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BUILDING CODES - PIMA COUNTY

2012 IBC (INTERNATIONAL BUILDING CODE)
 2011 NEC (NATIONAL ELECTRICAL CODE)
 2012 IFC (INTERNATIONAL FIRE CODE)
 AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES

BUILDING CODE INFORMATION**NEW SOLAR PV CANOPY OCCUPANCY GROUP**

OCCUPANCY GROUP S-2

NEW SOLAR PV CANOPY TYPE OF CONSTRUCTION

CONSTRUCTION TYPE IIB

NEW SOLAR PV CANOPY FIRE-RESISTANCE REQUIREMENTS

PV CANOPIES ARE NOT SPRINKLERED

FIRE SEPARATION DISTANCE: 10' - 30'

FIRE-RESISTANCE REQUIREMENT = 0 HRS. PER IBC
TABLES 601 AND 602**NEW SOLAR PV CANOPY AREA**

CANOPY AREA	
CANOPY AREA	SQUARE FT
TOTAL	7,955
A	5,965
B	1,990

DESIGN TEMP ASSUMPTIONS	
2% AVG DESIGN HIGH (°C)	40
EXTREME MIN (°C)	-3

PIMA COUNTY - MURPHY-WILMOT LIBRARY

SYSTEM DESCRIPTION

PROJECT SUMMARY											
CANOPY	TILT	AZIMUTH	PANEL BOARD	INACTIVE MODS	INVERTER	ACTIVE MODS	STRINGS	MODS / STRING	KWac	KWdc	DC/AC RATIO
A	14	180	PNL-01	0	INV-01	144	8	18	36	47.52	1.32
					INV-02	144	8	18	36	47.52	1.32
B	14	180		6	INV-03	90	6	15	23	29.7	1.29
Totals				6		378	22		95	124.7	1.31

PLANT LOCATION MAP

NOT TO SCALE



3840 S. PALO VERDE ROAD, #405
 TUCSON, ARIZONA 85714
 PHONE: (520) 307-3300
 FAX: (520) 307-4046

SOLON

PIMA COUNTY - MURPHY-WILMOT LIBRARY
 124.8 kW-DC, 95 KW-AC PHOTOVOLTAIC PROJECT
 530 N WILMOT ROAD TUCSON, AZ 85711

COVER

**SURVEYOR/CIVIL ENGINEER**

HESS-ROUNTREE, INC.
 9831 S. 51ST ST., SUITE C110
 PHOENIX, AZ 85044
 (480) 496-0244

DANA KLETT
 RLS 58841
 EXPIRES 12/31/20

STRUCTURAL ENGINEER

CARUSO TURLEY SCOTT
 1215 W RIO SALADO PARKWAY, SUITE 200
 TEMPE, AZ 85281
 (480) 774-1700

PAUL G SCOTT
 AZ PE REG #14427
 EXPIRES 6/30/19

ELECTRICAL ENGINEER

MATTHEWS CONSULTING & DESIGN, INC.
 10950 NORTH LA CANADA DRIVE, #9101
 ORO VALLEY, AZ 85737
 (520) 572-1650

JEFF MATTHEWS
 AZ PE REG #31168
 EXPIRES 3/31/20

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PROJECT
 SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHECKER	JM	

SHEET #
COVER

CANOPY PLANS

FOR

MURPHY WILMOT LIBRARY**SITE ADDRESS: 530 N. WILMOT ROAD,
TUCSON, AZ 85710****TITLE REPORT NOTES:**

PRELIMINARY MEMORANDUM REPORT, ORDER NO. 149530 DATED OCTOBER 31, 2017 AT 8:00 A.M. AS ISSUED BY STEWART TITLE AND TRUST OF TUCSON.

SURVEYOR'S DECLARATION REGARDING SCHEDULE B, PRELIMINARY MEMORANDUM REPORT, ORDER NO. 149530.

ITEMS 1, 2, 4, 7, 8, 9, 10, 11, 17 AND 19 ARE NOT PLOTTABLE AND NOT SHOWN HEREON.

ITEM 3. EASEMENT FOR ELECTRIC LINES AND RIGHTS INCIDENT THERETO, AS SET FORTH IN INSTRUMENT RECORDED IN DOCKET 759, PAGE 297 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [3].

ITEM 5. EASEMENT FOR ELECTRIC LINES AND RIGHTS INCIDENT THERETO, AS SET FORTH IN INSTRUMENT RECORDED IN DOCKET 1073, PAGE 449 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [5].

ITEM 6. EASEMENT FOR ELECTRIC LINES AND RIGHTS INCIDENT THERETO, AS SET FORTH IN INSTRUMENT RECORDED IN DOCKET 2366, PAGE 196 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [6].

ITEM 12. RESERVATIONS OF EASEMENT AND TERMS THEREIN RECORDED IN DOCKET 13554, PAGE 3183 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [12].

ITEM 13. MATTERS DISCLOSED BY SITE PLAN MAP ATTACHED TO INSTRUMENT RECORDED IN DOCKET 13554, PAGE 3183 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [13].

ITEM 14. EASEMENT FOR ELECTRIC AND COMMUNICATION FACILITIES AND RIGHTS INCIDENT THERETO, AS SET FORTH IN INSTRUMENT RECORDED IN DOCKET 13836, PAGE 2842 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [14].

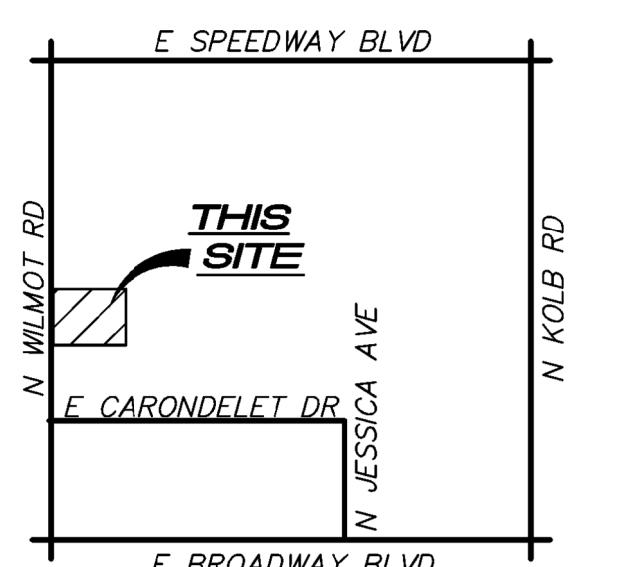
ITEM 15. MATTERS DISCLOSED IN SURVEY MAP ATTACHED TO INSTRUMENT RECORDED IN DOCKET 13836, PAGE 2842 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [15].

ITEM 16. TERMS, CONDITIONS, COVENANTS, RESTRICTIONS, EASEMENTS, LIABILITIES AND OBLIGATIONS AS SET FORTH IN EASEMENT FOR INGRESS, EGREG, UTILITIES AND PERMANENT MAINTENANCE RECORDED IN SEQUENCE NO. 2011-3540352 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [16].

ITEM 18. MATTERS AS DISCLOSED IN SURVEY RECORDED IN BOOK 64 OF RECORD OF SURVEYS, PAGE 74 OF THE OFFICIAL RECORDS OF PIMA COUNTY RECORDER, SHOWN HEREON AS [18].

**SURVEYOR'S DECLARATIONS REGARDING
THIS SURVEY:**

1. THIS SURVEY IS BASED ON A PRELIMINARY MEMORANDUM REPORT ISSUED BY STEWART TITLE AND TRUST OF TUCSON, ORDER NO. 149530, DATED OCTOBER 31, 2017 AT 8:00 A.M.
2. NO ATTEMPT HAS BEEN MADE TO SHOW ON THIS SURVEY ANY FUTURE RIGHTS-OF-WAY, FUTURE EASEMENTS, OR FUTURE DEDICATIONS THAT ANY MUNICIPALITY OR GOVERNMENTAL AGENCY MAY REQUIRE, EXCEPT AS NOTED HEREON.
3. A PERSONAL SEARCH OF THE RECORDS OF PIMA COUNTY IN THE RECORDERS OFFICE OF SAID COUNTY HAS NOT BEEN MADE BY THIS SURVEYOR.
4. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND ARE BASED ON RECORDS PROVIDED BY THE SERVING UTILITY COMPANIES AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THIS SURVEYOR.



VICINITY MAP
NOT TO SCALE

SHEET INDEX:

C1.0 CANOPY PLAN - COVER SHEET
C2.0 TRANSACTIONAL SURVEY, PARTIAL
TOPOGRAPHIC SURVEY AND CANOPY PLAN

LEGAL DESCRIPTION:

THAT CERTAIN PARCEL DESCRIBED IN DOCKET 2379, AT PAGE 29, AS RECORDED IN THE OFFICE OF THE PIMA COUNTY RECORDER, DESCRIBED AS FOLLOWS:

THE NORTH 364 FEET OF THE WEST 322.25 FEET OF LOT 3 (THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER) IN SECTION 7 TOWNSHIP 14 SOUTH, RANGE 15 EAST, GILA AND SALT RIVER MERIDIAN, PIMA COUNTY, ARIZONA;

EXCEPT THE WEST 75 FEET THEREOF; AND

EXCEPT A TRIANGULAR SHAPED PARCEL OF LAND IN SAID LOT 3, LYING NORTHEASTERLY FROM THE INTERSECTION OF THE NORTH LINE OF LOT 3 WITH THE EAST LINE OF THE ABOVE EXCEPTED 75 FEET, THE NORTH LINE OF SAID TRIANGULAR PARCEL BEING 15 FEET ALONG SAID NORTH LINE OF LOT 3 FROM SAID POINT OF INTERSECTION, AND THE WEST LINE OF SAID TRIANGULAR PARCEL BEING 15 FEET ALONG SAID EAST LINE OF THE ABOVE EXCEPTED 75 FEET FROM SAID POINT OF INTERSECTION.

3640 S. PALO VERDE ROAD, #205
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SOLON

PIMA COUNTY - MURPHY-WILMOT LIBRARY
124.8 KW-DC, 95 KW-AC PHOTOVOLTAIC PROJECT
530 N WILMOT ROAD TUCSON, AZ 85711

CANOPY PLAN - COVER SHEET

BENCHMARK:

PIMA COUNTY GEODETIC CONTROL POINT G04. FOUND 2" BRASS CAP, FLUSH, AT THE INTERSECTION OF MANN AVENUE AND MANN CIRCLE.

ELEVATION=2572.09

(NAVD88 DATUM)



EXPIRES 12-31-20
2018.05.25 11:07:07-07:00

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PROJECT

ENGINEER	INITIAL	DATE
DRAFTER	JCW	05/25/18
CHECKER	DLK	05/25/18

CONSULTING ENGINEERS & LAND SURVEYORS
9831 SOUTH 51ST STREET, SUITE C110
PHOENIX, ARIZONA 85044 (480)496-0244

H-R #1711-08

SHEET 1 OF 2

C1.0



ABBREVIATIONS

ABBREV

NOTE: ABBREVIATIONS MAY OR MAY NOT HAVE PERIODS, BUT SHALL BE READ AS SAME.	
A.B. - - - - -	ANCHOR BOLT
A.B.C. - - - - -	AGGREGATE BASE COURSE
ACI - - - - -	AMERICAN CONCRETE INSTITUTE
A/C - - - - -	AIR CONDITIONER
A.F.F. - - - - -	ABOVE FINISHED FLOOR
AISC - - - - -	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI - - - - -	AMERICAN IRON AND STEEL INSTITUTE
AITC - - - - -	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
ALT. - - - - -	ALTERNATE
ANSI - - - - -	AMERICAN NATIONAL STANDARDS INSTITUTE
APA - - - - -	AMERICAN PLYWOOD ASSOCIATION
ARCH'L. - - - - -	ARCHITECTURAL
ASTM - - - - -	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS - - - - -	AMERICAN WELDING SOCIETY
A.W.H.S. - - - - -	AUTOMATIC WELDED HEADED STUDS
A.W.T.S. - - - - -	AUTOMATIC WELDED THREADED STUDS
BM - - - - -	BEAM
B.F.F. - - - - -	BELLOW FINISHED FLOOR
BLK - - - - -	BLOCK
B.O.B. - - - - -	BOTTOM OF BEAM
B.O.D. - - - - -	BOTTOM OF DECK
B.O.F. - - - - -	BOTTOM OF FOOTING
BRG - - - - -	BEARING
C - - - - -	CAMBER
C.C. - - - - -	CENTERLINE TO CENTERLINE
C.F.S. - - - - -	COLD FORMED STEEL
C.G. - - - - -	CENTER OF GRAVITY
C.I.P. - - - - -	CAST IN PLACE
C.L. - - - - -	CENTERLINE
C.L.B. - - - - -	CENTERLINE OF BEAM
C.L.C. - - - - -	CENTERLINE OF COLUMN
C.L.F. - - - - -	CENTERLINE OF FOOTING
C.L.W. - - - - -	CENTERLINE OF WALL
CLR - - - - -	CLEAR
CONC - - - - -	CONCRETE
CONC C.J. - - - - -	CONCRETE CONTROL JOINT
CONC S.J. - - - - -	CONCRETE SAWCUT JOINT
C.M.U. - - - - -	CONCRETE MASONRY UNIT
CONN - - - - -	CONNECTION
CONT - - - - -	CONTINUOUS
CRSI - - - - -	CONCRETE REINFORCING STEEL INSTITUTE
D.F. (D.F.L.) - - - - -	Douglas Fir Larch
DL - - - - -	DEAD LOAD
DIA - - - - -	DIAMETER
DN - - - - -	DOWN
DWG(S) - - - - -	DRAWING(S)
E.C. - - - - -	END TO CENTERLINE
E.E. - - - - -	END TO END
E.O.S. - - - - -	EDGE OF SLAB
EQ - - - - -	EQUAL
EQUIP - - - - -	EQUIPMENT
EXP. BOLT (E.B.) - - - - -	EXPANSION BOLT
EXP. JT (E.J.) - - - - -	EXPANSION JOINT
E.W. - - - - -	EACH WAY
F.F. - - - - -	FINISHED FLOOR
F.O.M. - - - - -	FACE OF MEMBER
F.O.S. - - - - -	FACE OF STEEL
F.O.W. - - - - -	FACE OF WALL
GA - - - - -	GAGE (UNIT OF MEASUREMENT)
GALV - - - - -	GALVANIZED
G.S.N. - - - - -	GENERAL STRUCTURAL NOTES
GLB (GLULAM) - - - - -	GLUED-LAMINATED BEAM
H.F. - - - - -	HEM FIR
HORIZ - - - - -	HORIZONTAL REINFORCING
H.S. - - - - -	HEADED STUDS
IBC - - - - -	INTERNATIONAL BUILDING CODE
ICBO - - - - -	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
ICC - - - - -	INTERNATIONAL CODE COUNCIL
ICF - - - - -	INSULATED CONCRETE FORMS
I.F.W. - - - - -	INSIDE FACE OF WALL
I.O.D. - - - - -	INTERPRETATION OF DRAWINGS

GENERAL STRUCTURAL NOTES**BUILDING CODE:**

2012 EDITION OF THE INTERNATIONAL BUILDING CODE.

LOADS:**GRAVITY:**CANOPY DEAD LOAD = ACTUAL WEIGHT OF MEMBER:
SOLAR PANEL, RAILS, ETC. = 3 PSF (MAX)
PURFLIN = 4 PLF
BEAM = 31 PLF
COLUMN = 48 PLF**LATERAL:****WIND:**ASCE 7-10:
BASIC DESIGN WIND SPEED (3-SECOND GUST), V = 105 MPH. (ASCE 7-10)
RISK CATEGORY, I. (ASCE 7-10)
EXPOSURE B.

WIND LOAD FOR 14 DEGREE MAX SLOPE: (THESE VALUES ARE BEFORE MULTIPLYING BY 0.6 FACTOR IN LOAD COMBINATIONS)

C&C WIND LOAD = 25.3 PSF (TOWARD THE SURFACE).

C&C WIND LOAD = -29.2 PSF (AWAY FROM THE SURFACE).

MWFRS WIND LOAD = 20.8 PSF / 6.6 PSF (TOWARD THE SURFACE).

MWFRS WIND LOAD = -24 PSF / -7.3PSF (AWAY FROM THE SURFACE).

GENERAL STRUCTURAL NOTES (cont.)

Applies unless noted otherwise on drawings

SEISMIC:

K(KIP) --- 1000 POUNDS
 KLF --- KIPS PER LINEAR FOOT
 LBS (#) --- POUNDS
 LGR --- LEDGER
 LGS --- LIGHT GAGE STEEL
 LGSEA --- LIGHT GAGE STEEL ENGINEERS ASSOCIATION
 L.O.D. --- LOCATION OF DETAILS
 LL --- LIVE LOAD
 LLH --- LONG LEG HORIZONTAL
 LLV --- LONG LEG VERTICAL
 MAS --- MASONRY
 MAS C.J. --- MASONRY CONTROL JOINT
 MAX --- MAXIMUM
 MBMA --- METAL BUILDING MANUFACTURERS ASSOCIATION
 MECH'L' --- MECHANICAL
 MFR'D --- MANUFACTURED
 MFR'S) --- MANUFACTURER(S)
 MIN --- MINIMUM
 N/A --- NOT APPLICABLE
 N.T.S. --- NOT TO SCALE
 O.C. --- ON CENTER
 O.F.W. --- OUTSIDE FACE OF WALL
 OPP --- OPPOSITE
 OSHA --- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
 PAF --- POWDER ACTUATED FASTENER
 PDPAT --- SIMPSON POWDER DRIVEN PIN 'A' TOP HAT
 PDPT --- SIMPSON POWDER DRIVEN PIN WITH TOP HAT (0.300" HEAD)
 FOUNDATIONS --- SPECIFIED 28 DAY COMPRESSIVE STRENGTH F'c:
 FOUNDATIONS --- 2,500 PSI
 GENERAL:

SOIL REPORT BY SMITH AND ANNALA ENGINEERING CO.; JOB NO.29.18.5122
 DRILLED PIER FOOTING DESIGNS ARE BASED ON SOILS REPORT. THE ALLOWABLE LATERAL BEARING PRESSURE MAY BE USED AS 1.0 PSF IN SECTION 806.3.4. ALLOWABLE LATERAL BEARING PRESSURE = 750 PSF/FT FOR DRILLED PIER FOOTINGS. THE DRILLED PIER FOOTINGS ARE DESIGNED AS CONSTRAINED (SECTION 1807.3.2.2, EQUATION 18-5) WHERE PLACED IN CONCRETE AREAS, AS PARTIALLY CONSTRAINED (AVERAGE OF CONSTRAINED AND UNCONSTRAINED) WHERE PLACED IN ASPHALT AREAS AND AS UNCONSTRAINED (CZERNIAK) WHEN NOT PLACED IN CONCRETE OR ASPHALT AREAS.
 SPREAD FOOTING DESIGNS ARE BASED ON VALUES GIVEN IN SOILS REPORT. SPREAD FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL 2'-0" FEET MINIMUM BELOW ADJACENT EXISTING GRADE. DESIGN SOIL BEARING VALUE = 3,000 PSF. REFER TO SOILS REPORT FOR ADDITIONAL INFORMATION PRIOR TO COMMENCEMENT OF EARTHWORK. SOILS ENGINEER SHALL INSPECT FOUNDATION EXCAVATIONS PRIOR TO PLACEMENT OF CONCRETE.

CONCRETE:

P.C. --- PRECAST CONCRETE
 PCF --- POUNDS PER CUBIC FOOT
 PLF --- POUNDS PER LINEAR FOOT
 ± --- PLUS OR MINUS
 PREFAB --- PREFABRICATED
 PSF --- POUNDS PER SQUARE FOOT
 PSI --- POUNDS PER SQUARE INCH
 PT --- POST-TENSIONED
 PTI --- POST-TENSIONING INSTITUTE
 REINF --- REINFORCING
 SDI --- STEEL DECK INSTITUTE
 SLH --- SHORT LEG HORIZONTAL
 SLV --- SHORT LEG VERTICAL
 SJI --- STEEL JOIST INSTITUTE
 SIM --- SIMILAR
 SQ. --- SQUARE
 SSMA --- STEEL STUD MANUFACTURERS ASSOCIATION
 STD --- STANDARD
 STL --- STEEL
 TL --- TOTAL LOAD
 T.O.B. --- TOP OF BEAM
 T.O.C.T. --- TOP OF CONCRETE TOPPING
 T.O.D. --- TOP OF DECK
 T.O.F. --- TOP OF FOOTING
 T.O.L. --- TOP OF LEDGER
 T.O.M. --- TOP OF MASONRY
 T.O.P. --- TOP OF PLATE
 T.O.P.C. --- TOP OF PRECAST CONCRETE
 T.O.S. --- TOP OF STEEL
 T.O.W. --- TOP OF WALL
 TPI --- TRUSS PLATE INSTITUTE
 TYP --- TYPICAL
 T&G --- TONGUE AND GROOVE
 UBC --- UNIFORM BUILDING CODE
 U.N.O. --- UNLESS NOTED OTHERWISE
 VERT --- VERTICAL REINFORCING
 WCLA --- WEST COAST LUMBER ASSOCIATION
 WCLIB --- WEST COAST LUMBER INSPECTION BUREAU
 W.W.F. --- WELDED WIRE FABRIC
 WWPA --- WESTERN WOOD PRODUCTS ASSOCIATION
 W/ --- WITH
 W/C --- WATER TO CEMENT RATIO
 W/O --- WITHOUT

IT IS ACCEPTABLE AND INTENDED TO USE EARTH CUTS FOR THE DRILLED PIER FOOTING AND SPREAD FOOTING. THE FOOTING DESIGNS INDICATED IN THESE DRAWINGS DO NOT APPLY IF THE EARTH CUTS ARE UNSTABLE AND/OR DO NOT STAND ON THEIR OWN.
 THE FOOTINGS INDICATED IN THESE DRAWINGS DO NOT APPLY WHERE ORGANIC FILL MATERIALS EXIST.
 CONCRETE SHALL BE ADEQUATELY VIBRATED AROUND THE EMBEDDED STEEL COLUMNS TO ENSURE THE CONCRETE HAS COMPLETELY SURROUNDED THE STEEL COLUMN. CONCRETE SHALL SLOPE UP SLIGHTLY TOWARDS THE COLUMNS TO PREVENT WATER FROM PONDING AROUND COLUMNS.

SLABS ON GRADE AND SLAB FOOTINGS AT GRADE (E.G. INVERTER SLAB/FOUNDATION) SHALL BE VIBRATED ONLY AT TRENCHES, FLOOR DUCTS, TURNDOWNS, ETC. MIX DESIGNS SHALL TAKE CARE TO PROVIDE THE LARGEST POSSIBLE SIZE OF COURSE AGGREGATE WHILE MAINTAINING CONCRETE WORKABILITY. NOMINAL MAXIMUM AGGREGATE SIZE SHALL NOT BE LESS THAN 3/4 INCH NOR GREATER THAN 1/3 THE DEPTH OF THE SLAB. MIX DESIGNERS SHALL SUBMIT SLAB ON GRADE DESIGNS WITH SHOWN CHARACTERISTICS NOT EXCEEDING 0.00078 IN/YN TO MEET THE REQUIREMENTS OF ACI 360R-06, FIG5.6 FOR TYPICAL CONCRETE. SLABS SHALL BE PLACED ON FLAT, SMOOTH, FIRM, COMPACTED SUBGRADE.

IT IS ACCEPTABLE FOR CONCRETE TO FREE FALL INTO THE DRILLED PIER OR SPREAD FOOTINGS. THE GOAL OF THE CONSTRUCTION WITH THE DRILLED PIER AND SPREAD FOOTING IS TO HAVE CONCRETE WELL PLACED WITH MINIMAL Voids AND GOOD CONSOLIDATION (i.e. MINIMAL SEGREGATION OF THE AGGREGATE).

NON-STRUCTURAL PEDESTALS AT BASE OF STEEL COLUMNS:

IF A CONCRETE PEDESTAL IS CONSTRUCTED PER THE DETAILS(S) IN THIS SET THE PEDESTAL IS CONSIDERED NON-STRUCTURAL. THE PEDESTAL MAY BE CONSTRUCTED AFTER THE DRILLED PIER AND STEEL COLUMN ARE IN PLACE. THE TOP OF THE DRILLED PIER SHALL BE CLEANED BY EITHER BROOMING OR USING WATER SPRAY PRIOR TO CONSTRUCTING THE PEDESTAL. MINIMUM PEDESTAL REINFORCING SHALL BE # 4 #5 VERTICALS AND #4 TIES AT 12" O.C.

MATERIAL THICKNESS COMPARISON TABLE TO BE INSERTED HERE ON DWG SHEET.
 PLEASE DO NOT DELETE SPACERS IN WORD DOCUMENT

REINFORCING:

ALL REINFORCING PER CRSI SPECIFICATIONS AND HANDBOOK. ASTM A615 (Fy = 60 KSI / GRADE 60) DEFORMED BARS FOR ALL BARS. WHERE SHOWN ON DRAWINGS ALL GRADE 60 REINFORCING TO BE WELDED SHALL BE ASTM A706. NO TACK WELDING OF REINFORCING BARS ALLOWED WITHOUT PRIOR REVIEW OF PROCEDURE WITH THE STRUCTURAL ENGINEER. LATEST ACI CODE AND DETAILING MANUAL APPLY. CLEAR CONCRETE COVERAGES AS FOLLOWS:

CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ----- 3"
 EXPOSED TO EARTH OR WEATHER ----- 2"
 #6 OR LARGER ----- 2"
 #5 AND SMALLER ----- 1 1/2"

ALL OTHER PER LATEST EDITION OF ACI 318

ALL REINFORCING SHALL BE CHAIRED TO ENSURE PROPER CLEARANCES. SUPPORT OF FOUNDATION REINFORCING MUST PROVIDE ISOLATION FROM MOISTURE/CorROSION BY USE OF A PLASTIC OR CONCRETE CHAIR. DUCT-TAPE COVERED REINFORCING IS NOT AN ACCEPTABLE CHAIR.

ALL DIMENSIONS REFERENCED IN DRAWINGS AS "CLEAR" SHALL BE FROM FACE OF STRUCTURE TO EDGE OF REINFORCING, AND SHALL NOT BE LESS THAN STATED, NOR GREATER THAN "CLEAR" DIMENSION PLUS 3/8". ALL OTHERS SHALL BE PLUS OR MINUS 1/4" TYPICAL UNLESS NOTED OTHERWISE.

FIELD BENDING OR STRAIGHTENING OF DEFORMED BARS SHALL BE LIMITED TO #5 BARS AND SMALLER, AND SHALL BE FIELD BENT OR STRAIGHTENED ON-SITE. ANY BEND SHALL BE LIMITED TO 90 DEGREES. FIELD BENDING OR STRAIGHTENING OF #6 BARS OR LARGER IS REQUIRED, OR IF A 90 DEGREE BEND IS REQUIRED, THE BARS AND MAINTAIN MEAT SHALL BE APPLIED FOR BENDING OR STRAIGHTENING. CONTRACTOR SHALL SUBMIT PROCEDURE FOR APPLYING HEAT TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO BENDING OR STRAIGHTENING BARS.

WIND LOAD FOR 14 DEGREE MAX SLOPE: (THESE VALUES ARE BEFORE MULTIPLYING BY 0.6 FACTOR IN LOAD COMBINATIONS)

C&C WIND LOAD = 25.3 PSF (TOWARD THE SURFACE).

MWFRS WIND LOAD = 20.8 PSF / 6.6 PSF (TOWARD THE SURFACE).

MWFRS WIND LOAD = -24 PSF / -7.3PSF (AWAY FROM THE SURFACE).

STRUCTURAL STEEL:**GENERAL:**

ALL CONSTRUCTION PER LATEST AISC STEEL CONSTRUCTION MANUAL. ALL WIDE FLANGE STEEL SHALL BE ASTM A36 (Fy = 50 KSI). ALL FLAT STEEL SHALL BE ASTM A500 (Fy = 42 KSI) OR ASTM A53, TYPE 30, GRADE B (Fy = 35 KSI). ALL TUBE STEEL SHALL BE ASTM A53 (Fy = 46 KSI). ALL MALLEABLE IRON STEEL UNLESS NOTED OTHERWISE SHALL BE ASTM A36 (Fy = 36 KSI) IF CALLED OUT ON PLANS. FOR 50 KSI PLATE STEEL SHALL BE ASTM A572 OR A573. THE TERMS PIPE AND ROUND HOLLOW STRUCTURAL SHAPE (HSS) ARE USED SYNONYMOUSLY THROUGHOUT THESE DOCUMENTS ALONG WITH THE TERMS TUBE STEEL AND RECTANGULAR OR SQUARE HSS.

ALL STRUCTURAL ROLLED STEEL MEMBERS WITH Fy GREATER THAN 36 KSI ARE TO BE IDENTIFIED WITH AN ASTM SPECIFICATION MARK OR TAG PER IBC SEC. 2203.1.

PROTECT ALL EXPOSED STEEL BELOW GRADE WITH HE107 ASPHALT EMULSION PRODUCT. EXTEND A MINIMUM OF 2 INCHES ABOVE FINISHED GRADE.

BOLTS:

ALL BOLTS SHALL BE ASTM A325 (TYPE 1) OR ASTM A490 (TYPE 1) SHALL BE TESTED AND INSTALLED AS SLIP CRITICAL CONNECTIONS WITH HEADS AND DEEP SEAT AND BOLT INSTALLATIONS SHALL BE PER THE APPROPRIATE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS. HIGH STRENGTH WASHERS WHERE NOTED SHALL BE PER ASTM F436 (TYPE 1). DTI WASHERS SHALL BE PER ASTM F959. NUTS SHALL BE PER ASTM A563 GRADE DH OR ASTM A194 GRADE 2H. IT IS ACCEPTABLE TO USE OVERSIZE HOLES OR SLOTTED HOLES PER AISC SPECIFICATIONS.

WELDING:

UNLESS NOTED OTHERWISE, ALL WELDS PER LATEST EDITION OF THE AWS STANDARDS. ALL WELDING SHALL BE PERFORMED BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS OR NOTES. CERTIFICATES SHALL BE THOSE ISSUED BY AN ACCEPTED TESTING AGENCY. ALL WELDING DONE BY E70 SERIES UNLESS NOTED OTHERWISE. FOR GRADE 60 REINFORCING BARS, USE E90 SERIES. THESE DRAWINGS DO NOT DISTINGUISH BETWEEN SHOP AND FIELD WELDS; THE CONTRACTOR MAY SHOP WELD OR FIELD WELD AT THEIR DISCRETION. SHOP WELDS AND FIELD WELDS SHALL BE SHOWN ON THE SHOP DRAWINGS SUBMITTED FOR REVIEW.

SCREW FASTENERS:

ALL SCREWS 3/4" MIN. LENGTH U.N.O.

ALL STEEL SCREWS SHALL BE IN ACCORDANCE WITH AISI-GENERAL AND AISI-NAS. Fy = 50 ksi AND Ft = 70 ksi FOR ALL SCREWS.

1. MINIMUM SPACING OF SCREWS SHALL NOT BE LESS THAN 3 TIMES THE NOMINAL DIAMETER. MINIMUM EDGE DISTANCE FOR SCREWS SHALL NOT BE LESS THAN 1.5 TIMES THE NOMINAL SCREW DIAMETER.

2. THE HEAD OF THE SCREW OR WASHER SHALL HAVE A DIAMETER, DW, OF NOT LESS THAN 5/16". WASHERS SHALL BE AT LEAST 0.05" THICK.

SCREW NUMBER DESIGNATION	8	10	(12-14)	14
NOMINAL DIAMETER	0.164"			

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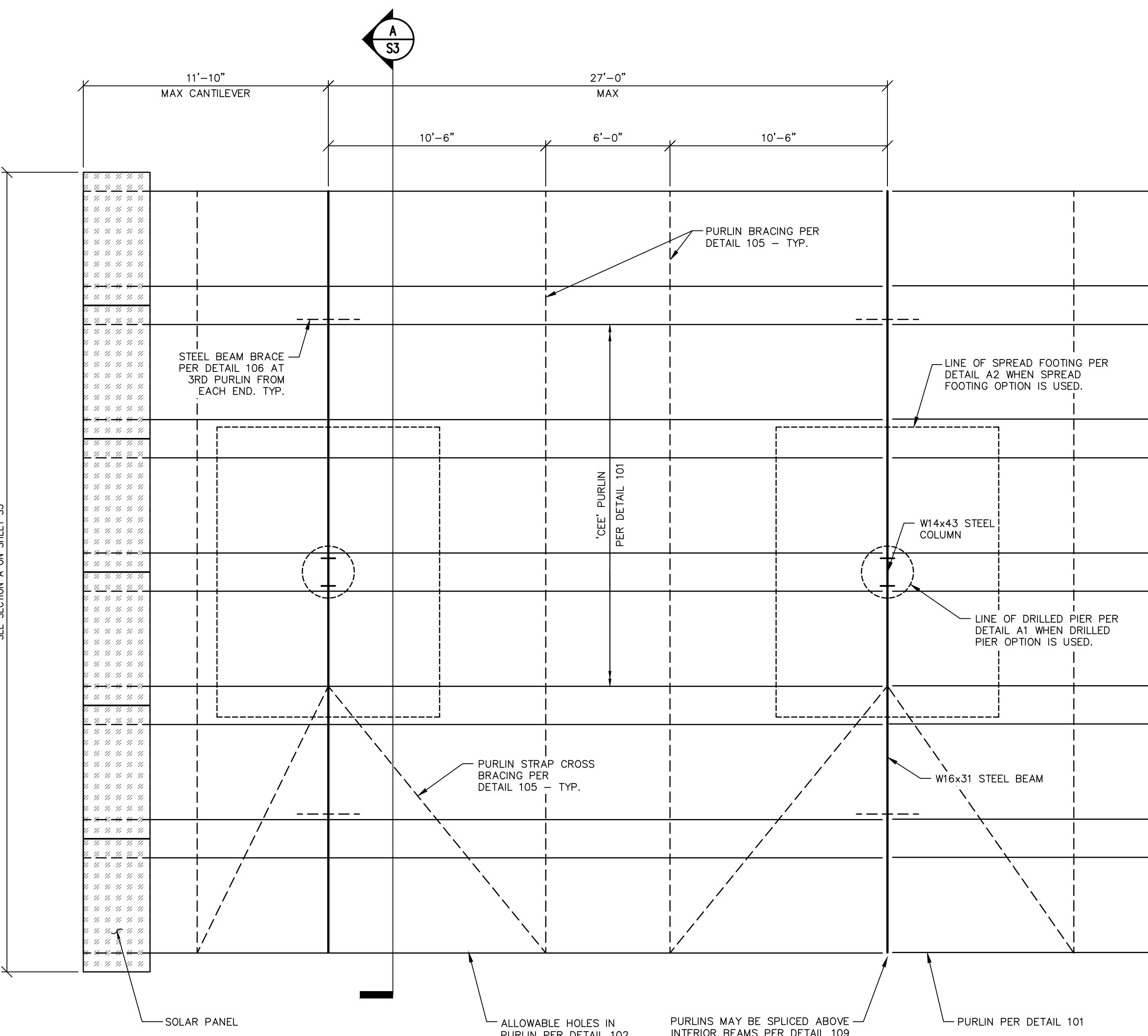
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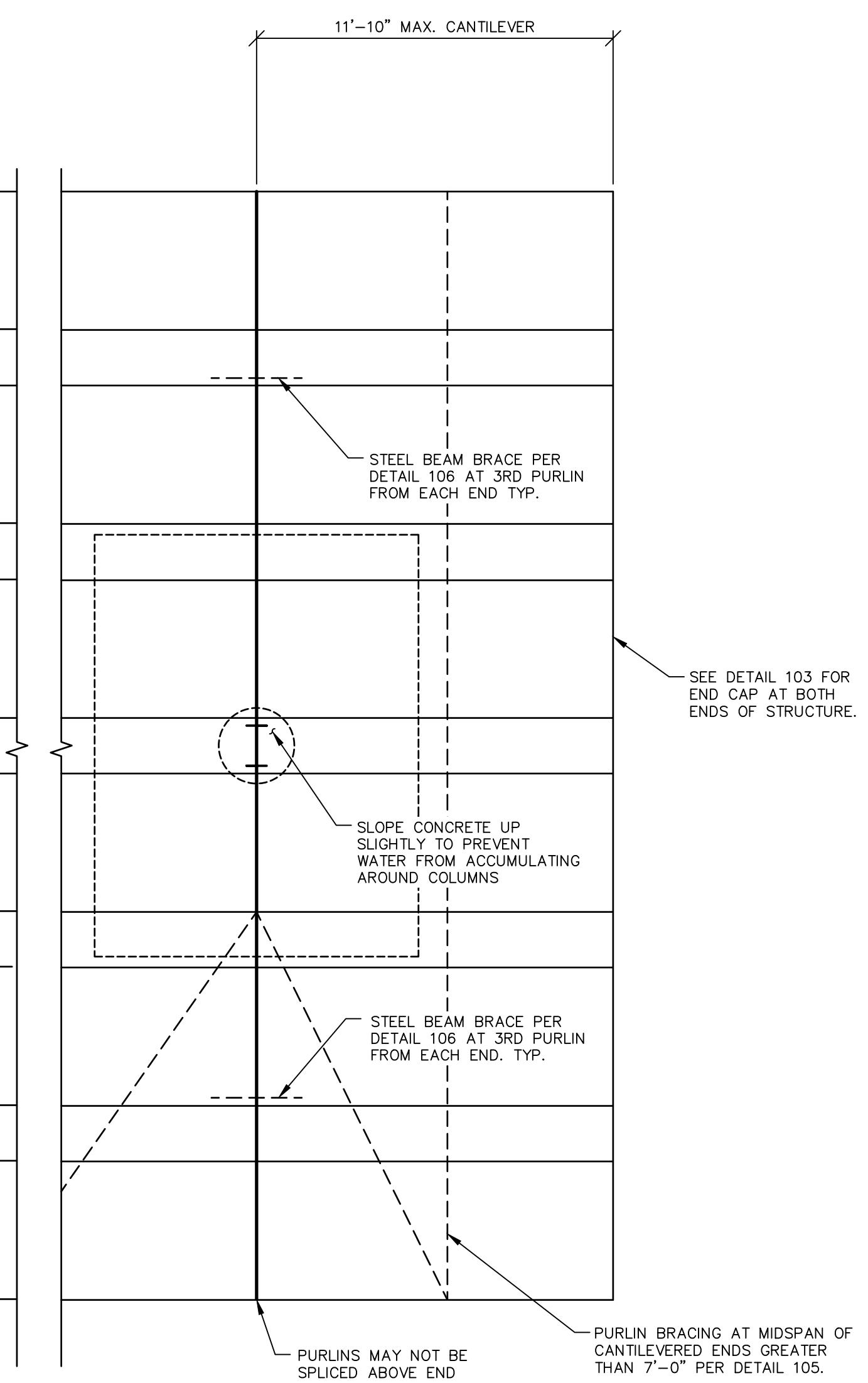
SEE SECTION A ON SHEET S3



TEE CANOPY PLAN VIEW

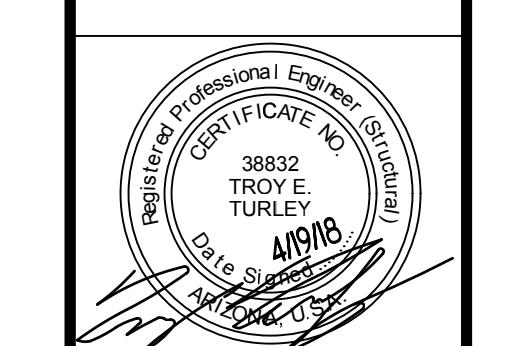
SCALE: 1/4" = 1'-0"

CANOPY A



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STRUCTURAL PLAN CANOPY A



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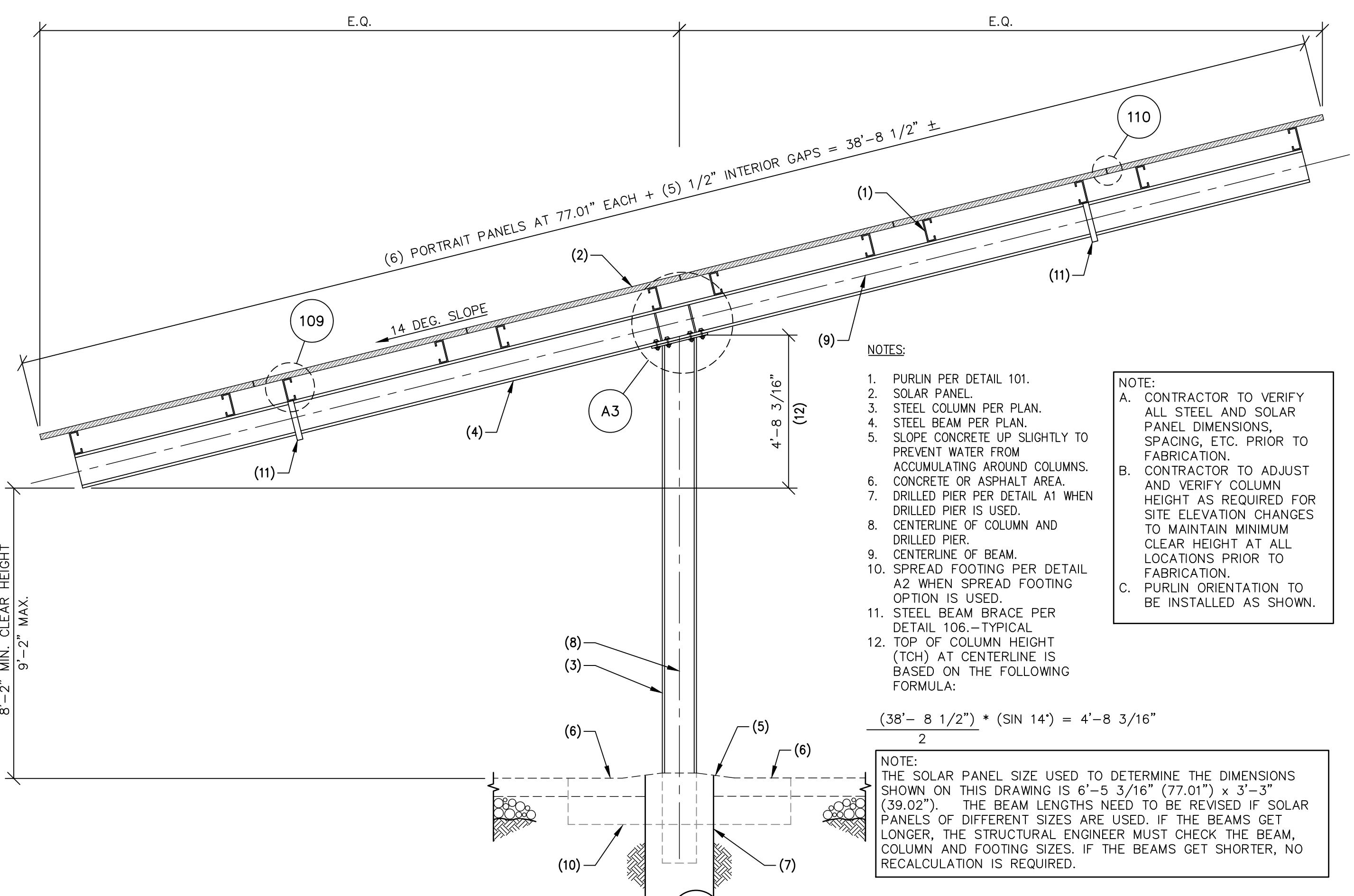
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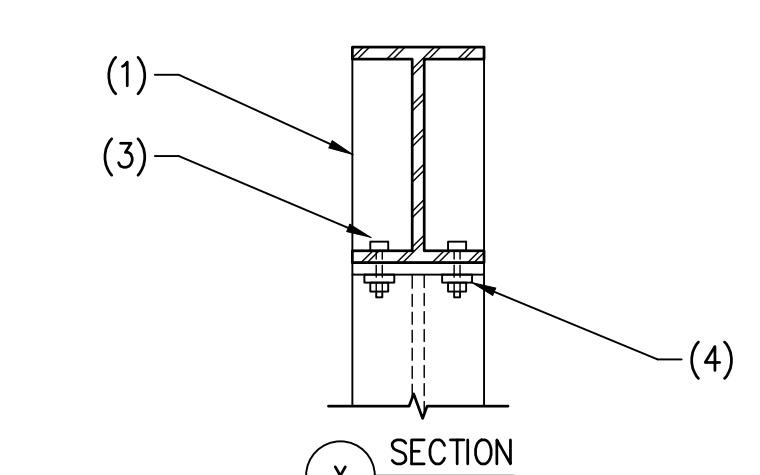
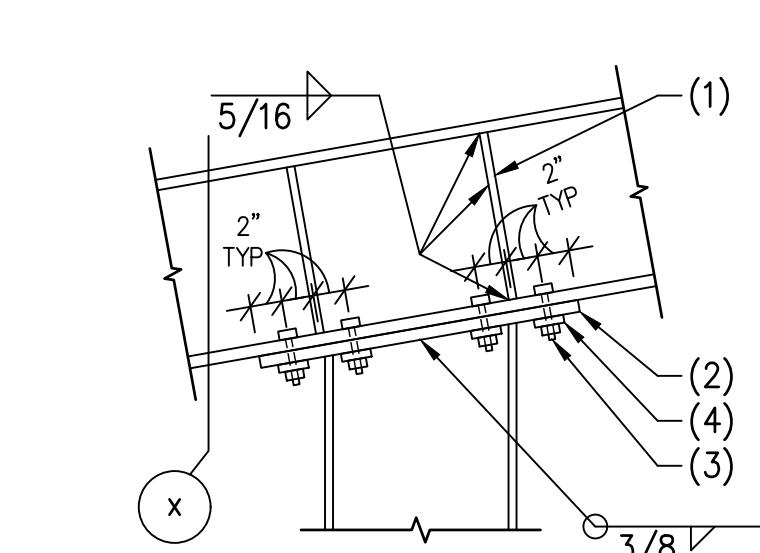
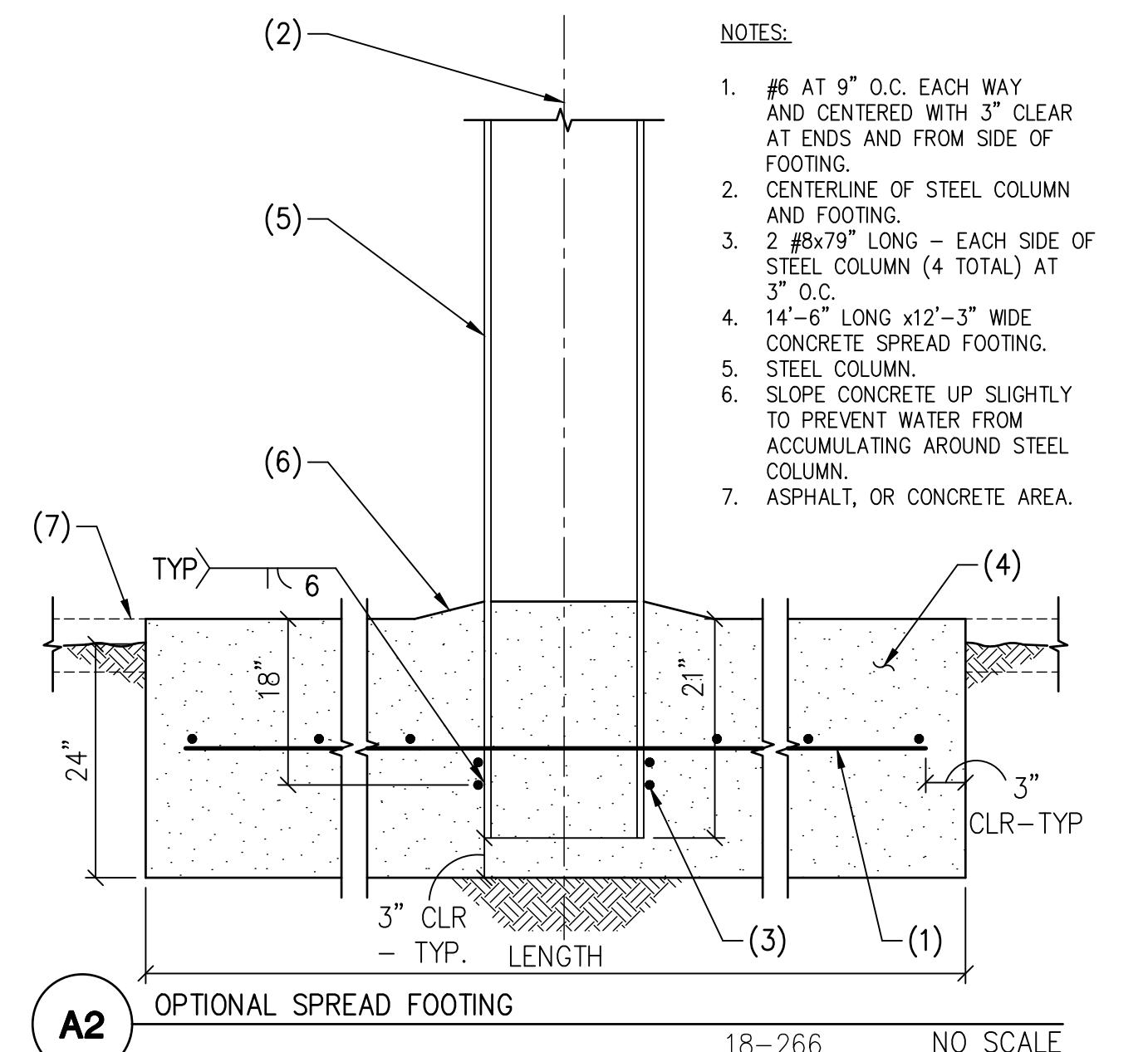
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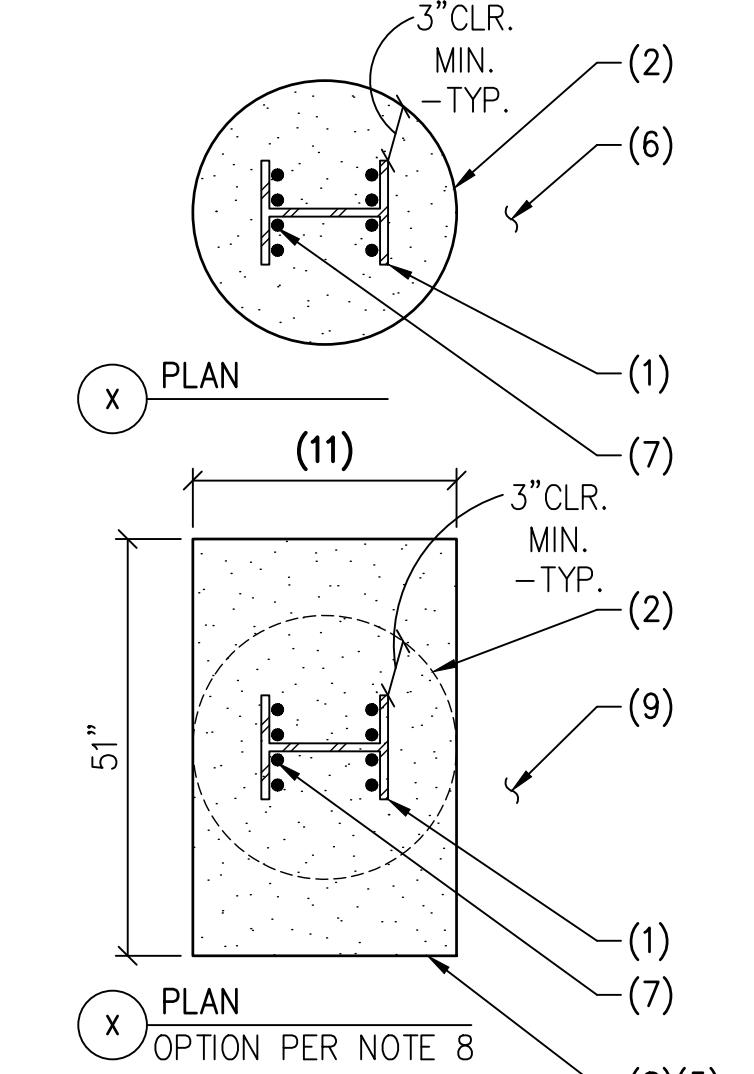
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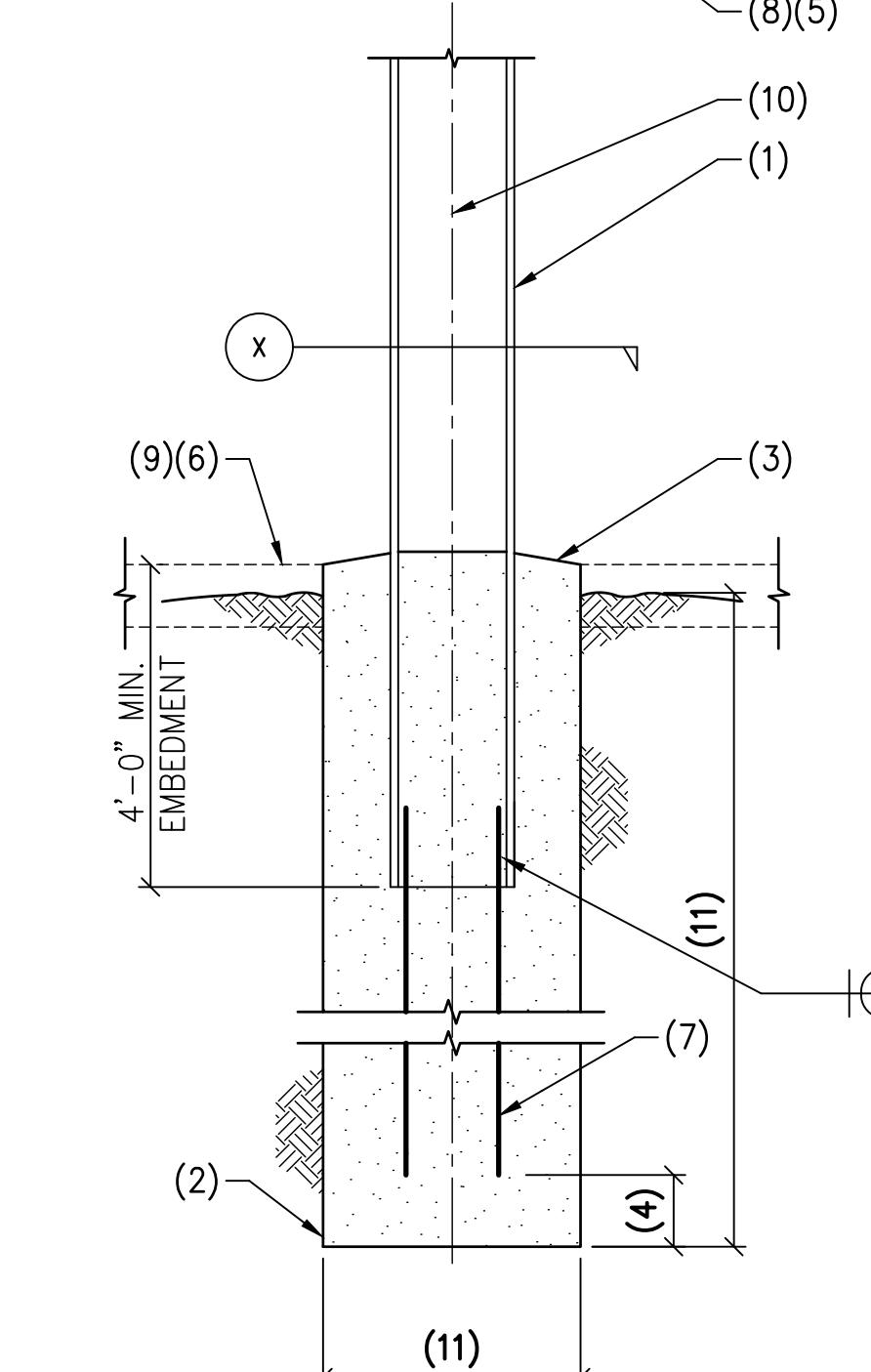
CANOPY A

**A3 STEEL BEAM TO STEEL COLUMN BOLTED MOMENT CONNECTION**

18-266 NO SCALE



DRILLED PIER DEPTH 24" DIAMETER	
AT DIRT AREA	12'-0"
AT CONCRETE AREA	7'-4"
AT ASPHALT AREA	9'-8"

**A1 DRILLED PIER FOOTING**

18-266 NO SCALE

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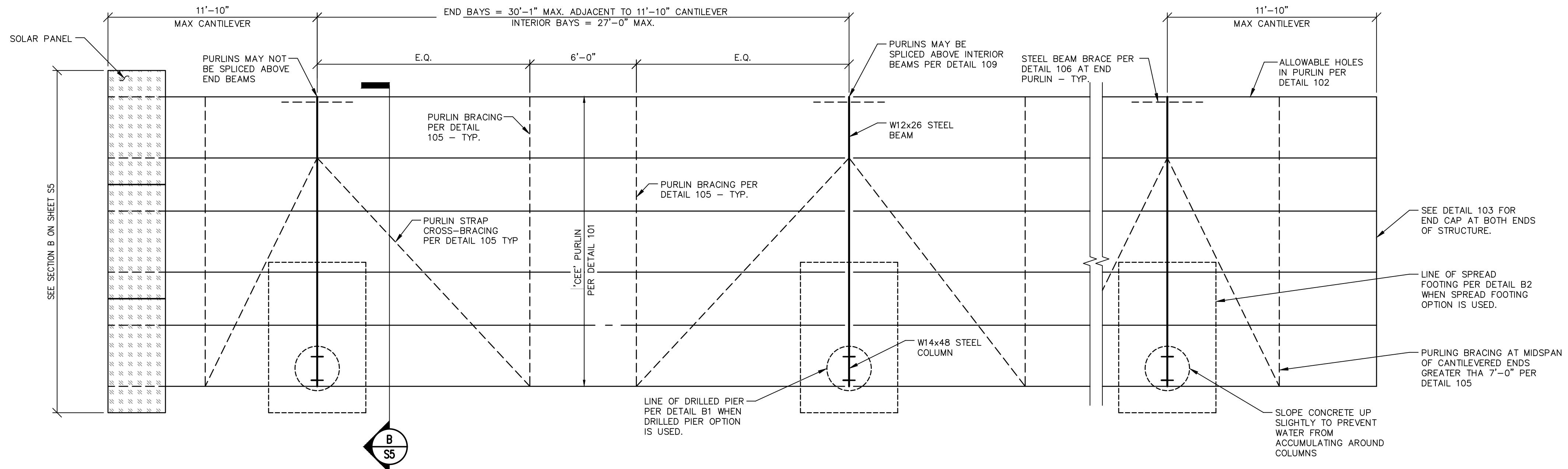
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SEMI - CANTILEVER CANOPY PLAN VIEW

SCALE: 1/4" = 1'-0"

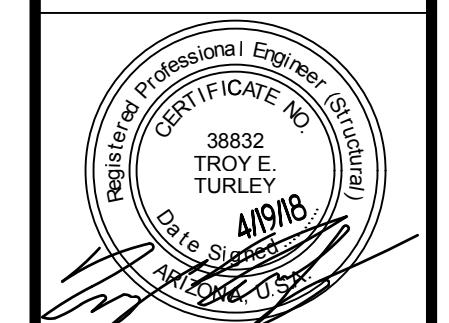
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ENGINEER INITIAL DATE

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SHEET # S4

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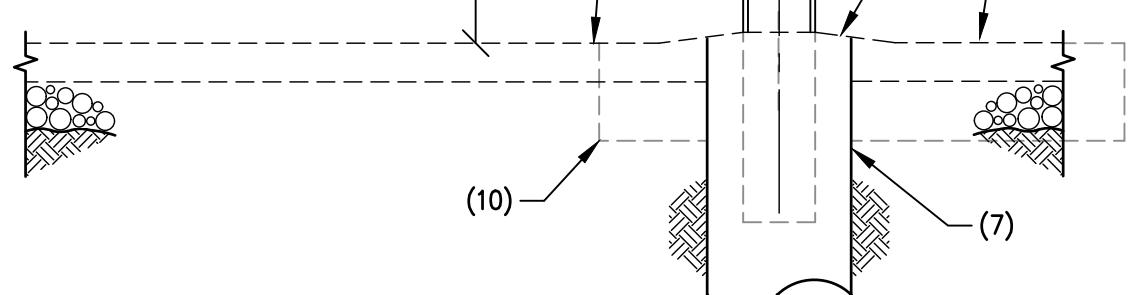
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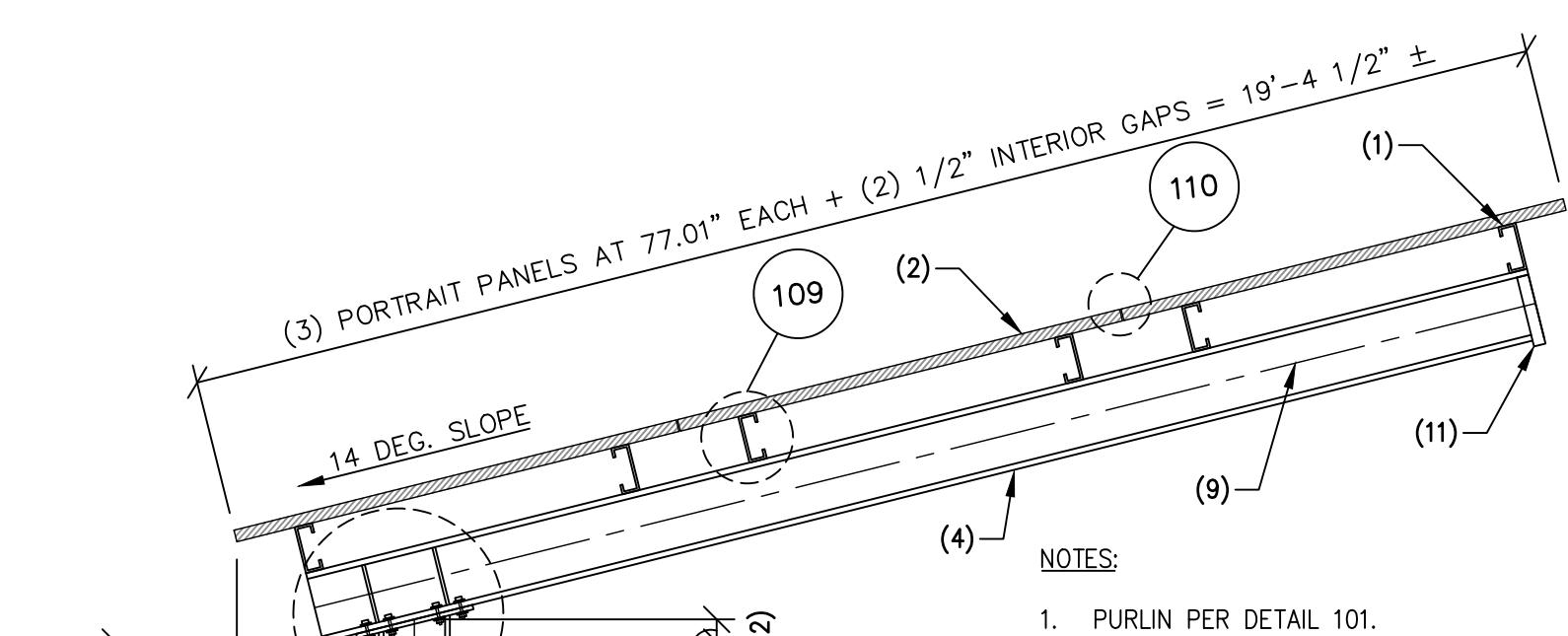
B 3 PANEL SEMI CANT SECTION

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

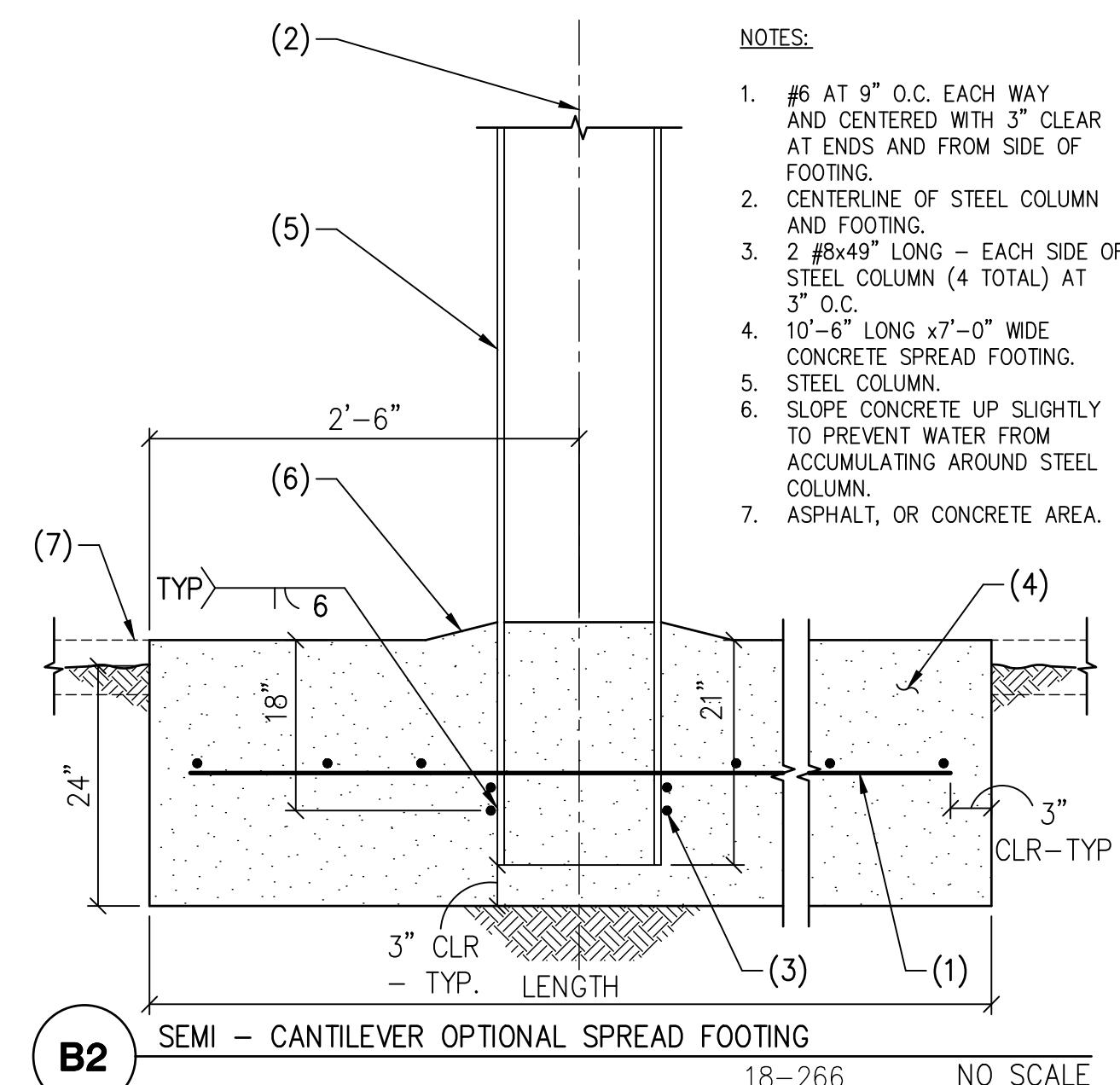


NOTE:
THE SOLAR PANEL SIZE USED TO DETERMINE THE DIMENSIONS SHOWN ON THIS DRAWING IS 6'-5 3/16" (77.01") x 3'-3" (39.02"). THE BEAM LENGTHS NEED TO BE REVISED IF SOLAR PANELS OF DIFFERENT SIZES ARE USED. IF THE BEAMS GET LONGER, THE STRUCTURAL ENGINEER MUST CHECK THE BEAM, COLUMN AND FOOTING SIZES. IF THE BEAMS GET SHORTER, NO RECALCULATION IS REQUIRED.

CANOPY B



- PURLIN PER DETAIL 101.
- SOLAR PANEL.
- STEEL COLUMN PER PLAN.
- STEEL BEAM PER PLAN.
- SLOPE CONCRETE UP SLIGHTLY TO PREVENT WATER FROM ACCUMULATING AROUND COLUMNS.
- CONCRETE OR ASPHALT AREA.
- DRILLED PIER DETAIL AT WHEN DRILLED PIER IS USED.
- CENTERLINE OF COLUMN AND DRILLED PIER.
- CENTERLINE OF BEAM.
- SPREAD FOOTING PER DETAIL A2 WHEN SPREAD FOOTING OPTION IS USED.
- STEEL BEAM BRACE PER DETAIL 106 - TYPICAL.
- TOP OF COLUMN HEIGHT (TCH) AT CENTERLINE IS BASED ON THE FOLLOWING FORMULA:
 $(2'-0 1/2") * (\tan 14') = 6" \pm$



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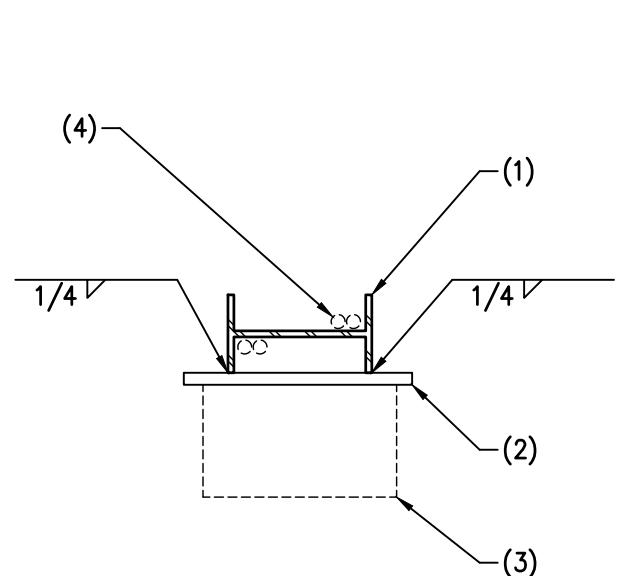
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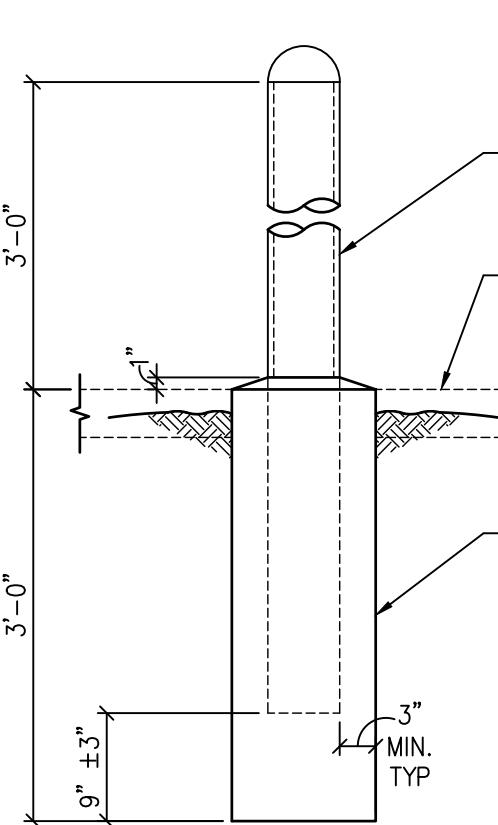
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NOTE:
MOUNT EQUIPMENT TO UNISTRUT.
ANCHORS AND SPACING PER
MANUFACTURER'S INSTRUCTIONS.

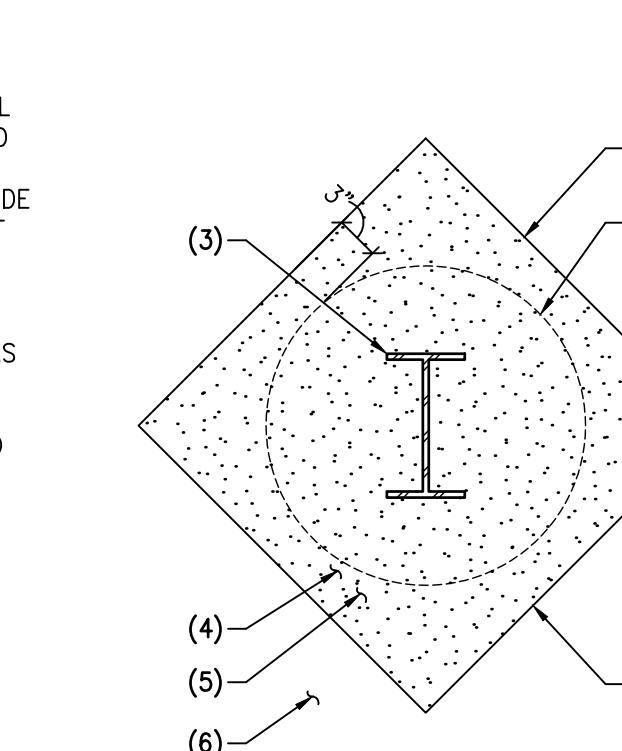
112 PLAN - TYPICAL EQUIPMENT MOUNTING

- NOTES:
- CARPORT CANOPY COLUMN.
 - P1000 UNISTRUT, MINIMUM (3) PER INVERTER, CAP BOTH ENDS WITH OUTDOOR RATED RUBBER INSERT. APPLY COLD GALVANIZING IMMEDIATELY AFTER CUTTING.
 - INVERTER OR PANELBOARD AS OCCURS.
 - CONDUITS AS REQ'D, PROVIDE REQUIRED CONDUIT SUPPORT WITH P4100 UNISTRUT AND CONDUIT STRAPS - TYP.



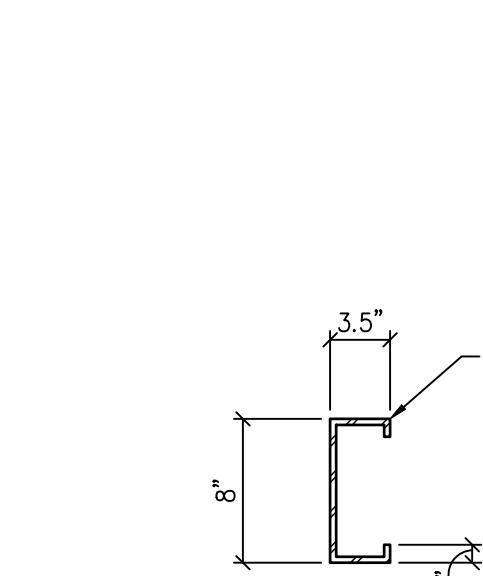
108 6" DIA. SAFETY BOLLARD

- NOTES:
- 6" DIA. STD. STEEL PIPE, PAINTED AND FILLED WITH CONCRETE. PROVIDE DOMED TOP, PAINT SAFETY YELLOW.
 - FINISHED GRADE, ASPHALT, OR CONCRETE SLAB AS OCCURS.
 - ENCASE PIPE IN CONCRETE DRILLED PIER FOOTING.



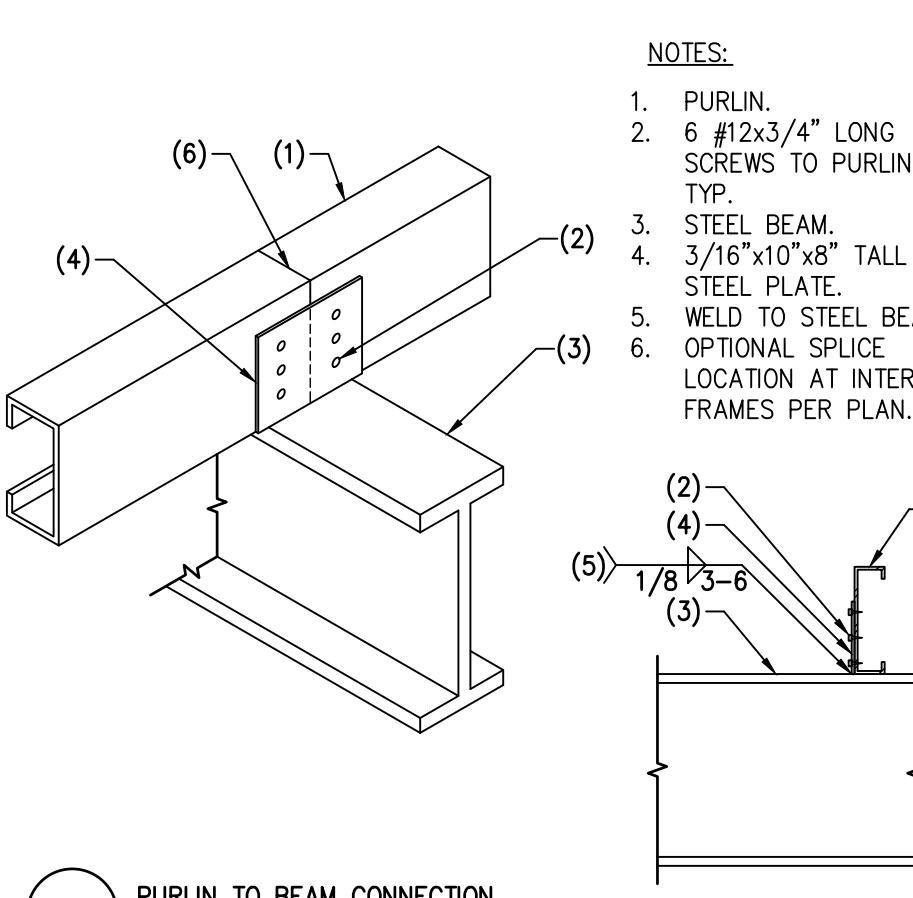
104 CONCRETE FINISH AT CONCRETE SLAB

- NOTES:
- SAW CUT CONCRETE AROUND DRILLED PIER. ENSURE CUT IS AT A 45° ANGLE TO THE COLUMN AS DEPICTED. FORM EDGE AS REQ'D IN TRENCHED AREAS.
 - DRILLED PIER BELOW PER STRUCTURAL PLANS.
 - STEEL COLUMN PER STRUCTURAL PLANS.
 - NEW CONCRETE TO MATCH DRILLED PIER SPECIFICATIONS. SLOPE TO PREVENT WATER ACCUMULATING AROUND COLUMN BASE. ENSURE EDGE IS FLUSH WITH EXISTING CONCRETE.
 - BRUSH FINISH.
 - PROTECT ADJACENT CONCRETE SURFACE TO ENSURE NO CONCRETE RESIDUE REMAINS.
 - 1/4" RADIUS EDGE AGAINST CONCRETE.



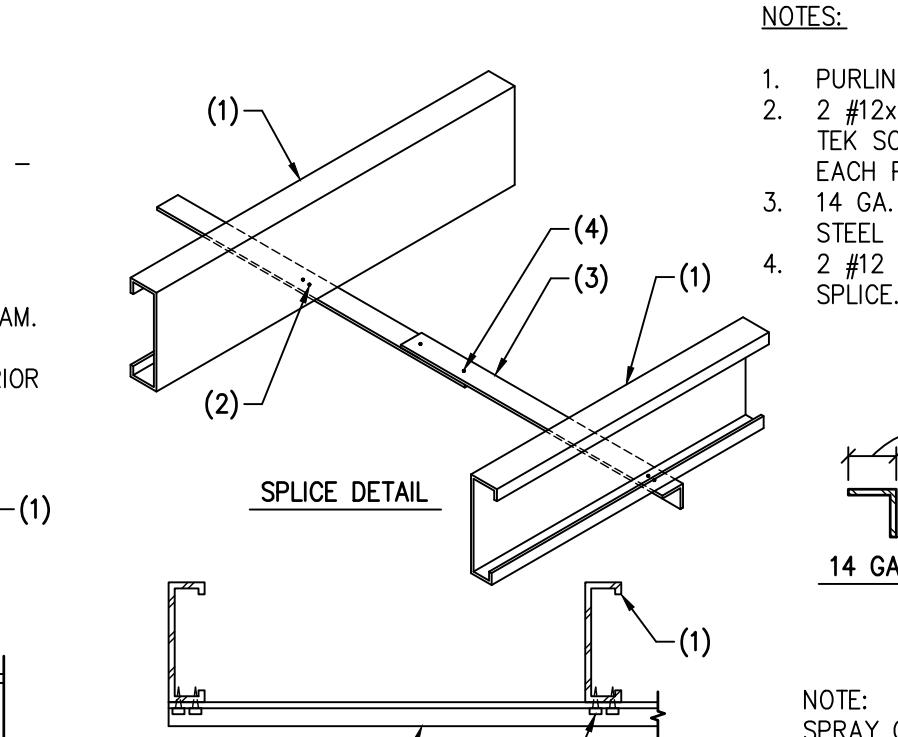
101 CEE PURLIN

- NOTES:
- 14 GA. CEE PURLIN. Fy = 60 KSI.



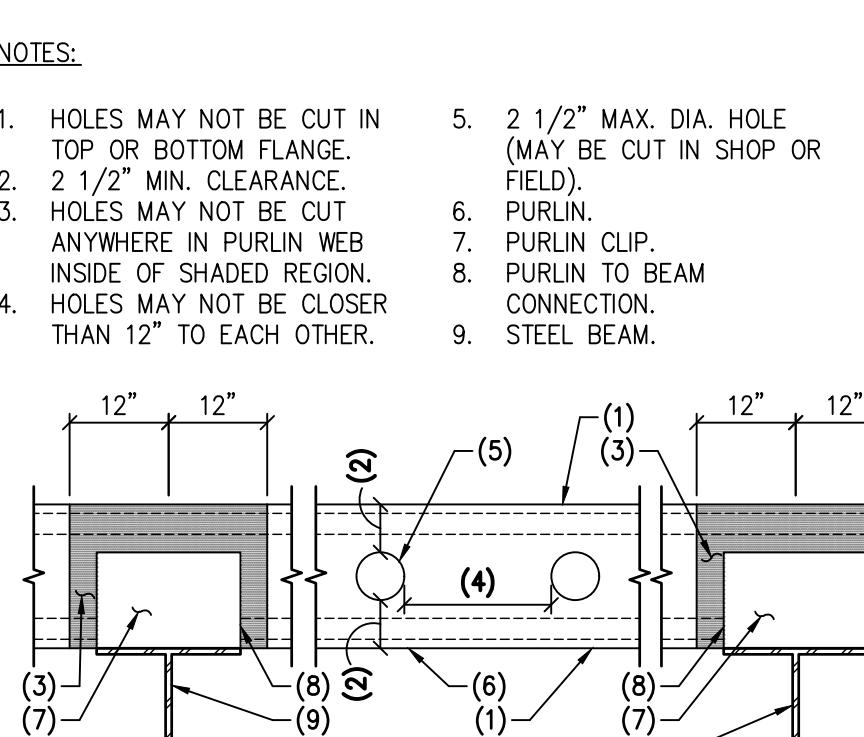
109 PURLIN TO BEAM CONNECTION

- NOTES:
- PURLIN.
 - 6 #12x3/4" LONG TEK SCREWS AT EACH PURLIN.
 - STEEL BEAM.
 - 3/16"x10"x8" TALL STEEL PLATE.
 - WELD TO STEEL BEAM.
 - OPTIONAL SPLICE LOCATION AT INTERIOR FRAMES PER PLAN.



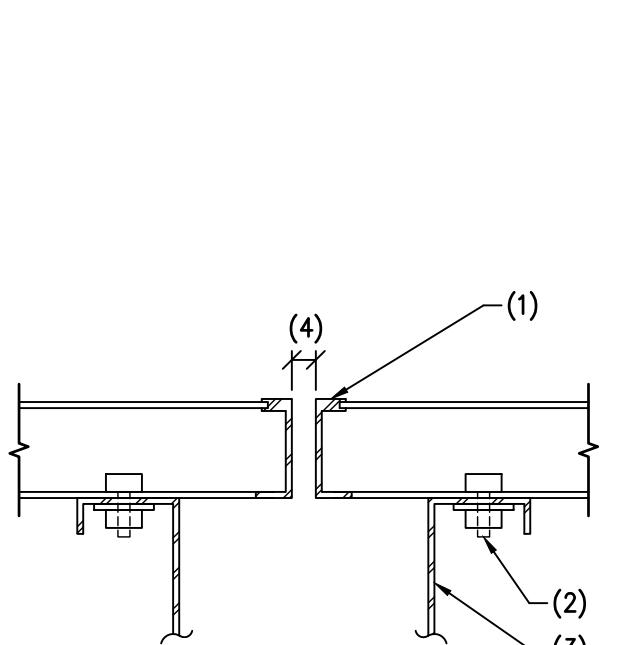
105 STEEL BRACING AT PURLINS

- NOTES:
- PURLIN.
 - 2 #12x3/4" LONG TEK SCREWS AT EACH PURLIN.
 - 14 GA. GALVANIZED STEEL ANGLE BRACE.
 - 2 #12 SCREWS AT SPLICE.
- SPICE DETAIL
- 14 GA. ANGLE
- 2" MIN.
- NOTE: SPRAY GALVANIZE ALL FIELD CUTS.



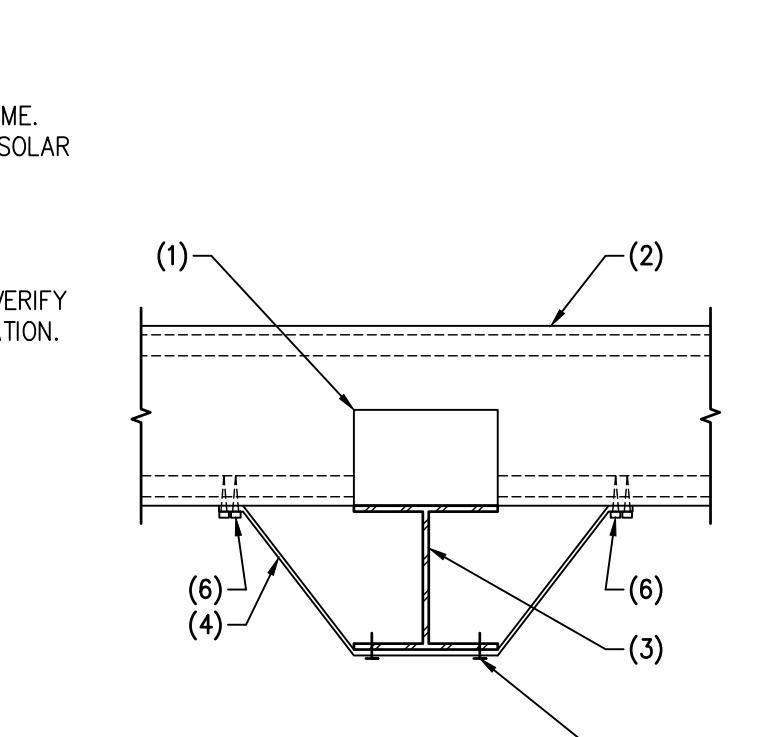
102 OPTIONAL ALLOWABLE HOLES IN PURLIN

- NOTES:
- HOLDS MAY NOT BE CUT IN TOP OR BOTTOM FLANGE.
 - 2 1/2" MAX. DIA. HOLE (MAY BE CUT IN SHOP OR FIELD).
 - 2 1/2" MIN. CLEARANCE.
 - HOLDS MAY NOT BE CUT ANYWHERE IN PURLIN WEB INSIDE OF SHADED REGION.
 - HOLDS MAY NOT BE CLOSER THAN 12" TO EACH OTHER.



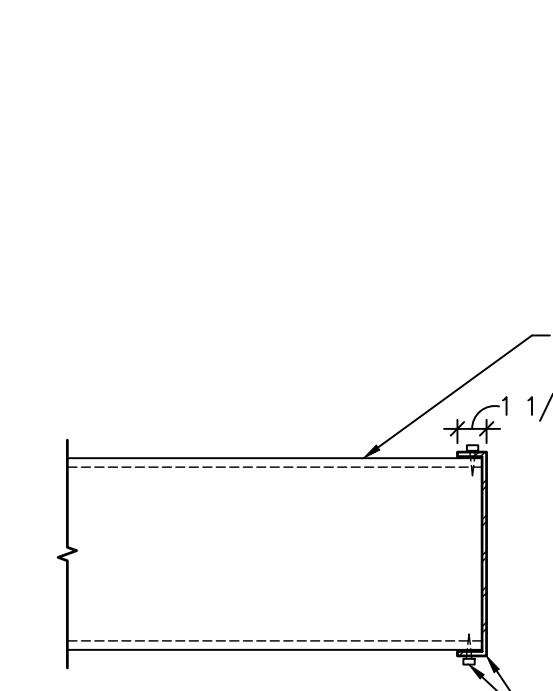
110 SOLAR PANEL SPACING

- NOTES:
- SOLAR PANEL FRAME.
 - CONNECTION PER SOLAR PANEL MOUNTING DETAIL.
 - PURLIN.
 - 1/2" GAP - CONTRACTOR TO VERIFY PRIOR TO FABRICATION.



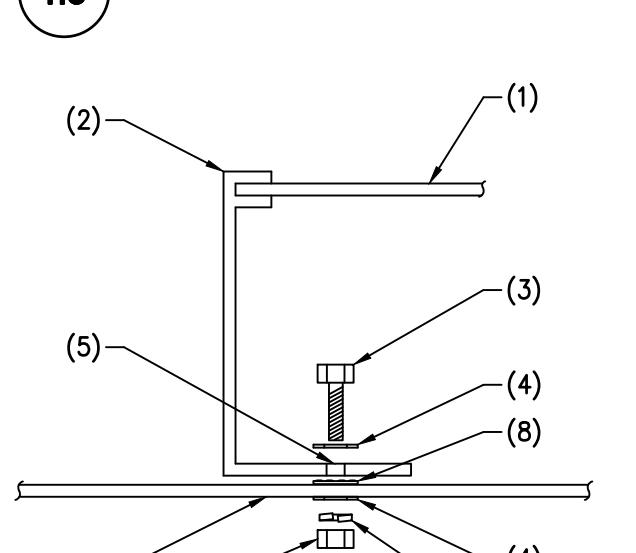
106 STEEL BEAM BRACE

- NOTES:
- PURLIN TO BEAM CONNECTION.
 - PURLIN.
 - STEEL BEAM.
 - 2" WIDE x1/8" (Fy=33 KSI MIN.) STEEL BEAM BRACE.
 - 2 HILTI X-U POWDER ACTUATED SHOT PINS AT EACH CONNECTION AND EACH SIDE OF BEAM FLANGE.
 - (2) #12 SCREWS.



103 END CAP AT PURLIN

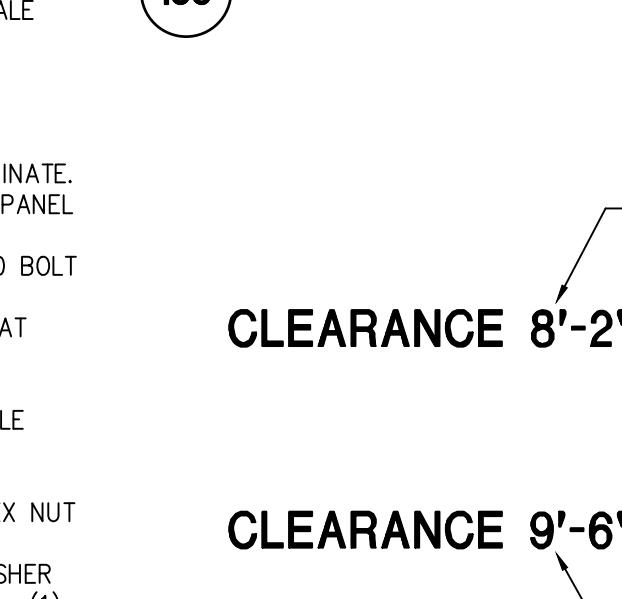
- NOTES:
- CONTINUOUS 16 GAGE END CAP TRIM. HEIGHT TO MATCH PURLINS. ATTACH TO PURLIN WITH (1) #8x3/4" SCREW AT TOP AND BOTTOM FLANGE.
 - PURLIN.



111 SOLAR PANEL MOUNTING

- NOTES:
- SOLAR PANEL LAMINATE.
 - ALUMINUM SOLAR PANEL FRAME.
 - SS MB (5/16")-20 BOLT ALL LOCATIONS.
 - SS MB (5/16") FLAT WASHERS ALL LOCATIONS.
 - DESIGNATED MODULE MOUNTING HOLE.
 - LOCK WASHER.
 - SS MB (5/16") HEX NUT ALL LOCATIONS.
 - INSTALL WEEB WASHER WHERE REQUIRED - (1) STACK PER SOLAR PANEL FOR ELECTRICAL BONDING.
 - TOP FLANGE OR PURLIN.

- A. EACH SOLAR PANEL SHOULD BE MOUNTED USING FOUR BOLTS THRU THE MOUNTING HOLES ON THE REAR SIDE OF THE SOLAR PANEL FRAME. THE SOLAR PANEL.
- B. MANUFACTURER'S REQUIRED STACK-UP SHALL SUPERcede THIS DETAIL IF IT DIFFERS FROM THE INSTALLATION MANUAL'S REQUIREMENTS.
- C. TORQUE BOLT STACK TO MFR'S RECOMMENDED VALUE.



107 CANOPY SIGNAGE MAXIMUM HEIGHT LABEL

- NOTES:
- INSTALL ON FRONT PURLIN AT BOTH CORNERS AND AT LOW CORNERS OF EACH END CAP. INSTALL INTERMEDIATELY AT SPANS OVER 125'-0".
 - SIGNAGE TO REFLECT ACTUAL CANOPY CLEARANCE AT EACH LOCATION. REFERENCE PROFILE DRAWINGS FOR MORE INFORMATION.

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Date 11/3/17
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CANOPY DETAILS

ELECTRICAL NOTES FOR NEW PHOTOVOLTAIC SYSTEM:

1. THIS PROPOSED SOLAR ELECTRIC SYSTEM IS INTENDED TO OPERATE IN PARALLEL WITH POWER RECEIVED FROM THE UTILITY SERVICE PROVIDER.
2. ALL EQUIPMENT SHALL BE NRTL LISTED TO APPROPRIATE UL STANDARD WHEN APPLICABLE.
3. THIS SYSTEM IS INTENDED TO CONNECT TO THE EXISTING FACILITY POWER SYSTEM AT A SINGLE POINT, POINT OF COMMON COUPLING (POCC). THIS CONNECTION SHALL BE IN COMPLIANCE WITH THE NEC ARTICLE 705.12 "POINT OF CONNECTION".
4. ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION FOR TESTING AND ISOLATION.
5. ALL DISCONNECTING COMBINERS SHALL BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL BY LOCK OR LOCATION.
6. ALL DISCONNECTING COMBINERS, FULL/SPICE BOXES, AND ENCLOSURES SHALL BE LISTED FOR ITS PURPOSE.
7. EQUIPMENT SHALL BE INSTALLED IN A SECURE AREA. INVERTER PERFORMANCE MAY BE AFFECTED IF INSTALLED IN DIRECT SUNLIGHT.
8. CONDUITS AND CABLES SHALL NOT ENTER THE TOP OR SIDES OF ANY OUTDOOR ENCLOSURE ABOVE ELECTRIC/ELECTRONIC EQUIPMENT WITHOUT WRITTEN APPROVAL FROM PROJECT ENGINEER.
9. ALL METALLIC EXPANSION FITTINGS SHALL HAVE INTERNAL OR EXTERNAL BONDING TO ENSURE CONTINUITY.

WIRING AND WIRING METHODS:

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

1. EXPOSED PV SOLAR MODULE WIRING WILL BE PV WIRE OR APPROVED EQUIVALENT, 90 DEGREE C, WET RATED AND UV RESISTANT. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED WITH MECHANICAL OR OTHER APPROVED SUN-LIGHT RESISTANT MEANS. THE USE OF PLASTIC ZIP TIES IS NOT AN APPROVED METHOD TO SUPPORT OR ATTACH WIRE TO A STRUCTURE; THESE ARE ONLY PERMITTED FOR SUPPLEMENTAL 'GROUPING' OR 'BINDING' CONDUCTORS INSIDE OF EQUIPMENT OR AN APPROVED EQUAL ARE ALLOWED FOR USE IN THIS APPLICATION.

2. WIRE COLOR SPECIFICATIONS:

AC CONDUCTORS		
	277 / 480 volt	120 / 208 volt
Phase A	BROWN	BLACK
Phase B	ORANGE	RED
Phase C	YELLOW	BLUE
Grounded Conductor	GRAY or WHITE	WHITE
Grounding Conductor	GREEN or BARE	GREEN or BARE
Grounding Electrode Conductor	BARE	BARE
DC CONDUCTORS		
Ungrounded Conductor	(+) FROM MODULE Red wire	(-) FROM MODULE Black wire
Grounding Conductor	GREEN or BARE	GREEN or BARE

3. PV STRING HOME RUNS SHALL BE LABELED ON BOTH ENDS, AT ARRAY AND AT COMBINER. COMBINER OUTPUT CONDUCTORS SHALL BE LABELED AT BOTH ENDS, AT COMBINER AND AT DISCONNECT.

4. LIQUID TIGHT FLEXIBLE METAL CONDUIT IS GENERALLY SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART (NEC 350.30).

5. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.

6. UNLESS MARKED AS UV RESISTANT, PVC IS NOT APPROVED FOR INSTALLATION IN LOCATIONS SUBJECTED TO DIRECT SUNLIGHT AND SHALL NOT BE EMPLOYED IN ANY SUCH LOCATION.

7. LONG STRAIGHT EXPOSED METAL CONDUIT (RMC, GRC, EMT) RUNS, 100 FEET OR MORE, SHALL HAVE EXPANSION FITTINGS INSTALLED PER NEC 300.7(B). EXPANSION FITTINGS SHALL ALSO BE USED WHEN CONDUIT SPANS AN EXPANSION JOINT.

8. FUSES AND WIRES SUBJECT TO TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.

9. ALL D.C. MATERIALS SHALL BE UL LISTED FOR 1000V DC. DC EQUIPMENT RATED TO 600V MAY BE USED WITH THE WRITTEN PERMISSION OF PROJECT ENGINEER.

10. WHEN TRANSITIONING UNDERGROUND PVC CONDUIT TO ABOVE GROUND RMC, IMC OR EMT CONDUIT, USE 20 MIL PIPE WRAP TAPE HALF-LAPPED FROM 6" PAST TRANSITION POINT ON PVC TO 6" ABOVE GROUND ON METALLIC CONDUIT. AN EXPANSION JOINT SHALL BE USED IN THE TRANSITION TO ABOVE GROUND CONDUIT WHERE REQUIRED BY NEC 300.5(j).

11. ANY METAL SHAVINGS RESULTING FROM SITE WORK SHALL BE CLEANED FROM ENCLOSURE INTERIORS, TOP SURFACES OF ENCLOSURE, ROOF SURFACE, AND ANY ADDITIONAL AREAS WHERE OXIDATION OR CONDUCTIVE METAL SHAVINGS MAY CAUSE RUST, ELECTRICAL SHORT CIRCUIT OR OTHER DAMAGE.

12. CONDUITS LONGER than 200' WITH NEGATIVE SLOPE TOWARD ELECTRICAL EQUIPMENT SHALL HAVE A PULL BOX OR VAULT ADJACENT TO THE ENTRY POINT INTO THE ELECTRICAL EQUIPMENT.

13. WHEN TRANSITIONING FROM FREE AIR TO CONDUCTORS IN CONDUIT A LISTED FITTING SHALL BE USED TO PREVENT THE ENTRY OF MOISTURE.

14. L AND T CONDUIT BODIES SHALL NOT BE USED.

15. ALL COPPER TERMINATION AC AND DC SHALL HAVE KOPR-SHIELD OR EQUIVALENT APPLIED.

16. MEGGER TESTING SHALL BE PERFORMED AT 1000 VDC FOR ALL AC CIRCUITS 480 V OR BELOW AND DC CIRCUITS 600 V OR BELOW. MEGGER TESTING WILL BE PERFORMED AT 1500 VDC FOR DC CIRCUITS IN 1000 VDC SYSTEMS. A MINIMUM OF 250 MEGA OHMS RESISTANCE TO GROUND IS REQUIRED. DO NOT MEGGER THE SOLAR MODULES AS DAMAGE WOULD LIKELY RESULT.

17. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAY PER TABLE 2 OF THE NEC.

18. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 300.19.

19. CONNECTORS TO BE TORQUED PER DEVICE LISTING, OR MANUFACTURERS RECOMMENDATIONS. CONNECTORS ARE TO BE MARKED WITH PERMANENT MARKING PAINT, AFTER TORQUEING.

20. ALL BARE CU WIRES SHALL BE INSTALLED TO NOT COME INTO CONTACT WITH DISSIMILAR METALS.

21. SPLICES/CONNECTORS SHALL BE INSULATED AND WILL REQUIRE PROJECT ENGINEER APPROVAL. UL LISTED ELECTRICAL TAPE ALONE IS NOT SUITABLE AS THE ONLY INSULATION MEANS. FOLLOW MANUFACTURERS INSTRUCTIONS FOR INSTALLATION, AND APPLICATION OF INSULATING PRODUCT.
22. ALL LV AC WIRING SHALL BE TYPE THHN-2 RATED AT 90 DEGREES C. XHHW-2 IS AN APPROVED ALTERNATE. THIS NOTE WILL BE SUPERCEDED BY ANY INVERTER SPECIFICATIONS REQUIRING LV AC WIRE TO MEET HIGHER VOLTAGE OR INSULATION STANDARDS.
23. USE MEYERS/APP EQUIHUB LISTED TO PROVIDE MOISTURE PROTECTION FOR CONDUIT ENTRANCES IN ALL APPLICABLE LOCATIONS AS REQUIRED BY NEC 314.15.

9. ALL EQUIPMENT GROUNDING CONDUCTORS INSTALLED SHOULD BE COPPER ONLY.

10. ALL METALLIC RACEWAYS AND ENCLOSURES SHALL REQUIRE A PHYSICAL CONNECTION TO THE GEC CONTAINED WITHIN.

GROUND FAULT PROTECTION:

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

DISCONNECTING MEANS:

1. MEANS SHALL BE PROVIDED TO DISCONNECT ALL CURRENT CARRYING CONDUCTORS OF THE PHOTOVOLTAIC POWER SOURCE FROM ALL OTHER EXISTING CONDUCTORS.
2. WHERE A CIRCUIT GROUNDING CONNECTION IS NOT DESIGNED TO BE AUTOMATICALLY INTERRUPTED AS PART OF THE GROUND FAULT PROTECTION SYSTEM REQUIRED BY SECTION 690.5, A SWITCH OR CIRCUIT BREAKER USED AS A DISCONNECTING MEANS SHALL NOT HAVE A POLE IN THE GROUNDED CONDUCTOR.
3. THE GROUNDED CONDUCTOR MAY HAVE A BOLTED OR TERMINAL DISCONNECTING MEANS TO ALLOW MAINTENANCE OR TROUBLESHOOTING BY QUALIFIED PERSONNEL.
4. UNLESS DISCONNECT IS SERVICING A LINE-SIDE TAP, THE DISCONNECTING MEANS SHALL NOT BE REQUIRED TO BE SUITABLE AS SERVICE EQUIPMENT AND SHALL BE RATED IN ACCORDANCE WITH SECTION 690.17.
5. EQUIPMENT SUCH AS PHOTOVOLTAIC SOURCE CIRCUITS, OVER CURRENT DEVICES, AND BLOCKING DIODES SHALL BE PERMITTED ON THE PHOTOVOLTAIC SIDE OF THE PHOTOVOLTAIC DISCONNECTING MEANS.
6. MEANS SHALL BE PROVIDED TO DISCONNECT EQUIPMENT SUCH AS INVERTERS, BATTERIES, CHARGE CONTROLLERS, AND THE LIKE FROM ALL UNGROUNDED CONDUCTORS OF ALL SOURCES. IF THE EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS SHALL BE GROUPED AND IDENTIFIED.

7. A SINGLE DISCONNECTING MEANS SHALL BE PERMITTED FOR THE COMBINED A.C. OUTPUT OF ONE OR MORE INVERTERS IN AN INTERACTIVE SYSTEM - PROVIDED EACH INVERTER ASSOCIATED WITH THE DISCONNECT HAS ITS OWN INTERNAL AC DISCONNECT.

8. DISCONNECTING MEANS SHALL BE PROVIDED TO DISCONNECT A FUSE FROM ALL SOURCES OF SUPPLY IF THE FUSE IS ENERGIZED FROM BOTH DIRECTIONS AND IS ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS. SUCH A FUSE IN A PHOTOVOLTAIC SOURCE CIRCUIT SHALL BE CAPABLE OF BEING DISCONNECTED INDEPENDENTLY OF FUSES IN OTHER PHOTOVOLTAIC SOURCE CIRCUITS.

9. ALL DISCONNECTS AND COMBINERS SHALL BE SECURED FROM UNAUTHORIZED AND UNQUALIFIED PERSONNEL BY EITHER LOCK OR LOCATION.

REQUIRED SAFETY SIGNS AND LABELS:

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

WEAR PERSONAL PROTECTIVE EQUIPMENT (PPE) APPROPRIATE FOR THE HAZARD: INSULATED GLOVES WITH PROTECTORS, INSULATED MATS AND TOOLS.

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

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

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

PHOTOVOLTAIC
DISCONNECTING COMBINERS

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

PHOTOVOLTAIC
DISCONNECTING MEANS
A.C. DISCONNECT

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

OPERATING CURRENT
OPERATING VOLTAGE
MAXIMUM SYSTEM VOLTAGE
SHORT CIRCUIT CURRENT
COMBINER

5. ALL INTERACTIVE SYSTEM POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTION MEANS.

6. A PERMANENT ETCHED PLAQUE OR DIRECTORY SHALL BE PROVIDED IDENTIFYING THE LOCATION OF THE SERVICE DISCONNECTION MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTION MEANS, IF NOT LOCATED AT THE SAME LOCATION.

7. ALL REQUIRED EQUIPMENT SHALL BE UL LISTED AND LABELED ACCORDINGLY.

8. ALL PULL BOXES SHALL BE PERMANENTLY MARKED WITH EITHER "ELECTRIC" OR "COMMUNICATION" DEPENDING ON THE APPLICATION, PER NEC 110.7(E).

MARKINGS:

1. ALL INTERACTIVE SYSTEM POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTION MEANS.

2. A PERMANENT ETCHED PLAQUE OR DIRECTORY SHALL BE PROVIDED IDENTIFYING THE LOCATION OF THE SERVICE DISCONNECTION MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTION MEANS, IF NOT LOCATED AT THE SAME LOCATION.

3. ALL REQUIRED EQUIPMENT SHALL BE UL LISTED AND LABELED ACCORDINGLY.

4. ALL PULL BOXES SHALL BE PERMANENTLY MARKED WITH EITHER "ELECTRIC" OR "COMMUNICATION" DEPENDING ON THE APPLICATION, PER NEC 110.7(E).

GENERAL NOTES:

1. THE 2011 NEC HAS BEEN USED AS THE BASIS FOR DESIGN.

2. ON THE LAYOUT PLANS, THE LOCATIONS OF SOME EQUIPMENT AND DEVICES AT WHICH CIRCUITS TERMINATE ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL INSTALL EACH CIRCUIT TO THE INTENDED EQUIPMENT TERMINATION POINT WITHOUT ADDITIONAL CHARGES TO THE OWNER, ALTHOUGH ITS FINAL LOCATION MAY SHIFT SOMEWHAT FROM THAT WHICH IS SHOWN.

3. THE CONTRACTOR TO VERIFY ALL SITE CONDITIONS AND DIMENSIONS PRIOR TO PERFORMING ANY WORK.

4. CONTRACTOR SHALL INSTALL A TRACER WIRE ON ANY UNDERGROUND CONDUIT THAT DOES NOT ALLOW A TRACER CLAMP TO BE FITTED AROUND THE OUTSIDE OF THE CONDUIT AND AN EXPOSED GROUNDING CONDUCTOR IS NOT PRESENT.

5. MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTORS BONDED TO A LOCATION APPROVED BY THE MANUFACTURER WITH A MEANS OF BONDING LISTED FOR THIS PURPOSE.

6. THE CONNECTION TO THE MODULE OR PANEL OF THIS PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE OR A PANEL FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT. SETS OF MODULES INTERCONNECTED AS SYSTEMS RATED AT 50 VOLTS OR LESS WITH OR WITHOUT BLOCKING DIODES, AND HAVING A SINGLE OVER CURRENT DEVICE SHALL BE CONSIDERED AS A SINGLE SOURCE CIRCUIT.

7. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC.

8. ALL GROUNDING CONNECTIONS SHALL BE RATED FOR DIRECT BURIAL (DB RATED). CONTRACTOR IS TO SUPPLY DOCUMENTATION PROVING THIS DURING PRODUCT SUBMITTALS

GENERAL NOTES FOR CHINT GRID TIE**PHOTOVOLTAIC INVERTERS:**

1. SYSTEM GROUNDING MEANS: CHINT INVERTERS ARE INTENDED TO BE INSTALLED AS PART OF A PERMANENTLY GROUNDED ELECTRICAL SYSTEM PER THE NEC ANSI/NFPA 70. AN ENGINEERED GROUND CONNECTION FOR THE INVERTER SHALL BE INSTALLED AND CONNECTED TO THE UNIT AS DESCRIBED IN THE INSTALLATION MANUAL. CONNECT THE GROUND WIRE WITH A M5 NUT AT THE MARKED PLACE AT THE LOWER RIGHT SIDE OF THE WIRING BOX. GROUND CONNECTION SHALL BE MADE PRIOR TO OPERATING THE UNIT.

2. CONDUITS AND CONDUCTORS: ALL INTERCONNECT WIRING AND POWER CONDUCTORS INTERFACING TO THE UNIT SHALL BE IN ACCORDANCE WITH THE NEC ANSI/NFPA 70 AND ANY APPLICABLE LOCAL CODES. LARGE GAUGE WIRE SHALL CONFORM TO THE MINIMUM BEND RADIUS SPECIFIED IN THE NEC, ARTICLE 300.34, NINTH EDITION. KEEP ALL WIRE BUNDLES AWAY FROM ANY SHARP EDGES TO AVOID DAMAGE TO WIRE INSULATION. ALL CONDUCTORS SHALL BE RATED FOR 90 DEGREE C MINIMUM. FOR OUTDOOR INSTALLATIONS, ALL INTERCONNECT CONDUITS AND FITTINGS SHALL BE NEMA-4 RATED AS REQUIRED BY THE NEC. FOR WIRE GAUGE, BOLT SIZE, AND TORQUE VALUES FOR THE DC & AC TERMINALS, SEE THE INSTALLATION MANUAL.

3. INVERTER ENCLOSURE: CHINT INVERTERS ARE ENCLOSED IN A MODULAR STEEL CABINET AND ARE NEMA 4 RATED.

4. ENVIRONMENTAL CONDITIONS: CHINT INVERTERS ARE DESIGNED TO BE INSTALLED IN EITHER AN INDOOR OR OUTDOOR LOCATION. THE UNIT SHALL BE MOUNTED IN A VERTICAL POSITION WITH A 15 DEGREE MAXIMUM. ALLOWABLE OPERATING TEMPERATURE RANGE FOR THE UNIT IS 25° TO +60°C. THE INVERTER UNIT USES COMBINATION LIQUID AND AIR COOLING IN A SELF CONTAINED SYSTEM.

5. OPERATOR INTERFACE CONTROLS: OPERATOR INTERFACE CONTROLS ARE LOCATED ON THE FRONT OF THE MAIN INVERTER ENCLOSURE. CONSULT THE OPERATIONS AND MAINTENANCE MANUAL FOR INSTRUCTIONS AND CODE REFERENCES.

6. ELECTRICAL SAFETY FEATURES:
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D

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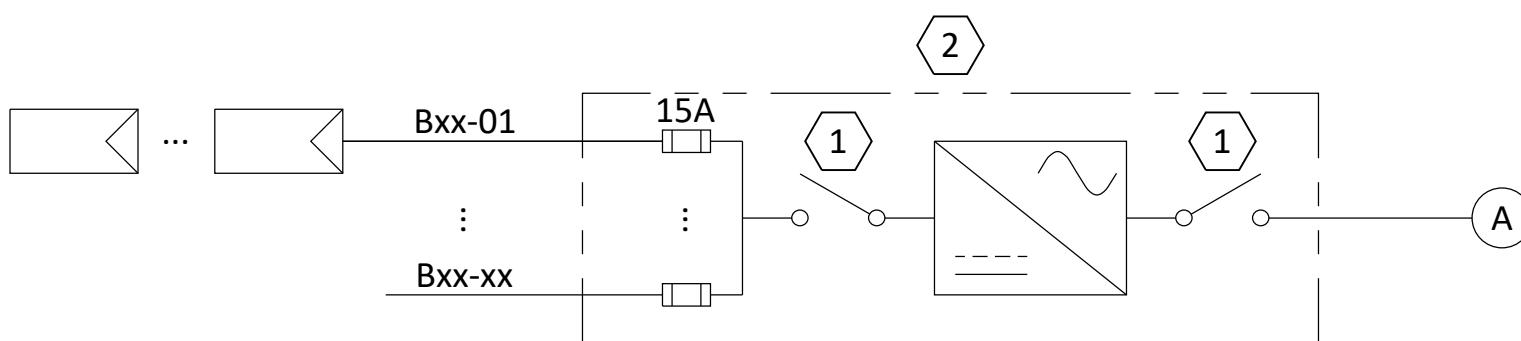
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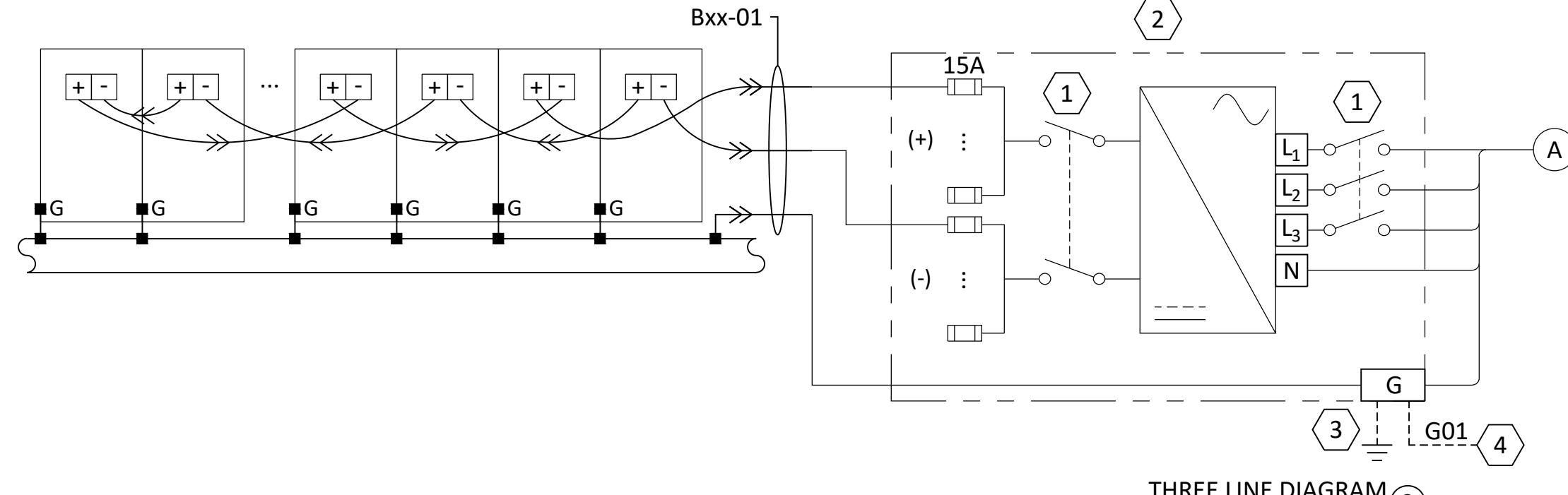
INVERTER A SPECS	
MANUFACTURER	CPS Energy
MODEL	Chint SCA36KTL-DO/US-480
KW-AC	36
MAX OUTPUT AMPS	43.5
OUTPUT VOLTAGE	480
WIRING	3P/4W
INPUT OPERATING VOLTAGE	240-950
MAX INPUT VOLTAGE	1000
MAX INPUT Isc	125
NOTES	Transformerless, Integrated GFCI per NEC 690.35

CALCULATIONS	
Vmax	Voc + Voc * Voc %/C * (Extreme Min - 25)
Vmax =	Voc + Vmp * Voc %/C * (2% High - 25)
Vmax =	46.2 + 46.2 * -0.0032 * (-3 - 25)
Vop	Vop = Vmp + Vmp * Voc %/C * (2% High - 25)
Vop =	37.8 + 37.8 * -0.0032 * (40 - 25)
Vmax =	50.34 Vdc Per Mod
Vop =	35.99 Vdc Per Mod
Vmax =	906.11 Vdc Per String
Vop =	647.74 Vdc Per String
I _{max}	I _{op}
I _{max} = Isc x 1.25	I _{op} = Imp + Imp * Isc %/C * (2% High - 25)
I _{max} = 9.33 x 1.25	I _{op} = 8.73 + 8.73 * 0.00055 * (40 - 25)
I _{max} = 11.11	I _{op} = 8.8 Adc

MODULE / STRING SPECS	
MANUFACTURER	GCL
MODEL	GCL-P6/72 330
WATTS	330
MODS PER STRING	18
STRINGS	8
MODULE	STRING
Vmax	50.34 906.11
Voc	46.20 831.60
Vmp	37.80 680.40
Voc %/C	-0.0032
Isc %/C	0.00055
Isc	9.33



SINGLE LINE DIAGRAM (1)



A INVERTER TYPE A

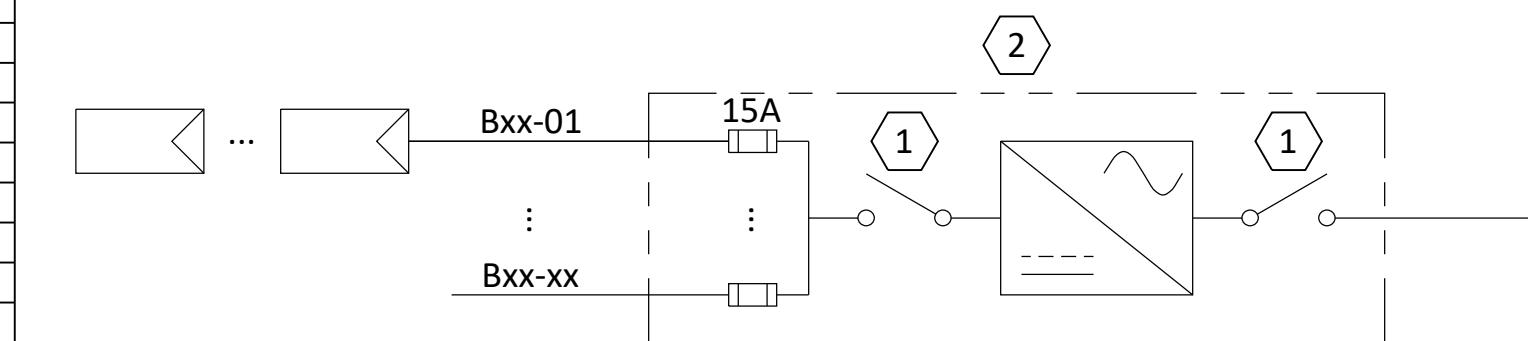
NOT USED

C INVERTER TYPE C

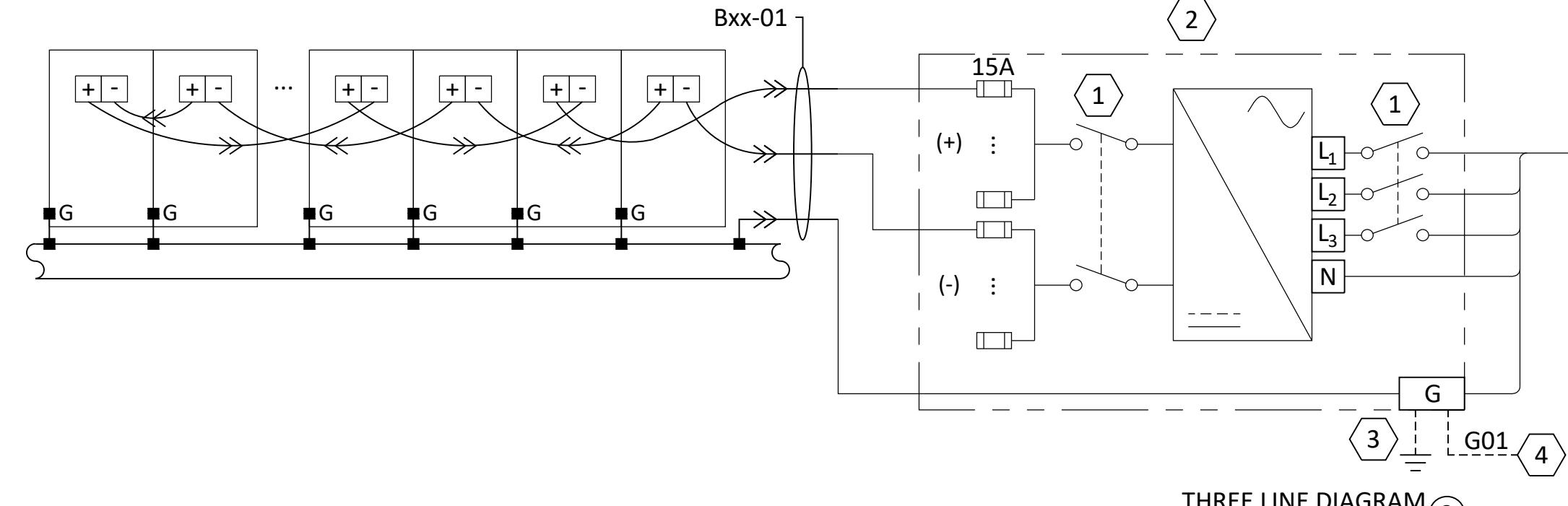
INVERTER B SPECS	
MANUFACTURER	CPS Energy
MODEL	Chint SCA23KTL-DO/US-480
KW-AC	23
MAX OUTPUT AMPS	27.7
OUTPUT VOLTAGE	480
WIRING	3P/4W
INPUT OPERATING VOLTAGE	300-900
MAX INPUT VOLTAGE	1000
MAX INPUT Isc	82
NOTES	Transformerless, Integrated GFCI per NEC 690.35

CALCULATIONS	
Vmax	Voc + Voc * Voc %/C * (Extreme Min - 25)
Vmax =	Voc + Vmp * Voc %/C * (2% High - 25)
Vmax =	46.2 + 46.2 * -0.0032 * (-3 - 25)
Vop	Vop = Vmp + Vmp * Voc %/C * (2% High - 25)
Vop =	37.8 + 37.8 * -0.0032 * (40 - 25)
Vmax =	50.34 Vdc Per Mod
Vop =	35.99 Vdc Per Mod
Vmax =	906.11 Vdc Per String
Vop =	647.74 Vdc Per String
I _{max}	I _{op}
I _{max} = Isc x 1.25	I _{op} = Imp + Imp * Isc %/C * (2% High - 25)
I _{max} = 9.33 x 1.25	I _{op} = 8.73 + 8.73 * 0.00055 * (40 - 25)
I _{max} = 11.11	I _{op} = 8.8 Adc

MODULE / STRING SPECS	
MANUFACTURER	GCL
MODEL	GCL-P6/72 330
WATTS	330
MODS PER STRING	15
STRINGS	6
MODULE	STRING
Vmax	50.34 755.09
Voc	46.20 693.00
Vmp	37.80 567.00
Voc %/C	-0.0032
Isc %/C	0.00055
Isc	9.33



SINGLE LINE DIAGRAM (1)



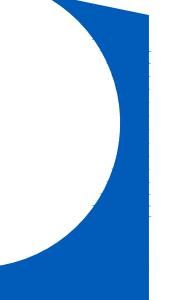
B INVERTER TYPE B

NOT USED

D INVERTER TYPE D

- KEYED NOTES:
- ① SWITCH COVER TO BE LOCKED AT ALL TIMES.
 - ② CONFIGURE INVERTER FOR PARALLEL OPERATION. PARALLELING JUMPER TO BE INSTALLED.
 - ③ BOND INVERTER TO COLUMN PER DETAIL 2 ON INSTALLATION DETAILS SHEET.
 - ④ SEE GROUNDING PLAN FOR ADDITIONAL GROUNDING INFORMATION.

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SOLON
PHOTOVOLTAIC PROJECT
530 N WILMOT ROAD TUCSON, AZ 85711

INVERTER DIAGRAMS

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PROJECT
SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHEKER	JM	

SHEET #

E1.1

1 2 3 4 5 6 7 8 9 10 11 12

SHORT CIRCUIT CURRENT CALCULATIONS (POINT-TO-POINT METHOD)												
LOCATION	START	ISC START	LENGTH	N	WIRE SIZE	WIRE METAL	CONDUIT TYPE	VOLTS	C	F	M	ISC FINAL
ACDS-01	POI	75.100	15	1	600 KCMIL	Cu	Non-Metallic	208	28,033	0.1450	0.8734	65,589
CT-01	ACDS-01	65.589	7	1	600 KCMIL	Cu	Non-Metallic	208	28,033	0.0591	0.9442	61,929
T-01	CT-01	61,929	7	1	600 KCMIL	Cu	Non-Metallic	208	28,033	0.0558	0.9471	58,656
T-01 SEC *												4,511
PNL-01	T-01 SEC	4,511	260	1	3/0 AWG	Al	Non-Metallic	480	9,110	0.4645	0.6828	3,080

* $((112.5\text{kVA}(1000))/(V(3480V))/3\%Z$

AC GEAR EQUIPMENT SPECIFICATIONS									
NAME	ENCLOSURE AMPS (*kVA)	OCPD AMPS	OCPD TYPE	VOLTS	WIRING	MIN KAIC	NEMA	OTHER	
ACDS-01	400	350	Fuse	208	3P/4W	66	3R		
CT-01	400	N/A	None	208	3P/4W	62	3R		
T-01	112.5*	N/A	None	208/480	3P/4W	59	3R		

PANELBOARD EQUIPMENT SPECIFICATIONS									
NAME	ENCLOSURE AMPS	MLO / MCB	MIN CIRCUITS	VOLTS	WIRING	MIN KAIC	NEMA	TOP / BOTTOM FED	
PNL-01	250	MLO	9	480	3P/4W	4	3R	BOTTOM	

WIRE SCHEDULE FOR REFERENCE
SEE CONDUCTOR SCHEDULE FOR FULL LIST

INVERTER WIRE SCHEDULE					
CIRCUIT	SETS	PHASE	NEUTRAL	GROUND	METAL
S01	1	4 AWG	6 AWG	6 AWG	Cu
S02	1	4 AWG	6 AWG	6 AWG	Cu
S03	1	8 AWG	8 AWG	8 AWG	Cu

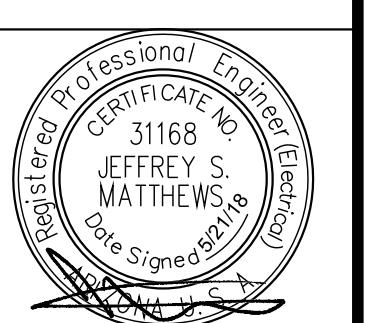
PANELBOARD WIRE SCHEDULE					
CIRCUIT	SETS	PHASE	NEUTRAL	GROUND	METAL
S101	1	3/0 AWG	4 AWG	4 AWG	Al
S201	1	600 KCMIL	1 AWG	1 AWG	Cu
S202	1	600 KCMIL	1 AWG	1 AWG	Cu
S203	1	600 KCMIL	1 AWG	1 AWG	Cu

AC GEAR WIRE SCHEDULE

CIRCUIT	SETS	PHASE	NEUTRAL	GROUND	METAL
S201	1	600 KCMIL	1 AWG	1 AWG	Cu
S202	1	600 KCMIL	1 AWG	1 AWG	Cu
S203	1	600 KCMIL	1 AWG	1 AWG	Cu

3840 S. PALO VERDE ROAD, #205
TUCSON, ARIZONA 85714
PHONE: 520-307-3300
FAX: 520-307-4046**SOLON****PIMA COUNTY - MURPHY-WILMOT LIBRARY**
124.8 kW-DC, 95 kW-AC PHOTOVOLTAIC PROJECT
530 N WILMOT ROAD TUCSON, AZ 85711

SINGLE LINE DIAGRAM



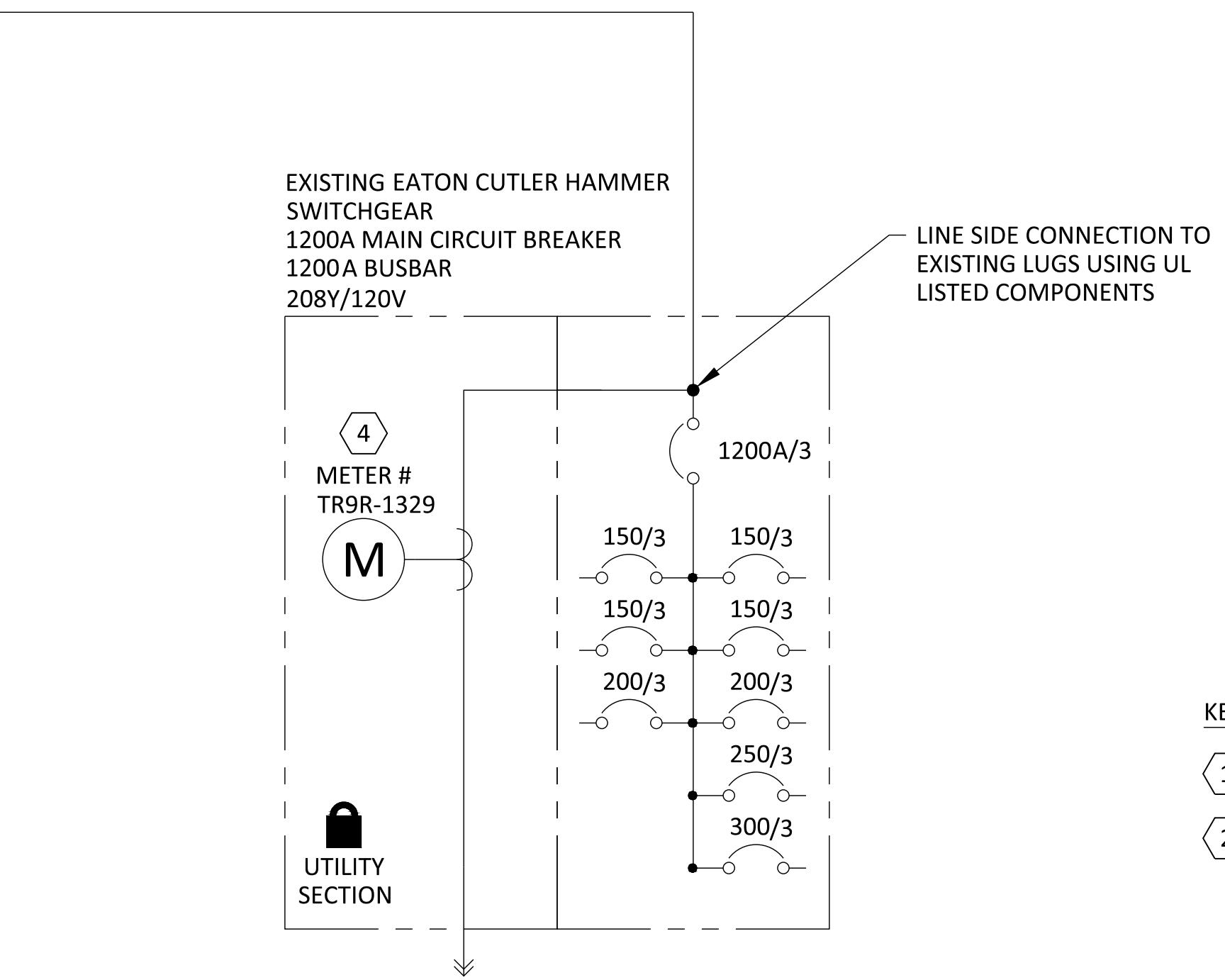
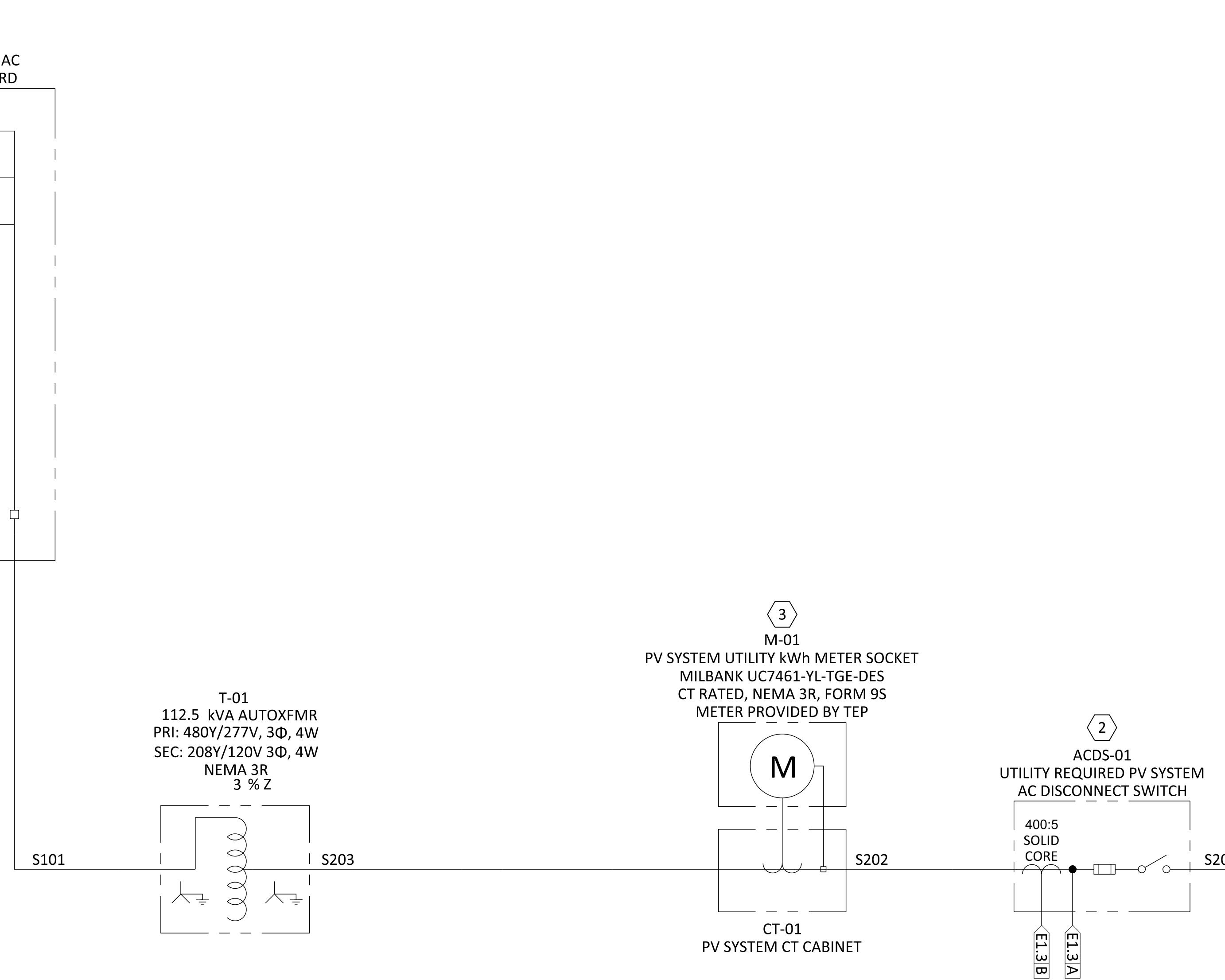
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PROJECT SC17-040

ENGINEER	INITIAL	DATE
DRAFTER	FA	5/18/18
CHEKER	JM	5/21/18
SHEET #		

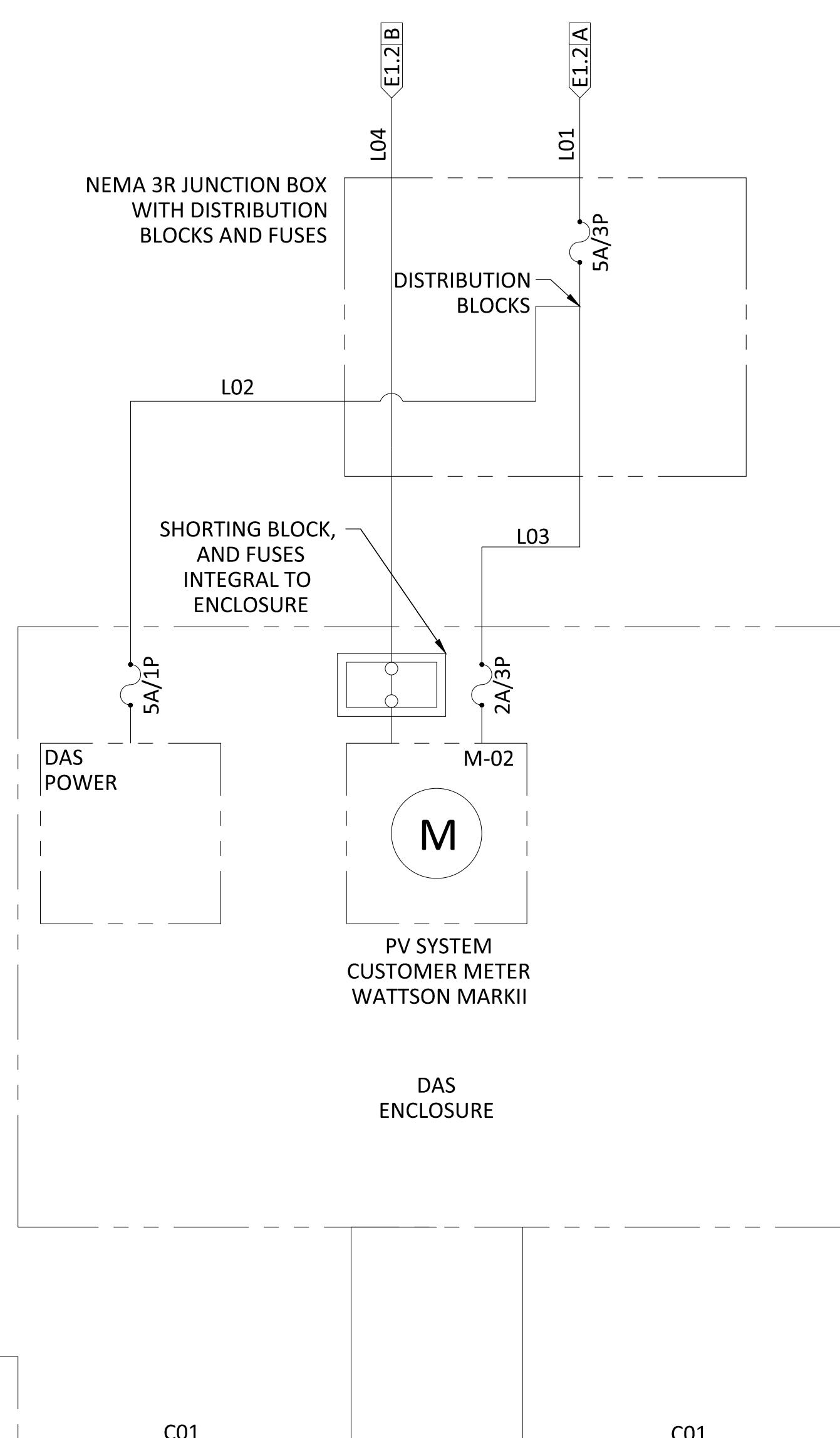
E1.2

VERSION: 01



- KEYED NOTES:
- 1 PANEL SHALL REMAIN LOCKED AT ALL TIMES.
 - 2 SWITCH TO BE VISUALLY OPEN, ACCESSIBLE PER UTILITY REQUIREMENTS, AND CONFORM TO NEC 705.22 REQUIREMENTS. SWITCH HANDLE SHALL BE INSTALLED BETWEEN 36" AND 60" ABOVE FINISHED GRADE. SWITCH COVER TO BE LOCKED AT ALL TIMES.
 - 3 METER ENCLOSURE AND SOCKET TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR PER UTILITY REQUIREMENTS. METER, CTs, AND TEST SWITCHES PROVIDED BY UTILITY WHEN REQUIRED. ENSURE CENTER OF METER SOCKET IS MOUNTED BETWEEN 3'-6" AND 6'-3" FROM GRADE.
 - 4 BI-DIRECTIONAL UTILITY METER TO BE INSTALLED BY UTILITY WHEN REQUIRED.

1 2 3 4 5 6 7 8 9 10 11 12

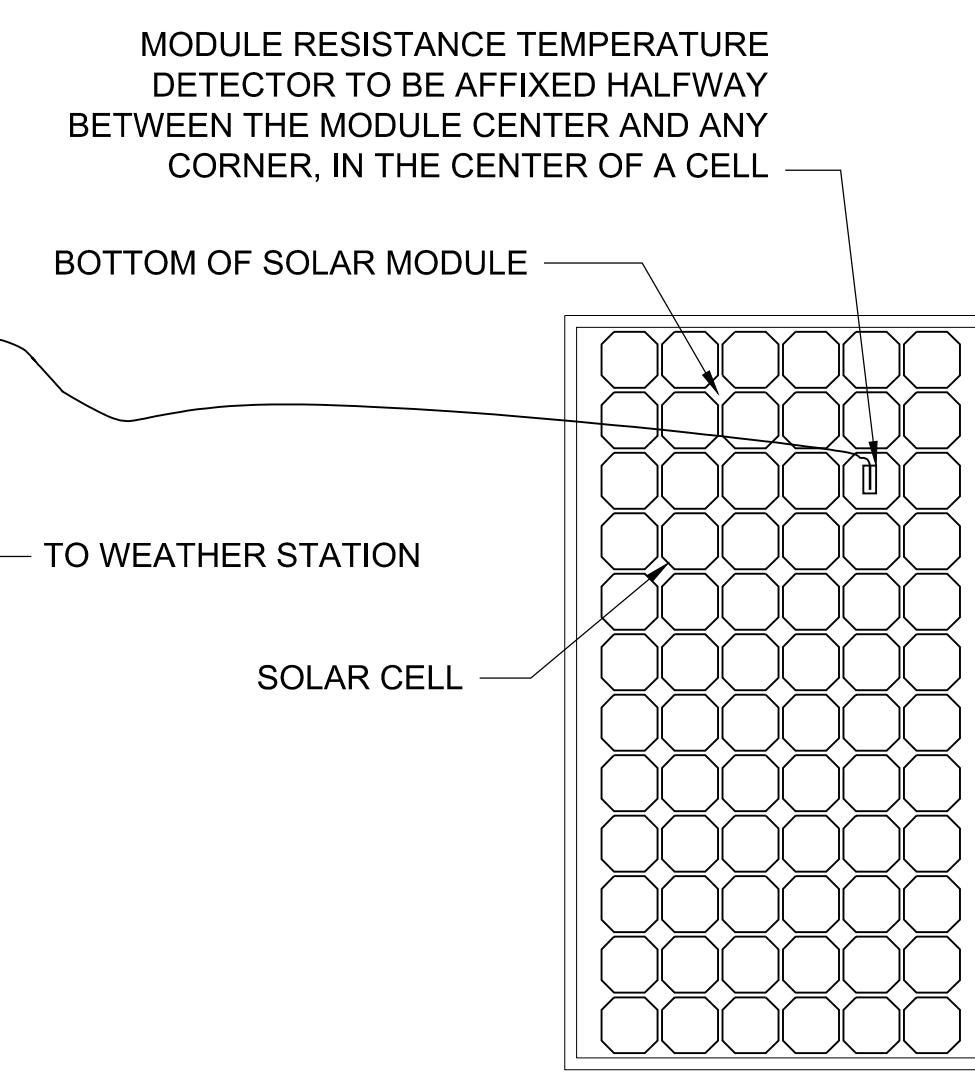
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GENERAL NOTES:

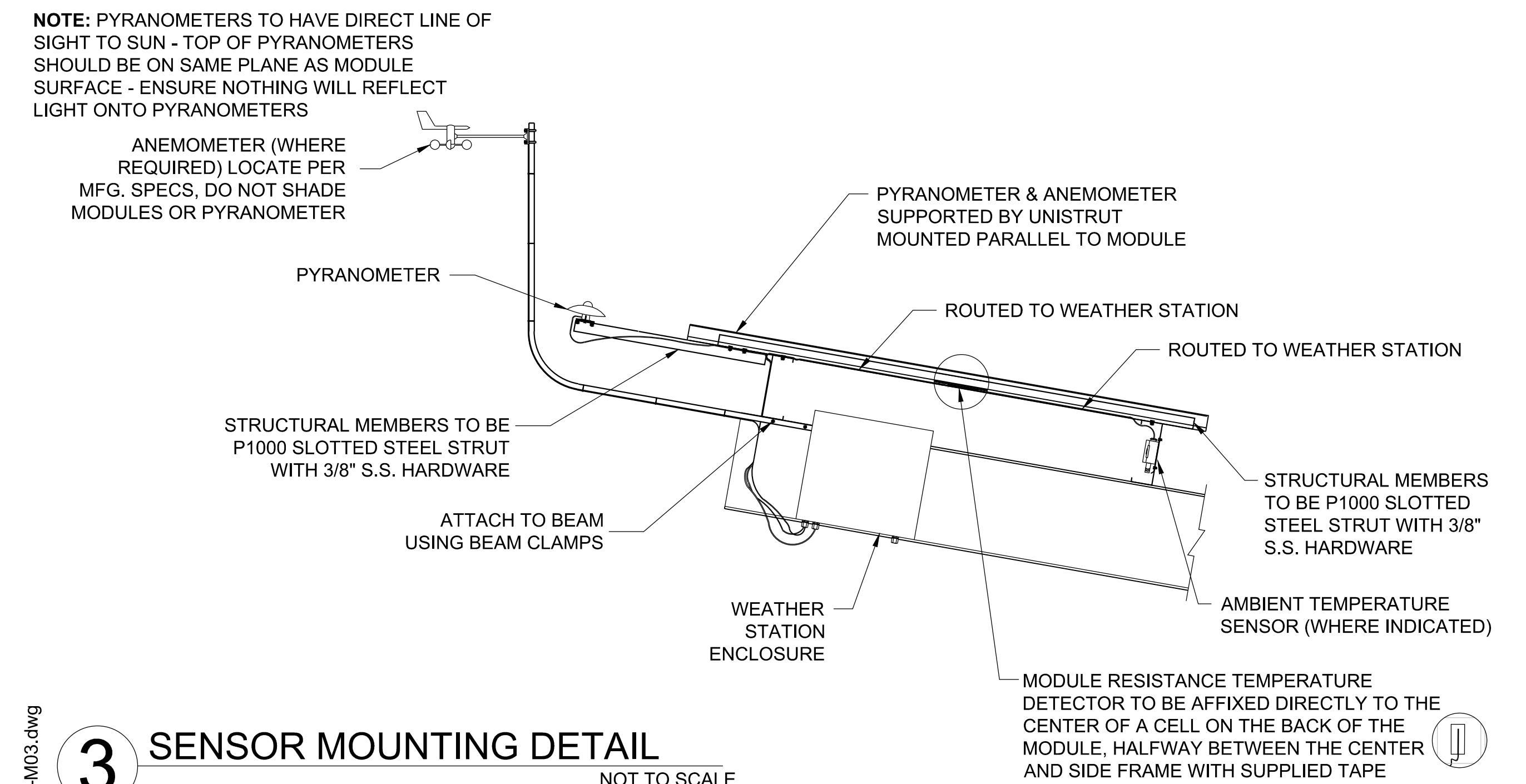
1. REFER TO GENERAL ELECTRICAL NOTES SHEET FOR ADDITIONAL NOTES.
2. SEE CONDUCTOR SCHEDULE SHEET FOR CONDUCTOR SIZES AND WIRE TYPES.
3. SEE CONDUIT DIAGRAM AND SCHEDULE SHEET FOR CONDUIT SIZES.
4. SEE EQUIPMENT LABELS SHEET FOR ALL REQUIRED LABELING.
5. SEE PV SUBARRAY THREE LINE DIAGRAMS SHEETS FOR NOTES ON INVERTER CONNECTIONS.

WEATHER STATION DETAILS								
	CANOPY	PYRO #1	PYRO #2	PYRO #3	AMBIENT TEMP	MODULE TEMP	ANEMOMETER	DIGITIZERS
WS-01	A	POA			Yes	Yes	Yes	1

MISCELLANEOUS										
CIRCUIT	RACEWAY	SETS	PHASE	PHASE QTY	NEUTRAL	GROUND	METAL	WIRE TYPE	VOLTS	AMPS
L01	CL01	1	10	3	10	10	Cu	THWN-2	480	5
L02	CL01	1	12	1	12	12	Cu	THWN-2	277	5
L03	CL01	1	12	3	12	12	Cu	THWN-2	480	2
L04	CL01	1	12	6		12	Cu	THWN-2	600	5
C01	CC01	1						SHIELDED CAT5		

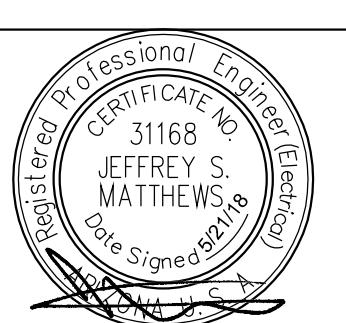


2 CELL TEMP. SENSOR DETAIL
NOT TO SCALE
det-M02.dwg



3 SENSOR MOUNTING DETAIL
NOT TO SCALE
det-M03.dwg

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530 N WILMOT ROAD TUCSON, AZ 85711
SINGLE LINE DIAGRAM AND DETAIL - DAS



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PROJECT
SC17-040

ENGINEER	INITIAL	DATE
DRAFTER	FA	5/18/18
CHECKER	JM	5/21/18
SHEET #		

E1.3

1 2 3 4 5 6 7 8 9 10 11 12

PANELBOARD EQUIPMENT SPECIFICATIONS								
NAME	ENCLOSURE AMPS	MLO / MCB	MIN CIRCUITS	VOLTS	WIRING	MIN KAIC	NEMA	TOP / BOTTOM FED
PNL-01	250	MLO	9	480	3P/4W	4	3R	BOTTOM

PANELBOARD CIRCUITS													
CIRCUIT	RACEWAY	START	END	SETS	PHASE	NEUTRAL	GROUND	METAL	WIRE TYPE	VOLTS	AMPS	LENGTH	V DROP
S101	CS101	PNL-01	T-01	1	3/0 AWG	4 AWG	4 AWG	AI	THWN-2	480	114.7	260	1.44%

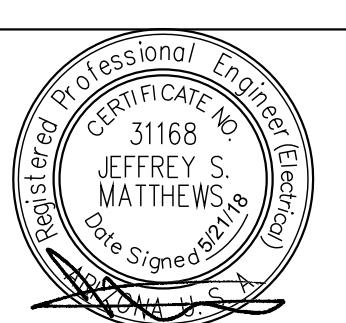
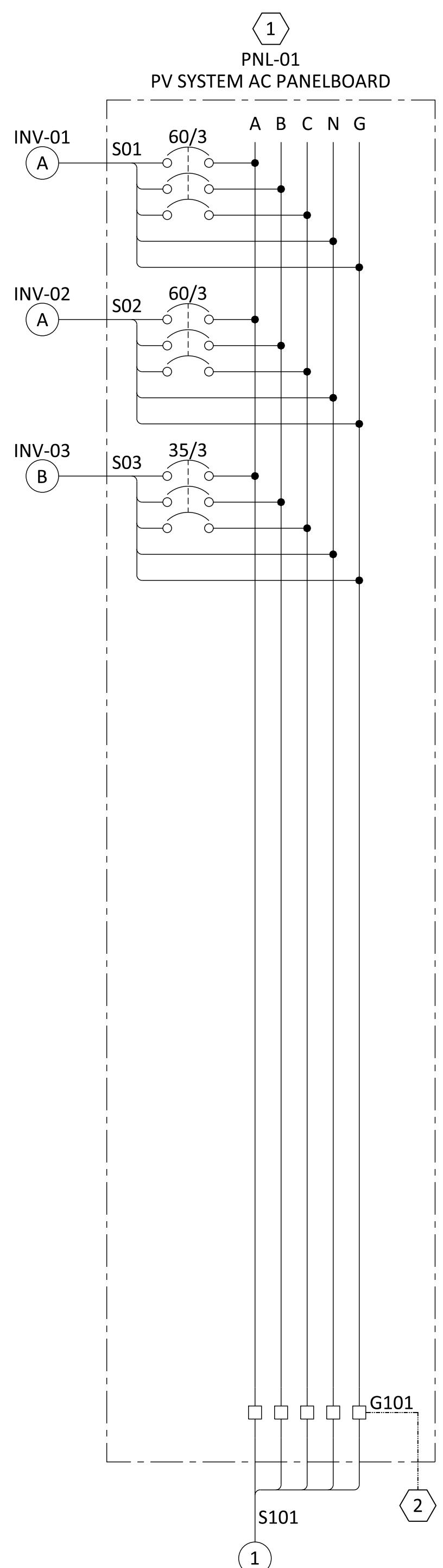
KEYED NOTES:

- (1) PANEL SHALL REMAIN LOCKED AT ALL TIMES.
 (2) SEE GROUNDING PLAN FOR ADDITIONAL GROUNDING INFORMATION.

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 TUCSON, ARIZONA 85714
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THREE LINE DIAGRAM - PANELBOARDS



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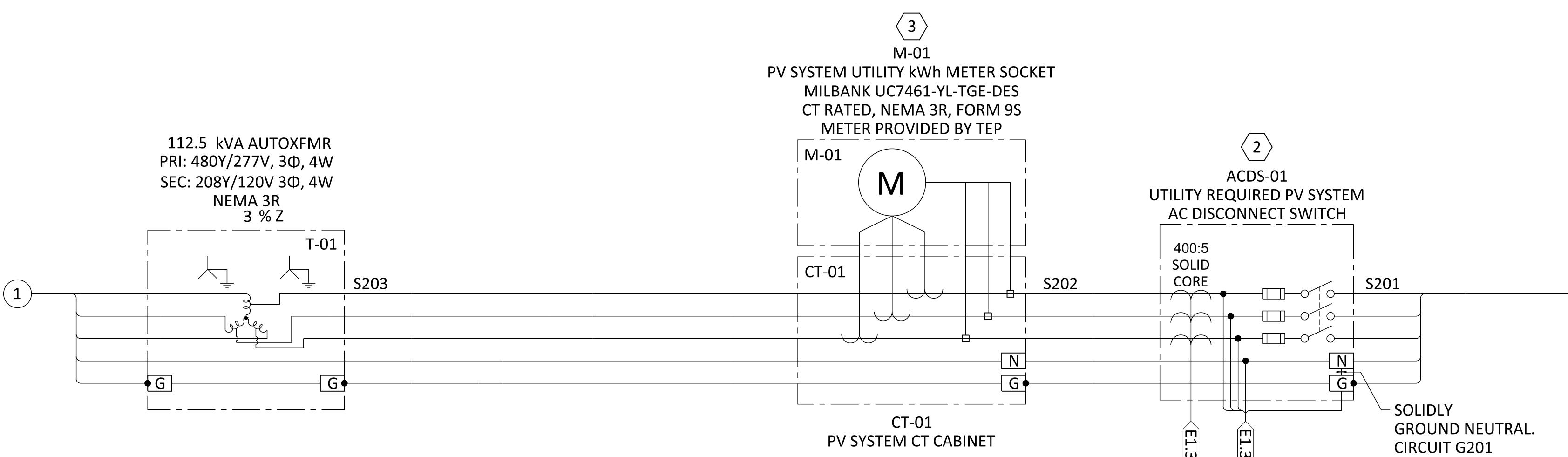
PROJECT
SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHECKER	JM	5/21/18

SHEET #
E1.4

1 2 3 4 5 6 7 8 9 10 11 12

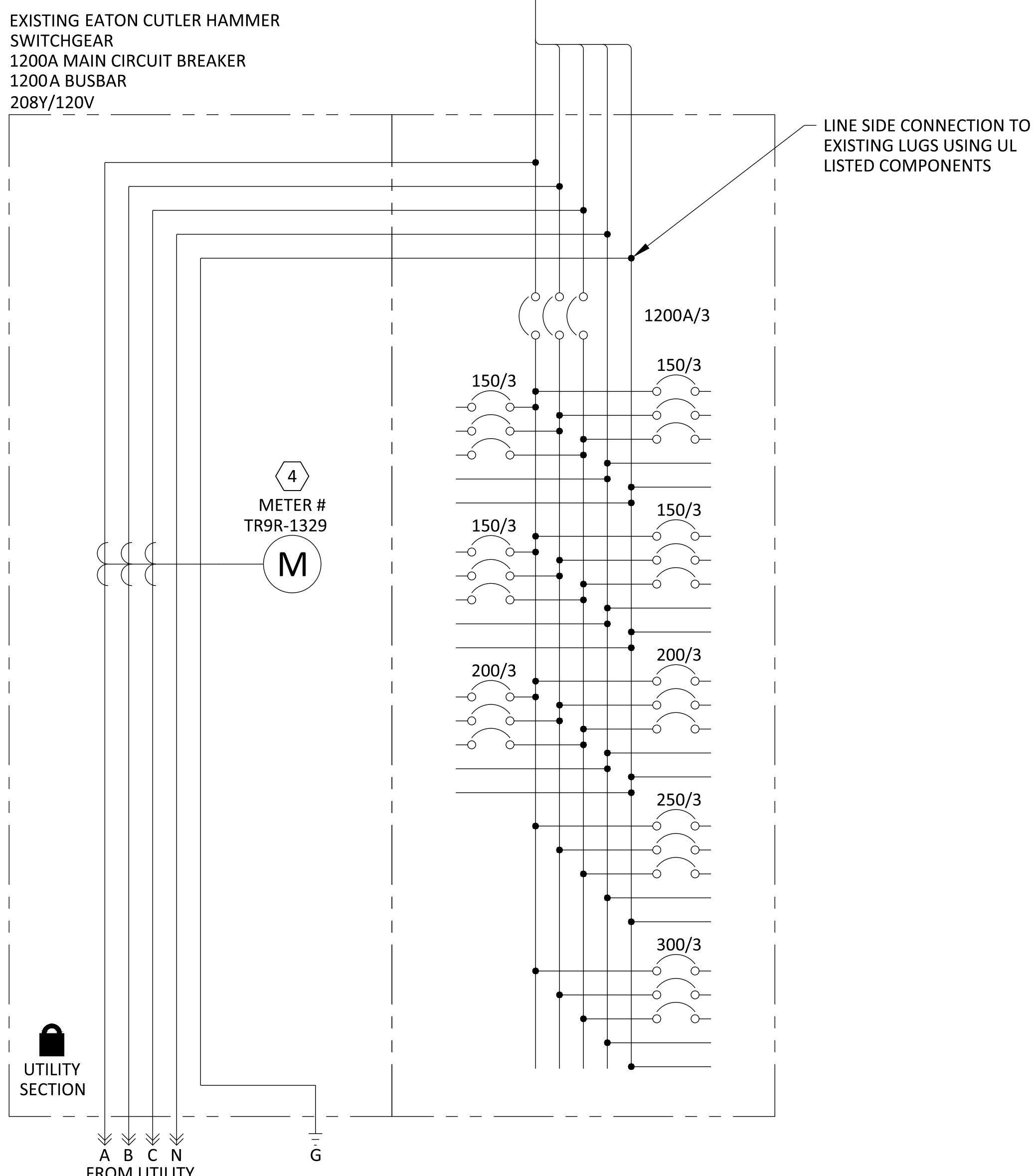
AC GEAR EQUIPMENT SPECIFICATIONS								
NAME	ENCLOSURE AMPS	OCPD AMPS	OCPD TYPE	VOLTS	WIRING	MIN KAIC	NEMA	OTHER
ACDS-01	400	350	Fuse	208	3P/4W	66	3R	
CT-01	400	N/A	None	208	3P/4W	62	3R	
T-01	112.5*	N/A	None	208/480	3P/4W	59	3R	



- KEYED NOTES:
- (1) NOT USED
 - (2) SWITCH TO BE VISUALLY OPEN, ACCESSIBLE PER UTILITY REQUIREMENTS, AND CONFORM TO NEC 705.22 REQUIREMENTS. SWITCH HANDLE SHALL BE INSTALLED BETWEEN 36" AND 60" ABOVE FINISHED GRADE. SWITCH COVER TO BE LOCKED AT ALL TIMES.
 - (3) METER ENCLOSURE AND SOCKET TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR PER UTILITY REQUIREMENTS. METER, CTs, AND TEST SWITCHES PROVIDED BY UTILITY WHEN REQUIRED. ENSURE CENTER OF METER SOCKET IS MOUNTED BETWEEN 3'-6" AND 6'-3" FROM GRADE.
 - (4) BI-DIRECTIONAL UTILITY METER TO BE INSTALLED BY UTILITY WHEN REQUIRED.

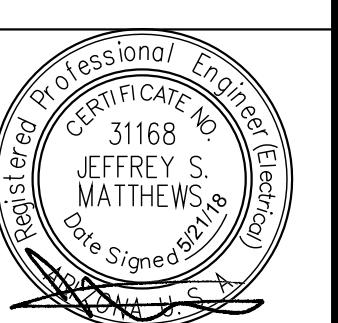
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THREE LINE DIAGRAM - AC GEAR & SES



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PROJECT
SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHECKER	JM	5/21/18

SHEET #
E1.5

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DC CIRCUITS							
CIRCUIT	LOCATION	Vmax	Vop	Imax	Iop	LENGTH	V DROP
B01-01	INV-01	906.11	647.74	14.58	8.8	15	0.05%
B01-02	INV-01	906.11	647.74	14.58	8.8	24	0.08%
B01-03	INV-01	906.11	647.74	14.58	8.8	32	0.11%
B01-04	INV-01	906.11	647.74	14.58	8.8	41	0.14%
B01-05	INV-01	906.11	647.74	14.58	8.8	49	0.17%
B01-06	INV-01	906.11	647.74	14.58	8.8	58	0.20%
B01-07	INV-01	906.11	647.74	14.58	8.8	66	0.22%
B01-08	INV-01	906.11	647.74	14.58	8.8	75	0.25%
B02-01	INV-02	906.11	647.74	14.58	8.8	40	0.13%
B02-02	INV-02	906.11	647.74	14.58	8.8	49	0.17%
B02-03	INV-02	906.11	647.74	14.58	8.8	58	0.20%
B02-04	INV-02	906.11	647.74	14.58	8.8	67	0.23%
B02-05	INV-02	906.11	647.74	14.58	8.8	77	0.26%
B02-06	INV-02	906.11	647.74	14.58	8.8	86	0.29%
B02-07	INV-02	906.11	647.74	14.58	8.8	95	0.32%
B02-08	INV-02	906.11	647.74	14.58	8.8	104	0.35%
B03-01	INV-03	755.09	539.78	14.58	8.8	15	0.06%
B03-02	INV-03	755.09	539.78	14.58	8.8	23	0.09%
B03-03	INV-03	755.09	539.78	14.58	8.8	31	0.13%
B03-04	INV-03	755.09	539.78	14.58	8.8	39	0.16%
B03-05	INV-03	755.09	539.78	14.58	8.8	47	0.19%
B03-06	INV-03	755.09	539.78	14.58	8.8	55	0.22%

INVERTER CIRCUITS													
CIRCUIT	RACEWAY	START	END	SETS	PHASE	NEUTRAL	GROUND	METAL	WIRE TYPE	VOLTS	AMPS	LENGTH	V DROP
S01	CS01	INV-01	PNL-01	1	4 AWG	10 AWG	Cu	THWN-2	480	43.5	20	0.10%	
S02	CS01	INV-02	PNL-01	1	4 AWG	10 AWG	Cu	THWN-2	480	43.5	45	0.22%	
S03	CS01	INV-03	PNL-01	1	8 AWG	10 AWG	Cu	THWN-2	480	27.7	110	0.86%	

NOTES:

1. Vop IS TEMPERATURE CORRECTED Vmp BASED ON 2% HIGH TEMPÉRATURE ON COVER SHEET. THIS VALUE IS USED IN VOLTAGE DROP CALCULATIONS. SEE E1.1 FOR Vop CALCULATION.

2. Iop IS TEMPERATURE CORRECTED Imp BASED ON 2% HIGH TEMPERATURE ON COVER SHEET. THIS VALUE IS USED IN VOLTAGE DROP CALCULATIONS. SEE E1.1 FOR Iop CALCULATION.

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CONDUCTOR AND RACEWAY SCHEDULE

ALL DC CIRCUITS							
SETS	CCC SIZE	METAL	WIRE TYPE	GND SIZE	METAL	WIRE TYPE	
1	10 AWG	Cu	PV Wire	10 AWG	Cu	BARE	

PANELBOARD CIRCUITS													
CIRCUIT	RACEWAY	START	END	SETS	PHASE	NEUTRAL	GROUND	METAL	WIRE TYPE	VOLTS	AMPS	LENGTH	V DROP
S101	CS101	PNL-01	T-01	1	3/0 AWG	4 AWG	4 AWG	Al	THWN-2	480	114.7	260	1.44%

AC GEAR CIRCUITS													
CIRCUIT	RACEWAY	START	END	SETS	PHASE	NEUTRAL	GROUND	METAL	WIRE TYPE	VOLTS	AMPS	LENGTH	V DROP
S201	CS201	ACDS-01	POI	1	600 KCMIL	2 AWG	2 AWG	Cu	THWN-2	208	264.7	15	0.09%
S202	CS202	CT-01	ACDS-01	1	600 KCMIL	2 AWG	2 AWG	Cu	THWN-2	208	264.7	7	0.04%
S203	CS201	T-01	CT-01	1	600 KCMIL	2 AWG	2 AWG	Cu	THWN-2	208	264.7	7	0.04%

GEC						
CIRCUIT	LOCATION	GEC SIZE	GEC METAL	CCC SIZE	CCC SETS	CCC METAL
G01	ALL INVERTERS	6 AWG	Cu	VARIABLE		Cu
G101	PNL-01	6 AWG	Cu	3/0 AWG	1	Al
G201	ACDS-01	1/0 AWG	Cu	600 KCMIL	1	Cu

MISCELLANEOUS										
CIRCUIT	RACEWAY	SETS	PHASE	PHASE QTY	NEUTRAL	GROUND	METAL	WIRE TYPE	VOLTS	AMPS
L01	CL01	1	10	3	10	10	Cu	THWN-2	480	5
L02	CL01	1	12	1	12	12	Cu	THWN-2	277	5
L03	CL01	1	12	3	12	12	Cu	THWN-2	480	2
L04	CL01	1	12	6	12	12	Cu	THWN-2	600	5
C01	CC01	1						SHIELDED CAT5		

RACEWAY SCHEDULE						RACEWAY SCHEDULE - NIPPLES ONLY						DC RACEWAY SCHEDULE				
RACEWAY ID	SETS	EMT	PVC Sched 40	PVC Sched 80	RMC	LFMC	RACEWAY ID	SETS	EMT	PVC Sched 40	PVC Sched 80	RMC	LFMC	NUMBER OF STRINGS	NUMBER OF CONDUCTORS	EMT / LTMC

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KEYED NOTES:
 ① MOUNT WEATHER STATION AND SENSORS PER DETAIL 2 AND 3 ON SHEET E1.3

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GENERAL NOTES:
 1. CONTRACTOR TO COORDINATE CONDUIT RUN LOCATIONS WITH LIGHTING CONDUIT LOCATIONS.
 2. UTILITY SHALL HAVE 24-HOUR UNRESTRICTED ACCESS TO THE PHOTOVOLTAIC SYSTEM METER AND UTILITY DISCONNECT SWITCH.
 3. CONDUIT LAYOUTS ARE SHOWN DIAGRAMMATICALLY. ACTUAL CONDUIT AND J-BOX LOCATIONS, FITTINGS, AND REQUIREMENTS ARE SUBJECT TO FIELD CONDITIONS AND SHALL BE DETERMINED BY THE CONTRACTOR.
 4. WHERE CONDUITS ARE RUN ABOVE GRADE IN DIRECT SUNLIGHT OR ON ROOF STRUCTURES, PROVIDE CONDUIT EXPANSION FITTINGS FOR EVERY 100 FT OF CONDUIT RUN, AND BETWEEN CHANGES OF DIRECTION, SUCH AS 90 DEGREE BENDS, AND BETWEEN JUNCTION BOXES TO ACCOMMODATE THERMAL EXPANSION AND CONTRACTION OF THE RACEWAYS. PROVIDED UNDERGROUND CONDUIT RUNS WITH EXPANSION JOINTS WHERE APPLICABLE. EXPANSION JOINT QUANTITIES AND LOCATIONS SHALL BE DETERMINED BY FIELD CONDITIONS, SO THEY ARE NOT SHOWN IN THESE PLANS.
 5. CONTRACTOR SHALL PERFORM CABLE PULLING CALCULATIONS AND PROVIDE HANDHOLES, JUNCTION BOXES, OR CONDUIT BODIES FOR ELECTRICAL AND COMMUNICATION CONDUIT RUNS AS NEEDED. ELECTRICAL AND COMMUNICATION CABLES SHALL NOT SHARE THE SAME HANDHOLES.
 6. REMOVE ALL TREES, LIGHT POLES, OR OTHER OBSTRUCTIONS UNDERNEATH ALL CANOPIES.
 7. SEE CONDUIT DETAILS SHEET FOR HORIZONTAL BORE DETAIL.

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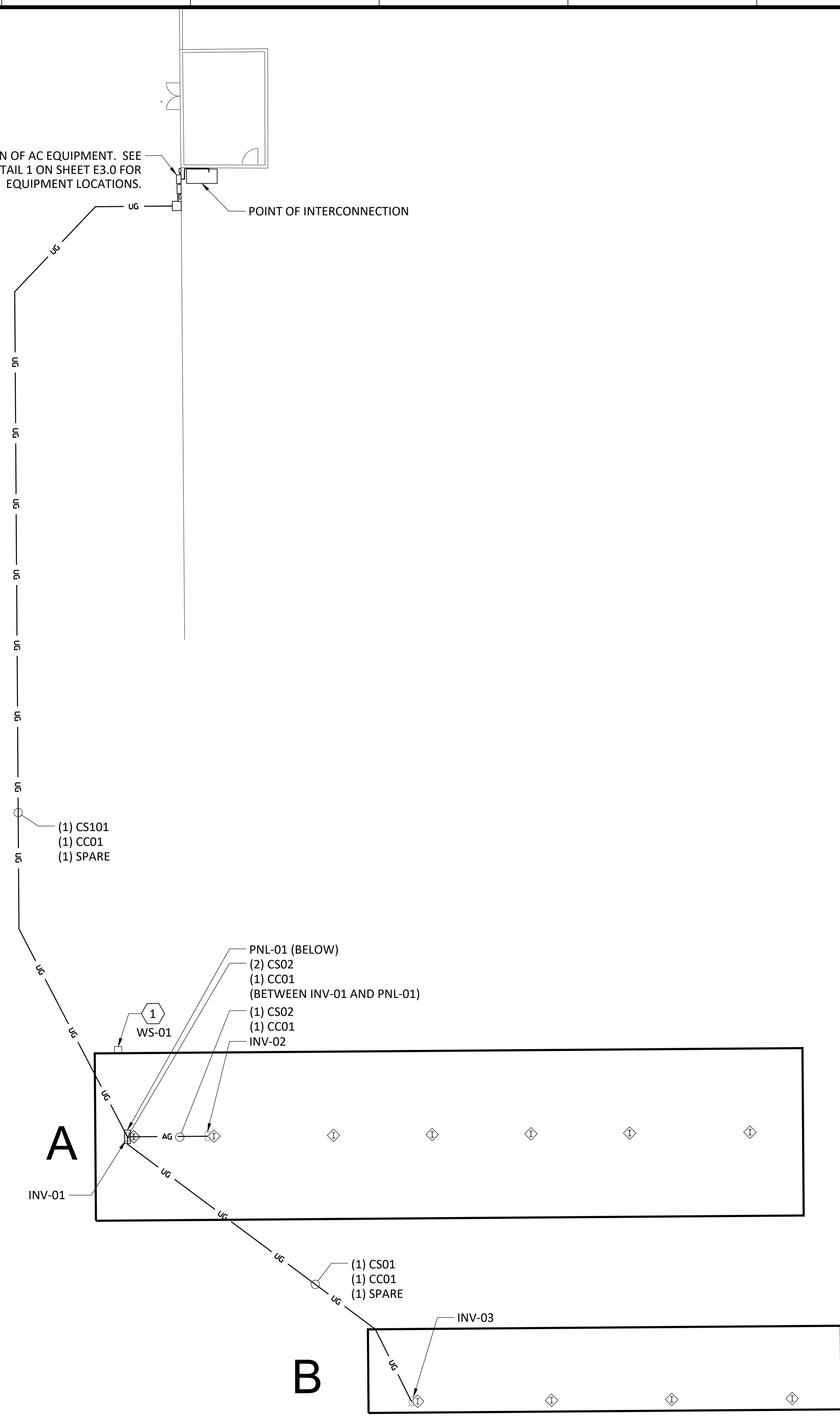
INVERTER RACEWAY SCHEDULE				
INVERTER	CS01	CS02	CS03	CS04
INV-01	X*			
INV-02	X*			
INV-03	X*			

* PVC SCH 80 CAN BE SIZED THE SAME AS EMT.

RACEWAY SCHEDULE						
RACEWAY ID	SETS	EMT	PVC Sched 40	PVC Sched 80	RMC	LFMC
CS01	1	1"	1"	1-1/4"	1"	1"
CS02	1	1-1/4"	1-1/4"	1-1/2"	1-1/4"	1-1/4"
CS03	1	1-1/2"	1-1/2"	2"	1-1/2"	1-1/2"
CS04	1	2"	2"	2-1/2"	2"	2"
CS101	1	2"	2"	2"	2"	2"
CS201	1	3"	3-1/2"	3-1/2"	3"	3"
CS202	1	3"	3-1/2"	3-1/2"	3"	3"
CS203	1	3"	3-1/2"	3-1/2"	3"	3"
CL01	1	3/4"	3/4"	3/4"	3/4"	3/4"
CC01	1	3/4"	1"	1"	3/4"	3/4"
CU01	1	2"				
SPARE	1	1"	1"	1"	1"	1"

RACEWAY SCHEDULE - NIPPLES ONLY

RACEWAY ID	SETS	EMT	PVC Sched 40	PVC Sched 80	RMC	LFMC
CS01	1	1"	1"	1-1/4"	1"	1"
CS02	1	1-1/4"	1-1/4"	1-1/2"	1-1/4"	1-1/4"
CS03	1	1-1/2"	1-1/2"	2"	1-1/2"	1-1/2"
CS04	1	2"	2"	2-1/2"	2"	2"
CS101	1	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
CS201	1	2-1/2"	3"	3"	2-1/2"	2-1/2"
CS202	1	2-1/2"	3"	3"	2-1/2"	2-1/2"
CS203	1	2-1/2"	3"	3"	2-1/2"	2-1/2"
CL01	1	3/4"	3/4"	3/4"	3/4"	3/4"
CC01	1	3/4"	1"	1"	3/4"	3/4"
CU01	1	2"				
SPARE	1	1"	1"	1"	1"	1"



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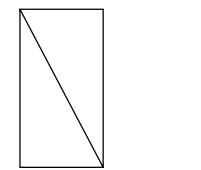
PROJECT SC17-040

ENGINEER	INITIAL	DATE
FA	5/18/18	
DRAFTER	FA	5/18/18
CHEKER	JM	
SHEET #		
E2.0		

1 2 3 4 5 6 7 8 9 10 11 12

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GENERAL NOTES:

1. INVERTERS AND AC COMBINER PANELS MAY NOT BE DRAWN TO SCALE. THEY ARE SHOWN FOR DIAGRAMMATIC PURPOSES ONLY.
2. SEE THREE LINE DIAGRAM: PV SUBARRAY SHEET(S) FOR DETAILED STRINGING DIAGRAM.
3. THIS DIAGRAM DOES NOT REFLECT THE WIRING METHOD THAT WILL BE USED. THIS DIAGRAM IS FOR DESCRIPTIVE PURPOSES ONLY, PLEASE REFER TO PV SUBARRAY THREE LINES FOR DETAILED WIRING DESCRIPTION.

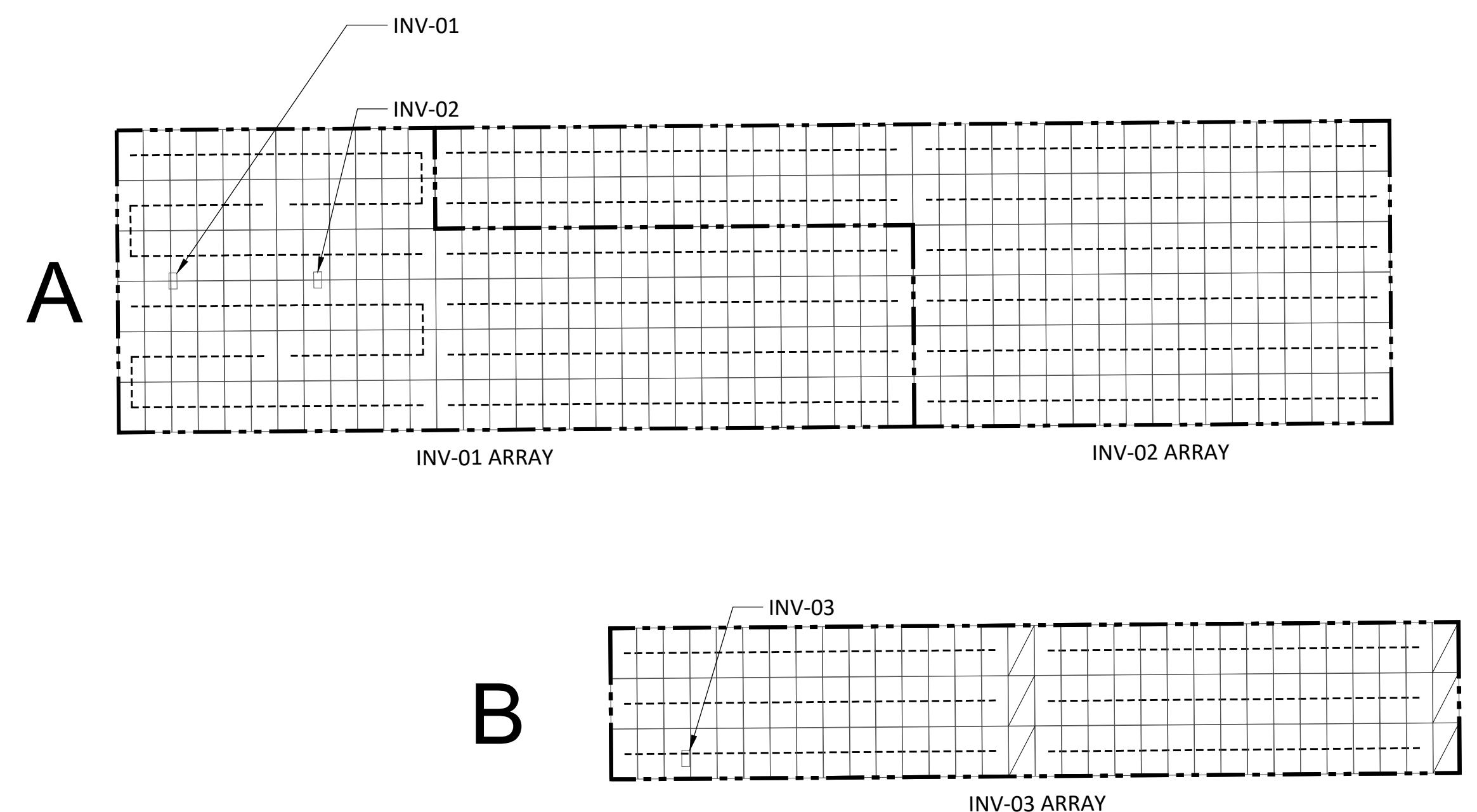


PV INACTIVE PANEL
(NOT USED)

G

STRINGING PATH

ARRAY OUTLINE



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PROJECT
SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	INITIAL	DATE
	FA	5/18/18
CHEKER	INITIAL	DATE
	JM	
SHEET #		
E2.1		

1 2 3 4 5 6 7 8 9 10 11 12

KEY NOTES:

- ① INSTALL CONCRETE ENCASED ELECTRODE PER DETAIL 6 ON GROUNDING DETAILS.

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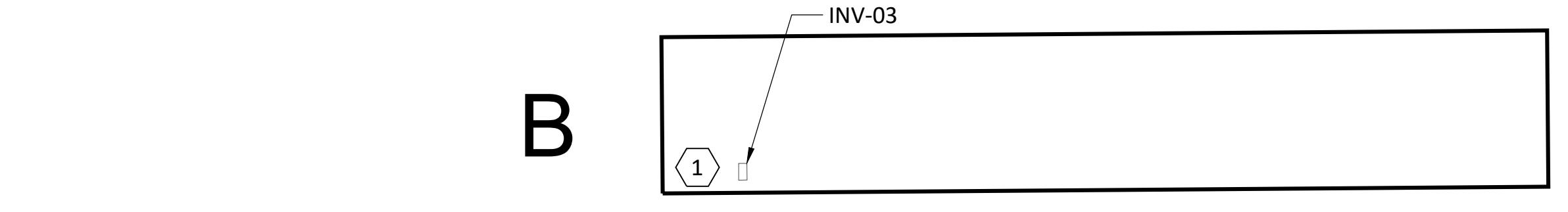
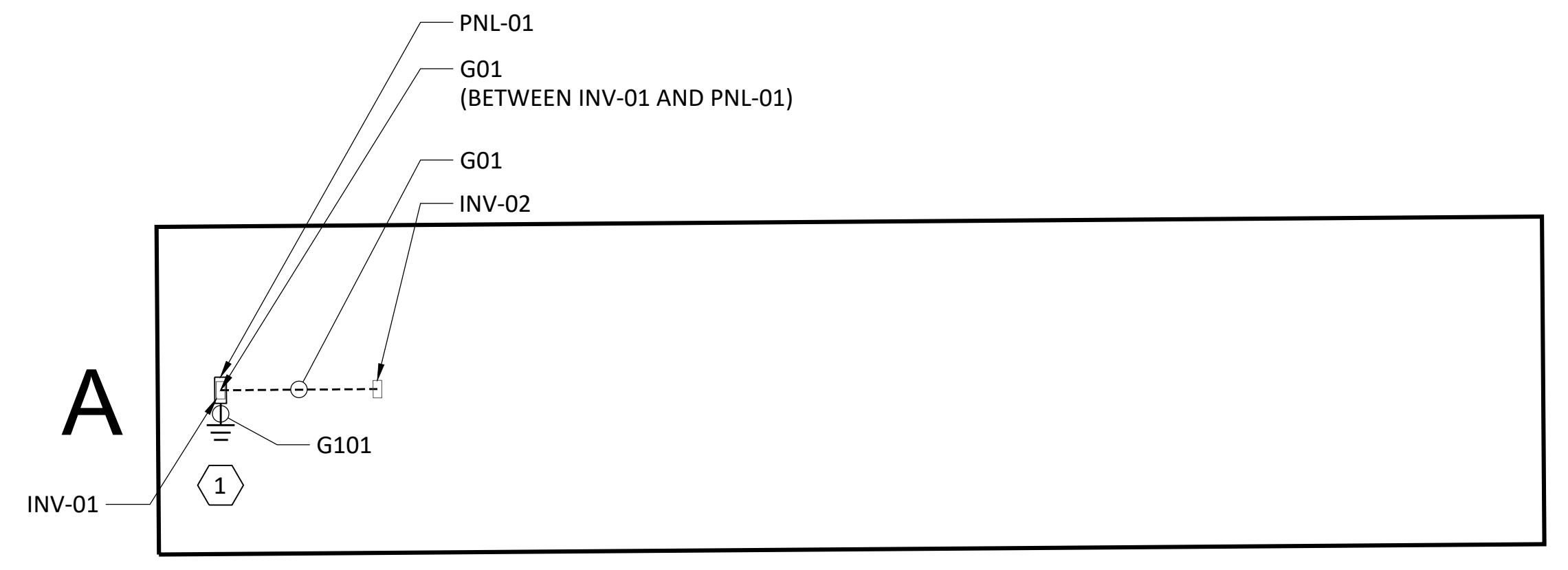
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GEC						
CIRCUIT	LOCATION	GEC SIZE	GEC METAL	CCC SIZE	CCC SETS	CCC METAL
G01	ALL INVERTERS	6 AWG	Cu	VARIES		Cu
G101	PNL-01	6 AWG	Cu	3/0 AWG	1	Al
G201	ACDS-01	1/0 AWG	Cu	600 KCMIL	1	Cu

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GROUNDING PLAN

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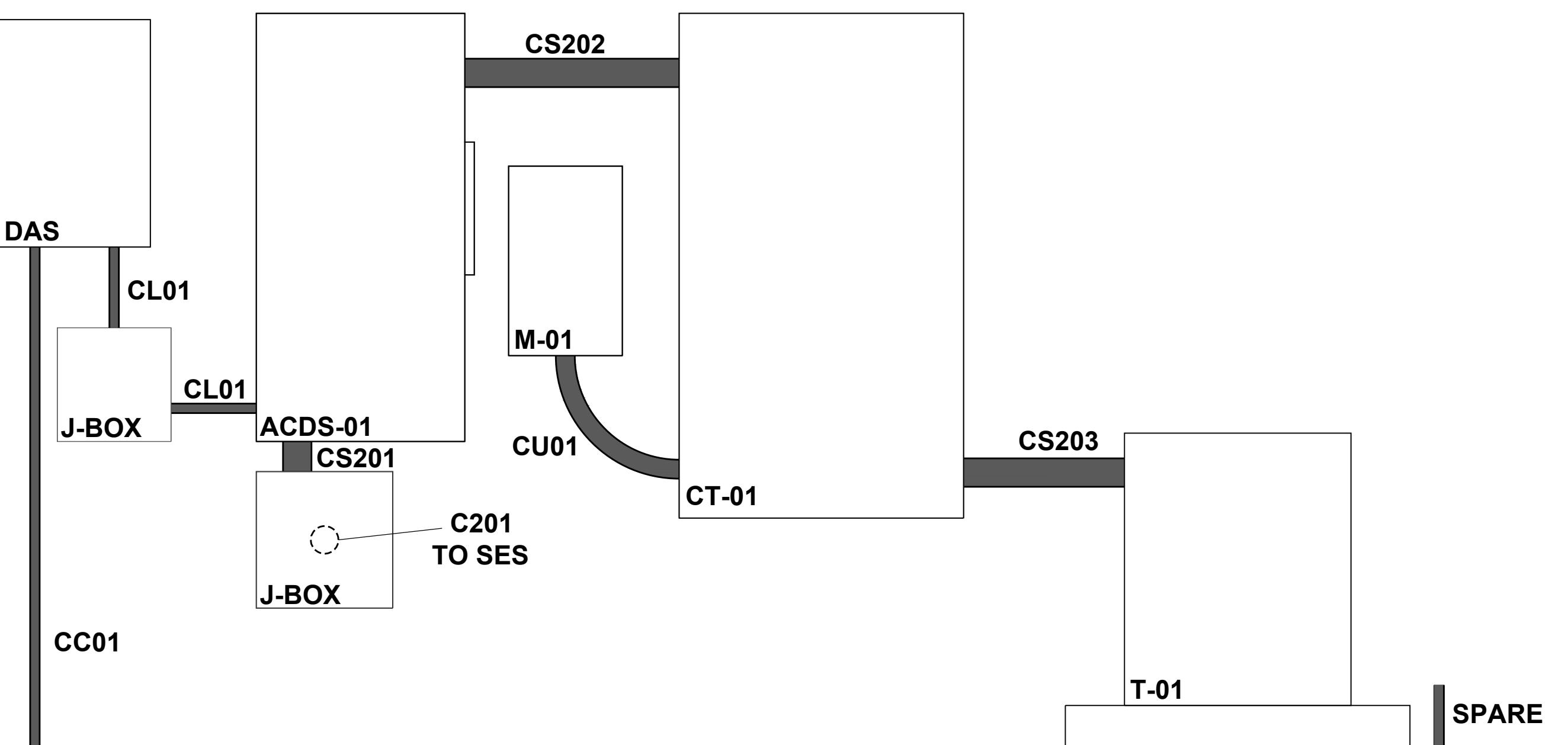
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PROJECT
SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHECKER	JM	
SHEET #		
E2.2		

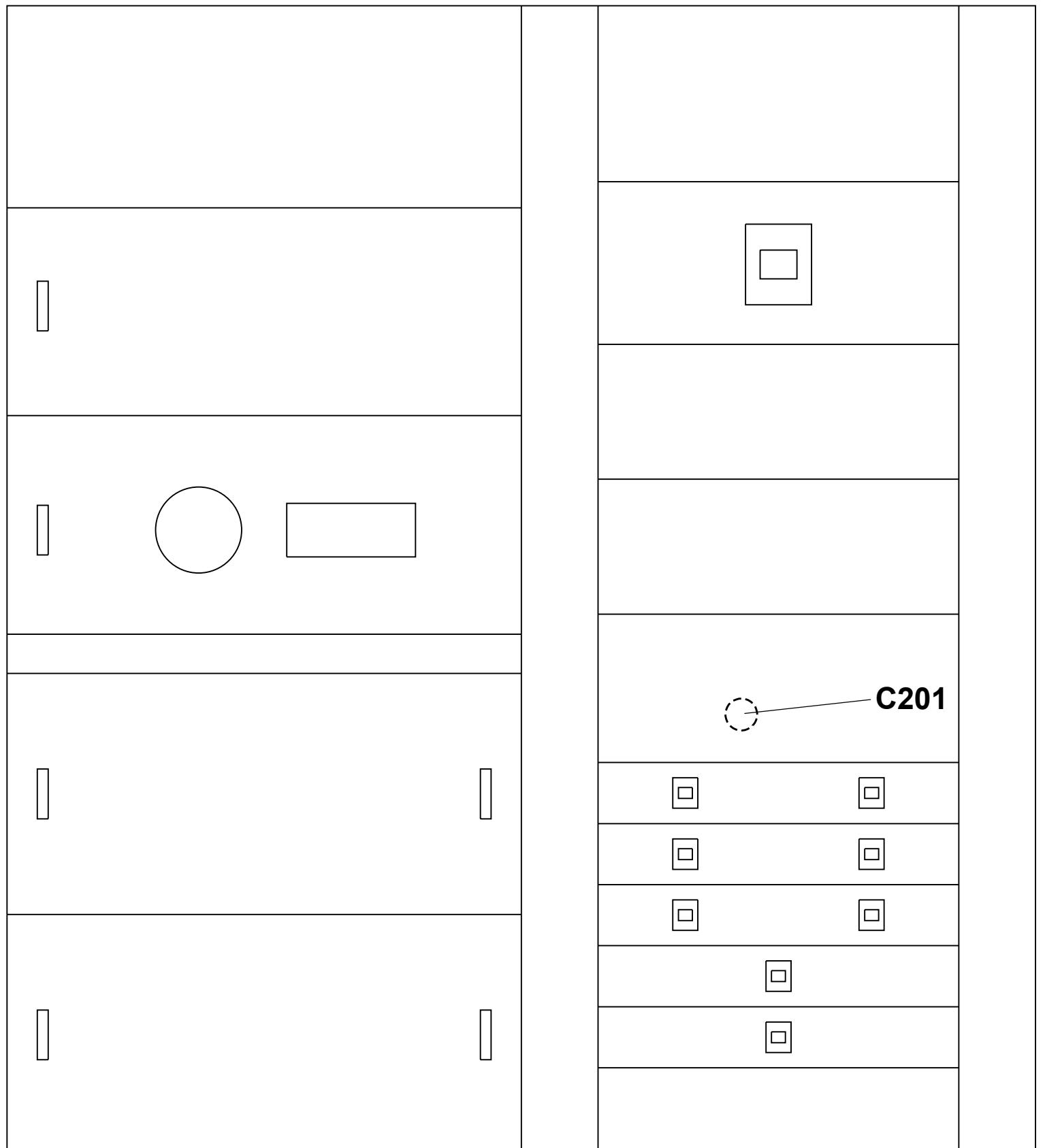
1 2 3 4 5 6 7 8 9 10 11 12

WALL



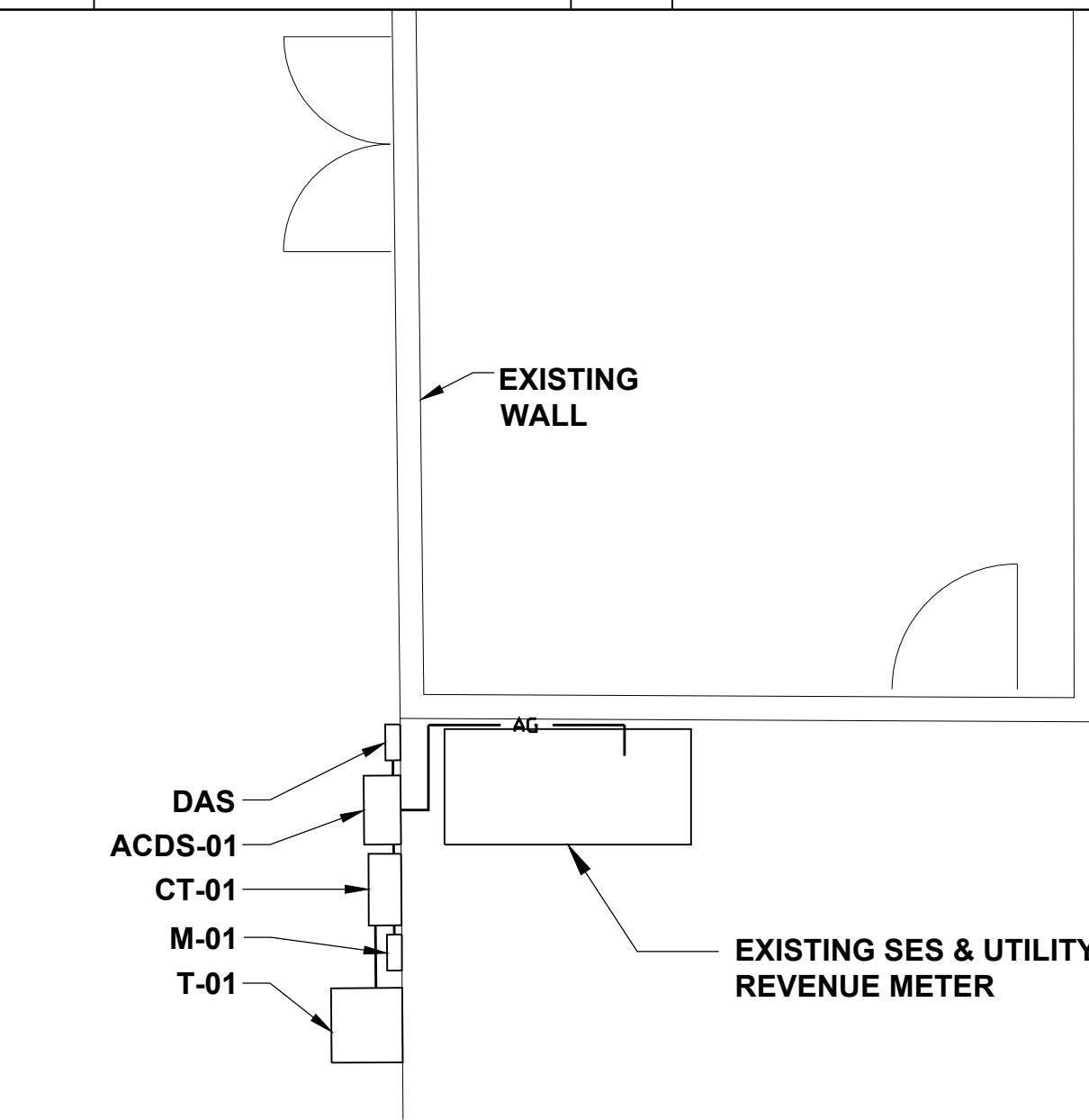
ELECTRIC ROOM

SES



1 AC EQUIPMENT ELEVATION

RACEWAY SCHEDULE						RACEWAY SCHEDULE - NIPPLES ONLY							
RACEWAY ID	SETS	EMT	PVC Sched 40	PVC Sched 80	RMC	LFMC	RACEWAY ID	SETS	EMT	PVC Sched 40	PVC Sched 80	RMC	LFMC
CS01	1	1"	1"	1-1/4"	1"	1"	CS01	1	1"	1"	1-1/4"	1"	1"
CS02	1	1-1/4"	1-1/4"	1-1/2"	1-1/4"	1-1/4"	CS02	1	1-1/4"	1-1/4"	1-1/2"	1-1/4"	1-1/4"
CS03	1	1-1/2"	1-1/2"	2"	1-1/2"	1-1/2"	CS03	1	1-1/2"	1-1/2"	2"	1-1/2"	1-1/2"
CS04	1	2"	2"	2-1/2"	2"	2"	CS04	1	2"	2"	2-1/2"	2"	2"
CS101	1	2"	2"	2"	2"	2"	CS101	1	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
CS201	1	3"	3"	3-1/2"	3"	3"	CS201	1	2-1/2"	3"	3"	2-1/2"	2-1/2"
CS202	1	3"	3"	3-1/2"	3"	3"	CS202	1	2-1/2"	3"	3"	2-1/2"	2-1/2"
CS203	1	3"	3"	3-1/2"	3"	3"	CS203	1	2-1/2"	3"	3"	2-1/2"	2-1/2"
CL01	1	3/4"	3/4"	3/4"	3/4"	3/4"	CL01	1	3/4"	3/4"	3/4"	3/4"	3/4"
CC01	1	3/4"	1"	1"	3/4"	3/4"	CC01	1	3/4"	1"	1"	3/4"	3/4"
CU01	1	2"					CU01	1	2"				
SPARE	1	1"	1"	1"	1"	SPARE	1	1"	1"	1"	1"	1"	



2 AC EQUIPMENT PLAN DETAIL

PIMA COUNTY - MURPHY-WILMOTT LIBRARY
124.8 KW-DC, 95 KW-AC PHOTOVOLTAIC PROJECT
530 N WILMOT ROAD TUCSON, AZ 85711
AC EQUIPMENT ELEVATION AND PLAN DETAIL

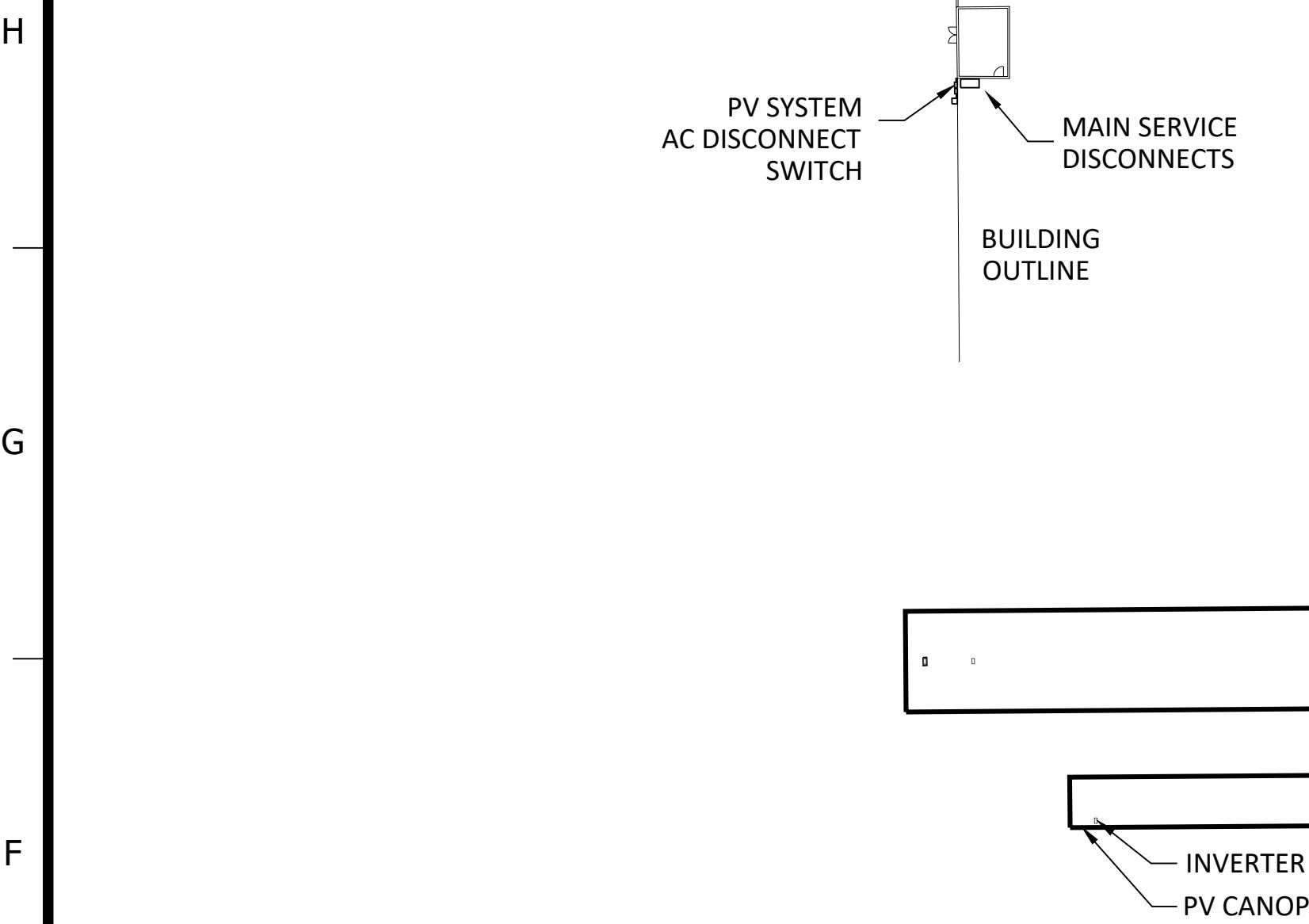
SOLON
3840 S. PALO VERDE ROAD, #205
TUCSON, ARIZONA 85714
PHONE: (520) 307-3300
FAX: (520) 307-4046

THE ENGINEER IS RESPONSIBLE ONLY FOR THE WORK ON THOSE SHEETS BEARING THE ENGINEER'S STAMP.
THESE DOCUMENTS MAY NOT BE REPRODUCED IN ANY FORM WITHOUT THE EXPRESS WRITTEN CONSENT OF SOLON CORPORATION.
SOLON IS NOT RESPONSIBLE FOR ANY REVISIONS OR ADDITIONS TO THESE DRAWINGS UNLESS INITIALED OR AGREED TO IN WRITING BY THE ENGINEER.

PROJECT SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHEKER	JM	
SHEET # E3.0		

1 2 3 4 5 6 7 8 9 10 11 12



CAUTION

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

A

WARNING

ELECTRICAL SHOCK HAZARD
DISTRIBUTED GENERATION PRESENT
TERMINALS ON LINE AND LOAD SIDE MAY BE ENERGIZED

B

C
PHOTOVOLTAIC SYSTEM METER

WARNING

UTILITY DG DISCONNECT PANEL MAY BE ENERGIZED BY UTILITY OR CUSTOMER GENERATION

E

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

WARNING:
ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED.

WARNING:
DO NOT OPEN FUSES UNDER LOAD

G

PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT SWITCH

J

NOTICE:
DEDICATED
PHOTOVOLTAIC SYSTEM
AC COMBINER PANEL.
DO NOT ADD LOADS TO THIS PANEL.

THIS EQUIPMENT IS OWNED AND OPERATED BY ONYX RENEWABLE PARTNERS L.P.
NOC@onyxrenewables.com
646-480-2176

L

XXX-yy

M

NOT USED.

P

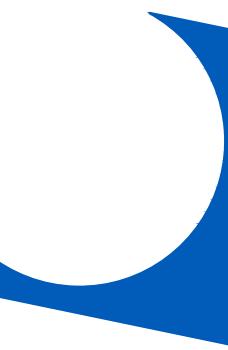
NOT USED.

Q

PIMA COUNTY - MURPHY-WILMOT LIBRARY
124.8 kW-DC, 95 kW-AC PHOTOVOLTAIC PROJECT
530 N WILMOT ROAD TUCSON, AZ 85711

EQUIPMENT LABELS

3840 S. PALO VERDE ROAD, #205
TUCSON, ARIZONA 85714
PHONE: 520-307-3300
FAX: 520-307-4046



SOLON

LABEL SCHEDULE:

EQUIP	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
INV-01						X						X	X		
INV-02							X						X	X	
INV-03								X					X	X	
PNL-01								X				X	X		
T-01								X					X		
CT-01									X				X		
M-01						X	X					X			
ACDS-01	X							X	X			X	X		
POI	X	X									X				
REV CT									X	X					
TOTALS	2	1	1	1	1	1	5	3	1	1	1	1	1	8	2

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PROJECT
SC17-040

ENGINEER	INITIAL	DATE
	FA	5/18/18
DRAFTER	FA	5/18/18
CHEKER	JM	
SHEET #		

E3.1

1 2 3 4 5 6 7 8 9 10 11 12

SOLON

PIMA COUNTY - MURPHY-WILMOT LIBRARY
124.8 kW-DC, 95 KW-AC PHOTOVOLTAIC PROJECT
530 N WILMOT ROAD TUCSON, AZ 85711

CONDUIT DETAILS

1 VERTICAL CONDUIT MOUNTING NOT TO SCALE
det-C01.dwg

2 TYP. CONDUIT MOUNTING NOT TO SCALE
det-C02.dwg

3 TYP. CONDUIT MOUNTING NOT TO SCALE
det-C03.dwg

4 ARRAY CONDUIT TRANSITION NOT TO SCALE
det-C04.dwg

5 TYPICAL CONDUIT RISER NOT TO SCALE
det-C05.dwg

6 TYPICAL BURIED CONDUIT NOT TO SCALE
det-C06.dwg

8 CONDUIT PENETRATING WALL NOT TO SCALE
det-C08.dwg

10 ASPHALT REPLACEMENT AT TRENCH LOCATION NOT TO SCALE
det-C10.dwg

11 HORIZONTAL BORE DETAIL NOT TO SCALE
det-C11.dwg

12 CURB REPLACEMENT AT COLUMN CONFLICT LOCATION NOT TO SCALE
det-C12.dwg

ELEVATION
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NOTES:

1. BACKFILL

- INSTALL 4 INCHES OF HAND COMPAKTED SAND BELOW CONDUIT OR CABLE.
- INSTALL 4 INCHES OF HAND COMPAKTED SAND ABOVE CONDUIT OR CABLE.
- OBTAIN BACKFILL MATERIALS FROM TRENCHES AND OTHER EXCAVATION WORK UNDER THIS CONTRACT AND/OR FROM ON SITE BORROW AREAS.
- BACKFILL SHALL BE MATERIAL THAT IS FREE OF DEBRIS, ROOTS, ORGANIC MATTER, REFUSE, CINDERS, FROZEN MATTER, AND ROCK THAT HAS A DIMENSION GREATER THAN 2".

2. COMPACTION

- PLACE BACKFILL MATERIAL IN LEVEL LAYERS NOT EXCEEDING 6 INCHES.
- COMPACT THE NON COHESIVE (SAND) MATERIAL TO A 95% RELATIVE COMPACTION AS DEFINED IN ASTM D 4254, 4254, AND ASTM D 6938. COMPACT THE COHESIVE MATERIAL TO A 95% RELATIVE COMPACTION AS DEFINED IN ASTM D 698 AND 6938.
- AT SOLON'S DISCRETION, AT CONTRACTOR'S EXPENSE, COMPACTION AND PLACEMENT OF BACKFILL SHALL BE INSPECTED AND TESTED FOR EVERY 12 INCHES OF LIFT, AT A MINIMUM OF 1 TEST FOR EVERY 600 FT. OF TRENCH BACKFILL. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF ASTM D 4253, 4254, D 6938, AND 698.
- PERFORM COMPACTION AND COMPACTION TESTING WITH PIMA COUNTY REPRESENTATIVE AS A WITNESS, IF THE REPRESENTATIVE IS ONSITE DURING COMPACTION ACTIVITIES.

3. CABLE OR CONDUIT

- THIS DETAIL APPLIES TO DIRECT BURIED CABLES AND TO DIRECT BURIED CONDUITS.

4. EXCAVATION WARNING

- PROVIDE A CONTINUOUS 6 INCH WIDE RED WARNING TAPE WITH LEGEND "CAUTION: BURIED ELECTRIC LINE BELOW". BRADY NUMBER 91296 OR EQUIVALENT.

ATTACHMENT SURFACE
GALVANIZED UNISTRUT P1000T
UNITSTRUT CONDUIT CLAMP
UNISTRUT CONDUIT CLAMP
CONDUIT

ATTACHMENT SURFACE
ATTACHMENT FASTENER (TYPE VARIES BY SURFACE)
GALVANIZED UNISTRUT P1000T
UNISTRUT CONDUIT CLAMP
CONDUIT

GALVANIZED UNISTRUT P1000T
ATTACHMENT FASTENER (TYPE VARIES BY SURFACE)
UNISTRUT CONDUIT CLAMP
CONDUIT
ATTACHMENT SURFACE

CABLES TO SOLAR ARRAY - TYP. OF 6 (3 STRINGS MAX)
NOTE: ALSO APPLIES TO ALT DETAILS.
SEAL CONDUIT WITH HEYCO LIQUID TIGHT CORD GRIP
GROUNDED CONDUCTOR BONDED TO CONDUIT
CB01
NOTE: PROVIDE SAME DETAIL FOR CONDUIT RUNNING HORIZONTALLY. WHENEVER POSSIBLE, ROUTE CONDUIT AS TO CREATE A HORIZONTAL ENTRY FROM CABLES TO CONDUIT.

CONTINUES TO ENCLOSURE
GALV. RIGID STEEL COUPLING (TYPICAL)
90° ELBOW SHOWN
NOTE: A 45° ELBOW ALTERNATIVE MAY BE USED TO ACCOMODATE CONDUIT ELEVATION CHANGES IN HORIZONTAL BORING APPLICATIONS
FOR CONDUIT TRADE SIZE 1.5" OR LARGER
INSTALL 20MIL 2" TAPE ALONG 90DEG RADIUS AND FITTINGS WITH A 1" OVERLAP
GALV. STEEL CONDUIT ADAPTER (TYPICAL)
SCH. 40 PVC CONDUIT

GENERAL NOTE:
THIS DETAIL IS TYPICAL FOR SINGLE AND MULTI-RISER ARRANGEMENTS. MAINTAIN CONSISTENT SPACING BETWEEN ADJACENT RISERS.

CONDUIT, SEAL FOR WATERTIGHTNESS AND TO MAINTAIN ORIGINAL FIRE RATING.
PERFORM ALL REBAR AND OBSTRUCTION SCANNING PRIOR TO PENETRATING WALL
BEFORE PENETRATING A LOAD BEARING WALL, CONSULT THE STRUCTURAL ENGINEER OF RECORD

CONCRETE OR MASONRY WALL

SAW CUT EXISTING ASPHALT FULL DEPTH BOTH SIDES
EXISTING ASPHALT CONCRETE PAVEMENT
EXISTING ABC OR GRANULAR BASE COURSE
TACK COAT, TYP.
PATCH FULL WIDTH OF TRENCH
NEW ASPHALT CONCRETE PAVEMENT:
- MATCH EXISTING DEPTH (3" MIN.)
- MIX DESIGN PER LOCAL GOVERNMENT REQUIREMENTS, OR AS APPROVED BY OWNER OR ENGINEER
NEW ABC:
- MATCH THICKNESS OF EXISTING GRANULAR BASE COURSE MATERIALS (4" MIN.)

RACEWAY PER CONDUIT SCHEDULE
BORE PIT. BACKFILL PER DETAIL 6
"48" MIN"
VARIES
RACEWAY SWEEP PER CONDUIT SCHEDULE
RECEIVING PIT. BACKFILL PER DETAIL 6

TOP ELEVATION VIEW
FORM / PLACE NEW CURB AROUND DIAMOND SURFACE FINISH.
MATCH EXISTING CURB DIMENSIONS AND FINISH.
BACKFILL AND RECOMPACT SOIL BEHIND CURB AS NEEDED
SAWCUT EXISTING CURB, INSTALL EXPANSION JOINT AT EXISTING SURFACE
EXISTING DIRT / LANDSCAPING
EXISTING CURB
EXISTING ASPHALT PARKING SURFACE
DIAMOND SURFACE FINISH PER STRUCTURAL DETAIL 6 ON SHEET S1.3
CAISON FOOTING TO BELOW

NOTE: 48" BORE DEPTH TO BE MAINTAINED EXCEPT WHERE ELEVATION CHANGES ARE REQUIRED TO AVOID EXISTING UTILITIES

SCALE: NTS

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NOTES:

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3. CABLE OR CONDUIT

- THIS DETAIL APPLIES TO DIRECT BURIED CABLES AND TO DIRECT BURIED CONDUITS.

4. EXCAVATION WARNING

- PROVIDE A CONTINUOUS 6 INCH WIDE RED WARNING TAPE WITH LEGEND "CAUTION: BURIED ELECTRIC LINE BELOW". BRADY NUMBER 91296 OR EQUIVALENT.

ATTACHMENT SURFACE
GALVANIZED UNISTRUT P1000T
UNITSTRUT CONDUIT CLAMP
UNISTRUT CONDUIT CLAMP
CONDUIT

ATTACHMENT SURFACE
ATTACHMENT FASTENER (TYPE VARIES BY SURFACE)
GALVANIZED UNISTRUT P1000T
UNISTRUT CONDUIT CLAMP
CONDUIT
ATTACHMENT SURFACE

CABLES TO SOLAR ARRAY - TYP. OF 6 (3 STRINGS MAX)
NOTE: ALSO APPLIES TO ALT DETAILS.
SEAL CONDUIT WITH HEYCO LIQUID TIGHT CORD GRIP
GROUNDED CONDUCTOR BONDED TO CONDUIT
CB01
NOTE: PROVIDE SAME DETAIL FOR CONDUIT RUNNING HORIZONTALLY. WHENEVER POSSIBLE, ROUTE CONDUIT AS TO CREATE A HORIZONTAL ENTRY FROM CABLES TO CONDUIT.

CONTINUES TO ENCLOSURE
GALV. RIGID STEEL COUPLING (TYPICAL)
90° ELBOW SHOWN
NOTE: A 45° ELBOW ALTERNATIVE MAY BE USED TO ACCOMODATE CONDUIT ELEVATION CHANGES IN HORIZONTAL BORING APPLICATIONS
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PERFORM ALL REBAR AND OBSTRUCTION SCANNING PRIOR TO PENETRATING WALL
BEFORE PENETRATING A LOAD BEARING WALL, CONSULT THE STRUCTURAL ENGINEER OF RECORD

CONCRETE OR MASONRY WALL

SAW CUT EXISTING ASPHALT FULL DEPTH BOTH SIDES
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TACK COAT, TYP.
PATCH FULL WIDTH OF TRENCH
NEW ASPHALT CONCRETE PAVEMENT:
- MATCH EXISTING DEPTH (3" MIN.)
- MIX DESIGN PER LOCAL GOVERNMENT REQUIREMENTS, OR AS APPROVED BY OWNER OR ENGINEER
NEW ABC:
- MATCH THICKNESS OF EXISTING GRANULAR BASE COURSE MATERIALS (4" MIN.)

RACEWAY PER CONDUIT SCHEDULE
BORE PIT. BACKFILL PER DETAIL 6
"48" MIN"
VARIES
RACEWAY SWEEP PER CONDUIT SCHEDULE
RECEIVING PIT. BACKFILL PER DETAIL 6

TOP ELEVATION VIEW
FORM / PLACE NEW CURB AROUND DIAMOND SURFACE FINISH.
MATCH EXISTING CURB DIMENSIONS AND FINISH.
BACKFILL AND RECOMPACT SOIL BEHIND CURB AS NEEDED
SAWCUT EXISTING CURB, INSTALL EXPANSION JOINT AT EXISTING SURFACE
EXISTING DIRT / LANDSCAPING
EXISTING CURB
EXISTING ASPHALT PARKING SURFACE
DIAMOND SURFACE FINISH PER STRUCTURAL DETAIL 6 ON SHEET S1.3
CAISON FOOTING TO BELOW

NOTE: 48" BORE DEPTH TO BE MAINTAINED EXCEPT WHERE ELEVATION CHANGES ARE REQUIRED TO AVOID EXISTING UTILITIES

SCALE: NTS

ELEVATION
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NOTES:

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- OBTAIN BACKFILL MATERIALS FROM TRENCHES AND OTHER EXCAVATION WORK UNDER THIS CONTRACT AND/OR FROM ON SITE BORROW AREAS.
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3. CABLE OR CONDUIT

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4. EXCAVATION WARNING

- PROVIDE A CONTINUOUS 6 INCH WIDE RED WARNING TAPE WITH LEGEND "CAUTION: BURIED ELECTRIC LINE BELOW". BRADY NUMBER 91296 OR EQUIVALENT.

ATTACHMENT SURFACE
GALVANIZED UNISTRUT P1000T
UNITSTRUT CONDUIT CLAMP
UNISTRUT CONDUIT CLAMP
CONDUIT

ATTACHMENT SURFACE
ATTACHMENT FASTENER (TYPE VARIES BY SURFACE)
GALVANIZED UNISTRUT P1000T
UNISTRUT CONDUIT CLAMP
CONDUIT
ATTACHMENT SURFACE

CABLES TO SOLAR ARRAY - TYP. OF 6 (3 STRINGS MAX)
NOTE: ALSO APPLIES TO ALT DETAILS.
SEAL CONDUIT WITH HEYCO LIQUID TIGHT CORD GRIP
GROUNDED CONDUCTOR BONDED TO CONDUIT
CB01
NOTE: PROVIDE SAME DETAIL FOR CONDUIT RUNNING HORIZONTALLY. WHENEVER POSSIBLE, ROUTE CONDUIT AS TO CREATE A HORIZONTAL ENTRY FROM CABLES TO CONDUIT.

CONTINUED

11 HORIZONTAL BORE DETAIL NOT TO SCALE
det-C11.dwg

12 CURB REPLACEMENT AT COLUMN CONFLICT LOCATION NOT TO SCALE
det-C12.dwg

ELEVATION
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CONTINUED

11 HORIZONTAL BORE DETAIL NOT TO SCALE
det-C11.dwg

12 CURB REPLACEMENT AT COLUMN CONFLICT LOCATION NOT TO SCALE
det-C12.dwg

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det-C11.dwg

12 CURB REPLACEMENT AT COLUMN CONFLICT LOCATION NOT TO SCALE
det-C12.dwg

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- PLACE BACKFILL MATERIAL IN LEVEL LAYERS NOT EXCEEDING 6 INCHES.
- COMPACT THE NON COHESIVE (SAND) MATERIAL TO A 95% RELATIVE COMPACTION AS DEFINED IN ASTM D 4254, 4254, AND ASTM D 6938. COMPACT THE COHESIVE MATERIAL TO A 95% RELATIVE COMPACTION AS DEFINED IN ASTM D 698 AND 6938.
- AT SOLON'S DISCRETION, AT CONTRACTOR'S EXPENSE, COMPACTION AND PLACEMENT OF BACKFILL SHALL BE INSPECTED AND TESTED FOR EVERY 12 INCHES OF LIFT, AT A MINIMUM OF 1 TEST FOR EVERY 600 FT. OF TRENCH BACKFILL. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF ASTM D 4253, 4254, D 6938, AND 698.
- PERFORM COMPACTION AND COMPACTION TESTING WITH PIMA COUNTY REPRESENTATIVE AS A WITNESS, IF THE REPRESENTATIVE IS ONSITE DURING COMPACTION ACTIVITIES.

3. CABLE OR CONDUIT

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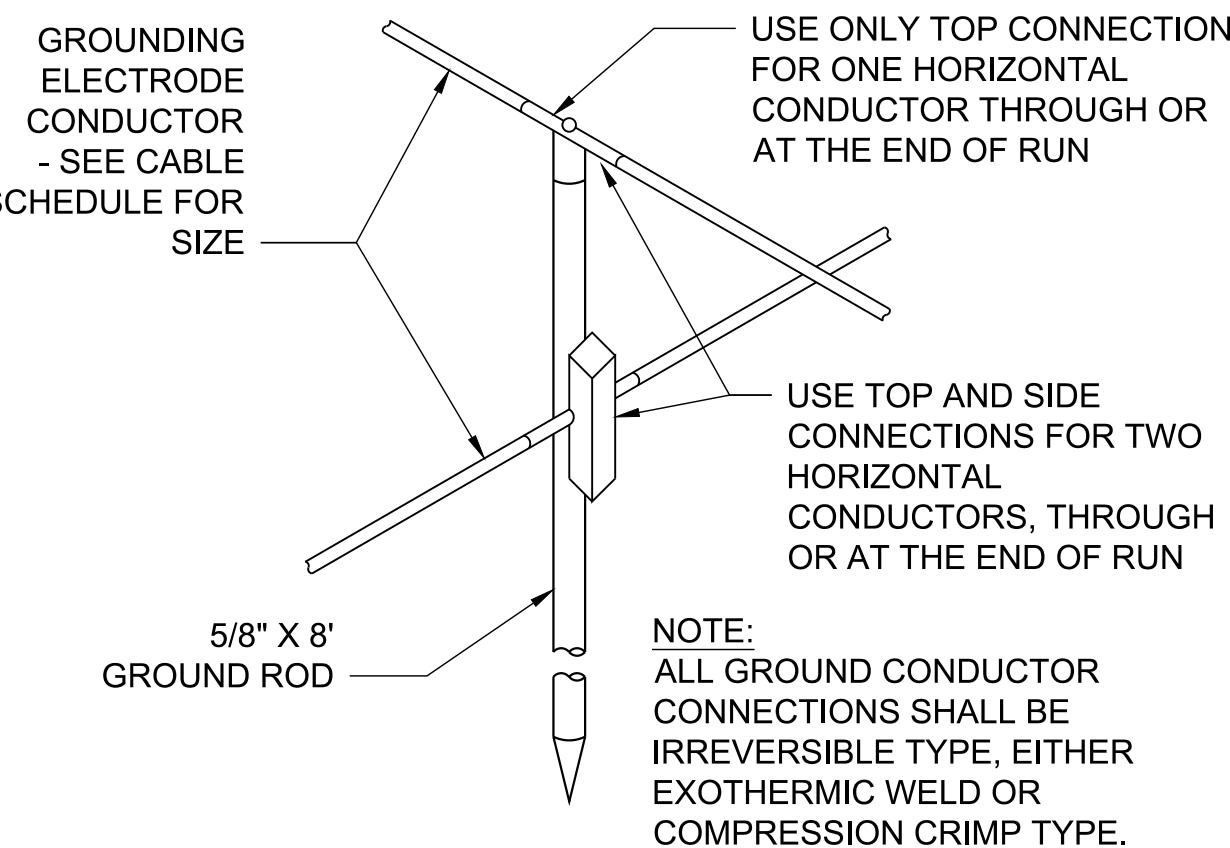
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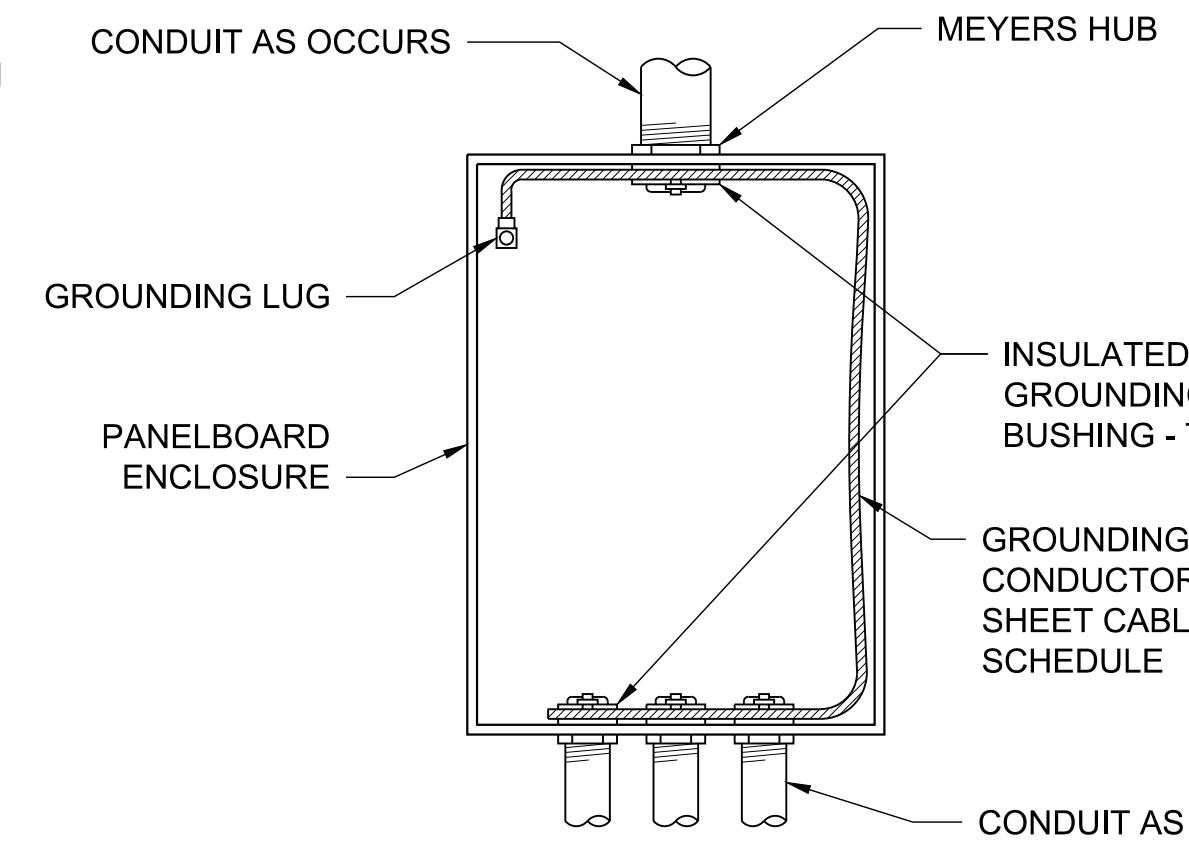
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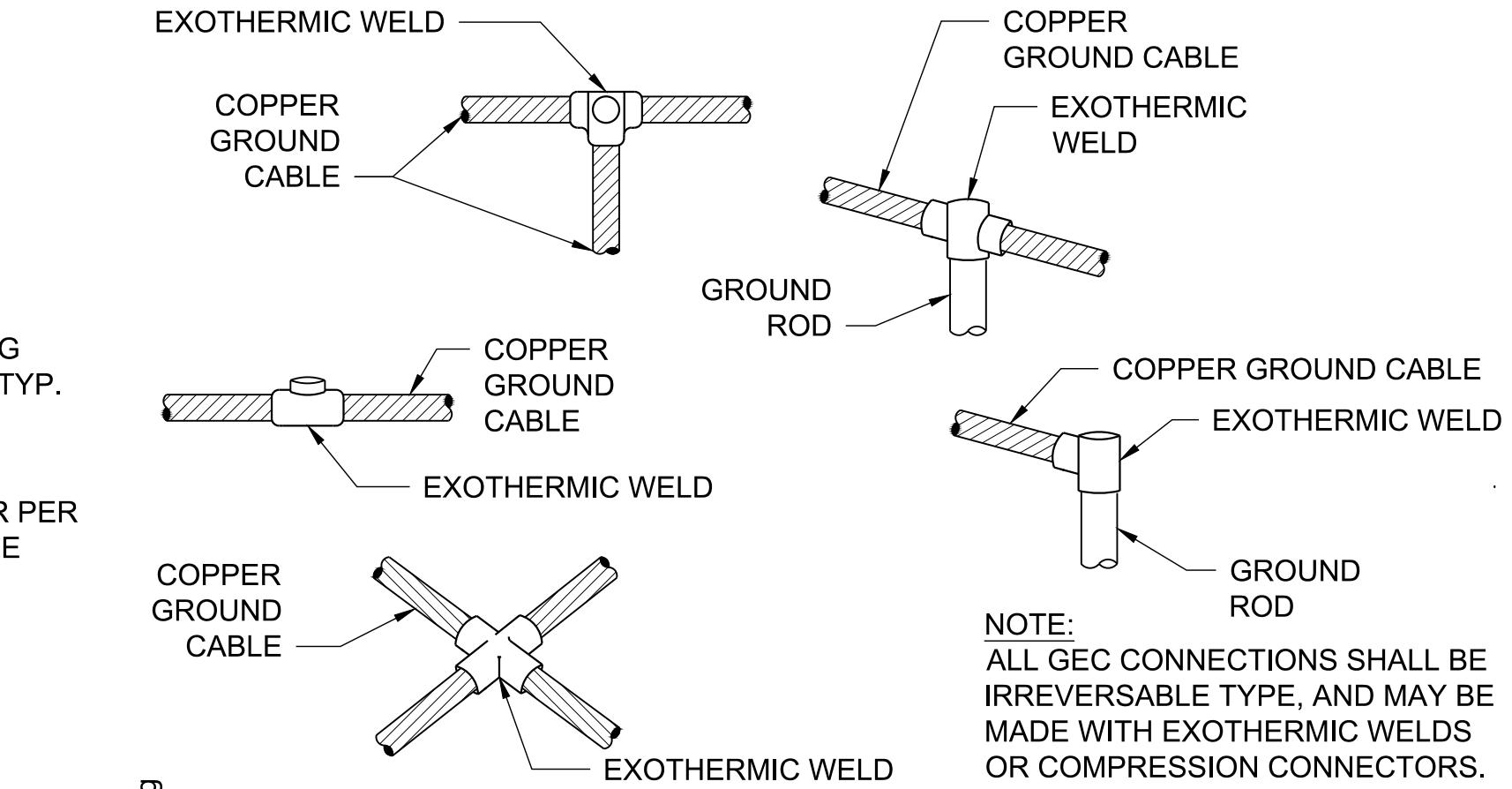
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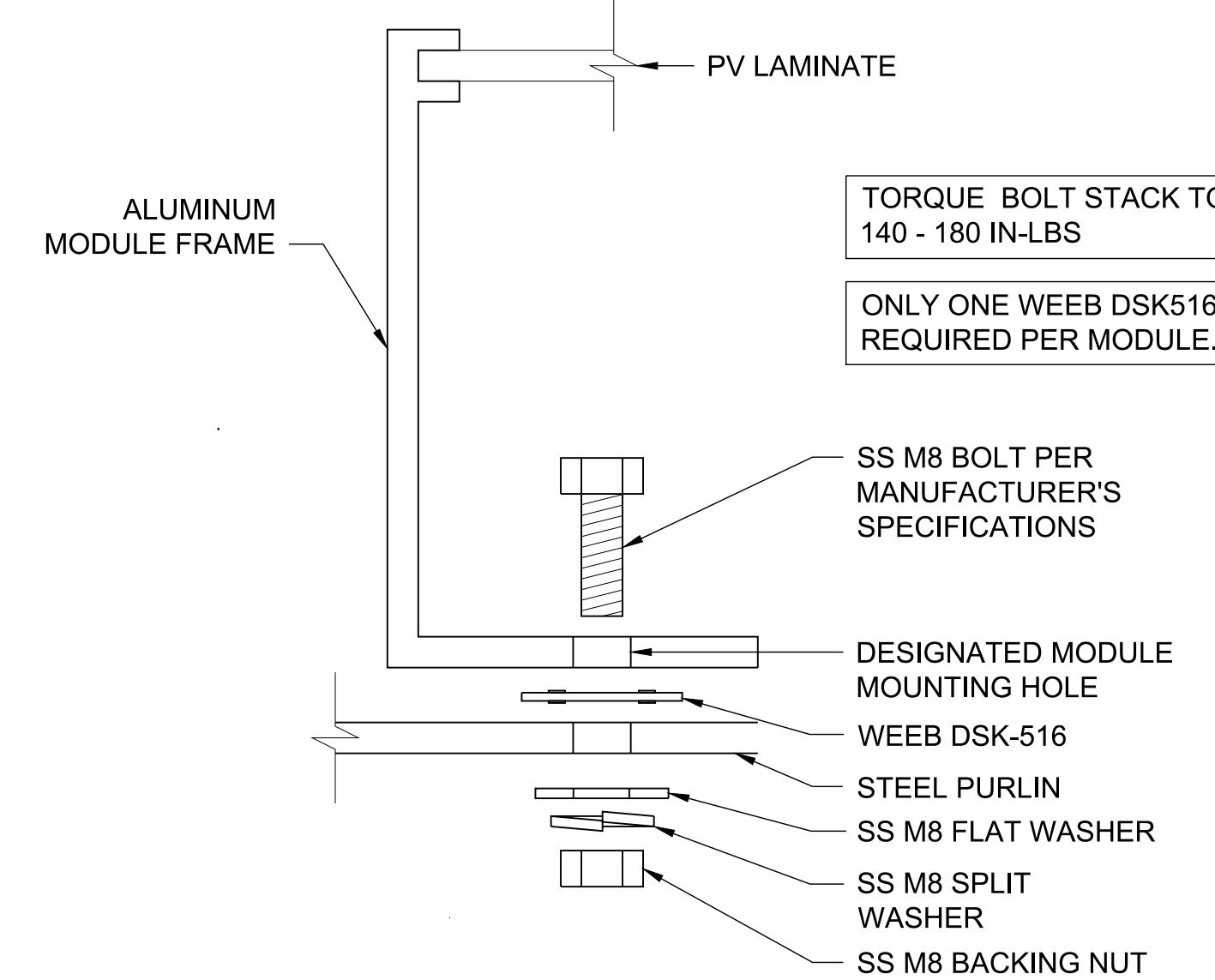
1 TYPICAL GROUND ROD



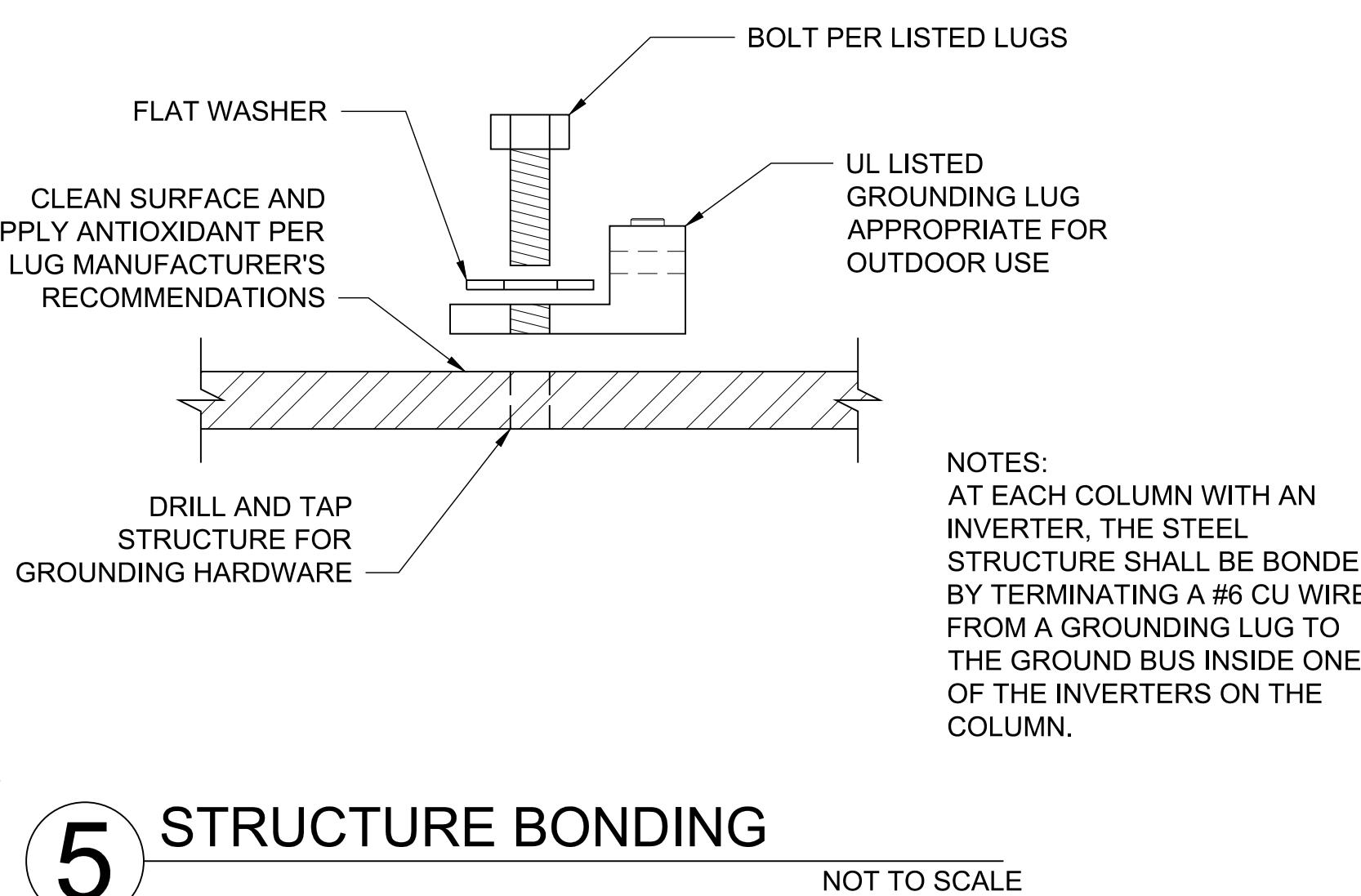
2 PANELBOARD GROUNDING



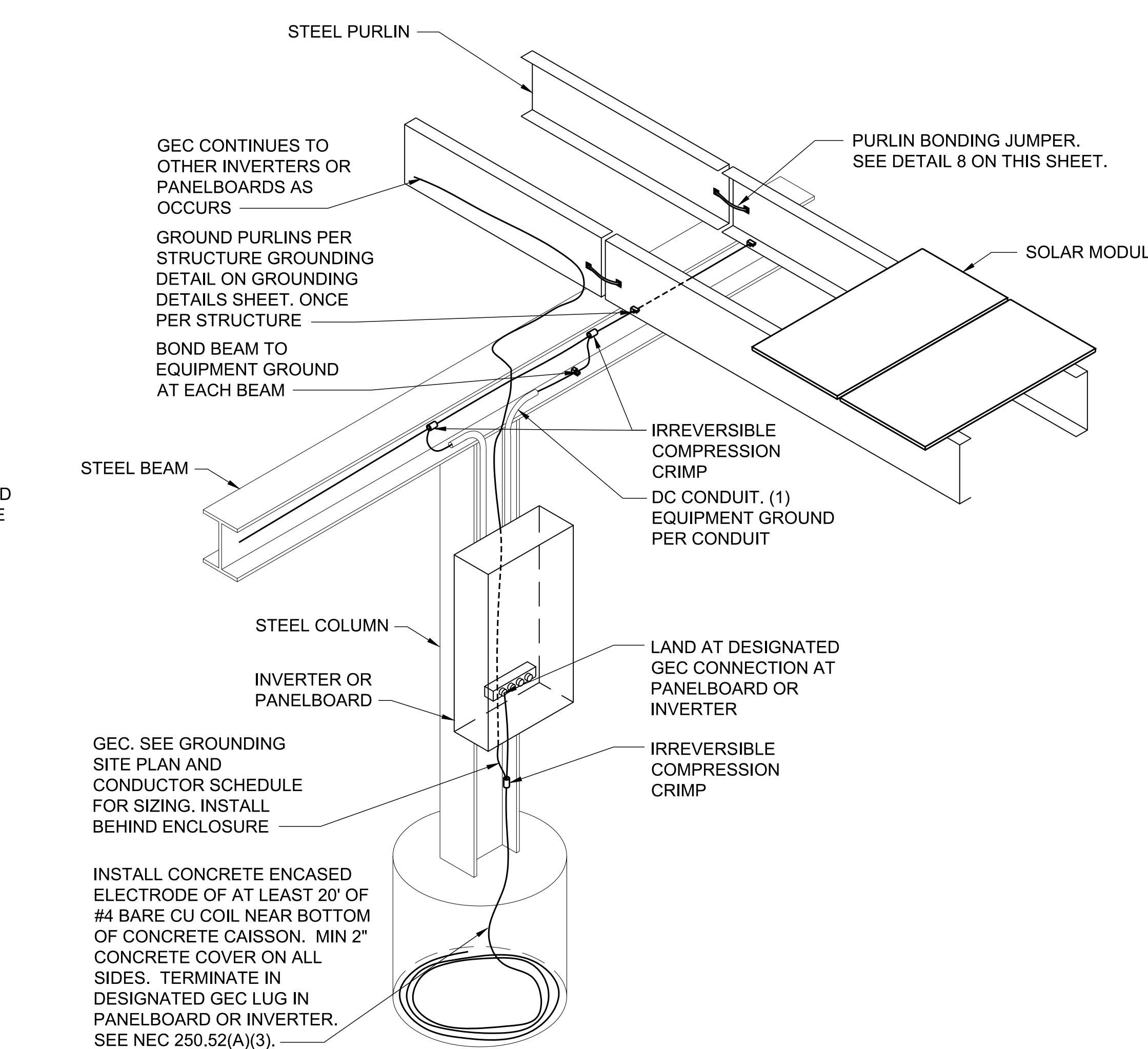
3 TYP. EXOTHERMIC WELDS



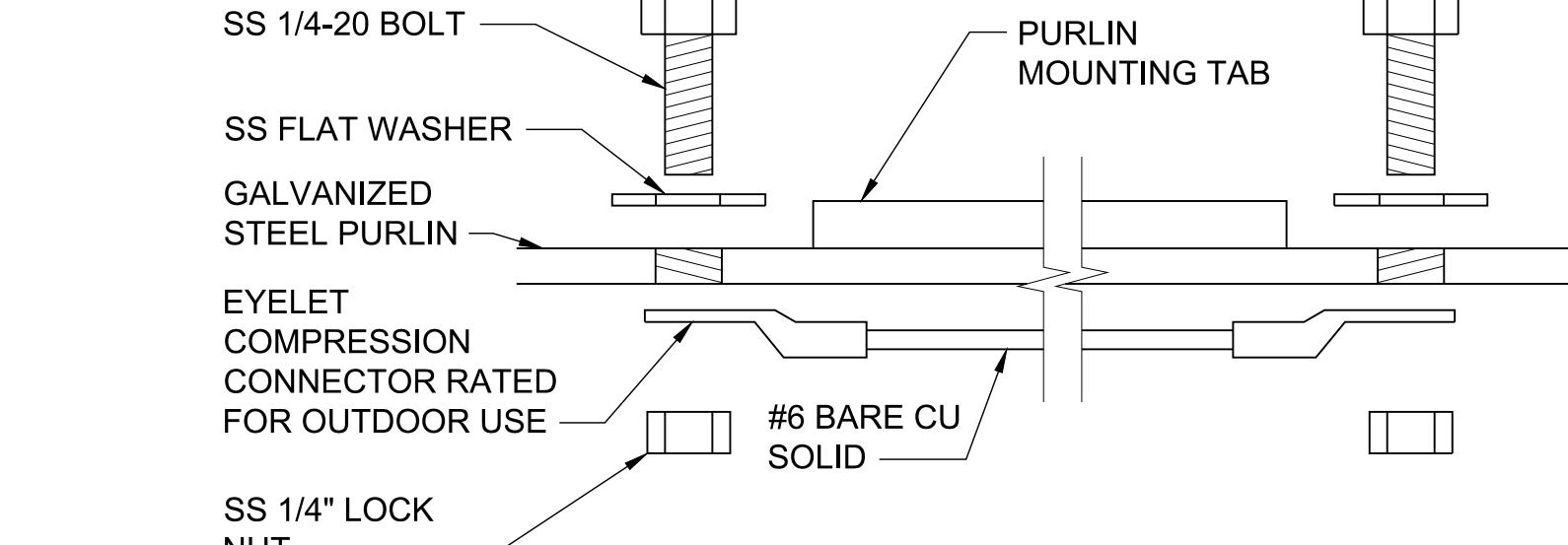
4 MODULE BONDING



5 STRUCTURE BONDING



6 STRUCTURE GROUNDING AND BONDING



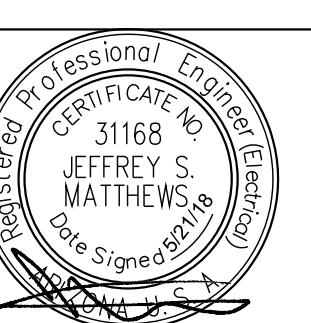
8 PURFLIN BONDING

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GROUNDING DETAILS



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PROJECT
SC17-040

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CHECKER	JM	5/21/18

SHEET #

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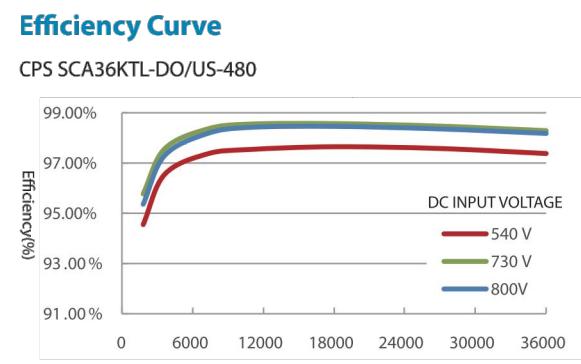
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**36kW, 1000Vdc String Inverters for North America**

The medium power series of grid-tied, transformerless inverters help to accelerate the use of 1000Vdc and three phase string architecture for commercial and small ground mount utility applications. A NRTL approved, cost effective alternative to central inverters enabling BoS cost savings, high harvest performance and modular design building blocks. These models provide up to 98.5% conversion efficiency and wide operating window of 240-950Vdc and dual MPPT's for maximum energy harvest.



- Maximum efficiency of 98.5%, CEC efficiency of 98%
- 3-level technology and enhanced control mechanism to achieve high efficiency over wide load range
- 2 MPPTs to achieve higher system efficiency
- Transformerless design

High Reliability

- Standard warranty: 10 years, extension up to 20 years
- Advanced thermal design, with variable speed fans
- Ground-fault detection and interruption circuit
- AFCI Integrated (per UL1699B, Factory Enabled Option)

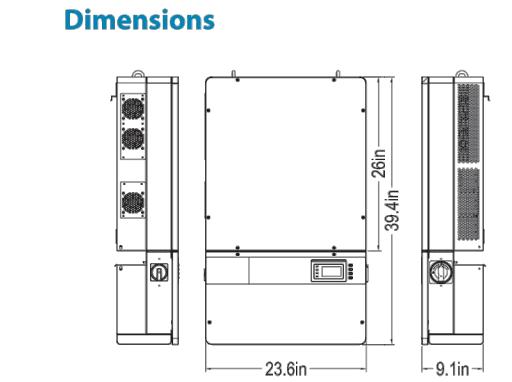


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Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

**CPS SCA36KTL-DO/US-480**

Model Name	
DC Input	CPS SCA36KTL-DO/US-480
Max. PV Power	54kw(27kw/MPPT)
Nominal DC Input Power	37kW
Max. DC Input Voltage	1000Vdc
Operating DC Input Voltage Range	240-950Vdc
Start-up DC Input Voltage / Power	330V/300W
Number of MPPT Trackers	2
MPPT Voltage Range	540-800Vdc
Operating Current (Imp)	70A(35A per MPPT)
Max Input Current (Isc)	125A
Number of DC Inputs	10 inputs, 5 per MPPT
DC Disconnection Type	Load rated DC switch
AC Output	
Rated AC Output Power	36kW
Max. AC Output Power	36kW
Rated Output Voltage	480Vac
Output Voltage Range*	422-528Vac
Grid Connection Type	30/PE/N (Neutral Optional)
Nominal AC Output Current @480Vac	43.5A
Rated Output Frequency	60Hz
Output Frequency Range*	57-63Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD	<3%
AC Disconnection Type	Load rated AC switch
System	
Topology	Transformerless
Max. Efficiency	98.5%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<20W<2W
Environment	
Protection Degree	NEMA 4X
Cooling	Variable speed cooling fans
Operating Temperature Range	-22°F to +140°F/ -30°C to +60°C (derating from +113°F/+45°C)
Storage Temperature Range	-40°F to +158°F/-40°C to +70°C
Operating Humidity	0-95%, non-condensing
Operating Altitude	13123ft/4000m (derating from 6561.7ft/2000m)
Display and Communication	
Display	LCD+LED
Communication	Standard:RS485(Modbus);Optional:TCP/CP Card
Mechanical	
Dimensions (WxHxD)	600x1000x230mm
Weight	inverter:121lbs/55kg;wirebox:24lbs/11kg
Installation Angle	15 - 90 degrees from horizontal
Safety	
Safety and EMC Standard	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15
Grid Standard	IEEE 1547-2003 (R2008), IEEE 1547-1-2005(R2011)HECO/Rule14

**Broad Adaptability**

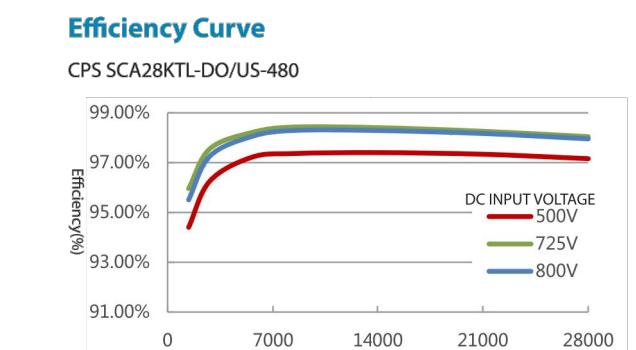
- NEMA 4X (IP65), outdoor application
- Utility interactive controls : Active power derating, reactive power control
- Separate wiring box design
- Integrated DC, AC disconnects
- Wide MPPT range for flexible string sizing
- 1000V Max. DC input voltage for flexible configuration
- 15 - 90 degree installation angle
- Compatible with Copper and Aluminum wire on AC side

Display	LCD+LED
Communication	Standard:RS485(Modbus);Optional:TCP/CP Card
Mechanical	
Dimensions (WxHxD)	600x1000x230mm
Weight	inverter:121lbs/55kg;wirebox:24lbs/11kg
Installation Angle	15 - 90 degrees from horizontal
Safety	
Safety and EMC Standard	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15
Grid Standard	IEEE 1547-2003 (R2008), IEEE 1547-1-2005(R2011)HECO/Rule14

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

**23/28kW, 1000Vdc String Inverters for North America**

The medium power series of grid-tied, transformerless inverters help to accelerate the use of 1000Vdc and three phase string architecture for commercial and small ground mount utility applications. A NRTL approved, cost effective alternative to central inverters enabling BoS cost savings, high harvest performance and modular design building blocks. These models provide up to 98.6% conversion efficiency and wide operating window of 300-900Vdc and dual MPPT's for maximum cash-flow generation.



- Maximum efficiency of 98.6%, CEC efficiency of 98%
- 3-level technology and enhanced control mechanism to achieve high efficiency over wide load range
- 2 MPPTs to achieve higher system efficiency
- Transformerless design

High Reliability

- NEMA 4X (IP65), outdoor application
- Utility interactive controls : Active power derating, reactive power control
- Separate wiring box design
- Integrated DC, AC disconnects
- Wide MPPT range for flexible string sizing
- 1000V Max. DC input voltage for flexible configuration
- 15 - 90 degree installation angle

Display	LCD+LED
Communication	Standard:RS485 (Modbus)
Mechanical	
Dimensions (WxHxD)	23.6x39.4x9.1in/600x1000x230mm
Weight	122lbs/55kg
Installation Angle	15 - 90 degrees from horizontal
Safety	
Safety and EMC Standard	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15
Grid Standard	IEEE1547-2003, IEEE1547-1-2005

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



Datasheet

CPS SCA23KTL-DO/US-480

Technical Data

Model Name	
DC Input	CPS SCA23KTL-DO/US-480
Max. PV Power	31kW (15.5kW/MPPT)
Nominal DC Input Power	24kW
Max. DC Input Voltage	1000Vdc
Operating DC Input Voltage Range	300-900Vdc
Start-up DC Input Voltage / Power	330V/300W
Number of MPPT Trackers	2
MPPT Voltage Range	480-800Vdc
Operator Current (Imp)	50A (25A per MPPT)
Max. Input Current (Isc)	58A (29A per MPPT)
Number of DC Inputs	8 inputs, 4 per MPPT
DC Disconnection Type	Load rated DC switch
AC Output	
Rated AC Output Power	23kW
Max. AC Output Power	23kW
Rated Output Voltage	480Vac
Output Voltage Range*	422-528Vac
Grid Connection Type	30/N/PE
Max AC Output Current	27.7A
Rated Output Frequency*	60Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD	<3%
AC Disconnection Type	Load rated AC switch
System	
Topology	Transformerless
Max. Efficiency	98.6%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<20W<2W
Environment	
Protection Degree	NEMA 4X
Cooling	Variable speed cooling fans
Operating Temperature Range	-22°F to +140°F/ -30°C to +60°C (derating from +113°F/+45°C)
Storage Temperature Range	-40°F to +158°F/-40°C to +70°C
Operating Altitude	13123ft/4000m (derating from 6561.7ft/2000m)
Operating Humidity	0-95%, non-condensing
Display and Communication	
Display	LCD+LED
Communication	Standard:RS485 (Modbus)
Mechanical	
Dimensions (WxHxD)	23.6x39.4x9.1in/600x1000x230mm
Weight	122lbs/55kg
Installation Angle	15 - 90 degrees from horizontal
Safety	
Safety and EMC Standard	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15
Grid Standard	IEEE1547-2003, IEEE1547-1-2005

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INVERTER SPECIFICATION SHEETS

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PROJECT
SC17-040
SHEET # E4.0
ENGINEER INITIAL DATE 5/18/18
DRAFTER FA 5/18/18
CHECKER JM 5/21/18

VERSION: 01

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GCL-P6/72

HIGH EFFICIENCY
MULTICRYSTALLINE MODULE

GCL-P6/72 310-330 Watt

330W

MAXIMUM POWER OUTPUT

17.0 %

MAXIMUM MODULE EFFICIENCY

0~+5W

POWER OUTPUT GUARANTEE

Trust GCL to Deliver Reliable Performance Over Time

- World-class manufacturer of crystalline silicon photovoltaic modules
- Fully automatic facility and world-class technology
- Rigorous quality control to meet the highest standard: ISO9001:2008, ISO 14001:2004 and OHSAS: 18001 2007
- Tested for harsh environments (salt mist, ammonia corrosion and sand blowing test: IEC 61701, IEC 62716, DIN EN 60068-2-6)
- Long term reliability test
- 2*100% EL inspection ensuring defect-free modules



Ideal choice for large scale ground installation



High conversion efficiency due to top quality wafer and advanced cell technology



Selected encapsulating material and stringent production process control ensure product highly PID resistant and small traits free



Passed sand blowing test, salt mist test and ammonia test; flexible for harsh environments



Optimized system performance by module level current sorting



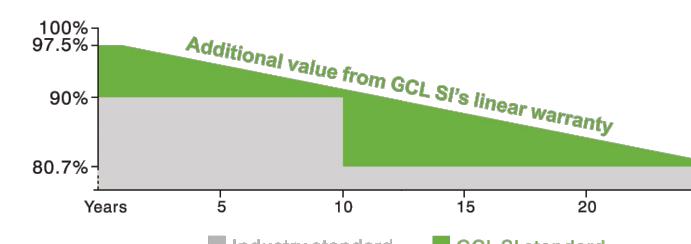
Special cell process ensures great performance in low irradiance environment



Additional yield and easy maintenance with high transparent self-cleaning glass

LINEAR PERFORMANCE WARRANTY

10 Years Product Warranty 25 Years Linear Power Warranty



Additional insurance backed by Swiss RE



Bringing Green Power to Life

GCL-P6/72

HIGH EFFICIENCY MULTICRYSTALLINE MODULE

GCL-P6/72 310-330 Watt

ELECTRICAL SPECIFICATION (STC)

TYPE (STC)	GCL-P6/72 310	GCL-P6/72 315	GCL-P6/72 320	GCL-P6/72 325	GCL-P6/72 330
Maximum Power (W)	310	315	320	325	330
Maximum Power Voltage (Vm/V)	37	37.2	37.4	37.6	37.8
Maximum Power Current (ImA)	8.38	8.47	8.56	8.64	8.73
Open Circuit Voltage (Voc/V)	45.4	45.6	45.8	46	46.2
Short Circuit Current (Isc/A)	9.99	9.08	9.17	9.24	9.33
Module Efficiency (%)	16.0	15.2	16.5	16.7	17.0
Power Output Tolerance (%)	+0~-5				

Values at Standard Test Conditions STC (Air Mass AM1.5, Irradiance 1000W/m², Cell Temperature 25°C).

ELECTRICAL DATA (NOCT)

Maximum Power (Pmax/W)	224.45	227.14	231.2	234.61	237.71
Maximum Power Voltage (Vm/V)	33.6	33.8	34.1	34.3	34.5
Maximum Power Current (ImA)	6.68	6.72	6.78	6.84	6.89
Open Circuit Voltage (Voc/V)	42.2	42.4	42.5	42.7	42.9
Short Circuit Current (Isc/A)	7.19	7.30	7.38	7.46	7.58

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

MECHANICAL DATA

Solar Cells	Poly 156*156mm (6 inches)
Cell Orientation	72 Cells (6*12)
Module Dimensions	1956*992*40mm (77 * 39.05 * 1.57 inches)
Weight	22.5kg/26kg
Glass	High transparency solar glass 3.2mm (0.13 inches) or 4mm (0.16 inches)
Backsheet	White
Frame	Silver, anodized aluminum alloy
J-Box	IP67 Rated
Cables	4.0mm ² (0.06 inches ²), 1200mm (47.2 inches)
Connector	Original MC4 or Compatible
Wind Load / Snow Load	2400Pa/5400Pa*

*More details please check the installation manual of GCLSI

TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.41%/°C
Temperature Coefficient of Vm	+0.32%/°C

Temperature Coefficient of Isc: +0.055%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC(IEC)

Max Series Fuse Rating: 15A

WARRANTY

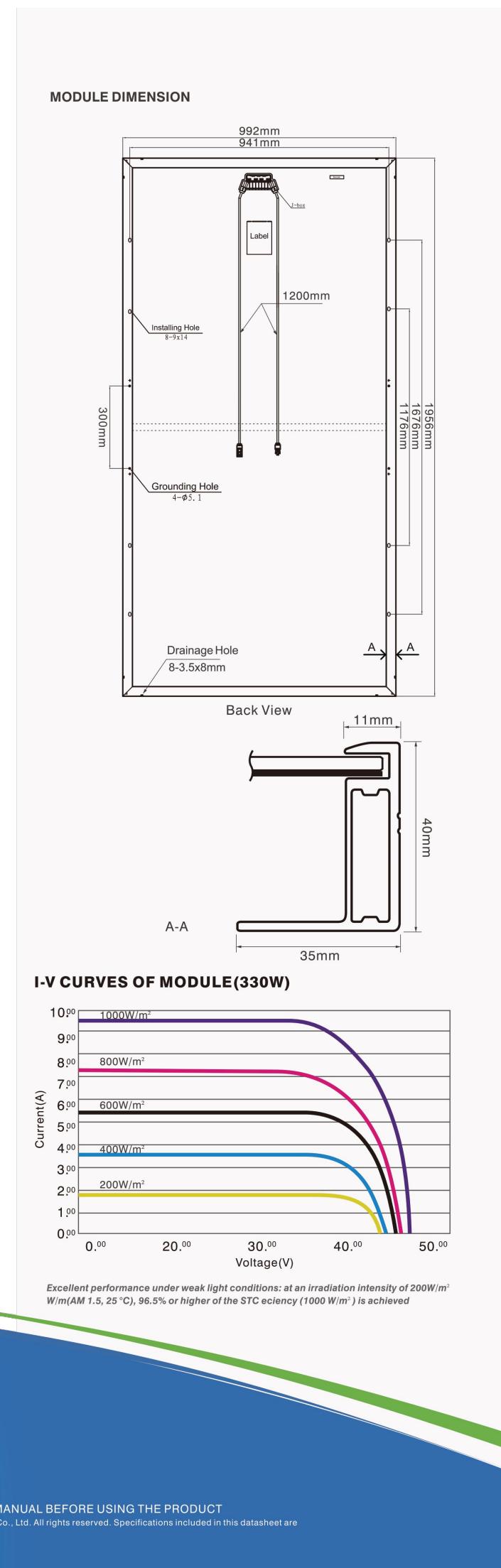
10 Years Product Workmanship Warranty	Modules per box: 26 pieces
25 Years Linear Power Warranty	Modules per 40'HD container: 624 pieces

(Please refer to GCL standard warranty for details)

PACKAGING CONFIGURATION

Modules per box: 26 pieces

Modules per 40'HD container: 624 pieces



Bringing Green Power to Life

GCL-P6/72-2016-V2.0
CAUTION: READ INSTALLATION MANUAL BEFORE USING THE PRODUCT
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MODULE SPECIFICATION SHEETS

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FAX: 520-307-4046

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PROJECT
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ENGINEER	INITIAL	DATE
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CHEKER	JM	

SHEET #

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GENERAL NOTES:

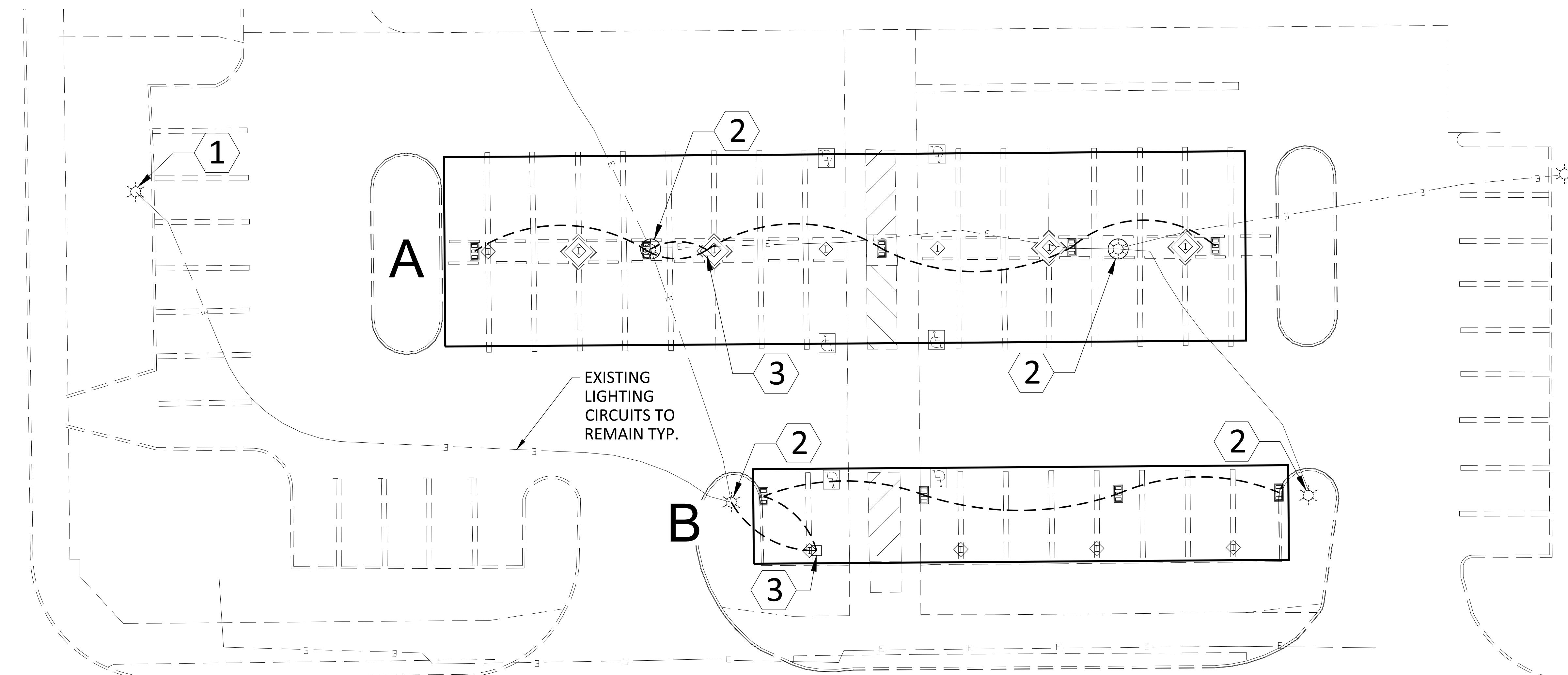
- NOT USED.
- LIGHTING CIRCUIT DESIGNATOR (—) IS INTENDED TO REPRESENT ELECTRICAL CONTINUITY ONLY. CONTRACTOR SHALL DETERMINE CIRCUIT ROUTING AND PROVIDE APPROPRIATE CONDUIT AND ADDITIONAL EQUIPMENT NEEDED FOR LIGHTING INSTALLATION.
- CONDUCTORS FOR NEW LIGHTING CIRCUITS SHALL BE 600V, XHHW-2, #10 AWG Cu MINIMUM WITH #10 AWG GROUND.
- CONDUIT FOR NEW LIGHTING CIRCUITS SHALL BE MIN 1" EMT ABOVE GROUND AND 1" SCHEDULE 40 PVC UNDERGROUND. USE 1" RMC FOR ABOVE GROUND LOCATIONS WHERE CONDUIT IS SUBJECT TO PHYSICAL DAMAGE.
- ALL NEW FIXTURES ARE FULL CUTOFF TYPE.

Fixture Notes:

-
-
-

KEY NOTES:

- EXISTING POLE AND LIGHT FIXTURE TO REMAIN.
- EXISTING LIGHT POLE AND 328W FIXTURES TO BE REMOVED. KEEP EXISTING LIGHTING CIRCUIT CONTINUITY, SEE SHEET EL1.1 DETAIL B.
- NEW CANOPY LIGHTING SYSTEM DISCONNECT, SEE SHEET EL1.1 DETAIL A.



A1 LIGHTING PLAN DETAIL

MAIN ARRAY

SCALE: NONE

NOTE:
NEW FIXTURES ARE FULL CUTOFF AND LOCATED UNDER CANOPY RESULTING IN A NET LUMEN ADDITION OF 0 PER THE 2012 TUCSON/PIMA COUNTY OUTDOOR LIGHTING CODE SECTION 401.2.1.4.

LOAD ADDITION / REDUCTION (CANOPY A)

FIXTURES REMOVED	Fixture Watts	Total Watts Removed	FixtureS ADDED	Total Watts ADDED	Net Power Addition (Reduction)
4	328W	1312W	(5) 37W	185W	(1127W)

LOAD ADDITION / REDUCTION (CANOPY B)

FIXTURES REMOVED	Fixture Watts	Total Watts Removed	FixtureS ADDED	Total Watts ADDED	Net Power Addition (Reduction)
2	328W	656W	(4) 37W	148W	(508W)

LUMINAIRE SCHEDULE

SYMBOL	QUANTITY	CATALOG NUMBER	DESCRIPTION	CUTOFF	LAMP	LUMENS	VOLT AMPS	WATTS	VOLTS
	9	DSXPG 10C 1000 3000K T5M MVOLT DNAXD	LED PARKING SERIES	FULL	(1) 37W LED, 3000K	2,576	41	37	120-277



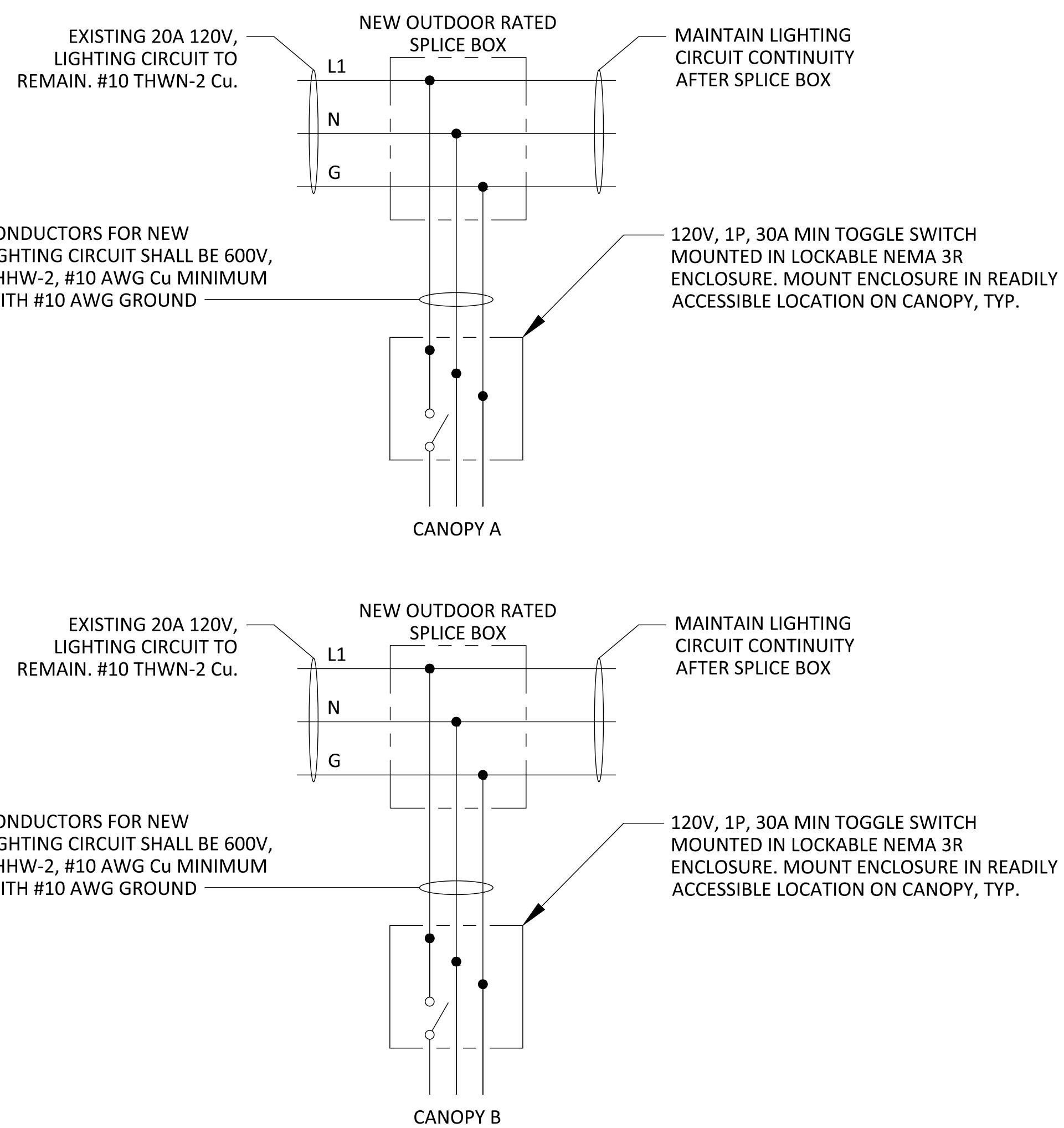
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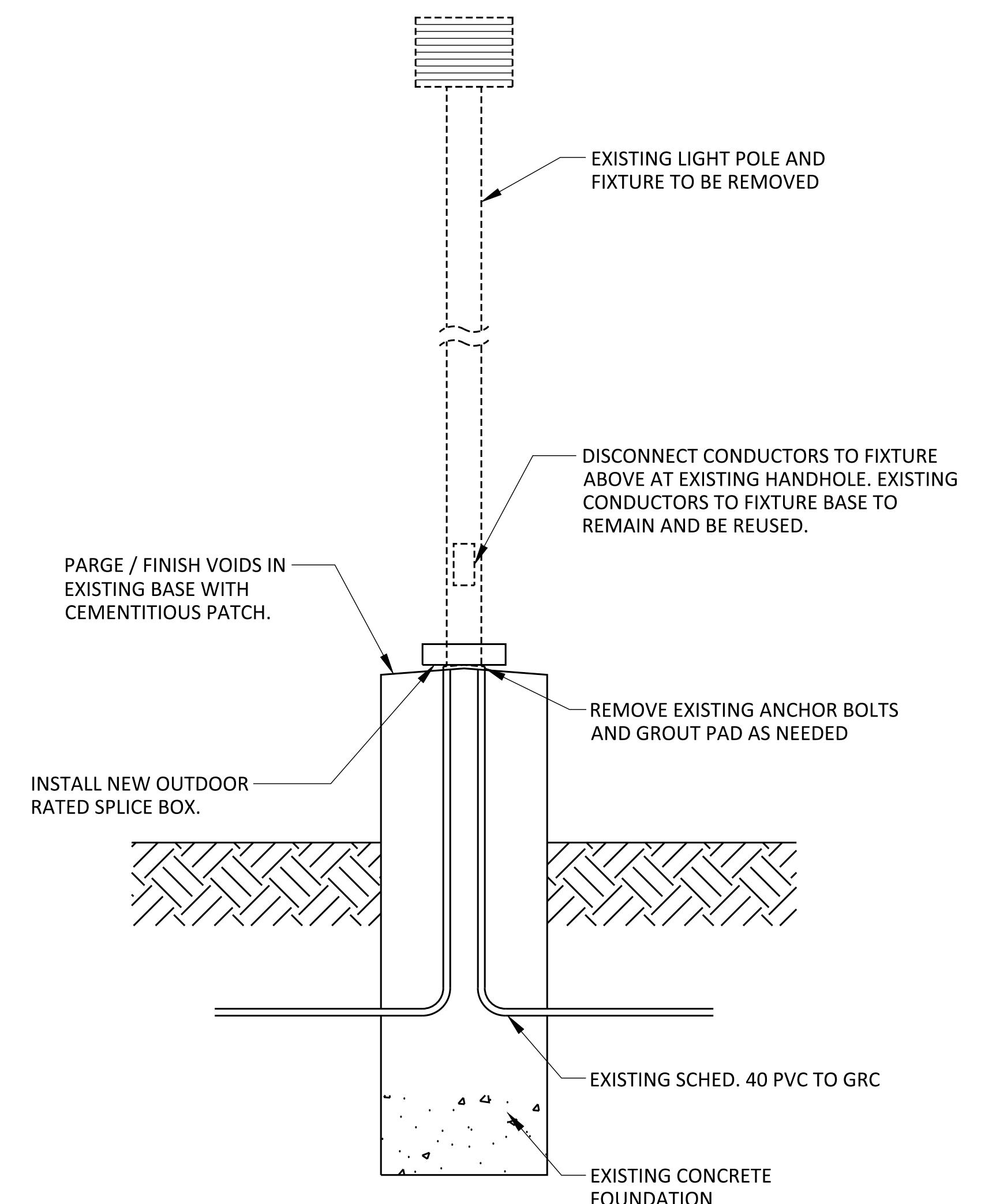
ENGINEER	INITIAL	DATE
	FA	5/16/18
DRAFTER	FA	5/16/18
CHECKER	JM	5/21/18
SHEET #		
EL1.0		

GENERAL NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL LABELING AT NEW DISCONNECT: "CANOPY LIGHTING DISCONNECT".

**A** LIGHTING THREE LINE PER SPLICE BOX

SCALE: NONE

**B** LIGHT FIXTURE DEMOLITION DETAIL

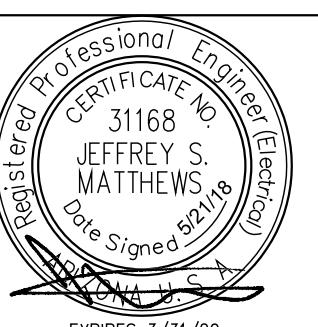
SCALE: NONE

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LIGHTING THREE LINE AND DETAILS



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ENGINEER	INITIAL	DATE
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CHECKER	JM	5/21/18

SHEET #

EL1.1

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D-Series
LED Surface Canopy



Specifications	
Length:	17-3/4" (45.1 cm)
Width:	8-1/2" (21.6 cm)
Height:	3-7/16" (8.7 cm)
Weight (max):	16 lbs (7.3 kg)

Ordering Information

EXAMPLE: DSXSC LED 20C 700 40K T5M MVOLT SRM DWHXD						
DSXSC LED	Series	LEDs	Drive current	Color temperature	Distribution	Voltage
DSXSC LED	10C	10 LEDs (one engine) ¹	350 350 mA	30K 3000K	TSE Type V, entryway ⁴	MVOLT ¹ 277 ⁵
	20C	20 LEDs (two engines)	530 530 mA	40K 4000K	TSM Type V, medium	120 ¹ 347 ⁶
	30C	30 LEDs (three engines)	700 700 mA	50K 5000K	TSW Type V, wide	208 ¹ 480 ⁶
				AMPC Amber phosphor converted ⁷	TSR Type V, rectangular	240 ¹
				ASY Asymmetric		

Options

Shipped installed	PIR/PIRC	Motion/ambient sensor for 15-30 mounting heights and typical application requirements for parking garage and tile 2 compliance ¹⁰	Shipped separately	BDS Bird bosh ¹¹	Finish required
HS House-side shield (housing view) ¹²	XAD PIR			DWHD White	
SF Single fuse (120, 277, 347) ¹³	XAD	XPoint ¹⁴ Wireless enabled		DNAZ Natural aluminum	
DF Double fuse (208, 240, 480) ¹⁴	XADN	XPoint ¹⁴ Wireless enabled for emergency circuit ¹⁵		DOBX Dark bronze	
SPD Surge protection device ¹⁶	XAD PIR	XPoint ¹⁴ Wireless enabled motion/ambient sensor for 8'-15' mounting heights ¹⁷			
GPH Cover finish housing housing ¹⁸	XAD PIRH	XPoint ¹⁴ Wireless enabled motion/ambient sensor for 8'-15' mounting heights ¹⁹			
PIR Motion/ambient sensor for 8'-15' mounting heights ¹³	XAD PIR	XPoint ¹⁴ Wireless enabled motion/ambient sensor for 15-30' mounting			
PIR Motion/ambient sensor for 8'-15' mounting heights ¹³	XADN PIR	XPoint ¹⁴ Wireless enabled motion/ambient sensor for emergency circuits for 8'-15' mounting heights ²⁰			
PIRC/FCV Motion/ambient sensor for 8'-15' mounting heights ¹³	XADN PIRH	XPoint ¹⁴ Wireless enabled motion/ambient sensor for emergency circuits for 15-30' mounting heights ²¹			
PIRC/FCV Motion/ambient sensor for 8'-15' mounting heights ¹³	XADN PIR	XPoint ¹⁴ Wireless enabled motion/ambient sensor for emergency circuits for 8'-15' mounting heights ²²			
PIRC/FCV Motion/ambient sensor for 8'-15' mounting heights ¹³	XADN PIR	XPoint ¹⁴ Wireless enabled motion/ambient sensor for emergency circuits for 15-30' mounting heights ²³			

Accessories

Notes
1 Available with 700mA or 1000mA option only.
2 Not available with 347 or 480V.
3 AMPC only available with 530mA or 700mA.
4 12PIR & PIR3FC3V specifies the Acuity Controls SBCR 10 ODP motion/ambient sensor, the PIR & PRH3FC2V specifies the Acuity Controls XPA 5000K motion/ambient sensor.
5 120V/240V/480V line voltage from 120-277V (50/60 Hz). Specify 120, 240, or 277 options with having SF options.
6 N/A with one light engine (1CQ). Only available with 700mA or 1000mA.
7 Also available as a separate accessory; see Accessories section for details.
8 Single fuse (SF) requires 120, 277 or 347 voltage option.
9 Double fuse (DF) requires 208, 240 or 480 voltage option.

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