Enprotec | Hibbs & Todd

February 18, 2026

CITY OF MIDLOTHIAN
Auger Water Treatment Plant 3 Million Gallon Ground Storage Tank

Addendum # 1

Attention is called to the following modifications to the referenced Plans, Specification and Contract Documents for the referenced project. The City of Midlothian will receive sealed Bids for the Auger WTP 3 MG GST at Midlothian City Hall, located at 215 N 8th Street, Midlothian, Texas 76065, until 11:00 a.m., local time on **Thursday, February 26, 2026**, at which time the sealed Bids received will be publicly opened and read. We hereby modify as follows:

PROJECT MANUAL

1. **REPLACE** the City's address in multiple places throughout the front end documents. The correct address is **215 N. 8th St., Midlothian, TX 76065**. The incorrect address appears in the following places:
    a. Article 15 of the Instructions to Bidders.
    b. Bid Bond.
    c. Performance Bond.
    d. Supplementary Conditions 1.01.A.28.

2. **REPLACE** the Bid Form, in its entirety, with the attached Bid Form.

3. **REPLACE** the agreement (EJCDC C-520), in its entirety, with the attached agreement.

4. Specification Section 01090. **REPLACE** the Owner's Address with 215 N. 8th St. Midlothian, TX 76065.

5. Specification Section 09800. **DELETE** this spec in its entirety.

6. Specification Section 13200. Paragraph 3.2.E. **REVISE** minimum floor thickness requirement to 6".

7. Specification Section 13200. **REPLACE** 3.7.A with the following, "*Upon completion, the tank shall be disinfected in accordance with AWWA C652.*"

8. Specification Section 15103. **ADD** J&S Valve to Paragraph 2.2.B as an approved manufacturer.

9. **ADD** the attached Geotechnical Report and Supplementary Geotechnical Letter as Appendix A.

DRAWINGS

1. **REPLACE** Sheet 5, in its entirety, with the attached Sheet 5.

2. **REPLACE** Sheet 6, in its entirety, with the attached Sheet 6.

3. Sheet 8. **REVISE** minimum floor thickness requirement to 6" in Wall Section A.

CLARIFICATIONS:

1. City will obtain the required building permit and there will be no cost to the Contractor.

2. The address for the Midlothian Auger Water Treatment Plant is 1761 Auger Road, Midlothian, TX 76065.

This addendum consists of fifty (50) pages and becomes a part of the referenced plans, specifications and contract documents and shall be acknowledged by the proposer and attached to the sealed proposal submitted.

By: Jordan Hibbs, P.E. #115729
President

2/18/2026

BID FORM

Auger Water Treatment Plant 3 MG Ground Storage Tank #3

City of Midlothian

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Midlothian

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum Date**
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of

the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

BID SCHEDULE
FOR
AUGER WATER TREATMENT PLANT 3 MG GROUND STORAGE TANK #3
BASE BID FOR LABOR, MATERIAL, EQUIPMENT, AND INDCIENTALS

ITEM NO	ESTIMATED QUANTITY	DESCRIPTION AND UNIT PRICE (Price to be written in words)	UNIT PRICE	TOTAL PRICE
1	1 LS	Mobilization, bonds, and insurance (not to exceed 5 percent of bid), for _____ _____ Dollars and _____ Cents per lump sum.		$_____
2	1 LS	Prepare and obtain applicable approvals for and implement Stormwater Pollution Prevention Plan (SWP3) and related work as shown and as specified, complete and in place, for _____ _____ _____ Dollars and _____ Cents per lump sum.		$_____
3	200 LF	Prepare and obtain applicable approvals for, and implement Trench and Excavation Safety Plan and related work as shown and as specified, complete and in place, for _____ _____ Dollars and _____ Cents per linear foot.	$_____/LF	$_____
4	1 LS	Furnish and install a 3.0 MG GST with all related appurtenances, including 6" floor, and curtain baffles, as shown and as specified, complete and in place, for _____ _____ Dollars and _____ Cents per lump sum.		$_____
5	1 LS	Furnish and install Piping, Valves, Fittings, and all related appurtenances, as shown and as specified, complete in place for _____ _____ Dollars and _____ Cents per lump sum.		$_____
6	1 LS	Furnish and install electrical & instrumentation work and all related appurtenances, as shown and as specified, complete in place for _____ _____ _____ Dollars and _____ Cents per lump sum.		$_____
7	1 LS	Allowance for Owner – Directed Improvements at the site as directed, complete and in place, for ____ Two Hundred Fifty Thousand Dollars and No Cents per lump sum.		$250,000.00
TOTAL BASE BID (Items 1 thru 7)			$_____	

AUGER WATER TREATMENT PLANT 3 MG GROUND STORAGE TANK #3
ALTERNATE A BID FOR LABOR, MATERIAL, EQUIPMENT, AND INDCIENTALS

ITEM NO	ESTIMATED QUANTITY	DESCRIPTION AND UNIT PRICE (Price to be written in words)	UNIT PRICE	TOTAL PRICE
A1	1 LS	Furnish and install concrete baffles in lieu of curtain baffles and all related appurtenances, as shown and specified, complete in place, for _____ _____ _____ Dollars and _____ Cents per lump sum.		$_____
A2	1 LS	Furnish and install exterior coating system and repairs on existing 3.0 Million Gallon Ground Storage Tank #1 as shown and specified, complete in place, for _____ _____ Dollars and _____ Cents per lump sum.		$_____
A3	1 LS	Furnish and install exterior coating systems and repairs on existing 3.0 Million Gallon Ground Storage Tank #2 as shown and specified, complete in place, for _____ _____ Dollars and _____ Cents per lump sum.		$_____
TOTAL ALTERNATE A BID (Items A1 thru A3)			$_____	

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete within **570** calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **600** calendar days after the date when the Contract Times commence to run.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. Completed Conflict of Interest Questionnaire (Form CIQ);

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____
(where applicable)

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between the City of Midlothian, Texas ("Owner") and _____ ("Contractor"), a _____.

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **Auger Water Treatment Plant 3 MG Ground Storage Tank #3**.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Auger Water Treatment Plant 3 MG Ground Storage Tank #3**.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by

Enprotec/Hibbs & Todd, Inc.
402 Cedar Street
Abilene, Texas 79601
Texas Registered Engineering Firm No. F-1151

3.02 The Owner has retained Enprotec/Hibbs & Todd, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within **570** days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **600** days after the date when the Contract is substantially complete.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any

extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $200.00 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) $_____.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment for work performed up to the 25TH day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 90 percent of cost of materials and equipment not incorporated in the Work but delivered, suitably stored and accompanied by documentation satisfactory to Owner as provided in Paragraph 15.01.B of the General Conditions (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 90 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions.

6.02 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All moneys not paid when due as provided in Article 15 of the General Conditions shall bear interest at the maximum rate allowed in accordance with Chapter 2251 of the Texas Government Code.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site, if any, and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement
2. Performance bond
3. Payment bond
4. Maintenance bond
5. Certificate of Insurance
6. Form 1295
7. General Conditions
8. Supplementary Conditions
9. Specifications bearing the title:

   "Auger Water Treatment Plant 3 MG Ground Storage Tank #3"
10. Drawings bearing the following general title:

    "Auger Water Treatment Plant 3 MG Ground Storage Tank #3"
11. Addenda
12. Contractor's Bid Form as contained herein.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

B. Contractor verifies that it does not:

1. Boycott Israel and agrees that during the term of the Agreement will not Boycott Israel as that term is defined in Texas Government Code Section 808.001, as amended;

2. Boycott Energy Companies and agrees that during the term of this Agreement will not Boycott Energy Companies as that term is defined in Texas Government Code Section 809.001, as amended;

3. Have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association as those terms are defined in Texas Government Code Section 2274.001, as amended; and will not discriminate during the term of this Agreement against a firearm entity or firearm trade association.

   This Section 10.05.B. does not apply if Contractor is a sole proprietor, a non-profit entity, or a governmental entity; and only applies if: (i) Contractor has ten (10) or more fulltime employees and (ii) this Agreement has a value of $100,000.00 or more to be paid under the terms of this Agreement.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
City of Midlothian	
By:	By:
Chris Dick	
Title: City Manager	Title:
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:	Attest:
Title:	Title:
Address for giving notices:	Address for giving notices:
215 N. 8th Street	
Midlothian, TX 76065	
	License No.: *(where applicable)*
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

PROJECT NO. 25682
FEBRUARY, 2025

GEOTECHNICAL INVESTIGATION
MIDLOTHIAN WATER TREATMENT PLANT – PROPOSED TANK
AUGER ROAD
MIDLOTHIAN, TEXAS

Presented To:
ENPROTEC / HIBBS & TODD, INC. (eHT)
ABILENE, TEXAS

February 5, 2025
Project No. 25682

Enprotec / Hibbs & Todd, Inc. (eHT)
402 Cedar Street
Abilene, Texas 79601
ATTN: Mr. Jordan S. Hibbs, P.E.

GEOTECHNICAL INVESTIGATION
MIDLOTHIAN WATER TREATMENT PLANT – PROPOSED TANK
AUGER ROAD
MIDLOTHIAN, TEXAS

Gentlemen:

Transmitted herewith are copies of the referenced report. Should you have any questions concerning our findings or if you desire additional information, do not hesitate to call.

Sincerely,

REED ENGINEERING GROUP, LTD.
Registration Number F-3114

William Blake Gibson, P.E.
Project Engineering Geologist

Ronald F. Reed, P.E.
Principal Engineer

STATE OF TEXAS
RONALD F. REED
48174
LICENSED
PROFESSIONAL ENGINEER

February 6, 2025

WBG/RFR/apv

copy submitted via e-mail only

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ILLUSTRATIONS

INTRODUCTION

Project Description

This report presents the results of a geotechnical investigation performed for a proposed tank to be located at the Water Treatment Plant on Auger Road in Midlothian, Texas. The general orientation of the site is shown on the Plan of Borings, Plate 1 of the report **Illustrations**.

The project consists of construction of a three- to four-million-gallon ground storage tank. The tank is anticipated to be 30 feet tall.

Authorization

This investigation was authorized by Mr. Jordan Hibbs of Enprotec / Hibbs & Todd, Inc. by signature of the Subconsultant Agreement related to the Proposal No. 12-10 (Revised) dated December 9, 2024.

Purpose and Scope

The purpose of this investigation has been to evaluate the general subsurface conditions and provide recommendations for:

- design of the foundation system;
- floor slab; and
- site preparation and earthwork compaction criteria.

The investigation has included drilling sample borings, performing laboratory testing, analyzing engineering and geologic data, and developing geotechnical recommendations. The following sections present the methodology used in this investigation.

Recommendations provided herein are site-specific and were developed for the project discussed in the report **Introduction**. Persons using this report for other than the intended purpose do so at their own risk.

FIELD AND LABORATORY INVESTIGATIONS

General

The field and laboratory investigations have been conducted in accordance with applicable standards and procedures set forth in the 2024 Annual Book of ASTM Standards, Volumes 04.08 and 04.09, "Soil and Rock." These volumes should be consulted for information on specific test procedures.

Field Investigation

Subsurface conditions were evaluated by 4 sample borings drilled to depths of 43 to 59 feet in January 2025. The locations of the borings are shown on Plate 1 of the report **Illustrations**. Boring locations were identified using a GPS (global positioning system) unit. The accuracy of this unit is estimated to be within plus or minus one meter.

Borings were advanced between sampling intervals by means of a truck-mounted drilling rig equipped with continuous flight augers. Samples of cohesive soils were obtained with 3-inch diameter Shelby tubes (ASTM D1587). Unweathered shale was evaluated in-situ using the Texas Department of Transportation (TxDOT) cone penetrometer test.

Delayed water level observations were made in the open boreholes to evaluate ground water conditions. Borings were backfilled at completion of field operations.

Sample depth, description of materials, field tests, water conditions and soil classification [Unified Soil Classification System (USCS), ASTM D2488] are presented on the Boring Logs, Plates 2 through 5. Keys to terms and symbols used on the logs are included as Plates 6 and 7.

Laboratory Testing

All samples were returned to the laboratory and visually logged in accordance with the USCS. The consistency of cohesive soils was evaluated by means of a pocket penetrometer. Results of the pocket penetrometer readings are presented on the boring logs.

Laboratory tests were performed to evaluate index properties and confirm visual classification of selected samples. Tests and ASTM designations are provided in Table 1.

TABLE 1.
TESTS CONDUCTED AND ASTM DESIGNATIONS

Type of Test	ASTM Designation
Atterberg Limits	D4318
Moisture Content	D2216
Partial Gradation	D1140
Soil Suction	D5298

The results of these tests are summarized on Plates 8 and 9.

The expansive characteristics of the upper soils and severely weathered shale were also evaluated by means of three absorption pressure-swell tests conducted in accordance with general procedures discussed by Johnson and Snethen[1]. Results of the swell tests are presented graphically on Plates 10 through 12.

GENERAL SITE CONDITIONS

Physiography

The site was located within property of the existing Midlothian Water Treatment Plant. Based on review of historical Google Earth aerial photographs, the site appears to have been used for stockpiling of soils since development of the Water Treatment Plant starting around 2009. A Google Earth aerial photograph dated February 2024 is included as Plate 1 (Plan of Borings) for reference.

Geology and Stratigraphy

Subsurface conditions encountered in the borings consisted of fill and alluvial soil overlying severely weathered grading to unweathered shale. The fill generally consisted of an unsorted mixture of dark brown, brown, and brownish-yellow, high plasticity (CH) silty clay, with varying amounts of sand, gravel, iron staining, and calcareous concretions. The fill extended to depths of 1-1/2 to 7 feet.

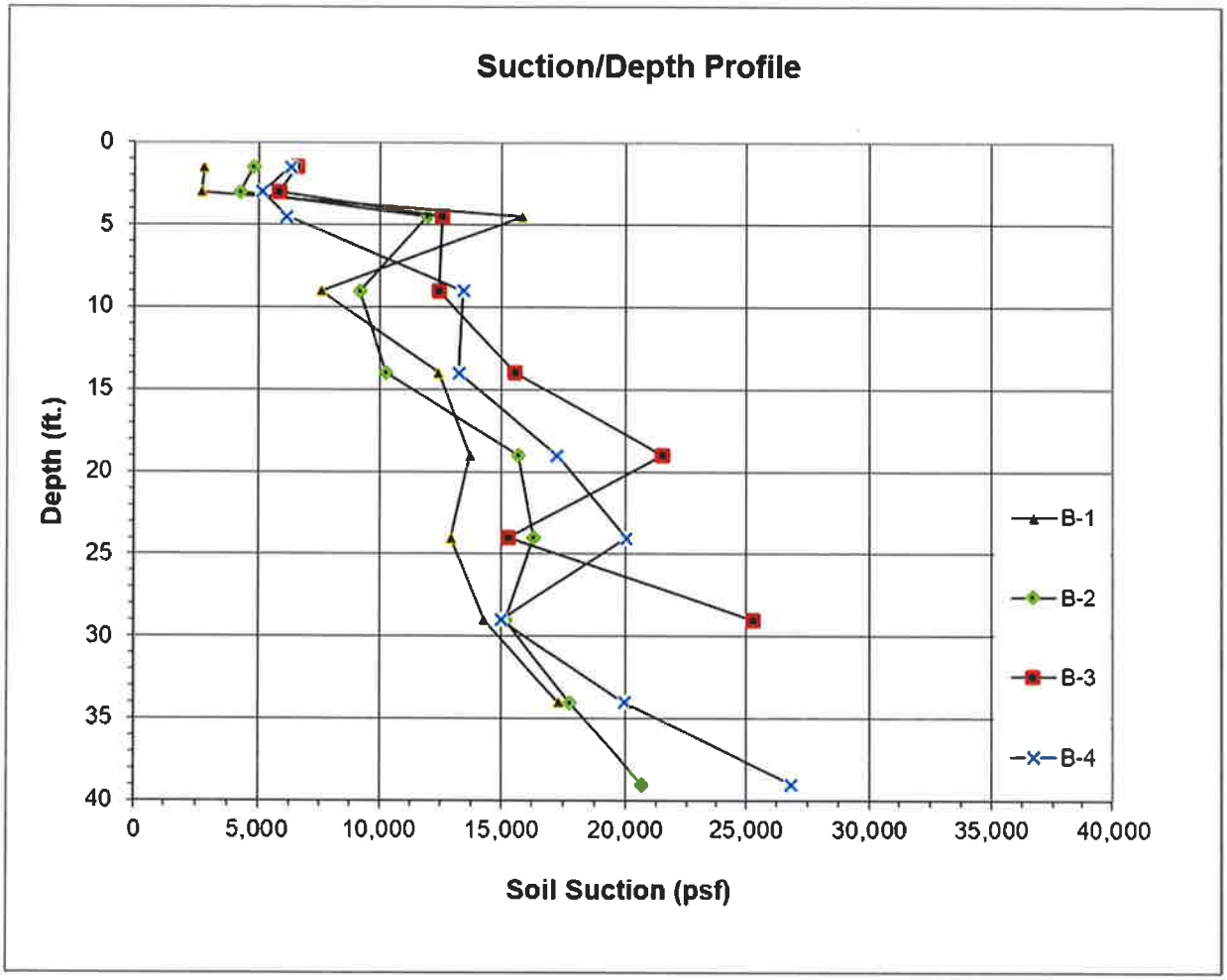
[1] Johnson, L.D., & Snethen, D.R. (1978). "Prediction of Potential Heave of Swelling Soil." Geotechnical Testing Journal, ASTM 1 (3), 117-124.

The underlying alluvial soils consisted of dark brown to brownish-yellow, reddish-yellow, and gray, CH to moderate plasticity (CL) silty clay, with varying amounts of sand, gravel, iron staining, and calcareous concretions and deposits. The alluvial soil extended to depths of 12 to 17 feet.

Brownish-yellow and gray, severely weathered shale, with intermittent iron-stained seams, gypsum seams, and mudstone deposits was encountered below the alluvial soils. The severely weathered shale possesses the engineering properties of CH silty clay and is dual-classified as such on the boring logs.

Dark gray, brownish-yellow, and gray, soft (rock classification), weathered shale, with intermittent iron-stained seams was encountered below depths of 31 to 42 feet. Dark gray, soft (rock classification), unweathered shale was encountered below depths of 33 to 49 feet in the borings. The depth to unweathered shale generally increased from west to east. The unweathered shale extended through the 43- to 59-foot termination depths of the borings.

In general, the seasonal zone of moisture variation is estimated to be on the order of 8 to 10 feet for this site. Based on the suction profiles, the fill and alluvial soils were relatively dry between the depths of approximately 5 to 10 feet in January 2025. The severely weathered shale was generally moist through the depths explored. The suction profiles are provided in the following graph.



Ground Water

Ground water seepage was observed in Boring B-4 at a depth of 14 feet during drilling operations. Based on post-drilling water level observations, ground water was present at a depth of 22 feet in Borings B-2 and 56-1/2 feet in B-4 at the end of the day of drilling.

Boring B-2 is of particular interest; as it was drilled over a two-day period. During drilling operations, a relatively impermeable smear zone is created along the perimeter of the borehole. Over time, the water pressure is able to fracture and dislodge portions of this smear zone allowing

for water to seep or flow into the borehole. It is opined that the smear zone was displaced between the two days of drilling allowing for a closer or more accurate end of day water level to be observed.

Based on the post-drilling observations and soil suction measurements, the ground water is perched above the relatively impermeable, unweathered shale predominantly in the overlying fill and alluvial soil. The depth to ground water will fluctuate with variations in seasonal and yearly rainfall, but is anticipated to be present throughout the year.

Texas Health and Safety Code and TCEQ Comment

Pursuant to the Texas Health and Safety Code, Chapter 361, §361.538 and 30 Texas Administrative Code 330, §330.953, Reed Engineering Group, Ltd. has performed appropriate soil tests as required by these regulations to demonstrate that the subject property does not overlie a closed municipal solid waste landfill. The site observations and subsurface data do not indicate the presence of buried municipal solid waste at this site. Based on these data, development of this site should not require a Development Permit, as described in §361.532 and §§330.951-330.963, Subchapter T.

Seismic Site Classification

The site has been classified with respect to seismic design criteria contained in the 2021 International Building Code (IBC), Section 1613, and ASCE 7-22, Chapter 20. The criteria require characterization of the upper 100 feet of subsurface materials. Based on the ASCE 7-22 criteria, the site is classified as Site Class C in accordance with Table 20.2-1.

ANALYSIS AND RECOMMENDATIONS

Potential Vertical Movements

Potential Vertical Movements (PVM) were evaluated using an empirical procedure developed by McDowell[2] and modified by the Texas Department of Transportation, TxDOT Test Method 124-E[3] in conjunction with the soil suction and absorption pressure-swell tests. Based on the PVM calculations and past experience, potential movements are estimated to be on the order of two to four inches, depending on location. Movement will be associated with seasonal changes in soil moisture.

Ground-supported improvements (i.e., sidewalks and paving) will move in response to changes in soil moisture. The movement will be observed as heave if the soils are dry at the time the pavement or sidewalk is constructed. The movement will be observed as settlement if the soils are moist at the time of construction. Generally, settlement will be limited to the outer perimeter (outer four to five feet) of larger slabs. Prudent watering during extended dry climatic periods can control settlement. Recommendations are provided to limit movement below the structure; however, some movement of site paving and sidewalks should be anticipated.

The estimated PVM is based on existing site grades. If cut and fill in excess of two feet will be required below the tank to establish finished grade, this office should be consulted for additional analysis and recommendations.

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[2] McDowell, C. "The Relation of Laboratory Testing to Design for Pavements and Structures on Expansive Soils" (1959). Quarterly of the Colorado School of Mines, Volume 54, No. 4, 127-153.
[3] "Method for Determining the Potential Vertical Rise, PVR." (1978). Texas Department of Transportation, Test Method Tex-124-E.

Subgrade Modification

Potential movements associated with heave from a dry condition to a moist condition are estimated to be on the order of two to four inches, depending on location. Additional movement is possible if the clays become saturated, such as can happen from utility leaks and excessive ponding of water adjacent to the perimeter walls.

The most economical way of limiting the potential for post-construction movement, and the most positive from a design perspective, is to reduce the potential for heave-related movement prior to construction. Due to the presence of fill on-site, this should be accomplished by mechanically excavating the upper soils, mixing the soils with water, then recompacting the soils at an elevated moisture in controlled lifts.

At completion of the excavation and recompaction process, a surface seal will be required to maintain the desired moisture. A minimum three-foot thick cap of either "select" fill or flexible base including a 20-mil polyethylene sheet vapor barrier overlying the cap is recommended below the tank floor and foundation. The 20-mil poly should extend a minimum of two feet beyond the extent of the moisture-conditioned subgrade and be placed two feet below the proposed final grade outside of the tank footprint.

Experience has shown comparable performance for either of the recommended surface caps.

The recommendations provided below should be reviewed by this office once finished floor elevation has been established. This office should be provided with a site grading plan to allow for evaluation and modification of the recommendations, if necessary.

This method of pre-wetting the soils is not effective unless the water is uniformly blended with the soil. Simply wetting the surface of the soil will not achieve the required result. General procedures are as follows.

1. Strip vegetation and dispose of the organic materials in accordance with the project specifications.

2. Excavate to a depth of eight feet below existing grade or finished grade, whichever is deeper. Extend the footprint of the excavated area a minimum of 10 feet beyond the proposed footprint of the tank.

3. Scarify the exposed subgrade to a depth of six inches, water as necessary and recompact to the density and moisture recommended in the **Earthwork** section.

4. Compact site-excavated soils in lifts as outlined in the **Earthwork** section to the subgrade required for the "select" fill or flexible base cap. Place and compact soils in accordance with recommendations in the **Earthwork** section.

    - Note: If insufficient on-site fill exists to achieve the proposed subgrade, all imported fill for use below the structure should consist of "select" fill, flexible base, or approved common fill. Balance on-site soils to provide a uniform thickness of "select" fill or flexible base.

5. Place and compact either the "select" fill or flexible base cap. The cap should extend a minimum of three feet beyond the footprint of the foundation. Place a minimum of three feet of "select" fill or flexible base below the slab or foundation of the tank. The cap should be sloped to allow for a minimum of three feet below the footing to account for the footing embedment depth and footing thickness. Placement of the cap should be done a maximum of seven days following completion of the final lift of reworked soil.

Placement recommendations for "select" fill and flexible base are included in the **Earthwork** section.

The perimeter of the excavation should be sloped, from the bottom up, at one horizontal to one vertical (1H:1V) to create a transition between reworked soils and non-reworked soils. This will decrease the potential for concentrated differential movement between treated and untreated areas.

The moisture cap should be placed within seven days following completion of the excavation and recompaction operations to limit moisture loss.

Potential post-construction floor movement associated with heave, considering a properly reworked subgrade, is anticipated to be on the order of approximately one inch. Additional movement, especially during construction, is possible if the clays become saturated, such as can happen from utility leaks, ponding of water adjacent to the slab during construction, and excessive ponding of water adjacent to the perimeter walls after construction.

Positive drainage of water away from the structure must be provided and maintained after construction.

Modulus of Subgrade Reaction

The preceding section discussed alternatives to reduce the potential and/or probability of post-construction movement of the structure and ground-supported floor slab. Two alternatives were provided to seal the moisture into the subgrade to reduce construction-related moisture loss. The alternatives included placement of three feet of either "select" fill or flexible base.

Considering either of these options, it is recommended a value of 250 pounds per cubic inch (pci) be used for the modulus of subgrade reaction, k. This value is applicable considering placement of a minimum of three feet of either "select" fill or flexible base over the prepared subgrade. To

achieve the recommended modulus, compaction of the "select" fill or flexible base to the specified density will be required. Materials disturbed by the construction equipment immediately prior to placement of the concrete will reduce the allowable modulus.

Foundation Design – Footing or Ring-Type Foundation

Considering remedial earthwork as discussed in the preceding **Subgrade Modification** section, the foundation for the proposed tank may consist of either shallow spread footings or a continuous ring-type footing. Footings should be founded a minimum of 18 inches below finished grade within compacted and tested "select" fill or flexible base.

Footings should be designed based on an allowable net bearing pressure of 3.0 kips per square foot (ksf), dead load or 4.5 ksf total load, whichever governs. The bearing value for dead load contains a factor of safety of three considering a general shear failure.

A minimum footing width of 36 inches is recommended for a continuous ring footing. A wider footing may be required to accommodate uplift loads.

Care should be taken to not eccentrically load or point-load the footings.

Properly constructed footings designed in accordance with the bearing pressures should undergo post-construction settlement of less than one inch. It is recommended continuous footings or beams spanning between spread footings be reinforced for differential movement of 1/2 inch over a 20-foot span.

Inspection of the footing excavations by a representative of this office is recommended prior to placement of the concrete. Footing excavations should be dry and free of all loose soils and deleterious materials prior to placement of concrete.

Earthwork, General

Proper compaction of soil requires both the correct moisture content and "compactive effort" or energy. The compactive effort, or energy, imparted into the soil by the equipment used for compaction, has to be compatible with the lift thickness. The lighter the equipment (lower contact pressure), the thinner the loose lift of soil has to be to achieve adequate compaction.

If the lift of soil is too thick for the energy (compactive effort) exerted by the equipment, insufficient energy will be transferred through the full lift thickness, resulting in a lens of loose, settlement-prone soil at the bottom of the lift.

For example, if track-mounted equipment such as a "dozer" is used for compaction, the thickness of lift will vary with the track contact pressure. For a Caterpillar D-6, with a contact pressure of approximately 1,000 pounds per square foot (psf), a maximum loose lift thickness of 6 inches (compacted lift of 4 inches) is needed to achieve compaction. For a Caterpillar D-10, with a contact pressure of approximately 3,000 psf, a maximum loose lift thickness of 8 inches (compacted lift of 6 inches) is needed to achieve compaction.

If the upper five to six inches of an excessively thick lift is well compacted, it can meet density, and therefore the loose, relatively thin lens at the bottom of the lift will not be detected by density testing resulting in the potential for settlement of under-compacted lenses. Accurately determining lift thickness is virtually impossible after the fact in large-scale mass earthwork

operations, and can only be controlled by the earthwork contractor by "experience". Alternatively, if the earthwork contractor's field personnel do not have sufficient experience, a surveyor would need to be hired to accurately survey each lift to evaluate if excessive lifts are being placed.

For equipment with a relatively light contact pressure (any type of equipment with a contact pressure of less than approximately 2,000 psf), there is virtually no "factor of safety" relative to the lift thickness. It is therefore recommended that, if track-mounted equipment is used for compaction, equipment with a minimum contact pressure of 2,500 psf be specified for mass earthwork operations.

Earthwork

All vegetation and topsoil containing organic material should be cleared and grubbed at the beginning of earthwork construction. Areas of the site that will underlie fill or within the footprint of the proposed tank should be scarified to a depth of 6 inches and recompacted to a minimum of 95 percent and a maximum of 100 percent of the maximum density, as determined by ASTM D698, "Standard Proctor". The moisture content should range from +1 to +5 percentage points above optimum.

Considering the wide variation in the quality and preparation techniques in developing the Moisture-Density relationship (ASTM D698), if testing of the fill is not performed by Reed Engineering Group. Ltd., it is recommended that the testing agency perform one-point swell tests

at a pressure of 450 psf on laboratory samples compacted to the above recommended density and moisture. If test results indicate that the swell will exceed one percent, the field moisture should be adjusted to limit the potential for swell to less than one percent.

Site-excavated soils should be placed in maximum eight-inch loose lifts (note, loose lift thickness must be compatible with the compaction equipment) and compacted to the moisture and density requirements outlined above. The soils should be uniformly blended with water to achieve the required moisture content.

Areas where compaction utilizing hand-held equipment will be required, such as for site utilities, should be compacted to a density of between 95 and 100 percent of Standard Proctor, at a moisture content of between +1 to +5 percentage points above optimum.

Proper backfilling around the perimeter will reduce the potential for water seepage beneath the structure. Fill against the perimeter of the foundation should consist of site-excavated clays, or equal, placed and compacted in accordance with the recommendations outlined above.

"Select" fill is defined as uniformly blended clayey sand with a Plasticity Index (PI) of between 4 and 15. "Select" fill should be placed in maximum 8-inch loose lifts and compacted to at least 95 percent of the Standard Proctor density, at a moisture content between -2 to +3 percentage points of optimum moisture.

Flexible base is defined as crushed stone or crushed concrete meeting the requirements of the 2014 Edition of the Texas Department of Transportation (TxDOT), "Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges", Item 247 Grade 2, Type A

(crushed limestone), or Type D (crushed concrete) or better. Flexible base should be compacted to a minimum of 95 percent of Standard Proctor density, at a moisture content between -2 to +3 percentage points of optimum moisture.

The moisture cap should be placed within seven days over the modified subgrade to limit moisture loss within the underlying soils.

Construction Observation and Testing Frequency

It is recommended the following items (as a minimum) be observed and tested by a representative of this office during construction.

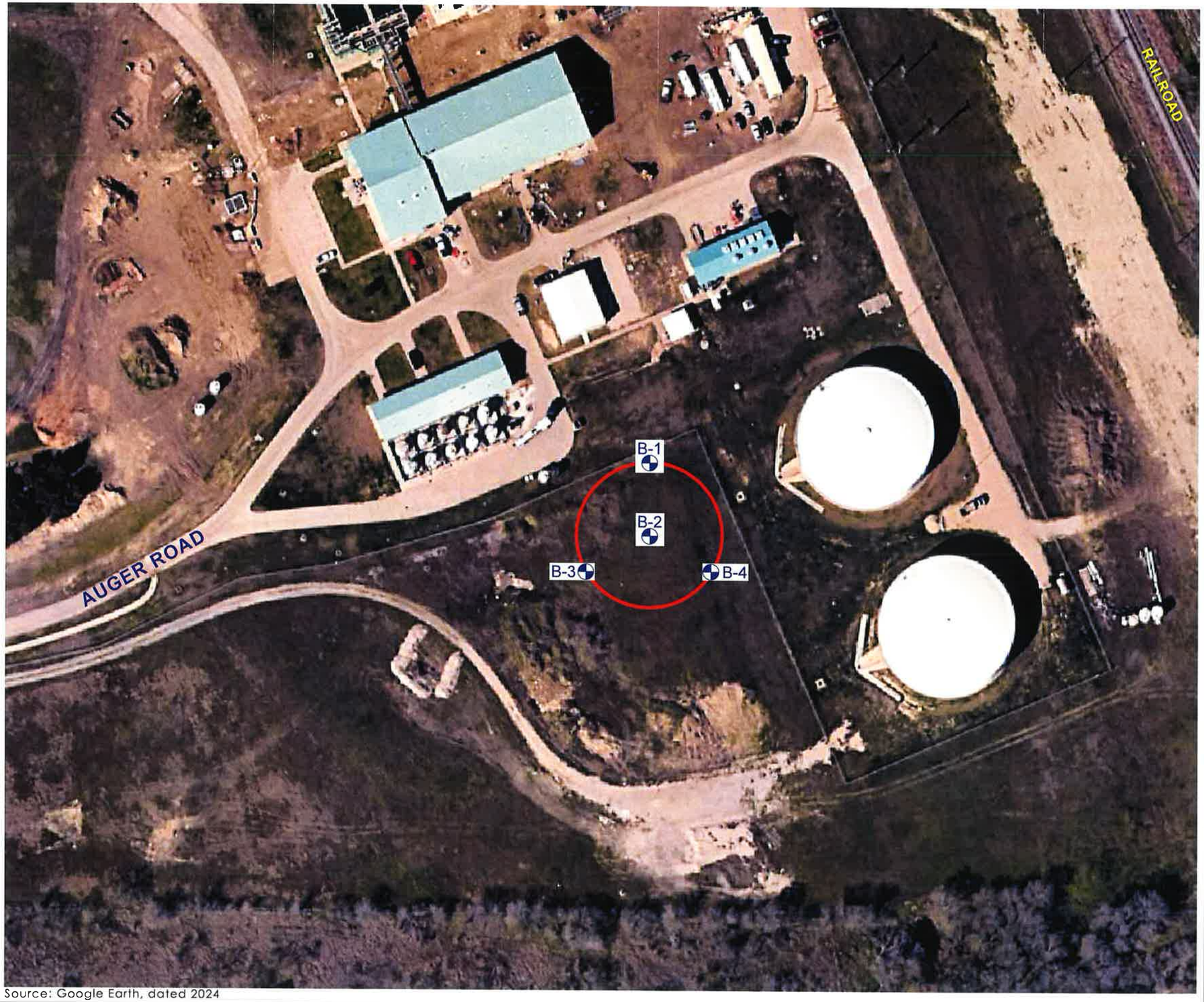
Observation:

- Fill placement and compaction.
- Foundation construction and concrete placement.

Testing:

- Earthwork
  - One test per 5,000 square feet per lift within fills below the tank.
  - One test per 150 linear feet per lift in utility and grade beam backfill.

The purpose of the recommended observation and testing is to confirm the proper foundation bearing stratum and the earthwork and pad construction procedures.



Source: Google Earth, dated 2024

LEGEND

APPROXIMATE LOCATION OF TANK.

N

0 50' 100' 200'

REED | ENGINEERING GROUP
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

PLAN OF BORINGS

Midlothian Water Treatment Plant
- Proposed Tank
Auger Road
Midlothian, Texas

Project No. 25682

PLATE 1

REED ENGINEERING GROUP

Project Number : 25682

Date Completed : 1/17/2025

Midlothian Water Treatment Plant - Proposed Tank
Auger Road
Midlothian, Texas

Location: See Plate 1

Depth (ft)	Sample	rec % (rqd %)	Graphic Log	DESCRIPTION OF STRATA	Standard Penetration Tests Blows per Foot - ⊕ (10 20 30 40 50 60) / Pocket Penetrometer Readings Tons Per Sq. Ft. - ✳ (1 2 3 4 4.5+ 4.5++)	Elev. (ft)
0				SILTY CLAY, dark brown & brown, very stiff, w/trace of calcareous concretions & sand (Fill) (CH)		
5				SILTY CLAY, brownish-yellow & brown, very stiff to hard, w/some calcareous concretions & sand (Fill) (CH)		
				SILTY CLAY, dark brown (CH)		
10				SILTY CLAY, brownish-yellow, hard, w/some calcareous concretions, sand & iron stains (CL)		
15				SILTY CLAY, brownish-yellow, reddish-yellow & gray, very stiff, w/trace of calcareous concretions & sand (CH)		
20				SILTY CLAY, brownish-yellow & gray, hard, w/iron-stained seams & some gypsum seams (severely weathered shale) (CH) -w/dark red mudstone deposits @ 20'		
25						
30						
35						
40				SHALE, dark gray & brownish-yellow, soft, weathered		
45				SHALE, dark gray, soft	100 Blows = 1 inch	
50					100 Blows = 1 inch	
55				Total Depth = 49 feet Dry after 5 minutes. Dry & blocked @ 48-1/2' @ end of day.		
60						
65						

BORING LOG B-1

PLATE 2

GEOTECHNICAL CONSULTANTS

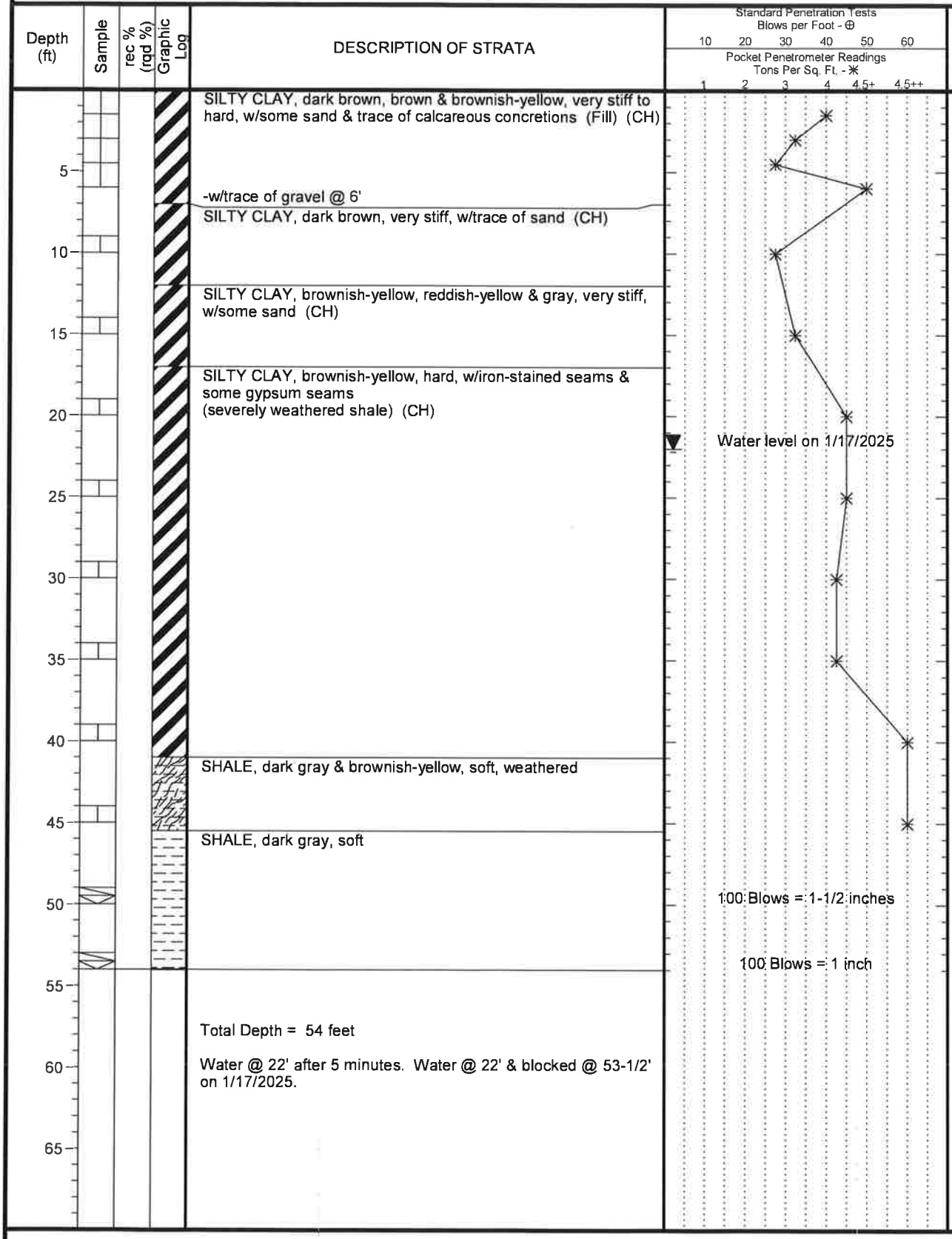
REED ENGINEERING GROUP

Project Number : 25682

Date Completed : 1/17/2025

Midlothian Water Treatment Plant - Proposed Tank
Auger Road
Midlothian, Texas

Location: See Plate 1



BORING LOG B-2

PLATE 3

GEOTECHNICAL CONSULTANTS

Project Number : 25682

Date Completed : 1/17/2025

Midlothian Water Treatment Plant - Proposed Tank
Auger Road
Midlothian, Texas

Location: See Plate 1

Depth (ft)	Sample	rec % (rqd %)	Graphic Log	DESCRIPTION OF STRATA	Elev. (ft)
0				SILTY CLAY, brownish-yellow & brown, very stiff, w/sand & trace of gravel (Fill) (CH)	
				SILTY CLAY, brown, hard, w/trace of sand, calcareous concretions & gravel (CH)	
5				SILTY CLAY, brownish-yellow, hard, w/sand, some calcareous concretions & trace of gravel (CL)	
				SILTY CLAY, brownish-yellow & gray, very stiff to hard, w/iron stains, some sand & trace of gravel (CH)	
10					
				SILTY CLAY, brownish-yellow, hard, w/iron-stained seams & trace of gypsum seams (severely weathered shale) (CH)	
15					
20					
25					
30				SHALE, dark gray & brownish-yellow, soft, weathered	
				SHALE, dark gray, soft	
35					
40					
45				Total Depth = 43 feet	
				Dry after 5 minutes. Dry & blocked @ 43' @ end of day.	
50					
55					
60					
65					

Standard Penetration Tests
Blows per Foot - ⊕
10 20 30 40 50 60

Pocket Penetrometer Readings
Tons Per Sq. Ft. - ✳
1 2 3 4 4.5+ 4.5++

100 Blows = 1-1/2 inches

100 Blows = 1-1/2 inches

BORING LOG B-3

PLATE 4

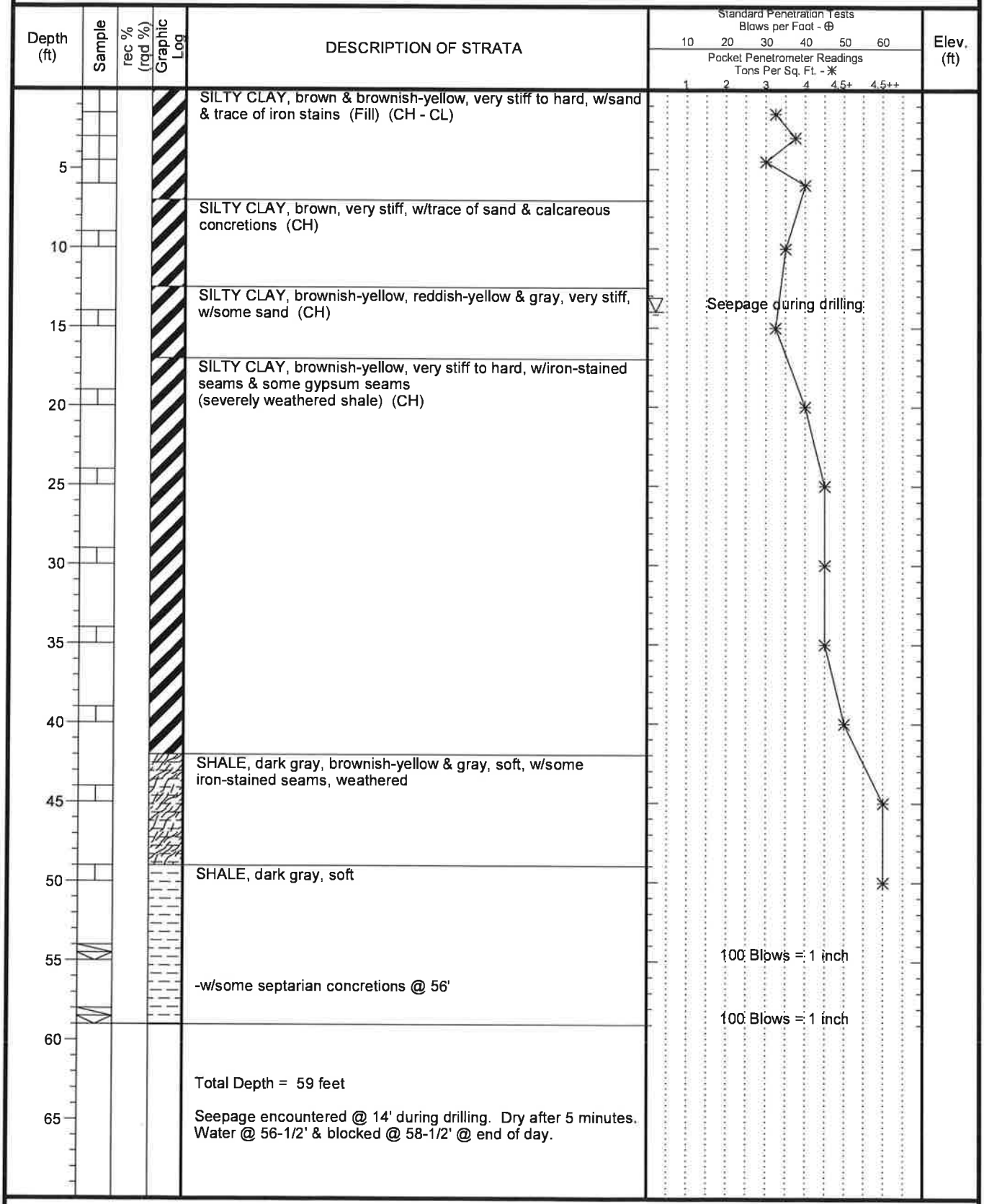
REED ENGINEERING GROUP

Project Number : 25682

Date Completed : 1/16/2025

Midlothian Water Treatment Plant - Proposed Tank
Auger Road
Midlothian, Texas

Location: See Plate 1



BORING LOG B-4

PLATE 5

GEOTECHNICAL CONSULTANTS

REED ENGINEERING GROUP

Project Number : 25682
Date Completed : 1/17/2025

Midlothian Water Treatment Plant - Proposed Tank
Auger Road
Midlothian, Texas

Location: See Plate 1

Depth (ft)	Sample	rec % (rqd %)	Graphic Log	DESCRIPTION OF STRATA	Elev. (ft)
				SILTY CLAY, dark brown & brown, very stiff, w/trace of calcareous concretions & sand (Fill) (CH)	
				SILTY CLAY, brownish-yellow & brown, very stiff to hard, w/some calcareous concretions & sand (Fill) (CH)	
				SILTY CLAY, dark brown (CH)	
				SILTY CLAY, brownish-yellow, hard, w/some calcareous concretions, sand & iron stains (CL)	
				SILTY CLAY, brownish-yellow, reddish-yellow & gray, very stiff, w/trace of calcareous concretions & sand (CH)	
				SILTY CLAY, brownish-yellow & gray, hard, w/iron-stained seams & some gypsum seams (severely weathered shale) (CH) -w/dark red mudstone deposits @ 20'	
				SHALE, dark gray & brownish-yellow, soft, weathered	
				SHALE, dark gray, soft	

SPT N VALUE ⊕ (10, 20, 30, 40, 50, 60)
Pocket Penetrometer Readings Tons Per Sq. Ft. - ✱ (1, 2, 3, 4, 4.5+)

100 Blows = 1 inch

100 Blows = 1 inch

Total Depth = 49 ft

Dry after 5 minutes. Dry & blocked @ 48-1/2' @ end of day.

BORING LOG B-1 PLATE 2

GEOTECHNICAL CONSULTANTS

- Fill — Type of Fill
- Clay (CL) (LL<50)
- Clay (CH) (LL>50)
- SILT (ML) (LL<50)
- SILT (MH) (LL>50)
- CLAYEY SAND (SC)
- SILTY SAND (SM)
- SAND (SP-SW)
- CLAYEY GRAVEL (GRAVELLY CLAY)
- GRAVEL (GP-GW)
- (weathered) SHALE (unweathered)
- (weathered) LIMESTONE (unweathered)
- (weathered) SANDSTONE (unweathered)

UNDISTURBED (Shelby Tube & NX-Core)

STANDARD PENETRATION TEST

DISTURBED

THD CONE PENETROMETER TEST

▽ = Water level at time of drilling.

▼ = Subsequent water level and date.

KEYS TO SYMBOLS USED ON BORING LOGS

PLATE 6

GEOTECHNICAL CONSULTANTS

SOIL PROPERTIES

COHESIONLESS SOILS

SPT N-Values (blows / foot)	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

COHESIVE SOILS

Pocket Penetrometer (T.S.F.)	Consistency
<0.25	Very Soft
0.25-0.50	Loose
0.50-1.00	Medium Stiff
1.00-2.00	Stiff
2.00-4.00	Very Stiff
4.00 +	Hard

ROCK PROPERTIES

HARDNESS	DIAGNOSTIC FEATURES
Very Soft	Can be dented with moderate finger pressure.
Soft	Can be scratched easily with fingernail.
Moderately Hard	Can be scratched easily with knife but not with fingernail.
Hard	Can be scratched with knife with some difficulty; can be broken by light to moderate hammer blow.
Very Hard	Cannot be scratched with knife; can be broken by repeated heavy hammer blows.

DEGREE OF WEATHERING	DIAGNOSTIC FEATURES
Slightly Weathered	Slight discoloration inwards from open fractures.
Weathered	Discoloration throughout; weaker minerals decomposed; strength somewhat less than fresh rock; structure preserved.
Severely Weathered	Most minerals somewhat decomposes; much softer than fresh rock; texture becoming indistict but fabric and structure preserved.
Completely Weathered	Minerals decomposes to soil; rock fabric and structure destroyed (residual soil).

GEOTECHNICAL INVESTIGATION
MIDLOTHIAN WATER TREATMENT PLANT - PROPOSED TANK
AUGER ROAD
MIDLOTHIAN, TEXAS

Summary of Classification and Index Property Tests

Boring No.	Depth (feet)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (PI)	Total Soil Suction (psf)	Percent Passing No. 200 Sieve
B-1	1.5 - 3.0	29.2	--	--	--	2,830	--
	3.0 - 4.5	15.7	--	--	--	2,720	--
	4.5 - 6.0	16.2	--	--	--	15,840	--
	9.0 - 10.0	14.7	37	16	21	7,560	--
	14.0 - 15.0	26.2	--	--	--	12,430	--
	19.0 - 20.0	27.5	--	--	--	13,700	--
	24.0 - 25.0	28.2	72	27	45	12,940	--
	29.0 - 30.0	26.1	--	--	--	14,270	--
	34.0 - 35.0	27.4	--	--	--	17,300	--
B-2	1.5 - 3.0	27.3	65	24	41	4,820	--
	3.0 - 4.5	24.6	--	--	--	4,280	--
	4.5 - 6.0	17.1	--	--	--	11,940	--
	9.0 - 10.0	29.7	65	22	43	9,180	--
	14.0 - 15.0	23.3	--	--	--	10,230	--
	19.0 - 20.0	27.9	--	--	--	15,680	--
	24.0 - 25.0	28.2	--	--	--	16,300	--
	29.0 - 30.0	26.5	--	--	--	15,130	--
	34.0 - 35.0	27.5	--	--	--	17,740	--
	39.0 - 40.0	22.6	--	--	--	20,640	--
B-3	1.5 - 3.0	21.1	--	--	--	6,540	--
	3.0 - 4.5	17.2	--	--	--	5,840	--
	4.5 - 6.0	16.4	36	15	21	12,580	82
	9.0 - 10.0	22.9	--	--	--	12,440	--
	14.0 - 15.0	29.3	--	--	--	15,530	--
	19.0 - 20.0	28.0	76	26	50	21,510	--
	24.0 - 25.0	27.4	--	--	--	15,260	--
	29.0 - 30.0	26.6	--	--	--	25,290	--

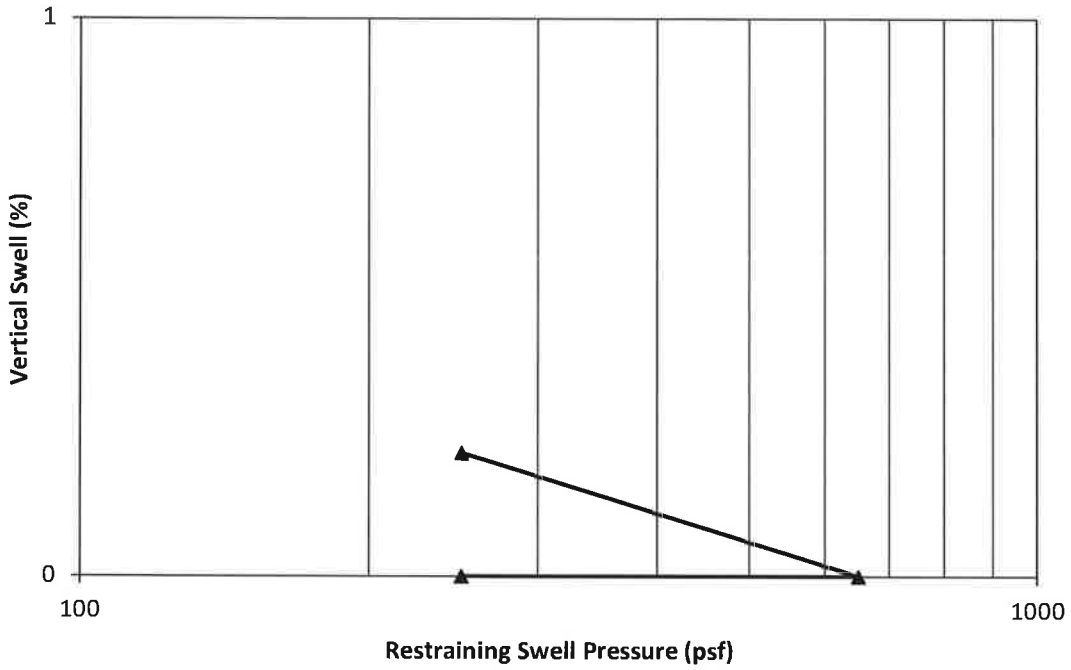
GEOTECHNICAL INVESTIGATION
MIDLOTHIAN WATER TREATMENT PLANT - PROPOSED TANK
AUGER ROAD
MIDLOTHIAN, TEXAS
(Continued)

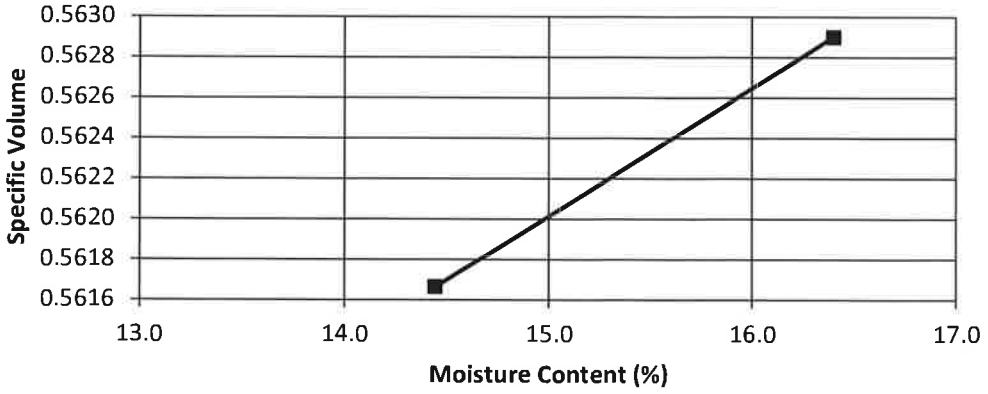
Summary of Classification and Index Property Tests

Boring No.	Depth (feet)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (PI)	Total Soil Suction (psf)	Percent Passing No. 200 Sieve
B-4	1.5 - 3.0	18.5	--	--	--	6,310	--
	3.0 - 4.5	21.6	--	--	--	5,150	--
	4.5 - 6.0	17.8	45	16	29	6,140	--
	9.0 - 10.0	19.4	--	--	--	13,440	--
	14.0 - 15.0	23.9	55	20	35	13,260	--
	19.0 - 20.0	28.2	--	--	--	17,240	--
	24.0 - 25.0	28.0	--	--	--	20,040	--
	29.0 - 30.0	26.3	--	--	--	14,970	--
	34.0 - 35.0	25.5	--	--	--	19,960	--
	39.0 - 40.0	19.9	--	--	--	26,840	--

Absorption Pressure Swell Test

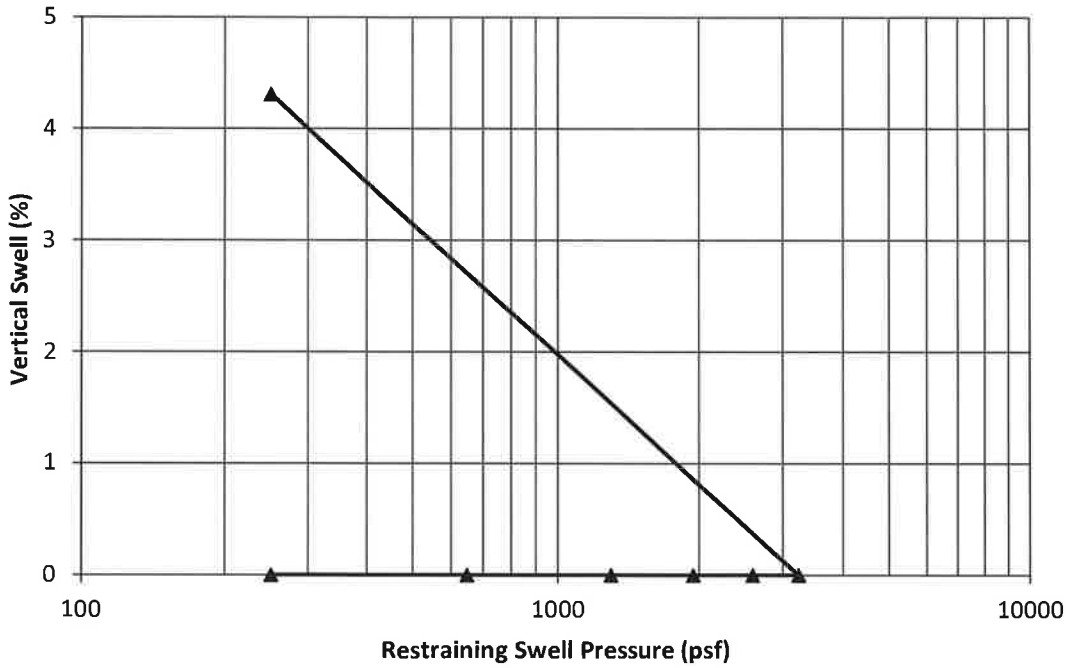
			Initial	Final
Project No.	25682	Moisture Content (%)	14.4	16.4
Boring No.	B-1	Penetrometer (tsf)	4.5+	4.5
Depth (ft)	9-10	Dry Unit Weight (pcf)	111.1	110.9
Liquid Limit	37	Specific Gravity	2.71	2.71
Plasticity Index	21	Void Ratio	0.522	0.525
Cs	0.008	Saturation (%)	75	85
alpha	0.06	Spec. Volume	0.56	0.56
Percent Swell	0.2	Swell Pressure (psf)	650	250

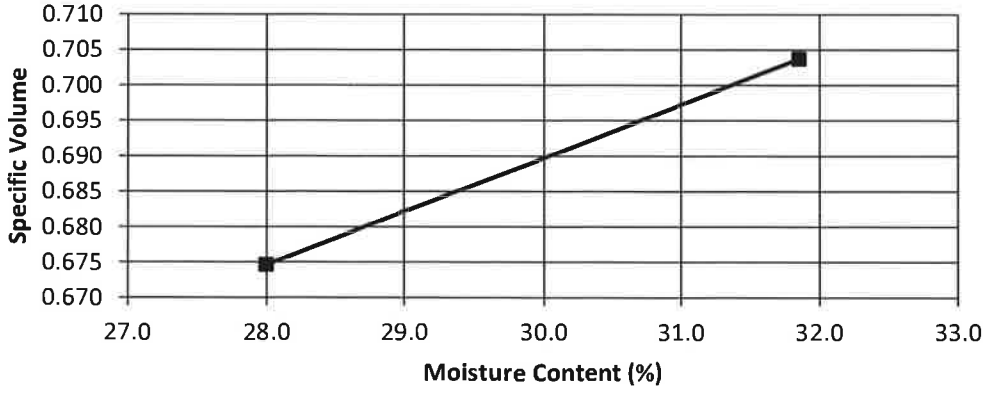




Absorption Pressure Swell Test

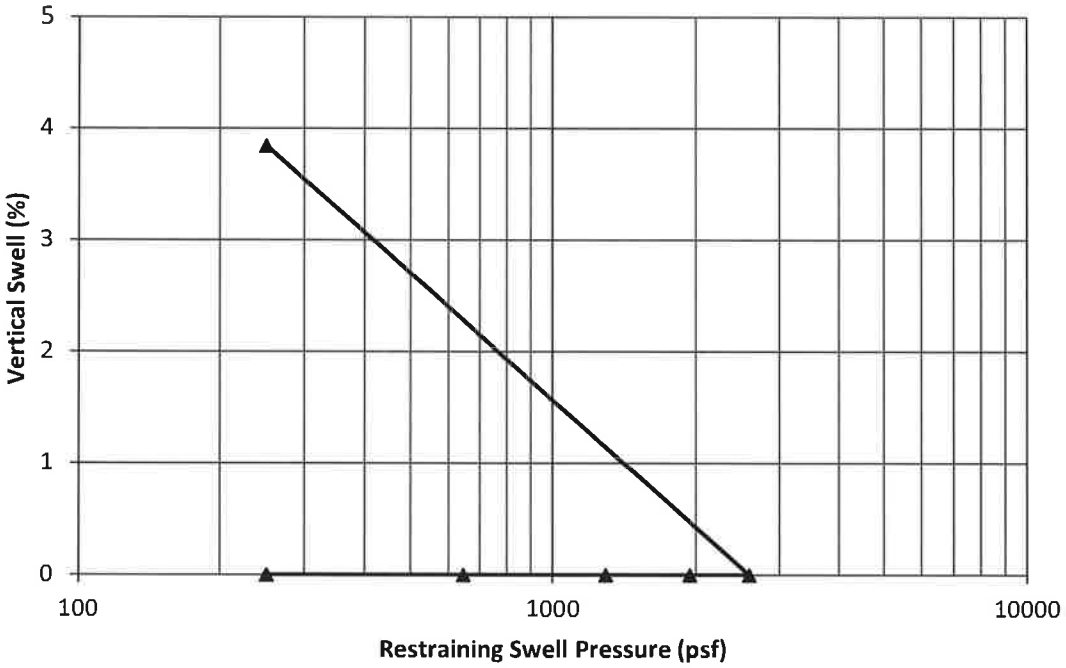
			Initial	Final
Project No.	25682	Moisture Content (%)	28.0	31.9
Boring No.	B-1	Penetrometer (tsf)	4.5	3
Depth (ft)	24-25	Dry Unit Weight (pcf)	92.5	88.7
Liquid Limit	72	Specific Gravity	2.71	2.71
Plasticity Index	45	Void Ratio	0.828	0.907
Cs	0.071	Saturation (%)	92	95
alpha	0.75	Spec. Volume	0.67	0.70
Percent Swell	4.3	Swell Pressure (psf)	3,240	250

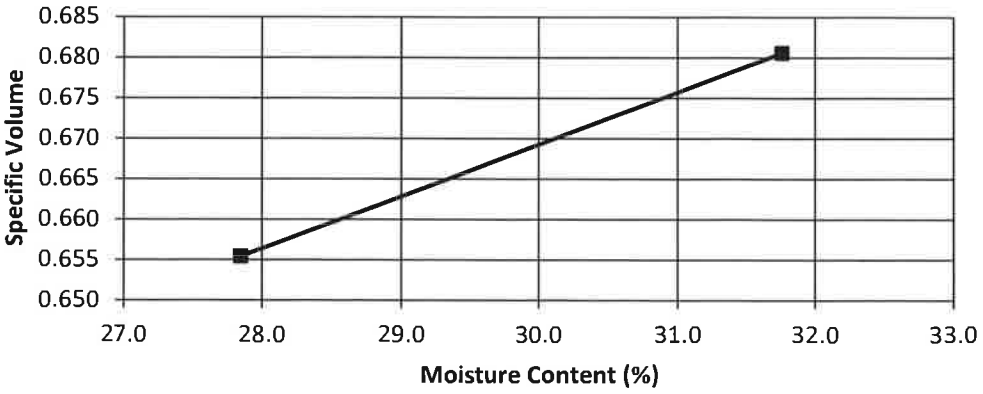




Absorption Pressure Swell Test

			Initial	Final
Project No.	25682	Moisture Content (%)	27.9	31.8
Boring No.	B-3	Penetrometer (tsf)	4	2.75
Depth (ft)	19-20	Dry Unit Weight (pcf)	95.2	91.7
Liquid Limit	76	Specific Gravity	2.75	2.75
Plasticity Index	50	Void Ratio	0.802	0.872
Cs	0.068	Saturation (%)	95	100
alpha	0.64	Spec. Volume	0.66	0.68
Percent Swell	3.8	Swell Pressure (psf)	2,590	250





February 17, 2026
Project No. 25682

Enprotec/Hibbs & Todd, Inc. (eHT)
402 Cedar Street
Abilene, Texas 79601
ATTN: Mr. Jordan S. Hibbs, P.E.

Re: Supplemental Geotechnical Recommendations
Midlothian Water Treatment Plant – Proposed Tank
Auger Road
Midlothian, Texas

Gentlemen:

Submitted here supplemental recommendations for the referenced project. The project consists of construction of a three- to four-million gallon ground storage tank. The tank is anticipated to be 30 feet tall and approximately 150 feet in diameter.

Consolidation settlement calculations were performed to estimate the potential amount of consolidation settlement during the hydrostatic testing and long-term loading of the tank. The calculations include the removal and replacement of the upper three feet of soil as recommended in the **Subgrade Modification** section.

During hydrostatic testing, the contact pressure was estimated to be approximately 1,870 pounds per square foot (psf) for the 30-foot-tall tank. During long-term loading with water, the contact pressure was estimated to be approximately 1,870 psf, if the tank is completely full.

Based on the results of the consolidation tests and past experience, the estimates for consolidation settlement are provided in Table 1.

TABLE 1.
ESTIMATE OF CONSOLIDATION SETTLEMENTS

Case	Center of Tank	Edge of Tank
Hydrostatic Testing (24-hour loading)	1-1/2 inches	1 inch
Long Term	3 inches	1-1/2 inches
Total Settlement	4-1/2 inches	2-1/2 inches

Consolidation settlement due to hydrostatic testing will occur during the 24-hour loaded period. The long-term consolidation settlement will occur over the life of the tank based on the water level stored in the tank.

* * *

We trust this information will be sufficient for your needs. If any questions arise, do not hesitate to call.

Sincerely,

REED ENGINEERING GROUP, LTD.
Registration Number F-3114

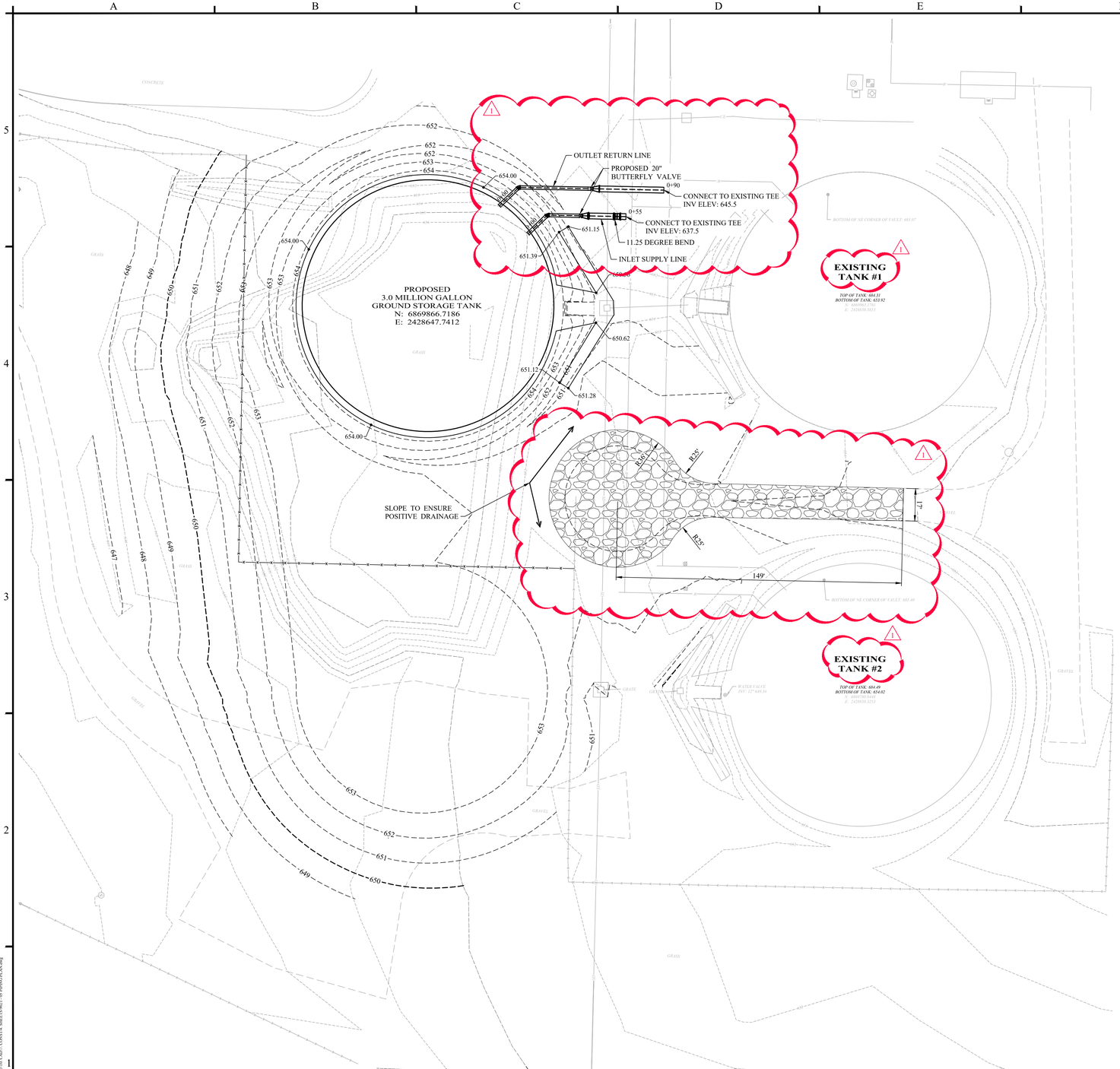
Derrin G. Williams
Vice President of Consulting and Client Development

Sandip Tamrakar, P.E.
Vice President of Engineering

February 18, 2026

DGW/ST/mt

copy submitted via e-mail only



SCALE IN FEET

LEGEND

- SANITARY SEWER CLEANOUT
- MANHOLE - ELECTRIC
- WATER VALVE
- FIRE HYDRANT
- ELECTRICAL BOX
- LIGHT POLE
- CHAINLINK FENCE
- SEWER LINE
- WATER LINE

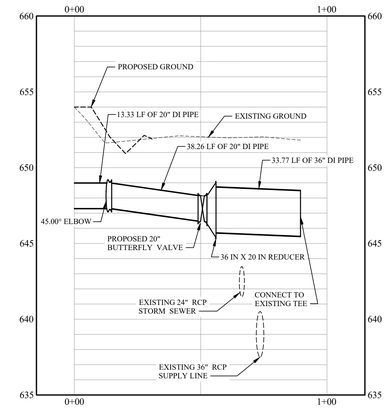
UTILITY WARNING

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

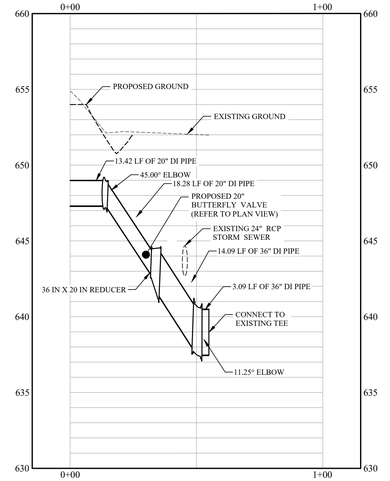
GENERAL NOTES:

1. EXISTING 3,000,000 GALLON GROUND STORAGE TANKS 36" INLET AND OUTLETS HAVE A TEE WITH A PLUG AND THRUST BLOCK. REMOVE PLUGS AND THRUST BLOCKS TO TIE IN NEW 36-INCH INLET AND OUTLET LINES TO-AND-FROM THE NEW 3,000,000 GALLON GROUND STORAGE TANK.
2. CONTRACTOR TO MATCH TOP ELEVATIONS OF EXISTING TEES ON THE 36" INLET AND OUTLET LINES TO THE EXISTING GROUND STORAGE TANK.
3. BUTTERFLY VALVES ARE TO BE MJ AND RESTRAINED TO 20" DUCTILE IRON PIPE (DIP).
4. 20" INLET AND OUTLET PIPING TO BE DUCTILE IRON, PRESSURE CLASS 250.
5. CONTRACTOR TO FIELD VERIFY THE LOCATION AND ELEVATION OF THE EXISTING 36" RCP STORM SEWER. IF THE LOCATION OR ELEVATION DIFFERS FROM WHAT IS SHOWN ON THE PLANS, CONTACT THE ENGINEER IMMEDIATELY.
6. LENGTHS SHOWN ARE APPROXIMATE: CONTRACTOR TO VERIFY.

OUTLET RETURN ALIGNMENT PROFILE



INLET SUPPLY ALIGNMENT PROFILE



NO.	REVISION	DATE
1	ADDENDUM #1	02/18/2026

02/18/2026

STATE OF TEXAS — ERIC M. LOPEZ — 155754 — LICENSED PROFESSIONAL ENGINEER

Enprotec | Hibbs & Todd
402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

BAR IS ONE INCH ON ORIGINAL DRAWING (0 — 1)

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

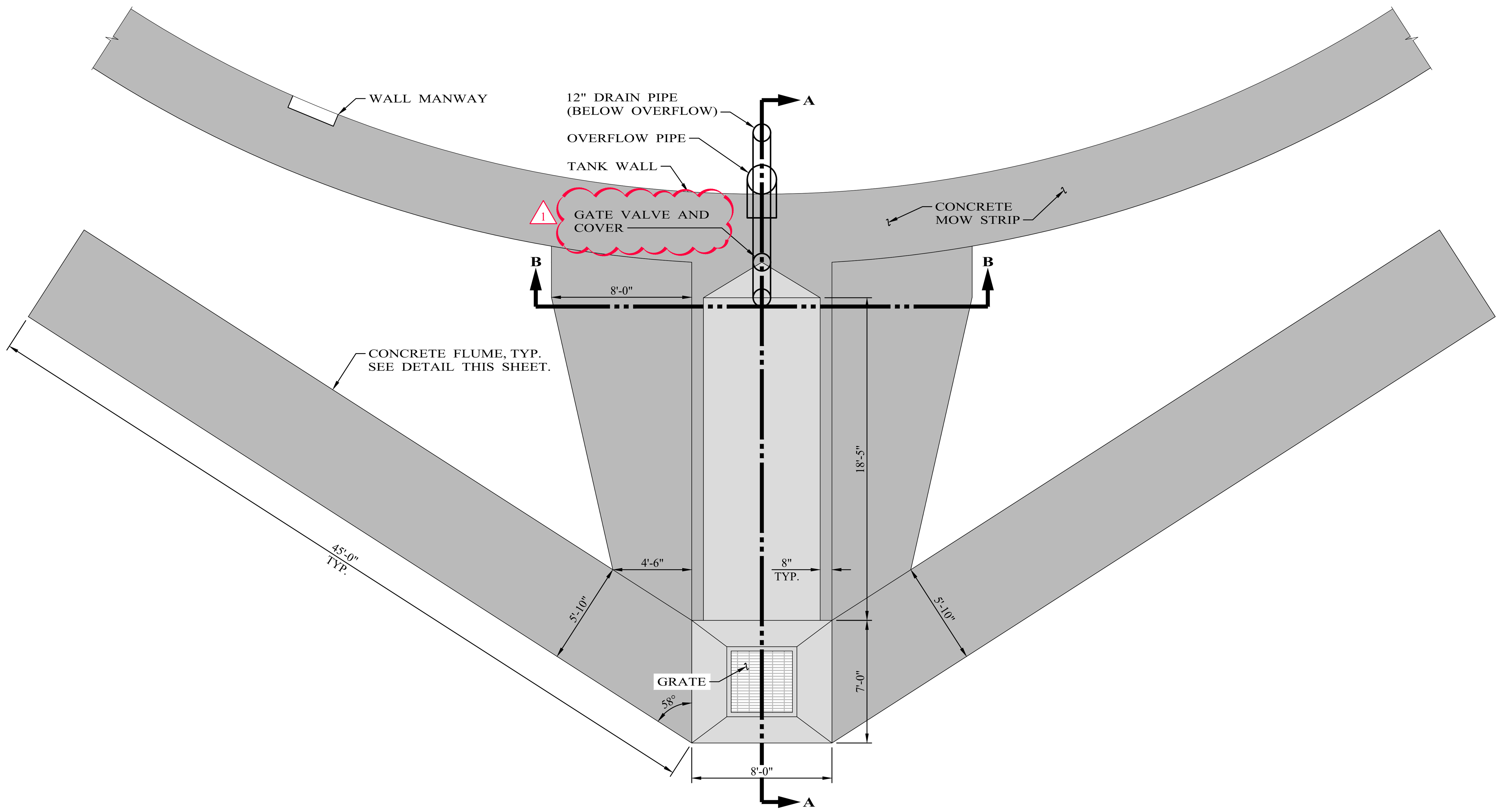
DESIGNED BY E. LOPEZ
DRAWN BY B. MCGIFF
CHECKED BY E. LOPEZ
SCALE AS NOTED
DATE 02/18/2026

CITY OF MIDLOTHIAN
AUGER WATER TREATMENT PLANT
CITY PROJECT #315
PRESTRESSED CONCRETE GROUND STORAGE TANK
(3.0 MILLION GALLONS)

SITE PIPING AND GRADING PLAN

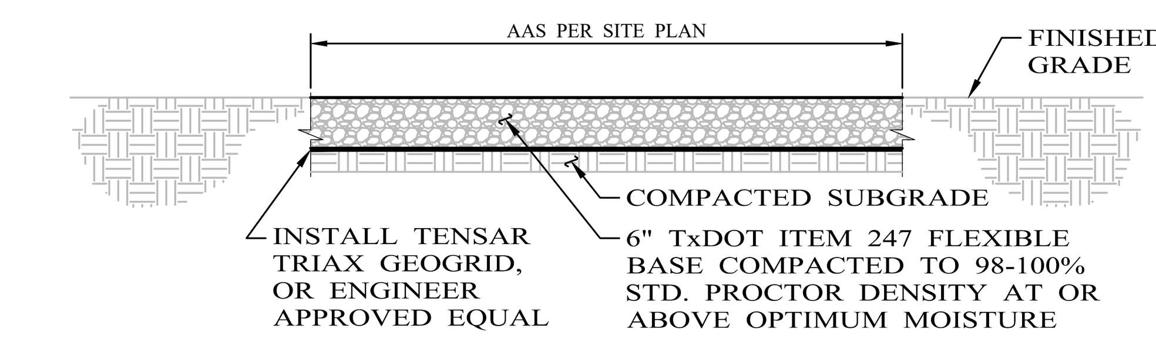
PROJECT NO.: 9021
SHEET No. 5

P:\Projects\Midlothian, City of\9021 Augr WTP 3-4 MG GST (3.0)\CAD\7-CONST\4. SHEETS\9021 - 05 PIPING\PLAN.dwg



DRAIN AND OVERFLOW OUTFALL TREATMENT PLAN

SCALE: 3/16" = 1'-0"



ALL-WEATHER SURFACE DETAIL

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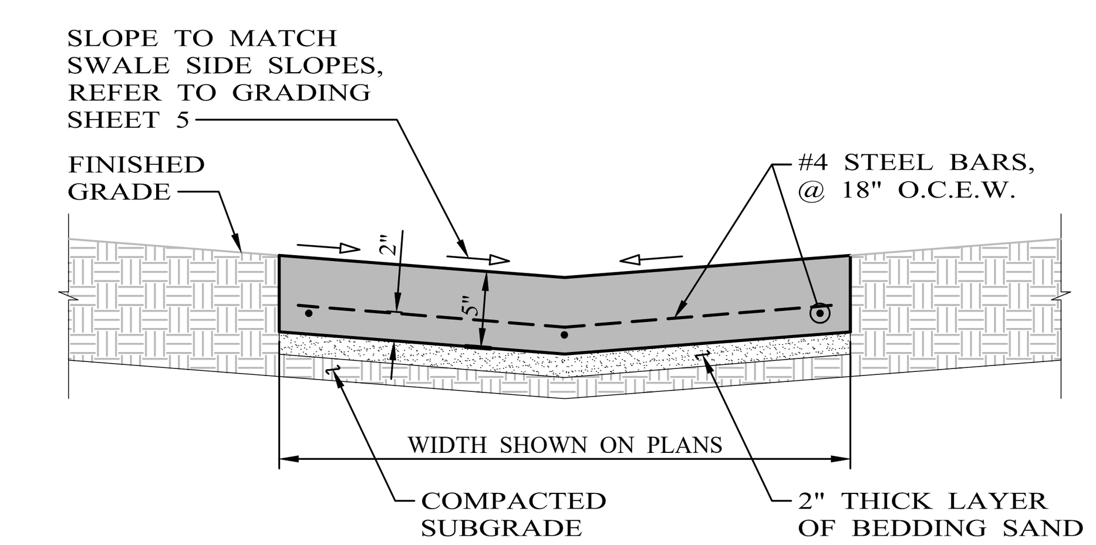

CONCRETE FLUME DETAIL

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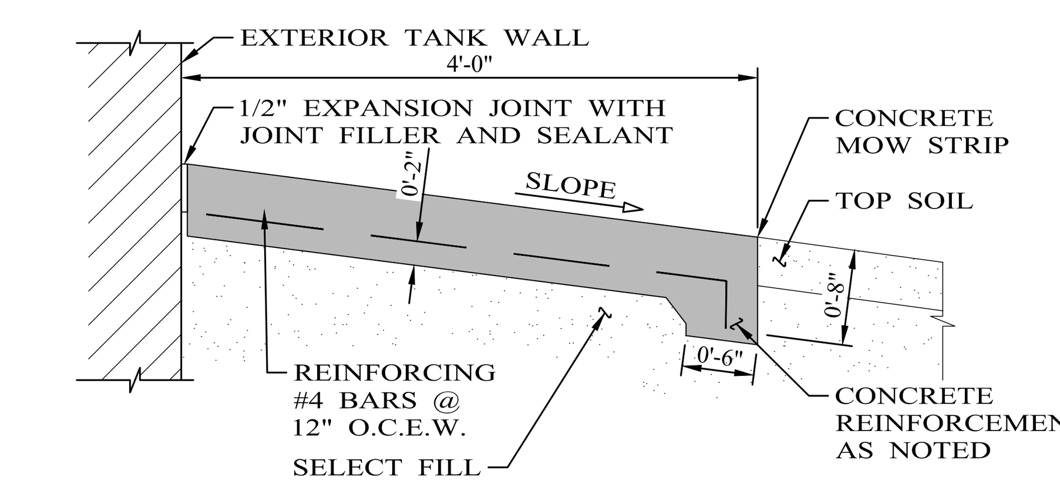
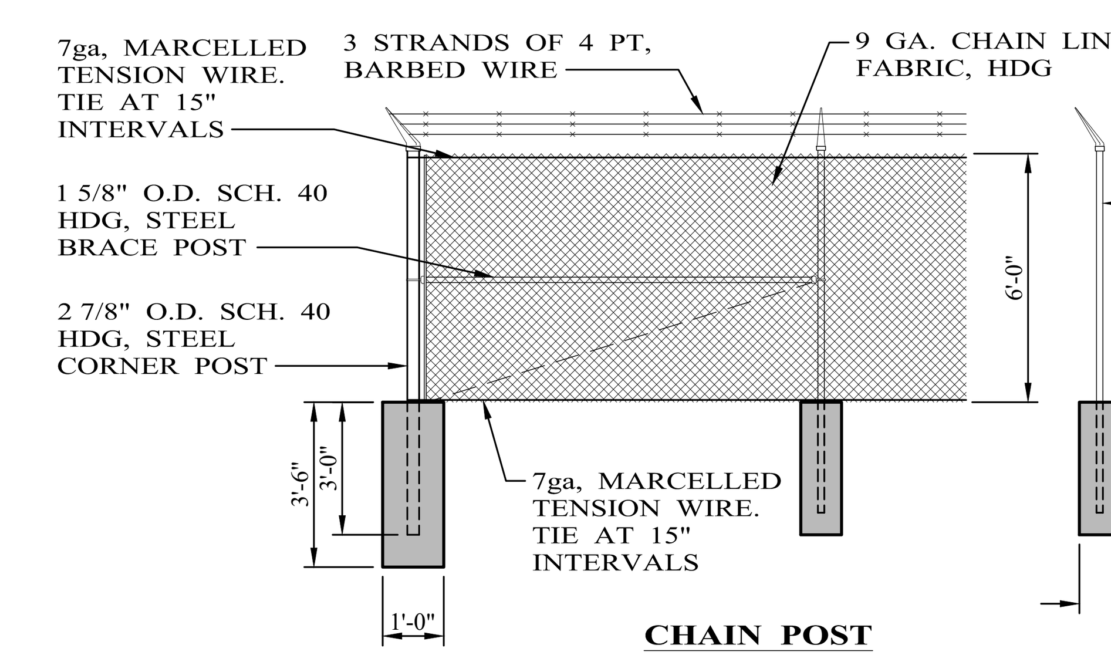
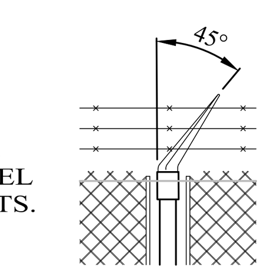


EROSION CONTROL AND MOW STRIP

SCALE: 3/4" = 1'-0"



CHAIN POST DETAIL



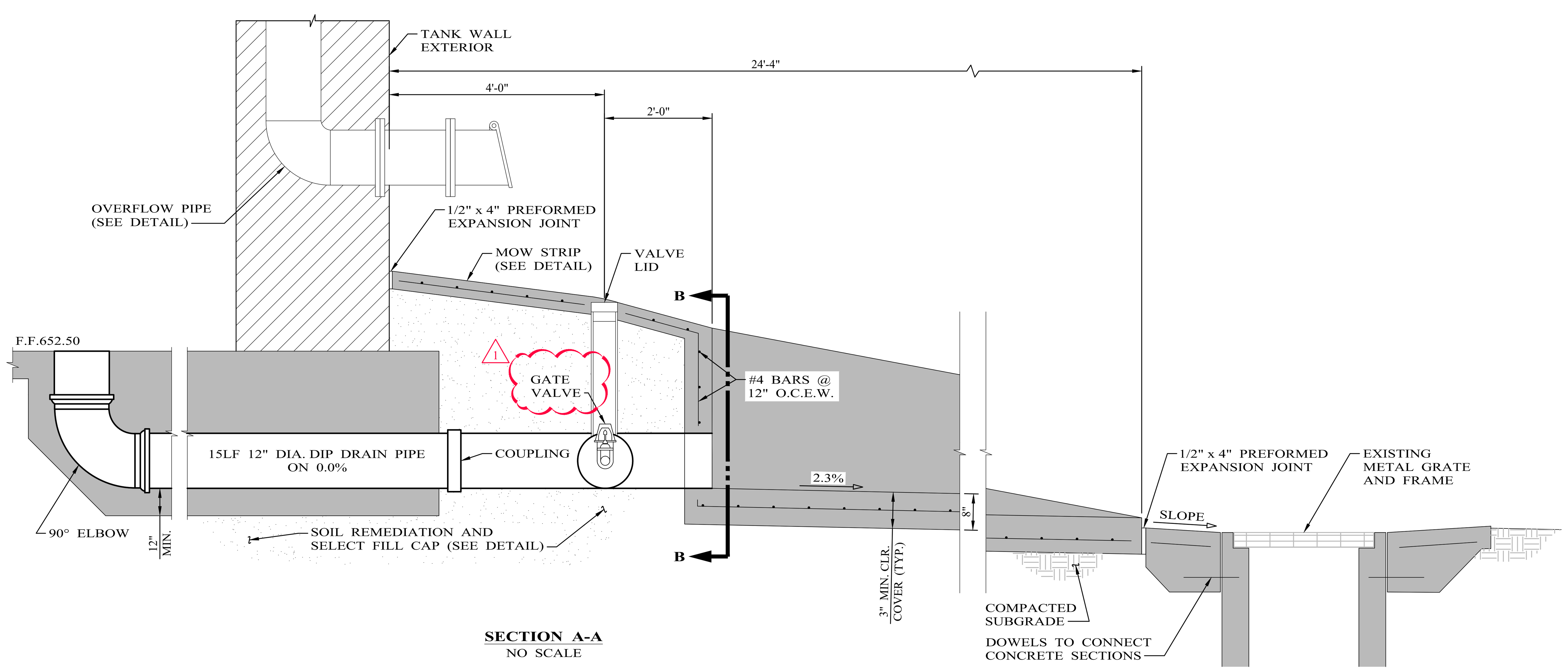
BARBED WIRE ARM DETAIL

CHAIN LINK FENCE DETAIL

NO SCALE

NOTES

1. EXCAVATE HOLE DEPTHS APPROXIMATELY 6" DEEPER THAN BOTTOM OF POLE.
2. MAXIMUM POST SPACING SHALL BE 10'-0".
3. ALL TIES ARE TO BE 9 GA. MINIMUM.
4. ALL FITTINGS, HARDWARE & APPURTENANCES ETC., ARE TO BE OF GALVANIZED MATERIAL.
5. ALL FENCE COMPONENTS/INSTALLATIONS SHALL BE IN ACCORDANCE WITH CURRENT ASTM STANDARDS REGARDLESS OF ANY INFORMATION SHOWN HERE.
6. FENCE SHALL MATCH EXISTING FENCE. DETAIL IS FOR GENERAL USE



SECTION A-A

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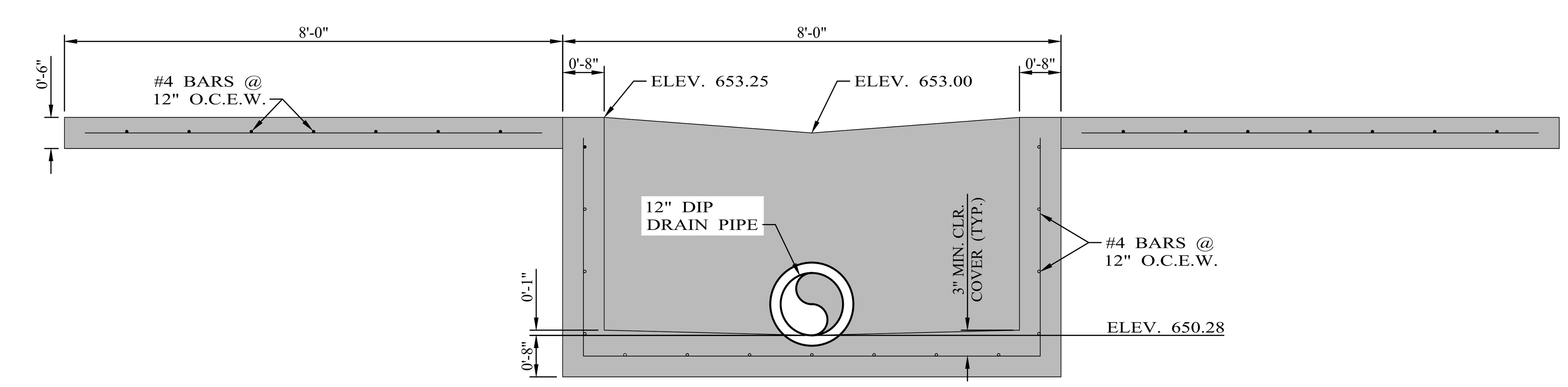

SECTION B-B

NO SCALE

NO.	REVISION	DATE
1	ADDENDUM #1	02/18/2026

02/18/2026

STATE OF TEXAS — ERIC M. LOPEZ — 155754 — LICENSED PROFESSIONAL ENGINEER

Enprotec | Hibbs & Todd

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IF NOT ONE INCH ON THIS SHEET. ADJUST SCALES ACCORDINGLY.

DESIGNED BY E. LOPEZ	SCALE AS NOTED	CITY OF MIDLOTHIAN AUGER WATER TREATMENT PLANT CITY PROJECT #315 PRESTRESSED CONCRETE GROUND STORAGE TANK (3.0 MILLION GALLONS)	PROJECT NO.: 9021
DRAWN BY B. MCGIFF	DATE 02/18/2026	SITE DETAILS	SHEET No. 6
CHECKED BY E. LOPEZ			