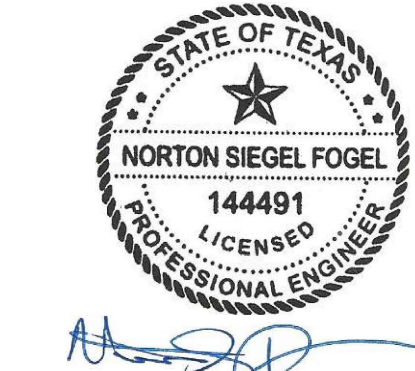
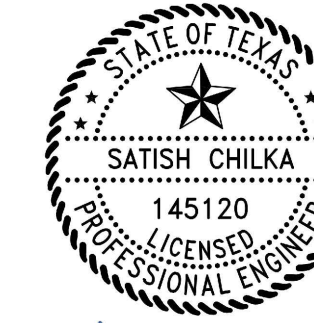
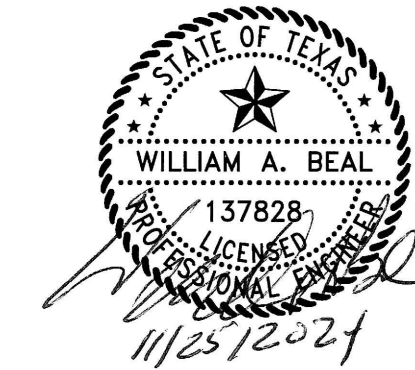


Appendix G

Design Drawing Package

SAN JACINTO RIVER WASTE PITS NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

JULY 2024
11215702



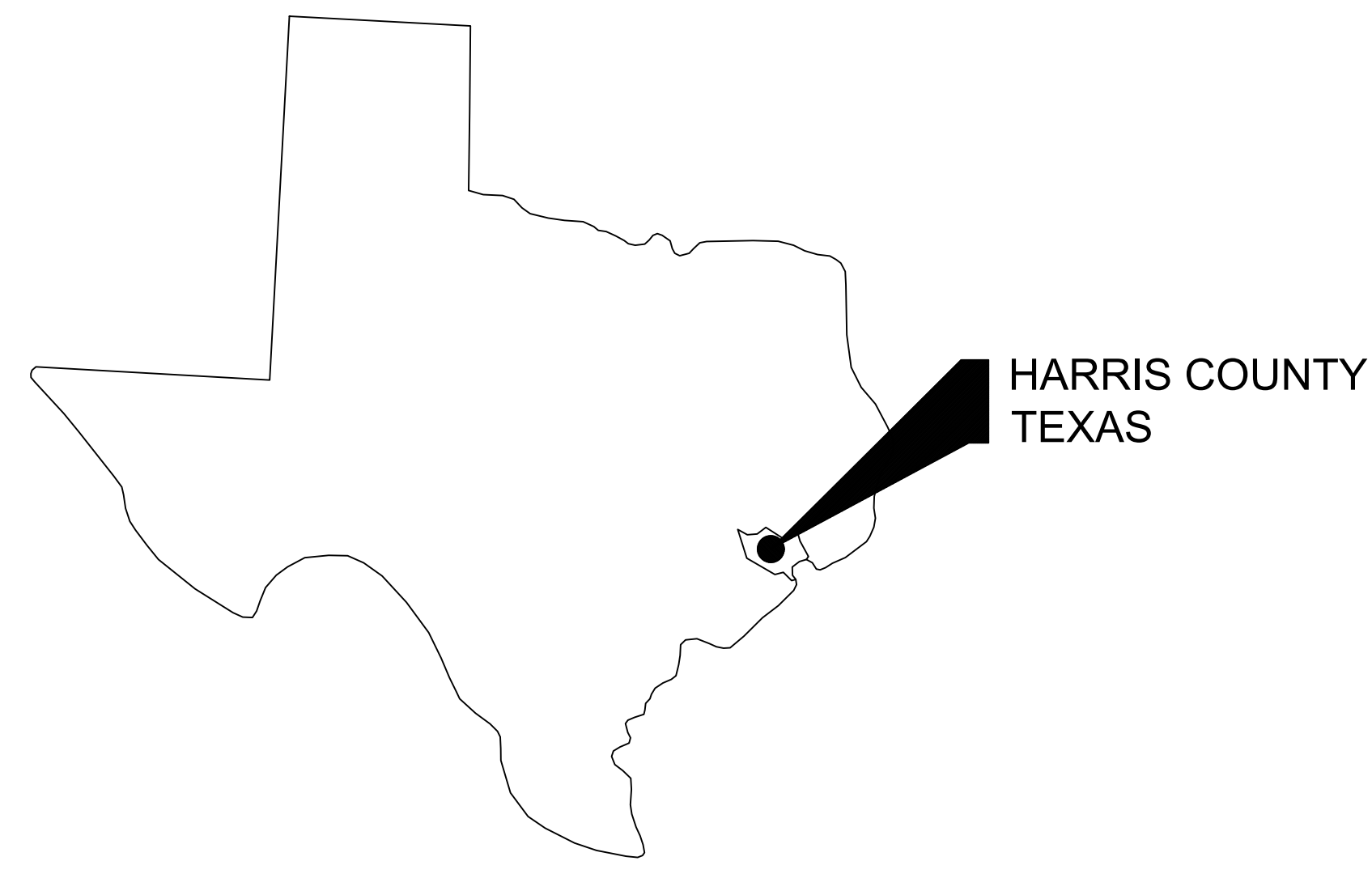
Satish Chilka
11/25/24

11/25/2024

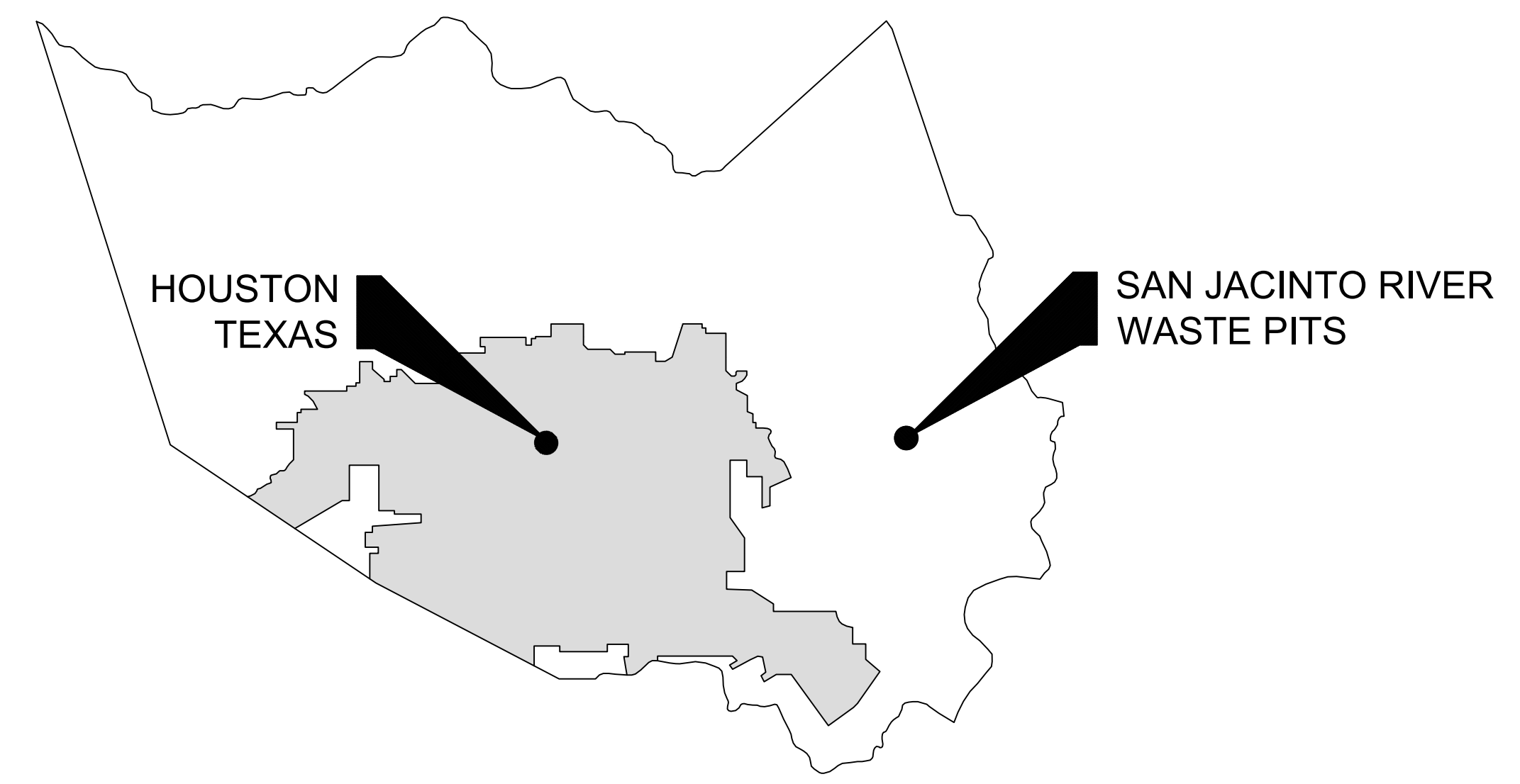


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STATE OF TEXAS
VICINITY MAP



HARRIS COUNTY
VICINITY MAP



LOCATION MAP

DRAWING NUMBER	DRAWING NAME
GENERAL SERIES	
G-01	COVER SHEET
CIVIL SERIES	
C-01	OVERALL PLAN
C-02	EXISTING CONDITIONS
C-03	SSA AREA AND NORTHERN IMPOUNDMENT WORKS
C-04	SOIL EROSION AND SEDIMENT CONTROL PLAN - OVERALL
C-05	SOIL EROSION AND SEDIMENT CONTROL PLAN - SEASONAL
C-06	SOIL EROSION AND SEDIMENT CONTROL DETAILS
C-07	PROJECT TRAFFIC CONTROL PLAN
C-08	EXCAVATION PLAN - OVERALL
C-09	EXCAVATION PLAN NORTHWEST
C-10	EXCAVATION PLAN NORTHEAST
C-11	EXCAVATION PLAN SOUTHWEST
C-12	EXCAVATION PLAN SOUTHEAST
C-13	EXCAVATION SECTION - 1 OF 6
C-14	EXCAVATION SECTION - 2 OF 6
C-15	EXCAVATION SECTION - 3 OF 6
C-16	EXCAVATION SECTION - 4 OF 6
C-17	EXCAVATION SECTION - 5 OF 6
C-18	EXCAVATION SECTION - 6 OF 6
C-19	TYPICAL SEASONAL EXCAVATION SEQUENCING
C-20	TYPICAL EXCAVATION SEQUENCING - 1 OF 2
C-21	TYPICAL EXCAVATION SEQUENCING - 2 OF 2
C-22	RESTORATION PLAN
C-23	TYPICAL CONSTRUCTION SEQUENCING - 1 OF 2
C-24	TYPICAL CONSTRUCTION SEQUENCING - 2 OF 2
C-25	TYPICAL DETAILS - 1 OF 3
C-26	TYPICAL DETAILS - 2 OF 3
C-27	TYPICAL DETAILS - 3 OF 3
C-28	PILE WALL LAYOUT PLAN
C-29	DOUBLE PILE WALL PLAN AND PROFILE - 1 OF 4
C-30	DOUBLE PILE WALL PLAN AND PROFILE - 2 OF 4
C-31	DOUBLE PILE WALL PLAN AND PROFILE - 3 OF 4
C-32	DOUBLE PILE WALL PLAN AND PROFILE - 4 OF 4
C-33	SOUTH WALL PLAN AND PROFILE - 1 OF 2
C-34	SOUTH WALL PLAN AND PROFILE - 2 OF 2
C-35	DOUBLE PILE WALL SECTIONS - 1 OF 7
C-36	DOUBLE PILE WALL SECTIONS - 2 OF 7
C-37	DOUBLE PILE WALL SECTIONS - 3 OF 7
C-38	DOUBLE PILE WALL SECTIONS - 4 OF 7
C-39	DOUBLE PILE WALL SECTIONS - 5 OF 7
C-40	DOUBLE PILE WALL SECTIONS - 6 OF 7
C-41	DOUBLE PILE WALL SECTIONS - 7 OF 7
C-42	SOUTH WALL SECTIONS - 1 OF 3
C-43	SOUTH WALL SECTIONS - 2 OF 3
C-44	SOUTH WALL SECTIONS - 3 OF 3
C-45	DREDGING NORTHWEST CORNER WORKS PLAN
C-46	DREDGING NORTHWEST CORNER DREDGING CONTROLS
C-47	DREDGING NORTHWEST CORNER DRY EXCAVATION
C-48	DREDGING NORTHWEST CORNER WET EXCAVATION
C-49	DREDGING NORTHWEST CORNER SECTIONS 1 OF 2
C-50	DREDGING NORTHWEST CORNER SECTIONS 2 OF 2
C-51	DREDGING NORTHWEST CORNER SEQUENCING 1 OF 3
C-52	DREDGING NORTHWEST CORNER SEQUENCING 2 OF 3
C-53	DREDGING NORTHWEST CORNER SEQUENCING 3 OF 3
C-54	DREDGING NORTHWEST CORNER FINAL GRADE
C-55	DREDGING NORTHWEST CORNER DREDGING DETAILS
C-56	RESTORATION SECTIONS 1 OF 2
C-57	RESTORATION SECTIONS 2 OF 2
STRUCTURAL SERIES	
S-01	STRUCTURAL NOTES
S-02	STRUCTURAL LAYOUT PLAN
S-03	STRUCTURAL SECTIONS
S-04	STRUCTURAL DETAILS 1 OF 2
S-05	STRUCTURAL DETAILS 2 OF 2
S-06	FRP BARRIER WALL
PROCESS FLOW AND INSTRUMENTATION SERIES	
P-00A	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SYMBOLS
P-00B	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SCHEDULES
P-01	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM (NON-CONTACT WATER)
P-02	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM (CONTACT WATER)
P-03	WATER TREATMENT SYSTEM P&ID (NON-CONTACT WATER) (1 OF 3)
P-04	WATER TREATMENT SYSTEM P&ID (NON-CONTACT WATER) (2 OF 3)
P-05	WATER TREATMENT SYSTEM P&ID (NON-CONTACT WATER) (3 OF 3)
P-06	WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (1 OF 4)
P-07	WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (2 OF 4)
P-08	WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (3 OF 4)
P-09	WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (4 OF 4)
P-10	WATER TREATMENT SYSTEM SITE PLAN (NON-CONTACT WATER)
P-11	WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (NON-CONTACT WATER)
P-12	WATER TREATMENT SYSTEM SITE PLAN (CONTACT WATER)
P-13	WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (CONTACT WATER) (1 OF 2)
P-14	WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (CONTACT WATER) (2 OF 2)
P-15	MECHANICAL DETAILS 1 OF 1
P-16	HELICAL PILE DETAILS
P-17	MECHANICAL SCHEDULE

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS P&ID REGISTRATION NO. 276

Client
**SAN JACINTO RIVER
WASTE PITS**

Project
**NORTHERN IMPOUNDMENT
FINAL 100% REMEDIAL DESIGN
HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024
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Original Size	Arch D Bar is one inch on original size drawing 0 1"		

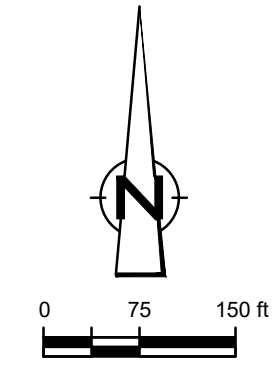
Project No. 11215702

Title
COVER SHEET

Sheet No.

G-01

100% EPA SUBMITTAL



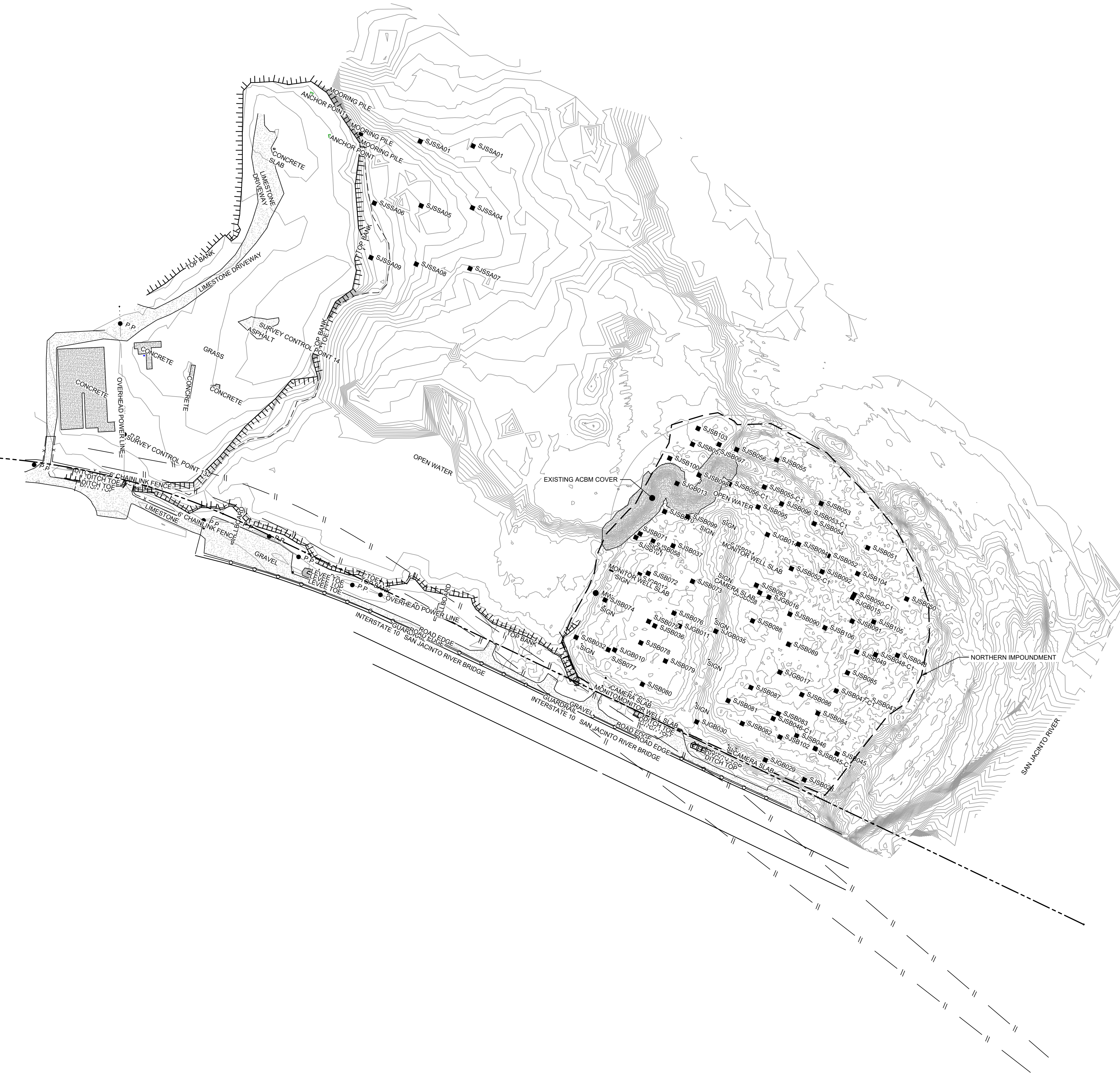
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LEGEND

---	TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
-x-	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	WELL
●	L.P.
●	LIGHT POLE
○	WELL
■	ASPHALT
■	CONCRETE
■	GRAVEL



Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn JC Designer RH

Drafting BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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Scale 1" = 150'

Original Size Arch D Bar is one inch on original size drawing

Project No. 11215702

Title

OVERALL PLAN

Sheet No.

C-01

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR O&A OCTOBER 2021.
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC, PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS P.E. REGISTRATION NO. 276

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LEGEND	
---	TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
-10	EXISTING CONTOUR INTERVAL
x	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
●	LIGHT POLE
○	WELL
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	ARMORED CAP
---	GEOMEMBRANE
---	GEOTEXTILE

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting	BS	Design	LL
Check		Check	
Project Coordinator	CM	Date	Nov 25, 2024

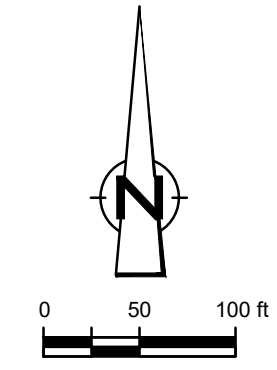
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Project No. 11215702

Title
EXISTING CONDITIONS

Sheet No.

C-02

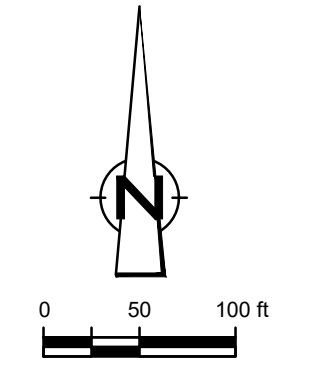


SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR OEA OCTOBER 2021
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 3402-028-01, JUNE 28, 2024
GEOMEMBRANE LIMITS FROM ANCHOR OEA DRAWING C-1, GEOMEMBRANE LOCATION PLAN, SAN JACINTO RIVER WASTE PITS SUPERFUND SITE, DECEMBER 2010
GEOTEXTILE LIMITS FROM ANCHOR OEA DRAWING C-2, CAPPING PLAN, SAN JACINTO RIVER WASTE PITS SUPERFUND SITE, DECEMBER 2010
UPDATED GEOTEXTILE LIMITS FROM ANCHOR OEA FIGURE 5-1, WATER-SIDE GEOTEXTILE AS-BUILT, REVISED DRAFT FINAL REMOVAL ACTION COMPLETION REPORT (RACR), SAN JACINTO RIVER WASTE PITS SUPERFUND SITE, MARCH 9, 2012.

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GHD TEXAS FIRM REGISTRATION NO. 276

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LEGEND	
---	TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
- - -	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	A226-700 PILE
---	A236-700 PILE
---	A242-700 PILE
---	FRP BARRIER WALL
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	SOIL TYPE S1
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS
 Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	Check	Project Coordinator	Date	Scale
JC	BS	CM	Nov 25, 2024	1" = 100'

Original Size
Arch D
 Bar is one inch on original size drawing

Project No. **11215702**

Title
SSA AREA AND NORTHERN IMPOUNDMENT WORKS

Sheet No.

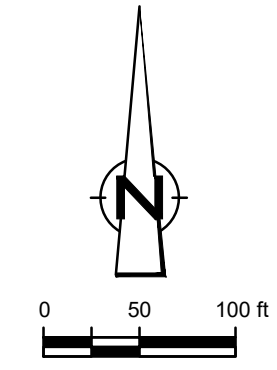
C-03

SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021
 TXDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-029-01, JUNE 28, 2024
 NOTES:
 1. LOCATION OF OVERBURDEN STOCKPILE, DECONTAMINATION PAD, SOLIDIFICATION PAD, AND DEWATERING FACILITY ARE SUBJECT TO CHANGE AND CAN VARY FROM SEASON TO SEASON.

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LEGEND

---	TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
-10	EXISTING CONTOUR INTERVAL
x	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
●	LIGHT POLE
●	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	AZ26-700 PILE
---	AZ42-700 PILE
---	FRP BARRIER WALL
---	SILT FENCE
---	TURBIDITY CURTAIN
---	OIL BOOM
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024

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 Original Size: Arch D
 Scale: 1" = 100'
 Bar is one inch on original size drawing

Project No. 11215702
 Title

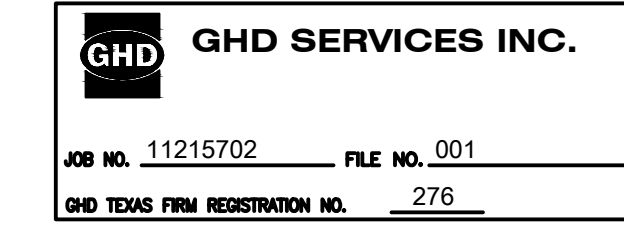
SOIL EROSION AND SEDIMENT CONTROL PLAN OVERALL

Sheet No.

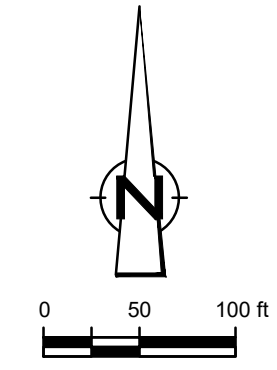
C-04

- SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021
- NOTES:
 1. TXDOT RIGHT OF WAY IS BASED ON LJA ENGINEERING INC. SURVEY PROVIDED APRIL 3, 2023. TXDOT PRELIMINARY SCHEMATIC IH 10 - HARRIS COUNTY.
 2. LOCATION AND TYPE OF SOIL EROSION AND SEDIMENT CONTROLS ARE SUBJECT TO CHANGE AND CAN VARY FROM SEASON TO SEASON.
 3. TURBIDITY CONTROLS AND OIL BOOM ONLY TO BE IMPLEMENTED DURING BMP, FRP BARRIER WALL, AND SCOUR PROTECTION INSTALLATION AND REMOVAL.
 4. TURBIDITY CURTAIN AND OIL BOOM ONLY TO BE DEPLOYED IN IMMEDIATE AREA AROUND BMP, FRP BARRIER WALL, AND SCOUR PROTECTION INSTALLATION AND REMOVAL; LOCATION TO VARY DURING CONSTRUCTION PHASE.

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LEGEND

---	TXDOT RIGHT OF WAY
---	TOCA CAP PERIMETER
-10	EXISTING CONTOUR INTERVAL
x	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
●	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	FRP BARRIER WALL
---	TURBIDITY CURTAIN
---	SILT FENCE
---	OIL BOOM
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date

Drawn	JC	Designer	RH
Drafting	BS	Design	LL
Check		Check	
Project Coordinator	CM	Date	Nov 25, 2024
Original Size		Scale	1" = 100'
		Bar is one inch on original size drawing	0 1"

Project No. 11215702
 Title

SOIL EROSION AND SEDIMENT CONTROL PLAN SEASONAL

Sheet No.
C-05

SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019. UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
 1. TXDOT RIGHT OF WAY IS BASED ON LJA ENGINEERING INC. SURVEY PROVIDED APRIL 3, 2023. TXDOT PRELIMINARY SCHEMATIC IH 10 - HARRIS COUNTY.
 2. LOCATION AND TYPE OF SOIL EROSION AND SEDIMENT CONTROLS ARE SUBJECT TO CHANGE AND CAN VARY FROM SEASON TO SEASON.

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GHD SERVICES INC.
 JOB NO. 11215702 FILE NO. 001
 GHD TEXAS FIRM REGISTRATION NO. 276

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GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
T 225 292 9007



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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
-----	-------	-------	----------	------

Drawn JC Designer RH

Drafting Check BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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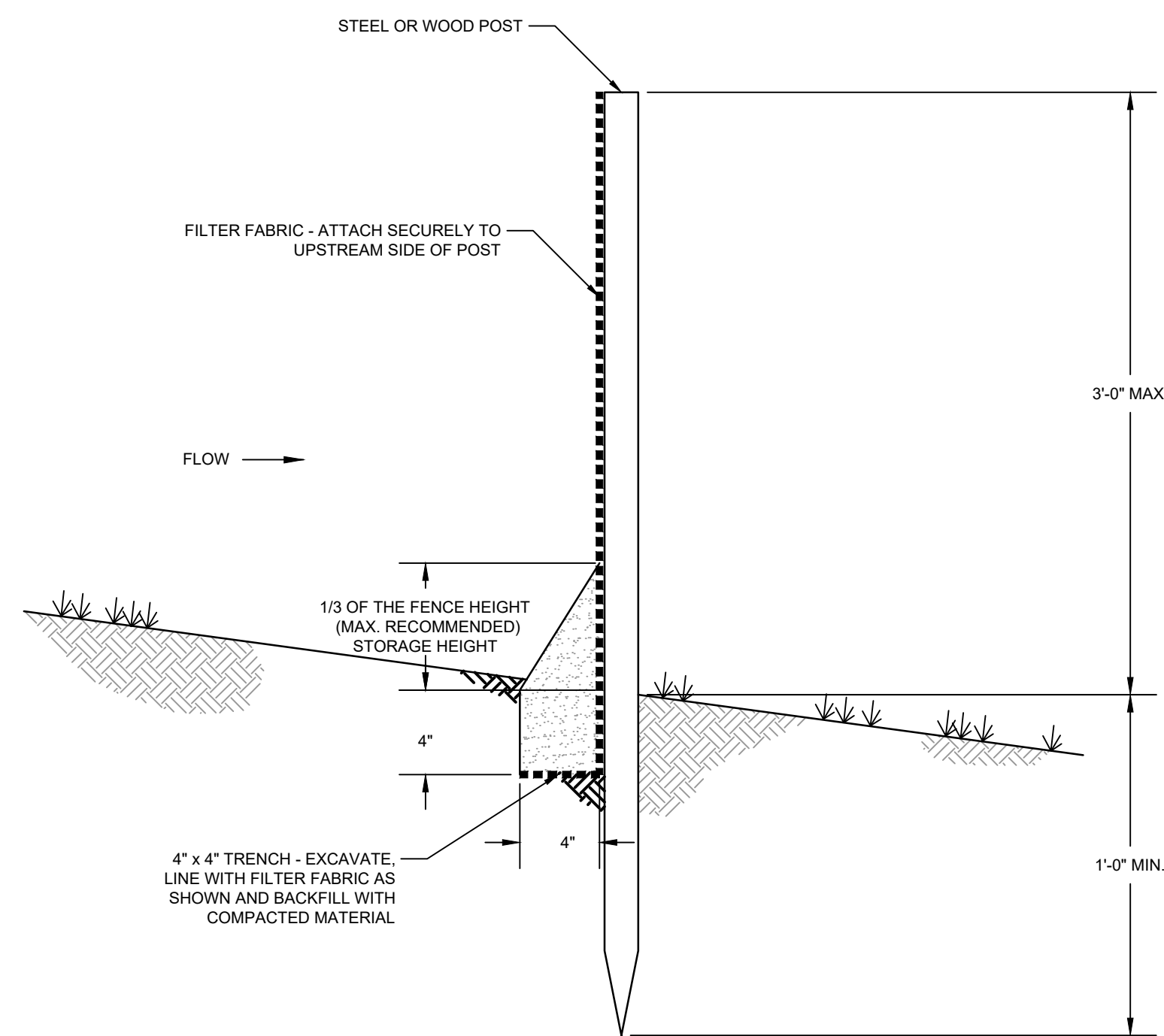
Original Size Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215702

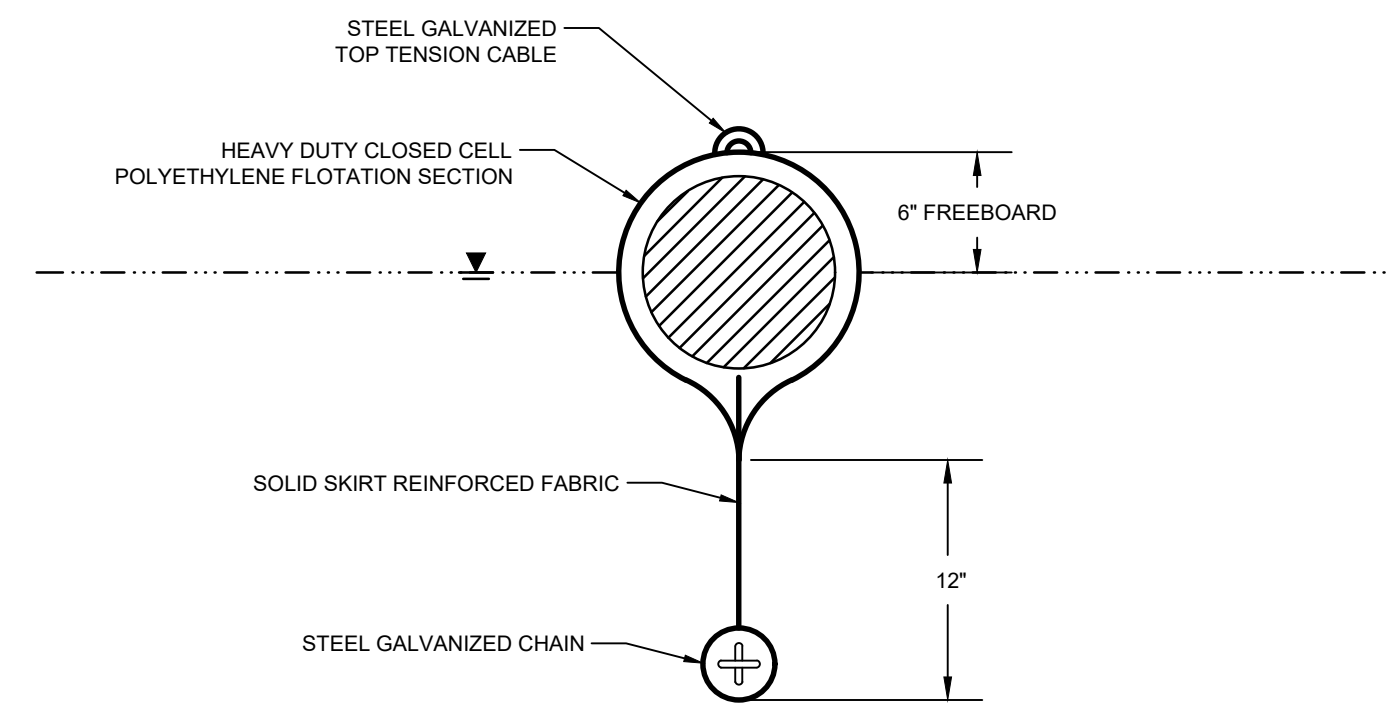
Title
SOIL EROSION AND SEDIMENT CONTROL DETAILS

Sheet No.

C-06

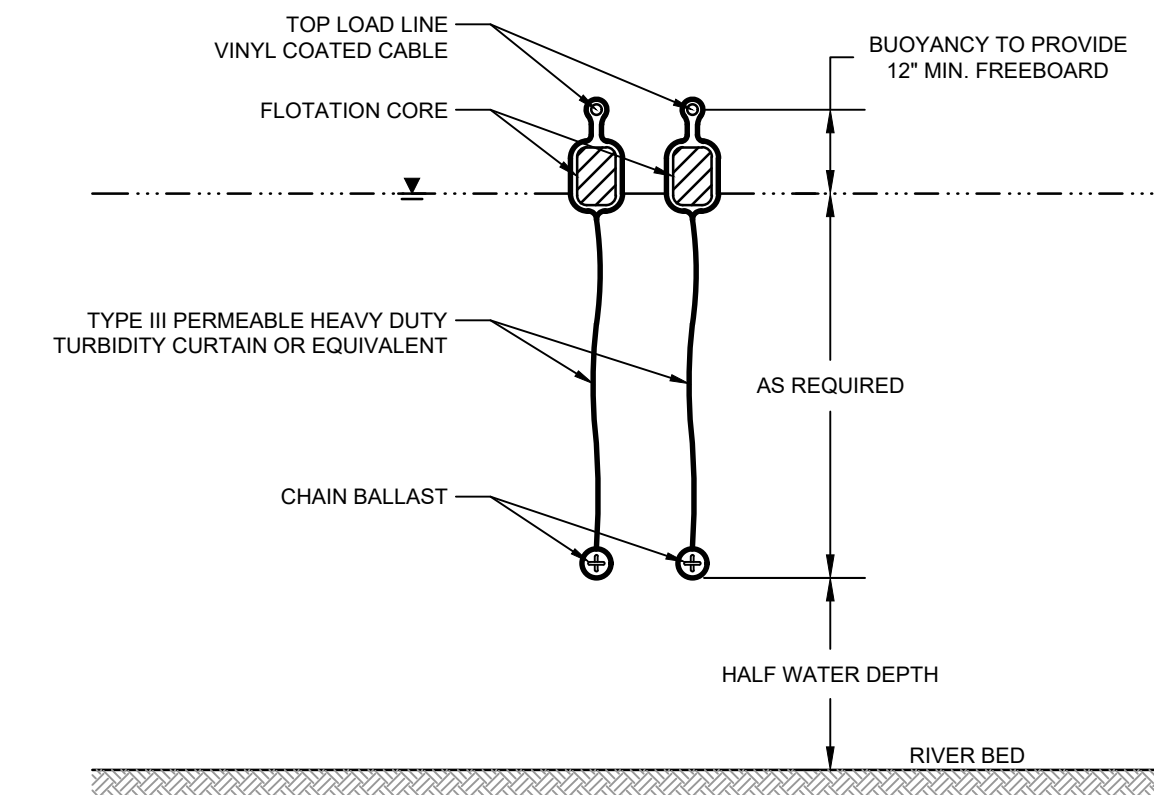


DETAIL 1 TEMPORARY SILT FENCE
N.T.S. C-05



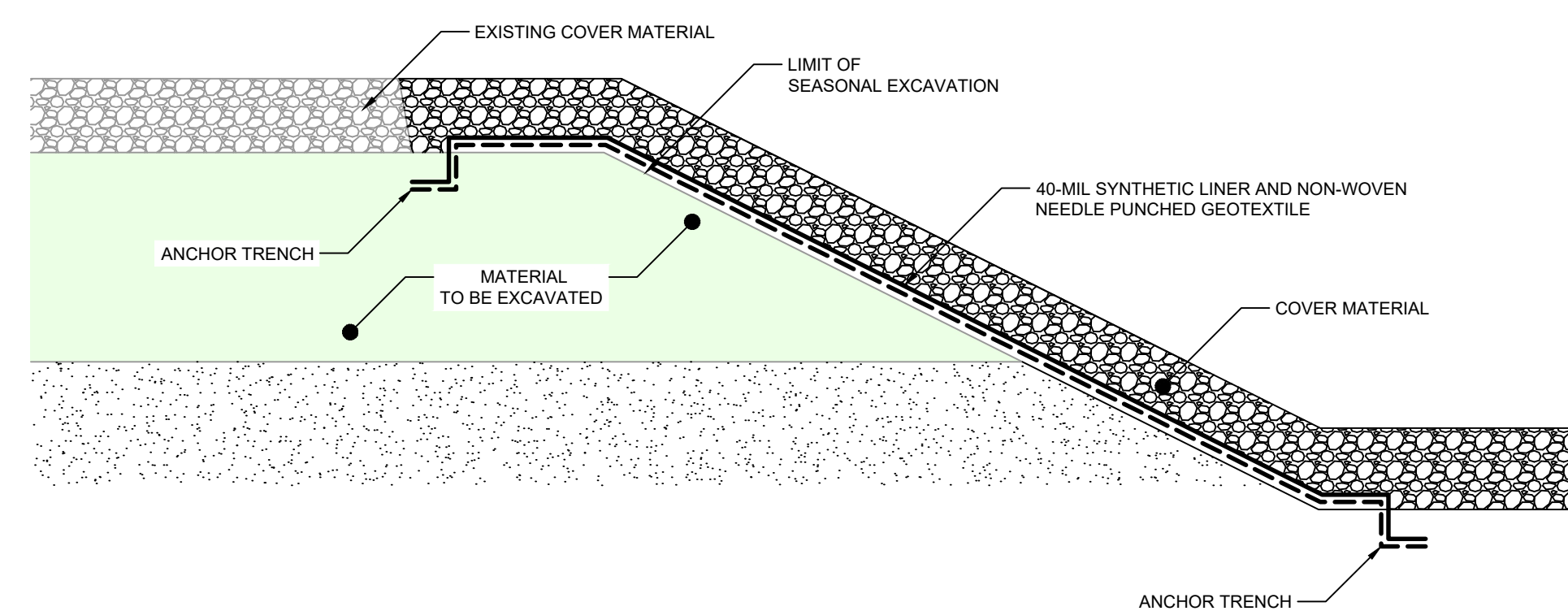
- NOTES
- OIL BOOM SHALL CONFORM TO COAST GUARD OPA 90 REGULATION AND ASTM F-1523
 - OIL BOOM SHALL BE CONTINUOUS TYPE.

DETAIL 2 NON-ABSORBENT OIL BOOM
N.T.S. C-04

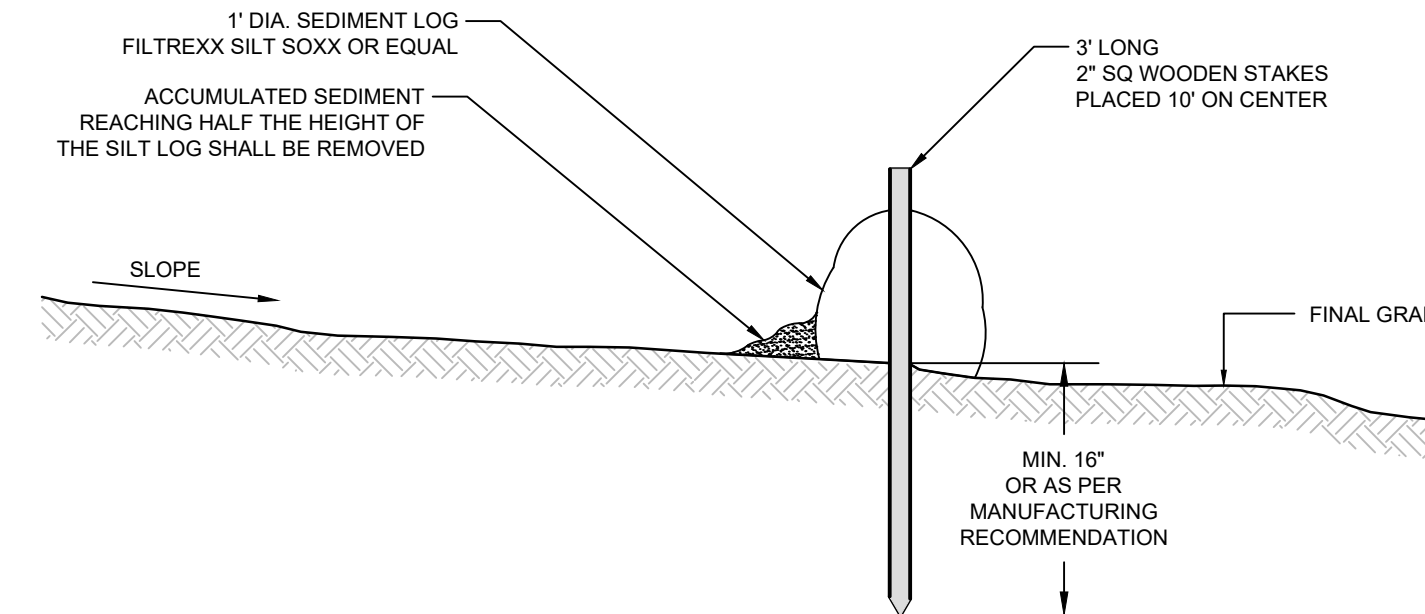
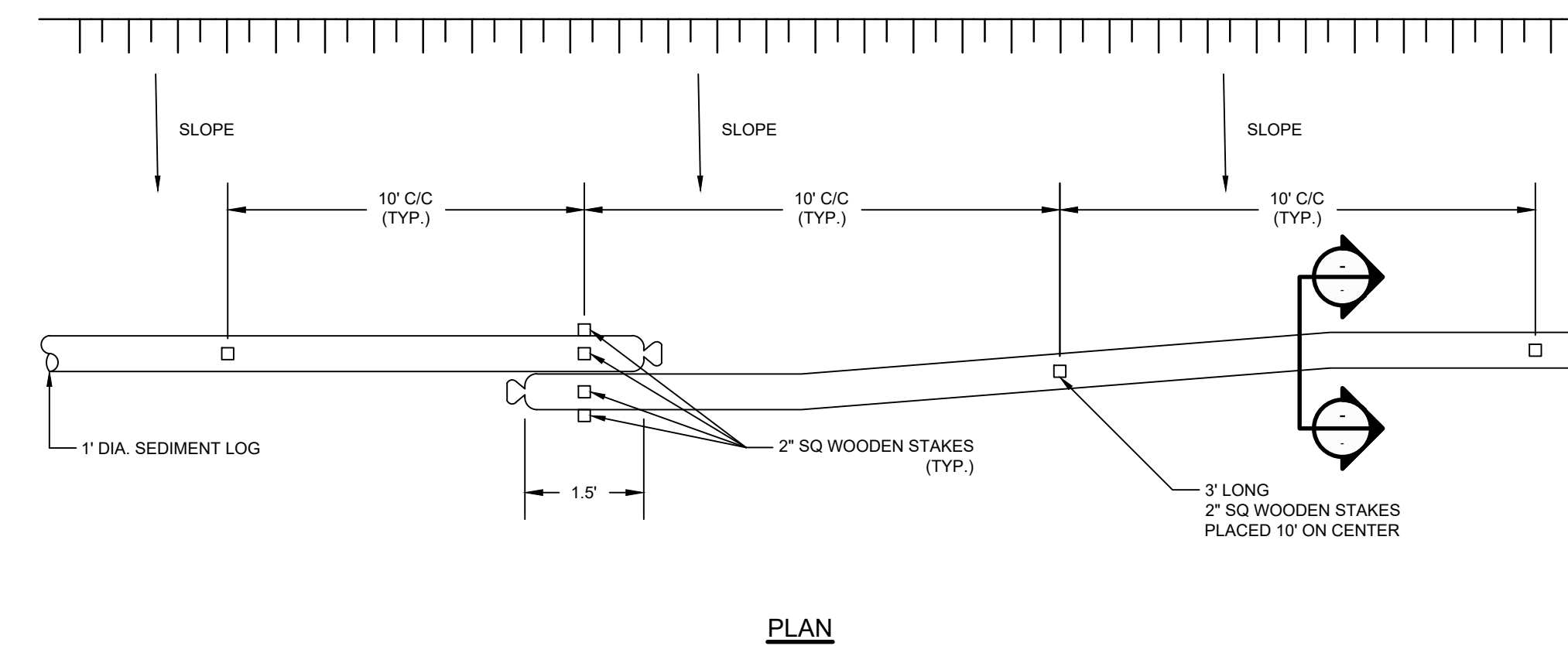


- NOTES
- TURBIDITY CURTAIN SHALL BE TYPE III ACCORDING TO DEPARTMENT OF THE ARMY, US ARMY CORPS OF ENGINEERS WASHINGTON, DC, ENGINEERING AND DESIGN HANDBOOK FOR THE PREPARATION OF STORM WATER POLLUTION PREVENTION PLANS FOR CONSTRUCTION ACTIVITIES, APPENDIX 'D' BMP 27 TURBIDITY CURTAIN, DOCUMENT EP1110-1-16, 1997.
 - CURTAIN SYSTEM SHALL BE EQUIPPED WITH LOAD TRANSFER TYPE PANEL CONNECTORS
 - INCLUDE MOORING SYSTEM IF REQUIRED.

DETAIL 3 TURBIDITY CURTAINS
N.T.S. C-04



DETAIL 4 TEMPORARY SEASONAL COVER
N.T.S. C-28

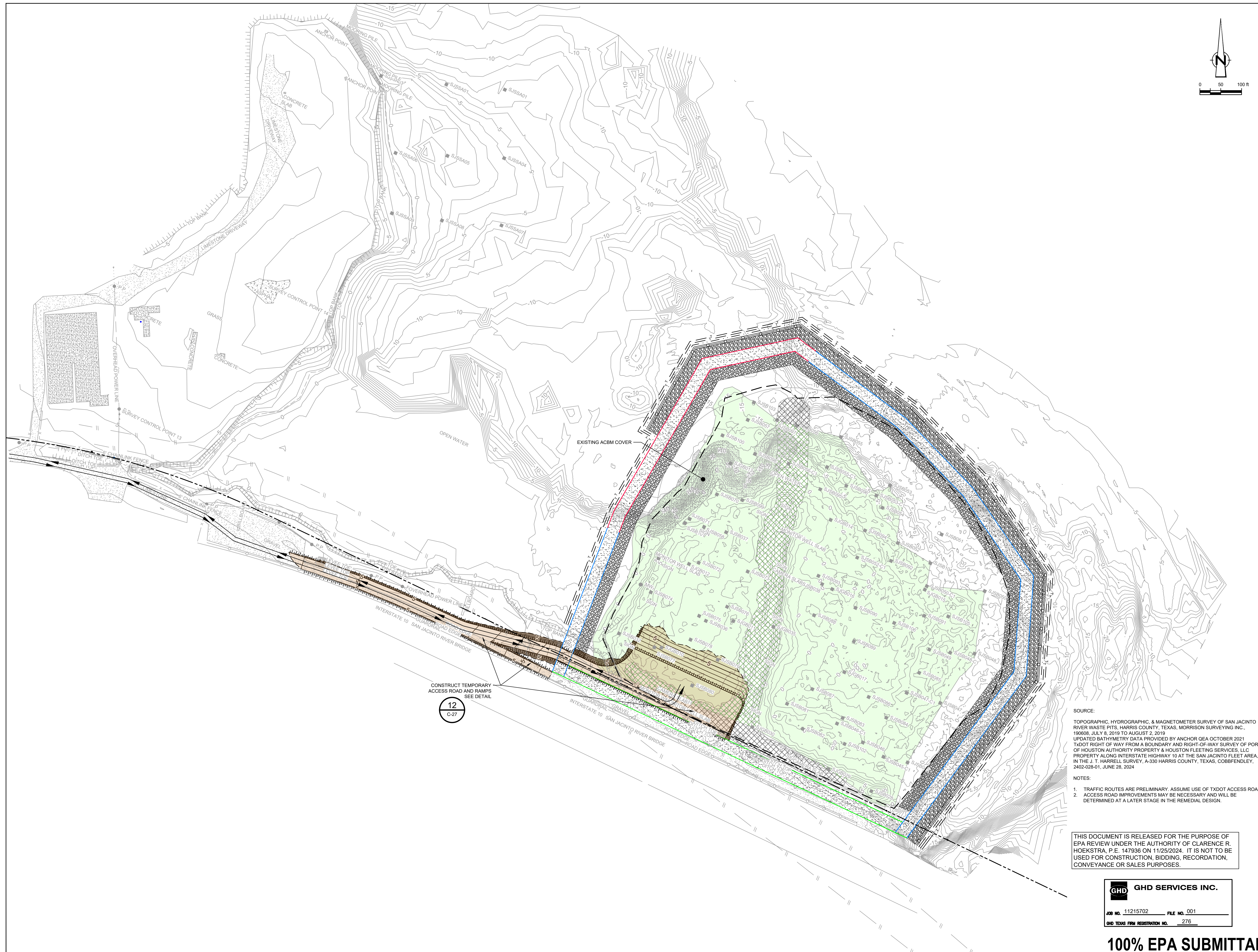


DETAIL 5 SEDIMENT LOG
N.T.S. C-05

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LEGEND

---	TXDOT RIGHT OF WAY
---	TCRA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	A226-700 PILE
---	A236-700 PILE
---	A242-700 PILE
---	FRP BARRIER WALL
---	TURBIDITY CURTAIN
---	OIL BOOM
---	TRAFFIC FLOW
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting	BS	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Nov 25, 2024	

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 Scale 1" = 100'
 Original Size
Arch D
 Bar is one inch on original size drawing
 0 1"

Project No. 11215702
 Title

PROJECT TRAFFIC CONTROL PLAN

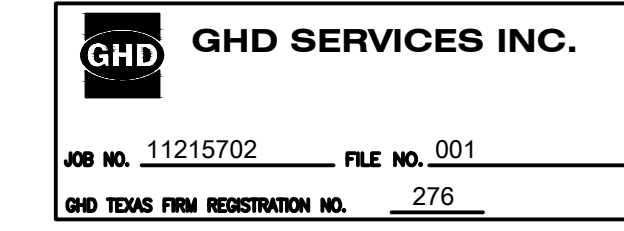
Sheet No.

C-07

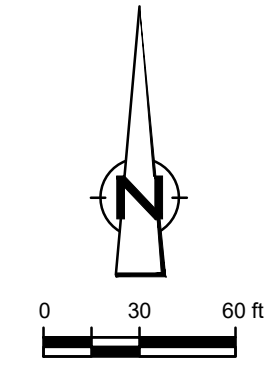
SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021
 TXDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC, PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
 1. TRAFFIC ROUTES ARE PRELIMINARY. ASSUME USE OF TXDOT ACCESS ROAD.
 2. ACCESS ROAD IMPROVEMENTS MAY BE NECESSARY AND WILL BE DETERMINED AT A LATER STAGE IN THE REMEDIAL DESIGN.

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---	TxDOT RIGHT OF WAY
---	TCRA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	FRP BARRIER WALL
---	TURBIDITY CURTAIN
---	OIL BOOM
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024

Original Size: Arch D
 Scale: 1" = 60'
 Bar is one inch on original size drawing

Project No. 11215702
 Title: **EXCAVATION PLAN OVERALL**

Sheet No. **C-08**

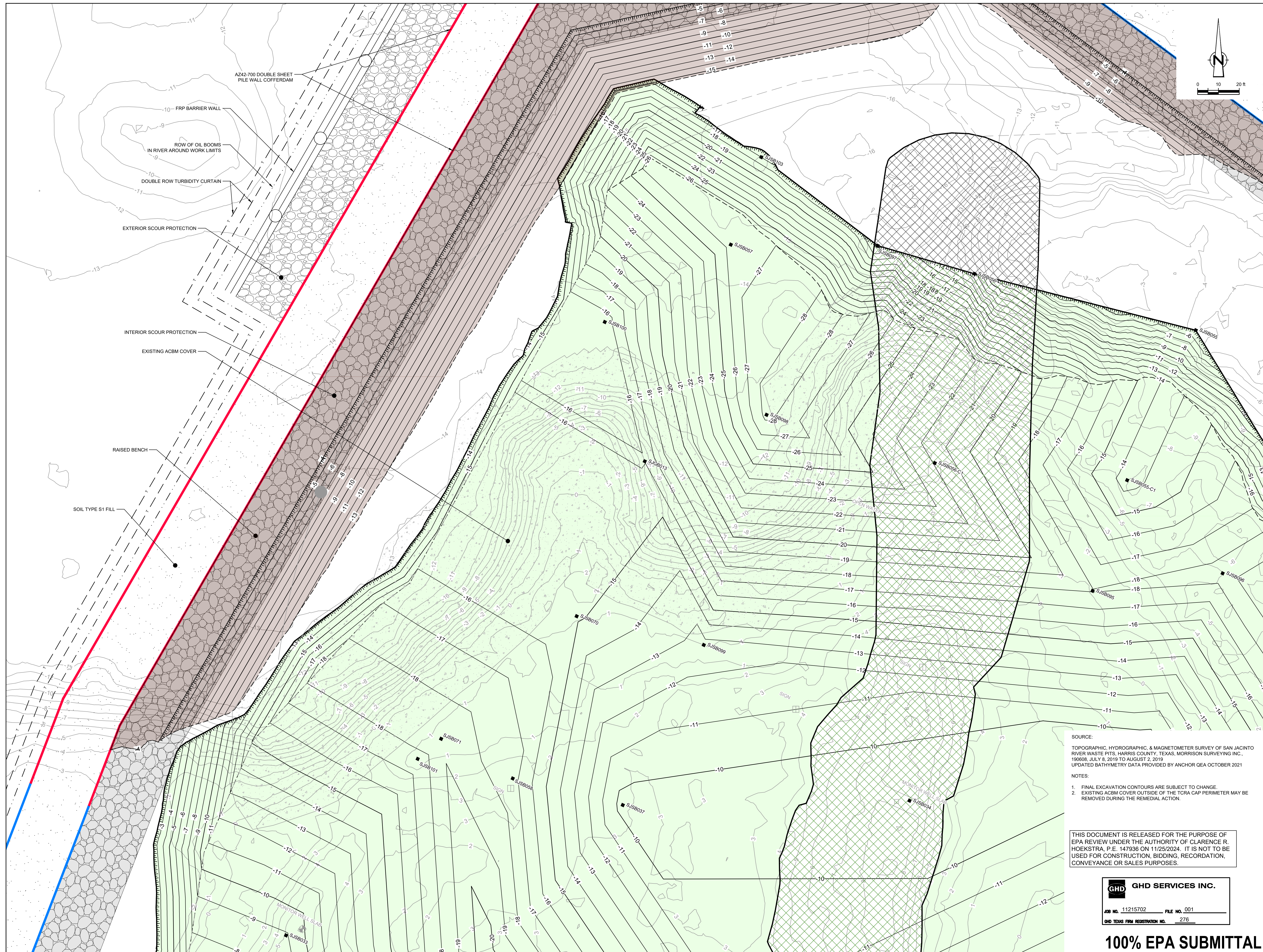
SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 9, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR O&A OCTOBER 2021
 TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
 1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.
 2. EXISTING ACBM COVER OUTSIDE OF THE TCRA CAP PERIMETER MAY BE REMOVED DURING THE REMEDIAL ACTION.

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LEGEND

---	TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ42-700 PILE
---	FRP BARRIER WALL
---	TURBIDITY CURTAIN
---	OIL BOOM
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

Scale: 1" = 20'
 Original Size: Arch D
 Bar is one inch on original size drawing

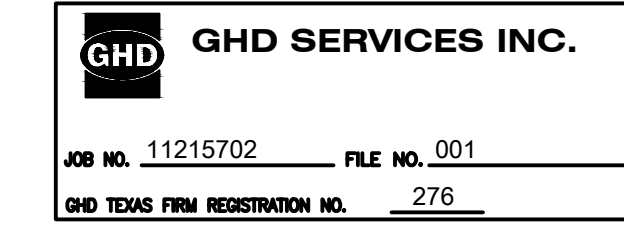
Project No. 11215702
 Title: **EXCAVATION PLAN NORTHWEST**

Sheet No. **C-09**
 Sheet 10 of 83

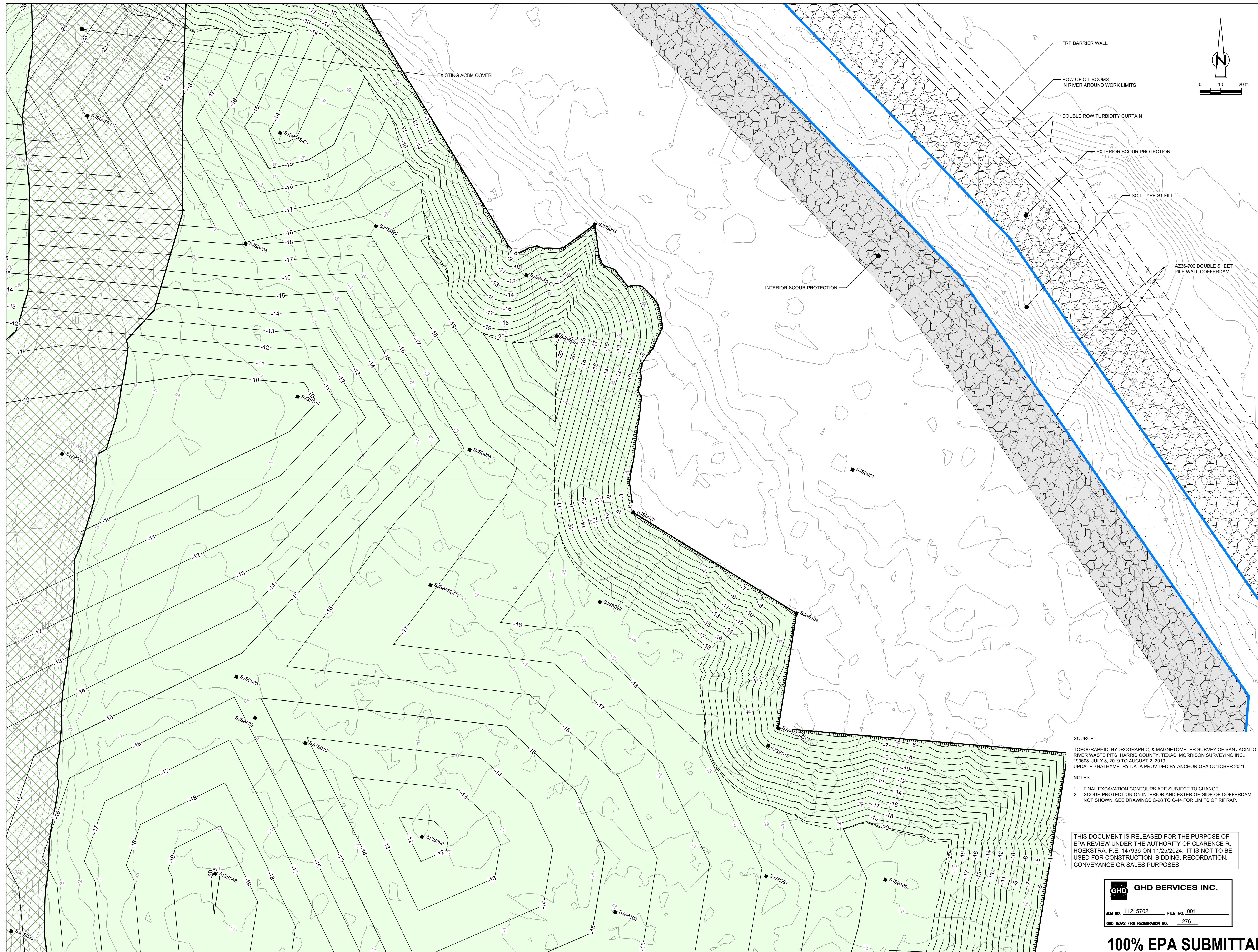
SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
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LEGEND

---	TXDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
■	BORING LOCATION
■	MONITORING WELL
■	POWER POLE
■	L.P.
○	WELL
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	CONCRETE
---	GRAVEL
---	AZ36-700 PILE
---	AZ42-700 PILE
---	FRP BARRIER WALL
---	TURBIDITY CURTAIN
---	OIL BOOM
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting	BS	Design	LL	
Check		Check		
Project	CM	Date	Nov 25, 2024	
Coordinator		Scale	1" = 20'	

Original Size
Arch D
 Bar is one inch on original size drawing
 0 1"

Project No. **11215702**
 Title

EXCAVATION PLAN NORTHEAST

Sheet No.

C-10
 Sheet 11 of 83

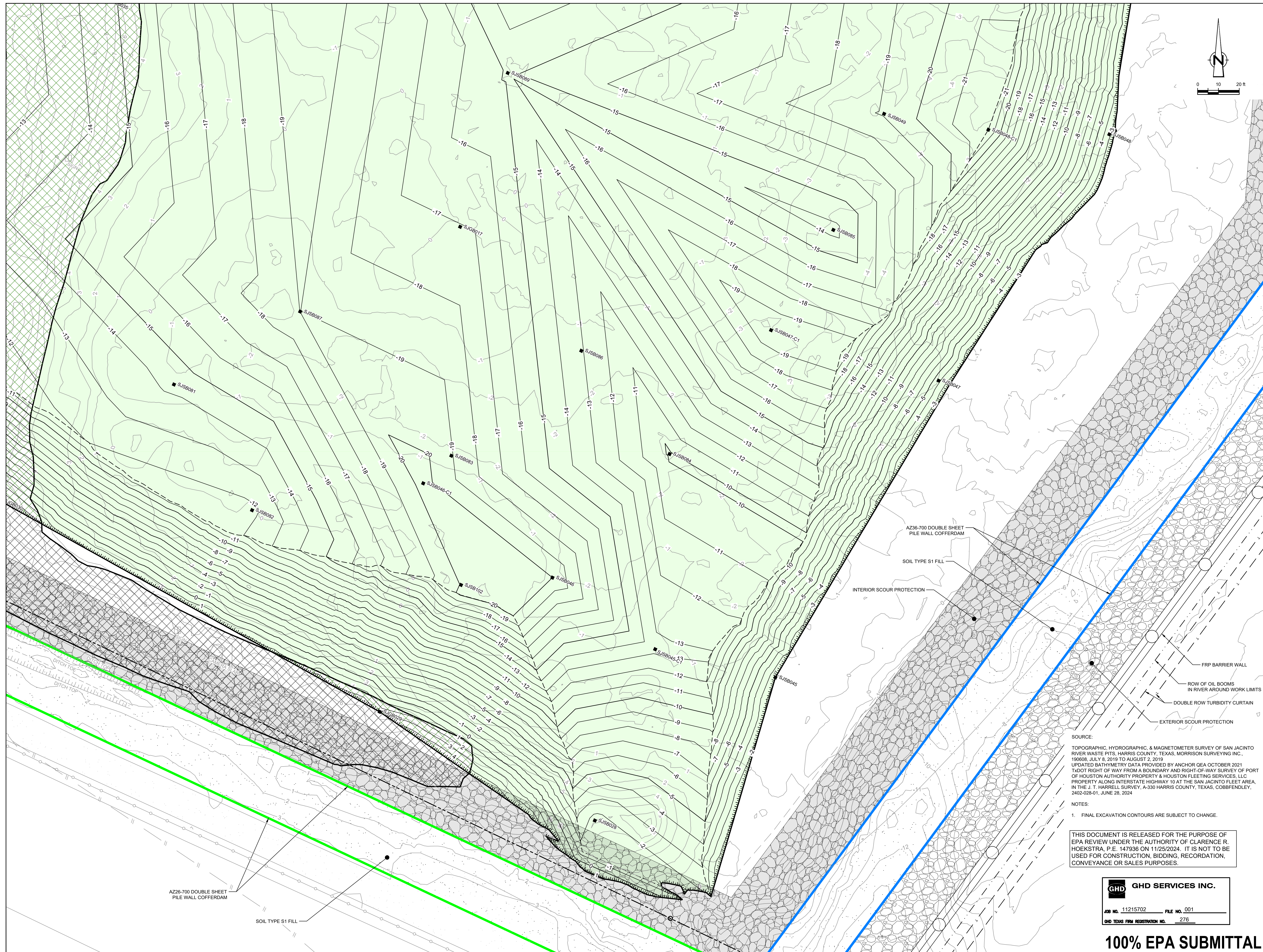
SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
 1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.
 2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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LEGEND

---	TXDOT RIGHT OF WAY
---	TOCA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	L.P.
---	WELL
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	FRP BARRIER WALL
---	TURBIDITY CURTAIN
---	OIL BOOM
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

Original Size
Arch D
 Bar is one inch on original size drawing
 0 1"

Project No. **11215702**
 Title

EXCAVATION PLAN SOUTHEAST

Sheet No.
C-11
 Sheet 12 of 83

SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
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NOTES:
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LEGEND

---	TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	TURBIDITY CURTAIN
---	OIL BOOM
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
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Drafting	BS	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Nov 25, 2024	

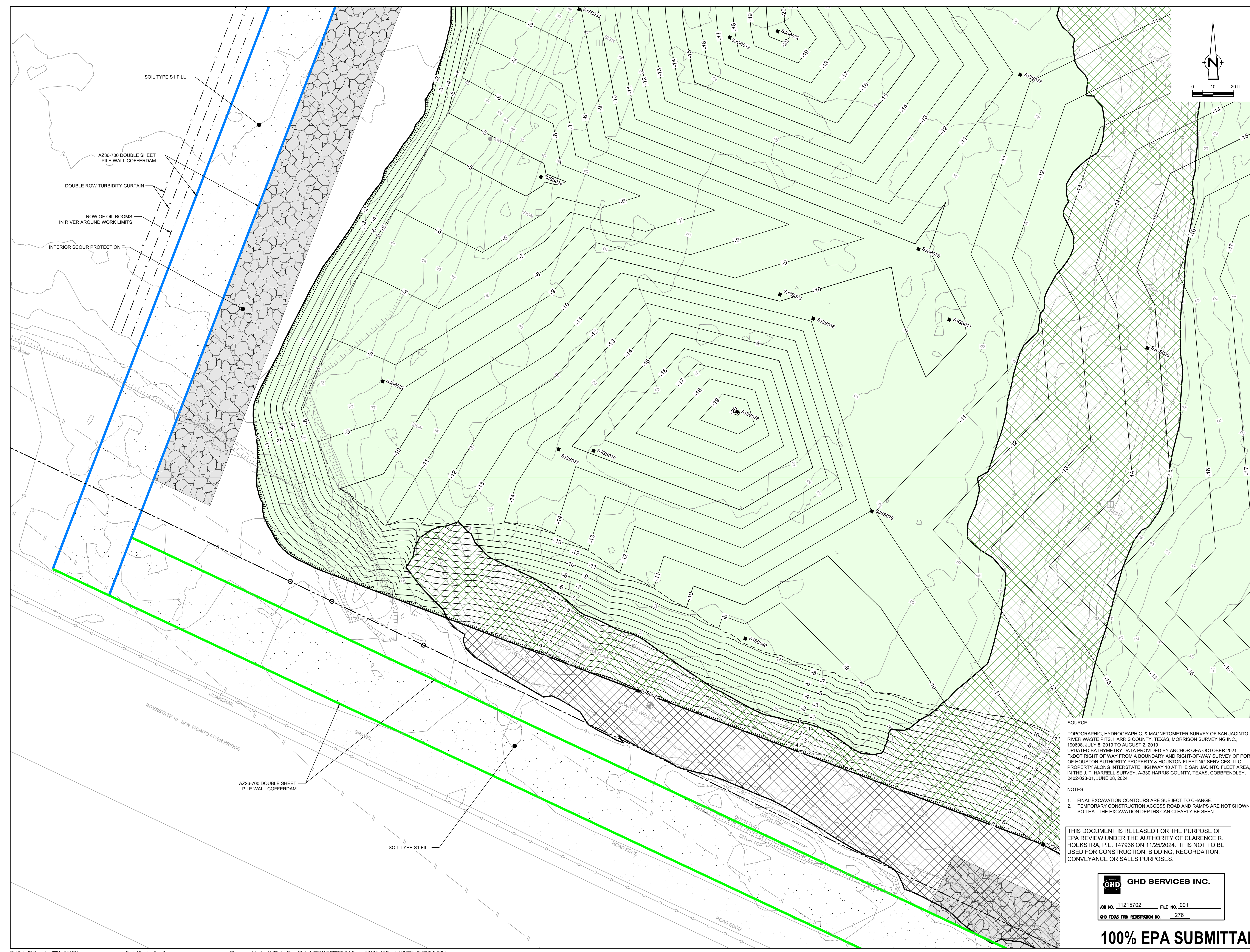
Original Size	Arch D	Scale	1" = 20'
		Bar is one inch on original size drawing	0 1"

Project No. **11215702**
 Title

EXCAVATION PLAN SOUTHWEST

Sheet No.

C-12



SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 10808B, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021
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NOTES:
 1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.
 2. TEMPORARY CONSTRUCTION ACCESS ROAD AND RAMPS ARE NOT SHOWN SO THAT THE EXCAVATION DEPTHS CAN CLEARLY BE SEEN.

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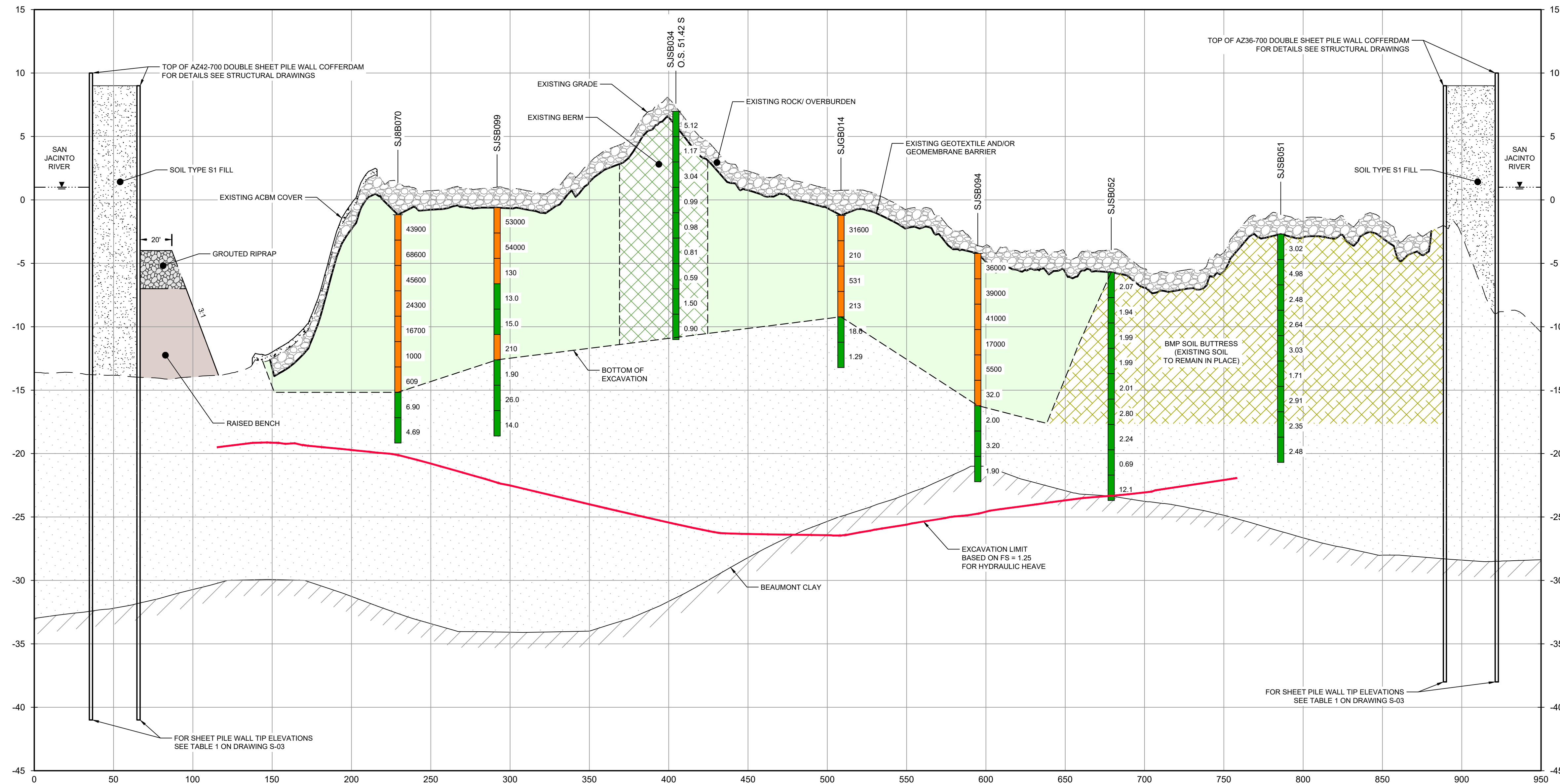
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SECTION **A** WEST/EAST
HORIZ: 1"=40'
VERT: 1"=5'

LEGEND

- █ SOILS WITH CONCENTRATIONS <30 ng/kg TE_{2,3,4}, TCDD
- █ SOILS WITH CONCENTRATIONS >30 ng/kg TE_{2,3,4}, TCDD
- EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
- BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
- INTERIOR SCOUR PROTECTION
- RAISED BENCH

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024
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Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. **11215702**

Title
EXCAVATION SECTION 1 OF 6

Sheet No.
C-13

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 - SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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JOB NO. 11215702 FILE NO. 001
GHD TEXAS PFW REGISTRATION NO. 276

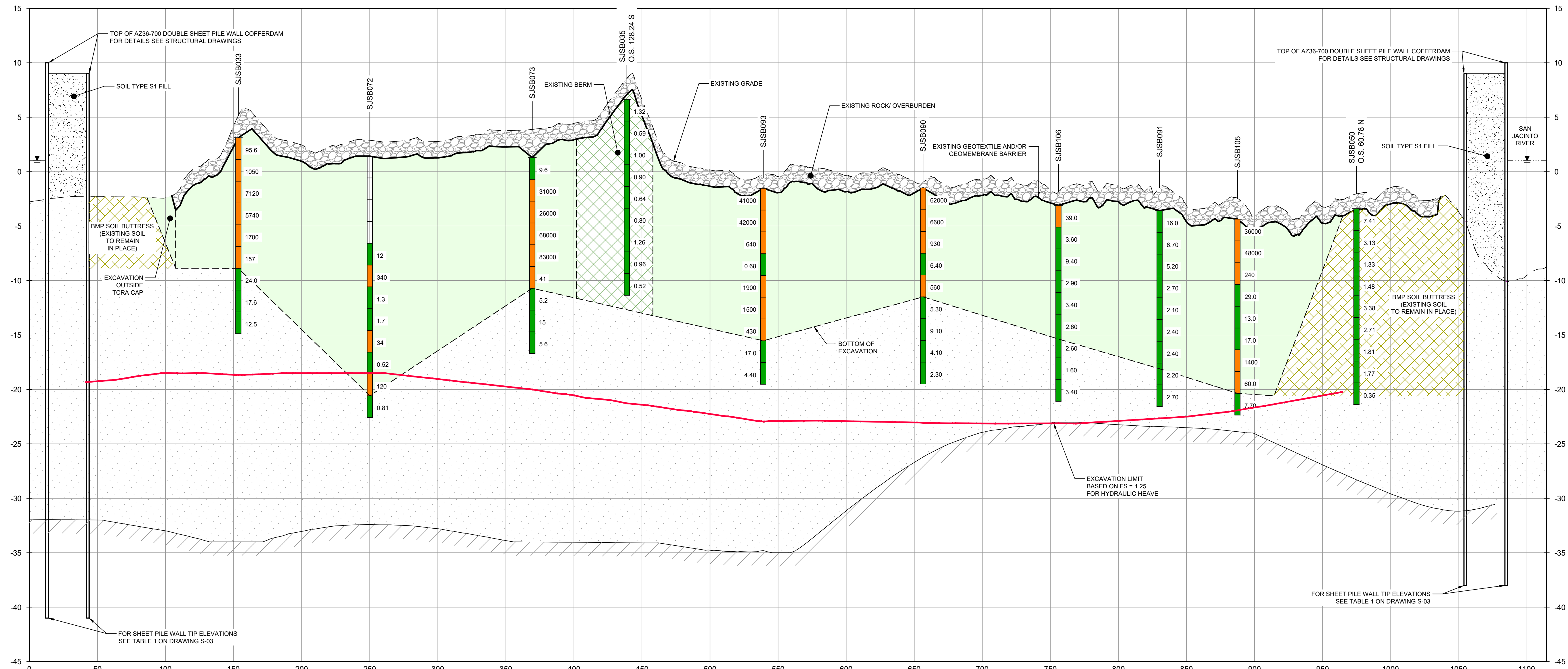
100% EPA SUBMITTAL



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LEGEND

- █ SOILS WITH CONCENTRATIONS <30 ng/kg TE_{2,3,4}, TCDD
- █ SOILS WITH CONCENTRATIONS >30 ng/kg TE_{2,3,4}, TCDD
- EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
- BMP SOIL BUTTRISS (EXISTING SOIL TO REMAIN IN PLACE)

SECTION B WEST/EAST
HORIZ: 1"=40'
VERT: 1"=5'
C-08

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 - SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024
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Original Size	Bar is one inch on original size drawing 0 1"		

Project No. **11215702**
Title

EXCAVATION SECTION 2 OF 6

Sheet No.

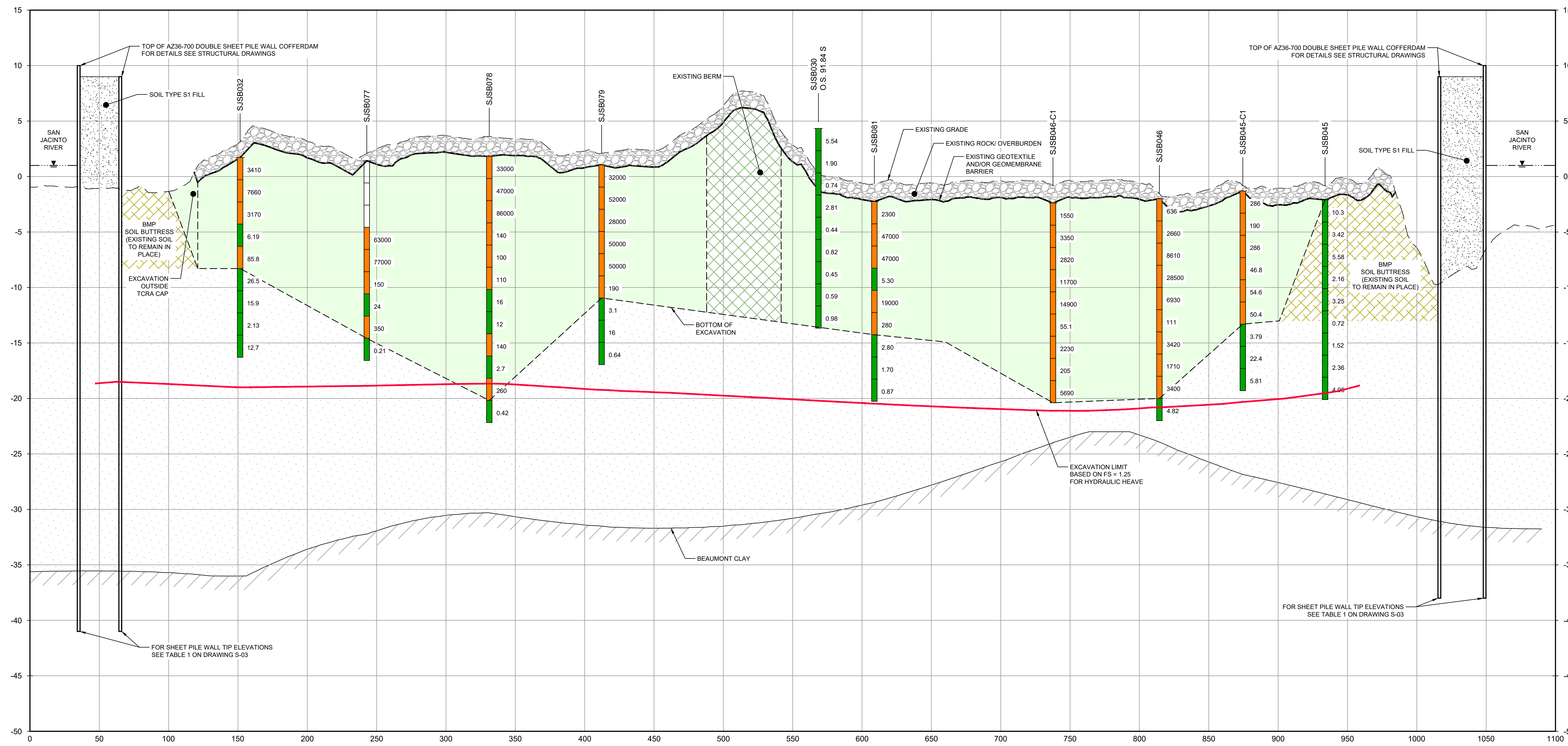
C-14



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LEGEND

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- SOILS WITH CONCENTRATIONS >30 ng/kg TE_{2,3,4}, TCDD
- EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
- BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
-----	-------	-------	----------	------

Drawn JC Designer RH

Drafting Check BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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Scale AS SHOWN

Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702
Title

EXCAVATION SECTION 3 OF 6

Sheet No.

C-15

Sheet 16 of 83

SECTION C WEST/EAST
HORIZ: 1"=40'
VERT: 1"=5'

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 - SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL



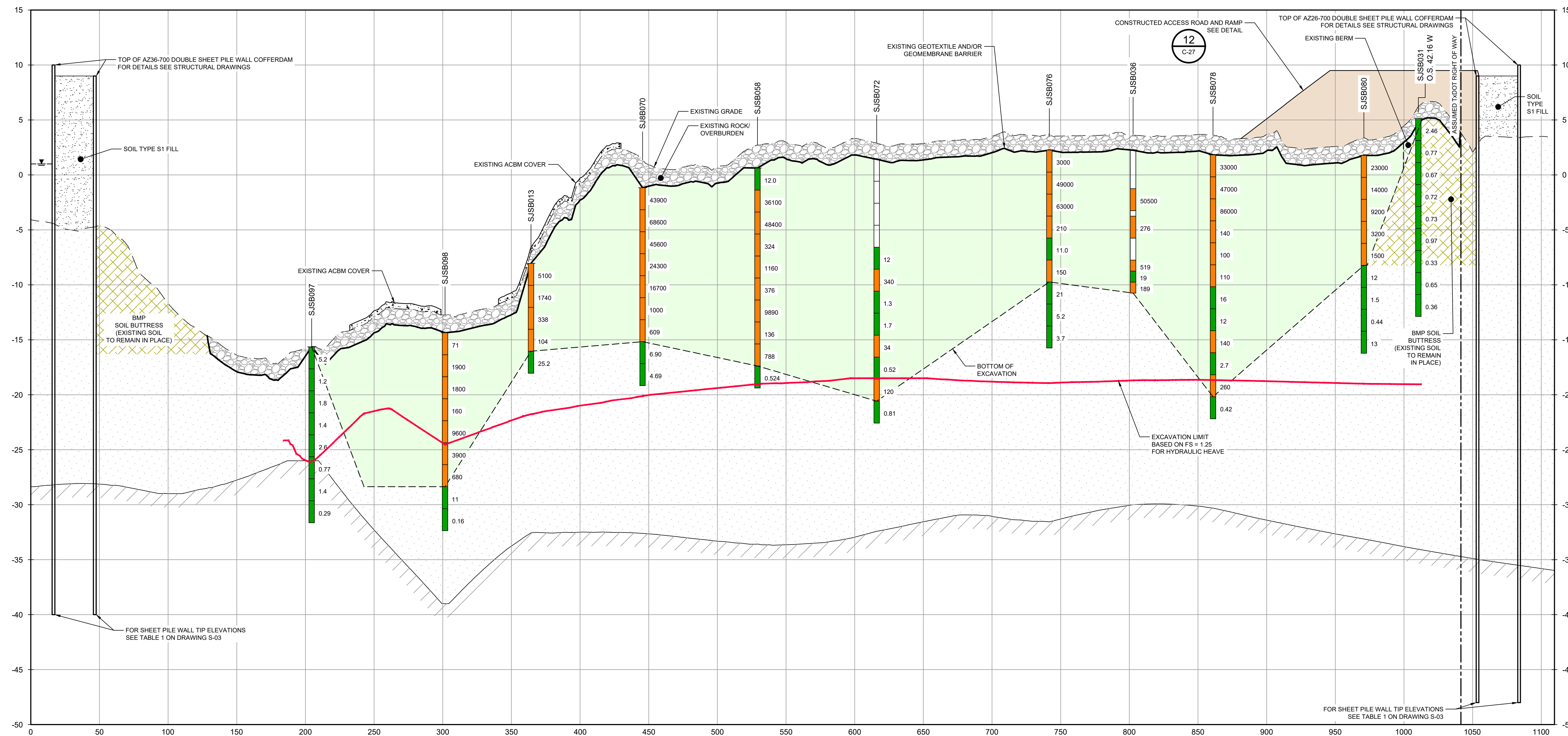
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LEGEND

	SOILS WITH CONCENTRATIONS <30 ng/kg TEQ _d , TCDD
	SOILS WITH CONCENTRATIONS >30 ng/kg TEQ _d , TCDD
	EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS



SECTION D NORTH/SOUTH
C-08
HORIZ: 1"=40'
VERT: 1"=5'

SOURCE:
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBRENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

Scale: **AS SHOWN**
Original Size: Arch D
Bar is one inch on original size drawing

Project No. **11215702**

EXCAVATION SECTION 4 OF 6

Sheet No.

C-16



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LEGEND	
	SOILS WITH CONCENTRATIONS <30 ng/kg TEQ _{2,3,4} , TCDD
	SOILS WITH CONCENTRATIONS >30 ng/kg TEQ _{2,3,4} , TCDD
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	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

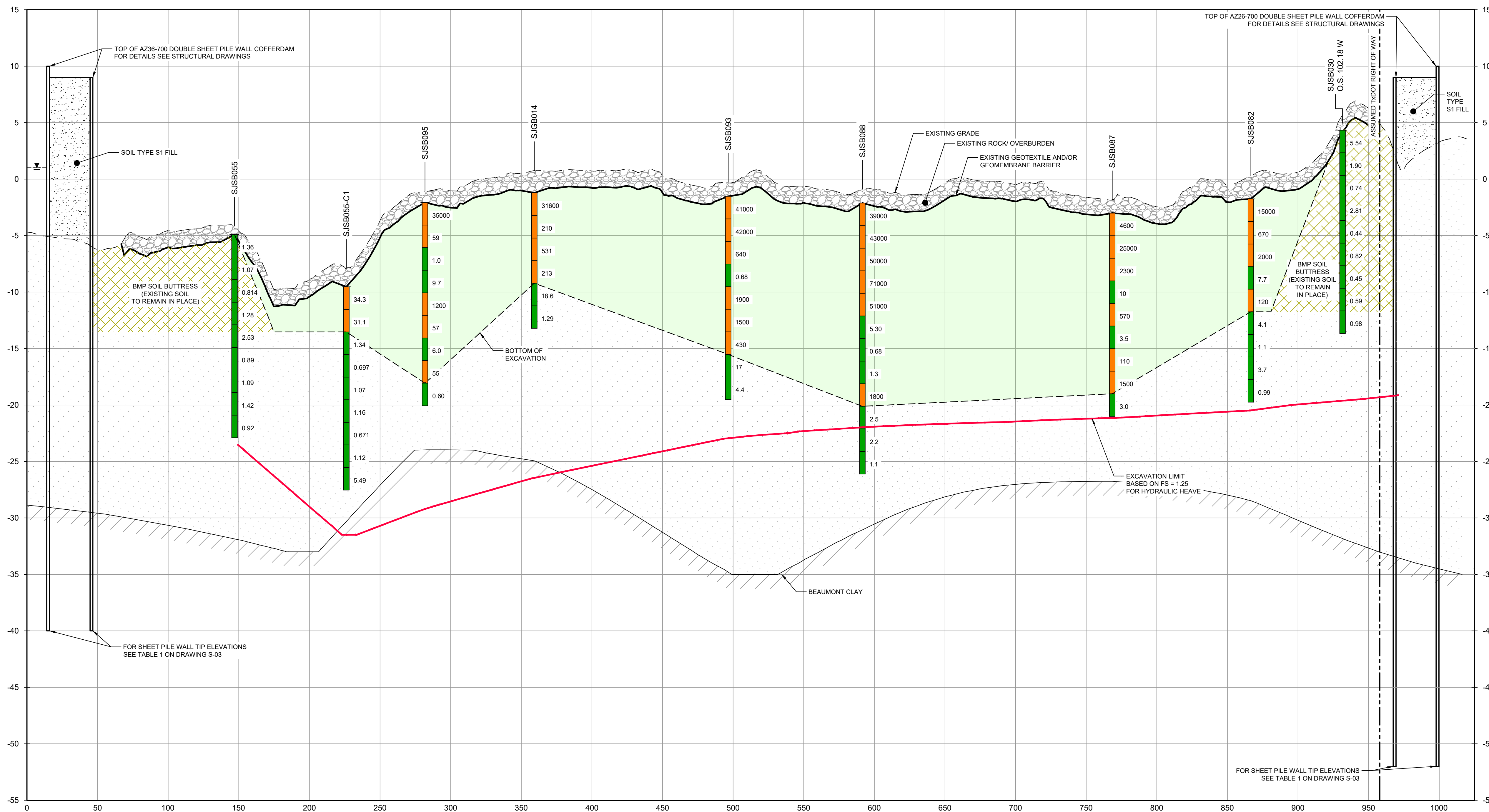
No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

Original Size	Arch D	Bar is one inch on original size drawing
Project No.	11215702	Scale AS SHOWN

Title
EXCAVATION SECTION 5 OF 6

Sheet No.
C-17



SECTION E NORTH/SOUTH
C-08

HORIZ: 1"=40'
VERT: 1"=5'

SOURCE:
TXDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBRENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PFW REGISTRATION NO. 276

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LEGEND	
	SOILS WITH CONCENTRATIONS <30 ng/kg TE _{2,3,4} , TCDD
	SOILS WITH CONCENTRATIONS >30 ng/kg TE _{2,3,4} , TCDD
	EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

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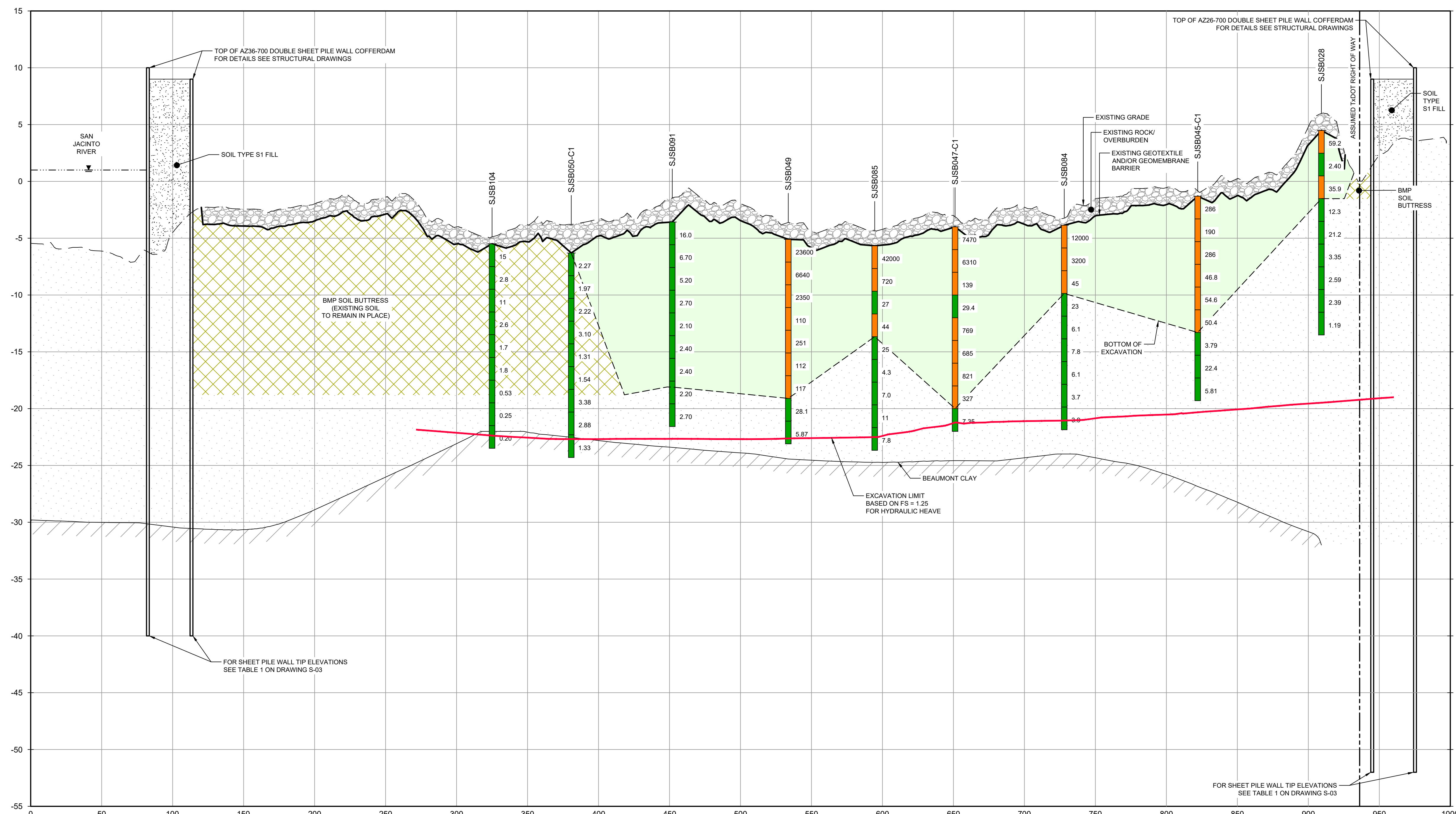
Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. **11215702**

Title
EXCAVATION SECTION 6 OF 6

Sheet No.

C-18



SECTION F NORTH/SOUTH
HORIZ: 1"=40'
VERT: 1"=5'

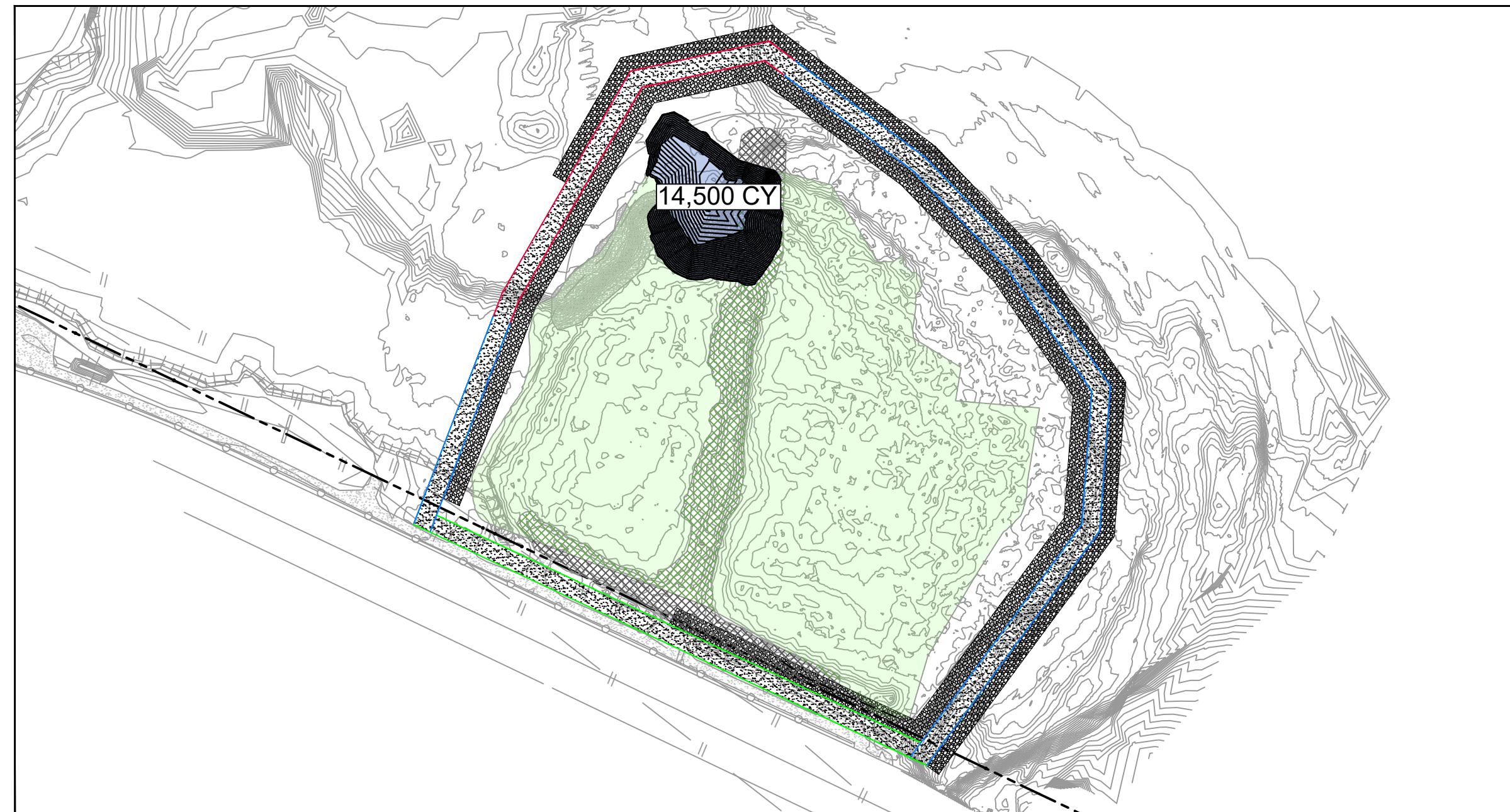
SOURCE:
TXDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRILL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBRENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

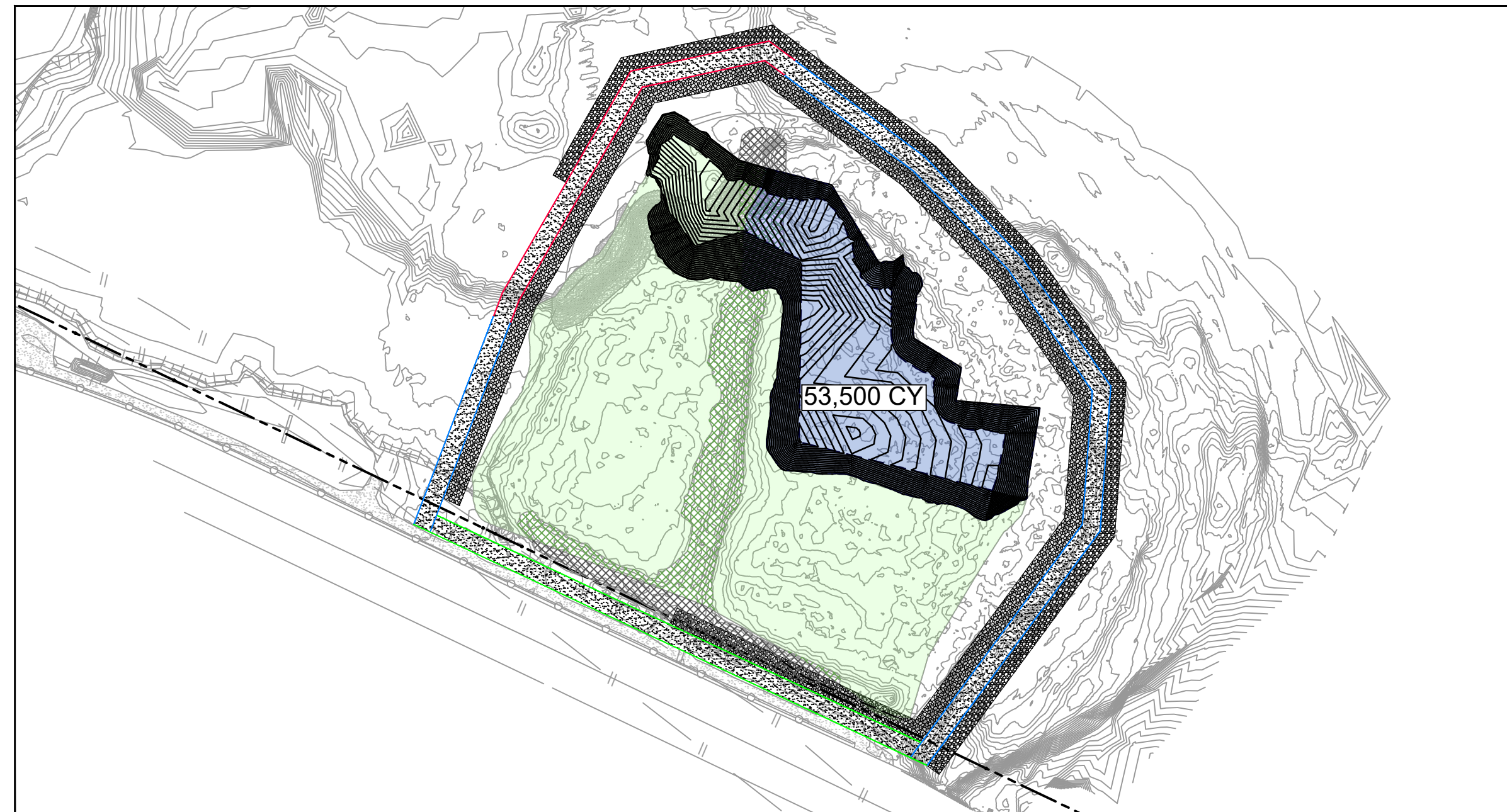
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS PFW REGISTRATION NO. 276

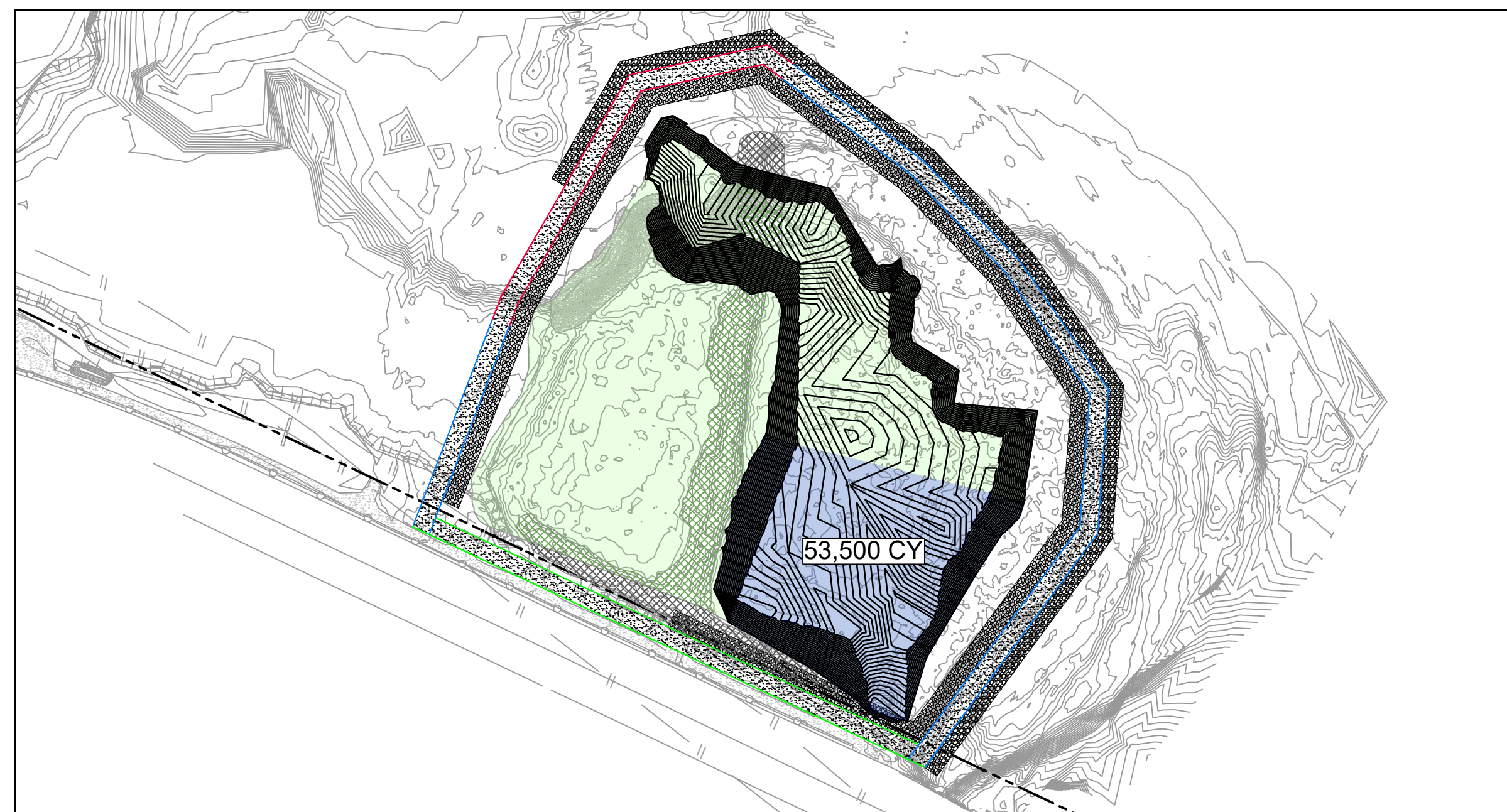
100% EPA SUBMITTAL



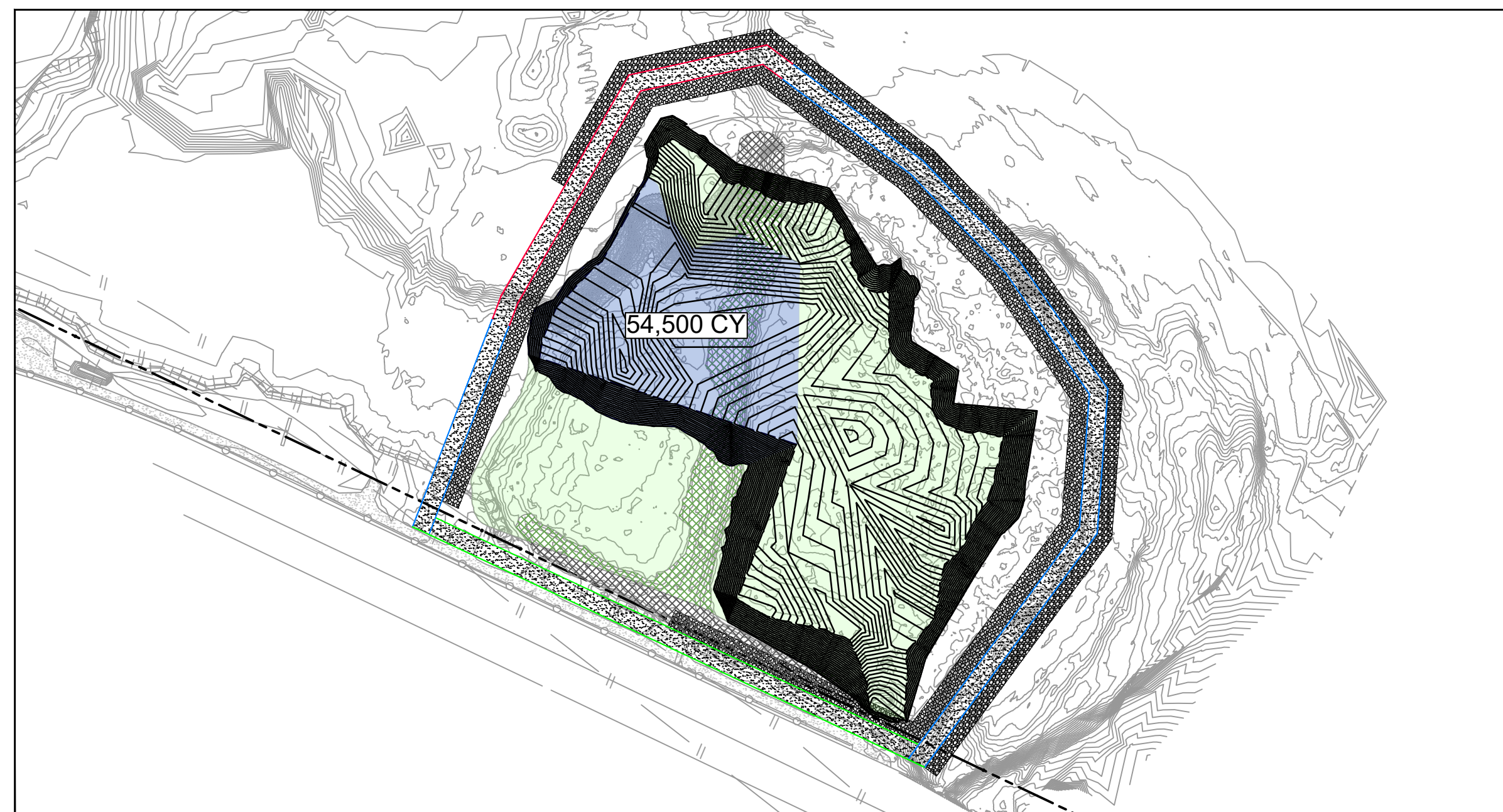
YEAR 2



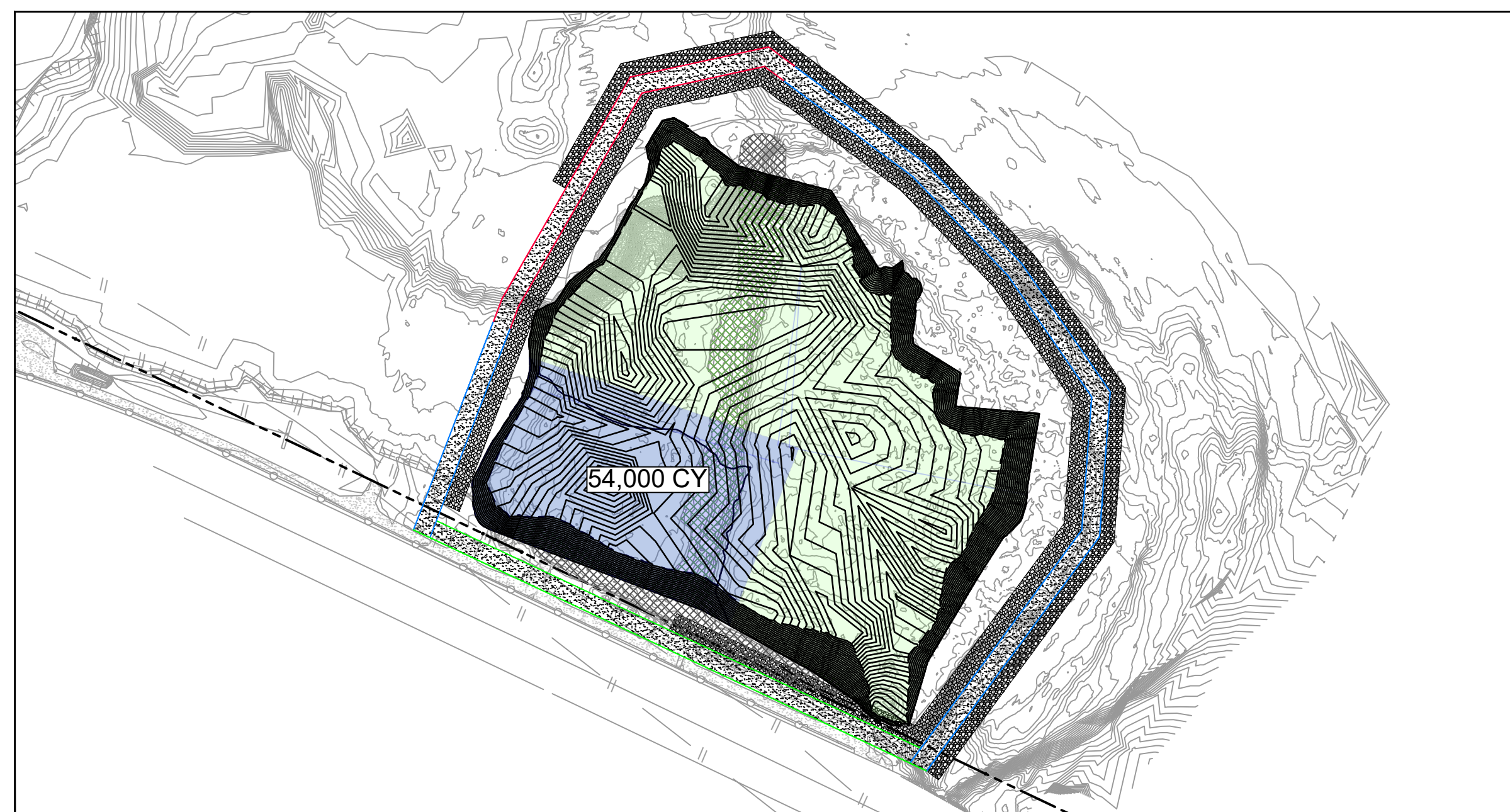
YEAR 3



YEAR 4



YEAR 5



YEAR 6

PHASE	TCRA CAP (CY)	CENTER BERM MATERIAL			CONTAMINATED MATERIAL		
		CUT (CY)	FILL (CY)	NET (CUT, CY)	CUT (CY)	FILL (CY)	NET (CUT, CY)
YEAR 2	2,440	4,300	0	4,300	10,200	0	10,200
YEAR 3	7,800	2,350	0	2,350	51,150	0	51,150
YEAR 4	7,000	20	0	20	53,480	0	53,480
YEAR 5	5,560	11,230	0	11,230	43,270	0	43,270
YEAR 6	5,520	12,760	0	12,760	41,240	0	41,240
TOTAL	28,320	30,660	0	30,660	199,340	0	199,340

NOTES:

- CENTER BERM MATERIAL MAY NOT BE IMPACTED MATERIAL. CHEMICAL SAMPLING SHALL BE CONDUCTED ON CENTER BERM MATERIAL. IF DIOXIN CONTAMINATION IS FOUND TO BE PRESENT THEN THE CENTER BERM MATERIAL SHALL BE DISPOSED OFF-SITE AND WILL NOT BE AVAILABLE FOR RE-USE.
- VOLUME CALCULATIONS CONDUCTED USING TOOLS AND MEASUREMENTS IN AUTODESK AUTOCAD CIVIL 3D 2024.

SOURCE:

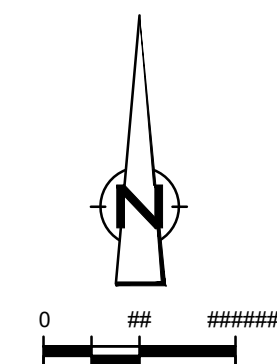
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021
 TXDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:

- TYPICAL EXCAVATION SEQUENCING ASSUMES BMP INSTALLATION AND SITE PREPARATION WILL BE COMPLETED IN YEAR 1, REMEDIATION OF THE NORTHWEST CORNER IN YEAR 2, AND BMP REMOVAL AND SITE RESTORATION WILL BE COMPLETED IN YEAR 7.
- SEASONAL EXCAVATION AREAS, VOLUMES, AND SEQUENCING ARE APPROXIMATE AND SUBJECT TO CHANGE.

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LEGEND

---	TXDOT RIGHT OF WAY
---	TCRA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	PHASE OF EXCAVATION
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client

SAN JACINTO RIVER WASTE PITS

Project

NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5 100% EPA SUBMITTAL JC CRH 11/25/2024

4 FOR CLIENT REVIEW JC CRH 11/21/2024

3 100% EPA SUBMITTAL MW CRH 07/17/2024

No.	Issue	Drawn	Approved	Date

Drawn JC Designer RH

Drafting BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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Original Size Scale 1" = 200'

Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title

SEASONAL EXCAVATION SEQUENCING TYPICAL

Sheet No.

C-19

100% EPA SUBMITTAL

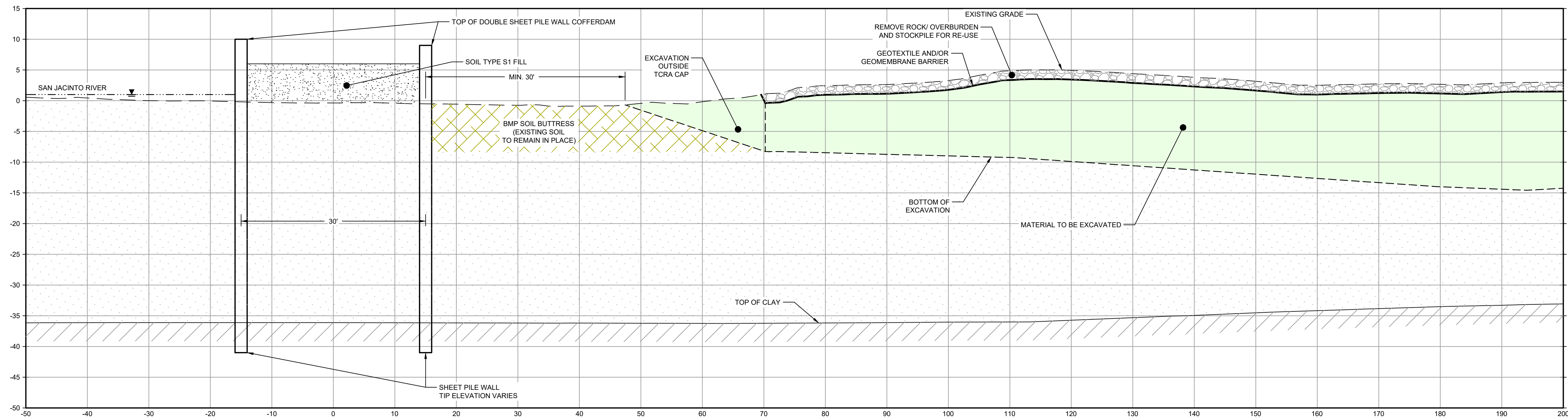


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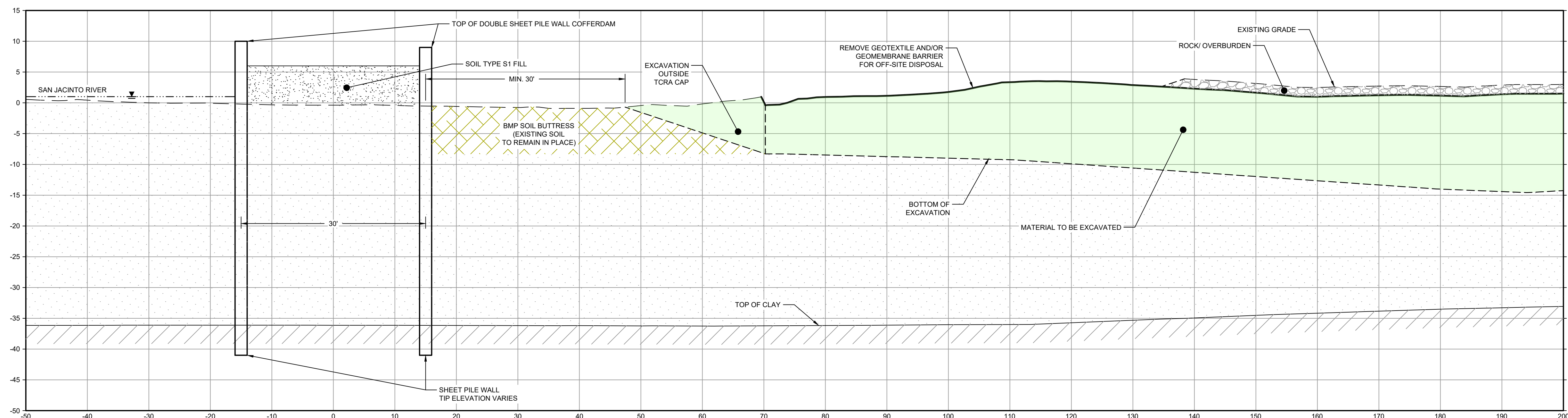
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LEGEND	
	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)



- NOTES:
1. INSTALL PILE WALL COFFERDAM AROUND PERIMETER OF EXCAVATION AND DEWATER.

PHASE 1
1' = 10'



- NOTES:
1. REMOVE ROCK LAYER TO BE STOCKPILED ON SITE. REUSED AS TEMPORARY COVER AT END OF SEASONAL EXCAVATION.

PHASE 2
1' = 10'

- NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.
 3. FRP BARRIER WALL NOT SHOWN FOR CLARITY.

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100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn JC Designer RH

Drafting Check BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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Original Size Scale AS SHOWN

Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title

TYPICAL EXCAVATION SEQUENCING

1 OF 2

Sheet No.

C-20

Sheet 21 of 83

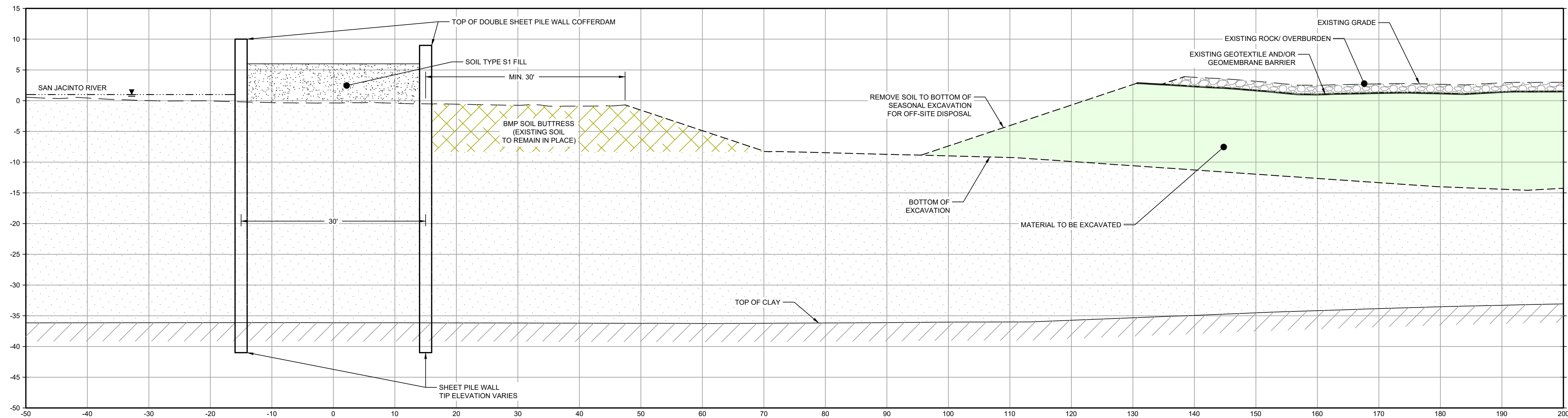


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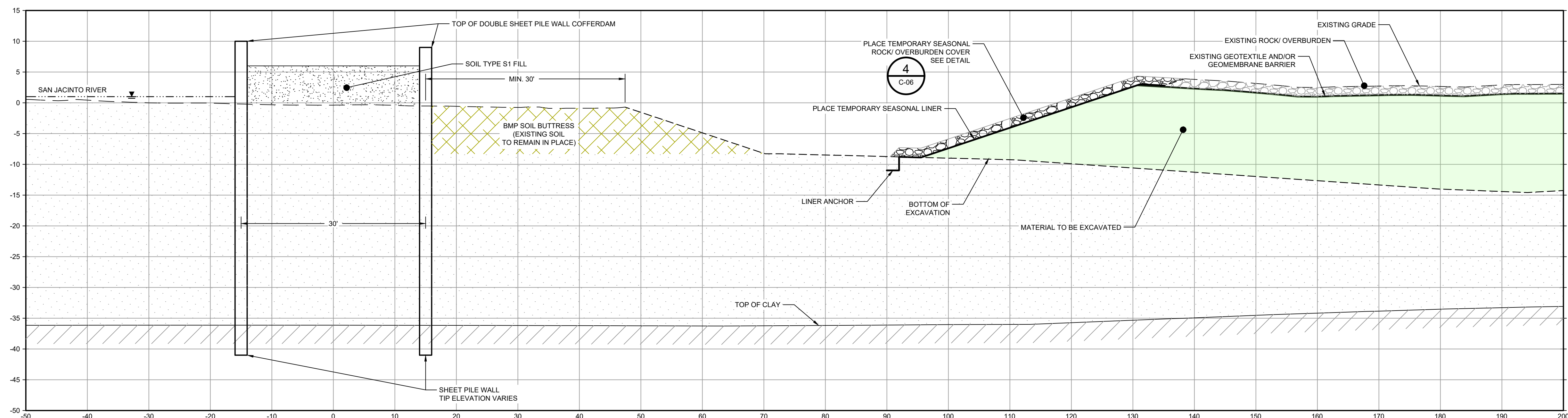
LEGEND	
	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS (EXISTING SOIL TO REMAIN IN PLACE)



NOTES:

1. REMOVE GEOMEMBRANE, EXCAVATE MATERIAL AND DISPOSE OF OFFSITE.

PHASE 3
1' = 10'



PHASE 4
1' = 10'

- NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.
 3. FRP BARRIER WALL NOT SHOWN FOR CLARITY.

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Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024
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Original Size	Arch D	Bar is one inch on original size drawing
		0 1"

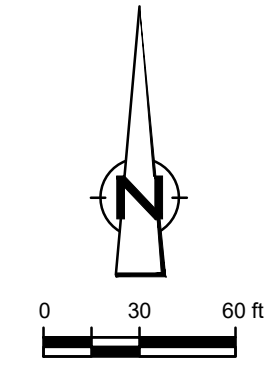
Project No. 11215702

Title

TYPICAL EXCAVATION SEQUENCING
2 OF 2

Sheet No.

C-21



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LEGEND

---	TxDOT RIGHT OF WAY
---	TCRA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	EXTERIOR SCOUR PROTECTION/IRIPRAP
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS
 Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

6	100% EPA SUBMITTAL	JC	CRH	11/25/2024
5	FOR CLIENT REVIEW	JC	CRH	11/21/2024
4	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	
Original Size	Arch D	Scale	1" = 60'	Bar is one inch on original size drawing

SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR O&A OCTOBER 2021
 TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
 1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.

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Project No. 11215702
 Title
RESTORATION PLAN

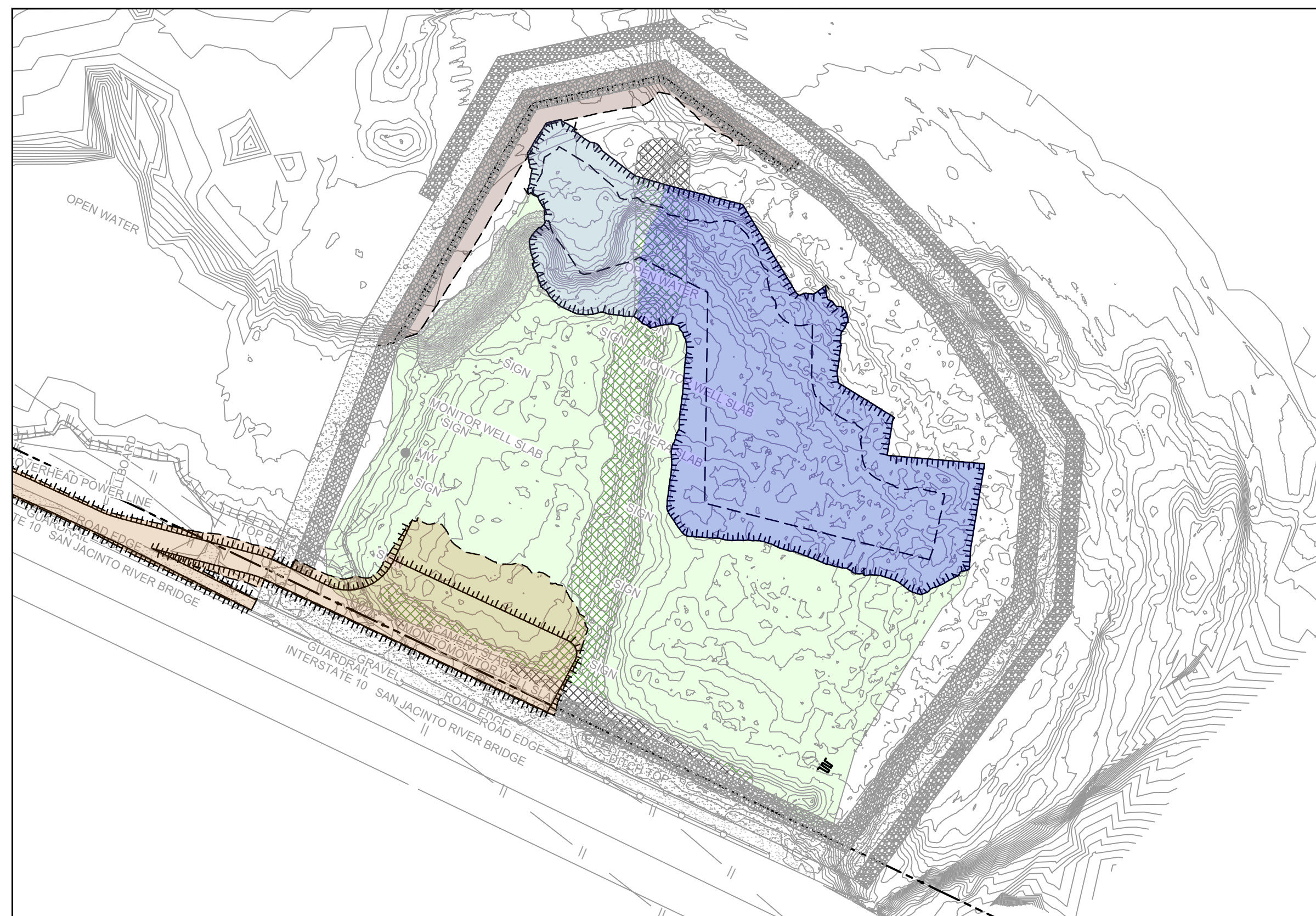
Sheet No.
C-22
 Sheet 23 of 83



YEAR 1 - BMP INSTALLATION AND SITE PREPARATION



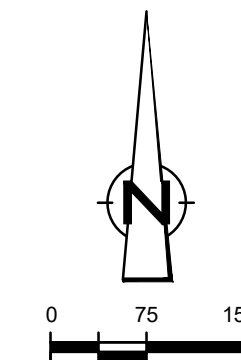
YEAR 2 - EXCAVATION SEASON 1



YEAR 3 - EXCAVATION SEASON 2



YEAR 4 - EXCAVATION SEASON 3



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LEGEND	
---	TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
-10	EXISTING CONTOUR INTERVAL
x	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	PHASE OF EXCAVATION
---	PLANNED IMPROVEMENTS FOR
---	NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	100% EPA SUBMITTAL	JC	CRH	11/25/2024
5	FOR CLIENT REVIEW	JC	CRH	11/21/2024
4	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024
Original Size	Bar is one inch on original size drawing 0 1"		

Project No. 11215702

Title

CONSTRUCTION SEQUENCING
1 OF 2

Sheet No. **C-23**
Sheet 24 of 83

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-530 HARRIS COUNTY, TEXAS, COBBFENDLY, 2402-029-01, JUNE 28, 2024

NOTES:
1. SEASONAL EXCAVATION AREAS, VOLUMES, AND SEQUENCING ARE APPROXIMATE AND SUBJECT TO CHANGE.

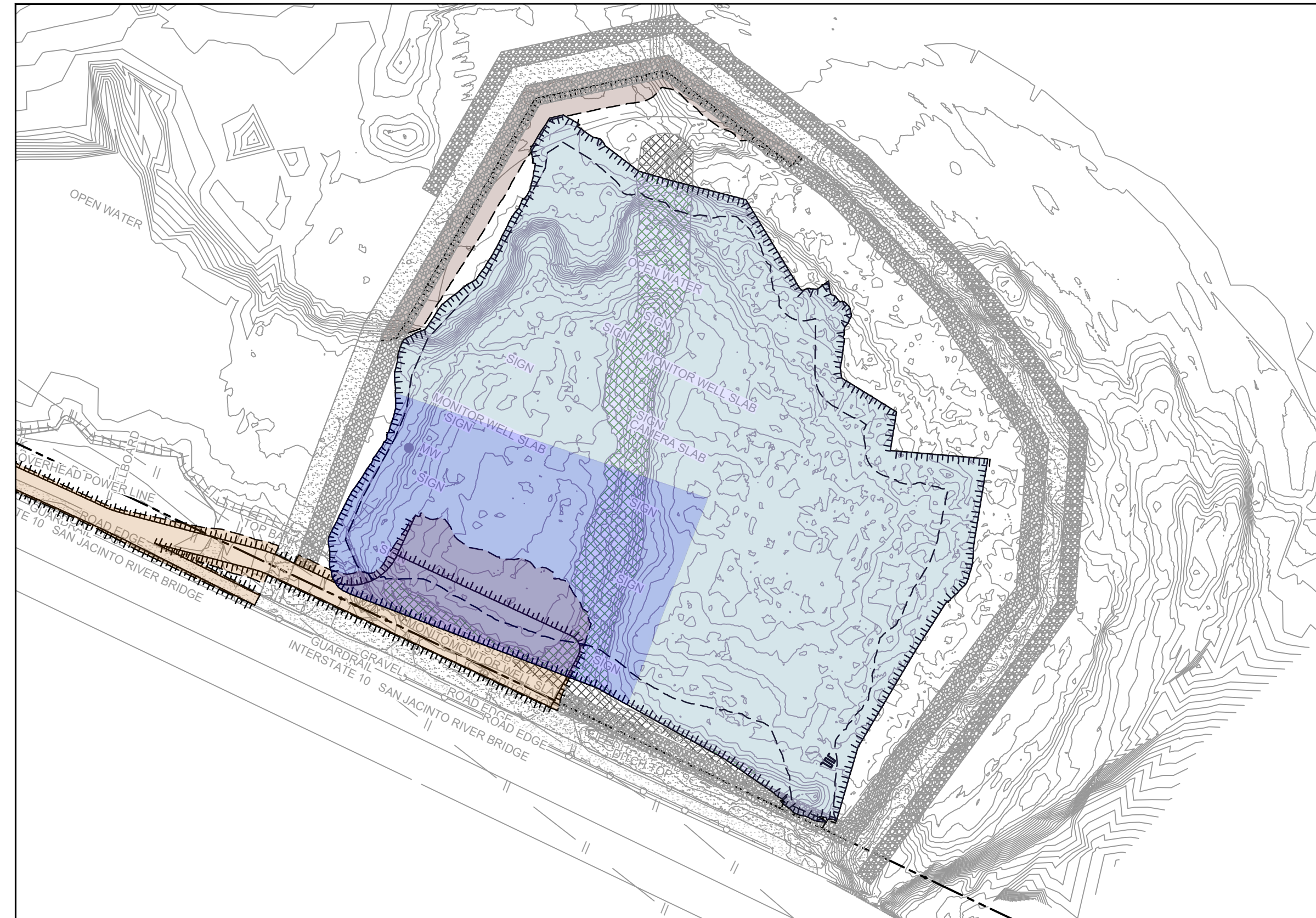
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

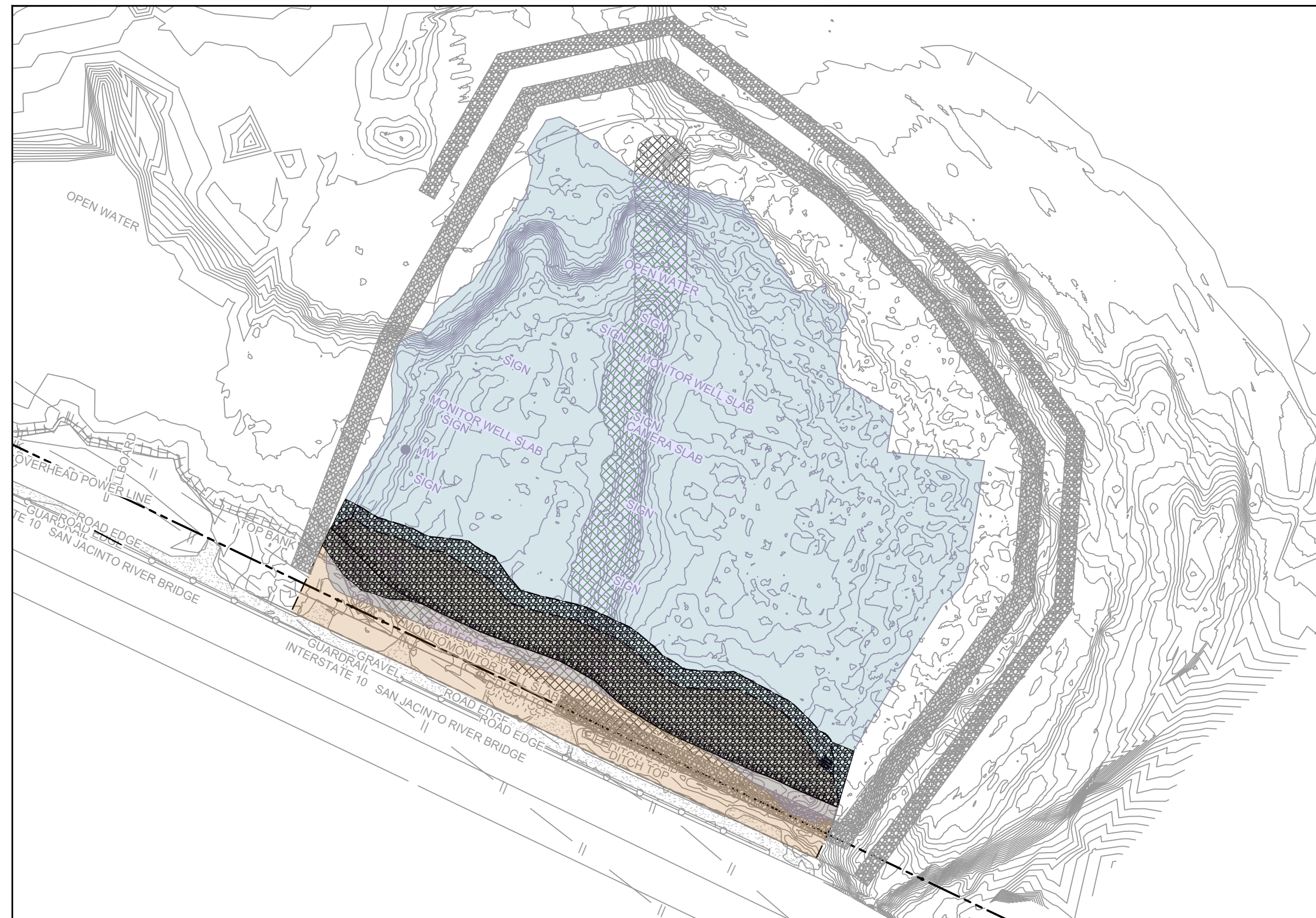
100% EPA SUBMITTAL



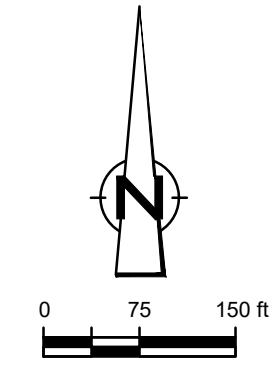
YEAR 5 - EXCAVATION SEASON 4



YEAR 6 - EXCAVATION SEASON 5



YEAR 7 - BMP REMOVAL AND SITE RESTORATION



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LEGEND

---	TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
■	MATERIAL TO BE EXCAVATED
■	EXISTING BERM TO BE EXCAVATED
■	FOR POTENTIAL TESTING AND REUSE
■	EXISTING BERM TO REMAIN
■	CONCRETE
■	GRAVEL
■	AZ26-700 PILE
■	AZ36-700 PILE
■	AZ42-700 PILE
■	PHASE OF EXCAVATION
■	PLANNED IMPROVEMENTS FOR
■	NORTHERN IMPOUNDMENT ACCESS
■	RESTORED AREA
■	INCLUDING TOPSOIL PLACEMENT
■	AND SEEDING TO RIVER LEVEL
■	RAISED BENCH
■	EXTERIOR SCOUR PROTECTION
■	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

6	100% EPA SUBMITTAL	JC	CRH	11/25/2024
5	FOR CLIENT REVIEW	JC	CRH	11/21/2024
4	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting	BS	Design	LL	
Check		Check		
Project	CM	Date	Nov 25, 2024	
Coordinator		Scale	1" = 150'	

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Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702
Title

CONSTRUCTION SEQUENCING
2 OF 2

Sheet No.

C-24
Sheet 25 of 83

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021
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NOTES:
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Client
**SAN JACINTO RIVER
WASTE PITS**

Project
**NORTHERN IMPOUNDMENT
FINAL 100% REMEDIAL DESIGN
HARRIS COUNTY, TEXAS**

7 100% EPA SUBMITTAL JC CRH 11/25/2024

6 FOR CLIENT REVIEW JC CRH 11/21/2024

5 100% EPA SUBMITTAL MW CRH 07/17/2024

No.	Issue	Drawn	Approved	Date

Drawn	JC	Designer	RH
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Drafting Check	BS	Design Check	LL
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Project Coordinator	CM	Date	Nov 25, 2024
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Original Size	Bar is one inch on original size drawing
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Arch D	0 1"
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Project No. 11215702

Title

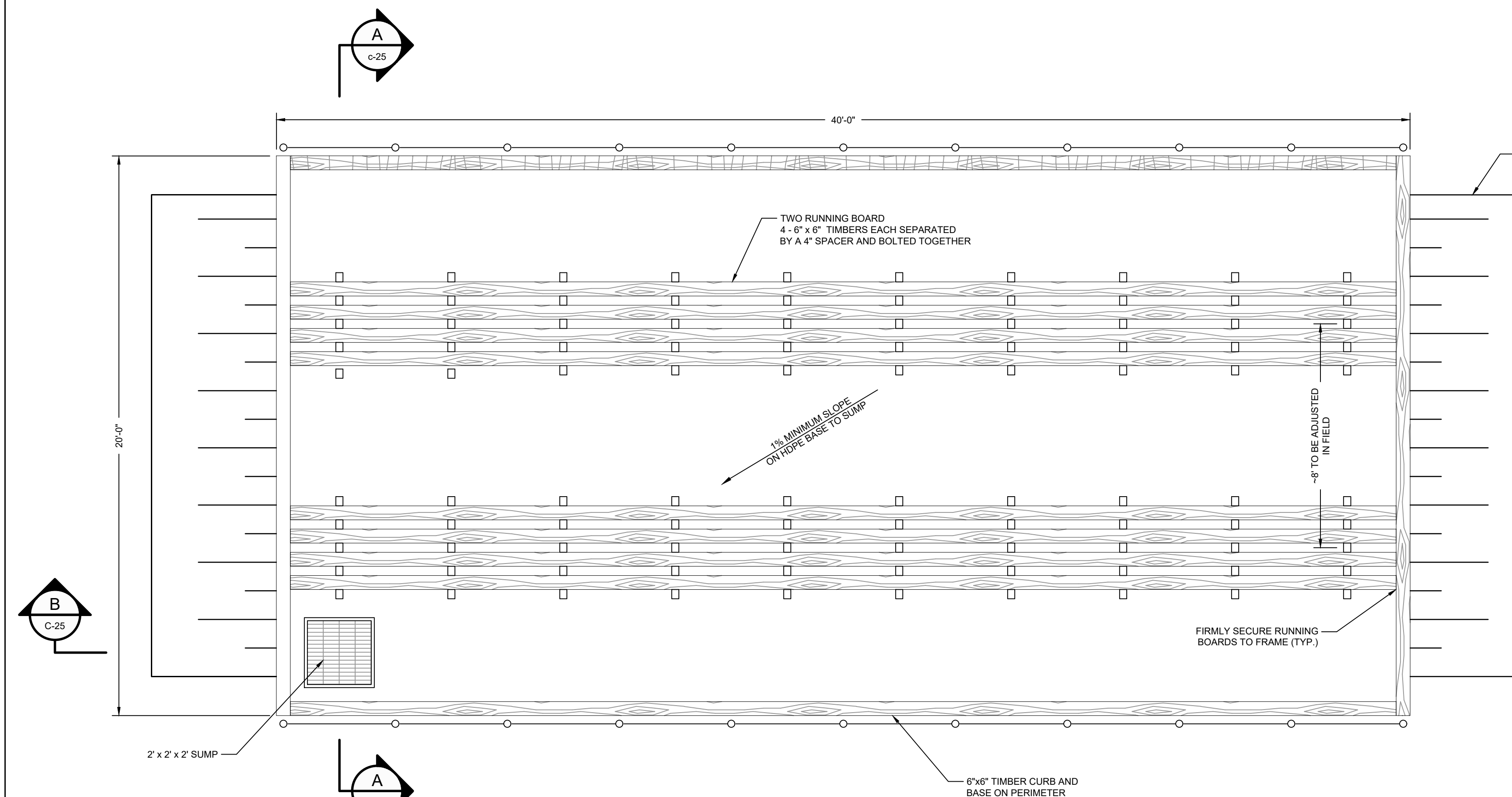
TYPICAL DETAILS

1 OF 3

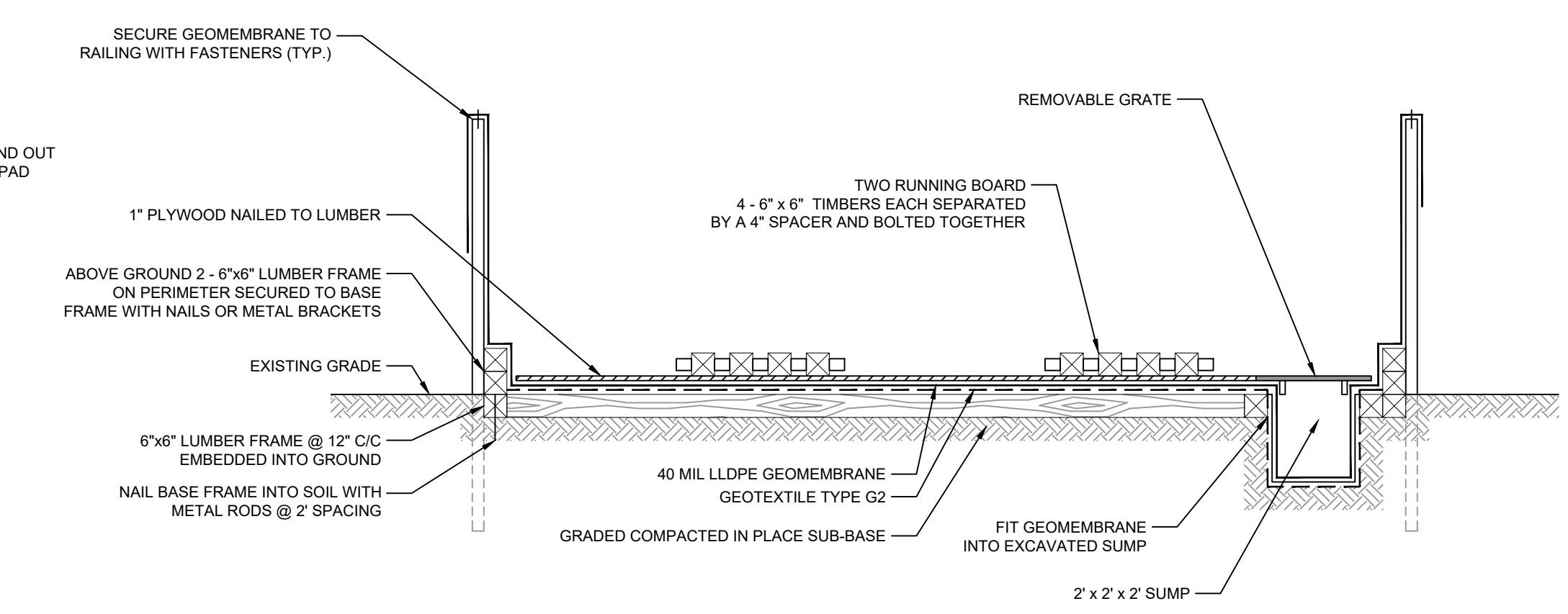
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C-25

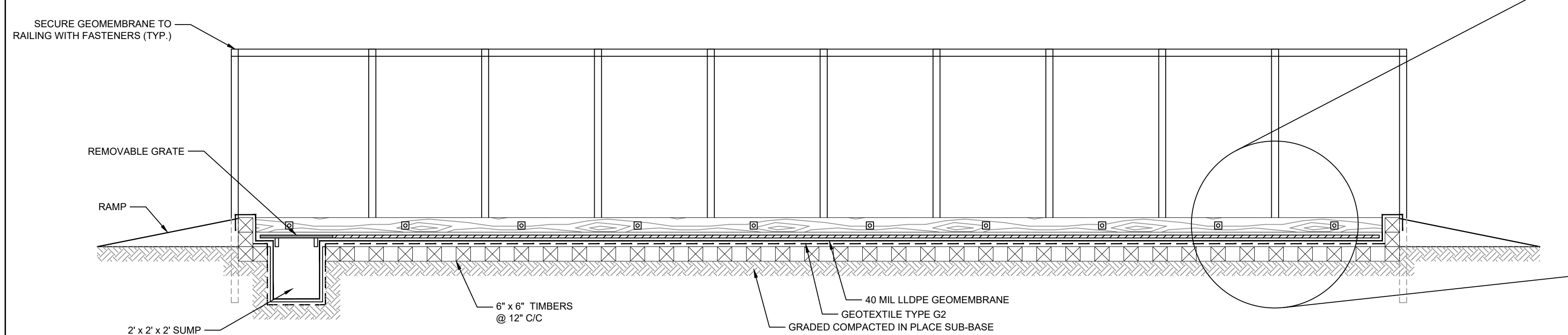
Sheet 26 of 83



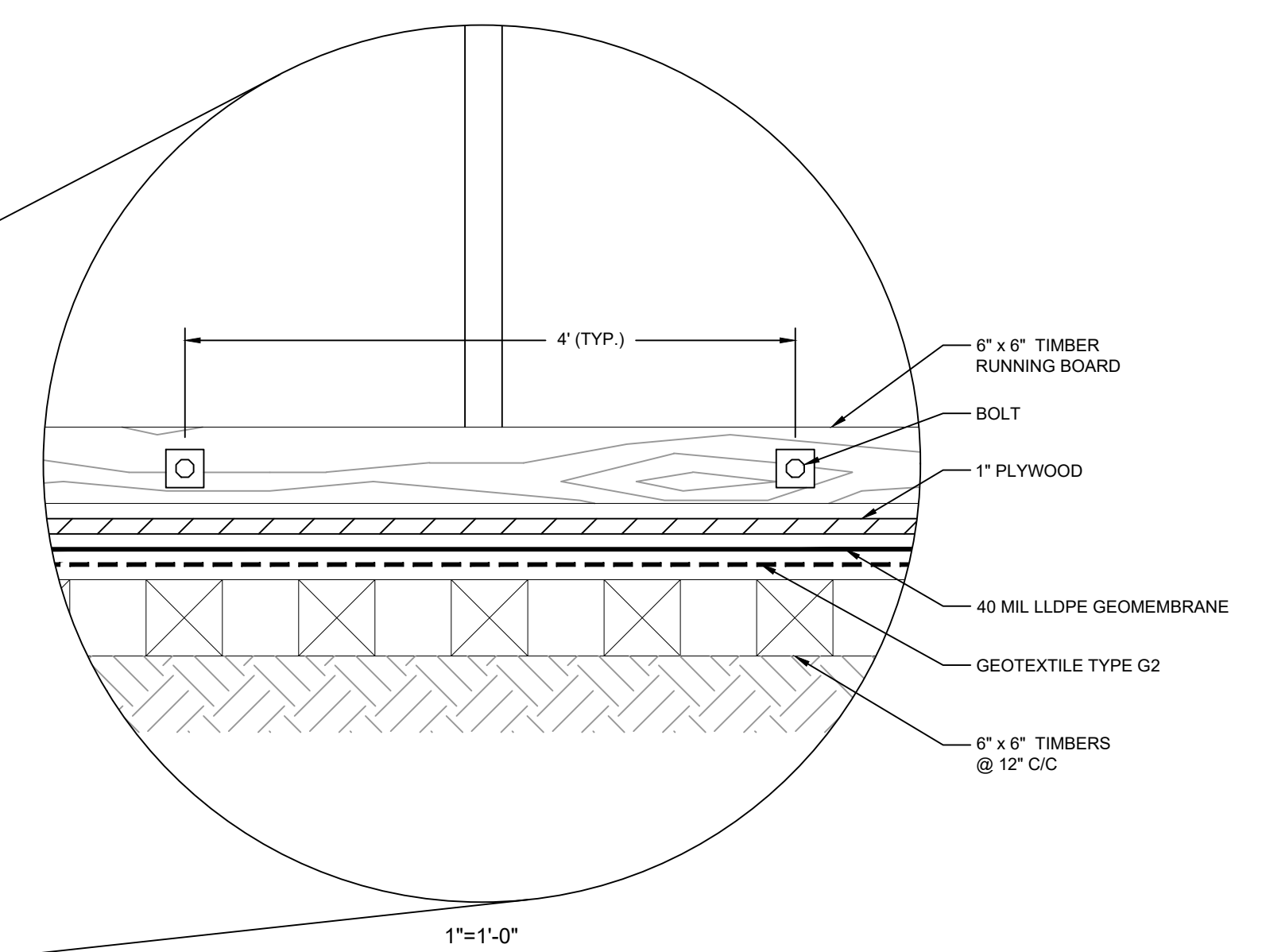
PLAN
1"=3'-0"



SECTION A
1"=3'-0"



SECTION B
1"=3'-0"



1"=1'-0"

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JOB NO. 11215702	FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276	

DETAIL 8 TEMPORARY EQUIPMENT DECONTAMINATION PAD
1"=3'-0" C-03

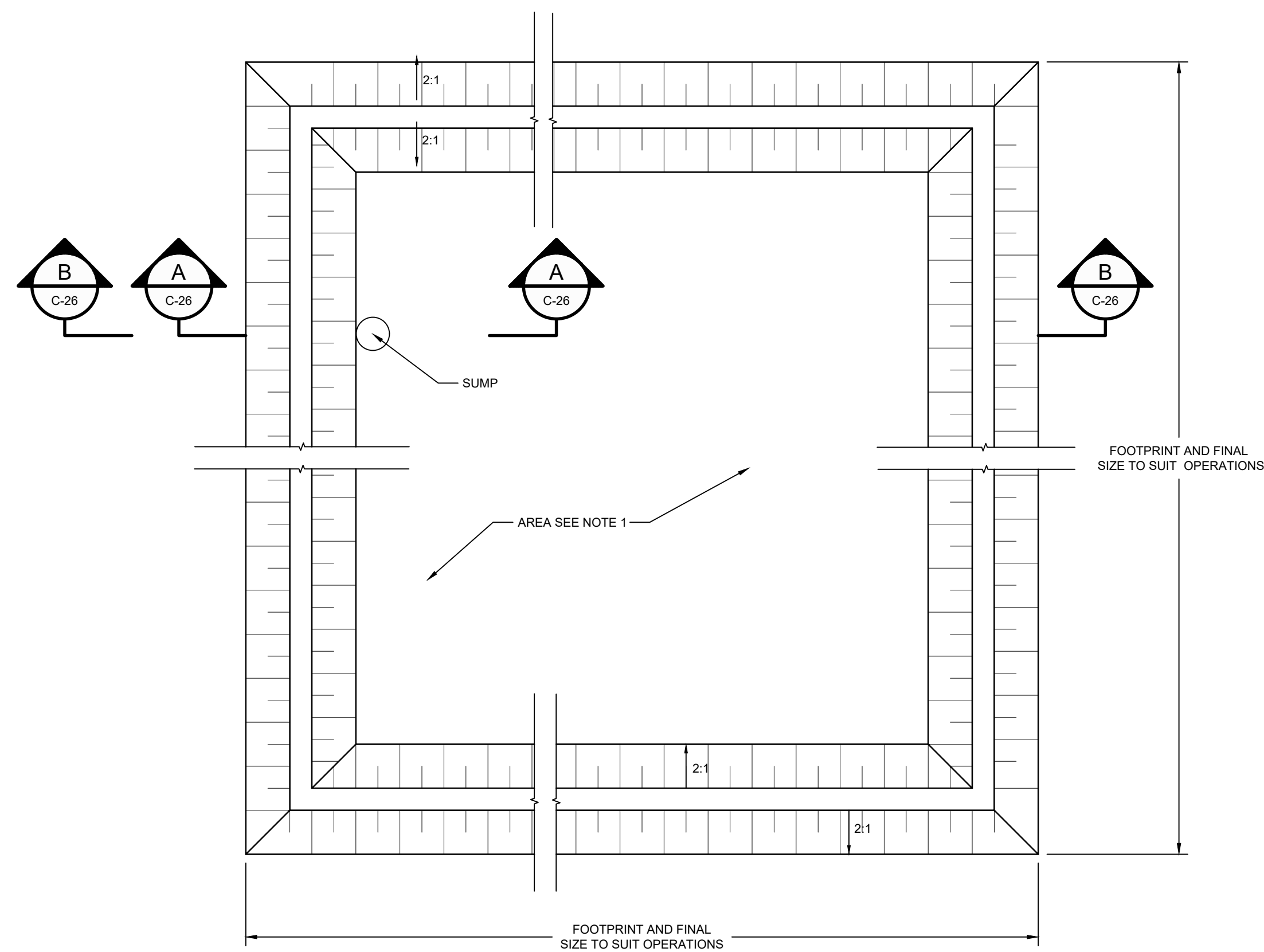
100% EPA SUBMITTAL



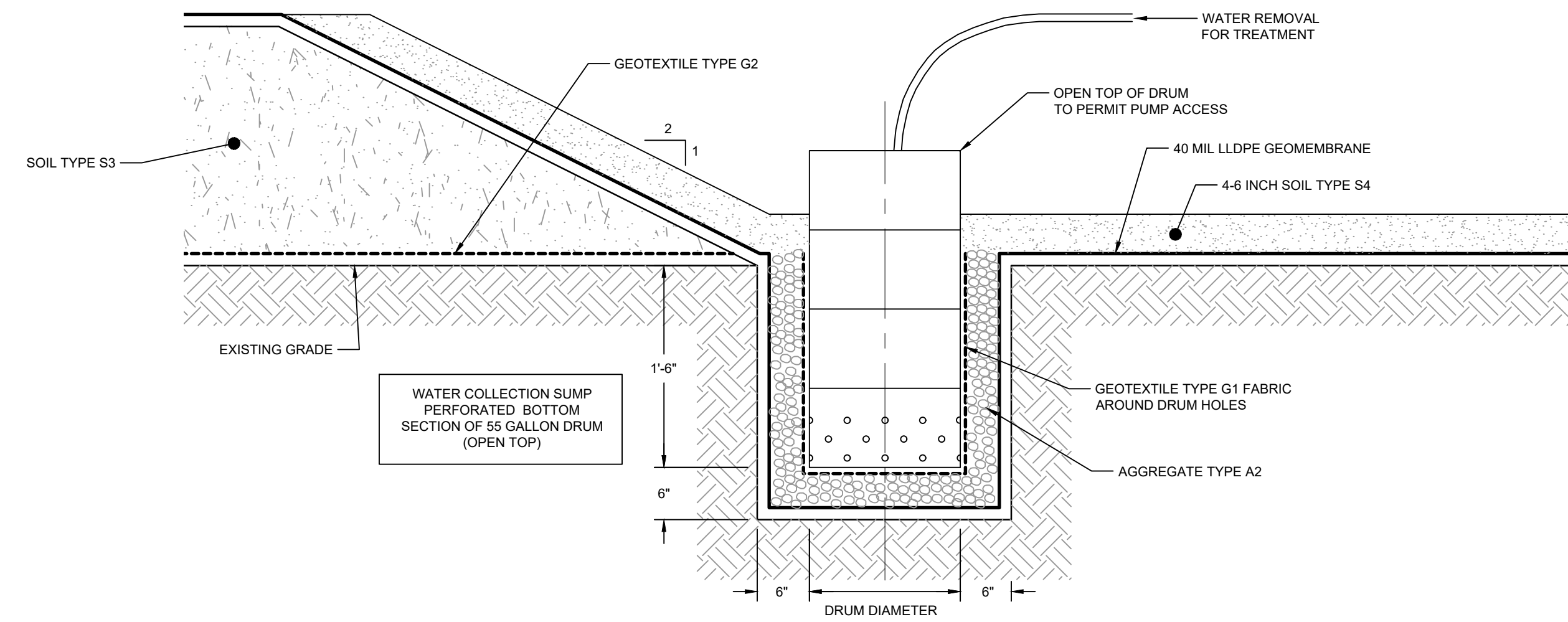
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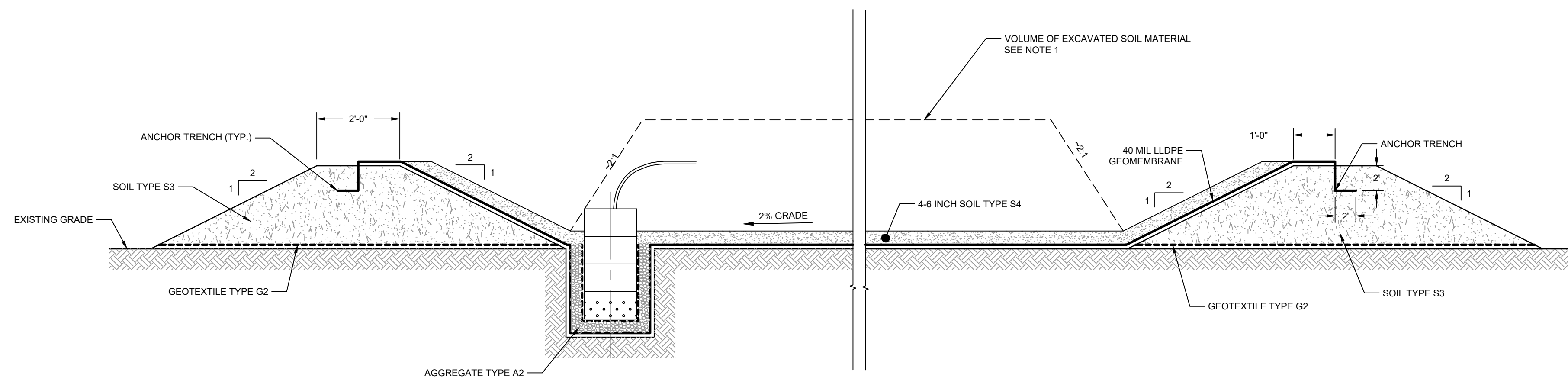


PLAN
N.T.S.



SECTION A SUMP
N.T.S.

NOTES:
1. TYPICAL DETAILS SHOWN AT DEWATERING AND SOLIDIFICATION AREA MAY BE REVISED BY THE CONTRACTOR. CONTRACTOR'S REVISED DETAILS SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION.



SECTION B
N.T.S.

DETAIL 9 TEMPORARY DEWATERING FACILITY
N.T.S.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn JC Designer RH

Drafting Check BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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Original Size Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title **TYPICAL DETAILS 2 OF 3**

Sheet No.

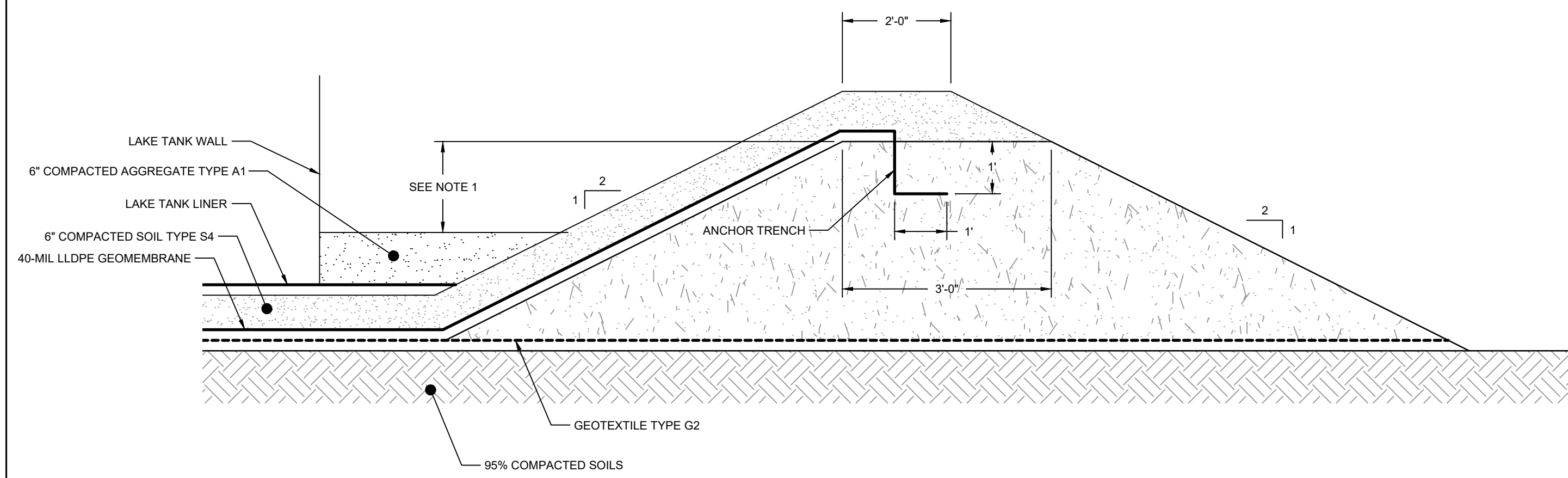
C-26



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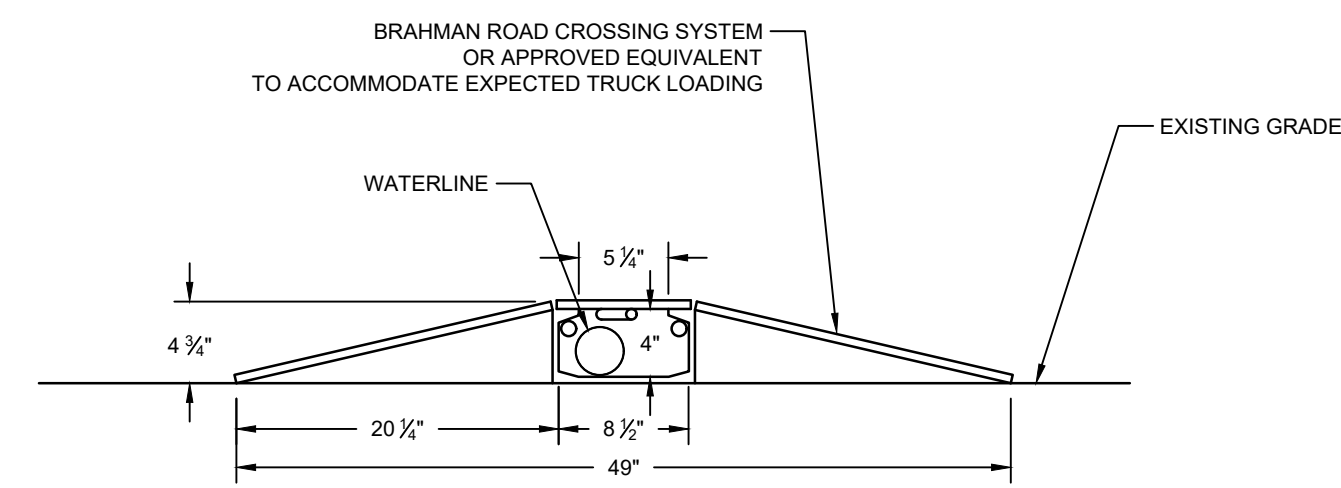


NOTE:

- CONTRACTOR SHALL DESIGN THE HEIGHT AND LENGTHS OF THE BERM SUCH THAT THE AVAILABLE VOLUME OF CONTAINMENT AREA (I.E., NOT OCCUPIED BY ONE INFLUENT TANK AND WTS EQUIPMENT) IS GREATER THAN THE 110% OF THE VOLUME OF THE LARGEST TANK (I.E., 1.33 MILLION GALLONS)

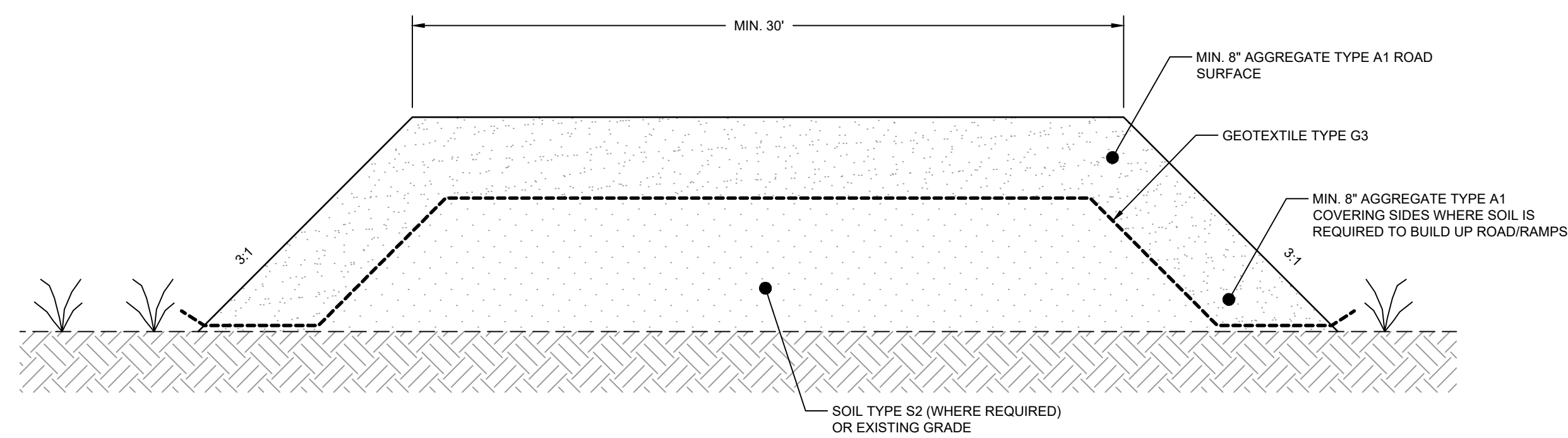
DETAIL 10 WTS SECONDARY CONTAINMENT BERM

N.T.S. C-55, P-011, P-013, P-014



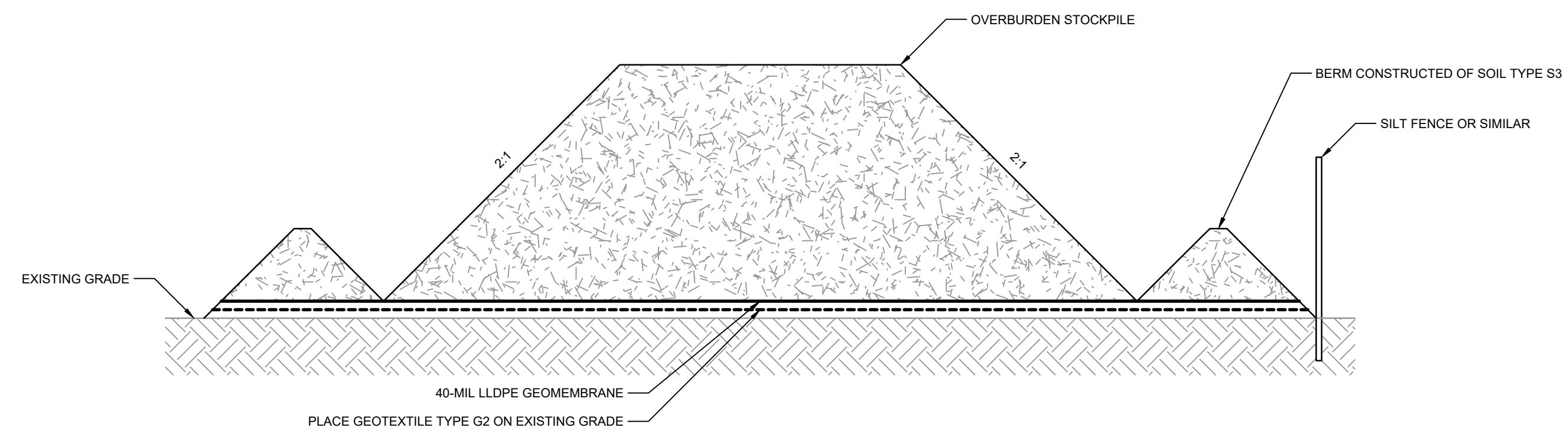
DETAIL 11 TEMPORARY PIPE CROSSING PROTECTION

1"=1'-0"



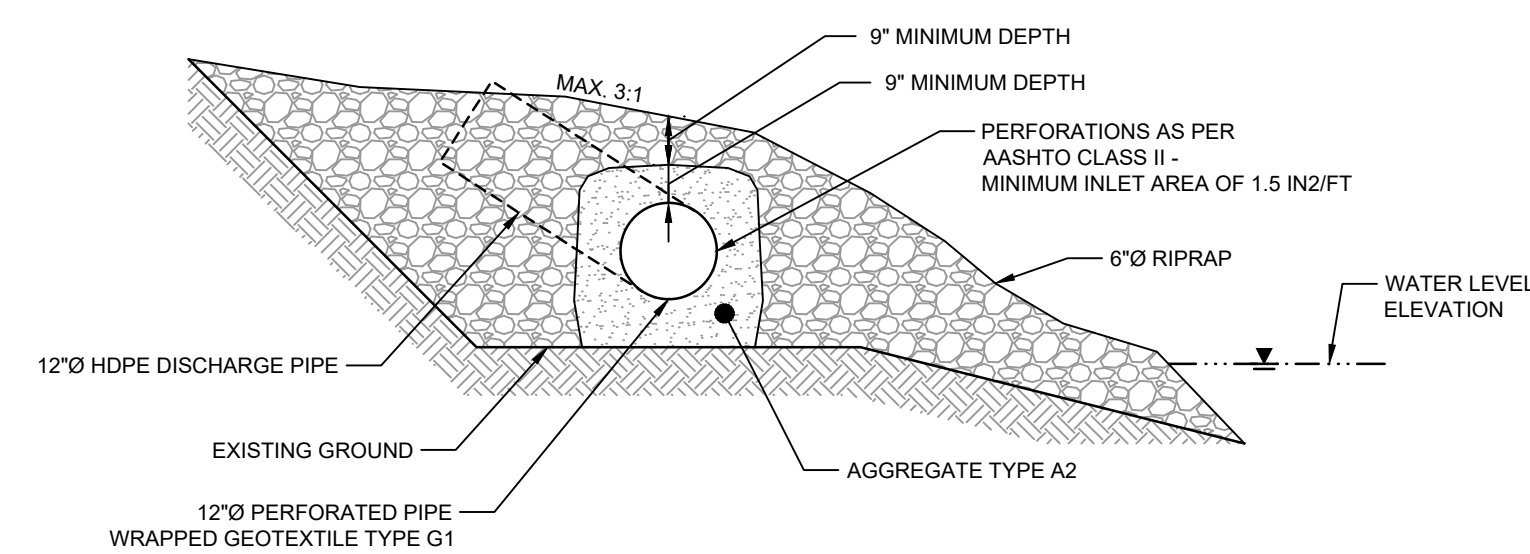
DETAIL 12 TEMPORARY ACCESS ROAD/ RAMPS

N.T.S. C-03



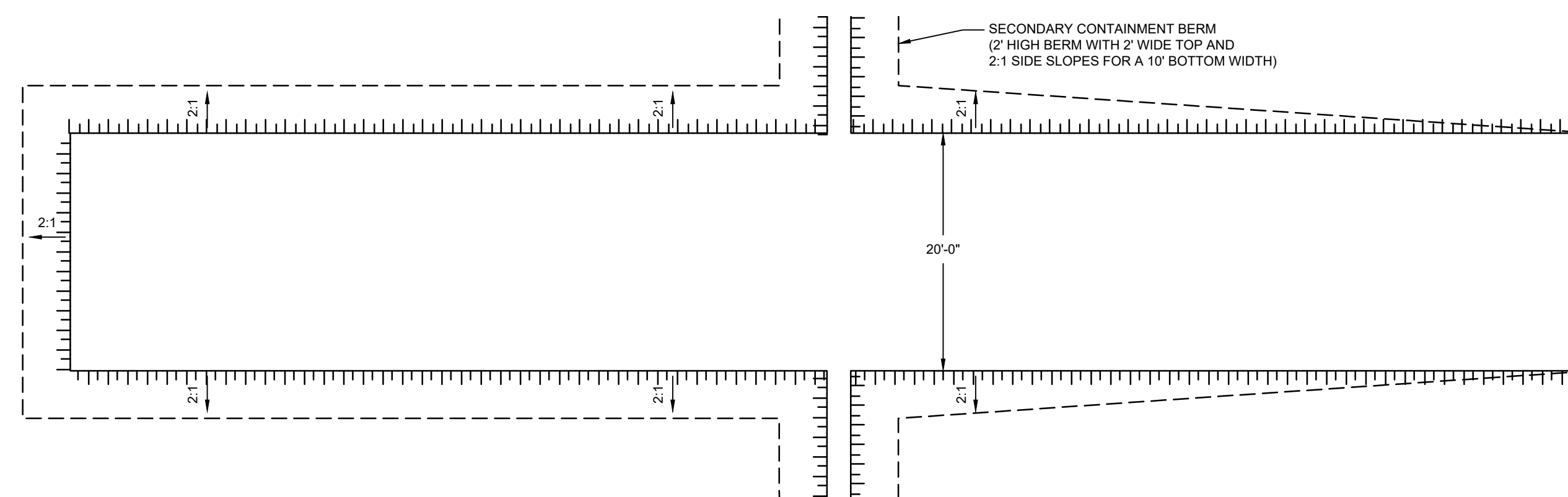
DETAIL 13 TEMPORARY EXCAVATED MATERIAL STOCKPILE

N.T.S. C-03



DETAIL 14 RIVER DISCHARGE DIFFUSER

N.T.S.



DETAIL 15 ACCESS PLATFORM

N.T.S.

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GHD TEXAS PERM REGISTRATION NO. 276

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Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

6	100% EPA SUBMITTAL	JC	CRH	11/25/2024
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No.	Issue	Drawn	Approved	Date
		JC	RH	

Drawn	JC	Designer	RH
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Drafting Check	BS	Design Check	LL
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Project Coordinator	CM	Date	Nov 25, 2024
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Original Size	Arch D	Bar is one inch on original size drawing
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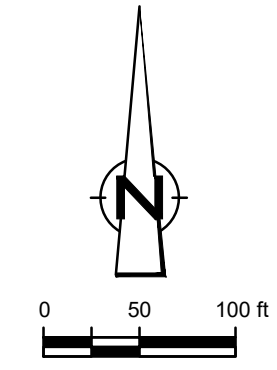
Project No.	11215702
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Title	TYPICAL DETAILS
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3 OF 3

Sheet No.	C-27
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C-27



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LEGEND

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- - -	EXISTING CONTOUR INTERVAL
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- - -	TOP OF BANK
- - -	TOE OF SLOPE
- - -	OVERHEAD ELECTRICAL
- - -	GUARDRAIL
- - -	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
●	WELL
■	MATERIAL TO BE EXCAVATED
■	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
■	EXISTING BERM TO REMAIN
■	CONCRETE
■	GRAVEL
■	ASPHALT
■	A226-700 PILE
■	A236-700 PILE
■	A242-700 PILE
■	RAISED BENCH
■	EXTERIOR SCOUR PROTECTION
■	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
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Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024

Original Size
Arch D
 Bar is one inch on original size drawing
 0 1"

Project No. **11215702**
 Title

PILE WALL LAYOUT PLAN

Sheet No.

C-28
 Sheet 29 of 83

SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
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 GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL



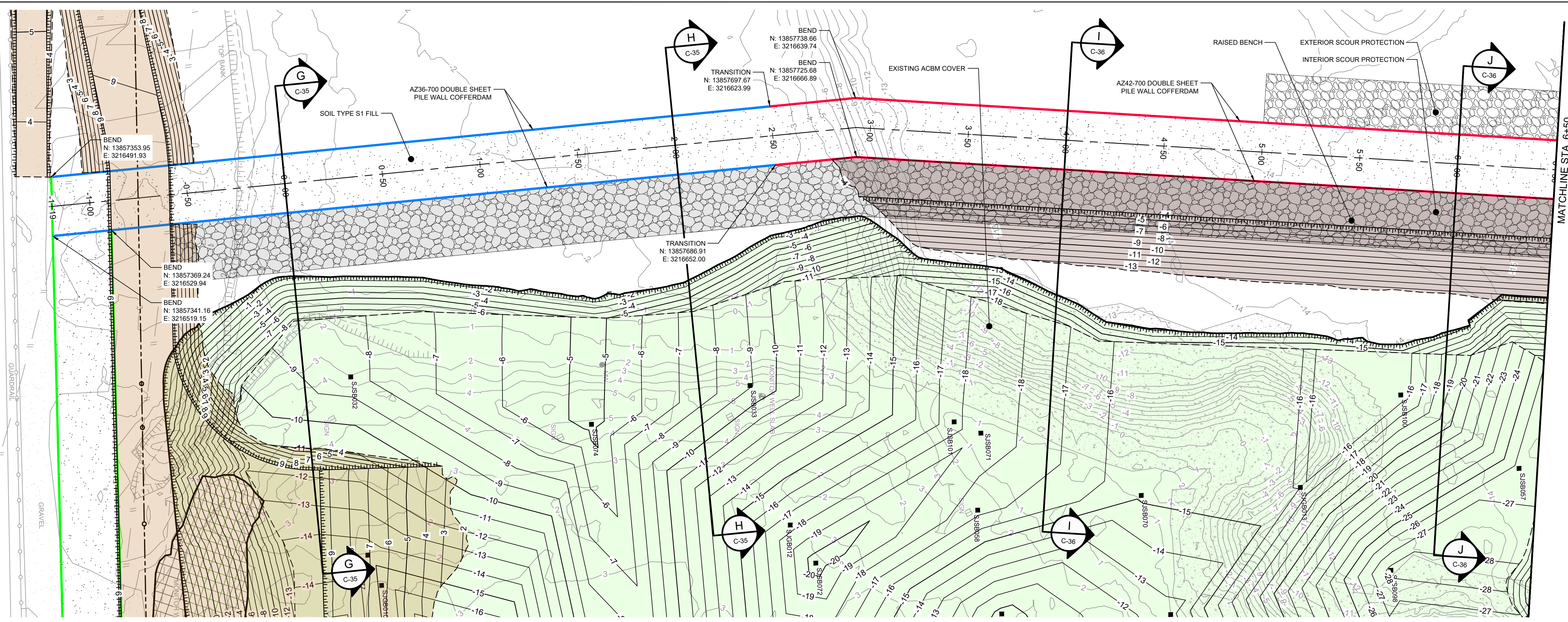
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Baton Rouge Louisiana 70808 USA
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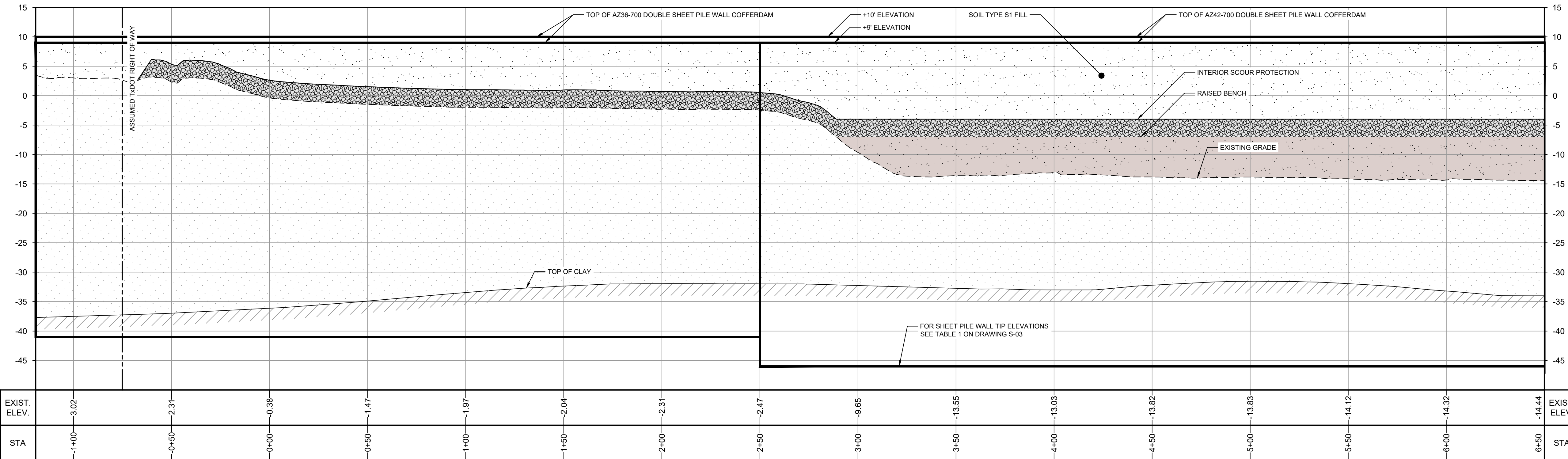
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LEGEND

---	TXDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	L.P.
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ36-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION



PLAN
1" = 30'



PROFILE
HORIZ: 1" = 30'
VERT: 1" = 10'

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC. 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR O&A OCTOBER 2021
TXDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS P.E. REGISTRATION NO. 276

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

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Original Size
Arch D
Bar is one inch on original size drawing
0 1"

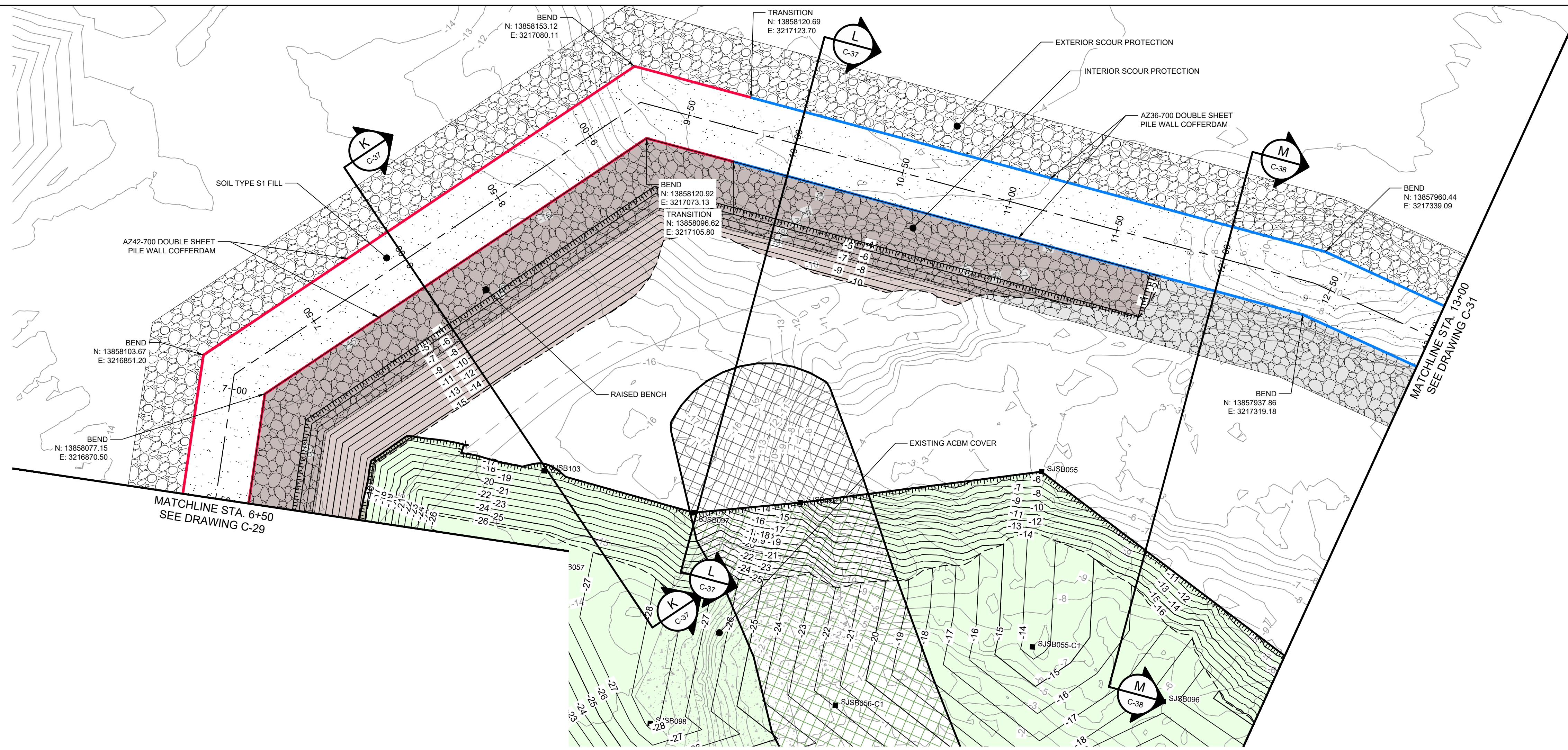
Project No. **11215702**
Title

DOUBLE PILE WALL PLAN AND PROFILE 1 OF 4

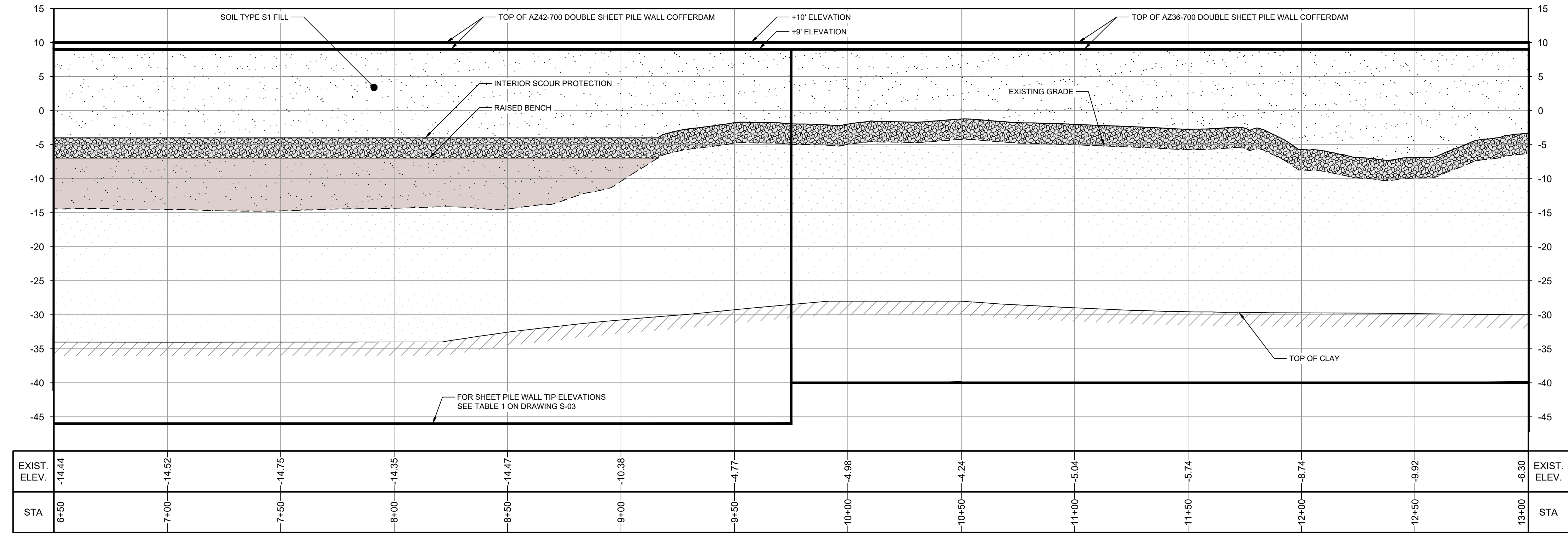
Sheet No.

C-29

100% EPA SUBMITTAL



PLAN
1" = 30'



PROFILE
HORIZ: 1" = 30'
VERT: 1" = 10'

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019. UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL

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GHD
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Baton Rouge Louisiana 70808 USA
T 225 292 9007

STATE OF TEXAS
C. R. HOEKSTRA
147938
LICENSED PROFESSIONAL ENGINEER

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LEGEND

---	TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ36-700 PILE
---	AZ42-700 PILE
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
8	100% EPA SUBMITTAL	JC	CRH	11/25/2024
7	FOR CLIENT REVIEW	JC	CRH	11/21/2024
6	100% EPA SUBMITTAL	MW	CRH	07/17/2024

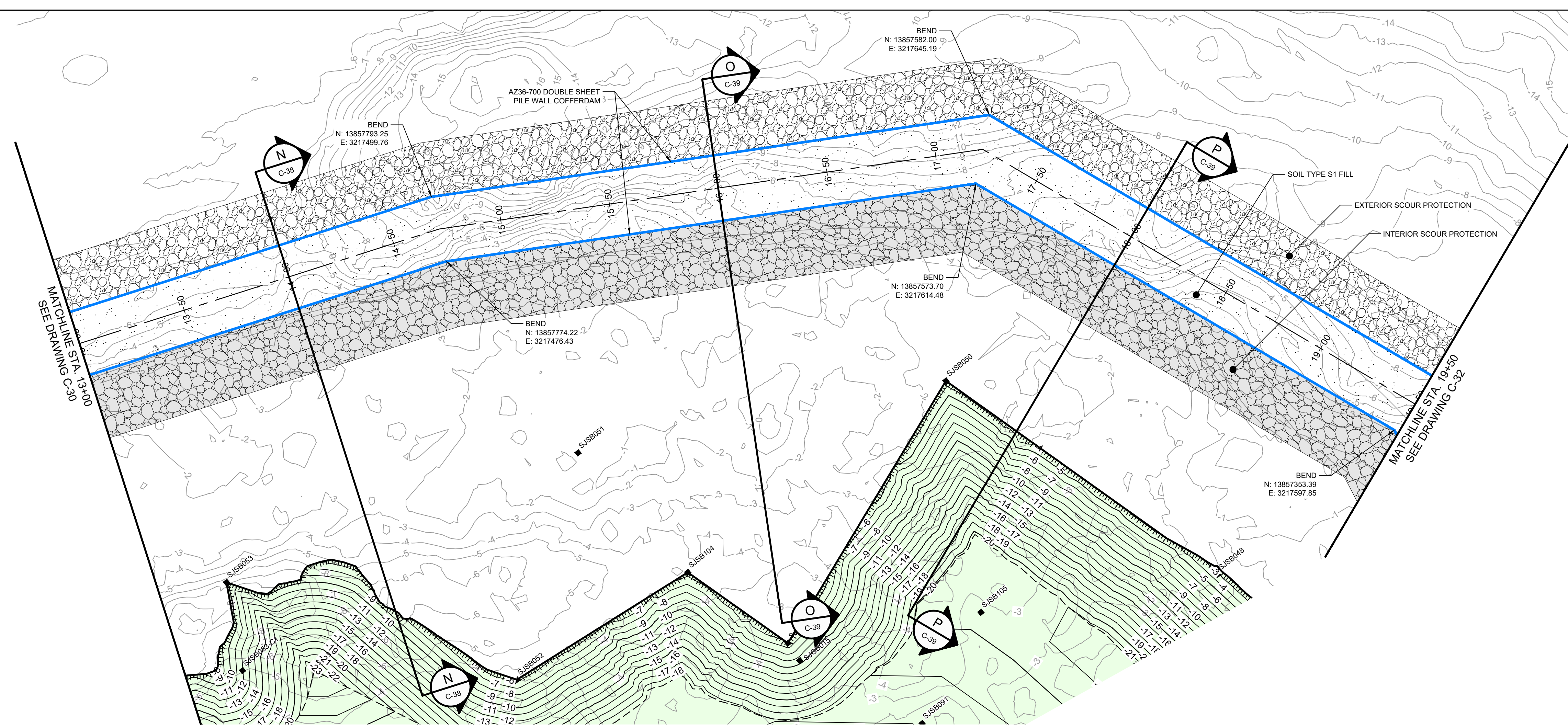
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024

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Original Size: Arch D
Scale: AS SHOWN
Bar is one inch on original size drawing 0 1"

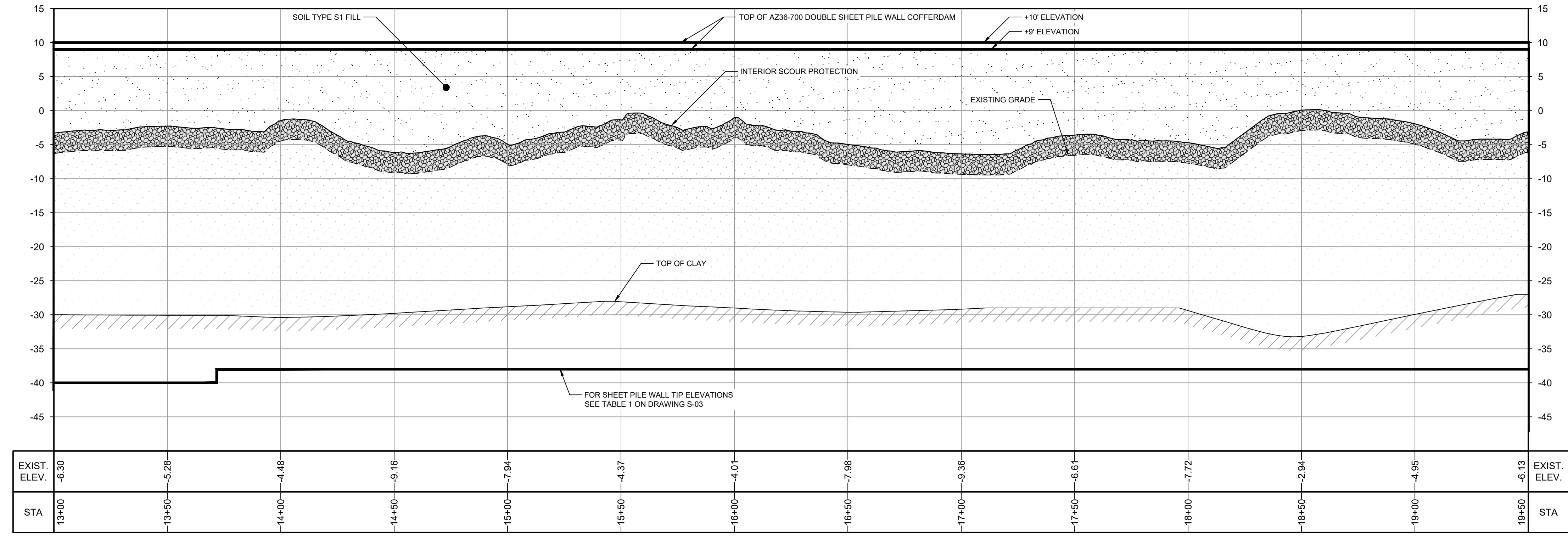
Project No. 11215702
Title

DOUBLE PILE WALL PLAN AND PROFILE 2 OF 4

Sheet No. **C-30**
Sheet 31 of 83



PLAN
1" = 30'



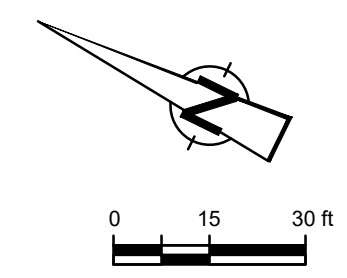
PROFILE
HORIZ: 1" = 30'
VERT: 1" = 10'

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276



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LEGEND

---	TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
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---	LIGHT POLE
---	WELL
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---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ36-700 PILE
---	AZ42-700 PILE
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
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No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

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Scale: **AS SHOWN**
Original Size: Arch D
Bar is one inch on original size drawing
0 1"

Project No. **11215702**
Title

DOUBLE PILE WALL PLAN AND PROFILE
3 OF 4

Sheet No. **C-31**

100% EPA SUBMITTAL

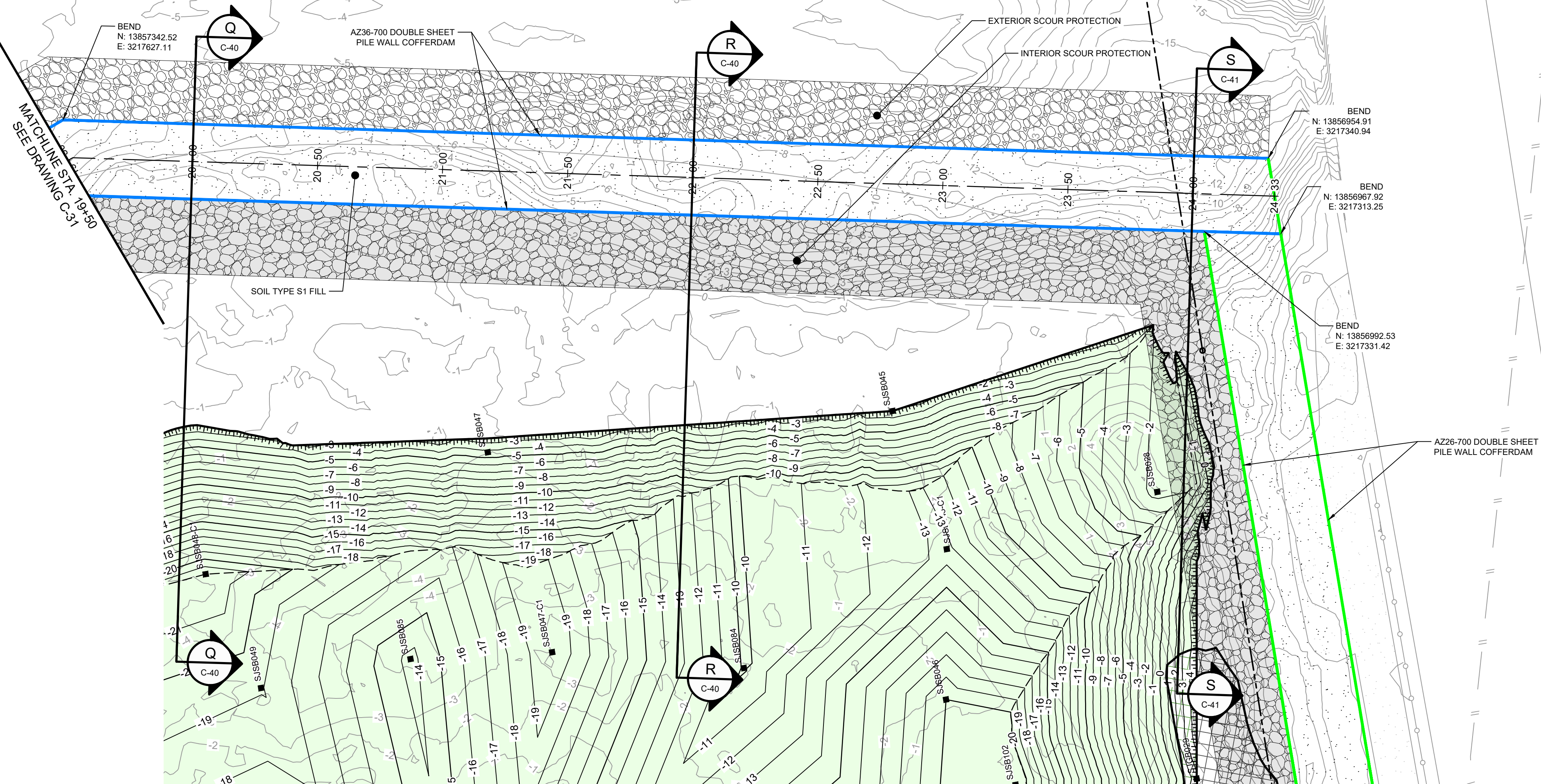


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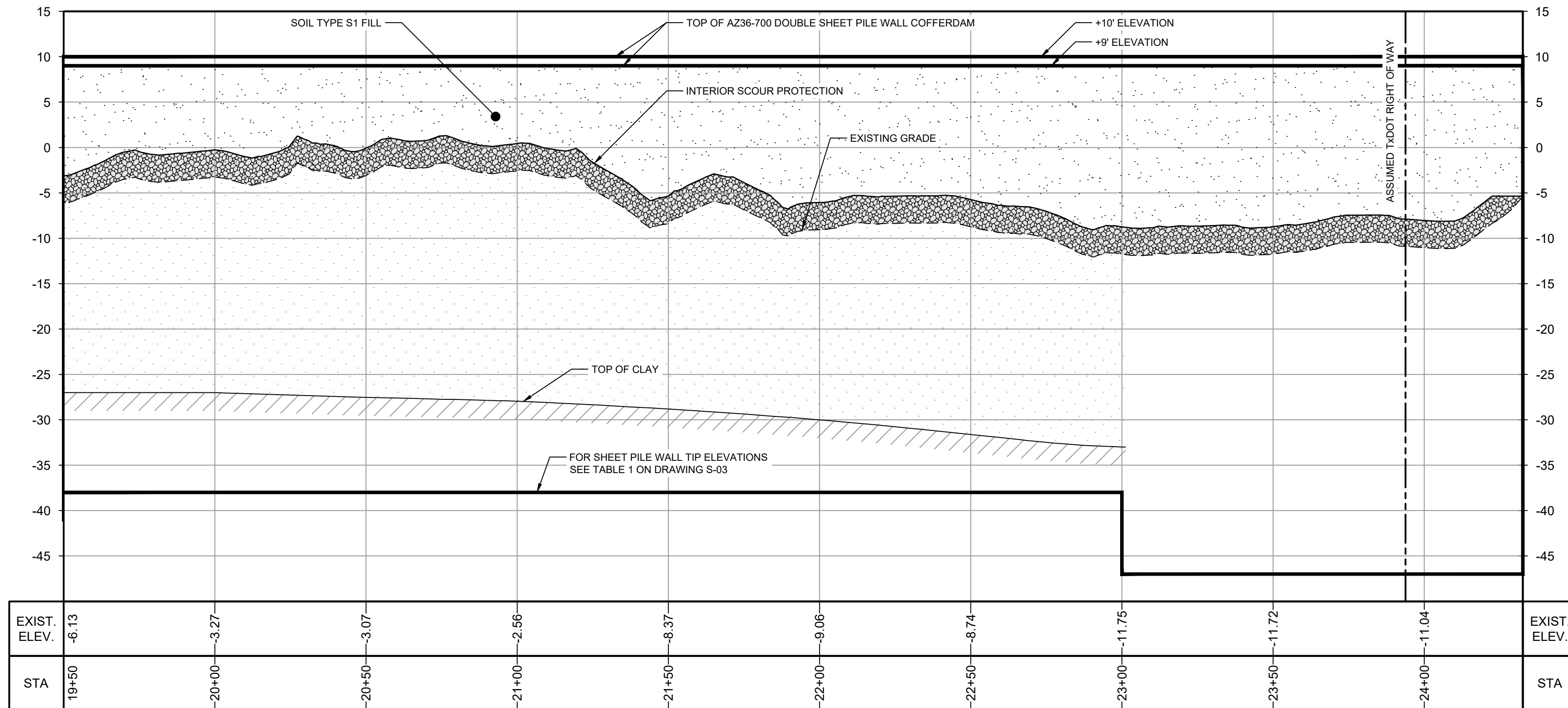


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LEGEND	
	TxDOT RIGHT OF WAY
	TOP OF BANK
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	PIPELINE
	BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	EXISTING BERM TO REMAIN
	CONCRETE
	GRAVEL
	AZ26-700 PILE
	AZ36-700 PILE
	AZ42-700 PILE
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION



PLAN
1" = 30'



PROFILE
HORIZ: 1" = 30'
VERT: 1" = 10'

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR OEA OCTOBER 2021
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

- NOTES:
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS P.E. REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024

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Scale AS SHOWN

Original Size
Arch D
Bar is one inch on original size drawing
0 1"

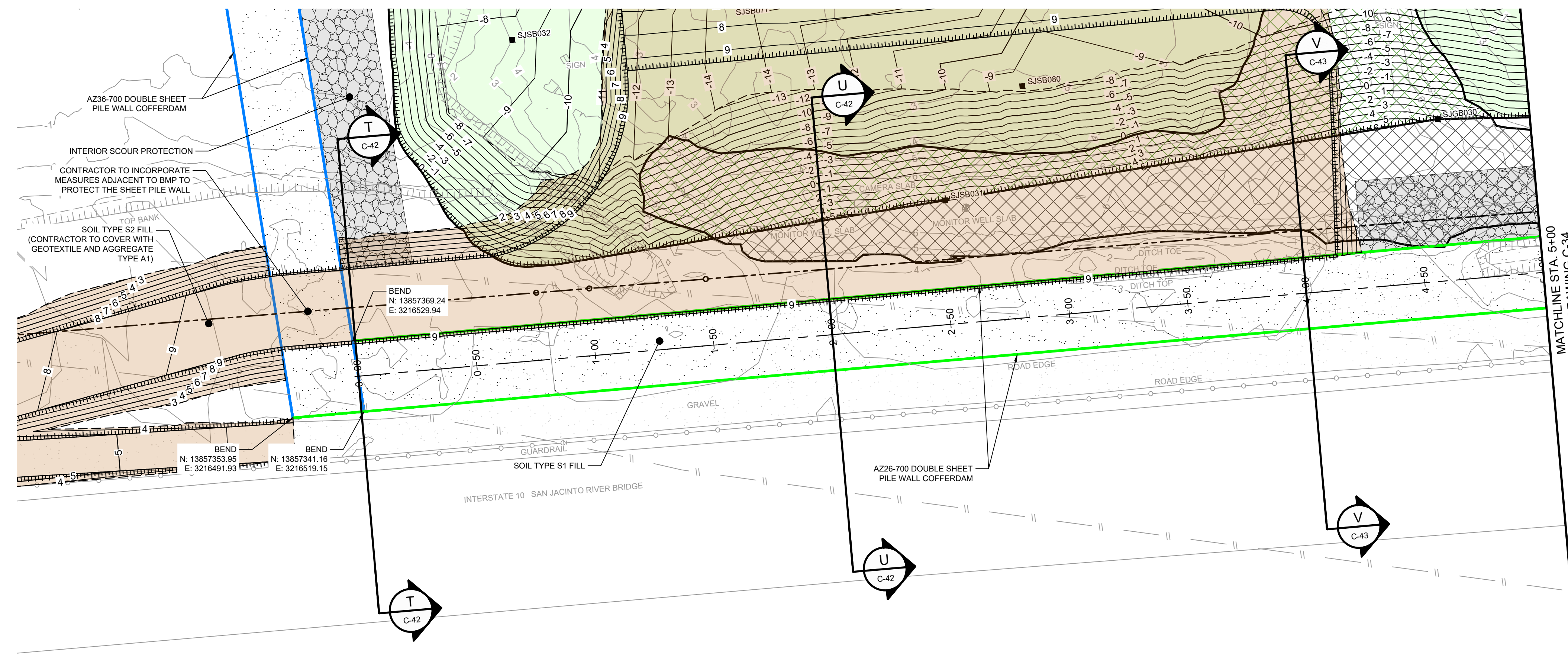
Project No. 11215702

Title

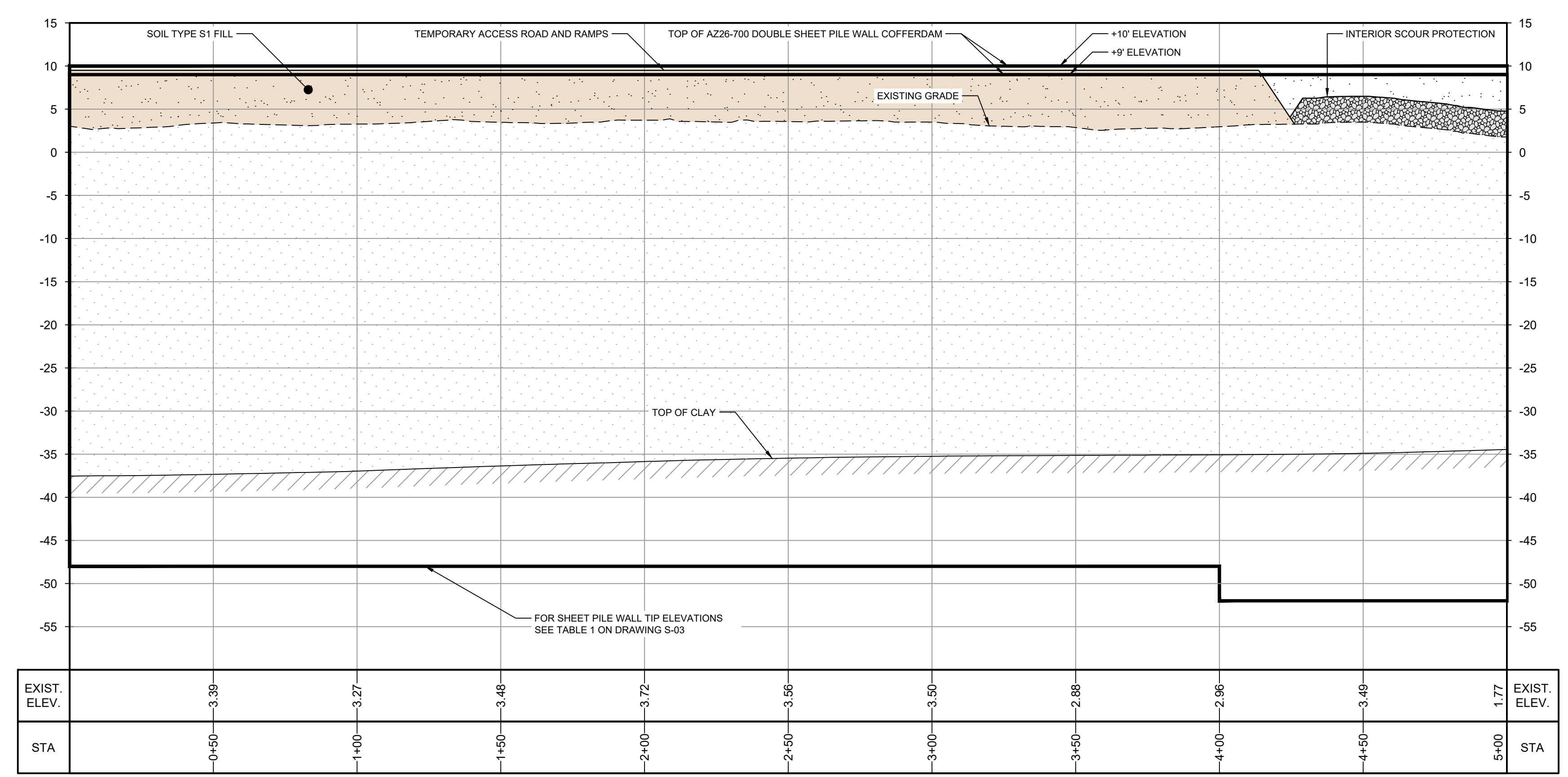
DOUBLE PILE WALL PLAN AND PROFILE 4 OF 4

Sheet No.

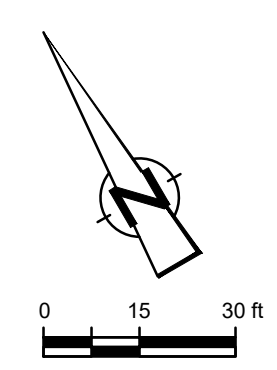
C-32



PLAN
1" = 30'



PROFILE
HORIZ: 1" = 30'
VERT: 1" = 10'



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LEGEND

- TxDOT RIGHT OF WAY
- - - TORA CAP PERIMETER
- - - EXISTING CONTOUR INTERVAL
- - - FENCELINE
- - - SHORELINE
- - - TOP OF BANK
- - - TOE OF SLOPE
- - - OVERHEAD ELECTRICAL
- - - GUARDRAIL
- - - PIPELINE
- BORING LOCATION
- MONITORING WELL
- POWER POLE
- LIGHT POLE
- WELL
- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO BE EXCAVATED
- FOR POTENTIAL TESTING AND REUSE
- EXISTING BERM TO REMAIN
- GRAVEL
- AZ26-700 PILE
- AZ36-700 PILE
- AZ42-700 PILE
- PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
- INTERIOR SCOUR PROTECTION

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

Scale: **AS SHOWN**
Original Size: Arch D
Bar is one inch on original size drawing

Project No. **11215702**
Title

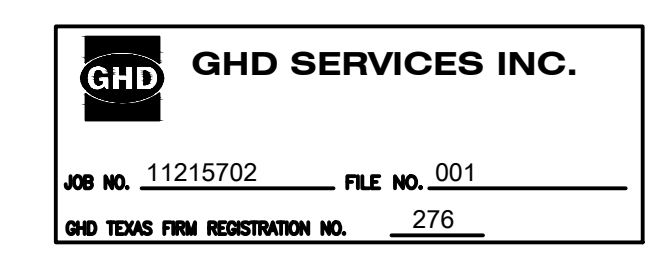
PILE WALL PLAN AND PROFILE 1 OF 2

Sheet No. **C-33**

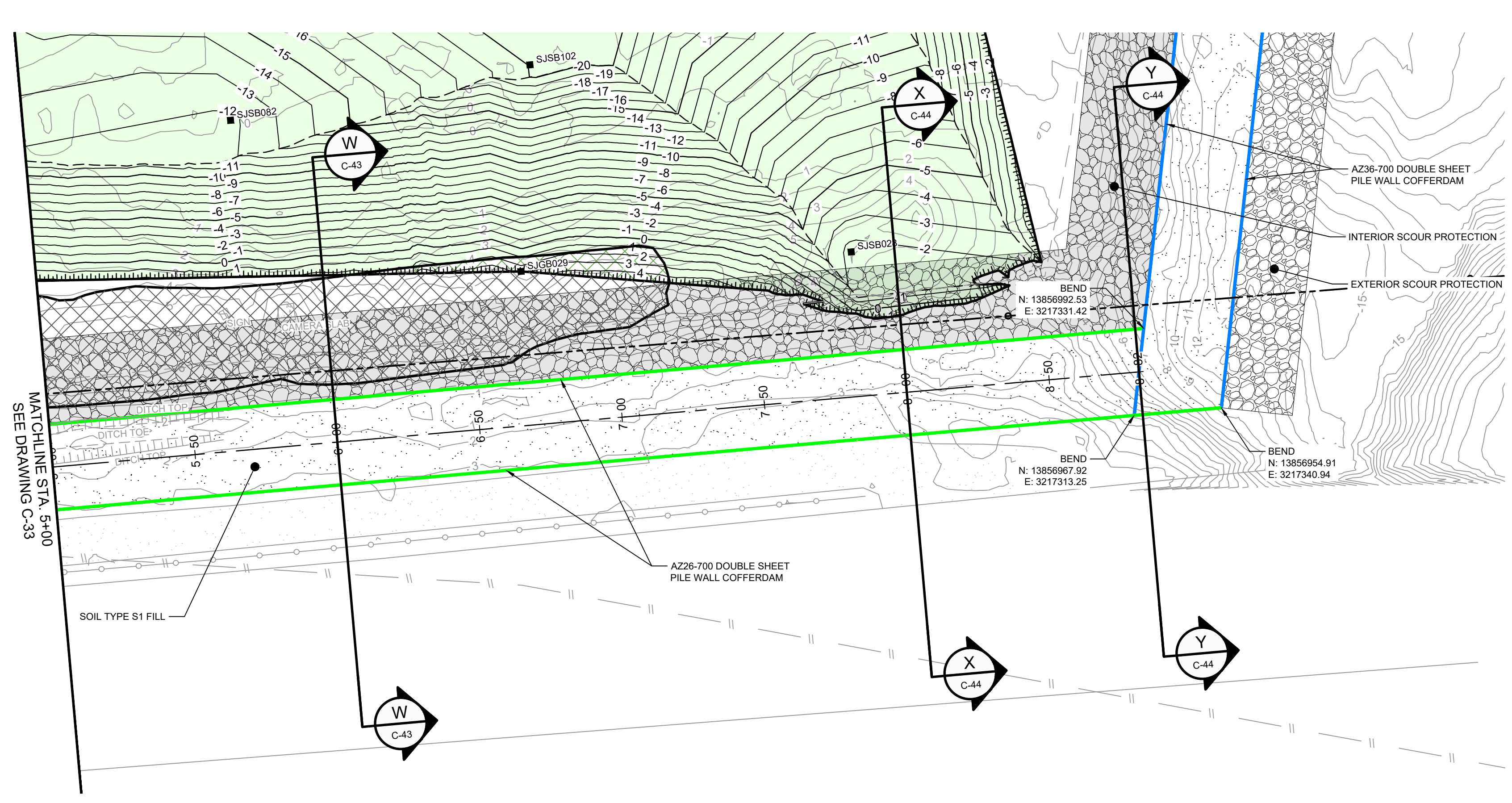
SOURCE:
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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021
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NOTES:
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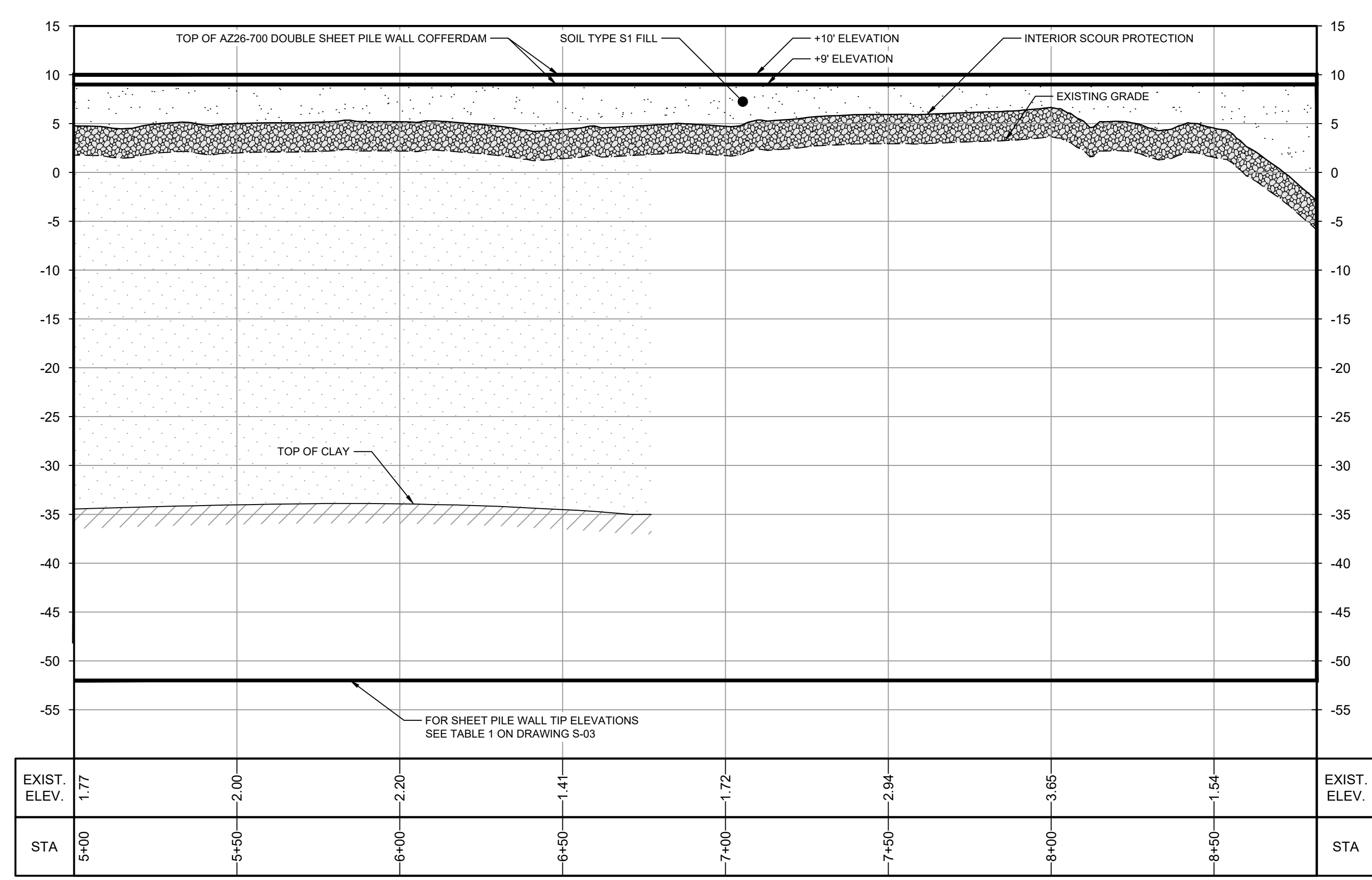
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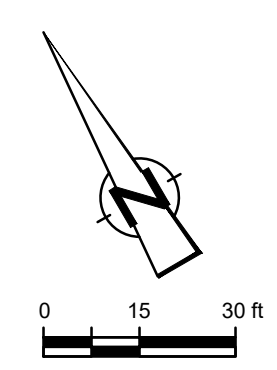
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PLAN
1" = 30'



PROFILE
HORIZ: 1" = 30'
VERT: 1" = 10'



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LEGEND

---	TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
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---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
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---	AZ26-700 PILE
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---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
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---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

7	100% EPA SUBMITTAL	JC	CRH	11/25/2024
6	FOR CLIENT REVIEW	JC	CRH	11/21/2024
5	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	
		Scale	AS SHOWN	

Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. **11215702**
Title

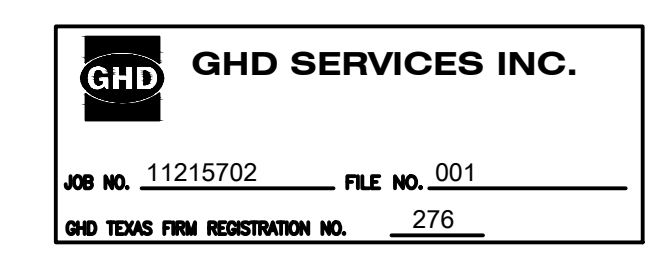
PILE WALL PLAN AND PROFILE 2 OF 2

Sheet No.
C-34

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR OEA OCTOBER 2021
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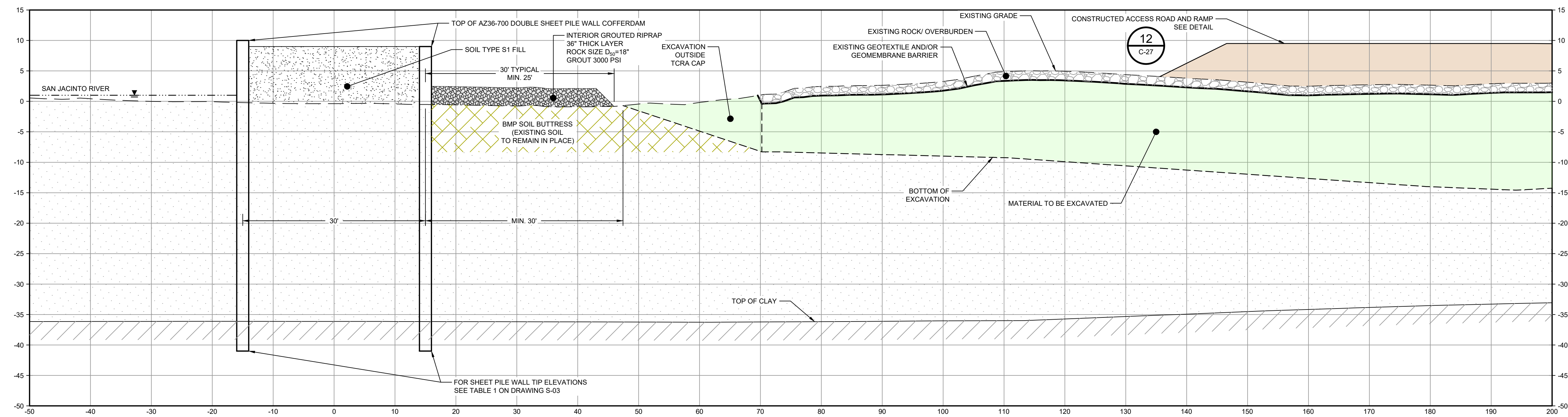
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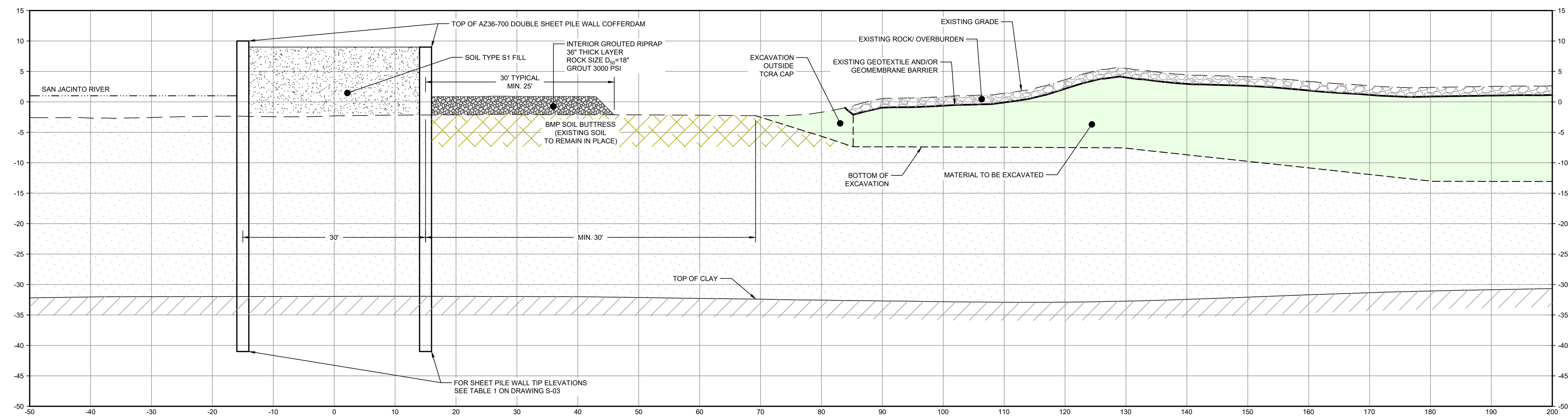
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS (EXISTING SOIL TO REMAIN IN PLACE)
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
	INTERIOR SCOUR PROTECTION



SECTION G STA. 0+00.00
SCALE: 1"=10'
C-29



SECTION H STA. 2+00.00
SCALE: 1"=10'
C-29

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	

Drafting Check	BS	Design Check	LL
----------------	----	--------------	----

Project Coordinator	CM	Date	Nov 25, 2024
---------------------	----	------	--------------

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Scale 1" = 10'

Original Size	Arch D	Bar is one inch on original size drawing
---------------	--------	--

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 1 OF 7

Sheet No.

C-35

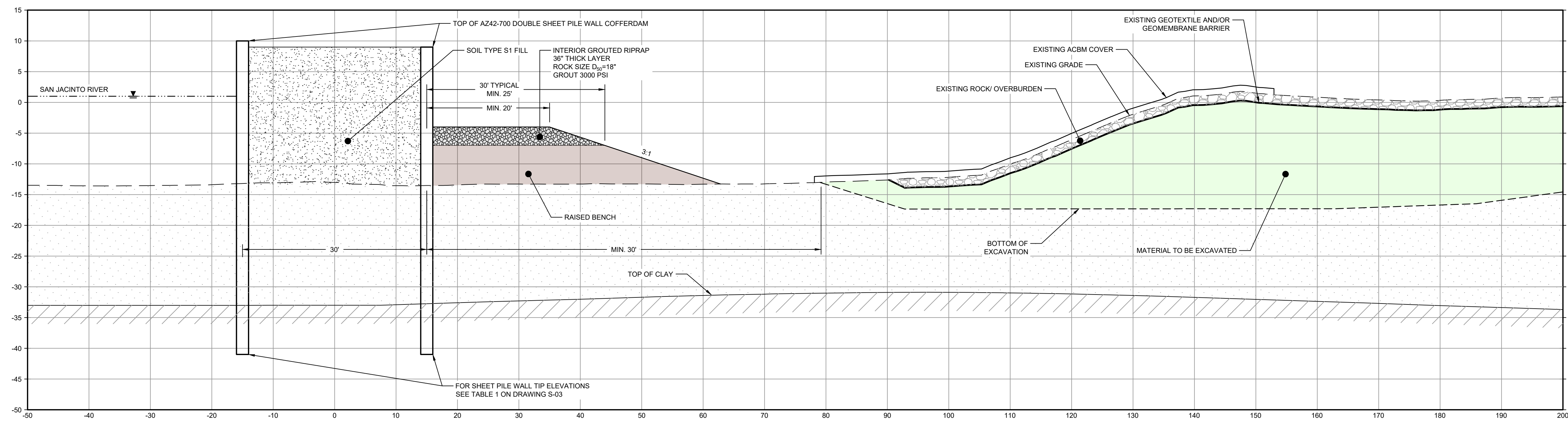


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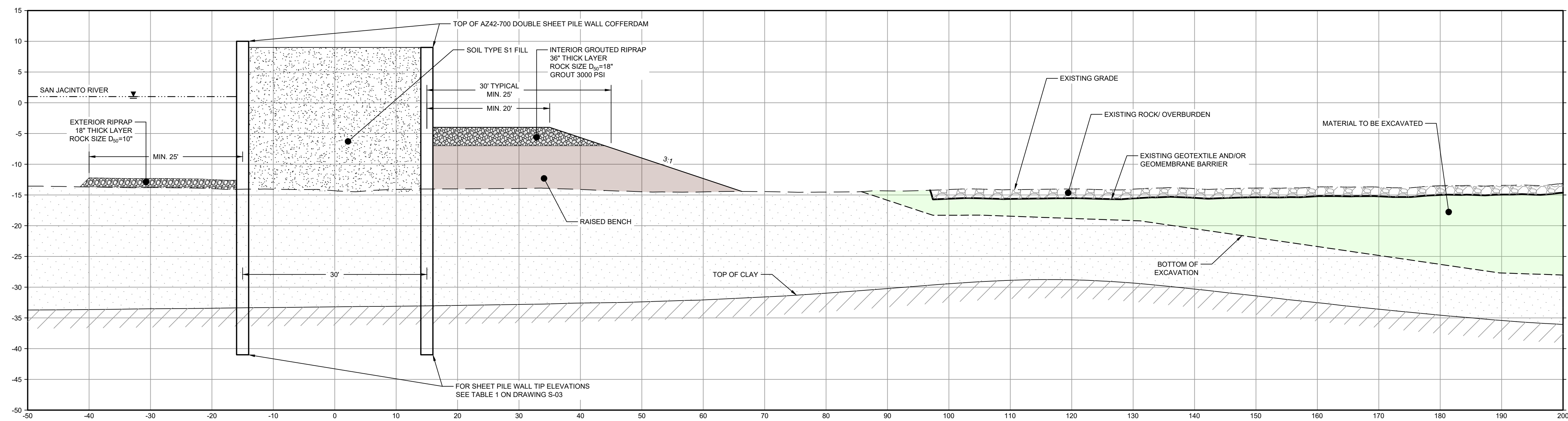


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	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION



SECTION I STA. 4+00.00
SCALE: 1"=10'
C-29



SECTION J STA. 6+00.00
SCALE: 1"=10'
C-29

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 - FRP BARRIER WALL NOT SHOWN FOR CLARITY.

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100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	100% EPA SUBMITTAL	JC	CRH	11/25/2024
5	FOR CLIENT REVIEW	JC	CRH	11/21/2024
4	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
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Drafting Check	BS	Design Check	LL
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Project Coordinator	CM	Date	Nov 25, 2024
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Scale 1" = 10'

Original Size	Arch D	Bar is one inch on original size drawing
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Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 2 OF 7

Sheet No.

C-36



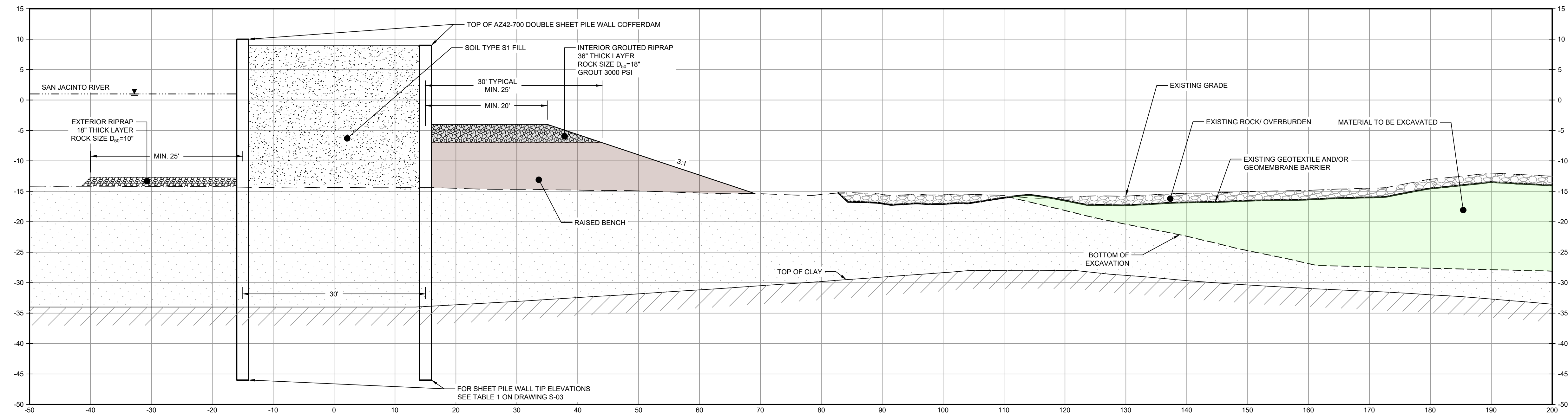
GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
T 225 292 9007



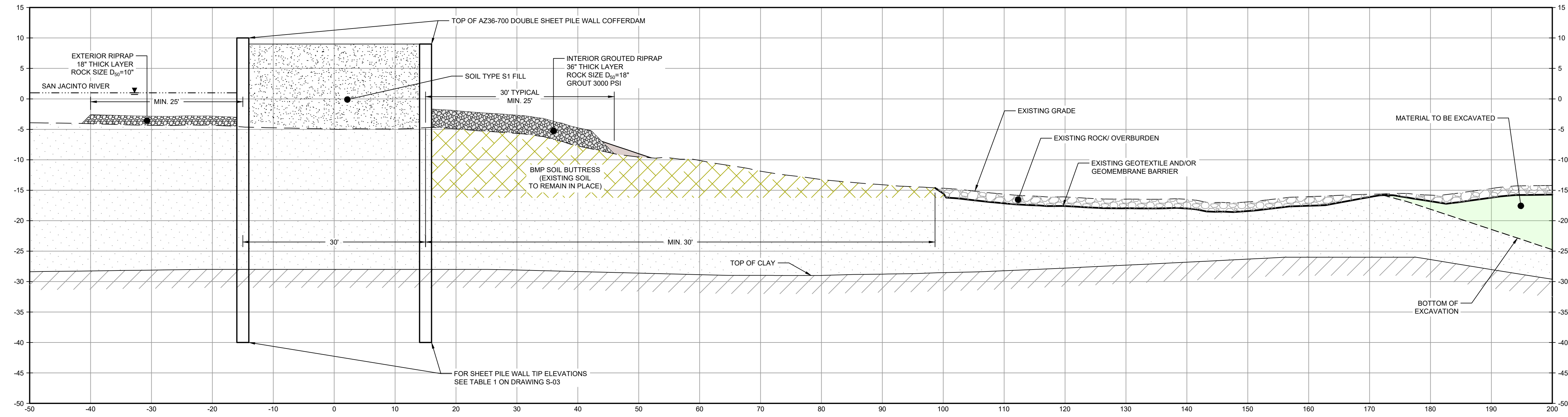
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	RAISED BENCH
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION



SECTION K STA. 8+00.00
SCALE: 1"=10'
C-30



SECTION L STA. 10+00.00
SCALE: 1"=10'
C-30

- NOTES:
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

6	100% EPA SUBMITTAL	JC	CRH	11/25/2024
5	FOR CLIENT REVIEW	JC	CRH	11/21/2024
4	100% EPA SUBMITTAL	MW	CRH	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	Nov 25, 2024
Original Size	Arch D	Scale	1" = 10'

Project No. 11215702
Title

DOUBLE PILE WALL SECTIONS
3 OF 7

Sheet No.
C-37

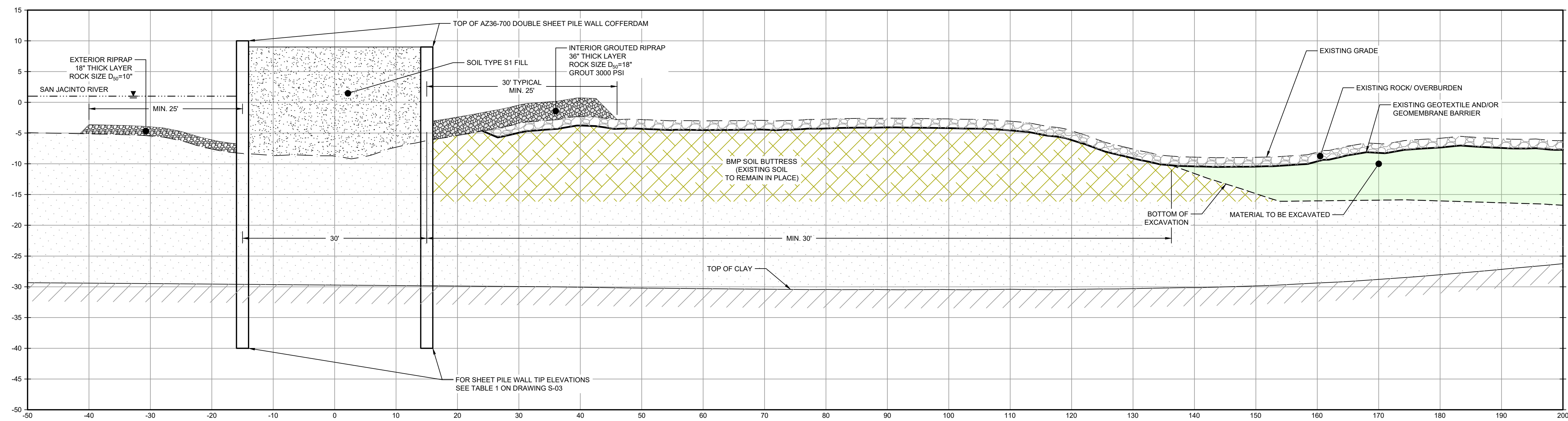


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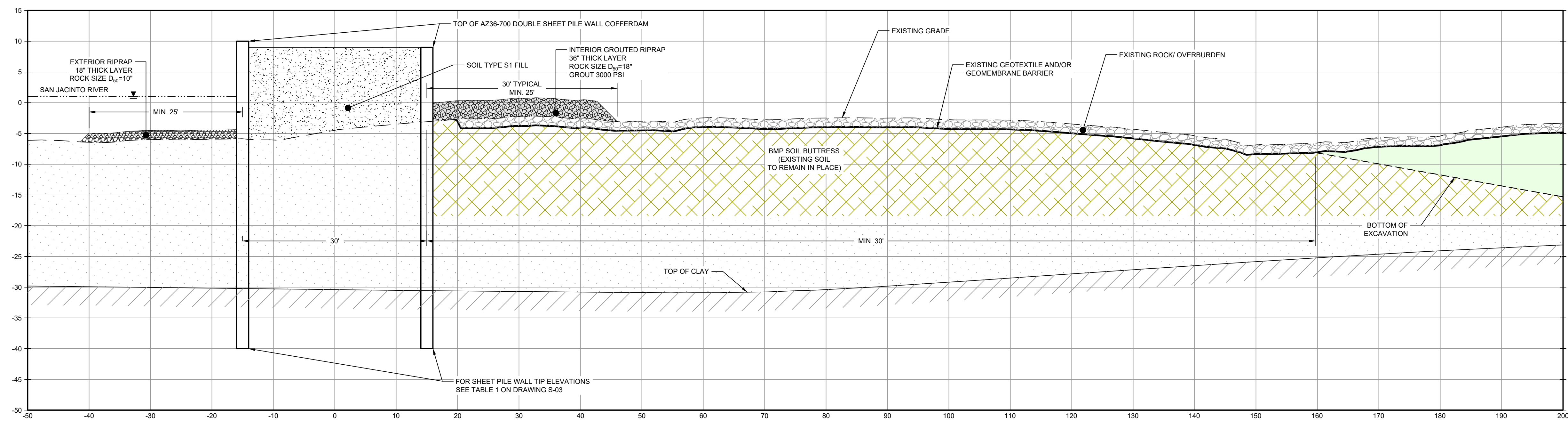


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LEGEND	
	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS (EXISTING SOIL TO REMAIN IN PLACE)
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION



SECTION **M** STA. 12+00.00
SCALE: 1"=10'
C-30



SECTION **N** STA. 14+00.00
SCALE: 1"=10'
C-31

- NOTES:
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
-----	-------	-------	----------	------

Drawn	JC	Designer	RH
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Drafting Check	BS	Design Check	LL
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Project Coordinator	CM	Date	Nov 25, 2024
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Scale 1" = 10'

Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 4 OF 7

Sheet No.

C-38

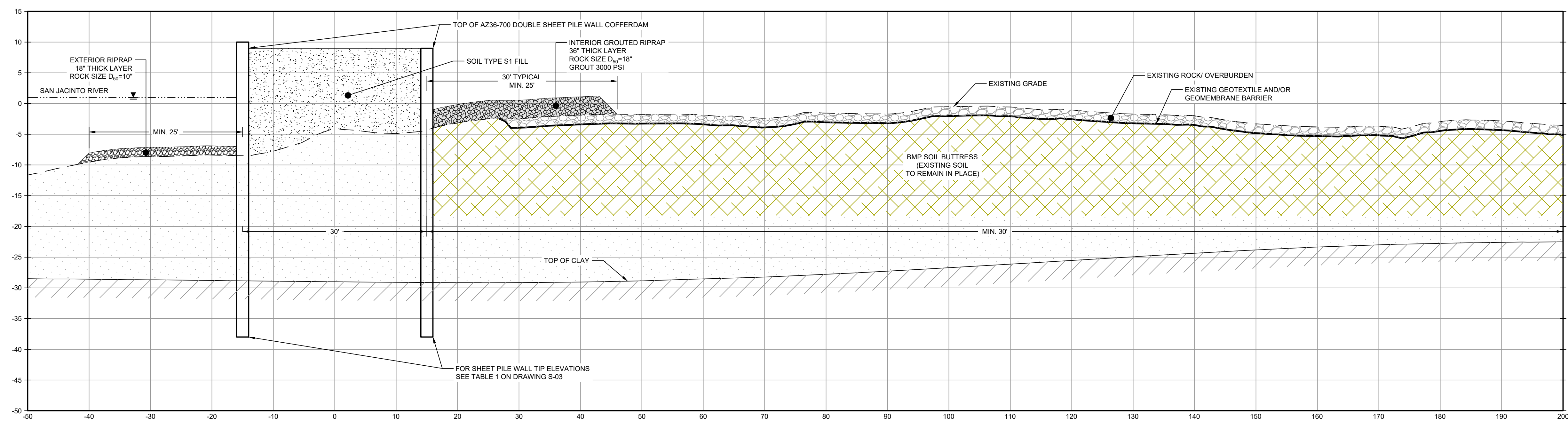


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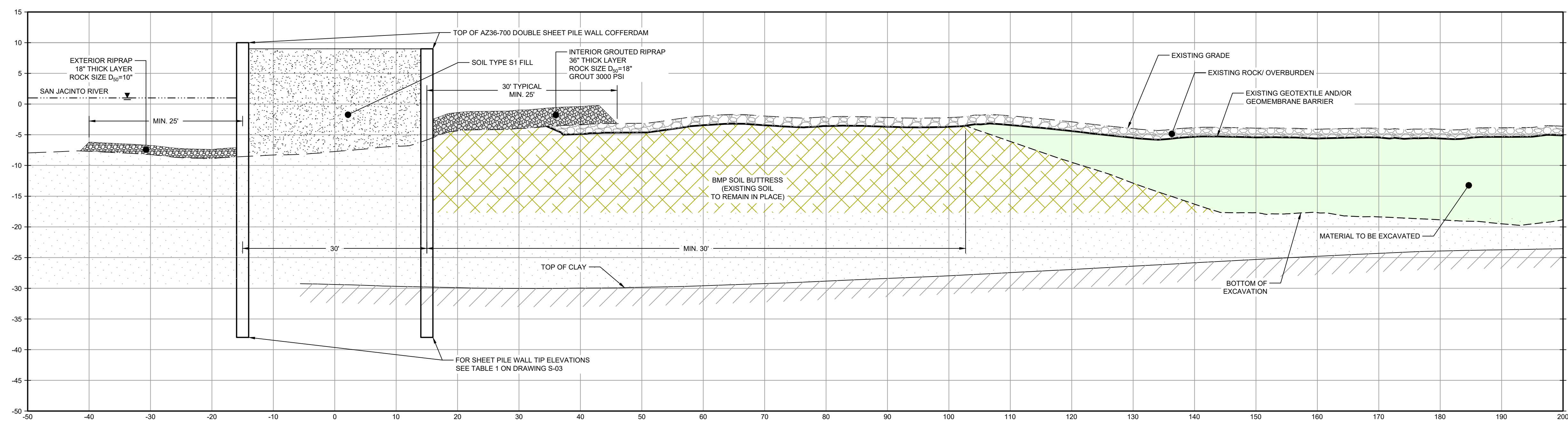


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LEGEND	
	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION



SECTION **O** STA. 16+00.00
SCALE: 1"=10'
C-31



SECTION **P** STA. 18+00.00
SCALE: 1"=10'
C-31

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
-----	-------	-------	----------	------

Drawn JC Designer RH

Drafting Check BS Design Check LL

Project Coordinator CM Date Nov 25, 2024

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Scale 1" = 10'

Original Size

Arch D Bar is one inch on original size drawing

0 1"

Project No. 11215702

Title

DOUBLE PILE WALL SECTIONS

5 OF 7

Sheet No.

C-39

Sheet 40 of 83



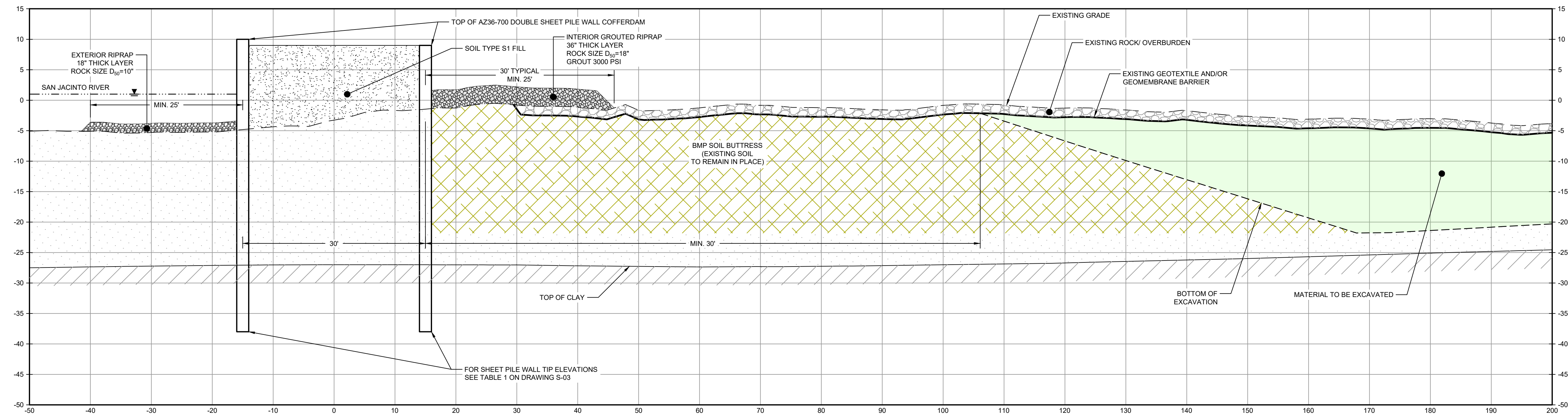
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Baton Rouge Louisiana 70808 USA
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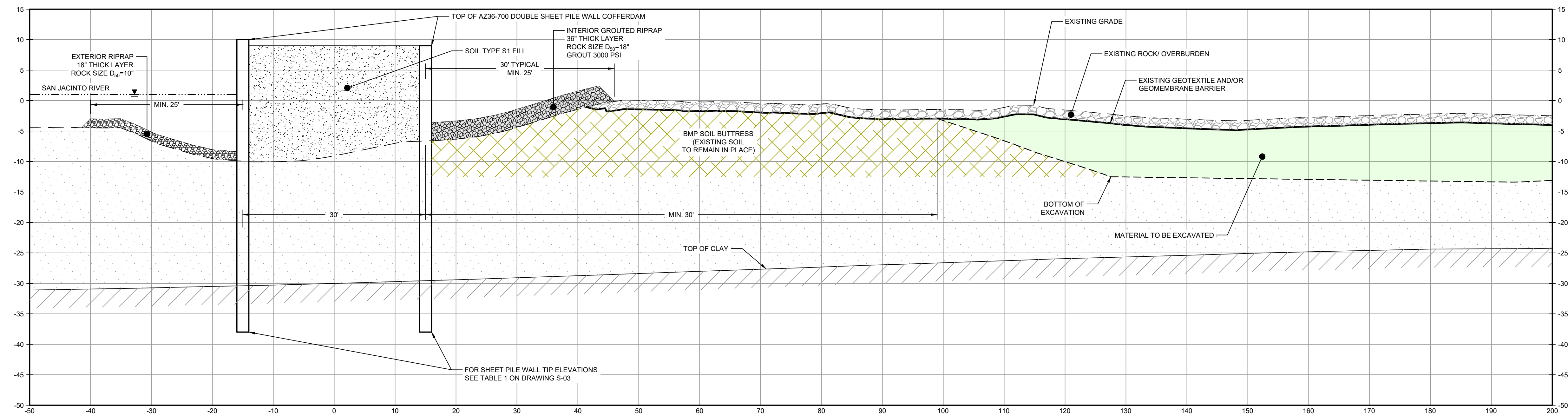
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION



SECTION Q STA. 20+00.00
SCALE: 1"=10'
C-32



SECTION R STA. 22+00.00
SCALE: 1"=10'
C-32

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS P.E. REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	

Drafting Check	BS	Design Check	LL
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Project Coordinator	CM	Date	Nov 25, 2024
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Scale 1" = 10'

Original Size	Arch D	Bar is one inch on original size drawing 0 1"
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Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 6 OF 7

Sheet No.

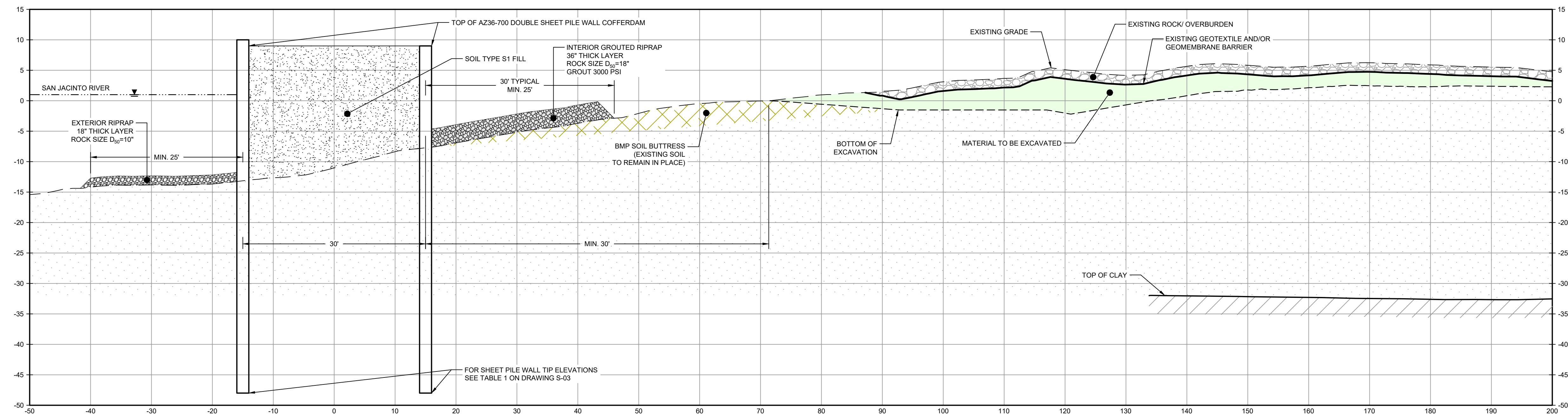
C-40



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SECTION S STA. 24+00
SCALE: 1"=10'

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	

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Scale 1" = 10'

Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 7 OF 7

Sheet No.

C-41

- NOTES:
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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL



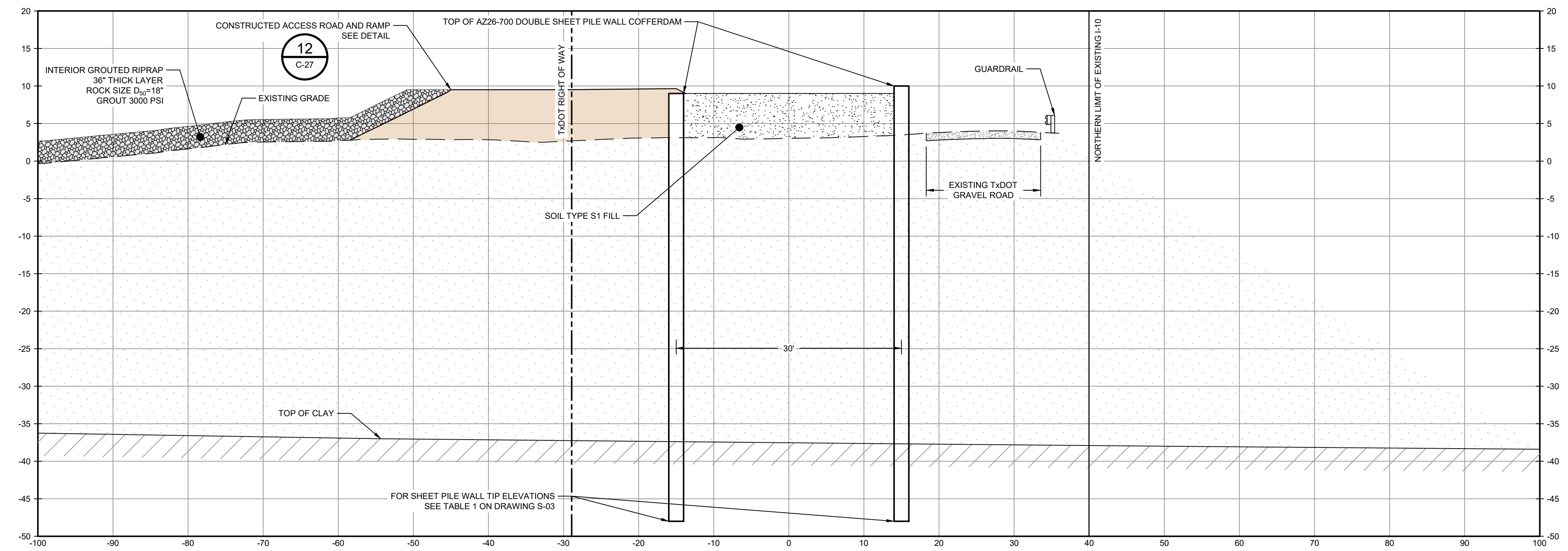
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Baton Rouge Louisiana 70808 USA
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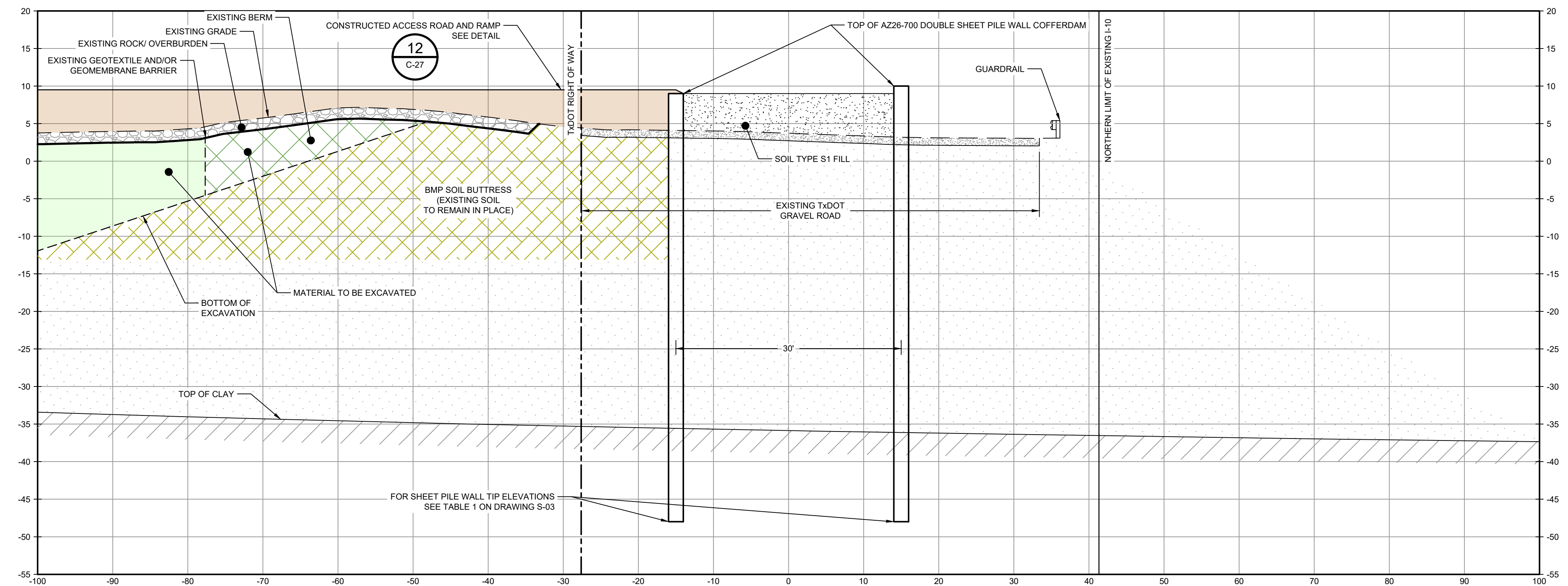
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
	INTERIOR SCOUR PROTECTION



SECTION T STA. 0+00.00
SCALE: 1"=10'



SECTION U STA. 2+00.00
SCALE: 1"=10'

SOURCE:
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

- NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS P.E. REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	
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Original Size	Arch D			Bar is one inch on original size drawing 0 1"

Project No. 11215702
Title

SOUTH WALL SECTIONS 1 OF 3

Sheet No.
C-42
Sheet 43 of 83



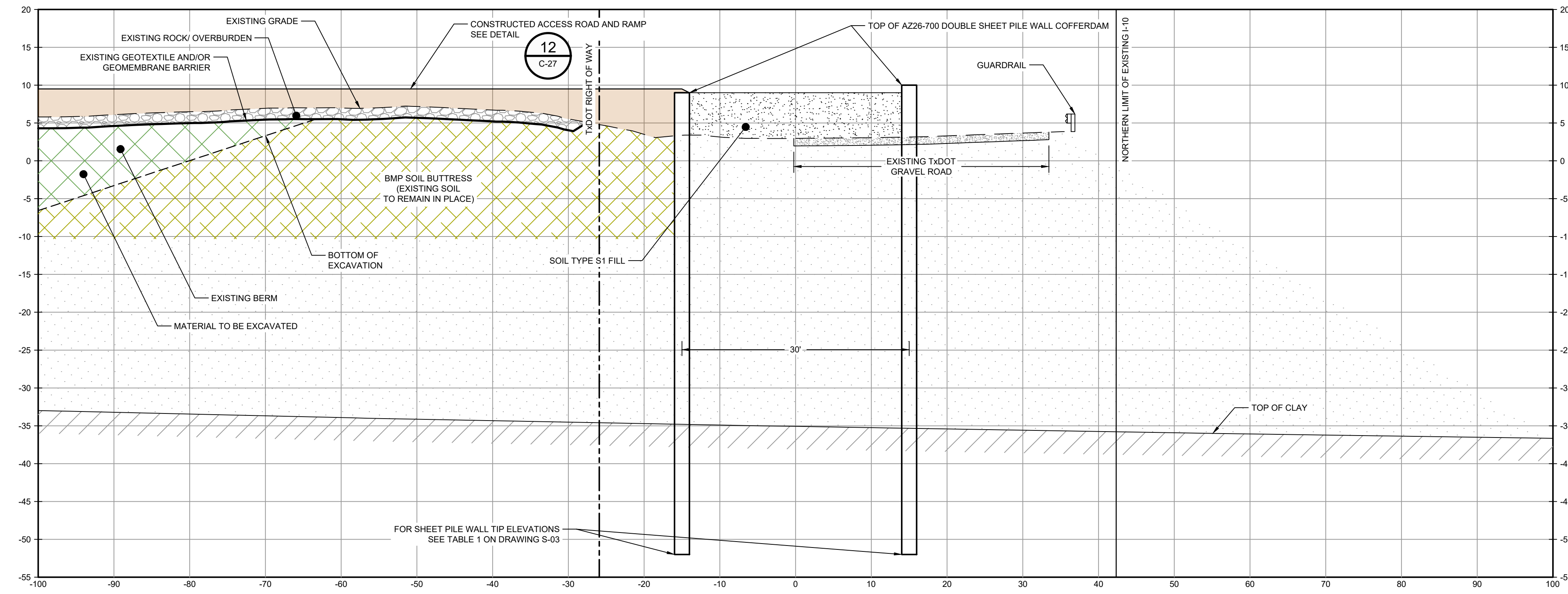
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T 225 292 9007



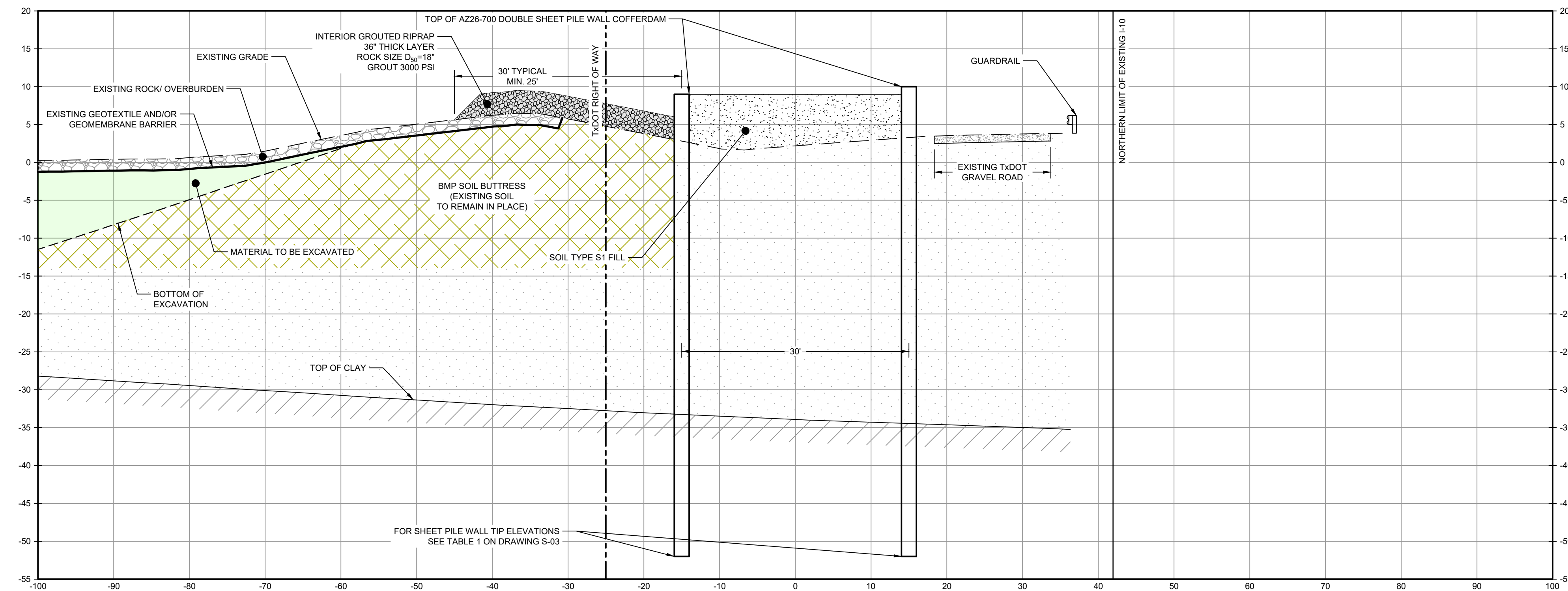
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
	INTERIOR SCOUR PROTECTION



SECTION **V** STA. 4+00.00
SCALE: 1"=10'
C-33



SECTION **W** STA. 6+00.00
SCALE: 1"=10'
C-34

SOURCE:
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

- NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	

Drafting Check	BS	Design Check	LL
----------------	----	--------------	----

Project Coordinator	CM	Date	Nov 25, 2024
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Scale 1" = 10'

Original Size	Arch D	Bar is one inch on original size drawing
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Project No. 11215702
Title

SOUTH WALL SECTIONS 2 OF 3

Sheet No.

C-43



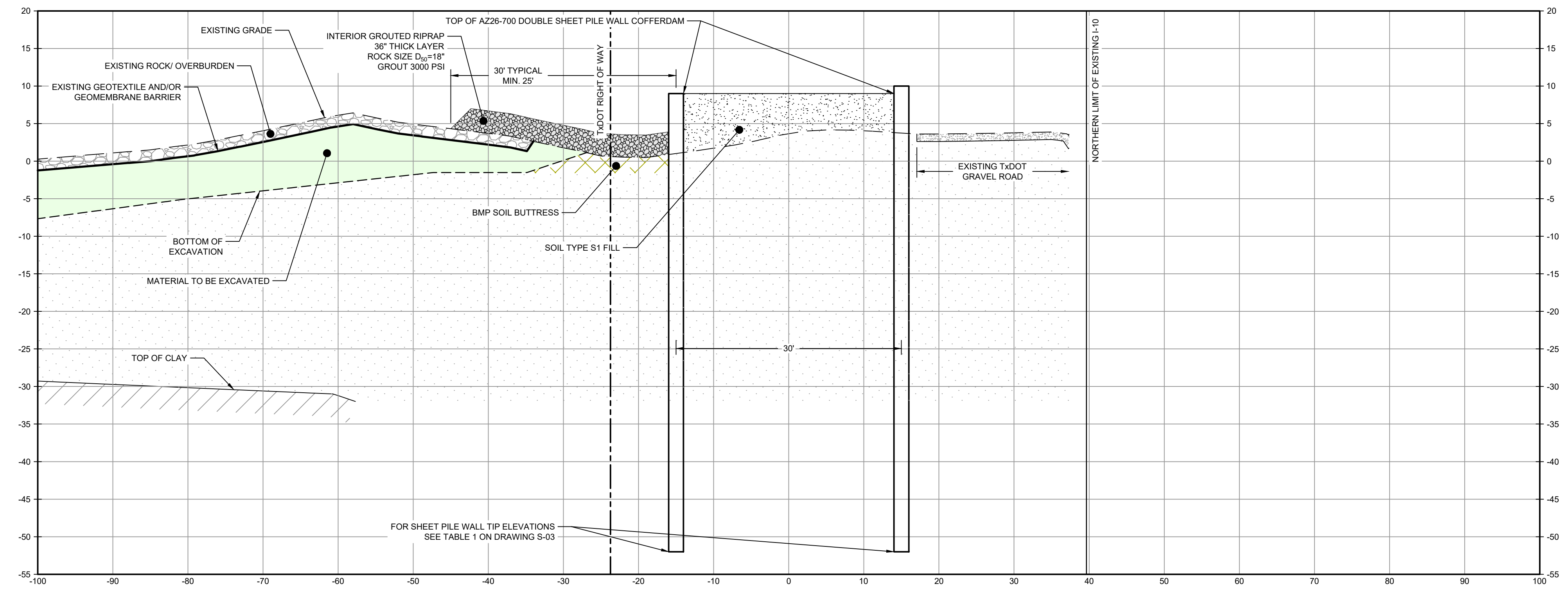
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Baton Rouge Louisiana 70808 USA
T 225 292 9007



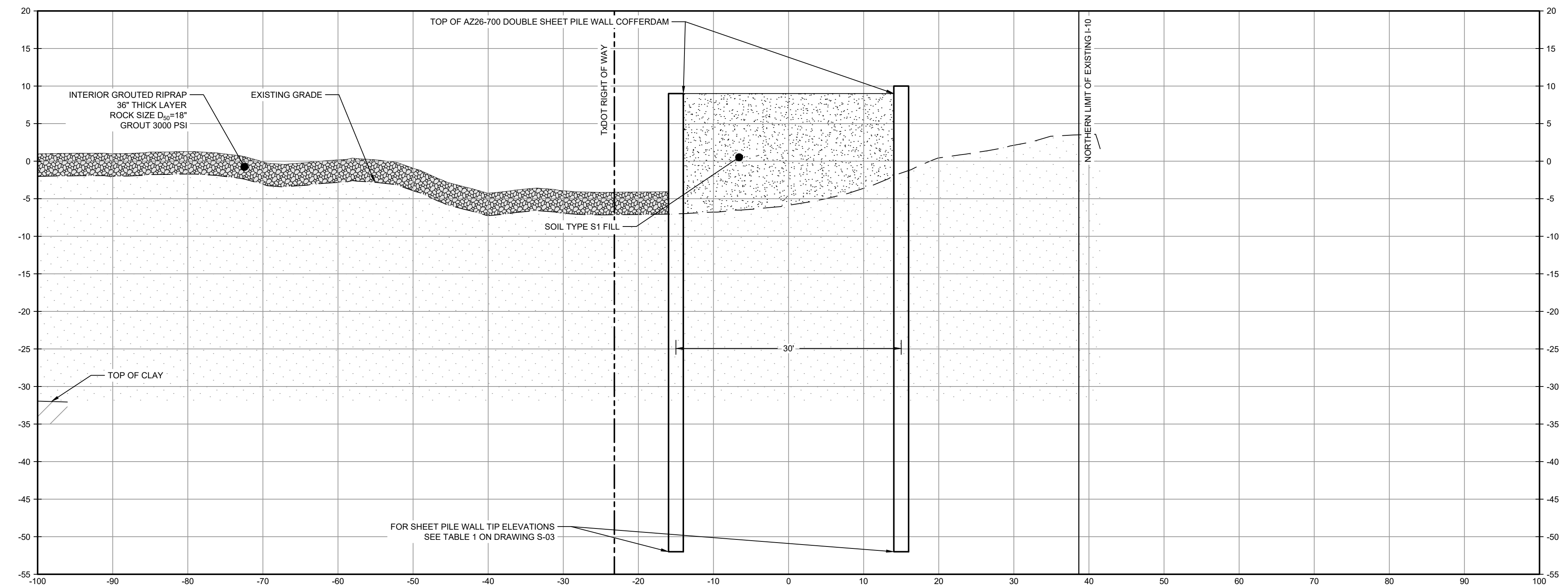
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS (EXISTING SOIL TO REMAIN IN PLACE)
	INTERIOR SCOUR PROTECTION



SECTION **X** STA. 8+00.00
SCALE: 1"=10'
C-34



SECTION **Y** STA. 8+81.52
SCALE: 1"=10'
C-34

SOURCE:
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

- NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

5	100% EPA SUBMITTAL	JC	CRH	11/25/2024
4	FOR CLIENT REVIEW	JC	CRH	11/21/2024
3	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	LL	
Project Coordinator	CM	Date	Nov 25, 2024	
		Scale	1" = 10'	

Original Size
Arch D
Bar is one inch on original size drawing
0 1"

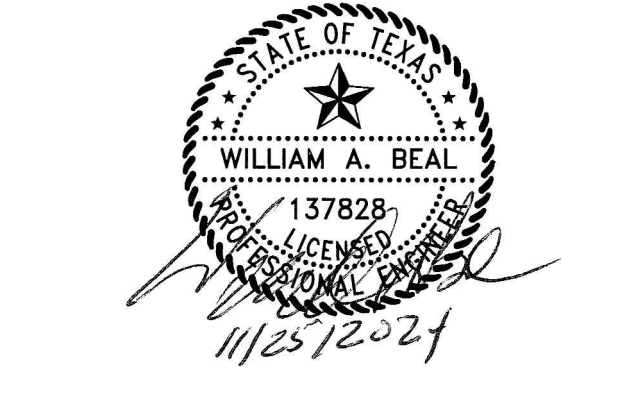
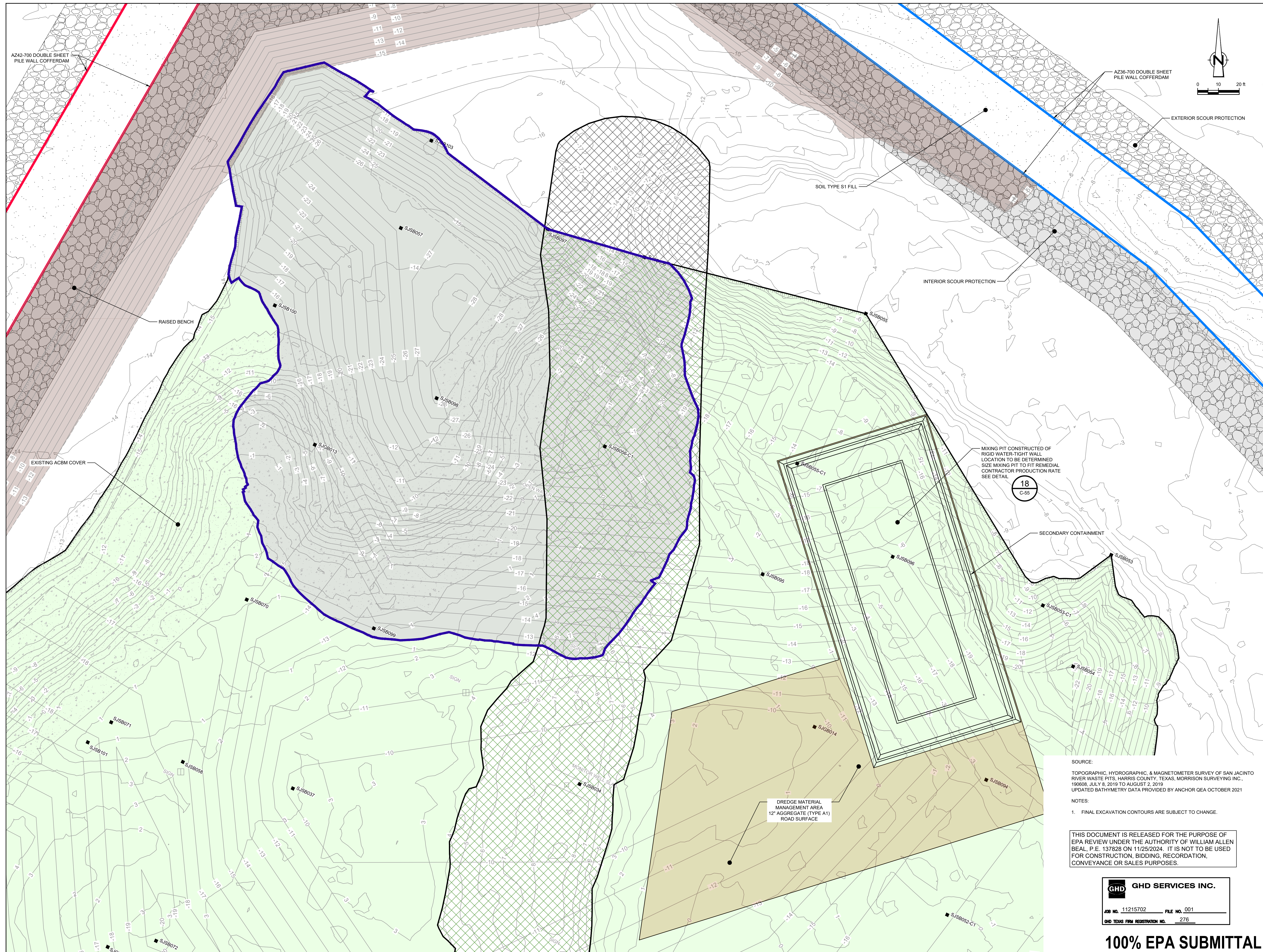
Project No. 11215702
Title

SOUTH WALL SECTIONS 3 OF 3

Sheet No.

C-44

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LEGEND

---	TXDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	L.P.
---	WELL
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	NORTHWEST CORNER
---	CONCRETE
---	GRAVEL
---	AZ36-700 PILE
---	AZ42-700 PILE
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	Nov 25, 2024
Original Size	Arch D	Scale	1" = 20'

Project No. **11215702**
 Title

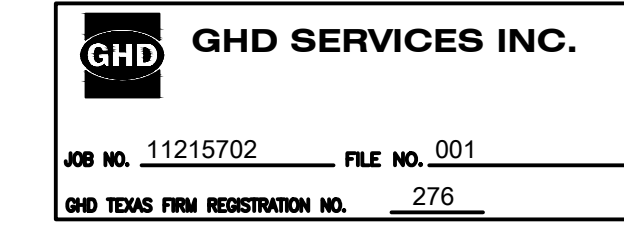
DREDGING NORTHWEST CORNER WORKS PLAN

Sheet No. **C-45**
 Sheet 46 of 83

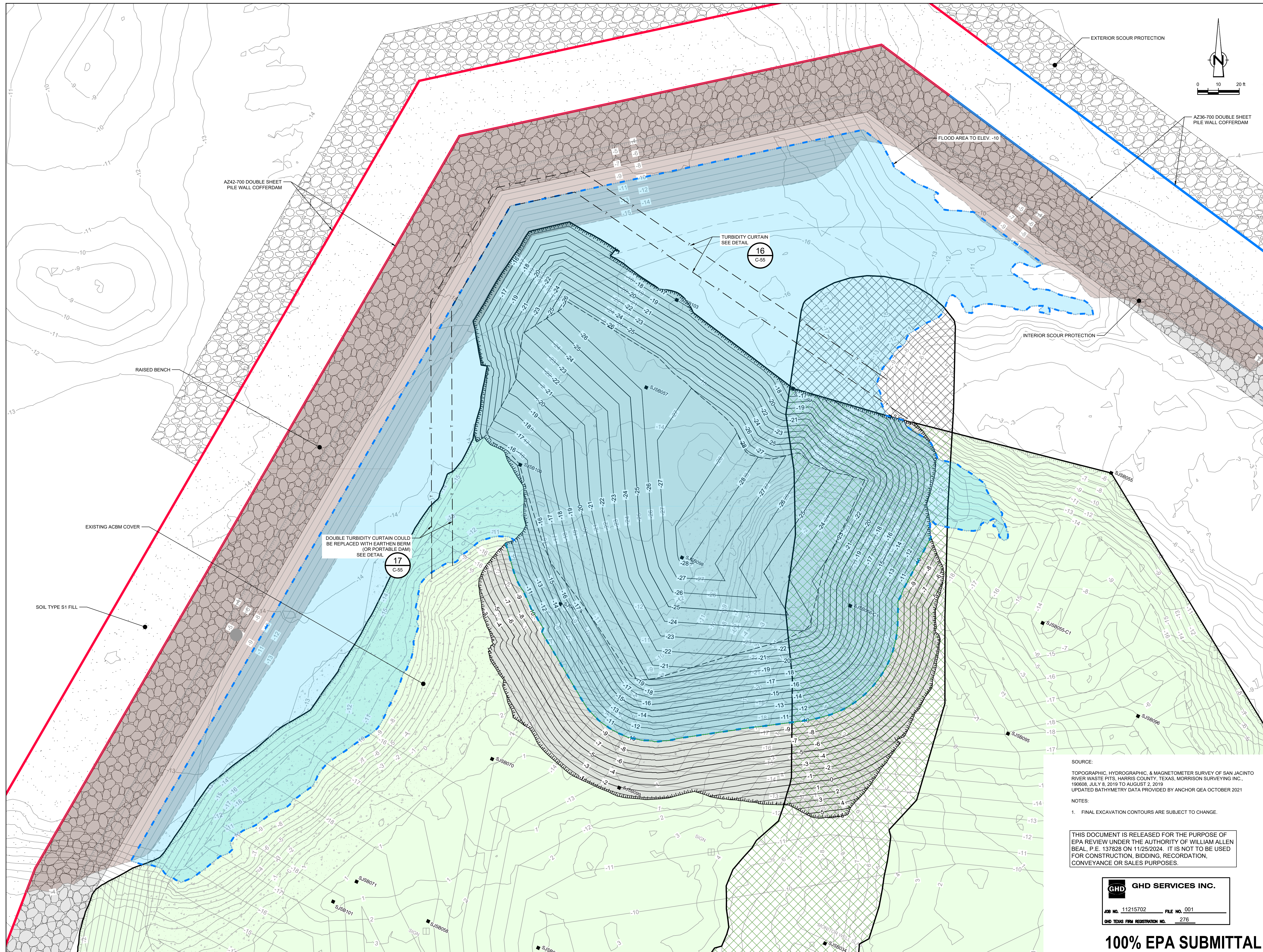
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 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
 1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.

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LEGEND

---	TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	L.P.
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	NORTHWEST CORNER
---	CONCRETE
---	GRAVEL
---	A236-700 PILE
---	AZ42-700 PILE
---	RAISED BENCH
---	FLOOD AREA TO ELEV. -10
---	TURBIDITY CURTAIN
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024
No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting	BS	Design	WB	
Check		Check		
Project Coordinator	CM	Date	Nov 25, 2024	
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Original Size	Arch D	Bar is one inch on original size drawing	0	1"

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

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Project No. 11215702

Title
DREDGING NORTHWEST CORNER DREDGING CONTROLS

Sheet No.
C-46

Sheet 47 of 83



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---	TOCA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	L.P.
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	NORTHWEST CORNER
---	CONCRETE
---	GRAVEL
---	AZ36-700 PILE
---	AZ42-700 PILE
---	RAISED BENCH
---	MATERIAL TO BE EXCAVATED - DRY
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting	BS	Design	WB	
Check		Check		
Project	CM	Date	Nov 25, 2024	
Coordinator				

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Arch D
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0 1"

Project No. **11215702**
Title

DREDGING NORTHWEST CORNER DRY EXCAVATION

Sheet No.
C-47

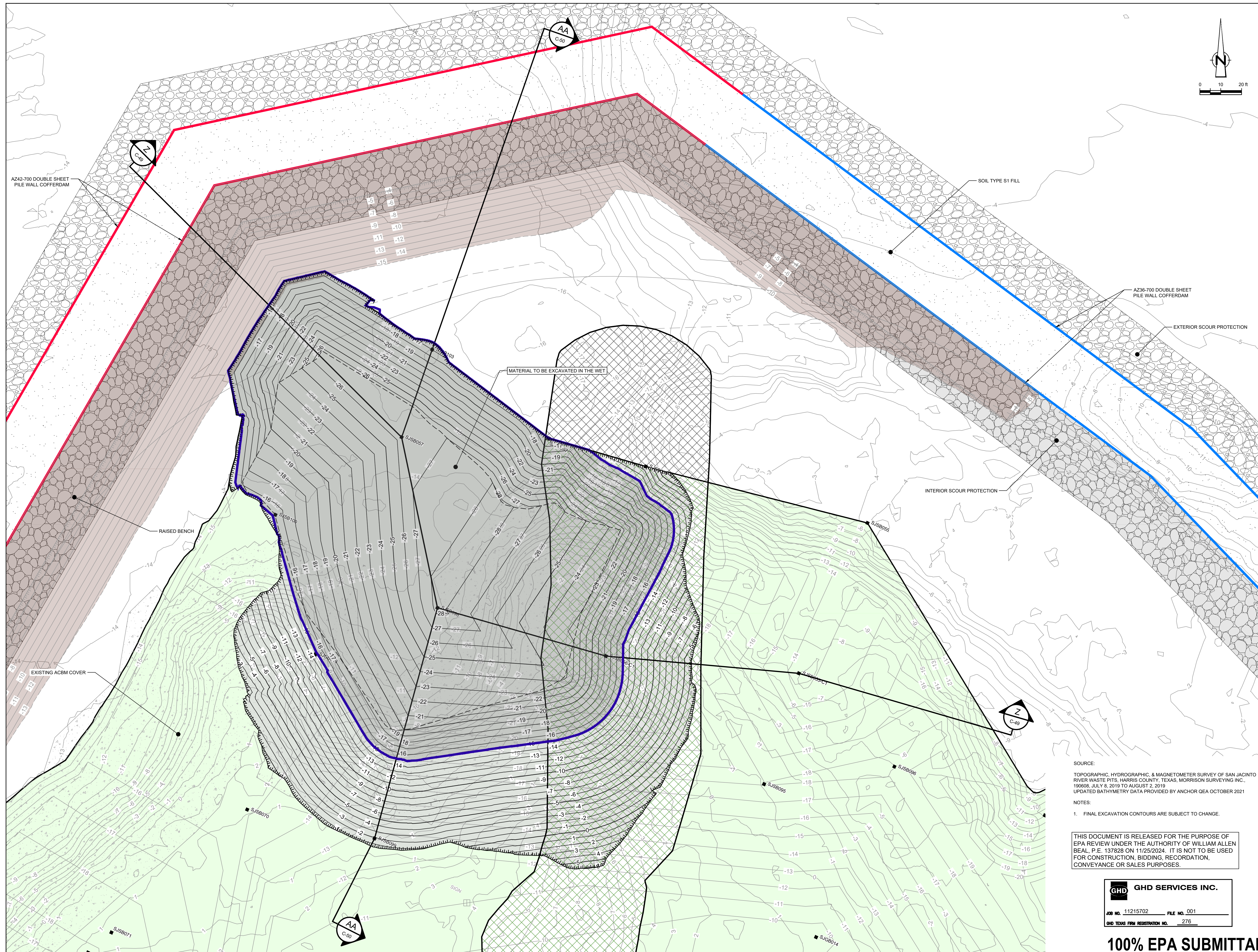
SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
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NOTES:
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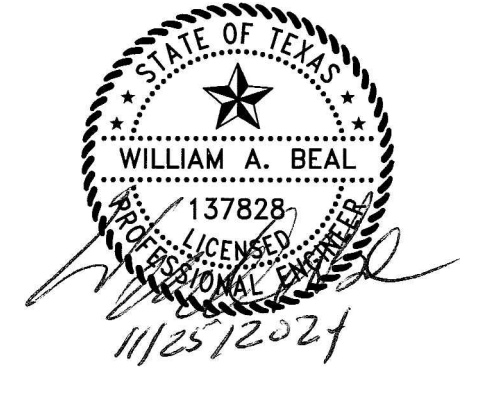
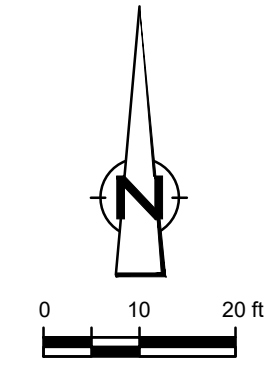
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LEGEND

---	TXDOT RIGHT OF WAY
---	TOCA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	NORTHWEST CORNER
---	CONCRETE
---	GRAVEL
---	A236-700 PILE
---	A242-700 PILE
---	RAISED BENCH
---	MATERIAL TO BE EXCAVATED - WET
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS
 Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting	BS	Design	WB	
Check		Check		
Project	CM	Date	Nov 25, 2024	
Coordinator		Scale	1" = 20'	

Original Size
Arch D
 Bar is one inch on original size drawing
 0 1"

Project No. **11215702**
 Title

DREDGING NORTHWEST CORNER WET EXCAVATION

Sheet No.
C-48

SOURCE:
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 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
 1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.

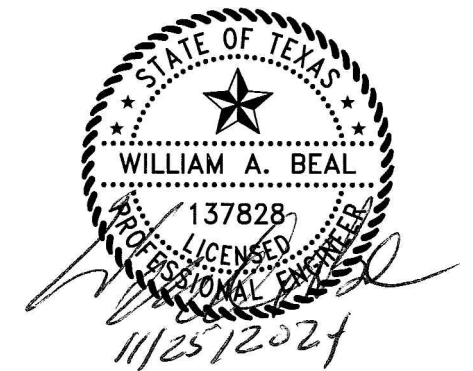
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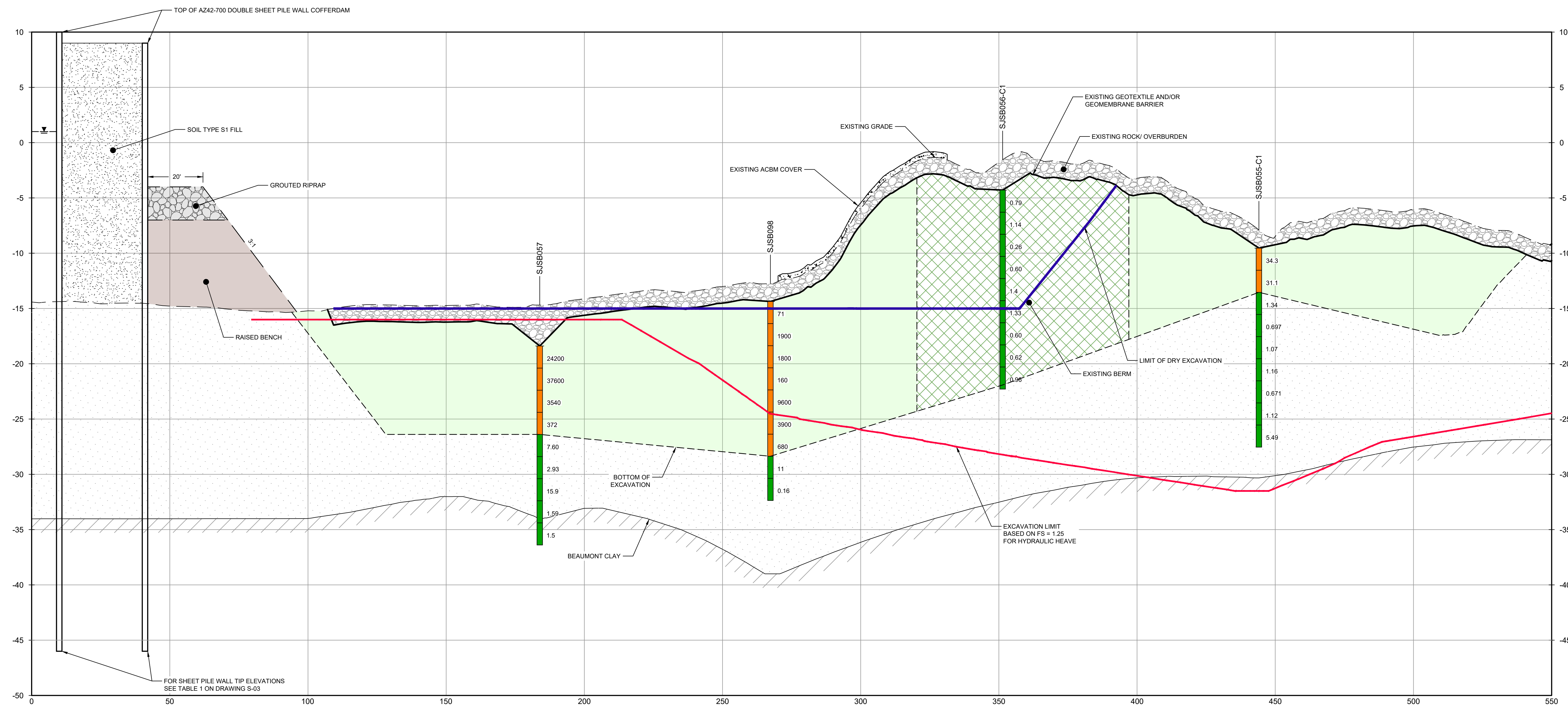
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LEGEND

- SOILS WITH CONCENTRATIONS <30 ng/kg TE_{2,3,4}, TCDD
- SOILS WITH CONCENTRATIONS >30 ng/kg TE_{2,3,4}, TCDD
- EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE



SECTION Z WEST/EAST
HORIZ: 1"=20'
VERT: 1"=5'

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 - SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS PERM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	JC	Designer	RH	
Drafting Check	BS	Design Check	WB	
Project Coordinator	CM	Date	Nov 25, 2024	

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Original Size: Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702
Title

DREDGING NORTHWEST CORNER SECTIONS 1 OF 2

Sheet No. **C-49**
Sheet 50 of 83



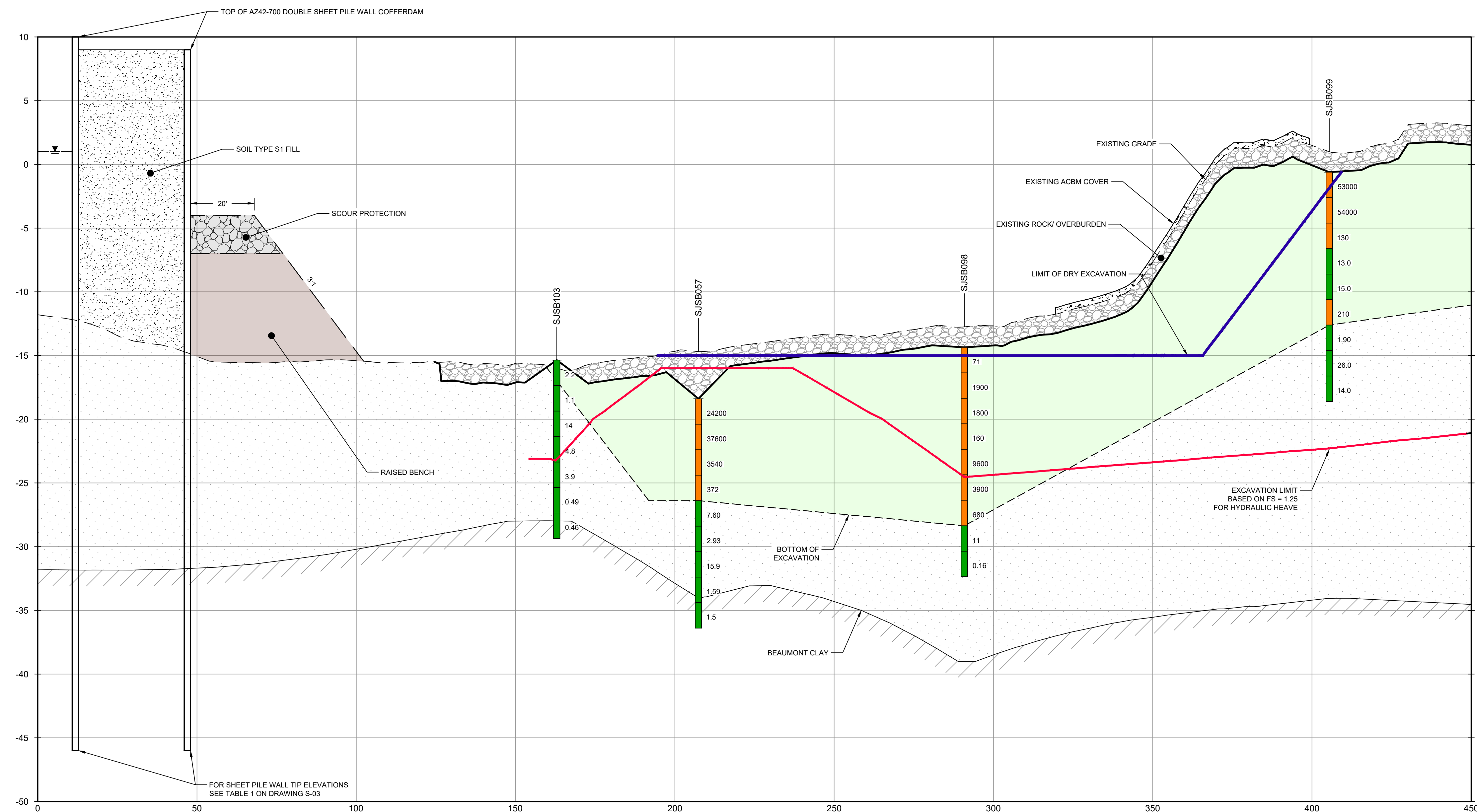
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LEGEND

- █ SOILS WITH CONCENTRATIONS <30 ng/kg TEQ_{d,e}, TCDD
- █ SOILS WITH CONCENTRATIONS >30 ng/kg TEQ_{d,e}, TCDD
- EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE



SECTION AA NORTH/ SOUTH
HORIZ: 1"=20'
VERT: 1"=5'

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
 - SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	Nov 25, 2024
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Original Size		Bar is one inch on original size drawing	

Arch D

Project No. 11215702

Title
DREDGING NORTHWEST CORNER SECTIONS 2 OF 2

Sheet No.



C-50

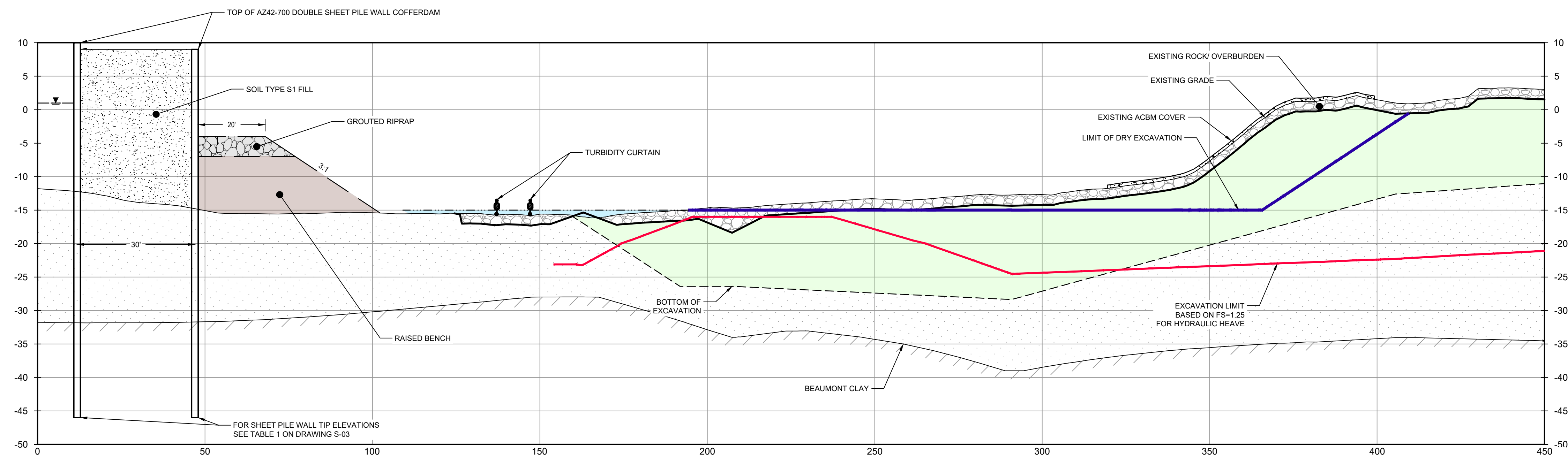


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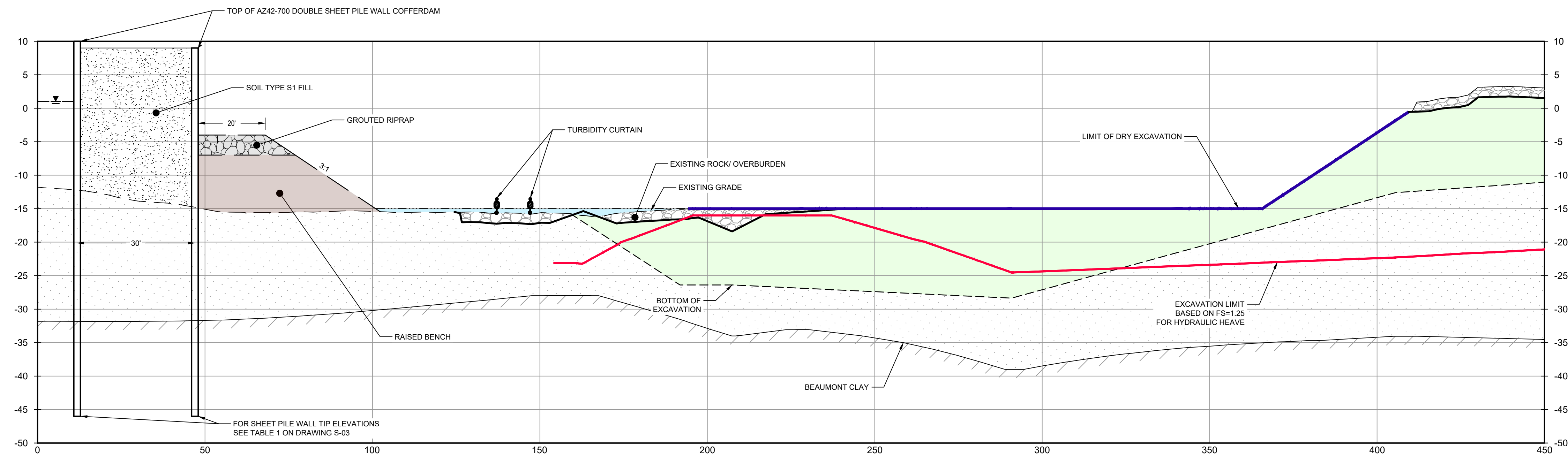
LEGEND
 EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
 MATERIAL TO BE EXCAVATED



NOTES:

1. DEWATER NORTHWEST CORNER TO EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE.

PHASE 1
HORIZ: 1" = 20'
VERT: 1" = 10'



NOTES:

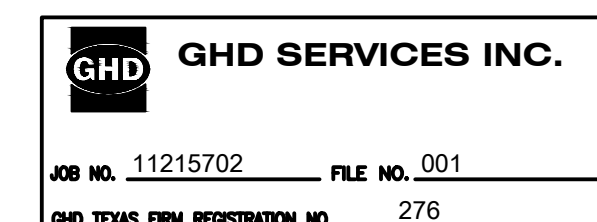
1. REMOVE ROCK LAYER TO BE STOCKPILED ON SITE. REUSED AS TEMPORARY COVER AT END OF SEASONAL EXCAVATION.
2. REMOVE GEOMEMBRANE/ GEOTEXTILE / ACBM (IF PRESENT) EXCAVATE MATERIAL ABOVE LIMIT OF DRY EXCAVATION AND DISPOSE OF OFFSITE.

PHASE 2
HORIZ: 1" = 20'
VERT: 1" = 10'

NOTES:

1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn JC Designer RH

Drafting Check BS Design Check WB

Project Coordinator CM Date Nov 25, 2024

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Original Size

Arch D Bar is one inch on original size drawing

0 1"

Project No. 11215702

Title

DREDGING NORTHWEST CORNER SEQUENCING 1 OF 3

Sheet No.

C-51

Sheet 52 of 83

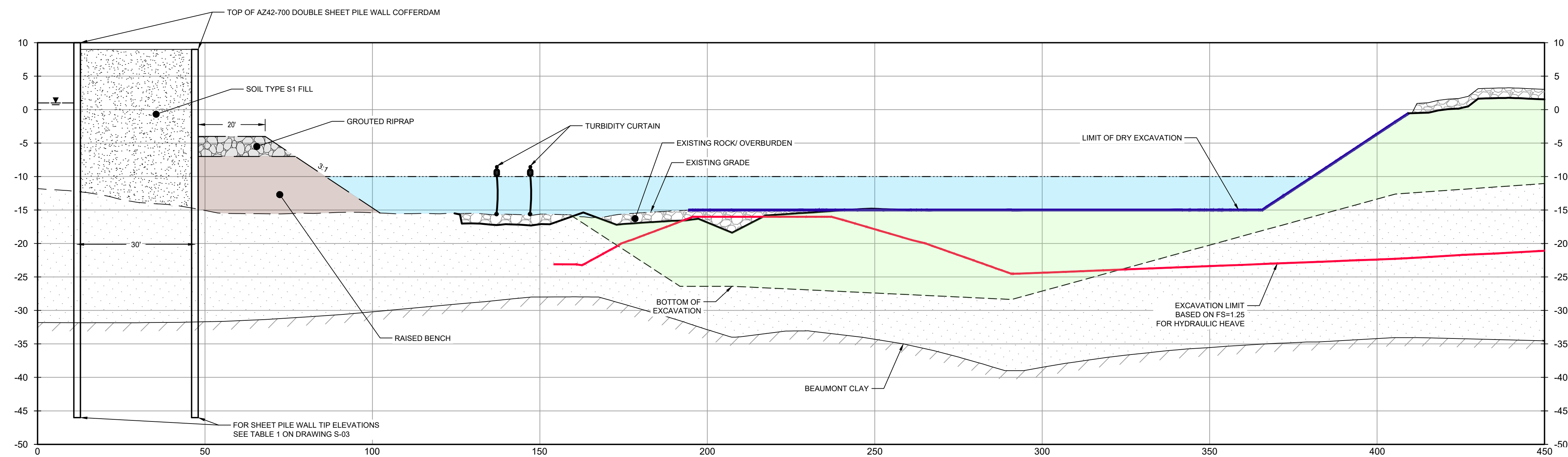


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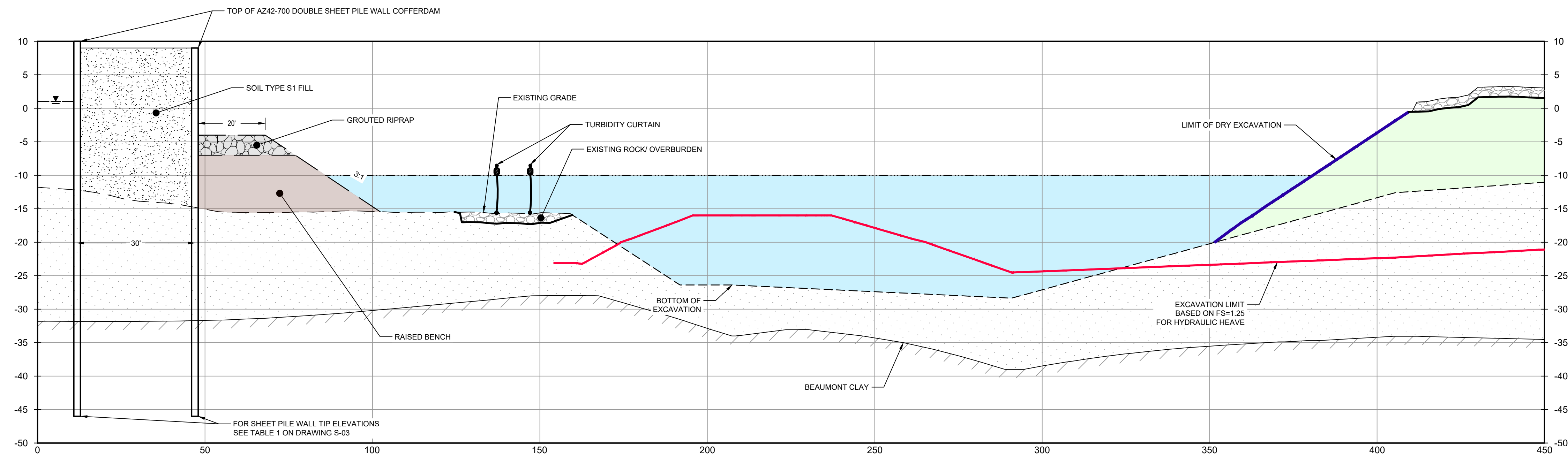
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LEGEND
 EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
 MATERIAL TO BE EXCAVATED



NOTES:
1. WATER ADDED TO MITIGATE HYDRAULIC HEAVE AND ALLOW DRAFT OF DREDGE VESSEL.

PHASE 3
HORIZ: 1" = 20'
VERT: 1" = 10'



NOTES:
1. REMOVE ROCK LAYER TO BE STOCKPILED ON SITE. REUSED AS TEMPORARY COVER AT END OF SEASONAL EXCAVATION.
2. REMOVE GEOTEXTILE (IF PRESENT), EXCAVATE MATERIAL THROUGH A COLUMN OF WATER, AND DISPOSE OF OFFSITE.
3. WATER LEVEL TO BE MAINTAINED ABOVE EXCAVATION LIMIT BASED ON FS=1.25 FOR HYDRAULIC HEAVE.

PHASE 4
HORIZ: 1" = 20'
VERT: 1" = 10'

NOTES:
1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn	JC	Designer	RH
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Drafting Check	BS	Design Check	WB
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Project Coordinator	CM	Date	Nov 25, 2024
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Original Size	Bar is one inch on original size drawing
Arch D	

Project No. **11215702**
Title

DREDGING NORTHWEST CORNER SEQUENCING 2 OF 3

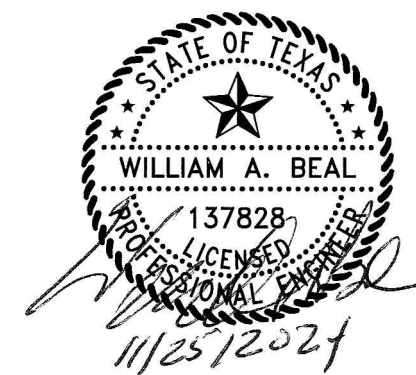
Sheet No.

C-52

Sheet 53 of 83

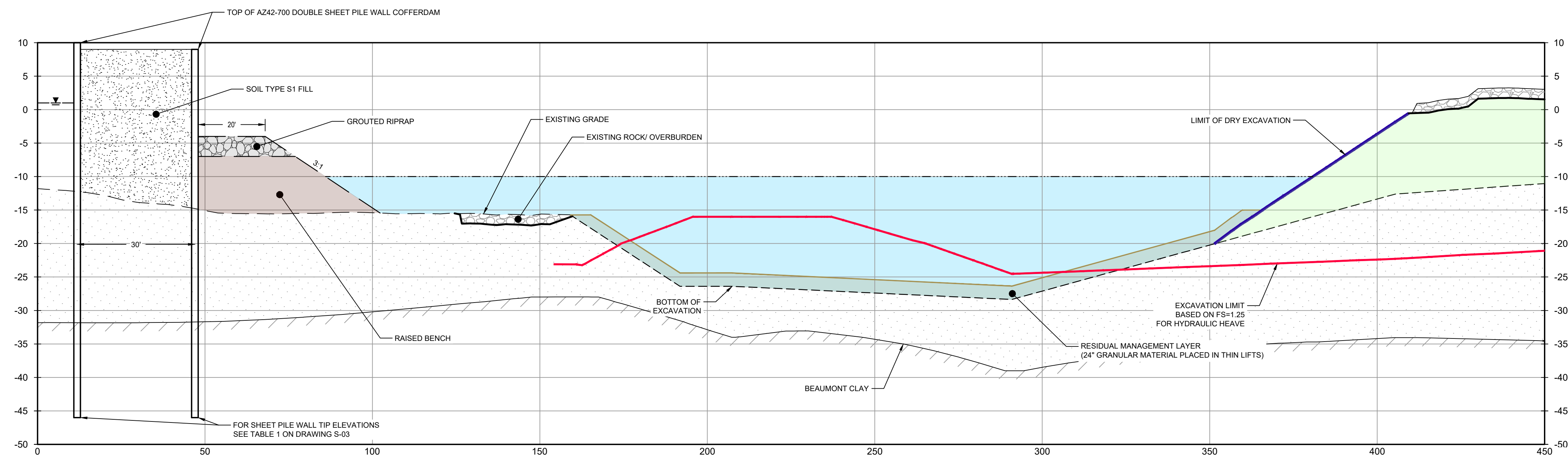


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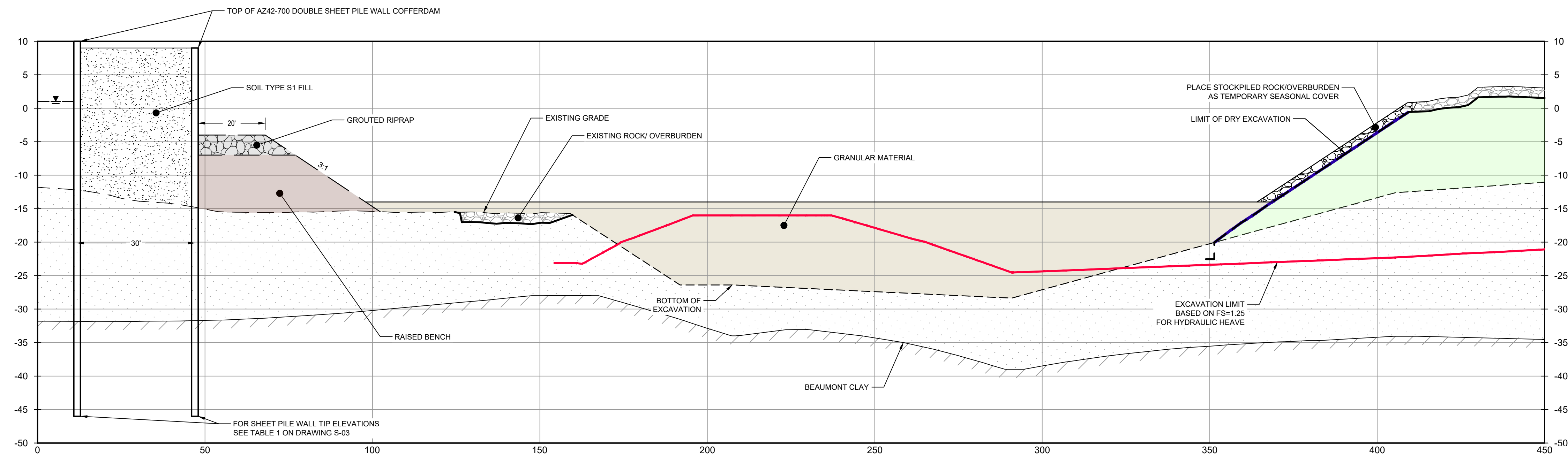
LEGEND	
	EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE
	MATERIAL TO BE EXCAVATED
	GRANULAR MATERIAL



NOTES:

1. PLACE GRANULAR MATERIAL AS RESIDUAL MANAGEMENT LAYER UPON COMPLETION OF DREDGING.

PHASE 5
HORIZ: 1" = 20'
VERT: 1" = 10'



NOTES:

1. OPTIONAL REUSE OF ONSITE RIP RAP AND AGGREGATE.
2. FILL PLACEMENT TO OVERCOME HYDRAULIC HEAVE.
3. WATER TO BE PUMPED OFF AND TREATED. WATER LEVEL TO BE MAINTAINED ABOVE HYDRAULIC HEAVE LIMIT BASED ON FS=1.25.

PHASE 6
HORIZ: 1" = 20'
VERT: 1" = 10'

NOTES:

1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.
2. SCOUR PROTECTION ON INTERIOR AND EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWINGS C-28 TO C-44 FOR LIMITS OF RIPRAP.

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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn JC Designer RH

Drafting Check BS Design Check WB

Project Coordinator CM Date Nov 25, 2024

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Scale AS SHOWN

Original Size

Arch D Bar is one inch on original size drawing

0 1"

Project No. 11215702

Title

DREDGING NORTHWEST CORNER SEQUENCING 3 OF 3

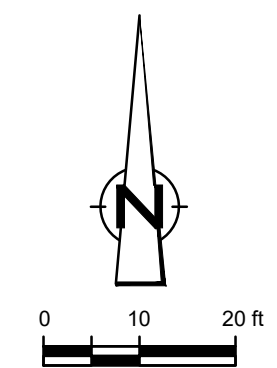
Sheet No.

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LEGEND	
	TxDOT RIGHT OF WAY
	TORA CAP PERIMETER
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	PIPELINE
	BORING LOCATION
	MONITORING WELL
	POWER POLE
	L.P.
	LIGHT POLE
	WELL
	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
	EXISTING BERM TO REMAIN
	NORTHWEST CORNER
	CONCRETE
	GRAVEL
	AZ36-700 PILE
	AZ42-700 PILE
	RAISED BENCH
	GRANULAR MATERIAL
	EXTERIOR SCOUR PROTECTION
	INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

Drawn JC Designer RH

Drafting BS Design Check WB

Project Coordinator CM Date Nov 25, 2024

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Scale 1" = 20'

Original Size
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Bar is one inch on original size drawing
0 1"

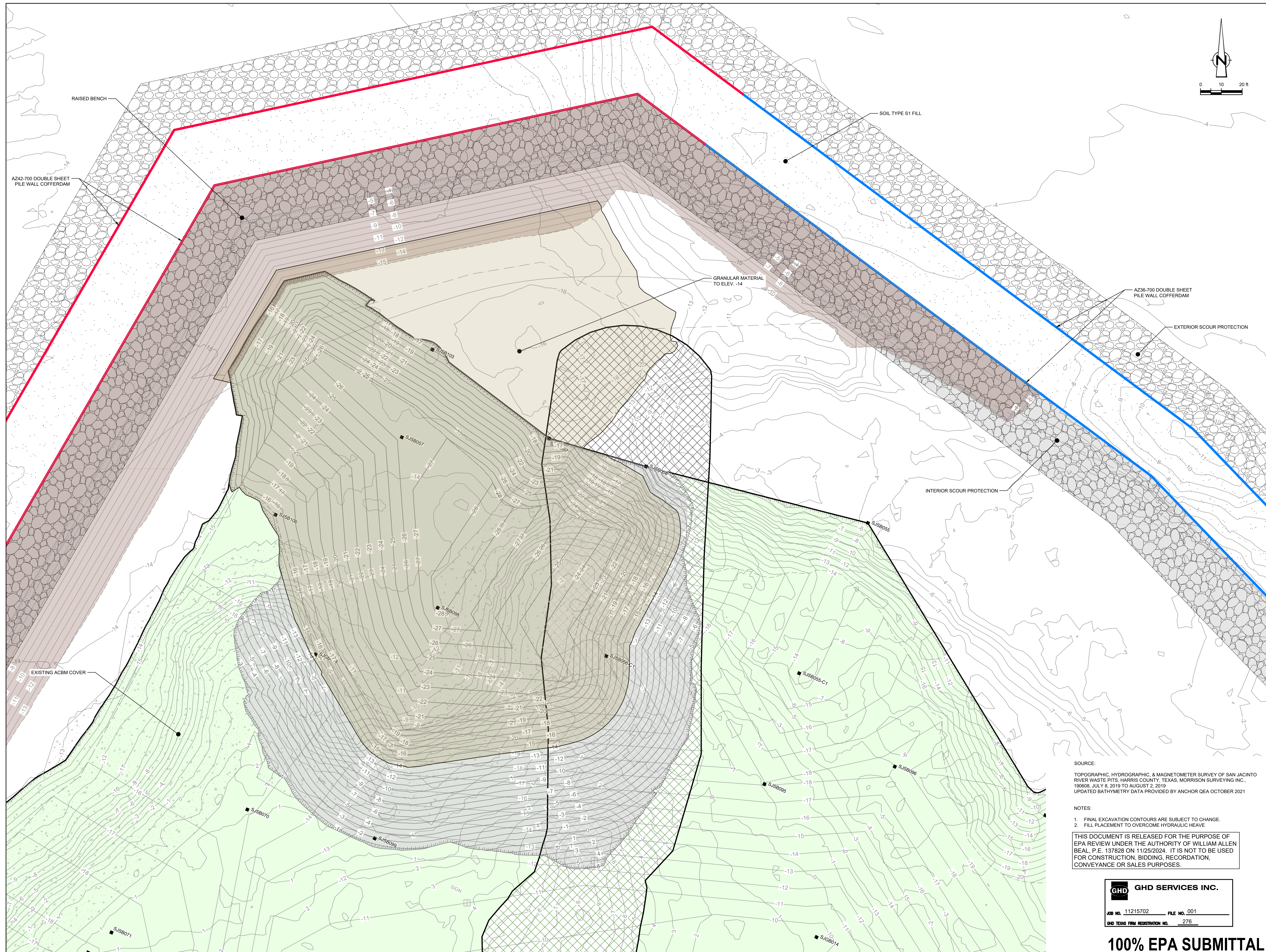
Project No. 11215702

Title
DREDGING NORTHWEST CORNER FINAL GRADE

Sheet No.

C-54

Sheet 55 of 83



SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

- NOTES:
- FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.
 - FILL PLACEMENT TO OVERCOME HYDRAULIC HEAVE

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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

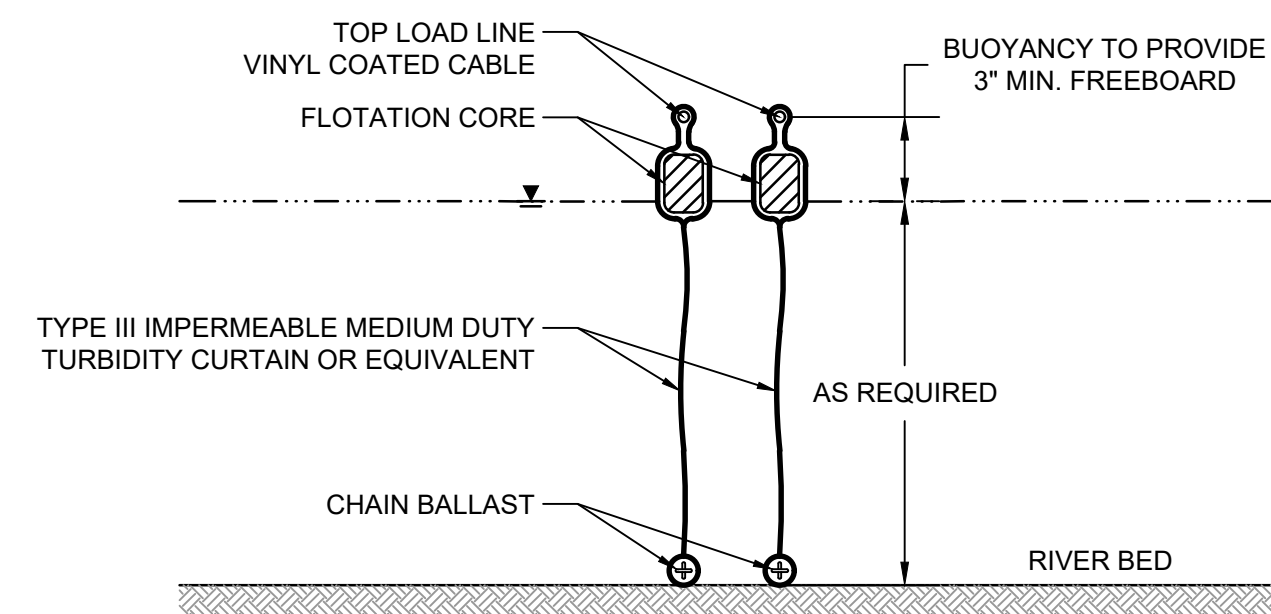
100% EPA SUBMITTAL



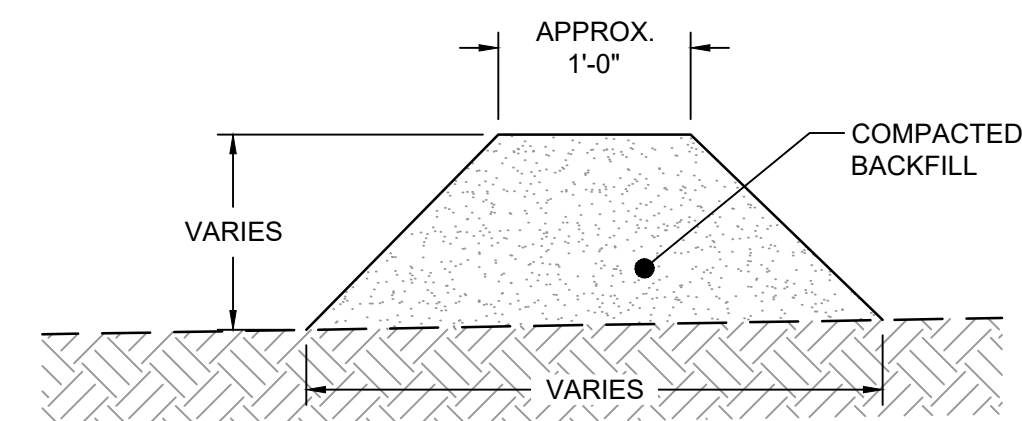
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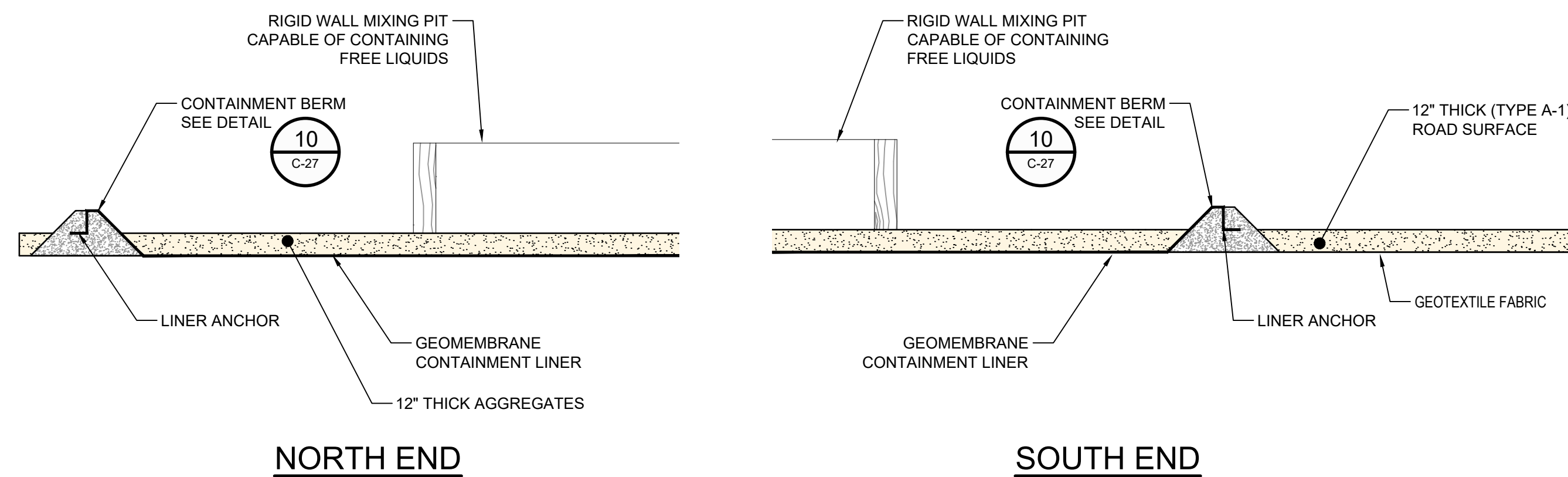
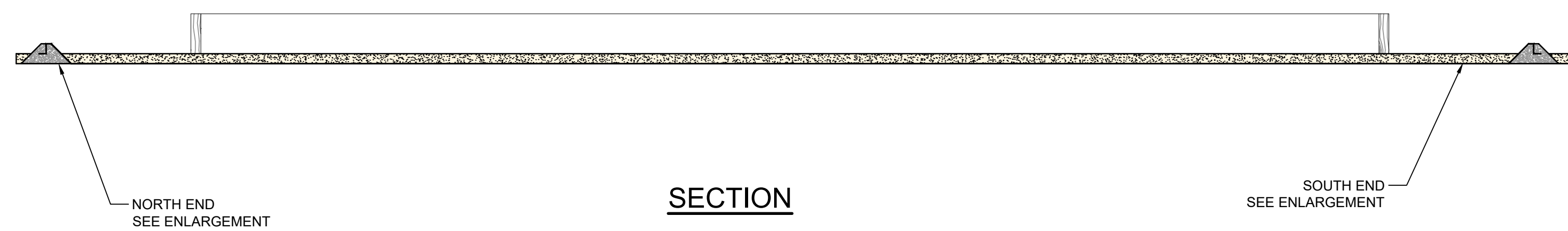


DETAIL 16 DREDGING TURBIDITY CURTAINS
N.T.S. C-46



NOTES:
1. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF REQUIRED TO FACILITATE CROSSING CONSTRUCTION TRAFFIC.

DETAIL 17 DREDGING EARTHEN BERM
N.T.S. C-46



NOTES:
1. DIMENSION TO BE DETERMINED BY CONTRACTOR

DETAIL 18 MIXING PIT
N.T.S. C-45

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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	100% EPA SUBMITTAL	JC	WB	11/25/2024
3	FOR CLIENT REVIEW	JC	WB	11/21/2024
2	100% EPA SUBMITTAL	MW	WB	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn JC Designer RH

Drafting Check BS Design Check WB

Project Coordinator CM Date Nov 25, 2024

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Project No. 11215702

Title
DREDGING NORTHWEST CORNER DREDGING DETAILS

Sheet No.

C-55

Sheet 56 of 83



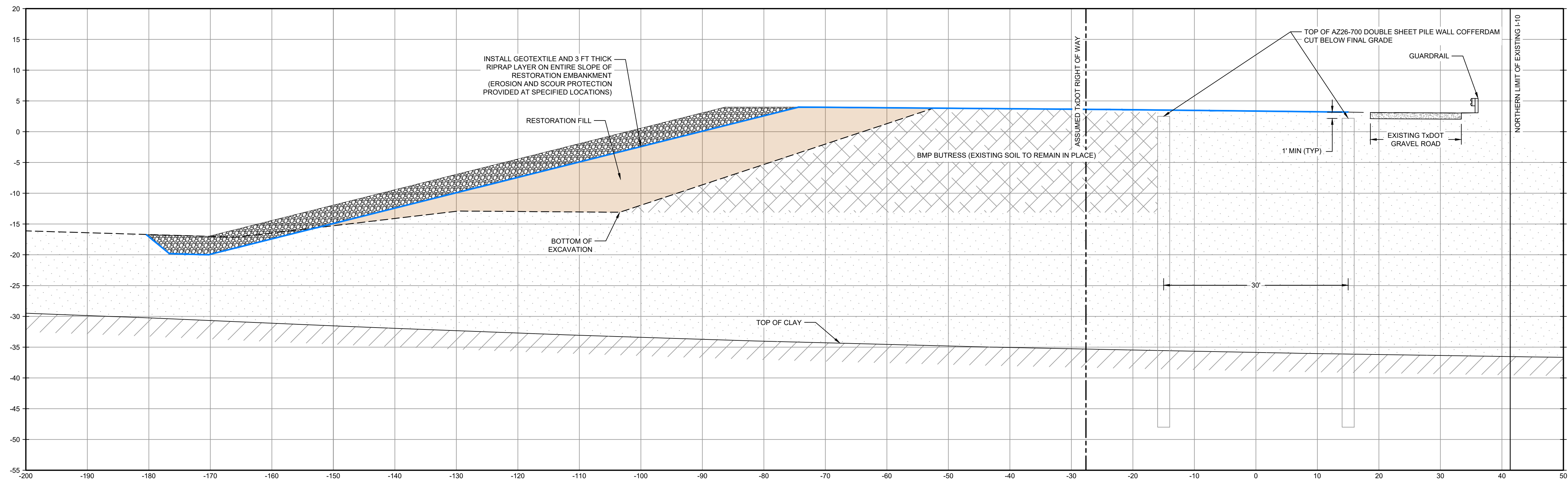
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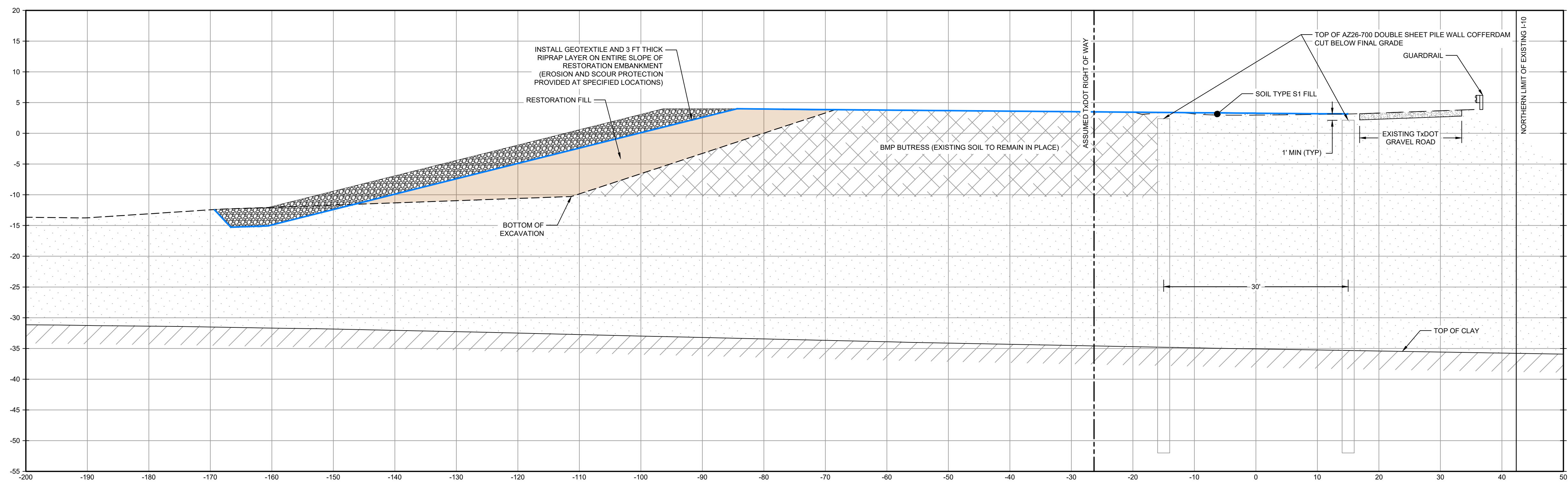
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LEGEND

- RESTORED AREA INCLUDING SOIL BACKFILL AND EROSION CONTROL (NOT SHOWN)
- RESTORATION EMBANKMENT
- RIPRAP



SECTION **U** STA. 2+00.00
SCALE: 1"=10'



SECTION **V** STA. 4+00.00
SCALE: 1"=10'

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SOURCE:
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBENDEY, 2402-028-01, JUNE 28, 2024

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	JC	CRH	11/25/2024
2	FOR CLIENT REVIEW	JC	CRH	11/21/2024
1	100% EPA SUBMITTAL	MW	CRH	07/17/2024

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Drawn JC Designer RH

Drafting Check BS Design Check WB

Project Coordinator CM Date Nov 25, 2024

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Project No. 11215702

Title
RESTORATION SECTIONS 1 OF 2

Sheet No.

C-56

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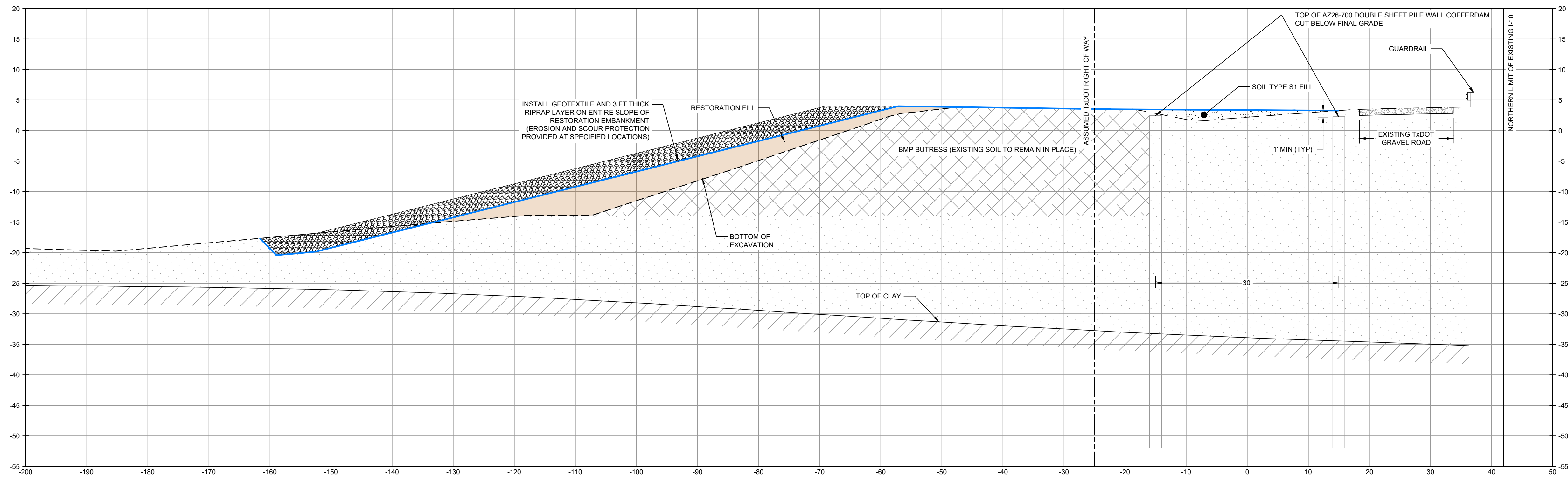
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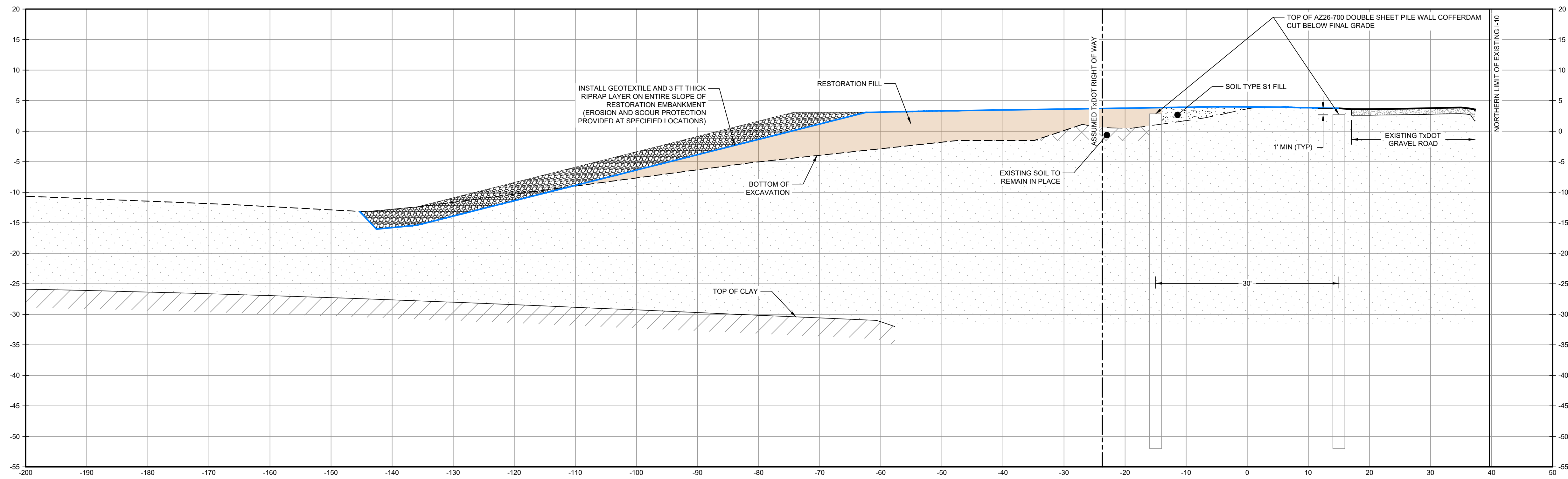
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- RESTORATION EMBANKMENT
- RIPRAP



SECTION **W** STA. 6+00.00
SCALE: 1"=10'
C-22



SECTION **X** STA. 8+00.00
SCALE: 1"=10'
C-22

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SOURCE:
TxDOT RIGHT OF WAY FROM A BOUNDARY AND RIGHT-OF-WAY SURVEY OF PORT OF HOUSTON AUTHORITY PROPERTY & HOUSTON FLEETING SERVICES, LLC PROPERTY ALONG INTERSTATE HIGHWAY 10 AT THE SAN JACINTO FLEET AREA, IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBENDELY, 2402-028-01, JUNE 28, 2024

- NOTES:
- BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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JOB NO. 11215702 FILE NO. 001
GHD TEXAS P.E. REGISTRATION NO. 276

100% EPA SUBMITTAL

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	JC	CRH	11/25/2024
2	FOR CLIENT REVIEW	JC	CRH	11/21/2024
1	100% EPA SUBMITTAL	MW	CRH	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn JC Designer RH

Drafting Check BS Design Check WB

Project Coordinator CM Date Nov 25, 2024

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Project No. 11215702

Title
RESTORATION SECTIONS 2 OF 2

Sheet No.

C-57

GENERAL

- 1. VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE COMMENCING WORK. REPORT ANY DISCREPANCIES AND/OR INCONSISTENCIES TO THE OWNER FOR CLARIFICATION.
- 2. TEMPORARILY BRACE PILES AFTER DRIVING UNTIL TIE RODS ARE INSTALLED.

CODES AND GUIDELINES

- ASCE MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDING AND OTHER STRUCTURES, ASCE 7, 2016
- USACE ENGINEERING MANUAL, DESIGN OF SHEET PILE WALLS BY UNITED STATES ARMY CORPS OF ENGINEERS, EM 1110 2 2504
- AMERICAN INSTITUTE OF STEEL CONTRACTORS, STEEL CONSTRUCTION MANUAL 15TH EDITION, AISC 360-16.
- USACE HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM DESIGN GUIDELINES, UPDATED JUNE 2012.
- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, LRFD BRIDGE DESIGN SPECIFICATIONS, 2012.

MATERIALS

STEEL:

- BARS AND C, MC, AND L SHAPES ASTM A36, GALV, UNO
- SHEET PILE ASTM A572, GRADE 60
- PIPE PILES ASTM A252, GRADE 3 MODIFIED TO MEET ASTM A572 GRADE 55
- TIE ROD ASSEMBLY
 - GRADE 80 KSI
 - THREADED BARS ASTM A572/A588 GRADE 50
 - BEARING PLATE ASTM F436
 - HARDENED WASHER ASTM 108/S576
 - HEX NUT WITH JAM NUT ASTM 108/S576
- GALVANIZED BOLTS FOR SPLICE CONNECTIONS ASTM A325 WITH A563 NUTS AND HARDENED WASHER

STRUCTURAL STEEL AND MISCELLANEOUS METAL

- 1. WELDING SHALL CONFORM TO "STRUCTURAL WELDING CODE - STEEL" (AWS D1.1).
- 2. PROVIDE 1" DIAMETER BLEED HOLES IN WALERS AT 10'-0" ON CENTER MAX, AVOID CONTACT WITH SPLICE PLATE CONNECTION.

FRP BARRIER WALL

- PIPE PILE SPECIFICATION 31 62 23
- FENDER WALERS SPECIFICATION 06 71 13
- BOLTS ASTM A193 316L STAINLESS STEEL GRADE B8M
- NUTS ASTM F594 TYPE 316L STAINLESS STEEL
- WASHERS 316L STAINLESS STEEL

CONSTRUCTION SEQUENCE

SECTION C1

- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. INSTALL FILL UP TO EL. +3 FT UNIFORMLY OVER MIN 10 DAYS
- 3. INSTALL TIE ROD AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 6 DAYS
- 5. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 6. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 7. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 8. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

SECTION C2

- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. INSTALL FILL UP TO EL. -7 FT UNIFORMLY OVER MIN 7 DAYS
- 3. INSTALL TIE ROD AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. -1 FT UNIFORMLY OVER MIN 7 DAYS
- 5. INSTALL FILL UP TO EL. +5 FT UNIFORMLY OVER MIN 7 DAYS
- 6. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 7 DAYS
- 7. INSTALL RAISED BENCH TO EL. -9 FT, SLOPED AT 4H:1V AND WAIT 7 DAYS.
- 8. INSTALL RAISED BENCH FROM EL. -9 FT TO EL. -4 FT, SLOPED AT 4H:1V, TOP WIDTH OF MIN 20-FT AND WAIT 7 DAYS BEFORE DEWATERING.
- 9. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 10. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 11. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 12. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

SECTION C3

- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. INSTALL FILL UP TO EL. +0 FT UNIFORMLY OVER MIN 10 DAYS
- 3. INSTALL TIE ROD AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. +3 FT UNIFORMLY OVER MIN 3 DAYS
- 5. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 10 DAYS
- 6. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 7. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 8. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 9. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

SECTION C4A

- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. INSTALL FILL UP TO EL. +0 FT UNIFORMLY OVER MIN 10 DAYS
- 3. INSTALL TIE ROD AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 6 DAYS
- 5. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 6. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 7. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 8. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

SECTION C4

- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. INSTALL FILL UP TO EL. -3 FT UNIFORMLY OVER MIN 10 DAYS
- 3. INSTALL TIE ROD AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 6 DAYS
- 5. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 6. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 7. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 8. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

SECTION C5

- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. INSTALL FILL UP TO EL. -1 FT UNIFORMLY OVER MIN 10 DAYS
- 3. INSTALL TIE ROD AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 6 DAYS
- 5. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 6. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 7. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 8. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

SECTION C6, C7

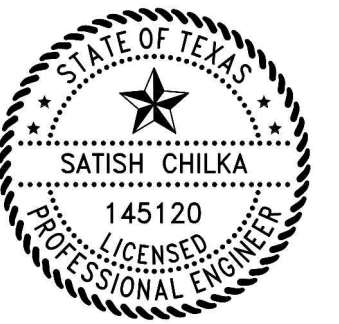
- 1. INSTALL LEFT AND RIGHT SHEET PILE WALL
- 2. CUT BETWEEN THE SHEET PILES TO ELEVATION 0 FT
- 3. INSTALL TIE RODS AT ELEVATION NOTED ON SHEET S-03
- 4. INSTALL FILL UP TO EL. +9 FT UNIFORMLY OVER MIN 6 DAYS
- 5. MINIMUM TIME FOR DEWATERING TO EXISTING MUDLINE: 4 DAYS
- 6. MINIMUM TIME FOR EXCAVATING TO 50% DEPTH: 17 DAYS
- 7. MINIMUM TIME FOR DEWATERING TO FINAL LEVEL: 3 DAYS
- 8. MINIMUM TIME FOR EXCAVATING TO 100% DEPTH: 14 DAYS

ABBREVIATIONS

- ANG ANGLE
- ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS
- AWS AMERICAN WELDING SOCIETY
- BEG BEGINNING
- BOW BOTTOM OF WALL
- CONST CONSTRUCTION
- CONT CONTINUOUS OR CONTINUED
- DIA DIAMETER
- DWG DRAWING
- EA EACH
- EL ELEVATION
- E EASTING
- EXIST. EXISTING
- FG FINISH GRADE
- FOW FACE OF WALL
- FS FINISH SURFACE
- FT FEET
- HORIZ HORIZONTAL
- INV INVERT
- JT JOINT
- LF LINEAR FEET
- LT LEFT
- MAX MAXIMUM
- MHW MEAN HIGH WATER
- MIN MINIMUM
- MISC. MISCELLANEOUS
- N NOTHING
- NTS NOT TO SCALE
- NAVD NORTH AMERICAN VERTICAL DATUM
- OC ON CENTER
- PROF PROFILE
- PT POINT
- QTY QUANTITY
- RET RETAINING
- ROW RIGHT OF WAY
- RT RIGHT
- SHT SHEET
- STA STATION
- STD STANDARD
- T&B TOP AND BOTTOM
- TOW TOP OF WALL
- TYP TYPICAL
- UNK UNKNOWN
- UNO UNLESS NOTED OTHERWISE
- USACE UNITED STATES ARMY CORPS OF ENGINEERS
- VERT VERTICAL
- W WIDTH
- W/ WITH



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Satish Chilka
11/25/24

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Client **SAN JACINTO RIVER
WASTE PITS**

Project **NORTHERN IMPOUNDMENT
FINAL 100% REMEDIAL DESIGN
HARRIS COUNTY, TEXAS**

5	100% EPA SUBMITTAL	DS	SC	11/25/2024
4	FOR CLIENT REVIEW	DS	SC	11/21/2024
3	100% EPA REVIEW	DS	SC	07/17/2024
2	90% EPA REVIEW	DS	SC	08/27/2022

No.	Issue	Drawn	Approved	Date
Drawn	DS	Designer KM		
Drafting Check		Design Check	SC	
Project Coordinator	CM	Date	Nov 25, 2024	

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Original Size	Bar is one inch on original size drawing
Arch D	0 1"

Project No. **11215702**

Title

**STRUCTURAL
NOTES**

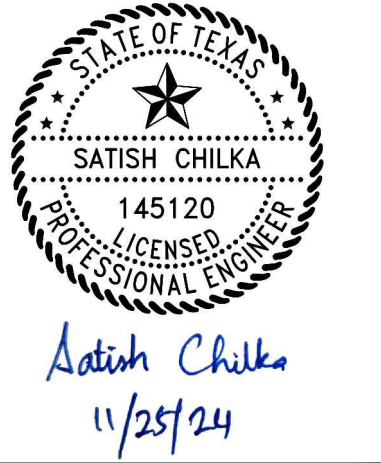
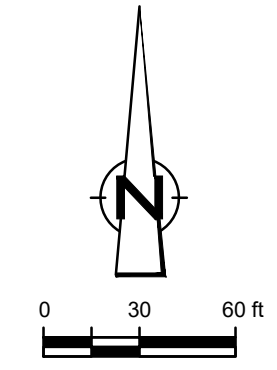
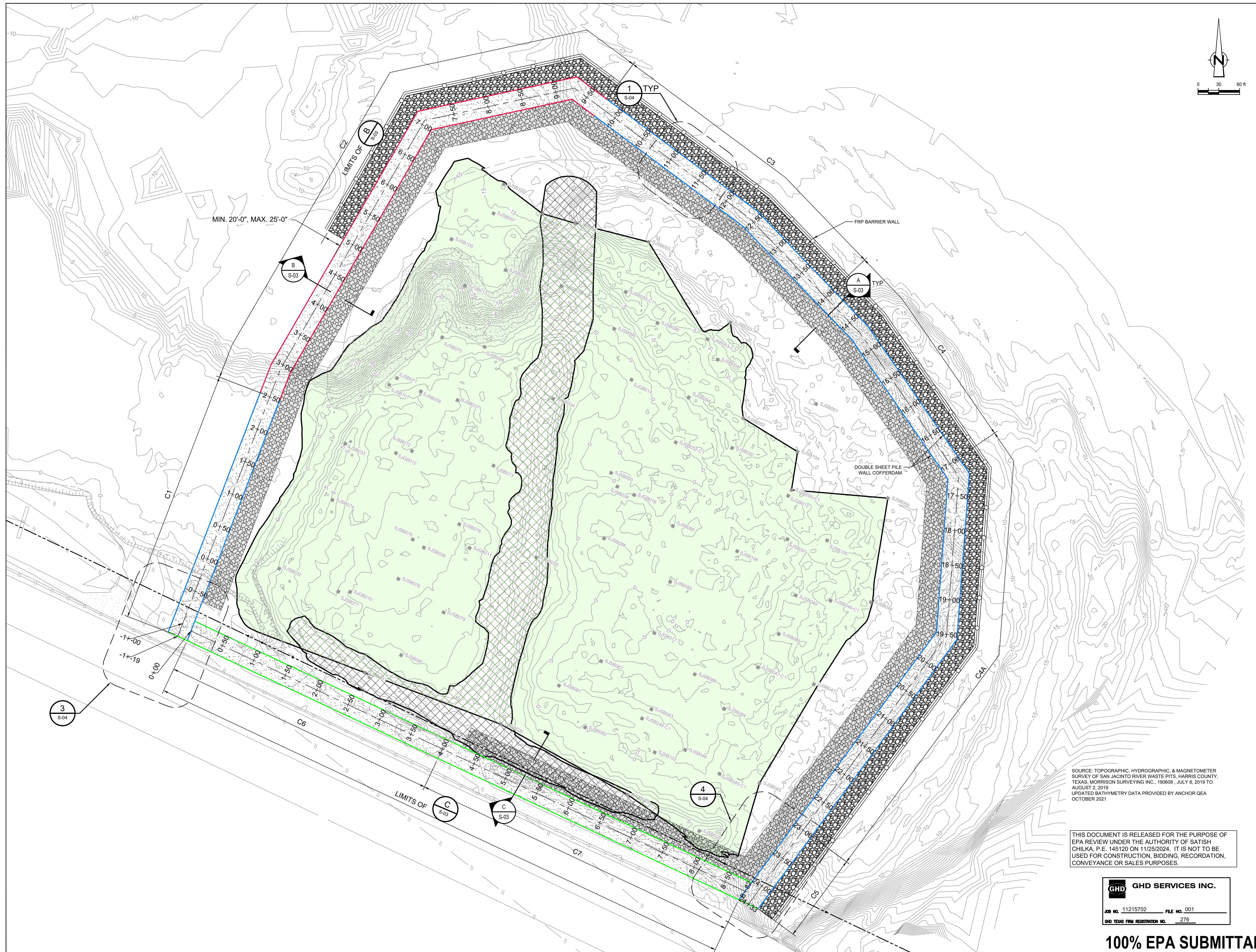
Sheet No.

S-01

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LEGEND

---	TXDOT RIGHT OF WAY
---	TOCA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	L.P.
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	FOR POTENTIAL TESTING AND REUSE
---	EXISTING BERM TO REMAIN
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	A226-700 PILE
---	A236-700 PILE
---	A242-700 PILE
---	PLANNED IMPROVEMENTS FOR
---	NORTHERN IMPOUNDMENT ACCESS
---	SOIL TYPE S1
---	RAISED BENCH
---	EXTERIOR SCOUR PROTECTION
---	INTERIOR SCOUR PROTECTION
---	FRP BARRIER WALL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	100% EPA SUBMITTAL	DS	SC	11/25/2024
4	FOR CLIENT REVIEW	DS	SC	11/21/2024
3	100% EPA REVIEW	DS	SC	07/17/2024
2	90% EPA REVIEW	DS	SC	08/27/2022

Drawn	DS	Designer	KM
Drafting Check		Design Check	SC
Project Coordinator	CM	Date	Nov 25, 2024

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 Original Size
 Arch D
 Bar is one inch on original size drawing
 0 1"

Project No. 11215702
 Title

STRUCTURAL LAYOUT PLAN

Sheet No.

S-02
 Sheet 60 of 83

SOURCE: TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS. MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR OEA OCTOBER 2021

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SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

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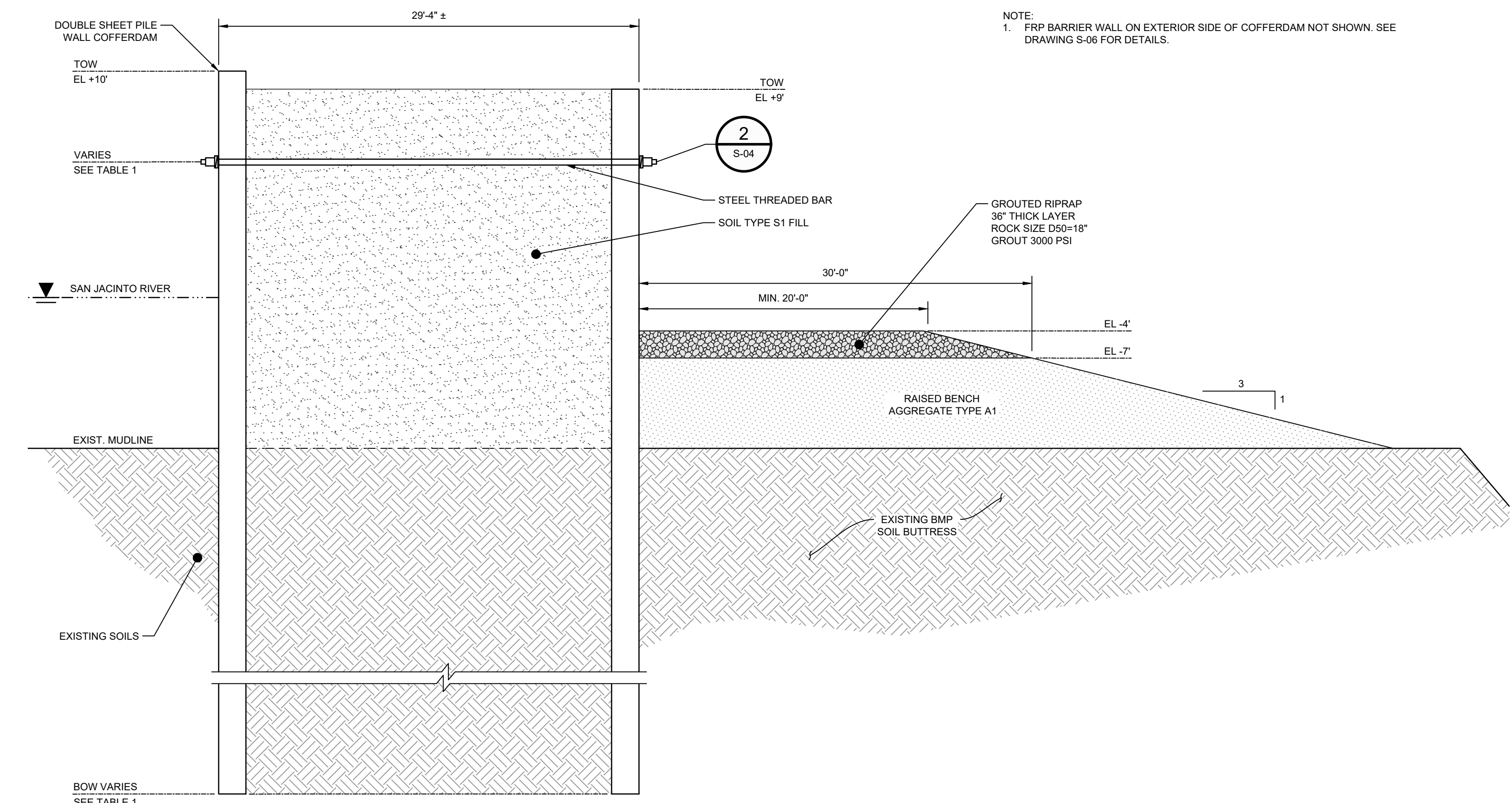
No.	Issue	Drawn	Approved	Date
Drawn	DS	Designer	KM	
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Project Coordinator	CM	Date	Nov 25, 2024	
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Project No. 11215702

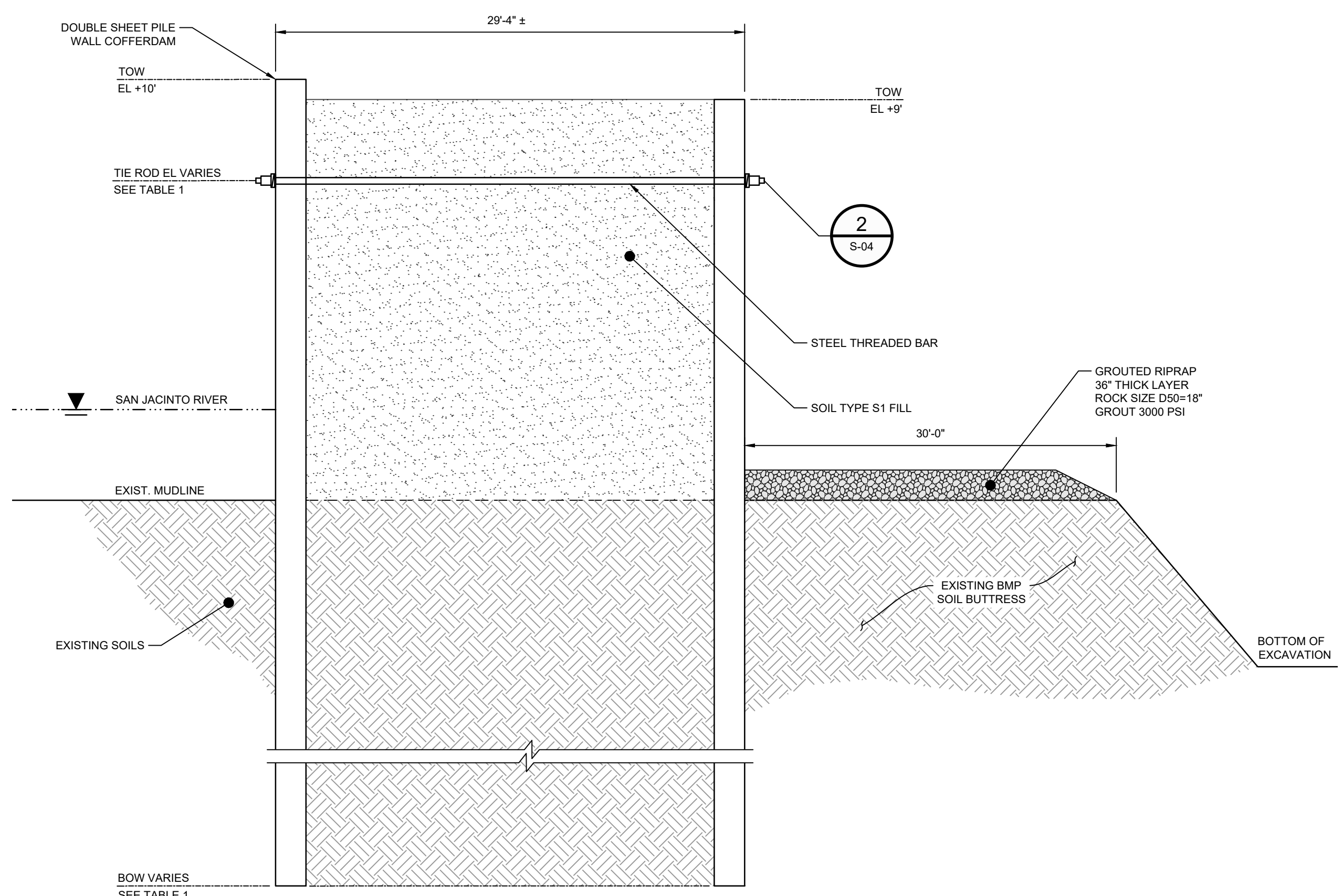
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STRUCTURAL SECTIONS

Sheet No.

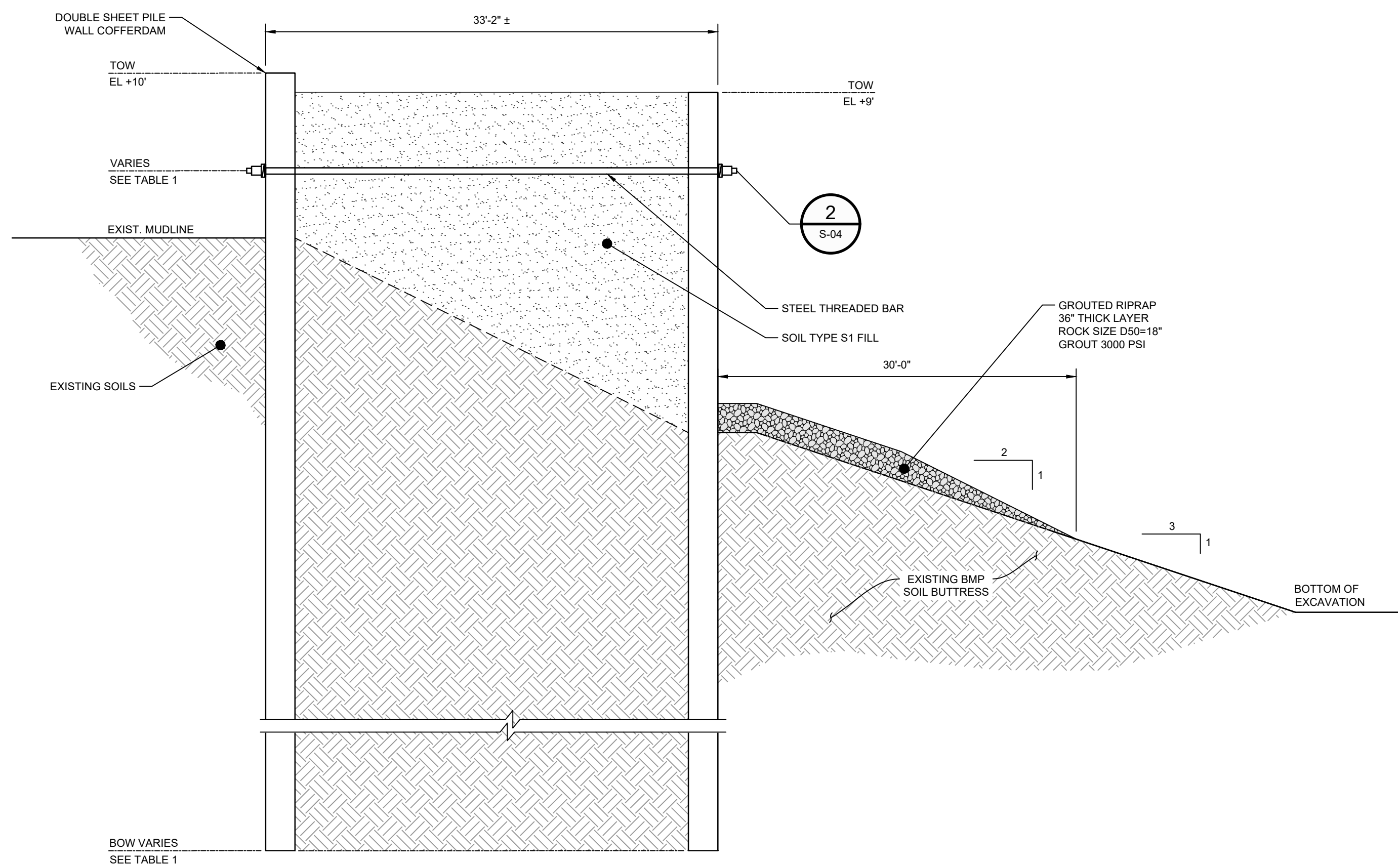
S-03



DETAIL B TYPICAL WALL SECTION
N.T.S.



DETAIL A TYPICAL WALL SECTION
N.T.S.



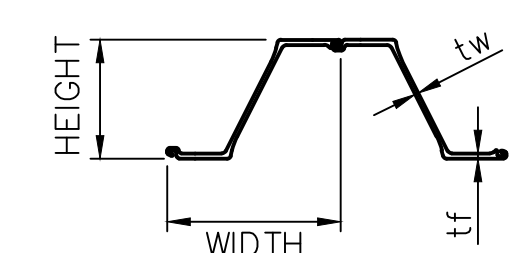
DETAIL C TYPICAL WALL SECTION
N.T.S.

TABLE 1

WALL SEGMENT	START STA	END STA	DETAIL	SHEET PILE SECTION	SHEET PILE LENGTH (FT)	TIE ROD NOMINAL DIAMETER (IN)	TIE ROD SPACING (FT)	TIE ROD EL (FT)
C1	-1+10	2+50	A	AZ36-700N	50	SEE TABLE 2 ON S-04	5	3
C2	2+50	9+75	B	AZ42-700N	55		5	3
C3	9+75	14+00	A	AZ36-700N	50		5	3
C4	14+00	17+00	A	AZ36-700N	50		5	3
C4A	17+00	23+00	A	AZ36-700N	50		5	3
C5	23+00	24+33	A	AZ36-700N	60		5	3
C6	0+00	4+00	C	AZ26-700	60		5	3
C7	4+00	8+82	C	AZ26-700	60	5	3	

MINIMUM STEEL SHEET PILE

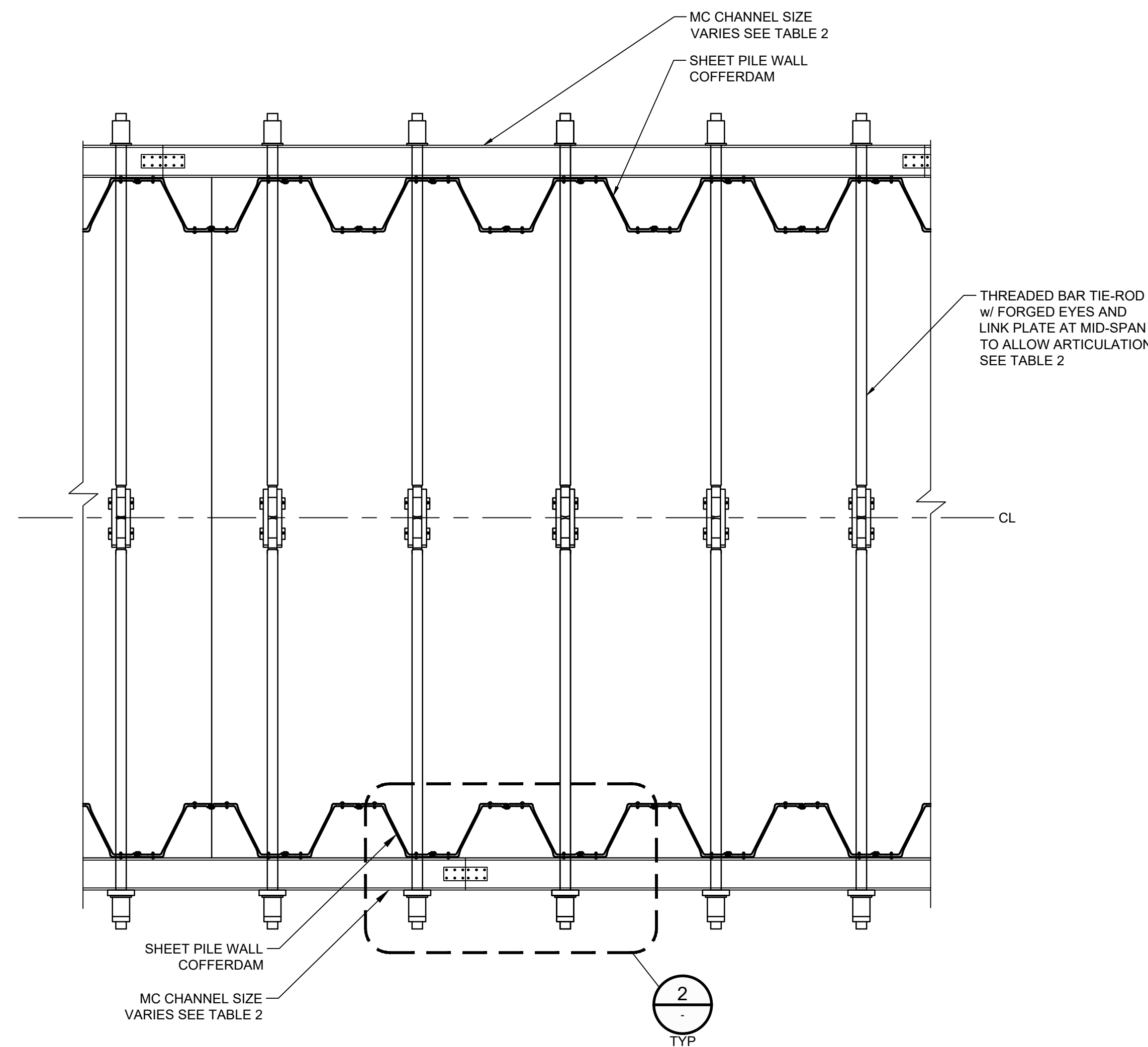
SSP SECTION	ASTM	YIELD STRENGTH (KSI)	WIDTH w (IN)	HEIGHT h (IN)	THICKNESS (IN)		WEIGHT		ELASTIC MODULUS (IN ³ /FT)
					FLANGE tf	WEB tw	SINGLE PILE (LB/FT)	WALL AREA (LB/FT ²)	
AZ26-700	A572	60	27.56	18.11	0.480	0.480	69.12	30.10	48.4
AZ36-700N	A572	60	27.56	19.65	0.591	0.441	79.72	34.71	66.8
AZ42-700N	A572	60	27.56	19.65	0.709	0.551	95.51	41.59	78.2



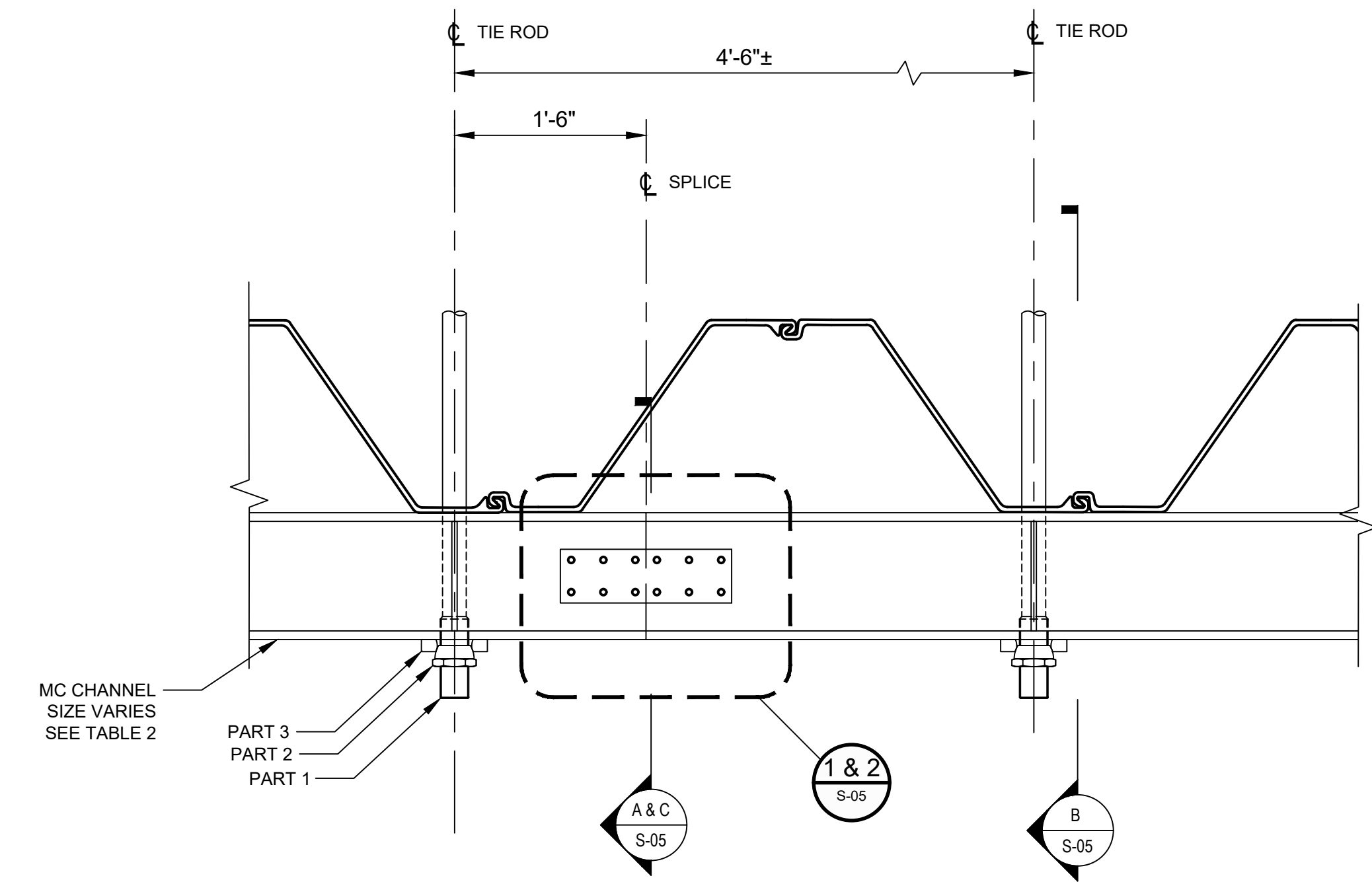
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GHD TEXAS PERM REGISTRATION NO. 276

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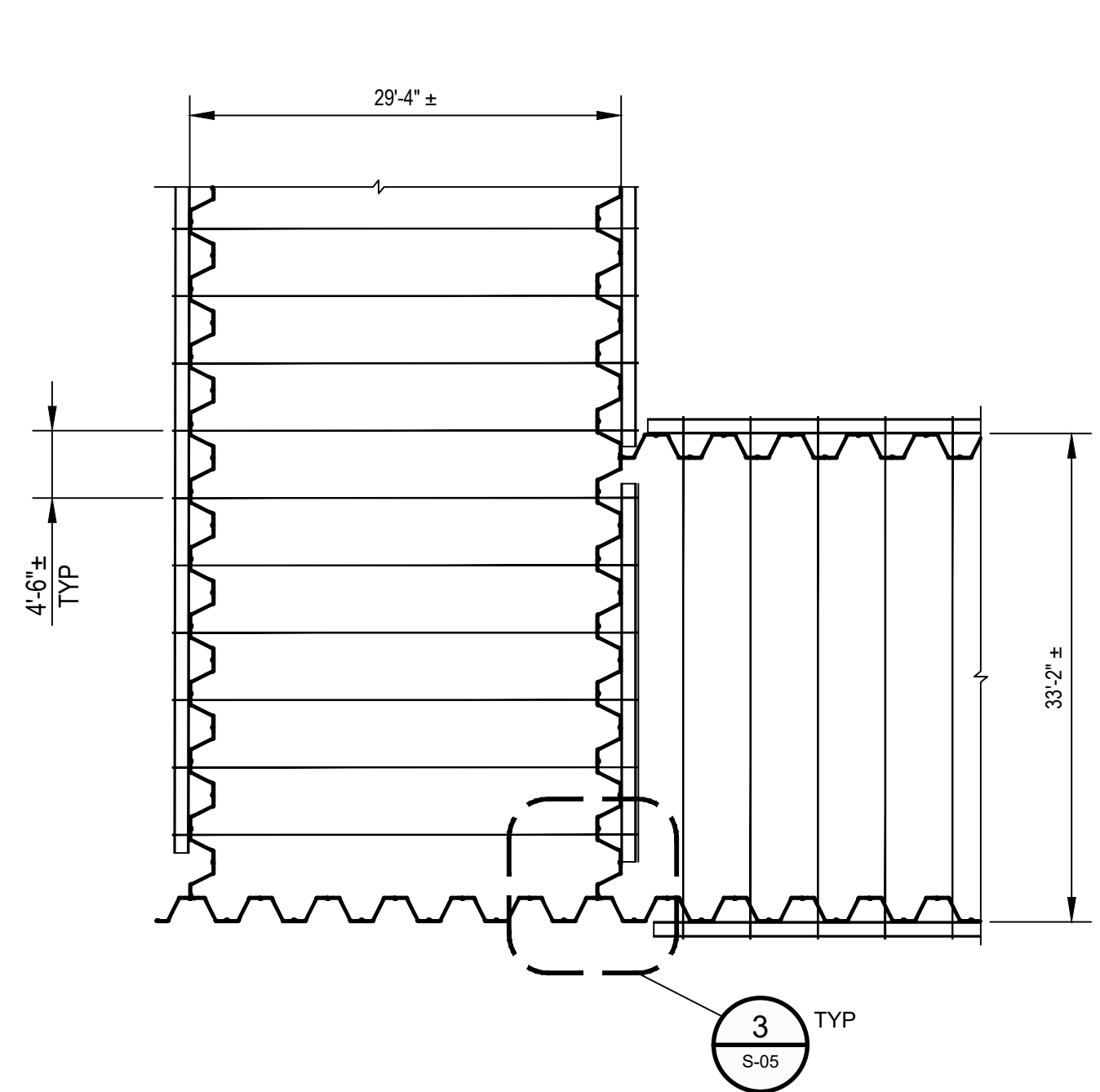


DETAIL 1 PLAN VIEW
SCALE: 1"=3'-0"

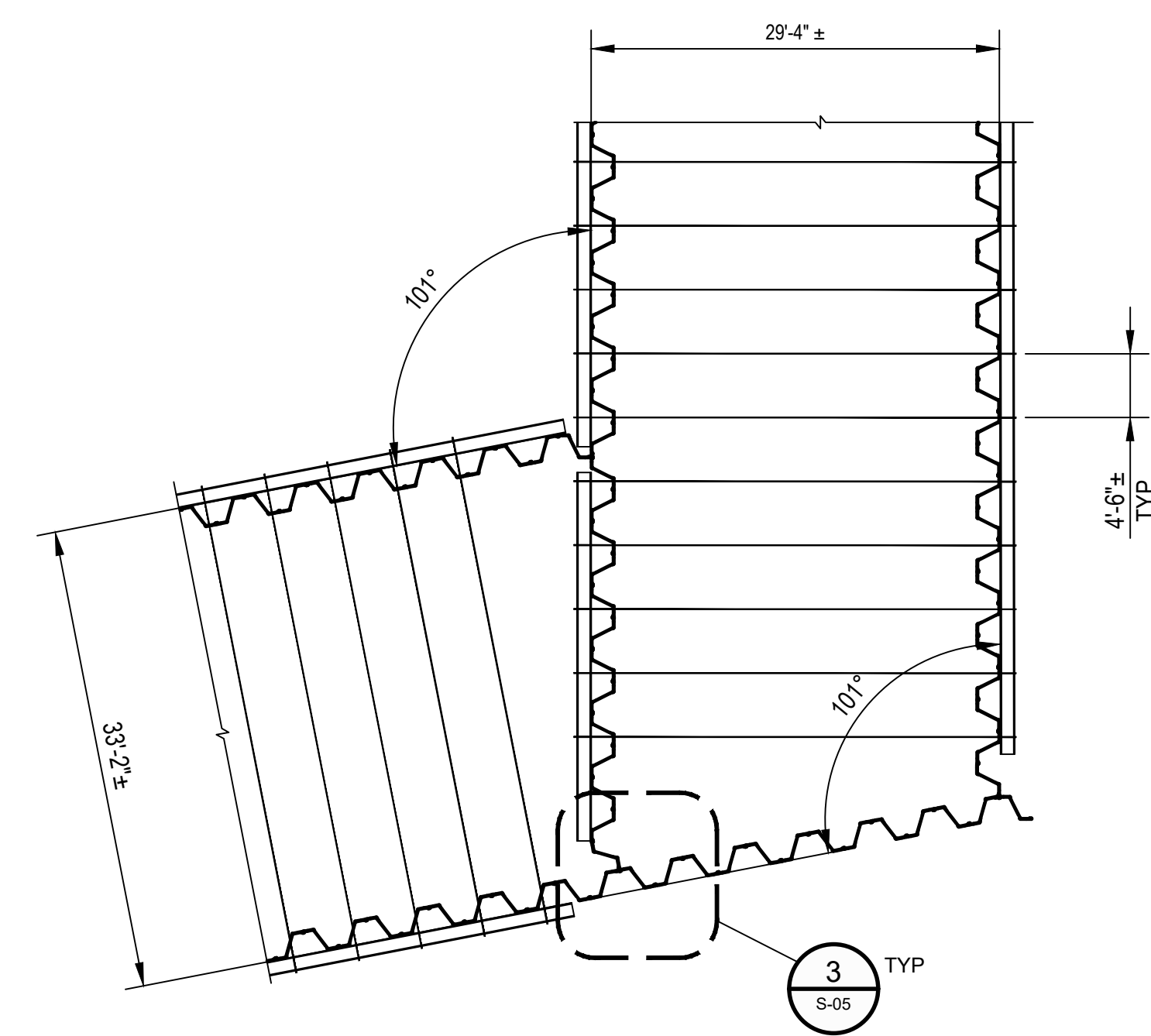


NOTE:
1. STAGGER WALER SPLICE ON INTERIOR AND EXTERIOR WALL BY 10'-0" +/-
2. WELD 1/2" THICK STEEL PLATES BETWEEN T&B WALERS TO MAINTAIN SPACING

DETAIL 2 PLAN VIEW
SCALE: 1"=1'-0"



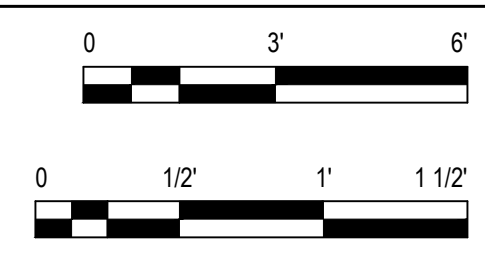
DETAIL 3 PLAN VIEW
SCALE: 3/32"=1'-0"



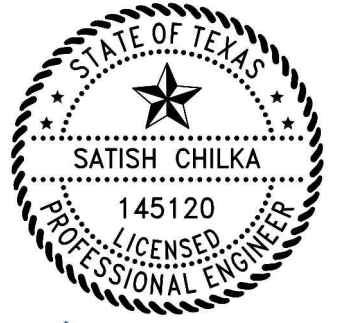
DETAIL 4 PLAN VIEW
SCALE: 3/32"=1'-0"

WALL SEGMENT	TIE ROD NOMINAL DIAMETER PART 1 (IN)	TIE ROD SPHERICAL NUT O.D. PART 2 (IN)	SPHERICAL BEARING PLATE PART 3 (IN)	WALER SECTION
C1	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C2	3.00	4 3/4"	7" X 9" X 1 1/2"	MC18 x 45.8
C3	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C4	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C4A	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C5	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C6	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C7	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35

NOTE: THE ROD SUPPLIER SHALL REVIEW AND VERIFY THE DIMENSIONS OF THE SPHERICAL NUT AND BEARING PLATE TO MATCH THE REQUIRED TIE ROD NOMINAL DIAMETER



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SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	100% EPA SUBMITTAL	DS	SC	11/25/2024
4	FOR CLIENT REVIEW	DS	SC	11/21/2024
3	100% EPA REVIEW	DS	SC	07/17/2024
2	90% EPA REVIEW	DS	SC	08/27/2022

Drawn	DS	Designer	KM
Drafting Check		Design Check	SC
Project Coordinator	CM	Date	Nov 25, 2024

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Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702
Title

STRUCTURAL DETAILS 1 of 2

Sheet No.

S-04

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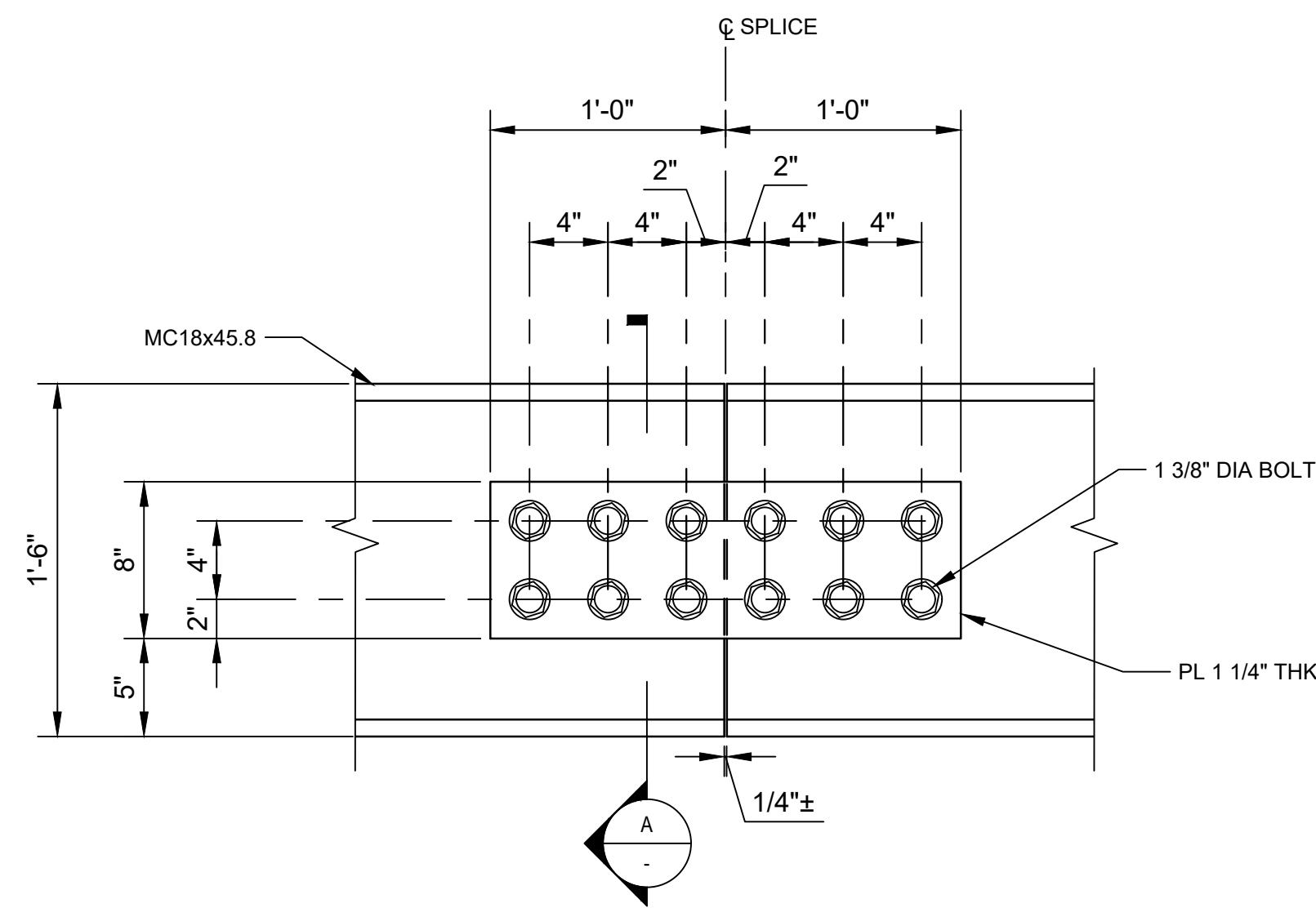


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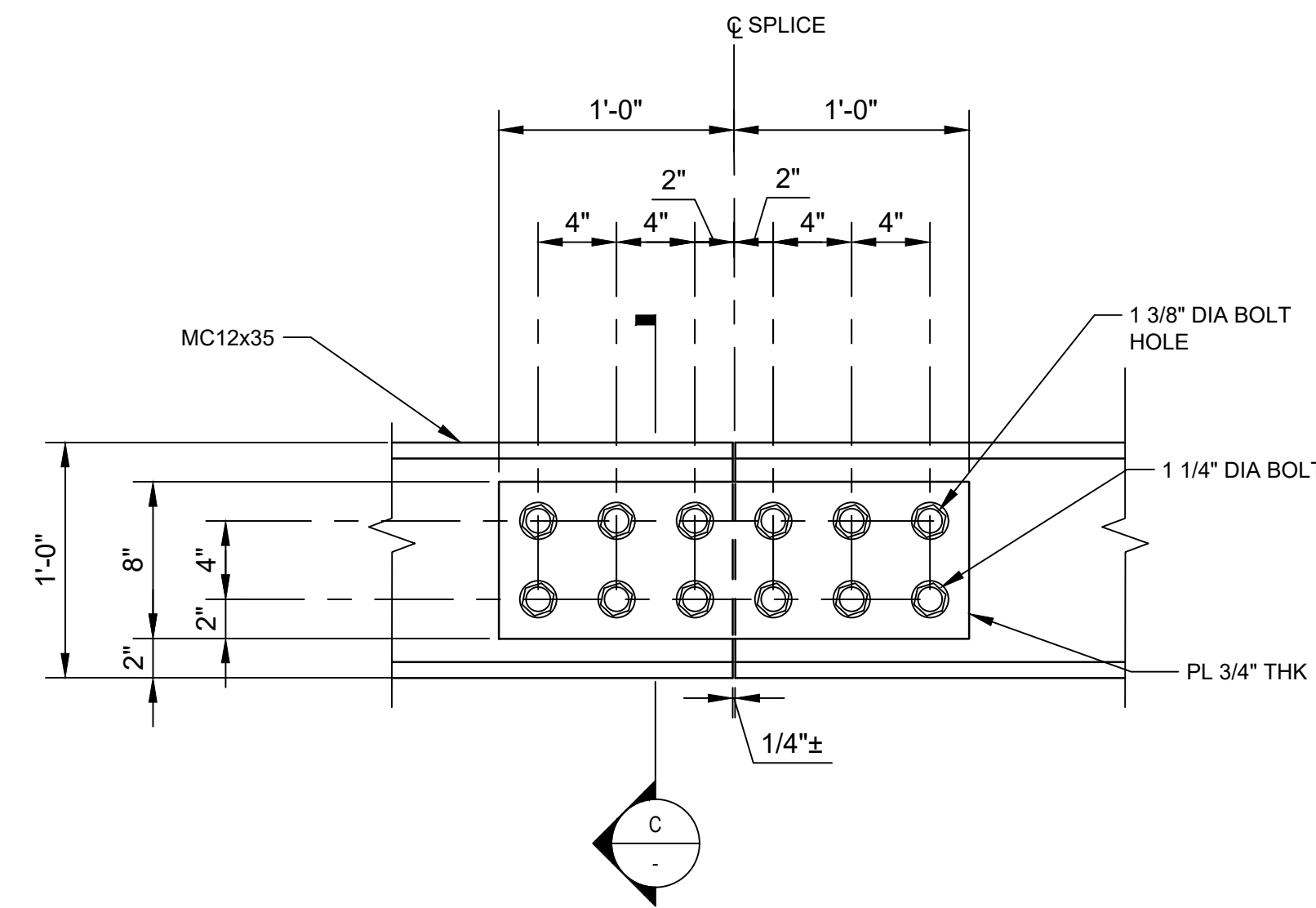


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11/25/24

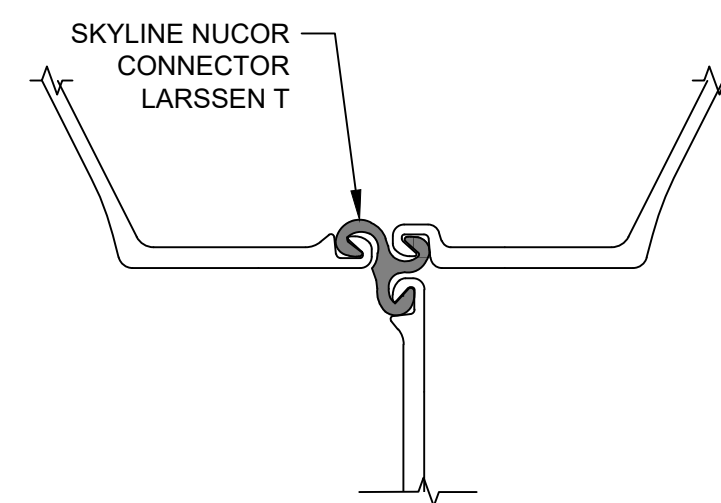
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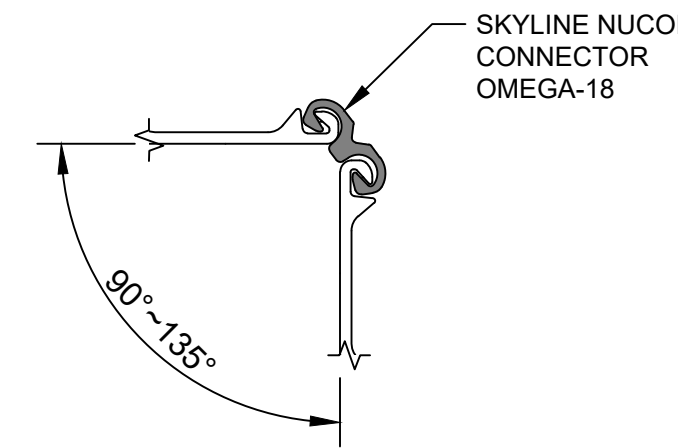
DETAIL 1 PLAN - SPLICE CONNECTION - WALER MC 18X45.8
SCALE: 1 1/2"=1'-0"



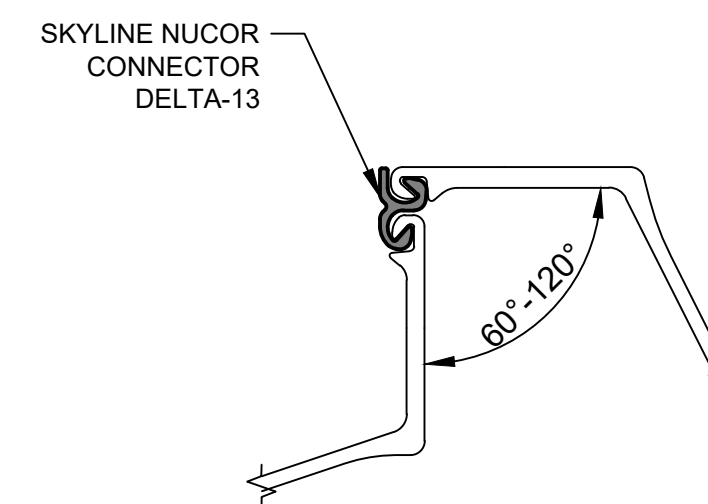
DETAIL 2 PLAN - SPLICE CONNECTION - WALER MC 12X35
SCALE: 1 1/2"=1'-0"



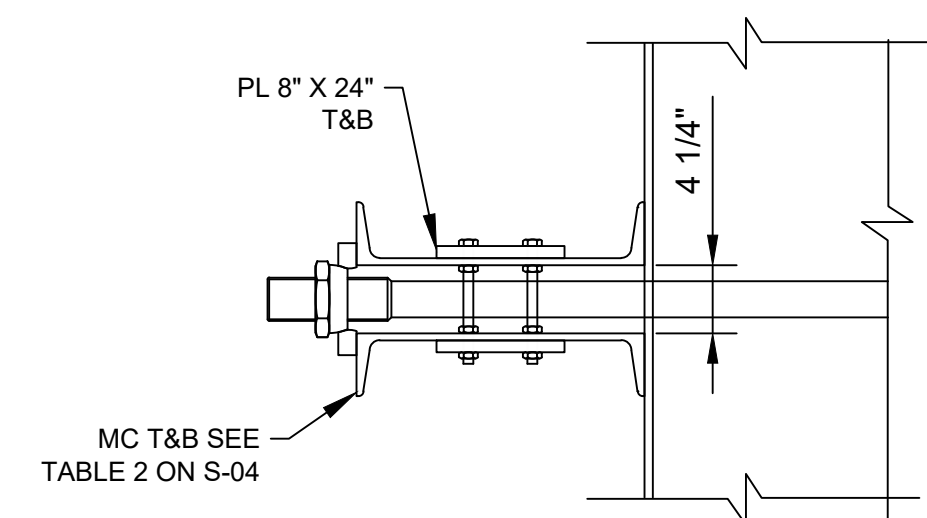
DETAIL 3 THREE SHEET PILE CONNECTOR
SCALE: NTS



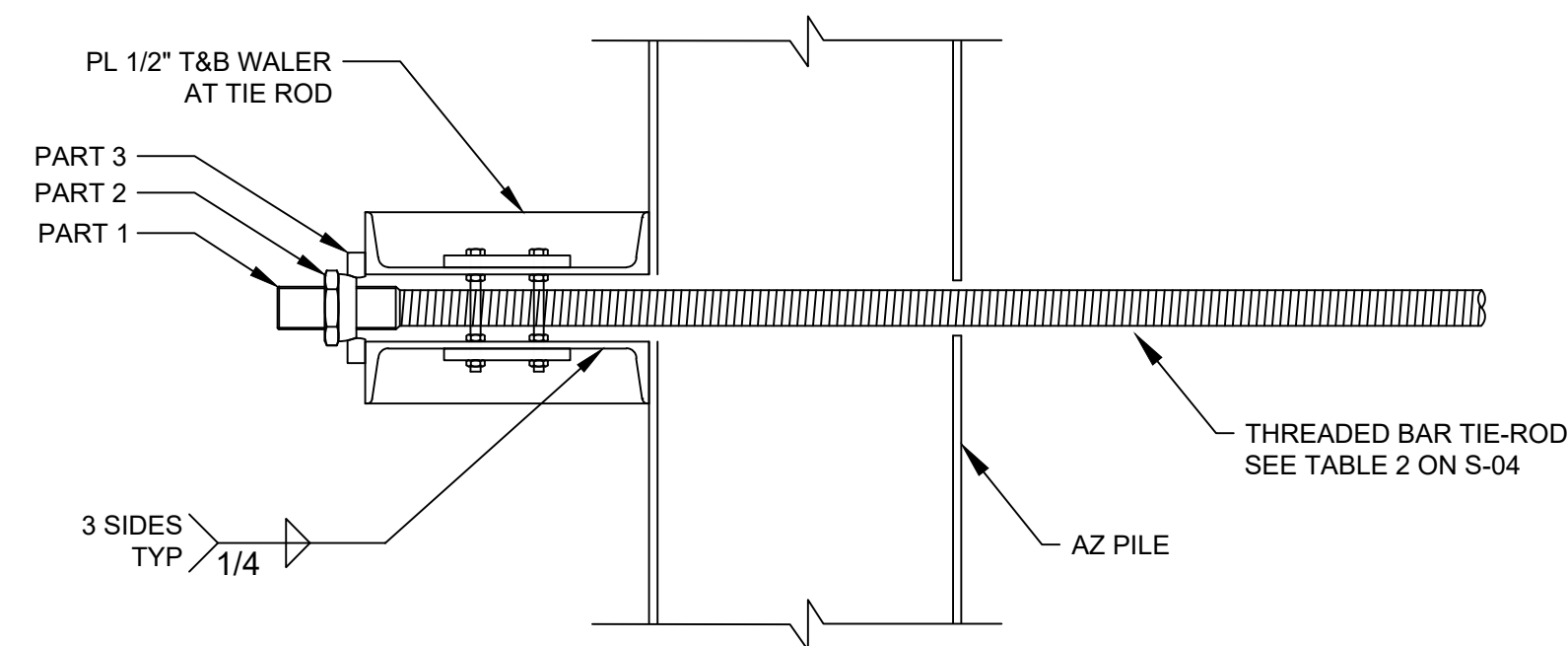
DETAIL 4 CORNER CONNECTOR ALTERNATIVE A
SCALE: NTS



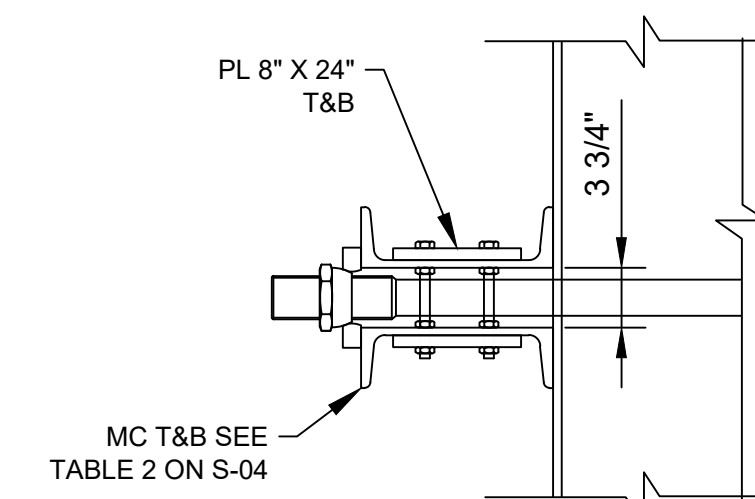
DETAIL 5 CORNER CONNECTOR ALTERNATIVE B
SCALE: NTS



SECTION A SPLICE CONNECTION
SCALE: 1"=1'-0"

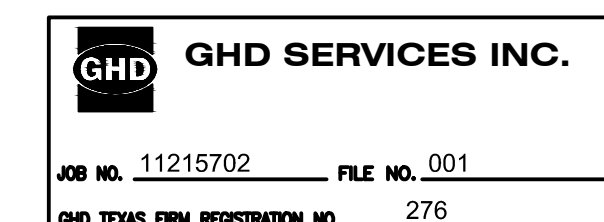


SECTION B TIE ROD CONNECTION
SCALE: 1"=1'-0"



SECTION C SPLICE CONNECTION
SCALE: 1"=1'-0"

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Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA SUBMITTAL	DS	SC	11/25/2024
4	FOR CLIENT REVIEW	DS	SC	11/21/2024
3	100% EPA REVIEW	DS	SC	07/17/2024
2	90% EPA REVIEW	DS	SC	08/27/2022

Drawn: DS, Designer: KM

Drafting Check: SC, Design Check: SC

Project Coordinator: CM, Date: Nov 25, 2024

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Project No. 11215702

Title: **STRUCTURAL DETAILS 2 OF 2**

Sheet No.

S-05



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Project
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No.	Issue	Drawn	Approved	Date
5	100% EPA SUBMITTAL	DS	SC	11/25/2024
4	FOR CLIENT REVIEW	DS	SC	11/21/2024
3	100% EPA REVIEW	DS	SC	07/17/2024
2	90% EPA REVIEW	DS	SC	08/27/2022

Drawn DS Designer KM

Drafting Check Design Check SC

Project Coordinator CM Date Nov 25, 2024

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Project No. 11215702

Title

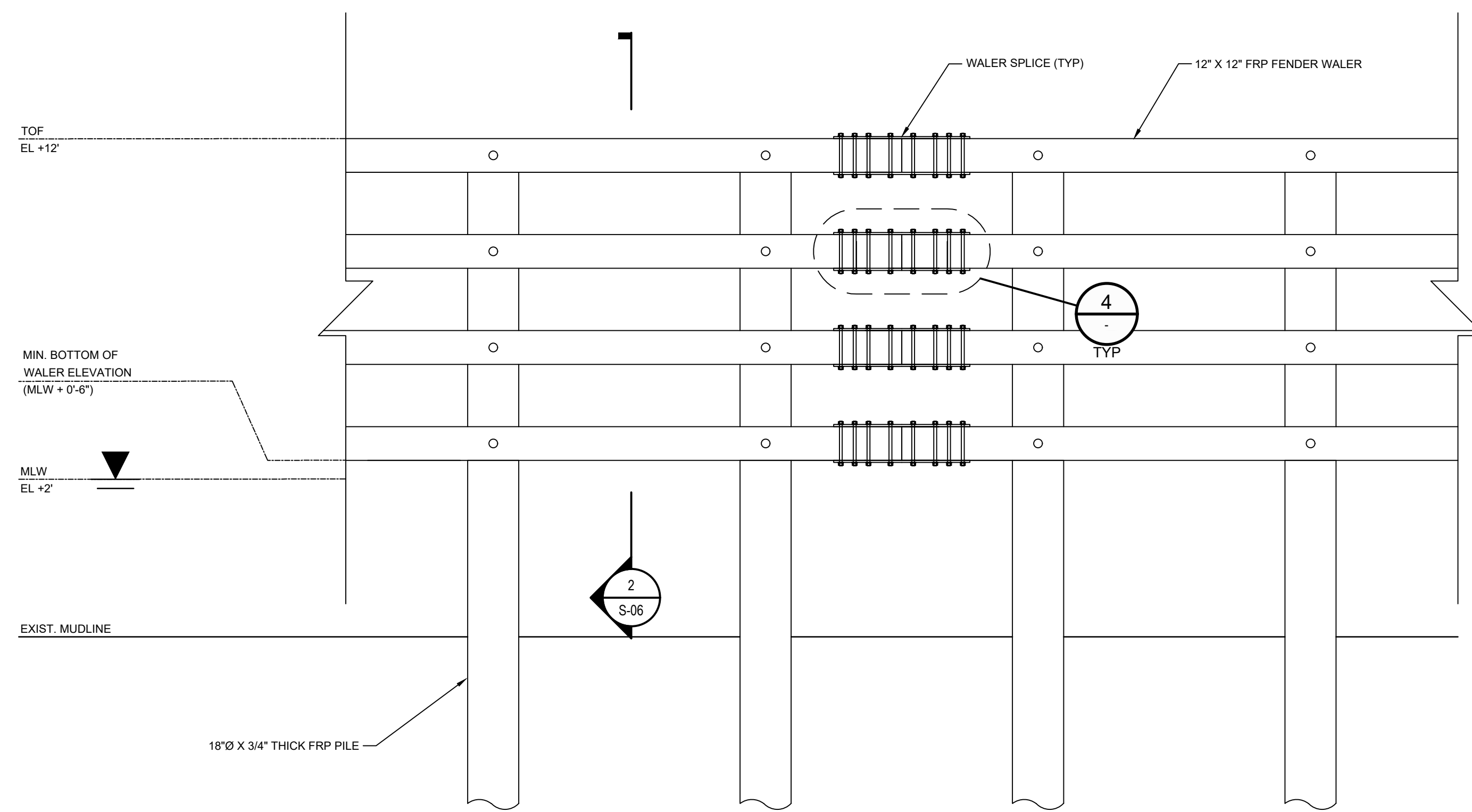
FRP BARRIER WALL

Sheet No.

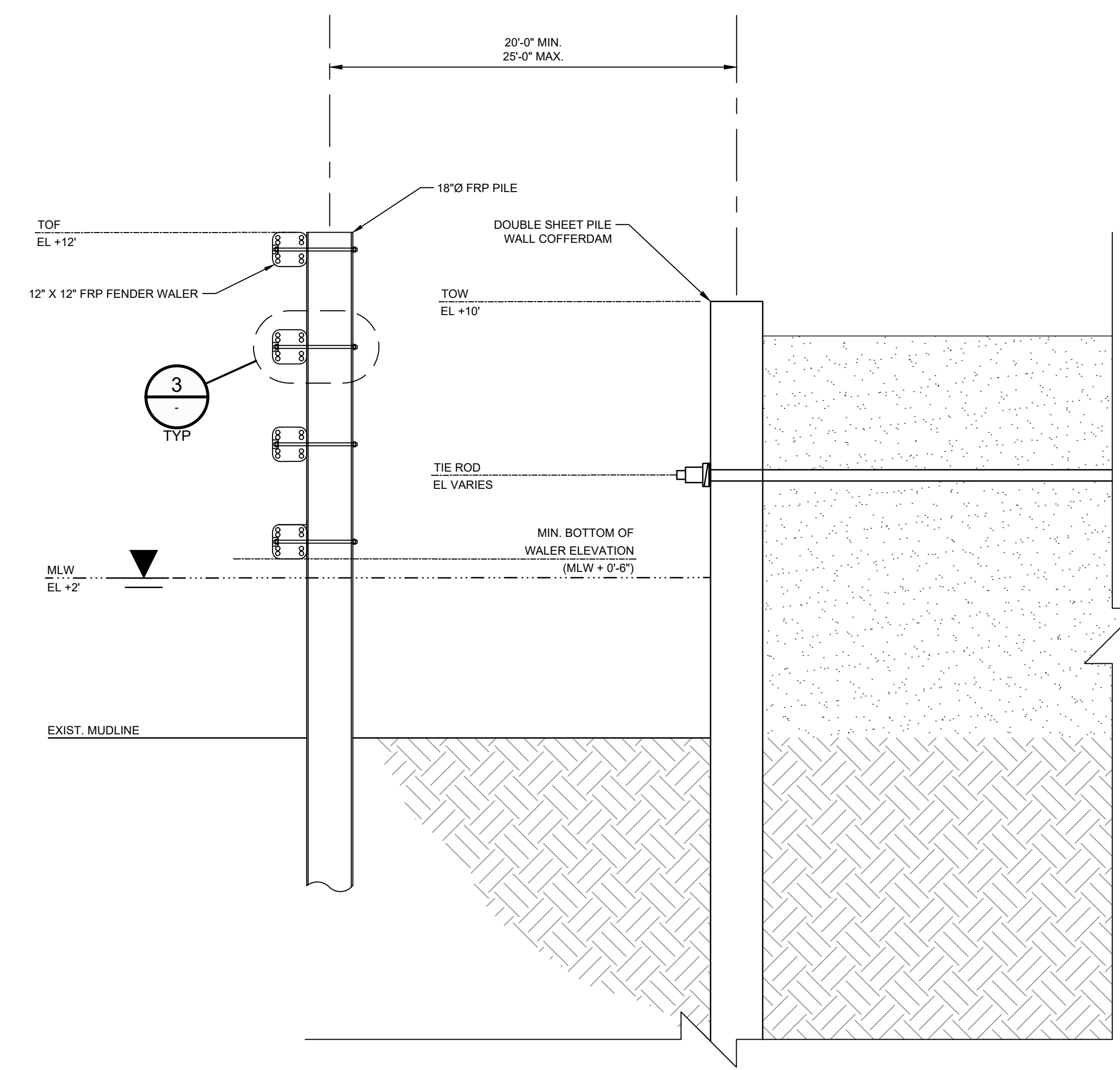
S-06

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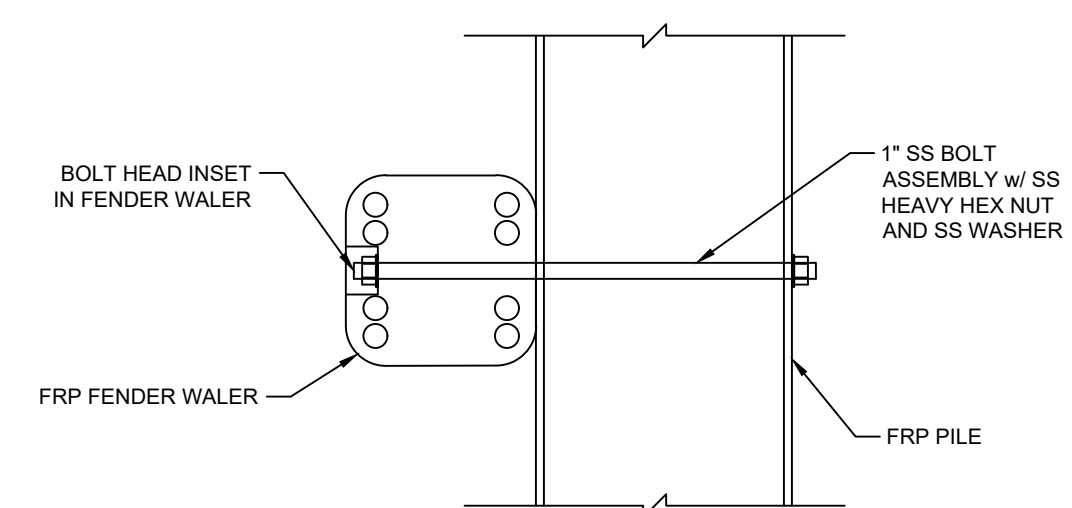
Sheet 64 of 83



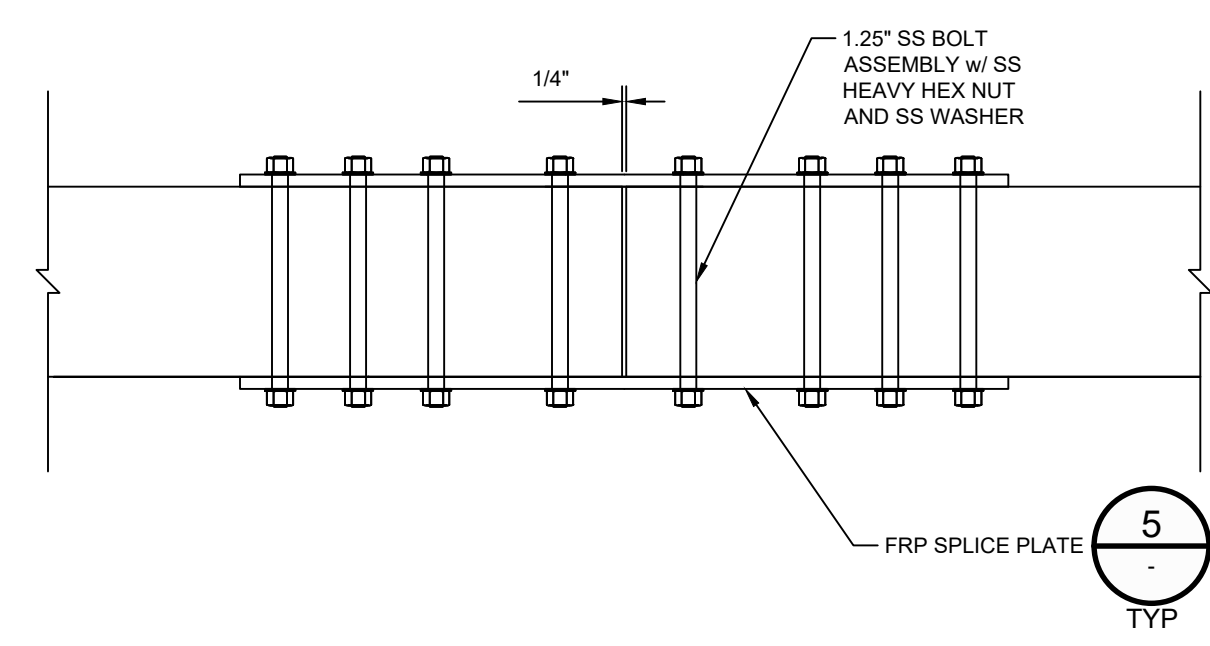
DETAIL 1 TYPICAL FRP BARRIER ELEVATION
SCALE: 1"=3'-0"
S-06



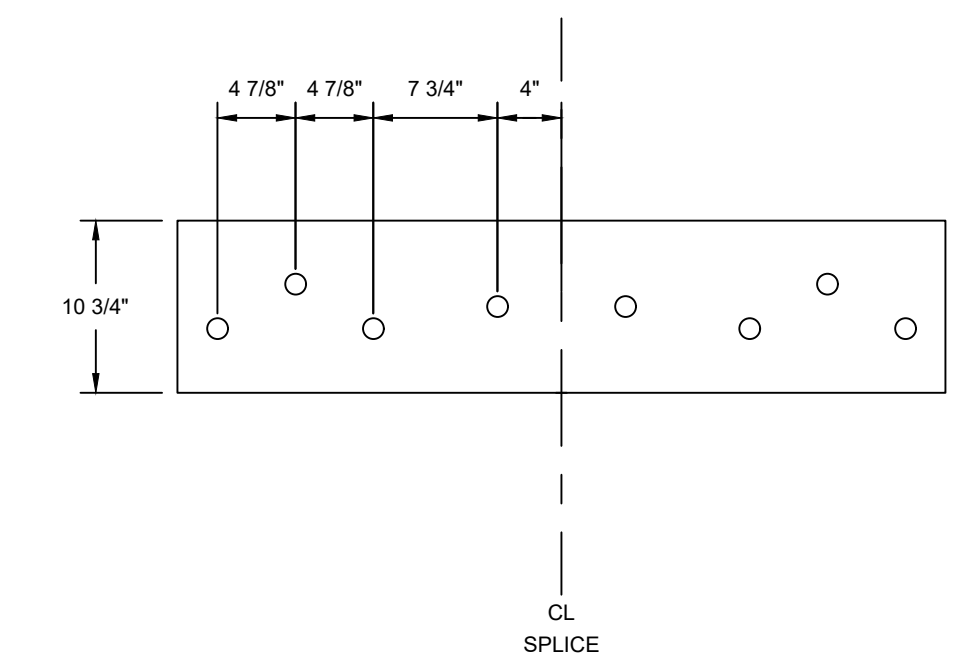
DETAIL 2 TYPICAL FRP BARRIER SECTION
SCALE: 1"=3'-0"
S-06



DETAIL 3 TYPICAL WALER SECTION
SCALE: 1"=1'-0"
S-06



DETAIL 4 TYPICAL WALER SECTION
SCALE: 1"=1'-0"
S-06



DETAIL 5 TYPICAL BOLT PATTERN FOR FRP SPLICE PLATE
SCALE: 1"=1'-0"
S-06

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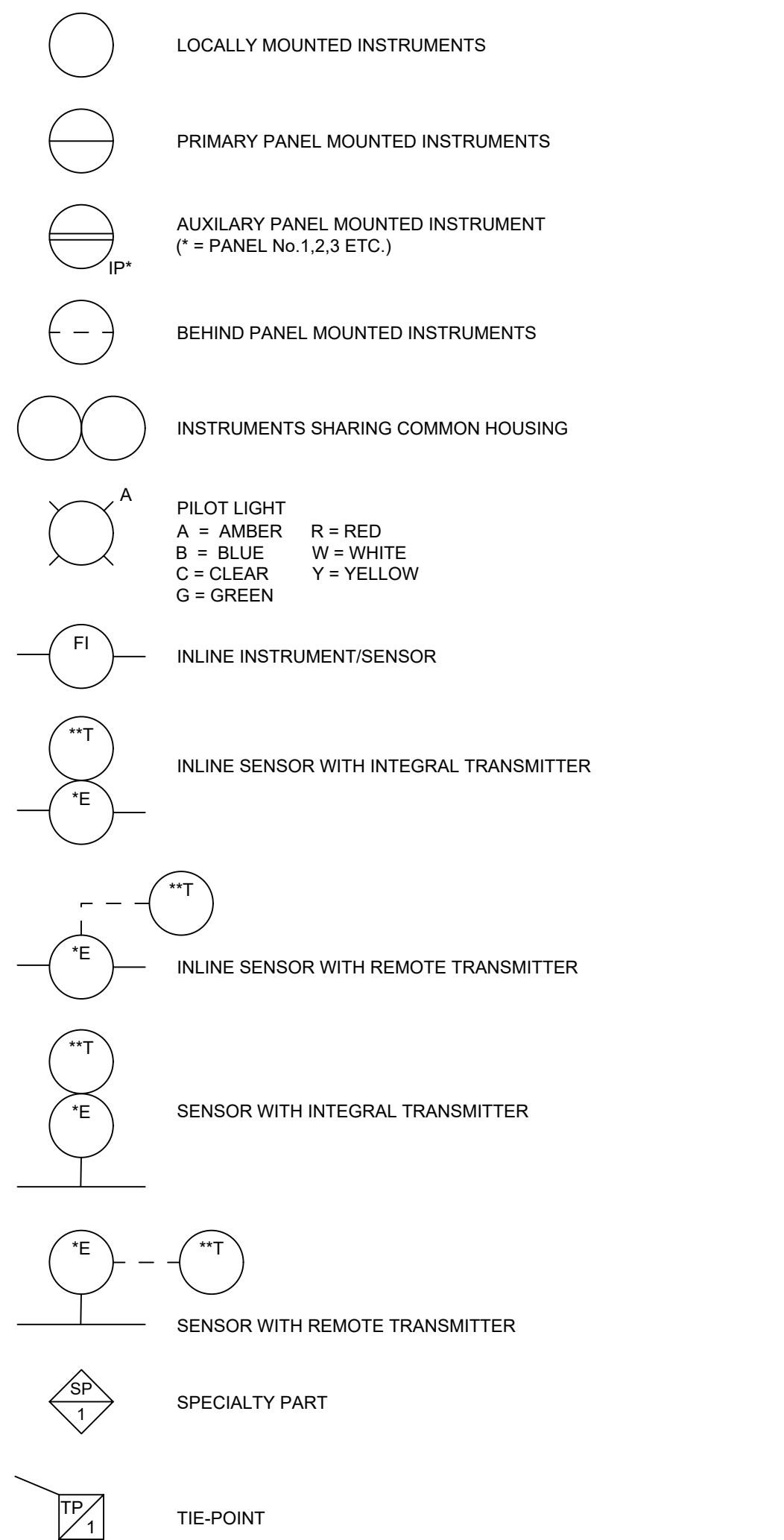
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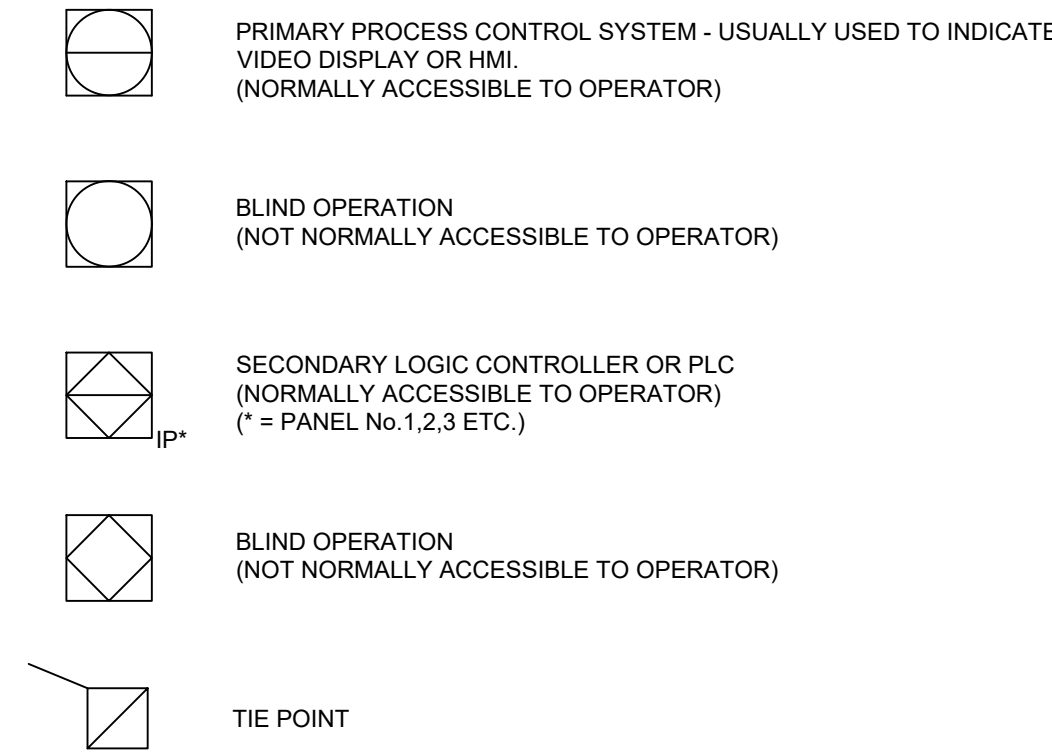
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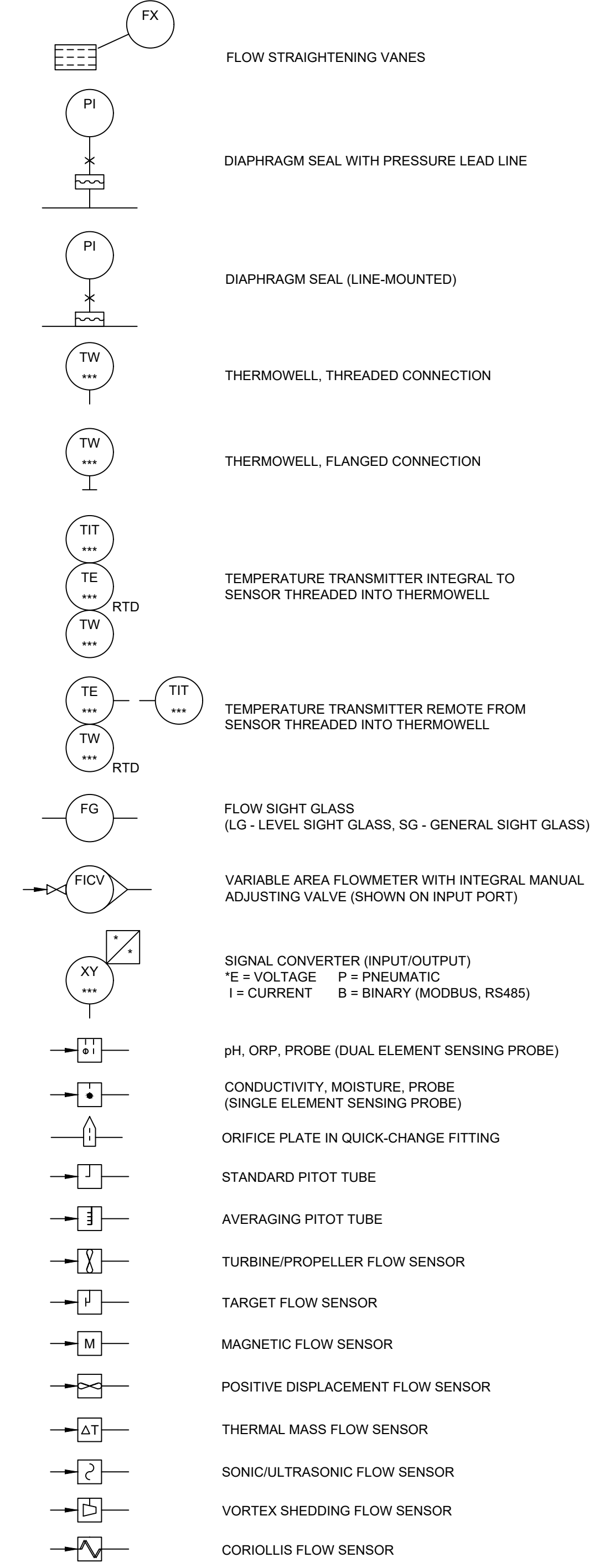
GENERAL INSTRUMENT SYMBOLS



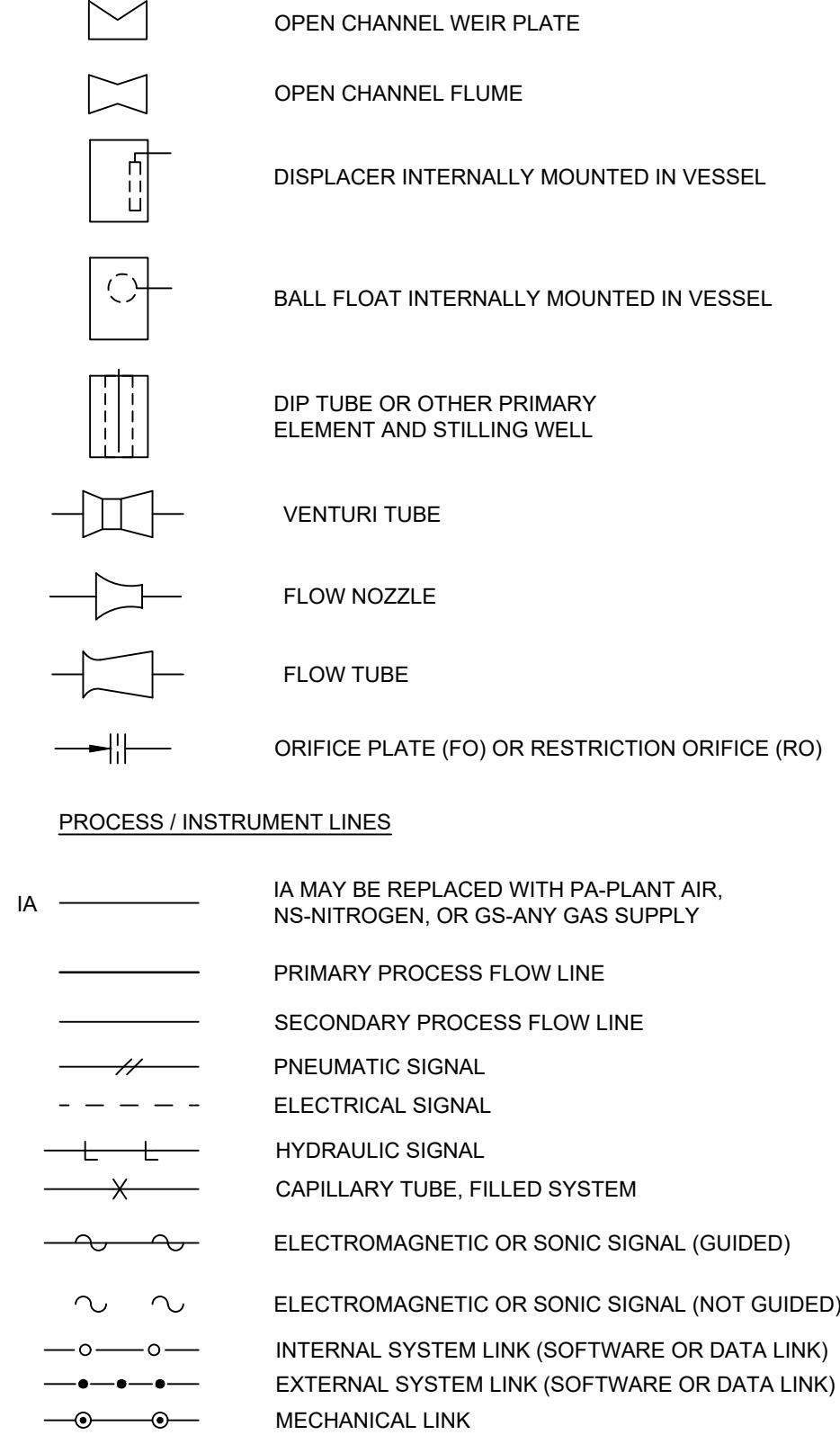
DISTRIBUTED CONTROL / SHARED DISPLAY INSTRUMENTS



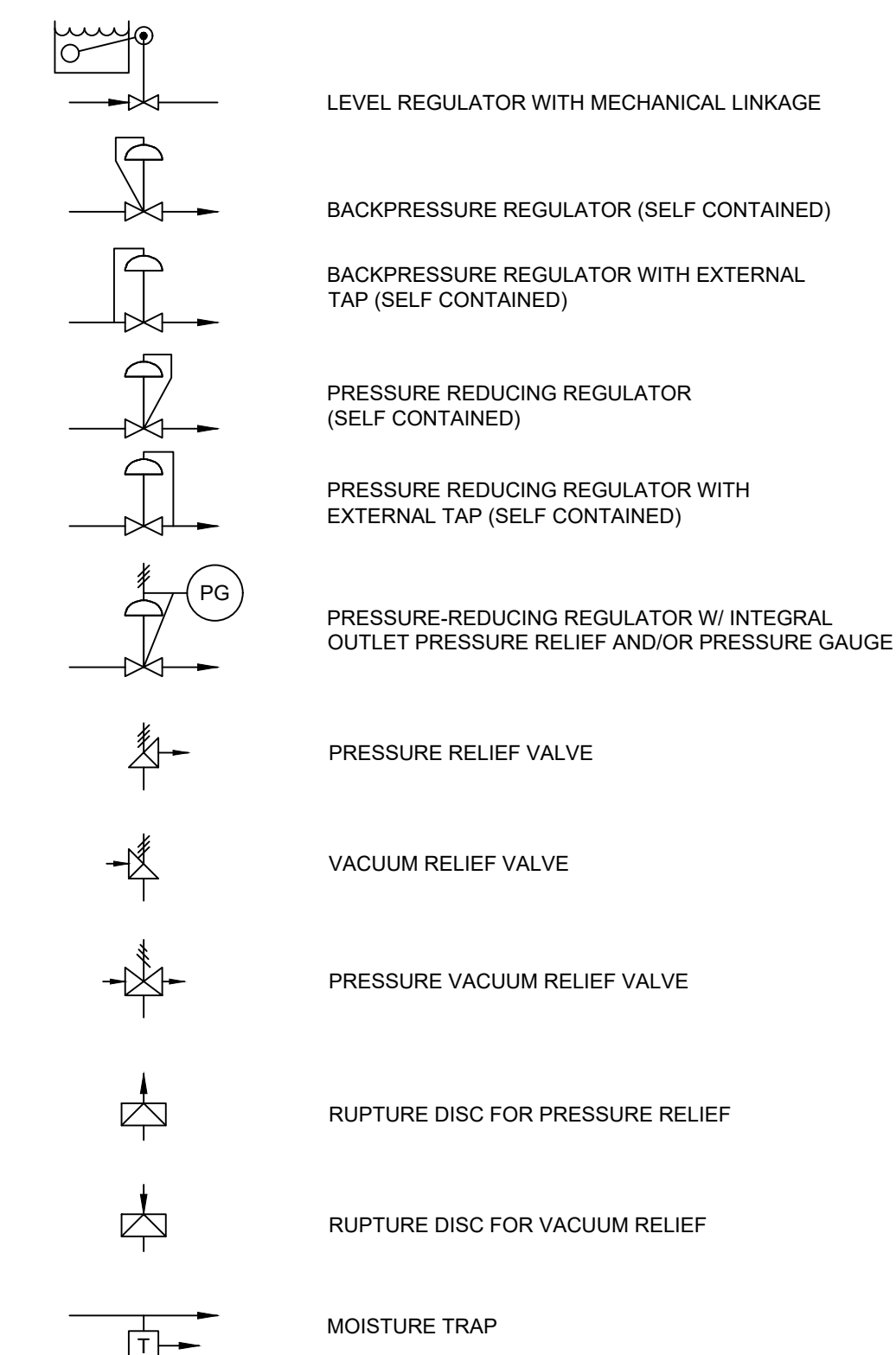
PRIMARY ELEMENT SYMBOLS



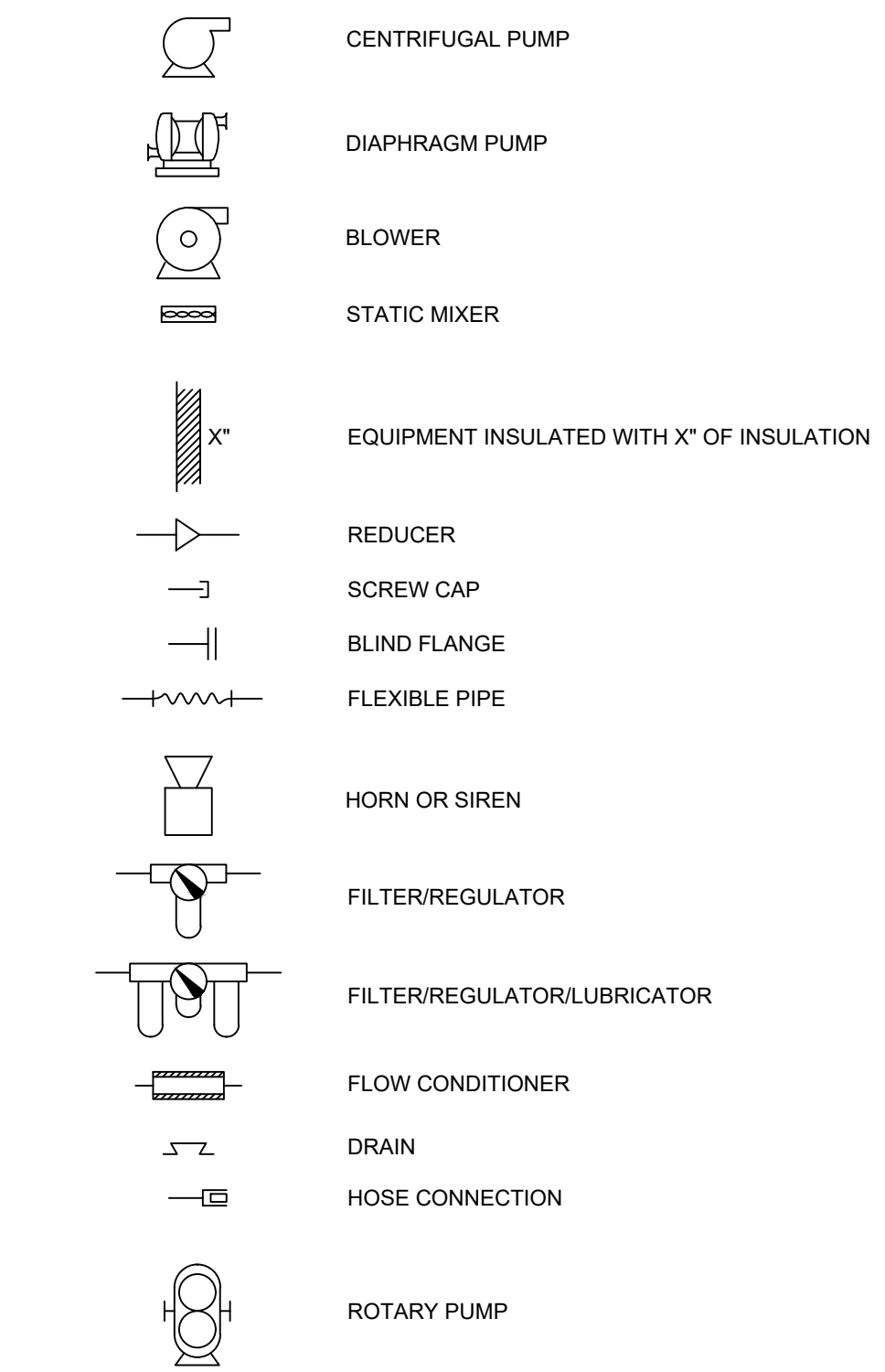
PRIMARY ELEMENT SYMBOLS (CONT'D)



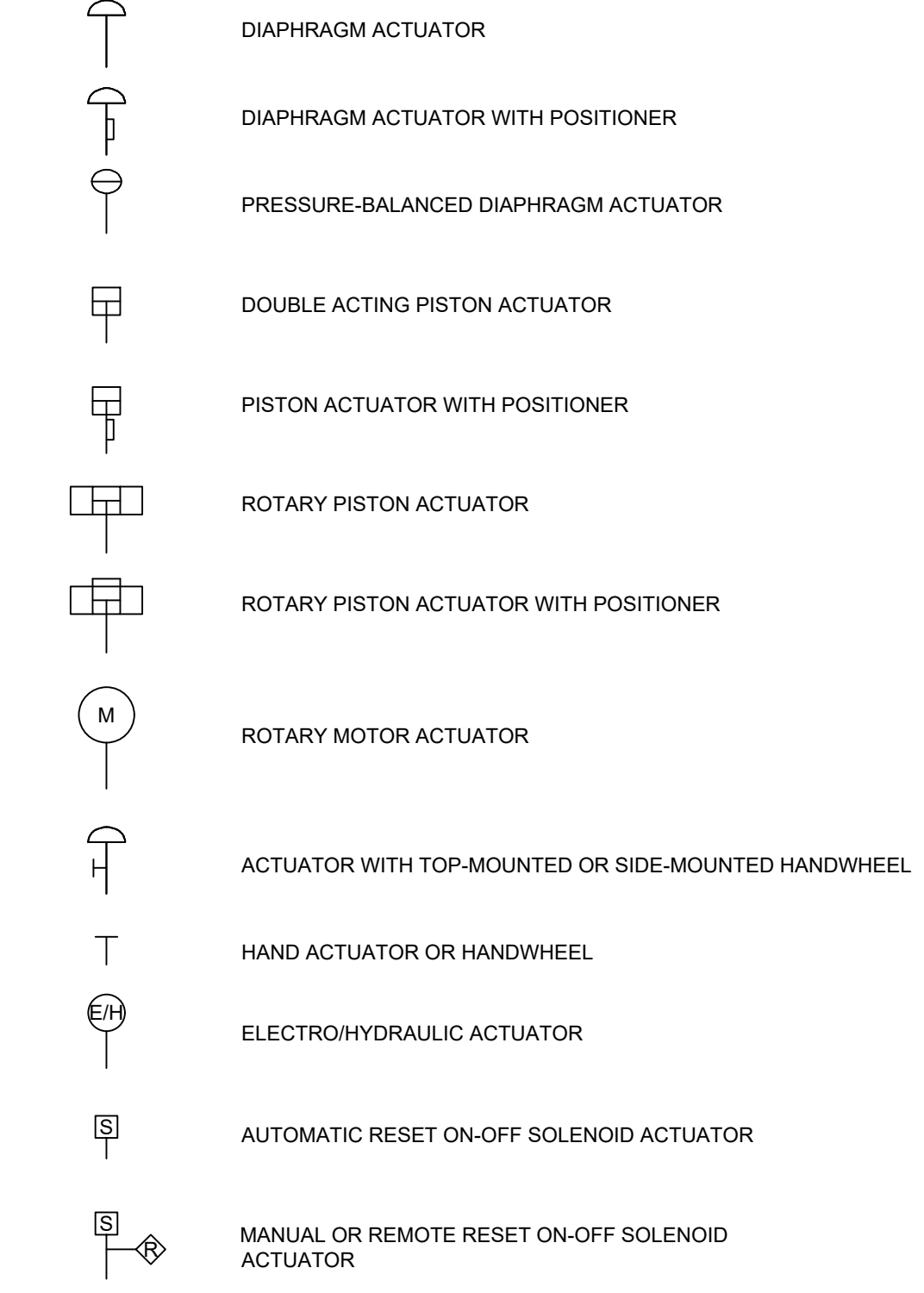
SELF-ACTUATED REGULATORS, VALVES, AND OTHER DEVICES



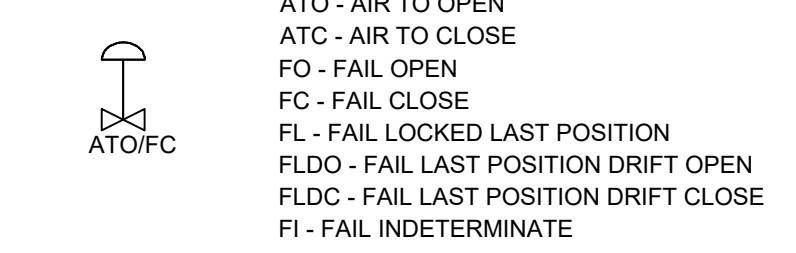
EQUIPMENT/PIPING SYMBOLS



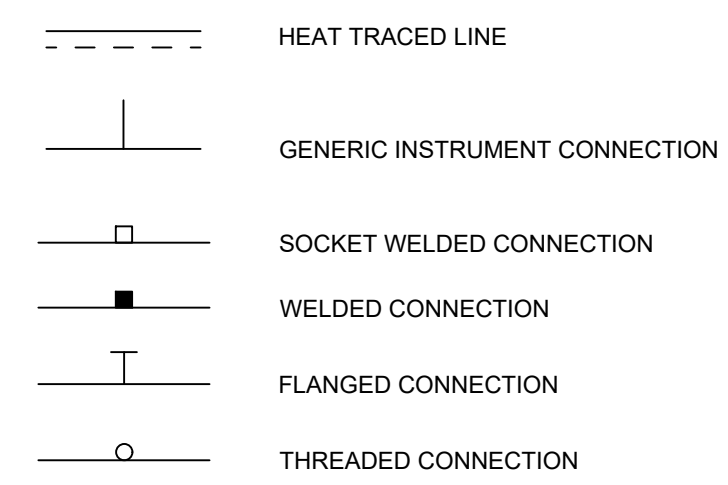
ACTUATOR SYMBOLS



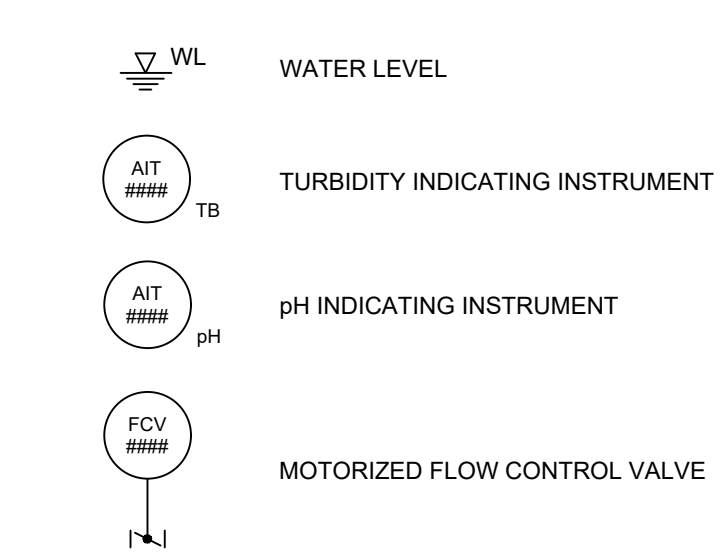
ACTUATOR INDICATIONS



INSTRUMENT TO PROCESS/EQUIP. CONNECTIONS



MISCELLANEOUS SYMBOLS



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Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	RH	NF	11/25/2024
2	FOR CLIENT REVIEW	RH	NF	11/21/2024
1	100% EPA SUBMITTAL	RH	NF	07/17/2024
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Drawn	RH	Designer	NF	
Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	
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Original Size	Bar is one inch on original size drawing			0 1"
Project No.	11215702			
Title	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SYMBOLS			
Sheet No.	P-000A			

Project No. 11215702
Title
WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SYMBOLS
Sheet No.
P-000A



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TYPICAL INTERNATIONAL SOCIETY OF AUTOMATION LETTER COMBINATIONS

First-Letters	Initiating or Measured Variable	Controllers				Readout Devices		Switches and Alarm Devices *			Transmitters			Solenoids, Relays, Computing Devices	Primary Element	Test Point	Well or Probe	Viewing Device, Glass	Safety Device	Final Element
		Recording	Indicating	Blind	Self-Actuated Control Valves	Recording	Indicating	High **	Low	Comb	Recording	Indicating	Blind							
A	Analysis	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW			AV
B	Burner/Combustion	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW	BG		BZ
C	User's Choice																			
D	User's Choice																			
E	Voltage	ERC	EIC	EC		ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE				EZ	
F	Flow Rate	FRC	FIC	FC	FCV, FICV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP		FG		FV
FQ	Flow Quantity	FQRC	FQIC			FQR	FQI	FQSH	FQSL		FQIT	FQT	FQY	FQE					FQV	
FF	Flow Ratio	FFRC	FFIC	FFC		FFR	FFI	FFSH	FFSL					FE					FFV	
G	User's Choice																			
H	Hand		HIC	HC						HS									HV	
I	Current	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE				IZ	
J	Power	JRC	JIC			JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE				JV	
K	Time	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE				KV	
L	Level	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG	LV	
M	User's Choice																			
N	User's Choice																			
O	User's Choice																			
P	Pressure/Vacuum	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP		PSV, PSE	PV	
PD	Pressure, Differential	PDR	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDR	PDI	PDT	PDY	PE	PP			PDV	
Q	Quantity	QRC	QIC			QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE				QZ	
R	Radiation	RRC	RIC	RC		RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE		RW		RZ	
S	Speed/Frequency	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSH	SRT	SIT	ST	SY	SE				SV	
T	Temperature	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TW	TSE	TV	
TD	Temperature, Differential	TDR	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDR	TDI	TDT	TDY	TE	TP	TW		TDV	
U	Multivariable					UR	UI							UY					UV	
V	Vibration/Machinery Analysis					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE				VZ	
W	Weight/Force	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE				WZ	
WD	Weight/Force, Differential	WDR	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDR	WDI	WDT	WDY	WE				WDZ	
X	Unclassified																			
Y	Event/State/Presence		YIC	YC		YR	YI	YSH	YSL			YT	YY	YE					YZ	
Z	Position/Dimension	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE				ZV	
ZD	Gauging/Deviation	ZDR	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDR	ZDI	ZDT	ZDY	ZDE				ZDV	

IDENTIFICATION LETTERS

FIRST-LETTER	SUCCEEDING-LETTERS			
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	Analysis		Alarm	User's Choice
B	Burner/Combustion		User's Choice	User's Choice
C	User's Choice	Conductivity		User's Choice
D	User's Choice	Differential, Density		User's Choice
E	Voltage		Sensor (Primary Element)	
F	Flow Rate	Ratio (Fraction)		
G	User's Choice		Glass, Viewing Device, Gauge	
H	Hand			High
I	Current (Electrical)		Indicate	
J	Power	Scan		
K	Time, Time Schedule	Time Rate of Change		Control Station
L	Level		Light	Low
M	User's Choice	Momentary, Moisture		Middle, Intermediate
N	User's Choice		User's Choice	User's Choice
O	User's Choice		Orifice, Restriction	
P	Pressure, Vacuum		Point (Test) Connection	
Q	Quantity	Integrate, Totalize		
R	Radiation		Record	
S	Speed, Frequency	Safety		Switch
T	Temperature			Transmit
U	Multivariable		Multifunction	Multifunction
V	Vibration, Machinery Analysis			Valve, Damper, Louver
W	Weight, Force		Well	
X	Unclassified	X Axis	Unclassified	Unclassified
Y	Event, State, or Presence	Y Axis		Relay, Compute, Convert
Z	Position, Dimension	Z Axis		Driver, Actuator, Unclassified Final Control Element

NOTE: THIS TABLE IS NOT ALL-INCLUSIVE.

OTHER POSSIBLE COMBINATIONS:

* A, ALARM, THE ANNUNCIATING DEVICE, MAY BE USED IN THE SAME FASHION AS S, SWITCH, THE ACTUATING DEVICE.
 ** THE LETTERS H AND L MAY BE OMITTED IN THE UNDEFINED CASE.

ABBREVIATIONS:

HOA - HAND/OFF/AUTO NC - NORMALLY CLOSED
 LOR - LOCAL/OFF/REMOTE NO - NORMALLY OPEN
 OPN - OPEN ST - START / ENABLE
 CLS - CLOSE SP - STOP / DISABLE
 STPT - SETPOINT JOG - PUMP MOTOR
 ES - EMERGENCY STOP SA - SINGLE ACTING
 DA - DOUBLE ACTING

INSTRUMENTS

PIPE FLUID SERVICE CODE INDEX
SEE PIPING SPECIFICATIONS FOR DETAILS

CODE	SERVICE
CL21	CHLORINE LIQUID OR GAS
CTW1	COOLING TOWER WATER
CW3	PROCESS WATER
CW4	CHILLED WATER
NaOH	CAUSTIC SODA SOLUTION
GCO	GLYCOL
N20	NITROGEN (DRY COMPRESSED GAS)
SI	STEAM
CI	CONDENSATE
PV	PROCESS VENT
STS	STORM SEWER
PR	PROCESS RELIEF
GW	GROUNDWATER
DR	DRAIN
IA	INSTRUMENT AIR
VE	VAPOR EXTRACTION
NPW	NON POTABLE WATER
H2SO4	SULFURIC ACID
DW	DOMESTIC WATER
INF	INFLUENT WATER (CONTACT WATER)
EFF	EFFLUENT WATER (TREATED WATER)
SLG	SLUDGE
BW	BACKWASH
COAG	COAGULANT
POLY	POLYMER
OS	ORGANOSULFIDE
DEC	DECANT WATER
CONT	CONTAINMENT AREA DRAINAGE

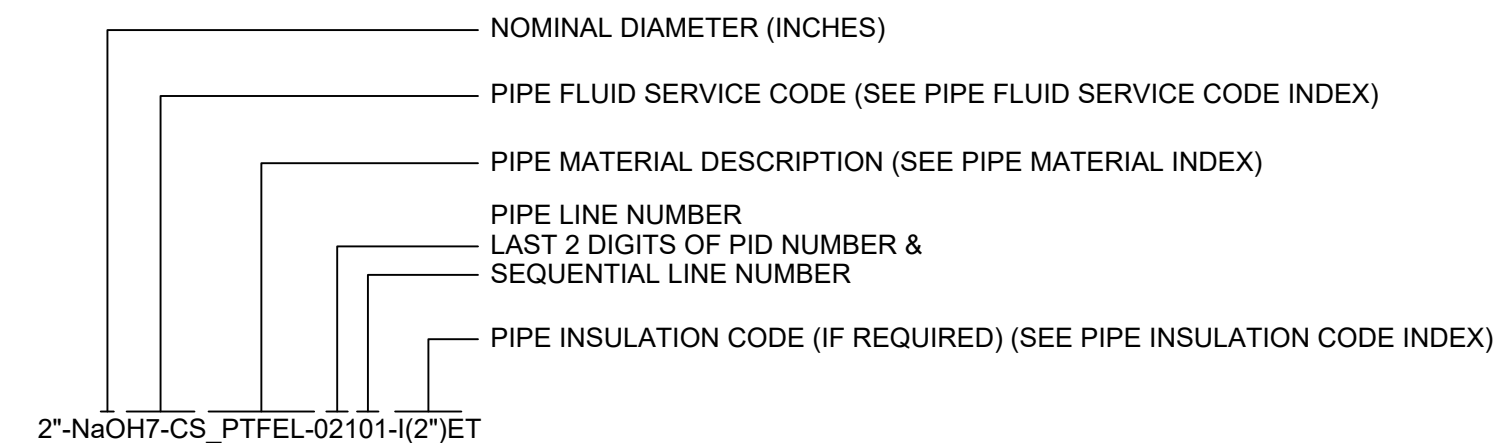
PIPE MATERIAL INDEX
SEE PIPING SPECIFICATIONS FOR DETAILS

MATL	DESCRIPTION	SPEC
CS_40	CARBON STEEL SCHEDULE 40 PIPE	
CS_80	CARBON STEEL SCHEDULE 80 PIPE	
316L_10	316L STAINLESS STEEL SCHEDULE 10 PIPE	
304_40	304 STAINLESS STEEL SCHEDULE 40 PIPE	
316L_ST	316L STAINLESS STEEL TUBING	
304_ST	304 STAINLESS STEEL TUBING	
CS_T	CARBON STEEL TUBING	
CU_T	COPPER TUBING	
PE_T	POLYETHYLENE TUBING	
CS_PTFEL	CARBON STEEL PTFE LINED PIPE	
CS-PFAL	CARBON STEEL PFA LINED PIPE	
CS-GL	CARBON STEEL GLASS LINED PIPE	
CPVC_80	CPVC SCHEDULE 80 PIPE	
PCV_80	PVC SCHEDULE 80 PIPE	
304_10	304 STAINLESS STEEL SCHEDULE 10 PIPE	
FRP	FIBERGLASS REINFORCED PIPE	
HDPE_11	HIGH-DENSITY POLYETHYLENE SDR-11	
FRH	FLEXIBLE RUBBER HOSE	
304L_ST	304L STAINLESS STEEL TUBING	
304L_10	304L STAINLESS STEEL SCHEDULE 10 PIPE	
304L_ST	TEFLON TUBING, CPVC CARRIER AND CONTAINMENT PIPE	
HDPE_DW_11	HIGH-DENSITY POLYETHYLENE SDR-11, DOUBLE WALLED CARRIER AND CONTAINMENT PIPE	
PTFE_CPVC	TEFLON TUBING, CPVC CARRIER AND CONTAINMENT PIPE	

PIPE INSULATION CODE INDEX
SEE PIPING SPECIFICATIONS FOR DETAILS

CODE	DESCRIPTION
I(2")	INSULATED (2")
NI	NOT INSULATED
JKT	JACKETED PIPE
I(2")ET	INSULATED (2") AND ELECTRICALLY TRACED
I(2")ST	INSULATED (2") AND STEAM TRACED
I(2")JKT	INSULATED (2") AND JACKETED

LINE DESIGNATION



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Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
3	100% EPA SUBMITTAL	RH	NF	11/25/2024
2	FOR CLIENT REVIEW	RH	NF	11/21/2024
1	100% EPA SUBMITTAL	RH	NF	07/17/2024

Drawn: **RH** Designer: **NF**
 Drafting Check: Design Check: **NF**
 Project Coordinator: **LL** Date: **November 25, 2024**

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 Scale: **N.T.S.**

Original Size: **Arch D**
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 0 1"

Project No. **11215702**

Title: **WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SCHEDULES**

Sheet No.

P-000B

100% EPA SUBMITTAL

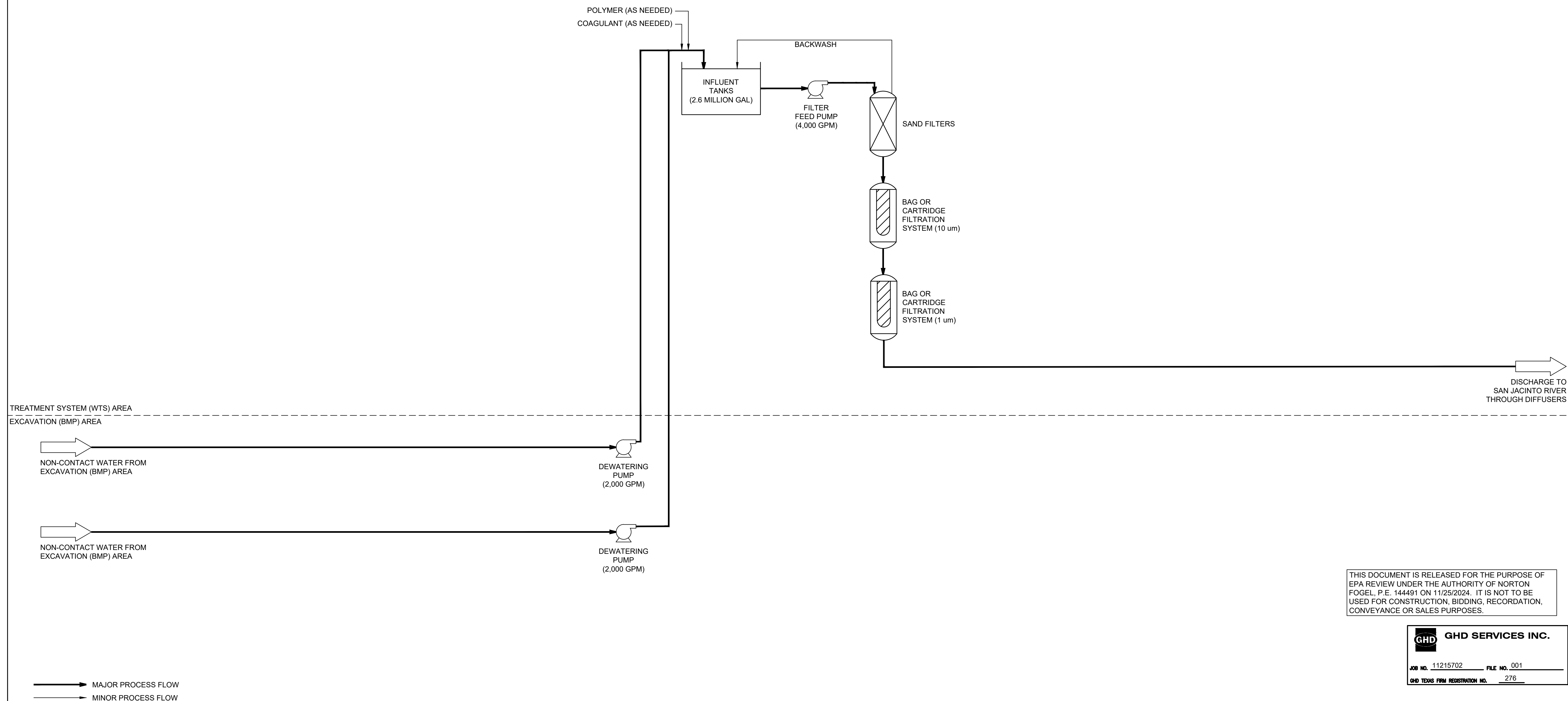


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GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

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3	100% EPA SUBMITTAL	SH	NF	11/25/2024
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Drawn: SH Designer: NF

Drafting Check: Design Check: NF

Project Coordinator: LL Date: November 25, 2024

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Project No. 11215702 Title

WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM (NON-CONTACT WATER)

Sheet No.

P-001



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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	RH	NF	11/25/2024
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No.	Issue	Drawn	Approved	Date
Drawn	RH	Designer	NF	

Drafting Check	Design Check	NF
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Project Coordinator	LL	Date	November 25, 2024
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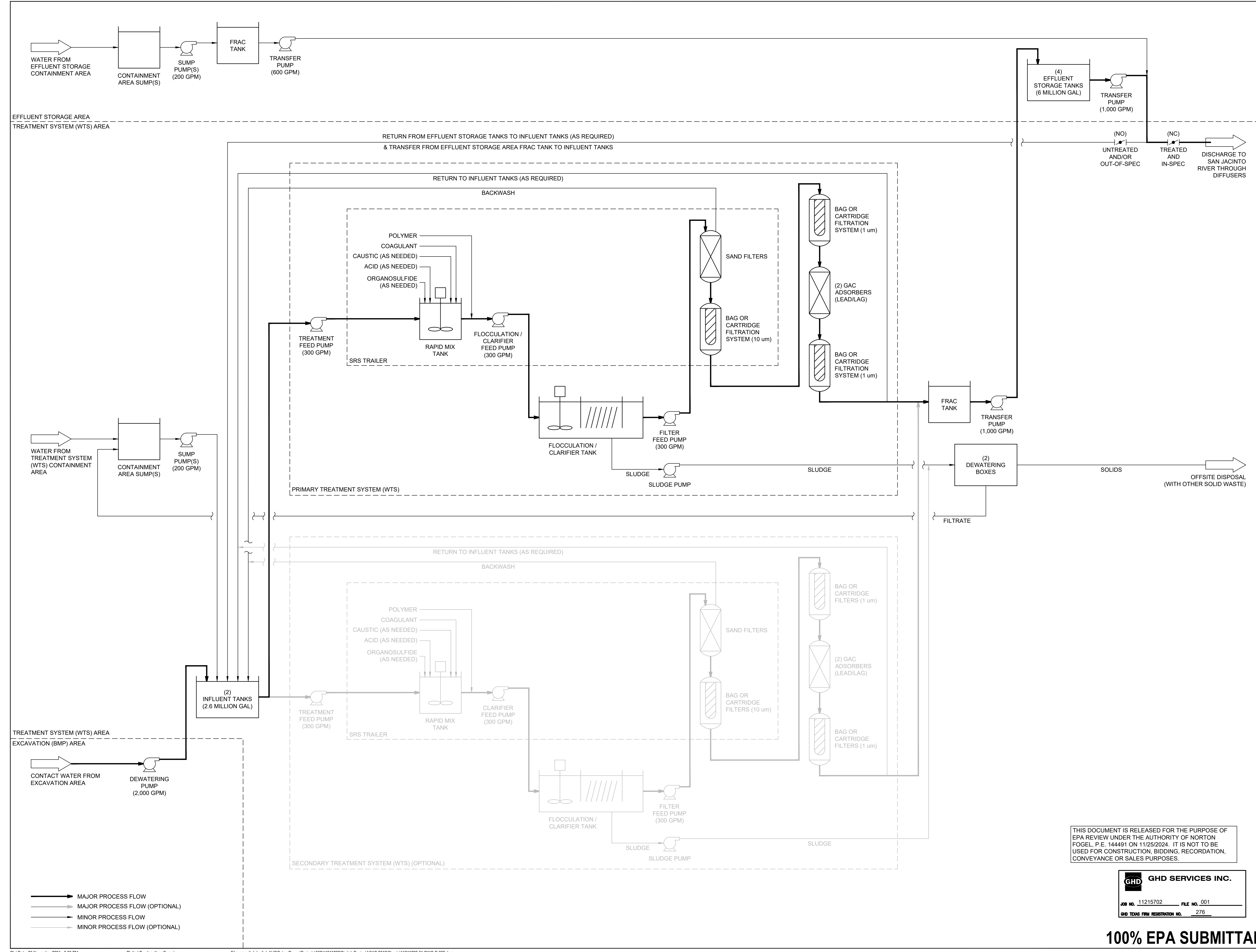
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Project No. 11215702

Title
WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM (CONTACT WATER)

Sheet No.

P-002



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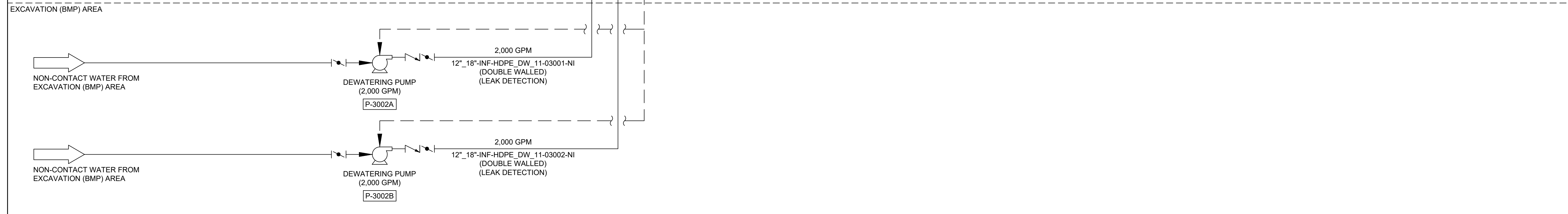
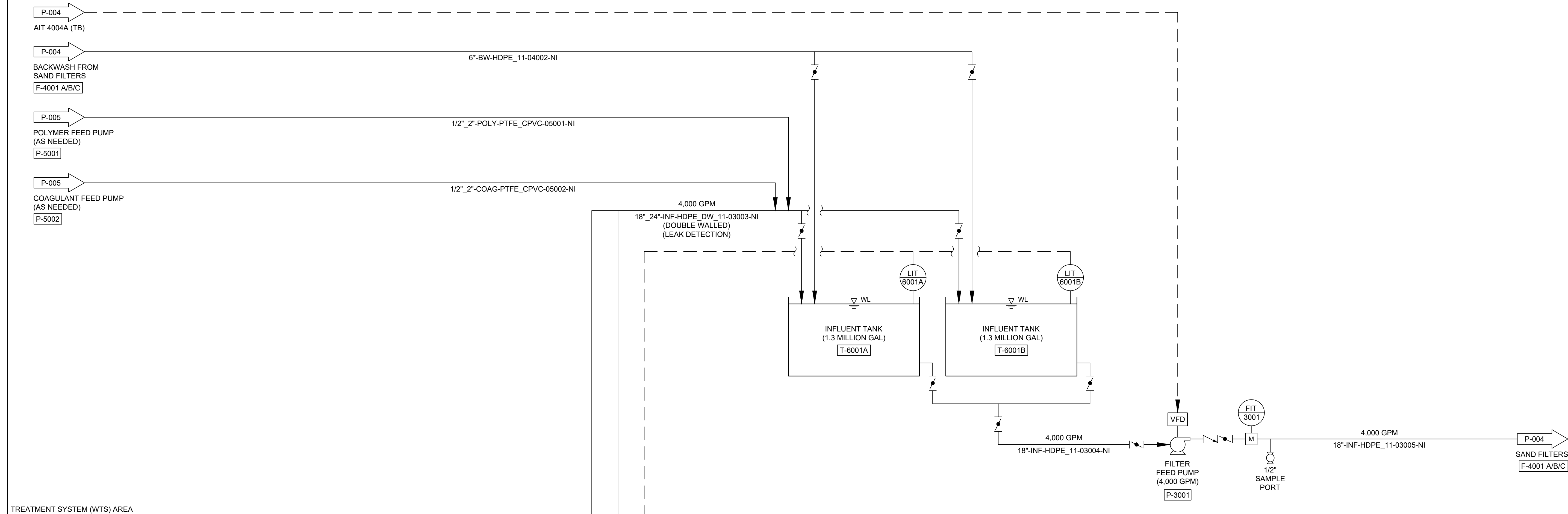


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No.	Issue	Drawn	Approved	Date
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Drawn SH Designer NF

Drafting Check Design Check NF

Project Coordinator LL Date November 25, 2024

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Project No. 11215702

Title
WATER TREATMENT SYSTEM P&ID (NON-CONTACT WATER) (1 OF 3)

Sheet No.

P-003

Sheet 69 of 83

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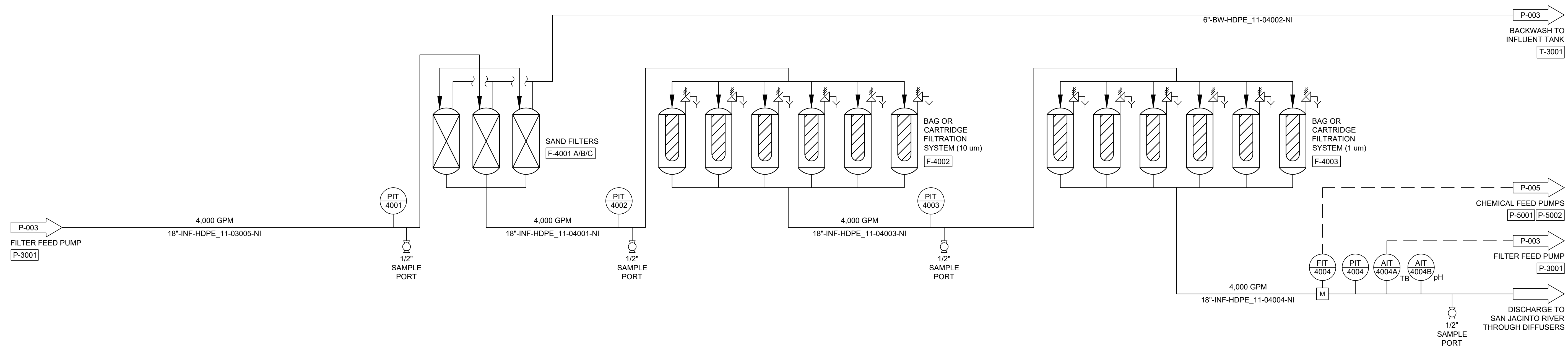


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Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
3	100% EPA SUBMITTAL	SH	NF	11/25/2024
2	FOR CLIENT REVIEW	SH	NF	11/21/2024
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Drawn SH Designer NF

Drafting Check Design Check NF

Project Coordinator LL Date November 25, 2024

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Project No. 11215702

Title
WATER TREATMENT SYSTEM P&ID (NON-CONTACT WATER) (2 OF 3)

Sheet No.

P-004



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Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	SH	NF	11/25/2024
2	FOR CLIENT REVIEW	SH	NF	11/21/2024
1	100% EPA SUBMITTAL	SH	NF	07/17/2024

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Drawn	SH	Designer	NF	
Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	

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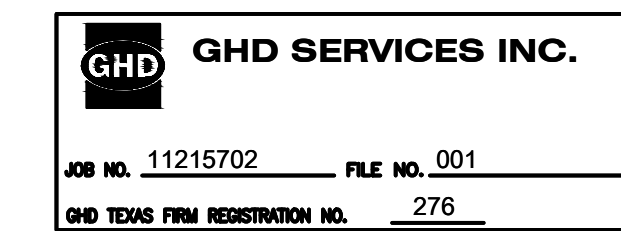
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Title
WATER TREATMENT SYSTEM P&ID (NON-CONTACT WATER) (3 OF 3)

Sheet No.

P-005

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NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

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2	FOR CLIENT REVIEW	RH	NF	11/21/2024
1	100% EPA SUBMITTAL	RH	NF	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn **RH** Designer **NF**

Drafting Check Design Check **NF**

Project Coordinator **LL** Date **November 25, 2024**

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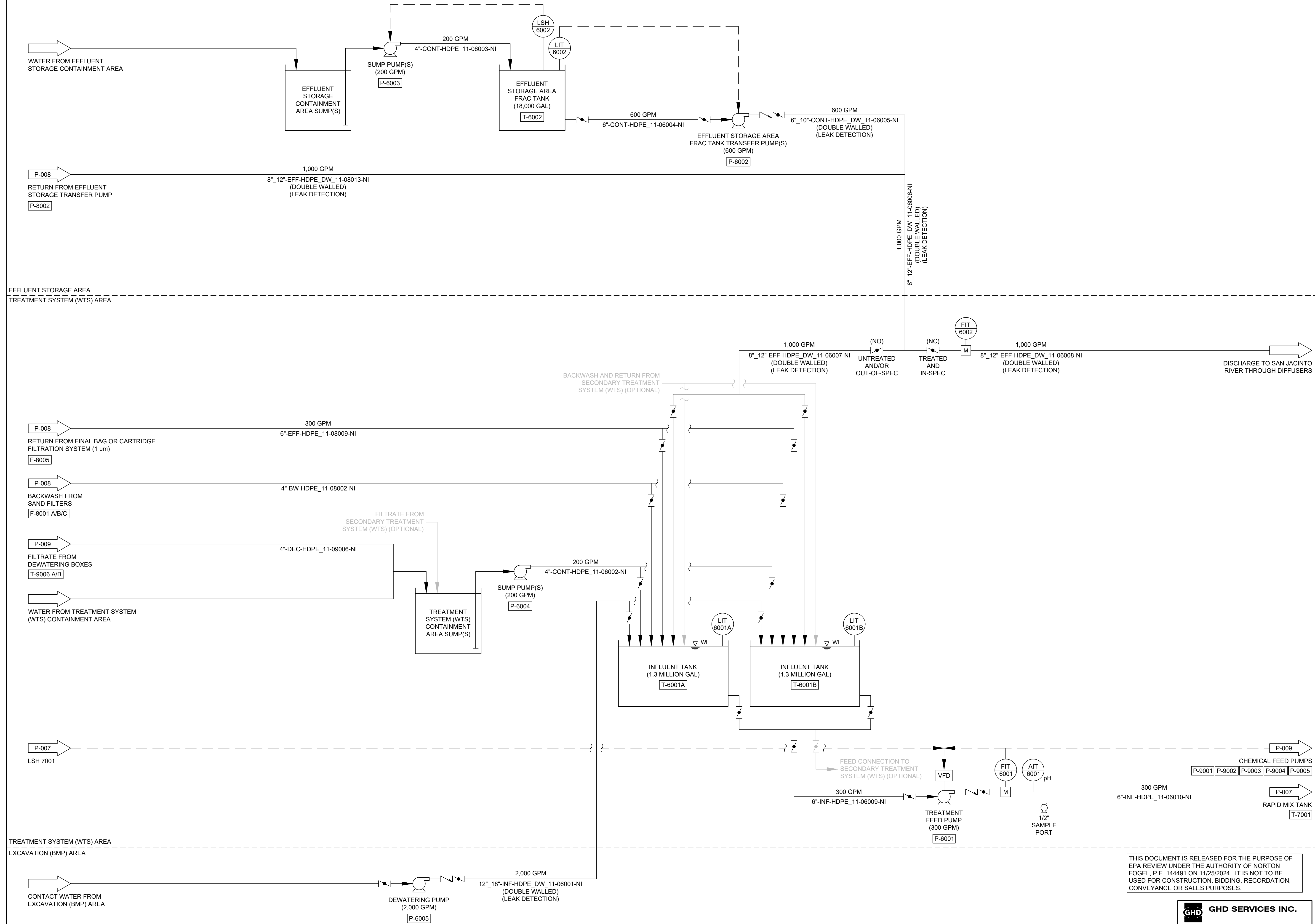
Original Size **Arch D**
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0 1"

Project No. **11215702**

Title
WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (1 OF 4)

Sheet No.

P-006



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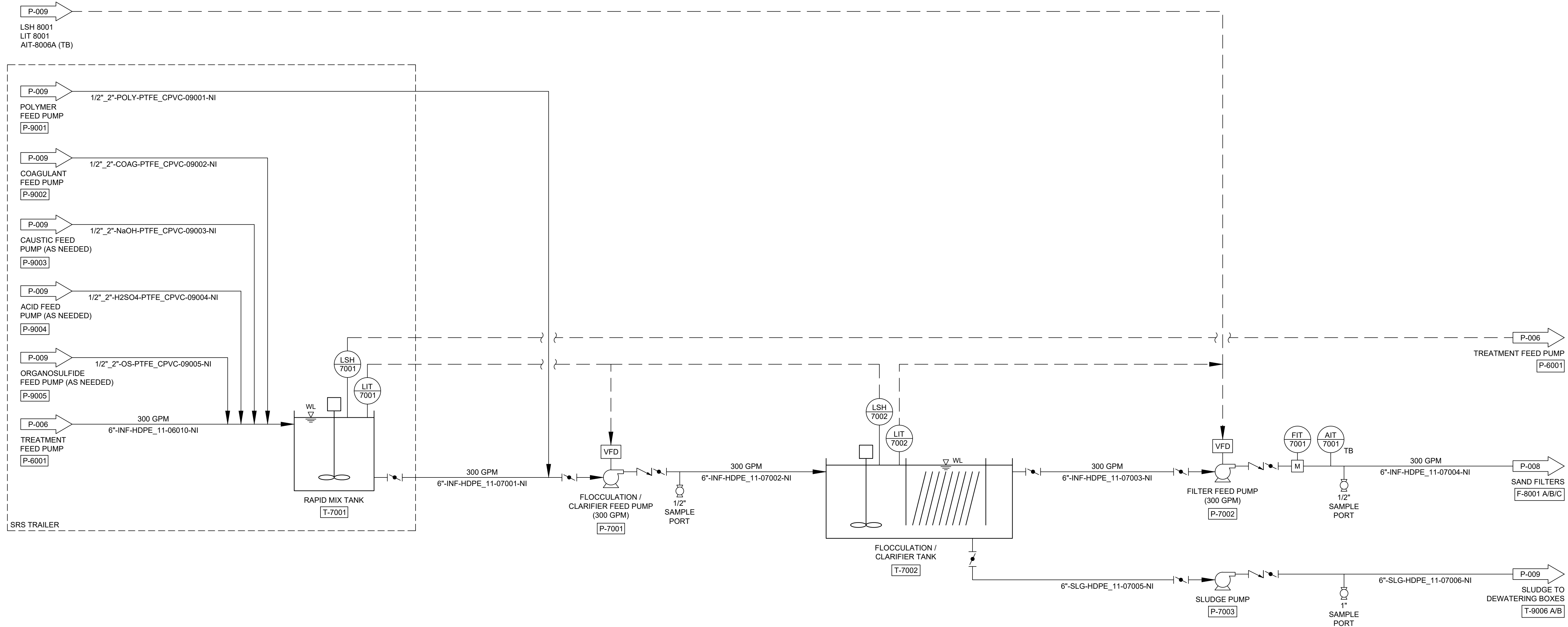


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2	FOR CLIENT REVIEW	SH	NF	11/21/2024
1	100% EPA SUBMITTAL	SH	NF	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	SH	Designer	NF	
Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	

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Original Size
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Project No. 11215702
Title

WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (2 OF 4)

Sheet No.

P-007
Sheet 73 of 83

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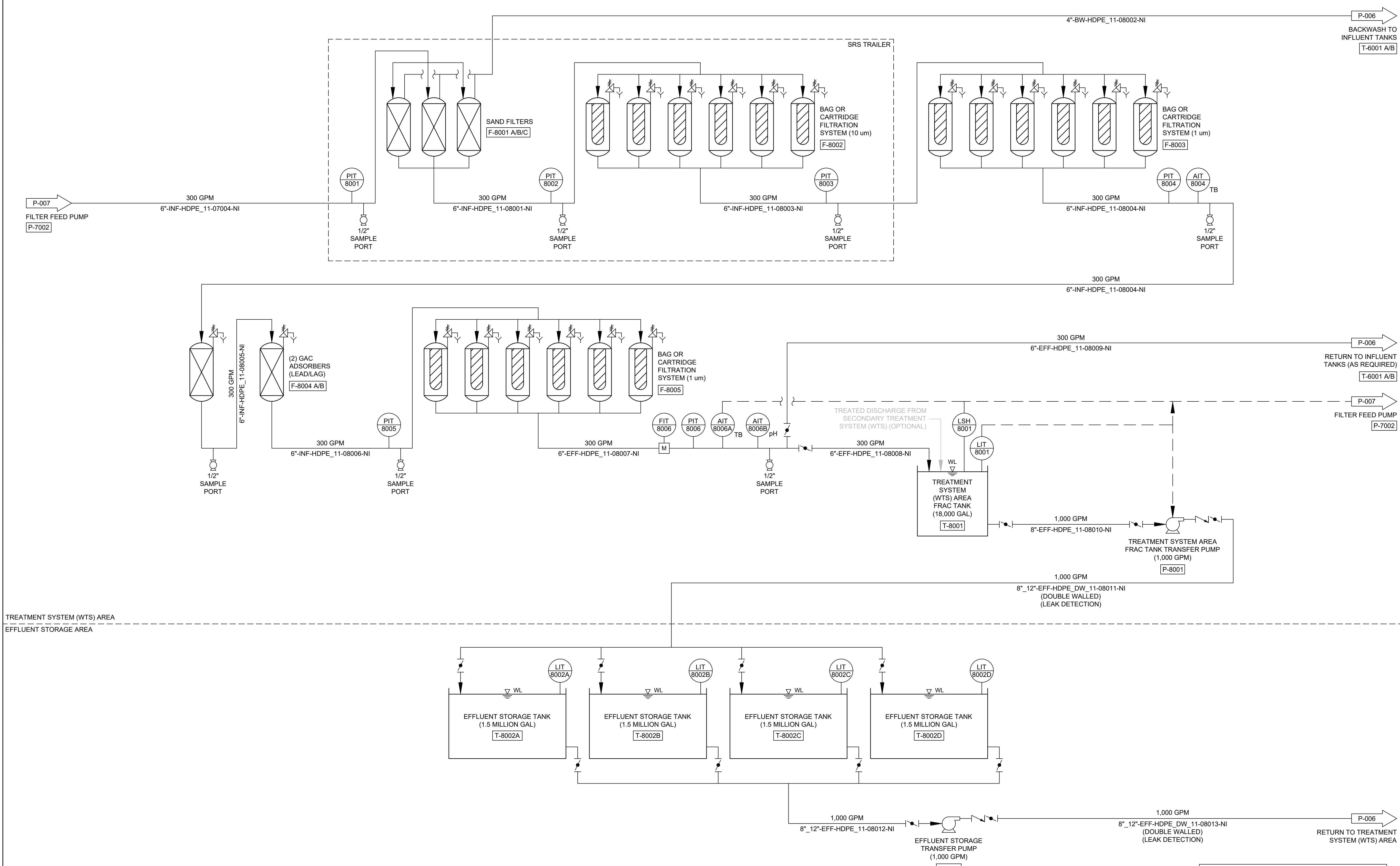


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TREATMENT SYSTEM (WTS) AREA
EFFLUENT STORAGE AREA

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Project
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3	100% EPA SUBMITTAL	RH	NF	11/25/2024
2	FOR CLIENT REVIEW	RH	NF	11/21/2024
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No.	Issue	Drawn	Approved	Date
Drawn	RH	Designer	NF	
Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	
Original Size	Arch D	Scale	N.T.S.	

Project No. **11215702**
Title
WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (3 OF 4)

Sheet No.
P-008
Sheet 74 of 83

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Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

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Drawn	RH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	November 25, 2024
		Scale	N.T.S.

Original Size	Arch D	Bar is one inch on original size drawing	0 1"
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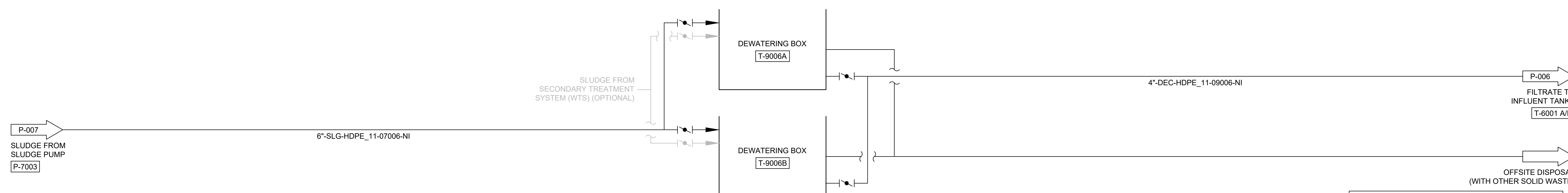
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Title
WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (4 OF 4)

Sheet No.

P-009

Sheet 75 of 83



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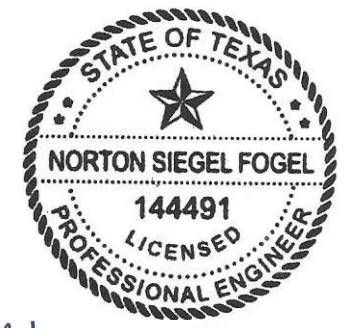
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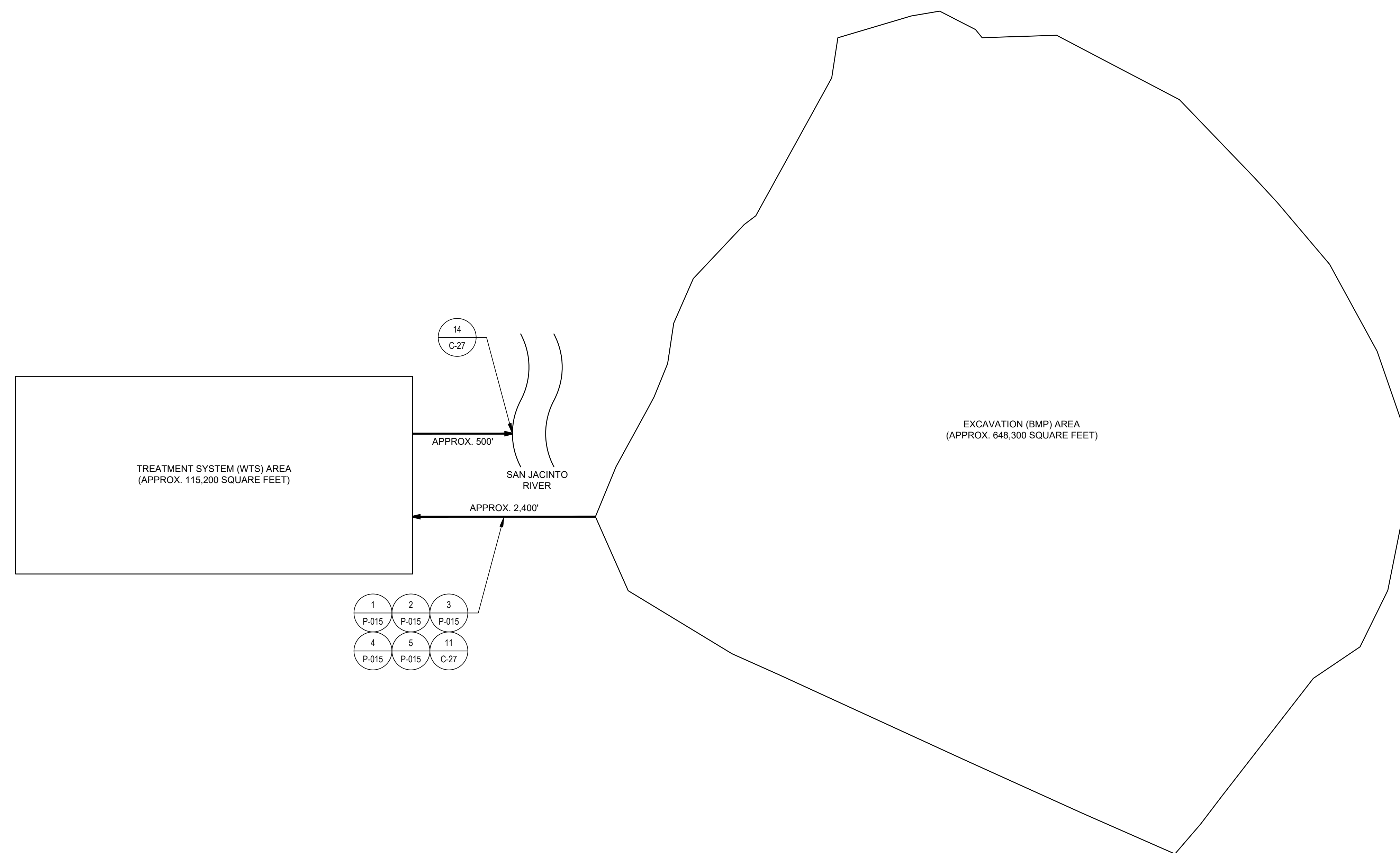


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 Project **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

3	100% EPA SUBMITTAL	RH	NF	11/25/2024
2	FOR CLIENT REVIEW	RH	NF	11/21/2024
1	100% EPA SUBMITTAL	RH	NF	07/17/2024

No.	Issue	Drawn	Approved	Date
Drawn	RH	Designer	NF	
Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	

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 0 1"

Project No. **11215702**

Title
WATER TREATMENT SYSTEM SITE PLAN (NON-CONTACT WATER)

Sheet No.

P-010

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GHD SERVICES INC.
 JOB NO. 11215702 FILE NO. 001
 GHD TEXAS FIRM REGISTRATION NO. 276

100% EPA SUBMITTAL

- NOTES:
- SITE PLANS ARE CONCEPTUAL ONLY AND ARE TO BE FINALIZED BY CONTRACTOR.
 - CONTRACTOR SHALL PROVIDE LEAK DETECTION AT LOW POINT ON ALL PIPELINES (SEE DETAIL 4/P-015).
 - CONTRACTOR SHALL INSTALL BIDIRECTIONAL CLEANOUTS EVERY 500' (MINIMUM) ON ALL PIPELINES.

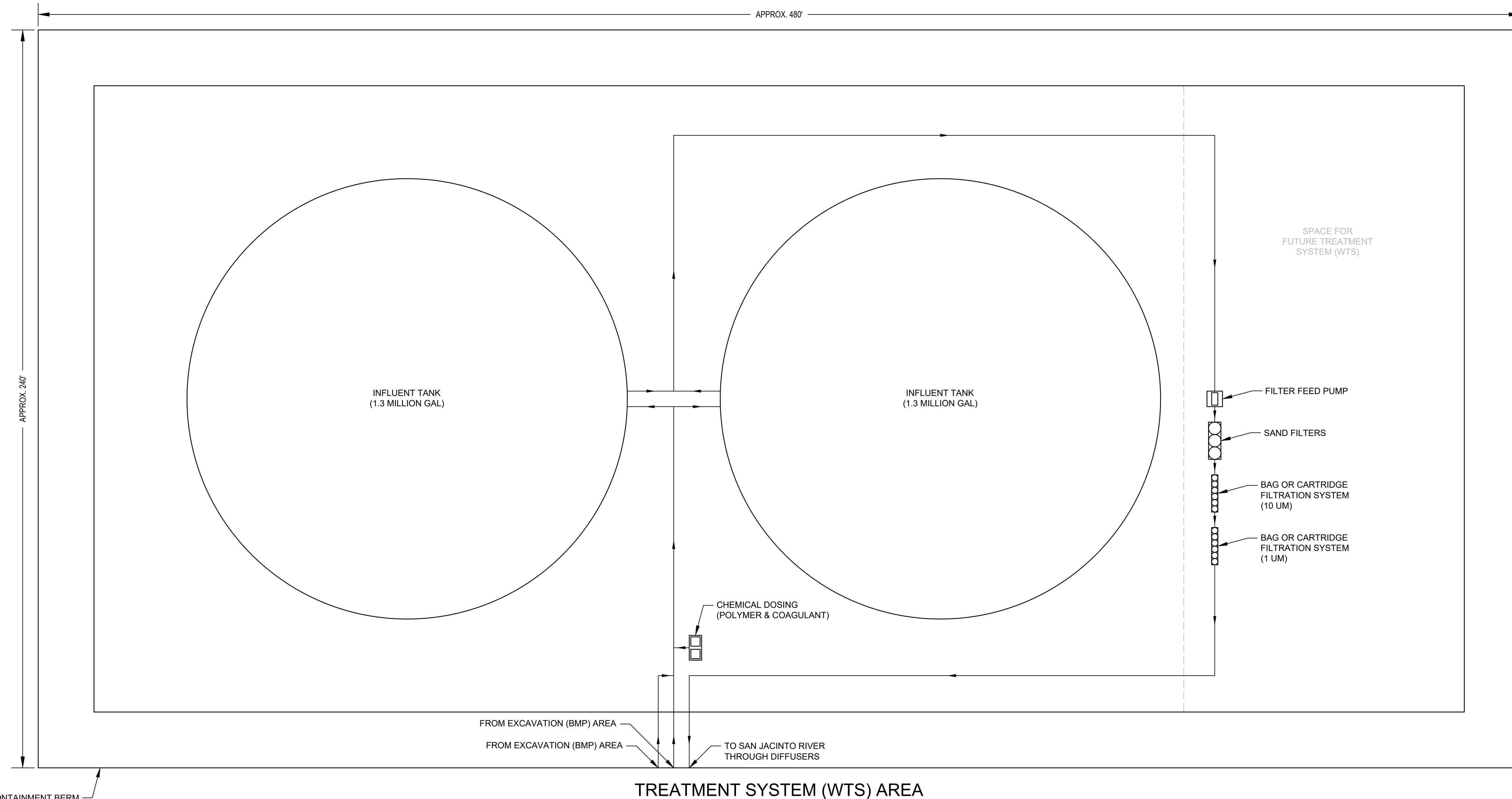


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SAN JACINTO RIVER WASTE PITS
 Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	100% EPA SUBMITTAL	RH	NF	11/25/2024
1	FOR CLIENT REVIEW	RH	NF	11/21/2024
0	100% EPA SUBMITTAL	RH	NF	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn **RH** Designer **NF**

Drafting Check Design Check **NF**

Project Coordinator **LL** Date **November 25, 2024**

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Title
WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (NON-CONTACT WATER)

Sheet No.

P-011

Sheet 77 of 83

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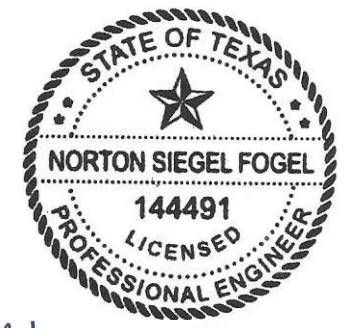


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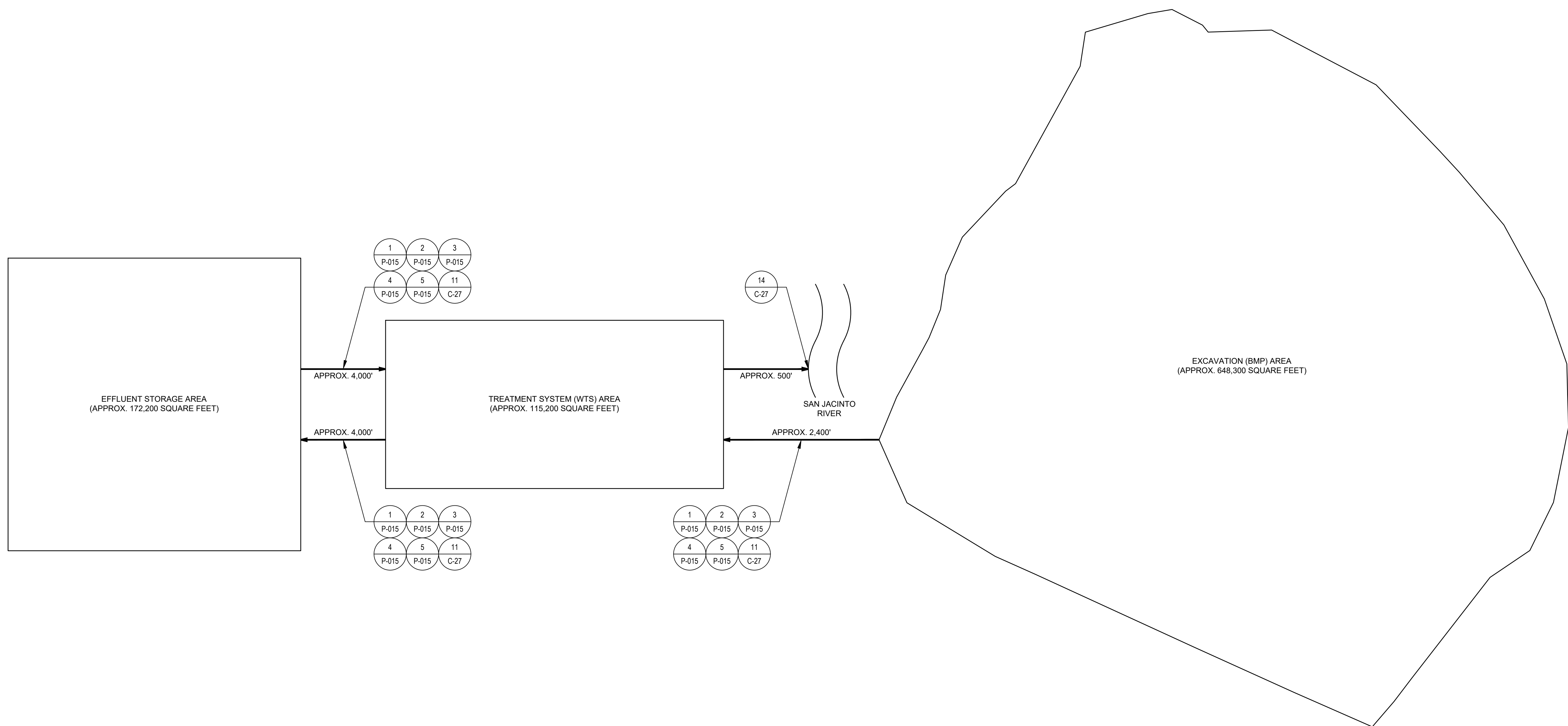


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Project **NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

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2	FOR CLIENT REVIEW	RH	NF	11/21/2024
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Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	

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0 1"

Project No. **11215702**

Title
WATER TREATMENT SYSTEM SITE PLAN (CONTACT WATER)

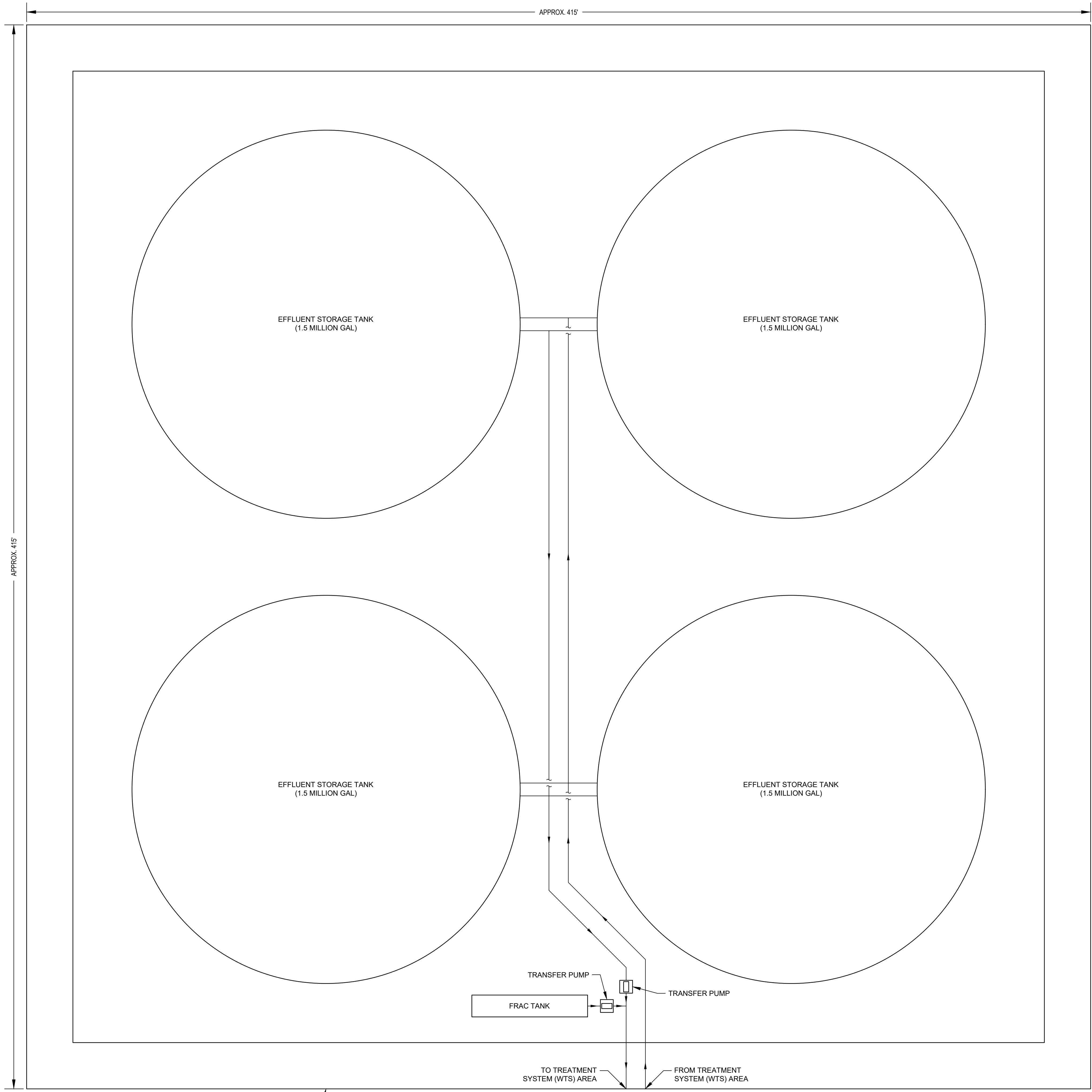
Sheet No.
P-012
Sheet 78 of 83

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 Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	RH	NF	11/25/2024
2	FOR CLIENT REVIEW	RH	NF	11/21/2024
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Drafting Check		Design Check	NF	
Project Coordinator	LL	Date	November 25, 2024	

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Project No. 11215702
 Title

WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (CONTACT WATER) (1 OF 2)

Sheet No.

P-013

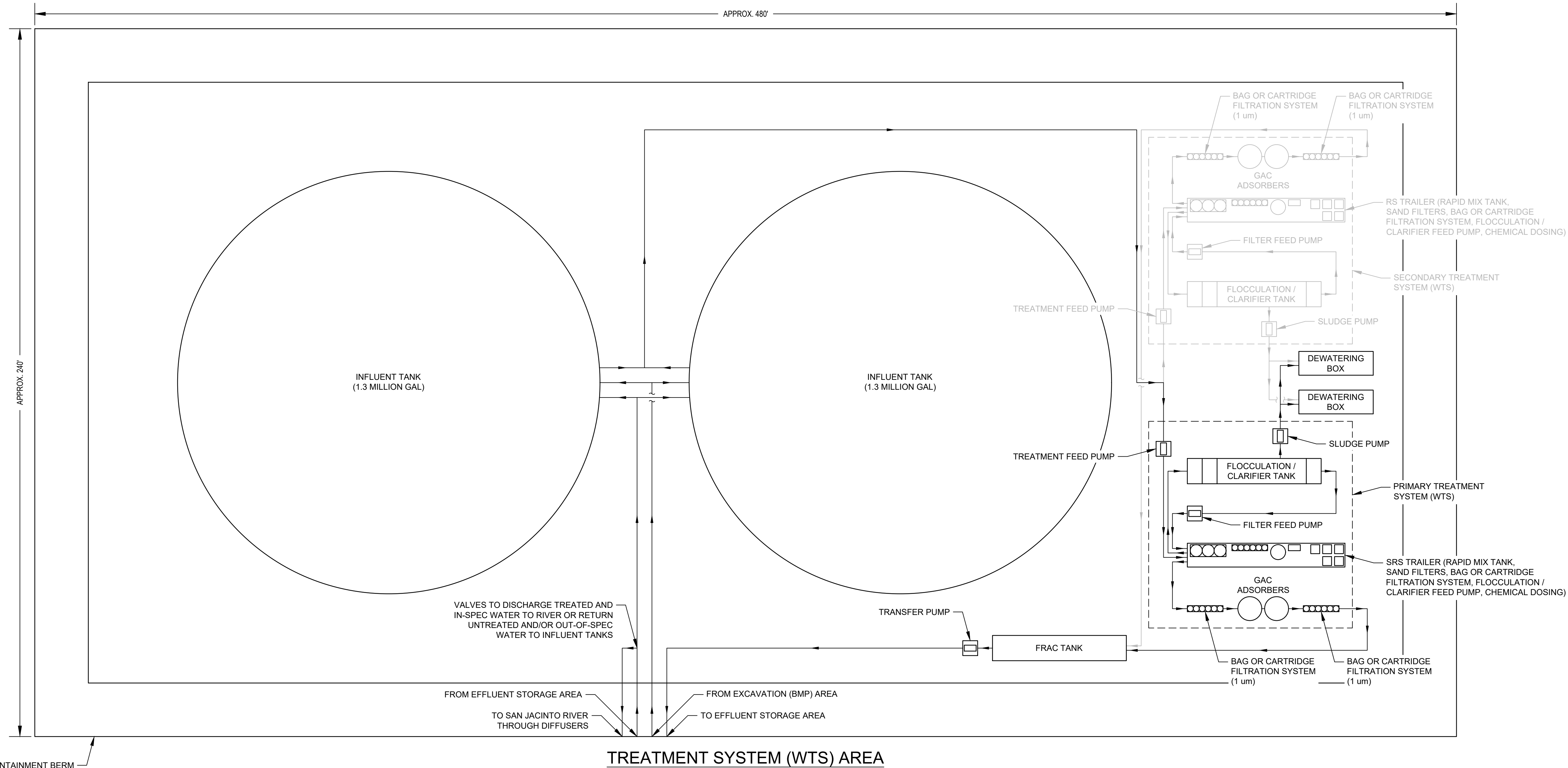


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Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

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1	100% EPA SUBMITTAL	RH	NF	07/17/2024

No.	Issue	Drawn	Approved	Date
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Drawn **RH** Designer **NF**

Drafting Check Design Check **NF**

Project Coordinator **LL** Date **November 25, 2024**

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Title
WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (CONTACT WATER) (2 OF 2)

Sheet No.

P-014

Sheet 80 of 83

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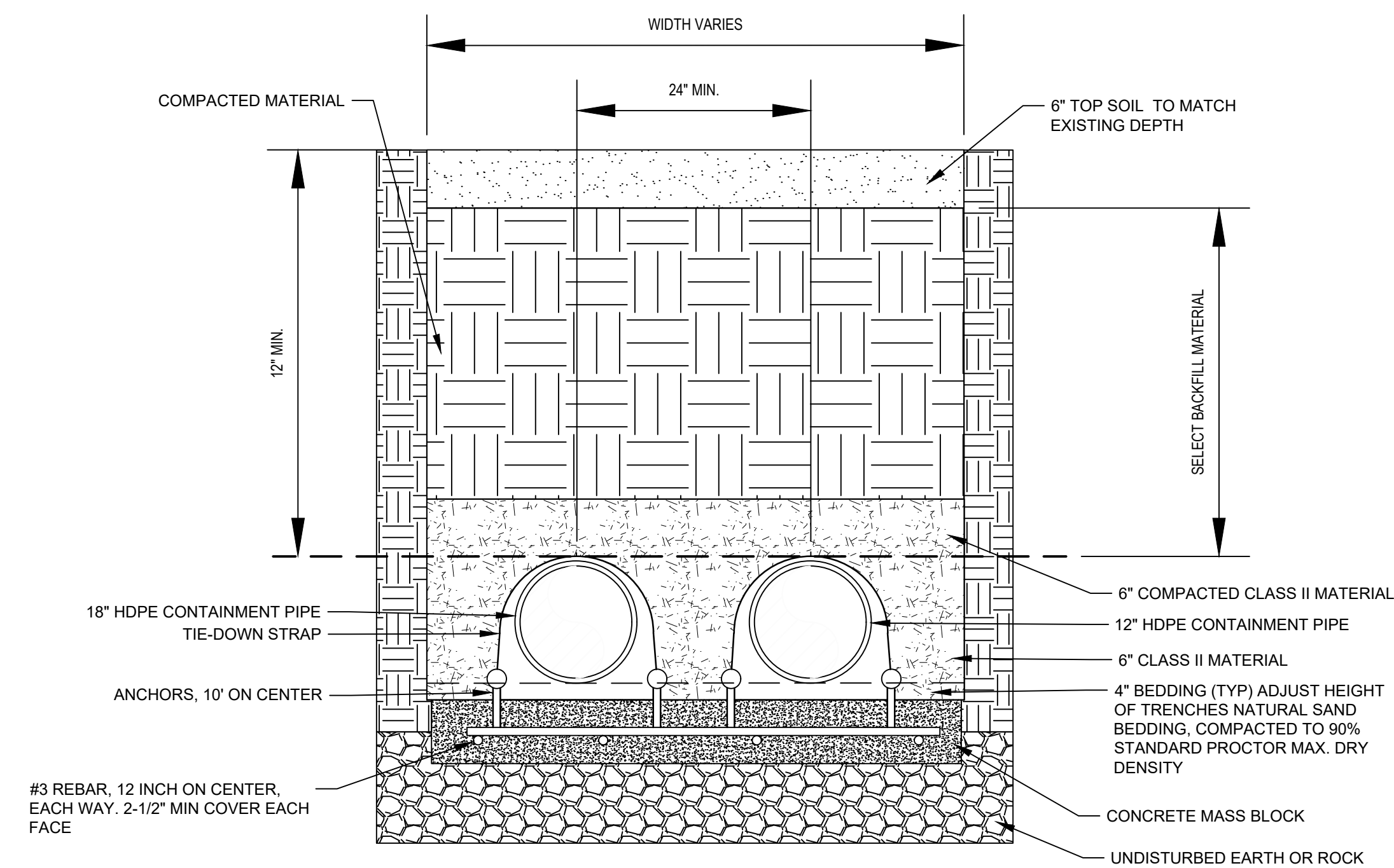


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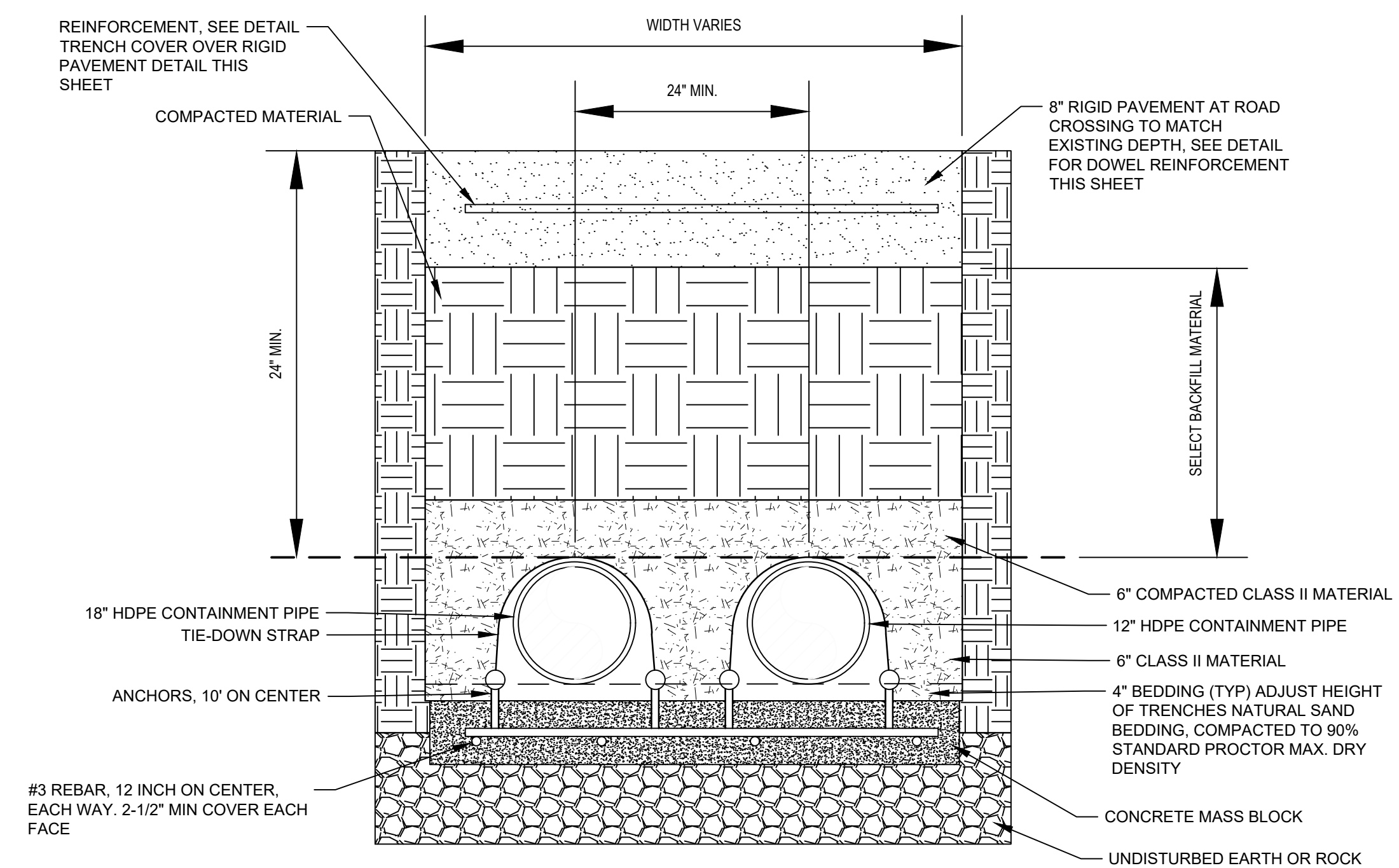
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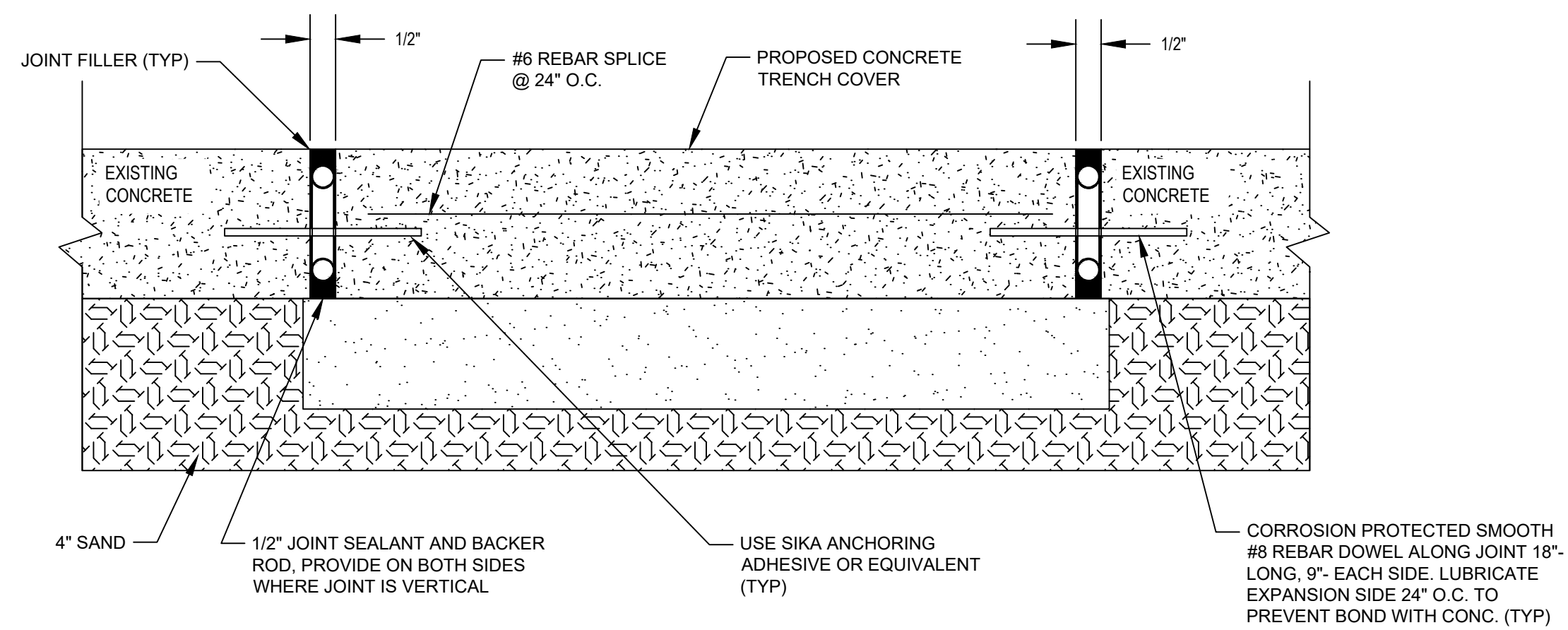
DETAIL 1 UTILITY TRENCH - GROUND COVER

NTS



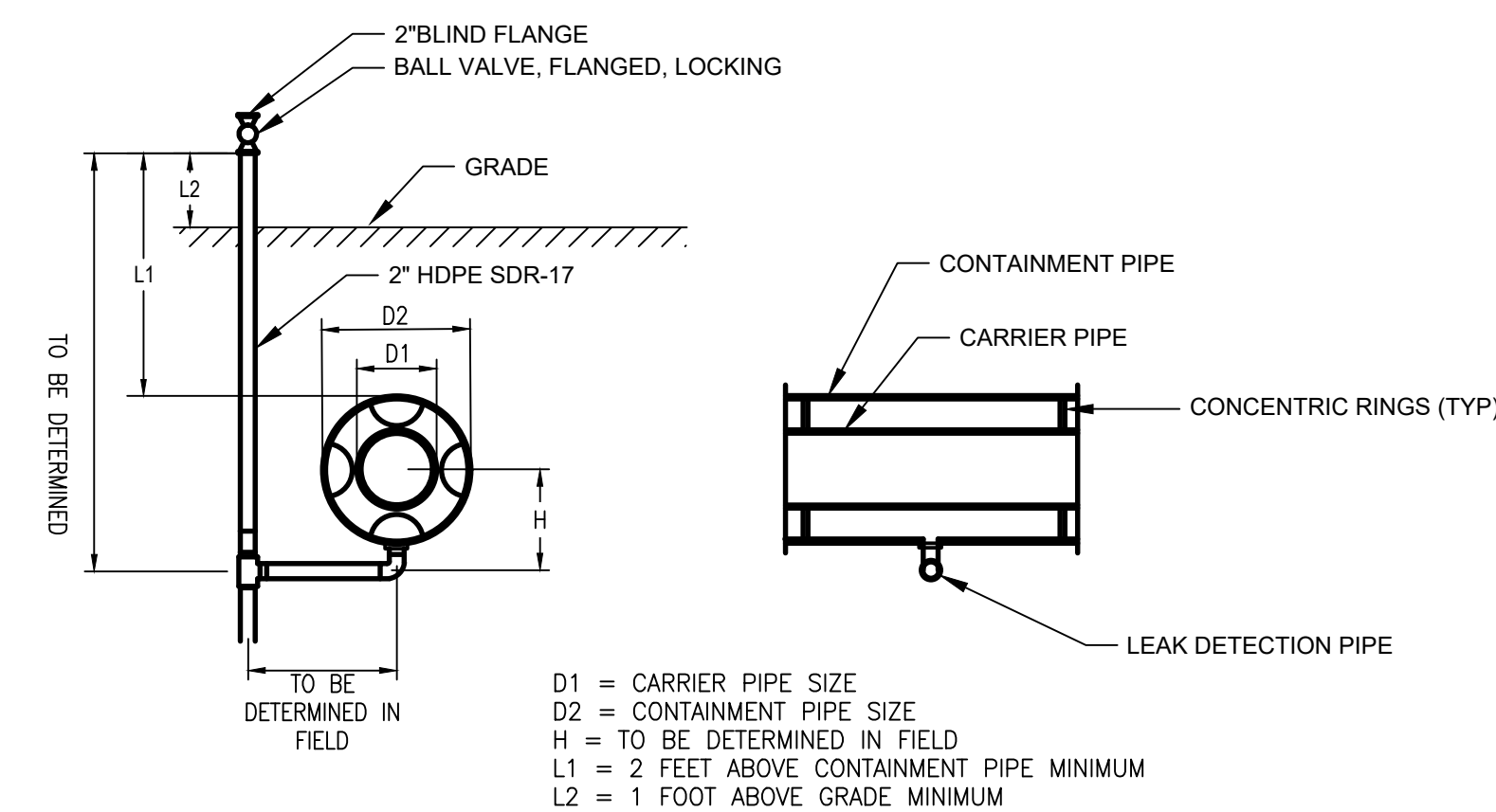
DETAIL 2 UTILITY TRENCH - RIGID PAVEMENT OR ROADWAY SURFACE

NTS



DETAIL 3 TRENCH COVER OVER RIGID PAVEMENT

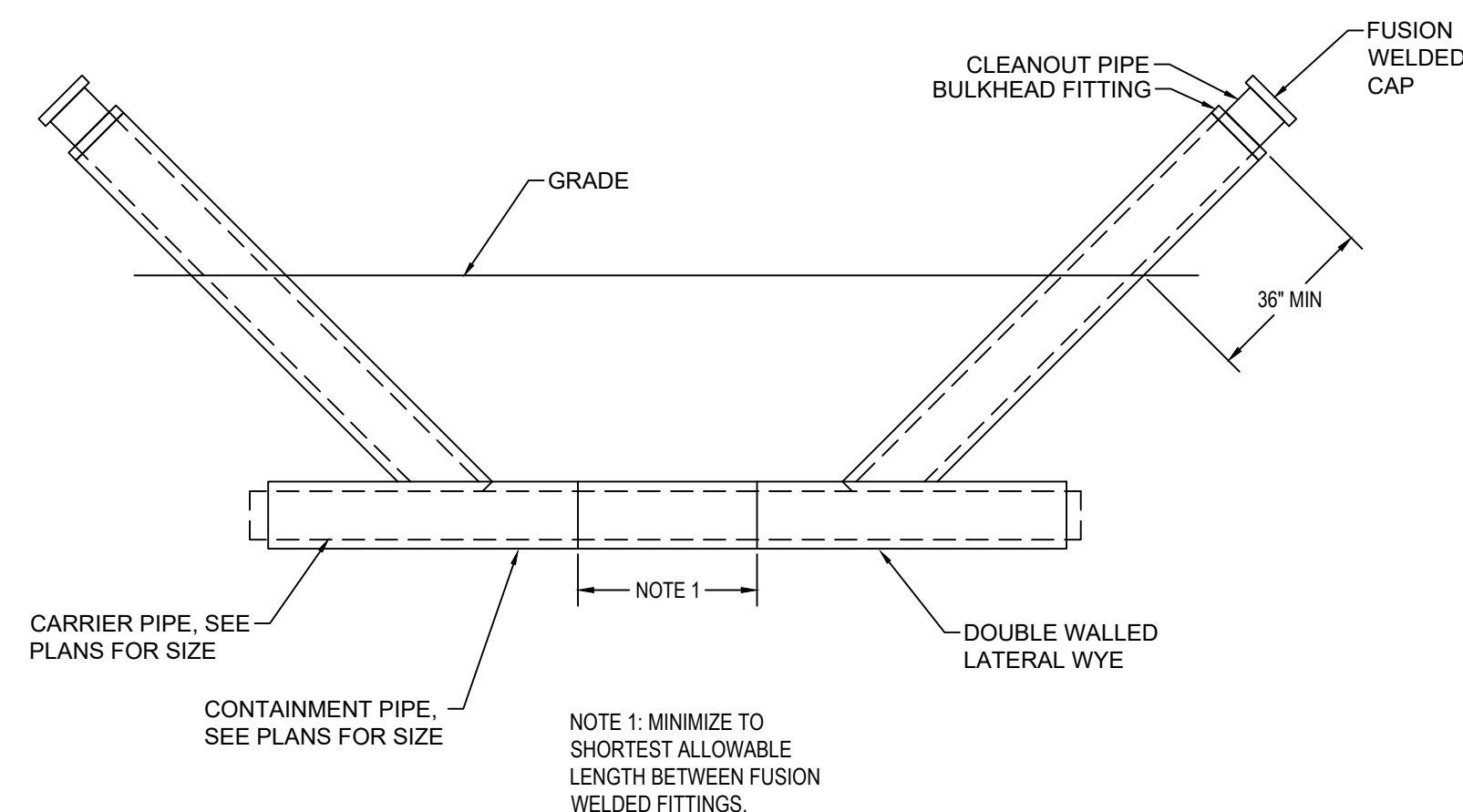
SCALE: NTS



NOTES:
1. FOR ABOVE GROUND INSTALLATIONS, 2" PIPE MUST BE ABOVE GRADE AND CLEAR OF SUPPORTS TO AVOID DAMAGE FROM THERMAL MOVEMENT.

DETAIL 4 LEAK DETECTION

SCALE: NTS



DETAIL 5 DOUBLE WALLED, DOUBLE CLEANOUT

SCALE: NTS

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SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

3	100% EPA SUBMITTAL	EAW	NF	11/25/2024
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1	100% EPA SUBMITTAL	EAW	NF	07/17/2024

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Drawn **EAW** Designer **WSK**

Drafting Check Design Check **WSK**

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Project No. **11215702**

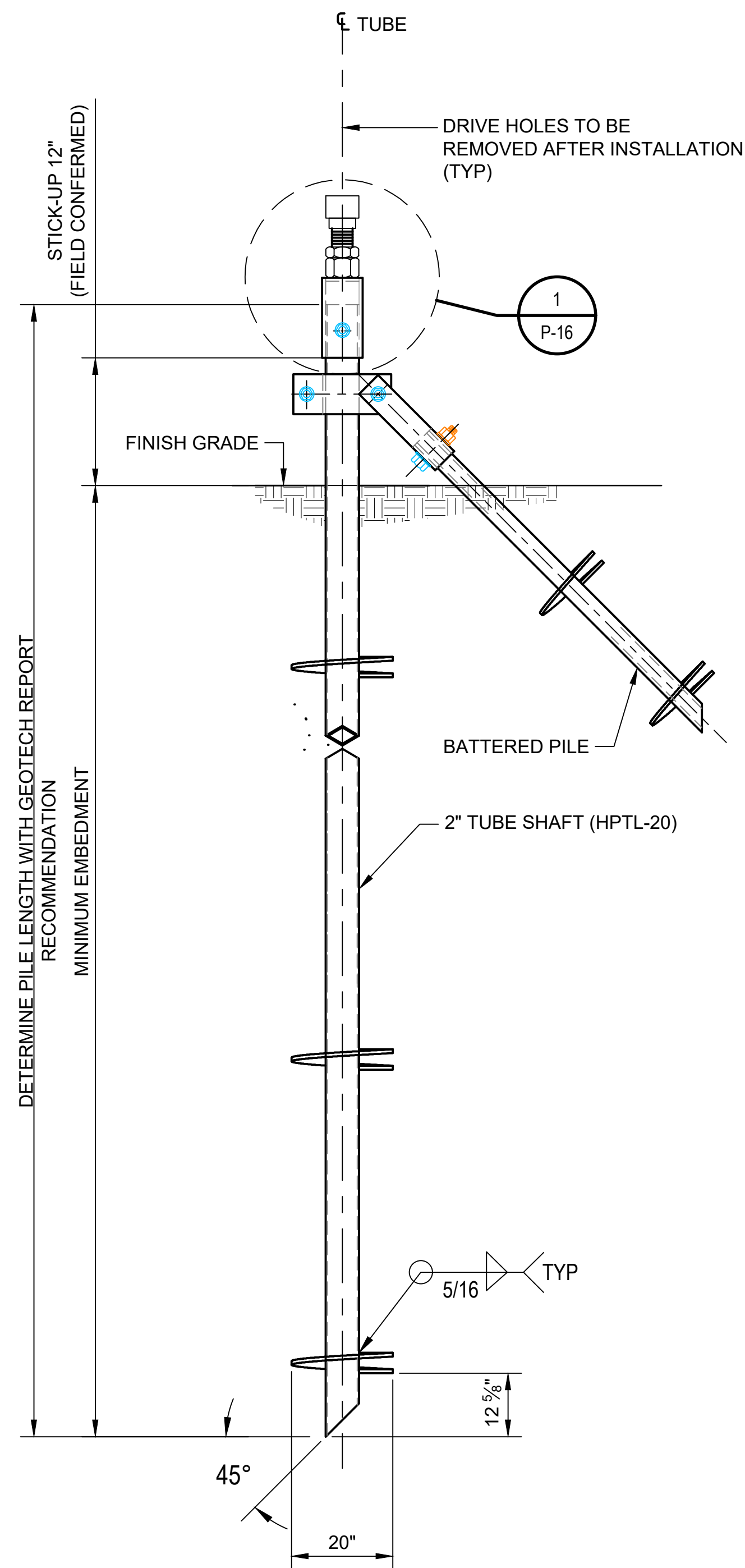
Title

MECHANICAL DETAILS 1 OF 1

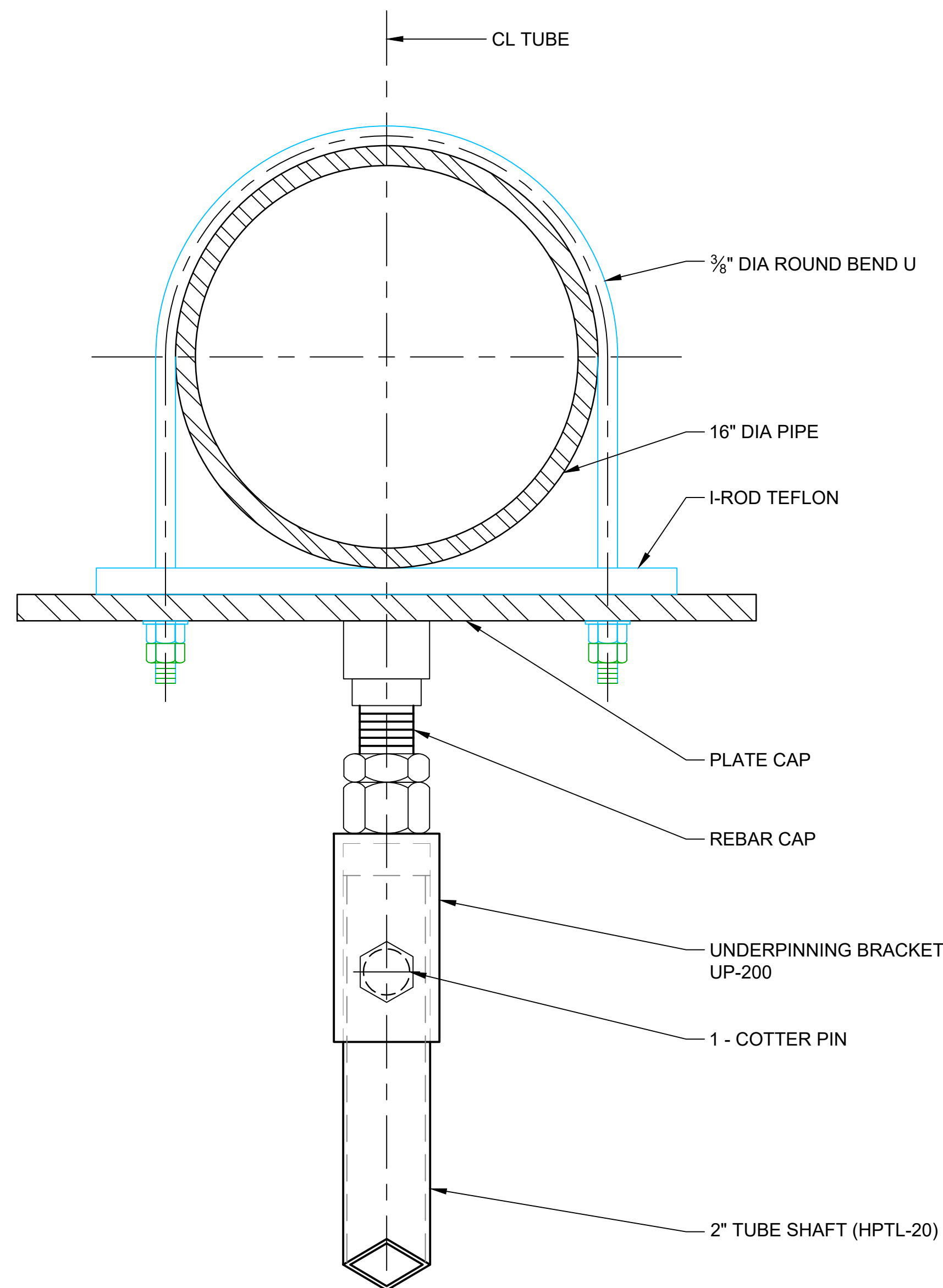
Sheet No.

P-015

Sheet 81 of 83



DETAIL **A** HELICAL COMPOSITE PILE HPTL-20
SCALE: NTS



DETAIL **1** PIPE SUPPORT BRACKET FOR 16" PIPE
SCALE: NTS

NOTES:

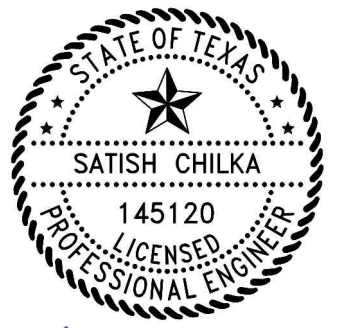
- CONTRACTOR TO SUB-CONTRACT GEOTECH ENGINEER LICENSE IN THE STATE OF TEXAS FOR THE DESIGN OF PIPE SUPPORTS.
- DESIGN CRITERIA
BASIC WIND SPEED, V: 143 mph
WIND EXPOSURE: C

PIPE WEIGHT: 135 lb/ft (ASSUMING 16" STEEL SCH 40 SHELL / 12" HDPE SDR 7)
- USE BATTERED PILE AT EACH END OF THE PIPE RUN WITH A MAXIMUM OF 100 FT SPACING FOR BATTERED PILES.
- HARDWARE TO BE HELI-PILE OR APPROVED EQUAL.

CONTACT:
HELI-PILE
A: 5135 WARD ROAD
WHEATRIDGE, CO 80033
P: 303-423-0591
W: <https://helipile.com>



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Satish Chilka
11/25/24

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5	100% EPA SUBMITTAL	AL	SC	11/25/2024
4	FOR CLIENT REVIEW	AL	SC	11/21/2024
3	100% EPA REVIEW	AL	SC	07/17/2024
2	90% EPA REVIEW	DS	SC	08/27/2022

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Drawn AL Designer TN

Drafting Check Design Check

Project Coordinator CM Date Nov 25, 2024

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Project No. 11215702

Title

HELICAL PILE DETAILS

Sheet No.

P-016

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GHD TEXAS P.E. REGISTRATION NO. 276

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PUMP SCHEDULE

PUMP NO.	SERVICE	CAPACITY		ELECTRICITY				MANUFACTUREER	POTENTIAL VENDOR	MODEL	REMARKS
		FLOW (GPM)	HEAD (FT)	KW	HP	VOLTS	PHASE				
P-3001	FILTER FEED (NON-CONTACT WATER)	4,000							TREATMENT VENDOR		
P-3002A	EXCAVATION (BMP) AREA DEWATERING TO INFLUENT TANK	2,000	90						RAIN FOR RENT	DV-200C	
P-3002B	EXCAVATION (BMP) AREA DEWATERING TO INFLUENT TANK	2,000	90						RAIN FOR RENT	DV-200C	
P-6001	TREATMENT FEED	300							TREATMENT VENDOR		
P-6002	EFFLUENT STORAGE AREA FRAC TANK TO INFLUENT TANKS	600	208						RAIN FOR RENT	HH-125C	
P-6003	EFFLUENT STORAGE AREA SUMP TO EFFLUENT STORAGE AREA FRAC TANK	200	9						RAIN FOR RENT	DV-80M	
P-6004	TREATMENT SYSTEM (WTS) AREA SUMP TO INFLUENT TANK	200	24						RAIN FOR RENT	DV-80M	
P-6005	EXCAVATION (BMP) AREA DEWATERING TO INFLUENT TANK	2,000	90						RAIN FOR RENT	DV-200C	
P-7001	FLOCCULATION / CLARIFIER FEED	300							TREATMENT VENDOR		
P-7002	FILTER FEED (CONTACT WATER)	300							TREATMENT VENDOR		
P-7003	CLARIFIER SLUDGE								TREATMENT VENDOR		
P-8001	TREATMENT SYSTEM (WTS) AREA FRAC TANK TO EFFLUENT STORAGE TANKS	1,000	140						RAIN FOR RENT	DV-150I	
P-8002	EFFLUENT STORAGE TANKS TO DIFFUSER OR INFLUENT TANKS	1,000	64						RAIN FOR RENT	DV-200C	



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Drawn **EAW** Designer **WSK**

Drafting Check Design Check **WSK**

Project Coordinator **CM** Date **November 25, 2024**

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Title **MECHANICAL SCHEDULE**

Sheet No. **P-017**

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