

# SITES RESERVOIR

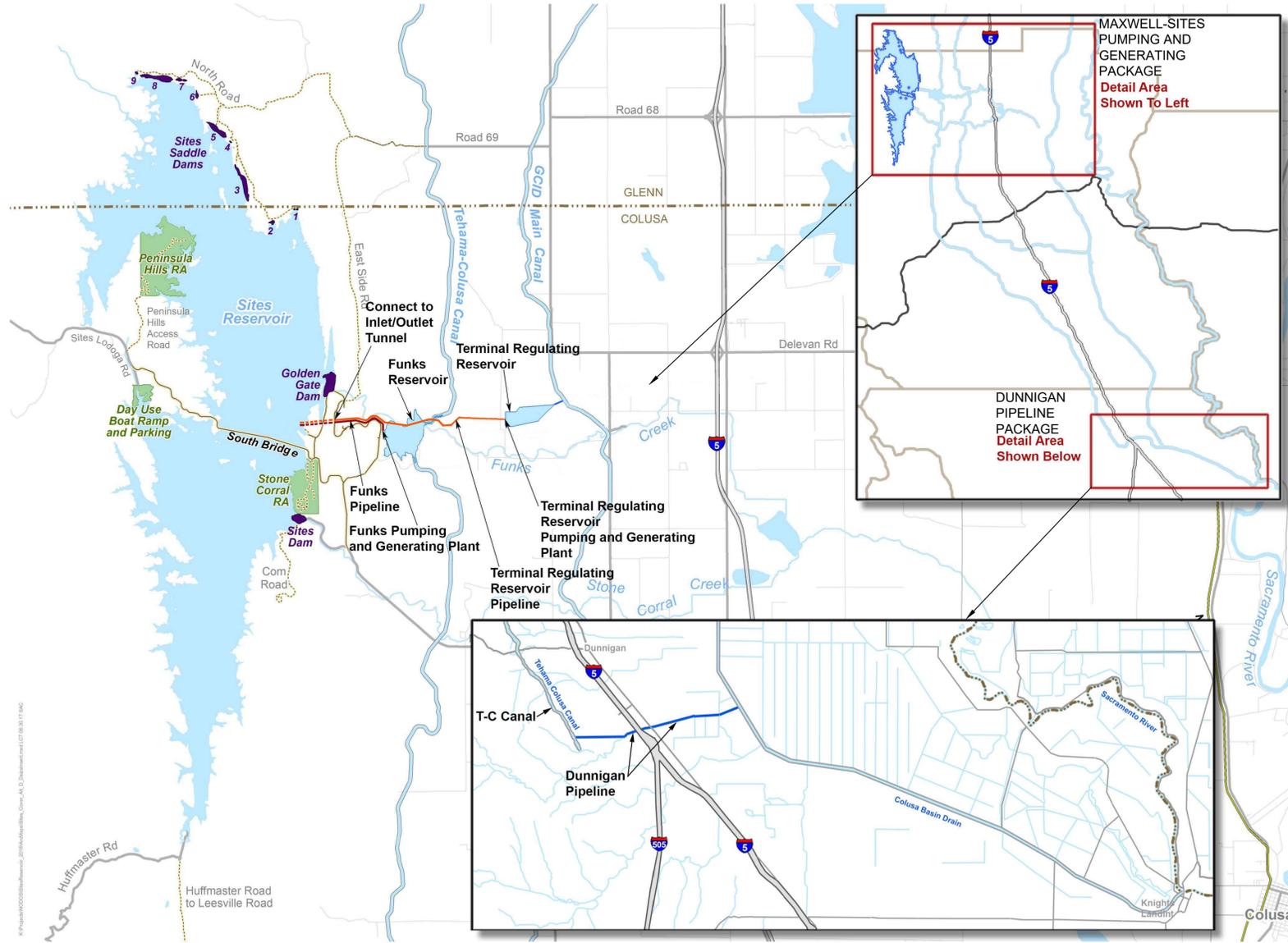
## MAXWELL / SITES PUMPING AND GENERATING PROJECT

### TERMINAL REGULATING RESERVOIR SWITCHYARD AND SUBSTATION

30% DESIGN - CLIENT REVIEW  
APRIL 9, 2024



PROJECT LOCATION MAP



OVERALL PROJECT SITE MAP - DUNNIGAN PIPELINE NOT INCLUDED IN THIS PACKAGE

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REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
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DRAWN BY:  
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**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING  
GENERAL  
COVER SHEET,  
LOCATION MAP AND SITE MAP

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
0 1"

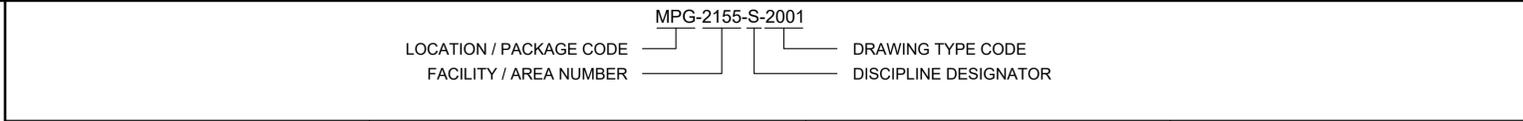
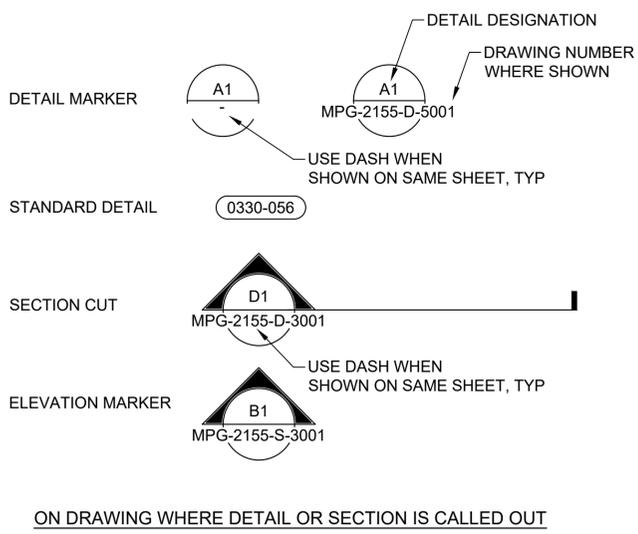
DRAWING NO.  
MPG-0001-G-0001  
SHT 1 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

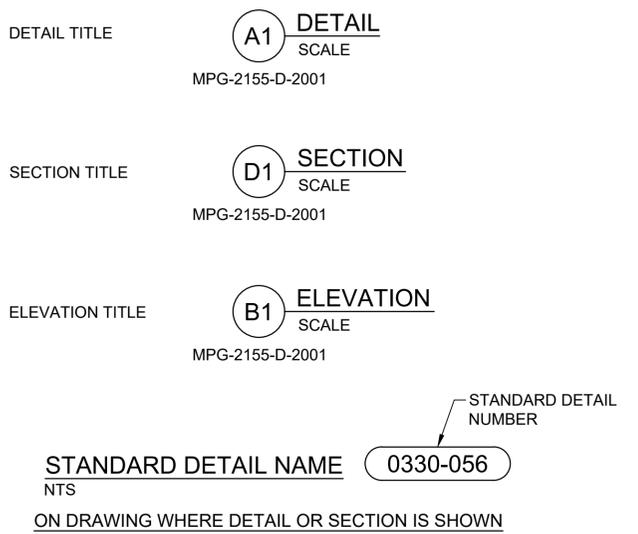


**GENERAL SYMBOLS**

**DRAWING NUMBERING LEGEND**



PACKAGE NUMBER - CODE - LOCATION	AREA NUMBER - FACILITY / DISCIPLINE	DISCIPLINE DESIGNATOR	DRAWING TYPE CODE
1- STS - SITES RESERVOIR 2- MPG - MAXWELL / SITES PUMPING AND GENERATING 3- SCD - RESERVOIR CLEARING AND DEMOLITION 4- HFR - HUFFMASTER ROAD 5- DNP - DUNNIGAN PIPELINE 6- CCA - TEHAMA-COLLUSA CANAL AUTHORITY 7- CID - GLENN-COLLUSA IRRIGATION DISTRICT 8- REC - SITES RECREATION 9- MIT - SITES MITIGATION	0001 - GENERAL 0010 - GEOTECH 0045 - OVERALL SITE CIVIL 0060 - OVERALL SITE ELECTRICAL 0065 - INSTRUMENTATION AND CONTROLS 2005 - ACCESS ROADS 2010 - TRANSMISSION 2015 - PGE POI SWITCHYARD 2030 - VALVE VAULT 2040 - ENVIRONMENTAL WATER PIPELINE DISSIPATION STRUCTURE 2100 - FNK - TEMPORARY CONSTRUCTION 2105 - FNK - SITE CIVIL 2107 - FNK - RETAINING WALL 2110 - FNK - YARD PIPING 2115 - FNK - RESERVOIR 2120 - FNK - PIPELINE 2125 - FNK - SITE AND GENERAL ELECTRICAL 2130 - FNK - SUBSTATION 2135 - FNK - INSTRUMENTATION AND CONTROLS 2145 - FNK - ADMINISTRATION AND OPERATIONS BUILDING 2150 - FNK - MAINTENANCE AND STORAGE BUILDING 2155 - FNK - PUMPING PLANT 2160 - FNK - SWITCHGEAR BUILDING 2161 - FNK - EMERGENCY GENERATOR 2165 - FNK - GENERATING PLANT 2170 - FNK - CHILLER YARD 2171 - FNK - HVAC BUILDING 2175 - FNK - EMERGENCY DISSIPATION STRUCTURE 2180 - FNK - FIRE WATER TANK 2181 - FNK - FIRE WATER PUMPING PLANT 2185 - FNK - SURGE CONTROL SYSTEM 2190 - FNK - FLOW METER VAULT 2200 - TRR - TEMPORARY CONSTRUCTION 2205 - TRR - SITE CIVIL 2207 - TRR - SHEET PILE WALL 2210 - TRR - YARD PIPING 2215 - TRR - RESERVOIR 2220 - TRR - PIPELINE 2225 - TRR - SITE ELECTRICAL 2230 - TRR - SWITCHYARD 2231 - TRR - SUBSTATION 2235 - TRR - INSTRUMENTATION AND CONTROL 2240 - TRR - TRANSMISSION 2255 - TRR - PUMPING PLANT 2260 - TRR - SWITCHGEAR BUILDING 2261 - TRR - EMERGENCY GENERATOR 2265 - TRR - GENERATING PLANT 2270 - TRR - CHILLER YARD 2271 - TRR - HVAC BUILDING 2275 - TRR - ENERGY DISSIPATION STRUCTURE 2280 - TRR - FIRE WATER TANK 2281 - TRR - FIRE WATER PUMPING PLANT 2285 - TRR - SURGE CONTROL SYSTEM 2291 - TRR - CHECK STRUCTURE 1 2292 - TRR - CHECK STRUCTURE 2 2293 - TRR - CHECK STRUCTURE 3 2294 - TRR - CHECK STRUCTURE 4	A - ARCHITECTURAL B - GEOTECHNICAL C - CIVIL D - PROCESS MECHANICAL E - ELECTRICAL F - FIRE PROTECTION FET - FOUNDATION EXCAVATION AND TREATMENT G - GENERAL H - HVAC I - INTERIORS J - PLUMBING K - TRANSMISSION L - LANDSCAPE M - BUILDING MECHANICAL N - INSTRUMENTATION AND CONTROLS P - PIPELINE Q - EQUIPMENT R - ROADWAY S - STRUCTURAL T - TELECOMMUNICATIONS V - SURVEY MAPPING Y - YARD PIPING	0000 - GENERAL AND 3D RENDERINGS 1000 - DEMOLITION 2000 - PLANS AND PLAN AND PROFILE 3000 - SECTIONS, ELEVATIONS AND PROFILES 4000 - ENLARGED PLANS 5000 - DETAILS 6000 - SCHEDULES AND DIAGRAMS 7000 - USER DEFINED 8000 - USER DEFINED 9000 - STD DETAILS



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: D. CAVE  
 DRAWN BY: D. CAVE  
 CHECKED BY: W. OHLIN  
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 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
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 72287  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 GENERAL  
 GENERAL SYMBOLS  
 AND DRAWING NUMBERING LEGEND

VERIFY SCALES  
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 0 1"  
 DRAWING NO. MPG-0001-G-0020  
 SHT 4 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

LEGEND AND SYMBOLS

EXISTING FEATURES

	DRAIN ROCK
	FENCE
	SUBSTATION FENCE
	GATE
	MAJOR CONTOURS
	MINOR CONTOURS
	SILO(S), TANK(S)
	TRAFFIC SIGN
	FIRE HYDRANT
	POST
	TREE
	PALM TREE
	BUSH
	POLE
	SURVEY CONTROL POINT
	MANHOLE
	MISC UTILITY
	UTILITY BOX
	TRAFFIC LIGHT
	UTILITY JUNCTION
	BILLBOARD
	CATCH BASIN, RECT
	VA-TRAF-BARR-POST
	COMMUNICATION ANTENNA
	UTILITY VALVE
	SIGN, REFLECTIVE
	MAILBOX
	STORM DRAIN INLET
	ROAD, CENTER
	ROAD, ALIGNMENT
	ROAD
	DRIVEWAY
	BUILDING OUTLINE
	WALL, RETAINING WALL
	WALL, RETAINING WALL WITH CONC BARRIER
	PIPE, UNIDENTIFIED
	HEADWALL
	CULVERT
	SANITARY SEWER UNDERGROUND PIPE
	SANITARY SEWER MANHOLE
	WATER UNDERGROUND PIPE
	NATURAL GAS UNDERGROUND PIPE
	FIBER OPTIC LINE
	ELEC UNDERGROUND
	ELEC OVERHEAD
	POWER POLE
	GUY WIRE
	GUY ANCHOR
	TRANSMISSION TOWER, METAL
	CANAL
	RAILROAD
	DITCH/FLOW LINE
	STORM DRAIN UNDERGROUND PIPE
	STORM DRAIN MANHOLE
	SLOPE BANK, CUT
	SLOPE BANK, FILL
	SPOT ELEVATION
	BORE LOCATION & #
	TEST PIT LOCATION AND NUMBER
	DWR AUGER HOLE
	DWR CORE HOLE
	USBR CORE HOLE
	GEOTECHNICAL BORING
	STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES

PROPOSED FEATURES

	DRAIN ROCK
	FENCE
	SUBSTATION FENCE
	GATE
	MAJOR CONTOURS
	MINOR CONTOURS
	SILO(S), TANK(S)
	TRAFFIC SIGN
	FIRE HYDRANT
	POST
	TREE
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	GEOTECHNICAL BORING
	STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES

EXISTING FEATURES

	SLOPE PERCENT OR RISE:RUN
	FLOW ARROW
	DIRECTION ARROW
	WATER SURFACE
	PIEZOMETER
	EARTH SLOPE
	STEEL CHECKER PLATE
	BENTONITE CEMENT GROUT
	BENTONITE PELLET SEAL
	CUTOFF WALL (DETAILS/SECTIONS)
	ORIGINAL GROUND
	AGGREGATE BASE
	DAM/LEVEE FILL
	DAM/LEVEE EMBANKMENT FILL
	FINE SAND
	CONCRETE
	CLSM
	ROCK SLOPE PROTECTION
	ASPHALT CONCRETE PAVEMENT
	GRAVEL SURFACING
	CUTOFF WALL (PLANS)
	LIMITS OF WORK
	BREAK LINE
	PIPE BREAK LINE
	CENTERLINE
	SPRING LINE CENTERLINE
	DEMOLITION
	STRUCTURE, BUILDING OR FACILITY
	EXISTING PIPE TO BE ABANDONED
	EXISTING PIPE TO BE DEMOLISHED
	CONSTRUCTION CONTRACT LIMIT
	CONSTRUCTION EASEMENT
	CABLE TV
	COMMUNICATION
	FIRE PROTECTION WATER SUPPLY
	GUARD RAIL
	PROPERTY LINE
	CONTRACTOR STAGING BOUNDARY
	RIGHT OF WAY
	SILT FENCE
	TELEPHONE OVERHEAD
	TELEPHONE UNDERGROUND
	TEMPORARY CONSTRUCTION EASEMENT
	PERMANENT EASEMENT

PROPOSED FEATURES

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	FLOW ARROW
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	CONTRACTOR STAGING BOUNDARY
	RIGHT OF WAY
	SILT FENCE
	TELEPHONE OVERHEAD
	TELEPHONE UNDERGROUND
	TEMPORARY CONSTRUCTION EASEMENT
	PERMANENT EASEMENT

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	B. CHELONIS
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**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 GENERAL CIVIL LEGEND

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SHT 5 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**CAST IN PLACE CONCRETE**

- 28-DAY COMPRESSIVE STRENGTHS (TO MEET STRUCTURAL STRENGTH REQUIREMENTS):  
 HYDRAULIC STRUCTURES: 4,500 PSI  
 BUILDING STRUCTURES: 4,000 PSI  
 CONCRETE FILL: 3,500 PSI  
 CURBS AND SIDEWALKS: 3,500 PSI  
 DUCT BANKS AND PIPE ENCASUREMENTS  
 NOT INTEGRAL WITH FOUNDATIONS: 3,500 PSI
- 56-DAY COMPRESSIVE STRENGTHS (TO MEET DURABILITY REQUIREMENTS FOR ACI 318 AND ACI 350):  
 HYDRAULIC STRUCTURES: 5,000 PSI  
 BUILDING STRUCTURES: 4,500 PSI  
 CONCRETE FILL: 4,000 PSI  
 CURBS AND SIDEWALKS: 4,000 PSI  
 DUCT BANKS AND PIPE ENCASUREMENTS  
 NOT INTEGRAL WITH FOUNDATIONS: 4,000 PSI
- CONTINUOUS WATERSTOP AS SPECIFIED SHALL BE INSTALLED IN ALL CONSTRUCTION JOINTS IN WALLS AND SLABS OF WATER HOLDING BASINS AND BELOW GRADE STRUCTURES UNLESS SPECIFICALLY NOTED OTHERWISE.
- CONSTRUCTION JOINTS INDICATED ARE SUGGESTED LOCATIONS. CONTRACTOR MAY REVISE LOCATION OF JOINTS, SUBJECT TO SPECIFIED REQUIREMENTS. LAYOUT SHOWING ALL CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED FOR REVIEW BY ENGINEER.
- ROUGHEN AND CLEAN CONSTRUCTION JOINTS IN WALLS AND SLABS AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE, EXPOSING CLEAN AGGREGATE OF 1/4" AMPLITUDE SOLIDLY EMBEDDED IN MORTAR MIX.
- COORDINATE PLACEMENT OF OPENINGS, PIPE PENETRATIONS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
- NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
- CONDUIT SHALL NOT BE PLACED PARALLEL WITH BEAM OR COLUMN REINFORCEMENT UNLESS SPECIFICALLY INDICATED IN DRAWINGS.
- PATCH FORM TIE HOLES IN ACCORDANCE WITH STANDARD DETAILS.

**CONCRETE UNIT MASONRY**

- MASONRY WALL TYPE: SPECIAL REINFORCED WALLS.
- DESIGN COMPRESSIVE STRENGTH, f<sub>m</sub>, OF THE FINISHED ASSEMBLY AND MATERIAL PROPERTIES SHALL BE PER THE TABLE BELOW.
- MORTAR: ASTM C270, TYPE S, HYDRATED.
- GROUT: ASTM C476 COARSE GROUT. USE OF WATER REDUCERS OR SUPERPLASTICIZERS IS NOT PERMITTED.
- CONCRETE MASONRY UNITS: ASTM C90, MEDIUM WEIGHT, LINEAR SHRINKAGE SHALL NOT EXCEED 0.065 PERCENT.

DESIGN COMPRESSIVE STRENGTH f <sub>m</sub> (PSI)	UNIT STRENGTH (PSI)	GROUT STRENGTH (PSI) MIN / MAX	MORTAR PROPERTIES
2,000	2,000	2,000 / 3,500	TYPE S

- PLACE COURSES IN WALLS, COLUMNS, AND PILASTERS IN RUNNING BOND PATTERN.
- PROVIDE MATCHING FOUNDATION DOWELS FOR ALL TYPICAL AND ADDITIONAL VERTICAL BARS.
- PROVIDE VERTICAL BARS AND DOWELS WITH LAP LENGTHS AS SHOWN IN DETAIL 0422-004.
- STAGGER ADJACENT LAP SPLICES BY 24 INCHES WHEN SEPARATED BY 3 INCHES OR LESS.
- PROVIDE NUMBER OF FULL HEIGHT VERTICAL BARS AT EDGES OF OPENINGS AS SHOWN IN DETAIL 0422-004.
- PROVIDE FULL HEIGHT VERTICAL BARS IN 3 CELLS AT WALL CORNERS AND INTERSECTIONS AS SHOWN IN DETAIL 0422-001.
- PROVIDE HORIZONTAL CORNER AND INTERSECTION BARS WITH LAP LENGTHS AS SHOWN IN DETAIL 0422-001.
- PROVIDE REINFORCED LINTELS ABOVE AND REINFORCED BOND BEAMS BELOW OPENINGS AS SHOWN IN DETAIL 0422-002.
- PROVIDE FULL HEIGHT VERTICAL BARS WITH MATCHING DOWELS IN CELLS ADJACENT TO OPENINGS AS SHOWN IN DETAIL 0422-002.
- GROUTING: SOLID GROUT ALL CMU WALLS.
- DO NOT PLACE CONDUIT IN CELLS CONTAINING PARALLEL REINFORCEMENT.

**WELDING**

- WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS), LATEST EDITION:  
 D1.1, STRUCTURAL WELDING CODE – STEEL  
 D1.2, STRUCTURAL WELDING CODE – ALUMINUM  
 D1.3, STRUCTURAL WELDING CODE – SHEET STEEL  
 D1.4, STRUCTURAL WELDING CODE – REINFORCING STEEL  
 D1.6, STRUCTURAL WELDING CODE – STAINLESS STEEL
- REPAIR WELDS FOUND DEFECTIVE IN ACCORDANCE WITH AWS D1.1 CLAUSE 7.25.
- USE INTERMITTENT WELDS AND A LOW HEAT INPUT WELDING PROCESS AT FIELD WELDS OF EMBED PLATES AND ANGLES TO AVOID SPALLING OR CRACKING OF THE EXISTING CONCRETE.
- BUTT JOINT AND GROOVE WELDS SHALL BE COMPLETE JOINT PENETRATION (CJP) UNLESS INDICATED OTHERWISE.

**STRUCTURAL STEEL AND METAL FABRICATIONS**

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:  
 W-SHAPES AND CHANNELS A992  
 MISCELLANEOUS SHAPES INCLUDING ANGLES, PLATES, ETC. A572  
 SQUARE OR RECTANGULAR STEEL TUBING A500, GRADE C  
 STEEL PIPE A53, GRADE B  
 STAINLESS STEEL SHAPES A276
- ALUMINUM SHALL CONFORM TO THE FOLLOWING STANDARDS:  
 STRUCTURAL SHAPES B308  
 PLATES B209
- STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION, AND CURRENT OSHA STANDARDS.
- FASTENERS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE FOLLOWING EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE:  
 UNLESS SHOWN OTHERWISE F3125, GRADE A325, TYPE 1  
 ANCHOR BOLTS (AB)  
 STAINLESS STEEL F593, AISI TYPE 304 OR 316, CONDITION CW  
 STEEL F1554, GR 36  
 GALVANIZED STEEL F1554, GR 36 / A153  
 MACHINE BOLTS (MB) A307, GRADE B
- ITEMS TO BE EMBEDDED IN CONCRETE SHALL BE CLEAN AND FREE OF OIL, DIRT AND PAINT.
- NO HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS. NO CUTTING OR BURNING OF STRUCTURAL STEEL IS PERMITTED WITHOUT THE WRITTEN APPROVAL OF JACOBS.
- ALL STEEL MEMBERS EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED TO ASTM A123 UNLESS NOTED OTHERWISE. MEMBERS THAT ARE WELDED AFTER GALVANIZING SHALL BE TOUCHED UP WITH A ZINC RICH COATING AFTER COMPLETIONS AND INSPECTION OF THE WELD.

**OPEN WEB METAL JOIST FRAMING**

- JOISTS SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE AISC AND THE STEEL JOIST INSTITUTE (SJI).
- SEE ROOF FRAMING PLANS FOR DESIGN LOADS.
- LOADS INDICATED ON THE DRAWINGS ARE MINIMUM DESIGN LOADS AND SHALL NOT BE CONSTRUED TO BE ALL LOADS APPLICABLE TO THE DESIGN OF THE JOISTS. DEAD LOADS INFERRED BY THE DRAWINGS WHICH WOULD BE INCLUDED IN COMMON PRACTICE, INCLUDING EQUIPMENT LOADS AND CONSTRUCTION LOADS, SHALL BE INCLUDED IN THE DESIGN.
- VERIFY AND COORDINATE EQUIPMENT WEIGHTS, LOCATIONS, AND ATTACHMENT REQUIREMENTS PRIOR TO JOIST FABRICATION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE VERTICAL AND LATERAL SUPPORT OF EQUIPMENT AS SPECIFIED IN SECTION 01 88 15, ANCHORAGE AND BRACING. JOIST MANUFACTURER SHALL COORDINATE AND SUPPLY ADDITIONAL DIAGONAL WEB MEMBERS AT CONCENTRATED LOAD LOCATIONS.
- JOIST SIZES AND CHORD SIZES INDICATED ON THE PLANS ARE MINIMUM ONLY. DESIGN BY THE JOIST MANUFACTURER MAY RESULT IN A LARGER SIZE. JOISTS SHALL HAVE DOUBLE ANGLE CHORDS.
- DESIGN JOIST TOP CHORD AT END OF ROOF SUB-DIAPHRAGMS AND JOISTS DESIGNATED AS DRAG STRUTS FOR ADDITIONAL AXIAL LOAD (BOTH TENSION AND COMPRESSION) AS INDICATED ON THE ROOF FRAMING PLANS.
- PROVIDE CALCULATIONS, PRODUCT DATA, MATERIAL PROPERTIES, CONNECTION DETAILS, ETC FOR ALL TYPES OF JOISTS. CALCULATIONS SHALL BE STAMPED AND SIGNED BY AN ENGINEER REGISTERED IN THE STATE OF CA.
- JOIST BRIDGING, BOTTOM CHORD BRACING, AND OTHER ACCESSORIES SHALL BE PER THE MANUFACTURER'S STANDARDS AND AS INDICATED ON THE DRAWINGS. BRACING SHALL EXTEND TO WALLS, SEE DETAIL 0521-022.
- JOISTS SHALL BE CAMBERED FOR DEAD LOAD AS REQUIRED BY SJI. PROVIDE STANDARD SJI CAMBER UNLESS NOTED OTHERWISE. JOIST CAMBER SHALL BE SHOWN ON SHOP DRAWINGS.

**STEEL DECKING**

- FOR DECK SIZE, GAGE, AND FASTENING CONFIGURATIONS, SEE FRAMING PLANS. FASTENING CONFIGURATIONS SHOWN ARE SPECIFIC TO THE DECK PRODUCT USED AS BASIS OF DESIGN. CONTRACTOR SHALL FASTEN THE DECKING IN ACCORDANCE WITH INSTALLED DECK MANUFACTURER'S RECOMMENDATIONS TO MEET SPECIFIED CAPACITY REQUIREMENTS.
- WELDING SHALL BE IN ACCORDANCE WITH AWS D1.3 "STRUCTURAL WELDING CODE SHEET STEEL".
- DECKING SHALL HAVE A MINIMUM 1 1/2 INCHES BEARING ON SUPPORTS.
- DECKING SHALL BE CONTINUOUS OVER THREE SPANS MINIMUM, EXCEPT WHERE SHOWN OTHERWISE.
- LOCATE OPENINGS FOR EQUIPMENT PER OTHER DISCIPLINE DRAWINGS.

**DEFERRED SUBMITTALS**

- DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY FOR ACCEPTANCE PRIOR TO INSTALLATION OF THAT PORTION OF THE WORK.
- THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OR SAFETY RELATED SYSTEM INFORMATION FOR REVIEW TO MEET BUILDING PERMITTING REQUIREMENTS FOR DESIGNED SYSTEMS. PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, OR COMPONENT OR ITS ANCHORAGE, SUBMIT THE REQUIRED CALCULATIONS AND SUPPORTING DATA AND DRAWINGS FOR REVIEW AND ACCEPTANCE.

SPECIFICATION SECTION	ITEM
01 88 15	ANCHORAGE AND BRACING
05 21 19	OPEN WEB STEEL JOIST FRAMING
33 16 13.12	BOLTED STEEL STORAGE TANK
40 05 15	PIPING SUPPORT SYSTEMS
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS

Plot Date: 12/12/2023 2:59 PM File: C:\pwworking\hdr\_sites\_reservoir\dwg\01711\MPG-0001-G-0302.dwg Saved By: DCAVE

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DESIGNED BY: J. KELLOGG  
 DRAWN BY: S. METCALF  
 CHECKED BY: H. HENRIKSON  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



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**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 GENERAL  
 STRUCTURAL NOTES 2

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1"  
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 SHT 7 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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**ONE-LINE DIAGRAM**

**CONTROL DIAGRAM**

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION																
	DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE		DRAWOUT FUSED SWITCH AND VACUUM CONTACTOR, MEDIUM VOLTAGE		PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN		LIMIT SWITCH, NORMALLY OPEN, CLOSSES AT END OF TRAVEL																
	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO		DRAWOUT VACUUM CONTACTOR, MEDIUM VOLTAGE		PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED		LIMIT SWITCH, NORMALLY CLOSED, OPENS AT END OF TRAVEL																
	CIRCUIT BREAKER, STATIC TRIP UNIT, SENSOR AMP TRIP AND FRAME RATINGS SHOWN, 3 POLE, UNO		MEDIUM VOLTAGE CABLE STRESS CONE TYPE TERMINATION, OPEN TERMINATOR OR BELOW		PUSH-BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK		TEMPERATURE SWITCH, OPENS ON TEMPERATURE RISE																
	CIRCUIT BREAKER, MAGNETIC TRIP SHOWN, TRIP RATING SHOWN, 3 POLE, UNO		SWITCH - LOAD BREAK, GROUP OPERATED, MEDIUM VOLTAGE		3 POSITION SELECTOR SWITCH MAINTAINED CONTACT		TEMPERATURE SWITCH, CLOSSES ON TEMPERATURE RISE																
	CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE, UNO		SWITCH W/ARCING HORNS, MEDIUM VOLTAGE		SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION WHEN NEEDED FOR CLARITY		FLOAT SWITCH, NORMALLY OPEN, CLOSSES ON DESCENDING LEVEL																
	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE, UNO		DISCONNECTING FUSE - SOLID MATERIAL, MEDIUM VOLTAGE	<table border="1"> <tr><th colspan="4">POSITION</th></tr> <tr><th>CKT</th><th>HAND</th><th>OFF</th><th>REMOTE</th></tr> <tr><td>1</td><td>X</td><td>O</td><td>O</td></tr> <tr><td>2</td><td>O</td><td>O</td><td>X</td></tr> </table> X - CLOSED CONTACT O - OPEN CONTACT	POSITION				CKT	HAND	OFF	REMOTE	1	X	O	O	2	O	O	X			FLOAT SWITCH, NORMALLY OPEN, CLOSSES ON RISING LEVEL
POSITION																							
CKT	HAND	OFF	REMOTE																				
1	X	O	O																				
2	O	O	X																				
	SWITCH, CURRENT RATING INDICATED, 3 POLE, UNO		FUSE - EXPULSION, HOOK STICK OPERATED, SINGLE POLE, MEDIUM VOLTAGE		TOGGLE SWITCH, ON-OFF TYPE		PRESSURE SWITCH, NORMALLY CLOSED, OPENS ON RISING PRESSURE																
	FUSE, CURRENT RATING AND QUANTITY INDICATED		SWITCH - HOOK STICK OPERATED, SINGLE POLE, MEDIUM VOLTAGE		SELECTOR SWITCH, ON-OFF TYPE		PRESSURE SWITCH, NORMALLY OPEN, CLOSSES ON RISING PRESSURE																
	MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO		GROUND SWITCH, GANG OPERATED		MUSHROOM HEAD PUSHBUTTON SWITCH		FLOW SWITCH, CLOSSES ON INCREASED FLOW																
	ELECTRONIC STARTER/SPEED CONTROL RVSS = REDUCED VOLTAGE SOFT STARTER ASD = AC ADJUSTABLE SPEED DRIVE DC = DC ADJUSTABLE SPEED DRIVE RVAT = REDUCED VOLTAGE AUTO TRANSFORMER TYPE RVRT = REDUCED VOLTAGE REACTOR TYPE		TERMINAL BLOCK LUG		WYE GROUNDED CONNECTION, SOLID GROUND		FLOW SWITCH, OPENS ON INCREASED FLOW																
	CABLE OR BUS CONNECTION POINT		DELTA CONNECTION		WYE NEUTRAL GROUND RESISTOR OR IMPEDANCE CONNECTION		NEUTRAL GROUND CURRENT LIMITING RESISTOR																
	KEY INTERLOCK		RELAY OR DEVICE, FUNCTION NUMBER AS INDICATED		RELAY OR DEVICE, FUNCTION NUMBER AS INDICATED		CALIBRATING RESISTOR																
	SURGE ARRESTER (GAS TYPE)		CURRENT TRANSFORMER, ZERO SEQUENCE, RATIO AND QUANTITY INDICATED		WYE NEUTRAL GROUND RESISTOR OR IMPEDANCE CONNECTION		TACHOMETER GENERATOR																
	CAPACITOR - KVAR INDICATED, 3 PHASE		BUSHING CURRENT TRANSFORMER, MULTI-RATIO AND QUANTITY INDICATED		METAL OXIDE SURGE ARRESTER, MAXIMUM CONTINUOUS OVERVOLTAGE RATING AND QUANTITY INDICATED		GROUND FAULT SENSOR																
	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED		MULTI-FUNCTION DIGITAL RELAY MPR = MOTOR PROTECTION RELAY FMR = FEEDER MANAGEMENT RELAY MMR = MAIN MANAGEMENT RELAY GPR = GENERATOR PROTECTIVE RELAY		INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR		FLASHER																
	GENERATOR, KW/KVA RATING SHOWN		MOTOR STARTER CONTACTOR COIL		INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN S - STROBE B - BLUE R - RED C - CLEAR W - WHITE		SEALED CONTACT																
	ANALOG METER WITH SWITCH - SCALE RANGE SHOWN V = VOLTAGE KW = KILOWATTS A = AMPERAGE KVAR = KILOVAR PF = POWER FACTOR		ELAPSED TIME METER		CONTACT - NORMALLY OPEN		BUZZER																
	DIGITAL POWER METER (MULTIFUNCTION)		CONTROL RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT		CONTACT - NORMALLY CLOSED		POTENTIOMETER																
	UTILITY REVENUE METER		TIME DELAY RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT		REMOTE DEVICE		RESISTOR																
	GROUND		SOLENOID VALVE, X INDICATES NUMERICAL ORDER IN CIRCUIT		TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSSES WHEN ENERGIZED AND TIMED OUT		BLOWN FUSE INDICATOR																
	TRANSFORMER, SIZE, VOLTAGE RATINGS AND PHASE INDICATED		CONTACT - NORMALLY OPEN		TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT		COAXIAL CABLE																
	SHIELDED ISOLATION TRANSFORMER		CONTACT - NORMALLY CLOSED		TIME DELAY RELAY CONTACT, CLOSSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT		DUPLEX RECEPTACLE																
	POTENTIAL TRANSFORMER, VOLTAGE RATING AND QUANTITY INDICATED		REMOTE DEVICE		TIME DELAY RELAY CONTACT, OPENS WHEN ENERGIZED, CLOSSES WHEN DE-ENERGIZED AND TIMED OUT		RELAY, WITH MECHANICAL LATCH																
	CURRENT TRANSFORMER, RATIO(100:5) AND QUANTITY INDICATED (3)		TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSSES WHEN ENERGIZED AND TIMED OUT		MOTOR SPACE HEATER		FULLWAVE DIODE BRIDGE (AC TO DC)																
	CONNECTION POINT TO EQUIPMENT SPECIFIED IN OTHER DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS DIVISION		TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT		TERMINAL BLOCK, REMOTE																		
	TRANSIENT VOLTAGE SURGE SUPPRESSOR		TIME DELAY RELAY CONTACT, CLOSSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT		TERMINAL BLOCK, INTERNAL																		
	SURGE PROTECTIVE DEVICE		FUSED TERMINAL BLOCK		FUSE RATING INDICATED																		
	DRAWOUT POWER CIRCUIT BREAKER, MEDIUM VOLTAGE		TRANSFORMER, CONTROL POWER		THERMOCOUPLE																		
	NON DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE		CAPACITOR		BATTERY																		
	DRAWOUT FUSED SWITCH AND CONTACTOR, MEDIUM VOLTAGE																						

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: C. CUSWORTH  
 DRAWN BY: E. GARCIA  
 CHECKED BY: J. LANDMAN  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 CRAIG M. CUSWORTH  
 19120 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 GENERAL ELECTRICAL LEGEND 1

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1"  
 DRAWING NO. MPG-0001-G-0601  
 SHT 8 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**POWER SYSTEM PLAN**

**GROUND SYSTEM PLAN**

**ABBREVIATIONS**

SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED. RACEWAY, CONDUCTOR, TERMINATION AND CONNECTION IN THIS DIVISION
	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN
	PANELBOARD - SURFACE MOUNTED
	PANELBOARD LETTER OR NUMBER FACILITY NUMBER LP - LOW VOLTAGE PANEL DP - DISTRIBUTION PANEL
	PANELBOARD - FLUSH MOUNTED
	TERMINAL JUNCTION BOX
	MOTOR, SQUIRREL CAGE INDUCTION
	GENERATOR, VOLTAGE AND SIZE AS INDICATED
	HOME RUN - DESTINATION SHOWN
	EXPOSED CONDUIT AND CONDUCTORS*
	CONCEALED CONDUIT AND CONDUCTORS*
<b>NOTE:</b> ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO. 12, ONE NO. 12 GROUND CONDUCTORS IN 3/4" CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO. 12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE.	
	CROSSHATCHES WITH BAR INDICATE NO. 10 CONDUCTOR. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
	CONDUIT AND CONDUCTOR CALLOUT, SEE LEGEND.
	CONDUIT DOWN
	CONDUIT UP
	CONDUIT, STUBBED AND CAPPED
	CONDUIT TERMINATION AT CABLE TRAY
	EXISTING CONDUIT / DUCT BANK
	BUS DUCT - SEE SPECIFICATIONS
	CONCRETE ENCASED CONDUIT
	DIRECT BURIED CONDUIT
	FIBER OPTIC CONDUIT
	EXISTING OVERHEAD ELECTRICAL LINE
	CONCRETE ENCASED DUCT BANK WHERE XXXX IS THE DUCT BANK NAME. SEE CIRCUIT AND RACEWAY CODING DEFINITION
	CONCEALED CONDUIT ROUTING AREA
	CONDUIT ROUTING AREA
	CABLE TRAY
	TRANSFORMER
	GENERAL CONTROL OR WIRING DEVICE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE
	CONTROL STATION. SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED
	NONFUSED DISCONNECT SWITCH, CURRENT RATING INDICATED, 3 POLE
	FUSED DISCONNECT SWITCH, CURRENT RATING INDICATED (60/40, 60 = SWITCH RATING / 40 = FUSE RATING) 3 POLE
	COMBINATION CIRCUIT BREAKER AND MAGNETIC STARTER, NEMA SIZE INDICATED
	BREAKER SEPARATELY MOUNTED, CURRENT RATING INDICATED (100/40, 100 = FRAME SIZE; 40 = TRIP RATING) 3 POLE
	CONTACTOR, MAGNETIC, NEMA SIZE INDICATED
	LIGHTING CONTACTOR, CURRENT RATING INDICATED
	STARTER, MAGNETIC NEMA SIZE INDICATED

SYMBOL	DESCRIPTION
	CONVENIENCE RECEPTACLE - DUPLEX UNLESS NOTED OTHERWISE WP - WEATHERPROOF C - CLOCK HANGER TL - TWIST LOCK CRE - CORROSION RESISTANT GFCI - GROUND FAULT CIRCUIT INTERRUPTER SUBSCRIPT NUMBER AT RECEPTACLE INDICATES CIRCUIT
	240V RECEPTACLE
	CONVENIENCE RECEPTACLE - QUADRUPLEX
	MULTI OUTLET ASSEMBLY
	DUPLEX CONVENIENCE RECEPTACLE - FLUSH IN FLOOR
	CONVENIENCE RECEPTACLE, PEDESTAL, DUPLEX SINGLE FACE UNLESS INDICATED OTHERWISE
	RECEPTACLE, SPECIAL PURPOSE-NEMA CONFIGURATION AND AMPERAGE INDICATED
	THERMOSTAT
	UTILITY REVENUE METERING FACILITY
	POWER POLE WITH GUY WIRE
	230kV TRANSMISSION LINE STRUCTURE
	ELECTRICAL BOX/VAULT IDENTIFICATION XX: HH - HANDHOLE MH - MANHOLE PB - PULLBOX  YY: MV - MEDIUM VOLTAGE POWER P - LOW VOLTAGE POWER C - CONTROL  ZZ: IDENTIFICATION NUMBER (e.g. 01)

**LIGHTING SYSTEM PLAN**

	LUMINAIRE, SEE SCHEDULE
	LUMINAIRE WITH INTERNAL BATTERY BACKUP, SEE SCHEDULE
	STRIP LUMINAIRE, SEE SCHEDULE
	LUMINAIRE AND POLE, SEE SCHEDULE
	WALL MOUNTED LUMINAIRE, SEE SCHEDULE
	FLOOD LIGHTS - AIM IN THE DIRECTION SHOWN
	STANDBY LIGHTING UNIT, SURFACE MOUNTED, SEE SCHEDULE
	EXIT LIGHTS - FILLED SECTION INDICATES LIGHTED FACE, ARROW INDICATES EGRESS DIRECTIONAL INDICATORS, XX = FIXTURE NUMBER, SEE SCHEDULE
	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT
	WALL SWITCH: 2- DOUBLE POLE P- PILOT LIGHT 3- THREE WAY K- KEY OPERATED 4- FOUR WAY D- DIMMER WP- WEATHERPROOF CRE- CORROSION RESISTANT EX- EXPLOSIONPROOF L- MOMENTARY 3-WAY M - MOTOR RATED MS- MANUAL STARTER WITH OVERLOADS LV- ON/OFF/DIMMING (0-10V)
	OCCUPANCY SENSOR
	LIGHTING CONTACTOR
	MOTION DETECTOR
	PHOTOCELL

	GROUND ROD
	GROUND ROD IN TEST WELL
	GROUNDING CONDUCTOR, SIZE AS INDICATED
	PIGTAIL FOR CONNECTION TO EQUIPMENT CABINET OR FRAME
	EQUIPMENT GROUND BUS
	EQUIPMENT NEUTRAL BUS

**ABBREVIATIONS**

ABBREVIATIONS	DESCRIPTION	ABBREVIATIONS	DESCRIPTION
A	AMMETER, AMPERE, AMBER	M	MAGNETIC CONTACTOR
AF	AMPERE FRAME	MCC	MOTOR CONTROL CENTER
AFD	ADJUSTABLE FREQUENCY DRIVE	MH	MANHOLE, METAL HALIDE
AFF	ABOVE FINISHED FLOOR	MO	MOTOR OPERATER
AFG	ABOVE FINISHED GRADE	MS	MOTOR STARTER
AS	AMMETER SWITCH, AMPERE SENSOR	MSC	MFR SUPPLIED CABLE
ASU	AIR SUPPLY UNIT	MT	MOUNT
AT	AMPERE TRIP	MTD	MOUNTED
ATC	AUTOMATIC THROWOVER CONTROL	N	NEUTRAL
ATS	AUTOMATIC TRANSFER SWITCH	NA	NON-AUTOMATIC
BC	BARE COPPER	NC	NORMALLY CLOSED
BCP	BRANCH CIRCUIT PANEL	NL	NIGHT LIGHT
BPP	BRANCH POWER PANEL	NO	NORMALLY OPEN
BRKR	BREAKER	NP	NAMEPLATE
C	CONDUIT, CONTACTOR	OC	ON CENTER
CB	CIRCUIT BREAKER	OL	OVERLOAD RELAY
CC	CONTROL CABLE	PB	PULL BOX, PUSH BUTTON SWITCH
CKT	CIRCUIT	PC	PHOTOCELL
CPT	CONTROL POWER TRANSFORMER	PH	PHASE
CR	CONTROL RELAY	PMR	PHASE MONITOR RELAY
CRE	CORROSION-RESISTANT	PNL	PANEL
CRS	COATED RIGID STEEL CONDUIT	PS	PRESSURE SWITCH
CT	CURRENT TRANSFORMER	PT	POTENTIAL TRANSFORMER
DC	DIRECT CURRENT	PVC	POLYVINYL CHLORIDE CONDUIT
DIV	DIVISION	R	RED
E	EMPTY	RCPT	RECEPTACLE
EO	ELECTRIC OPERATOR	REQD	REQUIRED
EQPT	EQUIPMENT	RM	REMOTE MULTIPLEXER
ESS	EMERGENCY SHUTDOWN SWITCH	RS	RIGID STEEL CONDUIT
ETM	ELAPSED TIME METER	RT	REMOTE TELEMETRY
EXST	EXISTING	RVNR	REDUCED VOLTAGE NON-REVERSING
FDR	FEEDER	RVR	REDUCED VOLTAGE REVERSING
F	FUSE	SA	SURGE ARRESTOR
FLR	FLOOR	SCCR	SHORT CIRCUIT CURRENT RATING
FLUOR	FLUORESCENT	S/N	SOLID NEUTRAL
FVNR	FULL VOLTAGE NON-REVERSING	SPD	SPEED
FVR	FULL VOLTAGE REVERSING	SST	STAINLESS STEEL
G	GREEN, GROUND	SV	SOLENOID VALVE
GALV	GALVANIZED	SW	SWITCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SWBD	SWITCHBOARD
GFR	GROUND FAULT RELAY	T	THERMOSTAT
GND	GROUND	TB	TERMINAL BOARD
H	HIGH SPEED	TC	TIME CLOSE
HH	HANDHOLE	TD	TEMPERATURE DETECTOR
HID	HIGH INTENSITY DISCHARGE	TDR	TEMPERATURE DETECTOR RELAY
HPS	HIGH PRESSURE SODIUM	TDB	TERMINAL JUNCTION BOX
HS	HAND SWITCH	T.O.	TIME OPEN
IC	INTERRUPTING CAPACITY	TS	TEMPERATURE SWITCH
I & C	INSTRUMENTATION AND CONTROL	TSP	TEMPERATURE SWITCH
INCAND	INCANDESCENT	TST	TWISTED SHIELDED PAIR
INST	INSTANTANEOUS	TYP	TWISTED SHIELDED TRIAD TYPICAL
		UH	UNIT HEATER
		UVR	UNDER VOLTAGE RELAY
		V	VOLTMETER, VOLT
		VS	VOLTMETER SWITCH

ABBREVIATIONS	DESCRIPTION	ABBREVIATIONS	DESCRIPTION
J, J-BOX	JUNCTION BOX	W	WATT
K	KEY INTERLOCK	WHD	WATTHOUR DEMAND METER
L	LIGHTING CONTACTOR, LOW SPEED	WP	WEATHERPROOF
LOS	LOCKOUT STOP PUSH BUTTON	XFDR	TRANSPODER
LR	LATCHING RELAY	XFMR	TRANSFORMER
LT FLEX	LIQUID TIGHT FLEX CONDUIT		
LTS	LIGHTS		

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	C. CUSWORTH
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**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 GENERAL ELECTRICAL LEGEND 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"
DRAWING NO.
MPG-001-G-0602
SHT 9 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**ONE LINE PROTECTION RELAYING AND  
ELEMENTARY DIAGRAMS - 1**

**ONE LINE PROTECTION RELAYING AND  
ELEMENTARY DIAGRAMS - 2**

**GENERAL CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION**

SYMBOL DESCRIPTION

	DEVICE FUNCTION NUMBER INDICATED, SEE DEVICE TABLE
	CONTROL SWITCH TRIP
	CONTROL SWITCH CLOSE
43/CS	43 - DEVICE FUNCTION NUMBER, SEE DEVICE TABLE
	VOLTMETER SWITCH
	AMMETER SWITCH
	INDICATING LAMP - SWITCHBOARD TYPE INDICATING LAMP LENS COLORS INDICATED AS FOLLOWS: A - AMBER      R - RED B - BLUE      W - WHITE G - GREEN
	VOLTMETER
	AMMETER
	WATTMETER
	FREQUENCY METER
	POWER FACTOR METER
	WATT-HOUR METER
	ELAPSED TIME METER
	TACHOMETER
	WATTS TRANSDUCER
	POWER FACTOR TRANSDUCER
	TIME DELAY
	RELAY COIL, DEVICE FUNCTION NUMBER PER ANSI 37.2 - AMERICAN STANDARD MANUAL AND AUTOMATIC STATION CONTROL, SUPERVISORY AND ASSOCIATED TELEMETRY EQUIPMENT
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	REMOTE DEVICE
	TEST SWITCH CURRENT ELEMENT
	TEST SWITCH POTENTIAL ELEMENT
	NEUTRAL CONNECTION
	DIODE
	INSTRUMENTATION CABLE, SHIELDED
	NEUTRAL GROUNDING RESISTOR
	PHASE SHIFTING TRANSFORMER

DEVICE FUNCTION NO.	DEVICE DESCRIPTION
21	IMPEDANCE/DISTANCE RELAY
25A	AUTOMATIC SYNCHRONIZER
25C	SYNCH CHECK RELAY
27	UNDERVOLTAGE RELAY
32	REVERSE POWER RELAY
40	GENERATOR LOSS OF EXCITATION RELAY
43CSE	AUTOMATIC POWER TRANSFER AND LOAD CONTROL MODE SEL. SWITCH
43CSX	MODE SEL. SWITCH
46	GENERATOR CURRENT UNBALANCE RELAY
49	THERMAL RELAY
50GS	INSTANTANEOUS OVERCURRENT DEVICE, GROUND SENSOR
50	INSTANTANEOUS OVERCURRENT DEVICE,
51	TIME OVERCURRENT RELAY
51G	TIME OVERCURRENT RELAY, GROUND FAULT
51V	TIME OVERCURRENT, VOLTAGE RESTRAINED
52	POWER CIRCUIT BREAKER
52CSX	POWER CIRCUIT BREAKER CONTROL SWITCH
59	OVERVOLTAGE RELAY
60	VOLTAGE OR CURRENT BALANCE RELAY
65A	ENGINE GOVERNOR, SPEED CONTROL
65A, MOP	ENGINE GOVERNOR, SPEED CONTROL MOTOR OPERATED POTENTIOMETER
65A, RL	ENGINE GOVERNOR, SPEED CONTROL RAISE/LOWER SWITCH
65B	ENGINE GOVERNOR, LOAD CONTROL
65B, MOP	ENGINE GOVERNOR, LOAD CONTROL MOTOR OPERATED POTENTIOMETER
65B, RL	ENGINE GOVERNOR, % LOAD RAISE/LOWER SWITCH
65E	AUTOMATIC POWER TRANSFER AND LOAD CONTROL, WOODWARD APTL
65F	AUTOMATIC GENERATOR LOADING CONTROL, WOODWARD AGLC
67	DIRECTIONAL TIME OVERCURRENT RELAY
74	ALARM RELAY
810/U	FREQUENCY RELAY, OVER/UNDER
86	LOCKOUT RELAY
87	DIFFERENTIAL PROTECTIVE RELAY
90	VOLTAGE REGULATOR
90, MOP	ENGINE EXCITATION, POWER OPERATED POTENTIOMETER
90PF	ENGINE EXCITATION, POWER FACTOR CONTROL
90RL	ENGINE EXCITATION, RAISE/LOWER SWITCH

X = DEVICE NUMBER, WHEN THERE ARE MULTIPLE UNITS

POWER CIRCUIT CALLOUTS		MULTICONDUCTOR POWER CABLE CIRCUIT CALLOUTS	
[P1]	[1/2"FLEX, 2#12, #12G]	[P24]	[1"C, 3#8, 3#14, 1#10G]
[P2]	[3/4"C, 2#12, 1#12G]	[P25]	[1"C, 3#8, 4#14, 1#10G]
[P3]	[3/4"C, 3#12, 1#12G]	[P26]	[1"C, 3#8, 5#14, 1#10G]
[P4]	[3/4"C, 4#12, 1#12G]	[P27]	[1"C, 2#6, 1#10G]
[P5]	[3/4"C, 5#12, 1#12G]	[P28]	[1"C, 3#6, 1#8G]
[P6]	[3/4"C, 6#12, 1#12G]	[P29]	[1"C, 3#6, 2#14, 1#8G]
[P7]	[3/4"C, 7#12, 1#12G]	[P30]	[1 1/4"C, 3#6, 3#14, 1#8G]
[P8]	[3/4"C, 8#12, 1#12G]	[P31]	[1 1/4"C, 3#6, 4#14, 1#8G]
[P9]	[3/4"C, 3#12, 2#14, 1#12G]	[P32]	[1 1/4"C, 3#6, 5#14, 1#8G]
[P10]	[3/4"C, 3#12, 3#14, 1#12G]	[P33]	[1 1/4"C, 3#4, 1#8G]
[P11]	[3/4"C, 3#12, 4#14, 1#12G]	[P34]	[1 1/4"C, 3#4, 3#14, 1#8G]
[P12]	[3/4"C, 3#12, 5#14, 1#12G]	[P35]	[1 1/4"C, 3#4, 5#14, 1#8G]
[P13]	[3/4"C, 3#12, 6#14, 1#12G]	[P36]	[1 1/4"C, 3#3, 1#6G]
[P14]	[1"C, 3#12, 7#14, 1#12G]	[P37]	[1 1/4"C, 3#3, 3#14, 1#6G]
[P15]	[3/4"C, 2#10, 1#10G]	[P38]	[1 1/4"C, 3#2, 1#6G]
[P16]	[3/4"C, 3#10, 1#10G]	[P39]	[1 1/2"C, 3#1, 1#6G]
[P17]	[3/4"C, 3#10, 2#14, 1#10G]	[P40]	[2"C, 3#1, 3#14, 1#6G]
[P18]	[3/4"C, 3#10, 3#14, 1#10G]	[P41]	[2"C, 3#2/0, 1#4G]
[P19]	[3/4"C, 3#10, 4#14, 1#10G]	[P42]	[2"C, 3#3/0, 1#4G]
[P20]	[1"C, 3#10, 5#14, 1#10G]	[P43]	[2"C, 3#4/0, 1#3G]
[P21]	[1"C, 2#8, 1#10G]		
[P22]	[1"C, 3#8, 1#10G]		
[P23]	[1"C, 3#8, 2#14, 1#10G]		
ANALOG CIRCUIT CALLOUTS		CONTROL CIRCUIT CALLOUTS	
[A1]	[3/4"C, 1 TYPE 3]	[C1]	[3/4"C, MSC]
[A2]	[3/4"C, 2 TYPE 3]	[C2]	[3/4"C, 2#14, 1#14G]
[A3]	[1"C, 3 TYPE 3]	[C3]	[3/4"C, 3#14, 1#14G]
[A4]	[1 1/4"C, 4 TYPE 3]	[C4]	[3/4"C, 4#14, 1#14G]
[A5]	[1 1/4"C, 5 TYPE 3]	[C5]	[3/4"C, 5#14, 1#14G]
[A6]	[1 1/4"C, 6 TYPE 3]	[C6]	[3/4"C, 6#14, 1#14G]
[A7]	[1 1/2"C, 7 TYPE 3]	[C7]	[3/4"C, 7#14, 1#14G]
[A8]	[1 1/2"C, 8 TYPE 3]	[C8]	[3/4"C, 8#14, 1#14G]
[A9]	[1 1/2"C, 9 TYPE 3]	[C9]	[3/4"C, 9#14, 1#14G]
[A10]	[2"C, 10 TYPE 3]	[C10]	[3/4"C, 10#14, 1#14G]
[A11]	[2"C, 11 TYPE 3]	[C11]	[3/4"C, 11#14, 1#14G]
[A12]	[2"C, 12 TYPE 3]	[C12]	[3/4"C, 12#14, 1#14G]
[A13]	[2"C, 13 TYPE 3]	[C13]	[3/4"C, 13#14, 1#14G]
[A14]	[2"C, 14 TYPE 3]	[C14]	[1"C, 14#14, 1#14G]
[A15]	[3/4"C, 1 TYPE 4]	[C15]	[1"C, 15#14, 1#14G]
[A16]	[3/4"C, 2 TYPE 4]	[C16]	[1"C, 16#14, 1#14G]
[A17]	[1"C, 3 TYPE 4]	[C17]	[1"C, 17#14, 1#14G]
[A18]	[1 1/4"C, 4 TYPE 4]	[C18]	[1"C, 18#14, 1#14G]
[A19]	[1 1/4"C, 5 TYPE 4]	[C19]	[1"C, 19#14, 1#14G]
[A20]	[1 1/4"C, 6 TYPE 4]	[C20]	[1"C, 20#14, 1#14G]
[A21]	[1 1/2"C, 7 TYPE 4]	[C21]	[1"C, 21#14, 1#14G]
[A22]	[1 1/2"C, 8 TYPE 4]	[C22]	[1"C, 22#14, 1#14G]
[A23]	[2"C, 9 TYPE 4]	[C23]	[1"C, 23#14, 1#14G]
[A24]	[3/4"C, 1-4 pr. TYPE 5]	[C24]	[1 1/4"C, 24#14, 1#14G]
[A25]	[1"C, 2-4 pr. TYPE 5]	[C25]	[1 1/4"C, 25#14, 1#14G]
MULTICONDUCTOR CONTROL CABLE CIRCUIT CALLOUTS		[EC-1]	[3/4"C, WITH PULL STRING]
[CC3]	[3/4"C, 1-3C TYPE 1]	[EC-2]	[1"C, WITH PULL STRING]
[CC5]	[3/4"C, 1-5C TYPE 1]	[EC-3]	[1 1/4"C, WITH PULL STRING]
[CC7]	[3/4"C, 1-7C TYPE 1]	[EC-4]	[1 1/2"C, WITH PULL STRING]
[CC9]	[1"C, 1-9C TYPE 1]	[EC-5]	[2"C, WITH PULL STRING]
[CC12]	[1"C, 1-12C TYPE 1]	[EC-6]	[3"C, WITH PULL STRING]
[CC19]	[1 1/2"C, 1-19C TYPE 1]	[EC-7]	[4"C, WITH PULL STRING]
[CC25]	[1 1/2"C, 1-25C TYPE 1]	[EC-8]	[5"C, WITH PULL STRING]
[CC37]	[2"C, 1-37C TYPE 1]		
[CCC1]	[1-7C #12 TYPE 1]		

- NOTES:**
- FOR CABLE TYPES, SEE SPECIFICATIONS.
  - POWER CIRCUIT CALLOUTS ARE BASED ON THE AREA OF THW CONDUCTORS. CONTROL CIRCUIT CALLOUTS ARE BASED ON THE AREAS OF SCHEDULE 40 PVC CONDUIT AND TYPES XHHW & XHHW-2 INSULATION.
  - SIZING OF CONDUCTORS #14WG AND SMALLER BASED ON AMPACITIES AT 60 DEGREES C. SIZING OF CONDUCTORS #1/0AWG AND LARGER BASED ON AMPACITIES AT 75 DEGREES C.
  - WHERE CIRCUITS ARE UNDERGROUND, DIRECT BURIED OR CONCRETE ENCASED, MINIMUM CONDUIT SIZE SHALL BE 1".
  - FOR METRIC CONDUIT SIZES USE THE FOLLOWING CONVERSION:

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Plot Date: 2/6/2024 3:56 PM  
Saved By: RS033139

DESIGNED BY:	C. CUSWORTH
DRAWN BY:	E. GARCIA
CHECKED BY:	J. LANDMAN
IN CHARGE:	P. RUDE
DATE:	04-09-2024

**Jacobs**  
2525 AIRPARK DR  
REDDING, CA 96001  
(530) 243-5831

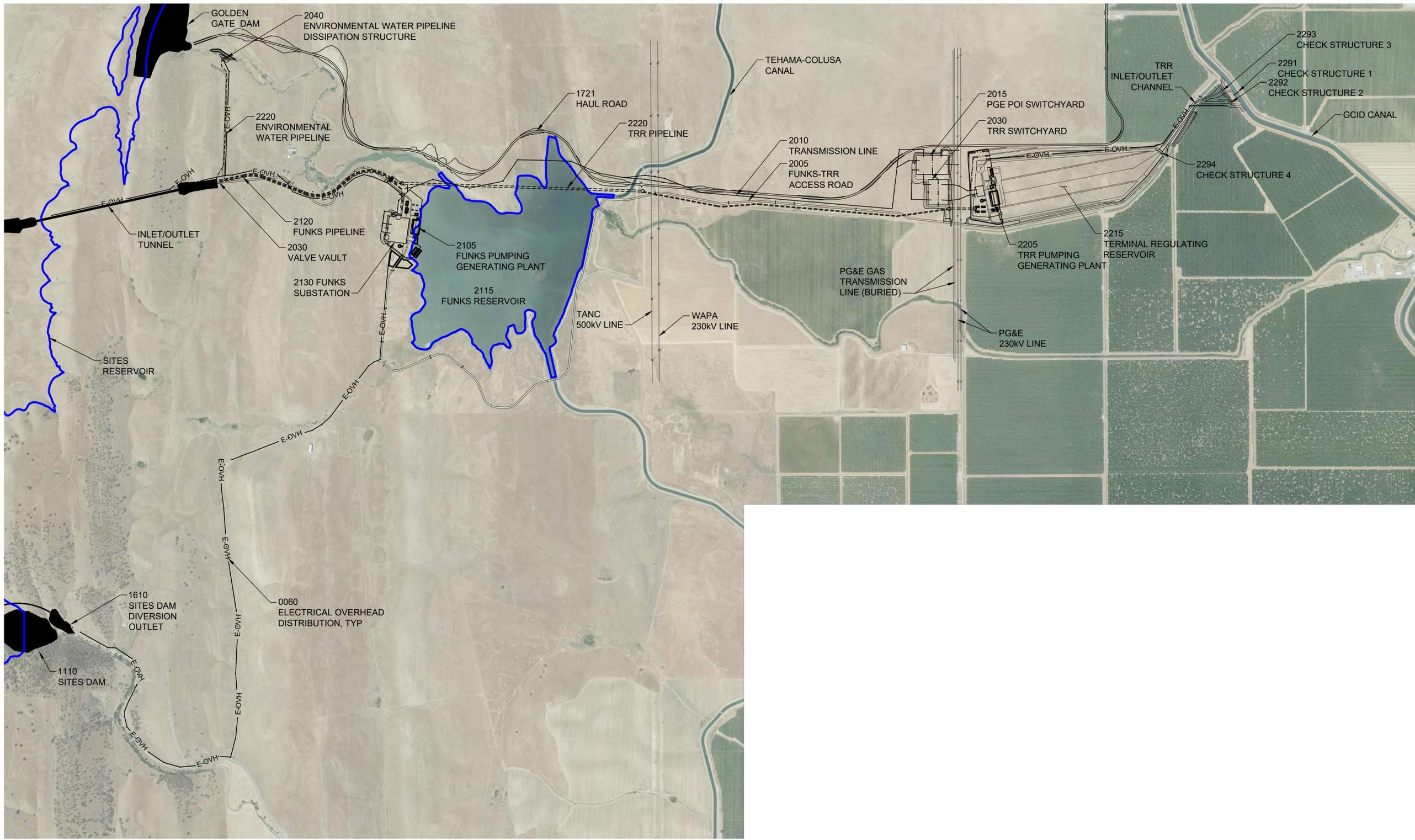
REGISTERED PROFESSIONAL ENGINEER  
CRAIG M. CUSWORTH  
19120 CALIFORNIA



**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING  
GENERAL ELECTRICAL LEGEND 3

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.
0 1"
DRAWING NO.
MPG-0001-G-0603
SHT 10 OF 106

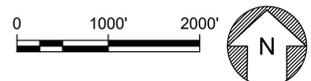
PRELIMINARY - NOT FOR CONSTRUCTION



**GENERAL NOTES**

1. AERIAL PHOTOGRAPHY WAS FLOWN ON MAY 13 AND 14, 2022 BY GEOTERRA, INC. AND WAS DELIVERED TO JACOBS IN SEPTEMBER 2022.
2. MAPPING WAS COMPILED BY R.E.Y. ENGINEERS, INC. FROM AERIAL LIDAR DATA, COLLECTED BY GEOTERRA, INC. ON FEBRUARY 8 AND 9, 2022, AND SUPPLEMENTAL GROUND SURVEY AND BATHYMETRY PERFORMED BY R.E.Y. ENGINEERS.
3. HORIZONTAL DATUM: 2011 REALIZATION OF THE NORTH AMERICAN DATUM OF 1983 (NAD83(2011)), EPOCH 2017.50. MAPPING PROJECTION IS US STATE PLANE COORDINATES, CALIFORNIA ZONE 2, SURVEY FEET.
4. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), GEOID18.
5. SOURCE OF BATHYMETRY IN FUNKS RESERVOIR: R.E.Y. ENGINEERS, INC CONDUCTED THE BATHYMETRIC SURVEY IN SEPTEMBER OF 2020. DATA COLLECTION WAS BY EXTENDED RANGE-POLE WITH GPS RTK ROVER FROM A RAFT. DENSE VEGETATION IN THE RESERVOIR PREVENTED USE OF SONAR.
6. SITES PROJECT JOINT POWERS AUTHORITY GPS CONTROL NETWORK ESTABLISHED IN JANUARY 2023. RECORD OF SURVEY IS RECORDED WITH COLUSA COUNTY RECORDS, DOCUMENT NUMBER 2023-0001608 AND WAS FILED JUNE 27, 2023.

**PLAN**  
HORIZ SCALE: 1" = 1000'



Plot Date: 2/29/2024 9:01 AM  
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REV	DATE	BY	CHK	APPR.	DESCRIPTION

DESIGNED BY:	B. CHELONIS
DRAWN BY:	B. CHELONIS
CHECKED BY:	W. OHLIN
IN CHARGE:	P. RUDE
DATE:	04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 BECKY K CHELONIS  
 C 59851  
 CALIFORNIA

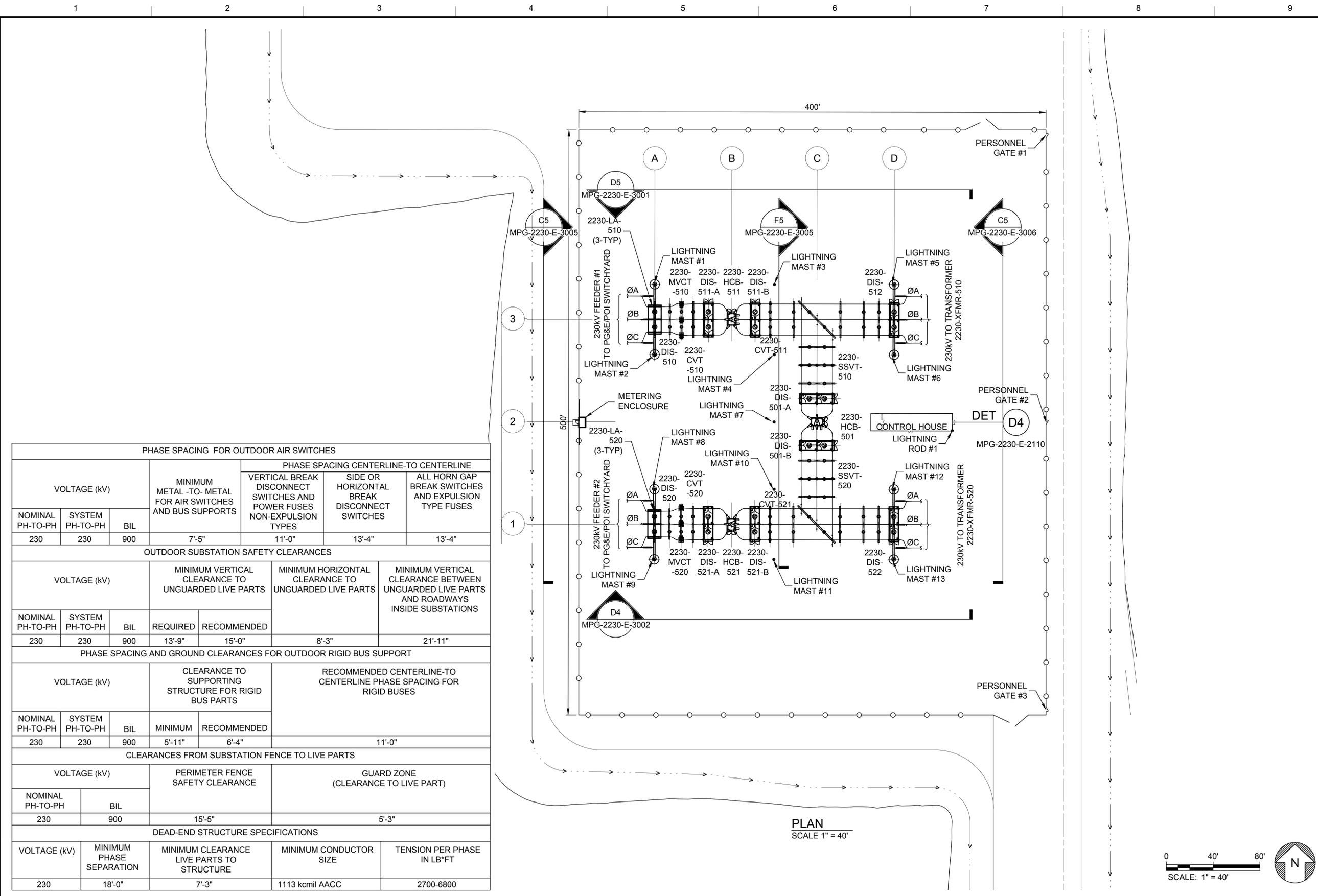


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 CIVIL  
 OVERALL LOCATION  
 AND SURVEY CONTROL  
 PLAN

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS. 1"
DRAWING NO. MPG-0045-C-2001 SHT 11 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 4/1/2024 8:05 AM  
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 File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-2100.dwg



PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL -TO- METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES						
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS		MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	REQUIRED	RECOMMENDED		
230	230	900	13'-9"	15'-0"	8'-3"	21'-11"

PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT					
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO CENTERLINE PHASE SPACING FOR RIGID BUSES
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED	
230	230	900	5'-11"	6'-4"	11'-0"

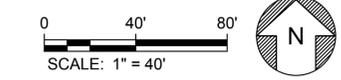
  

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS			
VOLTAGE (kV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)
NOMINAL PH-TO-PH	BIL		
230	900	15'-5"	5'-3"

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

PLAN  
SCALE 1" = 40'



**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, SECTOR 3: MPG-2230-E-2103  
 EQUIPMENT PLAN, SECTOR 4: MPG-2230-E-2104  
 EQUIPMENT PLAN, SECTOR 5: MPG-2230-E-2105  
 EQUIPMENT PLAN, SECTOR 6: MPG-2230-E-2106  
 ONE LINE DIAGRAM: MPG-2230-E-6001
- FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2103	MPG-2230-E-2104
MPG-2230-E-2105	MPG-2230-E-2106

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



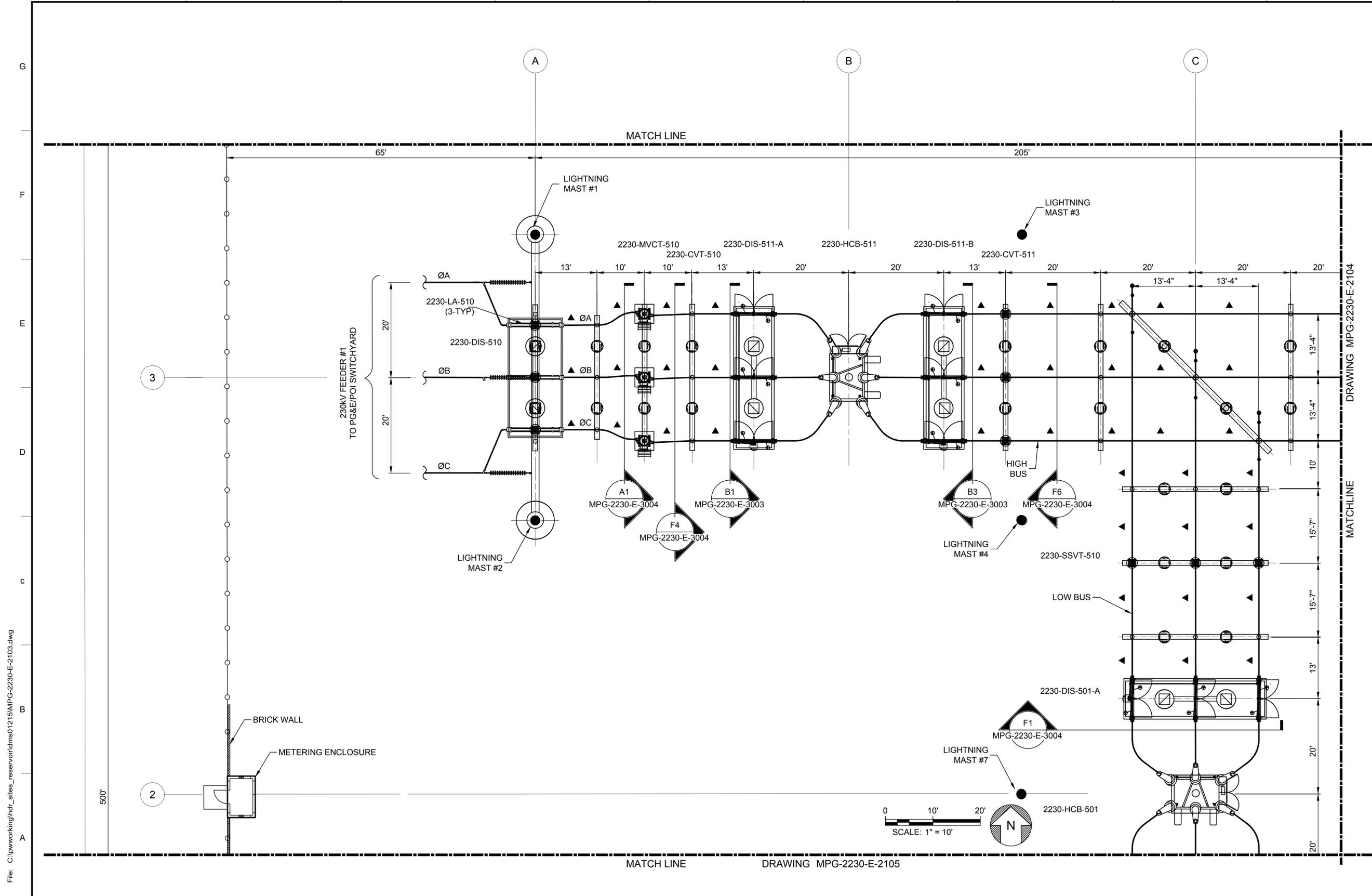
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT OVERALL PLAN

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 DRAWING NO. MPG-2230-E-2100  
 SHT 12 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



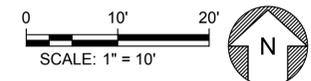
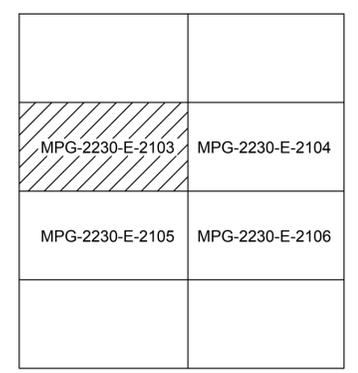
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
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 EQUIPMENT PLAN, SECTOR 4: MPG-2230-E-2104  
 EQUIPMENT PLAN, SECTOR 5: MPG-2230-E-2105  
 EQUIPMENT PLAN, SECTOR 6: MPG-2230-E-2106  
 ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ▲ -TUBING WITH CABLE FOR VIBRATION DAMPING

**KEY PLAN**



MATCH LINE DRAWING MPG-2230-E-2105

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DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831

**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP  
 714 Summer Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



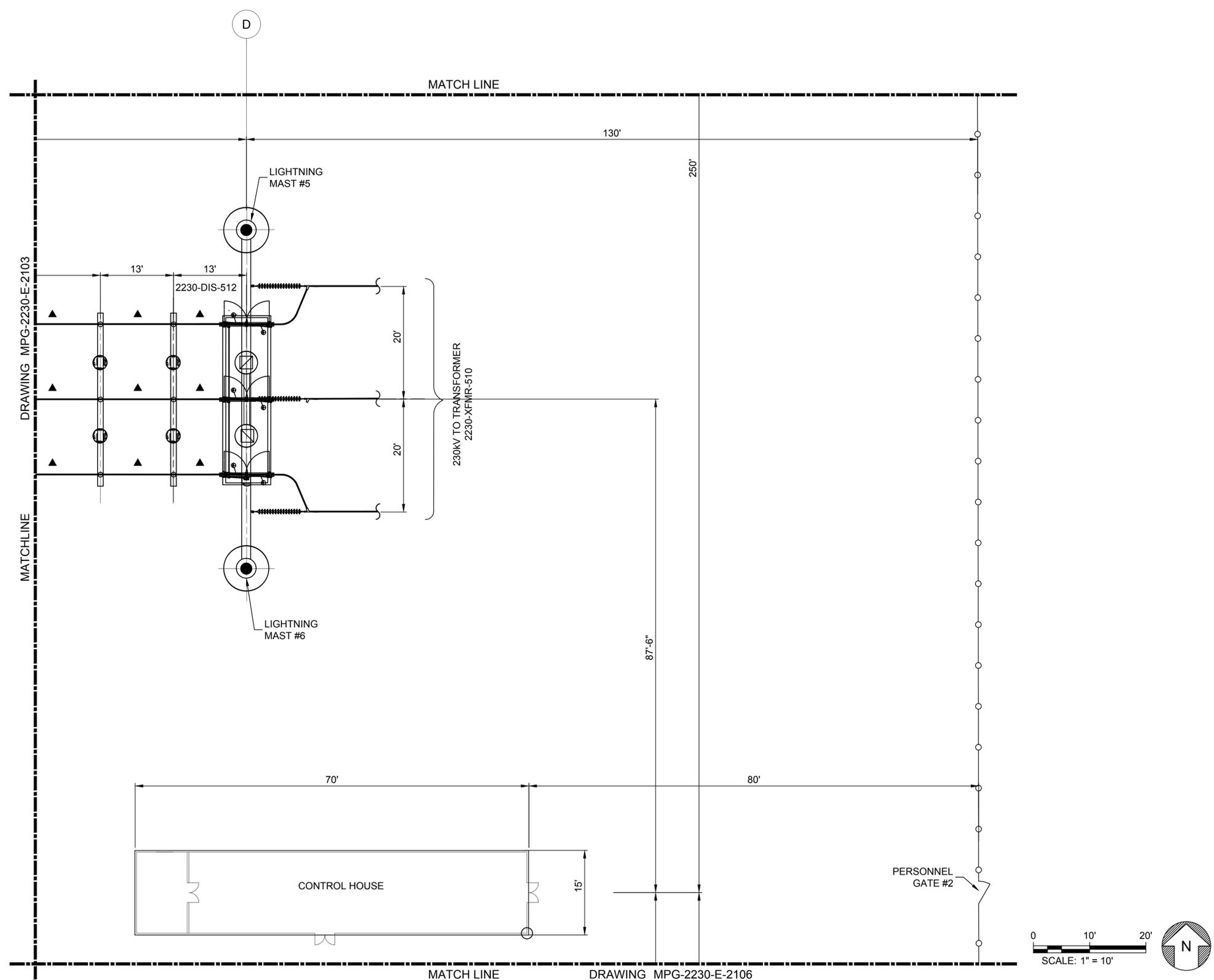
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT PLAN SECTOR 3

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 10 20 1"  
 DRAWING NO.  
 MPG-2230-E-2103  
 SHT 13 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
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 EQUIPMENT PLAN, SECTOR 3: MPG-2230-E-2103  
 EQUIPMENT PLAN, SECTOR 4: MPG-2230-E-2104  
 EQUIPMENT PLAN, SECTOR 5: MPG-2230-E-2105  
 EQUIPMENT PLAN, SECTOR 6: MPG-2230-E-2106  
 ONE LINE DIAGRAM: MPG-2230-E-6001



**SHEET KEY NOTES**

- ▲ -TUBING WITH CABLE FOR VIBRATION DAMPING

**KEY PLAN**

MPG-2230-E-2103	MPG-2230-E-2104
MPG-2230-E-2105	MPG-2230-E-2106

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 874 Main Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT PLAN SECTOR 4

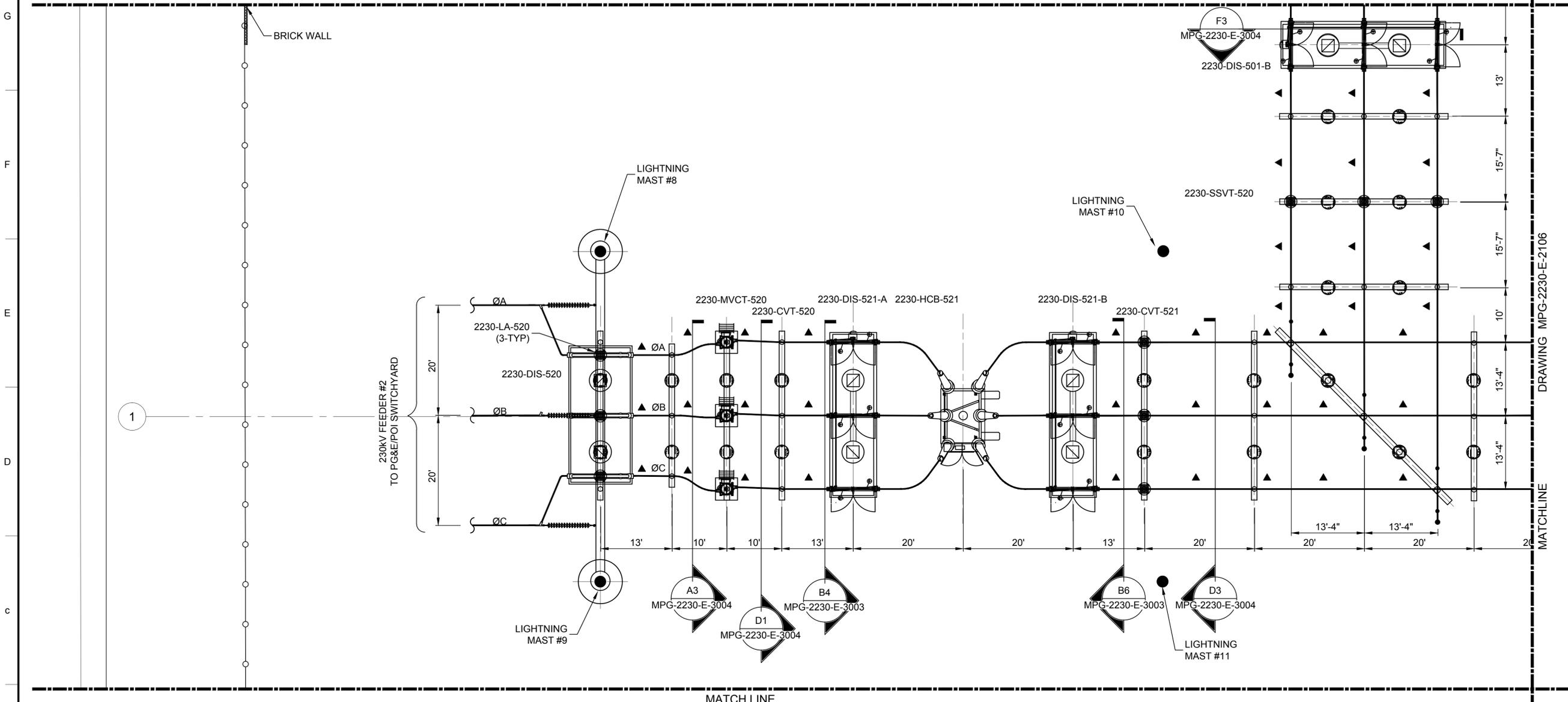
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 DRAWING NO.  
 MPG-2230-E-2104  
 SHT 14 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

MATCH LINE DRAWING MPG-2230-E-2103

GENERAL NOTES

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
 EQUIPMENT PLAN, SECTOR 3: MPG-2230-E-2103  
 EQUIPMENT PLAN, SECTOR 4: MPG-2230-E-2104  
 EQUIPMENT PLAN, SECTOR 6: MPG-2230-E-2106  
 ONE LINE DIAGRAM: MPG-2230-E-6001

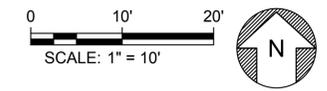
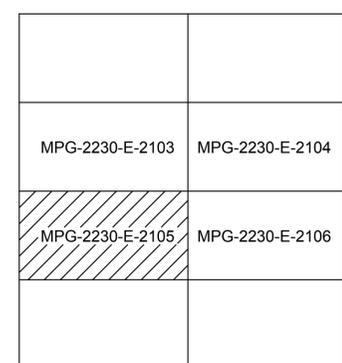


DRAWING MPG-2230-E-2106

SHEET KEY NOTES

- ▲ -TUBING WITH CABLE FOR VIBRATION DAMPING

KEY PLAN



Plot Date: 4/1/2024 8:36 AM Saved By: CCASSELL File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-2105.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



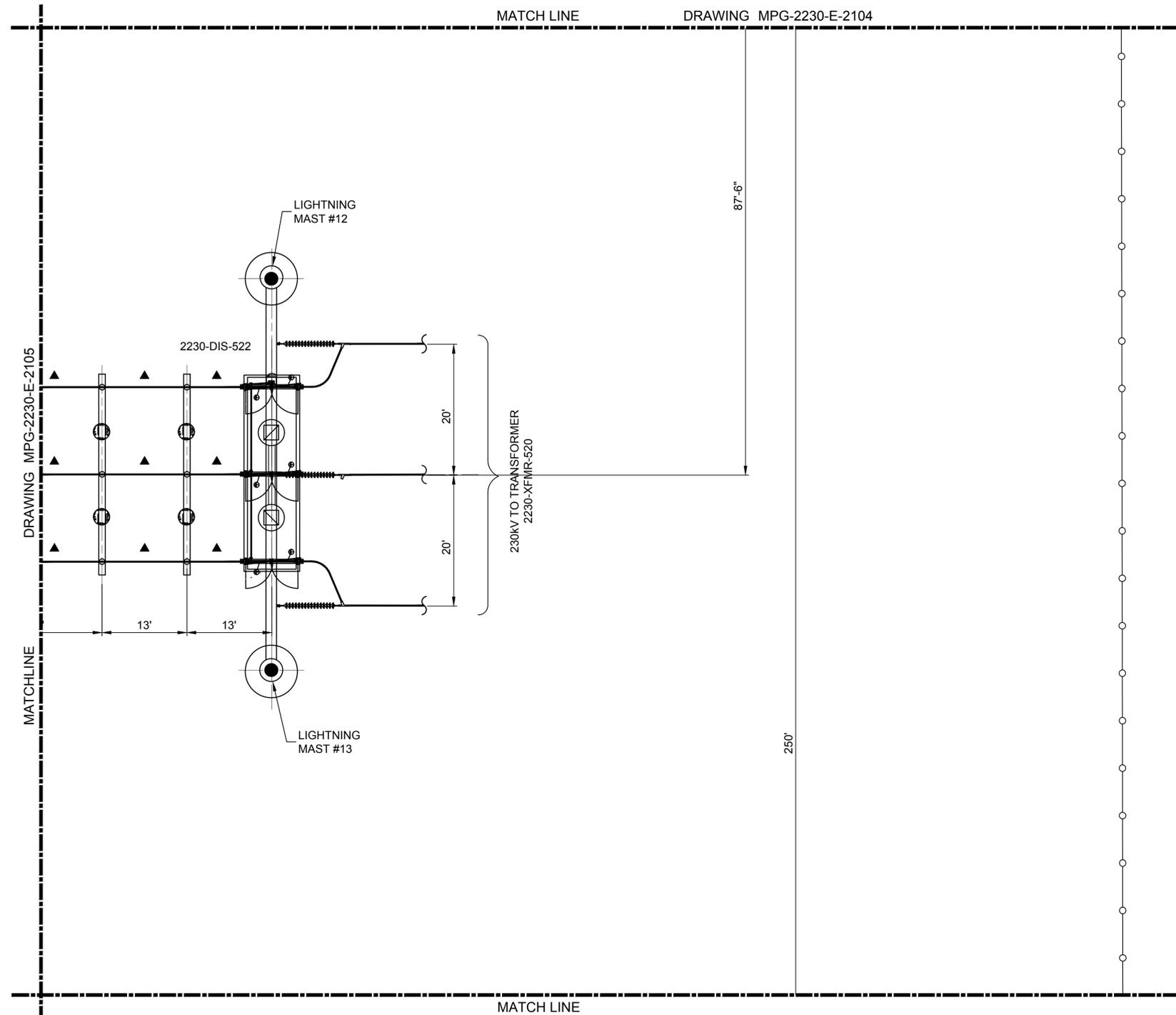
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT PLAN SECTOR 5

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1" 1"  
 DRAWING NO.  
 MPG-2230-E-2105  
 SHT 15 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**GENERAL NOTES**

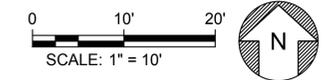
- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
 EQUIPMENT PLAN, SECTOR 3: MPG-2230-E-2103  
 EQUIPMENT PLAN, SECTOR 4: MPG-2230-E-2104  
 EQUIPMENT PLAN, SECTOR 5: MPG-2230-E-2105  
 ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ▲ -TUBING WITH CABLE FOR VIBRATION DAMPING

**KEY PLAN**

MPG-2230-E-2103	MPG-2230-E-2104
MPG-2230-E-2105	MPG-2230-E-2106



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

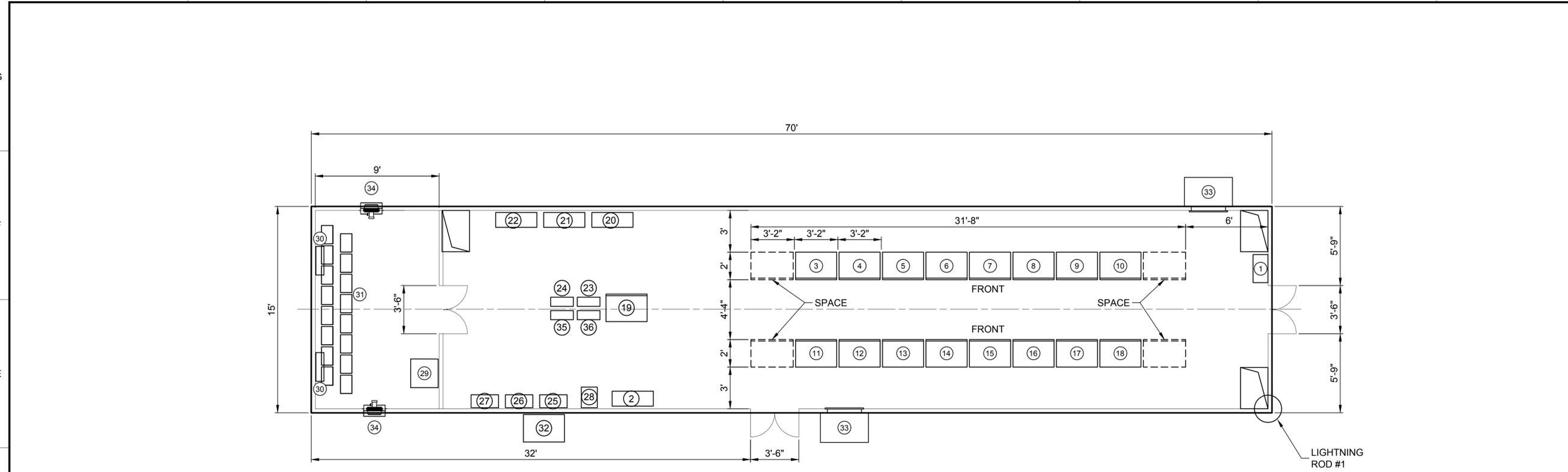


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT PLAN SECTOR 6

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 10 1"  
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 MPG-2230-E-2106  
 SHT 16 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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**D4** DETAIL-230KV SWITCHYARD CONTROL HOUSE  
 SCALE 1" = 4'  
 MPG-2130-E-2100

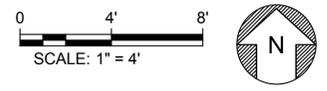
**GENERAL NOTES**

1. CONTROL HOUSE EQUIPMENT SIZING TO BE DETERMINED.
2. EXTERIOR AND INTERIOR LIGHTS AS REQUIRED
3. CABLE TRAYS, CONDUITS AND GROUNDING AS REQUIRED

**SHEET KEY NOTES**

ITEM	TAG	DESCRIPTION	CAT.#
1	-	FIRE ALARM PANEL	-
2	-	HVAC PANEL	-
3	-	COMMUNICATION PANEL A	-
4	-	MARSH. A	-
5	-	TRANSF. TRIP 1	-
6	-	XFMR MAIN	-
7	-	L1 MAIN	-
8	-	L2 MAIN	-
9	-	BF1/BF2	-
10	-	ECS	-
11	-	COMMUNICATION PANEL B	-
12	-	MARSH. B	-
13	-	TRANSF. TRIP 2	-
14	-	XFMR BACKUP	-
15	-	L1 BACKUP	-
16	-	L2 BACKUP	-
17	-	METER MAIN	-
18	-	METER BACKUP	-
19	-	SECURITY	-
20	-	ATS 1 - 208/120 VAC	-
21	-	AC1 - 208/120 VAC	-
22	-	AC2 - 208/120VAC	-
23	2130-FOP-510	FO PATCHPANEL#1	-
24	2130-FOP-520	FO PATCHPANEL#2	-
25	2130-DCPN-501	DC-PNL-1A 125VDC	-
26	2130-DCPN-502	DC-PNL-1B 125VDC	-

ITEM	TAG	DESCRIPTION	CAT.#
27	2130-DCPN-503	DC-PNL-1C 125VDC	-
28	2130-BC-501	BATTERY CHARGER A 125VDC, 75A	-
29	-	EYEWASH STATION	-
30	-	WALL MOUNTED HYDROGEN SENSOR	-
31	2130-BB-501	125VDC BATTERY SYSTEM- 400AH	-
32	2130-DCJB-501	125VDC TEMPORARY BATTERY/LOAD BANK CONNECTION BOX	-
33	-	HVAC UNIT	-
34	-	EXHAUST FAN	-
35	FOP-512A	FO PATCH PANEL	-
36	FOP-522A	FO PATCH PANEL	-



**KEY MAP**



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
M. NESSABI

DRAWN BY:  
M. ZARETSKY

CHECKED BY:  
C. VANSANT

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 CONTROL HOUSE EQUIPMENT PLAN

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

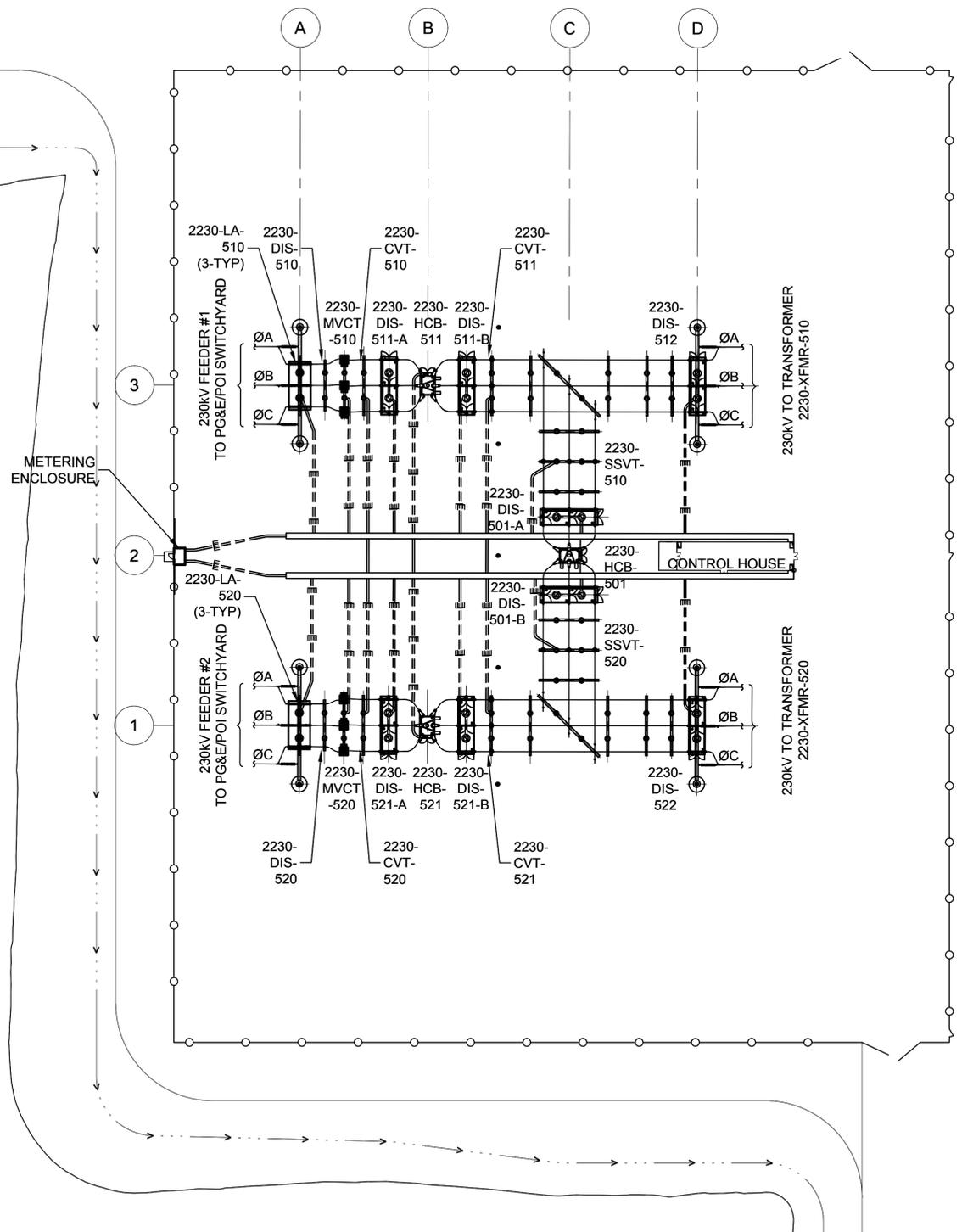
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 SCALE: 1" = 4"

DRAWING NO.  
 MPG-2230-E-2110  
 SHT 18 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, SECTOR 3: MPG-2230-E-2103  
 EQUIPMENT PLAN, SECTOR 4: MPG-2230-E-2104  
 EQUIPMENT PLAN, SECTOR 5: MPG-2230-E-2105  
 EQUIPMENT PLAN, SECTOR 6: MPG-2230-E-2106  
 ONE LINE DIAGRAM: MPG-2230-E-6001



**BILL OF MATERIAL**

ITEM	MODEL No.	DESCRIPTION	QTY	CAT.#	CODE
1	3016	CABLE TRENCH 2'-11 3/8" (W) x 1'-7 1/2" (D) x 9'-10 1/8" (L), HS20	520 ft	-	-
2	3016	CABLE TRENCH LID 11 3/4" (W) x 2'-8" (L) x 2 1/2" (D), HS20	520 ft	-	-
3	3016	CABLE TRENCH END PLATE	4	-	-
4	68813-020	CONDUIT, 3"Ø, PVC, SCH. 80 W/INTEGRAL BELL ON ONE END	3500 ft	DB-120	016471
5	E240L	CONDUIT COUPLING, PVC, 3" Ø	200	DB-120	360322
6	-	CONDUIT BEND, PVC, 3" Ø, 90°, 36" R	70	DB-120	360328
7	-	CONDUIT BEND, PVC, 3" Ø, 45°, 36" R	18	DB-120	360403
8	-	CONDUIT BEND, PVC, 3" Ø, 22 1/2°, 36" R	8	DB-120	360800
9	-	CONDUIT BEND, PVC, 3" Ø, 11 1/4°, 36" R	80	DB-120	360801
10	-	END BELL, PVC, 3" Ø	80	-	360421
11	-	CONDUIT PLASTIC CAP, 3" Ø	80	-	360441
12	-	PULLING TAPE WITH SEQUENTIAL FOOTAGE MARKING	5000 ft	-	M560154
13	-	ALL WEATHER CLEAR PVC CEMENT	15 qt	-	30886

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2203	MPG-2230-E-2204
MPG-2230-E-2205	MPG-2230-E-2206

PLAN  
SCALE 1" = 40'



Plot Date: 3/28/2024 3:30 PM  
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File: C:\pwworking\hdr\_sites\_reservoir\dwg\151\MPG-2230-E-2200.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831

**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714 Adams Street  
 Boston, MA 02210

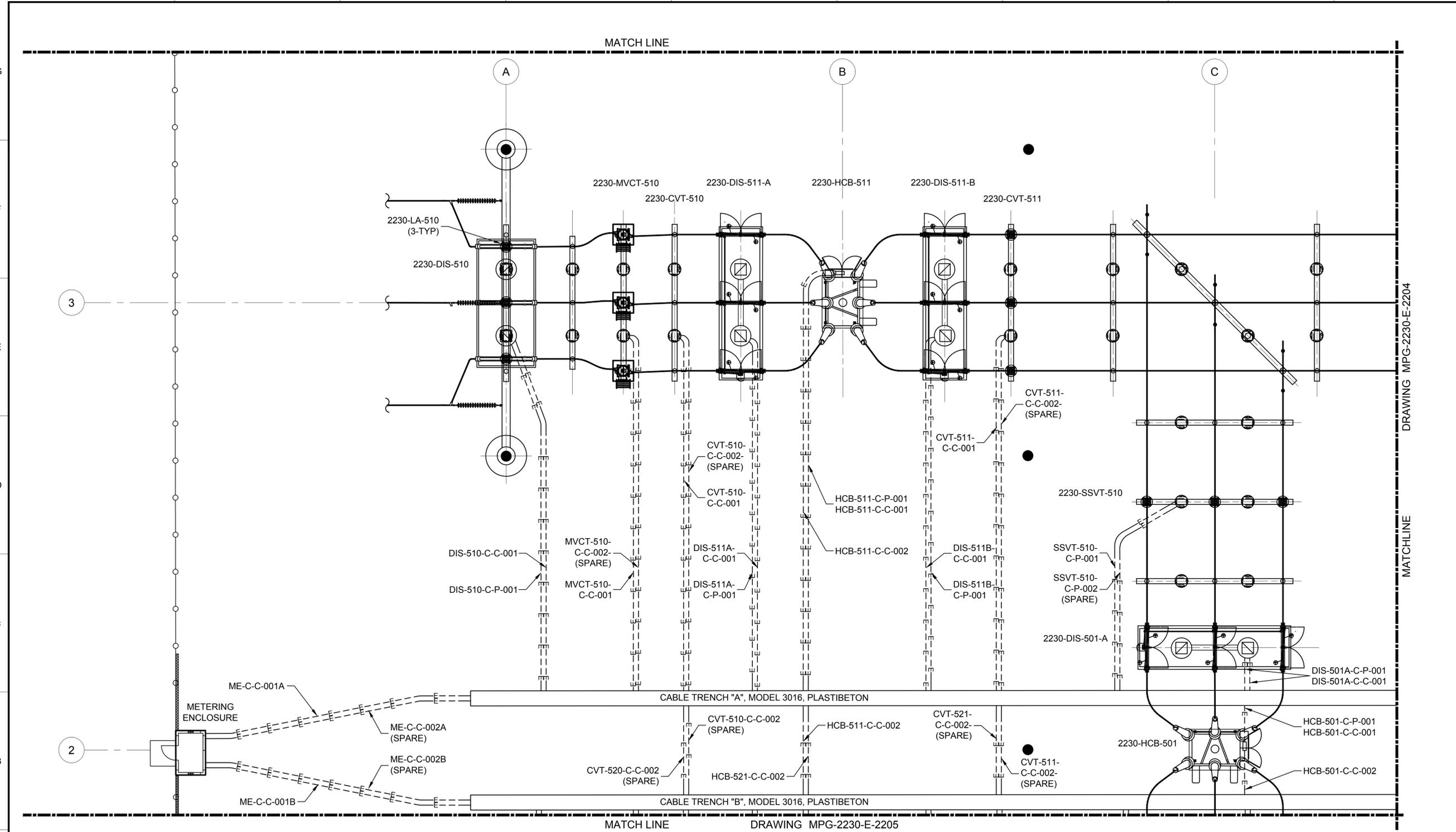
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230 KV SWITCHYARD UNDERGROUND TRENCH & CONDUIT OVERALL PLAN

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1" 1"  
 DRAWING NO.  
 MPG-2230-E-2200  
 SHT 19 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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 Saved By: MZARETSKY



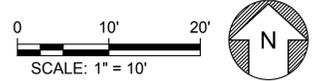
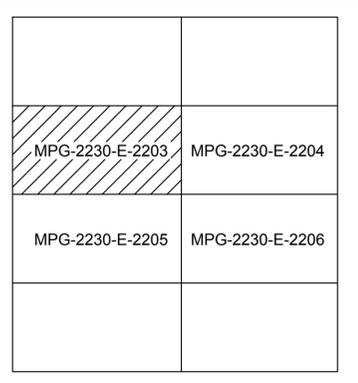
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - UNDERGROUND TRENCH & CONDUIT OVERALL PLAN: MPG-2230-E-2200
  - UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 4: MPG-2230-E-2204
  - UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 5: MPG-2230-E-2205
  - UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 6: MPG-2230-E-2206
  - ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**



**KEY PLAN**



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

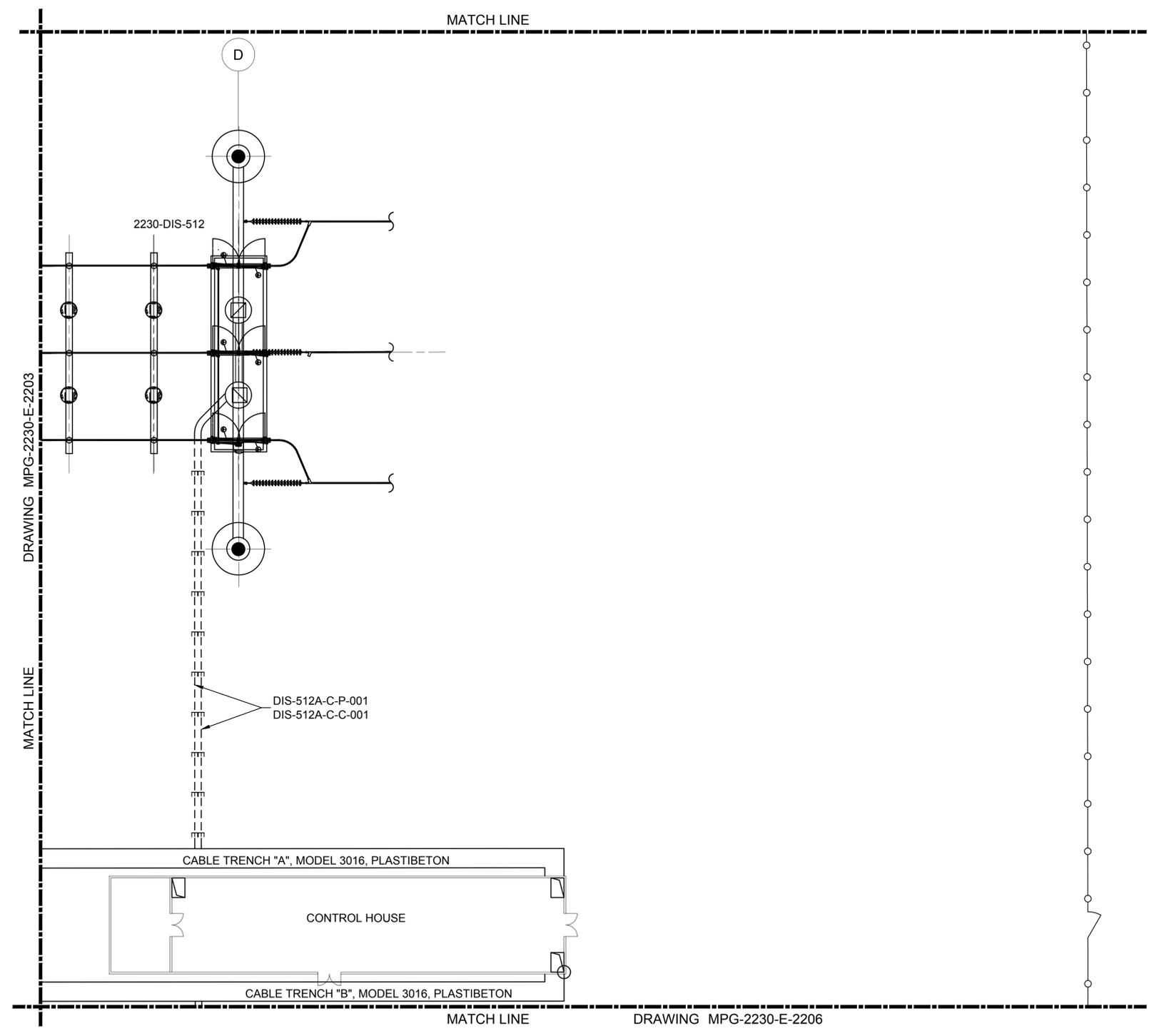
2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
  
R.G. Vanderweil Engineers, LLP 617-423-7423 TEL  
 714-444-0888 FAX  
 BOSTON, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 3

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
  
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 MPG-2230-E-2203  
 SHT 20 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

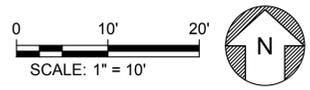


**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - UNDERGROUND TRENCH & CONDUIT OVERALL PLAN: MPG-2230-E-2200
  - UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 3: MPG-2230-E-2203
  - UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 5: MPG-2230-E-2205
  - UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 6: MPG-2230-E-2206
  - ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2203	MPG-2230-E-2204
MPG-2230-E-2205	MPG-2230-E-2206



Plot Date: 3/28/2024 4:20 PM  
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 File: C:\pwworking\hdr\_sites\_reservoir\dms012151\MPG-2230-E-2204.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
M. NESSABI

DRAWN BY:  
M. ZARETSKY

CHECKED BY:  
C. VANSANT

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

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P.O. Box 100  
Barnstable, MA 02532

REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA



**SITES RESERVOIR**

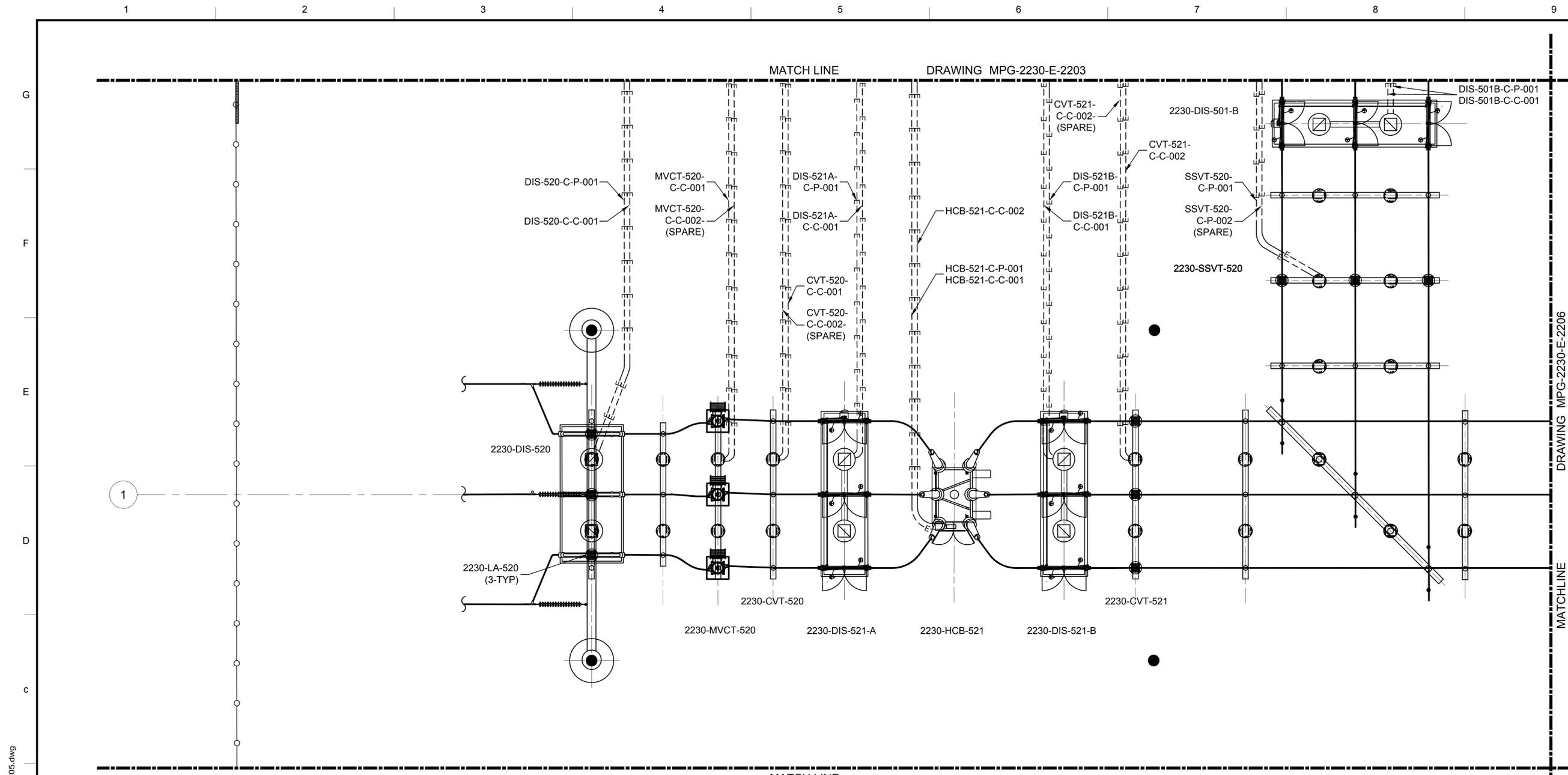
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 4

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 1" 1"

DRAWING NO.  
MPG-2230-E-2204  
SHT 21 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

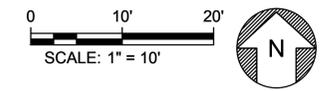


**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 UNDERGROUND TRENCH & CONDUIT OVERALL PLAN: MPG-2230-E-2200  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 3: MPG-2230-E-2203  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 4: MPG-2230-E-2204  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 6: MPG-2230-E-2206  
 ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2203	MPG-2230-E-2204
MPG-2230-E-2205	MPG-2230-E-2206



Plot Date: 3/28/2024 4:07 PM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
  
R.G. Vanderweil Engineers, LLP 817-233-7423 TEL  
 714-466-0868 FAX  
 Boston, MA 02210

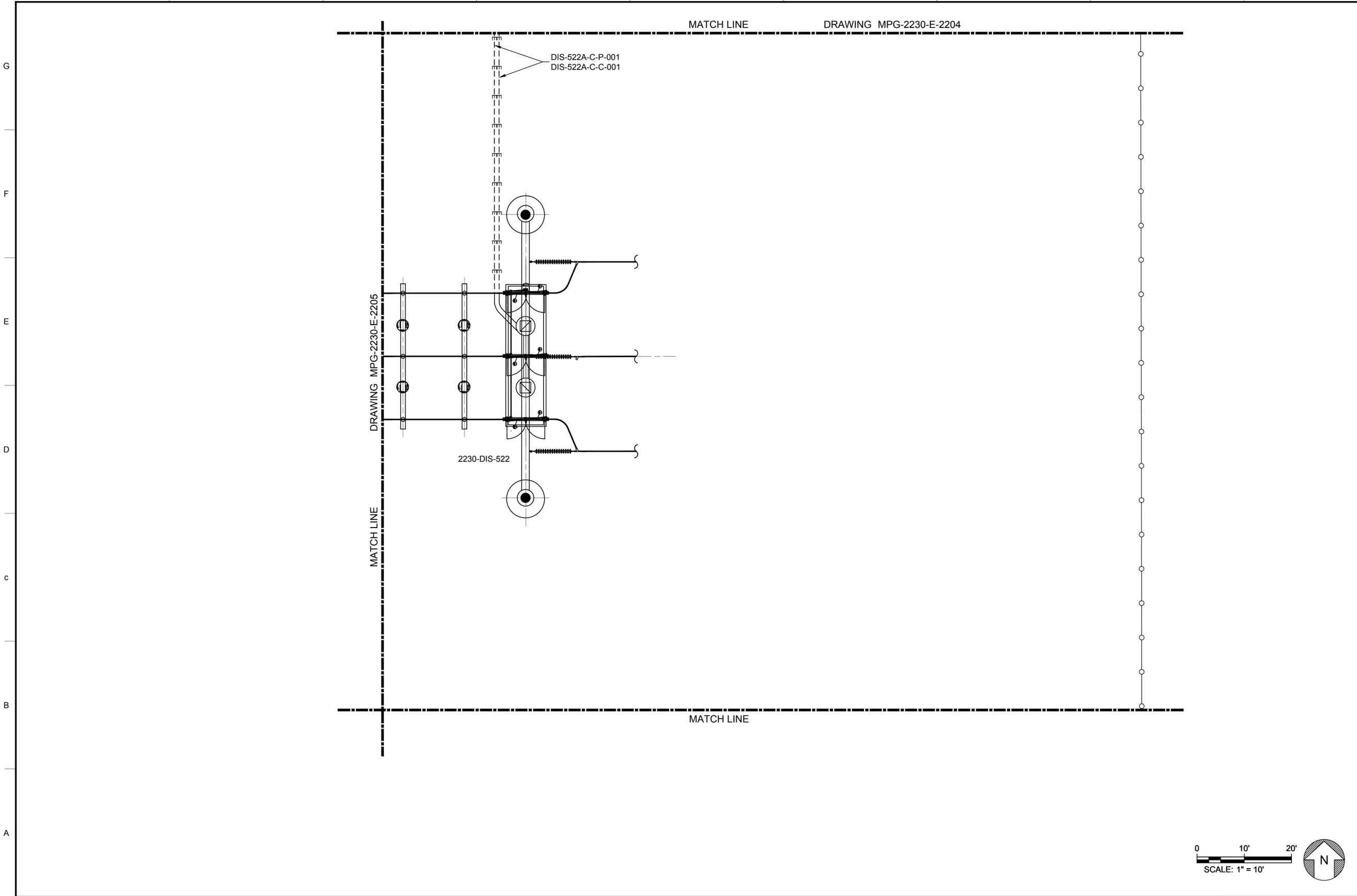
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 5

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2230-E-2205  
 SHT 22 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**GENERAL NOTES**

1. FACILITY DRAWINGS ARE AS NOTED BELOW:

UNDERGROUND TRENCH & CONDUIT OVERALL PLAN:  
MPG-2230-E-2200

UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 3:  
MPG-2230-E-2203

UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 4:  
MPG-2230-E-2204

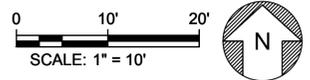
UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 5:  
MPG-2230-E-2205

ONE LINE DIAGRAM:  
MPG-2230-E-6001

**SHEET KEY NOTES**

**KEY PLAN**

MPG-2230-E-2203	MPG-2230-E-2204
MPG-2230-E-2205	MPG-2230-E-2206



Plot Date: 3/28/2024 3:57 PM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
M. NESSABI

DRAWN BY:  
M. ZARETSKY

CHECKED BY:  
C. VANSANT

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

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**VANDERWEIL**  
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Barnstable, MA 02718

REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 6

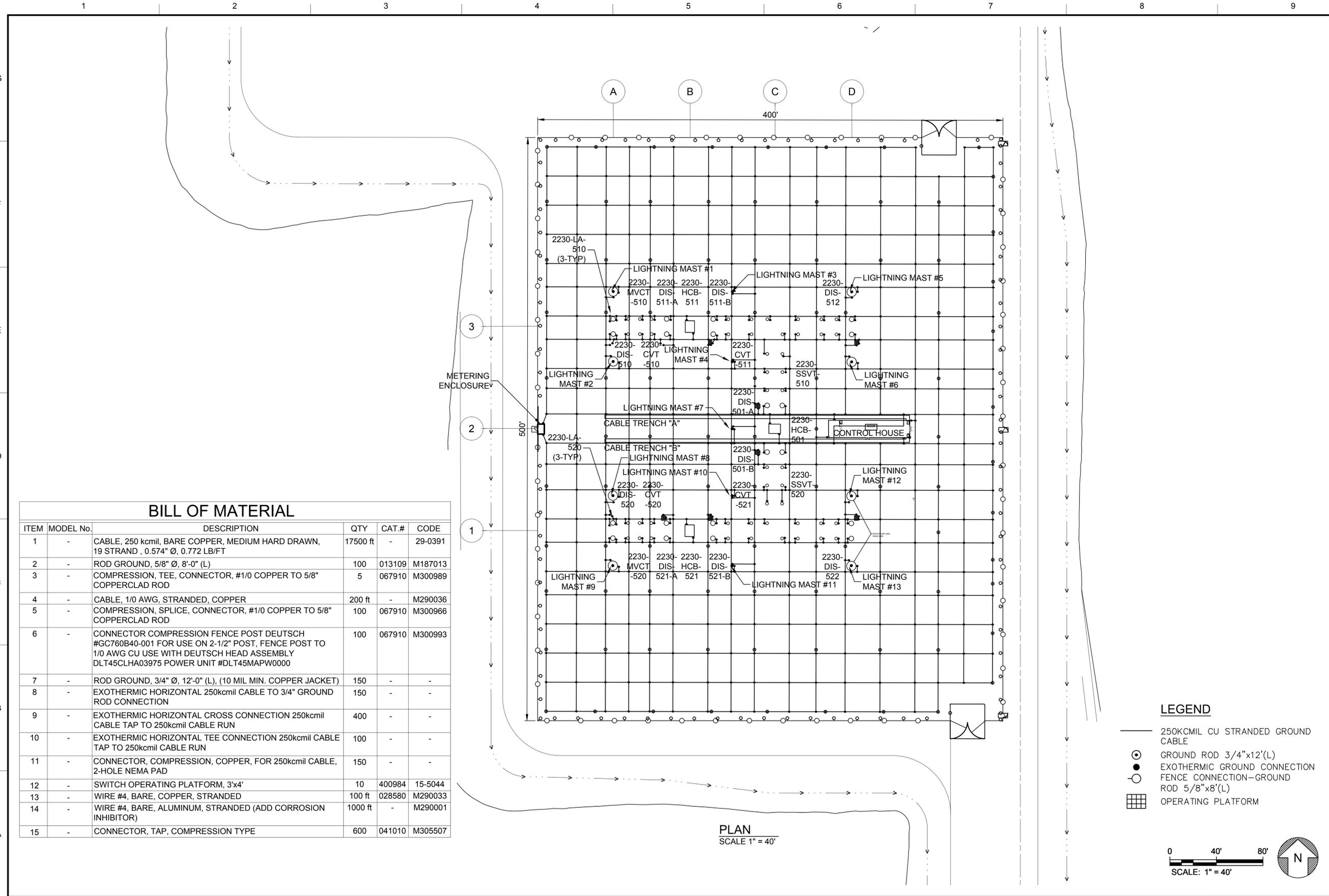
**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 10 20  
SCALE: 1" = 10'

DRAWING NO.  
MPG-2230-E-2206  
SHT 23 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 3/29/2024 5:13 PM  
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 File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-2300.dwg



### BILL OF MATERIAL

ITEM	MODEL No.	DESCRIPTION	QTY	CAT.#	CODE
1	-	CABLE, 250 kcmil, BARE COPPER, MEDIUM HARD DRAWN, 19 STRAND, 0.574" Ø, 0.772 LB/FT	17500 ft	-	29-0391
2	-	ROD GROUND, 5/8" Ø, 8'-0" (L)	100	013109	M187013
3	-	COMPRESSION, TEE, CONNECTOR, #1/0 COPPER TO 5/8" COPPERCLAD ROD	5	067910	M300989
4	-	CABLE, 1/0 AWG, STRANDED, COPPER	200 ft	-	M290036
5	-	COMPRESSION, SPLICE, CONNECTOR, #1/0 COPPER TO 5/8" COPPERCLAD ROD	100	067910	M300966
6	-	CONNECTOR COMPRESSION FENCE POST DEUTSCH #GC760B40-001 FOR USE ON 2-1/2" POST, FENCE POST TO 1/0 AWG CU USE WITH DEUTSCH HEAD ASSEMBLY DLT45CLHA03975 POWER UNIT #DLT45MAPW0000	100	067910	M300993
7	-	ROD GROUND, 3/4" Ø, 12'-0" (L), (10 MIL MIN. COPPER JACKET)	150	-	-
8	-	EXOTHERMIC HORIZONTAL 250kcmil CABLE TO 3/4" GROUND ROD CONNECTION	150	-	-
9	-	EXOTHERMIC HORIZONTAL CROSS CONNECTION 250kcmil CABLE TAP TO 250kcmil CABLE RUN	400	-	-
10	-	EXOTHERMIC HORIZONTAL TEE CONNECTION 250kcmil CABLE TAP TO 250kcmil CABLE RUN	100	-	-
11	-	CONNECTOR, COMPRESSION, COPPER, FOR 250kcmil CABLE, 2-HOLE NEMA PAD	150	-	-
12	-	SWITCH OPERATING PLATFORM, 3'x4'	10	400984	15-5044
13	-	WIRE #4, BARE, COPPER, STRANDED	100 ft	028580	M290033
14	-	WIRE #4, BARE, ALUMINUM, STRANDED (ADD CORROSION INHIBITOR)	1000 ft	-	M290001
15	-	CONNECTOR, TAP, COMPRESSION TYPE	600	041010	M305507

**PLAN**  
 SCALE 1" = 40'

#### LEGEND

- 250KCMIL CU STRANDED GROUND CABLE
- GROUND ROD 3/4"x12'(L)
- EXOTHERMIC GROUND CONNECTION
- FENCE CONNECTION-GROUND ROD 5/8"x8'(L)
- OPERATING PLATFORM

SCALE: 1" = 40'

- #### GENERAL NOTES
- FACILITY DRAWINGS ARE AS NOTED BELOW:
    - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
    - GROUNDING PLAN, SECTOR 2: MPG-2230-E-2302
    - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
    - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
    - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
    - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
    - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
    - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
    - GROUNDING DETAILS: MPG-2230-E-5001
    - ONE LINE DIAGRAM: MPG-2230-E-6001
    - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
    - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
    - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
    - LEGEND AND BOM: DWG MPG-2230-E-2300

#### SHEET KEY NOTES

KEY PLAN	
MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

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R.G. Vanderweil Engineers, LLP  
917-423-7423 TEL  
174 Adams Street  
Boston, MA 02210

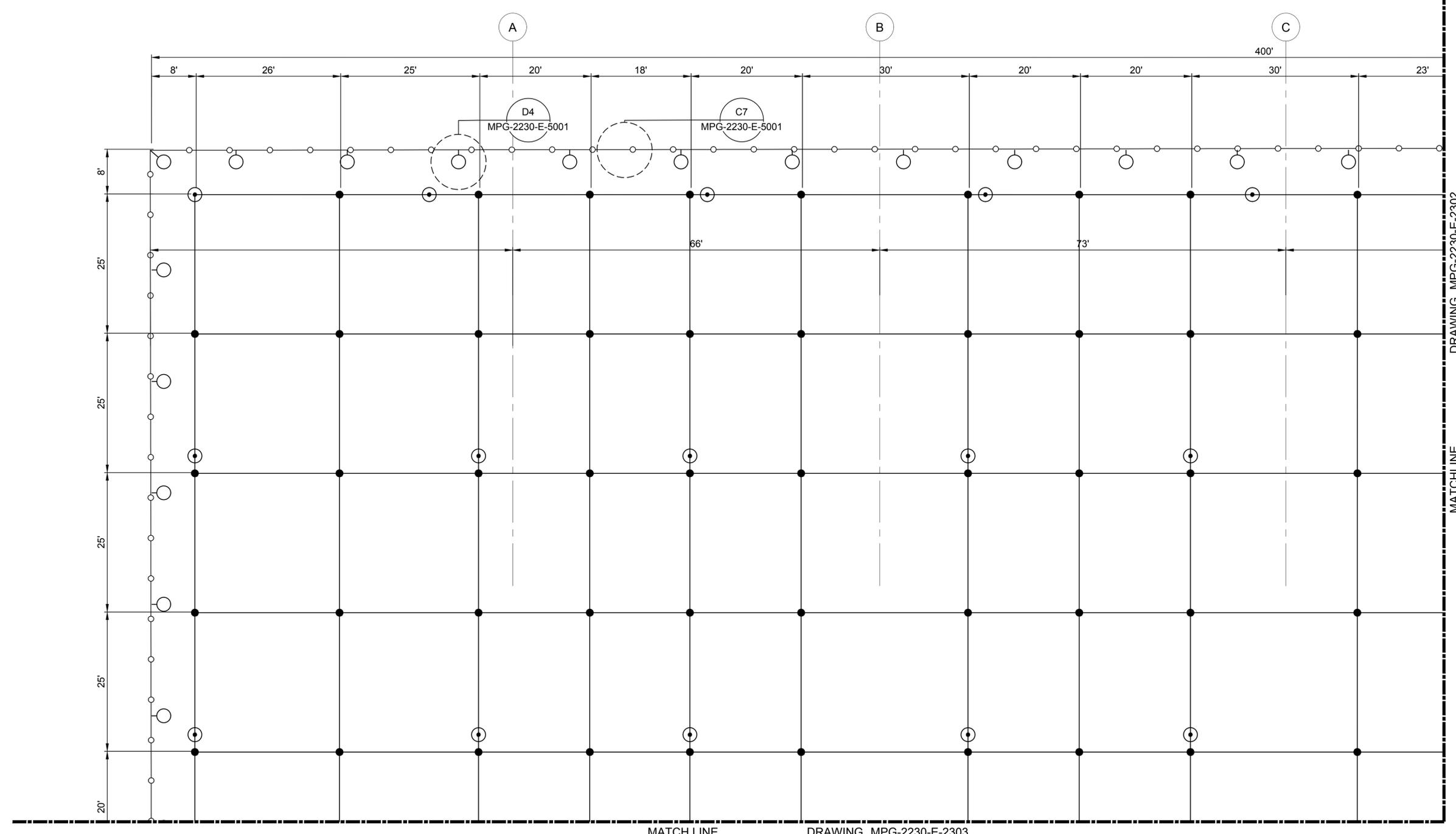
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

### SITES RESERVOIR

MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN OVERALL

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
  
 DRAWING NO.  
 MPG-2230-E-2300  
 SHT 24 OF 106

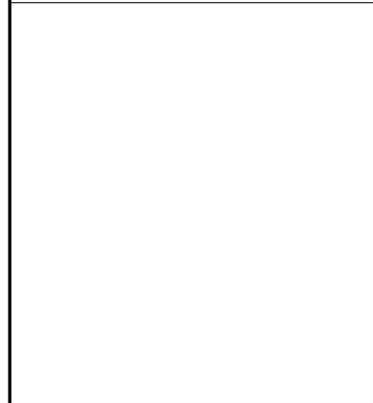
PRELIMINARY - NOT FOR CONSTRUCTION



**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
  - GROUNDING PLAN, SECTOR 2: MPG-2230-E-2302
  - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
  - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
  - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
  - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**



**KEY PLAN**

	MPG-2230-E-2301	MPG-2230-E-2302
	MPG-2230-E-2303	MPG-2230-E-2304
	MPG-2230-E-2305	MPG-2230-E-2306
	MPG-2230-E-2307	MPG-2230-E-2308

Plot Date: 3/29/2024 4:28 PM Saved By: MZARETSKY File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-2301.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

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**VANDERWEIL**  
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R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714 Summer Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
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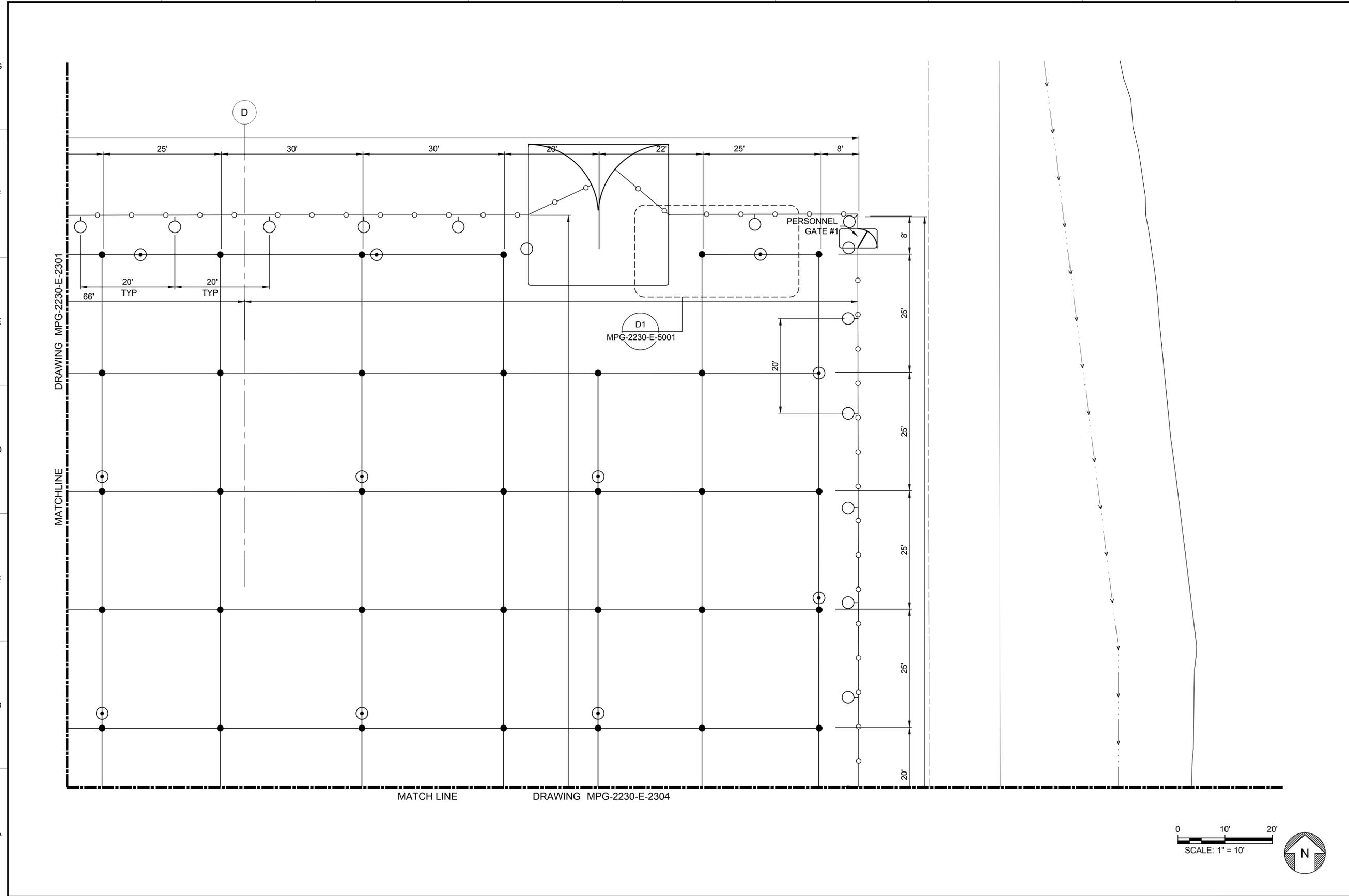


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 1

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2230-E-2301  
 SHT 25 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

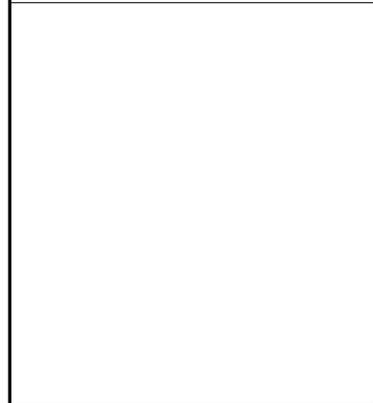
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 Saved By: MZARETSKY



**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
  - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
  - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
  - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
  - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
  - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**



**KEY PLAN**

MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-444-9999 FAX  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

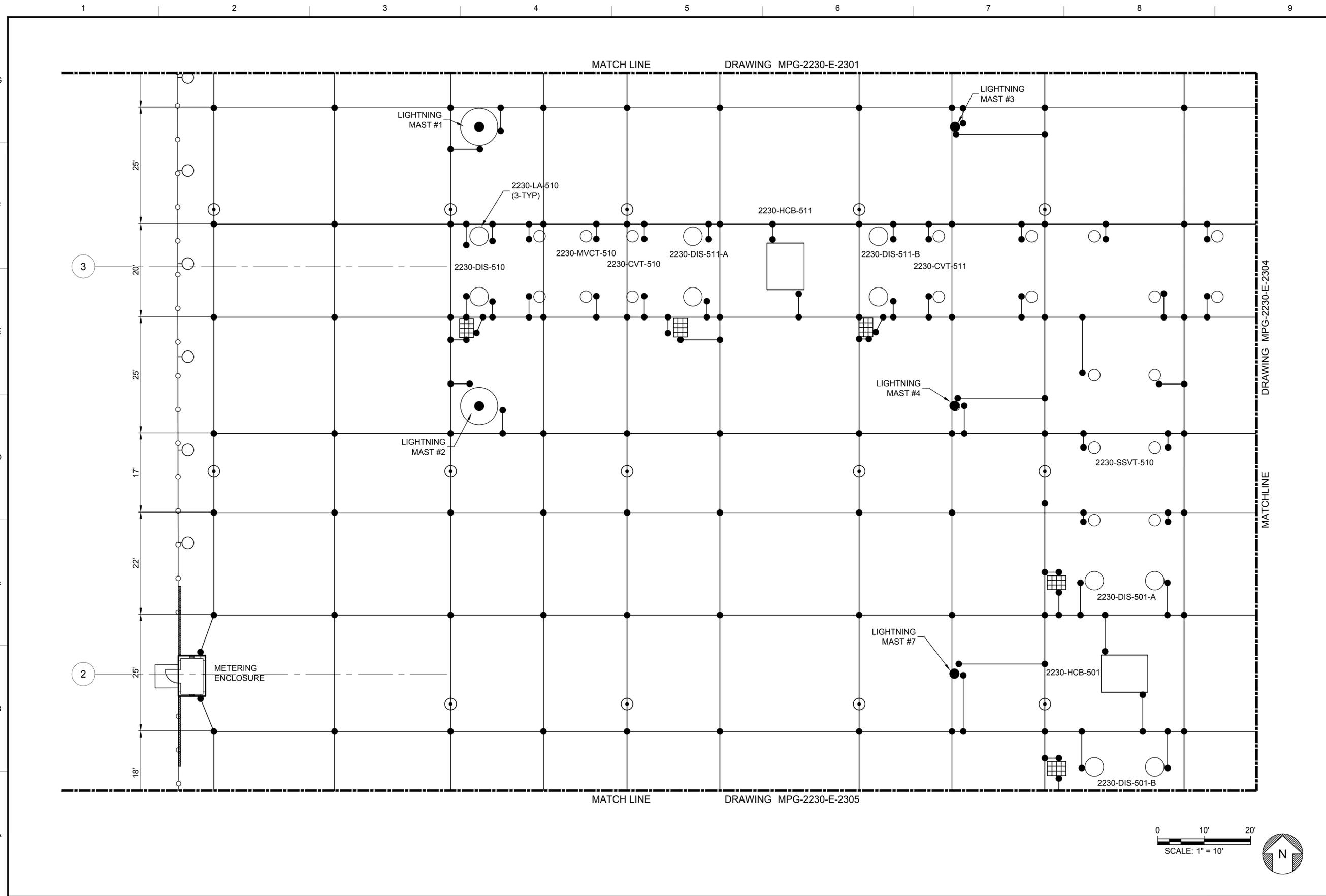


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 2

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 10' 20'  
 SCALE: 1" = 10'  
 DRAWING NO.  
 MPG-2230-E-2302  
 SHT 26 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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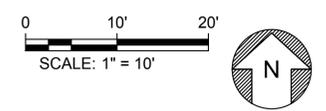


**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
  - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
  - GROUNDING PLAN, SECTOR 2: MPG-2230-E-2302
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
  - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
  - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
  - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
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**VANDERWEIL**  
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R.G. Vanderweil Engineers, LLP 817-231-7423 TEL  
 714-444-0888 FAX  
 Boston, MA 02210

REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**Sites**

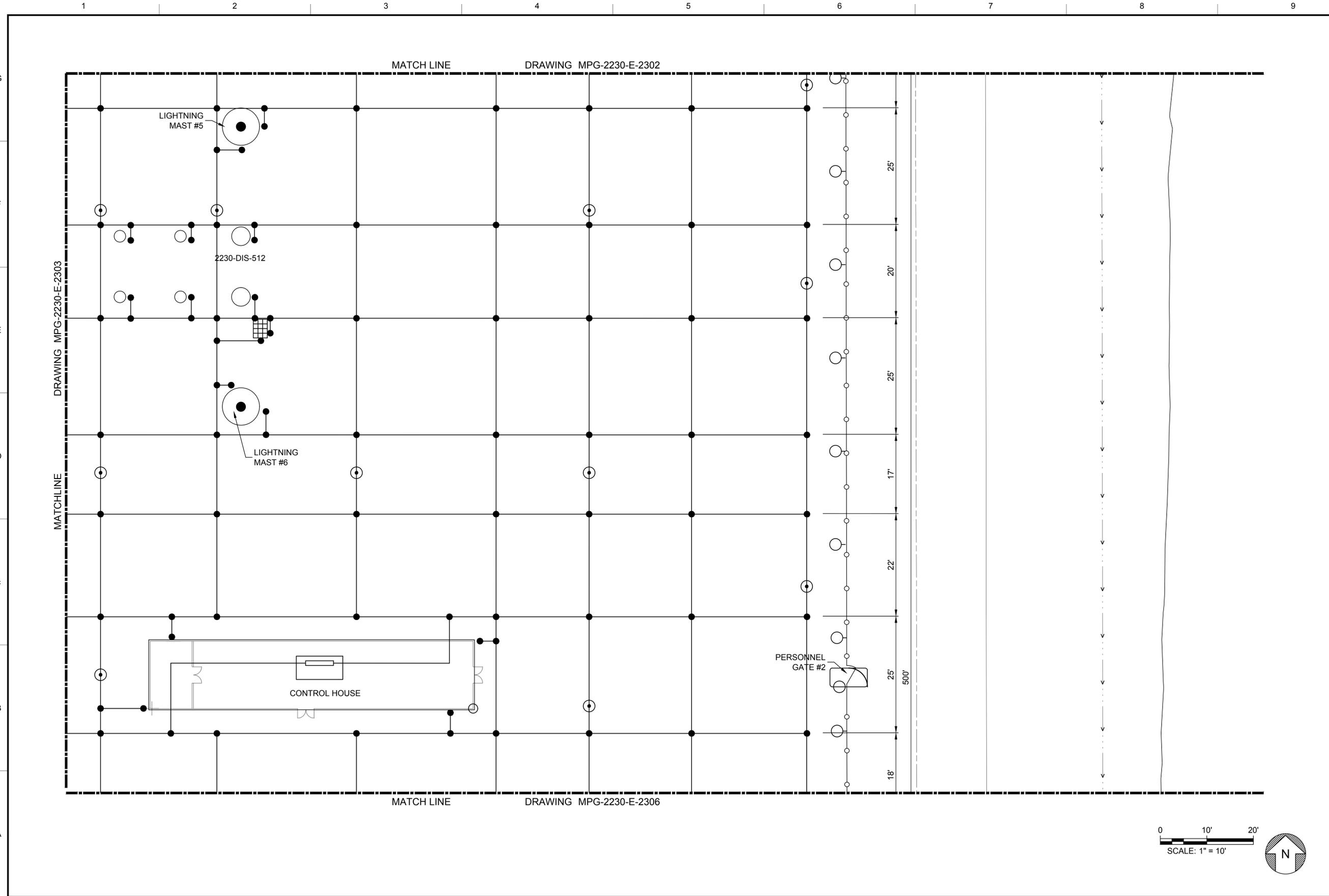
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 3

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS  

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 SHT 27 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

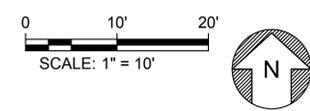
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- GENERAL NOTES**
- FACILITY DRAWINGS ARE AS NOTED BELOW:
    - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
    - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
    - GROUNDING PLAN, SECTOR 2: MPG-2230-E-2302
    - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
    - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
    - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
    - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
    - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
    - GROUNDING DETAILS: MPG-2230-E-5001
    - ONE LINE DIAGRAM: MPG-2230-E-6001
    - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
    - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
    - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
    - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
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 Boston, MA 02215

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 4

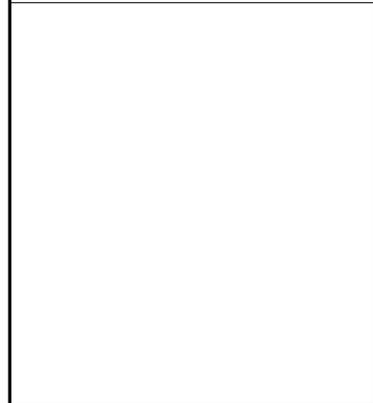
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 SHT 28 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

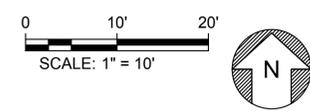
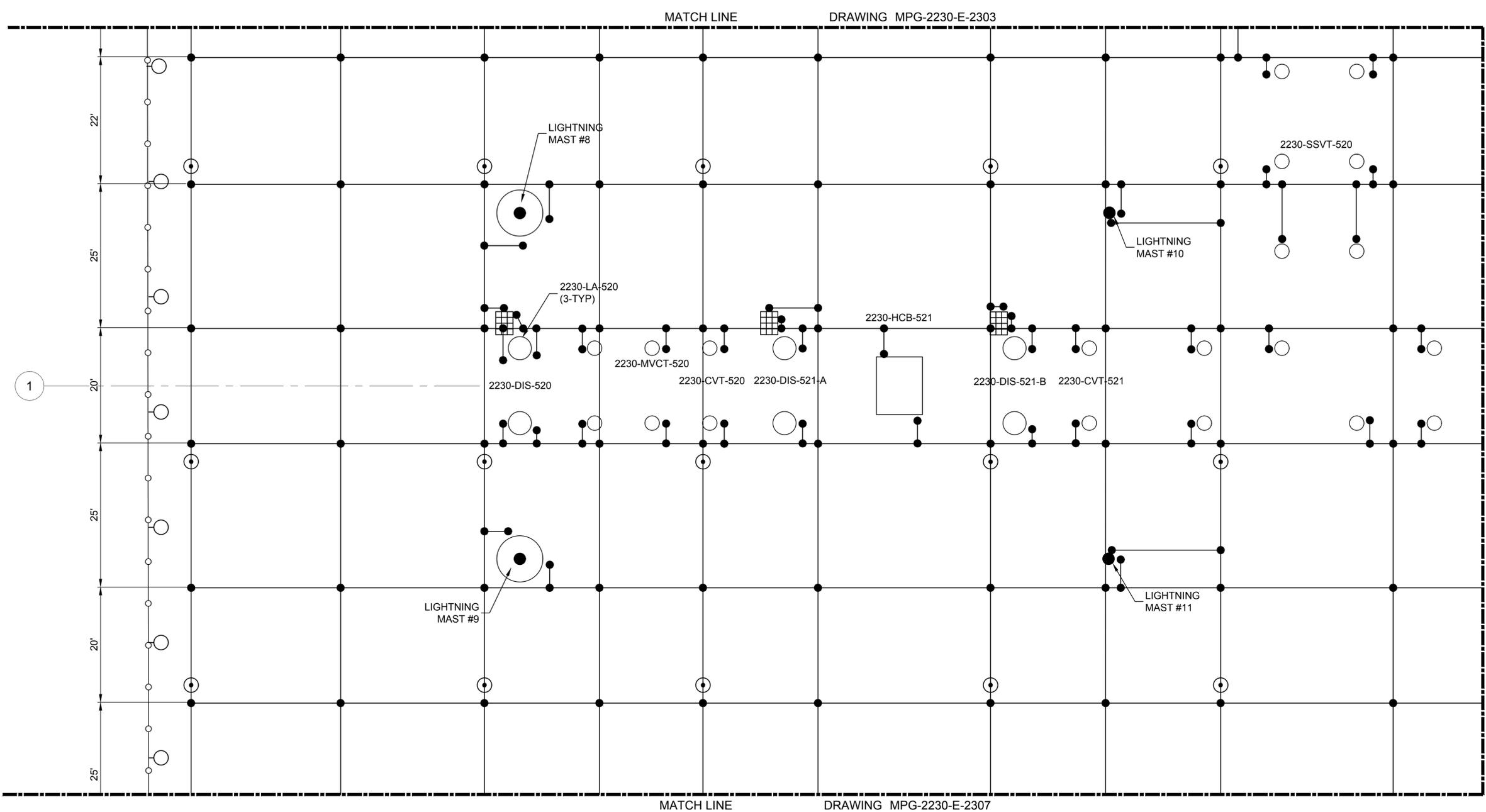
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  - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
  - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
  - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**



**KEY PLAN**

MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

2525 AIRPARK DR  
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 (530) 243-5831  
  
 R.G. Vanderweil Engineers, LLP  
 914 Summer Street  
 Boston, MA 02210

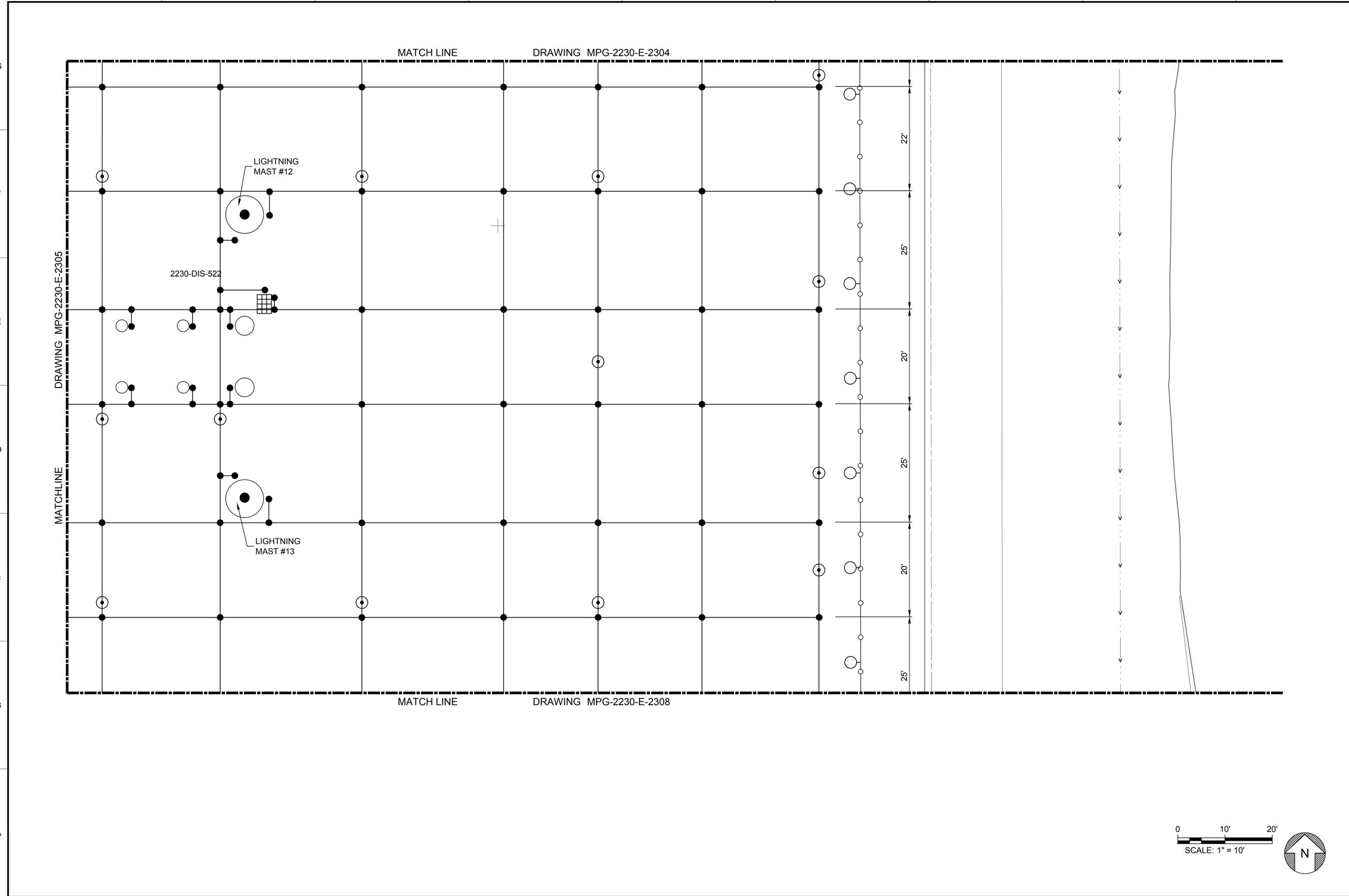
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 5

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
  
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 SHT 29 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

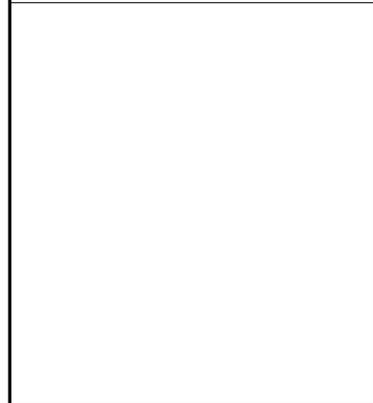
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**GENERAL NOTES**

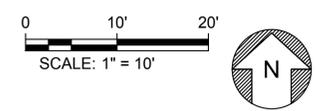
- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
  - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
  - GROUNDING PLAN, SECTOR 2: MPG-2230-E-2302
  - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
  - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
  - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**



**KEY PLAN**

MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308



REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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**VANDERWEIL**  
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R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-444-0844 FAX  
 Boston, MA 02210

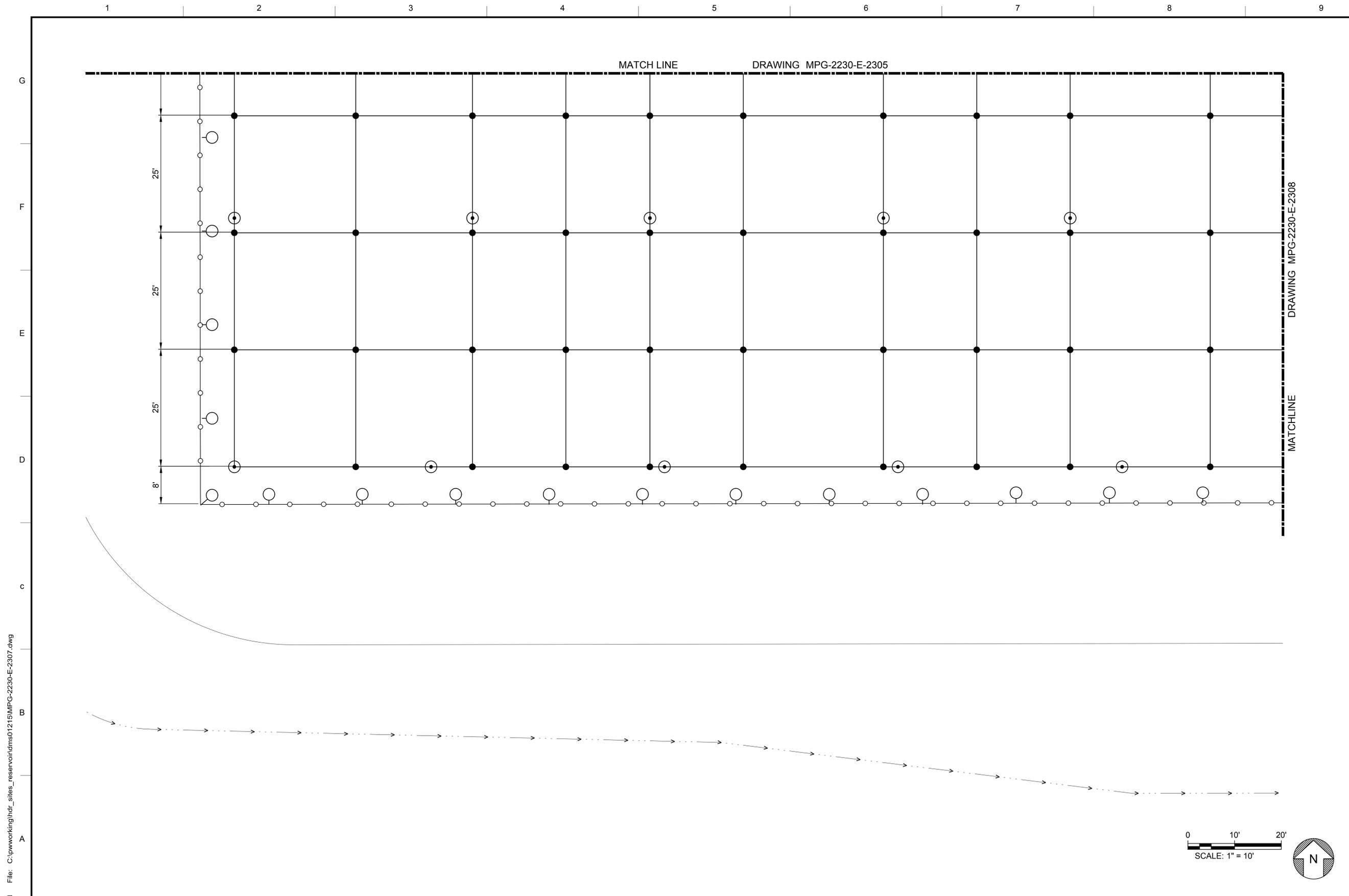
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 6

VERIFY SCALES  
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 SHT 30 OF 106

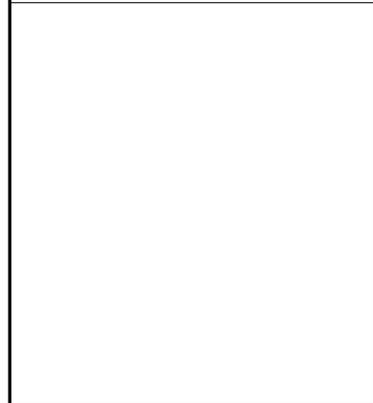
PRELIMINARY - NOT FOR CONSTRUCTION



**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
  - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
  - GROUNDING PLAN, SECTOR 2: MPG-2230-E-2302
  - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
  - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
  - GROUNDING PLAN, SECTOR 8: MPG-2230-E-2308
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**



**KEY PLAN**

MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
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**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714 Summer Street  
 Boston, MA 02210

REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

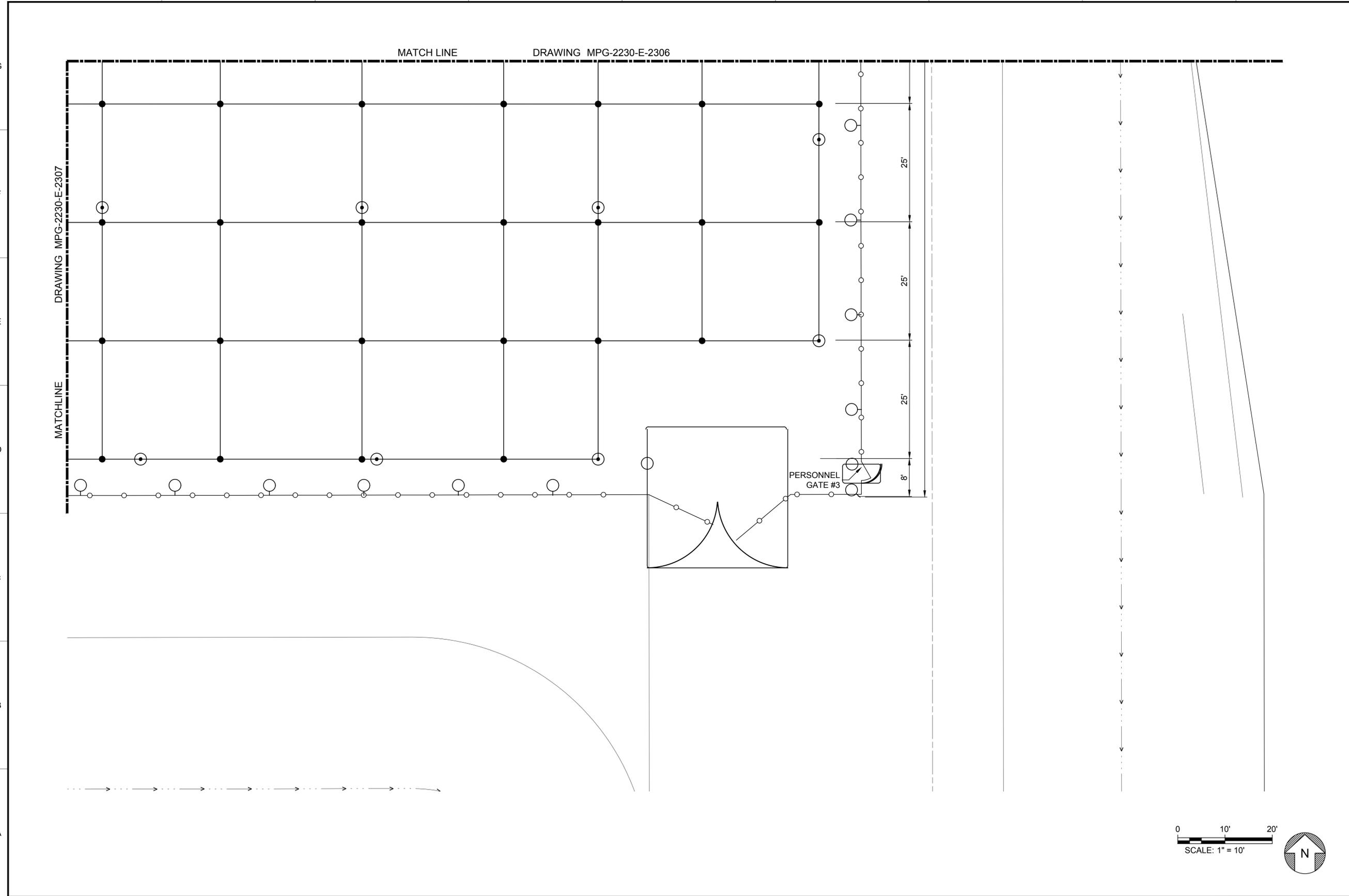


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 7

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS  
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 DRAWING NO.  
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 SHT 31 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

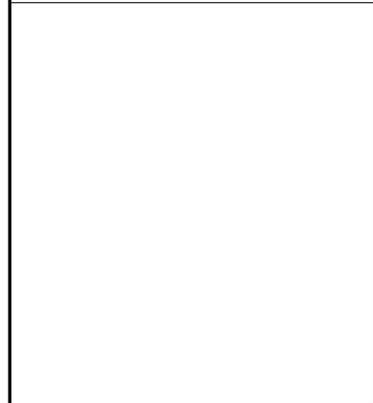
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**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - GROUNDING PLAN, OVERALL: MPG-2230-E-2300
  - GROUNDING PLAN, SECTOR 1: MPG-2230-E-2301
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  - GROUNDING PLAN, SECTOR 3: MPG-2230-E-2303
  - GROUNDING PLAN, SECTOR 4: MPG-2230-E-2304
  - GROUNDING PLAN, SECTOR 5: MPG-2230-E-2305
  - GROUNDING PLAN, SECTOR 6: MPG-2230-E-2306
  - GROUNDING PLAN, SECTOR 7: MPG-2230-E-2307
  - GROUNDING DETAILS: MPG-2230-E-5001
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - PG&E GROUNDING REQUIREMENTS FOR OUTDOOR ELECTRICAL SUBSTATIONS: DWG.#067910
  - PG&E METHOD OF GROUNDING FENCES AND WIRE TRELLISES: DWG.#020607
  - PG&E STEEL GRATING TYPE SWITCH OPERATING PLATFORMS: DWG.#034851
  - LEGEND AND BOM: DWG MPG-2230-E-2300

**SHEET KEY NOTES**



**KEY PLAN**

MPG-2230-E-2301	MPG-2230-E-2302
MPG-2230-E-2303	MPG-2230-E-2304
MPG-2230-E-2305	MPG-2230-E-2306
MPG-2230-E-2307	MPG-2230-E-2308

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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**VANDERWEIL**  
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 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING PLAN SECTOR 8

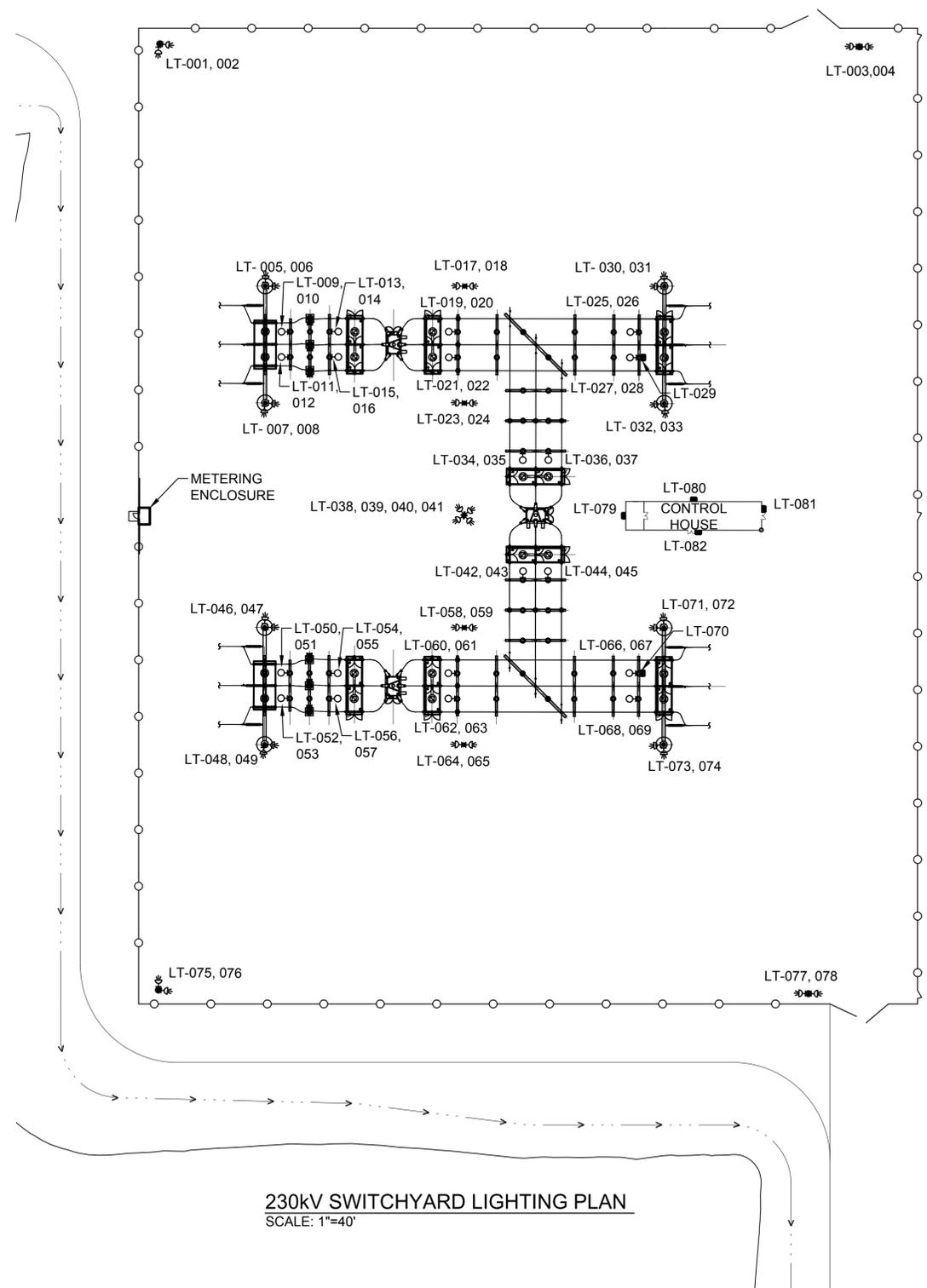
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 SHT 32 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

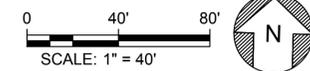
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Symbol	Qty	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
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⬮	6	Single	121-16L530-WW-G4-3	0.850	2885	28.1	168.6
○	40	Single	PLED2-10000LM-L5H-MVOLT-40K-70CRI-UNM-DGXD	0.850	10000	98.8	395.2

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LT-005	30	0	30
LT-006	30	90	30
LT-007	30	0	30
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LT-063	25	180	180
LT-064	30	0	30
LT-065	30	180	30
LT-066	25	180	0
LT-067	25	180	180
LT-068	25	180	0
LT-069	25	180	180
LT-070	15	0	0

Luminaire Location Summary			
LumNo	Mount. (H)	Orient	Tilt
LT-071	30	90	30
LT-072	30	180	30
LT-073	30	180	30
LT-074	30	270	30
LT-075	30	0	30
LT-076	30	90	30
LT-077	30	0	30
LT-078	30	180	30
LT-079	8	180	0
LT-080	8	90	0
LT-081	8	0	0
LT-082	8	270	0



230KV SWITCHYARD LIGHTING PLAN  
SCALE: 1"=40'



GENERAL NOTES

- TITLE 24 INDICATES OUTDOOR LIGHTING APPLICATIONS NOT REGULATED BY § 140.7 6.2.2.2.
- REFER TO DRAWING MPG-2230-E-XXXX FOR LIGHTING INSTALLATION DETAIL.
- "PLED2" FIXTURES TO BE MOUNTED IN PAIRS, ONE ILLUMINATING GROUND OPERATING AREA, ONE TO ILLUMINATE OVERHEAD EQUIPMENT.
- FACILITY DRAWINGS ARE AS NOTED BELOW:  
  
LIGHTING PLAN, SECTOR 1: MPG-2230-E-2401  
LIGHTING PLAN, SECTOR 2: MPG-2230-E-2402  
LIGHTING PLAN, SECTOR 3: MPG-2230-E-2403  
LIGHTING PLAN, SECTOR 4: MPG-2230-E-2404  
LIGHTING PLAN, SECTOR 5: MPG-2230-E-2405  
LIGHTING PLAN, SECTOR 6: MPG-2230-E-2406  
LIGHTING PLAN, SECTOR 7: MPG-2230-E-2407  
LIGHTING PLAN, SECTOR 8: MPG-2230-E-2408  
  
ONE LINE DIAGRAM: MPG-2230-E-6001
- FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

SHEET KEY NOTES

KEY PLAN	
MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
DRAWN BY: M. ZARETSKY  
CHECKED BY: C. VANSANT  
IN CHARGE: P. RUDE  
DATE: 04-09-2024

**Jacobs**  
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REDDING, CA 96001  
(530) 243-5831

**VANDERWEIL**  
POWER GROUP  
R.G. Vanderweil Engineers, LLP  
517-233-7423 TEL  
517-233-7423 FAX  
BOSTON, MA 02210

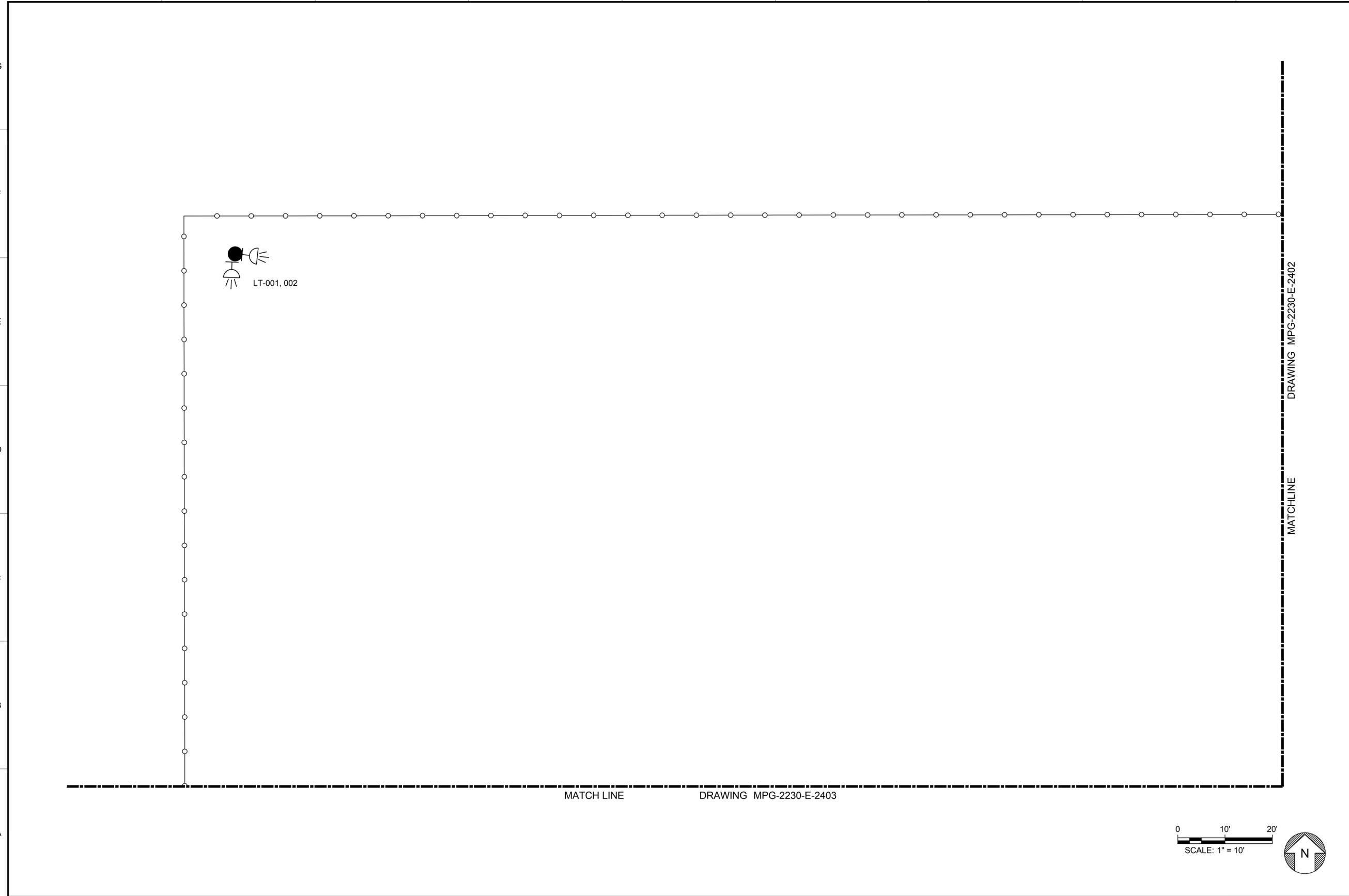
REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA

SITES RESERVOIR  
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
LIGHTING PLAN OVERALL

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
0 1" 1"  
DRAWING NO.  
MPG-2230-E-2400  
SHT 33 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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 Saved By: MZARETSKY



- ### GENERAL NOTES
- FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
  - FACILITY DRAWINGS ARE AS NOTED BELOW:
    - LIGHTING PLAN, SECTOR 2: MPG-2230-E-2402
    - LIGHTING PLAN, SECTOR 3: MPG-2230-E-2403
    - LIGHTING PLAN, SECTOR 4: MPG-2230-E-2404
    - LIGHTING PLAN, SECTOR 5: MPG-2230-E-2405
    - LIGHTING PLAN, SECTOR 6: MPG-2230-E-2406
    - LIGHTING PLAN, SECTOR 7: MPG-2230-E-2407
    - LIGHTING PLAN, SECTOR 8: MPG-2230-E-2408
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

### SHEET KEY NOTES

KEY PLAN	
MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

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 174 Summer Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

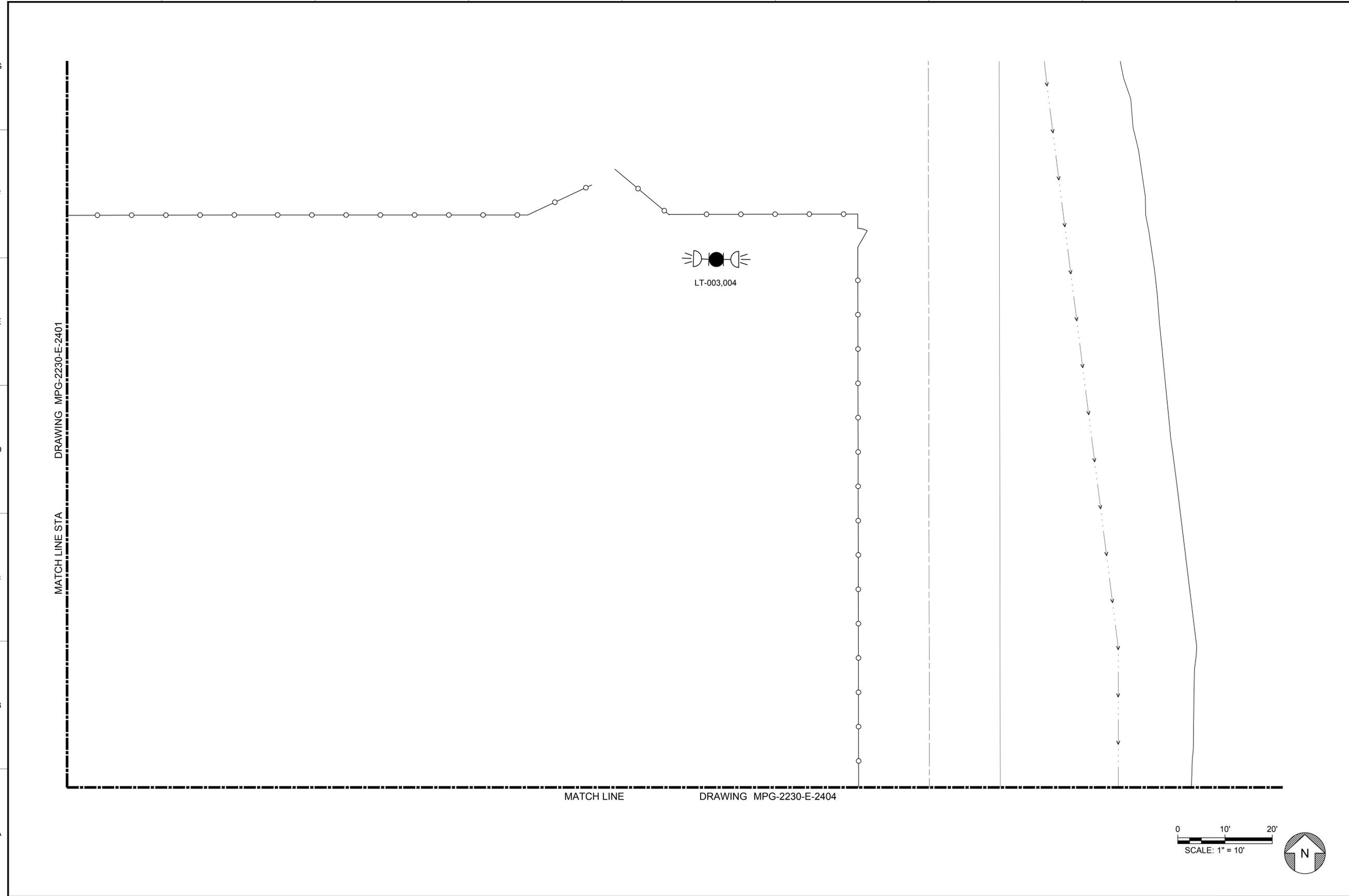


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 1

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2230-E-2401  
 SHT 34 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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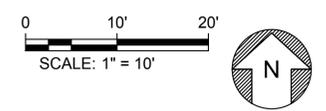
**GENERAL NOTES**

- FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - LIGHTING PLAN, SECTOR 1: MPG-2230-E-2401
  - LIGHTING PLAN, SECTOR 3: MPG-2230-E-2403
  - LIGHTING PLAN, SECTOR 4: MPG-2230-E-2404
  - LIGHTING PLAN, SECTOR 5: MPG-2230-E-2405
  - LIGHTING PLAN, SECTOR 6: MPG-2230-E-2406
  - LIGHTING PLAN, SECTOR 7: MPG-2230-E-2407
  - LIGHTING PLAN, SECTOR 8: MPG-2230-E-2408
- FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**

**KEY PLAN**

MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714 Adams Street  
 Boston, MA 02210

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 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

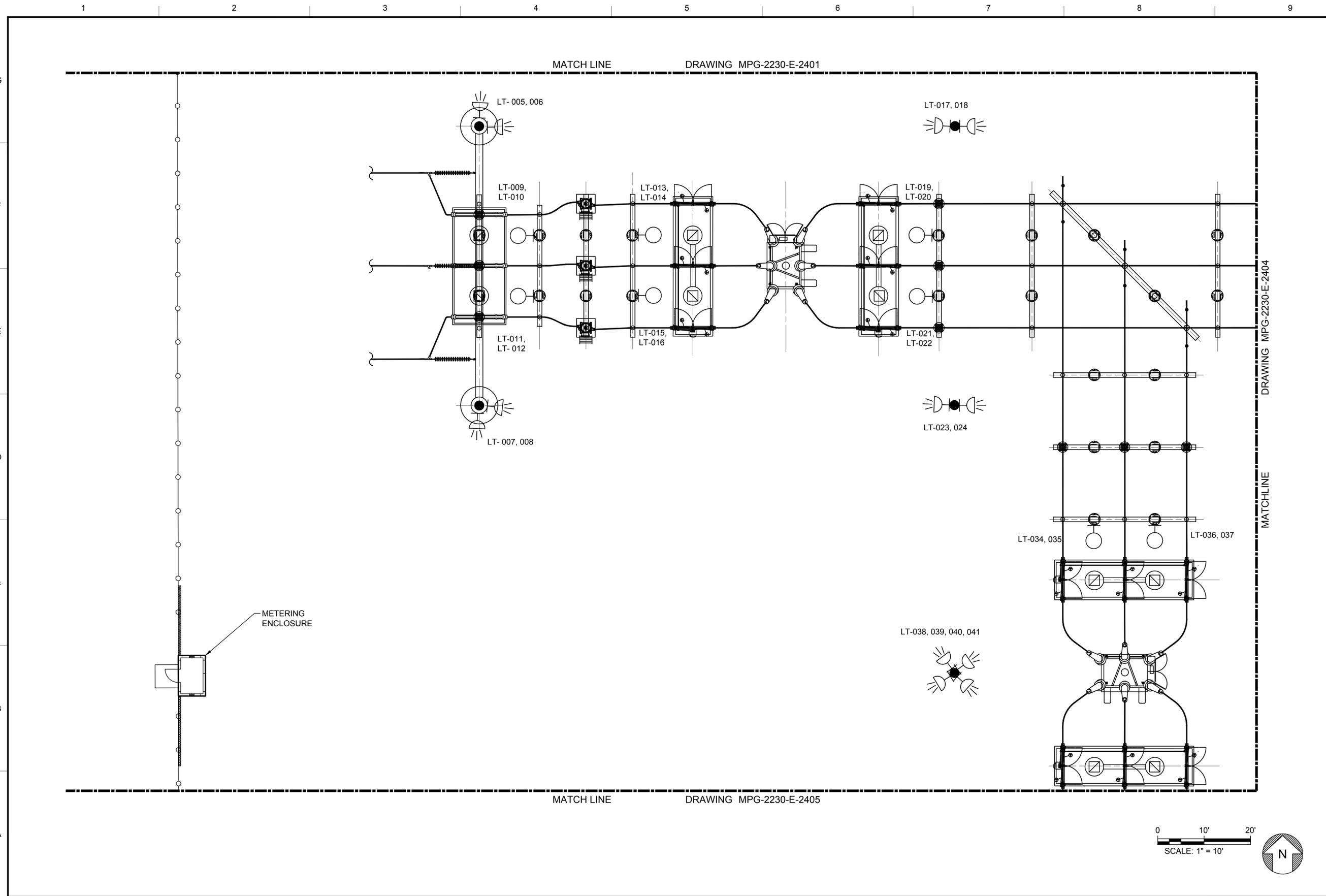


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 2

**VERIFY SCALES**  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 1"  
 DRAWING NO.  
 MPG-2230-E-2402  
 SHT 35 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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**GENERAL NOTES**

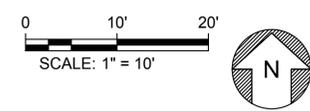
- FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - LIGHTING PLAN, SECTOR 1: MPG-2230-E-2401
  - LIGHTING PLAN, SECTOR 2: MPG-2230-E-2402
  - LIGHTING PLAN, SECTOR 4: MPG-2230-E-2404
  - LIGHTING PLAN, SECTOR 5: MPG-2230-E-2405
  - LIGHTING PLAN, SECTOR 6: MPG-2230-E-2406
  - LIGHTING PLAN, SECTOR 7: MPG-2230-E-2407
  - LIGHTING PLAN, SECTOR 8: MPG-2230-E-2408
- ONE LINE DIAGRAM: MPG-2230-E-6001
- FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**

MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408

**KEY PLAN**

MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408



REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

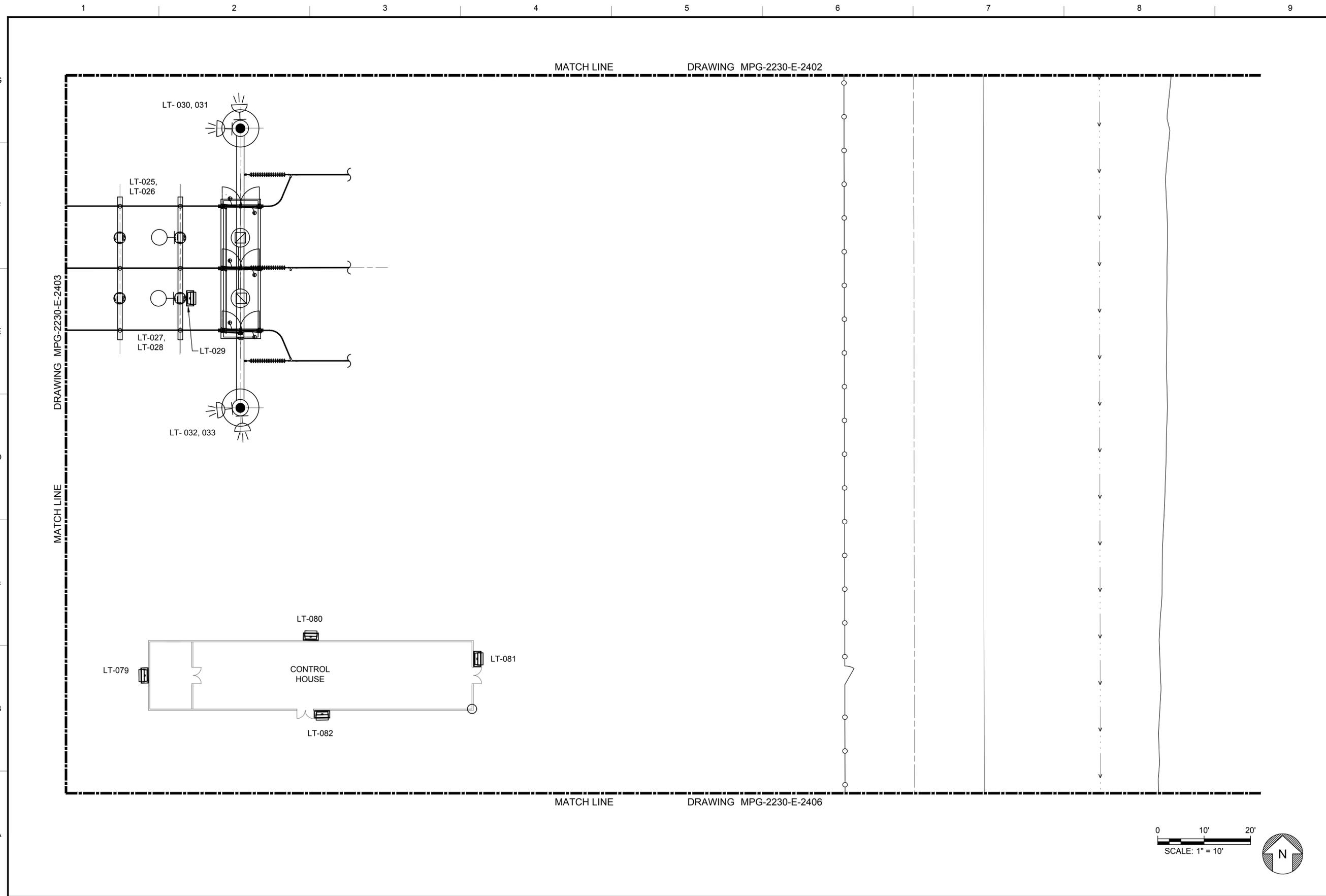


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 3

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 10 20  
 SCALE: 1" = 10"  
 DRAWING NO. MPG-2230-E-2403  
 SHT 36 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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- ### GENERAL NOTES
- FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
  - FACILITY DRAWINGS ARE AS NOTED BELOW:
    - LIGHTING PLAN, SECTOR 1: MPG-2230-E-2401
    - LIGHTING PLAN, SECTOR 2: MPG-2230-E-2402
    - LIGHTING PLAN, SECTOR 3: MPG-2230-E-2403
    - LIGHTING PLAN, SECTOR 5: MPG-2230-E-2405
    - LIGHTING PLAN, SECTOR 6: MPG-2230-E-2406
    - LIGHTING PLAN, SECTOR 7: MPG-2230-E-2407
    - LIGHTING PLAN, SECTOR 8: MPG-2230-E-2408
  - ONE LINE DIAGRAM: MPG-2230-E-6001
  - FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

### SHEET KEY NOTES

KEY PLAN	
MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-888-0888 FAX  
 Boston, MA 02210

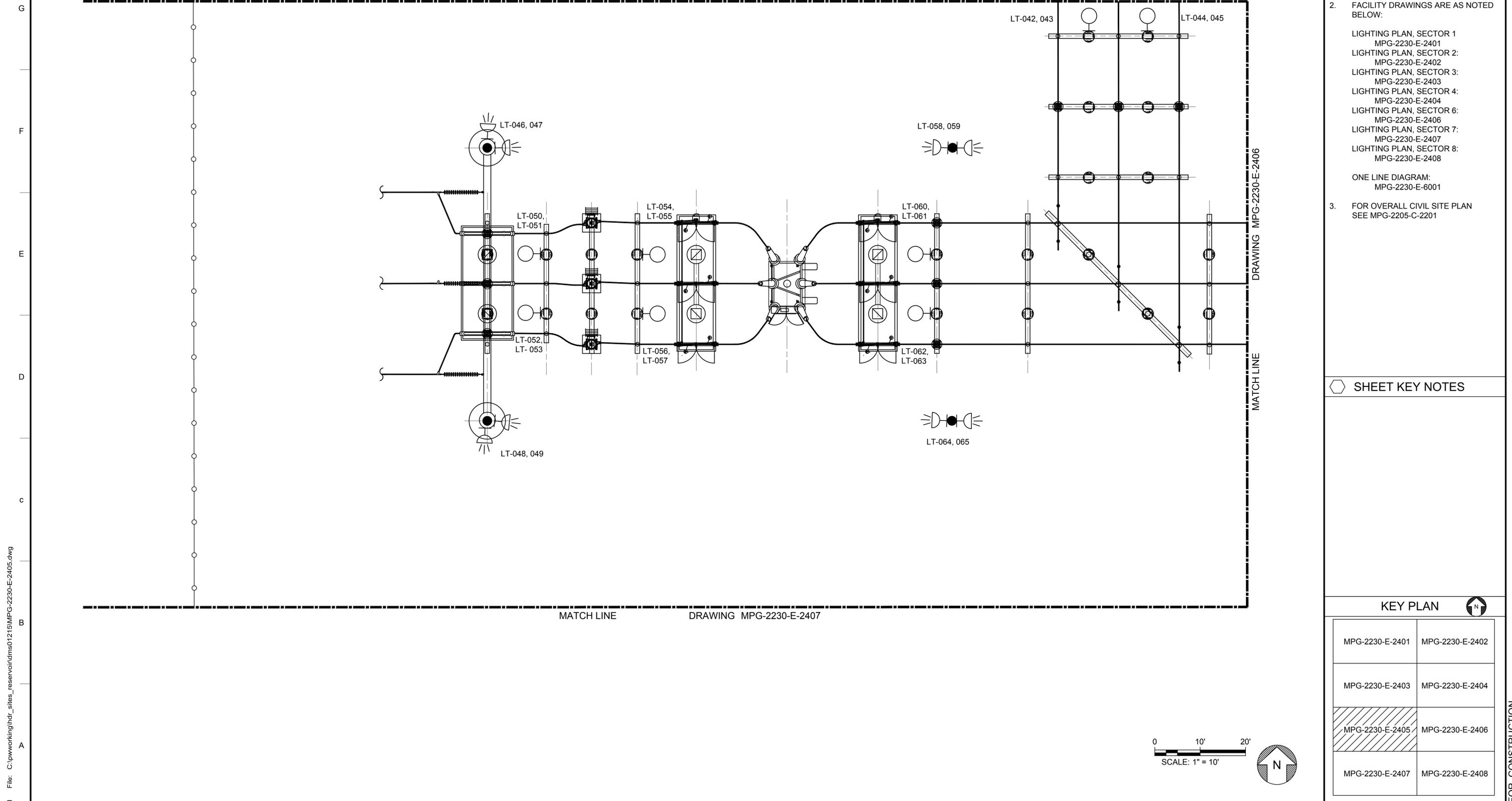
REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 4

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWINGS. ADJUST SCALES FOR  
 REDUCED PLOTS  
 0 10' 20'  
 SCALE: 1" = 10'  
 DRAWING NO.  
 MPG-2230-E-2404  
 SHT 37 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**GENERAL NOTES**

- FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 LIGHTING PLAN, SECTOR 1: MPG-2230-E-2401  
 LIGHTING PLAN, SECTOR 2: MPG-2230-E-2402  
 LIGHTING PLAN, SECTOR 3: MPG-2230-E-2403  
 LIGHTING PLAN, SECTOR 4: MPG-2230-E-2404  
 LIGHTING PLAN, SECTOR 6: MPG-2230-E-2406  
 LIGHTING PLAN, SECTOR 7: MPG-2230-E-2407  
 LIGHTING PLAN, SECTOR 8: MPG-2230-E-2408  
  
 ONE LINE DIAGRAM: MPG-2230-E-6001
- FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408

Plot Date: 4/1/2024 11:10 AM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

2525 AIRPARK DR  
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 (530) 243-5831  
  
  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-949-0848 FAX  
 Boston, MA 02210

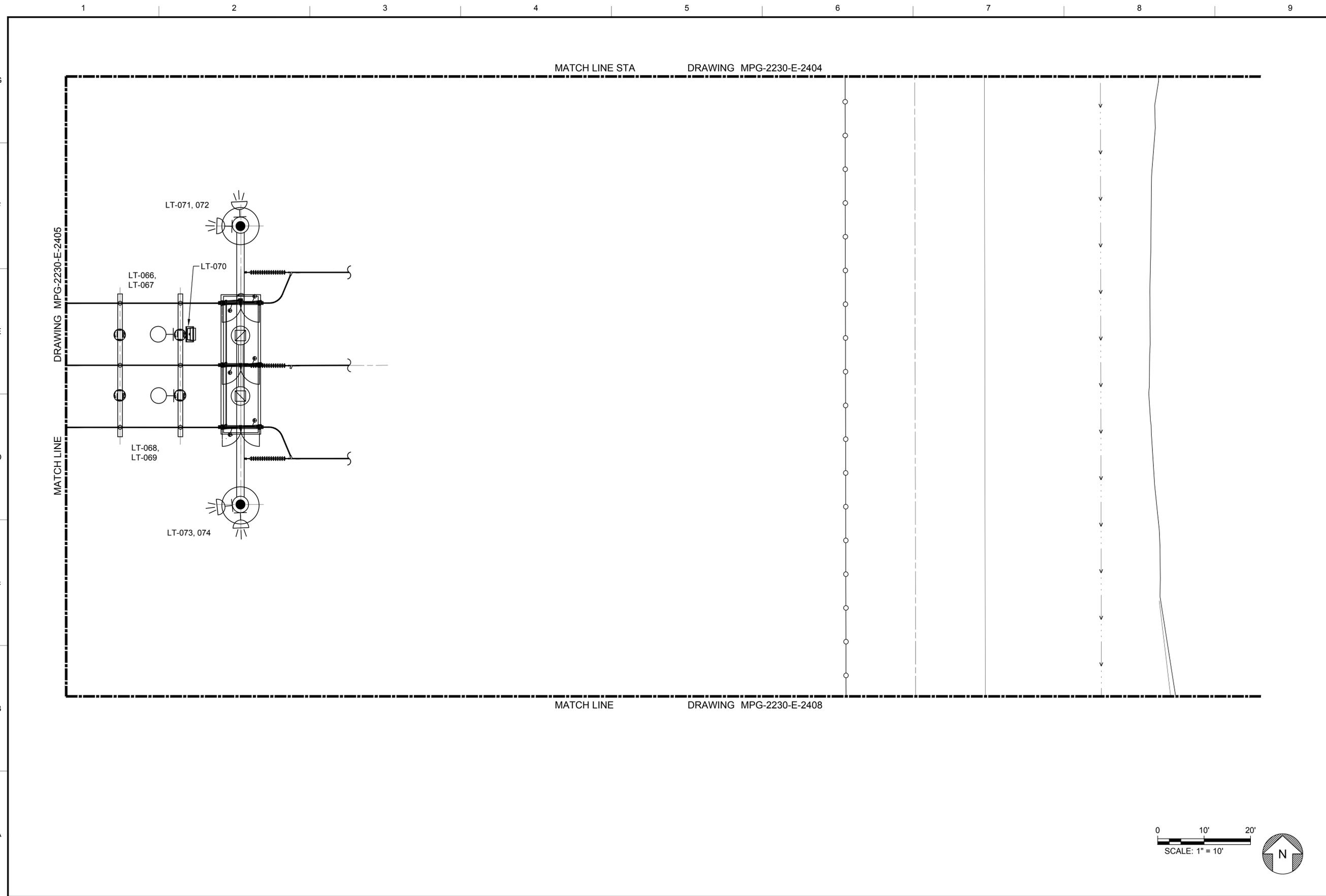
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 5

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2230-E-2405  
 SHT 38 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

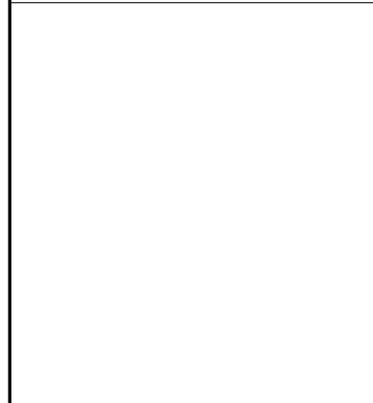
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**GENERAL NOTES**

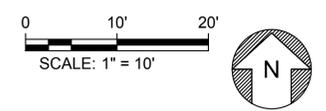
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2. FACILITY DRAWINGS ARE AS NOTED BELOW:  
  
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 MPG-2230-E-2401  
 LIGHTING PLAN, SECTOR 2:  
 MPG-2230-E-2402  
 LIGHTING PLAN, SECTOR 3:  
 MPG-2230-E-2403  
 LIGHTING PLAN, SECTOR 4:  
 MPG-2230-E-2404  
 LIGHTING PLAN, SECTOR 5:  
 MPG-2230-E-2405  
 LIGHTING PLAN, SECTOR 7:  
 MPG-2230-E-2407  
 LIGHTING PLAN, SECTOR 8:  
 MPG-2230-E-2408  
  
 ONE LINE DIAGRAM:  
 MPG-2230-E-6001
3. FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**



**KEY PLAN**

MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
 M. NESSABI  
 DRAWN BY:  
 M. ZARETSKY  
 CHECKED BY:  
 C. VANSANT  
 IN CHARGE:  
 P. RUDE  
 DATE:  
 04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
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**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-888-0888 FAX  
 Boston, MA 02210

REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 6

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS  
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 SCALE: 1" = 10"  
 DRAWING NO.  
 MPG-2230-E-2406  
 SHT 39 OF 106

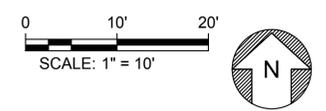
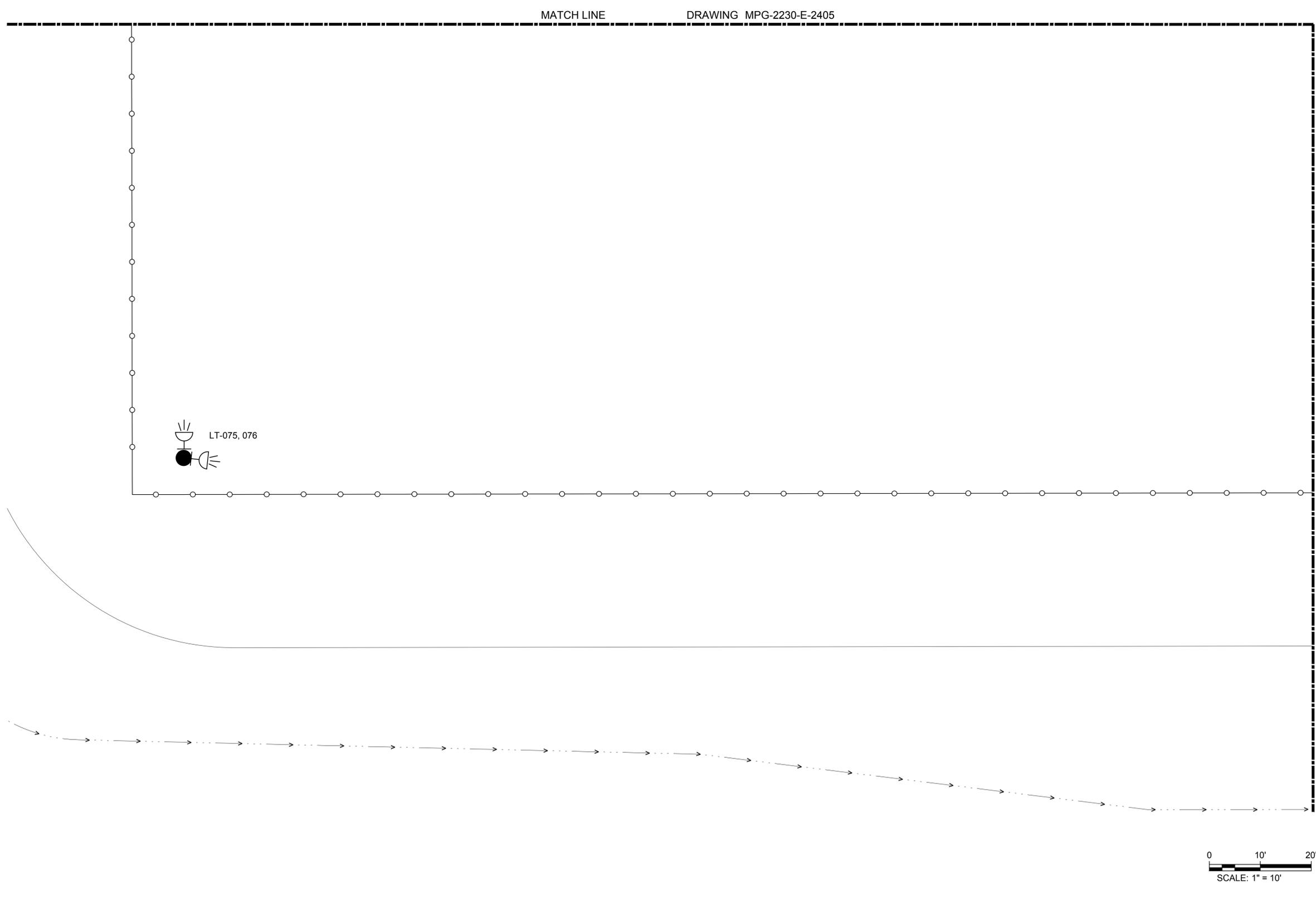
PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
- FACILITY DRAWINGS ARE AS NOTED BELOW:  
  
 LIGHTING PLAN, SECTOR 1:  
MPG-2230-E-2401  
 LIGHTING PLAN, SECTOR 2:  
MPG-2230-E-2402  
 LIGHTING PLAN, SECTOR 3:  
MPG-2230-E-2403  
 LIGHTING PLAN, SECTOR 4:  
MPG-2230-E-2404  
 LIGHTING PLAN, SECTOR 5:  
MPG-2230-E-2405  
 LIGHTING PLAN, SECTOR 6:  
MPG-2230-E-2406  
 LIGHTING PLAN, SECTOR 8:  
MPG-2230-E-2408  
  
 ONE LINE DIAGRAM:  
MPG-2230-E-6001
- FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**

KEY PLAN	
MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408



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REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
 (530) 243-5831  
  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 974 Summer Street  
 Boston, MA 02210  
 vanderweil.com

REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

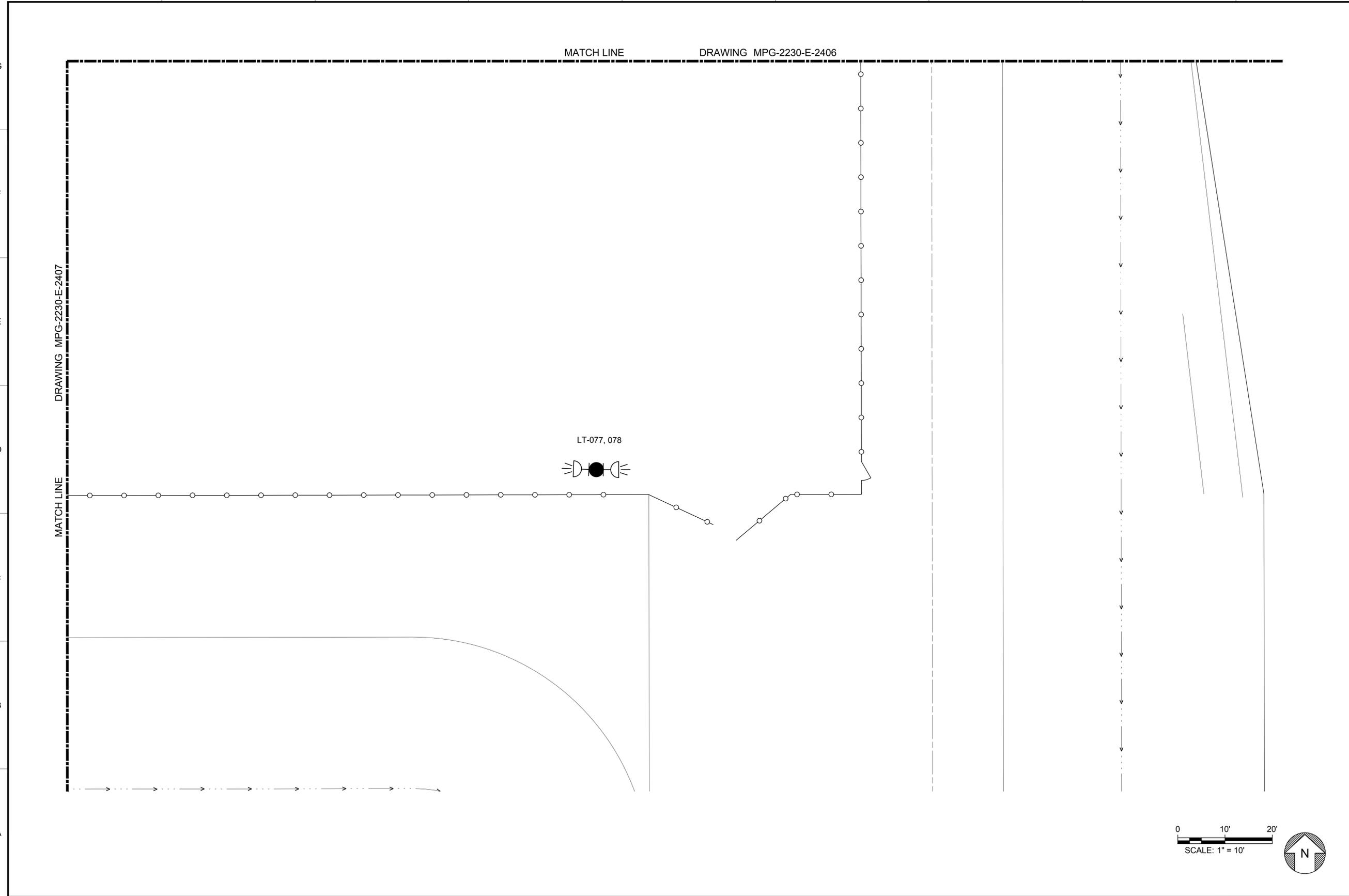


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 7

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWINGS. ADJUST SCALES FOR  
 REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2230-E-2407  
 SHT 40 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

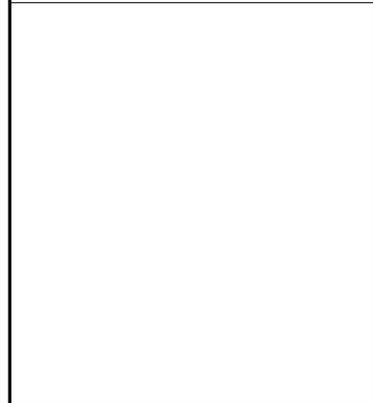
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**GENERAL NOTES**

1. FOR LUMINARIES SCHEDULE REFER TO DRAWING MPG-2230-E-2400
2. FACILITY DRAWINGS ARE AS NOTED BELOW:  
  
 LIGHTING PLAN, SECTOR 1:  
 MPG-2230-E-2401  
 LIGHTING PLAN, SECTOR 2:  
 MPG-2230-E-2402  
 LIGHTING PLAN, SECTOR 3:  
 MPG-2230-E-2403  
 LIGHTING PLAN, SECTOR 4:  
 MPG-2230-E-2404  
 LIGHTING PLAN, SECTOR 5:  
 MPG-2230-E-2405  
 LIGHTING PLAN, SECTOR 6:  
 MPG-2230-E-2406  
 LIGHTING PLAN, SECTOR 7:  
 MPG-2230-E-2407  
  
 ONE LINE DIAGRAM:  
 MPG-2230-E-6001
3. FOR OVERALL CIVIL SITE PLAN SEE MPG-2205-C-2201

**SHEET KEY NOTES**



KEY PLAN	
MPG-2230-E-2401	MPG-2230-E-2402
MPG-2230-E-2403	MPG-2230-E-2404
MPG-2230-E-2405	MPG-2230-E-2406
MPG-2230-E-2407	MPG-2230-E-2408

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
  
  
 R.G. Vanderweil Engineers, LLP  
 817-423-7423 TEL  
 814-466-0844 FAX  
 BOSTON, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTING PLAN SECTOR 8

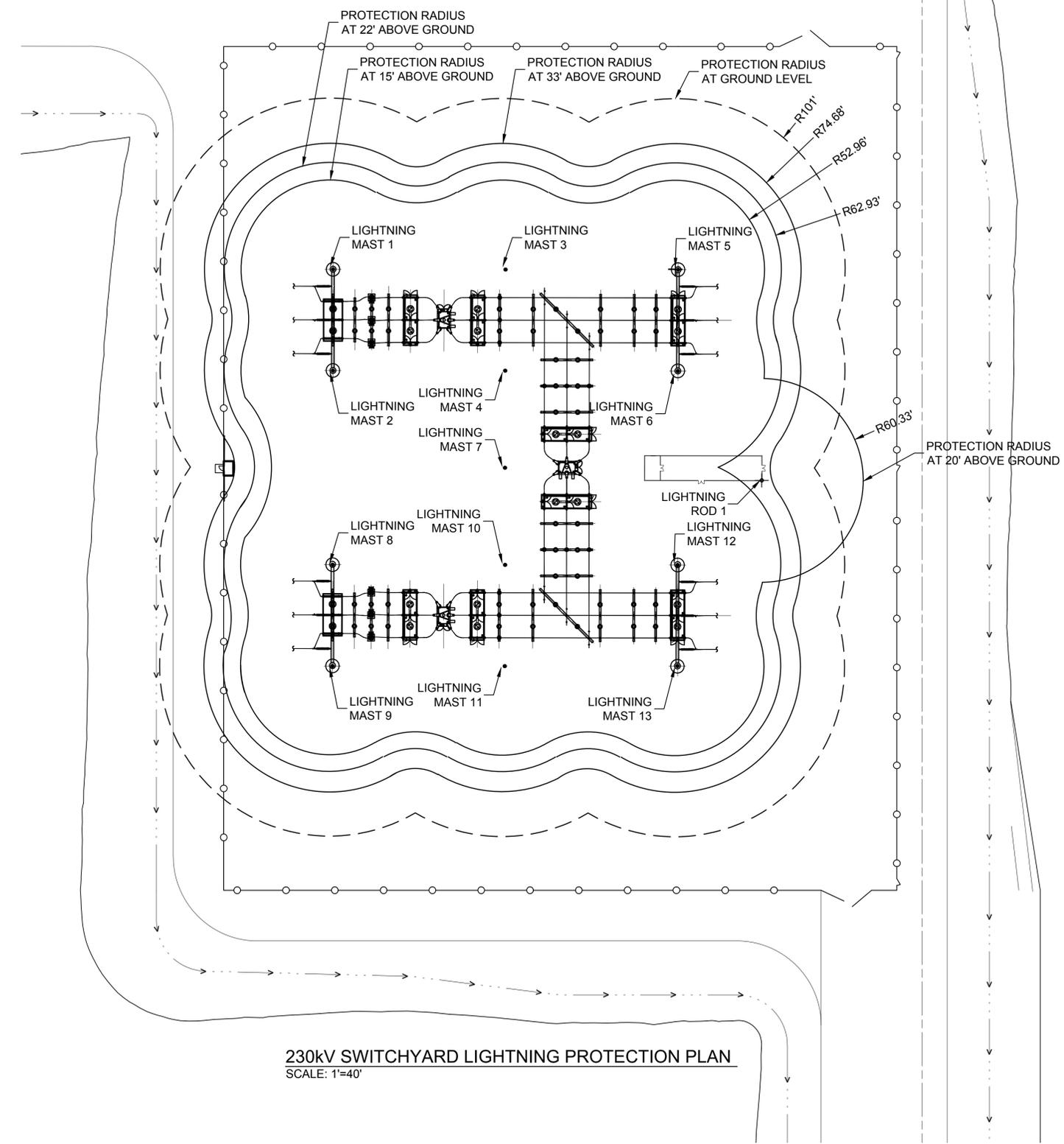
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 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
  
 DRAWING NO.  
 MPG-2230-E-2408  
 SHT 41 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- IEEE Std 998TM - 2012, IEEE GUIDE TO DIRECT LIGHTNING STROKE, SHIELDING OF SUBSTATIONS METHOD: ROLLING SPHERE METHOD, STATIC MASTS ONLY.

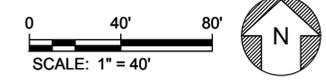
G  
F  
E  
D  
C  
B  
A



**230kV SWITCHYARD LIGHTNING PROTECTION PLAN**  
SCALE: 1"=40'

**SHEET KEY NOTES**

KEY PLAN



Plot Date: 4/1/2024 10:13 AM  
Saved By: MZARETSKY  
File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-2500.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



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 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 LIGHTNING PROTECTION PLAN

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 40 80  
 SCALE: 1" = 40'  
 DRAWING NO.  
 MPG-2230-E-2500  
 SHT 42 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 4/1/2024 10:29 AM  
 Saved By: MZARETSKY  
 File: C:\pwworking\hdr\_sites\_reservoir\hms01215\MPG-2230-E-3001.dwg

PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL-TO-METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO-CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES					
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	REQUIRED	RECOMMENDED	
230	230	900	13'-9"	15'-0"	8'-3"
230	230	900	13'-9"	15'-0"	21'-11"

PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT					
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO-CENTERLINE PHASE SPACING FOR RIGID BUSES
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED	
230	230	900	5'-11"	6'-4"	11'-0"

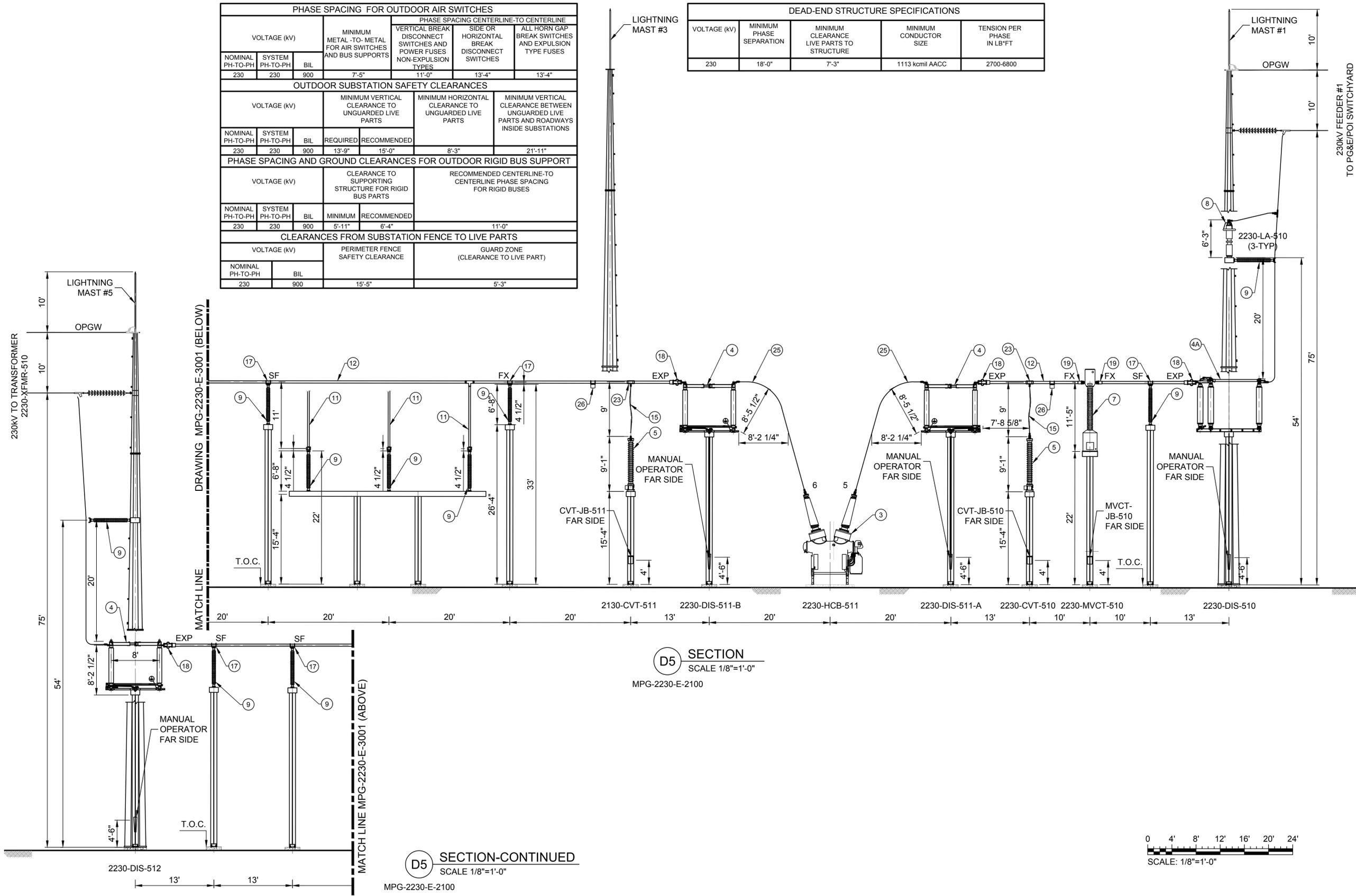
  

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS			
VOLTAGE (kV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)
NOMINAL PH-TO-PH	BIL		
230	900	15'-5"	5'-3"

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB-FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

**GENERAL NOTES**

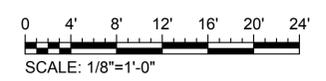
- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
 BILL OF MATERIAL: MPG-2230-E-2109  
 EQUIPMENT SECTIONS - SECTOR 2: MPG-2230-E-3002  
 EQUIPMENT SECTIONS - SECTOR 3: MPG-2230-E-3003  
 EQUIPMENT SECTIONS - SECTOR 4: MPG-2230-E-3004  
 EQUIPMENT SECTIONS - SECTOR 5: MPG-2230-E-3005  
 EQUIPMENT SECTIONS - SECTOR 6: MPG-2230-E-3006  
 ONE LINE DIAGRAM: MPG-2230-E-6001



**SHEET KEY NOTES**

- ABBREVIATIONS
- SF : SLIP-FIT FITTING
  - FX : FIXED BUS SUPPORT FITTING
  - EXP : EXPANSION TYPE FITTING/CONNECTOR
  - OPGW : OPTICAL GROUND WIRE

**KEY PLAN**



REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831

**VANDERWEIL POWER GROUP**  
 P.O. Box 100  
 174 Adams Street  
 Boston, MA 02210

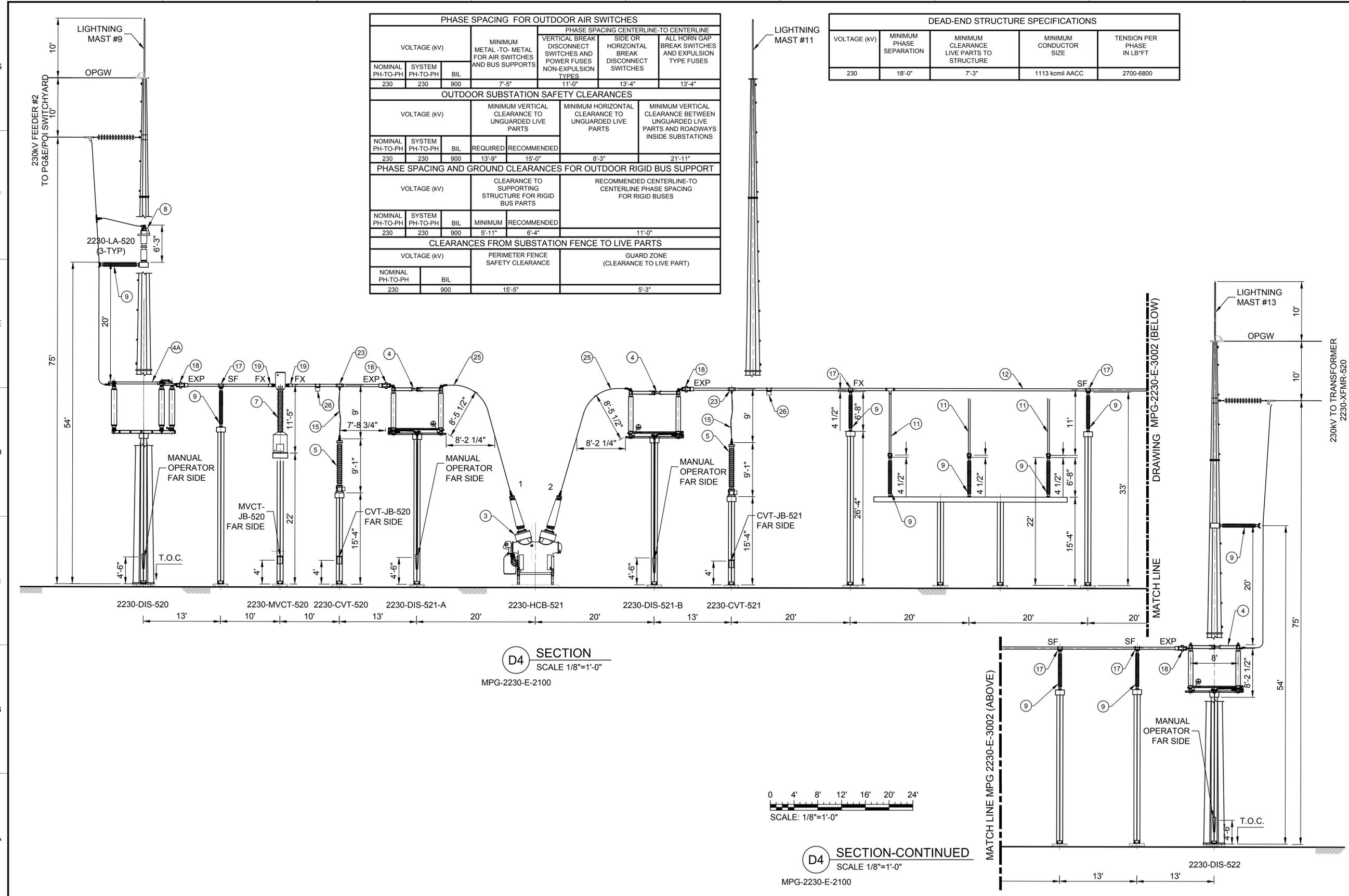
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT SECTIONS SHEET 1

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1" 1"  
 DRAWING NO. MPG-2230-E-3001  
 SHT 43 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL TO METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO-CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES						
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL			REQUIRED	RECOMMENDED
230	230	900	13'-9"	15'-0"	8'-3"	21'-11"

PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT						
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO-CENTERLINE PHASE SPACING FOR RIGID BUSES	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED		
230	230	900	5'-11"	6'-4"	11'-0"	

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS			
VOLTAGE (kV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)
NOMINAL PH-TO-PH	BIL		
230	900	15'-5"	5'-3"

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

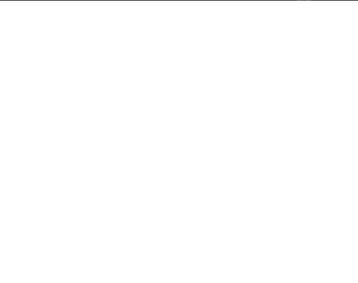
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
 BILL OF MATERIAL: MPG-2230-E-2109  
 EQUIPMENT SECTIONS - SECTOR 1: MPG-2230-E-3001  
 EQUIPMENT SECTIONS - SECTOR 3: MPG-2230-E-3003  
 EQUIPMENT SECTIONS - SECTOR 4: MPG-2230-E-3004  
 EQUIPMENT SECTIONS - SECTOR 5: MPG-2230-E-3005  
 EQUIPMENT SECTIONS - SECTOR 6: MPG-2230-E-3006  
 ONE LINE DIAGRAM: MPG-2230-E-6001

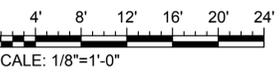
**SHEET KEY NOTES**

- ABBREVIATIONS
- SF : SLIP-FIT FITTING
  - FX : FIXED BUS SUPPORT FITTING
  - EXP : EXPANSION TYPE FITTING/CONNECTOR
  - OPGW : OPTICAL GROUND WIRE

**KEY PLAN**



**D4 SECTION**  
SCALE 1/8"=1'-0"  
MPG-2230-E-2100



**D4 SECTION-CONTINUED**  
SCALE 1/8"=1'-0"  
MPG-2230-E-2100

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 File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-3002.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831

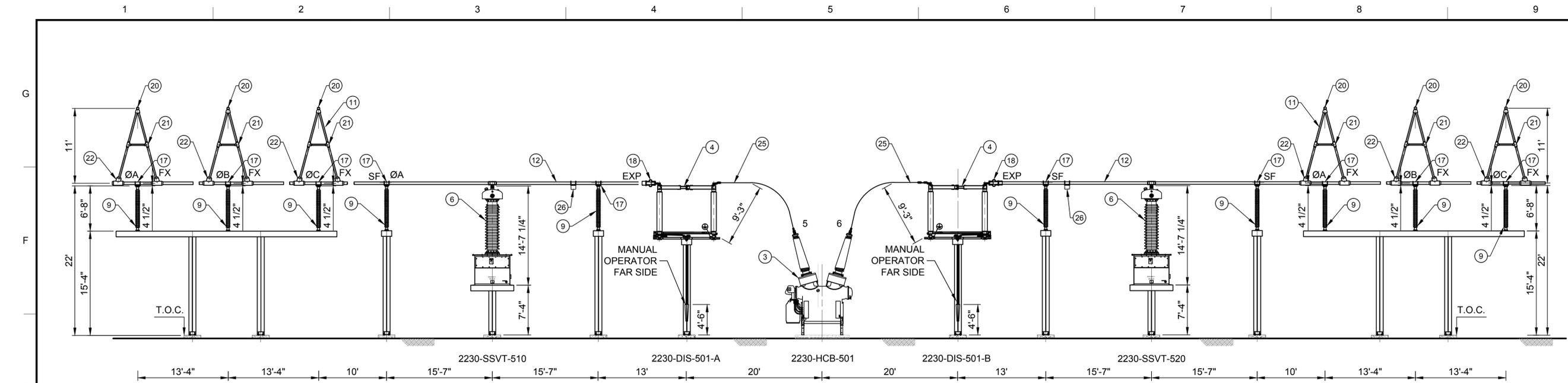
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-223-7423 TEL  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

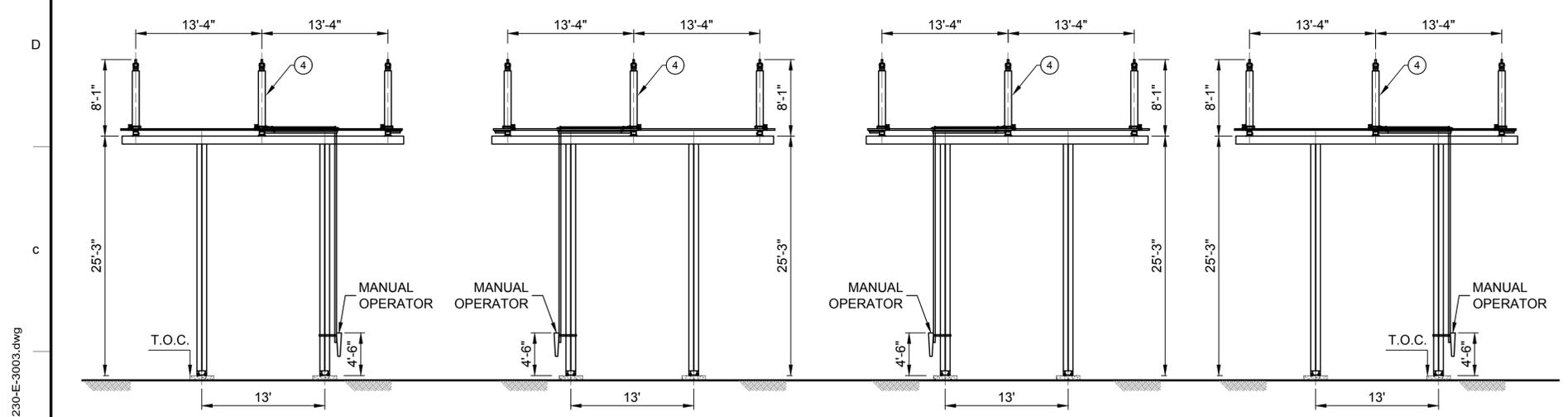
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT SECTIONS SHEET 2

VERIFY SCALES	BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.
	0 1"
DRAWING NO.	MPG-2230-E-3002
SHT	44 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**F5 SECTION**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2100



**B1 SECTION DIS 511A**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2103

**B3 SECTION DIS 511-B**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2103

**B4 SECTION DIS 521-A**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2105

**B6 SECTION DIS 521-B**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2105

PHASE SPACING FOR OUTDOOR AIR SWITCHES					
VOLTAGE (KV)			PHASE SPACING CENTERLINE-TO-CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM METAL-TO-METAL FOR AIR SWITCHES AND BUS SUPPORTS	VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
230	230	900	7'-5"	11'-0"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES					
VOLTAGE (KV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	REQUIRED	RECOMMENDED	
230	230	900	13'-9"	15'-0"	8'-3" / 21'-11"

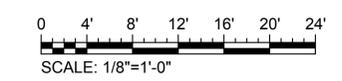
PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT					
VOLTAGE (KV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED	RECOMMENDED CENTERLINE-TO-CENTERLINE PHASE SPACING FOR RIGID BUSES
230	230	900	5'-11"	6'-4"	11'-0"

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS			
VOLTAGE (KV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)
NOMINAL PH-TO-PH	BIL		
230	900	15'-5"	5'-3"

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (KV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800



**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
  - EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100
  - BILL OF MATERIAL: MPG-2230-E-2109
  - EQUIPMENT SECTIONS - SECTOR 1: MPG-2230-E-3001
  - EQUIPMENT SECTIONS - SECTOR 2: MPG-2230-E-3002
  - EQUIPMENT SECTIONS - SECTOR 4: MPG-2230-E-3004
  - EQUIPMENT SECTIONS - SECTOR 5: MPG-2230-E-3005
  - EQUIPMENT SECTIONS - SECTOR 6: MPG-2230-E-3006
  - ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ABBREVIATIONS
- SF : SLIP-FIT FITTING
  - FX : FIXED BUS SUPPORT FITTING
  - EXP : EXPANSION TYPE FITTING/CONNECTOR
  - OPGW : OPTICAL GROUND WIRE

**KEY MAP**



Plot Date: 4/1/2024 10:34 AM Saved By: MZARETSKY File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-E-3003.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831

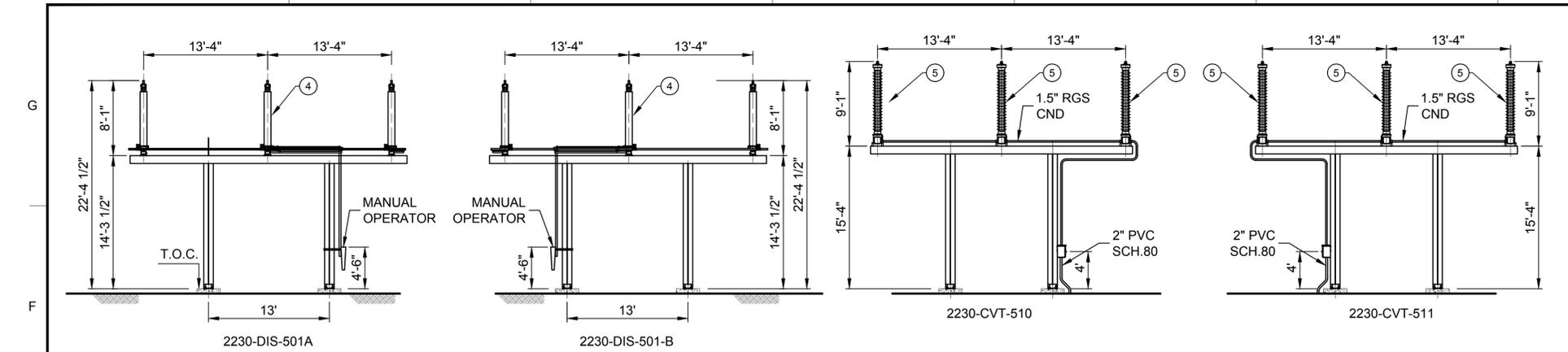
**VANDERWEIL POWER GROUP**  
 R/G Vanderweil Engineers, LLP  
 714 Vermont Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 EQUIPMENT SECTIONS SHEET 3

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
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 DRAWING NO.  
 MPG-2230-E-3003  
 SHT 45 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

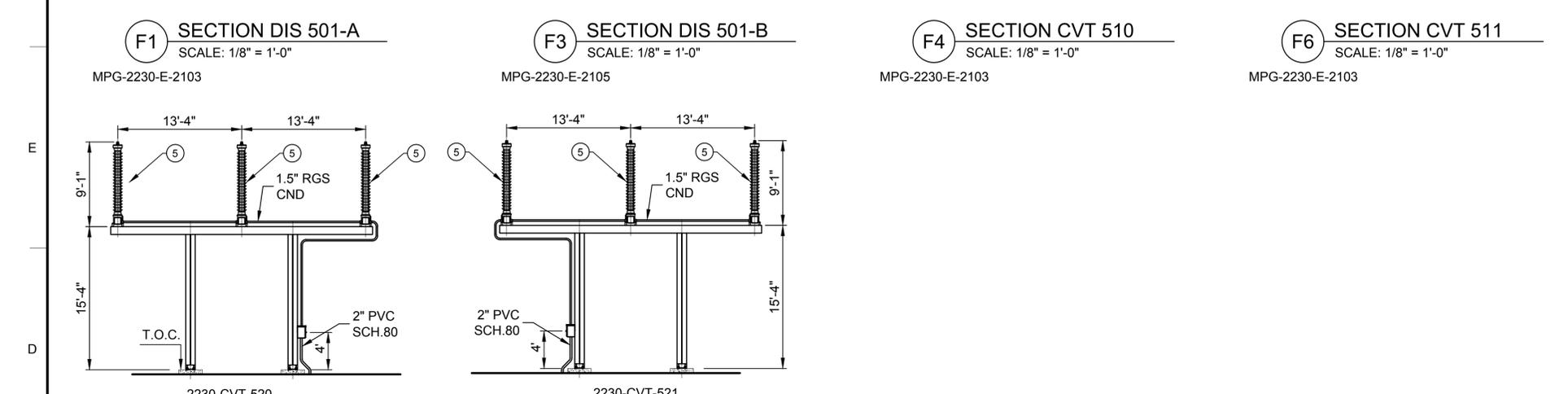


**F1 SECTION DIS 501-A**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2103

**F3 SECTION DIS 501-B**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2105

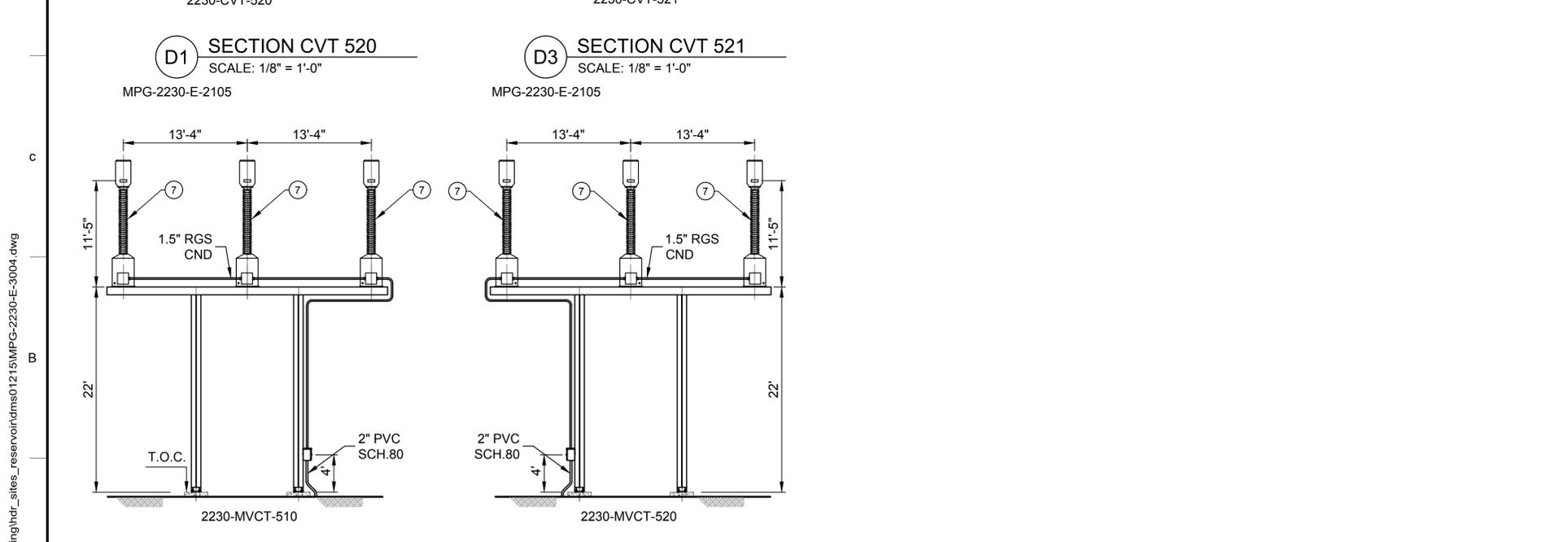
**F4 SECTION CVT 510**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2103

**F6 SECTION CVT 511**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2103



**D1 SECTION CVT 520**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2105

**D3 SECTION CVT 521**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2105



**A1 SECTION MVCT 510**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2103

**A3 SECTION MVCT 520**  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2105

PHASE SPACING FOR OUTDOOR AIR SWITCHES				
VOLTAGE (kV)		MINIMUM METAL-TO-METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO-CENTERLINE	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES
230	230	900	7'-5"	11'-0"
				13'-4"
				13'-4"
OUTDOOR SUBSTATION SAFETY CLEARANCES				
VOLTAGE (kV)		MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	REQUIRED	RECOMMENDED
230	230	900	13'-9"	15'-0"
			8'-3"	21'-11"
PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT				
VOLTAGE (kV)		CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS	RECOMMENDED CENTERLINE-TO-CENTERLINE PHASE SPACING FOR RIGID BUSES	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED
230	230	900	5'-11"	6'-4"
				11'-0"
CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS				
VOLTAGE (kV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)	
NOMINAL PH-TO-PH	BIL			
230	900	15'-5"		5'-3"
DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

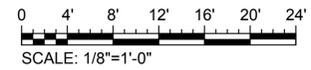
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
BILL OF MATERIAL: MPG-2230-E-2109  
EQUIPMENT SECTIONS - SECTOR 1: MPG-2230-E-3001  
EQUIPMENT SECTIONS - SECTOR 2: MPG-2230-E-3002  
EQUIPMENT SECTIONS - SECTOR 3: MPG-2230-E-3003  
EQUIPMENT SECTIONS - SECTOR 5: MPG-2230-E-3005  
EQUIPMENT SECTIONS - SECTOR 6: MPG-2230-E-3006  
ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ABBREVIATIONS
- SF : SLIP-FIT FITTING
  - FX : FIXED BUS SUPPORT FITTING
  - EXP : EXPANSION TYPE FITTING/CONNECTOR
  - OPGW : OPTICAL GROUND WIRE

**KEY MAP**



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Print Date: 4/1/2024 10:36 AM  
Saved By: MZARETSKY

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

**Jacobs**  
2525 AIRPARK DR  
REDDING, CA 96001  
(530) 243-5831

**VANDERWEIL**  
POWER GROUP  
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REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA



**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
EQUIPMENT SECTIONS SHEET 4

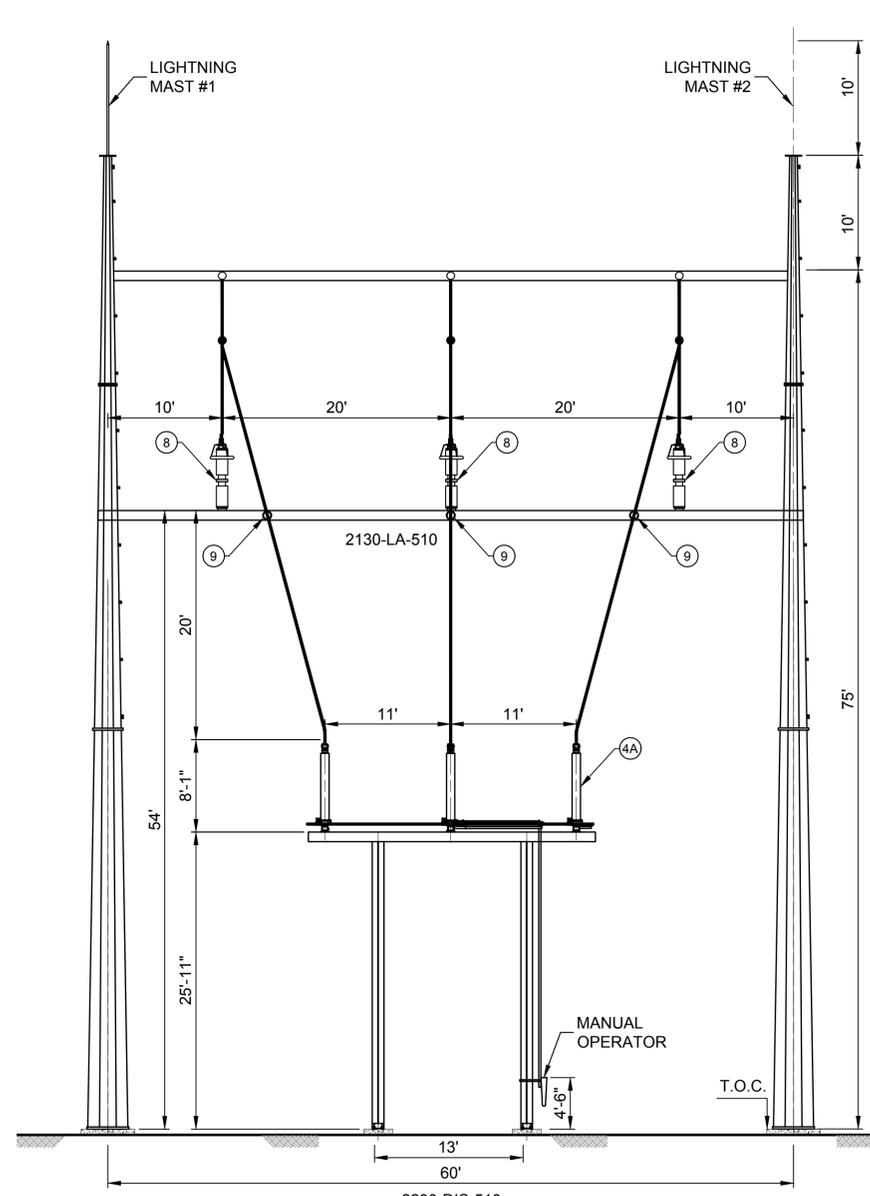
VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 1" SCALE

DRAWING NO.  
MPG-2230-E-3004  
SHT 46 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL-TO-METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO-CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES						
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
230	230	900	13'-9"	15'-0"	8'-3"	21'-11"

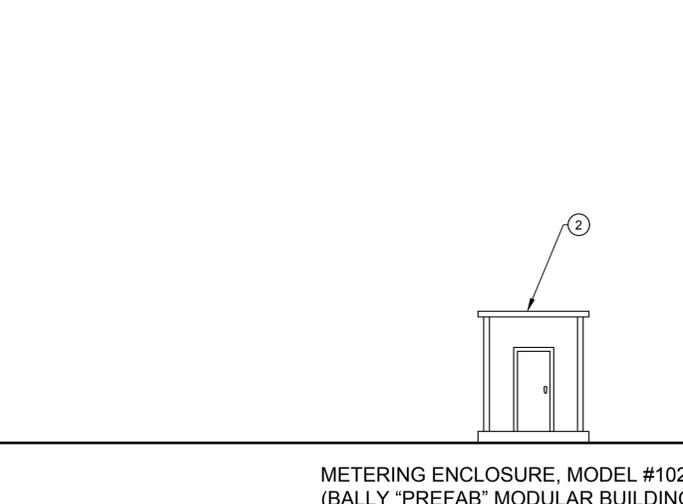
PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT						
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO-CENTERLINE PHASE SPACING FOR RIGID BUSES	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED		
230	230	900	5'-11"	6'-4"	11'-0"	

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS			
VOLTAGE (kV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)
NOMINAL PH-TO-PH	BIL		
230	900	15'-5"	5'-3"

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800



METERING ENCLOSURE, MODEL #102 (BALLY "PREFAB" MODULAR BUILDING)

SECTION DIS-510, LA-510, DIS-520, LA-520

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

MPG-2230-E-2100

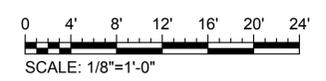
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:
- EQUIPMENT PLAN, OVERALL SITE:  
MPG-2230-E-2100
- BILL OF MATERIAL  
MPG-2230-E-2109
- EQUIPMENT SECTIONS - SECTOR 1:  
MPG-2230-E-3001
- EQUIPMENT SECTIONS - SECTOR 2:  
MPG-2230-E-3002
- EQUIPMENT SECTIONS - SECTOR 3:  
MPG-2230-E-3003
- EQUIPMENT SECTIONS - SECTOR 4:  
MPG-2230-E-3004
- EQUIPMENT SECTIONS - SECTOR 6:  
MPG-2230-E-3006
- ONE LINE DIAGRAM:  
MPG-2230-E-6001

**SHEET KEY NOTES**

- ABBREVIATIONS
- SF : SLIP-FIT FITTING
  - FX : FIXED BUS SUPPORT FITTING
  - EXP : EXPANSION TYPE FITTING/CONNECTOR
  - OPGW : OPTICAL GROUND WIRE

**KEY MAP**



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 Saved By: MZARETSKY

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

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CALIFORNIA

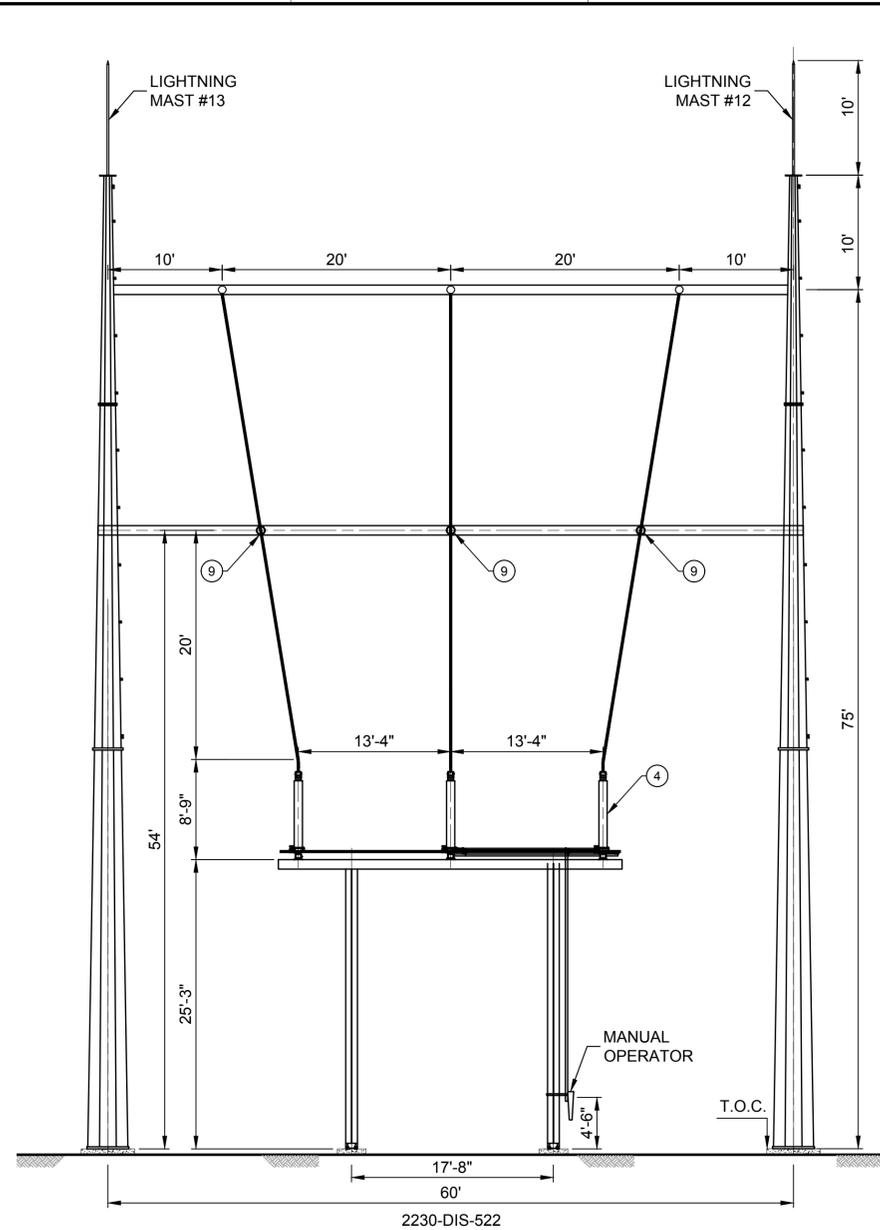


**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
EQUIPMENT SECTIONS SHEET 5

VERIFY SCALES	BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
	0 4 8 12 16 20 24 1"
DRAWING NO.	MPG-2230-E-3005
SHT	47 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL-TO-METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO-CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

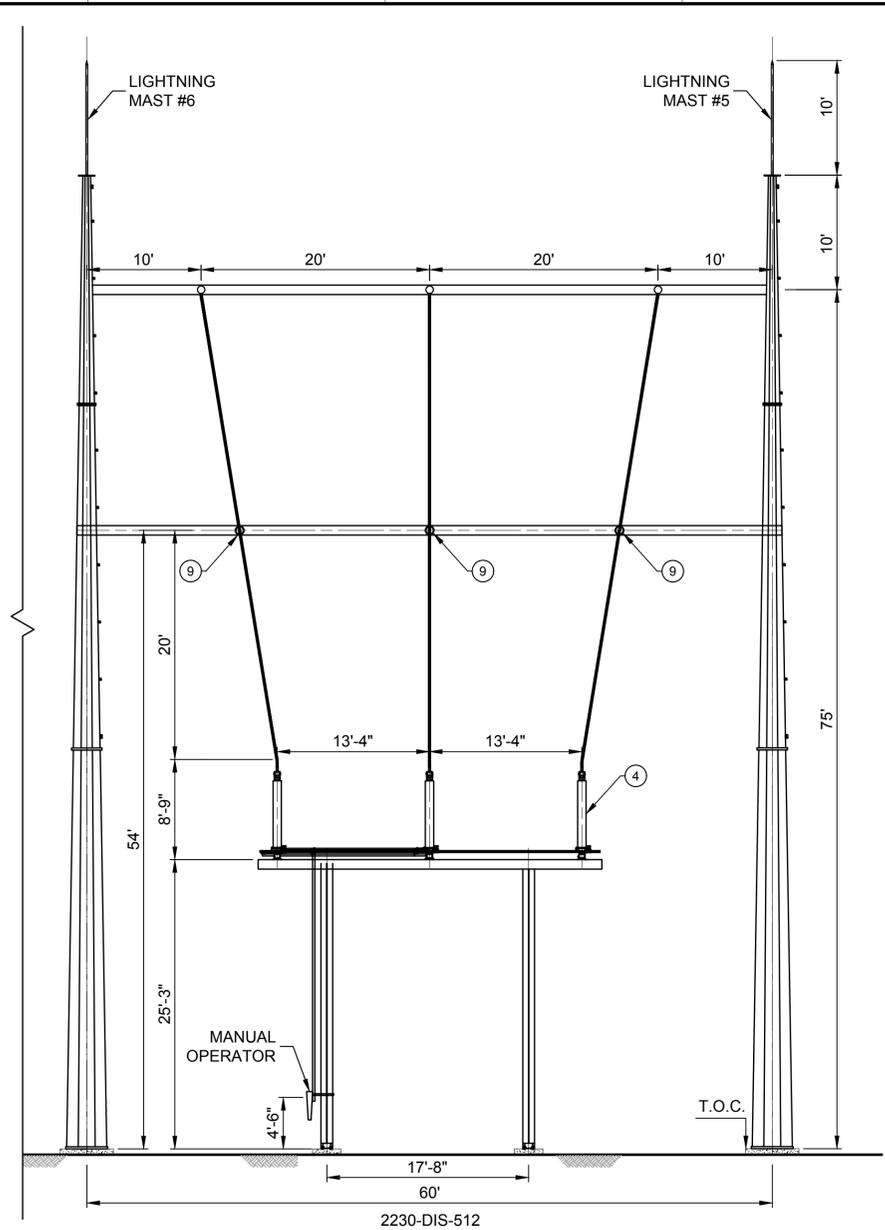
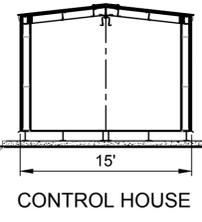
OUTDOOR SUBSTATION SAFETY CLEARANCES					
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	REQUIRED	RECOMMENDED	
230	230	900	13'-9"	15'-0"	8'-3"
			RECOMMENDED CENTERLINE-TO-CENTERLINE PHASE SPACING FOR RIGID BUSES		
			11'-0"		

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS					
VOLTAGE (kV)			PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)	
NOMINAL PH-TO-PH	BIL				
230	900		15'-5"	5'-3"	

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800



**C5** SECTION DIS-512-A, DIS-522-A  
SCALE: 1/8" = 1'-0"  
MPG-2230-E-2100

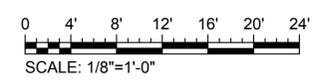
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
BILL OF MATERIAL: MPG-2230-E-2109  
EQUIPMENT SECTIONS - SECTOR 1: MPG-2230-E-3001  
EQUIPMENT SECTIONS - SECTOR 2: MPG-2230-E-3002  
EQUIPMENT SECTIONS - SECTOR 3: MPG-2230-E-3003  
EQUIPMENT SECTIONS - SECTOR 4: MPG-2230-E-3004  
EQUIPMENT SECTIONS - SECTOR 5: MPG-2230-E-3005  
ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ABBREVIATIONS
- SF : SLIP-FIT FITTING
  - FX : FIXED BUS SUPPORT FITTING
  - EXP : EXPANSION TYPE FITTING/CONNECTOR
  - OPGW : OPTICAL GROUND WIRE

**KEY MAP**



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

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E 23322  
CALIFORNIA



**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
EQUIPMENT SECTIONS SHEET 6

VERIFY SCALES	BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
	0 1"
DRAWING NO.	MPG-2230-E-3006
SHT	48 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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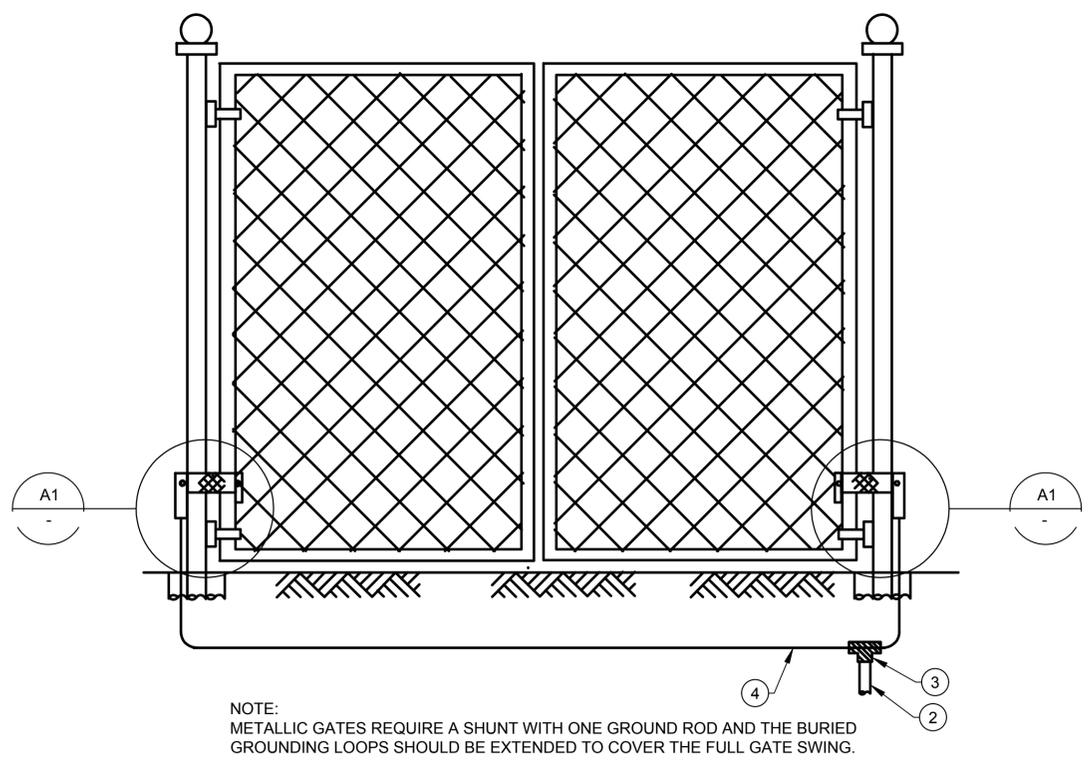
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 OVERALL GROUNDING PLAN:  
 MPG-2230-E-2300  
 BILL OF MATERIAL:  
 MPG-2230-E-2300

**SHEET KEY NOTES**

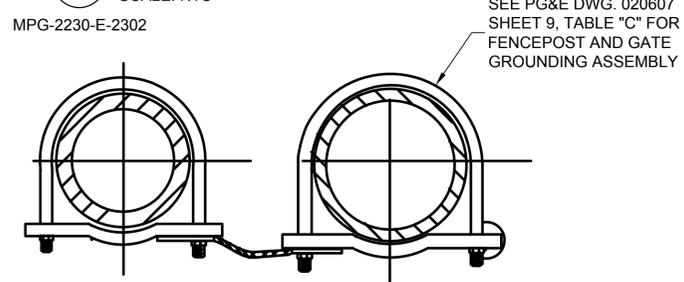
**KEY MAP**

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1"  
 DRAWING NO.  
 MPG-2230-E-5001  
 SHT 49 OF 106

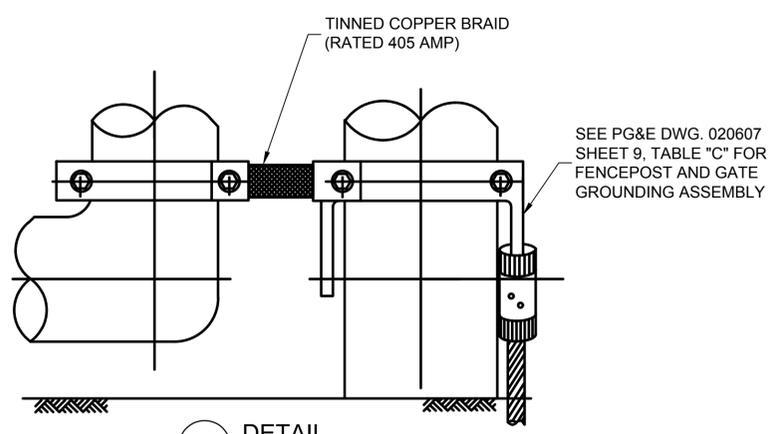


NOTE:  
 METALLIC GATES REQUIRE A SHUNT WITH ONE GROUND ROD AND THE BURIED GROUNDING LOOPS SHOULD BE EXTENDED TO COVER THE FULL GATE SWING.

**D1** DETAIL (GROUNDING OF GATE)  
 SCALE: NTS  
 MPG-2230-E-2302



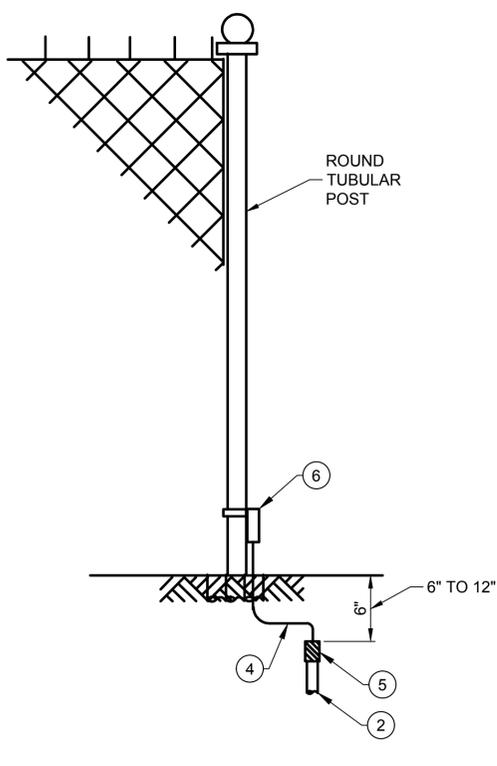
SEE PG&E DWG. 020607 SHEET 9, TABLE "C" FOR FENCEPOST AND GATE GROUNDING ASSEMBLY



**A1** DETAIL  
 SCALE: NTS

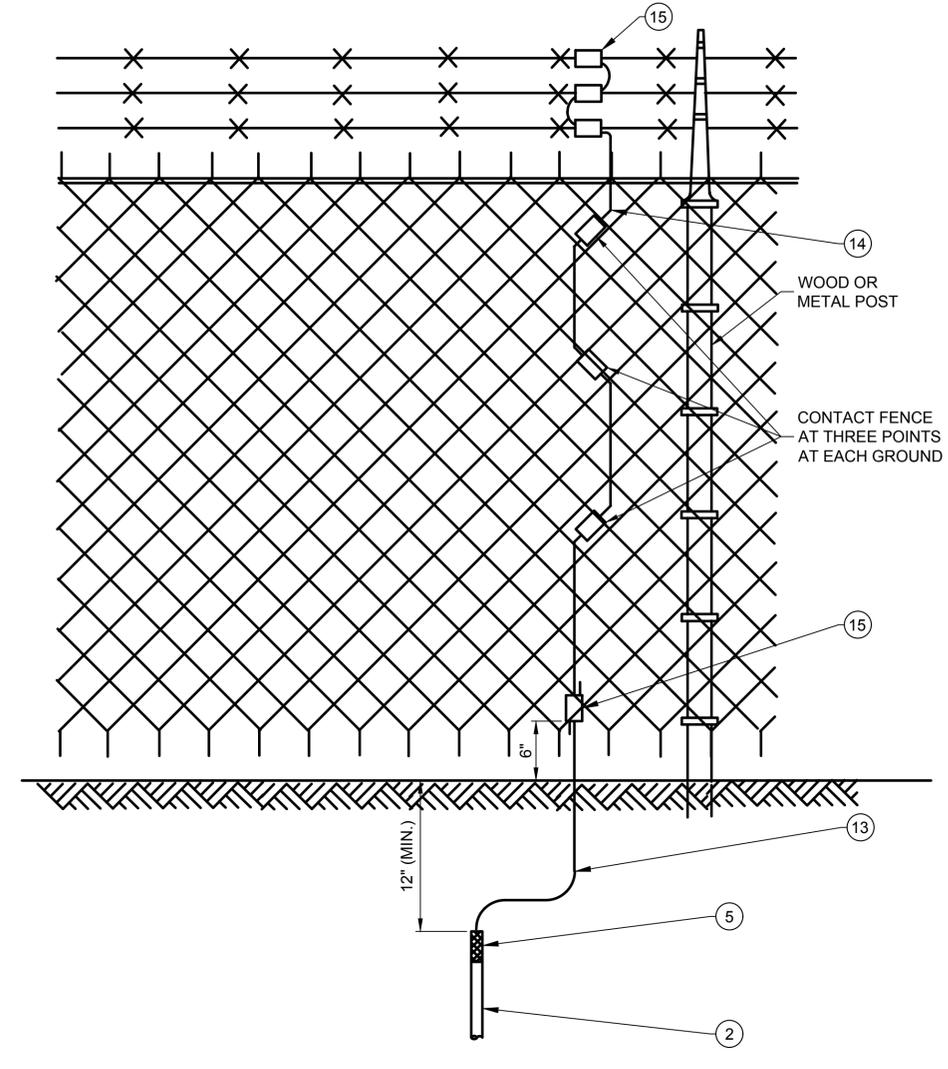
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SEE PG&E DWG. 020607 SHEET 9, TABLE "C" FOR FENCEPOST AND GATE GROUNDING ASSEMBLY



**D4** DETAIL (GROUNDING OF POST)  
 SCALE: NTS  
 MPG-2230-E-2301

ROUND TUBULAR POST



**C7** DETAIL (GROUNDING OF FENCE)  
 SCALE: NTS  
 MPG-2230-E-2301

WOOD OR METAL POST

CONTACT FENCE AT THREE POINTS AT EACH GROUND

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

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 914 Summer Street  
 Boston, MA 02210

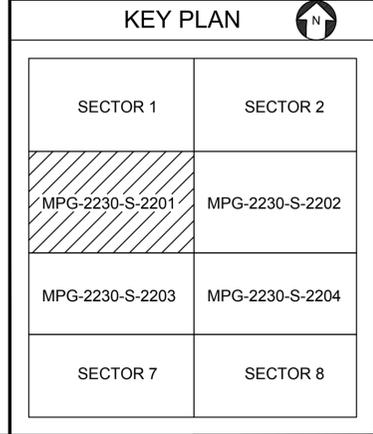
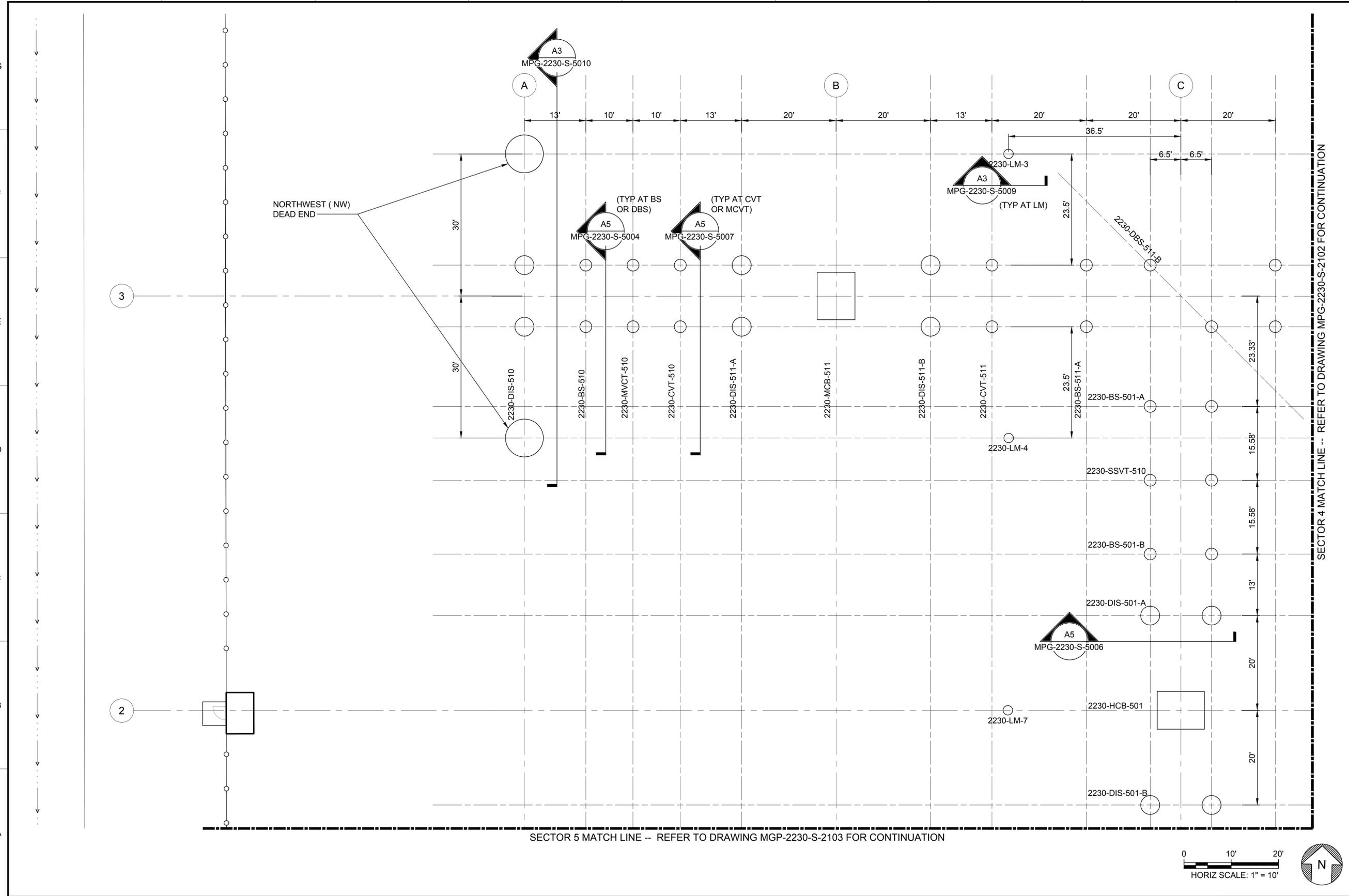
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 GROUNDING DETAILS

PRELIMINARY - NOT FOR CONSTRUCTION

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REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

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**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-233-7423 TEL  
 714 Adams Street  
 Boston, MA 02210

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 PROFESSIONAL  
 ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



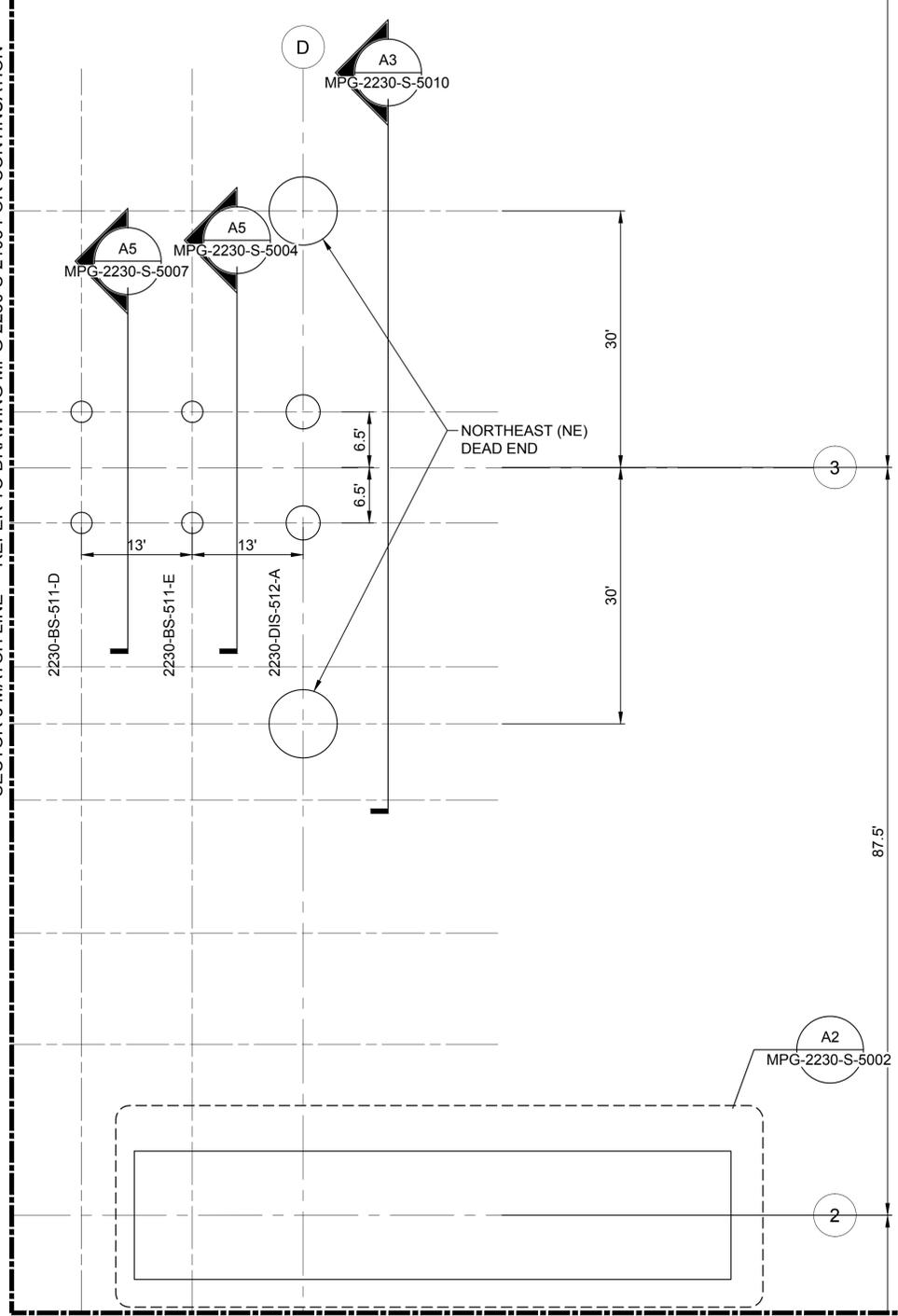
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 FOUNDATION PLAN SECTOR 3

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
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 REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2230-S-2101  
 SHT 59 OF 106

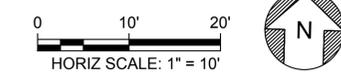
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SECTOR 3 MATCH LINE -- REFER TO DRAWING MPG-2230-S-2103 FOR CONTINUATION



SECTOR 6 MATCH LINE -- REFER TO DRAWING MPG-2230-S-2104 FOR CONTINUATION



**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.
- FOR FOUNDATION KEY PLAN REFER TO DRAWING MPG-2230-2100.
- FOR AUGER DRILLED CAST-IN-PLACE CONCRETE PIER ELEVATION, SIZE AND DETAILS REFER TO DRAWING MPG-2230-S-2100.

**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2130-S-2101	MPG-2130-S-2102
MPG-2130-S-2103	MPG-2130-S-2104
SECTOR 7	SECTOR 8

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: N. MCMAHON  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



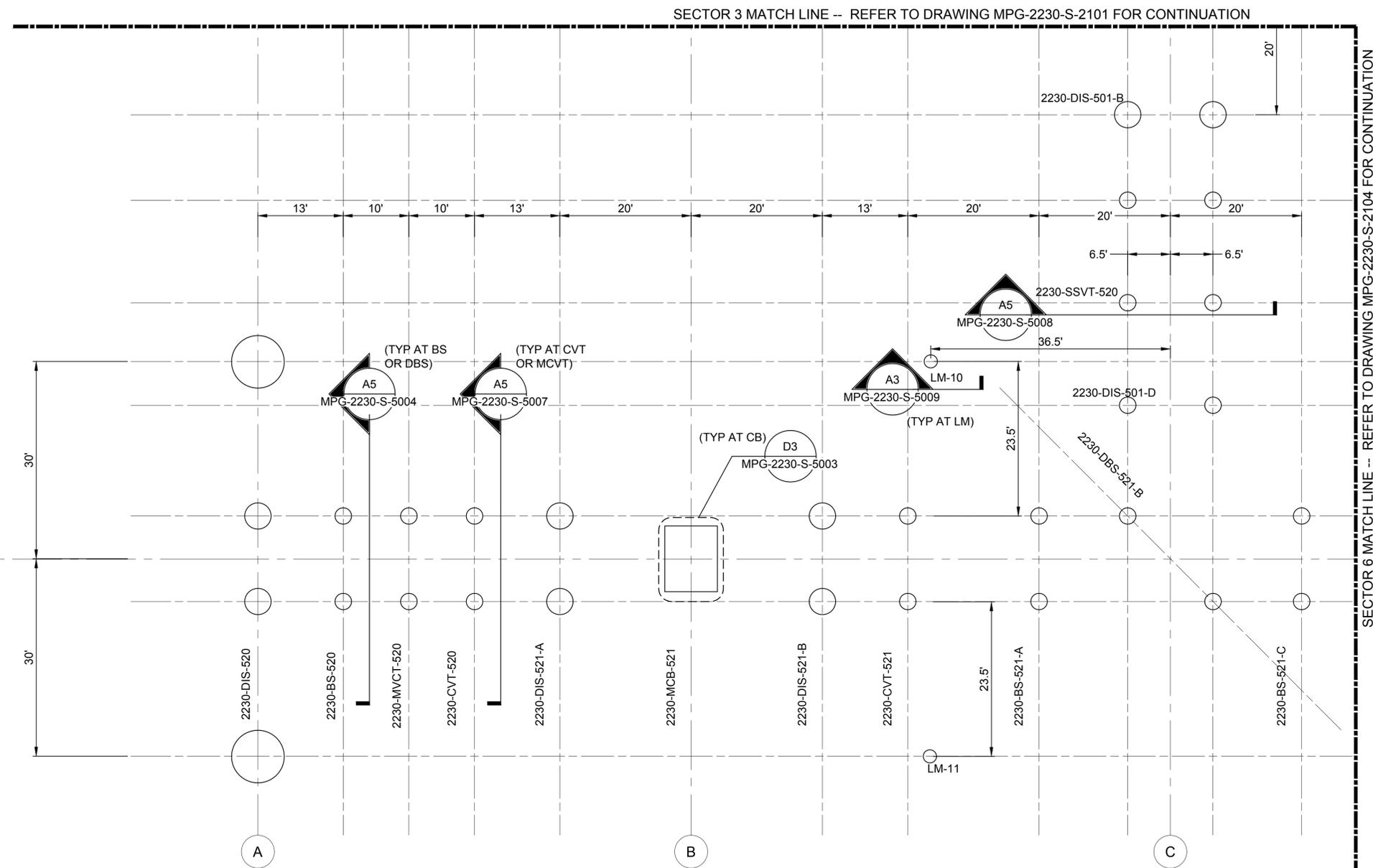
REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



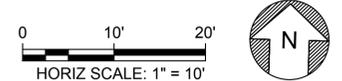
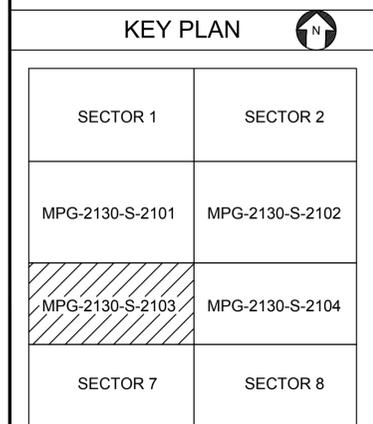
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 FOUNDATION PLAN SECTOR 4

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1"  
 DRAWING NO.  
 MPG-2230-S-2102  
 SHT 60 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



- ### GENERAL NOTES
- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.
  - FOR FOUNDATION KEY PLAN REFER TO DRAWING MPG-2230-2100.
  - FOR AUGER DRILLED CAST-IN-PLACE CONCRETE PIER ELEVATION, SIZE AND DETAILS REFER TO DRAWING MPG-2230-S-6100.



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REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

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 REDDING, CA 96001  
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 R.G. Vanderweil Engineers, LLP  
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 714-444-0844 FAX  
 Boston, MA 02210

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 C 89993  
 CALIFORNIA



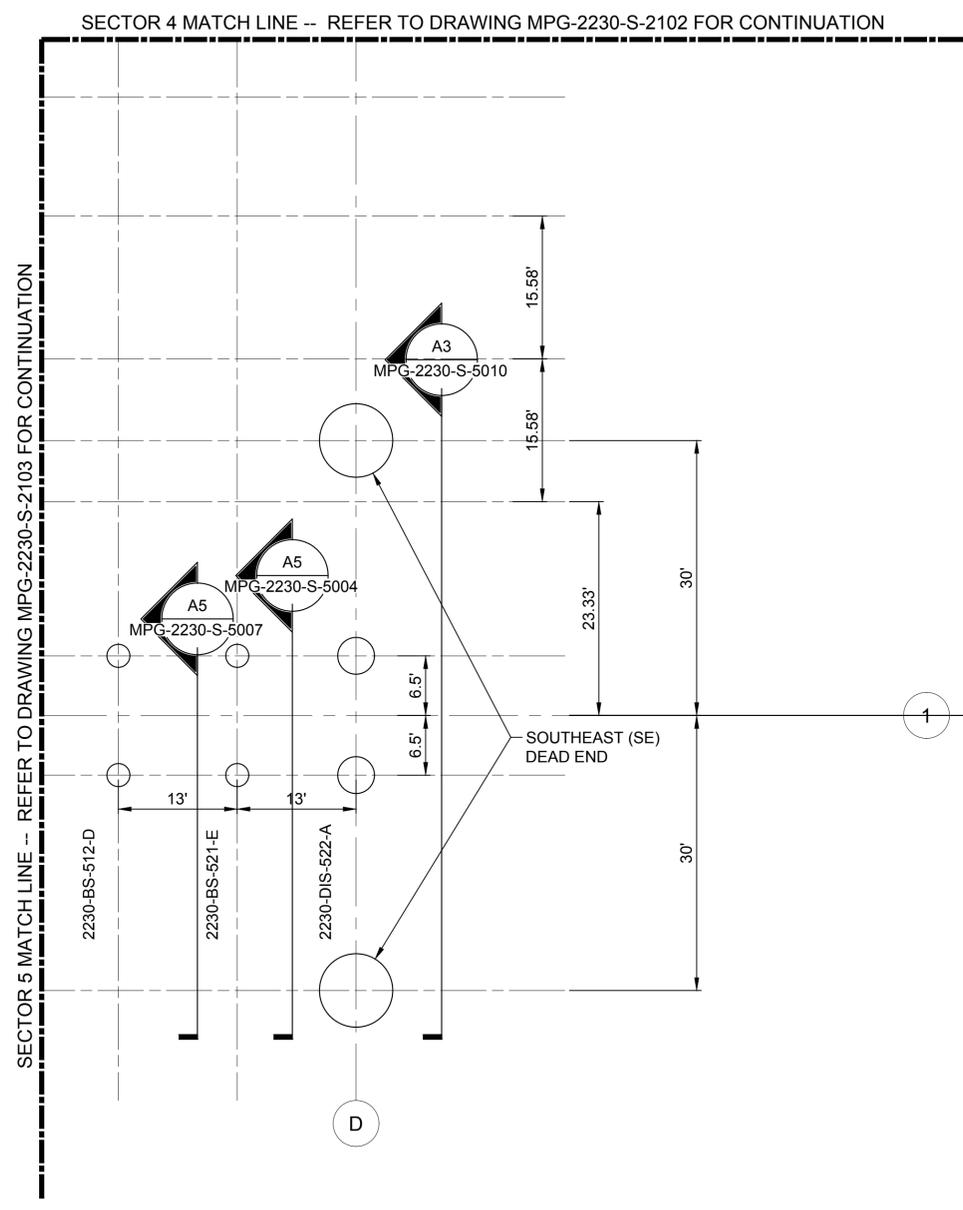
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 FOUNDATION PLAN SECTOR 5

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 10' 1"

DRAWING NO.  
 MPG-2230-S-2103  
 SHT 61 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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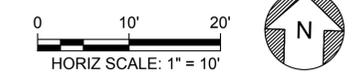


**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.
- FOR FOUNDATION KEY PLAN REFER TO DRAWING MPG-2230-2100.
- FOR AUGER DRILLED CAST-IN-PLACE CONCRETE PIER ELEVATION, SIZE AND DETAILS REFER TO DRAWING MPG-2230-S-6100.

**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2130-S-2101	MPG-2130-S-2102
MPG-2130-S-2103	MPG-2130-S-2104
SECTOR 7	SECTOR 8



REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
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 C 89993  
 CALIFORNIA

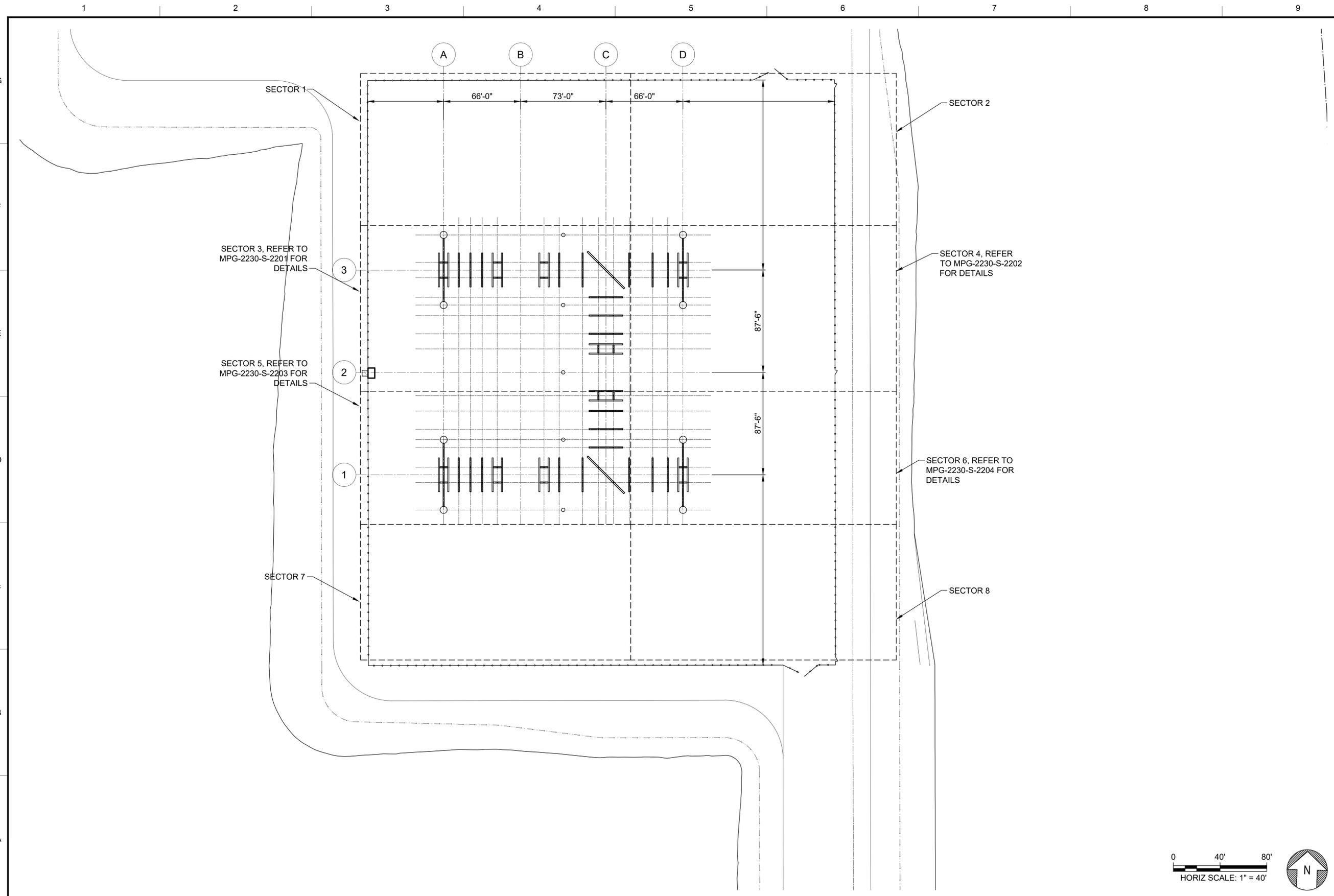


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 FOUNDATION PLAN SECTOR 6

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 10 20 1"  
 DRAWING NO. MPG-2230-S-2104  
 SHT 62 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 4/9/2024 11:02 AM  
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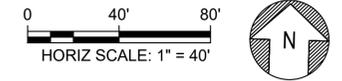


**GENERAL NOTES**

1. FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
 MPG-0001-G-0301 AND  
 MPG-0001-G-0302.

**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2230-S-2201	MPG-2230-S-2202
MPG-2230-S-2203	MPG-2230-S-2204
SECTOR 7	SECTOR 8



REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
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**VANDERWEIL**  
 POWER GROUP  
 R.G. Vanderweil Engineers, LLP  
 174 Worcester Street  
 Boston, MA 02210

REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
 STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 STEEL STRUCTURE KEY PLAN

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS

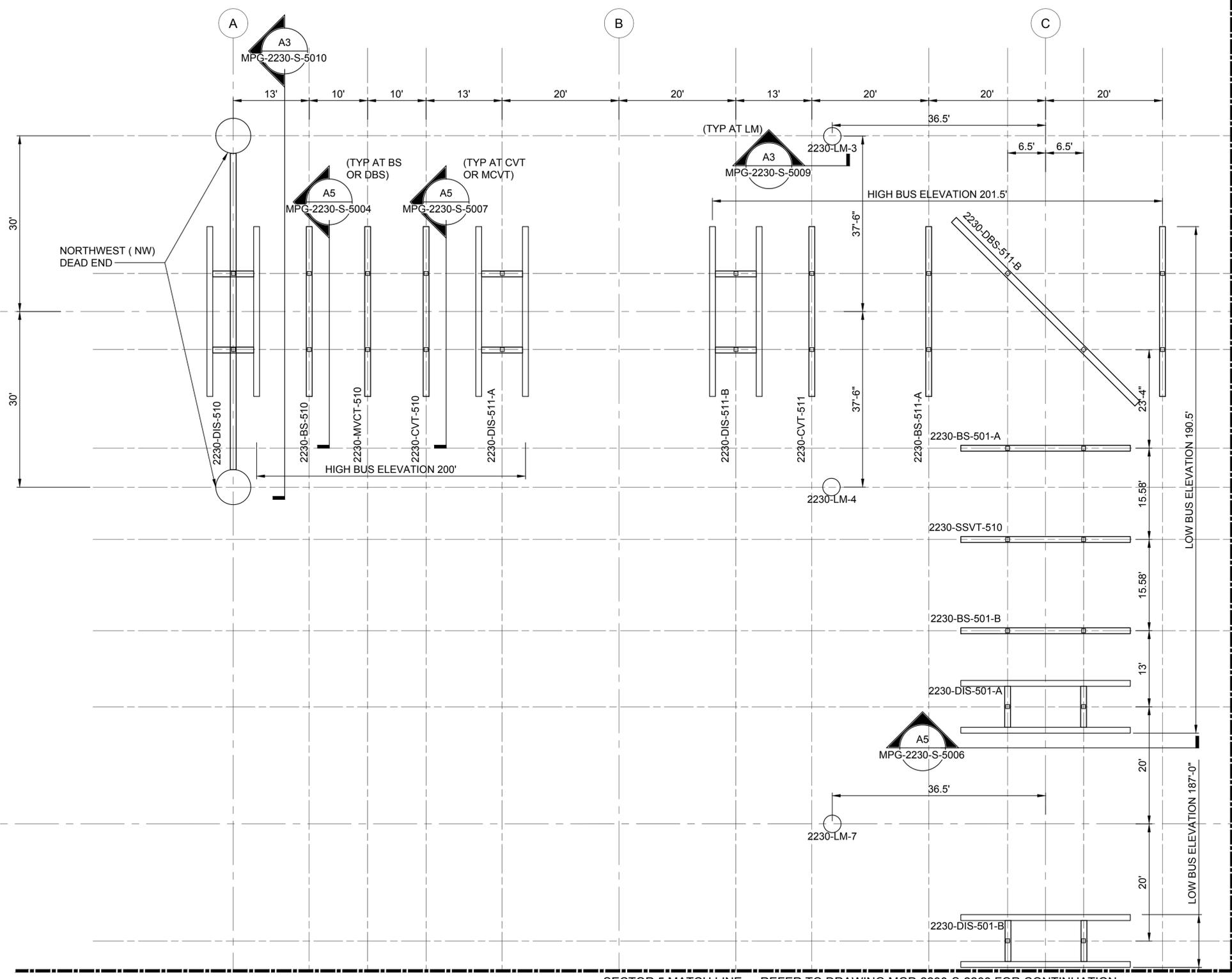
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DRAWING NO.  
 MPG-2230-S-2200  
 SHT 63 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

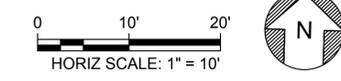
**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
MPG-0001-G-0301 AND  
MPG-0001-G-0302.
- FOR STRUCTURE KEY PLAN REFER TO DRAWING MPG-2230-2200



SECTOR 4 MATCH LINE -- REFER TO DRAWING MGP-2230-S-2202 FOR CONTINUATION

SECTOR 5 MATCH LINE -- REFER TO DRAWING MGP-2230-S-2203 FOR CONTINUATION



**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2230-S-2201	MPG-2230-S-2202
MPG-2230-S-2203	MPG-2230-S-2204
SECTOR 7	SECTOR 8

Plot Date: 4/3/2024 10:20 AM  
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File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-S-2201.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

**Jacobs**  
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REDDING, CA 96001  
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POWER GROUP  
P.O. Box 100  
Barnstable, MA 02715

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PROFESSIONAL  
ENGINEER  
WAYNE E SILADI  
C 89993  
CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
STRUCTURAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
STEEL STRUCTURE PLAN SECTOR 3

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL  
DRAWING. ADJUST SCALES FOR  
REDUCED PLOTS

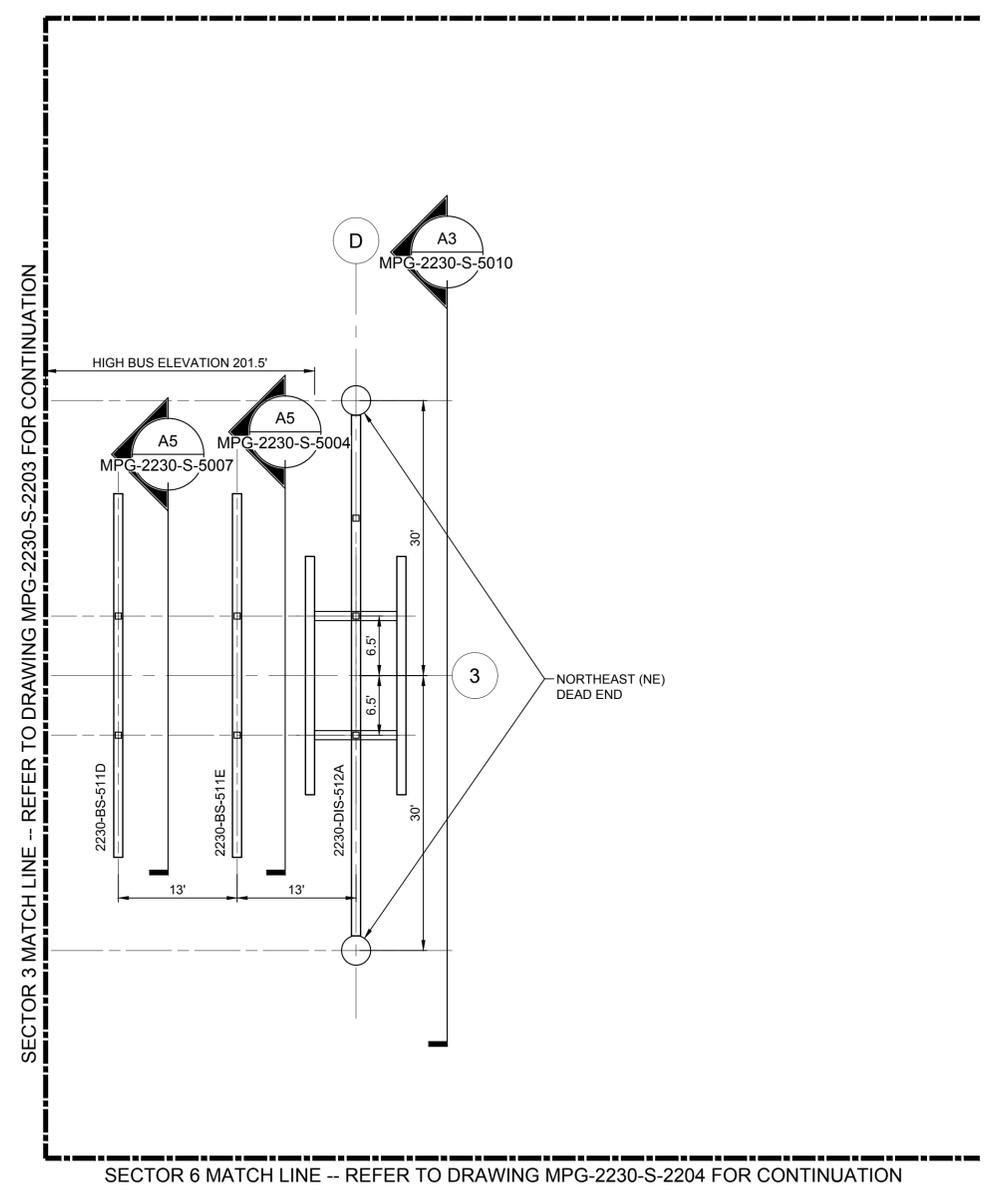
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DRAWING NO.  
MPG-2230-S-2201  
SHT 64 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

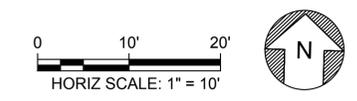
**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
MPG-0001-G-0301 AND  
MPG-0001-G-0302.
- FOR STRUCTURE KEY PLAN REFER TO DRAWING MPG-2230-S-2200



**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2230-S-2201	MPG-2230-S-2202
MPG-2230-S-2203	MPG-2230-S-2204
SECTOR 7	SECTOR 8



Plot Date: 4/3/2024 10:26 AM  
 Saved By: EBORDENAVE  
 File: C:\pwworking\hdr\_sites\_reservoir\dms012151\MPG-2230-S-2202.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 STEEL STRUCTURE PLAN SECTOR 4

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 DRAWING NO.  
 MPG-2230-S-2202  
 SHT 65 OF 106

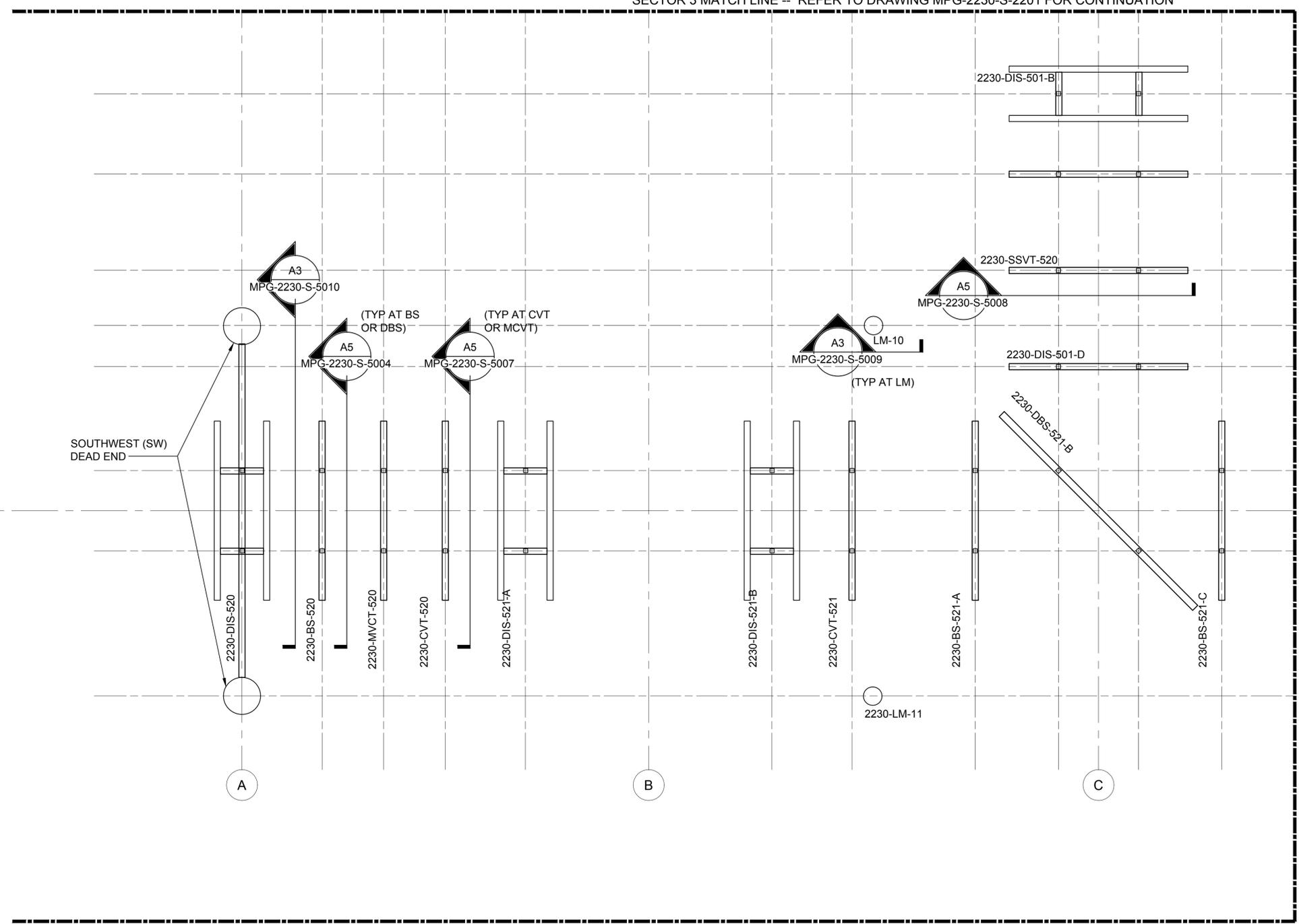
PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
MPG-0001-G-0301 AND  
MPG-0001-G-0302.
- FOR STRUCTURE KEY PLAN REFER TO DRAWING MPG-2230-2200

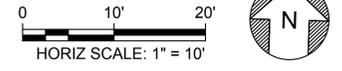
SECTOR 3 MATCH LINE -- REFER TO DRAWING MPG-2230-S-2201 FOR CONTINUATION

SECTOR 6 MATCH LINE -- REFER TO DRAWING MPG-2230-S-2106 FOR CONTINUATION



**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2230-S-2201	MPG-2230-S-2202
MPG-2230-S-2203	MPG-2230-S-2204
SECTOR 7	SECTOR 8



Plot Date: 4/3/2024 10:27 AM  
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File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-S-2203.dwg

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024



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PROFESSIONAL  
ENGINEER  
WAYNE E SILADI  
C 89993  
CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
STRUCTURAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
STEEL STRUCTURE PLAN SECTOR 5

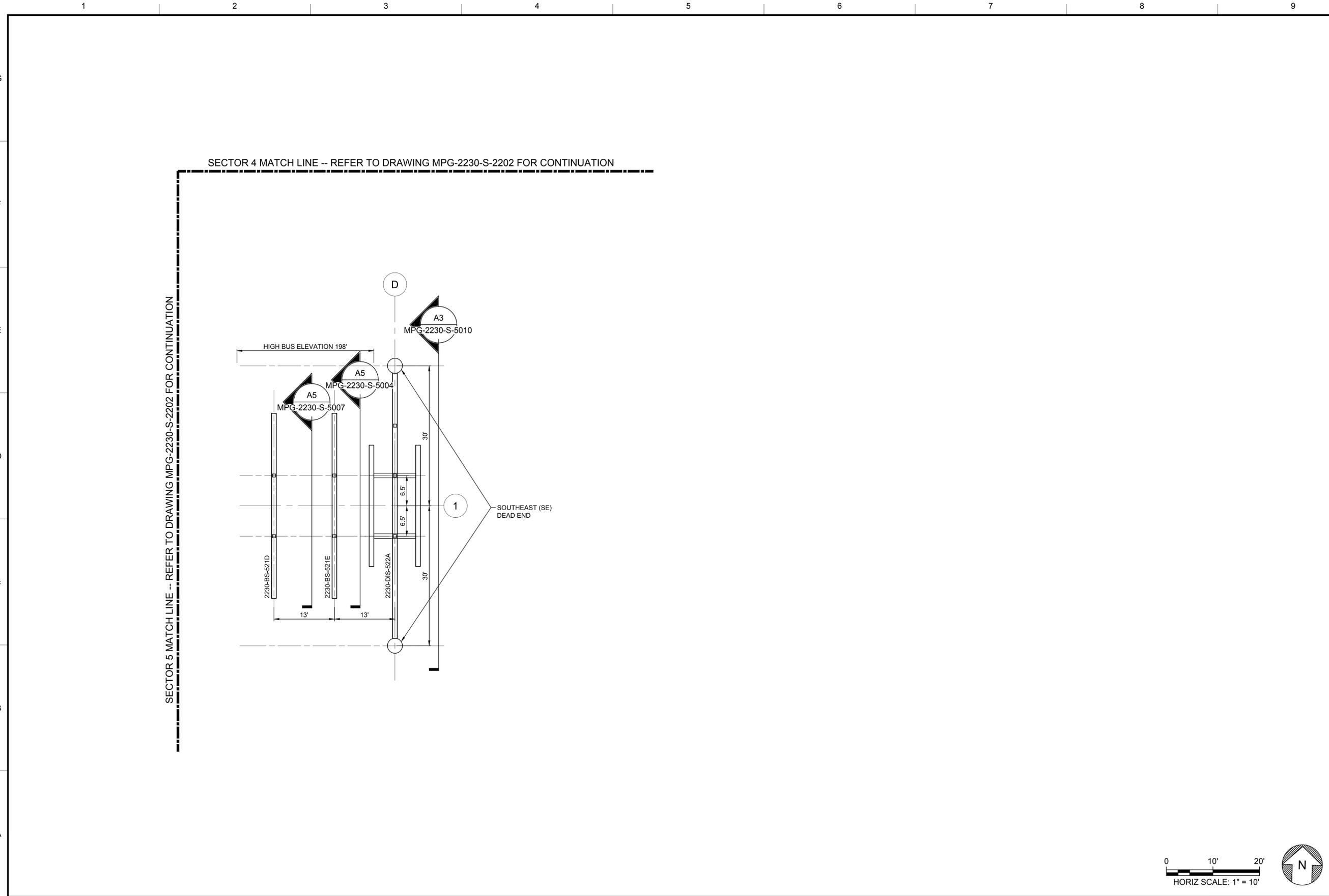
VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL  
DRAWING. ADJUST SCALES FOR  
REDUCED PLOTS

0 10 20 1"

DRAWING NO.  
MPG-2230-S-2203  
SHT 66 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 4/3/2024 10:28 AM  
 Saved By: EBORDENAVE  
 File: C:\pwworking\hdr\_sites\_reservoir\dms012151\MPG-2230-S-2204.dwg



**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
 MPG-0001-G-0301 AND  
 MPG-0001-G-0302.
- FOR STRUCTURE KEY PLAN REFER TO DRAWING MPG-2230-2200

**KEY PLAN**

SECTOR 1	SECTOR 2
MPG-2230-S-2201	MPG-2230-S-2202
MPG-2230-S-2203	MPG-2230-S-2204
SECTOR 7	SECTOR 8

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

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 714 Adams Street  
 Boston, MA 02210

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 PROFESSIONAL  
 ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 STEEL STRUCTURE PLAN SECTOR 6

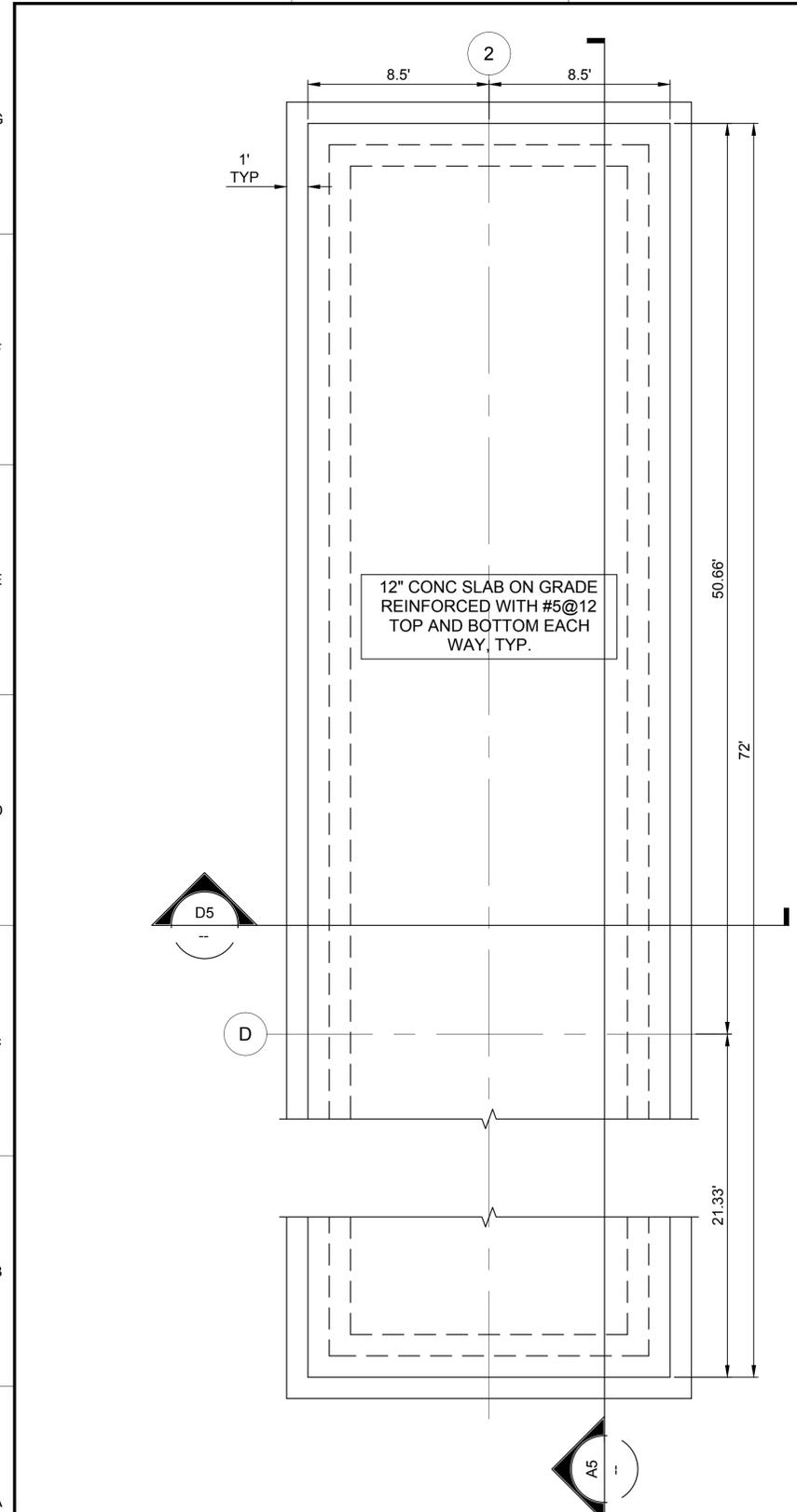
**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS

0 10' 20'  
 HORIZ SCALE: 1" = 10'

DRAWING NO.  
 MPG-2230-S-2204  
 SHT 67 OF 106

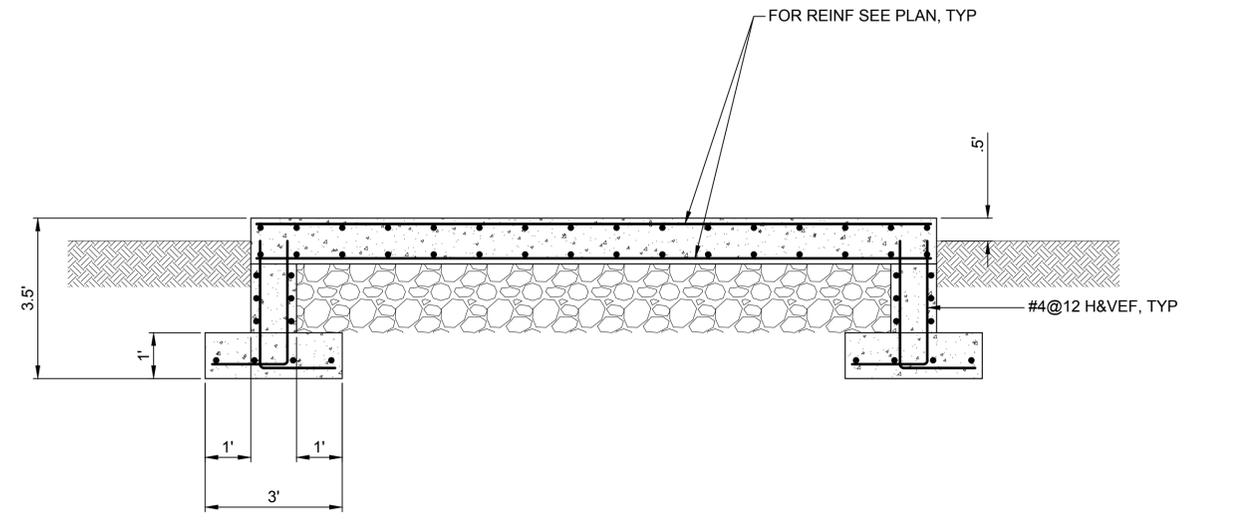
PRELIMINARY - NOT FOR CONSTRUCTION

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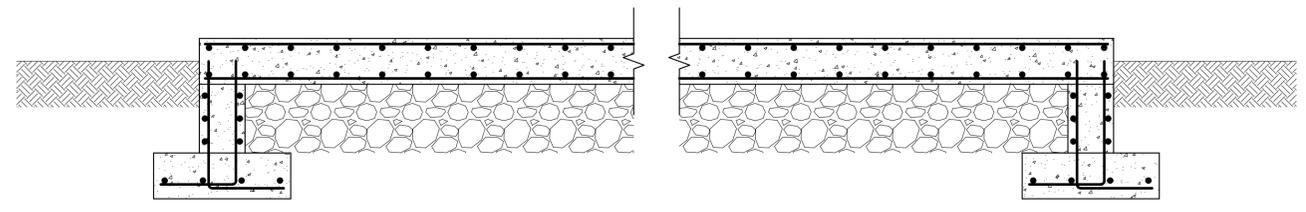


**A2 CONTROL HOUSE FOUNDATION PLAN**  
SCALE 1/4" = 1'-0"

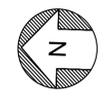
MPG-2230-S-2100, MPG-2230-S-2102



**D5 SECTION**  
SCALE 1/2" = 1'-0"  
MPG-2230-S-5002



**A5 SECTION**  
SCALE 1/2" = 1'-0"  
MPG-2230-S-5002



**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
MPG-0001-G-0301 AND  
MPG-0001-G-0302.

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
**POWER GROUP**  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-866-0868 FAX  
 Boston, MA 02210

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 PROFESSIONAL  
 ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA

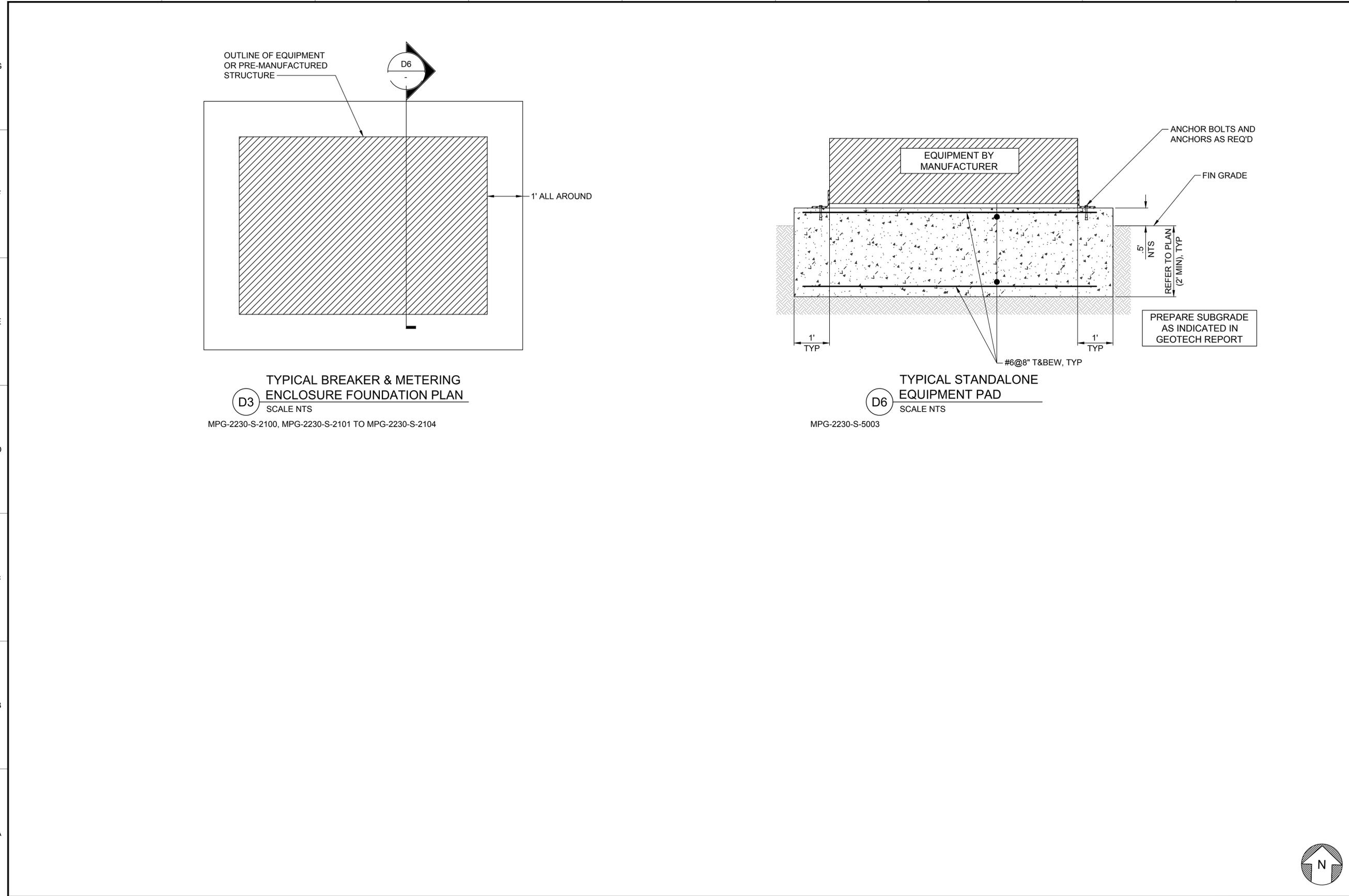


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 CONTROL HOUSE FOUNDATION PLAN & DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS  
 0 5 10'  
 DRAWING NO.  
 MPG-2230-S-5002  
 SHT 68 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 4/3/2024 10:30 AM Saved By: EBORDENAVE File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-S-5003.dwg



**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.



REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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 (530) 243-5831

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R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 174 Summer Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
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 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 METERING ENCL & BREAKER PAD FOUNDATION PLAN

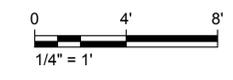
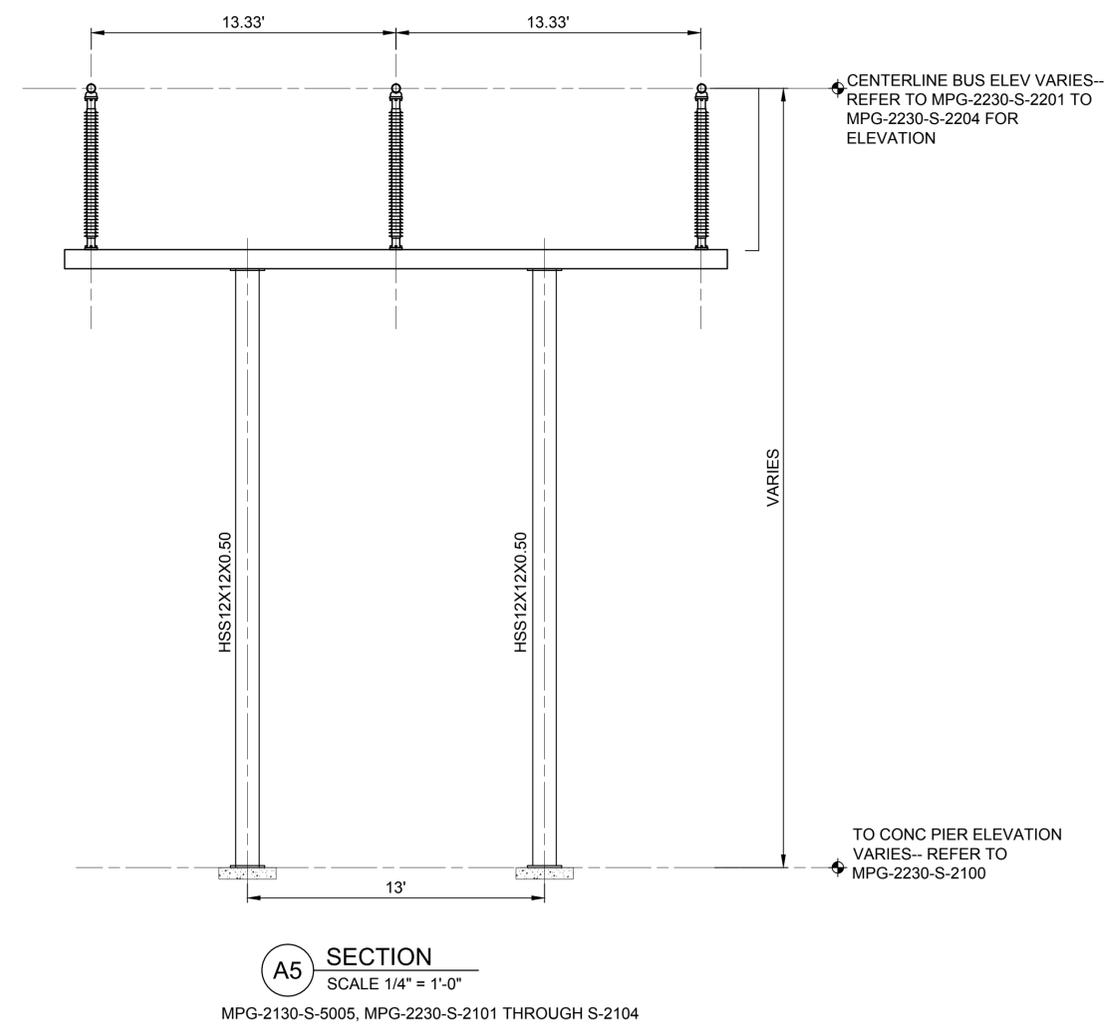
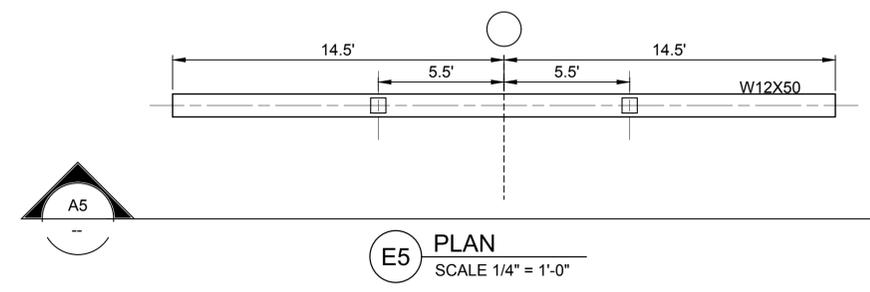
VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1"

DRAWING NO.  
 MPG-2230-S-5003  
 SHT 69 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS:  
MPG-0001-G-0301 AND  
MPG-0001-G-0302.
- FOR STRUCTURAL LOCATIONS SEE  
MPG-2230-S-2200 AND  
MPG-2230-S-2203 THRU  
MPG-2230-S-2206
- FOR STRUCTURE SCHEDULE SEE  
MPG-2230-S-6002



Plot Date: 4/3/2024 10:34 AM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

**Jacobs**  
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REDDING, CA 96001  
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**VANDERWEIL**  
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P.O. Box 100  
Barnstable, MA 02532

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PROFESSIONAL  
ENGINEER  
WAYNE E SILADI  
C 89993  
CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
STRUCTURAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD  
LOW BUS SUPPORT STEEL STRUCTURE PLAN & DETAILS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL  
DRAWING. ADJUST SCALES FOR  
REDUCED PLOTS

0 4' 8'

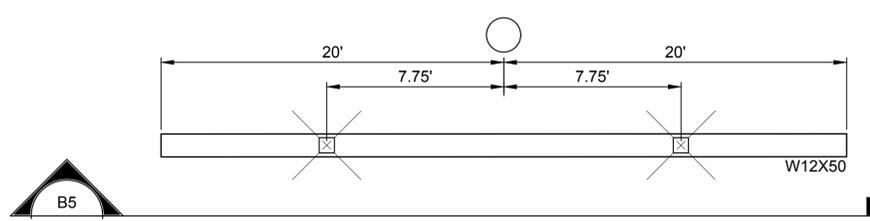
1/4" = 1'

DRAWING NO.  
MPG-2230-S-5004  
SHT 70 OF 106

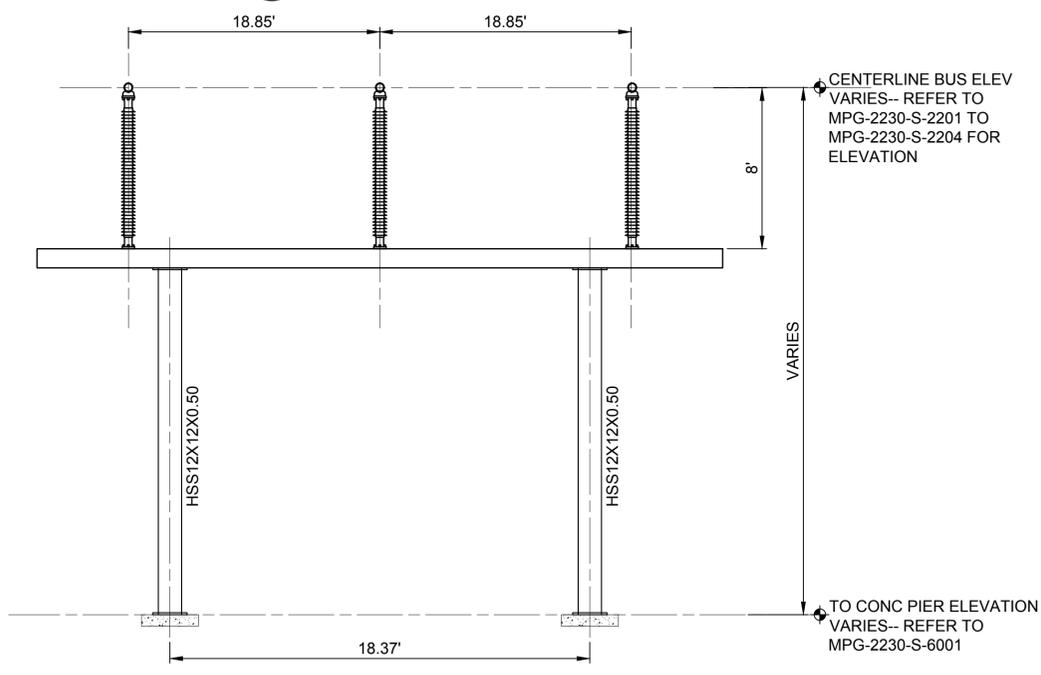
PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.
- FOR STRUCTURAL LOCATIONS SEE MPG-2230-S-2200 AND MPG-2230-S-2203 THRU MPG-2230-S-2206
- FOR STRUCTURE SCHEDULE SEE MPG-2230-S-6002



**E5 PLAN**  
SCALE 1/4" = 1'-0"



**B5 SECTION**  
SCALE 1/4" = 1'-0"

MPG-2230-S-2101, MPG-2230-S-2103

Plot Date: 4/3/2024 10:35 AM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



**SITES RESERVOIR**

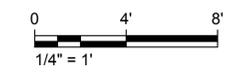
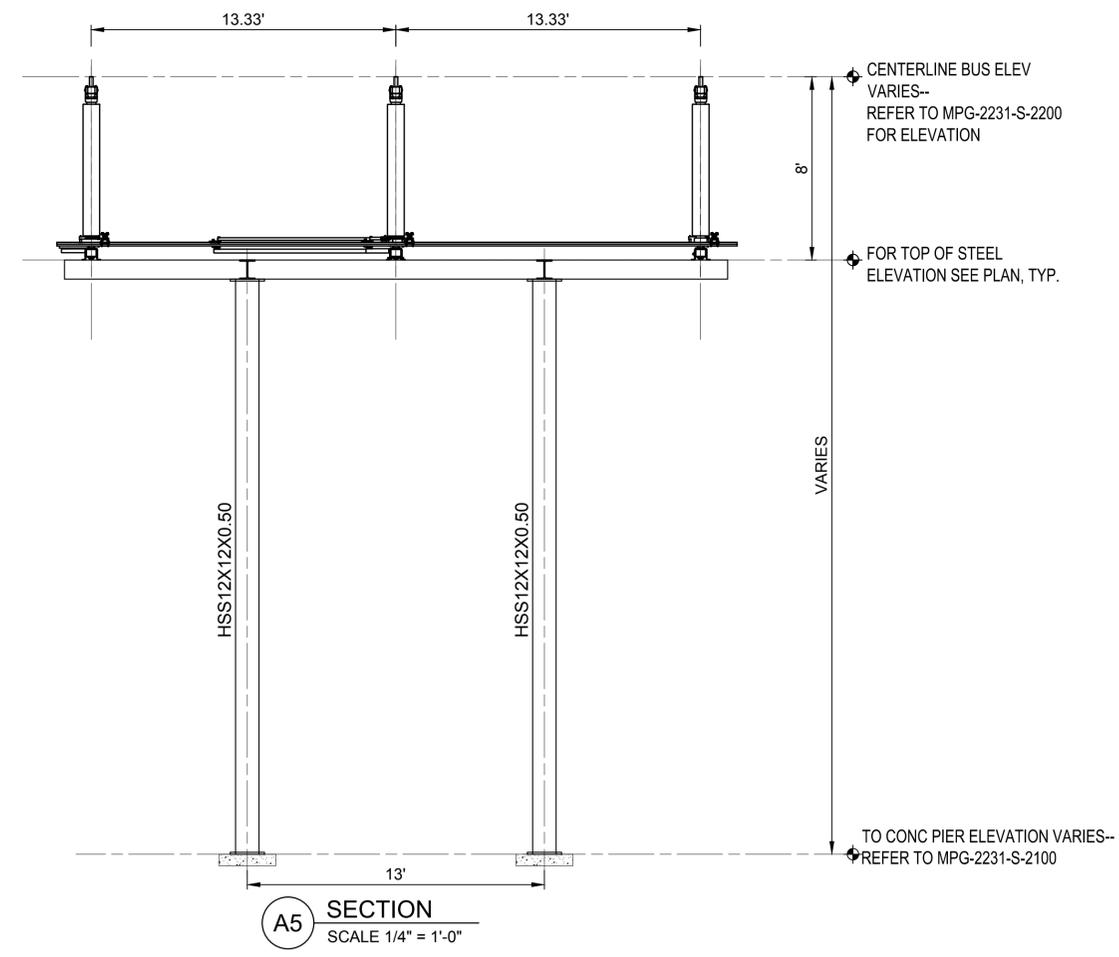
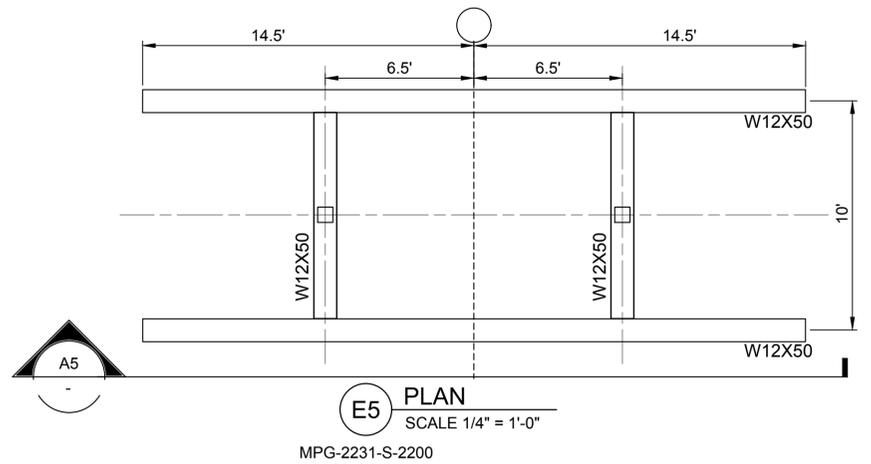
MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD DIAGONAL BUS SUPPORT  
 STEEL STRUCTURE PLAN & DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1"  
 DRAWING NO.  
 MPG-2230-S-5005  
 SHT 71 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

1. FOR STRUCTURAL LOCATIONS SEE MPG-2231-S-2200
2. FOR GENERAL NOTES SEE MPG-0001-G-0301 AND MPG-0001-G-0302



File: C:\pwworking\hdr\_sites\_reservoir\dms02611\MPG-2231-S-5006.dwg  
Plot Date: 4/3/2024 1:26 PM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



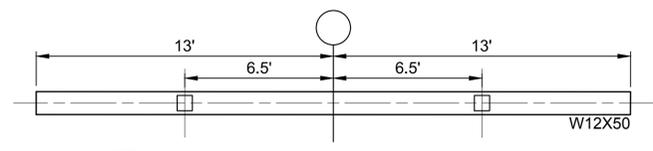
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION HIGH DISCONNECT  
 SUPPORT STEEL STRUCTURE PLAN & DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
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 1" = 1'  
 DRAWING NO.  
 MPG-2230-S-5006  
 SHT 72 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

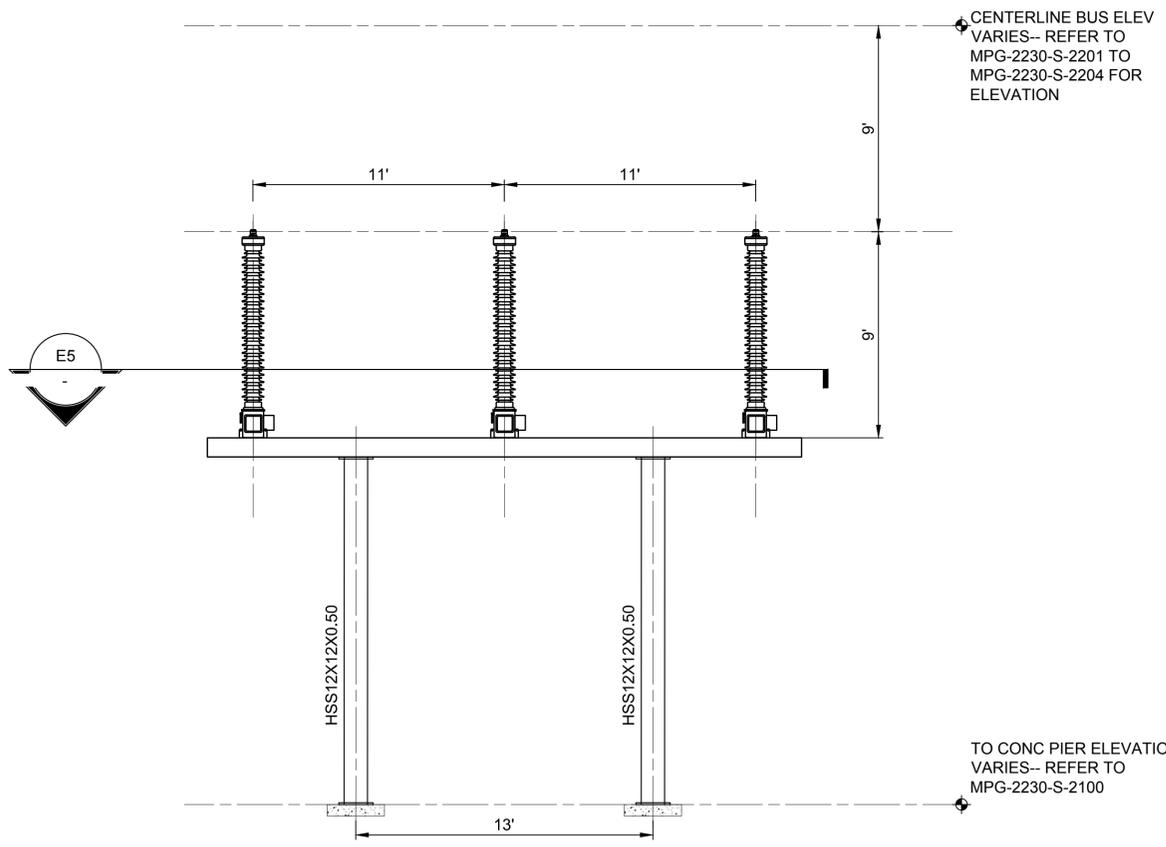
**GENERAL NOTES**

1. FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.
2. FOR STRUCTURAL LOCATIONS SEE MPG-2230-S-2200 AND MPG-2230-S-2201 THRU MPG-2230-S-2204
3. FOR STRUCTURE SCHEDULE SEE MPG-2230-S-6002



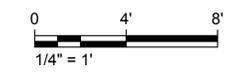
**E5 PLAN**  
SCALE 1/4" = 1'-0"

MPG-2231-S-5007



**A5 SECTION**  
SCALE 1/4" = 1'-0"

MPG-2230-S-2101 TO MPG-2230-S-2104



File: C:\pwworking\hdr\_sites\_reservoir\dms01215\MPG-2230-S-5007.dwg  
Plot Date: 4/3/2024 10:37 AM  
Saved By: EBORDENAVE

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



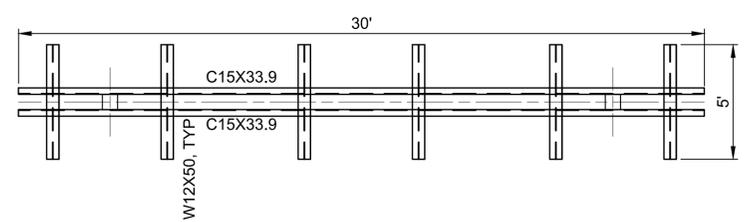
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 CCVT SUPPORT STEEL STRUCTURE  
 PLAN AND DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 4 8  
 1/4" = 1'  
 DRAWING NO.  
 MPG-2230-S-5007  
 SHT 73 OF 106

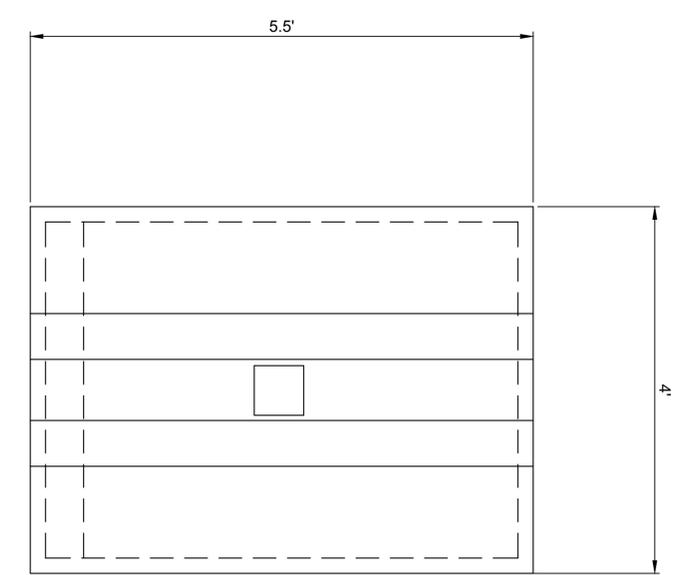
PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

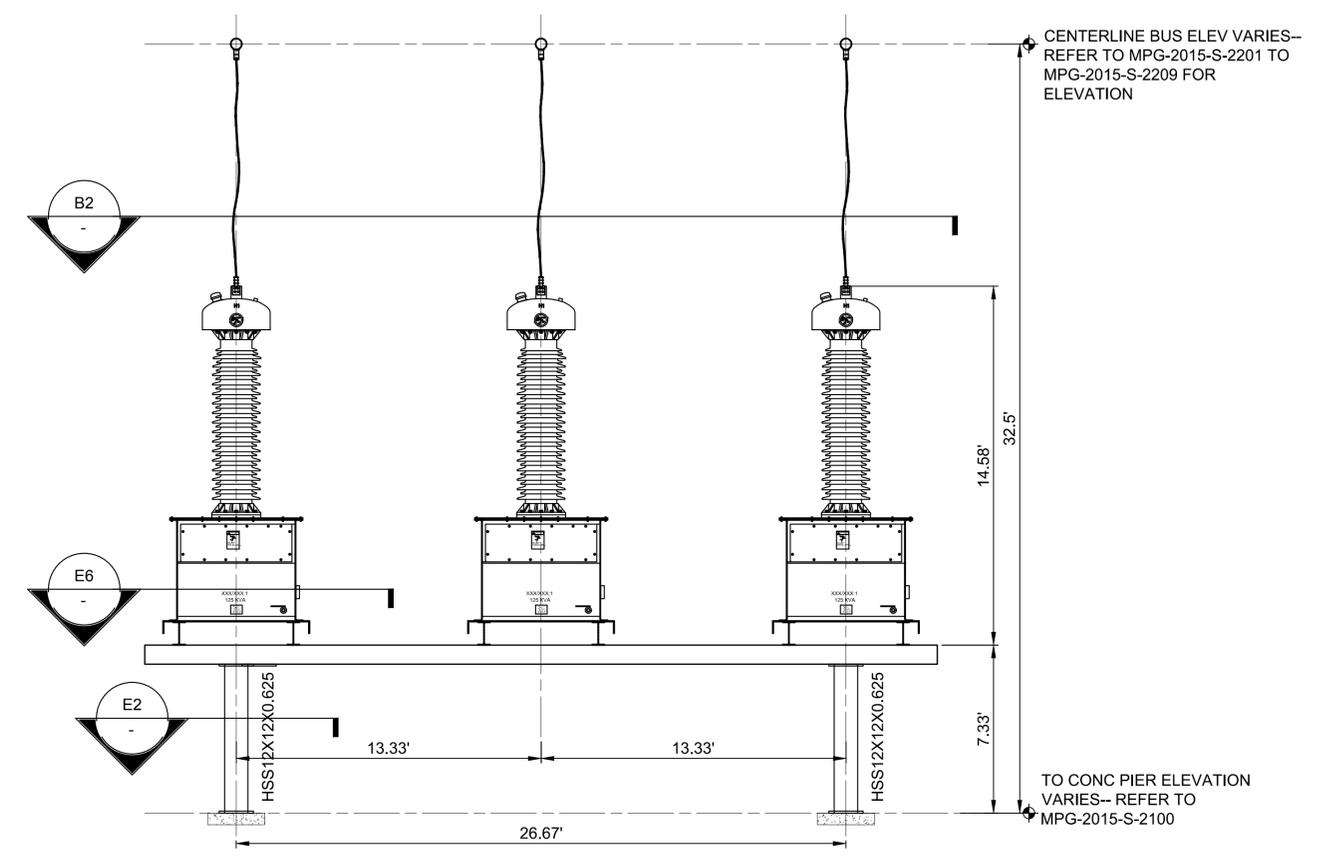
1. FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.
2. FOR STRUCTURE LOCATIONS SEE MPG-2230-S-2200 AND MPG-2230-S-2203 THRU MPG-2230-S-2206
3. FOR STRUCTURE SCHEDULE SEE MPG-2230-S-6002



**B2 SECTION**  
SCALE 1/4" = 1'-0"



**E6 SECTION**  
SCALE 1" = 1'-0"

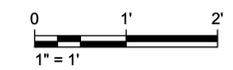
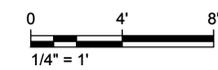


CENTERLINE BUS ELEV VARIES-- REFER TO MPG-2015-S-2201 TO MPG-2015-S-2209 FOR ELEVATION

TO CONC PIER ELEVATION VARIES-- REFER TO MPG-2015-S-2100

**B6 SECTION**  
SCALE 1" = 1'-0"

**B2 SECTION**  
SCALE 1/4" = 1'-0"



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA

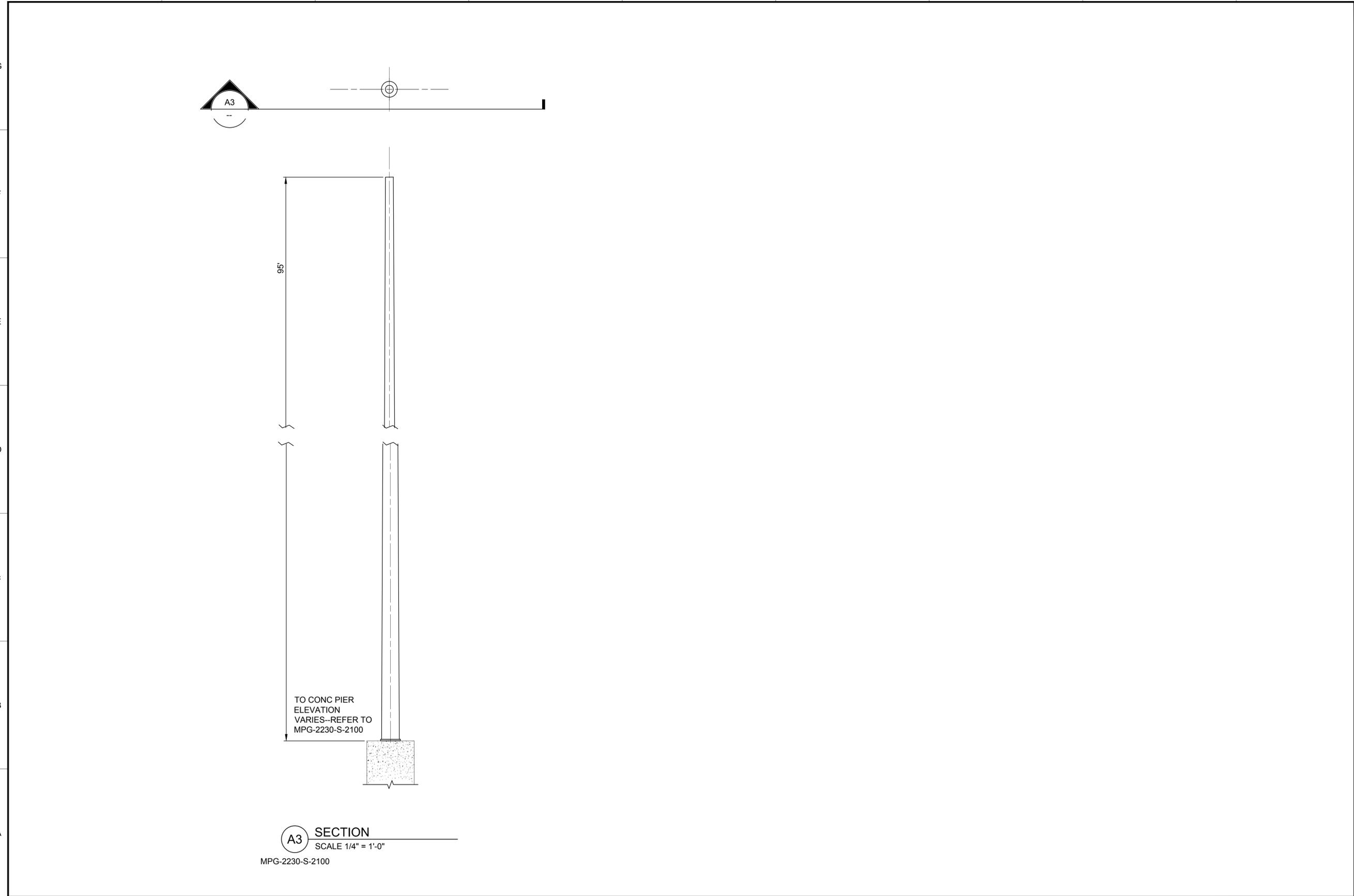


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 STATION SERVICE SUPPORT STEEL STRUCTURE  
 PLAN AND DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1 2  
 1" = 1'  
 DRAWING NO. MPG-2230-S-5008  
 SHT 74 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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**GENERAL NOTES**

- FOR STRUCTURE LOCATIONS SEE MPG-2230-S-2200 AND MPG-2230-S-2203 THRU MPG-2230-S-2206
- FOR STRUCTURE SCHEDULE SEE MPG-2230-S-6002
- STRUCTURE DESIGN BY VENDOR

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

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 vanderweil.com

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 ENGINEER

WAYNE E SILADI  
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**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
 STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 LIGHTNING MAST STEEL STRUCTURE  
 PLAN AND DETAILS

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS

0 1"

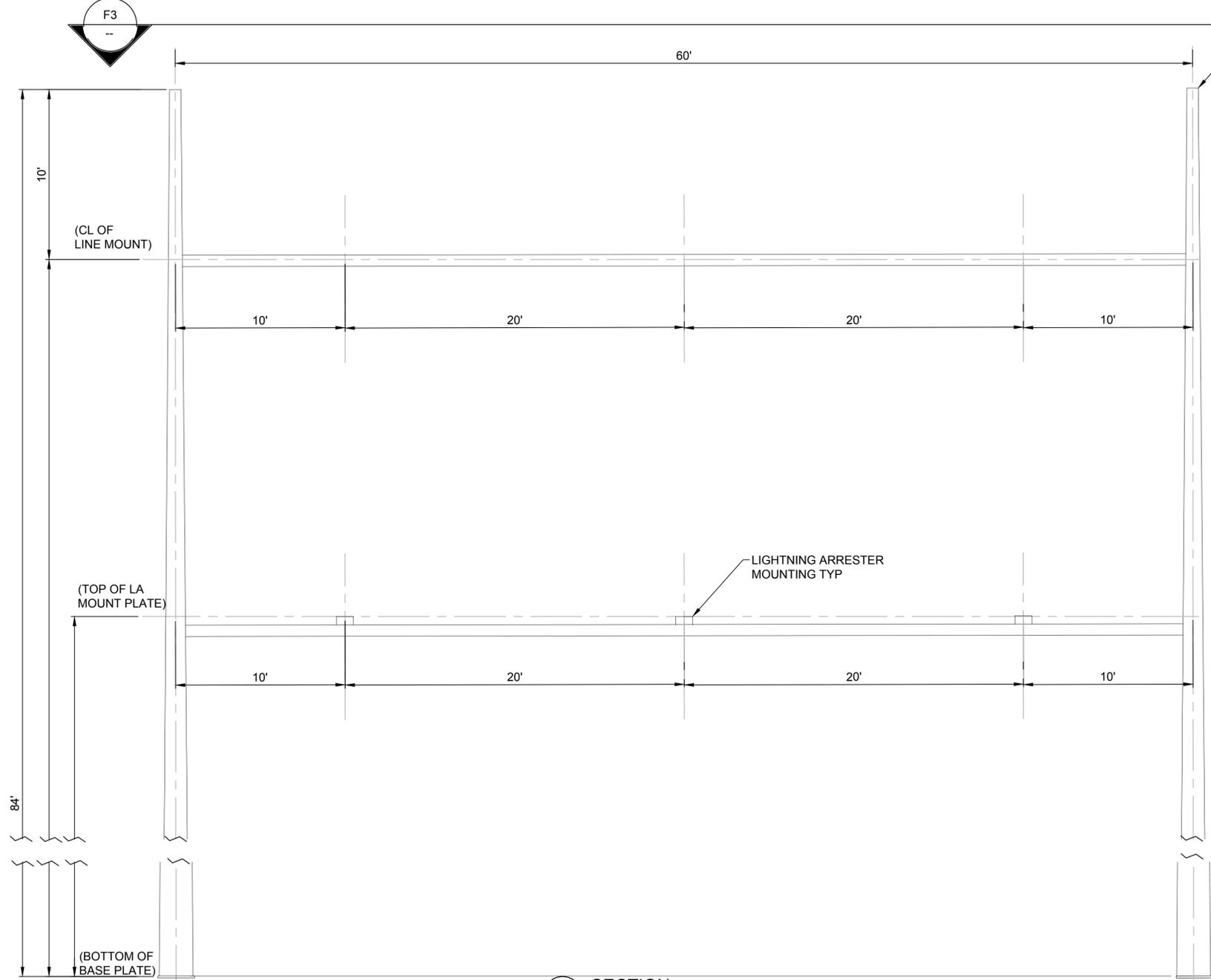
DRAWING NO.  
 MPG-2230-S-5009  
 SHT 75 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

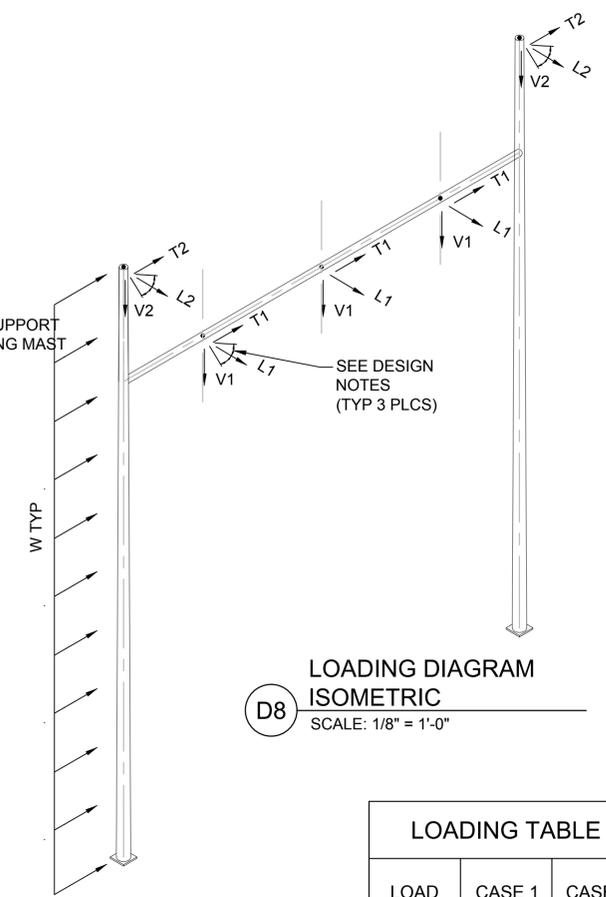
- FOR GENERAL NOTES SEE MPG-0001-G-0301 AND MPG-0001-G-0302
- FOR STRUCTURE LOCATIONS SEE MPG-2230-S-2200 AND MPG-2230-S-2203 THRU MPG-2230-S-2206
- FOR STRUCTURE SEE MPG-2230-S-2200
- STRUCTURE DESIGN BY VENDOR

**F3 PLAN**  
SCALE 1/4" = 1'-0"



**A3 SECTION**  
SCALE 1/4" = 1'-0"

MPG-2230-S-2200, MPG-2230-S-2101 TO MPG-2230-S-2104



**D8 LOADING DIAGRAM ISOMETRIC**  
SCALE: 1/8" = 1'-0"

LOADING TABLE		
LOAD	CASE 1	CASE 2
W	6.0000	28.3
L1	8	4.438
T1	0.561	0.455
V1	0.677	0.409
L2	4.945	2.560
T2	0.342	0.231
V2	0.162	0.085

DESIGN VOLTAGE: 115KV  
LOADING CRITERIA

CASE 1 - NESC INTERMEDIATE LOADING:  
6 PSF WIND, 1/4" ICE, 0°F, NESC OLF, TRANSVERSE WIND=2.54,  
TRANSVERSE LINE TENSION =1.65, LONGITUDINAL WIRE TENSION=1.65,  
VERTICAL=2.0.

CASE 2 - EXTREME WIND LOADING:  
TRANSVERSE, 105 MPH WIND, NO ICE, 60°F, OVERLOAD FACTOR (OLF) = 1.10.

- DESIGN NOTES
- LOAD ABBREVIATIONS AND UNIT ENTRIES IN THE LOADING DIAGRAMS ARE AS FOLLOWS:  
W - WIND = POUNDS PER SQUARE FOOT  
L - LONGITUDINAL = KIPS  
T - TRANSVERSE = KIPS  
V - VERTICAL = KIPS
  - THE LOADS IN THE LOADING TABLES INCLUDE OVERLOAD FACTORS (OLF).
  - THE VERTICAL LOADS (V) IN THE LOADING DIAGRAMS DO NOT INCLUDE THE DEAD WEIGHT OF THE STRUCTURE. THE STRUCTURE DEAD WEIGHT SHALL BE SUPPLIED BY THE FABRICATOR AND MULTIPLIED BY THE OLF OF THE APPROPRIATE LOAD CASE.
  - THE LONGITUDINAL LOADS (L) FOR THE CONDUCTOR (L1) SHALL BE DESIGNED FOR A LINE ANGLE OF ±10°. THE SHEILDWIRE (L2) SHALL BE DESIGNED FOR A LINE ANGLE OF ±15°.
  - IN ADDITION TO LOADS SHOWN. STRUCTURES SHALL BE DESIGNED FOR A 0.30 KIP VERTICAL POINT LOAD AT ANY POSITION ON THE STRUCTURE.
  - ANCHOR BOLT CIRCLE FOR STRUCTURE SHALL NOT EXCEED 40 INCHES.
  - CHAMFER ALL HOLES WHERE ELECTRICAL WIRES WILL BE PULLED OR PLACED

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
DRAWN BY: E. BORDENAVE  
CHECKED BY: W. SILADI  
IN CHARGE: P. RUDE  
DATE: 04-09-2024

**Jacobs**  
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REGISTERED PROFESSIONAL ENGINEER  
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C 89993  
CALIFORNIA

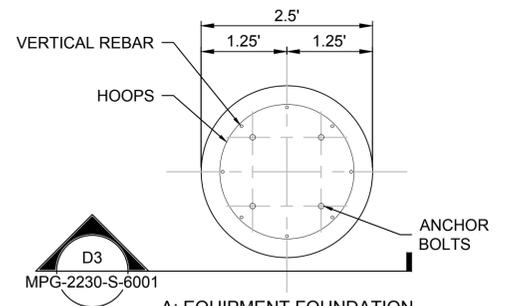


**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
TERMINAL REGULATING RESERVOIR  
DEAD END STEEL STRUCTURE  
PLAN AND DETAILS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
0 1"  
DRAWING NO.  
MPG-2230-S-5010  
SHT 76 OF 106

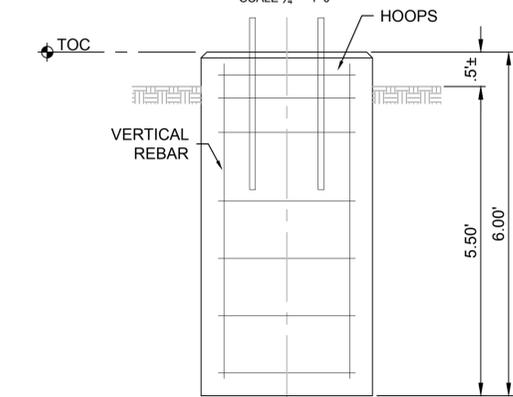
PRELIMINARY - NOT FOR CONSTRUCTION

STRUCTURE	PIER TYPE	TOP OF PIER
NW DEAD END	C	167.00
2230-DIS-510	B	166.25
2230-BS-510	A	166.50
2230-MVCT-510	A	166.75
2230-CVT-510	A	166.83
2230-DIS-511A	B	167.00
2230-DIS-511B	B	167.25
2230-CVT-511	A	168.25
2230-BS-511A	A	168.50
2230-DBS-511B	A	168.75
2230-BS-511C	A	168.50
2230-BS-511D	A	168.25
2230-BS-511E	A	168.00
2230-DIS-512A	B	167.75
NE DEAD END	C	168.50
SW DEAD END	C	162.00
2230-DIS-520	B	161.00
2230-BS-520A	A	161.25
2230-MVCT-520	A	161.50
2230-CVT-520	A	161.50
2230-DIS-521A	B	161.83
2230-DIS-521B	B	162.83
2230-CVT-521	A	163.00
2230-BS-521A	A	163.25
2230-DBS-521B	A	163.25
2230-BS-521C	A	163.25
2230-BS-521D	A	163.00
2230-BS-521E	A	162.75
2230-DIS-522A	B	162.50
SE DEAD END	C	163.25
2230-BS-501A	A	168.00
2230-SSVT-510	A	167.50
2230-BS-501B	A	167.00
2230-DIS-501A	B	166.75
2230-DIS-501B	B	165.50
2230-BS-501C	A	165.00
2230-SSVT-520	A	164.75
2230-BS-501D	A	164.25
LM 3	D	169.00
LM 4	D	166.75
LM 7	D	166.00
LM 10	D	162.75
LM 11	D	162.00



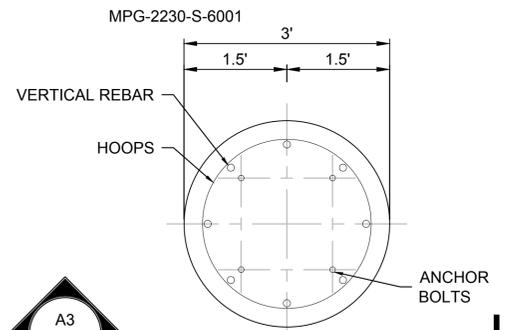
**A: EQUIPMENT FOUNDATION**

SEE TABLE FOR LOCATIONS  
SCALE 3/4" = 1'-0"



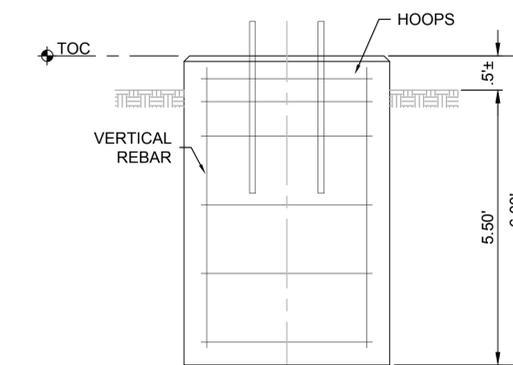
**D3 SECTION**

SCALE 3/4" = 1'-0"



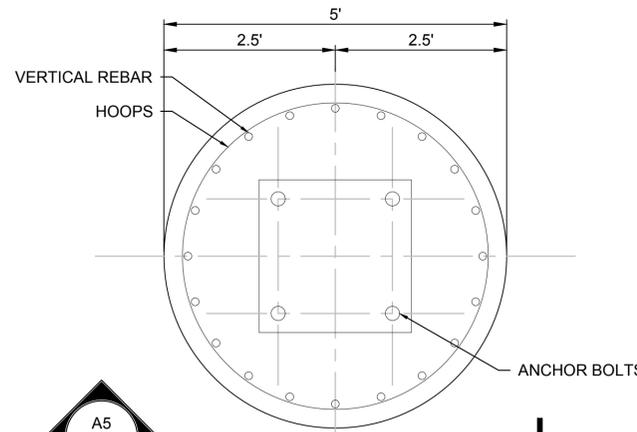
**B: DISCONNECT SWITCH FOUNDATION**

SEE TABLE FOR LOCATIONS  
SCALE 3/4" = 1'-0"



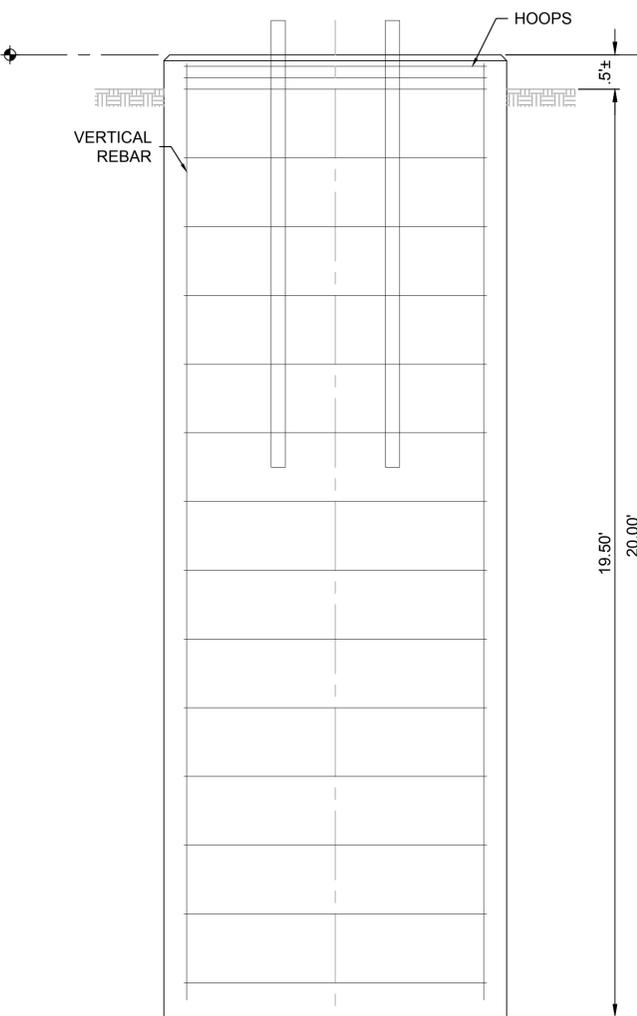
**A3 SECTION**

SCALE 3/4" = 1'-0"



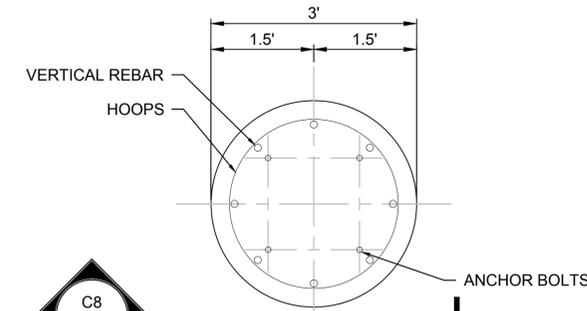
**C: DEAD END A-FRAME FOUNDATION**

SEE TABLE FOR LOCATIONS  
SCALE 3/4" = 1'-0"



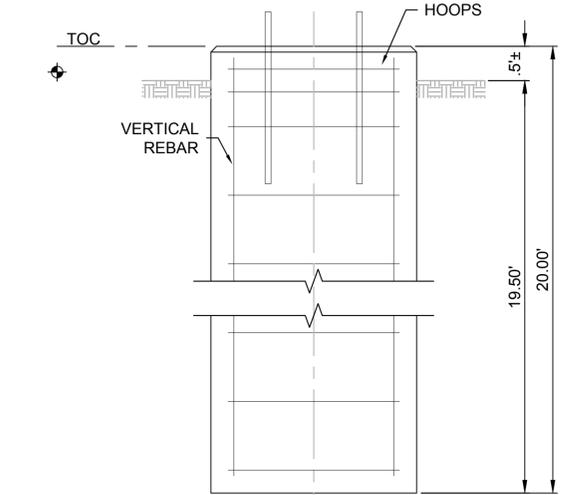
**A5 SECTION**

SCALE 3/4" = 1'-0"



**D: LIGHTNING MAST FOUNDATION**

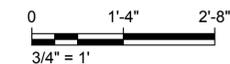
SEE TABLE FOR LOCATIONS  
SCALE 3/4" = 1'-0"



**C8 SECTION**

SCALE 3/4" = 1'-0"

MPG-2230-S-6001



**GENERAL NOTES**

- FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302
- FOR FOUNDATION LOCATIONS REFER TO DRAWINGS MPG-2230-S-2100 THROUGH MPG-2230-S-2105

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

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Boston, MA 02210  
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PROFESSIONAL  
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WAYNE E SILADI  
C 89993  
CALIFORNIA

**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
STRUCTURAL  
TERMINAL REGULATING RESERVOIR  
230KV SWITCHYARD FOUNDATION  
FOUNDATION SCHEDULES & MISC DETAILS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL  
DRAWING. ADJUST SCALES FOR  
REDUCED PLOTS

DRAWING NO.  
MPG-2230-S-6001  
SHT 77 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

1. FOR GENERAL NOTES REFER TO MPG-2230-S-0001-G-0301 AND G-0302
2. FOR STRUCTURE LOCATIONS REFER TO MPG-2230-S-2200 THROUGH MPG-2230-S-2204.

STRUCTURE	DETAIL DRAWING	TO PIER TO BUS HT
NW DEAD END	MPG-2230-S-5010	33.0000
2230-DIS-510	MPG-2230-S-5006	33.7500
2230-BS-510	MPG-2230-S-5004	33.5000
2230-MVCT-510	MPG-2230-S-5007	33.2500
2230-CVT-510	MPG-2230-S-5007	33.1700
2230-DIS-511A	MPG-2230-S-5006	33.0000
2230-DIS-511B	MPG-2230-S-5006	34.2500
2230-CVT-511	MPG-2230-S-5007	33.2500
2230-BS-511A	MPG-2230-S-5004	33.0000
2230-DBS-511B	MPG-2230-S-5005	32.7500
2230-BS-511C	MPG-2230-S-5004	33.0000
2230-BS-511D	MPG-2230-S-5004	33.2500
2230-BS-511E	MPG-2230-S-5004	33.5000
2230-DIS-512A	MPG-2230-S-5006	33.7500
NE DEAD END	MPG-2230-S-5010	33.0000
SW DEAD END	MPG-2230-S-5010	33.0000
2230-DIS-520	MPG-2230-S-5006	34.0000
2230-BS-520A	MPG-2230-S-5004	33.7500
2230-MVCT-520	MPG-2230-S-5007	33.5000
2230-CVT-520	MPG-2230-S-5007	33.5000
2230-DIS-521A	MPG-2230-S-5006	33.1700
2230-DIS-521B	MPG-2230-S-5006	35.1700
2230-CVT-521	MPG-2230-S-5007	35.0000
2230-BS-521A	MPG-2230-S-5004	34.7500
2230-DBS-521B	MPG-2230-S-5005	34.5000
2230-BS-521C	MPG-2230-S-5004	34.7500
2230-BS-521D	MPG-2230-S-5004	35.0000
2230-BS-521E	MPG-2230-S-5004	35.2500
2230-DIS-522A	MPG-2230-S-5006	35.5000
SE DEAD END	MPG-2230-S-5010	34.7500
2230-BS-501A	MPG-2230-S-5004	22.5000
2230-SSVT-510	MPG-2230-S-5008	23.0000
2230-BS-501B	MPG-2230-S-5004	23.5000
2230-DIS-501A	MPG-2230-S-5006	23.7500
2230-DIS-501B	MPG-2230-S-5006	21.5000
2230-BS-501C	MPG-2230-S-5004	22.0000
2230-SSVT-520	MPG-2230-S-5008	22.2500
2230-BS-501D	MPG-2230-S-5004	22.7500
LM 3	MPG-2230-S-5009	N/A
LM 4	MPG-2230-S-5009	N/A
LM 7	MPG-2230-S-5009	N/A
LM 6	MPG-2230-S-5009	N/A
LM 10	MPG-2230-S-5009	N/A
LM 11	MPG-2230-S-5009	N/A

Plot Date: 4/3/2024 10:58 AM  
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 CHECKED BY: W. SILADI  
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 C 89993  
 CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
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 TERMINAL REGULATING RESERVOIR  
 230KV SWITCHYARD  
 STEEL STRUCTURE SCHEDULES & MISC DETAILS

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 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS.  
 1"  
 DRAWING NO.  
 MPG-2230-S-6002  
 SHT 78 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

# BILL OF MATERIAL

ITEM	TAG	MODEL No.	DESCRIPTION	QTY	CAT.#	CODE
1	2231-XFMR-510 2231-XFMR-520	-	GENERATOR STEP-UP TRANSFORMER, 75/100/125MVA, 230KV-13.8KV/13.8KV, %Z=LATER	2	-	-
2	2231-DIS-513 2231-DIS-523	AGCH5-24520	DISCONNECT SWITCH, 3Ø, 245KV, 2000A, 900 KV BIL, 100kA (MOM), MANUAL GROUP OPERATED, CENTER BREAK	2	USCO	-
3	-	-	STATION POST INSULATOR, TR-308, 900kv BIL, HIGH STRENGTH, WITH 4 HOLES ON 5" B.C.	12	-	-
4	-	-	STATION POST INSULATOR, CLASS 34.5kv, TR-210, STANDARD STRENGTH, WITH 4 HOLES ON 3" B.C.	72	-	-
5	-	-	TUBULAR BUS, 6063-T6 ALLOY, SEAMLESS, SCH.40, 6"Ø	400 ft	-	-
6	-	AAC	ALUMINUM CONDUCTOR, BARE, 397.5kcmil, "CANNA"	300 ft	-	-
7	-	AAC	ALUMINUM CONDUCTOR, BARE, 2500kcmil, "LUPINE"	2000 ft	-	-
8	DIS-SW1 (2)	FDS-3P-600V-400A-F300A	DISCONNECT SWITCH, FUSED 300A, 3Ø, 600V, 400A, NEMA 3R	2	LARSON	-
9	S/S-TR1 (2)	MT-DOE16-3P-480D-75KVA-208Y-120-N3R	TRANSFORMER DOE, 75 kVA 3PH, 480V, DELTA PRIMARY, 208Y/120 Wye-N SECONDARY, 60 Hz, VENTILATED, NEMA 3R.	2	LARSON	-
10	-	PSCA350S	OPGW FIBER OPTIC SPLICE CLOSURE	2	HUBBELL	-

PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL -TO- METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO CENTERLINE		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL		VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
15	12	110	1'-0"	2'-0"	2'-6"	3'-0"
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES						
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS		MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	REQUIRED	RECOMMENDED		
15	12	110	9'-0"	10'-0"	3'-6"	18'-0"
230	230	900	13'-9"	15'-0"	8'-3"	21'-11"

PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT						
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO CENTERLINE PHASE SPACING FOR RIGID BUSES	
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL	MINIMUM	RECOMMENDED		
15	12	110	0'-7"	0'-10"	2'-0"	
230	230	900	5'-11"	6'-4"	11'-0"	

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS			
VOLTAGE (kV)		PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)
NOMINAL PH-TO-PH	BIL		
15	110	10'-2"	0'-6"
230	900	15'-5"	5'-3"

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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**VANDERWEIL**  
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 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 EQUIPMENT OVERALL PLAN

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 10' 20' 30' 40' 50' 60'  
 SCALE: 1" = 20'

DRAWING NO.  
 MPG-2231-E-2100  
 SHT 79 OF 106

# GENERAL NOTES

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, SECTOR 1:  
 MPG-2231-E-2101  
 EQUIPMENT PLAN, SECTOR 2:  
 MPG-2231-E-2102  
 ONE LINE DIAGRAM:  
 MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205

# SHEET KEY NOTES

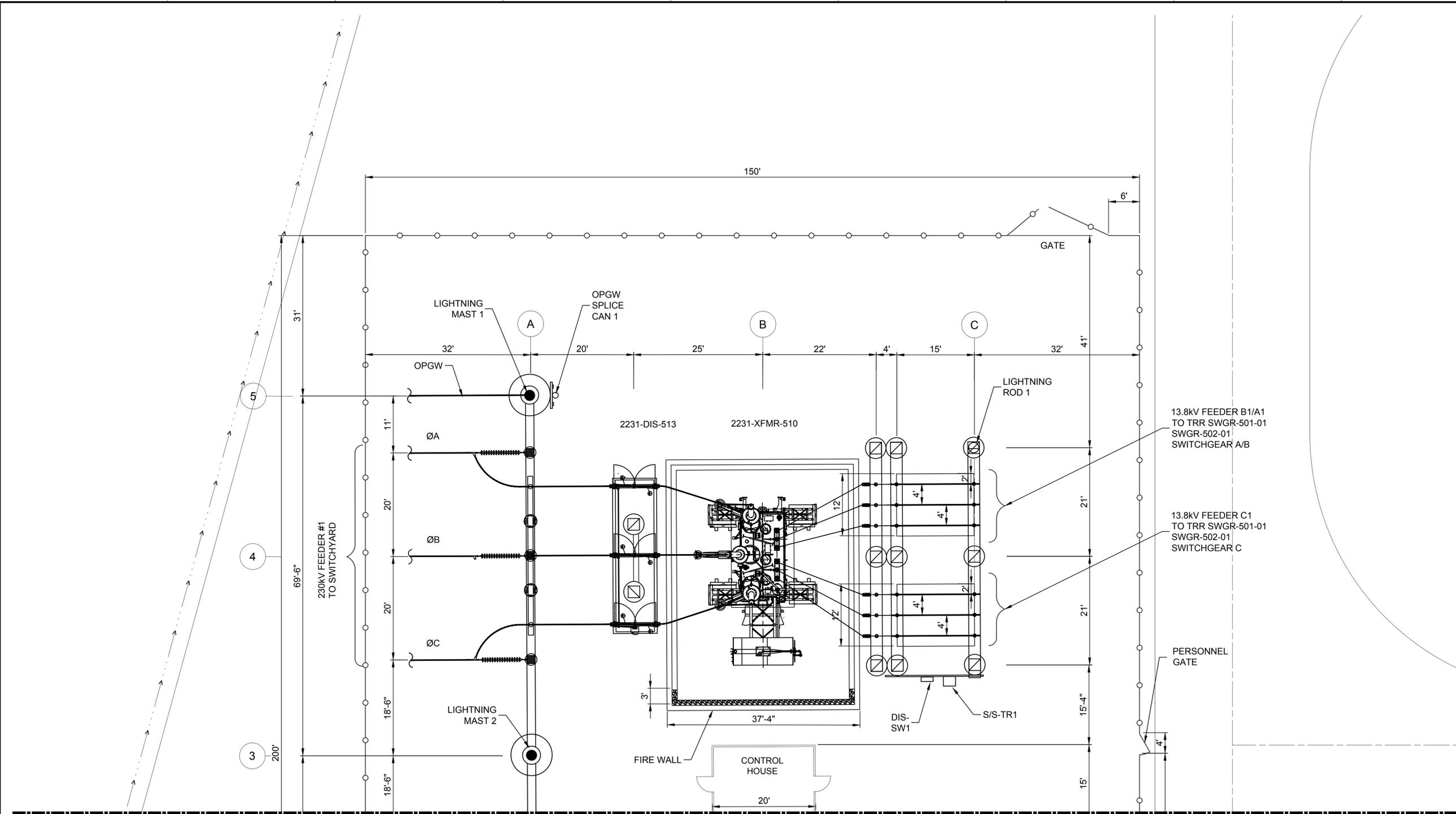
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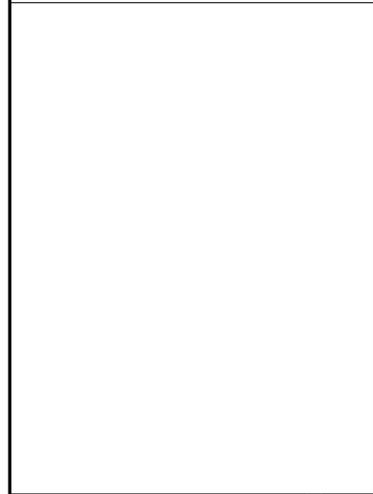
PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 SUBSTATION EQUIPMENT OVERALL PLAN:  
 MPG-2231-E-2100  
 SUBSTATION EQUIPMENT PLAN, SECTOR 2:  
 MPG-2231-E-2102  
 SUBSTATION ONE LINE DIAGRAM:  
 MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205



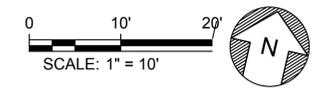
**SHEET KEY NOTES**



**KEY PLAN**

MATCH LINE DRAWING MPG-2231-E-2102

PLAN  
SCALE 1" = 10'



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Plot Date: 4/1/2024 11:45 AM  
Saved By: MZARETSKY

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
M. NESSABI  
 DRAWN BY:  
M.ZARETSKY  
 CHECKED BY:  
C. VANSANT  
 IN CHARGE:  
P.RUDE  
 DATE:  
04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831

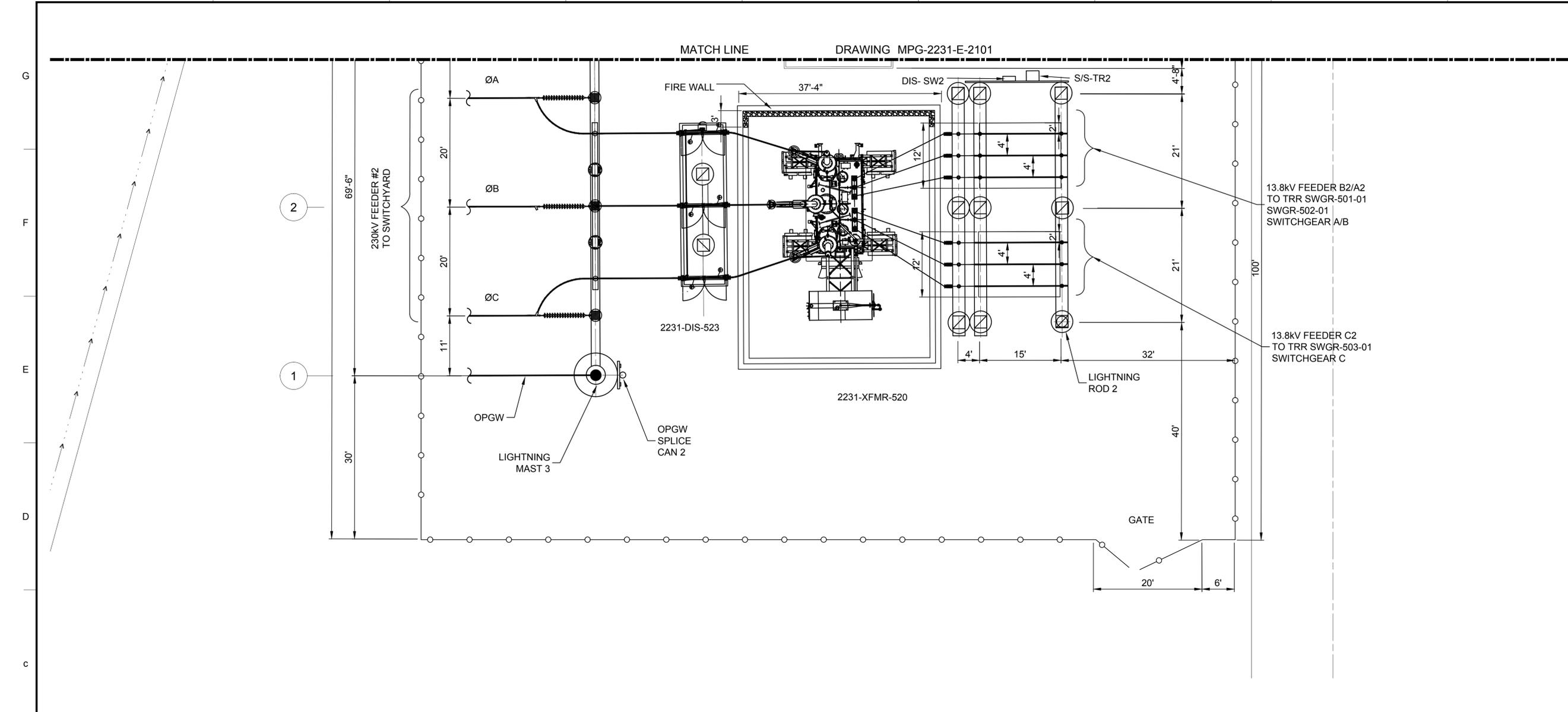
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714-444-0888 FAX  
 BOSTON, MA 02210

REGISTERED  
 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 EQUIPMENT PLAN-SECTOR 1

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS  
 0 10 20 1"  
 DRAWING NO.  
 MPG-2231-E-2101  
 SHT 80 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

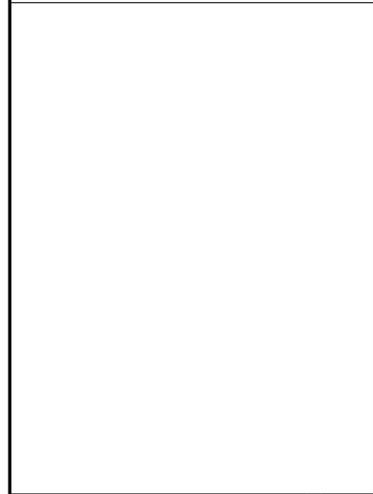


PLAN  
SCALE 1" = 10'

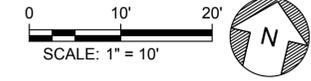
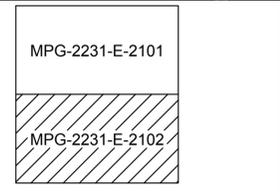
GENERAL NOTES

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 SUBSTATION EQUIPMENT OVERALL PLAN: MPG-2231-E-2100  
 SUBSTATION EQUIPMENT PLAN, SECTOR 1: MPG-2231-E-2101  
 SUBSTATION ONE LINE DIAGRAM: MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205

SHEET KEY NOTES



KEY PLAN



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M.ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P.RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714 Adams Street  
 Boston, MA 02210

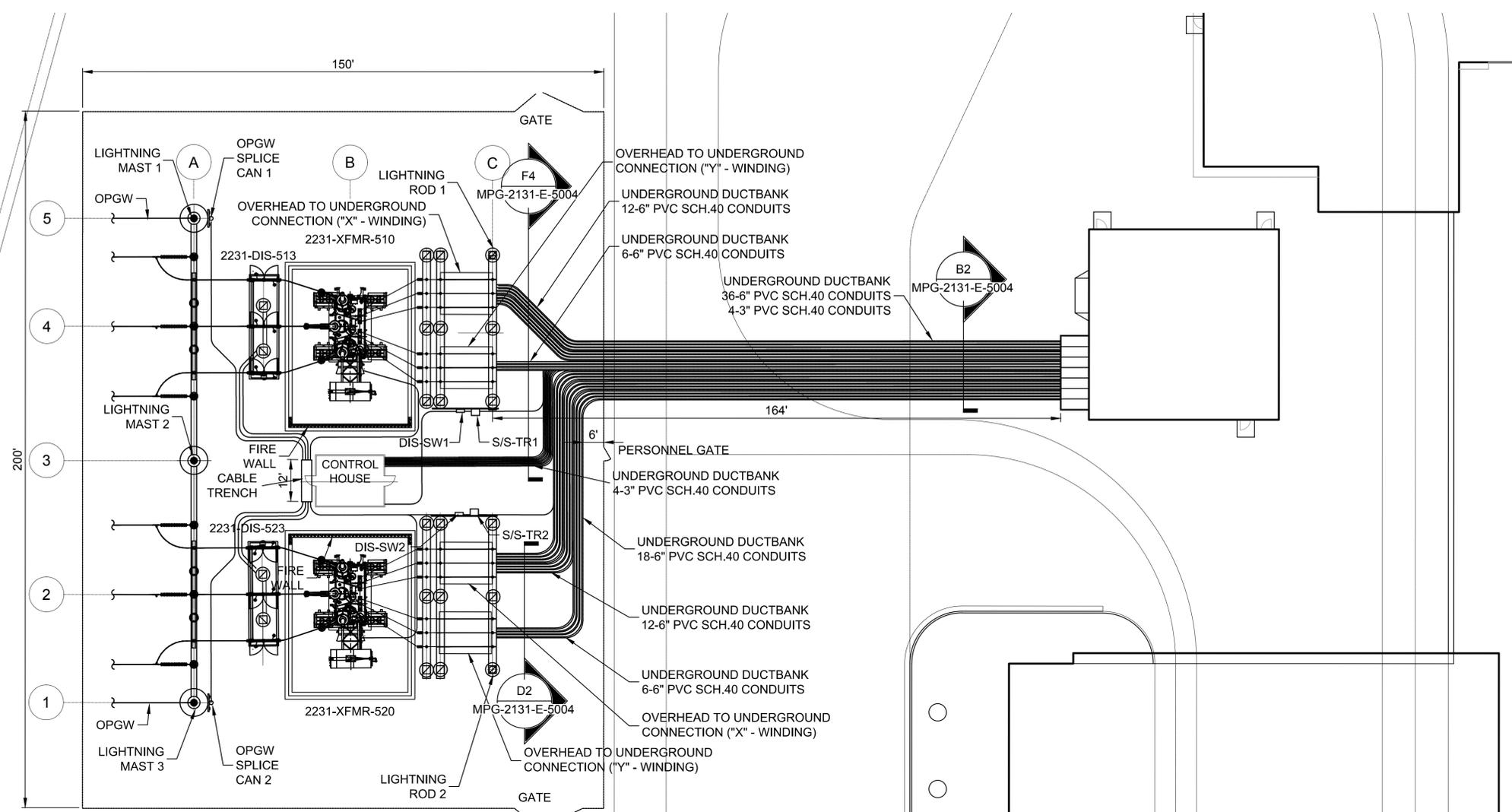
REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 EQUIPMENT PLAN-SECTOR 2

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
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 SCALE: 1" = 10"  
 DRAWING NO.  
 MPG-2231-E-2102  
 SHT 81 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

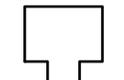
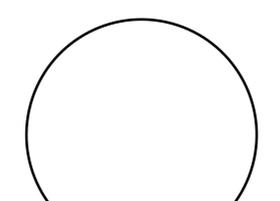


**GENERAL NOTES**

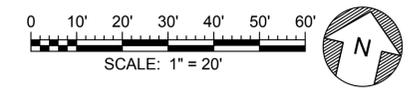
- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 1:  
 MPG-2231-E-2201  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 2:  
 MPG-2231-E-2202  
 ONE LINE DIAGRAM:  
 MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205

**BILL OF MATERIAL**

ITEM	MODEL No.	DESCRIPTION	QTY	CAT.#	CODE
1	68817-020	CONDUIT, 6"Ø, PVC, SCH. 40 W/INTEGRAL BELL ON ONE END	10000 ft	DB-120	016474
2	E240RF	CONDUIT COUPLING, PVC, 6" Ø	200	DB-120	360482
3	-	CONDUIT BEND, PVC, 6" Ø, 90°, 60" R	100	DB-120	360484
4	-	CONDUIT BEND, PVC, 6" Ø, 22 1/2°, 60" R	32	DB-120	360765
5	-	CONDUIT BEND, PVC, 6" Ø, 11 1/4°, 60" R	16	DB-120	360811
6	-	END BELL, PVC, 6" Ø	50	-	360487
7	-	CONDUIT PLASTIC CAP, 6" Ø	100	-	360494
8	68813-020	CONDUIT, 3"Ø, PVC, SCH. 80 W/INTEGRAL BELL ON ONE END	2500 ft	DB-120	016471
9	E240L	CONDUIT COUPLING, PVC, 3" Ø	100	DB-120	360322
10	-	CONDUIT BEND, PVC, 3" Ø, 90°, 36" R	30	DB-120	360328
11	-	CONDUIT BEND, PVC, 3" Ø, 45°, 36" R	20	DB-120	360403
12	-	CONDUIT BEND, PVC, 3" Ø, 22 1/2°, 36" R	10	DB-120	360800
13	-	CONDUIT BEND, PVC, 3" Ø, 11 1/4°, 36" R	20	DB-120	360801
14	-	END BELL, PVC, 3" Ø	30	-	360421
15	-	CONDUIT PLASTIC CAP, 3" Ø	30	-	360441
16	-	PULLING TAPE WITH SEQUENTIAL FOOTAGE MARKING	15000 ft	-	M560154
17	-	ALL WEATHER CLEAR PVC CEMENT	56qt	-	30886
18	-	MARKER BALL	30	-	M374947
19	3016	CABLE TRENCH 2'-11 3/8" (W) x 1'-7 1/2" (D) x 9'-10 1/8" (L), HS20	12 ft	-	-
20	3016	CABLE TRENCH LID 11 3/4" (W) x 2'-8" (L) x 2 1/2" (D), HS20	12 ft	-	-
21	3016	CABLE TRENCH END PLATE	2	-	-



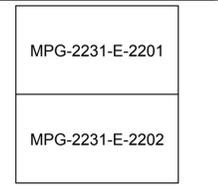
PLAN  
SCALE 1" = 20'



**SHEET KEY NOTES**



**KEY PLAN**



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Plot Date: 4/2/2024 3:48 PM  
Saved By: CCASSELL

REV	DATE	BY	CHK	APPR.	DESCRIPTION

DESIGNED BY:  
M. NESSABI  
DRAWN BY:  
M. ZARETSKY  
CHECKED BY:  
C. VANSANT  
IN CHARGE:  
P. RUDE  
DATE:  
04-09-2024

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REDDING, CA 96001  
(530) 243-5831

**VANDERWEIL**  
POWER GROUP  
P.O. Box 100  
174 Adams Street  
Boston, MA 02210

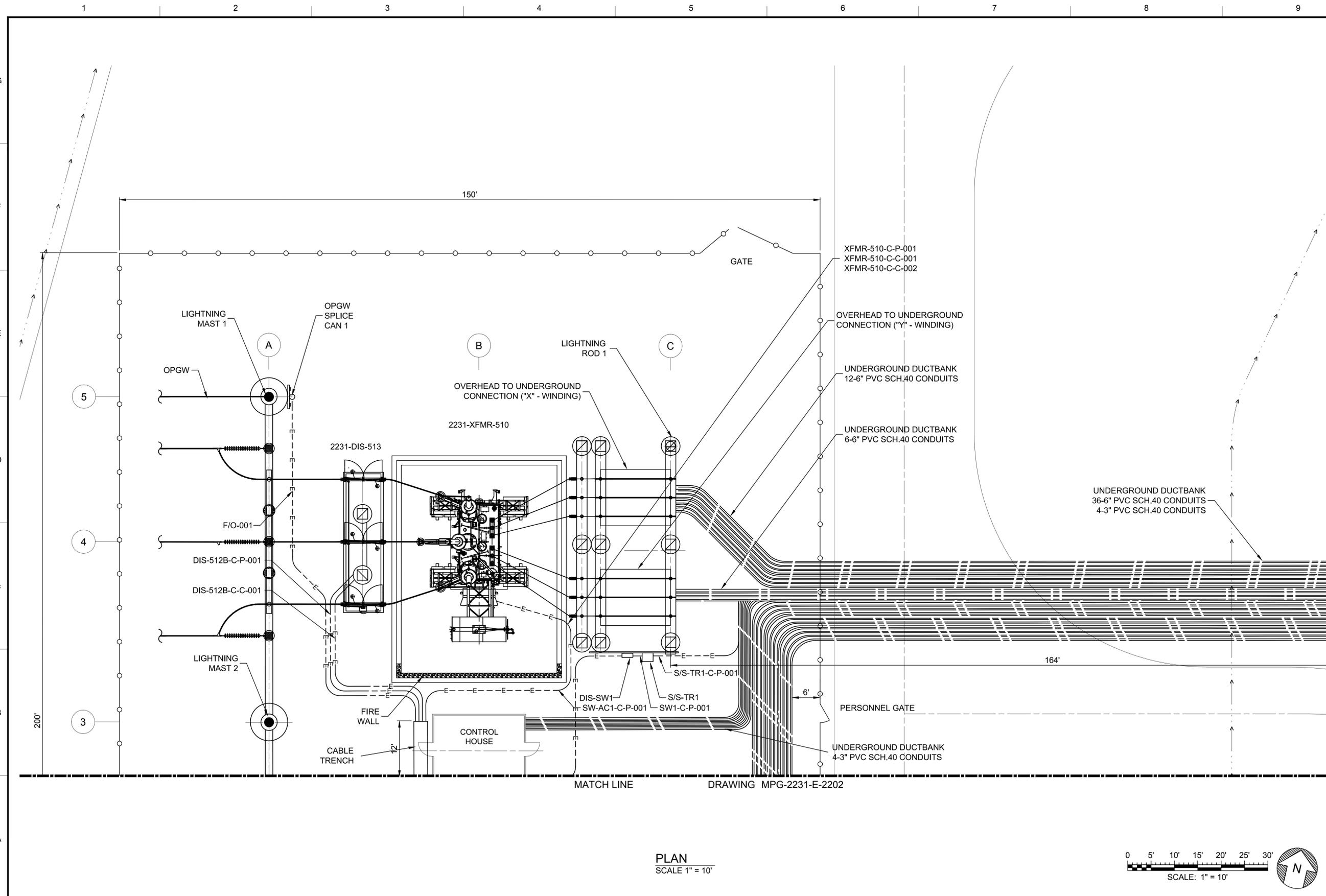
REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA

**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SUBSTATION UNDERGROUND TRENCH & CONDUIT OVERALL PLAN

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
0 1"  
DRAWING NO.  
MPG-2231-E-2200  
SHT 83 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

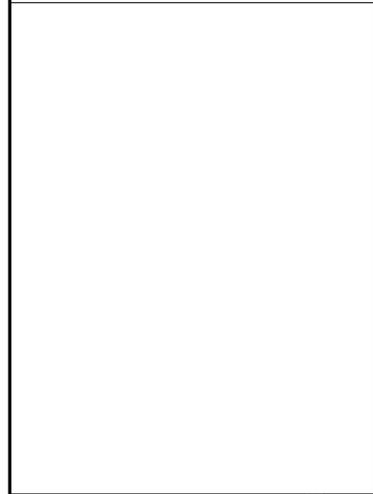
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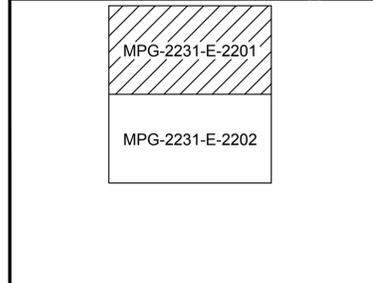
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 UNDERGROUND TRENCH & CONDUIT OVERALL PLAN:  
 MPG-2231-E-2200  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 2:  
 MPG-2231-E-2202  
 ONE LINE DIAGRAM:  
 MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN  
 SEE MPG-2205-C-2205

**SHEET KEY NOTES**



**KEY PLAN**



PLAN  
 SCALE 1" = 10'

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
M. NESSABI  
 DRAWN BY:  
M. ZARETSKY  
 CHECKED BY:  
C. VANSANT  
 IN CHARGE:  
P. RUDE  
 DATE:  
04-09-2024

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 174 North Street  
 Boston, MA 02210

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 PROFESSIONAL  
 ENGINEER  
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 E 23322  
 CALIFORNIA

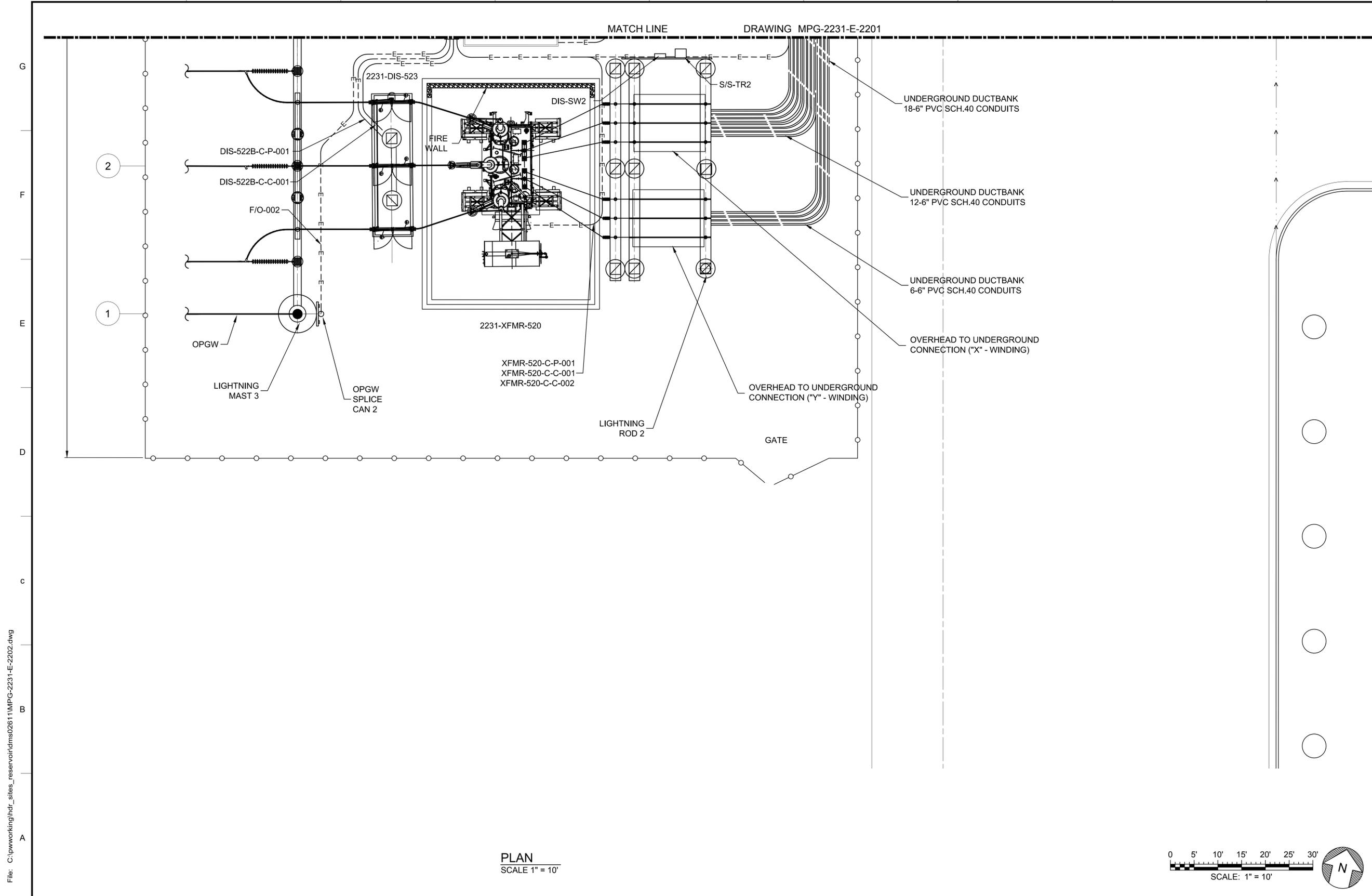


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION UNDERGROUND  
 TRENCH & CONDUIT PLAN SECTOR 1

VERIFY SCALES  
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 0 1" 1"

DRAWING NO.  
 MPG-2231-E-2201  
 SHT 84 OF 106

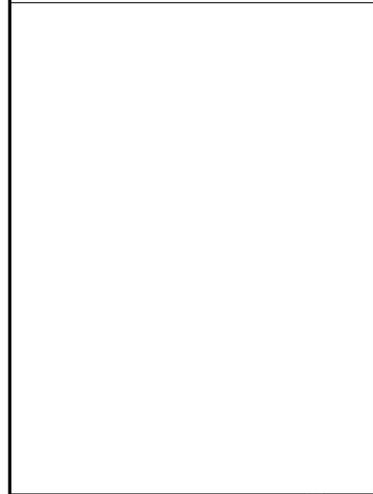
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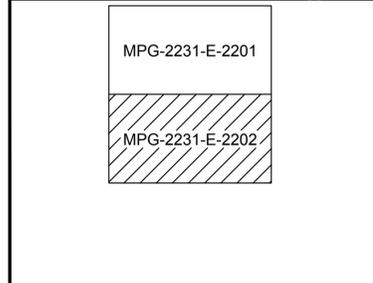
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 UNDERGROUND TRENCH & CONDUIT OVERALL PLAN: MPG-2231-E-2200  
 UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 1: MPG-2231-E-2201  
 ONE LINE DIAGRAM: MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205

**SHEET KEY NOTES**



**KEY PLAN**



PLAN  
SCALE 1" = 10'

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Plot Date: 4/2/2024 3:50 PM  
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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

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REDDING, CA 96001  
(530) 243-5831

**VANDERWEIL**  
POWER GROUP  
P.O. Box 100  
BOSTON, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA



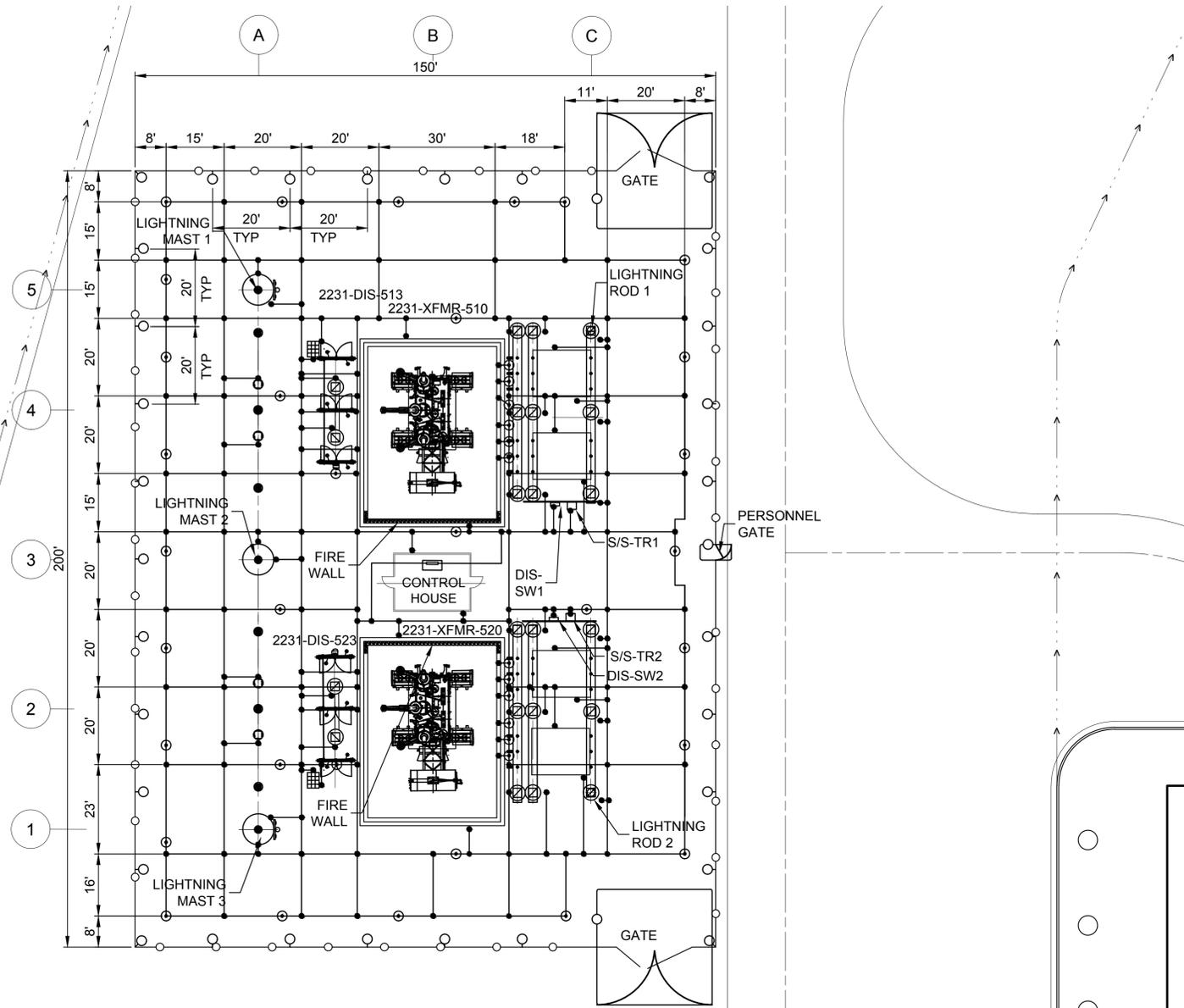
**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SUBSTATION UNDERGROUND TRENCH & CONDUIT PLAN SECTOR 2

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
DRAWING NO. MPG-2231-E-2202 SHT 85 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 GROUNDING PLAN - SECTOR 1:  
 MPG-2231-E-2301  
 GROUNDING PLAN - SECTOR 2:  
 MPG-2231-E-2302  
 ONE LINE DIAGRAM:  
 MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205



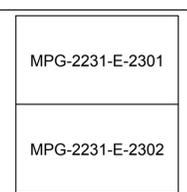
**BILL OF MATERIAL**

ITEM	MODEL No.	DESCRIPTION	QTY	CAT.#	CODE
1	-	CABLE, 250 kcmil, BARE COPPER, MEDIUM HARD DRAWN, 19 STRAND , 0.574" Ø, 0.772 LB/FT	4000 ft	-	29-0391
2	-	ROD GROUND, 5/8" Ø, 8'-0" (L)	40	013109	M187013
3	-	COMPRESSION, TEE, CONNECTOR, #1/0 COPPER TO 5/8" COPPERCLAD ROD	5	067910	M300989
4	-	CABLE, #1/0, STRANDED, COPPER	200 ft	-	M290036
5	-	COMPRESSION, SPLICE, CONNECTOR, #1/0 COPPER TO 5/8" COPPERCLAD ROD	40	067910	M300966
6	-	CONNECTOR COMPRESSION FENCE POST DEUTSCH #GC760B40-001 FOR USE ON 2-1/2" POST, FENCE POST TO 1/0 kcmil CU USE WITH DEUTSCH HEAD ASSEMBLY DLT45CLHA03975 POWER UNIT #DLT45MAPW0000	40	067910	M300993
7	-	ROD GROUND, 3/4" Ø, 12'-0" (L), (10 MIL MIN. COPPER JACKET)	50	-	-
8	-	EXOTHERMIC HORIZONTAL 250kcmil CABLE TO 3/4" GROUND ROD CONNECTION	50	-	-
9	-	EXOTHERMIC HORIZONTAL CROSS CONNECTION 250kcmil CABLE TAP TO 250kcmil CABLE RUN	100	-	-
10	-	EXOTHERMIC HORIZONTAL TEE CONNECTION 250kcmil CABLE TAP TO 250kcmil CABLE RUN	50	-	-
11	-	CONNECTOR, COMPRESSION, COPPER, FOR 250kcmil CABLE, 2-HOLE NEMA PAD	50	-	-
12	-	SWITCH OPERATING PLATFORM, 3'x4'	2	400984	15-5044
13	-	WIRE #4, BARE, COPPER, STRANDED	150 ft	028580	M290033
14	-	WIRE #4, BARE, ALUMINUM, STRANDED (ADD CORROSION INHIBITOR)	500 ft	-	M290001
15	-	CONNECTOR, TAP, COMPRESSION TYPE	250	041010	M305507

**SHEET KEY NOTES**

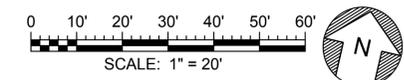


**KEY PLAN**



**LEGEND**

- 250KCMIL CU STRANDED GROUND CABLE
- ⊙ GROUND ROD 3/4"x12'(L)
- EXOTHERMIC GROUND CONNECTION
- FENCE CONNECTION-GROUND ROD 5/8"x8'(L)
- ▣ OPERATING PLATFORM



**PLAN**  
SCALE 1" = 20"

File: C:\pwworking\hdr\_sites\_reservoir\dms02611\MPG-2231-E-2300.dwg  
 Plot Date: 4/1/2024 1:47 PM  
 Saved By: MZARETSKY

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
 M. NESSABI  
 DRAWN BY:  
 M. ZARETSKY  
 CHECKED BY:  
 C. VANSANT  
 IN CHARGE:  
 P. RUDE  
 DATE:  
 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

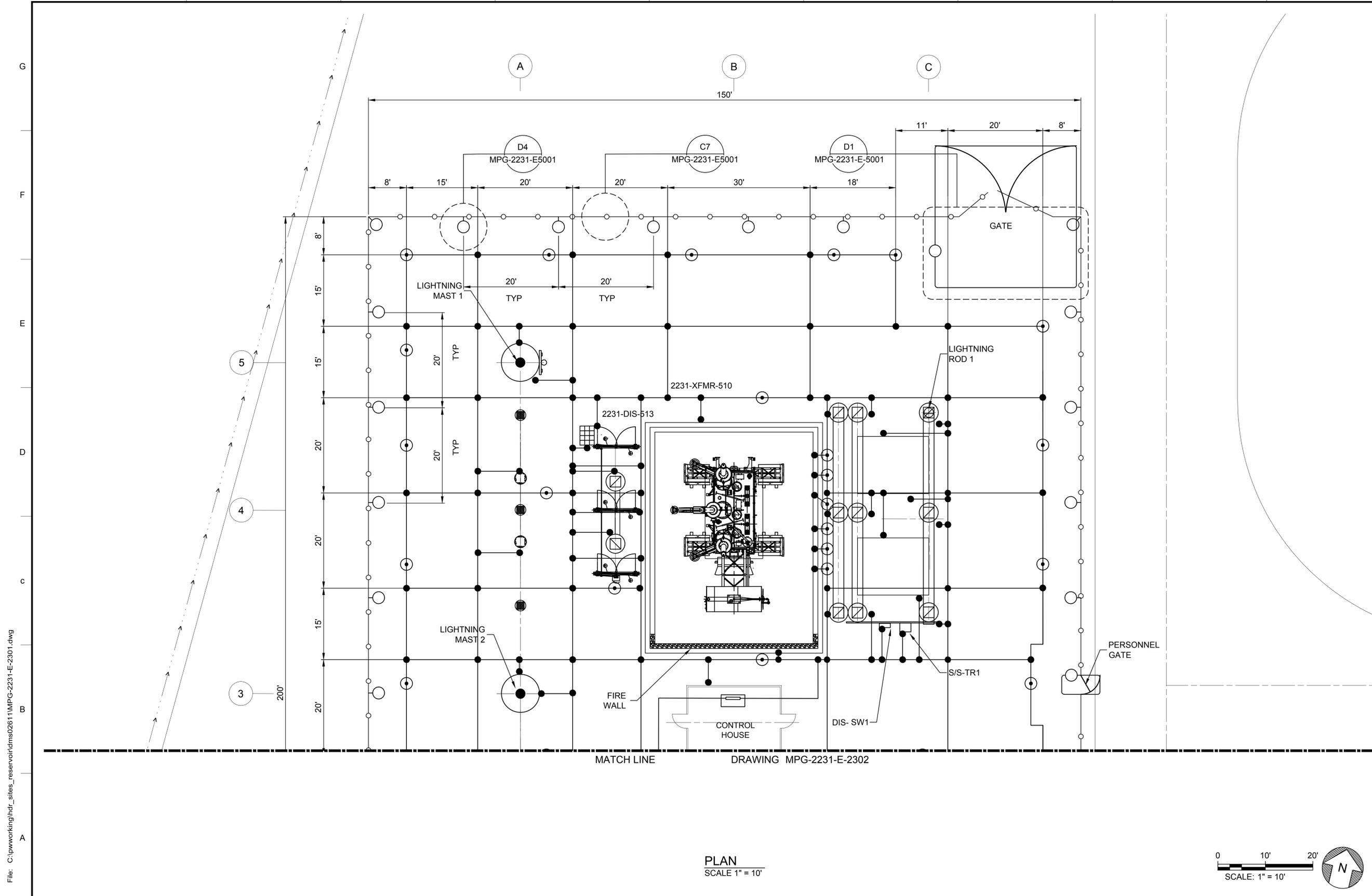


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
**OVERALL GROUNDING PLAN**

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1"

DRAWING NO.  
 MPG-2231-E-2300  
 SHT 86 OF 106

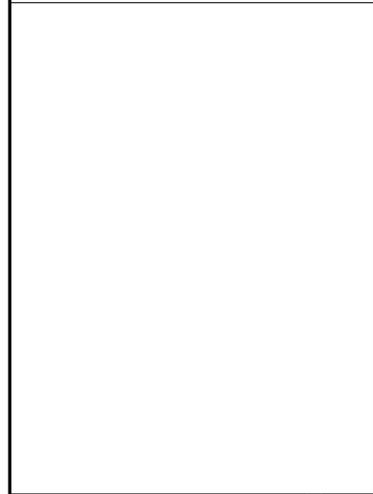
PRELIMINARY - NOT FOR CONSTRUCTION



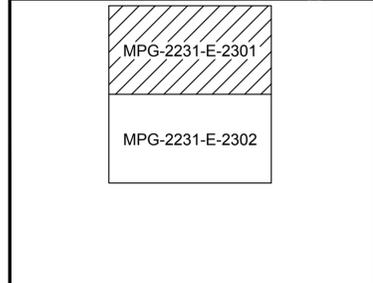
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 SUBSTATION OVERALL GROUNDING PLAN: MPG-2231-E-2300  
 SUBSTATION GROUNDING PLAN - SECTOR 2: MPG-2231-E-2302  
 SUBSTATION ONE LINE DIAGRAM: MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205

**SHEET KEY NOTES**



**KEY PLAN**



MATCH LINE DRAWING MPG-2231-E-2302

PLAN  
SCALE 1" = 10'

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 Plot Date: 4/1/2024 1:49 PM  
 Saved By: CCASSELL

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 617-423-7423 TEL  
 714 Vermont Drive  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

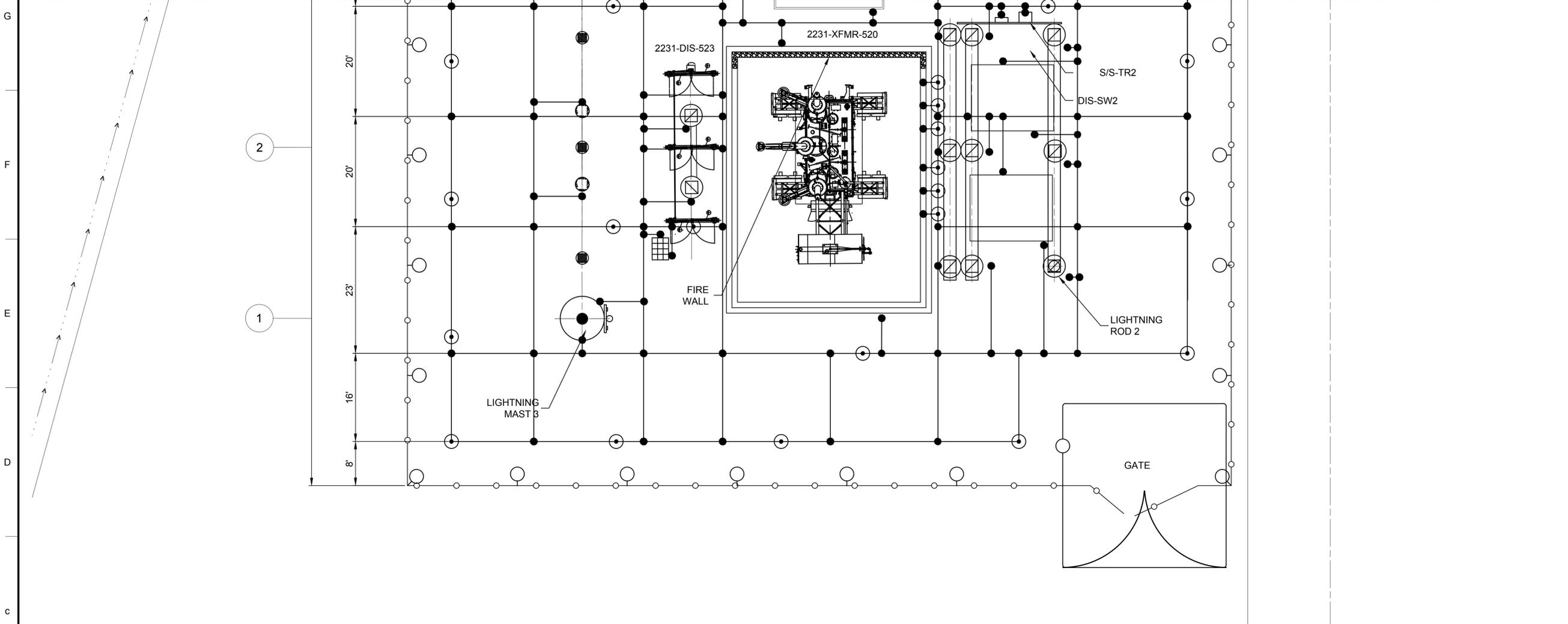


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 GROUNDING PLAN SECTOR 1

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1" 1"  
 DRAWING NO.  
 MPG-2231-E-2301  
 SHT 87 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

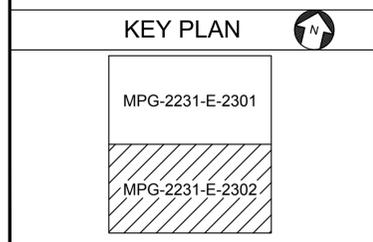
MATCH LINE DRAWING MPG-2231-E-2301



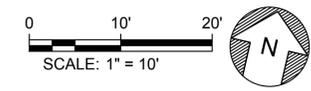
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 SUBSTATION OVERALL GROUNDING PLAN:  
 MPG-2231-E-2300  
 SUBSTATION GROUNDING PLAN - SECTOR 1:  
 MPG-2231-E-2301  
 SUBSTATION ONE LINE DIAGRAM:  
 MPG-2231-E-6001
- FOR OVERALL SITE CIVIL PLAN SEE MPG-2205-C-2205

**SHEET KEY NOTES**



PLAN  
SCALE 1" = 10'



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 Saved By: MZARETSKY

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 914 Summer Street  
 Boston, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



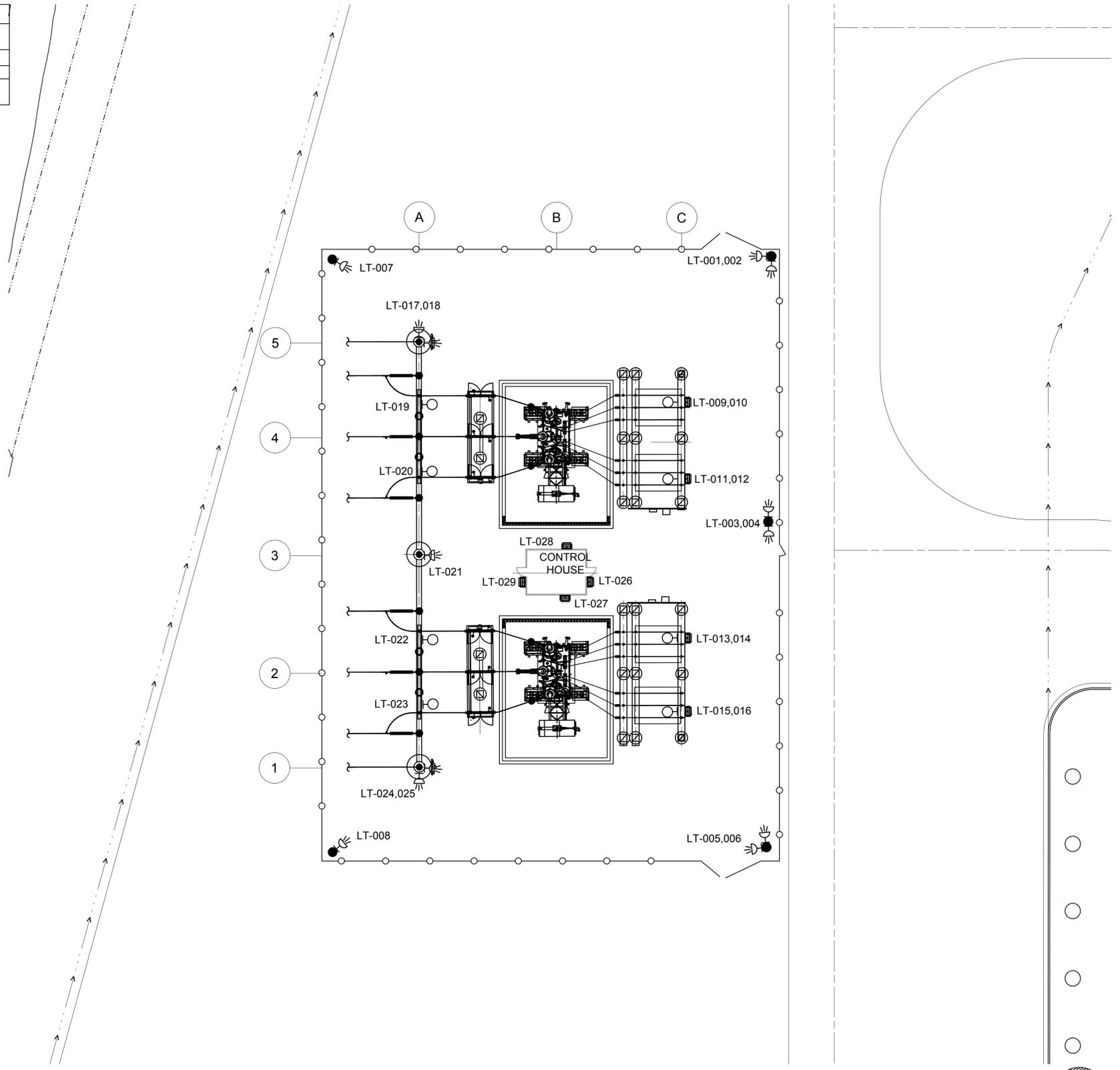
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 GROUNDING PLAN SECTOR 2

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1" 1"  
 DRAWING NO.  
 MPG-2231-E-2302  
 SHT 88 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Luminaire Schedule							
Symbol	Qty	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
⊕	13	Single	PFF-138L-700-WW-G2-A33	0.850	43064	289.3	3760.9
⊕	8	Single	121-16L530-WW-G4-3	0.850	2885	28.1	224.8
⊕	8	Single	PLED2-10000LM-L5H-MVOLT-40K-70CRI-UNM-DGXD	0.850	10000	98.8	790.4

Luminaire Location Summary			
LumNo	Mount. (H)	Orient	Tilt
LT-001	35	180	0
LT-002	35	270	0
LT-003	35	90	0
LT-004	35	270	0
LT-005	35	90	0
LT-006	35	180	0
LT-007	35	315	0
LT-008	35	45	0
LT-009	15	180	180
LT-010	15	0	0
LT-011	15	180	180
LT-012	15	0	0
LT-013	15	180	180
LT-014	15	0	0
LT-015	15	180	180
LT-016	15	0	0
LT-017	35	180	0
LT-018	35	0	0
LT-019	15	0	180
LT-020	15	0	180
LT-021	35	0	0
LT-022	15	0	180
LT-023	15	0	180
LT-024	35	0	0
LT-025	35	270	0
LT-026	8	0	0
LT-027	8	90	0
LT-028	8	180	0
LT-029	8	270	0



**GENERAL NOTES**

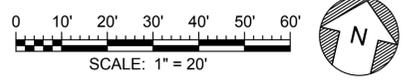
- IEEE Std 998TM - 2012, IEEE GUIDE TO DIRECT LIGHTNING STROKE, SHIELDING OF SUBSTATIONS METHOD: ROLLING SPHERE METHOD, STATIC MASTS ONLY.

**SHEET KEY NOTES**



**KEY PLAN**

PLAN  
SCALE: 1"=20'



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Plot Date: 4/1/2024 1:22 PM  
Saved By: JDELLAZOPPA

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M. ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

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 P.O. Box 100  
 Boston, MA 02210

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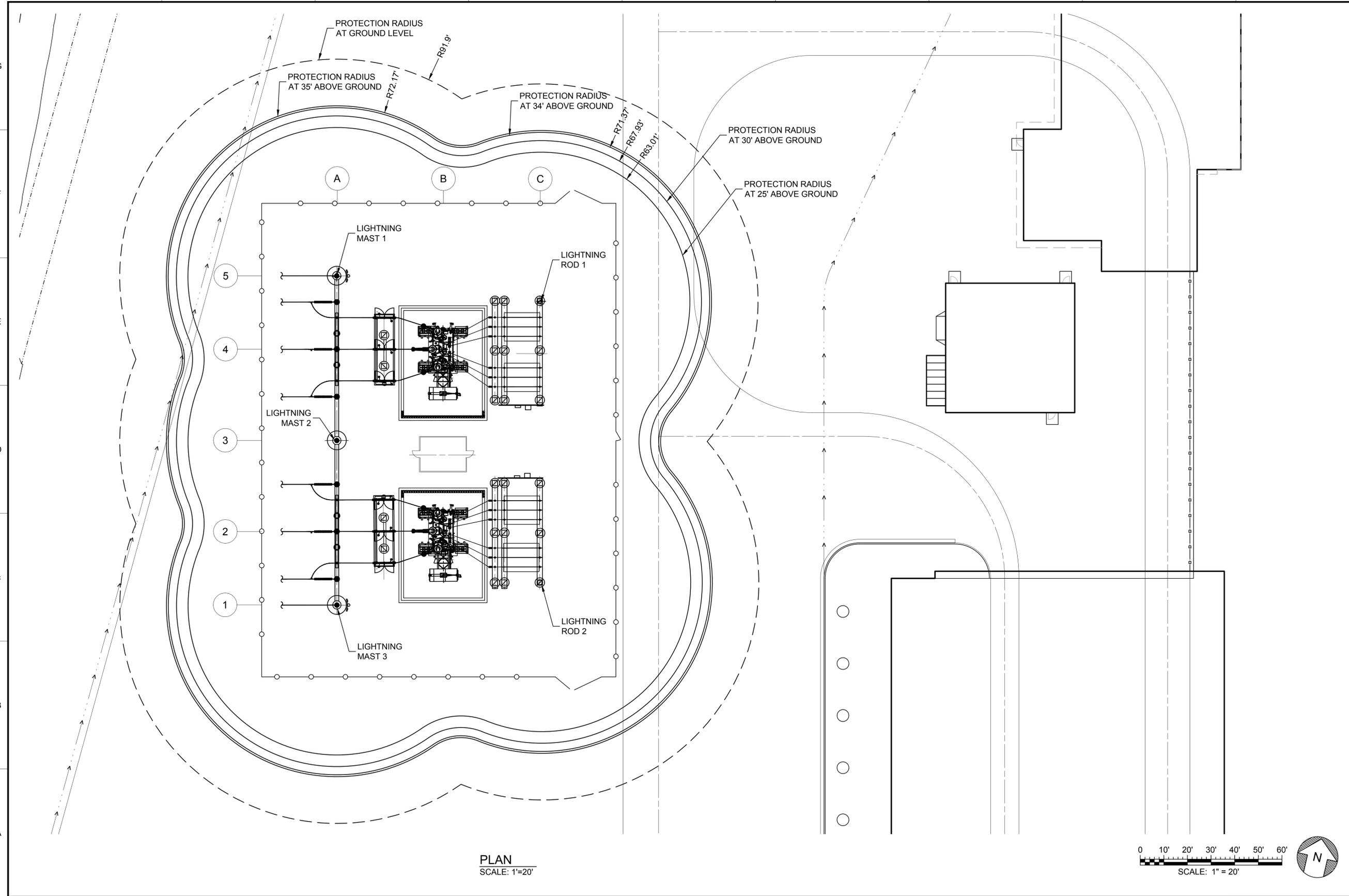
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 LIGHTING PLAN OVERALL

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1" 1"

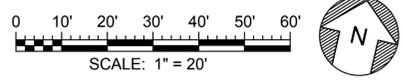
DRAWING NO.  
 MPG-2231-E-2400  
 SHT 89 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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 Saved By: MZARETSKY  
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PLAN  
 SCALE: 1"=20'



GENERAL NOTES

- IEEE Std 998TM - 2012, IEEE GUIDE TO DIRECT LIGHTNING STROKE, SHIELDING OF SUBSTATIONS METHOD: ROLLING SPHERE METHOD, STATIC MASTS ONLY.

SHEET KEY NOTES

KEY PLAN

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
M. NESSABI  
 DRAWN BY:  
M.ZARETSKY  
 CHECKED BY:  
C. VANSANT  
 IN CHARGE:  
P.RUDE  
 DATE:  
04-09-2024

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 (530) 243-5831

**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP  
 174 Newmarket Street  
 Boston, MA 02210

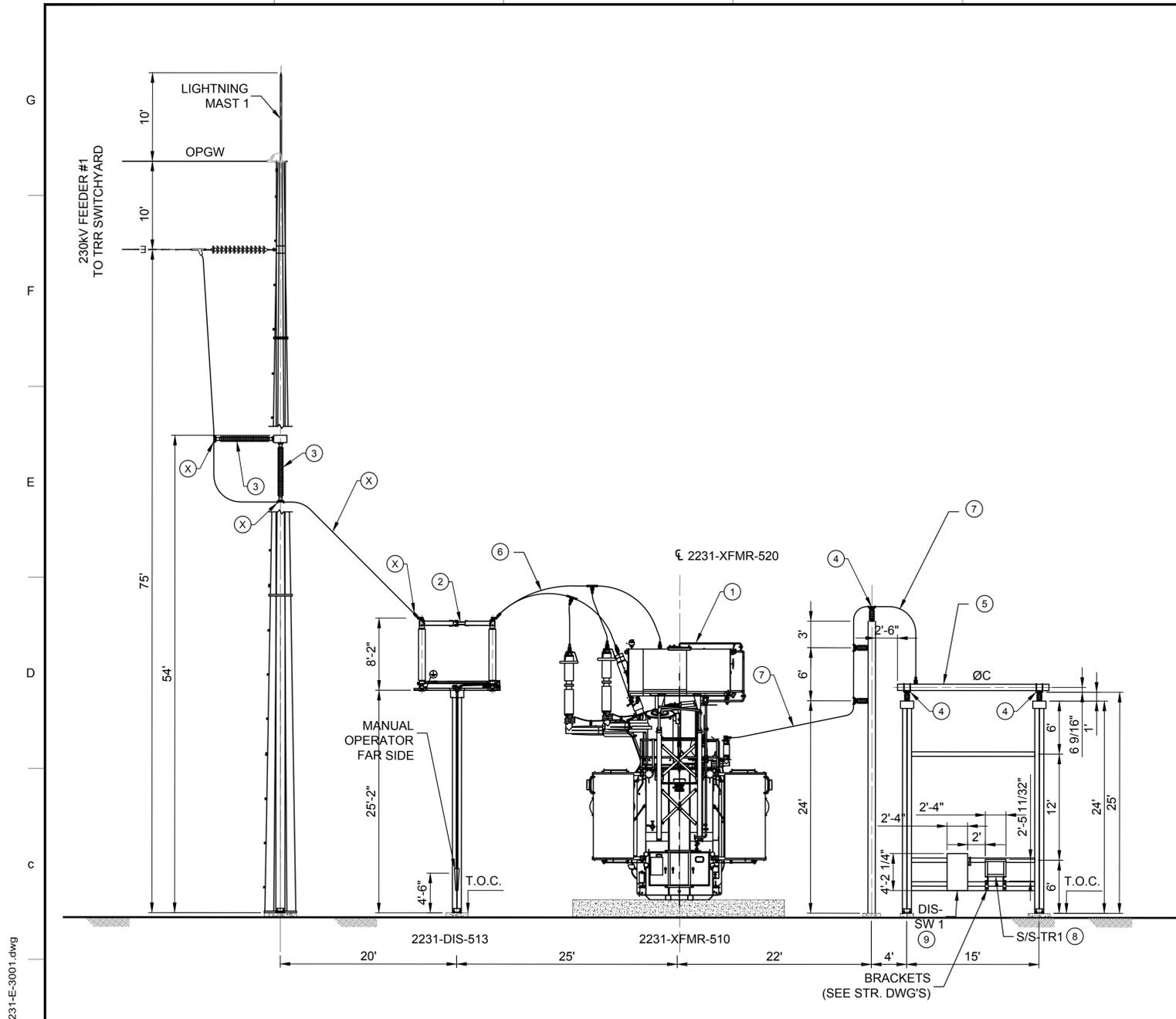
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 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 LIGHTNING PROTECTION PLAN

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS  
  
 DRAWING NO.  
 MPG-2231-E-2500  
 SHT 90 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**B2 SECTION**  
SCALE 1/8"=1'-0"  
MPG-2231-E-2100

PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL -TO- METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO CENTERLINE		
				VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
15	12	110	1'-0"	2'-0"	2'-6"	3'-0"
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES						
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS		MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
			REQUIRED	RECOMMENDED		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
15	12	110	9'-0"	10'-0"	3'-6"	18'-0"
230	230	900	13'-9"	15'-0"	8'-3"	21'-11"

PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT						
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO CENTERLINE PHASE SPACING FOR RIGID BUSES	
			MINIMUM	RECOMMENDED		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
15	12	110	0'-7"	0'-10"	2'-0"	
230	230	900	5'-11"	6'-4"	11'-0"	

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS						
VOLTAGE (kV)			PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)		
				NOMINAL PH-TO-PH	BIL	
15	12	110	10'-2"	0'-6"		
230	230	900	15'-5"	5'-3"		

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

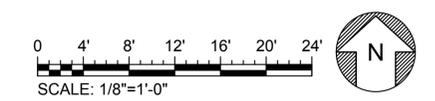
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
BILL OF MATERIAL: MPG-2230-E-2100  
EQUIPMENT SECTIONS - SECTOR 2: MPG-2230-E-3002  
EQUIPMENT SECTIONS - SECTOR 3: MPG-2230-E-3003  
ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ABBREVIATIONS  
OPGW : OPTICAL GROUND WIRE

**KEY PLAN**



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Print Date: 4/1/2024 2:43 PM  
Saved By: MZARETSKY

DESIGNED BY:	M. NESSABI
DRAWN BY:	M.ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P.RUDE
DATE:	04-09-2024

**Jacobs**  
2525 AIRPARK DR  
REDDING, CA 96001  
(530) 243-5831

**VANDERWEIL**  
POWER GROUP  
P.O. Box 100  
Boston, MA 02201

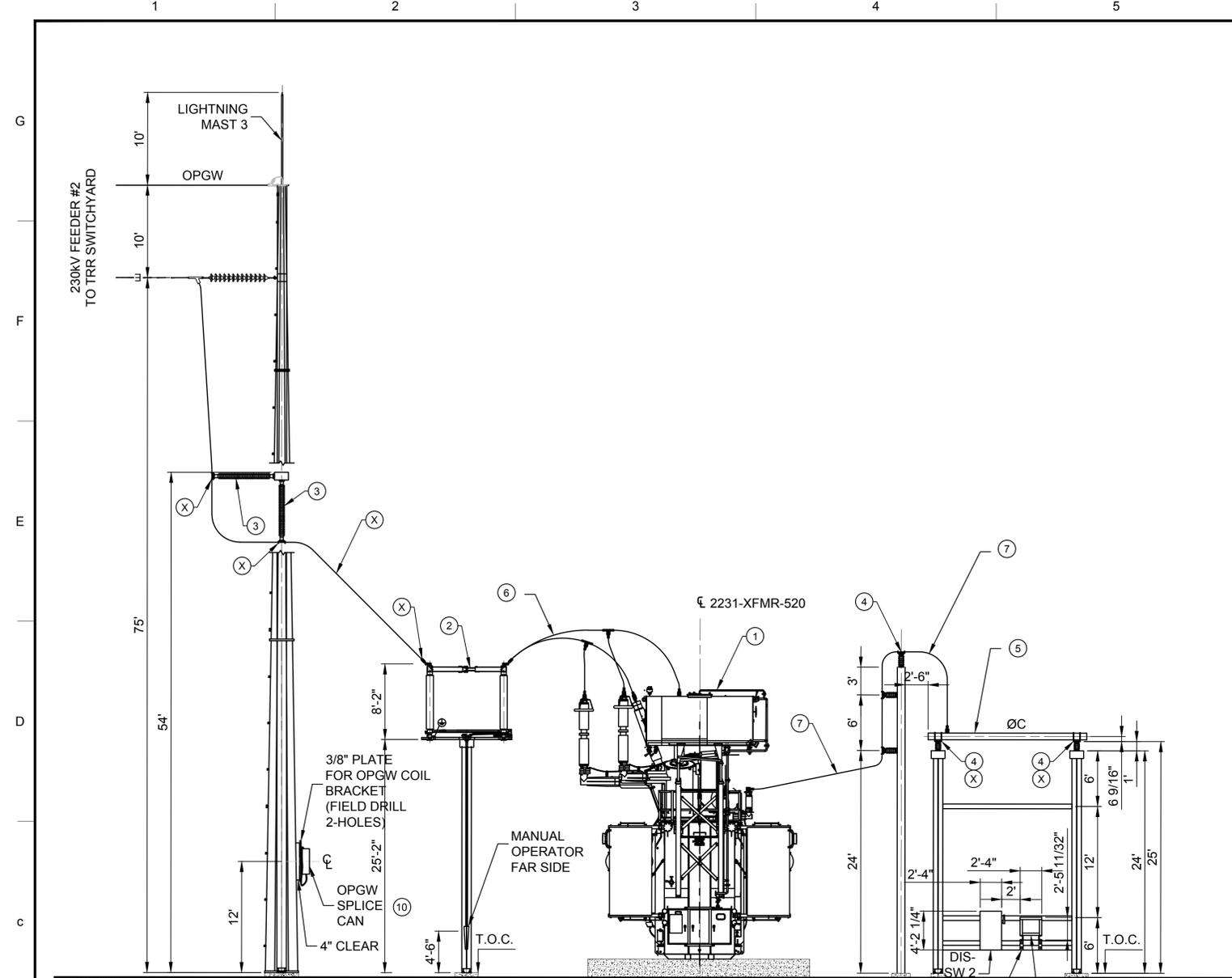
REGISTERED PROFESSIONAL ENGINEER  
MANSOUR NESSABI  
E 23322  
CALIFORNIA



**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
TERMINAL REGULATING RESERVOIR  
230KV SUBSTATION  
EQUIPMENT SECTION. SHEET 1

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS 0 1"
DRAWING NO. MPG-2231-E-3001 SHT 91 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION



**B3 SECTION**  
SCALE 1/8"=1'-0"  
MPG-2231-E-2100

PHASE SPACING FOR OUTDOOR AIR SWITCHES						
VOLTAGE (kV)			MINIMUM METAL -TO- METAL FOR AIR SWITCHES AND BUS SUPPORTS	PHASE SPACING CENTERLINE-TO CENTERLINE		
				VERTICAL BREAK DISCONNECT SWITCHES AND POWER FUSES NON-EXPULSION TYPES	SIDE OR HORIZONTAL BREAK DISCONNECT SWITCHES	ALL HORN GAP BREAK SWITCHES AND EXPULSION TYPE FUSES
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
15	12	110	1'-0"	2'-0"	2'-6"	3'-0"
230	230	900	7'-5"	11'-0"	13'-4"	13'-4"

OUTDOOR SUBSTATION SAFETY CLEARANCES						
VOLTAGE (kV)			MINIMUM VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS		MINIMUM HORIZONTAL CLEARANCE TO UNGUARDED LIVE PARTS	MINIMUM VERTICAL CLEARANCE BETWEEN UNGUARDED LIVE PARTS AND ROADWAYS INSIDE SUBSTATIONS
			REQUIRED	RECOMMENDED		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
15	12	110	9'-0"	10'-0"	3'-6"	18'-0"
230	230	900	13'-9"	15'-0"	8'-3"	21'-11"

PHASE SPACING AND GROUND CLEARANCES FOR OUTDOOR RIGID BUS SUPPORT						
VOLTAGE (kV)			CLEARANCE TO SUPPORTING STRUCTURE FOR RIGID BUS PARTS		RECOMMENDED CENTERLINE-TO CENTERLINE PHASE SPACING FOR RIGID BUSES	
			MINIMUM	RECOMMENDED		
NOMINAL PH-TO-PH	SYSTEM PH-TO-PH	BIL				
15	12	110	0'-7"	0'-10"	2'-0"	
230	230	900	5'-11"	6'-4"	11'-0"	

CLEARANCES FROM SUBSTATION FENCE TO LIVE PARTS						
VOLTAGE (kV)			PERIMETER FENCE SAFETY CLEARANCE	GUARD ZONE (CLEARANCE TO LIVE PART)		
				NOMINAL PH-TO-PH	BIL	
15	12	110	10'-2"	0'-6"		
230	230	900	15'-5"	5'-3"		

DEAD-END STRUCTURE SPECIFICATIONS				
VOLTAGE (kV)	MINIMUM PHASE SEPARATION	MINIMUM CLEARANCE LIVE PARTS TO STRUCTURE	MINIMUM CONDUCTOR SIZE	TENSION PER PHASE IN LB*FT
230	18'-0"	7'-3"	1113 kcmil AACC	2700-6800

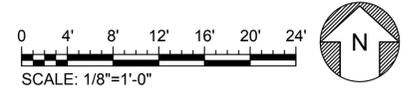
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
EQUIPMENT PLAN, OVERALL SITE: MPG-2230-E-2100  
BILL OF MATERIAL: MPG-2230-E-2100  
EQUIPMENT SECTIONS - SECTOR 1: MPG-2230-E-3001  
EQUIPMENT SECTIONS - SECTOR 3: MPG-2230-E-3003  
ONE LINE DIAGRAM: MPG-2230-E-6001

**SHEET KEY NOTES**

- ABBREVIATIONS  
OPGW : OPTICAL GROUND WIRE  
F.S.: FAR SIDE

**KEY PLAN**



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REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: M. NESSABI  
 DRAWN BY: M.ZARETSKY  
 CHECKED BY: C. VANSANT  
 IN CHARGE: P.RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



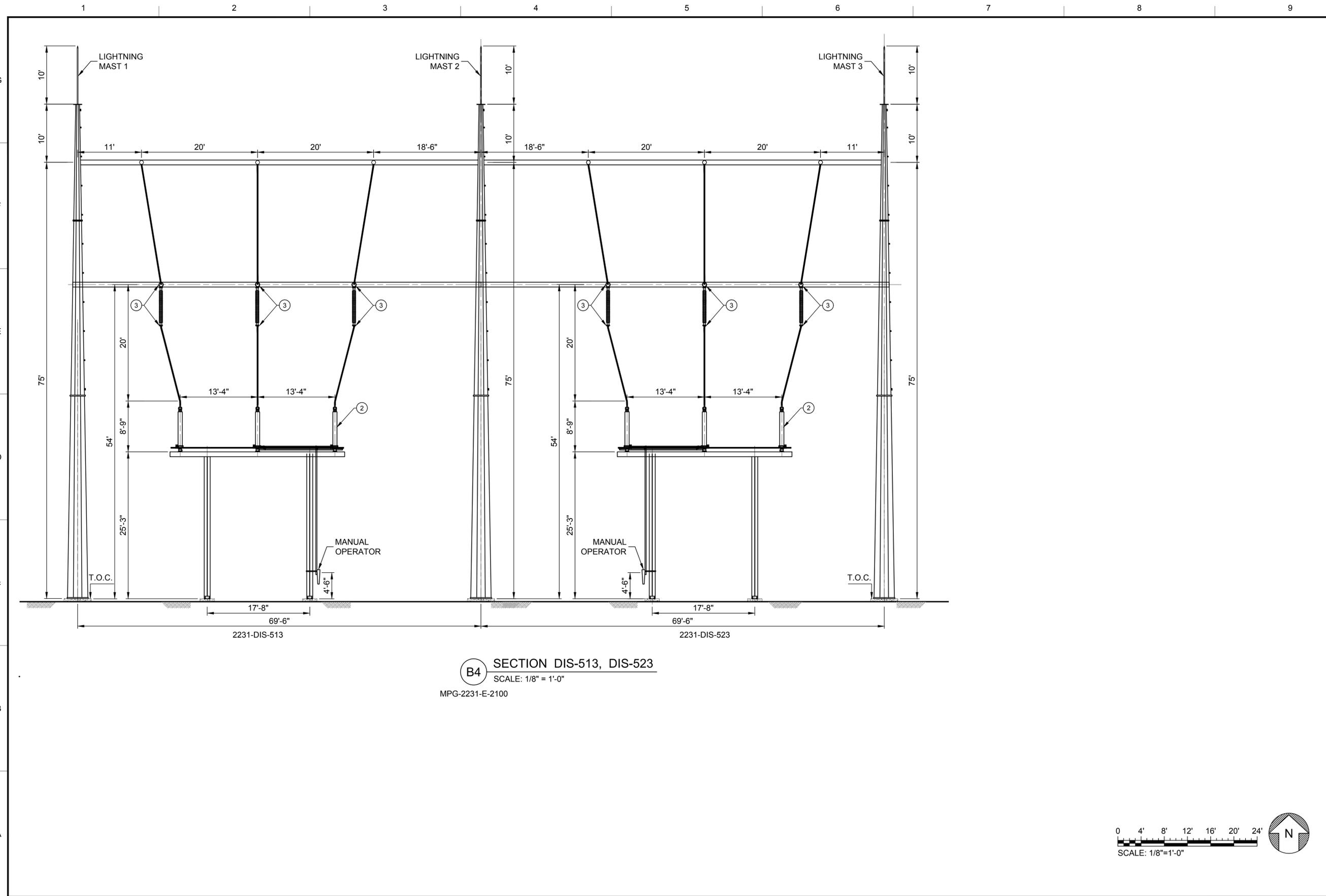
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 EQUIPMENT SECTION. SHEET 2

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1"

DRAWING NO.  
 MPG-2231-E-3002  
 SHT 92 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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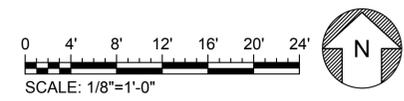
**B4** SECTION DIS-513, DIS-523  
 SCALE: 1/8" = 1'-0"  
 MPG-2231-E-2100

**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 EQUIPMENT PLAN, OVERALL SITE:  
 MPG-2231-E-2100  
 BILL OF MATERIAL  
 MPG-2231-E-2100  
 EQUIPMENT SECTIONS - SECTOR 1:  
 MPG-2231-E-3001  
 EQUIPMENT SECTIONS - SECTOR 2:  
 MPG-2231-E-3002  
 ONE LINE DIAGRAM:  
 MPG-2231-E-6001

**SHEET KEY NOTES**

**KEY MAP**



REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M.ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

**Jacobs**  
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 (530) 243-5831

**VANDERWEIL**  
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R.G. Vanderweil Engineers, LLP 817-423-7423 TEL  
 714 Summer Street  
 Boston, MA 02210

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 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA



**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 EQUIPMENT SECTION. SHEET 3

VERIFY SCALES <small>BAR IS ONE INCH ON ORIGINAL          DRAWING. ADJUST SCALES FOR          REDUCED PLOTS</small>
DRAWING NO. MPG-2231-E-3003 SHT 93 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

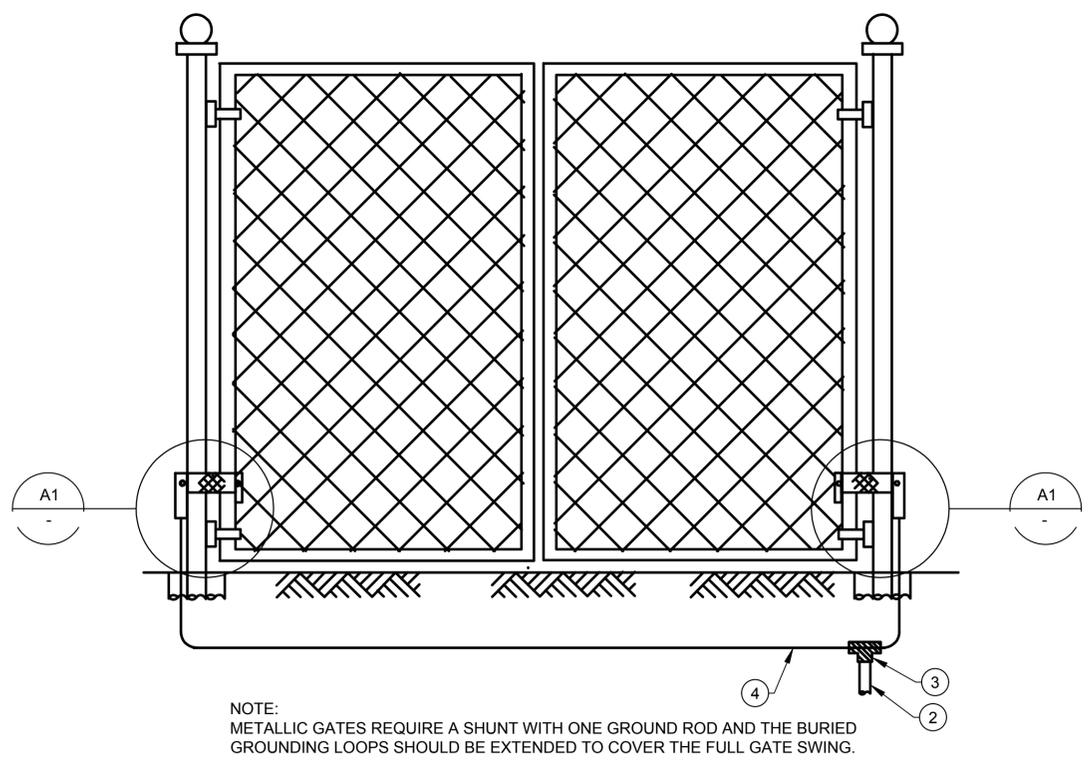
**GENERAL NOTES**

- FACILITY DRAWINGS ARE AS NOTED BELOW:  
 OVERALL GROUNDING PLAN:  
 MPG-2231-E-2300  
 BILL OF MATERIAL:  
 MPG-2231-E-2300

**SHEET KEY NOTES**

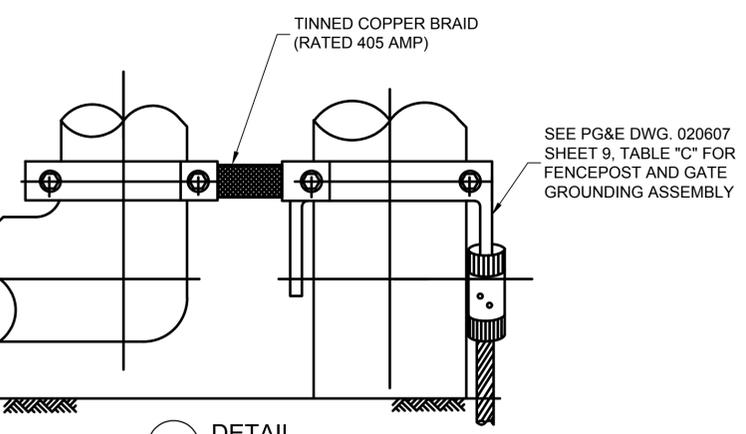
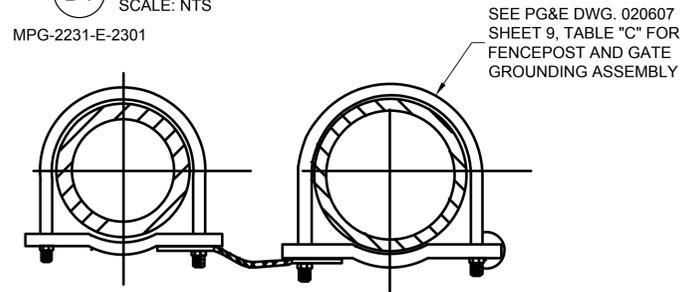
**KEY MAP**

PRELIMINARY - NOT FOR CONSTRUCTION

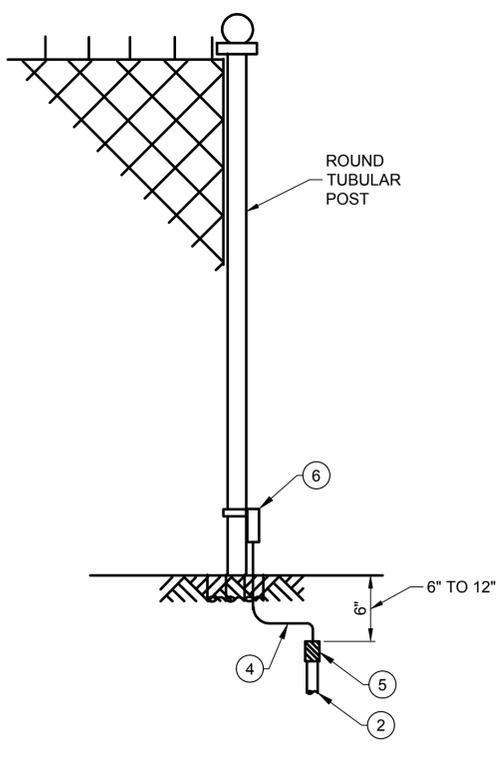


NOTE:  
 METALLIC GATES REQUIRE A SHUNT WITH ONE GROUND ROD AND THE BURIED  
 GROUNDING LOOPS SHOULD BE EXTENDED TO COVER THE FULL GATE SWING.

**D1** DETAIL (GROUNDING OF GATE)  
 SCALE: NTS

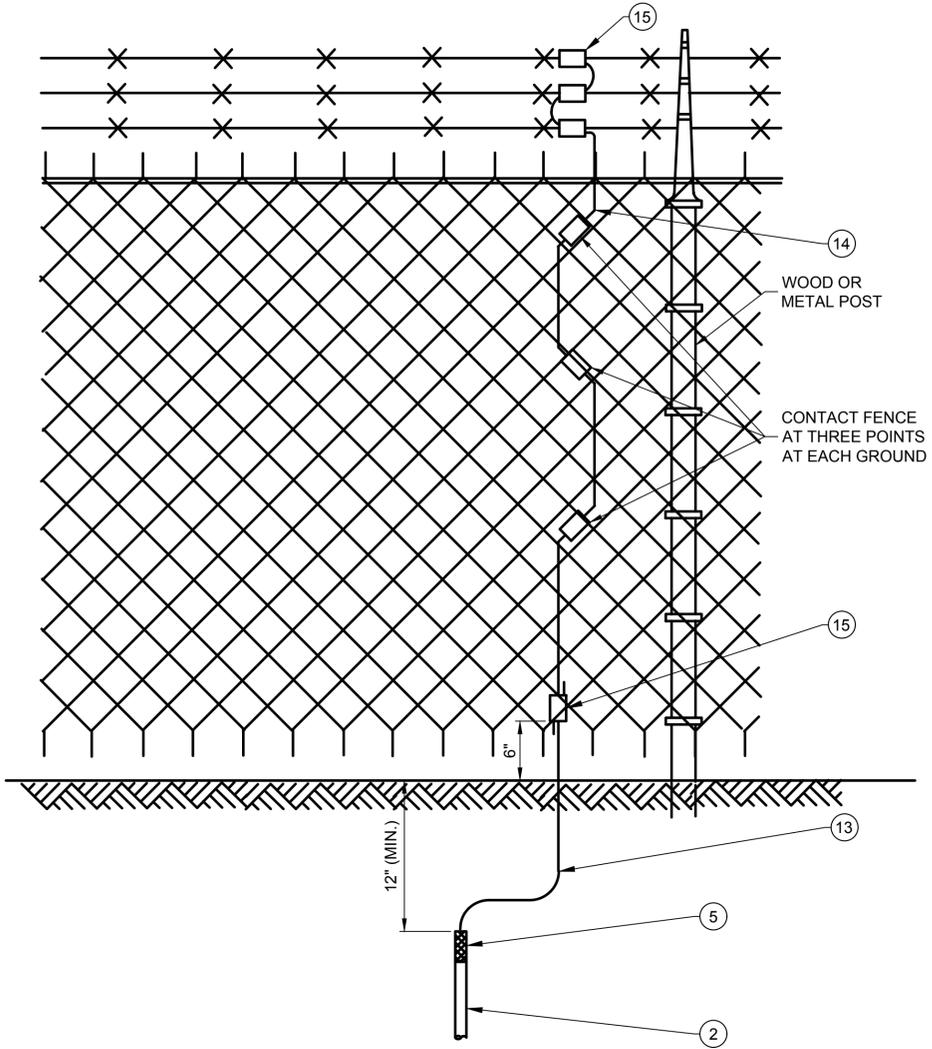


**A1** DETAIL  
 SCALE: NTS



**D4** DETAIL (GROUNDING OF POST)  
 SCALE: NTS

MPG-2231-E-2301



**C7** DETAIL (GROUNDING OF FENCE)  
 SCALE: NTS

MPG-2231-E-2301

REV	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:	M. NESSABI
DRAWN BY:	M. ZARETSKY
CHECKED BY:	C. VANSANT
IN CHARGE:	P. RUDE
DATE:	04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
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**VANDERWEIL**  
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R.G. Vanderweil Engineers, LLP 817-233-7423 TEL  
 914 Summer Street  
 Boston, MA 02210

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 PROFESSIONAL  
 ENGINEER  
 MANSOUR NESSABI  
 E 23322  
 CALIFORNIA

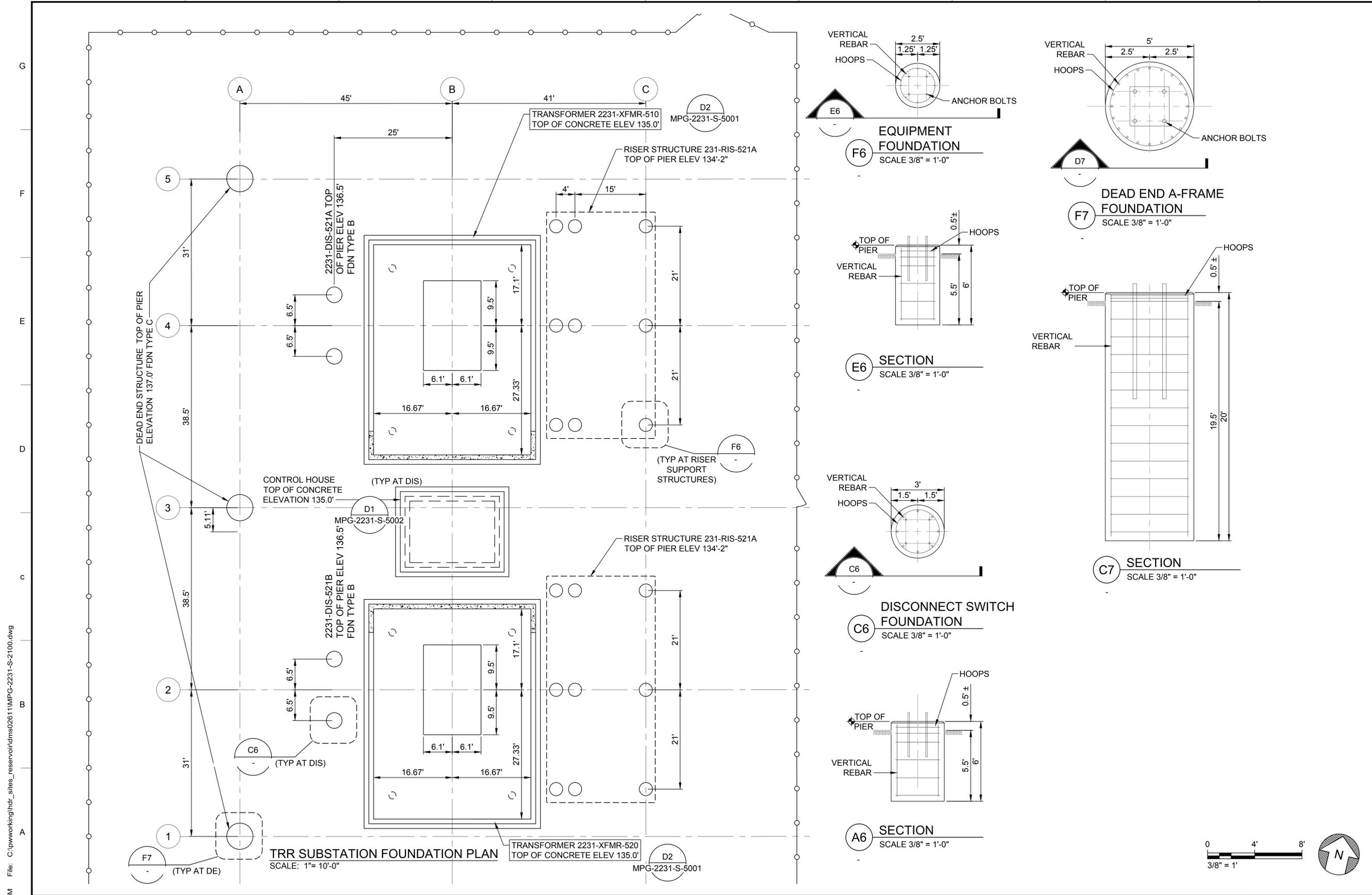


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING  
 ELECTRICAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 GROUNDING DETAILS

VERIFY SCALES <small>BAR IS ONE INCH ON ORIGINAL          DRAWING. ADJUST SCALES FOR          REDUCED PLOTS</small>
0 1"
DRAWING NO. MPG-2231-E-5001 SHT 94 OF 106

**GENERAL NOTES**

1. FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301 AND MPG-0001-G-0302.



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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
 2525 AIRPARK DR  
 REDDING, CA 96001  
 (530) 243-5831  
**VANDERWEIL**  
 POWER GROUP  
R.G. Vanderweil Engineers, LLP 817-423-7423 TEL 712 Bond, MA 02210 vanderweil.com

REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA

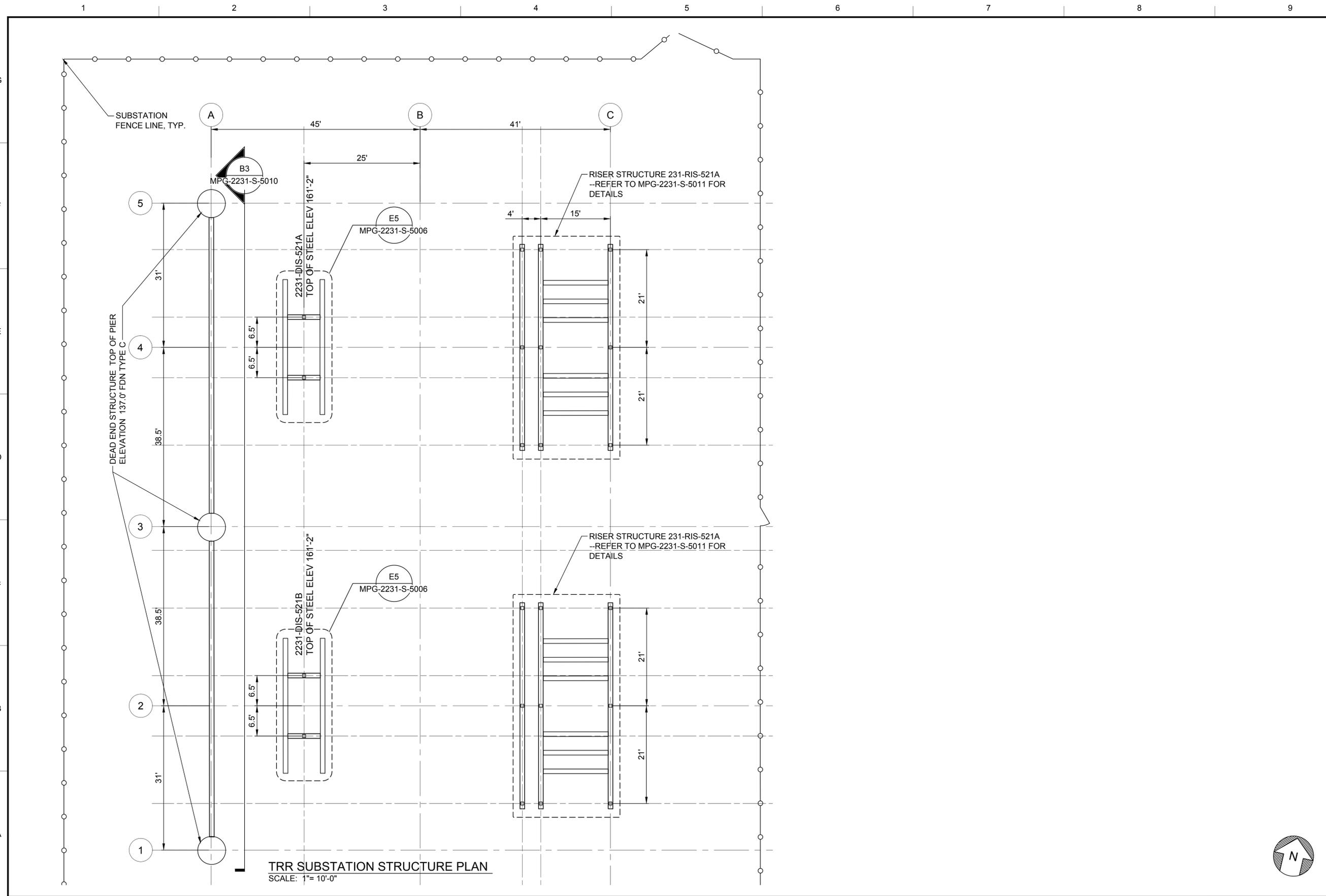


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 FOUNDATION PLAN AND DETAILS

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 4 8  
 3/8" = 1"  
 DRAWING NO.  
 MPG-2231-S-2100  
 SHT 100 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

Plot Date: 4/3/2024 1:49 PM  
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**GENERAL NOTES**

1. FOR GENERAL NOTES REFER TO THE FOLLOWING DRAWINGS: MPG-0001-G-0301, AND MPG-0001-G-0302.

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
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 POWER GROUP  
 P.O. Box 100  
 Redding, CA 96001

REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA

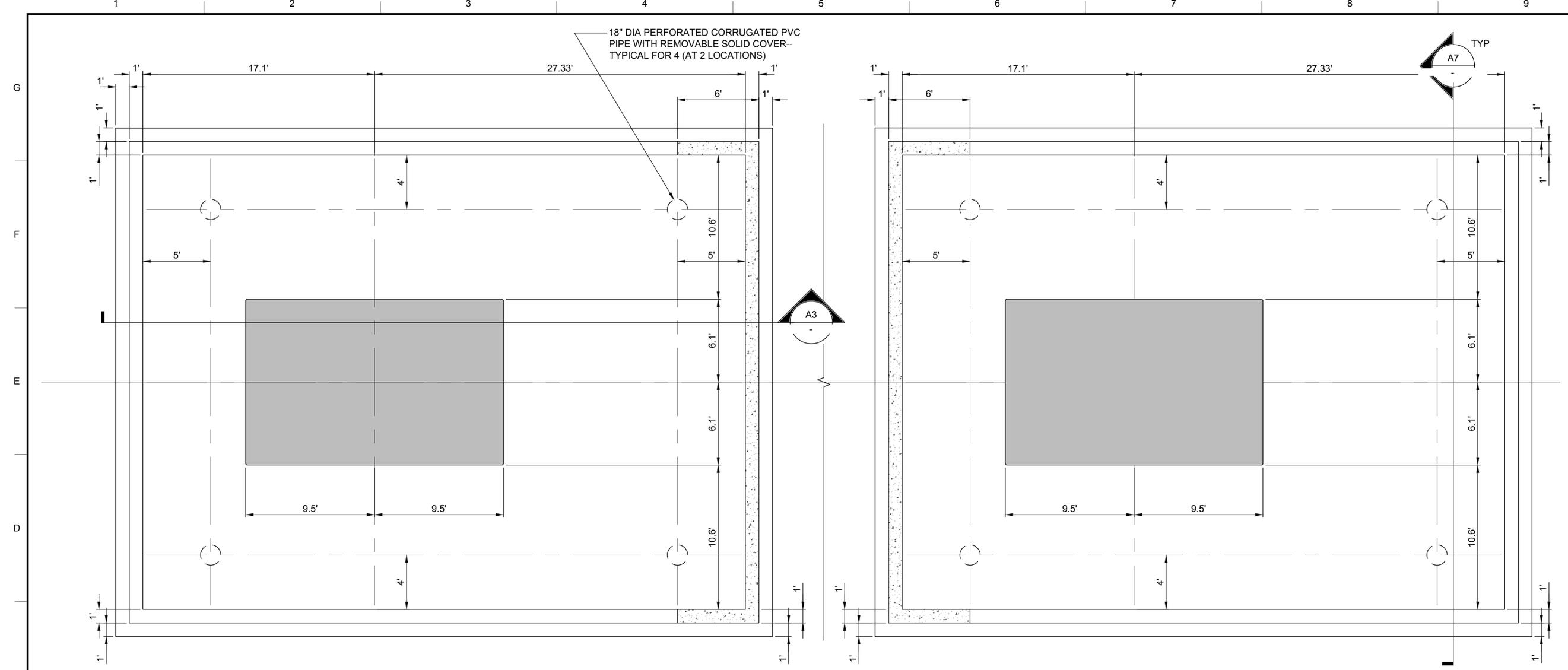


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV TRANSFORMER SUBSTATION  
 FOUNDATION PLAN AND DETAILS

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0 1"

DRAWING NO.  
 MPG-2231-S-2200  
 SHT 101 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

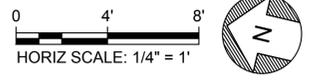
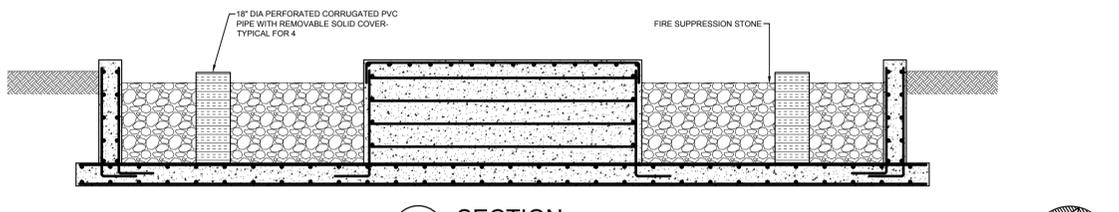
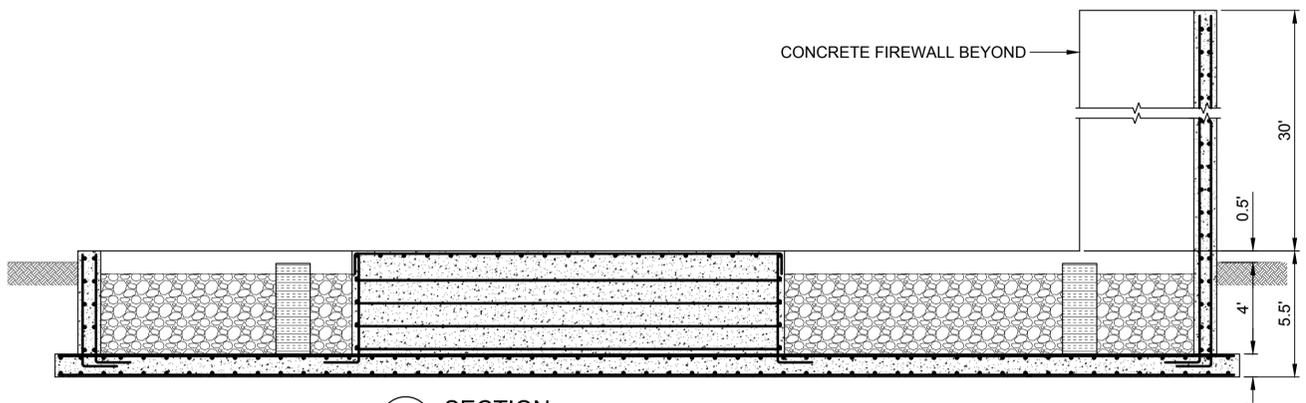


**GENERAL NOTES**

1. FOR GENERAL NOTES SEE MPG-0001-G-0301 AND MPG-0001-G-0302

- SHEET NOTES**
- DESIGN OIL VOLUME OF SELECTED TRANSFORMER: 11608 GALLONS.
  - PG&E STANDARD INCREASE FOR CONTAINMENT: 10%
  - UNCERTAINTY IN ACTUAL TRANSF VOL: 20%
  - DESIGN BASIS FOR 30% DESIGN: 15,090 GALLONS
  - OIL TANK VOLUME TO TOP OF STONE CONSIDERING 60% STONE, 40% VOID: 16665 GALLONS
  - DESIGN BASIS TRANSFORMER: SIEMENS T.040N.001527.01.
  - CLEARANCE FROM OIL CONTAINING PARTS = 20% OF MAXIMUM TRANSFORMER HEIGHT= 6'-0" (PER IEC 61936)

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY: W. SILADI  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024

**Jacobs**  
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 REDDING, CA 96001  
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**VANDERWEIL POWER GROUP**  
 R/G Vanderweil Engineers, LLP 817-233-7423 TEL  
 714-888-0100 FAX  
 BOSTON, MA 02210

REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA



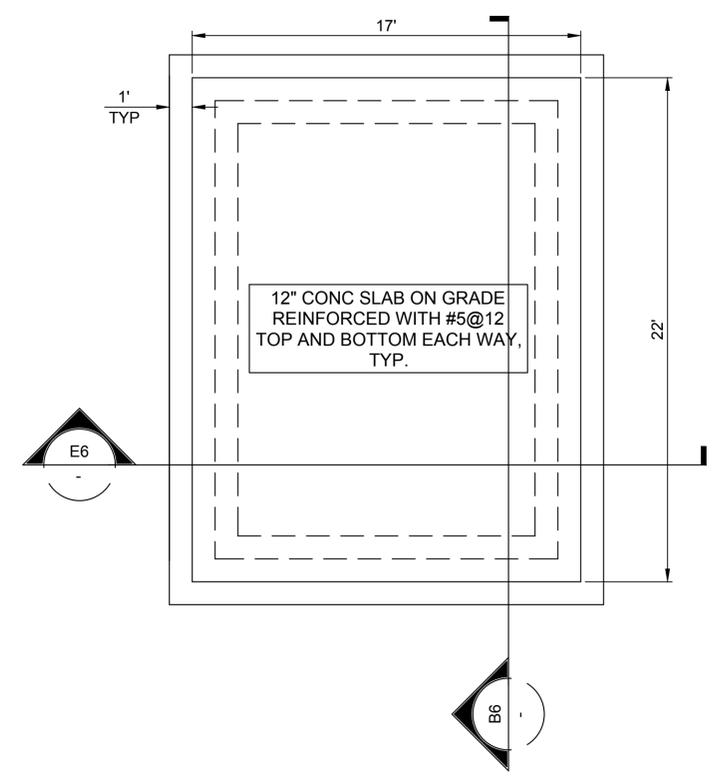
**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION  
 STRUCTURE PLAN

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

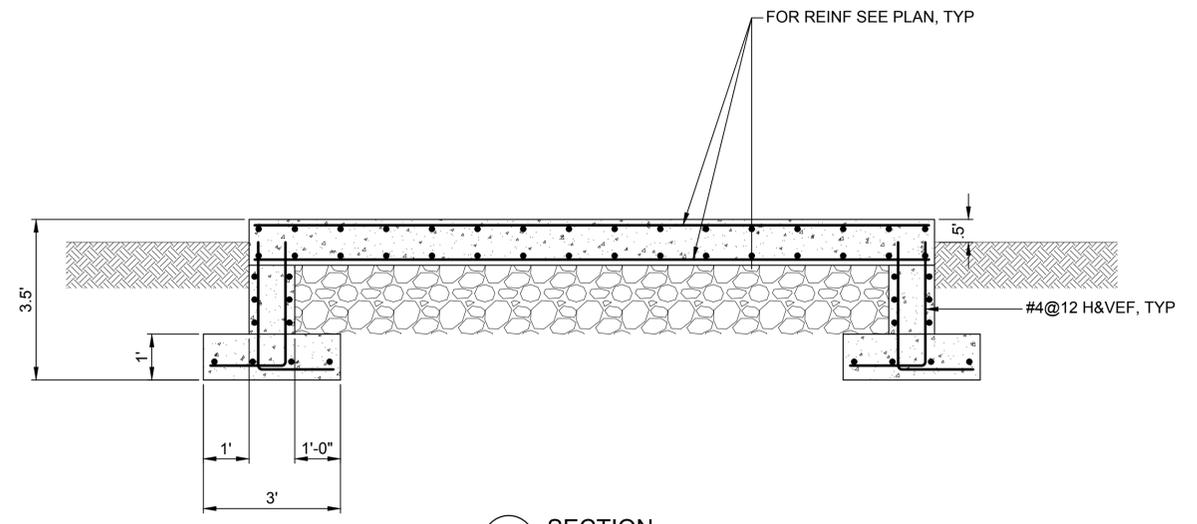
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 MPG-2231-S-5001  
 SHT 102 OF 106

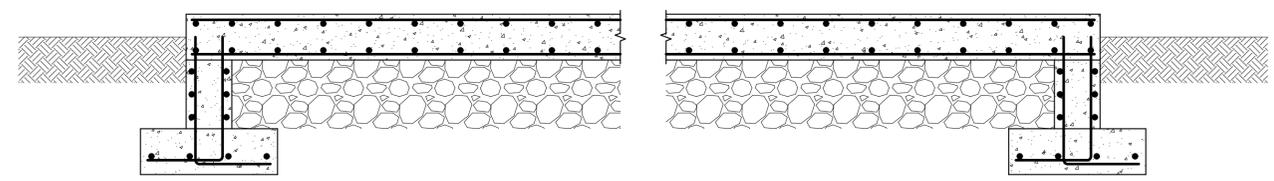
PRELIMINARY - NOT FOR CONSTRUCTION



**D1 CONTROL HOUSE FOUNDATION PLAN**  
SCALE 1/4" = 1'-0"  
MPG-2231-S-2100



**E6 SECTION**  
SCALE 1/2" = 1'-0"  
MPG-2231-S-5002



**B6 SECTION**  
SCALE 1/2" = 1'-0"  
MPG-2231-S-5002

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REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024



REGISTERED  
PROFESSIONAL  
ENGINEER  
WAYNE E SILADI  
C 89993  
CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
STRUCTURAL  
TERMINAL REGULATING RESERVOIR  
230KV SUBSTATION  
CONTROL HOUSE FOUNDATION PLAN & DETAILS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL  
DRAWINGS. ADJUST SCALES FOR  
REDUCED PLOTS

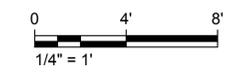
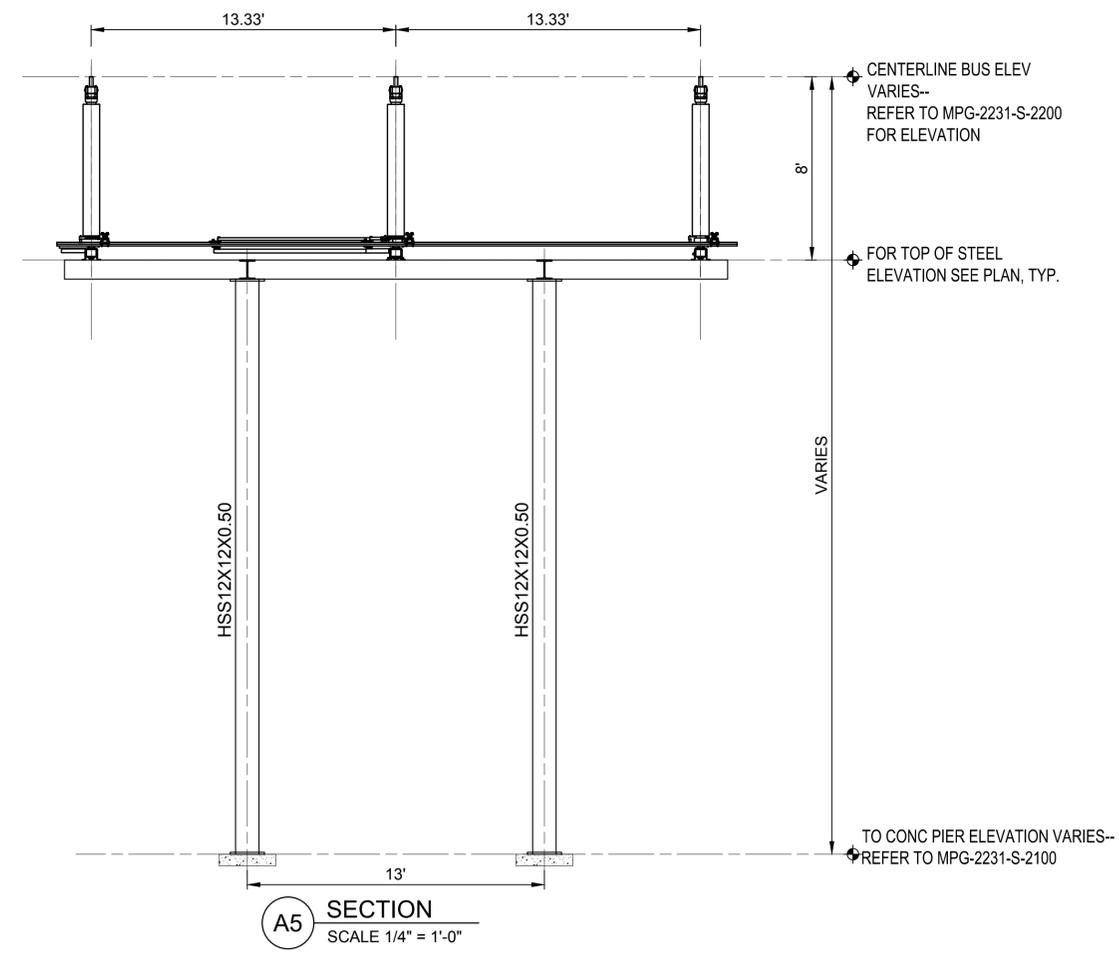
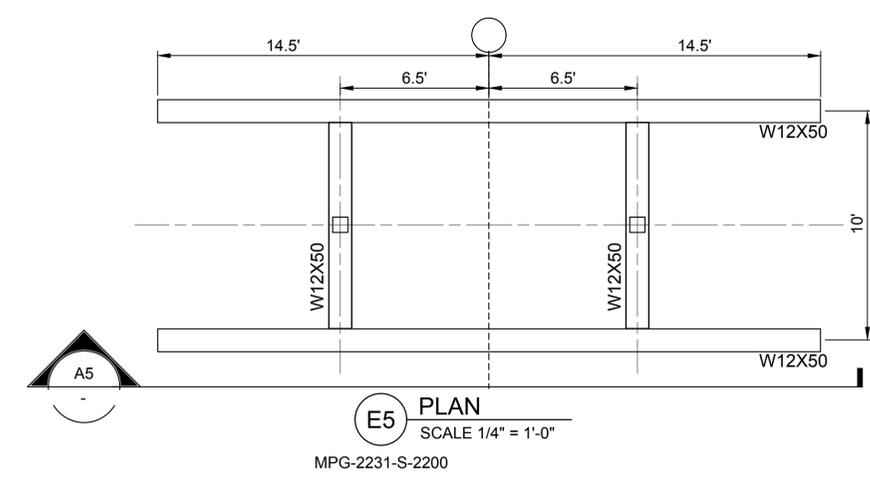
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MPG-2231-S-5002  
SHT 103 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

1. FOR STRUCTURAL LOCATIONS SEE MPG-2231-S-2200
2. FOR GENERAL NOTES SEE MPG-0001-G-0301 AND MPG-0001-G-0302



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DESIGNED BY: N. MCMAHON  
 DRAWN BY: E. BORDENAVE  
 CHECKED BY: W. SILADI  
 IN CHARGE: P. RUDE  
 DATE: 04-09-2024



REGISTERED PROFESSIONAL ENGINEER  
 WAYNE E SILADI  
 C 89993  
 CALIFORNIA

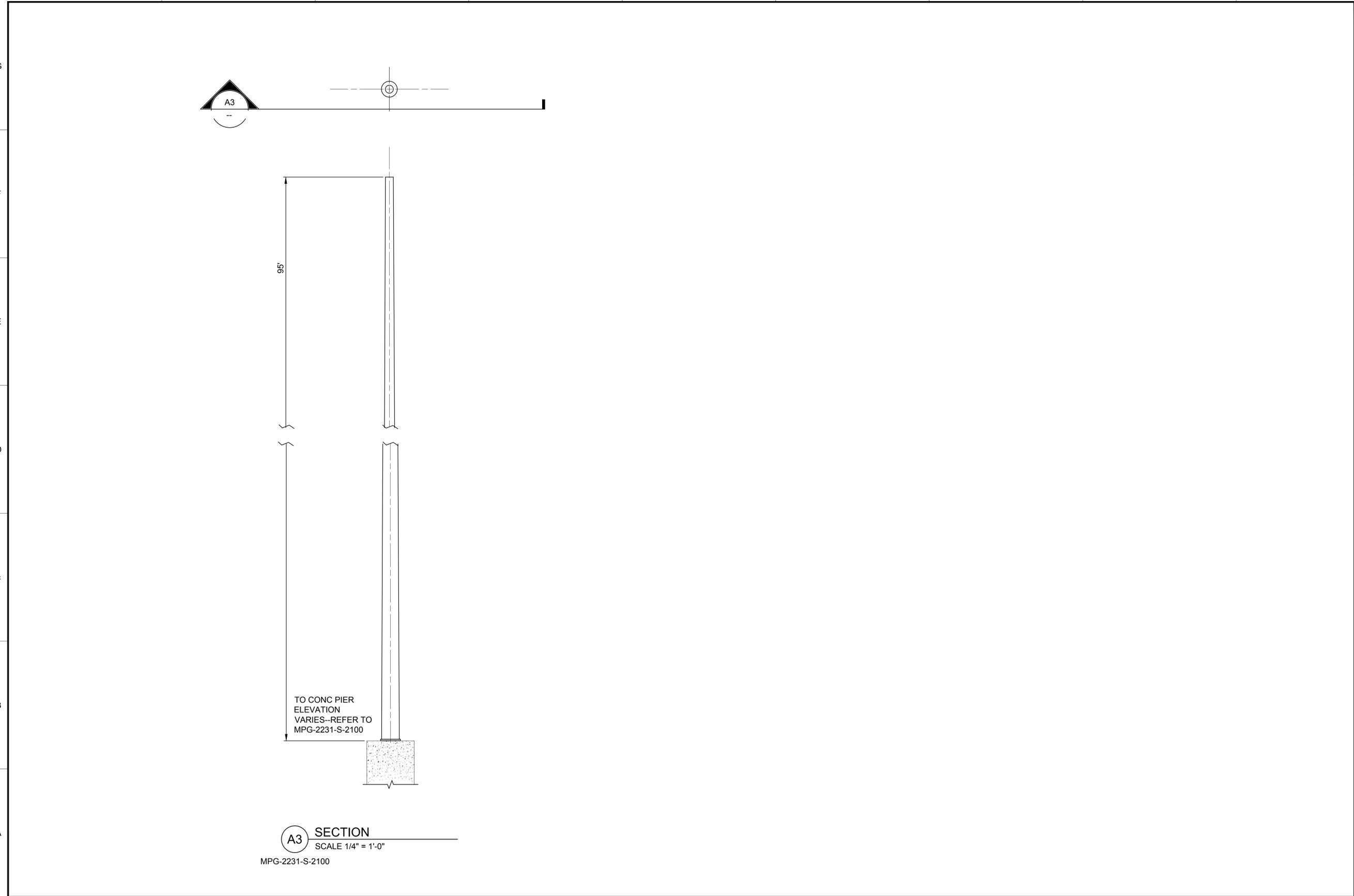


**SITES RESERVOIR**  
 MAXWELL / SITES PUMPING AND GENERATING STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION HIGH DISCONNECT  
 SUPPORT STEEL STRUCTURE PLAN & DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.  
 0 1'  
 DRAWING NO.  
 MPG-2231-S-5006  
 SHT 104 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

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**A3 SECTION**  
 SCALE 1/4" = 1'-0"  
 MPG-2231-S-2100

**GENERAL NOTES**

1. FOR STRUCTURE LOCATIONS SEE MPG-2231-S-2200
2. STRUCTURE DESIGN BY VENDOR

REV	DATE	BY	CHK	APPR	DESCRIPTION

DESIGNED BY:  
N. MCMAHON

DRAWN BY:  
E. BORDENAVE

CHECKED BY:  
W. SILADI

IN CHARGE:  
P. RUDE

DATE:  
04-09-2024

**Jacobs**  
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 CALIFORNIA



**SITES RESERVOIR**

MAXWELL / SITES PUMPING AND GENERATING  
 STRUCTURAL  
 TERMINAL REGULATING RESERVOIR  
 230KV SUBSTATION LIGHTNING MAST  
 STEEL STRUCTURE PLAN & DETAILS

**VERIFY SCALES**  
 BAR IS ONE INCH ON ORIGINAL  
 DRAWING. ADJUST SCALES FOR  
 REDUCED PLOTS

0 1"

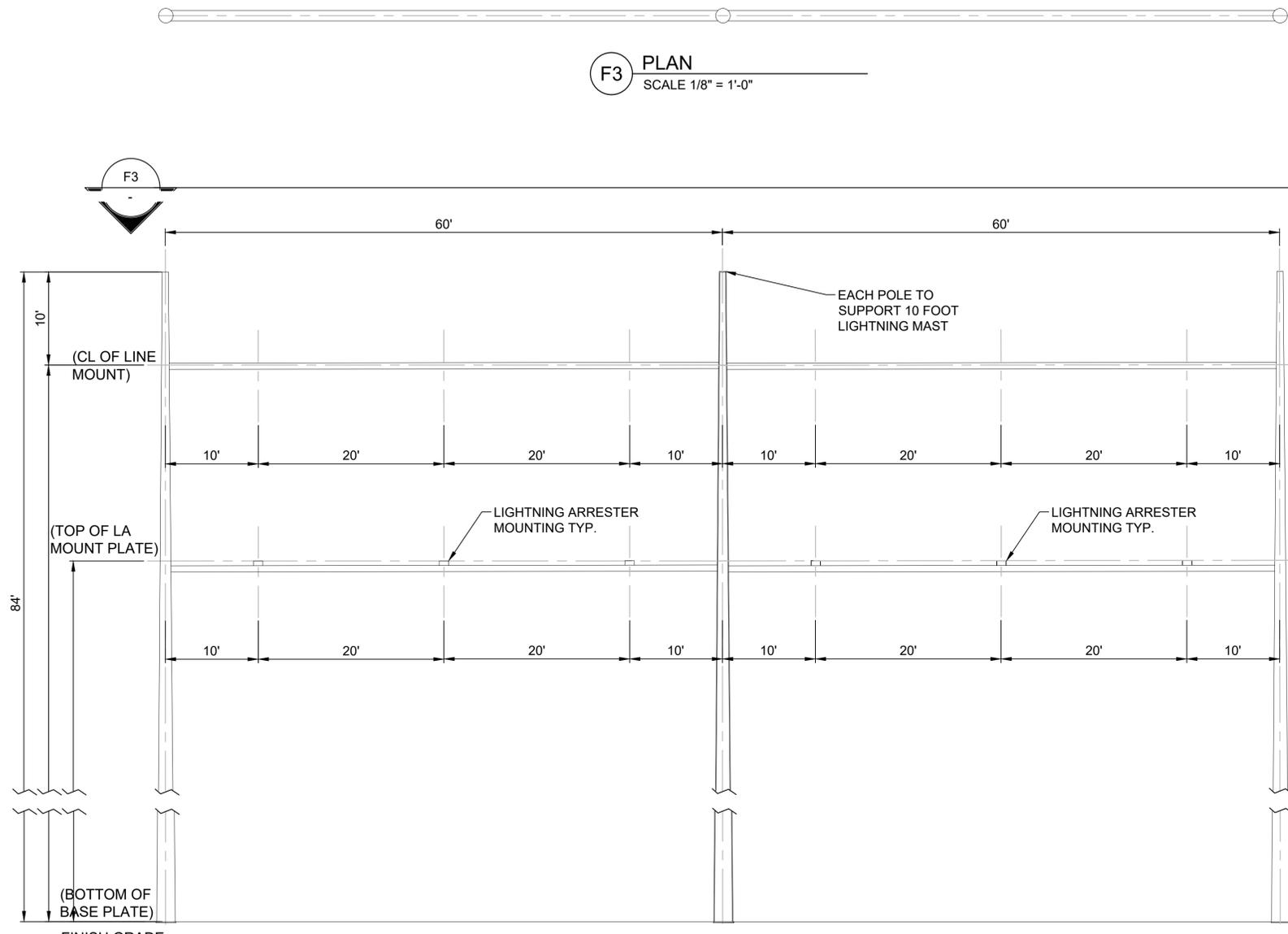
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 SHT 105 OF 106

PRELIMINARY - NOT FOR CONSTRUCTION

**GENERAL NOTES**

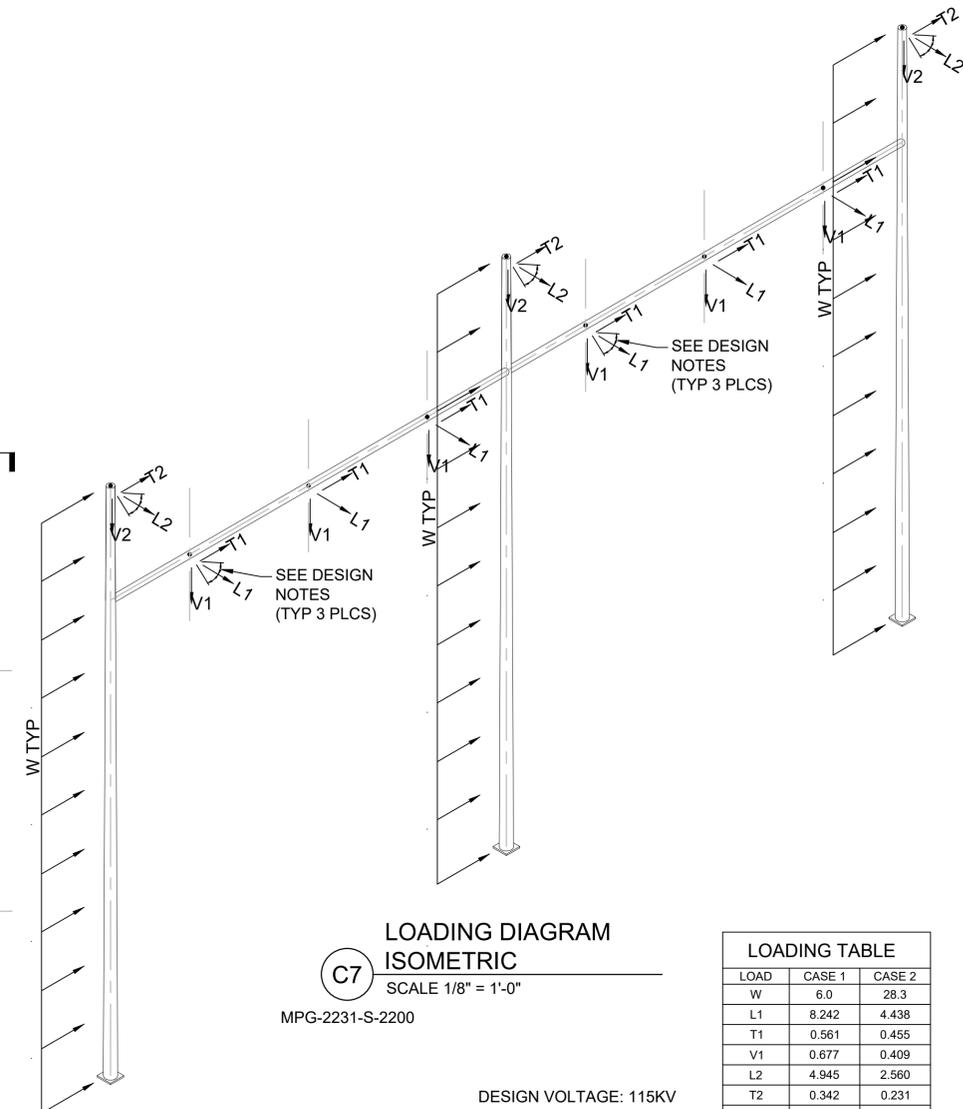
- FOR STRUCTURE LOCATIONS SEE MPG-2231-S-2200
- STRUCTURE DESIGN BY VENDOR

**F3 PLAN**  
SCALE 1/8" = 1'-0"



**B3 SECTION**  
SCALE 1/8" = 1'-0"  
MPG-2231-S-2200

**C7 LOADING DIAGRAM ISOMETRIC**  
SCALE 1/8" = 1'-0"  
MPG-2231-S-2200



LOADING TABLE		
LOAD	CASE 1	CASE 2
W	6.0	28.3
L1	8.242	4.438
T1	0.561	0.455
V1	0.677	0.409
L2	4.945	2.560
T2	0.342	0.231
V2	0.162	0.085

DESIGN VOLTAGE: 115KV  
LOADING CRITERIA

CASE 1 - NESC INTERMEDIATE LOADING:  
6 PSF WIND, 1/4" ICE, 0°F, NESC OLF, TRANSVERSE WIND=2.54,  
TRANSVERSE LINE TENSION =1.65, LONGITUDINAL WIRE TENSION=1.65,  
VERTICAL=2.0.

CASE 2 - EXTREME WIND LOADING:  
TRANSVERSE, 105 MPH WIND, NO ICE, 60°F, OVERLOAD FACTOR (OLF) =  
1.10.

- DESIGN NOTES
- LOAD ABBREVIATIONS AND UNIT ENTRIES IN THE LOADING DIAGRAMS ARE AS FOLLOWS:  
W - WIND = POUNDS PER SQUARE FOOT  
L - LONGITUDINAL = KIPS  
T - TRANSVERSE = KIPS  
V - VERTICAL = KIPS
  - THE LOADS IN THE LOADING TABLES INCLUDE OVERLOAD FACTORS (OLF). THE VERTICAL LOADS (V) IN THE LOADING DIAGRAMS DO NOT INCLUDE THE DEAD WEIGHT OF THE STRUCTURE. THE STRUCTURE DEAD WEIGHT SHALL BE SUPPLIED BY THE FABRICATOR AND MULTIPLIED BY THE OLF OF THE APPROPRIATE LOAD CASE.
  - THE LONGITUDINAL LOADS (L) FOR THE CONDUCTOR (L1) SHALL BE DESIGNED FOR A LINE ANGLE OF ±10°. THE SHIELDWIRE (L2) SHALL BE DESIGNED FOR A LINE ANGLE OF ±15°.
  - IN ADDITION TO LOADS SHOWN, STRUCTURES SHALL BE DESIGNED FOR A 0.30 KIP VERTICAL POINT LOAD AT ANY POSITION ON THE STRUCTURE.
  - ANCHOR BOLT CIRCLE FOR STRUCTURE SHALL NOT EXCEED 40 INCHES.
  - CHAMFER ALL HOLES WHERE ELECTRICAL WIRES WILL BE PULLED OR PLACED

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DESIGNED BY:  
N. MCMAHON  
DRAWN BY:  
E. BORDENAVE  
CHECKED BY:  
W. SILADI  
IN CHARGE:  
P. RUDE  
DATE:  
04-09-2024

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CALIFORNIA



**SITES RESERVOIR**  
MAXWELL / SITES PUMPING AND GENERATING  
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TERMINAL REGULATING RESERVOIR  
230KV SUBSTATION DEAD END  
STEEL STRUCTURE PLAN & DETAILS

VERIFY SCALES  
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DRAWING. ADJUST SCALES FOR  
REDUCED PLOTS  
0 1"  
DRAWING NO.  
MPG-2231-S-5010  
SHT 106 OF 106

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