

# BRISTOL

# LANDFILL SOLAR

## MINTURN FARM RD,

## BRISTOL, RHODE ISLAND 02809

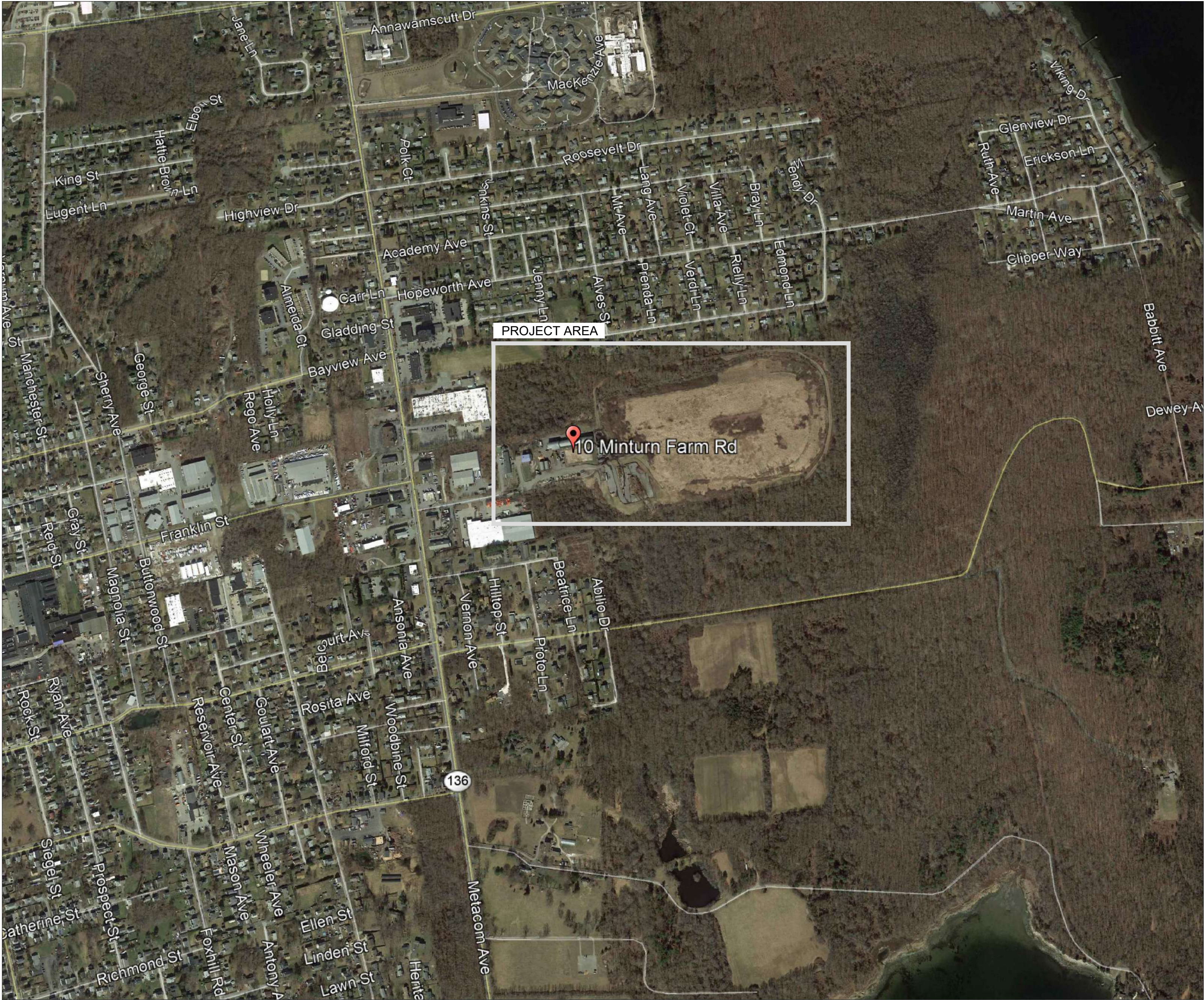
DRAWING LIST

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E-100	OVERALL ARRAY LAYOUT PLAN
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E-010	ELECTRICAL NOTES
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E-501	EQUIPMENT LABELS
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S250	TUB SPACING PLAN
S251	TUB SPACING PLAN (Hansol)
S403	TYPICAL ASSEMBLY EAST ELEVATION

PROJECT SUMMARY

PROJECT SIZE	
DC SYSTEM SIZE	6,875.68 KW
AC SYSTEM SIZE	4,980.00 KW
DC/AC RATIO	1.455
EQUIPMENT INFORMATION	
MODULE INFO	HANSOL 340TD-AN3 (340W) - 10,056 TOTAL (10,052 ACTIVE)
	HELIENE SOLAR 72P (325W) - 10,640 MODULES
TILT	20 DEGREES
AZIMUTH	171 DEGREES
INVERTER INFO	YASAKAWA SOLECTRIA XGI 1500 166/166 - 30 (QTY)
RACKING INFO	GAMECHANGE SOLAR FIXED TILT BALLASTED

OWNER: TOWN OF BRISTOL, RHODE ISLAND  
APPLICANT: NUGEN CAPITAL MANAGEMENT, LLC  
267 WARREN STREET  
WARREN, RI 02885



2 VICINITY MAP  
SCALE: 1" = 500'-0"

-1000'-0" -500'-0" 0'-0" 500'-0" 1000'-0"

NOT FOR  
CONSTRUCTION

REV	DESCRIPTION	DATE	CHK
1	90% DESIGN	01/03/2023	DB
0	90% DESIGN	12/15/2022	DB
8	PRELIMINARY LAYOUT	07/05/2022	DB
7	PRELIMINARY LAYOUT	06/13/2022	DB
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5	PRELIMINARY LAYOUT	04/25/2022	DB
4	PRELIMINARY LAYOUT	04/22/2022	DB
3	PRELIMINARY LAYOUT	04/12/2022	DB
2	PRELIMINARY LAYOUT	04/05/2022	DB

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DEVELOPER  
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PROJECT NAME AND ADDRESS  
BRISTOL LANDFILL  
SOLAR  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE  
TITLE PAGE

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	E-001 SHEET 1 OF 22



LEGEND

GENERAL SYMBOLS

EXISTING	PROPOSED	
		CURB (TYPE AS NOTED)
		BERM
		EDGE OF PAVEMENT / LIMIT OF PAVEMENT
		CATCH BASIN (OR GUTTER INLET, DROP INLET, CATCH BASIN CURB INLET)
		ELECTRIC HANDHOLE (NUMBER AS NOTED)
		ELECTRIC MANHOLE
		TELEPHONE MANHOLE (TYPE NOTED)
		WATER MANHOLE (TYPE NOTED)
		SEWER MANHOLE (TYPE NOTED)
		DRAINAGE MANHOLE (TYPE NOTED)
		GAS GATE / GAS SHUT OFF
		WATER GATE / WATER SHUT OFF
		HYDRANT
		FIRE ALARM BOX
		STREET LIGHT POLE
		UTILITY POLE
		SIGN
		GUY POLE
		ABANDONED UTILITY LINE (TYPE AS NOTED)
		DRAIN PIPE (SIZE AND SLOPE AS NOTED)
		SEWER MAIN (SIZE AS NOTED)
		SEWER SERVICE LINE
		ELECTRIC DUCT
		GAS MAIN (SIZE AS NOTED)
		GAS SERVICE LINE
		WATER MAIN (SIZE AS NOTED)
		WATER SERVICE LINE
		TELEPHONE DUCT (SIZE AS NOTED)
		MAIL BOX
		WOOD GUARD RAIL STEEL BEAM GUARD, WOOD OR STEEL POSTS (TYPE AS NOTED)
		STEEL GUARD RAIL, STEEL POSTS (TYPE NOTED)
		STONE WALL
		RETAINING WALL (TYPE NOTED)
		HIGHWAY/PROPERTY BOUND (TYPE AS NOTED)
		STATE HIGHWAY LAYOUT LINE (S.H.L.)
		CITY, TOWN, COUNTY OR STATE BOUNDARY LINE
		PROPERTY LINE
		TEMPORARY EASEMENT LINE
		PERMANENT EASEMENT LINE
		CONSTRUCTION BASELINE
		SURVEY LINE
		RAILROAD OR STREET RAILWAY TRACKS WITH SIDELINES
		WHEELCHAIR RAMP
		TREE (SIZE AND TYPE AS NOTED)
		HEDGE
		FENCE (SIZE AND TYPE AS NOTED)
		EDGE OF WETLAND W/ FLAGGED NUMBER
		EDGE OF RIVER/STREAM LINE
		50 FT. WETLAND BUFFER LIMIT
		100 FT. WETLAND BUFFER LIMIT
		100 FT. RIVER FRONT LIMIT
		200 FT. RIVER FRONT LIMIT
		WOODED AREA / LIMIT OF CLEARING
		SPOT GRADE
		SAW CUT LINE
		COMPOST FILTER SOCK
		PROPERTY LINE

EXISTING

PROPOSED

		Building
		CONTOUR MAJOR
		CONTOUR MINOR
		DRIVEWAY DIRT
		DRIVEWAY PAVED
		TEST PIT "QUALITY LEVEL A" DATA POINT
		BORING
		PROBE
		MONITORING WELL
		GAS VENT
		CAP / PLUG PIPE

ABBREVIATIONS

GENERAL

ABAN.	ABANDON	RT.	RIGHT
ADJ.	ADJUST	ROW	RIGHT-OF-WAY
AADT	ANNUAL AVERAGE DAILY TRAFFIC	RD.	ROAD
APPROX.	APPROXIMATE	SHT.	SHEET
	BASELINE	SHLD.	SHOULDER
BM	BENCH MARK	SDWK.	SIDEWALK
BIT.	BITUMINOUS	SB	SOUTH BOUND OR STONE BOUND
BB	BITUMINOUS BERM	SHLL	STATE HIGHWAY LAYOUT LINE
BC	BITUMINOUS CURB	STA.	STATION
BOS	BOTTOM OF SLOPE	ST.	STREET
BOW	BOTTOM OF WALL	TAN	TANGENT
BD OR BND	BOUND	T	TANGENT DISTANCE OF CURVE/TRUCK PERCENTAGE
BLDG.	BUILDING	TEB	TEMPORARY EASEMENT BOUNDARY
CEM.	CEMENT	TEMP.	TEMPORARY
	CENTER LINE	TOS	TOP OF SLOPE
CLF.	CHAIN LINK FENCE	TOW	TOP OF WALL
CONC.	CONCRETE	TP	TURNING POINT
CC	CONCRETE CURB	TYP.	TYPICAL
CONT.	CONTINUOUS	VAR.	VARIABLE
CONST.	CONSTRUCTION	VERT.	VERTICAL
CO.	COUNTY	VC	VERTICAL CURVE
CS	COMBINED SEWER PIPE	VGC	VERTICAL GRANITE CURB
D	DELTA ANGLE (CENTRAL ANGLE OF HORIZ. CURVE)	WB	WEST BOUND
DWY.	DRIVEWAY	WCR	WHEELCHAIR RAMP
EB	EAST BOUND		
EP, EOP	EDGE OF PAVEMENT		
EL	ELEVATION		
ETW	EDGE OF TRAVEL WAY		
EXIST.	EXISTING		
FLDSTN	FIELDSSTONE		
FDN.	FOUNDATION		
GAR.	GARAGE		
GRAN.	GRANITE		
GC	GRANITE CURB		
GE	GRANITE EDGING		
GRAV.	GRAVEL		
GD	GROUND		
HOR.	HORIZONTAL		
HMA	HOT MIX ASPHALT		
HO	HOUSE		
IP	IRON PIPE		
JCT	JUNCTION		
LT.	LEFT		
LP	LOW POINT		
MB	MAIL BOX		
MAX.	MAXIMUM		
MIN.	MINIMUM		
NB	NORTH BOUND		
NTS	NOT TO SCALE		
OC	ON CENTER		
PVMT.	PAVEMENT		
PGL	PROFILE GRADE LINE		
PROJ.	PROJECT		
	PROPERTY LINE		
PROP.	PROPOSED		
R	RADIUS OF CURVATURE		
RR	RAILROAD		
R&D	REMOVE & DISPOSE		
REM.	REMOVE		
REMODEL	REMODEL		
RET.	RETAINING		
R&R	REMOVE AND RESET		
R&S	REMOVE AND STACK		
		CB	CATCH BASIN
		CBCI	CATCH BASIN WITH CURB INLET
		CIP	CAST IRON PIPE
		CIT	CHANGE IN TYPE
		CL	CLASS (PIPE, CONCRETE, EXCAVATION, ETC.)
		COND.	CONDUIT
		CAP	CORRUGATED ALUMINUM PIPE
		CMP	CORRUGATED METAL PIPE
		CPP	CORRUGATED PLASTIC PIPE
		CSP	CORRUGATED STEEL PIPE
		CULV.	CULVERT
		CI	CURB INLET
		DI	DROP INLET
		DIP	DUCTILE IRON PIPE
		DMH	DRAIN MANHOLE
		EL. (OR ELEV.)	ELEVATION
		FM	FORCE MAIN
		F&C	FRAME AND COVER
		F&G	FRAME AND GRATE
		GIP	GALVANIZED IRON PIPE
		GG	GAS GATE
		GI	GUTTER INLET
		HDW	HEADWALL
		HYD.	HYDRANT
		INV.	INVERT ELEVATION
		LP	LIGHT POLE
		MH	MANHOLE
		PVC	POLY-VINYL-CHLORIDE PIPE
		PWW	PAVED WATER WAY
		R&D	REMOVE & DISPOSE
		RCP	REINFORCED CONCRETE PIPE (CLASS III UNLESS NOTED)
		SMH	SEWER MANHOLE
		SD	SUBDRAIN
		TSV&B	TAPPING SLEEVE, VALVE AND BOX
		TS	TRAFFIC SIGNAL
		TSC	TRAFFIC SIGNAL CONDUIT
		UP	UTILITY POLE
		VCP	VITRIFIED CLAY PIPE
		WG	WATER GATE
		WM	WATER METER/WATER MAIN
		WIP	WROUGHT IRON PIPE

GENERAL NOTES:

- VERTICAL DATUM - NAVD 88.
- THE EXISTING SURVEY IS A COMPILATION OF AN AERIAL SURVEY PERFORMED IN 2002 BY T3 GLOBAL STRATEGIES AND UPDATED IN 2020 BY DIPRETE ENGINEERING, INC.
- THE STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION (AMENDED AUGUST 2013) AND ALL APPROVED REVISIONS IN THE COMPILATIONS OF APPROVED SPECIFICATIONS, THE LATEST EDITION OF THE RHODE ISLAND STANDARD DETAILS WITH REVISIONS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE RIDOT TRAFFIC DESIGN MANUAL (OCTOBER 2004), THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z-60.1-1986) AND ALL AMENDMENTS WILL GOVERN.
- THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIG SAFE PRIOR TO ANY EXCAVATION OR DEMOLITION WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT OF WAYS OR EASEMENTS.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR THE RESOLUTION OF THE CONFLICT.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- TREES WITHIN THE LIMITS OF GRADING SHALL NOT BE REMOVED UNLESS APPROVED BY THE ENGINEER.

SOIL EROSION AND SEDIMENTATION CONTROL:

- ALL EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES WILL BE INSTALLED AND INSPECTED PRIOR TO THE START OF CONSTRUCTION. THE E&S CONTROLS SHALL BE CLEANED AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION OPERATIONS AND UNTIL ALL DISTURBED AREAS ARE STABILIZED AFTER CONSTRUCTION IS COMPLETE. E&S CONTROLS SHALL BE INSPECTED AND CLEANED AFTER ALL STORM EVENTS AND UPON THE REQUEST OF THE OWNER OR ENGINEER. CONTRACTOR WILL MAINTAIN AN ADEQUATE SUPPLY OF SILT SOCK ON SITE TO BE INSTALLED IN AREAS WHERE EXISTING E&S CONTROLS HAVE FAILED OR AS DETERMINED NECESSARY BY THE ENGINEER. NO WORK OR STORAGE OF CONSTRUCTION EQUIPMENT WILL BE PERMITTED OUTSIDE THE LIMIT OF DISTURBANCE ADJACENT TO THE WETLAND. TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROLS (SILT SOCKS, ETC.) SHALL BE MAINTAINED UNTIL ALL EXPOSED SOILS ARE SATISFACTORILY STABILIZED.
- ALL CATCH BASINS SHALL BE PROTECTED WITH FILTER FABRIC INSERTS IN UNPAVED LOCATIONS AND PAVED OR OTHERWISE IMPERVIOUS AREAS FOR THE DURATION OF THE PROJECT.
- CONSTRUCTION ENTRANCES CONSISTING OF STONE STABILIZED PAD SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR TO PREVENT TRACKING OF OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS.
- ALL REFERENCED SOIL EROSION AND SEDIMENTATION CONTROLS INCLUDING MATERIALS USED, APPLICATION RATES AND THE INSTALLATION PROCEDURES SHALL BE PERFORMED PER THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK", LATEST EDITION, WITH ALL SOIL CONSERVATION SERVICE, AND/OR THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
- UPON COMPLETION AND ACCEPTANCE OF SITE PREPARATION AND INITIAL INSTALLATION OF EROSION, RUNOFF, AND SEDIMENT CONTROLS AND TEMPORARY POLLUTION PREVENTION MEASURES, THE OPERATOR SHALL INITIATE APPROPRIATE STABILIZATION PRACTICES DURING ALL PHASES OF CONSTRUCTION ON ALL DISTURBED AREAS AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED.
- ANY DISTURBED AREAS THAT WILL NOT HAVE ACTIVE CONSTRUCTION ACTIVITY OCCURRING WITHIN 14 DAYS MUST BE STABILIZED USING THE CONTROL MEASURES, SUCH AS EROSION CONTROL MATTING, AND IN ACCORDANCE WITH APPLICABLE MEASURES SPECIFIED IN THE *RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK* (AS AMENDED).
- SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN TWENTY FOUR HOURS AFTER AN EVENT WHICH GENERATES 0.25 INCHES OF RAIN IN A TWENTY FOUR HOUR PERIOD. CLEANOUT OF ACCUMULATED SEDIMENT BEHIND THE SILT SOCK SHALL BE PERFORMED WHEN 1/4 THE ORIGINAL HEIGHT OF THE SILT SOCK BECOMES FILLED WITH SEDIMENT. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE HAS BEEN REMOVED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
- VEGETATIVE PRACTICES ON DISTURBED SOILS, INCLUDING STOCKPILES, SHALL BEGIN AS SOON AS POSSIBLE BUT NO LATER THAN 14 DAYS AFTER THE LAST ACTIVITY IN THAT AREA UNLESS ACTIVITY IS TO RESUME WITHIN 21 DAYS.
- AREAS HAVING SLOPES GREATER THAN OR EQUAL TO 3H:1V SHALL BE STABILIZED WITH EROSION CONTROL MATS OR BLANKETS IN COMBINATION WITH SEEDING, AS INDICATED ON THE DRAWINGS AND SPECIFIED.
- EXCESS SOIL, STUMPS, TREES, ROCKS, BOULDERS, AND OTHER REFUSE SHALL BE DISCARDED OFF-SITE IN AN APPROPRIATE UPLAND LOCATION, OUTSIDE OF ALL REGULATED WETLAND AREAS.

UTILITIES

CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CL	CLASS (PIPE, CONCRETE, EXCAVATION, ETC.)
COND.	CONDUIT
CAP	CORRUGATED ALUMINUM PIPE
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
CSP	CORRUGATED STEEL PIPE
CULV.	CULVERT
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DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
EL. (OR ELEV.)	ELEVATION
FM	FORCE MAIN
F&C	FRAME AND COVER
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UP	UTILITY POLE
VCP	VITRIFIED CLAY PIPE
WG	WATER GATE
WM	WATER METER/WATER MAIN
WIP	WROUGHT IRON PIPE

REV	DESCRIPTION	DATE	CHK

NOT FOR  
CONSTRUCTION



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PROJECT NAME AND ADDRESS

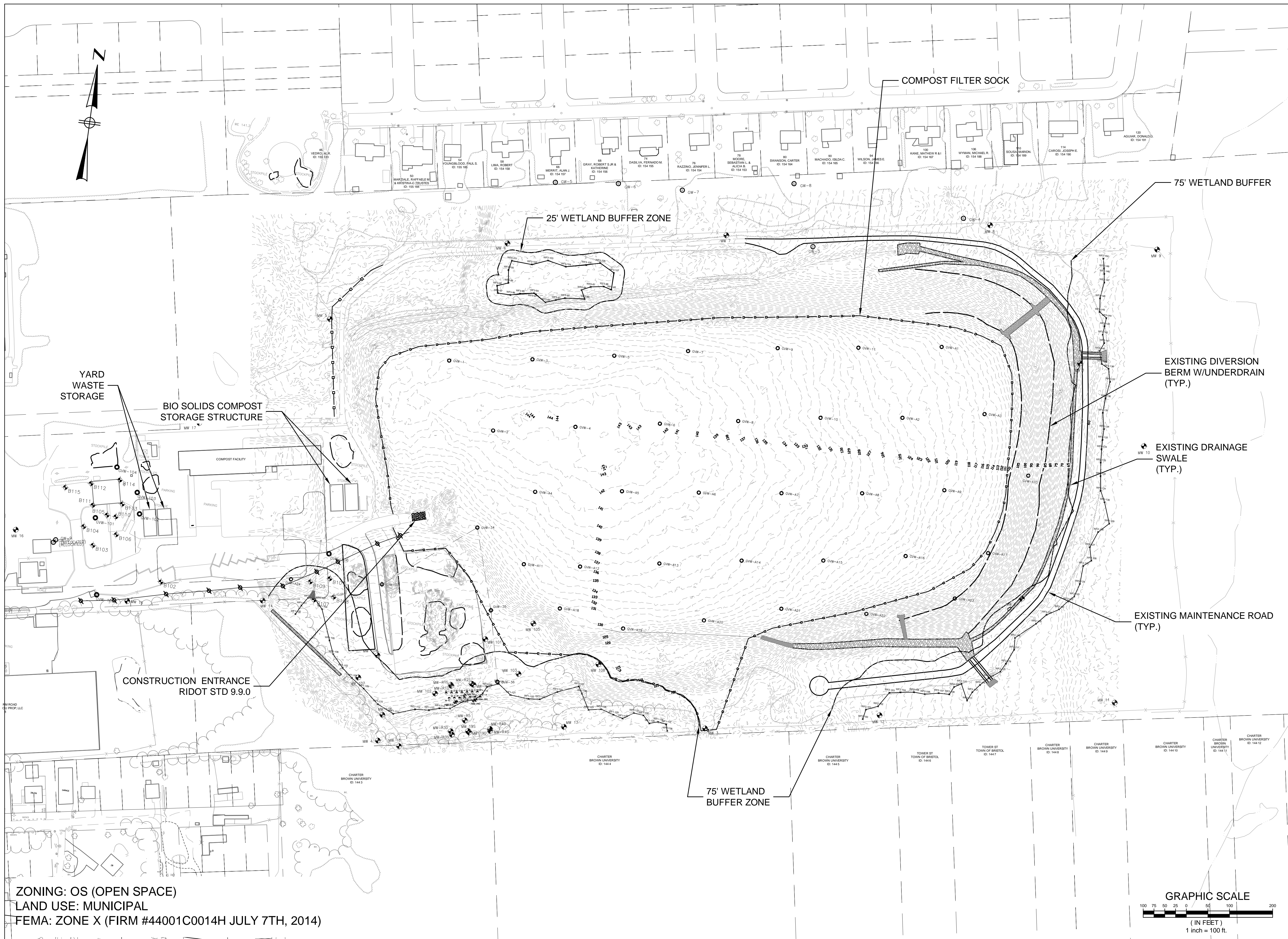
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE

GENERAL NOTES &  
LEGEND

ENGINEER: SJR	DRAWN BY: JC
PROJECT NO. 6851	SHEET NO.
CREATION DATE 10/16/2020	C-001
SCALE NOT TO SCALE	SHEET 2 OF 22





REV	DESCRIPTION	DATE	CHK

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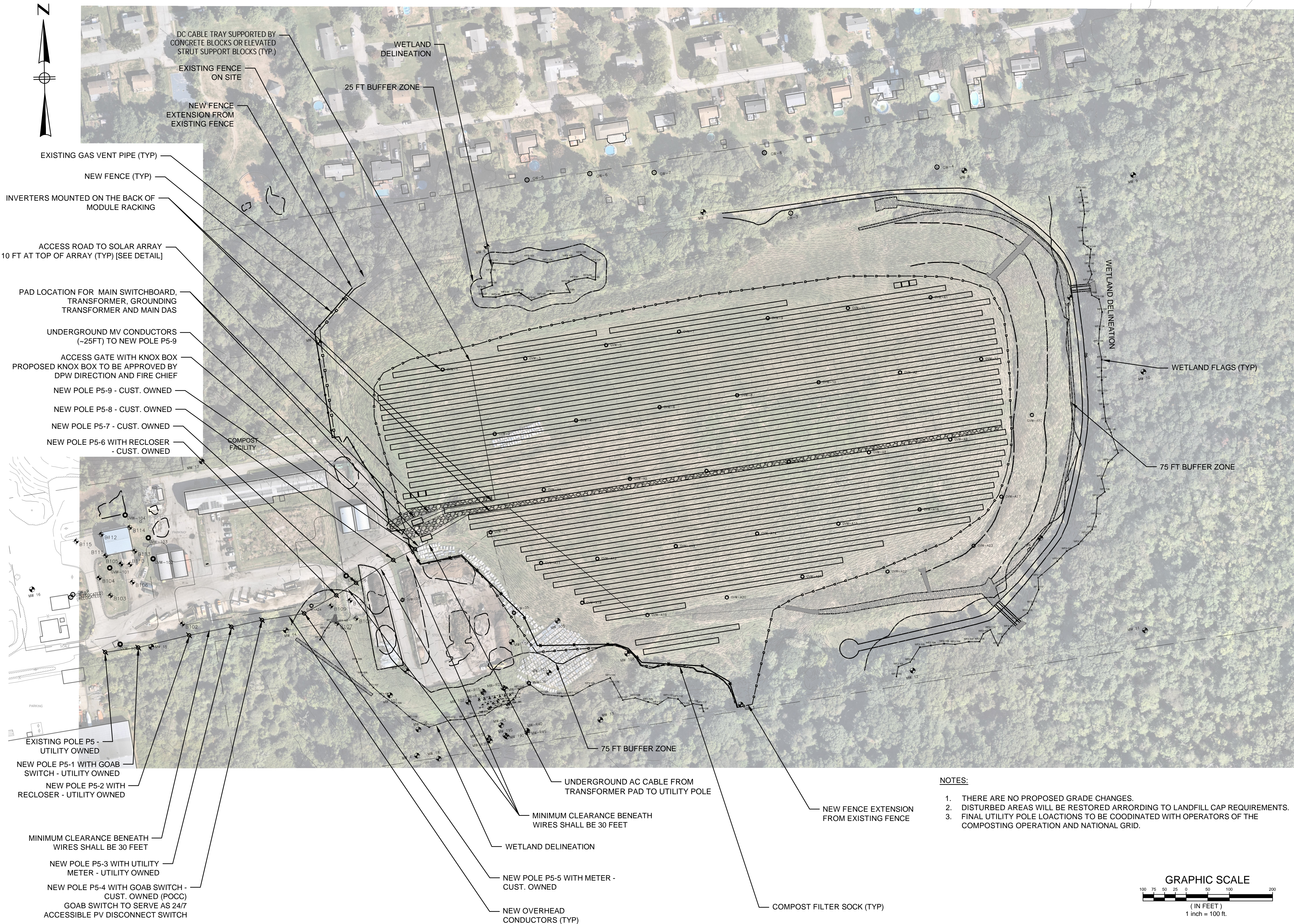
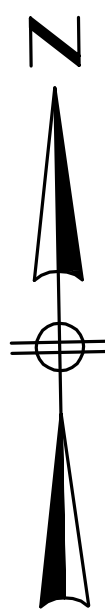
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
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SHEET TITLE

EXISTING CONDITIONS SITE PREP  
PLAN

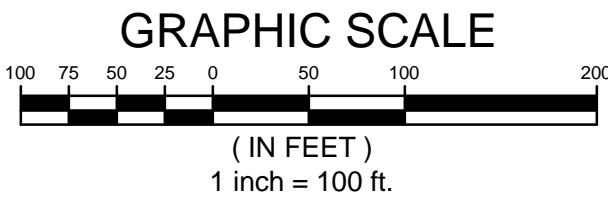
ENGINEER: SJR	DRAWN BY: JC
PROJECT NO. 6851	SHEET NO.
CREATION DATE 10/16/2020	<b>C-100</b>
SCALE 1" = 100'	SHEET 3 OF 22





NOTES:

1. THERE ARE NO PROPOSED GRADE CHANGES.
2. DISTURBED AREAS WILL BE RESTORED ACCORDING TO LANDFILL CAP REQUIREMENTS.
3. FINAL UTILITY POLE LOACTIONS TO BE COORDINATED WITH OPERATORS OF THE COMPOSTING OPERATION AND NATIONAL GRID.



REV	DESCRIPTION	DATE	CHK

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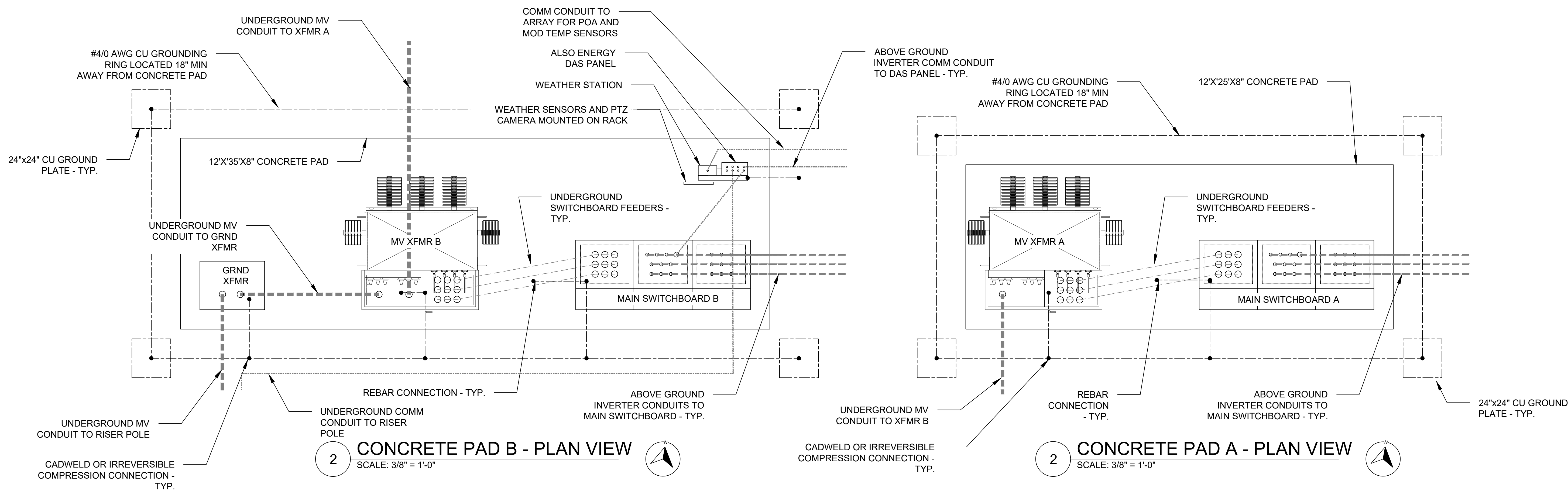
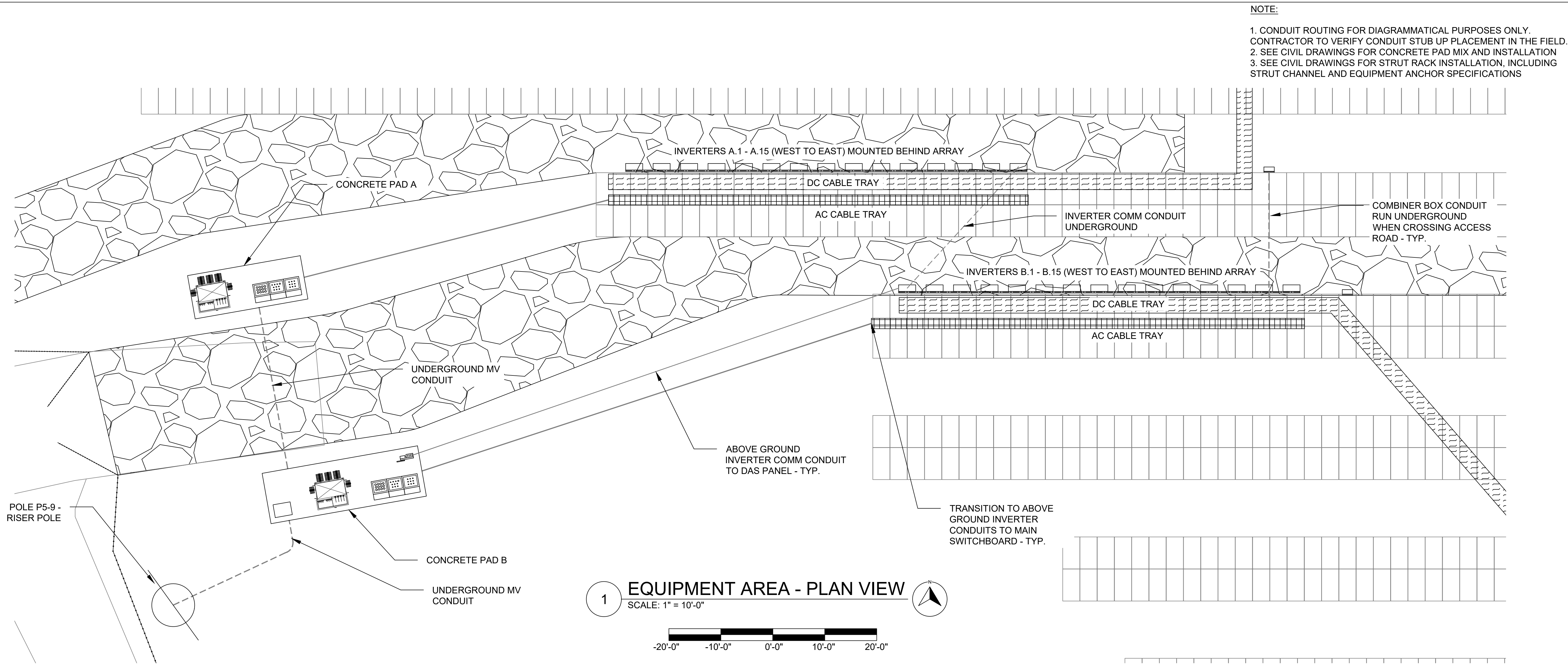
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE

OVERALL ARRAY LAYOUT PLAN

ENGINEER: PROJECT NO. CREATION DATE SCALE	SJR 6851 10/16/2020 1" = 100'
DRAWN BY: SHEET NO.	JC E-100 SHEET 4 OF 22





NOT FOR  
CONSTRUCTION

2	90% DESIGN	01/18/2023	DB
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REV	DESCRIPTION	DATE	CHK

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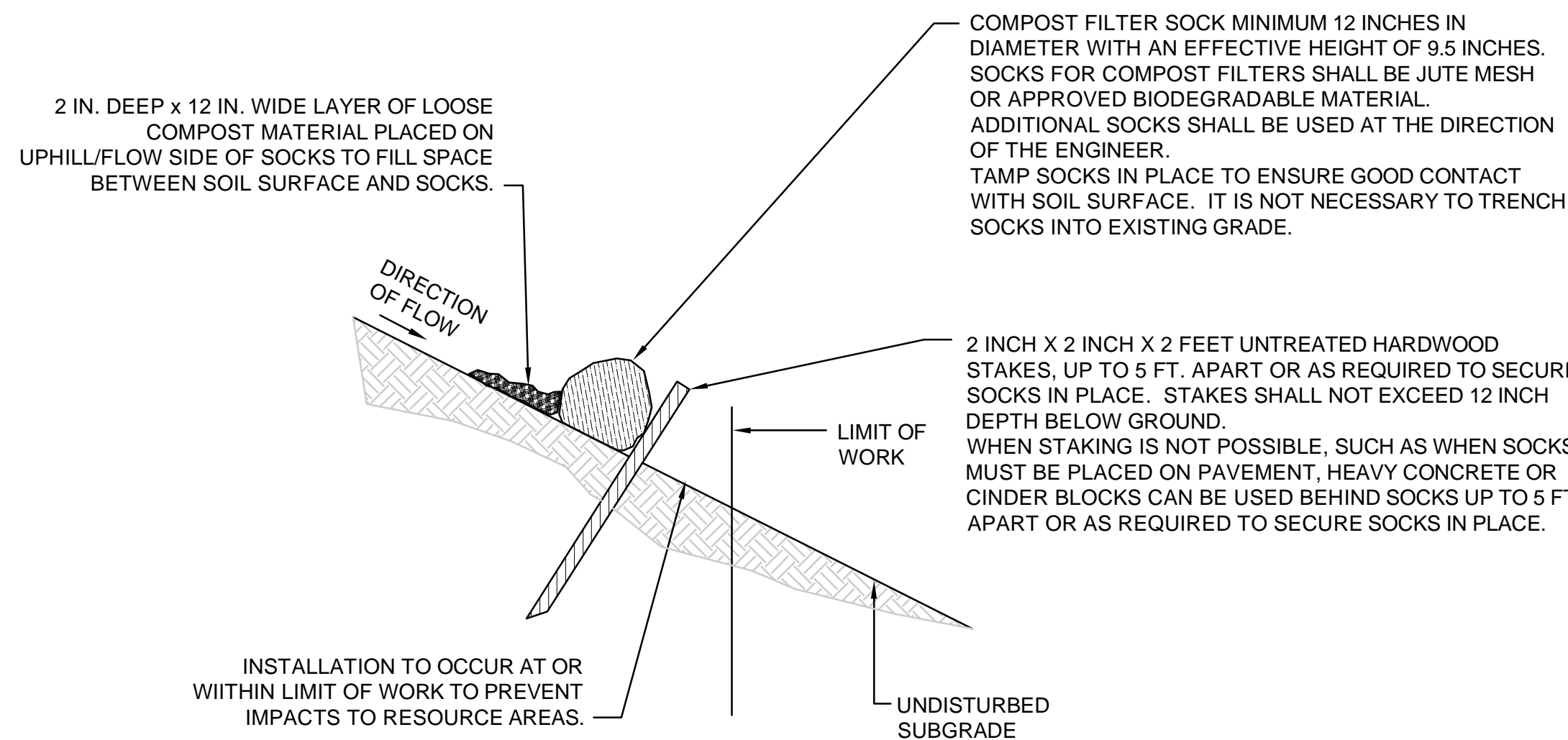
SHEET TITLE

EQUIPMENT AREA PLAN

ENGINEER:	DB	DRAWN BY:	AJ
PROJECT NO.	01-19-001	SHEET NO.	
CREATION DATE	12/31/2019		

**E-101**  
SHEET 5 OF 22



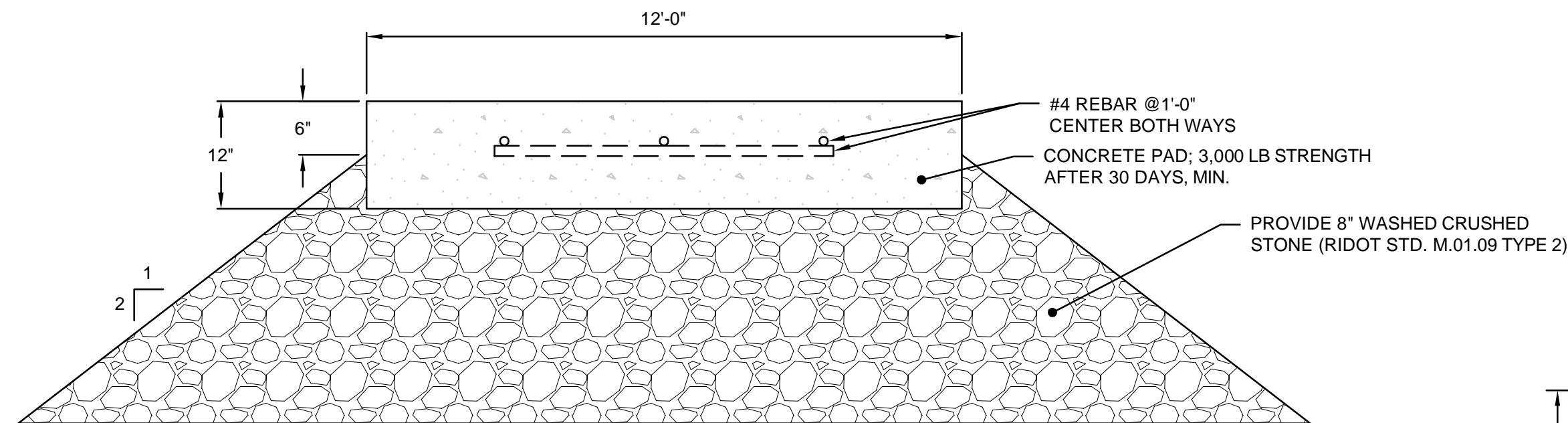


NOTES:

1. PROVIDE A MINIMUM SOCK DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER SOCK DIAMETER OR ADDITIONAL COURSING OF FILTER SOCKS TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL SOCKS ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. CONFIGURE SOCKS AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.

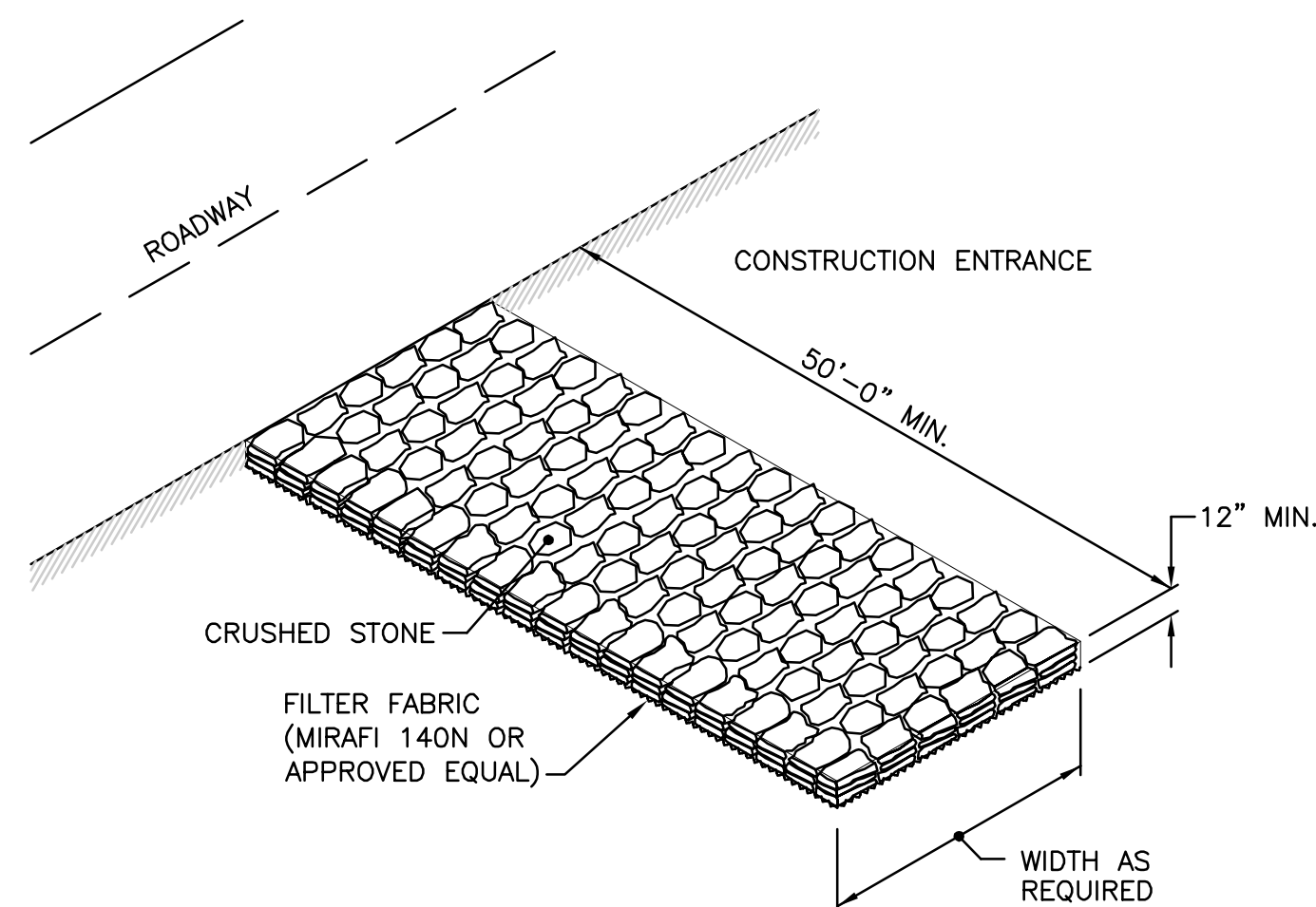
COMPOST FILTER SOCK

NOT TO SCALE



GENERATOR PAD DETAIL

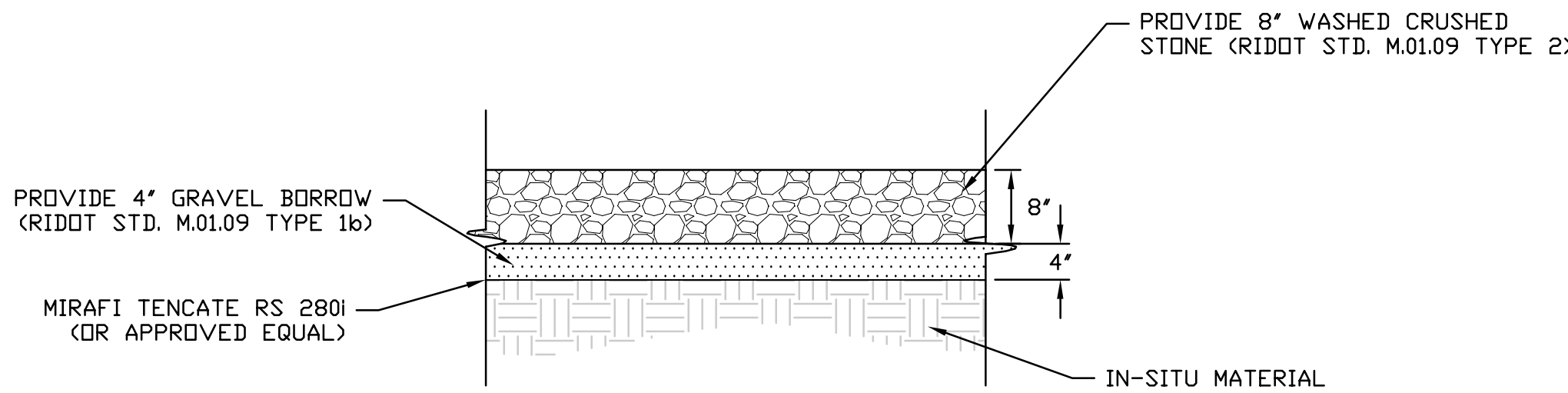
NOT TO SCALE



NOTE:  
SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

CONSTRUCTION ACCESS

NOT TO SCALE

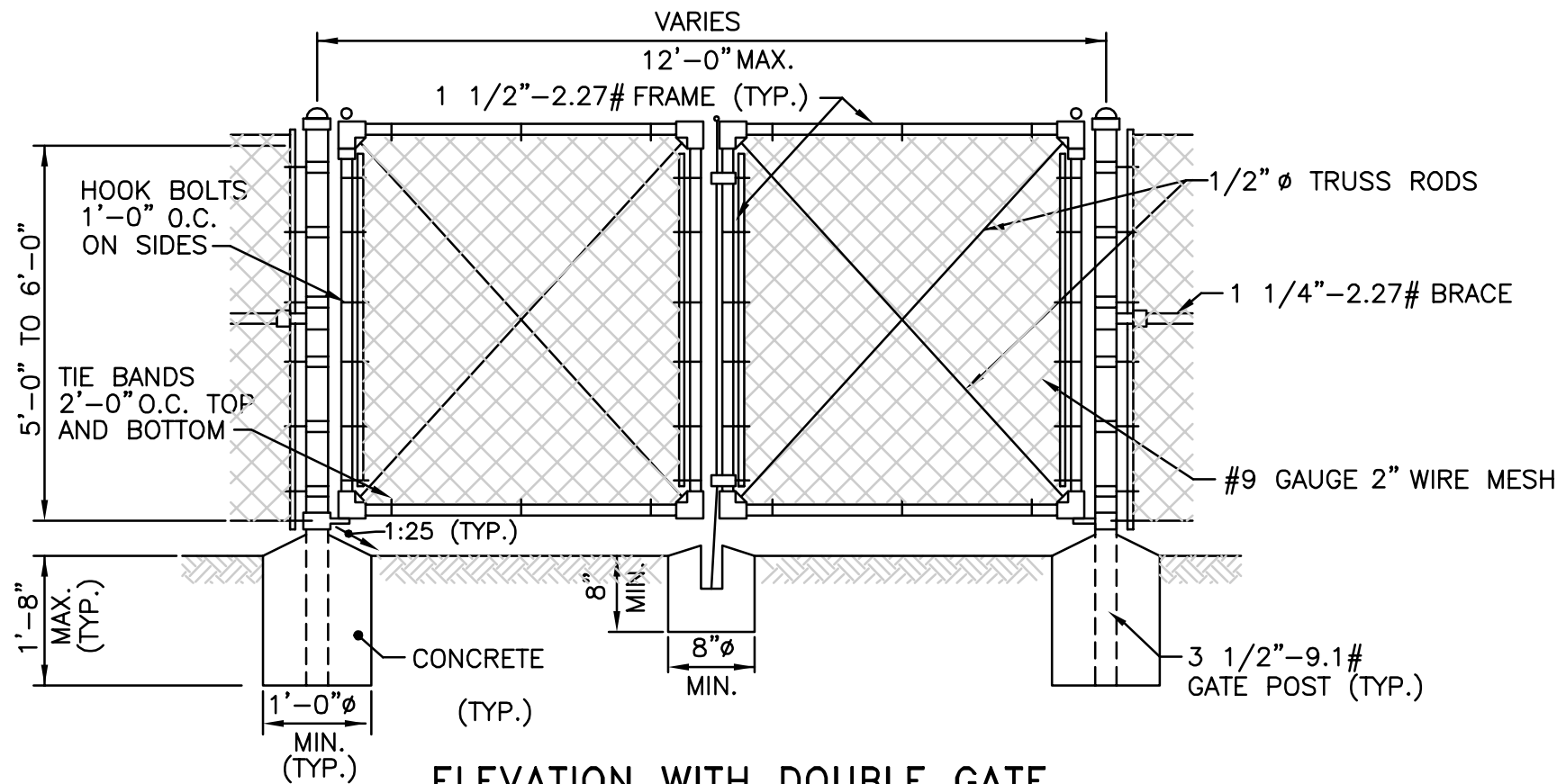


CRUSHED STONE ACCESS DRIVEWAY DETAIL

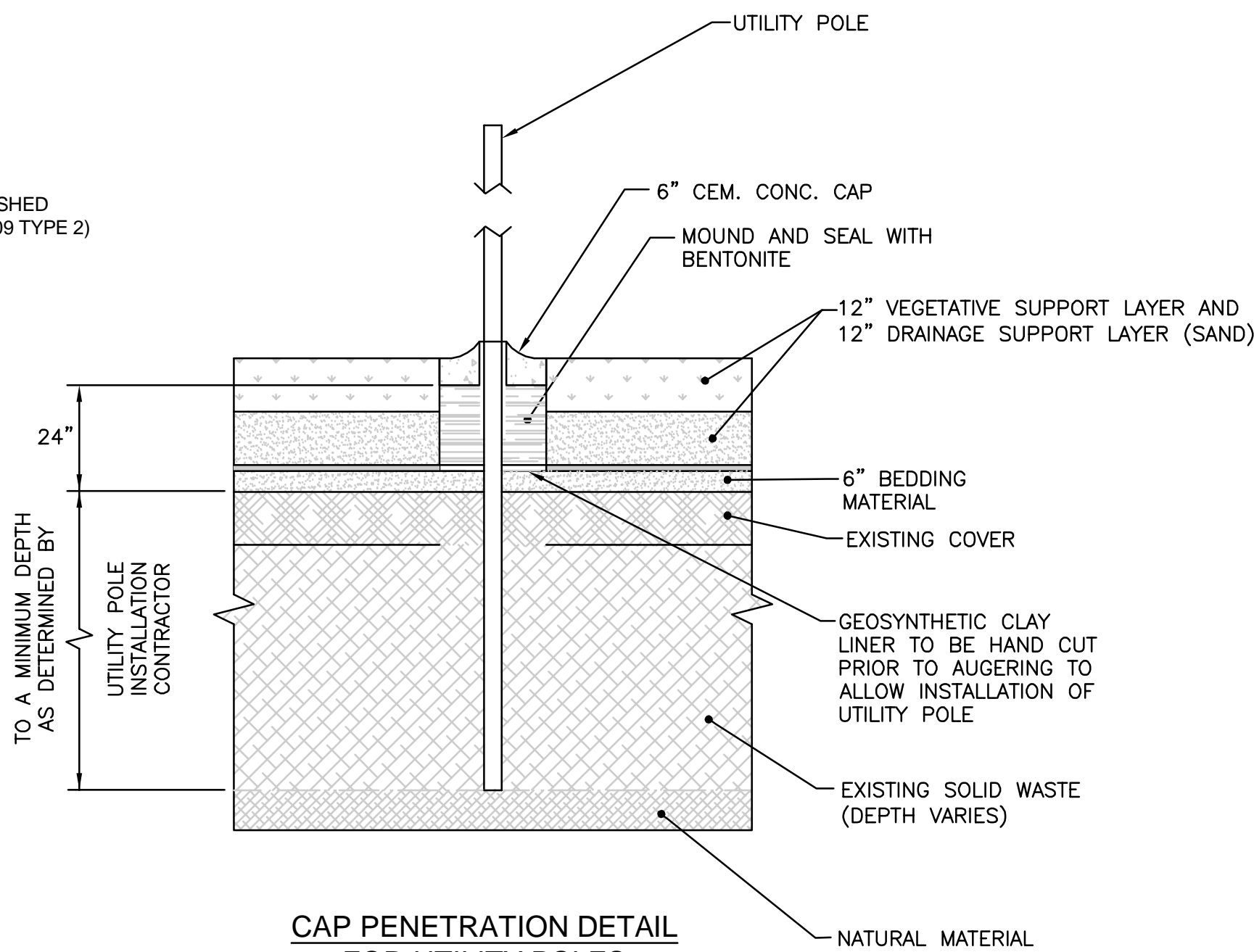
NOT TO SCALE

NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 903 OF THE R.I. STANDARD SPECIFICATIONS.
2. 6 GAUGE STREET CLIPS TO BE USED TO FASTEN SPRING TENSION WIRE TO LINE POST.
3. SPRING TENSION WIRE - NO. 7 GAUGE CORRUGATED HEAVILY GALVANIZED (2.0 OZ. PER SQ. FT.) ALUMINUM COATED (0.4 OZ. PER SQ. FT.) ALL PIPES REFER TO SCHEDULE 40 NOMINAL PIPE SIZES.
4. A 1 1/4"-2.27# TOP RAIL MAY BE SUBSTITUTED FOR THE TOP TENSION WIRE WHEN THE FENCE IS NOT LOCATED IN THE CLEAR ZONE.
5. WHEN A TOP RAIL IS USED, LOCATE THE BRACE RAIL AT 1/2 H.
6. WHEN A TOP RAIL IS USED, DELETE THE BOTTOM SPRING TENSION WIRE.
7. FENCE POST MOST NOT PENETRATE THE GCL LINER IS APPROXIMATELY 24-INCHES BELOW GROUND SURFACE.



ELEVATION WITH DOUBLE GATE



CAP PENETRATION DETAIL  
FOR UTILITY POLES

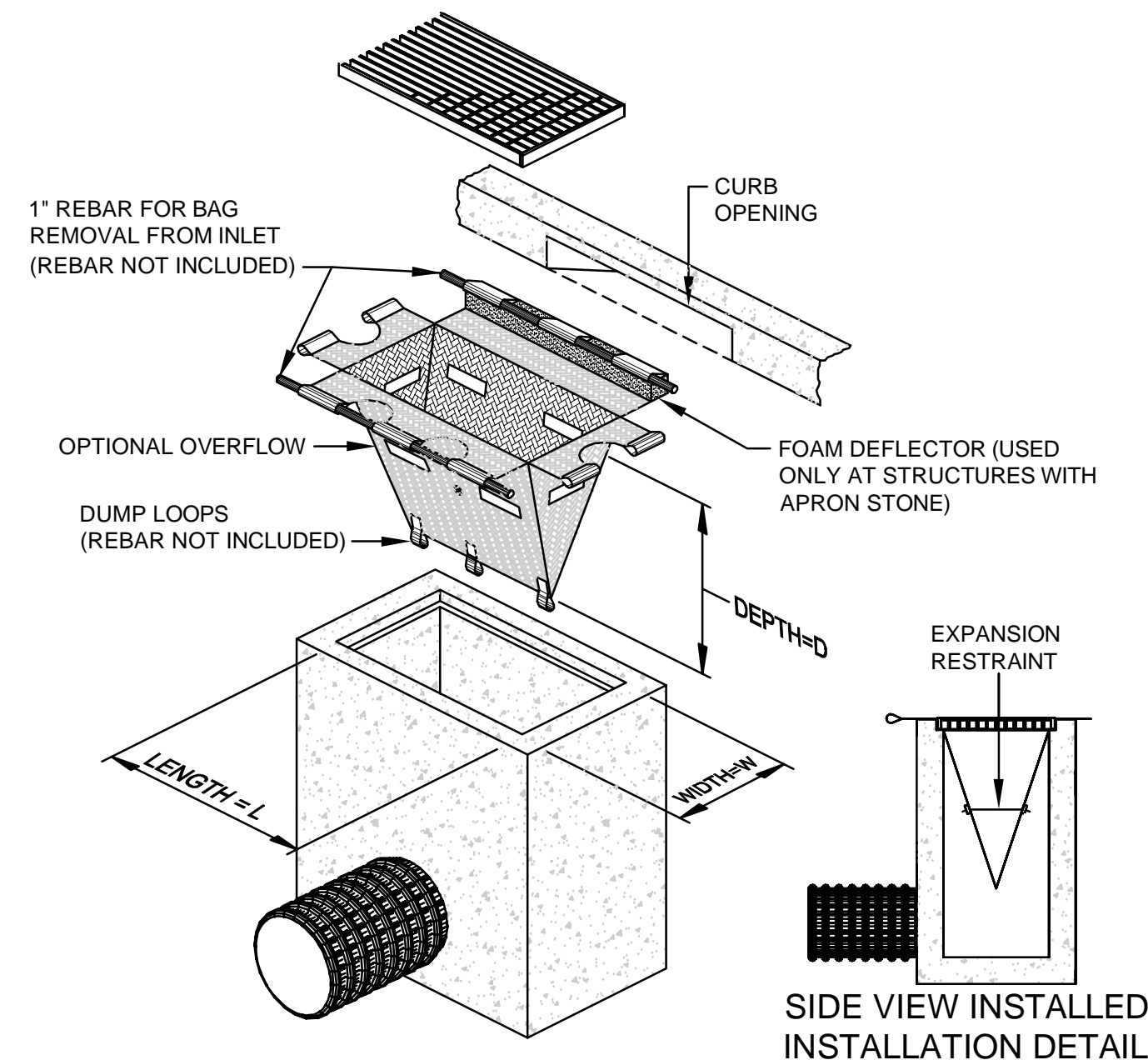
NOT TO SCALE

UTILITY POLE GENERAL NOTES

1. UTILITY POLE DETAIL IS PROVIDED TO SHOW THE METHOD OF PENETRATING THE GCL AND RESEALING THE LINER AFTER INSTALLATION ONLY. THE UTILITY CONTRACTOR INSTALLING THE POLES WILL BE RESPONSIBLE FOR DESIGN AND INSTALLATION OF THE POLES.
2. PRIOR TO AUGERING FOR THE UTILITY POLE INSTALLATION, THE AREA SHALL BE HAND OR VACUUM EXCAVATED TO EXPOSE THE GEOSYNTHETIC CLAY LINER. THE LINER SHALL THEN BE CUT TO ACCOMMODATE THE DIAMETER OF THE AUGER.
3. THE UTILITY POLE SHALL BE SEALED BY PLACING 24-INCHES OF BENTONITE AS SHOWN ON THE DETAIL AND APPROVED BY THE ENGINEER.
4. BENTONITE SHALL BE PELLETS OF COMPRESSED OR ROLLED BENTONITE APPROXIMATELY 1/8-INCH IN DIAMETER SUCH AS "PI-PELLETS" DISTRIBUTED BY PIEZOMETER RESEARCH & DEVELOPMENT CORP., 33 MAGEE AVENUE, STAMFORD CONNECTICUT, 06902.
4. UTILITY POLES SHALL BE GROUTED IN CONCRETE AT THE SURFACE TO PREVENT RAINWATER AND/OR SURFACE WATER FROM ENTERING THE DRILL HOLE.

GENERAL NOTES:

1. USE OF THIS DETAIL IS LIMITED TO CONSTRUCTION AND OCCASIONAL MAINTENANCE OF THE ACCESS DRIVE TO THE TOP OF THE LANDFILL.
2. CROSS SLOPE SHALL BE 2% AND RUNNING SLOPE SHALL NOT EXCEED 10%.
3. IN AREAS OF NO EARTHWORK, THE DRIVE INSTALLED ON UN-COMPACTED IN-SITU MATERIAL. WHERE REQUIRED, A GRAVEL BORROW WEDGE, COMPACTED TO 80% MDD, MAY BE INSTALLED. WEDGE SHALL BE SLOPED AT 2% MINIMUM TO SHED WATER.
4. THE ACCESS DRIVE SHALL BE INSTALLED IN FLUSH WITH EXISTING GRADE.
5. DO NOT OIL, WATER BIND, SEALCOAT, OR CHOKO START
6. DO NOT OVERLAY WITH CONCRETE, ASPHALT PAVEMENT, OR ANY MATERIAL THAT WILL CREATE AN IMPERVIOUS SURFACE
7. APPROPRIATE EROSION AND SEDIMENT CONTROL TECHNIQUES SHALL BE USED DURING CONSTRUCTION TO ENSURE THAT SEDIMENT FINES ARE NOT DEPOSITED WITHIN THE VOIDS OF THE RIDOT STD. M.01.09 TYPE 2 OF THE ACCESS DRIVE.



INLET SEDIMENT CONTROL DEVICE  
(WITH OPTIONAL CURB DEFLECTOR)

NOT TO SCALE

REV	DESCRIPTION	DATE	CHK

NOT FOR  
CONSTRUCTION

**BETA**  
BETA GROUP, INC.  
701 GEORGE WASHINGTON HWY.  
LINCOLN, RI 02865  
www.BETA-Inc.com

**RENUA**  
ENERGY  
RENUA ENERGY, INC.  
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GLEN FALLS, NY 12801  
http://www.renuenergy.com/

DEVELOPER  
**NUGEN CAPITAL**  
NUGEN CAPITAL MANAGEMENT LLC.  
267 WATER STREET  
WARREN, RI 02885  
http://www.nugencapital.com/

PROJECT NAME AND ADDRESS  
**BRISTOL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE  
CIVIL  
DETAILS

ENGINEER: SJR	DRAWN BY: JC
PROJECT NO. 6851	SHEET NO.
CREATION DATE 10/16/2020	<b>C-101</b> SHEET 6 OF 22
SCALE NOT TO SCALE	



NOTES:

GENERAL GROUNDING NOTES

1. THE BONDING CONNECTION BETWEEN MODULES IN A SOURCE CIRCUIT SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PV SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PV SOURCE CIRCUIT.
2. MODULES SHALL BE GROUNDED PER MANUFACTURER'S INSTALLATION GUIDELINES. BARE COPPER USED FOR GROUNDING SHALL NOT TOUCH THE MODULE FRAMES.
3. THE DC CIRCUIT GROUNDING CONNECTION SHALL BE MADE AT A SINGLE POINT IN THE INVERTER, PER MANUFACTURER'S INSTALLATION GUIDELINES. [REFERENCE NEC 690.42]
4. EXPOSED NON-CURRENT-CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE. AN EQUIPMENT GROUNDING CONDUCTOR BETWEEN A PV ARRAY AND OTHER EQUIPMENT SHALL BE REQUIRED IN ACCORDANCE WITH 250.110. [NEC 690.42]
5. RACKING COMPONENTS AND STRUCTURAL SUPPORTS MUST BE ELECTRICALLY BONDED TOGETHER BY AN ACCEPTABLE MEANS.
6. IF APPLICABLE, PAINT/FINISH AT POINT OF CONTACT ON EXPOSED NON-CURRENT CARRYING METAL PARTS SHALL BE PROPERLY REMOVED.
7. EQUIPMENT GROUNDING CONDUCTORS FOR THE PV ARRAY AND STRUCTURE (WHERE INSTALLED) SHALL BE CONTAINED WITHIN THE SAME RACEWAY OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THOSE CIRCUIT CONDUCTORS LEAVE THE VICINITY OF THE PV ARRAY. [NEC 690.43]
8. EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO GROUND AS POSSIBLE AND A MINIMUM NUMBER OF TURNS.
9. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC.

PV ARRAY COMMISSIONING

1. BEFORE CLOSING DISCONNECTS OR ATTEMPTING TO ENERGIZE THE INVERTERS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED.
- 1.1. CHECK THE OPEN CIRCUIT VOLTAGE AND POLARITY OF EACH SOURCE CIRCUIT. DOCUMENT THE VALUES.
- 1.2. CHECK THAT ALL THE FUSES, DISCONNECTS, AND OTHER BALANCE OF SYSTEM COMPONENTS ARE RATED FOR 1500 VDC AND THE APPROPRIATE CURRENT CAPACITY.
- 1.3. COMPLETE A VISUAL INSPECTION OF ALL THE MODULES AND CONDUCTORS TO CHECK FOR BROKEN GLASS, FRAYED WIRES, DAMAGED OR PINCHED WIRE INSULATION, EXPOSED CONDUCTORS AND OTHER PROBLEMS THAT MAY CAUSE FAULT CONDITIONS. IT WILL BE IN THE SOLE DISCRETION OF THE OWNER IF A CONDUCTOR NEEDS TO BE REPLACED.

INVERTER COMMISSIONING

1. BEFORE TURNING THE INVERTER ON OR CLOSING ANY OF THE INVERTER DISCONNECTS, THE FOLLOWING COMMISSIONING PROCEDURE SHOULD BE COMPLETED. REFER TO THE MANUFACTURER'S INSTALLATION MANUAL FOR DETAILED START UP PROCEDURES.
- 1.1. CHECK THAT THE INVERTER IS PROPERLY GROUNDED AS DESCRIBED IN THE INSTALLATION MANUAL PROVIDED BY THE MANUFACTURER.
- 1.2. CHECK THE INVERTER DC INPUT VOLTAGE FOR THE PROPER POLARITY INSIDE THE INVERTER CABINET.
- 1.3. VERIFY THAT THE DC INPUT VOLTAGE IS WITHIN THE PROPER RANGE FOR THE INVERTER PER THE INSTALLATION MANUAL PROVIDED BY THE MANUFACTURER.
- 1.4. VERIFY THAT THE AC INPUT VOLTAGE IS IN THE PROPER PHASE SEQUENCE.
- 1.5. CHECK THAT THE AC GRID VOLTAGE AT THE INVERTER AC TERMINALS IS WITHIN THE PROPER RANGE AS DEFINED BY THE INVERTER RATING LABEL AND THE INSTALLATION MANUAL PROVIDED BY THE MANUFACTURER.

ELECTRICAL WIRING AND WIRING METHODS

1. PV STRING WIRING SHALL BE TYPE PV, #10AWG COPPER CONDUCTOR, UV RESISTANT, 90 DEGREE C, WET RATED.
2. ALL DC CONDUCTORS AND EQUIPMENT IN PV SOURCE AND OUTPUT CIRCUITS SHALL BE RATED 1500V DC MINIMUM.
3. DC SOURCE CIRCUIT CONNECTORS SHALL MATCH THE BRAND AND MODEL OF OEM SUPPLIED CONDUCTORS. NO INTERMATING OF CONNECTORS IS PERMITTED.
4. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED WITH MECHANICAL OR OTHER SUNLIGHT RESISTANT MEANS. THE USE OF PLASTIC UV RATED ZIP TIES ARE NOT ALLOWED FOR SECURING CABLES. PLASTIC ZIP TIES ARE ONLY ALLOWED TO BE USED FOR ORGANIZATION ONLY.
5. DURING CONSTRUCTION, ANY OPEN (UN-MATED) DC SOURCE CIRCUIT CONNECTORS (MC4 TYPE) SHALL AT ALL TIMES BE (I) KEPT OFF THE GROUND AND (II) PROTECTED FROM WATER INTRUSION AND OTHER CONTAMINATION. IF WATER OR OTHER CONTAMINATION GETS INTO THE CONNECTORS, THE CONTRACTOR MUST REPLACE THE CONNECTOR WITH A NEW PART.
6. ALL PVC CONDUIT AND FITTINGS SHALL BE RATED AS UV RESISTANT.
7. THE LAYOUT OF CONDUIT SHOWN IN THE PLANS IS INDICATIVE ONLY. INSTALLER SHALL ROUTE AND LOCATE THE CONDUITS TO SUIT THE SITE CONDITIONS BUT SHALL NOT EXCEED THE CABLE LENGTHS SHOWN IN THE CABLE SCHEDULE WITHOUT PRIOR APPROVAL BY THE ENGINEER OF RECORD.
8. WIRE SIZING IS BASED ON THE WIRE LENGTHS SHOWN ON THE DRAWINGS. IF THE LENGTHS INCREASE, THE ENGINEER OF RECORD SHALL BE NOTIFIED TO CONFIRM SIZING OF CONDUCTORS AND CONDUITS STILL APPLY.
9. UNDERGROUND CONDUITS AND CONDUCTORS SHALL COMPLY WITH THE MINIMUM COVER REQUIREMENTS OF NEC 300.5 AND 300.50.

10. PROVIDE PULL, JUNCTION OR CHRISTY BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF THE WIRING IN ADDITION TO THOSE SHOWN ON THE DRAWINGS. A PULLBOX IS REQUIRED AFTER 360 DEGREES OF CONDUIT BEND.
11. WHERE WATER CAN REASONABLY BE EXPECTED TO FOLLOW A CONDUIT RUN, A PULLBOX SHALL BE USED TO ALLOW WATER TO EXIT THE CONDUIT SYSTEM.
12. PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS 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. [NEC 690.4 (B)]
13. SUPPORT CONDUIT USING STEEL PIPE STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS OR SPLIT-HANGERS. HANGER SPACING SHALL BE INSTALLED AS PER THE NEC REQUIREMENTS FOR THE CONDUIT TYPE.
14. WHEN FIELD CUTTING OF CONDUIT IS REQUIRED, ENSURE THAT THE ENDS ARE CUT SQUARE AND DEBURRED.
15. CONDUIT SIZES NOT SPECIFIED SHALL MEET THE NEC FILL REQUIREMENTS AND SHALL NOT BE SMALLER THAN 3/4" IN DIAMETER.
16. CONNECTORS SHALL BE TORQUED PER DEVICE LISTING OR MANUFACTURER'S RECOMMENDATION. IN THE ABSENCE OF MANUFACTURER TORQUE VALUES, REFERENCE NEC ANNEX I.
17. BECAUSE OF DIFFERENT CHARACTERISTICS OF DISSIMILAR METALS, DEVICES SUCH AS PRESSURE TERMINAL OR PRESSURE SPLICING CONNECTORS AND SOLDERING LUGS SHALL BE IDENTIFIED FOR THE MATERIAL OF THE CONDUCTOR AND SHALL BE PROPERLY INSTALLED AND USED. CONDUCTORS OF DISSIMILAR METALS SHALL NOT BE INTERMIXED IN A TERMINAL OR SPLICING CONNECTOR WHERE PHYSICAL CONTACT OCCURS BETWEEN DISSIMILAR CONDUCTORS (SUCH AS COPPER AND ALUMINUM, COPPER AND COPPER-CLAD ALUMINUM, OR ALUMINUM AND COPPER-CLAD ALUMINUM), UNLESS THE DEVICE IS IDENTIFIED FOR THE PURPOSE AND CONDITIONS OF USE. MATERIALS SUCH AS SOLDER, FLUXES, INHIBITORS, AND COMPOUNDS, WHERE EMPLOYED, SHALL BE SUITABLE FOR THE USE AND SHALL BE OF A TYPE THAT WILL NOT ADVERSELY AFFECT THE CONDUCTORS, INSTALLATION, OR EQUIPMENT. [NEC 110.14]
18. HEAT SHRINK WRAP SHALL BE USED AT THE AC TERMINATIONS OF INVERTER WIRING BOX FOR INVERTER AC CIRCUITS
19. TERMINALS, SPLIT BOLTS, SPLICES, CONNECTORS SHALL BE INSTALLED IN ACCORDANCE TO NEC 110.14 OR PER MANUFACTURER'S GUIDELINES. ALL TERMINALS SHALL BE RATED 75°C MINIMUM.
20. CONTRACTOR SHALL PROVIDE AND INSTALL PRINTED WIRE MARKERS AT ALL CONDUCTOR TERMINATIONS, INCLUDING BOTH ENDS OF THE CIRCUIT. WIRE MARKERS SHALL BEAR THE WIRE NUMBER, CIRCUIT OR STRING NUMBER AS INDICATED ON THE DRAWINGS.
21. THE INSTALLER SHALL USE PERMANENTLY COLOR CODED INSULATION PER THE COLOR WIRE COLOR TABLE BELOW. PHASE TAPE IS NOT ALLOWED.

WIRE COLOR TABLE		
VOLTAGE	PHASE	COLOR
MEDIUM VOLTAGE	A	BLACK
	B	RED
	C	BLUE
600V OR 480V, 3Ø	A	BROWN
	B	ORANGE
	C	YELLOW
240V OR 208V, 3Ø	A	BLACK
	B	RED
	C	BLUE
240/120V 1Ø	L1	BLACK
	L2	RED
AC NEUTRAL	N	WHITE
GROUND	G	GREEN OR BARE
DC POS	+	RED
DC NEG	-	BLACK

GENERAL NOTES

1. INSTALLER SHALL CONTACT UNDERGROUND SERVICES ALERT FOR LOCATION OF UNDERGROUND UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE INSTALLER SHALL BECOME FAMILIAR WITH ALL UTILITY AS-BUILT PLANS AND THE LOCATIONS OF ALL EXISTING UTILITIES AND STRUCTURES. THE INSTALLER SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES, STRUCTURES, PAVEMENT OR IMPROVEMENTS.
3. INSTALLER SHALL VERIFY EXISTING CONDITIONS AND NOTIFY THE OWNER AND ENGINEER OF RECORD OF DISCREPANCIES REQUIRING FURTHER CLARIFICATION BEFORE PROCEEDING WITH THE WORKS.
4. INSTALLER SHALL ASSUME FULL RESPONSIBILITY AND LIABILITY FOR COMPLIANCE WITH REGULATIONS PER FEDERAL OSHA AND LOCAL REGULATIONS PERTAINING TO WORK PRACTICES, PROTECTION OF WORKERS AND VISITORS TO THE SITE.
5. INSTALLER SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AT SITE BEFORE COMMENCING WORK.
6. INSTALLER INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO MAKING ANY CHANGES. APPROVED CHANGES SHALL REQUIRE A DRAWING REVISION TO MAINTAIN CONTROL OVER THE DESIGN. DEVIATION FROM THE THE APPROVED PLANS PRIOR TO ENGINEER APPROVAL SHALL PLACE LIABILITY ONTO THE INSTALLER.

7. EQUIPMENT SUBSTITUTIONS ARE TO BE APPROVED BY THE OWNER AND ENGINEER OF RECORD.
8. ALL MATERIALS SHALL BE IN NEW AND UNUSED CONDITION.
9. MANUFACTURER'S MATERIAL, EQUIPMENT, ETC. SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
10. ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES BY EXPERIENCED WORKFORCE AND DULY LICENSED CONTRACTORS WHO SHALL OBTAIN ALL NECESSARY PERMITS AND REGISTRATIONS WITH APPLICABLE STATE AND LOCAL COUNTY OFFICIALS, AND PAY ALL ASSOCIATED AND APPLICABLE FEES FOR SUCH.
11. INSTALL ALL ASPECTS OF THIS PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS AND AS NOTED ON DRAWINGS ISSUED FOR CONSTRUCTION.
12. FOLLOW ALL SITE-SPECIFIC POLICIES AND THE OWNER'S POLICIES AND PROCEDURES REGARDING SAFETY AND ENVIRONMENTAL REQUIREMENTS IN ADDITION TO ANY PERMIT REQUIREMENTS.
13. ANY METAL SHAVINGS RESULTING FROM SITE WORK SHALL BE CLEANED FROM THE ENCLOSURE INTERIORS BEFORE POWER OR GROUND CONDUCTORS ARE INSTALLED.
14. ANY STRUT HOLES PUNCHED IN WORK BOXES SHOULD BE DE-BURRED AND REPAINTED WITH COLD GALVANIZING PAINT.

GENERAL ELECTRICAL NOTES

1. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LAB TO A UL SPECIFICATION PERTAINING TO THE PRODUCT. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING:

1.1. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)

1.2. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)

1.3. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

1.4. AMERICAN STANDARD ASSOCIATION (ASA)

1.5. NATIONAL FIRE PROTECTION AGENCY (NFPA)

1.6. AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)

1.7. NATIONAL ELECTRICAL CODE (NEC) - 2017

1.8. NATIONAL ELECTRICAL SAFETY CODE (NESC) - 2017

1.9. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)

1.10. ALL LOCAL CODES HAVING JURISDICTION

1.11. SUPPORT SYSTEM BONDING PATH PER UL 2703

1.12. CABLE MANAGEMENT PER UL 62275

1.13. INVERTERS PER UL 1741
2. INSTALLER IS ADVISED THAT ALL DRAWINGS AND COMPONENT MANUALS ARE TO BE READ AND UNDERSTOOD PRIOR TO INSTALLATION OR ENERGIIZATION OF ANY EQUIPMENT. THE INSTALLER IS ALSO ADVISED TO HAVE ALL COMPONENT SWITCHES IN THE OPEN POSITION AND FUSES REMOVED PRIOR TO INSTALLATION OF FUSE-BEARING COMPONENTS.
3. THE PHOTOVOLTAIC SYSTEM SHALL BE INSTALLED PER THE APPLICABLE VERSION OF THE NATIONAL ELECTRICAL CODE OR LOCAL CODE THAT MAY SUPERSEDE.
4. THE INSTALLER IS RESPONSIBLE FOR THE PROCUREMENT OF EQUIPMENT AND MATERIALS THAT WILL LAST THE DESIGN LIFE OF THE SYSTEM.
5. DURING DAYLIGHT HOURS DC VOLTAGE FROM THE ARRAY IS ALWAYS PRESENT AT THE MODULE PIGTAIL TERMINAL AND THE DC TERMINALS ON THE INVERTER. ALL PERSONS WORKING ON OR INVOLVED WITH THE INSTALLATION OF THIS PV SYSTEM MUST BE MADE OF AWARE OF THIS FACT.
6. SAFETY REGULATIONS, SUCH AS LOCK OUT AND TAG PROCEDURES, SHALL BE OBSERVED BY THE INSTALLER DURING CONSTRUCTION.
7. ALL PORTIONS OF THE PV SYSTEM SHALL BE MARKED AS REQUIRED PER NATIONAL ELECTRICAL CODE ARTICLE 690.
8. CONDUIT AND CABLE ROUTING SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES.
9. CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS OF DEVIATIONS FROM DESIGNED WIRING OR ROUTING DETAILS.
10. SEAL CONDUIT ENDS WITH FOAM OR CAULK AT ENCLOSURE ENTRY POINTS TO MINIMIZE CONDENSATION AND PESTS WITHIN ENCLOSURES.
11. NEMA 3 BOXES SHALL BE EQUIPPED WITH A WEEP HOLE OR LISTED DRAIN PLUGS INSTALLED TO ALLOW WATER TO DRAIN.
12. ALL CONDUIT BENDS SHALL CONFORM TO NEC MINIMUM BEND RADII STANDARDS.
13. ALL ABOVE GRADE CONDUIT RUNS SHALL BE SECURELY FASTENED AT INTERVALS IN ACCORDANCE WITH THE NEC.
14. MINIMUM CLEARANCE BETWEEN ALL NEW EQUIPMENT TO BE INSTALLED AND ANY NEW SHALL BE IN ACCORDANCE WITH NEC 110.26.
15. ALL OUTDOOR EQUIPMENT SHALL BE APPROPRIATELY RATED PER NEC 110.20, INCLUDING OUTDOOR MOUNTED JUNCTION BOXES, COMBINER BOXES AND SWITCHES.

TESTING NOTES

1. AC CONDUCTOR MEGGER TEST REQUIREMENT (600VAC CIRCUITS):

1.1. CONDUCTOR BEING TESTED IS NOT TERMINATED

1.2. TEST VOLTAGE SET TO 1000V OR HIGHER

1.3. TEST REPORT TO INCLUDE DETAILS ON TECHNICIAN PERFORMING TEST, DATE/TIME, AMBIENT TEMP AT TIME OF TEST, AND TEST VOLTAGE

1.4. RECORD THE FOLLOWING VALUES FOR EACH CONDUCTOR (60 SECOND TEST FOR EACH CONDUCTOR):

1.4.1 MEGGER VALUE AT 30 SECONDS

1.4.2 MEGGER VALUE AT 60 SECONDS

1.5. MINIMUM ACCEPTABLE TEST RESULTS:

1.5.1 READING AT 60 SECONDS MUST EXCEED 100 MEGAOHMS

1.5.2 READING FOR EACH CONDUCTOR MUST CONTINUALLY CLIMB OR MAX OUT METER VALUE THROUGHOUT 60 SECOND TEST

1.6. IF ANY OF THE MINIMUM TEST THRESHOLD ARE NOT MET IT IS THE DISCRETION OF THE OWNER TO EITHER (A) ACCEPT THE CONDUCTOR AS IS OR (B) REQUIRE THE CONTRACTOR TO INSTALL A NEW CONDUCTOR IN ITS PLACE AND PERFORM THE SAME TEST.
2. DC CONDUCTOR MEGGER TEST REQUIREMENT (1500VDC CIRCUITS):

2.1. CONDUCTOR BEING TESTED IS NOT TERMINATED (NO CONDUCTORS LANDED IN INVERTER WIRING BOX)

2.2. CONFIRM POLARITY TO GROUND FOR EACH CONDUCTOR

2.3. TEST VOLTAGE SET TO 2000V OR HIGHER

2.4. TEST REPORT TO INCLUDE DETAILS ON TECHNICIAN PERFORMING TEST, DATE/TIME, AMBIENT TEMP AT TIME OF TEST, AND TEST VOLTAGE

2.5. RECORD THE FOLLOWING VALUES FOR EACH CONDUCTOR (60 SECOND TEST FOR EACH CONDUCTOR):

2.5.1. MEGGER VALUE AT 30 SECONDS

2.5.2. MEGGER VALUE AT 60 SECONDS

2.6. MINIMUM ACCEPTABLE TEST RESULTS:

2.6.1 READING AT 60 SECONDS MUST EXCEED 100 MEGAOHMS

2.6.2 READING FOR EACH CONDUCTOR MUST CONTINUALLY CLIMB OR MAX OUT METER VALUE THROUGHOUT 60 SECOND TEST

2.7. IF ANY OF THE MINIMUM TEST THRESHOLD ARE NOT MET IT IS THE DISCRETION OF THE OWNER TO EITHER (A) ACCEPT THE CONDUCTOR AS IS OR (B) REQUIRE THE CONTRACTOR TO INSTALL A NEW CONDUCTOR IN ITS PLACE AND PERFORM THE SAME TEST.
3. DC SOURCE CIRCUIT VOC TEST REQUIREMENT (1500VDC CIRCUITS):

3.1. CONDUCTORS BEING TESTED SHALL BE TERMINATED ON BOTH ENDS OF CIRCUIT (CONNECTORS IN ARRAY, WIRING BOX AT INVERTER)

3.2. INVERTER DC FUSES SHALL BE OPENED AND INVERTER DC SWITCH IS IN OPEN POSITION

3.3. TEST REPORT TO INCLUDE DETAILS ON TECHNICIAN PERFORMING TEST, DATE/TIME AND AMBIENT TEMP AT TIME OF TEST

3.4. CONFIRM POLARITY IS CORRECT ON ALL STRINGS PRIOR TO VOC TESTING

3.5. TEST AND RECORD VALUE OF VOLTAGE BETWEEN POSITIVE AND NEGATIVE OF EACH STRING

3.6. IF ANY VOC READINGS ARE SIGNIFICANTLY DEVIATED FROM EITHER (A) OTHER STRINGS WITHIN THE INVERTER OR (B) THE EXPECTED VALUE BASED ON MODULE VOC MULTIPLIED BY THE NO. OF MODULES IN THE STRING, THEN CONTRACTOR MUST FURTHER INVESTIGATE THE CAUSE OF THE DEVIATION AND TAKE CORRECTIVE ACTION AS NECESSARY
4. MV CONDUCTOR VLF WITHSTAND TEST REQUIREMENT (MV CIRCUITS):

4.1. CONDUCTORS BEING TESTED SHALL BE ISOLATED AT BOTH ENDS OF CIRCUIT (CONNECTORS IN TRANSFORMER, SURGE ARRESTORS, ETC.)

4.2. ALL CIRCUIT CONDUCTORS NOT UNDER TEST, INCLUDING CABLE SHIELDS AND NEARBY EQUIPMENT, SHALL BE GROUNDED

4.3. TEST REPORT TO INCLUDE DETAILS ON TECHNICIAN PERFORMING TEST, DATE/TIME, AMBIENT TEMP AT TIME OF TEST, TEST VOLTAGE AND FREQUENCY

4.4. TEST AND RECORD VALUE OF MEASUREMENTS FROM TEST

4.5. IF ANY OF THE MINIMUM TEST THRESHOLD ARE NOT MET IT IS THE DISCRETION OF THE OWNER TO EITHER (A) ACCEPT THE CONDUCTOR AS IS OR (B) REQUIRE THE CONTRACTOR TO INSTALL A NEW CONDUCTOR IN ITS PLACE AND PERFORM THE SAME TEST.

NOT FOR CONSTRUCTION

1	90% DESIGN	01/03/2023	DB
0	90% DESIGN	12/15/2022	DB
8	PRELIMINARY LAYOUT	07/05/2022	DB
7	PRELIMINARY LAYOUT	06/13/2022	DB
6	PRELIMINARY LAYOUT	06/10/2022	DB
5	PRELIMINARY LAYOUT	04/25/2022	DB
4	PRELIMINARY LAYOUT	04/22/2022	DB
3	PRELIMINARY LAYOUT	04/12/2022	DB
2	PRELIMINARY LAYOUT	04/05/2022	DB
REV	DESCRIPTION	DATE	CHK



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DEVELOPER

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PROJECT NAME AND ADDRESS

**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

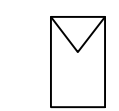
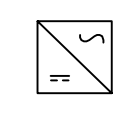
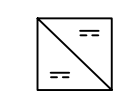

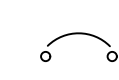
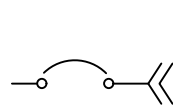


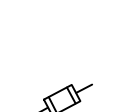


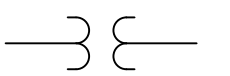
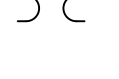
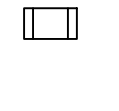



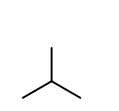
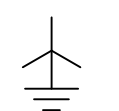

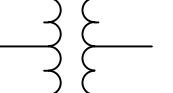
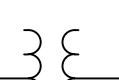




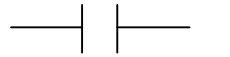
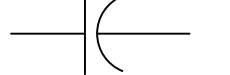
SHEET TITLE

ELECTRICAL NOTES

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.  <b>E-010</b> SHEET 7 OF 22
CREATION DATE 12/31/2019	



ELECTRICAL SYMBOLS:

	PV MODULE
	INVERTER
	DC-DC CONVERTER
	MPPT BLOCK
	CIRCUIT BREAKER
	DRAW OUT CIRCUIT BREAKER
	DISCONNECT SWITCH
	GANG OPERATE AIR BREAK SWITCH
	FUSED CUTOUT
	METER
	CURRENT TRANSFORMER
	CPT TRANSFORMER
	FUSE
	GFI DUPLEX RECEPTACLE
	PHASE
	RECLOSER
	WYE
	WYE-GROUNDED
	DELTA
	GROUND CONNECTION
	TRANSFORMER
	CONTINUATION SYMBOL
	SURGE ARRESTER
	OVERHEAD POLE
	ZIG-ZAG TRANSFORMER
	NEUTRAL GROUNDING REACTOR
	AUXILIARY CONTACTS
	LOW ENERGY ANALOG VOLTAGE INPUT

ELECTRICAL ABBREVIATIONS:

A/AMP -	AMPERE	SHT -	SHEET
AAC -	ALL ALUMINUM CONDUCTOR	SQFT -	SQUARE FEET
ACSR -	ALUMINUM CONDUCTOR STEEL REINFORCED	SS -	STAINLESS STEEL
AMB TEMP -	AMBIENT TEMPERATURE	STC -	STANDARD TEST CONDITIONS
AC -	ALTERNATING CURRENT	STR -	STRING
AG -	ABOVE GROUND	STL -	STEEL
AL -	ALUMINUM	SWBD -	SWITCHBOARD
APPROX -	APPROXIMATELY	SWGR -	SWITCHGEAR
AWG -	AMERICAN WIRE GAUGE	SYM -	SYMMETRICAL
BLDG -	BUILDING	TEMP -	TEMPERATURE
C.F. -	CORRECTION FACTOR	THWN -	THERMOPLASTIC HEAT & WATER RESISTANT NYLON
CAT -	CATEOGRY	TYP -	TYPICAL
CONC -	CONCRETE	UG -	UNDERGROUND
CONT -	CONTINUOUS	V -	VOLTAGE
CT -	CURRENT TRANSFORMER	VD -	VOLTAGE DROP
CU -	COPPER	VMPP -	MAXIMUM POWER POINT VOLTAGE
DC -	DIRECT CURRENT	VOC -	OPEN CIRCUIT VOLTAGE
DISC -	DISCONNECT	W/ -	WITH
DWG -	DRAWING	W/O -	WITHOUT
EA -	EACH	W -	WIRE
EGC -	EQUIPMENT GROUNDING CONDUCTOR	WT -	WEIGHT
EXP -	EXPANSION	XFMR -	TRANSFORMER
ELEV -	ELEVATION	XHHW -	XLPE HIGH HEAT-RESISTANT WATER-RESISTANT
ELEC -	ELECTRICAL	XLPE -	CROSSLINKED POLYETHYLENE
EMT -	ELECTRICAL METAL TUBING		
FLEX -	FLEXIBLE		
FMC -	FLEXIBLE METAL CONDUIT		
FT -	FEET		
G -	GROUND		
GC -	GENERAL CONTRACTOR		
GCR -	GROUND COVERAGE RATIO		
GEC -	GROUNDING ELECTRODE CONDUCTOR		
GEN -	GENERAL		
HT -	HEIGHT		
IBC -	INTERNATIONAL BUILDING CODE		
IFC -	INTERNATIONAL FIRE CODE		
IMC -	INTERMEDIATE METAL CONDUIT		
IMPP -	MXIMUM POWER POINT CURRENT		
INV -	INVERTER		
ISC -	SHORT CIRCUIT CURRENT		
JB -	JUNCTION BOX		
KCMIL -	1000 CIRCULAR MILS		
KV -	KILO-VOLT		
KVA -	KILO VOLT-AMPERE		
KW -	KILOWATT		
KWH -	KILOWATT-HOUR		
KWP -	KILOWATT PEAK		
LFMC -	LIQUIDTIGHT FLEXIBLE METAL CONDUIT		
LSIG -	LONG SHORT INSTANTEOUS GROUND		
LTP -	LONG TIME PICKUP		
LV -	LOW VOLTAGE		
MAX -	MAXIMUM		
MDP -	MAIN DISTRIBUTION PANEL		
MCOV -	MAXIMUM CONTINUOUS OPERATING VOLTAGE		
MFG -	MANUFACTURER		
MIN -	MINIMUM		
MISC -	MISCELLANEOUS		
MLO -	MAIN LUGS ONLY		
MODS -	MODULES		
MPPT -	MAXIMUM POWER POINT TRACKING		
MW -	MEGAWATT		
MWH -	MEGAWATT-HOURS		
MWP -	MEGAWATT0PEAK		
MV -	MEDIUM VOLTAGE		
N -	NEUTRAL		
N/A -	NOT AVAILABLE		
NEC -	NATIONAL ELECTRICAL CODE		
NEG -	NEGATIVE		
NEMA -	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION		
NTS -	NOT TO SCALE		
OC -	ON CENTER		
OCPD -	OVERCURRENT PROTECTION DEVICE		
PNB -	PV PANELBOARD		
POCC -	POINT OF COMMON COUPLING		
POI -	POINT OF INTERCONNECTION		
PSF -	POUNDS PER SQUARE FOOT		
PT -	POTENTIAL TRANSFORMER		
PV -	PHOTOVOLTAIC		
PVC -	POLYVINYL CHLORIDE		
REF -	REFERENCE		
RMC -	RIGID METAL CONDUIT		
SCH -	SCHEDULE		
SECT -	SECTION		

NOT FOR  
CONSTRUCTION

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0	90% DESIGN	12/15/2022	DB
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4	PRELIMINARY LAYOUT	04/22/2022	DB
3	PRELIMINARY LAYOUT	04/12/2022	DB
2	PRELIMINARY LAYOUT	04/05/2022	DB
REV	DESCRIPTION	DATE	CHK



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DEVELOPER



**NUGEN CAPITAL MANAGEMENT LLC.**  
267 WATER STREET  
WARREN, RI 02885  
<http://www.nugencapital.com/>

PROJECT NAME AND ADDRESS

**BRISTOL LANDFILL  
SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE

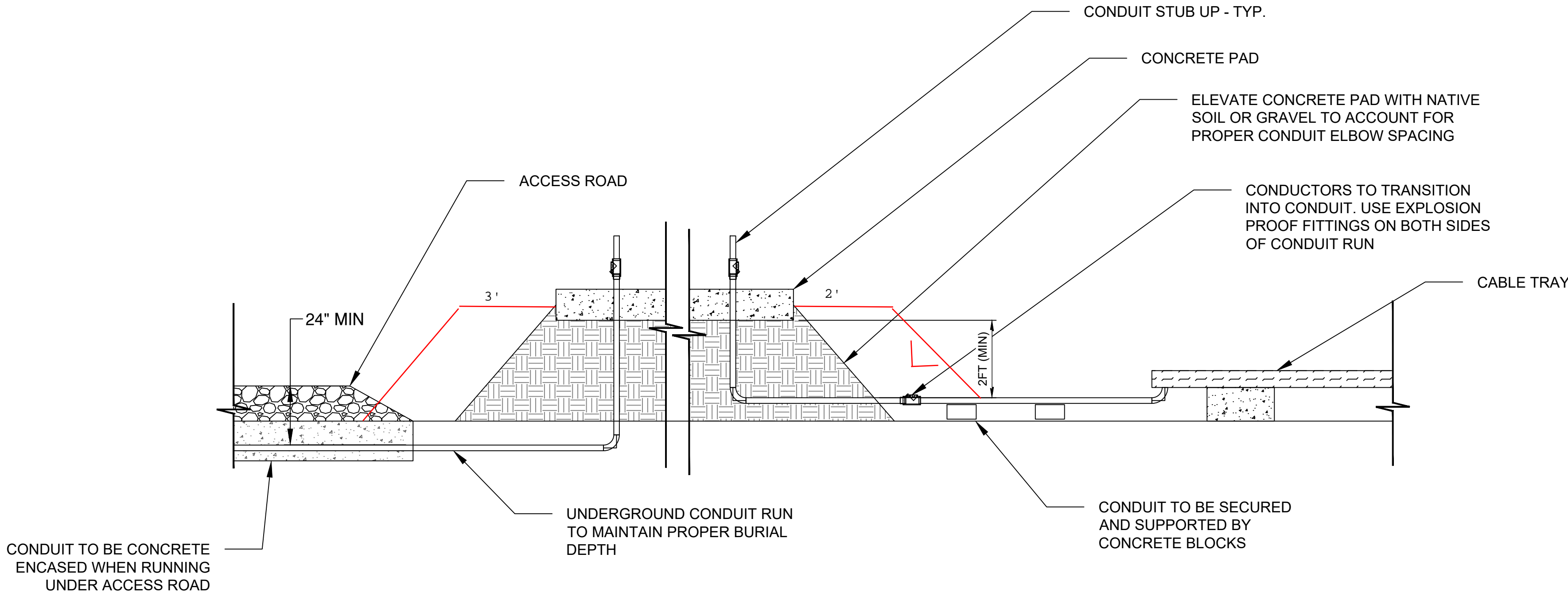
ELECTRICAL NOTES

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	<b>E-011</b> SHEET 8 OF 22

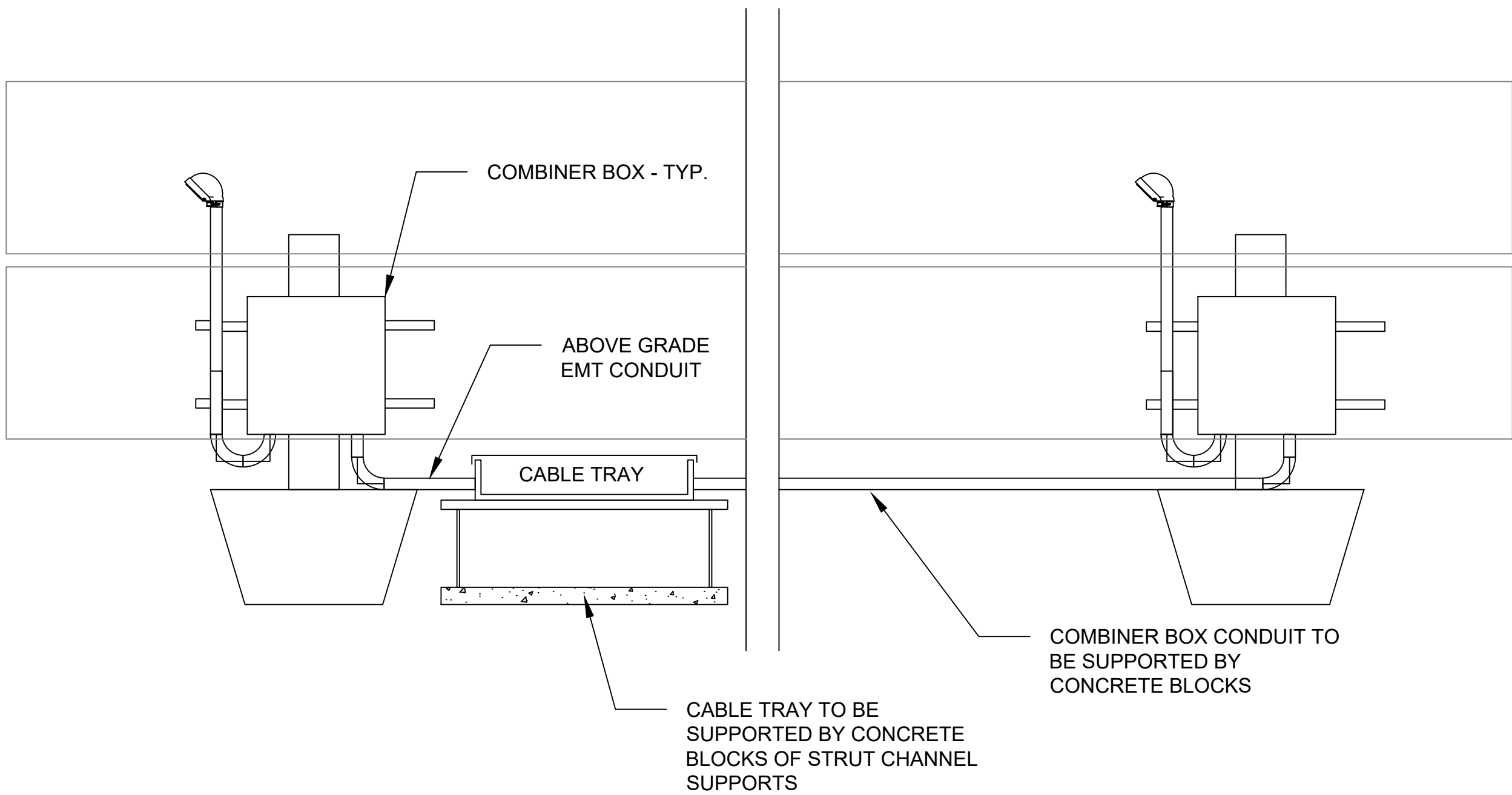




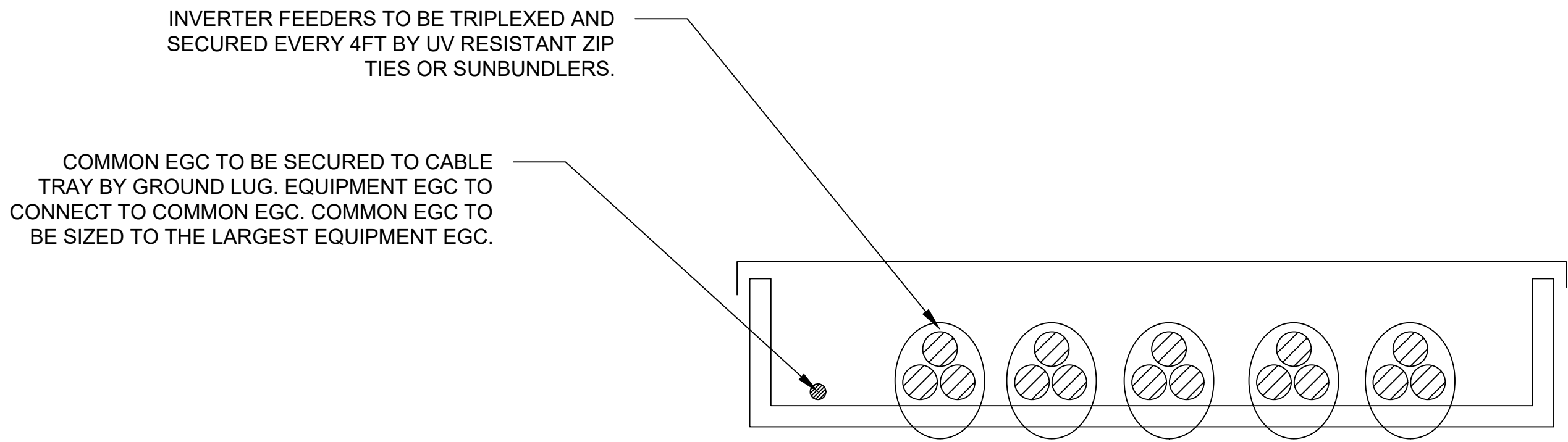




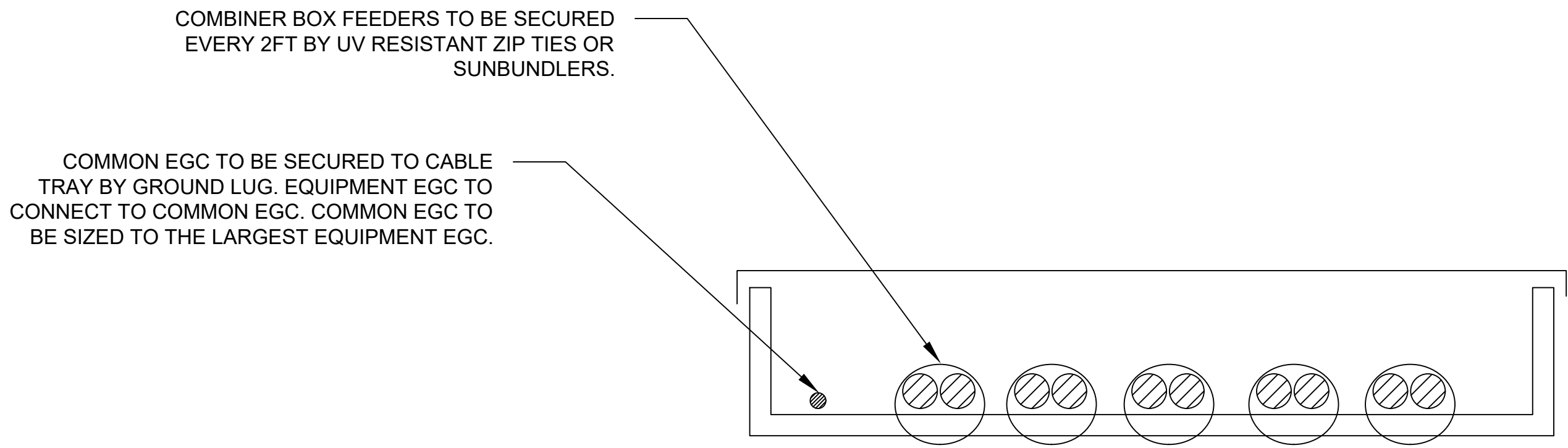
1 CONDUIT DETAIL - EQUIPMENT PAD



2 CONDUIT DETAIL - COMBINER BOX



3 AC CABLE TRAY DETAIL



4 DC CABLE TRAY DETAIL

NOT FOR  
CONSTRUCTION

2	90% DESIGN	01/18/2023	DB
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3	PRELIMINARY LAYOUT	04/12/2022	DB
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REV	DESCRIPTION	DATE	CHK

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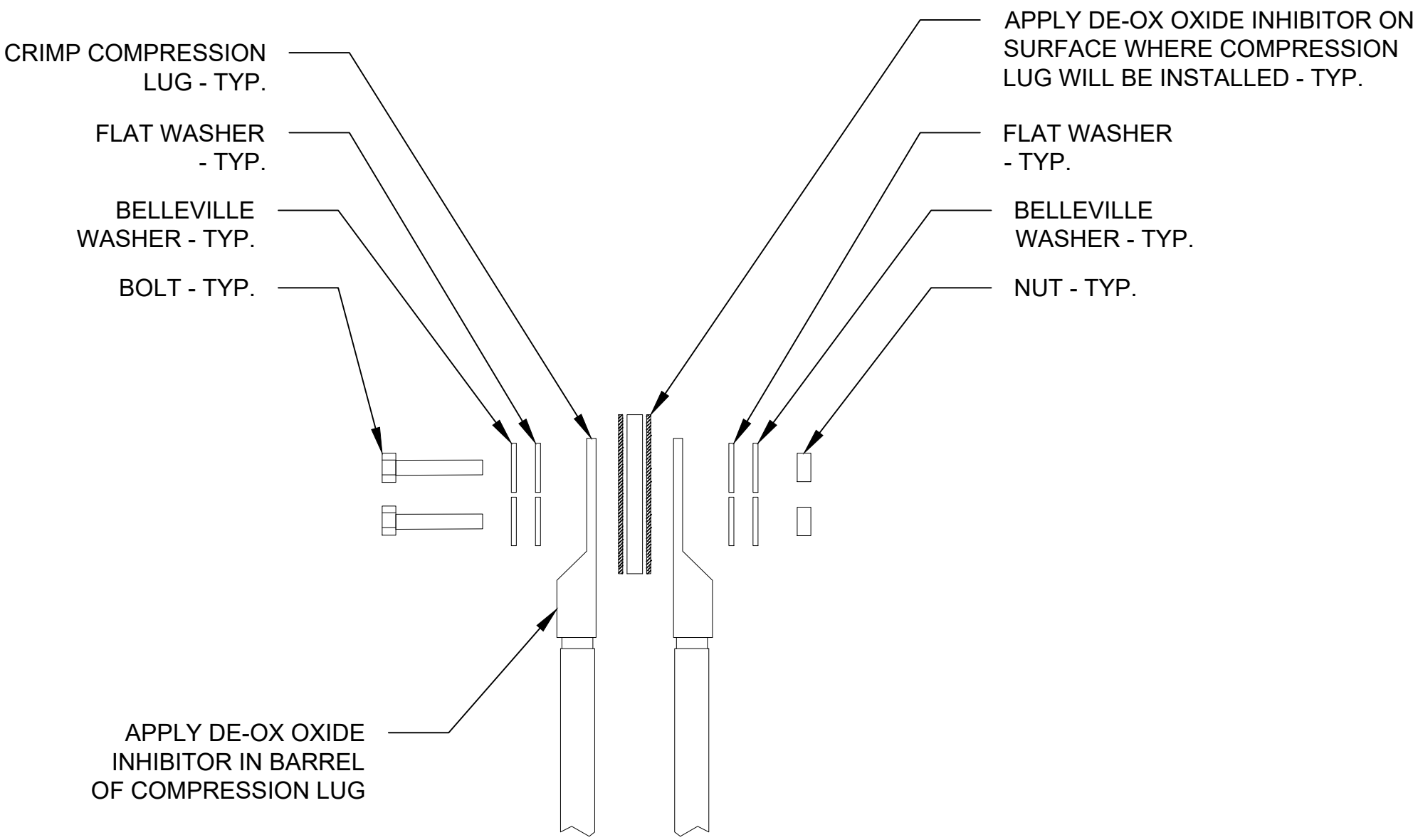
DEVELOPER  
**NUGEN CAPITAL**  
NUGEN CAPITAL MANAGEMENT LLC.  
267 WATER STREET  
WARREN, RI 02885  
<http://www.nugencapital.com/>

PROJECT NAME AND ADDRESS  
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

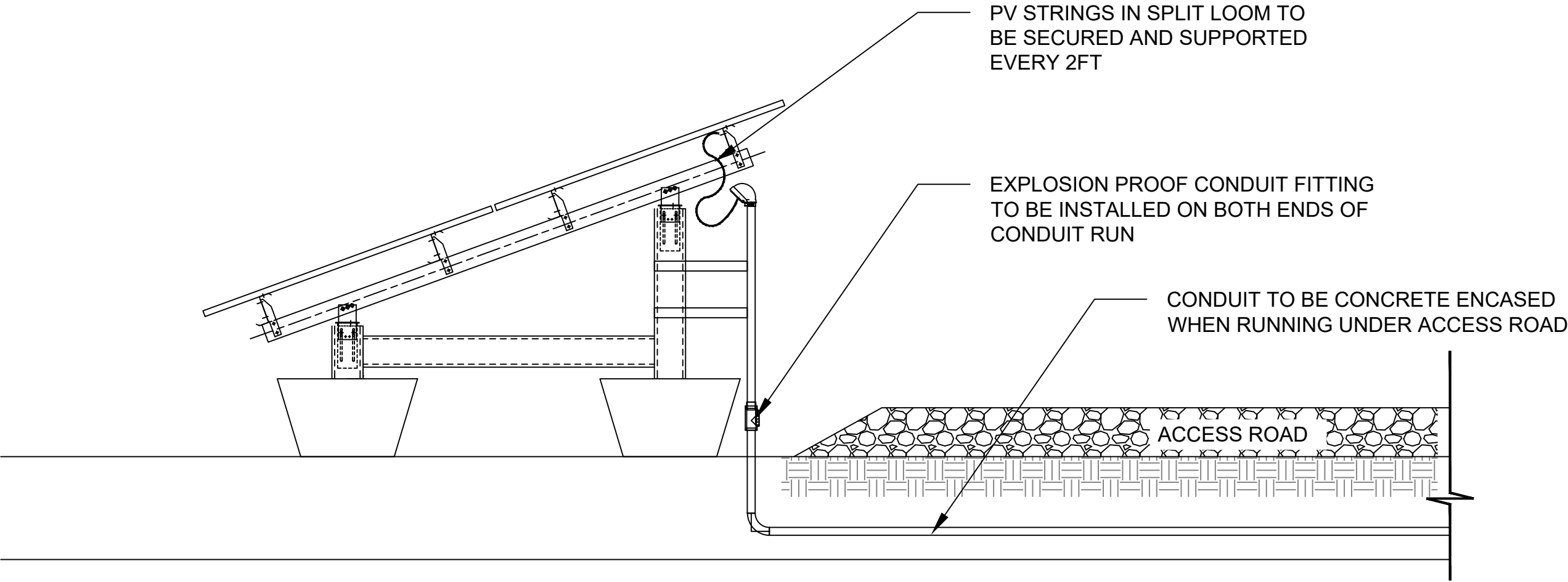
SHEET TITLE  
CONSTRUCTION DETAILS

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	<b>E-200</b> SHEET 7 OF 18

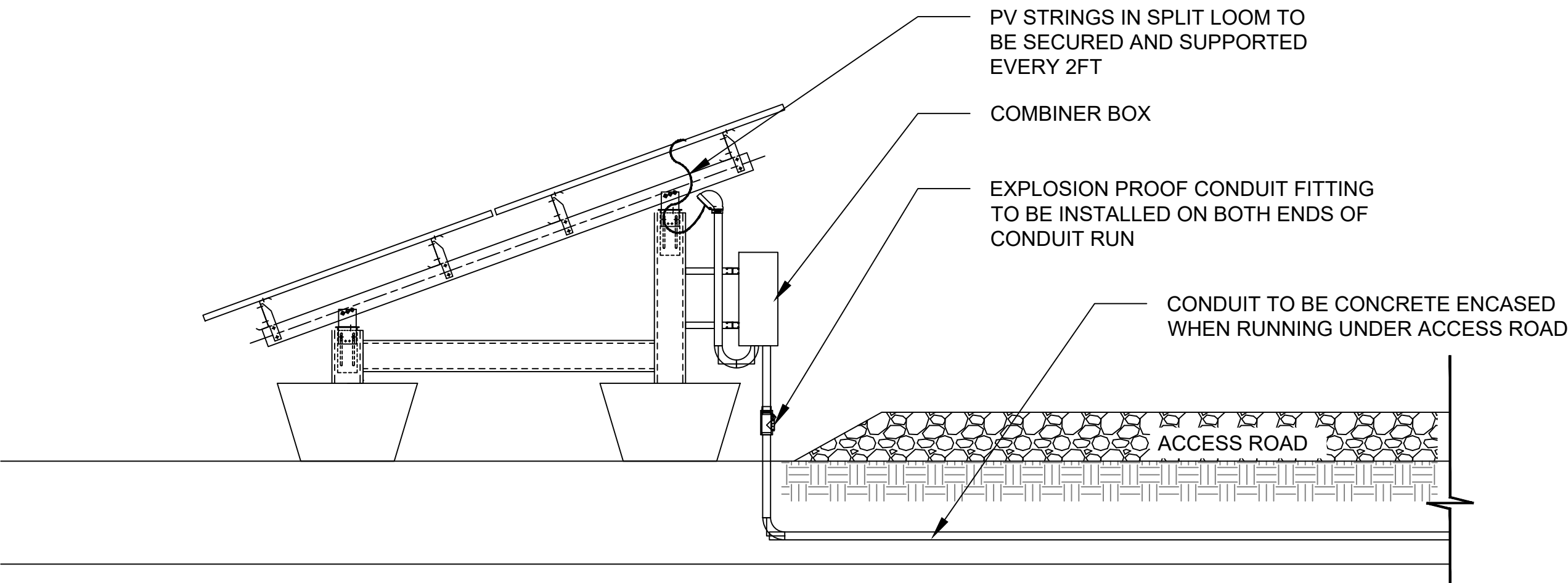




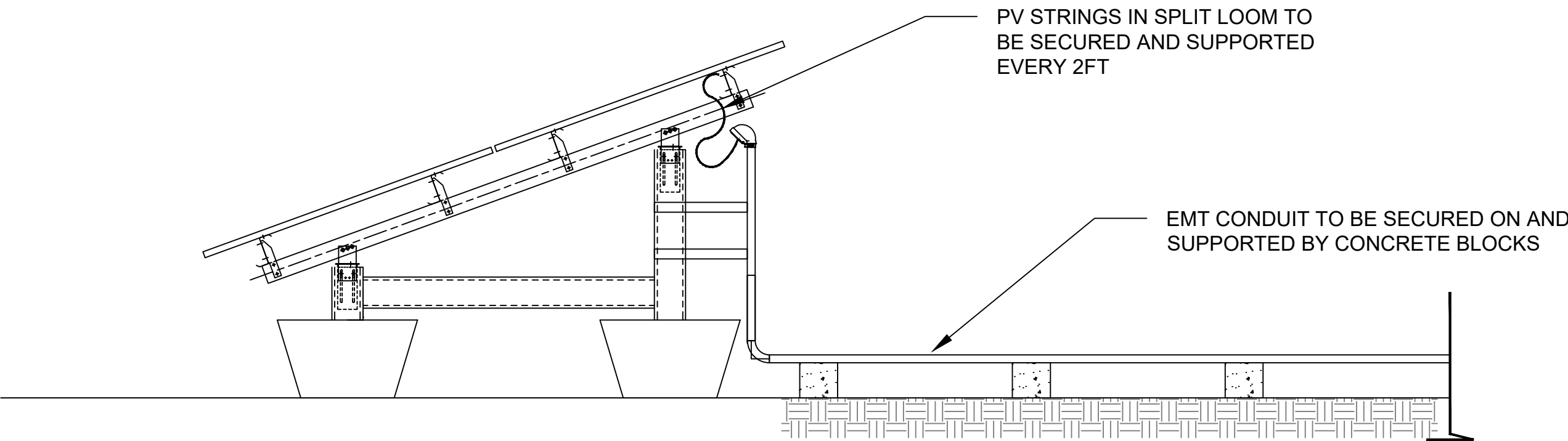
1 COMPRESSION LUG DETAIL



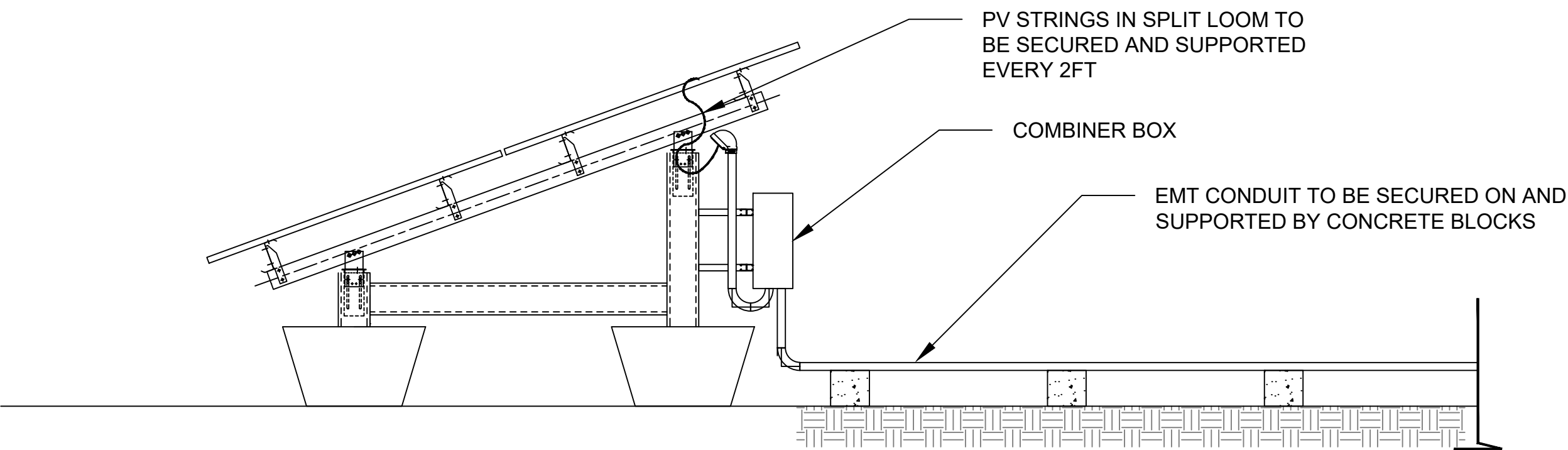
2 CONDUIT RUN DETAIL - UNDERGROUND AT ARRAY



3 CONDUIT RUN DETAIL - UNDERGROUND AT ARRAY



4 CONDUIT RUN DETAIL - ABOVE GROUND AT ARRAY



5 CONDUIT RUN DETAIL - ABOVE GROUND AT ARRAY

NOT FOR  
CONSTRUCTION

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PROJECT NAME AND ADDRESS

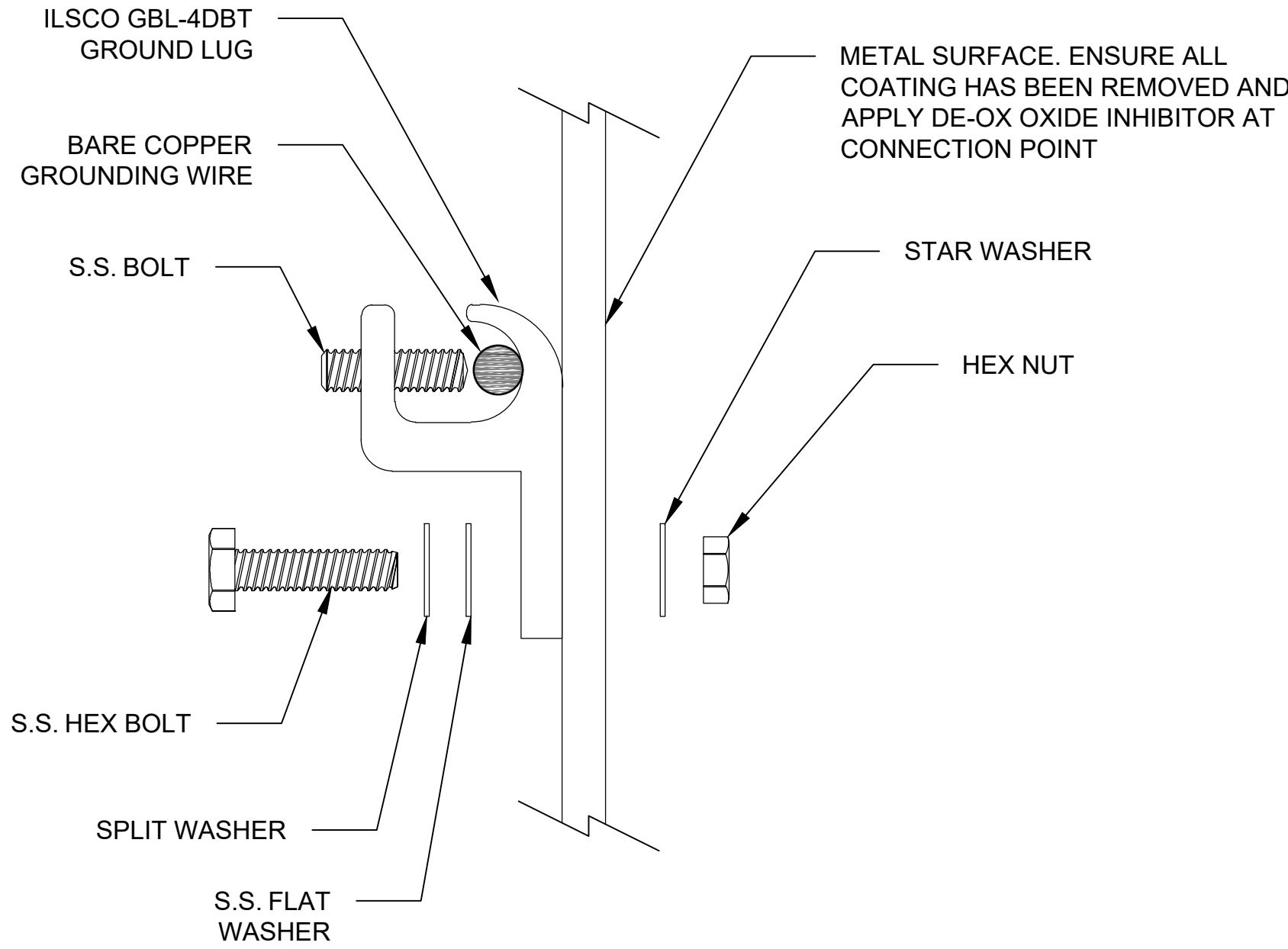
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE

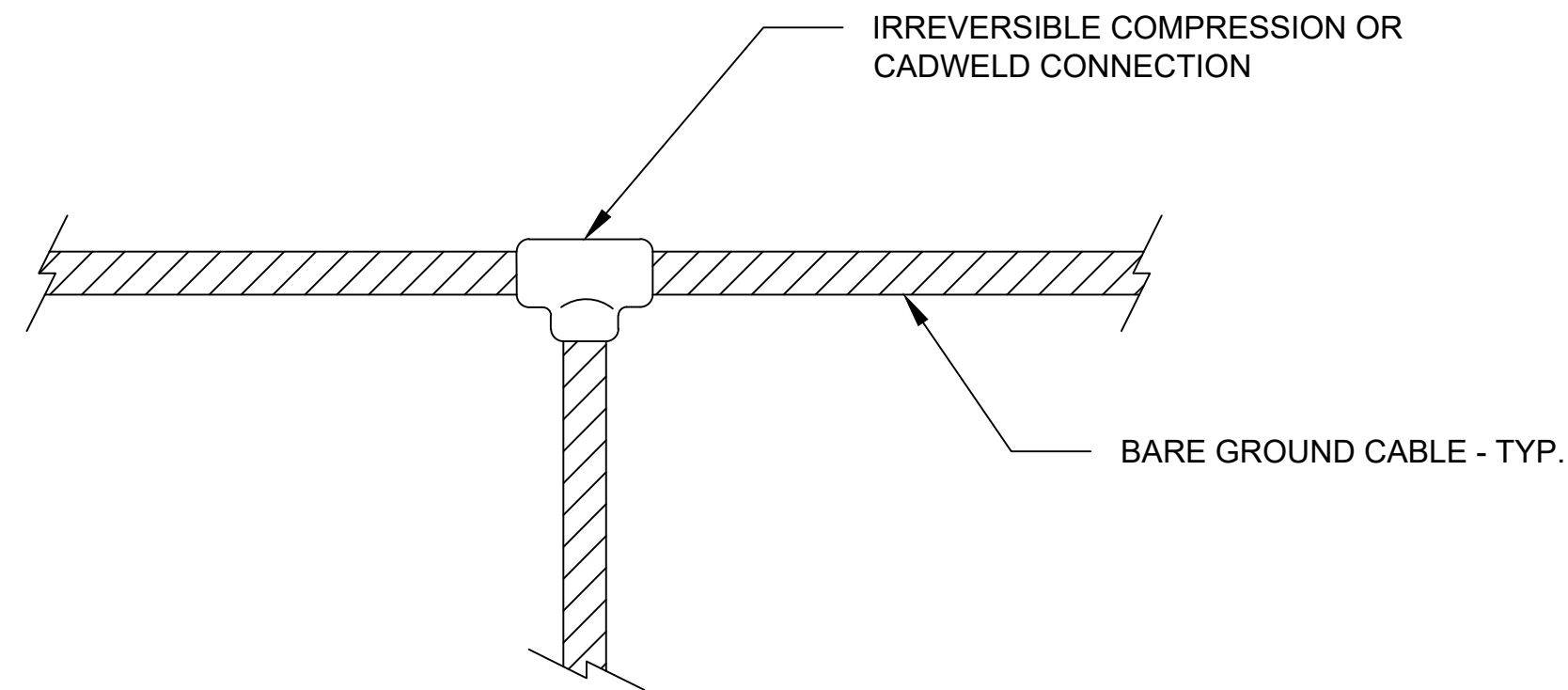
CONSTRUCTION DETAILS

ENGINEER:	DB	DRAWN BY:	AJ
PROJECT NO.	01-19-001	SHEET NO.	
CREATION DATE	12/31/2019		
			<b>E-201</b> SHEET 11 OF 22

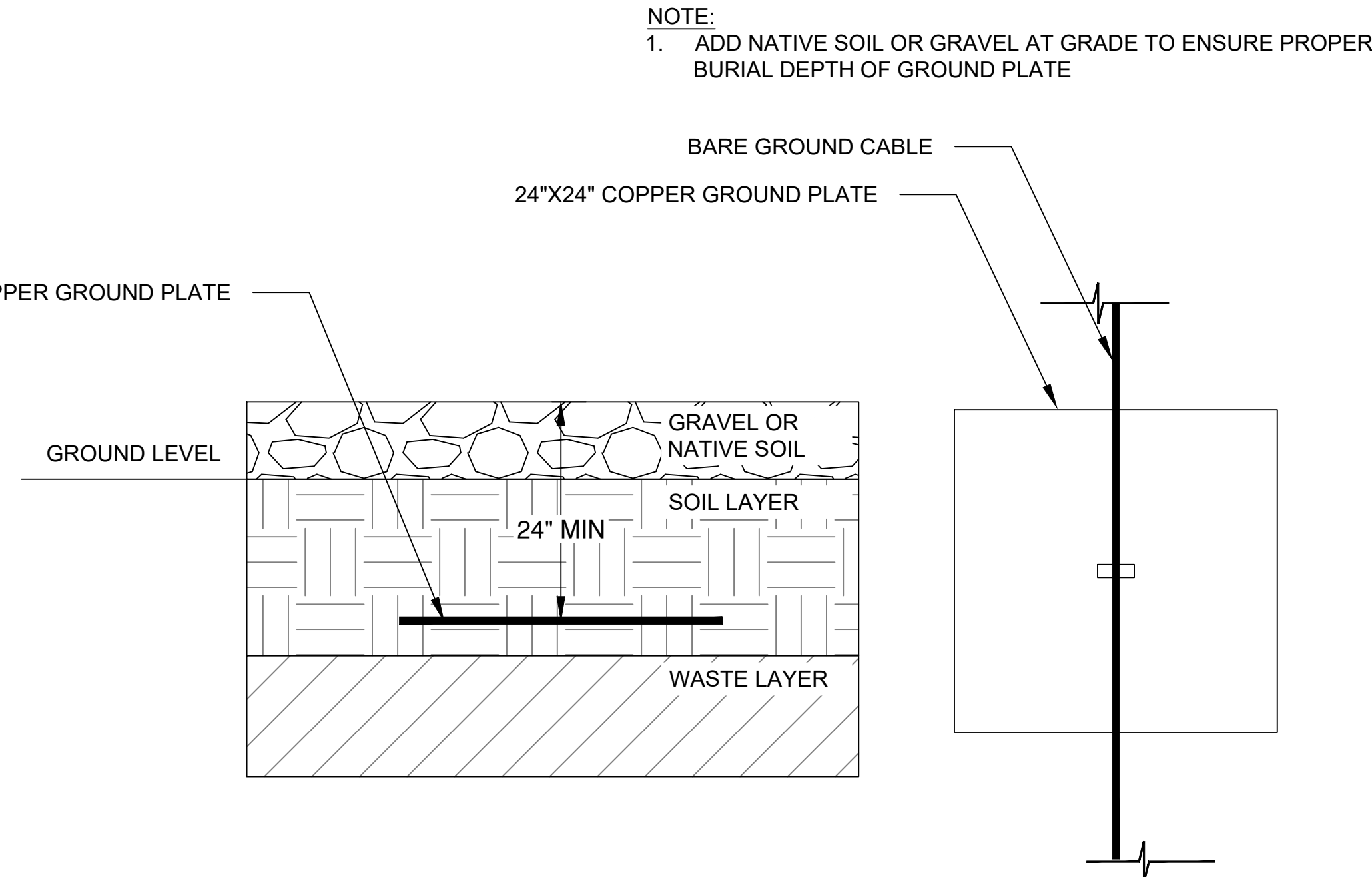




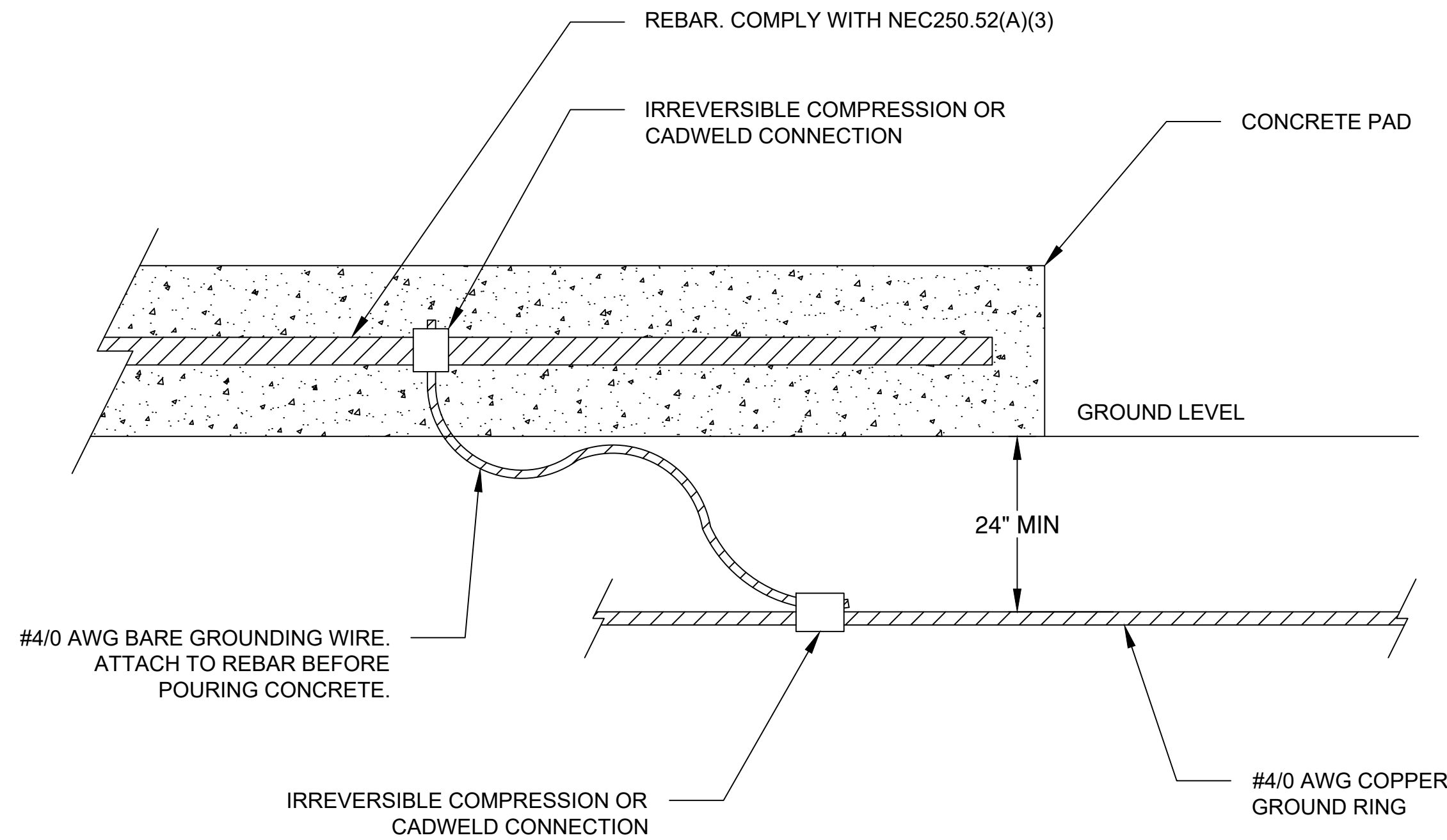
1 GROUND LUG DETAIL



2 GROUNDING CONNECTION DETAIL



3 GROUND PLATE DETAIL



4 GROUND RING DETAIL

NOT FOR  
CONSTRUCTION

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REV	DESCRIPTION	DATE	CHK

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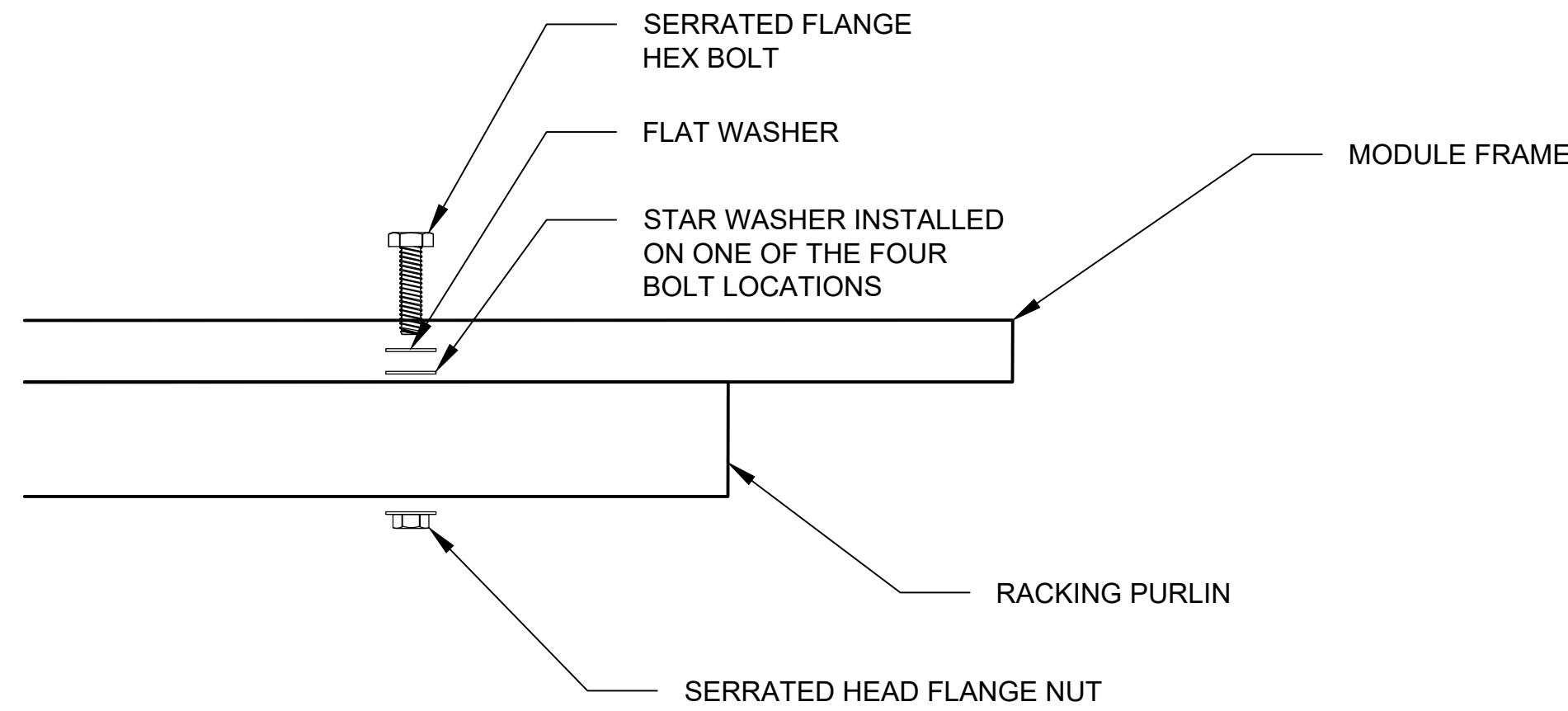
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE

GROUNDING DETAILS

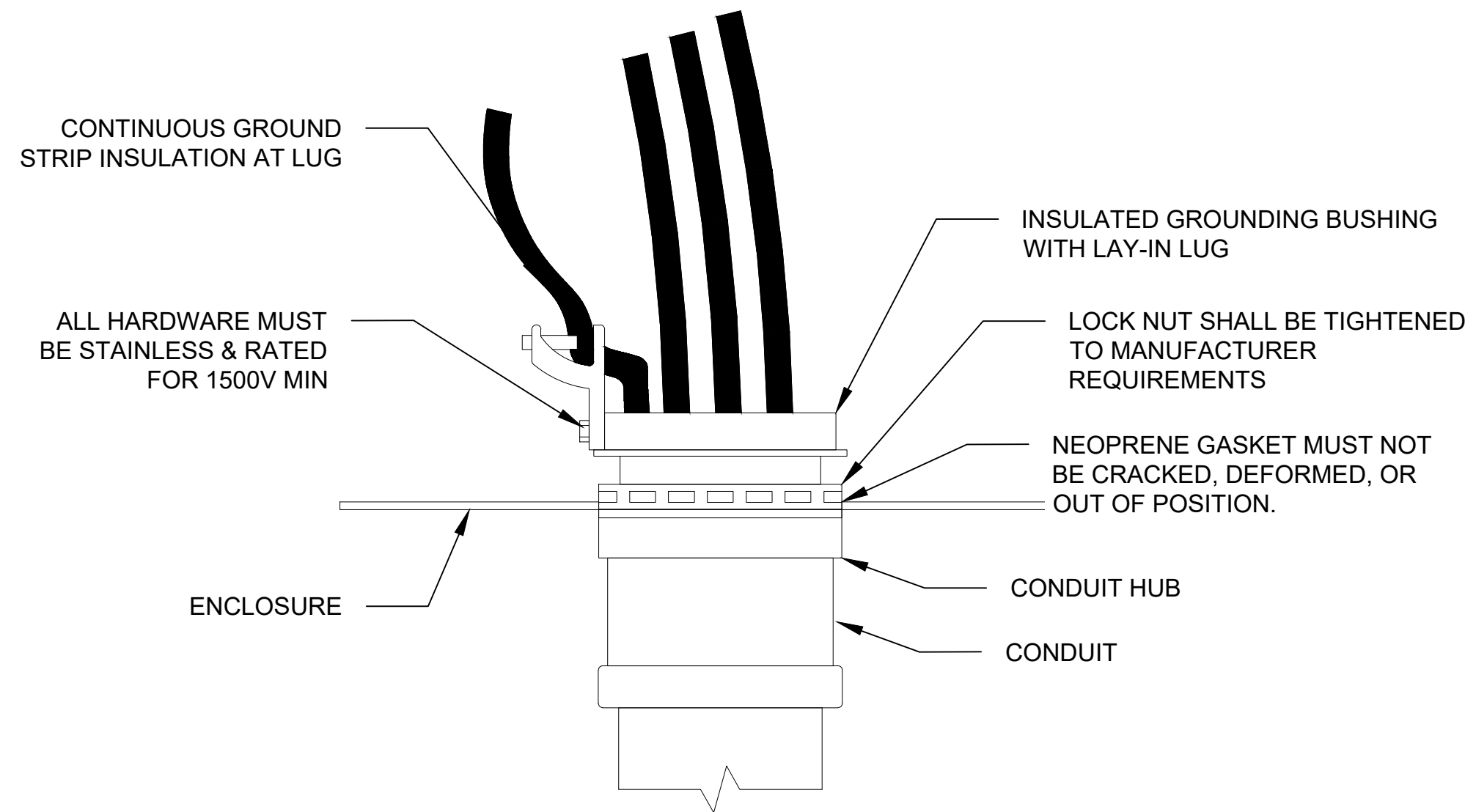
ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	<b>E-202</b> SHEET 9 OF 18





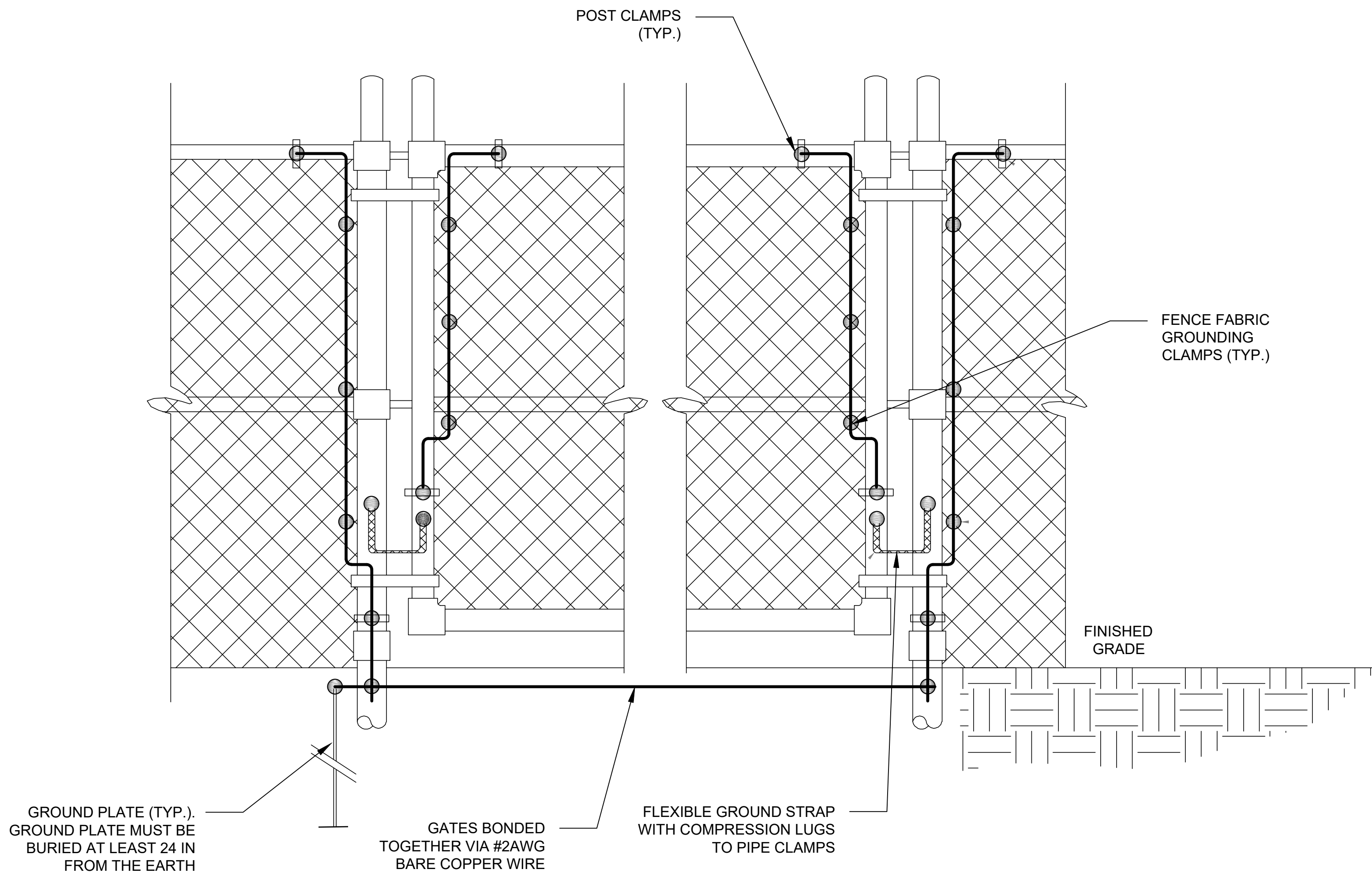
NOTES:  
1. FOLLOW RACKING MANUFACTURER  
INSTALLATIONS ON PROPER MODULE BONDING  
METHOD

1 MODULE GROUNDING DETAIL



NOTES:  
1. ALL METALLIC CONDUIT RUNS MUST HAVE A MINIMUM OF 1 INSULATED GROUNDING BUSHING INSTALLED. THE OPPOSITE END OF THE RUN MAY HAVE AN INSULATED BUSHING INSTALLED.  
2. AN INSULATED GROUNDING BUSHING SHALL BE USED ON BOTH CONDUIT ENDS FOR CONDUIT RUNS WITH AN EXPANSION JOINT.  
3. NO SHARP METAL EDGES ARE PERMITTED ON ANY CONDUIT.  
4. IF A CONDUIT MUST ENTER THE SIDE OR TOP OF AN ENCLOSURE A MEYERS HUB SHALL BE USED.  
5. BARE COPPER WIRE IS PROHIBITED IN EMT CONDUIT.  
6. ALL CONDUITS SHALL HAVE A WIRE INSULATING BUSHING INSTALLED TO PROTECT THE WIRE.  
7. CONDUITS ENTERING ANY ENCLOSURE NEEDS TO BE LIQUID-TIGHT.  
8. WHEN PENETRATING AN ENCLOSURE, DEBUR ENTRY AND RE-COAT WITH GALVY

2 CONDUIT GROUNDING DETAIL



GENERAL NOTES:  
1. EXPOSED FENCE GROUNDING CONDUCTORS AND CLAMPS SHALL BE INSTALLED INSIDE FENCE PERIMETER  
2. FENCES SHALL BE GROUNDED AT EACH SIDE OF A GATE OR OPENING. GROUND ALL GATE POSTS.  
3. RODS AND GEC SHALL BE BURIED AT LEAST 2FT OUTSIDE THE PERIMETER OF THE FENCE.  
4. SEE CIVIL DRAWINGS FOR STRUCTURAL DESIGN OF FENCE, INCLUDING POST EMBEDMENT DEPTH, FENCE MATERIAL, POST FOUNDATION, ETC, FENCE HEIGHT, ETC.

3 FENCE GROUNDING DETAIL

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PROJECT NAME AND ADDRESS  
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE  
**GROUNDING DETAILS**

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	<b>E-203</b> SHEET 13 OF 22



SUBARRAY A			
INVERTER	AC SYSTEM SIZE	STRING BREAKDOWN	DC SYSTEM SIZE
INVERTER (INV.A1)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	236.60 KW
INVERTER (INV.A2)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.50 KW
INVERTER (INV.A3)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	236.60 KW
INVERTER (INV.A4)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	236.60 KW
INVERTER (INV.A5)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.50 KW
INVERTER (INV.A6)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.50 KW
INVERTER (INV.A7)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.5 KW
INVERTER (INV.A8)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.5 KW
INVERTER (INV.A9)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.5 KW
INVERTER (INV.A10)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.5 KW
INVERTER (INV.A11)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.5 KW
INVERTER (INV.A12)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	236.60 KW
INVERTER (INV.A13)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.50 KW
INVERTER (INV.A14)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	227.50 KW
INVERTER (INV.A15)	166 KW	26 STRINGS OF 28 HELIENE 325W MODS	236.60 KW

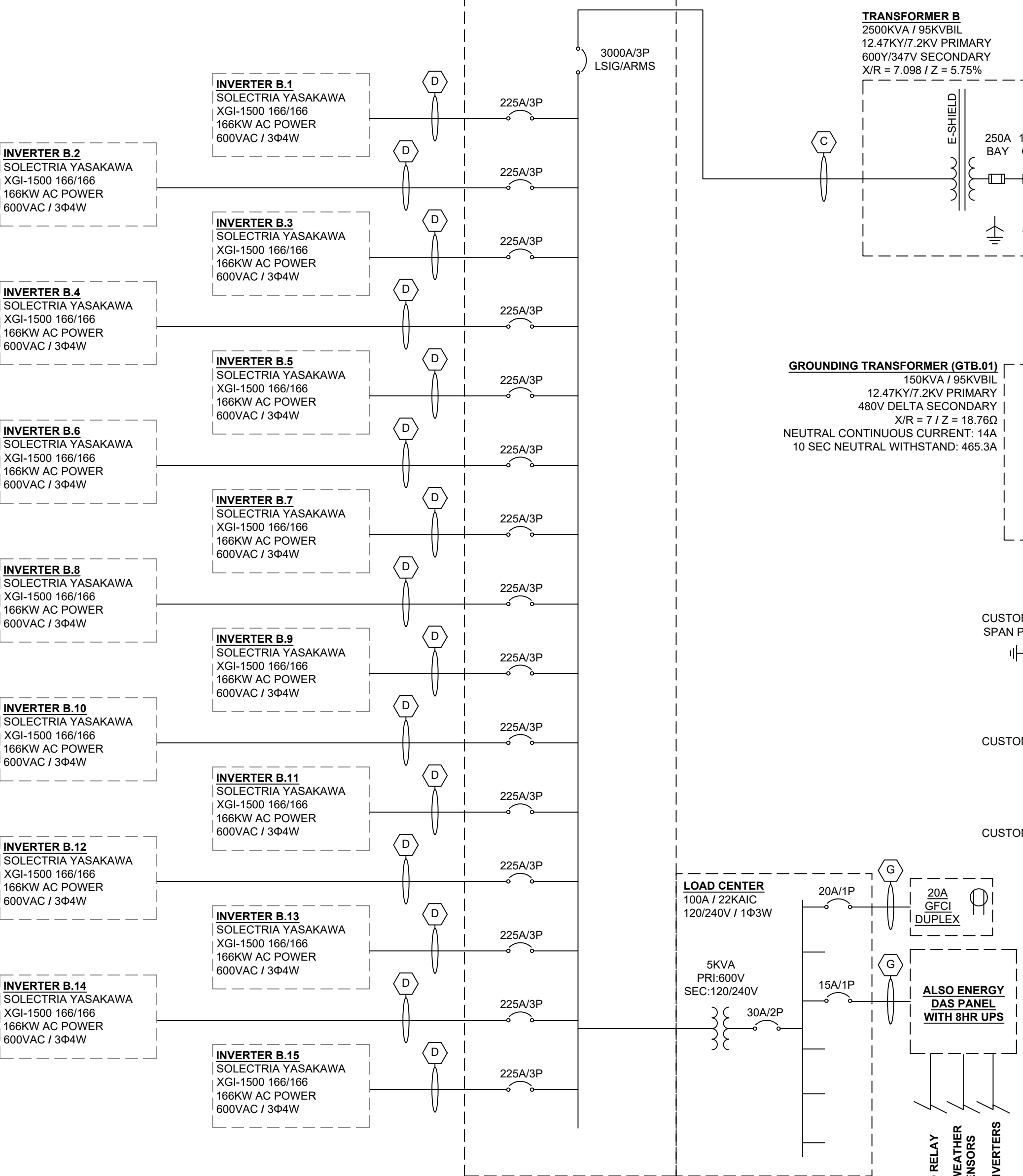
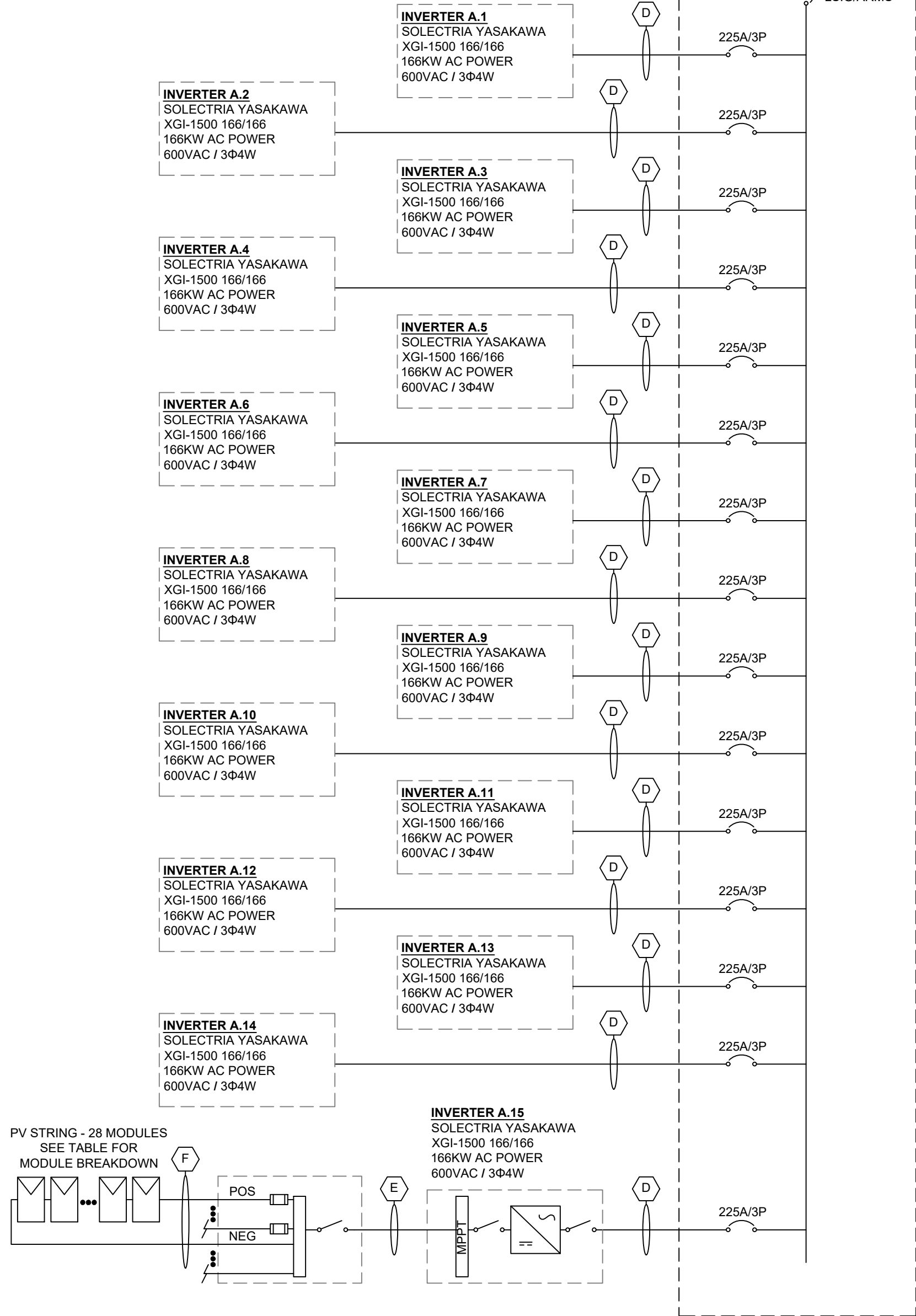
SUBARRAY B			
INVERTER	AC SYSTEM SIZE	STRING BREAKDOWN	DC SYSTEM SIZE
INVERTER (INV.B1)	166 KW	23 STRINGS OF 28 HANSOL 340W MODS	218.96 KW
INVERTER (INV.B2)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B3)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B4)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B5)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B6)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B7)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B8)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B9)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B10)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B11)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B12)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B13)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B14)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW
INVERTER (INV.B15)	166 KW	24 STRINGS OF 28 HANSOL 340W MODS	228.48 KW

CABLE SCHEDULE							
CALLOUT ID	WIRE QTY	PARALLEL RUNS	PHASE SIZE	NEUTRAL SIZE	GROUND SIZE & TYPE	INSULATION/TYPE	CONDUIT TYPE
A	3Φ, N	1	#2/0 AWG ASCR	#2/0 AWG ASCR	-	15KV BARE	-
B	3Φ, N, G	1	#350 KCMIL AL-MV105	FULL CONC.	CABLE SHIELD	15KV 133% EPR	5" PVC SCH40
C	3Φ, N	9	600 KCMIL AL	600 KCMIL AL	-	600V XHHW2	4" PVC SCH40
D	3Φ, G	1	#250 KCMIL AL	-	#4 AWG CU EGC	600V XHHW2	2" PVC SCH40 <sup>1)</sup>
E	2Φ PER STRING, G	1	-	SEE E302	-	2KV PWIRE	VARIES <sup>2) 1)</sup>
F	2Φ PER STRING, G	1	#10 AWG CU	-	#6 AWG CU EGC	2KV PWIRE	VARIES <sup>2)</sup>
G	1Φ, N, G	1	#12 AWG CU	#12 AWG CU	#12 CU EGC	600V THWN2	3/4" EMT

GENERAL NOTES:

- ALL UTILITY OWNED EQUIPMENT IS SHOWN FOR REFERENCE PURPOSES ONLY. THE UTILITY EQUIPMENT MAY BE CHANGED BY THE UTILITY AT ANY TIME. COORDINATE WITH THE UTILITY FOR FINAL EQUIPMENT SPECSLINEUP.
- THE RELAY POWER FAILURE ALARM AND UPS FAILURE ALARM TO CAUSE RELAY TO PICKUP AND TRIP 52R ELEMENT WITHIN 2 SECONDS.
- EQUIPMENT LISTED AS 'TYPICAL' SHALL REPRESENT THE EQUIPMENT SPECIFICATIONS USED FOR THE OTHER EQUIPMENT THROUGHOUT THE PROJECT UNLESS NOTED OTHERWISE.
- THE PV MAIN DISCONNECT SWITCH SHALL BE ACCESSIBLE BY THE UTILITY 24/7. IF THE PV MAIN DISCONNECT SWITCH IS ENCLOSED IN A FENCED AREA, THE UTILITY WILL HAVE MEANS OF ACCESS WITHIN THE FENCED AREA AT ALL TIMES.
- THE PV MAIN DISCONNECT SWITCH SHALL BE LOCKABLE IN THE OPEN POSITION.
- THE CU FEEDERS USED SHALL HAVE A THWN-2 RATED JACKET UNLESS NOTED OTHERWISE. THE AL FEEDERS USED SHALL HAVE A XHHW-2 RATED JACKET UNLESS NOTED OTHERWISE.
- REFER TO THE EQUIPMENT MANUFACTURER'S INSTALLATION MANUAL FOR PROPER INSTALLATION AND SETTINGS.
- ALL 600V RATED CIRCUIT BREAKERS MUST HAVE ADEQUATE KAIC RATING FOR POTENTIAL INTERRUPTION AT 105% OF NOMINAL VOLTAGE.
- MAXIMUM NO. OF TOTAL CONDUCTORS ALLOWED IN DC CONDUIT:
  - 1.5" EMT SCH40 CONDUIT: 10 TOTAL DC CONDUCTORS + GND (36.9% CONDUIT FILL)
  - 2" EMT SCH40 CONDUIT: 20 TOTAL DC CONDUCTORS + GND (38.4% CONDUIT FILL)
  - ASSUMES OUTER DIAMETER OF 0.27". DIFFERENT DIAMETER MAY RESULT IN RESIZING.
- DC COMBINER BOX FEEDERS CONDUIT TO BE FOUND IN E301
- CONDUITS TO TRANSITION TO CABLE TRAY

MODULE BREAKDOWN



INVERTER SETTINGS			
ELECTRICAL CHARACTERISTICS			
FREQUENCY	60HZ		
VOLTAGE	346.4V		
AMPERAGE	230.56A		
ANSI ELEMENT	PICKUP	CLEAR (SEC)	VALUE
81U (FAST)	0.09	0.16	56.5 Hz
81U (SLOW)	299.93	300.00	58.5 Hz
81O (FAST)	0.09	0.16	62 Hz
81O (SLOW)	299.93	300.00	61.2 Hz
27 (0.50 PU)	1.03	1.10	173.2 V
27 (0.88 PU)	1.93	2.00	304.8 V
59 (1.10 PU)	1.93	2.00	381.1 V
59 (1.20 PU)	0.09	0.16	415.7 V

SEL-651R RELAY SETTINGS			
ELECTRICAL CHARACTERISTICS			
ANSI ELEMENT	PU (PRI)	CURVE	TD
51	300.00	U1	2
51N	55.00	U1	1.3

ONE LINE DIAGRAM

EQUIPMENT SETTINGS

NOT FOR CONSTRUCTION

1	90% DESIGN	01/03/2023	DB
0	90% DESIGN	12/15/2022	DB
8	PRELIMINARY LAYOUT	07/05/2022	DB
7	PRELIMINARY LAYOUT	06/13/2022	DB
6	PRELIMINARY LAYOUT	06/10/2022	DB
5	PRELIMINARY LAYOUT	04/25/2022	DB
4	PRELIMINARY LAYOUT	04/22/2022	DB
3	PRELIMINARY LAYOUT	04/12/2022	DB
2	PRELIMINARY LAYOUT	04/05/2022	DB
REV	DESCRIPTION	DATE	CHK



RENUA ENERGY, INC.  
16 HUDSON AVENUE, UNIT 2713  
GLEN FALLS, NY 12801  
833-736-8218  
<http://www.renuacnrgy.com/>



BETA GROUP, INC.  
701 GEORGE WASHINGTON HWY.  
LINCOLN, RI 02885  
[www.BETA-Inc.com](http://www.BETA-Inc.com)

DEVELOPER  
**NUGEN CAPITAL**  
NUGEN CAPITAL MANAGEMENT LLC.  
267 WATER STREET  
WARREN, RI 02885  
<http://www.nugencapital.com/>

PROJECT NAME AND ADDRESS  
**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

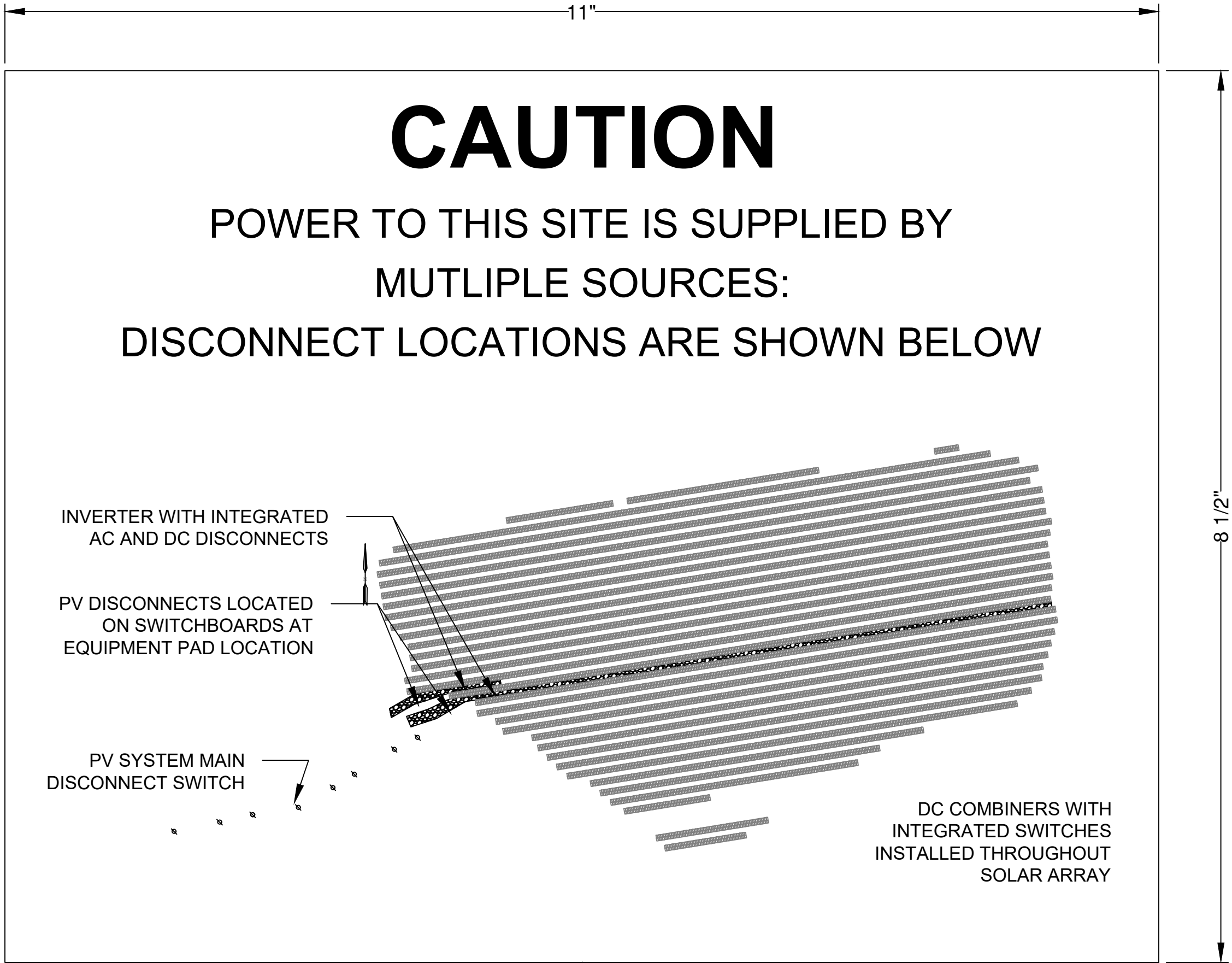
SHEET TITLE  
**ONE LINE DIAGRAM**

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	<b>E-400</b> SHEET 14 OF 22

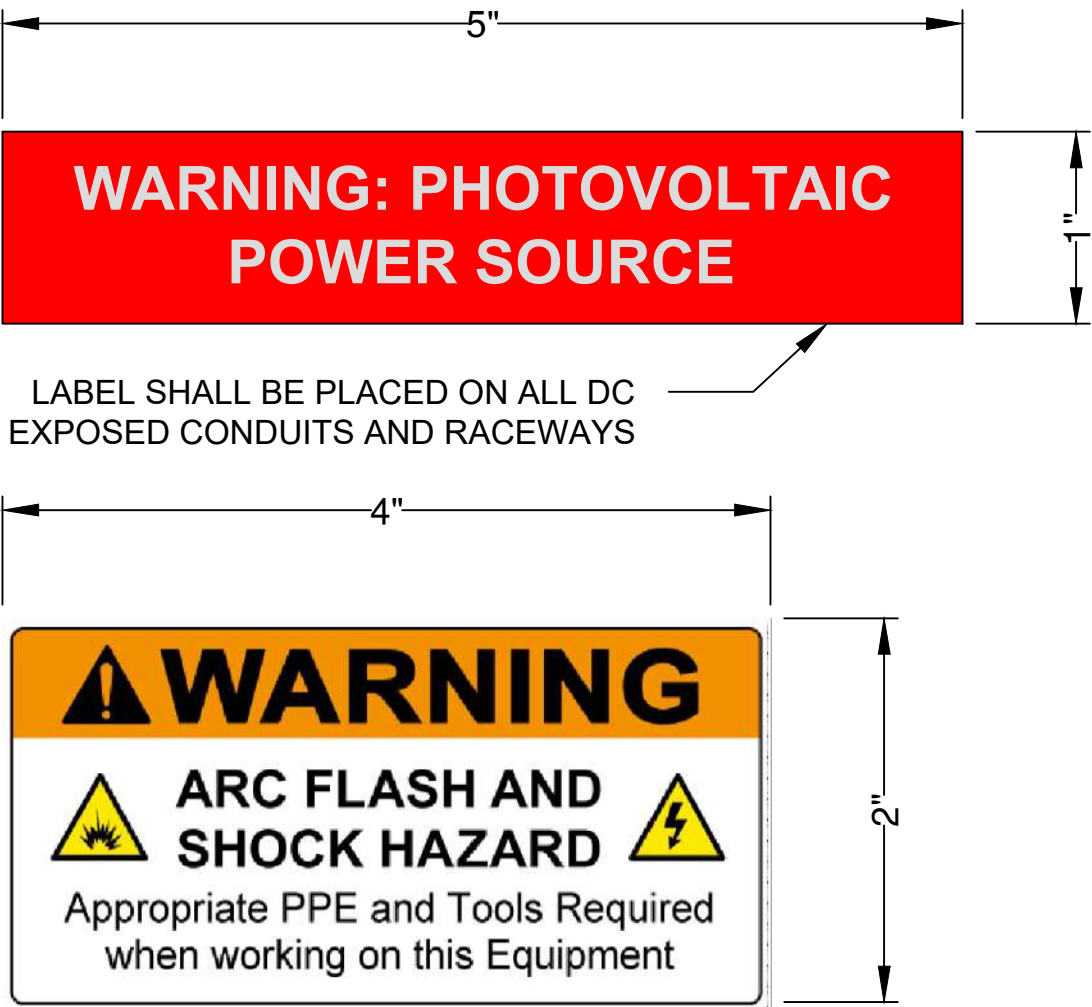
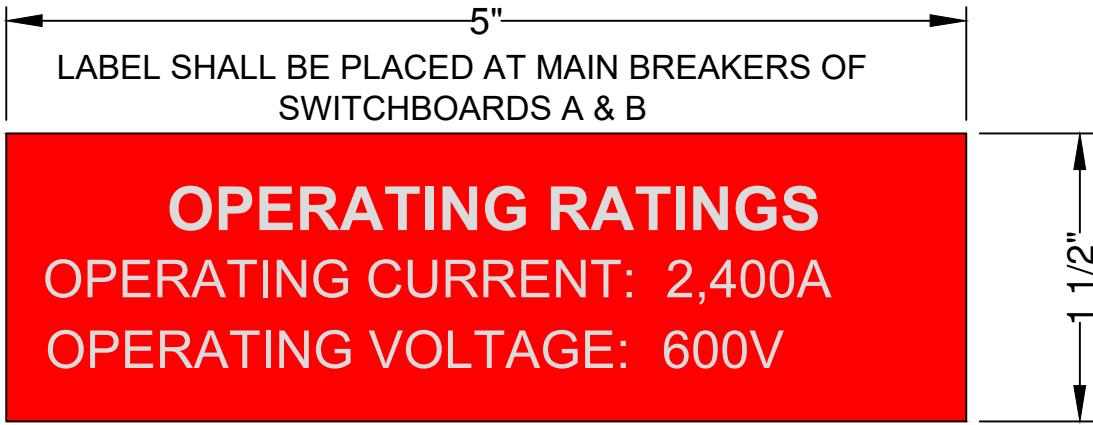
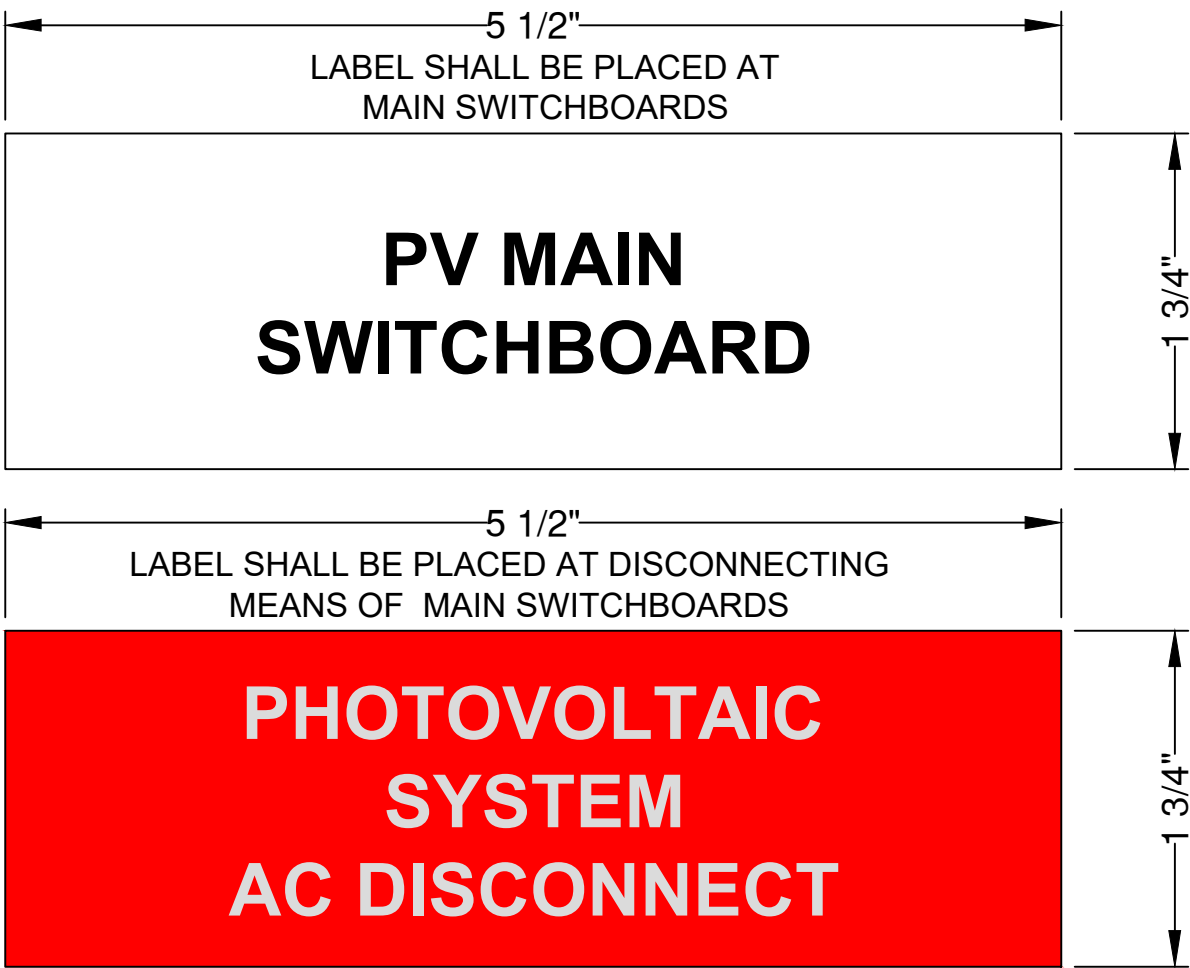
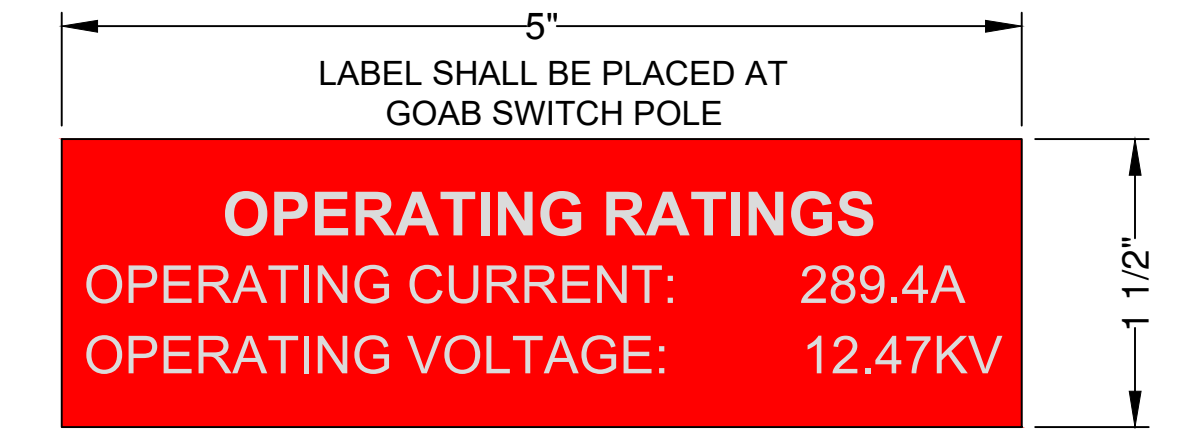
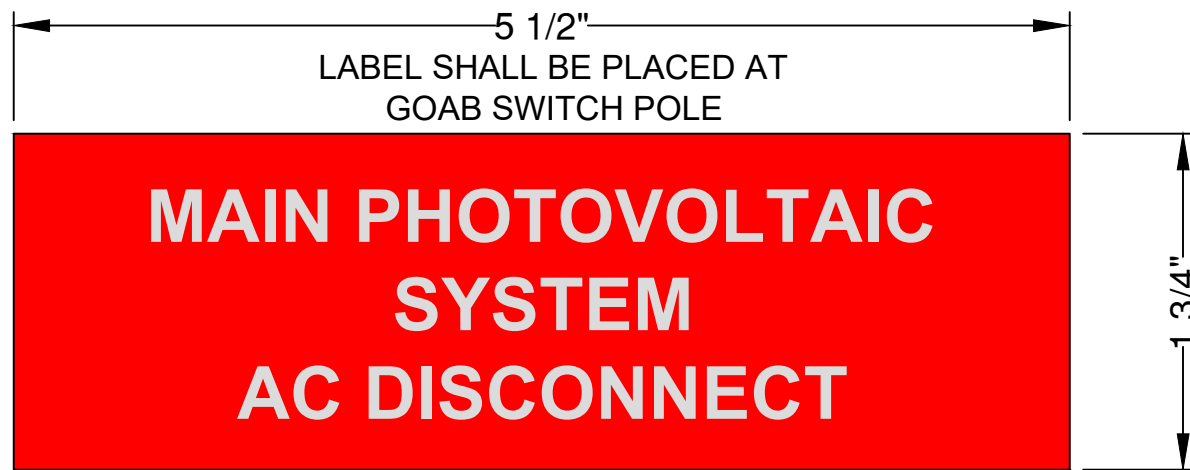
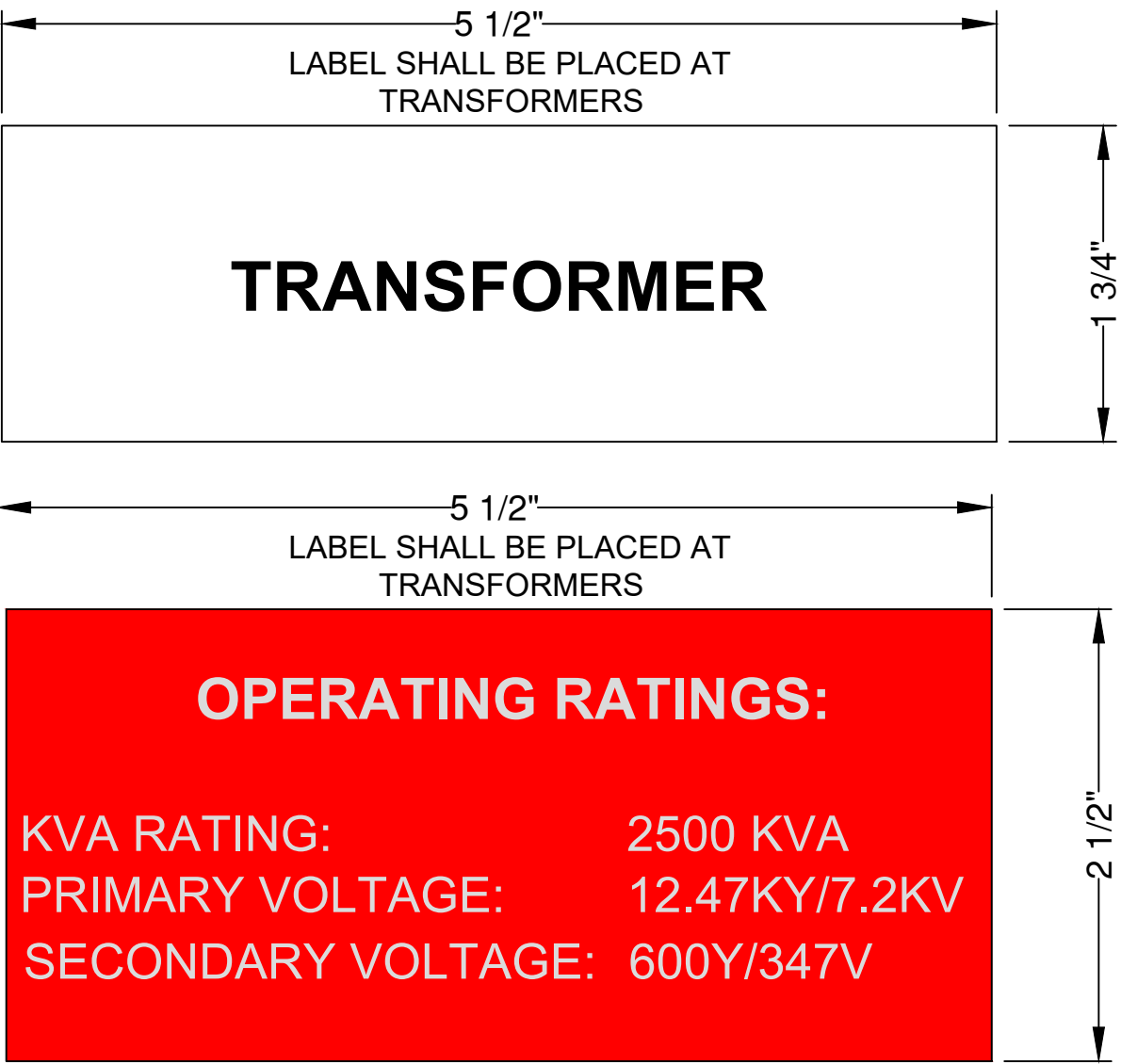


FEEDER SCHEDULE																			
EQUIPMENT	ESTIMATED DISTANCE	NUMBER OF SETS	PHASE SIZE	NEUTRAL SIZE	GROUND SIZE	75° CONDUCTOR AMPACITY	TEMPERATURE CORRECTION FACTOR	CONDUIT FILL CORRECTION FACTOR NEC 310.15(B)(3)	90° AMPACITY W/ CORRECTION FACTOR	CONDUCTOR RESISTANCE (OHMS/KFT)	CONDUCTOR VOLTAGE DROP	VOLTAGE DROP FROM PCC	SYSTEM VOLTAGE	CONTINUOUS LOAD AMPERAGE	125% FACTOR NEC 690.8(B)	MINIMUM OCPD SIZE NEC 240.4	CONDUIT TYPE	CONDUIT SIZE	CONDUIT FILL
INVERTER A.1 TO PV MAIN SWITCHBOARD A	80	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.32%	0.42%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.2 TO PV MAIN SWITCHBOARD A																			
INVERTER A.3 TO PV MAIN SWITCHBOARD A	90	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.36%	0.46%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.4 TO PV MAIN SWITCHBOARD A																			
INVERTER A.5 TO PV MAIN SWITCHBOARD A	100	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.40%	0.50%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.6 TO PV MAIN SWITCHBOARD A																			
INVERTER A.7 TO PV MAIN SWITCHBOARD A	110	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.44%	0.54%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.8 TO PV MAIN SWITCHBOARD A																			
INVERTER A.9 TO PV MAIN SWITCHBOARD A	120	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.48%	0.58%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.10 TO PV MAIN SWITCHBOARD A																			
INVERTER A.11 TO PV MAIN SWITCHBOARD A	130	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.52%	0.61%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.12 TO PV MAIN SWITCHBOARD A																			
INVERTER A.13 TO PV MAIN SWITCHBOARD A	140	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.06%	0.15%	600	16.00	20.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.14 TO PV MAIN SWITCHBOARD A																			
INVERTER A.15 TO PV MAIN SWITCHBOARD A	150	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.60%	0.69%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.16 TO PV MAIN SWITCHBOARD A																			
INVERTER A.17 TO PV MAIN SWITCHBOARD A	160	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.64%	0.73%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.18 TO PV MAIN SWITCHBOARD A																			
INVERTER A.19 TO PV MAIN SWITCHBOARD A	170	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.68%	0.77%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.20 TO PV MAIN SWITCHBOARD A																			
INVERTER A.21 TO PV MAIN SWITCHBOARD A	180	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.71%	0.81%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.22 TO PV MAIN SWITCHBOARD A																			
INVERTER A.23 TO PV MAIN SWITCHBOARD A	190	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.75%	0.85%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.24 TO PV MAIN SWITCHBOARD A																			
INVERTER A.25 TO PV MAIN SWITCHBOARD A	200	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.79%	0.89%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.26 TO PV MAIN SWITCHBOARD A																			
INVERTER A.27 TO PV MAIN SWITCHBOARD A	210	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.83%	0.93%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.28 TO PV MAIN SWITCHBOARD A																			
INVERTER A.29 TO PV MAIN SWITCHBOARD A	220	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.87%	0.97%	600	160.00	200.00	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER A.30 TO PV MAIN SWITCHBOARD A																			
INVERTER A.31 TO TRANSFORMER A	20	9	600 KCMIL AL	600 KCMIL AL	-	3060	-	1.00	3465	0.038	0.05%	0.10%	600	2256.00	2820.00	3000	PVC SCH 40	4"	23.69%
INVERTER A.32 TO TRANSFORMER B																			
INVERTER B.1 TO PV MAIN SWITCHBOARD B	50	1	#350MCM AL MV-105 133%EPR	1/3 CONCENTRIC NEUTRAL	-	-	1.04	1.00	384.8	0.063	0.01%	0.04%	12470	115.75	-	-	PVC SCH 40	5"	17.63%
INVERTER B.2 TO PV MAIN SWITCHBOARD B																			
INVERTER B.3 TO PV MAIN SWITCHBOARD B	100	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.40%	0.51%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.4 TO PV MAIN SWITCHBOARD B																			
INVERTER B.5 TO PV MAIN SWITCHBOARD B	110	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.44%	0.55%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.6 TO PV MAIN SWITCHBOARD B																			
INVERTER B.7 TO PV MAIN SWITCHBOARD B	120	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.48%	0.59%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.8 TO PV MAIN SWITCHBOARD B																			
INVERTER B.9 TO PV MAIN SWITCHBOARD B	130	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.52%	0.63%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.10 TO PV MAIN SWITCHBOARD B																			
INVERTER B.11 TO PV MAIN SWITCHBOARD B	140	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.56%	0.67%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.12 TO PV MAIN SWITCHBOARD B																			
INVERTER B.13 TO PV MAIN SWITCHBOARD B	150	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.59%	0.71%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.14 TO PV MAIN SWITCHBOARD B																			
INVERTER B.15 TO PV MAIN SWITCHBOARD B	160	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.63%	0.75%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.16 TO PV MAIN SWITCHBOARD B																			
INVERTER B.17 TO PV MAIN SWITCHBOARD B	170	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.67%	0.79%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.18 TO PV MAIN SWITCHBOARD B																			
INVERTER B.19 TO PV MAIN SWITCHBOARD B	180	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.71%	0.83%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.20 TO PV MAIN SWITCHBOARD B																			
INVERTER B.21 TO PV MAIN SWITCHBOARD B	190	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.75%	0.87%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.22 TO PV MAIN SWITCHBOARD B																			
INVERTER B.23 TO PV MAIN SWITCHBOARD B	200	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.79%	0.91%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.24 TO PV MAIN SWITCHBOARD B																			
INVERTER B.25 TO PV MAIN SWITCHBOARD B	210	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.83%	0.95%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.26 TO PV MAIN SWITCHBOARD B																			
INVERTER B.27 TO PV MAIN SWITCHBOARD B	220	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.87%	0.99%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.28 TO PV MAIN SWITCHBOARD B																			
INVERTER B.29 TO PV MAIN SWITCHBOARD B	230	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.91%	1.03%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.30 TO PV MAIN SWITCHBOARD B																			
INVERTER B.31 TO PV MAIN SWITCHBOARD B	240	1	#250 KCMIL AL	-	#6 AWG CU	205	-	1.00	230.0	0.086	0.95%	1.07%	600	159.74	199.67	200	PVC SCH 40 / EMT	2"	31.71%
INVERTER B.32 TO PV MAIN SWITCHBOARD B																			
INVERTER B.33 TO TRANSFORMER B	20	9	600 KCMIL AL	600 KCMIL AL	-	3060	-	1.00	3465	0.038	0.06%	0.18%	600	2352.09	2940.11	-	PVC SCH 40	4"	23.69%
INVERTER B.34 TO TRANSFORMER B																			
INVERTER B.35 TO GROUNDING TRANSFORMER	20	1	#350MCM AL MV-105 133%EPR	1/3 CONCENTRIC NEUTRAL	-	-	1.04	1.00	343.2	0.063	0.08%	0.12%	600	218.70	273.38	-	PVC SCH 40	5"	23.69%
INVERTER B.36 TO GROUNDING TRANSFORMER																			
INVERTER D1 TO RISER POLE	50	1	#350MCM AL MV-105 133%EPR	1/3 CONCENTRIC NEUTRAL	-	-	1.04	1.00	343.2	0.063	0.01%	0.04%	12470	231.50	-	-	HDPE	5"	17.63%
INVERTER D2 TO RISER POLE																			
INVERTER D3 TO POI	500	1	WAX/WING ACSR	WAX/WING ACSR	-	-	0.92	1.00	253.9	0.176	0.03%	0.03%	12470	231.50	-	-	-	-	-
INVERTER D4 TO POI																			

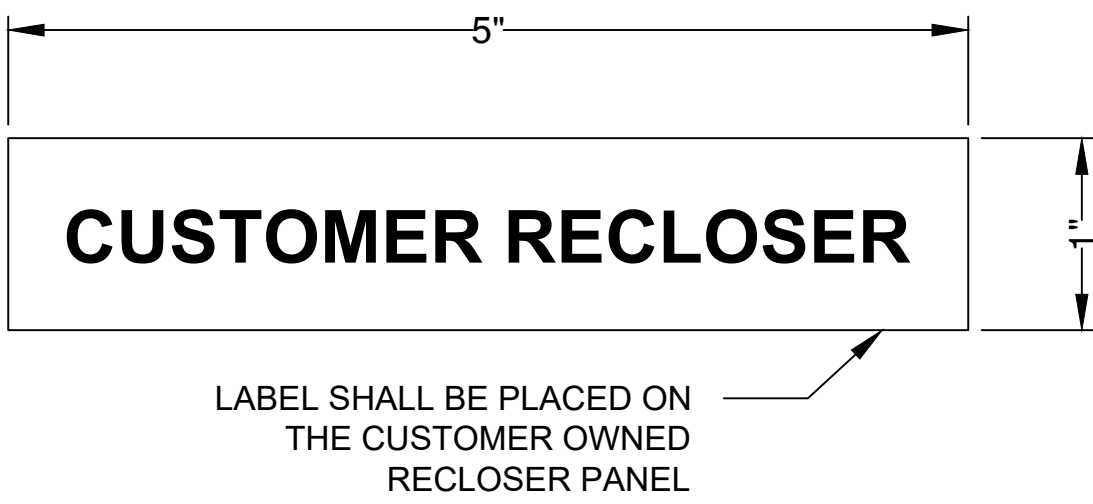
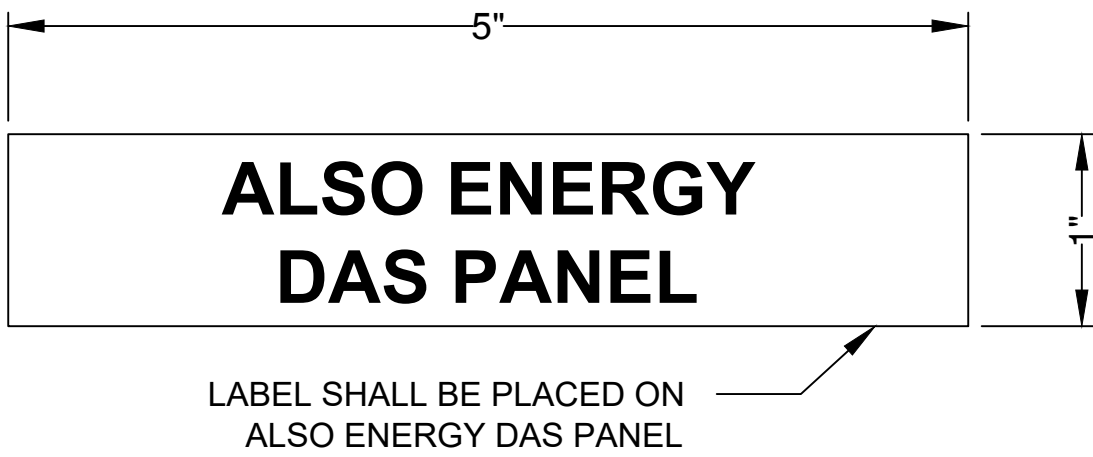
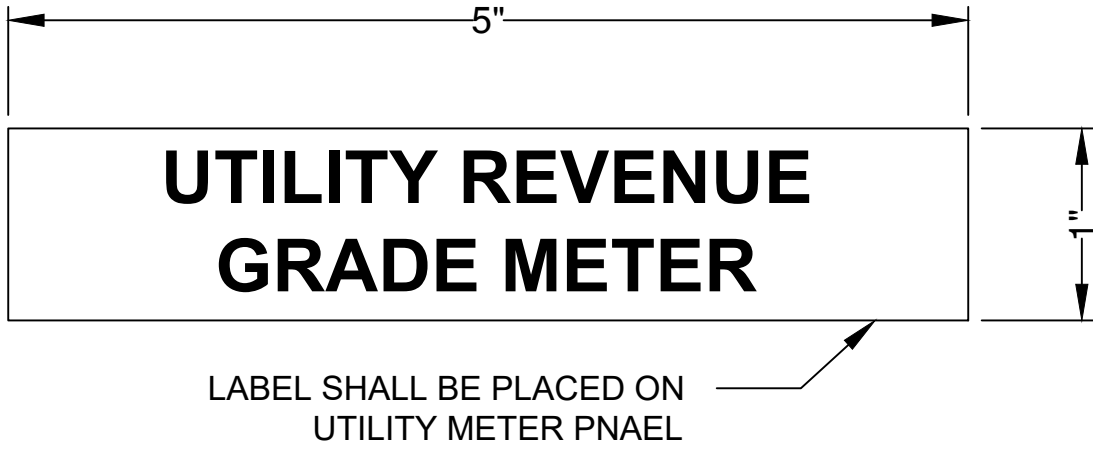
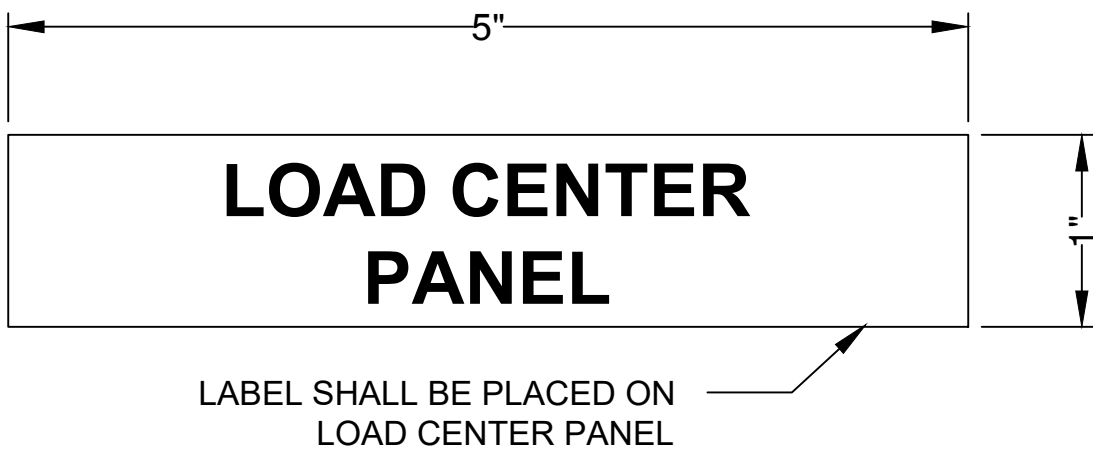




PLACARD SHALL BE PLACED AT GOAB  
SWITCH POLE LOCATION AND AT  
MAIN SWITCHBOARDS

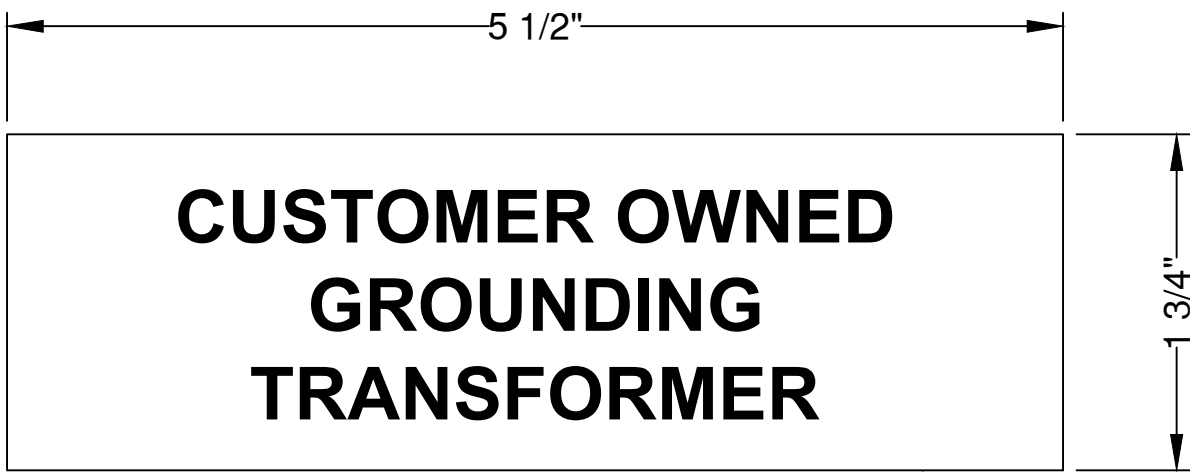


LABEL SHALL BE PLACED ON ALL ELECTRICAL EQUIPMENT,  
SUCH AS SWITCHBOARDS, INDUSTRIAL CONTROL PANELS,  
METER SOCKET ENCLOSURES, THAT ARE LIKELY TO  
REQUIRE EXAMINATION, ADJUSTMENT, SERVICING OR  
MAINTENANCE WHILE ENERGIZED.

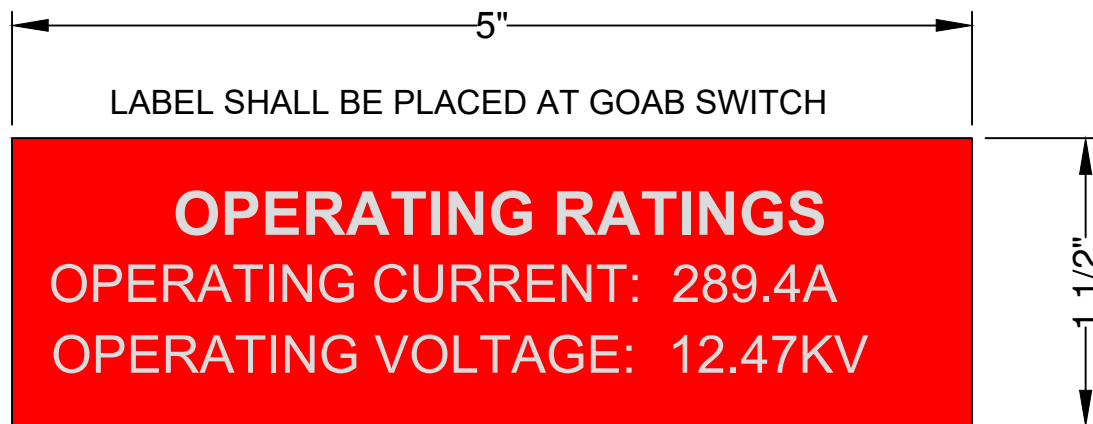
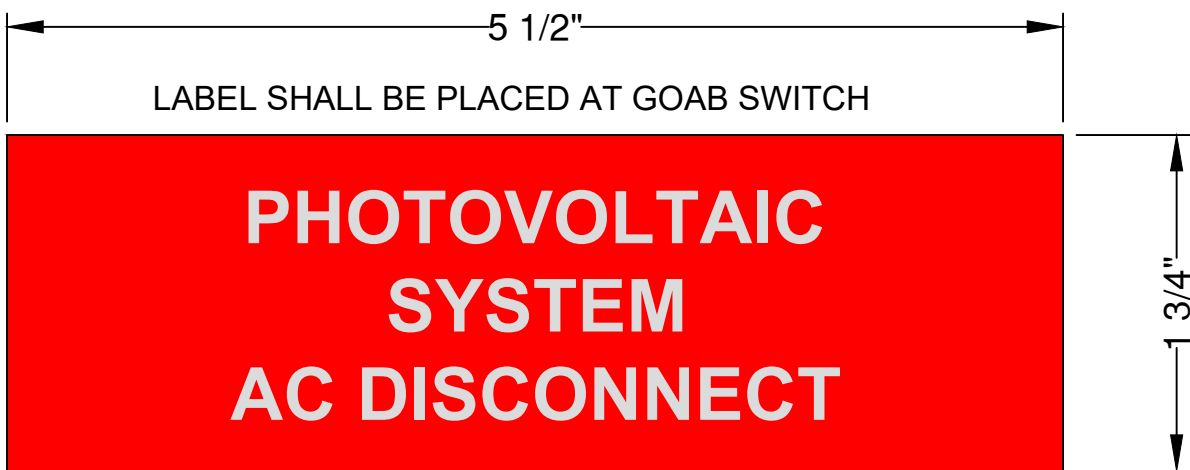
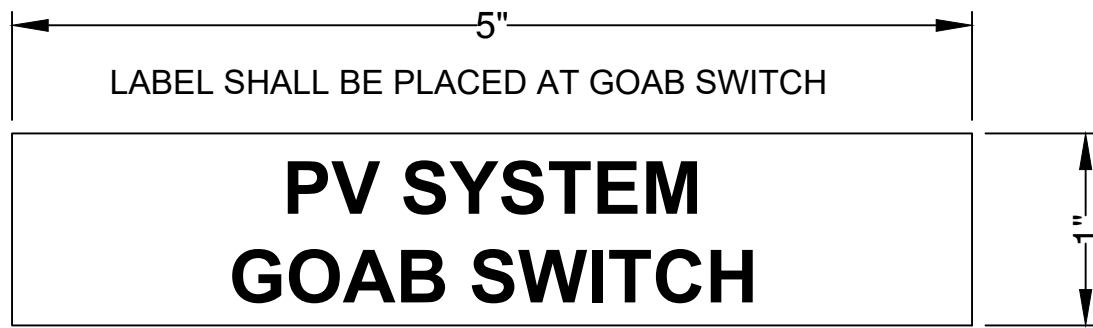
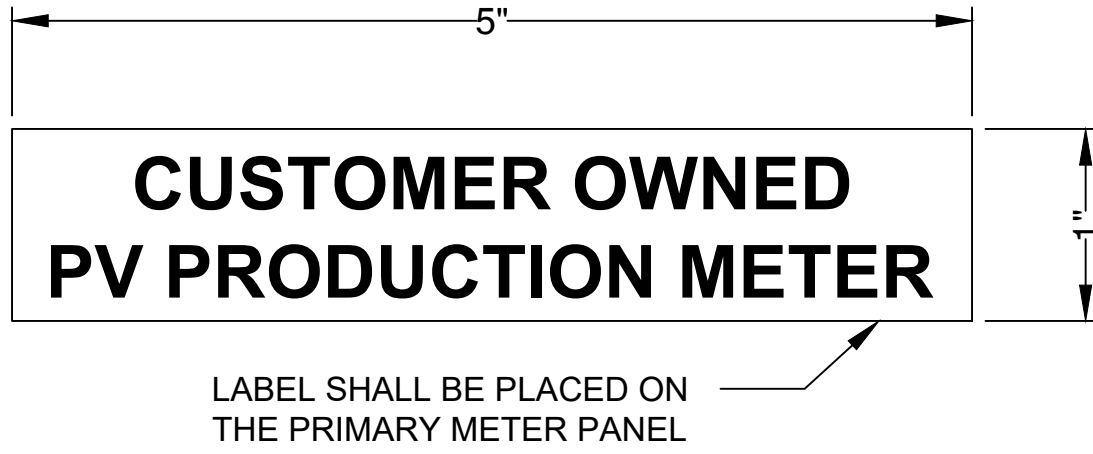


**GENERAL LABEL NOTES:**

- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL  
PLACARDS AS REQUIRED BY THE NEC, LOCAL UTILITY  
AND LOCAL AUTHORITY HAVING JURISDICTION  
REQUIREMENTS.
- PLACARDS AND LABELS SHALL USE ARIAL OR SIMILAR  
FONT, LETTERING IN CAPITAL LETTERS, AND SHALL BE  
MADE OF WEATHER RESISTANT AND DURABLE MATERIAL.  
PLACARDS AND LABELS SHALL BE NEC 2017 COMPLIANT.
- ALL PLACARDS AND LABELS SHALL BE AFFIXED TO  
EQUIPMENT UNLESS NOTED OTHERWISE.
- ALL CONDUCTORS SHALL BE LABELED WITH HEAT  
SHRINK LABELS AT THE FOLLOWING LOCATIONS:
  - DC CONDUCTORS AT THE MODULE CONNECTORS AND AT  
INVERTER INPUT TERMINALS
  - INVERTER CONDUCTORS AT INVERTER OUTPUT  
TERMINALS AND TERMINALS OF DISCONNECTING  
MEANS
  - AC FEEDERS (BOTH SIDES) AT LUGS OR TERMINALS OF  
DISCONNECTING MEANS



LABEL SHALL BE PLACED ON ALL  
GROUNDING TRANSFORMERS



**NOT FOR  
CONSTRUCTION**

1	90% DESIGN	01/03/2023	DB
0	90% DESIGN	12/15/2022	DB
8	PRELIMINARY LAYOUT	07/05/2022	DB
7	PRELIMINARY LAYOUT	06/13/2022	DB
6	PRELIMINARY LAYOUT	06/10/2022	DB
5	PRELIMINARY LAYOUT	04/25/2022	DB
4	PRELIMINARY LAYOUT	04/22/2022	DB
3	PRELIMINARY LAYOUT	04/12/2022	DB
2	PRELIMINARY LAYOUT	04/05/2022	DB
REV	DESCRIPTION	DATE	CHK

**RENUA**  
ENERGY

RENUA ENERGY, INC.  
16 HUDSON AVENUE, UNIT 2713  
GLEN FALLS, NY 12801  
833-736-8218  
<http://www.renuacnenergy.com/>

**BETA**

BETA GROUP, INC.  
701 GEORGE WASHINGTON HWY.  
LINCOLN, RI 02885  
[www.BETA-Inc.com](http://www.BETA-Inc.com)

DEVELOPER
<b>NUGEN CAPITAL</b>
NUGEN CAPITAL MANAGEMENT LLC. 267 WATER STREET WARREN, RI 02885 <a href="http://www.nugencapital.com/">http://www.nugencapital.com/</a>

PROJECT NAME AND ADDRESS
<b>BRISTOL LANDFILL SOLAR</b> MINTURN FARM RD BRISTOL, RI 02809

SHEET TITLE
EQUIPMENT LABELS

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	<b>E-500</b> SHEET 16 OF 22



5 1/4"

LABEL SHALL BE PLACED ON INVERTERS  
A.1, A.3, A.4, A.13, A.14 (26 STRINGS - HELIENE)

INPUT RATINGS

MAX CIRCUIT CURRENT: 294.13A  
MAX DC VOLTAGE: 1,464.60V

OUTPUT RATINGS

OPERATING CURRENT: 160.00A  
OPERATING VOLTAGE: 600V

5"

5 1/4"

LABEL SHALL BE PLACED ON INVERTERS  
A.2, A.5-A.12, A.15 (25 STRINGS - HELIENE)

INPUT RATINGS

MAX CIRCUIT CURRENT: 282.81A  
MAX DC VOLTAGE: 1,464.60V

OUTPUT RATINGS

OPERATING CURRENT: 160.00A  
OPERATING VOLTAGE: 600V

5"

5 1/4"

LABEL SHALL BE PLACED ON INVERTERS  
B.2-B.15 (24 STRINGS - HANSOL)

INPUT RATINGS

MAX CIRCUIT CURRENT: 286.20A  
MAX DC VOLTAGE: 1,474.68V

OUTPUT RATINGS

OPERATING CURRENT: 160.00A  
OPERATING VOLTAGE: 600V

5"

5 1/4"

LABEL SHALL BE PLACED ON INVERTERS  
B.1 (23 STRINGS - HANSOL)

INPUT RATINGS

MAX CIRCUIT CURRENT: 274.28A  
MAX DC VOLTAGE: 1,474.68V

OUTPUT RATINGS

OPERATING CURRENT: 160.00A  
OPERATING VOLTAGE: 600V

5"

5"

INVERTER XX

1"

LABEL SHALL BE PLACED ON ALL INVERTERS. THE REFERENCE 'XX' SHALL MATCH THE NUMERICAL NAME OF THE INVERTER THE LABEL IS PLACED ON.

5"

LABEL SHALL BE PLACED ON COMBINER BOXES  
A.1, A.3, A.4, A.13, A.14 (26 STRINGS - HELIENE)

OPERATING RATINGS

MAX CIRCUIT CURRENT: 294.13A  
MAX DC VOLTAGE: 1,464.60V

1 1/2"

5"

LABEL SHALL BE PLACED ON COMBINER BOXES  
A.2, A.5-A.12, A.15 (25 STRINGS - HELIENE)

OPERATING RATINGS

MAX CIRCUIT CURRENT: 282.81A  
MAX DC VOLTAGE: 1,464.60V

1 1/2"

5"

LABEL SHALL BE PLACED ON COMBINER BOXES  
B.1 (23 STRINGS - HANSOL)

OPERATING RATINGS

MAX CIRCUIT CURRENT: 274.28A  
MAX DC VOLTAGE: 1,474.68V

1 1/2"

5"

LABEL SHALL BE PLACED ON COMBINER BOXES  
B.2-B.15 (24 STRINGS - HANSOL)

OPERATING RATINGS

MAX CIRCUIT CURRENT: 286.20A  
MAX DC VOLTAGE: 1,474.68V

1 1/2"

5"

COMBINER BOX  
XX

1 1/2"

LABEL SHALL BE PLACED ON ALL COMBINER BOXES. THE REFERENCE 'XX' SHALL MATCH THE NUMERICAL NAME OF THE COMBINER BOXES THE LABEL IS PLACED ON.

GENERAL LABEL NOTES:

- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL PLACARDS AS REQUIRED BY THE NEC, LOCAL UTILITY AND LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS.
- PLACARDS AND LABELS SHALL USE ARIAL OR SIMILAR FONT, LETTERING IN CAPITAL LETTERS, AND SHALL BE MADE OF WEATHER RESISTANT AND DURABLE MATERIAL. PLACARDS AND LABELS SHALL BE NEC 2017 COMPLIANT.
- ALL PLACARDS AND LABELS SHALL BE AFFIXED TO EQUIPMENT UNLESS NOTED OTHERWISE.
- ALL CONDUCTORS SHALL BE LABELED WITH HEAT SHRINK LABELS AT THE FOLLOWING LOCATIONS:
  - DC CONDUCTORS AT THE MODULE CONNECTORS AND AT INVERTER INPUT TERMINALS
  - INVERTER CONDUCTORS AT INVERTER OUTPUT TERMINALS AND TERMINALS OF DISCONNECTING MEANS
  - AC FEEDERS (BOTH SIDES) AT LUGS OR TERMINALS OF DISCONNECTING MEANS

5 1/2"

⚡

WARNING

⚡

ELECTRIC SHOCK HAZARD

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

3 3/4"

LABEL SHALL BE PLACED ON ALL INVERTERS BY THE INVERTER WIRING BOX & ALL DC COMBINER BOXES

NOT FOR  
CONSTRUCTION

1	90% DESIGN	01/03/2023	DB
0	90% DESIGN	12/15/2022	DB
8	PRELIMINARY LAYOUT	07/05/2022	DB
7	PRELIMINARY LAYOUT	06/13/2022	DB
6	PRELIMINARY LAYOUT	06/10/2022	DB
5	PRELIMINARY LAYOUT	04/25/2022	DB
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3	PRELIMINARY LAYOUT	04/12/2022	DB
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REV	DESCRIPTION	DATE	CHK



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DEVELOPER



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267 WATER STREET  
WARREN, RI 02885  
<http://www.nugencapital.com/>

PROJECT NAME AND ADDRESS

BRISTOL LANDFILL  
SOLAR  
MINTURN FARM RD  
BRISTOL, RI 02809

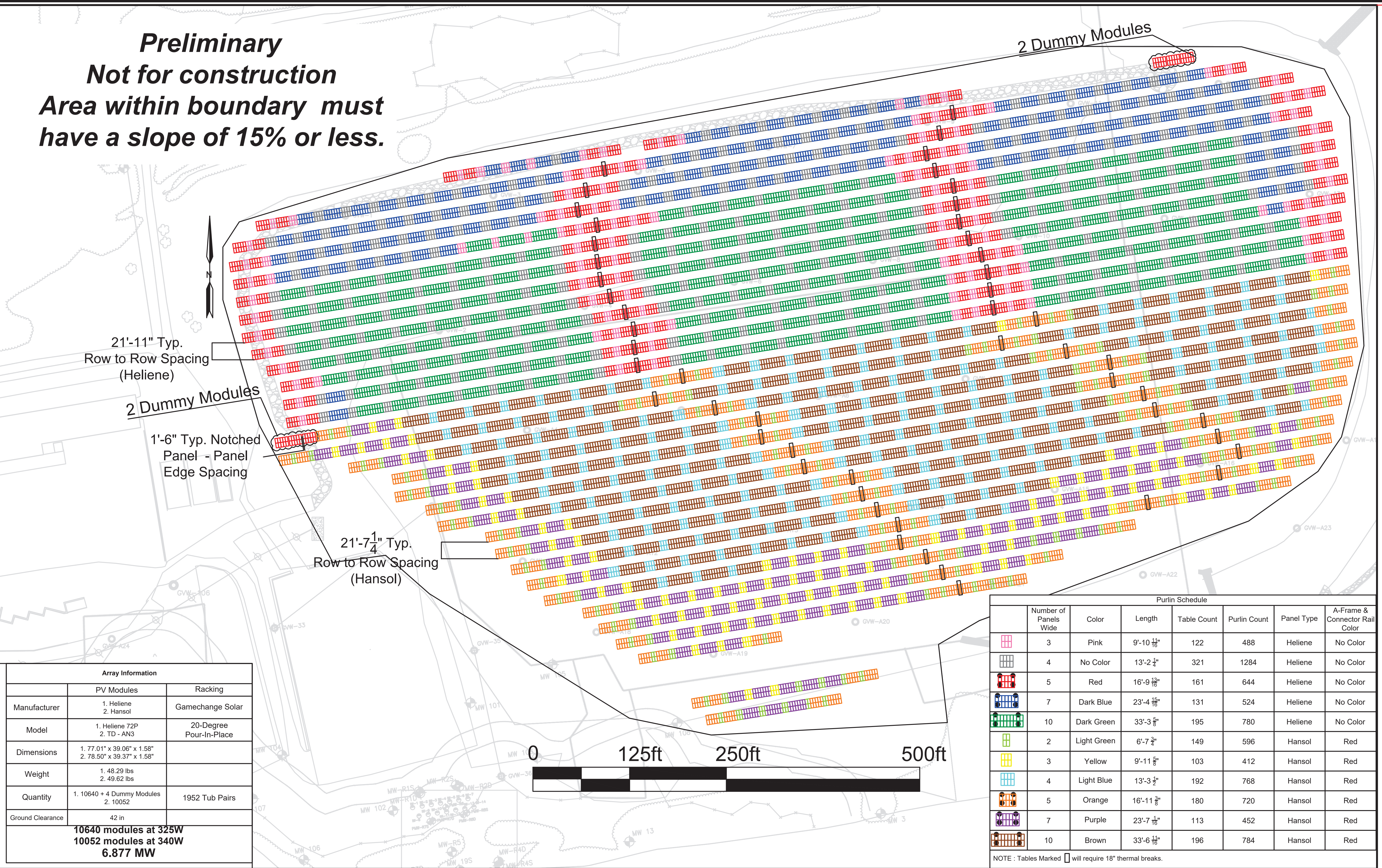
SHEET TITLE

EQUIPMENT LABELS

ENGINEER: DB	DRAWN BY: AJ
PROJECT NO. 01-19-001	SHEET NO.
CREATION DATE 12/31/2019	E-501 SHEET 17 OF 22



Preliminary  
Not for construction  
Area within boundary must  
have a slope of 15% or less.



AERIAL VIEW



A	Issued For Client Approval	2022-09-28	HD
B	Updated Layout	2022-11-17	MG
REV	DESCRIPTION	DATE	CHK



**REPOWERING THE PLANET**

230 East Ave, Suite 100, Norwalk, CT 06855  
Tel: 212-388-5160  
www.gamechangesolar.com



**BETA GROUP, INC.**  
701 GEORGE WASHINGTON HWY.  
LINCOLN, RI 02865  
www.BETA-Inc.com



**RENUA ENERGY, INC.**  
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GLEN FALLS, NY 12801  
http://www.renuenergy.com/

DEVELOPER



**NUGEN CAPITAL MANAGEMENT LLC.**  
267 WATER STREET  
WARREN, RI 02885  
http://www.nugencapital.com/


PROJECT NAME AND ADDRESS

**BRISTOL LANDFILL SOLAR**  
MINTURN FARM RD  
BRISTOL, RI 02809

SITE PLAN

ENGINEER:	SVP	DRAWN BY:	MG
PROJECT NO.	1369	SHEET NO.	<b>S100</b>
CREATION DATE	01/13/2023		
SCALE	As Shown		SHEET 18 OF 22

Purlin Schedule							
	Number of Panels Wide	Color	Length	Table Count	Purlin Count	Panel Type	A-Frame & Connector Rail Color
	3	Pink	9'-10 <sup>1</sup> / <sub>8</sub> "	122	488	Heliene	No Color
	4	No Color	13'-2 <sup>1</sup> / <sub>4</sub> "	321	1284	Heliene	No Color
	5	Red	16'-9 <sup>3</sup> / <sub>8</sub> "	161	644	Heliene	No Color
	7	Dark Blue	23'-4 <sup>1</sup> / <sub>8</sub> "	131	524	Heliene	No Color
	10	Dark Green	33'-3 <sup>5</sup> / <sub>8</sub> "	195	780	Heliene	No Color
	2	Light Green	6'-7 <sup>1</sup> / <sub>4</sub> "	149	596	Hansol	Red
	3	Yellow	9'-11 <sup>5</sup> / <sub>8</sub> "	103	412	Hansol	Red
	4	Light Blue	13'-3 <sup>1</sup> / <sub>2</sub> "	192	768	Hansol	Red
	5	Orange	16'-11 <sup>3</sup> / <sub>8</sub> "	180	720	Hansol	Red
	7	Purple	23'-7 <sup>1</sup> / <sub>8</sub> "	113	452	Hansol	Red
	10	Brown	33'-6 <sup>1</sup> / <sub>8</sub> "	196	784	Hansol	Red

NOTE : Tables Marked  will require 18" thermal breaks.

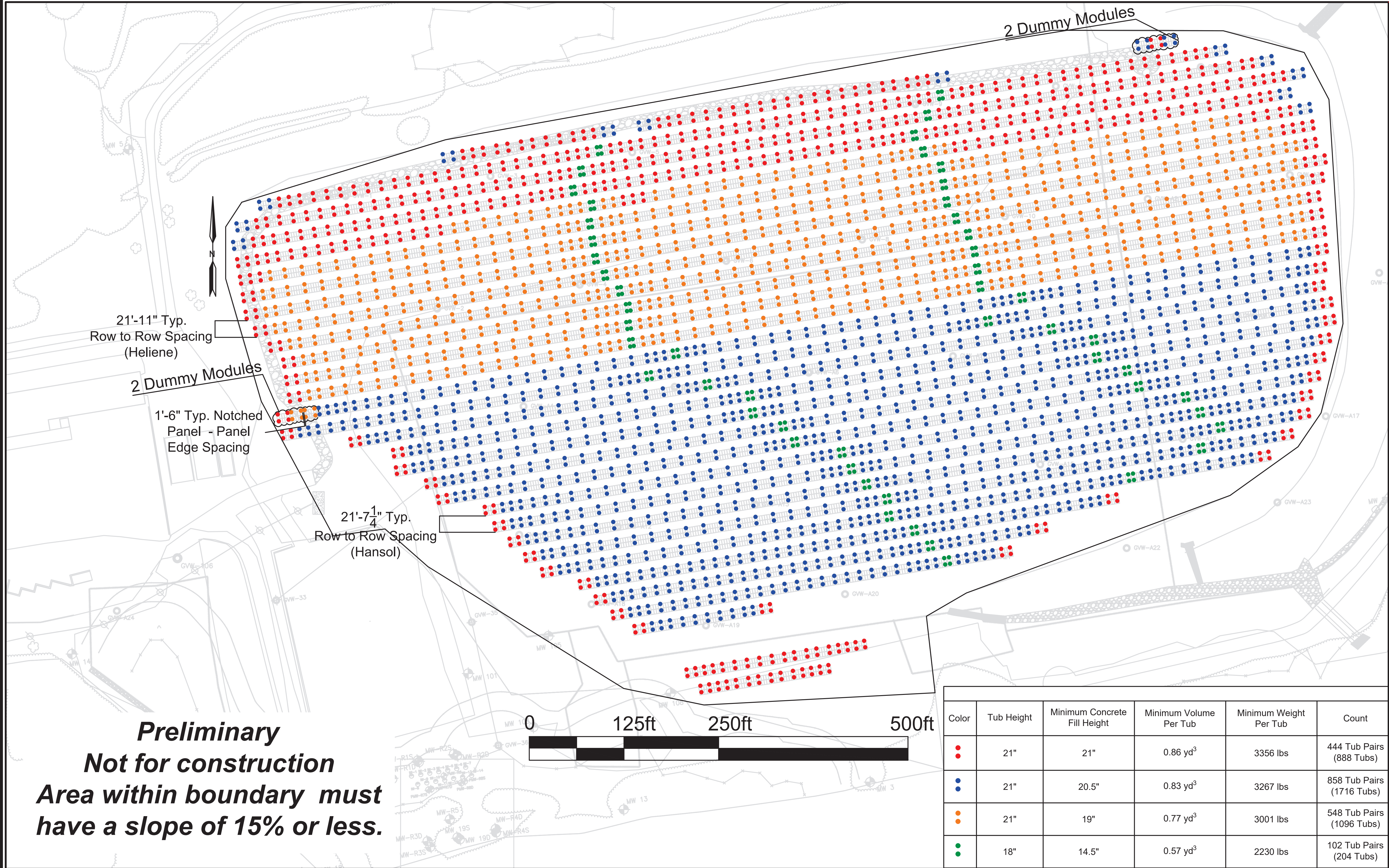
GENERAL NOTES

- The layout shown herein is based on site layout geometry provided to GameChange Solar by the customer.
  - Any changes to the site that may affect the solar PV arrays depicted herein shall be notified to GameChange Solar.
  - The layouts and details shown herein are a custom design for this project and are specific to the PV module(s) shown in the Array Information table.
- GameChange Solar cannot be responsible for errors during installation caused by changes that impact the layout as shown
  - Install foundations at specified distances along slope line, Not by plane view. See Detail Sheets for additional info
  - Minimum safety factor of 1.5 used in structural design per UL2703

Design Information

Building Occupancy Category	I	Area of Array	21.84 acres	Distributed Dead Load	14.5 psf
Wind Exposure Category	C	No. of rows	34	Seismic Site Class	D
Design Wind Speed	126 mph ASCE7-10	Distance to Saltwater	approx. 1 mile	S <sub>s</sub> /S <sub>1</sub>	0.174 g/ 0.06 g
Design Snow Load	30 psf	Years Since Landfill Capped	over 20 years	Project Design Life	25 Years





**Preliminary**  
**Not for construction**  
**Area within boundary must**  
**have a slope of 15% or less.**

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Design Snow Load	30 psf	Years Since Landfill Capped	over 20 years	Project Design Life	25 Years

AERIAL VIEW



A	Issued For Client Approval	2022-09-28	HD
B	Updated Layout	2022-11-17	MG
REV	DESCRIPTION	DATE	CHK



REPOWERING THE PLANET

230 East Ave, Suite 100, Norwalk, CT 06855  
Tel:212-388-5160  
www.gamechangesolar.com



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GLEN FALLS, NY 12801  
http://www.renuaenergy.com/

DEVELOPER



NUGEN CAPITAL MANAGEMENT LLC.

267 WATER STREET  
WARREN, RI 02885  
http://www.nugencapital.com/

PROJECT NAME AND ADDRESS

BRISTOL LANDFILL SOLAR  
MINTURN FARM RD  
BRISTOL, RI 02809

TUB PLAN

ENGINEER:	SVP	DRAWN BY:	MG
PROJECT NO.	1369	SHEET NO.	S200
CREATION DATE	01/13/2023		
SCALE	As Shown		



AERIAL VIEW



A	Issued For Client Approval	2022-09-28	HD
B	Updated Layout	2022-11-17	MG
REV	DESCRIPTION	DATE	CHK

GAMECHANGE SOLAR

REPOWERING THE PLANET

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BETA

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RENUA

ENERGY

RENUA ENERGY, INC.  
16 HUDSON AVENUE, UNIT 2731  
GLEN FALLS, NY 12801  
http://www.renuenergy.com/

DEVELOPER

NUGEN CAPITAL

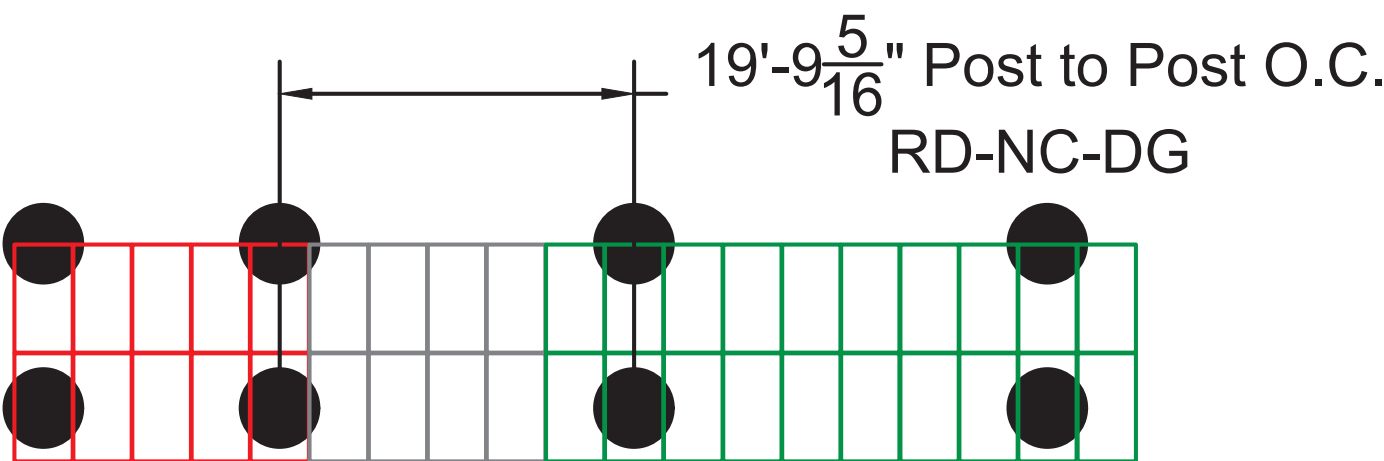
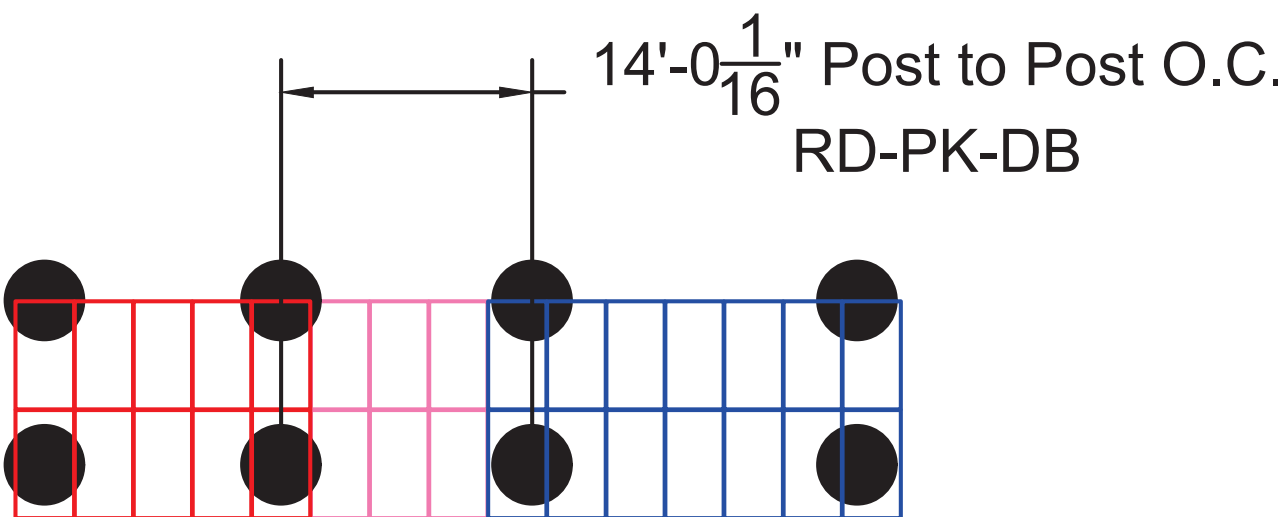
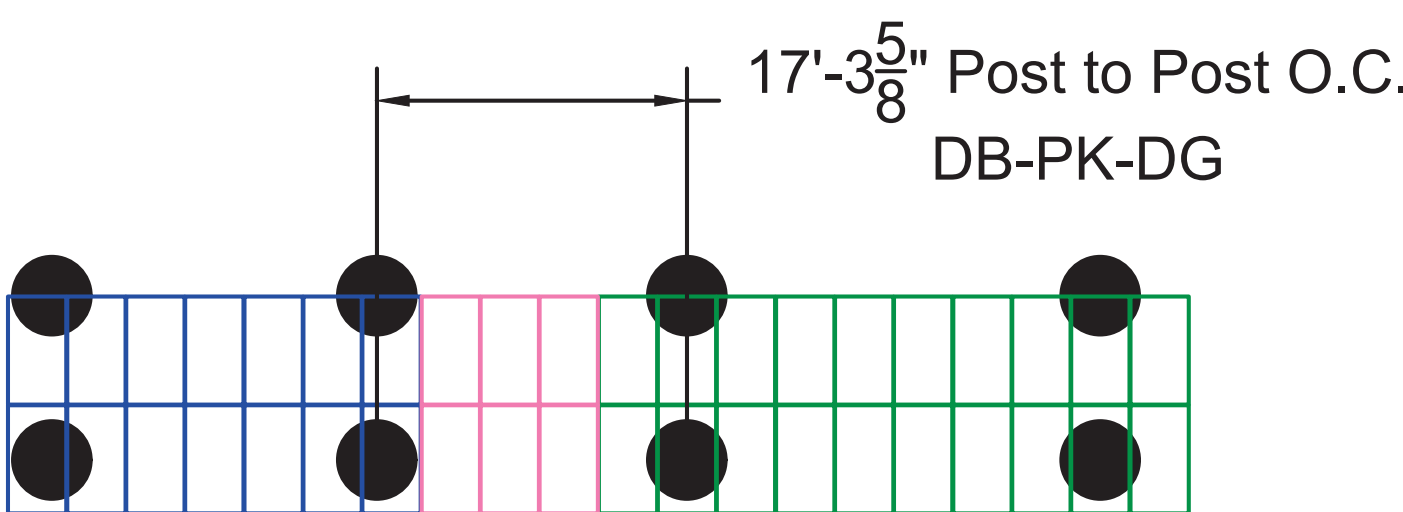
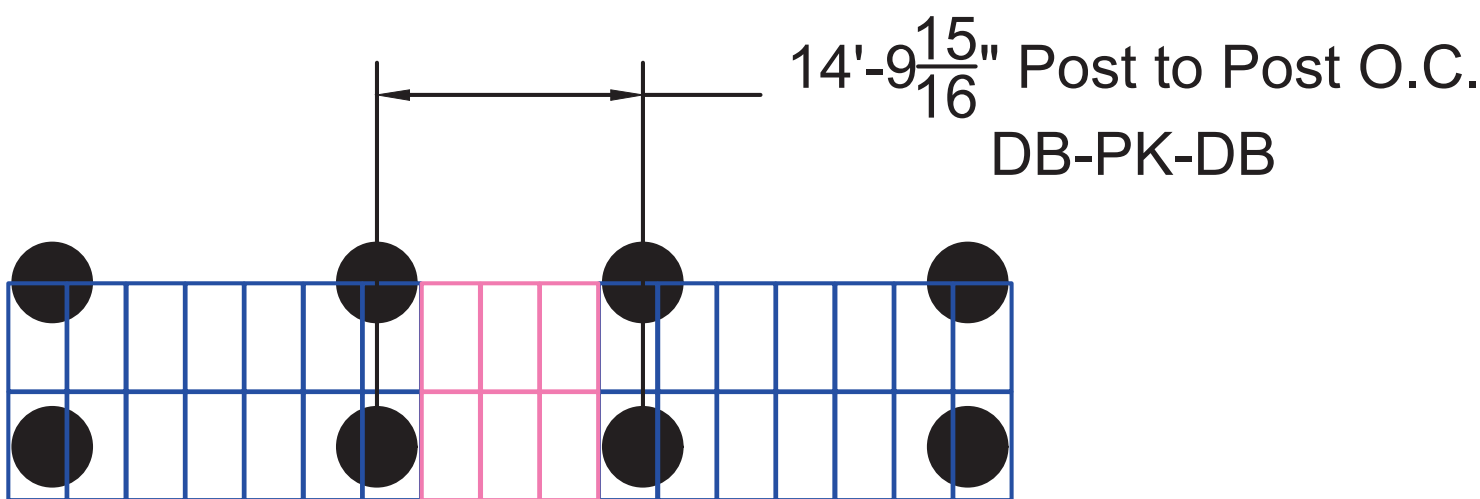
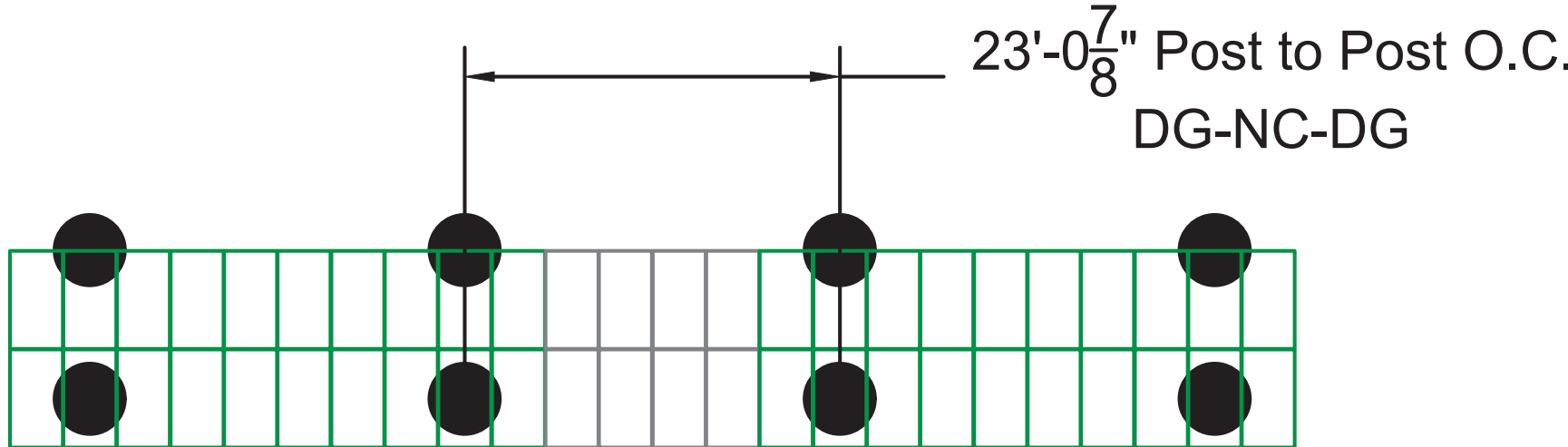
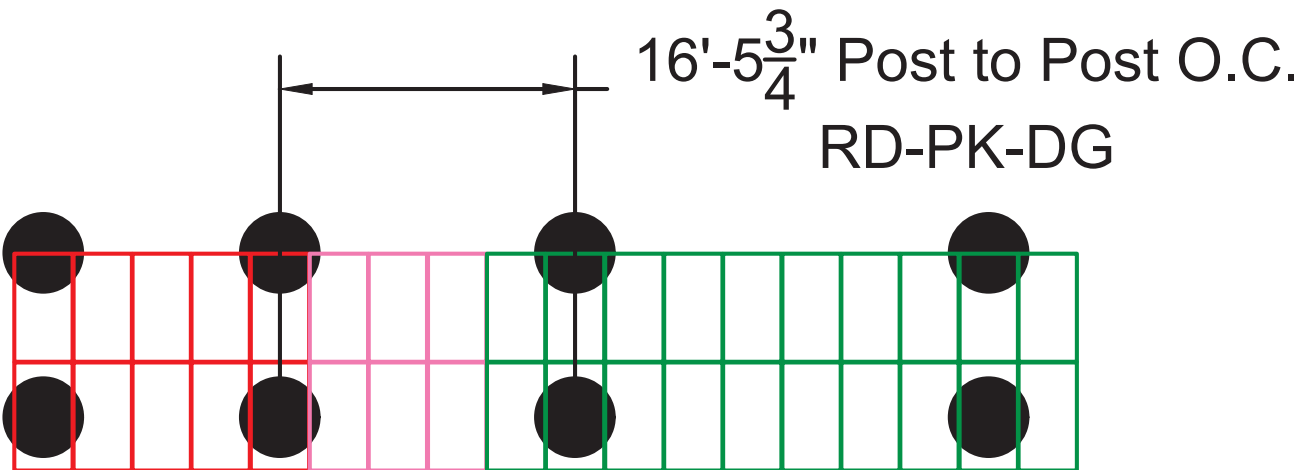
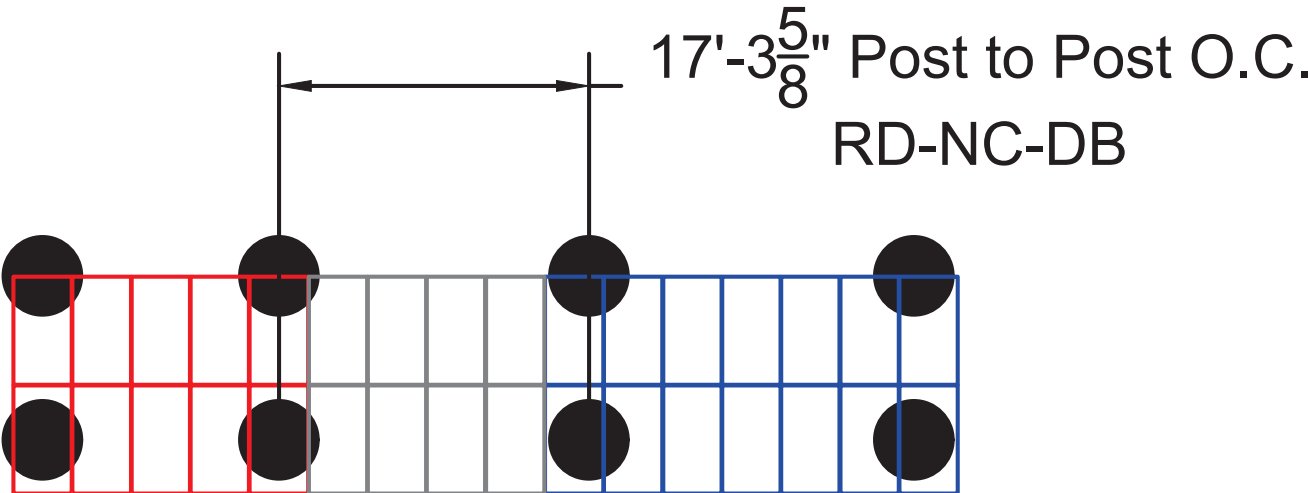
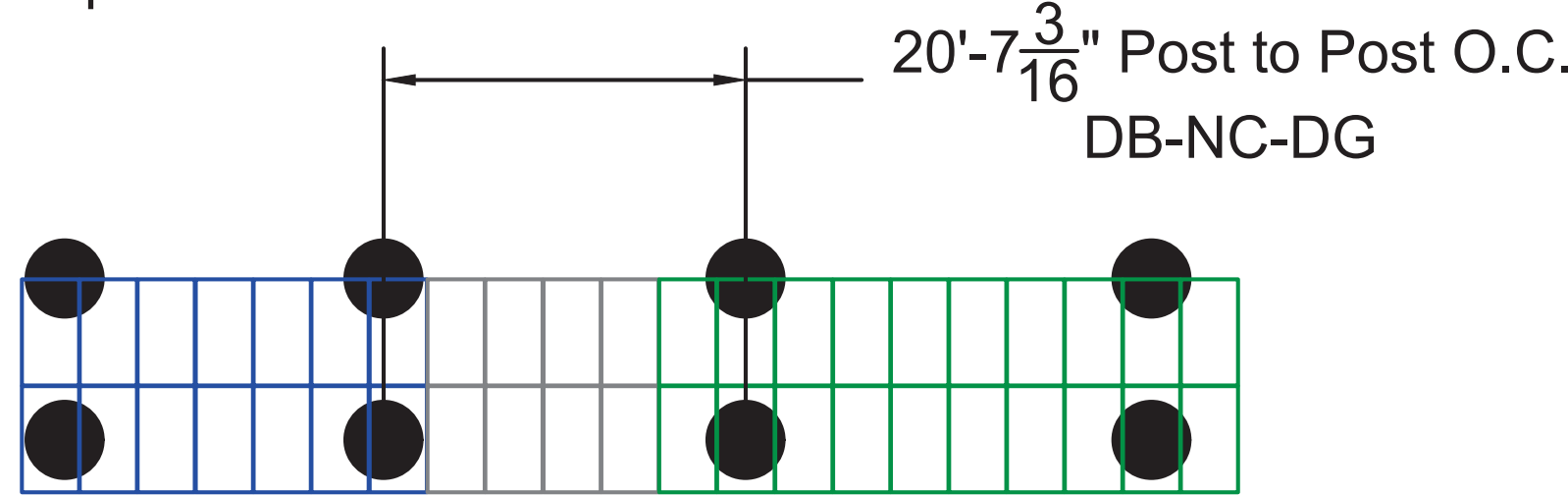
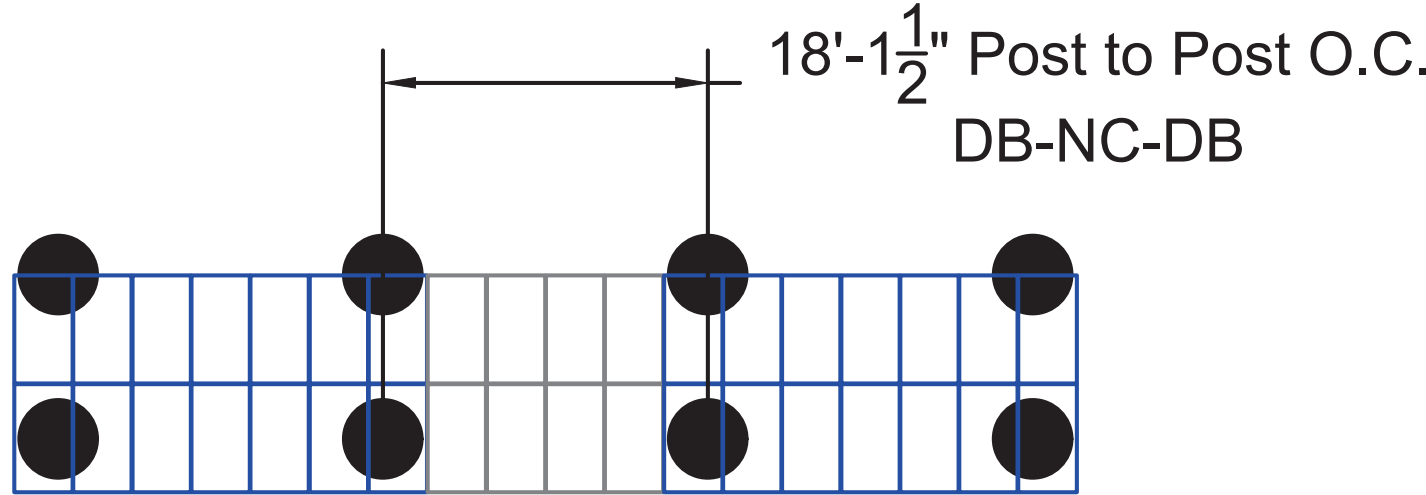
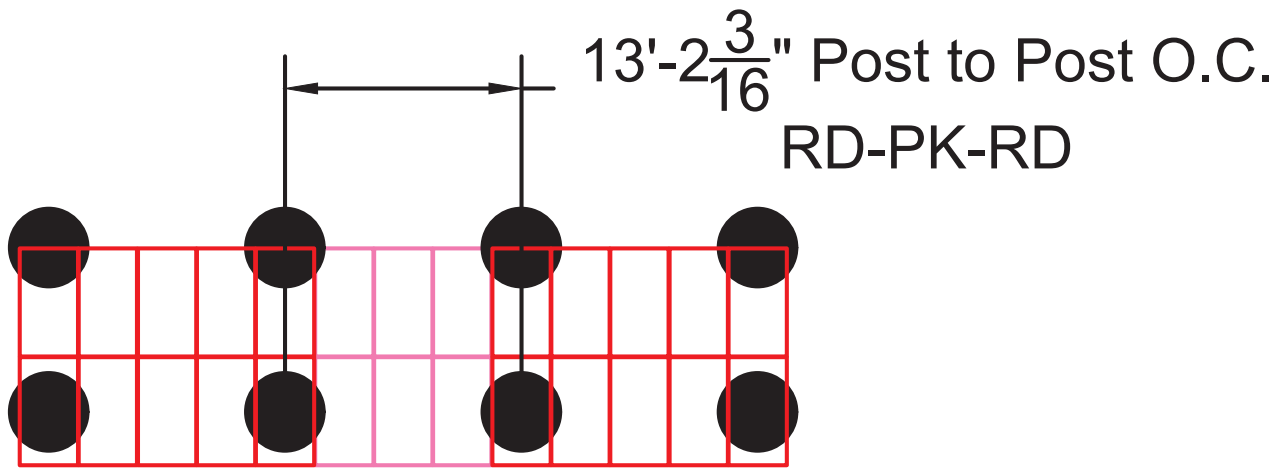
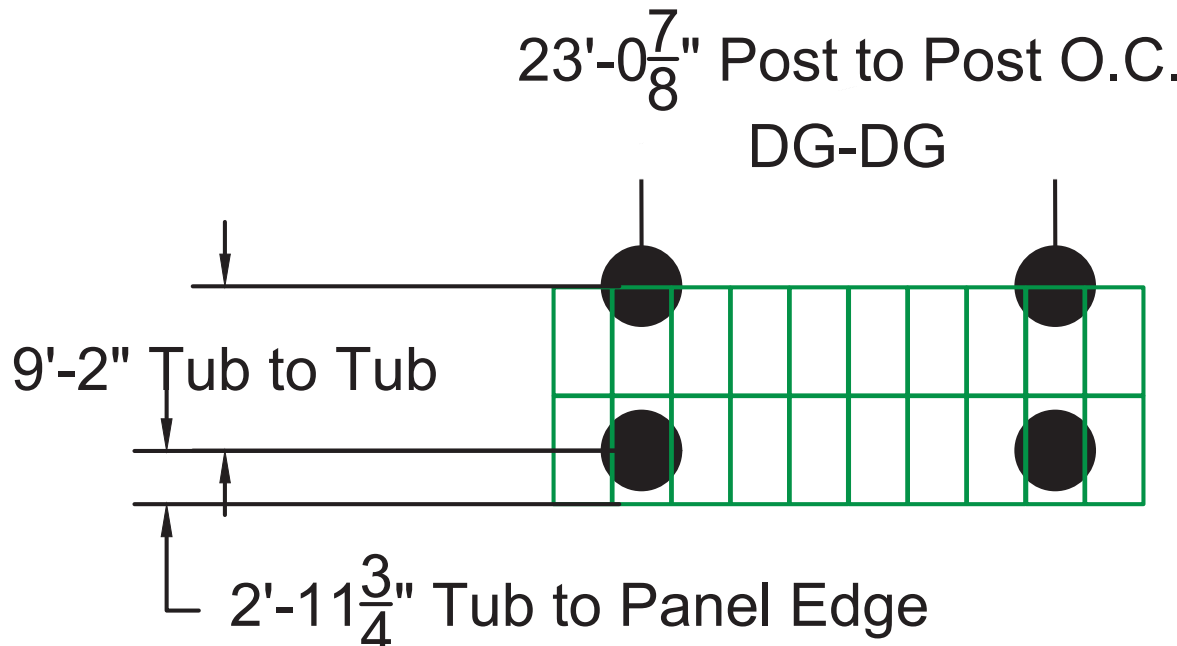
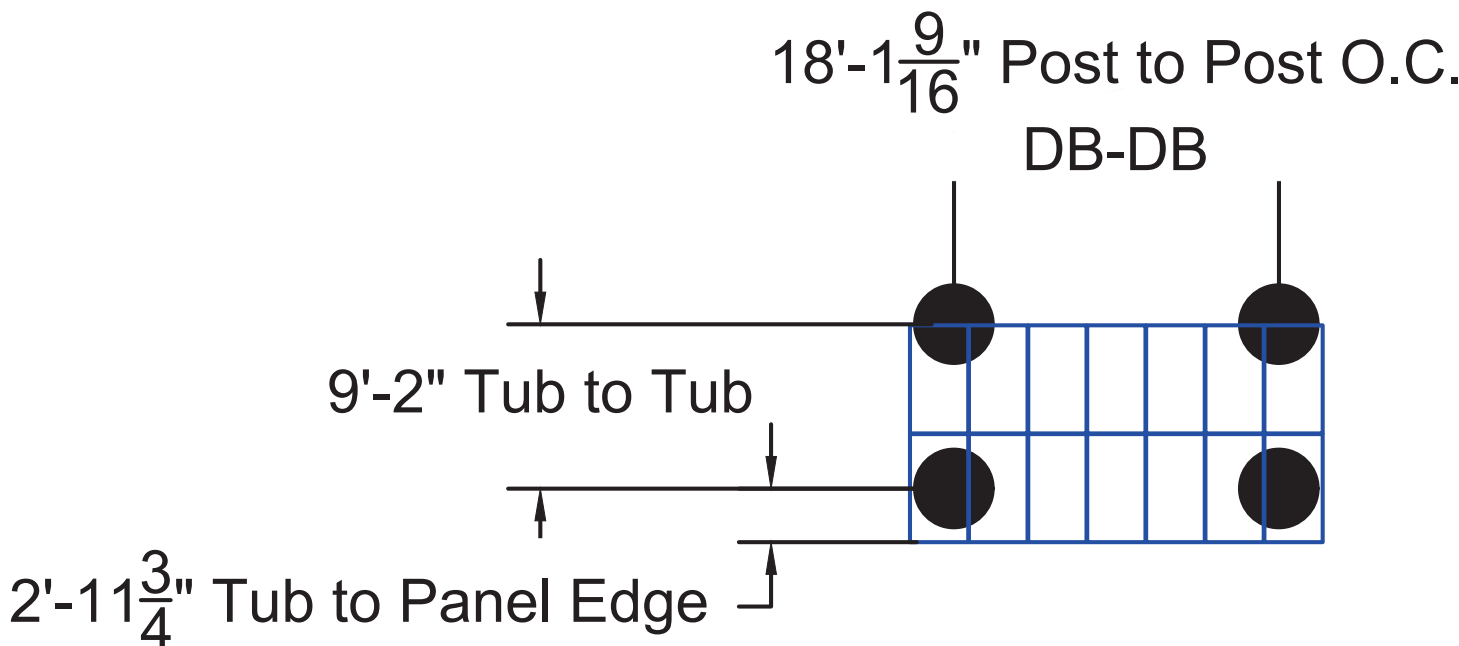
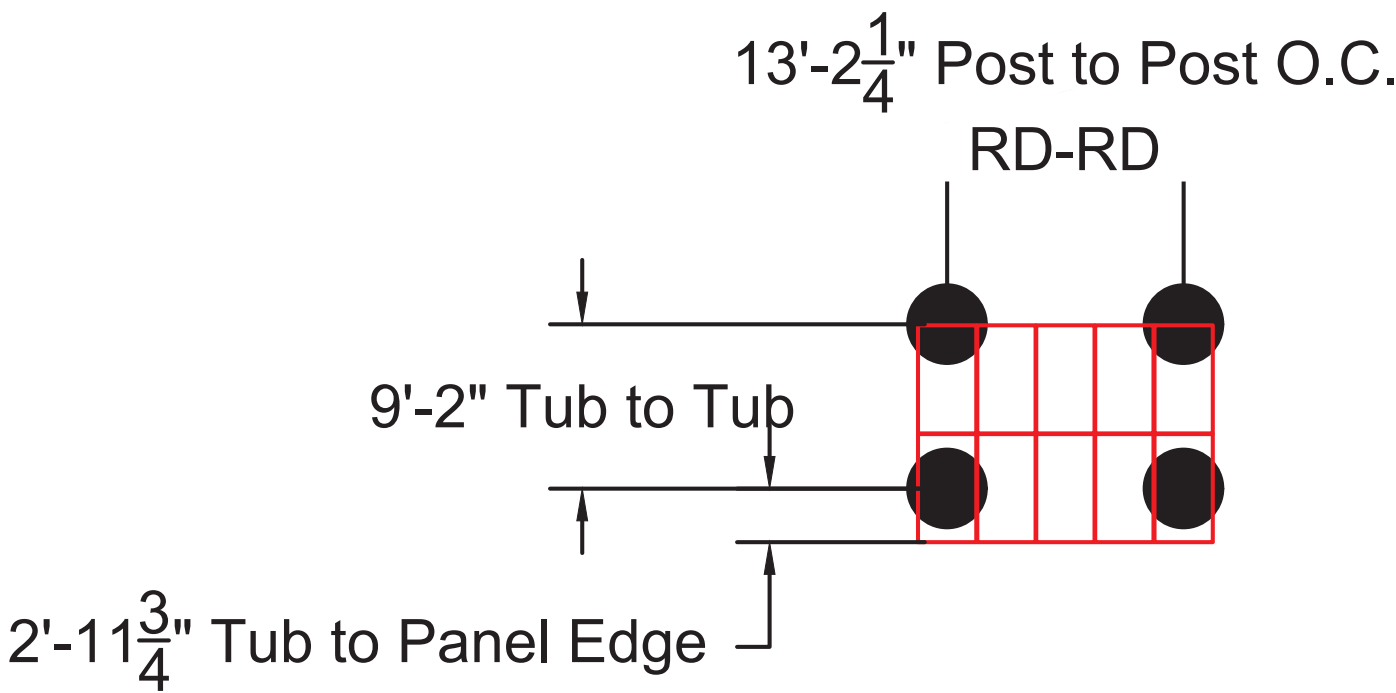
NUGEN CAPITAL MANAGEMENT LLC.  
267 WATER STREET  
WARREN, RI 02885  
http://www.nugencapital.com/

PROJECT NAME AND ADDRESS

BRISTOL LANDFILL SOLAR  
MINTURN FARM RD  
BRISTOL, RI 02809

TUB SPACING PLAN  
(Heliene)

ENGINEER:	SVP	DRAWN BY:	MG
PROJECT NO.	1369	SHEET NO.	S250
CREATION DATE	01/13/2023		
SCALE	As Shown		SHEET 20 OF 22



GENERAL NOTES

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- Any changes to the site that may affect the solar PV arrays depicted herein shall be notified to GameChange Solar.
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- Install foundations at specified distances along slope line, Not by plane view. See Detail Sheets for additional info
- Minimum safety factor of 1.5 used in structural design per UL2703

Design Information

Building Occupancy Category	I	Area of Array	21.84 acres	Distributed Dead Load	14.5 psf
Wind Exposure Category	C	No. of rows	34	Seismic Site Class	D
Design Wind Speed	126 mph ASCE7-10	Distance to Saltwater	approx. 1 mile	Ss/S <sub>1</sub>	0.174 g/ 0.06 g
Design Snow Load	30 psf	Years Since Landfill Capped	over 20 years	Project Design Life	25 Years

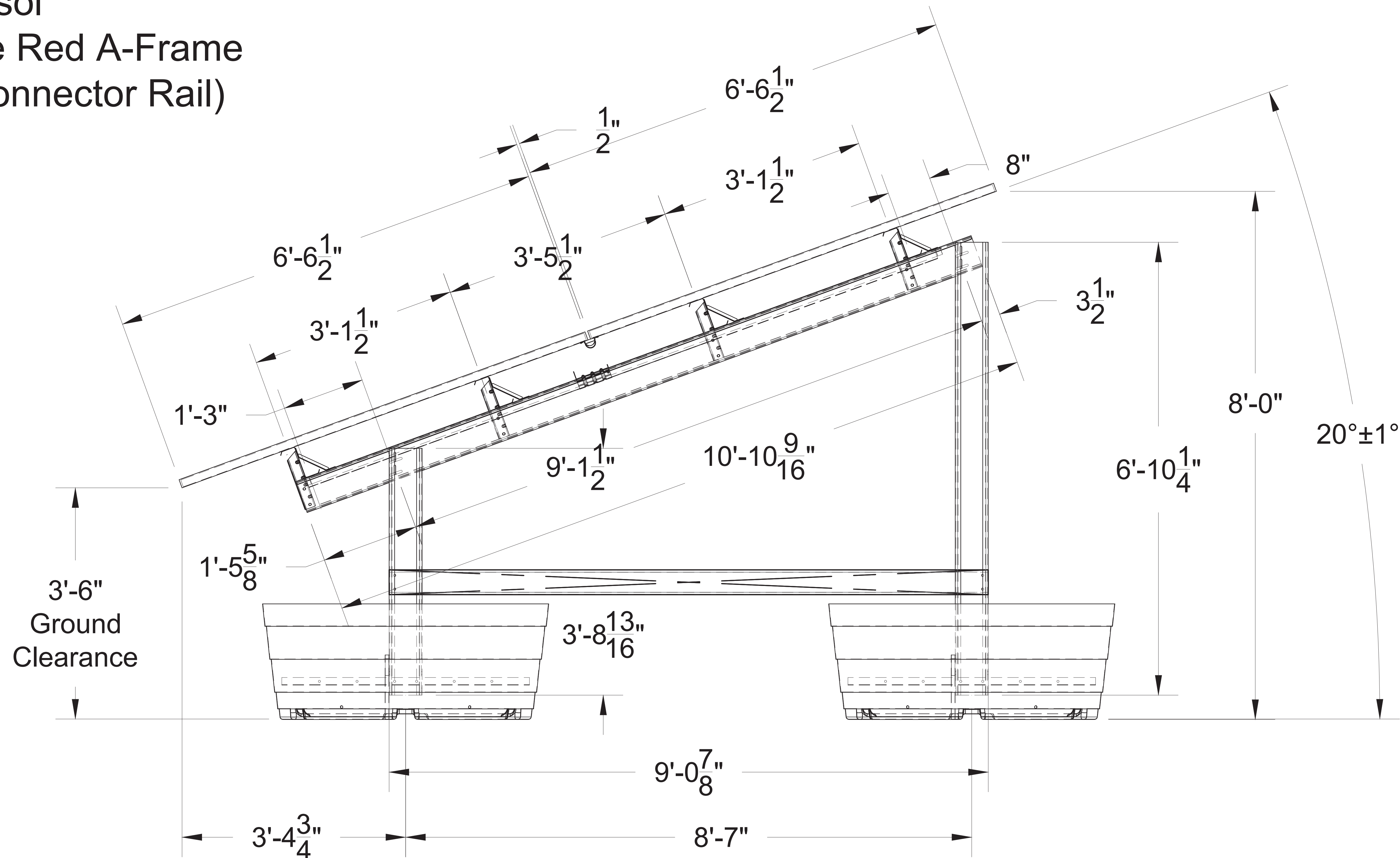






# Hansol

(Use Red A-Frame  
& Connector Rail)



## GENERAL NOTES

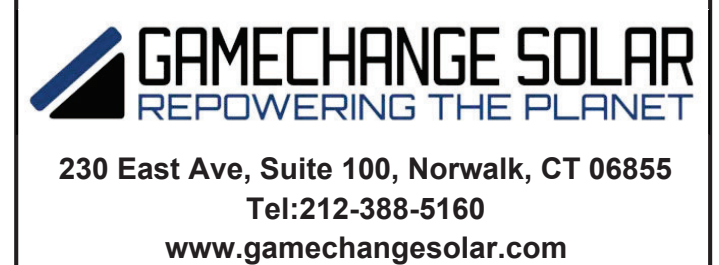
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### AERIAL VIEW



A	Issued For Client Approval	2022-09-28	HD
B	Updated Layout	2022-11-17	MG
REV	DESCRIPTION	DATE	CHK



DEVELOPER

**NUGEN CAPITAL**

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PROJECT NAME AND ADDRESS

**BRISTOL LANDFILL  
SOLAR**

MINTURN FARM RD  
BRISTOL, RI 02809

SHEET TITLE

**TYPICAL ASSEMBLY**  
**East Elevation**

ENGINEER:  SVP	DRAWN BY:  MG
PROJECT NO.  1369	SHEET NO.  <div style="font-size: 48pt; font-weight: bold; text-align: center;">S403</div>
CREATION DATE  01/13/2023	
SCALE  As Shown	
SHEET 22 OF 22	