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**MAIN WASTEWATER TREATMENT PLANT
OXYGEN PLANT REHABILITATION**

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CONTRACT DOCUMENTS

VOLUME IV - DRAWINGS

JUNE 2024

SPECIFICATION SD-428



EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

Recommended *Garin D. Warren*
Garin D. Warren
Mgr. of Wastewater Engineering Division
R.P.E. No. C 65259

Approved *Amit K. Mutsuddy*
Amit K. Mutsuddy
Director of Wastewater
R.P.E. No. C 68285

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DATE: 8/8/2024 10:15:55 AM
FILE: C:\Users\jdoyle\OneDrive\Documents\EBMUD\Projects\SD-428\Drawings\SD-428-04.dwg

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NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA
DESIGN BY:	J. JANCATTIS	
DRAWN BY:	L. MAXWELL	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT GENERAL DRAWING INDEX - VOLUME IV
DESIGN CHECKED BY R.P.E. NO. 37097	D. RICHARDSON	
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS	
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. 37097	D. RICHARDSON	SD428-W4400-G041 DRAWING NUMBER
PROJECT MANAGER R.P.E. NO. 95046	J. LAW	
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	0 REV.
SCALE: NONE		DATE: 28JUN24



STRUCTURAL NOTES

GENERAL

- ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND SHOP DRAWINGS AND THE PROJECT SPECIFICATIONS (IF ANY).
- CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE 2022 CALIFORNIA BUILDING CODE (CBC). THE CBC SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR THESE DOCUMENTS ARE MORE RESTRICTIVE.
- NOTHING SHOWN OR OMITTED FROM THESE DOCUMENTS SHALL RELIEVE THE CONTRACTOR FROM FULL COMPLIANCE WITH ALL APPLICABLE CODES AND ORDINANCES.
- THE CONTRACTOR ALONE IS RESPONSIBLE FOR JOB SITE SAFETY. SITE REVIEW OF THE CONSTRUCTION BY THE ENGINEER IS TO DETERMINE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. IT DOES NOT ENCOMPASS SAFETY PROCEDURES OR OPERATIONS.
- WITHOUT EXCLUSION OF ANY REFERENCE IN THE CONSTRUCTION DOCUMENTS TO ANY RULE OR REGULATION, THE ENGINEER IS NOT ASSUMING ANY PROVISIONS OF SUPERVISION OF CONSTRUCTION METHODS OR PROCESSES.
- STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. DURING CONSTRUCTION, BRACING OR SHORING SHALL SUPPORT STRUCTURES WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR.
- SEE ALL OTHER PROJECT DOCUMENTS FOR CONDUITS AND OTHER ITEMS TO BE EMBEDDED OR PASSED THROUGH CONCRETE.
- PENETRATIONS THROUGH WALLS OR SLABS LESS THAN 12 INCHES IN DIAMETER MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO ASSOCIATED DRAWINGS FOR LOCATIONS.
- THE MINIMUM CLEAR DISTANCE BETWEEN CONDUIT PENETRATIONS SHALL BE 3 TIMES THE DIAMETER OF THE PENETRATION OR 8 INCHES, WHICHEVER IS SMALLER.
- WRITTEN DIMENSIONS SHALL BE USED FOR CONSTRUCTION. DO NOT SCALE DRAWINGS.
- STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- DIMENSIONS INDICATED WITH AN * SHALL BE COORDINATED WITH MECHANICAL AND/OR ELECTRICAL DRAWINGS AND EQUIPMENT SUPPLIED.
- ALL DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR. SHOULD CONFLICTS OR INTERFERENCE OCCUR, THEY SHALL BE RESOLVED WITH THE ENGINEER AT NO ADDITIONAL COST TO THE DISTRICT. EXISTING FIELD CONDITIONS AT VARIANCE WITH THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ANY WORK IS PERFORMED.
- USE PERTINENT STANDARD DETAILS SHOWN, EVEN THOUGH THEY MAY NOT BE CALLED OUT AT LOCATIONS WHERE THEY APPLY.
- CONDITIONS NOT SPECIFICALLY SHOWN OR INDICATED SHALL BE CONSTRUCTED SIMILAR TO DETAILS SHOWN FOR THE RESPECTIVE MATERIALS OR CONDITIONS.

DEFERRED SUBMITTALS

- THE FOLLOWING PORTIONS OF THE PROJECT ARE DEFERRED SUBMITTAL ITEMS. DEFERRED SUBMITTALS LISTED BELOW ARE THE RESPONSIBILITY OF THE CONTRACTOR. DEFERRED SUBMITTAL ITEMS HAVE NOT BEEN DESIGNED BY THE ENGINEER OF RECORD. REFER TO CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.
 - FIRE PROTECTION CLEAN AGENT CANISTERS SEISMIC BRACING
 - UPS EQUIPMENT SEISMIC BRACING
- UNLESS OTHERWISE NOTED, DEFERRED SUBMITTAL ITEMS SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.
- DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE DISTRICT FOR APPROVAL DURING THE CONSTRUCTION PHASE OF THE PROJECT.
- DEFERRED SUBMITTAL ITEMS SHALL NOT BE FABRICATED UNTIL THE ENGINEER OF RECORD HAS REVIEWED THE SUBMITTAL DOCUMENTS AND INDICATED THAT THEY HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS.
- DEFERRED SUBMITTAL ITEMS SHALL NOT BE FABRICATED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN FAVORABLY REVIEWED BY THE DISTRICT.

SPECIAL INSPECTION

- SPECIAL INSPECTION SHALL BE CONDUCTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN CHAPTER 17 OF THE CBC, AND PAID FOR BY THE DISTRICT. THE FOLLOWING ITEMS, AS A MINIMUM, SHALL RECEIVE SPECIAL INSPECTION:
 - WELDING - INSPECTION SHALL BE IN COMPLIANCE WITH AWS D1.1. ALL STRUCTURAL WELDING PERFORMED IN THE FIELD SHALL BE INSPECTED.
 - CONCRETE REINFORCING AS REQUIRED BY CHAPTER 17 OF THE CALIFORNIA BUILDING CODE.
 - POST-INSTALLED ANCHOR SYSTEMS - THE INSPECTOR SHALL VERIFY HOLE DEPTH AND CLEANLINESS AND ANCHOR INSTALLATION IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS AND ICC-ES EVALUATION REPORT.

DESIGN LOADS

1. GRAVITY LOADS:

DEAD LOAD:	WEIGHT OF ELECTRICAL EQUIPMENT (LB)
LIVE LOAD:	250 PSF

2. SEISMIC PER DISTRICT (BASED ON ASCE 7-16 AND ASCE 41-17):

RISK CATEGORY:	IV
SITE CATEGORY:	D
SEISMIC IMPORTANCE FACTOR (I _s):	1.5
SPECTRAL RESPONSE ACCELERATION PARAMETER - 0.2s, S _{DS}	1.111g
SITE MODIFIED SPECTRAL RESPONSE - 0.2s, S _{XS} (BSE-2E)	1.638g
SITE MODIFIED SPECTRAL RESPONSE - 1s, S _{X1} (BSE-2E)	1.039g
SITE MODIFIED SPECTRAL RESPONSE - 0.2s, S _{XS} (BSE-1E)	0.985g
SITE MODIFIED SPECTRAL RESPONSE - 1s, S _{X1} (BSE-1E)	0.6g

CONCRETE ANCHORS

- ANCHOR / ADHESIVE SPECIFICATION:
 - SEE SPECIFICATION SECTIONS 01 33 12 AND 05 05 19 FOR OTHER REQUIREMENTS.
 - POST INSTALLED ANCHORS SHALL BE STAINLESS STEEL, TYPE 316.
- POST-INSTALLED CONCRETE ANCHORS, INCLUDING ADHESIVE AND EXPANSION ANCHORS, SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND THE APPROPRIATE EVALUATION REPORT. ANCHORS WITHOUT A CURRENT ICC-ES ESR, IAPMO-UES ER OR EQUAL SHALL NOT BE USED.
- UNLESS OTHERWISE INDICATED, ALL ADHESIVE AND EXPANSION ANCHORS FOR INSTALLATION IN CONCRETE SHALL HAVE SATISFIED THE REQUIREMENTS OF THE SIMULATED SEISMIC TESTS OF ACI 308.4 OR ACI 308.5, NO EXCEPTIONS ALLOWED.
- CONTRACTOR SHALL LOCATE EXISTING REBAR USING NON-DESTRUCTIVE METHODS PRIOR TO DRILLING HOLES FOR POST-INSTALLED ANCHORS. ADJUST SPACING OF ANCHORS TO MISS EXISTING REINFORCING. TOTAL NUMBER OF ANCHORS PROVIDED SHALL BE EQUAL TO THAT SHOWN ON THE DRAWINGS.
- WHERE THREADED RODS ARE REQUIRED, RODS SHALL CONFORM TO ASTM A193 GRADE B7. WHERE STAINLESS STEEL IS CALLED FOR ON THE DRAWINGS, STAINLESS STEEL SHALL BE TYPE 316.
- POST-INSTALLED CONCRETE ANCHORS, INCLUDING ADHESIVE AND EXPANSION TYPE ANCHORS, SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS AND THE APPROPRIATE EVALUATION REPORT. ANCHORS WITHOUT A CURRENT ICC-ES ESR, IAPMO-UES ER OR EQUAL SHALL NOT BE USED.
 - EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED CONCRETE EXPANSION ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES:
 - HILTI KWIK BOLT T22 SS PER ICC-ESR-4266.
 - SIMPSON STRONG-BOLT 2 SS PER ICC-ESR-3037.
 - DEWALT POWER STUD + SD4 SS 316 PER ICC-ESR-2502.
 - EXCEPT WHERE INDICATED ON THE DRAWINGS, EPOXY ANCHORING ADHESIVE SHALL CONSIST OF THE FOLLOWING:
 - HILTI HIT-RE 500 V3, PER ICC ES-ESR-3814.
 - SIMPSON STRONG-TIE, SET-3G PER ICC-ES-ESR-5334.
 - EQUAL TO.

MODIFICATIONS AND REPAIR TO CONCRETE

- NO EXISTING STRUCTURE OR CONCRETE SHALL BE CUT, REMOVED, OR OTHERWISE ALTERED UNTIL AUTHORIZATION IS GIVEN BY THE DISTRICT ENGINEER.
- WHEN REMOVING MATERIALS OR PORTIONS OF AN EXISTING STRUCTURE AND WHEN MAKING OPENINGS IN EXISTING STRUCTURE, ALL PRECAUTIONS SHALL BE TAKEN AND ALL NECESSARY BARRIERS, SHORING AND BRACING AND OTHER PROTECTIVE DEVICES SHALL BE ERECTED TO PREVENT DAMAGE TO THE STRUCTURE AND EXISTING MECHANICAL EQUIPMENT BEYOND THE LIMITS NECESSARY FOR THE NEW WORK. PROTECT PERSONNEL, CONTROL DUST AND PREVENT DAMAGE TO THE STRUCTURE OR CONTENTS BY FALLING OR FLYING DEBRIS.
- CONTRACTOR SHALL NOTIFY THE DISTRICT OF TWO WEEKS (14 CALENDAR DAYS) PRIOR TO COMMENCEMENT OF WORK.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
- EPOXY BONDING AGENT:
 - A TWO-COMPONENT, SOLVENT FREE, MOISTURE INSENSITIVE EPOXY RESIN MATERIAL USED TO BOND PLASTIC CONCRETE TO HARDENED CONCRETE COMPLYING WITH THE REQUIREMENTS OF ASTM C881, TYPE II.
 - FIELD PREPARATION AND APPLICATION OF THE EPOXY-BONDING AGENT SHALL STRICTLY COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - PLACE REPAIR CONCRETE OR GROUT MIXTURE TO LIMITS SHOWN ON THE DRAWINGS WITHIN TIME CONSTRAINTS RECOMMENDED BY THE MANUFACTURER TO ENSURE BOND.
 - COLOR SHALL BE CONCRETE GRAY.
 - PRODUCT SHALL BE SIKADUR 32 HI-MOD BY SIKA CORPORATION OR APPROVED EQUAL.
- WHEN DRILLING HOLES FOR DOWELS/BOLTS AT NEW OR EXISTING CONCRETE, DRILLING SHALL STOP IF REBAR IS ENCOUNTERED. AS APPROVED BY THE DISTRICT, THE HOLE LOCATION SHALL BE RELOCATED TO AVOID REBAR. CONTRACTOR SHALL NOT CUT REBAR WITHOUT PRIOR WRITTEN APPROVAL FROM THE DISTRICT ENGINEER. WHERE POSSIBLE, REBAR LOCATIONS SHALL BE IDENTIFIED PRIOR TO DRILLING USING "REBAR LOCATORS" SO THAT DRILLED HOLES MAY BE ADJUSTED TO AVOID REBAR INTERFERENCE.
- CONNECTION SURFACE PREPARATION:
 - 1" MAXIMUM PERIMETER SAWCUT OR OTHER SIMILAR METHODS AT 90 DEGREE PERPENDICULARLY TO THE DAMAGED CONCRETE AREA TO AVOID FEATHERED EDGES.
 - REMOVE ALL DETERIORATED MATERIALS, DIRT, OILS, GREASE, AND ALL OTHER BOND INHIBITING MATERIALS FROM THE SURFACE BY DRY MECHANICAL MEANS, I.E., SANDBLASTING, GRINDING, ETC., AS APPROVED BY THE ENGINEER.
 - SURFACES SHALL BE ROUGHENED TO FULL AMPLITUDE OF AT LEAST 1/4-INCH IN DEPTH.
 - IRREGULAR VOIDS OR SURFACE STONES NEED NOT BE REMOVED IF THEY ARE SOUND, FREE OF LAITANCE, AND FIRMLY EMBEDDED INTO PARENT CONCRETE, SUBJECT TO THE ENGINEER'S FINAL INSPECTION.
 - COAT VERTICAL AND HORIZONTAL CONCRETE SURFACES WITH CORROSION INHIBITOR AND CONCRETE BONDING AGENT OR BRUSH COAT REPAIR MORTAR PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
- CONCRETE DOWELS AND ANCHOR RODS:
 - CONCRETE ADHESIVE DOWELS AND/OR ANCHOR RODS SHALL NOT BE LOADED UNTIL THE ADHESIVE HAS REACHED ITS INDICATED STRENGTH IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - CONTRACTOR SHALL SUBMIT MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS AND PROCEDURES FOR ALL POST INSTALLED CONCRETE ANCHORS FOR DISTRICT REVIEW. UPON FAVORABLE REVIEW BY THE DISTRICT ENGINEER THESE INSTRUCTIONS SHALL BE FOLLOWED EXPLICITLY.

STRUCTURAL AND MISCELLANEOUS STEEL

- STRUCTURAL SHAPES, PLATES AND BARS SHALL CONFORM TO ASTM A36, UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL COMPLY WITH SPECIFICATION 05 50 00.
- STRUCTURAL W-SHAPES SHALL CONFORM TO ASTM A992, GRADE 50.
- STRUCTURAL STEEL TUBES SHALL CONFORM TO ASTM A500, GRADE B.
- MACHINE BOLTS (MB) SHALL CONFORM TO ASTM A307.
- NUTS SHALL BE HEAVY HEX IN ACCORDANCE WITH ANSI B8.2.1.1.
- ALL STRUCTURAL STEEL SHALL BE FABRICATED, ERECTED AND CONNECTED IN COMPLIANCE WITH THE LATEST AISC MANUAL. *Let does not vouch for the accuracy or correctness of these drawings or any of their contents.*
- CONNECTIONS FOR STRUCTURAL STEEL SHALL CONFORM TO ASTM A325, SC, CLASS A. UNLESS OTHERWISE NOTED, ALL BOLTS SHALL BE 3/4 INCH DIAMETER MEETING THE REQUIREMENTS OF ASTM A325. BOLTS SHALL BE TIGHTENED USING THE TURN-OF-THE-NUT METHOD.
- ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STRUCTURAL WELDING CODE, AWS (D1.1). ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS.
- WELDING ELECTRODES SHALL MEET THE MINIMUM REQUIREMENTS OF E70XX. FILLER METAL FOR WELDS IN MOMENT CONNECTIONS SHALL HAVE A MINIMUM CVN VALUE OF 20 FT-LB AT 0 DEGREE F.
- WHERE BUTT WELDS ARE SHOWN, MATERIAL SHALL BE GROUND TO A BEVEL AND WELD SHALL BE FULL PENETRATION.
- ALL BOLT HOLES SHALL BE PUNCHED OR DRILLED (REAMED). BURNING OF HOLES IS NOT ACCEPTABLE.
- SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION.

STRUCTURAL STAINLESS STEEL

- ALL FRAMING SUPPORT SYSTEMS FOR PIPE AND VALVE ASSEMBLIES AND APPURTENANCES SHALL BE FABRICATED OF TYPE 316 STAINLESS STEEL.
- STAINLESS STEEL PLATES, SHEETS, AND STRUCTURAL SHAPES SHALL CONFORM TO ASTM A167, TYPE 316 (TYPE 316L FOR WELDING) STAINLESS STEEL AND SHALL NOT BE GALVANIZED.
- STAINLESS STEEL BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM F593 AND ASTM F594, TYPE 316.
- ALL STRUCTURAL STAINLESS STEEL SHALL BE FABRICATED, ERECTED AND CONNECTED IN COMPLIANCE WITH THE LATEST AISC MANUAL.
- ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STRUCTURAL WELDING CODE, AWS (D1.1). ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS. QUALIFICATIONS AND CERTIFICATIONS OF WELDING INSPECTORS SHALL BE PER ANSI/AWS QC1.
- ALL WORK SHALL BE FORMED TRUE TO DETAIL, WITH CLEAN, STRAIGHT, SHARPLY DEFINED PROFILES AND SMOOTH SURFACES OF UNIFORM COLOR AND TEXTURE AND FREE FROM DEFECTS IMPAIRING STRENGTH OR DURABILITY. HOLES SHALL BE DRILLED OR PUNCHED. EDGES SHALL BE SMOOTH AND WITHOUT BURRS. FABRICATE SUPPLEMENTARY PIECES NECESSARY TO COMPLETE EACH ITEM EVEN IF SUCH PIECES ARE NOT DEFINITELY SHOWN OR SPECIFIED.
- CONNECTIONS AND ACCESSORIES SHALL BE OF SUFFICIENT STRENGTH TO SAFELY WITHSTAND THE STRESSES AND STRAINS TO WHICH THEY WILL BE SUBJECTED. EXPOSED JOINTS SHALL BE CLOSE-FITTING AND JOINTED WHERE LEAST CONSPICUOUS. THREADED CONNECTIONS SHALL HAVE THE THREADS CONCEALED WHERE PRACTICAL. WELDED CONNECTIONS SHALL HAVE CONTINUOUS WELDS OR INTERMITTENT WELDS AS SPECIFIED OR SHOWN. THE FACE OF WELDS SHALL BE DRESSED FLUSH AND SMOOTH. PROVIDE HOLES FOR TEMPORARY FIELD CONNECTIONS AND FOR ATTACHMENT OF THE WORK OF OTHER TRADES.
- ALL ANCHORING AND CONNECTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

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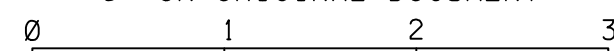
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SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT	STRUCTURAL GENERAL NOTES I
DESIGN BY:	C. WILLIAMS			
DRAWN BY:	A. PRIOR			
DESIGN CHECKED BY: R.P.E. NO. C84881	H. MONTOYA			
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS	SD428-W4400-S004		
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. S4439	R. MIGDAL			
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	SCALE NTS	DATE 28JUNE24	REV.
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	DRAWING NUMBER		0



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WELDING

- ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS AND SHALL CONFORM TO THE APPLICABLE AWS WELDING CODE. WELDING OF STEEL SHALL CONFORM TO AWS D1.1 AND COMPLY WITH SPECIFICATION SECTION 05 05 24.
- ALL WELDING PROCEDURES AND WELDER CERTIFICATION SHALL BE AVAILABLE FOR ENGINEER'S REVIEW.
- ALL FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE INSPECTED BY THE DISTRICT AND THIRD-PARTY CERTIFIED INSPECTOR. THIS INSPECTION, IN ADDITION TO THE WELDING INSPECTION REQUIREMENTS SPECIFIED HEREIN, SHALL CONSIST OF, BUT SHALL NOT NECESSARILY BE LIMITED TO, THE FOLLOWING:
 - VISUALLY INSPECT STEEL SHAPES AND PLATES FOR EXISTENCE OF DEFECTS SUCH AS LAMINATIONS AND NON-METALLIC INCLUSIONS. USE ULTRASONIC EQUIPMENT AND OTHER NDT METHODS TO DETERMINE EXTENT OF DEFECTS.
 - VERIFY STEEL MATERIALS WITH MILL CERTIFICATES. VERIFY WELD FILLER METAL MATERIALS WITH CERTIFICATES AND MANUFACTURERS RECOMMENDED LIMITATIONS.
 - REVIEW ROLLED SHAPES FOR CONFORMITY TO DIMENSIONAL INDUSTRY STANDARDS.
- ALL WELDING SHALL BE INSPECTED BY THE DISTRICT AND THIRD-PARTY CERTIFIED INSPECTOR PROVIDED AWS CERTIFIED INSPECTOR IN ACCORDANCE WITH AWS D1.1. THE TESTING AGENCY SHALL PROVIDE THE FOLLOWING:
 - REVIEW OF WELDING PROCEDURE SPECIFICATION (WPS) AND VERIFICATION THAT WELDERS ARE COMPLYING WITH APPROVED WPS.
 - VERIFICATION THAT ELECTRICAL METERS ACCURATELY REFLECT VOLTAGE AND AMPERAGE AT THE WELDING SITE FOR THE LENGTH OF CABLE USED.
 - VISUAL INSPECTION OF ALL WELDING IN ACCORDANCE WITH AWS D1.1 SECTION 6, INCLUDING FIT-UP, PREHEAT, CALIBRATION OF EQUIPMENT, EQUIPMENT SETTINGS, MATERIAL, ADHERENCE TO APPROVED WPS, INTERPASS TEMPERATURES, DEPOSITION RATES, TECHNIQUES, PROPER FUSION OF EACH PASS, ENSURE THE WELD IS CRACK FREE AT EACH PASS, CONFIRM POROSITY AND UNDERCUT TO NOT EXCEED AWA REQUIREMENTS, CONFIRM THE FINAL WELD PROFILE AND CONFIRM THAT ALL SPECIAL REQUIREMENTS SPECIFIED HEREIN ARE ADHERED TO.
 - IF INSPECTION OF SHOP FABRICATION REQUIRES THE DISTRICT AND THIRD-PARTY CERTIFIED INSPECTOR TO TRAVEL FURTHER THAN 100 MILES FROM THE PROJECT SITE, THE FULL COST OF TRAVEL EXPENSES INCURRED FOR SUCH INSPECTION SHALL BE COVERED BY THE CONTRACTOR.
- ALL WELDING SHALL BE BY THE METAL-ARC METHOD OR GAS-SHIELDED ARC METHOD AS DESCRIBED IN THE AWS'S "WELDING HANDBOOK" AS SUPPLEMENTED BY OTHER PERTINENT STANDARDS OF THE AWS. QUALIFICATION OF WELDERS SHALL BE IN ACCORDANCE WITH THE AWS STANDARDS GOVERNING SAME.
- WELDING ELECTRODES SHALL MEET THE MINIMUM REQUIREMENTS OF E70XX. FILLER METAL FOR WELDS IN MOMENT CONNECTIONS SHALL HAVE A MINIMUM CVN VALUE OF 20 FOOT-POUNDS AT 0 DEGREES F.
- PREPARATION FOR WELDING:
 - ALL SURFACES SHALL BE CLEAN, FREE OF RUST, PAINT AND FOREIGN MATTER OF ANY KIND. SCALE SHALL BE REMOVED BY WIRE BRUSH, CHIPPING OR HAMMERING AS REQUIRE.
 - THERMAL CUT EDGES TO BE WELDED SHALL BE CHIPPED CLEAN, AND GROUND AT LEAST 1/32 INCH TO BRIGHT METAL BEFORE WELDING.
 - CLAMP MEMBERS AS REQUIRED, SPACE AND ALTERNATE WELDS, OR AS MAY BE NECESSARY TO PREVENT WARPING OR MISALIGNMENT.
- WELD QUALITY:
 - WELDS SHALL PRESENT A UNIFORM SURFACE, FREE OF IMPERFECTIONS AS DEFINED BY AWS, AND WITHOUT UNDERCUTTING OR OVER-LAPPING AND FREE OF EXCESSIVE OXIDES, GAS POCKETS AND NON-METALLIC INCLUSIONS.
 - WELDS SHALL BE MADE WITH THE PROPER NUMBER OF BEADS OR PASSES TO SECURE SOUND, THOROUGHLY FUSED JOINTS.
 - EACH DEPOSIT SHALL NOT EXCEED MAXIMUM LAYER HEIGHT AND BEAD WIDTH SPECIFIED IN AWS D1.1.
 - EACH PASS SHALL BE CLEANED BY CHIPPING AND WIRE BRUSHING TO REMOVE SCALE AND SLAG, BEFORE PLACING ANY ADDITIONAL WELD METAL.
- SEQUENCE OF WELDING:
 - FOR HIGHLY RESTRAINED CONNECTION AND/OR WELDMENTS, THE SEQUENCE OF WELDING SHALL BE DESIGNED TO MINIMIZE DISTORTION OF THE MEMBERS AND TO MINIMIZE THE BUILDUP OF INTERNAL STRESSES.
- PREHEAT:
 - NO WELDING AT THE JOINT MAY PROCEED, INCLUDING TACK WELDS, BACKUP BARS AND WELD TABS, UNTIL THE PRE-HEATING HAS BEEN COMPLETED. PREHEAT BASE METALS IN ACCORDANCE WITH AWS D1.1 TABLE 3.2, EXCEPT THE FOLLOWING MINIMUM VALUES SHALL APPLY:
 - FOR RESTRAINED WELDING CONDITIONS, MINIMUM PREHEAT SHALL BE DETERMINED USING AWS D1.1 ANNEX XI. RESTRAINED WELDING CONDITIONS SHALL INCLUDE BUT ARE NOT LIMITED TO: CONTINUITY PLATES IN COLUMNS.
- FAULTY AND DEFECTIVE WELDING:
 - ANY WELDING PERFORMED WITHOUT INSPECTION OR CONTRARY TO THE APPROVED WPS, OR SHOWING CRACKS, SLAG INCLUSION, LACK OF FUSION, UNDERCUT OR OTHER DEFECTS AS DEFINED BY AWS, ASCERTAINED BY VISUAL OR OTHER MEANS OF INSPECTION, SHALL BE CHIPPED OUT AND PROPERLY REPLACED BY THE CONTRACTOR, AND REINSPECTED BY THE DISTRICT AND THIRD-PARTY CERTIFIED INSPECTOR, AT THE CONTRACTOR'S EXPENSE.

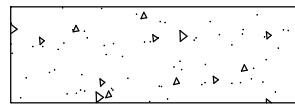
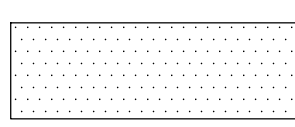


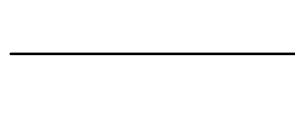
ABBREVIATIONS:

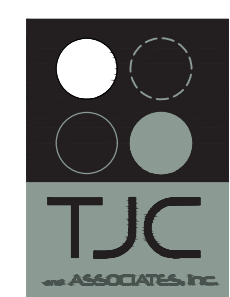
Ø	DIAMETER	f _c	CONCRETE COMPRESSIVE STRENGTH	PCF	POUNDS PER CUBIC FOOT
AB	ANCHOR BOLT	f _m	MASONRY PRISM STRENGTH	PJF	PREMOLDED JOINT FILLER
ACI	AMERICAN CONCRETE INSTITUTE	FAB	FABRICATE (OR, ED)	PL	PLATE
ADDL	ADDITIONAL	FD	FLOOR DRAIN	PLYWD	PLYWOOD
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	FDN	FOUNDATION	PM	PRESSED METAL
AISI	AMERICAN IRON AND STEEL INSTITUTE	FHMS	FLATHEAD MACHINE SCREW	PRCST	PRECAST
AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION	FHWS	FLATHEAD WOOD SCREW	PREFAB	PRE-FABRICATED
AL	ALUMINUM	FIG	FIGURE	PSF	POUNDS PER SQUARE FOOT
ALT	ALTERNATE(ING)	FIN	FINISH (ED)	PSI	POUNDS PER SQUARE INCH
APPROX	APPROXIMATE(LY)	FL	FLOOR	PT	POINT
AR	ANCHOR ROD	FLEX	FLEXIBLE	PVC	PRESSURE TREATED POLYVINYL CHLORIDE
ARND	AROUND	FO	FACE OF	PVMT	PAVEMENT
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	FRP	FIBERGLASS REINFORCED PLASTIC	PWT	PREFABRICATED WOOD TRUSS
ASTM	ASTM INTERNATIONAL	FTG	FOOTING	R	RISER
ATR	ALL-THREADED ROD	FURN	FURNISHED	RAD	RADIUS
AWS	AMERICAN WELDING SOCIETY	GA	GAUGE	RC	REINFORCED CONCRETE
		GALV	GALVANIZED	RD	ROOF DRAIN
		GALVS	GALVANIZED STEEL	REF	REFERENCE / REFER
		GLB	GLUE LAMINATED BEAM	REINF	REINFORCE (D, ING)
		GR	GUARD RAIL	REQD	REQUIRED
		GRTG	GRATING	REV	REVISION
				RM	ROOM
				RO	ROUGH OPENING
				RT	RIGHT
B TO B	BACK TO BACK	H.A.S.	HEADED ANCHOR STUD	SB	SOLID BLOCKING
BLDG	BUILDING	HD	HAND	SCHED	SCHEDULE
BLK	BLOCK(ING)	HDR	HEADER	SECT	SECTION
BM	BEAM	HDWD	HARDWOOD	SHT	SHEET
BN	BOUNDARY NAILING	HGR	HANGER	SIM	SIMILAR
B.O.	BOTTOM OF	HGT	HEIGHT	SL	SLOPE
BOT	BOTTOM	HOR	HORIZONTAL	SLNT	SEALANT
BRG	BEARING	HP	HIGH POINT	SMS	SHEET METAL SCREW
BTWN	BETWEEN	HR	HANDRAIL	SP	SPACE (S, ED)
		HS	HIGH STRENGTH	SPEC	SPECIFICATION, SPECIFIED
CBC	CALIFORNIA BUILDING CODE	HS	HIGH STRENGTH	SQ	SQUARE
C/C	CENTER TO CENTER	IAMPO	INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICALS	SS	STAINLESS STEEL
CHKD	CHECKERED	ICC	INTERNATIONAL CODE COUNCIL	SSMH	SANITARY SEWER MANHOLE
CHRC	CIRCUMFERENTIAL	ID	INSIDE DIAMETER	STD	STANDARD
CJ	CONSTRUCTION JOINT	IE	INVERT ELEVATION	STIF	STIFFENER
CL	CENTERLINE	IN	INCHES	STIR.	STIRRUP (S)
CLG	CILING	INT	INTERIOR	STL	STEEL
CLKG	CAULKING	I.P.S.	IRON PIPE SIZE	STRUC	STRUCTURE (S, URAL)
CLR	CLEAR	JB	JUNCTION BAR	STWY	STAIRWAY
CMU	CONCRETE MASONRY UNIT	JT	JOINT	SWGR	SWITCHGEAR
COL	COLUMN	JT FLR	JOINT FILLER	SYM	SYMMETRICAL
CONC	CONCRETE			T	TREAD (S)
CONN	CONNECTION	Ld	DEVELOPMENT LENGTH	T&B	TOP AND BOTTOM
CONST	CONSTRUCTION	Ldh	DEVELOPMENT LENGTH STANDARD HOOK	TD	TONGUE AND GROOVE
CONT	CONTINUOUS	LG	LONG	THD	THREADED
CRS	COURSE(S)	LL	LIVE LOAD	THK	THICK (NESS)
CRSI	CONCRETE REINFORCING STEEL INSTITUTE	LLH	LONG LEG HORIZONTAL	TJ	TOOLED JOINT
CSK	COUNTERSINK	LLV	LONG LEG VERTICAL	T.O.	TOP OF
CTJ	CONTROL JOINT	LNTL	LONGITUDINAL	TOC	TOP OF CONCRETE
CTR	CENTER (ED)	LONG.	LONGITUDINAL	TOS	TOP OF STEEL
D	DEEP, DEPTH	LP	LONG POINT	T.O.W.	TOP OF WALL
d	PENNY	Ls	LEFT	TPER	THERMOPLASTIC ELASTOMERIC RUBBER
d _b	BAR DIAMETER	LT	LEFT	TRNSV	TRANSVERSE
DBL	DOUBLE	LW	LIGHTWEIGHT	TYP	TYPICAL
DEMO	DEMOLITION	MAS	MASONRY	UES	UNIFORM EVALUATION SERVICES
DET	DETAIL	MATL	MATERIAL	UON	UNLESS OTHERWISE NOTED
DF	DOUGLAS FIR	MAX	MAXIMUM	VERT	VERTICAL
DIA	DIAMETER	MB	MACHINE BOLT	VIF	VERIFY IN FIELD
DIAG	DIAGONAL	MCC	MOTOR CONTROL CENTER	VR	VAPOR RETARDER
DIM	DIMENSION	MCJ	MASONRY CONTROL JOINT	W	WIDE
DL	DEAD LOAD	MFR	MANUFACTURER	W/	WITH
DN	DOWN	MIN	MINIMUM	WF	WIDE FLANGE
DO	DITTO	MO	MASONRY OPENING	W/O	WITHOUT
DP	DAMPPOOFING	MTL	METAL	WD	WIDTH /WOOD
DR	DRAIN	NAAMM	NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS	WP	WORKING POINT
DWG(S)	DRAWING(S)	NIC	NOT IN CONTRACT	WPG	WATERPROOFING
DWL(S)	DOWEL(S)	NOM	NOMINAL	WS	WATERSTOP
(E)	EXISTING	NSG	NON-SHRINK GROUT	WT	WEIGHT
EA	EACH	NTS	NOT TO SCALE	WWF	WELDED WIRE FABRIC
EB	EXPANSION BOLT	O/E	OR EQUAL		
ECC	ECCENTRIC	OC	ON CENTER		
ED	EQUIPMENT DRAIN	OD	OUTSIDE DIAMETER		
E EL	EAST ELEVATION	O.F.	OUTSIDE FACE		
EF	EACH FACE	OPNG(S)	OPENING(S)		
EL	ELEVATION	OPP	OPPOSITE		
EMBED	EMBEDMENT	OPP HD	OPPOSITE HAND		
EN	EDGE NAILING	OPT	OPTION (AL)		
EOR	ENGINEER OF RECORD				
EQ	EQUAL (LY)				
EQUIP	EQUIPMENT				
EQUIV	EQUIVALENT				
ES	EACH SIDE				
ESR	EVALUATION SERVICE REPORT				
ETC	ETCETERA				
EW	EACH WAY				
EXP	EXPANSION				
EXP JT	EXPANSION JOINT				
EXST	EXISTING				
EXT	EXTERIOR				
EY	EPOXY				

ABBREVIATION NOTES:

- ABBREVIATIONS AND DESIGNATIONS FOR STEEL MEMBERS MAY BE FOUND IN THE CURRENT STEEL CONSTRUCTION MANUAL BY AISC.
- ABBREVIATIONS OF TECHNICAL SOCIETIES AND TRADE ASSOCIATIONS MAY BE FOUND IN THE SPECIFICATIONS
- WELDING SYMBOLS AND ABBREVIATIONS MAY BE FOUND IN AWS 2.4.
- ABBREVIATIONS LISTED ARE FOR USE WITH STRUCTURAL DRAWINGS ONLY. SOME ABBREVIATIONS LISTED MAY NOT BE USED ON THE PLANS.

These unlocked pdf project drawings are provided for the convenience of bidders. The District does not vouch for the accuracy or correctness of these drawings or any of their contents. The unlocked pdf project drawings are not considered part of the LEGEND: Documents. Bidders assume all risks associated with the use of all these unlocked pdf project drawings.

CONCRETE	
CONCRETE GROUT/HORIZONTAL REPAIR MATERIAL	
CONTRACTOR TO VERIFY DIMENSIONS IN FIELD	
EXISTING CABINETS AND COMPONENTS	
NEW CONNECTIONS AND COMPONENTS	



SOLUTIONWERKS™ INCORPORATED

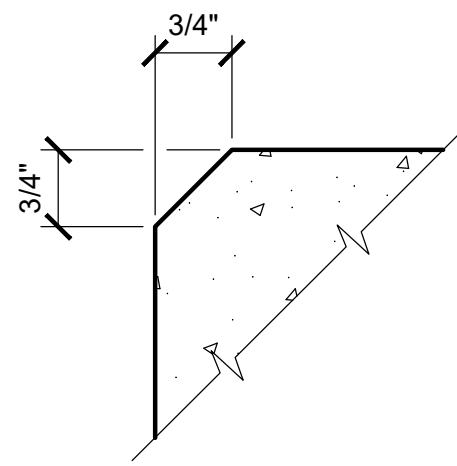
NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWTP OXYGEN PLANT REHABILITATION		CONSULTANT	DESIGN BY: C. WILLIAMS	DRAWN BY: A. PRIOR	DESIGN CHECKED BY: H. MONTOYA	PROJECT MANAGER: J. JANCAITIS	APPROVED: R. MIGDAL	PROJECT MANAGER: J. LAW	RECOMMENDED: D. RUSSELL	SCALE NTS	DATE 28JUNE24	SD428-W4400-S005	0
EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA													



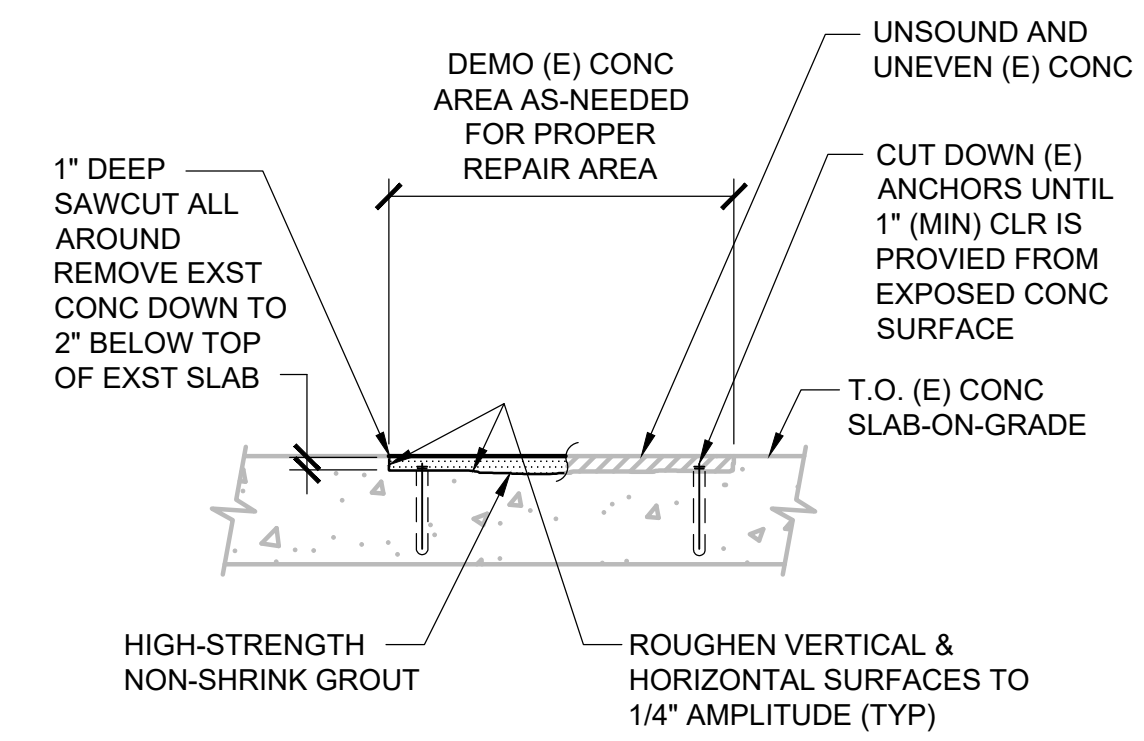
6/28/24

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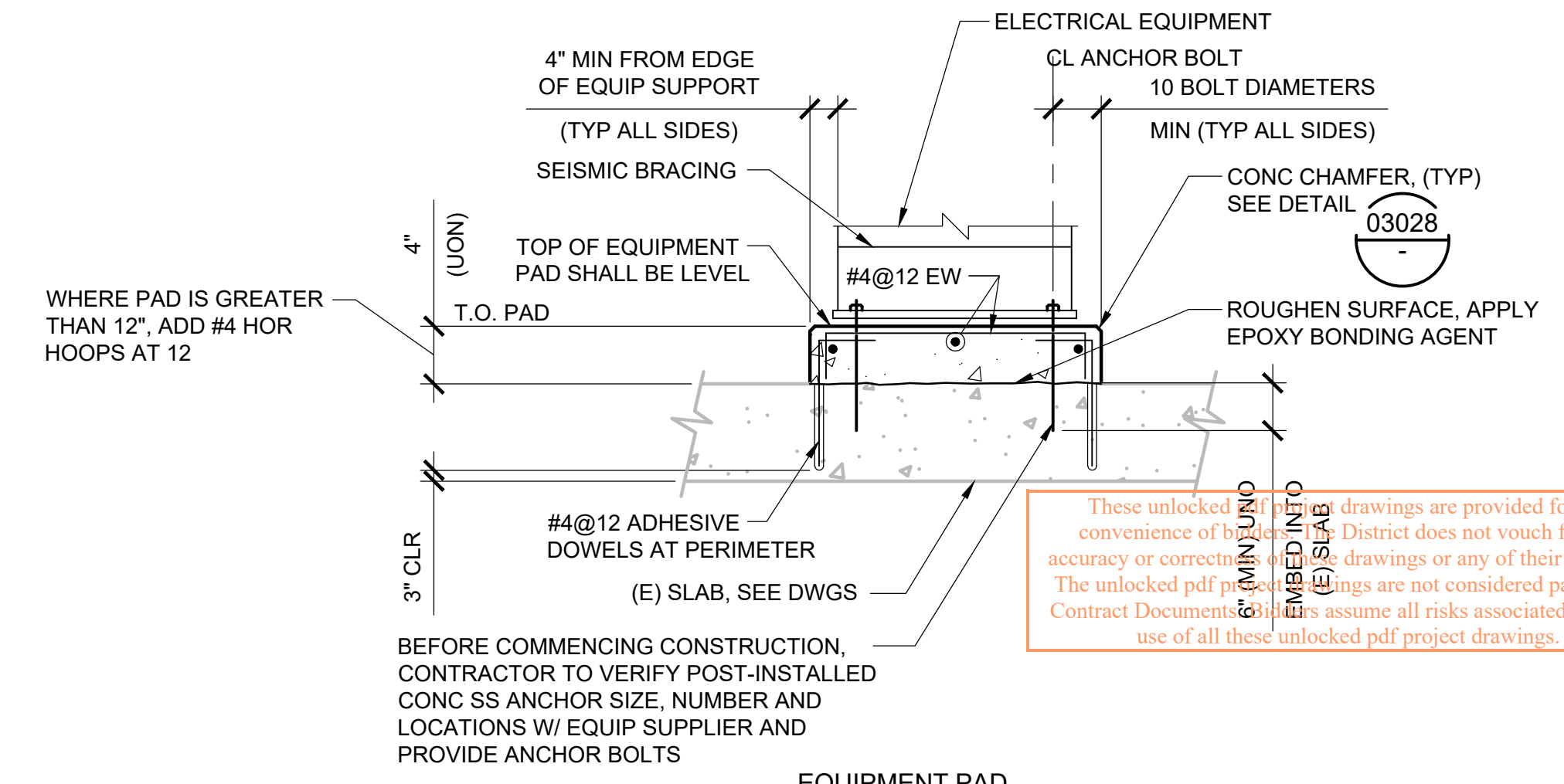
NOTE:
 1. PROVIDE CHAMFER AT ALL EXPOSED CONCRETE EDGES.

CONCRETE CHAMFER
 DETAIL 03028
 NTS VAR



NOTES:
 1. REPAIR MATERIAL APPLICATION SHALL COMPLY WITH THE MOST RECENT ESR REPORT AND MANUFACTURER'S RECOMMENDATIONS.
 2. MINIMIZE CONCRETE REMOVAL WHEN CUTTING BACK EXISTING ANCHORS FROM CONCRETE SURFACE.
 3. REFER TO GENERAL NOTES, "MODIFICATIONS AND REPAIR TO CONCRETE" ON SHEET S004 FOR ADDITIONAL INFORMATION.

CONCRETE SLAB-ON-GRADE REPAIR
 DETAIL 03153
 NTS VAR

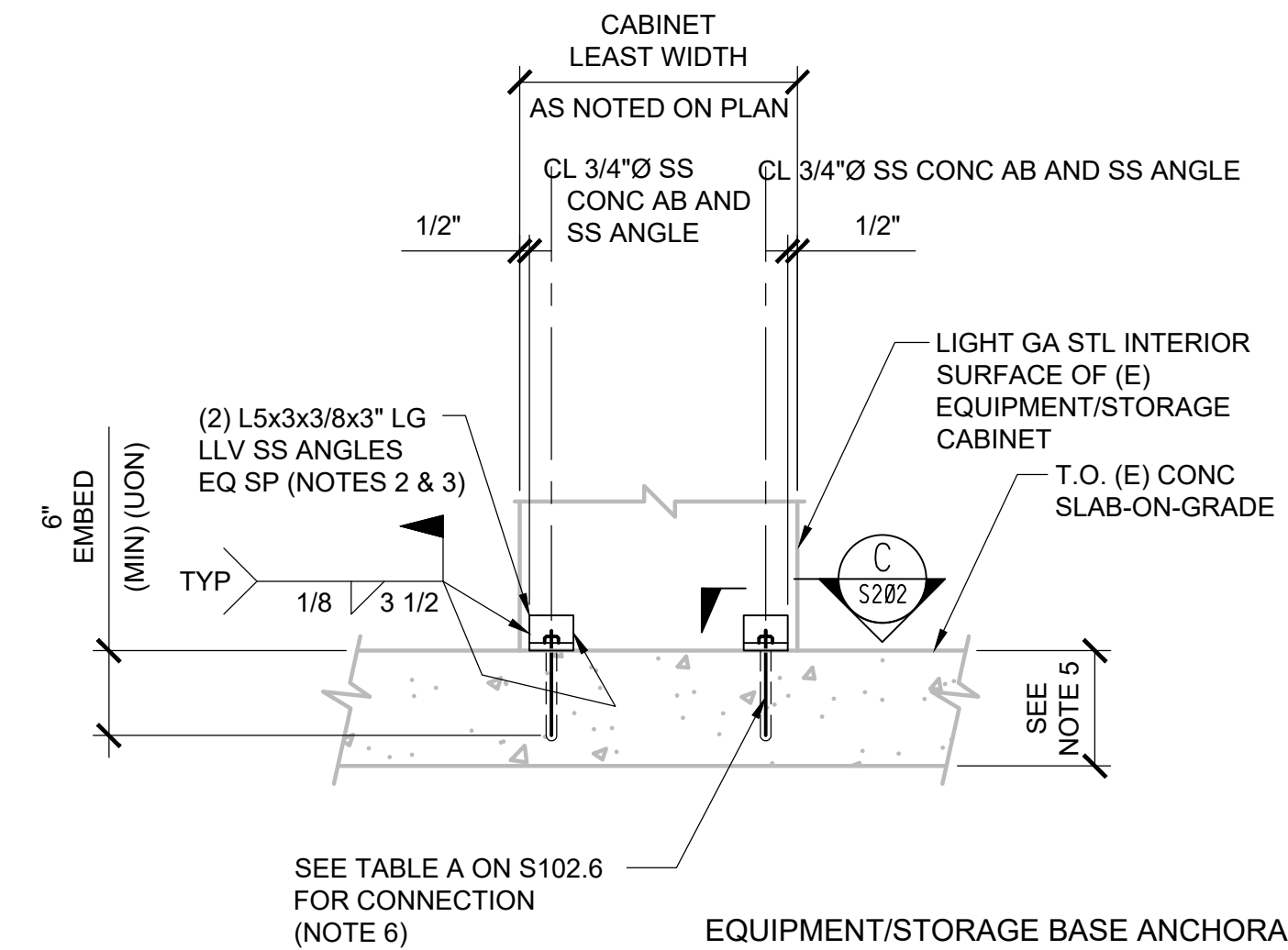


BEFORE COMMENCING CONSTRUCTION, CONTRACTOR TO VERIFY POST-INSTALLED CONC SS ANCHOR SIZE, NUMBER AND LOCATIONS W/ EQUIP SUPPLIER AND PROVIDE ANCHOR BOLTS

EQUIPMENT PAD
 DETAIL 03163
 NTS VAR

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 REF 5: REF#FILENAME
 REF 6: REF#FILENAME



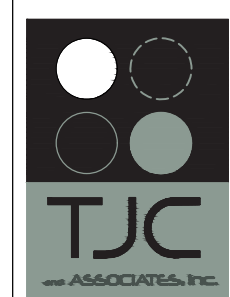
NOTES:
 1. MINIMUM 4-CONNECTIONS, (1) AT EACH RECTANGULAR CABINET CORNER.
 2. DIMENSIONS AND CONNECTION SIZES ARE SPECIFIED AS MINIMUMS, UON.
 3. SHIMS ARE UNACCEPTABLE UNDER HOLDDOWN PLATES.
 4. EXISTING CONCRETE SLAB SURFACE WITHIN THE CABINET'S FOOTPRINT AREA IS REQUIRED TO BE LEVEL AND IN SOUND CONDITION, OTHERWISE SEE REPAIR REQUIREMENTS.
 5. CONTRACTOR TO VERIFY SLAB-ON-GRADE IS AT LEAST 10-INCHES DEEP.
 6. CONTRACTOR TO VERIFY POST-INSTALLED SS CONCRETE ANCHOR BOLT AND PLATES (CONNECTIONS) DO NOT OBSTRUCT OR IMPEDED CABINET/LOCKER OPERABLE COMPONENTS.

EQUIPMENT/STORAGE BASE ANCHORAGE
 DETAIL 03164
 NTS VAR

REF 1: REF#FILENAME
 REF 2: REF#FILENAME
 REF 3: REF#FILENAME

USER: \$USER\$\$\$\$
 DATE: \$\$\$\$DATE\$\$\$\$
 FILE: \$\$\$\$FILE\$\$\$\$

PLOT SCALE: PLOT\$SCALE

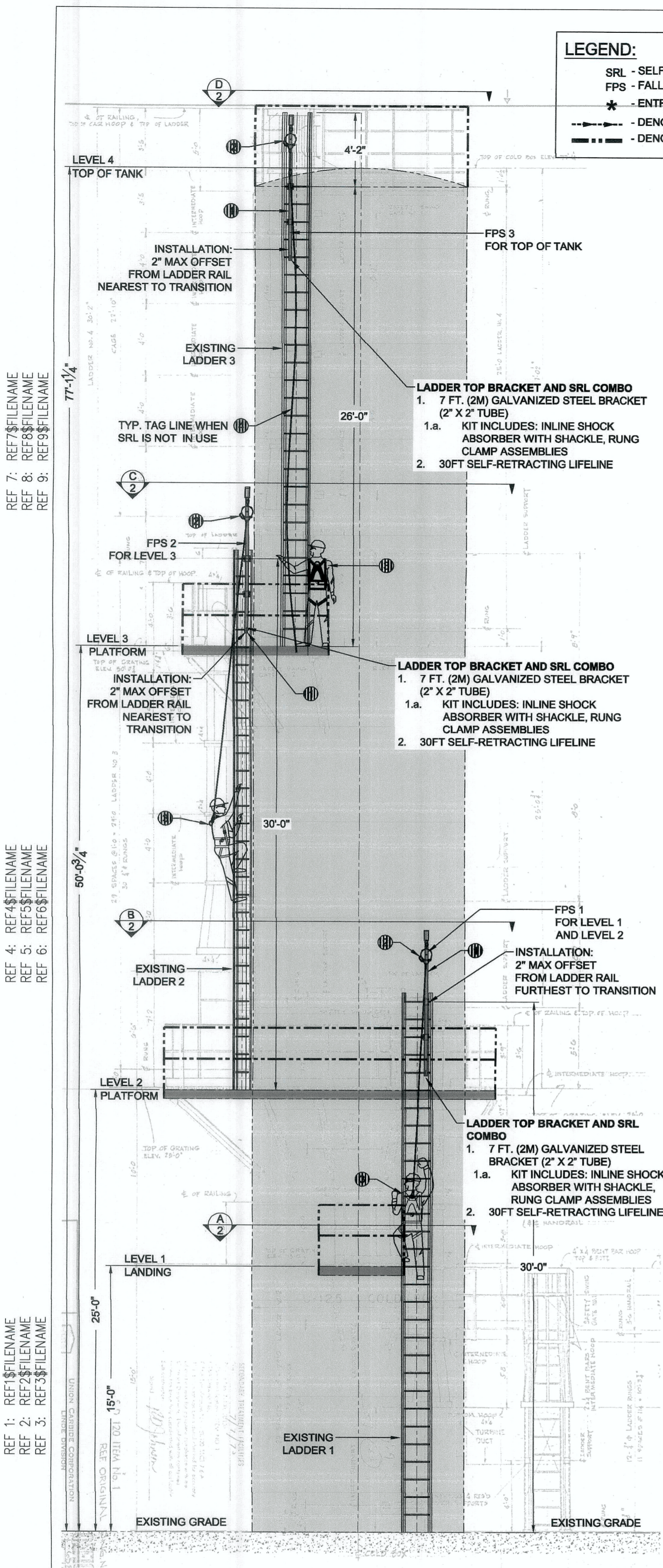


NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	C. WILLIAMS	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT STRUCTURAL STANDARD DETAILS	
DRAWN BY:	A. PRIOR		
DESIGN CHECKED BY: R.P.E. NO. C84881	H. MONTOYA		
PROJECT MANAGER R.P.E. NO.	J. JANCAITIS	SCALE NTS DATE 28JUNE24	
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. S4439	R. MIGDAL	SD428-W4400-S006 DRAWING NUMBER	
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	0 REV.	
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	6/28/24	



6/28/24

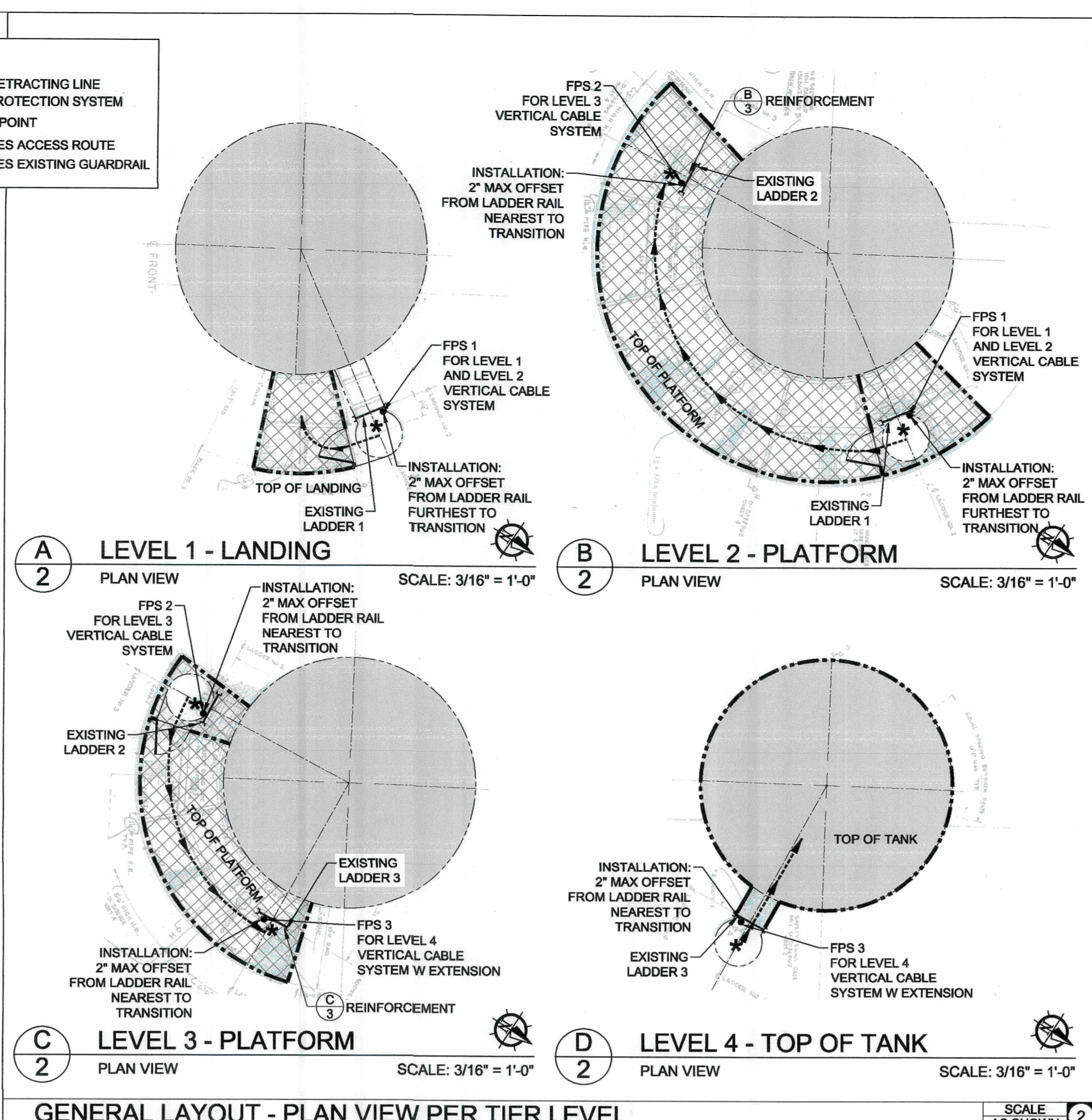


GENERAL LAYOUT - ELEVATION

SCALE: 3/16" = 1'-0" 1

LADDER NAME	LADDER HT	RUNG LT	RUNG DIA	RAIL SIZE	GUARDRAIL	SWING GATE	FALL PROTECTION SYSTEM SPECIFICATION
LADDER 1	30'-0"	1'-6"	0'-0 3/4"	C3X4.1 CHANNEL RAIL	PRESENT	PRESENT	MILLER, LADDER TOP BRACKET COMBINED WITH FALCON™ SELF-RETRACTING LIFELINE
LADDER 2	30'-0"	1'-6"	0'-0 3/4"	C3X4.1 CHANNEL RAIL	PRESENT	PRESENT	MILLER, LADDER TOP BRACKET COMBINED WITH FALCON™ SELF-RETRACTING LIFELINE
LADDER 3	26'-0"	1'-6"	0'-0 3/4"	C3X4.1 CHANNEL RAIL	PRESENT	PRESENT	MILLER, LADDER TOP BRACKET COMBINED WITH FALCON™ SELF-RETRACTING LIFELINE

LADDER PARAMETERS - SIMILAR FOR 2 TOWERS



WARNING!

FALL PROTECTION SYSTEM

MUST READ AND FULLY UNDERSTAND PRIOR TO USE

ALTERATION OR MISUSE OF THIS SYSTEM, FAILURE TO FOLLOW INSTRUCTIONS, OR UNAUTHORIZED SUBSTITUTION OF SYSTEM MAY RESULT IN SERIOUS INJURY OR DEATH.

DO NOT MAKE ANY MODIFICATIONS WITHOUT WRITTEN APPROVAL FROM CAI SAFETY.

INSPECT SYSTEM BEFORE EACH USE. AN IMMEDIATE INSPECTION AND REPLACEMENT OF DAMAGED PARTS IS REQUIRED FOLLOWING ANY FALL OR DAMAGE TO SYSTEM.

THIS SYSTEM IS FOR USE BY FALL PROTECTION TRAINED PERSONNEL ONLY.

FALL PROTECTION SYSTEM MUST BE USED IN ACCORDANCE WITH DESIGN STATEMENTS SHOWN ON THE ENGINEERED DRAWINGS AND MANUFACTURER'S INSTRUCTIONS.

A COMPETENT PERSON AS DEFINED BY ANSI Z359 CURRENT STANDARDS MUST CERTIFY THE SYSTEM:

- ANNUALLY
- SEMI-ANNUALLY

USE CAUTION WHEN USING NEAR THERMAL, ELECTRICAL, OR CHEMICAL SOURCES.

SYSTEM TO BE USED IN FULL CONFORMANCE WITH THE LATEST OSHA AND ANSI FALL PROTECTION STANDARDS.

A OSHA AND ANSI COMPLIANT RESCUE PLAN MUST BE IN PLACE AND READY FOR USE PRIOR TO USING THE FALL PROTECTION SYSTEM. ALWAYS WORK IN PAIRS AND MAINTAIN VISUAL CONTACT IN CASE RESCUE OR ASSISTANCE IS REQUIRED.

SYSTEM CAPACITY:

- MAXIMUM OF 1 USER(S) PER SYSTEM.
- MAXIMUM WEIGHT OF EACH USER IS 310 LBS, INCLUDING CLOTHING AND TOOLS.
- SYSTEM IS NOT INTENDED FOR LIFTING TOOLS OR EQUIPMENT.
- THIS SYSTEM IS RATED FOR: FULL ARREST FALL RESTRAINT

PERSONAL PROTECTIVE EQUIPMENT:

- USE ONLY CAI APPROVED PERSONAL PROTECTIVE EQUIPMENT:
- 30 FT SELF-RETRACTING LIFELINE
- WHEN USING FALL PROTECTION SYSTEM THE USER MUST BE WEARING A FULL BODY HARNESS AND TIED OFF AT ALL TIMES.
- ALL PERSONAL PROTECTIVE EQUIPMENT MUST BE INSPECTED AND MAINTAINED PER MANUFACTURER'S INSTRUCTIONS.

ANY QUESTIONS CALL CAI SAFETY AT (951) 465-7386 OR INFO@CAISAFETY.COM

SERIAL NUMBER: 2660-12-2023-XXXX

ORIGINAL DATE OF COMMISSION: _____ DATE OF COMMISSION WHEN SYSTEM IS READY TO BE INSTALLED: _____

Certification Valid Until: _____

CAI SAFETY SYSTEMS

TERMS AND CONDITIONS: SALE OF ANY PRODUCTS OR SERVICES IS EXPRESSLY CONDITIONED ON BUYER'S ASSENT TO THE TERMS AND CONDITIONS ONLINE AT [HTTPS://WWW.CAISAFETY.COM/CAI-SAFETY-SYSTEMS-TERMS-AND-CONDITIONS](https://www.caisafety.com/cai-safety-systems-terms-and-conditions). NO BUYER SHALL MODIFY THESE TERMS AND CONDITIONS, NOR SHALL ANY COURSE OF PERFORMANCE, COURSE OF DEALING, OR USAGE OF TRADE OPERATE AS A MODIFICATION OR WAIVER OF THESE TERMS AND CONDITIONS. ACCEPTANCE AND/OR USE OF THE SYSTEM SHALL CONSTITUTE ASSENT TO THESE TERMS AND CONDITIONS.

SYSTEM NUMBER: SEE TABLE "WARNING SIGN - SYSTEM NUMBER"

YEAR OF SHIPMENT: _____

MONTH OF SHIPMENT: _____

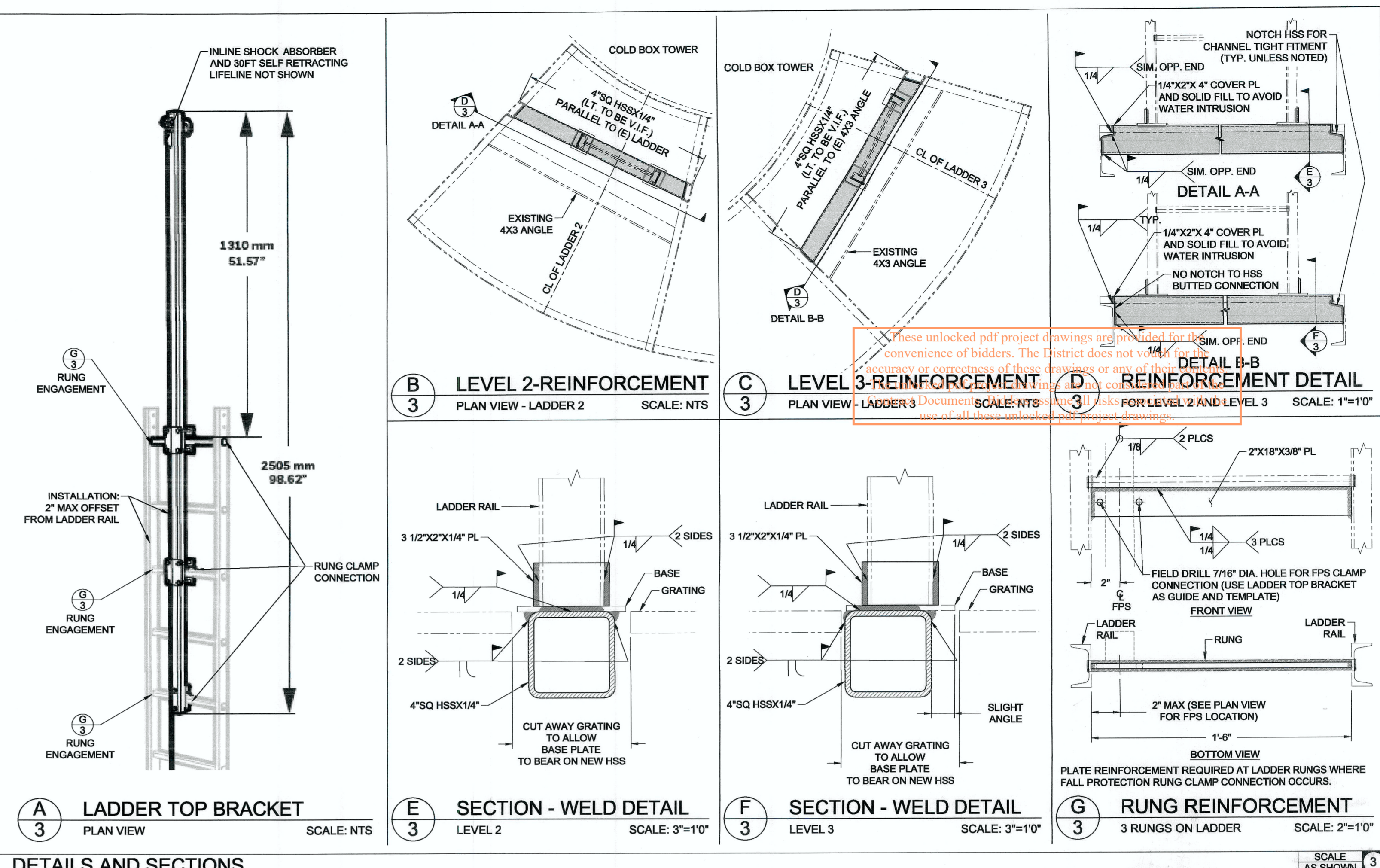
CAI PROJECT NUMBER: _____

WARNING SIGN

TOWER	SYSTEM NUMBER	TOWER	SYSTEM NUMBER
LADDER 1	T1-FPS1	LADDER 1	T2-FPS1
LADDER 2	T1-FPS2	LADDER 2	T2-FPS2
LADDER 3	T1-FPS3	LADDER 3	T2-FPS3

ACTIVE SYSTEM GENERAL NOTES:

- REGULATIONS AND STANDARDS
 - APPLICABLE CODES, REGULATIONS, & STANDARDS:
 - CAL - OSHA - TITLE 8 SECTION 1670 ARTICLE 24 - FALL PROTECTION
 - OSHA TITLE 29, CHAPTER XVII PART 1910 AND 1926
 - AMERICAN NATIONAL STANDARDS INSTITUTE, Z359.1-2016, A10.32
 - MANUFACTURER'S O&M MANUAL
- CORRECT USE, INSPECTION AND MAINTENANCE OF SYSTEM
 - PROPOSED SAFETY FOR TOWER PLATFORMS AND LANDINGS PER DRAWING AND MANUFACTURER'S O&M MANUAL.
 - SEE BOM TABLE FOR CALL OUT OF SYSTEM COMPONENTS AND USER HARDWARE.
 - FOR MAINTENANCE, INSPECTION & OPERATION REFER TO THE PRODUCT MANUFACTURER'S MANUAL PROVIDED WITH THE SYSTEM.
 - AN OSHA COMPETENT PERSON, FAMILIAR WITH THE WORKINGS OF THIS SPECIFIC SYSTEM, SHALL TRAIN USERS IN THE PROPER USE OF THE SYSTEM.
 - INSPECTION FREQUENCY IS AS FOLLOWS:
 - FALL PROTECTION SYSTEMS IN CALIFORNIA MUST BE INSPECTED AND DOCUMENTED EVERY 6 MONTHS BY COMPETENT PERSON PER CAL-OSHA.
 - AMERICAN NATIONAL STANDARDS INSTITUTE, Z359.1-2016, A10.32
 - MANUFACTURER'S MANUAL.
 - DOCUMENTED ANNUAL INSPECTION BY CERTIFIED INSTALLER PER MANUFACTURER'S WARRANTY REQUIREMENT.
 - FALL ARREST RESCUE PLAN, EQUIPMENT AND TRAINING MUST BE ADDRESSED AND AVAILABLE PRIOR TO SYSTEM USE.
 - FALL PROTECTION TRAINING SPECIFIC TO THIS SYSTEM IS REQUIRED FOR ALL PERSONNEL WHO WILL BE USING THE SYSTEM. REFRESHER TRAINING IS REQUIRED EVERY TWO YEARS.
 - WARNING SIGN TO BE INSTALLED WITHIN CLOSE PROXIMITY OF ACTIVE FALL PROTECTION SYSTEM AND MUST BE VISUALLY PROMINENT FOR USERS OF THE SYSTEM.
 - DO NOT USE THE SYSTEM IF A FALL HAS OCCURRED OR IF ANY DAMAGE OR DEFORMATION TO THE SYSTEM EXISTS. IF SYSTEM HAS BEEN IMPACTED OR USED TO ARREST A FALL TAKE OUT OF SERVICE UNTIL INSPECTED AND APPROVED BY MANUFACTURER'S CERTIFIED INSTALLER.
 - ALWAYS WORK IN TEAMS OF TWO OR MORE AND MAINTAIN VISUAL CONTACT AT ALL TIMES IN CASE RESCUE OR ASSISTANCE IS REQUIRED.
 - OWNER OR OPERATOR MUST HAVE A COMPREHENSIVE MANAGED FALL PROTECTION PROGRAM AS DEFINED BY ANSI Z359.2.
- INSPECTION FREQUENCY IS AS FOLLOWS:
 - FALL PROTECTION SYSTEMS IN CALIFORNIA MUST BE INSPECTED AND DOCUMENTED EVERY 6 MONTHS BY COMPETENT PERSON PER CAL-OSHA.
 - AMERICAN NATIONAL STANDARDS INSTITUTE, Z359.1-2016, A10.32
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FALL PROTECTION PARAMETERS

APPLICATION	FPS LOADS	TI-OFF	NUMBERS OF USERS	DIRECTION OF LOAD	ALLOWABLE TI-OFF MEANS
FALL ARREST	1800 lbs PER USER	SELF RETRACTING LIFELINE	1 USER	VERTICAL	FRONT DORSAL D-RING OF HARNESS

REINFORCEMENT MATERIAL NOTE:

ALL REINFORCEMENT MATERIAL AND FIELD WELDING TO BE SUPPLIED AND PERFORMED BY OTHERS. REINFORCEMENT MATERIAL AND FIELD WELDING IS NOT INCLUDED IN CAI SCOPE OF WORK.

LIST OF MATERIALS FOR 2 TOWERS

ITEM	REQ'D	PART NO.	DESCRIPTION
①	6	TRTB-7	MILLER, 7 FT TOP BRACKET ASSEMBLY W/ BUILT-IN SHOCK ABSORBER
②	6	MP30SS-Z7	FALCON™ SELF-RETRACTING LIFELINE, (SS) CABLE WITH STEEL -30FT
③	TBD	H5CC22222	HONEYWELL MILLER H500 FULL BODY HARNESS WITH FRONT D-RING
④	6		30FT SAFETY YELLOW TAG LINE
⑤	6	CA112757-4	WARNING LABELS
⑥	1	2660-12-2023	O&M MANUAL

SD428 - MWTP OXYGEN PLANT REHABILITATION

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO.1
OAKLAND, CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
OXYGEN PRODUCTION PLANT

LADDER ANCHOR
FALL PROTECTION SYSTEM
2660-CA112757

SCALE AS SHOWN
DATE 28JUN24

SD428-W4400-S011
DRAWING NUMBER

0 REV.

CAI PROJ # 2660

TERMS AND CONDITIONS: SALE OF ANY PRODUCTS OR SERVICES IS EXPRESSLY CONDITIONED ON BUYER'S ASSENT TO THE TERMS AND CONDITIONS ONLINE AT [HTTPS://WWW.CAISAFETY.COM/CAI-SAFETY-SYSTEMS-TERMS-AND-CONDITIONS](https://www.caisafety.com/cai-safety-systems-terms-and-conditions). NO BUYER SHALL MODIFY THESE TERMS AND CONDITIONS, NOR SHALL ANY COURSE OF PERFORMANCE, COURSE OF DEALING, OR USAGE OF TRADE OPERATE AS A MODIFICATION OR WAIVER OF THESE TERMS AND CONDITIONS. ACCEPTANCE AND/OR USE OF THE SYSTEM SHALL CONSTITUTE ASSENT TO THESE TERMS AND CONDITIONS.

CAI SAFETY SYSTEMS

1000 SOUTH BROAD AVE. TRING, BRISTOL, ENGLAND, BS16 1JH
1000 SOUTH BROAD AVE. TRING, BRISTOL, ENGLAND, BS16 1JH

DRAWING REFERENCE NOTE:

ALL INFORMATION SHOWN ON THIS DRAWING ARE BASED ON CUSTOMER SUPPLIED DATA AND DRAWINGS. REFERENCE PER: UNION CARBIDE CORP. LINDE DIVISION U-125 COLD BOX LADDERS AND PLATFORM

- SET D-2034562, SHEET 1-5
- SET D-2035977, SHEET 1-5

3" ON ORIGINAL DOCUMENT

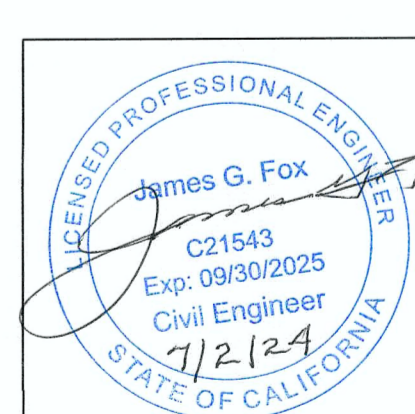
SOLUTIONWERKS INCORPORATED

APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. 37997 D. RICHARDSON

PROJECT MANAGER R.P.E. NO. 95846 J. LAW

RECOMMENDED: ENGINEER R.P.E. NO. 69681 D. RUSSELL

DATE 28JUN24



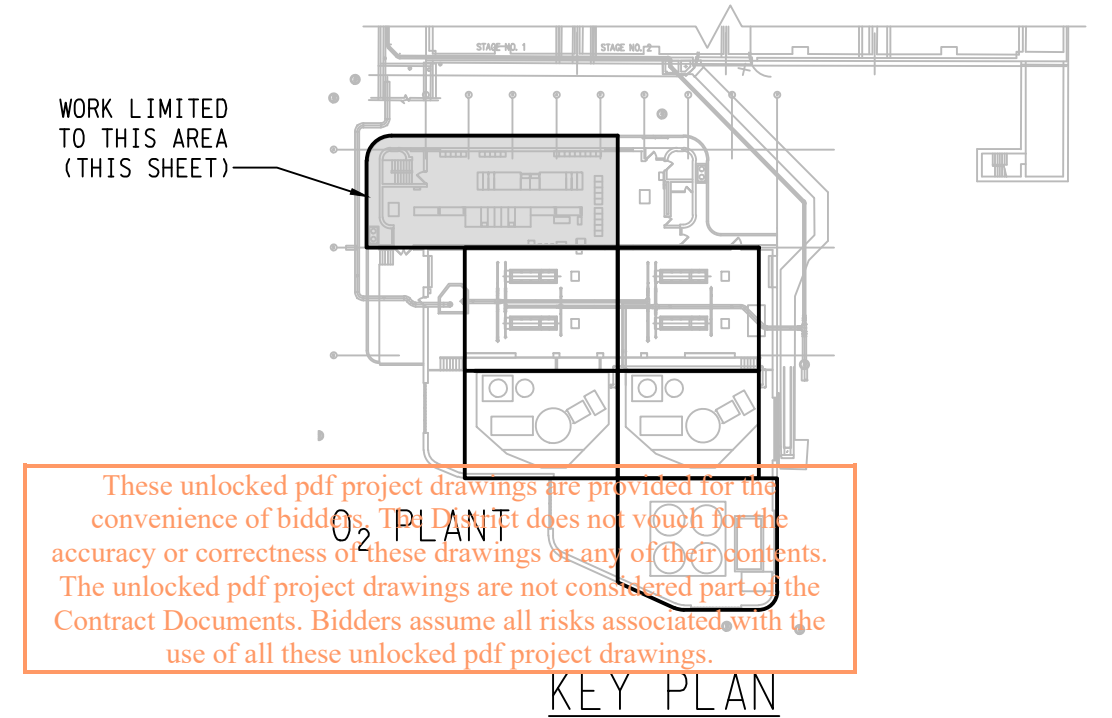
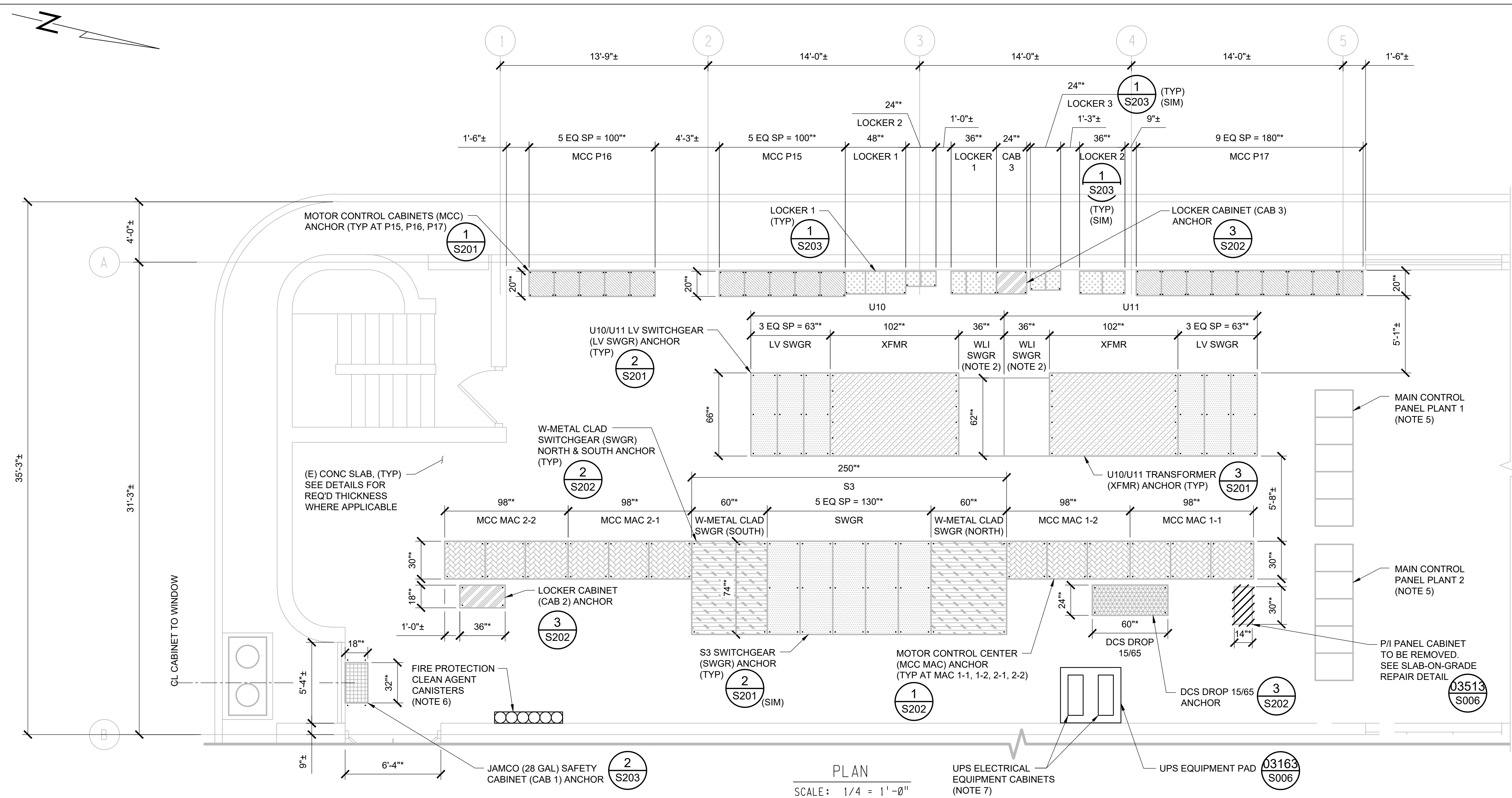
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PLOT SCALE: PLOT\$SCALE



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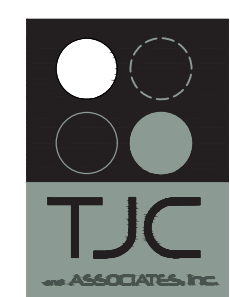
- NOTES:**
- REFER TO EXISTING DRAWINGS FOR EXISTING CONCRETE WALL AND SLAB DIMENSIONS, REINFORCEMENT, AND EMBEDDED COMPONENTS.
 - BEFORE COMMENCING ANY PROJECT WORK, THE CONTRACTOR SHALL VERIFY THE FOLLOWING PROVISIONS:
 - WEIGHTS, DIMENSIONS, AND EXISTING CONNECTIONS SHOWN ON THE PROJECT STRUCTURAL DRAWINGS.
 - EXISTING CONCRETE SLAB SURFACE WITHIN THE CABINETS FOOTPRINT IS LEVEL AND IN GENERALLY SOUND CONDITION, FOR REQUIRED REPAIR WORK SEE DETAIL **03153/S006**.
 - CONTRACTOR TO VERIFY POST-INSTALLED CONNECTIONS SHALL NOT OBSTRUCT OR IMPEDE CABINET/LOCKER OPERATION, INCLUDING MAINTENANCE ACCESS AND THE FUNCTIONING OF ELECTRICAL COMPONENTS.
 - AT THE WLI SWITCHGEAR ENCLOSURES: PROOF TENSION TEST LOAD OF 2,000 LBS AT THE 4 EXISTING ANCHORS PER CBC 1901.3.4 AND ACI 318. TESTING OF EXISTING ANCHOR BOLTS IS NOT REQUIRED AT OTHER CONNECTIONS.
 - AT THE WLI SWITCHGEAR ENCLOSURES: VERIFY EXISTING STEEL CONNECTIONS ARE IN SOUND CONDITION. IF STEEL CONNECTIONS ARE EXPERIENCING DETERIORATION INCLUDING, BUT NOT LIMITED TO CORROSION WITH SECTION LOSS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
 - HORIZONTAL AND VERTICAL SURFACES SHALL BE FREE OF DIRT, OILS, GREASE, ETC. BEFORE INSTALLATION OF CONNECTIONS.
 - EXISTING ANCHORAGE SHALL REMAIN. FURNISH EXISTING ANCHOR BOLT WITH APPROPRIATE HEX NUTS AND WASHERS WHERE MISSING AND WHERE DETERMINED BY FIELD ENGINEER. REFER TO GENERAL NOTES SHEET ON S004.
 - AFTER EXISTING CONTROLS AND INSTRUMENTATION ARE REMOVED FROM THE MAIN CONTROL PANEL, CONTRACTOR SHALL EXPOSE THE ANCHORAGE AT THE BASE AND ALLOW DISTRICT TO INSPECT. DISTRICT WILL PROVIDE DIRECTION ON WHETHER ADDITIONAL BRACING IS NEEDED. ADDITIONAL RETROFIT WORK WILL BE BILLED OUT OF AN ALLOWANCE.
 - SEISMIC BRACING CONNECTIONS FOR FIRE PROTECTION CLEAN AGENT CANISTERS ARE DEFERRED SUBMITTAL ITEMS AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. SEISMIC BRACING CONNECTIONS FOR FIRE PROTECTION CLEAN AGENT CANISTERS HAVE NOT BEEN DESIGNED BY THE ENGINEER OF RECORD. REFER TO STRUCTURAL NOTES AND PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
 - CONTRACTOR SHALL PROVIDE SEISMIC BRACING IN ACCORDANCE WITH LOCAL CODES AND THE AUTHORITY HAVING JURISDICTION. FIRE PROTECTION CLEAN AGENT CANISTERS LOCATIONS GENERALLY SHOWN ON PLAN, FOR REFERENCE ONLY.
 - FOR SEISMIC BRACING OF THE UPS EQUIPMENT USE MANUFACTURER'S RECOMMENDED ENCLOSURE AND ANCHORS. AT A MIN. USE (2) 1/2" DIA SS ANCHORS EA SIDE OF EA UPS UNIT (SEE TABLE). CONTRACTOR TO COORDINATE WITH DISTRICT EXACT SPECIFICATIONS AND LOCATION OF UPS UNITS AND ITS EQUIPMENT PAD.
 - SEE DETAIL **03164/S006** FOR ADDITIONAL INFORMATION.

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

TABLE A

EQUIPMENT	TYPE	MAX ALLOWABLE OPERATING WEIGHT (PER INDIVIDUAL CABINET SECTION) (LBS)	TOTAL EQUIPMENT BASE ANCHOR BOLTS USE EXISTING ANCHORAGE (NOTE 2d & 2e)	MINIMUM NO. BOLTS AT MAXIMUM BOLT SPACING ON ES OF CABINET	HATCH	SEE DETAIL
U10	WLI SWGR (SWITCHGEAR)	1200	(12) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 7" (MIN)	(6) AT 11" O.C.		3/S201
	XFMR (TRANSFORMER)	11100	(6) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(3) AT 30" O.C.		2/S201
	LV SWGR (LOW-VOLTAGE SWITCHGEAR)	1800	(6) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(3) AT 30" O.C.		2/S201
U11	WLI SWGR (SWITCHGEAR)	1200	USE EXISTING ANCHORAGE (NOTE 2d & 2e)	NOTE 2d & 2e		-
	XFMR (TRANSFORMER)	11100	(12) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 7" (MIN)	(6) AT 11" O.C.		3/S201
S3	LV SWGR (LOW-VOLTAGE SWITCHGEAR)	1633	(6) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(3) AT 30" O.C.		2/S201
	W-METAL CLAD SWGR (NORTH & SOUTH)	3400	(4) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 4 1/2" (MIN)	(1) AT EA. OF THE 4 CORNERS		2/S202
MCC	SWGR (SWITCHGEAR)	2215	(6) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(3) AT 34" O.C.		2/S201
	P15	1100	(2) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(2) AT E FRONT BOLT HOLES		1/S201
	P16	1100	(2) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(2) AT E FRONT BOLT HOLES		1/S201
MCC	P17	1100	(2) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(2) AT E FRONT BOLT HOLES		1/S201
	MAC 1-1 & 1-2	1600	(4) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(1) AT EA. OF THE 4 CORNERS		1/S202
	MAC 2-1 & 2-2	1600	(4) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(1) AT EA. OF THE 4 CORNERS		1/S202
MISCELLANEOUS	DCS DROP 15-65	1200	(4) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(1) AT EA. OF THE 4 CORNERS		3/S202
	JAMCO (28 GAL) SAFETY CABINET (CAB 1)	480	(4) 5/8"Ø SS HILTI KB-TZ2, EMBED. 3 1/4" (MIN)	(4) AT 11" O.C.		2/S203
	CABINET 2	1000	(4) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 4 1/2" (MIN)	(1) AT EA. OF THE 4 CORNERS		3/S202
	CABINET 3	1000	(4) 3/4"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 4 1/2" (MIN)	(1) AT EA. OF THE 4 CORNERS		3/S202
	LOCKER 1	500	(2) 5/8"Ø SS HILTI KB-TZ2, EMBED. 3 1/4" (MIN)	(1) AT EA. OUTER LEG		1/S203
	LOCKER 2	200	(2) 5/8"Ø SS HILTI KB-TZ2, EMBED. 3 1/4" (MIN)	(2) AT 24" O.C. - OUTER LEGS		1/S203
	LOCKER 3	200	(2) 5/8"Ø SS HILTI KB-TZ2, EMBED. 3 1/4" (MIN)	(2) AT 24" O.C. - OUTER LEGS		1/S203
	UPS CABINETS	710	(4) 1/2"Ø SS ANCHORS W/ HILTI ADHESIVE HIT-RE 500 V3 + HAS-R, EMBED. 6" (MIN)	(1) AT EA. OF THE 4 CORNERS		03163/S006

3" ON ORIGINAL DOCUMENT



NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWTP OXYGEN PLANT REHABILITATION

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
OXYGEN PRODUCTION PLANT

STRUCTURAL
SEISMIC PARTIAL PLAN 6

DESIGN BY: C. WILLIAMS
DRAWN BY: A. PRIOR
PROJECT MANAGER: J. JANCAITIS
R.P.E. NO. 95846

DESIGN CHECKED BY: H. MONTOYA
R.P.E. NO. C84881

APPROVED: R. MIGDAL
R.P.E. NO. S 4439
Exp. 12/31/25

RECOMMENDED: J. LAW
R.P.E. NO. 95846

SCALE 1/4"=1'-0"
DATE 28JUNE24

SD428-W4400-S102.6
DRAWING NUMBER

03163/S006

03164/S006

03153/S006

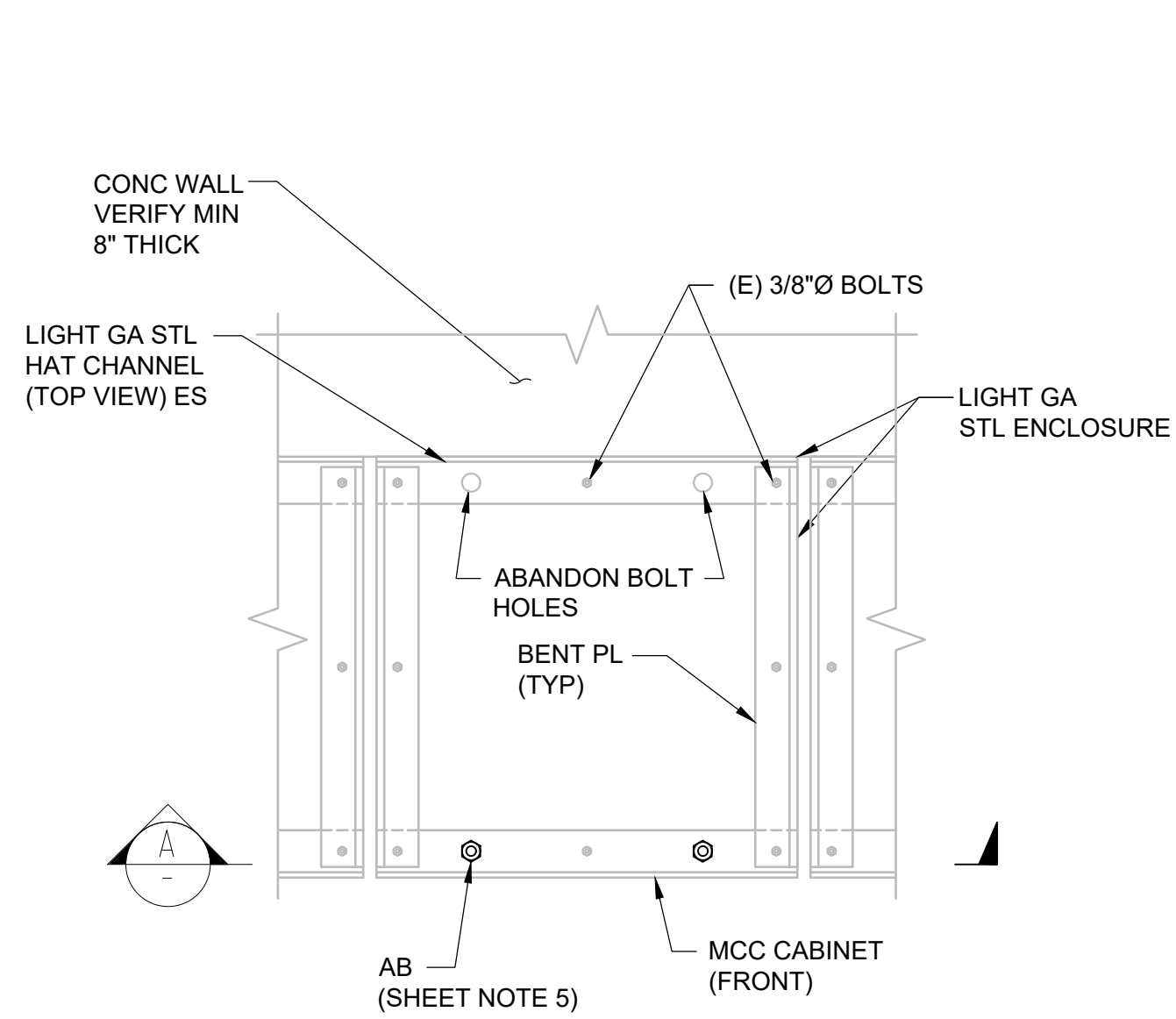
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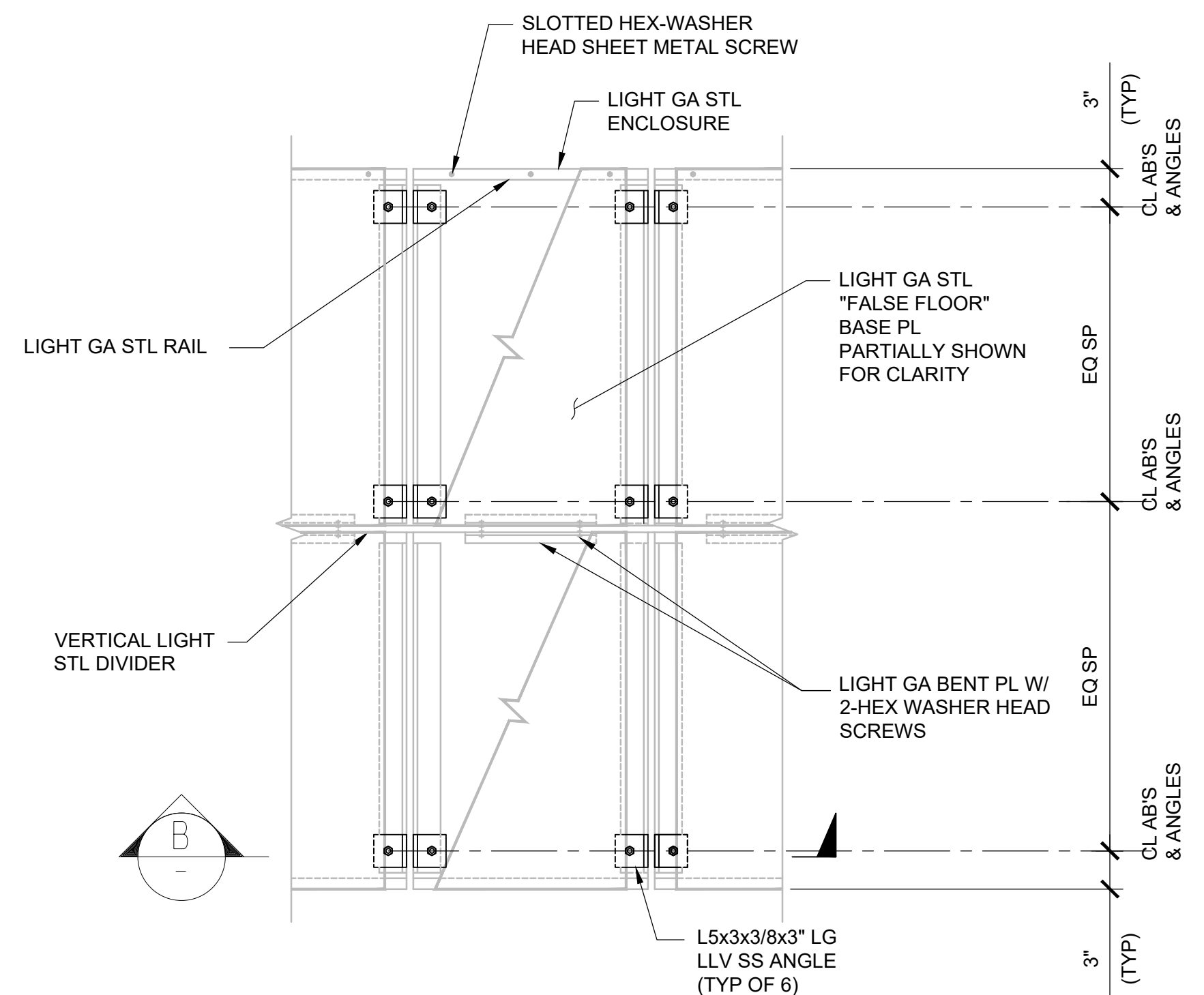
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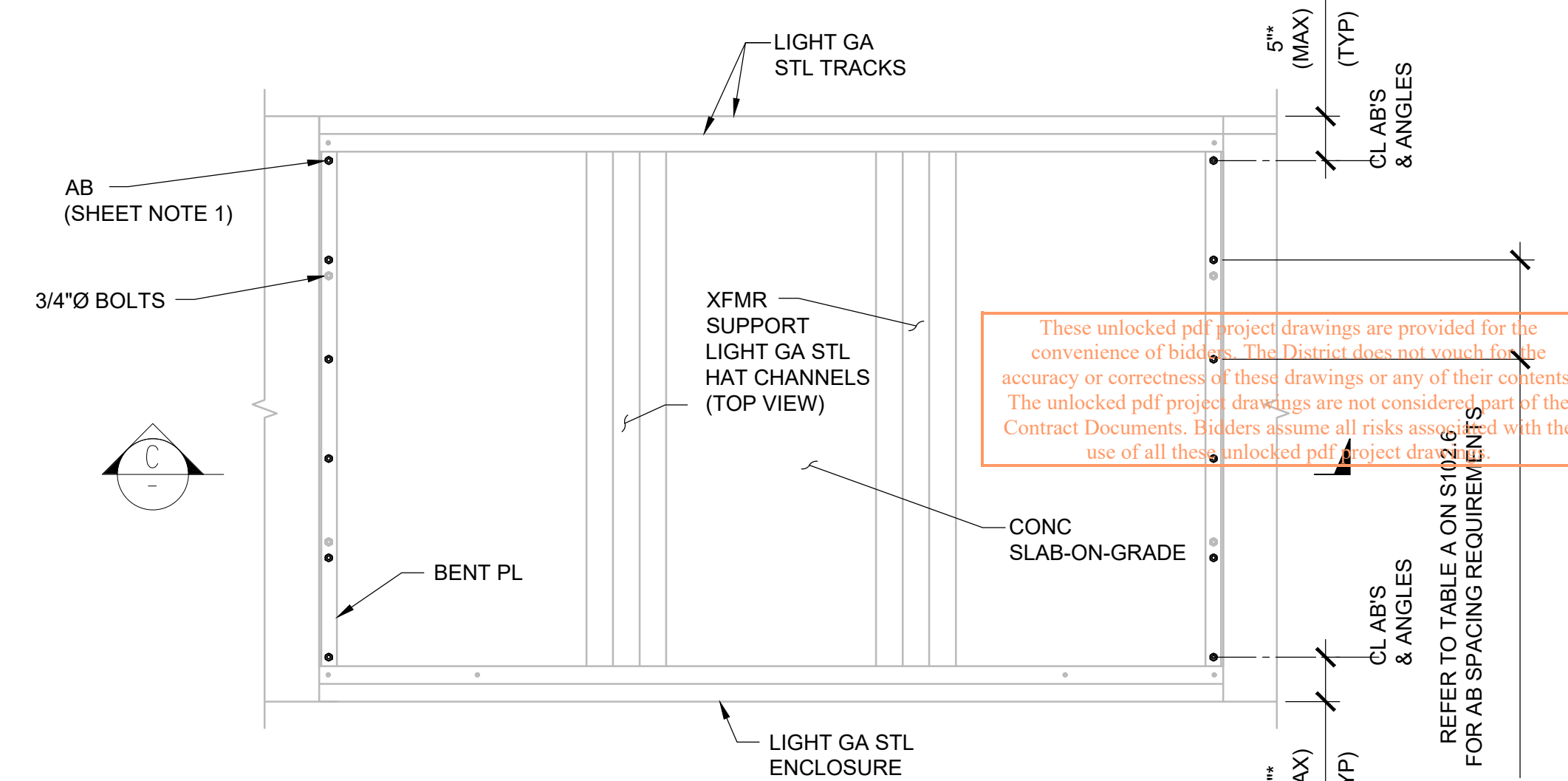


NOTE:
 1. REFER TO SECTION D TOP OF MCC CABINET-TO-VERTICAL CONCRETE SURFACE WALL CONNECTIONS. MCC CABINET WALL CONNECTIONS NOT SHOWN FOR CLARITY.

PLAN DETAIL 1
 SCALE: 1 1/2"=1'-0"
 S102.6



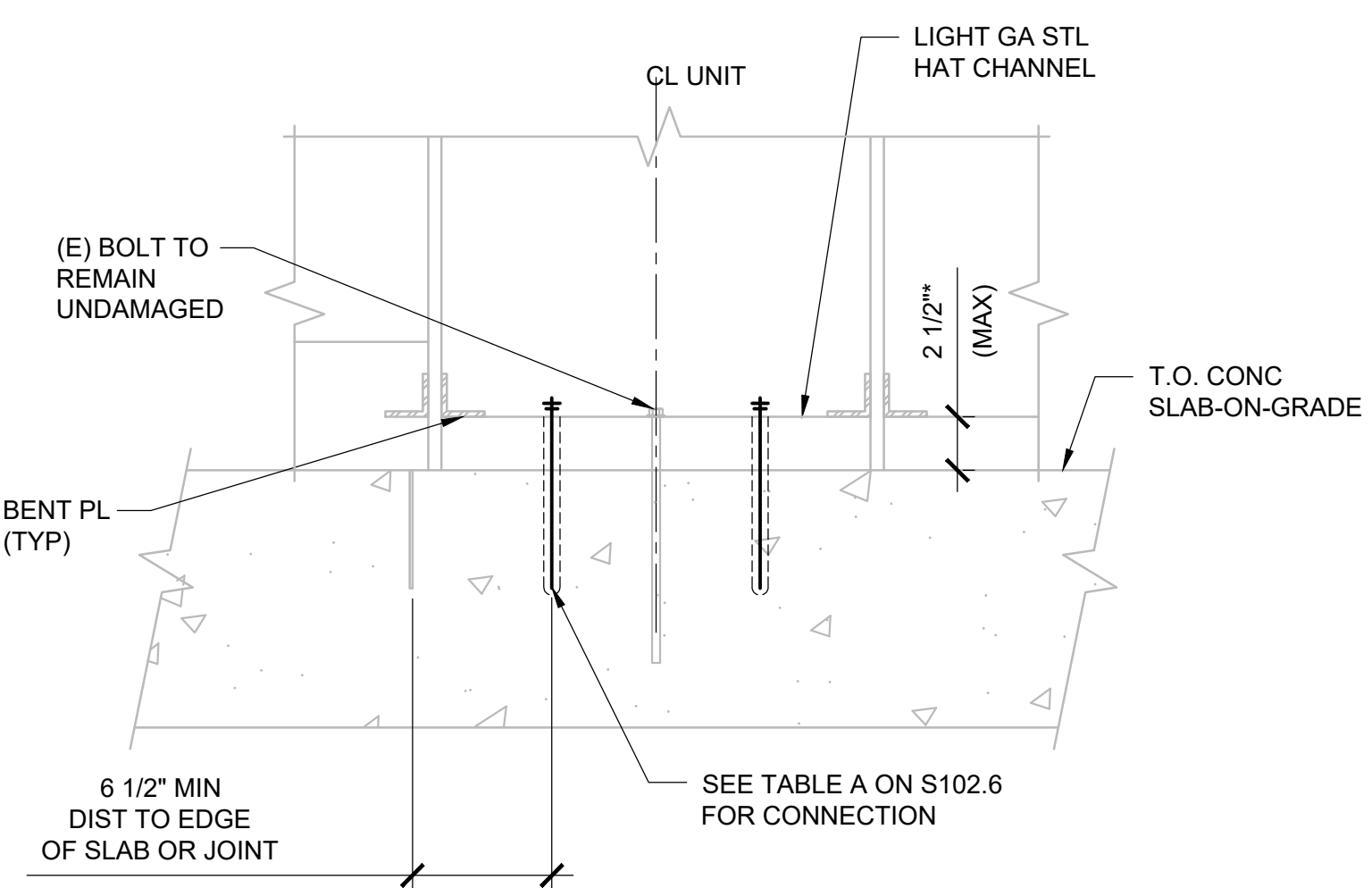
PLAN DETAIL 2
 SCALE: 1"=1'-0"
 S102.6



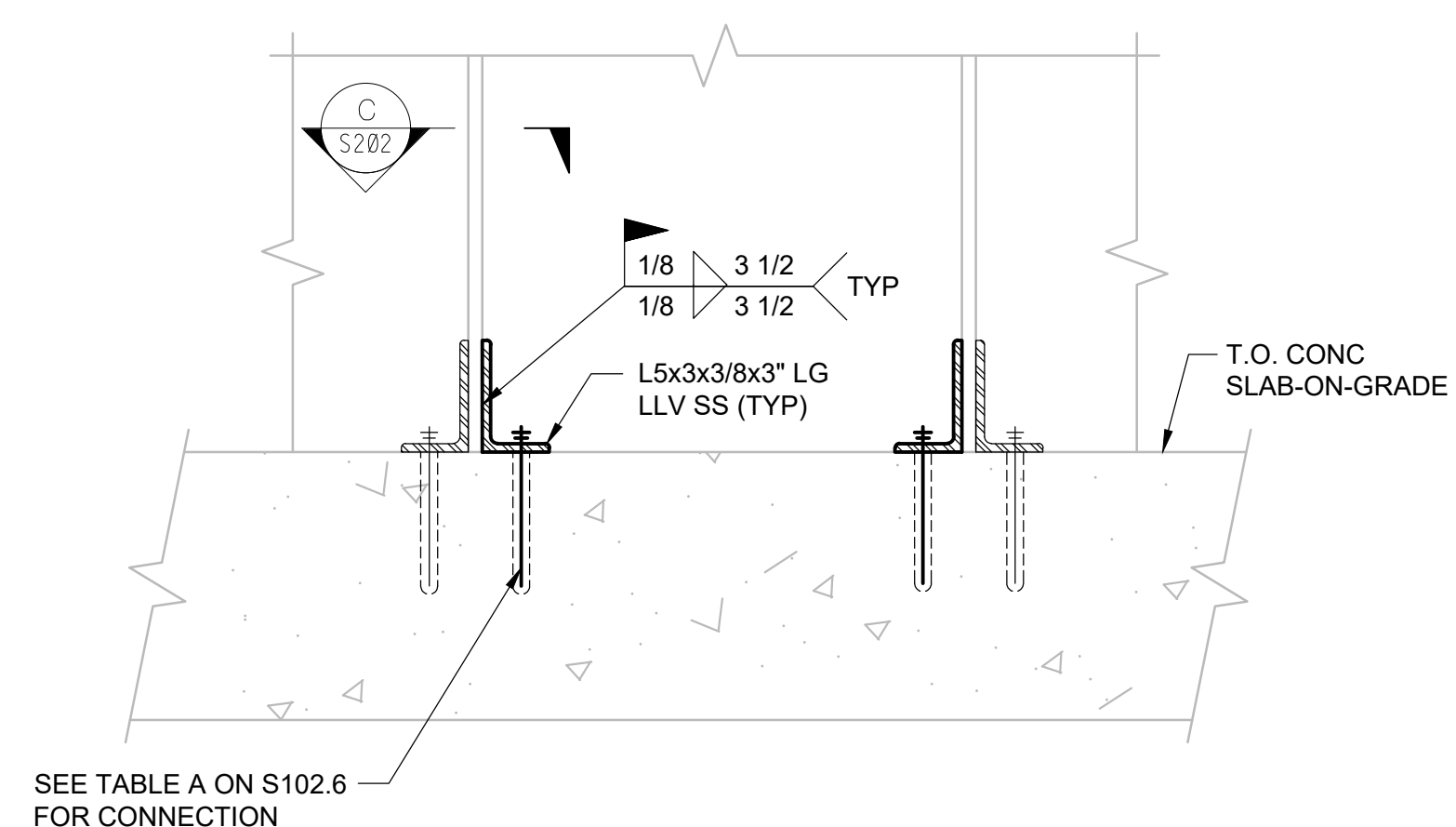
NOTE:
 1. CREATE NEW ANCHOR BOLT HOLES AT SPACING PER TABLE A ON DRAWING SHEET S102.6. SEE SHEET NOTE 5 FOR BALANCE OF INFORMATION.

PLAN DETAIL 3
 SCALE: 3/4"=1'-0"
 S102.6

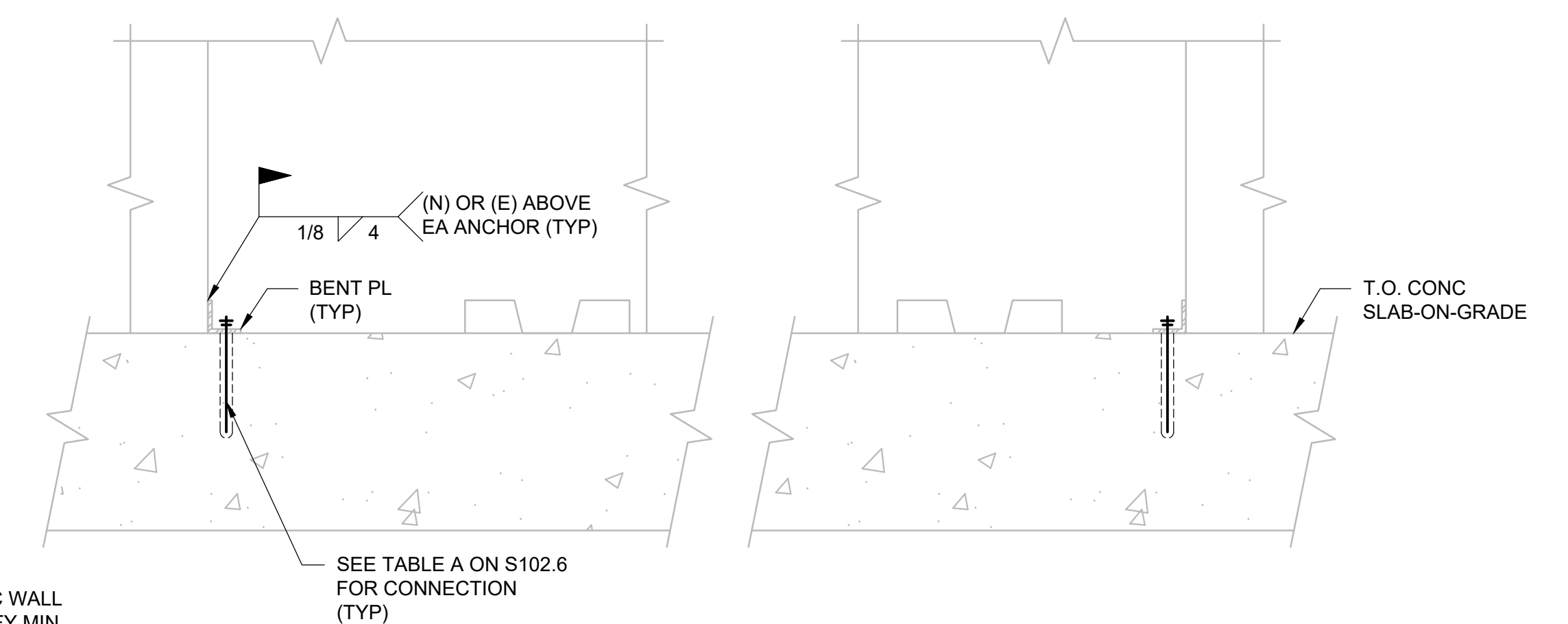
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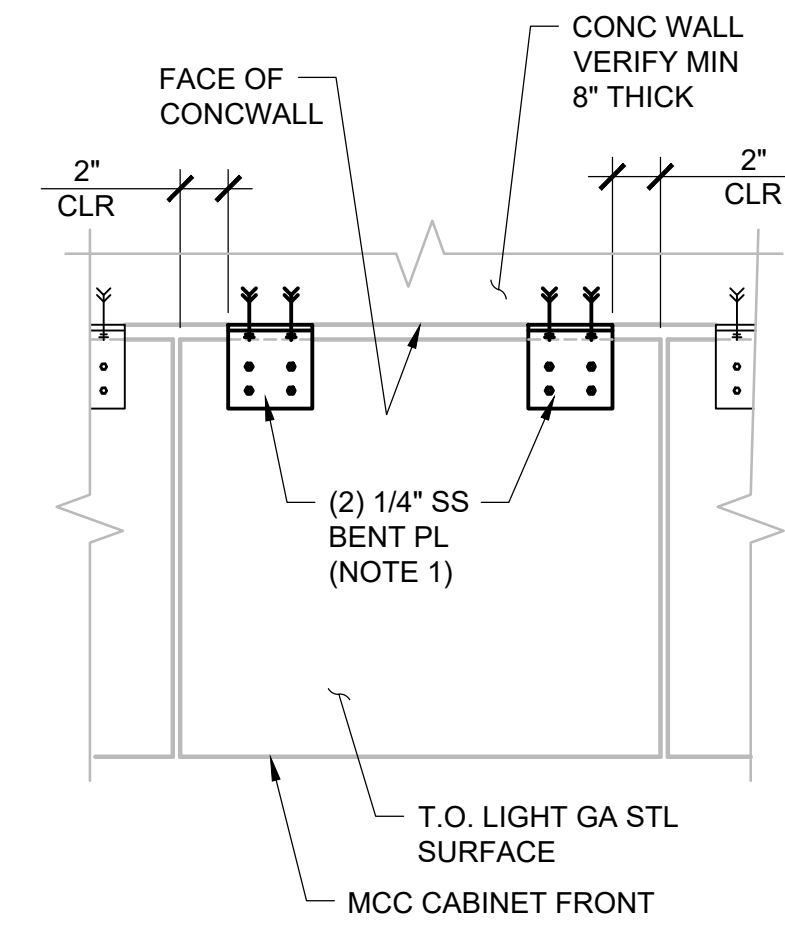
SECTION A
 SCALE: 1 1/2"=1'-0"
 S102.6



SECTION B
 SCALE: 1 1/2"=1'-0"
 S102.6



SECTION C
 SCALE: 1 1/2"=1'-0"
 S102.6

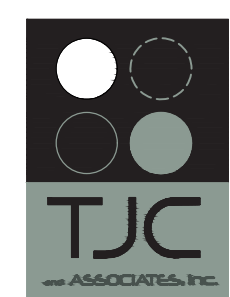


SECTION D
 SCALE: 1 1/2"=1'-0"
 S102.6

- NOTES:
- EXISTING ANCHORAGE SHALL REMAIN. FURNISH EXISTING ANCHOR BOLT WITH APPROPRIATE HEX NUTS AND WASHERS WHERE MISSING AND WHERE DETERMINED BY FIELD ENGINEER. REFER TO GENERAL NOTES ON DRAWING SHEET S004.
 - LOCATE NEW HOLDOWN LOCATIONS BEFORE COMMENCING WORK. NOTIFY THE ENGINEER OF CONFLICTS, INTERFERENCE, AND DEVIATIONS FROM THE CONDITIONS SHOWN IN THE APPLICABLE DETAIL.
 - CABINET CONNECTIONS PER PLAN AND TABLE A ON DRAWING SHEET S102.6 WITH THE FOLLOWING PROVISIONS, WHERE APPLICABLE:
 - AS REQUIRED, TEMPORARILY REMOVE AND SAFELY STORE CABINET'S NON-STRUCTURAL LIGHT GAUGE METAL THAT OBSTRUCTS THE PROPER INSTALLATION OF THE NEW HOLDOWNS.
 - WHEN APPLICABLE, REINSTALL THE TEMPORARILY DISPLACED LIGHT GAUGE METAL CABINET COMPONENTS PER DISTRICT ENGINEER.
 - AS APPLICABLE, REINSTALL CABINET'S NON-STRUCTURAL LIGHT GAUGE METAL BASE PLATE ("FALSE FLOOR") WITH LIKE FASTENERS AND PER MANUFACTURER'S REQUIREMENTS.
 - HORIZONTAL AND VERTICAL SURFACES SHALL BE FREE OF DIRT, OILS, GREASE, ETC. BEFORE INSTALLATION OF CONNECTIONS.

- REFER TO DETAIL 03153/S006 FOR INFORMATION NOT NOTED ON THE DETAILS OF THIS SHEET.
- USE EXISTING STEEL BENT PLATE WITH ABANDONED BOLTS HOLES FOR NEW ANCHORS, WHERE APPLICABLE:
 - SEE TABLE A ON DRAWING SHEET S102.6.
 - MAKE BOLT HOLES AT STEEL PLATES 1/16" LARGER THAN BOLT DIAMETER PER AISC GUIDELINES.
 - WIDEN EXISTING DIAMETER BOLT HOLES TO ACCOMMODATE NEW ANCHORS PER CURRENT EDITION OF THE AISC GUIDELINES.
- ANCHOR BOLTS ARE TO BE MINIMUM 6 1/2" CLEAR FROM CONCRETE SLAB EDGES AND JOINTS, AND 3" CLEAR TO EXISTING ANCHOR BOLTS.

- NOTES:
- (2) STAINLESS STEEL BENT PLATES AT EACH 20"x20" MCC CABINET TOP SURFACE-TO-CONCRETE WALL CONNECTION, TYPICAL.
 - REFER TO PLAN DETAIL 1/S203 FOR BENT PLATE CONNECTION DETAIL INFORMATION NOT NOTED.



NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	C. WILLIAMS	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT	
DRAWN BY:	A. PRIOR		
DESIGN CHECKED BY R.P.E. NO. C84881	H. MONTOYA	STRUCTURAL SEISMIC PLAN DETAILS AND SECTIONS	
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS		
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. S4439	R. MIGDAL	SCALE AS SHOWN	SD428-W4400-S201
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	DATE 28JUNE24	DRAWING NUMBER
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL		0



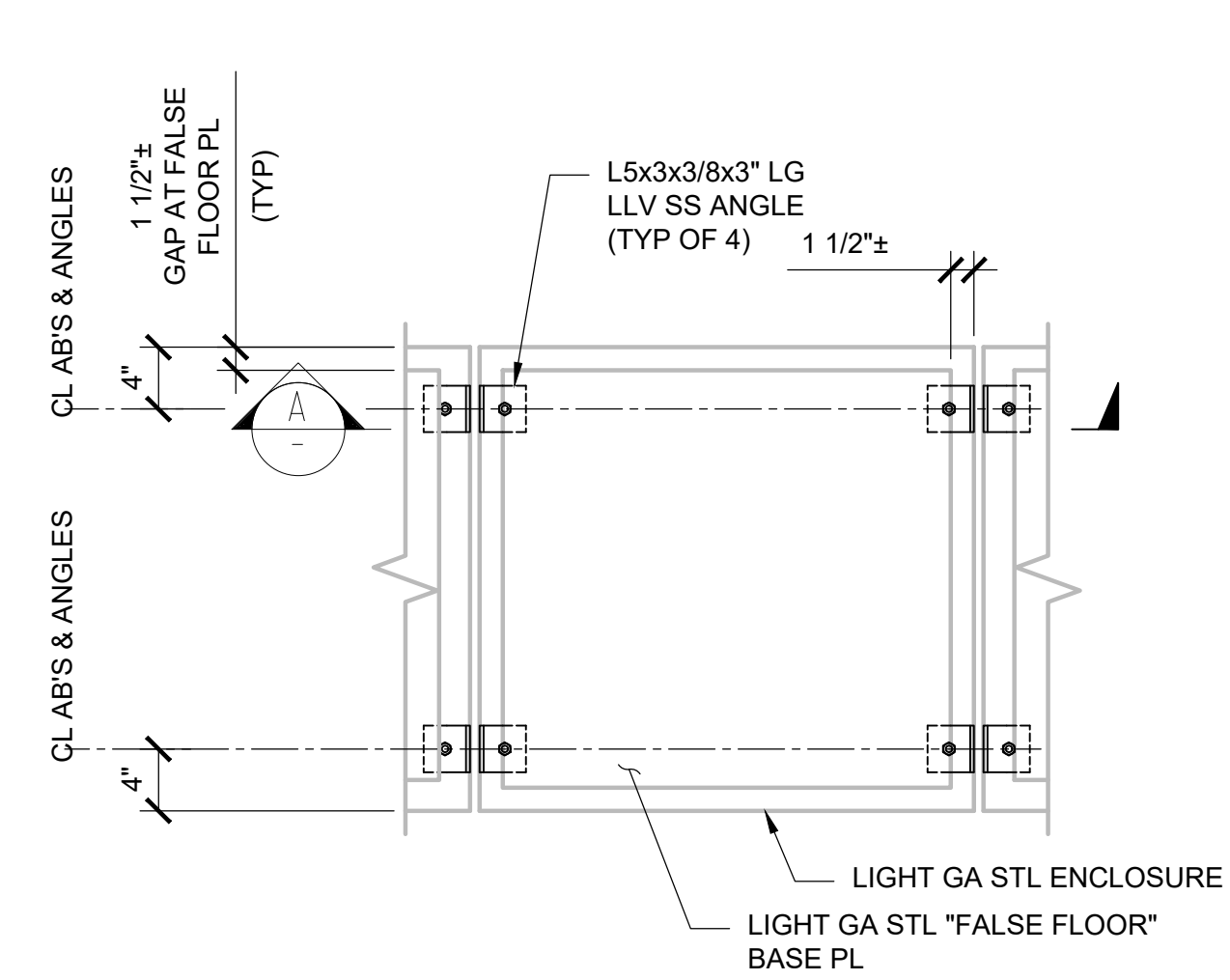
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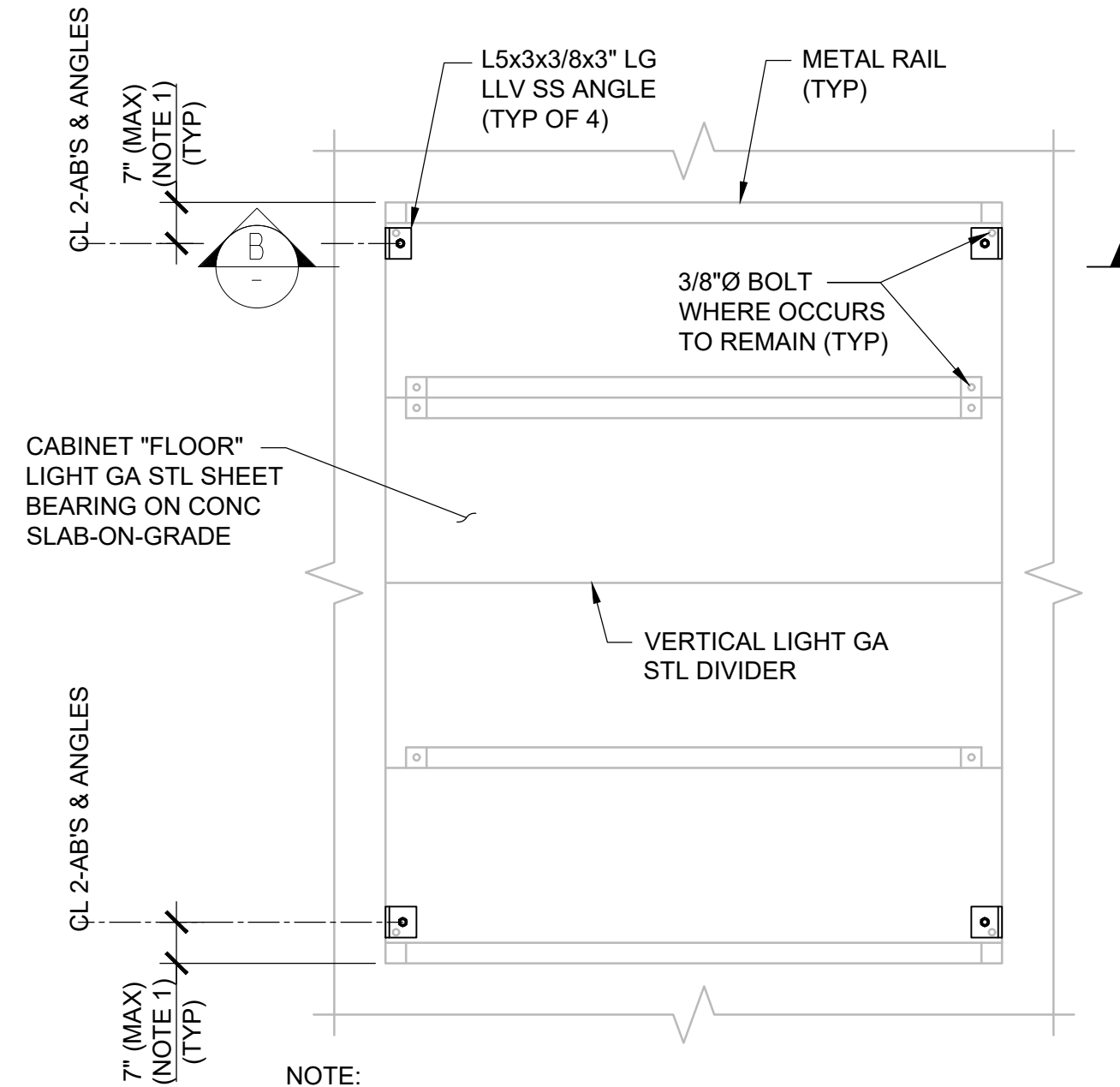
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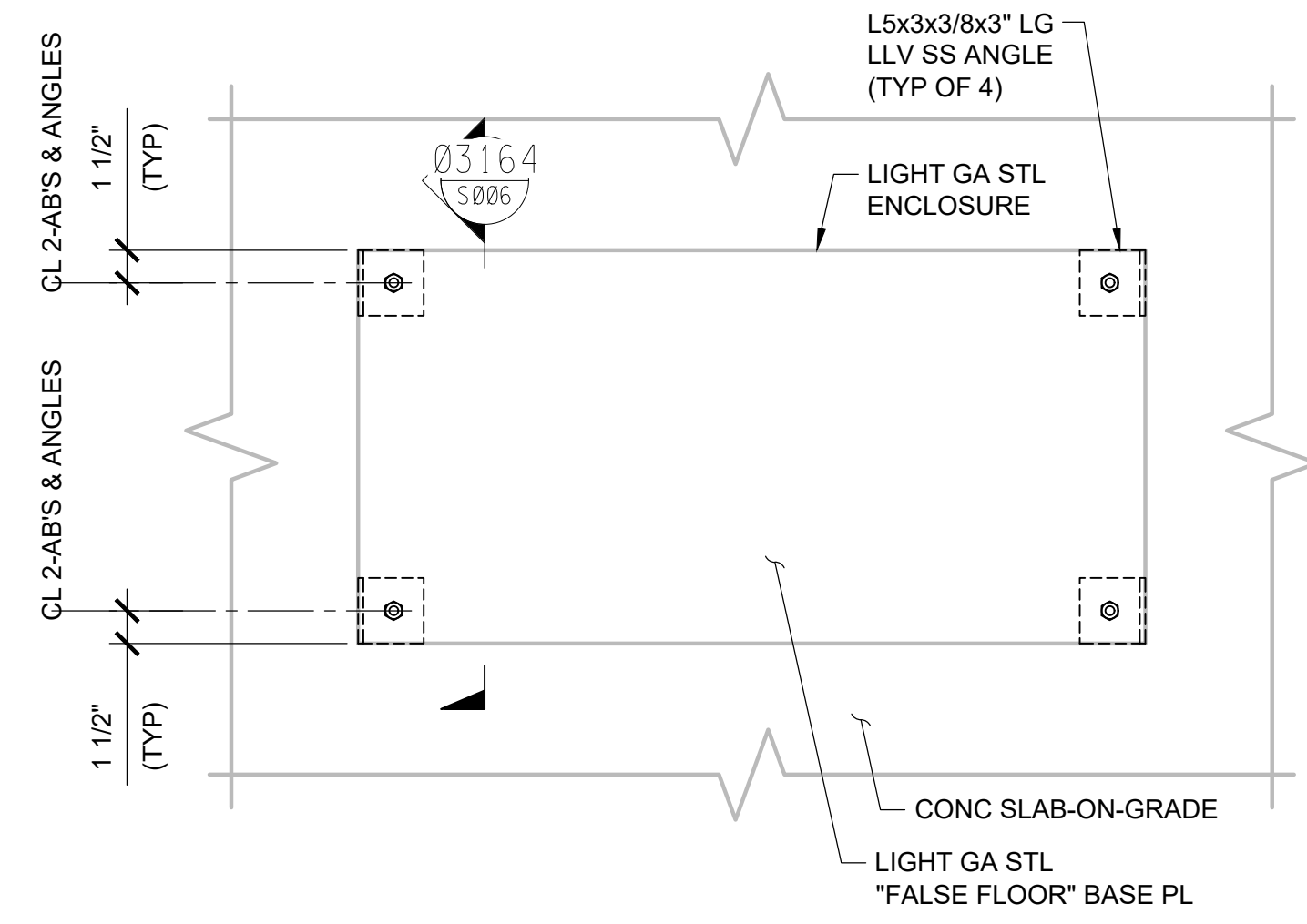
NOTE:
 1. EXISTING CABINET COMPONENTS NOT SHOWN FOR CLARITY.

PLAN DETAIL 1
 SCALE: 1"=1'-0"



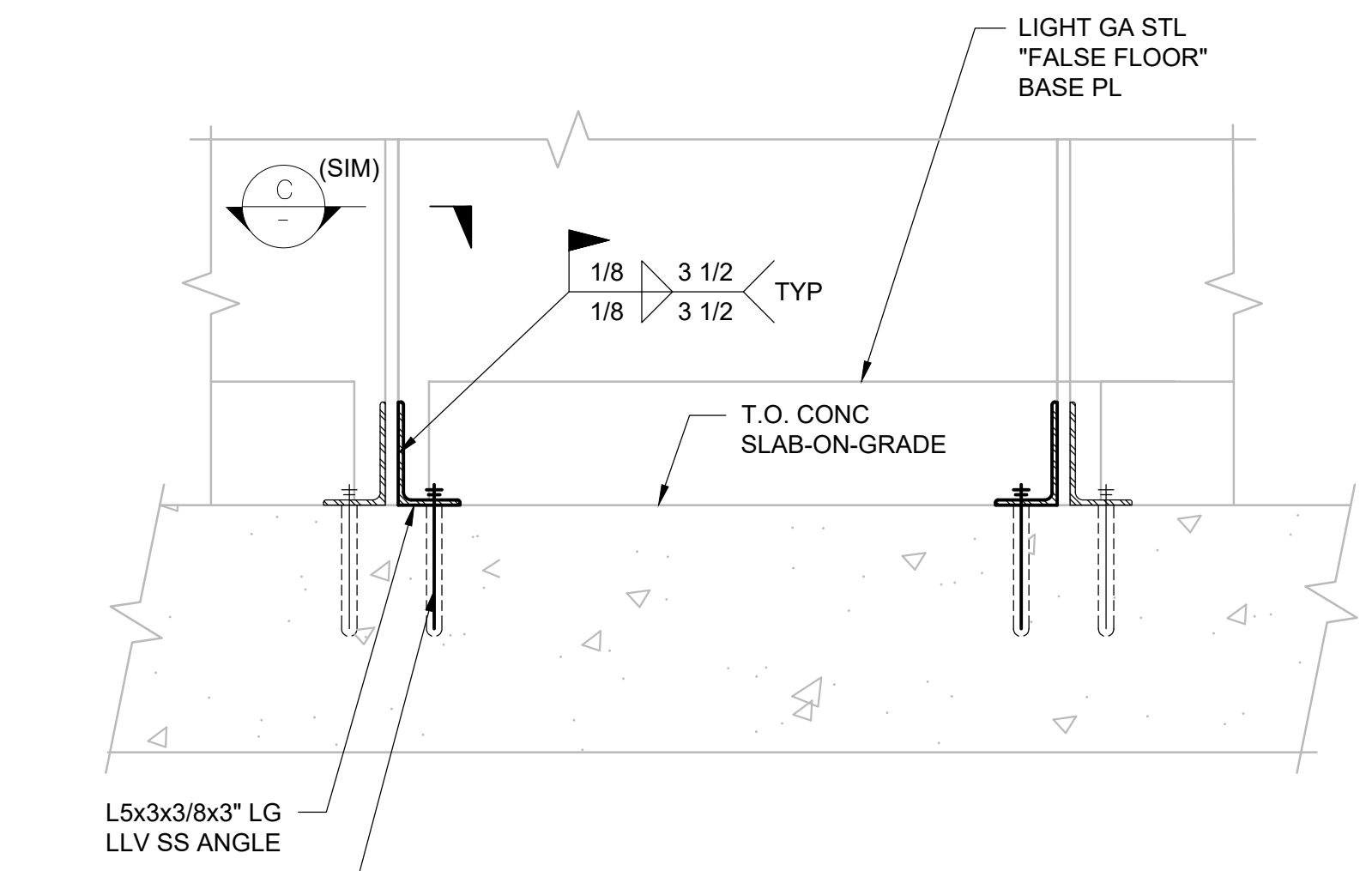
NOTE:
 1. ADJUST NEW CONNECTIONS TO MISS EXISTING CONNECTIONS.

PLAN DETAIL 2
 SCALE: 3/4"=1'-0"

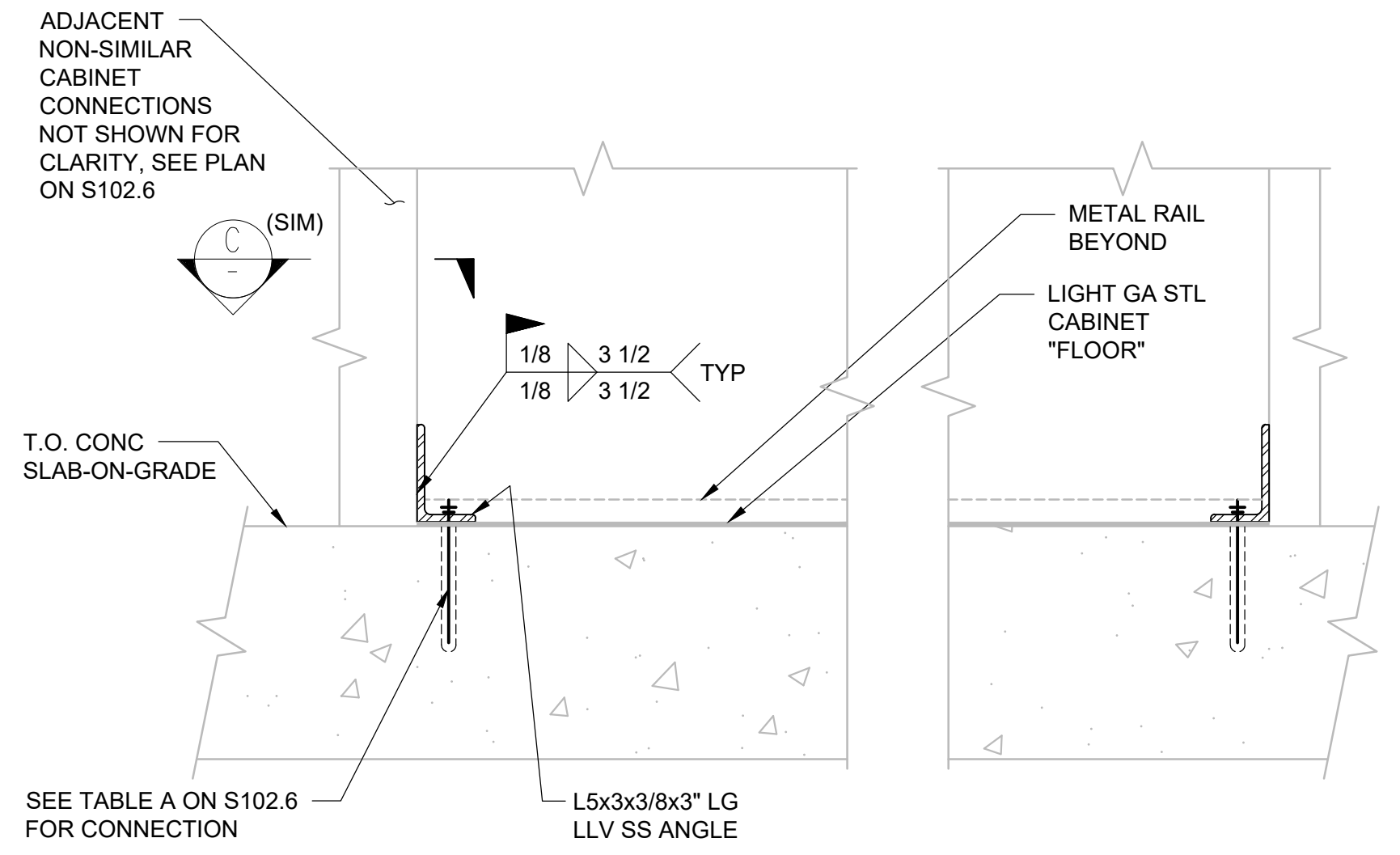


PLAN DETAIL 3
 SCALE: 3/4"=1'-0"

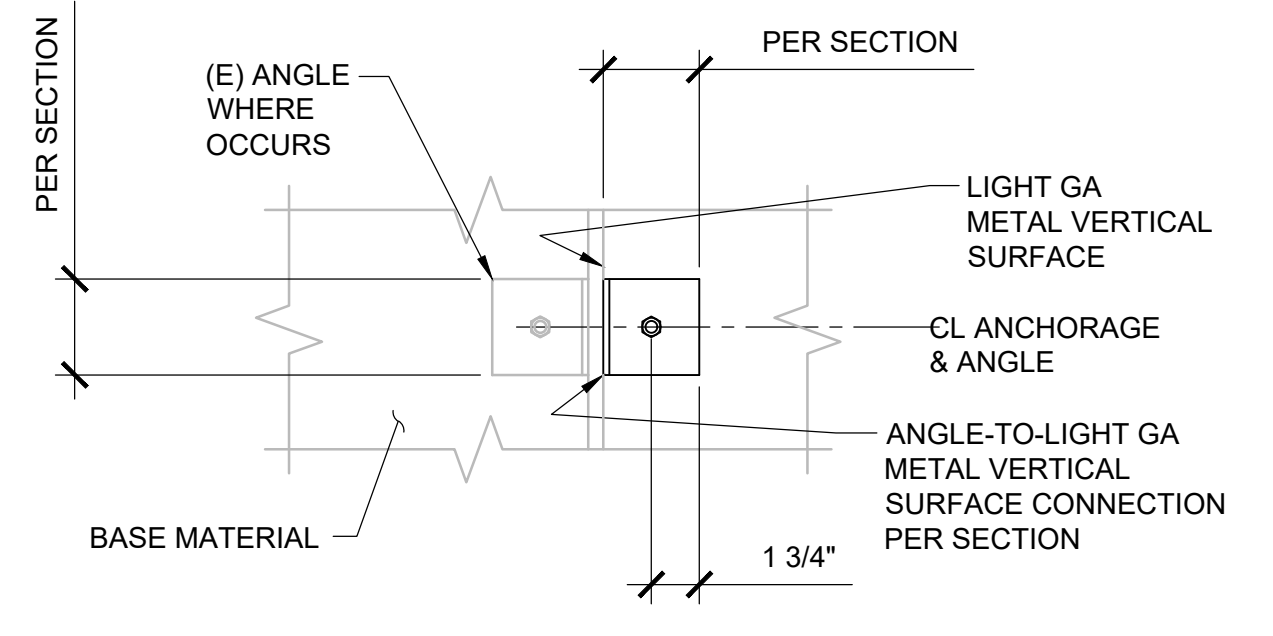
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SECTION A
 SCALE: 1 1/2"=1'-0"

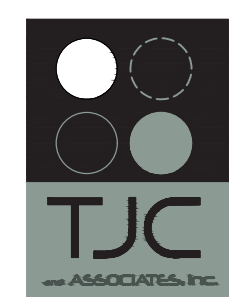


SECTION B
 SCALE: 1 1/2"=1'-0"



SECTION C
 SCALE: 1 1/2"=1'-0"

NOTE:
 1. SEE SHEET S201 FOR APPLICABLE NOTES.



NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA
DESIGN BY:	C. WILLIAMS	
DRAWN BY:	A. PRIOR	
DESIGN CHECKED BY: R.P.E. NO. C84881	H. MONTOYA	
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS	
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. S4439	R. MIGDAL	
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	
SCALE AS SHOWN	SD428-W4400-S202	0
DATE 28JUNE24	DRAWING NUMBER	



6/28/24

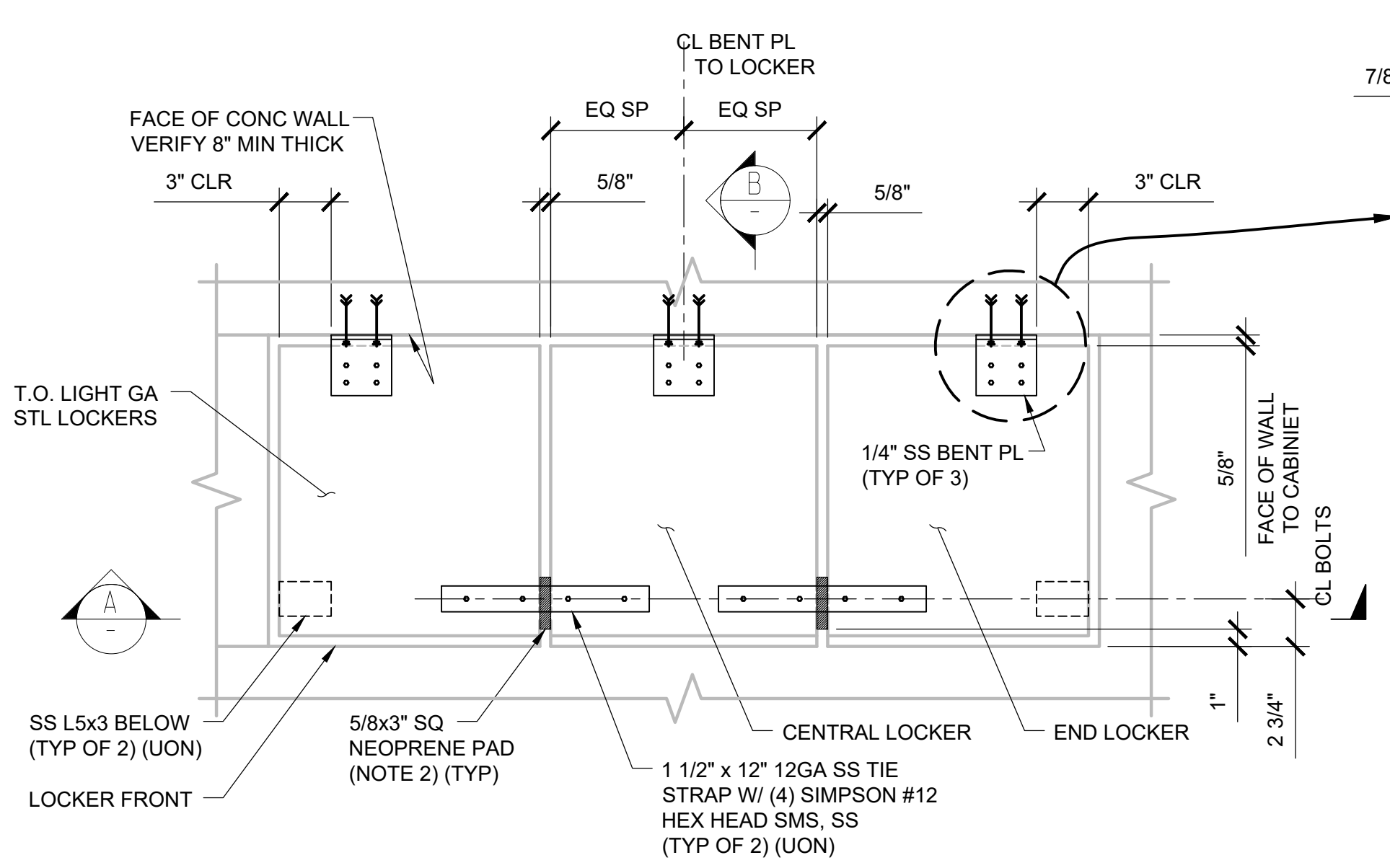
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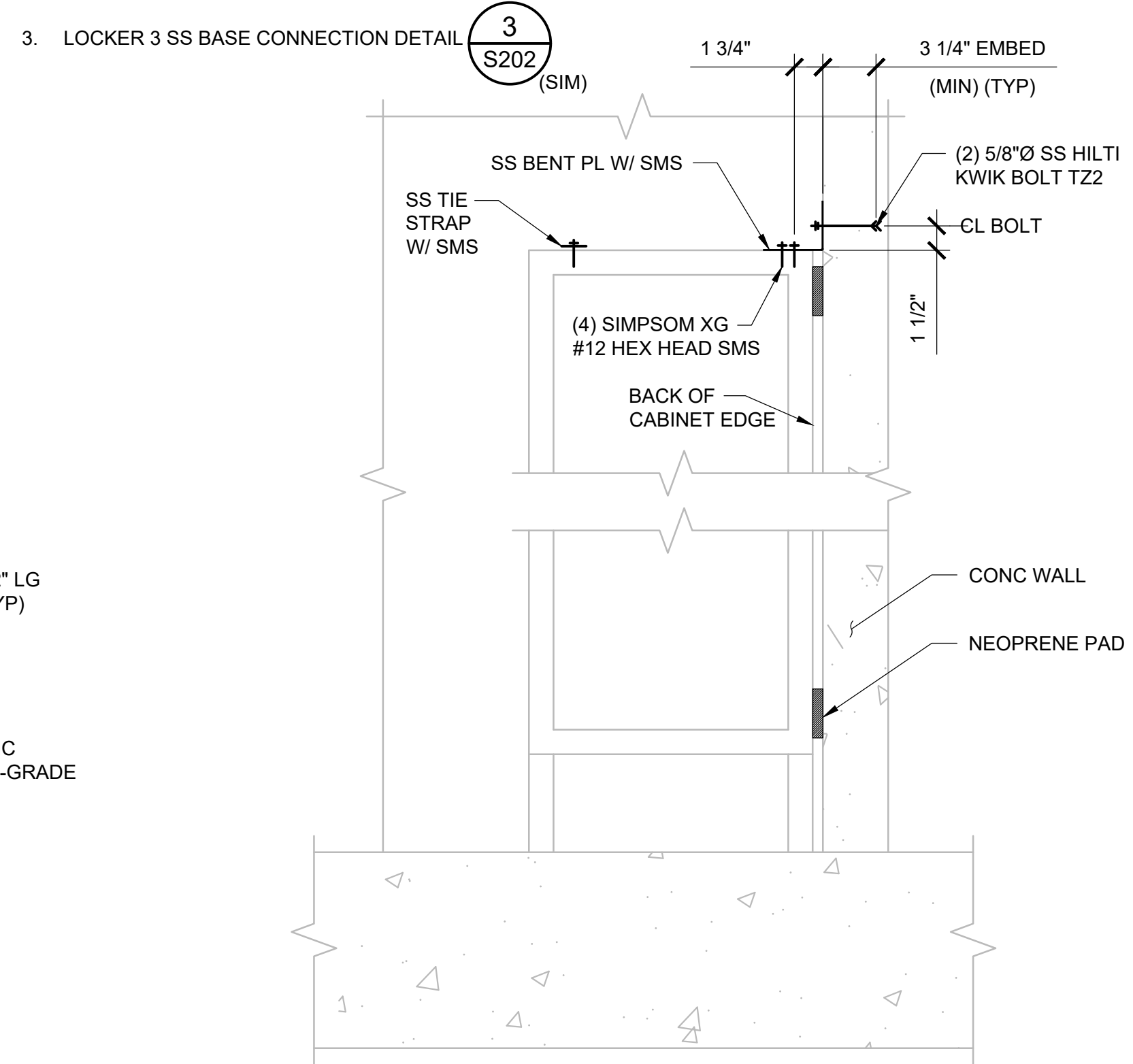
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PLOT SCALE: PLOT\$SCALE

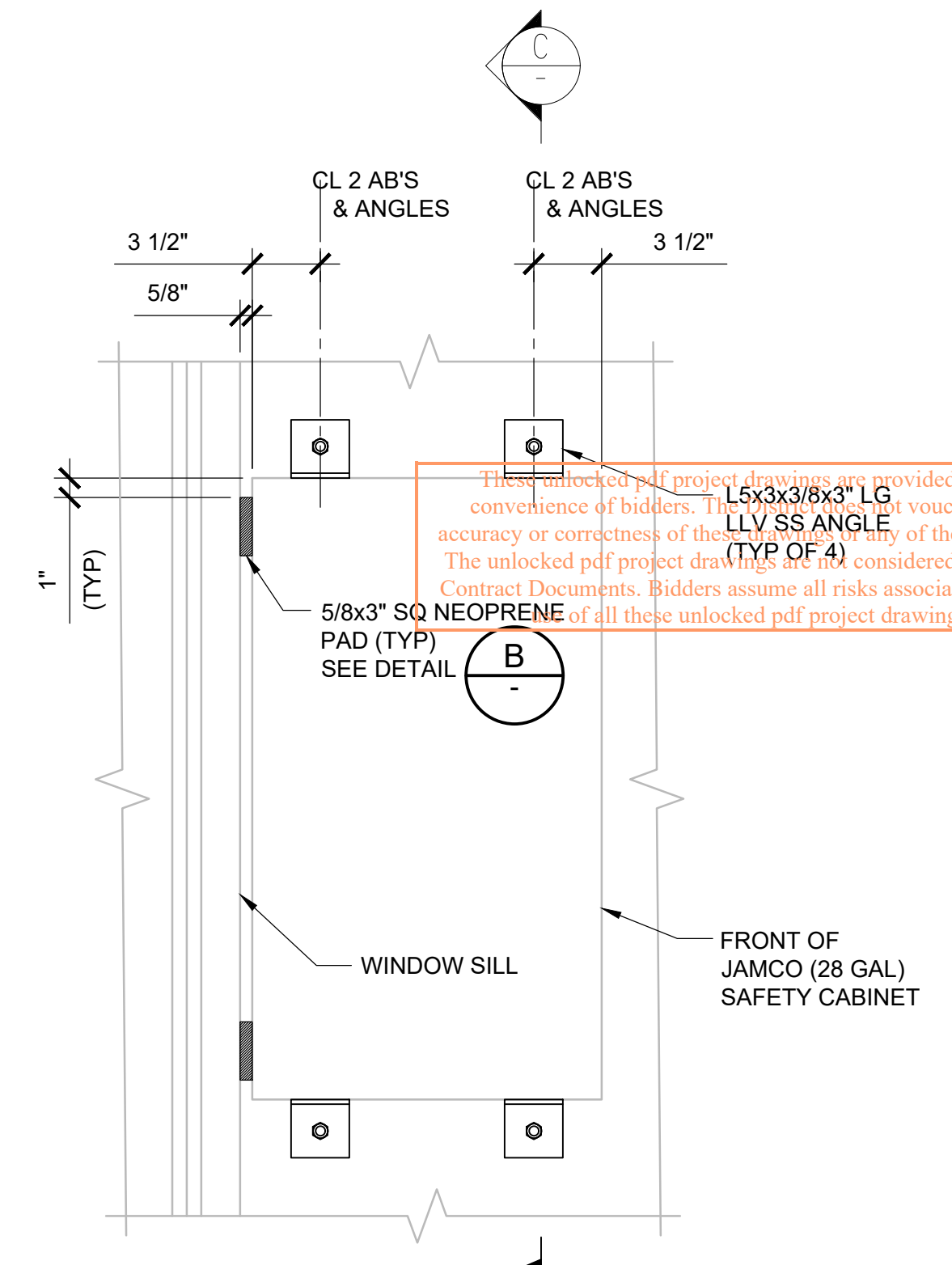


PLAN DETAIL 1
 SCALE: 1 1/2"=1'-0" S102.6

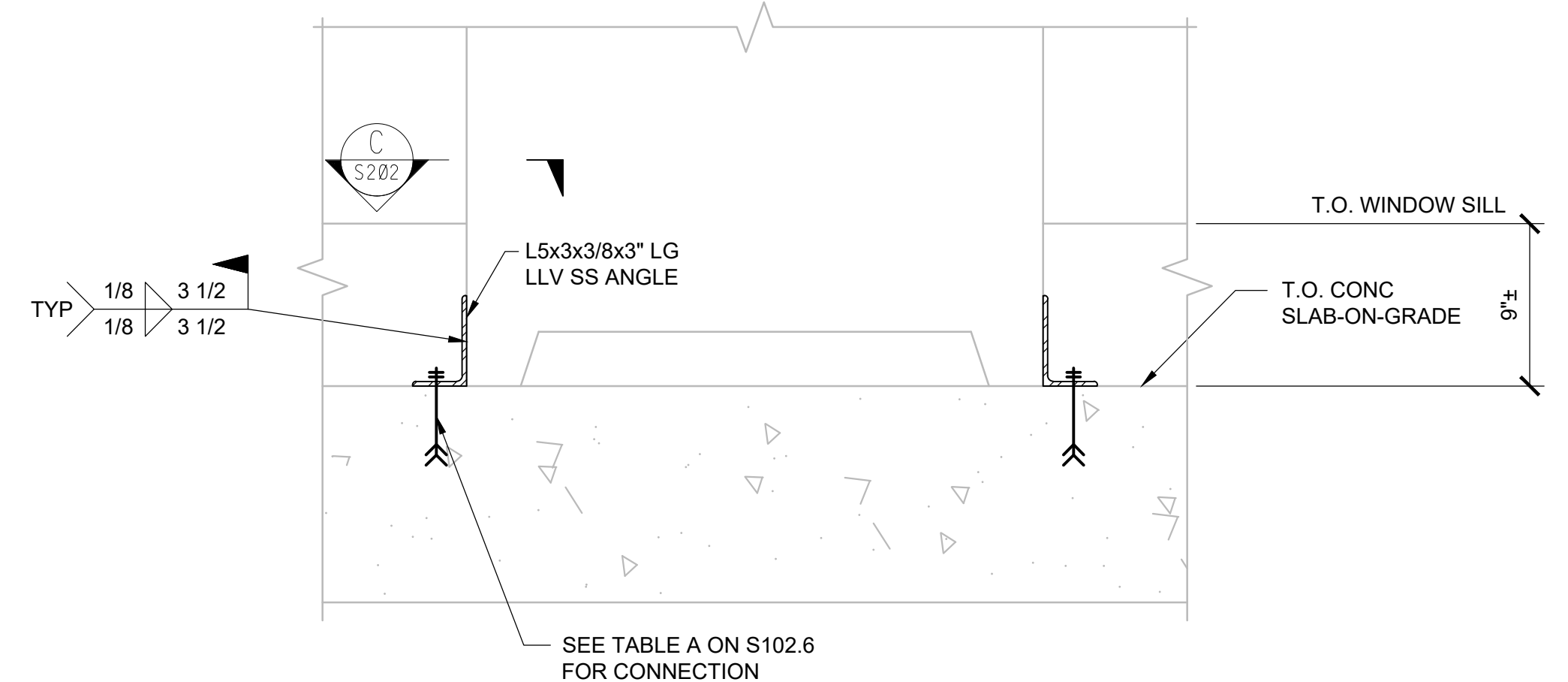
- NOTES:
- CONNECTION DETAIL APPLICABLE TO LOCKER 2 AND LOCKER 3. LOCKER 2 AND LOCKER 3 CONNECTIONS (SIMILAR) TO PLAN DETAIL AND ARE AS FOLLOWS:
 - TOP OF LOCKER-TO-LOCKER CONNECTION: (1) 1 1/2"x12" 12GA SS TIE STRAP W/ (4) #12 HEX HEAD SMS, SS.
 - TOP OF LOCKER-TO-VERTICAL CONCRETE WALL SURFACE CONNECTION: (1) 1/4" SS BENT PLATE PER SINGLE LOCKER. SEE LOCKER LABELED END LOCKER FOR ADDITIONAL CONNECTION DETAIL INFORMATION.
 - FOR NON-ELECTRICAL CABINETS, ADD SINGLE-SIDED ADHESIVE NEOPRENE PAD AT ABUTTING CONCRETE AND METAL SURFACES. ADHESIVE NEOPRENE PADS ARE TO BE PLACED AT 1" (MINIMUM) FROM THE UPPER AND LOWER VERTICAL CABINET/LOCKER SURFACE.
 - LOCKER 3 SS BASE CONNECTION DETAIL



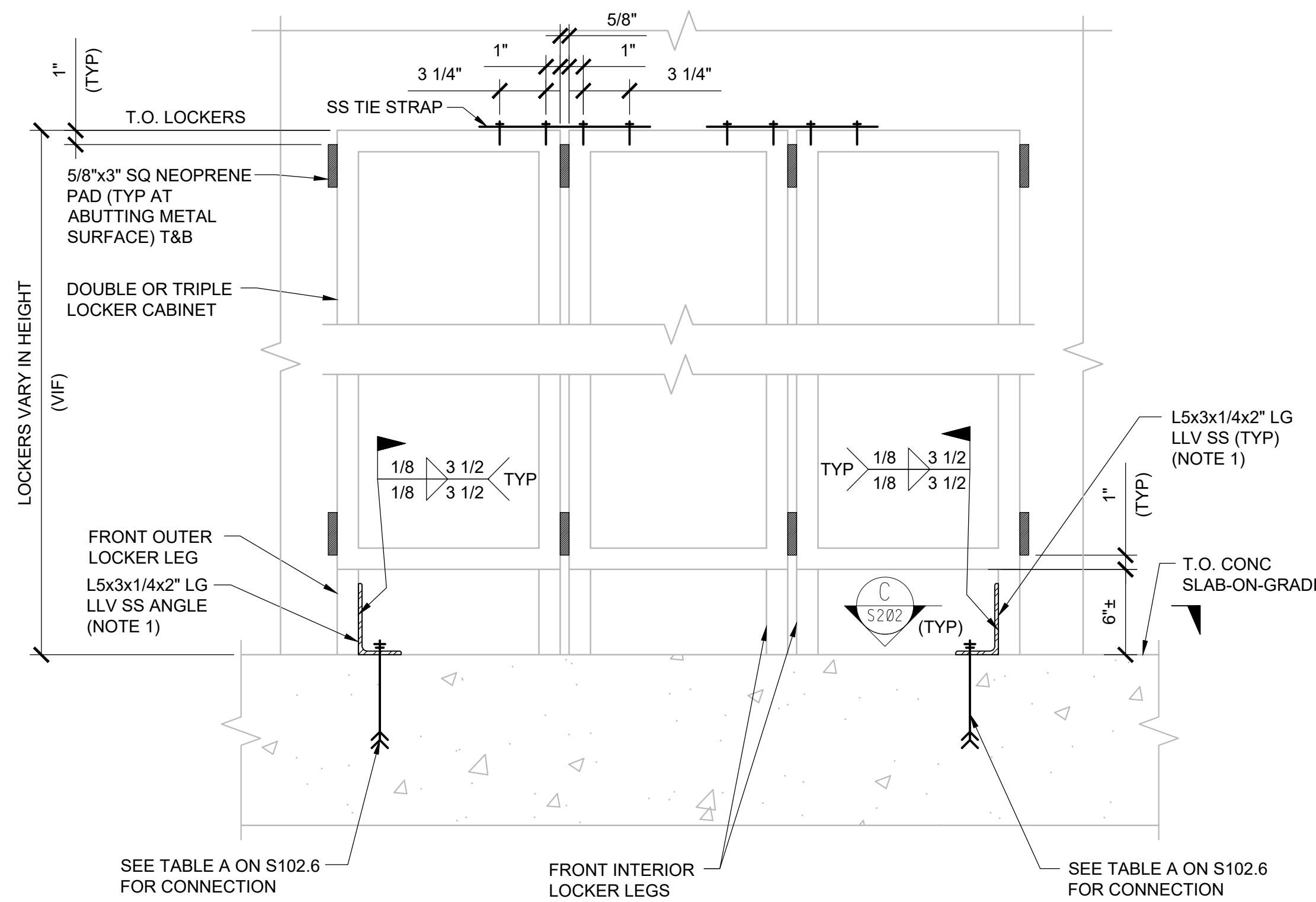
- NOTE:
- FRONT LOCKER LEG CONNECTION NOT SHOWN FOR CLARITY.



PLAN DETAIL 2
 SCALE: 1 1/2"=1'-0" S102.6



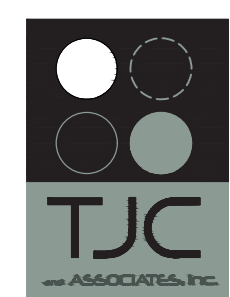
SECTION C
 SCALE: 1 1/2"=1'-0"



SECTION A
 SCALE: 1 1/2"=1'-0"

- NOTE:
- SS ANGLES ARE LOCATED ONLY ALONG THE FRONT LOCKER ELEVATIONS.

- NOTE:
- SEE SHEET S201 FOR APPLICABLE NOTES.



NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	C. WILLIAMS	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT	
DRAWN BY:	A. PRIOR		
DESIGN CHECKED BY:	H. MONTOYA	STRUCTURAL SEISMIC PLAN DETAIL AND SECTIONS	
PROJECT MANAGER:	J. JANCAITIS		
APPROVED:	R. MIGDAL	SCALE AS SHOWN DATE 28JUNE24	
PROJECT MANAGER:	J. LAW		
RECOMMENDED:	D. RUSSELL	SD428-W4400-S203	
SR. ENGINEER:		DRAWING NUMBER	
		REV. 0	



6/28/24

EBMUD - OXYGEN PRODUCTION PLANT FIRE PROTECTION SYSTEM UPGRADE 2020 WAKE AVENUE OAKLAND CA, 94607

These unlocked pdf project drawings are provided for the convenience of bidders. The District does not vouch for the accuracy or correctness of these drawings or any of their contents. The unlocked pdf project drawings are not considered part of the Contract Documents. Bidders assume all risks associated with the use of all these unlocked pdf project drawings.

FIRE ALARM SYSTEMS NOTES

1. THE FOLLOWING NOTES ARE APPLICABLE TO THE FIRE ALARM SYSTEM ONLY.
2. ALL PENETRATIONS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE PROVIDED WITH GROUT OR DISTRICT APPROVED EQUIVALENT UL LISTED THROUGH PENETRATION FIRESTOP ASSEMBLY. THE RATINGS OF ALL FIRESTOP ASSEMBLIES SHALL BE GREATER THAN OR EQUAL TO THE RATING OF THE PENETRATED BARRIER. AS A TEMPORARY MEASURE, THE PENETRATION SHOULD BE FILLED WITH MINERAL WOOL TO PROVIDE A SMOKE SEAL.
3. ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
4. NO FABRICATION OR INSTALLATION SHALL BE PERMITTED WITHOUT DISTRICT APPROVED SHOP DRAWING SUBMITTALS. CONTRACTOR SHALL SUBMIT SYSTEM CATALOG PRODUCT DATA SHEETS FOR ALL COMPONENTS PROPOSED FOR USE PRIOR TO INSTALLATION FOR APPROVAL. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND SHALL INCLUDE ALL ITEMS REQUIRED BY CODE.
5. ALL SYSTEM COMPONENTS SHALL BE INSTALLED TO MAINTAIN SAFE ELECTRICAL SEPARATIONS FROM HIGH VOLTAGE EQUIPMENT AND CONDUCTORS PER REQUIREMENTS LISTED ON THIS SHEET.
6. CONTRACTOR SHALL INSTALL ALL FIRE PROTECTION COMPONENTS IN ACCORDANCE WITH ALL APPLICABLE CODES, INCLUDING, BUT NOT LIMITED TO, NFPA STANDARDS, THE CALIFORNIA BUILDING CODE, THE CALIFORNIA FIRE CODE, AND THE FIRE PREVENTION CODE OF THE CITY OF OAKLAND.
7. ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE USED FOR EXACT MEASURE OR FABRICATION. CONTRACTOR SHALL INSTALL ALL FIRE PROTECTION COMPONENTS IN ACCORDANCE WITH ALL APPLICABLE CODES. CONTRACTOR SHALL COORDINATE INSTALLATION OF SYSTEM CONDUIT AND OTHER COMPONENTS WITH ALL OTHER TRADES. CONTRACTOR SHALL COORDINATE INSTALLATION WITH THESE DRAWINGS TECHNICAL SPECIFICATION. CONTRACTOR SHALL ALSO FIELD VERIFY EXISTING STRUCTURAL, MECHANICAL, AND ELECTRICAL CONDITIONS, INSTALLATIONS AND DRAWINGS TO AVOID OBSTRUCTIONS OR INTERFERENCE.
8. ALL NEW FIRE PROTECTION SYSTEM EQUIPMENT SHALL BE INSTALLED IN A PROFESSIONAL, NEAT AND WORKMAN-LIKE MANNER. ALL CIRCUITS SHALL TEST FREE FROM GROUNDS AND SHORT CIRCUIT FAULTS. ALL FINAL EQUIPMENT LOCATIONS SHOULD BE VERIFIED TO AVOID CONFLICTS WITH LIGHTING, CEILING OBSTRUCTIONS, AND HVAC REGISTERS.
9. ALL MATERIALS, EQUIPMENT AND SYSTEM COMPONENTS PROVIDED SHALL BE NEW AND APPROVED BY LOCAL STATUTORY AUTHORITIES AND LISTED BY UNDERWRITERS LABORATORY (UL) OR APPROVED BY FACTORY MUTUAL RESEARCH CORPORATION (FM) FOR THEIR INTENDED USE. ALL EQUIPMENT SHALL BE DESIGNED, INSTALLED AND TESTED IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS, THE MANUFACTURER'S RECOMMENDATIONS, AND WITHIN THE LIMITATIONS OF THEIR UL LISTING AND/OR FM APPROVALS. THE CONTRACTOR SHALL PROVIDE EVIDENCE OF LISTING OF ALL PROPOSED EQUIPMENT AND COMBINATIONS OF EQUIPMENT UPON THE DISTRICT'S REQUEST.
10. EACH COMPONENT OF THE FIRE PROTECTION SYSTEMS SHALL BE LISTED AS A PRODUCT OF A SINGLE SYSTEM MANUFACTURER UNDER THE APPROPRIATE CATEGORY FOR THE INTENDED USE IN UNDERWRITERS LABORATORIES, INC. (UL) FIRE PROTECTION EQUIPMENT DIRECTORY (FPED).
11. ALL WIRING, RACEWAYS, CONDUITS AND BOXES SHALL BE NEW THROUGHOUT UNLESS OTHERWISE NOTED. PROVIDE A PERMANENT LABEL FOR EACH WIRE/CIRCUIT (WITHIN ALL PANELS, CABINETS AND JUNCTION BOXES) INDICATING ITS APPLICATION/USE/SERVICE.
12. CONTRACTOR SHALL COORDINATE INSTALLATION OF SYSTEM CONDUIT AND OTHER COMPONENTS WITH ALL OTHER TRADES.
13. WIRING SHALL BE INSTALLED WITHIN EMT TYPE CONDUIT OR APPROVED EQUAL. NO EXPOSED WIRING WILL BE PERMITTED ANYWHERE, AT ANY HEIGHT, IN ANY PORTION OF THE ENCLOSURE. ALL EXTERIOR WIRING SHALL BE INSTALLED WITHIN RIGID CONDUIT.

FIRE ALARM SYSTEMS NOTES (CONT.)

14. ALL FIRE ALARM WIRING SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH NFPA 70. WIRING SHALL BE A MINIMUM #16 GAUGE SOLID COPPER. ALL WIRING SHALL BE RUN CONTINUOUSLY DEVICE TO DEVICE FREE OF SPLICES OR TERMINAL STRIPS. WIRING SIZE SHALL BE INCREASED AS REQUIRED TO LIMIT VOLTAGE DROP TO MANUFACTURER'S SPECIFICATIONS.
15. CONTRACTOR TO PROVIDE GROUNDING OF THE FIRE ALARM SYSTEM IN ACCORDANCE WITH REQUIREMENTS OF NFPA 70.
16. ALL FIRE ALARM HORNS SHALL MEET THE AUDIBLE REQUIREMENTS OF CFC 907.5.2.1. HORNS/STROBES SHALL BE MOUNTED 80"-96" AFF PER NFPA 72 7.5.4.1. HORN ONLY DEVICES SHALL BE MOUNTED 90" AFF.
17. THE AUDIBLE TONE USED FOR FIRE ALARM EVACUATION NOTIFICATION SHALL BE DISTINCTIVE TEMPORAL THREE PATTERN AS PER NFPA 72 18.4.2.
18. THE AUDIBLE TONE USED FOR CLEAN AGENT COUNTDOWN AND RELEASE SHALL BE DISTINCTIVELY DIFFERENT FROM FIRE ALARM EVACUATION AND SHALL BE APPROVED AS PER NFPA 2001 4.3.5.1.
19. ALL AREAS OF THE FACILITY SHALL BE PROVIDED WITH PUBLIC MODE EVACUATION SIGNALS AS STATED IN NFPA 72 18.4.4 REQUIRING SOUND LEVELS AT LEAST 15dB ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5dB ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER AS PER NFPA 72 18.4.4.1.
20. ALL FIRE ALARM CONTROL AND RELEASING EQUIPMENT, DEVICES AND WIRING SHALL BE PROTECTED AGAINST ELECTRO-MAGNETIC/RADIO FREQUENCY INTERFERENCE OR INDUCED VOLTAGES CAUSED BY AC POWER CIRCUITS, DC POWER CIRCUITS, ELECTRICAL TRANSFORMERS, MOTORS OR SWITCHGEAR, ELECTRONIC EQUIPMENT, FLUORESCENT LIGHTING FIXTURES, HAND HELD PORTABLE RADIOS, CELLULAR PHONES OR OTHER DEVICES.
21. ALL NEW SIGNALING LINE CIRCUITS AND NEW NOTIFICATION APPLIANCE CIRCUITS SHALL BE INSTALLED CLASS B IN ACCORDANCE WITH NFPA 72. EACH SLC AND NAC SHALL BE LOADED TO NO MORE THAN 75% OF ITS RATED CAPACITY. CONTRACTOR SHALL VERIFY COMPLIANCE WITH THIS REQUIREMENT AND SHALL FURNISH AND INSTALL ADDITIONAL CIRCUITS TO COMPLY.
22. CONTRACTOR SHALL FURNISH AND INSTALL WEATHERPROOF NOTIFICATION APPLIANCES IN SPACES THAT ARE UNCONDITIONED OR CONTAIN HARSH ENVIRONMENTS AND AS INDICATED BY THE DRAWINGS. THIS SHALL INCLUDE RUNNING ALL CONDUCTORS WITHIN WEATHERTIGHT CONDUIT, CONNECTORS AND JUNCTION BOXES IN HARSH ENVIRONMENT AREAS.
23. ADDRESSABLE DEVICES SHALL OPERATE UNDER THE FOLLOWING RANGES OF ENVIRONMENTAL CONDITIONS:
 AMBIENT TEMPERATURE: 32-100 DEGREES, FAHRENHEIT
 RELATIVE HUMIDITY: 0-93 PERCENT, NON-CONDENSING
 AIR VELOCITY: 300 FEET PER MINUTE
 IF ENVIRONMENTAL CONDITIONS OF A SPACE DO NOT MEET THE LISTED CRITERIA, A CONVENTIONAL DEVICE SHALL BE INSTALLED THAT IS CONNECTED TO A MONITOR MODULE THAT IS INSTALLED IN A CONDITIONED SPACE.
24. CONTRACTOR TO PROVIDE EQUIPMENT AND CONNECTION TO AN APPROVED CENTRAL STATION FOR FIRE ALARM SYSTEM MONITORING.
25. FIRE ALARM SYSTEM DEVICES AND COMPONENTS ARE TO BE LISTED BY THE CALIFORNIA STATE FIRE MARSHAL'S OFFICE.
26. PROVIDE SECONDARY POWER SUPPLY COMPLIANT WITH NFPA 72 10.6.7. PROVIDE SECONDARY CAPABILITY TO OPERATE THE FIRE ALARM DETECTION SYSTEM FOR A MINIMUM OF 24 HOURS IN STANDBY WITH 5 MINUTES OF ALARM.
27. UPON COMPLETION OF SYSTEM INSTALLATION, A COMPLETE FUNCTIONAL TEST OF THE SYSTEM SHALL BE CONDUCTED, VERIFYING PROPER OPERATION OF ALL COMPONENTS. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL TESTING AND INSPECTION WITH THE LOCAL AHJ, GENERAL CONTRACTOR, AND ANY ASSOCIATED CONTRACTORS.
28. ALL FIRE ALARM CONDUIT SHALL BE 3/4" MINIMUM AND SHALL NOT EXCEED 40% FILL IN ACCORDANCE WITH THE CEC. ALL FIRE ALARM CIRCUITS ROUTED UNDERGROUND SHALL BE APPROVED/LISTED FOR USE IN WET LOCATIONS PER THE CEC.

DESCRIPTION OF WORK

1. THE SCOPE OF WORK INCLUDES THE DESIGN, FABRICATION AND INSTALLATION OF A NEW FIRE ALARM SYSTEM INCLUDING CLASS B, ADDRESSABLE, AUTOMATIC FIRE DETECTION AND REPORTING, AND CLEAN AGENT RELEASING CAPABILITIES AT THE EBMUD OXYGEN PRODUCTION PLANT.
2. CONTRACTOR SHALL PROVIDE NEW DETECTION DEVICES, MONITORING DEVICES, CONTROL DEVICES, ANNUNCIATOR PANELS, AND NOTIFICATION APPLIANCES AS INDICATED ON THE DESIGN DRAWINGS FOR THE OXYGEN PRODUCTION PLANT.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL OTHER TRADES AND INSTALLING CONTRACTORS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY PERMITS REQUIRED BY THE OAKLAND FIRE DEPARTMENT PERTAINING TO ALL FIRE PROTECTION WORK.
5. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF OSHA AND CAL-OSHA.
6. CONTRACTOR SHALL PROVIDE THE FOLLOWING SUBMITTALS: INTERCONNECTION DIAGRAMS FOR THE WORK, FLOOR PLANS SHOWING ALL FIRE PROTECTION AND FUIRE ALARM CONTROLS AND EQUIPMENT, WIRING DIAGRAM FOR SHUTDOWN OF HVAC, CONTROL NARRATIVES FOR SUPERVISORY AND ALARM STATE SIGNAL FUNCTIONS, AND COMMUNICATION OR EVACUATION PLAN FOR DISTRICT STAFF.

APPLICABLE CODES AND STANDARDS

1. CITY OF OAKLAND FIRE CODE
2. 2022 CALIFORNIA BUILDING CODE (CBC)
3. 2022 CALIFORNIA FIRE CODE (CFC)
4. NFPA 70-2020, NATIONAL ELECTRIC CODE
5. NFPA 72-2019, NATIONAL FIRE ALARM AND SIGNALING CODE
6. NFPA 2001-2018, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS

SHEET INDEX

1. SD428-W4400-FA001 - FIRE ALARM GENERAL SYSTEM NOTES
2. SD428-W4400-FA101 - FIRE ALARM LAYOUT PLAN
3. SD428-W4400-FA201 - FIRE RISER DIAGRAM AND DETAILS
4. SD428-W4400-FA202 - FIRE ALARM SYSTEM SEQUENCE OF OPERATIONS MATRIX

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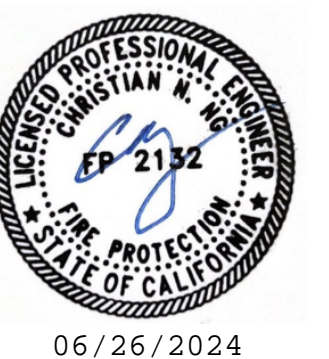
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NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA
DESIGN BY:	C. AZNOE	
DRAWN BY:	C. AZNOE	
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG	
PROJECT MANAGER R.P.E. NO.	J. JANCAITIS	
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG	
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	
SCALE NONE	SD428-W4400-FA001	0
DATE 28JUN24	DRAWING NUMBER	REV.



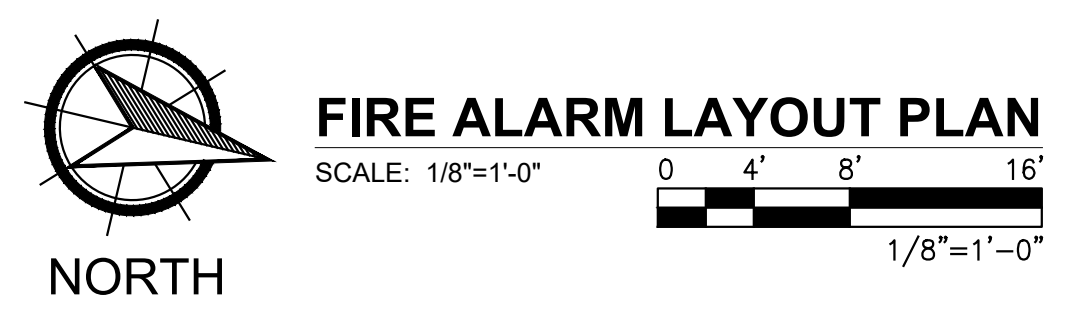
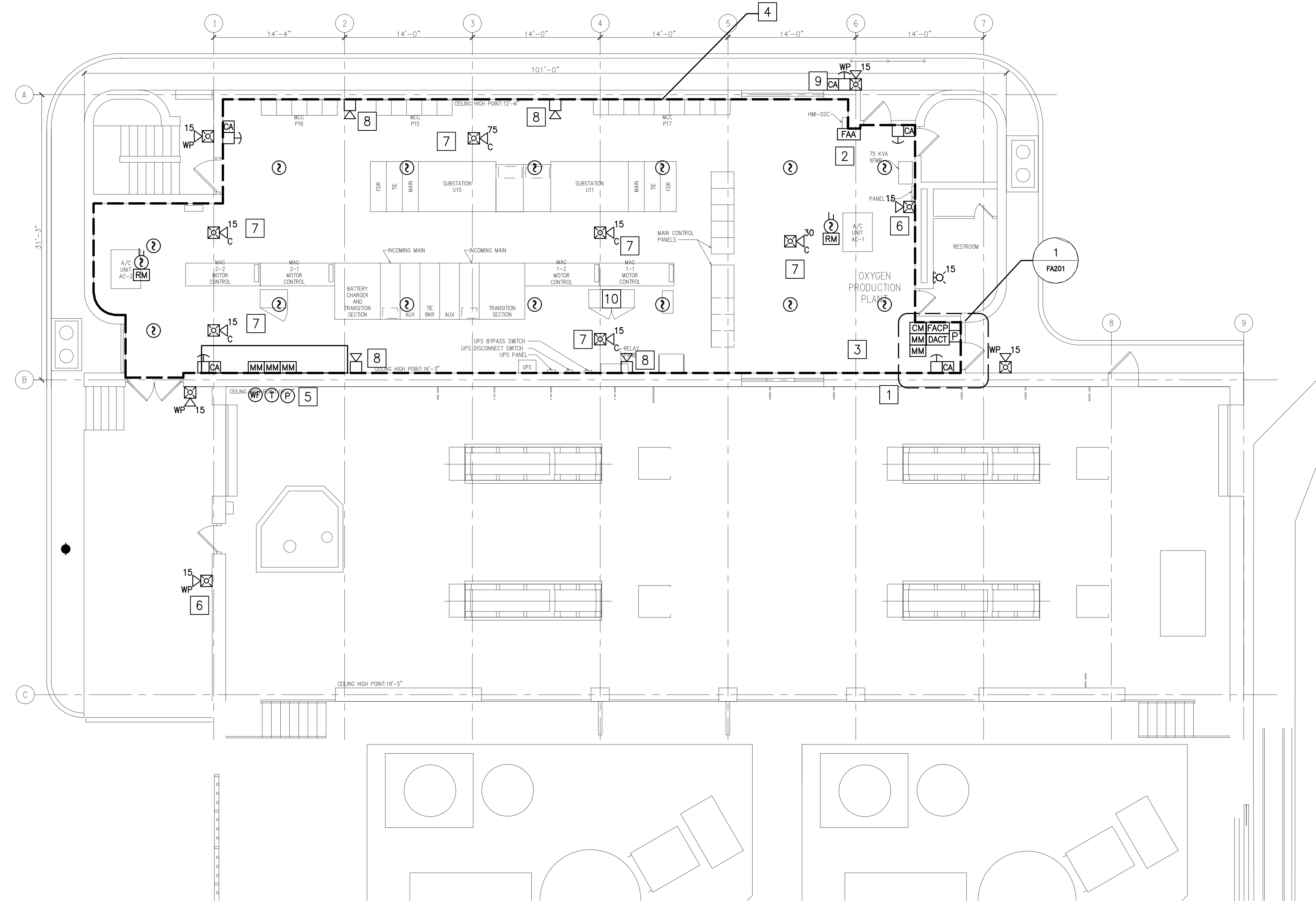
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GENERAL NOTES

- SEE SHEET SD428-W4400-FA001 FOR PROJECT NOTES.
- ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE USED FOR EXACT MEASURE OR FABRICATION, SHOW EXACT LOCATIONS OF COMPONENTS, NOR SHOW ALL SYSTEM COMPONENTS. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES.

SHEET NOTES

- CONTRACTOR SHALL PROVIDE CONDUIT TO SITE FIRE WATER CONNECTIONS FOR BACKFLOW PREVENTION SUPERVISORY TAMPER SWITCHES. CONDUIT LOCATION AND ROUTING SHALL BE COORDINATED BY THE DISTRICT AND ELECTRICAL SUBCONTRACTOR. *Contractor shall be responsible for the accuracy or correctness of these drawings or any of their contents.*
- CONTRACTOR TO INSTALL FIRE ALARM ANNUNCIATOR AT ENTRY FOR USE BY FIRST RESPONDERS. *Contract Documents. Bidders assume all risks associated with the use of all these unlocked pdf project drawings.*
- CONTRACTOR TO PROVIDE VIABLE MEANS OF CONNECTION TO THE APPROVED CENTRAL MONITORING STATION THAT IS APPROVED BY THE AHJ IN ACCORDANCE WITH NFPA 72 CHAPTER 26.
- AREA PROTECTED BY CLEAN AGENT EXTINGUISHING SYSTEM.
- DRY PIPE SPRINKLER MONITORING DEVICES TO BE LOCATED WITHIN THE STRUCTURE.
- WALL MOUNTED NAC DEVICE PROVIDED FOR SPRINKLER MONITORING NOTIFICATION ONLY.
- CEILING HORN/STROBES USED FOR FIRST ALARM AND COUNTDOWN NOTIFICATION ONLY.
- WALL MOUNTED HORNS USED FOR DISCHARGE NOTIFICATION ONLY.
- EXTERIOR CLEAN AGENT MANUAL RELEASE STATION AND ABORT STATION TO BE PROVIDED WITH WEATHERPROOF ENCLOSURE.
- TIE-IN LOCATION TO EBMUD DCS.

FIRE ALARM LEGEND

- FACP** FIRE ALARM CONTROL PANEL
- FAA** FIRE ALARM ANNUNCIATOR
- DACT** FIRE ALARM SYSTEM DIGITAL COMMUNICATOR
- P** FIRE ALARM MANUAL PULL STATION
- CA** CLEAN AGENT MANUAL RELEASE STATION
- A** CLEAN AGENT ABORT STATION
- S** SMOKE DETECTOR
- D** DUCT SMOKE DETECTOR
- RM** RELAY MODULE
- MM** MONITOR MODULE
- CM** RELEASING CONTROL MODULE
- LS** LIGHTNING SURGE SUPPRESSION
- WF** WATERFLOW SWITCH
- T** TAMPER SUPERVISORY SWITCH
- P** PRESSURE SWITCH
- XX** WALL MOUNT HORN STROBE (XX INDICATES CANDELA RATING, WP INDICATES WEATHERPROOF)
- XX** CEILING MOUNT HORN STROBE (XX INDICATES CANDELA RATING, WP INDICATES WEATHERPROOF)
- XX** WALL MOUNT STROBE (XX INDICATES CANDELA RATING)
- H** WALL MOUNT HORN



SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA					
DESIGN BY:	C. AZNOE	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT					
DRAWN BY:	C. AZNOE						
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG						
PROJECT MANAGER R.P.E. NO.	J. JANCAITIS	FIRE ALARM LAYOUT PLAN					
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG						
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	SCALE 1/8"=1'-0"	SD428-W4400-FA101				
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	DATE 28JUN24	DRAWING NUMBER				
NO.	DATE	REVISION	BY	REC.	APP.	0	REV.



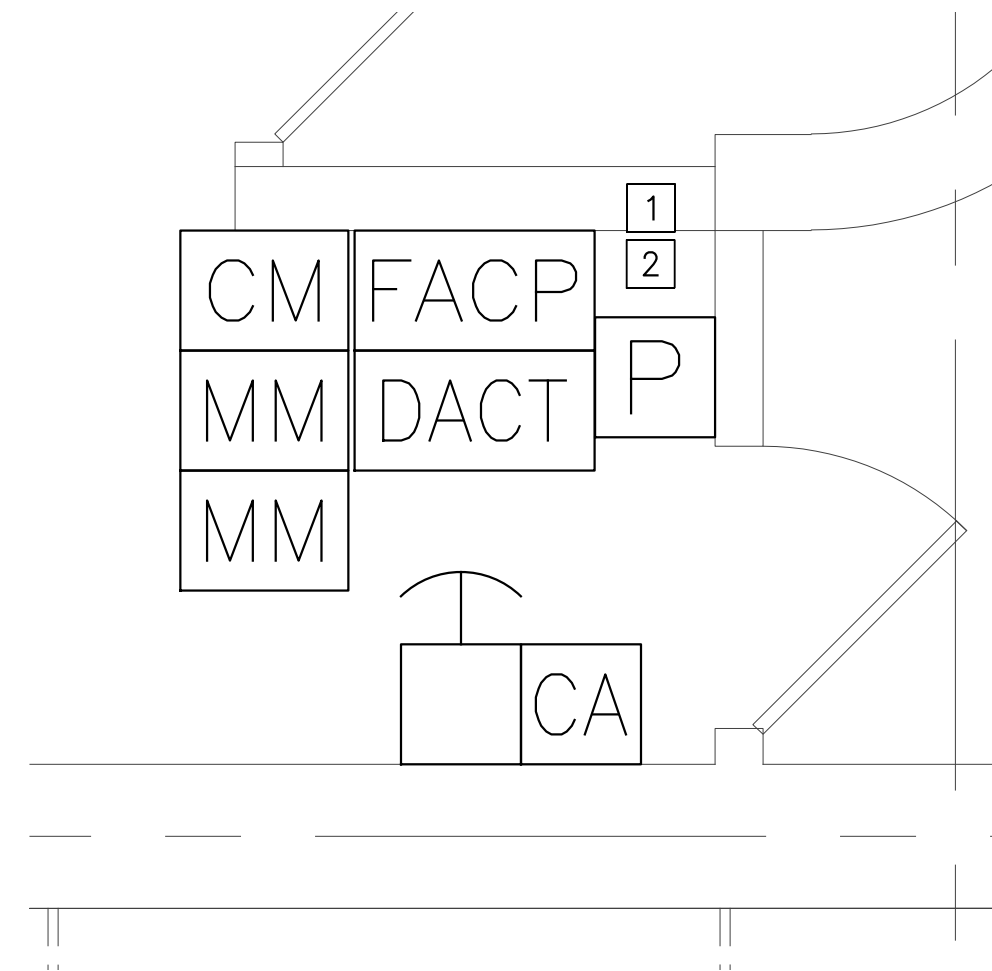
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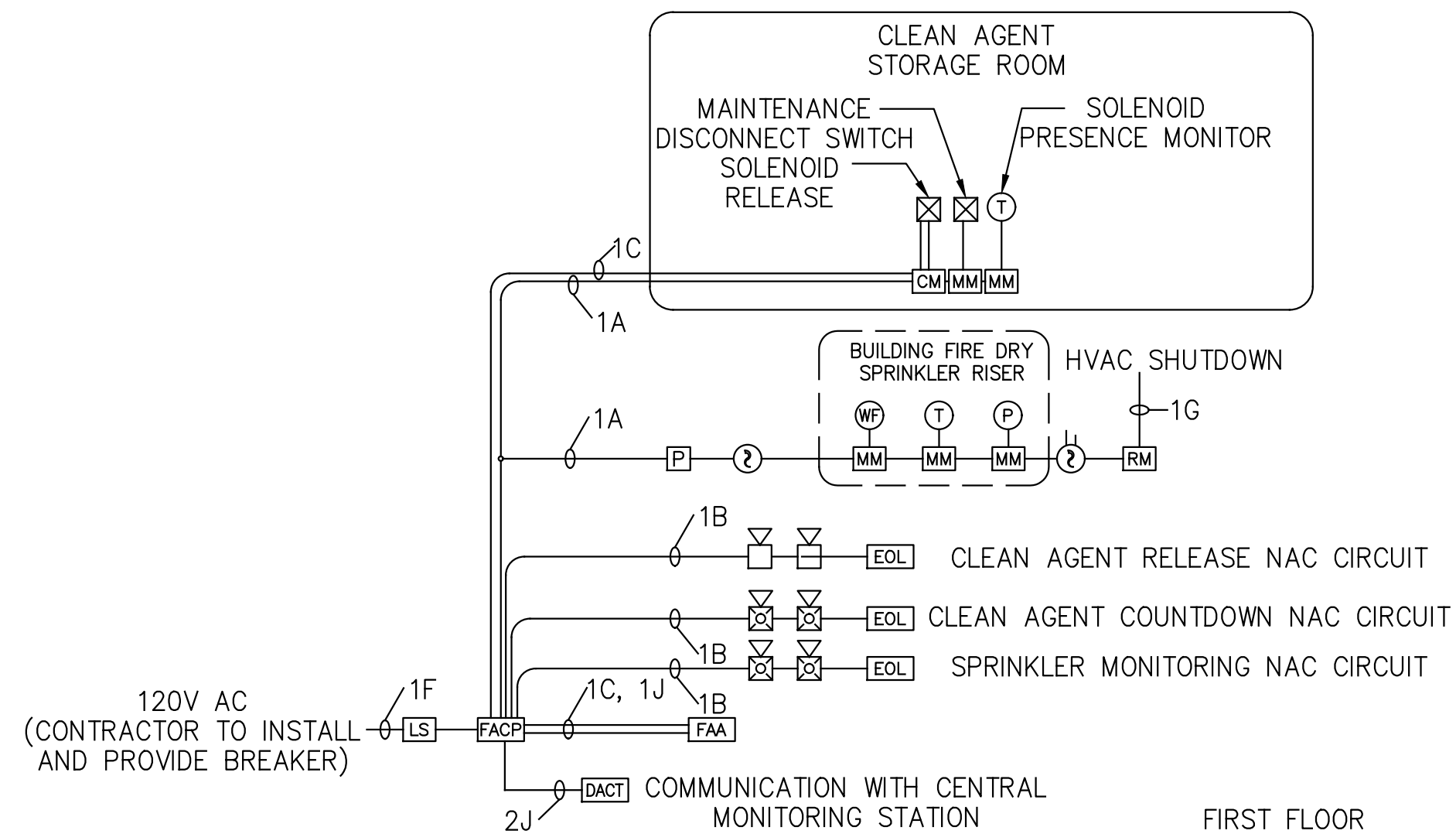
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1 CLEAN AGENT PANEL DETAIL
 FA101 SCALE: 1" = 1/2"
 0 1' 2' 4'
 1/2"=1'-0"



FIRE ALARM CONCEPTUAL RISER DIAGRAM

3" ON ORIGINAL DOCUMENT
 0 1 2 3

FIRE ALARM LEGEND

- [FACP] FIRE ALARM CONTROL PANEL
- [FAA] FIRE ALARM ANNUNCIATOR
- [DACT] FIRE ALARM SYSTEM DIGITAL COMMUNICATOR
- [P] FIRE ALARM MANUAL PULL STATION
- [CA] CLEAN AGENT MANUAL RELEASE STATION
- [] CLEAN AGENT ABORT STATION
- [] SMOKE DETECTOR
- [] DUCT SMOKE DETECTOR
- [RM] RELAY MODULE
- [MM] MONITOR MODULE
- [CM] RELEASING CONTROL MODULE
- [LS] LIGHTNING SURGE SUPPRESSION
- [WP] WATERFLOW SWITCH
- [T] TAMPER SUPERVISORY SWITCH
- [P] PRESSURE SWITCH
- [XX WP] WALL MOUNT HORN STROBE (XX INDICATES CANDELA RATING, WP INDICATES WEATHERPROOF)
- [XX C] CEILING MOUNT HORN STROBE (XX INDICATES CANDELA RATING, WP INDICATES WEATHERPROOF)
- [XX] WALL MOUNT STROBE (XX INDICATES CANDELA RATING)
- [] WALL MOUNT HORN

GENERAL NOTES

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2. ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE USED FOR EXACT MEASURE OR FABRICATION, SHOW EXACT LOCATIONS OF COMPONENTS, NOR SHOW ALL SYSTEM COMPONENTS. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES.

SHEET NOTES

- 1 MAINTENANCE DISCONNECT SWITCH SHALL BE ACTIVATED BY PHYSICAL MEANS ONLY USING A KEYSWITCH AS PER NFPA 2001 4.3.6.4(3).
- 2 PRESENCE OF SOLENOID HEAD ON THE AGENT CYLINDER SHALL BE MONITORED AND ANNUNCIATED AT THE FIRE ALARM CONTROL PANEL

CONDUIT CAPACITY CHART
 ALL NEW CONDUIT IS 3/4" UNLESS OTHERWISE NOTED.

CONDUIT SIZE	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
AREA (IN ²)	0.3037	0.5330	0.8638	1.4850	2.0348	3.3540
ALLOWABLE FILL (40%)	0.120	0.210	0.340	0.600	0.820	1.340

WIRE LEGEND

SYMBOL	DESCRIPTION	WIRE SIZE	AREA (IN ²)	FIRE RATED	WIRE COLOR
A	SLC LOOP	2 COND. #16 AWG. FPL UNSHIELDED	0.033	75°C DRY 60°C WET	RED/BLACK
B	AUDIO/VISUAL CIRCUIT	2 COND. #14 AWG. THHN STRANDED	0.019	90°C	BLUE/YELLOW
C	24VDC POWER	2 COND. #14 AWG. THHN/THWN STRANDED	0.019	90°C DRY 75°C WET	BLACK/RED
D	CONV. IDC CIRCUIT	2 COND. #14 AWG. THHN/THWN STRANDED	0.019	90°C DRY 75°C WET	ORANGE/ORANGE
F	120 VAC POWER	3 COND. #12 AWG. THHN STRANDED	0.026	90°C	BLACK/WHITE
G	FAN SHUTDOWN	2 COND. #12 AWG. THHN STRANDED	0.026	90°C	BLACK/WHITE
J	RS-485 SERIAL	2 COND. #14 AWG. THHN/THWN STRANDED	0.019	90°C DRY 75°C WET	BLACK/RED



06/26/2024

SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA		
DESIGN BY:	C. AZNOE	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT		
DRAWN BY:	C. AZNOE			
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG	FIRE ALARM RISER DIAGRAM AND DETAILS		
PROJECT MANAGER R.P.E. NO.	J. JANCAITIS			
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG	SCALE NONE DATE 28JUN24		
PROJECT MANAGER R.P.E. NO. 95846	J. LAW			
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	SD428-W4400-FA201 DRAWING NUMBER		
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SYSTEM OUTPUTS / SYSTEM INPUTS		Annunciation				Notification								Control			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
SMOKE DETECTOR	1	X			X	X				X	X						
MANUAL PULL STATION	2	X			X	X				X	X						
DUCT SMOKE DETECTION	3		X		X					X		X					X
ONE SMOKE DETECTOR - CLEAN AGENT	4	X			X	X				X	X						X
TWO SMOKE DETECTORS - CLEAN AGENT	5	X			X			X		X	X						
END OF 30 SECONDD COUNTDOWN	6	X			X				X	X	X				X		
MANUAL RELEASE STATION	7	X			X				X	X					X		
ABORT STATION	8		X		X					X		X				X	
DRY SPRINKLER WATERFLOW	9	X			X	X	X			X	X						
DRY SPRINKLER TAMPER SUPERVISORY SW	10		X		X					X		X					
DRY SPRINKLER LOW AIR PRESSURE SW	11		X		X					X		X					
MAINTENANCE DISCONNECT SWITCH	12		X		X					X		X		X			
SOLENOID ACTUATOR REMOVAL	13		X		X					X		X					
LOSS OF AC POWER	14			X	X					X			X				
OPEN/SHORT CIRCUIT (NAC/SLC)	15			X	X					X			X				
GROUND FAULT	16			X	X					X			X				
BATTERY FAILURE	17			X	X					X			X				

FIRE ALARM SYSTEM SEQUENCE OF OPERATIONS MATRIX

3" ON ORIGINAL DOCUMENT
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NO.	DATE	REVISION	BY	REC.	APP.

SD428 - MWWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	C. AZNOE	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT FIRE ALARM SYSTEM SEQUENCE OF OPERATIONS MATRIX	
DRAWN BY:	C. AZNOE		
DESIGN CHECKED BY: R.P.E. NO. FP2132	C. NG		
PROJECT MANAGER R.P.E. NO.	J. JANCAITIS	APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132 C. NG	
PROJECT MANAGER R.P.E. NO. 95046	J. LAW		
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	SCALE NONE	SD428-W4400-FA202
		DATE 28JUN24	DRAWING NUMBER
			0
			REV.



06/26/2024

EBMUD - OXYGEN PRODUCTION PLANT FIRE PROTECTION SYSTEM UPGRADE 2020 WAKE AVENUE OAKLAND CA, 94607

These unlocked pdf project drawings are provided for the convenience of bidders. The District does not vouch for the accuracy or correctness of these drawings or any of their contents. The unlocked pdf project drawings are not considered part of the Contract Documents. Bidders assume all risks associated with the use of all these unlocked pdf project drawings.

FIRE PROTECTION SYSTEMS DESIGN NOTES

1. THE FOLLOWING NOTES ARE APPLICABLE TO THE FIRE PROTECTION SYSTEMS ONLY.
2. FURNISH AND INSTALL THE FIRE PROTECTION SYSTEMS TO MEET THE REQUIREMENTS OF THE CODES LISTED ON THIS PAGE.
3. EACH COMPONENT OF THE SPRINKLER SYSTEM SHALL BE RATED FOR A 175 PSI MINIMUM WORKING PRESSURE, WHICH EXCEEDS THE MAXIMUM ANTICIPATED SYSTEM PRESSURE AT ITS INTENDED LOCATION.
4. CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR THE SPRINKLER AND FK-5-1-12 SYSTEMS SHOWING ALL SPRINKLER AND CLEAN AGENT NOZZLE LOCATIONS, SPACED AND LOCATED IN ACCORDANCE WITH NFPA 13 AND 2001 RESPECTIVELY, AND MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE PACKAGE SHALL INCLUDE FLOW CALCULATION REPORTS INCLUDING ISOMETRIC PIPE LAYOUTS. THE PACKAGE SHALL ALSO INCLUDE THE CLEAN AGENT MANUFACTURER'S INSTALLATION MANUAL FOR EBMUD USE IN REVIEW OF SHOP DRAWING SUBMITTALS. THE SHOP DRAWING PACKAGE SHALL BE APPROVED IN WRITING BY EBMUD PRIOR TO THE START OF INSTALLATION.
5. THE ENTIRE SYSTEM SHALL BE FLUSHED AND HYDROSTATICALLY TESTED @ 200 PSI OR 50 PSI ABOVE MAXIMUM WORKING PRESSURE FOR 2 HOURS AS REQUIRED BY NFPA 13.
6. REPLACE PIPING SYSTEM COMPONENTS THAT DO NOT PASS HYDROSTATIC TEST PROCEDURES AND RETEST TO DEMONSTRATE COMPLIANCE. REPEAT PROCEDURE UNTIL SATISFACTORY RESULTS ARE OBTAINED.
7. REPORT FLUSHING AND HYDROSTATIC TEST RESULTS PROMPTLY AND IN WRITING TO EBMUD. CONTRACTOR SHALL PROVIDE CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR PIPING. EBMUD PERSONNEL SHALL BE PRESENT DURING ALL TESTING.
8. THE COMPONENTS OF HANGER ASSEMBLIES THAT DIRECTLY ATTACH TO THE PIPE OR TO THE BUILDING SHALL BE UL LISTED IN ACCORDANCE WITH NFPA 13.
9. THE FK-5-1-12 AND SPRINKLER SYSTEM PIPING SHALL NOT SHARE SUPPORTS WITH OTHER BUILDING SYSTEMS.
10. THE CONTRACTOR SHALL COORDINATE THE FIRE PROTECTION AND FIRE ALARM WORK FOR CONNECTION TO THE FIRE ALARM SYSTEM.
11. ALL SYSTEMS SHALL BE DESIGNED TO COMPLETELY DRAIN THROUGH PIPED CONNECTIONS.
12. ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE USED FOR EXACT MEASURE OR FABRICATION. CONTRACTOR SHALL INSTALL ALL FIRE PROTECTION COMPONENTS IN ACCORDANCE WITH ALL APPLICABLE CODES. CONTRACTOR SHALL COORDINATE INSTALLATION OF SYSTEM CONDUIT AND OTHER COMPONENTS WITH ALL OTHER TRADES. CONTRACTOR SHALL COORDINATE INSTALLATION WITH THESE DRAWINGS, THE BASIS OF DESIGN DOCUMENT AND THE TECHNICAL SPECIFICATION. CONTRACTOR SHALL ALSO FIELD VERIFY EXISTING STRUCTURAL, MECHANICAL, AND ELECTRICAL CONDITIONS, INSTALLATIONS AND DRAWINGS TO AVOID OBSTRUCTIONS OR INTERFERENCE WITH FIRE PROTECTION PIPING AND NOZZLES.
13. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FINAL EQUIPMENT LOCATIONS. CONFLICTS WITH LIGHTING, CEILING OBSTRUCTIONS, AND SUPPLY/RETURN REGISTERS MUST BE DOCUMENTED AND VARIATIONS FROM THE DESIGN MUST MEET THE REQUIREMENTS OF THE SPECIFICATION.
14. THE FK-5-1-12 (NOVEC 1230) SYSTEMS SHALL BE DESIGNED TO MAINTAIN THE MINIMUM DESIGN CONCENTRATION OF 5.6% IN THE MCC ROOM IN ACCORDANCE WITH NFPA 2001 AND ISO 14520.
15. CONTRACTOR SHALL PROVIDE A RESERVE CYLINDER BANK HAVING THE SAME QUANTITY AND CAPACITY OF THE CALCULATED REQUIRED AGENT FOR EACH SYSTEM.
16. SUPERVISE THE GASEOUS AGENT SUPPRESSION SYSTEM FOR FLOW/DISCHARGE (PRESSURE SWITCH) AND LOW CYLINDER PRESSURE AT THE FIRE ALARM CONTROL PANEL.
17. SUPERVISE EACH DISCHARGE SOLENOID IN ACCORDANCE WITH NFPA 2001.
18. REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INSTALLATION INSTRUCTIONS AND PROCEDURES FOR SYSTEM OPERATION.
19. ALL PIPE SIZES SHOWN ON THE DRAWINGS ARE APPROXIMATE. ACTUAL PIPE SIZES SHALL BE DETERMINED BY THE CONTRACTOR VIA FLOW CALCULATIONS BASED ON FINAL PIPING AND NOZZLE LOCATIONS.
20. CONTRACTOR SHALL PROVIDE CLOSEOUT DOCUMENTATION FOR THE FK-5-1-12 SYSTEMS THAT INCLUDES DRAWINGS SHOWING FINAL LAYOUT AND FLOW CALCULATIONS. THE FLOW CALCULATIONS SHALL BE BASED ON THE ACTUAL ROUTING OF THE PIPE NETWORK. ANY FIELD CHANGES SHALL REQUIRE AN UPDATED FLOW CALCULATION.
21. CONTRACTOR TO PROVIDE WARNING SIGNS AT ALL ENTRANCES TO PROTECTED SPACES THAT IDENTIFIES THE AREA AS BEING PROTECTED BY AN FK-5-1-12 SUPPRESSION SYSTEM IN ACCORDANCE WITH THE APPLICABLE CODES AND THE SPECIFICATIONS. SEE BASIS OF DESIGN FOR FURTHER INFORMATION.

FIRE PROTECTION SYSTEMS NOTES (CONT.)

22. ALL MATERIALS, EQUIPMENT AND SYSTEM COMPONENTS PROVIDED SHALL BE NEW AND APPROVED BY LOCAL STATUTORY AUTHORITIES AND LISTED BY UNDERWRITERS LABORATORY (UL) OR APPROVED BY FACTORY MUTUAL RESEARCH CORPORATION (FM) FOR THEIR INTENDED USE. ALL EQUIPMENT SHALL BE DESIGNED, INSTALLED AND TESTED IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS, THE MANUFACTURER'S RECOMMENDATIONS, AND WITHIN THE LIMITATIONS OF THEIR UL LISTING AND/OR FM APPROVALS. THE CONTRACTOR SHALL PROVIDE EVIDENCE OF LISTING OF ALL PROPOSED EQUIPMENT AND COMBINATIONS OF EQUIPMENT UPON THE DISTRICT'S REQUEST.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING A MINIMUM OF TWO DOOR FAN TESTS. ONE TEST SHALL BE CONDUCTED AT THE START OF THE INSTALLATION FOR A BASELINE OF ENCLOSURE LEAKAGE. THE SECOND TEST SHALL BE CONDUCTED AT THE END OF THE PROJECT TO VERIFY THE FINAL DESIGN. ENCLOSURE INTEGRITY FAILURES SHALL REQUIRE ADDITIONAL DOOR FAN TESTS UNTIL THE ENCLOSURE IS SHOWN TO PASS IN ACCORDANCE WITH THE DESIGN CONCENTRATIONS AND REQUIRED HOLD TIMES.
24. THE PIPING SYSTEM SHALL BE SECURELY SUPPORTED WITH ALLOWANCE FOR THRUST FORCES, THERMAL EXPANSION/CONTRACTION AND SHOULD NOT BE SUBJECT TO MECHANICAL, CHEMICAL, VIBRATION OR OTHER DAMAGE. THE MAXIMUM HORIZONTAL SPACING FOR SCREWED, WELDED OR GROOVED PIPE SHALL FOLLOW THE REFERENCED STANDARDS OR SD-428 SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.

GENERAL NOTES

1. ALL SYSTEM PIPING SHALL BE AS FOLLOWS:
 - ALL PIPING SHALL BE ASTM A53 SCH. 40 BLACK STEEL.
 - 2" AND SMALLER PIPING SHALL BE BLACK THREADED WITH CLASS 150 MALLEABLE IRON FITTINGS.
 - 2-1/2" AND LARGER PIPING SHALL BE CUT GROOVED FOR SCH. 40 AND HAVE GROOVED OR MECHANICAL TYPE FITTINGS.
 - 2-1/2" AND LARGER GROOVED FITTINGS SHALL BE FACTORY PAINTED.
2. BRANCH OUTLETS MAY BE THREADED, GROOVED MECHANICAL TYPE FITTINGS, HOLE CUT MECHANICAL TYPE FITTINGS WITH A THREADED OR GROOVED OUTLET, OR WELDED PIPE-O-LETS OR GROOVE-O-LETS.
3. DRY SYSTEM PIPING SHALL BE PITCHED TO DRAIN. BRANCH LINES SHALL BE PITCHED AT LEAST 1/2" PER 10 FEET, AND MAINS SHALL BE PITCHED AT LEAST 1/4" PER 10 FT.
4. ALL PENETRATIONS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE PROVIDED WITH GROUT OR EBMUD APPROVED EQUIVALENT UL LISTED THROUGH PENETRATION FIRESTOP ASSEMBLY. THE RATINGS OF ALL FIRESTOP ASSEMBLIES SHALL BE GREATER THAN OR EQUAL TO THE RATING OF THE PENETRATED BARRIER. AS A TEMPORARY MEASURE, THE PENETRATION SHOULD BE FILLED WITH MINERAL WOOL TO PROVIDE A SMOKE SEAL.
5. CORE DRILL PENETRATIONS IN CONCRETE FLOORS OR WALLS SHALL BE 1-2 INCHES LARGER THAN THE PIPE DIAMETER OF THE PENETRATING PIPE. CONTRACTOR SHALL PERFORM NON-DESTRUCTIVE TESTING AND SHALL NOT CUT ANY REBAR WITHOUT ENGINEER'S APPROVAL.
6. NO FABRICATION OR INSTALLATION SHALL BE PERMITTED WITHOUT EBMUD APPROVED SHOP DRAWING SUBMITTALS. CONTRACTOR SHALL SUBMIT SYSTEM CATALOG PRODUCT DATA SHEETS FOR ALL COMPONENTS PROPOSED FOR USE PRIOR TO INSTALLATION FOR APPROVAL. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND SHALL INCLUDE ALL ITEMS REQUIRED BY CODE.
7. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THESE BID DOCUMENTS, AND EBMUD REQUIREMENTS.
8. ALL MATERIAL AND LABOR SHALL BE UNDER WARRANTY FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY EBMUD. ANY NEW DEVICES OR EQUIPMENT FOUND FAULTY SHALL BE REPLACED AS PART OF THE WARRANTY.
9. A SET OF APPROVED DRAWINGS SHALL BE MAINTAINED ON SITE AND ALL FIELD CHANGES SHALL BE RED LINED ON THE DRAWINGS. CONTRACTOR SHALL PREPARE "AS-BUILT" DRAWINGS IN ELECTRONIC (AUTOCAD) FORMAT, REFLECTING ACCURATE FIELD CONDITIONS. FINAL DRAWING FILES SHALL MEET EBMUD STANDARDS AND BE PROVIDED TO EBMUD. DRAWINGS PROVIDED BY CONTRACTOR THAT DO NOT MEET THESE STANDARDS WILL BE REJECTED AND CONTRACTOR WILL BE REQUIRED TO MAKE NECESSARY REVISIONS AT THEIR OWN EXPENSE. CONTRACTOR SHALL MEET WITH EBMUD DRAFTING TO REVIEW FINAL RECORD DRAWINGS PRIOR TO SUBMITTING.
10. DRAWINGS PROVIDED BY CONTRACTOR THAT DO NOT MEET THESE STANDARDS WILL BE REJECTED AND CONTRACTOR WILL BE REQUIRED TO MAKE NECESSARY REVISIONS AT THEIR OWN EXPENSE.

DESCRIPTION OF WORK

1. THE SCOPE OF WORK INCLUDES THE DESIGN, FABRICATION, AND INSTALLATION OF COMPLETE AND OPERATIONAL NEW AUTOMATIC FIRE SPRINKLER AND FK-5-1-12 (NOVEC 1230) CLEAN AGENT EXTINGUISHING SYSTEM IN THE OXYGEN PRODUCTION PLANT AT EBMUD.
2. CONTRACTOR SHALL PROVIDE A COMPLETE AUTOMATIC DRY PIPE SPRINKLER AND FK-5-1-12 (NOVEC 1230) CLEAN AGENT EXTINGUISHING SYSTEM IN THE OXYGEN PRODUCTION PLANT IN ACCORDANCE WITH THE DESIGN DOCUMENTS AND APPLICABLE CODES AND STANDARDS LISTED ON THIS SHEET.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH ALL OTHER TRADES AND INSTALLING CONTRACTORS. COORDINATION SHALL INCLUDE THE INTERFACE BETWEEN THE FIRE ALARM, SPRINKLER AND CLEAN AGENT EXTINGUISHING SYSTEMS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY PERMITS REQUIRED BY THE OAKLAND FIRE DEPARTMENT PERTAINING TO ALL FIRE PROTECTION WORK.
5. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF OSHA AND CAL-OSHA.
6. CONTRACTOR SHALL PROVIDE THE FOLLOWING SUBMITTALS: INTERCONNECTION DIAGRAMS FOR THE WORK, FLOOR PLANS SHOWING ALL FIRE PROTECTION AND FIRE ALARM CONTROLS AND EQUIPMENT, WIRING DIAGRAM FOR SHUTDOWN OF HVAC, CONTROL NARRATIVES FOR SUPERVISORY AND ALARM STATE SIGNAL FUNCTIONS, AND COMMUNICATION OR EVACUATION PLAN FOR DISTRICT STAFF.

APPLICABLE CODES AND STANDARDS

1. CITY OF OAKLAND FIRE CODE
2. 2022 CALIFORNIA BUILDING CODE (CBC)
3. 2022 CALIFORNIA FIRE CODE (CFC)
4. NFPA 13-2019, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
5. NFPA 24-2019, STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES
6. NFPA 25-2020, STANDARD FOR INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS
7. NFPA 70-2020, NATIONAL ELECTRIC CODE
8. NFPA 72-2019, NATIONAL FIRE ALARM AND SIGNALING CODE
9. NFPA 2001-2018, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS

SHEET INDEX

1. SD428-W4400-FP001 - FIRE PROTECTION GENERAL SYSTEM NOTES
2. SD428-W4400-FP100 - FIRE PROTECTION SITE PLAN
3. SD428-W4400-FP101 - FIRE PROTECTION SPRINKLER PLAN
4. SD428-W4400-FP102 - FIRE PROTECTION CLEAN AGENT PLAN



SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	A. VILLADOLID	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT	
DRAWN BY:	A. VILLADOLID		
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG	FIRE PROTECTION GENERAL SYSTEM NOTES	
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS	SCALE	SD428-W4400-FP001
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG	DATE	28JUN24
PROJECT MANAGER R.P.E. NO. 95046	J. LAW	SD428-W4400-FP001	
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL	DRAWING NUMBER	
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FIRE PROTECTION ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACK FLOW PREVENTER
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
CSP	COMBINATION STANDPIPE
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DP	DRY PENDENT SPRINKLER
DSP	DRY STANDPIPE
EC	EXTENDED COVERAGE SPRINKLER
FDC	FIRE DEPARTMENT CONNECTION
FHC	FIRE HOSE CABINET
FHV	FIRE HOSE VALVE
FS	FLOW SWITCH
GBE	GROOVE BOTH ENDS
GOE	GROOVE ONE END
GxT	GROOVED BY THREAD
NIC	NOT IN CONTRACT
NRS	NON-RISING STEM
OS&Y	OUTSIDE SCREW AND YOKE
PD	PUMP DISCHARGE
PIV	POST INDICATOR VALVE
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PS	PUMP SUCTION
RC	REDUCING COUPLING
RPZ	REDUCED PRESSURE PRINCIPAL BACKFLOW
SRC	WATER SUPPLY SOURCE
SSP	STANDARD SPRAY PENDENT SPRINKLER
SSU	STANDARD SPRAY UPRIGHT SPRINKLER
TBE	THREAD BOTH ENDS
TS	TAMPER SWITCH

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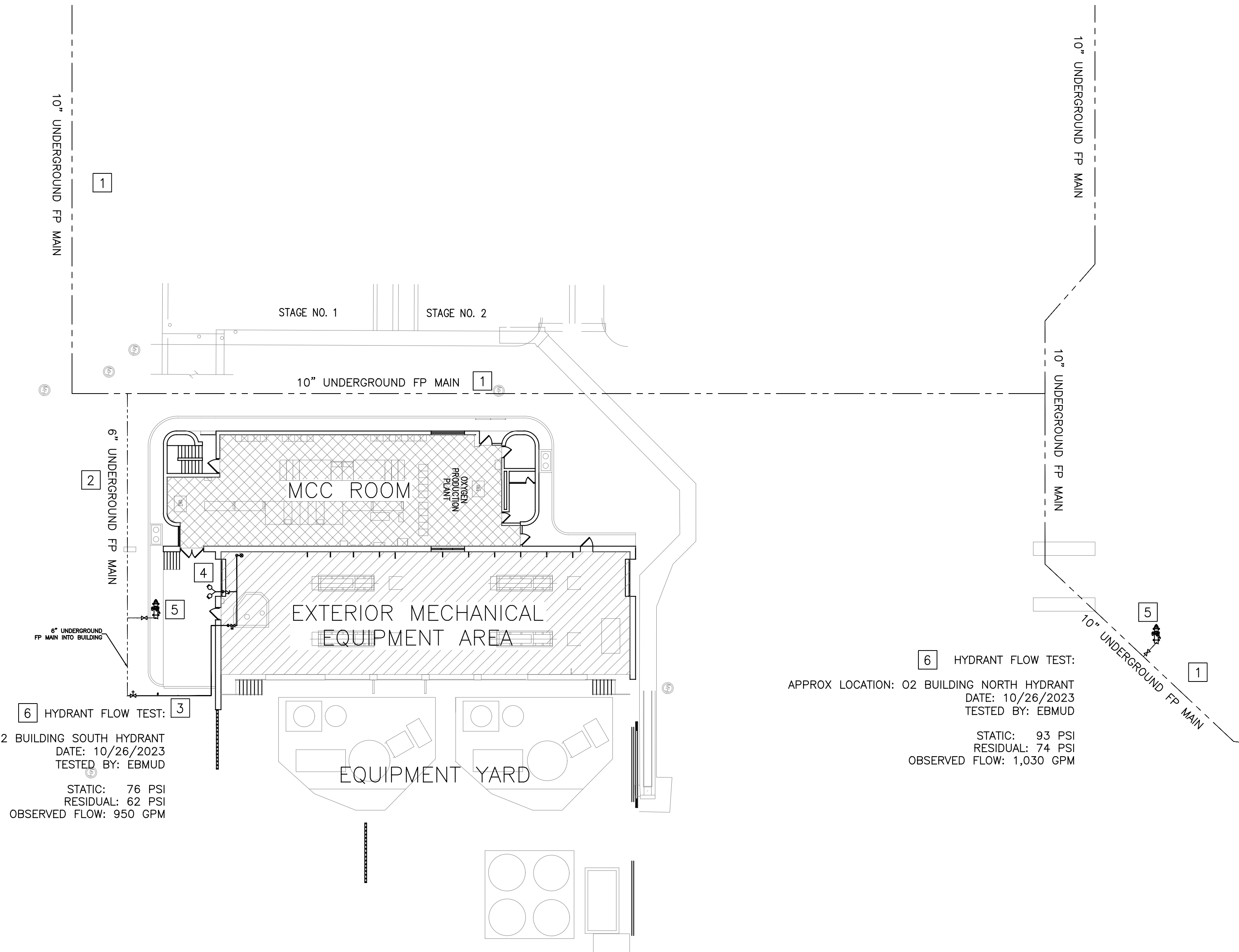
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FIRE PROTECTION LEGEND

	NEW SPRINKLER MAIN
	NEW SPRINKLER BRANCH PIPE
	EXISTING UNDERGROUND MAIN
	PIPE CONTINUATION
	RISE IN PIPE ELEVATION
	PIPE TEE DOWN
	PIPE DOWN ON ELBOW
	ENDCAP OR FLUSHING CONNECTION
	OS&Y ISOLATION VALVE WITH TAMPER SWITCH
	BUTTERFLY VALVE
	DRY-PIPE VALVE
	FIRE DEPARTMENT CONNECTION
	FIRE HYDRANT
	FLOOR ELEVATION ABOVE GRADE
	CENTER OF PIPE ELEVATION
	HYDRAULIC NODE
	RISER
	AIR COMPRESSOR



APPROX LOCATION: 02 BUILDING SOUTH HYDRANT
DATE: 10/26/2023
TESTED BY: EBMUD

STATIC: 76 PSI
RESIDUAL: 62 PSI
OBSERVED FLOW: 950 GPM

APPROX LOCATION: 02 BUILDING NORTH HYDRANT
DATE: 10/26/2023
TESTED BY: EBMUD

STATIC: 93 PSI
RESIDUAL: 74 PSI
OBSERVED FLOW: 1,030 GPM



FIRE PROTECTION SITE PLAN

SCALE: 1" = 20'-0"
0 10' 20' 40'
1"=20'

3" ON ORIGINAL DOCUMENT
0 1 2 3



NO.	DATE	REVISION	BY	REC.	APP.

GENERAL NOTES

- SEE SHEET SD428-W4400-FP001 FOR PROJECT NOTES.
- ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE USED FOR EXACT MEASURE OR FABRICATION, SHOW EXACT LOCATIONS OF COMPONENTS, NOR SHOW ALL SYSTEM COMPONENTS. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES.
- CONTRACTOR SHALL INSTALL ALL FIRE PROTECTION COMPONENTS IN ACCORDANCE WITH ALL APPLICABLE CODES, INCLUDING, BUT NOT LIMITED TO, NFPA STANDARDS, THE CALIFORNIA BUILDING CODE, THE CALIFORNIA FIRE CODE, AND THE FIRE PREVENTION CODE OF THE CITY OF OAKLAND.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF SYSTEM PIPING AND OTHER COMPONENTS WITH ALL OTHER TRADES. *Contractor does not vouch for the accuracy or correctness of these drawings or any of their contents.*
- ALL PENETRATIONS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE PROVIDED WITH APPROVED EQUIVALENT UL LISTED THROUGH PENETRATION FIRESTOP ASSEMBLY. THE RATINGS OF ALL FIRESTOP ASSEMBLIES SHALL BE GREATER THAN OR EQUAL TO THE RATING OF THE PENETRATED BARRIER. AS A TEMPORARY MEASURE, THE PENETRATION SHOULD BE FILLED WITH MINERAL WOOL TO PROVIDE A SMOKE SEAL.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
- NO FABRICATION OR INSTALLATION SHALL BE PERMITTED WITHOUT APPROVED SHOP DRAWING SUBMITTALS. CONTRACTOR SHALL SUBMIT SYSTEM CATALOG PRODUCT DATA SHEETS FOR ALL COMPONENTS PROPOSED FOR USE PRIOR TO INSTALLATION FOR APPROVAL. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND SHALL INCLUDE ALL ITEMS REQUIRED BY CODE.

HAZARD CLASSIFICATION LEGEND

	MCC ROOM - CLEAN AGENT (2,525 SQFT) CEILING H.P.: 16'-3" ROOM VOLUME: 41,032 CU.FT. DESIGN CONCENTRATION: 5.6% FK-5-1-12 REQUIRED: 2,128 LBS
	EXTERIOR MECHANICAL EQUIPMENT AREA - DRY SYSTEM CEILING H.P.: 19'-7" ORDINARY HAZARD 2 - (3,631 SQFT) 0.2 GPM/SQ.FT. @ 1,950 SQ.FT. 250 GPM HOSE STREAM ALLOWANCE

SHEET NOTES

- 10" UNDERGROUND PRIVATE FP MAIN (EXISTING)
- 6" UNDERGROUND PRIVATE FP MAIN (EXISTING)
- 6" UNDERGROUND PRIVATE FP MAIN (NEW)
- FIRE DEPARTMENT CONNECTION (NEW)
- FIRE HYDRANT (EXISTING)
- SEE SHEET SD428-W4400-FP103 FOR HYDRANT FLOW TEST REPORT



06/26/2024

SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	A. VILLADOLID	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT FIRE PROTECTION SITE PLAN	
DRAWN BY:	A. VILLADOLID		
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG	SCALE 1"=20'	SD428-W4400-FP100 DRAWING NUMBER
PROJECT MANAGER R.P.E. NO.	J. JANCAITIS	DATE 28JUN24	
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG		
PROJECT MANAGER R.P.E. NO. 95046	J. LAW		
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL		

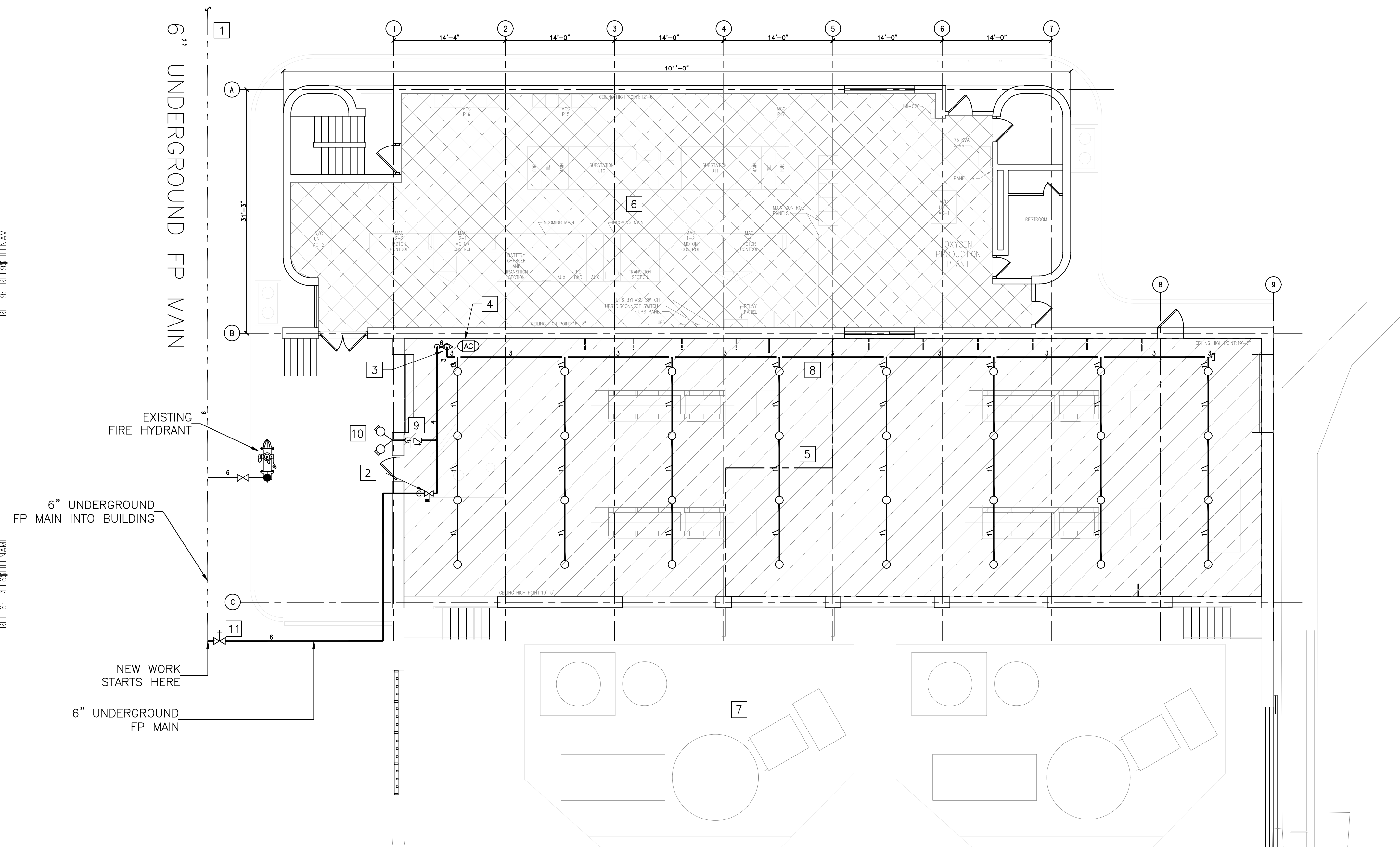
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FIRE PROTECTION SPRINKLER PLAN

SCALE: 1/8" = 1'-0"
0 4' 8' 16'
1/8"=1'-0"

HYDRAULIC DATA INFORMATION	
AREA:	ORDINARY HAZARD SPACE
SYSTEM TYPE:	DRY SYSTEM
# OF SPRINKLERS:	18 (APPROX)
SPRINKLER K-FACTOR:	5.6
DENSITY:	.15 GPM
REMOTE AREA:	1,950 SQ.FT.
HOSE STREAM:	250
GPM @ BOR:	378 GPM
PSI @ BOR:	44.6 PSI

3" ON ORIGINAL DOCUMENT
0 1 2 3



GENERAL NOTES

- SEE SHEET SD428-W4400-FP001 FOR PROJECT NOTES.
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- CONTRACTOR SHALL INSTALL ALL FIRE PROTECTION COMPONENTS IN ACCORDANCE WITH ALL APPLICABLE CODES, INCLUDING, BUT NOT LIMITED TO, NFPA STANDARDS, THE CALIFORNIA BUILDING CODE, THE CALIFORNIA FIRE CODE, AND THE FIRE PREVENTION CODE OF THE CITY OF HAYWARD.
- CONTRACTOR SHALL COORDINATE AND INSTALL PROPOSED SYSTEM PIPING AND OTHER COMPONENTS WITH ALL OTHER TRADES. *Contractor does not vouch for the accuracy or correctness of these drawings or any of their contents.*
- ALL PENETRATIONS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE PROVIDED WITH APPROVED EQUIVALENT UL LISTED THROUGH PENETRATION FIRESTOP ASSEMBLY. THE RATINGS OF ALL FIRESTOP ASSEMBLIES SHALL BE GREATER THAN OR EQUAL TO THE RATING OF THE PENETRATED BARRIER. AS A TEMPORARY MEASURE, THE PENETRATION SHOULD BE FILLED WITH MINERAL WOOL TO PROVIDE A SMOKE SEAL.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
- NO FABRICATION OR INSTALLATION SHALL BE PERMITTED WITHOUT APPROVED SHOP DRAWING SUBMITTALS. CONTRACTOR SHALL SUBMIT SYSTEM CATALOG PRODUCT DATA SHEETS FOR ALL COMPONENTS PROPOSED FOR USE PRIOR TO INSTALLATION FOR APPROVAL. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND SHALL INCLUDE ALL ITEMS REQUIRED BY CODE.

SYSTEM NOTES

- A DRY-PIPE SPRINKLER SYSTEM FOR THE EXTERIOR COMPRESSOR AREA SHALL BE DESIGNED PER NFPA 13 AND AS INDICATED ON PLANS. THE NEW DRY-PIPE SPRINKLER SYSTEM SHALL CONSIST OF ONE DRY VALVE RISER AND SHALL BE DESIGNED PER NFPA 13. THE DESIGN DENSITY SHALL BE 0.15 GPM/FT² OVER THE MOST REMOTE 1,950 SQ.FT (ORDINARY HAZARD GROUP 1). HYDRAULIC DESIGN SHALL INCLUDE 250 GALLONS PER MINUTE HOSE STREAM ALLOWANCE AS REQUIRED BY NFPA.
- AN AIR COMPRESSOR SHALL BE PROVIDED FOR THE DRY-PIPE SPRINKLER SYSTEM. THE COMPRESSED AIR SUPPLY SHALL BE FROM A SOURCE AVAILABLE AT ALL TIMES AND SHALL HAVE A CAPACITY CAPABLE OF RESTORING NORMAL AIR PRESSURE IN THE SYSTEM WITHIN 30 MINUTES (NFPA 13, SECTION 7.2.6.3.2).

HAZARD CLASSIFICATION LEGEND

- MCC ROOM - CLEAN AGENT (2,525 SQFT)
CEILING H.P.: 16'-3"
ROOM VOLUME: 41,032 CU.FT.
DESIGN CONCENTRATION: 5.6%
FK-5-1-12 REQUIRED: 2,128 LBS
- EXTERIOR MECHANICAL EQUIPMENT AREA - DRY SYSTEM
CEILING H.P.: 19'-7"
ORDINARY HAZARD 2 - (3,631 SQFT)
0.2 GPM/SQ.FT. @ 1,950 SQ.FT.
250 GPM HOSE STREAM ALLOWANCE

SHEET NOTES

- 6" UNDERGROUND FP MAINS. SEE SHEET FP100 FOR CONTINUATION.
- 6" BUILDING SPRINKLER ISOLATION VALVE.
- DRY-PIPE VALVE FOR EXTERIOR MECHANICAL EQUIPMENT AREA SPRINKLER SYSTEM.
- AIR COMPRESSOR FOR DRY SYSTEM.
- ORDINARY HAZARD 1 AREA (DRY-TYPE SPRINKLER SYSTEM)
- PROTECTED BY CLEAN AGENT SYSTEM. SEE SHEET SD428-W4400-FP102
- EQUIPMENT YARD - NO FIRE PROTECTION
- PROPOSED LOCATION OF SPRINKLER MAIN
- 4" CHECK VALVE FOR FDC
- WALL MOUNTED FDC 1.5-4 FEET ABOVE GRADE
- NEW 6" ISOLATION VALVE TO BE PROVIDED BY INSTALLING CONTRACTOR



SD428 - MWWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	
DESIGN BY:	A. VILLADOLID	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT FIRE PROTECTION SPRINKLER PLAN	
DRAWN BY:	A. VILLADOLID		
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG		
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS	SCALE 1/8"=1'-0" DATE 28JUN24	
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG	SD428-W4400-FP101 DRAWING NUMBER	
PROJECT MANAGER R.P.E. NO. 95846	J. LAW	0 REV.	
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL		

NO.	DATE	REVISION	BY	REC.	APP.

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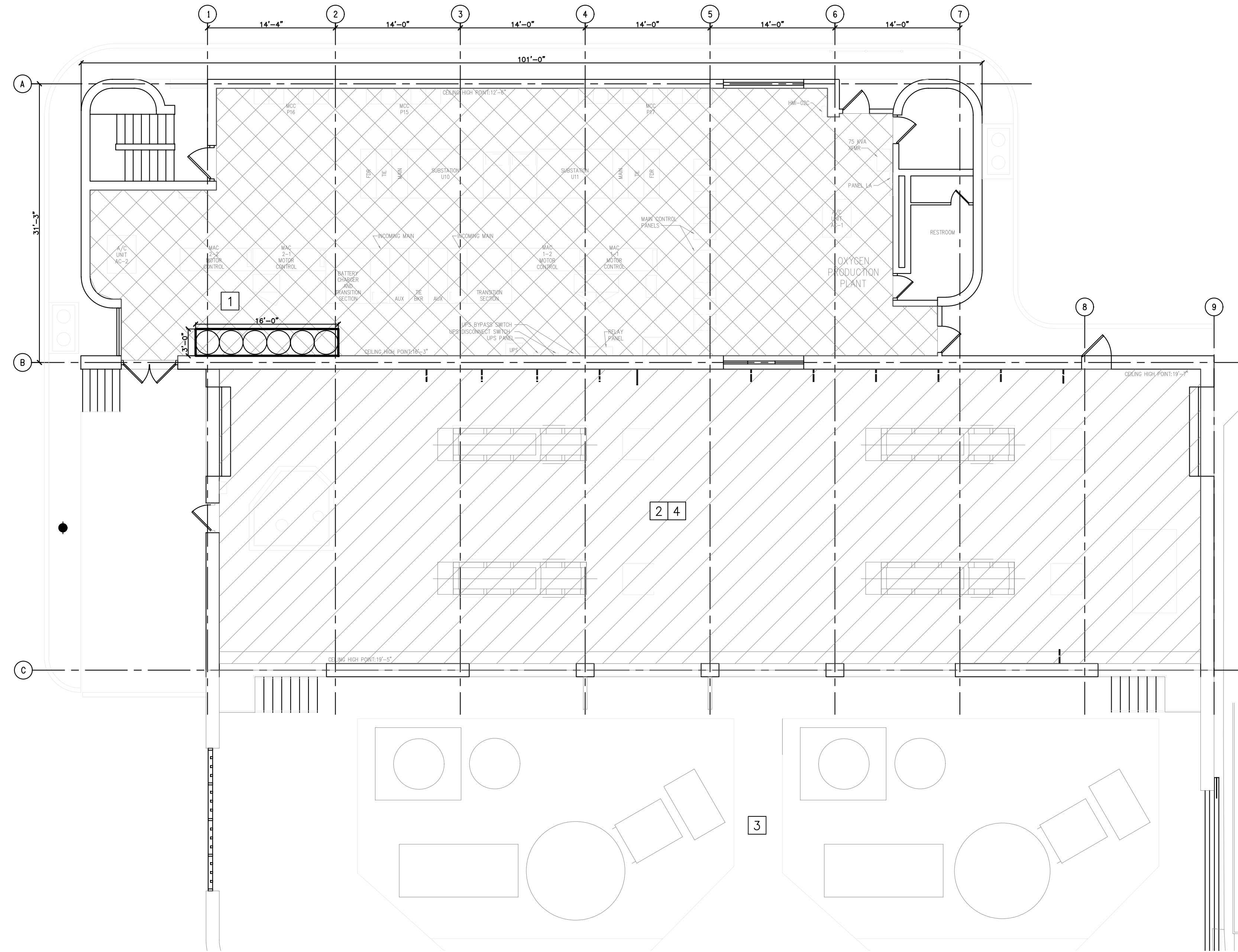
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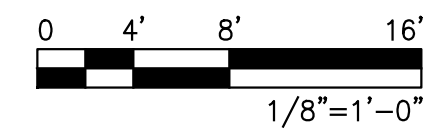
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PLOT SCALE: PLOT\$SCALE
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FIRE PROTECTION CLEAN AGENT PLAN

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



GENERAL NOTES

- SEE SHEET SD428-W4400-FP001 FOR PROJECT NOTES.
- ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE USED FOR EXACT MEASURE OR FABRICATION, SHOW EXACT LOCATIONS OF COMPONENTS, NOR SHOW ALL SYSTEM COMPONENTS. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES.
- CONTRACTOR SHALL INSTALL ALL FIRE PROTECTION COMPONENTS IN ACCORDANCE WITH ALL APPLICABLE CODES, INCLUDING, BUT NOT LIMITED TO, NFPA STANDARDS, THE CALIFORNIA BUILDING CODE, THE CALIFORNIA FIRE CODE, AND THE FIRE PREVENTION CODE OF THE CITY OF OAKLAND.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF SYSTEM PIPING AND OTHER COMPONENTS WITH ALL OTHER TRADES.
- ALL PENETRATIONS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE PROVIDED WITH APPROVED EQUIVALENT UL LISTED THROUGH PENETRATION FIRESTOP ASSEMBLY. THE RATINGS OF ALL FIRESTOP ASSEMBLIES SHALL BE GREATER THAN OR EQUAL TO THE RATING OF THE PENETRATED BARRIER. AS A TEMPORARY MEASURE, THE PENETRATION SHOULD BE FILLED WITH MINERAL WOOL TO PROVIDE A SMOKE SEAL.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
- NO FABRICATION OR INSTALLATION SHALL BE PERMITTED WITHOUT APPROVED SHOP DRAWING SUBMITTALS. CONTRACTOR SHALL SUBMIT SYSTEM CATALOG PRODUCT DATA SHEETS FOR ALL COMPONENTS PROPOSED FOR USE PRIOR TO INSTALLATION FOR APPROVAL. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND SHALL INCLUDE ALL ITEMS REQUIRED BY CODE.

SYSTEM NOTES

- CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING A MINIMUM OF TWO DOOR FAN TESTS. ONE TEST SHALL BE CONDUCTED AT THE START OF THE INSTALLATION FOR A BASELINE OF ENCLOSURE LEAKAGE. THE SECOND TEST SHALL BE CONDUCTED AT THE END OF THE PROJECT TO VERIFY THE FINAL DESIGN. ENCLOSURE INTEGRITY FAILURES SHALL REQUIRE ADDITIONAL DOOR FAN TESTS UNTIL THE ENCLOSURE IS SHOWN TO PASS IN ACCORDANCE WITH THE DESIGN CONCENTRATIONS AND REQUIRED HOLD TIMES. CONTRACTOR SHALL SUBMIT SYSTEM OUTAGE REQUEST (SOR) FOR END OF PROJECT LEAK TEST.
- CONTRACTOR TO PROVIDE WARNING SIGNS AT ALL ENTRANCES TO PROTECTED SPACES THAT IDENTIFIES THE AREA AS BEING PROTECTED BY AN FK-5-1-12 SUPPRESSION SYSTEM IN ACCORDANCE WITH THE APPLICABLE CODES AND THE SPECIFICATIONS. SEE BASIS OF DESIGN FOR FURTHER INFORMATION.
- FLOW CALCULATIONS PROVIDED BY THE CONTRACTOR SHALL BE BASED ON ACTUAL PIPE NETWORK ROUTING. ANY FIELD CHANGES SHALL REQUIRE A REVISED FLOW CALCULATION.
- THE PIPING SYSTEM SHALL BE SECURELY SUPPORTED WITH ALLOWANCE FOR THRUST FORCES, THERMAL EXPANSION/CONTRACTION AND SHOULD NOT BE SUBJECT TO MECHANICAL, CHEMICAL, VIBRATION OR OTHER DAMAGE. THE MAXIMUM HORIZONTAL SPACING FOR SCREWED, WELDED OR GROOVED PIPE SHALL FOLLOW THE REFERENCED STANDARDS.
- DISCHARGE NOZZLES SHALL BE INSTALLED WITHIN THE UL LISTING/FM APPROVAL CRITERIA AND SHALL NOT EXCEED LISTING/APPROVAL LIMITATIONS.

HAZARD CLASSIFICATION LEGEND

	MCC ROOM - CLEAN AGENT (2,525 SQFT) CEILING H.P.: 16'-3" ROOM VOLUME: 41,032 CU.FT. DESIGN CONCENTRATION: 5.6% FK-5-1-12 REQUIRED: 2,128 LBS
	EXTERIOR MECHANICAL EQUIPMENT AREA - DRY SYSTEM CEILING H.P.: 19'-7" ORDINARY HAZARD 2 - (3,631 SQFT) 0.2 GPM/SQ.FT. @ 1,950 SQ.FT. 250 GPM HOSE STREAM ALLOWANCE

SHEET NOTES

- CYLINDERS SHOWN INCLUDE MAIN AND RESERVE CYLINDER BANKS.
- SEE SHEET SD428-W4400-FP101 FOR EXTERIOR MECHANICAL EQUIP SPRINKLER SYSTEM PLAN.
- EQUIPMENT YARD - NO FIRE PROTECTION
- ALL NEW DRY SYSTEM PIPING BETWEEN COLUMN LINES 2 & 8 SHA AT LEAST 17'-4" AFF (ELEVATION 129.75) TO AVOID CONFLICT WITH BRIDGE CRANE.



SD428 - MWTP OXYGEN PLANT REHABILITATION		EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA		
DESIGN BY:	A. VILLADOLID	MAIN WASTEWATER TREATMENT PLANT OXYGEN PRODUCTION PLANT FIRE PROTECTION CLEAN AGENT PLAN		
DRAWN BY:	A. VILLADOLID			
DESIGN CHECKED BY R.P.E. NO. FP2132	C. NG			
PROJECT MANAGER R.P.E. NO.	J. JANCATTIS			
APPROVED: PRINCIPAL IN CHARGE R.P.E. NO. FP2132	C. NG	SCALE 1/8"=1'-0"	SD428-W4400-FP102	
PROJECT MANAGER R.P.E. NO. 95046	J. LAW	DATE 28JUN24		DRAWING NUMBER
RECOMMENDED: SR. ENGINEER R.P.E. NO. 69681	D. RUSSELL			0
				REV.



NO.	DATE	REVISION	BY	REC.	APP.