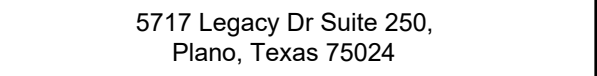


aes

2180 South 1300 East, Suite 600
Salt Lake City, UT 84106-2749
(801) 679 - 3500



SHEET LIST	
SHEET NUMBER	SHEET TITLE
TL-G.01.01	COVER SHEET
TL-G.01.02	GENERAL LEGENDS, NOTES & STANDARDS
TL-E.01.01	PLAN LAYOUT
TL-S.01.01	STEEL POLE GEOMETRY
TL-C.01.01	PLAN & PROFILE
TL-C.01.02	PLAN & PROFILE
TL-C.01.03	PLAN & PROFILE
TL-C.01.04	PLAN & PROFILE
TL-C.01.05	PLAN & PROFILE
TL-C.01.06	CONSTRUCTION STAKING TABLE
TL-C.01.07	STRINGING CHART
TL-C.01.08	BILL OF QUANTITY

- ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE
- ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
- ASCE - AMERICAN SOCIETY OF CIVIL ENGINEERS
- IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
- NESC - NATIONAL ELECTRIC SAFETY CODE
- NEC - NATIONAL ELECTRICAL CODE 2017 (NFPA 70)
- IBC - INTERNATIONAL BUILDING CODE



OWNER

AES
2180 SOUTH 1300 EAST, SUITE 600
SALT LAKE CITY, UT 84106-2749

JUNE 2024

DESIGN ENTITY CONTACT INFORMATION					
TRADE ITEM	FIRM NAME	CONTACT NAME	ADDRESS	PHONE	EMAIL
OWNER	AES	DARREN KUENZI	2180 SOUTH 1300 EAST, SUITE 600SALT LAKE CITY, UTAH 84106-2749	(801) 679-3500	DARREN.KUENZI@AES.COM
CIVIL	PV INSIGHT	MARCUS TREW	5717 LEGACY DR SUITE 250, PLANO, TEXAS 75024	(817) 946-5474	MARCUS.TREW@PVINSIGHTINC.COM
ELECTRICAL	PV INSIGHT	HEMAL SHAH	5717 LEGACY DR SUITE 250, PLANO, TEXAS 75024	(732) 261-6455	HEMAL.SHAH@PVINSIGHTINC.COM
GEOTECH	TERRACON	MICHAEL ANDERSON	6805 ACADEMY PKWY, W.ALBUQUERQUE, NEW MEXICO 87109	(505) 797-4287	-
ALTA SURVEYOR	WSB	BRAD OSWALD, P.L.S	-	-	-

30% DESIGN
NOT FOR CONSTRUCTION

REVISIONS:

NO.	DATE	DESCRIPTION
0	08/02/2023	ISSUED FOR 30% DESIGN
1	06/25/2024	UPDATED 30% DESIGN

PROJECT TITLE:

RANCHO VIEJO SOLAR
UTILITY

PROJECT LOCATION:

SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

COVER SHEET

115kV HV GENERATION
TIE LINE

PROJ NUM:	
DES:	C M HAREESH
DWN:	G VENKATESH
CHK:	JAGADEESH Y
APV:	P KRISHNA
DATE:	06/25/2024

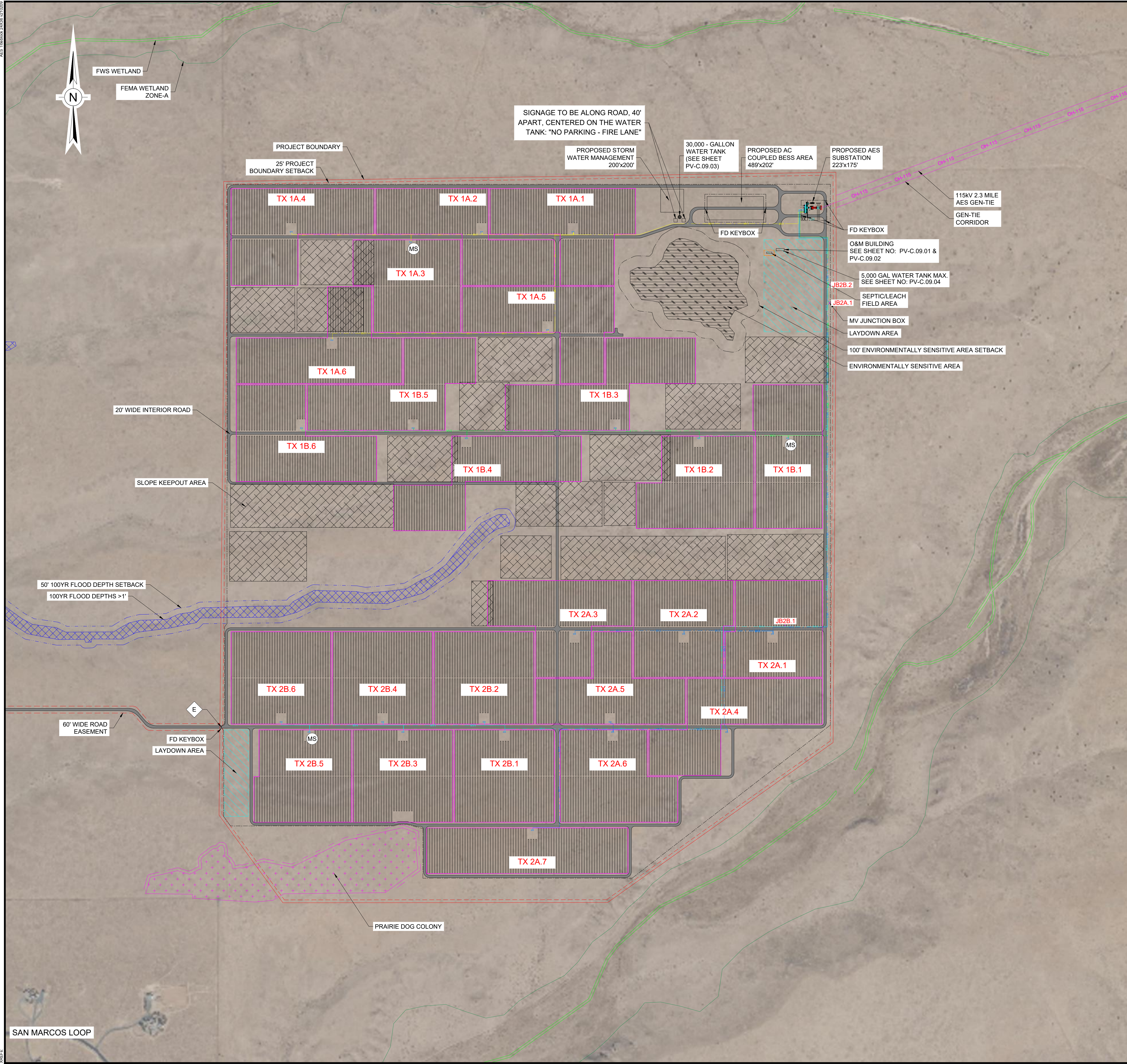
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NTS

SHEET NO:
TL-G.01.01

REV
1

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PLOTED: 7/2/2024 3:10 PM
C:\Users\p\Documents\Bates\Projects\10.9 AES\Design\1. Solar\01. CAD Files\01 Solar Field Layout Plan.dwg



SYSTEM INFORMATION	
MW-AC @ POI:	96
NAMEPLATE MVA:	110
POI VOLTAGE (KV):	115
COLLECTION SYSTEM VOLTAGE (KV)	34.5
MW-DC:	115.2
SITE DC-AC RATIO @ POI	1.2
SITE INFORMATION	
ASHRAE STATION NAME:	SANTA FE, NM, USA
ASHRAE 0.4% DB MAX. TEMPERATURE:	33.6°C
ASHRAE ANNUAL DB MEAN MIN. TEMP.:	-16.7°C
LATITUDE:	35.5415
LONGITUDE:	-106.0106
MODULE	
MODULE MANUFACTURER:	BYD SOLAR
MODULE MODEL #:	MLTK-36
STC WATTAGE (W):	560
VOLTAGE RATING (V):	1500 (VDC)
DIMENSIONS	2278x1134x35MM
MODULES PER STRING:	26
PV ARRAY	
MODULE QUANTITY:	205,712
TOTAL STRINGS:	7912
LOAD BREAK DISCONNECT QUANTITY:	456
PV INVERTER	
INVERTER MANUFACTURER:	SUNGROW
INVERTER MODEL #:	SG4400UD-MV-US
KVA @ 40° C:	4400
KVA @ DESIGN TEMP:	4400
MAX. INPUT VOLTAGE (V-DC):	1500
INV QUANTITY:	25
TRACKER	
TRACKER MANUFACTURER AND MODEL:	ATI DURATRACK HZ V3
AZIMUTH (DEG):	180
CONFIGURATION:	1-HIGH PORTRAIT
ROTATION ANGLE LIMITS:	52°±
78 MODULE (3-STRING) TRACKER QUANTITY:	104
104 MODULE (4-STRING) TRACKER QUANTITY:	1900
TOTAL TRACKER QUANTITY:	2004
PITCH (FT) / GCR (%):	21.98' / 34%
MIN INTER-ROW SPACING (FT):	14.5

- NOTES:
- ALL DIMENSIONS ARE IN FEET OTHERWISE SPECIFIED.
 - THIS DRAWING IS PRELIMINARY AND FOR ESTIMATING PURPOSES ONLY. IT IS NOT FOR CONSTRUCTION.
 - ALL SPECIFIED EQUIPMENTS ARE PRELIMINARY. FINAL EQUIPMENT SELECTION SHALL BE APPROVED BY OWNER.
 - PCS SIZE CONSIDERED FOR THE LAYOUT IS 4400 KVA.
 - LOCATION OF ALL EXISTING ITEMS IS APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
 - 50' N/S DISTANCE HAS BEEN MAINTAINED BETWEEN TABLE TO TABLE WHERE PCS'S ARE LOCATED AND FOR OTHERS 12' HAS BEEN MAINTAINED.
 - INTERIOR ROADS ARE MAINTAINED AT 20' WIDE.
 - OFFSET OF MINIMUM 16' HAVE BEEN MAINTAINED FROM INTERIOR ROADS CENTER TO PV TRACKERS.
 - OFFSET OF 16' HAVE BEEN MAINTAINED FROM FENCING TO INTERIOR ROADS CENTER.
 - MINIMUM OFFSET OF 25' HAVE BEEN MAINTAINED FROM PROJECT BOUNDARY TO FENCE.
 - CURRENT LAYOUT IS BASED ON THE ALTA SHARED ON 08.10.2022
 - FOR DETAILS RELATED TO THE COLLECTOR SUBSTATION, SWITCHYARD AND BESS DESIGN DRAWINGS, REFER TO THE DRAWING SET AS PREPARED BY SUBSTATION CONTRACTOR.

LEGEND:	
	SITE ENTRANCE W/ 20' GATE
	MET STATION
	PROJECT BOUNDARY
	PROJECT BOUNDARY - 25' SETBACK
	100YR FLOOD DEPTHS >1'
	100YR FLOOD - 50' SETBACK
	ENVIRONMENTALLY SENSITIVE AREA
	ENVIRONMENTALLY SENSITIVE AREA - 100' SETBACK
	PRAIRIE DOG COLONY
	PRAIRIE DOG COLONY - 25' SETBACK
	SLOPE KEEPOUT AREA
	115KV OVERHEAD TRANSMISSION LINE
	FWS WETLAND
	FEMA WETLAND (ZONE-A)
	LAYDOWN AREA
	FENCE
	INTERIOR ROADS
	XFMR SKID
	MEDIUM VOLTAGE AC, CIRCUIT #1
	MEDIUM VOLTAGE AC, CIRCUIT #2
	MEDIUM VOLTAGE AC, CIRCUIT #3
	MEDIUM VOLTAGE AC, CIRCUIT #4
	XFMR SKID GROUPING
	MV JUNCTION BOX
	PV PANELS 1P 4 STRING
	PV PANELS 1P 3 STRING
	30,000-GALLON WATER TANK

2180 South 1300 East, Suite 600
Salt Lake City, UT 84106-2749
(801) 679 - 3500

DELIVERING EXCELLENCE

5717 Legacy Dr Suite 250,
Plano, Texas 75024

PE STAMP:

30% DESIGN

NOT FOR CONSTRUCTION

KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	08/02/2023	ISSUED FOR 30% DESIGN
1	08/11/2023	UPDATED 30% DESIGN
2	03/04/2024	UPDATED 30% DESIGN
3	07/02/2024	UPDATED 30% DESIGN

PROJECT TITLE:

RANCHO VIEJO SOLAR UTILITY

PROJECT LOCATION:

SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

SOLAR FIELD LAYOUT PLAN

96 MWAC/115.2 MWDC

PROJ
NUM:

DES: PC BALAJI

DWN: J RAJESHWAR

CHK: M AJAY

APV: P KRISHNA

DATE: 07/02/2024

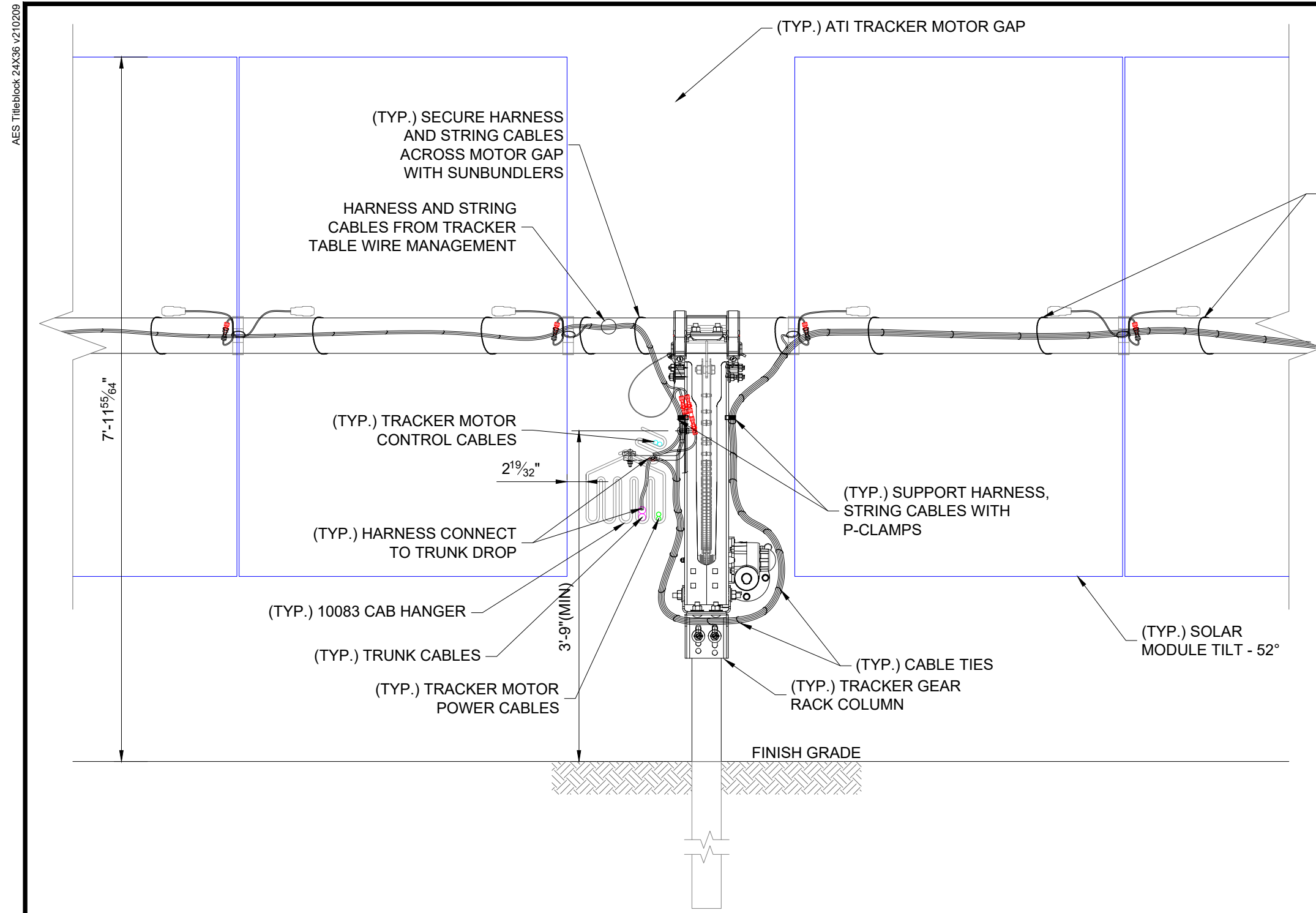
SCALE AT 24" x 36":
0 200' 400' 600' 800'
1" = 400'

SHEET NO:

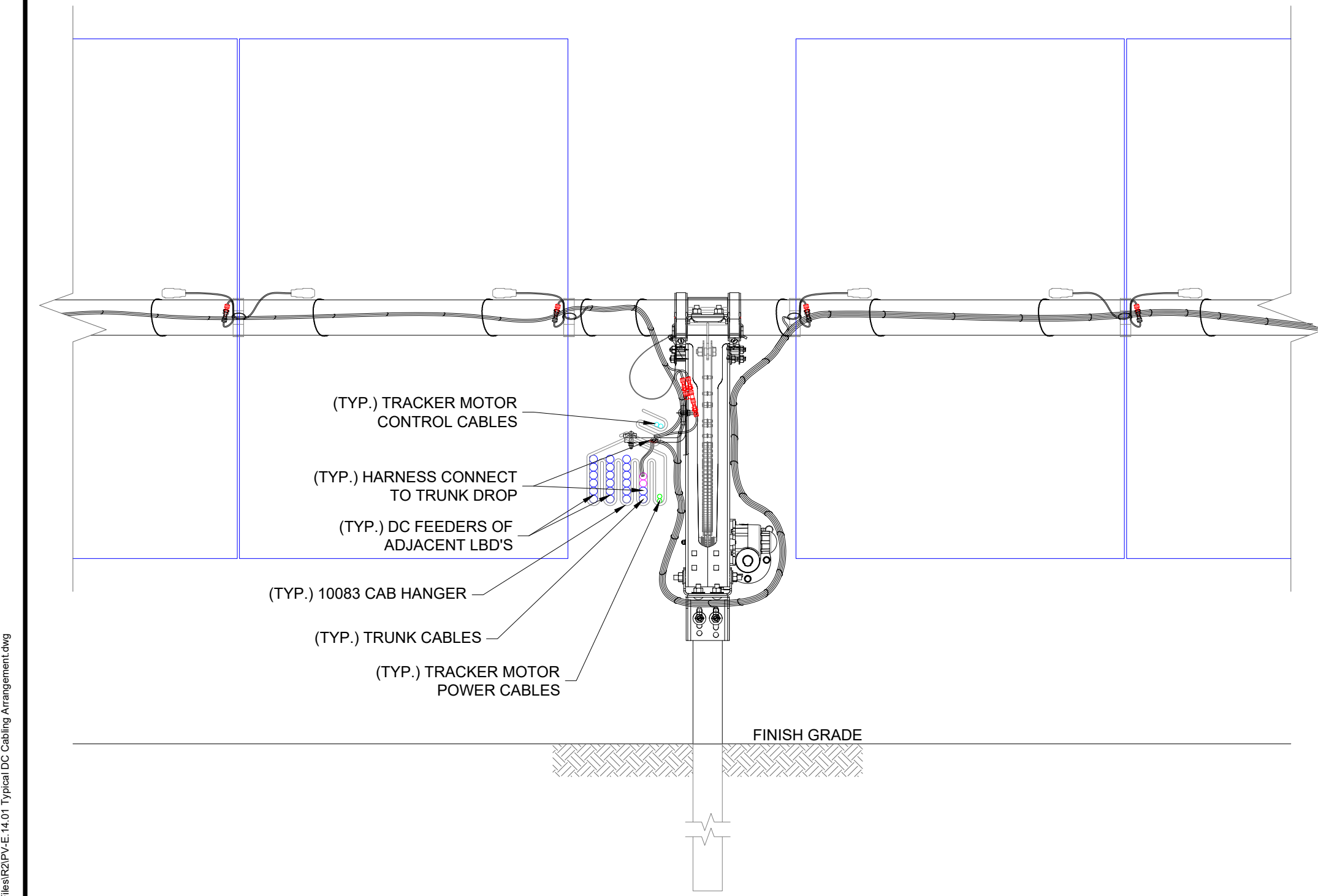
PV-E.04.01

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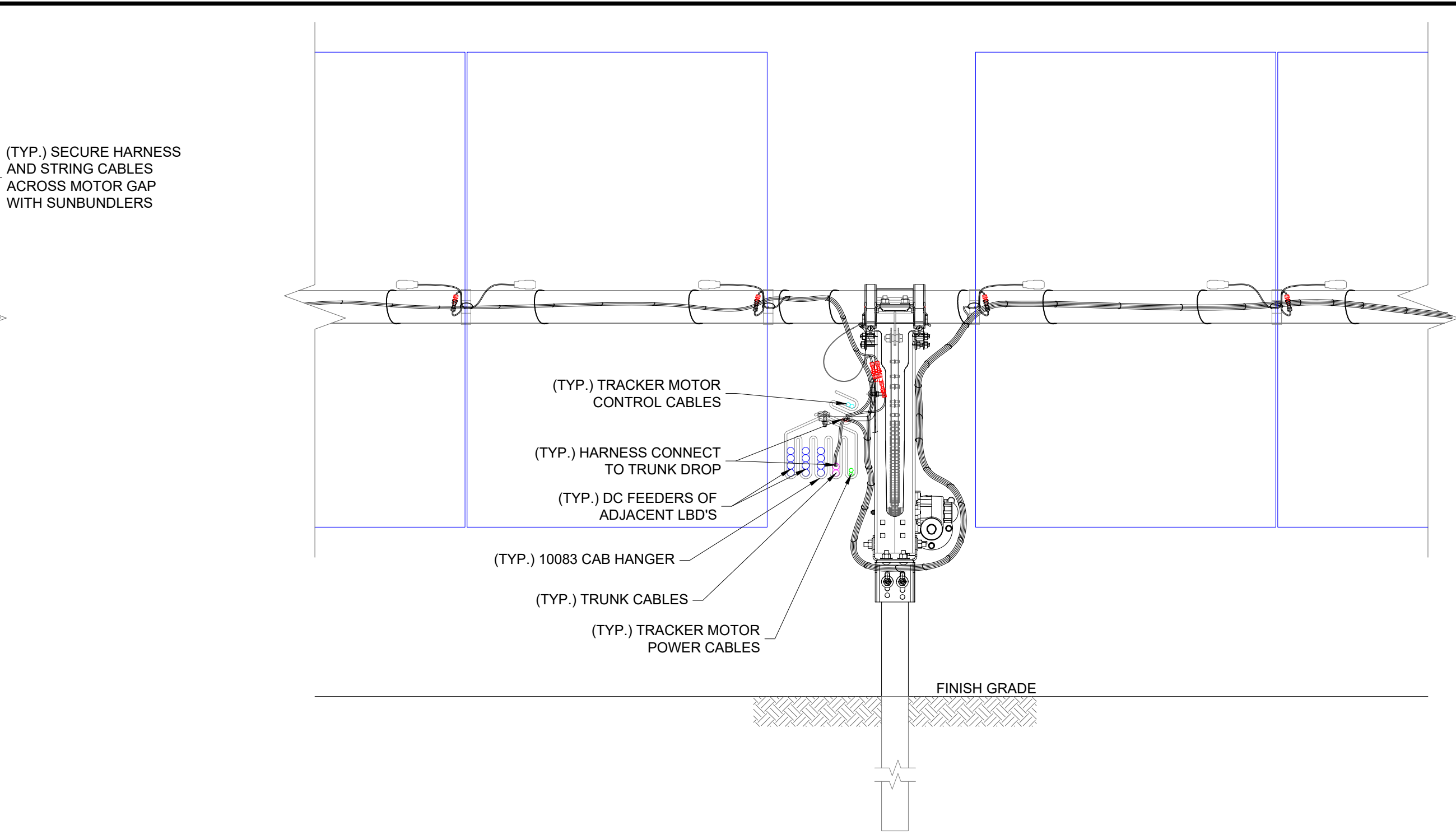
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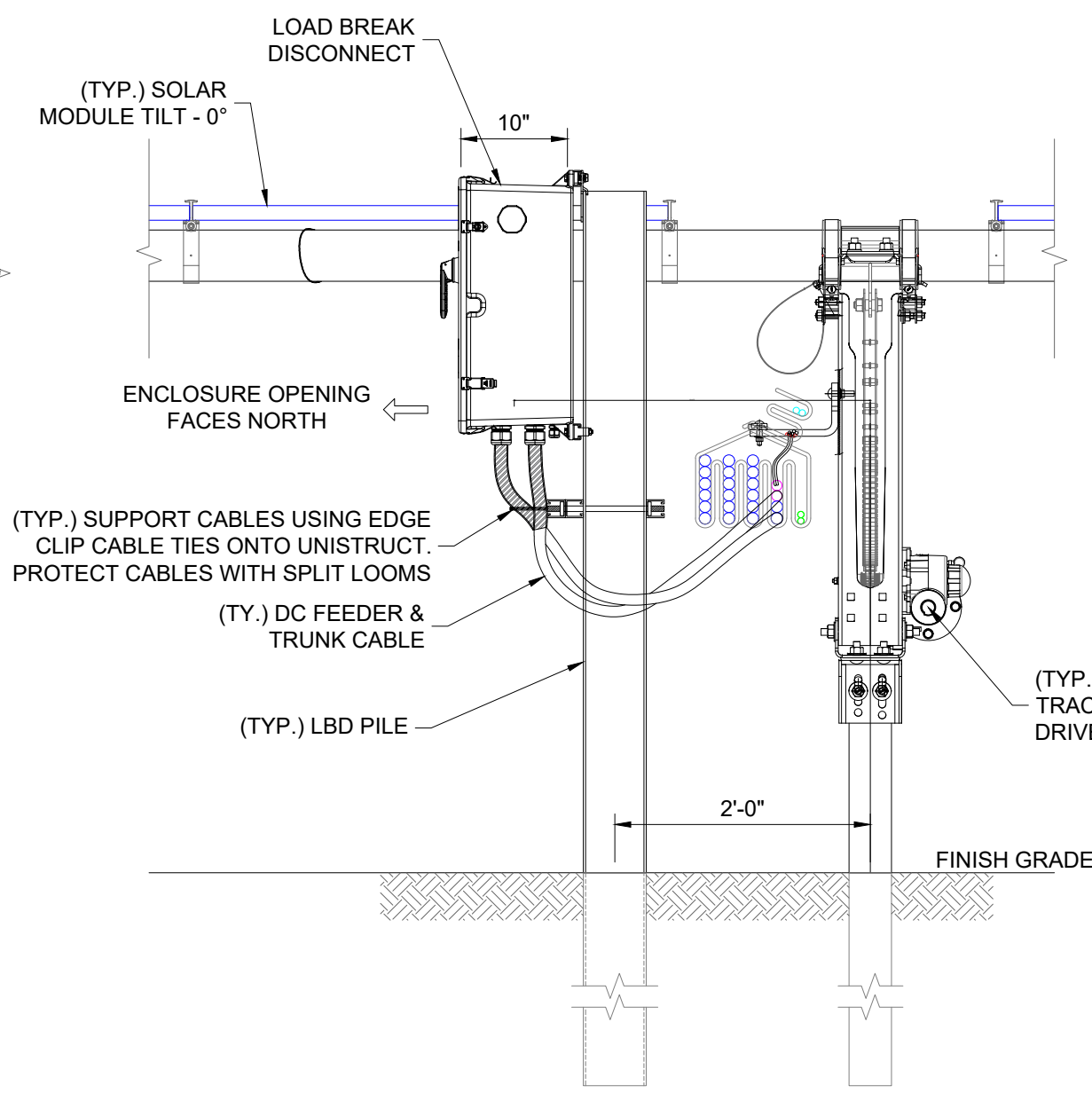
DC STRING CABLE TRANSITION FROM TRACKER TO CAB SYSTEM (WITH DC TRUNK CABLE)
SECTION - A



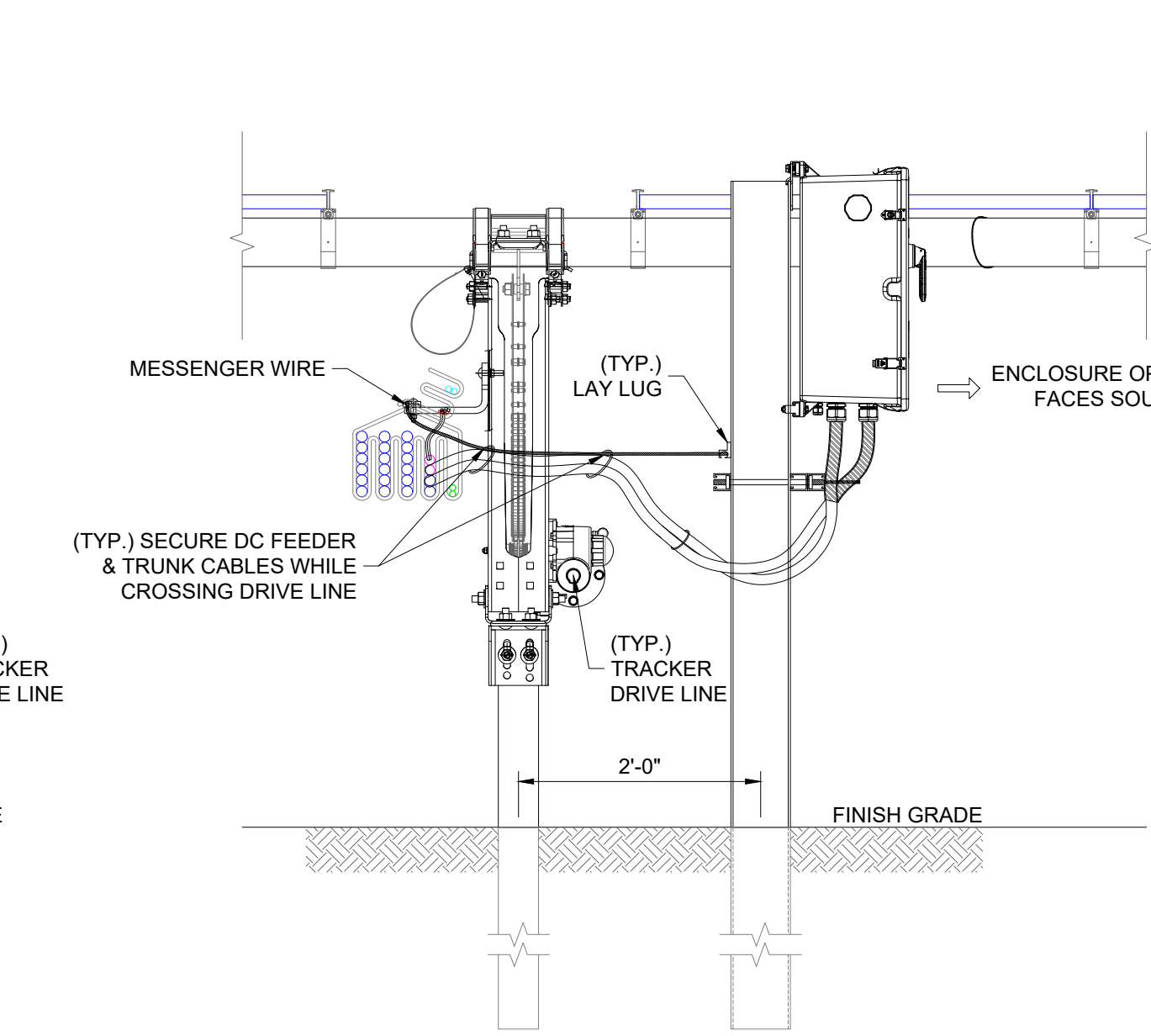
TYP. DC STRING CABLE TRANSITION FROM TRACKER TO CAB SYSTEM (WITH DC TRUNK CABLE AND DC FEEDER CABLE UPTO 10 CIRCUITS)
SECTION - C



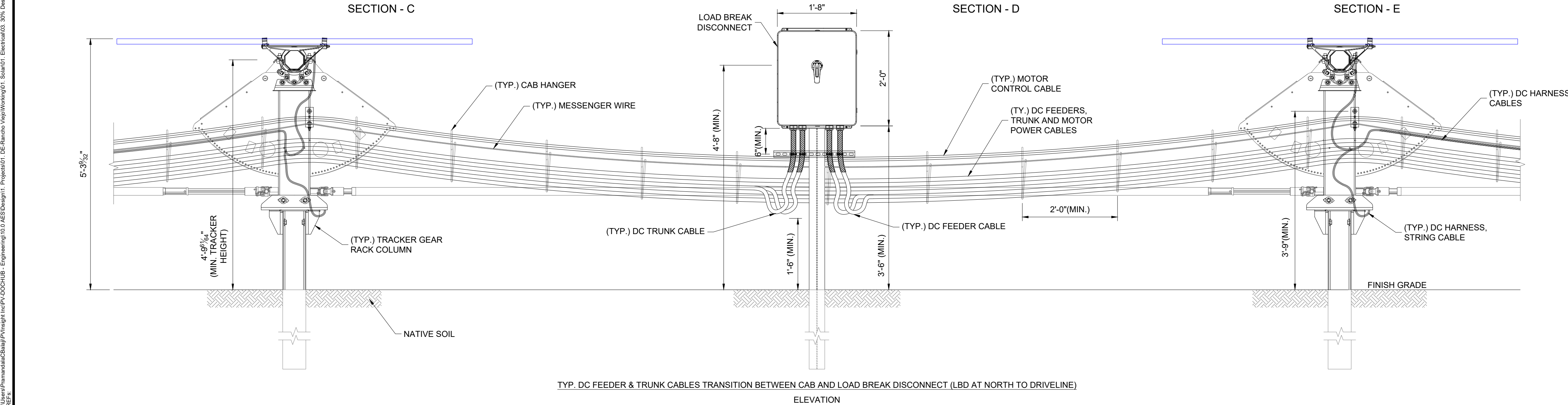
DC STRING CABLE TRANSITION FROM TRACKER TO CAB SYSTEM (WITH DC TRUNK CABLE AND DC FEEDER CABLE UPTO 6 CIRCUITS)
SECTION - B



TYP. DC TRUNK AND FEEDER CABLE TRANSITION BETWEEN CAB SYSTEM TO LOAD BREAK DISCONNECT (LBD AT NORTH TO DRIVELINE)
SECTION - D



TYP. DC TRUNK AND FEEDER CABLE TRANSITION BETWEEN CAB SYSTEM TO LOAD BREAK DISCONNECT (LBD AT SOUTH TO DRIVELINE)
SECTION - E



TYP. DC FEEDER & TRUNK CABLES TRANSITION BETWEEN CAB AND LOAD BREAK DISCONNECT (LBD AT NORTH TO DRIVELINE)
ELEVATION

NOTES:

- CONTRACTOR SHALL COORDINATE WITH UTILITIES / AHJ BEFORE PROCEEDING WITH UNDERGROUND TRENCHES AS REQUIRED.
- DRAWINGS SHOW RACEWAY LOCATION DIAGRAMMATICALLY, CONTRACTOR SHALL ADJUST ROUTING TO SUIT FIELD LOCATION. ANY CHANGES TO PROPOSED ROUTING SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL.
- MINIMUM 6" CLEARANCE SHALL BE MAINTAINED BETWEEN TRACKER MOTOR CONTROL CABLES AND MOTOR AUXILIARY CABLES. IF IT IS VIOLATING ANY CASE, SPECIAL APPROVAL SHALL BE TAKEN FROM TRACKER MANUFACTURER.
- PROTECT CABLES FROM ABRASIVE EDGES, SCREWS OR OTHER POTENTIAL PHYSICAL DAMAGE USING UV RESISTANT CABLE WRAP OR EDGE PROTECTION WHERE NEEDED.
- ALL CABLE MANAGEMENT PRODUCTS SHALL BE NON-CONDUCTIVE WHERE IN CONTACT WITH CABLES.
- SECURE CABLES TO MODULE OR TRACKER FRAMES WITH LOOP CLAMPS OR HANGERS. LOOP CLAMPS SHOULD BE ENTIRELY COATED WITH NON-CONDUCTIVE, UV-RESISTANT SURFACE SUCH AS HELLERMAN TYTON RCB180SM10 OR EQUIVALENT.
- LOCATE CABLES TO REDUCE SHADING ON REAR SIDE OF THE MODULES.
- FOR ALL WIRE MANAGEMENT PRODUCTS, IMPACT-MODIFIED HEAT-STABILIZED UV-RESISTANT NYLON 66 OR BETTER SHALL BE USED. STANDARD UV-RESISTANT NYLON 66 IS NOT ACCEPTABLE.
- ALTERNATIVE CABLE MANAGEMENT PRODUCTS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL. AUTHORITY HAVING JURISDICTION (AHJ) MUST ALSO BE NOTIFIED ABOUT THE CHANGE IN WIRE MANAGEMENT AND APPROVE THE PROPOSED ALTERNATE METHODS/COMPONENTS PRIOR TO THEIR INSTALLATION.
- "TRAIN" CABLES TO MINIMIZE FLEXURE OF CONDUCTORS, PROVIDE SUFFICIENT SLACK TO ALLOW FOR CABLE CLEARANCE THROUGHOUT COMPLETE TRACKING RANGE. SECURE CABLES AS CLOSE AS PRACTICAL TO CENTER OF TRACKER ROTATION BEFORE TRANSITIONING OFF OF TRACKER.
- PROTECT STRING CABLES AT GAPS IN TRACKER WITH A UV RESISTANT CABLE SLEEVE. BUNDLE CABLES TOGETHER WITH UV-RESISTANT CABLE MANAGEMENT PRODUCTS.
- CAB HANGERS WOULD BE PLACED AT A DISTANCE OF 24" FROM EACH OTHER, IT IS PER 334.30 OF NEC 2017.
- STRAIN RELIEF TO BE PROVIDED FOR CABLE ENTERING AND LEAVING THE DC DISCONNECT BOXES AS PER NEC 314.17(B)(1) AND SHALL BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS.
- SEAL ENTRANCE TO ABOVE GROUND CONDUIT WITH WEATHERHEAD FOR 90° CABLE TRANSITION AND DUCT SEALANT OR WEATHERHEAD FOR 45° CABLE TRANSITION. CONDUIT SHALL BE INSTALLED 1'-6" MINIMUM ABOVE GRADE.
- DC FEEDERS CABLE SIZING AND SEPARATION DISTANCES ARE BASED ON NATIVE SOIL WITH A THERMAL TRANSITIVITY OF 190°C-cm/W.
- WARNING TAPE SHALL BE IDEAL INDUSTRIES 42-251 6" WIDE DETECTABLE UNDERGROUND WARNING TAPE (OAE), OR EQUIV.
- DURING INSTALL, AT THE DISCRETION OF THE CONTRACTOR OR ENGINEER, ADDITIONAL SUPPORT AND SECUREMENT IN THE FORM OF HANGERS OR UV-RATED TIES MAY BE RECOMMENDED TO ELIMINATE FIELD ENCOUNTERED CHALLENGES SUCH AS CABLE SAG OR INADEQUATE SUPPORT TO THE CABLES OR STRUCTURE.
- TRENCHING AND CABLE INSTALLATION MUST BE COORDINATED TO AVOID ALL OBSTRUCTIONS. REFERENCE STRUCTURAL AND CIVIL DRAWINGS FOR EQUIPMENT LOCATION COORDINATES, GRADING, AND UNDERGROUND OBSTRUCTIONS.
- DIMENSIONS TO CABLE LAYERS ARE FROM FINISHED GRADE TO THE CENTER OF CABLES, EXCEPT WHERE NOTED.
- ALL BARE CU. GROUND WIRE SHALL BE DIRECT BURIED TO A MINIMUM DEPTH OF 30", EXCEPT UNDER ROAD CROSSINGS, GROUND WIRE SHALL BE BURIED AT 36".
- FOR DC CABLES SIZING, SEE DC SLD DRAWING. WHEN MVAC CROSSES DC FEEDERS AND MOTOR POWER & CONTROL CABLES, LOWER MVAC CABLES 12" BELOW DC LAYER.
- ALL EQUIPMENT AND MATERIAL SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE ELECTRICAL CONSTRUCTION SPECIFICATION MANUAL.
- REFER ARRAY LAYOUT (PV-E-14 SHEET 01 TO 25) FOR DC FEEDER CABLE SCHEDULE WITH LENGTHS AND CABLE SIZES.
- WHERE TRENCHES CROSS, CABLE CROSSING SHALL BE AT A 90° ANGLE AND 12" MIN. VERTICAL CLEARANCE BETWEEN CABLES SHALL BE MAINTAINED.
- MINIMUM BENDING RADIUS OF AT LEAST 5 TIMES THE DIAMETER OF THE CABLE IS REQUIRED FOR ALL DC STRING CABLES.
- MINIMUM BENDING RADIUS FOR DC HOME RUN CABLES SHALL BE 12 TIMES THE OUTER DIAMETER OF THE CABLE OR AS PER MANUFACTURER RECOMMENDATION WHICHEVER IS GREATER.
- FOR TRUNK INSTALLATION AND TERMINATION FOLLOW MANUFACTURE INSTRUCTIONS.
- SURFACE ACTIVITIES AND LOADING OVER BURIED CABLES SHALL NOT EXCEED RATED CRUSH CAPACITY OF CABLES OR CONDUITS.
- WHERE NOT EXPOSED TO VEHICULAR TRAFFIC, TRENCHES SHALL BE BACKFILLED AT 8" LIFTS AND COMPACTED TO 85% ASTM D698 WITHIN ± 2% OPTIMUM MOISTURE CONTENT.
- WHERE EXPOSED TO VEHICULAR TRAFFIC, TRENCHES SHALL BE BACKFILLED AT 8" LIFTS AND COMPACTED TO 95% ASTM D698 WITHIN ± 2% OPTIMUM MOISTURE CONTENT.
- USE SCHEDULE 80 PVC FOR RISERS WHERE CONDUIT IS EXPOSED ABOVE GRADE AND USE SCHEDULE 40 PVC FOR HORIZONTAL CONDUIT BELOW GRADE.
- PARALLEL CONDUCTORS CAN BE LAID IN SEPARATE TRENCHES AS LONG AS CONDUCTOR SPACING IS MAINTAINED.
- RACKING ELEVATION DETAILS SHOWN ARE TENTATIVE TO BE PROVIDED BY TRACKER MANUFACTURER.
- PVC CONDUIT:
DC FEEDERS : 3" DIAMETER (2 CABLES)
MOTOR POWER CABLE : 2" DIAMETER (2 CABLES)
MOTOR CONTROL CABLE : 2" DIAMETER (2 CABLES)
- CLEAN FILL REQUIREMENTS:
TRENCHING:
35A. TYPE 1: FILL SHALL BE CLEAN AND CONTAIN PARTICLES NO LARGER THAN 3" IN DIAMETER. OBJECTS WITH SHARP EDGES AND HINDERING ORGANIC MATERIAL SHALL BE REMOVED.
35B. TYPE 2: NATIVE SOIL SHALL BE USED FOR BACKFILL AROUND CABLES. BACKFILL SHALL BE CLEAN AND SCREENED TO CONTAIN PARTICLES NO LARGER THEN 3/8" IN DIAMETER WITHIN 6" (COMPACTED) OF CABLES, OBJECTS WITH SHARP EDGES, AND HINDERING ORGANIC MATERIAL SHALL BE REMOVED.
PLOWING:
PLOWING-IN OF DC FEEDERS AND MOTOR POWER & CONTROL CABLE IN SOIL CONTAINING ROCK OR OTHER SOLID MATERIAL SHALL BE DONE IN SUCH A MANNER THAT THE SOLID MATERIAL WILL NOT DAMAGE THE CABLE. EITHER DURING THE PLOWING OPERATION OR AFTERWARD. THE DESIGN OF CABLE-PLOWING EQUIPMENT AND THE PLOWING-IN OPERATION SHOULD BE SUCH THAT THE CABLE WILL NOT BE DAMAGED BY BENDING, SIDE WALL PRESSURE, OR EXCESSIVE CABLE TENSION.

aes

2180 South 1300 East, Suite 600
Salt Lake City, UT 84106-2749
(801) 679 - 3500



5717 Legacy Dr Suite 250,
Plano, Texas 75024

PE STAMP:

30% DESIGN
NOT FOR CONSTRUCTION

KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	08/02/2023	ISSUED FOR 30% DESIGN
1	08/11/2023	UPDATED 30% DESIGN
2	03/04/2024	UPDATED 30% DESIGN

PROJECT TITLE:

**RANCHO VIEJO SOLAR
UTILITY**

PROJECT LOCATION:

**SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)**

SHEET TITLE & DESCRIPTION:

**TYPICAL DC CABLEING
ARRANGEMENT**

CAB SYSTEM

PROJ

NUM:

DES: PC BALAJI

DWN: L RAMA KRISHNA

CHK: M AJAY

APV: P KRISHNA

DATE:

03/04/2024

SCALE AT 24" x 36":



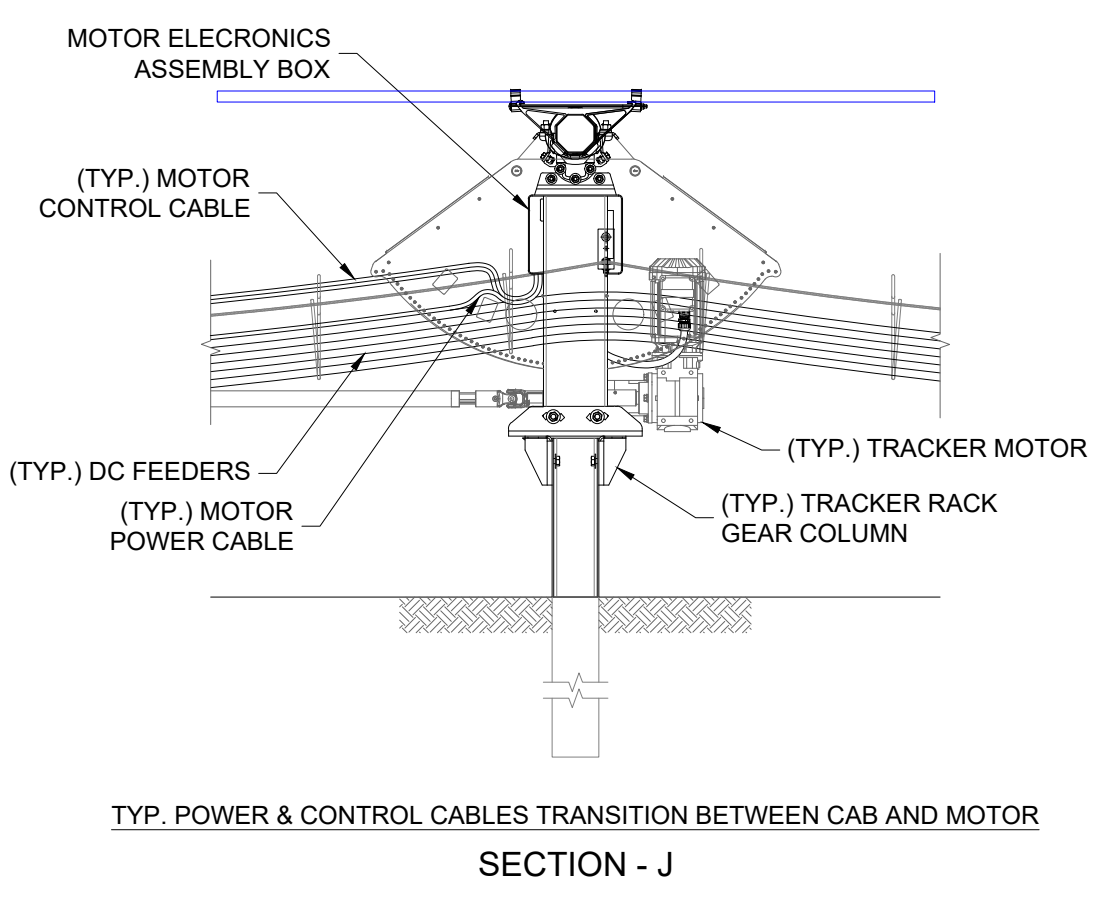
3/4" = 1'-0"

SHEET NO:

PV-E.14.01

REV:

2



MOTOR ELECTRONICS ASSEMBLY BOX

(TYP.) MOTOR CONTROL CABLE

(TYP.) TRACKER MOTOR

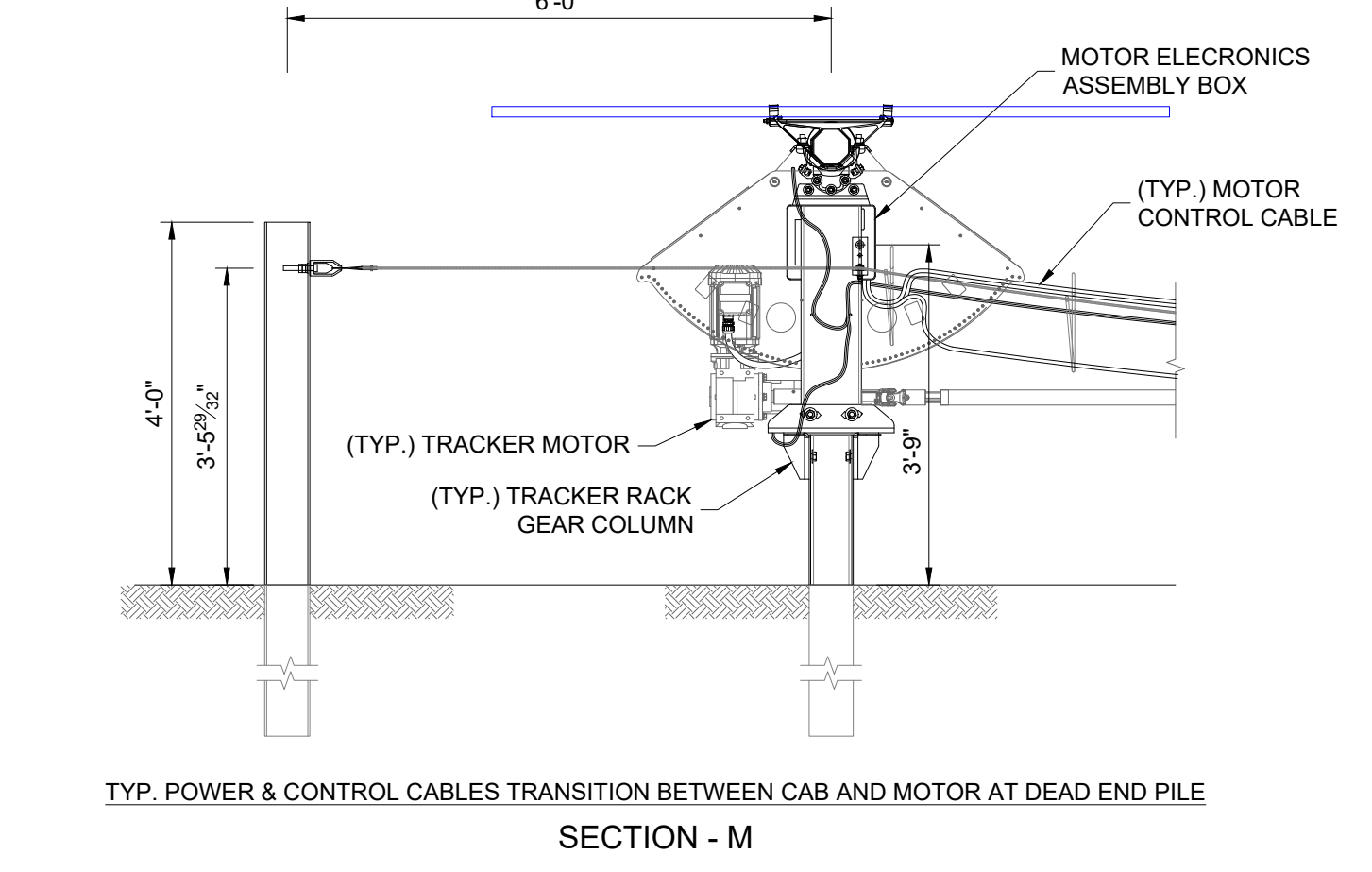
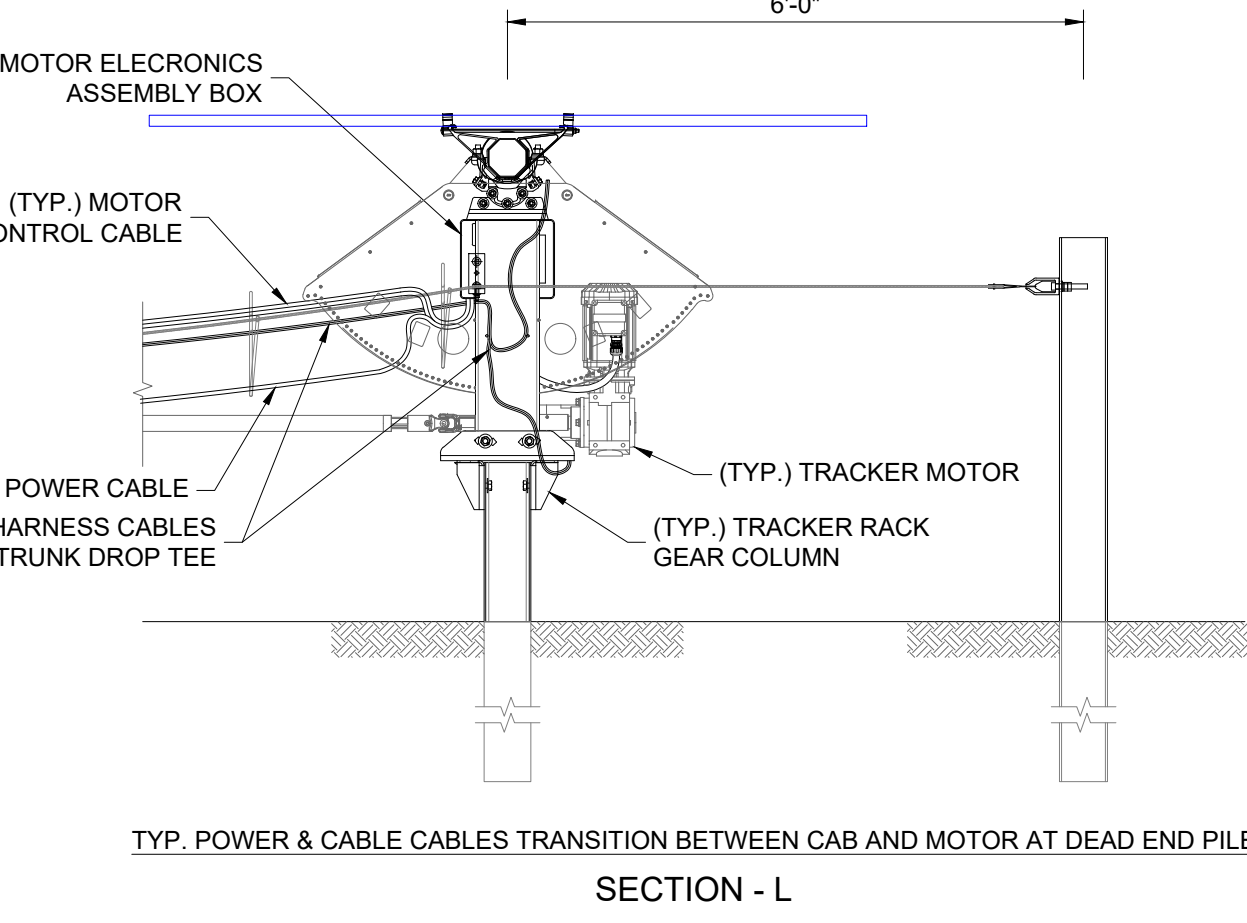
(TYP.) TRACKER RACK GEAR COLUMN

(TYP.) DC FEEDERS

(TYP.) MOTOR POWER CABLE

TYP. POWER & CONTROL CABLES TRANSITION BETWEEN CAB AND MOTOR

SECTION - K



- NOTES:**

 1. CONTRACTOR SHALL COORDINATE WITH UTILITIES / AHJ BEFORE PROCEEDING WITH UNDERGROUND TRENCHES AS REQUIRED.
 2. DRAWINGS SHOW RACEWAY LOCATION DIAGRAMMATICALLY. CONTRACTOR SHALL ADJUST ROUTING TO SUIT FIELD LOCATION. ANY CHANGES TO PROPOSED ROUTING SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL.
 3. MINIMUM 6" CLEARANCE SHALL BE MAINTAINED BETWEEN TRACKER MOTOR CONTROL CABLES AND MOTOR AUXILIARY CABLES. IF IT IS VIOLATING ANY CASE, SPECIAL APPROVAL SHALL BE TAKEN FROM TRACKER MANUFACTURER.
 4. PROTECT CABLES FROM ABRASIVE EDGES, SCREWS OR OTHER POTENTIAL PHYSICAL DAMAGE USING UV RESISTANT CABLE WRAP OR EDGE PROTECTION WHERE NEEDED.
 5. ALL CABLE MANAGEMENT PRODUCTS SHALL BE NON-CONDUCTIVE WHERE IN CONTACT WITH CABLES.
 6. SECURE CABLES TO MODULE OR TRACKER FRAMES WITH LOOP CLAMPS OR HANGERS. LOOP CLAMPS SHOULD BE ENTIRELY COATED WITH NON-CONDUCTIVE, UV-RESISTANT SURFACE SUCH AS HELLERMAN TYTON RCB180SM10 OR EQUIVALENT.
 7. LOCATE CABLES TO REDUCE SHADING ON REAR SIDE OF THE MODULES.
 8. FOR ALL WIRE MANAGEMENT PRODUCTS, IMPACT-MODIFIED HEAT-STABILIZED UV-RESISTANT NYLON 66 OR BETTER SHALL BE USED. STANDARD UV-RESISTANT NYLON 66 IS NOT ACCEPTABLE.
 9. ALTERNATIVE CABLE MANAGEMENT PRODUCTS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL. AUTHORITY HAVING JURISDICTION (AHJ) MUST ALSO BE NOTIFIED ABOUT THE CHANGE IN WIRE MANAGEMENT AND APPROVE THE PROPOSED ALTERNATE METHODS/COMPONENTS PRIOR TO THEIR INSTALLATION.
 10. "TRAIN" CABLES TO MINIMIZE FLEXURE OF CONDUCTORS. PROVIDE SUFFICIENT SLACK TO ALLOW FOR CABLE CLEARANCE THROUGHOUT COMPLETE TRACKING RANGE. SECURE CABLES AS CLOSE AS PRACTICAL TO CENTER OF TRACKER ROTATION BEFORE TRANSITIONING OFF OF TRACKER.
 11. PROTECT STRING CABLES AT GAPS IN TRACKER WITH A UV RESISTANT CABLE SLEEVE. BUNDLE CABLES TOGETHER WITH UV-RESISTANT CABLE MANAGEMENT PRODUCTS.
 12. CAB HANGERS WOULD BE PLACED AT A DISTANCE OF 24" FROM EACH OTHER, IT IS PER 334.30 OF NEC 2017.
 13. STRAIN RELIEF TO BE PROVIDED FOR CABLE ENTERING AND LEAVING THE DC DISCONNECT BOXES AS PER NEC 314.17(B)(1) AND SHALL BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS.
 14. SEAL ENTRANCE TO ABOVE GROUND CONDUIT WITH WEATHERHEAD FOR 90° CABLE TRANSITION AND DUCT SEALANT OR WEATHERHEAD FOR 45° CABLE TRANSITION. CONDUIT SHALL BE INSTALLED 1'-6" MINIMUM ABOVE GRADE.
 15. DC FEEDERS CABLE SIZING AND SEPARATION DISTANCES ARE BASED ON NATIVE SOIL WITH A THERMAL TRANSITIVITY OF 190°C-cm/w.
 16. WARNING TAPE SHALL BE IDEAL. INDUSTRIES 42-251 6" WIDE DETECTABLE UNDERGROUND WARNING TAPE (OAE), OR EQUIV.
 17. DURING INSTALL, AT THE DISCRETION OF THE CONTRACTOR OR ENGINEER, ADDITIONAL SUPPORT AND SECUREMENT IN THE FORM OF HANGERS OR UV-RATED TIES MAY BE RECOMMENDED TO ELIMINATE FIELD ENCOUNTERED CHALLENGES SUCH AS CABLE SAG OR INADEQUATE SUPPORT TO THE CABLES OR STRUCTURE.
 18. TRENCHING AND CABLE INSTALLATION MUST BE COORDINATED TO AVOID ALL OBSTRUCTIONS. REFERENCE STRUCTURAL AND CIVIL DRAWINGS FOR EQUIPMENT LOCATION COORDINATES, GRADING, AND UNDERGROUND OBSTRUCTIONS.
 19. DIMENSIONS TO CABLE LAYERS ARE FROM FINISHED GRADE TO THE CENTER OF CABLES, EXCEPT WHERE NOTED.
 20. ALL BARE CU. GROUND WIRE SHALL BE DIRECT BURIED TO A MINIMUM DEPTH OF 30", EXCEPT UNDER ROAD CROSSINGS. GROUND WIRE SHALL BE BURIED AT 36".
 21. FOR DC CABLES SIZING, SEE DC SLD DRAWING. WHEN MVAC CROSSES DC FEEDERS AND MOTOR POWER & CONTROL CABLES, LOWER MVAC CABLES 12" BELOW DC LAYER.
 22. ALL EQUIPMENT AND MATERIAL SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE ELECTRICAL CONSTRUCTION SPECIFICATION MANUAL.
 23. REFER ARRAY LAYOUT (PV-E-14 SHEET 01 TO 25) FOR DC FEEDER CABLE SCHEDULE WITH LENGTHS AND CABLE SIZES.
 24. WHERE TRENCHES CROSS, CABLE CROSSING SHALL BE AT A 90° ANGLE AND 12" MIN. VERTICAL CLEARANCE BETWEEN CABLES SHALL BE MAINTAINED.
 25. MINIMUM BENDING RADIUS OF AT LEAST 5 TIMES THE DIAMETER OF THE CABLE IS REQUIRED FOR ALL DC STRING CABLES.
 26. MINIMUM BENDING RADIUS FOR DC HOME RUN CABLES SHALL BE 12 TIMES THE OUTER DIAMETER OF THE CABLE OR AS PER MANUFACTURER RECOMMENDATION WHICHEVER IS GREATER.
 27. FOR TRUNK INSTALLATION AND TERMINATION FOLLOW MANUFACTURE INSTRUCTIONS.
 28. SURFACE ACTIVITIES AND LOADING OVER BURIED CABLES SHALL NOT EXCEED RATED CRUSH CAPACITY OF CABLES OR CONDUITS.
 29. WHERE NOT EXPOSED TO VEHICULAR TRAFFIC, TRENCHES SHALL BE BACKFILLED AT 8" LIFTS AND COMPACTED TO 85% ASTM D698 WITHIN ± 2% OPTIMUM MOISTURE CONTENT.
 30. WHERE EXPOSED TO VEHICULAR TRAFFIC, TRENCHES SHALL BE BACKFILLED AT 8" LIFTS AND COMPACTED TO 95% ASTM D698 WITHIN ± 2% OPTIMUM MOISTURE CONTENT.
 31. USE SCHEDULE 80 PVC FOR RISERS WHERE CONDUIT IS EXPOSED ABOVE GRADE AND USE SCHEDULE 40 PVC FOR HORIZONTAL CONDUIT BELOW GRADE.
 32. PARALLEL CONDUCTORS CAN BE LAID IN SEPARATE TRENCHES AS LONG AS CONDUCTOR SPACING IS MAINTAINED.
 33. RACKING ELEVATION DETAILS SHOWN ARE TENTATIVE TO BE PROVIDED BY TRACKER MANUFACTURER.
 34. PVC CONDUIT:

DC FEEDERS	: 3" DIAMETER (2 CABLES)
MOTOR POWER CABLE	: 2" DIAMETER (2 CABLES)
MOTOR CONTROL CABLE	: 2" DIAMETER (2 CABLES)
 35. CLEAN FILL REQUIREMENTS:

TRENCHING:

35A. TYPE 1: FILL SHALL BE CLEAN AND CONTAIN PARTICLES NO LARGER THAN 3" IN DIAMETER. OBJECTS WITH SHARP EDGES AND HINDERING ORGANIC MATERIAL SHALL BE REMOVED.

35B. TYPE 2: NATIVE SOIL SHALL BE USED FOR BACKFILL AROUND CABLES. BACKFILL SHALL BE CLEAN AND SCREENED TO CONTAIN PARTICLES NO LARGER THAN 3/8" IN DIAMETER WITHIN 6" (COMPACTED) OF CABLES. OBJECTS WITH SHARP EDGES, AND HINDERING ORGANIC MATERIAL SHALL BE REMOVED.

PLOWING:

PLOWING-IN OF DC FEEDERS AND MOTOR POWER & CONTROL CABLE IN SOIL CONTAINING ROCK OR OTHER SOLID MATERIAL SHALL BE DONE IN SUCH A MANNER THAT THE SOLID MATERIAL WILL NOT DAMAGE THE CABLE. EITHER DURING THE PLOWING OPERATION OR AFTERWARD. THE DESIGN OF CABLE-PLOWING EQUIPMENT AND THE PLOWING-IN OPERATION SHOULD BE SUCH THAT THE CABLE WILL NOT BE DAMAGED BY BENDING, SIDE WALL PRESSURE, OR EXCESSIVE CABLE TENSION.

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(801) 679 - 3500

DELIVERING EXCELLENCE

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Plano, Texas 75024

PE STAMP:

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KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	08/02/2023	ISSUED FOR 30% DESIGN
1	08/11/2023	UPDATED 30% DESIGN
2	03/04/2024	UPDATED 30% DESIGN

PROJECT TITLE:

RANCHO VIEJO SOLAR UTILITY

PROJECT LOCATION:

SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

PCS GA PLAN &
SECTION LAYOUT

SG4400UD-MV-US

PROJ
NUM:

DES: PC BALAJI

DWN: L RAMA KRISHNA

CHK: M AJAY

APV: P KRISHNA

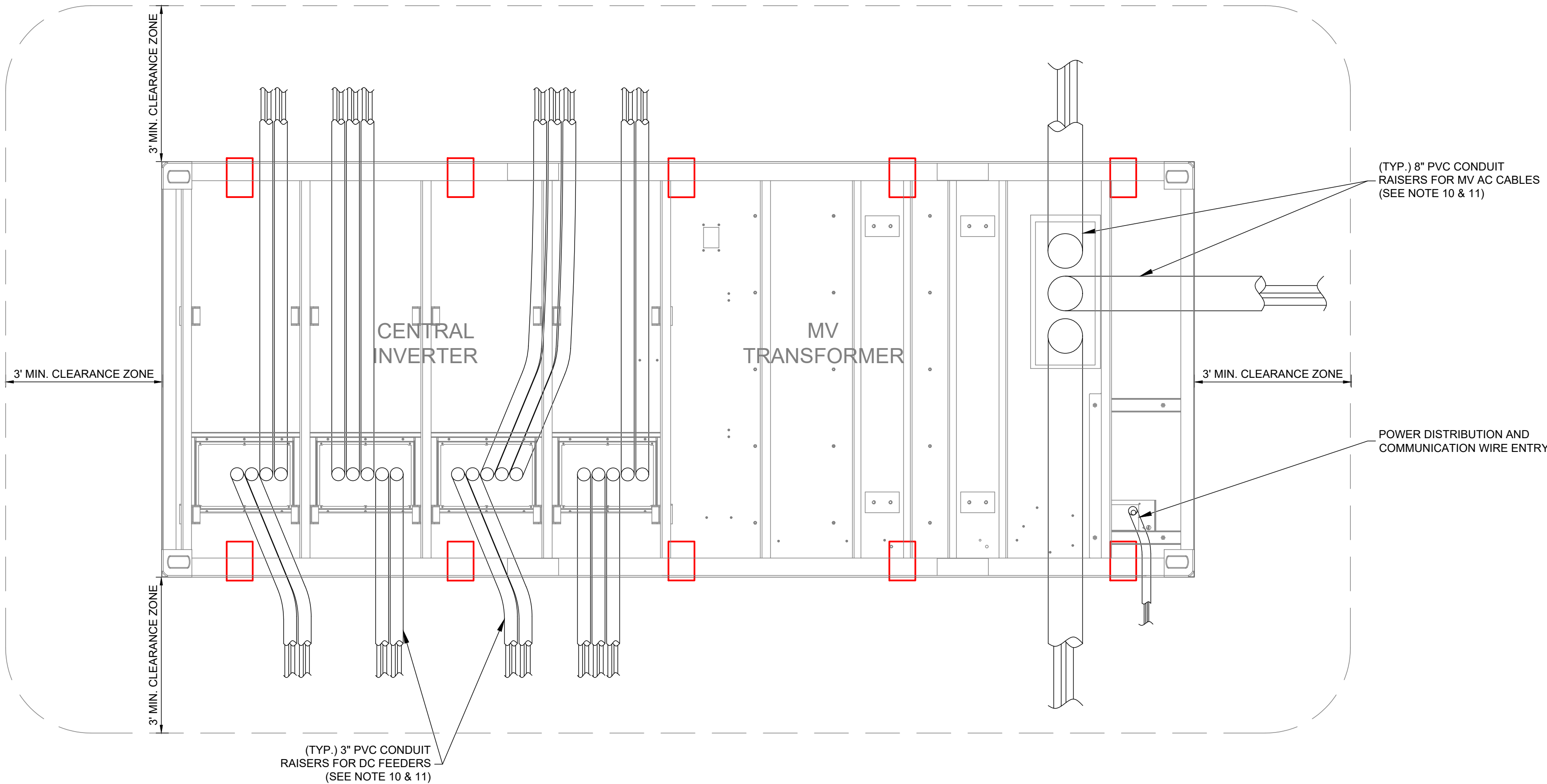
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SCALE AT 24" x 36":

NTS

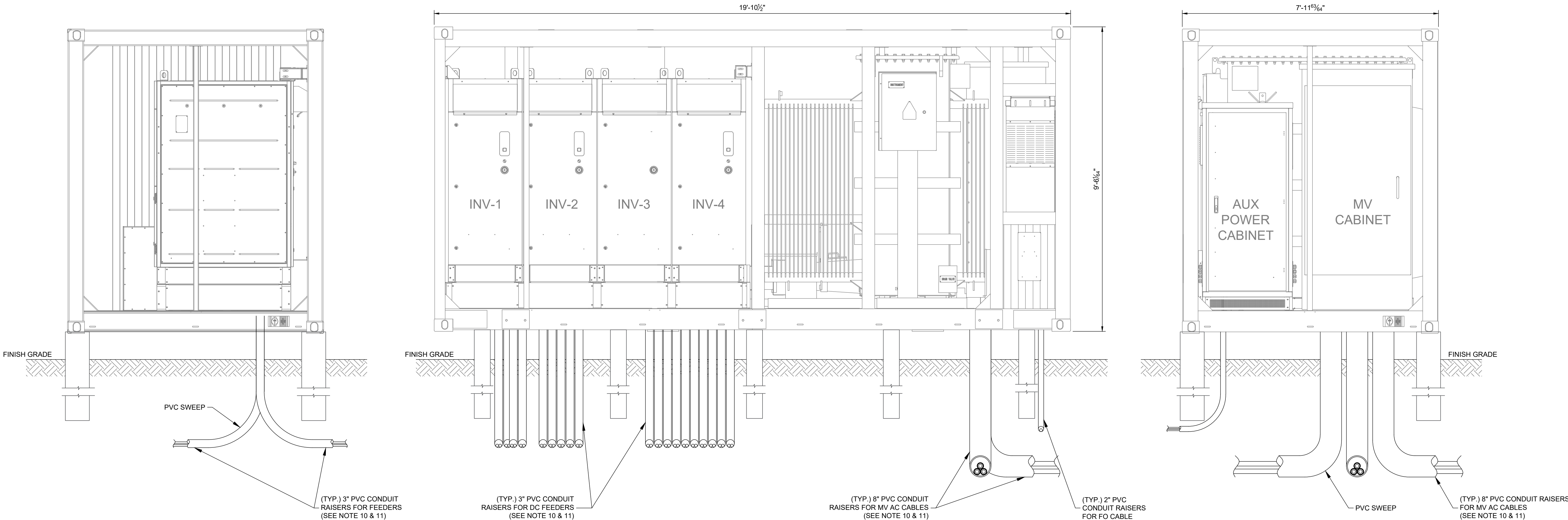
SHEET NO: PV-E.11.01

REV: 2



- NOTES:
- REFER PCS VENDOR MANUALS AND DRAWING FOR INSTALLATION DETAILS.
 - REFER DC FEEDERS SCHEDULE (PV-E.09 SHEET 01 TO 25) FOR ALL INCOMING CABLES AND QUANTITY.
 - REFER MV AC CABLE SCHEDULE (PV-E.05 SHEET 02) FOR ALL OUTGOING CABLES AND QUANTITY.
 - REFER MV AC CABLE ROUTING AND TRENCH SECTION LAYOUT (PV-E15 SHEET 01 TO 02) FOR MV ROUTING.
 - REFER TO SCADA VENDOR DRAWINGS FOR FINAL LOCATION OF FIELD NETWORK ENCLOSURE AND DETAILS RELATED TO COMMUNICATION BETWEEN COMPONENTS.
 - SEAL ENTRANCE TO ABOVE GROUND CONDUITS WITH DUCT SEALANT.
 - ORIENT MV AC AND DC FEEDER CONDUIT SWEEPS IN DIRECTION OF INCOMING CABLES AS PER SITE CONDITIONS. PROVIDE WATERTIGHT SEAL WHERE CONDUITS ENTER EQUIPMENT.
 - MINIMUM BENDING RADIUS FOR MV AC AND DC HOME RUN CABLE SHALL BE 12 TIMES THE OUTER DIAMETER OF THE CABLE OR AS PER MANUFACTURER RECOMMENDATION WHICHEVER IS GREATER.
 - DC TERMINALS IN THE INVERTERS MUST BE LISTED AND MARKED AS 90°C RATED.
 - USE SCHEDULE 80 PVC FOR RISERS WHERE CONDUIT IS EXPOSED ABOVE GRADE AND USE SCHEDULE 40 PVC FOR BELOW GRADE.
 - PVC CONDUIT:
 - DC FEEDERS: 3" DIAMETER (2 CABLES)
 - MV AC CABLES: 8" DIAMETER (3 CABLES)(CONTRACTOR TO ENSURE THE MV CABLES ARE IN TREFOIL FORMATION WHEN INSTALLED IN THE CONDUIT)

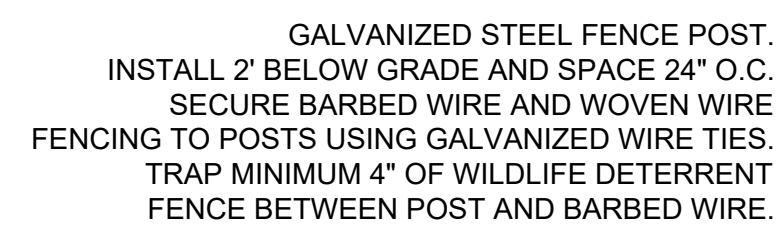
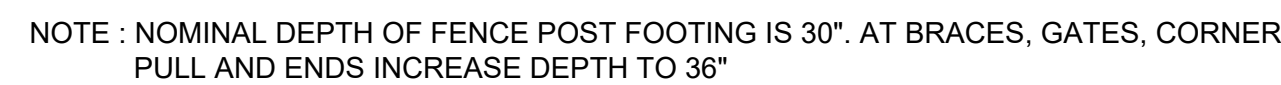
4400KVA POWER CONVERSION STATION
PLAN VIEW



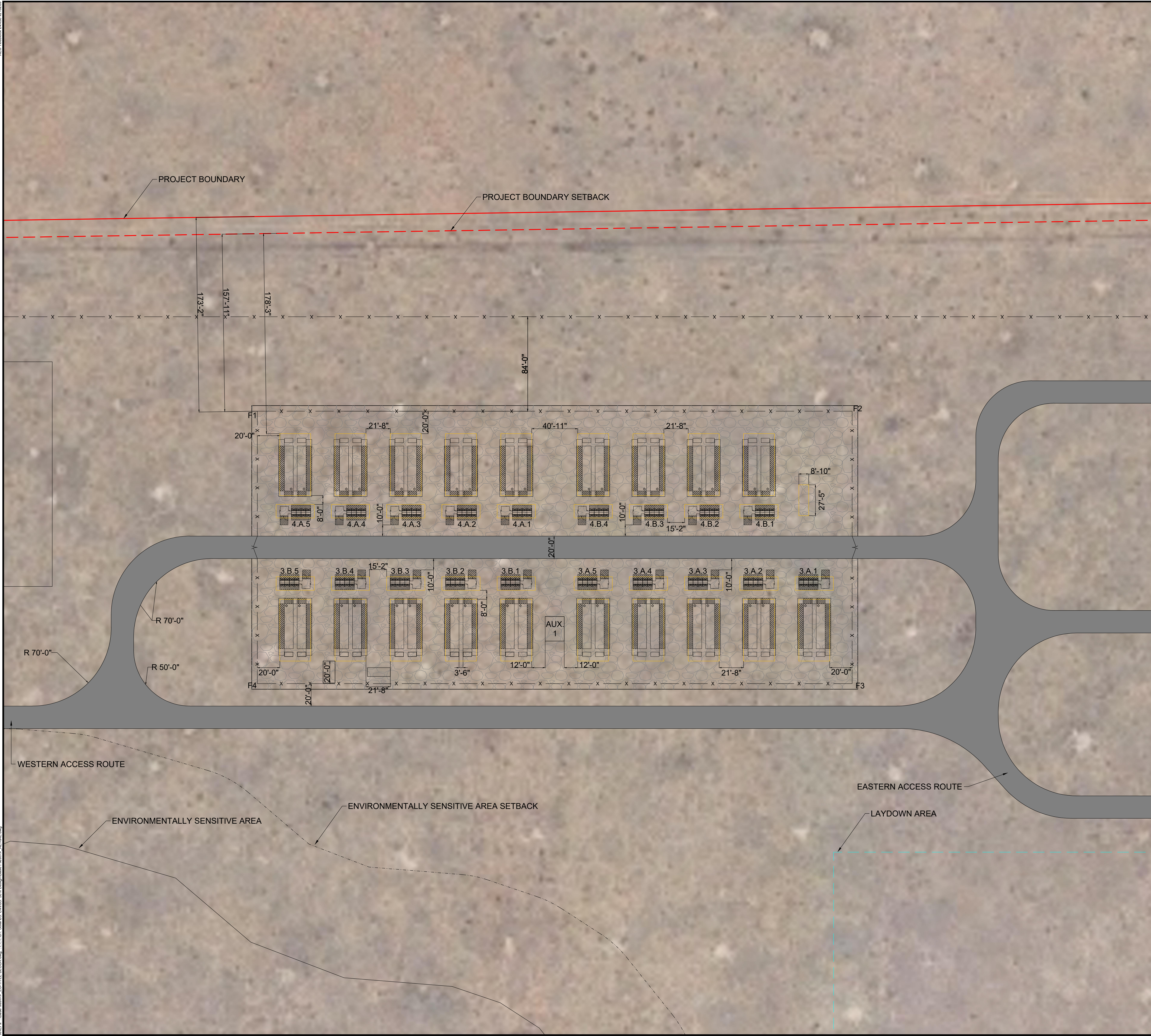
LEFT SIDE ELEVATION VIEW

FRONT ELEVATION VIEW

RIGHT SIDE ELEVATION VIEW



AES Titleblock 24x36 01/09/2024
PLOTTED: 8/11/2024 8:59 PM
C:\Users\Bjorn\OneDrive\Documents\AES\Projects\03_Rancho Viejo\Worksheets\03_BES0303_Civil03_30% Design\Sheet\Overall Site Plan.dwg
C:\Users\Bjorn\OneDrive\Documents\AES\Projects\03_Rancho Viejo\Worksheets\03_BES0303_Civil03_30% Design\Sheet\Overall Site Plan.dwg



GENERAL NOTES

- THIS DRAWING IS PRELIMINARY AND FOR ESTIMATING PURPOSES ONLY. IT IS NOT FOR CONSTRUCTION.
- LOCATION OF ALL EXISTING ITEMS IS APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
- ALL SPECIFIED EQUIPMENT IS PRELIMINARY. FINAL EQUIPMENT SELECTION SHALL BE APPROVED BY OWNER.
- ALL DIMENSIONS ARE IN FEET OTHERWISE SPECIFIED.
- NAMEPLATE VALUES ARE AT BEGINNING OF LIFE.
- SERVICE & ACCESS ROADS ARE MAINTAINED AT 20' WIDE.

SHEET NOTES

SITE ENTRANCE W/ 20' GATE

LEGEND:

- PROJECT BOUNDARY
- PROJECT BOUNDARY - 20' SETBACK
- X FENCE
- INTERIOR ROADS
- BESS FOUNDATION
- BESS EQUIPMENT - MAJOR
- AUXILIARY TRANSFORMER PAD

SYSTEM DETAILS

BESS CAPACITY AT POI	48 MWAC
BESS DURATION	4 HR
INSTALLED ENERGY CAPACITY BOL	277.8 MWh DC STC
INSTALLED ENERGY CAPACITY EOL	207.9 MWh DC STC
BATTERY MODULE (MANUFACTURER - MODEL)	SAMSUNG SDI-E5S
BATTERY STRING LENGTH (# OF MODULES)	12
STRINGS PER CONTAINER BOL	20
STRINGS PER CONTAINER BOL	19
STRINGS PER CONTAINER BOL	18
STRINGS PER CONTAINER EOL	20
STRINGS PER CONTAINER EOL	19
STRINGS PER CONTAINER EOL	18
TOTAL DESIGN OVERBUILT	44.6%
CONTAINER TYPE	CEN 40'
TOTAL CONTAINER COUNT BOL	38
TOTAL CONTAINER COUNT EOL	38
CONTAINER COUNT	13
CONTAINER COUNT	13
CONTAINER COUNT	12
BESS PCS COUNT: GPTECH 3MsWD3-V730	19
BESS PCS RATED AC OUTPUT POWER	3.607 MVA
BESS PCS DERATED AC OUTPUT POWER	3.210 MVA
MV AC COLLECTION SYSTEM VOLTAGE	34.5 kV
ASHRAE MIN DESIGN TEMP	-16.7 °C
ASHRAE MAX DESIGN TEMP	33.6 °C
POWER FACTOR @POI	0.95

FENCE COORDINATES	
POINT	NM STATE PLANE COORDINATES
F1	N=1657035.1492, E=1713479.5135
F2	N=1657035.1492, E=1714008.7756
F3	N=1656792.7069, E=1714008.7756
F4	N=1656792.7069, E=1713479.5135

TOTAL PARCEL ACREAGE	N/A
LINER FT OF FENCE	1,550
FENCE AREA (ACRES)	2.95
NUMBER OF SITE ENTRANCES	2.00
LINER FT OF BESS INTERIOR ROAD	500



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PROJECT TITLE:

RANCHO VIEJO SOLAR
UTILITY

PROJECT LOCATION:

SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

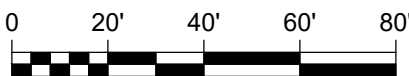
SHEET TITLE & DESCRIPTION:

BESS CIVIL

OVERALL SITE PLAN

PROJ NUM:	
DES:	HARI TARUN
DWN:	B SURESH
CHK:	S YASHWANTH
APV:	M TREW
DATE:	08/11/2023

SCALE AT 24" x 36":



1" = 40'

SHEET NO:

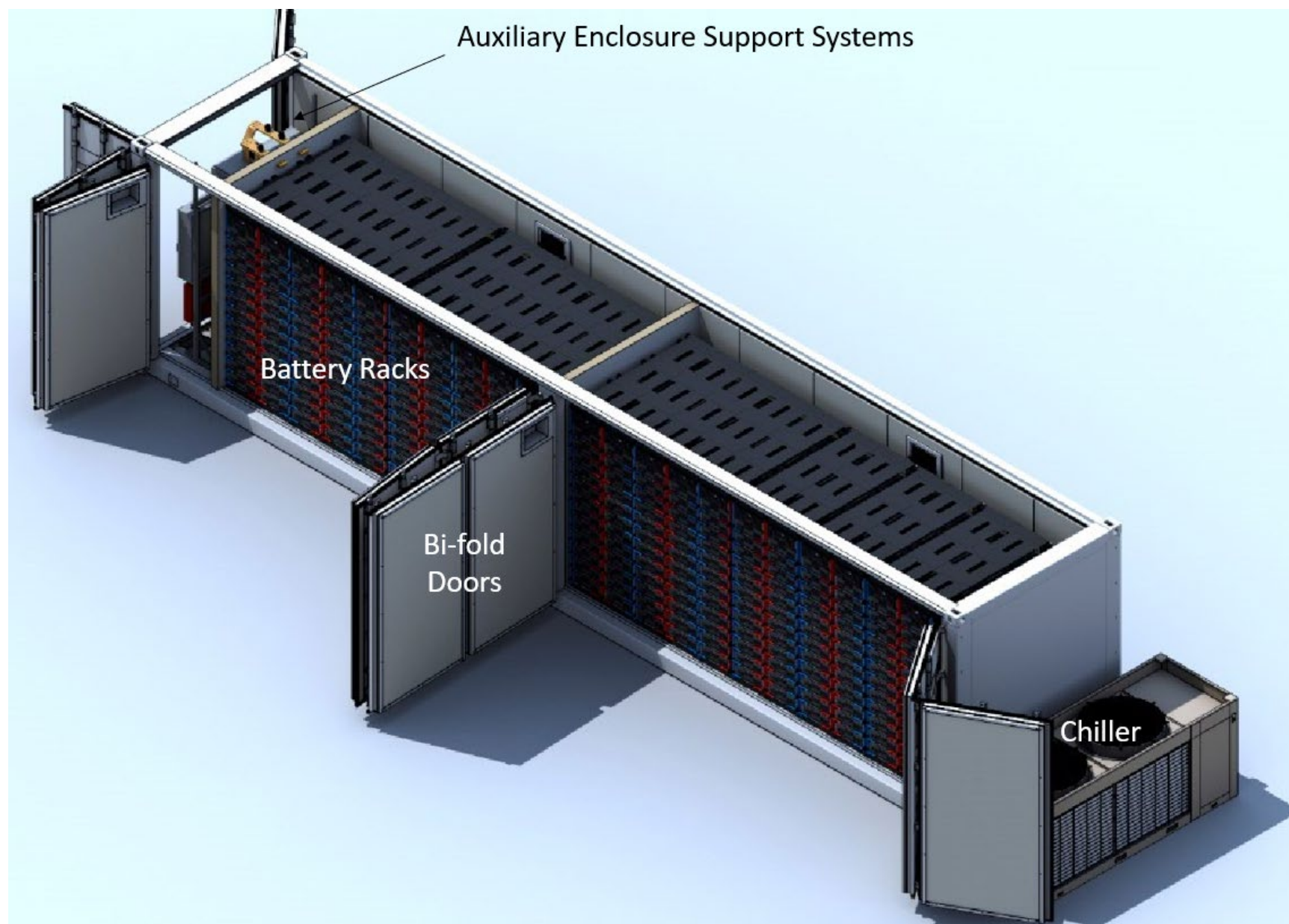
ES-C.02.01

REV:

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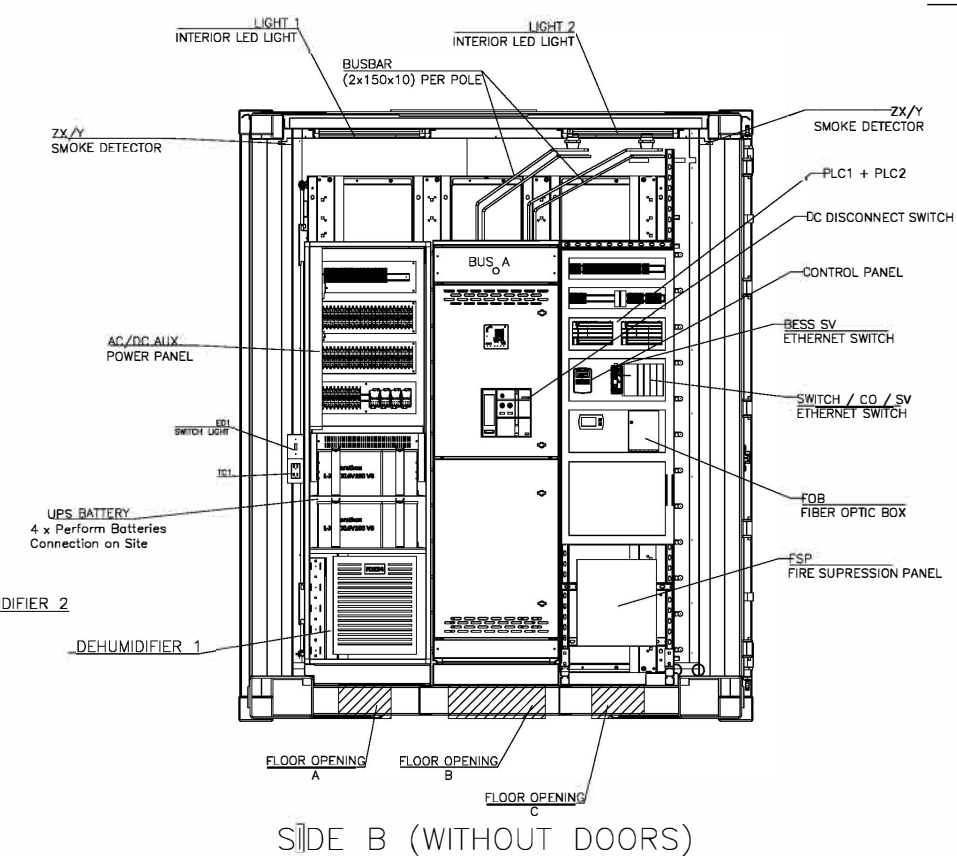
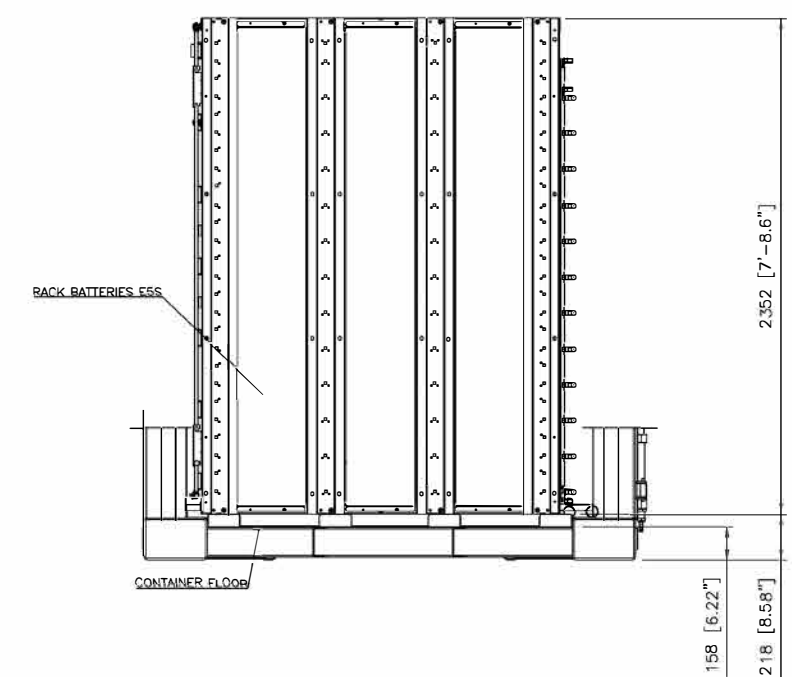
Magnesium Anodes to provide additional corrosion protection.
Burying sacrificial (cathodic) magnesium anodes underneath Pioneer Water Tanks significantly extends the lifespan of the tank. Electrolysis diverts corrosion to the magnesium away from the tank walls. They should be replaced every 10 years.

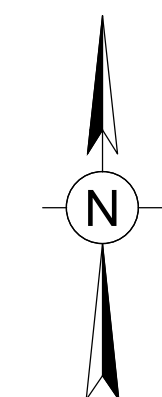
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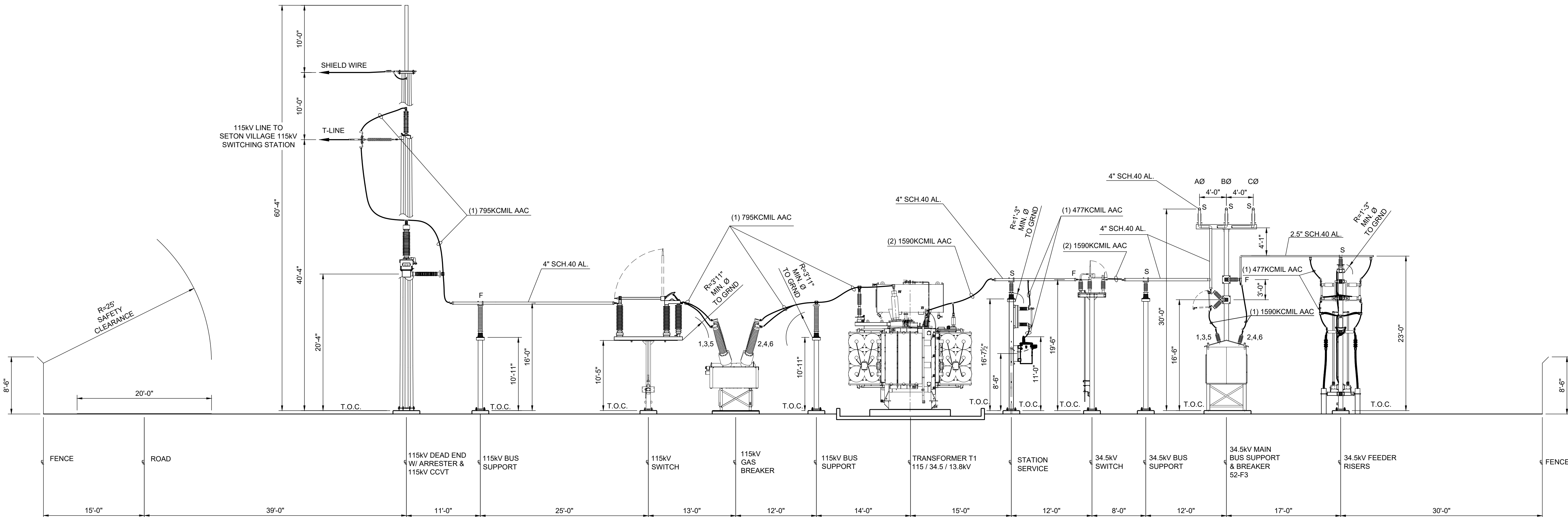




Auxiliary Enclosure Support Systems

[illegible][illegible]

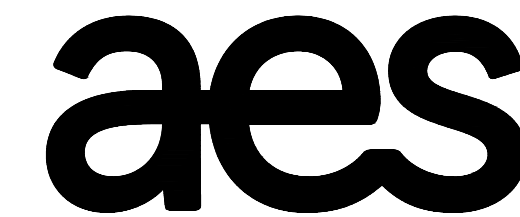




ELEVATION A-A

GENERAL ARRANGEMENT NOTES

- JUMPERS
 - ALL 115kV JUMPERS= (1) 795 AAC LILAC
 - T1 MAIN BUS JUMPERS = (2) 1590 AAC COREOPSIS
 - 34.5kV FEEDER BREAKER JUMPERS = (2) 477 AAC COSMOS
 - 34.5kV FEEDER JUMPERS = (1) 477 AAC COSMOS
- PIPE BUS
 - ALL 115kV BUS = 4" SCH 40 6063-T6
 - 34.5kV MAIN BUS = 4" SCH 40 6063-T6
 - 34.5kV FEEDER BUS = 2.5" SCH 40 6063-T6
- CLEARANCES
 - 115kV CLEARANCE (650kV BIL)
 - PHASE TO PHASE: MIN. 8'-0"
 - METAL TO METAL: MIN. 4'-11"
 - PHASE TO GROUND: MIN. 3'-11"
 - VERTICAL CLEARANCE TO LIVE PART: 14'- 0"
 - HORIZONTAL CLEARANCE FROM FENCE TO LIVE PART: 14'-6"
 - 34.5kV CLEARANCE(250kV BIL)
 - PHASE TO PHASE: MIN. 4'-0"
 - METAL TO METAL: MIN. 1'-8"
 - PHASE TO GROUND: MIN. 1'-3"
 - VERTICAL CLEARANCE TO LIVE PART: 11'-1"
 - HORIZONTAL CLEARANCE FROM FENCE TO LIVE PART: 11'-1"



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PROJECT TITLE:

RANCHO VIEJO SOLAR
UTILITY

PROJECT LOCATION:

SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

ELEVATION
A-A

115/34.5kV COLLECTOR
SUBSTATION

PROJ

NUM:

DES: P L SRAMAN

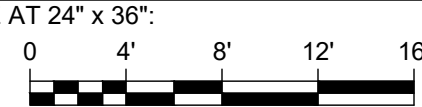
DWN: R BALA

CHK: M AJAY

APV: P KRISHNA

DATE: 08/18/2023

SCALE AT 24" x 36":



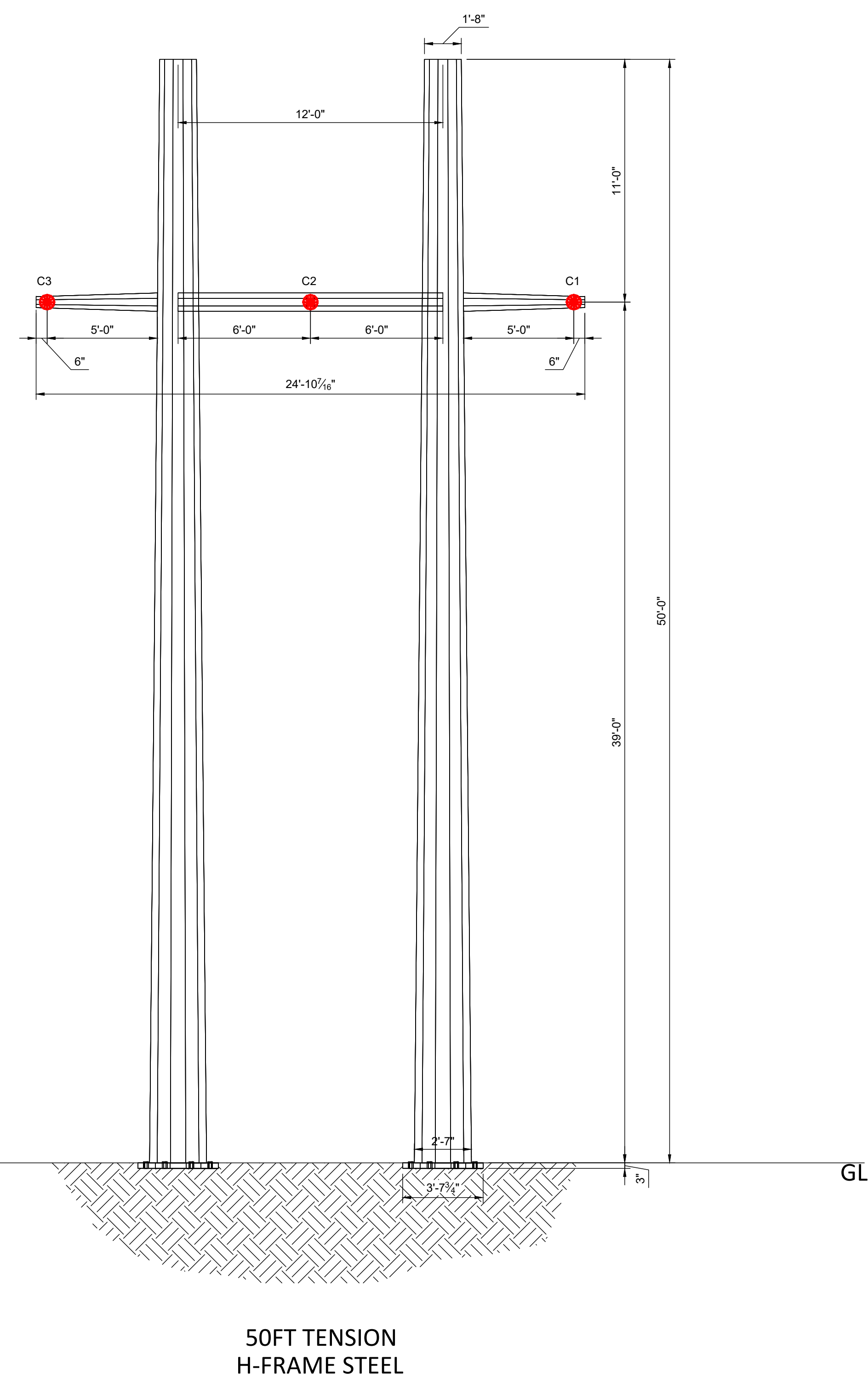
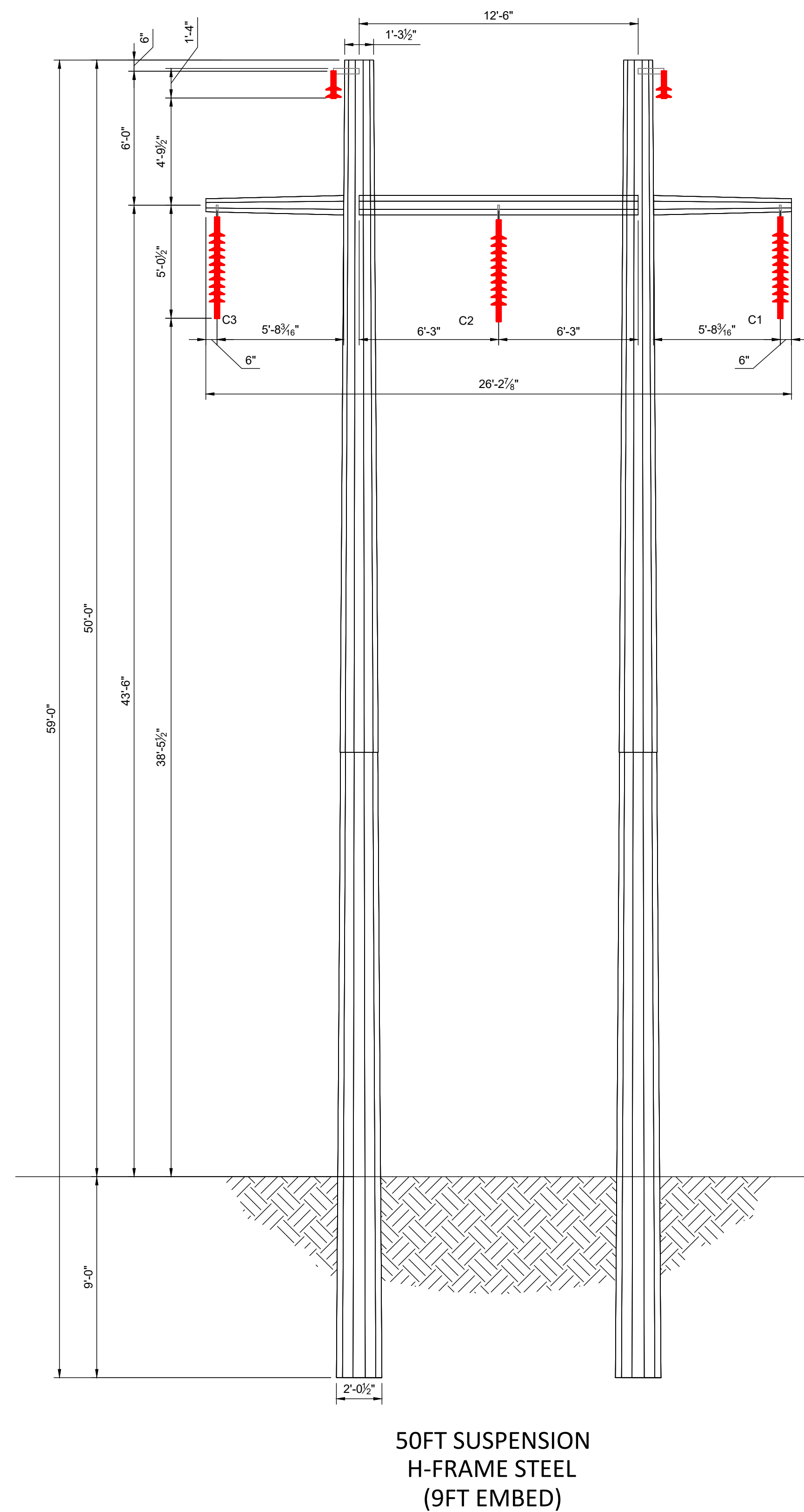
1/8" = 1'-0"

SHEET NO:

HV-P.02.01

REV:

1



NOTES:

1. ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SPECIFIED.
2. THE DESIGNATED EMBEDMENT LENGTH IS CALCULATED AS 10% OF THE TOTAL POLE LENGTH ABOVE THE GROUND, PLUS AN ADDITIONAL 2 FEET. THIS DECISION IS MADE BASED ON DESIGN CONSIDERATIONS, RESULTING IN A FINAL EMBEDMENT LENGTH OF 9 FEET.
3. ALL ELECTRICAL CLEARANCES WERE CONSIDERED AS PER NESC RULE 235.
4. DUE TO THE NON AVAILABILITY OF GEO-TECHNICAL INVESTIGATION REPORT, IN PARTICULAR, TO TRANSMISSION LINE CORRIDOR, WE HAVE CONSIDERED THE PARAMETERS FOR FOUNDATION DESIGN BASED ON SUBSTATION BORING LOG REPORT AND ASSUMING THE WORST CASE SCENARIO WITH UNIFORM LAYER OF SANDY SILT THROUGH OUT.



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PE STAMP:

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KEY PLAN:

[illegible]

PROJECT TITLE:

RANCHO VIEJO SOLAR
UTILITY

PROJECT LOCATION:

SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

STEEL POLE
GEOMETRY

115kV HV GENERATION
TIE LINE

PROJ
NUM:

DES: C M HAREESH

DWN: G VENKATESH

CHK: JAGADEESH Y

APV: P KRISHNA

DATE: 08/02/2023

SCALE AT 24" x 36"

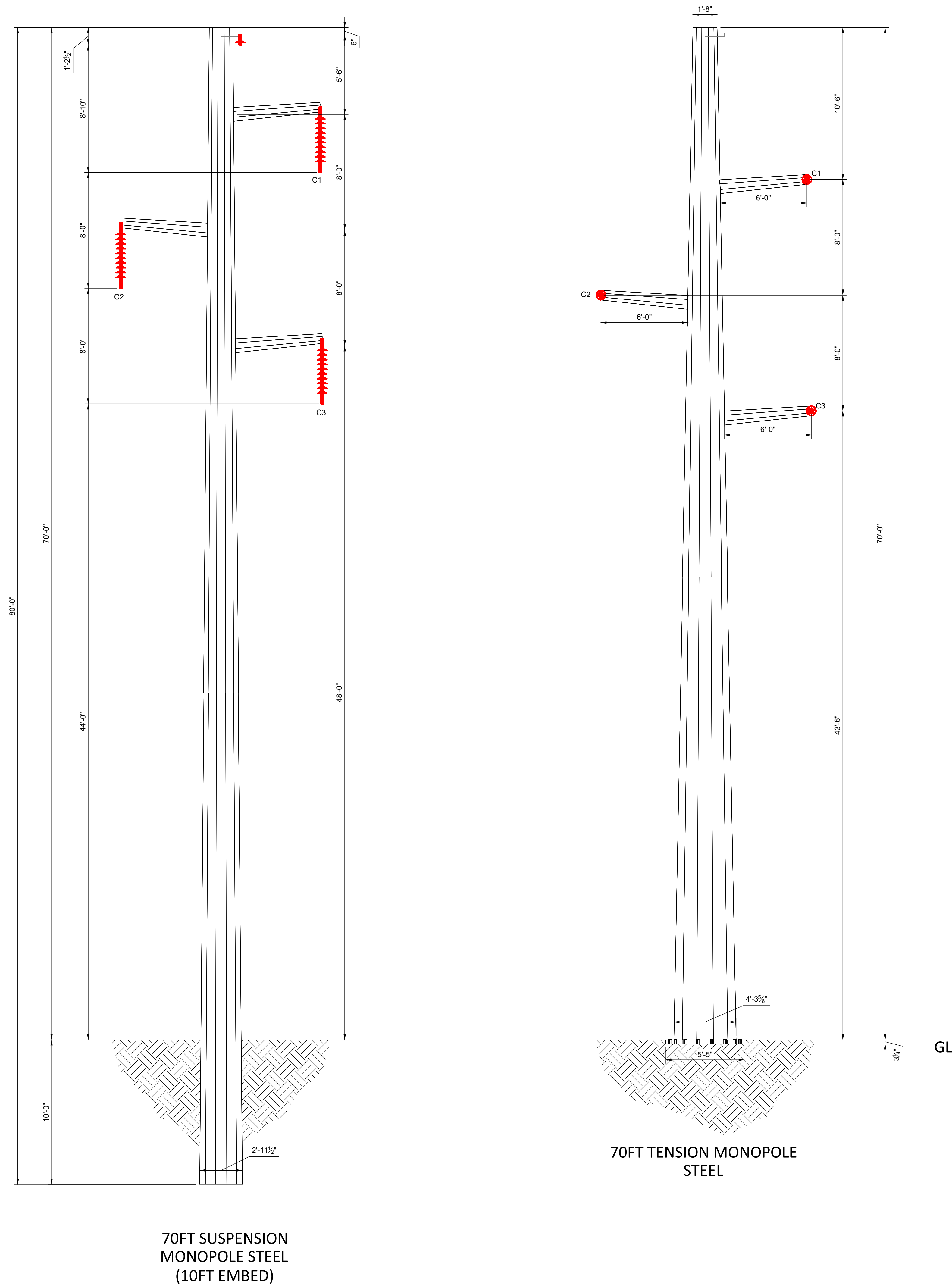
1/4" = 1'-0'

SHEET NO:

TL-S.01.01

REV

C



NOTES:

1. ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SPECIFIED.
2. THE DESIGNATED EMBEDMENT LENGTH IS CALCULATED AS 10% OF THE TOTAL POLE LENGTH ABOVE THE GROUND, PLUS AN ADDITIONAL 2 FEET. THIS DECISION IS MADE BASED ON DESIGN CONSIDERATIONS, RESULTING IN A FINAL EMBEDMENT LENGTH OF 10 FEET.
3. ALL ELECTRICAL CLEARANCES WERE CONSIDERED AS PER NESC RULE 235.
4. DUE TO THE NON AVAILABILITY OF GEO-TECHNICAL INVESTIGATION REPORT, IN PARTICULAR, TO TRANSMISSION LINE CORRIDOR, WE HAVE CONSIDERED THE PARAMETERS FOR FOUNDATION DESIGN BASED ON SUBSTATION BORING LOG REPORT AND ASSUMING THE WORST CASE SCENARIO WITH UNIFORM LAYER OF SANDY SILT THROUGH OUT.



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REVISIONS:

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PROJECT TITLE:

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UTILITY

PROJECT LOCATION:

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NEW MEXICO
(35.5415, -106.0106)

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STEEL POLE GEOMETRY

115kV HV GENERATION
TIE LINE

PROJ NUM:	
--------------	--

DES: C M HAREESH

DWN: G VENKATESH

CHK: JAGADEESH Y

APV: P KRISHNA

DATE: 08/02/2023

SCALE AT 24" x 36":


$$1/4" = 1'-0"$$

SHEET NO:

TL-S.01.01

EV:

0

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PROJECT TITLE:
RANCHO VIEJO SOLAR UTILITY

PROJECT LOCATION:
SANTA FE COUNTY,
NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:
PV CIVIL

O&M BUILDING

PROJ
NUM:
DES: B SURESH
DWN: B SURESH
CHK: S YASHWANTH
APV: M TREW
DATE: 07/02/2024
SCALE AT 24" x 36":
N.T.S

SHEET NO:
PV-C.09.01

REV:
3

NOTE:
1. LIGHTING WILL COMPLY WITH SECTION 7.8
OF THE SUSTAINABLE LAND DEVELOPMENT
CODE.
2. BUILDING COLOR WILL BE NEUTRAL EARTH
TONES SUCH AS DESERT SAND OR
BROWNSTONE, UNLESS OTHERWISE
INDICATED BY THE COUNTY.

KEY PLAN:

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3	07/02/2024	UPDATED 30% DESIGN

ELEVATION 1

ELEVATION 2

ELEVATION 3

ELEVATION 4

70'-0"

15'-0"

4'-0"

4'-0"

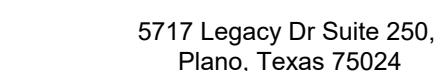
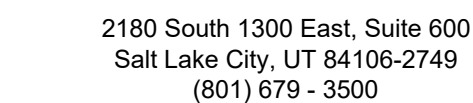
3'-0"

6'-8"

10'-0"

10'-0"





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RANCHO VIEJO SOLAR
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NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

PV CIVIL

O&M FACILITY LAYOUT

PROJ
NUM:

NUM:	
DES:	B SURESH

DWN: B SURESH

CHK: S YASHWANTH

APV: M TREW

DATE: 07/02/2021

SCALE AT 24" x 36":

A horizontal scale bar with alternating black and white segments. It is marked with '0', '10'', '20'', '30'', and '40''.

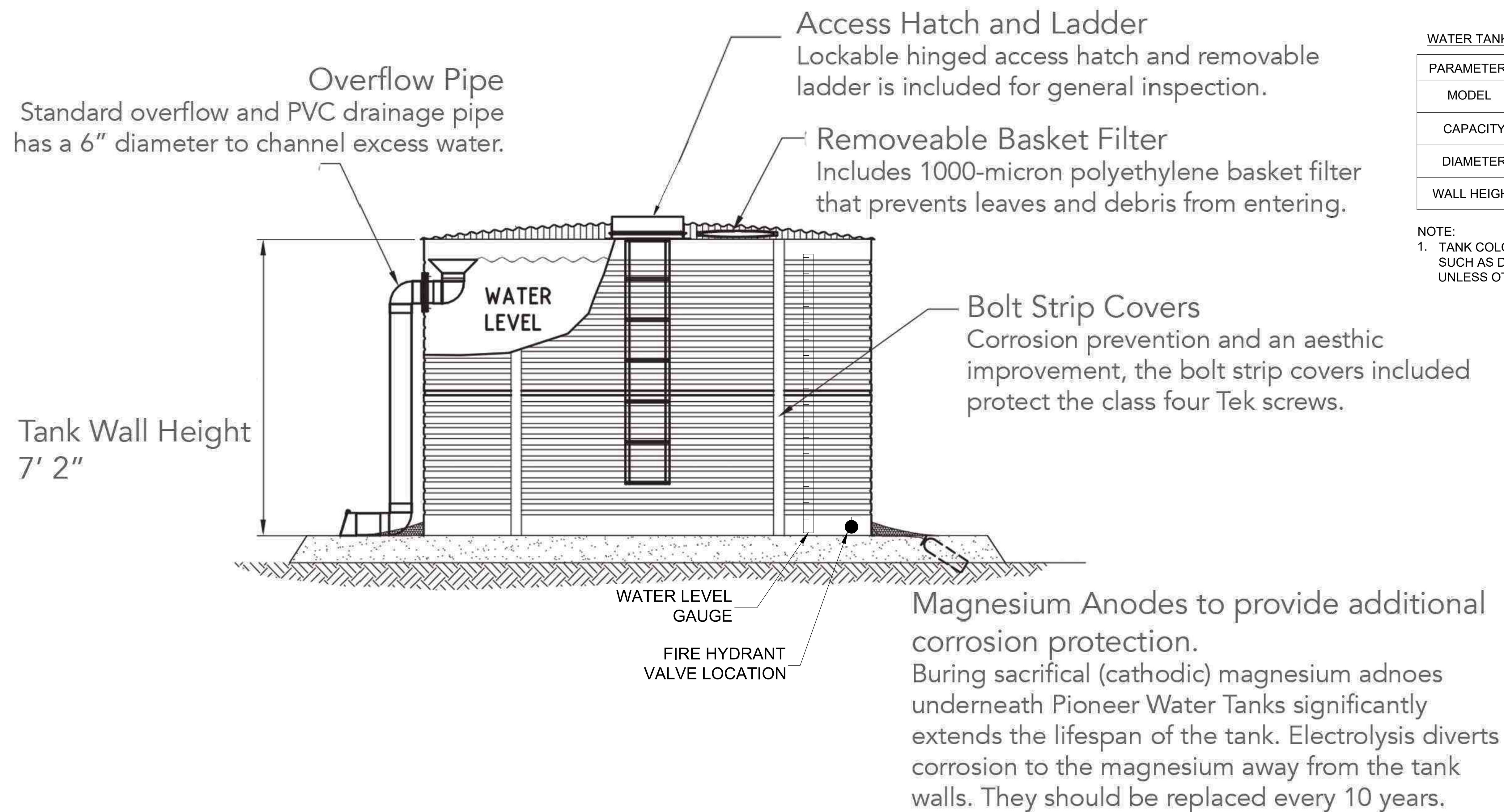
 $1'' = 20'$

SHEET NO:

PV-C.09.00

REV

3

WATER TANK INFORMATION:

PARAMETERS	DATA
MODEL	PIONEER WATER TANKS XLR 04/02
CAPACITY	5,076-GALLONS NOMINAL CAPACITY
DIAMETER	11'
WALL HEIGHT	7' 2"

NOTE:

1. TANK COLOR WILL BE NEUTRAL EARTH TONES SUCH AS DESERT SAND OR BROWNSTONE, UNLESS OTHERWISE INDICATED BY THE COUNTY.



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PROJECT TITLE:	
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UTILITY

PROJECT LOCATION:

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NEW MEXICO
(35.5415, -106.0106)

SHEET TITLE & DESCRIPTION:

PV CIVIL

PIONEER-WATER TANK

PROJ

PROJ
NUM:

DES:

DWN:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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CHK:

APV:

DATE _____

SCAL

[illegible]

11

11

SUEE

STILL

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REV: