

CRANE BAYOU PUMP STATION GENERATORS AND BUILDING

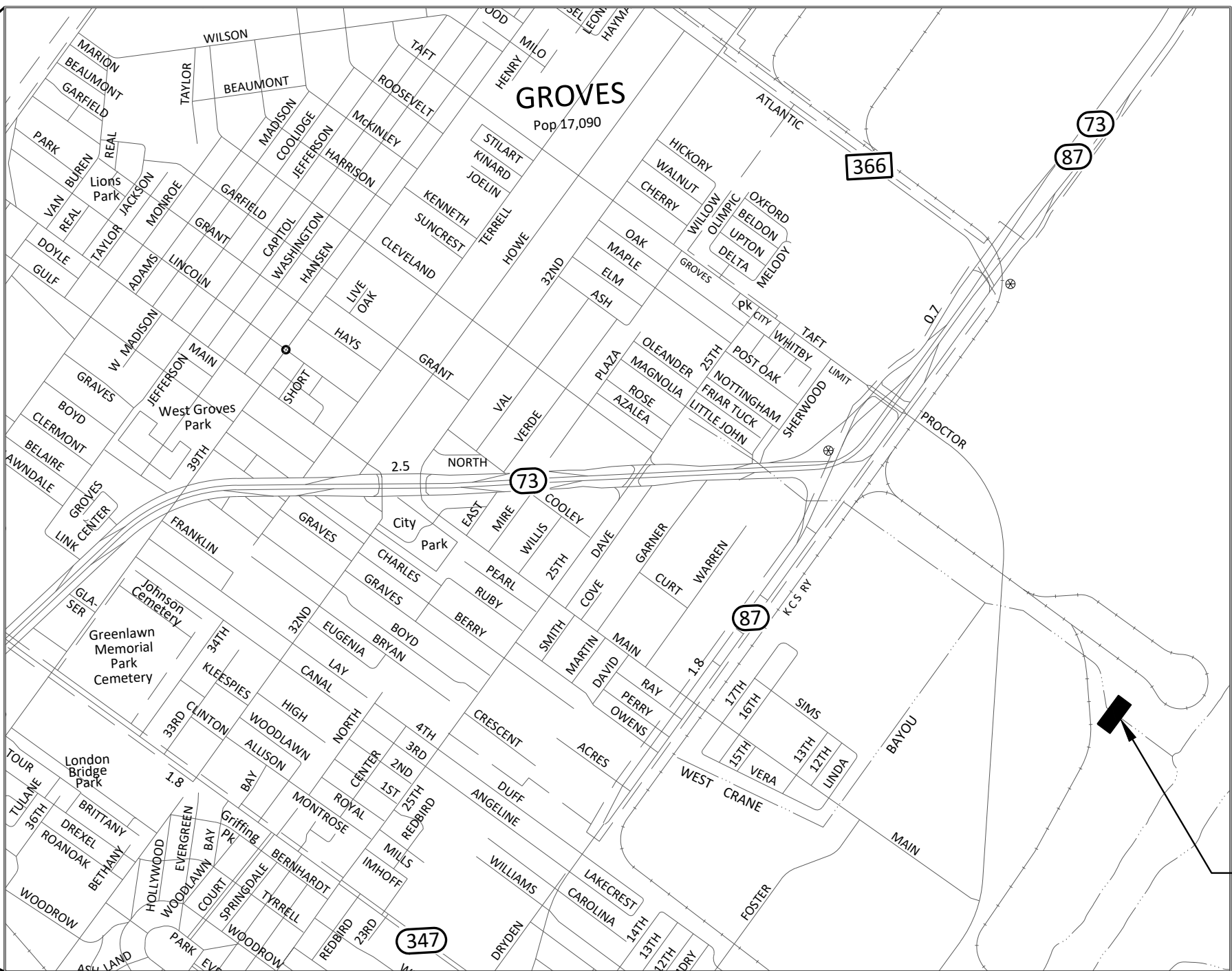
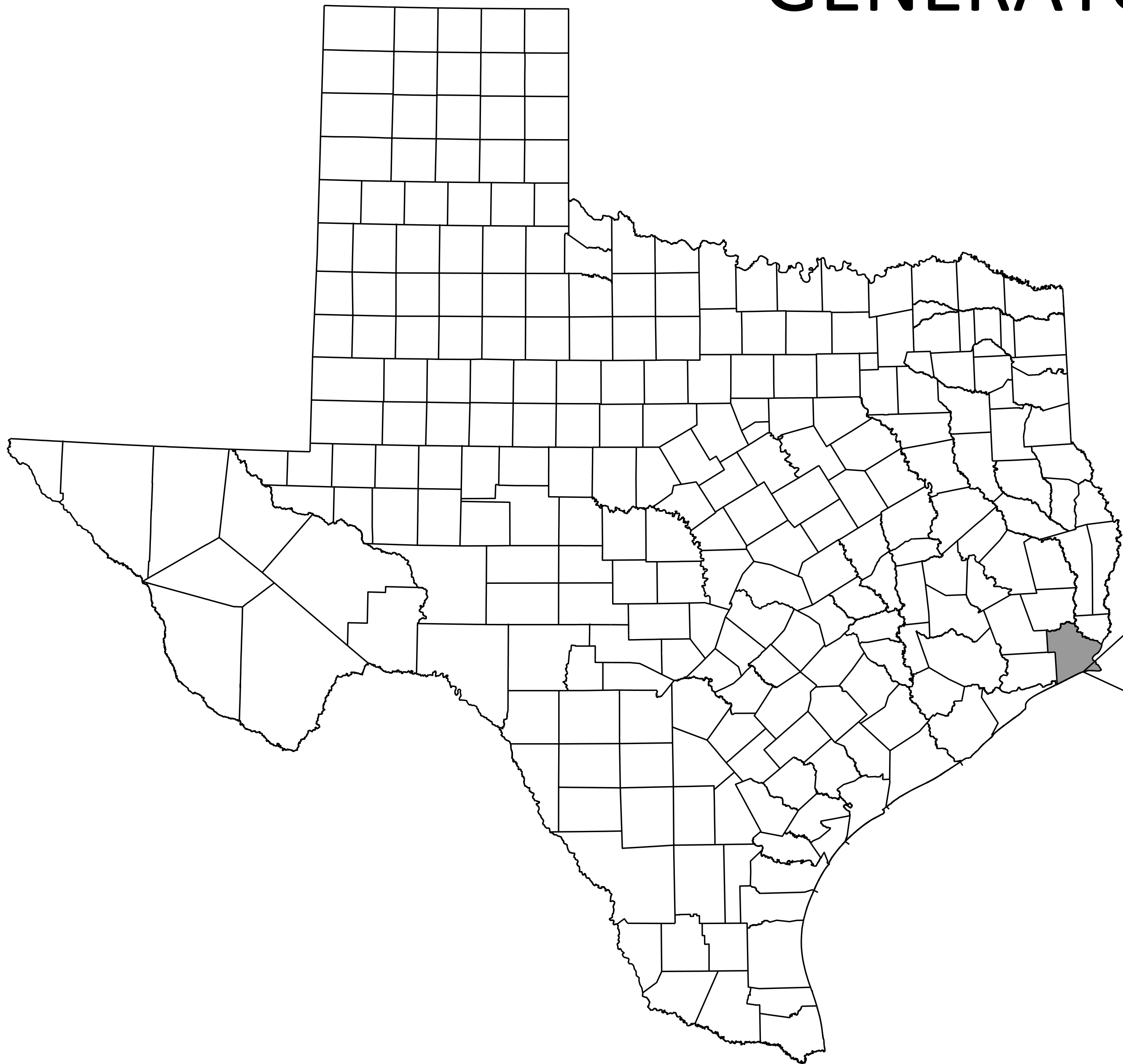
CALL BEFORE YOU DIG!



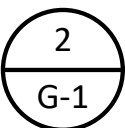
PARTICIPANTS REQUEST
48 HOURS NOTICE BEFORE YOU DIG,
DRILL, OR BLAST - STOP AND CALL

811

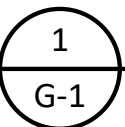
THE LONE STAR
NOTIFICATION COMPANY
AT 1-800-669-8344



PROJECT LOCATION
LATITUDE: 29.9292277
LONGITUDE: -93.880833
PORT ARTHUR, TEXAS



VICINITY MAP
NOT TO SCALE



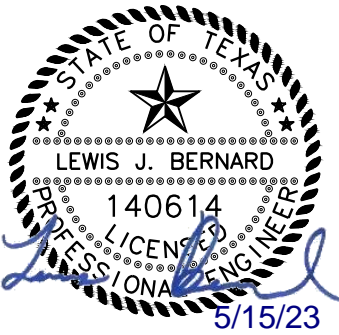
LOCATION MAP
NOT TO SCALE



JEFFERSON COUNTY, TX
MAY 2023

PREPARED BY:

FREESE & NICHOLS
10497 Town and Country Way,
Suite 500
Houston, Texas 77024
Phone - (713) 600-6800
Web - www.freese.com
Engineering Firm F-2144



ISSUED FOR BID

Seq. No. Sheet No. Title

GENERAL

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- COVER SHEET

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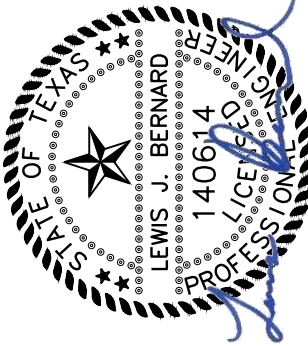
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Freeze and Nichols, Inc.
Texas Registered Engineering Firm F-2144



10497 Town and Country Way,
Suite 500 Houston, Texas 77024
Phone - (713) 600-6800
Web - www.freeze.com

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING

GENERAL

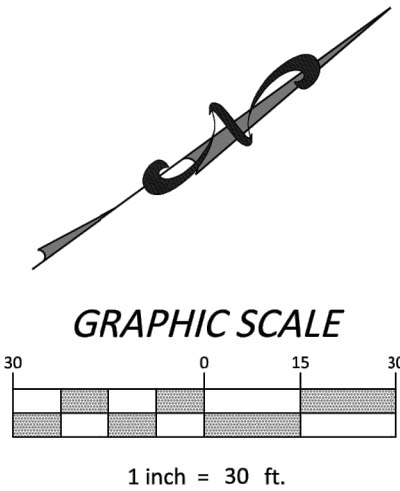
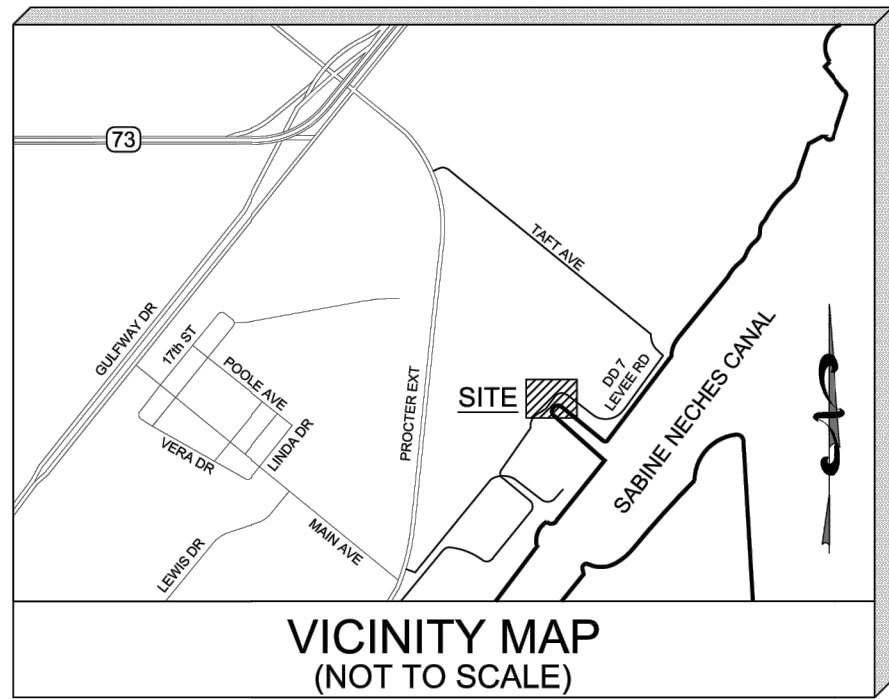
SHEET INDEX

NO.	ISSUE	BY	DATE	F&N JOB NO. JFF22292			
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				DRAWN		JSG	
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				CHECKED		JJB	
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				FILE NAME GN-ALL-INDEX.dwg			

SHEET
G-2

SEQ.
2

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BENCHMARK NOTE:

VERTICAL DATUM REFERENCED HEREON IS BASED ON NAVD88, GEOID18.

TEMPORARY BENCHMARK A:

T.B.M. "A" IS A BOX CUT IN CONCRETE ON TOP OF CONCRETE STEPS.
X=3,589,685.30; Y=13,922,095.58
ELEVATION=13.62 FEET.

TEMPORARY BENCHMARK B:

T.B.M. "B" IS A BOX CUT IN CONCRETE ON TOP OF CONCRETE STEPS.
X=3,589,792.56; Y=13,922,242.46
ELEVATION=13.68 FEET.

COMBINED SCALE FACTOR NOTE:

COORDINATES REFERENCED HEREON ARE BASED ON SURFACE VALUES. TO CONVERT TO GRID VALUES, MULTIPLY BY THE COMBINED SCALE FACTOR OF 1.000795520.

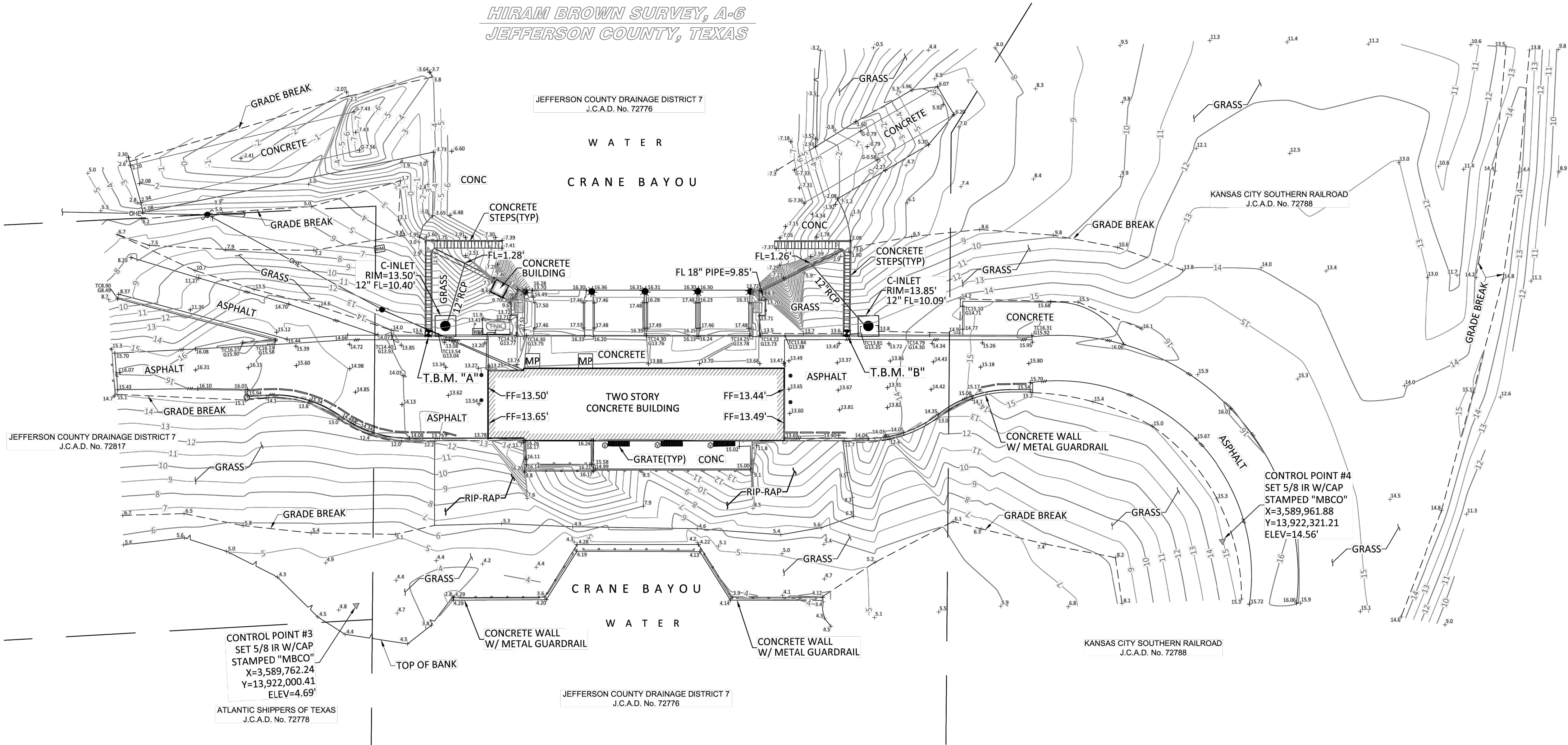
Freeze and Nichols, Inc.
Texas Registered Engineering Firm F-2144



JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING

CIVIL

SURVEY



NOTES:

- This survey represents a topographic survey of subject property and is not a boundary survey. Property lines referenced hereon are based on GIS line work from the appraisal district and was performed without the benefit of a title commitment. Easements and restrictions may exist which are not referenced hereon; no additional research regarding the existence of easements or restrictions of record has been performed by MBCO Engineering LLC.
- This tract lies in Zone "A10 (EL8)" (shaded), designated as "Areas of 100 year flood; base flood elevations and flood hazard factors determined", as per the National Flood Insurance Program FIRM Community Panel Number 485499 0035 E, latest available published revision dated April 17, 1984.
- A Zoning Report was not provided at the time of this survey; however, this tract is subject to the developmental requirements of the City of Port Arthur and Jefferson County, Texas.
- Mineral Rights and/or Lease Rights are not survey related and therefore not a part of this survey.
- Surface or subsurface faulting, hazardous waste or other environmental issues have not been addressed within the scope of this survey.
- All bearings shown hereon are based on the Texas Coordinate System of 1983, South Central Zone No. 4204.

SYMBOLS LEGEND

- BENCHMARK
- BOLLARD
- C INLET
- GATE CONTROL BOX
- GUY ANCHOR
- FOUND IRON ROD
- LIGHT STANDARD
- POWER POLE
- POWER POLE W/TRANSFORMER
- TANK
- WATER METER
- WHEEL STOP

ABBREVIATIONS LEGEND:

- CONC CONCRETE
- FF FINISHED FLOOR
- FL FLOWLINE
- G GUTTER
- J.C.A.D. JEFFERSON COUNTY APPRAISAL DISTRICT
- MP METAL PLATE
- No. NUMBER
- OHE OVERHEAD ELECTRIC
- RCP REINFORCED CONCRETE PIPE
- TNK STORAGE TANK
- TYP TYPICAL
- W/ WITH
- WM WATER METER

I hereby certify that this plat correctly represents a survey made on the ground under my supervision on April 4, 2022, and that said survey complies with the current Texas Society of Professional Surveyors Standards for Land Surveys for a Category 6, Condition II Topographic Survey.

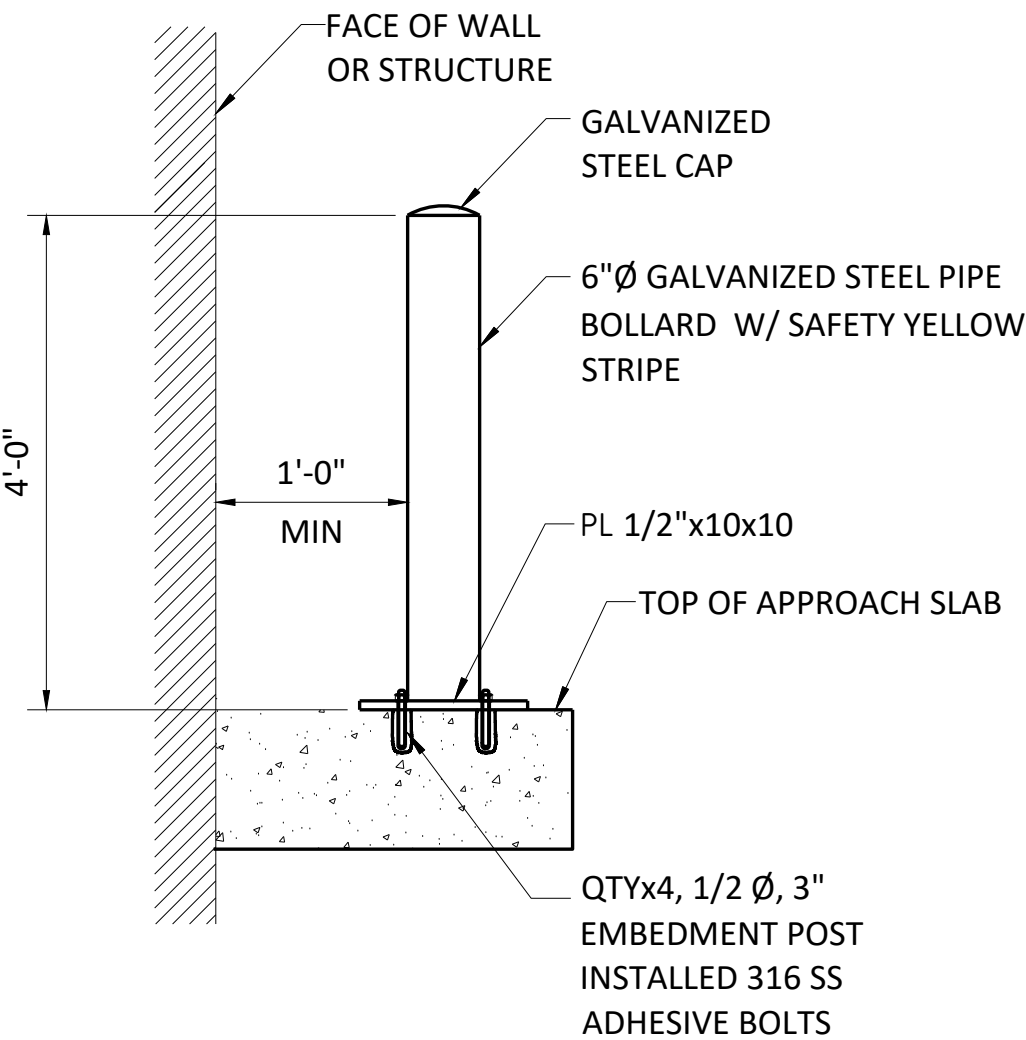
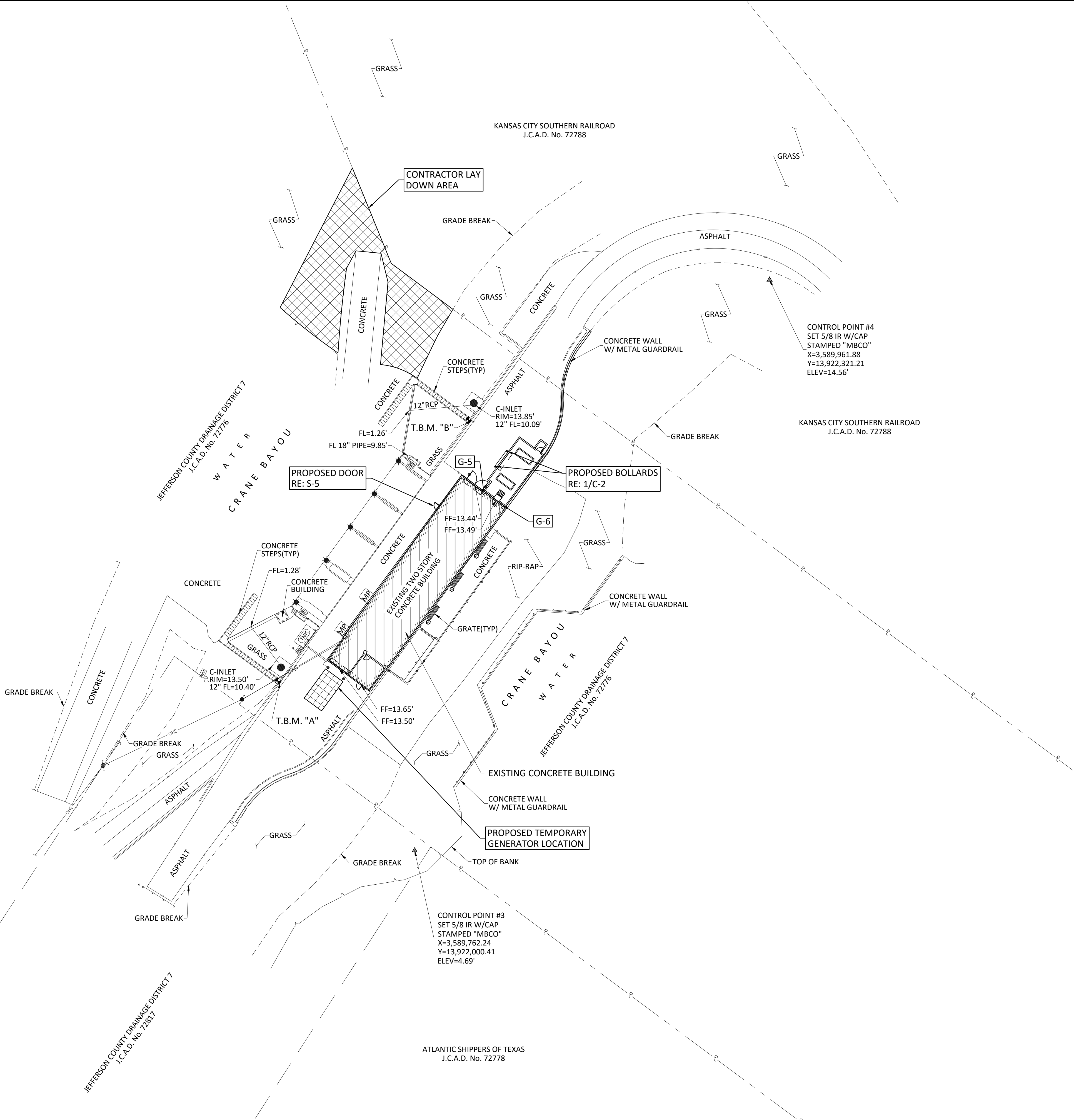
Marion R. Clark
Registered Professional
Land Surveyor
Texas Registration No. 1881



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NO.	ISSUE	BY	DATE	F&N JOB NO.	JFF22292	DATE	DESIGNED	LIB	DRAWN	REVISD	CHECKED	FILE NAME
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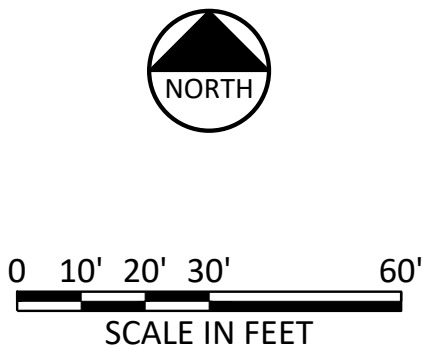


1 BOLLARD DETAIL
NOT TO SCALE

NOTES:

- CONTRACTOR SHALL NOT PARK ANY VEHICLE LARGER THAN A 3/4 TON TRUCK ON TOP OF THE LEVEE OR WITHIN THE TOE (INDICATED BY A GRADE BREAK ON THIS SHEET) WITHOUT WRITTEN APPROVAL FROM THE OWNER.
- EQUIPMENT AND VEHICLES LARGER THAN A 3/4 TON TRUCK MAY STAGE ON THE LEVEE FOR THE PURPOSES OF LOADING AND UNLOADING ONLY.
- CONTRACTOR IS CAUTIONED THAT THE OWNER WILL BE OPERATING THE PUMP STATION THROUGHOUT CONSTRUCTION AND SHALL KEEP ROADWAYS AND ACCESS POINTS CLEAR TO ALLOW FREE MOVEMENT FOR OWNER'S OPERATIONS AND MAINTENANCE STAFF.
- TEMPORARY GENERATOR SHALL BE TRAILER MOUNTED. CONTRACTOR SHALL COORDINATE WITH OWNER IF GENERATOR NEEDS TO BE TEMPORARILY RELOCATED TO ALLOW ACCESS TO THE SOUTHWEST ROLL UP DOOR.

BUILDING TABLE				
POINT NO.	LABEL NO.	NORTHING	EASTING	POINT DESCRIPTION
1	G-1	13922222.70	3589835.09	GENERATOR RM
2	G-2	13922233.02	3589821.17	GENERATOR RM
3	G-3	13922208.76	3589803.18	GENERATOR RM
4	G-4	13922207.59	3589804.75	GENERATOR RM
5	G-5	13922202.67	3589801.10	GENERATOR RM
6	G-6	13922193.45	3589813.40	GENERATOR RM



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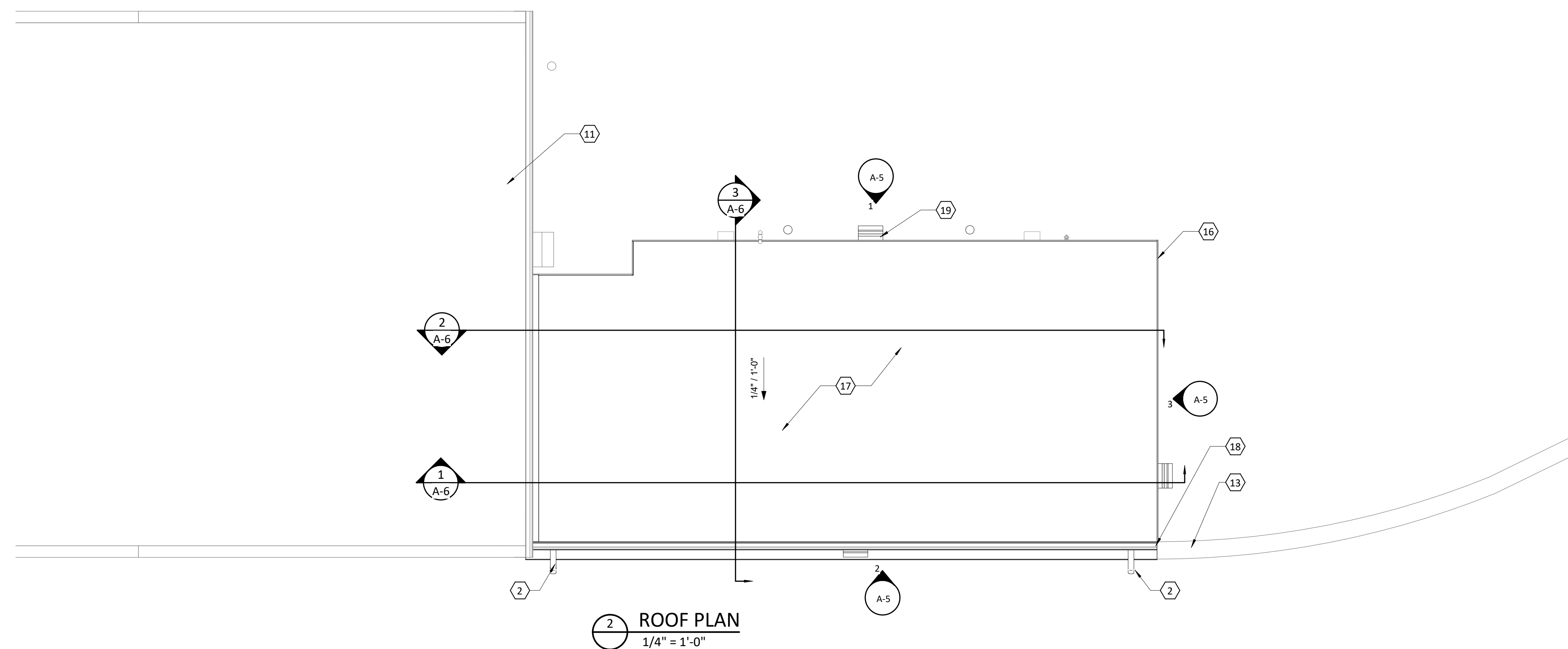
Freeze and Nichols, Inc.
Texas Registered Engineering Firm F-2144

5/15/23

10497 Town and Country Way,
Suite 500 Dallas, Texas 77024
Phone - (713) 600-6800
Web - www.freezeandnichols.com

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
CIVIL
SITE PLAN

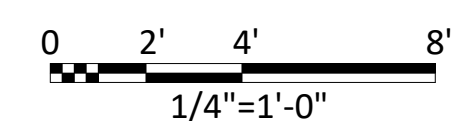
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VERIFIED SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.									
SHEET C-2									
SEQ. 4									



2 ROOF PLAN
1/4" = 1'-0"

FLOOR PLAN NOTES
BY SYMBOL "X"

- 1 8" CAST-IN-PLACE CONCRETE PANELS
- 2 4" PREFINISHED METAL DOWNSPOUT
- 3 DEMO EXISTING DOOR AND FRAME. CUT
EXISTING CONCRETE WALL PANEL AS REQUIRED
TO INSTALL NEW HOLLOW METAL DOOR AND
FRAME
- 4 EXISTING OVERHEAD COILING DOOR WITH
STORM DOORS
- 5 EXISTING BOLLARD
- 6 BOLLARD. RE: SHEET C-2
- 7 DUAL WALL TANK WITH STACKED GENERATOR.
RE: ELECTRICAL 1/E-5
- 8 EQUIPMENT, RE: ELECTRICAL SHEET E-5
- 9 EQUIPMENT PADS; RE: STRUCTURAL SHEET S-7
- 10 RAMP AND LANDING. RAMP TO HAVE OSHA
COMPLIANT ANTI-SLIP CLEATS, SPACED AS
SHOWN
- 11 EXISTING PUMP STATION BUILDING
- 12 REMOVABLE HANDRAIL WITH
FLANGE-MOUNTED RAILING BASE FLANGE. RE:
EASYFIT.COM PART # EF12G-40
- 13 EXISTING RETAINING WALL
- 14 FIRE EXTINGUISHER
- 15 NEW DOOR AND FRAME AT PUMP STATION
WALL. CUT EXISTING CONCRETE WALL PANEL
AS REQUIRED TO INSTALL. RE: STRUCTURAL
SHEET S-5
- 16 PREFINISHED METAL FASCIA
- 17 TDI WINDSTORM PRODUCT MEMBRANE ROOFING
SYSTEM OVER 2" TOPPING SLAB AND 8" PRECAST
CONCRETE ROOF PANELS
- 18 5" X 5" PREFINISHED METAL GUTTER
- 19 LIGHT FIXTURE, RE: ELECTRICAL SHEET E-4 & E-11



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CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ARCHITECTURE

FLOOR AND ROOF PLAN

F&N JOB NO.		JFF22292	
DATE	05/15/2023		
DESIGNED	HS		
DRAWN	KM		
REVISED	KM		
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FILE NAME	AR-JFF2292-R2-1 RVT		

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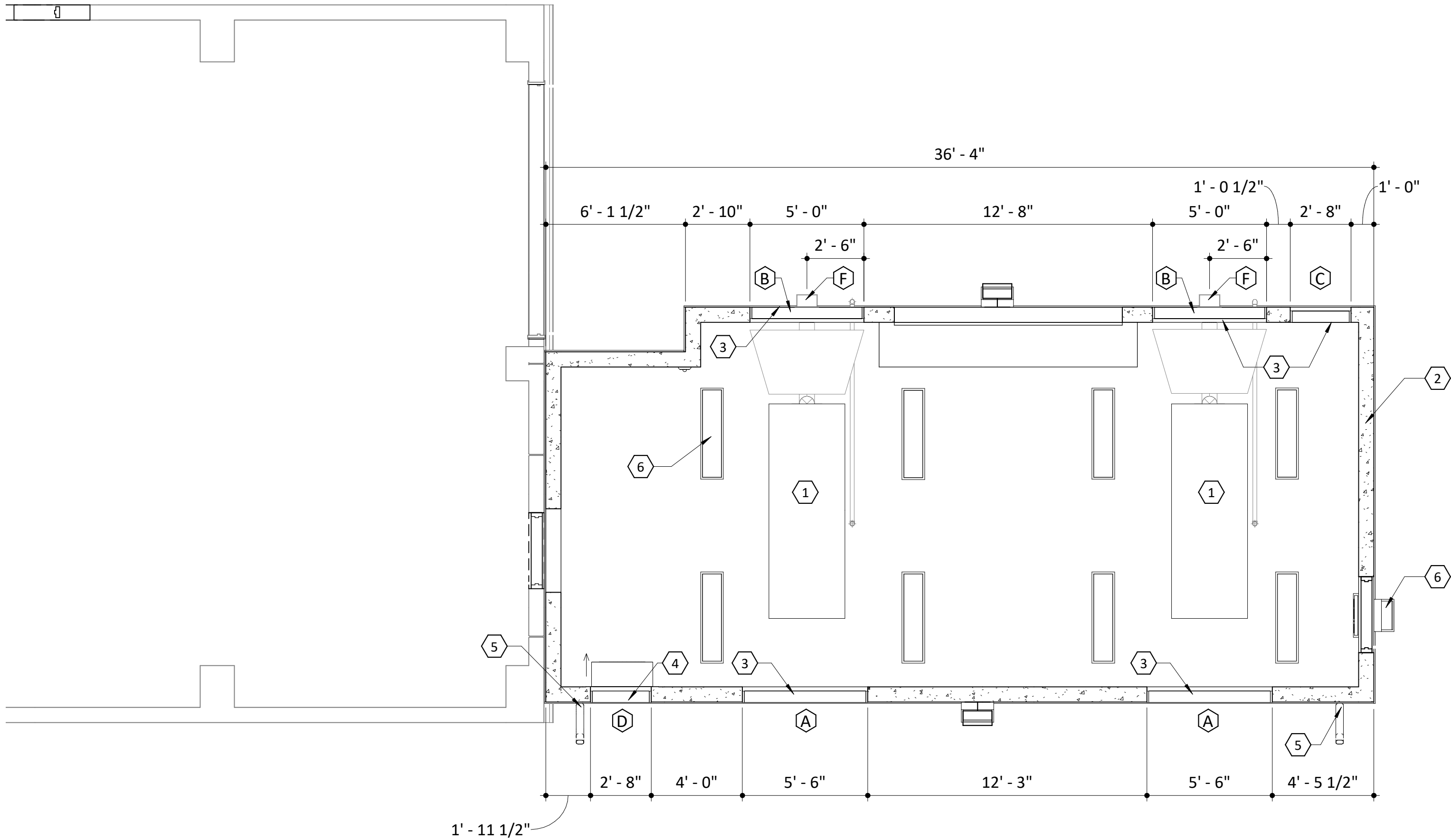
SHEET

A-3

7

SEQ.





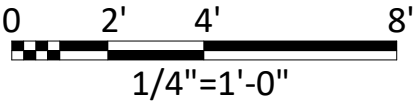
1 REFLECTED CEILING PLAN
1/4" = 1'-0"

GENERAL NOTES

1. REFER TO SHEET A-2 FOR GENERAL NOTES & ABBREVIATIONS.
2. REFER TO BUILDING SECTIONS (SHEET A-6) FOR EXPOSED STRUCTURE AND DECK HEIGHTS ABOVE FINISH FLOOR (NO CEILINGS).
3. NOT ALL LIGHTING FIXTURES AND DEVICES ARE SHOWN ON THIS PLAN. REFER TO LIGHTING SHEET E-4.
4. REFER TO ELECTRICAL PLAN, SHEET E-6, FOR MORE INFORMATION.
5. REFER TO SHEET A-7 FOR DOOR SCHEDULE.

NOTES BY SYMBOL " (X) "

- 1 GENERATOR WITH UL 142 BELLY TANK BELOW.
- 2 8" CAST-IN-PLACE CONCRETE PANELS.
- 3 LOUVER, RE: MECHANICAL SHEET M-3
- 4 SUPPLY FAN LOUVER, RE: MECHANICAL SHEET M-3.
- 5 4" PREFINISHED METAL DOWNSPOUT.
- 6 LIGHT FIXTURE, RE: ELECTRICAL SHEET E-4 & E-11



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F&N JOB NO.	JFF22292			
	DATE	05/15/2023	DESIGNED	HS
BY	DATE	FILE NAME	DRAWN	KM
			REVISED	KM
NO.	ISSUE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	CHECKED	PJ
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SHEET
A-4

SEQ.
8

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ARCHITECTURE
REFLECTED CEILING PLAN - LEVEL 1

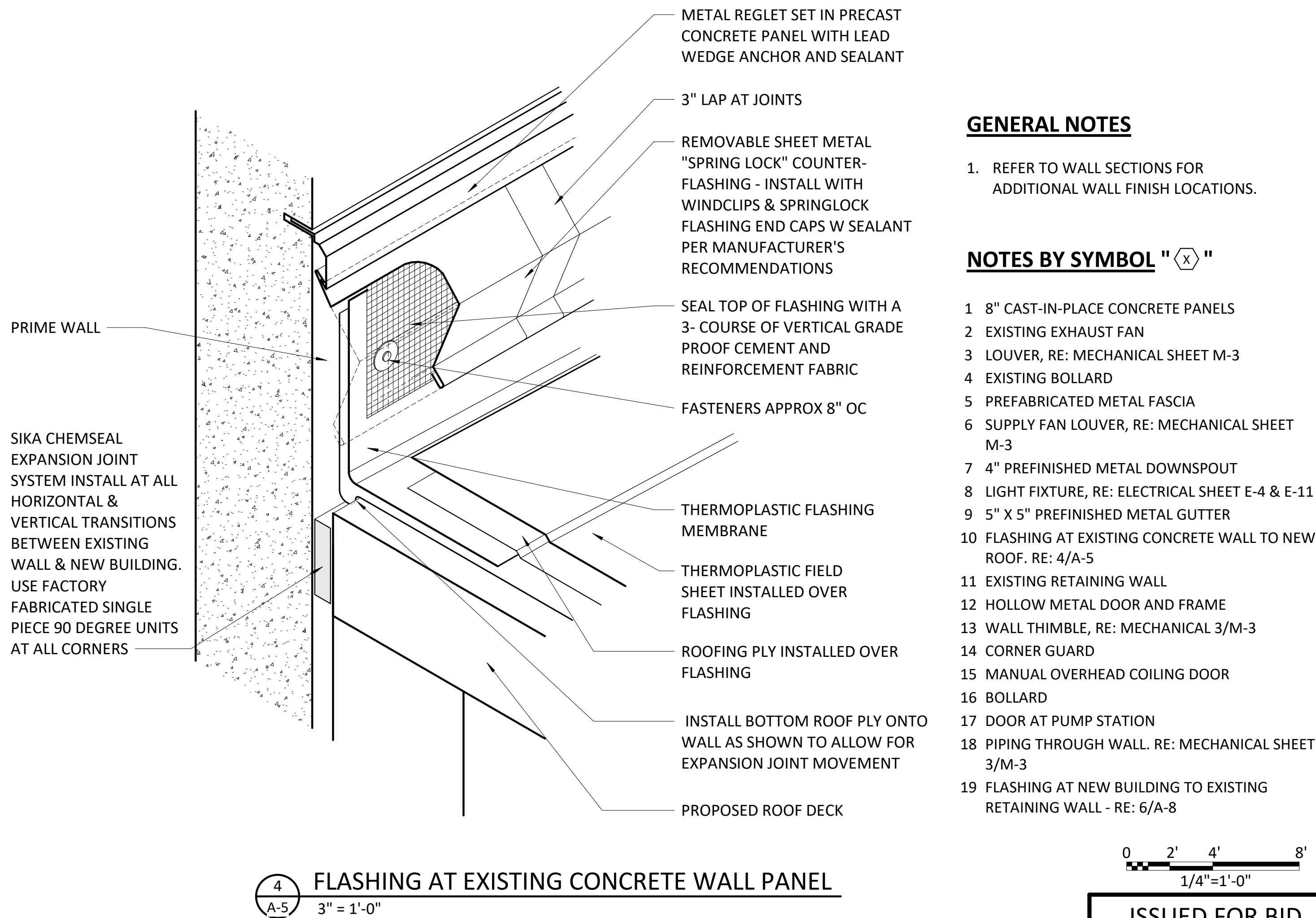
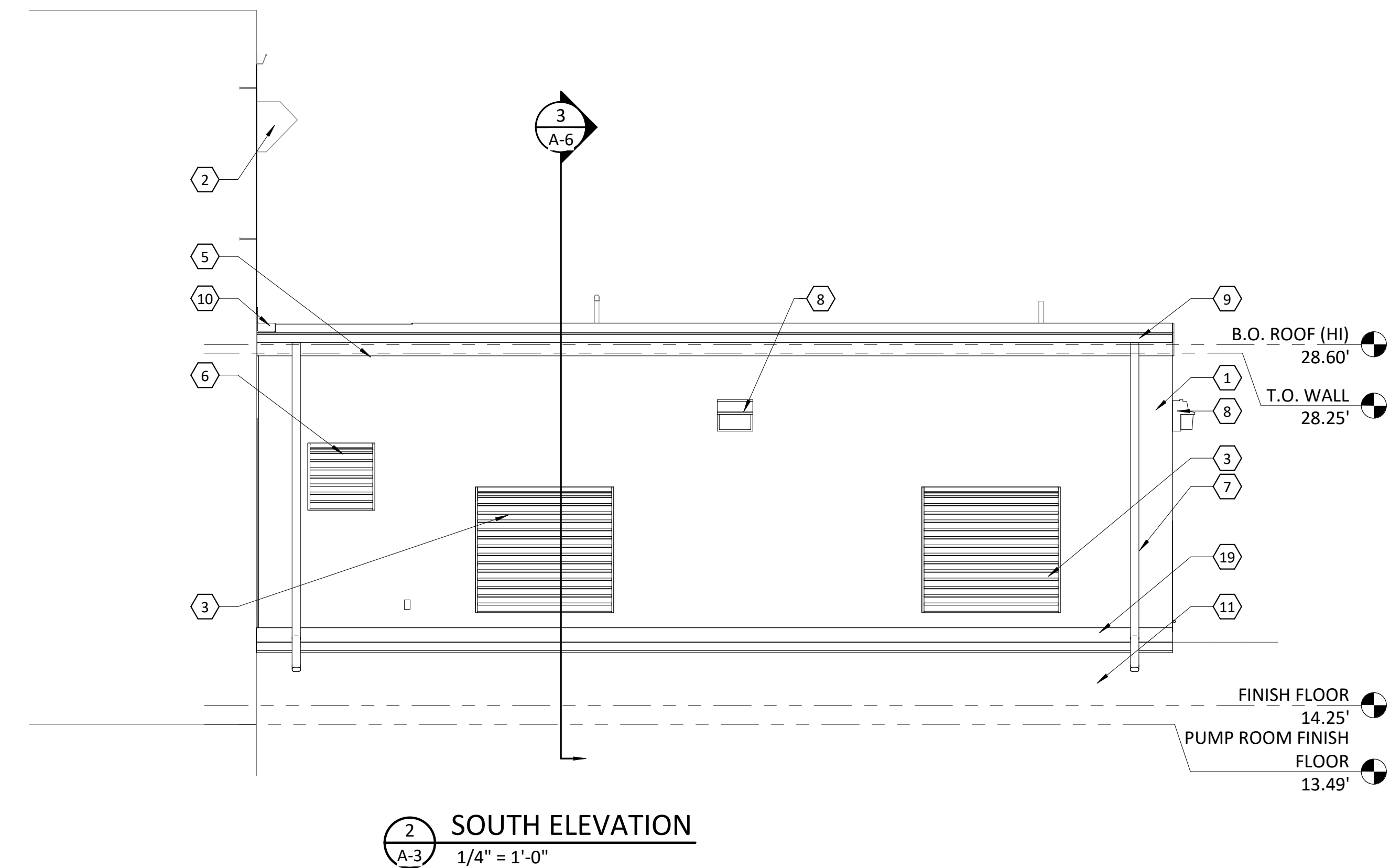
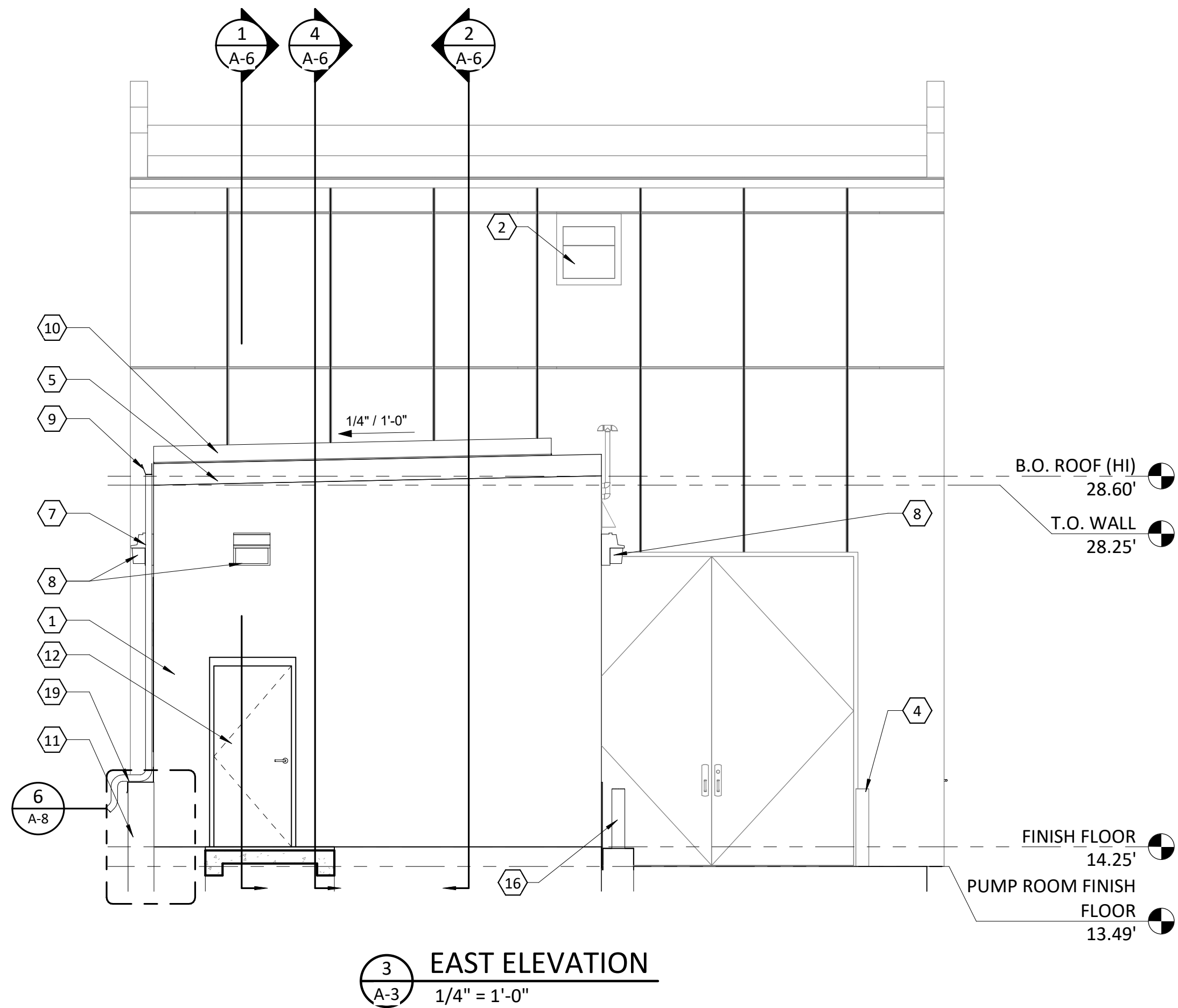
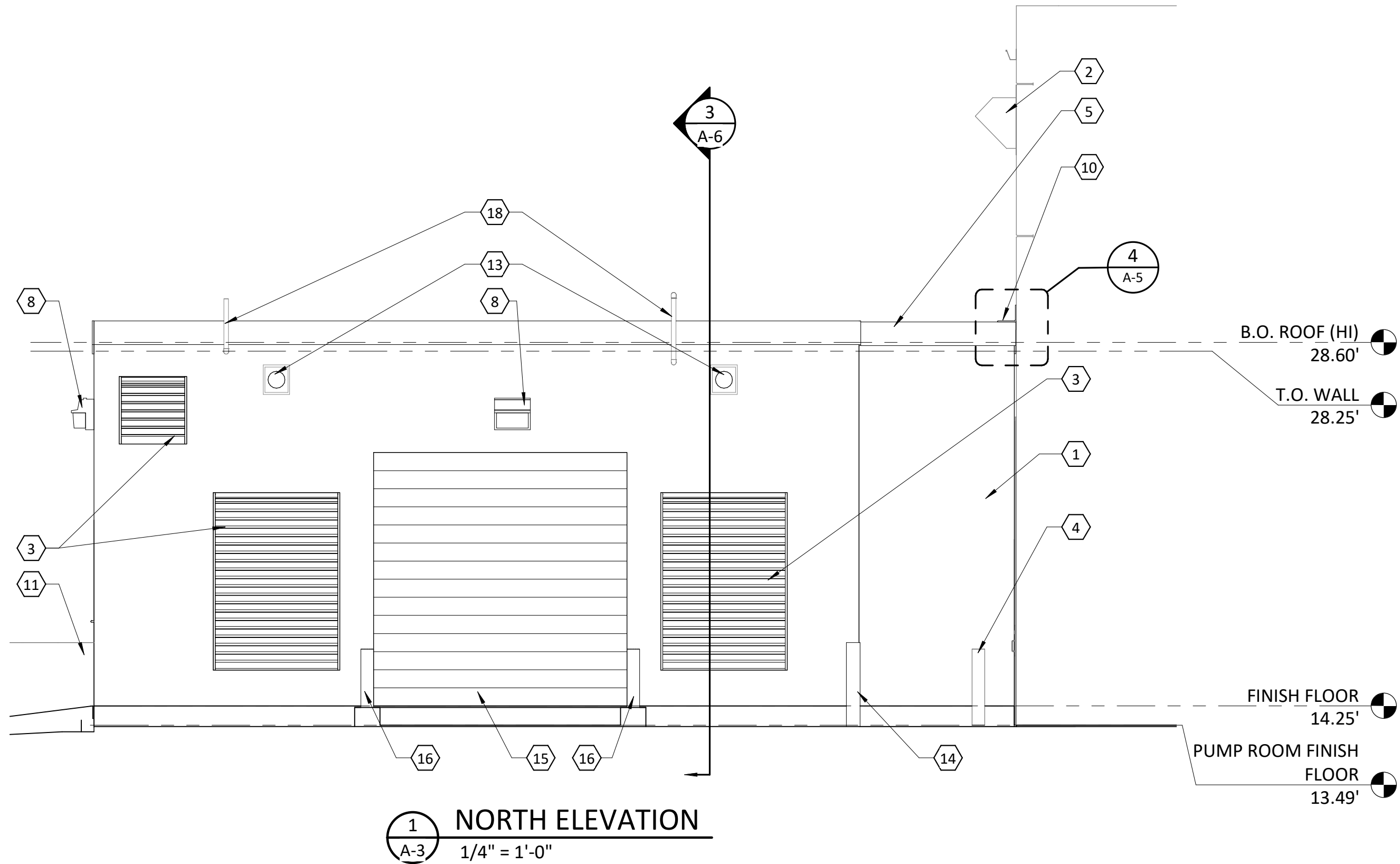


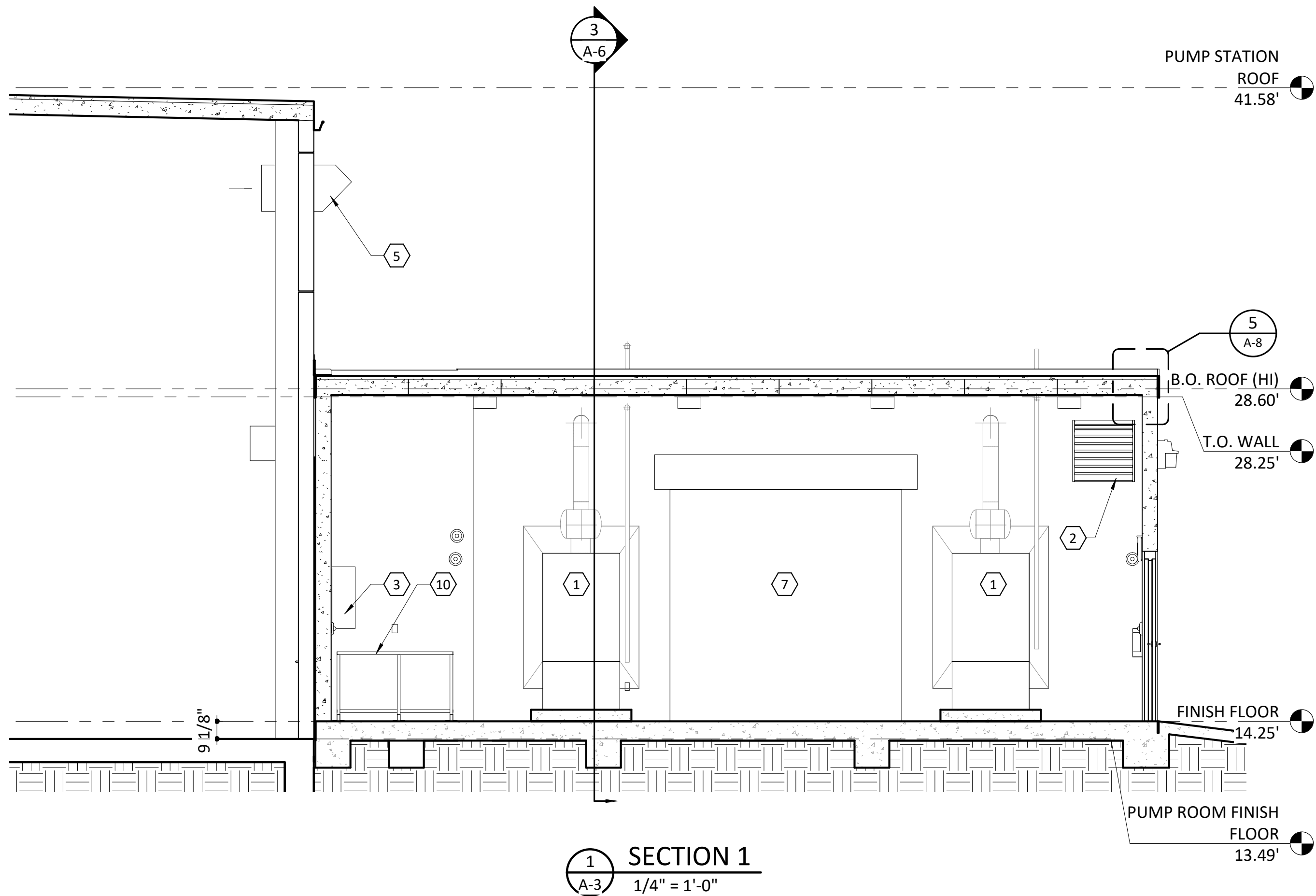
Freese and Nichols, Inc.

Tg

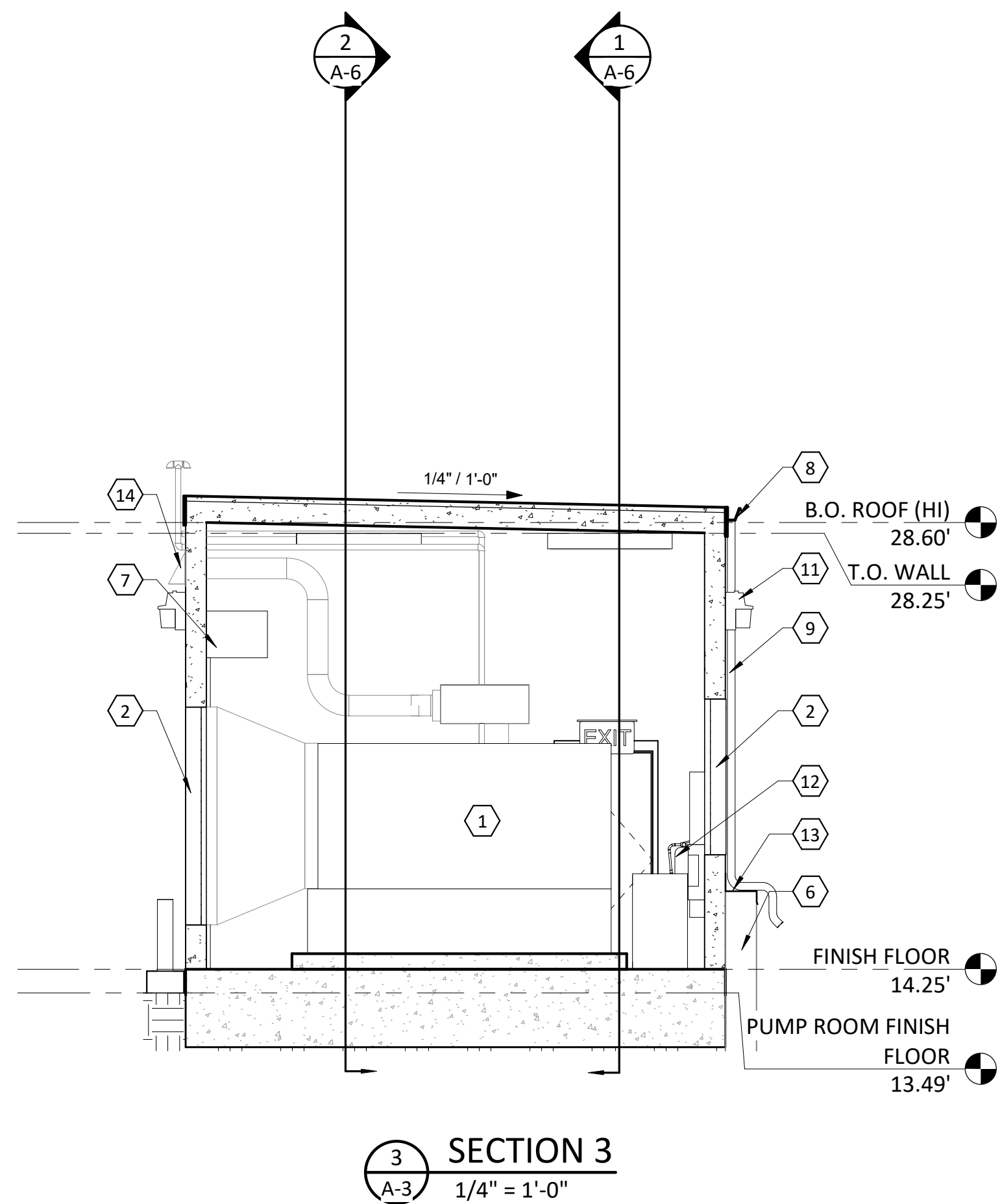
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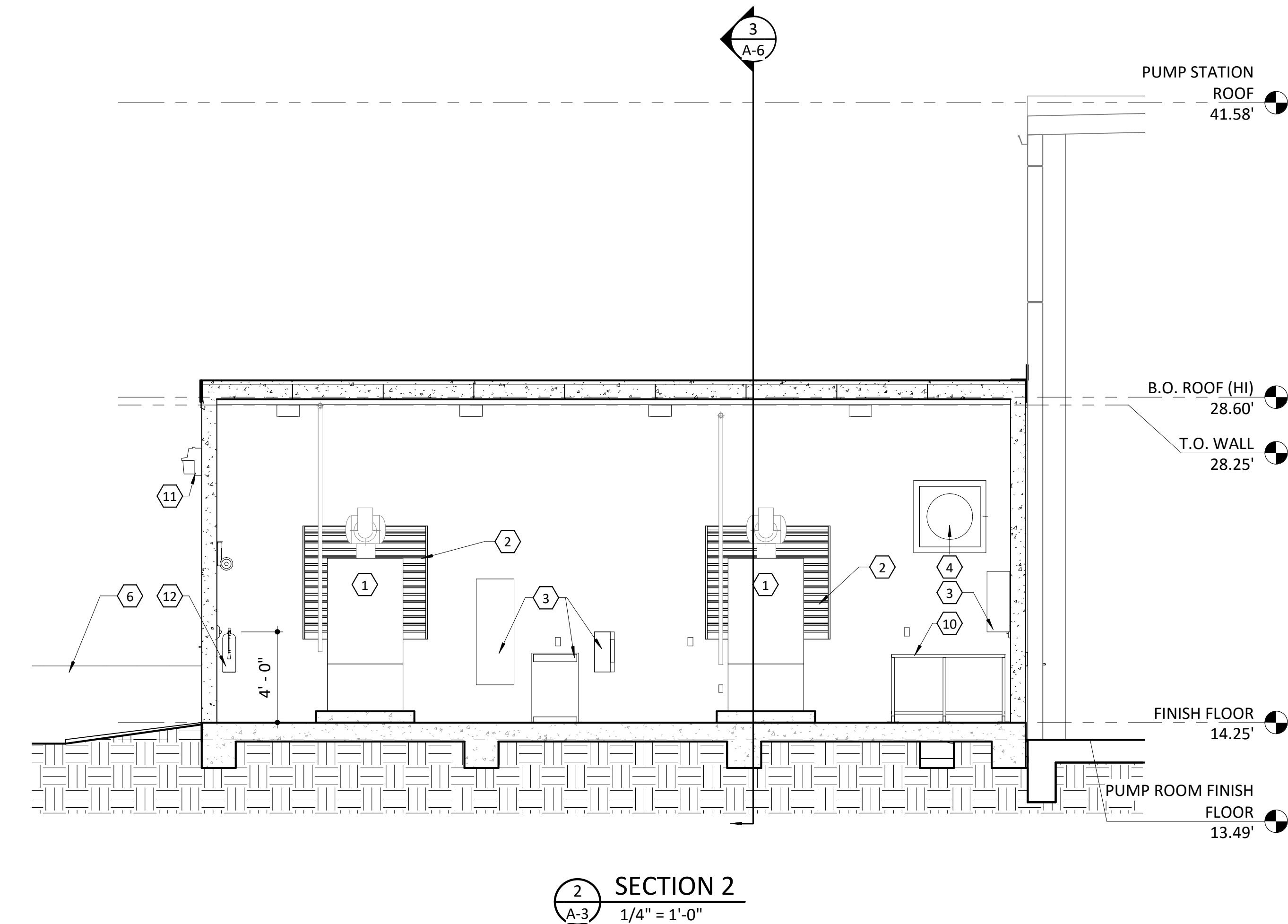




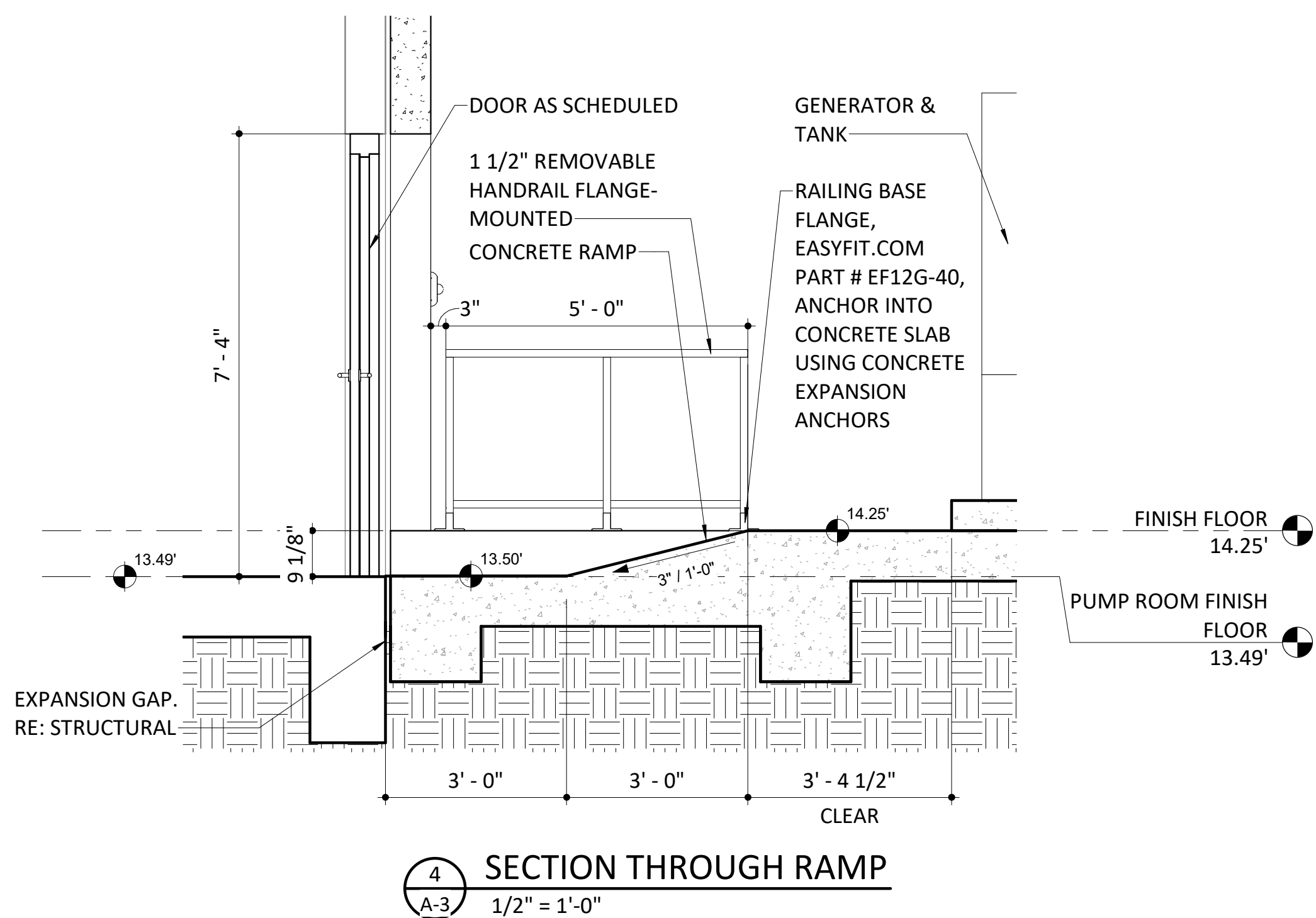
1 SECTION 1
A-3 1/4" = 1'-0"



3 SECTION 3
A-3 1/4" = 1'-0"



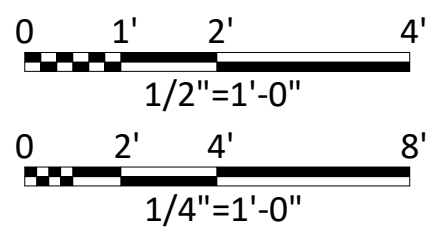
2 SECTION 2
A-3 1/4" = 1'-0"



4 SECTION THROUGH RAMP
A-3 1/2" = 1'-0"

NOTES BY SYMBOL "X"

- GENERATOR WITH UL 142 SUB BASE BELOW. RE: ELECTRICAL SHEET E-3
- LOUVER, RE: MECHANICAL SHEET M-3
- EQUIPMENT, RE: ELECTRICAL SHEET E-5
- SUPPLY FAN. RE: MECHANICAL SHEET M-3
- EXISTING EXHAUST FAN.
- EXISTING RETAINING WALL, REF: STRUCTURAL DETAIL 3/S-4
- MANUAL OVERHEAD COILING DOOR
- 5" X 5" PREFINISHED METAL GUTTER
- 4" PREFINISHED METAL DOWNSPOUT
- REMOVABLE HANDRAIL WITH FLANGE-MOUNTED RAILING BASE FLANGE. RE: EASYFIT.COM PART # EF12G-40
- LIGHT FIXTURE, RE: ELECTRICAL SHEET E-4 & E-11
- FIRE EXTINGUISHER
- FLASHING AT NEW BUILDING TO EXISTING RETAINING WALL - RE: 6/A-8
- WALL THIMBLE, RE: MECHANICAL 3/M-3



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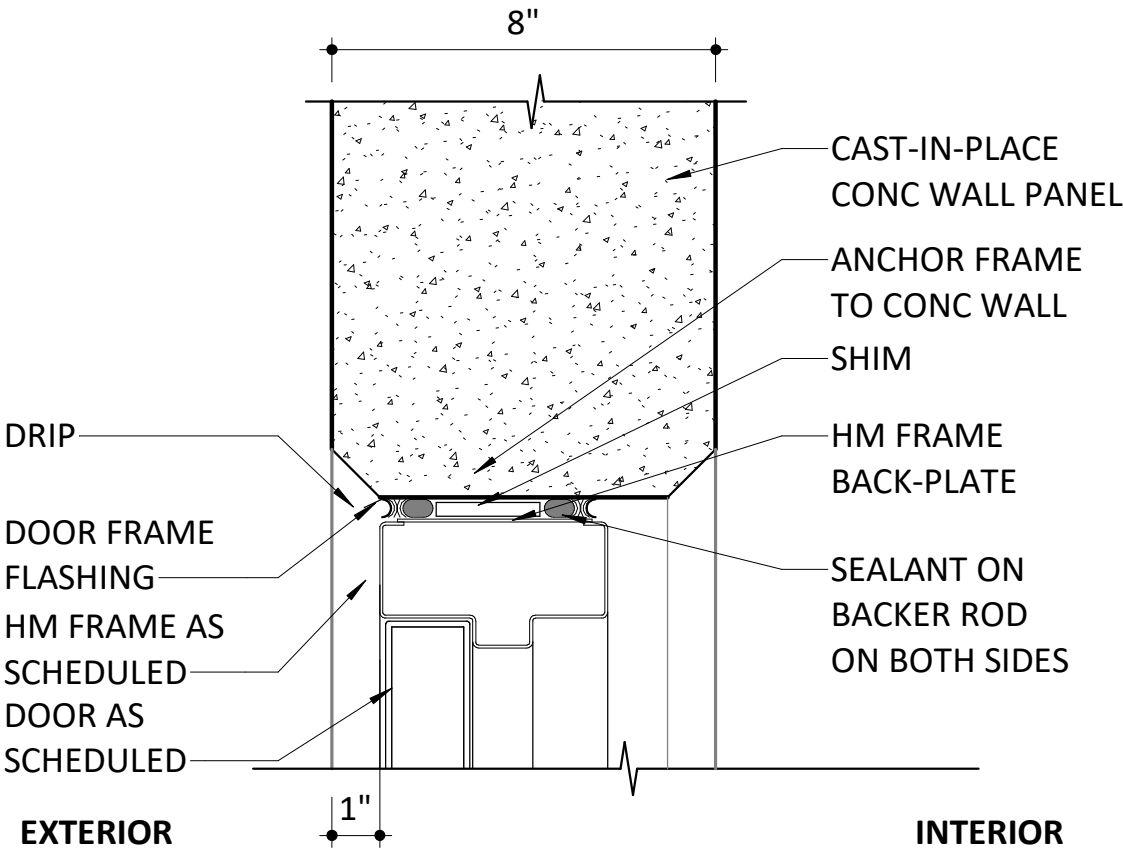
JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ARCHITECTURE

BUILDING SECTIONS

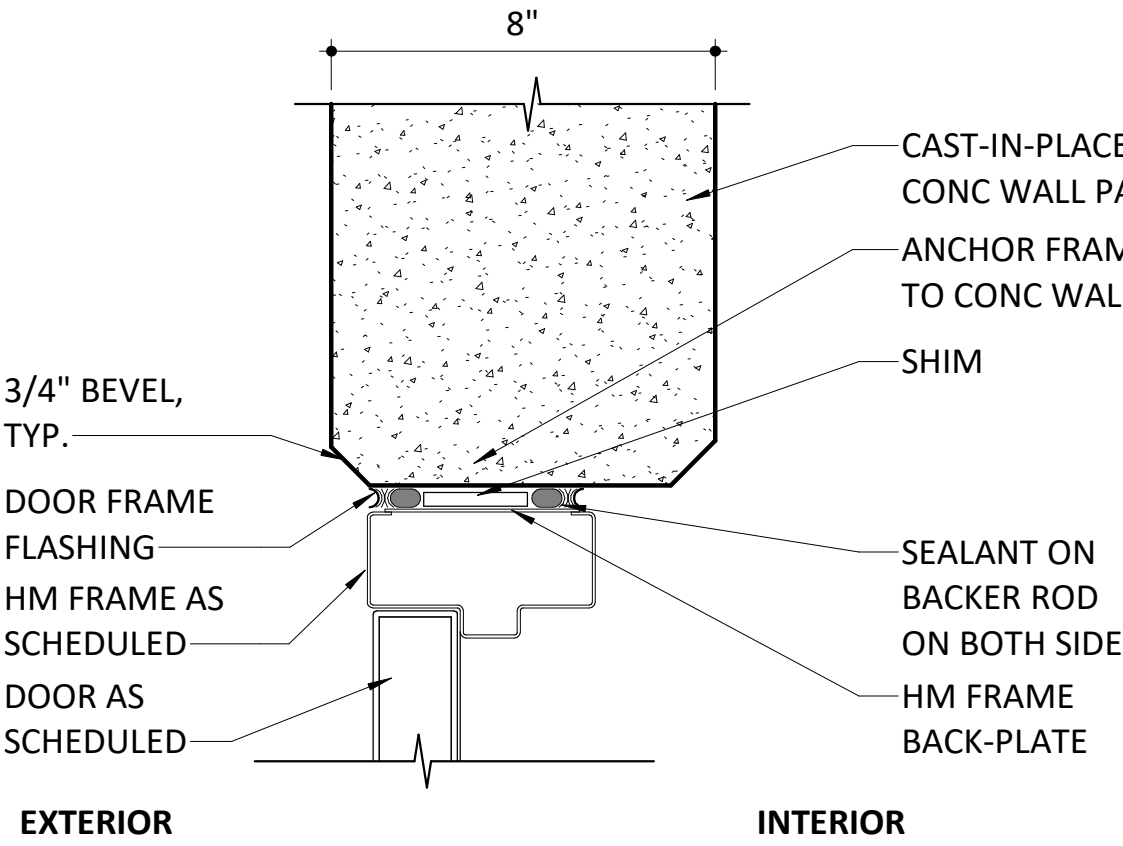
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NO.	0	ISSUE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	BY	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
SHEET	A-6	SEQ.	10										

DOOR & FRAME SCHEDULE - GEN SET BUILDING														
DOOR NO.	SIGN TYPE	DOOR DESCRIPTION				FRAME DESCRIPTION							FIRE RATING	COMMENTS
		SIZE			MAT	DOOR TYPE	MAT	FRAME TYPE	DOOR DETAILS					
		WIDTH	HEIGHT	THICKNESS					HEAD	JAMB	JAMB	SILL		
101A		10' - 0"	10' - 0"	1 1/2"	STL	C	STL	OC-1	7/A-7	8/A-7	8/A-7	9/A-7	NA	TDI WINDSTORM PRODUCT
101B		3' - 0"	7' - 0"	1 3/4"	HM	A	HM	HM-1	4/A-7	5/A-7	5/A-7	6/A-7	NA	TDI WINDSTORM PRODUCT
101C		3' - 0"	7' - 0"	1 3/4"	HM	A	HM	HM-1	4/A-7	5/A-7	5/A-7	-	NA	

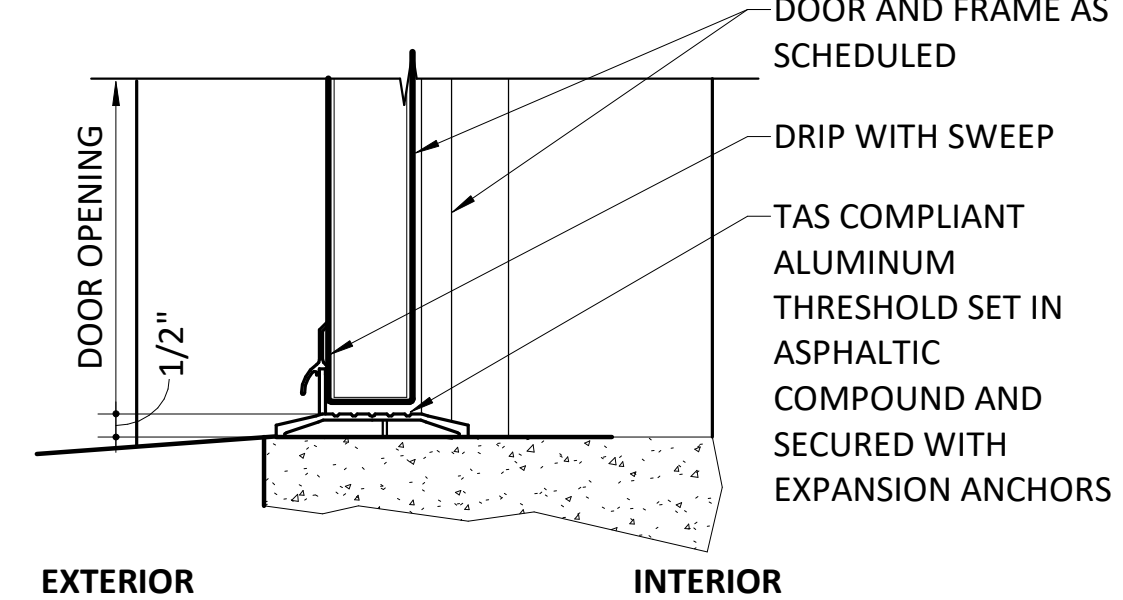
DOOR & FRAME SCHEDULE - PUMP STATION															
DOOR NO.	SIGN TYPE	DOOR DESCRIPTION					FRAME DESCRIPTION							FIRE RATING	COMMENTS
		SIZE			MAT	DOOR TYPE	MAT	FRAME TYPE	DOOR DETAILS						
		WIDTH	HEIGHT	THICKNESS					HEAD	JAMB	JAMB	SILL			
100A		3' - 0"	7' - 0"	1 3/4"	HM	A	HM	HM-1	4/A-7	5/A-7	5/A-7	6/A-7	NA	TDI WINDSTORM PRODUCT	



4 DOOR HEAD DETAIL
3" = 1'-0"



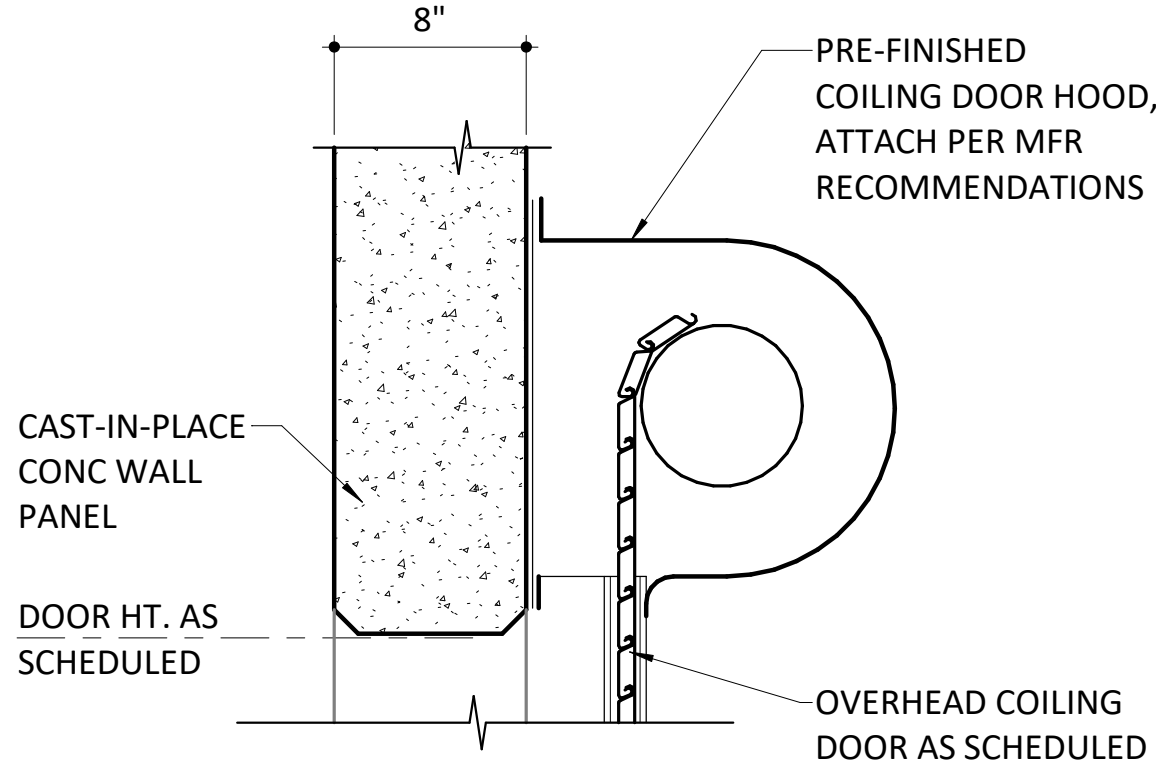
5 DOOR JAMB DETAIL
3" = 1'-0"



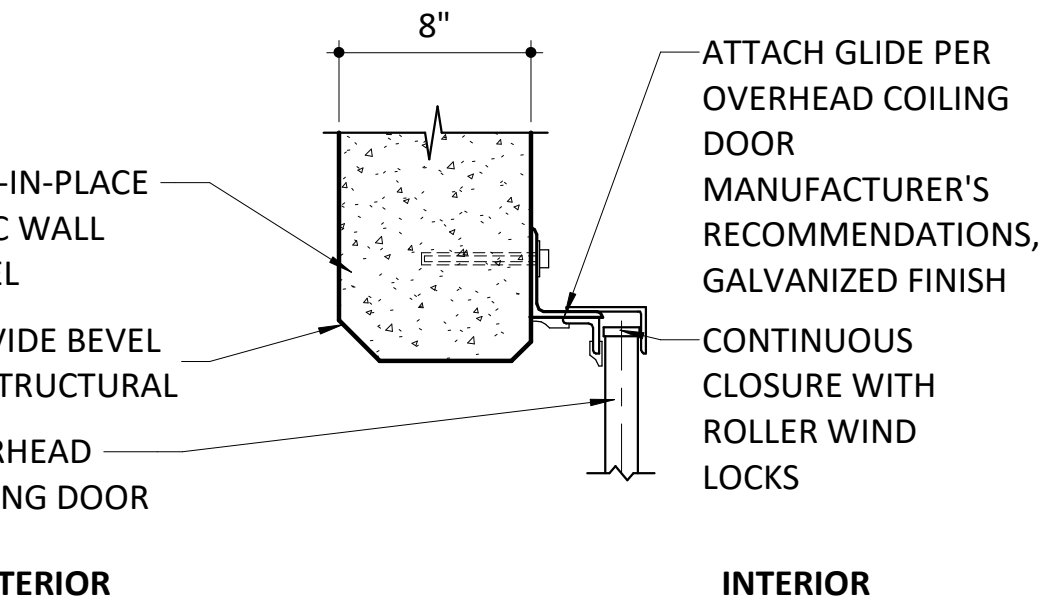
6 DOOR SILL DETAIL
3" = 1'-0"

GENERAL NOTES

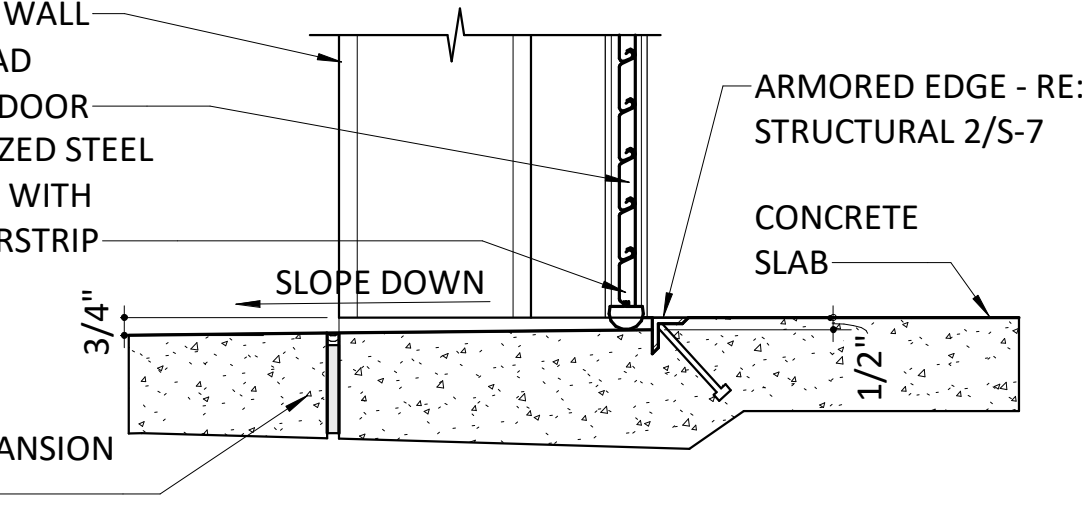
1. PANIC HARDWARE TO MATCH DOOR FRAME.
2. ALL FRAMES TO BE HOLLOW METAL U.N.O.
3. ALL MOUNTING DIMENSIONS SHALL COMPLY WITH REQUIREMENTS OF TAS (ADA). CONTRACTOR MUST VERIFY EACH SUCH DIMENSION.
4. ALL DOOR DIMENSIONS ARE CLEAR, FROM EDGE OF DOOR STOP TO EDGE OF DOOR IN 90° OPEN POSITION.



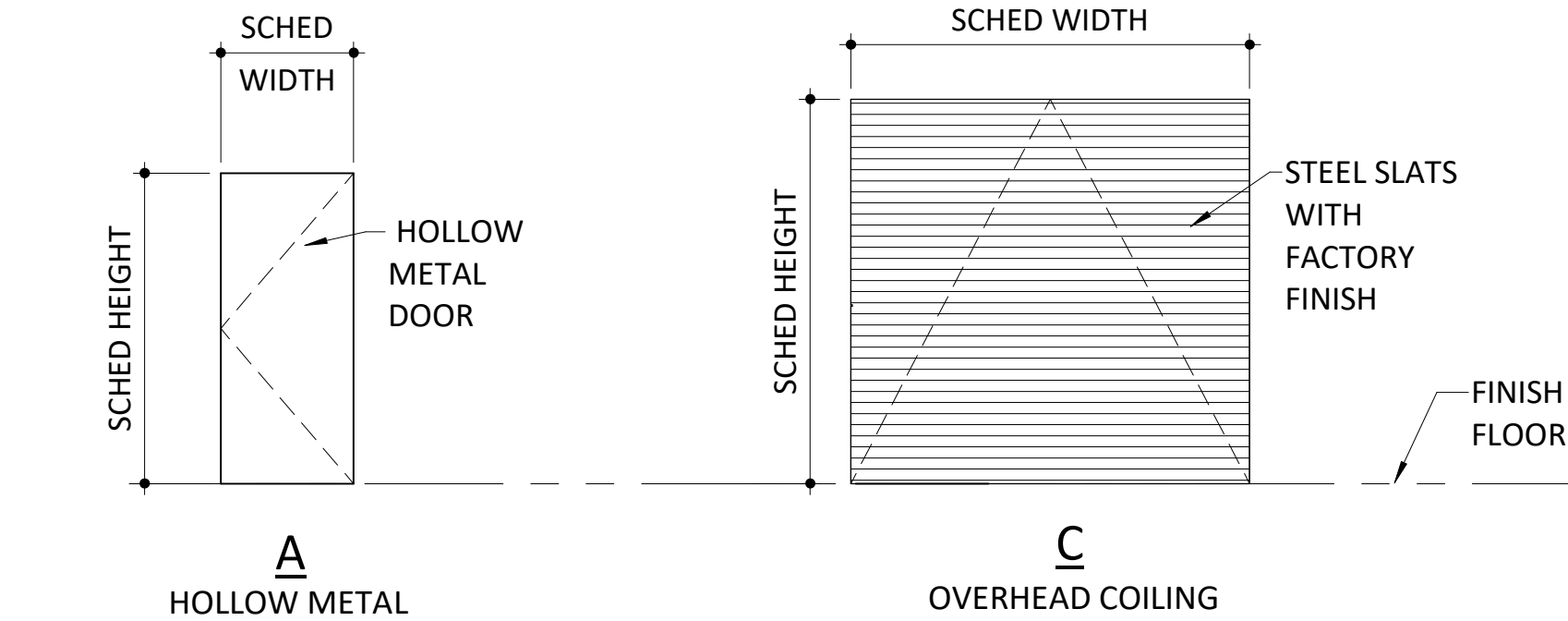
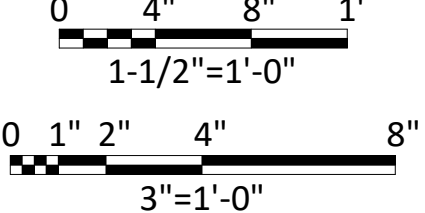
7 OH COILING DOOR HEAD DETAIL
1 1/2" = 1'-0"



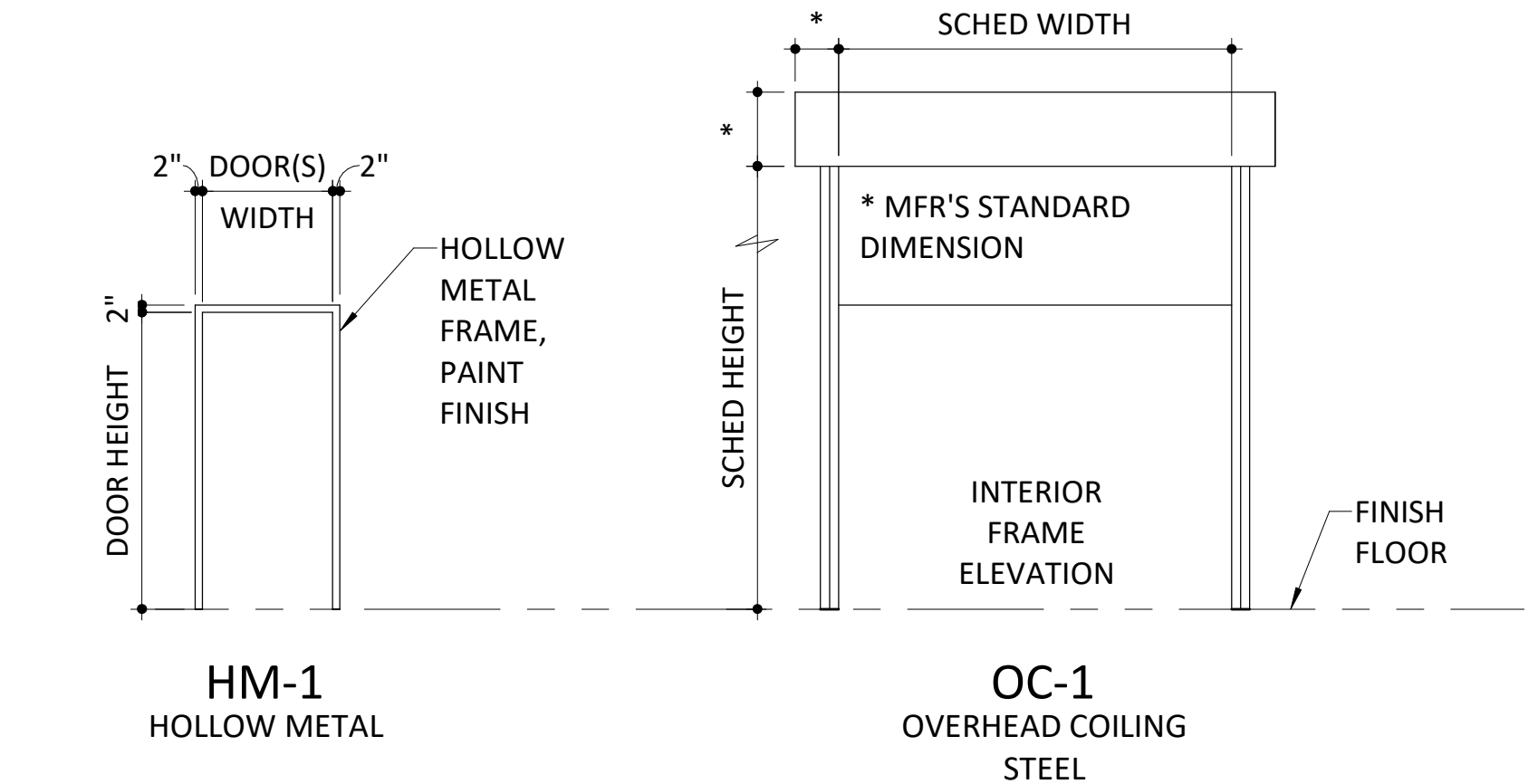
8 OH COILING DOOR JAMB DETAIL
1 1/2" = 1'-0"



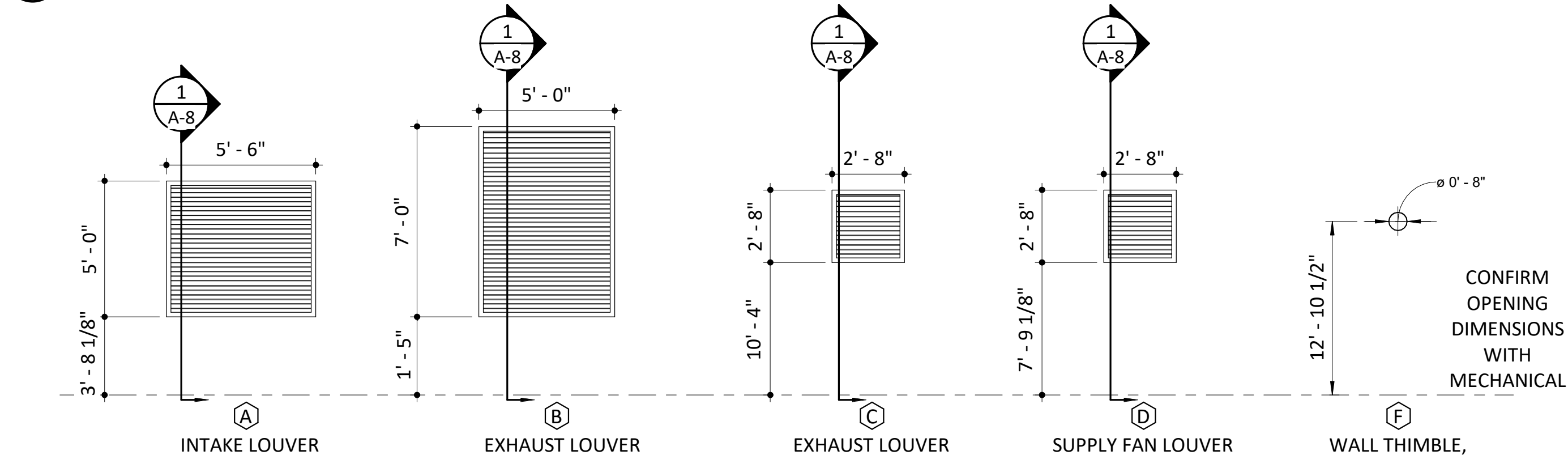
9 OH COILING DOOR SILL DETAIL
1 1/2" = 1'-0"



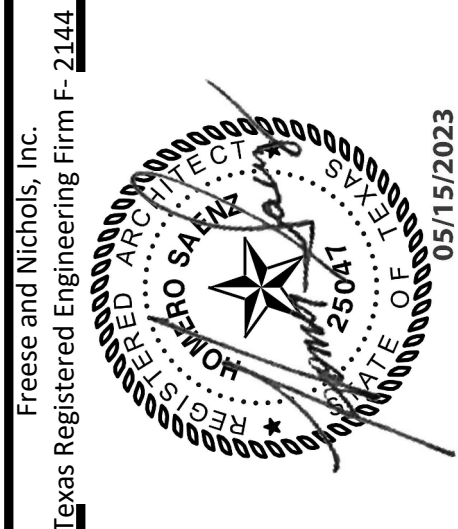
1 DOOR TYPES
1/4" = 1'-0"



2 FRAME TYPES
1/4" = 1'-0"



3 WINDOW & OPENING TYPES
NTS

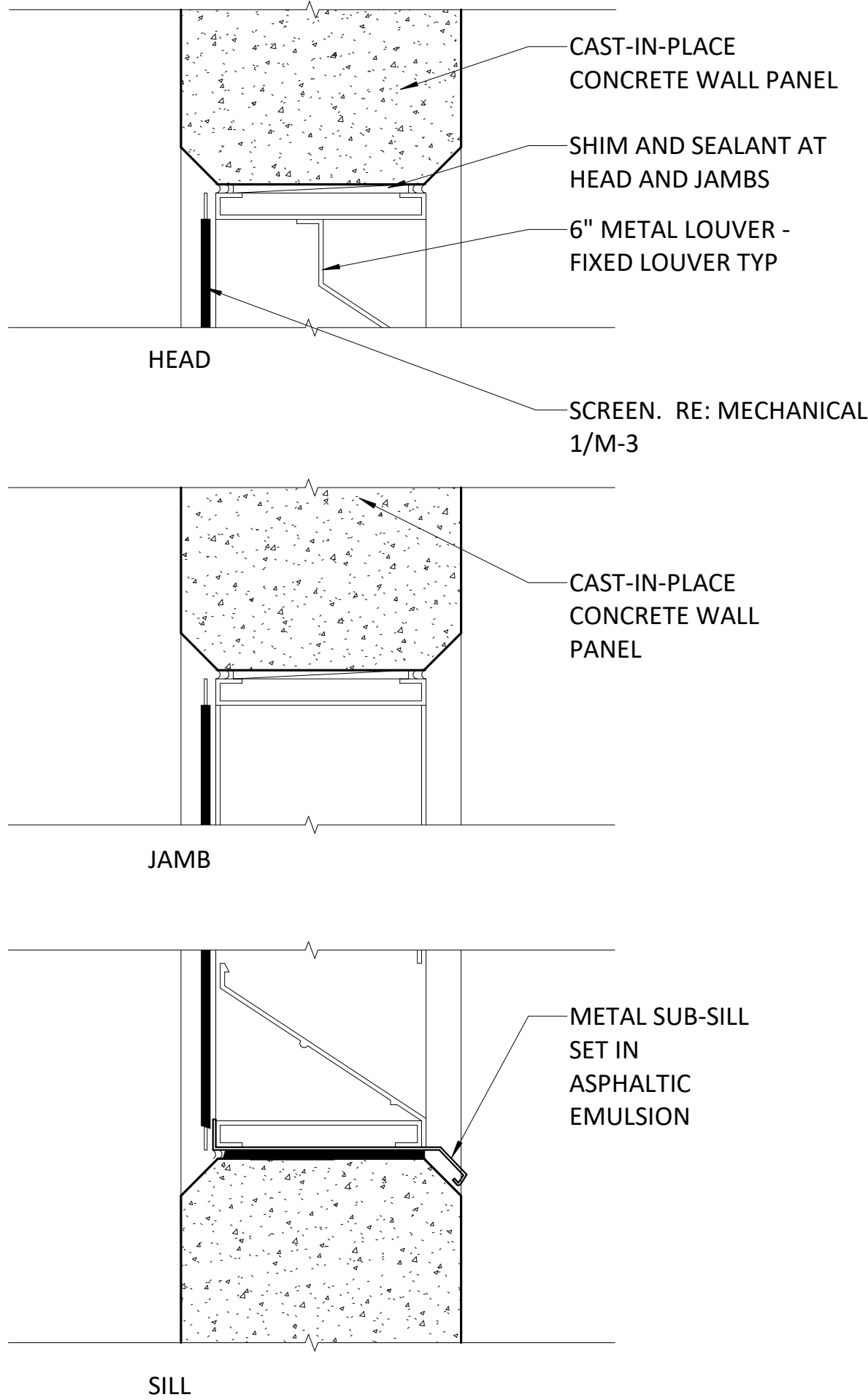


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GENERATORS AND BUILDING**
ARCHITECTURE

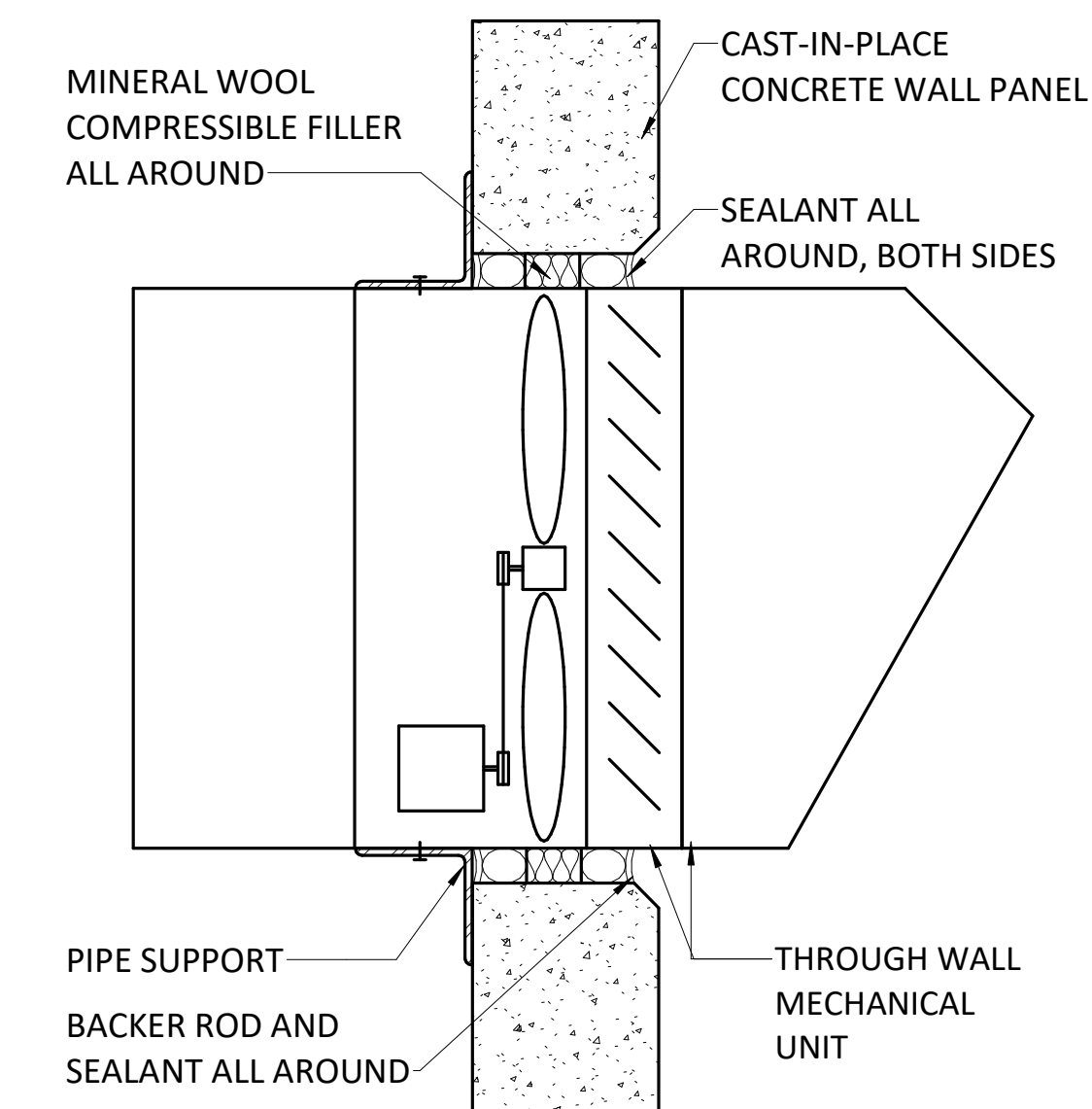
DOOR & FRAME - LEGEND

F&N JOB NO.	JFF22292	DATE	05/15/2023	DESIGNED	HS	DRAWN	KM	REVIEWED	KM	CHECKED	PJ	FILE NAME	AR-JFF22292-R21.RVT
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LOUVER ASSEMBLY & FASTENERS SHALL BE WINDSTORM & MISSILE RESISTANT PER TDI REQUIREMENTS. RE: HVAC FOR MORE INFORMATION.

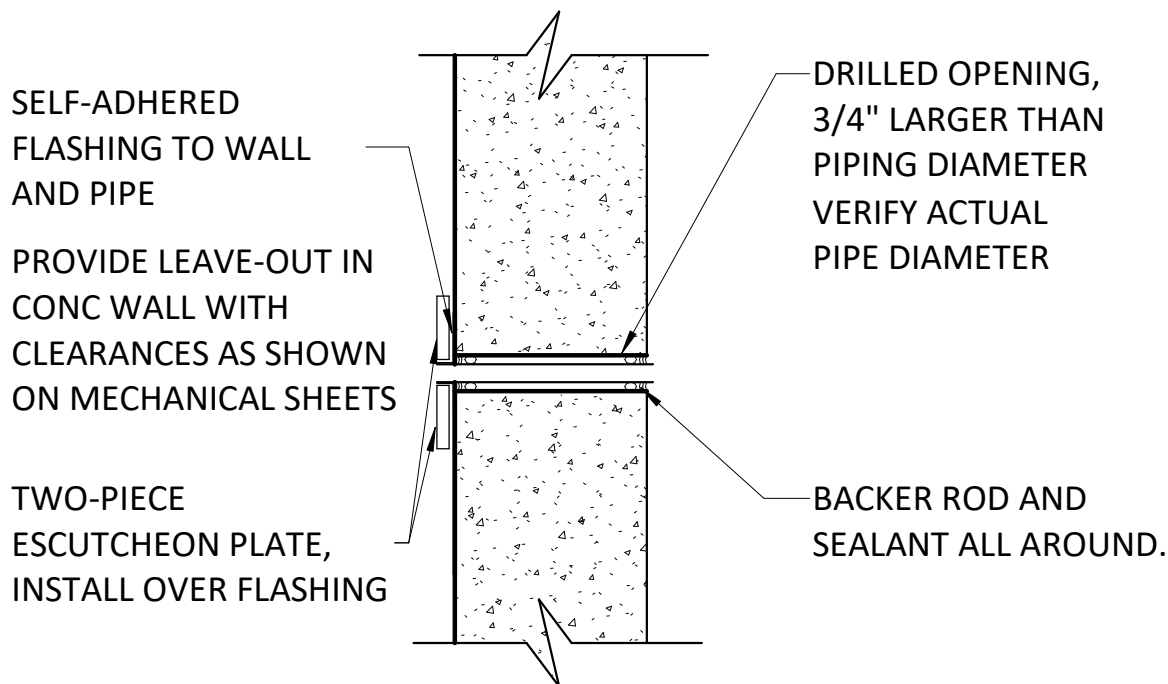
1 LOUVER OPENING THROUGH WALL
3" = 1'-0"



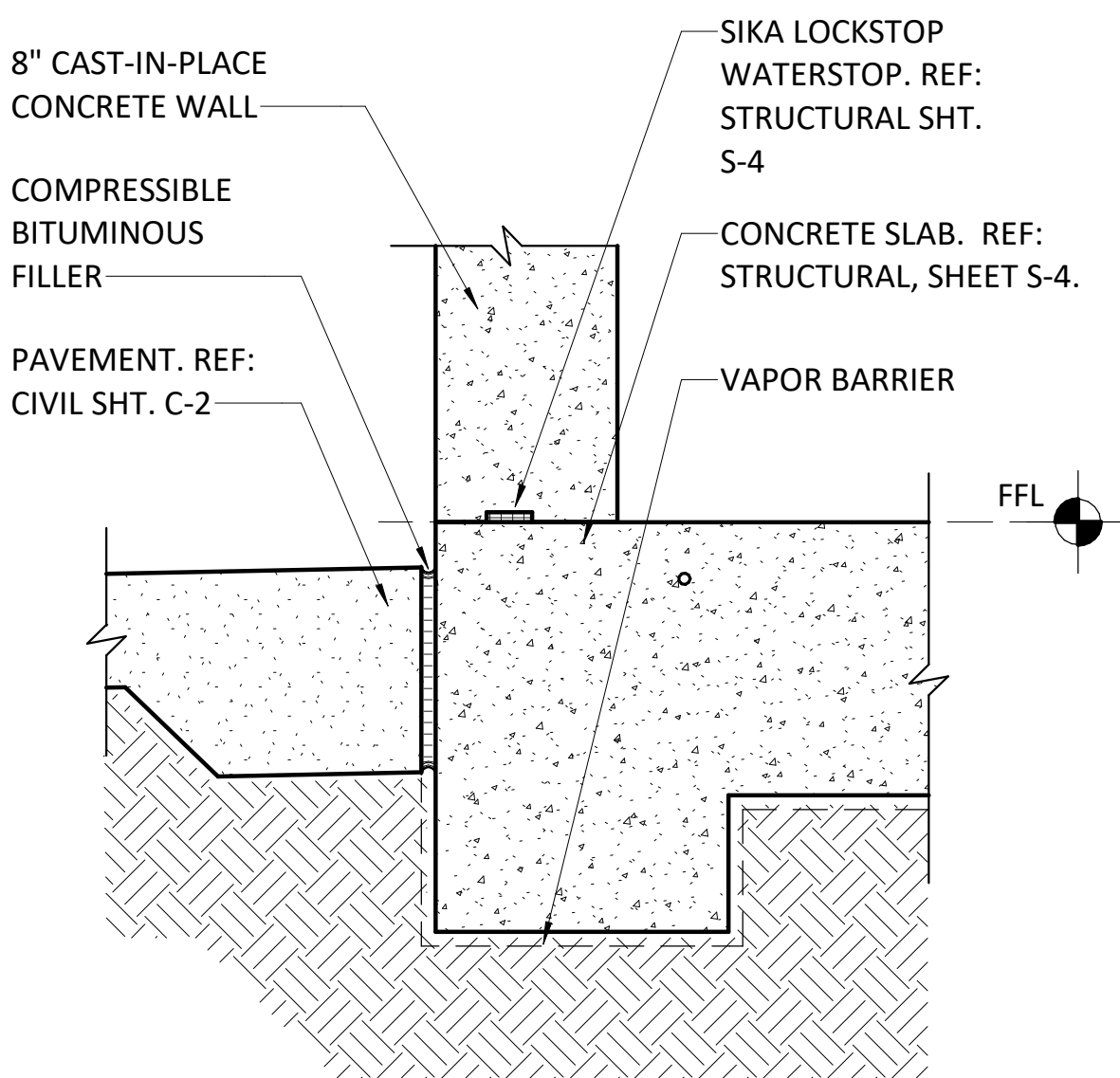
2 MECHANICAL FAN THROUGH WALL
1 1/2" = 1'-0"

EXTERIOR

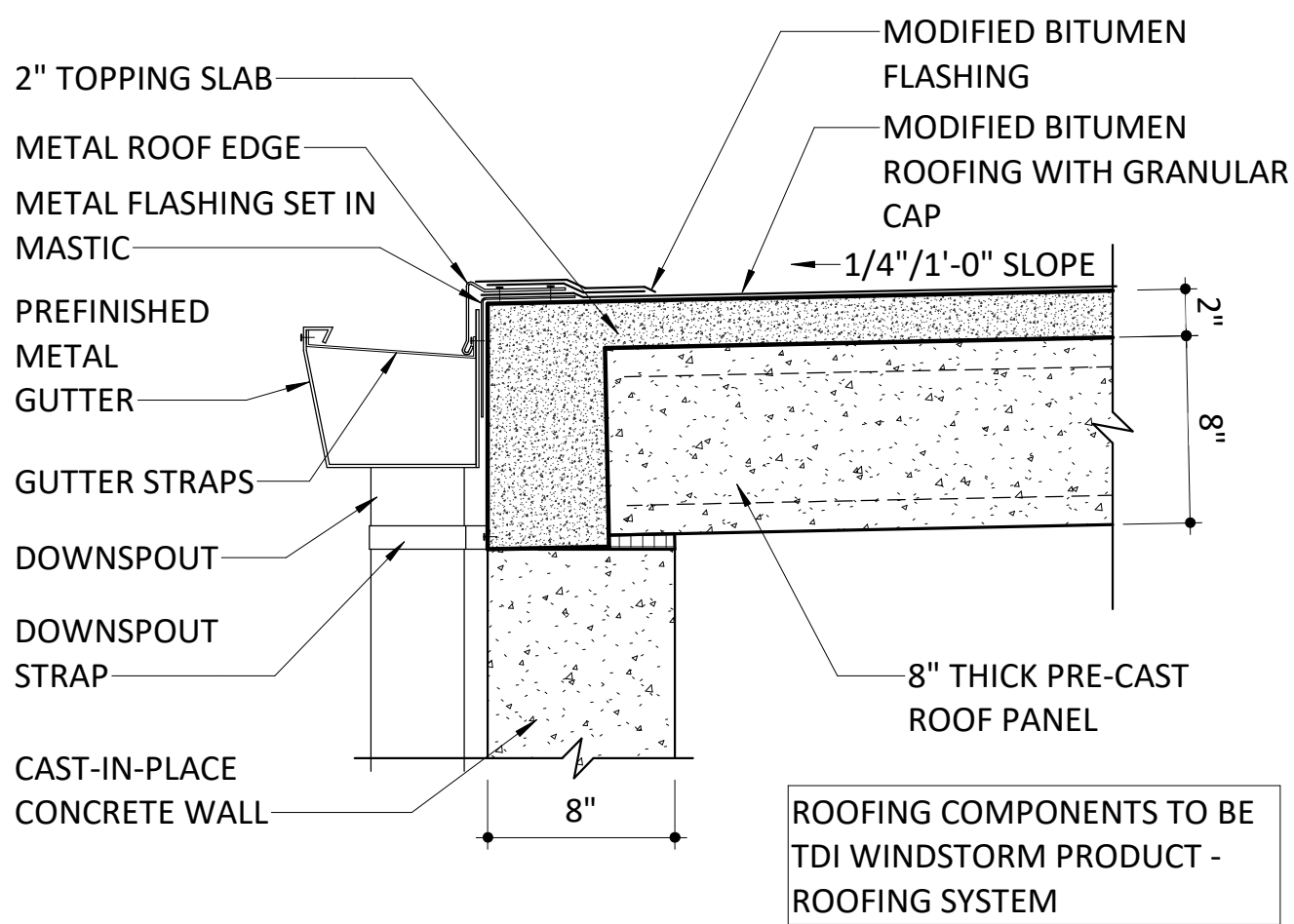
INTERIOR



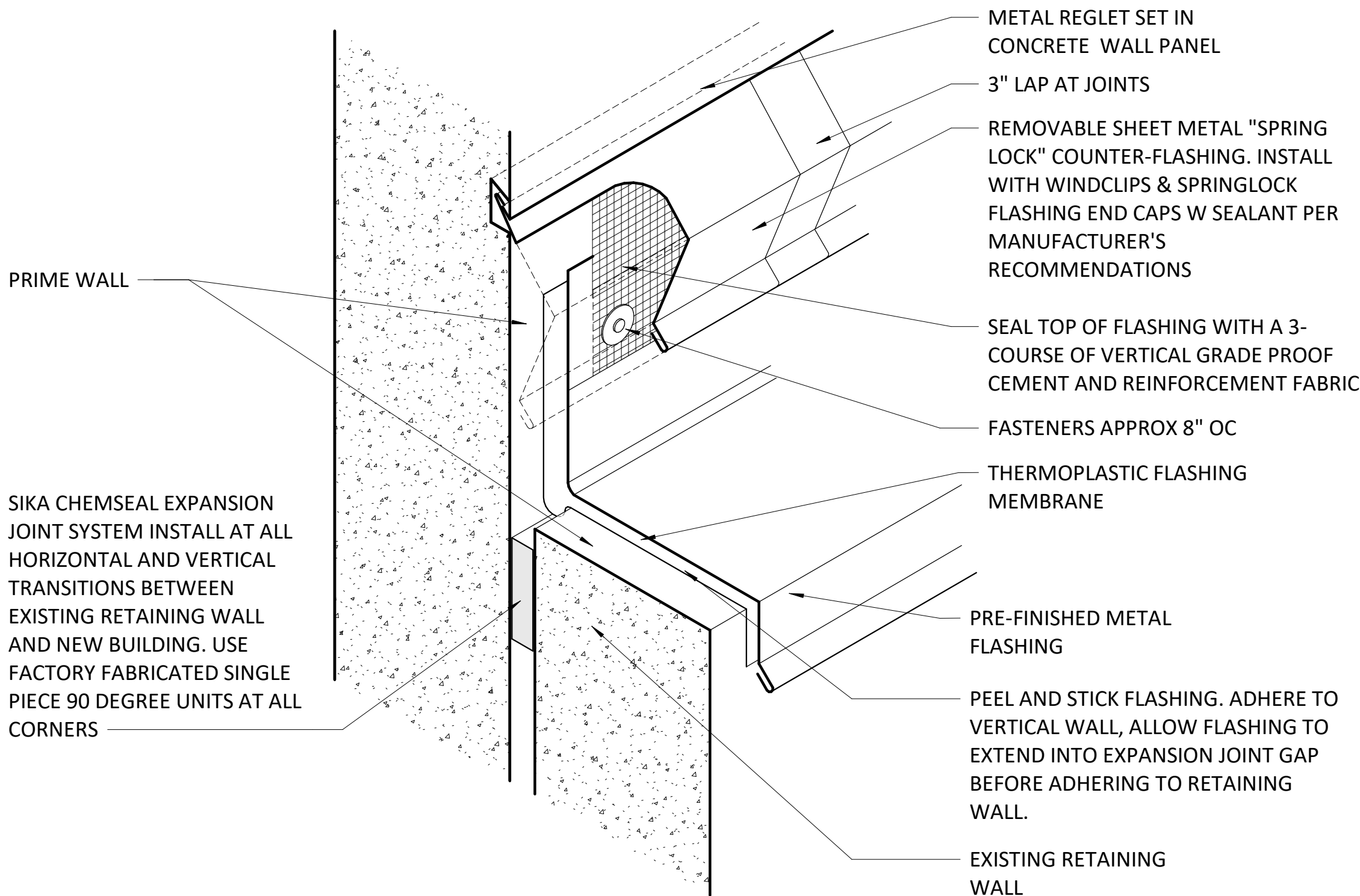
3 PIPING PENETRATION DETAIL
1 1/2" = 1'-0"



4 WALL BASE DETAIL
1 1/2" = 1'-0"



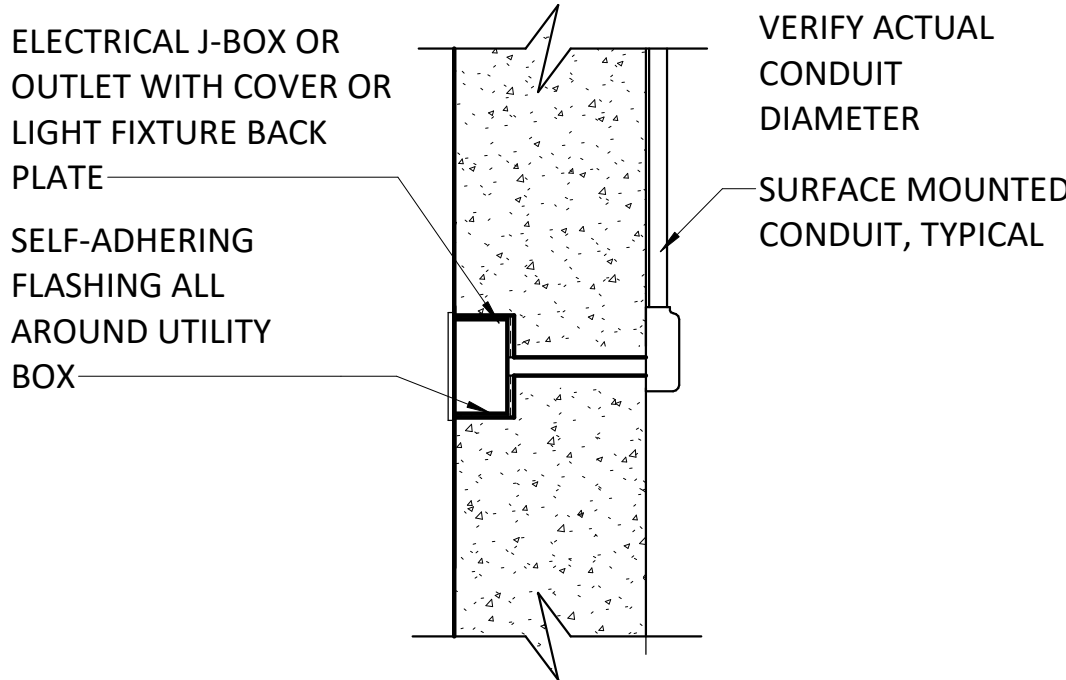
5 GUTTER DETAIL
1 1/2" = 1'-0"



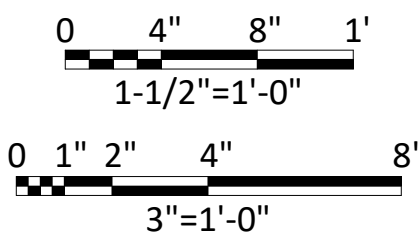
6 FLASHING AT EXISTING RETAINING WALL
3" = 1'-0"

EXTERIOR

INTERIOR



7 SMALL PIPE WALL PENETRATION DETAIL
1 1/2" = 1'-0"



Freese and Nichols, Inc. 2144

Tg

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DETAILS

F&N JOB NO.		JFF22292	DATE		05/15/2023	DESIGNED	HS	DRAWN	KM	REVIEWED	KM	CHECKED	PJ	FILE NAME	AR-JFF22292-R21.RVT
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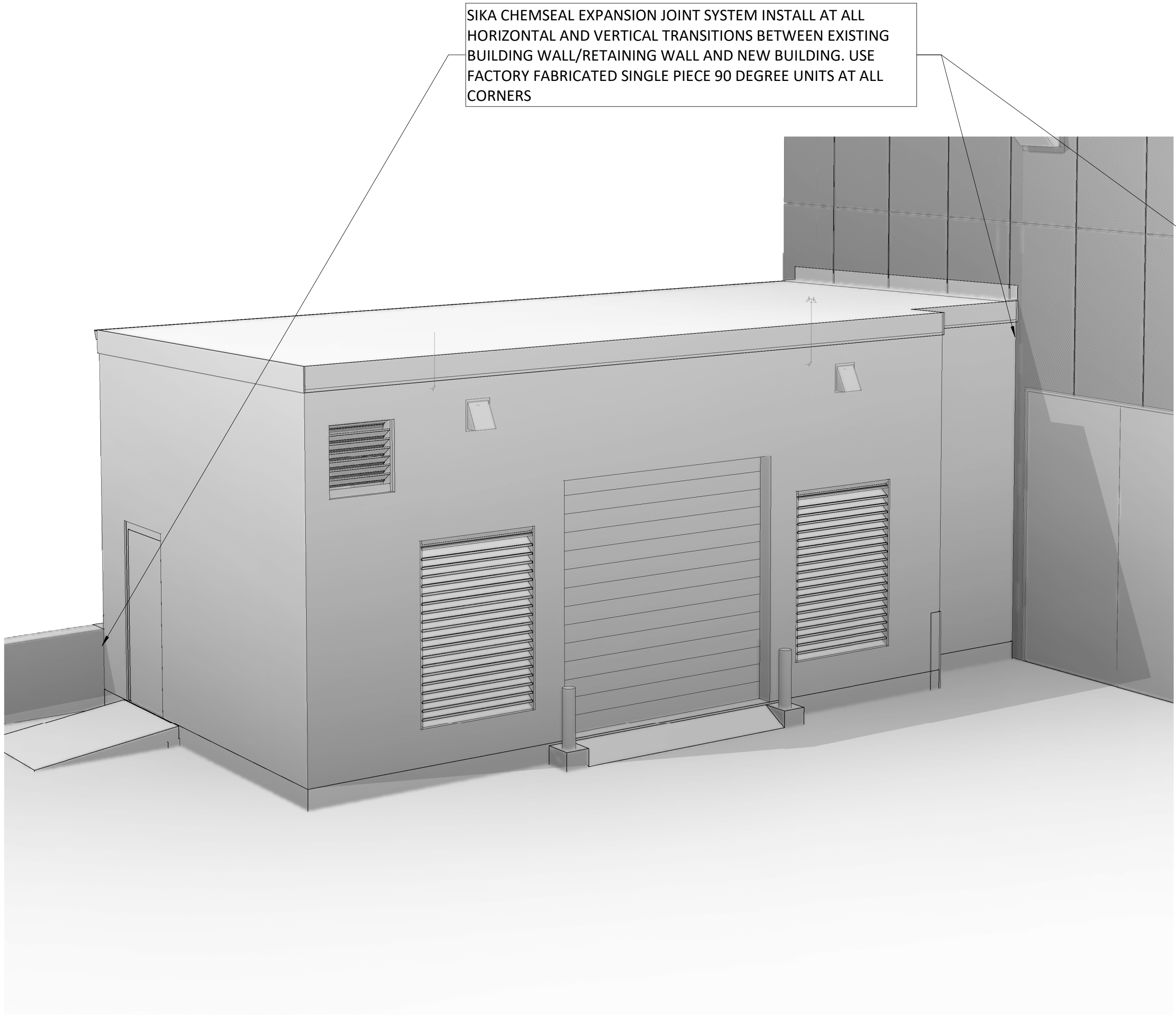
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A-8

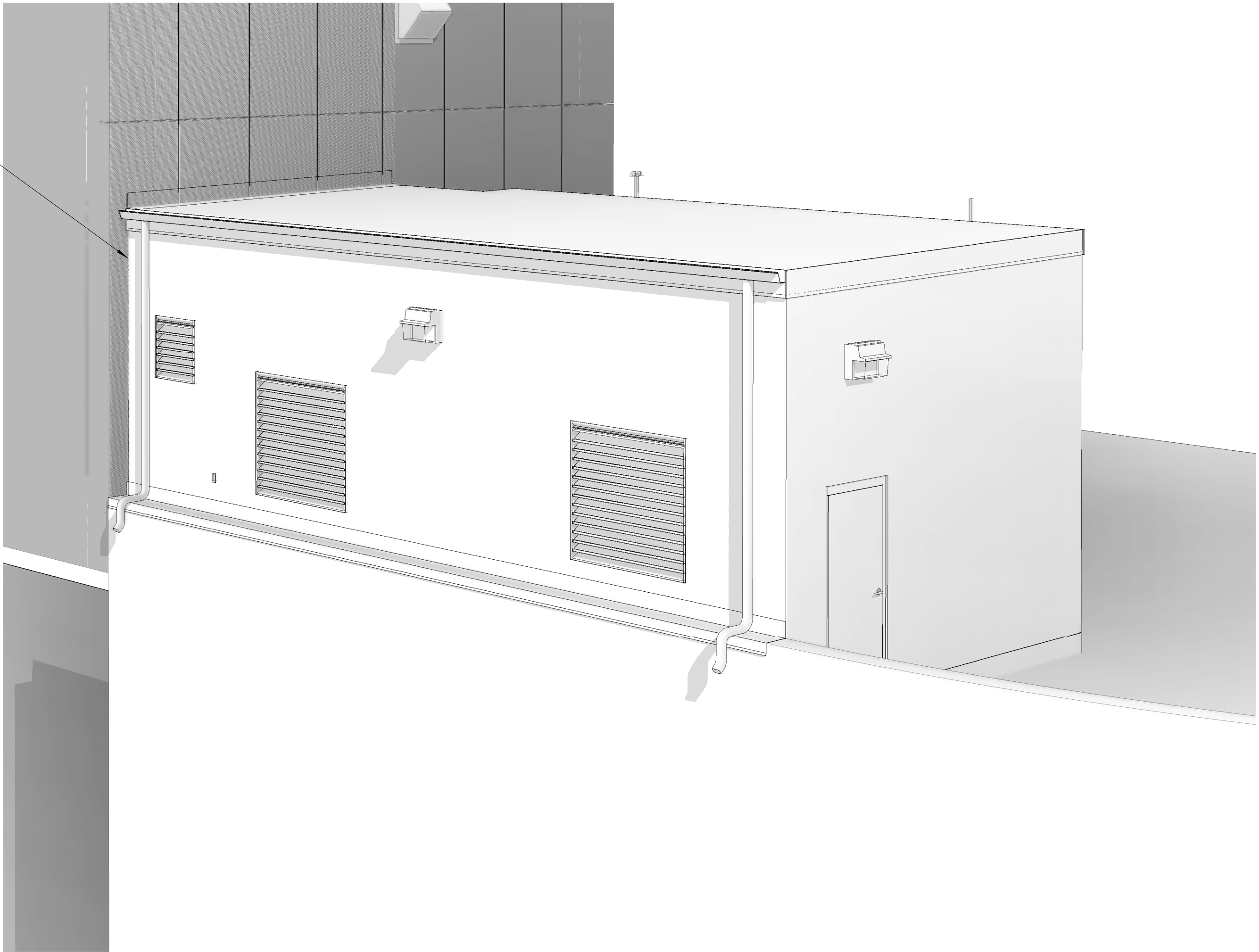
SEQ.

12

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1 VIEW LOOKING SOUTHEAST



2 VIEW LOOKING NORTHWEST

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ISOMETRIC VIEWS

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NO.	0	ISSUE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
VERIFY SCALE	1		

SHEET

A-9

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SEQ. 13

1. DESIGN IS IN ACCORDANCE WITH 2015 INTERNATIONAL BUILDING CODE, LOCAL AMENDMENTS, AND APPLICABLE CODE REFERENCED STANDARDS.
2. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH APPLICABLE OSHA, STATE, AND LOCAL REGULATIONS. THIS DESIGN IS NOT INTENDED TO CONFLICT WITH SAFETY OR APPLICABLE REGULATIONS OR TO RELIEVE THE CONTRACTOR OF COMPLIANCE WITH THESE REQUIREMENTS. IN CASE OF CONFLICT WITH SAFETY OR APPLICABLE REGULATIONS, CONTACT THE ENGINEER FOR GUIDANCE BEFORE PROCEEDING WITH FABRICATION OR CONSTRUCTION.
3. PRIOR TO FABRICATION OR CONSTRUCTION:
 - A. REVIEW OTHER DISCIPLINE DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, EQUIPMENT REQUIREMENTS, ETCETERA, WHICH ARE NOT SHOWN ON STRUCTURAL DRAWINGS.
 - B. VERIFY DIMENSIONS AND LOCATIONS OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, EQUIPMENT REQUIREMENTS, ETCETERA.
 - C. FIELD VERIFY ALL EXISTING CONDITIONS, INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES.
 - D. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN DISCIPLINES, CONSTRUCTABILITY ISSUES, OR EXISTING CONDITIONS.
4. REMOVE ALL ABANDONED FOUNDATIONS, UTILITIES, PIPELINES, ETCETERA THAT INTERFERE WITH PROPOSED CONSTRUCTION.
5. PROVIDE EXCAVATION SHORING TO PROTECT AND SUPPORT FOUNDATION SOILS UNDER EXISTING STRUCTURES.
6. THE STRUCTURE IS DESIGNED FOR STABILITY IN THE FINAL CONDITION ONLY. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY DURING CONSTRUCTION.
7. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.
8. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.

1. SUPERIMPOSED DEAD LOADS (NOT INCLUDING STRUCTURAL FRAMING SELF-WEIGHT):
 - A. ROOF (COLLATERAL LOAD): 20 PSF
 - B. FLOORS: 8 PSF
2. FLOOR LIVE LOADS:
 - A. MECH, ELECT, AND EQUIP ROOMS: 150 PSF
3. ROOF LIVE LOAD:
 - A. ROOF: 20 PSF
4. GROUND SNOW LOAD: $P_g = 5$ PSF
5. LATERAL LOADS:
 - A. RISK CATEGORY IV
 - B. WIND LOAD:
 1. BASIC WIND SPEED: $V = 158$ MPH
 2. WIND EXPOSURE: C
 3. INTERNAL PRESSURE COEFFICIENT: $GC_{pi} = +/-0.18$
 4. COMPONENTS AND CLADDING PRESSURES PER ASCE-7, FOR VARIOUS ZONES USING AN EFFECTIVE WIND AREA OF 10 FT^2 ARE AS FOLLOWS:

C. SEISMIC LOAD:

1. SEISMIC IMPORTANCE FACTOR: $I = 1.5$
2. MAPPED SPECTRAL ACCELERATIONS: $S_s = 0.075$, $S_1 = 0.044$
3. SITE CLASS: C
4. SPECTRAL RESPONSE COEFFICIENT: $SD_s = 0.065$, $SD_1 = 0.044$
5. SEISMIC DESIGN CATEGORY: A
6. BASIC SEISMIC FORCE-RESISTING SYSTEM:
 1. ORDINARY REINFORCED CONCRETE SHEAR WALLS
7. DESIGN BASE SHEAR $V = 0.01W$

1. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT "GEOTECHNICAL ENGINEERING REPORT; EMERGENCY GENERATOR BUILDING CRANE BAYOU PUMPING STATION; JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7; PORT ARTHUR, TEXAS", DATED MAY 13, 2022, PREPARED BY TOLUNAY-WONG ENGINEERS, INC. (REPORT NO. 129545). THE GEOTECHNICAL REPORT IS NOT PART OF THE CONTRACT DOCUMENTS.
2. EXCAVATION DESIGN AND SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. ANY SLOPES SHOWN ARE A MAXIMUM AND SHALL BE DECREASED AS REQUIRED FOR SAFETY OR TO MEET OSHA REQUIREMENTS.
3. AT THE LOCATIONS WHERE UTILITY TRENCHES CROSS THE BUILDING LINE, 5'-0" OF EACH TRENCH CENTERED ON THE BUILDING LINE SHALL BE BACKFILLED AS FOLLOWS: OUTSIDE THE BUILDING LINE BACKFILL ABOVE THE UTILITY WITH A COMPACTED, LOW-PERMEABILITY CLAY; INSIDE THE BUILDING LINE BACKFILL ABOVE THE UTILITY WITH SPECIFIED STRUCTURAL FILL; EMBEDMENT MATERIAL BELOW AND AROUND THE UTILITY SHALL BE FLOWABLE FILL.
4. BACKFILL SHALL BE ON-SITE NATIVE SOILS.
5. EXTERIOR SLABS MUST SLOPE AWAY FROM THE STRUCTURE A MINIMUM OF 1/4" PER FOOT UNLESS NOTED OTHERWISE. GRADING AROUND STRUCTURES SHALL BE SUCH AS TO DRAIN ALL WATER AWAY FROM BUILDINGS.
6. ALL FOUNDATIONS SHALL BEAR ON SOUND, UNDISTURBED, LEVEL EXCAVATIONS. REMOVE ANY AND ALL LOOSE DEBRIS FROM EXPOSED BEARING SURFACE. SUITABLE BEARING MATERIAL SHALL BE VERIFIED BY A GEOTECHNICAL PROFESSIONAL ENGINEER
7. MOISTURE CONTENT IN FOOTING EXCAVATIONS SHALL BE MAINTAINED UNTIL FOOTING IS PLACED. FOOTINGS SHALL BE PLACED AS SOON AS PRACTICAL AFTER EXCAVATIONS ARE COMPLETED.

1. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI.
2. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60, DEFORMED.
3. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE AS LISTED BELOW, UNLESS NOTED OTHERWISE.
 - A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
 - B. EXPOSED TO EARTH, WATER, OR WEATHER:
 1. SLABS
 1. #6 AND LARGER: 2-1/2"
 2. #5 AND SMALLER: 2"
 2. BEAMS AND COLUMNS: 2-1/2"
 3. WALLS
 1. ALL OTHERS: 2"
 - C. FORMED CONCRETE SURFACES NOT PERMANENTLY EXPOSED TO WEATHER NOR IN CONTACT WITH GROUND:
 1. BEAMS AND COLUMNS: 2"
 2. SLABS AND WALLS: 1-1/2"
4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS ON SLABS UNLESS NOTED OTHERWISE.
5. ALL CONSTRUCTION JOINTS (CXJ) SHALL BE THOROUGHLY CLEANED AND PURPOSELY ROUGHENED TO 1/4" PRIOR TO PLACING ADJACENT CONCRETE.
6. PENETRATIONS OTHER THAN SHOWN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
7. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED DUE TO THE LIMITED EXTENT OF THE ADJACENT CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.
9. CONDUITS AND PIPING EMBEDDED IN CONCRETE SHALL BE SPACED A MINIMUM OF FOUR DIAMETERS AND THE OUTSIDE DIAMETER SHALL BE LESS THAN 30% OF THE MEMBER THICKNESS PLACED BETWEEN LAYERS OF REINFORCING.
10. UNLESS NOTED OTHERWISE, HOOKS SHOWN ON DRAWINGS SHALL BE ASSUMED TO BE STANDARD HOOKS PER ACI 318.
11. ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP 48 BAR DIAMETERS OF SMALLER BARS LAPPED, UNLESS NOTED OTHERWISE. ALL REBAR EMBEDMENT LENGTHS SHALL BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII), BUT NOT LESS THAN THAT INDICATED BELOW.
2. INSTRUCTIONS BELOW ARE NOT INTENDED TO CONFLICT WITH APPLICABLE SAFETY OR OSHA REGULATIONS OR TO RELIEVE CONTRACTOR OF COMPLIANCE WITH ALL APPLICABLE SAFETY AND OSHA REGULATIONS. IN CASE OF CONFLICT WITH SAFETY OR OSHA REGULATIONS, CONTACT THE ENGINEER FOR GUIDANCE BEFORE PROCEEDING WITH FABRICATION OR CONSTRUCTION.
3. ADHESIVE ANCHORS SHALL ONLY BE INSTALLED BY CONSTRUCTION PERSONNEL CERTIFIED UNDER ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM OR APPROVED EQUAL. SUBMIT CERTIFICATIONS AS RECORD DATA PRIOR TO ANCHOR INSTALLATION.
4. ANCHOR DIAMETER AND EMBEDMENT SHALL BE AS INDICATED.
5. HOLES SHALL BE DRILLED USING ROTARY HAMMER DRILLS WITH ANSI MATCHED TOLERANCE CARBIDE-TIPPED DRILL BITS. DRILL BIT DIAMETER SHALL MATCH DIAMETER RECOMMENDED BY MANUFACTURER. DRILL HOLES USING HILTI SAFESET TECHNOLOGY OR APPROVED EQUAL.
6. USE CARE AND CAUTION WHEN INSTALLING TO AVOID CUTTING OR DAMAGING EXISTING REINFORCING STEEL. FIELD VERIFY EXISTING REINFORCING LOCATIONS PRIOR TO FABRICATION OR CONSTRUCTION, AND THEN COORDINATE REBAR LOCATIONS WITH SHOP DRAWINGS.
7. ADHESIVE ANCHORS SHALL BE DEFORMED REINFORCING BARS (ASTM A615, GR 60) OR GALVANIZED THREADED ROD (ASTM F1554 GRADE 36) UNLESS NOTED OTHERWISE, AND AS NOTED BELOW:
 - A. ADHESIVE SHALL BE HILTI HIT-RE 500 V3 OR AN APPROVED EQUAL. SUBMIT PUBLISHED COMPARISONS BETWEEN EACH SPECIFIED AND EACH ALTERNATE ANCHOR.
 - B. PRIOR TO INSTALLATION: ALL DEFORMED BARS AND THREADED ROD SHALL BE CLEAN, FREE OF OIL, GREASE, OR OTHER RESIDUE, IN ACCORDANCE WITH MPII.
 - C. VERIFY HOLE IS CLEAR OF DUST AND DEBRIS.
 - D. INSTALL ADHESIVE STARTING AT BACK OF HOLE. AS REQUIRED BY MPII, USE MANUFACTURER SUPPLIED PISTON PLUG INJECTION SYSTEM FOR ALL HORIZONTAL AND VERTICALLY INCLINED HOLES.
 - E. INSTALL ANCHOR BY SIMULTANEOUSLY TWISTING AND INSERTING INTO HOLE.
 - F. ALLOW ANCHOR TO SET REQUIRED TIME. DO NOT DISTURB.
 - G. TIGHTEN NUT. DO NOT OVER-TORQUE.
 - H. MINIMUM CONCRETE AGE AT TIME OF INSTALLATION: 28 DAYS
 - I. CONCRETE TEMPERATURE RANGE AT TIME OF INSTALLATION SHALL BE: 41DEG F TO 104DEG F.
 - J. CONCRETE MOISTURE CONDITION AT TIME OF INSTALLATION: DRY.

1. 8" PRECAST CONCRETE HOLLOWCORE MEMBERS SHALL SPAN FROM CONCRETE BEARING WALLS AS INDICATED IN DRAWINGS
2. PRECAST CONCRETE HOLLOWCORE SLAB MANUFACTURER SHALL DETERMINE FINAL ROOF SLAB LAYOUT AND SUBMIT FOR APPROVAL.
3. CONTRACTOR SHALL AVOID PRESTRESS TENDONS IN PRECAST CONCRETE HOLLOW CORE SLABS WHEN DRILLING FOR ANCHOR PLACEMENT. CONTRACTOR SHALL COORDINATE ANCHOR LOCATIONS WITH PRECAST CONCRETE HOLLOWCORE SLAB MANUFACTURER. THE PRECAST MANUFACTURER MAY PROPOSE ALTERNATE ANCHOR DETAIL FOR APPROVAL.
4. PRECAST CONCRETE HOLLOW CORE SLABS SHALL BE NORMAL WEIGHT CONCRETE AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI.
5. A STANDARD FINISH SHALL BE PROVIDED ON THE HOLLOW CORE ROOF SLABS.

STRUCTURAL MODIFICATIONS

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR RELOCATION AND DEMOLITION OF PIPING, CONDUITS, FIXTURES, INSTRUMENTS, ETC. ASSOCIATED WITH STRUCTURES SHOWN TO BE DEMOLISHED.
2. ALL DEMOLITION, REMOVAL AND CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED WITH CONSIDERATION FOR EXISTING FACILITIES STRUCTURES, EQUIPMENT, ETC. ANY DAMAGE WHICH MAY OCCUR BEYOND DESCRIBED DEMOLITION AND CONSTRUCTION SHALL BE REMEDIED AT CONTRACTOR'S EXPENSE AND OWNER/ENGINEER NOTIFIED.
3. CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL DEMOLISHED CONCRETE AND OTHER MATERIALS FROM THE EXISTING STRUCTURES OFF SITE PRIOR TO THE PROPOSED CONSTRUCTION.
4. UNLESS NOTED OTHERWISE ON PLANS, CUTTING EMBEDDED REBARS DUE TO PIPING, CONDUITS OR ANY OTHER PENETRATION THROUGH EXISTING CONCRETE STRUCTURE IS PROHIBITED. CONTRACTOR SHALL DETECT THE EXISTING REBAR LOCATIONS BY NONDESTRUCTIVE TESTING METHODS AND KEEP PENETRATION AWAY FROM THE EMBEDDED REBARS.
5. WHERE REMOVING EXISTING CONCRETE BUT RETAINING REBARS IS INDICATED ON DRAWINGS, SAWCUT EXISTING CONCRETE TO THE LIMITS SHOWN ON PLANS BUT NOT MORE THAN 3/4" DEEP TO AVOID DAMAGING OR NICKING THE REINFORCING.
6. WHERE DEMOLITION OF EXISTING CONCRETE WILL LEAVE EMBEDDED EXISTING REBARS EXPOSED, AN ADDITIONAL 1 1/2" CONCRETE AND REINFORCEMENT BEYOND LIMITS OF THE DEMOLITION SHALL BE REMOVED. THE 1 1/2" AREAS BEING REMOVED SHALL THEN BE PLACED BACK WITH CONCRETE STRUCTURAL REPAIR MATERIAL AS SPECIFIED TO PROVIDE CORROSION PROTECTION FOR THE EXPOSED EXISTING REBARS, UNLESS NOTED OTHERWISE ON PLAN.
7. ROUGHEN THE EXISTING CONCRETE SURFACES THAT WILL ENCOUNTER NEW CONCRETE. "ROUGHENED SURFACE" SHALL HAVE A UNIFORMLY ROUGHENED CONCRETE SURFACE TO A FULL AMPLITUDE (DISTANCE BETWEEN HIGH AND LOW POINTS OR SIDE TO SIDE) OF APPROXIMATELY 1/4" WITH SUITABLE TOOLS TO EXPOSE A FRESH FACE. APPLY BONDING AGENT TO THE EXISTING CONCRETE SURFACES PRIOR TO THE PLACEMENT OF NEW CONCRETE PER MANUFACTURER'S INSTRUCTIONS.
8. ALL EXPOSED EXISTING REBARS SHALL BE CLEANED BY ABRASIVE BLASTING AND COATED WITH AN EPOXY RESIN/PORTLAND CEMENT ADHESIVE BONDING AGENT TO PROVIDE CORROSION PROTECTION.

DEFERRED SUBMITTALS

1. FORWARD THE FOLLOWING DEFERRED COMPONENT SUBMITTALS TO THE BUILDING OFFICIAL FOR APPROVAL AFTER RECEIPT OF APPROVAL FROM THE OWNER'S REPRESENTATIVE. DO NOT FABRICATE OR INSTALL DEFERRED SUBMITTAL ITEMS UNTIL APPROVED BY THE BUILDING OFFICIAL.
2. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS:

A. PRECAST CONCRETE HOLLOW CORE ROOF SYSTEMS: SPECIFICATION 03 41 00

B. OTHER SUBMITTALS AS INDICATED IN THE SPECIFICATIONS.

IBC CHAPTER 17 SPECIAL INSPECTION REQUIREMENTS

1. THE OWNER OR THE OWNER'S REPRESENTATIVE IS REQUIRED TO PERFORM SPECIAL INSPECTIONS IN ACCORDANCE WITH IBC 2015 AND AS OUTLINED IN THE STATEMENT OF SPECIAL INSPECTION.
2. THE CONTRACTOR IS REQUIRED TO ACCOMMODATE THE ABOVE INSPECTIONS AND PROVIDE ACCESS TO THE ELEMENTS REQUIRING INSPECTION. IN ADDITION, THE CONTRACTOR SHALL PROVIDE 48 HOURS ADVANCED NOTICE TO THE OWNER OR THE OWNER'S REPRESENTATIVE REGARDING ALL CONSTRUCTION ACTIVITIES RELATED TO AND/OR AFFECTING THE REQUIRED SPECIAL INSPECTIONS.

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5-15-23

JEFFERSON COUNTY, TX

CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING

STRUCTURAL

GENERAL NOTES II

F&N JOB NO.		JFF22292
NO.	DATE	05/15/2023
	DESIGNED	BBW
BY	DRAWN	JLM
	REVISED	
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Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

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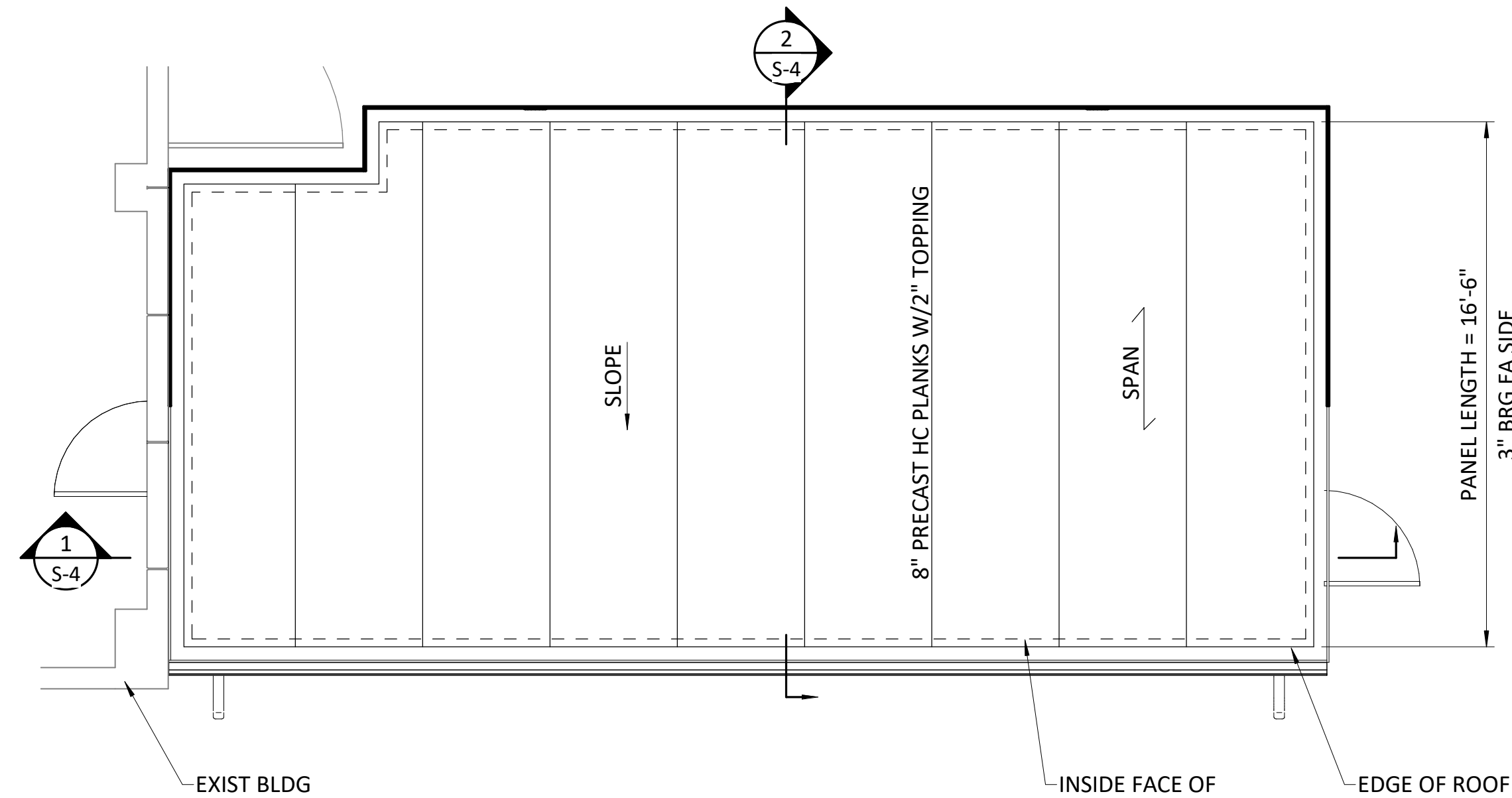
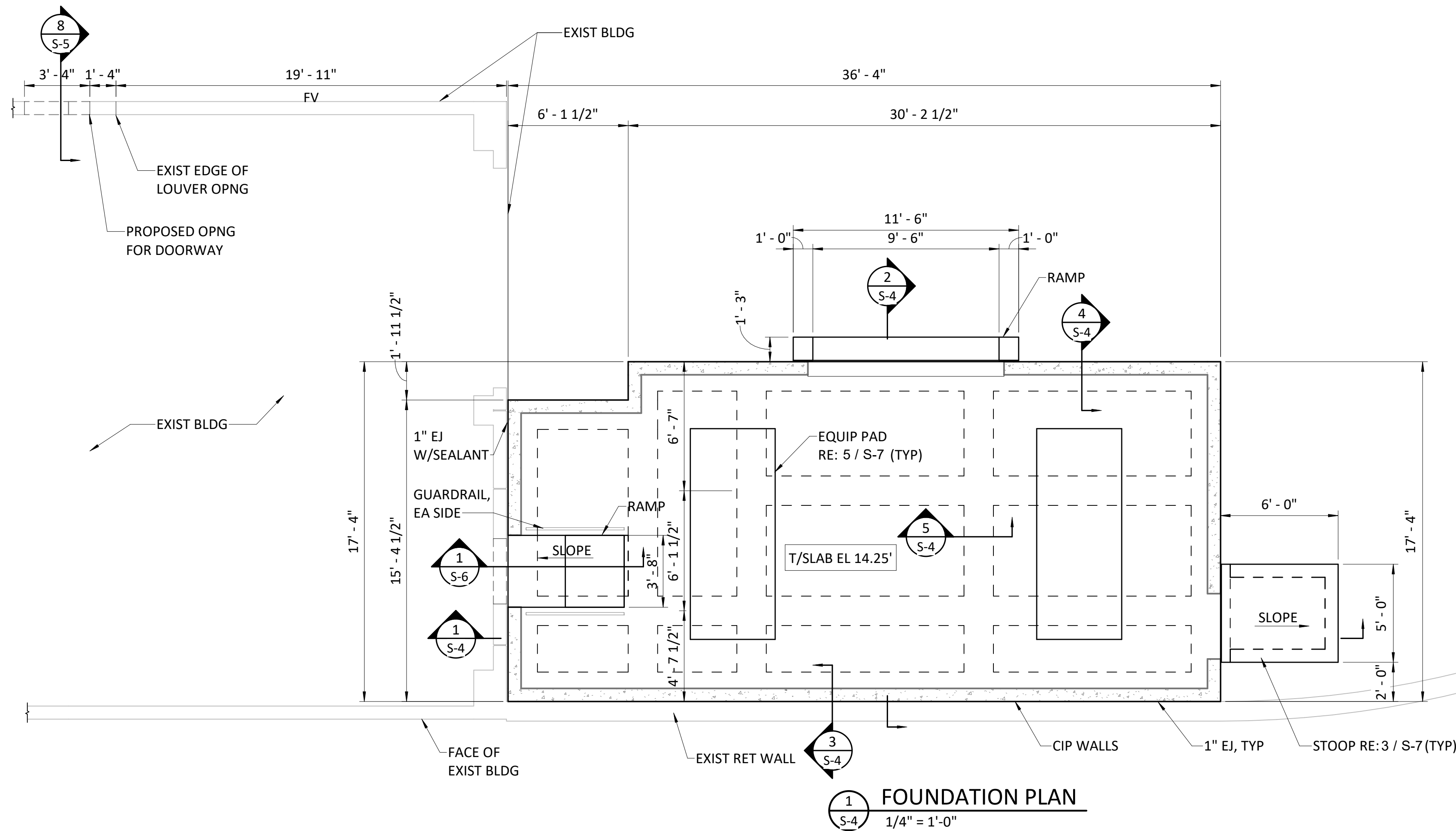
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15

ISSUED FOR BID



0 2' 4' 8'
1/4"=1'-0"



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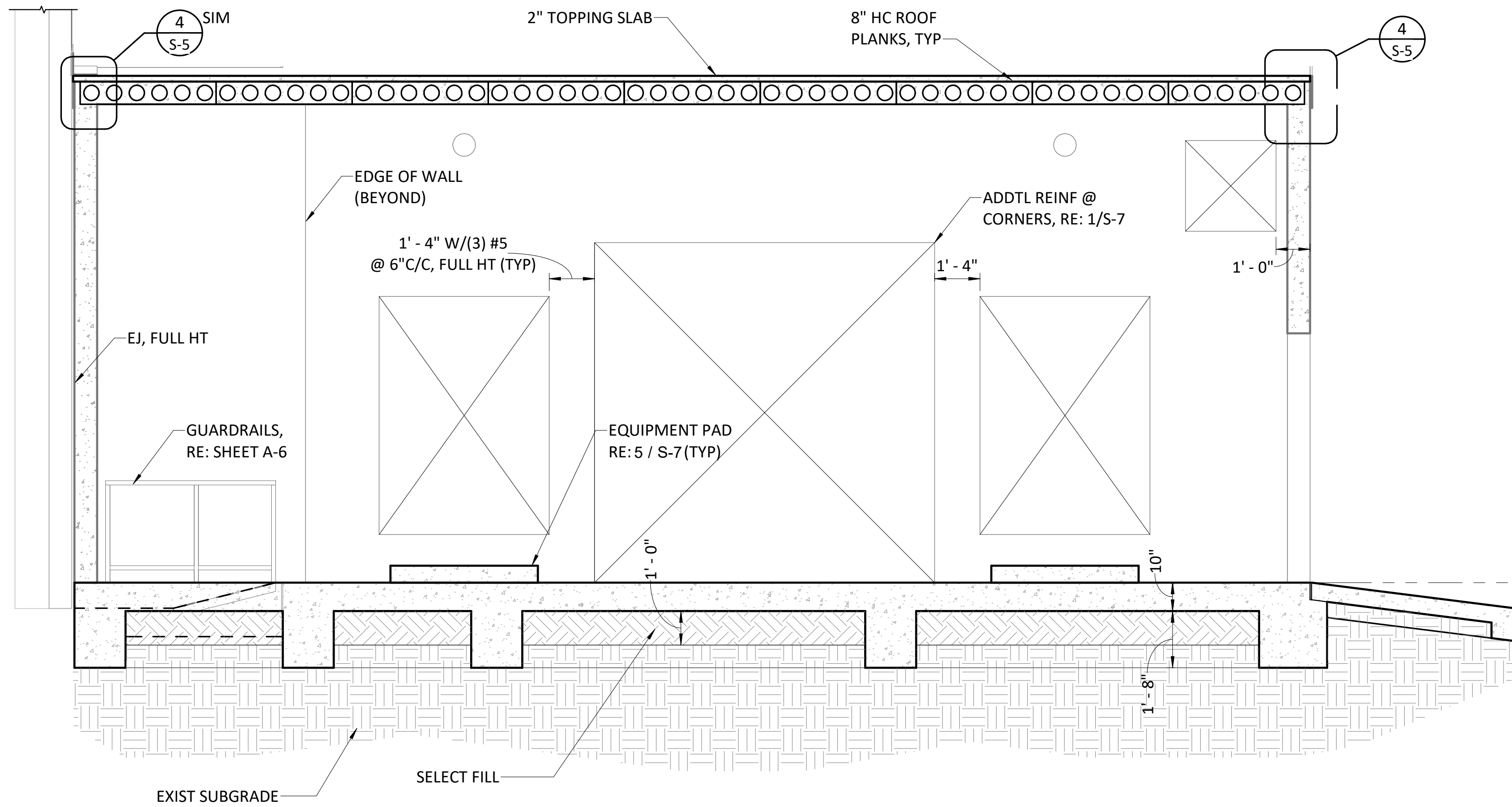
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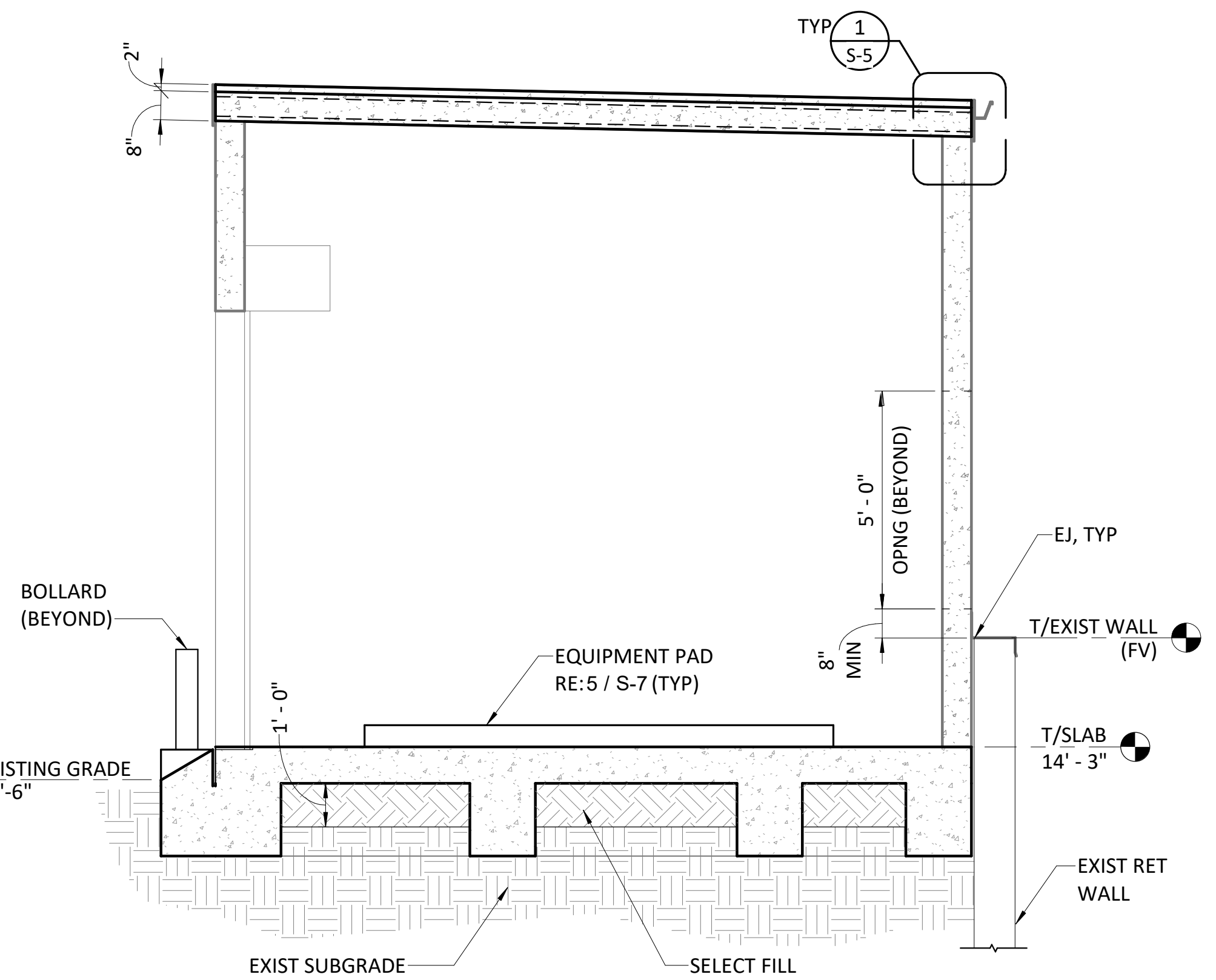
JEFFERSON COUNTY, TX
**CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING**
STRUCTURAL
**GENERATOR BUILDING
FOUNDATION AND ROOF FRAMING PLAN**

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1	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.			

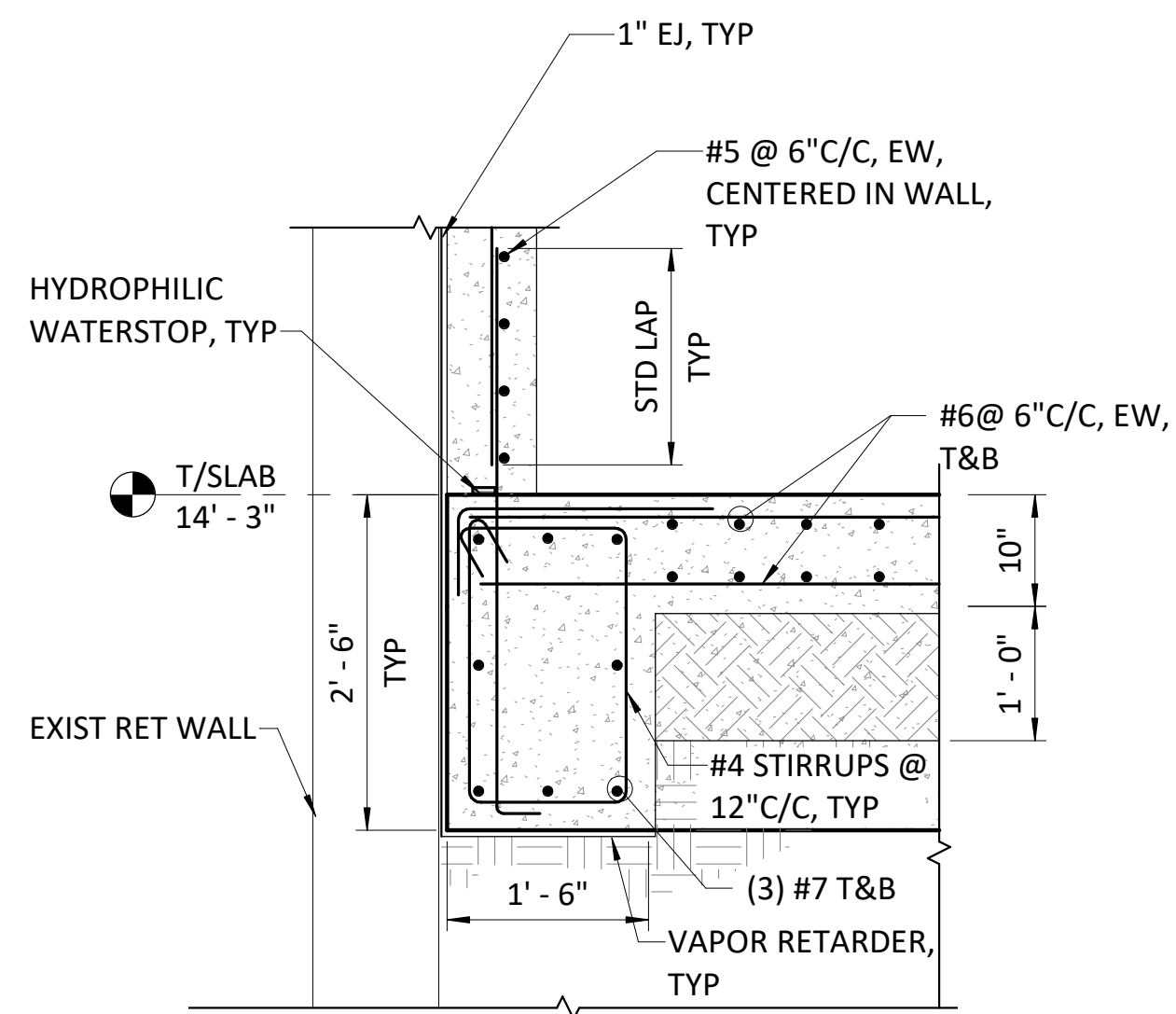
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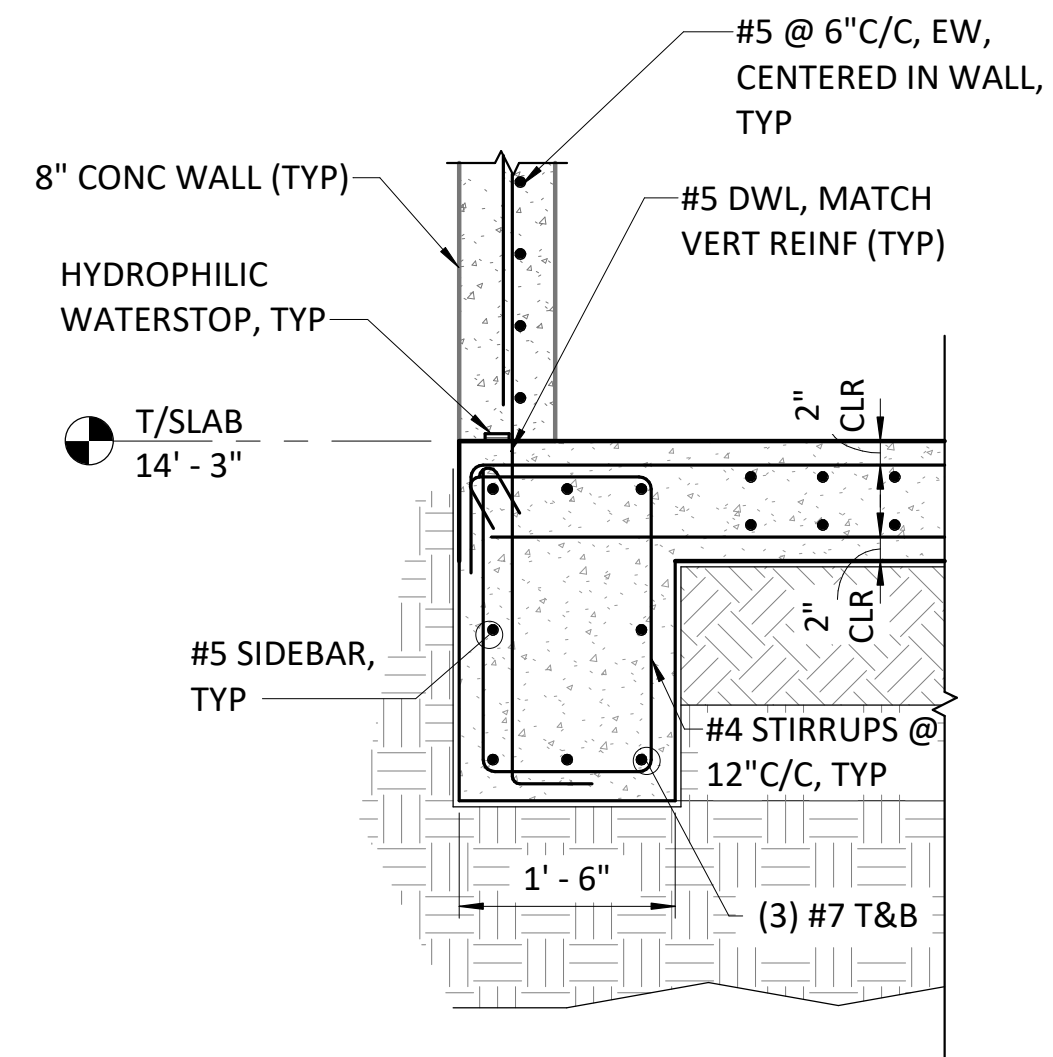
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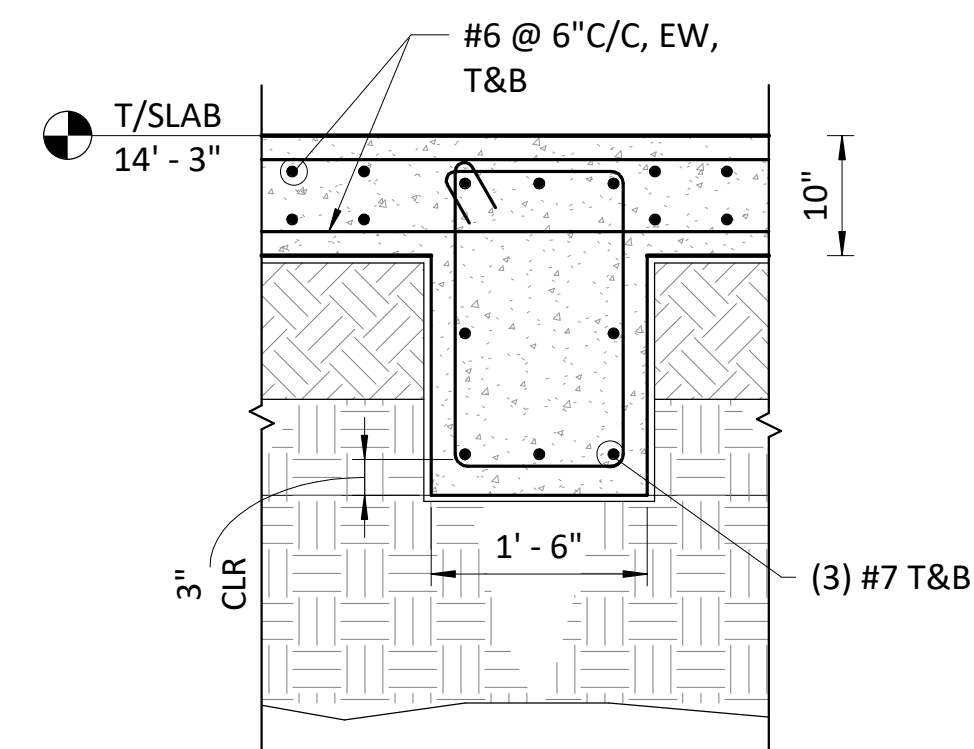
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3/8" = 1'-0"



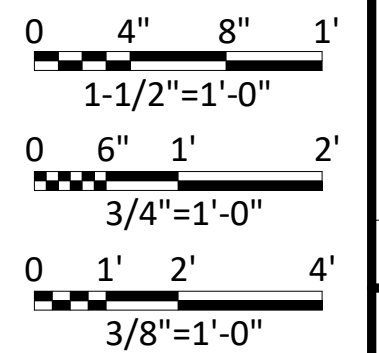
3 DETAIL @ EXIST RETAINING WALL
3/4" = 1'-0"



4 DETAIL @ WEST WALL
3/4" = 1'-0"



5 DETAIL @ INTERIOR BEAM
3/4" = 1'-0"



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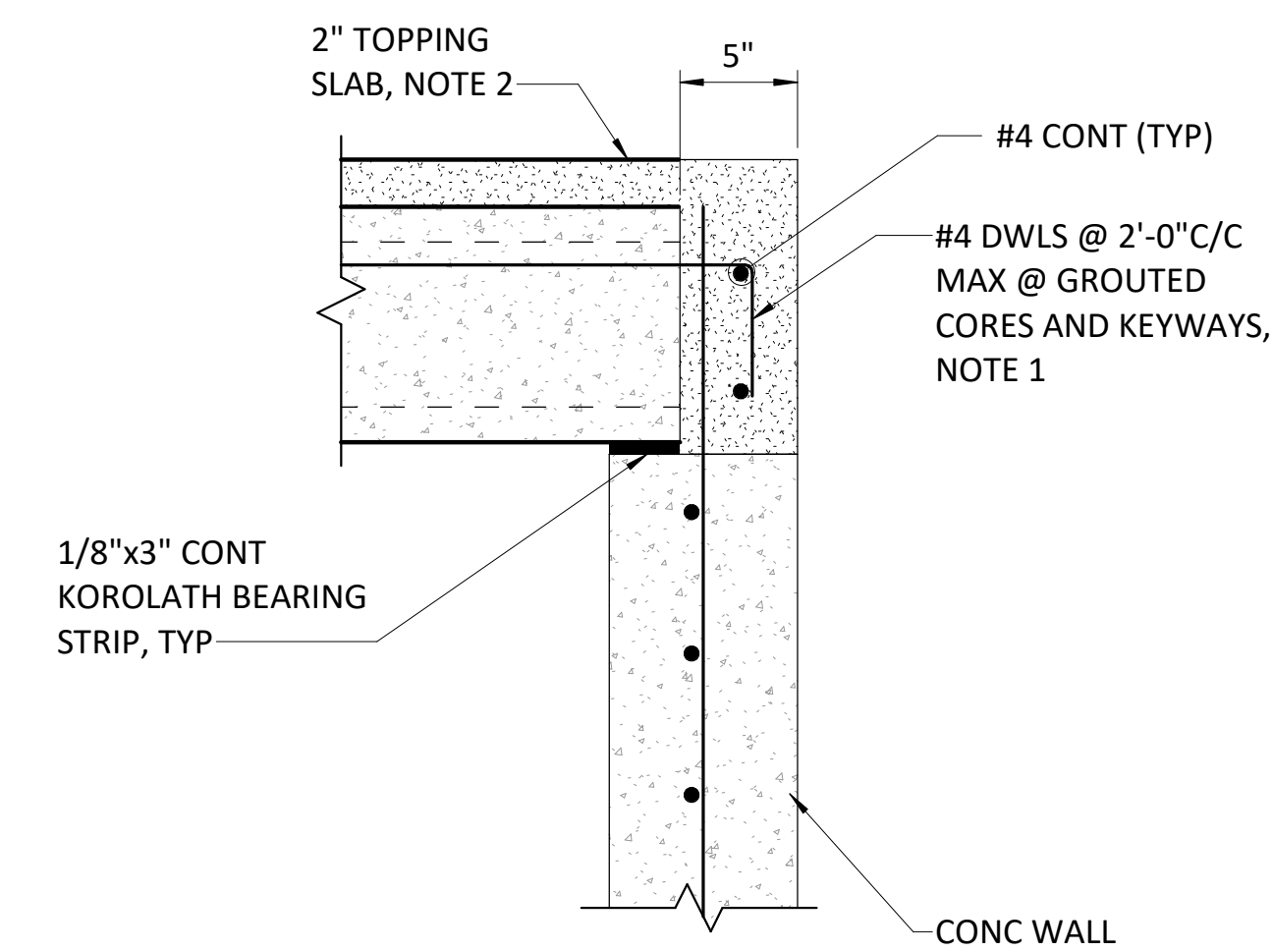
JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
STRUCTURAL
GENERATOR BUILDING
SECTIONS AND DETAILS I

FS&N JOB NO.	JFF22292	DATE	05/15/2023	DESIGNED	BBW	DRAWN	JLM	REVIEWED	PAB	FILE NAME	ST-JFF22292-R21.RVT
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SHEET	S-4										
SEQ.	17										

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10497 Town and Country Way,
Suite 500
Houston, TX 77024
Phone - (713) 600-6800
Web - www.freese.com

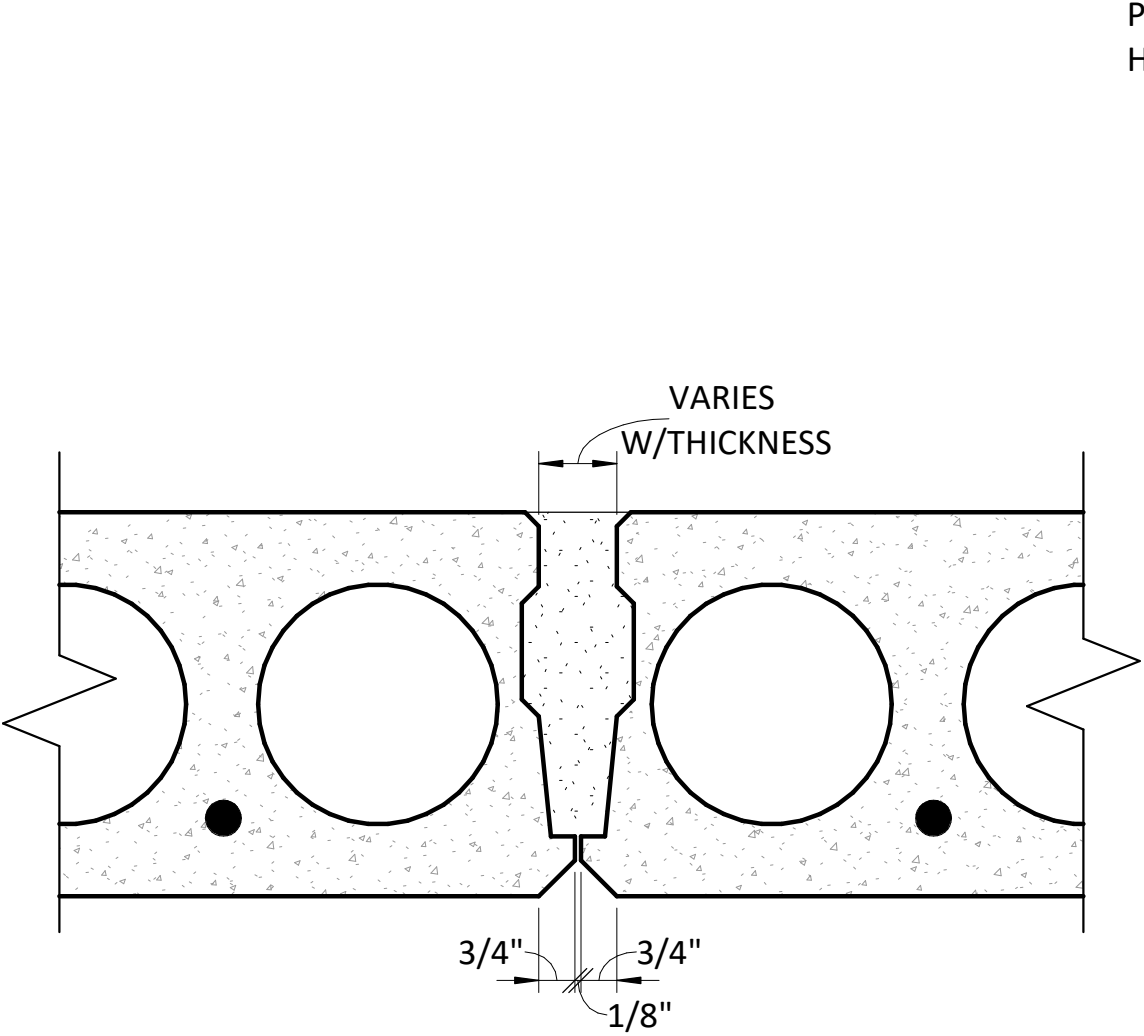
Freeze and Nichols, Inc.
Texas Registered Engineering Firm F-2144

5.15.23



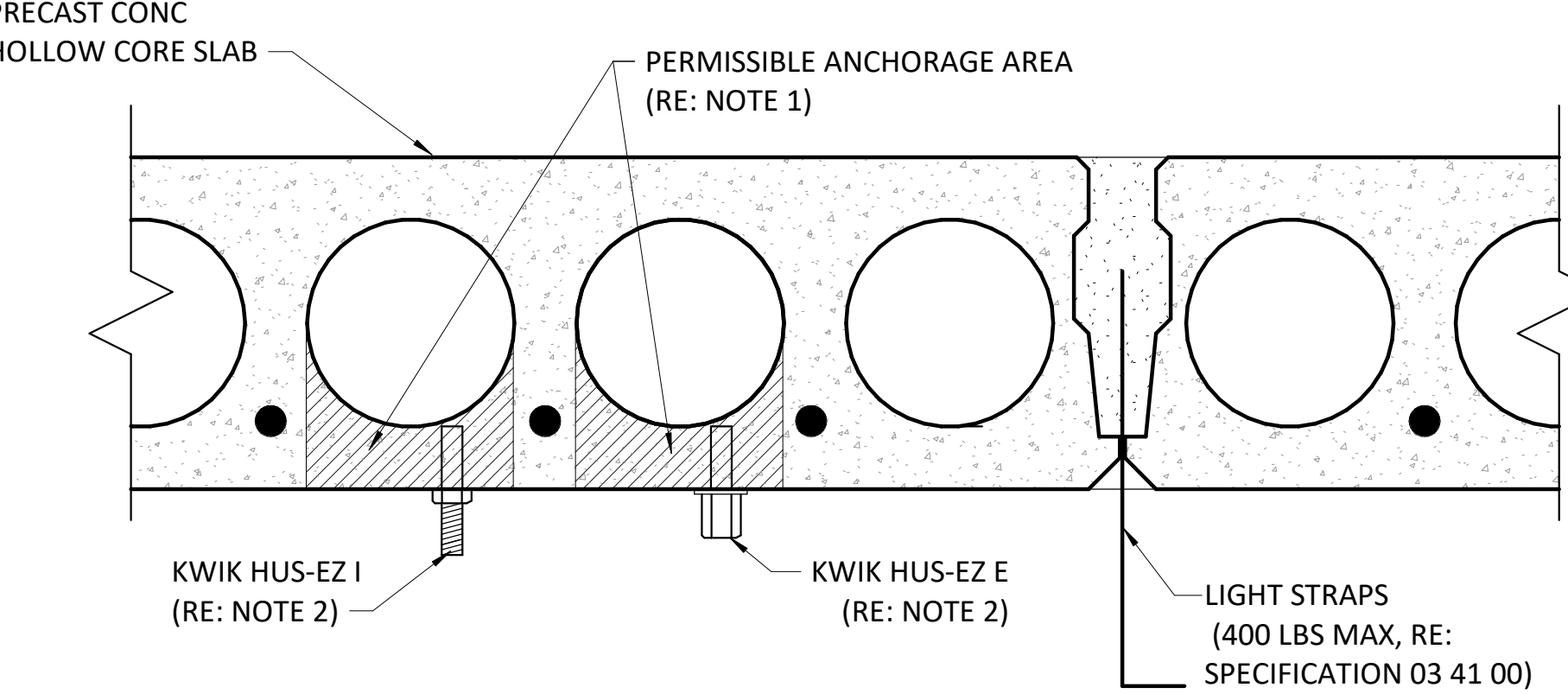
- DETAIL NOTES:**
1. CONNECTION TO WALL DESIGN FOR UPLIFT AND 180 PLF IN-PLANE LATERAL LOAD AT TOP OF WALL AND 390 PLF OUT-OF-PLANE LOAD AT TOP OF WALL.
 2. GROUT, REFER TO SPECIFICATION 03 41 00.

1 HOLLOW CORE ROOF @ LOAD BEARING WALL
S-4 NOT TO SCALE



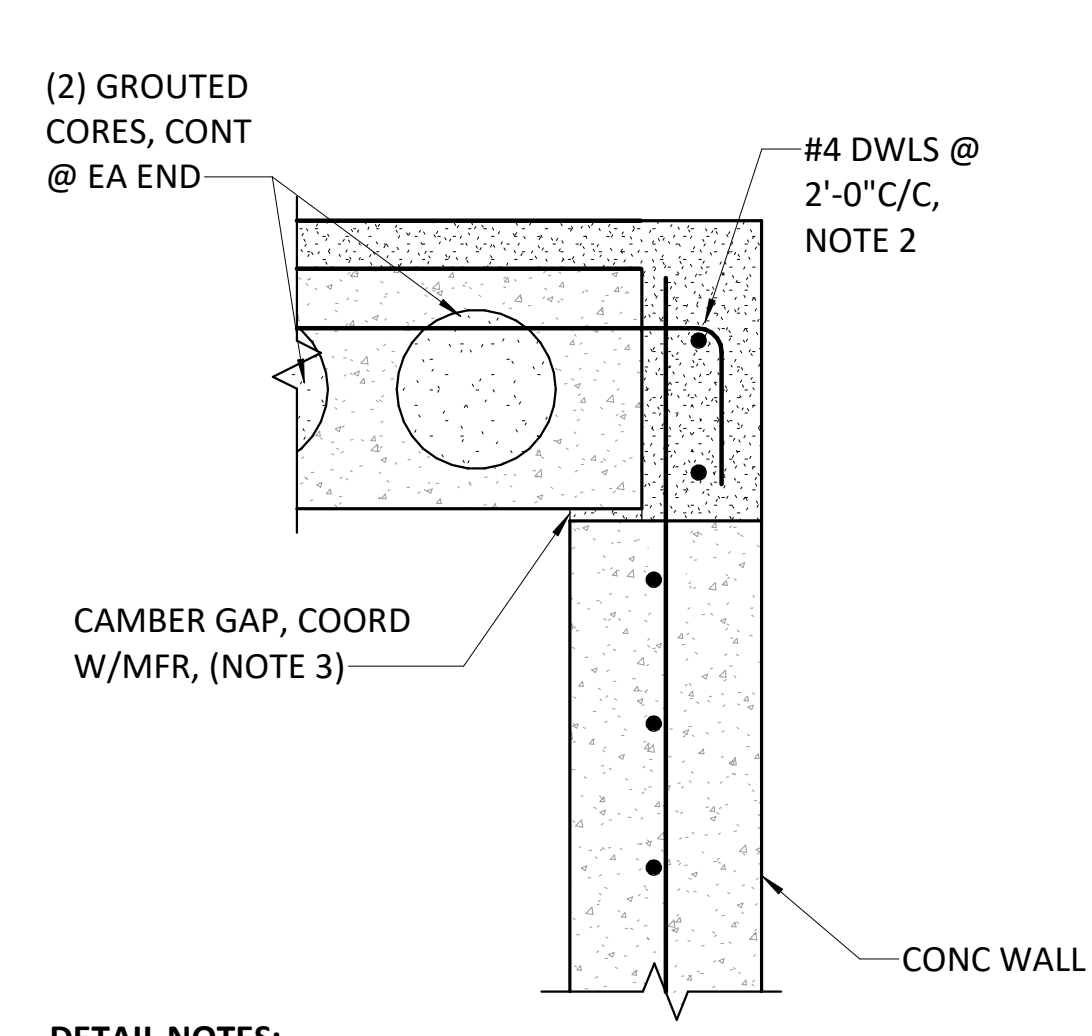
- DETAIL NOTES:**
1. ALL JOINTS BETWEEN HOLLOW CORE PLANKS SHALL BE FULLY FILLED WITH GROUT, RE: SPECIFICATION 03 41 00.

2 TYPICAL GROUTED KEYWAY
3" = 1'-0"



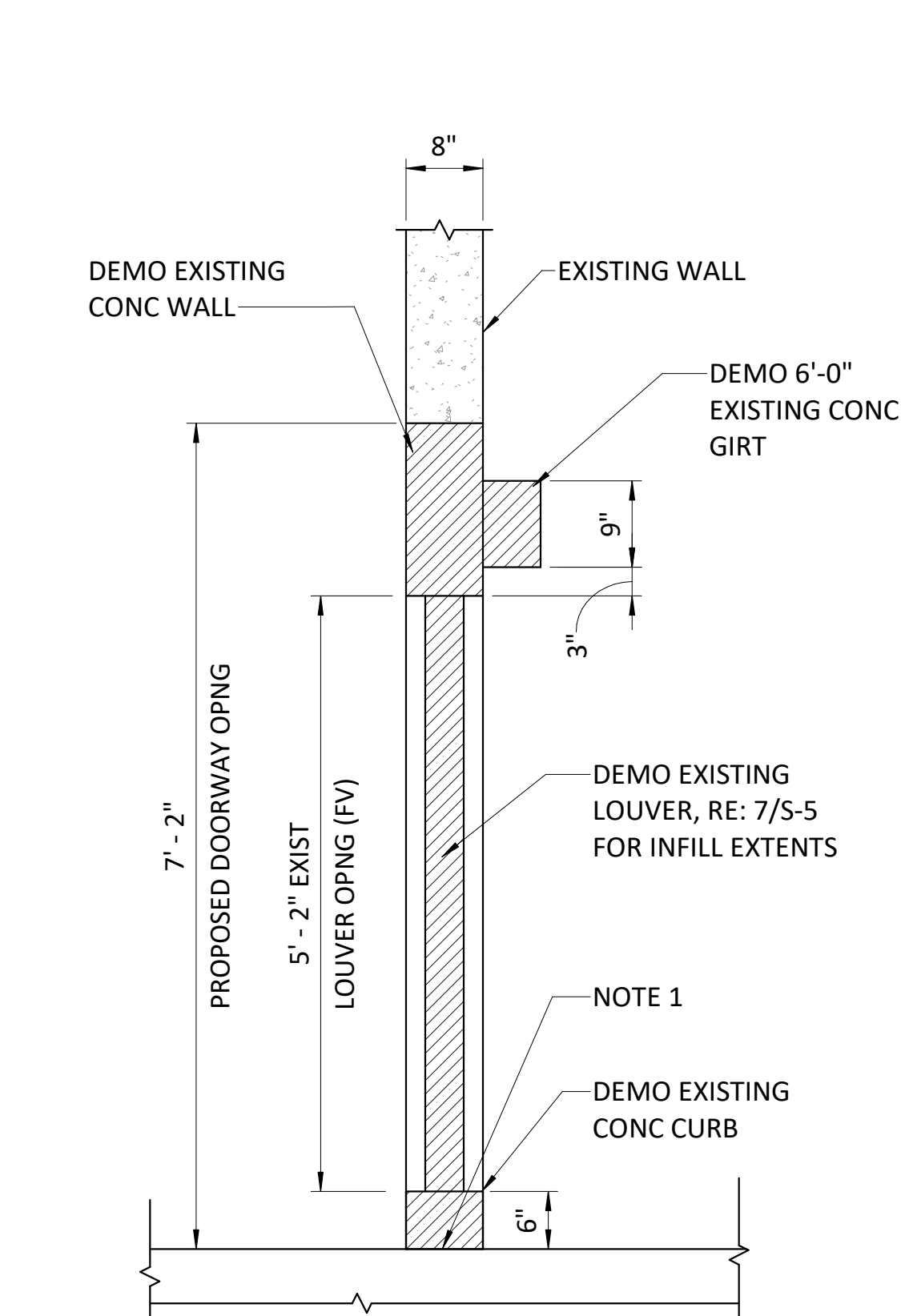
- DETAIL NOTES:**
1. PERMISSIBLE ANCHOR LOCATION MUST BE ESTABLISHED TO PREVENT DAMAGE TO PRESTRESSED CABLE DURING DRILLING PROCESS. COORDINATE WITH HOLLOW CORE SUPPLIER TO VERIFY LOCATION OF STRESSING STRANDS.
 2. FOR HANGER LOADS OF LESS THAN 500 LBS, USE HILTI POST-INSTALLED ANCHORS. USE GALVANIZED HILTI KWIK HUS-EZ I OR HUS-EZ E, 3/8"Ø WITH 1 3/8" MIN EMBEDMENT. INSTALL PER MANUFACTURERS REQUIREMENTS AND SPECIFICATIONS.

3 MISC HANGER DETAILS
3" = 1'-0"



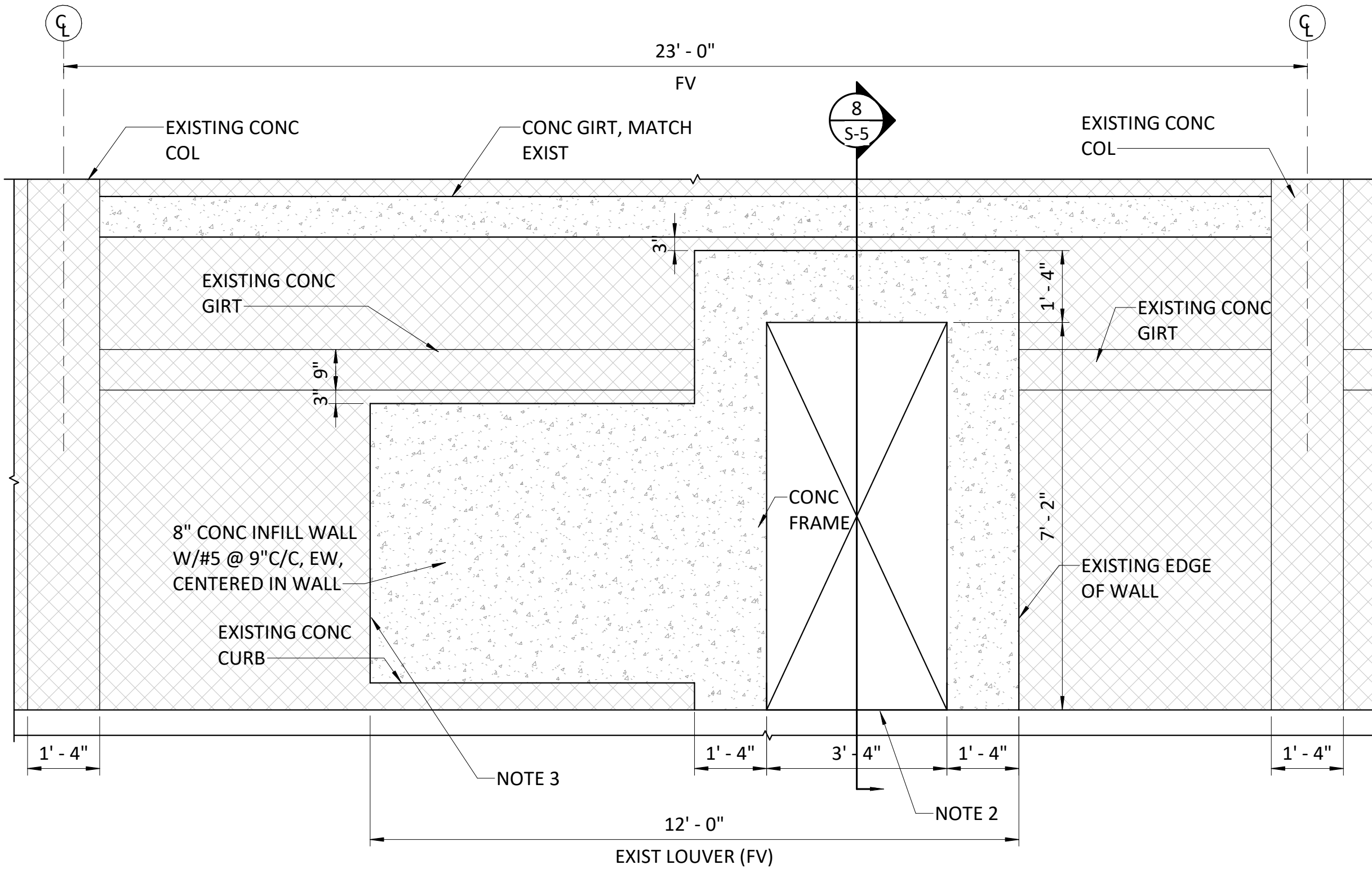
- DETAIL NOTES:**
1. REFER TO 1 / S-5 FOR ADDITIONAL INFORMATION.
 2. CONNECTION TO WALL DESIGN FOR UPLIFT AND 780 PLF IN-PLANE LATERAL LOAD AT TOP OF WALL AND 390 PLF OUT-OF-PLANE LATERAL LOAD AT TOP OF WALL.
 3. COORDINATE MAXIMUM MIDSPAN CAMBER GAP WITH MANUFACTURER. APPROXIMATE MIDSPAN CAMBER GAP SHALL BE 0.4 INCHES. CAMBER GAP SHALL BE GROUT FILLED IMMEDIATELY AFTER PLANK PLACEMENT.

4 HOLLOW CORE ROOF @ END WALLS
S-4 NOT TO SCALE



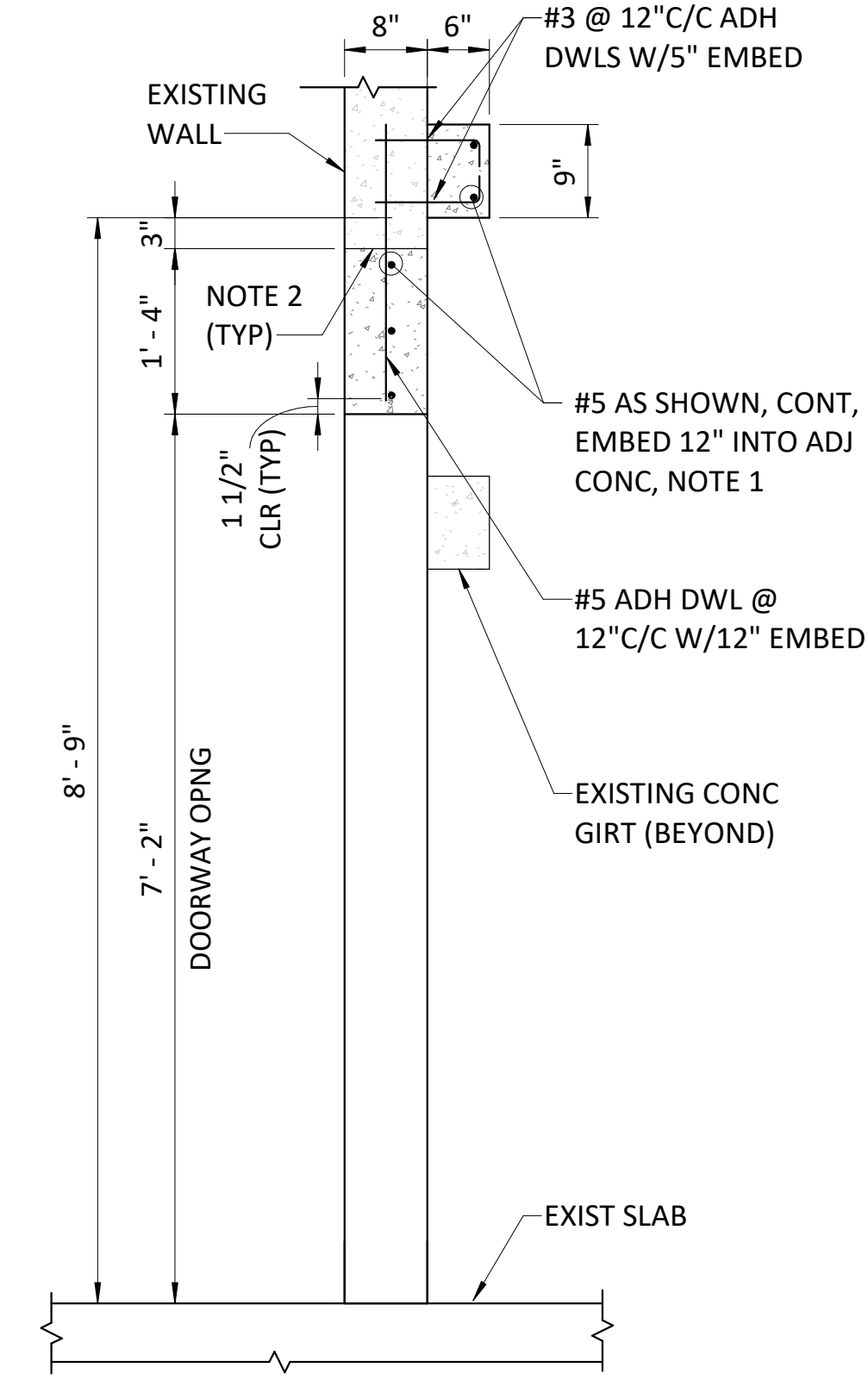
- NOTES:**
1. REPAIR EXIST CONCRETE, TYPICAL, REFER TO 2/S-6.

5 DOORWAY OPENING DEMOLITION DETAIL
3/4" = 1'-0"



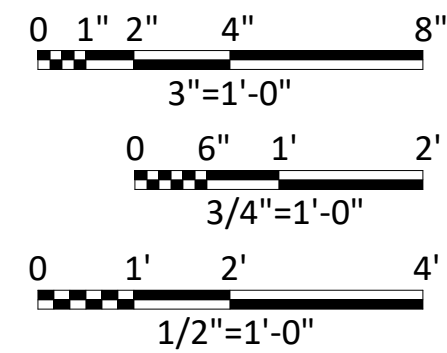
- NOTES:**
1. REFER TO 5/S-5 FOR REQUIRED DEMOLITION PRIOR TO FABRICATION OR CONSTRUCTION.
 2. REPAIR CONCRETE AT THRESHOLD. SEE DETAIL 2/S-6.
 3. EMBED REBAR 12" INTO EXISTING ADJACENT CONCRETE AT (3) SIDES. DO NOT OVER CUT AT CORNERS. APPLY A SINGLE BEAD OF ADEKA P-201 OR APPROVED EQUAL AT ALL JOINT INTERFACES, TYPICAL.

6 DOORWAY OPENING
1/2" = 1'-0"



- NOTES:**
1. EMBED REBAR 12" INTO EXISTING ADJACENT CONCRETE AT ALL SIDES OF HEAD AND JAMB, TYPICAL.
 2. SURFACE ROUGHENED TO 1/4" AMPLITUDE TO WITHIN 1" OF EDGE, TYPICAL.

7 DOORWAY OPENING SECTION
3/4" = 1'-0"



JEFFERSON COUNTY, TX

CRANE BAYOU PUMP STATION

GENERATORS AND BUILDING

STRUCTURAL

GENERATOR BUILDING

SECTIONS AND DETAILS II

Freese and Nichols, Inc.

Texas Registered Engineering Firm F-2144

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10497 Town and Country Way,

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Houston, TX 77024

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Grand Water

5-5-23

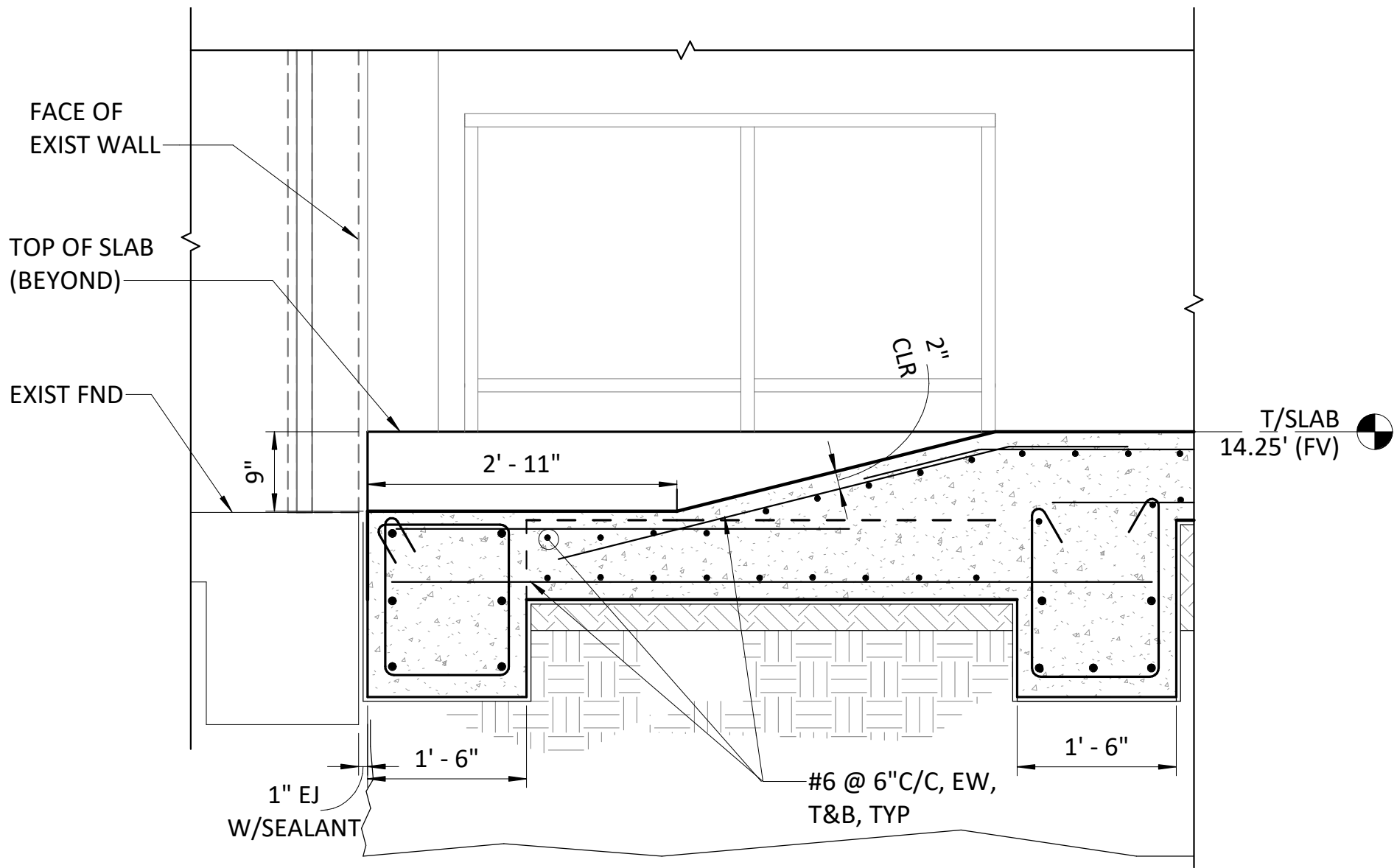
PROJECT NO.	JFF22292	DATE	05/15/2023	DESIGNED	BBW	DRAWN	JLM	REVISED	PAB	FILE NAME	ST-JFF22292-R21.RVT
ISSUE		BY		DATE							
VERIFY SCALE	1										
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.											

SHEET

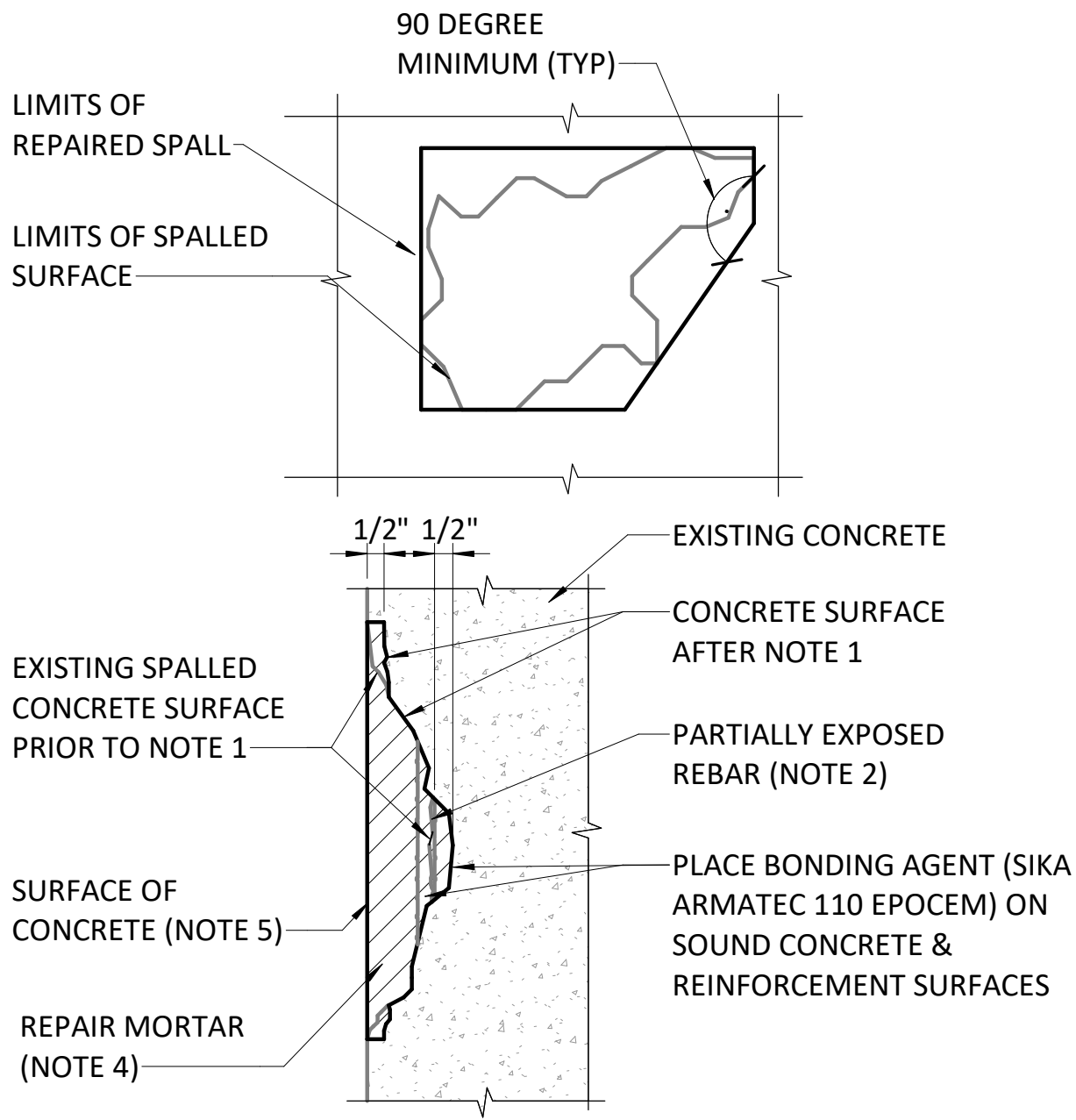
S-5

SEQ.

18



1
S-3
RAMP SECTION
3/4" = 1'-0"



- DETAIL NOTES:**
1. SAW CUT PERIMETER OF SPALLED AREA. REMOVE CONCRETE WITHIN CUT PERIMETER AS REQUIRED TO PROVIDE A 1/2" MINIMUM REPAIR DEPTH. REMOVE ALL UNSOUND CONCRETE. CLEAN REBAR OF CORROSION AND CONTAMINATES USING MECHANICAL MEANS.
 2. IF ANY REBAR HAS MORE THAN HALF ITS CROSS-SECTION EXPOSED, THEN REMOVE CONCRETE FROM AROUND THE BAR TO A MINIMUM DEPTH OF 1/2".
 3. CRACKS IN SOUND CONCRETE, THAT EXTEND OUT FROM THE SPALLED AREA TO BE REPAIRED, SHALL BE PRESSURE INJECTED WITH HIGH STRENGTH, LOW VISCOSITY EPOXY. USE SIKADUR 35, HI-MOD LV. PROVIDE SUPPORT PRODUCTS AND CRACK PREPARATION AS RECOMMENDED BY SIKA.
 4. REPAIR MORTAR SHALL BE SIKATOP 122 PLUS (FOR HORIZONTAL SURFACES) OR SIKATOP 123 PLUS (FOR VERTICAL AND OVERHEAD SURFACES), BY SIKA CORPORATION. PREPARE, INSTALL IN MULTIPLE LIFTS, FINISH, AND CURE AS RECOMMENDED BY MANUFACTURER.
 5. FINISHED SURFACE TEXTURE SHALL MATCH EXISTING FINISH TEXTURE.

2
TYPICAL CONCRETE SPALL & CRACK REPAIR
NOT TO SCALE

0 6" 1' 2'
3/4"=1'-0"

ISSUED FOR BID

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JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING

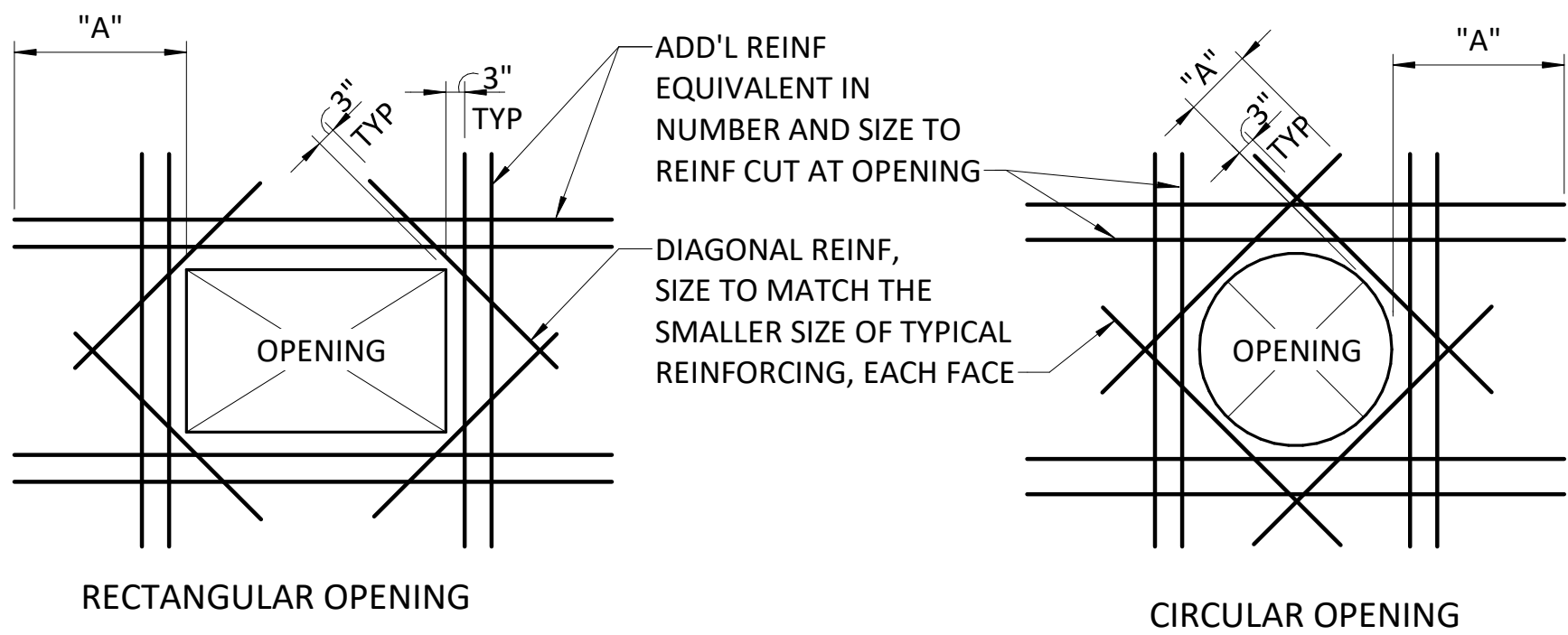
STRUCTURAL
GENERATOR BUILDING
SECTIONS AND DETAILS III

PROJECT NO. JFF22292
DATE 05/15/2023
DESIGNED BBW
DRAWN JLM
REVISED
CHECKED PAB
FILE NAME ST-JFF22292-R21.RVT

NO. 0
VERIFY SCALE 1
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET S-6

SEQ. 19

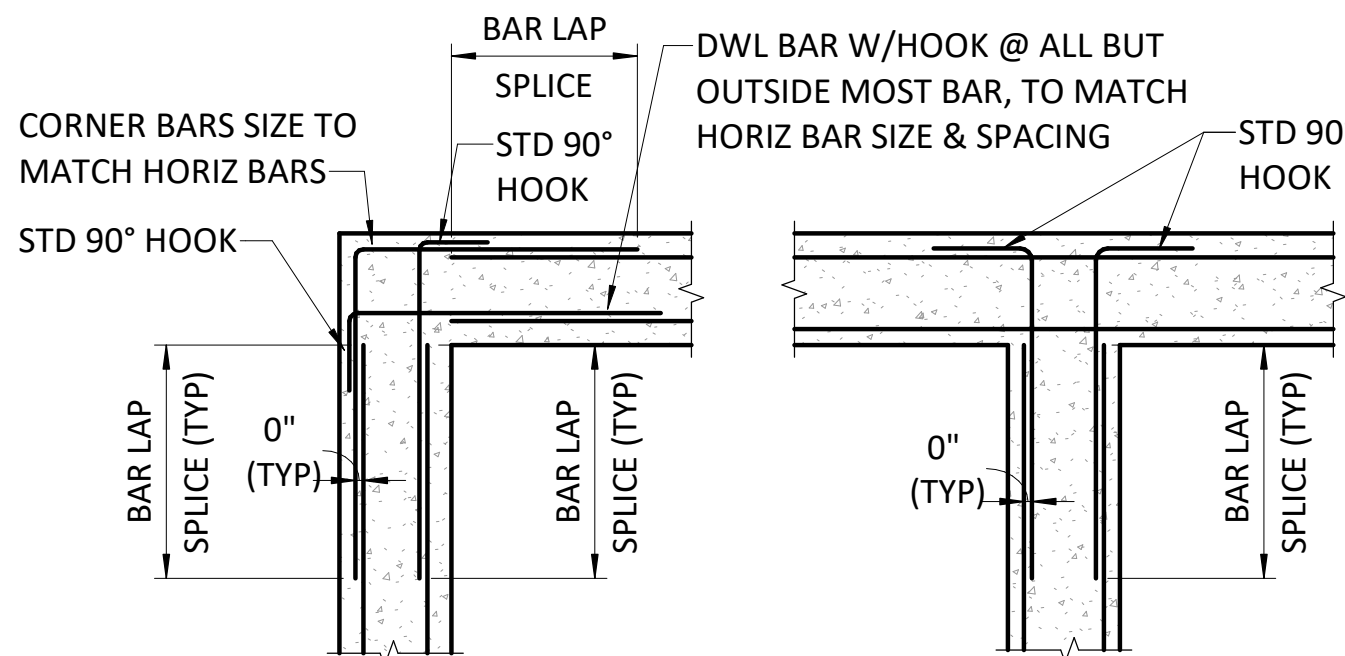


DETAIL NOTES:

1. CUT TYPICAL REINFORCING TO PROVIDE 3 INCHES CLEAR ON ALL SIDES OF OPENING.
2. REFER TO DRAWINGS FOR POSSIBLE EXCEPTIONS TO THIS TYPICAL DETAIL.
3. PLACE ADDITIONAL REINFORCING IN SAME ORIENTATION AND POSITION AS REINFORCING CUT BY OPENING, HALF ON EACH SIDE OF OPENING. PROVIDE ONE SET OF REINFORCING FOR EACH LAYER OF REINFORCING CUT.
4. ADDITIONAL REINFORCING SHALL BE INTERSPERSED WITH TYPICAL REINFORCING FOR A MINIMUM CENTER-TO-CENTER SPACING OF 3 INCHES. CLEAR SPACING BETWEEN REINFORCING SHALL NOT BE LESS THAN 2 INCHES.
5. "A" = 48 BAR DIAMETER LENGTH BEYOND OPENING.
6. REINFORCING IS TO EXTEND ACROSS ALL ADJACENT CONSTRUCTION JOINTS. PROVIDE STANDARD HOOK IF FULL EMBEDMENT LENGTH IS NOT POSSIBLE.
7. SEE OTHER DISCIPLINES' DRAWINGS FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.
8. ADDITIONAL AND DIAGONAL REINFORCING MAY BE OMITTED WHEN OPENING IS FRAMED BY BEAMS, WALLS, OR SLABS.
9. ADDITIONAL REINFORCING IS NOT REQUIRED WHEN SPECIFIED REINFORCING IS NOT CUT. DIAGONAL REINFORCING IS REQUIRED REGARDLESS IF ADDITIONAL REINFORCING IS NOT CUT.

1 TYPICAL WALL OR SLAB OPENING ADDITIONAL REINFORCEMENT

NOT TO SCALE

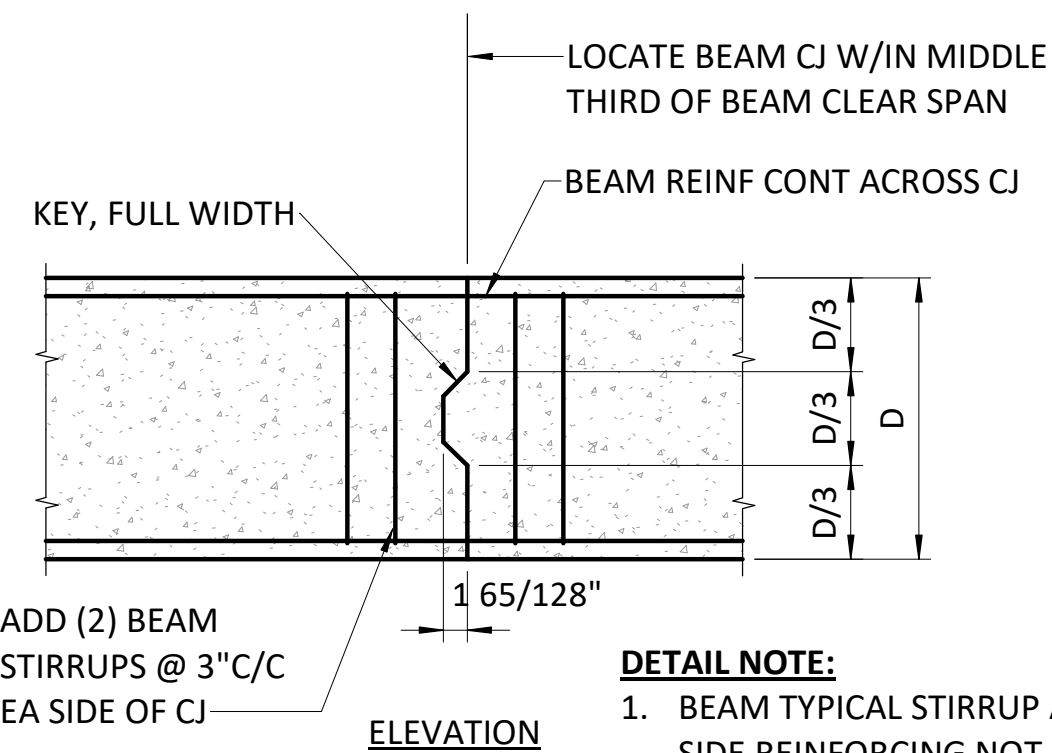


DETAIL NOTES:

1. REINFORCING SHOWN APPLIES TO ALL TOP, BOTTOM AND SIDE BARS. ALL REQUIRED BARS ARE NOT SHOWN IN DETAIL.
2. AT CONTRACTOR'S OPTION, UNLESS NOTED OTHERWISE, ELIMINATE DOWELS AND CORNER BAR AND TERMINATE HORIZONTAL BARS WITH STANDARD HOOKS.

4 CORNER @ INTERSECTION REINFORCING

NOT TO SCALE

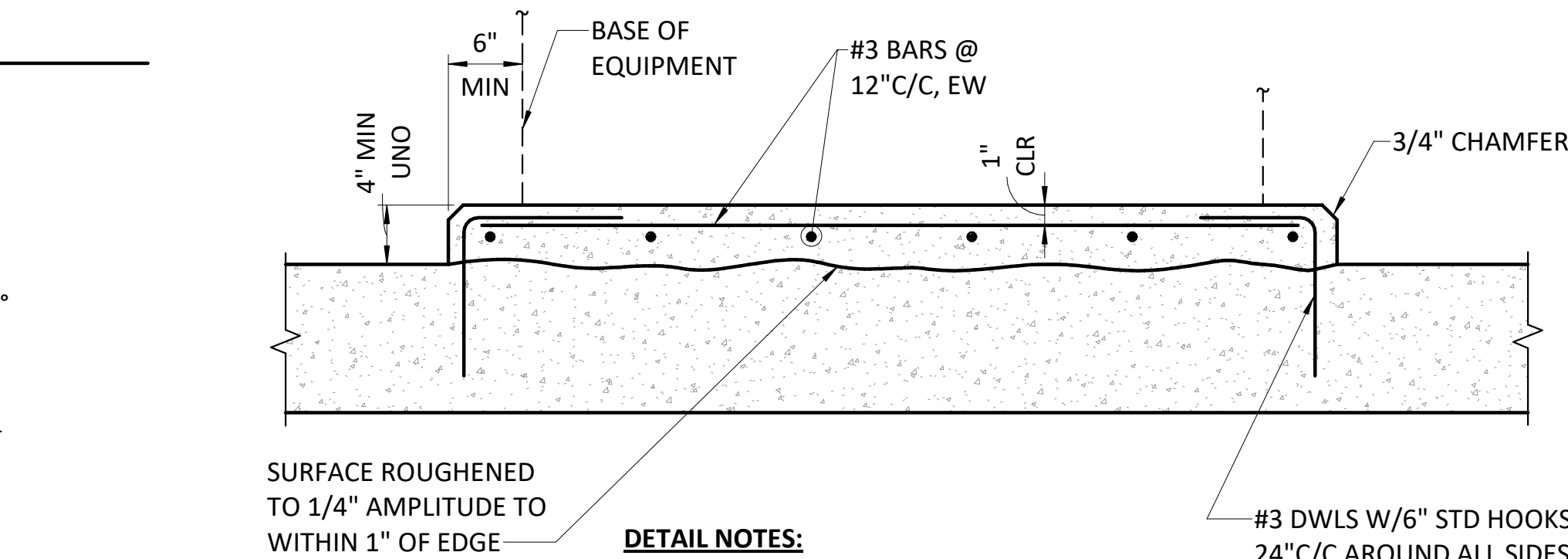


DETAIL NOTE:

1. BEAM TYPICAL STIRRUP AND SIDE REINFORCING NOT SHOWN.

6 TYPICAL GRADE BEAM CONSTRUCTION JOINT

NOT TO SCALE

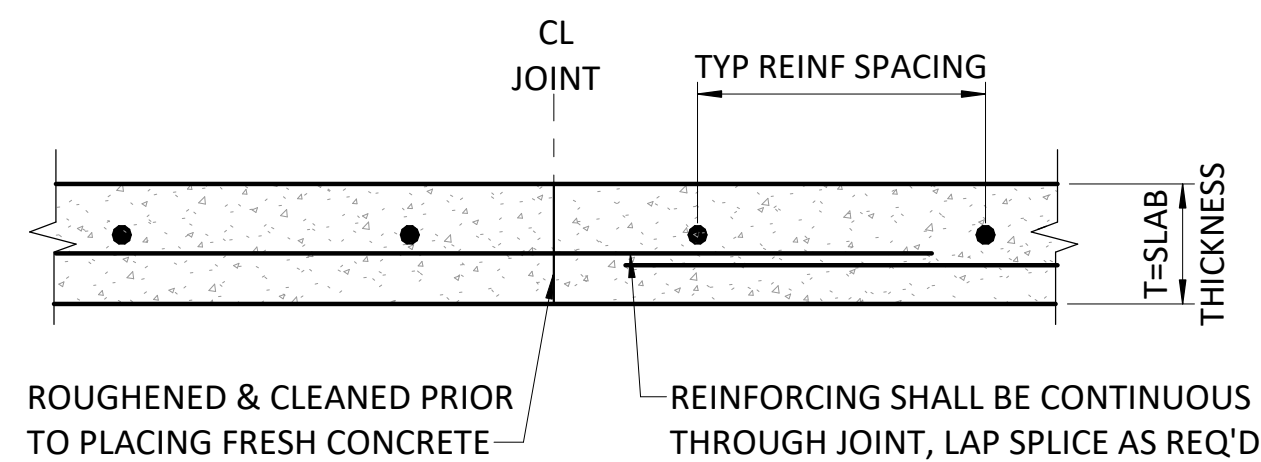


DETAIL NOTES:

1. REFER TO SHEET E-7 FOR ELECTRICAL EQUIPMENT ATTACHMENTS TO CONCRETE PAD.
- #3 DWLS W/6\"/>

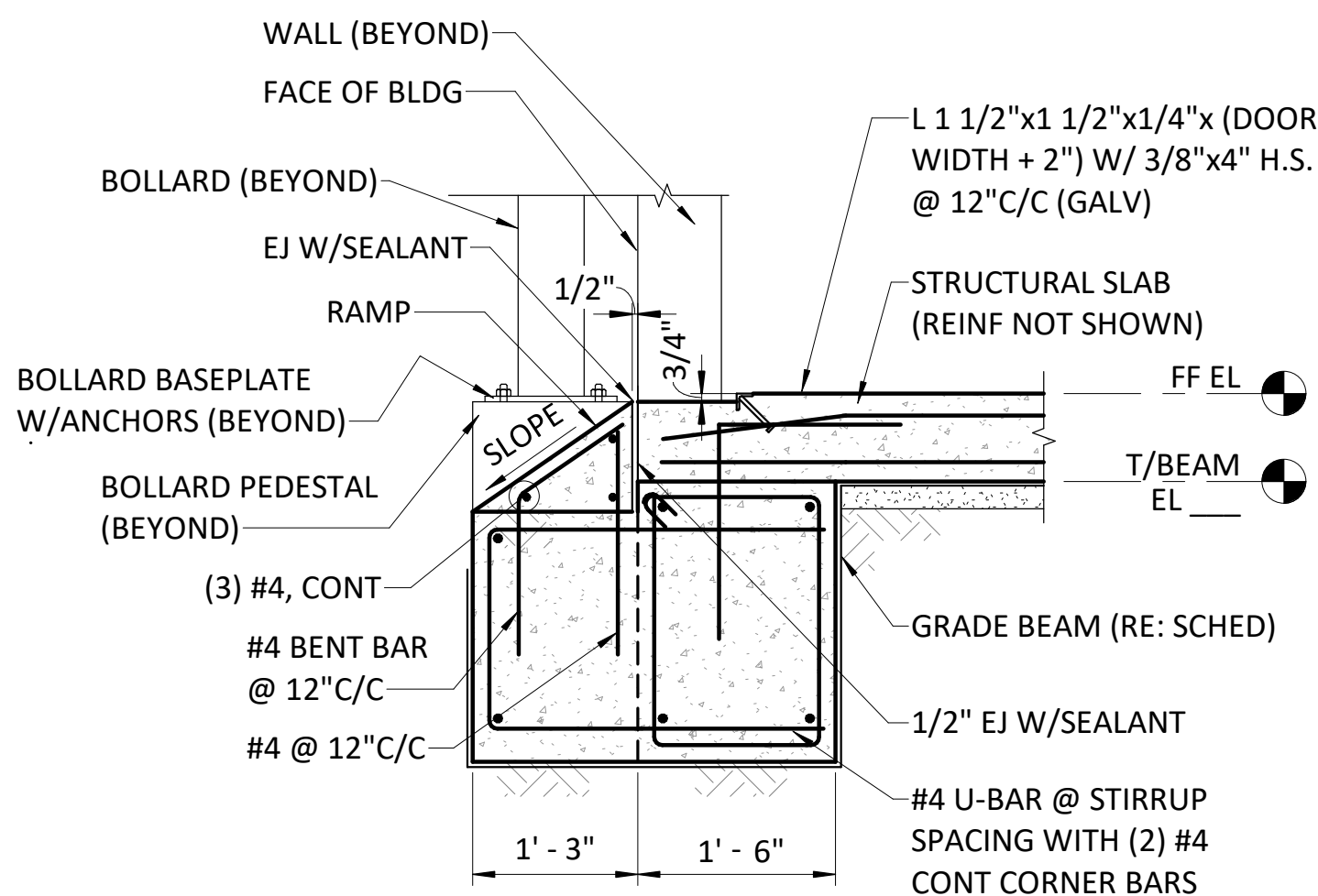
5 INTERIOR EQUIPMENT PAD

NOT TO SCALE



7 SLAB CONSTRUCTION JOINT

NOT TO SCALE

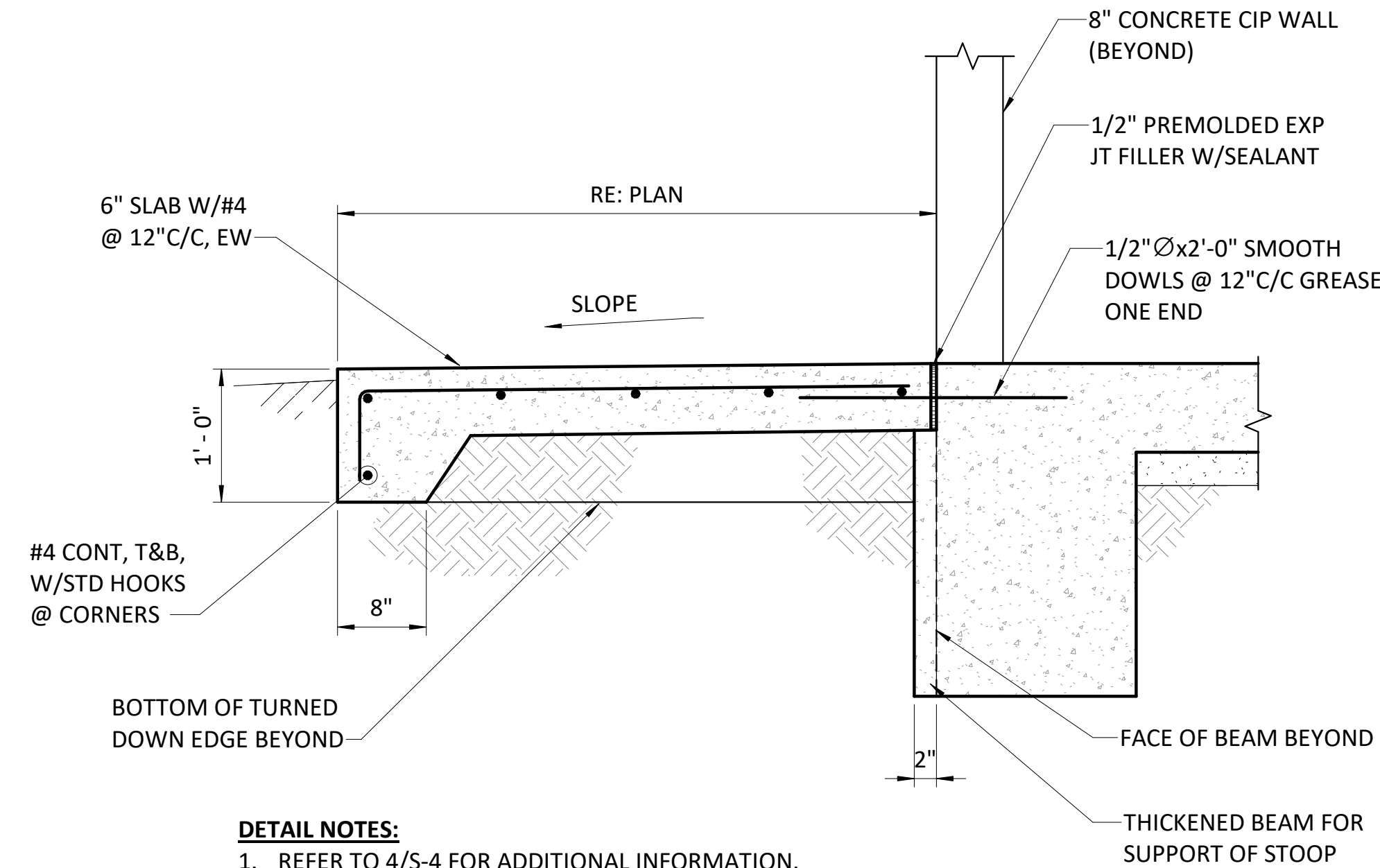


DETAIL NOTES:

1. REFER TO S-4 FOR ADDITIONAL INFORMATION.
2. REFER TO ARCH FOR ADDITIONAL INFORMATION AT OVERHEAD DOOR.

2 RAMP SECTION

NOT TO SCALE

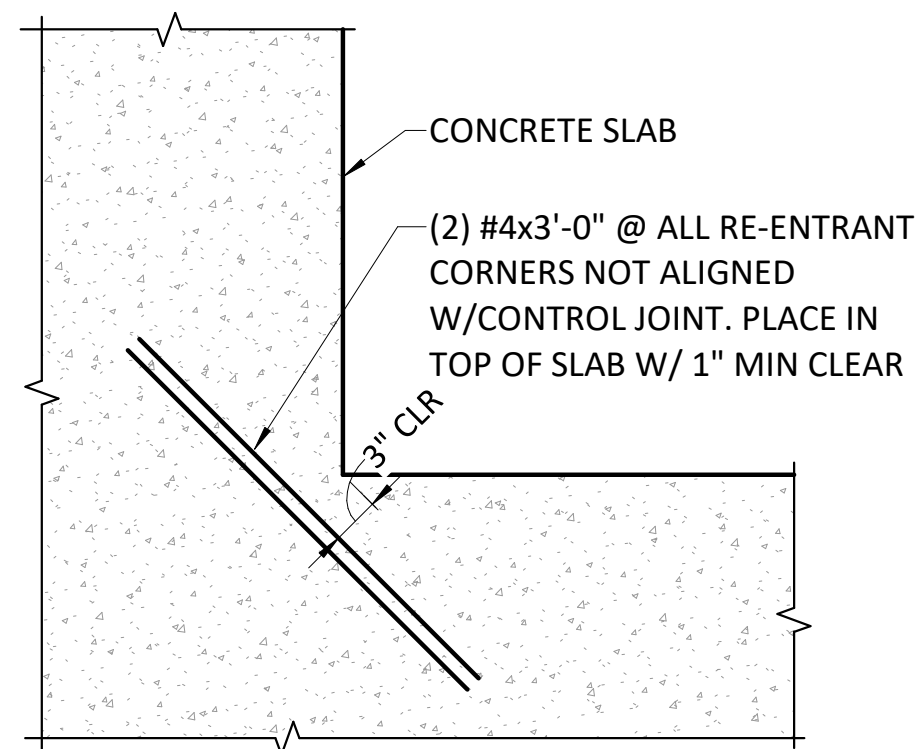


DETAIL NOTES:

1. REFER TO 4/S-4 FOR ADDITIONAL INFORMATION.

3 STOOP SECTION

NOT TO SCALE



8 RE-ENTRANT CORNER REINFORCING DETAIL

NOT TO SCALE

F&N JOB NO.	JFF22292	DATE	05/15/2023	DESIGNED	BBW	DRAWN	JLM	REVIEWED	PAB	CHECKED	FILE NAME	ST-JFF22292-R21.RVT
NO.	0	ISSUE	1	VERIFY SCALE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	BY	DATE	DATE	DATE	DATE	DATE	DATE

HVAC SYMBOLS				(ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS)			
ABBREVIATIONS							
A/C	AIR CONDITIONING	HP	HORSEPOWER				
AFF	ABOVE FINISHED FLOOR	HTG	HEATING				
AI	ANALOG INPUT	IN	INCHES				
AO	ANALOG OUTPUT	KW	KILOWATT				
APPROX	APPROXIMATELY	LAT	LEAVING AIR TEMPERATURE				
ARCH	ARCHITECTURE/ARCHITECTURAL	LWT	LEAVING WATER TEMPERATURE				
AV	ANALOG VALUE	MAX	MAXIMUM				
BI	BINARY INPUT	MECH	MECHANICAL				
BHP	BRAKE HORSEPOWER	MCA	MINIMUM CIRCUIT AMPACITY				
BO	BINARY OUTPUT	MBH	THOUSANDS BTU's PER HOUR				
BOD	BOTTOM OF DUCT	MIN	MINIMUM				
BTUH	BRITISH THERMAL UNIT PER HOUR	MOC	MAXIMUM OVERCURRENT PROTECTION				
BV	BINARY VALUE	NFPA	NATIONAL FIRE PROTECTION ASSOC.				
C	CELSIUS	NC	NOISE CRITERIA				
CC	COOLING COIL	NOM	NOMINAL				
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE				
CD	CONDENSATE DRAIN	NO	NUMBER				
CONN	CONNECTION	N.C.	NORMALLY CLOSED				
dB	DECIBELS	N.O.	NORMALLY OPEN				
DI	DIGITAL INPUT	OA	OUTSIDE AIR				
DIA	DIAMETER	P/PH	PHASE				
DB	DRY BULB	PLBG	PLUMBING				
DDC	DIRECT DIGITAL CONTROL	PSI	POUNDS PER SQUARE INCH				
DEG	DEGREE	RE	REFER/REFERENCE				
DO	DIGITAL OUTPUT	RA	RETURN AIR				
DX	DIRECT EXPANSION	RPM	REVOLUTIONS PER MINUTE				
DWGS	DRAWINGS	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOC.				
ELEC	ELECTRIC/ELECTRICAL	SQ FT	SQUARE FEET				
EAT	ENTERING AIR TEMPERATURE	SP	STATIC PRESSURE				
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR				
EFF	EFFICIENCY	TEMP	TEMPERATURE				
EL	ELEVATION	T-STAT	THERMOSTAT				
EMCS	ENERGY MONITORING AND CONTROL SYSTEM	TYP	TYPICAL				
EXH	EXHAUST	VAV	VARIABLE AIR VOLUME				
F	FAHRENHEIT	VFD	VARIABLE FREQUENCY DRIVE				
FLEX	FLEXIBLE	VD	VOLUME DAMPER				
FPM	FEET PER MINUTE	WT	WATTS				
FT	FEET, FOOT	WTR	WATER				
GPM	GALLONS PER MINUTE	WC	WATER COLUMN				
HC	HEATING COIL	WG	WATER GAUGE				
HVAC	HEATING, VENTILATION AND AIR CONDITIONING	WB	WET BULB				
HZ	HERTZ						

DUCTWORK SYMBOLS			
	SUPPLY AIR DIFFUSER - ARROWS INDICATE PATTERN. NO ARROWS SHOWN EQUALS 4-WAY.		FLEXIBLE DUCT CONNECTION TO EQUIPMENT
	RETURN/TRANSFER AIR GRILLE		SUPPLY AIR DUCT UP
	EXHAUST GRILLE		SUPPLY AIR DUCT DOWN
	SUPPLY AIR PLENUM SLOT DIFFUSER		RETURN AIR DUCT UP
	ROUND DUCTWORK		RETURN AIR DUCT DOWN
	RECTANGULAR DUCTWORK. SIZE INDICATED IN INCHES, FIRST NUMBER IS SIDE SHOWN		RELIEF OR EXHAUST AIR DUCT UP
	FLEXIBLE DUCT		RELIEF OR EXHAUST AIR DUCT DOWN
	RADIUS DUCTWORK ELBOW ROUND OR RECTANGULAR		90° ELBOW WITH TURNING VANES
	RECTANGULAR DUCTWORK BRANCH TAKE-OFF W/DAMPER AND 45 DEGREE BRANCH INLET		MOTORIZED DAMPER
	ROUND DUCT BRANCH TAKE-OFF FROM RECTANGULAR OR FLAT OVAL MAIN WITH CONICAL TAP. PROVIDE BALANCE DAMPER FOR LOW PRESSURE DUCTWORK ONLY		MANUAL VOLUME (BALANCE) DAMPER
	DUCTWORK SIZE TRANSITION.		FD - FIRE DAMPER
			SD - SMOKE DAMPER
			CD - COMBINATION FIRE/SMOKE DAMPER

PLAN SYMBOLOGY		
NEW PLANS		DOUBLE LINE
DUCTWORK	EXISTING TO REMAIN	
	DEMOLITION	
	NEW	
PIPING	EXISTING TO REMAIN	
	DEMOLITION	
	NEW	
EXISTING EQUIPMENT (FANS, AIR DEVICES, PUMPS, ETC.) TO BE RELOCATED.		
NEW EQUIPMENT		

EQUIPMENT DESIGNATIONS	
	LOUVER
	SUPPLY FAN

MISCELLANEOUS			
	DIFFUSER/GRILLE/REGISTER LABEL: "A" - TYPE/DESIGNATION "200" - AIRFLOW (CFM)		PRESSURE SENSOR
	THERMOSTAT (LOCAL CONTROL "X" INDICATES ZONE)		CO2 SENSOR
	TEMPERATURE SENSOR		DUCT MOUNTED STATIC PRESSURE SENSOR
	HUMIDITY SENSOR		DUCT SMOKE DETECTOR
			DRAWING NOTE REFERENCE
			DIAMETER/PHASE
			POINT OF NEW CONNECTION BETWEEN NEW AND EXISTING WORK
			SENSOR WITH LOCKING
			PROTECTIVE GUARD

GENERAL NOTES	
<p>1. THIS PROJECT IS DESIGNED BASED ON THE FOLLOWING CODES: INTERNATIONAL MECHANICAL CODE 2015, INTERNATIONAL ENERGY CONSERVATION CODE 2015, ASHRAE 62.1.</p> <p>2. ALL INFORMATION REQUIRED FOR DESIGN MAY NOT BE COVERED IN THE DRAWINGS. REFER TO DIVISION 23 TECHNICAL SPECIFICATIONS AND OTHER RELATED SECTIONS FOR ADDITIONAL INFORMATION.</p> <p>3. ALL DUCT SIZES SHOWN ON THE DRAWINGS ARE NET INSIDE CLEAR DIMENSIONS.</p> <p>4. UTILIZE LONG RADIUS ELBOWS WHERE SPACE PERMITS UNLESS OTHERWISE NOTED. ALL RECTANGULAR ELBOWS SHALL CONTAIN TURNING VANES.</p> <p>5. COORDINATE WITH OTHER UTILITIES TO AVOID INTERFERENCES WHEN INSTALLING DUCTWORK, PIPING AND EQUIPMENT.</p> <p>6. FURNISH AND INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS. PROVIDE MODIFICATIONS AND ACCESSORIES AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER TO ASSURE PROPER OPERATION OF THE EQUIPMENT.</p> <p>7. VERIFY DIMENSIONS, LOCATIONS, ELEVATIONS AND CONFIGURATION OF ALL ITEMS ASSOCIATED WITH THE INSTALLATION OF DUCTWORK AND EQUIPMENT.</p> <p>8. EQUIPMENT, DUCTWORK AND PIPING SHALL NOT BE SUPPORTED OR SECURED TO OTHER EQUIPMENT, DUCTWORK, PIPING OR OTHER UTILITIES.</p> <p>9. PAINT ALL EQUIPMENT VISIBLE THROUGH AIR DEVICES MATT BLACK.</p> <p>10. PROVIDE MANUAL VOLUME DAMPERS IN ALL DUCTWORK AT ALL DUCT SPLITS, BRANCH RUNOUTS AND DUCT COLLARS FOR REGISTERS. ALL MANUAL DAMPERS MAY NOT BE SHOWN ON DRAWINGS.</p> <p>11. ALL DUCTWORK SHALL BE CONSTRUCTED, SEALED AND INSTALLED IN CONFORMANCE TO SMACNA DUCT CONSTRUCTION STANDARDS.</p> <p>12. TO RESOLVE FIELD PROBLEMS IN ROUTING DUCTWORK THE CONTRACTOR SHALL USE THE SAME CIRCULAR EQUIVALENT DIAMETER TO TRANSFORM DUCT SIZE FROM THAT SPECIFIED ON THE DRAWINGS.</p> <div><div>DE =</div><div><div><div>1.30 (AB)</div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>IN INCHES</div><div>A = LENGTH OF ONE SIDE OF DUCT IN INCHES</div><div>B = LENGTH OF OTHER SIDE OF DUCT IN INCHES</div></div><p>13. PROVIDE FIRE DAMPERS IN DUCTWORK AT ALL FIRE BARRIER PENETRATIONS. PROVIDE ACCESS DOORS IN DUCTWORK TO VIEW AND SERVICE FIRE DAMPERS PER SMACNA AND APPLICABLE LOCAL CODES.</p><p>14. PROVIDE FIRE RESISTANT FLEXIBLE CONNECTION WHENEVER DUCTWORK IS CONNECTED TO MOTORIZED EQUIPMENT.</p><p>15. DUCT MATERIAL SHALL BE ZINC-COATED STEEL WITH METAL AND GALVANIZING THICKNESS AS PER SMACNA CONSTRUCTION STANDARDS.</p><p>16. PROVIDE OSHA-REQUIRED CLEARANCES AROUND ALL HVAC EQUIPMENT AND COMPONENTS FOR PERSONNEL ACCESS AND MAINTENANCE.</p><p>17. ALL PIPE HANGERS AND SUPPORTS SHALL COMPLY WITH MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) STANDARDS. VERTICAL PIPES MUST BE SUPPORTED AT EACH FLOOR WITH PIPE CLAMPS.</p><p>18. INSULATE BACKS AND PLENUMS OF SUPPLY AIR DEVICES WITH MINIMUM 1" MINERAL FIBER.</p><p>19. ALL AIR MOVING EQUIPMENT CONTAINING PARTICULATE FILTERS SHALL NOT BE OPERATED WITHOUT PARTICULATE FILTERS IN PLACE.</p><p>20. ADD DIELECTRIC CONNECTIONS BETWEEN PIPES OF DIFFERENT METALS.</p><p>21. MAINTAIN A VERTICAL SLOPE OF 1/8" PER FOOT IN THE DIRECTION OF FLOW FOR ALL HORIZONTAL CONDENSATE PIPING. ROUTE CONDENSATE DRAIN ALONG WALL TO TERMINATE OPEN-SITE AT MOP SINK.</p><p>22. INSTALL ALL PIPING PARALLEL TO BUILDING LINES UNLESS STATED OTHERWISE IN DRAWINGS.</p></div>	

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING

MECHANICAL

F&N JOB NO. JFF22292
DATE 05/15/2023
DESIGNED NMRB
DRAWN NMRB
REVISED
CHECKED WAY
FILE NAME HV-JFF22292-R21-RVT

NO. 0
ISSUE
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

VERIFY SCALE 1

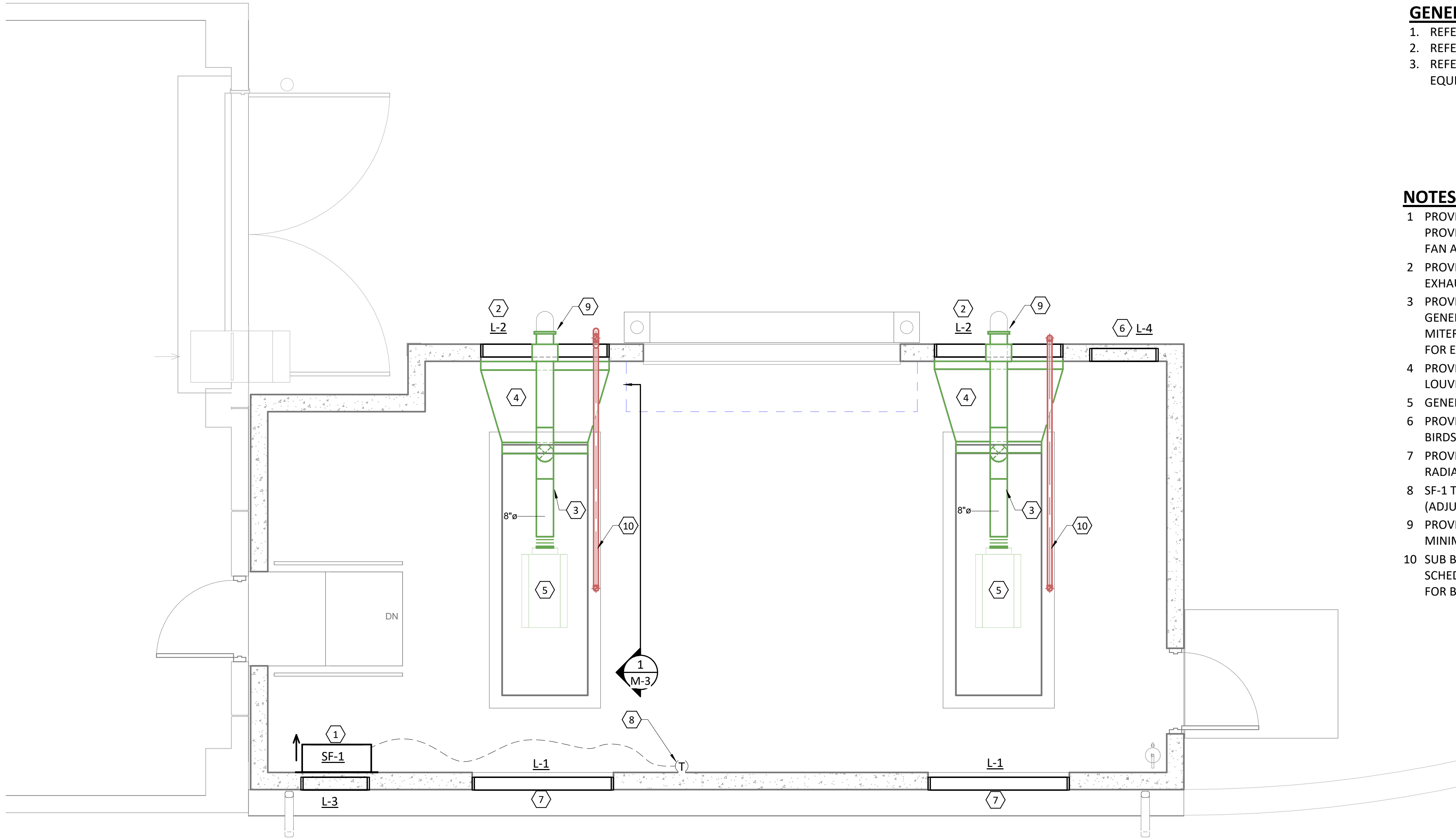
SHEET

M-1

SEQ.

21

ISSUED FOR BID



1 HVAC FLOOR PLAN
3/8" = 1'-0"

GENERAL NOTES

1. REFER TO M-1 FOR LEGEND, GENERAL NOTES AND ABBREVIATIONS.
2. REFER TO DIVISION 23 FOR TECHNICAL SPECIFICATIONS.
3. REFER TO SHEET E-6 FOR POWER ROUTING/CONNECTION TO MECHANICAL EQUIPMENT.

NOTES BY SYMBOL "⬡"

- 1 PROVIDE WALL MOUNTED SUPPLY FAN AND 32" X 32" INTAKE HURRICANE LOUVER. PROVIDE WITH BIRDSCREEN ON THE INSIDE OF THE LOUVER. MOUNT WITH BOTTOM OF FAN AT 8'-0" AFF. COORDINATE TO MAINTAIN A MINIMUM OF 1' CLEARANCE.
- 2 PROVIDE 84" X 60" EXHAUST HURRICANE LOUVER FOR GENERATOR AIRFLOW. CONNECT EXHAUST DUCT TO LOUVER. PROVIDE WITH BIRDSCREEN ON THE INSIDE OF THE LOUVER.
- 3 PROVIDE 8" ROUND EXHAUST PIPE WITH CALCIUM SILICATE INSULATION FOR GENERATOR EXHAUST. PROVIDE WITH REMOVABLE FLANGED OUTLET WITH 45 DEGREE MITER. PROVIDE WITH MANUFACTURES' BIRDSCREEN. FIELD VERIFY AND COORDINATE FOR EXACT LOCATIONS.
- 4 PROVIDE 2-HOUR RATED DUCT AND CONNECT FROM GENERATOR EXHAUST OPENING TO LOUVER. PROVIDE FLEXIBLE CONNECTOR AT EXHAUST CONNECTION.
- 5 GENERATOR EXHAUST MUFFLER PROVIDED BY OTHERS.
- 6 PROVIDE 32" X 32" EXHAUST HURRICANE LOUVER FOR ROOM AIRFLOW. PROVIDE WITH BIRDSCREEN ON THE INSIDE OF THE LOUVER.
- 7 PROVIDE 66" X 60" INTAKE HURRICANE LOUVER FOR GENERATOR COMBUSTION AND RADIATOR AIRFLOW. PROVIDE WITH BIRDSCREEN ON THE INSIDE OF THE LOUVER.
- 8 SF-1 THERMOSTAT MOUNTED AT 4'-0" AFF. SETPOINT TEMPERATURE AT 90 DEGREES F (ADJUSTABLE).
- 9 PROVIDE COWL AND BIRDSCREEN WITH A VENTILATED STAINLESS STEEL WALL THIMBLE MINIMUM OF 9" DIAMETER LARGER THAN THE EXHAUST PIPE.
- 10 SUB BASE FUEL TANK 2" VENT TO EXTERIOR. PIPE TO BE ASTM A 53/A 53M, BLACK STEEL, SCHEDULE 40, TYPE E OR S, GRADE B. STEEL WELDING FITTINGS: ASTM A 234/A 234M, FOR BUTT AND SOCKET WELDING.

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MECHANICAL

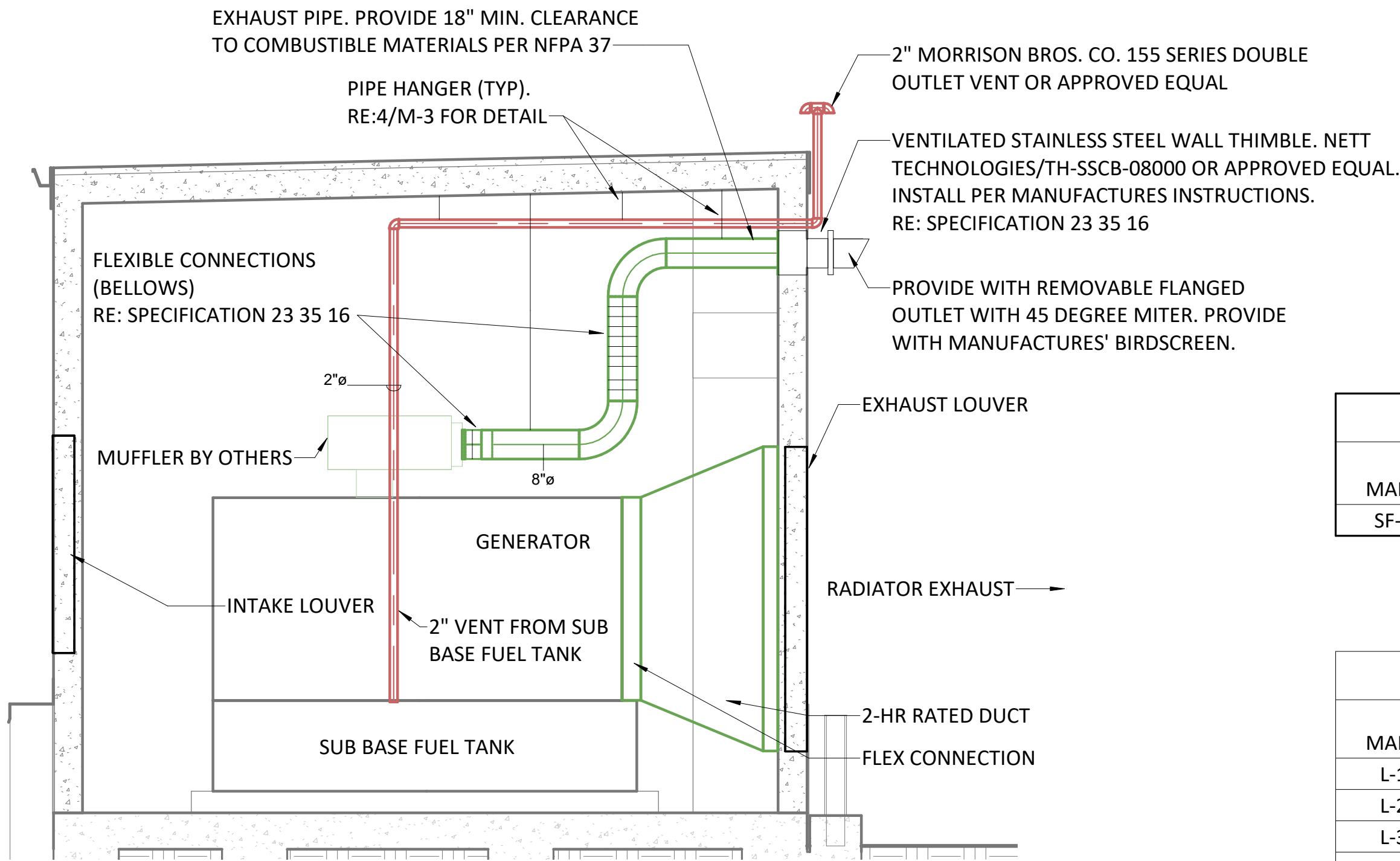
FLOOR PLAN

F&N JOB NO. JFF22292		DATE 05/15/2023		DESIGNED NMRB	DRAWN NMRB	REVIEWED NMRB	DATE	FILE NAME HV-JFF22292-R21-RVT
NO.		BY		ISSUE		Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.		VERIFY SCALE
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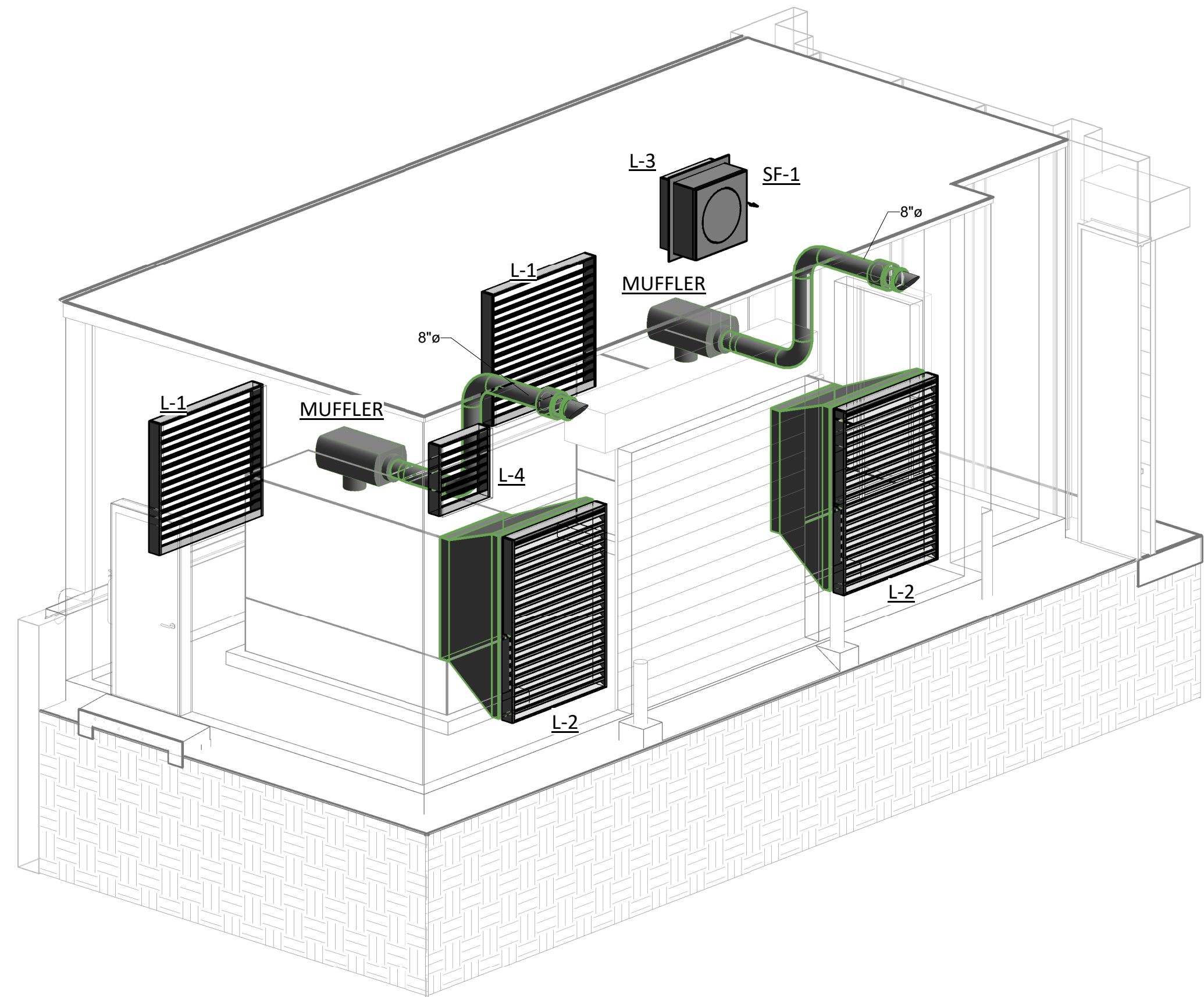
SHEET
M-2
SEQ.
22

0 1' 2' 4'
3/8"=1'-0"

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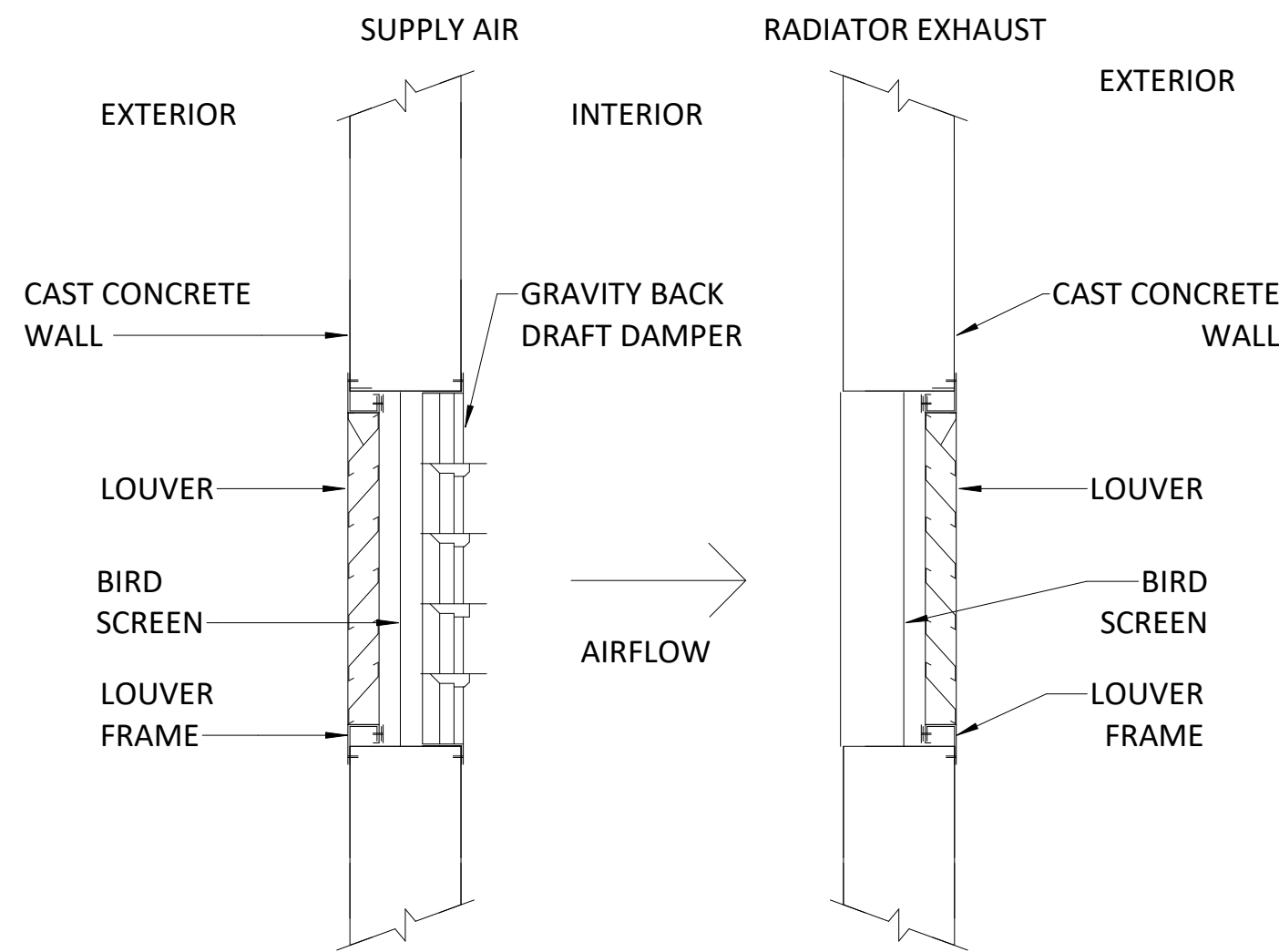
1 SECTION VIEW
3/8" = 1'-0"



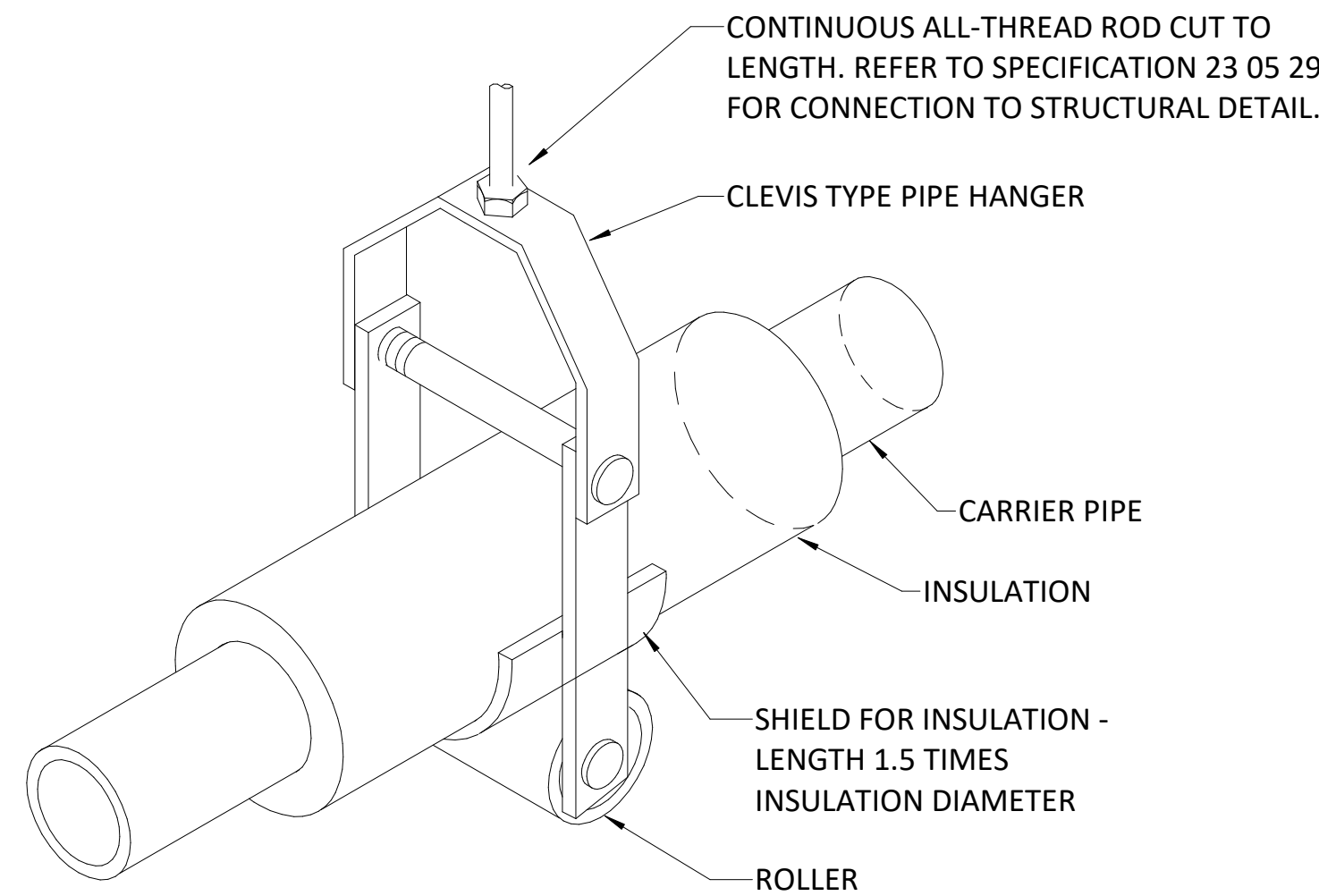
2 HVAC ISOMETRIC

SUPPLY FAN SCHEDULE										
MARK	TYPE	SERVICE	CFM	ESP (IN W.G)	MAX. SONES	UNIT ELECTRICAL				MANUFACTURER/MODEL
						HP	RPM	VOLTAGE	PHASE	
SF-1	SUPPLY	GENERATOR ROOM	1,000	0.50	16.3	0.25	1160	110	1	GREENHECK/AER-24-03-0603

LOUVER SCHEDULE									
MARK	COUNT	TYPE	AREA SERVED	CFM	ESP (IN W.G)	WIDTH	HEIGHT	FREE AREA (SQFT)	MANUFACTURER/MODEL
L-1	2	INTAKE	GENERATOR ROOM	12,800	0.09	66	60	16.6	GRRENHECK ESD-635X-66X60
L-2	2	EXHAUST	GENERATOR ROOM	10,800	0.03	60	84	22	GRRENHECK ESD-635X-60X84
L-3	1	INTAKE	GENERATOR ROOM	900	0.01	32	32	3.8	GRRENHECK ESD-635X-32X32
L-4	1	EXHAUST	GENERATOR ROOM	900	0.01	32	32	3.8	GRRENHECK ESD-635X-32X32



3 LOUVER DETAIL
NOT TO SCALE



4 ROLLER CLEVIS TYPE PIPE/DUCT HANGER
NOT TO SCALE

0 1' 2' 4'
3/8"=1'-0"

ISSUED FOR BID

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144



**FREES
NICHOLS**
10497 Town and Country Way,
Suite 500 Houston, TX 77024
Phone - (713) 600-6800
Web - www.freese.com

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
MECHANICAL

DETAILS AND SCHEDULE

F&N JOB NO. JFF22292		DATE 05/15/2023	DESIGNED MWRB	DRAWN MWRB	REVIEWED MWRB	CHECKED WAY	FILE NAME HV-JFF22292-R21-RVT
NO.		BY	DATE	ISSUE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.		
0		VERIFY SCALE		1			

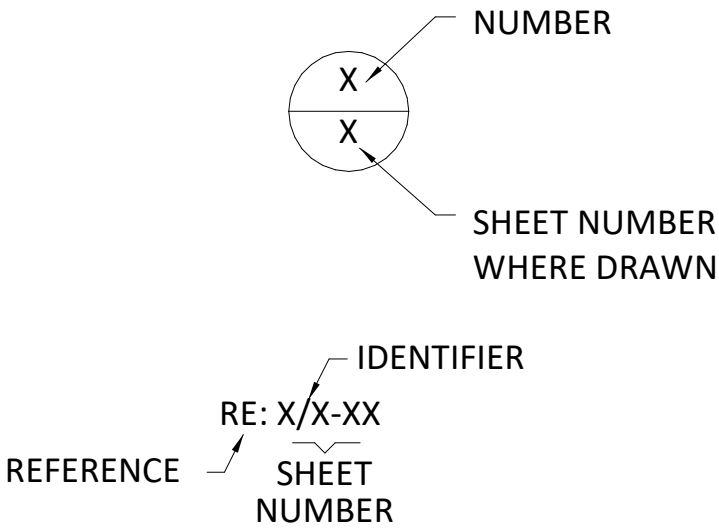
SHEET M-3

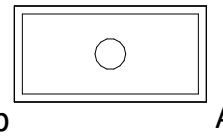






















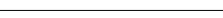





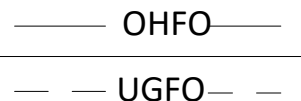



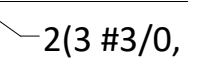






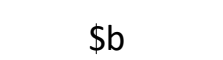




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











ABBREVIATIONS	
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR OR GRADE
AG	ABOVE GRADE
AGSB	ABOVE GROUND SPLICE BOX
AIC	AMPERES INTERRUPTING CAPACITY
AL OR ALUM	ALUMINUM
AMP OR A	AMPERE
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C.	CONDUIT
CB	CIRCUIT BREAKER
C/C	CENTER TO CENTER
CHH	COMMUNICATION HANDHOLE
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CMH	COMMUNICATION MANHOLE
CONT.	CONTINUATION
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH OR COMBINATION STARTER
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
EMH	ELECTRICAL MANHOLE
EC	EMPTY CONDUIT
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EHH	ELECTRICAL MANHOLE
EO	ELECTRICALLY OPERATED
ETM	ELAPSED TIME METER
EUC	ELECTRIC UTILITY CO.
EXIST.	EXISTING
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FT	FEET
FU	FUSE
G. OR GRD	GROUND
GA.	GAUGE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GFS	GROUND FAULT SENSING
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HP	HORSEPOWER
HT	HEIGHT
HTP	HEAT TRACE PANEL
HTR	HEATER
HZ	HERTZ
ID	INTERNAL DIAMETER
IMH	INSTRUMENT MANHOLE
INST	INSTRUMENT
IRP	INTERPOSING RELAY PANEL
JB	JUNCTION BOX
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LED	LIGHT EMITTING DIODE
LGTS ON LTG	LIGHTS/LIGHTING
LP	LIGHTING PANEL
LSIG	LONG, SHORT, INSTANTANEOUS, GROUND
MBFV	MOTOR OPERATED BUTTERFLY VALVE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MFR'S	MANUFACTURER'S
MH	MANHOLE
ML	MULTILIN
MM	MULTIMODE
MOV	MOTOR OPERATED VALVE
MLO	MAIN LUGS ONLY
MPR	MOTOR PROTECTION RELAY
MR	MULTIRATIO
MTD	MOUNTED










ABBREVIATIONS	
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
NC or N.C.	NORMALLY CLOSED
NF	NON-FUSED
NO or N.O.	NORMALLY OPEN OR NUMBER
NO.	NUMBER
OD	OUTSIDE DIAMETER
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
P	POLE
PB	PULL BOX OR PUSH BUTTON
PC	PHOTOCELL
PCC	PUMP CONTROL CONSOLE
PFR	PHASE FAILURE RELAY
PH	PHASE
PL.	PLATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PPR	PHASE PROTECTIVE RELAY
PR.	PAIR OR PAIR CABLE
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RC	REMOTE CONTROL
RCP	RELAY CONTROL PANEL
REC.	CIRCUIT RECLOSURE
RECP	RECEPTACLES
REQD.	REQUIRED
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
RVAT	REDUCED VOLTAGE AUTO-TRANSFORMER
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCTB	SHORT CIRCUIT TERMINAL BLOCK
SEC	SECONDS OR SECONDARY
SHLD. OR SH	SHIELD OR SHIELDED
SHT	SHEET
SM	SINGLE-MODE
SN OR S/N	SOLID NEUTRAL
SPD	SURGE PROTECTION DEVICES
SSRVS	SOLID-STATE REDUCED VOLTAGE STARTER
SS	STAINLESS STEEL
ST	STARTER
STA.	STATION
STC	SIGNAL TERMINATION CABINET
SV	SOLENOID VALVE
SW	SWITCH
SWGR	SWITCHGEAR
TC	TERMINATION CABINET OR TRAY CABLE
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TPR	TRANSFORMER PROTECTION RELAY
TR	TRIAD
TS	TEMPERATURE SWITCH
TW	TWISTED
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR CABLE
V	VOLTS
VAR.	VARIABLE
VFD	VARIABLE FREQUENCY DRIVE
VFI	VACUUM FAULT INTERRUPTER
VO	VALVE OPERATOR
W	WITH, WIRE OR WATT
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF

NOTE:
THIS IS A STANDARD LEGEND. THEREFORE NOT ALL OF
THIS INFORMATION MAY BE USED ON THIS PROJECT.




PLAN SYMBOL	DESCRIPTION
	LIGHTING FIXTURE "A" - FIXTURE TYPE "b" - SWITCH NUMBER
	EMERGENCY BATTERY PACK LIGHT FIXTURE "A" - FIXTURE TYPE
	CEILING MOUNTED EXIT SIGN "X" - FIXTURE TYPE
	WALL MOUNTED EXIT SIGN ARROW INDICATES DIRECTION OF EGRESS "X" - FIXTURE TYPE
	FIRE ALARM CONTROL PANEL
	MANUAL PULL STATION
	CEILING MOUNTED STROBE
	WALL MOUNTED STROBE
	SMOKE DETECTOR
	HEAT DETECTOR
	HORN
	COMBINATION STROBE/HORN
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCTBANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
	OVERHEAD ELECTRIC LINE
	UNDERGROUND ELECTRIC LINE
	OVERHEAD PRIMARY LINE
	UNDERGROUND PRIMARY LINE
	OVERHEAD SECONDARY LINE
	UNDERGROUND SECONDARY LINE
	OVERHEAD COMMUNICATION LINE
	UNDERGROUND COMMUNICATION LINE
	OVERHEAD FIBER OPTIC LINE
	UNDERGROUND FIBER OPTIC LINE
	FLEXIBLE METAL CONDUIT
	HEAT TRACE
	DENOTES A QUANTITY OF TWO (2) 3-INCH CONDUITS EACH CONTAINING THREE NO. 3/0 AWG CONDUCTORS AND ONE NO.2 AWG GROUND CONDUCTOR
	DENOTES A QUANTITY OF TWO INSTRUMENT CABLES. EACH CONSISTS OF TWO NO.16 AWG CONDUCTORS
	THREE 4-INCH CONDUITS
	CABLE TAG FOUR #14 CONTROL OR POWER CONDUCTORS, ONE #14 GROUND CONDUCTOR. ALL CONDUCTORS IN A 3/4" CONDUIT. TWO OF THE FOUR #14 CONTROL OR POWER CONDUCTORS ARE SPARE.
	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LA 2 #12, #12G., 3/4"C. UNLESS NOTED OTHERWISE
	SINGLE POLE SWITCH "b" - INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" - DESIGNATION
	MULTI POLE SWITCH "x" - INDICATES NUMBER OF POLE "c" - INDICATES SWITCH SHALL CONTROL LIGHT FIXTURES WITH "c" DESIGNATION
	MANUAL MOTOR STARTER /DISCONNECT
	3 WAY SWITCH
	4 WAY SWITCH
	DIMMER LIGHTING CONTROL SWITCH
	TIME SWITCH
	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W * "C" - MOUNTED ABOVE COUNTERTOP "GFI" OR "GF" - GROUND FAULT INTERRUPTER TYPE "WP" - WEATHERPROOF
	FLOOR MOUNTED RECEPTACLE
	SIMPLEX RECEPTACLE, GROUNDED TYPE
	QUADPLEX RECEPTACLE

PLAN SYMBOL	DESCRIPTION
	JUNCTION BOX
	PULL BOX
	TERMINAL CABINET
	OCCUPANCY SENSOR
	PHOTOCELL
	PREWIRED
	MANHOLE
	UTILITY METER
	MOTORIZED LOUVER
	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 12 CONSTRUCTION UNLESS OTHERWISE NOTED
	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4 CONSTRUCTION UNLESS OTHERWISE NOTED
	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4X CONSTRUCTION UNLESS OTHERWISE NOTED
	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL CONFORM TO N.E.C REQUIREMENTS FOR THE HAZARDOUS AREA CLASSIFICATION SHOWN

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	 OR 	PANEL
		MOTOR, NUMBER DESIGNATES HORSEPOWER
	-	VOLTMETER (WITH SWITCH IF 3-PHASE)
	-	AMMETER (WITH SWITCH IF 3-PHASE)
	-	*METER WM - WATTMETER WHM - WATTHOUR METER WHDM - WATTHOUR DEMAND METER WHDR - WATTHOUR DEMAND RECORDER PF - POWER FACTOR METER ETM - ELAPSED TIME METER TRANSDUCER AX - CURRENT TRANSDUCER WX - WATT TRANSDUCER
	-	RELAY, NO. AS INDICATED 25 - SYNCHRONISM CHECK RELAY 27 - UNDER VOLTAGE RELAY 38 - BEARING PROTECTIVE DEVICE 40 - LOSS OF EXCITATION RELAY 42 - RUNNING CONTACTOR/PILOT RELAY 46 - REVERSE PHASE/PHASE BALANCE/CURRENT RELAY 47 - PHASE SEQUENCE VOLTAGE RELAY 48 - MACHINE OR TRANSFORMER THERMAL RELAY 50 - INSTANTANEOUS OVERCURRENT RELAY 50G - INSTANTANEOUS GROUND 51 - TIME OVER CURRENT RELAY, GROUNDING RESISTOR TYPE 51N - TIME OVERCURRENT RELAY, RESIDUAL TYPE 51V - TIME OVERCURRENT RELAY WITH VOLTAGE RESTRAINT 59 - OVER VOLTAGE RELAY 60 - NEGATIVE SEQUENCE VOLTAGE RELAY 62 - TIME DELAY RELAY 63 - OVER PRESSURE RELAY 67 - AC DIRECTIONAL OVERCURRENT RELAY 83 - AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY 86 - LOCKING-OUT RELAY 87 - DIFFERENTIAL PROTECTIVE RELAY B - SUFFIX INDICATES "BUS" G - SUFFIX INDICATES "GENERATOR" GF - GROUND FAULT IR - INTERPOSING RELAY PFR - PHASE FAILURE, PHASE REVERSAL, UNDERVOLTAGE, OVERVOLTAGE RELAY ST - SHUNT TRIP T - SUFFIX INDICATES "TRANSFORMER" TRP CAP - CAPACITOR TRIP X - SUFFIX INDICATES "AUXILIARY"

ISSUED FOR BID

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144



05/12/2023

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ELECTRICAL
LEGEND I

F&N JOB NO. JFF22292
DATE 05/15/2023
DESIGNED MCD
DRAWN GTN
REVISED
CHECKED JMC
FILE NAME EL-JFF22292-R21.RVT

NO. 0
VERIFY SCALE 1
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET E-1
SEQ. 24

Plot Date: 5/12/2023 5:04:36 PM

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION																
	-	AC INDUSTRIAL CONTROL RELAY COIL, # - NUMBER AS INDICATED																
	-	MOTOR STARTER COIL, # - NUMBER AS INDICATED																
	-	SPECIAL CAPACITOR * SC - SURGE CAPACITOR PF - POWER FACTOR CORRECTION CAPACITOR																
	-	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED																
	-	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN																
	-	EMERGENCY STOP PUSH BUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)																
	-	OFF/ON SELECTOR SWITCH																
	-	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O-OPEN X-CLOSED <table><tr><th>POSITION</th><th>TOP CONTACT</th><th>MIDDLE CONTACT</th><th>BOTTOM CONTACT</th></tr><tr><td>A</td><td>X</td><td>O</td><td>O</td></tr><tr><td>B</td><td>O</td><td>O</td><td>O</td></tr><tr><td>C</td><td>O</td><td>O</td><td>X</td></tr></table> (A/B/C) HOA - HAND/OFF/AUTO HOR - HAND/OFF/REMOTE LOR - LOCAL/OFF/REMOTE OCS - OPEN/CLOSE/STOP OOA - ON/OFF/AUTO NOTE: 2 POSITION MULTI-CONTACT SWITCH FOLLOWS SAME CONVENTION	POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT	A	X	O	O	B	O	O	O	C	O	O	X
POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT															
A	X	O	O															
B	O	O	O															
C	O	O	X															
	-	INDICATING LAMP, COLOR INDICATED * R - RED G - GREEN B - BLUE W - WHITE A - AMBER O - ORANGE PTT - PUSH TO TEST																
	-	MEDIUM VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER																
		LOW VOLTAGE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED A - AMP TRIP, P - POLES																
		MOTOR CIRCUIT PROTECTOR																
		COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER * FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE NOTED: FVR - FULL VOLTAGE REVERSING FVNR - FULL VOLTAGE, NON REVERSING RVNR - REDUCED VOLTAGE NON-REVERSING 2S1W - TWO SPEED, ONE WINDING 2S2W - TWO SPEED, TWO WINDING Sz# - NEMA SIZE OF STARTER																
		NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE * AMPERE RATING NOTED																
		FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED * AMPERE RATING NOTED * FUSE RATING																
	-	DRAWOUT TYPE EQUIPMENT OR DEVICE																
	-	MEDIUM VOLTAGE CABLE TERMINATION																
	-	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH																
	-	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH																
	-	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER FUSED CONTACTOR DRAWOUT TYPE																
	-	VACUUM CONTACTOR																
	-	SPEED POTENTIOMETER																

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
		TIMING RELAY RANGE AS NOTED, SET POINT AS NOTED #-NUMBER AS INDICATED TDD-TIME DELAY AFTER DE-ENERGIZATION-OFF DELAY TDE-TIME DELAY AFTER ENERGIZATION-ON DELAY NOTC-NORMALLY OPEN, TIMED CLOSING WHEN ENERGIZED NCTO-NORMALLY CLOSED, TIMED OPENING WHEN ENERGIZED NOTO-NORMALLY OPEN, TIMED OPENING WHEN DE-ENERGIZED NCTC-NORMALLY CLOSED, TIMED CLOSING WHEN DE-ENERGIZED
		FIELD INSTRUMENT, TAG NO. OR LOOP NO. AS INDICATED * - INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS ## - INDICATES LOOP NO.
		LIQUID LEVEL (FLOAT) SWITCH NORMALLY CLOSED, OPENS ON FALLING LEVEL NORMALLY OPEN, CLOSSES ON FALLING LEVEL NORMALLY CLOSED, OPENS ON RISING LEVEL NORMALLY OPEN, CLOSSES ON RISING LEVEL
		PRESSURE OR VACUUM SWITCH NORMALLY OPEN, CLOSSES ON RISING PRESSURE NORMALLY CLOSED, OPENS ON RISING PRESSURE NORMALLY OPEN, CLOSSES ON DROPPING PRESSURE NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
		TEMPERATURE SWITCH OR THERMOSTAT NORMALLY OPEN, CLOSSES ON RISING TEMPERATURE NORMALLY OPEN, CLOSSES ON DROPPING TEMPERATURE NORMALLY CLOSED, OPENS ON RISING TEMPERATURE NORMALLY CLOSED, OPENS ON DROPPING TEMPERATURE
		FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSSES ON INCREASED FLOW NORMALLY CLOSED, OPENS ON INCREASED FLOW
		POSITION (LIMIT) SWITCH NORMALLY OPEN NORMALLY OPEN - HELD CLOSED NORMALLY CLOSED NORMALLY CLOSED - HELD OPEN
		TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
		TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED
	-	CURRENT TRANSFORMER # - QUANTITY A - RATIO
	-	POTENTIAL TRANSFORMER # - QUANTITY
	-	GROUND CURRENT SENSOR TRANSFORMER # - QUANTITY A - RATIO
	-	CONTROL TRANSFORMER
	-	CONTROL POWER TRANSFORMER
	-	GENERATOR, RATINGS AND CONNECTIONS AS NOTED
	-	TRANSFER SWITCH ATS - AUTOMATIC TRANSFER SWITCH MTS - MANUAL TRANSFER SWITCH "N" INDICATES NORMAL SOURCE "S" INDICATES STANDBY SOURCE #A INDICATES CONTINUOUS CURRENT RATING
	-	MOTOR OVERLOAD OVERLOAD RELAY HEATER

SYMBOL	DESCRIPTION
	DATA
	TELEPHONE
	COMBINATION TELEPHONE/DATA
	FLOOR MOUNTED DATA OUTLET
	FLOOR MOUNTED TELEPHONE OUTLET
	POKE-THRU DEVICE COMBINATION POWER/DATA/VOICE OUTLET
	FLOOR COMBINATION POWER/DATA/VOICE OUTLET
	CATV
	SECURITY CAMERA * F - FIXED Z - PAN/TILT/ZOOM
	SECURITY DEVICE SEC - SECURITY PANEL MAG - MAGNETIC LOCK CR - CARD READERS DR - REMOTE DOOR RELEASE MD - MOTION DETECTOR SK - SECURITY KEYPAD ES - ELECTRIC STRIKE DS - DOOR SWITCH IC - INTERCOM STATION SB - SECURITY PANIC BUTTON

NOTE:
THIS IS A STANDARD LEGEND.
THEREFORE NOT ALL OF THIS
INFORMATION MAY BE USED ON
THIS PROJECT.

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	-	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	-	CONDUCTORS ELECTRICALLY CONNECTED
	-	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
	-	LIGHTNING ARRESTER
		GROUND ROD
		GROUND ROD TEST WELL
	-	FUSE, AMPERE RATING AS NOTED
	-	HEATER
	-	INDUCTOR
	-	CONTACT, NORMALLY OPEN (NO)
	-	CONTACT, NORMALLY CLOSED (NC)
	-	OVERLOAD CONTACT
	-	KIRK KEY INTERLOCK
	-	MECHANICAL INTERLOCK
	-	TERMINAL
	-	NODE
	-	TERMINAL OR TEST BLOCK
	-	PUSH BUTTON STATION, REFER TO ELECTRICAL SHEET REFERENCE SCHEMATIC FOR NUMBER OF DEVICES.
	-	LOCATED AT SCADA RTU
	-	LOCATED REMOTE
	-	LOCATED AT MOTOR
	-	FUSED SWITCH/FUSED CUTOUT
		UTILITY METER

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Texas Registered Engineering Firm F-2144

JEFFERSON COUNTY, TX

CRANE BAYOU PUMP STATION

GENERATORS AND BUILDING

ELECTRICAL

LEGEND II



JEFFERSON COUNTY, TX

CRANE BAYOU PUMP STATION

GENERATORS AND BUILDING

ELECTRICAL

LEGEND II

FILE NAME

EL-JFF22292-R21.RVT

DATE

05/15/2023

DESIGNED

MCD

DRAWN

GTN

REVIEWED

JMC

DATE

BY

ISSUE

VERIFY SCALE

0 1

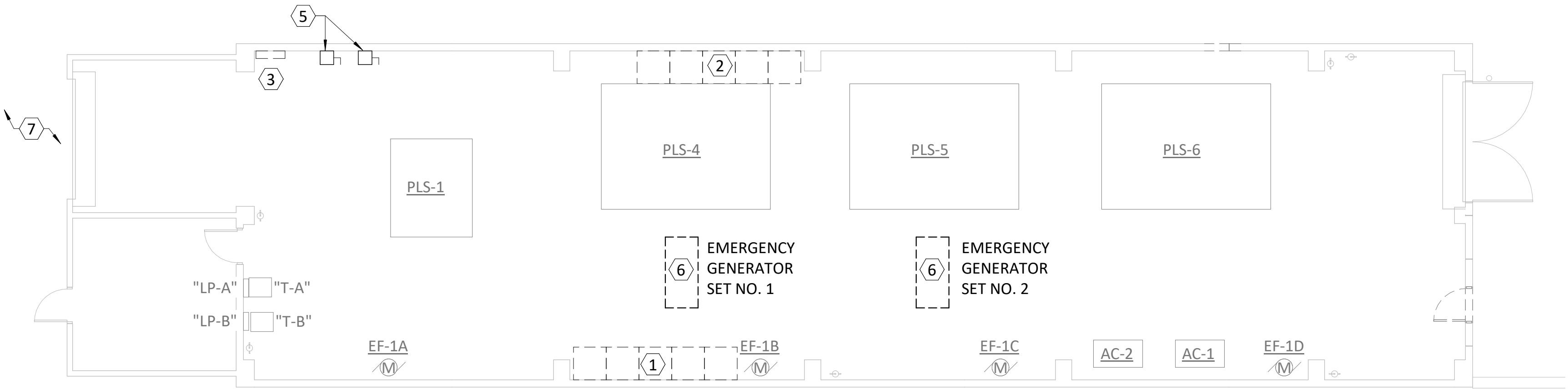
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SHEET

E-2

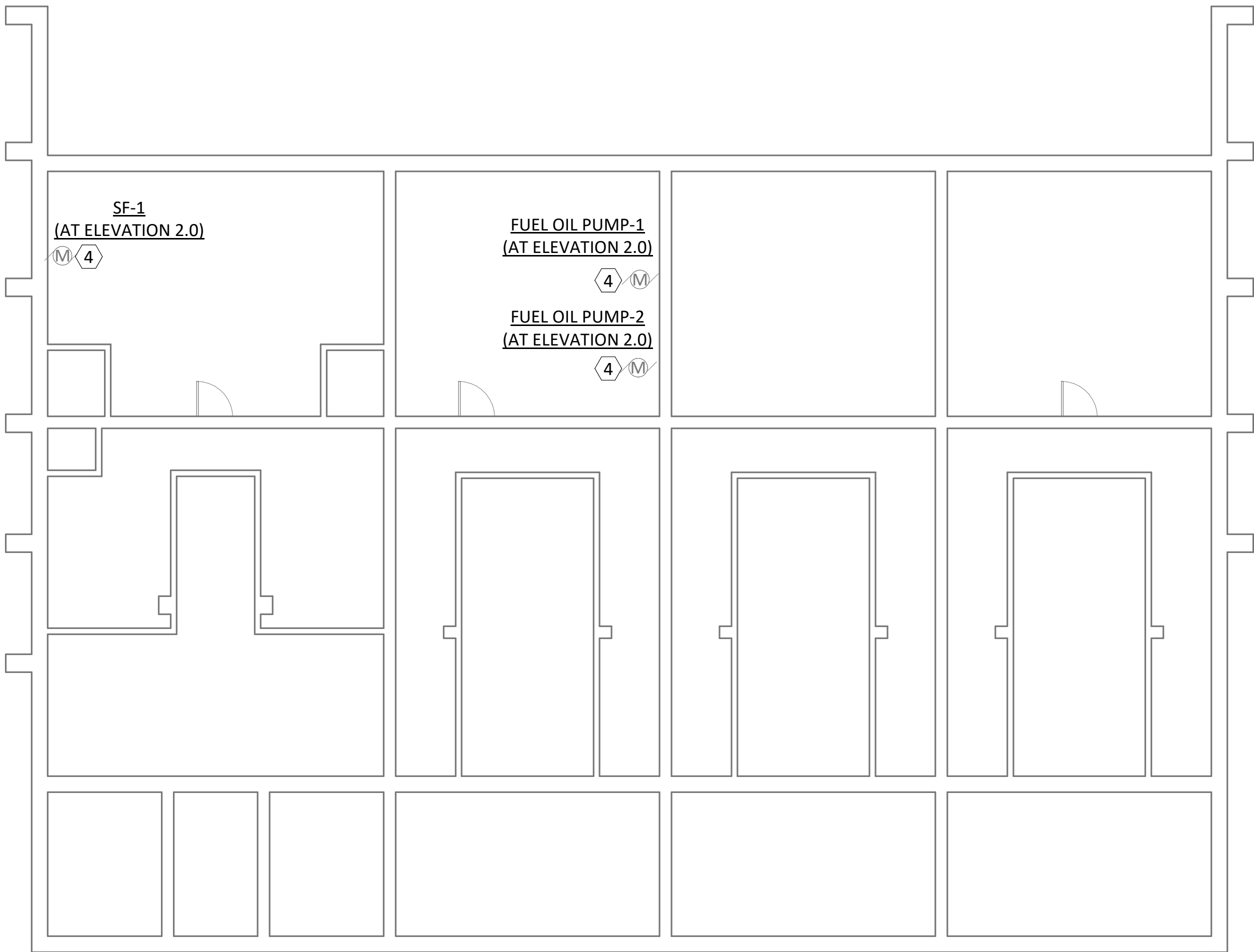
SEQ.

25



DEMOLITION PUMP BUILDING - FLOOR PLAN AT
ELEVATION 13.5

1
1/8" = 1'-0"



EXISTING PUMP BUILDING - GRADE LEVEL PLAN AT
ELEVATION 4.5

2
1/8" = 1'-0"

NOTES BY SYMBOL " " "

1. EXISTING MCC TO BE REMOVED PER THE DEMOLITION ORDER OF SEQUENCE NOTES.
2. PROPOSED LOCATION OF TEMPORARY 'MCC' WITH MTS, FINAL LOCATION TO BE DETERMINED BY CONTRACTOR WITH THE OWNER'S APPROVAL. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PLACEMENT.
3. EXISTING 'MDP' TO BE REMOVED.
4. LOCATION OF EXISTING EQUIPMENT TO RECONNECT TO PROPOSED MCC. RE: E-10
5. DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCHES FEEDING SUMP PUMPS 1 AND 2. REMOVE EXISTING WIRE AND CONDUIT BACK TO SOURCE. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF DEMOLITION WORK.
6. DISCONNECT AND REMOVE EXISTING GENERATOR SETS 1 AND 2. SALVAGE AND RETURN GENERATOR SETS BACK TO OWNER UNLESS OWNER INDICATES TO RECYCLE. CONTRACTOR MUST HAVE APPROVAL FROM THE OWNER PRIOR TO DEMOLISHING THE EMERGENCY GENERATOR SETS.
7. PROVIDE A TEMPORARY 200KW PORTABLE STANDBY EMERGENCY GENERATOR SET TO CONNECT TEMPORARY MTS AND MCC. LOCATION TO BE DETERMINED AND COORDINATED WITH DD7. FIELD VERIFY EXISTING CONDITIONS PRIOR TO MAKING FINAL CONNECTION.
8. ELECTRICAL DEMOLITION DRAWING DOES NOT SHOW ALL EQUIPMENT FED FROM THE EXISTING MCC TO BE TRANSFERRED TO THE TEMPORARY MCC. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL THE EQUIPMENT FED FROM THE EXISTING MCC TO ESTABLISH THE BEST ROUTE TO TRANSFER THE LOAD TO THE TEMPORARY MCC.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL INSTALL A TEMPORARY 'MCC' INSIDE THE PUMPS STATION JUST ACROSS THE ROOM FROM THE EXISTING 'MCC'. EXACT LOCATION AND CONDUIT ROUTE SHOULD BE COORDINATED WITH THE ENGINEER.
2. THE CONTRACTOR SHALL NOT LEAVE THE PUMP STATION OUT OF OPERATION WHILE TRANSFERING THE LOAD TO/FROM THE TEMPORARY 'MCC' FROM THE MAIN PANEL LOCATED INSIDE THE PUMP STATION. THIS INCLUDES A NEW TEMPORARY 300A BREAKER.
3. CONTRACTOR SHALL COORDINATE WITH OWNER THE ORDER OF THE LOAD TO BE TRANSFERRED TO THE TEMPORARY 'MCC'. SPECIAL CONSIDERATION SHALL BE GIVEN TO THE LOAD THAT HAS REDUNDANCY.
4. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, A SUGGESTED LOAD RELOCATION SHALL BE IN THE FOLLOWING ORDER FROM THE EXISTING 'MCC' TO THE TEMPORARY 'MCC':
 - AIR COMPRESSOR #1(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - OIL PUMP #1(REFER TO DETAIL 2 AND CONTRACTOR TO FIELD VERIFY EXACT LOCATION)
 - LP-A (30KVA TRANSFORMER)(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - LP-B (30KVA TRANSFORMER)(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - RAKE FEED #1(LOCATED OUTSIDE OF THE BAR SCREENS)
 - MOV#1(CONTRACTOR TO FIELD VERIFY EXACT LOCATION)
 - MOV#2(CONTRACTOR TO FIELD VERIFY EXACT LOCATION)
 - MOV#3(CONTRACTOR TO FIELD VERIFY EXACT LOCATION)
 - EXHAUST FAN 1A(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - EXHAUST FAN 1B(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - EXHAUST FAN 1C(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - SUPPLY FAN 1A(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - AIR COMPRESSOR #2(APPROXIMATE LOCATION REFER TO DETAIL 1 THIS SHEET)
 - OIL PUMP #2(REFER TO DETAIL 2 AND CONTRACTOR TO FIELD VERIFY EXACT LOCATION)
 - RAKE FEED #2(LOCATED OUTSIDE OF THE BAR SCREENS)
5. THE TWO SUMP PUMP (60HP) COULD CONTINUE TO BE FED FROM THEIR ACTUAL SOURCE, EXISTING 'MDP', WHILE THE OLD 'MCC' IS BEING REPLACED.
6. CONTRACTOR TO COORDINATE WITH OWNER ON DOWNTIME TIMEFRAME AND PROVIDE 2 WEEKS OF WRITTEN NOTICE TO THE OWNER PRIOR TO START OF DEMOLITION WORK. AFTER RECEIVING THE OWNER'S AUTHORIZATION TO START WORK, IT IS REQUIRED THAT THE CONTRACTOR PROVIDE A DETAILED STEP PLAN OF THE PROCEDURE TO REPLACE THE EXISTING 'MCC' THAT INCLUDES, BUT WITHOUT LIMITATION, THE SAFETY PROCEDURES (INCLUDING THE LOCKOUT- TAGOUT), THE RISK AND THE MITIGATION ACTION FOR EVERY STEP. CONTRACTOR TO GIVE THE OWNER 48 HOURS NOTICE PRIOR TO A SHUTDOWN, DUE TO WEATHER THE OWNER HAS A RIGHT TO REFUSAL.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A PRE-WORK WALK TO GO THROUGH THE DETAILED STEP PLAN FOR APPROVAL BY OWNER.

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



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JEFFERSON COUNTY, TX
**CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING**
ELECTRICAL
**PUMP BUILDING
ELECTRICAL DEMOLITION**

F&N JOB NO.		JFF22292									
DATE		05/15/2023									
DESIGNED		MCD									
DRAWN		GTN									
REVISED		JMC									
CHECKED		JMC									
FILE NAME		EL-JFF22292-R21.RVT									
NO.		ISSUE		BY		Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.					
VERIFY SCALE		0		1							

SHEET

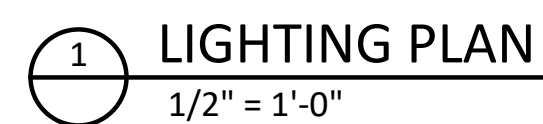
E-3

SEQ.

26

1. ALL EQUIPMENT SHOWN BOLD TO BE PROVIDED UNDER THIS CONTRACT.
2. ALL RECEPTACLE, LIGHTING, AND MISCELLANEOUS EQUIPMENT WIRING LESS THAN 150'-0" IN LENGTH WILL BE 2 #12, #12G., #3/4"C. MINIMUM. ALL RECEPTACLE, LIGHTING, & MISCELLANEOUS EQUIPMENT WIRING OVER 150'-0" IN LENGTH WILL BE 2 #10, #10G., 1"C. MINIMUM UNLESS SPECIFIED OTHERWISE.
3. PROVIDE AN UNSWITCHED "HOT" CONNECTION TO THE CHARGING CIRCUIT OF ALL FIXTURES THAT ARE BEING PROVIDED WITH INTEGRAL BATTERY PACKS.

1. MOUNT LIGHT FIXTURE TYPE "A" SURFACE MOUNTED AT 14'-0" AFF.
2. MOUNT LIGHT FIXTURE AT 11'-6" AFF.
3. EXIT SIGN SHALL NOT BE FED THROUGH A SWITCH. IT SHALL REMAIN ON. MOUNT EXIT SIGN AT 1'-0" ABOVE DOORWAY.



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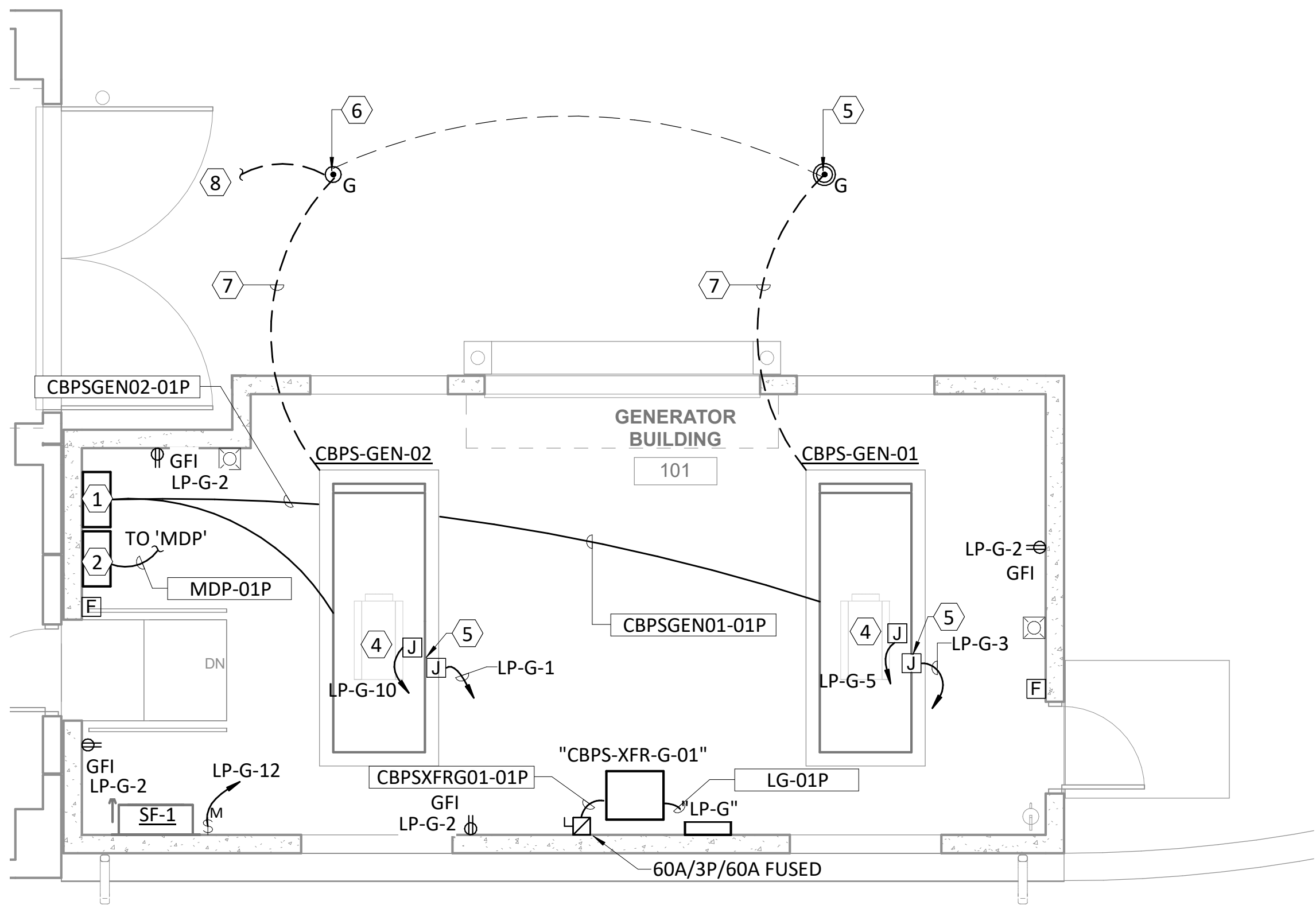


JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ELECTRICAL
GENERATOR BUILDING
LIGHTING PLAN

DATE	05/15/2023	DESIGNED	MCD	DRAWN	GTN	REVISED	JMC
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NO.		ISSUE	BY	DATE	FILE NAME	EL-JF22292-R21.RVT	
VERIFY SCALE	0						



1. PROPOSED 600A 'MCC'.
2. PROPOSED 800A 480V/277V, 3-PHASE, 4-WIRE 'MDP'. RE: E-10
3. PROPOSED SERVICE ENTRANCE 800A FUSED DISCONNECT SWITCH. RE: E-10



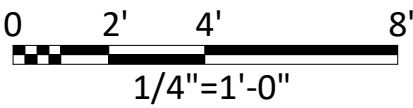
POWER, GROUNDING AND FA PLAN GENERATOR BUILDING
1
E-5
1/4" = 1'-0"

GENERAL NOTES:

1. ALL EQUIPMENT SHOWN BOLD TO BE PROVIDED UNDER THIS CONTRACT.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR SIZING AND PROVIDING ALL PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
3. REFER TO ONE-LINE DIAGRAM FOR FINAL DESTINATIONS OF CABLES AND CONDUITS. ALL CIRCUITS AND FEEDERS SHALL BE ROUTED IN SEPARATE CONDUITS PER ONE-LINE DIAGRAMS UNLESS NOTED OTHERWISE.
4. POWER, DISCRETE, ANALOG SIGNAL AND COMMUNICATION CONDUCTORS SHALL BE ROUTED IN SEPARATE CONDUITS.
5. ALL RECEPTACLE, LIGHTING, AND MISCELLANEOUS EQUIPMENT WIRING LESS THAN 150'-0" IN LENGTH WILL BE 2 #12, #12G., #3/4"C. MINIMUM. ALL RECEPTACLE, LIGHTING, & MISCELLANEOUS EQUIPMENT WIRING OVER 150'-0" IN LENGTH WILL BE 2 #10, #10G., 1"C. MINIMUM UNLESS SPECIFIED OTHERWISE.
6. STUB AND CAP ALL SPARE CONDUITS AT THE FLOOR WITH A PULL STRING.
7. PROVIDE A LOCAL FIRE ALARM ON THE OUTSIDE OF THE BUILDING FOR EMERGENCY SHUTDOWN.
8. ALL ANALOG (4-20mA) SIGNALS, AND COMMUNCATION SIGNALS (CAT 6) WILL BE ROUTED IN PVC COATED RIGID STEEL CONDUIT FOR ALL UNDERGROUND APPLICATIONS. RE: E-12
9. CONTRACTOR WILL PROVIDE ALL MATERIALS AS REQUIRED FOR A COMPLETE GROUNDING SYSTEM. THE GROUNDING PLAN DOES NOT SHOW ALL GROUNDING AS REQUIRED BY CODES, STANDARDS, AND THE SPECIFICATIONS. THE CONTRACTOR WILL GROUND ALL EQUIPMENT IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND SPECIFICATION SECTION 26 06 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEM.
10. THE GROUNDING RING CONDUCTOR WILL BE #4/0 BARE TINNED COPPER.
11. PROVIDE ALL REQUIRED MONITOR MODULES, RELAYS, WIRING AND CONDUITS FOR COMPLETE OPERATIONAL SYSTEM.
12. A/V DEVICE LAYOUT INDICATED IS BASED ON 75cd MINIMUM STROBES. STROBE INTENSITY SHALL FIELD SELECTABLE TO ACHIEVE THE REQUIRED COVERAGE THROUGHOUT THE SPACE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 72 AND THE SPECIFICATIONS.
13. DEVICES SHALL BE SUITABLE FOR THE ENVIRONMENT AND APPLICATION OF ASSOCIATED SPARE/AREA.
14. A LICENSED FIRE PROTECTION ENGINEER SHALL REVIEW AND STAMP/SEAL THE FINAL ALARM SYSTEM DESIGN. DEVICES ON THESE PLANS ARE BASED ON PRESCRIPTION BASED REQUIREMENTS.

NOTES BY SYMBOL " " "

1. 400A GENERATOR SELECTOR SWITCH. RE: E-10
2. 400A 'ATS'. RE: E-10
3. GENERATOR BATTERY CHARGER.
4. GENERATOR BLOCK HEATER.
5. GROUND ROD TEST WELL.
6. 3/4" X 10' COPPER CLAD GROUND ROD.
7. GENERATOR GROUND CONNECTION. COORDINATE WITH THE GENERATOR MANUFACTURER FOR EXACT LOCATION OF GROUND CONNECTION.
8. CONNECT GROUNDING ELECTRODE CONDUCTOR TO EXISTING BUILDING GROUND SYSTEM. FIELD VERIFY LOCATION OF EXISTING GROUND PRIOR TO START OF WORK.



ISSUED FOR BID

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144



05/12/2023



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Web - www.freese.com

JEFFERSON COUNTY, TX
**CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING**

ELECTRICAL
**GENERATOR BUILDING
ENLARGED POWER PLAN**

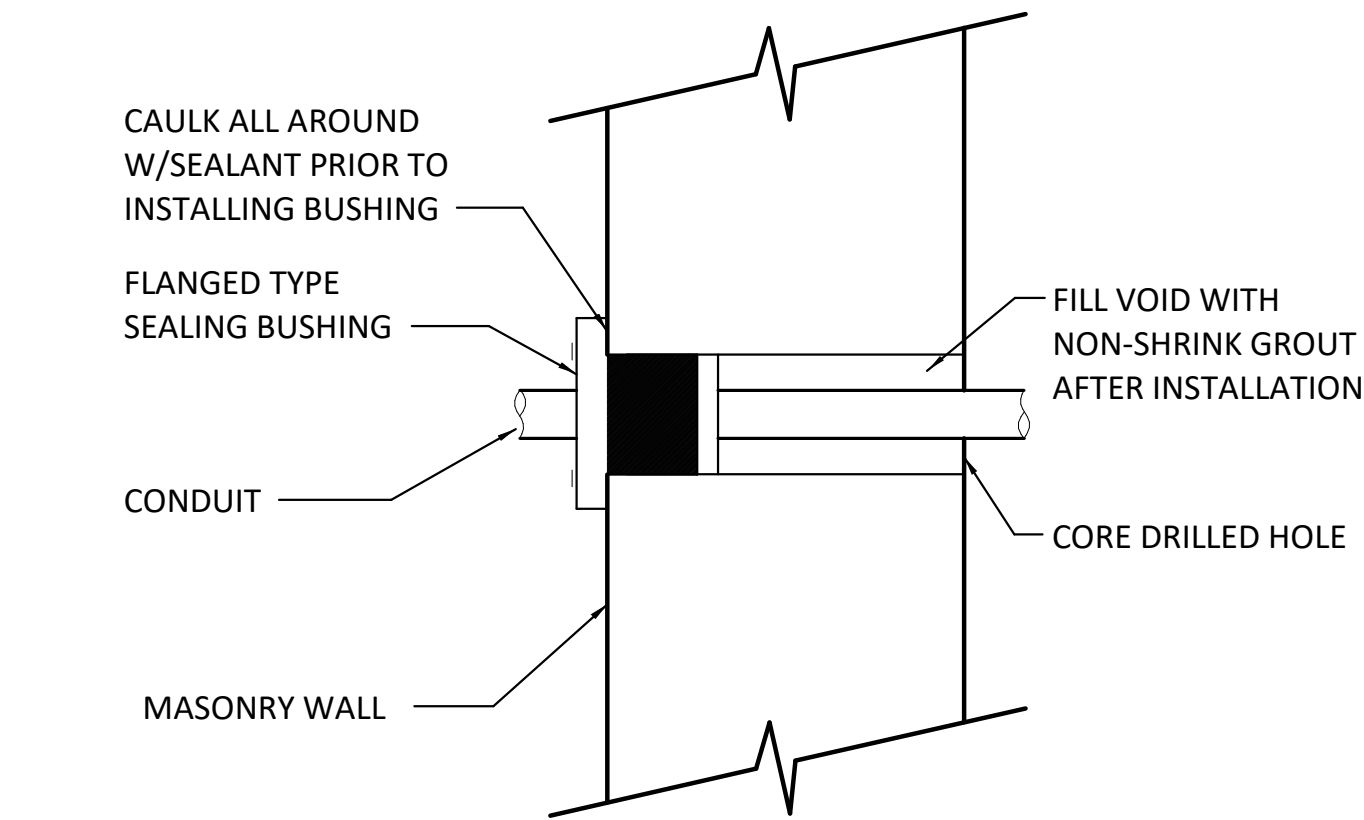
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DATE	DESIGNED	05/15/2023
DRAWN	MCD	
REVIEWED	GTN	
CHECKED	JMC	
FILE NAME	EL-JFF22292-R21.RVT	
NO.	ISSUE	
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SHEET

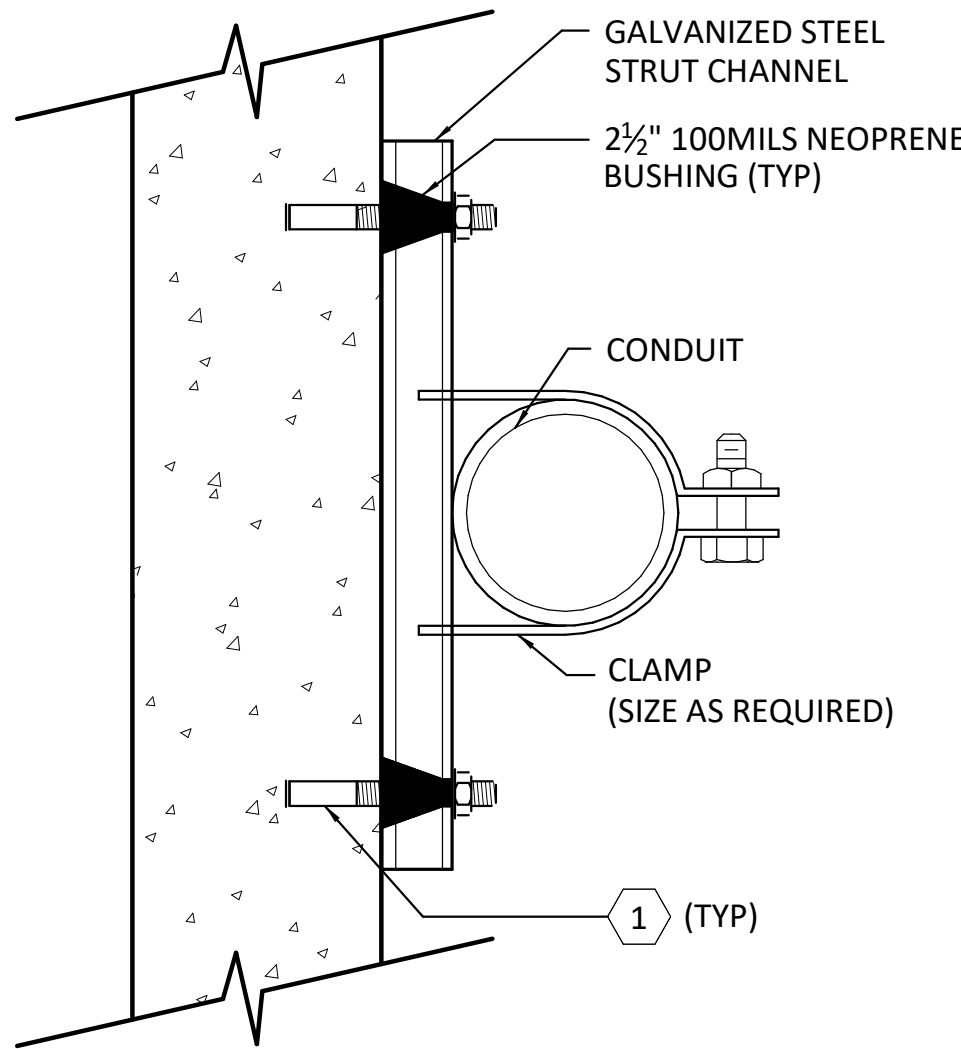
E-6

SEQ.

29

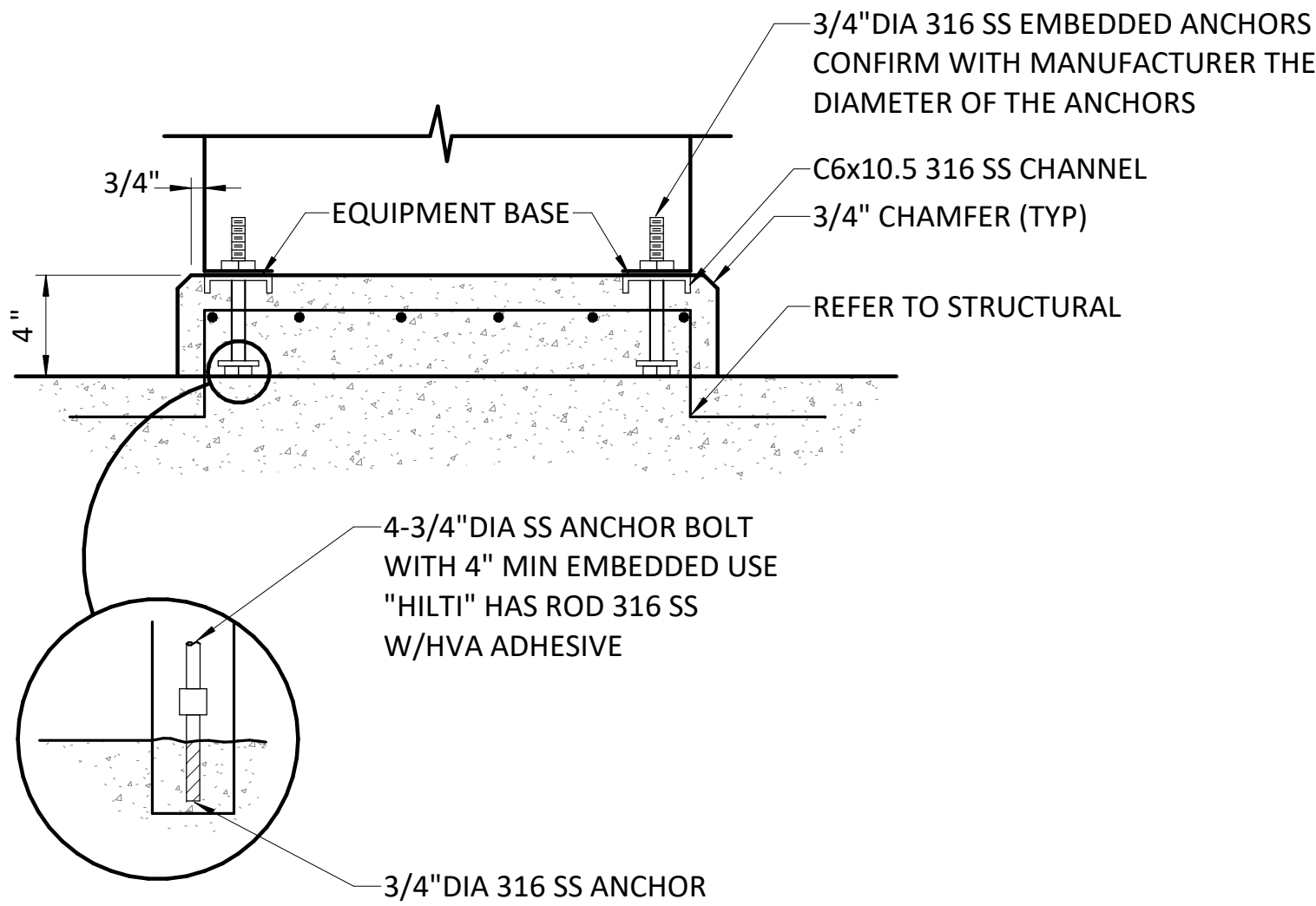


1 WATERTIGHT CONDUIT PENETRATION
NOT TO SCALE



NOTES BY SYMBOL "1" (TYP)
1. ANCHORS SHALL BE 1/2" DIA STAINLESS STEEL KWIK BOLT III WITH 3 1/2" EMBEDMENT. DO NOT DAMAGE EXISTING STRUCTURE DURING ANCHOR INSTALLMENT.

2 CEILING OR WALL EXPOSED CONDUIT
INSTALLATION
NOT TO SCALE



NO. 3 GENERAL NOTES:
1. CONTRACTOR SHALL VERIFY FLOOR SLAB THICKNESS IS ADEQUATE TO ACCOMMODATE MINIMUM EMBED LENGTH PRIOR TO DRILLING.

3 NEW TRANSFORMER HOUSEKEEPING PAD DETAIL
NOT TO SCALE

SHEET		E-7	
SEQ.		30	

F&N JOB NO.		JFF22292	
DATE		05/15/2023	
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DRAWN		GTN	
REVISED		JMC	
BY		DATE	
ISSUE		FILE NAME	
NO.		EL-JFF22292-R21.RVT	
VERIFY SCALE		Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	
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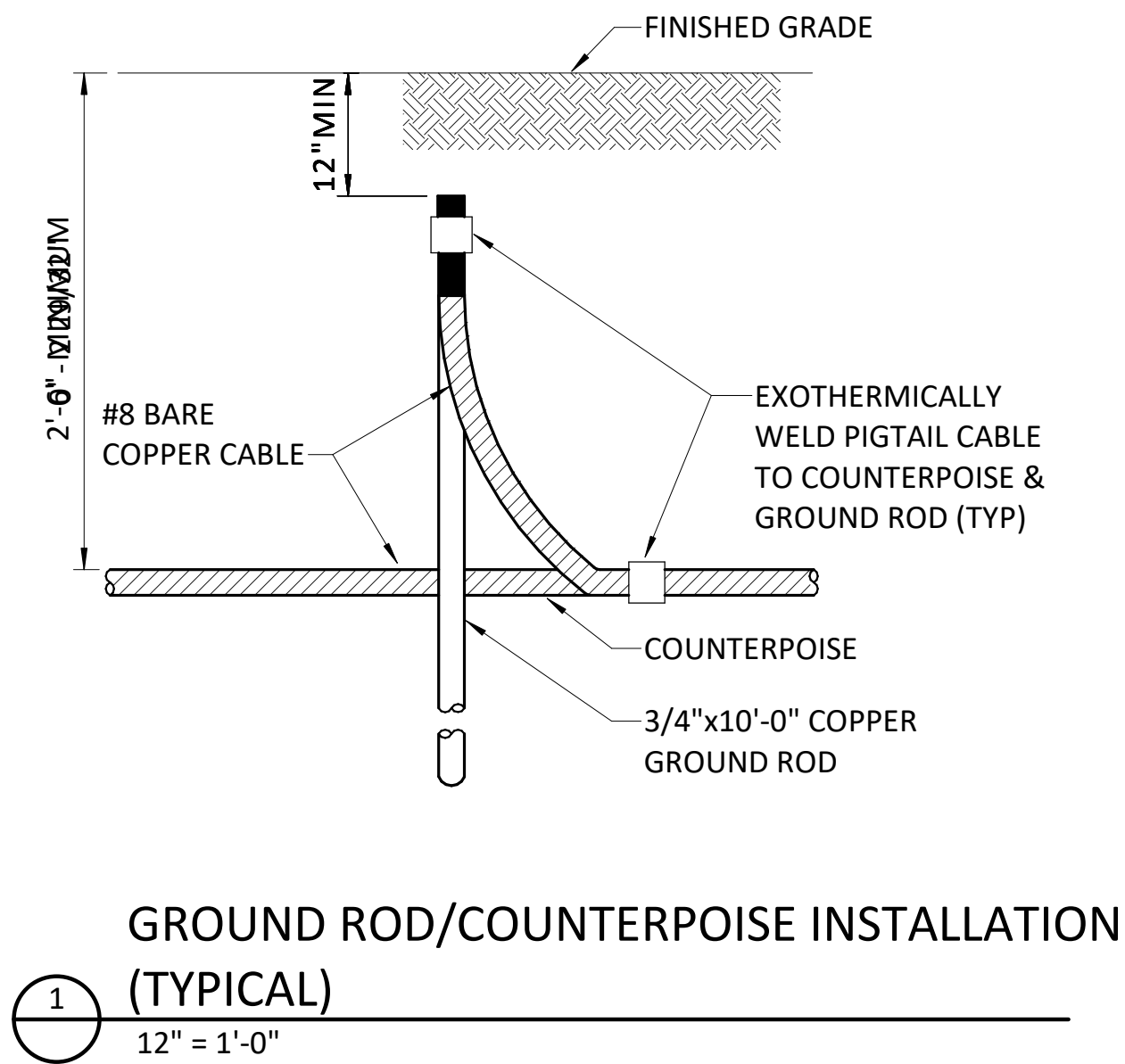
JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ELECTRICAL
DETAILS I

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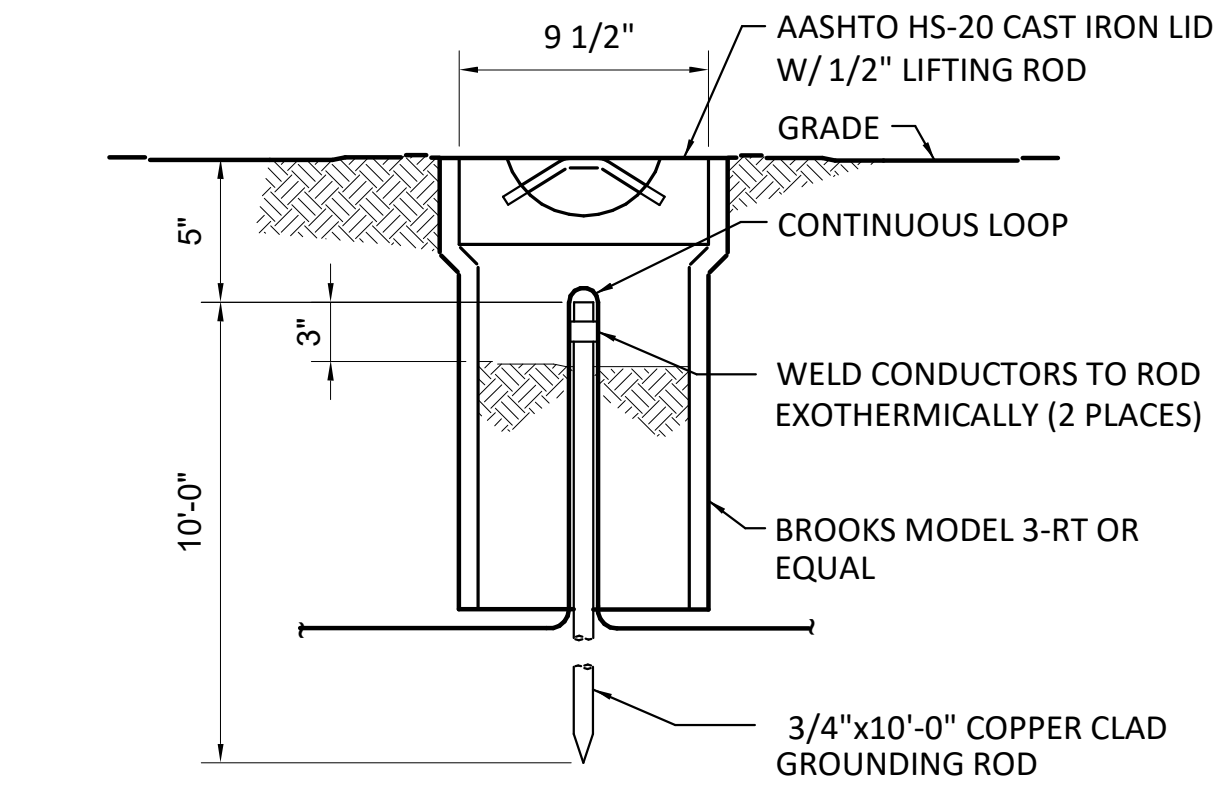
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05/12/2023



GROUND ROD/COUNTERPOISE INSTALLATION
(TYPICAL)
12" = 1'-0"



GROUND ROD DETAIL
12" = 1'-0"

SHEET		E-8	
SEQ.		31	

NO.		ISSUE		Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	
0		1			

F&N JOB NO.		JFF22292	
DATE		05/15/2023	
DESIGNED		MCD	
DRAWN		MCD	
REVISED		-	
CHECKED		JWC	
FILE NAME		EL-JFF22292-R21.RVT	

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ELECTRICAL
DETAILS II

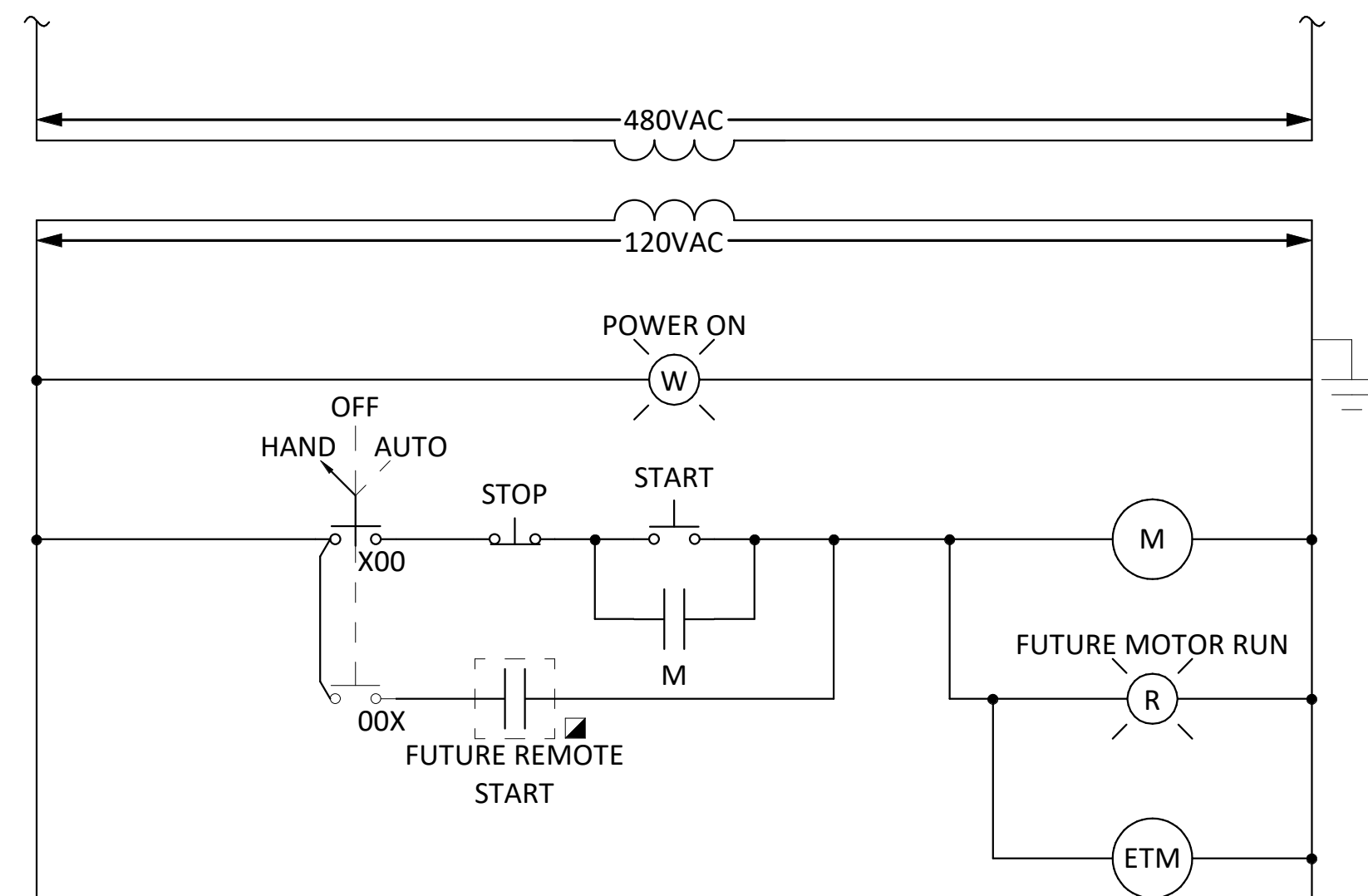
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JOSE MANUEL CURET
126134
05/12/2023

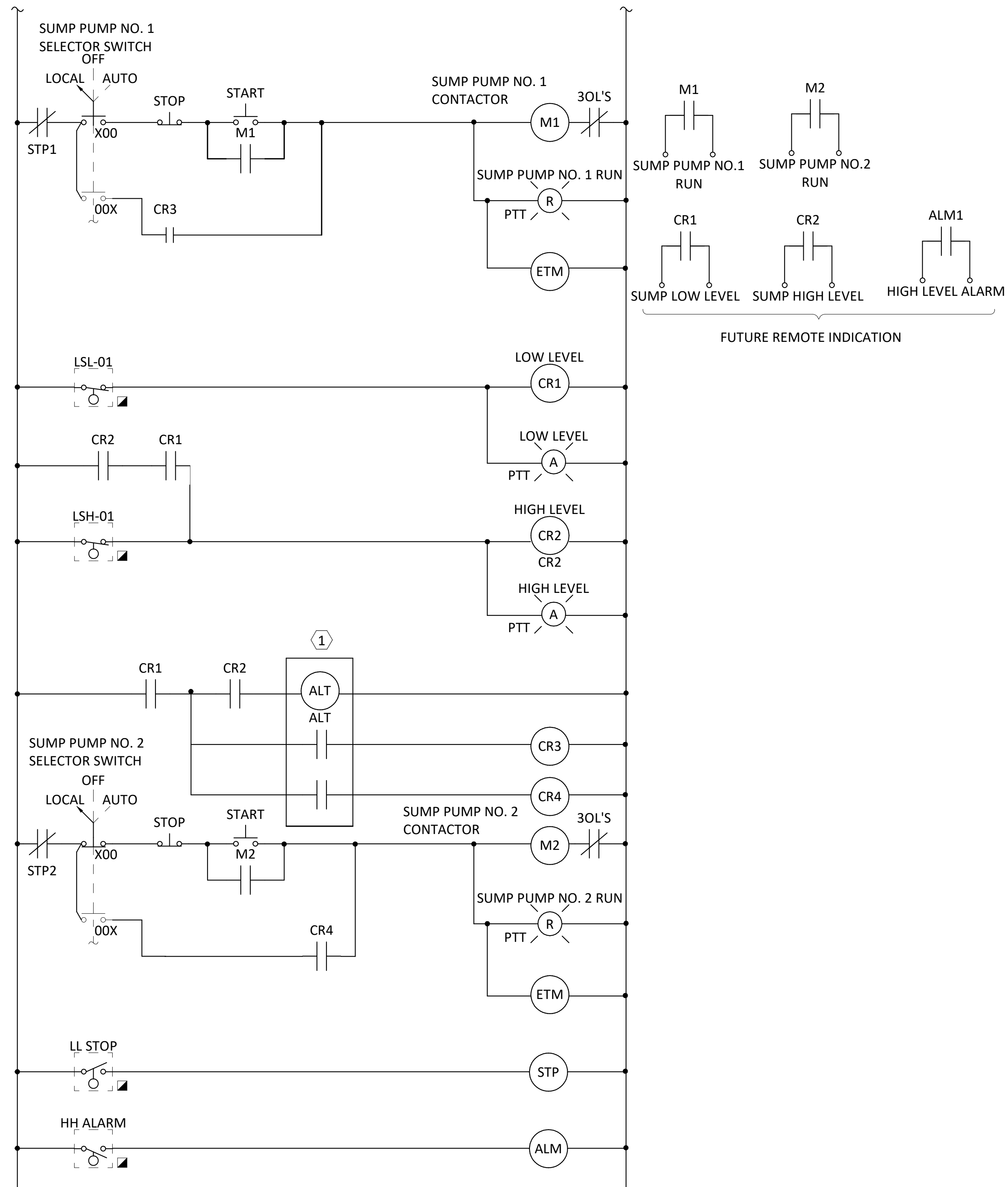
NOTES:
1. TYPICAL FOR EF-1A, EF-1B AND EF-1C.

1 EXHAUST FAN CONTROL SCHEMATIC
NOT TO SCALE



2 MOTOR CONTROL SCHEMATIC

NOT TO SCALE

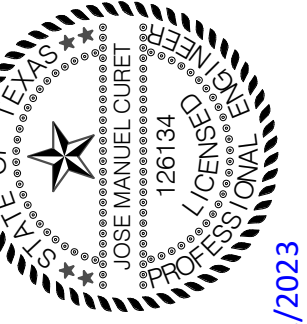


NOTES BY SYMBOL "

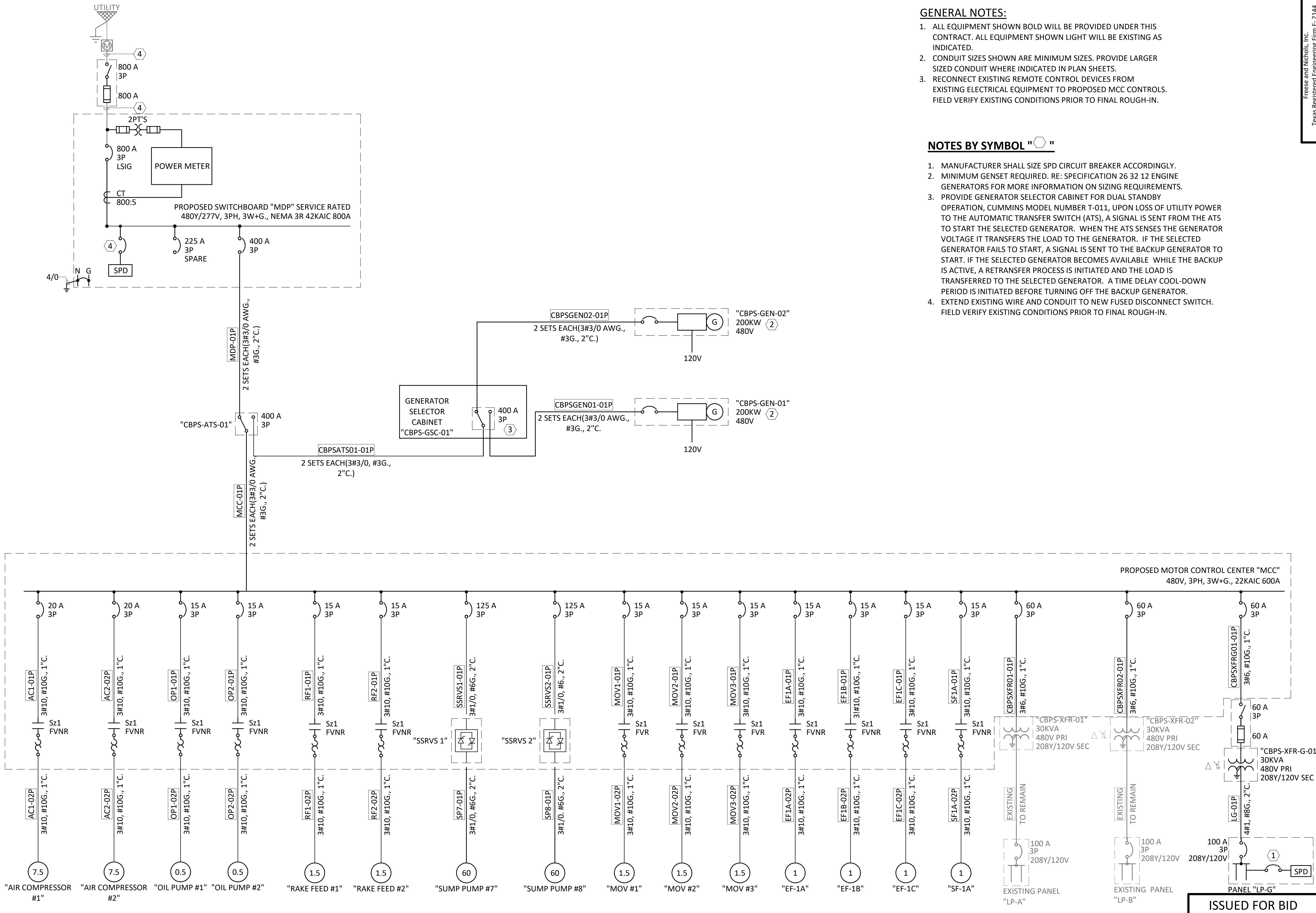
1. PROVIDE ALTERNATING RELAY BY EATON MODEL NUMBER: DS5 OR APPROVED EQUAL.

3 SP-1 AND SP-2 MOTOR CONTROL SCHEMATIC

NOT TO SCALE



PART JOB NO.					JFF22292
DATE	05/15/2023				
DESIGNED	MCD				
DRAWN	GTM				
NO.	ISSUE	BY	DATE	FILE NAME	
0	VERIFY SCALE				
1	Bar is one inch on original drawing. If not one inch on this sheet adjust scale.				
				EL-JFF22292-R21.RVT	



JEFFERSON COUNTY, TX
**CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING**
ELECTRICAL

ONE-LINE DIAGRAM

F&N JOB NO. JFF22292		DATE 05/15/2023		DESIGNED MCD	DRAWN GTN	REVIEWED	CHECKED JMC
				BY	DATE	FILE NAME	EL-JFF22292-R21.RVT
				ISSUE	NO.	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	
				VERIFY SCALE	1		
SHEET		E-10		SEQ.		33	

ISSUED FOR BID

PANEL NO. LP-G				MCB RATING 100 A				LOCATION GENERATOR BUILDING 101					
SERVICE VOLTAGE 208Y/120V				BUS RATING 100 A				FEED FROM					
A.I.C. 22,000				NEUTRAL BUS 100%				SECTIONS 1					
CKT NO.	DESCRIPTION	POLE	TRIP	A		B		C		TRIP	POLE	DESCRIPTION	CKT NO.
1	GENERATOR BLOCK HEATER - GENERATO...	1	20 A	1500	720					20 A	1	RECEPTACLES - GENERATOR BUILDING	2
3	GENERATOR BLOCK HEATER - GENERATO...	1	20 A			1500	141			20 A	1	EXTERIOR LIGHTING	4
5	GENERATOR BATTERY CHARGER -...	1	20 A					1800	0	20 A	1	SPARE	6
7	SPARE	1	20 A	0	0					20 A	1	SPARE	8
9	SPARE	1	20 A			0	1800			20 A	1	GENERATOR BATTERY CHARGER -...	10
11	LIGHTING	1	20 A					538	696	20 A	1	SF-1	12
13	SPARE	1	20 A	0	0					20 A	1	SPARE	14
15	SPARE	1	20 A			0	0			20 A	1	SPARE	16
17	SPARE	1	20 A					0	0	20 A	1	SPARE	18
19	SPARE	1	20 A	0	0					20 A	1	SPARE	20
21	SPARE	1	20 A			0	0			20 A	1	SPARE	22
23	SPARE	1	20 A					0	0	20 A	1	SPARE	24
25	SPARE	1	20 A	0	0					20 A	1	SPARE	26
27	SPARE	1	20 A			0	0			20 A	1	SPARE	28
29	SPARE	1	20 A					0	0	20 A	1	SPARE	30
31	PREPARED SPACE	1	--	--	--					--	1	PREPARED SPACE	32
33	PREPARED SPACE	1	--			--	--			--	1	PREPARED SPACE	34
35	PREPARED SPACE	1	--					--	--	--	1	PREPARED SPACE	36
37	PREPARED SPACE	1	--	--	--					--	1	PREPARED SPACE	38
39	PREPARED SPACE	1	--			--	--			--	1	PREPARED SPACE	40
41	PREPARED SPACE	1	--					--	--	--	1	PREPARED SPACE	42
PHASE TOTALS				2220 VA		3434 VA		3012 VA					
				19 A		30 A		26 A					
PANEL UNBALANCE				23 %									
LOAD CLASSIFICATION		CONNECTED LOAD		DEMAND FACTOR		ESTIMATED DEMAND		PANEL TOTALS					
Lighting		679 VA		125.00%		849 VA		TOTAL CONNECTED LOAD:		8664 VA			
Other		696 VA		100.00%		696 VA		TOTAL CONNECTED AMPS:		24 A			
Receptacle		720 VA		100.00%		720 VA		NON COINCIDENT LOAD:		0 VA			
Other Equipment/Apparatus		6600 VA		100.00%		6600 VA		NON COINCIDENT AMPS:		0 A			
								TOTAL DEMAND LOAD:		8826 VA			
								TOTAL DEMAND LOAD AMPS:		24 A			
NOTES:													

LIGHTING FIXTURE SCHEDULE						
TYPE	MANUFACTURER	CATALOG NO.	DESCRIPTION	LAMPS	VOLT.	WATTS
A	HOLOPHANE	EMX-L48-10000LM-FGCL-MD-40K-90CRI-DGXD	LED ENCLOSED AND GASKETED 4' 4000K 10,000 LUMENS RIBBED FROSTED ACRYLIC 0-10V DIMMING 120-277V	LED	120 V	67 VA
AE	HOLOPHANE	EMX-L48-10000LM-FGCL-MD-40K-90CRI-DGXD-E10WLCP	SAME AS LIGHT FIXTURE 'A', EXCEPT WITH EMERGENCY BATTERY PACK	LED	120 V	67 VA
WP	HOLOPHANE	HLWPC2-P20-40K-AS-T3M-BKSDP-MASL	LED EXTERIOR WALLPACK WITH FULL CUTOFF, MOTION SENSOR AND PHOTOCELL	LED	120 V	47 VA
WPE	HOLOPHANE	HLWPC2-P20-40K-AS-T3M-BKSDP-MASL-EM	SAME AS LIGHT FIXTURE 'WP', EXCEPT WITH EMERGENCY BATTERY PACK	LED	120 V	47 VA
X	LITHONIA	LQC W 1 R ELN	DIE CAST ALUMIMUM LED EXIT SIGN WITH 120VAC INPUT AND NICKEL-CADMINUM BATTERY BACK-UP	LED	120 V	2 VA



Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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Web - www.freese.com

JEFFERSON COUNTY, TX
**CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING**
ELECTRICAL

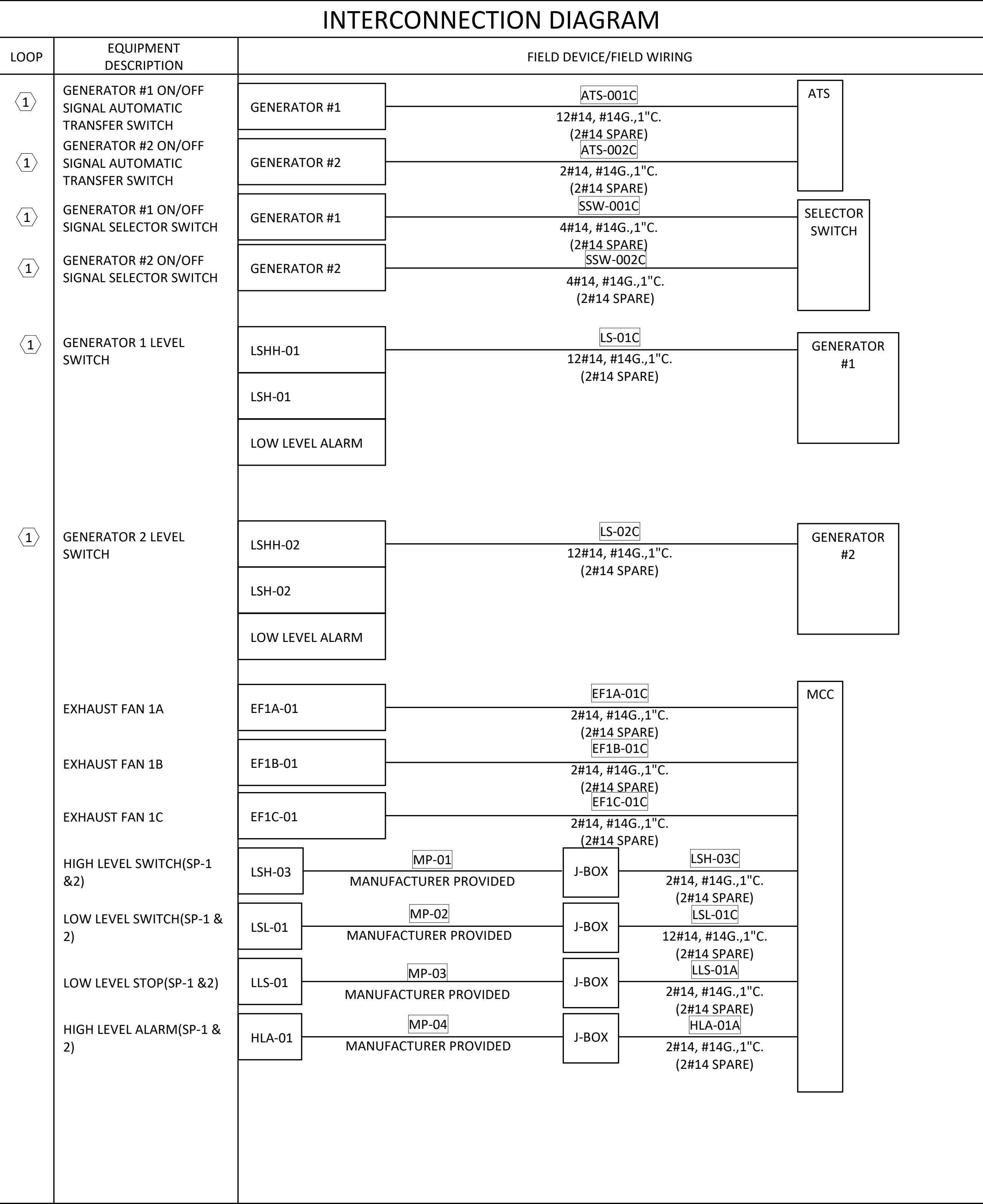
PANEL SCHEDULE AND LIGHT FIXTURE SCHEDULE

F&N JOB NO.		JFF22292	
DATE		05/15/2023	
DESIGNED		MCD	
DRAWN		GTN	
REVISED		JMC	
BY		DATE	
ISSUE		FILE NAME	
NO.		EL-JFF22292-R21.RVT	
VERIFY SCALE		1	
0		Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.	

SHEET
E-11

SEQ.
34

ISSUED FOR BID



NOTES BY SYMBOL "⬡"

1. LOCATION TO BE VERIFIED WITH GENERATOR MANUFACTURER.

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

05/12/2023

JEFFERSON COUNTY, TX
CRANE BAYOU PUMP STATION
GENERATORS AND BUILDING
ELECTRICAL

INTERCONNECTION DIAGRAM

F&N JOB NO. JFF22292

DATE 05/15/2023

DESIGNED MCD

DRAWN GTN

REVISED

CHECKED JMC

NO.

0

VERIFY SCALE

Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

BY

DATE

FILE NAME

EL-JFF22292-R21.RVT

SHEET E-12

SEQ. 35

ISSUED FOR BID

Plot Date: 5/12/2023 5:04:45 PM