Appendix G

Design Drawing Package

100033543

193757

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

MAY 2025

11215702

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
LICENSED
PROFESSIONAL ENGINEER

STATE OF TEXAS
WILLIAM A. BEAL
137828
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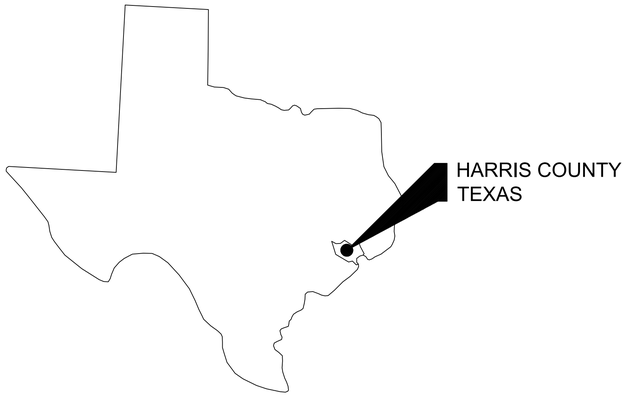
PROFESSIONAL ENGINEER
5/23/25

STATE OF TEXAS
NORTON SIEGEL FOGEL
144491
LICENSED
PROFESSIONAL ENGINEER
5-23-2025

STATE OF TEXAS
SATISH CHILKA
145120
LICENSED
PROFESSIONAL ENGINEER
Satish Chilka
05/23/2025



STATE OF TEXAS VICINITY MAP

HARRIS COUNTY VICINITY MAP

IMAGE - © 2020 Microsoft Corporation © 2020 Digital Globe © CNES (2020) Distribution Airbus DS

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 SOUTHEAST
C-12	EXCAVATION PLAN SOUTHWEST
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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

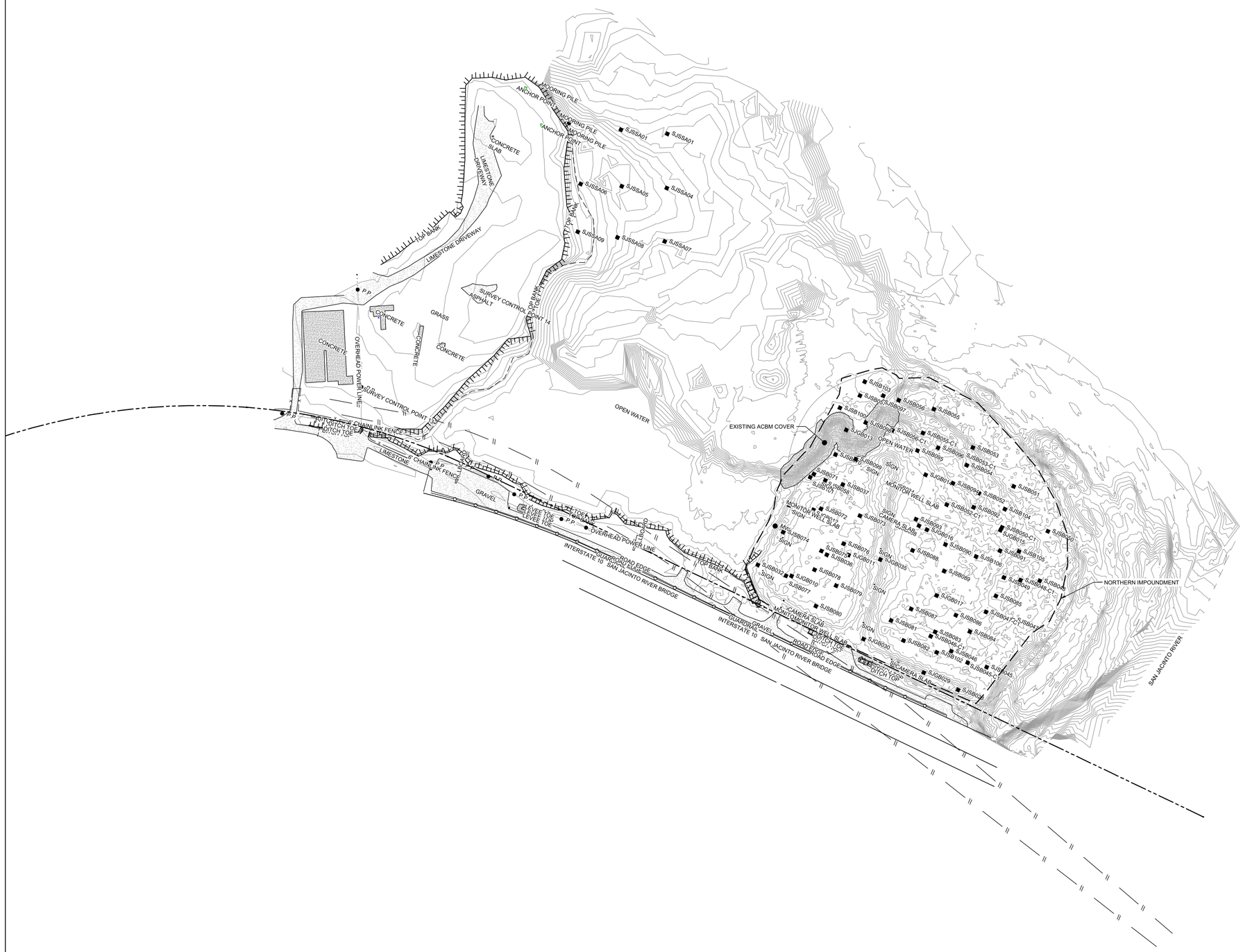
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	N.T.S.
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
COVER SHEET

Sheet No.
G-01

Sheet 1 of 83


MOORING PILE
ANCHOR POINT
CONCRETE SLAB
LIMESTONE DRIVEWAY
TOP BANK
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SJSSA06
SJSSA05
SJSSA04
SJSSA09
SJSSA08
SJSSA07
P.P.
CONCRETE
GRASS
ASPHALT
SURVEY CONTROL POINT 14
OVERHEAD POWER LINE
SURVEY CONTROL POINT 13
6' CHAINLINK FENCE
DITCH TOE
GRAVEL
LEVEE TOE
INTERSTATE 10 SAN JACINTO RIVER BRIDGE
GUARDRAIL
ROAD EDGE
OPEN WATER
EXISTING ACBM COVER
NORTHERN IMPOUNDMENT
SAN JACINTO RIVER
SIGN
MONITOR WELL SLAB
CAMERA SLAB
SJSB103
SJSB105
SJSB097
SJSB056
SJSB054
SJSB053
SJSB052
SJSB051
SJSB104
SJSB050
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SJGB047
SJGB048
SJGB049

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-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024
GEOMEMBRANE LIMITS FROM ANCHOR QEA DRAWING C-1, GEOMEMBRANE LOCATION PLAN, SAN JACINTO RIVER WASTE PITS SUPERFUND SITE, DECEMBER 2010.
GEOTEXTILE LIMITS FROM ANCHOR QEA DRAWING C-2, CAPPING PLAN, SAN JACINTO RIVER WASTE PITS SUPERFUND SITE, DECEMBER 2010.
UPDATED GEOTEXTILE LIMITS FROM ANCHOR QEA 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 SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. **11215702**

Title
EXISTING CONDITIONS

Sheet No.
C-02

Sheet 3 of 83

SOURCE:

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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-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, 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

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- TCRA CAP PERIMETER
- EXISTING CONTOUR INTERVAL
- FENCELINE
- SHORELINE
- TOP OF BANK
- TOE OF SLOPE
- OVERHEAD ELECTRICAL
- GUARDRAIL
- PIPELINE
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- AZ26-700 PILE
- AZ36-700 PILE
- AZ42-700 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025

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Scale 1" = 100'

Original Size **Arch D**

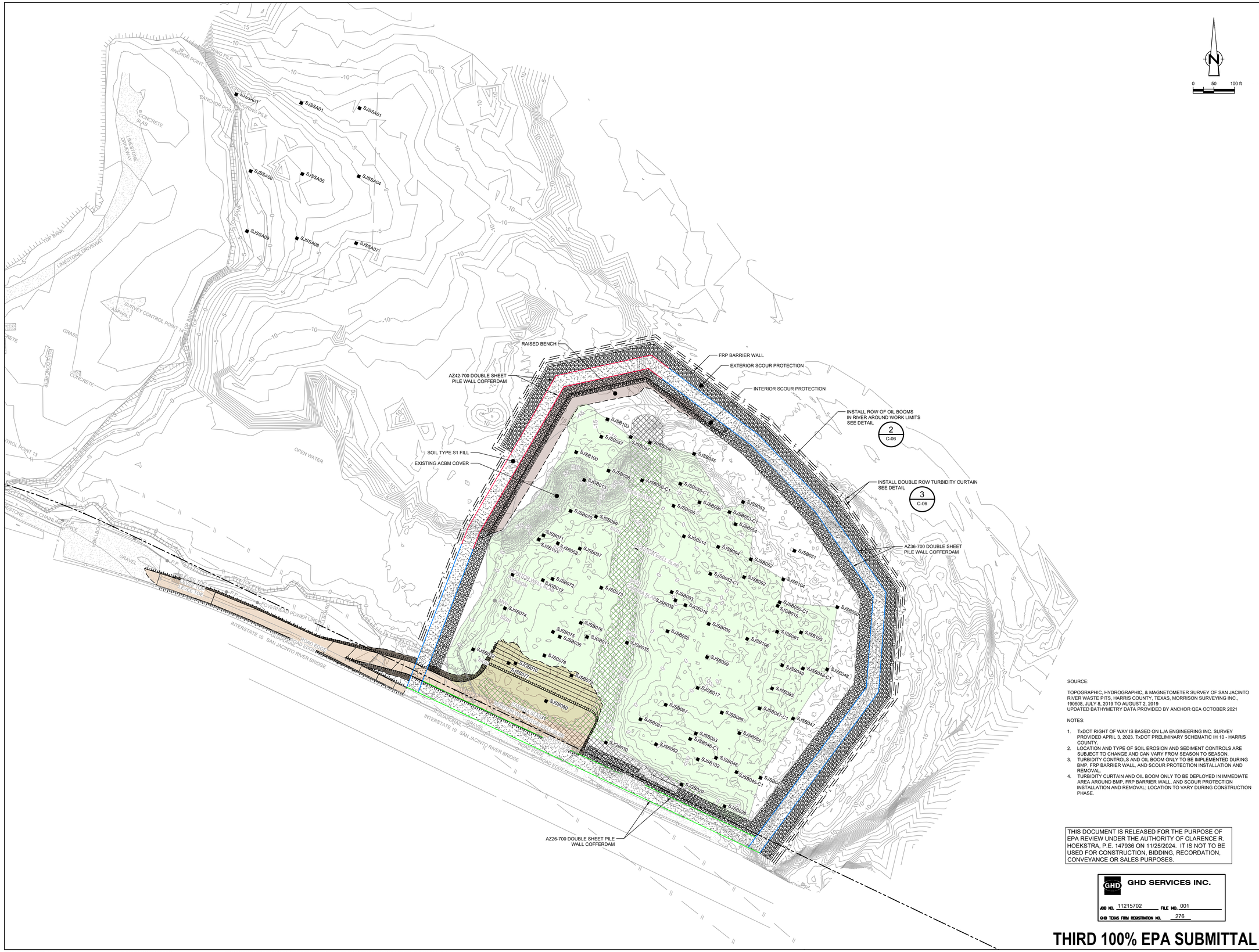
Bar is one inch on original size drawing 0 1"

Project No. **11215702**

Title
SSA AREA AND NORTHERN IMPOUNDMENT WORKS

Sheet No.
C-03

Sheet 4 of 83



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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

NOTES:

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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

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
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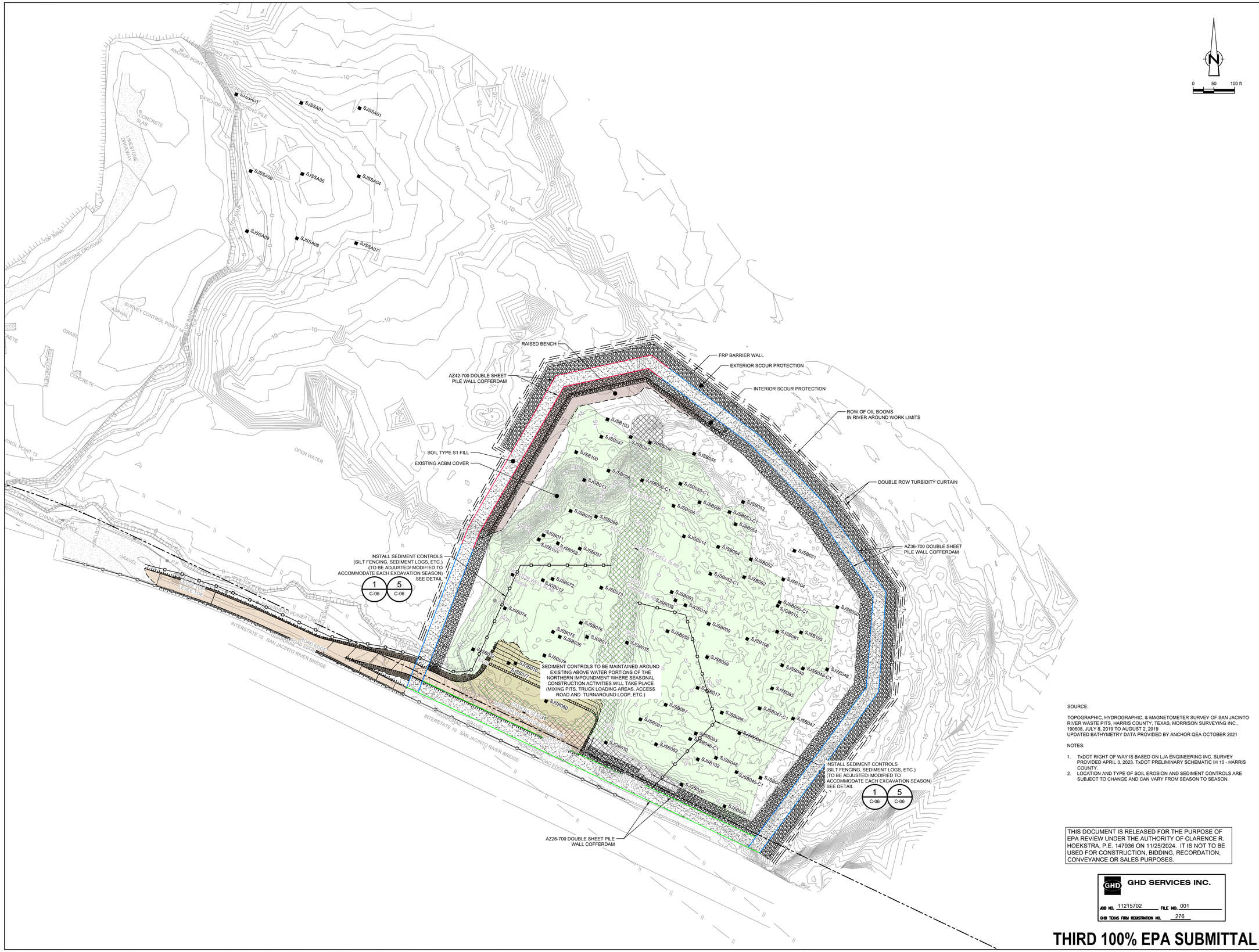
Project No. 11215702

Title
SOIL EROSION AND SEDIMENT CONTROL PLAN OVERALL

Sheet No.
C-04

Sheet 5 of 83



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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

NOTES:

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- INTERIOR SCOUR PROTECTION

Client

SAN JACINTO RIVER WASTE PITS

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Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025
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Project No. 11215702

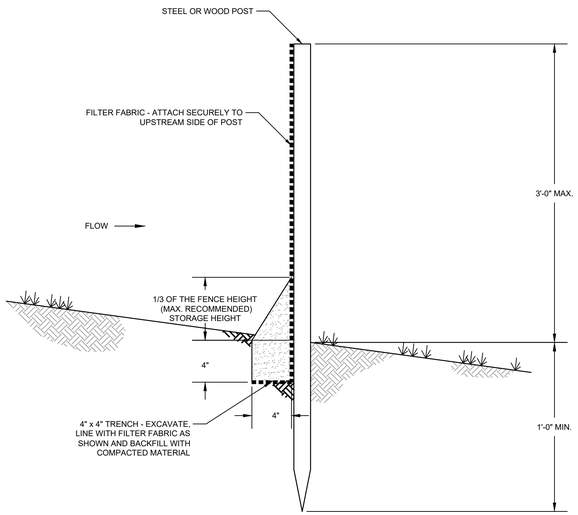
Title

SOIL EROSION AND SEDIMENT CONTROL PLAN SEASONAL

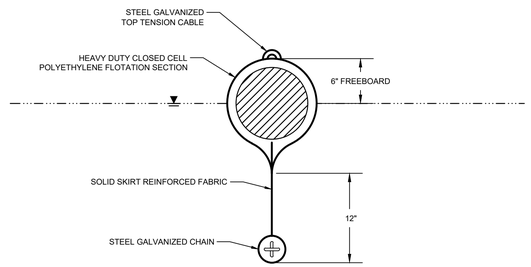
Sheet No.

C-05

Sheet 6 of 83



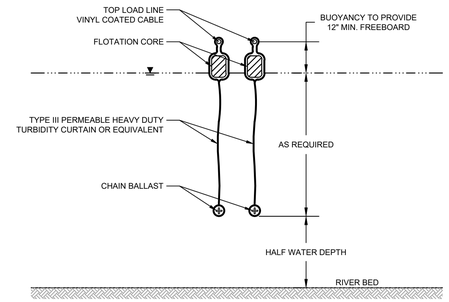
DETAIL 1 (C-05) TEMPORARY SILT FENCE
N.T.S.



NOTES

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

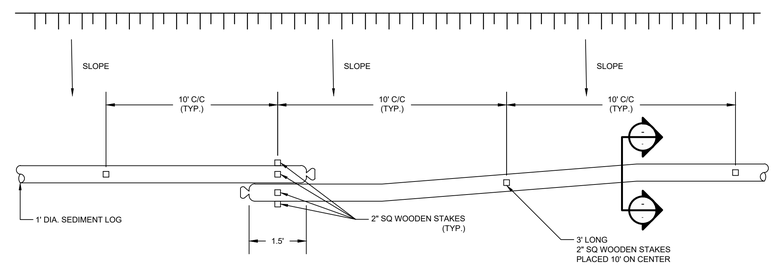
DETAIL 2 (C-04) NON-ABSORBENT OIL BOOM
N.T.S.



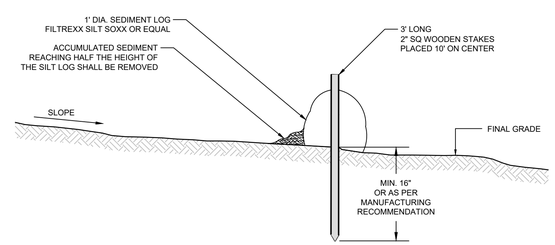
NOTES

1. 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 'C' BMP 27 TURBIDITY CURTAIN, DOCUMENT EP1110-1-16, 1997.
2. CURTAIN SYSTEM SHALL BE EQUIPPED WITH LOAD TRANSFER TYPE PANEL CONNECTORS
3. INCLUDE MOORING SYSTEM IF REQUIRED.

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

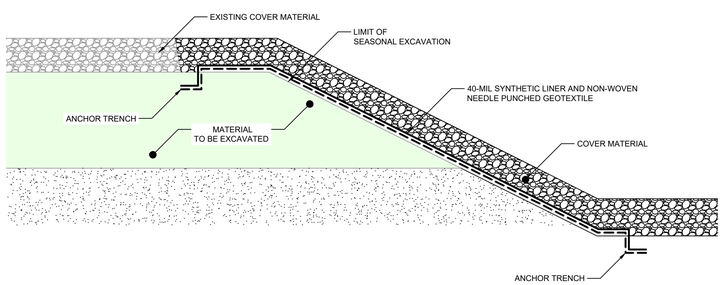


PLAN



SECTION

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



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

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GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
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5-23-2025
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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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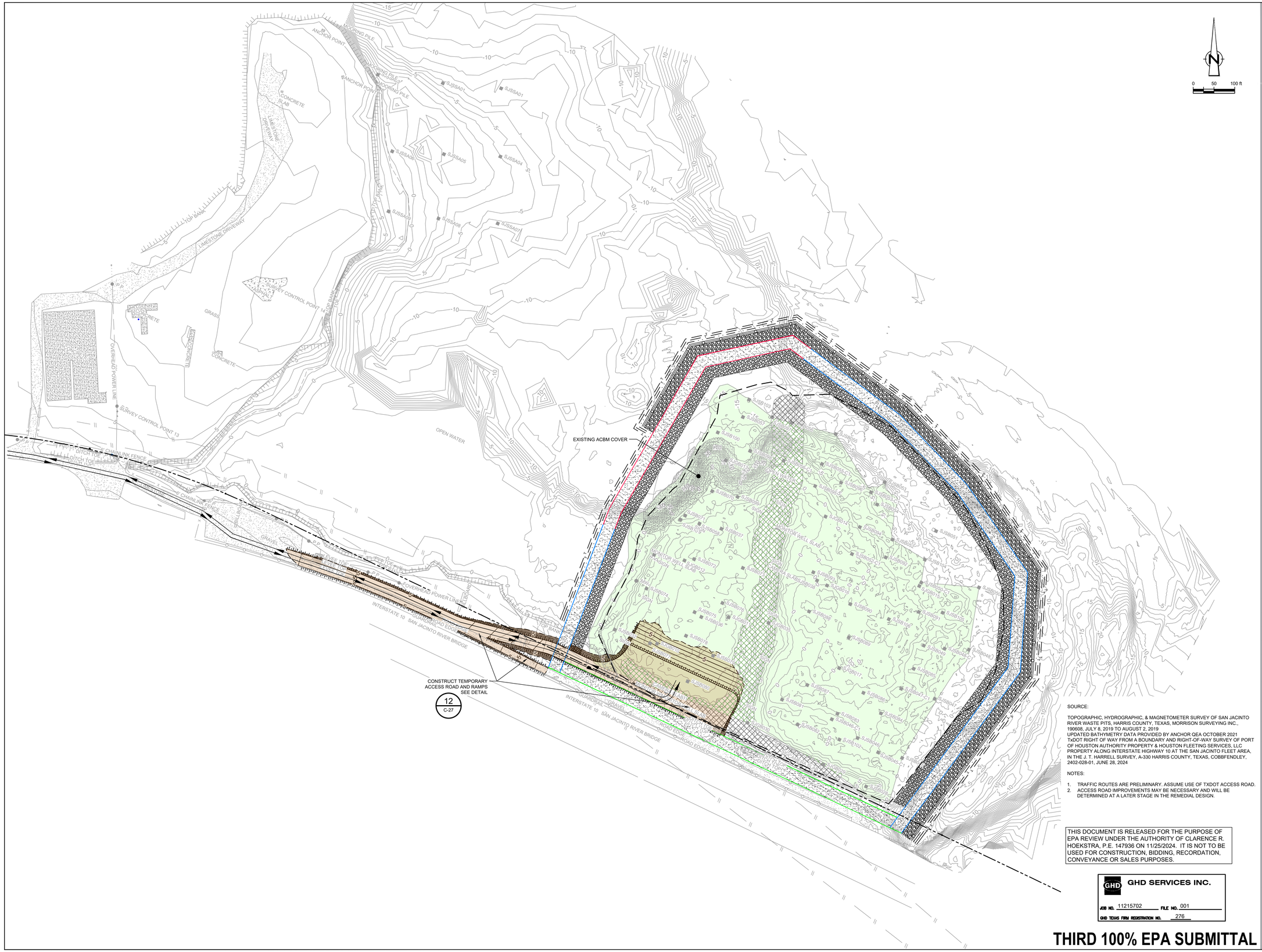
Project No. 11215702

Title
SOIL EROSION AND SEDIMENT CONTROL DETAILS

Sheet No.
C-06

Sheet 7 of 83



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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-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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- TOE OF SLOPE
- OVERHEAD ELECTRICAL
- GUARDRAIL
- PIPELINE
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- AZ26-700 PILE
- AZ36-700 PILE
- AZ42-700 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

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Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025

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Project No. 11215702

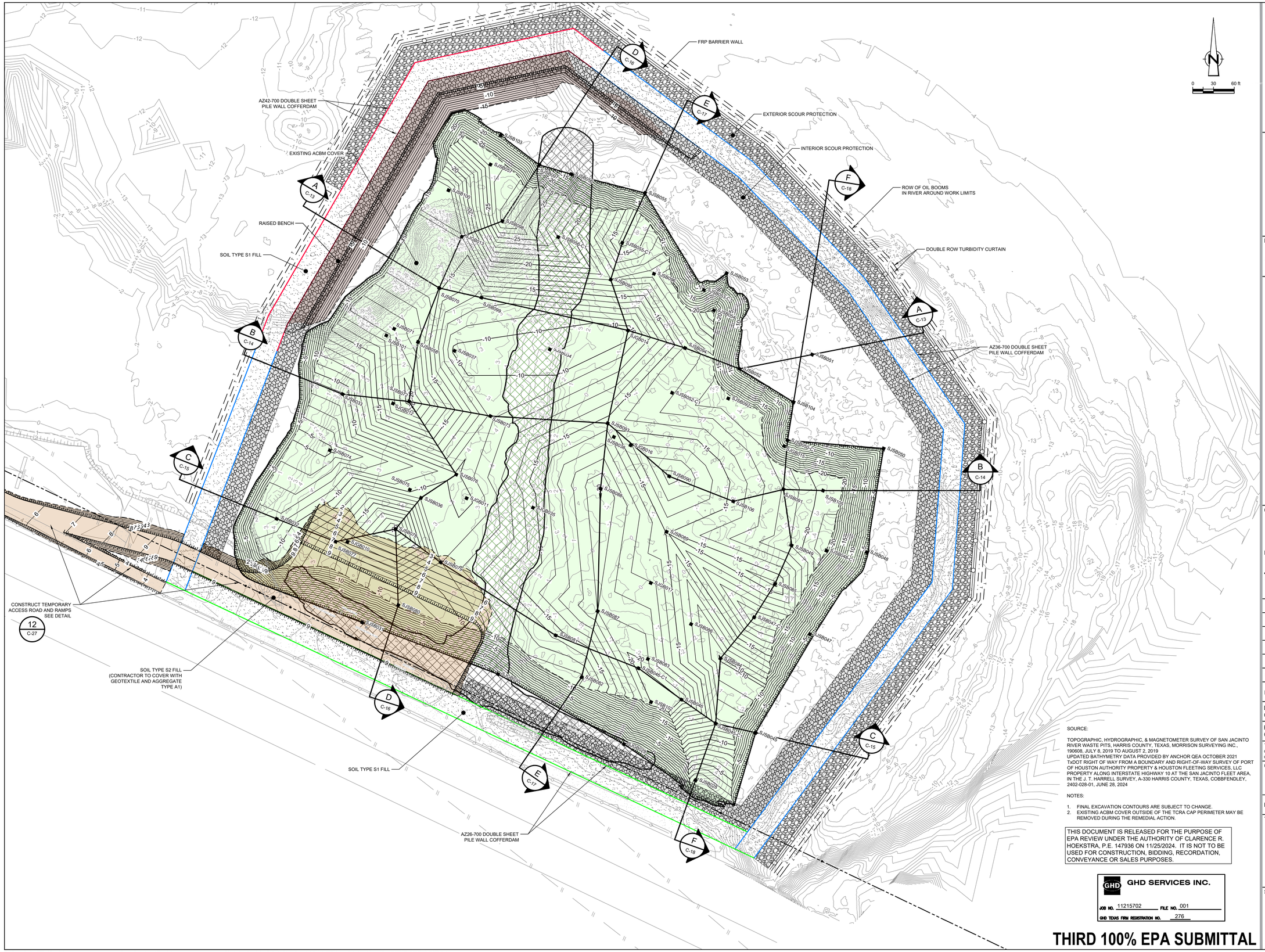
Title

PROJECT TRAFFIC CONTROL PLAN

Sheet No.

C-07

Sheet 8 of 83



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NOTES:

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- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

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Project No. 11215702

Title
EXCAVATION PLAN OVERALL

Sheet No.
C-08

Plot Date: 23 May 2025 - 10:11 AM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-008.dwg
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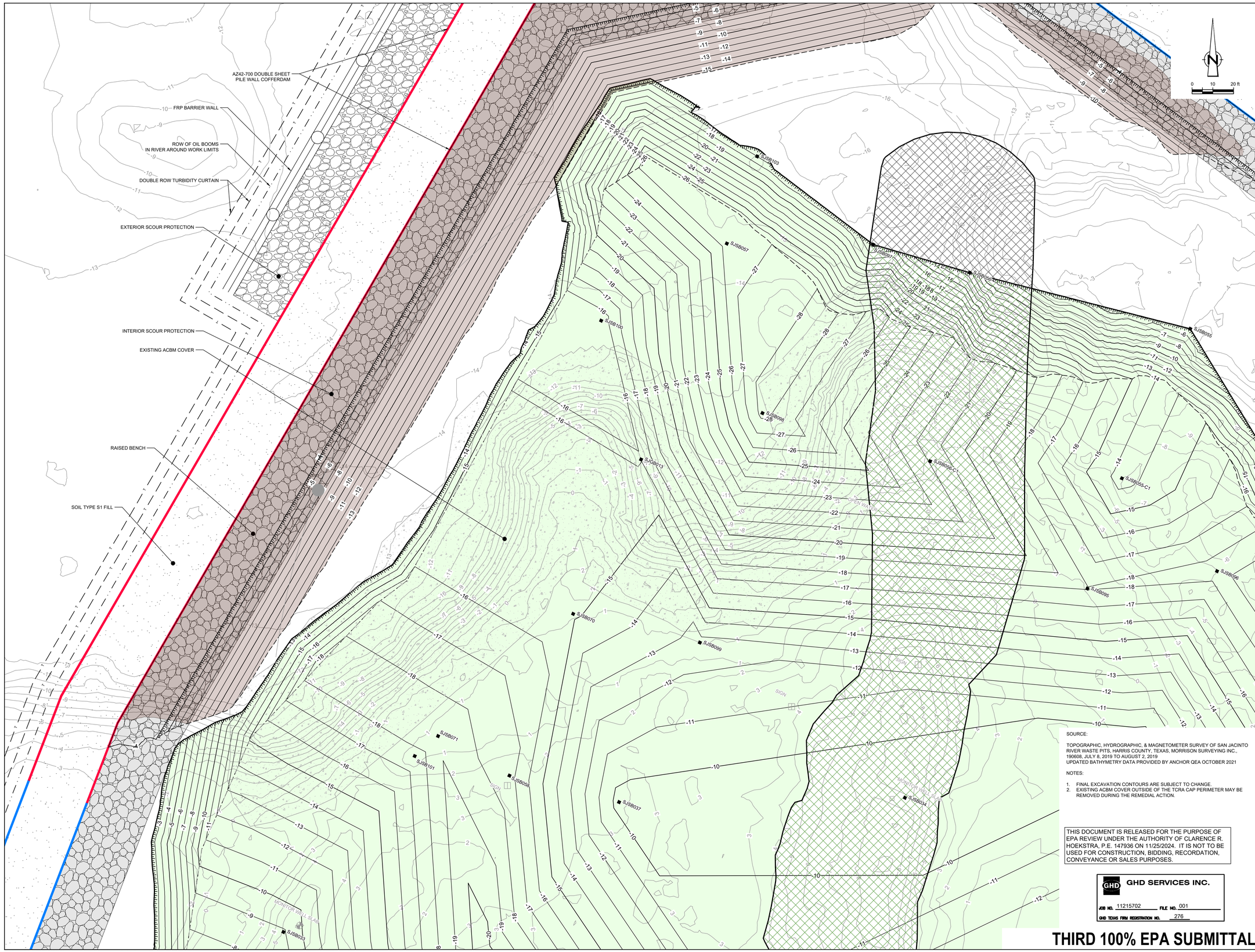

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- RAISED BENCH
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- INTERIOR SCOUR PROTECTION

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025

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Project No. 11215702

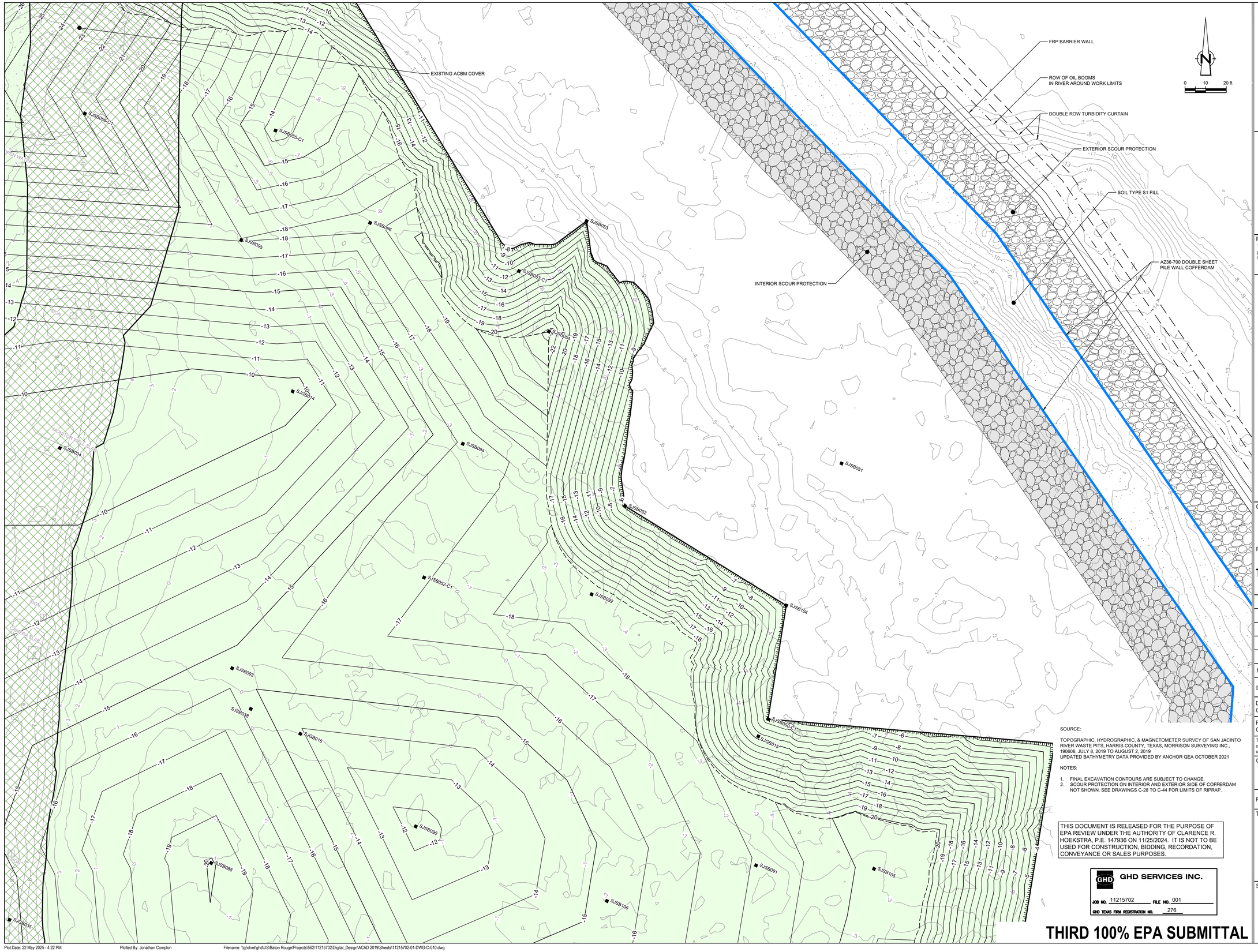
Title

EXCAVATION PLAN NORTHWEST

Sheet No.

C-09

Sheet 10 of 83



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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

NOTES:

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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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- OIL BOOM
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- INTERIOR SCOUR PROTECTION

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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Project No. 11215702

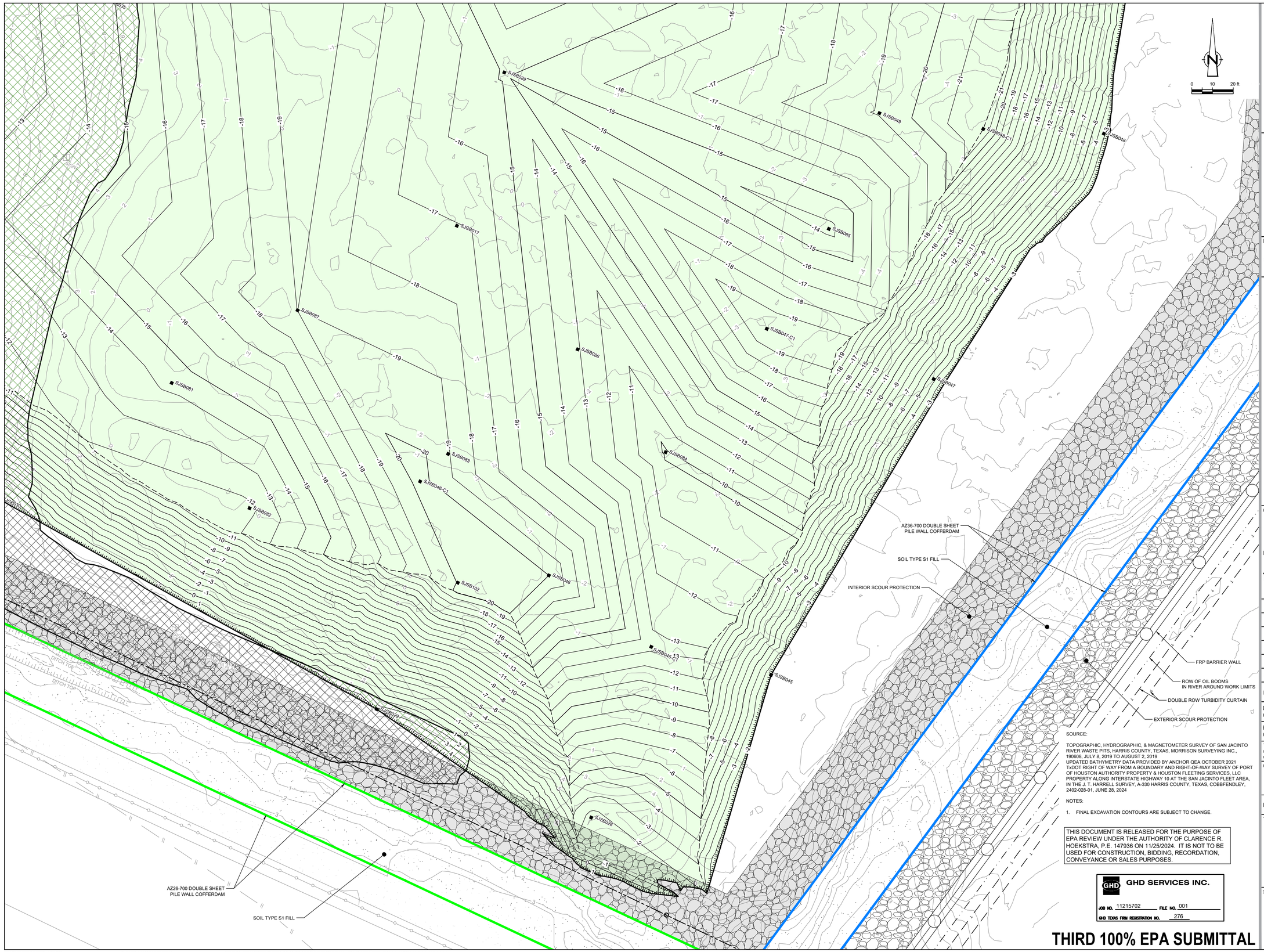
Title

EXCAVATION PLAN NORTHEAST

Sheet No.

C-10

Sheet 11 of 83



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- INTERIOR SCOUR PROTECTION

Client

SAN JACINTO RIVER WASTE PITS

Project

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No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025

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Original Size **Arch D**

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Project No. **11215702**

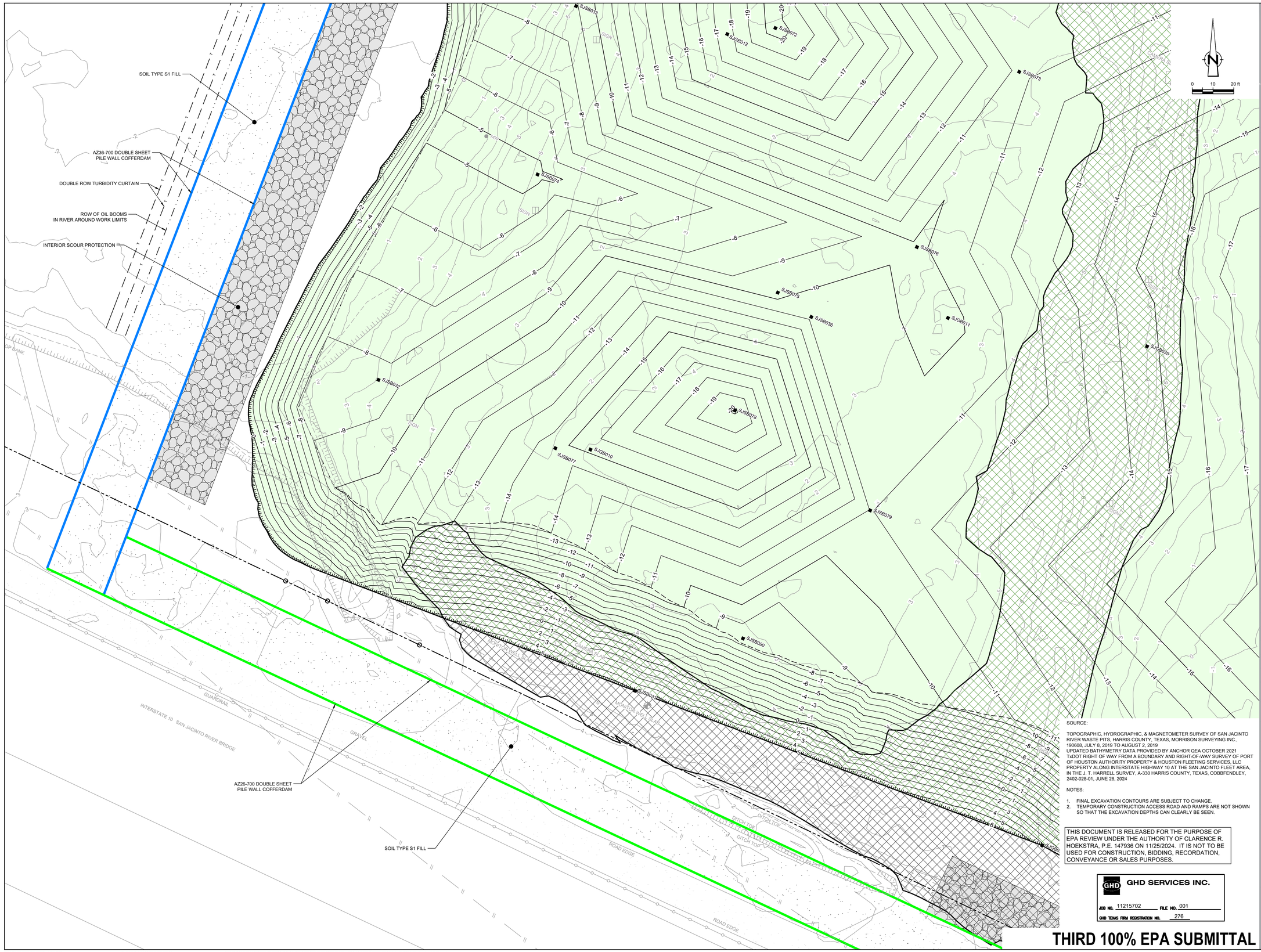
Title

EXCAVATION PLAN SOUTHEAST

Sheet No.

C-11

Sheet 12 of 83



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- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
EXCAVATION PLAN SOUTHWEST

Sheet No.
C-12

Plot Date: 22 May 2025 - 4:23 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-012.dwg
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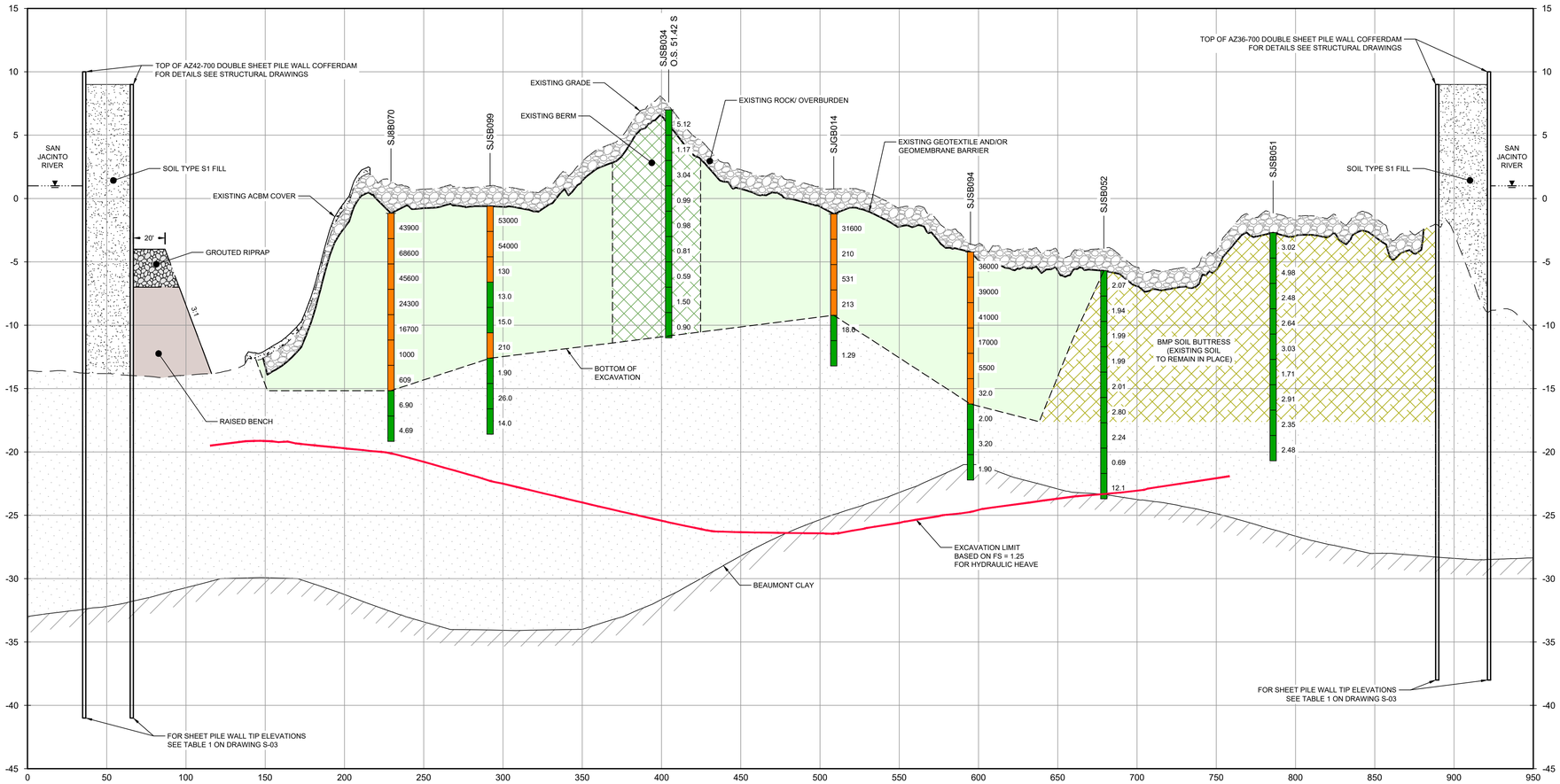

SECTION A WEST/EAST
C-08

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

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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

GHD
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Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
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5-25-2025
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LEGEND

- SOILS WITH CONCENTRATIONS <30 ng/kg TEQ_{WHO} TCDD
- SOILS WITH CONCENTRATIONS >30 ng/kg TEQ_{WHO} 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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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

Plot Date: 22 May 2025 - 4:23 PM
Plotted By: Jonathan Compton
Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-013.dwg
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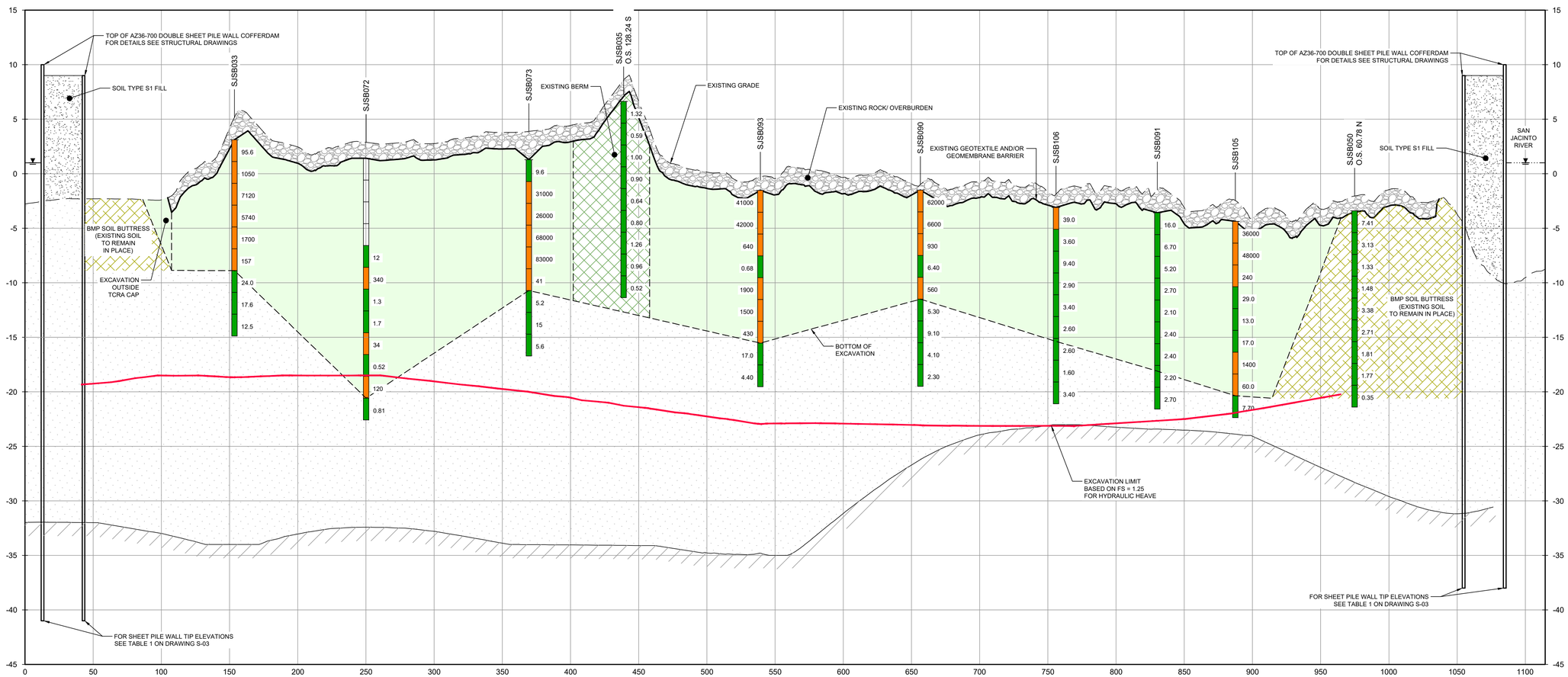

SECTION B WEST/EAST
C-08

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

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

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- SOILS WITH CONCENTRATIONS <30 ng/kg $TEQ_{DF,M}$ 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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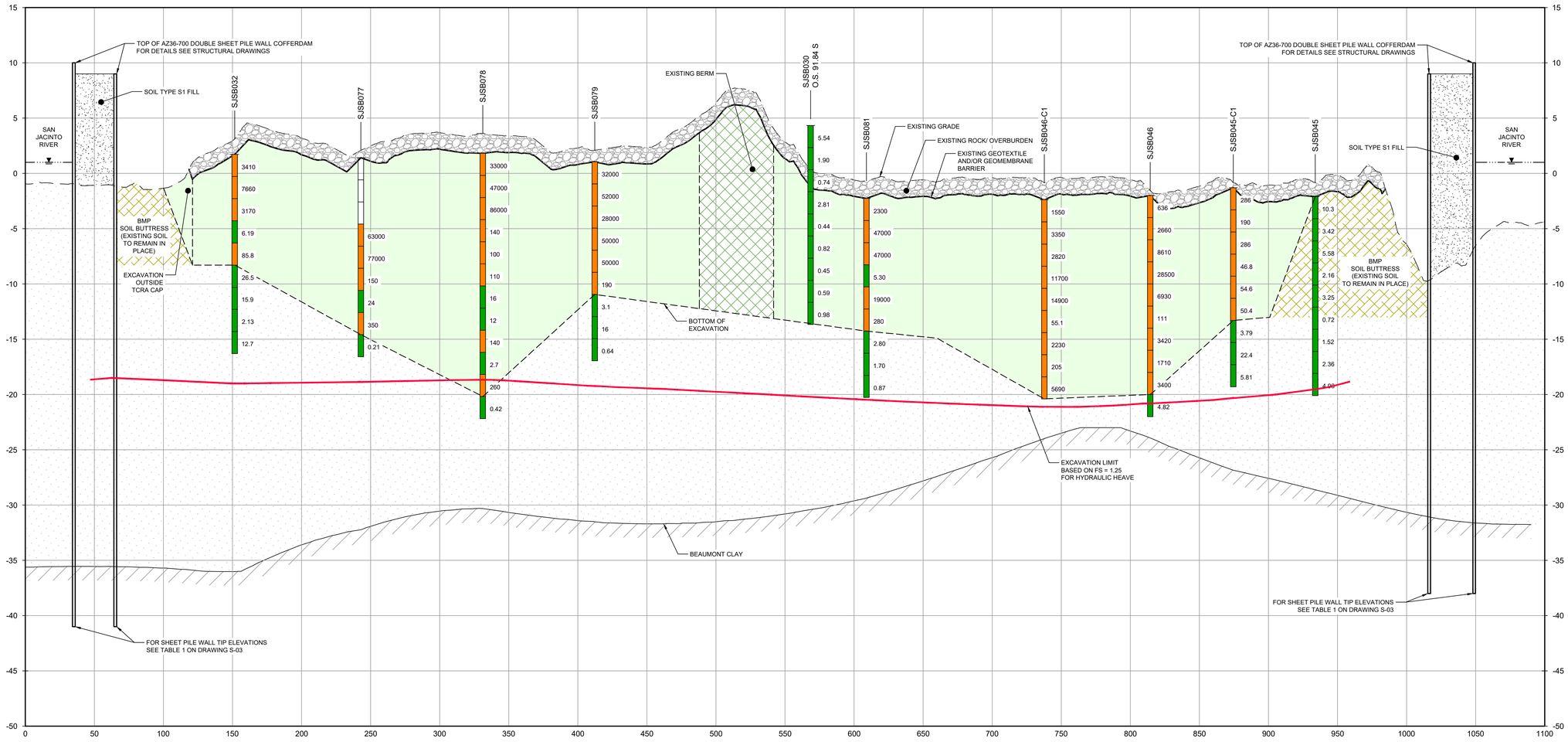
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

Title
EXCAVATION SECTION 2 OF 6

Sheet No.
C-14

Sheet 15 of 83



SECTION C WEST/EAST
C-08

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

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.

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- BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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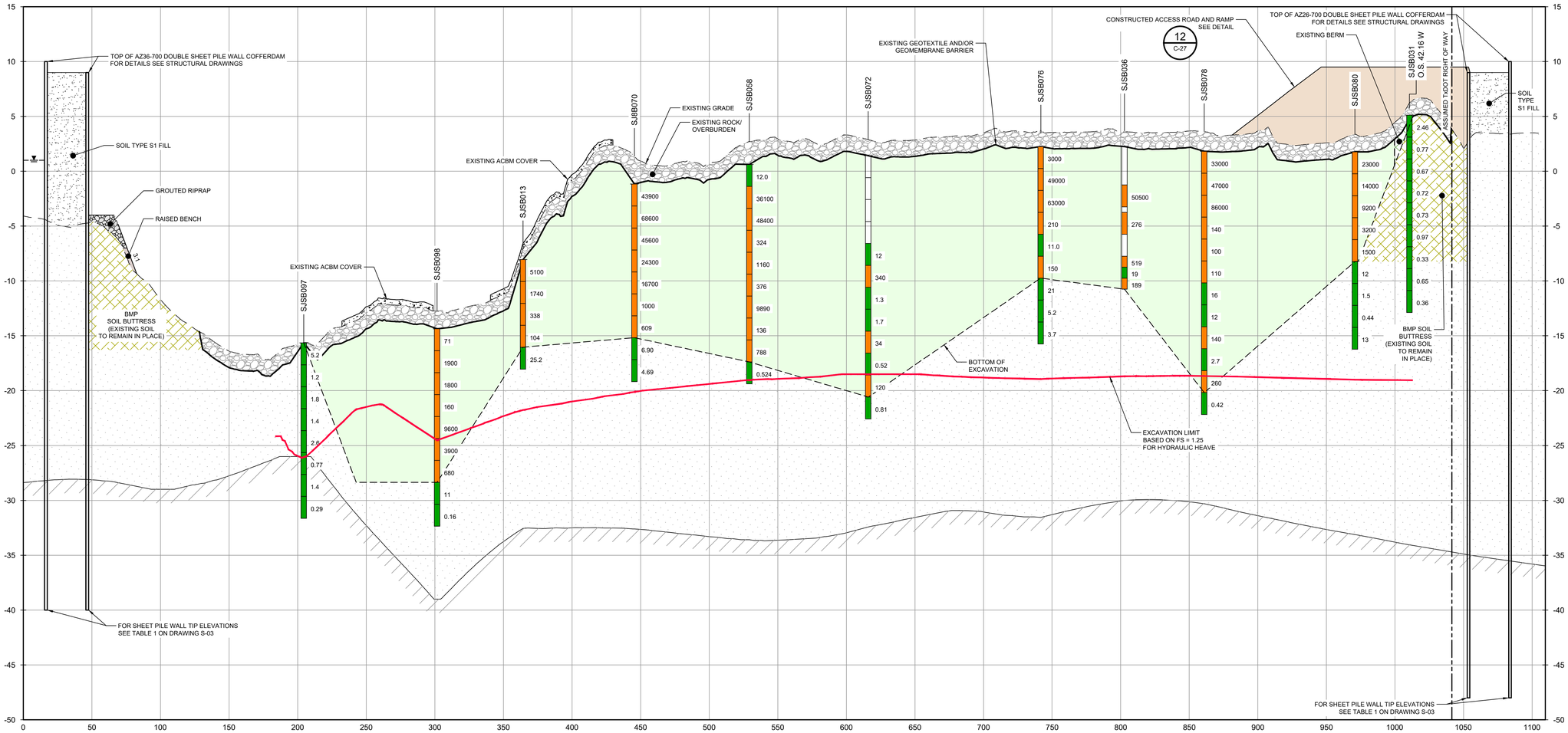
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

Title
EXCAVATION SECTION 3 OF 6

Sheet No.
C-15

Sheet 16 of 83



SECTION D C-08 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. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 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 FIRM REGISTRATION NO. 276

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LEGEND

- SOILS WITH CONCENTRATIONS <30 ng/kg $TEQ_{F,U}$ TCDD
- SOILS WITH CONCENTRATIONS >30 ng/kg $TEQ_{F,U}$ 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

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

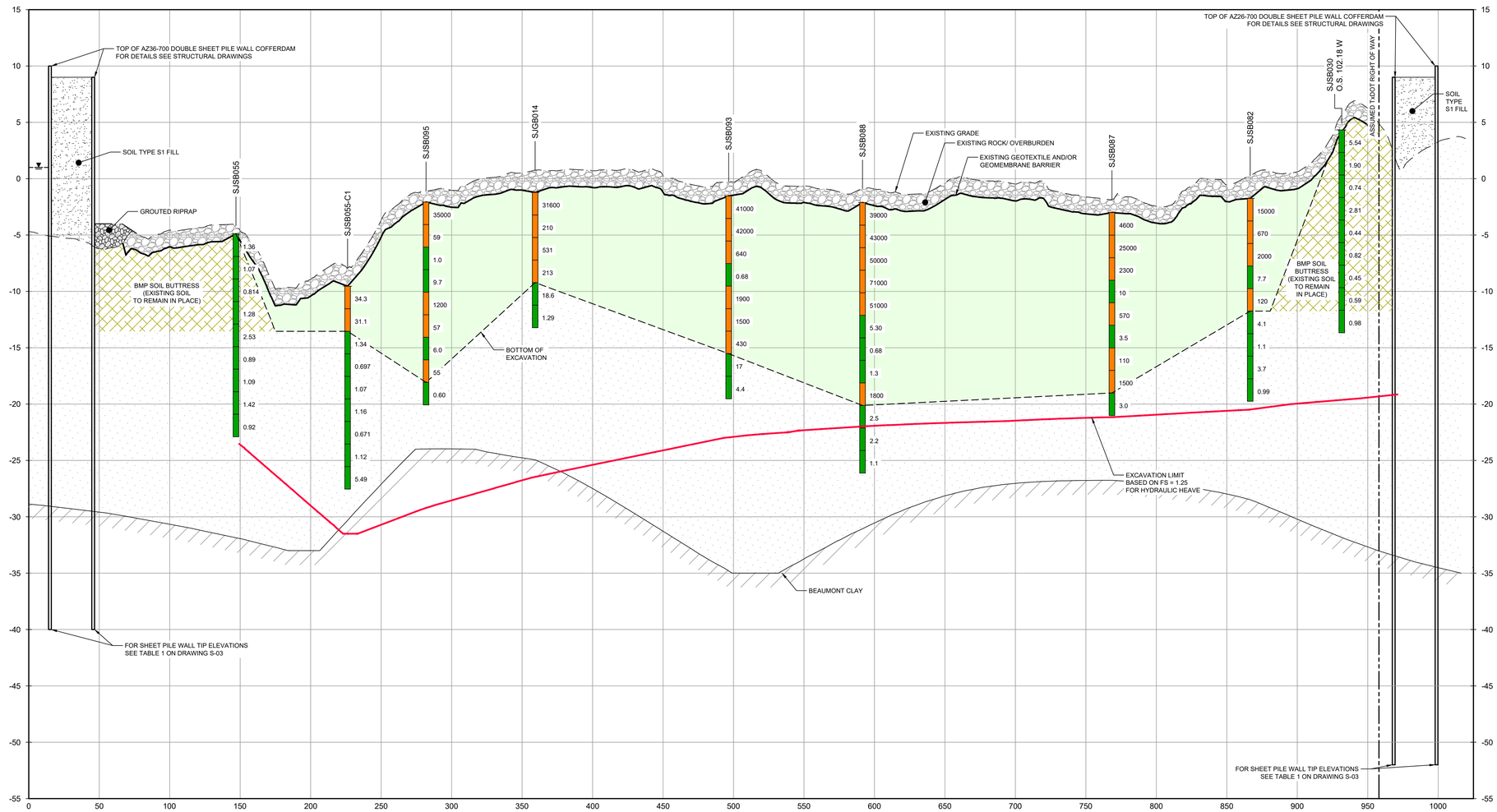
Title

EXCAVATION SECTION 4 OF 6

Sheet No.

C-16

Sheet 17 of 83



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, COBBFENDLEY, 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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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LEGEND
- SOILS WITH CONCENTRATIONS <30 ng/kg $TEQ_{DF,W}$ TCDD
- SOILS WITH CONCENTRATIONS >30 ng/kg $TEQ_{DF,W}$ TCDD
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- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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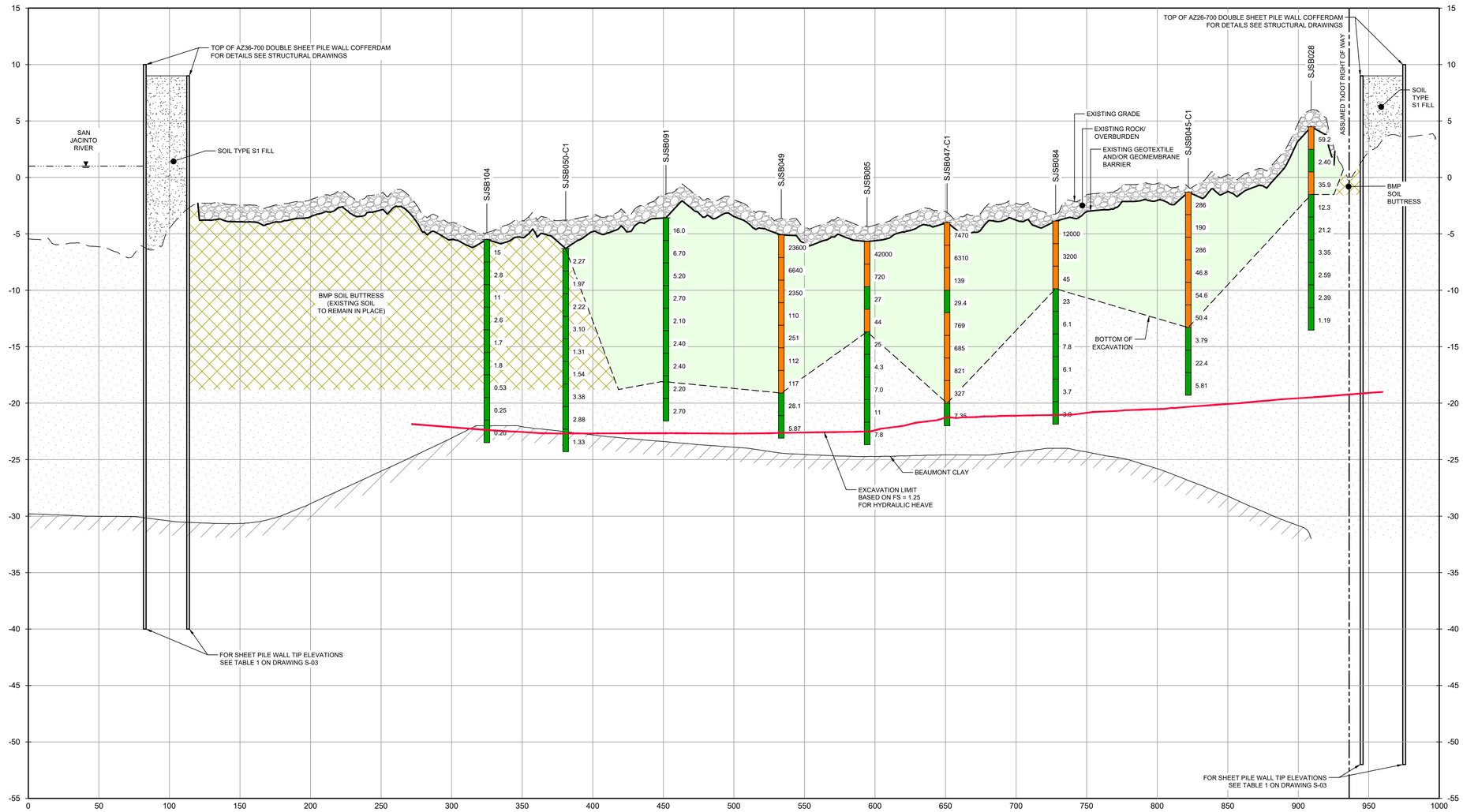
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
EXCAVATION SECTION 5 OF 6

Sheet No.
C-17

Sheet 18 of 83



SECTION F 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, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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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

Plot Date: 22 May 2025 - 4:24 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-013.dwg
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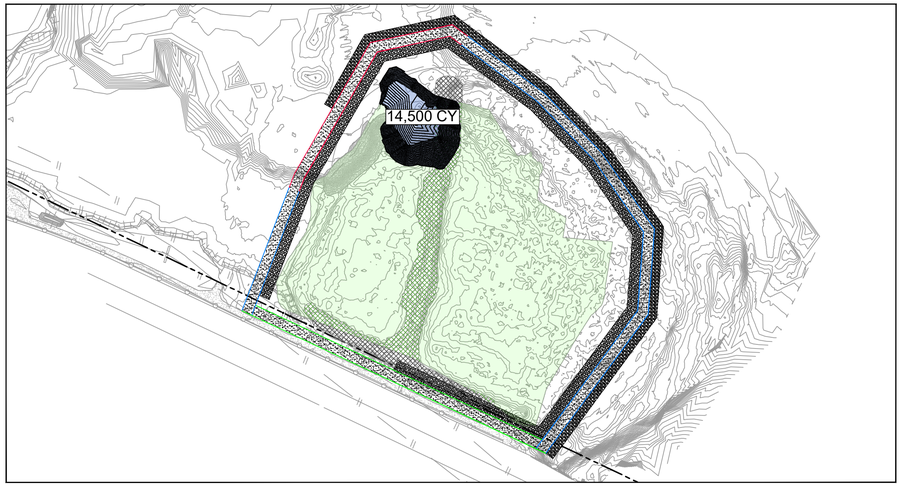
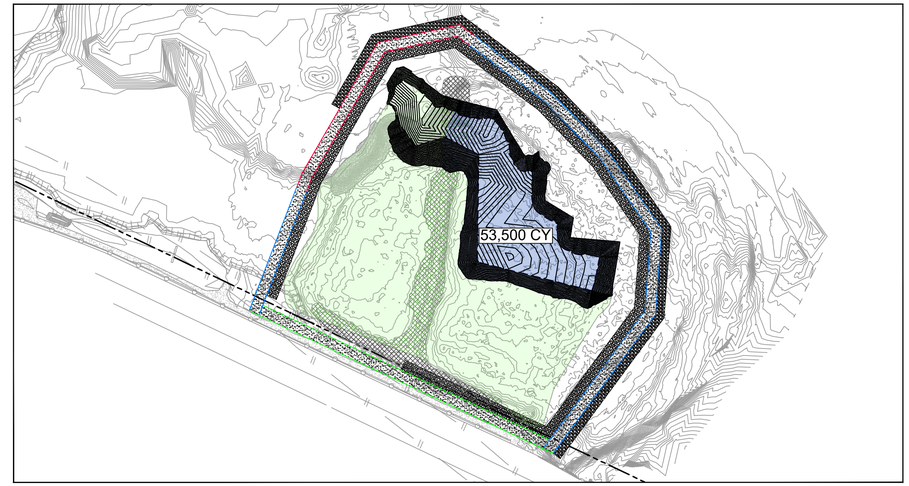
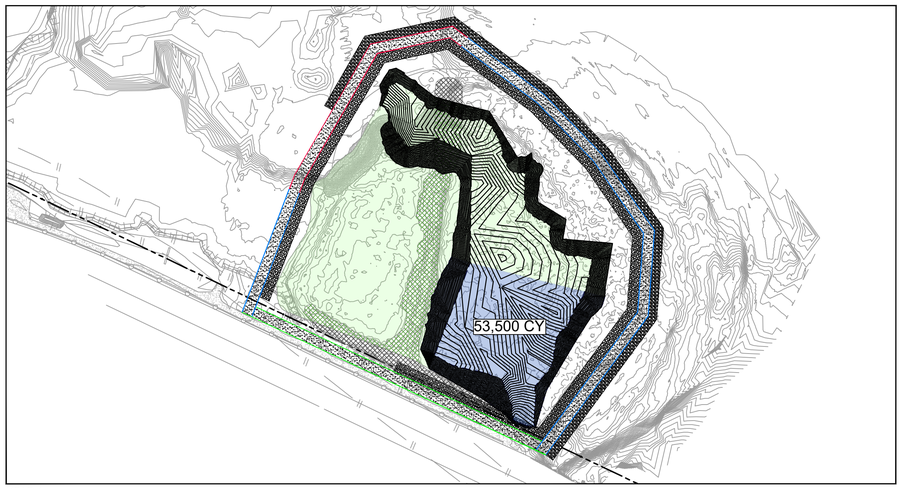


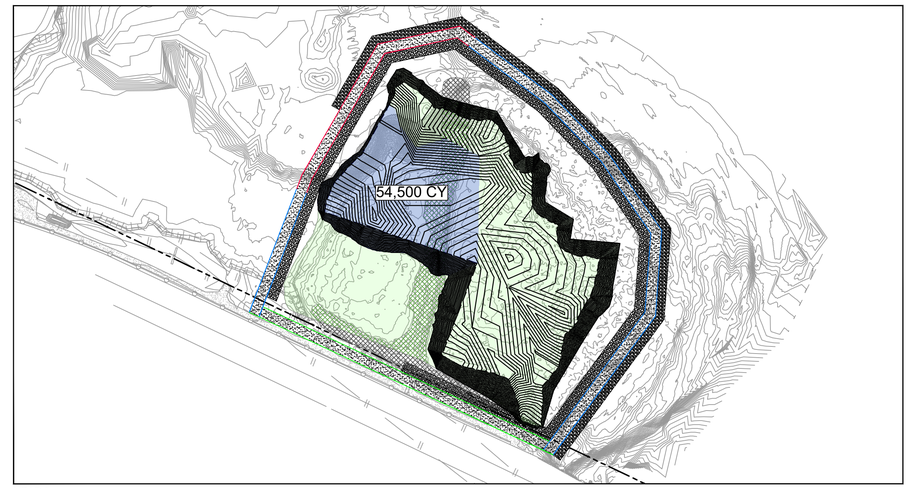
YEAR 2



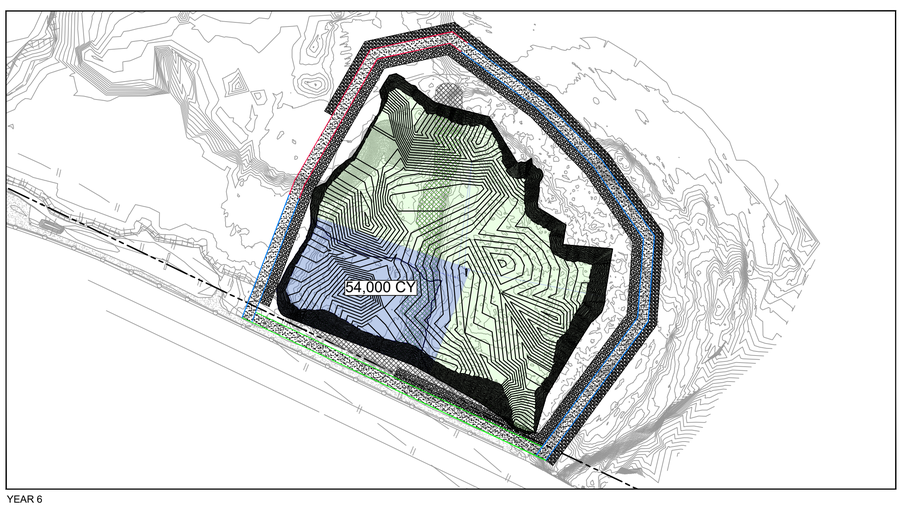
YEAR 3



YEAR 4



YEAR 5



YEAR 6

SEASONAL EXCAVATION VOLUMES							
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:

1. 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.
2. 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 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-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:

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

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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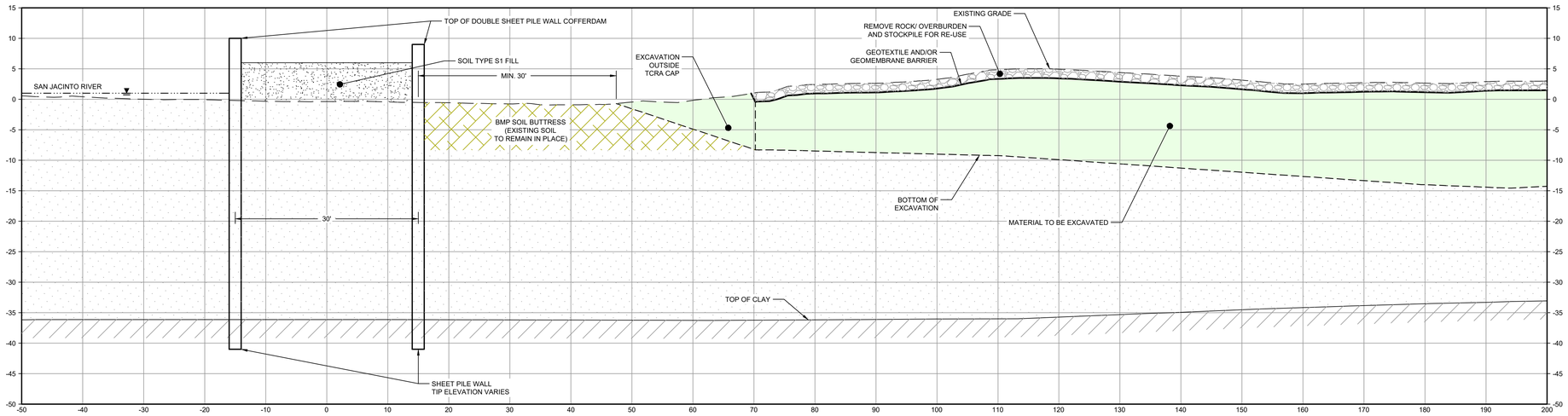
Project No. 11215702

Title
SEASONAL EXCAVATION SEQUENCING TYPICAL

Sheet No.
C-19

Plot Date: 22 May 2025 - 4:24 PM Plotted By: Jonathan Compton Filename: \\ghdnetghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-019.dwg
193777

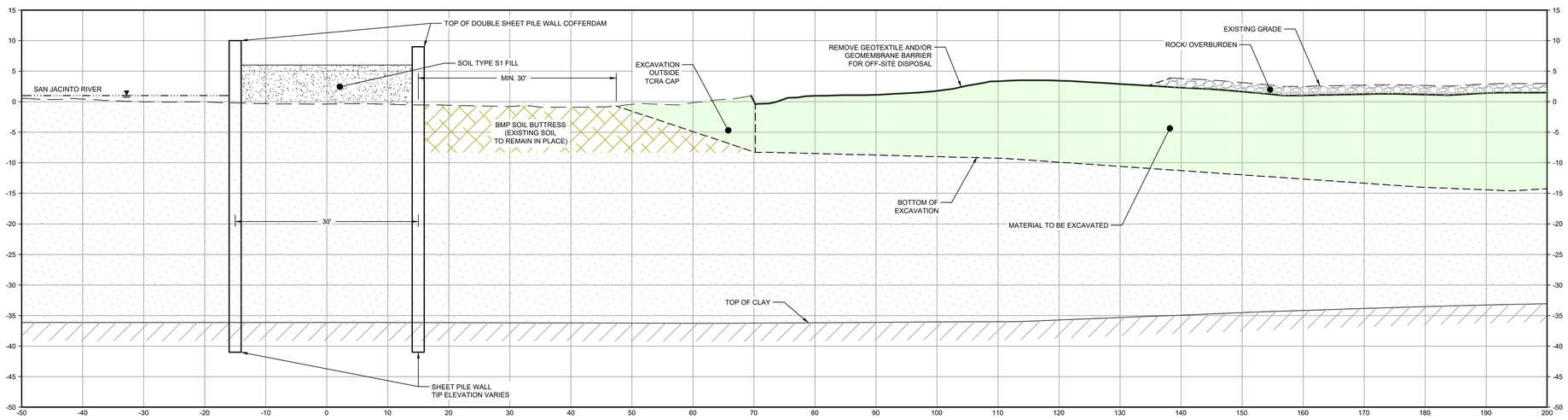


NOTES:

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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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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LEGEND

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

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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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 1 OF 2

Sheet No.

C-20

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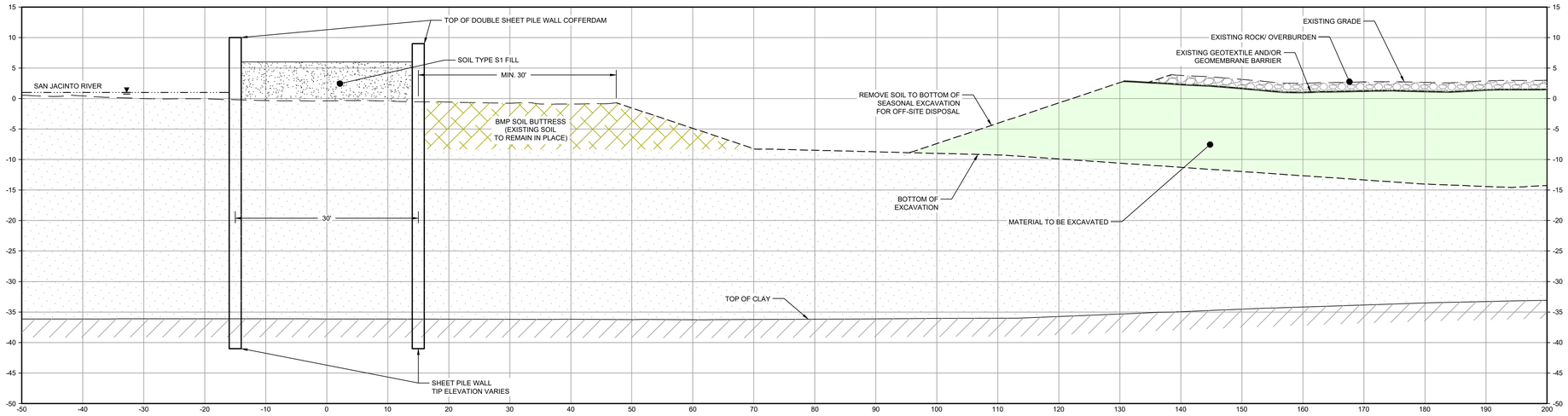
193778

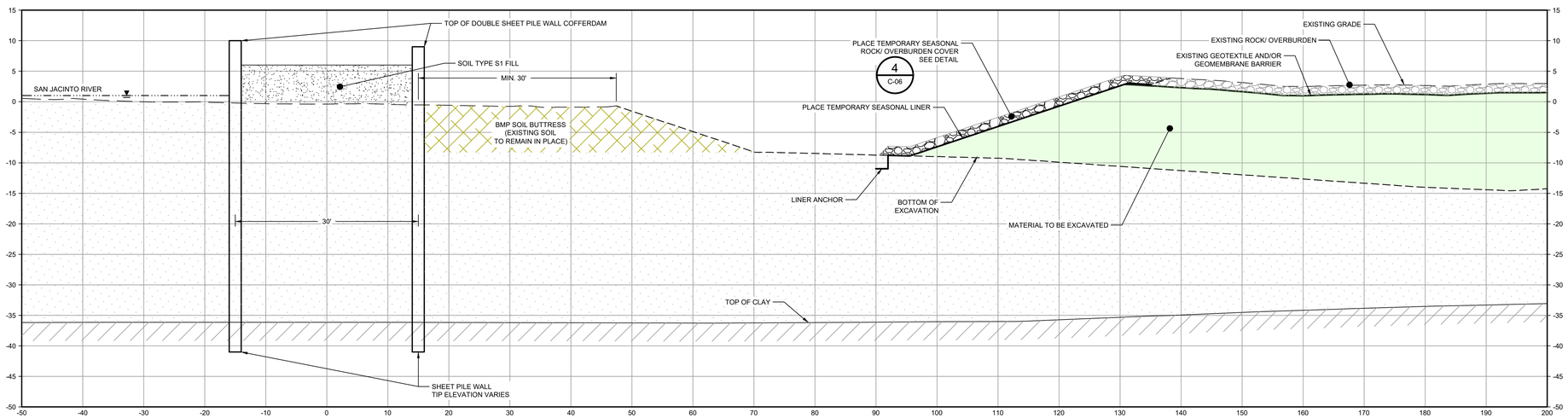


NOTES:

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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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
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C. R. HOEKSTRA
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LEGEND

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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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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

Sheet 22 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-330 HARRIS COUNTY, TEXAS, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:

1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.

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GHD SERVICES INC.

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GHD TEXAS FIRM REGISTRATION NO. 276

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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. POWER POLE
- L.P. LIGHT POLE
- WELL WELL
- CONCRETE
- GRAVEL
- AZ26-700 PILE
- AZ36-700 PILE
- AZ42-700 PILE
- EXTERIOR SCOUR PROTECTION/RIPRAP
- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
7	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

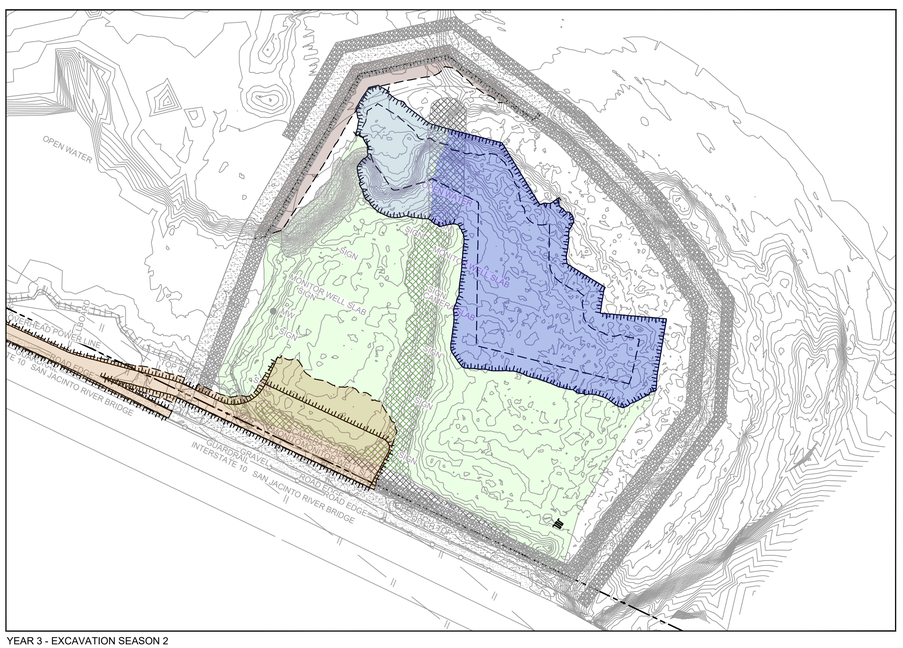
Title
RESTORATION PLAN

Sheet No.
C-22

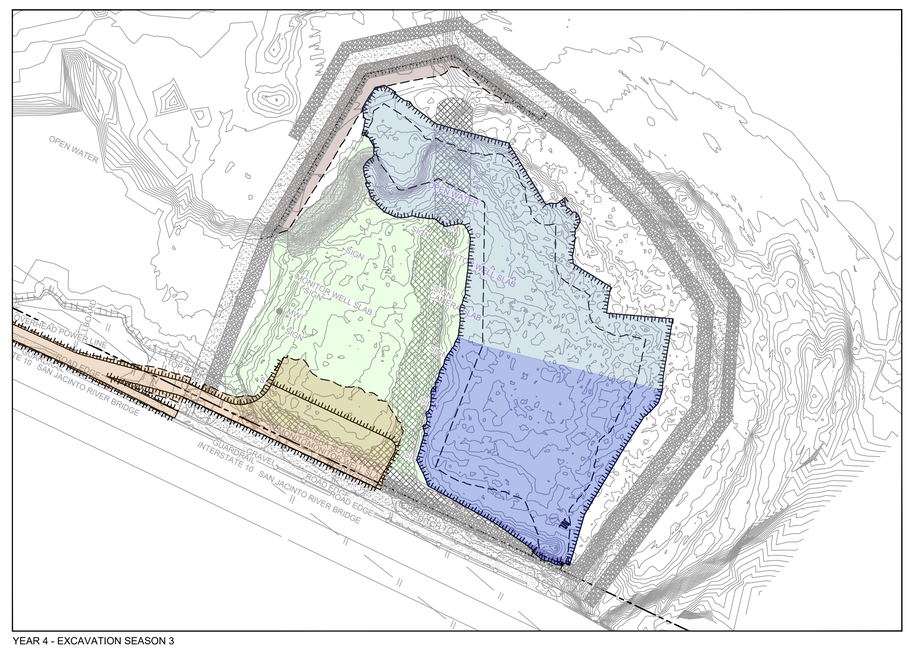
Sheet 23 of 83

YEAR 1 - BMP INSTALLATION AND SITE PREPARATION

YEAR 2 - EXCAVATION SEASON 1



YEAR 3 - EXCAVATION SEASON 2



YEAR 4 - EXCAVATION SEASON 3

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:

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

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

0 75 150 ft

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2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
7	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 1"

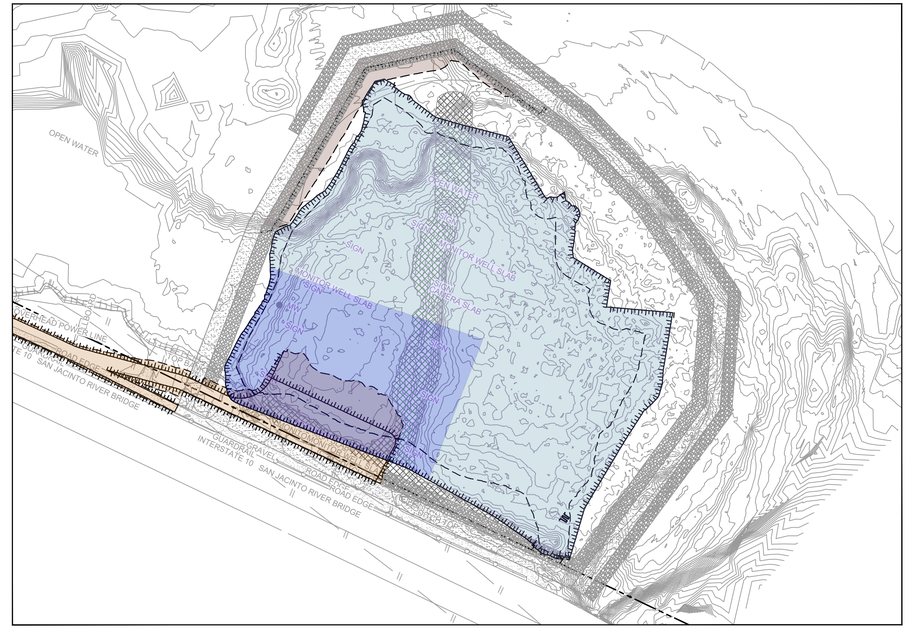
Project No. 11215702

Title
CONSTRUCTION SEQUENCING 1 OF 2

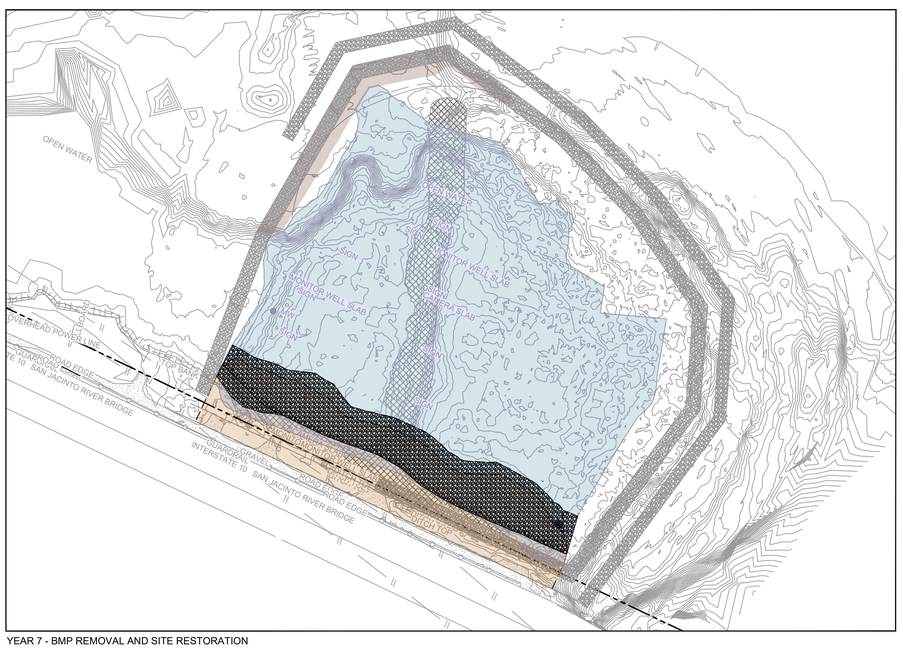
Sheet No.
C-23

Plot Date: 23 May 2025 - 10:11 AM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-023.dwg
193781

YEAR 5 - EXCAVATION SEASON 4



YEAR 6 - EXCAVATION SEASON 5



YEAR 7 - BMP REMOVAL AND SITE RESTORATION

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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GHD SERVICES INC.

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

THIRD 100% EPA SUBMITTAL

0 75 150 ft

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2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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LEGEND

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- FENCELINE
- SHORELINE
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- PIPELINE
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- WELL 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
7	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025
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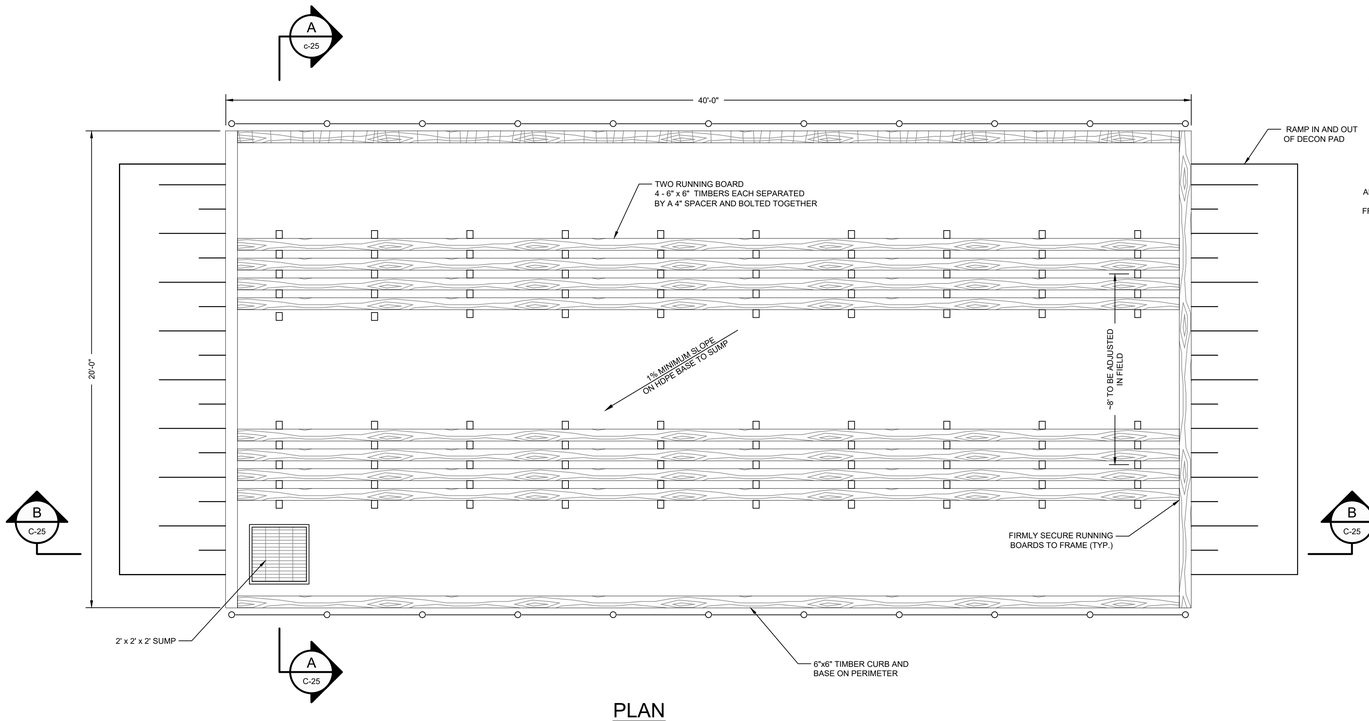
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

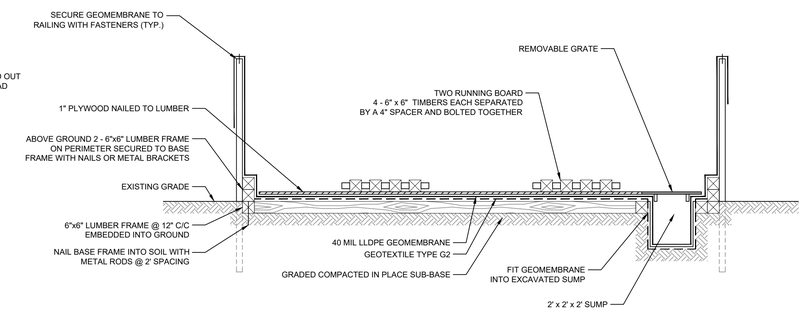
Title
CONSTRUCTION SEQUENCING 2 OF 2

Sheet No.
C-24

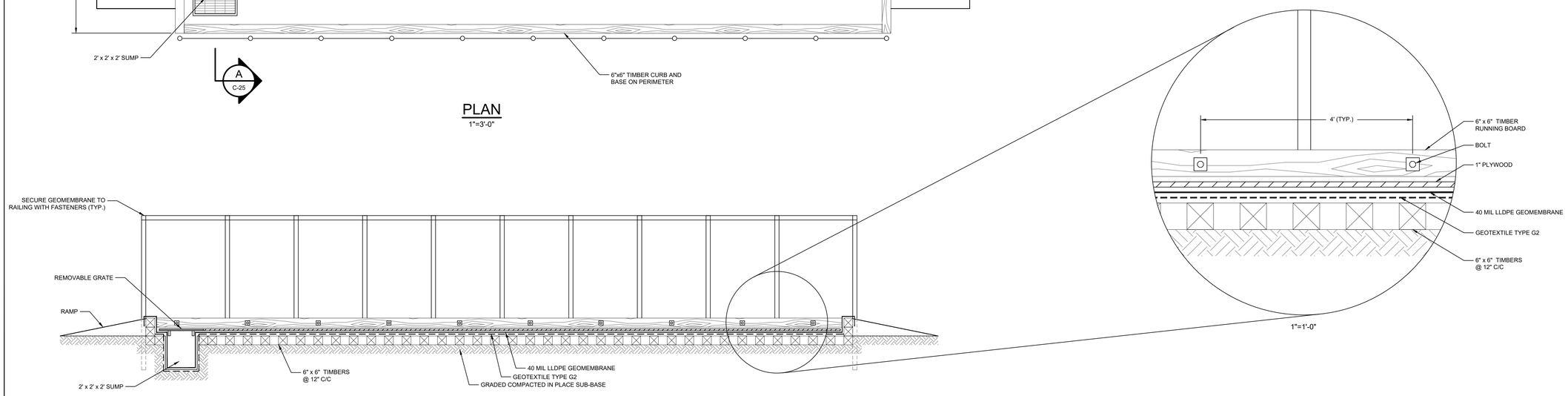
Plot Date: 23 May 2025 - 10:11 AM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-023.dwg
193782



PLAN
1"=3'-0"



SECTION A C-25
1"=3'-0"



SECTION B C-25
1"=3'-0"

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

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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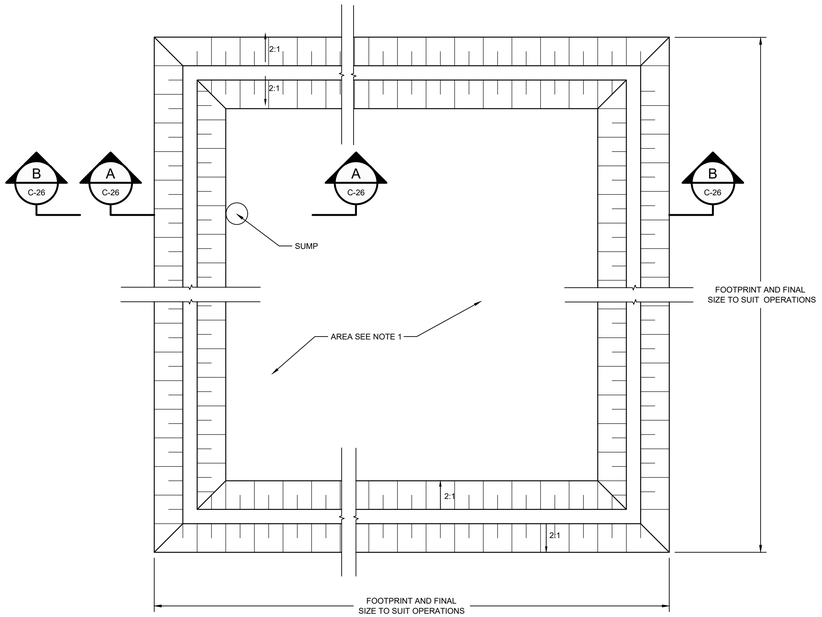
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

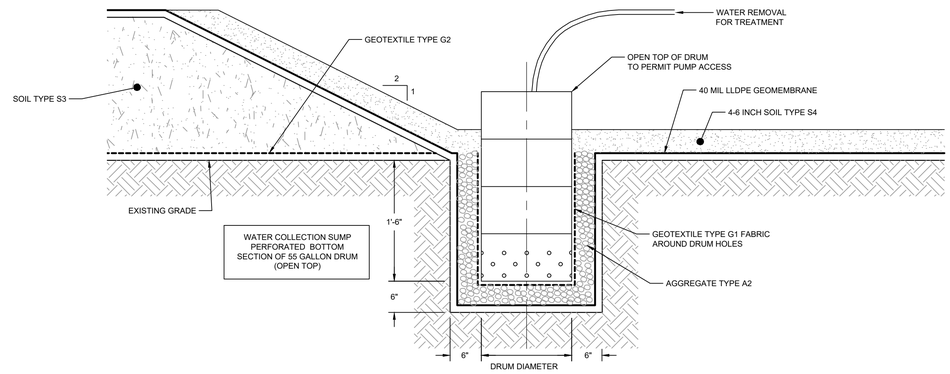
Title
TYPICAL DETAILS 1 OF 3

Sheet No.
C-25

Sheet 26 of 83



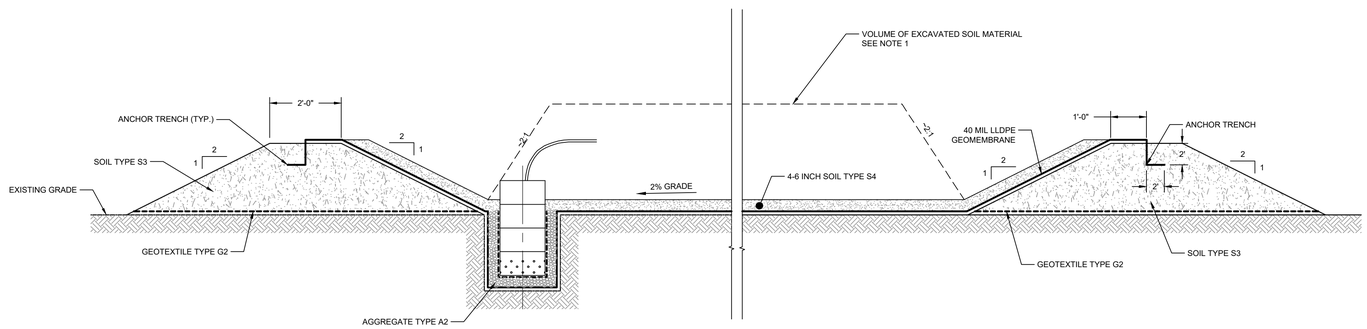
PLAN
N.T.S.



SECTION A C-26 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 C-26
N.T.S.

DETAIL 9 C-03 TEMPORARY DEWATERING FACILITY
N.T.S.

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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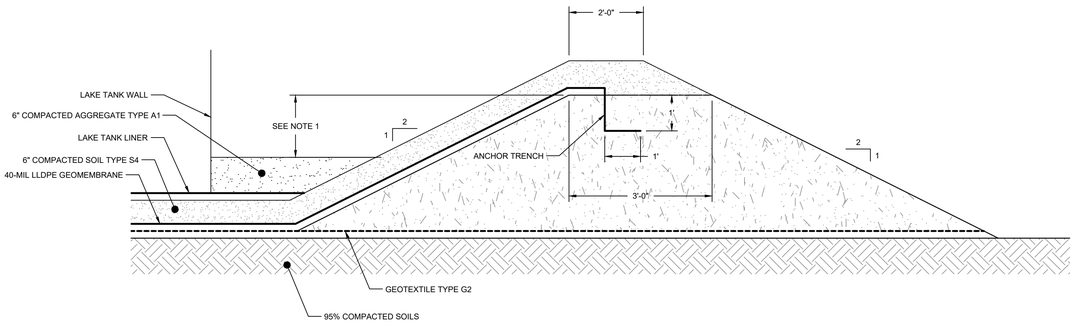
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
TYPICAL DETAILS 2 OF 3

Sheet No.
C-26

Sheet 27 of 83

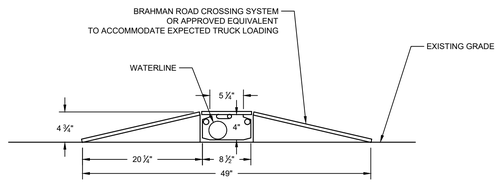


NOTE:

1. 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 EQUPIMENT) IS GREATER THAN THE 110% OF THE VOLUME OF THE LARGEST TANK (I.E., 1.33 MILLION GALLONS)"

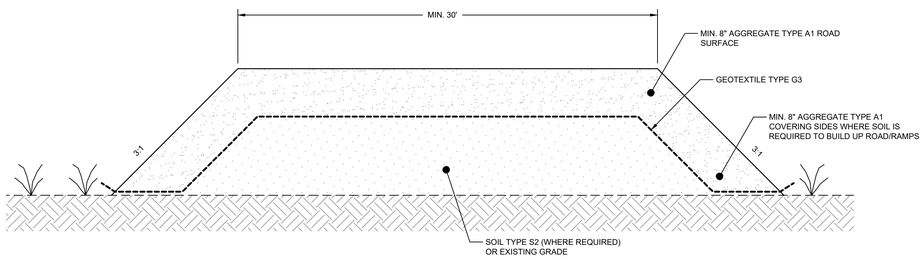
DETAIL 10 WTS SECONDARY CONTAINMENT BERM

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



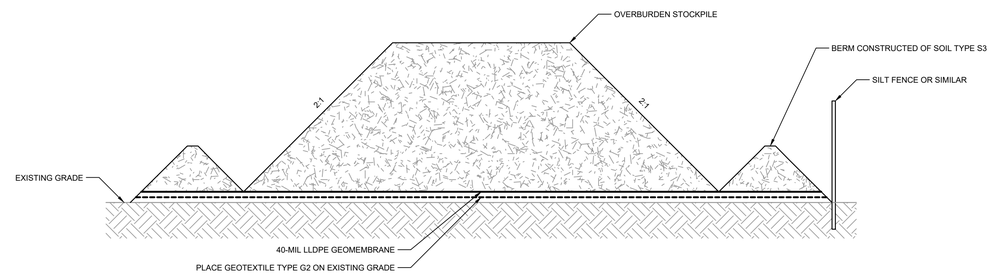
DETAIL 11 TEMPORARY PIPE CROSSING PROTECTION

1"=1'-0" -



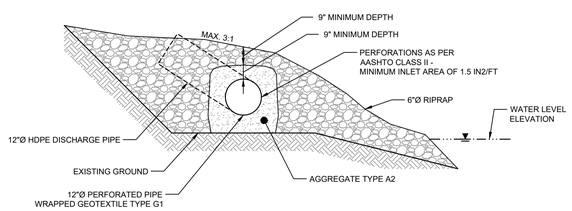
DETAIL 12 TEMPORARY ACCESS ROAD/ RAMPS

N.T.S. C-03



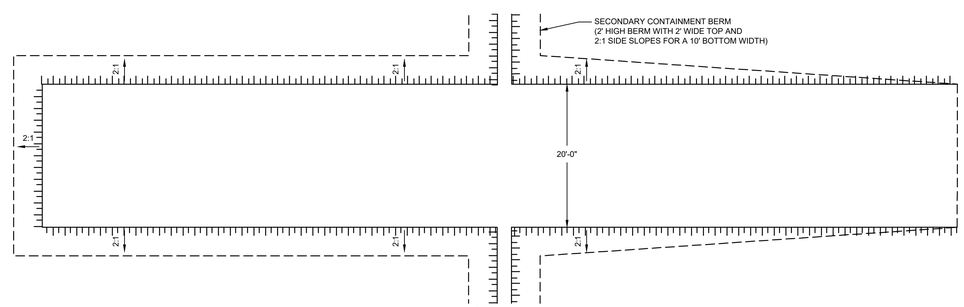
DETAIL 13 TEMPORARY EXCAVATED MATERIAL STOCKPILE

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 SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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PROFESSIONAL ENGINEER

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
7	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

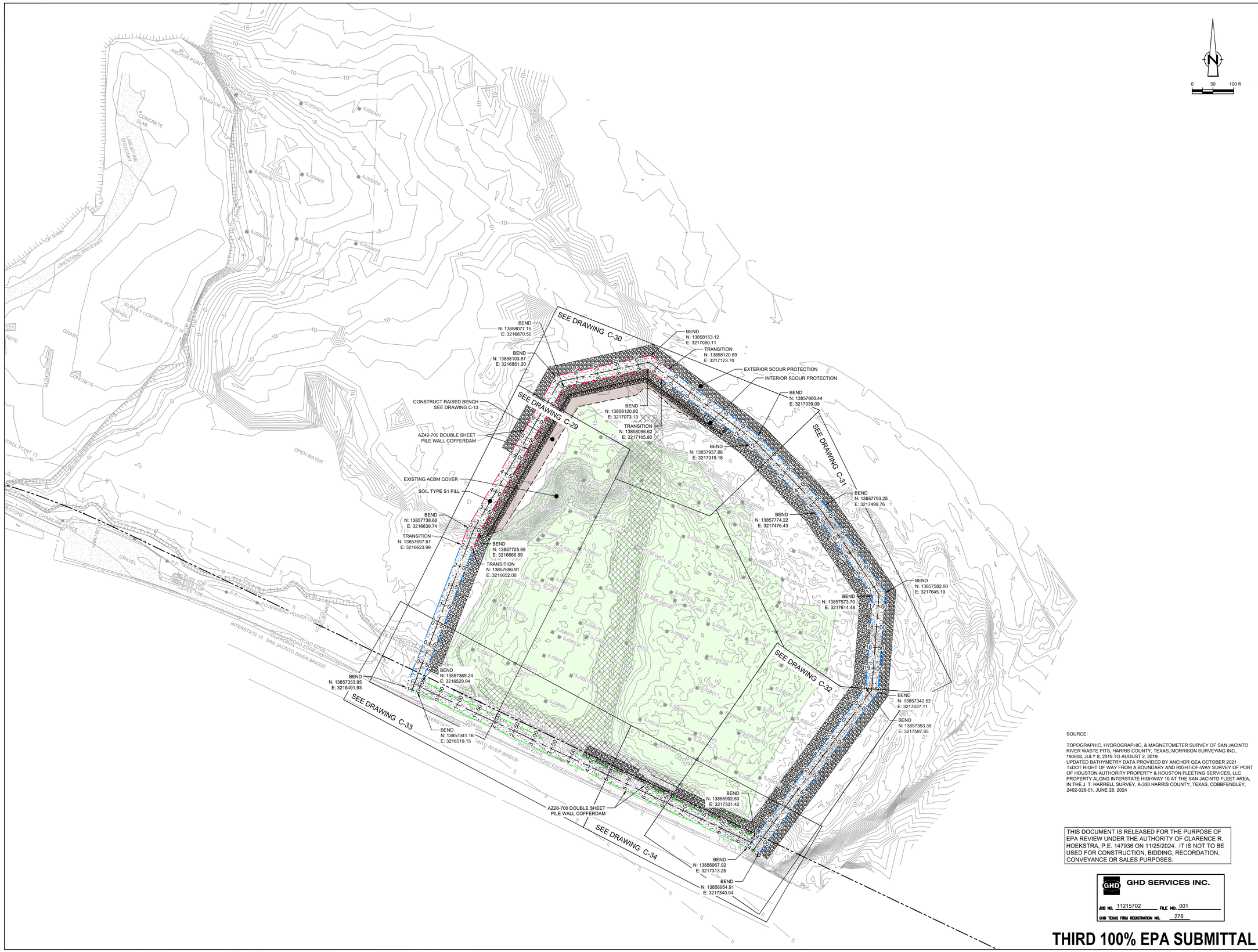
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
TYPICAL DETAILS 3 OF 3

Sheet No.
C-27

Sheet 28 of 83


SEE DRAWING C-30
SEE DRAWING C-29
SEE DRAWING C-31
SEE DRAWING C-32
SEE DRAWING C-33
SEE DRAWING C-34
BEND
N: 13858077.15
E: 3216870.50
BEND
N: 13858103.67
E: 3216851.20
BEND
N: 13858153.12
E: 3217080.11
TRANSITION
N: 13858120.69
E: 3217123.70
EXTERIOR SCOUR PROTECTION
INTERIOR SCOUR PROTECTION
BEND
N: 13857960.44
E: 3217339.09
CONSTRUCT RAISED BENCH
SEE DRAWING C-13
AZ42-700 DOUBLE SHEET
PILE WALL COFFERDAM
BEND
N: 13858120.92
E: 3217073.13
TRANSITION
N: 13858096.62
E: 3217105.80
BEND
N: 13857937.86
E: 3217319.18
EXISTING ACBM COVER
SOIL TYPE S1 FILL
BEND
N: 13857738.66
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TRANSITION
N: 13857697.67
E: 3216623.99
BEND
N: 13857725.68
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TRANSITION
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BEND
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BEND
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AZ26-700 DOUBLE SHEET
PILE WALL COFFERDAM
BEND
N: 13856967.92
E: 3217313.25
BEND
N: 13856954.91
E: 3217340.94
TOP BANK
LIMESTONE DRIVEWAY
CONCRETE SLAB
ANCHOR POINT
MOORING PILE
SURVEY CONTROL POINT 14
ASPHALT
GRASS
CONCRETE
OPEN WATER
CHAIN LINK FENCE
BILLBOARD
GRAVEL
EDGE OF PAVEMENT
LEVEE TOE
LEVEE TOP
OVERHEAD POWER LINE
GUARDRAIL
ROAD EDGE
INTERSTATE 10 SAN JACINTO RIVER BRIDGE
SJSS100
SJSB100
SJSB101
SJSB102
SJSB103
SJSB104
SJSB105
SJSB106
SJSB107
SJSB108
SJSB109
SJSB110
SJSB111
SJSB112
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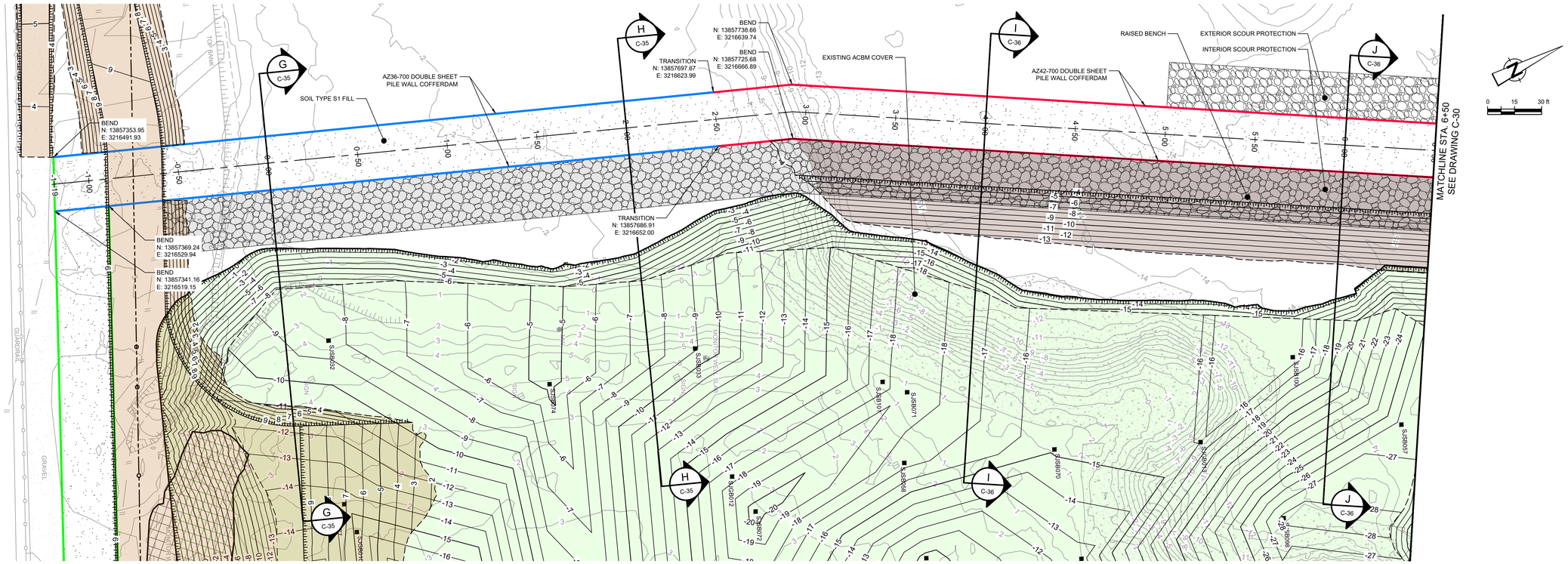
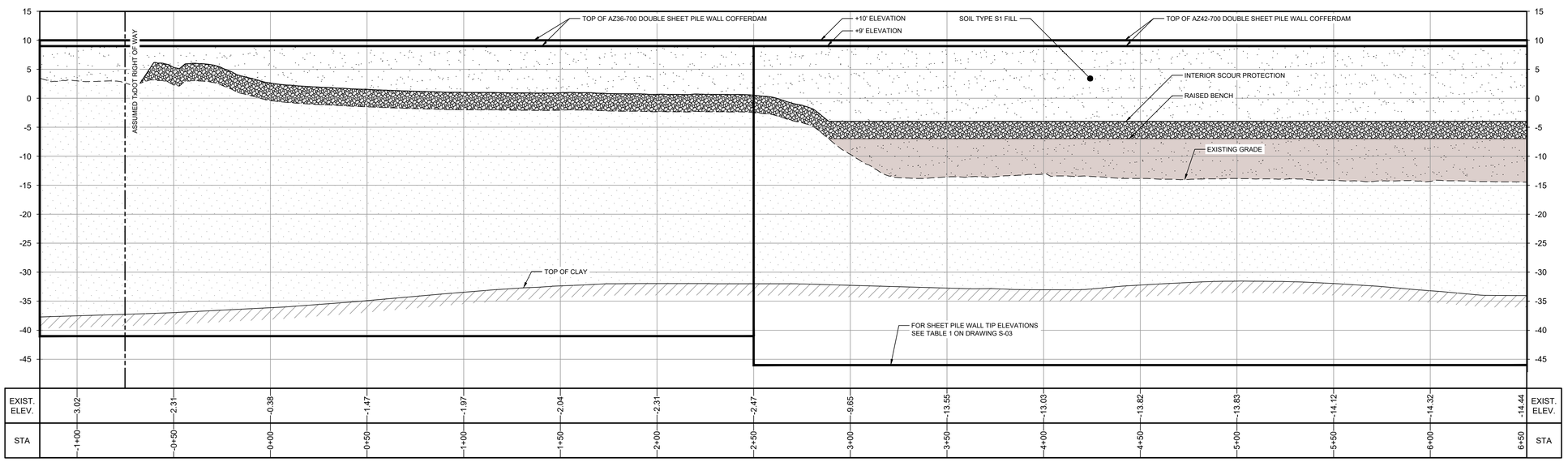


PLAN

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
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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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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
- PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
- RAISED BENCH
- EXTERIOR SCOUR PROTECTION
- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
9	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025
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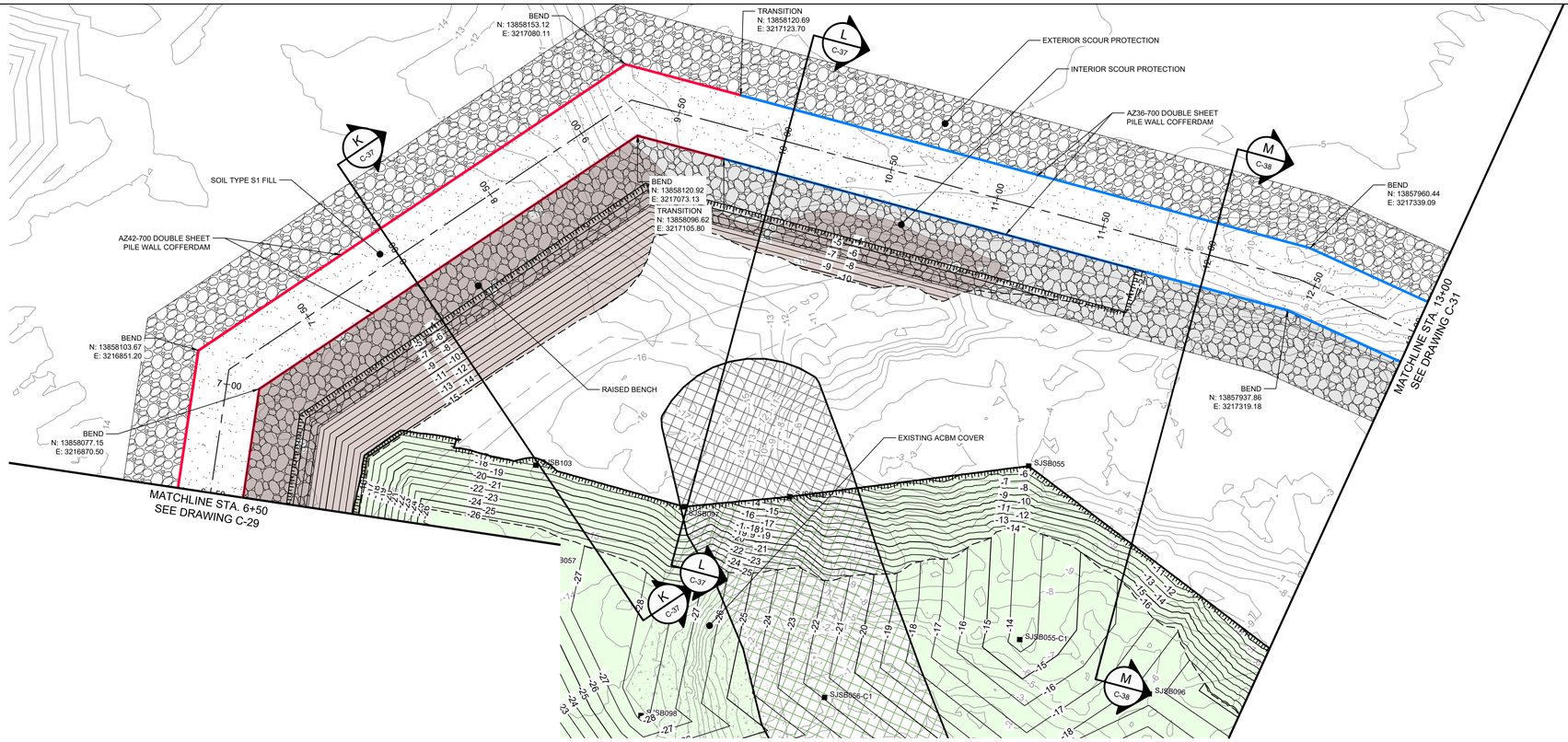
Original Size: Arch D
Bar is one inch on original size drawing (0 – 1")

Project No. 11215702

Title
DOUBLE PILE WALL PLAN AND PROFILE 1 OF 4

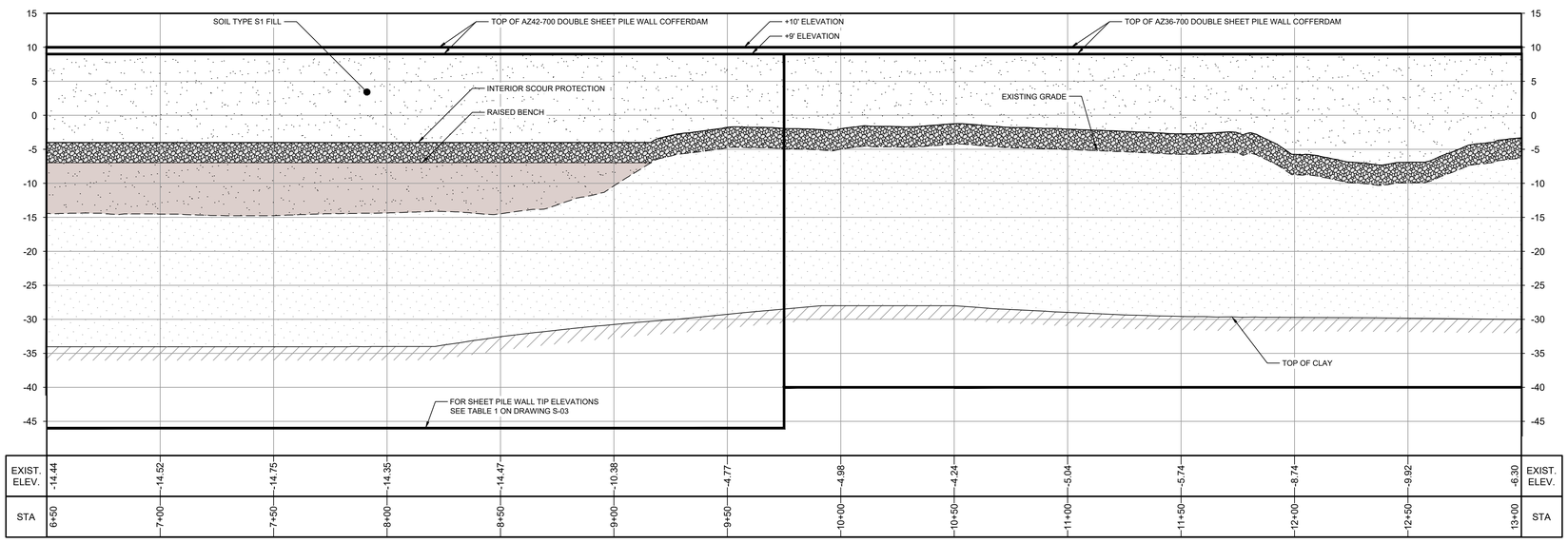
Sheet No.
C-29

Sheet 30 of 83



PLAN

1" = 30'



PROFILE

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

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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

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- OVERHEAD ELECTRICAL
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- PIPELINE
- SJSB002 BORING LOCATION
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- P.P. POWER POLE
- L.P. LIGHT POLE
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Client
SAN JACINTO RIVER WASTE PITS

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

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Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 23, 2025
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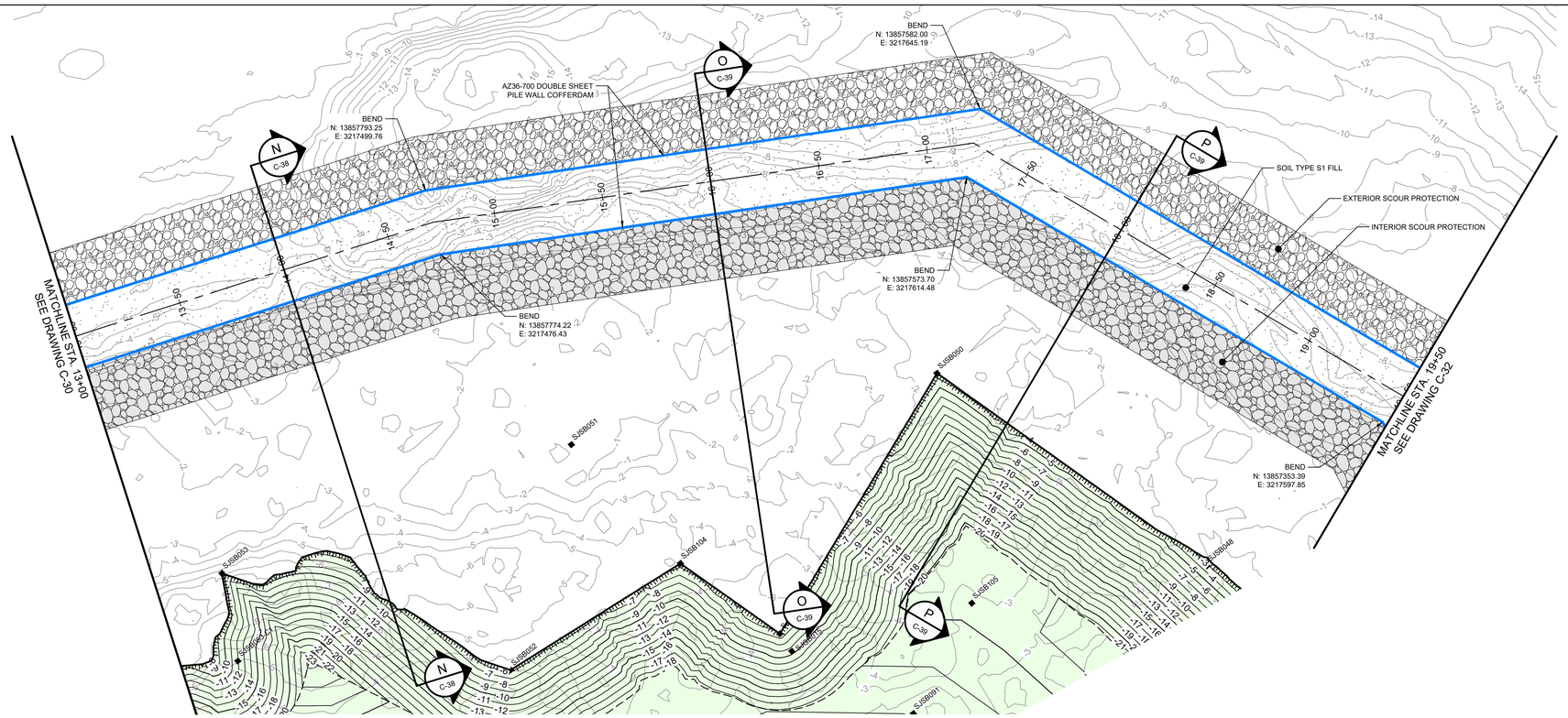
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. **11215702**

Title
DOUBLE PILE WALL PLAN AND PROFILE 2 OF 4

Sheet No.
C-30

Sheet 31 of 83



PLAN

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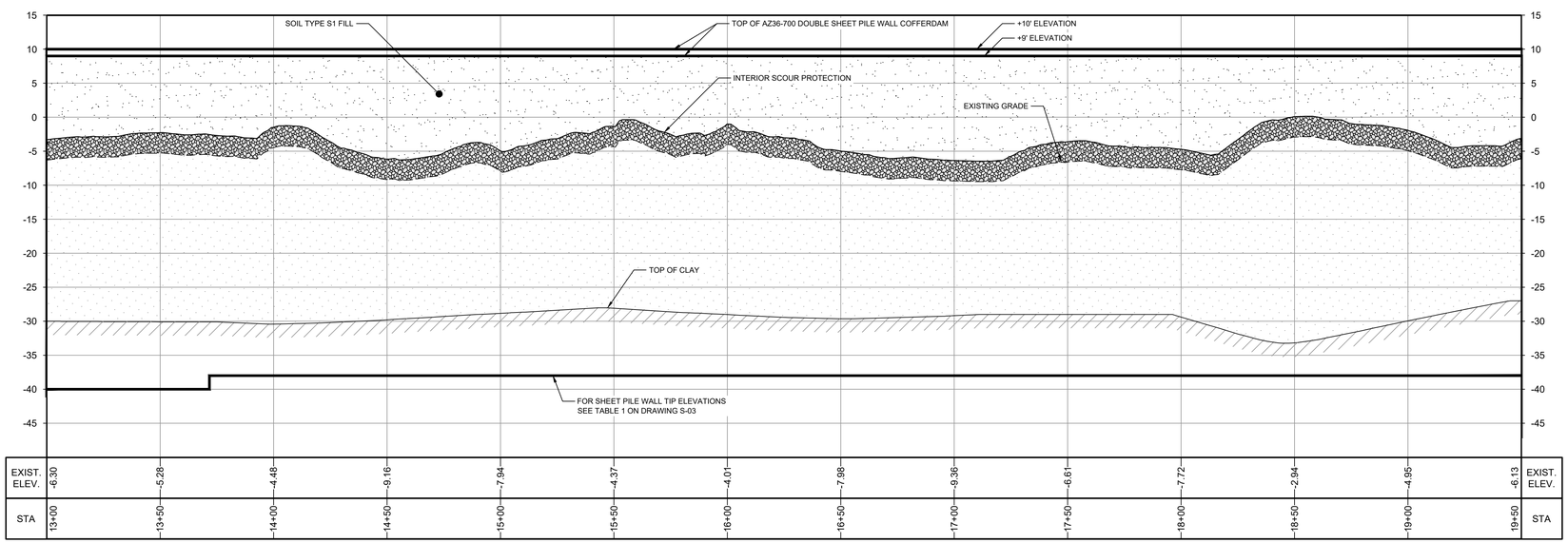

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EXIST. ELEV.	-6.30	-5.28	-4.48	-3.16	-7.94	-4.37	-4.01	-7.98	-9.36	-6.61	-7.72	-2.94	-4.95	-6.13

PROFILE

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

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- EXISTING BERM TO BE EXCAVATED FOR POTENTIAL TESTING AND REUSE
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- GRAVEL
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- AZ42-700 PILE
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- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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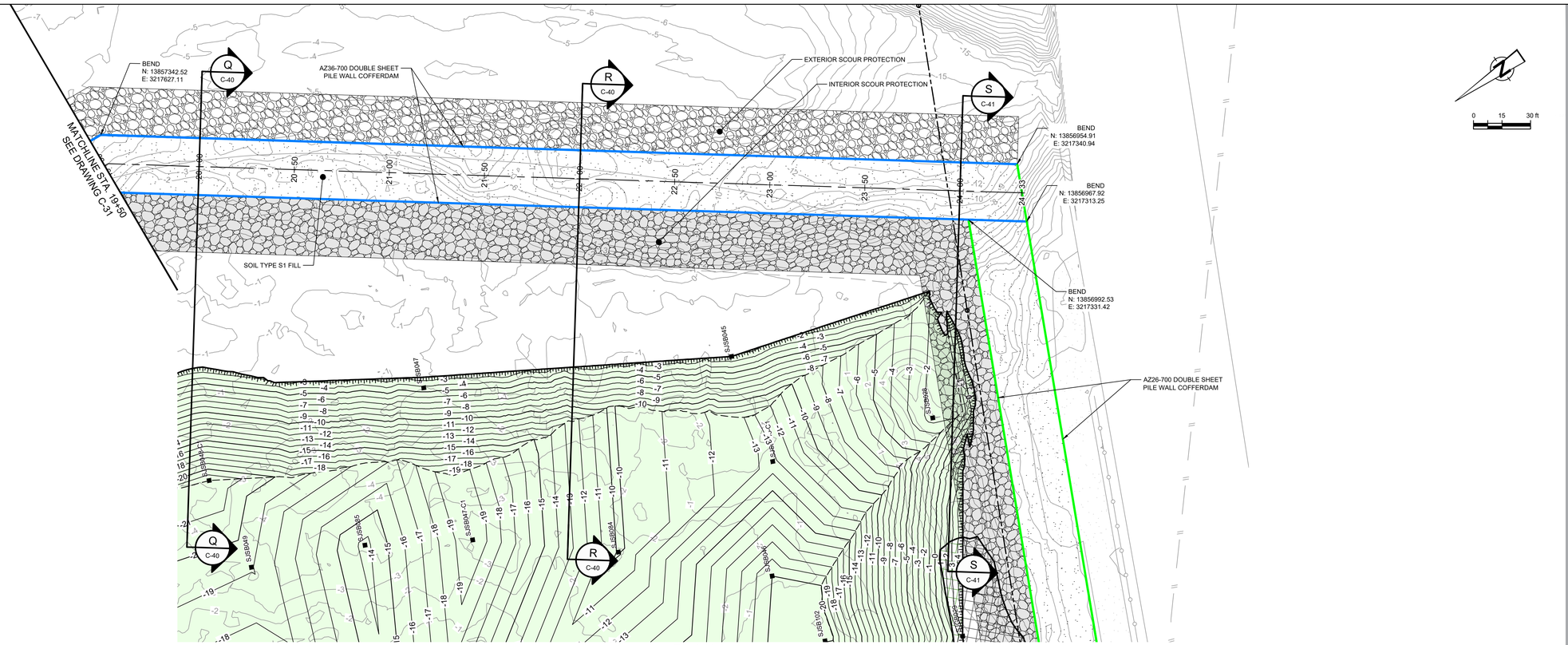
Project No. 11215702

Title
DOUBLE PILE WALL PLAN AND PROFILE 3 OF 4

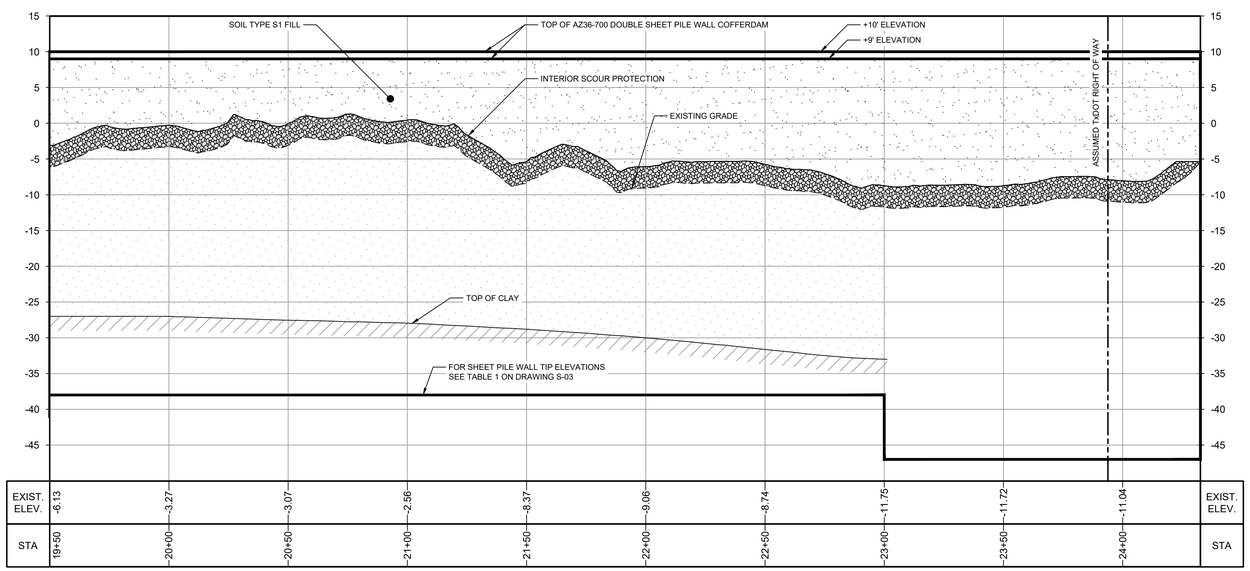
Sheet No.
C-31

Plot Date: 22 May 2025 - 4:28 PM
Plotted By: Jonathan Compton
Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-029.dwg
193789



PLAN

1" = 30'



EXIST ELEV.	-6.13	-3.27	-3.07	-2.56	-8.37	-9.06	-8.74	-11.75	-11.72	-11.04	EXIST. ELEV.
STA	19+50	20+00	20+50	21+00	21+50	22+00	22+50	23+00	23+50	24+00	STA

PROFILE

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

SOURCE:

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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021
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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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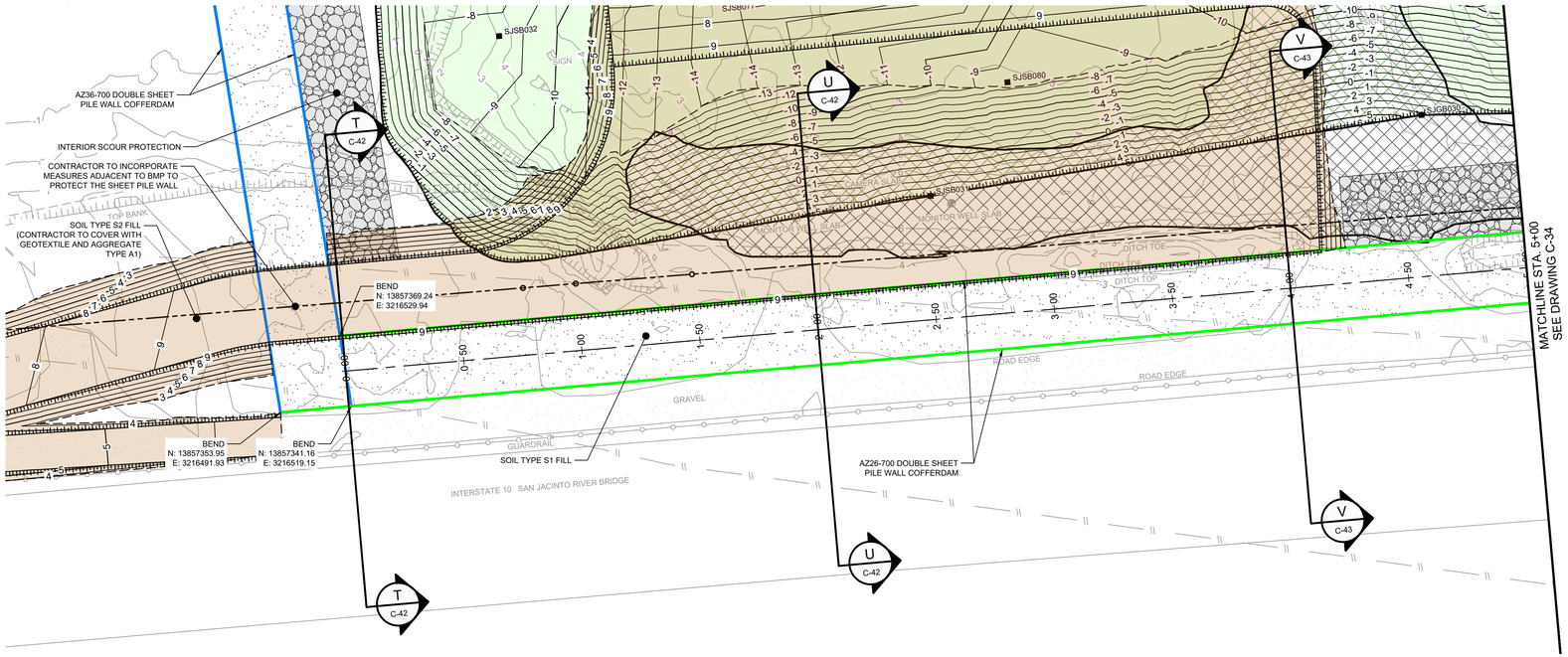
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
DOUBLE PILE WALL PLAN AND PROFILE 4 OF 4

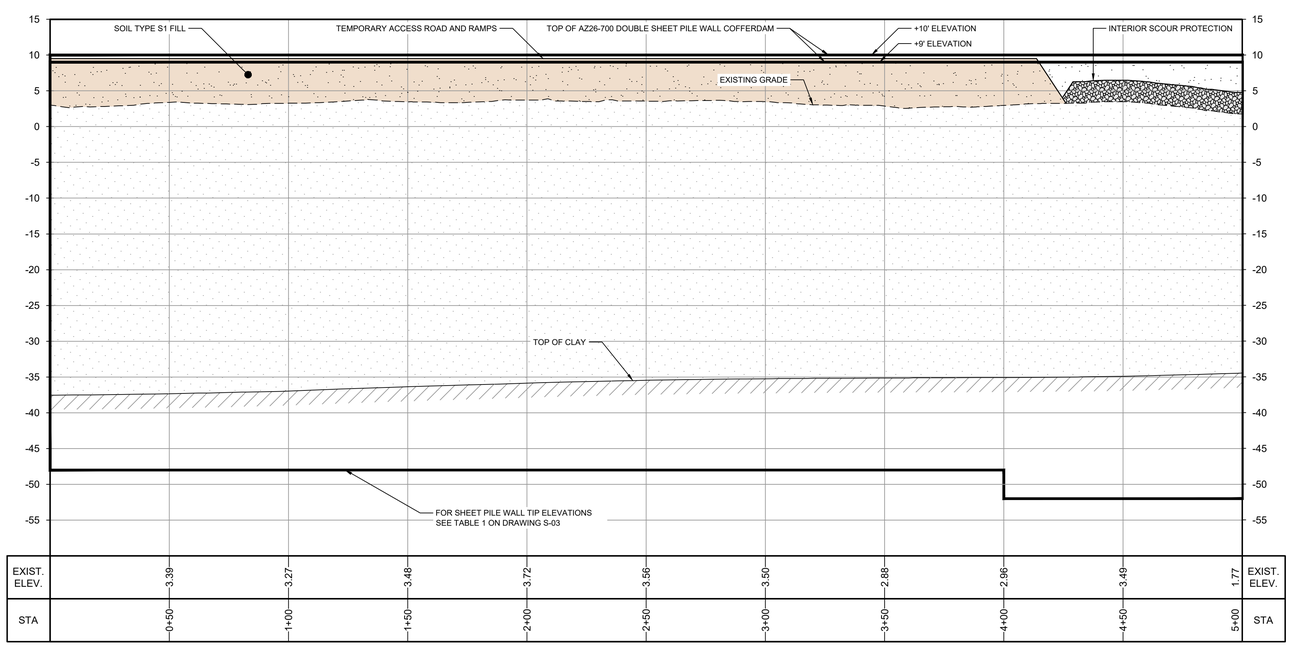
Sheet No.
C-32

Plot Date: 22 May 2025 - 4:28 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-029.dwg
193790



PLAN

1" = 30'



EXIST. ELEV.	3.39	3.27	3.48	3.72	3.56	3.50	2.88	2.96	3.49	1.77	EXIST. ELEV.
STA	0+50	1+00	1+50	2+00	2+50	3+00	3+50	4+00	4+50	5+00	STA

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

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
147936
LICENSED
PROFESSIONAL ENGINEER
5-23-2025

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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

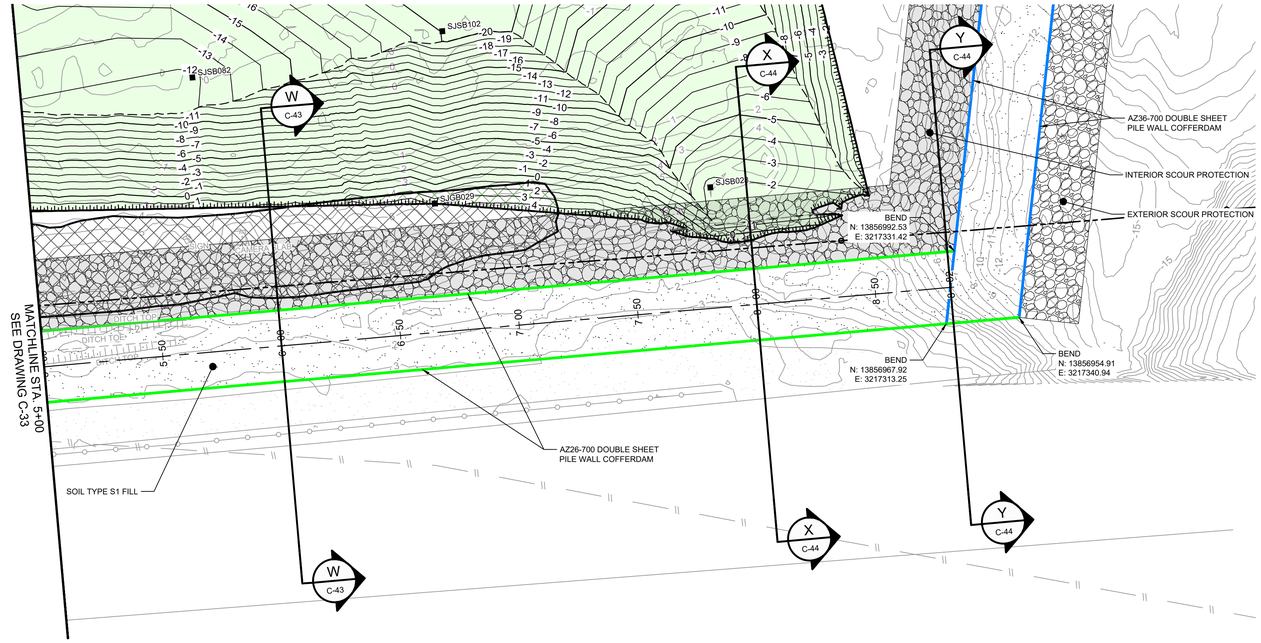
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
PILE WALL PLAN AND PROFILE 1 OF 2

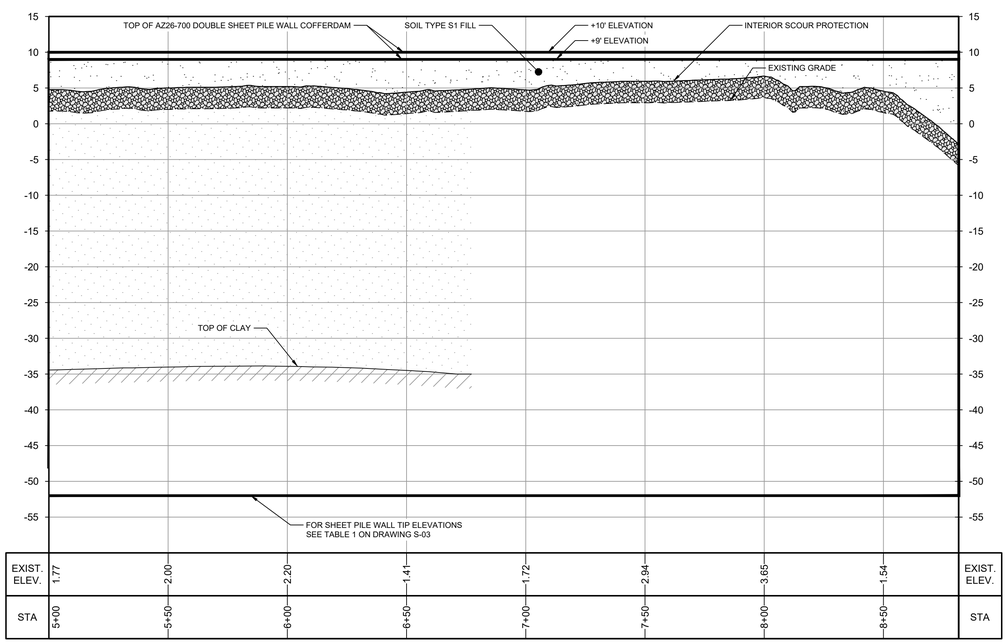
Sheet No.
C-33

Plot Date: 22 May 2025 - 4:29 PM
193791
Plotted By: Jonathan Compton
Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-033.dwg



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

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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PROFESSIONAL ENGINEER

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LEGEND

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- TCRA CAP PERIMETER
- EXISTING CONTOUR INTERVAL
- FENCELINE
- SHORELINE
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- TOE OF SLOPE
- OVERHEAD ELECTRICAL
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- GRAVEL
- AZ26-700 PILE
- AZ36-700 PILE
- AZ42-700 PILE
- PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
- EXTERIOR SCOUR PROTECTION
- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
8	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		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

Plot Date: 22 May 2025 - 4:29 PM Plotted By: Jonathan Compton Filename: \\ghdnefghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-033.dwg
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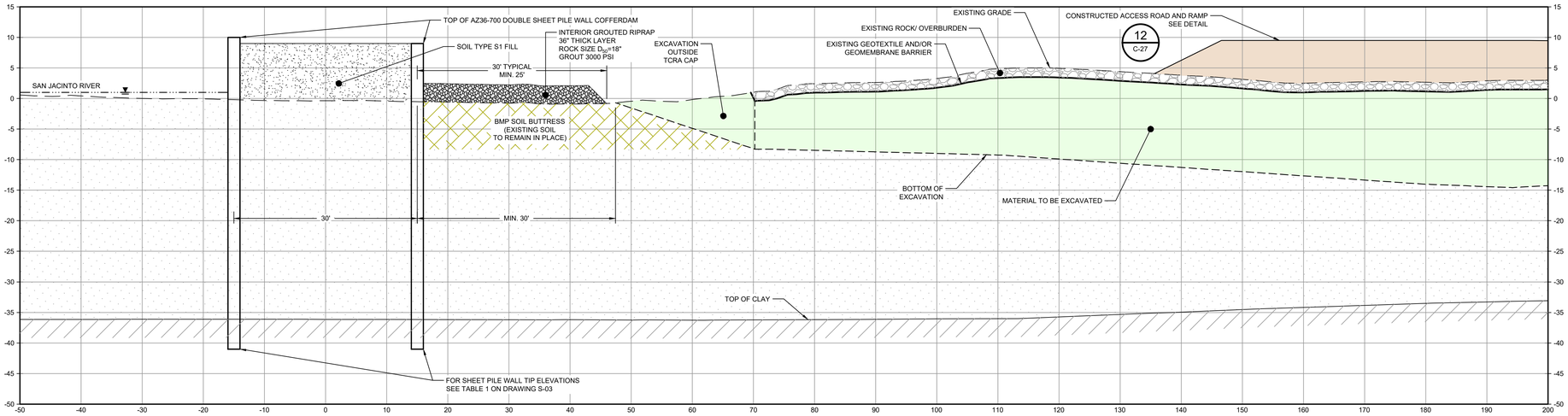
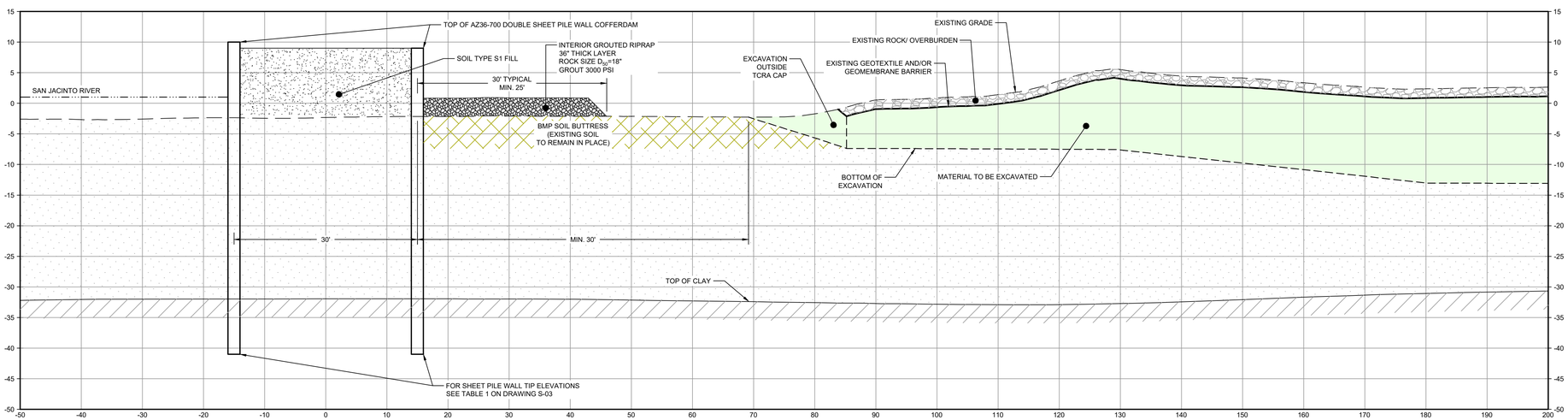


SECTION G STA. 0+00.00
SCALE: 1"=10'
C-29



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

NOTES:

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GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
C. R. HOEKSTRA
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LEGEND

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

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		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 1 OF 7

Sheet No.

C-35

Plot Date: 22 May 2025 - 4:29 PM Plotted By: Jonathan Compton Filename: \\ghdnefghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-035.dwg
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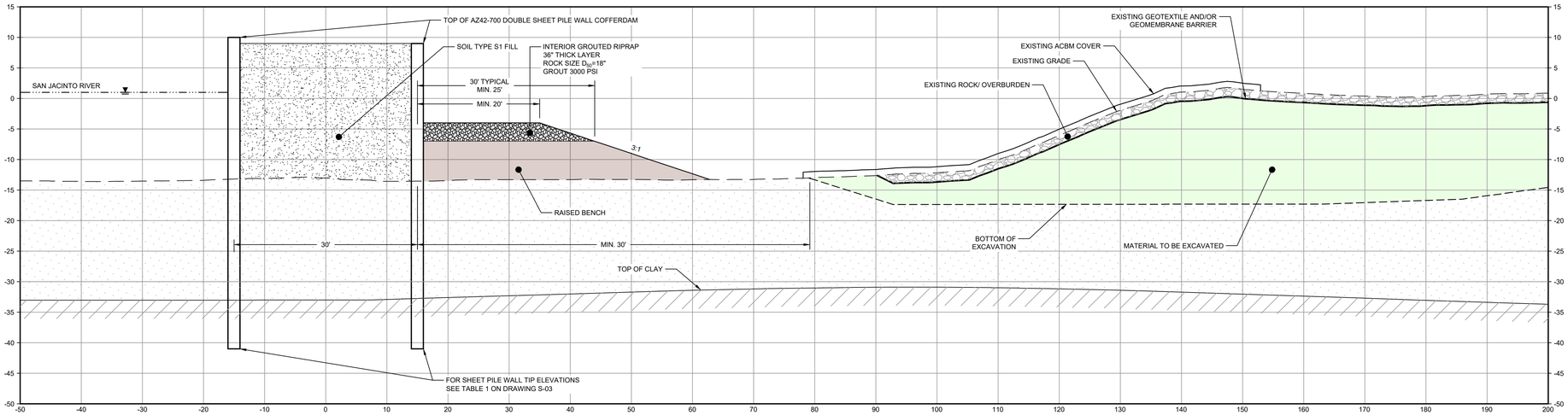
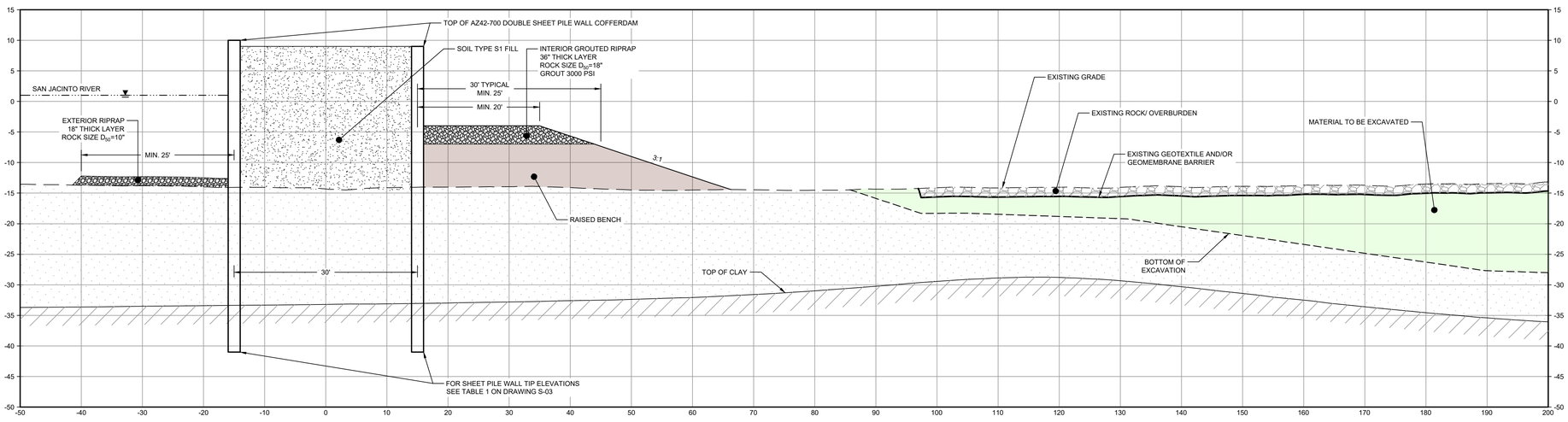


SECTION I STA. 4+00.00
SCALE: 1"=10'
C-29



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

NOTES:

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2. FRP BARRIER WALL NOT SHOWN FOR CLARITY.

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

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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LEGEND
- 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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
7	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

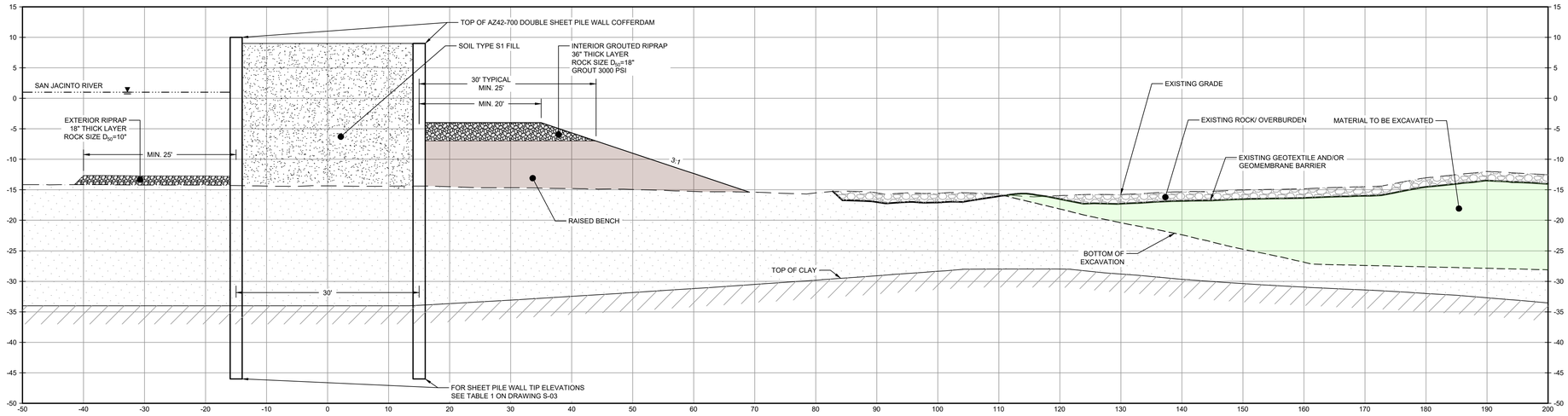
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	1" = 10'
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

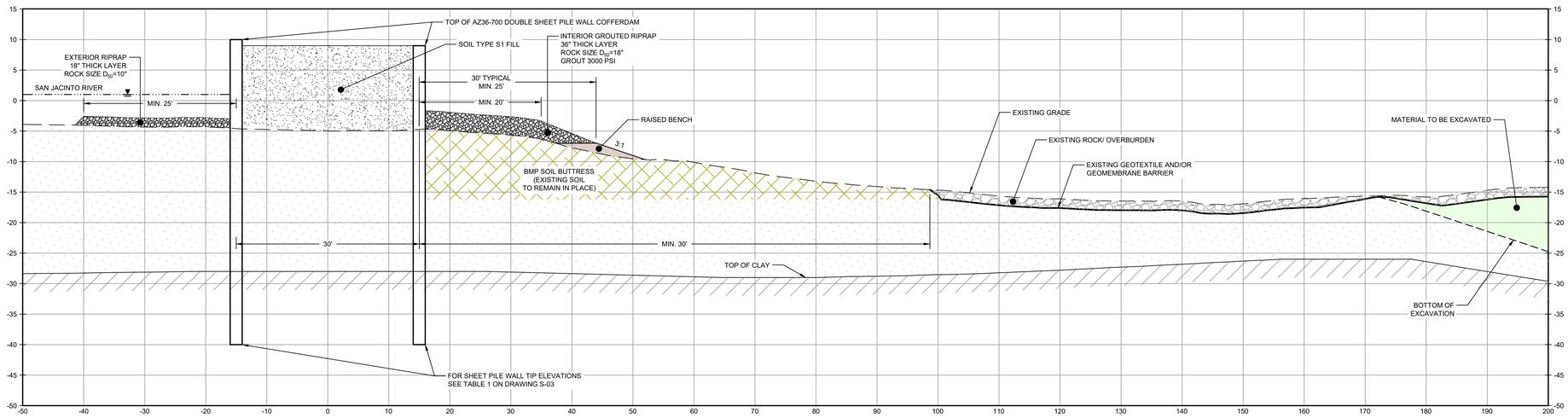
Title
DOUBLE PILE WALL SECTIONS 2 OF 7

Sheet No.
C-36

Sheet 37 of 83



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



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

NOTES:

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

THIRD 100% EPA SUBMITTAL

GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
C. R. HOEKSTRA
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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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
7	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		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 3 OF 7

Sheet No.
C-37

Plot Date: 22 May 2025 - 4:29 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-035.dwg
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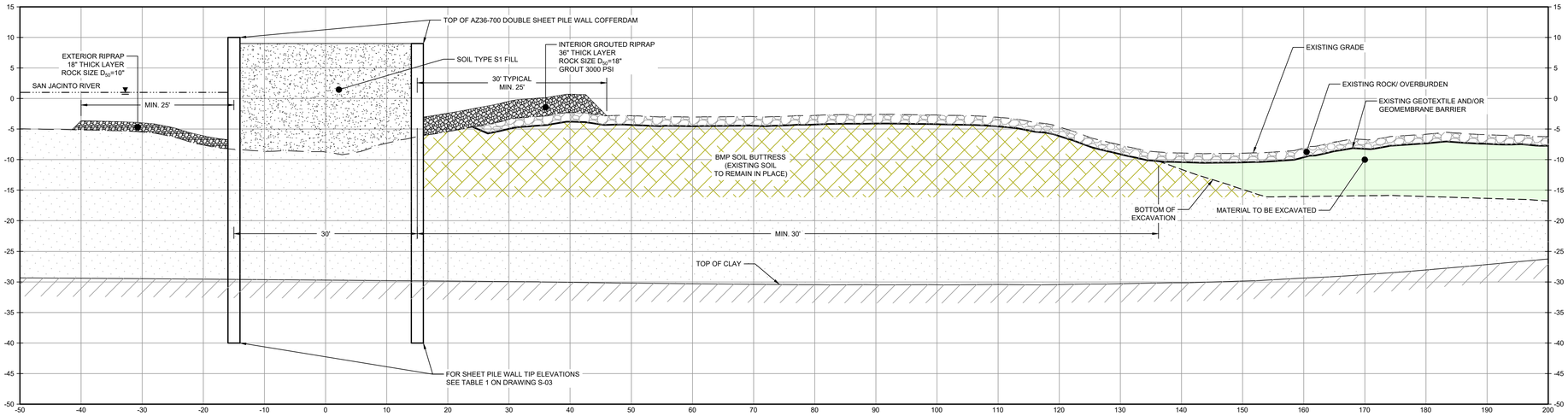
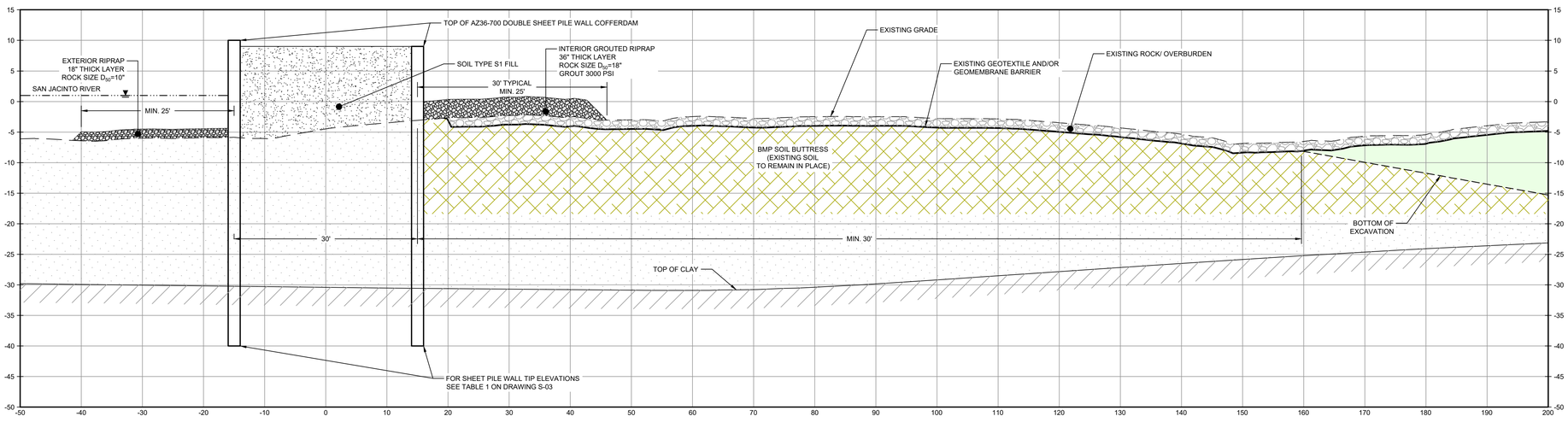


SECTION M STA. 12+00.00
SCALE: 1"=10'
C-30



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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
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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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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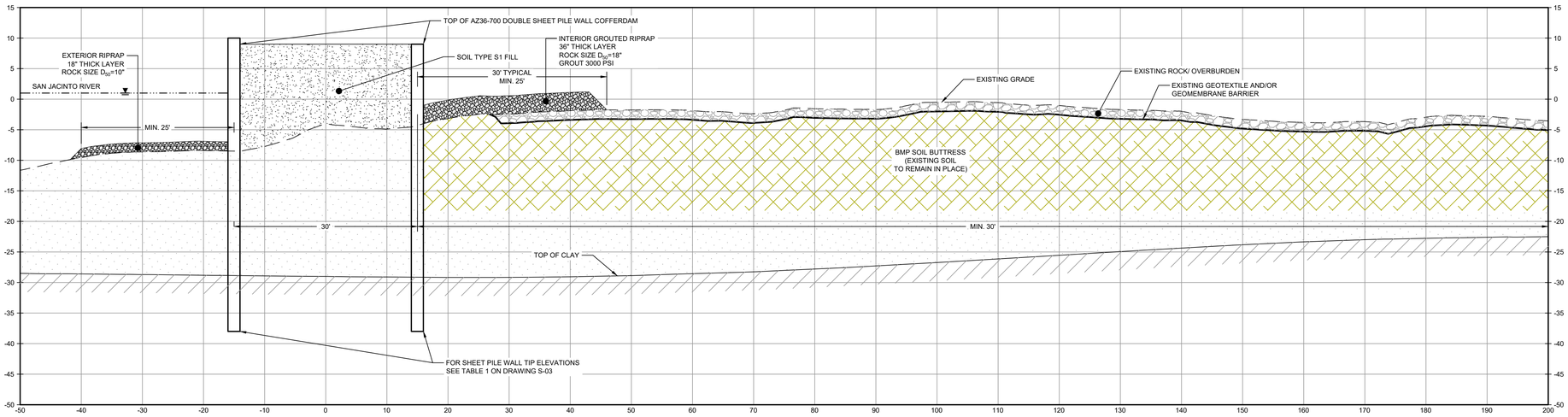
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

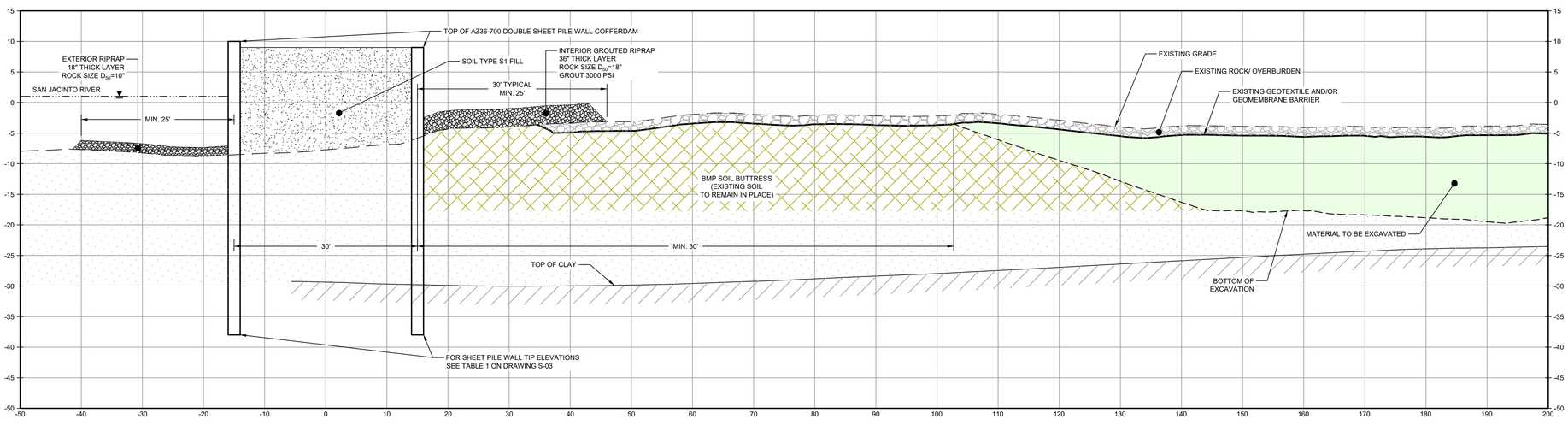
Title
DOUBLE PILE WALL SECTIONS 4 OF 7

Sheet No.
C-38

Sheet 39 of 83



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



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

NOTES:

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THIRD 100% EPA SUBMITTAL

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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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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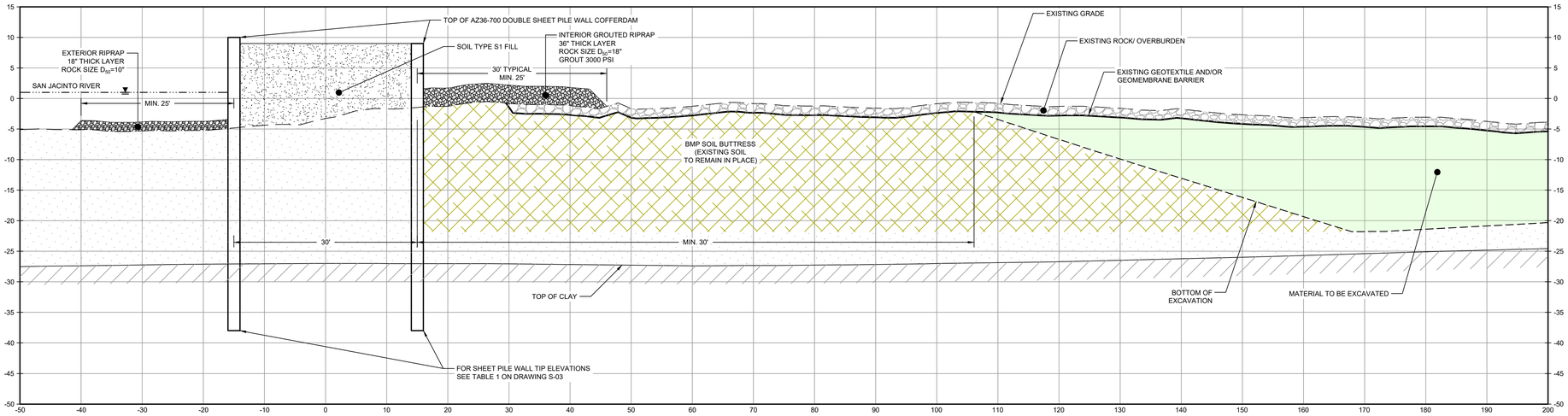
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

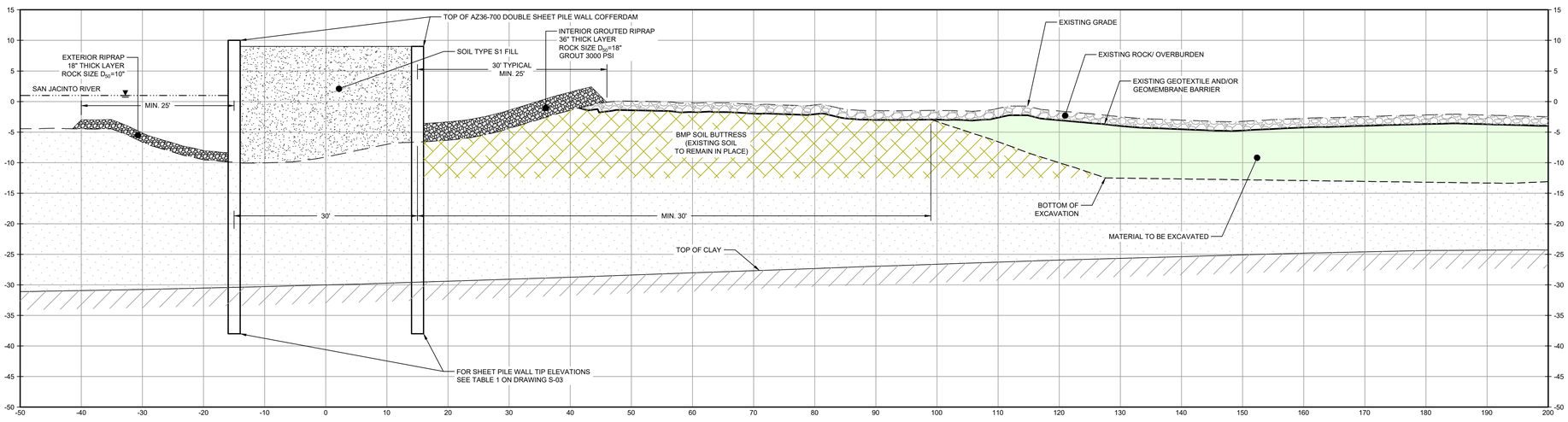
Title
DOUBLE PILE WALL SECTIONS 5 OF 7

Sheet No.
C-39

Sheet 40 of 83



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



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

NOTES:

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LEGEND
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- BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
- EXTERIOR SCOUR PROTECTION
- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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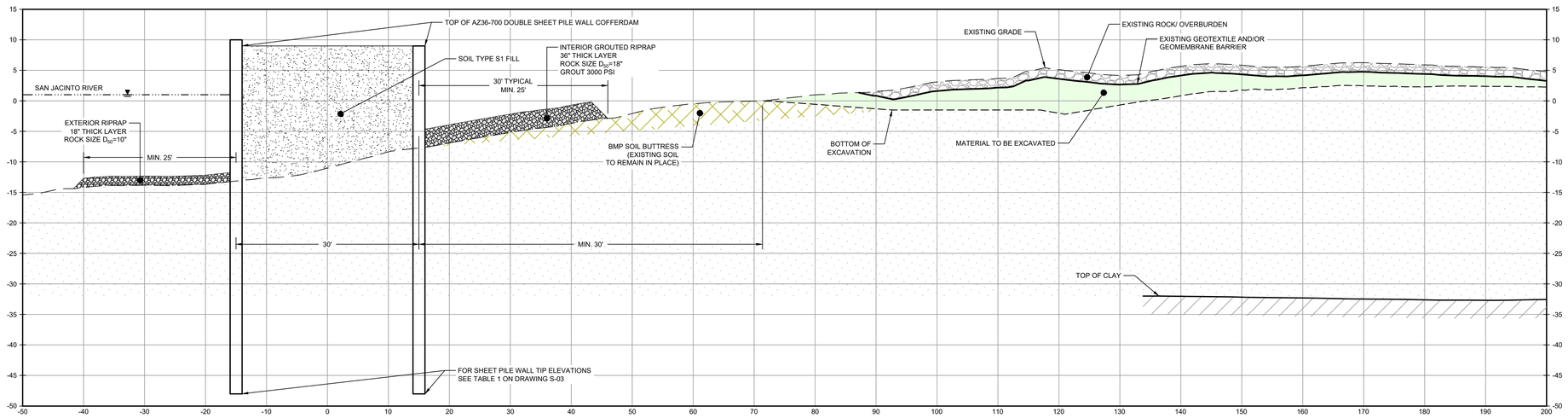
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 6 OF 7

Sheet No.
C-40

Sheet 41 of 83



SECTION S STA. 24+00
C-32
SCALE: 1"=10'

NOTES:

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2. FRP BARRIER WALL NOT SHOWN FOR CLARITY.

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
LICENSED
PROFESSIONAL ENGINEER

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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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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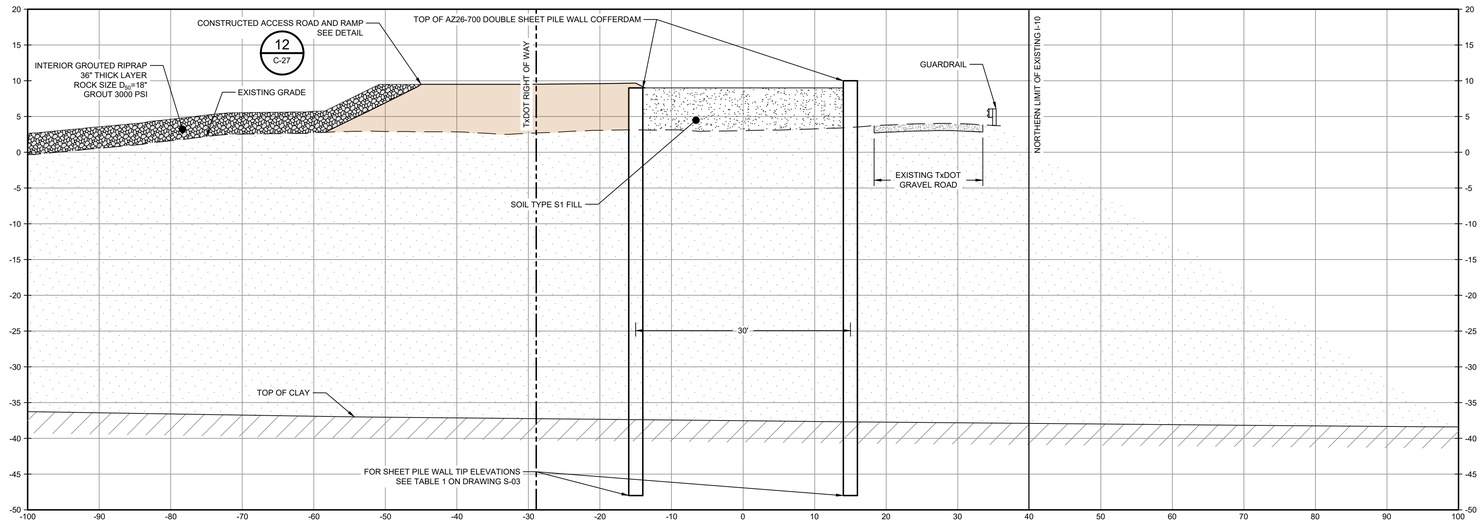
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 7 OF 7

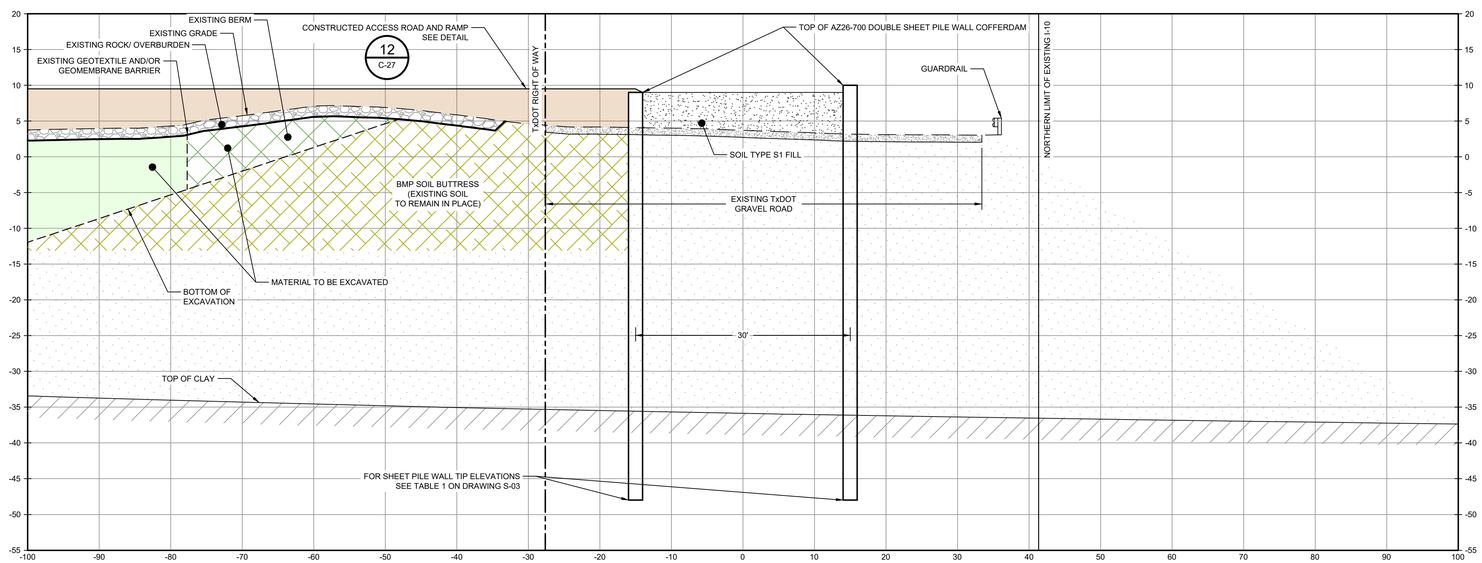
Sheet No.
C-41

Sheet 42 of 83



SECTION T C-33 STA. 0+00.00

SCALE: 1"=10'



SECTION U C-33 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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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PROFESSIONAL ENGINEER

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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

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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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

Plot Date: 22 May 2025 - 4:29 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-035.dwg

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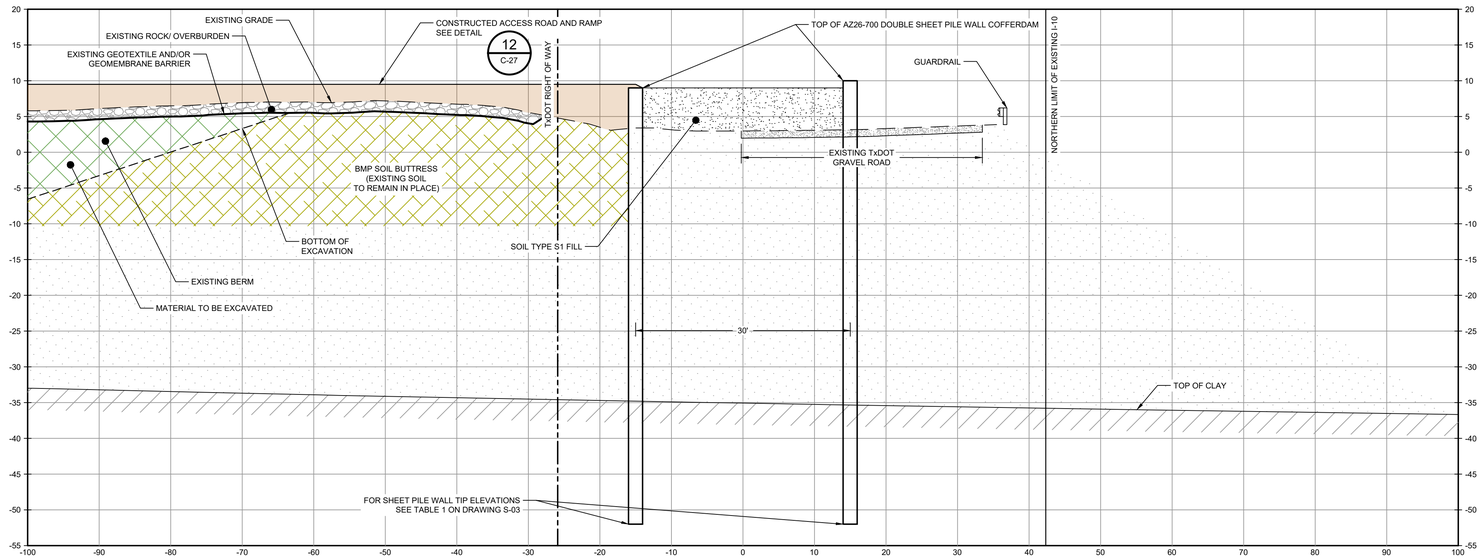
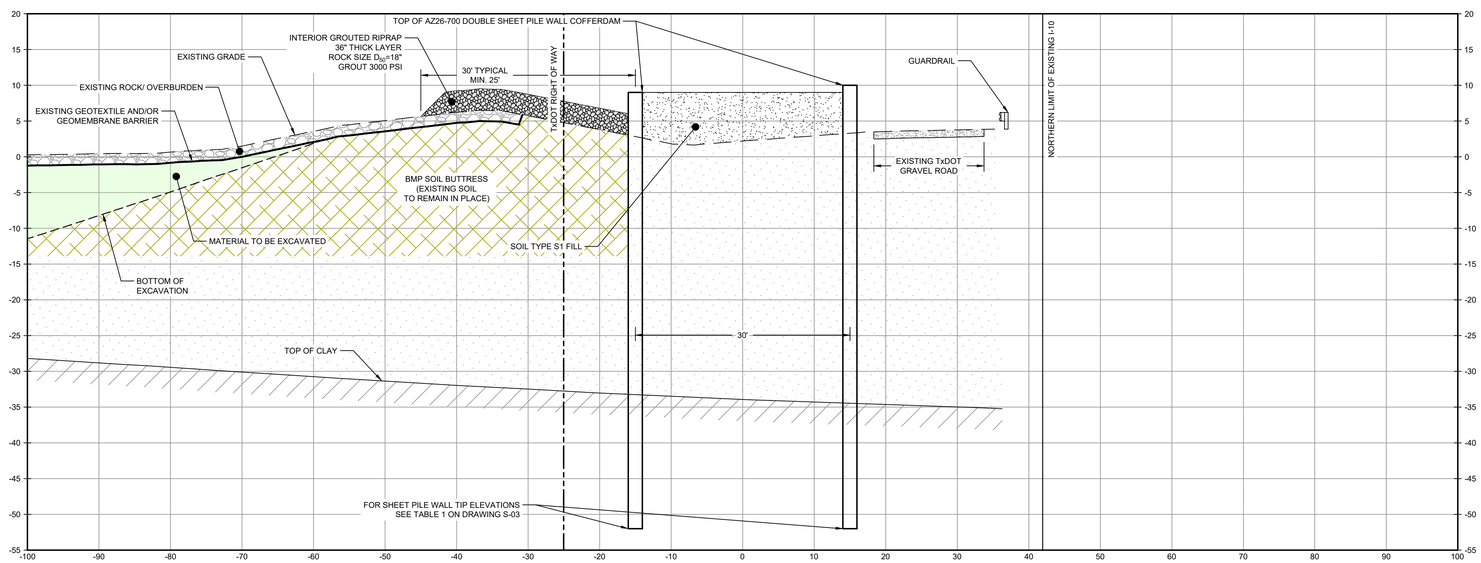


SECTION V STA. 4+00.00
C-33
SCALE: 1"=10'



SECTION W STA. 6+00.00
C-34
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:

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

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
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LEGEND
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- 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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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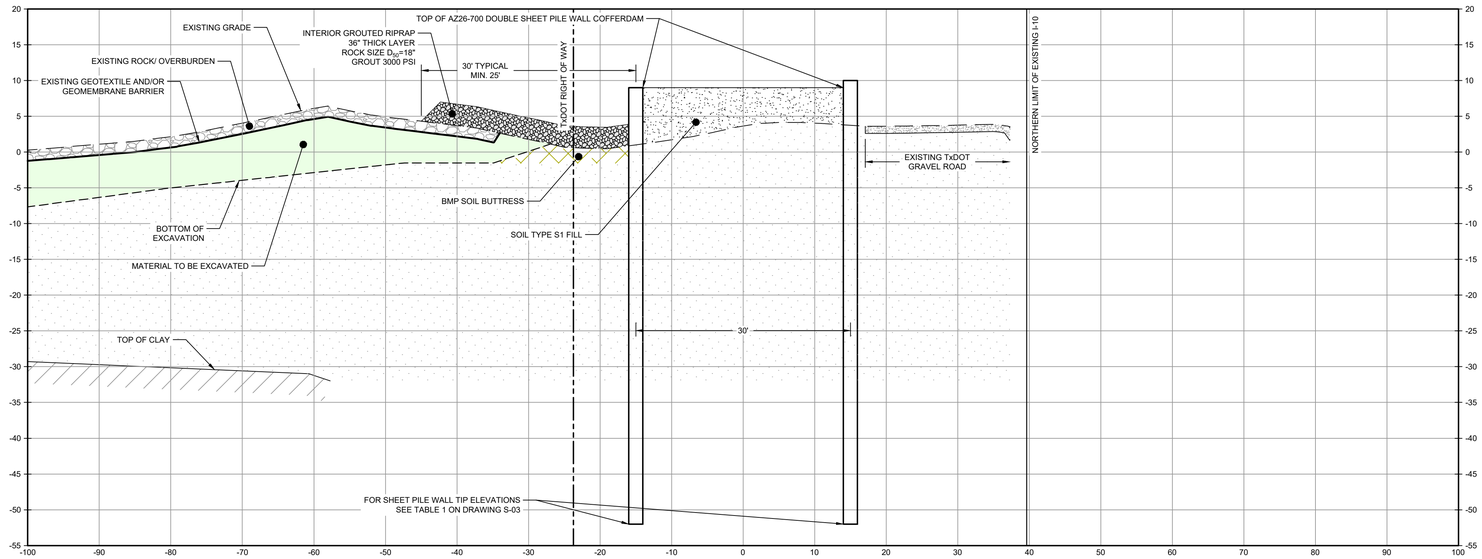
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

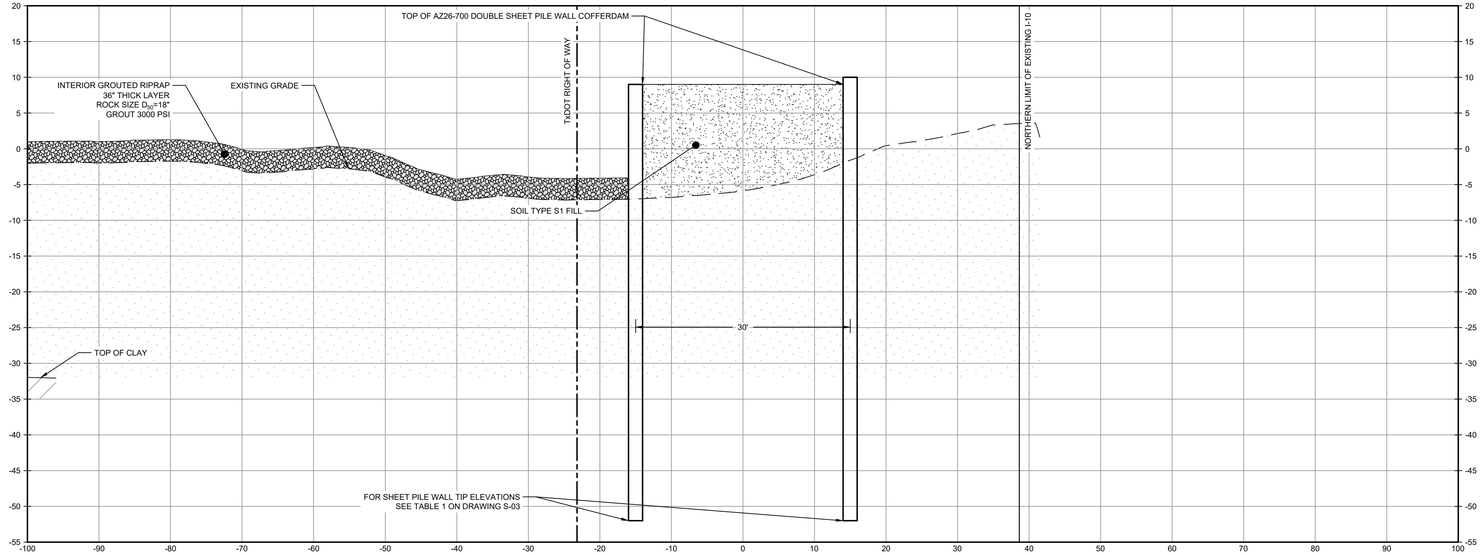
Title
SOUTH WALL SECTIONS 2 OF 3

Sheet No.
C-43

Sheet 44 of 83



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

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

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
T 225 292 9007

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
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LEGEND
- MATERIAL TO BE EXCAVATED
- BMP SOIL BUTTRESS (EXISTING SOIL TO REMAIN IN PLACE)
- INTERIOR SCOUR PROTECTION

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	LL
Project Coordinator	CM	Date	May 22, 2025
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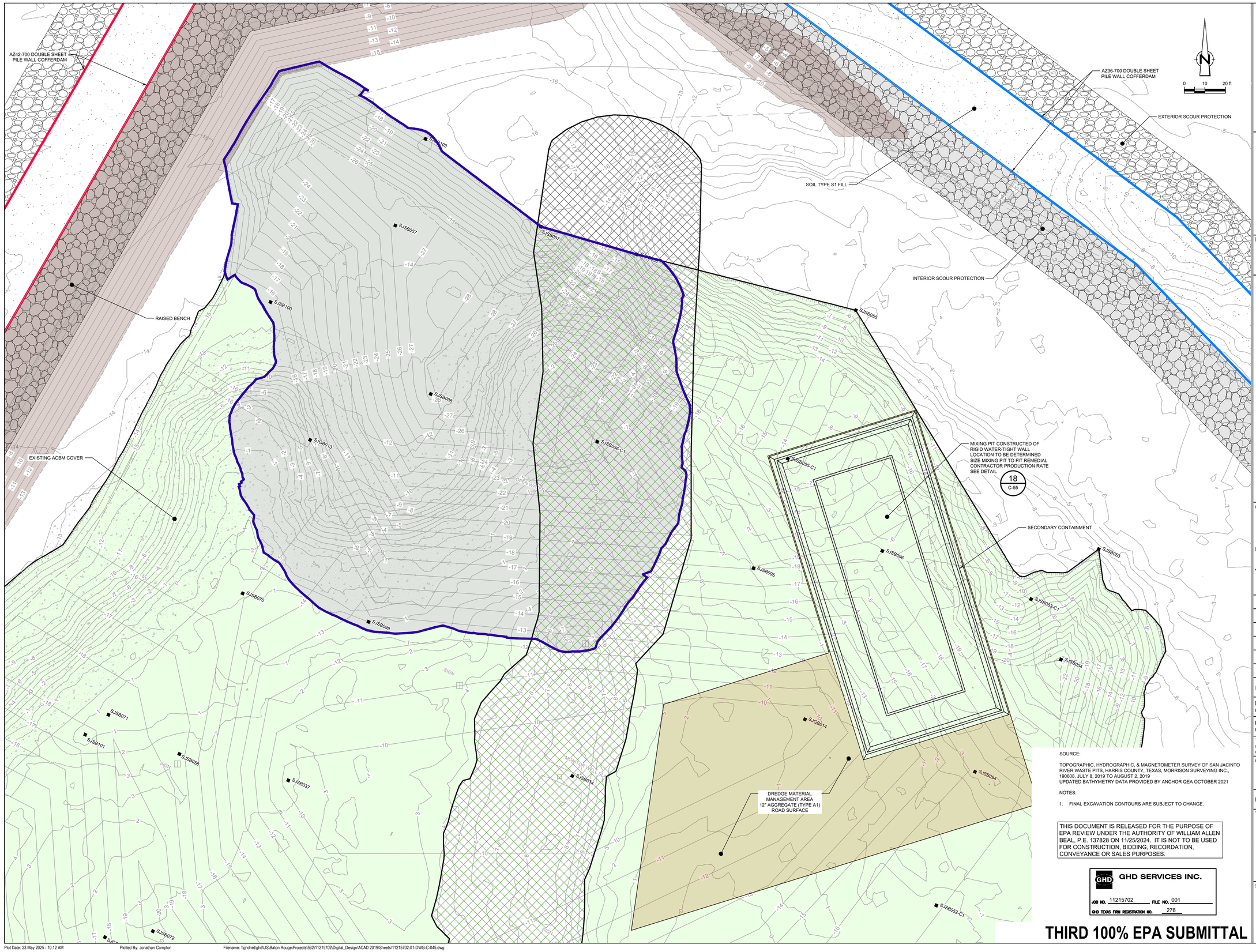
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
SOUTH WALL SECTIONS 3 OF 3

Sheet No.
C-44

Sheet 45 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

NOTES:

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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5/23/25

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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 23, 2025

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Scale 1" = 20'

Original Size **Arch D**

Bar is one inch on original size drawing 0 1"

Project No. **11215702**

Title
DREDGING NORTHWEST CORNER WORKS PLAN

Sheet No.
C-45

Sheet 46 of 83

Plot Date: 23 May 2025 - 10:12 AM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-045.dwg

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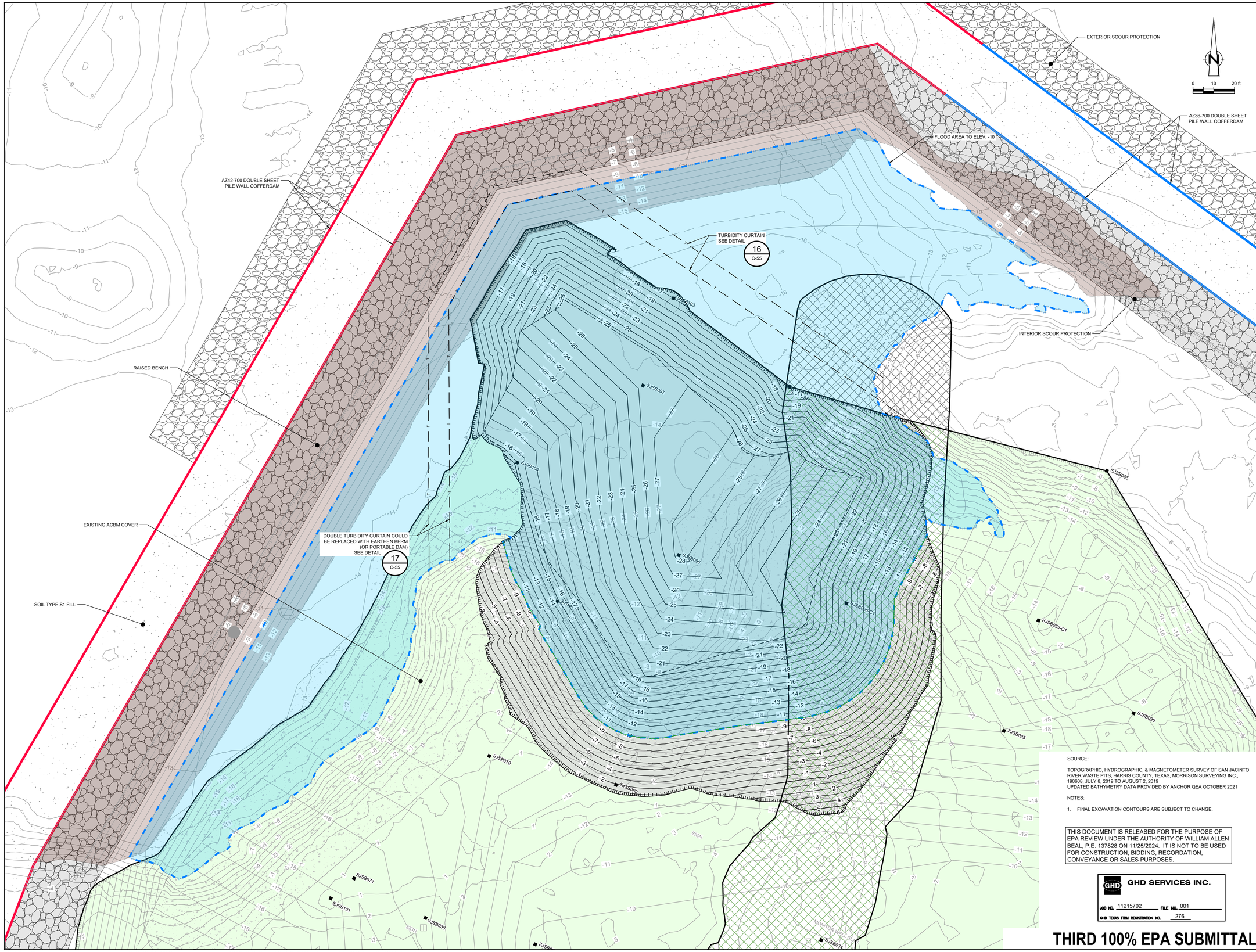

SOURCE:

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

NOTES:

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED PROFESSIONAL ENGINEER
5/23/25

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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- NORTHWEST CORNER
- CONCRETE
- GRAVEL
- AZ36-700 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 23, 2025
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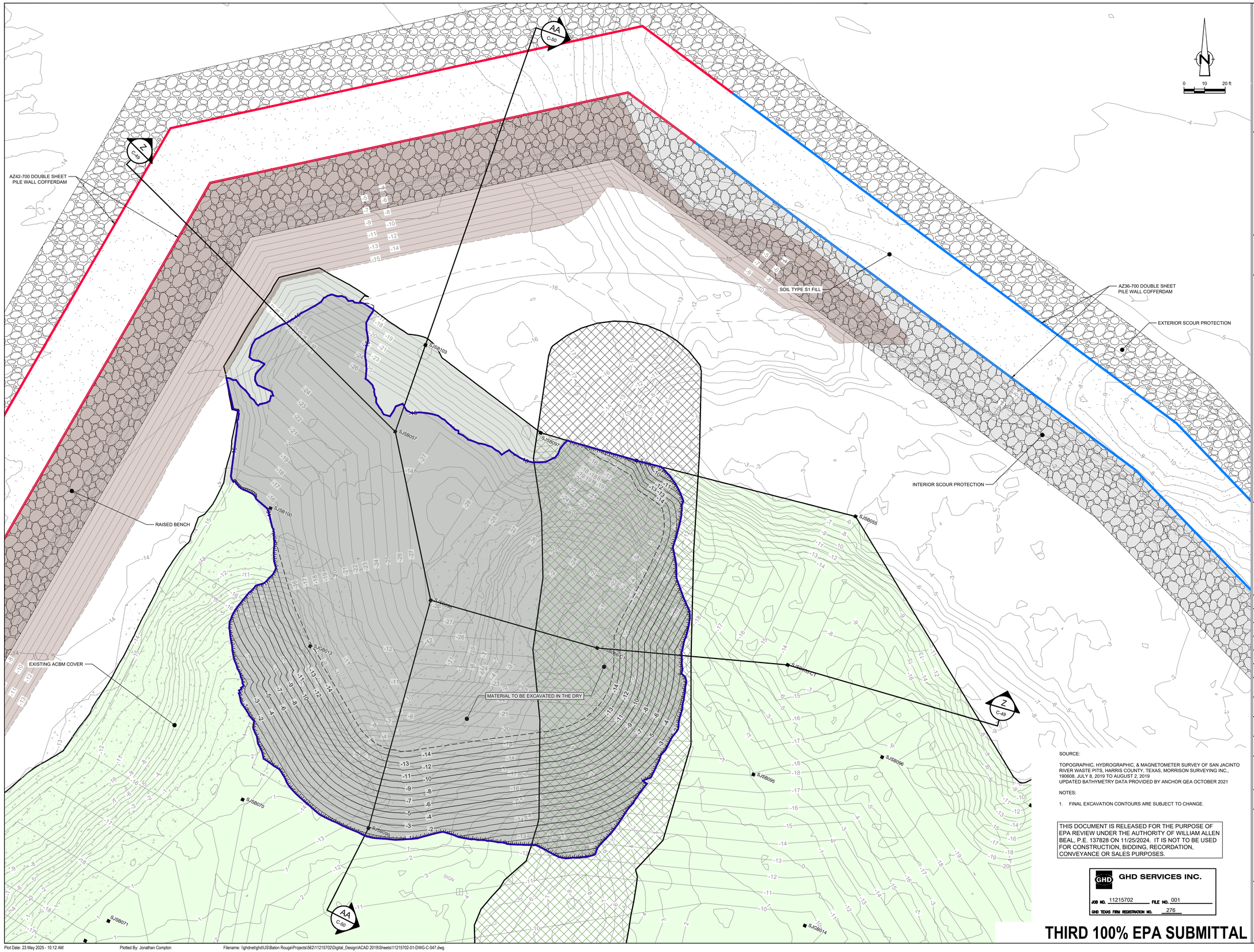
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

Title
DREDGING NORTHWEST CORNER DREDGING CONTROLS

Sheet No.
C-46

Sheet 47 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

NOTES:

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GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
T 225 292 9007

STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED
PROFESSIONAL ENGINEER

5/23/25

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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 23, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

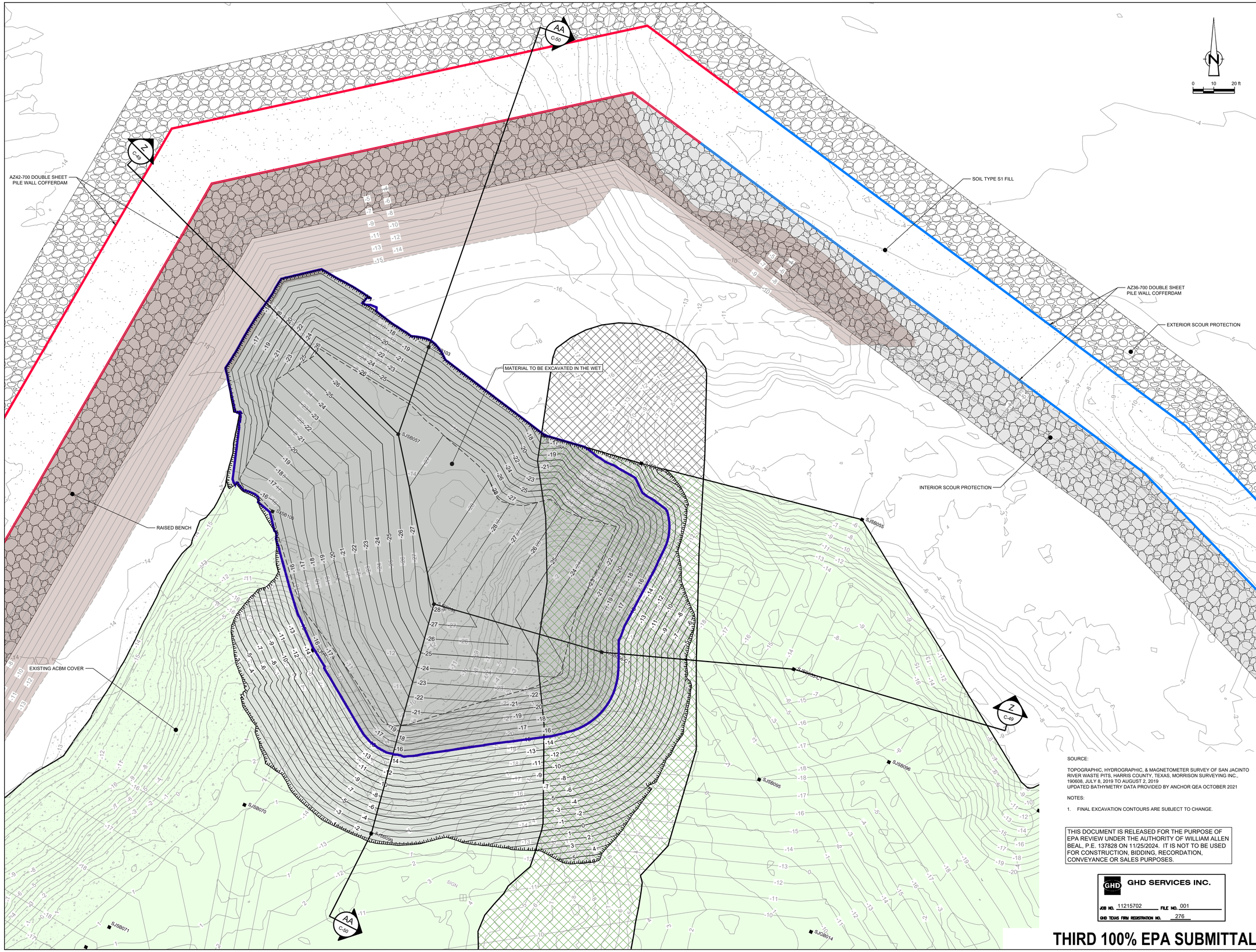
Title

DREDGING NORTHWEST CORNER DRY EXCAVATION

Sheet No.

C-47

Plot Date: 23 May 2025 - 10:12 AM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-047.dwg
193805



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

NOTES:

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STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
5/23/25

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LEGEND

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- TCRA CAP PERIMETER
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- FENCELINE
- SHORELINE
- TOP OF BANK
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- GUARDRAIL
- PIPELINE
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- NORTHWEST CORNER
- CONCRETE
- GRAVEL
- AZ36-700 PILE
- AZ42-700 PILE
- RAISED BENCH
- MATERIAL TO BE EXCAVATED - WET
- EXTERIOR SCOUR PROTECTION
- INTERIOR SCOUR PROTECTION

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 23, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

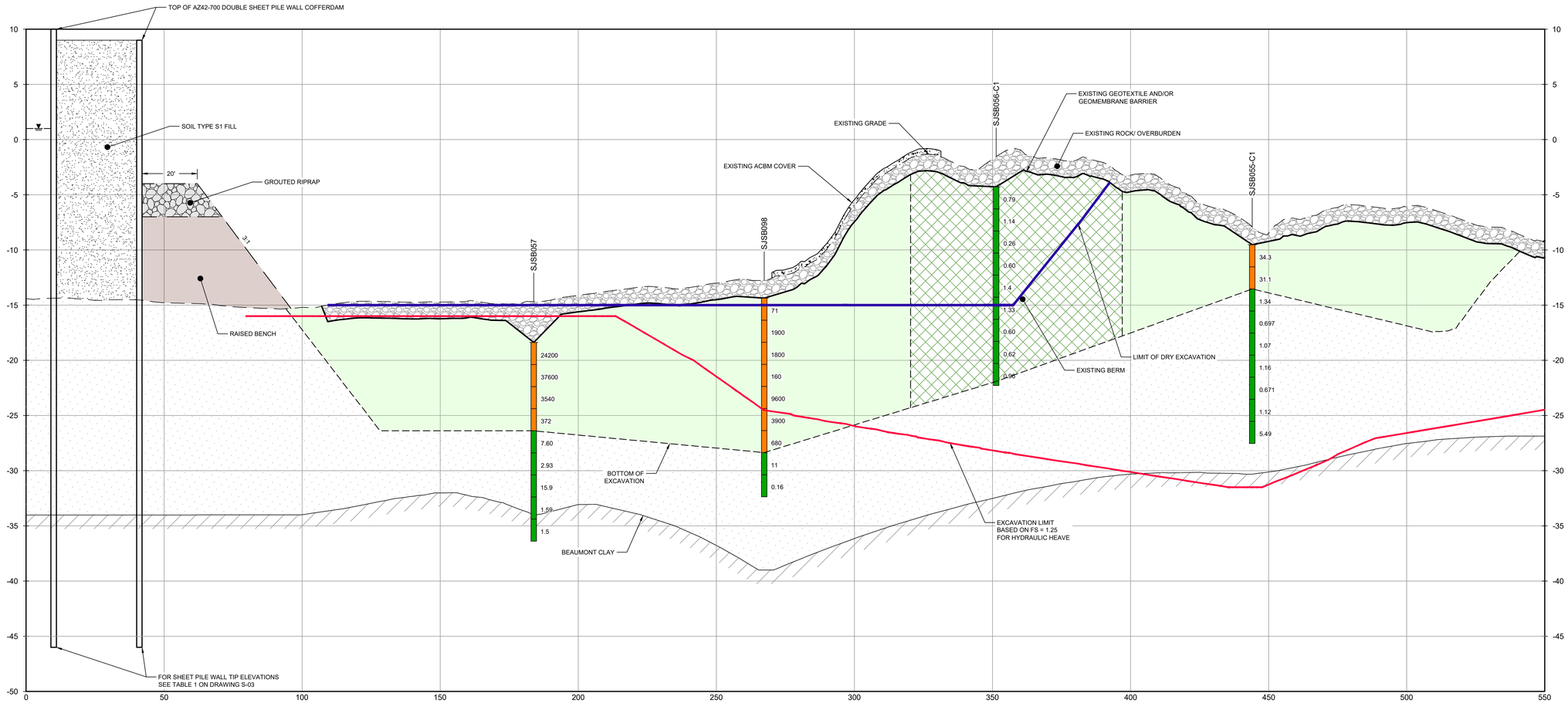
Title

DREDGING NORTHWEST CORNER WET EXCAVATION

Sheet No.

C-48

Sheet 49 of 83



SECTION Z WEST/EAST
C-47,C-48
HORIZ: 1"=20'
VERT: 1"=5'

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 TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
T 225 292 9007

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5/23/25

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LEGEND
- SOILS WITH CONCENTRATIONS <30 ng/kg TEQ_{WHO} TCDD
- SOILS WITH CONCENTRATIONS >30 ng/kg TEQ_{WHO} 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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
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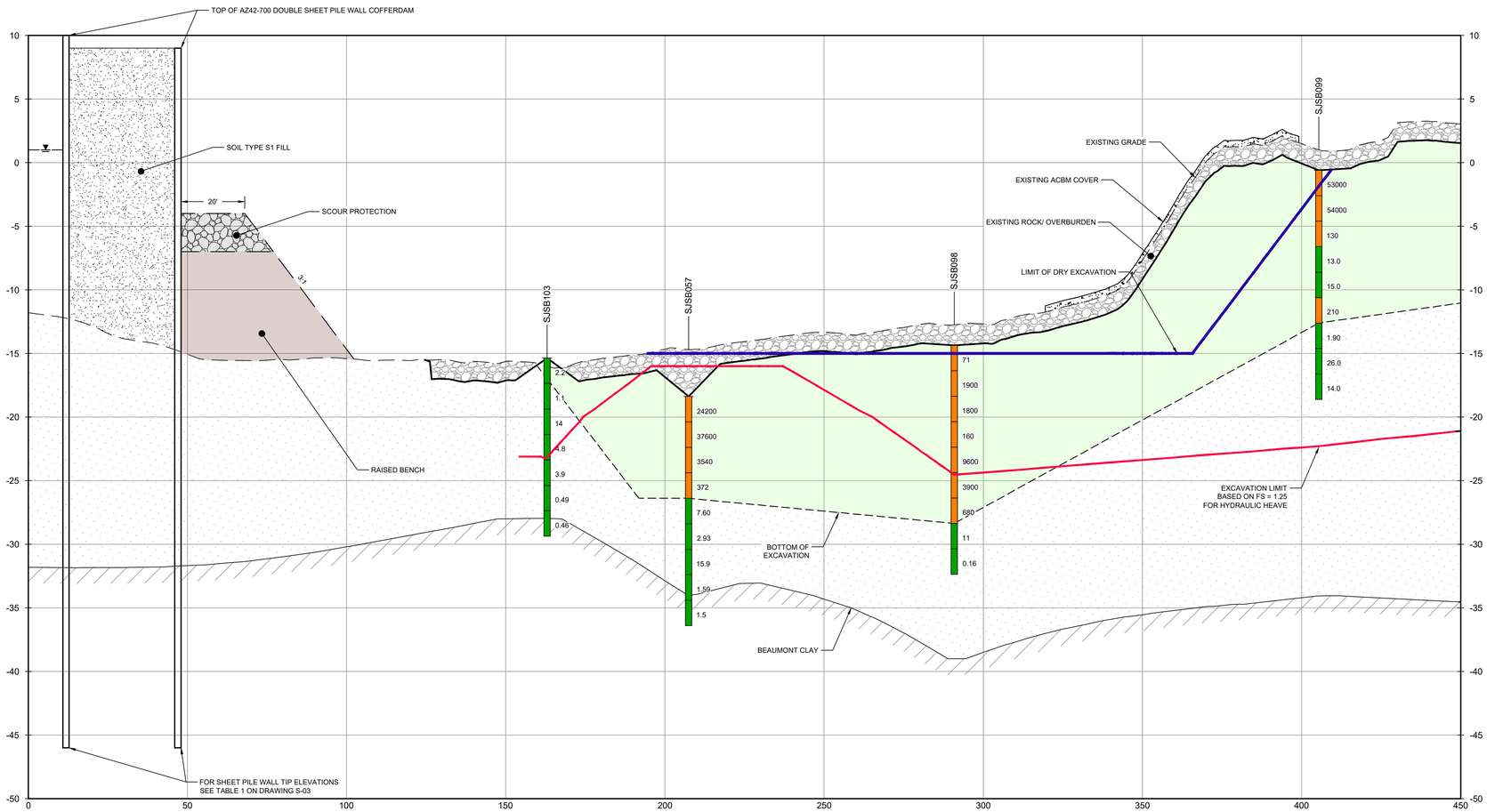
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
DREDGING NORTHWEST CORNER SECTIONS 1 OF 2

Sheet No.
C-49

Plot Date: 22 May 2025 - 4:32 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-049.dwg
193807



SECTION AA NORTH/ SOUTH
HORIZ: 1"=20'
VERT: 1"=5'
C-47,C-48

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 FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED
PROFESSIONAL ENGINEER
5/23/25

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LEGEND
- SOILS WITH CONCENTRATIONS <30 ng/kg TEQ_{WHO} TCDD
- SOILS WITH CONCENTRATIONS >30 ng/kg TEQ_{WHO} 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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
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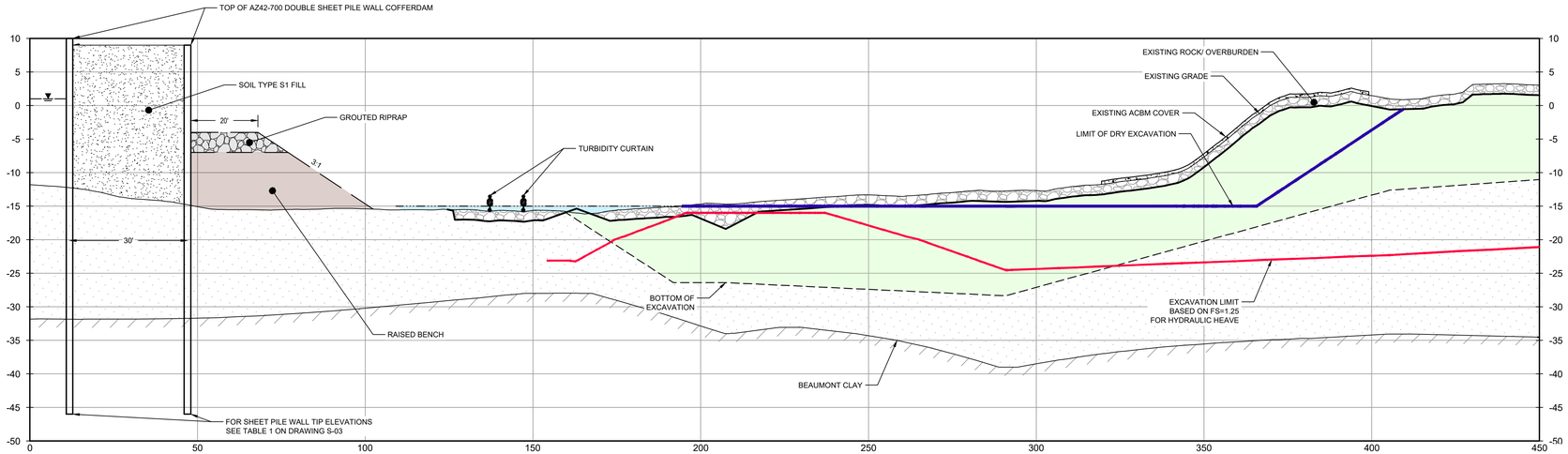
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

Title
DREDGING NORTHWEST CORNER SECTIONS 2 OF 2

Sheet No.
C-50

Plot Date: 22 May 2025 - 4:32 PM
193808
Plotted By: Jonathan Compton
Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-049.dwg

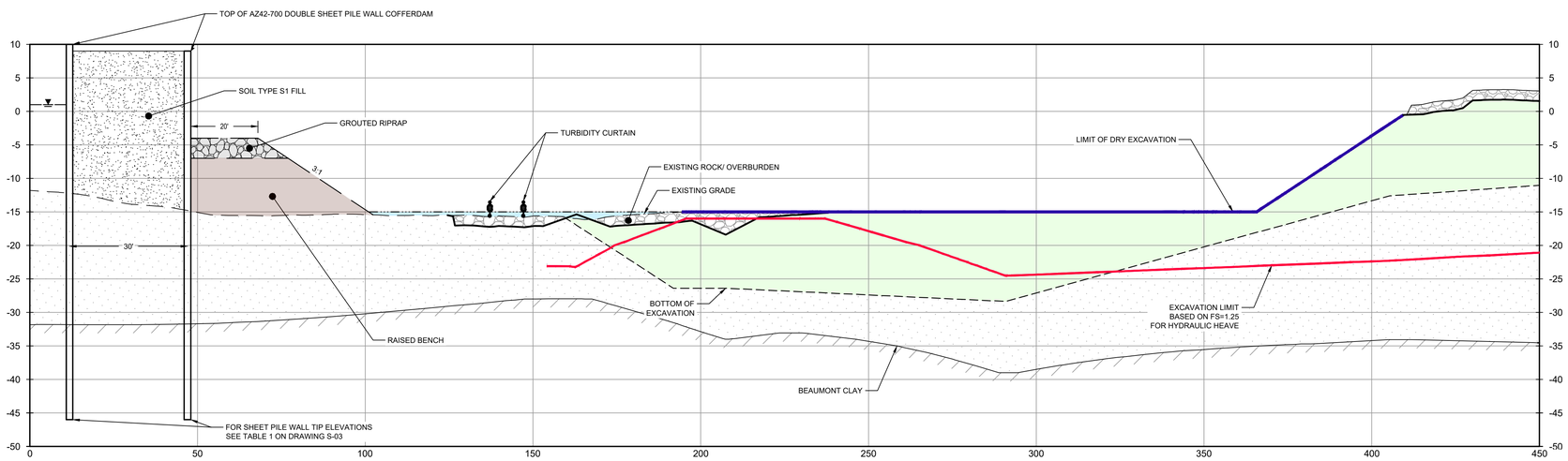


NOTES:

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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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED
PROFESSIONAL ENGINEER

5/23/25

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LEGEND

EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE

MATERIAL TO BE EXCAVATED

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
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Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

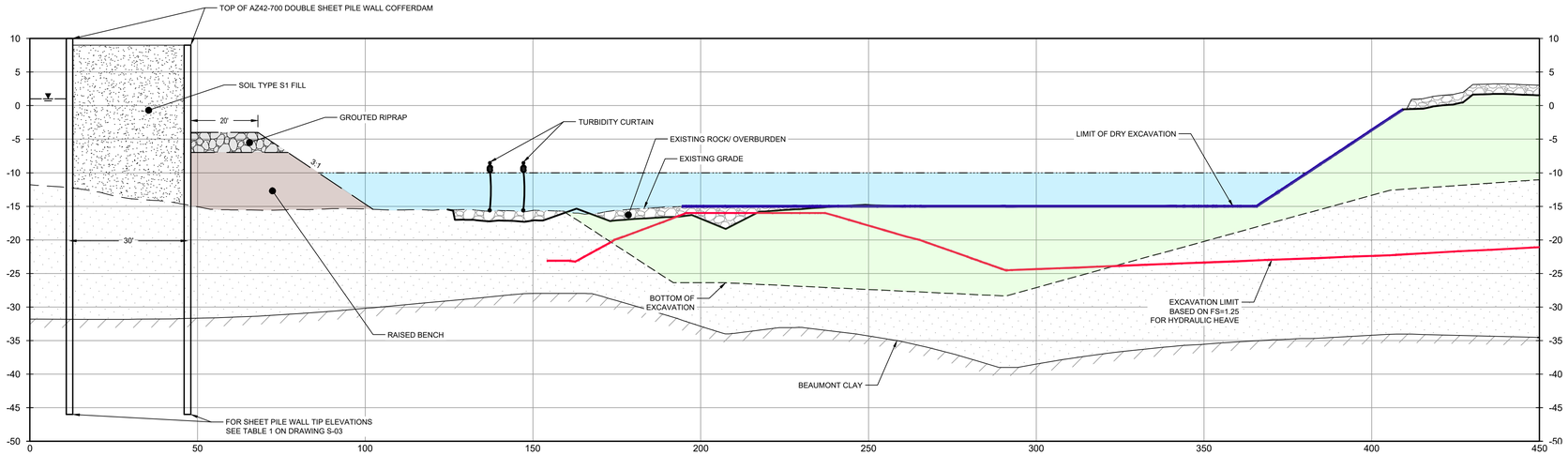
Title

DREDGING NORTHWEST CORNER SEQUENCING 1 OF 3

Sheet No.

C-51

Sheet 52 of 83

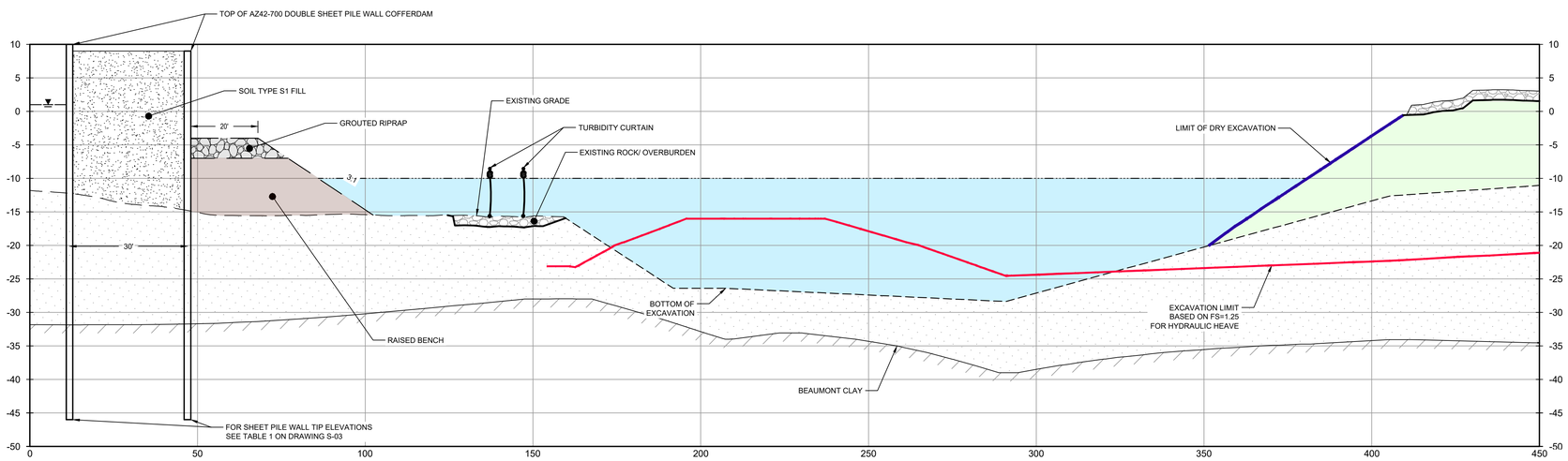


NOTES:

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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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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Baton Rouge Louisiana 70808 USA
T 225 292 9007

STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED
PROFESSIONAL ENGINEER

5/23/25

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LEGEND

EXCAVATION LIMIT BASED ON FS = 1.25 FOR HYDRAULIC HEAVE

MATERIAL TO BE EXCAVATED

Client

SAN JACINTO RIVER WASTE PITS

Project

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

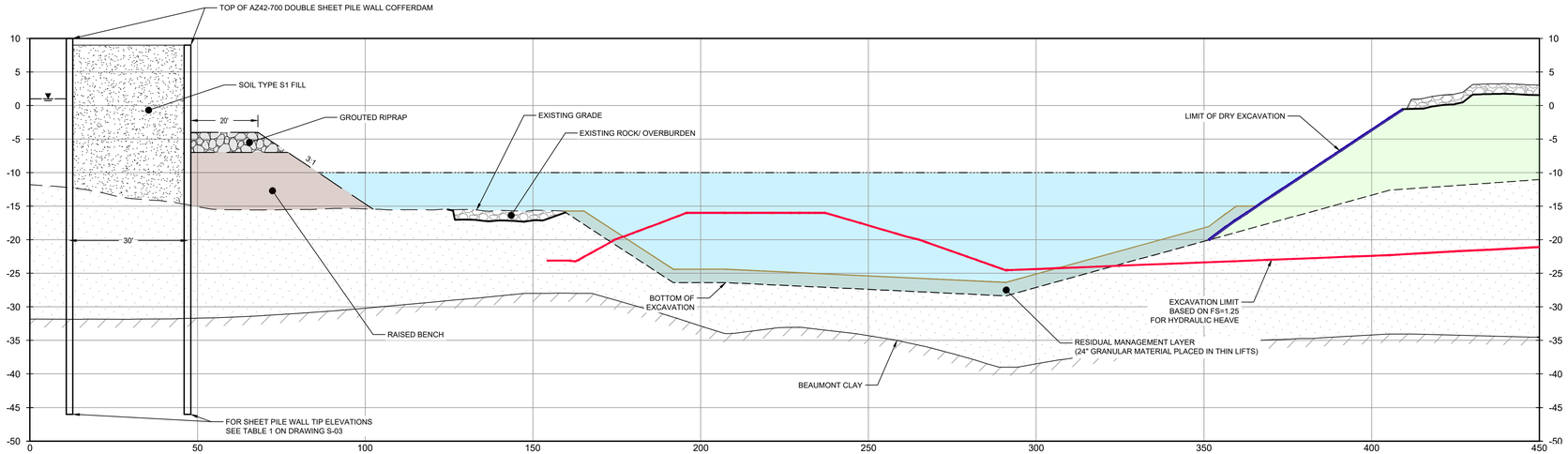
Title

DREDGING NORTHWEST CORNER SEQUENCING 2 OF 3

Sheet No.

C-52

Plot Date: 22 May 2025 - 4:32 PM
Plotted By: Jonathan Compton
Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-051.dwg
193810

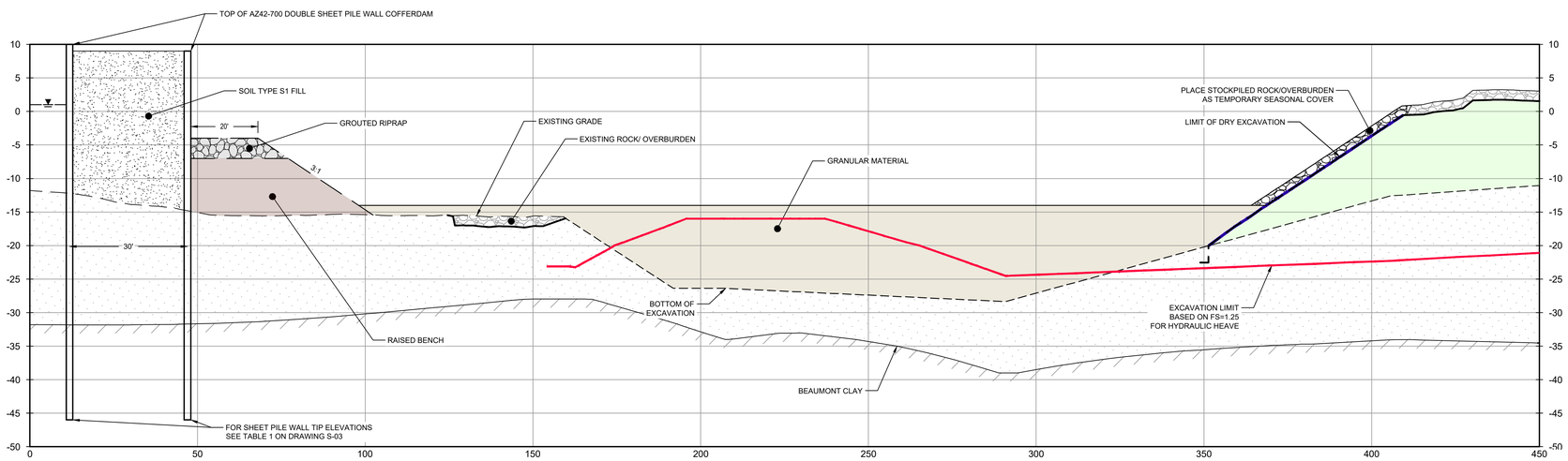


NOTES:

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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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED
PROFESSIONAL ENGINEER
5/23/25

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LEGEND

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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

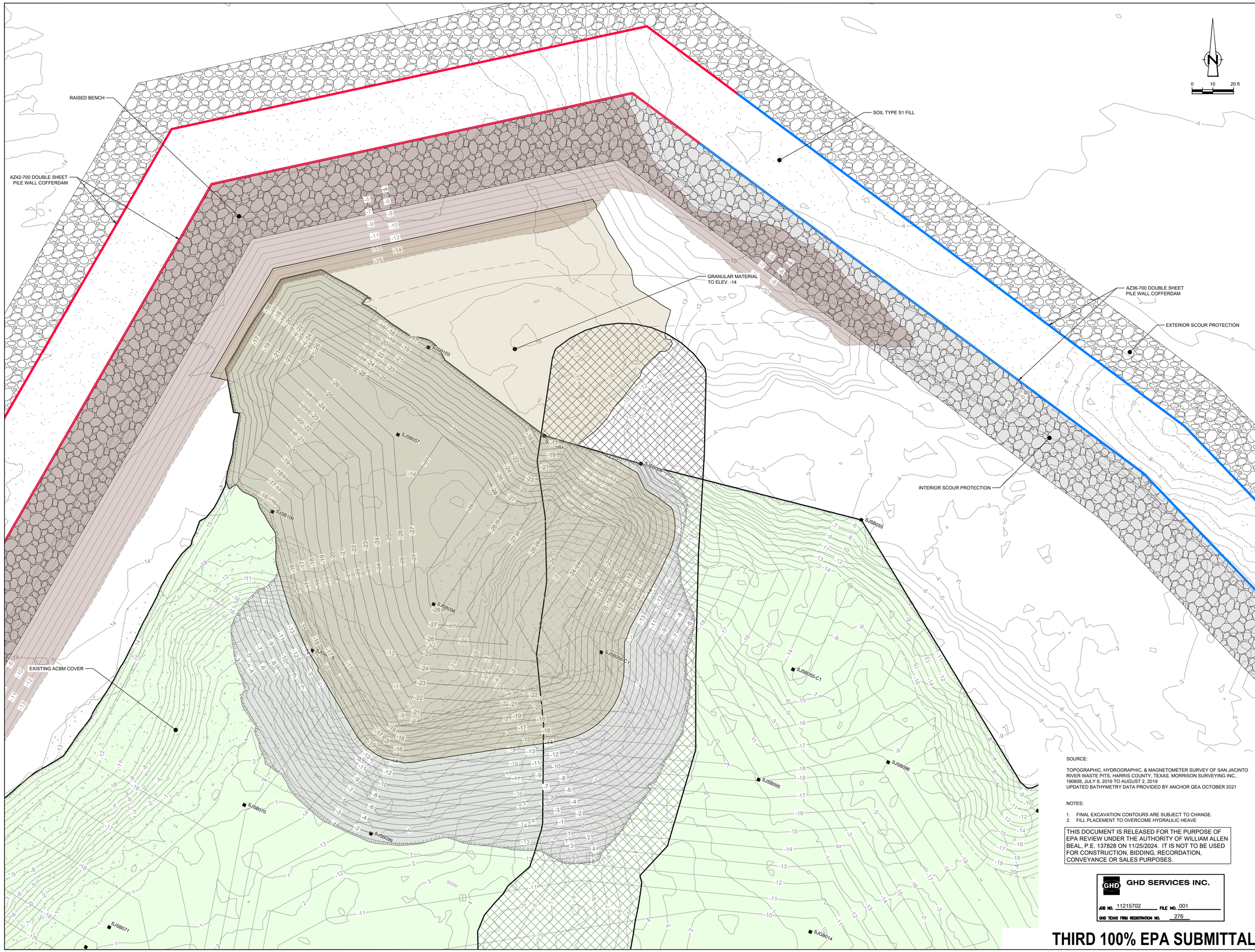
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

Title
DREDGING NORTHWEST CORNER SEQUENCING 3 OF 3

Sheet No.
C-53

Plot Date: 22 May 2025 - 4:32 PM
Plotted By: Jonathan Compton
Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-051.dwg
193811



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

NOTES:

1. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.
2. FILL PLACEMENT TO OVERCOME HYDRAULIC HEAVE

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

GHD
2237 S Acadian Thruway Suite 701
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STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED PROFESSIONAL ENGINEER
5/23/25

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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
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

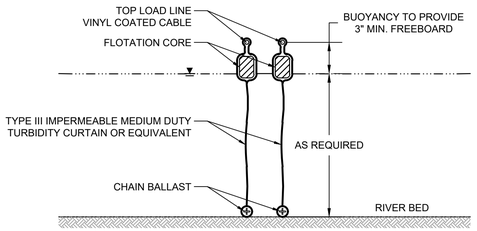
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 23, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	1" = 20'
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

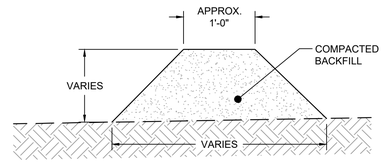
Title
DREDGING NORTHWEST CORNER FINAL GRADE

Sheet No.
C-54

Sheet 55 of 83

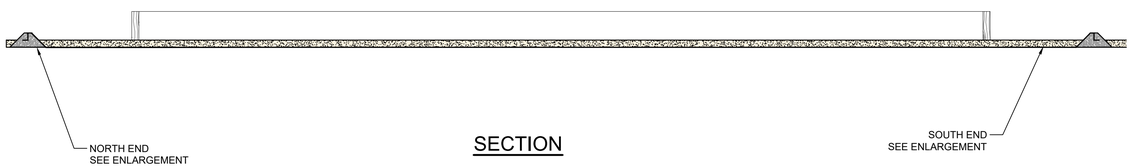


DETAIL 16 (C-46) DREDGING TURBIDITY CURTAINS
N.T.S.

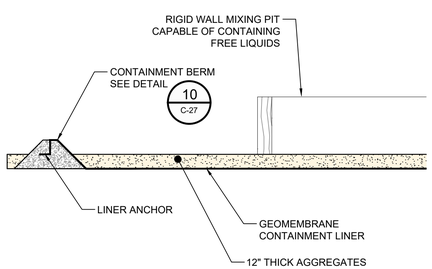


NOTES:
1. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF REQUIRED TO FACILITATE CROSSING CONSTRUCTION TRAFFIC.

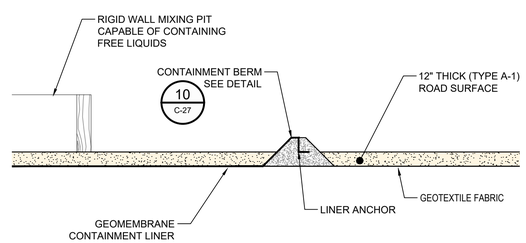
DETAIL 17 (C-46) DREDGING EARTHEN BERM
N.T.S.



SECTION



NORTH END



SOUTH END

NOTES:
1. DIMENSION TO BE DETERMINED BY CONTRACTOR

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

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

THIRD 100% EPA SUBMITTAL

GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
WILLIAM A. BEAL
137828
LICENSED
PROFESSIONAL ENGINEER
5/23/25

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
5	THIRD 100% EPA SUBMITTAL	JC	WB	05/23/2025

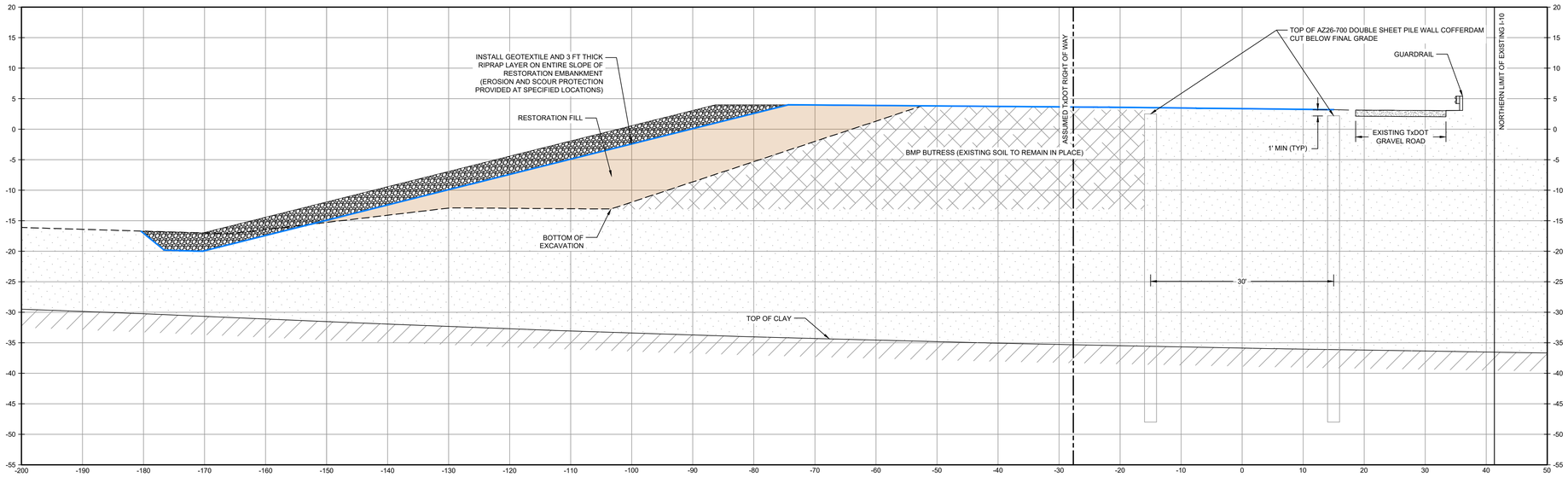
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

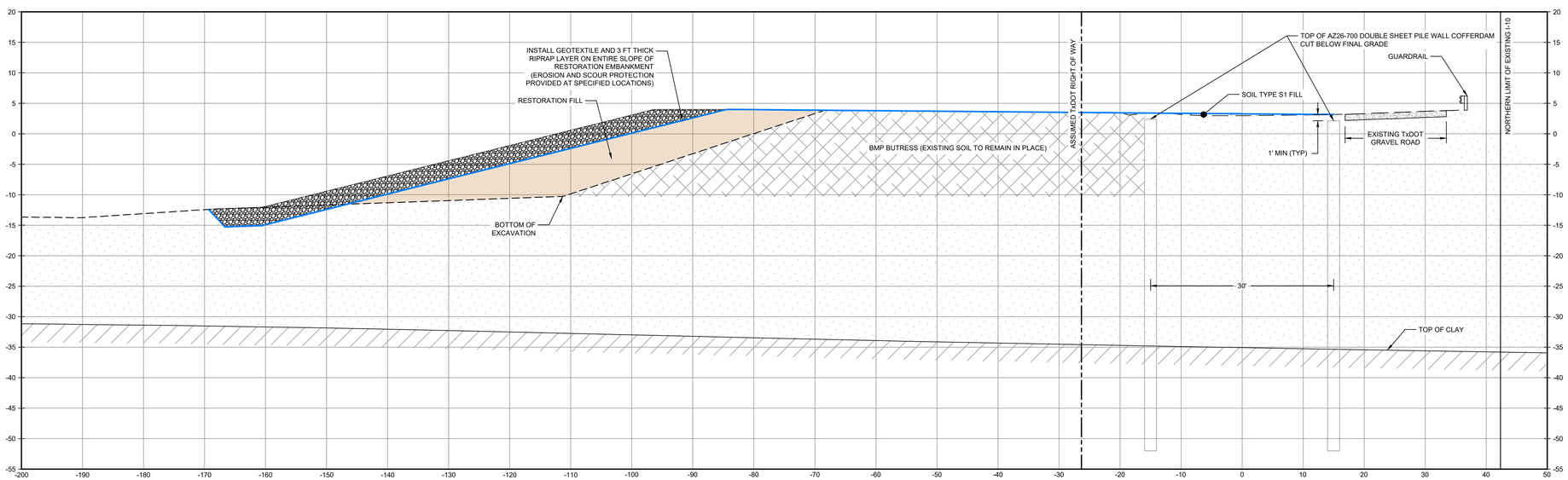
Title
DREDGING NORTHWEST CORNER DREDGING DETAILS

Sheet No.
C-55

Plot Date: 22 May 2025 - 4:33 PM
193813
Plotted By: Jonathan Compton
Filename: \\ghdnetghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-055.dwg



SECTION U STA. 2+00.00
SCALE: 1"=10'
C-22



SECTION V STA. 4+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, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:

1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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

THIRD 100% EPA SUBMITTAL

GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
C. R. HOEKSTRA
5-25-2025
147936
LICENSED
PROFESSIONAL ENGINEER

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LEGEND

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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

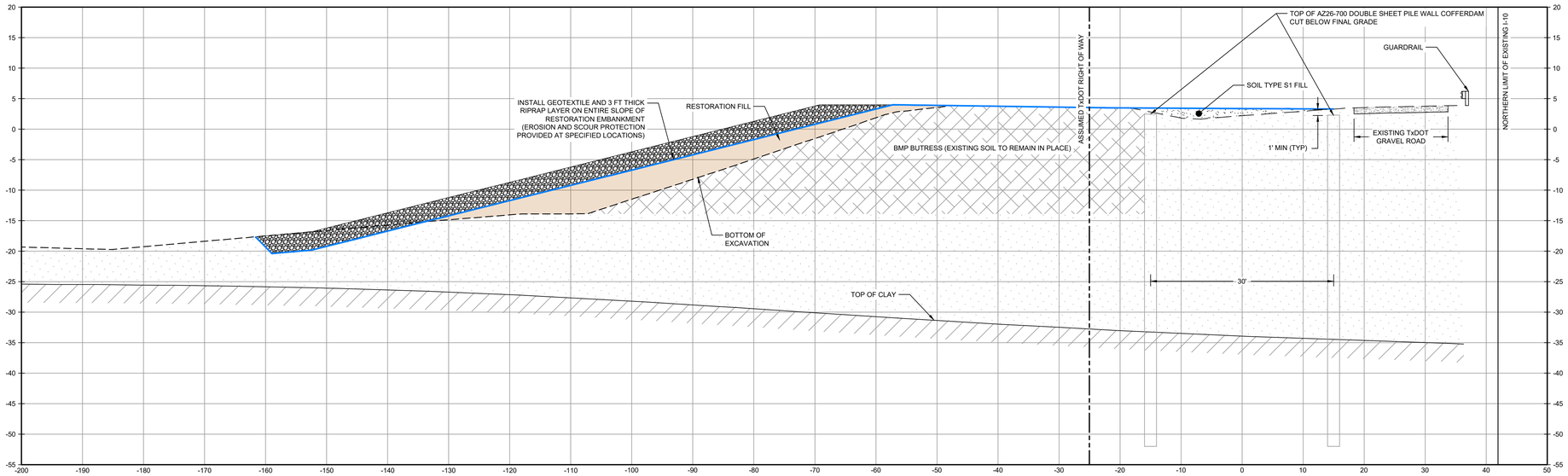
Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

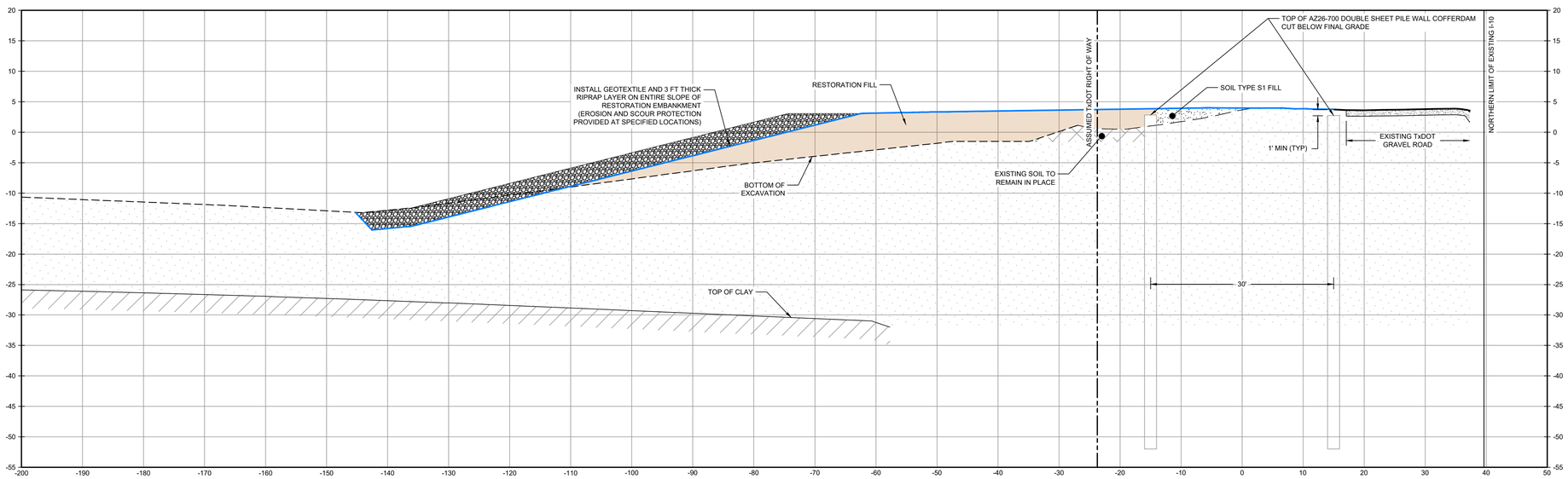
Title
RESTORATION SECTIONS 1 OF 2

Sheet No.
C-56

Sheet 57 of 83



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



SECTION X STA. 8+00.00
C-22
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, COBBFENDLEY, 2402-028-01, JUNE 28, 2024

NOTES:

1. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
C. R. HOEKSTRA
5-23-2025
147936
LICENSED
PROFESSIONAL ENGINEER

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

Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	JC	CRH	05/23/2025

Drawn	JC	Designer	RH
Drafting Check	BS	Design Check	WB
Project Coordinator	CM	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
RESTORATION SECTIONS 2 OF 2

Sheet No.
C-57

Plot Date: 22 May 2025 - 4:33 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-C-056.dwg
193815

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	
THREADED BARS	GRADE 80 KSI
BEARING PLATE	ASTM A572/A588 GRADE 50
HARDENED WASHER	ASTM F436
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	NORTHING
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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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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05/23/2025

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	DS	SC	05/23/2025

Drawn DS	Designer KM
Drafting Check	Design Check SC
Project Coordinator CM	Date May 22, 2025
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Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title
STRUCTURAL NOTES

Sheet No.
S-01

Sheet 59 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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LEGEND

- TxDOT RIGHT OF WAY
- TCRA CAP PERIMETER
- EXISTING CONTOUR INTERVAL
- FENCELINE
- SHORELINE
- TOP OF BANK
- TOE OF SLOPE
- OVERHEAD ELECTRICAL
- GUARDRAIL
- PIPELINE
- SJSB002 BORING LOCATION
- MW MONITORING WELL
- P.P. 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
- AZ26-700 PILE
- AZ36-700 PILE
- AZ42-700 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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	DS	SC	05/23/2025

Drawn DS	Designer KM
Drafting Check	Design Check SC
Project Coordinator CM	Date May 22, 2025
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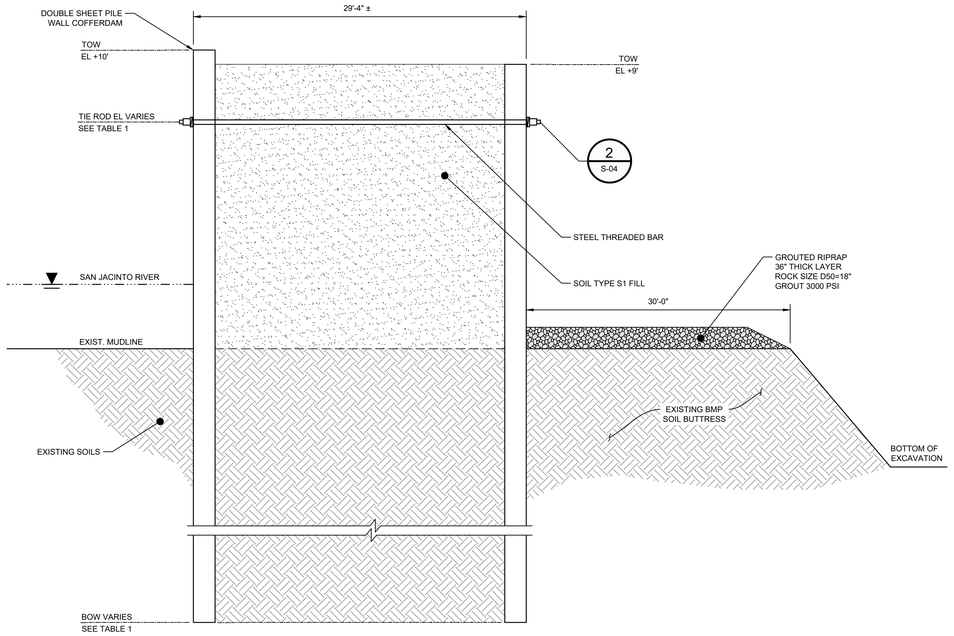
Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

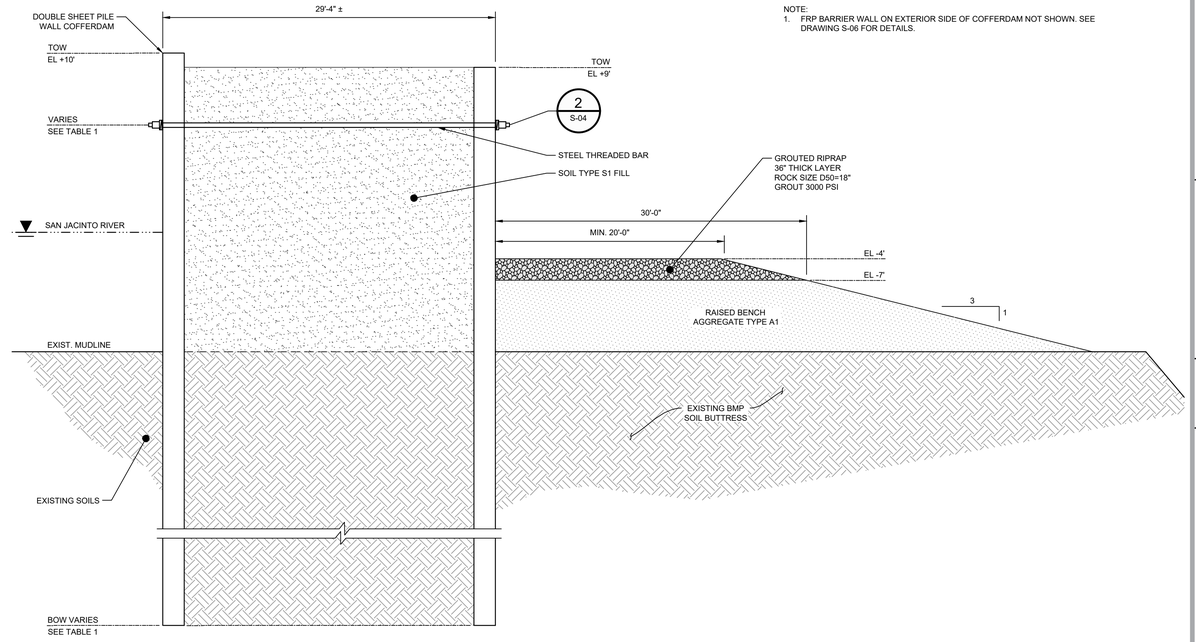
Title
STRUCTURAL LAYOUT PLAN

Sheet No.
S-02

Sheet 60 of 83

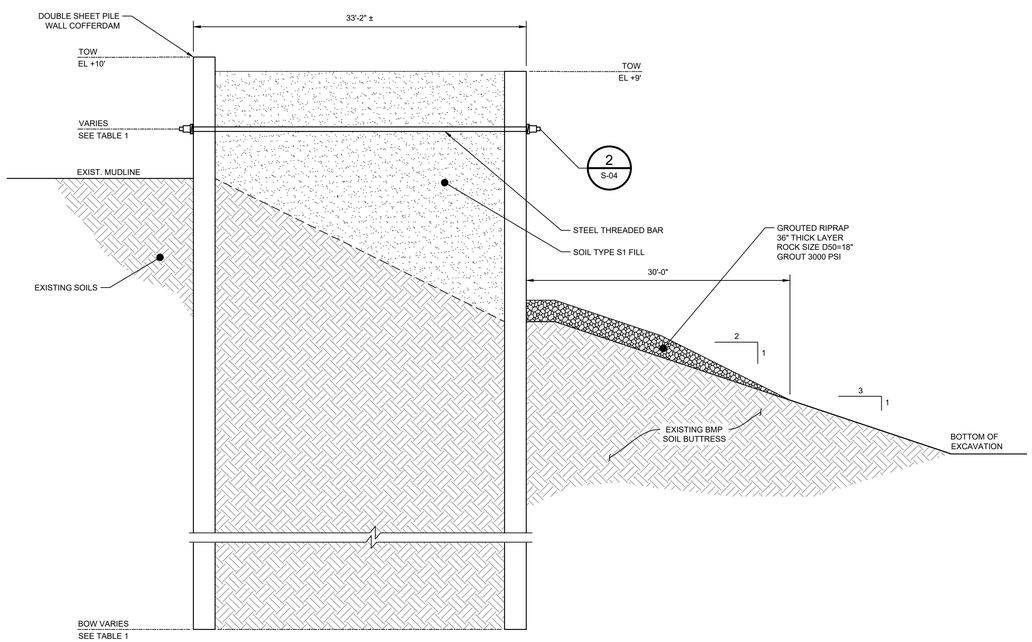


DETAIL A S-01 TYPICAL WALL SECTION
N.T.S.



NOTE:
1. FRP BARRIER WALL ON EXTERIOR SIDE OF COFFERDAM NOT SHOWN. SEE DRAWING S-06 FOR DETAILS.

DETAIL B S-01 TYPICAL WALL SECTION
N.T.S.



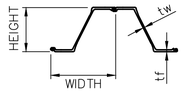
DETAIL C S-01 TYPICAL WALL SECTION
N.T.S.

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 (IN3/FT)
					FLANGE tf	WEB tw	SINGLE PILE (LB/FT)	WALL AREA (LB/FT2)	
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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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	DS	SC	05/23/2025

Drawn DS | Designer KM
Drafting Check | Design Check SC
Project Coordinator CM | Date May 22, 2025
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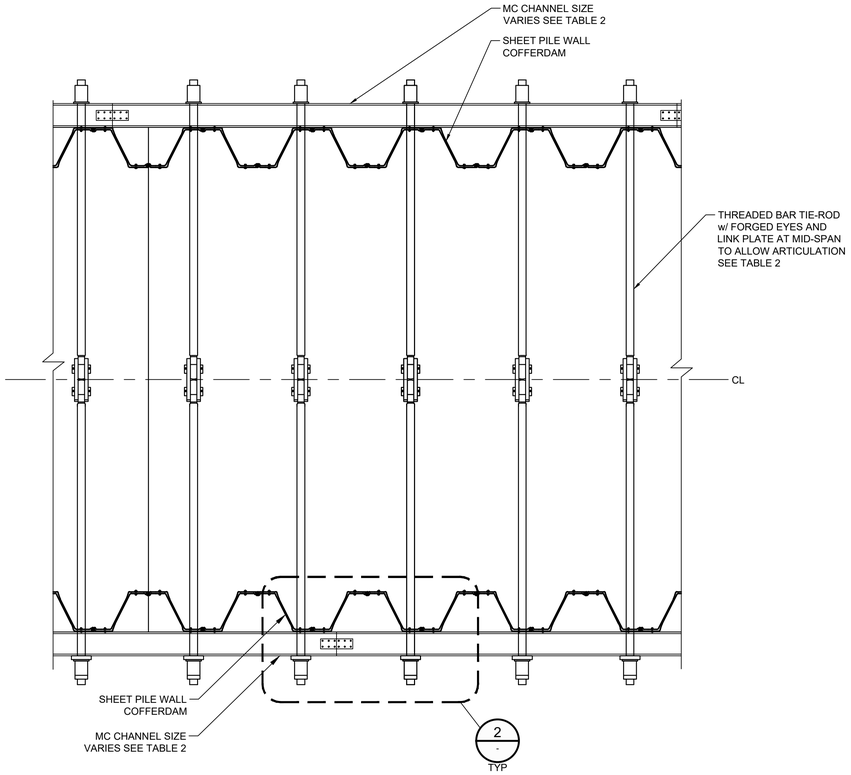
Original Size Arch D | Bar is one inch on original size drawing 0 1"
Project No. 11215702

Title
STRUCTURAL SECTIONS

Sheet No.
S-03

Sheet 61 of 83

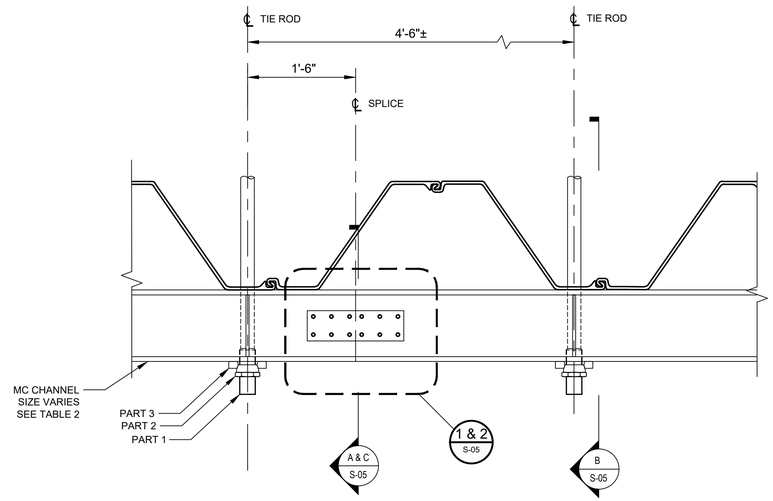


DETAIL 1 PLAN VIEW
SCALE: 1"=3'-0"

TABLE 2

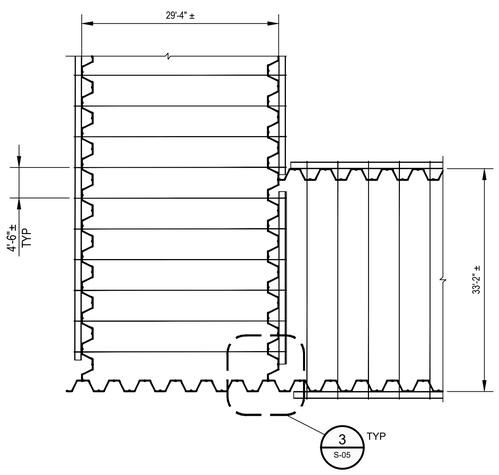
WALL SEGMENT	TIE ROD NOMINAL DIAMETER PART 1 (IN)	TIE ROD SPHERICAL NUT O.D. PART 2 (IN)	SPHERICAL BEARING PLATE PART 3 (IN)	WALER SECTION
C1	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C2	3.00	4 3/4"	7" X 9" X 1 1/2"	MC18 x 45.8
C3	2.25	4 1/8"	6 1/4" X 7 3/4" X 1 1/8"	MC12 x 35
C4	2.25	4 1/8"	6 1/4" 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: TIE ROD SUPPLIER SHALL REVIEW AND VERIFY THE DIMENSIONS OF THE SPHERICAL NUT AND BEARING PLATE TO MATCH THE REQUIRED TIE ROD NOMINAL DIAMETER

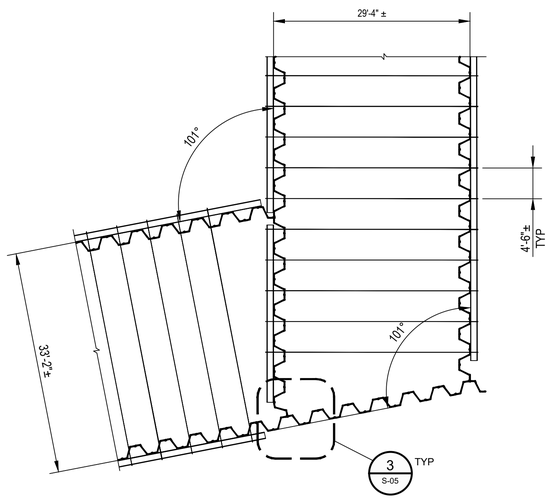


NOTE:
1. STAGGER WALER SPLICE ON INTERIOR AND EXTERIOR WALL BY 10'-0" +/-
2. WELD 1/2" THICK STEEL PLATES BETWEEN T&B WALERS TO MAINTAIN SPACING

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"

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THIRD 100% EPA SUBMITTAL

0 3' 6'
0 1/2' 1' 1 1/2'

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STATE OF TEXAS
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SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	DS	SC	05/23/2025

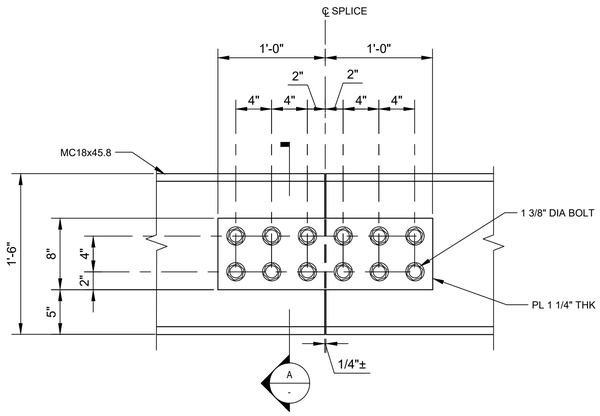
Drawn DS	Designer KM
Drafting Check	Design Check SC
Project Coordinator CM	Date May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.	Scale AS SHOWN
Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

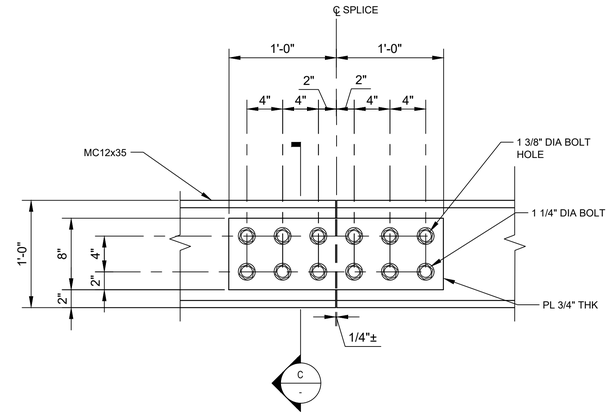
Title
STRUCTURAL DETAILS 1 of 2

Sheet No.
S-04

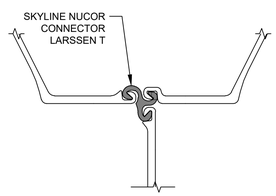
Sheet 62 of 83



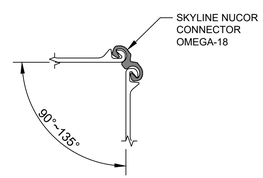
DETAIL 1 - PLAN - SPLICE CONNECTION - WALER MC 18X45.8
SCALE: 1 1/2"=1'-0"



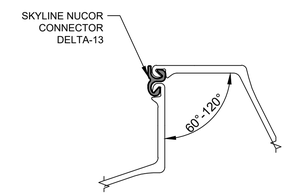
DETAIL 2 - PLAN - SPLICE CONNECTION - WALER MC 12X35
SCALE: 1 1/2"=1'-0"



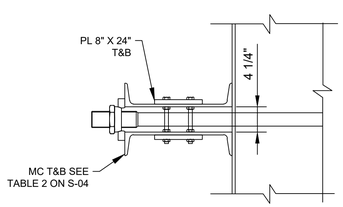
DETAIL 3 - THREE SHEET PILE CONNECTOR
SCALE: NTS



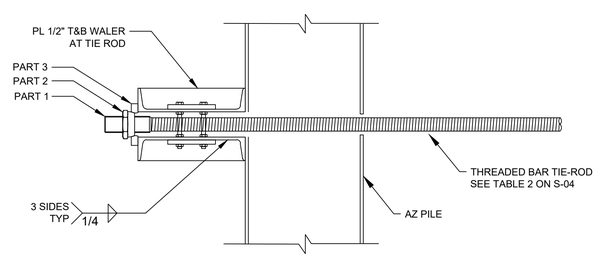
DETAIL 4 - CORNER CONNECTOR ALTERNATIVE A
SCALE: NTS



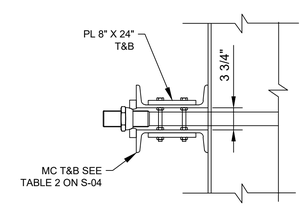
DETAIL 5 - CORNER CONNECTOR ALTERNATIVE B
SCALE: NTS



SECTION A - SPLICE CONNECTION
SCALE: 1"=1'-0"
S-04



SECTION B - TIE ROD CONNECTION
SCALE: 1"=1'-0"
S-04



SECTION C - SPLICE CONNECTION
SCALE: 1"=1'-0"
S-04

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

THIRD 100% EPA SUBMITTAL

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STATE OF TEXAS
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145120
LICENSED
PROFESSIONAL ENGINEER
Satish Chilka
05/23/2025

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	DS	SC	05/23/2025

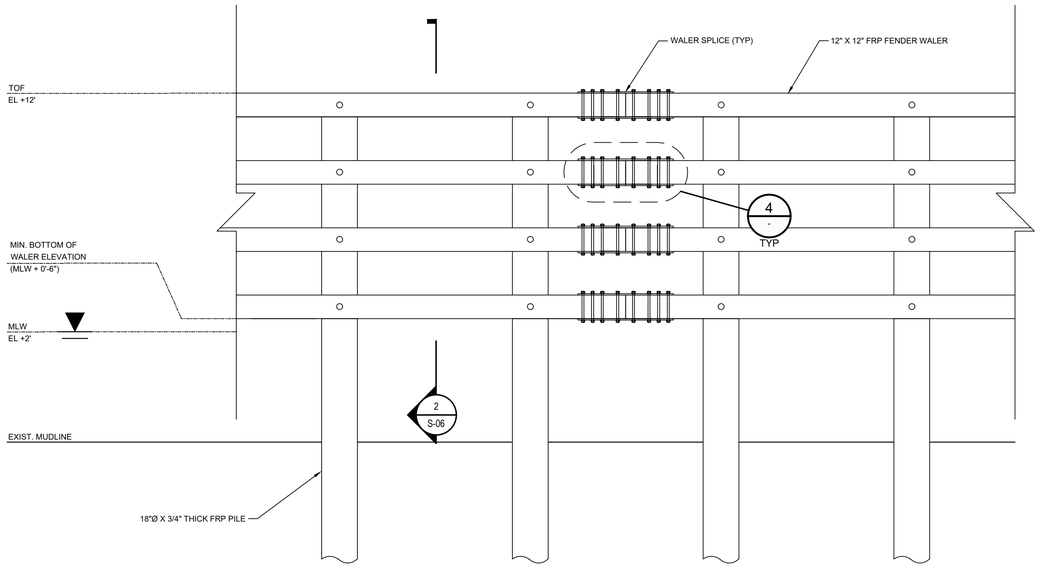
Drawn DS	Designer KM
Drafting Check	Design Check SC
Project Coordinator CM	Date May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.	Scale AS SHOWN
Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

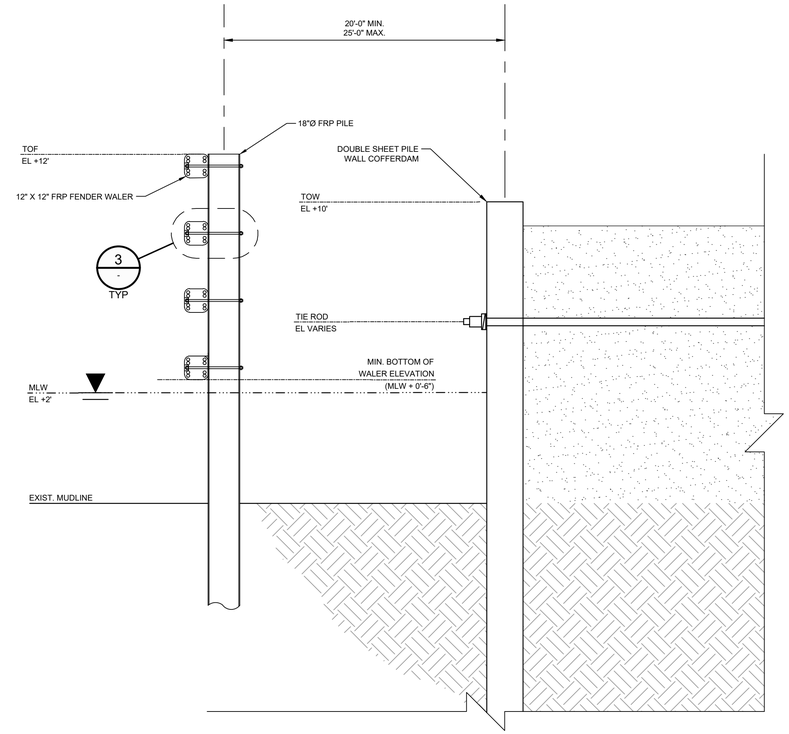
Title
STRUCTURAL DETAILS 2 OF 2

Sheet No.
S-05

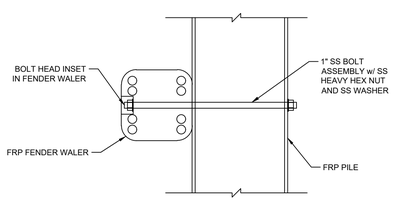
Sheet 63 of 83



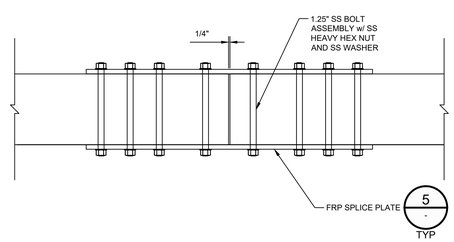
DETAIL 1 (S-06) TYPICAL FRP BARRIER ELEVATION
SCALE: 1"=3'-0"



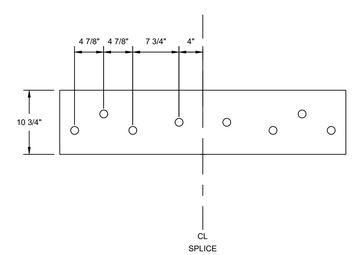
DETAIL 2 (S-06) TYPICAL FRP BARRIER SECTION
SCALE: 1"=3'-0"



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



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



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

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Satish Chilka
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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	DS	SC	05/23/2025

Drawn DS	Designer KM
Drafting Check	Design Check SC
Project Coordinator CM	Date May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.	Scale N.T.S.
Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title
FRP BARRIER WALL

Sheet No.
S-06

Plot Date: 22 May 2025 - 4:35 PM
193821
Plotted By: Jonathan Compton
Filename: \\ghdnefghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-S-006.dwg

GENERAL INSTRUMENT SYMBOLS

- LOCALLY MOUNTED INSTRUMENTS
- PRIMARY PANEL MOUNTED INSTRUMENTS
- AUXILARY PANEL MOUNTED INSTRUMENT (* = PANEL No.1,2,3 ETC.) — IP*
- BEHIND PANEL MOUNTED INSTRUMENTS
- INSTRUMENTS SHARING COMMON HOUSING
- PILOT LIGHT — A
  A = AMBER R = RED
  B = BLUE W = WHITE
  C = CLEAR Y = YELLOW
  G = GREEN
- FI — INLINE INSTRUMENT/SENSOR
- **T, *E — INLINE SENSOR WITH INTEGRAL TRANSMITTER
- **T, *E — INLINE SENSOR WITH REMOTE TRANSMITTER
- **T, *E — SENSOR WITH INTEGRAL TRANSMITTER
- *E, **T — SENSOR WITH REMOTE TRANSMITTER
- SP 1 — SPECIALTY PART
- TP 1 — TIE-POINT

DISTRIBUTED CONTROL / SHARED DISPLAY INSTRUMENTS

- PRIMARY PROCESS CONTROL SYSTEM - USUALLY USED TO INDICATE VIDEO DISPLAY OR HMI. (NORMALLY ACCESSIBLE TO OPERATOR)
- BLIND OPERATION (NOT NORMALLY ACCESSIBLE TO OPERATOR)
- SECONDARY LOGIC CONTROLLER OR PLC (NORMALLY ACCESSIBLE TO OPERATOR) (* = PANEL No.1,2,3 ETC.) — IP*
- BLIND OPERATION (NOT NORMALLY ACCESSIBLE TO OPERATOR)
- TIE POINT

PRIMARY ELEMENT SYMBOLS

- FX — FLOW STRAIGHTENING VANES
- PI — DIAPHRAGM SEAL WITH PRESSURE LEAD LINE
- PI — DIAPHRAGM SEAL (LINE-MOUNTED)
- TW *** — THERMOWELL, THREADED CONNECTION
- TW *** — THERMOWELL, FLANGED CONNECTION
- TIT ***, TE ***, TW *** (RTD) — TEMPERATURE TRANSMITTER INTEGRAL TO SENSOR THREADED INTO THERMOWELL
- TE ***, TW *** (RTD), TIT *** — TEMPERATURE TRANSMITTER REMOTE FROM SENSOR THREADED INTO THERMOWELL
- FG — FLOW SIGHT GLASS (LG - LEVEL SIGHT GLASS, SG - GENERAL SIGHT GLASS)
- FICV — VARIABLE AREA FLOWMETER WITH INTEGRAL MANUAL ADJUSTING VALVE (SHOWN ON INPUT PORT)
- XY *** — SIGNAL CONVERTER (INPUT/OUTPUT)
  *E = VOLTAGE P = PNEUMATIC
  I = CURRENT B = BINARY (MODBUS, RS485)
- pH, ORP, PROBE (DUAL ELEMENT SENSING PROBE)
- CONDUCTIVITY, MOISTURE, PROBE (SINGLE ELEMENT SENSING PROBE)
- ORIFICE PLATE IN QUICK-CHANGE FITTING
- STANDARD PITOT TUBE
- AVERAGING PITOT TUBE
- TURBINE/PROPELLER FLOW SENSOR
- TARGET FLOW SENSOR
- M — MAGNETIC FLOW SENSOR
- POSITIVE DISPLACEMENT FLOW SENSOR
- ΔT — THERMAL MASS FLOW SENSOR
- SONIC/ULTRASONIC FLOW SENSOR
- VORTEX SHEDDING FLOW SENSOR
- CORIOLLIS FLOW SENSOR

PRIMARY ELEMENT SYMBOLS (CONT'D)

- OPEN CHANNEL WEIR PLATE
- OPEN CHANNEL FLUME
- DISPLACER INTERNALLY MOUNTED IN VESSEL
- BALL FLOAT INTERNALLY MOUNTED IN VESSEL
- DIP TUBE OR OTHER PRIMARY ELEMENT AND STILLING WELL
- VENTURI TUBE
- FLOW NOZZLE
- FLOW TUBE
- ORIFICE PLATE (FO) OR RESTRICTION ORIFICE (RO)

PROCESS / INSTRUMENT LINES

- IA — IA MAY BE REPLACED WITH PA-PLANT AIR, NS-NITROGEN, OR GS-ANY GAS SUPPLY
- PRIMARY PROCESS FLOW LINE
- SECONDARY PROCESS FLOW LINE
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL
- HYDRAULIC SIGNAL
- CAPILLARY TUBE, FILLED SYSTEM
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
- EXTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
- MECHANICAL LINK
- TO / FROM SHEET No. — OFF PAGE CONNECTOR
- UTILITY — UTILITY IN/OUT

VALVE SYMBOLS

- GATE
- GLOBE
- CHECK
- ANGLE
- 3 WAY
- 4 WAY
- BUTTERFLY
- BALL
- PLUG
- ECCENTRIC ROTARY DISC
- DIAPHRAGM
- PINCH
- BELLOWS SEALED
- UNION
- GENERIC DAMPER/LOUVER
- VALVE WITH BLIND FLANGE
- KNIFE GATE
- REDUCER
- CLEANOUT
- QUILL

SELF-ACTUATED REGULATORS, VALVES, AND OTHER DEVICES

- LEVEL REGULATOR WITH MECHANICAL LINKAGE
- BACKPRESSURE REGULATOR (SELF CONTAINED)
- BACKPRESSURE REGULATOR WITH EXTERNAL TAP (SELF CONTAINED)
- PRESSURE REDUCING REGULATOR (SELF CONTAINED)
- PRESSURE REDUCING REGULATOR WITH EXTERNAL TAP (SELF CONTAINED)
- PG — PRESSURE-REDUCING REGULATOR W/ INTEGRAL OUTLET PRESSURE RELIEF AND/OR PRESSURE GAUGE
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE VACUUM RELIEF VALVE
- RUPTURE DISC FOR PRESSURE RELIEF
- RUPTURE DISC FOR VACUUM RELIEF
- T — MOISTURE TRAP

EQUIPMENT/PIPING SYMBOLS

- CENTRIFUGAL PUMP
- DIAPHRAGM PUMP
- BLOWER
- STATIC MIXER
- X" — EQUIPMENT INSULATED WITH X" OF INSULATION
- REDUCER
- SCREW CAP
- BLIND FLANGE
- FLEXIBLE PIPE
- HORN OR SIREN
- FILTER/REGULATOR
- FILTER/REGULATOR/LUBRICATOR
- FLOW CONDITIONER
- DRAIN
- HOSE CONNECTION
- ROTARY PUMP

ACTUATOR SYMBOLS

- DIAPHRAGM ACTUATOR
- DIAPHRAGM ACTUATOR WITH POSITIONER
- PRESSURE-BALANCED DIAPHRAGM ACTUATOR
- DOUBLE ACTING PISTON ACTUATOR
- PISTON ACTUATOR WITH POSITIONER
- ROTARY PISTON ACTUATOR
- ROTARY PISTON ACTUATOR WITH POSITIONER
- M — ROTARY MOTOR ACTUATOR
- ACTUATOR WITH TOP-MOUNTED OR SIDE-MOUNTED HANDWHEEL
- HAND ACTUATOR OR HANDWHEEL
- E/H — ELECTRO/HYDRAULIC ACTUATOR
- S — AUTOMATIC RESET ON-OFF SOLENOID ACTUATOR
- S, R — MANUAL OR REMOTE RESET ON-OFF SOLENOID ACTUATOR

ACTUATOR INDICATIONS

ATO/FC

- ATO - AIR TO OPEN
- ATC - AIR TO CLOSE
- FO - FAIL OPEN
- FC - FAIL CLOSE
- FL - FAIL LOCKED LAST POSITION
- FLDO - FAIL LAST POSITION DRIFT OPEN
- FLDC - FAIL LAST POSITION DRIFT CLOSE
- FI - FAIL INDETERMINATE

INSTRUMENT TO PROCESS/EQUIP. CONNECTIONS

- HEAT TRACED LINE
- GENERIC INSTRUMENT CONNECTION
- SOCKET WELDED CONNECTION
- WELDED CONNECTION
- FLANGED CONNECTION
- THREADED CONNECTION

MISCELLANEOUS SYMBOLS

- WL — WATER LEVEL
- AIT #### TB — TURBIDITY INDICATING INSTRUMENT
- AIT #### pH — pH INDICATING INSTRUMENT
- FCV #### — MOTORIZED FLOW CONTROL VALVE

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5-23-2025

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SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn	RH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	N.T.S.
Original Size	Arch D	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

Sheet 65 of 83

TYPICAL INTERNATIONAL SOCIETY OF AUTOMATION LETTER COMBINATIONS

First-Letters	Initiating or Measured Variable	Controllers Recording	Controllers Indicating	Controllers Blind	Self-Actuated Control Valves	Readout Devices Recording	Readout Devices Indicating	Switches and Alarm Devices * High **	Switches and Alarm Devices * Low	Switches and Alarm Devices * Comb	Transmitters Recording	Transmitters Indicating	Transmitters Blind	Solenoids, Relays, Computing Devices	Primary Element	Test Point	Well or Probe	Viewing Device, Glass	Safety Device	Final Element
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	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	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	SSHL	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	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	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	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	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	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDRT	ZDIT	ZDT	ZDY	ZDE					ZDV

NOTE: THIS TABLE IS NOT ALL-INCLUSIVE.

* 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.

OTHER POSSIBLE COMBINATIONS:

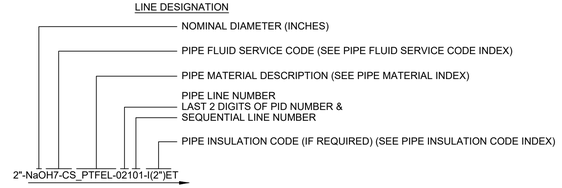
FO (RESTRICTION ORIFICE) LLH (LEVEL LIGHT HIGH) KQI (RUNNING TIME INDICATOR) LCH (LEVEL CONTROL HIGH)

FRK, HIK (CONTROL STATIONS LCL (LEVEL CONTROL LOW) HMS (HAND MOMENTARY SWITCH)

IDENTIFICATION LETTERS

	FIRST-LETTER: MEASURED OR INITIATING VARIABLE	FIRST-LETTER: MODIFIER	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: OUTPUT FUNCTION	SUCCEEDING-LETTERS: MODIFIER
A	Analysis		Alarm		
B	Burner/Combustion		User's Choice	User's Choice	User's Choice
C	User's Choice	Conductivity		Control	
D	User's Choice	Differential, Density			
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	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	Multifunction
V	Vibration, Machinery Analysis			Valve, Damper, Louver	
W	Weight, Force		Well		
X	Unclassified	X Axis	Unclassified	Unclassified	Unclassified
Y	Event, State, or Presence	Y Axis		Relay, Compute, Convert	
Z	Position, Dimension	Z Axis		Driver, Actuator, Unclassified Final Control Element	

LINE DESIGNATION



ABBREVIATIONS:

INSTRUMENTS

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

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

MAT'L	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

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JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

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SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn RH
Designer NF
Drafting Check
Design Check NF
Project Coordinator LL
Date May 22, 2025
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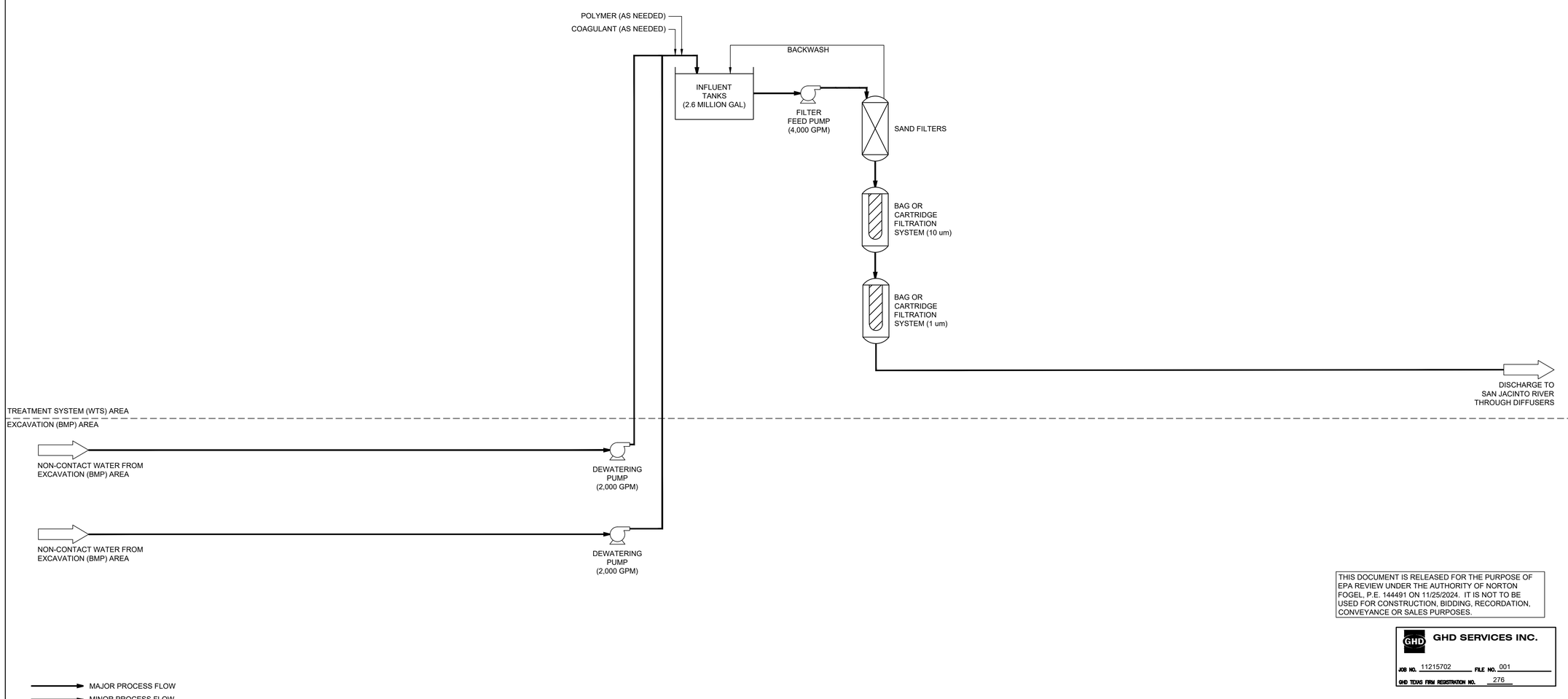
Scale N.T.S.
Original Size Arch D
Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title
WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SCHEDULES

Sheet No.
P-000B

Sheet 66 of 83



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Drawn SH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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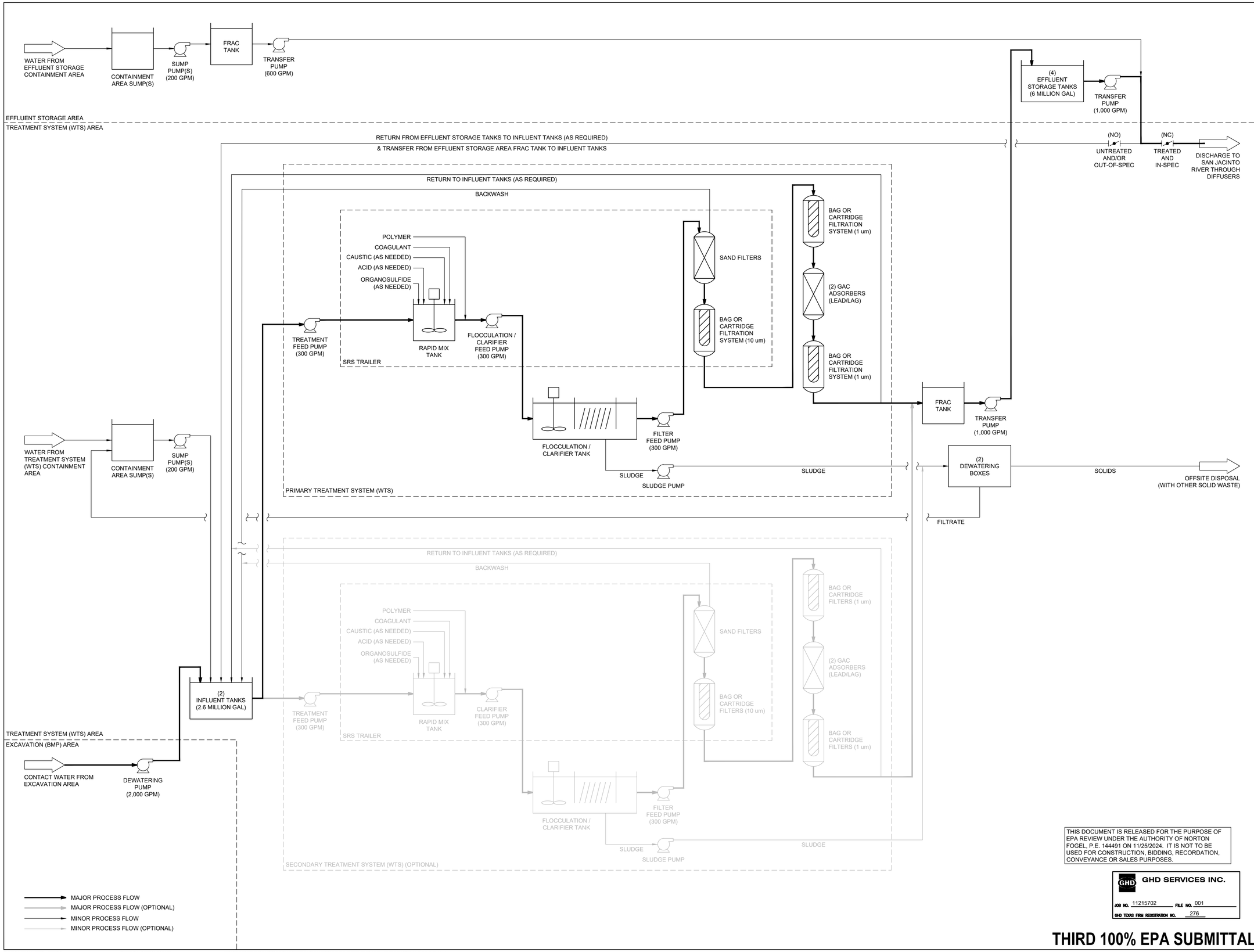
Project No. 11215702

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

Sheet No.
P-001

Sheet 67 of 83



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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn	RH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
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Project No. 11215702

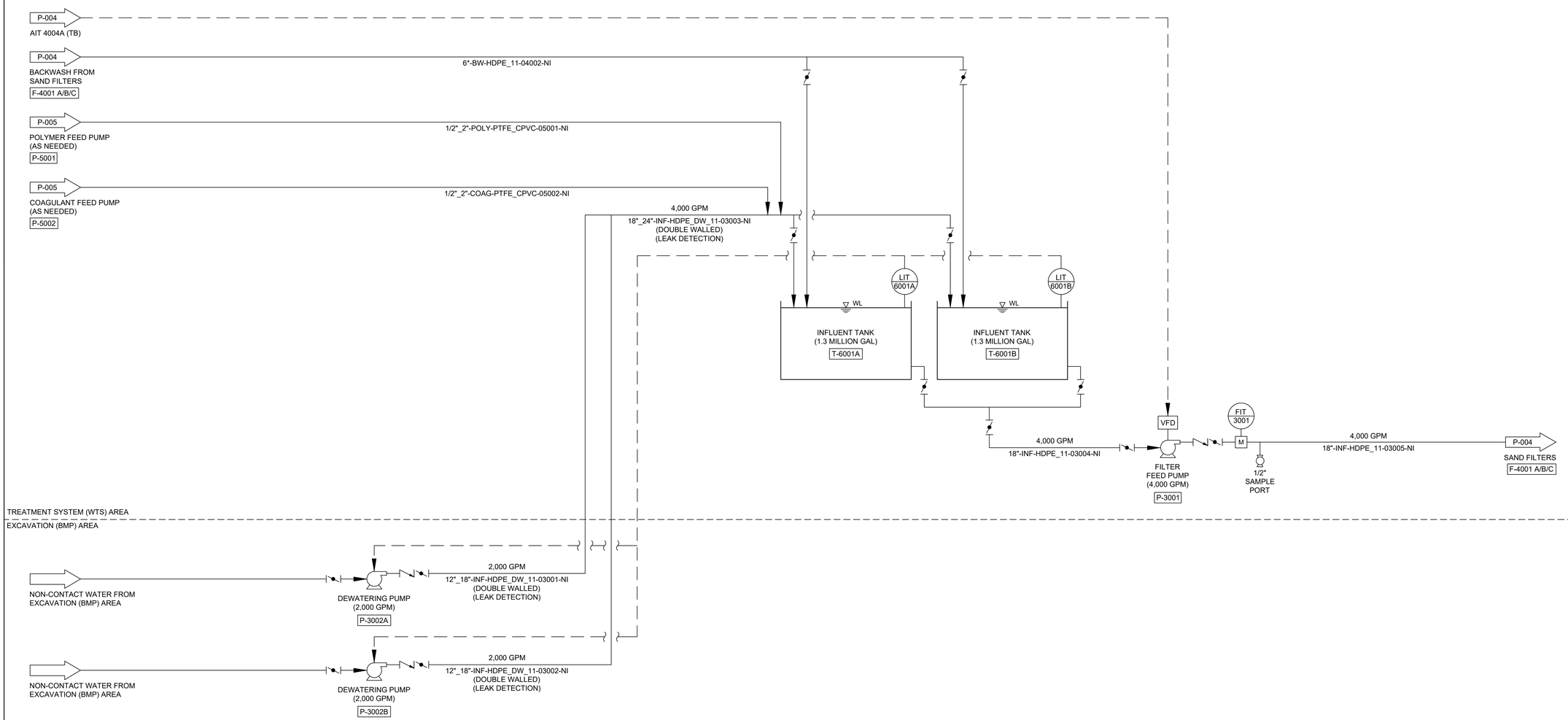
Title

WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM (CONTACT WATER)

Sheet No.

P-002

Sheet 68 of 83



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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	SH	NF	05/23/2025

Drawn SH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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Project No. 11215702

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

Sheet No.
P-003

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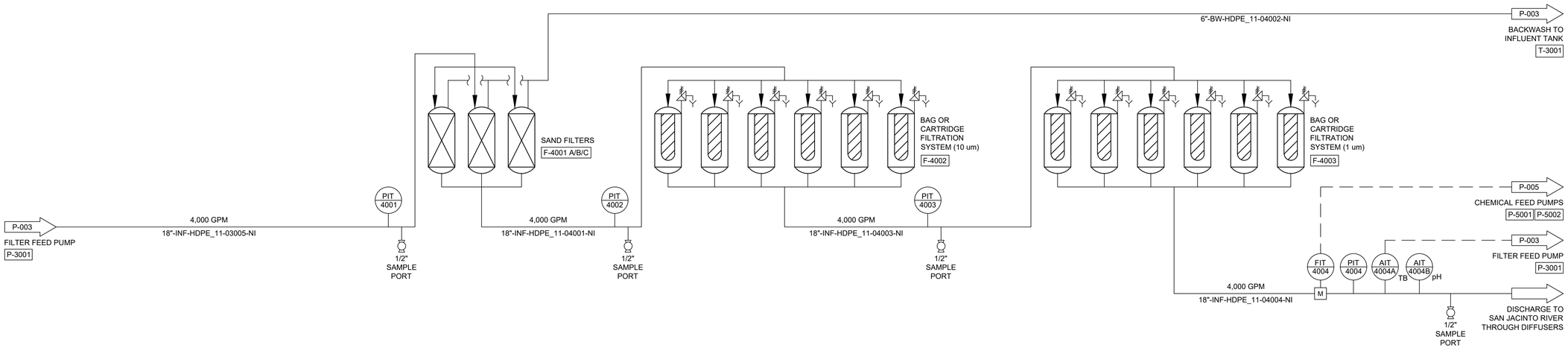

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NORTHERN IMPOUNDMENT THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	SH	NF	05/23/2025

Drawn SH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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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 THIRD FINAL 100% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	SH	NF	05/23/2025

Drawn	SH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
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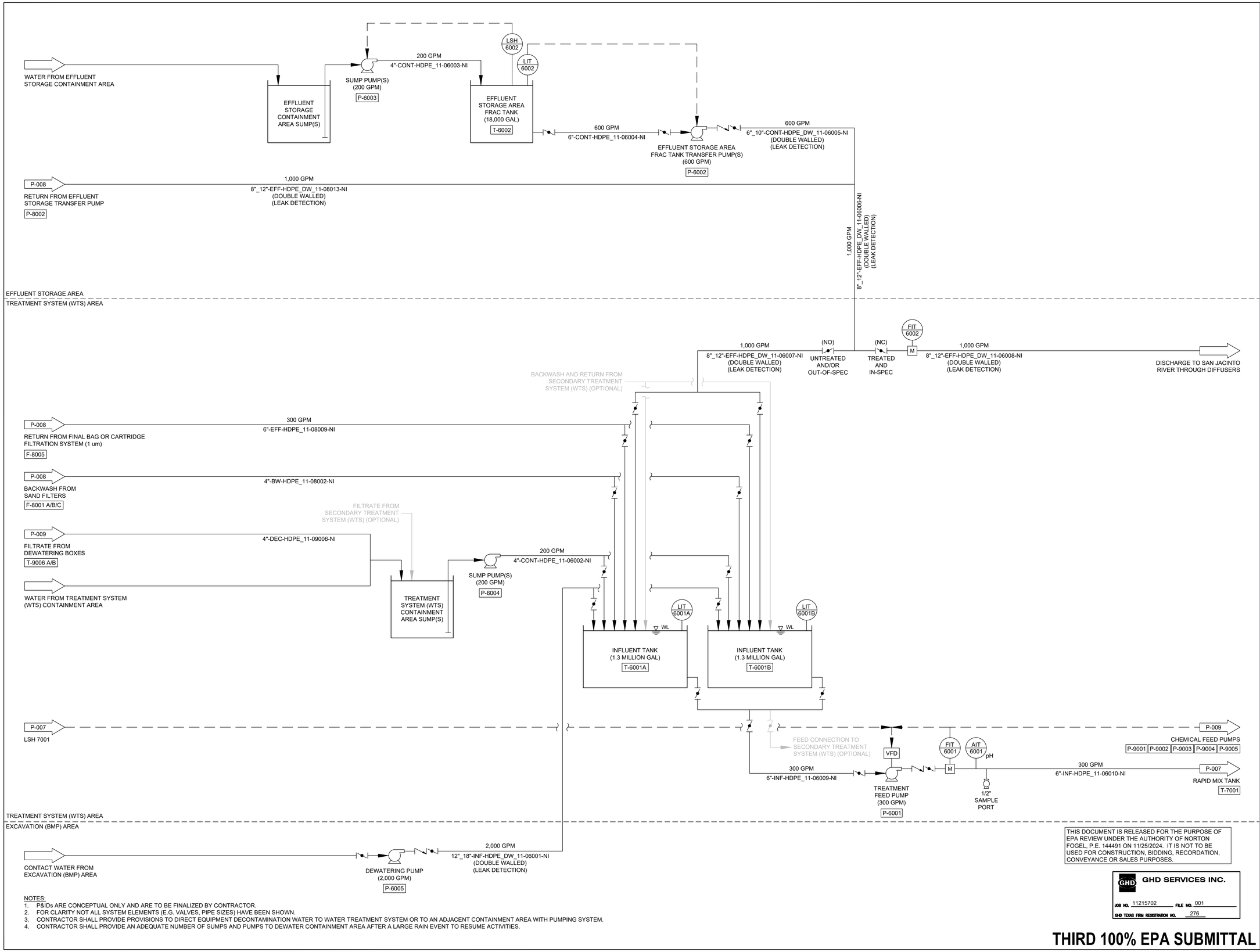
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

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

Sheet No.
P-005

Sheet 71 of 83



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No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn RH	Designer NF
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Project Coordinator LL	Date May 22, 2025
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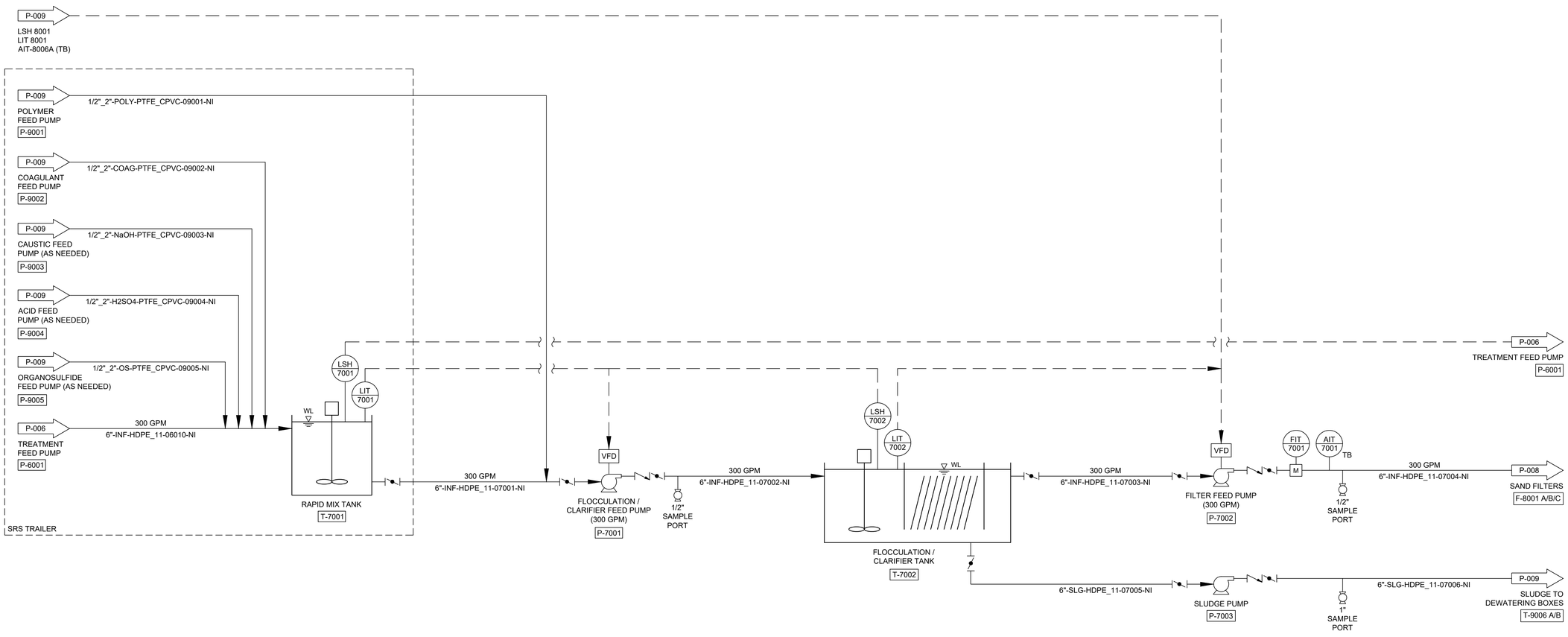
Project No. 11215702

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

Sheet No.
P-006

Sheet 72 of 83



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Drawn	SH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
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Project No. 11215702

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

Sheet No.
P-007

Plot Date: 22 May 2025 - 4:36 PM Plotted By: Jonathan Compton Filename: \\ghdnefghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-P-007.dwg
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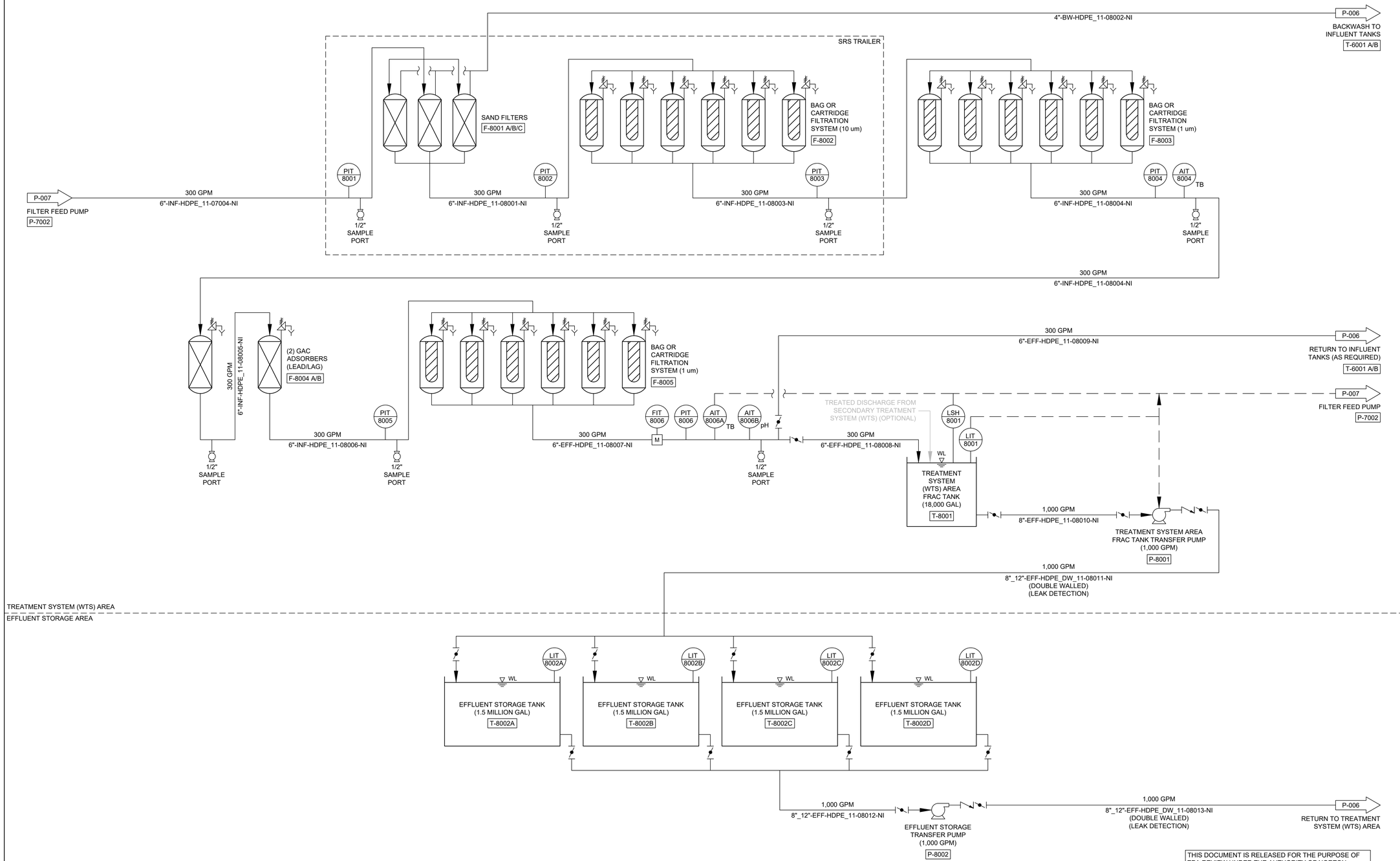

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Project
NORTHERN IMPOUNDMENT
THIRD FINAL 100% REMEDIAL DESIGN
HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn	RH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
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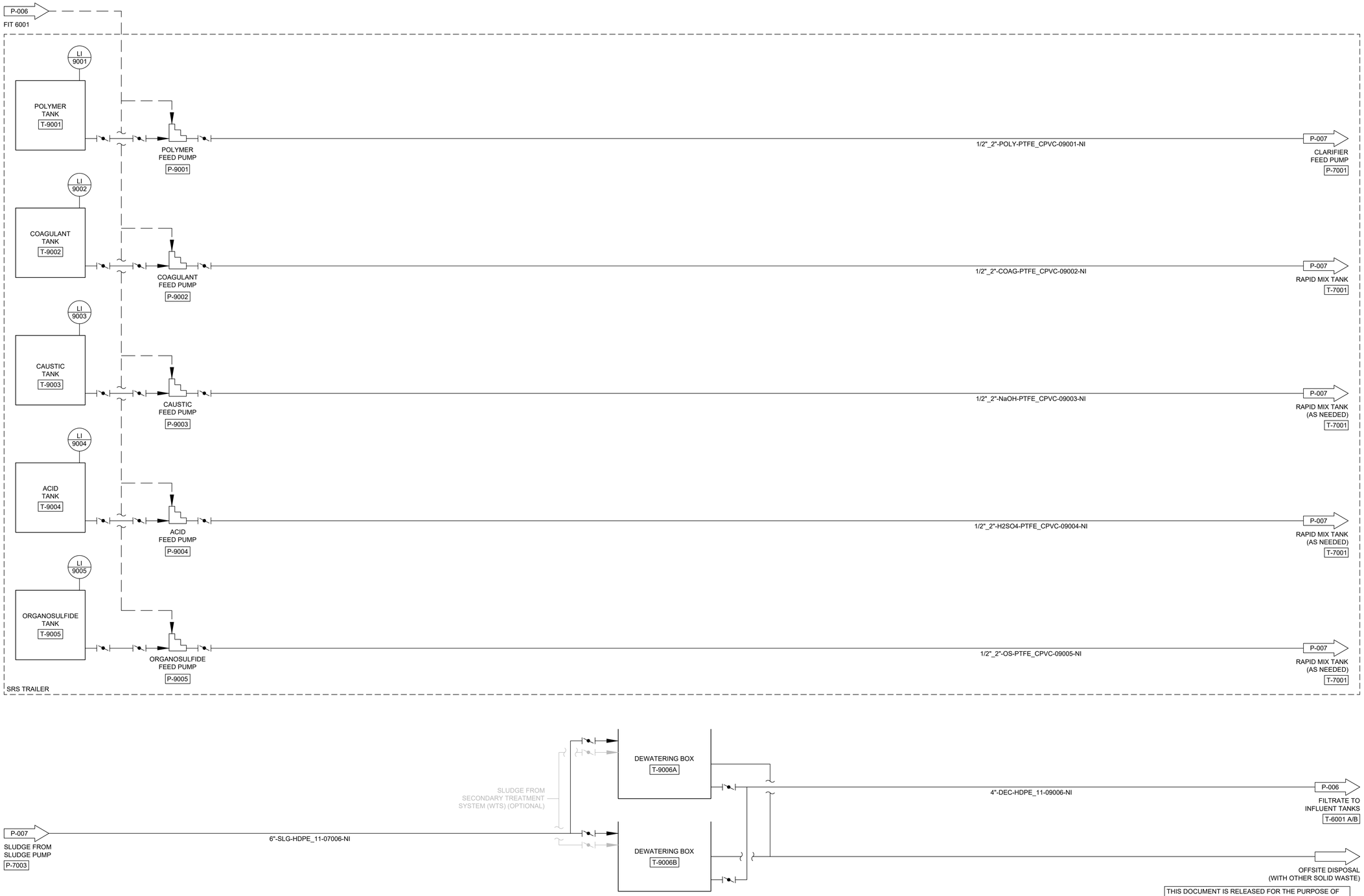
Project No. 11215702

Title
WATER TREATMENT SYSTEM P&ID (CONTACT WATER) (3 OF 4)

Sheet No.
P-008

Sheet 74 of 83



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4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn	RH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
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Project No. 11215702

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

Sheet No.
P-009

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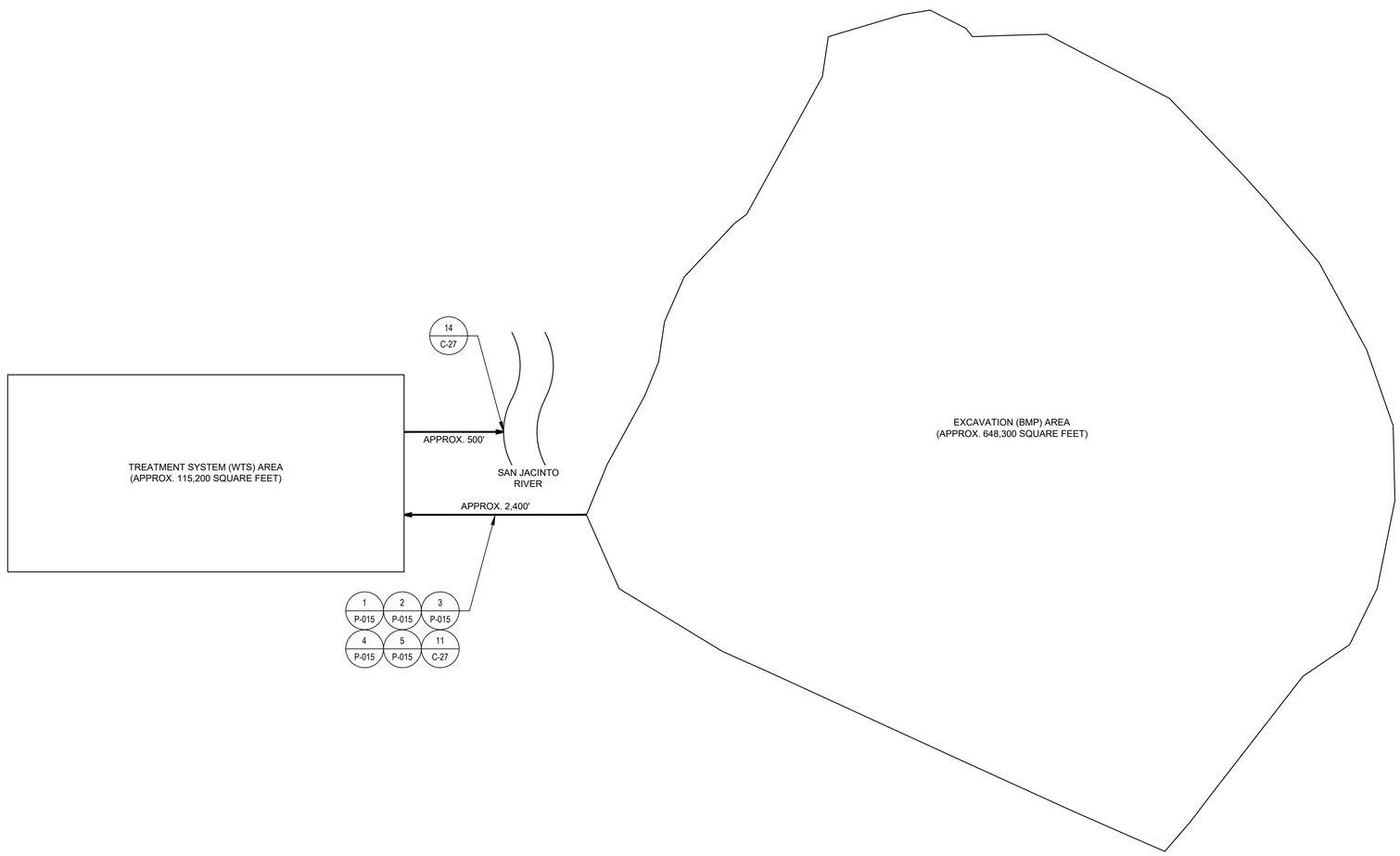

NOTES:
1. SITE PLANS ARE CONCEPTUAL ONLY AND ARE TO BE FINALIZED BY CONTRACTOR.
2. CONTRACTOR SHALL PROVIDE LEAK DETECTION AT LOW POINT ON ALL PIPELINES (SEE DETAIL 4/P-015).
3. CONTRACTOR SHALL INSTALL BIDIRECTIONAL CLEANOUTS EVERY 500' (MINIMUM) ON ALL PIPELINES.

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
NORTON SIEGEL FOGEL
144491
LICENSED
PROFESSIONAL ENGINEER
5-23-2025

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn RH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

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

Sheet No.
P-010

Plot Date: 22 May 2025 - 4:37 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-P-010.dwg
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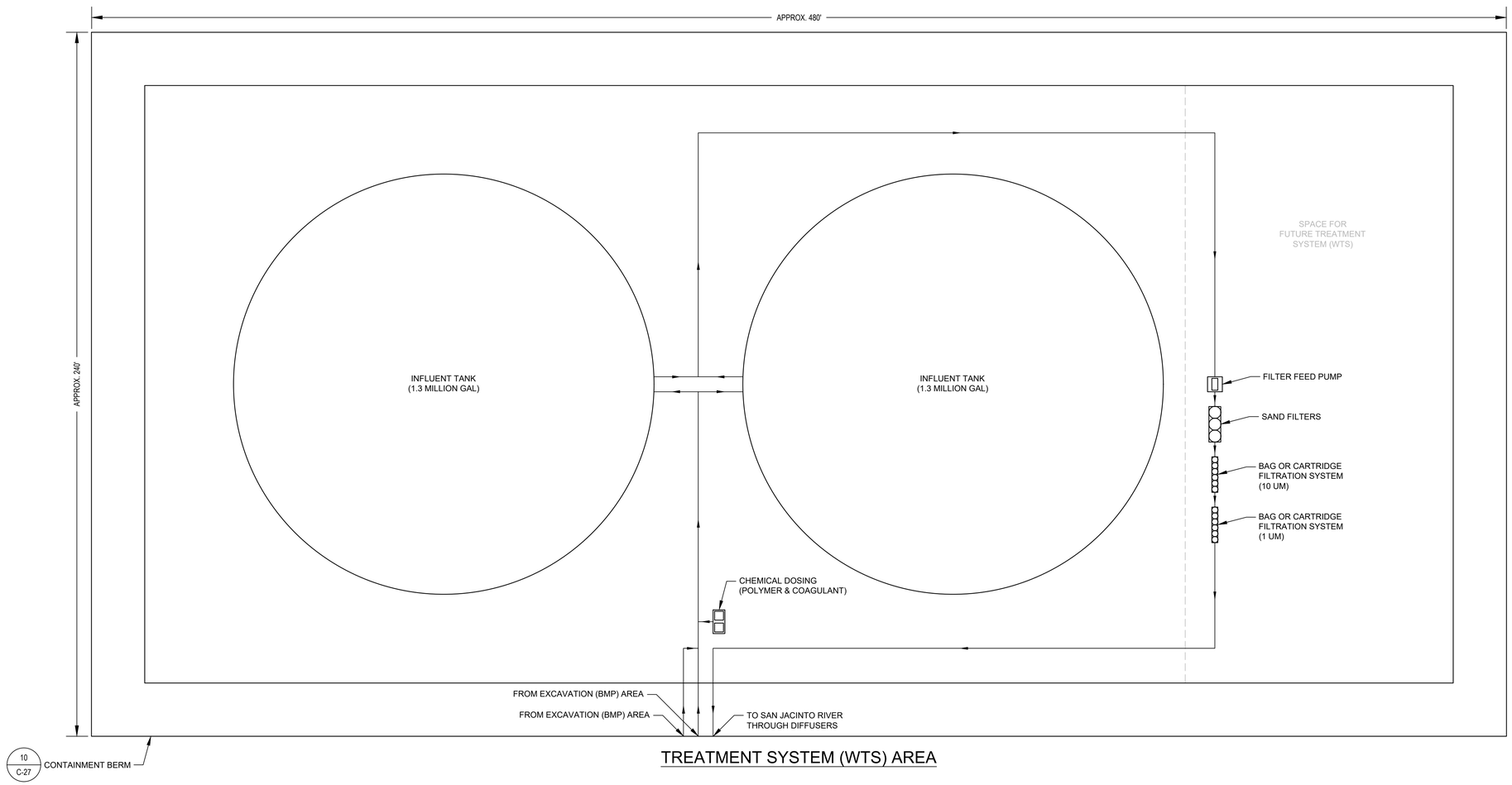

TREATMENT SYSTEM (WTS) AREA

NOTES:
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2. FOR CLARITY NOT ALL SYSTEM ELEMENTS (E.G. VALVES, PIPE SIZES, RETURN LINES) HAVE BEEN SHOWN.

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GHD SERVICES INC.

JOB NO. 11215702 FILE NO. 001

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
3	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn RH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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Original Size Arch D	Bar is one inch on original size drawing 0 — 1"

Project No. 11215702

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

Sheet No.
P-011

Plot Date: 22 May 2025 - 4:37 PM Plotted By: Jonathan Compton Filename: \\ghdnefghdf\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-P-011.dwg
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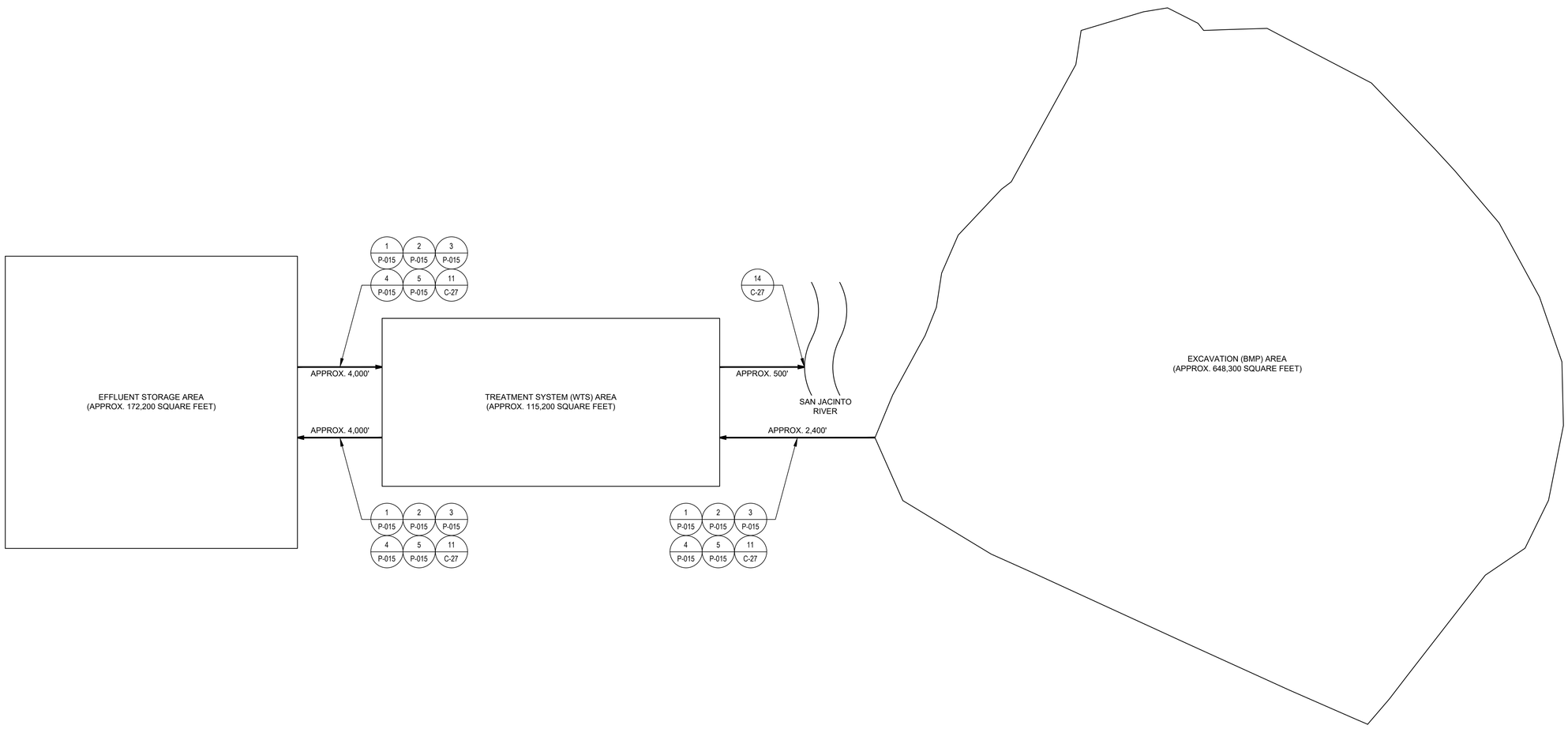

NOTES:
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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn	RH	Designer	NF
Drafting Check		Design Check	NF
Project Coordinator	LL	Date	May 22, 2025
This document shall not be used for construction unless signed and sealed for construction.		Scale	N.T.S.
Original Size	Arch D	Bar is one inch on original size drawing	0 1"

Project No. 11215702

Title
WATER TREATMENT SYSTEM SITE PLAN (CONTACT WATER)

Sheet No.
P-012

Plot Date: 22 May 2025 - 4:37 PM Plotted By: Jonathan Compton Filename: \\ghdnet\ghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-P-012.dwg
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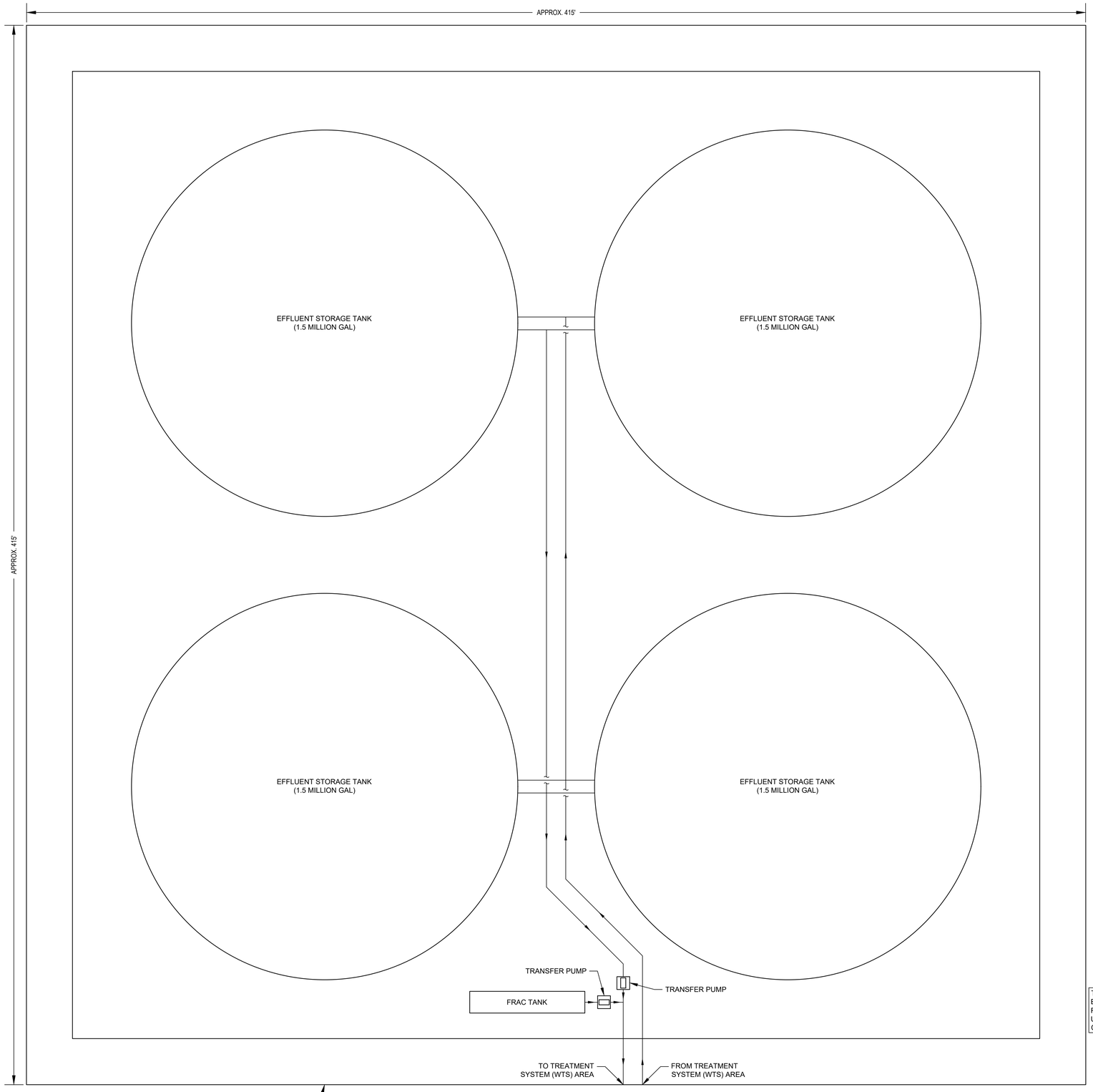

EFFLUENT STORAGE AREA

NOTES:
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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn RH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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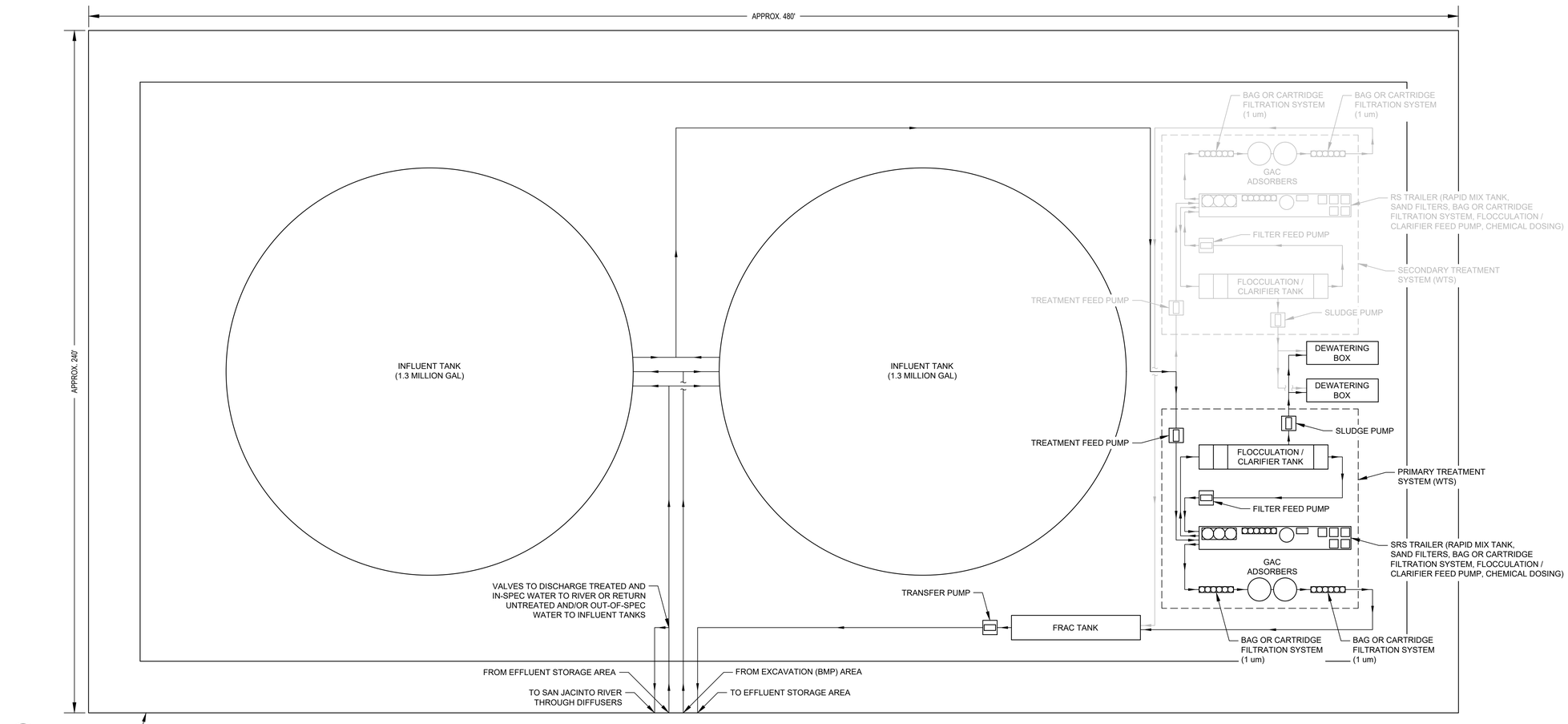
Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

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

Sheet No.
P-013

Sheet 79 of 83



TREATMENT SYSTEM (WTS) AREA

NOTES:
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GHD SERVICES INC.
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GHD TEXAS FIRM REGISTRATION NO. 276

THIRD 100% EPA SUBMITTAL

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	RH	NF	05/23/2025

Drawn RH	Designer NF
Drafting Check	Design Check NF
Project Coordinator LL	Date May 22, 2025
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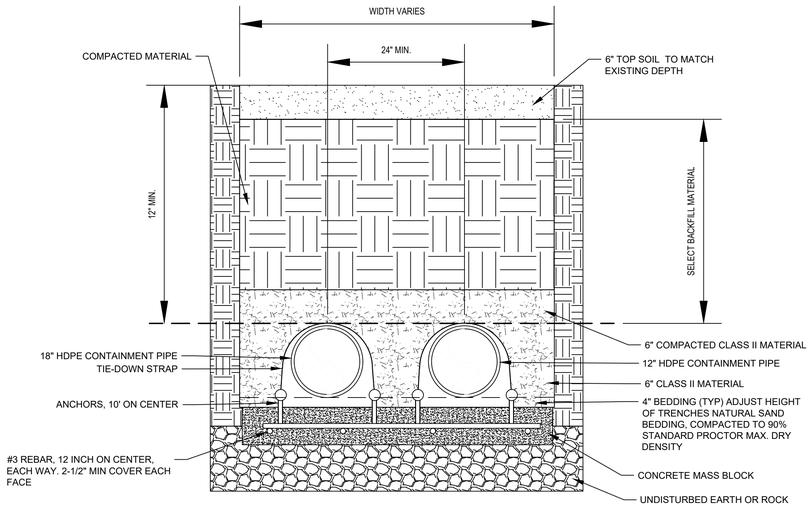
Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

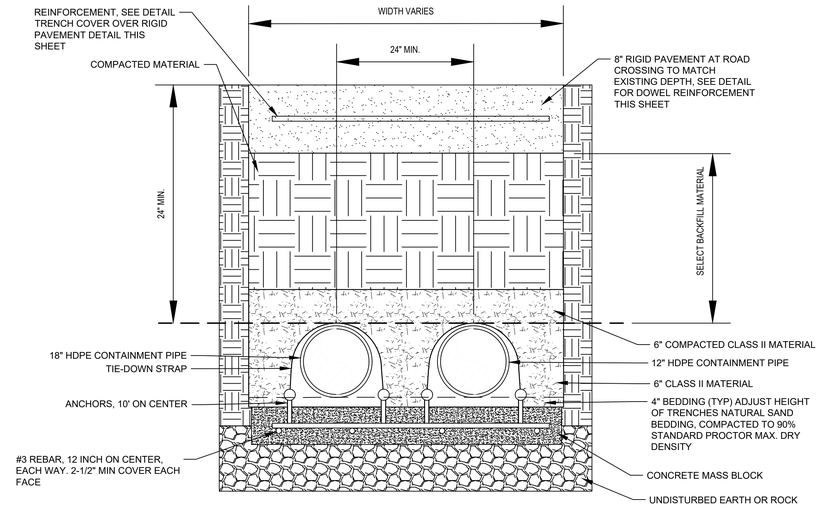
Title
WATER TREATMENT SYSTEM EQUIPMENT LAYOUT (CONTACT WATER) (2 OF 2)

Sheet No.
P-014

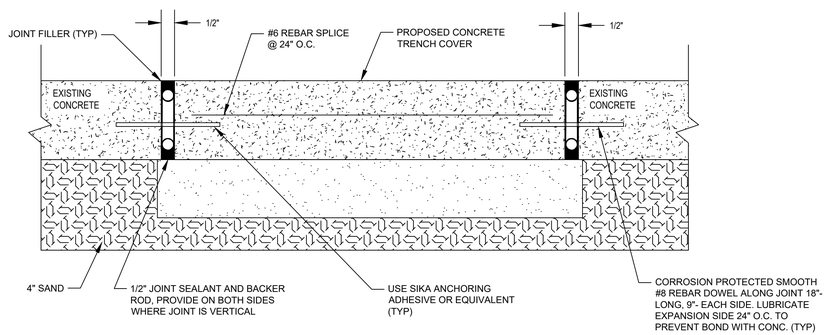
Sheet 80 of 83



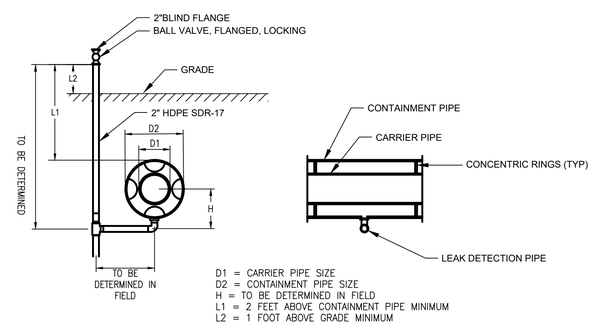
DETAIL 1 - UTILITY TRENCH - GROUND COVER
NTS



DETAIL 2 - UTILITY TRENCH - RIGID PAVEMENT OR ROADWAY SURFACE
NTS

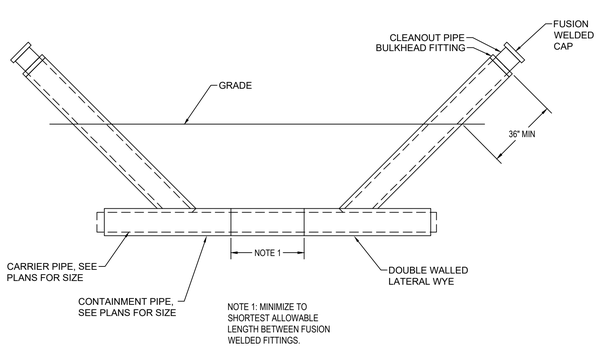


DETAIL 3 - TRENCH COVER OVER RIGID PAVEMENT
SCALE: NTS



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

THIRD 100% EPA SUBMITTAL

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

STATE OF TEXAS
NORTON SIEGEL FOGEL
144491
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5-23-2025

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	EAW	NF	05/23/2025

Drawn	EAW	Designer	WSK
Drafting Check		Design Check	WSK
Project Coordinator	CM	Date	May 22, 2025
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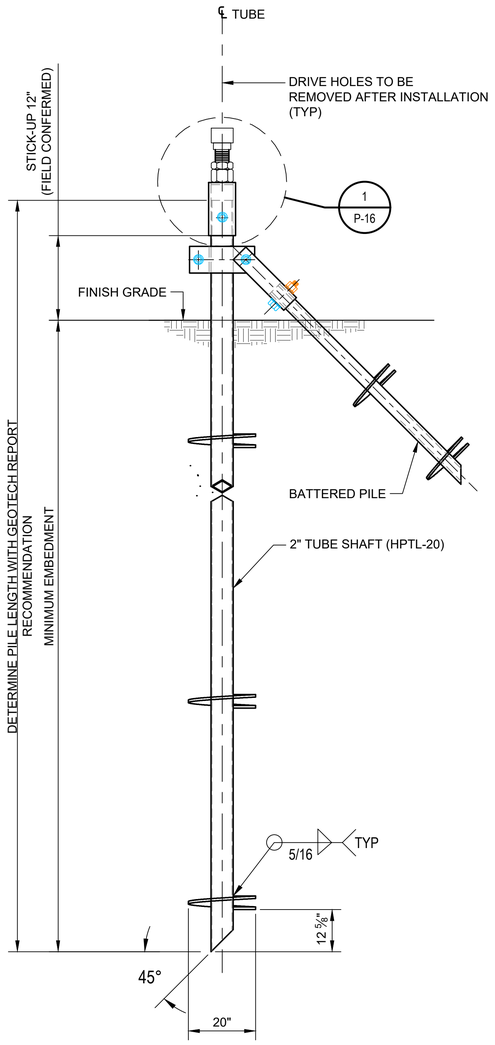
Original Size	Arch D	Bar is one inch on original size drawing	0 — 1"

Project No. 11215702

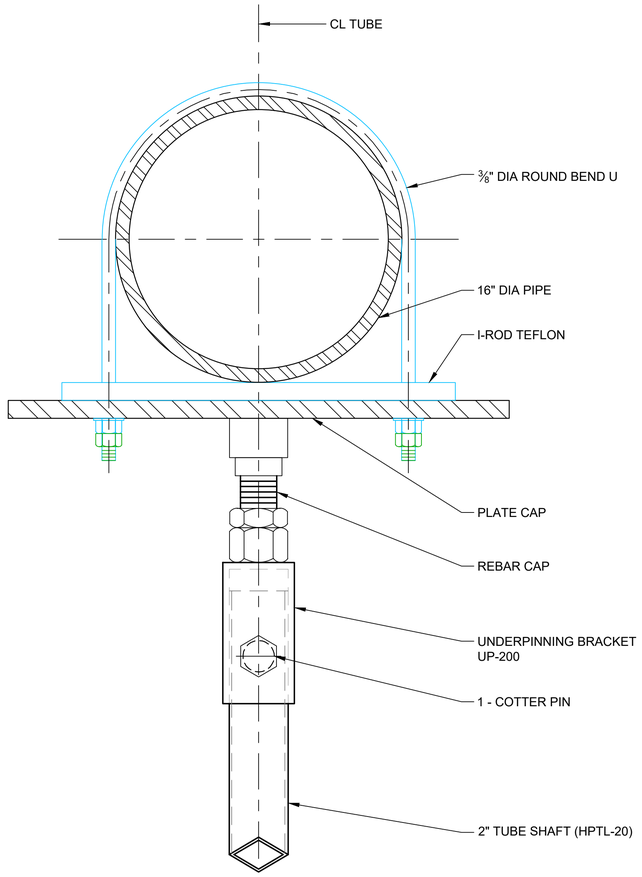
Title
MECHANICAL DETAILS 1 OF 1

Sheet No.
P-015

Plot Date: 22 May 2025 - 4:38 PM Plotted By: Jonathan Compton Filename: \\ghdnetghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-P-015.dwg
193838



DETAIL A P-16 HELICAL COMPOSITE PILE HPTL-20
SCALE: NTS



DETAIL 1 P-16 PIPE SUPPORT BRAKET FOR 16" PIPE
SCALE: NTS

NOTES:

1. CONTRACTOR TO SUB-CONTRACT GEOTECH ENGINEER LICENSE IN THE STATE OF TEXAS FOR THE DESIGN OF PIPE SUPPORTS.

2. DESIGN CRITERIA
   BASIC WIND SPEED, V: 143 mph
   WIND EXPOSURE: C

   PIPE WEIGHT: 135 bl/ft (ASSUMING 16" STEEL SCH 40 SHELL / 12" HDPE SDR 7)

3. USE BATTERED PILE AT EACH END OF THE PIPE RUN WITH A MAXIMUM OF 100 FT SPACING FOR BATTERED PILES.

4. HARDWARE TO BE HELI-PILE OR APROVED EQUAL.

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

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

THIRD 100% EPA SUBMITTAL

GHD
2237 S Acadian Thruway Suite 701
Baton Rouge Louisiana 70808 USA
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STATE OF TEXAS
SATISH CHILKA
145120
LICENSED
PROFESSIONAL ENGINEER
Satish Chilka
05/23/2025

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Client
SAN JACINTO RIVER WASTE PITS

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

No.	Issue	Drawn	Approved	Date
6	THIRD 100% EPA SUBMITTAL	AL	SC	05/23/2025

Drawn AL	Designer TN
Drafting Check	Design Check
Project Coordinator CM	Date May 22, 2025
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Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title
HELICAL PILE DETAILS

Sheet No.
P-016

Plot Date: 22 May 2025 - 4:38 PM Plotted By: Jonathan Compton Filename: \\ghdnefghd\US\Baton Rouge\Projects\562\11215702\Digital_Design\ACAD 2019\Sheets\11215702-01-DWG-P-016.dwg
193839

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

No.	Issue	Drawn	Approved	Date
4	THIRD 100% EPA SUBMITTAL	EAW	NF	05/23/2025

Drawn EAW	Designer WSK
Drafting Check	Design Check WSK
Project Coordinator CM	Date May 22, 2025
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Original Size Arch D	Bar is one inch on original size drawing 0 1"

Project No. 11215702

Title
MECHANICAL SCHEDULE

Sheet No.
P-017

Sheet 83 of 83