

Our Ref.: 12599404-Poulos-35

August 28, 2023

Ms. Lauren Poulos
Remedial Project Manager
United States Environmental Protection Agency - 6SF RA
1201 Elm Street, Suite 500
Dallas, Texas 75270

Southwest Excavation Area – Shoreline Design Deliverable
San Jacinto Waste Pits Superfund Site - Southern Impoundment, Harris County, Texas
Unilateral Administrative Order for Remedial Action of the Southern Impoundment
USEPA Region 6, Docket No. 06-05-21 (UAO)

Dear Ms. Poulos:

On behalf of International Paper Company (Respondent), GHD Services Inc. (GHD) submits to the United States Environmental Protection Agency (USEPA) this design deliverable related to the Southwest Excavation Area shoreline in connection with the Remedial Action (RA) for the Southern Impoundment of the San Jacinto Waste Pits Superfund Site in Harris County, Texas. This deliverable is being submitted to address USEPA's request for additional stabilization measures in the June 8, 2023, letter from the USEPA.

As shown on Drawing C-36 from the 100% Remedial Design (RD) Addendum, dated June 2, 2022, a temporary sheet pile wall was designed to support the removal of impacted soils to a depth of up to 10-feet below existing grade at the San Jacinto River shoreline in the Southwest Excavation Area. The design intent was for the sheet pile wall to be installed at the edge of water (shoreline), as defined by the topographic and hydrographic survey conducted by Morrison Surveying, Inc. (Morrison) between July and August 2019.

As part of the ongoing implementation of the RA, supplemental surveys were completed by Morrison on April 11, June 22, and July 7, 2023 to support excavation planning in the Southwest Excavation Area. These additional bathymetric and topographic surveys were used to field-adjust the alignment for the temporary sheet pile wall to reflect the Site-specific topographic and hydrographic conditions at this time of the RA.

GHD has revised Drawing C-45 (see Attachment 1) presenting a plan view of the western portion of the Southwest Excavation Area incorporating the additional survey data and the revised sheet pile wall alignment. It should be noted that the design intent has always been to install the sheet pile wall at the top-of-slope (i.e., shoreline), so the revised Drawing C-45 adjusts the alignment to more recent and more accurate survey data and field conditions. Drawing C-45 replaces Drawing C-36 in the 100% Design Addendum.

The following comments were provided by USEPA in their June 8, 2023 letter regarding additional stabilization along the southwest shoreline.

- "... the agency has determined that additional stabilization measures are needed along the southwest shoreline of the Southern Impoundment to ensure the remedy remains protective of human health into the long term. The bank slope that remains once the bulkhead is removed is steep in some areas."
- "If the bulkhead is removed, EPA recommends that rip rap and a strong vegetative cap be utilized for additional erosion control and bank stabilization along the shoreline in the area of the bulkhead to improve erosion protection after it is removed."

- “EPA expects components in the bank stabilization design would include but are not limited to: keying the structure at a proper angle into a toe below water line to support the weight of the rip rap; layered stabilization approaches potentially with geotextile to contain fine particle sized soil materials; and the use of silt fencing or other erosion-control measures while native vegetation establishes on the riverbank slope.”

To address USEPA’s comments, the following modifications have been made to the design:

- A rip-rap embankment will be constructed as part of backfilling and site restoration across the length of the Southwest Excavation Area that requires soil removal to the toe-of-slope.
- The placed backfill will be graded at approximately 3:1 slope and covered by geotextile, and approximately 24 inches of rip rap. Soil will be placed within the rip rap void spaces to allow vegetation to re-establish.
- The top of the rip rap slope will be seeded with grasses to provide further vegetation stabilized top of slope.

GHD prepared six cross sections at various locations perpendicular to the sheet pile wall, as shown on Drawings C-46, C-47, and C-48 (also in Attachment 1). The cross sections show excavation of impacted soil and placement of clean backfill as specified in the remedial design. The revised shoreline drawings incorporate the bank stability components of the design and replaces Drawing C-41 included in the 100% RD Addendum.

In addition, the tenant utilizing this property, Kirby Marine, stages barges adjacent to the river along the Southwest Excavation Area using subsurface concrete deadman connected to anchor chains that extend into the water for barge fleeting. Two concrete aprons have been added to the remedial design to allow for use of these anchor chains, yet protect the backfill placed following excavation. The concrete apron design is presented on Drawings S-01 and S-02 of Attachment 1.

These remedial design modifications to the Southwest Excavation Area shoreline have been reviewed by the property owner and the tenant, Kirby Marine, and have been accepted. Should you have any questions regarding this submittal, please contact GHD at (832) 380-7655.

Regards,

GHD



Charles W. Munce, P.E.
Project Coordinator

Charles.Munce@GHD.com

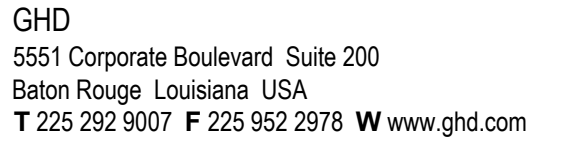
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Encl.: Attachment 1 – Southwest Excavation Area Shoreline Drawings

Copy to: Brent Sasser, IPC
Katie Delbecq, TCEQ
Xiaoxia Lu, TCEQ

Attachment 1

**Revised Southwest Excavation Area
Shoreline Drawings**



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	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	UNDERGROUND AT&T LINE
	REBORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL

620

EXCAVATION CONTOUR INTERVAL

EXCAVATION TOP OF BANK

EXCAVATION TOE OF SLOPE

ORIGINAL SHEET PILE WALL ALIGNMENT

PROPOSED SHEET PILE WALL ALIGNMENT

SURVEYED TOE OF BANK (6-22-2023)

VEGETATED RIPRAP ENBANKMENT

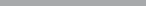
TURBIDITY CURTAIN

SAN JACINTO RIVER WASTE PITS

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Drawn	MW	Designer	RH
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Project Coordinator CM	Date Aug 24, 2023
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Original Size	Bar is one inch on original size drawing
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Sheet - of -

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

HYDROGRAPHIC SURVEY SOUTHWEST EXCAVATION AREA FOR SHEET PILE WALL
HARRIS COUNTY, TEXAS FOR GHD SERVICES. MORRISON SURVEYING INC.,
221222, APRIL 11, 2023

HYDROGRAPHIC SURVEY SOUTHWEST EXCAVATION AREA FOR SHEET PILE WALL
HARRIS COUNTY, TEXAS FOR GHD SERVICES. MORRISON SURVEYING INC.,
JUNE 22, AND JULY 5, 2023.

1. FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPONDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
2. THE WATER ELEVATION AT THE TIME OF SURVEY VARIED BUT GENERALLY RANGED BETWEEN +0.5' TO +2.6'. DATE OF SURVEY: JULY 8, 2019 TO AUGUST 2, 2019.



JOB NO. 11215131 FILE NO. 02

CLUB TEXAS FIRM REGISTRATION NO. 276

GRID TEXAS FIRM REGISTRATION NO. 213

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LEGEND
EXISTING GROUND 2023

Client
**SAN JACINTO RIVER
WASTE PITS**
Project
**SOUTHERN IMPOUNDMENT
HARRIS COUNTY, TEXAS**

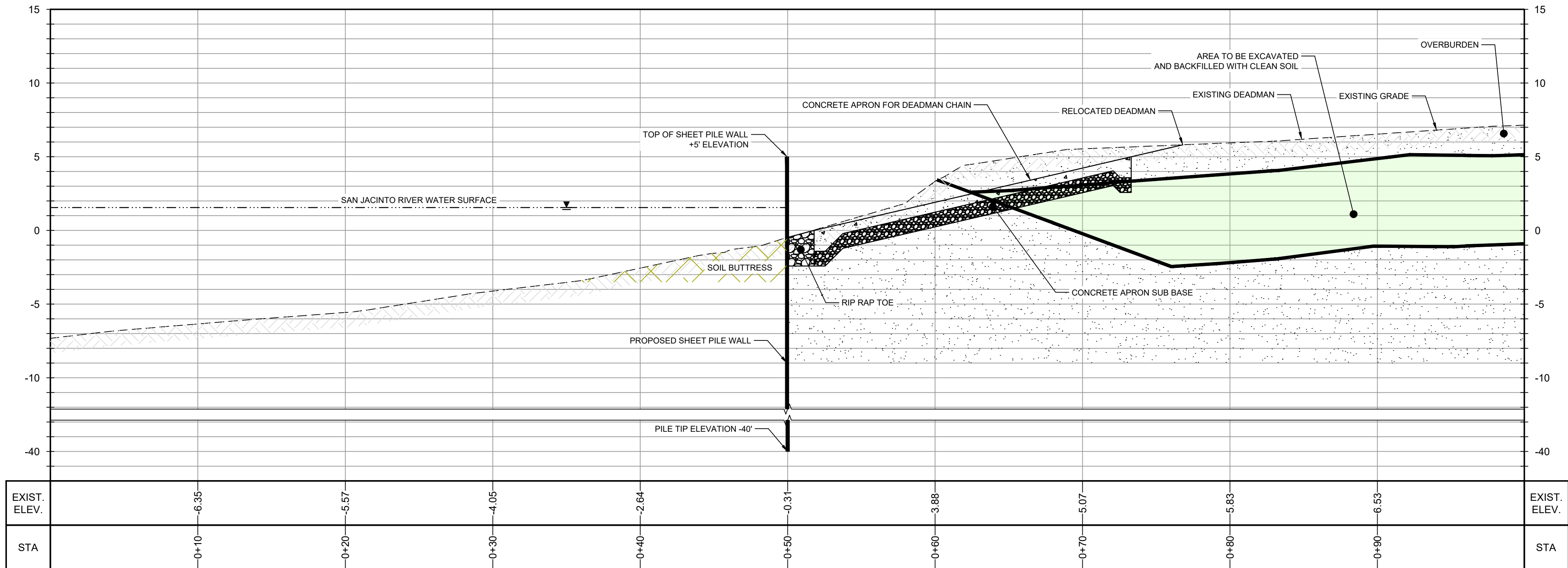
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Drafting		Design		
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Project	CM	Date	Aug 11, 2023	
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**ADDITIONAL SHEET PILE
SECTIONS AND DETAILS**

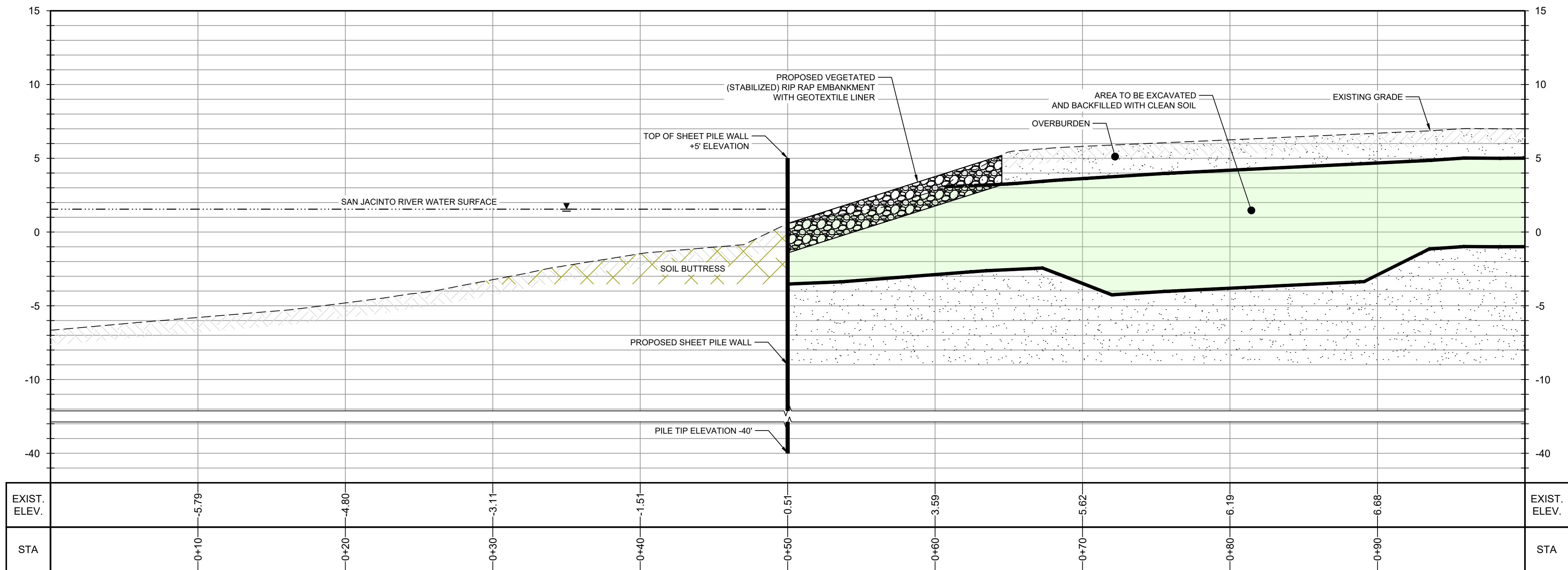
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Sheet - of -



SECTION A
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SECTION B
SCALE: 1"=5'

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PARCELS 1, 2 & 3 & PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020
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GHD SERVICES INC.
JOB NO. 11215131 FILE NO. 02
GHD TEXAS FIRM REGISTRATION NO. 276

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EXISTING GROUND 2023

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**SAN JACINTO RIVER
WASTE PITS**
Project
**SOUTHERN IMPOUNDMENT
HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
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Project Coordinator	CM	Date	Aug 11, 2023	
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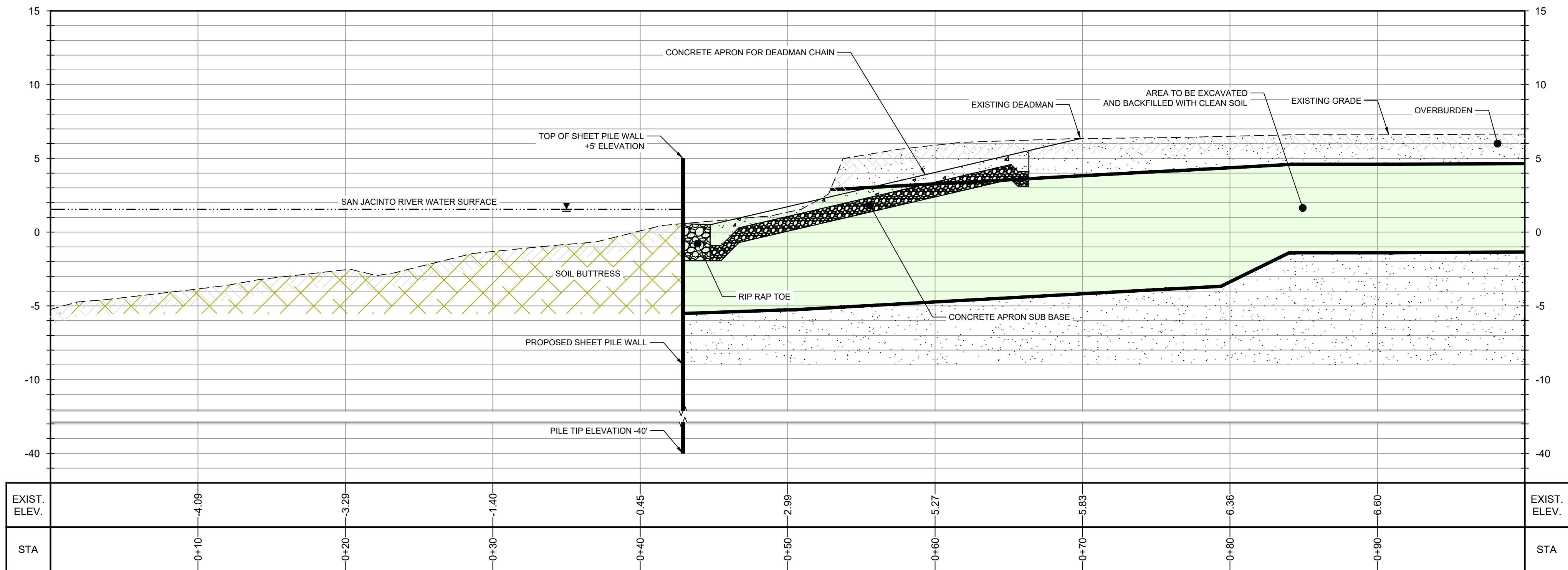
Project No. 11215131

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**ADDITIONAL SHEET PILE
SECTIONS AND DETAILS**

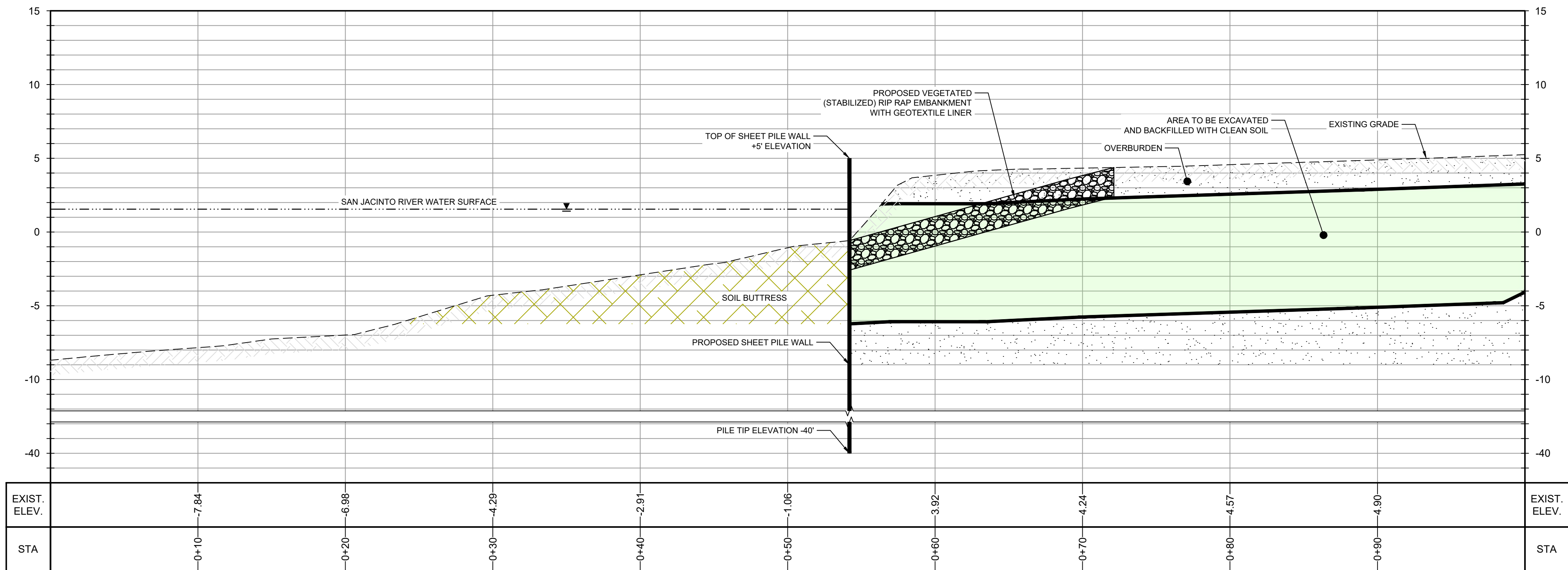
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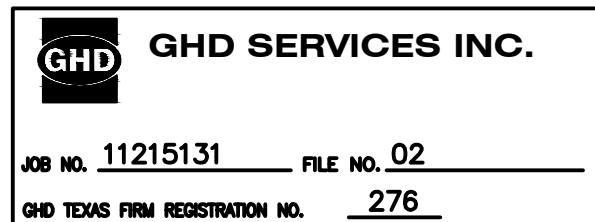


SECTION C
SCALE: 1"=5'



SECTION D
SCALE: 1"=5'

SOURCE:
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019
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	EXISTING GROUND 2023
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Client
**SAN JACINTO RIVER
WASTE PITS**

Project
**SOUTHERN IMPOUNDMENT
HARRIS COUNTY, TEXAS**

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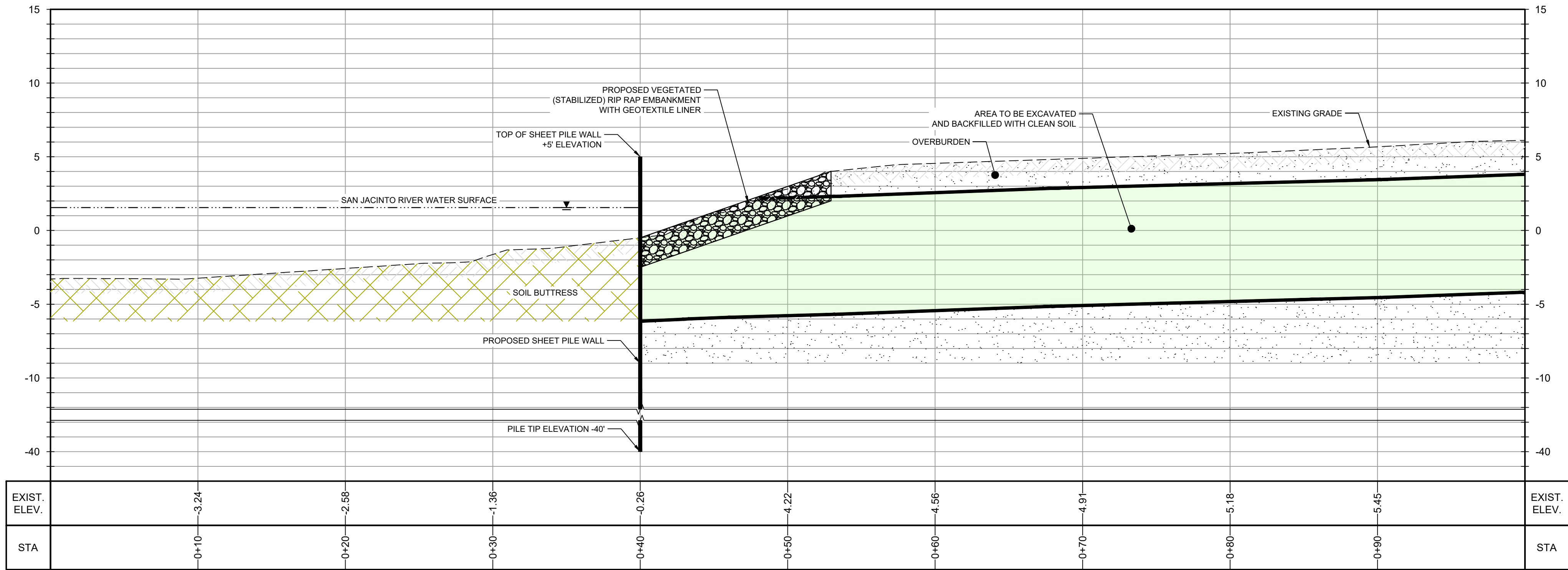
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Title
**ADDITIONAL SHEET PILE
SECTIONS AND DETAILS**

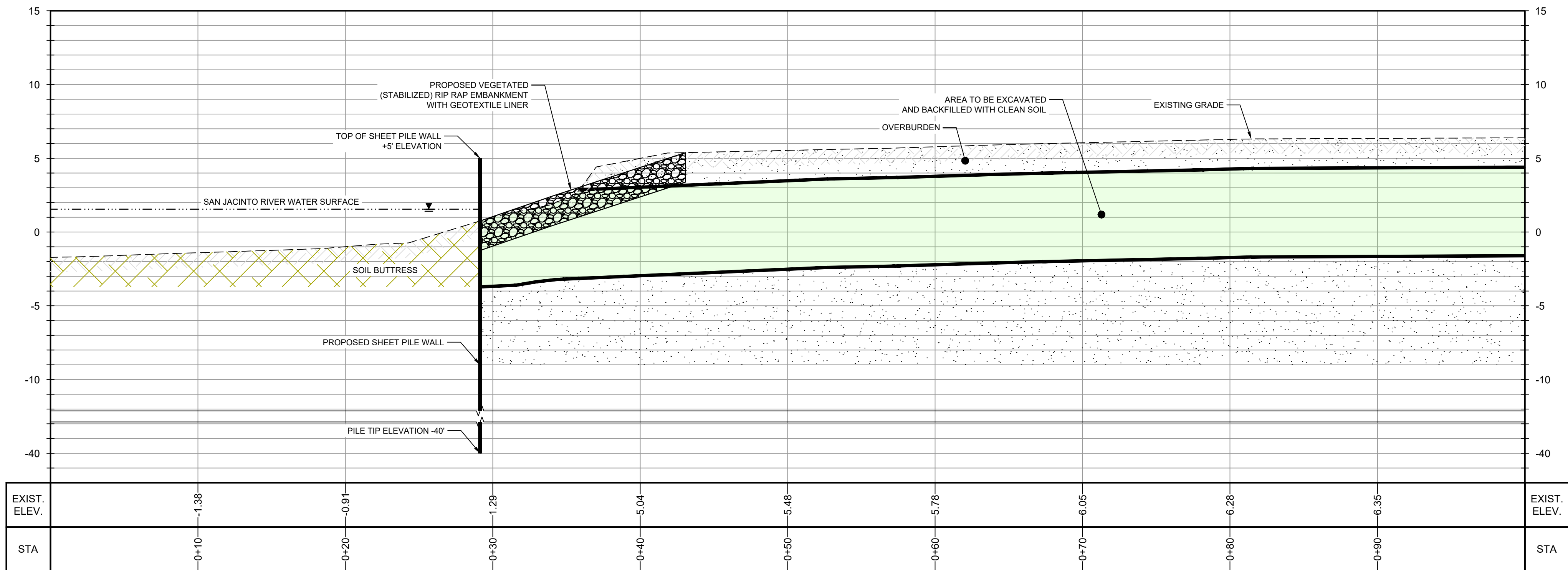
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Sheet - of -



SECTION E
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C-45



SECTION F
SCALE: 1"=5'
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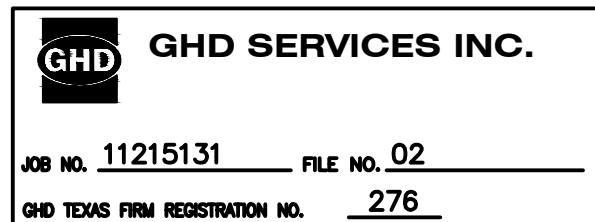
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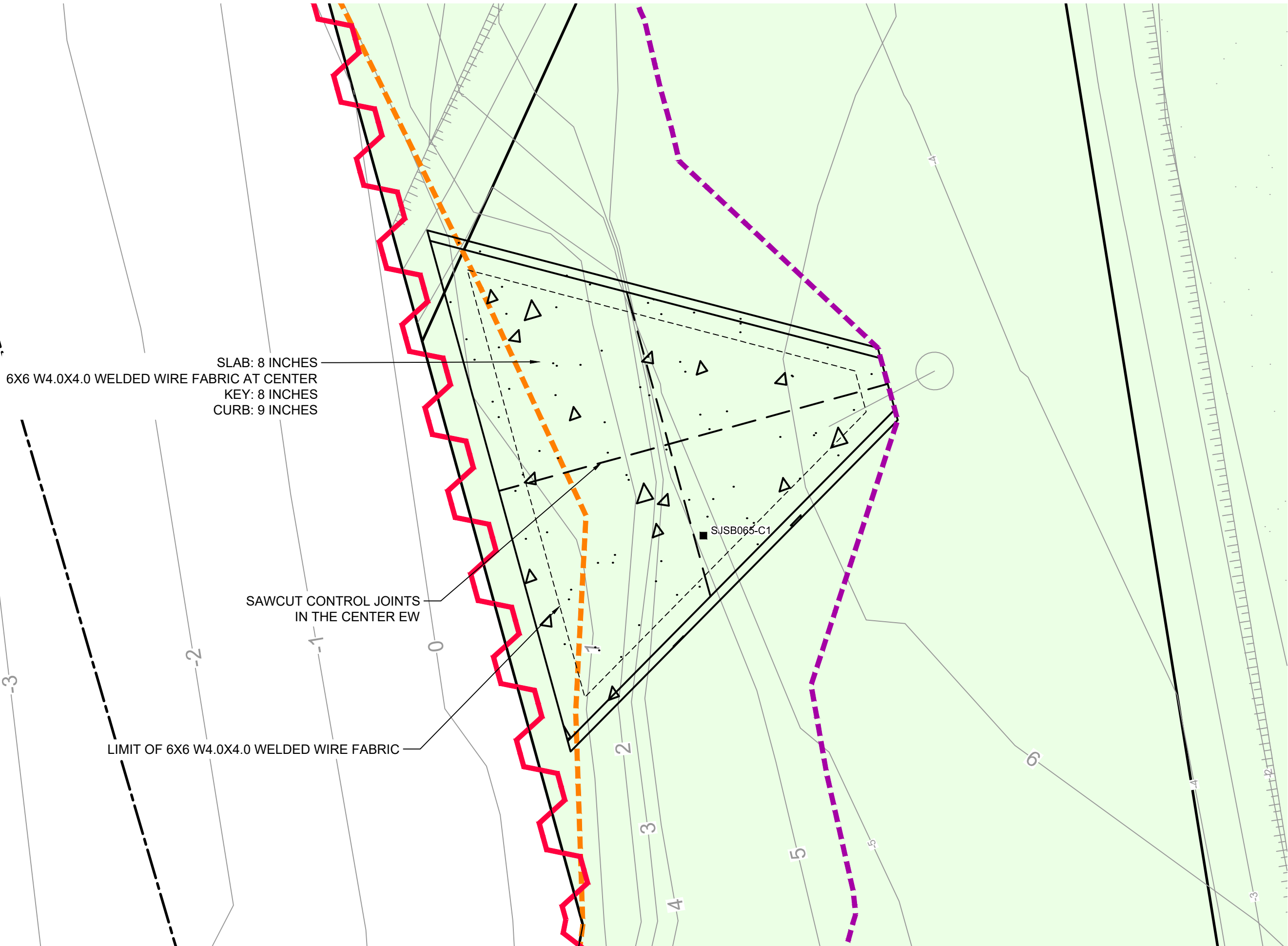
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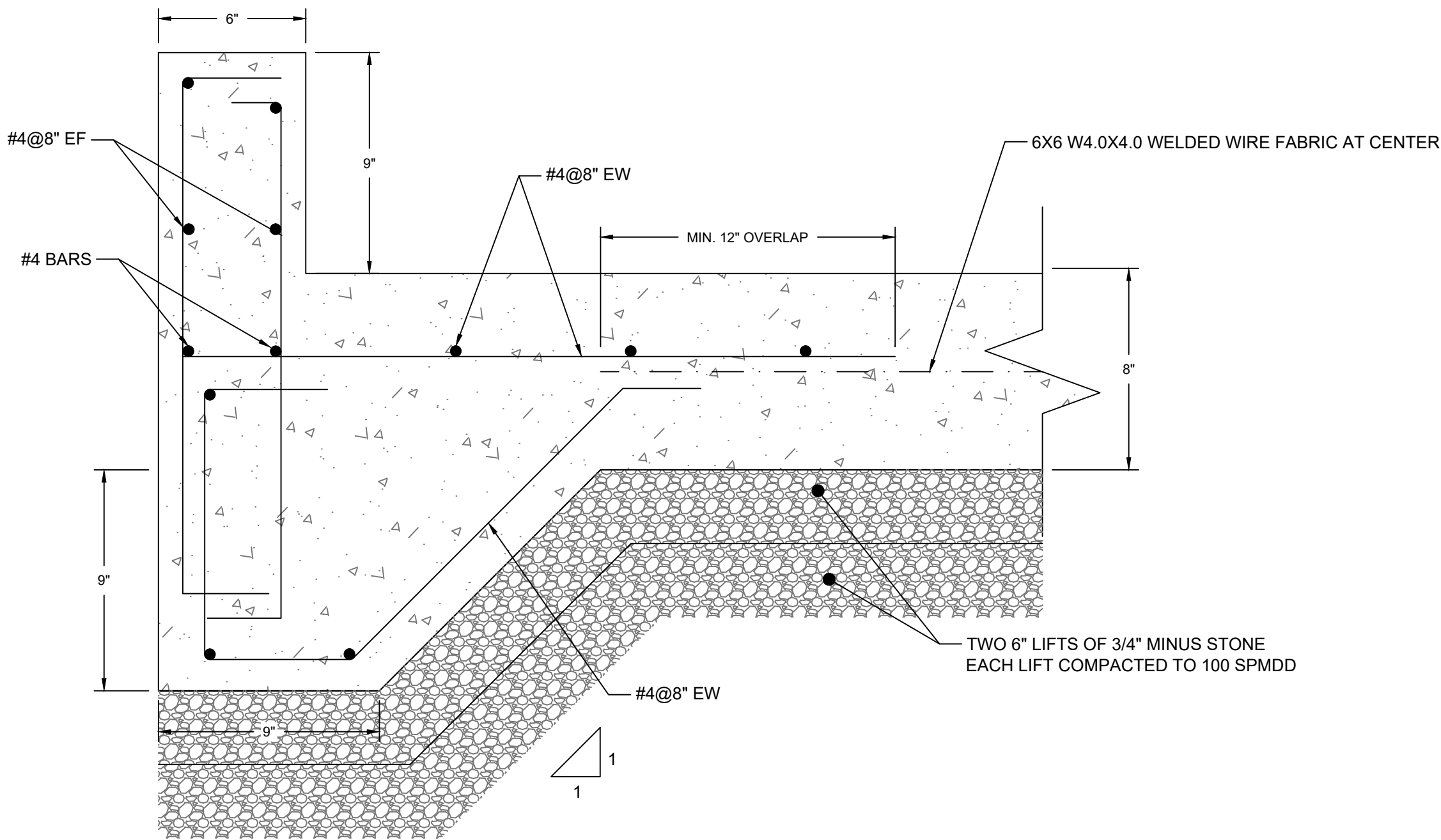
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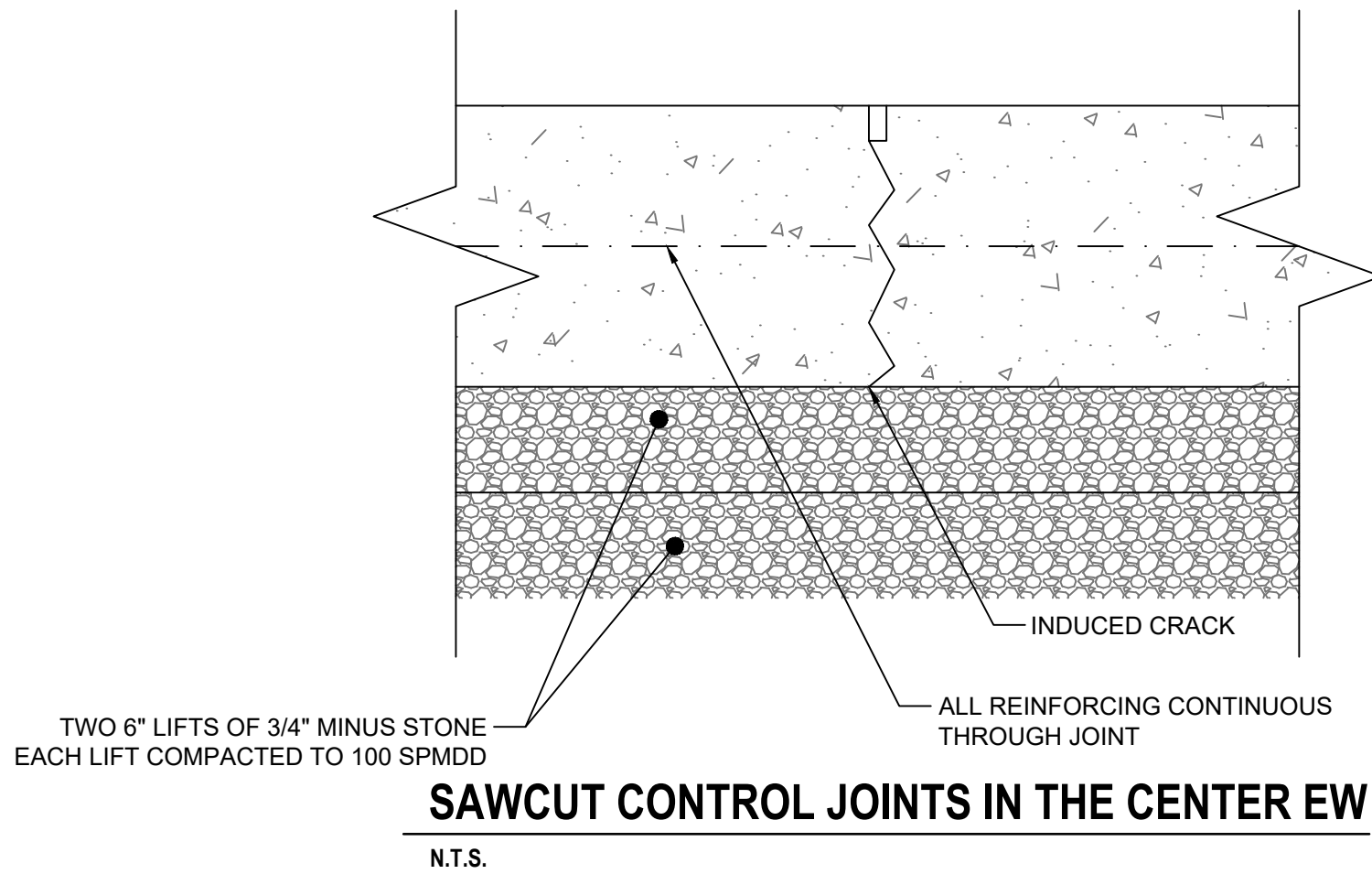


PLAN
SCALE 1" = 5'

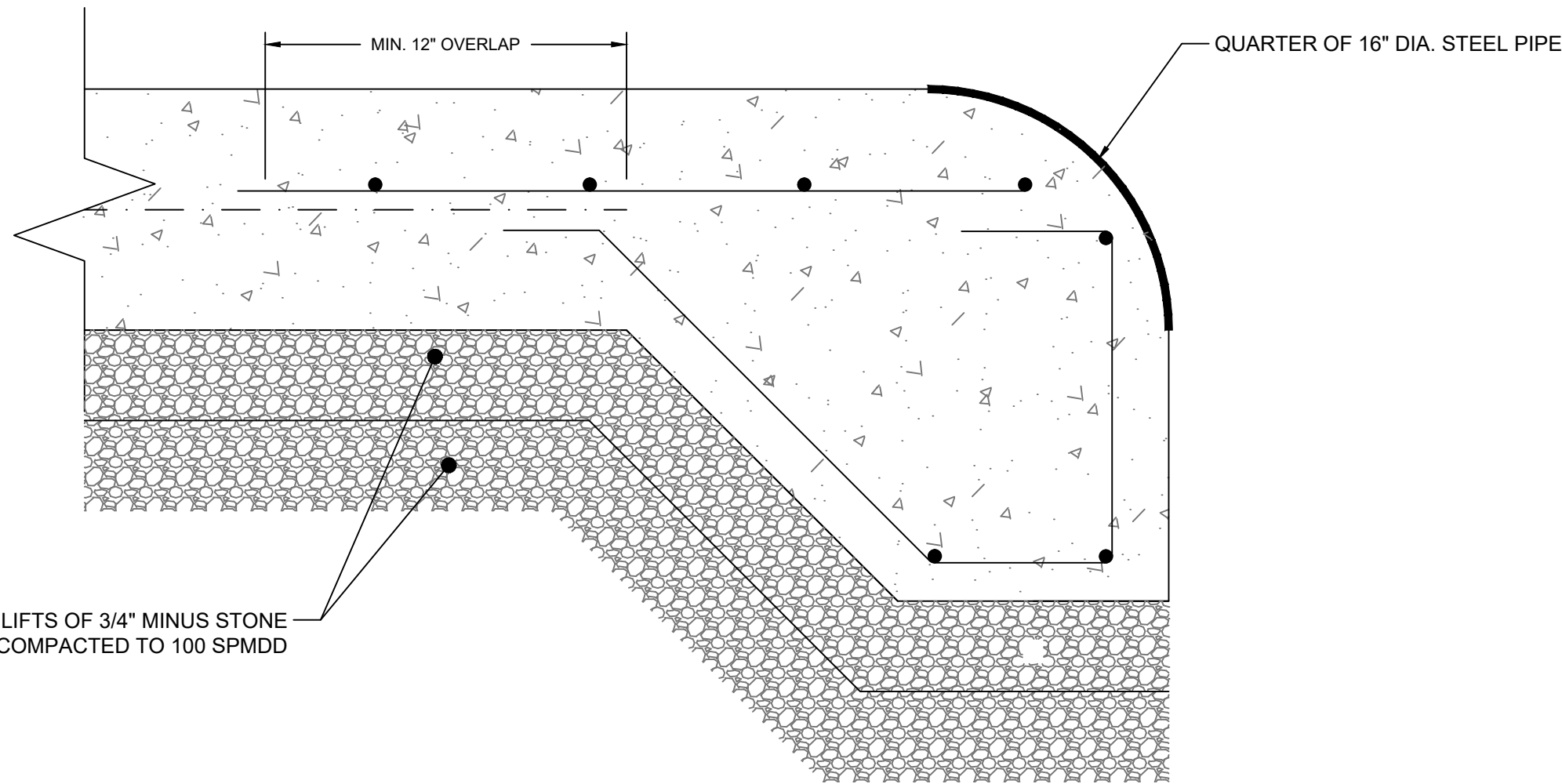


ANCHOR KEY
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- NOTES:
1. PROVIDE KEY ON THREE SIDES - FRONT, TOWARDS SEE AND TWO SIDES.
 2. PROVIDE CURB ON TWO SIDES



SAWCUT CONTROL JOINTS IN THE CENTER EW
N.T.S.



CONCRETE CHAIN PROTECTION
N.T.S.

NOTES:

1. SAW CUT CONTROL JOINTS SHALL BE PLACED AS SHOWN ON THE DRAWINGS, TYPICALLY AT A MAXIMUM SPACING OF 30' IN EACH DIRECTION.
2. JOINTS SHALL BE SAW CUT AS SOON AS PRACTICAL AFTER CONCRETE HAS HARDENED AND TYPICALLY WITHIN 4 TO 12 HOURS AFTER FINAL FINISHING

MATERIALS:

- | | |
|-----------------------|--|
| 1. CONCRETE: | CONCRETE = 35MPa - 56 DAYS MIN. COMP. STRENGTH, EXPOSURE CATEGORY C2 TO ACI 318-19 |
| 2. REINFORCING STEEL: | CARBON STL. BARS TO ASTM 615 GRADE 60 |

SOURCE:

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

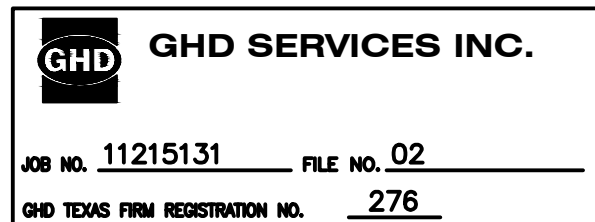
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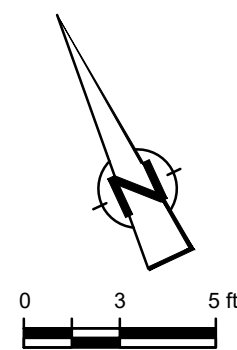
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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
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	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	UNDERGROUND AT&T LINE
	PD/R BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	ORIGINAL SHEET PILE WALL ALIGNMENT
	PROPOSED SHEET PILE WALL ALIGNMENT
	SURVEYED TOE OF BANK (8-22-2023)
	VEGETATED RIPRAP EMBANKMENT
	TURBIDITY CURTAIN

Client

SAN JACINTO RIVER
WASTE PITS

Project

SOUTHERN IMPOUNDMENT
HARRIS COUNTY, TEXAS

No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer	RH	
Drafting		Design		
Check		Check		
Project Coordinator	CM	Date	Aug 11, 2023	
		Scale	1" = 5' XREF	
Original Size			Bar is one inch on original size drawing	
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Project No. 11215131

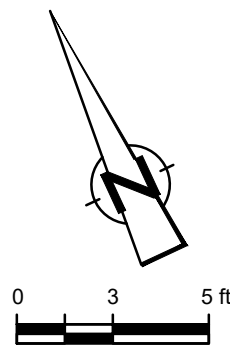
Title

SOUTHWEST EXCAVATION AREA
PROPOSED
DEADMAN

Sheet No.

S-01

Sheet - of -



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	VEGETATED RIPRAP ENBANKMENT
	TURBIDITY CURTAIN

Client
**SAN JACINTO RIVER
WASTE PITS**

Project
**SOUTHERN IMPOUNDMENT
HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
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Drawn	MW	Designer	RH
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Drafting	.	Design	.
Check		Check	

Project	CM	Date	Aug 11, 2023
Coordinator			

	This document shall not be used for construction unless signed and sealed for construction.	Scale	*****
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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.	11215131
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Title

SOUTHWEST EXCAVATION AREA

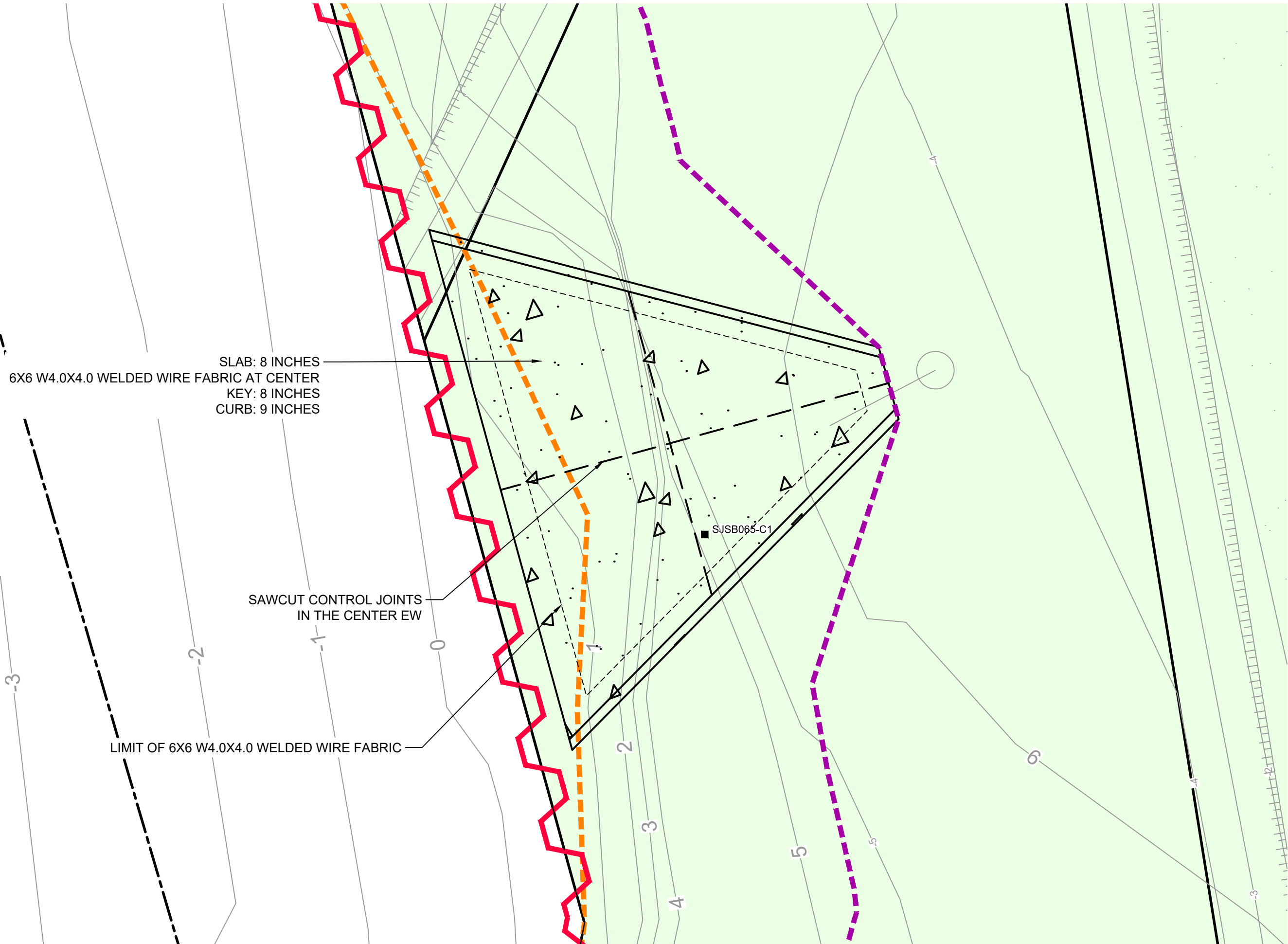
PROPOSED

DEADMAN

Sheet No.

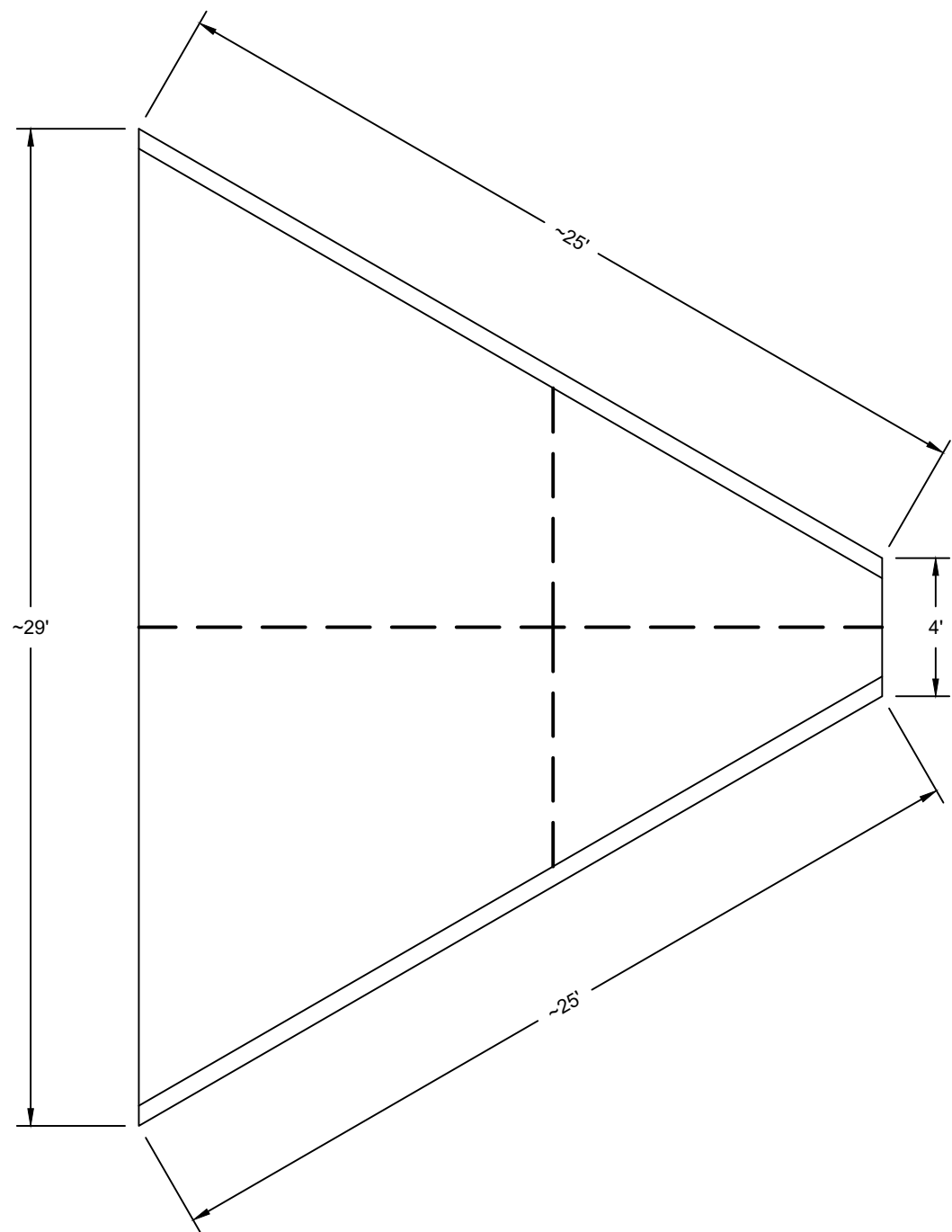
S-02

Sheet - of -



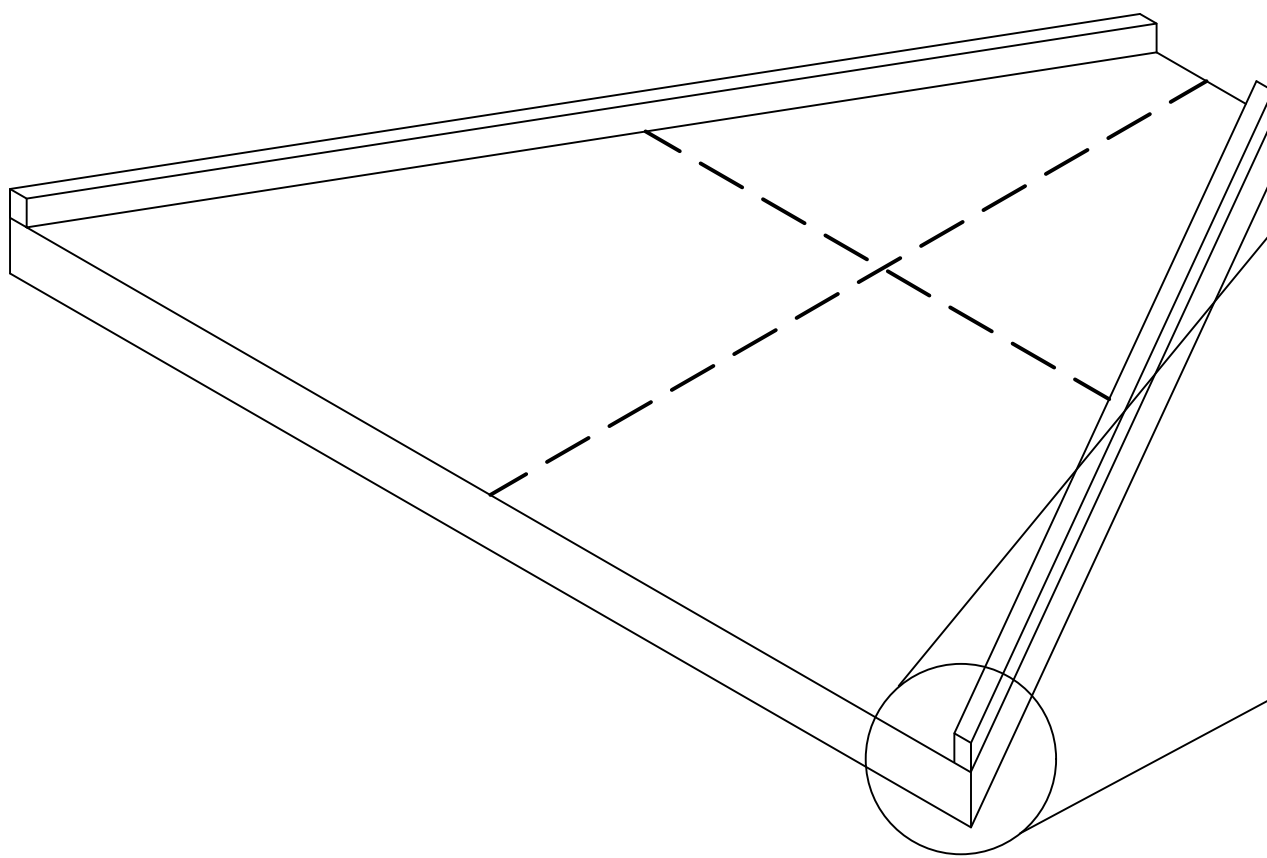
PLAN

SCALE 1" = 5'



DEADMAN CHAIN SHORELINE PROTECTION PLAN

N.T.S.



DEADMAN CHAIN SHORELINE PROTECTION SECTION

N.T.S.

DEADMAN CHAIN SHORELINE PROTECTION CURB

N.T.S.

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

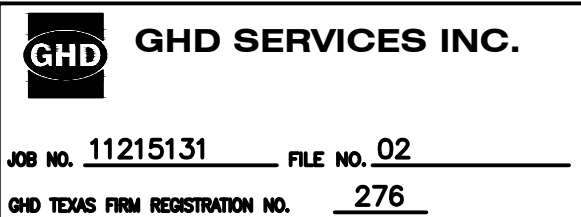
HYDROGRAPHIC SURVEY SOUTHWEST EXCAVATION AREA FOR SHEET PILE WALL, HARRIS COUNTY, TEXAS FOR GHD SERVICES, MORRISON SURVEYING INC., 221222, APRIL 11, 2023

HYDROGRAPHIC SURVEY SOUTHWEST EXCAVATION AREA FOR SHEET PILE WALL, HARRIS COUNTY, TEXAS FOR GHD SERVICES, MORRISON SURVEYING INC., JUNE 22, AND JULY 5, 2023.

PARCELS 1, 2 & 3 & PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

NOTES:

- FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
- THE WATER ELEVATION AT THE TIME OF SURVEY VARIED BUT GENERALLY RANGED BETWEEN +0.5' TO +2.6'. DATE OF SURVEY: JULY 8, 2019 TO AUGUST 2, 2019.



PRELIMINARY