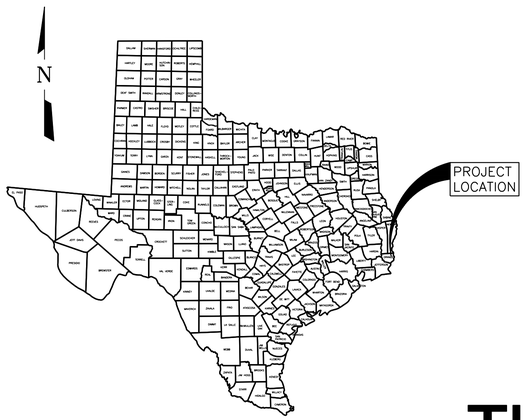
SABINE RIVER AUTHORITY OF TEXAS



CONSTRUCTION DRAWINGS FOR TULANE ROAD SIPHON REPLACEMENT

JANUARY 2023

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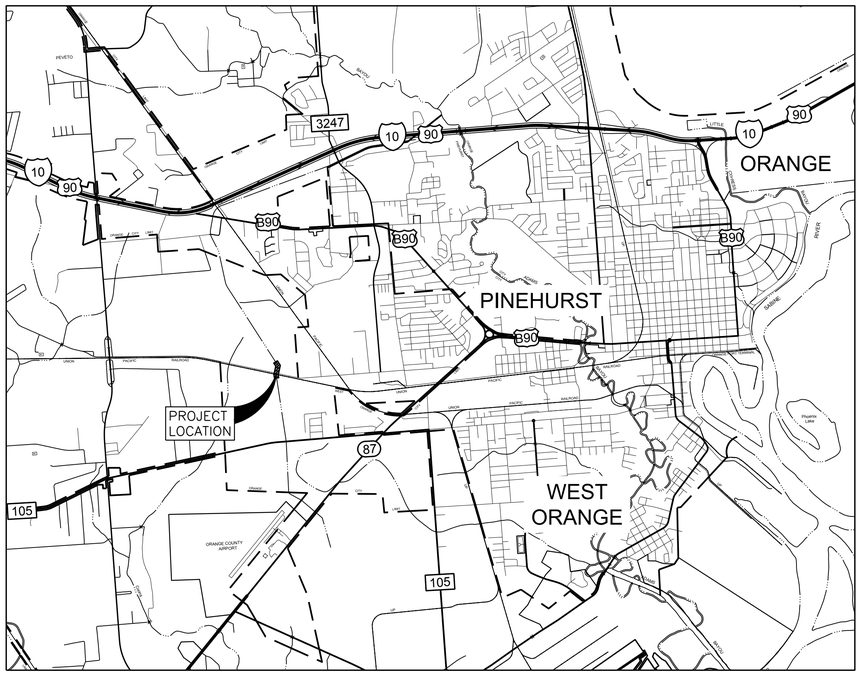
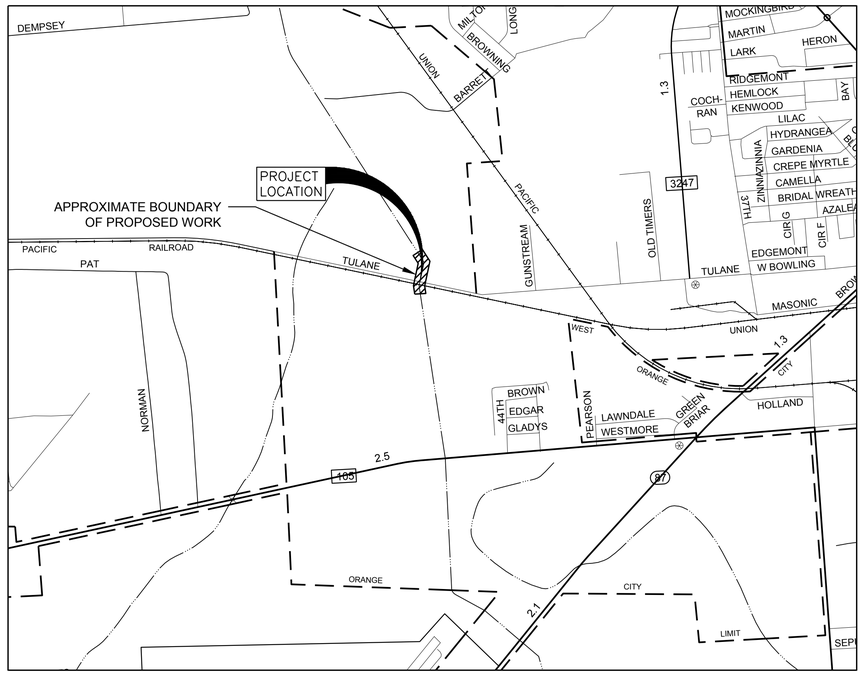


VICINITY MAP

N.T.S.



LOCATION MAP

N.T.S.

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Freese and Nichols, Inc.
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SCHEDULE OF TYPICAL ABBREVIATIONS

(NOT ALL ABBREVIATIONS MAY BE USED)

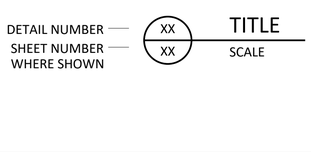
A	
AB	ANCHOR BOLT
APPROX	APPROXIMATELY
ASPH	ASPHALT
AC	ACRE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY AMERICAN WATER
AWWA	WORKS ASSOCIATION
B	
B/L	BASELINE
BM	BENCH MARK
BOT	BOTTOM
BOC	BOTTOM OF CONCRETE
BOW	BOTTOM OF WALL
BEL	BELOW
BET	BETWEEN
BIT	BITUMEN
BKWL	BACKWALL
BW	BOTH WAYS
BAS	BASIN
BLD	BUILDING
C	
C	CHANNEL
C/C	CENTER TO CENTER
CCFRPM	CENTRIFUGALLY CAST FIBERGLASS REINFORCED POLYMER MORTAR
CCF	COUNTY CLERK'S FILE NUMBER
CIP	CAST IN PLACE
CFH	CUBIC FEET PER HOUR
CFS	CUBIC FEET PER SECOND
CJ	CONTROL JOINT
C/L	CENTERLINE CLR CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CAM	CAMERA
CLO	CLEANOUT
CMP	CORRUGATED METAL PIPE
COH	CITY OF HOUSTON
CP	CONTROL POINT
D	
DBL	DOUBLE
DET/DTL	DETAIL
DIA	DIAMETER
DUC	DUCT
DVB	DIVERSION BOX
DS	DOWNSTREAM
DWLS	DOWELS
E	
EA	EACH
E	EXTRA TERRITORIAL JURISDICTION
ETJ	EAST
ELEV/EL	ELEVATION
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EW	EACH WAY EXIST EXISTING
EXP	EXPOSED
EXP JT	EXPANSION JOINT (OR EJ)
F	
FF	FINISH FLOOR
FC	FILM CODE NUMBER
FFE	FINISH FLOOR ELEVATION
FH	FIRE HYDRANT
FIN	FINISH
FL	FLOW LINE
FND	FOUND
FNI	FREESE AND NICHOLS, INC.
FL	FLOW LINE FT FEET
FRP	FIBERGLASS REINFORCED PIPE
G	
GA	GAUGE
GND	GROUND
GS	GROUND SURFACE
GR	GRADE
GCWA	GULF COAST WATER AUTHORITY
H	
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HC	HARRIS COUNTY
HCDR	HARRIS COUNTY DEED RECORDS
HCFCD	HARRIS COUNTY FLOOD CONTROL DISTRICT
HCMR	HARRIS COUNTY MAP RECORDS
I	
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
IP	IRON PIPE
IR	IRON ROD
J	
J	JUNCTION
JS	JUNCTION STRUCTURE
K	
KCJ	KEYED CONSTRUCTION JOINT
L	
L	LENGTH
LF	LINEAR FEET
LT	LEFT
LVL	LEVEL
LOU	LOUVER
M	
MAINT	MAINTENANCE/MAINTAINED
MAT	MATERIAL
MAX	MAXIMUM
MET	METAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MGD	MILLION GALLONS PER DAY
MNOP	MAXIMUM NORMAL OPERATING POOL
N	
NAD	NORTH AMERICAN DATUM
NOM	NOMINAL
N	NORTH
NO	NUMBER
NTS	NOT TO SCALE
NWSE	NORMAL WATER SURFACE ELEVATION
O	
OC	ON CENTER
OCEW	ON CENTER, EACH WAY
OD	OUTSIDE DIAMETER OF OUTSIDE FACE
O	OVERHEAD
OH	OVERHEAD ELECTRIC
OT	OVERHEAD TELEPHONE
OHL	OVERHEAD ELECTRIC TRANSMISSION LINES
OHWM	ORDINARY HIGH WATER MARK
OPNG	OPENING
OPRRPHC	OFFICIAL PUBLIC RECORDS OF REAL PROPERTY HARRIS COUNTY
P	
PL	PROPERTY LINE
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT VERTICAL INTERSECTION
PVMT	PAVEMENT
PG	PAGE
PROP	PROPOSED
PSI	POUNDS PER SQUARE INCH
PP	POLYPROPYLENE
R	
RAD	RADIUS
RE	REFER TO
REF	REFERENCE
REINF	REINFORCING (REINFORCED)
RCP	REINFORCING CONCRETE PIPE
REQ'D	REQUIRED
RET	RETAINING
REV	REVERSE
RFB	REINFORCED FILTER FABRIC BARRIER
RO	ROUGH OPENING
RT	RIGHT
ROW	RIGHT OF WAY
S	
SAN	SANITARY
SECT	SECTION
SB	SLAB BEAM
SDR	STRENGTH DIAMETER RATIO
SHT	SHEET
SIM	SIMILAR
SJ	SAWCUT JOINT
S	SOUTH
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
SM	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
STL	STEEL
STR	STRUCTURAL
SWPPP	STORM WATER POLLUTION PROTECTION PLAN
T	
T	TREAD OR THICKNESS
TBD	TO BE DETERMINED
TBM	TEMPORARY BENCHMARK
T&B	TOP AND BOTTOM
TC	TOP OF CURB
TEMP	TEMPERATURE
TOB	TOP OF BANK
TOC	TOP OF CONCRETE
TOJ	TOP OF JOIST
TOS	TOP OF SLAB
TOW	TOP OF WALL
TOP	TOP OF PIPE
TWSE	TEMPORARY WATER SURFACE ELEVATION
TYP	TYPICAL
TxDOT	TEXAS DEPARTMENT OF TRANSPORTATION
U	
UHMWPE	ULTRA-HIGH-MOLECULAR-WEIGHT POLYETHYLENE
US	UPSTREAM
UG	UNDERGROUND
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
V	
VERT	VERTICAL
VOL	VOLUME
W	
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER COLUMNS
WP	WEATHERPROOF OR WORKING POINT
WPFG	WATERPROOFING
WS	WATER STOP
WSE	WATER SURFACE ELEVATION

SYMBOLS

1+00	PROJECT BASELINE
	NEW STRUCTURE AND PIPE
	ITEMS TO BE DEMOLISHED
	ITEMS TO BE ABANDONED IN PLACE
	CENTERLINE
10	FINISH GRADE CONTOUR MAJOR
9	FINISH GRADE CONTOUR MINOR
2H:1V	SLOPE (2 HORIZONTAL TO 1 VERTICAL)
LOC	LIMITS OF CONSTRUCTION
SF	TEMPORARY SILT FENCE
	BREAK LINE
	BARB WIRE FENCE
	GUARDRAIL
X	CHAIN LINK FENCE
G	GAS
UE	UNDERGROUND ELECTRICAL LINE
UGT	UNDERGROUND TELEPHONE
T	TELEPHONE
	TOP OF BANK
	TOE OF SLOPE
W	WATER
SD	STORMDRAIN
OHE	OVERHEAD ELECTRIC
T	OVERHEAD TELEPHONE
	LIMITS OF CLEARING AND GRUBBING
////	EDGE OF ASPHALT
	TREE LINE/BRUSH LINE
ROW	R.O.W. LINE
10	EXISTING CONTOUR MAJOR
11	EXISTING CONTOUR MINOR
SC-1	TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
X RSF X	TEMPORARY REINFORCED SILT FENCE
	PROPERTY LINE
	TEMPORARY EASEMENT
	RAIL ROAD TRACK
CTW	CONCRETE TRUCK WASHOUT AREA
RFD-TYPE	FILTER DAM

B-1	BENCHMARK
TB-1	PERIMETER BOREHOLE
CPT-1	CONE PENETROMETER TEST
BR-1	SOURCE MATERIAL BOREHOLE
TP-1	TEST PIT
	TREE
	SIGN
LP	LIGHT POLE
CP	MONUMENT
D	STORM MANHOLE
	WATER METER
	GAS METER
	GAS VALVE
PP	POWER POLE
	GUY WIRE
FLOW	DIRECTION OF FLOW
	ELECTRIC BOX
	PEDESTAL BOX
	SIGNAL POLE
	CONCRETE - SECTION
	SAND OR GROUT - SECTION
	FINISH OR NATURAL GRADE
	EXISTING CONCRETE
	GRAVEL OR FLEXIBLE BASE - SECTION
OR	REINFORCEMENT IN SECTION
	FLOWABLE FILL - SECTION
	RIPRAP
	GRADED SIDE SLOPE

TYPICAL TITLE



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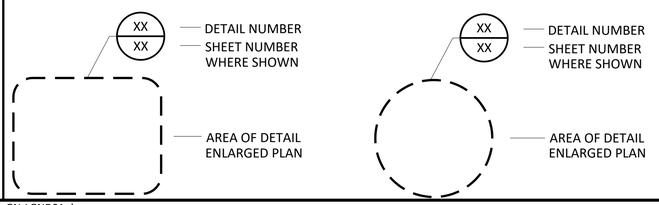
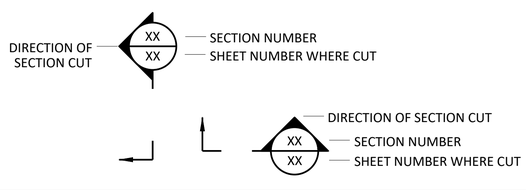


TYPICAL SECTION MARKS



NORTH ARROW

x NOTE BY SYMBOL

1 REVISION SYMBOL

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

GENERAL

LEGEND AND ABBREVIATIONS

NO.	ISSUE	BY	DATE

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME GN-ALL-GN-LGND01.dwg

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SHEET G-2
SEQ. 2 OF 25

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GENERAL NOTES

1. THE FOLLOWING NOTES ARE GENERAL AND APPLY TO ALL SHEETS OF THESE CONTRACT DOCUMENTS AS IF THEY WERE WRITTEN IN THEIR ENTIRETY ON EACH SHEET.
2. COORDINATE ALL WORK WITH THE SABINE RIVER AUTHORITY (SRA) DIVISION MANAGER - DAVID WILLIAMS (409) 746-2111.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND BONDS PRIOR TO START OF CONSTRUCTION WORK.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING MAINTENANCE/ACCESS ROADS AND PROVIDE ALL WEATHER INGRESS AND EGRESS FOR SRA MAINTENANCE AND OPERATOR PERSONNEL AT ALL TIMES.
5. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND BE SUBJECT TO INSPECTION BY THE SRA AND THE ENGINEER.
6. ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) US SURVEY FEET. HORIZONTAL DATUM AND DISTANCES ARE REFERENCED TO TEXAS STATE PLANE NAD83 CENTRAL, US SURVEY FEET
7. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES.
8. CONTRACTOR SHALL VERIFY LOCATIONS OF UNDERGROUND UTILITY LINES PRIOR TO BEGINNING WORK. CALL 811 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. CONTRACTOR SHALL IMMEDIATELY NOTIFY SRA AND ENGINEER OF ANY POTENTIAL CONFLICTS BEFORE BEGINNING EXCAVATION.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING STRUCTURES, UTILITIES, TREES, SHRUBS, FENCES, AND OTHER ADJOINING FACILITIES AND REPAIR OR REPLACE TO ORIGINAL OR BETTER CONDITION DUE TO DAMAGE CAUSED BY CONTRACTOR AT NO COST TO SRA.
10. RECONSTRUCT ALL DRAINAGE DITCHES DISTURBED BY CONSTRUCTION TO ORIGINAL OR BETTER CONDITION UTILIZING SAME FLOWLINES AND HYDRAULIC CAPACITY FOR STORM WATER SYSTEMS. CONTRACTOR SHALL MAINTAIN FLOW IN DRAINAGE DITCHES AT ALL TIMES. METHODS USED BY CONTRACTOR TO MAINTAIN FLOW IN DITCH MUST BE ACCEPTABLE TO SRA AND ENGINEER.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TEMPORARY SLOPE PROTECTION NECESSARY TO PREVENT ALL LEVEE EMBANKMENTS FROM SLOUGHING DURING CONSTRUCTION. TEMPORARY MEASURES ARE TO BE REMOVED WHEN CONSTRUCTION IS COMPLETED. CONTRACTOR'S FAILURE TO ADEQUATELY PROTECT/MAINTAIN SLOPES WHICH RESULTS IN SLOUGHING SHALL BE REPAIRED UNDER SRA DIRECTION AT NO COST TO SRA.
12. THE CONTRACTOR SHALL NOT DISPOSE OF ANY EXCAVATED MATERIALS WITHIN AN AREA DESIGNED AS BEING WITHIN THE 100-YEAR SPECIAL FLOOD HAZARD AREA. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE FLOOD PLAIN STATUS OF ANY PROPOSED DISPOSAL SITE.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS PROPERTY, EQUIPMENT, WORK IN PROGRESS AND COMPLETED WORK.
14. CONTRACTOR SHALL MAINTAIN THE PROJECT SITE SUCH THAT ACCESS TO THE ENTIRETY OF THE UNION PACIFIC RAILROAD'S FACILITIES IS UNINHIBITED THROUGHOUT THE PROJECT'S DURATION.
15. THE UNION PACIFIC RAILROAD LINE WILL REMAIN IN OPERATION THROUGHOUT CONSTRUCTION. CONTRACTOR'S WORK MUST REMAIN OUTSIDE OF THE UPRR ZONE OF INFLUENCE AND NOT DISRUPT ITS OPERATION.
16. CONTRACTOR SHALL PREVENT RUTS OR DAMAGE TO CANAL EMBANKMENTS. ALL INCIDENTAL DAMAGE TO EMBANKMENTS OR GRADES SHALL BE REPAIRED TO REMOVE ALL RUTS AND OTHER DAMAGE CREATED BY EQUIPMENT DURING CONSTRUCTION PROCESS AT NO COST TO SRA.
17. EXISTING PAVEMENTS, CURBS, SIDEWALKS AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO IN KIND OR BETTER CONDITION AT NO COST TO SRA.
18. CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH SAFETY. THE CONTRACTOR SHALL CONSTRUCT THE PROPOSED OPEN CUT INSTALLATION USING A TRENCH SAFETY PLAN PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS. THIS TRENCH SAFETY PLAN SHALL BE SUBMITTED PRIOR TO ANY WORK ACTIVITIES. REFER TO SECTION 31 23 33.14 TRENCH SAFETY.
19. EXISTING STRUCTURES, UTILITIES AND PIPING ARE SHOWN FROM AVAILABLE RECORDS AT THE TIME THIS PLAN WAS PREPARED. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE AND VERIFY THE LOCATION AND DEPTH OF ALL EXISTING STRUCTURES, UTILITIES AND PIPING WITHIN THE CONSTRUCTION AREA PRIOR TO THE BEGINNING OF CONSTRUCTION. ANY DAMAGE TO THE EXISTING STRUCTURES, UTILITIES AND PIPING SHALL BE RESTORED AT NO ADDITIONAL COST TO SRA. IN ADDITION, CONTRACTOR SHALL NOTIFY ENGINEER IF THERE IS A CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONSTRUCTION BEFORE PROCEEDING WITH WORK.
20. CONTRACTOR SHALL COMPLETELY REMOVE AND PROPERLY DISPOSE OF ALL FEATURES DESIGNATED FOR DEMOLITION AS INDICATED ON SHEET C-3.
21. PIPES DESIGNATED TO BE DEMOLISHED SHALL BE COMPLETELY REMOVED, UNLESS OTHERWISE APPROVED BY THE ENGINEER. PIPES ABANDONED IN PLACE SHALL BE EMPTIED, CLEANED OF SILT AND/OR DEBRIS, GROUT FILLED, AS SHOWN ON THE DRAWINGS, AND PLUGGED WITH 3' OF CONCRETE AT EACH END.
22. DIMENSIONS AND ELEVATIONS RELATED TO EXISTING UTILITIES WERE OBTAINED FROM PREVIOUS CONSTRUCTION/RECORD DRAWINGS. ALL EXISTING DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
23. ALL DEMOLISHED STRUCTURES AND EXCESS EXCAVATED SOILS BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OF IMMEDIATELY IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS, REGULATIONS AND OTHER ORDINANCES. FURNISH WRITTEN VERIFICATION FROM SRA OF THE DISPOSAL SITE AUTHORIZING THE CONTRACTOR TO DISPOSE OF MATERIALS AT THAT LOCATION.
24. EXISTING CONTOURS IN PLANS ARE SHOWN FOR TERRAIN RELIEF ONLY. ALL ELEVATIONS SHALL BE VERIFIED.
25. EXCAVATION ADJACENT TO EXISTING UTILITIES TO REMAIN OR CROSSING UTILITIES SHALL BE EXCAVATED BY HAND AND IN SUCH A MANNER AS TO AVOID DAMAGE TO THE EXISTING FACILITIES.
26. PROPOSED CONTOUR LINES, SPOT ELEVATIONS AND SLOPE INDICATORS REPRESENT FINISHED GRADES.
27. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF THE SITE AND ADJOINING ACCESS ROADS AFTER CONSTRUCTION EVERYDAY. ALL ACCESS ROADS TO BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO COST TO SRA.
28. BURNING TRASH OR DEBRIS AT THE PROJECT SITE IS NOT ALLOWED.

CARE OF WATER

1. CONTRACTOR IS RESPONSIBLE FOR ALL WATER CONTROL AND DEWATERING NECESSARY TO PROTECT THE PROJECT AREA IN ORDER TO PERFORM PROPOSED WORK IN THE DRY, INCLUDING CANAL WATER, GROUND WATER (STATIC OR PRESSURIZED) AND SURFACE WATER. THIS COULD INCLUDE COFFERDAMS (EARTH, SHEET PILING, PORTADAM SYSTEM, AQUADAM SYSTEM, OR OTHER APPROVED COFFERDAM, DEEP WELLS/WELL POINTS, BYPASS PUMPING, ETC.) TEMPORARY MEASURES SHALL BE REMOVED AT THE END OF CONSTRUCTION OR UNTIL THE TEMPORARY MEASURES HAVE MET THEIR INTENDED PURPOSE.
2. GROUNDWATER SHALL BE REDUCED TO NO LESS THAN 3-FT BELOW THE BOTTOM OF EXCAVATION OF THE HEADWALL STRUCTURES AT ALL TIMES DURING CONSTRUCTION.
3. CONTRACTOR TO PROTECT EXPOSED SOILS FROM DESICCATION DURING CONSTRUCTION.
4. 3" THICK LEAN CONCRETE SLABS SHOULD BE INCLUDED BENEATH CONCRETE STRUCTURES.
5. A MINIMUM FLOW OF 20 MGD SHALL BE MAINTAINED AT ALL TIMES BY CONTRACTOR. METHOD USED BY CONTRACTOR TO MAINTAIN FLOW IN SRA CANAL MUST BE SUBMITTED TO ENGINEER AND SRA FOR APPROVAL. ANY CHANGE OR DEVIATION TO APPROVED METHOD MUST BE RESUBMITTED AND APPROVED BY SRA.

STORMWATER POLLUTION PREVENTION PLAN

1. THE CONTRACTOR SHALL CONTROL EROSION AND SEDIMENTATION PER APPLICABLE JURISDICTIONAL PERMITS, LAWS, AND REGULATIONS.
2. CONTRACTOR SHALL PROVIDE TEMPORARY STRUCTURAL OR NON-STRUCTURAL STORMWATER PROTECTION AND POLLUTION PREVENTION MEASURES (SWPPP) THROUGHOUT THE PROJECT SITE WHERE REQUIRED. METHODS USED BY CONTRACTOR TO MAINTAIN FLOW IN DITCH AND PROVIDE SWPPP MEASURES MUST BE ACCEPTABLE TO SRA AND THE ENGINEER.
3. THE CONTRACTOR SHALL MINIMIZE TURBIDITY IN WATERWAYS DURING ALL PHASES OF THE PROJECT. THE CONTRACTOR SHALL EMPLOY ADEQUATE METHODS TO ENSURE MINIMUM TURBIDITY FROM NEAR AND LONG-TERM EROSION FROM FILLS, SPOIL, AND DEVEGETATED AREAS DURING AND FOLLOWING CONSTRUCTION.
4. CONTRACTOR SHALL RE-ESTABLISH THE GRASS AND MAINTAIN IT IN ALL AREAS THAT ARE DAMAGED OR DISTURBED BY CONSTRUCTION ACTIVITIES UNTIL SUCH TIME THAT THE GRASS IS FULLY GROWN AND ABLE TO PROVIDE EROSION PROTECTION FROM STORMWATER RUNOFF WITHOUT THE ASSISTANCE OF ANY TEMPORARY SWPPP MEASURES.
5. THE CONTRACTOR SHALL NOT BE ALLOWED TO EXCAVATE LEVEE/EMBANKMENT MATERIAL TO INSTALL EROSION AND SEDIMENT CONTROL DEVICES.

SEQUENCE OF CONSTRUCTION NOTES

1. PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR MAY PROPOSE AN ALTERNATIVE SEQUENCE OF CONSTRUCTION FOR APPROVAL BY SRA AND THE ENGINEER. ANY WORK DONE BY CONTRACTOR PRIOR TO CONSTRUCTION SEQUENCE APPROVAL WILL BE AT CONTRACTOR'S OWN RISK.
2. EXISTING WESTERN PIPES TO REMAIN IN PLACE AND OPERATIONAL UNTIL PROPOSED PIPES ARE OPERATIONAL. CONTRACTOR MAY REQUEST 10 HOUR SHUTDOWN OF FLOWS DURING CONSTRUCTION FOR PROJECT WORK AS APPROVED BY SRA.
3. UPSTREAM AND DOWNSTREAM CONSTRUCTION TO BE PERFORMED CONCURRENTLY.
4. COFFERDAMS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS AND SHALL BE SUBMITTED TO SRA AND THE ENGINEER FOR APPROVAL.
5. CANAL SYSTEM TESTING NOTES: FILL PROPOSED CULVERTS BY PUMPING AT APPROVED FLOW RATE TO EVACUATE AIR FROM SYSTEM. FILL PROPOSED CANAL SECTION WITH WATER TO 90% FULL AND ALLOW IT TO REMAIN FOR 48 HOURS.
6. FOR PROPOSED SEQUENCE OF CONSTRUCTION, SEE SHEETS C-9 AND C-10.

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

STATE OF TEXAS · APRIL HURRY · 140986 · LICENSED · PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT
GENERAL
GENERAL NOTES

NO.	ISSUE	BY	DATE

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME GN-ALL-OA-NOTE.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET G-3
SEQ. 3 OF 25

ISSUED FOR BID

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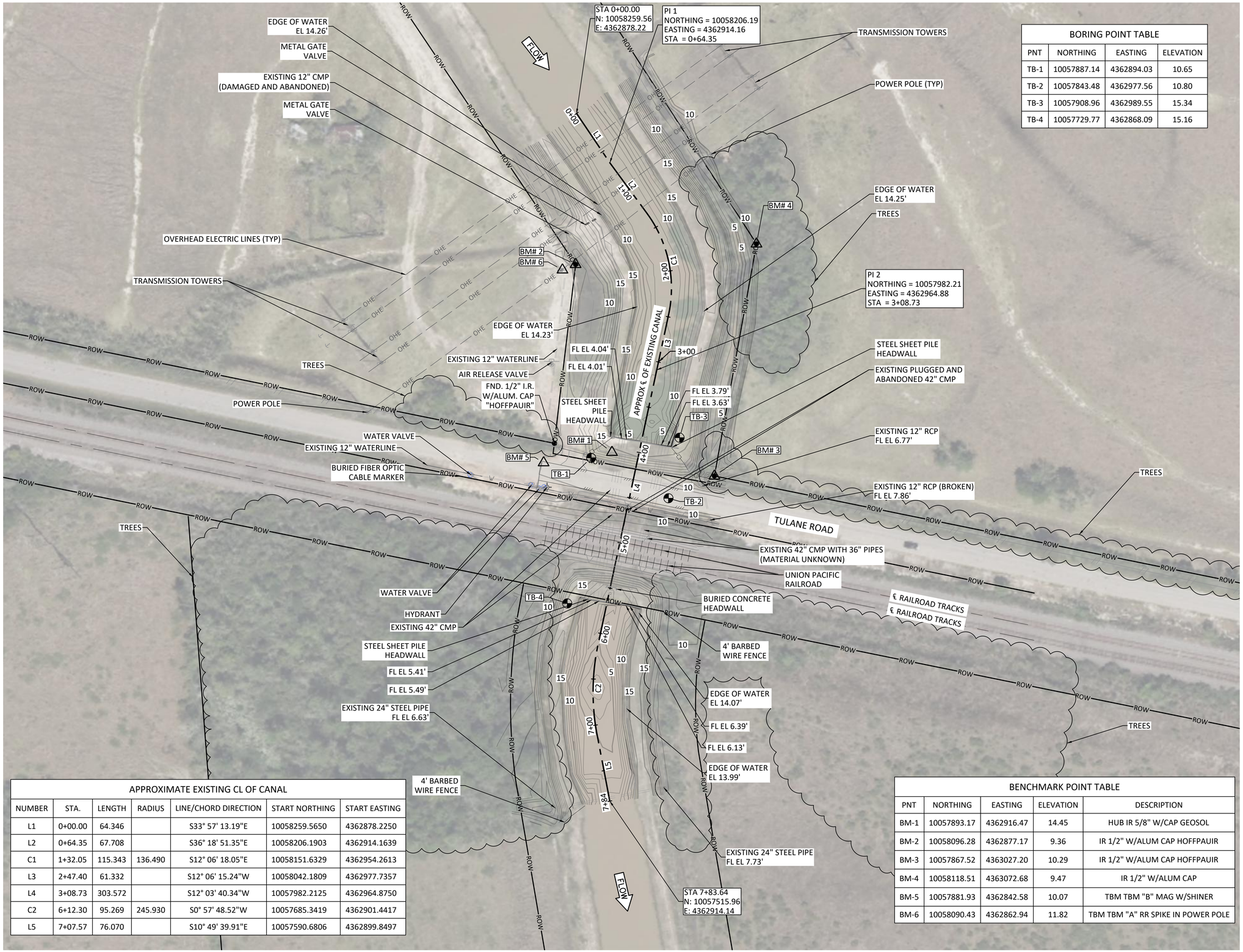

BORING POINT TABLE			
PNT	NORTHING	EASTING	ELEVATION
TB-1	10057887.14	4362894.03	10.65
TB-2	10057843.48	4362977.56	10.80
TB-3	10057908.96	4362989.55	15.34
TB-4	10057729.77	4362868.09	15.16

APPROXIMATE EXISTING CL OF CANAL						
NUMBER	STA.	LENGTH	RADIUS	LINE/CHORD DIRECTION	START NORTHING	START EASTING
L1	0+00.00	64.346		S33° 57' 13.19"E	10058259.5650	4362878.2250
L2	0+64.35	67.708		S36° 18' 51.35"E	10058206.1903	4362914.1639
C1	1+32.05	115.343	136.490	S12° 06' 18.05"E	10058151.6329	4362954.2613
L3	2+47.40	61.332		S12° 06' 15.24"W	10058042.1809	4362977.7357
L4	3+08.73	303.572		S12° 03' 40.34"W	10057982.2125	4362964.8750
C2	6+12.30	95.269	245.930	S0° 57' 48.52"W	10057685.3419	4362901.4417
L5	7+07.57	76.070		S10° 49' 39.91"E	10057590.6806	4362899.8497

BENCHMARK POINT TABLE				
PNT	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM-1	10057893.17	4362916.47	14.45	HUB IR 5/8" W/CAP GEOSOL
BM-2	10058096.28	4362877.17	9.36	IR 1/2" W/ALUM CAP HOFFPAUIR
BM-3	10057867.52	4363027.20	10.29	IR 1/2" W/ALUM CAP HOFFPAUIR
BM-4	10058118.51	4363072.68	9.47	IR 1/2" W/ALUM CAP
BM-5	10057881.93	4362842.58	10.07	TBM TBM "B" MAG W/SHINER
BM-6	10058090.43	4362862.94	11.82	TBM TBM "A" RR SPIKE IN POWER POLE

NOTES:

1. THE FLOWLINE ELEVATIONS OF THE EXISTING 42" CMP PIPES WERE APPROXIMATED BASED ON HISTORICAL DATA AND THE SURVEY PERFORMED IN OCTOBER 2022. CONTRACTOR TO FIELD VERIFY ELEVATION OF ALL EXISTING PIPES PRIOR TO PERFORMING ANY PROPOSED WORK.

NORTH

0 50' 100'

SCALE IN FEET
HORIZONTAL

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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Web - www.freese.com

SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

EXISTING SITE PLAN

NO.	ISSUE	BY	DATE

F&N JOB NO.	SRA22674
DATE	12/22/2022
DESIGNED	JMW
DRAWN	KAM
REVISED	----
CHECKED	AAH
FILE NAME	CV-ALL-PL-SITE.dwg

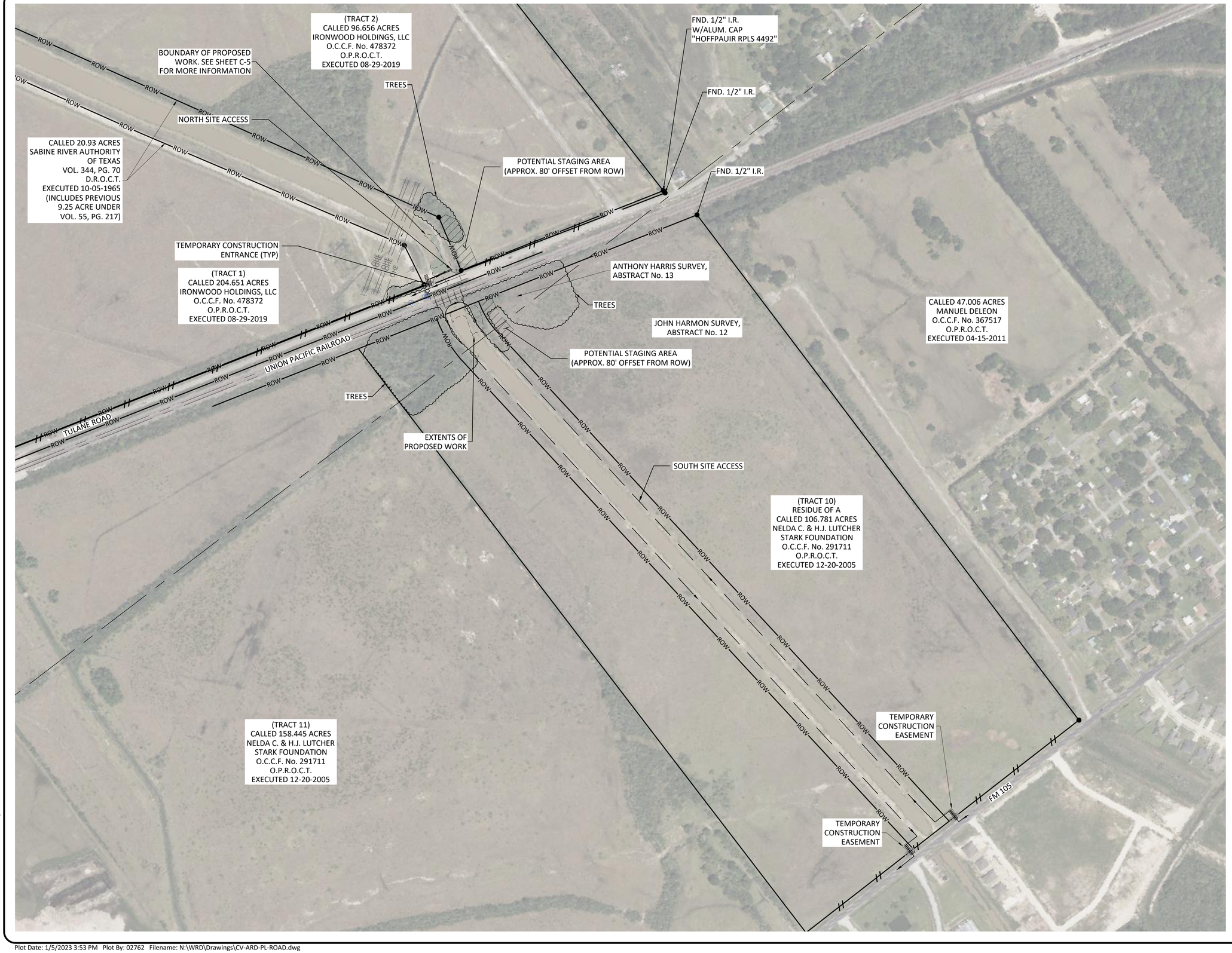
VERIFY SCALE
Bar is one inch on original drawing, if not one inch on this sheet, adjust scale.
0 1"

SHEET C-1

SEQ. 4 OF 25

ACAD Rel: 24.2s (LMS Tech)
Filename: N:\WRD\Drawings\CV-ALL-PL-SITE.dwg
Last Saved: 1/5/2023 3:15 PM Saved By: 02762

Plot Date: 1/5/2023 3:53 PM Plot By: 02762 Filename: N:\WRD\Drawings\CV-ALL-PL-SITE.dwg



NOTES:

1. TEMPORARY STABILIZED CONSTRUCTION ACCESS POINT SHALL BE REMOVED AT THE CONCLUSION OF THE PROJECT. DRAINAGE DITCH SHALL BE BROUGHT TO THE SAME CONTOURS AS EXISTING CONDITIONS.

NORTH

0 200' 400'
SCALE IN FEET

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

SITE ACCESS

NO.	ISSUE	BY	DATE

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME CV-ARD-PL-ROAD.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-2
SEQ. 5 OF 25

ACAD Rel: 24.2s (LMS Tech)
Filename: N:\WRD\Drawings\CV-ARD-PL-ROAD.dwg
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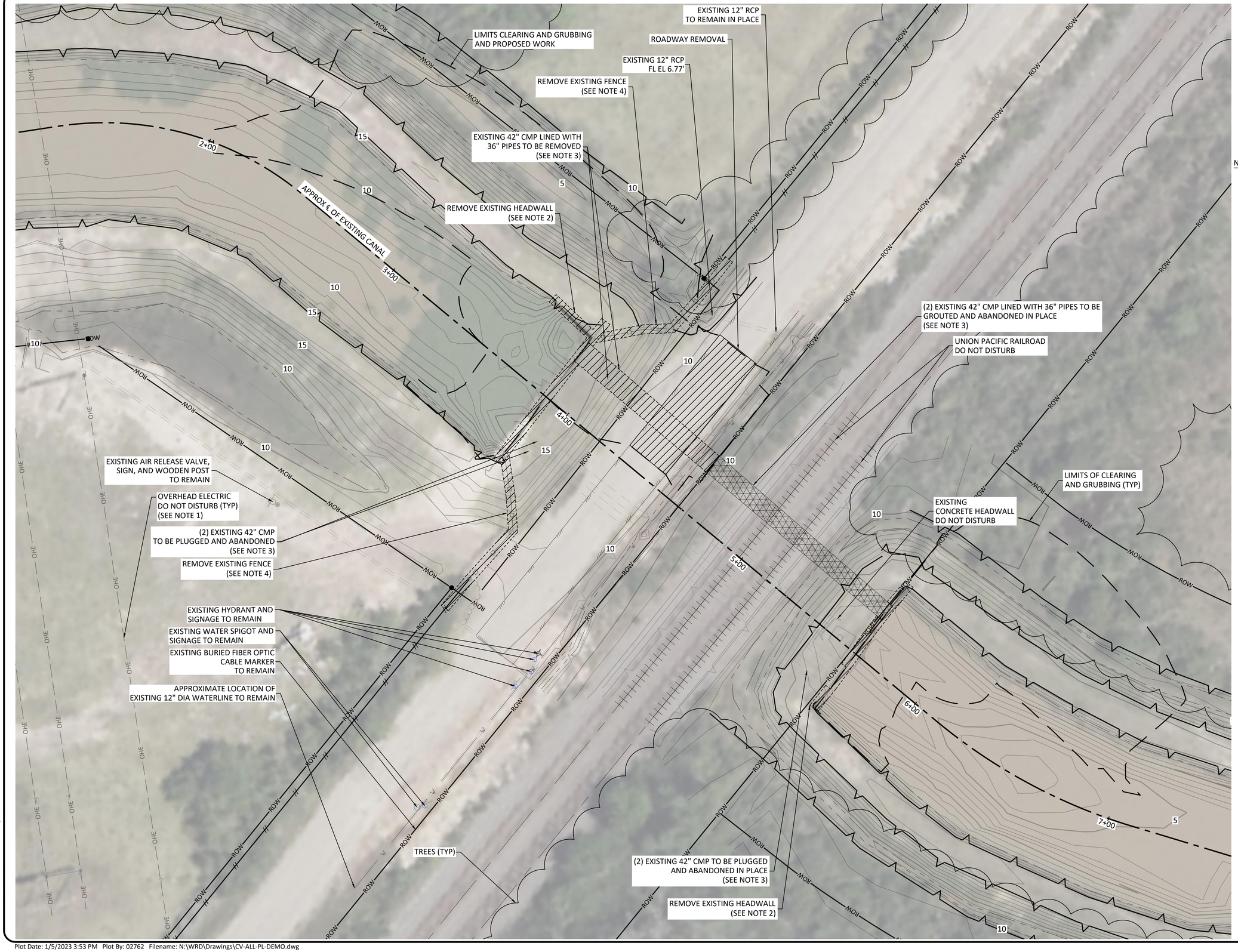

NOTES:

1. CONTRACTOR SHALL PROTECT ALL EXISTING TRANSMISSION LINES, TOWERS, POWER POLES, AND APPURTENANCES THROUGH THE FULL CONSTRUCTION DURATION.
2. CONTRACTOR SHALL DEMOLISH THE FULL EXTENTS OF THE EXISTING SHEET PILE HEADWALL INCLUDING A PORTION ALONG THE NORTHEAST CANAL BANK. IF THE FULL DEPTH OF THE HEADWALL CANNOT BE REMOVED, CONTRACTOR SHALL CUT THE HEADWALL TO MINIMALLY ELEVATION -4.0.
3. DEMOLITION OF THE EXISTING SIPHON SYSTEM WILL OCCUR IN PHASES. EXTENTS OF THE TWO EASTERN PIPES UPSTREAM AND UNDER TULANE ROAD ARE TO BE REMOVED. PIPING UNDERNEATH THE UPRR ROW ARE TO BE GROUTED AND ABANDONED IN PLACE. THE TWO EXISTING WESTERN 42" PIPES ARE TO REMAIN IN OPERATION UNTIL CONSTRUCTION OF THE NEW SIPHON PIPES ARE COMPLETED AND IN SERVICE. ONCE PROPOSED SIPHON IS IN SERVICE, PLUG 2 EXISTING WESTERN PIPES WITH 3 FEET OF CONCRETE AT EACH END.
4. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING THE EXISTING 4' BARBED WIRE FENCE. SHOULD ADDITIONAL FENCE BE REMOVED OUTSIDE OF WHAT IS DENOTED IN THE CONSTRUCTION PLANS, THE CONTRACTOR IS RESPONSIBLE FOR REPLACING IT IN KIND AT NO ADDITIONAL COST TO SRA.
5. AS-BUILT DRAWINGS OF THE WATERLINE ARE AVAILABLE FROM SRA.
6. EXTENTS OF CLEARING AND GRUBBING BEGIN AT STA 2+00 AND CONTINUE TO STA 7+15.
7. SEE SHEETS C-9 AND C-10 FOR MORE INFORMATION ON PROPOSED CONSTRUCTION SEQUENCING.

0 20' 40'
SCALE IN FEET
HORIZONTAL

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

CIVIL
DEMOLITION
PLAN

F&N JOB NO.	SRA22674
DATE	12/22/2022
DESIGNED	JMW
DRAWN	KAM
REVISED	----
CHECKED	AAH
FILE NAME	CV-ALL-PL-DEMO.dwg

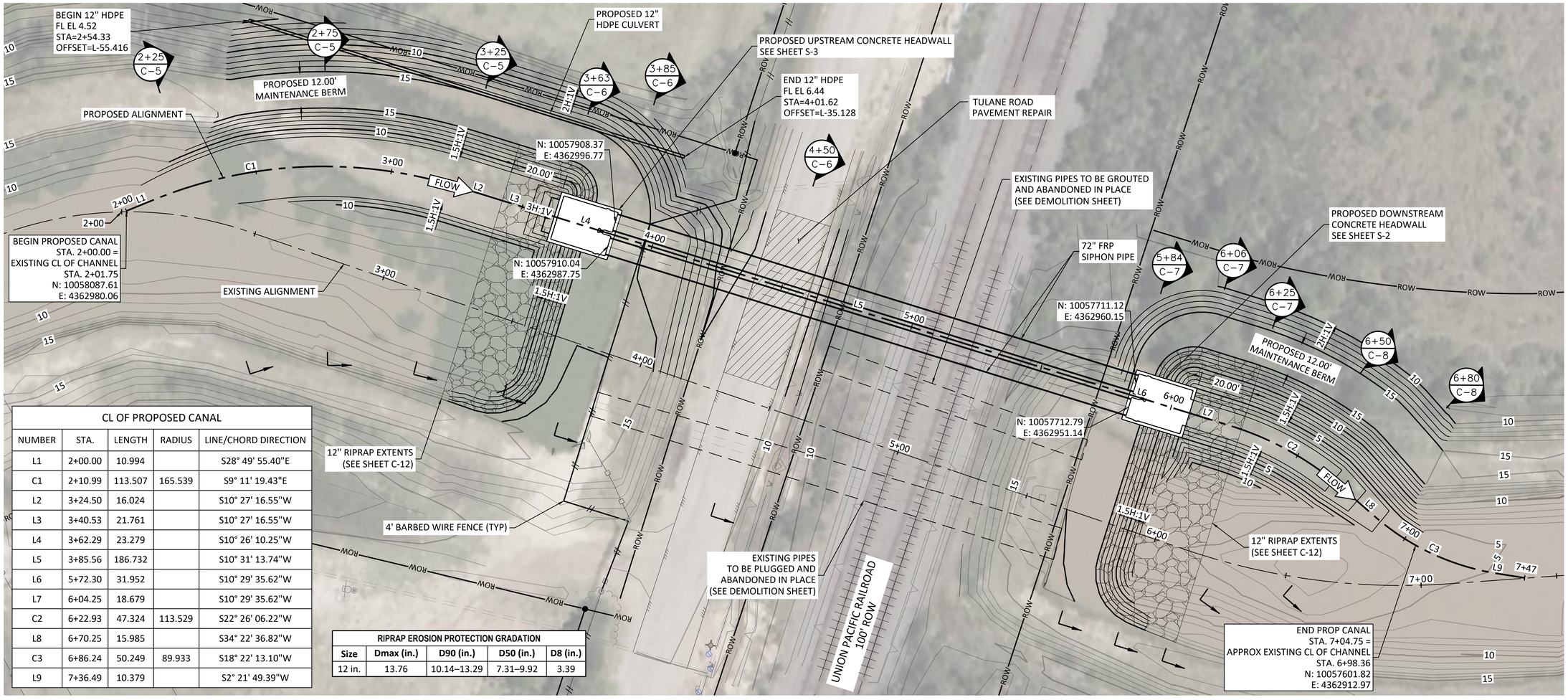
NO.	ISSUE	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1

SHEET C-3
SEQ. 6 OF 25

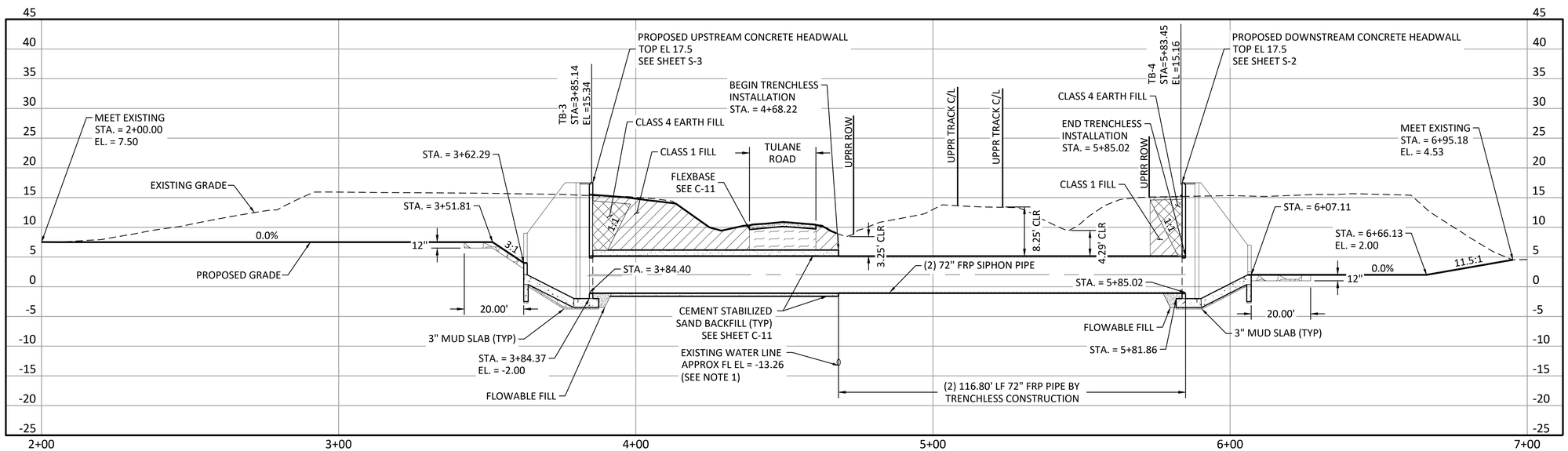
ACAD Rel: 24.2s (LMS Tech)
Filename: N:\WRD\Drawings\CV-ALL-PL-DEMO.dwg
Last Saved: 1/5/2023 3:29 PM Saved By: 02762

Plot Date: 1/5/2023 3:53 PM Plot By: 02762 Filename: N:\WRD\Drawings\CV-ALL-PL-DEMO.dwg



CL OF PROPOSED CANAL				
NUMBER	STA.	LENGTH	RADIUS	LINE/CHORD DIRECTION
L1	2+00.00	10.994		S28° 49' 55.40"E
C1	2+10.99	113.507	165.539	S9° 11' 19.43"E
L2	3+24.50	16.024		S10° 27' 16.55"W
L3	3+40.53	21.761		S10° 27' 16.55"W
L4	3+62.29	23.279		S10° 26' 10.25"W
L5	3+85.56	186.732		S10° 31' 13.74"W
L6	5+72.30	31.952		S10° 29' 35.62"W
L7	6+04.25	18.679		S10° 29' 35.62"W
C2	6+22.93	47.324	113.529	S22° 26' 06.22"W
L8	6+70.25	15.985		S34° 22' 36.82"W
C3	6+86.24	50.249	89.933	S18° 22' 13.10"W
L9	7+36.49	10.379		S2° 21' 49.39"W

RIPRAP EROSION PROTECTION GRADATION				
Size	Dmax (in.)	D90 (in.)	D50 (in.)	D8 (in.)
12 in.	13.76	10.14–13.29	7.31–9.92	3.39



NOTES:

1. EXISTING WATER LINE LOCATION IS AN APPROXIMATION FROM THE 2021 WEST SIDE WATER LINE PHASE 1 PROJECT. CONTRACTOR TO FIELD VERIFY WATERLINE LOCATION PRIOR TO BEGINNING WORK. AS-BUILT DRAWINGS OF THE WATERLINE ARE AVAILABLE FROM SRA.

NORTH

0 20' 40'
SCALE IN FEET
HORIZONTAL

0 10' 20'
SCALE IN FEET
VERTICAL

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

PROPOSED SITE PLAN AND PROFILE

NO.	ISSUE	BY	DATE

R&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME CV-ALL-PP-OVRL.dwg

Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
VERIFY SCALE 0 1

SHEET C-4
SEQ. 7 OF 25

ACAD Rel: 24.2s (LMS Tech)
Filename: N:\WRD\Drawings\CV-ALL-PP-OVRL.dwg
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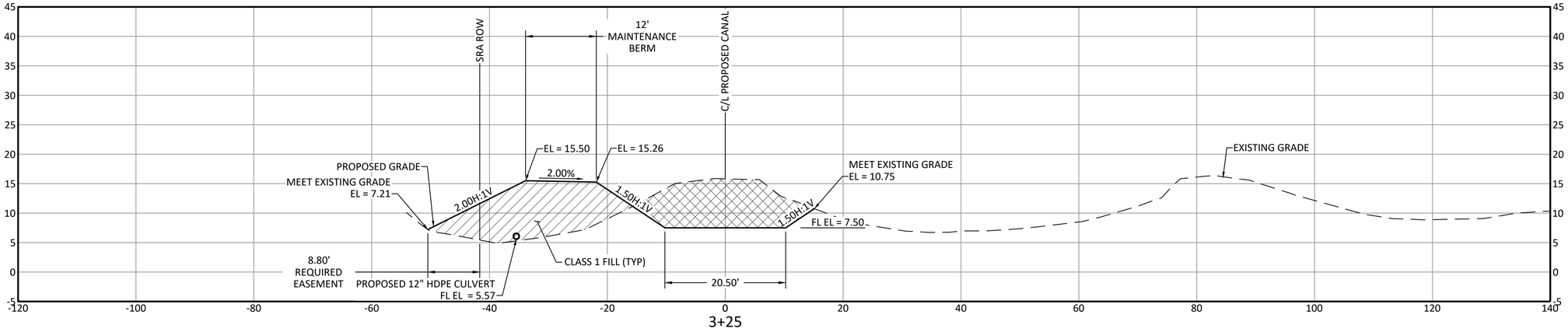

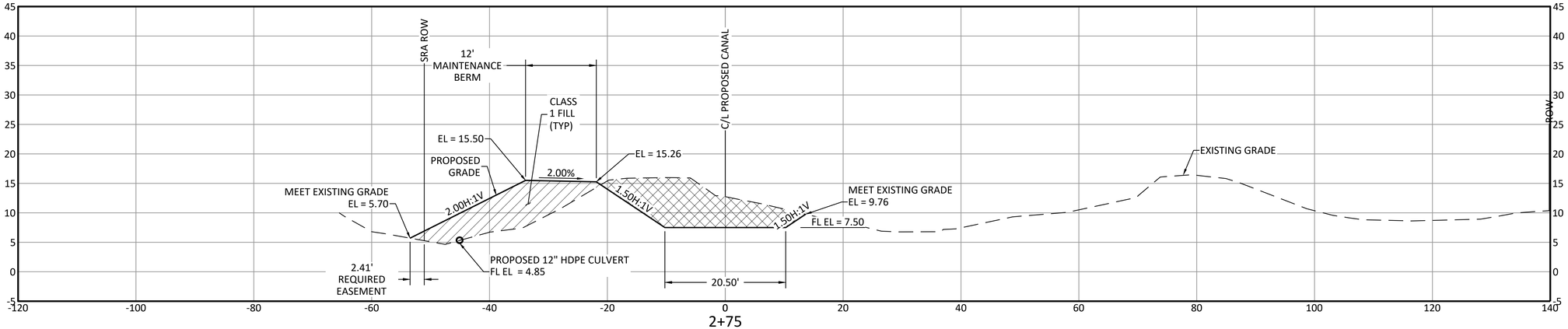

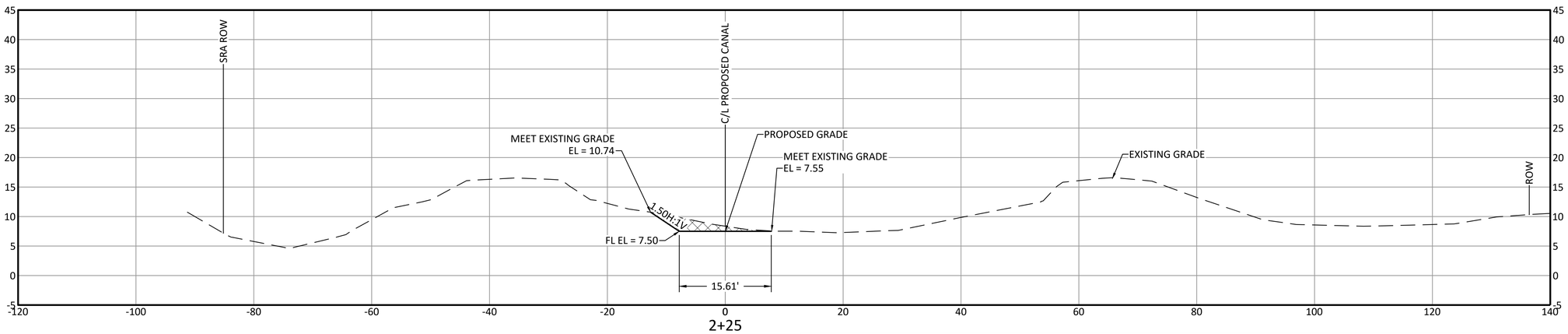

NOTES:

1. SECTIONS ARE FROM THE PERSPECTIVE OF LOOKING DOWNSTREAM.

LEGEND

FILL

CUT

CUT/FILL VOLUME TABLE							
STATION	CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME	RUNNING CUT VOLUME	RUNNING FILL VOLUME	NET VOLUME
2+25.00	20.92 SF	0.00 SF	0.00 CY	0.00 CY	0.00 CY	0.00 CY	0.00 CY
2+75.00	173.71 SF	145.29 SF	185.65 CY	164.41 CY	185.65 CY	164.41 CY	21.24 CY
3+25.00	187.64 SF	221.56 SF	339.99 CY	408.72 CY	525.64 CY	573.13 CY	-47.49 CY

0 10' 20'
SCALE IN FEET HORIZONTAL

0 10' 20'
SCALE IN FEET VERTICAL

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

CIVIL
CROSS SECTIONS
(STA 2+25 TO 3+25)

F&N JOB NO.	SRA22674
DATE	12/22/2022
DESIGNED	JMW
DRAWN	KAM
REVISED	----
CHECKED	AAH
FILE NAME	CV-ALL-XS-GRAD.dwg

NO.	ISSUE	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-5

SEQ. 8 OF 25

ACAD Rel: 24.2s (LMS Tech)
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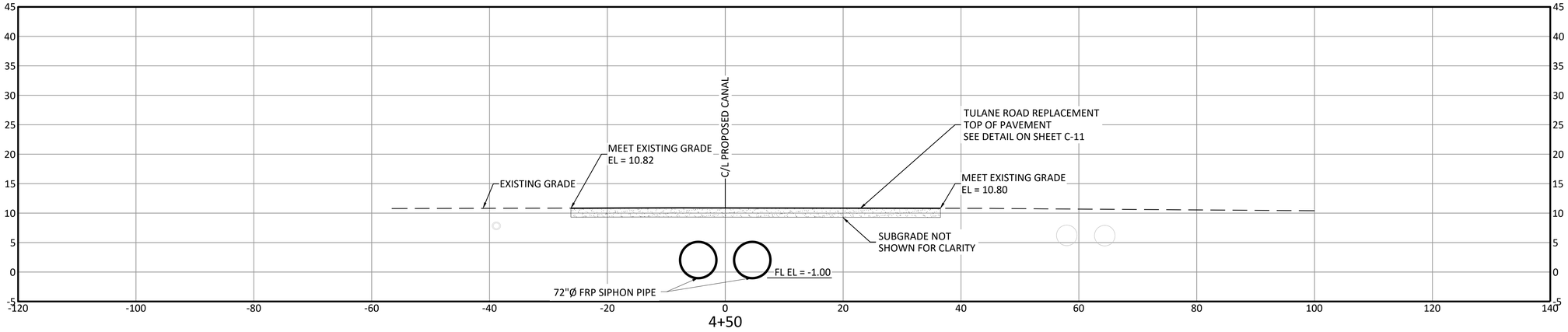
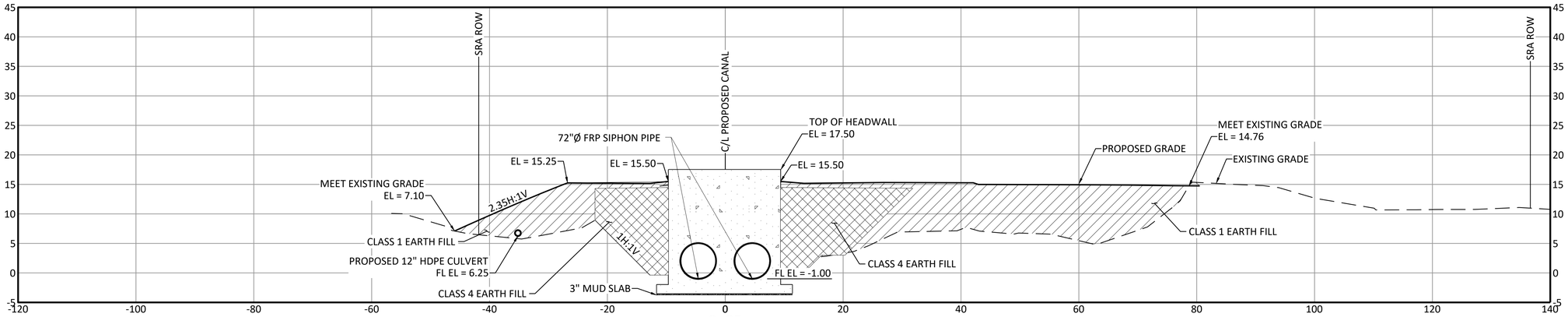
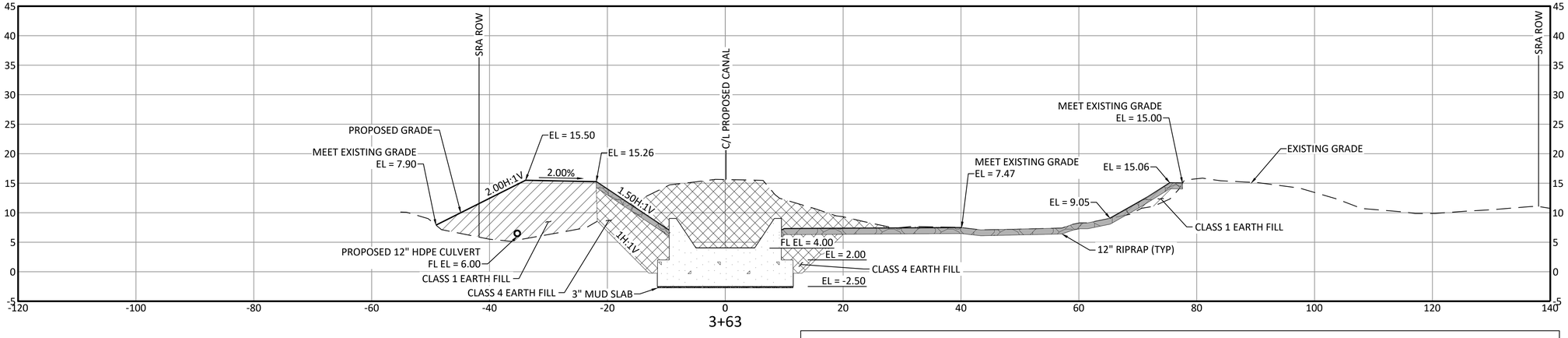


4+50



3+85



3+63

NOTES:

1. CEMENT STABILIZED SAND EXTENTS NOT SHOWN FOR CLARITY, REFER TO SHEET C-11.

LEGEND

FILL

CUT

SCALE IN FEET HORIZONTAL
0 10' 20'

SCALE IN FEET VERTICAL
0 10' 20'

CUT/FILL VOLUME TABLE

STATION	CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME	RUNNING CUT VOLUME	RUNNING FILL VOLUME	NET VOLUME
3+63.00	269.57 SF	227.56 SF	321.77 CY	316.08 CY	847.41 CY	889.21 CY	-41.80 CY
3+85.00	1.00 SF	789.77 SF	110.21 CY	414.40 CY	957.63 CY	1303.61 CY	-345.98 CY
4+50.00	0.10 SF	0.00 SF	1.32 CY	950.65 CY	958.95 CY	2254.26 CY	-1295.31 CY

ISSUED FOR BID

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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Web - www.freese.com

SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

CROSS SECTIONS (STA 3+72 TO 4+50)

F&N JOB NO.	SRA22674
DATE	12/22/2022
DESIGNED	JMW
DRAWN	KAM
REVISED	----
CHECKED	AAH
FILE NAME	CV-ALL-XS-GRAD.dwg

NO.	ISSUE	BY	DATE

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0 VERIFY SCALE 1

SHEET C-6

SEQ. 9 OF 25

ACAD Rel: 24.2s (LMS Tech)
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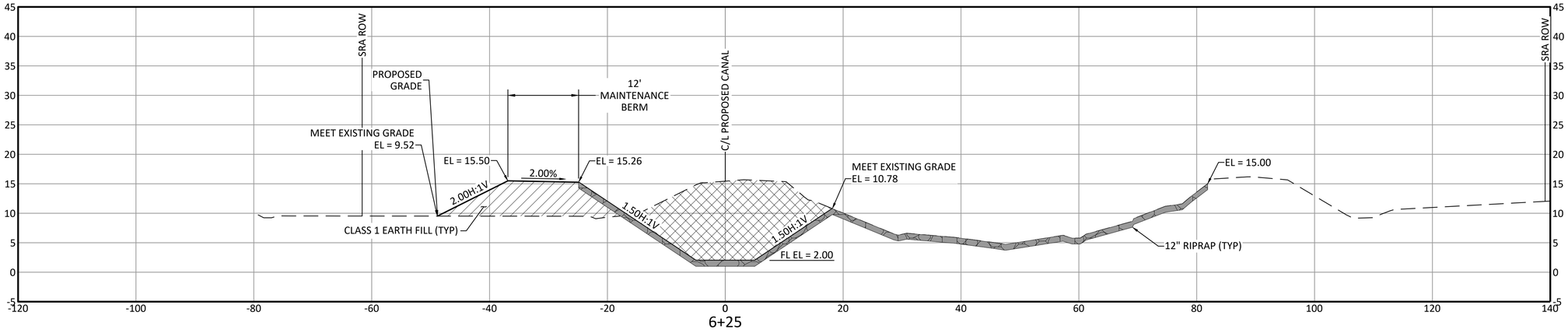

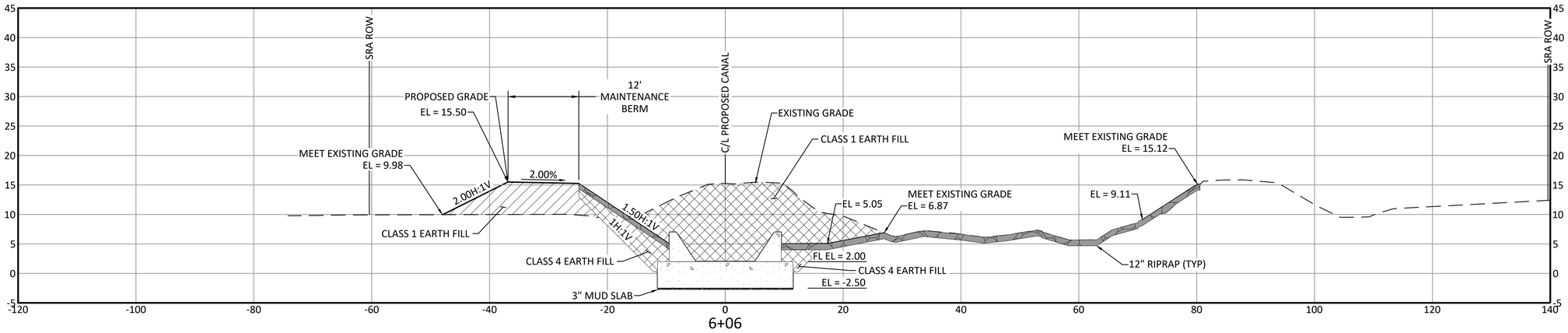

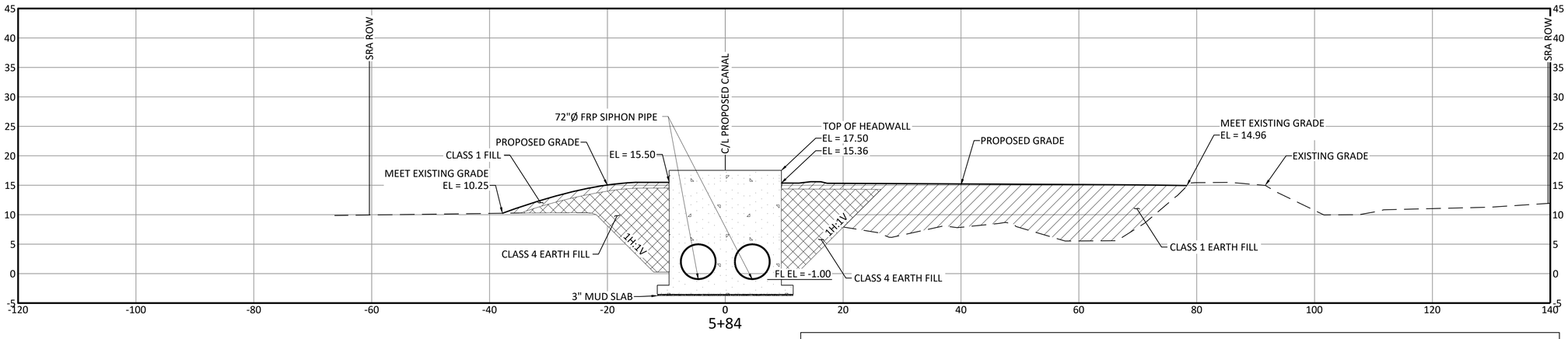

LEGEND

FILL

CUT

0 10' 20'
SCALE IN FEET
HORIZONTAL

0 10' 20'
SCALE IN FEET
VERTICAL

CUT/FILL VOLUME TABLE

STATION	CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME	RUNNING CUT VOLUME	RUNNING FILL VOLUME	NET VOLUME
5+84.00	0.00 SF	592.76 SF	0.24 CY	1470.93 CY	959.19 CY	3725.19 CY	-2766.00 CY
6+06.00	337.67 SF	125.45 SF	137.57 CY	292.60 CY	1096.76 CY	4017.80 CY	-2921.04 CY
6+25.00	302.20 SF	132.04 SF	224.66 CY	93.11 CY	1321.42 CY	4110.91 CY	-2789.49 CY

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

CROSS SECTIONS (STA 5+83 TO 6+25)

R&N JOB NO.	SRA22674
DATE	12/22/2022
DESIGNED	JMW
DRAWN	KAM
REVISED	----
CHECKED	AAH
FILE NAME	CV-ALL-XS-GRAD.dwg

NO.	ISSUE	DATE	BY

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

VERIFY SCALE 0 1

SHEET C-7

SEQ. 10 OF 25

ACAD Rel: 24.2s (LMS Tech)
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Last Saved: 1/5/2023 3:46 PM Saved By: 02762

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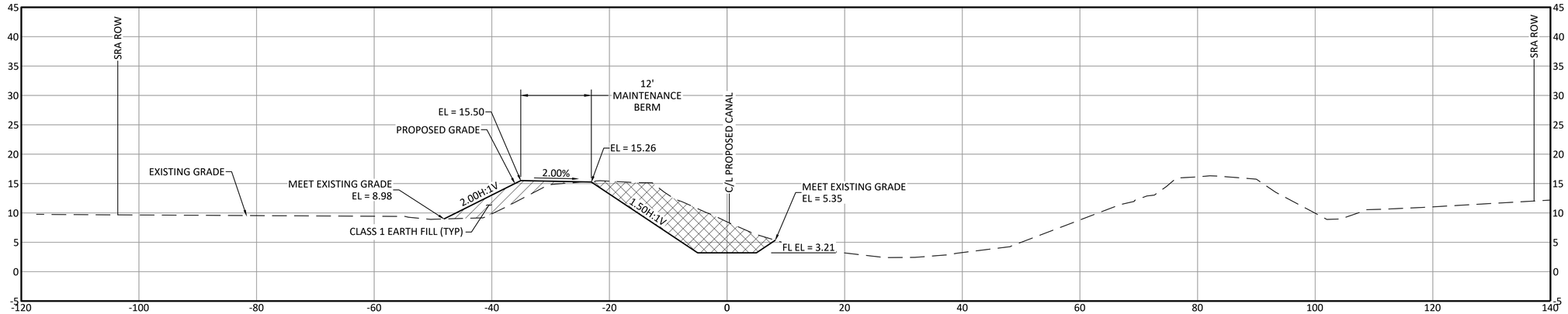
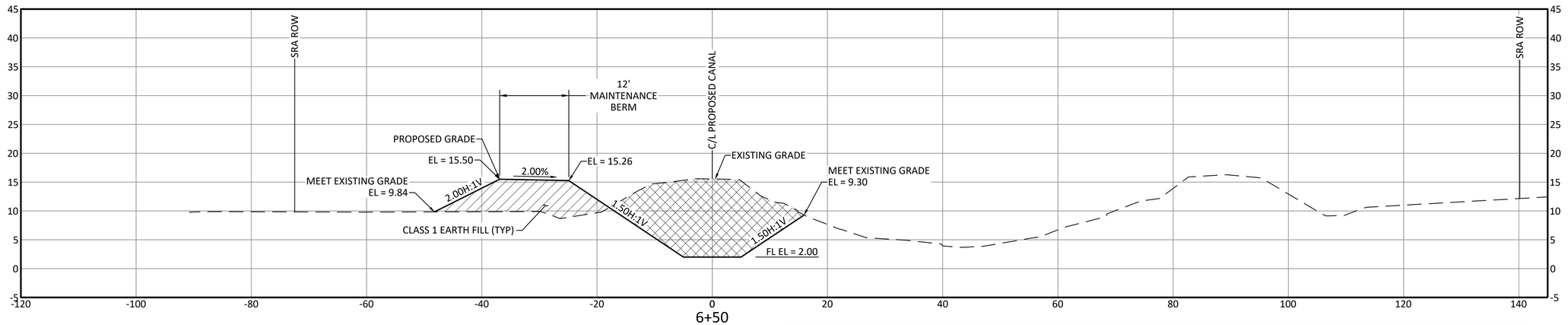


6+80



6+50

LEGEND

FILL

CUT

0 10' 20'
SCALE IN FEET
HORIZONTAL

0 10' 20'
SCALE IN FEET
VERTICAL

CUT/FILL VOLUME TABLE

STATION	CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME	RUNNING CUT VOLUME	RUNNING FILL VOLUME	NET VOLUME
6+50.00	299.59 SF	125.27 SF	278.55 CY	152.47 CY	1599.97 CY	4263.37 CY	-2663.40 CY
6+80.00	146.84 SF	41.74 SF	252.50 CY	111.14 CY	1852.48 CY	4374.51 CY	-2522.03 CY

ISSUED FOR BID

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Texas Registered Engineering Firm F-2144

STATE OF TEXAS
APRIL HURRY
140986
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PROFESSIONAL ENGINEER
01/05/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

CROSS SECTIONS (STA 6+50 TO 6+92)

NO.	ISSUE	DATE	BY

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME CV-ALL-XS-GRAD.dwg

VERIFY SCALE 0 1
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET C-8

SEQ. 11 OF 25

ACAD Rel: 24.2s (LMS Tech)
Filename: N:\WRD\Drawings\CV-ALL-XS-GRAD.dwg
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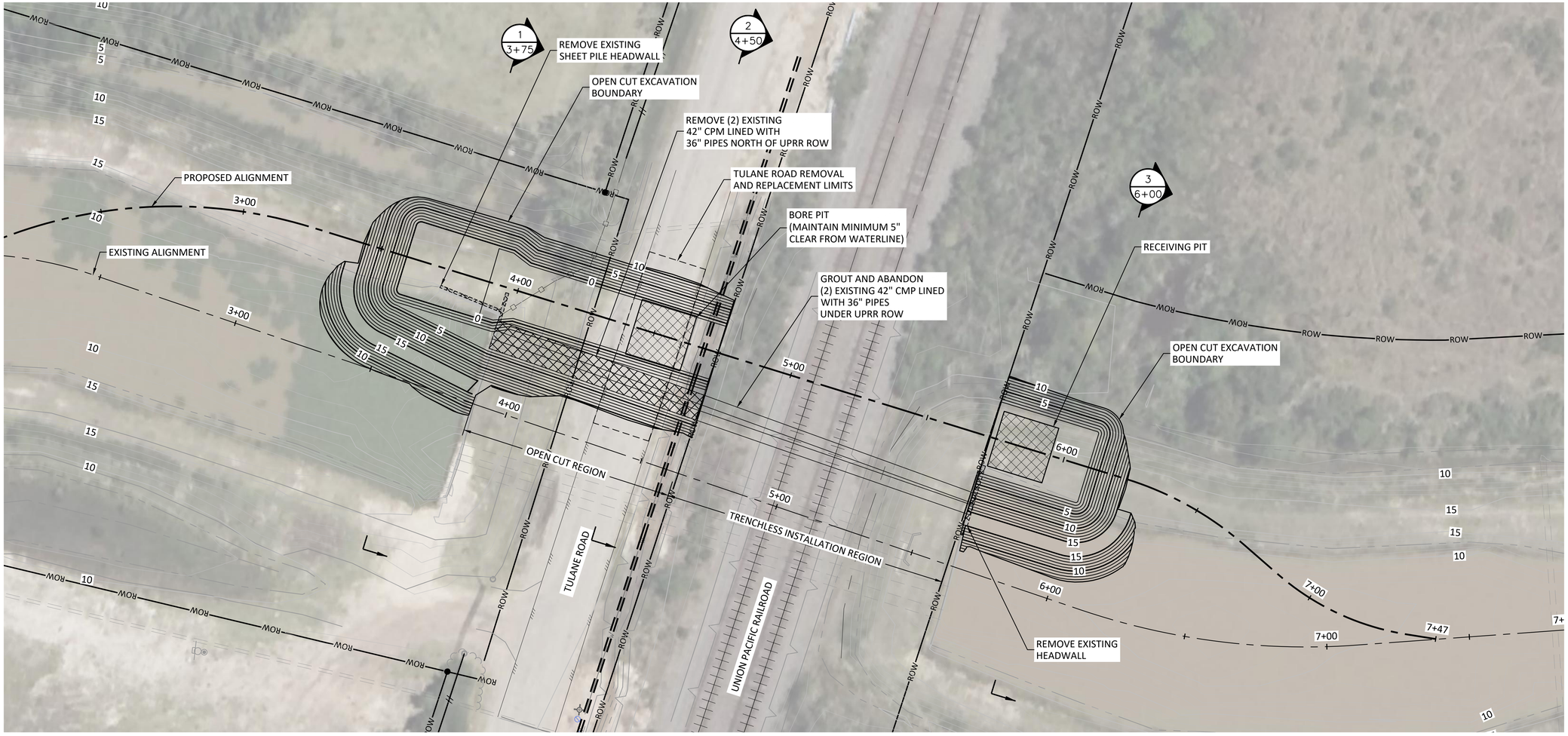

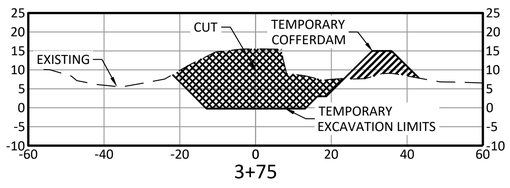

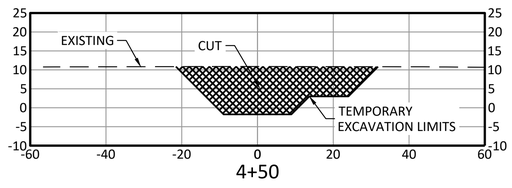

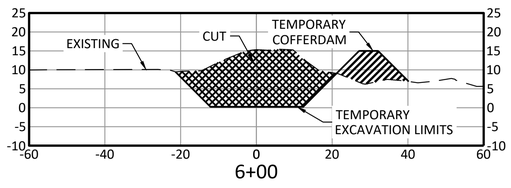

NOTES:

1. SEE SHEET G-2 FOR ADDITIONAL INFORMATION ON CONSTRUCTION SEQUENCING.
2. PHASE 1 PROPOSED SEQUENCE:

A. OPEN CUT TULANE ROAD AND EXCAVATE FOR INSTALLATION OF PROPOSED SIPHON CROSSINGS AND CONCRETE HEADWALLS.

B. PLACE TEMPORARY COFFERDAM IN EXISTING CANAL WEST OF PROPOSED HEADWALLS TO PROVIDE DRY AREA FOR INSTALLATION OF SIPHON PIPES AND HEADWALLS.

C. REMOVE TWO EXISTING EASTERN PIPES NORTH OF THE UPRR RIGHT OF WAY.

D. GROUT AND ABANDON EASTERN PIPES UNDER THE UPRR RIGHT OF WAY.

E. INSTALL PROPOSED FRP PIPES UNDER UPRR RIGHT OF WAY USING A TRENCHLESS INSTALLATION METHOD.

F. INSTALL REMAINDER OF PROPOSED FRP PIPING NORTH OF THE UPPR'S RIGHT OF WAY USING AN OPEN CUT METHOD.

G. INSTALL CONCRETE HEADWALLS AND PLACE RIPRAP.

H. REPAIR TULANE ROAD PER DETAIL ON SHEET C-11.

I. FORM EAST SIDE OF CANAL REALIGNMENT BUT DO NOT CONNECT TO EXISTING CANAL.

J. TEST NEW CANAL SYSTEM AS DESCRIBED IN NOTE 5 UNDER THE CONSTRUCTION SEQUENCING NOTES ON SHEET G-2. REPAIR ANY LEAKS OR ISSUES NOTED.

K. CONNECT NEW SIPHON SYSTEM TO EXISTING CANAL.

NORTH

0 20' 40'
SCALE IN FEET

ISSUED FOR BID

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Texas Registered Engineering Firm F-2144

STATE OF TEXAS
APRIL HURRY
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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

CIVIL

SUGGESTED CONSTRUCTION SEQUENCE (1 OF 2)

NO.	ISSUE	DATE	BY

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED
CHECKED AAH
FILE NAME CV-ALL-PL-CNSQ01.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET C-9
SEQ. 12 OF 25

ACAD Rel: 24.2s (LMS Tech)
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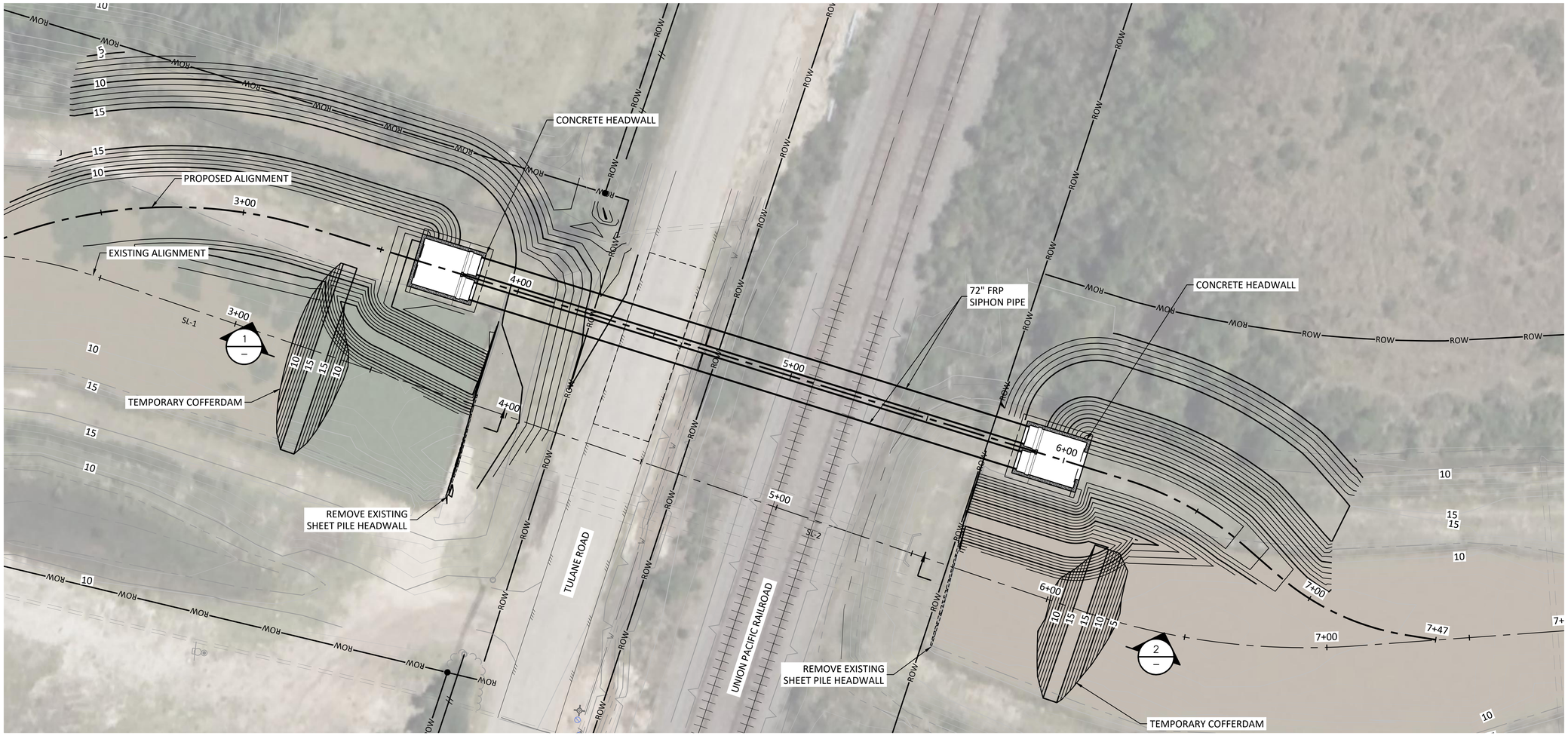
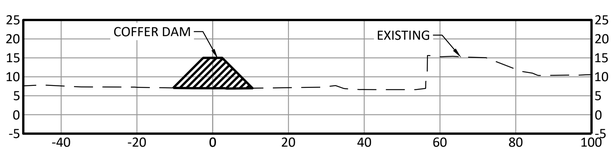
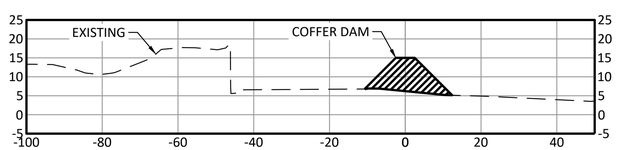




1 UPSTREAM COFFERDAM
1"=20'



2 DOWNSTREAM COFFERDAM
1"=20'

NOTES:

1. SEE SHEET G-2 FOR ADDITIONAL INFORMATION ON CONSTRUCTION SEQUENCING.
2. PHASE 2 PROPOSED SEQUENCE:

A. PLACE UPSTREAM AND DOWNSTREAM COFFERDAM TO ISOLATE EXISTING WESTERN PIPES.

B. REMOVE EXISTING HEADWALLS AND PLUG AND ABANDON TWO WESTERN PIPES.

C. PLACE RIPRAP AND COMPACT FILL TO COMPLETE CANAL REALIGNMENT. REMOVE COFFERDAMS. SEED AND MULCH DISTURBED AREAS. REPLACE FENCE.

NORTH

0 20' 40'
SCALE IN FEET
HORIZONTAL

ISSUED FOR BID

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CIVIL

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0 1

SHEET C-10
SEQ. 13 OF 25

ACAD Rel: 24.2s (LMS Tech)
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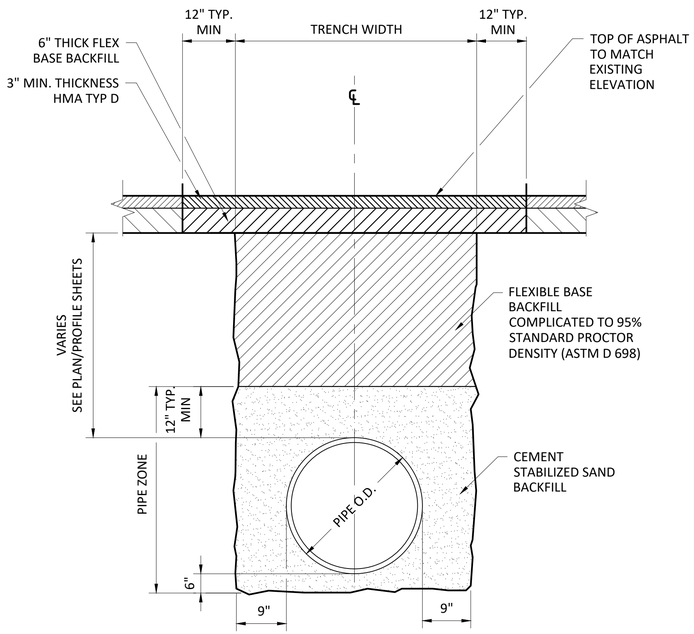


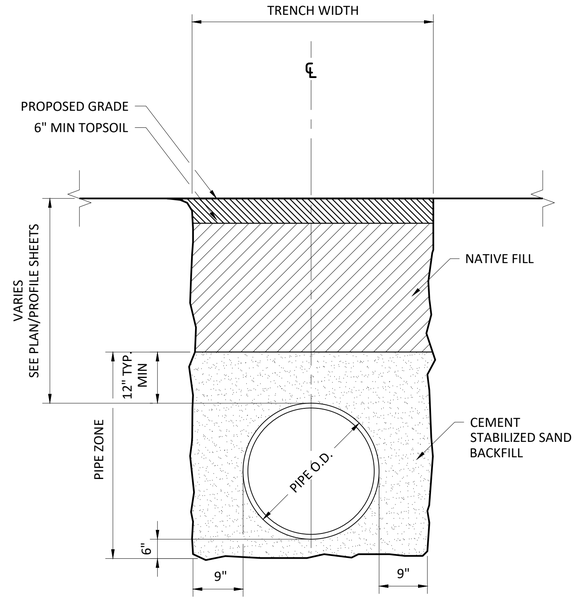
1

TYPICAL TRENCH SECTION FOR OPEN CUT ASPHALT PAVEMENT AREAS

NOT TO SCALE

GENERAL NOTE:

1. IF TRENCH BOX IS USED, TRENCH WIDTH DIMENSION IS THE DISTANCE FROM THE INSIDE WALL OF TRENCH BOX TO INSIDE WALL OF TRENCH BOX.
2. ASPHALT PAVING TYPICAL FOR ALL REPAIRED SECTIONS OF TULANE ROAD.



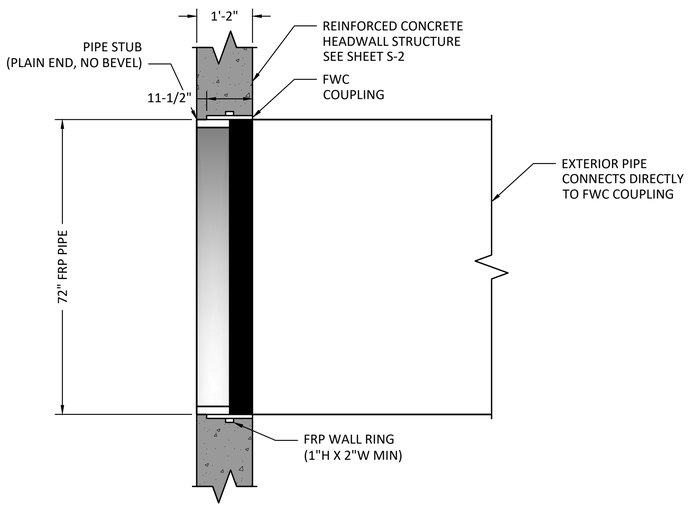
2

TYPICAL TRENCH SECTION FOR OPEN COMPACTED FILL AREAS

NOT TO SCALE

GENERAL NOTE:

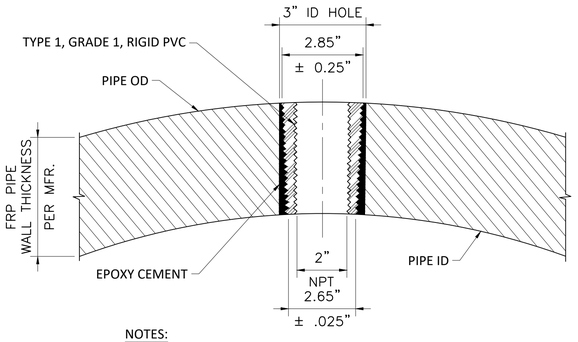
1. IF TRENCH BOX IS USED, TRENCH WIDTH DIMENSION IS THE DISTANCE FROM THE INSIDE WALL OF TRENCH BOX TO INSIDE WALL OF TRENCH BOX.



3

HEADWALL PIPE CONNECTION DETAIL

NOT TO SCALE



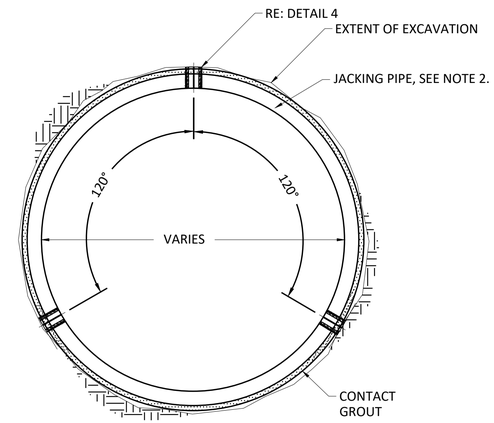
NOTES:

1. GROUT PORT SHALL BE INSTALLED BY MANUFACTURER.
2. GROUT PORT SHALL BE SEALED IN ACCORDANCE WITH SECTION 33 23 24 AFTER ANNULAR SPACE HAS BEEN FILLED.

4

FRP GROUT PORT DETAIL IN CROWN

NOT TO SCALE



NOTES:

1. GIVEN DIMENSIONS AND THICKNESSES SHALL BE MINIMUMS AND DO NOT CONSIDER CONTRACTOR'S CHOSEN MEANS AND METHODS. CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTION AND DESIGN OF JACKING PIPE OF ADEQUATE DIAMETER AND WALL THICKNESS FOR THEIR CHOSEN MEANS AND METHODS AND IN ACCORDANCE WITH SECTION 33 05 23.33 PIPELINE CROSSING OR SECTION 33 30 00 MICROTUNNELING.
2. JACKING PIPE SHALL BE IN ACCORDANCE WITH SECTION 33 31 13.13 FIBERGLASS PIPE.

5

TRENCHLESS TYPICAL CROSS SECTION

1"=1-0"

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PROJECT DETAILS

CIVIL DETAILS (SHEET 1 OF 2)

NO.	ISSUE	BY	DATE

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DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
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0 1"

SHEET C-11
SEQ. 14 OF 25

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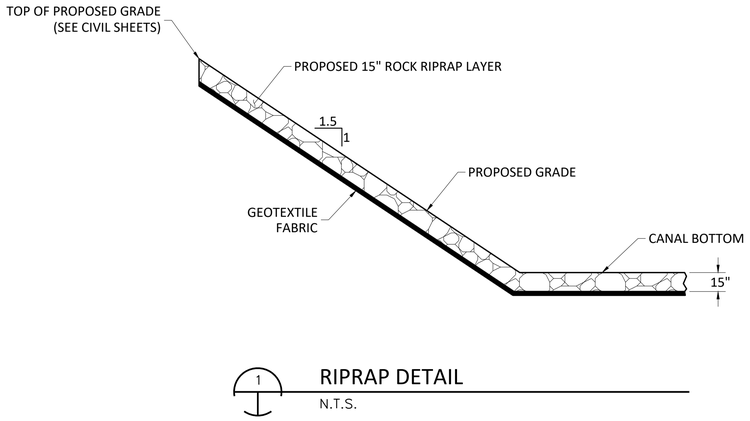
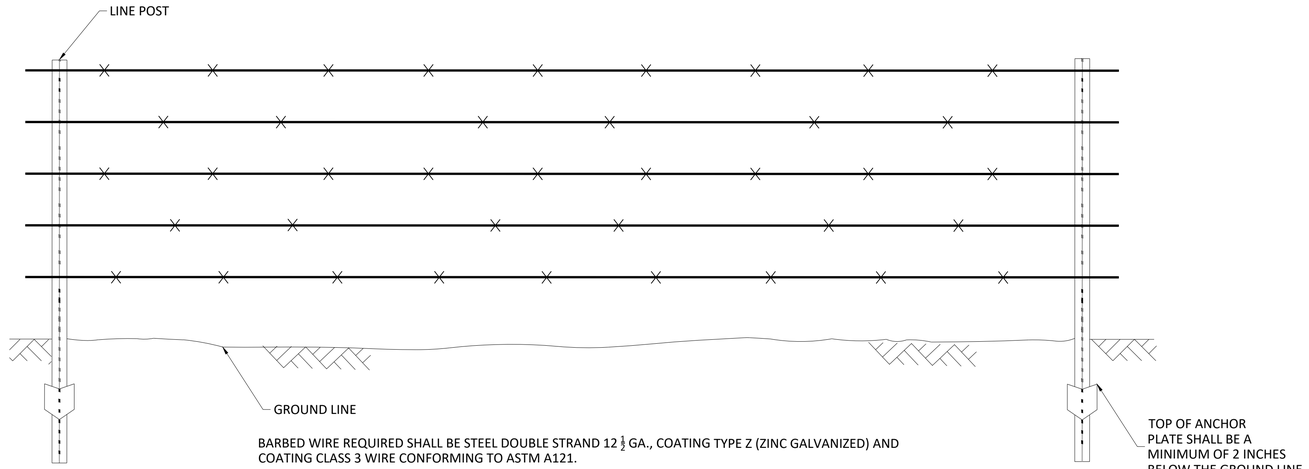


1 RIPRAP DETAIL

N.T.S.



BARBED WIRE REQUIRED SHALL BE STEEL DOUBLE STRAND 12 ½ GA., COATING TYPE Z (ZINC GALVANIZED) AND COATING CLASS 3 WIRE CONFORMING TO ASTM A121.

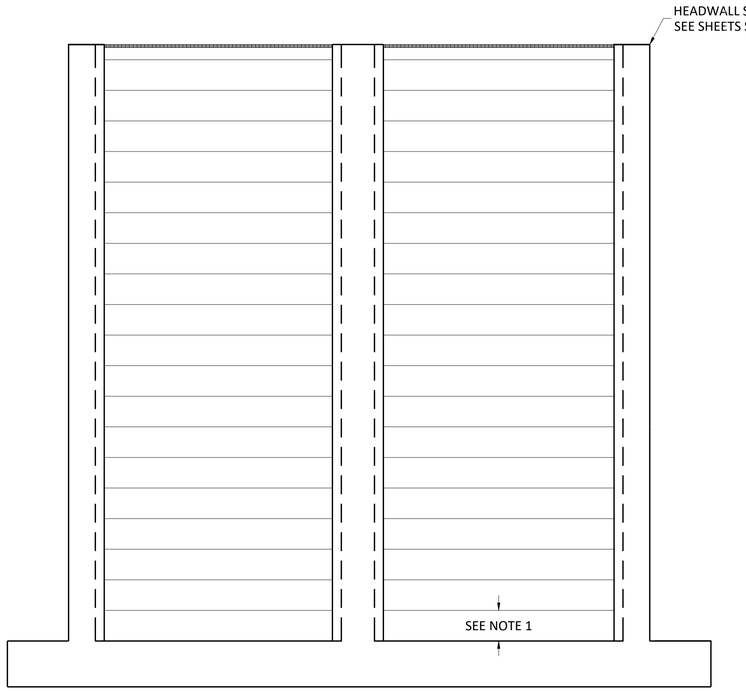
BARBS SHALL BE (2) POINT, 14 GA. OR LARGER, ROUND OR FLAT AND ON 4" SPACING.

ATTACH EACH BARBED WIRE STRAND TO THE CORNER, END POST, AND PULL PANEL BRACE POST WITH A DOUBLE WRAP OF GALVANIZED WIRE TIED BACK WITH A MIN. OF 4 WRAPS.

ANCHORAGE OF FENCE WIRE TO POSTS WHERE THERE IS A CHANGE IN VERTICAL ALIGNMENT THAT PRODUCES UPWARD OR DOWNWARD PULL SHALL BE ACCOMPLISHED WITH DOUBLE TIE WIRES TO EACH SUCCESSIVE FENCE WIRE. THE ENGINEER WILL DESIGNATE THE POSTS WHERE THIS SPECIAL FASTENING OF THE FENCE WIRES ARE REQUIRED.

2 BARBED WIRE FENCE DETAIL

5–STRAND BARBED WIRE



3 STOP LOG DETAIL

N.T.S.

DETAIL NOTES:

1. STOP LOGS SHALL CONFORM TO SECTION 40 05 50 FABRICATED GATES.
2. CONTRACTOR SHALL COORDINATE WITH STOP LOG MANUFACTURER FOR DESIGN OF STOP LOG SYSTEM AND RELATED APPURTENANCES PER THE DIMENSIONS AND APPLICABLE NOTES ON THIS SHEET. CONTRACTOR SHALL SUBMIT THE PROPOSED STOP LOG SYSTEM DESIGN TO THE ENGINEER FOR APPROVAL.
3. MAX HYDROSTATIC DESIGN HEAD = 17.00 FT MEASURED FROM THE TOP OF SLAB TO TOP OF STOP LOGS.
4. FRAMES AND GUIDE RAILS SHALL BE 304L OR 316 STAINLESS STEEL.
5. LEAKAGE RATE SHALL NOT EXCEED 0.05 GPM/FT OF WETTED PERIMETER.
6. PROVIDE TWO SETS OF STOP LOGS AS PART OF ALTERNATE BID NO. 1.

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

PROJECT DETAILS

CIVIL DETAILS (SHEET 2 OF 2)

NO.	ISSUE	BY	DATE

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0 1

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DESIGNED	JMW
DRAWN	KAM
REVISED	
CHECKED	AAH
FILE NAME	CV-RDS-DT-ROAD02.dwg

SHEET C-12

SEQ. 15 OF 25

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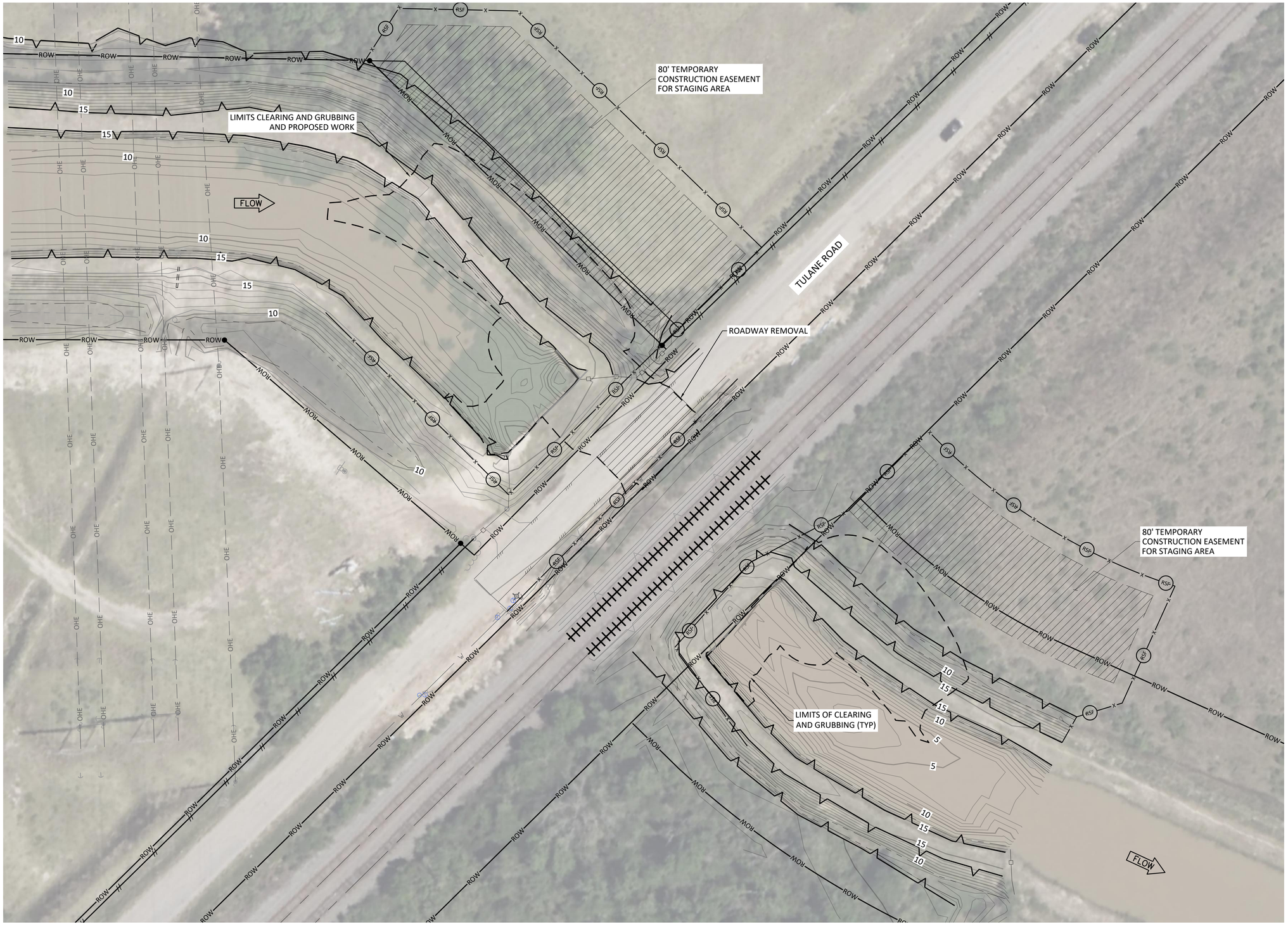

SWPPP PLAN VIEW

1"=50'

LEGEND

x — RSF — x REINFORCED SILT FENCE

NOTES:

1. BOUNDARY OF REINFORCED SILT FENCE IS ALONG THE LIMITS OF PHASE 1 EXCAVATION AND ALONG THE LIMITS OF THE STAGING AREAS.
2. SWPPP PLAN PROVIDED FOR BIDDING PURPOSES ONLY. CONTRACTOR TO PROVIDE A SWPPP PLAN PER STORMWATER POLLUTION PREVENTION PLAN GENERAL NOTES ON SHEET G-1.

NORTH

0 50' 100'

SCALE IN FEET
HORIZONTAL

ISSUED FOR BID

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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

PROJECT DETAILS
SWPPP
PLAN VIEW

NO.	ISSUE	BY	DATE

FB&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME CV-ALL-PL-SWPP01.dwg

Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
VERIFY SCALE 0 1

SHEET C-13
SEQ. 16 OF 25

ACAD Rel: 24.2s (LMS Tech)
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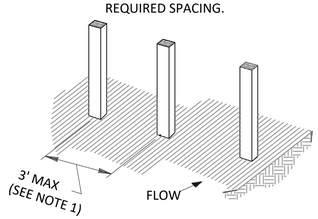
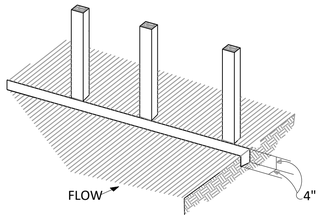
Plot Date: 1/5/2023 3:55 PM Plot By: 02762 Filename: N:\WRD\Drawings\CV-ALL-PL-SWPP01.dwg

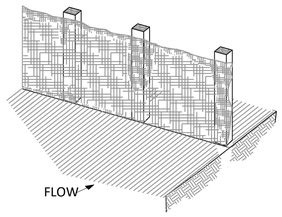
1. SET STAKES AT REQUIRED SPACING.



2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.

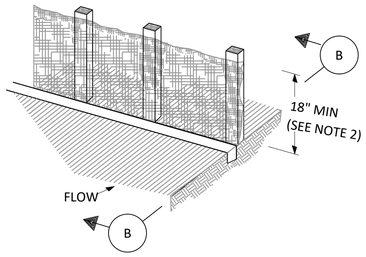


3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.

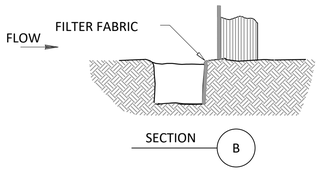


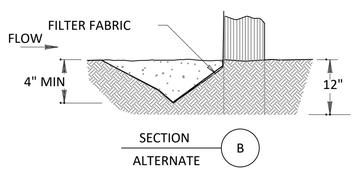
EXTENSION OF FABRIC INTO TRENCH

4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



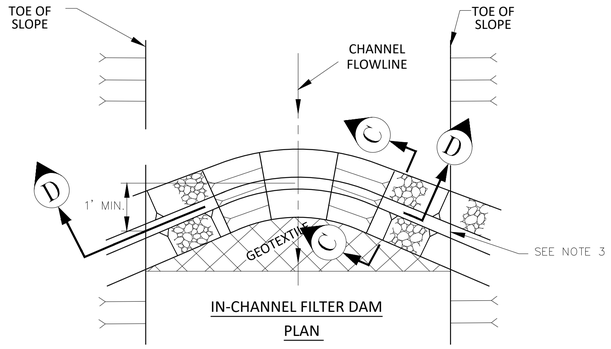
ALTERNATE V-TRENCH EXTENSION OF FABRIC INTO TRENCH



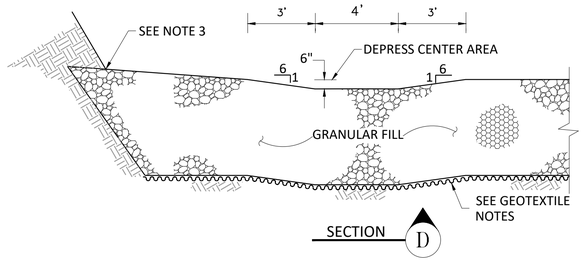


CONSTRUCTION NOTES:

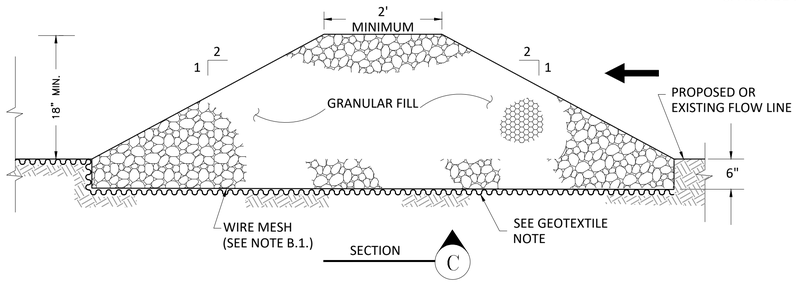
1. 2-INCH THICK BY 2-INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3-FEET AND EMBEDDED A MIN OF 8-INCHES. IF PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF STAKES MAY BE INCREASED TO 8-FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18-INCHES AND MAX HEIGHT OF 36-INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6-INCHES AT THE STAKES, AND FOLDED.
4. ALL FABRIC FENCE NEEDS TO BE REINFORCED WITH WIRE MESH.
5. SEE STANDARD SPECIFICATION FOR FILTER FABRIC FENCE.



IN-CHANNEL FILTER DAM
PLAN



SECTION D



SECTION C

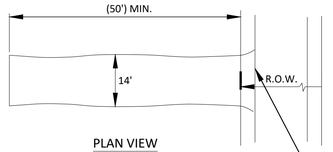
TYPE I FILTER DAM

GEOTEXTILE NOTES:

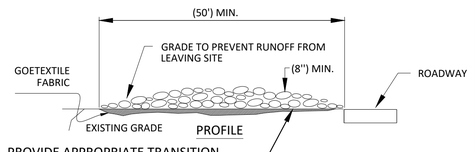
MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 0Z. MIN

FILTER DAM NOTES:

1. TYPE 1 (NON-REINFORCED):
   - A. HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   - B. TOP WIDTH - 2 FEET (MINIMUM) C. SLOPES - 2:1 (MAXIMUM).
2. GRANULAR FILL:
   - A. PLACE ON MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   - B. 3-5 INCHES FOR ROCK FILTER DAM TYPES
3. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.



PLAN VIEW



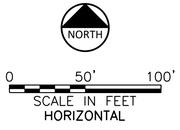
PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND PUBLIC RIGHT-OF-WAY

NOTES:

1. STONE SIZE: 3"-5" OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 50'.
3. THICKNESS: NOT LESS THAN 8".
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. PROVIDE GEOTEXTILE FABRIC BETWEEN NATURAL GRADE AND 3"-5" ROCK.

1 - STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

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

SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

PROJECT DETAILS
SWPPP
DETAILS

F&N JOB NO.	SRA22674
DATE	12/22/2022
DESIGNED	JMW
DRAWN	KAM
REVISED	----
CHECKED	AAH
FILE NAME	CV-ALL-DT-SWPP01.dwg

NO.	ISSUE	BY	DATE

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VERIFY SCALE 0 1

SHEET C-14

SEQ. 17 OF 25

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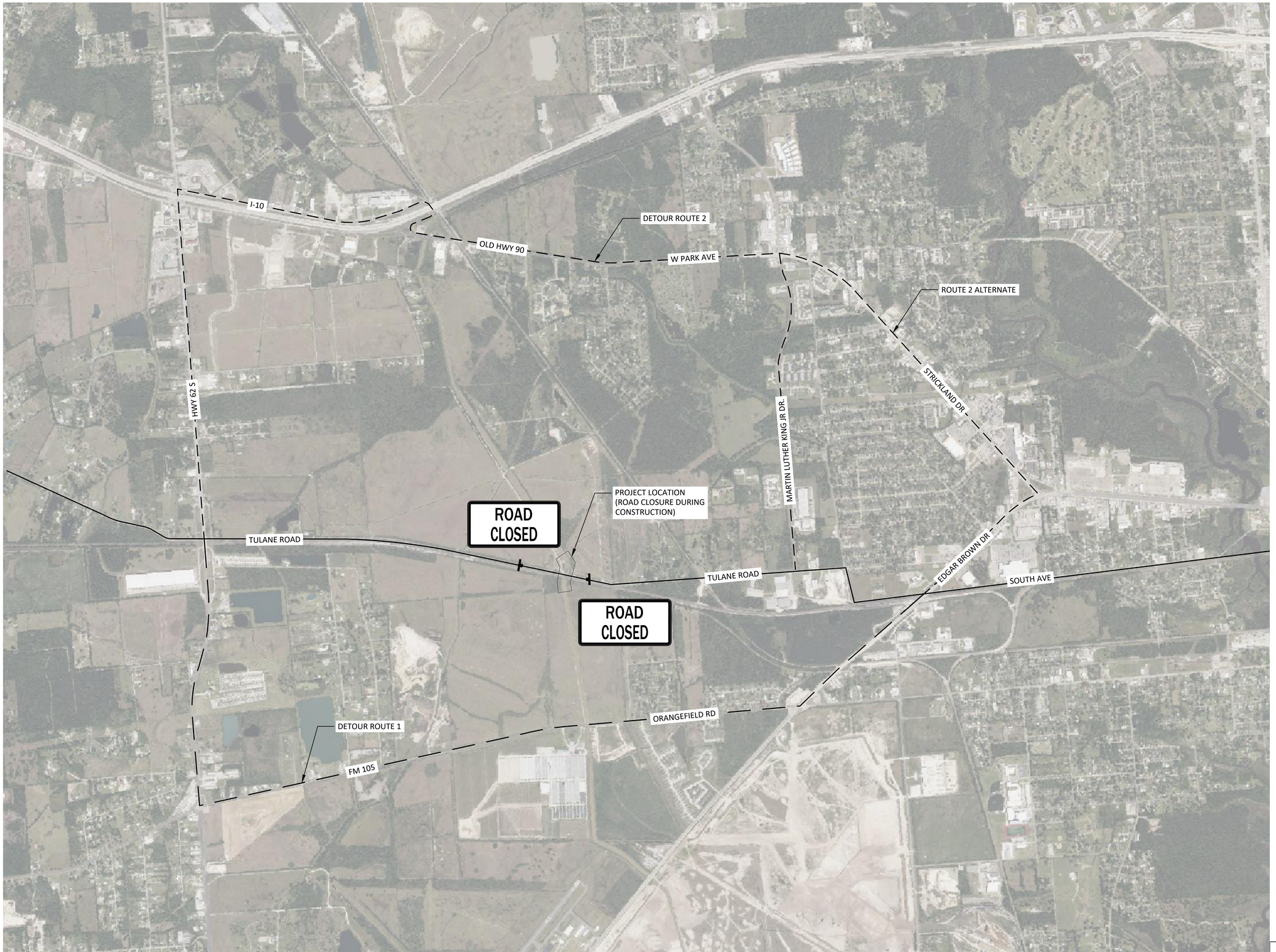

NOTES:

1. CONTRACTOR TO PREPARE AND SUBMIT TRAFFIC CONTROL PLAN IN ACCORDANCE WITH SECTION 10 14 53 TRAFFIC SIGNAGE.
2. CONTRACTOR TO NOTIFY ORANGE COUNTY AND THE CITY OF ORANGE 14 DAYS PRIOR TO ROAD CLOSURE.

NORTH

0 60' 120'
SCALE IN FEET

ISSUED FOR BID

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

STATE OF TEXAS
APRIL HURRY
140986
LICENSED
PROFESSIONAL ENGINEER
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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

TRAFFIC CONTROL
TRAFFIC CONTROL
PLAN - DETOUR ROUTES

NO.	ISSUE	BY	DATE

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED JMW
DRAWN KAM
REVISED ----
CHECKED AAH
FILE NAME TC-ALL-PL-SIGN.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET TC-1
SEQ. 18 OF 25

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GENERAL

1. 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.

2. 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.

3. REMOVE ALL ABANDONED FOUNDATIONS, UTILITIES, PIPELINES, ETCETERA THAT INTERFERE WITH NEW CONSTRUCTION.

4. PROVIDE EXCAVATION SHORING TO PROTECT AND SUPPORT FOUNDATION SOILS UNDER EXISTING STRUCTURES.

5. THE STRUCTURE IS DESIGNED FOR STABILITY IN THE FINAL CONDITION ONLY. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY DURING CONSTRUCTION.

6. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

7. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.

FOUNDATION

1. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT "GEOTECHNICAL STUDY; PROJECT TITLE: RAW WATER CONVEYANCE PROJECT TULANE ROAD AND UPPER CROSSING SABINE RIVER AUTHORITY OF TEXAS. CLIENT NAME: SABINE RIVER AUTHORITY OF TEXAS. PROJECT ADDRESS: ORANGE, TEXAS, DATED NOVEMBER 17, 2022, PREPARED BY TOLUNAY-WONG ENGINEERS, INC. 2455 WEST CARDINAL DR, SUITE A BEAUMONT, TX 77705, TWE PROJECT NO. 22.23.124 / REPORT NO. 134730. A COPY OF THIS REPORT IS AVAILABLE FOR INSPECTION AT THE ENGINEER'S OFFICE.

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. EXCAVATION AND SUBGRADE PREPARATION
   A. REMOVE THE SURFICIAL VEGETATION, WASTE AND LOOSE SOILS TO A MINIMUM DEPTH OF 12 INCHES.
   B. EXCAVATE THE SITE TO 2'-0" BEYOND THE PERIMETER OF THE FOUNDATION.
   C. SCARIFY THE EXPOSED SUBGRADE TO A DEPTH OF 6 INCHES, ADJUST THE MOISTURE CONTENT AS NECESSARY AND MAINTAIN IT TO WITHIN 2 PERCENT OF OPTIMUM AND RECOMPACT THE SOIL TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR).
   E. BACKFILL SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS FOR HEAVY EQUIPMENT AND LOOSE LIFTS FOR HAND-DIRECTED EQUIPMENT. COMPACT TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR), AND AT A MOISTURE CONTENT WITHIN **-2 TO 2 PERCENT** OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. IN-PLACE FIELD DENSITY TESTS SHALL BE CONDUCTED AT A RATE OF ONE TEST PER 3,000 SQUARE FEET FOR EVERY LIFT.
   E. THE SUBGRADE MOISTURE CONTENT AND DENSITY SHALL BE MAINTAINED DURING CONSTRUCTION.

4. BACKFILL SHALL BE AS INDICATED IN DRAWINGS,

5. 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

6. ALLOWABLE NET BEARING PRESSURES USED FOR FOUNDATION DESIGNS ARE AS FOLLOWS:
   B. HEADWALL STRUCTURE 2000 PSF

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.

CONCRETE

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF ACI 301 AND ACI 350.

2. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH AS FOLLOWS:
   A. SLABS AND WALLS: 5,000 PSI
   B. W/C RATIO: 0.4 MAXIMUM
   C. AGGREGATE: ASTM C 33, 1" MAXIMUM, CLASS 3M
   D. ENTRAINED AIR: ACI 318-08, EXPOSURE CLASS F1
   E. SLUMP: 4" (+/-1")

3. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60, DEFORMED.

4. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE AS INDICATED IN DRAWINGS.

5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS ON SLABS UNLESS NOTED OTHERWISE.

6. ALL CONSTRUCTION JOINTS (CJ) SHALL BE THOROUGHLY CLEANED AND PURPOSELY ROUGHENED TO 1/4" PRIOR TO PLACING ADJACENT CONCRETE.

7. PENETRATIONS OTHER THAN SHOWN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

8. 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.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.

10. UNLESS NOTED OTHERWISE, HOOKS SHOWN ON DRAWINGS SHALL BE ASSUMED TO BE STANDARD HOOKS PER ACI 318.

11. UNLESS NOTED OTHERWISE, LAP SPLICES IN BEAMS AND WALLS SHALL BE STAGGERED.

12. ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP 48 BAR DIAMETERS OF SMALLER BAR LAPPED, UNLESS NOTED OTHERWISE. ALL REBAR EMBEDMENT LENGTHS SHALL BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

ISSUED FOR BID

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

STATE OF TEXAS
MAGDUD GHAREEB MAGLAD
134629
LICENSED PROFESSIONAL ENGINEER

1/4/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

STRUCTURAL

GENERAL NOTES

NO.	ISSUE	BY	DATE

F&N JOB NO. SRA22674
DATE 01/04/2023
DESIGNED MGM
DRAWN AAD
REVISED -
CHECKED BBW
FILE NAME ST-SRA-GN-NOTE01.dwg

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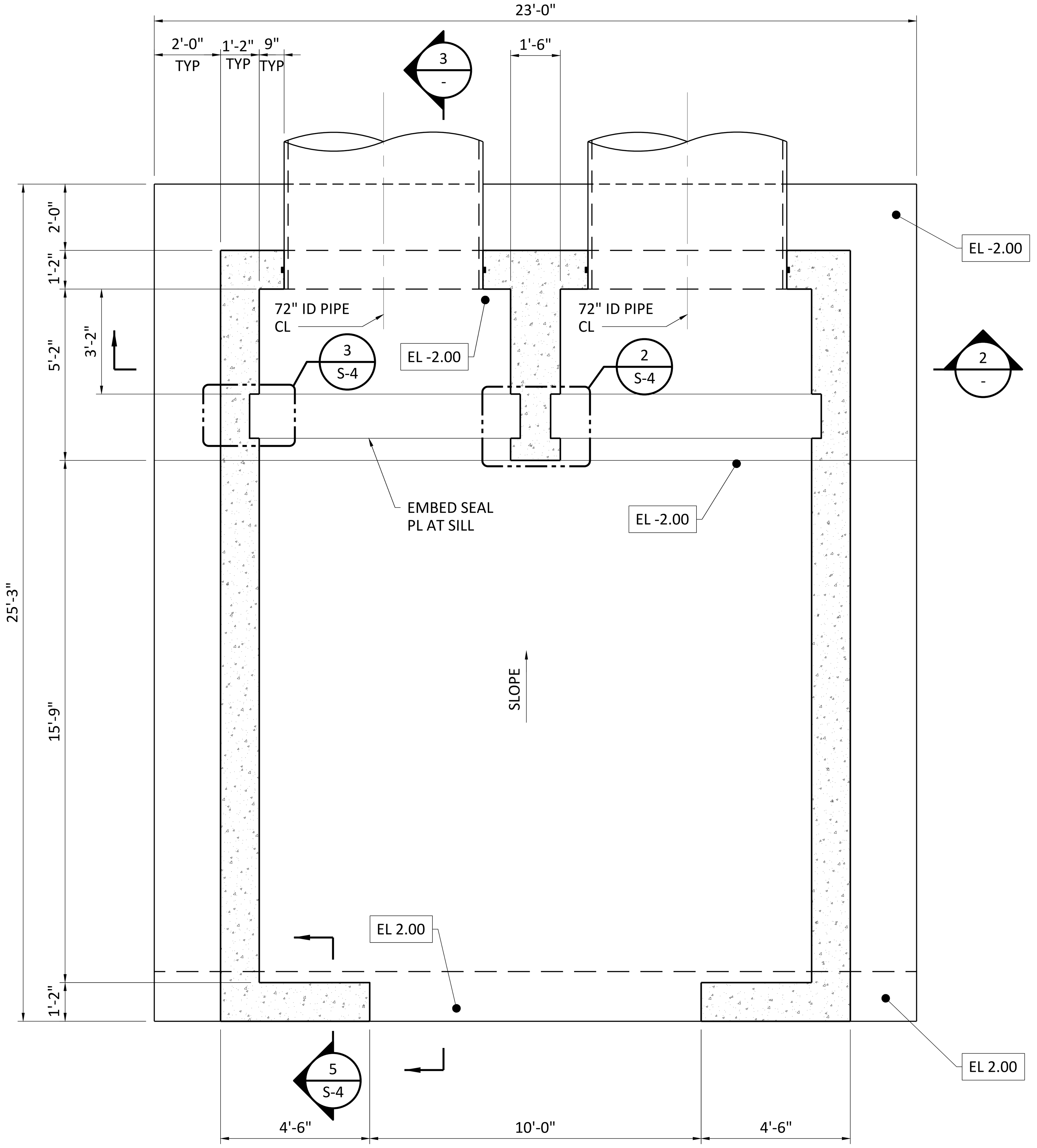


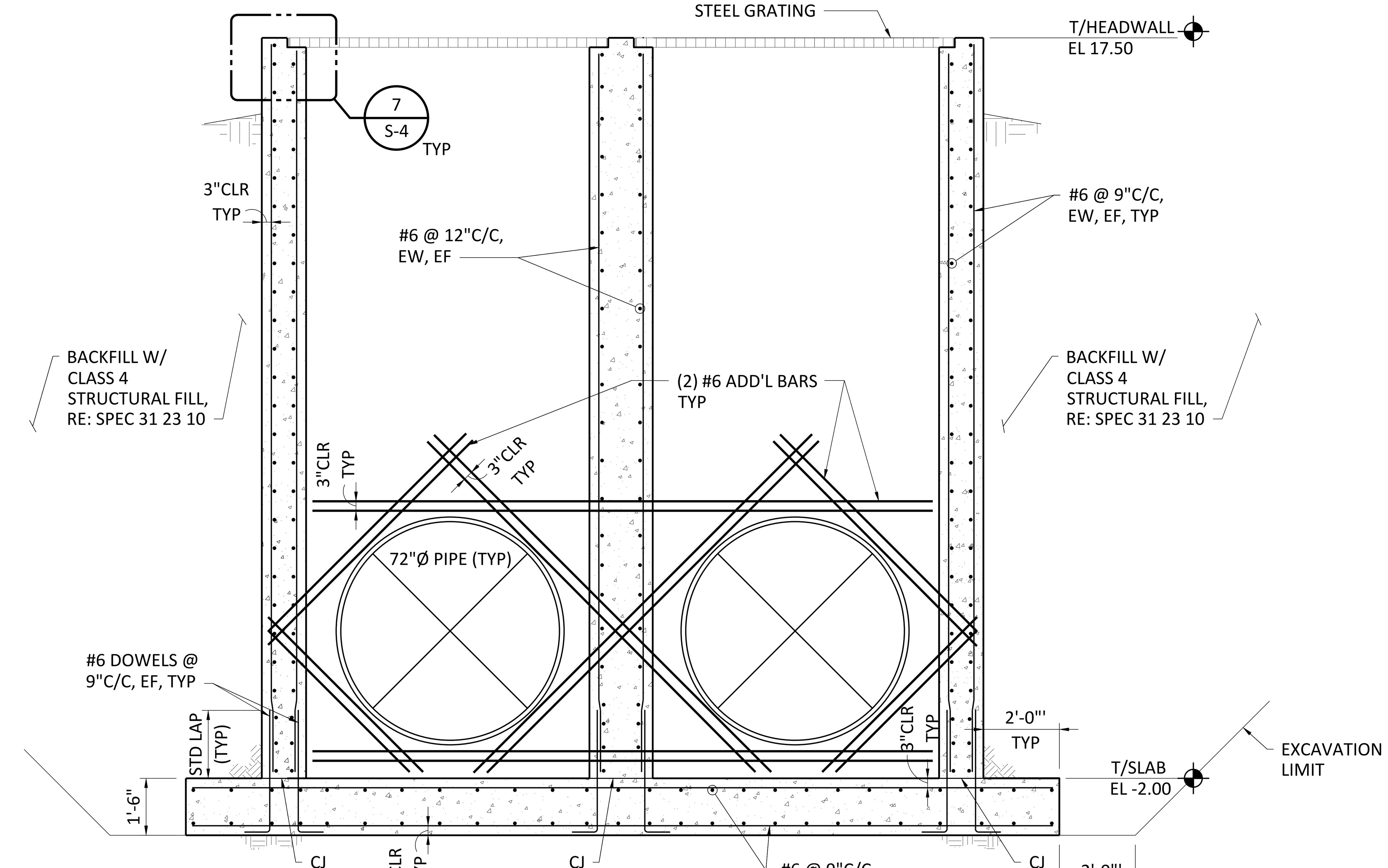
PLAN NOTES:

1. TOP OF CONCRETE ELEVATION INDICATED: XXX.XX
2. WHERE TOP OF CONCRETE VARIES, LINEARLY SLOPE BETWEEN ELEVATION SHOWN.
3. DIMENSIONS OF STOP LOG SLOTS SHALL BE CONFIRMED WITH THE MANUFACTURER PRIOR TO CONSTRUCTION.

NORTH

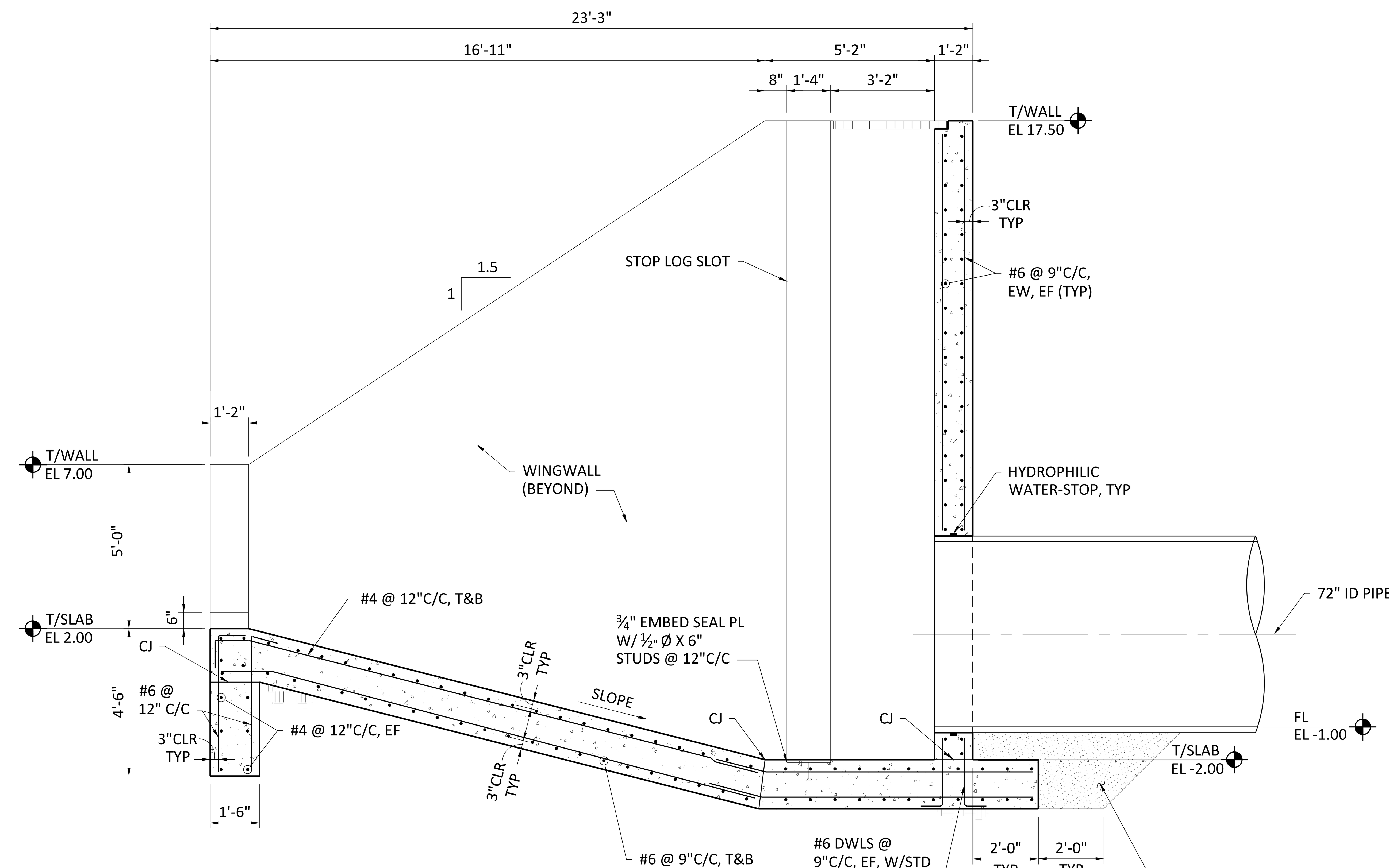
1 FOUNDATION PLAN

3/8"=1'-0"



2 SECTION

3/8"=1'-0"



3 SECTION

3/8"=1'-0"

0 1' 2' 4'

3/8"=1'-0

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

STATE OF TEXAS — LICENSED PROFESSIONAL ENGINEER — 134629

1/4/2023

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SABINE RIVER AUTHORITY

TULANE ROAD SIPHON REPLACEMENT

STRUCTURAL

HEADWALL DOWNSTREAM STRUCT STA 6+07.11 PLAN & SECTIONS

F&N JOB NO.	SRA22674
DATE	01/04/2023
DESIGNED	MGM
DRAWN	AAD
REVISED	#
CHECKED	BBW
FILE NAME	ST-SRA-PL-FNDN.dwg

NO.	ISSUE	BY	DATE

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SHEET S-2

SEQ.

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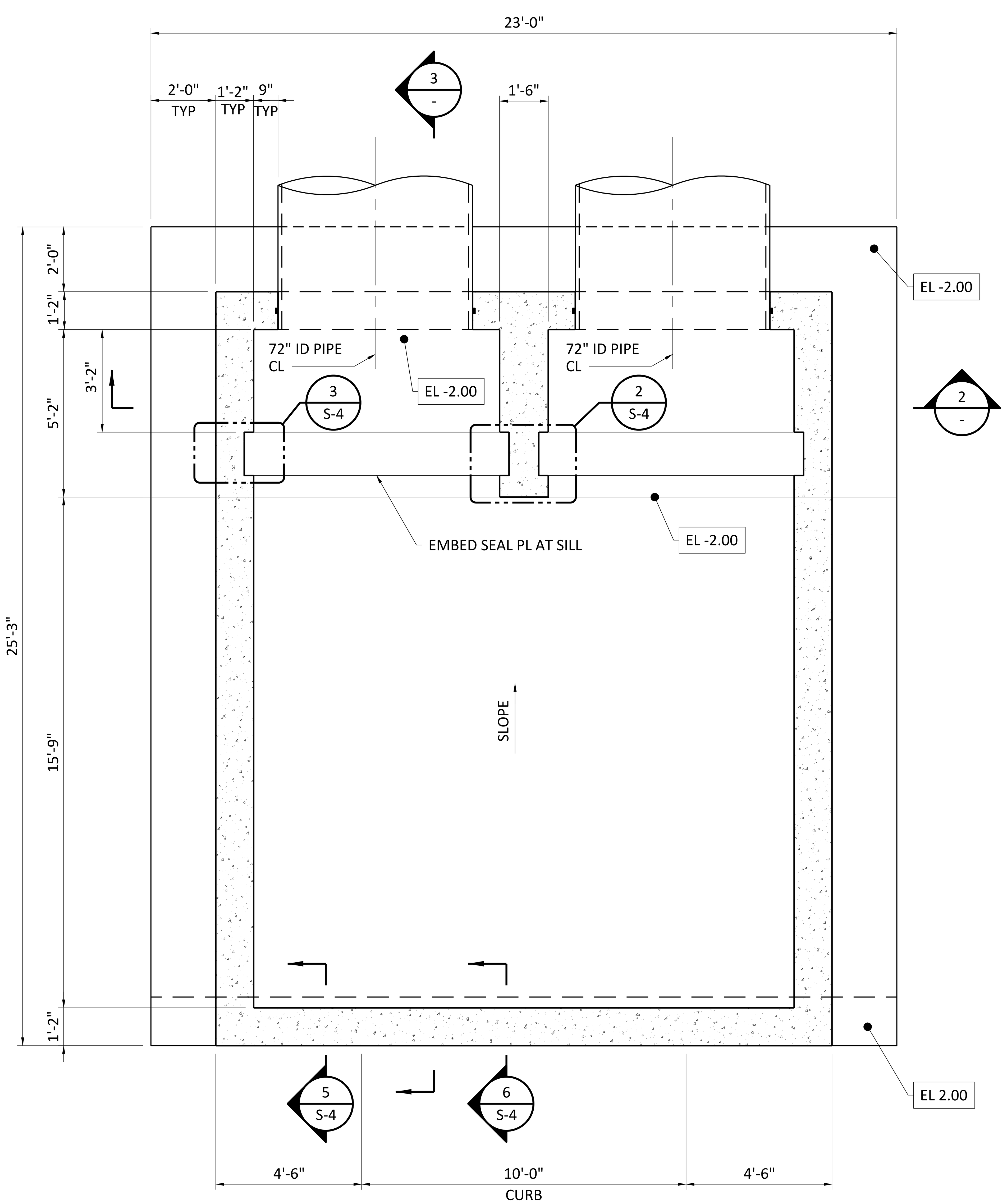
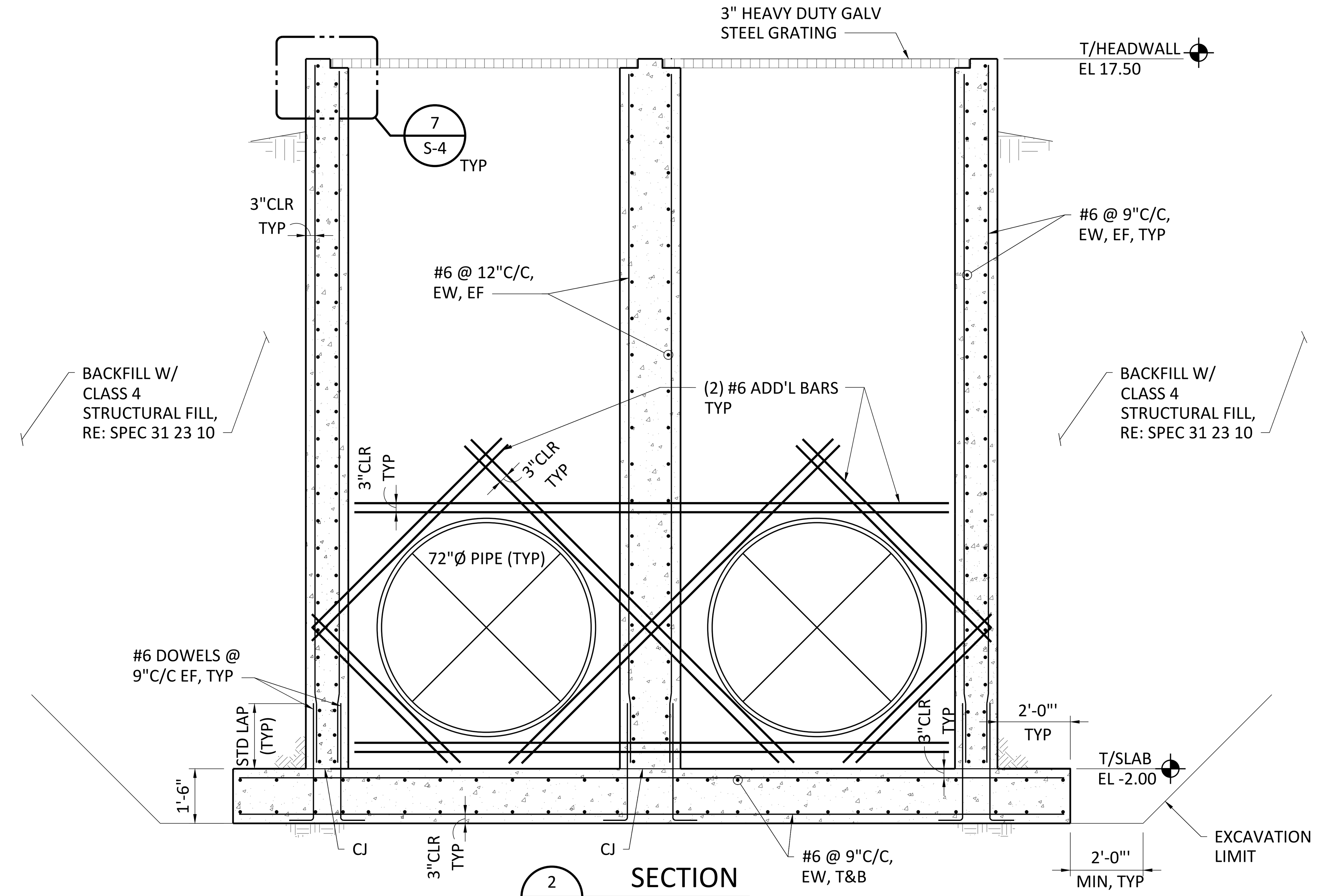


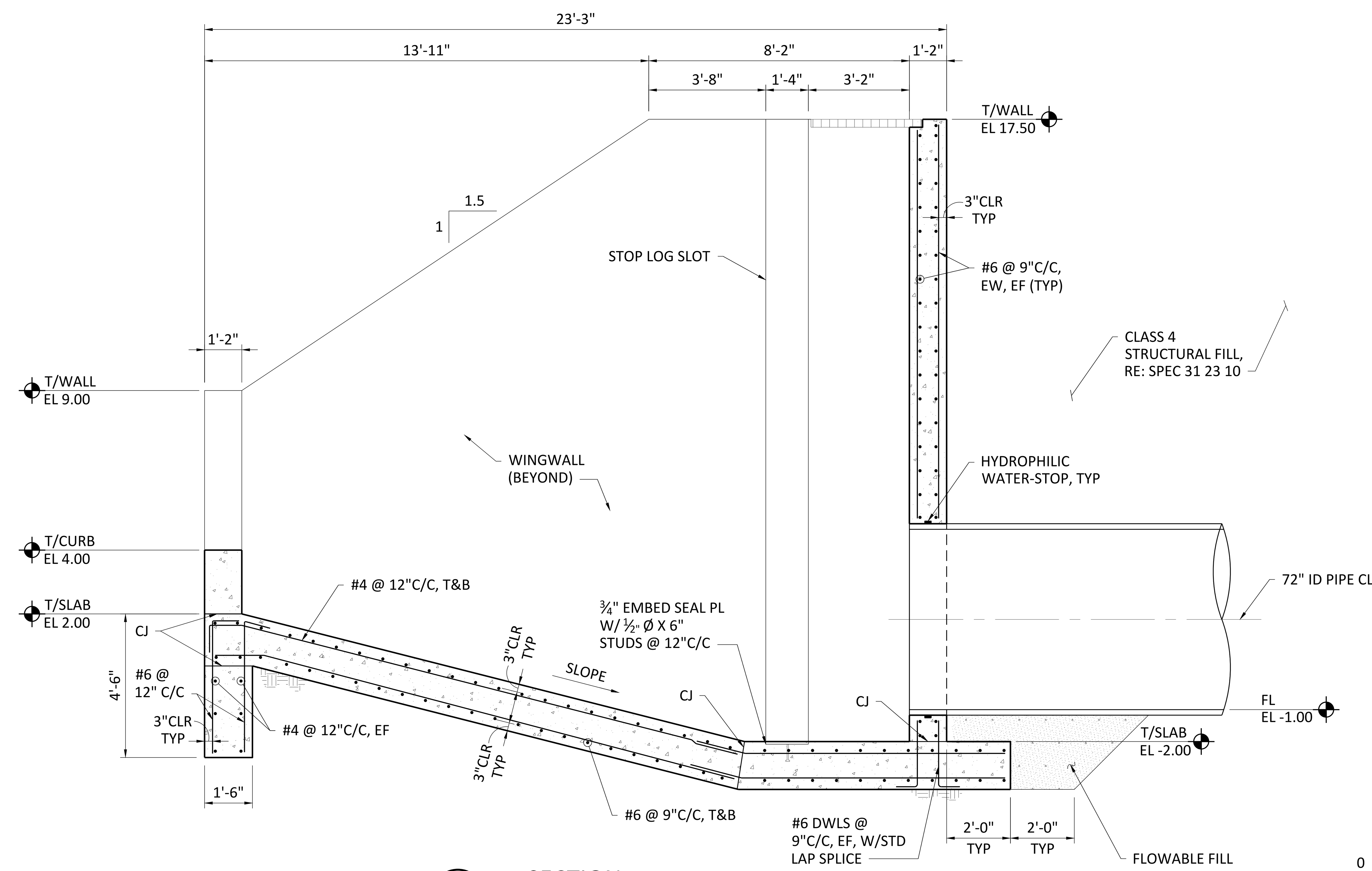
PLAN NOTES:
1. TOP OF CONCRETE ELEVATION INDICATED: XXX.XX'
2. WHERE TOP OF CONCRETE VARIES, LINEARLY SLOPE BETWEEN ELEVATION SHOWN.
3. DIMENSIONS OF STOP LOG SLOTS SHALL BE CONFIRMED WITH THE MANUFACTURER PRIOR TO CONSTRUCTION.

NORTH

1 FOUNDATION PLAN
3/8"=1'-0"



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



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

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

ISSUED FOR BID

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

1/4/2023

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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT
STRUCTURAL
HEADWALL UPSTREAM STRUCTURE STA 3+62.29
PLAN & SECTIONS

F&N JOB NO.	SRA22674
DATE	01/04/2023
DESIGNED	MGM
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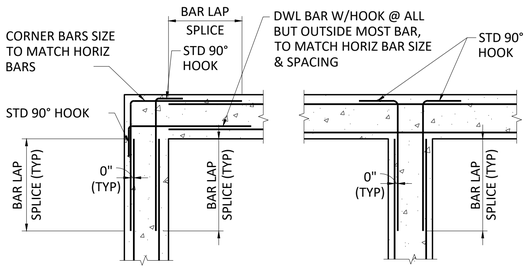
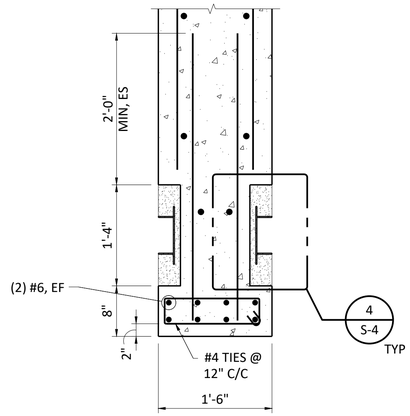
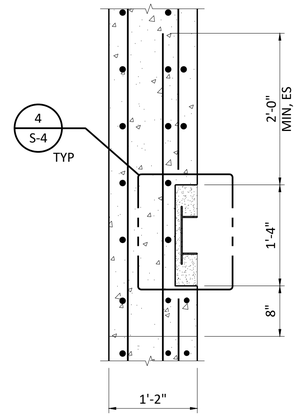


DETAIL NOTES:
1. REINFORCING SHOWN APPLIES TO ALL TOP, BOTTOM AND SIDE BARS. ALL REQUIRED BARS AR NOT SHOWN IN DETAIL.
2. AT CONTRACTOR'S OPTION, UNLESS NOTED OTHERWISE, ELIMINATE DOWELS AND CORNER BAR AND TERMINATE HORIZONTAL BARS WITH STANDARD HOOKS.

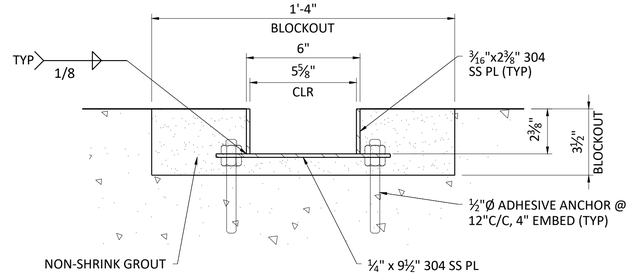
1 CORNER & INTERSECTION REINFORCEMENT
NOT TO SCALE



2 STOP LOG SLOT DETAIL AT MIDDLE WALL
1"-1'-0"



3 STOP LOG SLOT DETAIL AT WING WALL
1"=1'-0"



NOTES:
1. ROUGHEN ALL BLOCKOUT SURFACES PRIOR TO INSTALLATION OF SS SLOT.
2. PLATES ARE CONTINUOUS FOR FULL HEIGHT OF STOPLOG SLOT.
3. DIMENSIONS OF VERTICAL AND HORIZONTAL STOP LOG SLOTS SHALL BE CONFIRMED WITH STOP LOG'S MANUFACTURER PRIOR TO CONSTRUCTION. THEY MAY VARY PER DIFFERENT MANUFACTURERS.
4. THE SURFACE CONDITION OF STOP LOG SLOT SHALL FOLLOW MANUFACTURER WRITTEN INSTRUCTIONS.
5. ANY DIMENSION CHANGE IN DEPTH OF SLOTS GREATER THAN 4" SHALL OBTAIN APPROVAL.
6. MANUFACTURER REQUIREMENTS FOR INSTALLATION OF STOP LOG TRACK SHALL BE APPROVED PRIOR TO CONSTRUCTION.

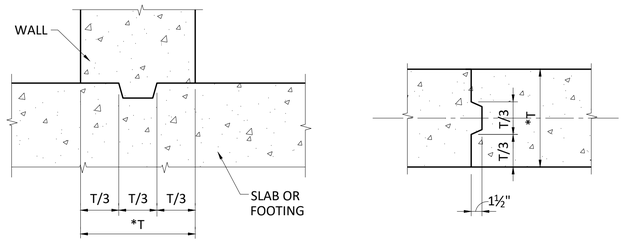
4 STOP LOG SLOT DETAIL
3"=1'-0"

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

6 CONCRETE CURB SECTION
3/4"=1'-0"

NOTES:
1. TOP OF GRATING SHALL BE FLUSHED WITH TOP OF CONCRETE
2. GRATING SHALL BE HEAVY-DUTY WELDED, RECTANGULAR BAR, GHB-300 19-W-4 SPACING, CARBON STEEL, HOT ROLLED 3"X ¼" RECTANGULAR BAR, SMOOTH SURFACE, 71% OPEN AREA OR EQUIVALENT WITH APPROVAL.
3. GRATING SHALL BE REMOVABLE AND MECHANICALLY ATTACHED WITH McNICHOLS ACCESSORIES PRODUCTS OR EQUIVALENT WITH APPROVAL.
4. ALL EDGE OF GRATING SHALL BE BANDED.

7 TYPICAL LEDGE DETAIL FOR GRATING
1-1/2"=1'-0"



* T=THICKNESS OF WALL OR SLAB

8 CONSTRUCTION JOINT DETAIL
NOT TO SCALE

0 4" 8" 1'
1-1/2"=1'-0"
0 1" 2" 4" 8"
3"=1'-0"
0 6" 1' 2'
3/4"=1'-0
0 6" 1' 2'
1"=1'-0"

ISSUED FOR BID

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
TEXAS REGISTERED ENGINEERING FIRM F-2144
MARCUS CHRISTIANSEN MARCUS
134629
LICENSED PROFESSIONAL ENGINEER
1/4/2023
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Suite 500
Houston, Texas 77024
Phone - (713) 600-6800
Web - www.freese.com

SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT
STRUCTURAL
HEADWALL STRUCTURE STANDARD DETAILS

	DATE	BY	NO.	ISSUE

F&N JOB NO. SRA22674
DATE 01/04/2023
DESIGNED MGM
DRAWN AAD
REVISED .
CHECKED BBW
FILE NAME ST-SRA-DT-DTLS.dwg

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VERIFY SCALE 0 1

SHEET S-4
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Plot Date: 1/4/2023 10:15 AM Plot By: 02856 Filename: N:\ST\ST-SRA-DT-DTLS.dwg

LOG OF BORING TB-1

PROJECT: SRA - Raw Water Conveyance
Tulane Road - Orange, Texas

CLIENT: Freese and Nichols, Inc.
Houston, Texas

COORDINATES: N 30° 05' 30.78"
W 93° 47' 45.97"

SURFACE ELEVATION: 7'

DRILLING METHOD:
Dry Augered: 0' to 16'
Wash Bored: 16' to 40'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			FILL: CRUSHED AGGREGATE with SHELL FRAGMENTS (12")													
5			Brown and gray LEAN CLAY with SAND (CH)				27		42	22					70	
			Stiff, gray, red and tan FAT CLAY (CH)	(P)2.50												
			-becomes very stiff, gray and tan at 4'	(P)2.75			23	104	62	43		2.29	15*	4		
0			Stiff, gray and brown LEAN CLAY (CH)	(P)2.25			24								95	
			-becomes tan, gray and brown at 8'	(P)2.50												
10			-becomes very stiff at 10'	(P)3.50			23		43	23					86	
-5			Stiff, tan, gray and brown SANDY LEAN CLAY (CL)	(P)2.25												
15					7/6" 5/6" 5/6"		24								51	
-10					5/6" 6/6" 8/6"											
20			Very dense tan POORLY GRADED SAND with SILT (SP-SM)		10/6" 25/6" 45/6"		22								7	
-15																
25			Stiff, gray and brown SANDY LEAN CLAY (CH)		6/6" 9/6" 9/6"		27		45	26					62	
-20																
30			Very stiff, gray and brown FAT CLAY (CH)	(P)3.25			44	80				2.30	5	24		
-25			-becomes stiff at 33'	(P)1.75			42		82	53						
35			-slickensided with shell fragments from 33' to 35'													

COMPLETION DEPTH: 40 ft
DATE BORING STARTED: 10/01/2022
DATE BORING COMPLETED: 10/01/2022
LOGGER: C. Watts
PROJECT NO.: 22.23.124

NOTES: Free Water Depth = 16.0-ft. 15-min Static Water Depth = 10.0-ft. 15-min Total Hole Depth = 15.6-ft. Borehole was backfilled with cement-bentonite grout upon completion.

Tolunay-Wong Engineers, Inc.

LOG OF BORING TB-1

PROJECT: SRA - Raw Water Conveyance
Tulane Road - Orange, Texas

CLIENT: Freese and Nichols, Inc.
Houston, Texas

COORDINATES: N 30° 05' 30.78"
W 93° 47' 45.97"

SURFACE ELEVATION: 7'

DRILLING METHOD:
Dry Augered: 0' to 16'
Wash Bored: 16' to 40'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
35			Stiff, gray and brown FAT CLAY (CH)													
-30			Stiff gray SANDY LEAN CLAY (CL)	(P)2.00			20								63	
40			Bottom @ 40'													
-35																
45																
-40																
50																
-45																
55																
-50																
60																
-55																
65																
-60																
70																

COMPLETION DEPTH: 40 ft
DATE BORING STARTED: 10/01/2022
DATE BORING COMPLETED: 10/01/2022
LOGGER: C. Watts
PROJECT NO.: 22.23.124

NOTES: Free Water Depth = 16.0-ft. 15-min Static Water Depth = 10.0-ft. 15-min Total Hole Depth = 15.6-ft. Borehole was backfilled with cement-bentonite grout upon completion.

Tolunay-Wong Engineers, Inc.

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Web - www.freese.com

SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

PROJECT DETAILS
BORING LOGS
(SHEET 1 OF 3)

F&N JOB NO. SRA22674
DATE 12/22/2022
DESIGNED ---
DRAWN ---
REVISED ---
CHECKED ---
FILE NAME CV-ALL-DT-BLOG.dwg

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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1

SHEET R-1

SEQ. 23 OF 25

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LOG OF BORING TB-2

PROJECT: SRA - Raw Water Conveyance
Tulane Road - Orange, Texas

CLIENT: Freese and Nichols, Inc.
Houston, Texas

COORDINATES: N 30° 05' 30.30"
W 93° 47' 45.05"

SURFACE ELEVATION: 7'

DRILLING METHOD:
Dry Augered: 0' to 14'
Wash Bored: 14' to 40'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0 / 0			ASPHALTIC CONCRETE (12")													
			Brown and gray FAT CLAY with SAND (CH)				16								73	
5 / 5			Stiff, gray, red and tan FAT CLAY (CH)	(T)0.75 (P)2.25			16	110	56	40		1.42	15*	3		
0 / 5			Very stiff, tan and gray FAT CLAY with SAND (CH)	(P)3.25			19		52	34					84	
			Very stiff, tan and gray FAT CLAY (CH)	(P)4.50			20	110				3.68	15*	8	86	
-5 / 10			Hard, tan and gray SANDY LEAN CLAY (CL)	(P)4.50												
			-becomes very stiff at 12'	(P)3.50			20		40	23					69	
-10 / 15			Medium dense, tan and brown SILTY SAND (SM)		6/6" 8/6" 13/6"											
			-dense from 16.5' to 18'		11/6" 14/6" 18/6"		26								19	
-15 / 20			-becomes tan at 18.5'		8/6" 12/6" 14/6"											
-20 / 25			Very stiff, brown and gray SANDY LEAN CLAY (CL)		6/6" 7/6" 12/6"		27								65	
-25 / 30			Stiff, gray and brown FAT CLAY (CH)	(P)2.75												
			-very stiff with slickensides and shell fragments	(P)2.50			41	81				2.02	6	28		
35																

COMPLETION DEPTH: 40 ft
DATE BORING STARTED: 09/30/2022
DATE BORING COMPLETED: 09/30/2022
LOGGER: C. Watts
PROJECT NO.: 22.23.124

NOTES: Free Water Depth = 14.0-ft. 15-min Static Water Depth = 6.5-ft. 15-min Total Hole Depth = 14. 0-ft. 24-hr Water Depth = 3.7-ft. Borehole was backfilled with cement-bentonite grout upon completion.

Tolunay-Wong Engineers, Inc.

LOG OF BORING TB-2

PROJECT: SRA - Raw Water Conveyance
Tulane Road - Orange, Texas

CLIENT: Freese and Nichols, Inc.
Houston, Texas

COORDINATES: N 30° 05' 30.30"
W 93° 47' 45.05"

SURFACE ELEVATION: 7'

DRILLING METHOD:
Dry Augered: 0' to 14'
Wash Bored: 14' to 40'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
-30 / 35			Stiff, gray and brown FAT CLAY (CH)													
-35 / 40			Very stiff, brown and gray CLAYEY SAND (SC)	(P)4.00			19		29	10					40	
			Bottom @ 40'													
-40 / 45																
-45 / 50																
-50 / 55																
-55 / 60																
-60 / 65																
70																

COMPLETION DEPTH: 40 ft
DATE BORING STARTED: 09/30/2022
DATE BORING COMPLETED: 09/30/2022
LOGGER: C. Watts
PROJECT NO.: 22.23.124

NOTES: Free Water Depth = 14.0-ft. 15-min Static Water Depth = 6.5-ft. 15-min Total Hole Depth = 14. 0-ft. 24-hr Water Depth = 3.7-ft. Borehole was backfilled with cement-bentonite grout upon completion.

Tolunay-Wong Engineers, Inc.

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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

PROJECT DETAILS
BORING LOGS
(SHEET 2 OF 3)

NO.	ISSUE	BY	DATE

F&N JOB NO. SRA22674
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SHEET R-2
SEQ. 24 OF 25

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LOG OF BORING TB-3

PROJECT: SRA - Raw Water Conveyance
Tulane Road - Orange, Texas

CLIENT: Freese and Nichols, Inc.
Houston, Texas

COORDINATES: N 30° 05' 30.94"
W 93° 47' 44.87"

SURFACE ELEVATION: 12'

DRILLING METHOD:
Dry Augered: 0' to 20'
Wash Bored: 20' to 25'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			Hard, tan and gray LEAN CLAY with SAND (CH)	(P)4.50												
10			-very stiff from 2' to 4'	(P)4.00			10		39	17					80	
			-becomes stiff at 4'	(P)2.50												
5			-brown from 6' to 8'	(P)1.50			22		26	9					79	
5			Stiff, brown and gray FAT CLAY (CH)	(P)2.25												
			-becomes gray and tan at 10'	(T)0.65			23	104	54	36		1.33	15	9		
0			-becomes very stiff at 12'	(P)3.25												
				(P)3.75			21	108	50	28		3.27	14	13		
15			Very stiff, brown, gray and tan SANDY FAT CLAY (CH)	(P)3.75			20								63	
-5			Medium dense tan SILTY SAND (SM)		6/6" 9/6" 11/6"											
20																
-10					6/6" 13/6" 13/6"		25								38	
25			Bottom @ 25'													
-15																
30																
-20																
35																

COMPLETION DEPTH: 25 ft
DATE BORING STARTED: 10/01/2022
DATE BORING COMPLETED: 10/01/2022
LOGGER: C. Watts
PROJECT NO.: 22.23.124

NOTES: Free Water Depth = 20.0-ft. 15-min Static Water Depth = 13.4-ft. 15-min Total Hole Depth = 18.0-ft. Borehole was backfilled with cement-bentonite grout upon completion.

Tolunay-Wong Engineers, Inc.

LOG OF BORING TB-4

PROJECT: SRA - Raw Water Conveyance
Tulane Road - Orange, Texas

CLIENT: Freese and Nichols, Inc.
Houston, Texas

COORDINATES: N 30° 05' 29.24"
W 93° 47' 46.37"

SURFACE ELEVATION: 12'

DRILLING METHOD:
Dry Augered: 0' to 20'
Wash Bored: 20' to 25'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			Hard, tan and brown SANDY LEAN CLAY (CL)	(P)4.50			14		37	20					56	
10			-becomes soft and brown at 2'	(T)0.20			30								67	
5			Stiff, gray, red and tan FAT CLAY (CH)	(P)1.75												
			-becomes tan and gray at 6'	(P)2.00			23	104	71	49		1.95	15	6		
5			-with sand pockets from 8' to 14'	(P)2.00												
10			Stiff, gray and tan LEAN CLAY with SAND (CL)	(P)1.75			21		48	24					79	
0			-very stiff from 12' to 14'	(P)4.00												
			-becomes hard at 14'	(P)4.50			20	110				4.17	15	13	80	
15			Very stiff, gray and tan SANDY LEAN CLAY (CL)	(P)4.00			20		33	11					65	
-5			Medium dense, brown and tan SILTY SAND (SM)		6/6" 12/6" 16/6"		25								28	
20																
-10			becomes very dense at 23.5'		19/6" 48/6" 33/4"											
25			Bottom @ 25'													
-15																
30																
-20																
35																

COMPLETION DEPTH: 25 ft
DATE BORING STARTED: 09/30/2022
DATE BORING COMPLETED: 09/30/2022
LOGGER: C. Watts
PROJECT NO.: 22.23.124

NOTES: Free Water Depth = 20.0-ft. 15-min Static Water Depth = 12.2-ft. 15-min Total Hole Depth = 18.0-ft. Borehole was backfilled with cement-bentonite grout upon completion.

Tolunay-Wong Engineers, Inc.

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SABINE RIVER AUTHORITY
TULANE ROAD SIPHON REPLACEMENT

PROJECT DETAILS
BORING LOGS
(SHEET 3 OF 3)

F&N JOB NO. SRA22674
DATE 12/22/2022
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SEQ. 25 OF 25

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