

Appendix G

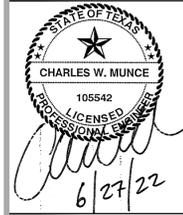
Design Drawing Package

SAN JACINTO RIVER WASTE PITS NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

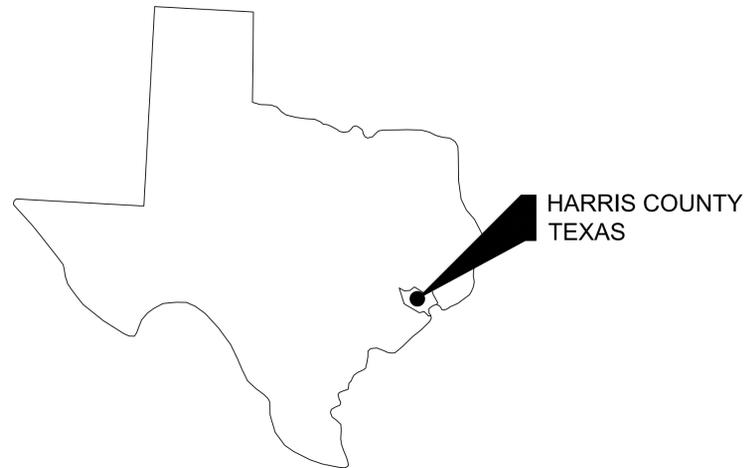
JUNE 2022
11215702



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STATE OF TEXAS
VICINITY MAP



HARRIS COUNTY
VICINITY MAP



LOCATION MAP

DRAWING NUMBER	DRAWING NAME
GENERAL SERIES	
G-01	COVER SHEET
CIVIL SERIES	
C-01	OVERALL PLAN
C-02	EXISTING CONDITIONS
C-03	SSA AREA AND NORTHERN IMPOUNDMENT WORKS
C-04	SOIL EROSION AND SEDIMENT CONTROL PLAN - OVERALL
C-05	SOIL EROSION AND SEDIMENT CONTROL PLAN - SEASONAL
C-06	SOIL EROSION AND SEDIMENT CONTROL DETAILS
C-07	PROJECT TRAFFIC CONTROL PLAN
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C-12	EXCAVATION PLAN SOUTHWEST
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C-17	EXCAVATION SECTION - 5 OF 6
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STRUCTURAL SERIES	
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S-02	STRUCTURAL LAYOUT PLAN
S-03	STRUCTURAL SECTIONS
S-04	STRUCTURAL DETAILS 1 OF 2
S-05	STRUCTURAL DETAILS 2 OF 2
PROCESS FLOW AND INSTRUMENTATION SERIES	
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P-00B	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM SCHEDULES
P-01	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM MASS BALANCE
P-02	WATER TREATMENT SYSTEM P&ID (1 OF 4)
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Client
**SAN JACINTO RIVER
WASTE PITS**

Project
**NORTHERN IMPOUNDMENT
PRE-FINAL 90% REMEDIAL DESIGN
HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
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No.	Issue	Drawn	Approved	Date
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Drawn	MW	Designer	RH
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Drafting Check	JC	Design Check	LL
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Project Coordinator	CM	Date	Jun 27, 2022
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Original Size	Arch D	Bar is one inch on original size drawing	0 1"
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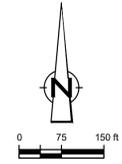
Project No. 11215702
Title
COVER SHEET

Sheet No.

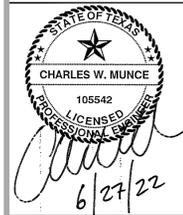
G-01

90% EPA REVIEW

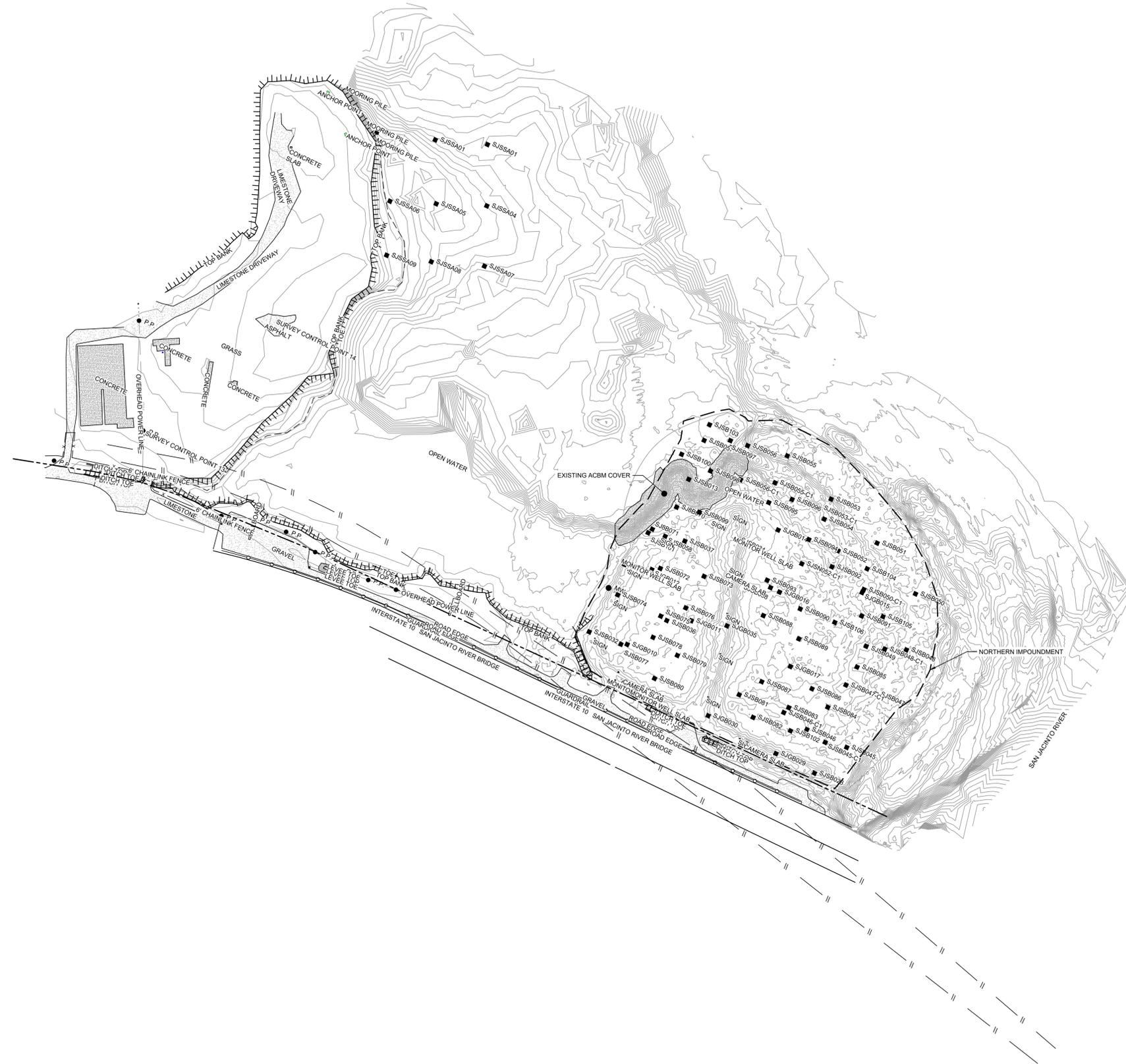
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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
-10-	EXISTING CONTOUR INTERVAL
x	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
○	WELL
---	ASPHALT
---	CONCRETE
---	GRAVEL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	

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Original Size
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0 1"

Project No. 11215702
Title

OVERALL PLAN

Sheet No.
C-01

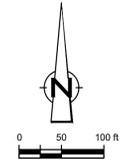
SOURCE:
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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.

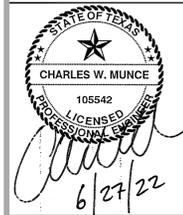
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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
-10-	EXISTING CONTOUR INTERVAL
x	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BJSB002 BORING LOCATION
●	MW MONITORING WELL
●	P.P. POWER POLE
●	L.P. LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER*
---	CONCRETE
---	GRAVEL
---	ASPHALT

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022

Drawn	MW	Designer	RH
Drafting	JC	Design	LL
Check		Check	

Project Coordinator	CM	Date	Jun 27, 2022
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Original Size	Arch D	Scale	1" = 100'
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Project No. 11215702

Title
EXISTING CONDITIONS

Sheet No.

C-02

Sheet - of -



SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 1990‐1998, JULY 8, 2019 TO AUGUST 2, 2019
 UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

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NOTES:
 1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.

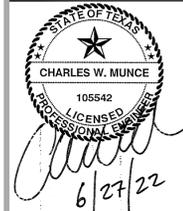
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LEGEND	
	ASSUMED TxDOT RIGHT OF WAY
	TORA CAP PERIMETER
	EXISTING CONTOUR INTERVAL
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL GUARDRAIL
	PIPELINE
	BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	EXISTING BERM
	NORTHWEST CORNER*
	CONCRETE
	GRAVEL
	ASPHALT
	AZ26-700 PILE
	AZ46-700 PILE
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
	SOIL TYPE S1

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	MW	CM	Drawn	Approved	Date
4	90% EPA REVIEW					06/27/2022

Drawn MW Designer RH

Drafting JC Design Check LL

Project Coordinator CM Date Jun 27, 2022

Scale 1" = 100'

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

Project No. 11215702

Title
SSA AREA AND NORTHERN IMPOUNDMENT WORKS

Sheet No.

C-03

Sheet - of -



SOURCE:
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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

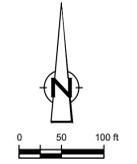
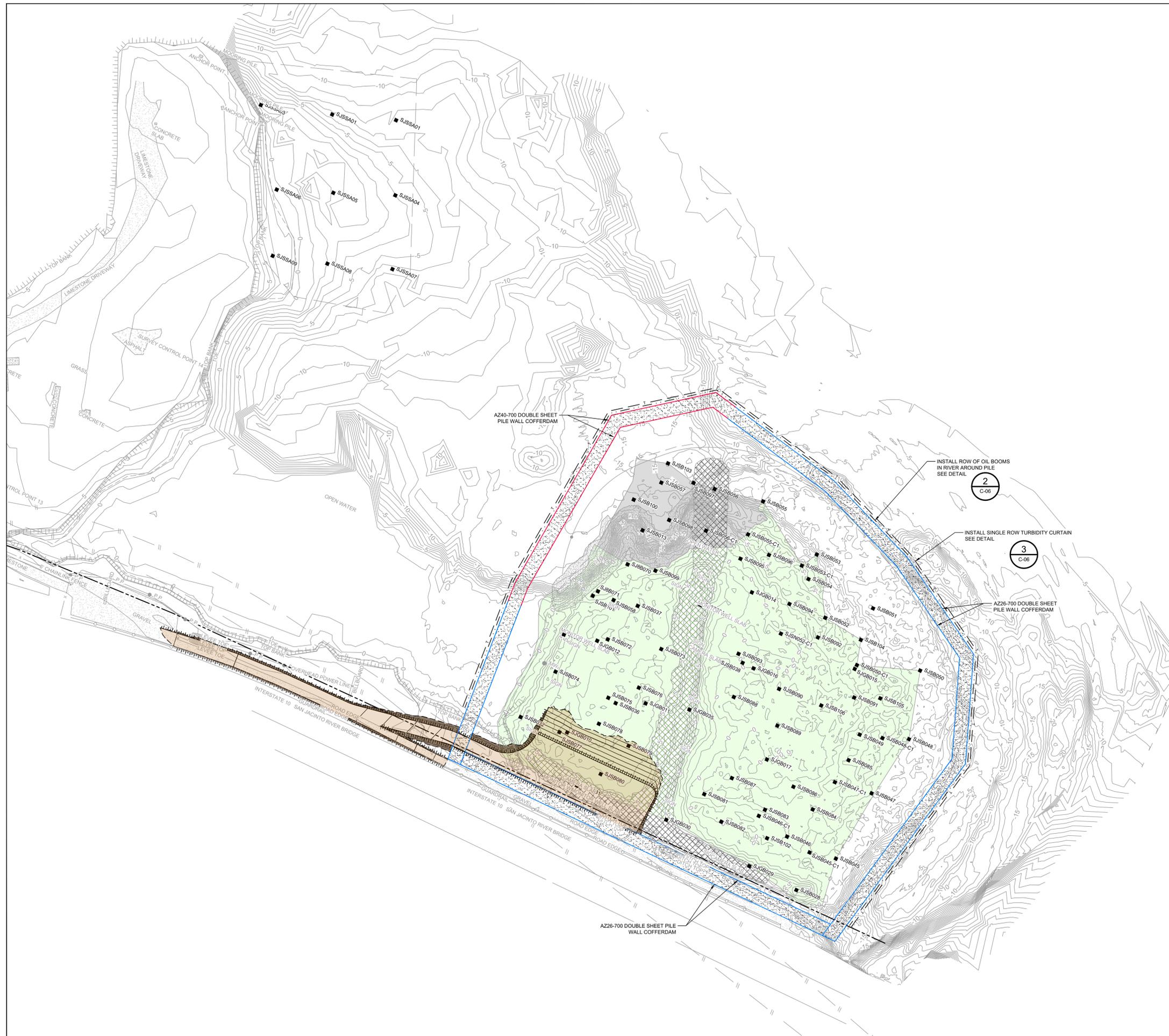
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- NOTES:
- ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
 - LOCATION OF OVERBURDEN STOCKPILE, DECONTAMINATION PAD, SOLIDIFICATION PAD, AND DEWATERING FACILITY ARE SUBJECT TO CHANGE AND CAN VARY FROM SEASON TO SEASON.

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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA GAP 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 EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER*
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	AZ26-700 PILE
---	AZ40-700 PILE
---	SILT FENCE
---	TURBIDITY CURTAIN
---	OIL BOOM
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS

Client
SAN JACINTO RIVER WASTE PITS
 Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 100'	
		Bar is one inch on original size drawing		
		0		1"
Project No.	11215702			
Title				

SOIL EROSION AND SEDIMENT CONTROL PLAN OVERALL

Sheet No.
C-04
 Sheet - of -

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

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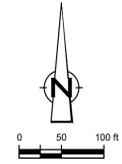
NOTES:

1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
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 INSTALLATION AND REMOVAL.
4. TURBIDITY CURTAIN AND OIL BOOM ONLY TO BE DEPLOYED IN IMMEDIATE AREA AROUND BMP INSTALLATION AND REMOVAL; LOCATION TO VARY DURING CONSTRUCTION PHASE.

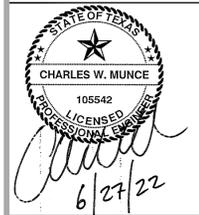
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 JOB NO. 11215702 FILE NO. 001
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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
---	TORA GAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
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---	PIPELINE
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○	P.P. POWER POLE
○	L.P. LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
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---	CONCRETE
---	GRAVEL
---	ASPHALT
---	AZ26-700 PILE
---	AZ40-700 PILE
---	SILT FENCE
---	TURBIDITY CURTAIN
---	PILE BOOM
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS

Client
SAN JACINTO RIVER WASTE PITS
 Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 100'	
		Bar is one inch on original size drawing	0	1"
Project No.	11215702			
Title	SOIL EROSION AND SEDIMENT CONTROL PLAN SEASONAL			

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

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NOTES:
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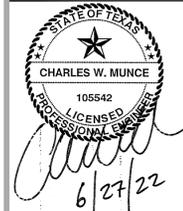
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C-05

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Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	08/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
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"			

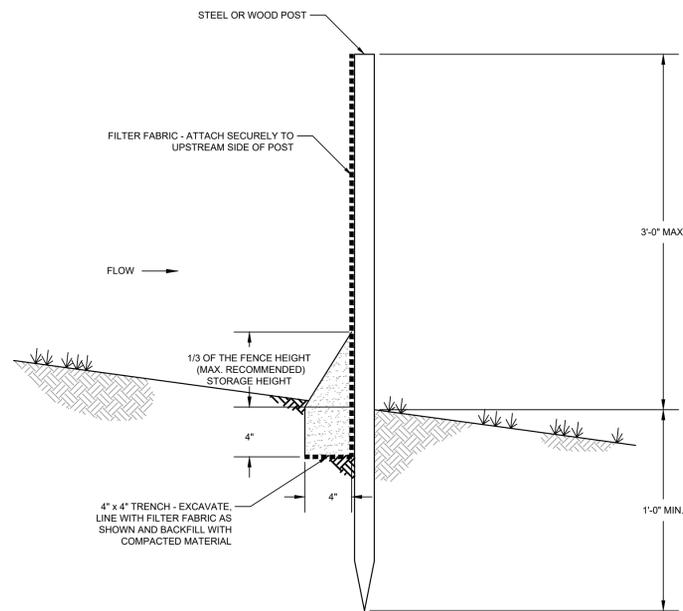
Project No. 11215702

Title
SOIL EROSION AND SEDIMENT CONTROL DETAILS

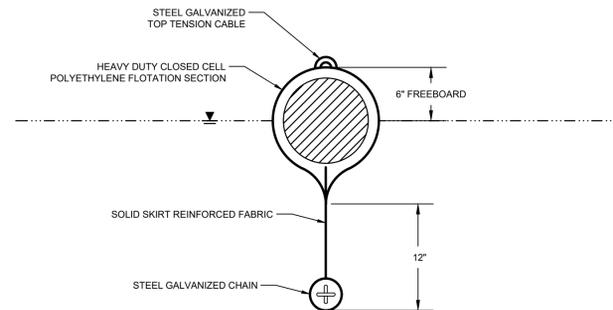
Sheet No.

C-06

Sheet - of -

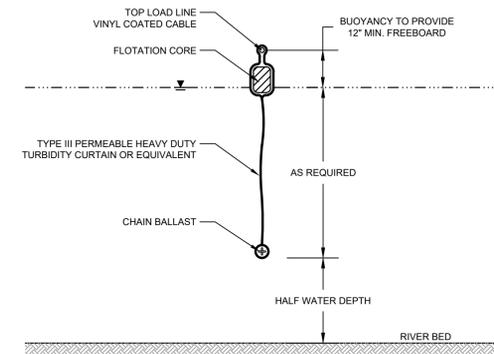


DETAIL 1 TEMPORARY SILT FENCE
N.T.S. C-05



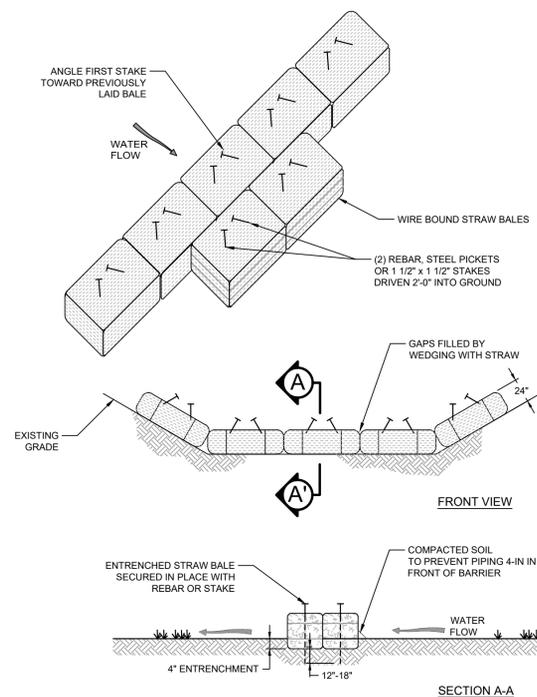
- NOTES
- OIL BOOM SHALL CONFORM TO COAST GUARD OPA 90 REGULATION AND ASTM F-1523
 - OIL BOOM SHALL BE CONTINUOUS TYPE.

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



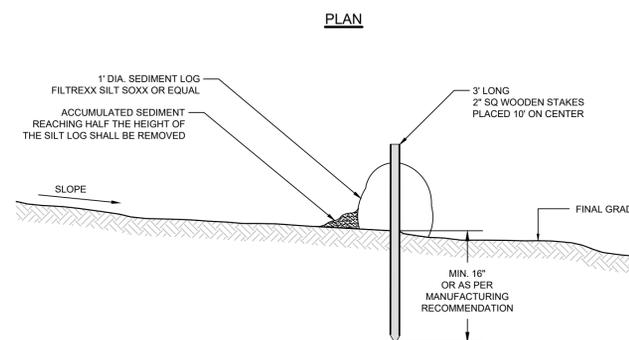
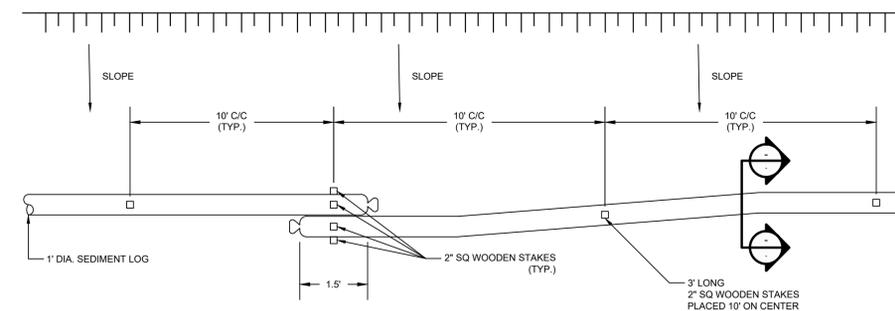
- NOTES
- TURBIDITY CURTAIN SHALL BE TYPE III ACCORDING TO DEPARTMENT OF THE ARMY, US ARMY CORPS OF ENGINEERS WASHINGTON, DC, ENGINEERING AND DESIGN HANDBOOK FOR THE PREPARATION OF STORM WATER POLLUTION PREVENTION PLANS FOR CONSTRUCTION ACTIVITIES, APPENDIX C BMP 27 TURBIDITY CURTAIN, DOCUMENT EP1110-1-16,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

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



NOTE:
INSTALL SECOND ROW OF STRAW BALES IN BOTTOM OF SWALE ONLY.

DETAIL 4 STRAW BALE BARRIER
N.T.S.



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

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

90% EPA REVIEW



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LEGEND

- ASSUMED TXDOT RIGHT OF WAY
- TORA 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 EXCAVATED
- EXISTING BERM
- NORTHWEST CORNER*
- CONCRETE
- GRAVEL
- ASPHALT
- AZ26-700 PILE
- AZ40-700 PILE
- TRAFFIC FLOW
- PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 100'	
		Bar is one inch on original size drawing		
		0	1"	

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

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- NOTES:**
1. ASSUMED TXDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE
 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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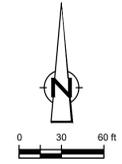
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Project No. 11215702

Title
PROJECT TRAFFIC CONTROL PLAN

Sheet No.
C-07

Sheet - of -



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LEGEND

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- - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
○	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER*
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 60'	
		Bar is one inch on original size drawing		

Project No. **11215702**
 Title

EXCAVATION PLAN OVERALL

Sheet No.

C-08
 Sheet - of -

SOURCE:
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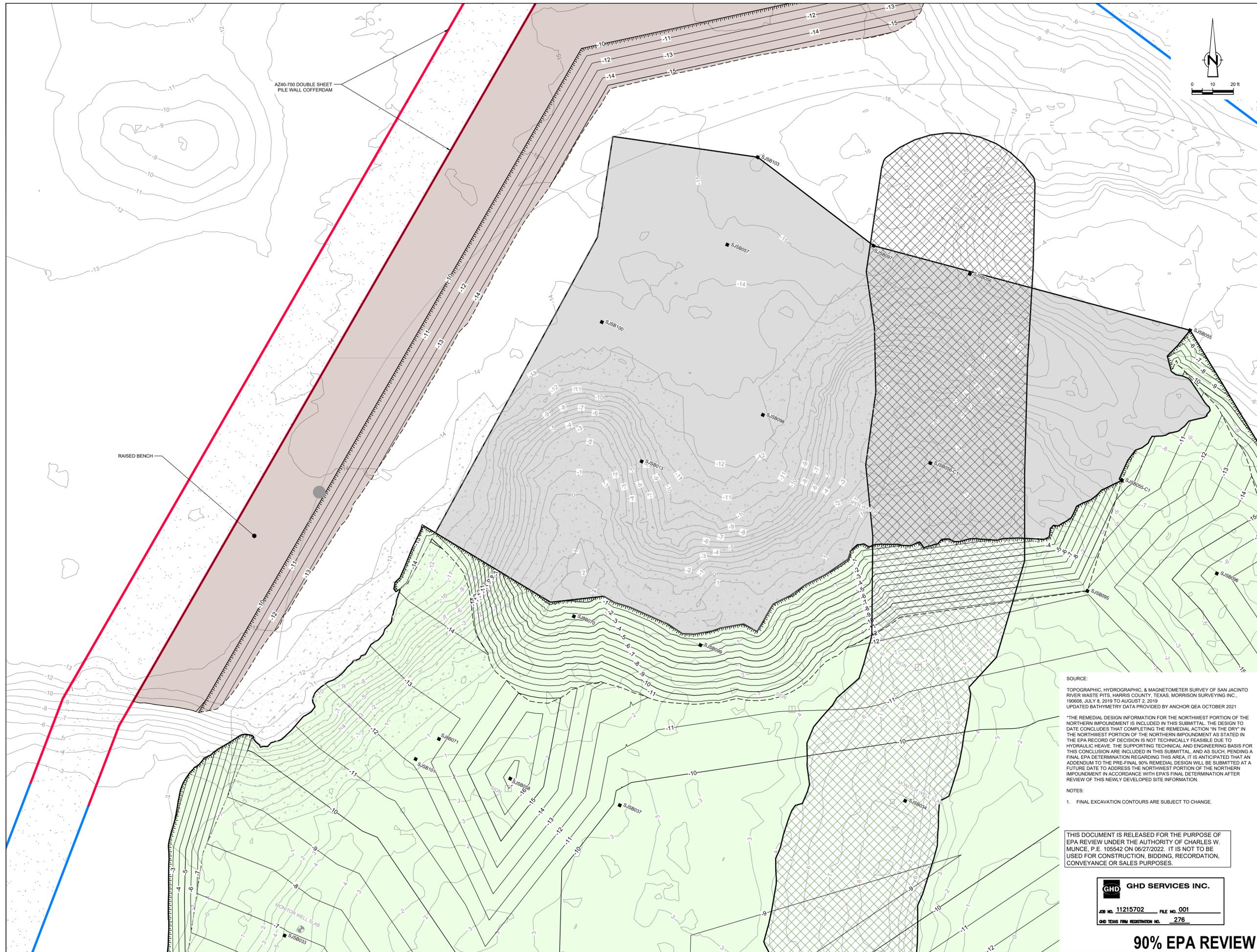
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 JOB NO. 11215702 FILE NO. 001
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- FENCELINE
- SHORELINE
- TOP OF BANK
- TOE OF SLOPE
- OVERHEAD ELECTRICAL
- GUARDRAIL
- PIPELINE
- BORING LOCATION
- MONITORING WELL
- POWER POLE
- LIGHT POLE
- WELL

- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO EXCAVATED
- EXISTING BERM
- NORTHWEST CORNER*
- CONCRETE
- GRAVEL
- AZ26-700 PILE
- AZ40-700 PILE
- RAISED BENCH

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 20'	
		Bar is one inch on original size drawing		

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 1998B, JULY 8, 2019 TO AUGUST 2, 2019, UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

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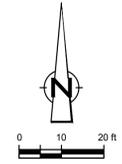
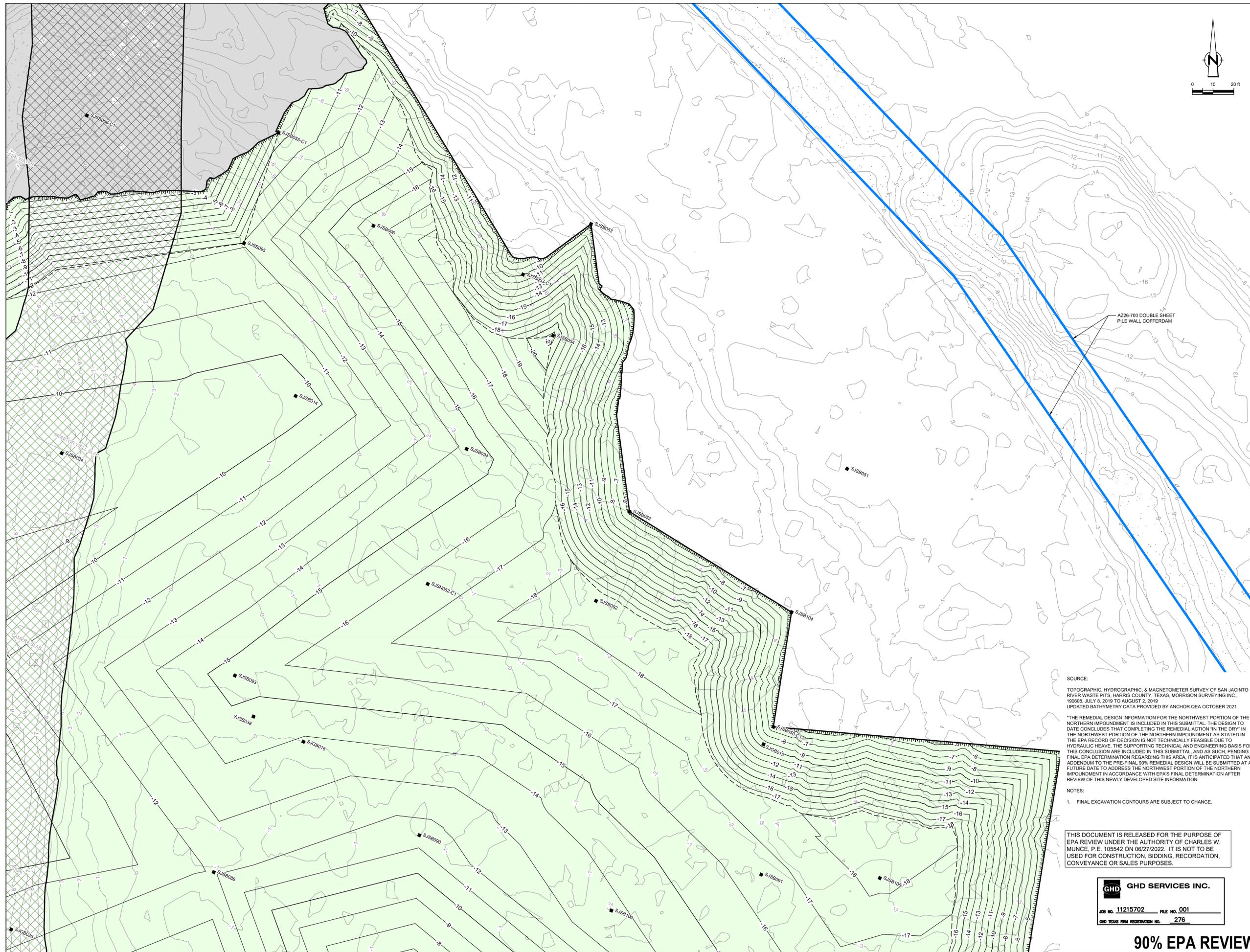
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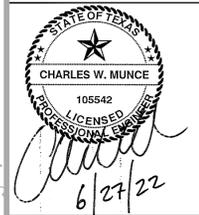
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

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Project No. 11215702
Title: **EXCAVATION PLAN NORTHWEST**
Sheet No. **C-09**
Sheet - of -



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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER*
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022

Drawn	MW	Designer	RH
Drafting	JC	Design	LL
Check		Check	
Project Coordinator	CM	Date	Jun 27, 2022
Original Size	Arch D	Scale	1" = 20'
		Bar is one inch on original size drawing	0 1"

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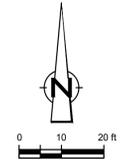
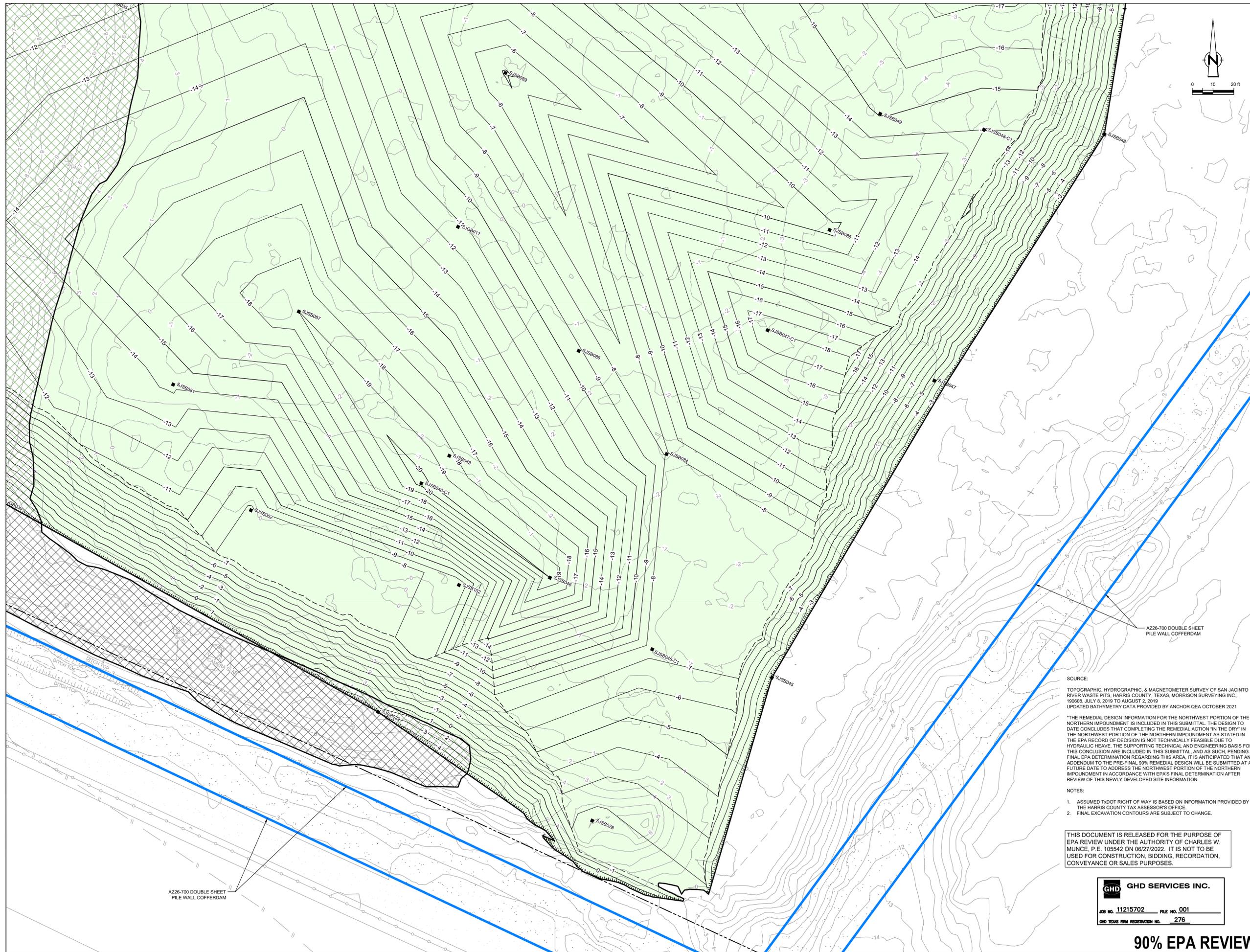
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 JOB NO. 11215702 FILE NO. 001
 GHD TEXAS FIRM REGISTRATION NO. 276

90% EPA REVIEW

Project No. **11215702**
 Title: **EXCAVATION PLAN NORTHEAST**
 Sheet No. **C-10**
 Sheet - of -



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STATE OF TEXAS
 CHARLES W. MUNCE
 105542
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 6/27/22

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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
-10	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
○	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	GRAVEL
---	AZ26-700 PILE
---	AZ42-700 PILE

Client: **SAN JACINTO RIVER WASTE PITS**
 Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project	CM	Date	Jun 27, 2022	
Coordinator		Scale	1" = 20'	
Original Size		Bar is one inch on original size drawing		
		0	1"	

SOURCE:
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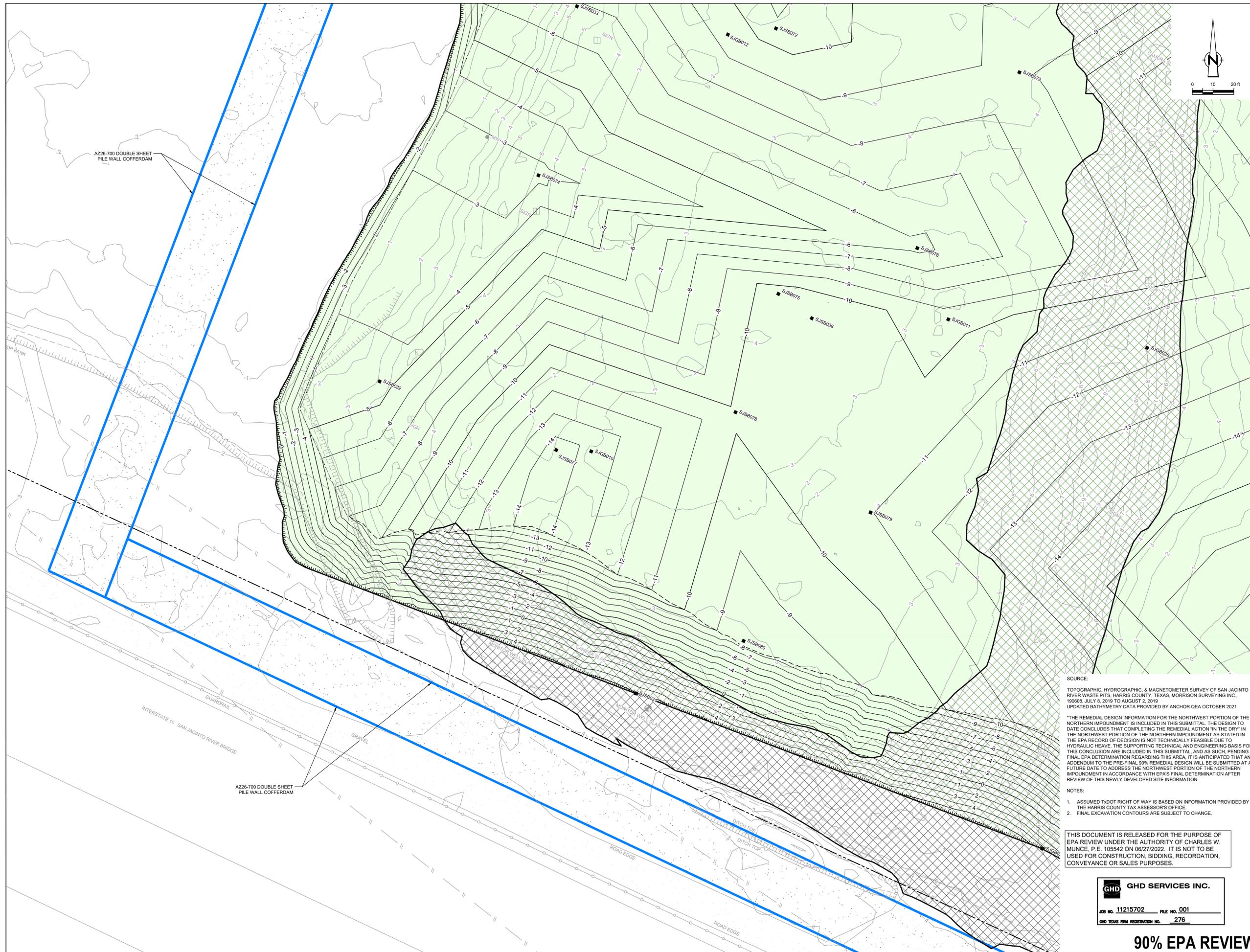
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Project No. **11215702**
 Title: **EXCAVATION PLAN SOUTHEAST**

Sheet No. **C-11**
 Sheet - of -



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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO BE EXCAVATED
---	EXISTING BERM
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022

Drawn	MW	Designer	RH
Drafting	JC	Design	LL
Check		Check	
Project Coordinator	CM	Date	Jun 27, 2022
Original Size		Scale	1" = 20'
		Bar is one inch on original size drawing	0 1"

SOURCE:
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 1998B, JULY 8, 2019 TO AUGUST 2, 2019. UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

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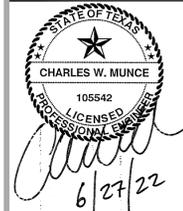
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Project No. 11215702
 Title
EXCAVATION PLAN SOUTHWEST

Sheet No.
C-12
 Sheet - of -



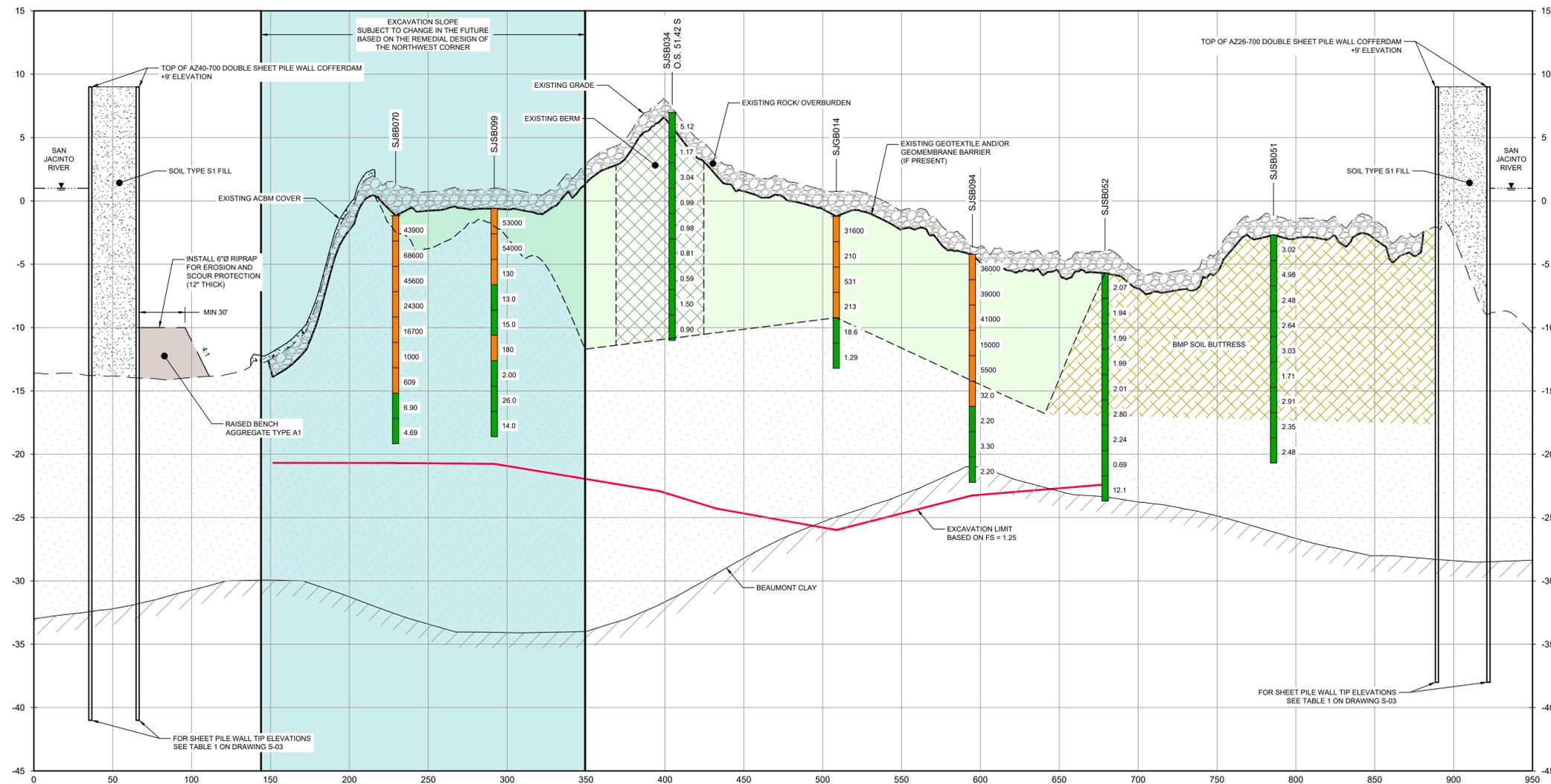
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LEGEND

	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRISS



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

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

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
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Original Size	Bar is one inch on original size drawing			
Arch D				

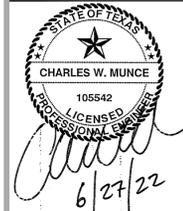
Project No. 11215702
Title: **EXCAVATION SECTION 1 OF 6**

Sheet No. **C-13**

90% EPA REVIEW



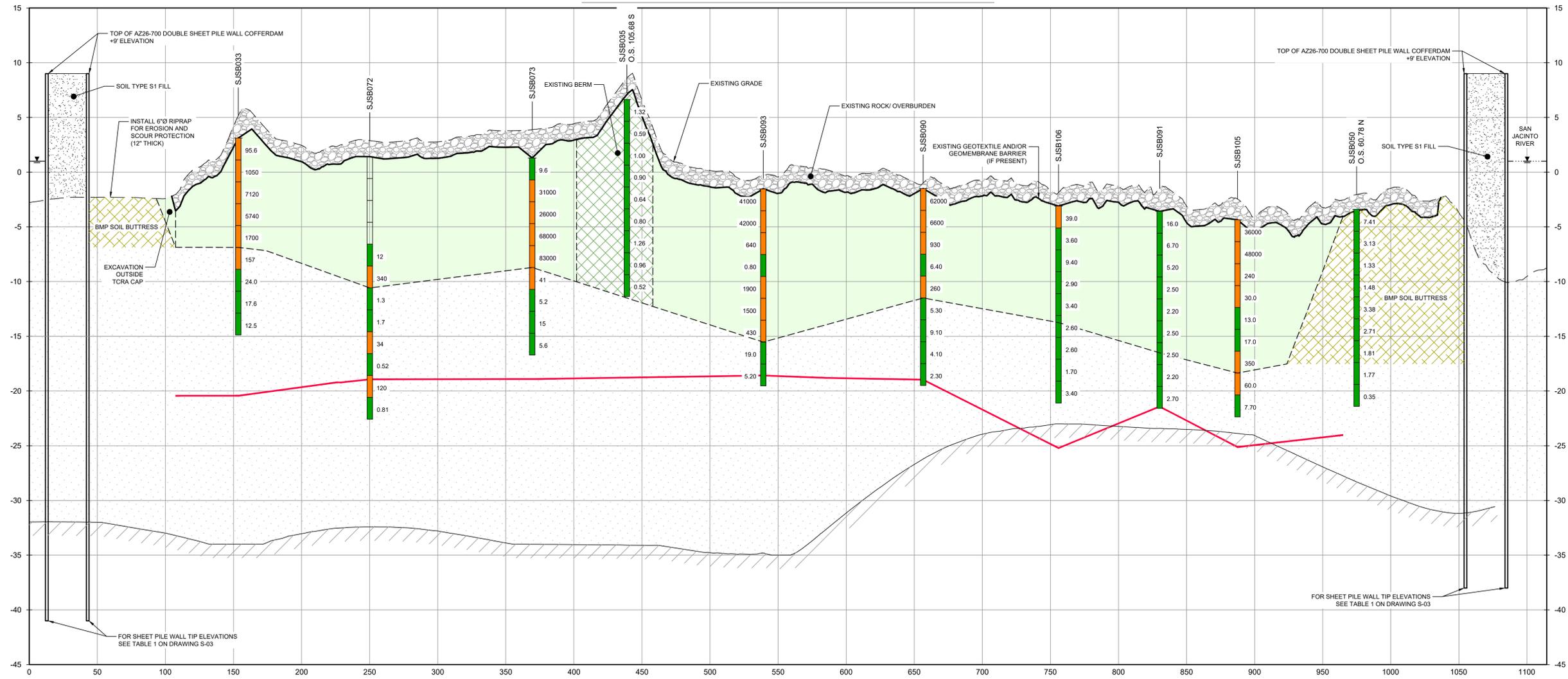
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LEGEND

	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRESS



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

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

90% EPA REVIEW

Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
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No.	Issue	Drawn	Approved	Date
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Drawn	MW	Designer	RH
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Drafting	JC	Design	LL
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Project Coordinator	CM	Date	Jun 27, 2022
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Original Size	Arch D	Scale	AS SHOWN
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Project No. 11215702

Title **EXCAVATION SECTION 2 OF 6**

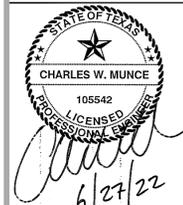
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C-14

Sheet - of -



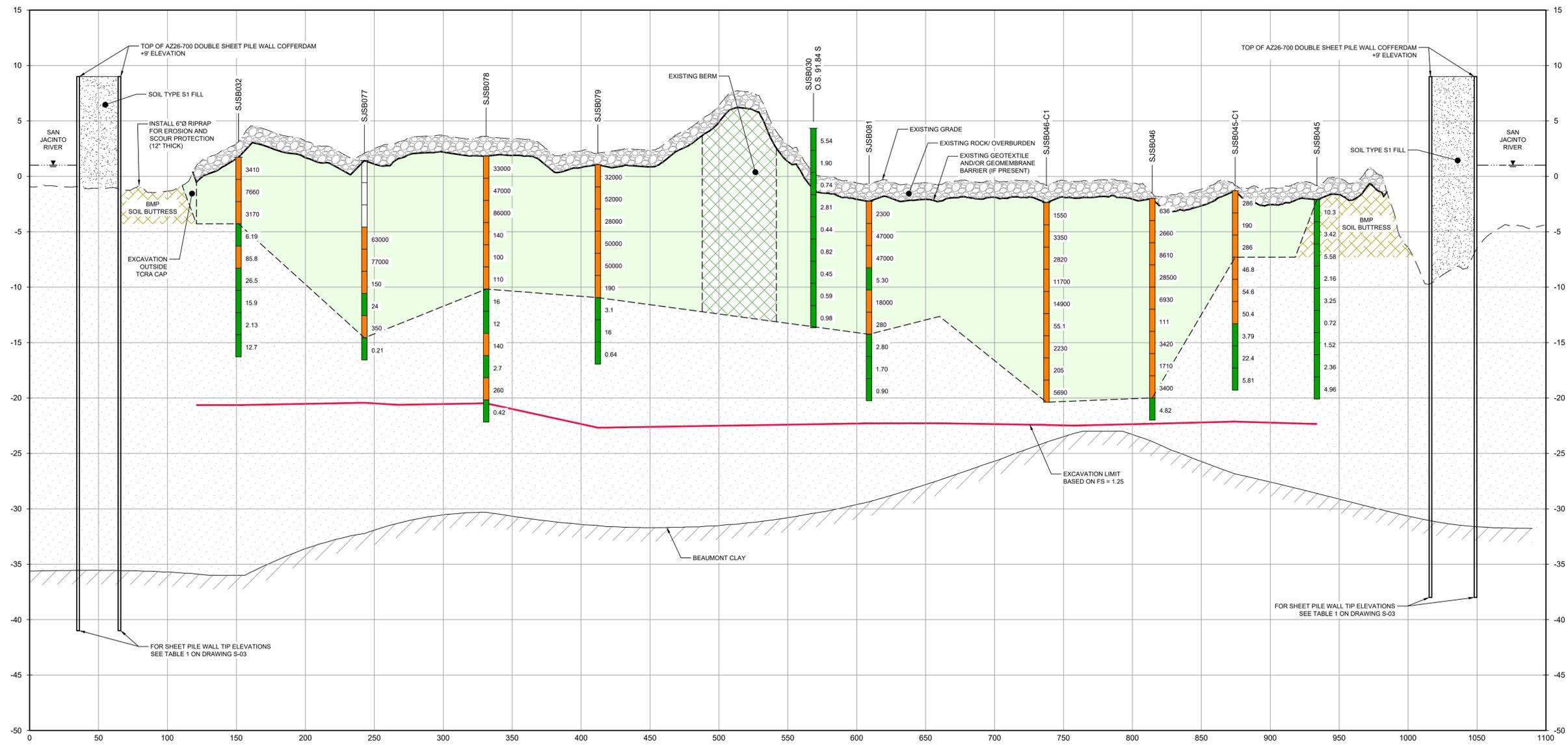
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LEGEND

	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRISS



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

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

90% EPA REVIEW

Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
---	----------------	----	----	------------

No.	Issue	Drawn	Approved	Date
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Drawn	MW	Designer	RH
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Drafting Check	JC	Design Check	LL
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Project Coordinator	CM	Date	Jun 27, 2022
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Original Size	Arch D	Scale	AS SHOWN
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Project No. 11215702

Title

EXCAVATION SECTION 3 OF 6

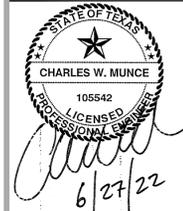
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Sheet - of -

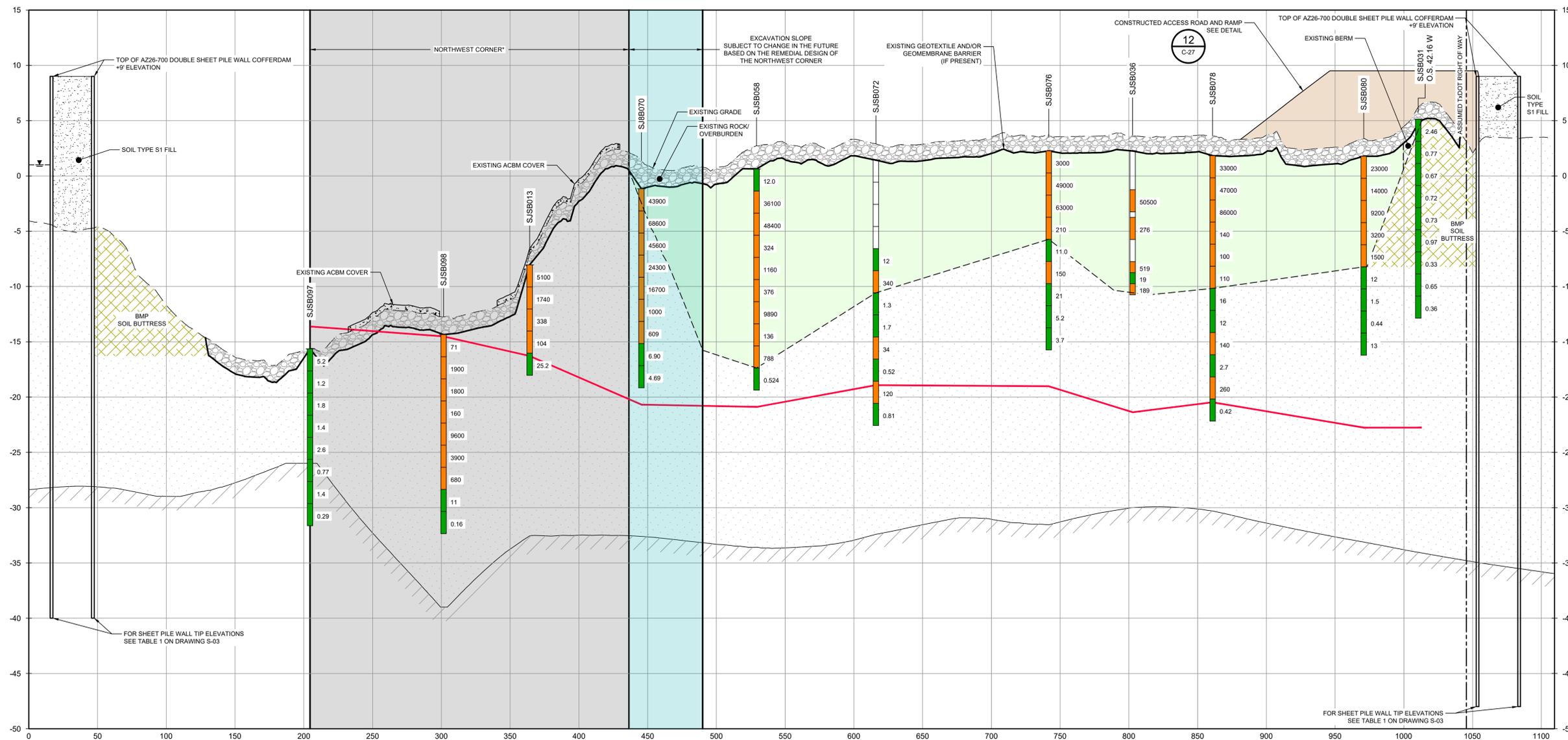


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LEGEND	
	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRISS
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS



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

"THE REMEDIAL DESIGN INFORMATION FOR THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IS INCLUDED IN THIS SUBMITTAL. THE DESIGN TO DATE CONCLUDES THAT COMPLETING THE REMEDIAL ACTION "IN THE DRY" IN THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT AS STATED IN THE EPA RECORD OF DECISION IS NOT TECHNICALLY FEASIBLE DUE TO HYDRAULIC HEAVE. THE SUPPORTING TECHNICAL AND ENGINEERING BASIS FOR THIS CONCLUSION ARE INCLUDED IN THIS SUBMITTAL, AND AS SUCH, PENDING A FINAL EPA DETERMINATION REGARDING THIS AREA, IT IS ANTICIPATED THAT AN ADDENDUM TO THE PRE-FINAL 90% REMEDIAL DESIGN WILL BE SUBMITTED AT A FUTURE DATE TO ADDRESS THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IN ACCORDANCE WITH EPA'S FINAL DETERMINATION AFTER REVIEW OF THIS NEWLY DEVELOPED SITE INFORMATION.

- NOTES:
1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
 2. 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

90% EPA REVIEW

Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4 90% EPA REVIEW MW CM 06/27/2022

No.	Issue	Drawn	Approved	Date

Drawn MW Designer RH

Drafting JC Design Check LL

Project Coordinator CM Date Jun 27, 2022

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Scale AS SHOWN

Original Size

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

Project No. 11215702

Title

EXCAVATION SECTION

4 OF 6

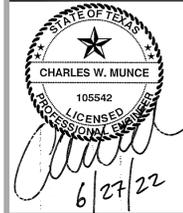
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C-16

Sheet - of -



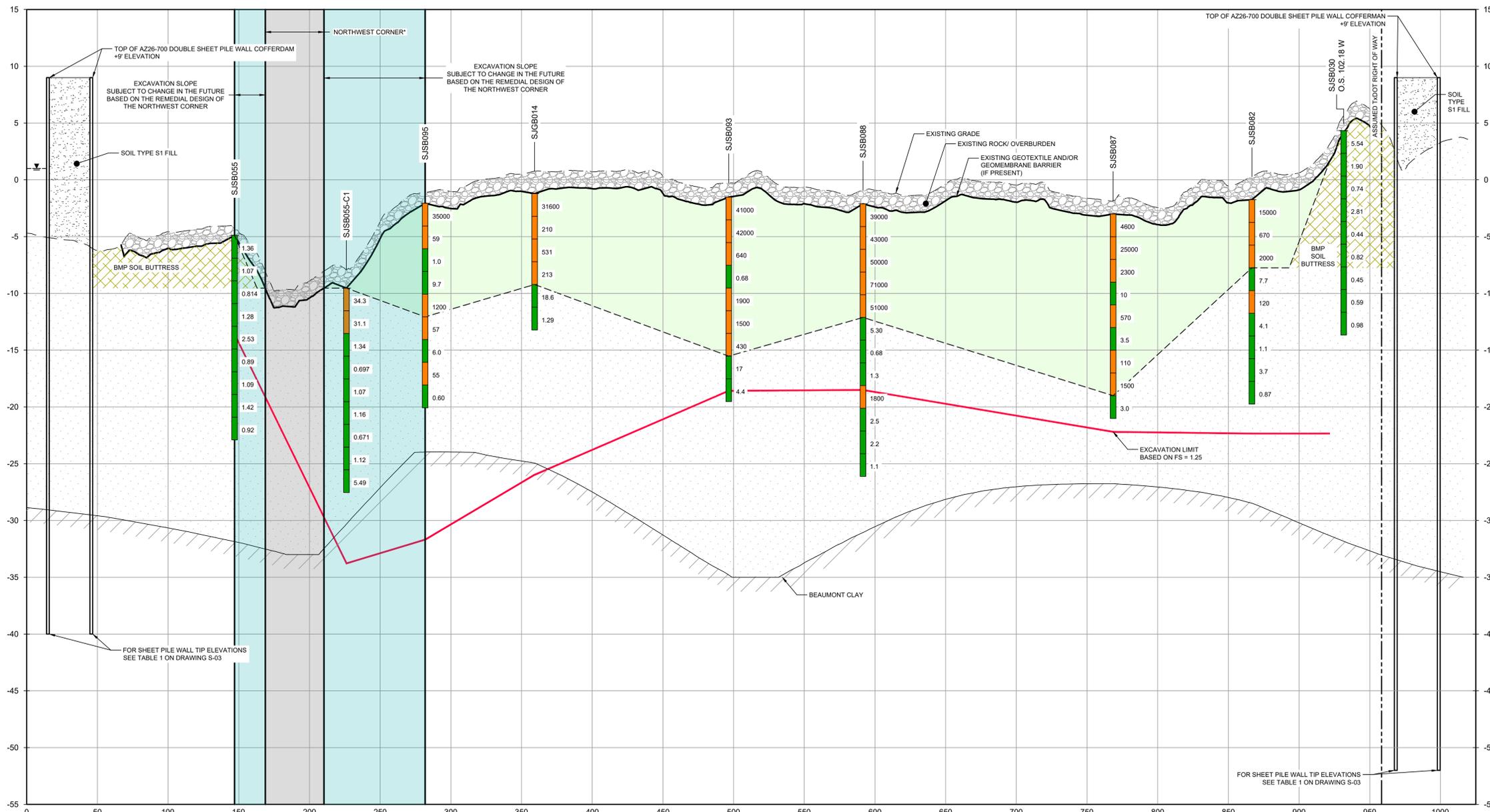
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LEGEND

	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRISS
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS



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

"THE REMEDIAL DESIGN INFORMATION FOR THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IS INCLUDED IN THIS SUBMITTAL. THE DESIGN TO DATE CONCLUDES THAT COMPLETING THE REMEDIAL ACTION "IN THE DRY" IN THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT AS STATED IN THE EPA RECORD OF DECISION IS NOT TECHNICALLY FEASIBLE DUE TO HYDRAULIC HEAVE. THE SUPPORTING TECHNICAL AND ENGINEERING BASIS FOR THIS CONCLUSION ARE INCLUDED IN THIS SUBMITTAL, AND AS SUCH, PENDING A FINAL EPA DETERMINATION REGARDING THIS AREA, IT IS ANTICIPATED THAT AN ADDENDUM TO THE PRE-FINAL 90% REMEDIAL DESIGN WILL BE SUBMITTED AT A FUTURE DATE TO ADDRESS THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IN ACCORDANCE WITH EPA'S FINAL DETERMINATION AFTER REVIEW OF THIS NEWLY DEVELOPED SITE INFORMATION.

NOTES:
1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
2. BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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

Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
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Drawn	MW	Designer	RH
Drafting Check	JC	Design Check	LL

Project Coordinator	CM	Date	Jun 27, 2022
Scale	AS SHOWN		

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

Project No. **11215702**
Title

EXCAVATION SECTION 5 OF 6

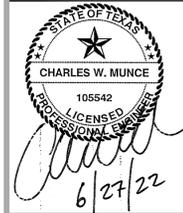
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C-17

90% EPA REVIEW



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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

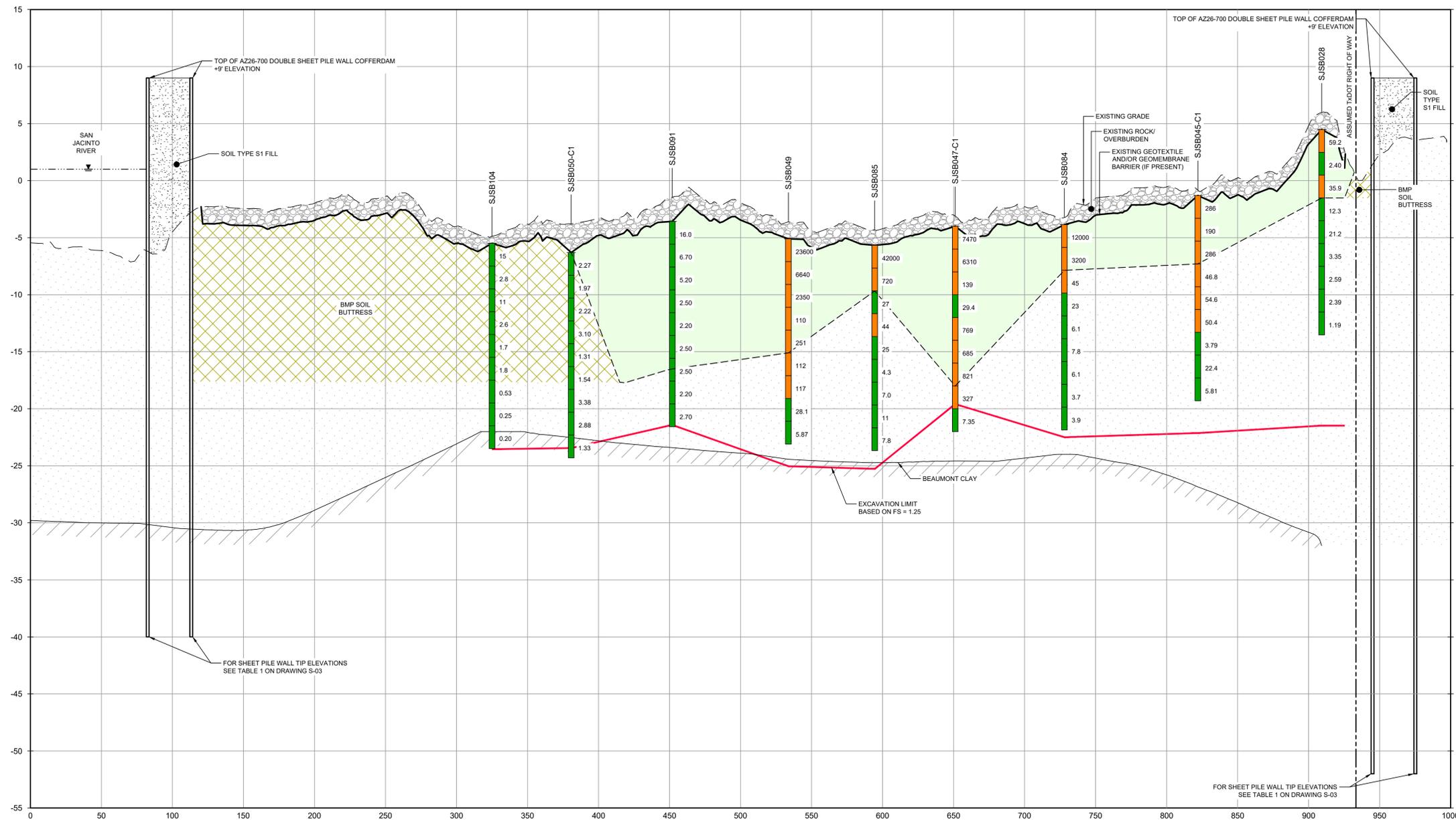
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No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
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Original Size	Bar is one inch on original size drawing			
Arch D	0 1"			

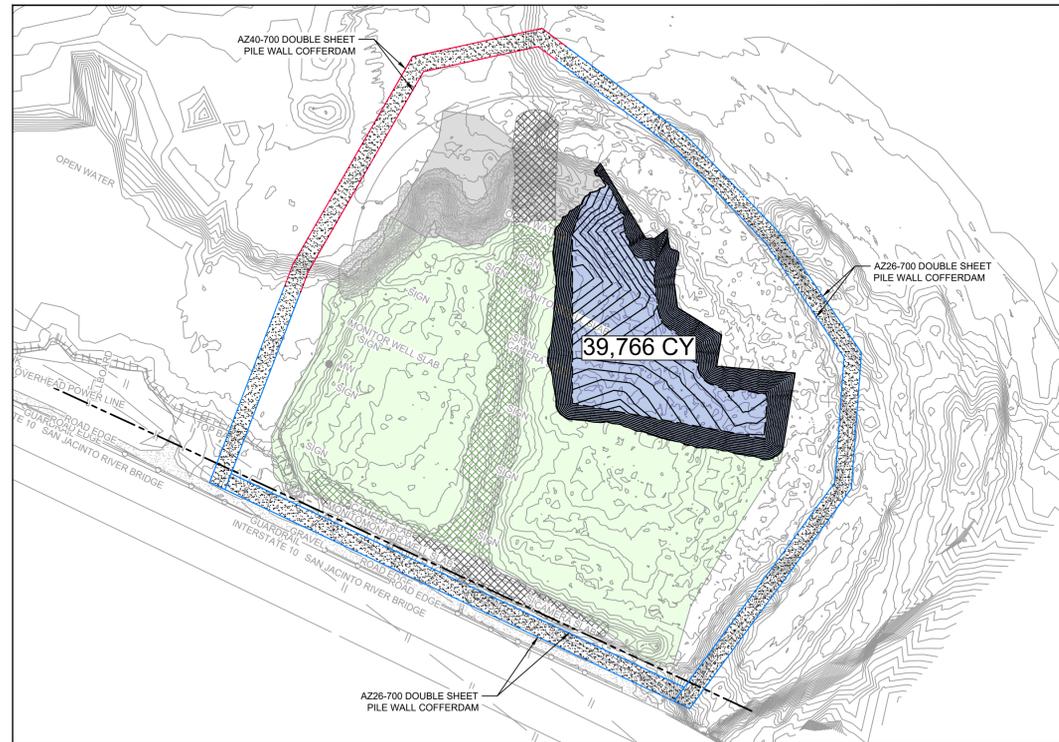
Project No. **11215702**

Title
EXCAVATION SECTION 6 OF 6

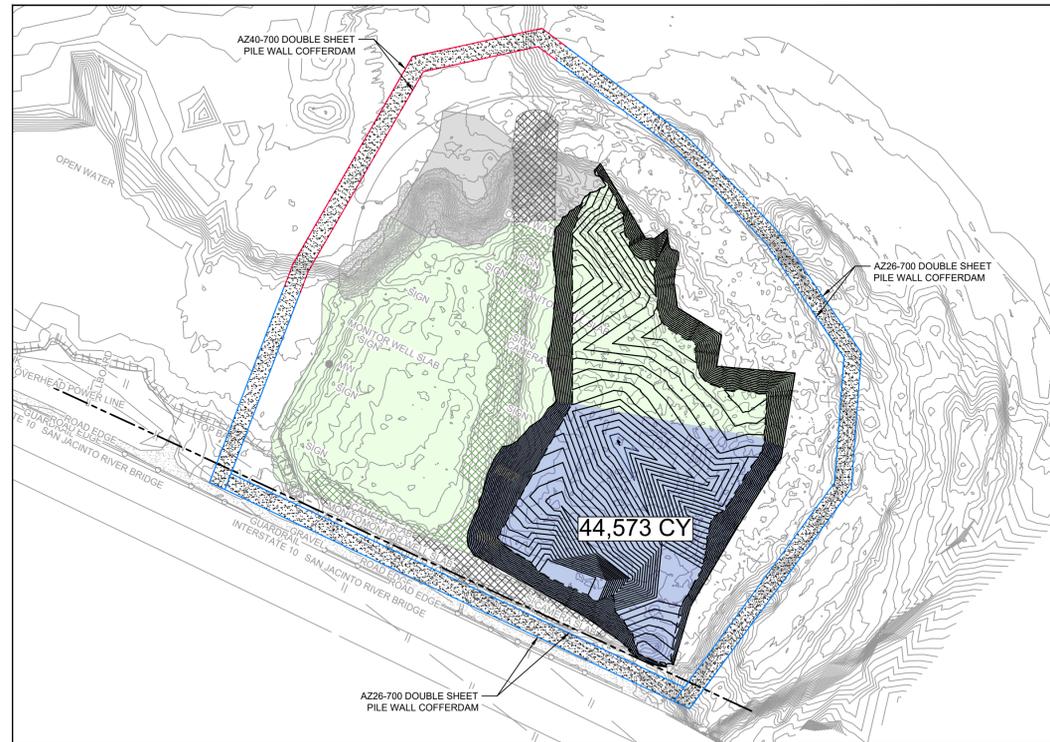
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C-18

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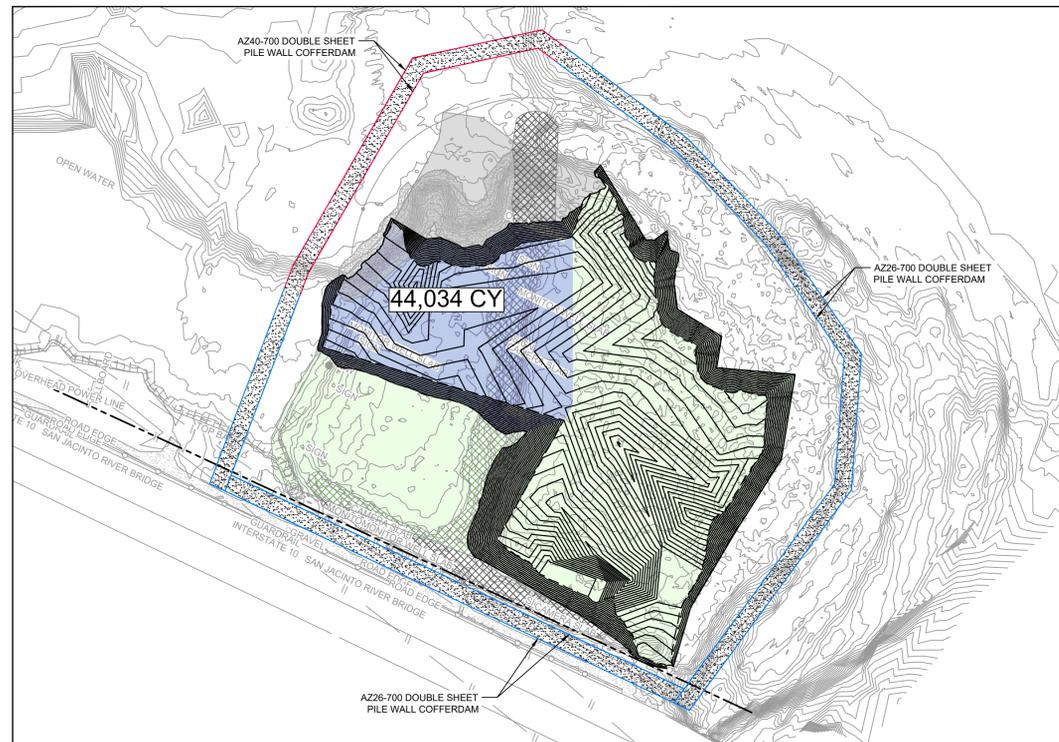




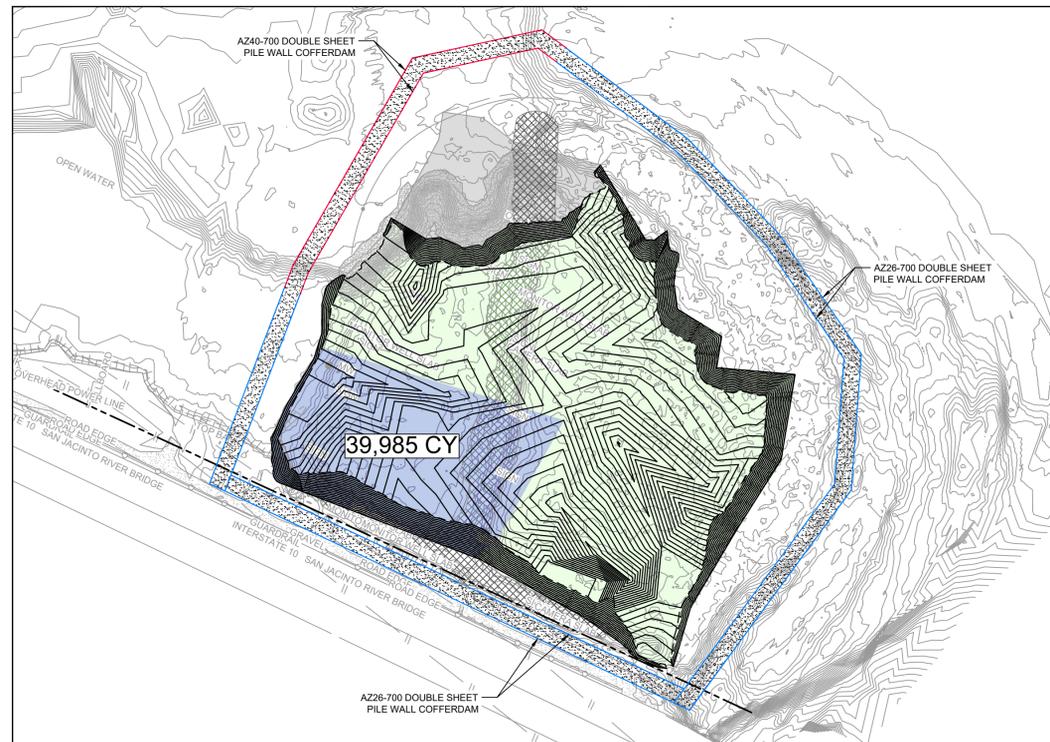
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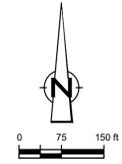
YEAR 4



YEAR 5



YEAR 6



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LEGEND

- ASSUMED TxDOT RIGHT OF WAY
- - - TORA 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

- MATERIAL TO BE EXCAVATED
- EXISTING BERM TO EXCAVATED
- EXISTING BERM
- NORTHWEST CORNER*
- CONCRETE
- GRAVEL
- AZ26-700 PILE
- AZ40-700 PILE
- PHASE OF EXCAVATION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size	Arch D	Scale	1" = 150'	
		Bar is one inch on original size drawing	0	1"

Project No. 11215702
Title

TYPICAL SEASONAL EXCAVATION SEQUENCING

Sheet No.

C-19

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190606, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

NOTES:
1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
2. 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.
3. SEASONAL EXCAVATION AREAS, VOLUMES, AND SEQUENCING ARE APPROXIMATE AND SUBJECT TO CHANGE.

*THE REMEDIAL DESIGN INFORMATION FOR THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IS INCLUDED IN THIS SUBMITTAL. THE DESIGN TO DATE CONCLUDES THAT COMPLETING THE REMEDIAL ACTION "IN THE DRY" IN THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT AS STATED IN THE EPA RECORD OF DECISION IS NOT TECHNICALLY FEASIBLE DUE TO HYDRAULIC HEAVE. THE SUPPORTING TECHNICAL AND ENGINEERING BASIS FOR THIS CONCLUSION ARE INCLUDED IN THIS SUBMITTAL, AND AS SUCH, PENDING A FINAL EPA DETERMINATION REGARDING THIS AREA, IT IS ANTICIPATED THAT AN ADDENDUM TO THE PRE-FINAL 90% REMEDIAL DESIGN WILL BE SUBMITTED AT A FUTURE DATE TO ADDRESS THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IN ACCORDANCE WITH EPA'S FINAL DETERMINATION AFTER REVIEW OF THIS NEWLY DEVELOPED SITE INFORMATION.

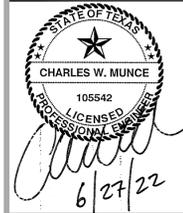
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GHD TEXAS FIRM REGISTRATION NO. 276

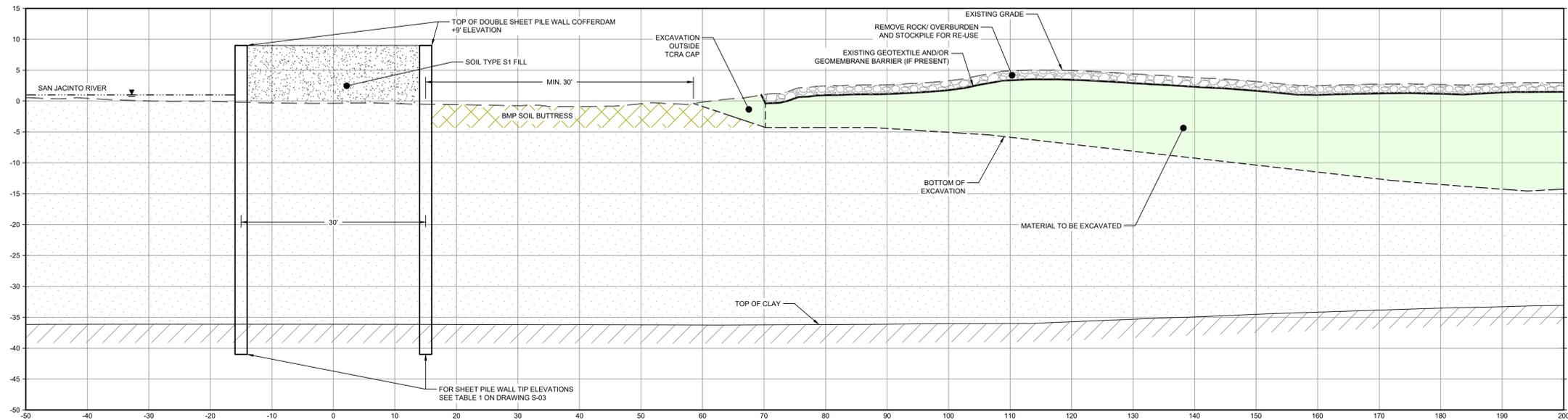
90% EPA REVIEW



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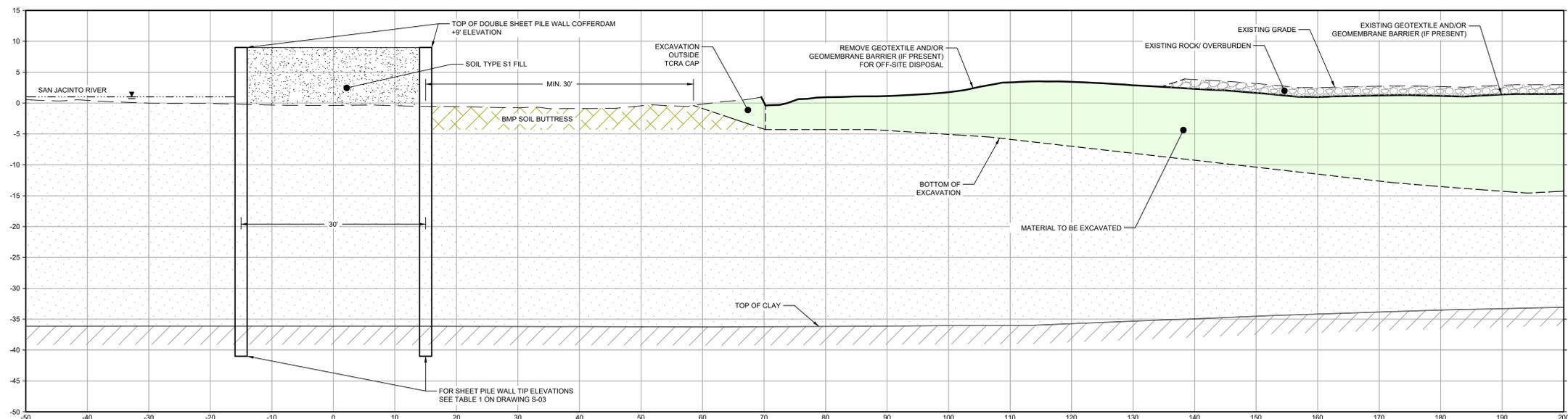


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- NOTES:
1. INSTALL PILE WALL COFFERDAM AROUND PERIMETER OF EXCAVATION AND DEWATER.

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.

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

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
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Drawn	MW	Designer	RH
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Drafting	JC	Design Check	LL
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Project Coordinator	CM	Date	Jun 27, 2022
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Original Size	Arch D	Bar is one inch on original size drawing
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Project No. 11215702

Title
TYPICAL EXCAVATION SEQUENCING 1 OF 2

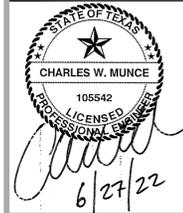
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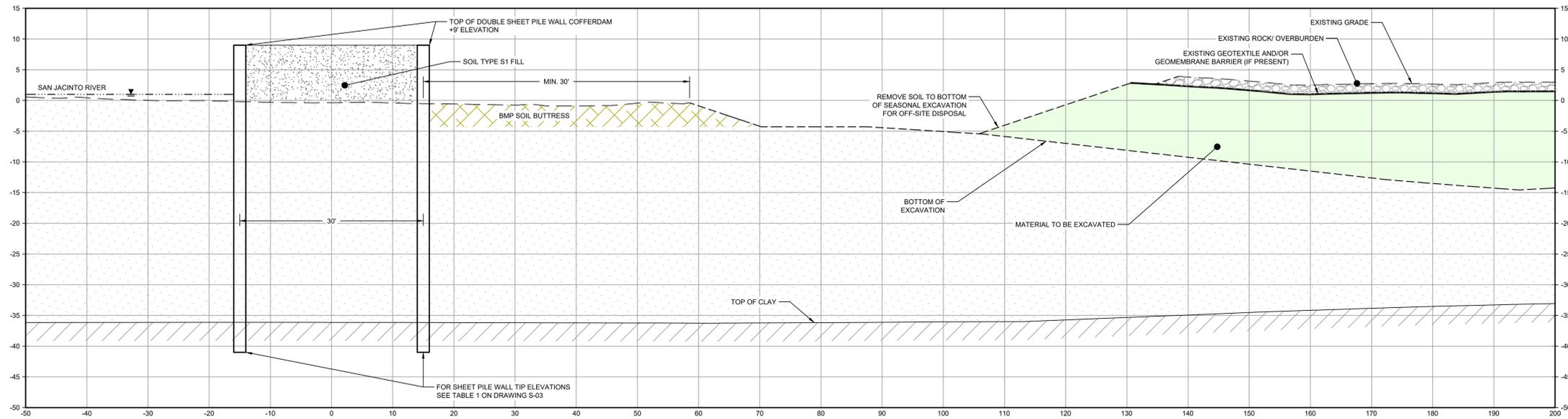
90% EPA REVIEW



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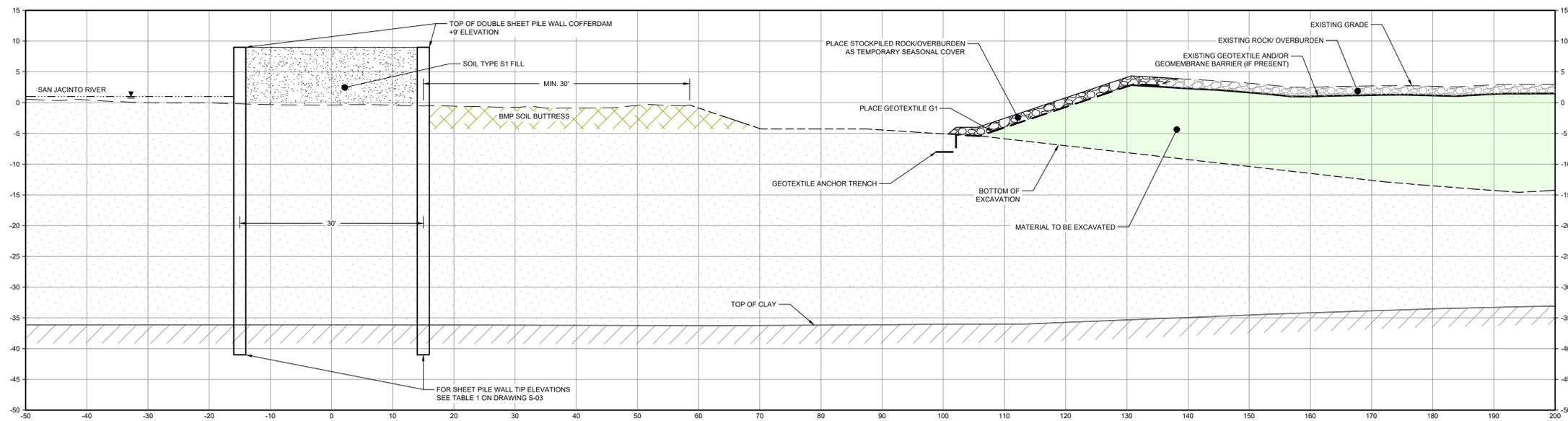
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NOTES:

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

PHASE 3
1' = 10'



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

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

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS

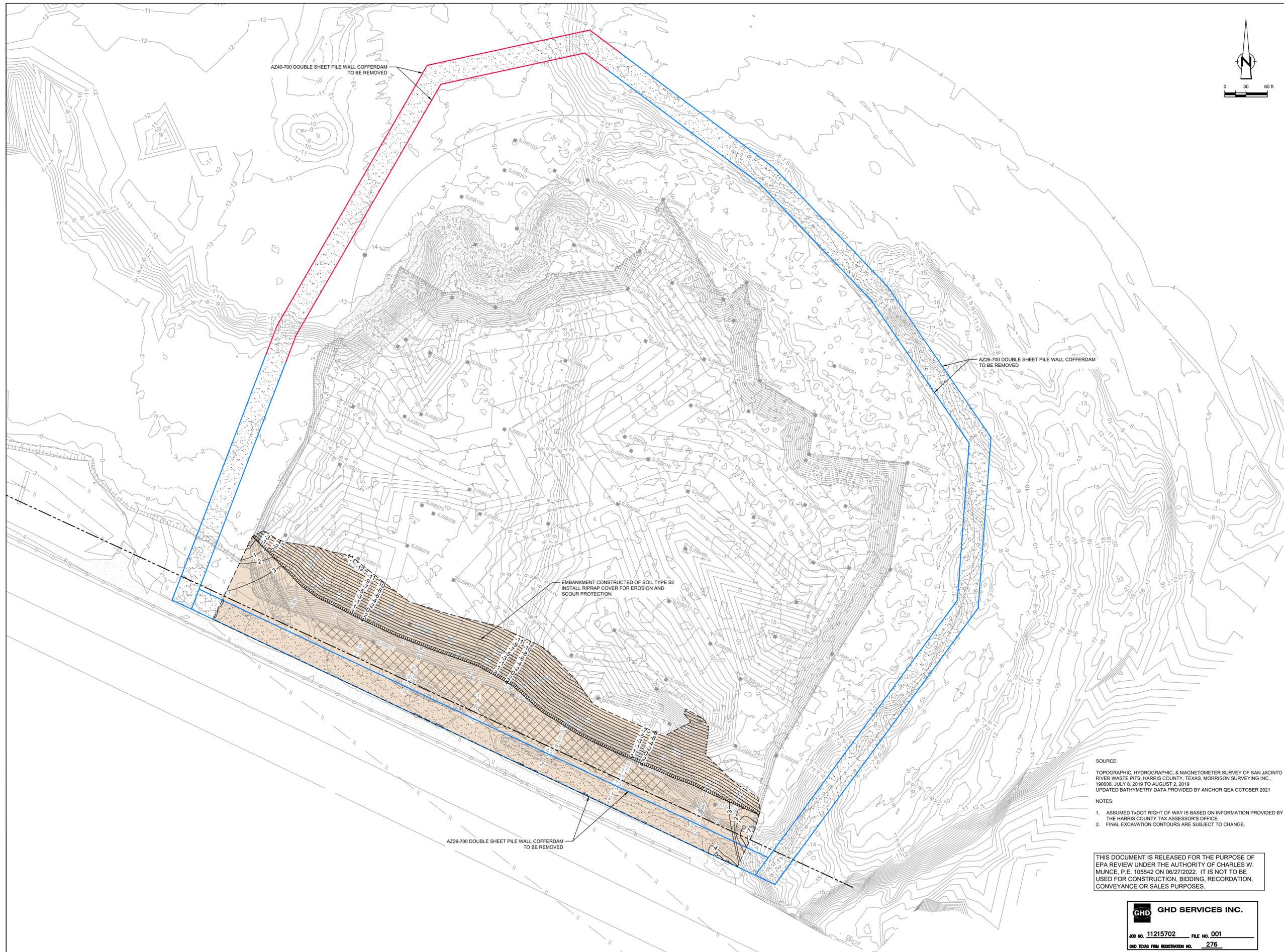
Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size	Scale			AS SHOWN
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 - of -

90% EPA REVIEW



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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE
---	RESTORED AREA INCLUDING TOPSOIL PLACEMENT AND SEEDING TO RIVER LEVEL

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project	CM	Date	Jun 27, 2022	
Coordinator		Scale	1" = 60'	

This document shall not be used for construction unless signed and sealed for construction.
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 - of -

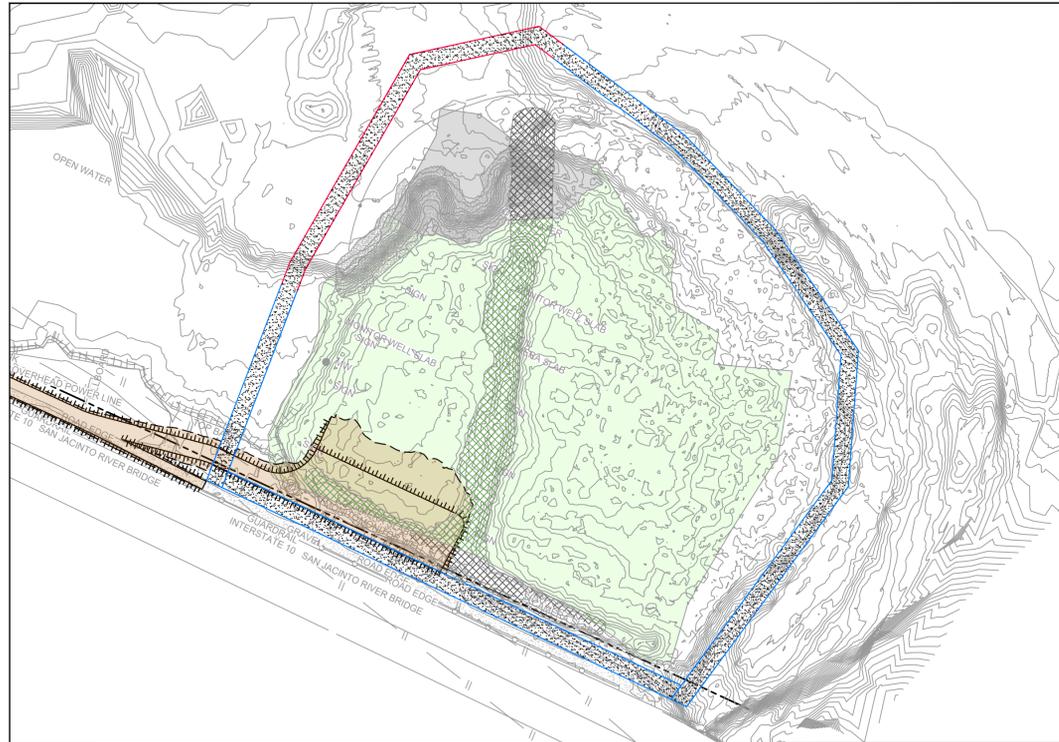
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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR GEA OCTOBER 2021

NOTES:
1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE
2. FINAL EXCAVATION CONTOURS ARE SUBJECT TO CHANGE.

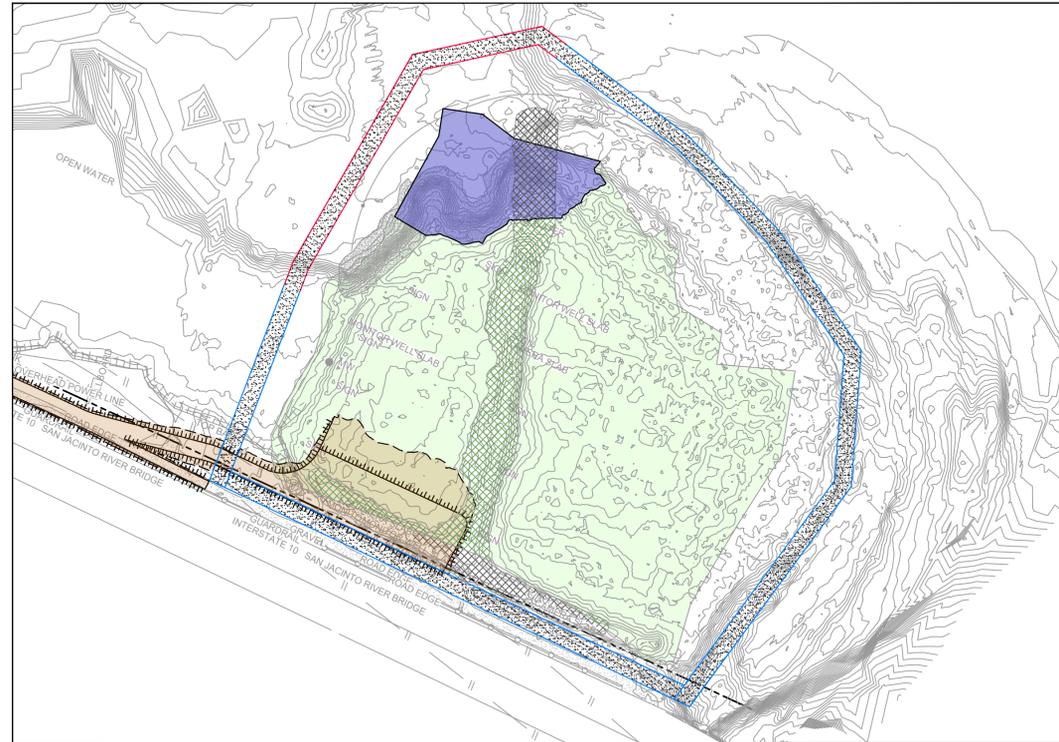
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

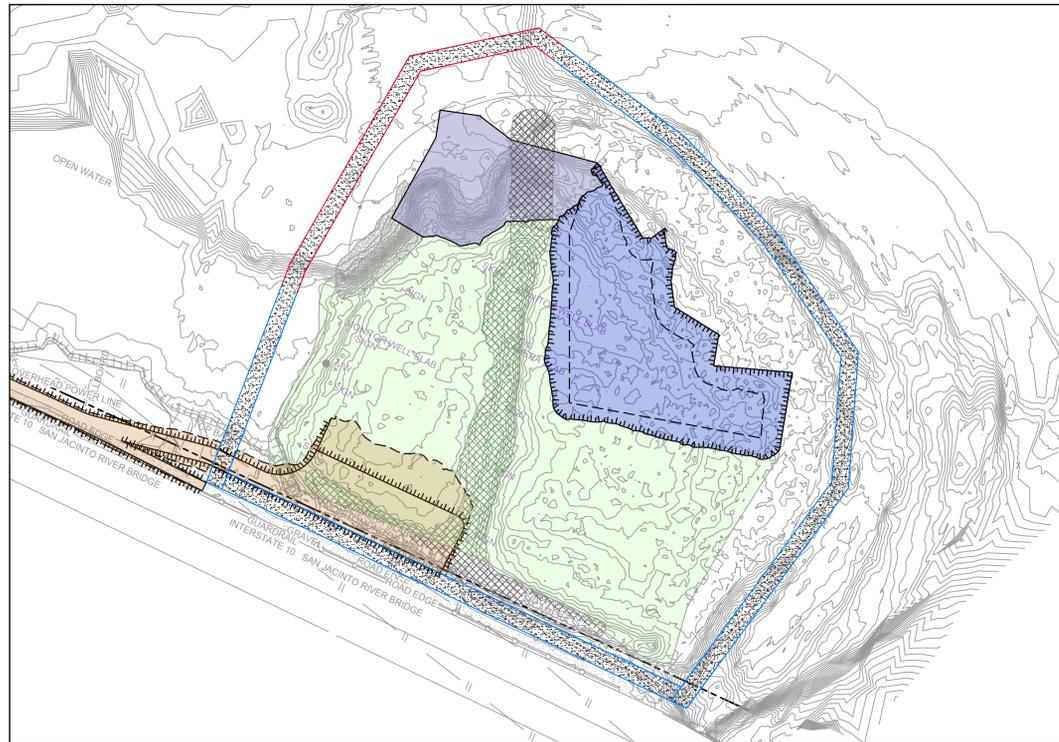
90% EPA REVIEW



YEAR 1 - BMP INSTALLATION AND SITE PREPARATION



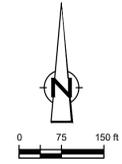
YEAR 2 - EXCAVATION SEASON 1



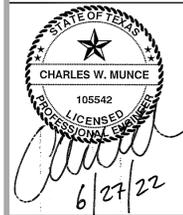
YEAR 3 - EXCAVATION SEASON 2



YEAR 4 - EXCAVATION SEASON 3



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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
- - - -	EXISTING CONTOUR INTERVAL
- - - -	FENCELINE
- - - -	SHORELINE
- - - -	TOP OF BANK
- - - -	TOE OF SLOPE
- - - -	OVERHEAD ELECTRICAL
- - - -	GUARDRAIL
- - - -	PIPELINE
●	BORING LOCATION
○	MONITORING WELL
○	POWER POLE
○	LIGHT POLE
○	WELL
■	MATERIAL TO BE EXCAVATED
■	EXISTING BERM TO EXCAVATED
■	EXISTING BERM
■	NORTHWEST CORNER*
■	CONCRETE
■	GRAVEL
■	AZ26-700 PILE
■	AZ40-700 PILE
■	PHASE OF EXCAVATION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project	CM	Date	Jun 27, 2022	
Coordinator		Scale	1" = 150'	
Original Size	Arch D	Bar is one inch on original size drawing	0	1"

Project No. 11215702

Title

TYPICAL CONSTRUCTION SEQUENCING 1 OF 2

Sheet No.

C-23

Sheet - of -

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2010 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR O&A OCTOBER 2021

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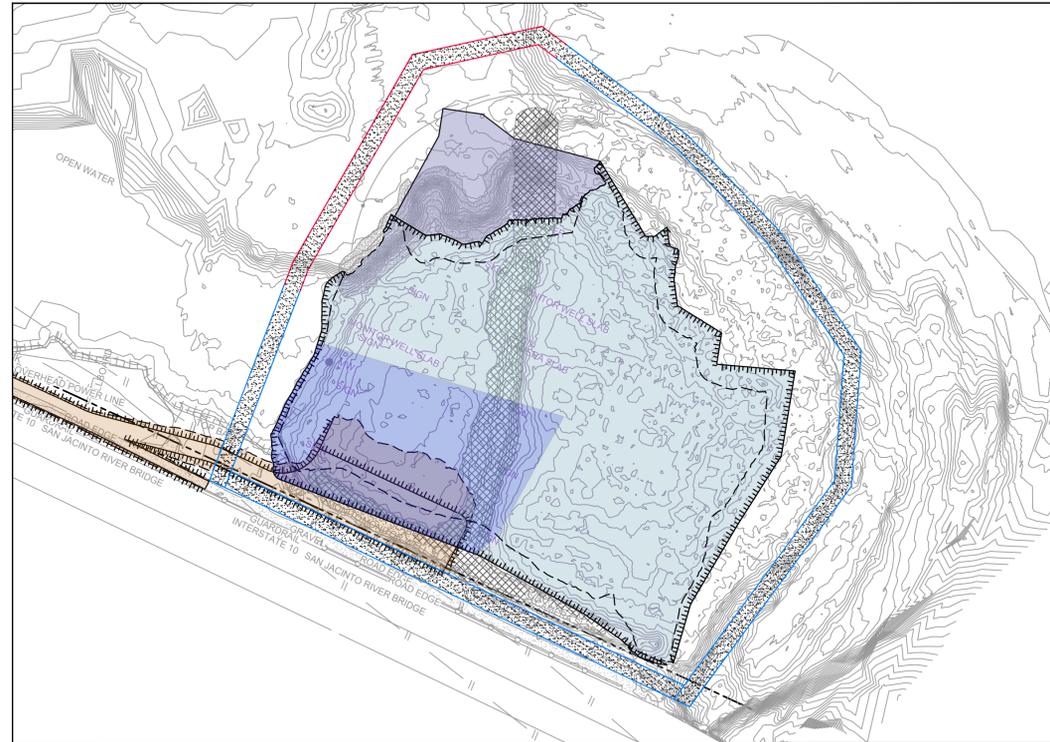
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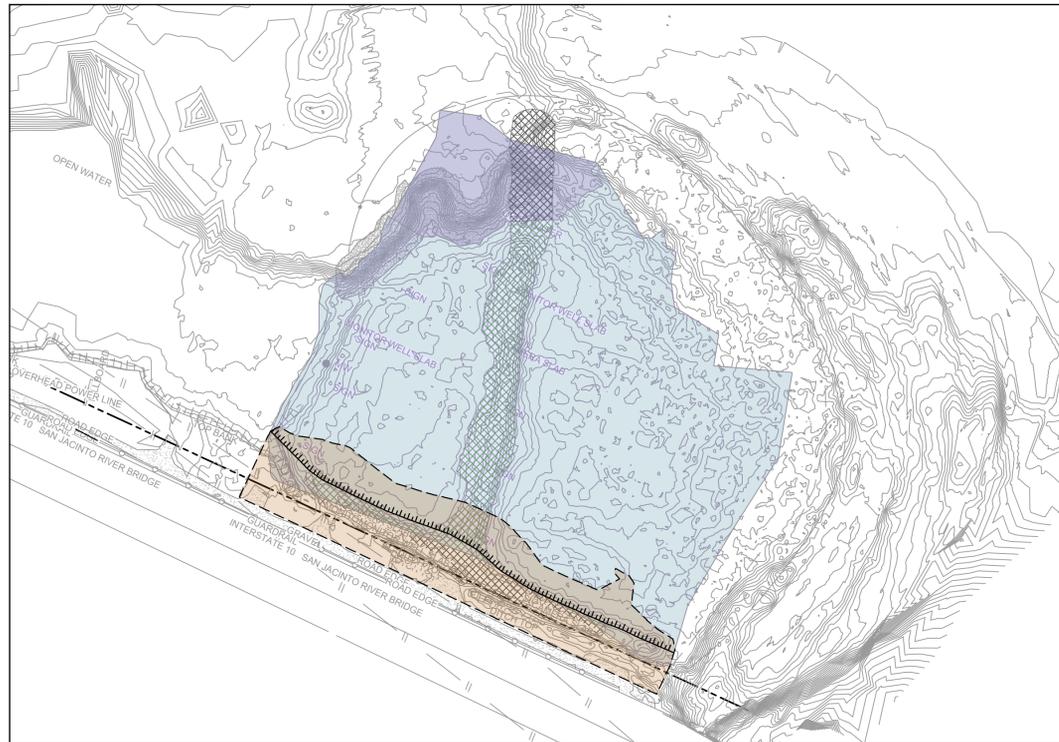
90% EPA REVIEW



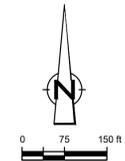
YEAR 5 - EXCAVATION SEASON 4



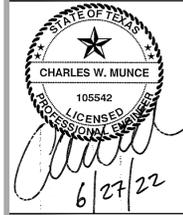
YEAR 6 - EXCAVATION SEASON 5



YEAR 7 - BMP REMOVAL AND SITE RESTORATION



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LEGEND	
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---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
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●	LIGHT POLE
○	WELL
█	MATERIAL TO BE EXCAVATED
█	EXISTING BERM TO EXCAVATED
█	EXISTING BERM
█	NORTHWEST CORNER*
█	CONCRETE
█	GRAVEL
█	A226-700 PILE
█	A240-700 PILE
█	PHASE OF EXCAVATION

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 150'	
Arch D		Bar is one inch on original size drawing		0 1"

Project No. 11215702

Title
TYPICAL CONSTRUCTION SEQUENCING 2 OF 2

Sheet No.
C-24

Sheet - of -

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

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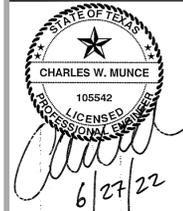
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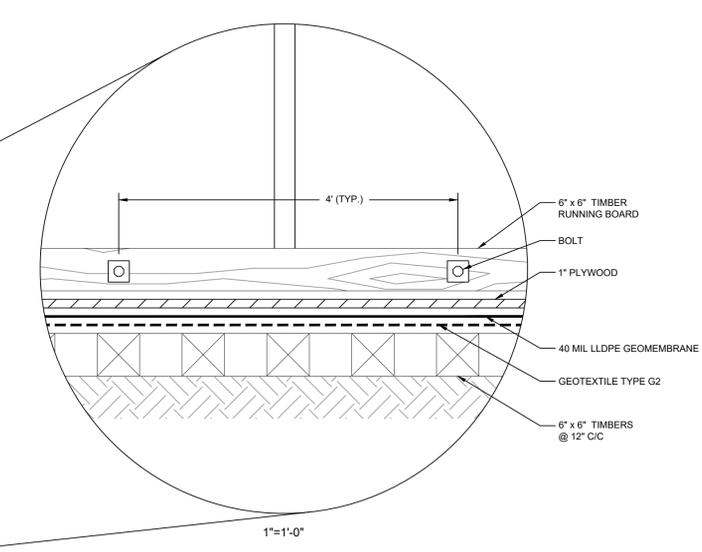
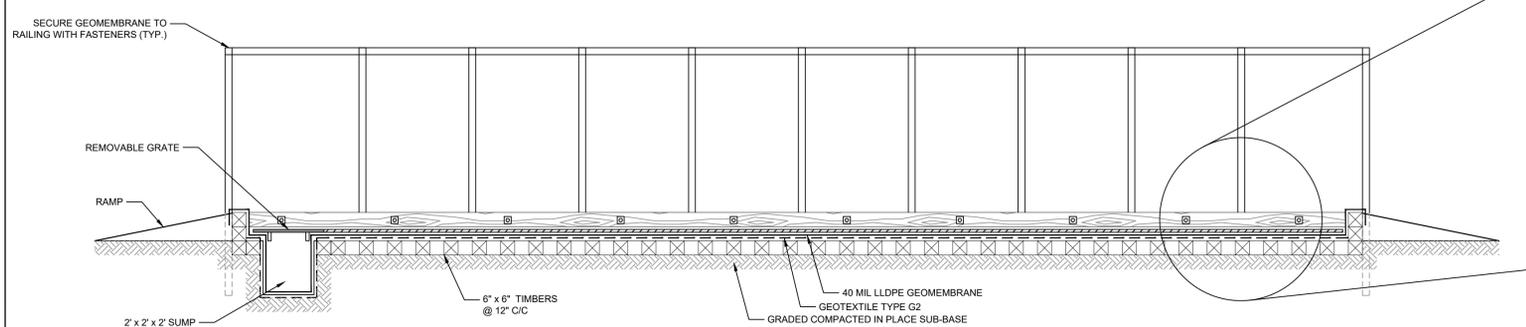
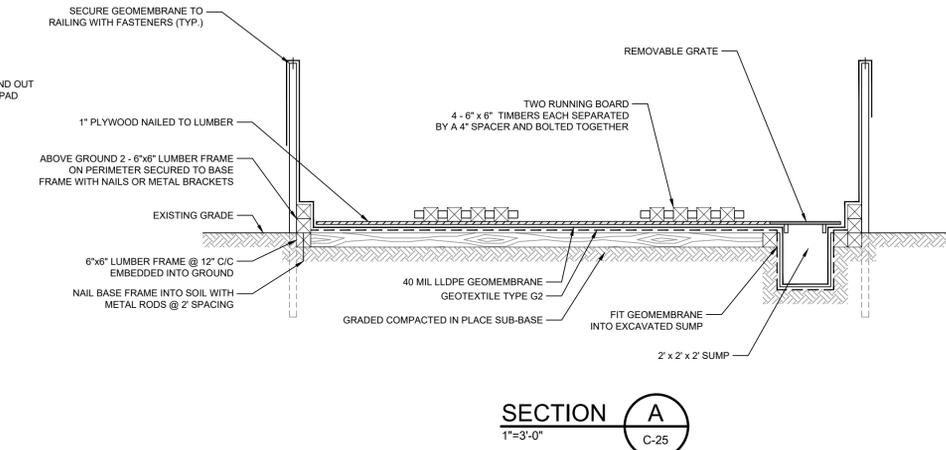
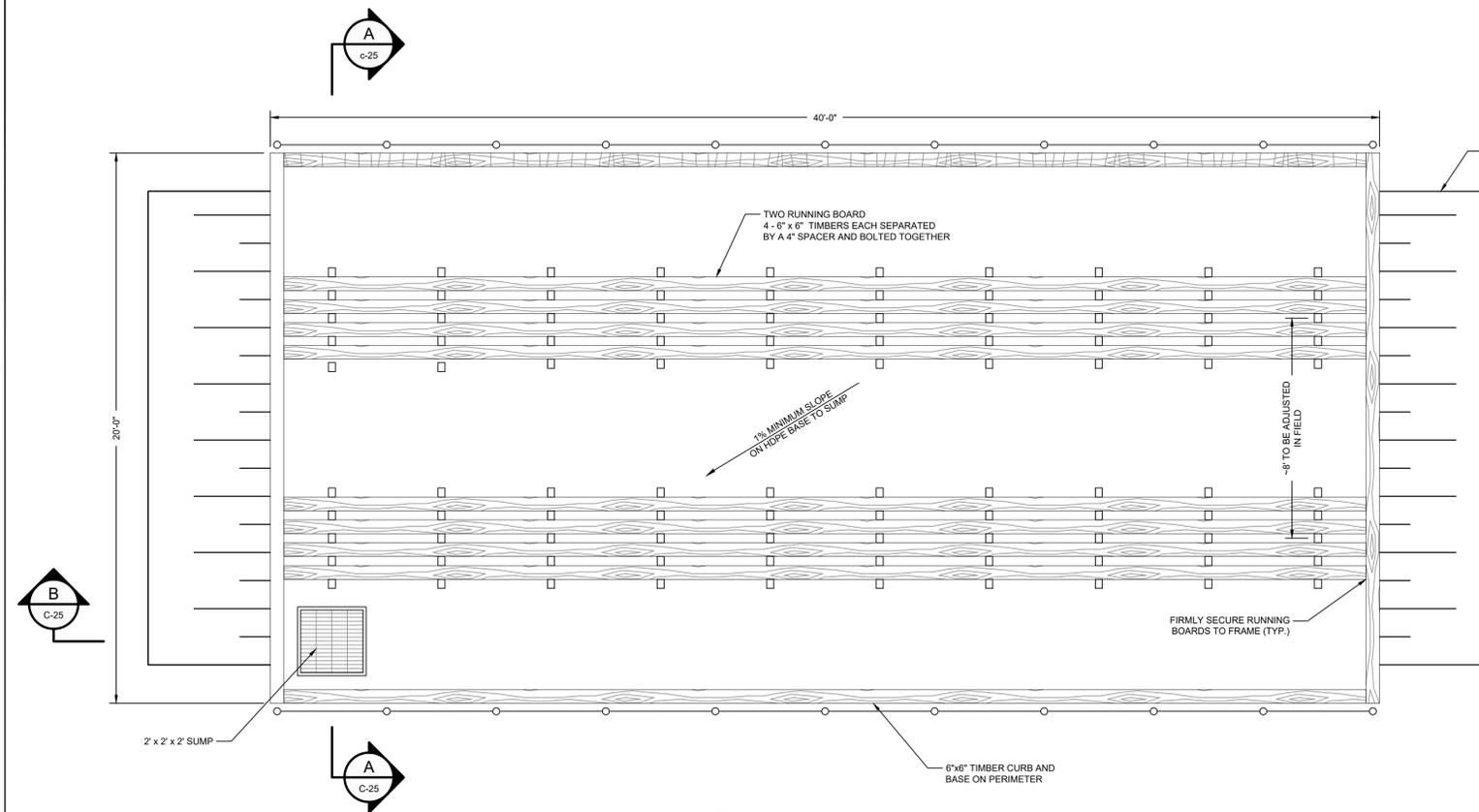
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DETAIL 8 TEMPORARY EQUIPMENT DECONTAMINATION PAD
1"=3'-0"

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022

Drawn MW Designer RH
Drafting JC Design Check LL
Project Coordinator CM Date Jun 27, 2022

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

Project No. 11215702
Title

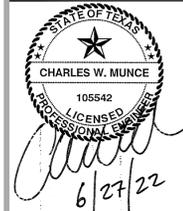
TYPICAL DETAILS 1 OF 3

Sheet No. **C-25**

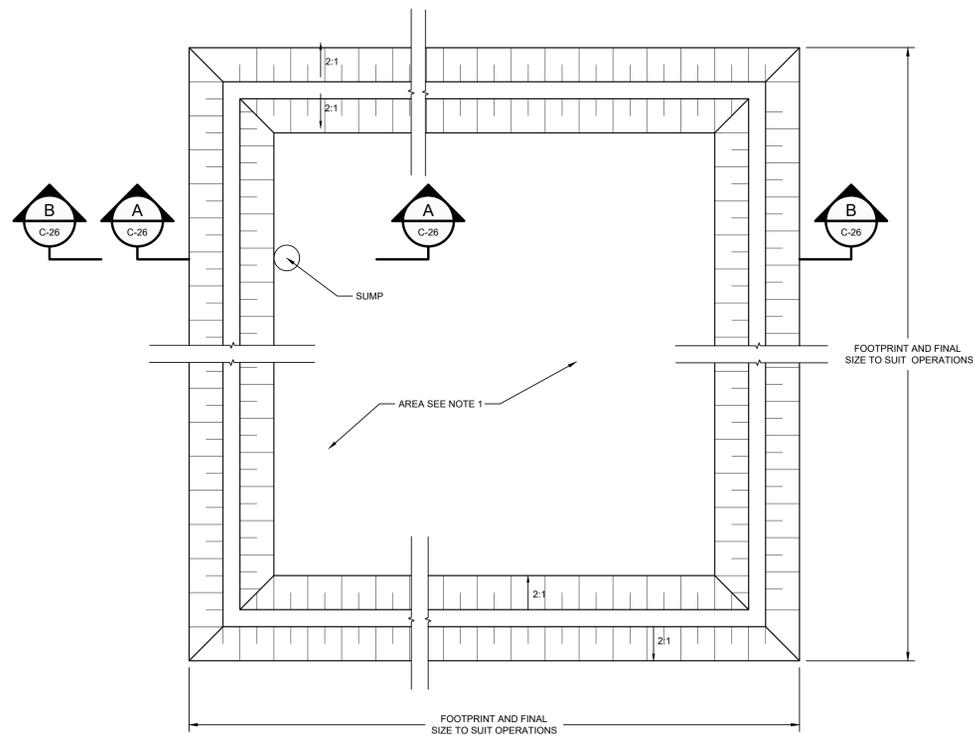
90% EPA REVIEW



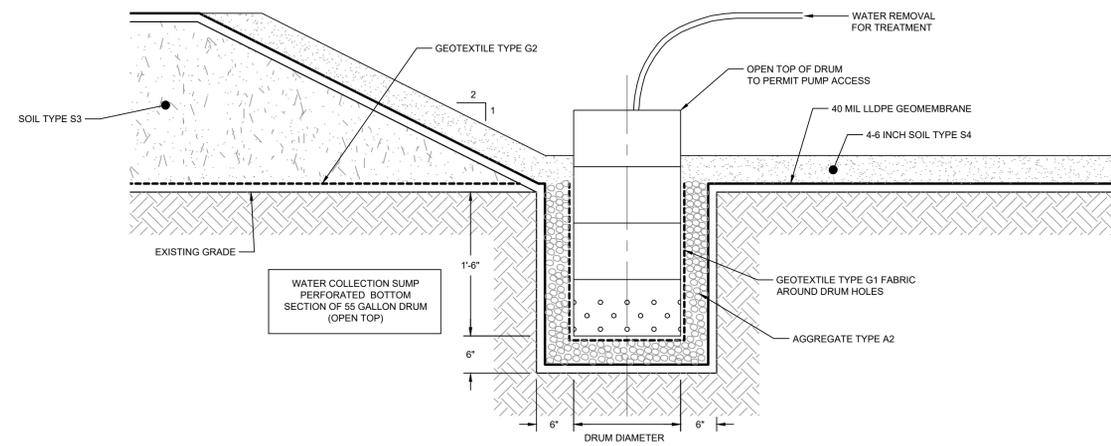
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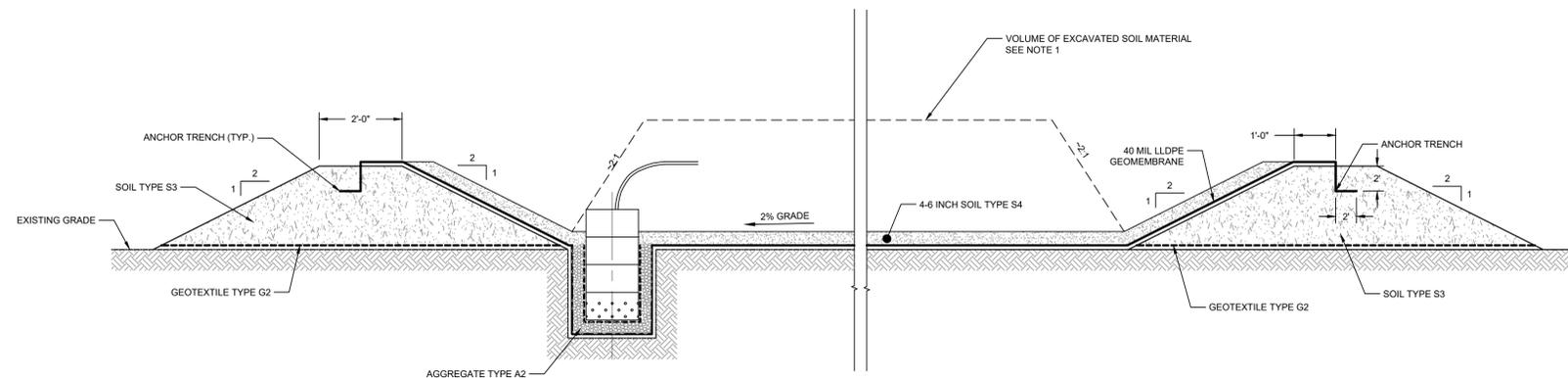


PLAN
N.T.S.



SECTION A SUMP
N.T.S.

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



SECTION B
N.T.S.

DETAIL 9 TEMPORARY DEWATERING FACILITY
N.T.S.

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JOB NO. 11215702 FILE NO. 001
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90% EPA REVIEW

Client **SAN JACINTO RIVER WASTE PITS**
Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
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No.	Issue	Drawn	Approved	Date

Drawn	MW	Designer	RH
-------	----	----------	----

Drafting	JC	Design	LL
----------	----	--------	----

Project	CM	Date	Jun 27, 2022
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Original Size	Bar is one inch on original size drawing
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Arch D	0 1"
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Project No. 11215702

Title

TYPICAL DETAILS

2 OF 3

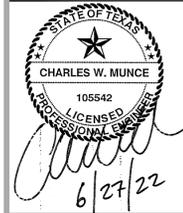
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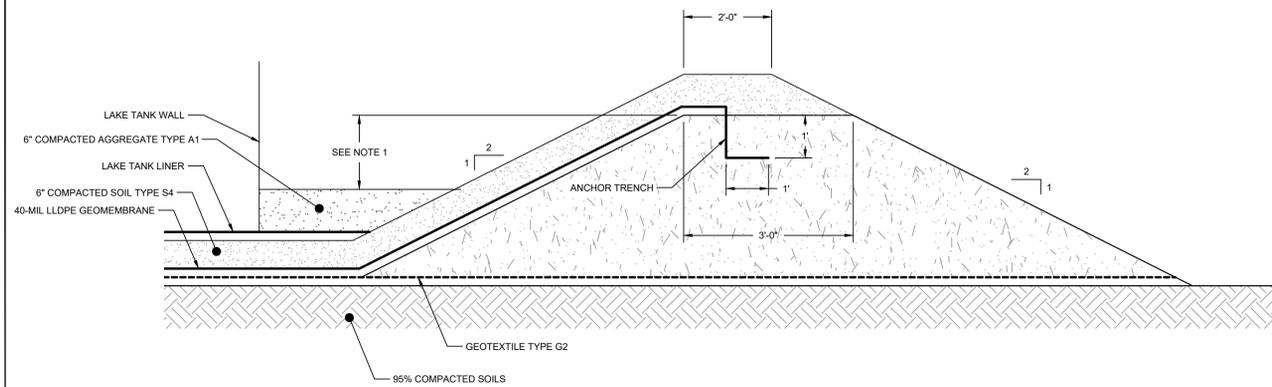
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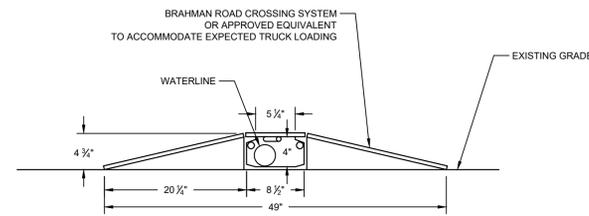
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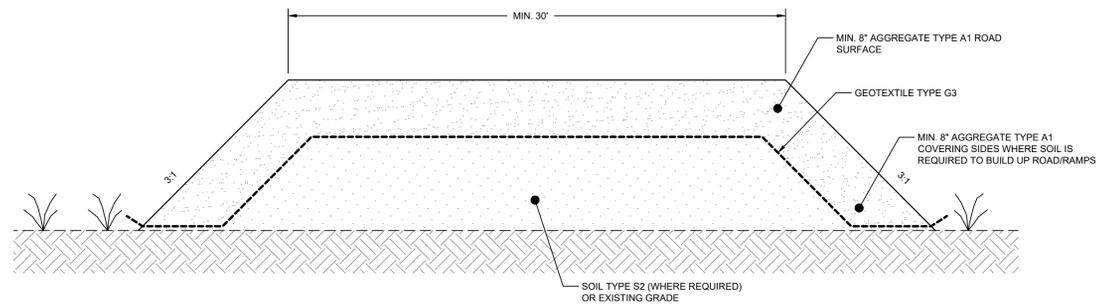
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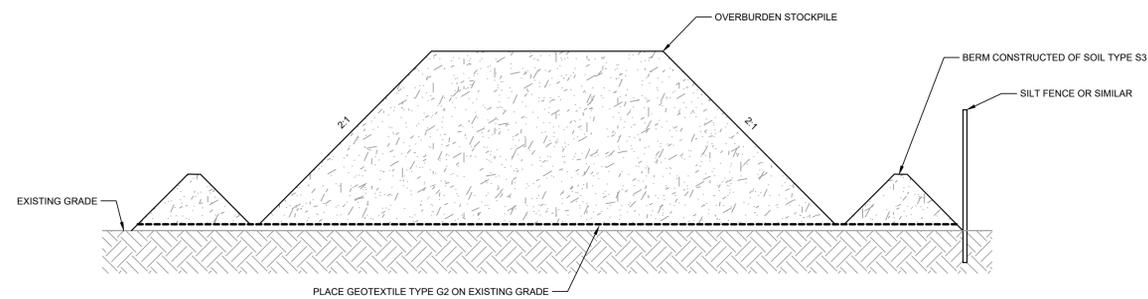
DETAIL 10 WTS SECONDARY CONTAINMENT BERM
N.T.S.



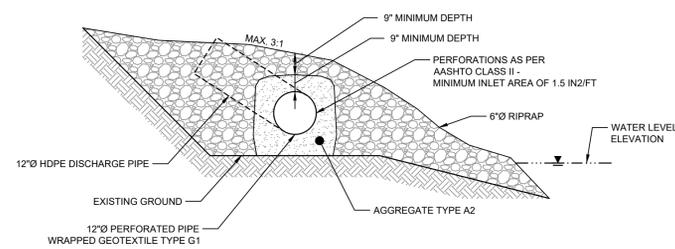
DETAIL 11 TEMPORARY PIPE CROSSING PROTECTION
1"=1'-0"



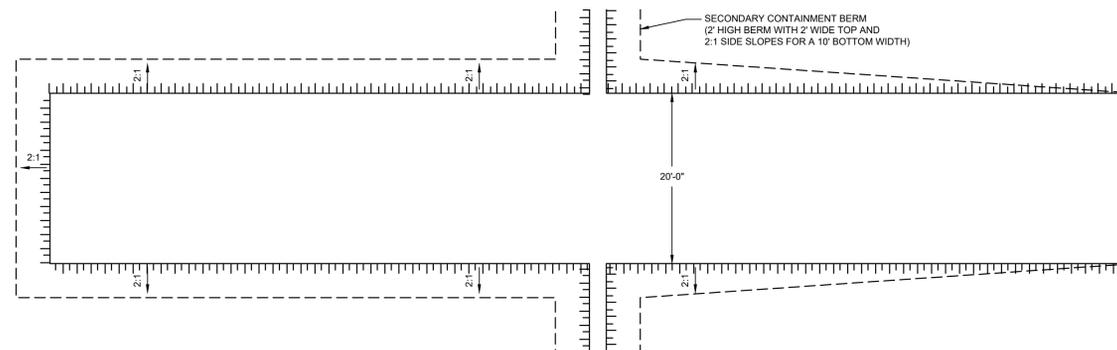
DETAIL 12 TEMPORARY ACCESS ROAD/ RAMPS
N.T.S. C-03



DETAIL 13 TEMPORARY EXCAVATED MATERIAL STOCKPILE
N.T.S. C-03



DETAIL 14 RIVER DISCHARGE
N.T.S.



DETAIL 15 ACCESS PLATFORM
N.T.S.

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GHD SERVICES INC.
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GHD TEXAS FIRM REGISTRATION NO. 276

90% EPA REVIEW

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
4	90% EPA REVIEW	MW	CM	06/27/2022

Drawn: MW, Designer: RH
Drafting Check: JC, Design Check: LL
Project Coordinator: CM, Date: Jun 27, 2022
Scale: AS SHOWN

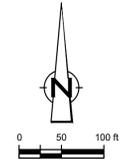
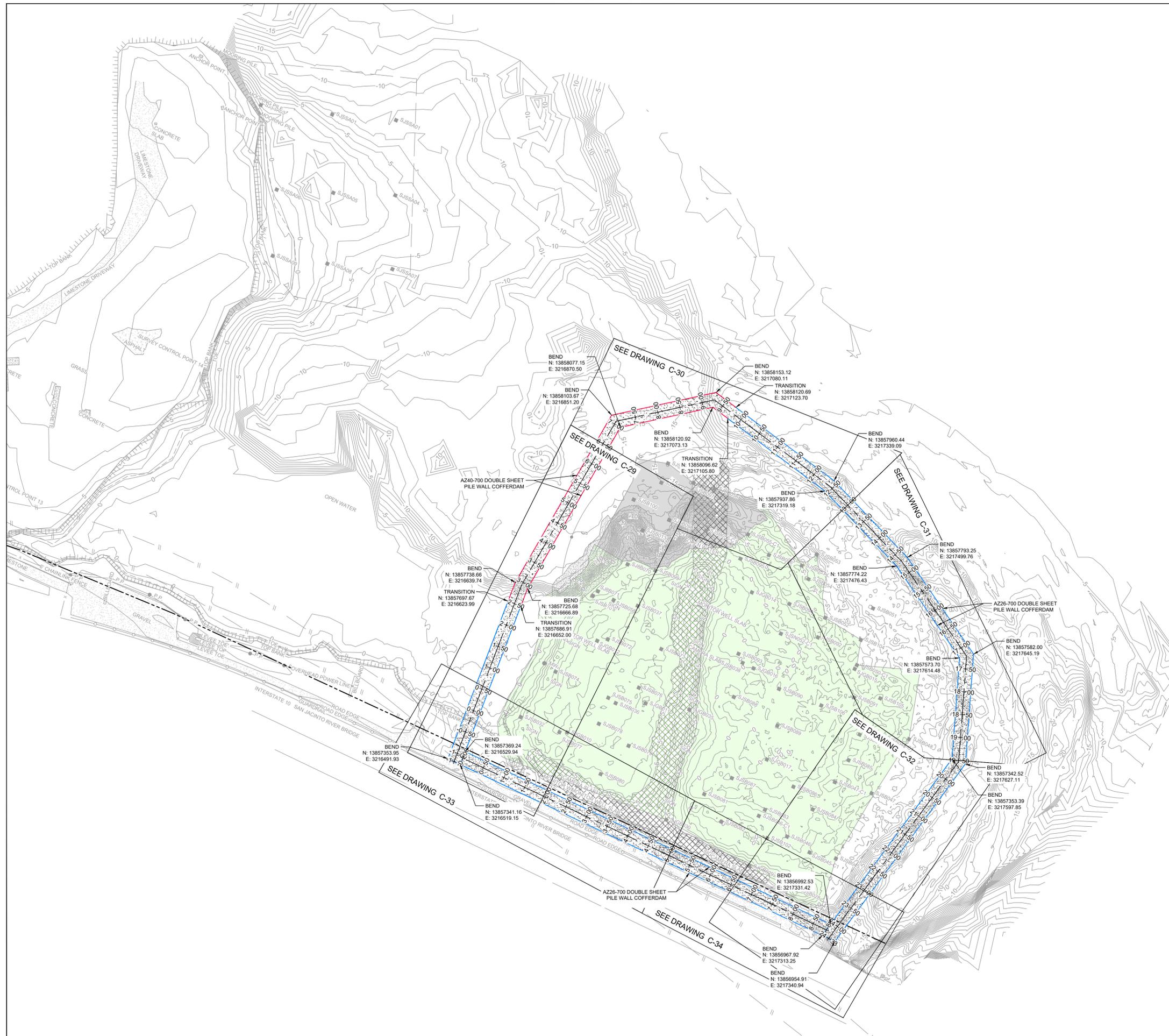
Project No. 11215702
Title

TYPICAL DETAILS 3 OF 3

Sheet No.

C-27

Sheet - of -



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 CHARLES W. MUNCE
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LEGEND

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---	EXISTING CONTOUR INTERVAL
---	FENCELINE
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---	TOE OF SLOPE
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---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER*
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	AZ26-700 PILE
---	AZ40-700 PILE

Client
SAN JACINTO RIVER WASTE PITS
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4	90% EPA REVIEW	MW	CM	06/27/2022
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Drafting	JC	Design	LL	
Check		Check		
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size		Scale	1" = 100'	
		Bar is one inch on original size drawing		
		0		1"
Project No.	11215702			
Title	PILE WALL LAYOUT PLAN			

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

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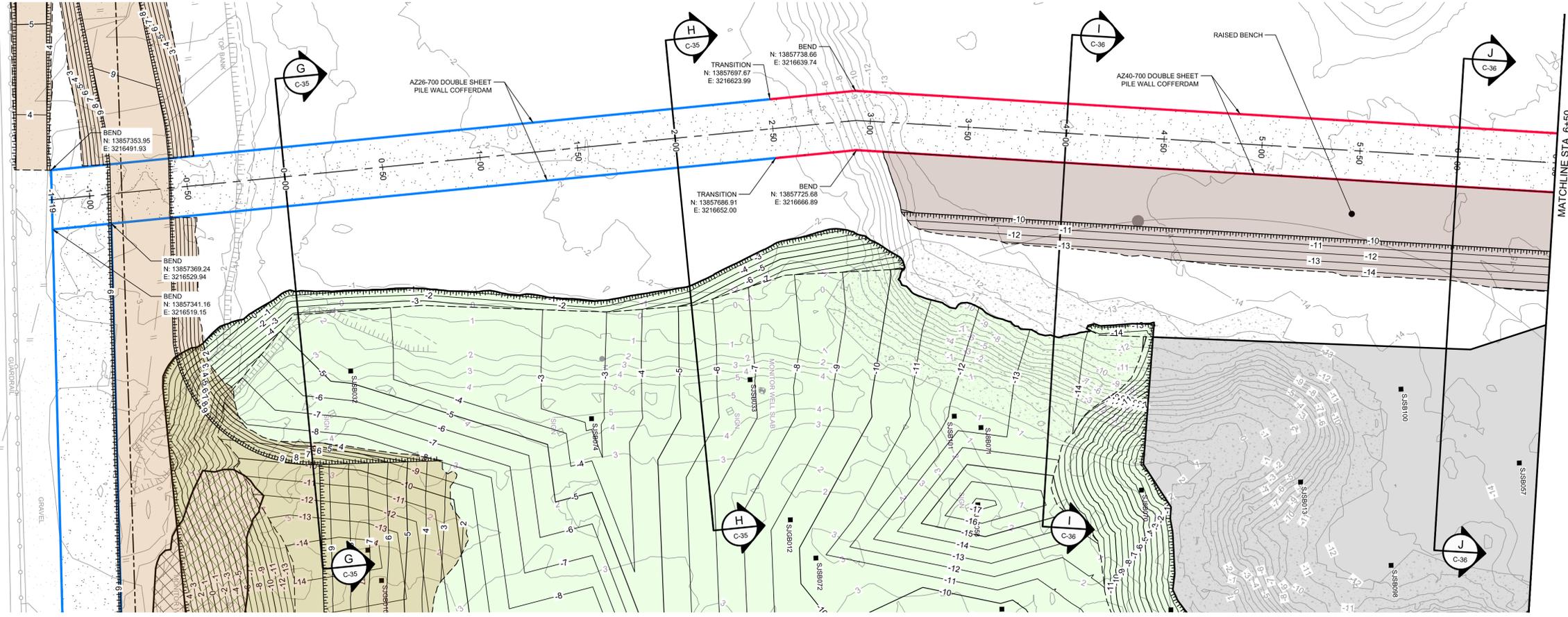
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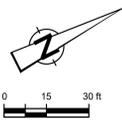
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 JOB NO. 11215702 FILE NO. 001
 GHD TEXAS FIRM REGISTRATION NO. 276

90% EPA REVIEW

Sheet No. **C-28**
 Sheet - of -



PLAN
1" = 30'



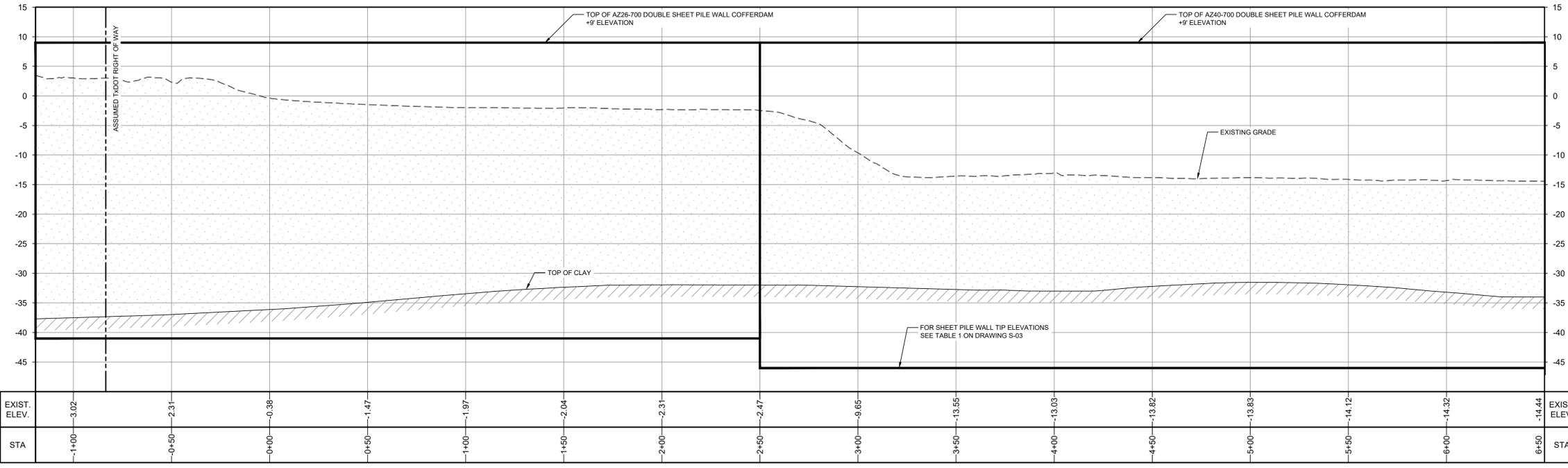
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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
---	BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER*
---	CONCRETE
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE
---	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS
---	RAISED BENCH



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

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 1980/08, JULY 8, 2019 TO AUGUST 2, 2019
UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

NOTES:
1. ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
2. 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

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project	CM	Date	Jun 27, 2022	
Coordinator		Scale	AS SHOWN	

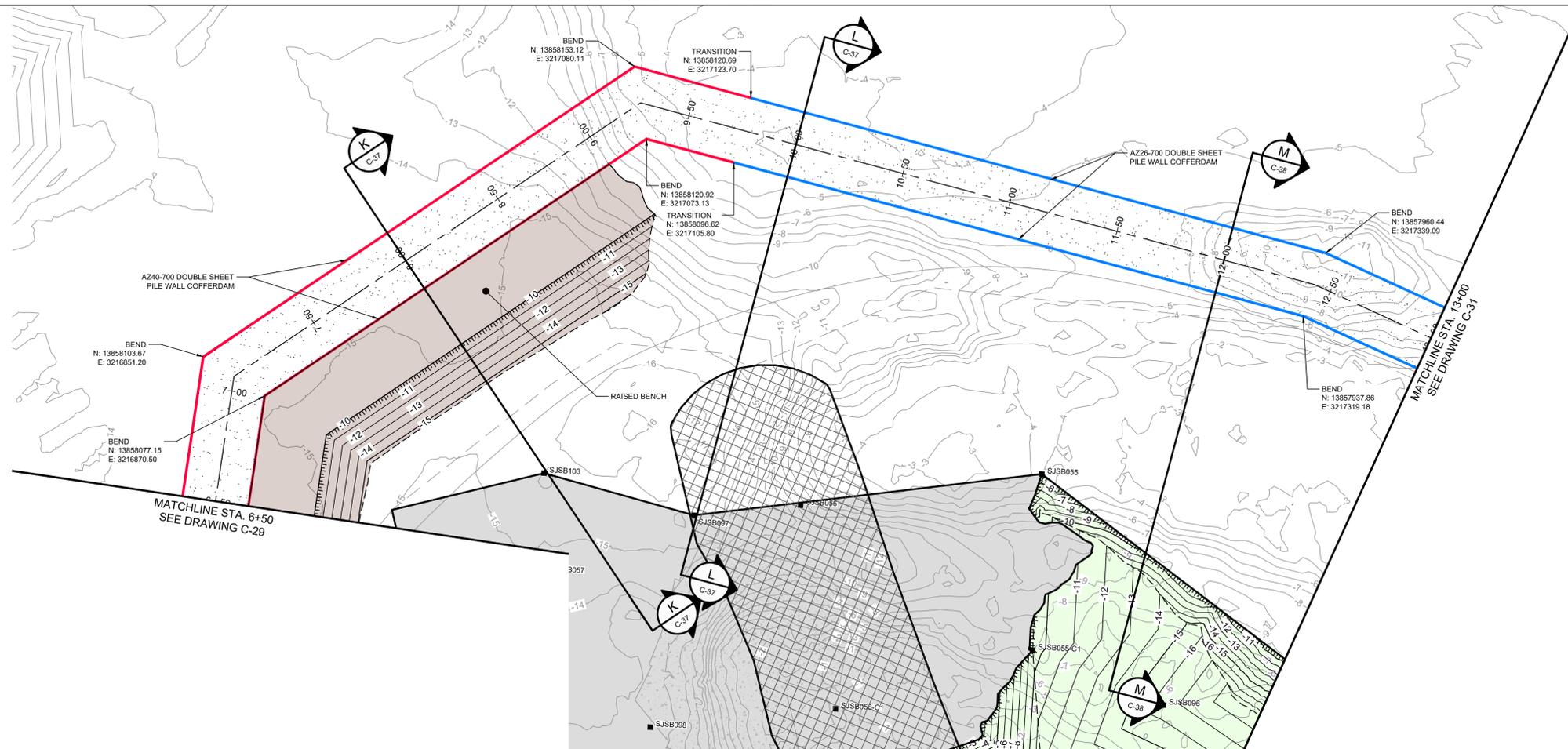
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Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702
Title

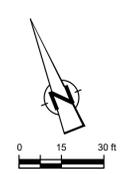
DOUBLE PILE WALL PLAN AND PROFILE
1 OF 4

Sheet No.
C-29
Sheet - of -

90% EPA REVIEW



PLAN
1" = 30'



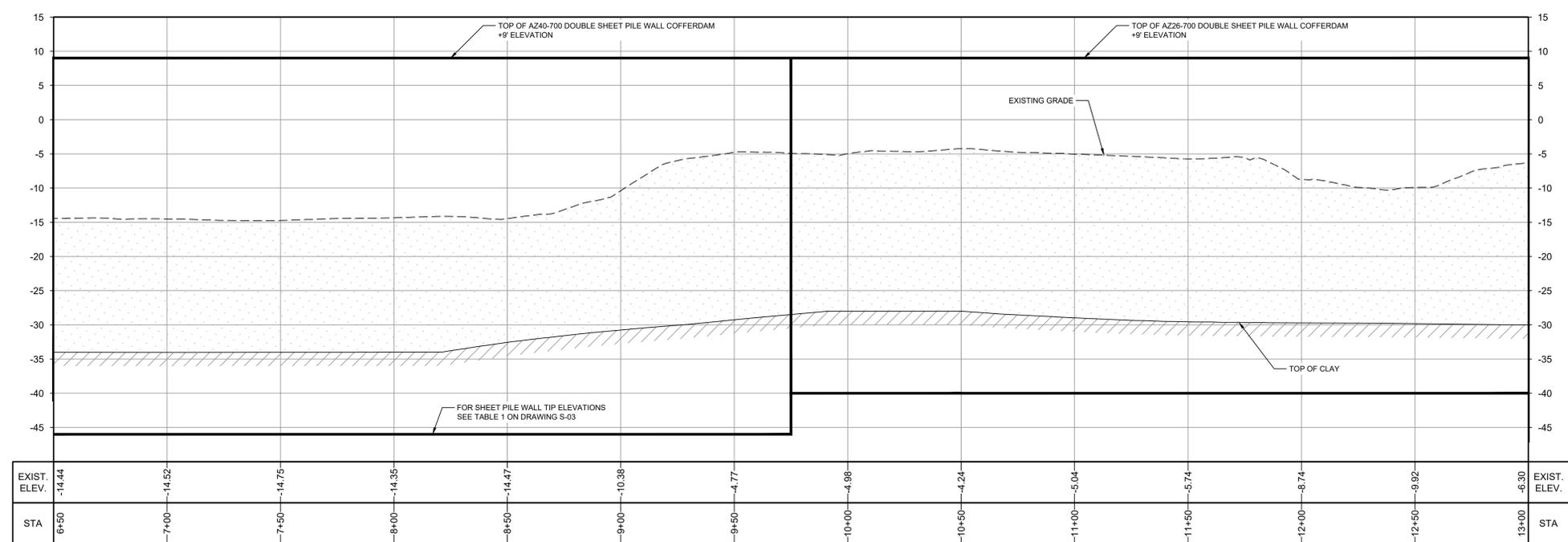
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STATE OF TEXAS
CHARLES W. MUNCE
105542
LICENSED PROFESSIONAL ENGINEER
6/27/22

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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
- - - -	FENCELINE
- - - -	SHORELINE
- - - -	TOP OF BANK
- - - -	TOE OF SLOPE
- - - -	OVERHEAD ELECTRICAL
- - - -	GUARDRAIL
- - - -	PIPELINE
■	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
○	LIGHT POLE
○	WELL
▭	MATERIAL TO BE EXCAVATED
▭	EXISTING BERM
▭	NORTHWEST CORNER*
▭	CONCRETE
▭	GRAVEL
▭	AZ26-700 PILE
▭	AZ40-700 PILE
▭	RAISED BENCH



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

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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

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project	CM	Date	Jun 27, 2022	
Coordinator		Scale	AS SHOWN	
Original Size	Arch D	Bar is one inch on original size drawing	0	1"

Project No. 11215702
Title

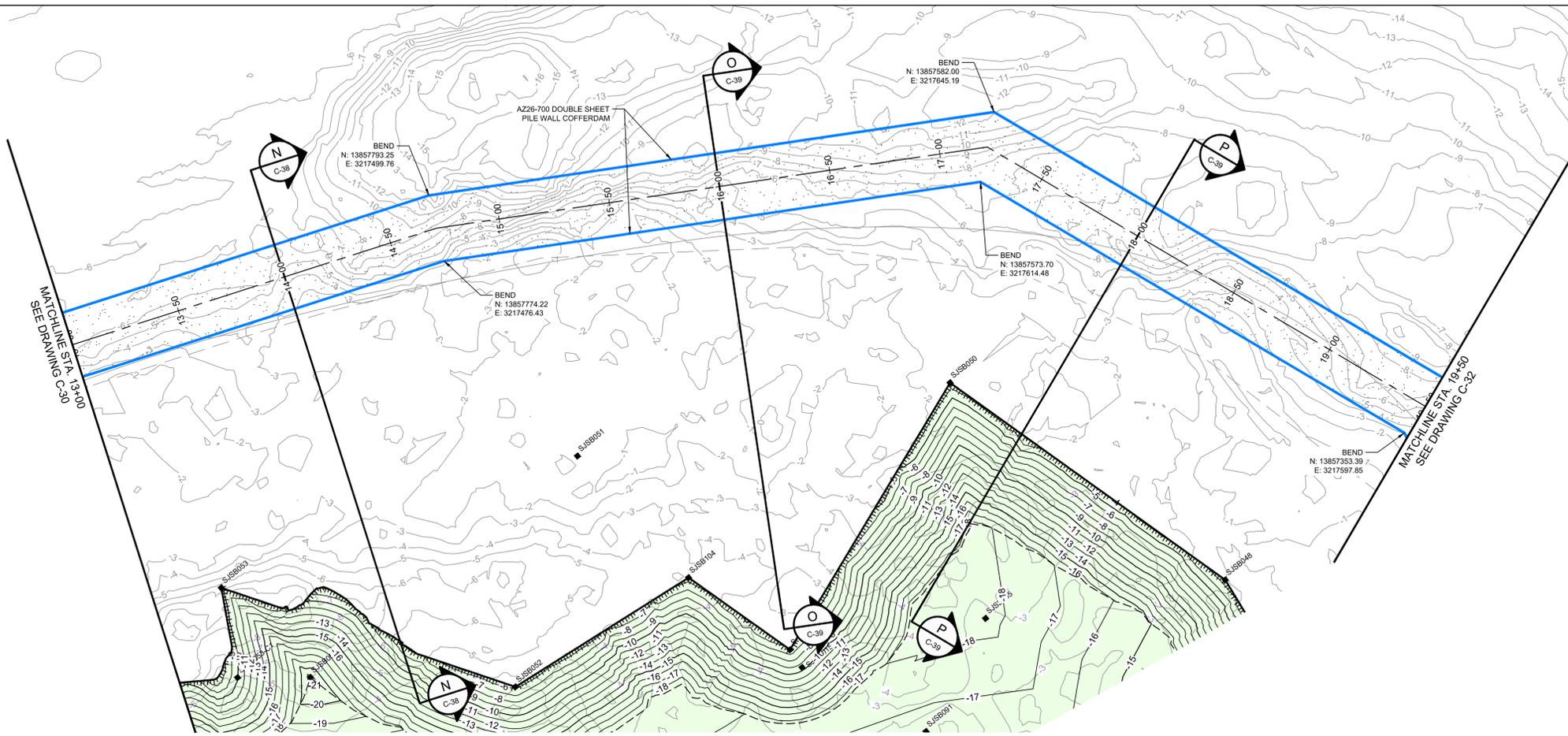
DOUBLE PILE WALL PLAN AND PROFILE
2 OF 4

Sheet No.

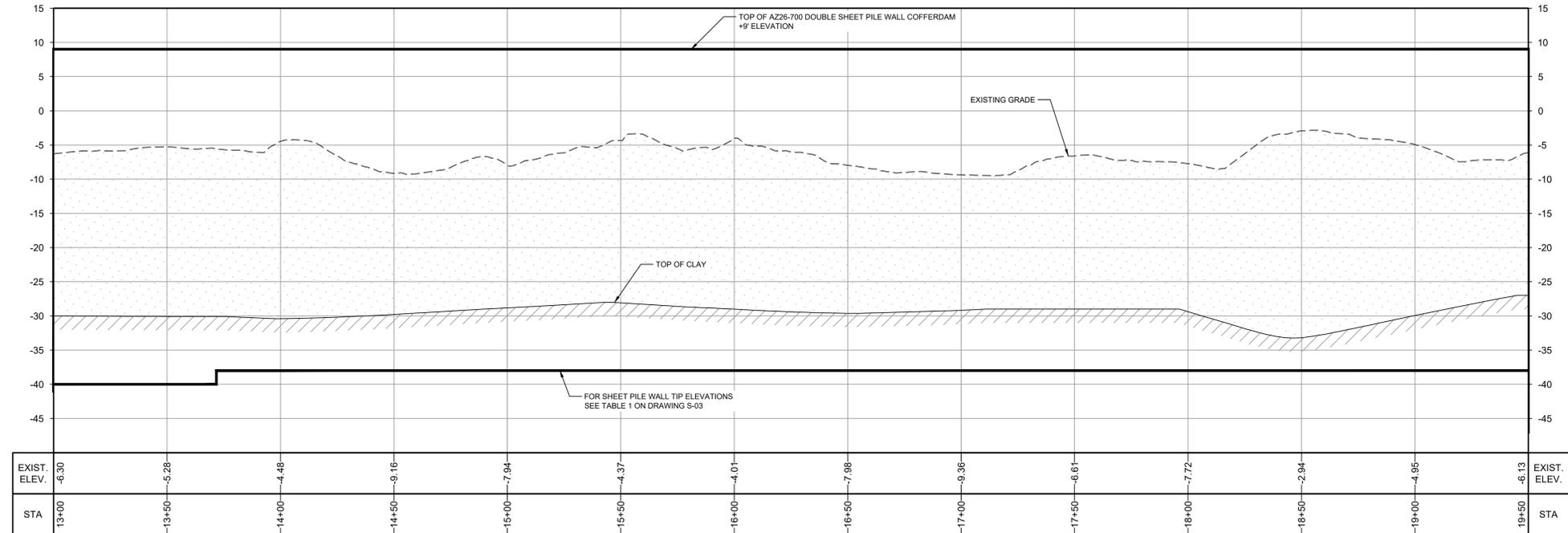
C-30

90% EPA REVIEW

Sheet - of -



PLAN
1" = 30'



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

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UPDATED BATHYMETRY DATA PROVIDED BY ANCHOR QEA OCTOBER 2021

NOTES:
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LEGEND

---	ASSUMED TXDOT RIGHT OF WAY
---	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	L.P.
○	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting	JC	Design	LL	
Check		Check		
Project	CM	Date	Jun 27, 2022	
Coordinator		Scale	AS SHOWN	

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

Project No. **11215702**
Title

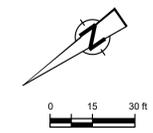
DOUBLE PILE WALL PLAN AND PROFILE
3 OF 4

Sheet No.

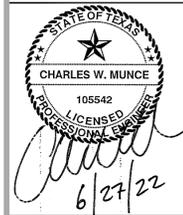
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90% EPA REVIEW

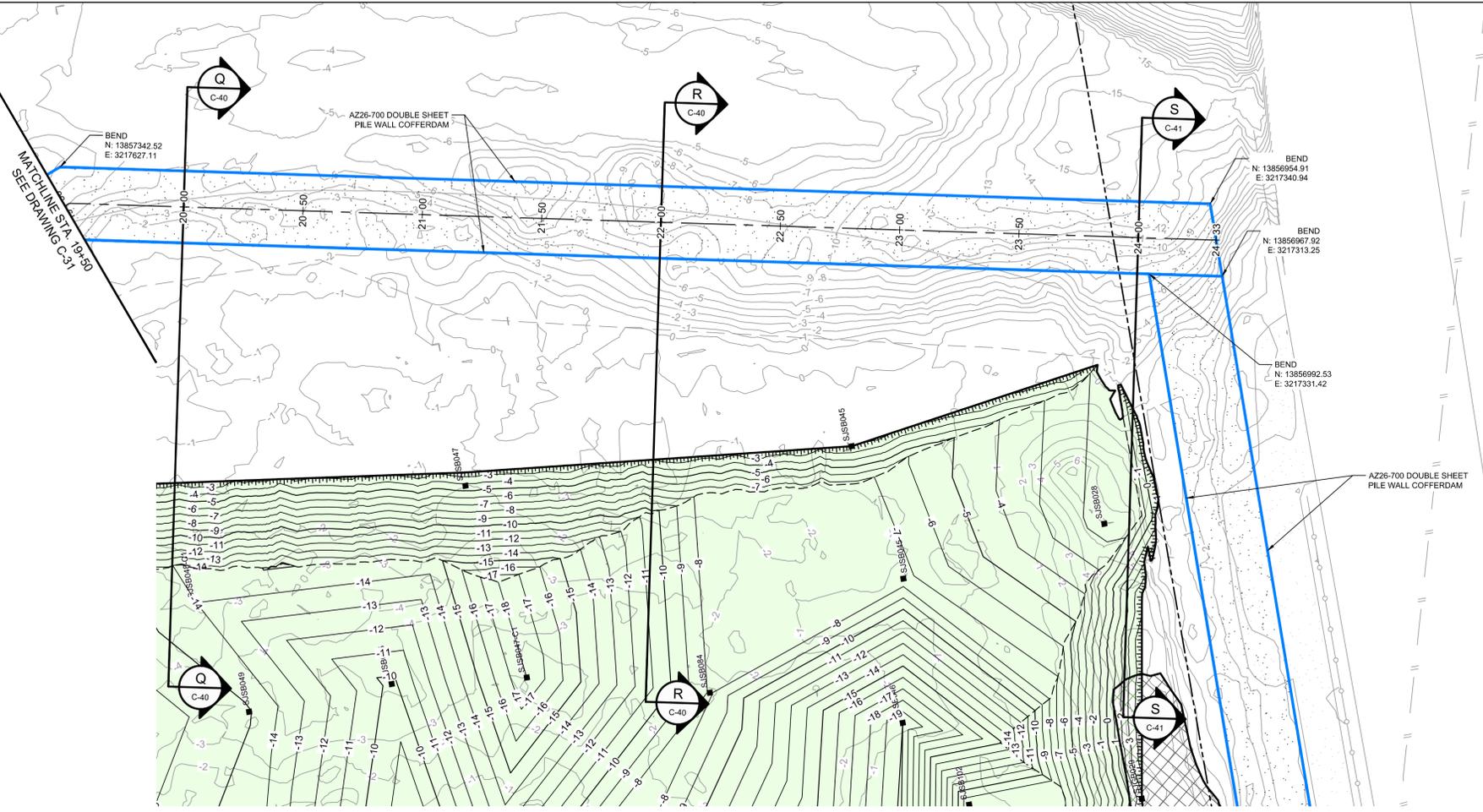
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276



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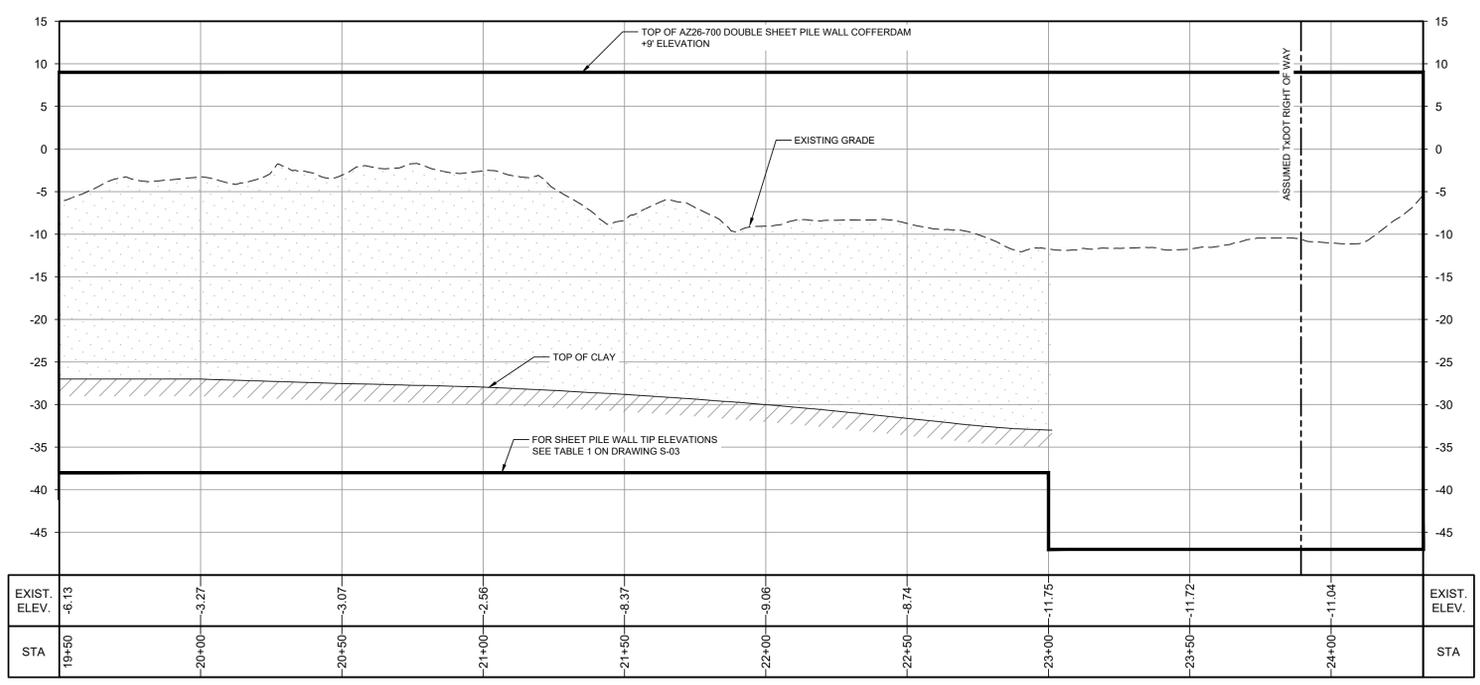
PLAN
1" = 30'

LEGEND

- ASSUMED TxDOT RIGHT OF WAY
- TORA CAP PERIMETER
- EXISTING CONTOUR INTERVAL
- 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
- GRAVEL
- AZ26-700 PILE
- AZ40-700 PILE



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

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

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
		Scale	AS SHOWN	

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

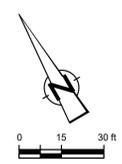
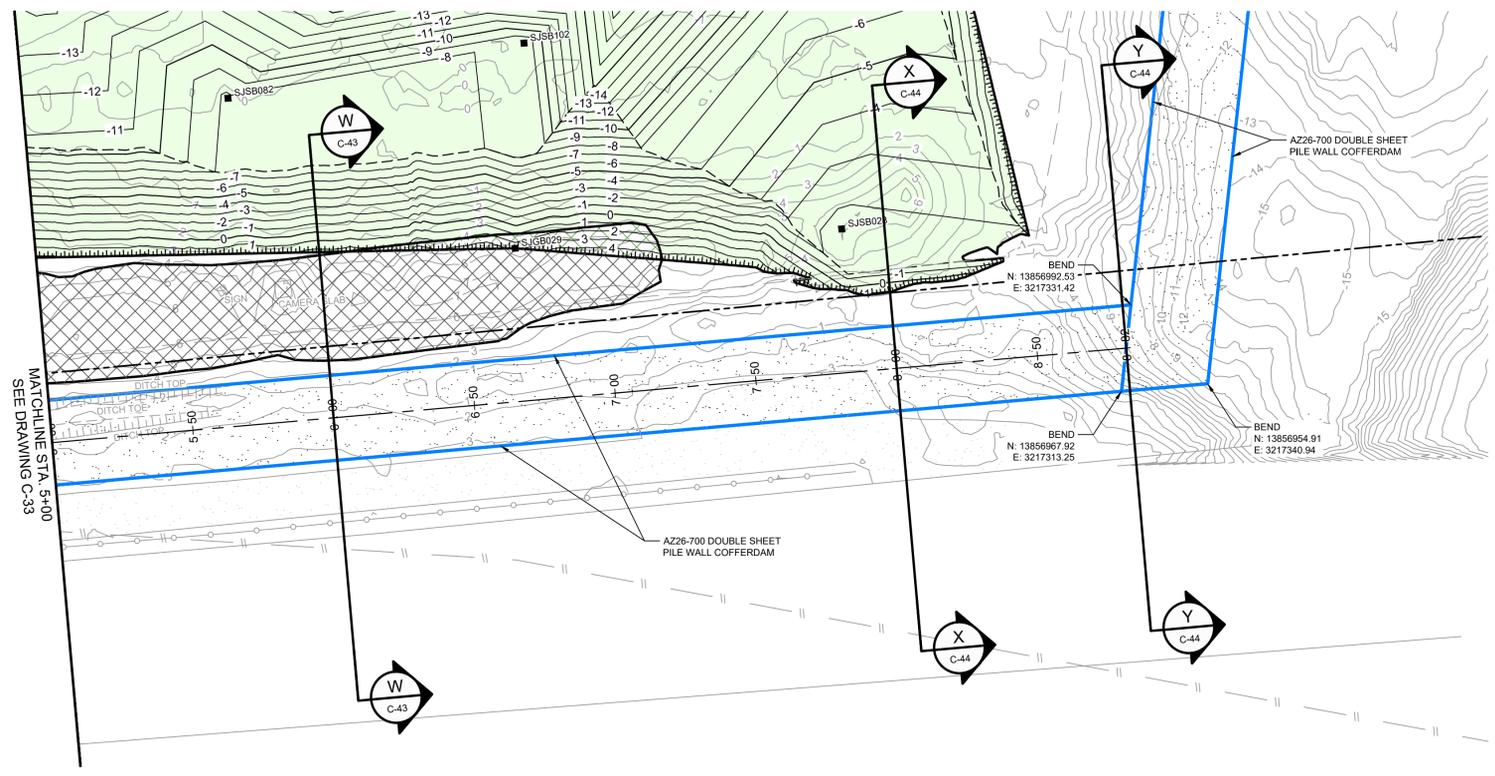
Project No. 11215702
Title

DOUBLE PILE WALL PLAN AND PROFILE
4 OF 4

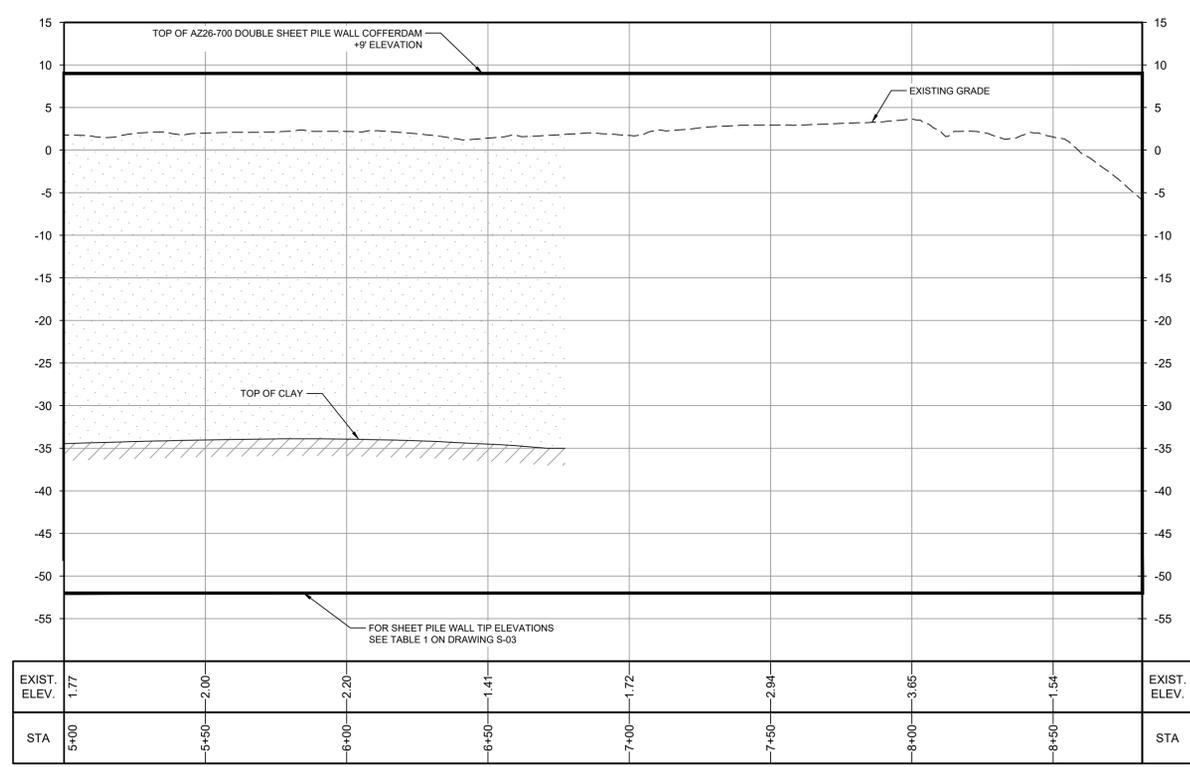
Sheet No.

C-32

90% EPA REVIEW



PLAN
1" = 30'



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

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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
- - - -	EXISTING CONTOUR INTERVAL
X	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 EXCAVATED
---	EXISTING BERM
---	GRAVEL
---	AZ26-700 PILE
---	AZ40-700 PILE

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
Original Size	This document shall not be used for construction unless signed and sealed for construction.			
Arch D	Scale AS SHOWN			
	Bar is one inch on original size drawing 0 1"			

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

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

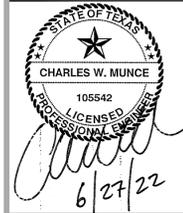
90% EPA REVIEW

Project No. **11215702**
Title: **SOUTH WALL PLAN AND PROFILE 2 OF 2**

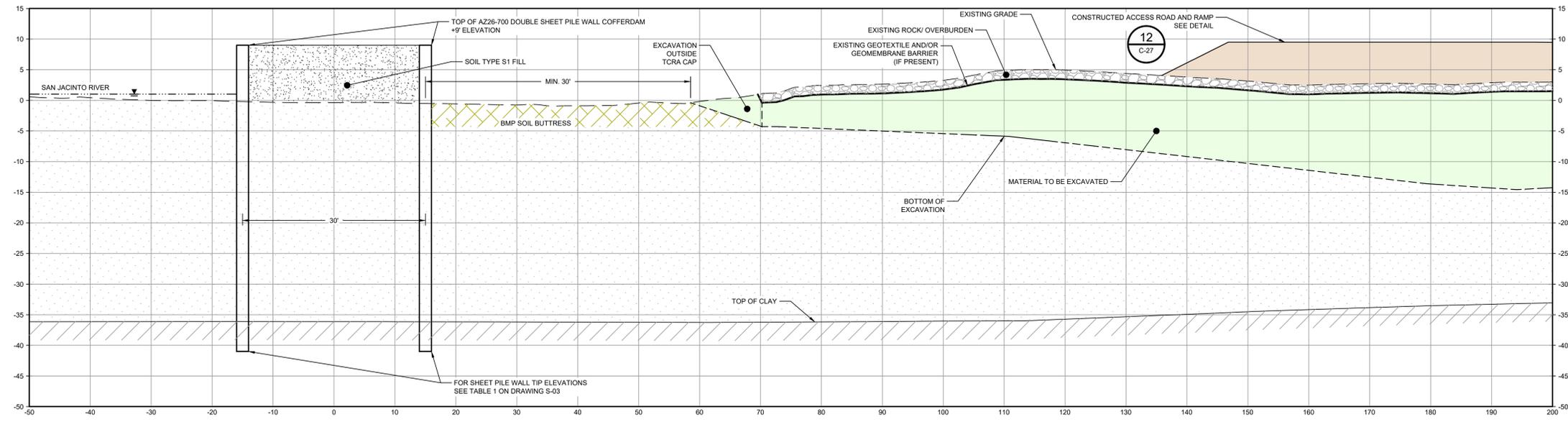
Sheet No. **C-34**
Sheet - of -



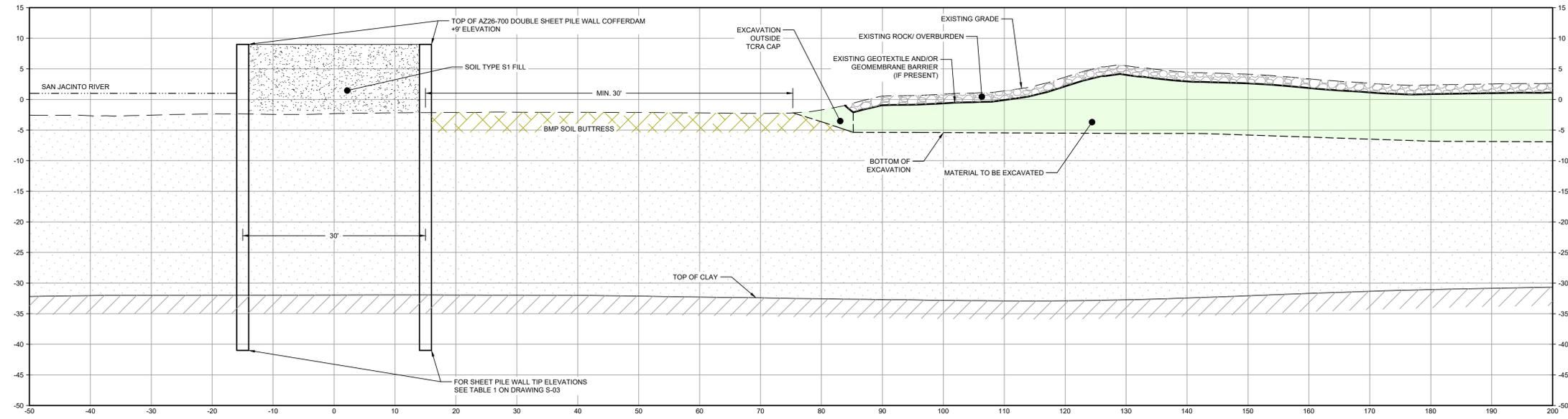
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SECTION **G** STA. 0+00.00
SCALE: 1"=10'
C-29



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

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRESS
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	

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Scale 1" = 10'
Original Size
Arch D
Bar is one inch on original size drawing
0 1"

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 1 OF 7

Sheet No.

C-35

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

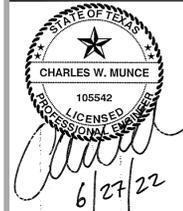
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

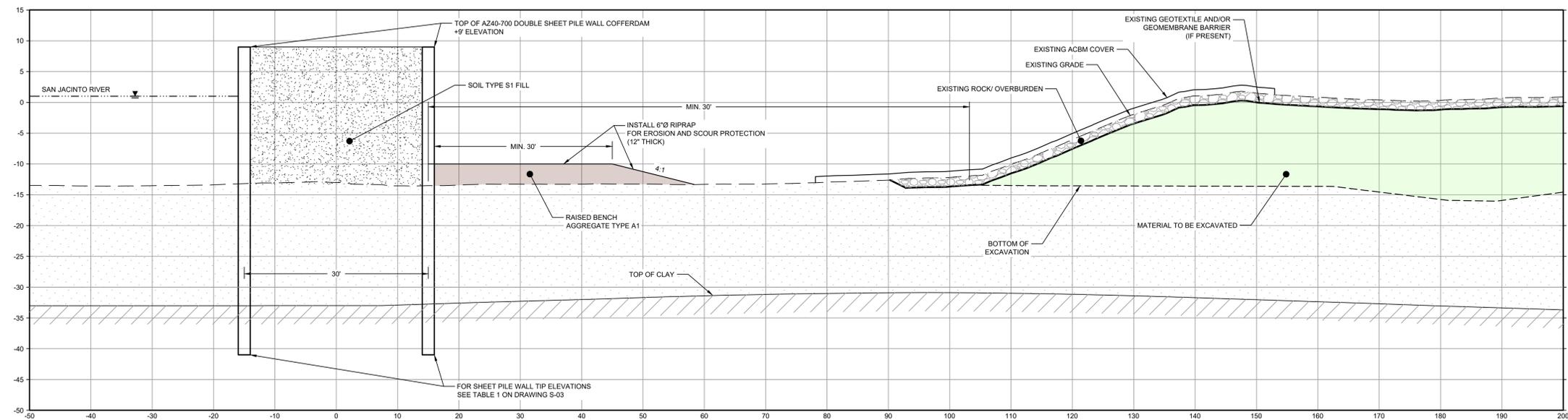
90% EPA REVIEW



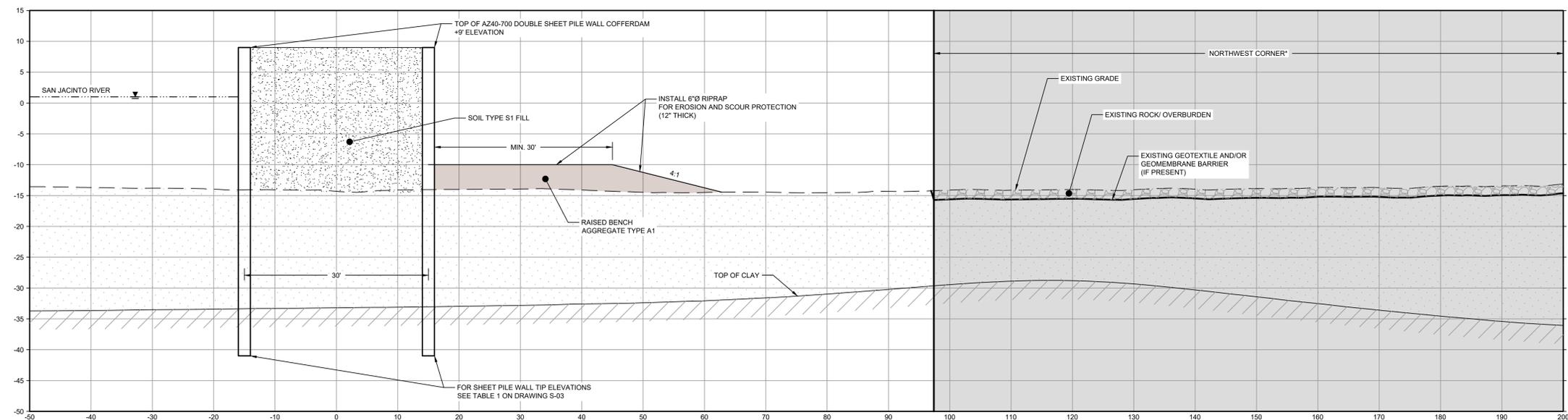
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SECTION I STA. 4+00.00
SCALE: 1"=10'
C-29



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

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS
	RAISED BENCH

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	

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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 2 OF 7

Sheet No.
C-36

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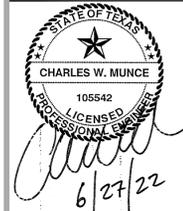
GHD SERVICES INC.
JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

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

90% EPA REVIEW



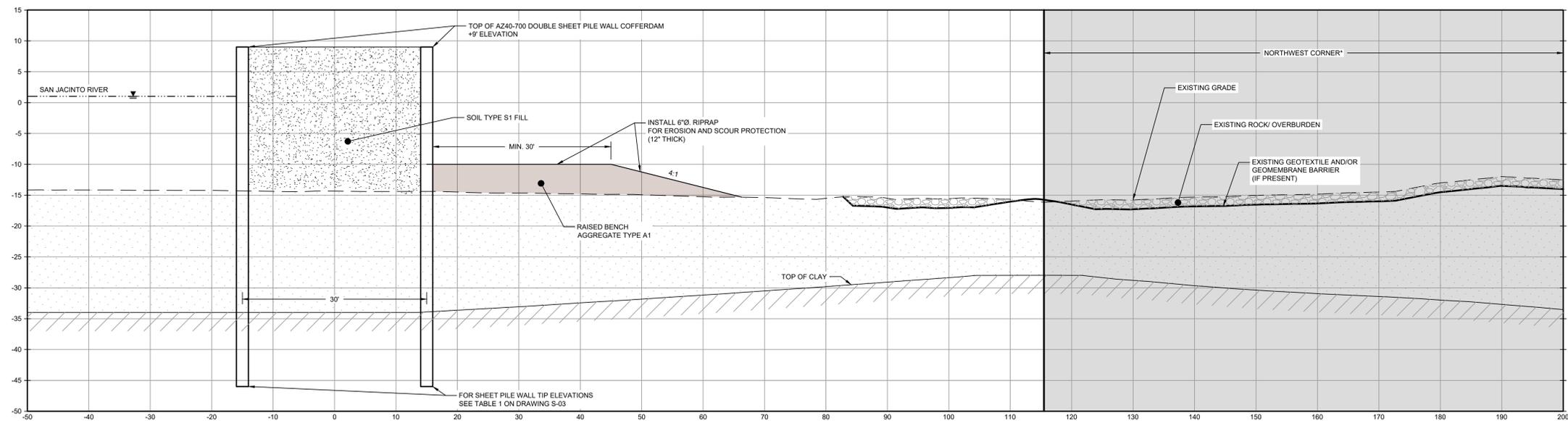
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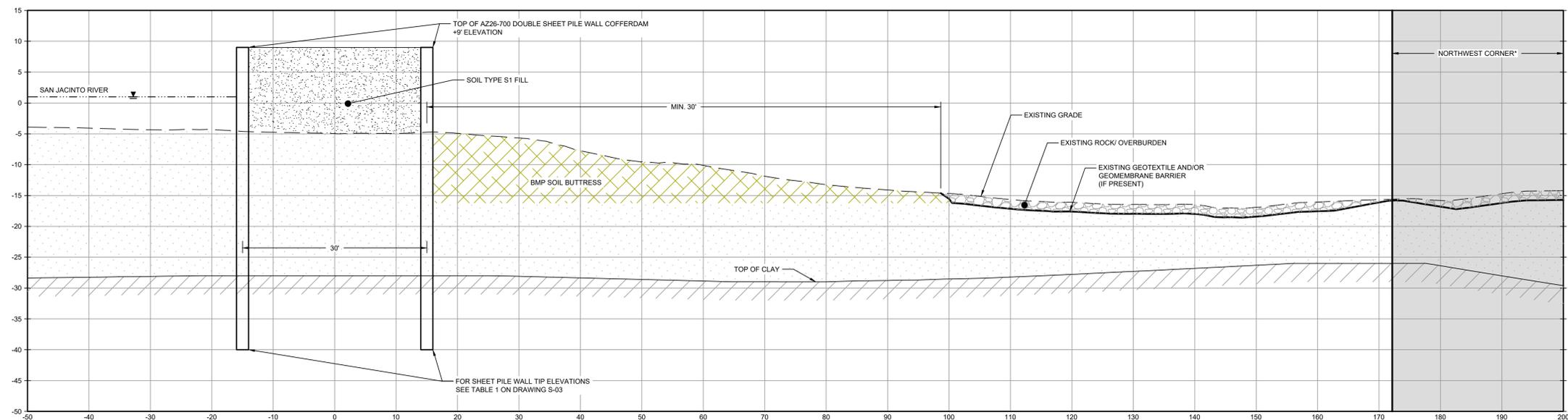
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LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS
	RAISED BENCH



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



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

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
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Arch D	Scale 1" = 10'			
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Project No. 11215702
Title

DOUBLE PILE WALL SECTIONS
3 OF 7

Sheet No.

C-37

*THE REMEDIAL DESIGN INFORMATION FOR THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IS INCLUDED IN THIS SUBMITTAL. THE DESIGN TO DATE CONCLUDES THAT COMPLETING THE REMEDIAL ACTION "IN THE DRY" IN THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT AS STATED IN THE EPA RECORD OF DECISION IS NOT TECHNICALLY FEASIBLE DUE TO HYDRAULIC HEAVE. THE SUPPORTING TECHNICAL AND ENGINEERING BASIS FOR THIS CONCLUSION ARE INCLUDED IN THIS SUBMITTAL AND AS SUCH, PENDING A FINAL EPA DETERMINATION REGARDING THIS AREA, IT IS ANTICIPATED THAT AN ADDENDUM TO THE PRE-FINAL 90% REMEDIAL DESIGN WILL BE SUBMITTED AT A FUTURE DATE TO ADDRESS THE NORTHWEST PORTION OF THE NORTHERN IMPOUNDMENT IN ACCORDANCE WITH EPA'S FINAL DETERMINATION AFTER REVIEW OF THIS NEWLY DEVELOPED SITE INFORMATION.

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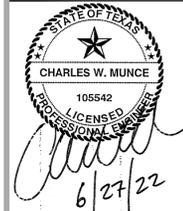
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JOB NO. 11215702 FILE NO. 001
GHD TEXAS FIRM REGISTRATION NO. 276

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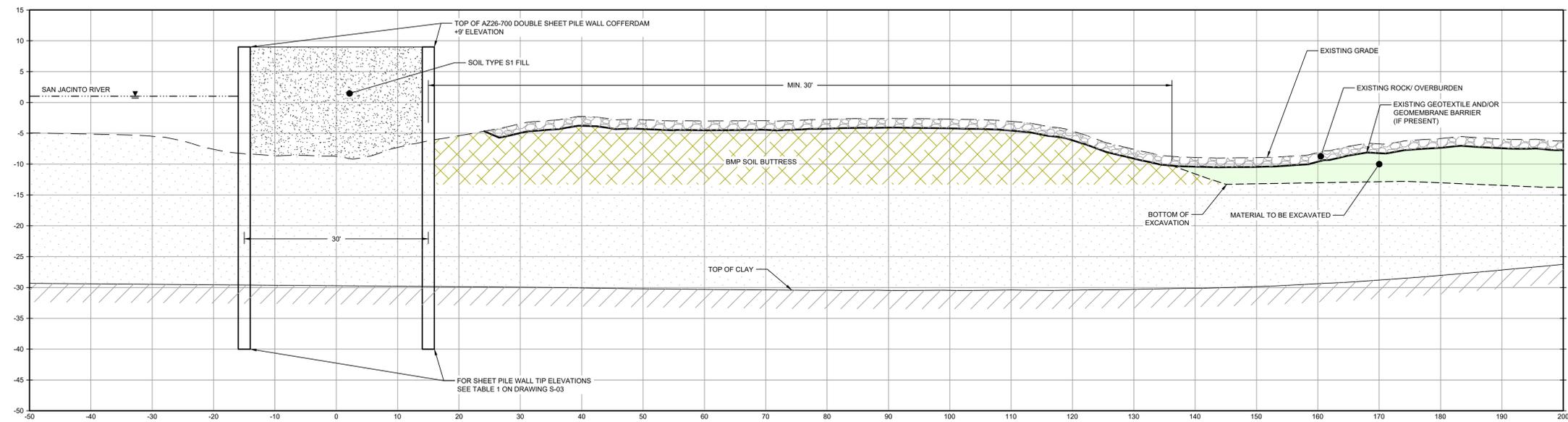
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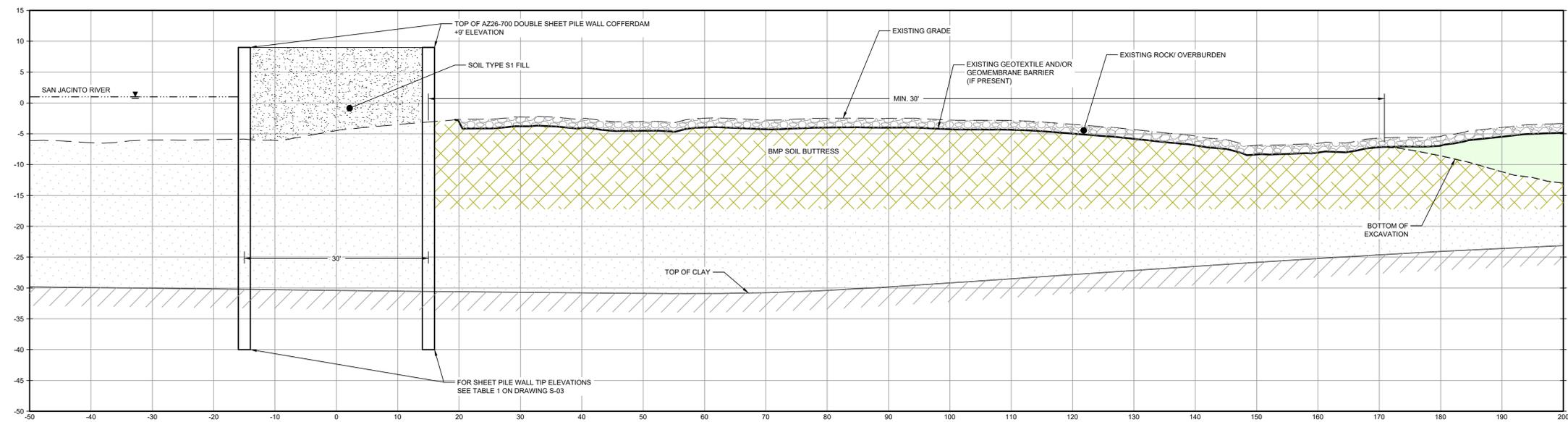
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SECTION **M** STA. 12+00.00
SCALE: 1"=10'
C-30



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

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
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Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
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Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 4 OF 7

Sheet No.

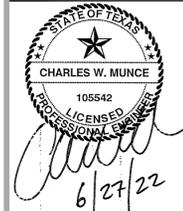
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90% EPA REVIEW

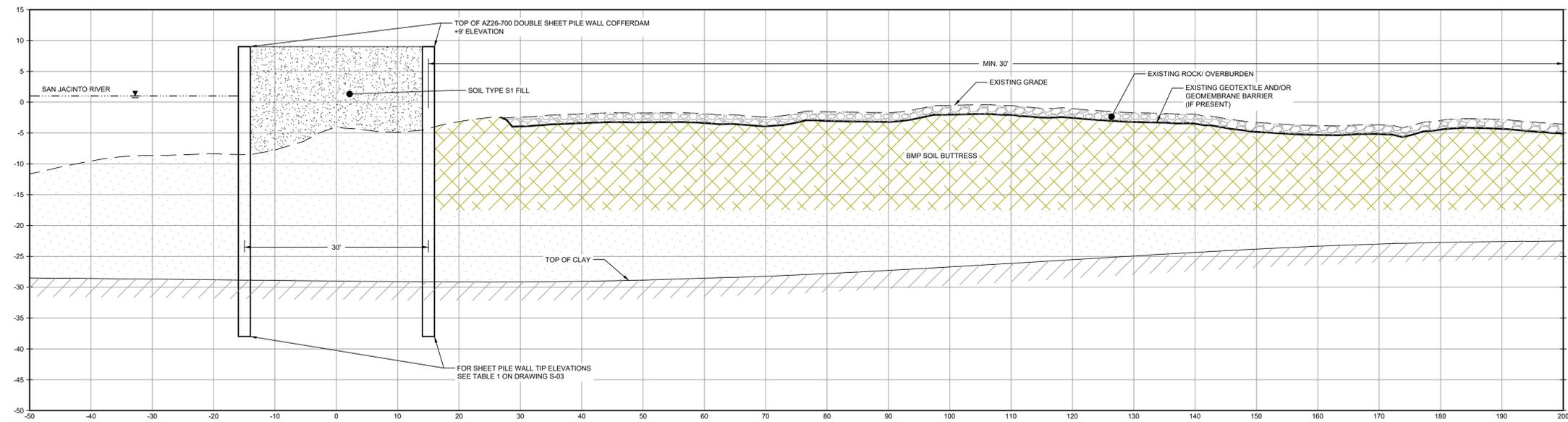
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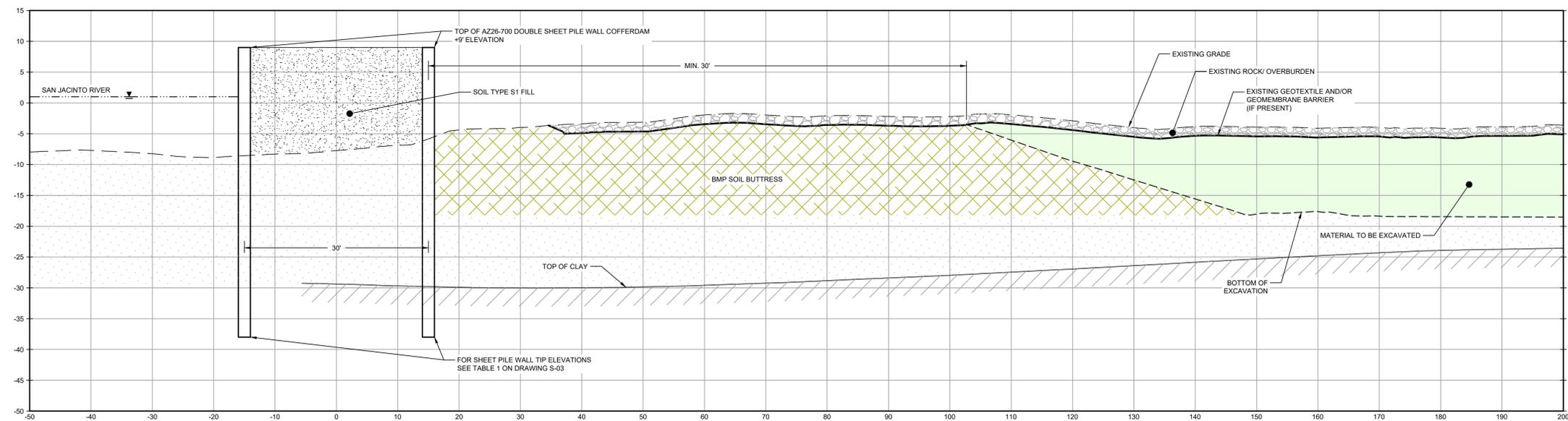


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SCALE: 1"=10'
C-31

LEGEND



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

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

90% EPA REVIEW

Client **SAN JACINTO RIVER WASTE PITS**
 Project **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022

Drawn **MW** Designer **RH**

Drafting Check **JC** Design Check **LL**

Project Coordinator **CM** Date **Jun 27, 2022**

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Project No. **11215702**

Title **DOUBLE PILE WALL SECTIONS 5 OF 7**

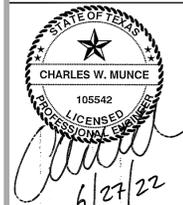
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C-39

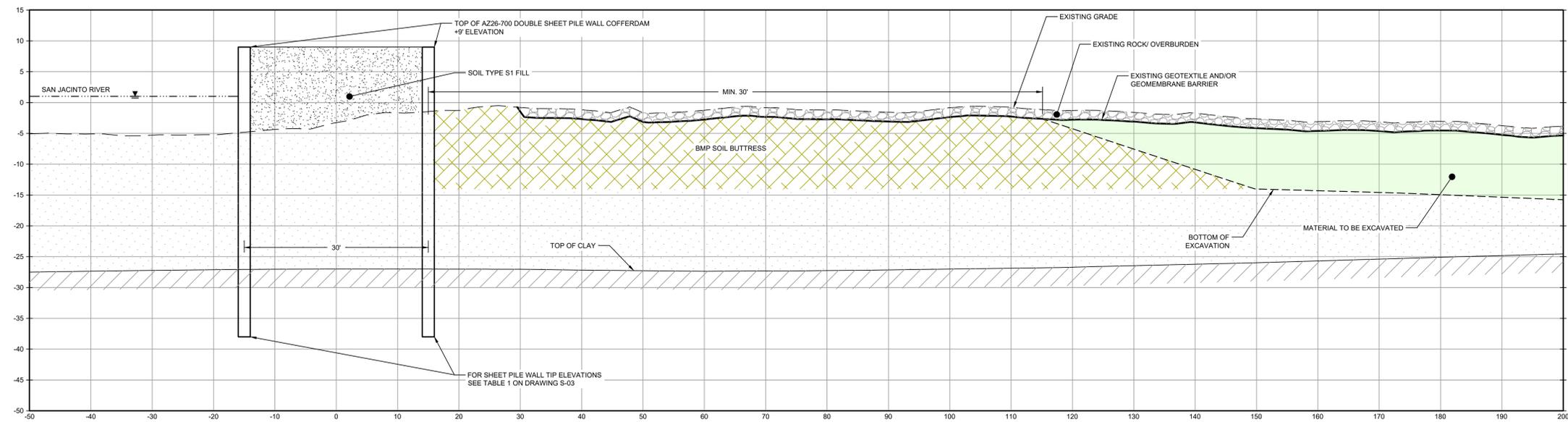
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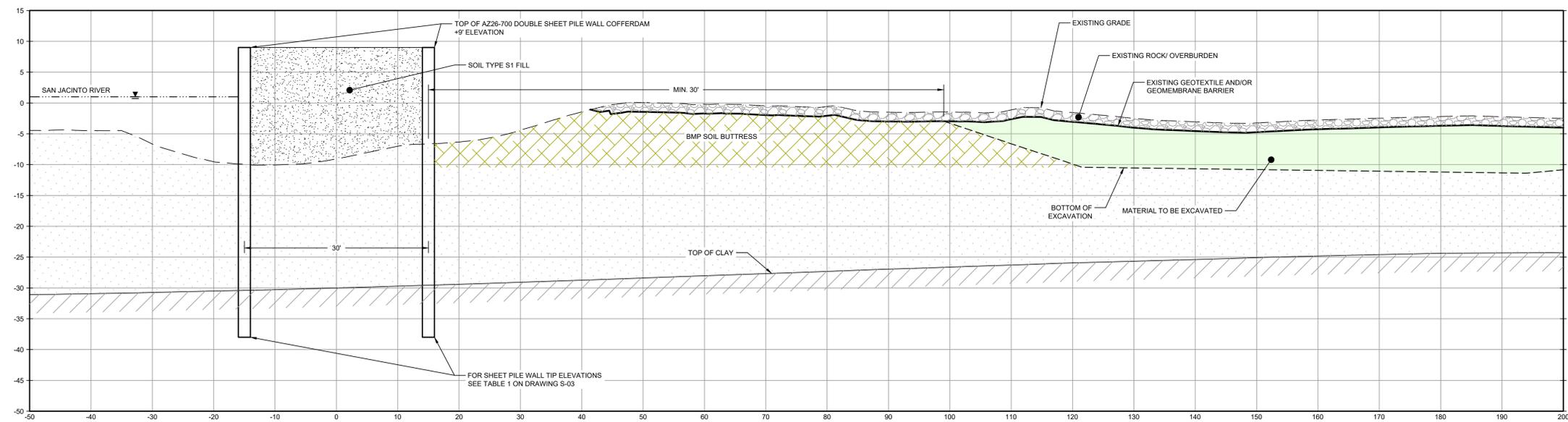
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SECTION **Q** STA. 20+00.00
SCALE: 1"=10'
C-XX

LEGEND

	MATERIAL TO BE EXCAVATED
	BMP SOIL BUTTRISS



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

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90% EPA REVIEW

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	MW	CM	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting Check	JC	Design Check	LL	
Project Coordinator	CM	Date	Jun 27, 2022	
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Original Size
Arch D
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0 1"

Project No. 11215702

Title
DOUBLE PILE WALL SECTIONS 6 OF 7

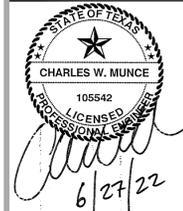
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C-40

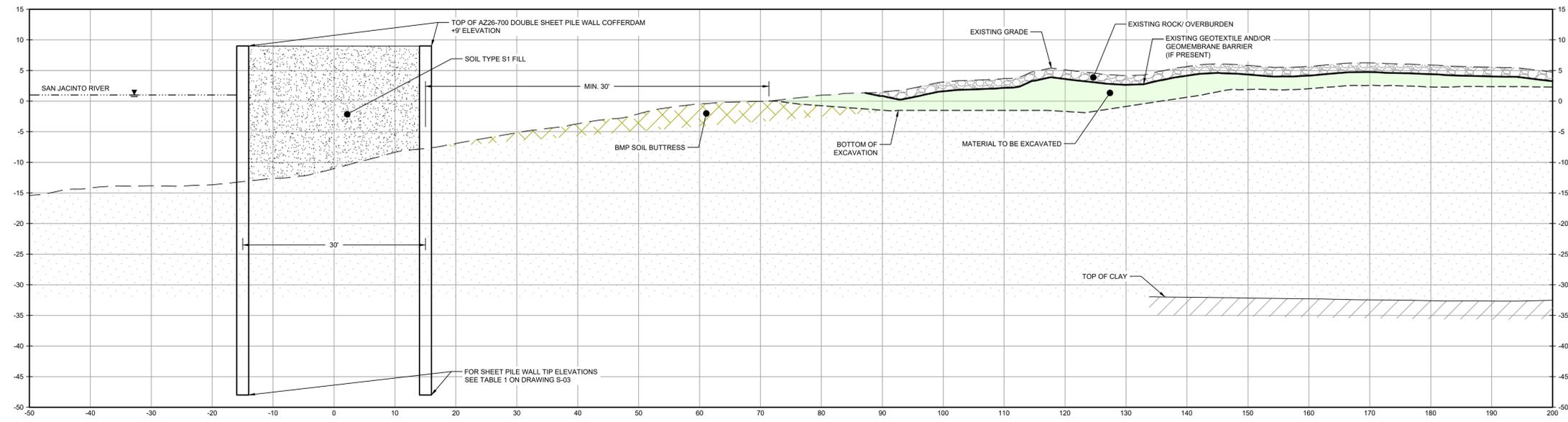
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SECTION **S** STA. 24+00
SCALE: 1"=10'

LEGEND

Client
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 Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022

Drawn **MW** Designer **RH**
 Drafting **JC** Design Check **LL**
 Project Coordinator **CM** Date **Jun 27, 2022**
 Scale **1" = 10'**

Original Size
Arch D
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Project No. **11215702**
 Title
DOUBLE PILE WALL SECTIONS 7 OF 7

Sheet No.
C-41

NOTES:
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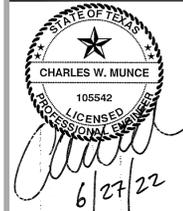
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 JOB NO. 11215702 FILE NO. 001
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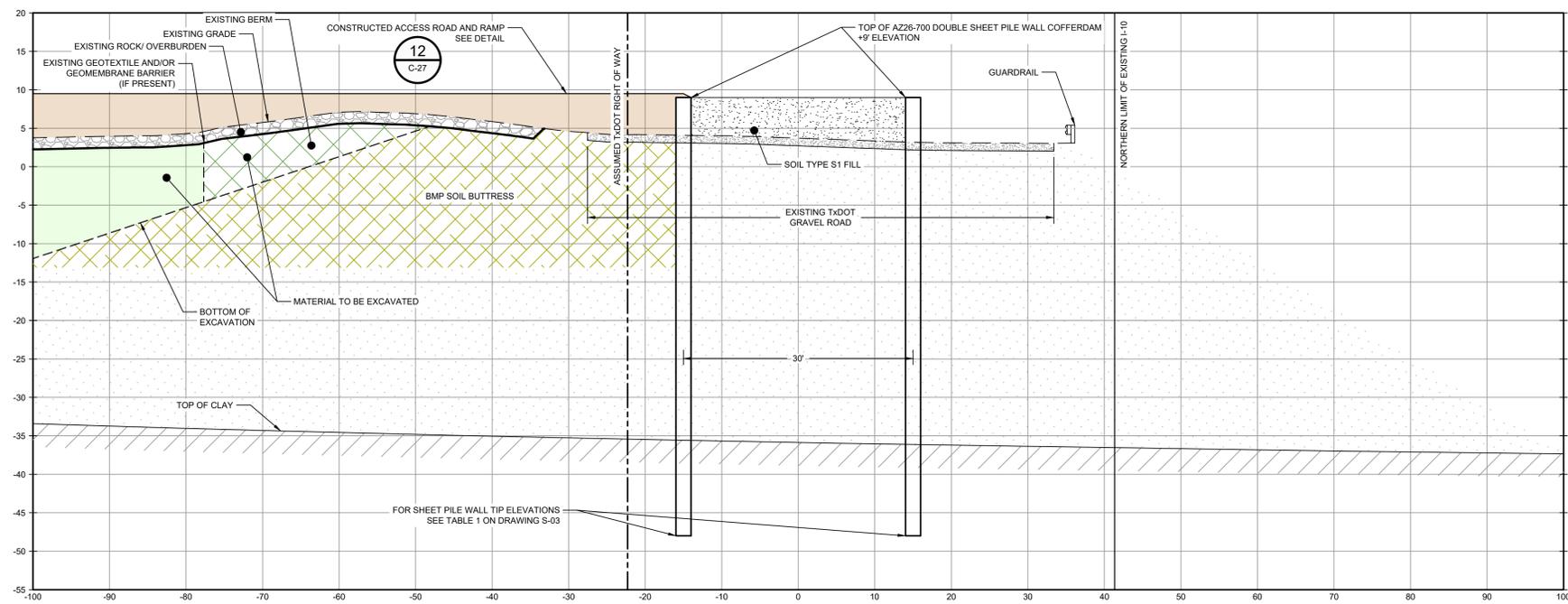
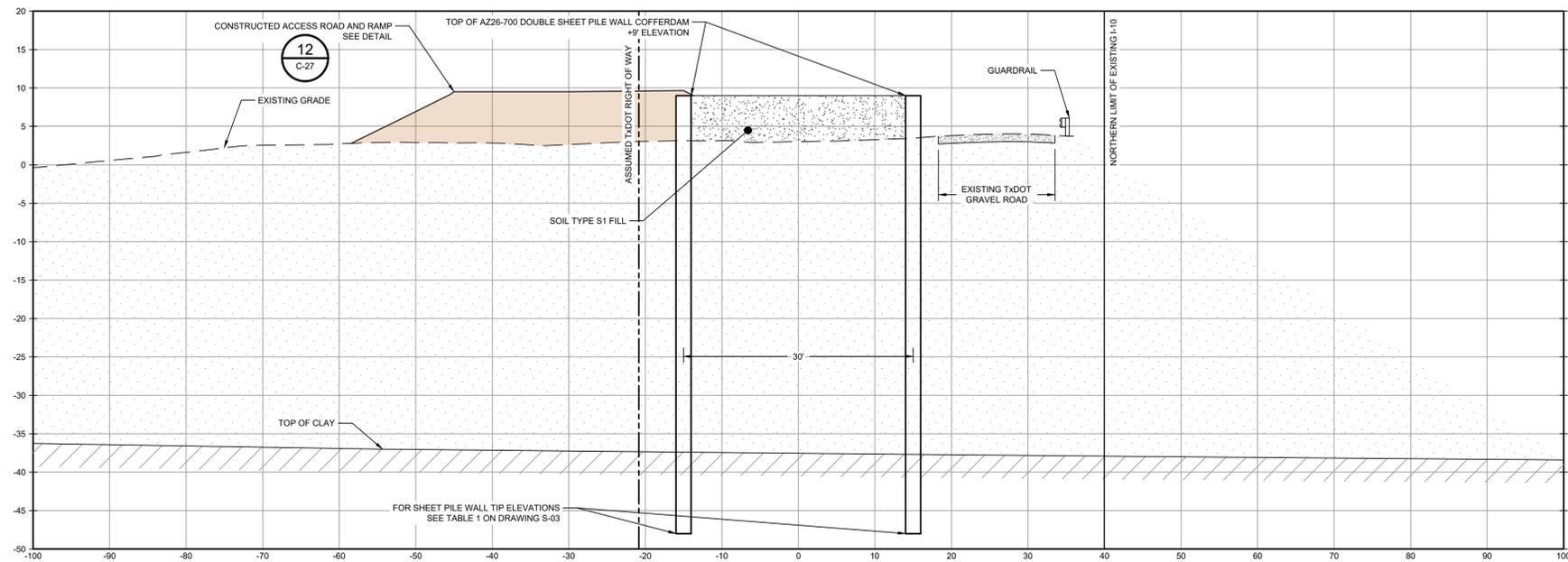
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LEGEND

	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRESS
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS



- NOTES:
- ASSUMED TxDOT RIGHT OF WAY IS BASED ON INFORMATION PROVIDED BY THE HARRIS COUNTY TAX ASSESSOR'S OFFICE.
 - BOTTOM OF EXCAVATION IS SUBJECT TO CHANGE.

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90% EPA REVIEW

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022

Drawn: MW, Designer: RH
Drafting Check: JC, Design Check: LL
Project Coordinator: CM, Date: Jun 27, 2022
Scale: 1" = 10'

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

Project No. 11215702

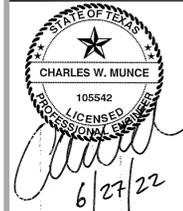
Title: **SOUTH WALL SECTIONS 1 OF 3**

Sheet No. **C-42**

Sheet - of -



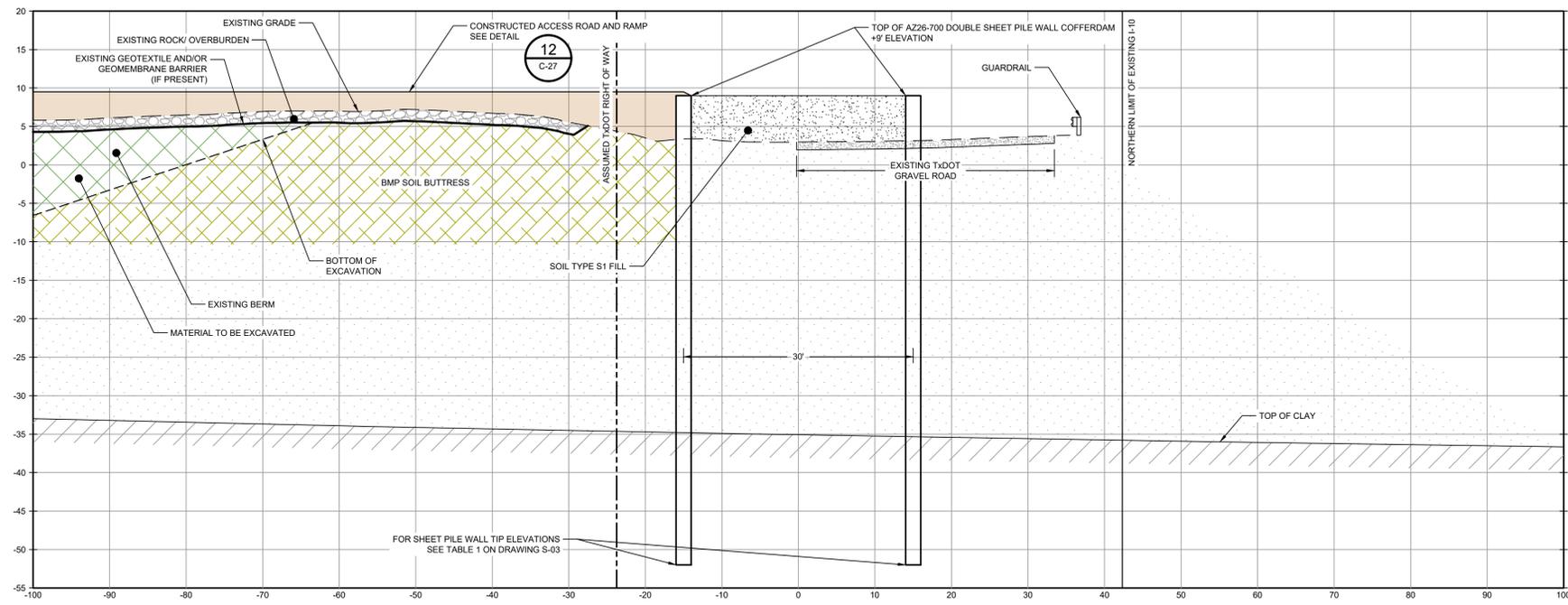
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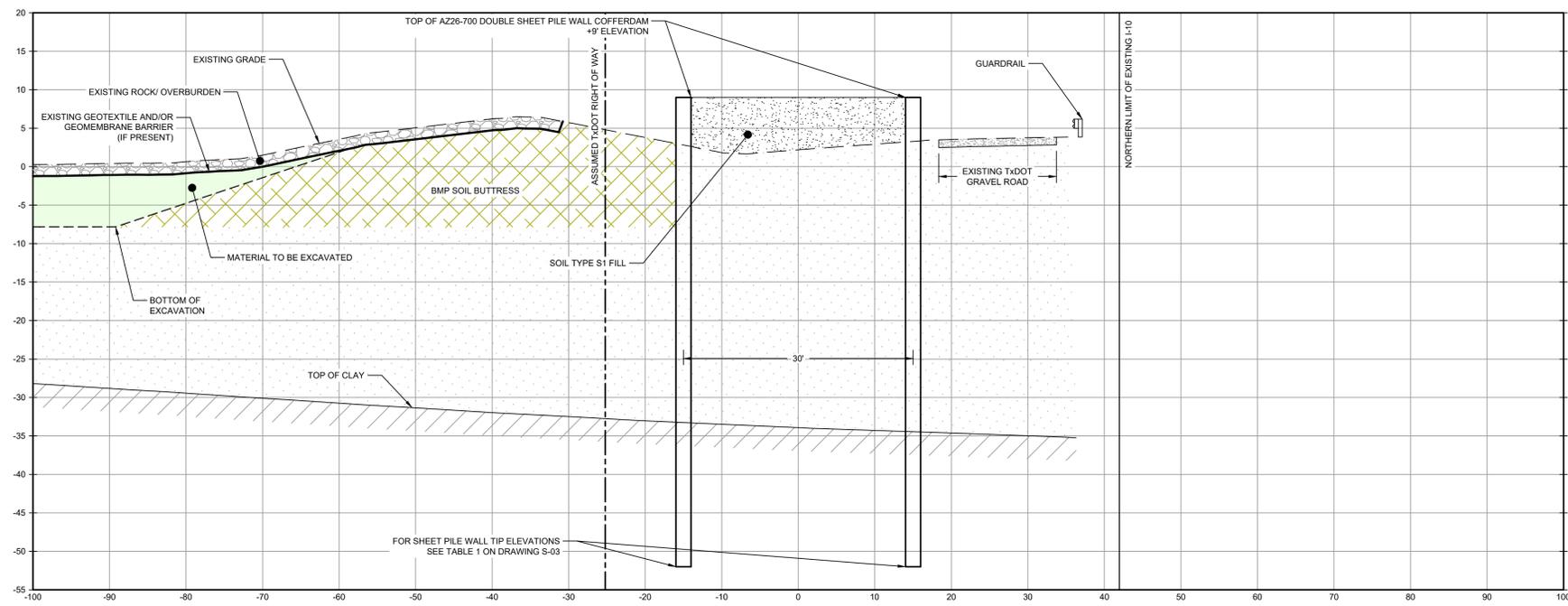
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LEGEND

	MATERIAL TO BE EXCAVATED
	EXISTING BERM TO BE EXCAVATED
	BMP SOIL BUTTRESS
	PLANNED IMPROVEMENTS FOR NORTHERN IMPOUNDMENT ACCESS



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



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

- NOTES:
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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022

Drawn **MW** Designer **RH**
Drafting **JC** Design Check **LL**
Project Coordinator **CM** Date **Jun 27, 2022**
Scale **1" = 10'**

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

Project No. **11215702**

Title
SOUTH WALL SECTIONS 2 OF 3

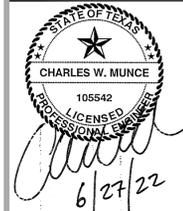
Sheet No.

C-43

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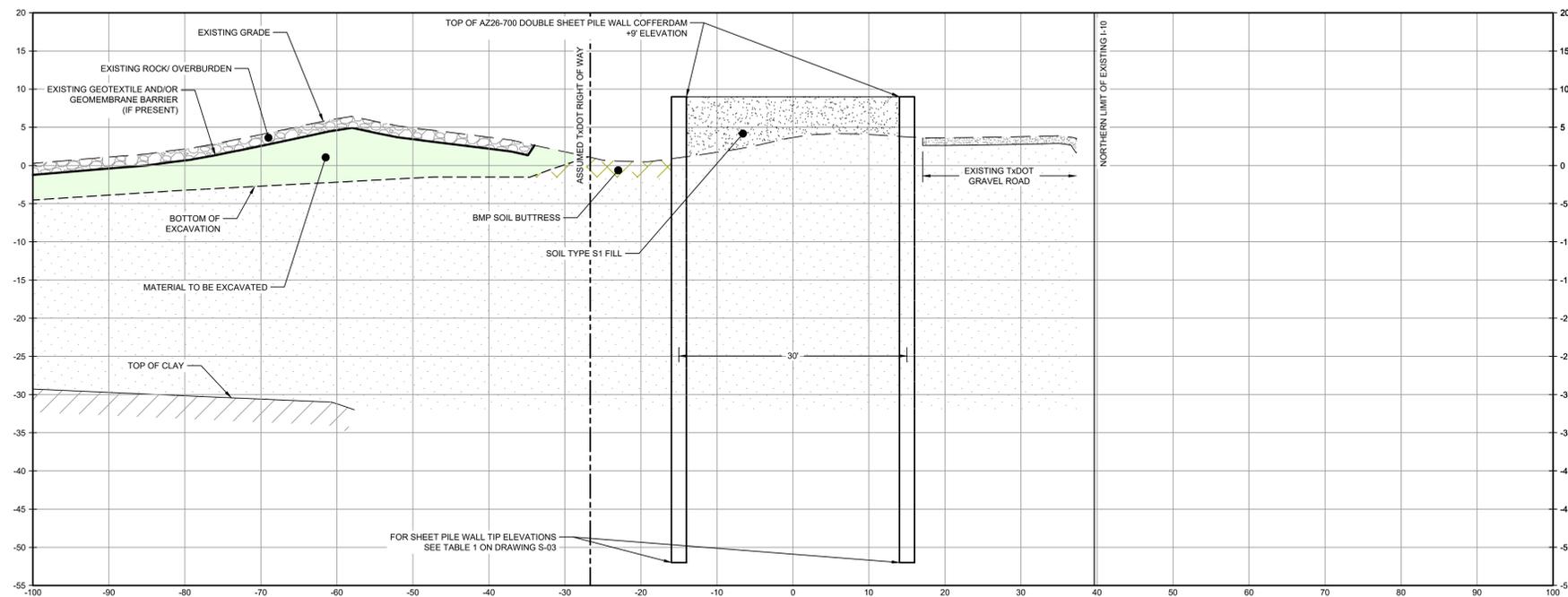
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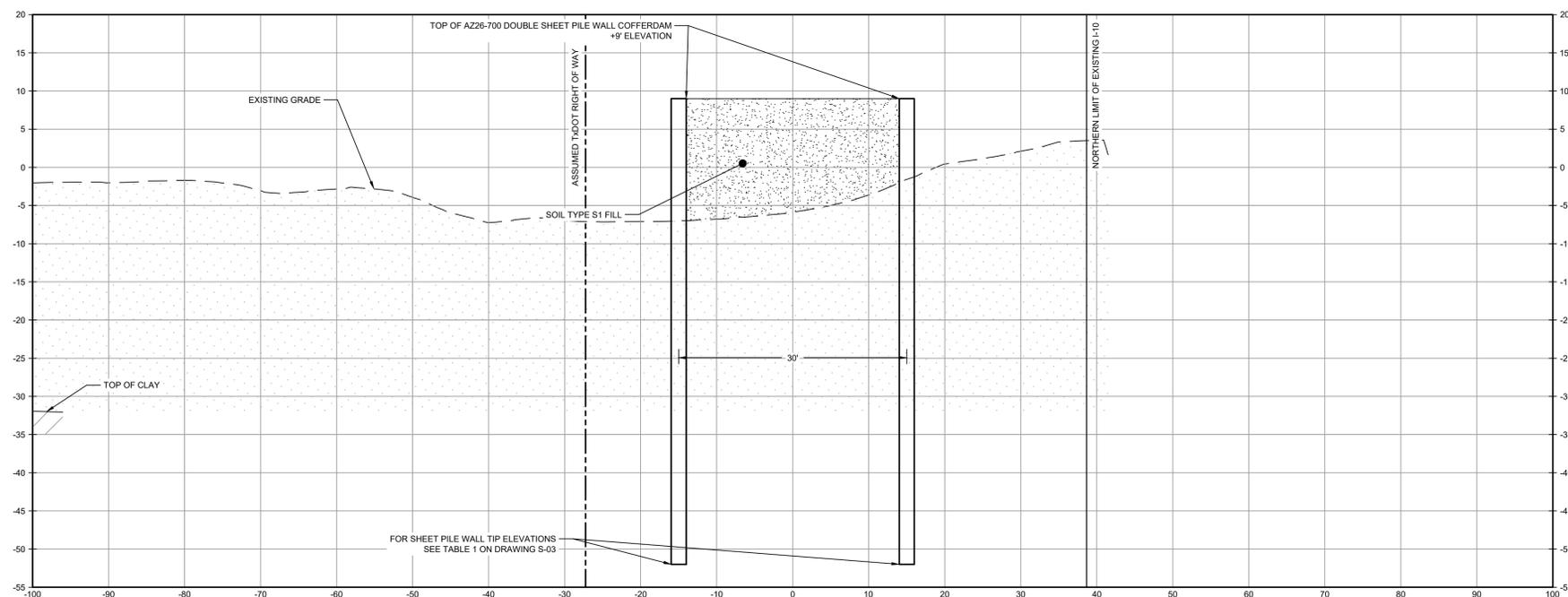
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LEGEND

- MATERIAL TO BE EXCAVATED
- BMP SOIL BUTTRISS



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



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

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Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	MW	CM	06/27/2022

Drawn **MW** Designer **RH**

Drafting **JC** Design Check **LL**

Project Coordinator **CM** Date **Jun 27, 2022**

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Project No. **11215702**

Title
SOUTH WALL SECTIONS 3 OF 3

Sheet No.

C-44



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LEGEND

---	ASSUMED TxDOT RIGHT OF WAY
- - - -	TORA CAP PERIMETER
---	EXISTING CONTOUR INTERVAL
- - - -	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	PIPELINE
●	BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	MATERIAL TO BE EXCAVATED
---	EXISTING BERM TO EXCAVATED
---	EXISTING BERM
---	NORTHWEST CORNER
---	CONCRETE
---	GRAVEL
---	ASPHALT
---	AZ26-700 PILE
---	AZ40-700 PILE

Client
SAN JACINTO RIVER WASTE PITS

Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

2	90% EPA REVIEW	DS	SC	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	DS	Designer	KM	
Drafting Check	MW	Design Check	SC	
Project Coordinator	CM	Date	Jun 24, 2022	
		Scale	1" = 60'	
Original Size		Bar is one inch on original size drawing		

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

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 GHD TEXAS FIRM REGISTRATION NO. 276

Project No. 11215702
 Title
STRUCTURAL LAYOUT PLAN

Sheet No.
S-02
 Sheet - of -

90% EPA REVIEW

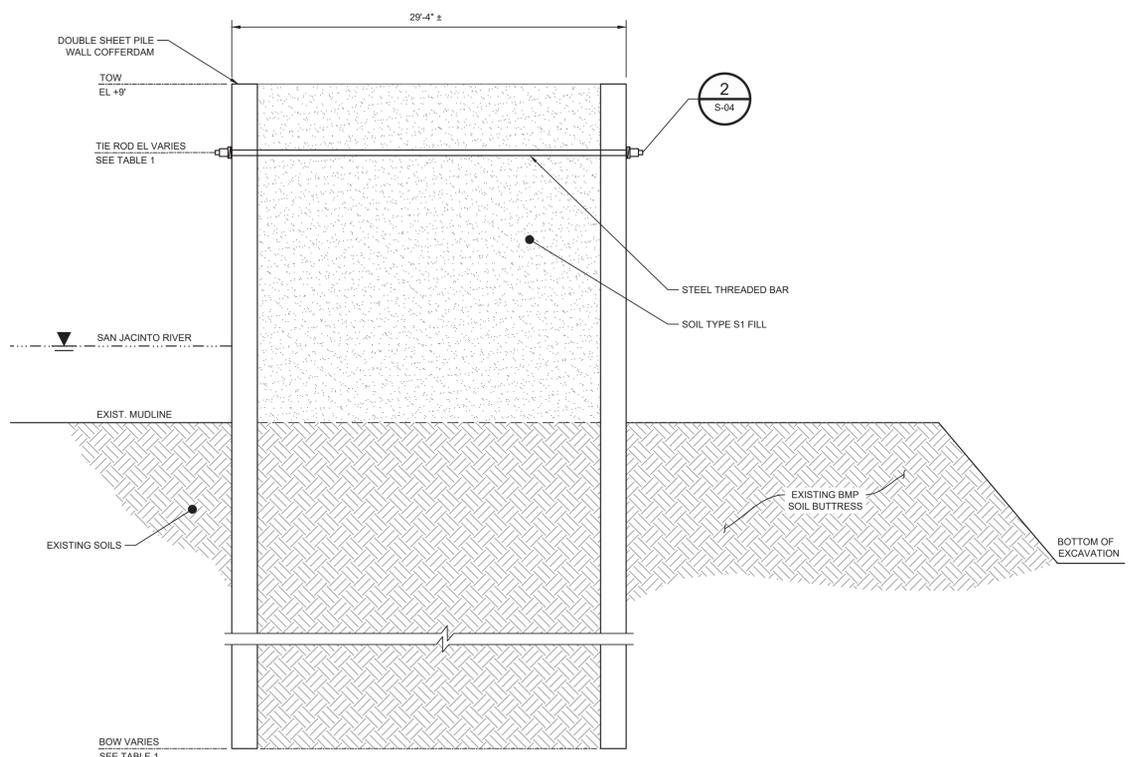


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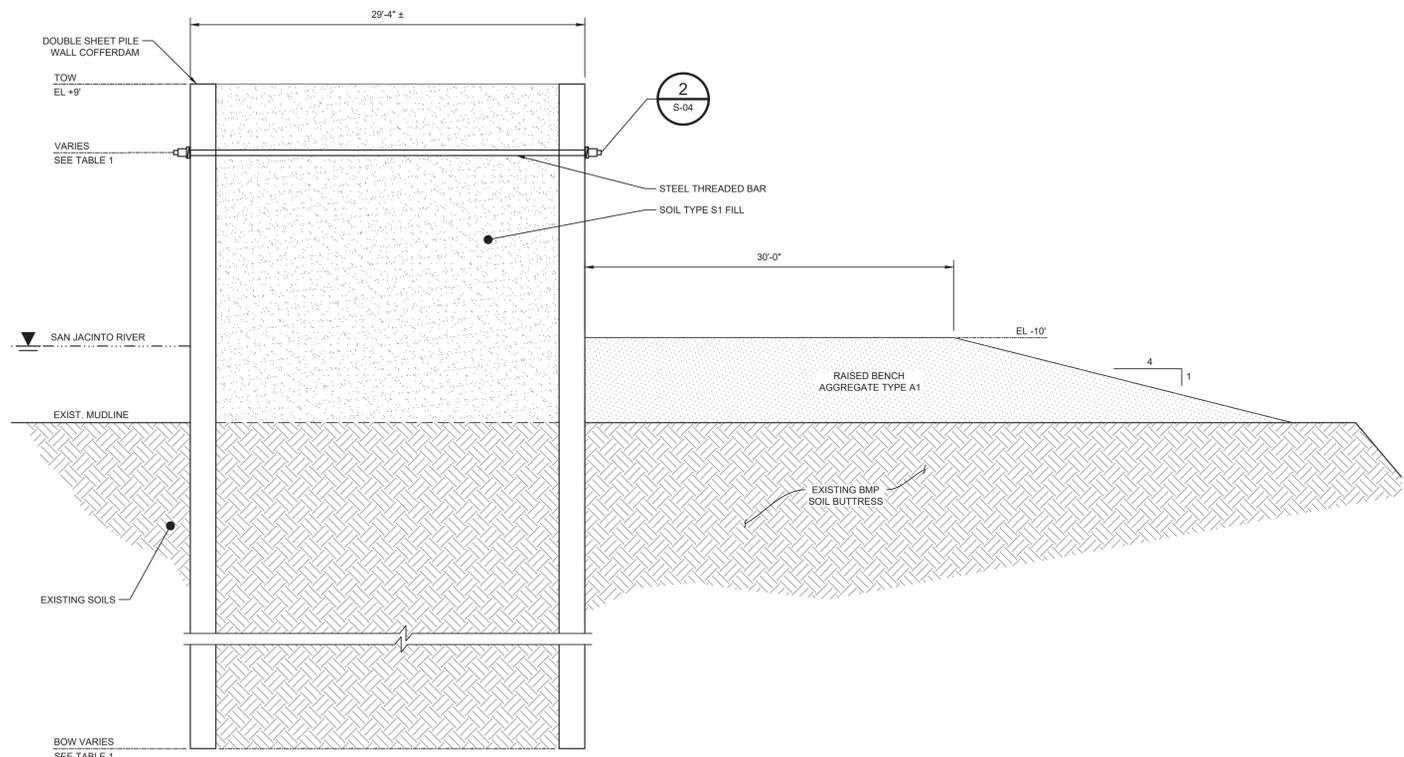


Satish Chilka
Digital Signature
06/27/2022

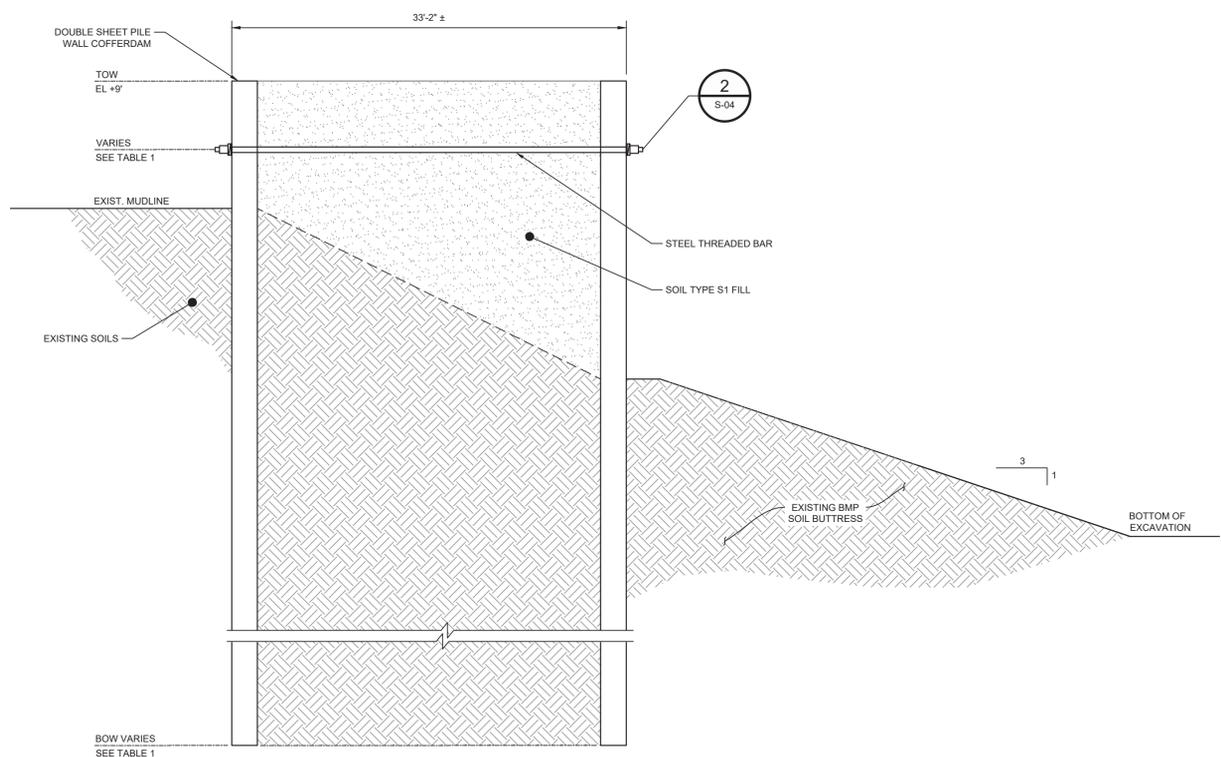
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DETAIL **A** TYPICAL WALL SECTION
N.T.S. S-01



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



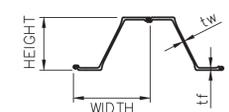
DETAIL **C** TYPICAL WALL SECTION
N.T.S. S-01

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	AZ26-700	50	2.25	5	3
C2	2+50	9+75	B	AZ40-700N	55	3.00	5	-5
C3	9+75	14+00	A	AZ26-700	50	2.25	5	0
C4	14+00	17+00	A	AZ26-700	50	2.25	5	0
C4A	17+00	23+00	A	AZ26-700	50	2.25	5	6
C5	23+00	24+33	A	AZ26-700	60	2.25	5	0
C6	0+00	4+00	C	AZ26-700	60	2.25	5	0
C7	4+00	8+82	C	AZ26-700	60	2.25	5	0

MINIMUM STEEL SHEET PILE

SSP SECTION	ASTM	YIELD STRENGTH (KSI)	WIDTH w (IN)	HEIGHT h (IN)	THICKNESS (IN)		WEIGHT		ELASTIC MODULUS (IN ³ /FT)
					FLANGE tf	WEB tw	SINGLE PILE (LB/FT)	WALL AREA (LB/FT ²)	
AZ26-700	A572	60	27.56	18.11	0.480	0.480	69.12	30.10	48.4
AZ40-700N	A572	60	27.56	19.72	0.669	0.520	90.16	39.26	74.3



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

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	DS	SC	06/27/2022

Drawn DS Designer KM
Drafting Check MW Design Check SC
Project Coordinator CM Date Jun 24, 2022
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"

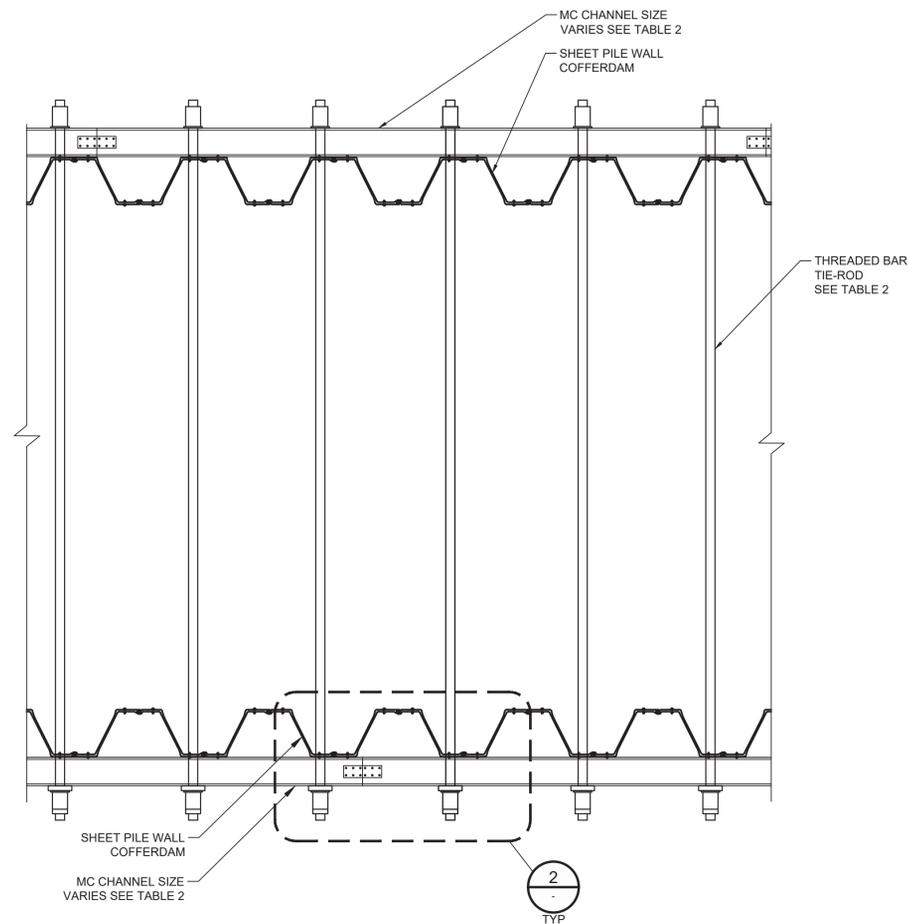
Project No. 11215702

Title
STRUCTURAL SECTIONS

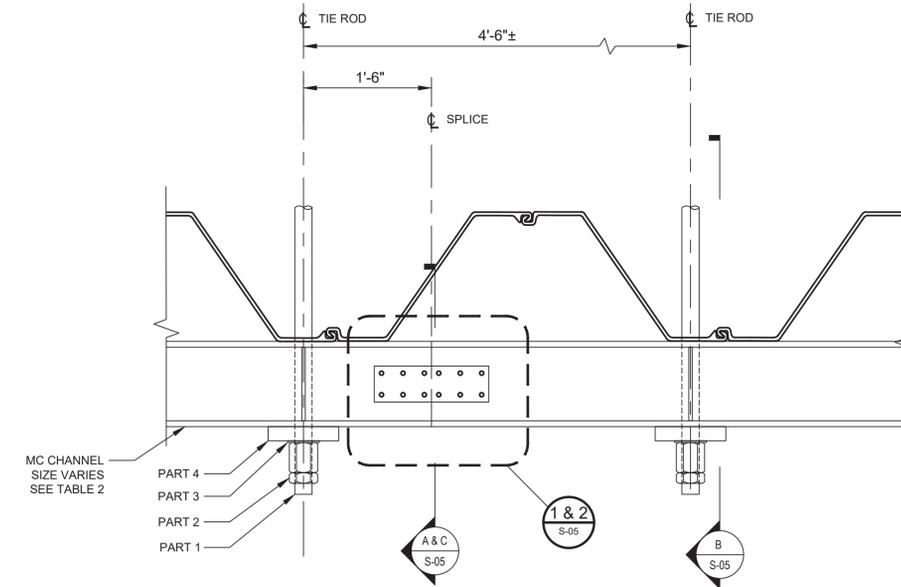
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S-03

90% EPA REVIEW

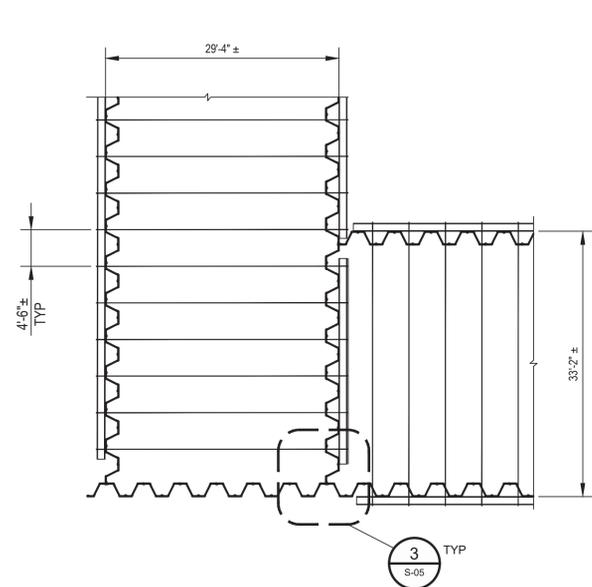


DETAIL 1 PLAN VIEW
SCALE: 1"=3'-0"

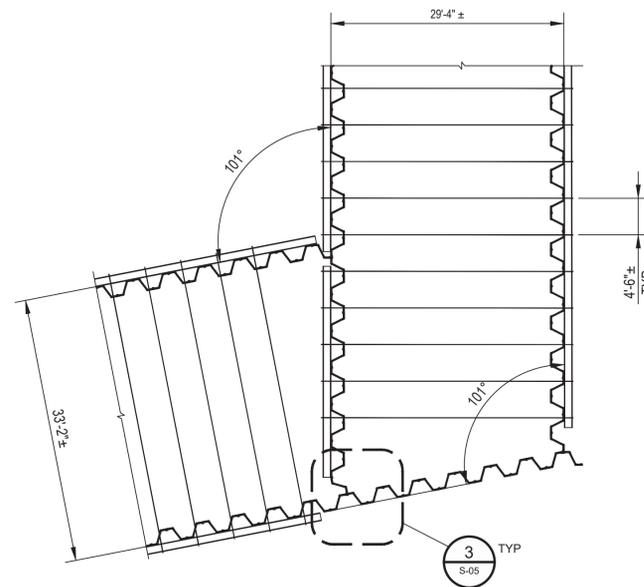


NOTE:
1. STAGGER WALER SPLICE ON INTERIOR AND EXTERIOR WALL BY 10'-0" +/-
2. WELD 1/2" THICK STEEL PLATES BETWEEN T&B WALERS TO MAINTAIN SPACING

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

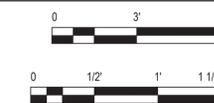


DETAIL 3 PLAN VIEW
SCALE: 3/32"=1'-0"



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

TABLE 2					
WALL SEGMENT	TIE ROD NOMINAL DIAMETER PART 1 (IN)	TIE ROD HEX NUT AND JAM NUT O.D. PART 2 (IN)	TIE ROD WASHER O.D. PART 3 (IN)	BEARING PLATE PART 4 (IN)	WALER SECTION
C1	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35
C2	3.00	4.50	6.00	10 x 10 x 2.5	MC18 x 45.8
C3	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35
C4	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35
C4A	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35
C5	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35
C6	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35
C7	2.25	3.50	4.50	10 x 10 x 2	MC12 x 35



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Satish Chilka
Digital Signature
06/27/2022

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Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
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Drawn DS Designer KM
Drafting Check MW Design Check SC
Project Coordinator CM Date Jun 24, 2022
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Project No. 11215702
Title

STRUCTURAL DETAILS 1 of 2

Sheet No.
S-04
Sheet - of -

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

90% EPA REVIEW

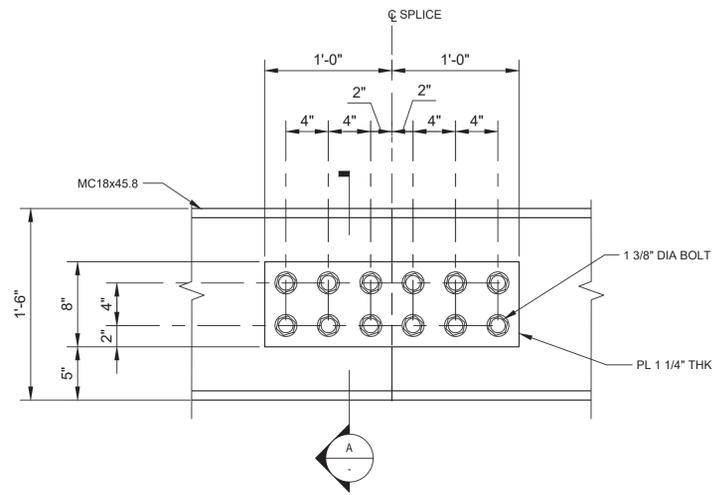


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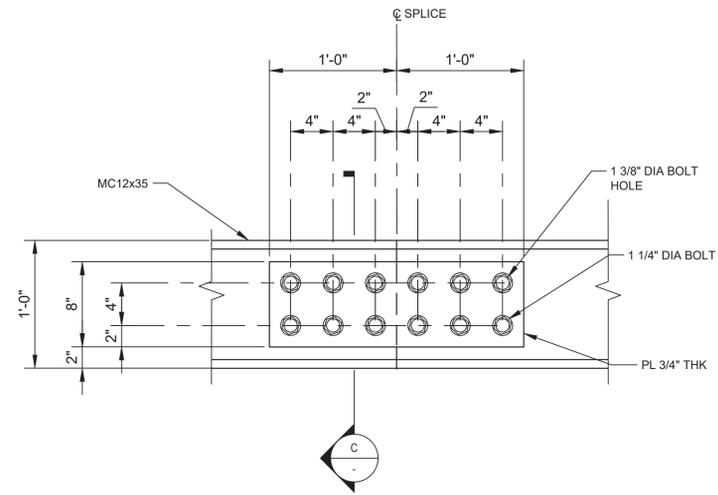


Satish Chilka
Digital Signature
06/27/2022

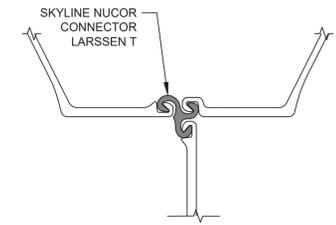
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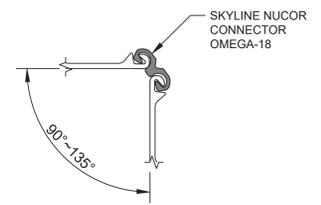
DETAIL 1 PLAN - SPLICE CONNECTION - WALER MC 18X45.8
SCALE: 1 1/2"=1'-0"



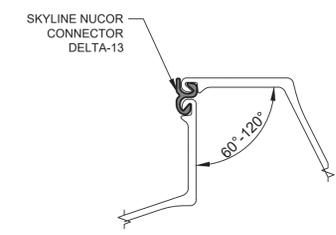
DETAIL 2 PLAN - SPLICE CONNECTION - WALER MC 12X35
SCALE: 1 1/2"=1'-0"



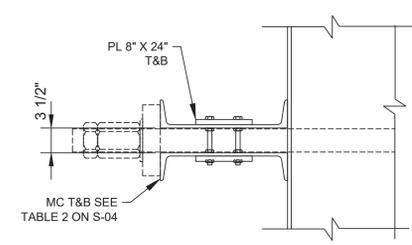
DETAIL 3 THREE SHEET PILE CONNECTOR
SCALE: NTS



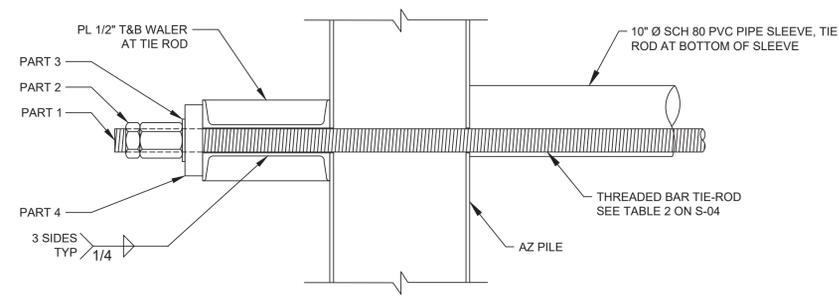
DETAIL 4 CORNER CONNECTOR ALTERNATIVE A
SCALE: NTS



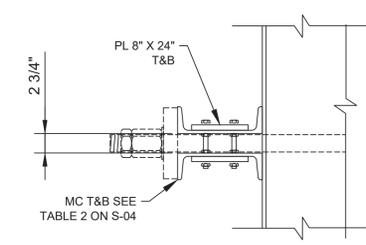
DETAIL 5 CORNER CONNECTOR ALTERNATIVE B
SCALE: NTS



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



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



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

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

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
2	90% EPA REVIEW	DS	SC	06/27/2022

Drawn DS Designer KM
Drafting Check MW Design Check SC
Project Coordinator CM Date Jun 24, 2022
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**

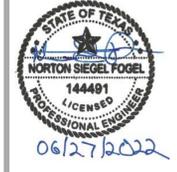
Sheet No.

S-05

90% EPA REVIEW

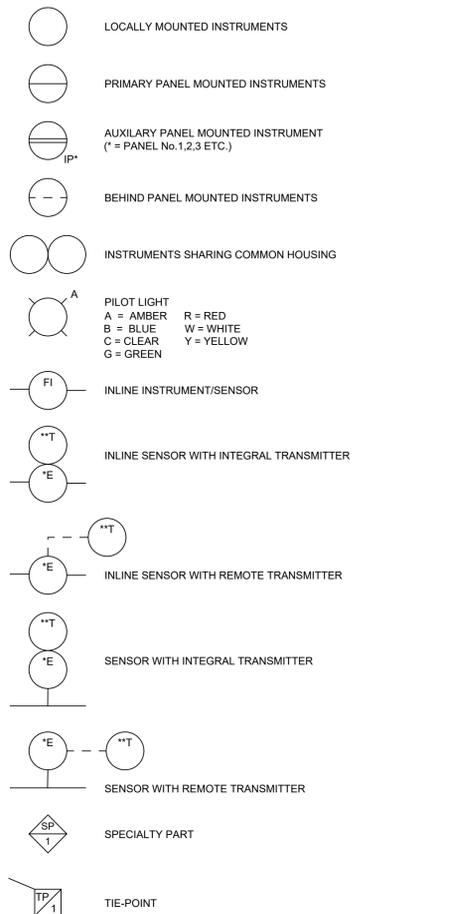


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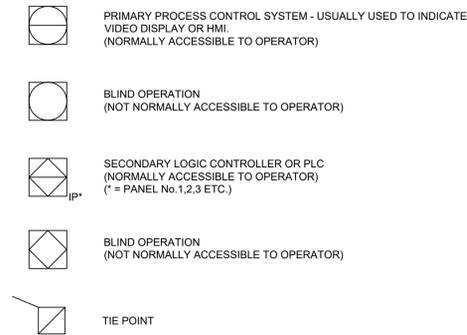


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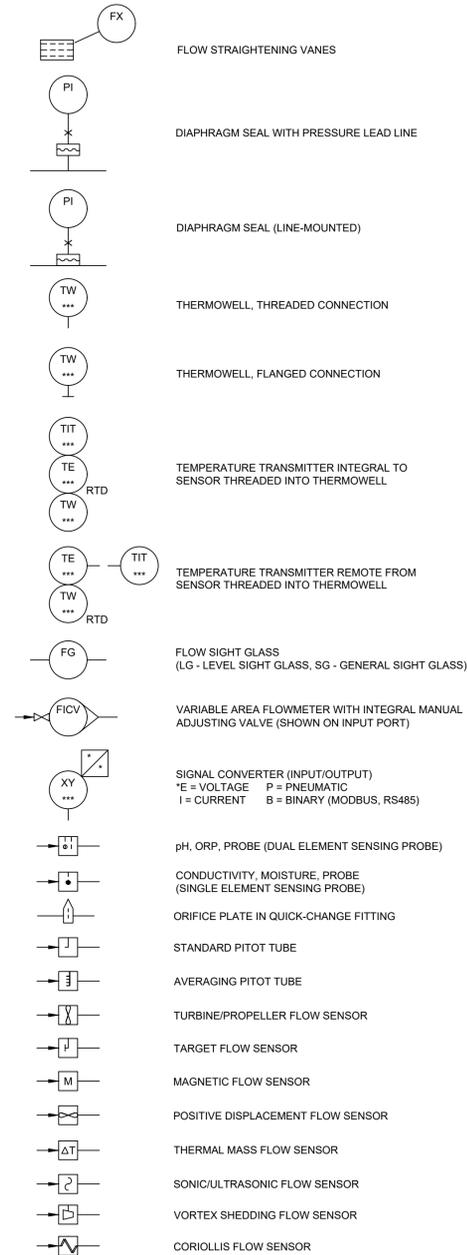
GENERAL INSTRUMENT SYMBOLS



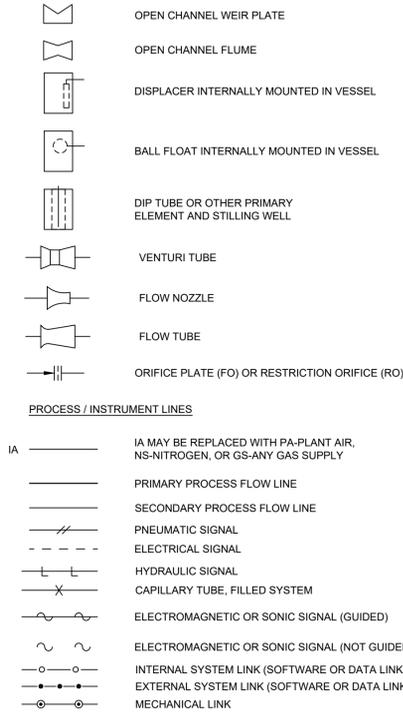
DISTRIBUTED CONTROL / SHARED DISPLAY INSTRUMENTS



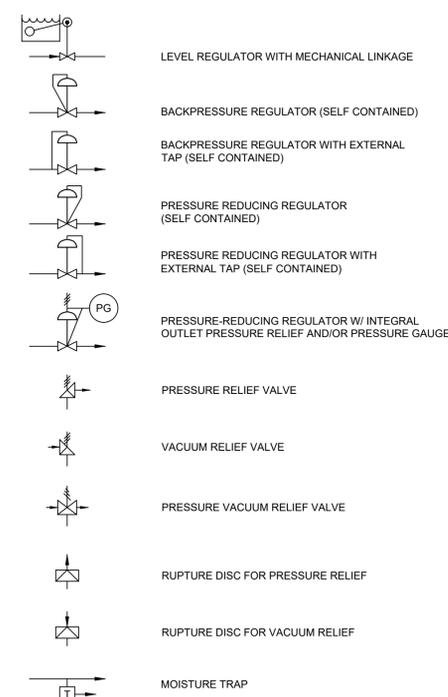
PRIMARY ELEMENT SYMBOLS



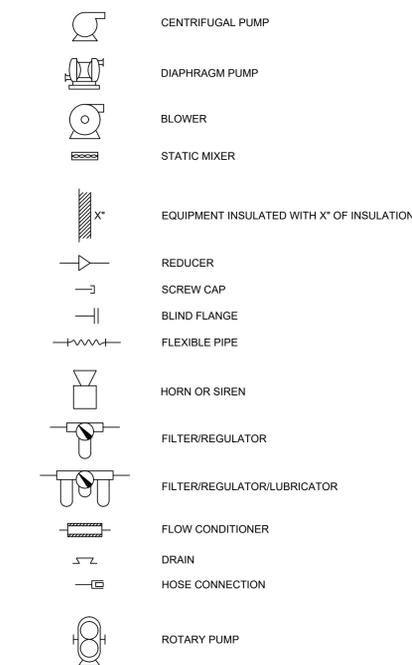
PRIMARY ELEMENT SYMBOLS (CONT'D)



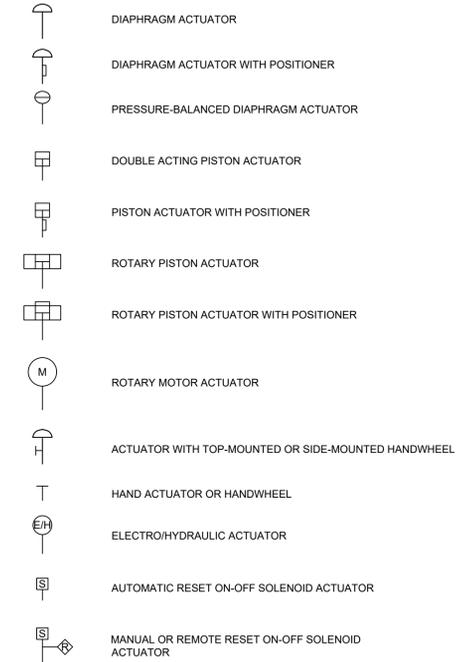
SELF-ACTUATED REGULATORS, VALVES, AND OTHER DEVICES



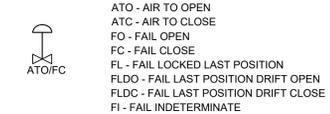
EQUIPMENT/PIPING SYMBOLS



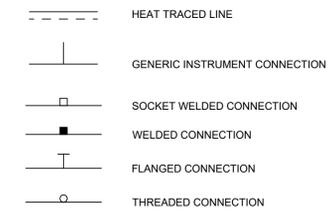
ACTUATOR SYMBOLS



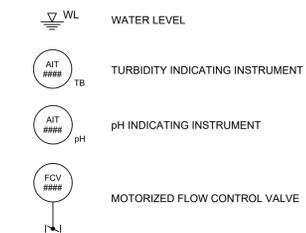
ACTUATOR INDICATIONS



INSTRUMENT TO PROCESS/EQUIP. CONNECTIONS



MISCELLANEOUS SYMBOLS



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

90% EPA REVIEW

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	RS	NF	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	RS	Designer	NF	
Drafting Check	MW	Design Check	NF	
Project Coordinator	CM	Date	Jun 27, 2022	
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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 PROCESS FLOW DIAGRAM SYMBOLS

Sheet No.
P-00A



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TYPICAL INTERNATIONAL SOCIETY OF AUTOMATION LETTER COMBINATIONS

First-Letters	Initiating or Measured Variable	Controllers				Readout Devices		Switches and Alarm Devices *			Transmitters			Solenoids, Relays, Computing Devices	Primary Element	Test Point	Well or Probe	Viewing Device, Glass	Safety Device	Final Element
		Recording	Indicating	Blind	Self-Actuated Control Valves	Recording	Indicating	High **	Low	Comb	Recording	Indicating	Blind							
A	Analysis	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW		AV	
B	Burner/Combustion	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW		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										FFV	
G	User's Choice																			
H	Hand		HIC	HC						HS									HV	
I	Current	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE				IZ	
J	Power	JRC	JIC			JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE				JV	
K	Time	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE				KV	
L	Level	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG	LV	
M	User's Choice																			
N	User's Choice																			
O	User's Choice																			
P	Pressure/Vacuum	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP		PSV, PSE	PV	
PD	Pressure, Differential	PDR	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDR	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	TDR	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDR	TDIT	TDI	TDY	TE	TP	TW		TDV	
U	Multivariable					UR	UI							UY					UV	
V	Vibration/Machinery Analysis					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE				VZ	
W	Weight/Force	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE				WZ	
WD	Weight/Force, Differential	WDR	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDR	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	ZDR	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDR	ZDIT	ZDT	ZDY	ZDE				ZDV	

IDENTIFICATION LETTERS

FIRST-LETTER	MEASURED OR INITIATING VARIABLE	MODIFIER	SUCCEEDING-LETTERS		
			READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	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	

NOTE: THIS TABLE IS NOT ALL-INCLUSIVE.

OTHER POSSIBLE COMBINATIONS:

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

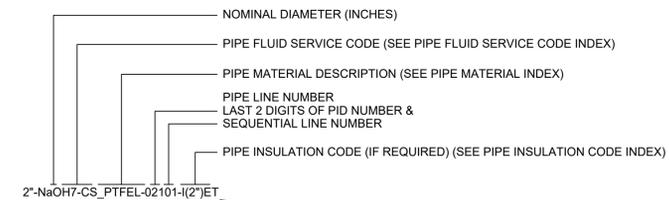
ABBREVIATIONS:

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

PIPE FLUID SERVICE CODE INDEX
SEE PIPING SPECIFICATIONS FOR DETAILS

PROCESS MEDIA CODE	SERVICE
CL21	CHLORINE LIQUID OR GAS
CTW1	COOLING TOWER WATER
CW3	PROCESS WATER
CW4	CHILLED WATER
NaOH7	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	WTS CONTAINMENT AREA DRAINAGE

LINE DESIGNATION



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-CARRIER WITH CPVC CONTAINMENT PIPE	
HDPE_DW	HDPE DOUBLE WALLED PIPE SDR-11 CARRIER AND CONTAINMENT PIPE	
PTFE_CPVC	TEFLON TUBING - CARRIER WITH CPVC CONTAINMENT PIPE	

PIPE INSULATION CODE INDEX
SEE PIPING SPECIFICATIONS FOR DETAILS

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

Client: **SAN JACINTO RIVER WASTE PITS**
Project: **NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS**

4	90% EPA REVIEW	RS	NF	06/27/2022
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No.	Issue	Drawn	Approved	Date
		RS	NF	

Drawn: **RS** Designer: **NF**

Drafting Check: **MW** Design Check: **NF**

Project Coordinator: **CM** Date: **June 3, 2022**

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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 PROCESS FLOW DIAGRAM SCHEDULES**

Sheet No.

P-00B

90% EPA REVIEW

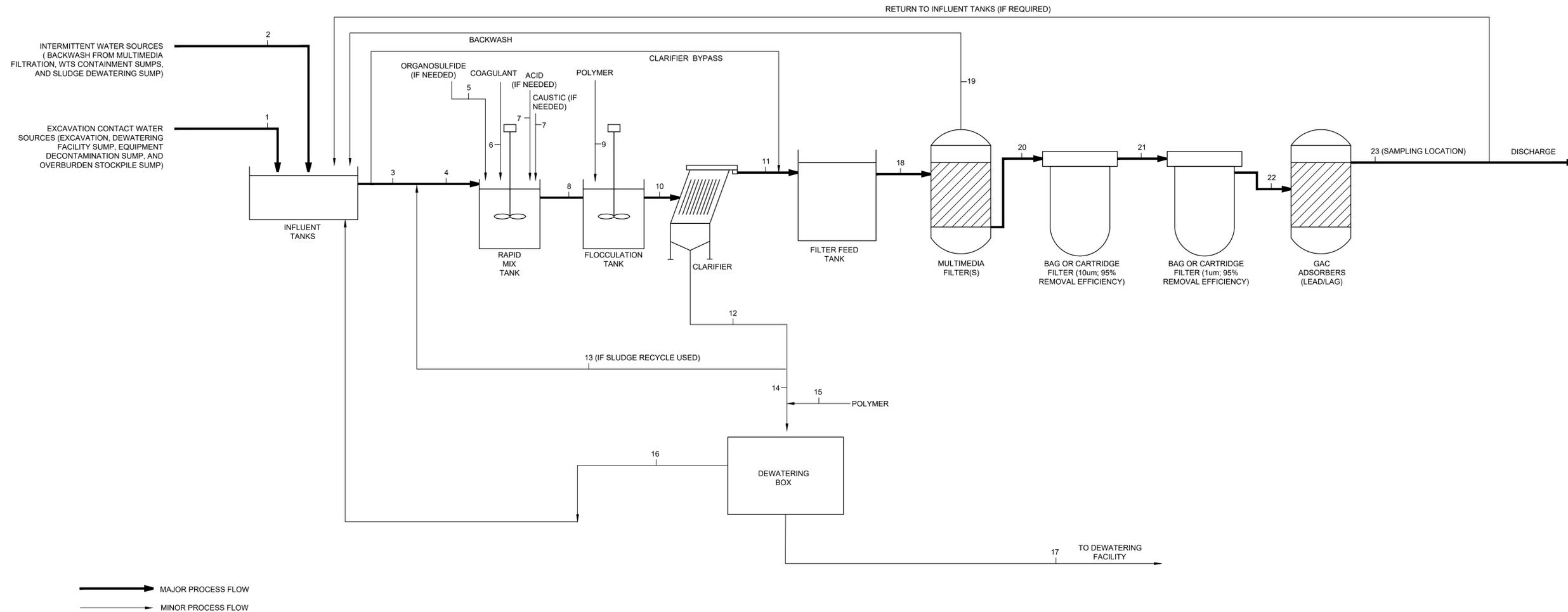
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MAJOR PROCESS FLOW
MINOR PROCESS FLOW

WATER TREATMENT PLANT PROCESS STREAMS¹

Streams		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Units	Excavation Contact Water	Containment Water Sources ²	WTS Treatment Flowrate	Rapid Mix Tank Influent	Organosulfide Feed	Coagulant Feed	Acid or Caustic Feed	Flocculation Tank Influent	Polymer Feed	Clarifier Influent	Clarifier Effluent	Clarifier Underflow	Sludge Recycle	Sludge to Dewatering Box	Dewatering Box Polymer Feed	Dewatering Box Decant to Influent Tank	Sludge to Dewatering Facility	Influent to Multimedia Filters	Backwash	Bag Filter Feed (10 um)	Bag Filter Feed (1 um)	GAC Adsorber Feed	Discharge Sampling Location
Volumetric Flow	GPM	1,000	400	300	357	0.01	0.03	TBD	357	0.01	357	282	75	0	75	0.01	57	18	282	200	282	282	282	282
Suspended Solids	PPM	4,000	varies	4,000	4,000	-	-	TBD	4,149	-	4,174	50	19,566	19,566	19,566	-	515	80,000	50	63	5	2	2	2
Chemical Feed	PPM	-	-	-	-	50	100	TBD	-	25	-	-	-	-	-	200	-	-	-	-	-	-	-	-
Mass Flow Solids	LB/HR	2,000	800	622	715	8.93	17.86	TBD	741	4.47	746	7	734	0	734	7.3	15	720	7.1	6.4	0.7	0.3	0.3	0.3
Specific Gravity		1.0	1.0	1.0	1.0	1.2	1.2	TBD	1.0	1.0	1.0	1.0	-	-	-	1.0	1.0	-	1.0	1.0	1.0	1.0	1.0	1.0
Density	LB/CF	62.4		62.4	62.4	74.9	74.9	TBD	62.4	62.4	62.4	62.4	-	-	-	62.4	62.4	-	62.4	62.4	62.4	62.4	62.4	62.4

NOTES:
1. FOR INFORMATION PURPOSES ONLY
2. FLOW ARE INTERMITTENT AND CONCENTRATIONS MAY VARY

Client
SAN JACINTO RIVER WASTE PITS
Project
NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

4	90% EPA REVIEW	RS	NF	06/27/2022
No.	Issue	Drawn	Approved	Date
Drawn	BP	Designer	KJ	
Drafting Check	MW	Design Check	NF	
Project Coordinator	CM	Date	Jun 27, 2022	
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Project No. **11215702**
Title
WATER TREATMENT SYSTEM
PROCESS FLOW DIAGRAM/ MASS BALANCE

Sheet No.
P-01
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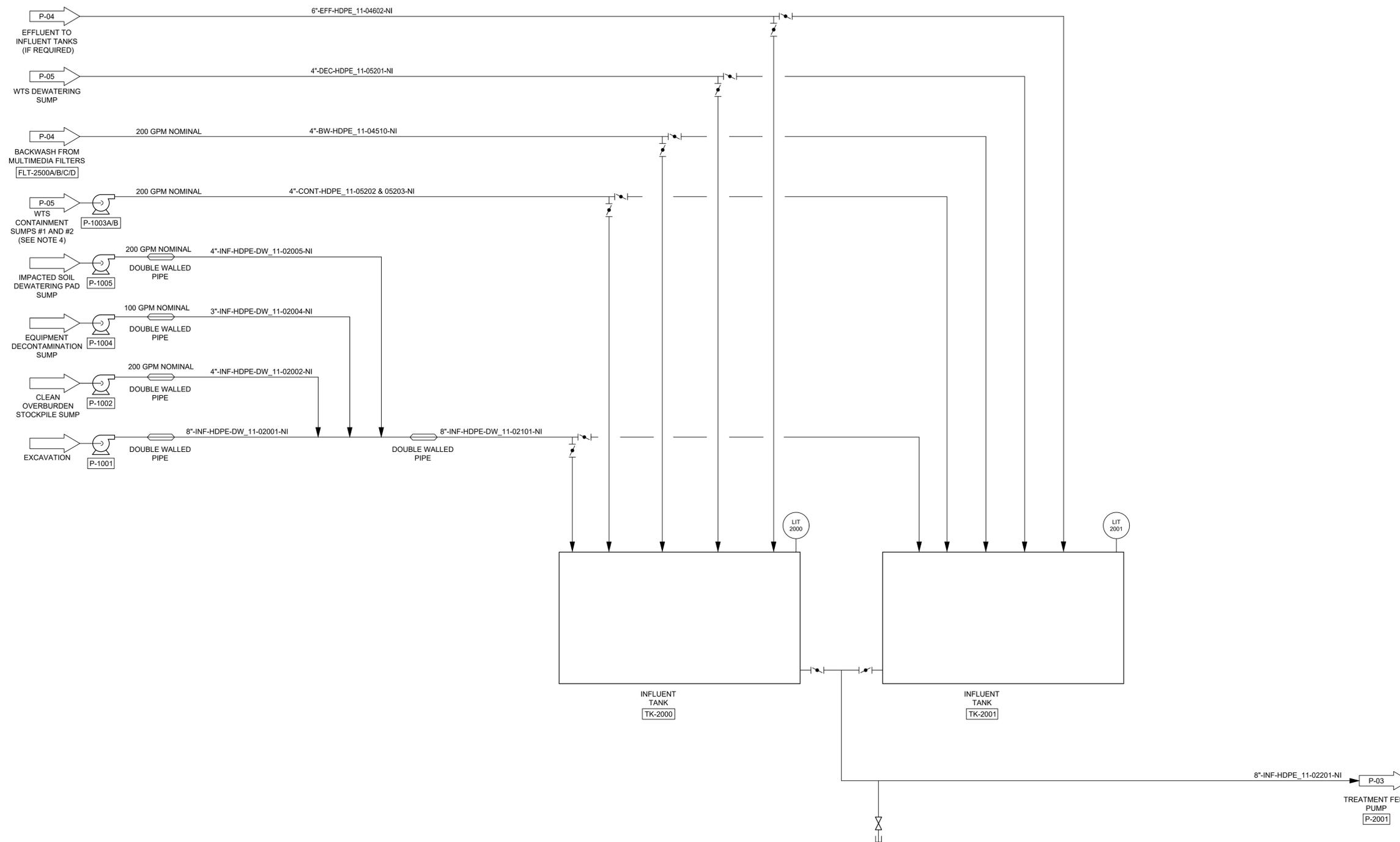
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Title
WATER TREATMENT SYSTEM P&ID (1 OF 4)

Sheet No.
P-02
Sheet - of -



- NOTES:
- FOR CLARITY NOT ALL SYSTEM ELEMENTS (E.G. VALVES, PIPE SIZES) HAVE BEEN SHOWN. P&IDs ARE CONCEPTUAL ONLY AND ARE TO BE FINALIZED BY CONTRACTOR.
 - THE TREATMENT SYSTEM DESIGNS ARE PRELIMINARY AND SUBJECT TO CHANGE.
 - CONTRACTOR SHALL PROVIDE PROVISIONS TO DIRECT EQUIPMENT DECONTAMINATION WATER TO WATER TREATMENT SYSTEM OR TO AN ADJACENT CONTAINMENT AREA WITH PUMPING SYSTEM.
 - CONTRACTOR PROVIDE AN ADEQUATE NUMBER OF SUMPS AND PUMPS TO DEWATER CONTAINMENT AREA AFTER A LARGE RAIN EVENT TO RESUME ACTIVITIES.

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NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

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Project Coordinator	CM	Date	Jun. 27, 22
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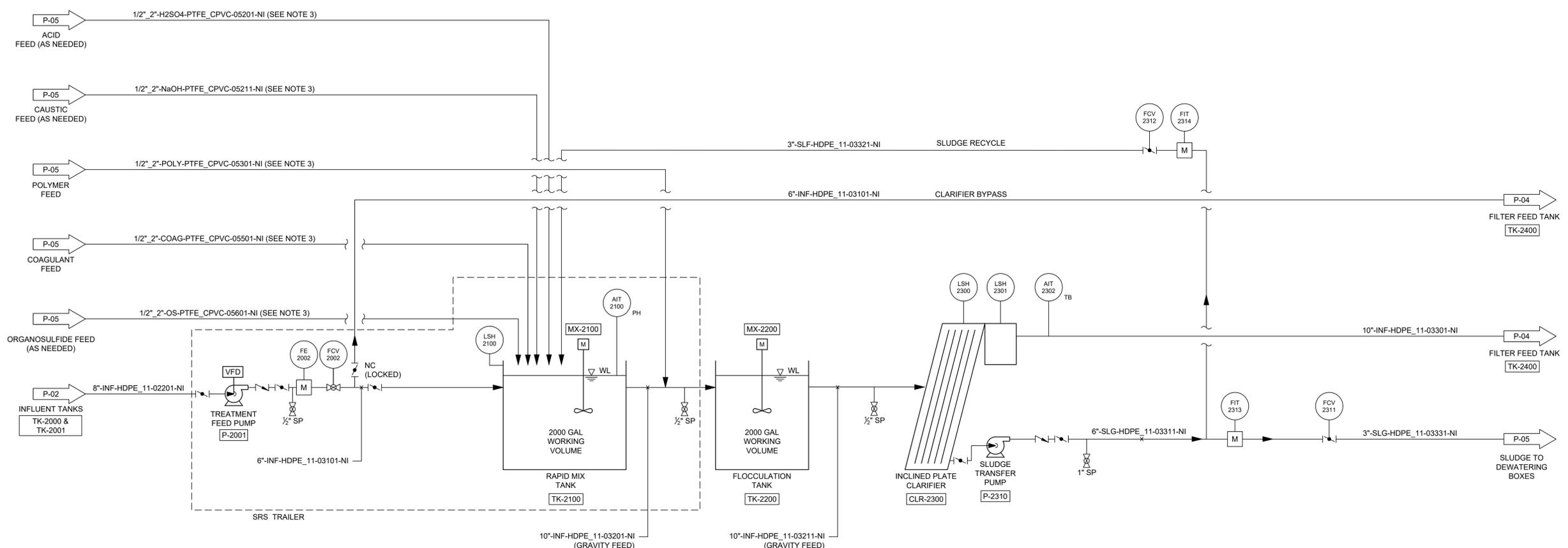
Title

WATER TREATMENT SYSTEM P&ID (2 OF 4)

Sheet No.

P-03

Sheet - of -



NOTE:
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2. THE TREATMENT SYSTEM DESIGNS ARE PRELIMINARY AND SUBJECT TO CHANGE.
3. ALL CHEMICAL TUBING SHALL BE INSIDE 2" CPVC CONTAINMENT PIPE.

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Drawn BP Designer KJ
Drafting Check MW Design Check NF
Project Coordinator CM Date Jun. 27, 22
Scale N.T.S.

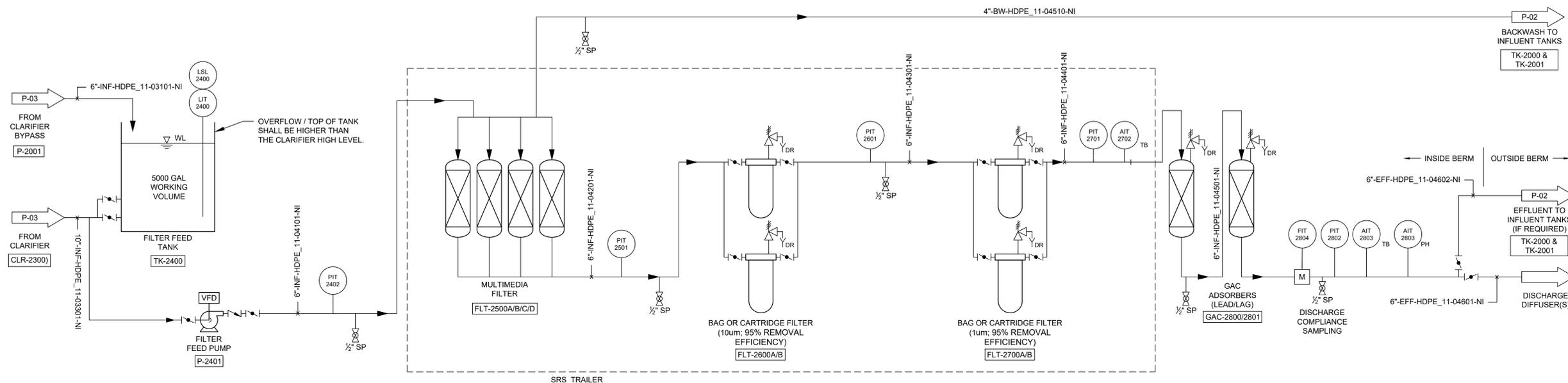
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WATER TREATMENT SYSTEM P&ID (3 OF 4)

Sheet No.

P-04

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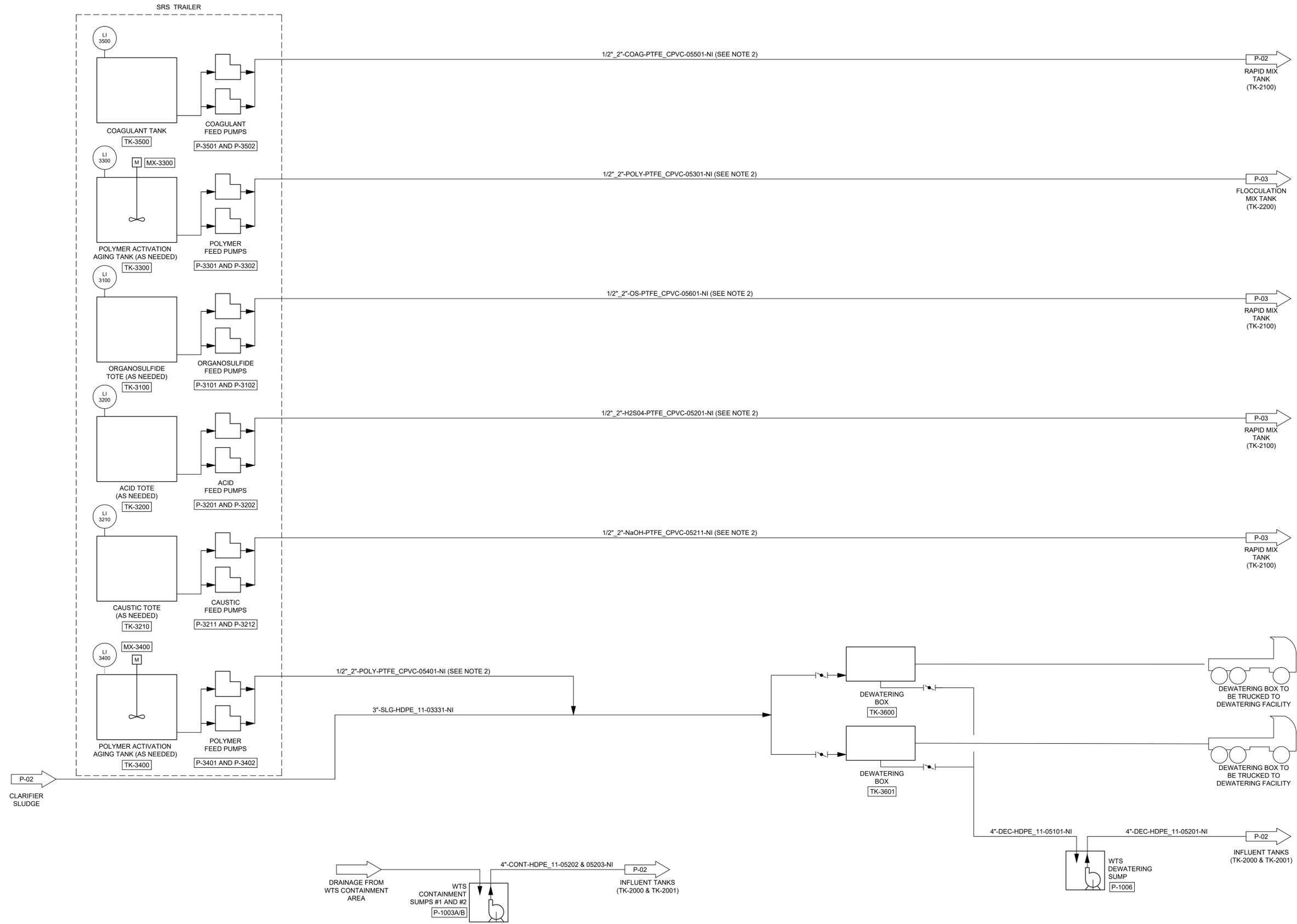
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NORTHERN IMPOUNDMENT PRE-FINAL 90% REMEDIAL DESIGN HARRIS COUNTY, TEXAS

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WATER TREATMENT SYSTEM P&ID (4 OF 4)

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P-05
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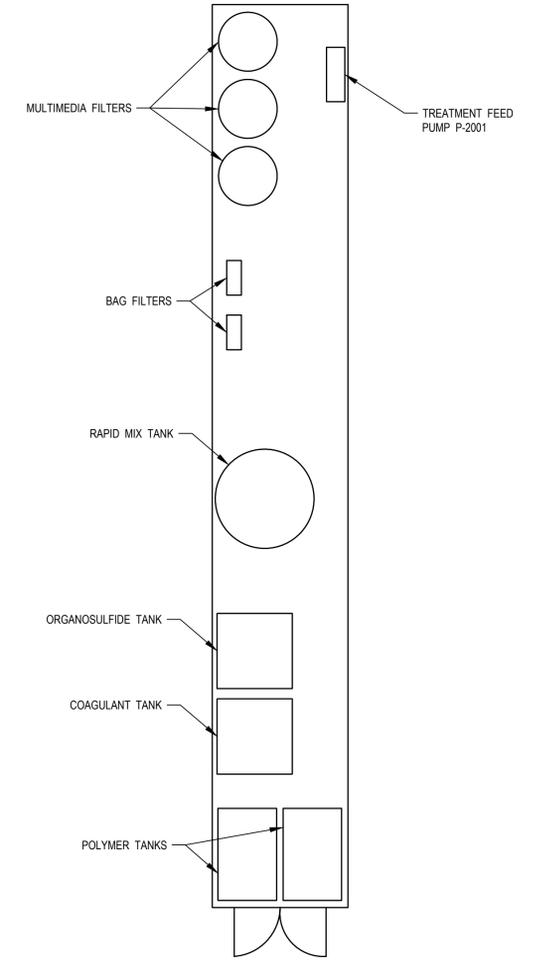
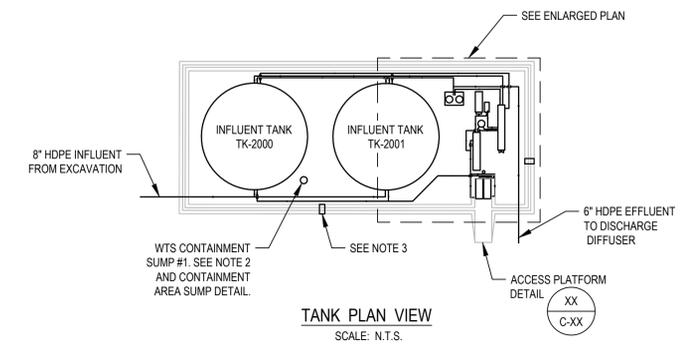
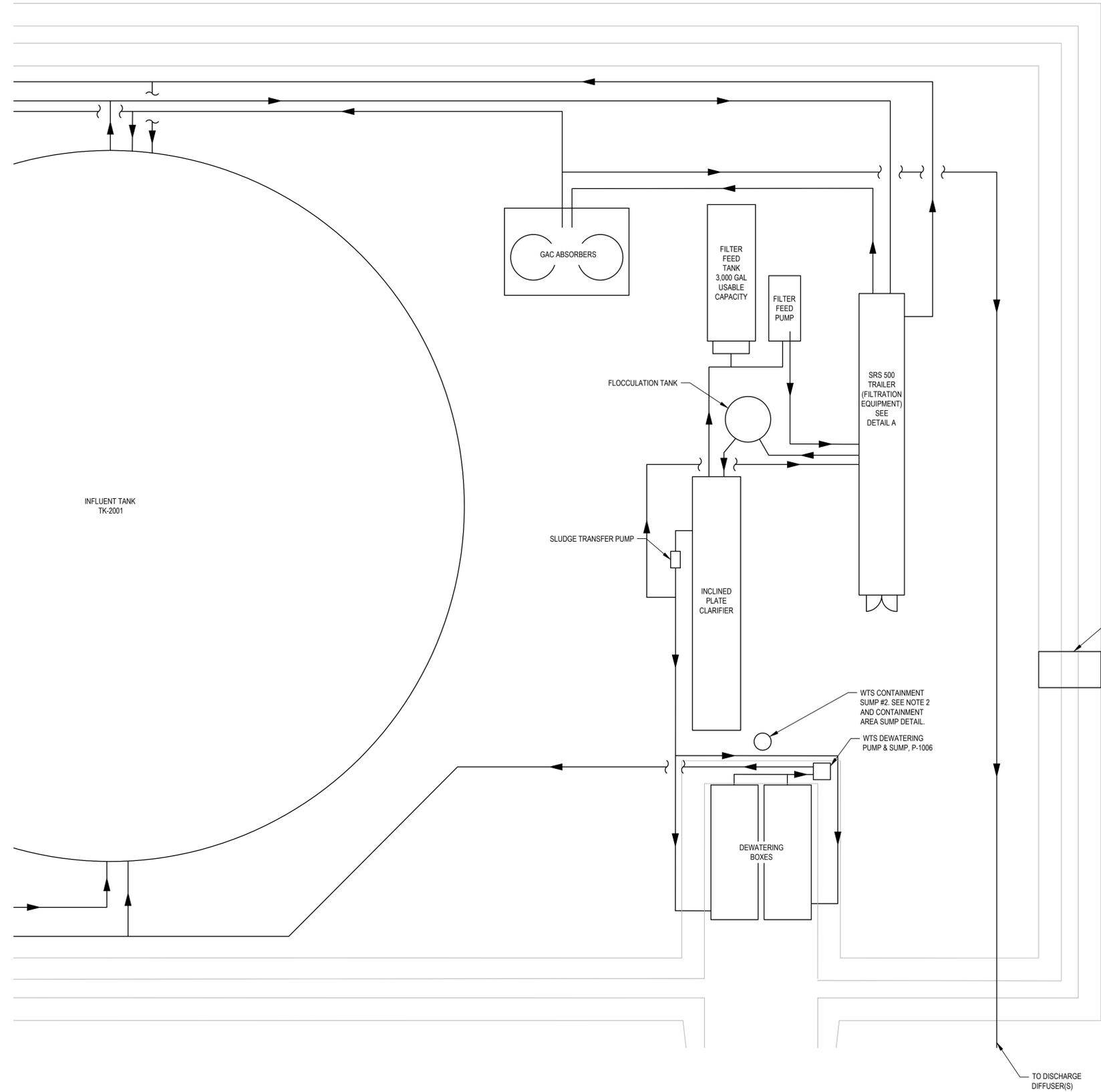


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DETAIL A: SRS 500 TRAILER
SCALE: N.T.S.

- NOTES:
1. EVOQUA RENTAL SYSTEM, INCLUDING SRS 500 TRAILER, IS SHOWN AS BASIS OF DESIGN BUT ALTERNATIVES MAY BE PROPOSED.
 2. CONTAINMENT AREA FLOOR TO SLOPE 1.0% (TYP.) TOWARDS CONTAINMENT AREA SUMPS.
 3. PROVIDE MODULAR STAIRWAYS OVER BERM FOR WALKWAY ACCESS.
 4. REFER TO P&ID FOR PIPING SIZING. PIPING SHOWN IS BASIC LAYOUT OF SYSTEM. CONTRACTOR TO PROVIDE ALL PIPING REQUIRED FOR COMPLETE AND OPERABLE SYSTEM.

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No.	Issue	Drawn	Approved	Date
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Drafting Check	MW	Design Check	NF
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Project Coordinator	CM	Date	Jun 27, 2022
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SITE PLAN WATER TREATMENT SYSTEM SEASON 3-6

Sheet No.

P-06

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