SECTION 00 05 15
ADDENDUM NO. 2

West Bailey Boswell Rd
City Project No. 104153

Issue Date: February 25, 2026
Bid Receipt Date: March 5, 2026

This addendum forms part of the Contract Documents referenced above and modifies the original Contract Documents. Attach this Addendum inside the Contract Documents and note receipt of this Addendum in the Bid Proposal. The submission instructions have been updated to include Addendum No. 2 under the Requested Information section.

1) Summarized below are responses to questions asked in Bonfire Vendor Discussions:
   a) **Q: What is the engineer's estimate on this project?**
      A: The Engineer's Estimate range is $20.8 million to $21.8 million.
   b) **Q: Does this bid require the contractor to be pre-qualified?**
      A: Yes. The procedures for qualification and pre-qualification are outlined in Section 3 of 00 21 13 – INSTRUCTIONS TO BIDDERS. For this project, West Bailey Boswell Road 3.1.1 Paving and 3.1.2 Roadway and Pedestrian Lighting are the required pre-qualification categories.
   c) **Q: Who pays for construction water usage?**
      A: The contractor pays for water usage.
   d) **Q: Who pays for construction materials testing?**
      A: The City of Fort Worth.
   e) **Q: Have any and all franchise utility conflicts been relocated or resolved?**
      A: Refer to the Project Manual in the documents uploaded to Bonfire. See Section 00 73 00 SUPPLEMENTARY CONDITIONS TO GENERAL CONDITIONS. It contains a table of Utilities or obstructions to be removed, adjusted, and/or relocated on page 2 of 5 that lists the Expected Owner; Utility and Location; and Target Date of Adjustment.
   f) **Q: While the contractor is performing work at Culvert Crossings #1 and #2, would a full traffic closure be permitted? We believe this approach would be the most cost-effective and efficient method to complete the work.?**
      A: Full roadway closures will not be permitted. Bailey Boswell is a major east-west corridor in Fort Worth, and 2-way traffic must be maintained during construction as indicated on the construction plans.
   g) **Q: We are not finding the Small Business Utilization Form included in the bid documents. Can it be provided? We noticed forms related to MWBE, but I believe they might be included by accident.**

A: The Small Business Utilization Form has replaced the MWBE forms with Addendum #2

h) **Q: Does the City have a list of approved SBE companies that they would recommend?**

A: We do not have a list of approved small businesses but per Specification 00 45 41 the small businesses shall be certified via one of the following certifying agencies: North Central Texas Regional Certifying Agency (NCTRCA), Dallas/Fort Worth Minority Supplier Development Council (DFW MSDC), Women's Business Council – Southwest (WBCS), and Texas Department of Transportation (TxDOT).

i) **Q: On Sheet 20 of the demolition plan, the estimated quantity table appears to be cut off, making it difficult to clearly view the quantities for the specific trees to be removed. Could a revised sheet be provided please?**

A: The plan sheet is replaced in Addendum 2 to show the full quantity table.

j) **Q: What county is this project in?**

A: This project is in Tarrant County.

2) The Following Bid Items have been impacted:

a) Bid Table – The bid table has been revised in Bonfire to reflect the changes made to the proposal form.

b) 0171.0101 Construction Staking has been added to the Proposal Form with a quantity of 1 LS.

c) 0171.0102 As-built Survey has been added to the Proposal Form with a quantity of 1 LS.

d) 3305.0103 Exploratory Excavation of Existing Utilities has been added to the Proposal Form with a quantity of 25 EA.

e) 3471.0002 Portable Message Sign has been added to the Proposal Form with a quantity of 102 WK.

f) TXDOT 681 7001 Temporary Traffic Signals has been broken out per each intersection.

g) 3349.5001 10' Curb Inlet quantity has been revised from 72 EA to 12 EA.

h) 3349.5002 15' Curb Inlet has been replaced with 3349.6002 15' Recessed Inlet. No quantity revision.

i) 3349.6001 10' Recessed Inlet has been added to the Proposal Form with a quantity of 60 EA.

j) 3312.0001 Fire Hydrant has been revised to include the 6" lead line. No quantity revision.

k) 3137.0101 Concrete Riprap has been revised to include a thickness of 5". No quantity revision.

l) 3137.0104 Medium Stone Riprap has been revised to include a thickness of 12". No quantity revision.

m) 3213.0301 4" Conc Sidewalk quantity has been revised from 123,631 SF to 90,103 SF.

n) 3213.0311 4" Conc Sidewalk, Adjacent to Curb has been added to the Proposal Form with a quantity of 36,528 SF.

3) The following modifications to the Project Manual:

a) Delete Section "**00 00 00 Table of Contents**" in its entirety and replace with the revised Section "**00 00 00 Table of Contents**".
b) Delete Section "**00 41 00 Bid Form**" in its entirety and replace with the revised Section "**00 41 00 Bid Form**".
c) Delete Section "**00 42 43 Proposal Form**" in its entirety and replace with the revised Section "**00 42 43 Proposal Form**".
d) Delete Section "**00 45 12 Prequalification Statement**" in its entirety and replace with the revised Section "**00 45 12 Prequalification Statement**".
e) Delete Section "**Appendix**" in its entirety and replace with the revised Section "**Appendix**". Replaced MWBE forms with Small Business Utilization Form and added the COFW Lighting Approved Products List.

4) The following modifications to the Plan Set:

a) **Demolition Sheet 12 of 23 quantity table revised.**
b) **The Storm Drain Line sheets are being revised to change standard curb inlets to recessed curb inlets except for the following inlets: E-1, E-2, H-9, H-11, K-4, N-1, P-2, P-7, Q-1, Q-3, R-1, and S-1. The quantity changes have been reflected in the Proposal Form in the Project Manual. The plan sheet revisions will be provided after the letting.**

END OF SECTION

RECEIPT ACKNOWLEDGED

By:_____

Company:_____

TRANSPORTATION & PUBLIC WORKS DEPARTMENT

By: David J. Kastendick
David J. Kastendick, P.E.
Sr. Project Manager

West Bailey Boswell Rd Project No. 104153

Answer to Vendor Discussions

1. QUESTION - asked by Stephan Schlett (Reliable Paving), Jeanette Oguin (Virtual Builder Exchange), Qasim Rasul (HQS Construction LLC), Zackery Marwardt (DDM Construction Corp.): What is the engineer's estimate on this project?
    a. ANSWER: The Engineer's Estimate range is $20.8 million to $21.8 million.
2. QUESTION - asked by Qasim Rasul (HQS Construction LLC): Does this bid require the contractor to be pre-qualified?
    a. ANSWER: Yes. The procedures for qualification and pre-qualification are outlined in Section 3 of 00 21 13 – INSTRUCTIONS TO BIDDERS. For this project, West Bailey Boswell Road 3.1.1 Paving and 3.1.2 Roadway and Pedestrian Lighting are the required pre-qualification categories. Water and Sanitary Sewer are not required.
3. QUESTION - asked by Quasim Rasul (HQS Construction LLC): Who pays for construction materials testing?
    a. ANSWER: City of Fort Worth.
4. QUESTION - asked by Quasim Rasul (HQS Construction LLC): Who pays for construction water usage?
    a. ANSWER: Contractor. This is considered subsidiary to the construction contract.
5. QUESTION - asked by Quasim Rasul (HQS Construction LLC): Have any and all franchise utility conflicts been relocated or resolved?
    a. ANSWER: Refer to the Project Manual in the documents uploaded to Bonfire. See Section 00 73 00 SUPPLEMENTARY CONDITIONS TO GENERAL CONDITIONS. It contains a table of Utilities or obstructions to be removed, adjusted, and/or relocated on page 2 of 5 that lists the Expected Owner; Utility and Location; and Target Date of Adjustment.
6. QUESTION - asked by Zackery Markwardt (DDM Construction Corp.): We have multiple bids scheduled to be submitted on the same day for the City of Fort Worth. Due to this overlap, we wanted to ask if it would be possible to push back the bid date for this project.
    a. ANSWER: This was not asked at the Pre-Bid Meeting, and at the moment is not extended.

City of Fort Worth

Standard Construction Specification Documents

Adopted September 2011

SECTION 00 00 00
TABLE OF CONTENTS

01 78 39	Project Record Documents	07/01/2011

Technical Specifications which have been modified by the Engineer specifically for this Project; hard copies are included in the Project's Contract Documents

NONE

Technical Specifications listed below are included for this Project by reference and can be viewed/downloaded from the City's website at:

http://fortworthtexas.gov/tpw/contractors/
or
https://apps.fortworthtexas.gov/ProjectResources/

Division 02 - Existing Conditions		**Last Revised**
02 41 13	Selective Site Demolition	03/11/2022
02 41 14	Utility Removal/Abandonment	12/20/2012
02 41 15	Paving Removal	02/02/2016

Division 03 - Concrete

~~03 30 00~~	~~Cast-In-Place Concrete~~	~~06/13/2025~~
~~03 34 13~~	~~Controlled Low Strength Material (CLSM)~~	~~03/07/2025~~
~~03 34 16~~	~~Concrete Base Material for Trench Repair~~	~~12/20/2012~~
~~03 80 00~~	~~Modifications to Existing Concrete Structures~~	~~12/20/2012~~

Division 26 - Electrical

~~26 05 00~~	~~Common Work Results for Electrical~~	~~03/11/2022~~
~~26 05 10~~	~~Demolition for Electrical Systems~~	~~12/20/2012~~
26 05 33	Raceways and Boxes for Electrical Systems	12/20/2012
26 05 43	Underground Ducts and Raceways for Electrical Systems	07/01/2011
26 05 50	Communications Multi-Duct Conduit	02/26/2016

Division 31 - Earthwork

31 00 00	Site Clearing	03/22/2021
31 23 16	Unclassified Excavation	01/28/2013
~~31 23 23~~	~~Borrow~~	~~01/28/2013~~
31 24 00	Embankments	01/28/2013
31 25 00	Erosion and Sediment Control	04/29/2021
~~31 36 00~~	~~Gabions~~	~~12/20/2012~~
31 37 00	Riprap	12/20/2012

Division 32 - Exterior Improvements

~~32 01 17~~	~~Permanent Asphalt Paving Repair~~	~~12/20/2012~~
~~32 01 18~~	~~Temporary Asphalt Paving Repair~~	~~12/20/2012~~
~~32 01 29~~	~~Concrete Paving Trench Repair~~	~~12/12/2025~~
~~32 11 23~~	~~Flexible Base Courses~~	~~12/20/2012~~
32 11 29	Lime Treated Base Courses	12/20/2012
~~32 11 33~~	~~Cement Treated Base Courses~~	~~06/10/2022~~
~~32 11 37~~	~~Liquid Treated Soil Stabilizer~~	~~08/21/2015~~
32 12 16	Asphalt Paving	6/07/2024

~~32 12 73~~	~~Asphalt Paving Crack Sealants~~	~~12/20/2012~~
32 13 13	Concrete Paving	06/13/2025
32 13 20	Concrete Sidewalks, Driveways and Barrier Free Ramps	12/09/2022
32 13 73	Concrete Paving Joint Sealants	12/20/2012
~~32 14 16~~	~~Brick Unit Paving~~	~~12/20/2012~~
32 16 13	Concrete Curb and Gutters and Valley Gutters	12/09/2022
32 17 23	Pavement Markings	06/10/2022
~~32 17 25~~	~~Curb Address Painting~~	~~11/04/2013~~
~~32 31 13~~	~~Chain Fences and Gates~~	~~12/20/2012~~
~~32 31 26~~	~~Wire Fences and Gates~~	~~12/20/2012~~
~~32 31 29~~	~~Wood Fences and Gates~~	~~12/20/2012~~
32 32 13	Cast-in-Place Concrete Retaining Walls	06/05/2018
32 91 19	Topsoil Placement and Finishing of Roadway Right-of-ways	03/11/2022
32 92 13	Sodding	05/13/2021
32 92 14	Non-Native Seeding	05/13/2021
~~32 92 15~~	~~Native Grass and Wildflower Seeding~~	~~10/06/2023~~
~~32 93 43~~	~~Trees and Shrubs~~	~~12/20/2012~~

Division 33 - Utilities

~~33 01 30~~	~~Sewer and Manhole Testing~~	~~09/07/2018~~
~~33 01 31~~	~~Closed Circuit Television (CCTV) Inspection - Sanitary Sewer~~	~~03/11/2022~~
~~33 01 32~~	~~Closed Circuit Television (CCTV) Inspection - Storm Drain~~	~~12/08/2023~~
~~33 03 10~~	~~Bypass Pumping of Existing Sewer Systems~~	~~12/20/2012~~
~~33 04 10~~	~~Joint Bonding and Electrical Isolation~~	~~12/20/2012~~
~~33 04 11~~	~~Corrosion Control Test Stations~~	~~12/20/2012~~
~~33 04 12~~	~~Magnesium Anode Cathodic Protection System~~	~~12/20/2012~~
~~33 04 30~~	~~Temporary Water Services~~	~~09/19/2025~~
~~33 04 40~~	~~Cleaning and Acceptance Testing of Water Mains~~	~~02/06/2013~~
~~33 04 50~~	~~Cleaning of Pipes~~	~~03/11/2022~~
~~33 05 10~~	~~Utility Trench Excavation, Embedment, and Backfill~~	~~06/13/2025~~
~~33 05 12~~	~~Water Line Lowering~~	~~12/20/2012~~
~~33 05 13~~	~~Frame, Cover and Grade Rings~~	~~09/09/2022~~
33 05 14	Adjusting Manholes, Inlets, Valve Boxes, and Other Structures to Grade	03/11/2022
~~33 05 16~~	~~Concrete Water Vaults~~	~~12/20/2025~~
~~33 05 17~~	~~Concrete Collars~~	~~03/11/2022~~
~~33 05 20~~	~~Auger Boring~~	~~12/20/2012~~
~~33 05 21~~	~~Tunnel Liner Plate~~	~~12/20/2012~~
~~33 05 22~~	~~Steel Casing Pipe~~	~~12/20/2012~~
~~33 05 23~~	~~Hand Tunneling~~	~~12/20/2012~~
~~33 05 24~~	~~Installation of Carrier Pipe in Casing or Tunnel Liner Plate~~	~~12/09/2022~~
~~33 05 26~~	~~Utility Markers/Locators~~	~~12/20/2012~~
33 05 30	Location of Existing Utilities	12/20/2012
~~33 11 05~~	~~Bolts, Nuts, and Gaskets~~	~~12/20/2012~~
~~33 11 10~~	~~Ductile Iron Pipe~~	~~12/09/2022~~
~~33 11 11~~	~~Ductile Iron Fittings~~	~~09/20/2017~~
~~33 11 12~~	~~Polyvinyl Chloride (PVC) Pressure Pipe~~	~~09/09/2022~~
~~33 11 13~~	~~Concrete Pressure Pipe, Bar-Wrapped, Steel Cylinder Type~~	~~03/07/2025~~
~~33 11 14~~	~~Buried Steel Pipe and Fittings~~	~~12/20/2012~~
~~33 12 10~~	~~Water Services 1-inch to 2-inch~~	~~12/12/2025~~

~~33 12 11~~	~~Large Water Meters~~	~~12/12/2025~~
~~33 12 20~~	~~Resilient Seated Gate Valve~~	~~05/06/2015~~
~~33 12 21~~	~~AWWA Rubber Seated Butterfly Valves~~	~~04/23/2019~~
~~33 12 25~~	~~Connection to Existing Water Mains~~	~~02/06/2013~~
~~33 12 30~~	~~Combination Air Valve Assemblies for Potable Water Systems~~	~~12/20/2012~~
33 12 40	Fire Hydrants	01/03/2014
~~33 12 50~~	~~Water Sample Stations~~	~~12/12/2025~~
~~33 12 60~~	~~Standard Blow-off Valve Assembly~~	~~06/19/2013~~
~~33 31 12~~	~~Cured in Place Pipe (CIPP)~~	~~12/20/2012~~
~~33 31 13~~	~~Fiberglass Reinforced Pipe for Gravity Sanitary Sewers~~	~~12/20/2012~~
~~33 31 15~~	~~High Density Polyethylene (HDPE) Pipe for Sanitary Sewer~~	~~04/23/2019~~
~~33 31 20~~	~~Polyvinyl Chloride (PVC) Gravity Sanitary Sewer Pipe~~	~~09/09/2022~~
~~33 31 21~~	~~Polyvinyl Chloride (PVC) Closed Profile Gravity Sanitary Sewer Pipe~~	~~12/20/2012~~
~~33 31 22~~	~~Sanitary Sewer Slip Lining~~	~~12/20/2012~~
~~33 31 23~~	~~Sanitary Sewer Pipe Enlargement~~	~~12/20/2012~~
~~33 31 50~~	~~Sanitary Sewer Service Connections and Service Line~~	~~04/26/2013~~
~~33 31 70~~	~~Combination Air Valve for Sanitary Sewer Force Mains~~	~~12/20/2012~~
~~33 39 10~~	~~Cast-in-Place Concrete Manholes~~	~~12/13/2024~~
~~33 39 20~~	~~Precast Concrete Manholes~~	~~12/13/2024~~
~~33 39 30~~	~~Fiberglass Manholes~~	~~12/13/2024~~
~~33 39 40~~	~~Wastewater Access Chamber (WAC)~~	~~12/20/2012~~
~~33 39 60~~	~~Liners for Sanitary Sewer Structures~~	~~04/29/2021~~
33 41 10	Reinforced Concrete Storm Sewer Pipe/Culverts	07/01/2011
~~33 41 11~~	~~High Density Polyethylene (HDPE) Pipe for Storm Drain~~	~~12/20/2012~~
~~33 41 12~~	~~Reinforced Polyethylene (SRPE) Pipe~~	~~11/13/2015~~
~~33 41 13~~	~~Polypropylene Pipe for Storm Drain~~	~~06/10/2022~~
33 46 00	Subdrainage	12/20/2012
~~33 46 01~~	~~Slotted Storm Drains~~	~~07/01/2011~~
~~33 46 02~~	~~Trench Drains~~	~~07/01/2011~~
33 49 10	Cast-in-Place Manholes and Junction Boxes	12/13/2024
33 49 20	Curb and Drop Inlets	03/11/2022
33 49 40	Storm Drainage Headwalls and Wingwalls	07/01/2011

Division 34 - Transportation

34 41 10	Traffic Signals	03/11/2022
34 41 10.01	Attachment A – Controller Cabinet	12/18/2015
34 41 10.02	Attachment B – Controller Specification	02/2012
34 41 10.03	Attachment C – Software Specification	01/2012
34 41 11	Temporary Traffic Signals	11/22/2013
34 41 13	Removing Traffic Signals	03/11/2022
34 41 20	Roadway Illumination Assemblies	12/20/2012
34 41 20.01	Arterial LED Roadway Luminaires	06/15/2015
~~34 41 20.02~~	~~Freeway LED Roadway Luminaires~~	~~06/15/2015~~
~~34 41 20.03~~	~~Residential LED Roadway Luminaires~~	~~06/15/2015~~
~~34 41 25~~	~~Residential Solar Powered Roadway Illumination Assemblies~~	~~12/12/2025~~
34 41 30	Aluminum Signs	11/12/2013
34 41 50	Single-Mode Fiber Optic Cable	02/26/2016
34 71 13	Traffic Control	03/22/2021

Division 99 – Special Technical Specifications

99 99 99	Special Technical Specifications	

TxDOT Specifications listed below are included for this Project by reference and can be viewed/downloaded from TxDOT's website at:

https://www.txdot.gov/business/resources/txdot-specifications/2024-standard-specifications.html

TxDOT Spec Item 432 Riprap
TxDOT Spec Item 450 Railing
TxDOT Spec Item 527 Colored Textured Concrete
TxDOT Spec Item 556 Pipe Underdrains
TxDOT Spec Item 681 Temporary Traffic Signals

Appendix

GC-4.01	Availability of Lands
GC-4.02	Subsurface and Physical Conditions
GC-4.04	Underground Facilities
GC-4.06	Hazardous Environmental Condition at Site
GC-6.06.D	Small Business Utilization Form
GC-6.07	Wage Rates
GC-6.09	Permits and Utilities
GC-6.24	Nondiscrimination
GR-01 60 00	Product Requirements

END OF SECTION

SECTION 00 41 00
BID FORM

TO: The Purchasing Manager
c/o: The Purchasing Division
200 Texas Street
City of Fort Worth, Texas 76102

FOR: West Bailey Boswell Rd

City Project No.: **104153**

Units/Sections: Unit I and West Bailey Boswell Rd

1. Enter Into Agreement

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

2. BIDDER Acknowledgements and Certification

2.1. In submitting this Bid, Bidder accepts all of the terms and conditions of the INVITATION TO BIDDERS and INSTRUCTIONS TO BIDDERS, including without limitation those dealing with the disposition of Bid Bond.

2.2. Bidder is aware of all costs to provide the required insurance, will do so pending contract award, and will provide a valid insurance certificate meeting all requirements within 14 days of notification of award.

2.3. Bidder certifies that 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.

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

2.5. Bidder has not solicited or induced any individual or entity to refrain from bidding.

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

a. "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.

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

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

d. "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.

3. Prequalification

The Bidder acknowledges that the following work types must be performed only by prequalified contractors and subcontractors:

a. Concrete Paving Construction/Reconstruction (greater than 15,000 square yards)

b. Roadway and Pedestrian Lighting

c. Asphalt Paving Construction/Reconstruction (LESS THAN 15,000 square yards)

d. Water Distribution, Urban and Renewal, 6-inch diameter and smaller

e. -

f. -

g. -

h. -

4. Time of Completion

4.1. The Work will be complete for Final Acceptance within 730 days after the date when the the Contract Time commences to run as provided in Paragraph 2.03 of the General Conditions.

4.2. Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work {and/or achievement of Milestones} within the times specified in the Agreement.

5. Attached to this Bid

The following documents are attached to and made a part of this Bid:

a. This Bid Form, Section 00 41 00

b. Required Bid Bond, Section 00 43 13 issued by a surety meeting the requirements of Paragraph 5.01 of the General Conditions.

c. Proposal Form, Section 00 42 43

d. Vendor Compliance to State Law Non Resident Bidder, Section 00 43 37

e. Small Business Forms (required at time of bid)

f. Prequalification Statement, Section 00 45 12

g. Conflict of Interest Affidavit, Section 00 35 13
*If necessary, CIQ or CIS forms are to be provided directly to City Secretary

h. Any additional documents that may be required by Section 12 of the Instructions to Bidders

6. Total Bid Amount

6.1. Bidder will complete the Work in accordance with the Contract Documents for the following bid amount. In the space provided below, please enter the total bid amount for this project. Only this figure will be read publicly by the City at the bid opening.

6.2. It is understood and agreed by the Bidder in signing this proposal that the total bid amount entered below is subject to verification and/or modification by multiplying the unit bid prices for each pay item by the respective estimated quantities shown in this proposal and then totaling all of the extended amounts.

Total Bid $0.00

7. Bid Submittal

This Bid is submitted on by the entity named below.

Respectfully submitted,

By:_____
(Signature)

(Printed Name)

Receipt is acknowledged of the following Addenda:	Initial
Addendum No. 1:	
Addendum No. 2:	
Addendum No. 3:	
Addendum No. 4:	

Title:

Company: Corporate Seal:

Address:

State of Incorporation:

Email:

Phone:

END OF SECTION

SECTION 00 42 43
PROPOSAL FORM

UNIT PRICE BID

Bidder's Application

Project Item Information					Bidder's Proposal	
Unit 1 - West Bailey Boswell Rd						
Bidlist Item No.	Description	Specification Section No.	Unit of Measure	Bid Quantity	Unit Price	Bid Value
1	0170.0100 Mobilization (Max 5%)	01 70 00	LS	1		
2	0171.0101 Construction Staking	01 71 23	LS	1		
3	0171.0102 As-Built Survey	01 71 23	LS	1		
4	3305.0103 Exploratory Excavation of Existing Utilities	33 05 30	EA	25		
5	3471.0001 Traffic Control	34 71 13	MO	24		
6	3471.0002 Portable Message Sign	34 71 13	WK	102		
7	TxDOT 681 7001 Temporary Traffic Signals at Bowman Roberts Rd	TxDOT 681	EA	1		
8	TxDOT 681 7001 Temporary Traffic Signals at Navigation Rd	TxDOT 681	EA	1		
9	TxDOT 681 7001 Temporary Traffic Signals at Twin Mills Rd	TxDOT 681	EA	1		
10	3110.0101 Site Clearing	31 10 00	LS	1		
11	0241.1100 Remove Asphalt Pvmt	02 41 15	SY	51,798		
12	0241.0402 Remove Asphalt Drive	02 41 13	SF	104		
13	0241.0401 Remove Concrete Drive	02 41 13	SF	5,929		
14	0241.0550 Remove Guardrail	02 41 13	LF	124		
15	0241.1000 Remove Conc Pvmt	02 41 15	SY	2,325		
16	0241.0100 Remove Sidewalk	02 41 13	SF	8,060		
17	0241.0900 Misc Conc Structure	02 41 13	LS	1		
18	0241.1300 Remove Conc Curb & Gutter	02 41 14	LF	59		
19	0241.3011 Remove 15" Storm Line	02 41 14	LF	210		
20	0241.3013 Remove 18" Storm Line	02 41 14	LF	299		
21	0241.3015 Remove 24" Storm Line	02 41 14	LF	1,601		
22	0241.3019 Remove 36" Storm Line	02 41 14	LF	263		
23	0241.3201 Remove Storm Sewer Box	02 41 14	LF	95		
24	0241.4401 Remove Headwall/SET	02 41 14	EA	28		
25	0241.3501 Remove Storm Junction Structure	02 41 13	EA	1		
26	0241.4202 Remove 5' Drop Inlet	02 41 14	EA	1		
27	0241.0500 Remove Fence	02 41 13	LF	2,526		
28	0241.1510 Salvage Fire Hydrant	02 41 14	EA	4		
29	2605.0111 Furnish/Install Elec Serv Pedestal	26 05 00	EA	7		
30	2605.3014 2" CONDT RM (Riser)	26 05 33	LF	48		
31	2605.3011 2" CONDT PVC SCH 40 (T)	26 05 33	LF	8,480		
32	2605.3012 2" CONDT PVC SCH 40 (B)	26 05 33	LF	3,260		
33	2605.3015 2" CONDT PVC SCH 80 (T)	26 05 33	LF	45		
34	2605.3021 3" CONDT PVC SCH 40 (T)	26 05 33	LF	505		
35	2605.3031 4" CONDT PVC SCH 40 (T)	26 05 33	LF	210		
36	2605.3032 4" CONDT PVC SCH 40 (B)	26 05 33	LF	1,800		
37	3110.0102 6"-12" Tree Removal	31 10 00	EA	99		
38	3110.0103 12"-18" Tree Removal	31 10 00	EA	13		
39	3110.0104 18"-24" Tree Removal	31 10 00	EA	4		
40	3110.0105 24" or Larger Tree Removal	31 10 00	EA	4		
41	3123.0101 Unclassified Excavation by Plan	31 23 16	CY	29,914		
42	3124.0101 Embankment by Plan	31 24 00	CY	9,821		
43	3217.0101 6" SLD Pvmt Marking HAS (W)	32 17 23	LF	1,076		
44	3217.0102 6" SLD Pvmt Marking HAS (Y)	32 17 23	LF	2,219		
45	3217.0103 6" BRK Pvmt Marking HAS (W)	32 17 23	LF	3,905		
46	3217.0201 8" SLD Pvmt Marking HAS (W)	32 17 23	LF	10,586		
47	3217.0202 8" SLD Pvmt Marking HAS (Y)	32 17 23	LF	2,127		
48	3217.0403 18" SLD Pvmt Marking HAE (Y)	32 17 23	LF	163		
49	3217.0501 24" SLD Pvmt Marking HAE (W)	32 17 23	LF	1,029		
50	3217.0502 Preformed Thermoplastic Contrast Markings - 24” Crosswalk	32 17 23	LF	1,630		
51	3217.1002 Lane Legend Arrow	32 17 23	EA	47		
52	3217.1003 Lane Legend DBL Arrow	32 17 23	EA	9		
53	3217.1004 Lane Legend Only	32 17 23	EA	45		
54	3217.2103 REFL Raised Marker TY II-A-A	32 17 23	EA	30		
55	3217.2104 REFL Raised Marker TY II-C-R	32 17 23	EA	721		
56	3441.1001 Furnish/Install 3-Sect Signal Head Assembly	34 41 10	EA	48		
57	3441.1002 Furnish/Install 4-Sect Signal Head Assembly	34 41 10	EA	9		
58	3441.1015 Install Ped Signal Head Assembly	34 41 10	EA	36		
59	3441.1031 Furnish/Install Audible Pedestrian Pushbutton Station	34 41 10	EA	36		
60	3441.1205 Furnish/Install VIVDS Detection Device	34 41 10	EA	9		
61	3441.1209 Furnish/Install BBU System EXT Mounted	34 41 10	EA	4		
62	3441.1215 Furnish/Install Hybrid Detection Device	34 41 10	EA	10		
63	3441.1220 Furnish/Install Model 711 Preemption Detector	34 41 10	EA	19		
64	3441.1224 Furnish/Install Preemption Cable	34 41 10	LF	2,650		
65	3441.1250 Furnish/Install PTZ Camera	34 41 10	EA	5		
66	3441.1255 Furnish/Install Communications Modem	34 41 10	EA	5		
67	3441.1260 Furnish/Install CAT5 Ethernet Cable	34 41 10	LF	2,910		
68	3441.1314 10/C 14 AWG Multi-Conductor Cable	34 41 10	LF	520		
69	3441.1315 20/C 14 AWG Multi-Conductor Cable	34 41 10	LF	2,650		
70	3441.1322 3/C 14 AWG Multi-Conductor Cable	34 41 10	LF	4,875		
71	3441.1405 NO 2 Insulated Elec Condr	34 41 10	LF	20,130		
72	3441.1408 NO 6 Insulated Elec Condr	34 41 10	LF	120		

SECTION 00 42 43
PROPOSAL FORM

UNIT PRICE BID

Bidder's Application

Project Item Information					Bidder's Proposal	
Unit 1 - West Bailey Boswell Rd						
Bidlist Item No.	Description	Specification Section No.	Unit of Measure	Bid Quantity	Unit Price	Bid Value
73	3441.1410 NO 10 Insulated Elec Condr	34 41 10	LF	4,170		
74	3441.1413 NO 6 Bare Elec Condr SLD	34 41 10	LF	10,115		
75	3441.1414 NO 8 Bare Elec Condr	34 41 10	LF	4,795		
76	3441.1502 Furnish/Install Ground Box Type B, w/Apron	34 41 10	EA	57		
77	3441.1503 Furnish/Install Ground Box Type D, w/Apron	34 41 10	EA	24		
78	3441.1506 Furnish/Install Ground Box Type D	34 41 10	EA	4		
79	3441.1603 Furnish/Install 10' - 20' Ped Pole Assmbly	34 41 10	EA	15		
80	3441.1611 Furnish/Install Type 41 Signal Pole	34 41 10	EA	3		
81	3441.1613 Furnish/Install Type 43 Signal Pole	34 41 10	EA	16		
82	3441.1623 Furnish/Install Mast Arm 16' - 36'	34 41 10	EA	3		
83	3441.1624 Furnish/Install Mast Arm 40' - 48'	34 41 10	EA	16		
84	3441.1701 TY 1 Signal Foundation	34 41 10	EA	15		
85	3441.1703 TY 3 Signal Foundation	34 41 10	EA	3		
86	3441.1704 TY 4 Signal Foundation	34 41 10	EA	16		
87	3441.1715 Signal Cabinet Foundation - 352i & BBU	34 41 10	EA	3		
88	3441.1725 Furnish/Install ATC Signal Controller	34 41 10	EA	4		
89	3441.1741 Furnish/Install 352i Controller Cabinet Assembly	34 41 10	EA	4		
90	3441.1742 Install 352i Controller Cabinet Assembly	34 41 10	EA	1		
91	3441.1835 Remove School Zone Flashing Assembly (Solar)	34 41 10	EA	2		
92	3441.1831 Furnish/Install School Zone Flasher Assembly (Solar)	34 41 10	EA	6		
93	3441.2001 Dispose/Salvage Traffic Signal	34 41 13	EA	3		
94	3441.3003 Rdwy Illum Assmbly TY 18,18A,19, and D-40	34 41 20	EA	44		
95	3441.3051 Furnish/Install LED Fixture (137W ATB2 Cobra Head)	34 41 20	EA	20		
96	3441.3302 Rdwy Illum Foundation TY 3,5,6, and 8	34 41 20	EA	44		
97	3441.4001 Furnish/Install Alum Sign Mast Arm Mount	34 41 30	EA	50		
98	3441.4003 Furnish/Install Alum Sign Ground Mount City Std.	34 41 30	EA	25		
99	3441.4108 Remove Sign Panel and Post	34 41 30	EA	51		
100	3441.3501 Salvage Street Light Pole	34 41 20	EA	4		
101	3125.0101 SWPPP ≥ 1 ACRE	31 25 00	LS	1		
102	3341.0205 24" RCP, Class III	33 41 10	LF	7,976		
103	3341.0302 30" RCP, Class III	33 41 10	LF	1,448		
104	3341.0309 36" RCP, Class III	33 41 10	LF	166		
105	3341.1001 3x2 Box Culvert	33 41 10	LF	350		
106	3341.1202 5x4 Box Culvert	33 41 10	LF	806		
107	3349.5001 10' Curb Inlet	33 49 20	EA	12		
108	3349.6001 10' Recessed Inlet	33 49 20	EA	60		
109	3349.6002 15' Recessed Inlet	33 49 20	EA	1		
110	3349.7001 4' Drop Inlet	33 49 20	EA	5		
111	3349.0006 3' Storm Junction Box	33 49 10	EA	25		
112	3349.0001 4' Storm Junction Box	33 49 10	EA	10		
113	3349.1000 Headwall, Box Culvert	33 49 40	CY	76		
114	3312.0001 Fire Hydrant (6" lead line is included)	33 12 40	EA	4		
115	TXDOT 527 7001 Colored Textured Concrete (4")	TxDOT 527	SY	4,617		
116	3137.0101 Concrete Riprap (5")	31 37 00	SY	659		
117	3137.0104 Medium Stone Riprap, dry (12")	31 37 00	SY	52		
118	3213.0106 11" Conc Pvmt	32 13 13	SY	61,265		
119	3211.0502 8" Lime Treatment	32 11 29	SY	65,846		
120	3211.0400 Hydrated Lime	32 11 29	TN	1,636		
121	3212.0203 4" Asphalt Pvmt Type C	32 12 16	SY	164		
122	3212.0503 4" Asphalt Base Type B (DG-B)	32 12 16	SY	184		
123	3213.0301 4" Conc Sidewalk	32 13 20	SF	90,103		
124	3213.0311 4" Conc Sidewalk, Adjacent to Curb	32 13 20	SF	36,528		
125	3213.0401 6" Concrete Driveway	32 13 20	SF	7,830		
126	3213.0506 Barrier Free Ramp, Type P-1	32 13 20	EA	40		
127	3213.0507 Barrier Free Ramp, Type P-2	32 13 20	EA	4		
128	3213.0503 Barrier Free Ramp, Type M-1	32 13 20	EA	1		
129	3305.0107 Manhole Adjustment, Minor	33 05 14	EA	11		
130	3305.0109 Meter Box Adjustment	33 05 14	EA	3		
131	3305.0111 Valve Box Adjustment	33 05 14	EA	19		
132	3292.0100 Block Sod Placement	32 92 13	SY	34,252		
133	3291.0100 Topsoil	32 91 19	CY	3,809		
134	TXDOT 432 7014 Riprap (Mow Strip) 5IN	TxDOT 432	CY	6		
135	TXDOT 556 7006 Pipe Underdrains (TY 6) 6IN	TxDOT 556	LF	115		
136	TXDOT 450 6103 Pedestrian Rail TY PR11	TxDOT 450	LF	1,359		
137	3232.0201 TxDOT Std Ret Wall - RW 1(L) A	32 32 13	SF	870		
138	9999.0001 Construction Allowance	99 99 99	EA	1,000,000	$1.00	$1,000,000.00

SECTION 00 42 43
PROPOSAL FORM

UNIT PRICE BID

Bidder's Application

Project Item Information					Bidder's Proposal	
Unit 1 - West Bailey Boswell Rd						
Bidlist Item No.	Description	Specification Section No.	Unit of Measure	Bid Quantity	Unit Price	Bid Value
					Total Bid	

END OF SECTION

SECTION 00 45 12
PREQUALIFICATION STATEMENT

Each Bidder for a City procurement is required to complete the information below by identifying the prequalified contractors and/or subcontractors whom they intend to utilize for the major work type(s) listed.

Major Work Type	Contractor/Subcontractor Company Name	Prequalification Expiration Date
Concrete Paving Construction/Reconstruction (greater than 15,000 square yards)		
Roadway and Pedestrian Lighting		
Asphalt Paving Construction/Reconstruction (LESS THAN 15,000 square yards)		
Water Distribution, Urban and Renewal, 6-inch diameter and smaller		
-		
-		
-		
-		

The undersigned hereby certifies that the contractors and/or subcontractors described in the table above are currently prequalified for the work types listed.

BIDDER:

By: _____

(Signature)

Title: _____

Date: _____

END OF SECTION

APPENDIX

GC-4.01 Availability of Lands *(TO BE PROVIDED AT A LATER DATE)*

GC-4.02 Subsurface and Physical Conditions

- Geotech Report (HVJ Associates, October 10, 2025, Project No. DG-22-10349)

GC-4.04 Underground Facilities

- Existing Utility Plans – Work Performed by Teague Nall & Perkins Inc. 10/9/2025 (See Construction Plan Sheet 34-51)

GC-4.06 Hazardous Environmental Condition at Site - NONE

GC-6.06.D Small Business Utilization Form

GC-6.07 Wage Rates

- Heavy and Highway Construction Projects

GC-6.09 Permits and Utilities <*Provide all City obtained Permits available at the time of Advertisement*>

GC-6.24 Nondiscrimination

- None

GR-01 60 00 Product Requirements

- City of Fort Worth T&PW Standard Product List
- City of Fort Worth Water Department Standard Product List
- City of Fort Worth Lighting Approved Products List

GC-4.01 Availability of Lands

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GC-4.02 Subsurface and Physical Conditions

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GEOTECHNICAL INVESTIGATION
W. BAILEY BOSWELL ROAD IMPROVEMENTS
FROM BOAT CLUB ROAD TO BOSWELL MEADOWS DRIVE
FORT WORTH, TEXAS

SUBMITTED TO

TNP INC
3200 S INTERSTATE 35E, SUITE 1129
DENTON,TX, 76210

BY

HVJ ASSOCIATES®

DALLAS, TEXAS

OCTOBER 10, 2025

REPORT NO. DG-22-10349

8701 John Carpenter Freeway, Suite 250
Dallas, Texas 75247-4640
214.678.0227 Phone
214.678.0228 Fax
www.hvj.com

October 10, 2025

Justin Baker
TNP, Inc.
3200 S. Interstate 35E, Suite 1129
Denton, TX 76210

Re: Geotechnical Investigation
W Bailey Boswell Road Improvements
Boat Club Road to Boswell Meadows Drive
Fort Worth, Texas
Owner: City of Fort Worth
HVJ Associates® Project No. DG-22-10349

Dear Mr. Baker:

Submitted herein is the report of our geotechnical investigation for the above referenced project. This study was performed in accordance with sub consultant agreement between HVJ North Texas - Chelliah Consultants, Inc. and TNP, Inc dated March 31, 2023, and is subject to the limitations presented in this report.

We appreciate the opportunity of working with you on this project. Please read the entire report and notify us if there are questions concerning this report or if we may be of further assistance.

Sincerely,

HVJ NORTH TEXAS - CHELLIAH CONSULTANTS, INC.
Texas Firm Registration No. F-17942

Palasuntharam (Thusha) Thushanthan, PE,
Project Manager

Sudip Upadhyay
Staff Engineer

10/10/2025

The seal appearing on this document was authorized by Palasuntharam Thushanthan, PE 117402 on October 10, 2025. Alteration of a sealed document without proper notification to responsible engineer is an offence under the Texas Engineering Practice Act.

- Main Text – 20 pages
- Plates – 33 pages
- Appendix A – 5 pages
- Appendix B – 3 pages
- Appendix C – 10 pages
- Appendix D – 8 pages
- Appendix E – 2 pages
- Appendix F – 42 pages

CONTENTS

LIST OF TABLES

PLATES

APPENDICES

EXECUTIVE SUMMARY

HVJ Associates® was retained by TNP, Inc. to provide a geotechnical investigation for the for the reconstruction of W Bailey Boswell Road from Boat Club Road to Boswell Meadows Drive in Fort Worth, Texas. The proposed alignment is approximately 1.79 miles from Boat Club Road to Boswell Meadows Drive.

Subsurface conditions were evaluated by drilling and sampling nineteen (19) pavement borings. and one (1) culvert boring; The borings were advanced to a depth of 10 feet below the existing ground surface for the pavement and 30 feet below the existing ground surface for the culvert. A brief summary of the investigation findings from the borings are as follows:

1. Subsurface conditions encountered in the borings are consisted of high to moderate plasticity fat clays to moderate to low lean/sandy clays and clayey sands. These soils were followed by limestone to the boring termination depths in the borings. Limestone was generally encountered at depths of about 4 to 8 feet below existing grades at the time of our filed exploration. High plasticity clays have the potential to shrink and swell with moisture variations.

2. Groundwater was not encountered in any of the borings. Longer period may be required for the groundwater to develop due to the low permeability of the soils encountered.

3. A laboratory testing program was conducted. The test results are included on the boring logs and summarized in Appendix A. Free swell tests were performed on selected soil samples at depth ranging from 2 to 6 feet indicated that the soils can exhibit swell potential ranging from 0% to 2.14% when the soil is in dry condition.

4. Based on the information provided by the client, W. Bailey Boswell Road is classified as major arterial street. Portland concrete pavement (PCC) is considered for this roadway. A PCC thickness of 11 inches over 8-inch lime/cement treated subgrade is recommended for this roadway.

5. A Seven-cell box culvert is planned across W. Bailey Boswell roadway. Headwalls with heights ranging from 6 to 8 feet are anticipated for the culvert. Section 6 provides recommendations for the culvert and headwall construction.

Please note that this executive summary does not fully relate our findings and opinions. Those findings and opinions are only presented through our full report.

1 INTRODUCTION

1.1 General

HVJ Associates® was retained by TNP, Inc. to provide a geotechnical investigation for the improvements and reconstruction of a 1.79-mile-long segment of W. Bailey Boswell Road from Boat Club Road to Boswell Meadows Drive in Fort Worth, Texas.

This report presents the design and construction recommendations for the pavement and culvert. A site vicinity and site geology maps are provided on Plates 1 and 2, respectively.

1.2 Geotechnical Study Program

The primary objectives of this investigation were to gather information on subsurface conditions at the site and to provide recommendations for the pavement and culvert. The objectives were accomplished by:

1. Drilling nineteen (19) pavement borings and one (1) culvert borings. The borings were advanced to a depth of 10 feet for the pavement and 30 feet for the culvert.

2. Performing laboratory tests on the selected samples obtained from the borings to determine the pertinent physical and engineering characteristics of the soils and rocks; and

3. Performing engineering analyses to develop geotechnical engineering recommendations for pavement and culvert.

Subsequent sections of this report contain descriptions of the field exploration, laboratory testing program, general subsurface conditions, design recommendations, and general earthwork recommendations.

2 FIELD EXPLORATION

2.1 General

The field exploration program was performed between May 1 and May 3, 2023. Subsurface conditions were evaluated by drilling and sampling a total of (19) pavement borings and (1) culvert boring. The borings were advanced to a depth of 10 feet below the existing ground surface for the pavement and 30 feet below the ground surface for the culvert. Boring locations plans showing the approximate boring locations are presented on the Plan of Borings, Plates 3. The boring logs are presented on Plates 4 to 23. Boring locations were surveyed by others and survey data was provided to us by TNP . Survey data that includes boring elevations, offset and station are included in the boring log.

2.2 Sampling Methods

The borings were advanced using a truck-mounted drill rig equipped with continuous flight augers. Samples were obtained continuously to a depth of 10 feet. The culvert boring was sampled at 5-foot interval below 10 feet to the termination depth of the borings Cohesive soil samples were obtained with a three-inch thin-walled (Shelby) tube sampler in general accordance with ASTM D-1587 standard. Cohesionless soils and soft rocks were sampled using Standard Penetration Tests (SPT)

procedures in general accordance with ASTM D-1586. Each sample was removed from the sampler in the field, carefully examined, and then classified. The shear strength of the cohesive soils was estimated by a hand penetrometer in the field. Suitable portions of each sample were sealed and packaged for transportation to our laboratory.

When rock is encountered, Texas cone penetrometer test (TCP) tests were performed in the borings at 5-foot interval in accordance with Texas Department of Transportation (TxDOT) standard Tex-132-E.

Detailed descriptions of the soils and rocks encountered in the borings are given on the boring logs presented on Plates 4 to 23. A key to the soils and rock classification and symbols used in the boring logs is presented on Plates 25A and 25B.

2.3 Groundwater Observations

Groundwater was not encountered in any of the borings. Longer period may be required for the groundwater to develop due to the low permeability of the soils encountered.

Shallow limestone was encountered in borings. Groundwater may be encountered through the fractures and fissures of limestone during excavation for structures. It is also anticipated that groundwater levels will fluctuate due to seasonal variations in climatic conditions. Presence of water should be anticipated in any excavation.

2.4 Borehole Completion

The project borings were backfilled with soil cuttings and bentonite chips upon completion of drilling. The pavement was patched with asphalt and concrete at the surface so as to match the existing ground surface.

3 LABORATORY TESTING

Soil samples transported to our laboratory were further examined and identified in accordance with ASTM D 2488 – *Description and Identification of Soils*. A preliminary soil classification was assigned to each soil sample based on ASTM D 2487 – *Classification of Soil for Engineering Purposes*. Classification testing was subsequently conducted on select samples and the result of each test was used to confirm or modify the given preliminary soil classification.

3.1 Geotechnical Laboratory Testing

Selected soil samples were tested in the laboratory to determine applicable physical and engineering properties. All tests were performed according to the relevant ASTM Standards or TxDOT Standards. These tests consisted of moisture contents, percent passing No. 200 sieve, Atterberg limits, sieve and hydrometer, sulfate, one dimensional swell, lime series pH, and unconfined compressive strength tests on soil samples. The summary of laboratory test results is presented in Appendix A.

The Atterberg Limits and percent passing No. 200 sieve tests were utilized to verify field classification by the Unified Soils Classification System (USCS), and the unconfined compressive strength tests and hand penetrometer were utilized to obtain the undrained shear strength of the soil. Sulfate test results were utilized to determine the sulfate levels in the surficial soils. The type and number of tests performed for this investigation are summarized below.

Table 3-1 - Summary of Laboratory Test

Type of Test	Number of Tests
Moisture Content (ASTM D2216)	`95
Percent Passing No. 200 Sieve (ASTM D1140)	59
Atterberg Limits (ASTM D4318)	59
Unconfined Compression Soil (ASTM D2166)	15
Free Swell (Method B) (ASTM D 4546)	9
Sieve and Hydrometer	2
Lime Series pH (Tex-121-E)	10
Sulfate Content (Tex 145-E)	6

Sulfate content test was performed on selected soil samples. The test results are summarized in the table below. The maximum sulfate content was 2,702 ppm in a sample retrieved at 1 to 2 feet in Boring P-14. Sulfate content of 3,000 ppm or less poses low potential for sulfate heave and are not typically detrimental. In accordance with TxDOT's 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, a minimum of 24 hours mellowing period shall be incorporated with the regular mix design and construction practices. We recommend performing sulfate content tests after pavement subgrade is rough graded to determine sulfate contents in the near surface pavement subgrade.

Table 3-2 - Summary of Sulfate Tests

Boring	Depth (feet)	Sulfate content (ppm)
P-3	1-2	33
P-6	1-2	1,784
P-8	1-2	27
P-10	1-2	198
P-12	1-2	593
P-14	1-2	2,702

Free swell tests were performed on selected soil samples at depths ranging from 2 to 6 feet. The test results are summarized in the table below:

Table 3-3 – Summary of Swell Tests

Boring	Depth (feet)	Liquid Limit	Plasticity Index	Initial Moisture	Final Moisture	Measured Swell (%)
P-2	2-4	54	39	22.4	27.6	2.14
P-4	4-6	47	27	20.0	25.2	0.44
P-7	2-4	42	23	15.6	20.8	0.00

Boring	Depth (feet)	Liquid Limit	Plasticity Index	Initial Moisture	Final Moisture	Measured Swell (%)
P-8	2-4	47	32	14.0	17.2	0.27
P-9	4-6	29	16	13.6	17.8	0.02
P-12	4-6	27	12	12.1	15.8	0.08
P-15	4-6	71	50	30.3	33.8	0.47
P-16	2-4	71	45	32.4	36.5	0.80
P-19	2-4	66	43	28.0	32.4	0.73

Sieve and Hydrometer test results are presented in Appendix C. Lime series pH test results are presented in Appendix D.

4 SITE CHARACTERIZATION

4.1 General Geology

According to the USGS Texas Geology Map, the project site is located in or near the surface outcrops of the Fort Worth Limestone and Duck Creek Formation, undivided (Kfd). A geology map showing the project location is provided on Plate 2.

Fort Worth Limestone and Duck Creek Formation, undivided (Kfd) consists of alternating layers of marl and chalky white limestone. The clays are overlain the marl or limestone.

4.2 Soil Stratigraphy

Our interpretation of soil and groundwater conditions at the project site is based on information obtained at the boring locations only. This information has been used as the basis for our conclusions and recommendations. Significant variations at areas not explored by the project boring may require reevaluation of our findings and conclusions.

Table 4-1 – Stratum Types Encountered

Boring ID	Pavement Thickness[1] inches		Approximate Depths of Strata Encountered at Borings (feet) [2]				
			Material				
	Asphalt	Base	Clayey Sand/Silty Sand/Gravel	Lean Clay/ Lean Clay with Sand/ Sandy Lean Clay/ Gravelly (CL)	Fat Clay/ Fat Clay with Sand/ Sandy Fat Clay/Gravelly (CH)	Gravel/Silty, Clayey with sand	Limestone
P-1B	5	6	0.91-3	3-6, 6-10[2]	-	-	-

Boring ID	Pavement Thickness[1] inches		Approximate Depths of Strata Encountered at Borings (feet) [2]				
			Material				
	Asphalt	Base	Clayey Sand/Silty Sand/Gravel	Lean Clay/ Lean Clay with Sand/ Sandy Lean Clay/ Gravelly (CL)	Fat Clay/ Fat Clay with Sand/ Sandy Fat Clay/Gravelly (CH)	Gravel/Silty, Clayey with sand	Limestone
P-2	5	6	-	6-10[2]	2-6	0.91-2	-
P-3	4	6	-	0.83-6	6-8, 8-10[2]	-	-
P-4	4	6	0.83-4	4-6	6-10[2]	-	-
P-5	4	6	4-6	6-8	0.83-4	-	8-10.25[2]
P-6	4	7	2-4	-	-	0.91-2	4-10.25[2]
P-7	5	7	-	2-4		1-2, 4-6.5	6.5-10.66[2]
P-8	4.5	7	-	2-6.5	-	1.04-2	6.5-10.41[2]
P-9	4.5	7.5	-	1-10[2]	-	-	-
P-10	5	7	-	-	4-10[2]	1-4	-
P-11	5	6	-	-	0.92-10[2]	-	-
P-12	5	6	-	4-10[2]	0.91-4	-	-
P-13	5	6	-	2-4	0.91-2	-	4-10[2]
P-14	5	7	-	-	-	1-5.5	5.5-10.18[2]
P-15	5	6	0.91-4	6.5-8.5	4-6.5	8.5-10[2]	-
P-16	5	7	-	1-1.5	1.5-10[2]	-	-
P-17	5	8	-	-	1.08-10[2]	-	-
P-18	3.5	7	0.88-4	-	-	4-6	6-10[2]
P-19	10	2	-	6-10[2]	1-6	-	-
CB-1	4.5	12		13-28	1.38-13	-	28-30.41[2]

Notes:

(1) Pavement thickness details can be found on boring logs presented in Plates 4 to 23 and the pavement core photos are presented in Appendix D.

(2) Boring termination depth.

Detailed descriptions of the soils encountered in the borings are given on the boring logs presented on Plates 4 to 23. A key to the soil and rock classification and symbols used in the boring logs is also presented on Plates 24A and 24B.

5 PAVEMENT DESIGN AND RECOMMENDATIONS

5.1 General

We understand that the project includes reconstruction of approximately 1.79 miles of W. Bailey Boswell Road from Boat Club Road to Boswell Meadows Drive in Fort Worth, Texas. Based on the information provided by the client on March 24, 2025, W. Bailey Boswell Road is classified as major arterial street. The pavement design recommendations are presented in the following sections.

5.2 Potential Vertical Rise (PVR)

Potential Vertical Rise (PVR) values were estimated by the TxDOT standard Tex-124-E method for the overburden soils. The swell potential of the upper 10 feet of soils were considered for the estimate discussed in this section. Potential Vertical Rise (PVR) values were estimated based on the in-situ moistures at the time of our field explorations and dry moisture conditions. The PVR represents the potential ability of a soil at a specific density, moisture and loading condition to swell. It indicates the potential movement of the soils that may be realized if the soils become wet from a relatively dry/existing condition. The PVR value is provided to demonstrate the relative severity of the swell potential of the soils at the site; however, this value is not intended to be used directly as a design parameter. Th actual amount of swell the pavement may experience depends on many variables which are not known at the time of this study (such as the time of year the pavement is constructed, moisture contents of the pavement subgrade when pavement is constructed, etc.). The estimated PVR values for varying soil moisture levels are summarized in the table below. The PVR calculations are presented in Appendix E.

Table 5-1 - Potential Vertical Rise (PVR) Values

Boring ID	Station	Potential Vertical Rise (in.)	
		In-Situ Moisture Condition	Dry Moisture Condition
P-1B	2+83	0.40	0.42
P-2	4+74	1.25	1.50
P-3	9+76	2.13	2.34
P-4	14+66	0.52	0.65
P-5	19+78	1.10	1.19
P-6	24+42	0.47	0.47
P-7	29+32	0.58	0.64
P-8	33+96	0.63	1.07
P-9	38+95	0.65	0.84
P-10	44+21	1.74	2.35

Boring ID	Station	Potential Vertical Rise (in.)	
		In-Situ Moisture Condition	Dry Moisture Condition
P-11	48+40	3.26	4.21
P-12	53+17	1.00	1.06
P-13	58+05	0.47	0.62
P-14	62+81	0.58	0.61
P-15	67+79	1.92	2.78
P-16	72+57	3.02	3.73
CB-1	76+26	1.95	2.84
P-17	82+32	2.68	3.57
P-18	87+26	0.89	0.89
P-19	92+30	2.16	2.43

We understand the City of Fort Worth may not prepare the pavement subgrade considering PVR values as the roadway is classified as major arterial street. However, the PVR calculations were performed and the PVR values are provided to generally interpret the swell potential of the site soils. Based on the calculated PVR values, the site soils exhibit low to moderate swell potential except the soils near Borings P-11, P-16 and P-17 that are with moderate to high swell potential.

5.3 Pavement Design and Recommended Pavement Sections

The subgrade soils encountered in the borings consisted of sandy lean/fat clays and clayey sands. Therefore, we recommend either lime or cement treated subgrade to provide relatively uniform support for pavements. Pavement design was performed in accordance with 1993 AASHTO pavement design procedure and the City of Fort Worth Pavement Design Manual dated January 2015. WinPas 12 computer program was used to calculate the pavement layer thickness. The design parameters used in the pavement design and analyses for the rigid pavement are tabulated in the following table and the results of WinPAS 12 analyses are presented in Appendix E.

Table 5-2- Rigid Pavement Design Inputs

Parameter	Value
Annual ESALs	300,000
% Growth	2.5
Design life	30
Design ESALs	13,170,000
Modulus of Elasticity, psi	4,000,000
Reliability, %	90
Overall Standard Deviation	0.39

Parameter	Value
Flexural Strength, psi	620
Load Transfer Coefficient	3.0
Composite Modulus of Subgrade Reaction (for 8-inch Treated Subgrade), psi/in	239
Overall Drainage Coefficient, Cd	1.0
Initial Serviceability	4.5
Terminal Serviceability	2.5

Based on our analyses, we recommend the following pavement sections. The results of the WinPAS analyses are presented in Appendix E.

Table 5-3– Concrete Pavement Section Thickness

Pavement Layer	Minimum Design Thickness (inches)
Portland Cement Reinforced Concrete	11
Lime/Cement Treated Subgrade(1)	8

Note 1: Flexible base can also be used as an alternative to lime treated/cement treated subgrade. A similar thickness of flexible base should be used (8 inches). Flexible base material should be TxDOT Item 247, Grade 1-2, Type A or D.

Lime treatment is recommended for pavement subgrade with a plasticity index (PI) of 11 or above. Cement treatment is recommended when pavement subgrade is with a PI of 10 or less. Refer Section 5.5 below for detail description on subgrade preparation.

Reinforced concrete should have a minimum compressive strength of 3,600 psi. Minimum steel reinforcement and various standard joint details should be provided based on Section 4 of the City of Fort Worth Pavement Design Manual.

5.4 Subgrade Soil Expansion Potential

Clay soils were encountered in the borings. These clays exhibited low potential to shrink /swell movements in response to soil moisture content changes. Moisture changes occur due to seasonal changes in the relative amount of rainfall and evaporation potential. Based on the swell tests performed on soil samples, the subgrade soils exhibited swell potential of less than 1 percent, except the soils at/near Boring P-2 as the swell test performed at Boring B-2 indicated a swell of 2.14 percent. Subgrade modification is not necessary to reduce the soil shrink/swell potential, except for soils at Boring P-2 location. As stated earlier, the City of Fort Worth may not prepare the pavement subgrade considering PVR values for this roadway. Therefore, subgrade modification to reduce the PVR is not provided.

5.5 Pavement Subgrade Preparation

Existing asphalt pavement should be completely removed. The exposed subgrade should be scarified to a depth of 6 inches and proof rolled to detect any soft soils. Where excavations are

required for soil replacement or regarding, proof roiling should be performed on the excavated subgrade. Soft areas should be removed and replaced with compacted soils exhibiting similar classification as the adjacent in-place soils. Clean undercut soils can be replaced with controlled compaction.

Prior to placement of any new fill required, the exposed subgrade should be scarified to a minimum depth of 6 inches and moisture conditioned to the recommended moisture contents as shown in Table 5-4 below and compacted to at least 98 percent of the standard Proctor (ASTM D698) maximum dry density. Any required fill soils should be placed in accordance with the guidelines presented in Table 5-4 below.

Any highly plastic clay soils below the existing pavement could be subject to desiccation if left exposed, particularly during dry periods with high temperatures. Desiccation or drying of these soils could contribute to future pavement movements. For this reason, it is recommended that subgrade areas consisting of clays be prevented from excessive drying prior to stabilization of subgrades and construction of pavement sections.

For areas where PI is greater than 11, we recommend pavement subgrade be lime treated for 8 inches. For budgeting purposes, a lime content of 6 percent by dry weight can be used for subgrade lime treatment. The exact amount of lime content should be determined by testing the exposed subgrade during the construction phase by an accredited testing laboratory.

For areas where PI is 10 or less, we recommend pavement subgrade be cement treated with 5% of cement by dry weight for 8 inches for the budgeting purposes for subgrade treatment. The exact amount of cement should be determined by testing the exposed subgrade during the construction phase by an accredited testing laboratory.

All lime treated and cement treated subgrades should be compacted in accordance with the guidelines presented in Table 5-4 below. Finished pavement subgrade areas should be graded at all times to prevent ponding and infiltration of excessive moisture on or adjacent to the pavement subgrade surface. The lime treatment or cement treatment should be extended at least 3 feet beyond the curb lines of pavement.

Flexible base can be used as an alternative to lime/cement treated subgrade. A similar thickness of flexible base should be used as shown in Table 5-3. Flexible base material should meet TxDOT Item 247, Grade 1-2, Type A or D requirements.

5.6 Compaction Criteria

Table 5-4-Compaction Requirements

Materials	Compaction Requirements	Optimum Moisture Content Range
Soils with a plasticity index (PI) of 20 or less	At least 98% of Standard Proctor (ASTM D698) Maximum Dry Density	-2% to 4%
Soils with a plasticity index (PI) of greater than 20	At least 98% of Standard Proctor (ASTM D698) Maximum Dry Density	0% to +4%
Select fill	At least 98% of Standard Proctor (ASTM D698) Maximum Dry Density	-2% to +2%
Cement/lime treated subgrade	At least 98% of Standard Proctor (ASTM D698) Maximum Dry Density	-2% to +4%

It is important that the soil subgrades be uniform as practical in both moisture content and density to limit differential movements. In all areas to be paved, subgrade earthwork operations should be performed under the supervision of qualified contractor personnel working in conjunction with the project geotechnical or materials testing engineer. Adequate field moisture content and density tests should be performed on the compacted subgrade and all fill throughout all areas to be paved.

If borrow material from other areas of the site or off site are required, the properties of these materials could vary from the near surface soils and should be evaluated. It is recommended that all of the subgrade areas be proof rolled after rough grading is complete in order to verify the subgrade stability. Any soft areas identified should be undercut and recompacted with soils which can be recompacted to the required moisture and density as recommended in this section of the report.

Also, it is important that proper surface drainage be provided so that infiltration of surface water from unpaved areas adjacent to the pavement is minimized. Curb lines should be backfilled as soon as practical to avoid trapping water next to the pavement.

6 RECOMMENDATIONS FOR CULVERT

6.1 General

Existing culvert is planned to be replaced with a new seven-cell box culvert across W. Bailey Boswell roadway. Headwalls with heights ranging from 6 to 8 feet are anticipated for the culvert.

6.2 Culvert Foundation Recommendations

The following table presents the recommended net allowable bearing pressure. The net bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the culvert base. The recommended net allowable bearing pressure includes a factor of safety of 3.

Table 6-1– Design Parameters for the Culvert Foundation

Description	Design Parameters
Bearing Stratum	Compacted Native Subgrade
Allowable Net Bearing Capacity	2,000 psf
Allowable Coefficient of Sliding Resistance	0.27

Groundwater was not encountered in the borings. The foundation base should be free of loose materials and water when the concrete is placed.

6.3 Culvert Lateral Earth Pressures

Culvert, and headwalls will need to withstand the lateral earth pressure acting behind the wall retaining the fill.

Lateral earth pressures will be affected by structural design/stiffness of the wall, wall restraint conditions, methods of construction, and compaction and strength of the materials being retained. Design lateral earth pressures recommended for the walls are provided in the following table. These earth pressures do not include a factor of safety and are provided for horizontal backfill.

Table 6-2 - Lateral Earth Pressure Recommendations

Backfill Type	Earth Pressure Coefficients		Equivalent Fluid Pressure (Drained)		Equivalent Fluid Pressure (Undrained)	
	Active (Ka)	At Rest(Ko)	At-Rest (Rigid)	Active (Flexible)	At-Rest (Rigid)	Active (Flexible)
Onsite Fat Clays	0.45	0.63	85 pcf	60 pcf	105 pcf	95 pcf
Select Fill	0.33	0.5	65 pcf	45 pcf	95 pcf	85 pcf
Granular Fill/Cement Stabilized Backfill	0.26	0.41	55 pcf	35 pcf	90 pcf	80 pcf

Active earth pressures can be used for design of walls where the top of the wall will deflect on the order of 0.5 percent of the wall height. The "at-rest" condition is for where no or very small movement is anticipated. The at-rest condition is commonly used for walls restrained at the top. Drainage must be provided behind the walls for earth pressures provided for drained condition to prevent the development of hydrostatic pressures. A vertical drain can be used.

The following table presents the descriptions of wall backfill material. The limits of backfill should extend outward at least 2 feet from the wall base and then upward on a 1H: 1V slope. Surcharge loads should be considered if they apply at the surface above the wall within an area defined by an angle of 45 degrees extending up from the base of the wall. We recommend a minimum surcharge

load of 250 psf be included in the design. Lateral pressure coefficient provided in Table 6-2 are recommended for uniformly distributed surcharge loads.

Wall backfill should be placed in uniform layers not exceeding eight (8) inches in depth (loose thickness) and compacted as described in the following table. The top of the select fill and granular should be protected by 2-foot-thick clay material with plasticity index between 20 and 40 as shown in Table 6-3.

Table 6-3 - Backfill Material Description and Compaction Criteria

Backfill Material	Fill Description	Compaction Criteria (per ASTM D698)
Onsite Soil	Onsite soil free from organic material, loam, debris, frozen soil, or other deleterious material and rock size less than 4 inches, with a liquid limit of less than 60 and a plasticity index less than 40.	98% of the maximum dry density at a minimum moisture content of 2 percent points above the optimum moisture content
Select Fill	Sandy Lean Clay (CL), Clayey Sand (SC) or Clayey Gravel (GC). The liquid limit and plasticity index of the select fill shall not exceed 35 and 20, respectively, when tested in accordance with ASTM D4318.	98% of the maximum dry density at a moisture content range of -2 to +2 percent points of the optimum moisture content
Granular Fill	Non-plastic material with less than 3% passing no. 200 sieve and less than 30% passing no. 40 sieve. Maximum aggregate size of 2 inches	98% of the maximum dry density at a moisture content range of -2 to +2 percent points of the optimum moisture content
Cement Stabilized Backfill	Cement stabilized backfill in accordance with TxDOT specification TxDOT Item 400	Each lift must be compacted to at least 98%t of the maximum dry density at a moisture content range of -2 to +2 percent points of the optimum moisture content determined by ASTM D698.

The wall backfill is expected to settle over time. It's anticipated that backfill consists of onsite soil, select fill, and granular fill compacted to the recommended density may settle about one to two percent of the fill thickness. Settlement in the cement stabilized backfill is expected to be less than one inch.

6.4 Uplift

Buoyant uplift pressures will act on the base of the structure located below the water table. Buoyant uplift pressure is a function of the depth to groundwater. The largest uplift pressure will occur when groundwater is at the ground surface. We recommend that the structure constructed by open-cut

excavation method be designed to resist buoyant uplift based on the dead weight of the structure and the weight of any soil backfilled above the structure.

If dead weight alone is inadequate to resist uplift forces, a toe may be constructed into the soil at the base of the structure. Construction of a toe is most appropriate when open-cut excavation methods are used. The toe may consist of a bottom slab that extends into adjacent backfill. The weight of the material above the extension can then be relied upon to resist the uplift forces. The unit weight of soils above and below the water table for a compacted backfill will be about 125 and 62 pcf, respectively. Backfill should be placed in loose lifts not exceeding eight inches and should be compacted to 98 percent of standard Proctor maximum dry density as determined by ASTM D698.

6.5 Scour Potential

We recommend Scour analysis to be performed by Hydraulic Engineer. If scour is an issue then HVJ should be notified immediately. In general, to limit scour at the footing base, we recommend, over-excavating below the base of the foundation and replacing with structural fill in loose lifts less than 8 inch thick and compacted to at least 98 percent of the maximum dry density at a moisture content between optimum and 3% wet of optimum as determined by ASTM D 698. Alternately, flowable fill or flex-base material can be used in-lieu of structural fill. The structural fill or flowable fill should be extended laterally 3 feet from the face of the footing. We also recommend using rock riprap to prevent scour along the edges of the culvert.

6.6 Culvert Construction Considerations

6.6.1 General

This section is intended to address issues that might arise during construction. Our recommendations are intended for use as guidelines in dealing with particular soil conditions. The topics addressed in this section include trench excavation stability, groundwater control, and open-cut construction considerations.

The recommendations contained herein are not intended to dictate construction methods or sequences. Instead, they are provided solely to assist designers in identifying potential construction problems related to excavation, based upon findings derived from sampling. Depending upon the final design chosen for the project, the recommendations may also be useful to personnel who observe construction activity.

6.6.2 Open-Cut Excavation

We understand that the culverts will be installed using open-cut excavations. Excavations should satisfy two requirements. First, the soils above final grade must be removed without disturbing the soil below excavation grade, which will support constructed facilities. Second, the sides of the excavation must be stable to prevent damage to adjacent bridge structure as a result of either vertical or lateral movements of the soil. In addition, a satisfactory excavation procedure must include an adequate construction dewatering system to lower and maintain the water level at least a few feet below the lowest excavation grade.

Excavations. Trenches that are deeper than five feet deep should be appropriately sloped and protected in accordance with Table B-1 of 29 CFR Part 1926 subpart P, and shoring may be constructed in accordance with Table C-1.1, Table C-1.2 and Table C-1.3 of 29 CFR Part 1926.

6.6.3 Groundwater Control

Groundwater was not encountered in our borings. However, groundwater could be encountered in any excavation. Assessment of the need for groundwater control and installation of appropriate dewatering equipment is the contractor's responsibility. The following comments are intended to represent common solutions to groundwater control problems encountered in similar soil conditions, and may not be construed as dewatering system design recommendations.

A conventional pump and sump arrangement may be adequate if water bearing cohesive soils are encountered during trench excavations. Well points or eductors may be utilized to lower the groundwater level to at least three feet below the excavation level where water bearing cohesionless soils are encountered. Well points are generally not effective below about 15 feet beneath the top of the well point, and deeper dewatering requires deep wells with submersible pumps and eductors. Groundwater was encountered at boring B-1 during drilling operations at a depth of approximately 15 feet. However, groundwater will fluctuate due to climatic variations. Based on the subsurface soils encountered, we anticipate groundwater to be controlled using pump and sump arrangement. If necessary, coarse gravel should be used instead of embedment material under the pipe to provide for the free drainage and flow of water in the trench. In any case, the groundwater control system used must provide a relatively dry, stable base for construction. However, it should be noted that groundwater conditions will change due to rainfall and seasonal changes.

Control of groundwater should be accomplished in a manner that will preserve the strength of the foundation soils; will not cause instability of the excavation; and will not result in damage to existing structures. Where necessary to this purpose, the water will be lowered in advance of excavation by pump and sump arrangement, wells, well points, or similar methods. Open pumping should not be permitted if it results in boils, loss of fines, softening of the subgrade, or excavation instability. Discharge should be arranged to facilitate sampling by the owner's representative or engineer.

6.6.4 Reducing Differential Settlements at Culvert-Soil Embankment interface

Differential settlements could be observed at the box culvert edge and roadway soil embankment interface. Existing embankment behind the culvert walls are expected to be excavated to facilitate the new culvert and headwall construction. When backfilling these excavations, we recommend using cement stabilized backfill, granular fill or select fill outside face of the culvert and within the roadway section to reduce the differential settlement between the box culvert and adjacent soil embankment fill. Material descriptions and fill compaction requirements are provided in Table 6-3 above.

7 CONSTRUCTION MATERIAL TESTING

We recommend that construction be monitored by an accredited testing laboratory to verify that construction is performed in conformance with project specifications. HVJ Associates® routinely provides these services and would be pleased to do so for this project.

8 DESIGN REVIEW

HVJ Associates, Inc. should review the design and construction plans and specifications prior to release to confirm whether the geotechnical recommendations and design criteria presented herein have been properly interpreted.

9 LIMITATIONS

This investigation was performed for the exclusive use of by TNP, Inc., to perform a geotechnical investigation for the reconstruction of approximately 1.79 miles of W Bailey Boswell Road from Boat Club Road to Boswell Meadows Drive in Fort Worth, Texas. HVJ Associates® has endeavored to comply with generally accepted geotechnical engineering practice common in the local area. HVJ Associates® makes no warranty, express or implied. The analyses and recommendations contained in this report are based on data obtained from subsurface exploration, laboratory testing, the project information provided to us and our experience with similar soils and site conditions.

The methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. Should any subsurface conditions other than those described in our boring logs be encountered, HVJ Associates® should be immediately notified so that further investigation and supplemental recommendations can be provided.

PLATES

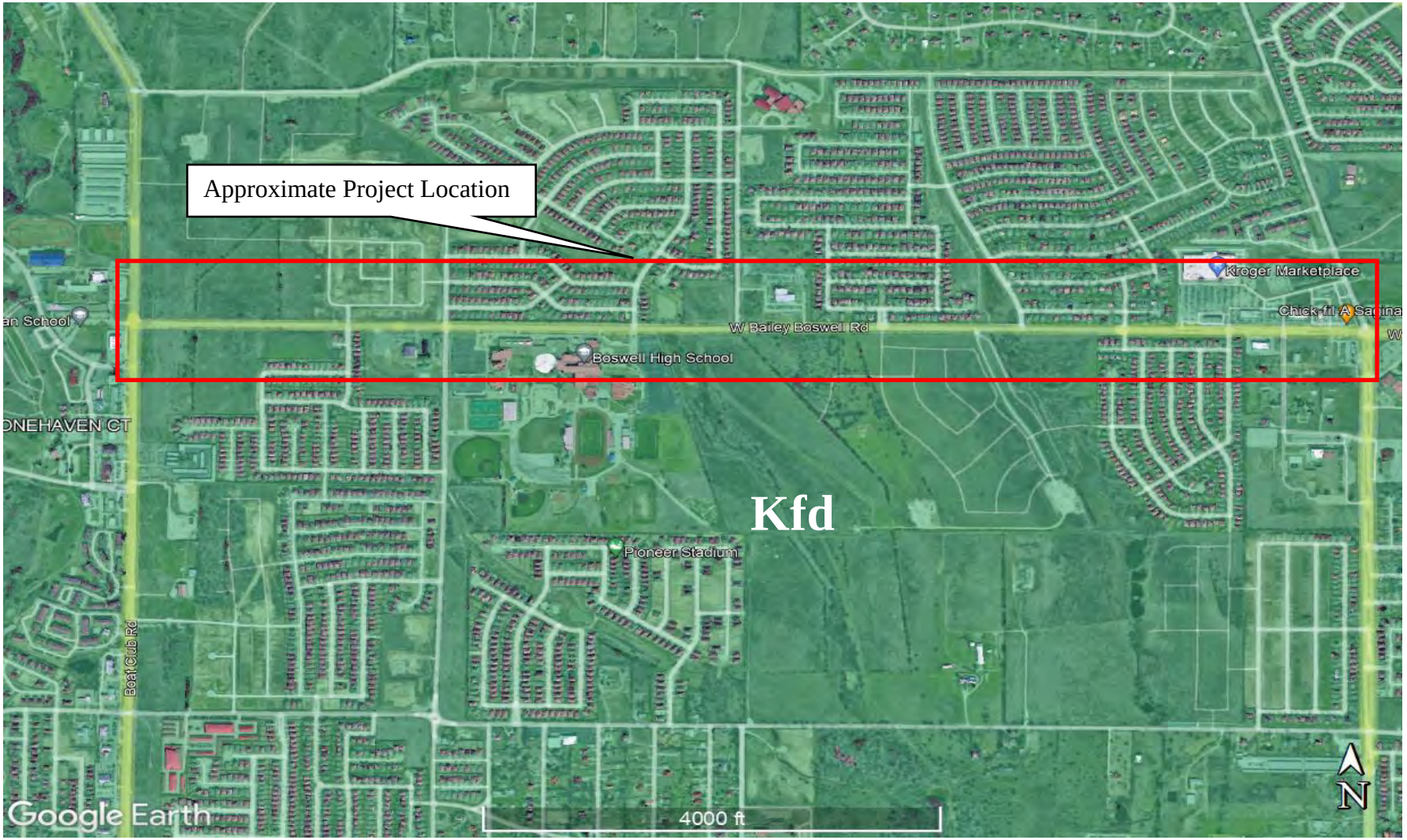
Image obtained from Google Earth Pro, August 2023.

HVJ ASSOCIATES
8701 John Carpenter Fwy, Suite 250
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

SITE VICINITY MAP
W Bailey Boswell Rd in Fort Worth, Texas

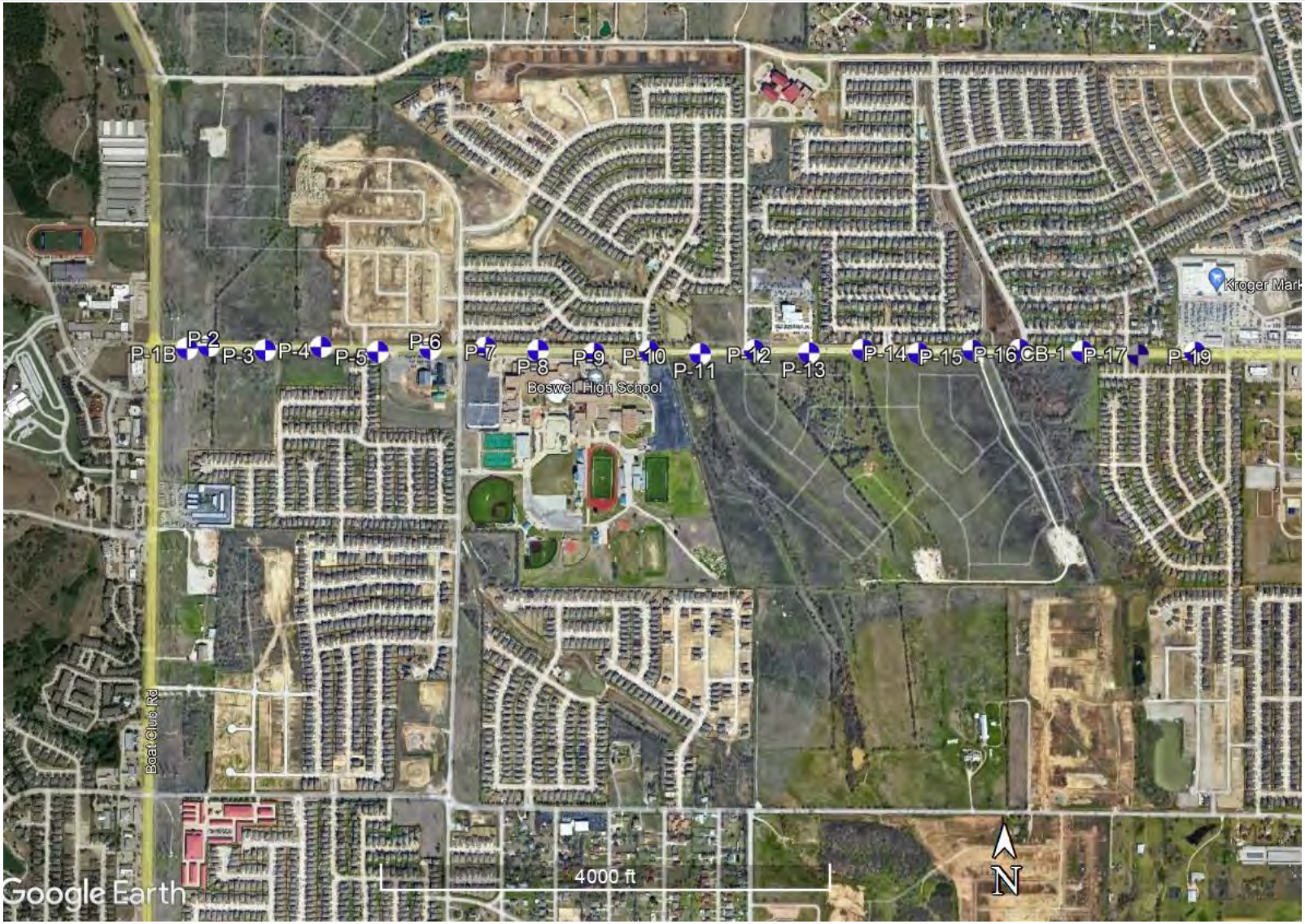
PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 1



Kfd: Fort Worth Limestone and Duck Creek Formation.

Image obtained from Google Earth Pro, September 2023.

HVJ ASSOCIATES 8701 John Carpenter Fwy, Suite 250 Dallas, TX 75247		
DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ
GEOLOGY MAP W Bailey Boswell Rd in Fort Worth, Texas		
PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 2	



: Approximate Boring Location

Image obtained from Google Earth Pro,September 2023.

HVJ ASSOCIATES

8701 John Carpenter Fwy, Suite 250
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3

: Approximate Boring Location

Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES	8701 John Carpenter Fwy, Suite 250 Dallas, TX 75247	
DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ
PLAN OF BORINGS W Bailey Boswell Rd in Fort Worth, Texas		
PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3A	

: Approximate Boring Location

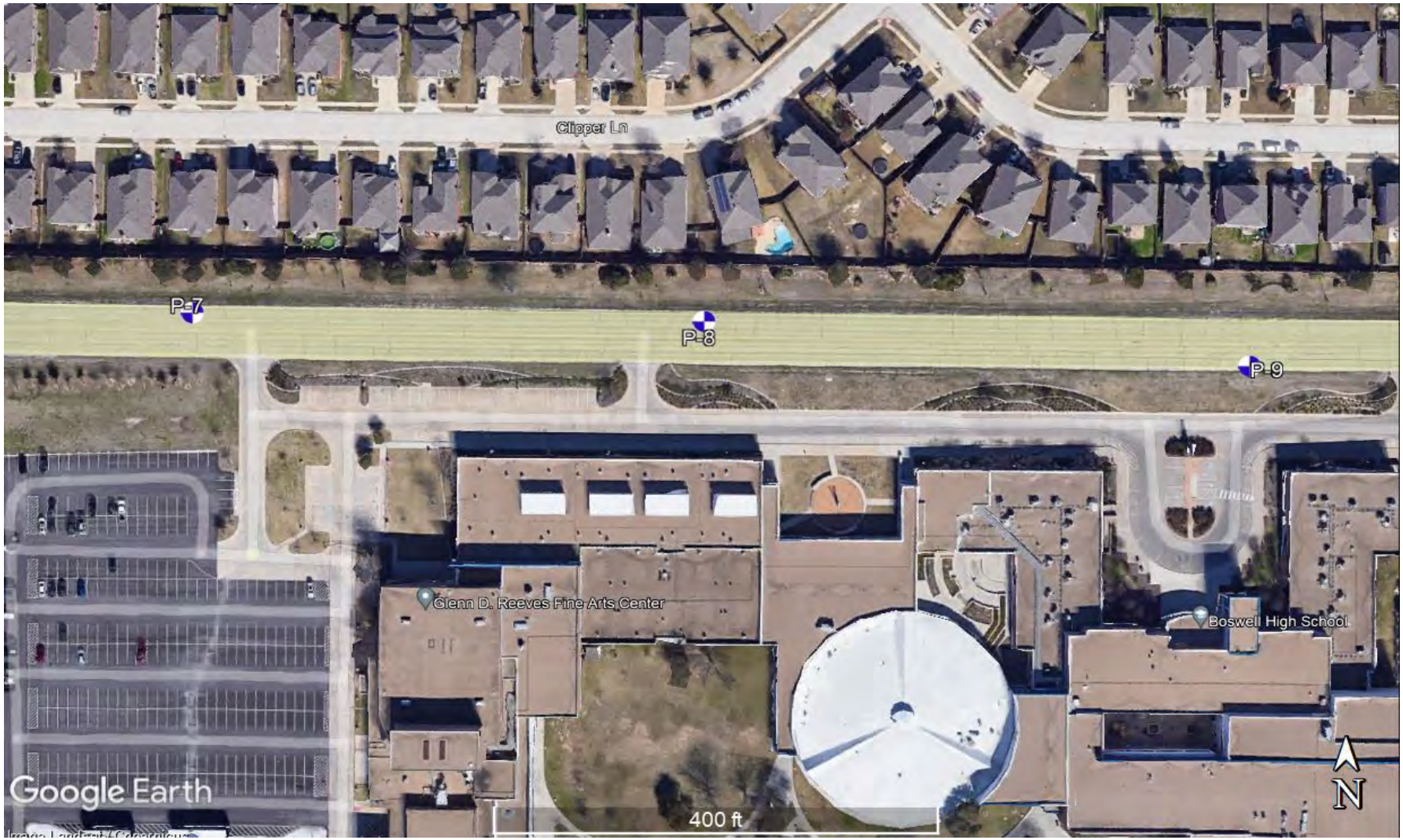
Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES
8701 John Carpenter Fwy, Suite 250
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3B



: Approximate Boring Location

Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES
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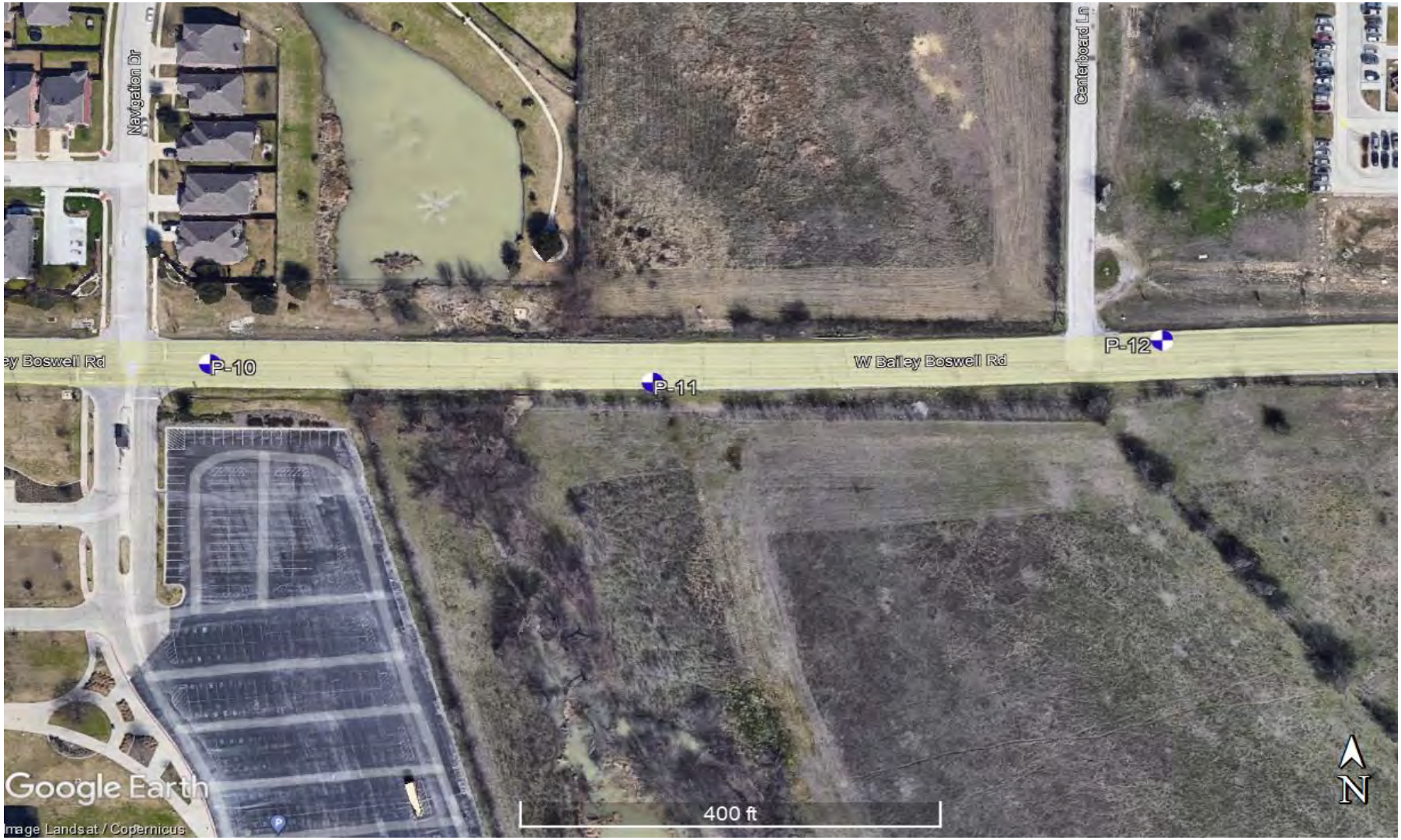
DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3C



: Approximate Boring Location

Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES

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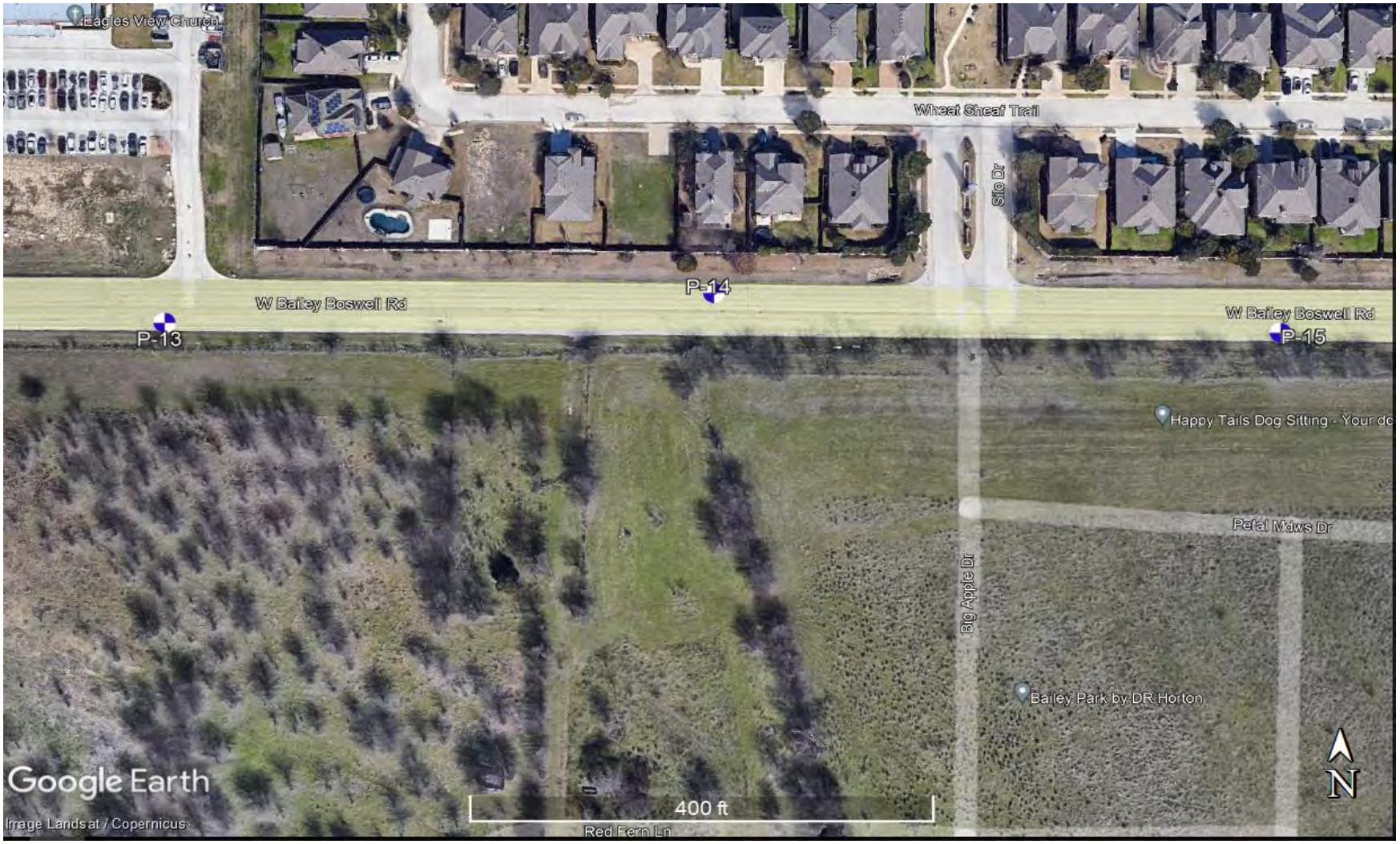
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3D



: Approximate Bridge Location

Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES
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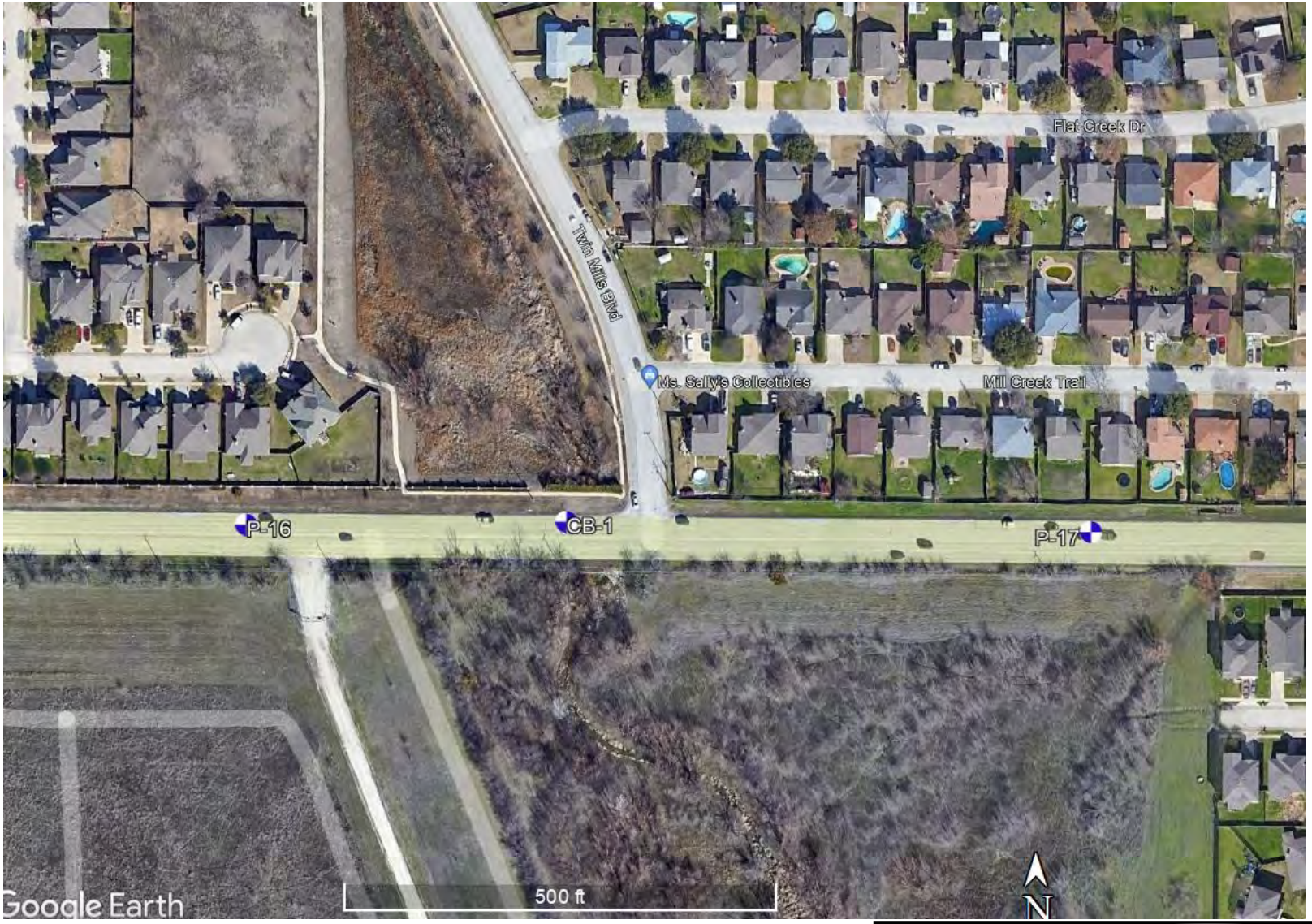
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3E



: Approximate Boring Location

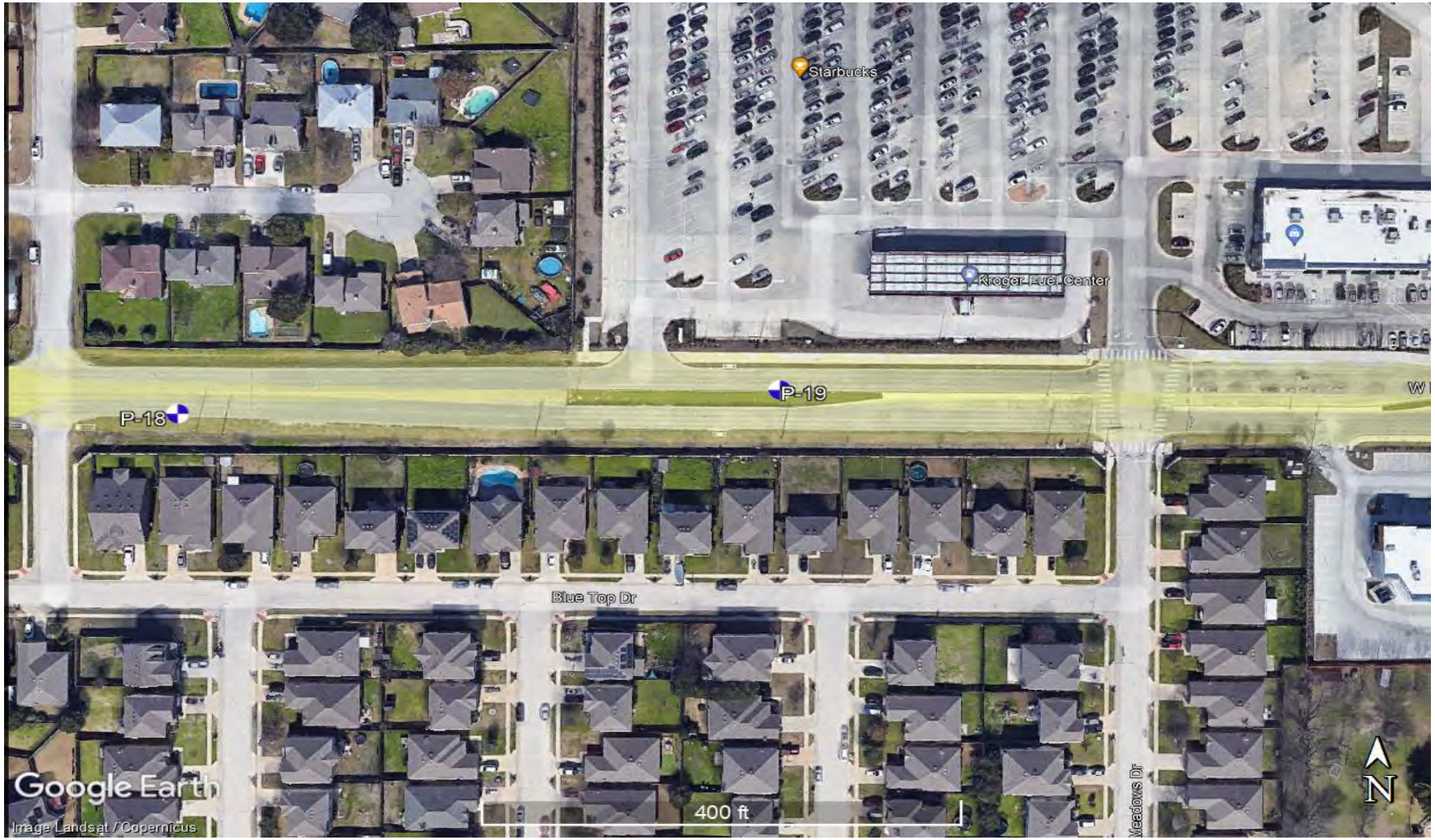
Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES
8701 John Carpenter Fwy, Suite 250
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3F



: Approximate Boring Location

Image obtained from Google Earth Pro, June 2023.

HVJ ASSOCIATES
8701 John Carpenter Fwy, Suite 250
Dallas, TX 75247

DATE: 9/5/2023	APPROVED BY: SU	PREPARED BY: JJ

PLAN OF BORINGS
W Bailey Boswell Rd in Fort Worth, Texas

PROJECT NO.: DG-22-10349	DRAWING NO.: PLATE 3G

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-1B
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/3/2023
Latitude: 32.881034
Longitude: -97.424933

Project No.: DG2210349
Elevation: 843.22 feet
Station: 2+82.67
Offset: 16.31' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 6 inches, lime treated		
		CLAYEY SAND WITH GRAVEL (SC), dense, moist, brown, with iron oxides	41	
840	16-8-8	**SANDY LEAN CLAY (CL)**, very stiff, moist, light brown, with iron staining		
5			61	
		LEAN CLAY WITH SAND (CL), very stiff, moist, light brown, with limestone fragments and iron staining	77	
835				
10		Boring terminated at 10 feet below ground surface.		
830				
15				
825				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 4

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-2
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.88101
Longitude: -97.422674

Project No.: DG2210349
Elevation: 840.41 feet
Station: 4+73.59
Offset: 17.07' LT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
840 / 0		**ASPHALT**, 5 inches		
		BASE, 6 inches, lime treated		
		SILTY, CLAYEY GRAVEL WITH SAND (GP-GC), dense, moist, grayish brown	6	
		SANDY FAT CLAY (CH), stiff to very stiff, moist, dark brown, with calcareous nodules and iron oxides	56	100
835 / 5		**LEAN CLAY (CL)**, very stiff, moist, tan, with limestone fragments. calcareous nodules and iron oxides	95	
830 / 10		Boring terminated at 10 feet below ground surface.		
825 / 15				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT ⊢ LIQUID LIMIT
10 20 30 40 50 60 70 80 90
Non-Plastic

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 5

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-3
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.881093
Longitude: -97.421060

Project No.: DG2210349
Elevation: 832.42 feet
Station: 9+76.27
Offset: 17.49' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASHPHALT**, 4 inches		
		BASE, 6 inches, lime treated		
		SANDY LEAN CLAY WITH GRAVEL (CL), stiff to very stiff, moist, grayish brown, with limestone fragments, iron oxides and calcareous nodules	52	
830				
5	6-7-7			
		FAT CLAY WITH SAND (CH), very stiff, moist, tan, with iron oxides , calcareous deposits and nodules	83	99
825				
		FAT CLAY (CH), stiff, moist, dark grayish brown, with iron oxides, calcareous deposits and nodules	96	
10		Boring terminated at 10 feet below ground surface.		
820				
15				
815				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 6

HVJ ASSOCIATES

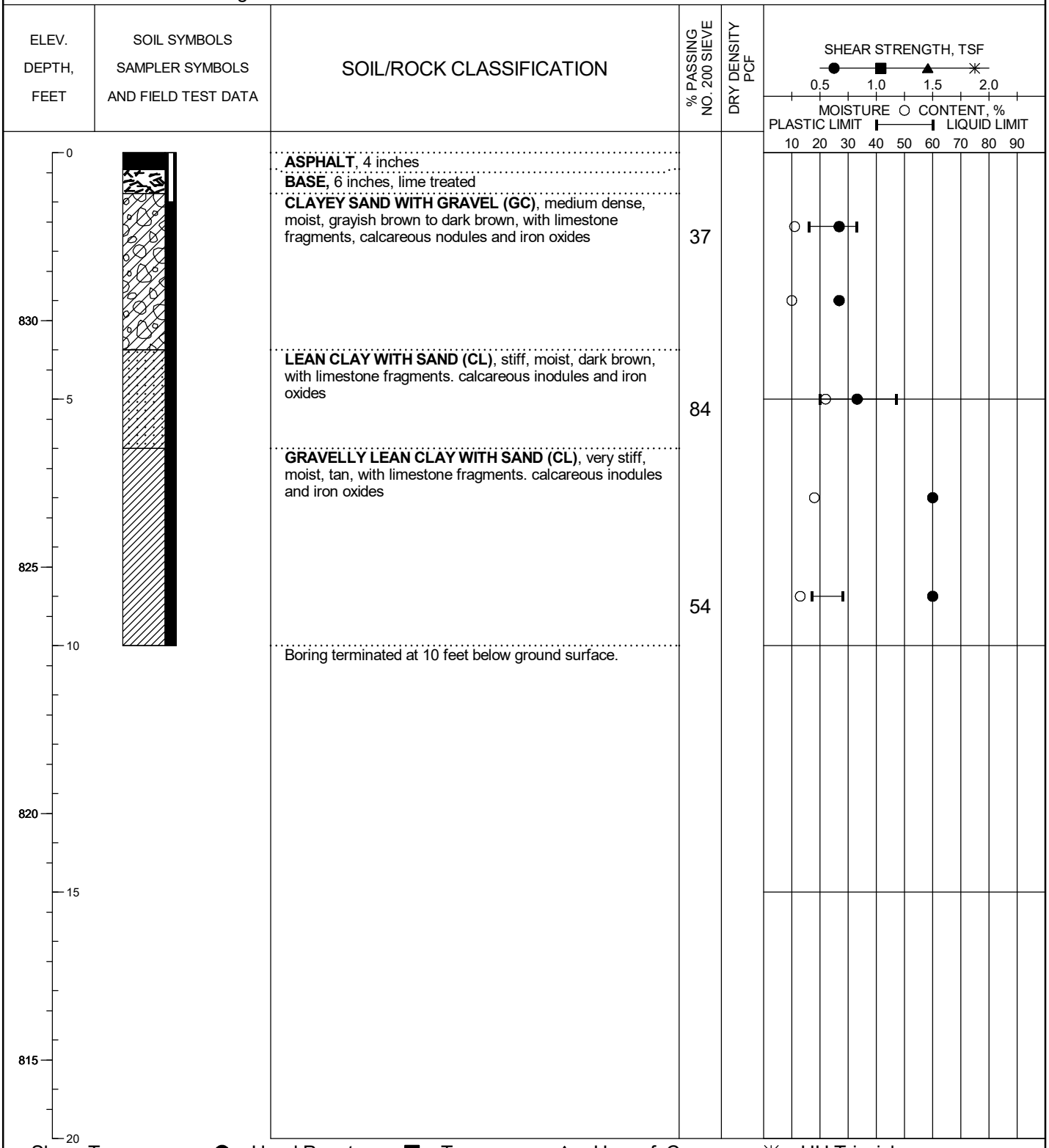
LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-4
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.881043
Longitude: -97.421060

Project No.: DG2210349
Elevation: 833.41 feet
Station: 14+65.62
Offset: 10.04' LT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 7

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-5
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/3/2023
Latitude: 32.880982
Longitude: -97.419413

Project No.: DG2210349
Elevation: 832.91 feet
Station: 19+77.82
Offset: 24.75' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 4 inches		
		BASE, 6 inches, lime treated		
830		**GRAVELLY FAT CLAY WITH SAND (CH)**, stiff to very stiff, moist, grayish brown, with iron oxides and calcareous nodules, with subrounded gravel	61	93
5	32-20-6	**SILTY SAND WITH GRAVEL (GM)**, dense to very dense, moist, brown, with limestone fragments and iron oxides	30	
825		**LEAN CLAY (CL)**, very stiff, moist, tan, with limestone fragments, calcareous and iron oxides	89	
		HIGHLY WEATHERED LIMESTONE, hard, tan, with clay seams		
10	50/2"-50/0.25"	Boring terminated at 10 feet below ground surface.		
820				
15				
815				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90
Non-Plastic

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 8

HVJ ASSOCIATES

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-6
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.881062
Longitude: -97.417901

Project No.: DG2210349
Elevation: 837.07 feet
Station: 24+41.69
Offset: 9.43' LT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 4 inches		
		BASE, 7 inches, lime treated		
		GRAVEL WITH CLAY AND SAND (GP-GC), loose to medium dense, grayish brown, with clay and limestone fragments	12	
835		**CLAYEY GRAVEL WITH SAND (GC)**, dense, moist, tan and grayish brown, with limestone fragments, calcareous nodules and iron oxides	44	
		HIGHLY WEATHERED LIMESTONE, hard, tan and white, with clay seams, finely grained		
5	43-25-50/3"			
830				
10	50/0.5"-50/0.25"	Boring terminated at 10 feet below ground surface.		
825				
15				
820				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90
Non-Plastic

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 9

HVJ ASSOCIATES

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-7
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.881048
Longitude: -97.416304

Project No.: DG2210349
Elevation: 832.34 feet
Station: 29+32.01
Offset: 9.70' LT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 7 inches, lime treated		
		GRAVEL, SILTY, CLAY WITH SAND (GP-GC), very stiff, dark brown, with subrounded gravel	5	
830		**LEAN CLAY (CL)**, very stiff, moist, dark brown and brown	86	
5		**CLAYEY GRAVEL WITH GRAVEL (SP-SC)**, dense, moist, dark grayish brown, with calcareous nodules and iron oxide	7	
825	50/3.5"	**HIGHLY WEATHERED LIMESTONE**, hard, tan and white, with clay seams		
10	47/6"-50/2"	Boring terminated at 10 feet below ground surface.		
820				
15				
815				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90
Non-Plastic

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 10

HVJ ASSOCIATES

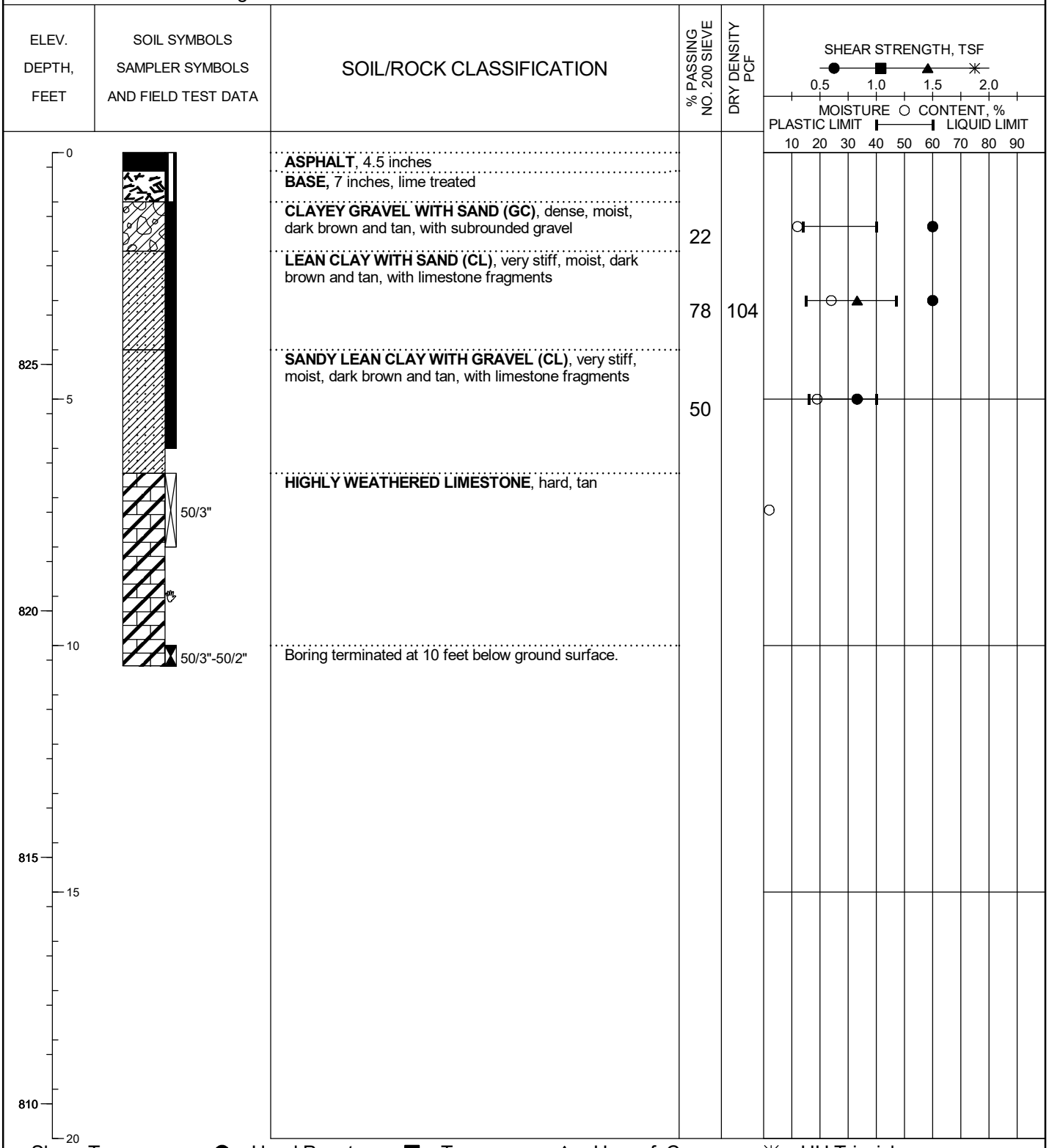
LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-8
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.881025
Longitude: -97.414792

Project No.: DG2210349
Elevation: 829.3 feet
Station: 33+96.28
Offset: 6.43' LT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 11

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

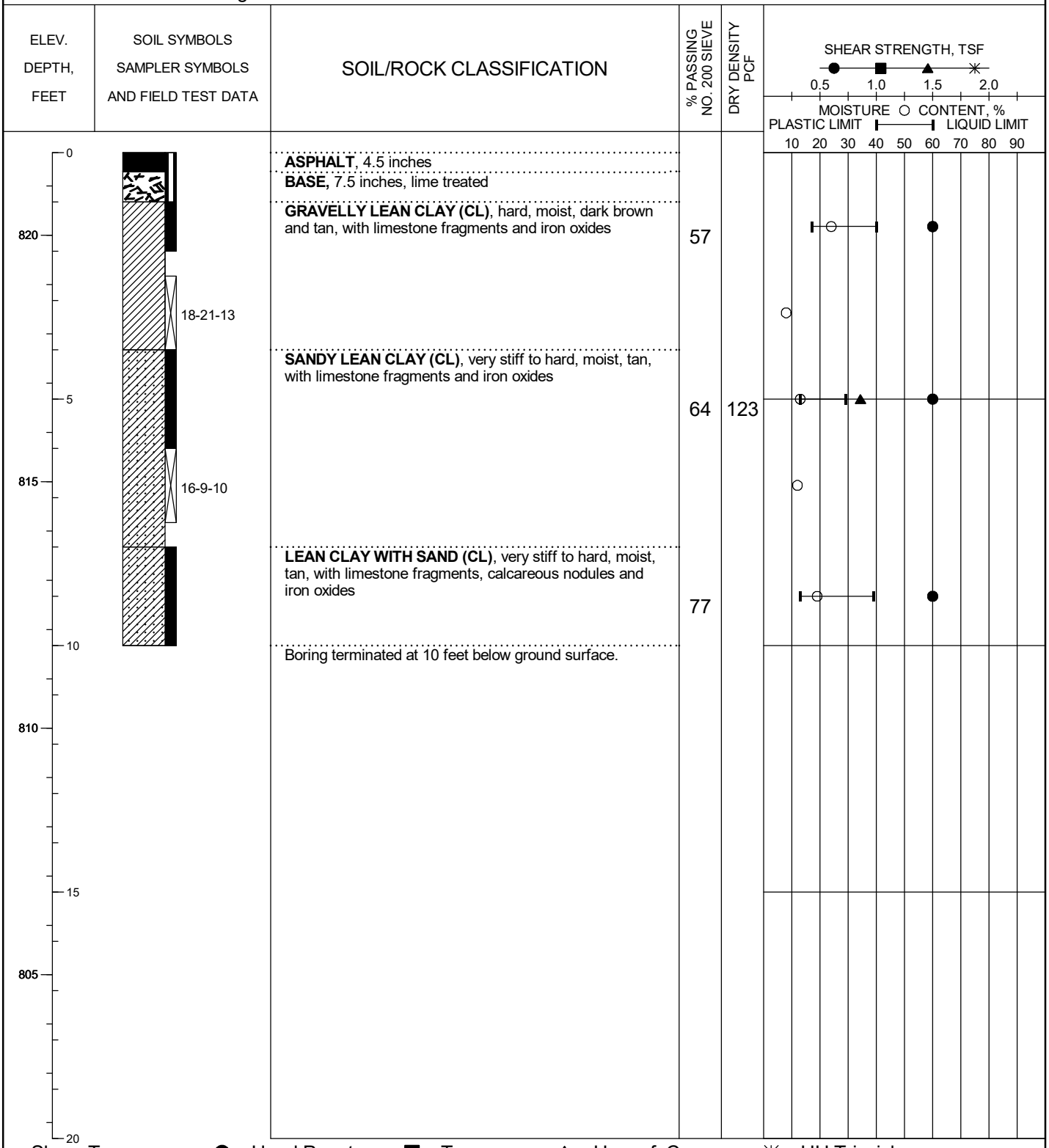
HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-9
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.880908
Longitude: -97.413168

Project No.: DG2210349
Elevation: 821.68 feet
Station: 38+95.32
Offset: 30.67' RT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 12

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-10
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.880997
Longitude: -97.411454

Project No.: DG2210349
Elevation: 804.17 feet
Station: 44+21.15
Offset: 7.50' LT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 7 inches, lime treated		
		CLAYEY GRAVEL WITH SAND (GC), dense, moist, brown, tan and grayish brown, with limestone fragments	33	
800		**FAT CLAY (CH)**, stiff, moist, drak grayish brown, with calcareous nodules and iron oxide		
5			93	
		FAT CLAY (CH), stiff, moist, dark brown, with calcareous nodules and iron oxide		
795			85	99
10		Boring terminated at 10 feet below ground surface.		
790				
15				
785				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 13

HVJ ASSOCIATES

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-11
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/2/2023
Latitude: 32.880893
Longitude: -97.410093

Project No.: DG2210349
Elevation: 801.78 feet
Station: 48+39.38
Offset: 25.73' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 6 inches, lime treated		
800		**FAT CLAY (CH)**, stiff to very stiff, moist, grayish brown to dark grayish brown, with limestone fragments and iron oxides	85	
5		**FAT CLAY WITH SAND (CH)**, stiff, moist, dark grayish brown, with calcareous nodules and iron oxides	83	
795		**FAT CLAY (CH)**, stiff, moist, dark grayish brown, with calcareous nodules and iron oxides	89	90
10		Boring terminated at 10 feet below ground surface.		
790				
15				
785				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 14

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-12
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.880893
Longitude: -97.410093

Project No.: DG2210349
Elevation: 811.72 feet
Station: 53+16.96
Offset: 18.25' LT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 6 inches, lime treated		
810		**SANDY FAT CLAY WITH GRAVEL (CH)**, very stiff, moist, brown and tan, with limestone fragments and iron oxides	61	
5		**SANDY LEAN CLAY (CL)**, very stiff, moist, tan, with limestone fragments, calcareous nodules and iron oxides	57	
805				
			84	
10		Boring terminated at 10 feet below ground surface.		
800				
15				
795				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 15

HVJ ASSOCIATES

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

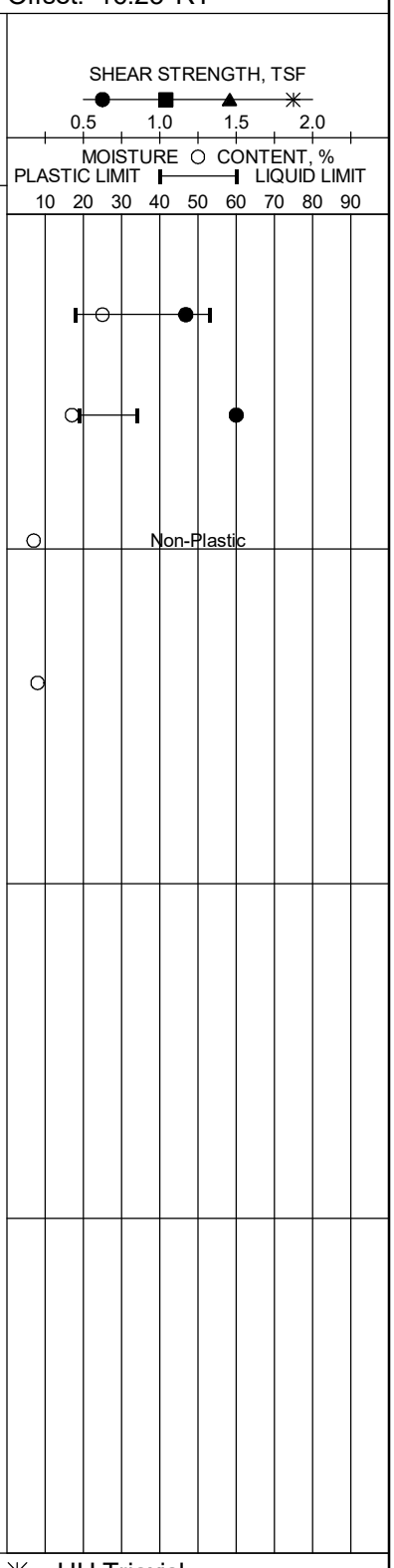
LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-13
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/3/2023
Latitude: 32.880943
Longitude: -97.406949

Project No.: DG2210349
Elevation: 818.52 feet
Station: 58+04.74
Offset: 16.23' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 6 inchese, lime treated		
		FAT CLAY WITH GRAVEL (CH), stiff to very stiff, moist, brown, with iron oxides and iron staining	84	
815		**SANDY LEAN CLAY WITH GRAVEL (CL)**, very stiff to hard, moist, light brown, with iron staining and weathered limestone fragments	55	
5	19-50/3"	**MODERATELY WEATHERED LIMESTONE**, soft to hard, tan, with clay semas	19	
810				
10		Boring terminated at 10 feet below ground surface.		
805				
15				
800				
20				



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 16

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

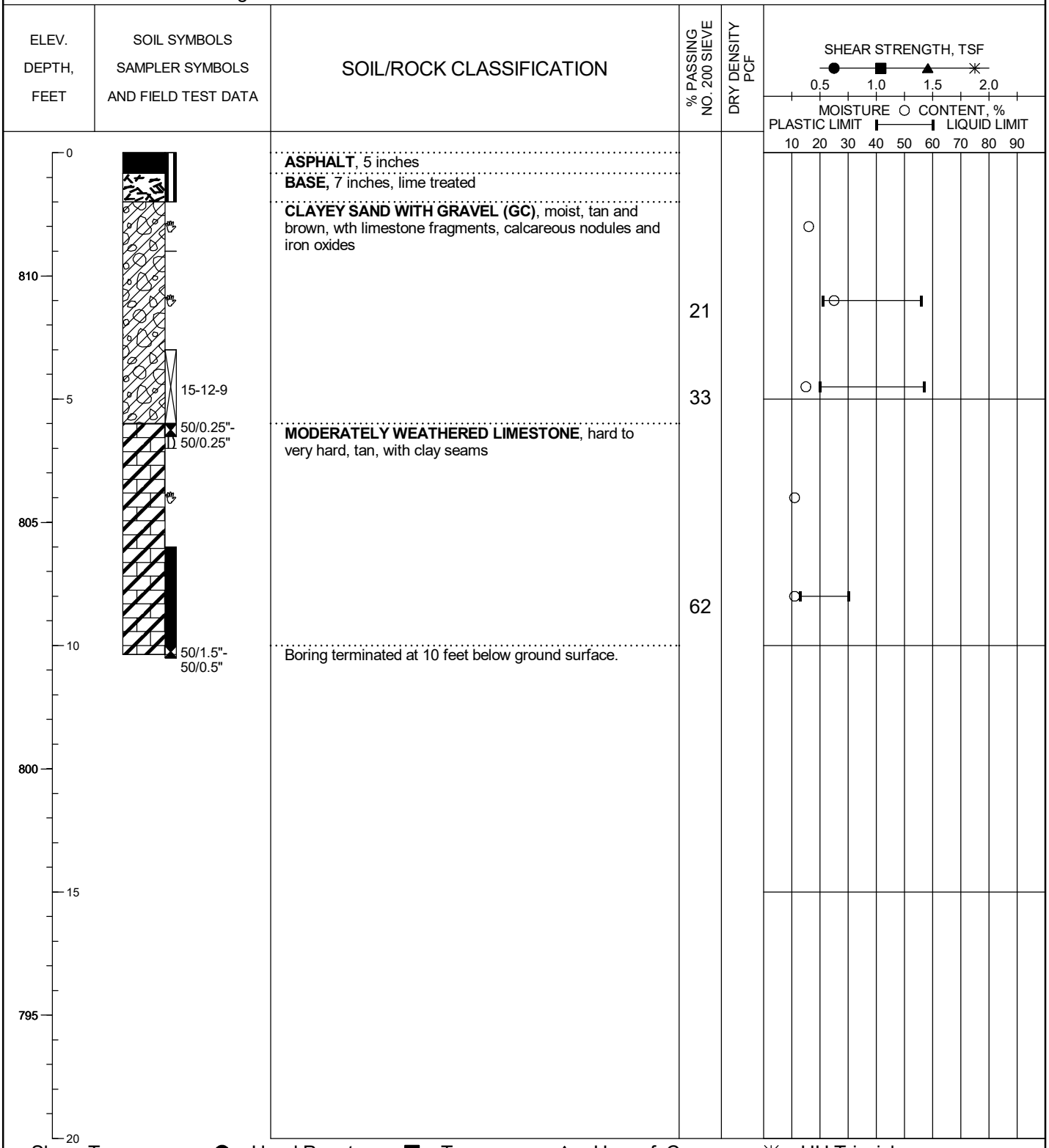
HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-14
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.881023
Longitude: -97.405396

Project No.: DG2210349
Elevation: 812.5 feet
Station: 62+81.22
Offset: 17.62' LT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 17

HVJ ASSOCIATES

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-15
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/3/2023
Latitude: 32.880919
Longitude: -97.403777

Project No.: DG2210349
Elevation: 804.52 feet
Station: 67+78.63
Offset: 15.27' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 5 inches		
		BASE, 6 inches, lime treated		
		CLAYEY SAND WITH GRAVEL (SC), medium dense, moist, brown, with subrounded gravel, iron staining and iron oxides	44	84
800 5		**FAT CLAY (CH)**, hard, moist, brown, with limestone fragments and iron staining	95	
	17-9-14	**SANDY LEAN CLAY WITH GRAVEL (CL)**, stiff to very stiff, moist, light brown, with iron stains and weathered limestone fragments		
795 10	23-50/4"	**CLAYEY GRAVEL WITH SAND (GC-GM)**, hard, moist, light brown, with limestone fragments and iron staining	18	
		Boring terminated at 10 feet below ground surface.		
790 15				
785 20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT ⊢ LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 18

HVJ ASSOCIATES

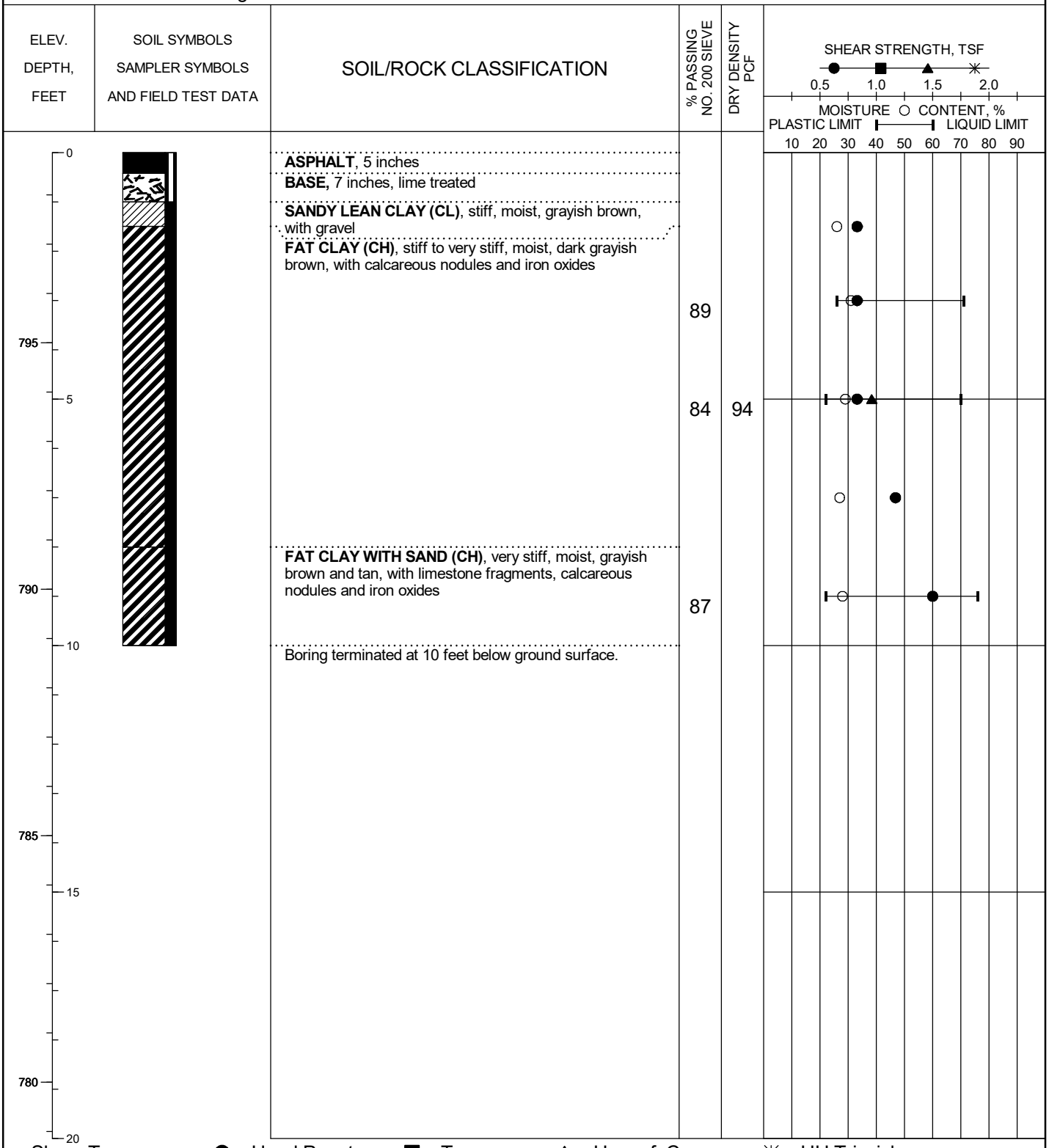
LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-16
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.880998
Longitude: -97.402218

Project No.: DG2210349
Elevation: 798.86 feet
Station: 72+56.95
Offset: 18.24' LT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 19

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

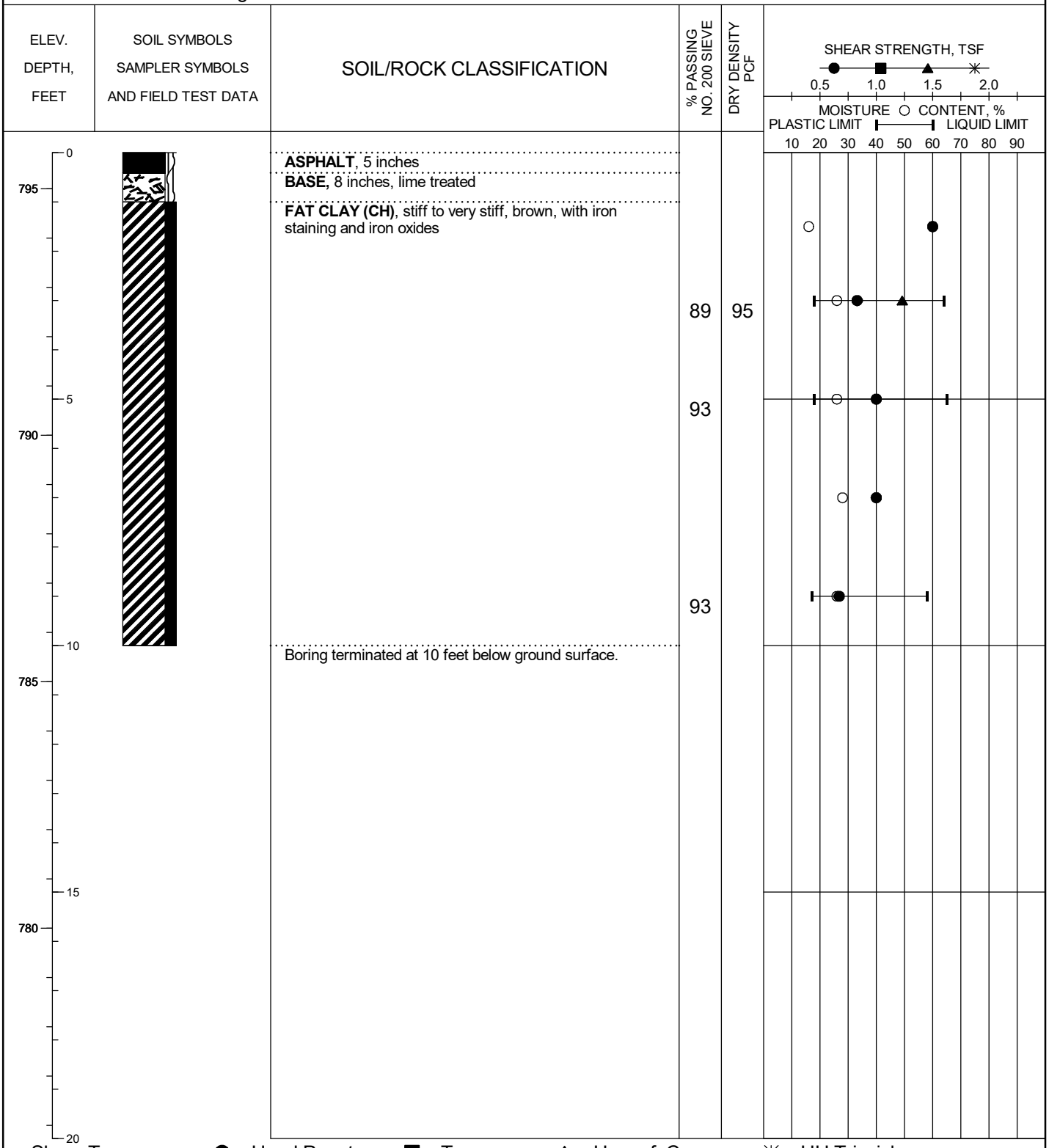
HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-17
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.880929
Longitude: -97.399091

Project No.: DG2210349
Elevation: 795.73 feet
Station: 82+32.36
Offset: 21.08' LT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 20

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-18
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/3/2023
Latitude: 32.880867
Longitude: -97.397934

Project No.: DG2210349
Elevation: 798.31 feet
Station: 87+26.12
Offset: 14.73' RT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**ASPHALT**, 3.5 inches **BASE,** 7 inches, lime treated		
795		**CLAYEY SAND WITH GRAVEL (SC)**, medium dense, moist, brown, with iron oxides and iron staining	46	109
5		**CLAYEY GRAVEL WITH SAND (GC)**, medium dense, moist, brown, with iron oxides and iron staining	22	
790		**HIGHLY WEATHERED LIMESTONE**, soft, light brown, with clay seams	70	
10		Boring terminated at 10 feet below ground surface.		
785				
15				
780				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 21

HVJ ASSOCIATES

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: P-19
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.880976
Longitude: -97.395793

Project No.: DG2210349
Elevation: 801.86 feet
Station: 92+29.69
Offset: 11.79' LT

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
0		**CONCRETE**, 10 inches		
		BASE, 2 inches, lime treated		
800		**FAT CLAY WITH SAND (CH)**, very stiff to moist, brown, with iron oxides nodules	78	
		FAT CLAY (CH), very stiff to moist, brown and light brown to light brown, with iron oxides and iron staining	94	
5				109
795		**SANDY LEAN CLAY WITH GRAVEL (CL)**, stiff to hard to moist, light brown, with weathered limestone fragments, iron oxides and iron staining	57	
	50/6"			
10		Boring terminated at 10 feet below ground surface.		
790				
15				
785				
20				

SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 22

HVJ ASSOCIATES

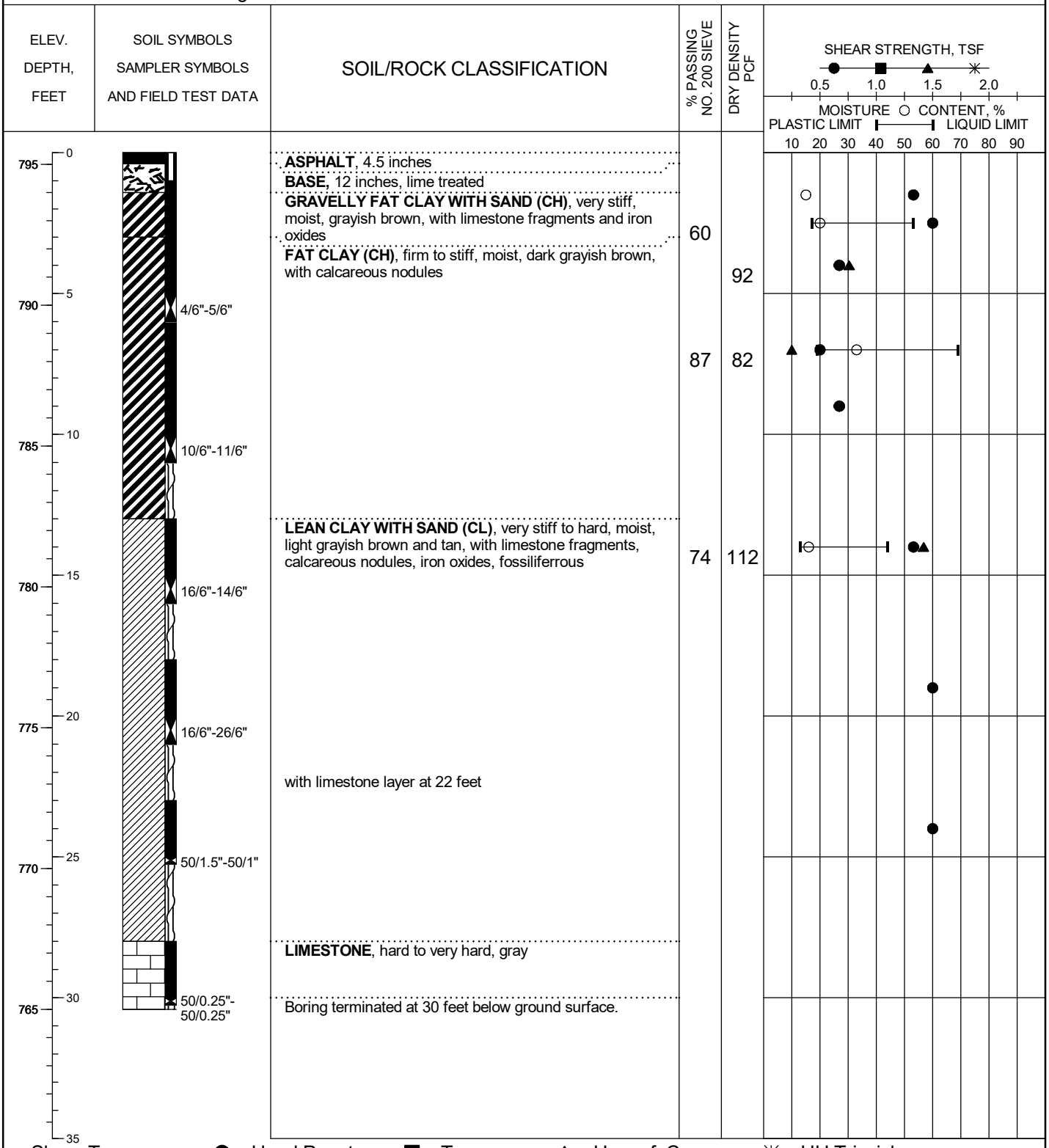
LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

LOG OF BORING

Project: W. Bailey Boswell Road Improvements
Boring No.: CB-1
Groundwater during drilling: Not Encountered
Groundwater after drilling: ---

Date: 5/1/2023
Latitude: 32.880492
Longitude: -97.401016

Project No.: DG2210349
Elevation: 795.42 feet
Station: 76+25.99
Offset: 19.75' LT



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE 23

LOG OF SOIL BORING BAILEY BOSWELL.GPJ HVJ.GDT 10/30/23

HVJ ASSOCIATES

SOIL AND ROCK SYMBOLS

- Asphalt
- Base
- USCS High Plasticity Clay
- USCS Low Plasticity Clay
- Concrete
- USCS Poorly-graded Gravel
- USCS Poorly-graded Gravel with Clay
- USCS Well-graded Gravel with Clay
- Limestone

SAMPLER TYPES

- Grab Sample
- Split Spoon
- Shelby Tube

DRILLING TYPES

- Solid-Stem Continous Flight Auger

WATER LEVEL SYMBOLS

- Groundwater meaured during drilling operations
- Groundwater meaured after drilling operations

SOIL GRAIN SIZE

Classification	Particle Size	Particle Size or Sieve No. (U.S. Standard)
Clay	<0.002 mm	<0.002 mm
Silt	0.002 - 0.075 mm	0.002 mm - # 200 sieve
Sand	0.075 - 4.75 mm	# 200 sieve - # 4 sieve
Gravel	4.7 - 75 mm	# 4 sieve - 3 in.
Cobble	75 - 200 mm	3 in. - 8 in.
Boulder	> 200 mm	> 8 in.

DENSITY OF COHESIONLESS SOILS

Descriptive Term	Penetration Resistance "N" * Blows/ft
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	>50

CONSISTENCY OF COHESIVE SOILS

Consistency	Undrained Shear Strength (tsf)	Penetration Resistance "N"* (Blows/ft)
Very Soft	0-0.125	<2
Soft	0.125-0.25	2-4
Firm	0.25-0.5	4-8
Stiff	0.5-1.0	8-15
Very Stiff	1.0-2.0	15-30
Hard	>2.0	>30

PENETRATION RESISTANCE

#-#-#	Blows required penetrating each of three consecutive 6-inches per ASTM D-1586*
50/4"	If more than 50 blows are required, driving is discontinued and penetration at 50 blows is noted
(4/6")	Texas Cone Penetration blows required penetrating each of two consecutive 6-inches per TEX-132-E

*The N value is taken as the blows required to penetrate the final 12 inches

TERMS DESCRIBING SOIL STRUCTURE

Slickensided	Fracture planes appear polished or glossy, sometimes striated
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Inclusion	Small pockets of different soils, such as small lenses of sand scattered through a mass of clay
Parting	Inclusion less than 1/4 inch thick extending through the sample
Seam	Inclusion 1/4 inch to 3 inches thick extending through the sample
Layer	Inclusion greater than 3 inches thick extending through the sample
Laminated	Soil sample composed of alternating partings of different soil type
Stratified	Soil sample composed of alternating seams or layers of different soil type
Intermixed	Soil sample composed of pockets of different soil type and laminated or stratified structure is not evident
Calcareous	Having appreciable quantities of calcium carbonate
Ferrous	Having appreciable quantities of iron
Nodule	A small mass of irregular shape

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KEY TO TERMS AND SYMBOLS USED ON BORING LOGS

W Bailey Boswell Rd in FW, TNP

PROJECT NUMBER: DG2210349

DRAWING NUMBER: Plate 24A

ROCK WEATHERING/ALTERATION

Residual	Original minerals of rock have been entirely decomposed to secondary minerals, and original rock fabric is not apparent; material can be easily broken by hand
Extremely Weathered	Original minerals of rock have been almost entirely decomposed to secondary minerals, although original fabric may be intact; material can be granulated by hand
Highly Weathered	More than half of the rock is decomposed; rock is weakened so that minimum 2-inch-diameter sample can be broken readily by hand across rock fabric
Moderately Weathered	Rock is discolored and noticeably weakened, but less than half is decomposed; a minimum 2-inch-diameter sample cannot be broken readily by hand across rock fabric
Slightly Weathered	Rock is slightly discolored or dulled, but not noticeably lower in strength than fresh rock
Fresh	Rock shows no discoloration, loss of strength, or other effect of weathering/alteration, except on or immediately adjacent to joint surfaces

SOLUTION AND VOID CONDITIONS

Void	Interstice; a general term for pore space or other openings in rock.
Cavities	Small solutional concavities.
Vuggy	Containing small cavities, usually lined with a mineral of different composition from that of the surrounding rock.
Vesicular	Containing numerous small, unlined cavities, formed by expansion of gas bubbles or steam during solidification of the rock.
Porous	Containing pores, interstices, or other openings which may or may not interconnect.
Cavernous	Containing cavities or caverns, sometimes quite large. Most frequent in limestones and dolomites.

SCRATCH HARDNESS

Soft	Applicable only to plastic material
Friable	Easily crumbled by hand, pulverized, or reduced to powder; too soft to be cut by pocket knife
Low Hardness	Can be gouged deeply or carved with a pocket knife
Moderately Hard	Can be readily scratched by knife blade; scratch leaves heavy trace of dust and is readily visible after powder has been blown away
Hard	Can be scratched with pocket knife only with difficulty; scratch produces little powder; traces of knife steel may be visible
Very Hard	Cannot be scratched with pocket knife; knife steel marks are left on surface

JOINT DESCRIPTION

SPACING		INCLINATION		SURFACES	
Very Close	<2"	Horizontal	0-5	Slickensided	Polished, grooved
Close	2"-12"	Shallow	5-35	Smooth	Planar
Medium Close	12"-3'	Moderate	35-65	Irregular	Undulating or granular
Wide	>3'	Steep	65-85	Rough	Jagged or pitted
		Vertical	85-90		

REFERENCES

(1) British Standard (1981) Code of Practice for Site Investigation, BS 5930.

(2) The Bridge Div., Tx. Highway Dept. Foundation Exploration & Design Manual, 2nd Division, revised June, 1974.

BEDDING THICKNESS[(2)]

Very Thick	>4'
Thick	2'-4'
Thin	2"-2'
Very Thin	1/2"-2"
Laminated	0.08"-1/2"
Thinly Laminated	<0.08"

Information on each boring log is a compilation of subsurface conditions and soil and rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the times and places indicated, and may vary with time, geologic condition or construction activity.

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KEY TO TERMS AND SYMBOLS USED ON BORING LOGS

W Bailey Boswell Rd in FW, TNP

PROJECT NUMBER:	DRAWING NUMBER:
DG2210349	Plate 24B

APPENDIX A

SUMMARY OF LABORATORY TEST RESULTS

Borehole No.	Depth (ft)	Moisture Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Percent Finer Than #4 Sieve (%)	Percent Finer Than #40 Sieve (%)	Percent Finer Than #200 Sieve (%)	Dry Unit Weight (pcf)	Soil Shear Strength (UC) (tsf)	Sulfate Content (ppm)
P-1B	1 - 2	10.8	32	14	18	71	49	41	-	-	-
P-1B	2.5 - 4	12.3	-	-	-	-	-	-	-	-	-
P-1B	4 - 6	15.8	28	16	12	91	73	61	-	-	-
P-1B	6 - 8	11.6	28	12	16	99	87	77	-	-	-
P-1B	8 - 10	11.4	-	-	-	-	-	-	-	-	-
P-2	1 - 2	16.7	NP	NP	NP	50	15	6	-	-	-
P-2	2 - 4	19.6	54	15	39	85	64	56	100	0.68	-
P-2	4 - 6	19.2	-	-	-	-	-	-	-	-	-
P-2	6 - 8	22.2	43	14	29	100	97	95	-	-	-
P-2	8 - 10	17.4	-	-	-	-	-	-	-	-	-
P-3	1 - 2	10.9	33	12	21	80	60	52	-	-	<100
P-3	2 - 4	11.5	-	-	-	-	-	-	-	-	-
P-3	6 - 8	26.7	76	17	59	96	87	83	99	1.11	-
P-3	8 - 10	33.7	77	18	59	100	98	96	-	-	-
P-4	1 - 2	10.8	33	16	17	65	45	37	-	-	-
P-4	2 - 4	10.3	-	-	-	-	-	-	-	-	-
P-4	4 - 6	21.5	47	20	27	99	91	84	-	-	-
P-4	6 - 8	17.7	-	-	-	-	-	-	-	-	-
P-4	8 - 10	13.0	28	17	11	72	59	54	-	-	-
P-5	1 - 2	12.9	-	-	-	-	-	-	-	-	-
P-5	2 - 4	19.2	65	24	41	77	67	61	93	0.94	-
P-5	4 - 5.5	9.3	NP	NP	NP	52	35	30	-	-	-
P-5	6 - 8	17.9	37	15	22	98	93	89	-	-	-
P-5	8 - 10	15.7	-	-	-	-	-	-	-	-	-
P-6	1 - 2	10.4	NP	NP	NP	47	21	12	-	-	1784
P-6	2 - 4	19.6	57	17	40	62	48	44	-	-	-

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Summary of Laboratory Results

W. Bailey Boswell Road Improvements

PROJECT NUMBER:	DRAWING NUMBER:
DG2210349	Appendix B-1

Borehole No.	Depth (ft)	Moisture Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Percent Finer Than #4 Sieve (%)	Percent Finer Than #40 Sieve (%)	Percent Finer Than #200 Sieve (%)	Dry Unit Weight (pcf)	Soil Shear Strength (UC) (tsf)	Sulfate Content (ppm)
P-6	4 - 5.5	8.9	-	-	-	-	-	-	-	-	-
P-6	6 - 8	8.6	-	-	-	-	-	-	-	-	-
P-7	1 - 2	7.1	NP	NP	NP	42	11	5	-	-	-
P-7	2 - 4	14.1	42	19	23	94	90	86	-	-	-
P-7	4 - 6	29.3	58	22	36	57	19	7	-	-	-
P-7	6 - 7.5	9.8	-	-	-	-	-	-	-	-	-
P-8	1 - 2	12.3	40	14	26	59	30	22	-	-	<100
P-8	2 - 4	24.4	47	15	32	100	89	78	104	0.83	-
P-8	4 - 6	18.5	40	16	24	81	60	50	-	-	-
P-8	6.5 - 8	2.3	-	-	-	-	-	-	-	-	-
P-9	1 - 2	23.7	40	17	23	70	63	57	-	-	-
P-9	2.5 - 4	8.3	-	-	-	-	-	-	-	-	-
P-9	4 - 6	12.7	29	13	16	96	76	64	123	0.86	-
P-9	6 - 7.5	11.8	-	-	-	-	-	-	-	-	-
P-9	8 - 10	19.4	39	13	26	98	84	77	-	-	-
P-10	1 - 2	12.1	-	-	-	-	-	-	-	-	198
P-10	2 - 4	12.8	40	15	25	60	40	33	-	-	-
P-10	4 - 6	33.6	71	27	44	100	98	93	-	-	-
P-10	6 - 8	31.5	-	-	-	-	-	-	-	-	-
P-10	8 - 10	26.5	72	21	51	96	89	85	99	1.11	-
P-11	1 - 2	11.9	-	-	-	-	-	-	-	-	-
P-11	2 - 4	31.0	67	19	48	98	92	85	-	-	-
P-11	4 - 6	46.2	78	21	57	98	90	83	-	-	-
P-11	6 - 8	33.3	-	-	-	-	-	-	90	0.57	-
P-11	8 - 10	36.7	79	18	61	97	92	89	-	-	-
P-12	1 - 2	11.6	-	-	-	-	-	-	-	-	593

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Summary of Laboratory Results

W. Bailey Boswell Road Improvements

PROJECT NUMBER:	DRAWING NUMBER:
DG2210349	Appendix B-2

Borehole No.	Depth (ft)	Moisture Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Percent Finer Than #4 Sieve (%)	Percent Finer Than #40 Sieve (%)	Percent Finer Than #200 Sieve (%)	Dry Unit Weight (pcf)	Soil Shear Strength (UC) (tsf)	Sulfate Content (ppm)
P-12	2 - 4	17.9	50	18	32	83	69	61	-	-	-
P-12	4 - 6	12.1	27	15	12	90	69	57	-	-	-
P-12	6 - 8	13.2	-	-	-	-	-	-	-	-	-
P-12	8 - 10	17.2	36	15	21	99	92	84	-	-	-
P-13	1 - 2	24.8	53	18	35	90	88	84	-	-	-
P-13	2 - 4	16.5	34	19	15	78	61	55	-	-	-
P-13	4.5 - 5.3	7.3	NP	NP	NP	47	25	19	-	-	-
P-13	6 - 8	8.1	-	-	-	-	-	-	-	-	-
P-14	1 - 2	16.2	-	-	-	-	-	-	-	-	2702
P-14	2 - 4	24.5	56	21	35	46	26	21	-	-	-
P-14	4 - 5.5	14.9	57	20	37	59	39	33	-	-	-
P-14	6 - 8	10.8	-	-	-	-	-	-	-	-	-
P-14	8 - 10	11.3	30	13	17	95	72	62	-	-	-
P-15	1 - 2	14.8	42	14	28	71	50	44	-	-	-
P-15	2 - 4	33.9	-	-	-	-	-	-	84	0.71	-
P-15	4 - 6	30.4	71	21	50	100	99	95	-	-	-
P-15	6.5 - 8	4.1	-	-	-	-	-	-	-	-	-
P-15	8.5 - 9.3	6.9	47	13	34	40	23	18	-	-	-
P-16	1 - 2	26.2	-	-	-	-	-	-	-	-	-
P-16	2 - 4	31.0	71	26	45	98	94	89	-	-	-
P-16	4 - 6	28.8	70	22	48	94	88	84	94	0.96	-
P-16	6 - 8	26.6	-	-	-	-	-	-	-	-	-
P-16	8 - 10	27.7	76	22	54	99	92	87	-	-	-
P-17	1 - 2	15.7	-	-	-	-	-	-	-	-	-
P-17	2 - 4	25.5	64	18	46	97	93	89	95	1.23	-
P-17	4 - 6	26.0	65	18	47	100	97	93	-	-	-

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Summary of Laboratory Results

W. Bailey Boswell Road Improvements

PROJECT NUMBER:	DRAWING NUMBER:
DG2210349	Appendix B-3

Borehole No.	Depth (ft)	Moisture Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Percent Finer Than #4 Sieve (%)	Percent Finer Than #40 Sieve (%)	Percent Finer Than #200 Sieve (%)	Dry Unit Weight (pcf)	Soil Shear Strength (UC) (tsf)	Sulfate Content (ppm)
P-17	6 - 8	28.2	-	-	-	-	-	-	-	-	-
P-17	8 - 10	26.4	58	17	41	99	96	93	-	-	-
P-18	1 - 2.2	17.7	51	16	35	77	54	46	-	-	-
P-18	2 - 4	15.6	-	-	-	-	-	-	109	0.66	-
P-18	4 - 6	12.4	50	17	33	50	29	22	-	-	-
P-18	6 - 8	13.0	32	14	18	90	78	70	-	-	-
P-19	1 - 2	31.8	77	32	45	97	86	78	-	-	-
P-19	2 - 4	29.2	66	23	43	100	98	94	-	-	-
P-19	4 - 6	15.5	-	-	-	-	-	-	109	1.09	-
P-19	6 - 8	12.9	28	14	14	84	68	57	-	-	-
P-19	8.5 - 9	10.9	-	-	-	-	-	-	-	-	-
CB-1	1 - 2	14.7	-	-	-	-	-	-	-	-	-
CB-1	2 - 3	19.8	53	17	36	75	65	60	-	-	-
CB-1	3 - 5	27.0	-	-	-	-	-	-	92	0.76	-
CB-1	6 - 8	33.4	69	19	50	98	92	87	82	0.25	-
CB-1	8 - 10	26.5	-	-	-	-	-	-	-	-	-
CB-1	13 - 15	16.3	44	13	31	88	80	74	112	1.42	-

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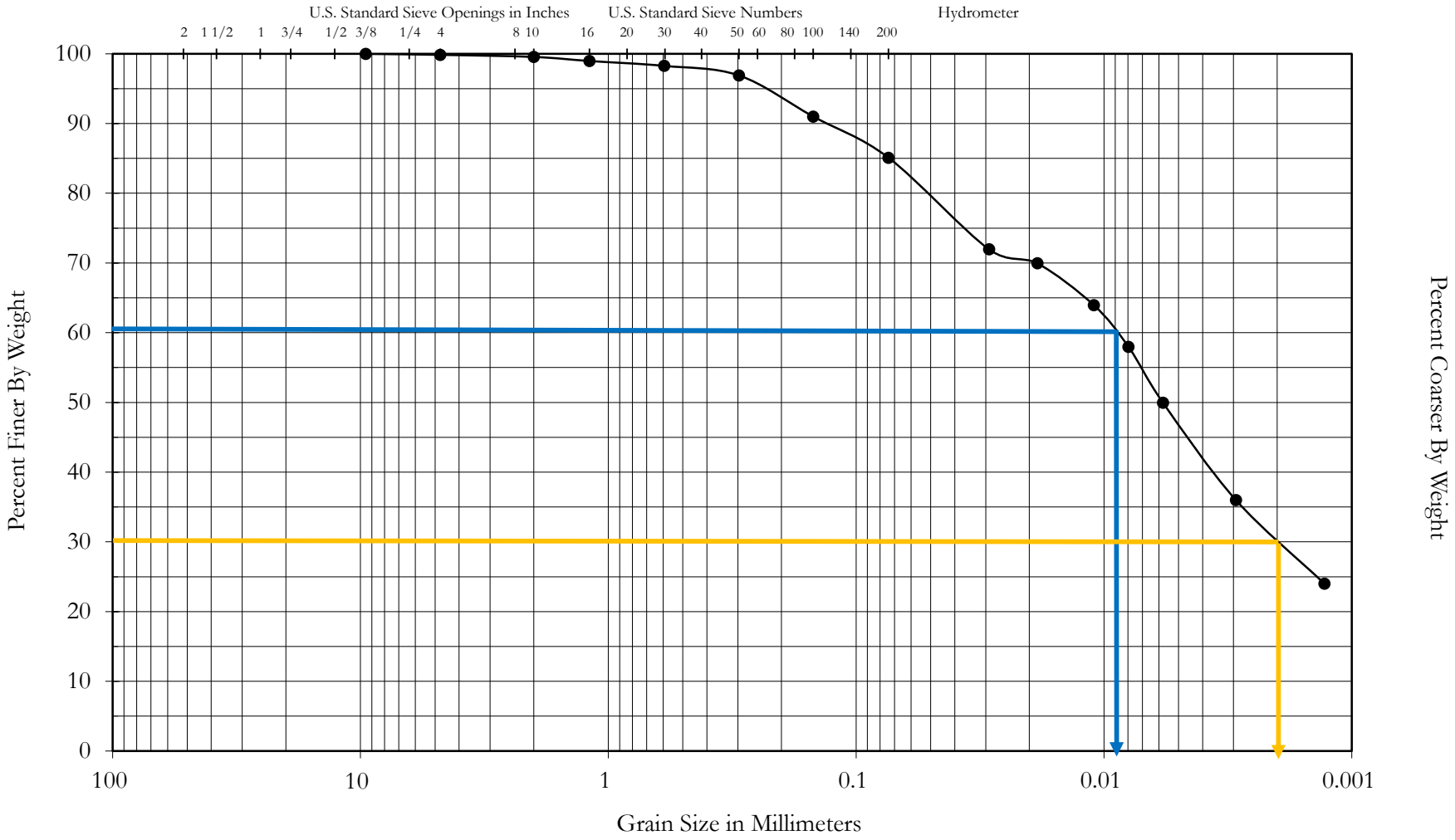
Summary of Laboratory Results

W. Bailey Boswell Road Improvements

PROJECT NUMBER:	DRAWING NUMBER:
DG2210349	Appendix B-4

APPENDIX B

SIEVE AND HYDROMETER TEST RESULTS



Sample Location	D_{10}, D_{30} & D_{60}	Classification
CB-1 8-10 ft	D_{30} = 0.002 mm D_{60} = 0.0088 mm	**Lean Clay**

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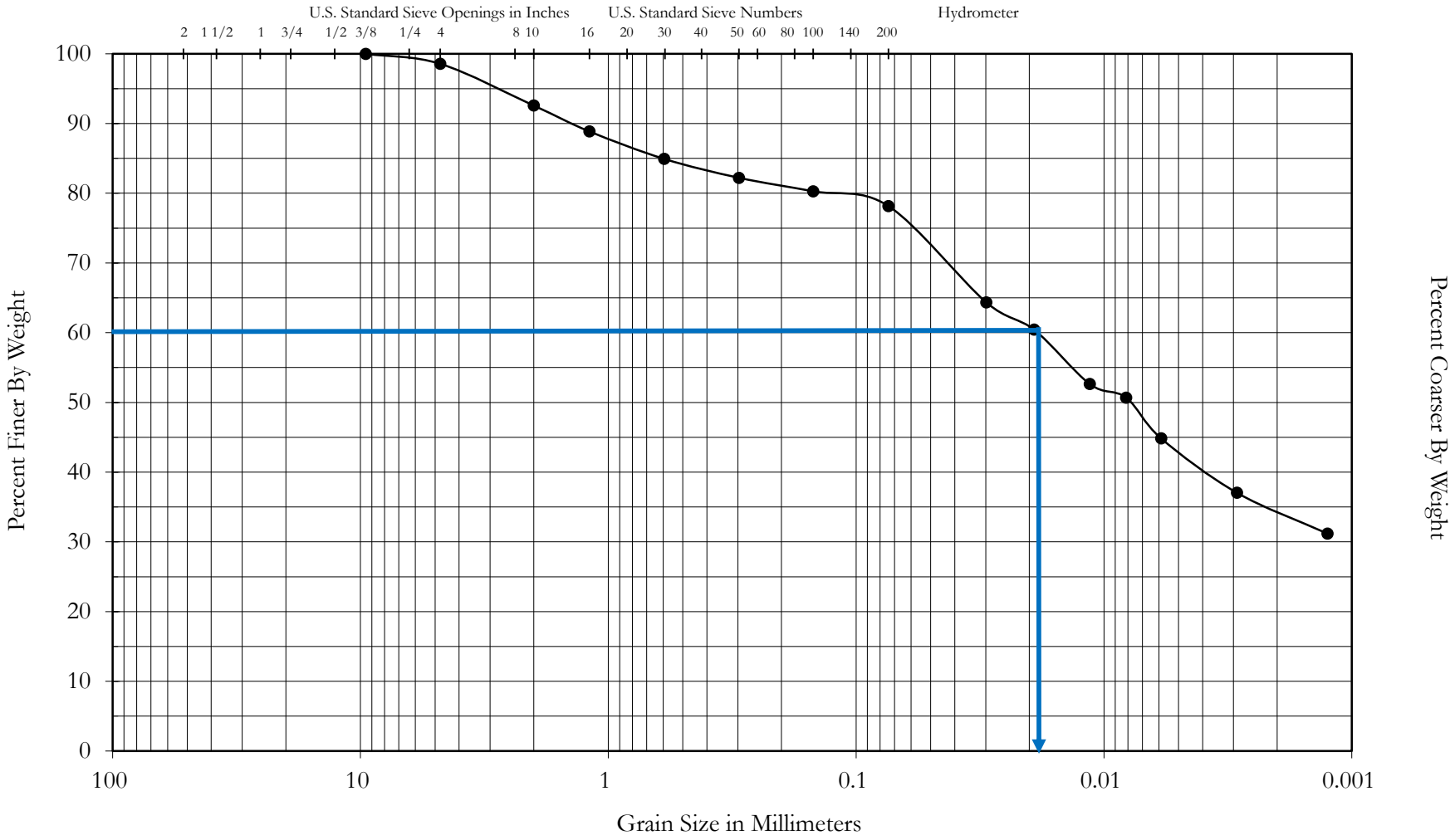
GRAIN SIZE ANALYSIS CURVE
ASTM D6913

PROJECT NO:
DG2210349

APPENDIX C-1



Sample Location	D_{10}, D_{30} & D_{60}	Classification
CB-1 8-10	D_{30} = N/A D_{60} = 0.018 mm	**Fat Clay**

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GRAIN SIZE ANALYSIS CURVE
ASTM D6913

PROJECT NO: DG2210349

APPENDIX C-1

APPENDIX C

LIME SERIES pH TEST RESULTS

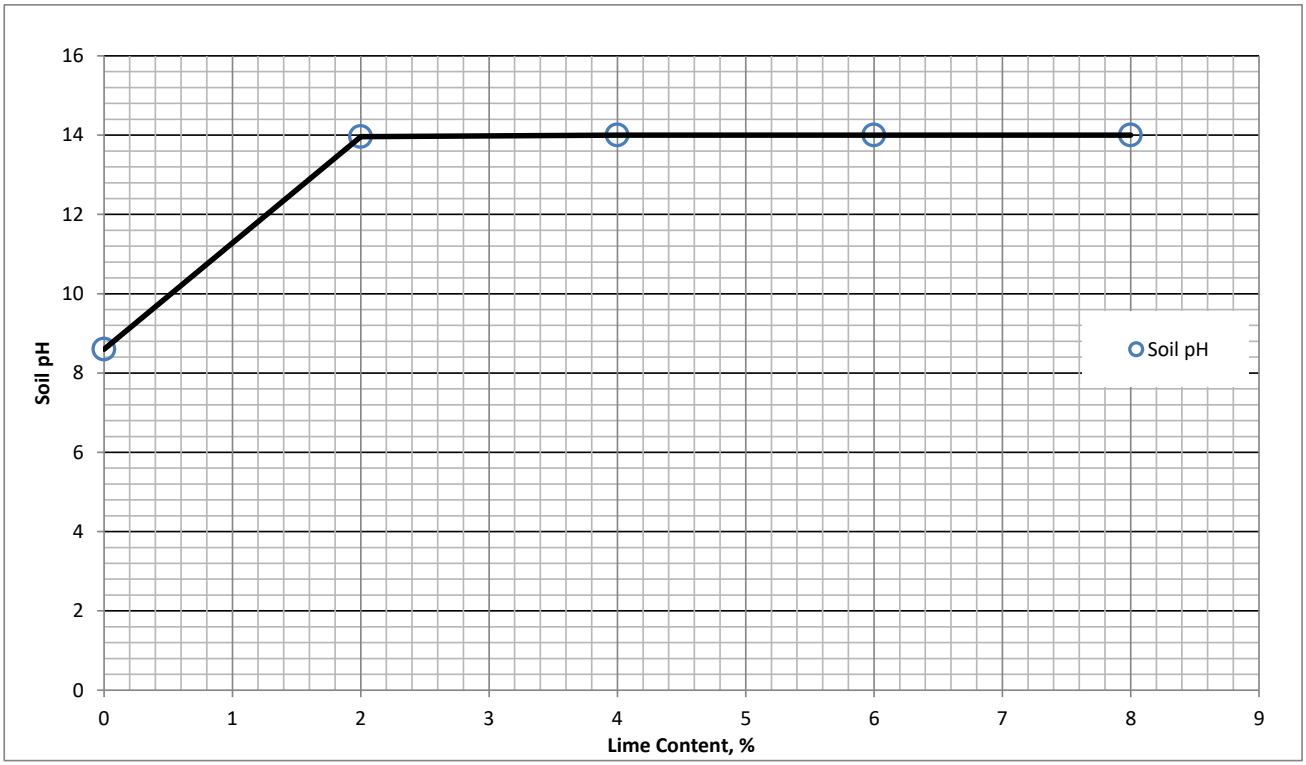
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : CB-1 DEPTH: 2-3 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	8.60	13.96	14.00	14.00	14.00



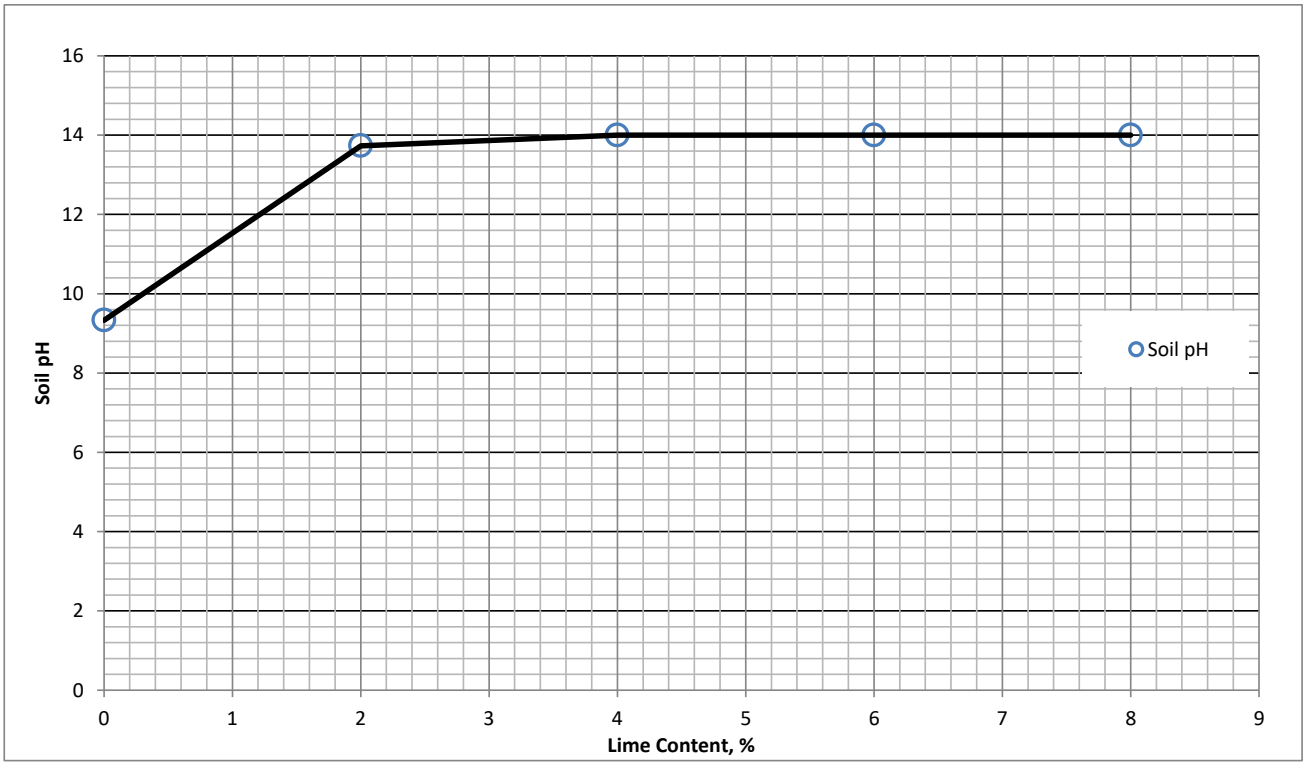
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-1B DEPTH: 2-4 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	9.33	13.73	14.00	14.00	14.00



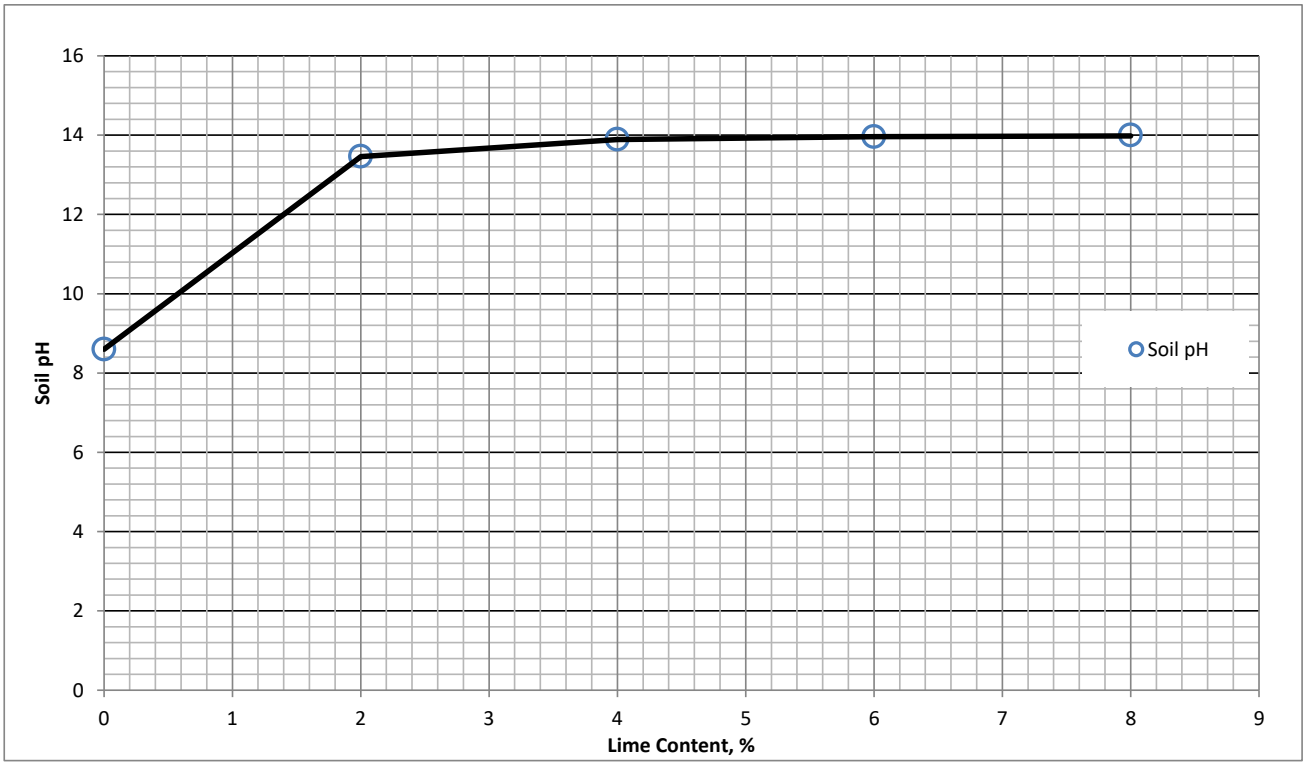
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-5 DEPTH: 2-4 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	8.60	13.46	13.89	13.96	14.00



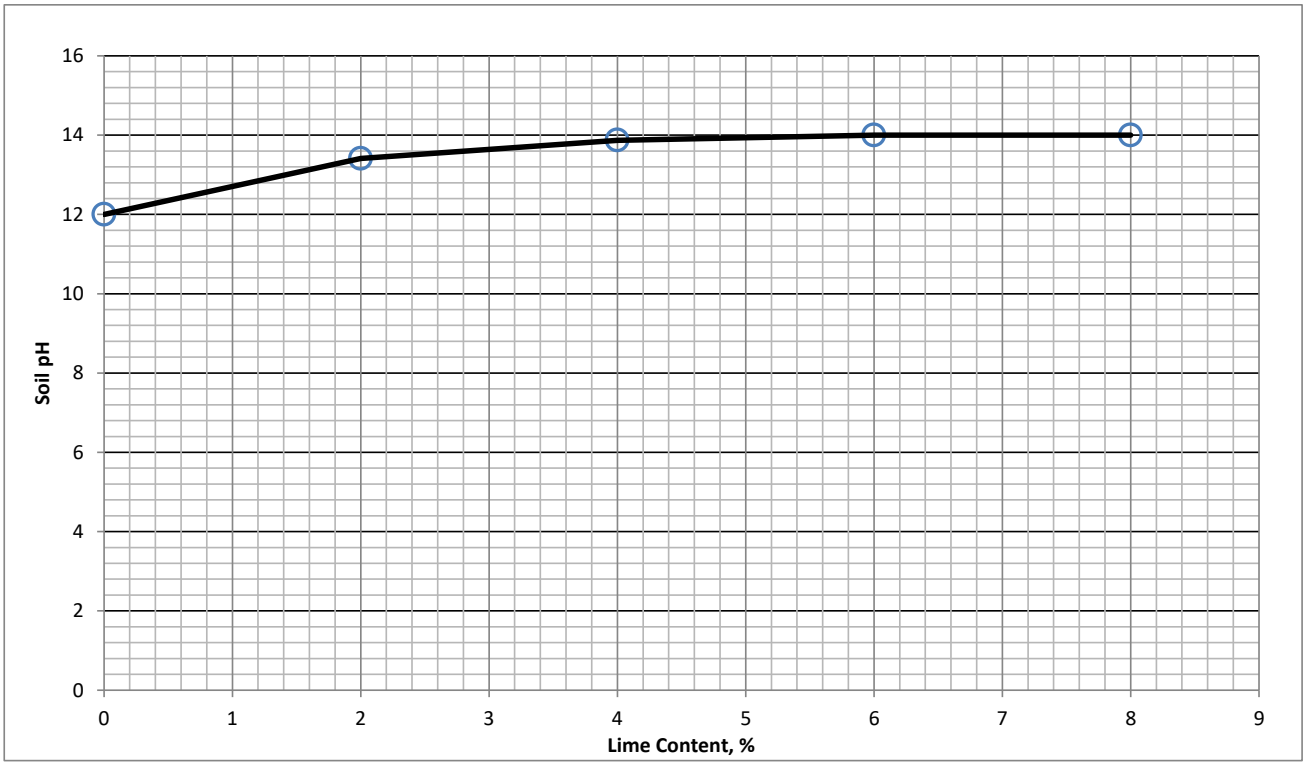
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-7 DEPTH: 1-2 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	12.00	13.41	13.87	14.00	14.00



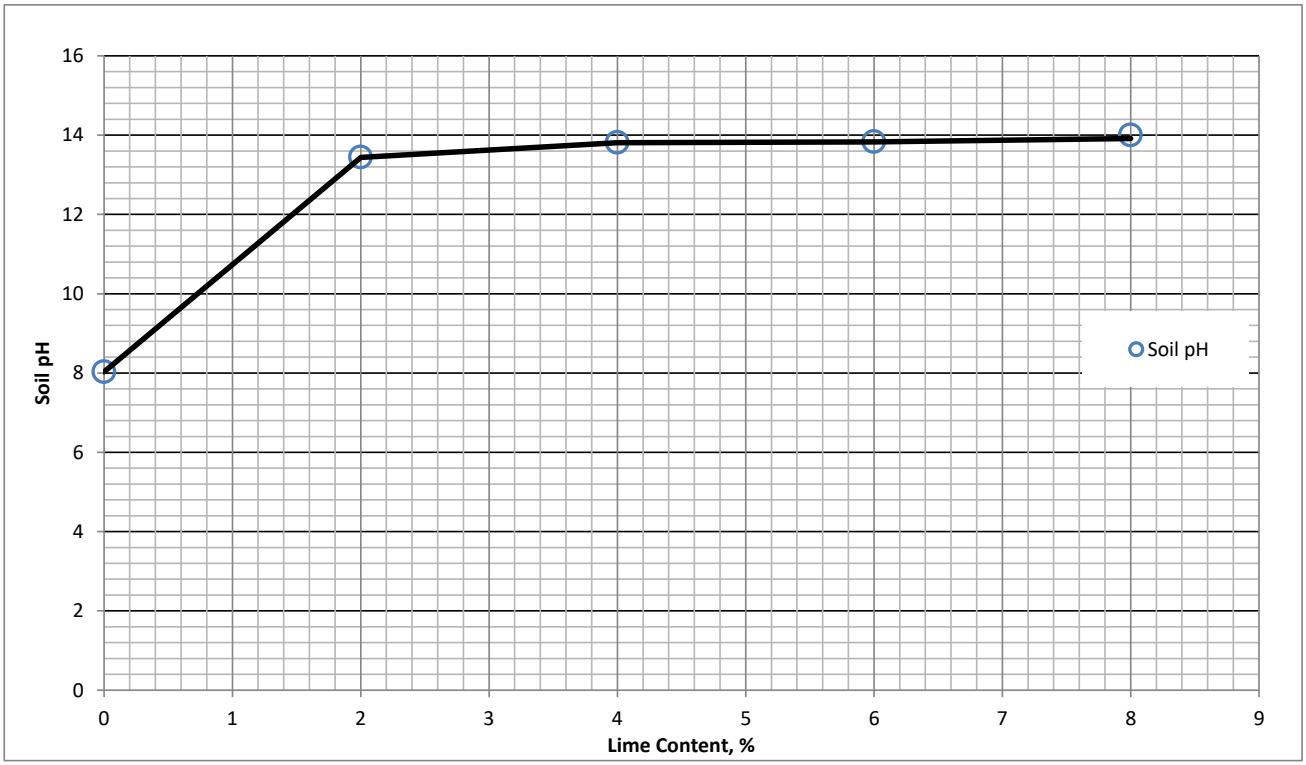
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-9 DEPTH: 1-2 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	8.03	13.44	13.81	13.83	14.00



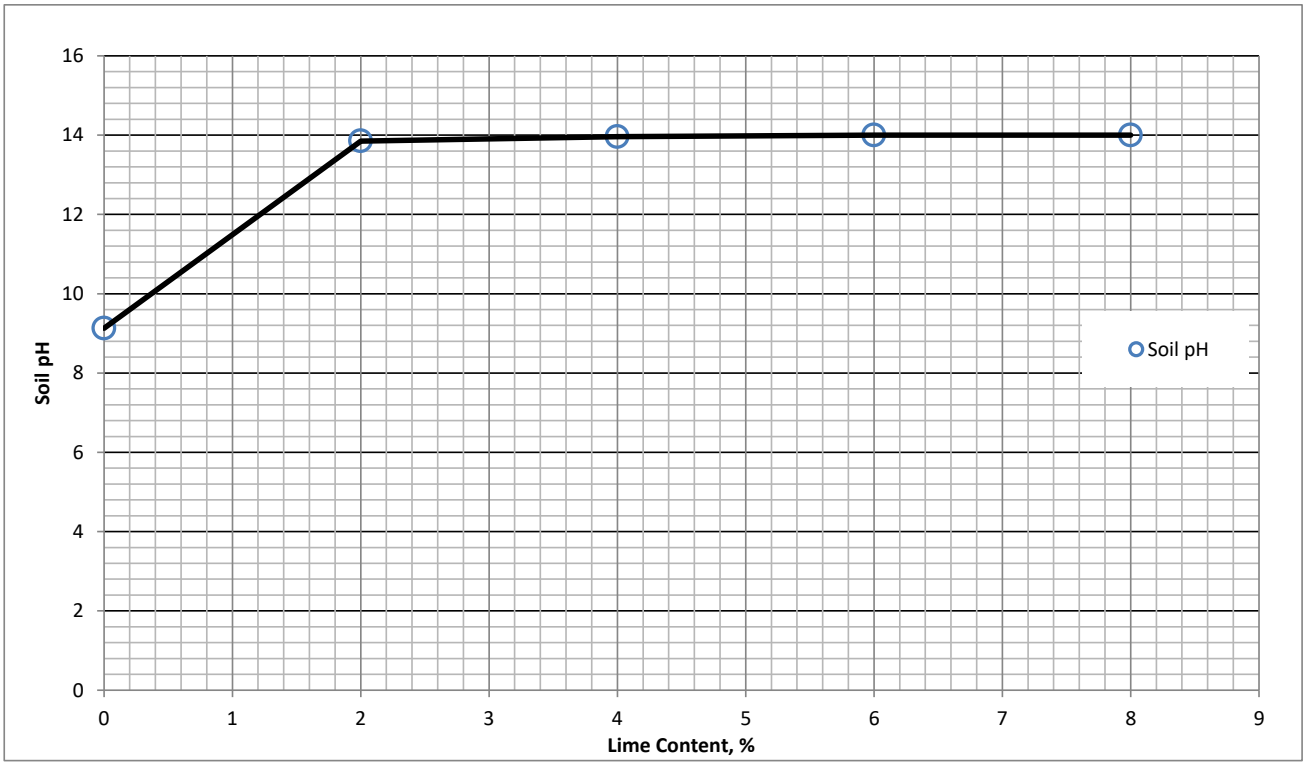
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-11 DEPTH: 1-2 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	9.13	13.85	13.96	14.00	14.00



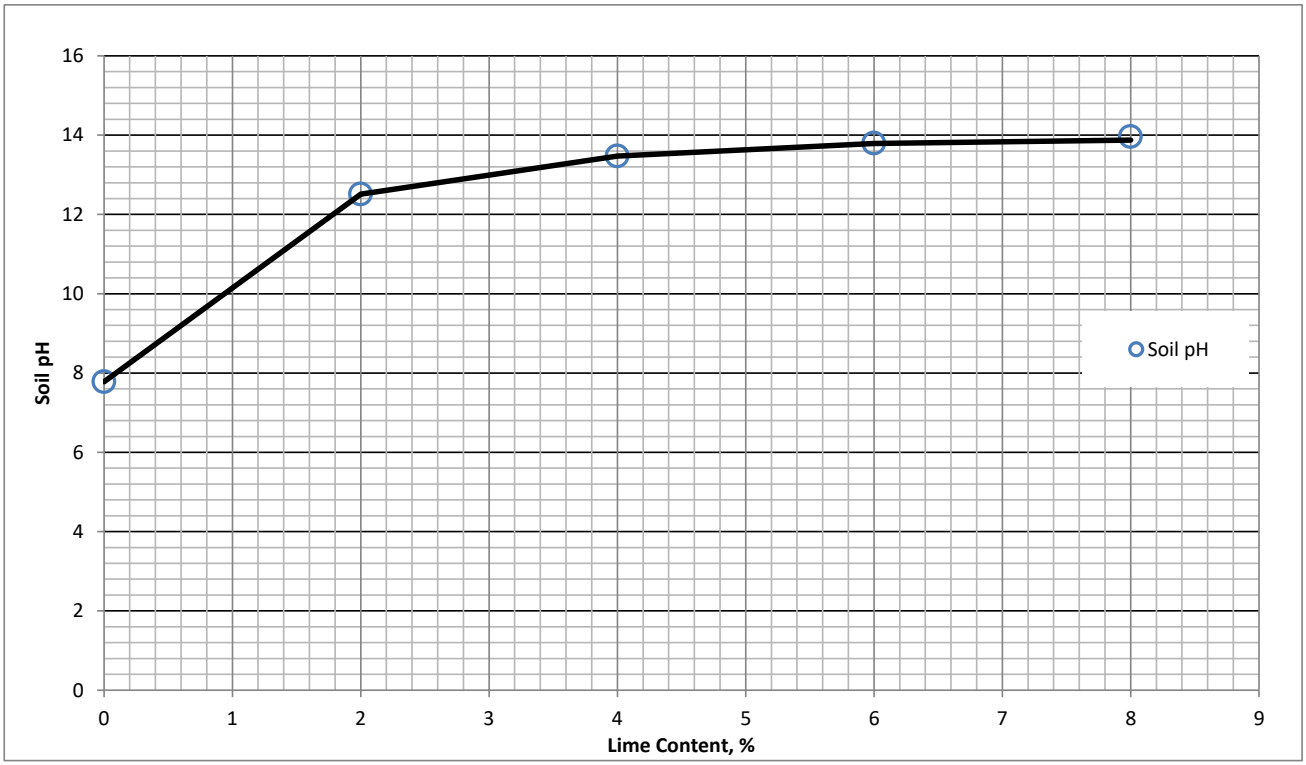
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-15 DEPTH: 1-2 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	7.78	12.51	13.47	13.79	13.96



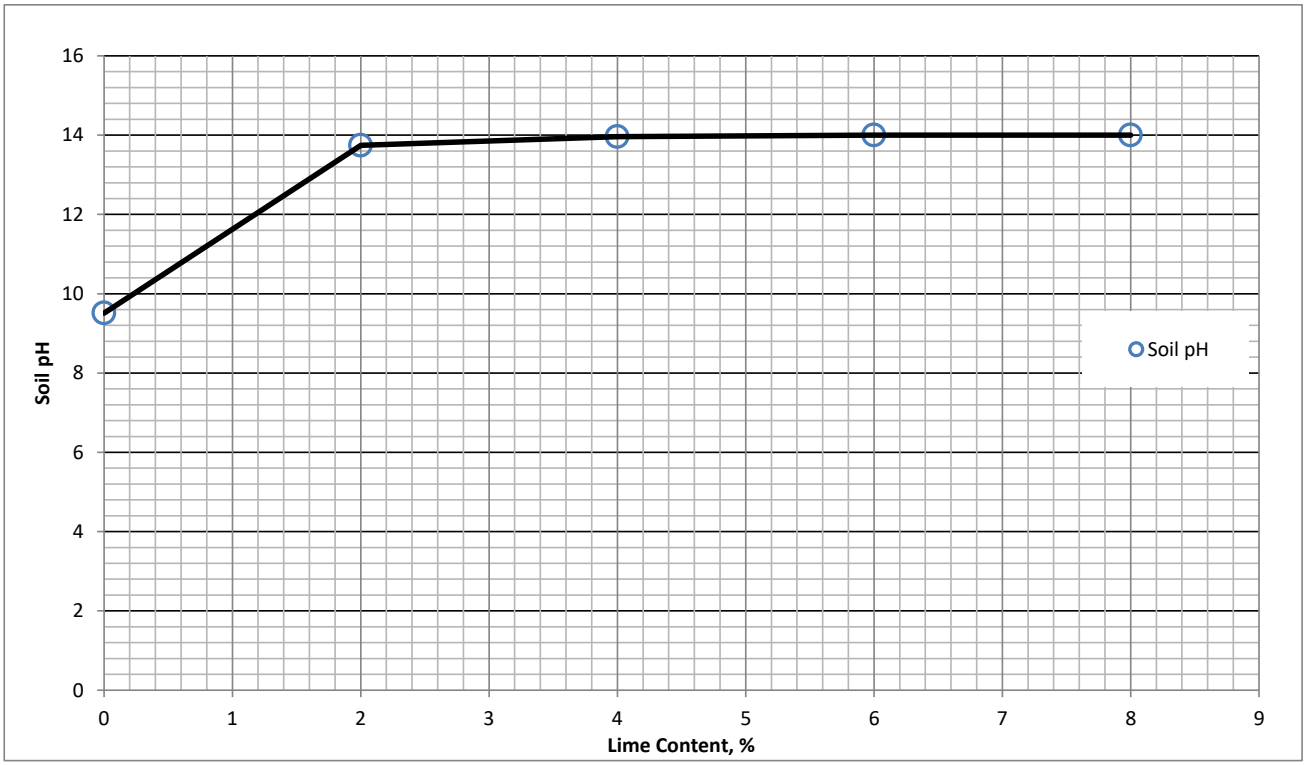
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-16 DEPTH: 1-2 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	9.51	13.74	13.96	14.00	14.00



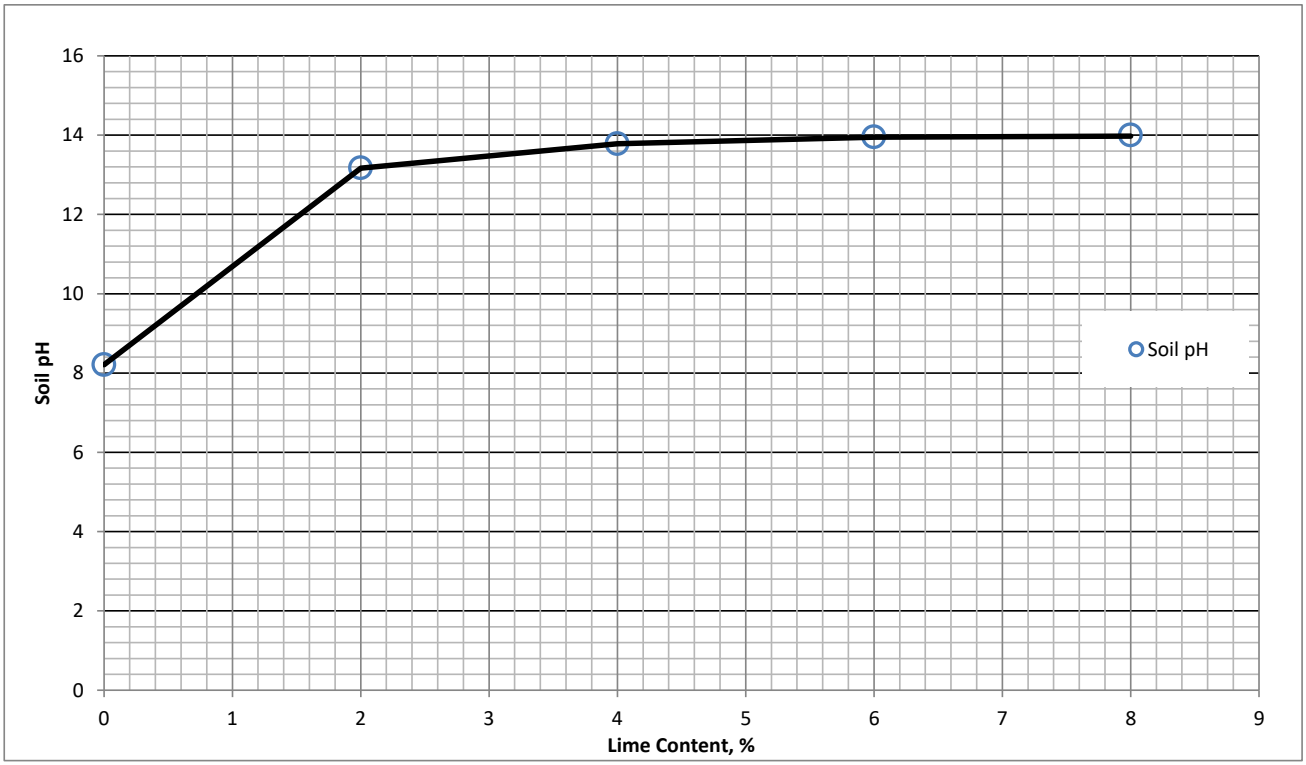
LIME SERIES-pH

PROJECT: W Bailey Boswell Rd in FW
STREET: W Bailey Boswell Rd
PROJECT NO. : DG-22-10349

Boring : P-18 DEPTH: 1-2 feet

LIME CURVE
(Soil pH vs Percent of Lime)

Percent of Lime	0	2	4	6	8
Soil pH	8.21	13.17	13.78	13.95	14.00



APPENDIX D

PAVEMENT CORE PICTURES

P-1B

P-2

P-3

BORING NO.	DATE	DESCRIPTION
P-1B	5/3/2023	5 inches of Asphalt over 6 inches of Lime Treated Base
P-2	5/2/2023	5 inches of Asphalt over 6 inches of Lime Treated Base
P-3	5/6/2023	4 inches of Asphalt over 6 inches of Lime Treated Base

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DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-1

P-4

P-5

P-6

BORING NO.	DATE	DESCRIPTION
P-4	5/2/2023	4 inches of Asphalt over 6 inches of Lime Treated Base
P-5	5/2/2023	4 inches of Asphalt over 6 inches of Lime Treated Base
P-6	5/2/2023	4 inches of Asphalt over 7 inches of Lime Treated Base

HVJ ASSOCIATES
8701 John Carpenter Fwy Suite 250
Dallas, Texas 75247
214-678-0227 Ph
214-678-0228 Fax

DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-2

P-7

P-8

P-9

BORING NO.	DATE	DESCRIPTION
P-7	5/2/2023	5 inches of Asphalt over 7 inches of Lime Treated Base
P-8	5/1/2023	4.5 inches of Asphalt over 7 inches of Lime Treated Base
P-9	5/2/2023	4.5 inches of Asphalt over 7.5 inches of Lime Treated Base

HVJ ASSOCIATES
8701 John Carpenter Fwy Suite 250
Dallas, Texas 75247
214-678-0227 Ph
214-678-0228 Fax

DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-3

P-10

P-11

P-12

BORING NO.	DATE	DESCRIPTION
P-10	5/1/2023	5 inches of Asphalt over 7 inches of Lime Treated Base
P-11	5/2/2023	5 inches of Asphalt over 6 inches of Lime Treated Base
P12	5/1/2023	5 inches of Asphalt over 6 inches of Lime Treated Base

HVJ ASSOCIATES
8701 John Carpenter Fwy Suite 250
Dallas, Texas 75247
214-678-0227 Ph
214-678-0228 Fax

DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-4

P-13

P-14

P-15

BORING NO.	DATE	DESCRIPTION
P-13	5/3/2023	5 inches of Asphalt over 6 inches of Lime Treated Base
P-14	5/1/2023	5 inches of Asphalt over 7 inches of Lime Treated Base
P-15	5/3/2023	5 inches of Asphalt over 6 inches of Lime Treated Base

HVJ ASSOCIATES
8701 John Carpenter Fwy Suite 250
Dallas, Texas 75247
214-678-0227 Ph
214-678-0228 Fax

DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-5

P-16

P-17

P-18

BORING NO.	DATE	DESCRIPTION
P-16	5/1/2023	5 inches of Asphalt over 7 inches of A Lime Treated Base
P-17	5/1/2023	5 inches of Asphalt over 8 inches of Lime Treated Base
P-18	5/3/2023	3.5 inches of Asphalt over 7 inches of Lime Treated Base

HVJ ASSOCIATES
8701 John Carpenter Fwy Suite 250
Dallas, Texas 75247
214-678-0227 Ph
214-678-0228 Fax

DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-6

P-19

CB-1

BORING NO.	DATE	DESCRIPTION
P-19	5/1/2023	10 inches of Concrete over 2 inches of Lime Treated Base
CB-1	5/1/2023	4.5 inches of Asphalt over 12 inches of Lime Treated Base

HVJ ASSOCIATES
8701 John Carpenter Fwy Suite 250
Dallas, Texas 75247
214-678-0227 Ph
214-678-0228 Fax

DATE:	APPROVED BY:	PREPARED BY:
6/6/2023	**SU**	**EH**

PAVEMENT CORES
W Bailey Boswell Road in Fort Worth

PROJECT NUMBER:	DRAWING NUMBER:
DG-22-10349	APPENDIX B-7

APPENDIX E

PAVEMENT DESIGN INPUT AND RESULTS

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Rigid Design Inputs

Project Name: W Bailey Boswell Rd
Route:
Location: Fort Worth
Owner/Agency: HVJ
Design Engineer:

Rigid Pavement Design/Evaluation

Concrete Thickness	10.34	**inches**	**Load Transfer Coefficient**	3.00	
Total Rigid ESALs	13,170,000		**Modulus of Subgrade Reaction**	239	**psi/in.**
Reliability	90.00	**percent**	**Drainage Coefficient**	1.00	
Overall Standard Deviation	0.39		**Initial Serviceability**	4.50	
Flexural Strength	620	**psi**	**Terminal Serviceability**	2.50	
Modulus of Elasticity	4,000,000	**psi**			

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	4,000.0	**psi**
Unadjusted Modulus of Subgrade Reaction	239	**psi/in**
Depth to Rigid Foundation	0.00	**feet**
Loss of Support Value (0,1,2,3)	0.0	

Modulus of Subgrade Reaction (8 inch treated subgrade)	239	**psi/in.**

APPENDIX F

POTENTIAL VERTICAL RISE (PVR) RESULTS

EXISTING CONDITION

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	2+82.67	DIST. FROM CL:	

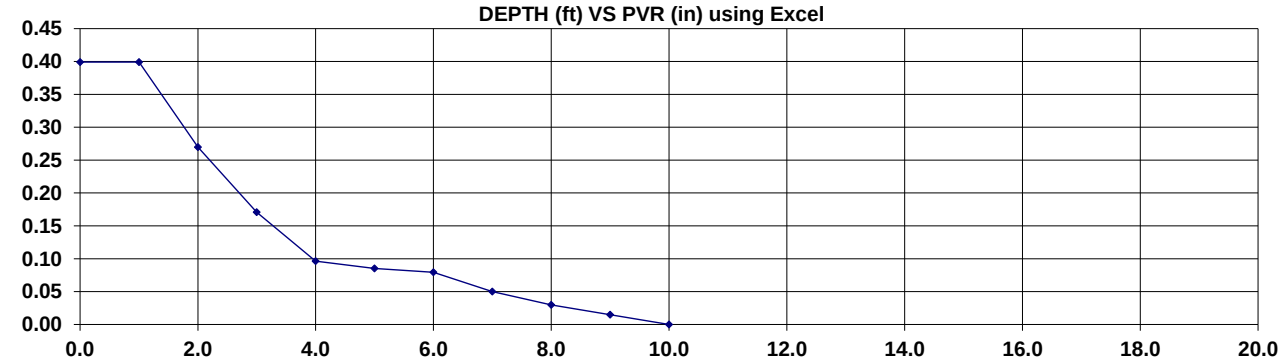
Boring Number:	P-1B	Ground Elevation (z):	843.22	Longitude (x):	-97.424933	Latitude (y):	32.8801034

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.40**
1.0	0.5	32	15.4	17.0	10.8	Dry	49.1	18	4.1	7.0	**0.00**	**0.00**	0.00	0.49	1.00	0.00	**0.40**
2.0	1.5	32	15.4	17.0	10.8	Dry	49.1	18	4.1	7.0	**0.00**	**0.26**	0.26	0.49	1.00	0.13	**0.27**
3.0	2.5	32	15.4	17.0	12.3	Dry	49.1	18	4.1	7.0	**0.26**	**0.46**	0.20	0.49	1.00	0.10	**0.17**
4.0	3.5	32	15.4	17.0	12.3	Dry	49.1	18	4.1	7.0	**0.46**	**0.62**	0.15	0.49	1.00	0.07	**0.10**
5.0	4.5	28	14.6	15.2	15.8	Wet	72.6	12	-0.3	2.3	**0.13**	**0.15**	0.02	0.73	1.00	0.01	**0.09**
6.0	5.5	28	14.6	15.2	15.8	Wet	72.6	12	-0.3	2.3	**0.15**	**0.15**	0.01	0.73	1.00	0.01	**0.08**
7.0	6.5	28	14.6	15.2	11.6	Dry	86.8	16	3.5	6.3	**0.60**	**0.63**	0.03	0.87	1.00	0.03	**0.05**
8.0	7.5	28	14.6	15.2	11.6	Dry	86.8	16	3.5	6.3	**0.63**	**0.65**	0.02	0.87	1.00	0.02	**0.03**
9.0	8.5	28	14.6	15.2	11.4	Dry	86.8	16	3.5	6.3	**0.65**	**0.67**	0.02	0.87	1.00	0.01	**0.01**
10.0	9.5	28	14.6	15.2	11.4	Dry	86.8	16	3.5	6.3	**0.67**	**0.69**	0.02	0.87	1.00	0.01	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	4+73.59	DIST. FROM CL:	

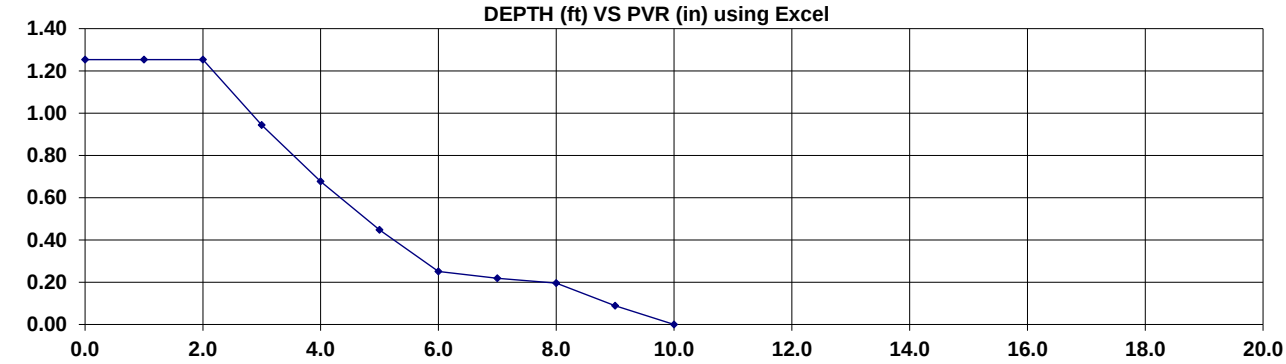
Boring Number:	P-2	Ground Elevation (z):	840.41	Longitude (x):	-97.422674	Latitude (y):	32.8801034

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.25**
1.0	0.5	0	9.0	2.0	16.7	Wet	15.0	0	-2.9	-0.5	**0.00**	**0.00**	0.00	0.15	1.00	0.00	**1.25**
2.0	1.5	0	9.0	2.0	16.7	Wet	15.0	0	-2.9	-0.5	**0.00**	**0.00**	0.00	0.15	1.00	0.00	**1.25**
3.0	2.5	54	19.8	27.4	19.6	Dry	64.0	39	10.9	14.3	**0.56**	**1.04**	0.48	0.64	1.00	0.31	**0.94**
4.0	3.5	54	19.8	27.4	19.6	Dry	64.0	39	10.9	14.3	**1.04**	**1.46**	0.42	0.64	1.00	0.27	**0.68**
5.0	4.5	54	19.8	27.4	19.2	Dry	64.0	39	10.9	14.3	**1.46**	**1.82**	0.36	0.64	1.00	0.23	**0.45**
6.0	5.5	54	19.8	27.4	19.2	Dry	64.0	39	10.9	14.3	**1.82**	**2.12**	0.31	0.64	1.00	0.20	**0.25**
7.0	6.5	43	17.6	22.2	22.2	Wet	97.0	29	3.4	6.2	**0.60**	**0.63**	0.03	0.97	1.00	0.03	**0.22**
8.0	7.5	43	17.6	22.2	22.2	Wet	97.0	29	3.4	6.2	**0.63**	**0.65**	0.02	0.97	1.00	0.02	**0.20**
9.0	8.5	43	17.6	22.2	17.4	Dry	97.0	29	7.7	10.8	**1.92**	**2.03**	0.11	0.97	1.00	0.11	**0.09**
10.0	9.5	43	17.6	22.2	17.4	Dry	97.0	29	7.7	10.8	**2.03**	**2.13**	0.09	0.97	1.00	0.09	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	9+76.27	DIST. FROM CL:	

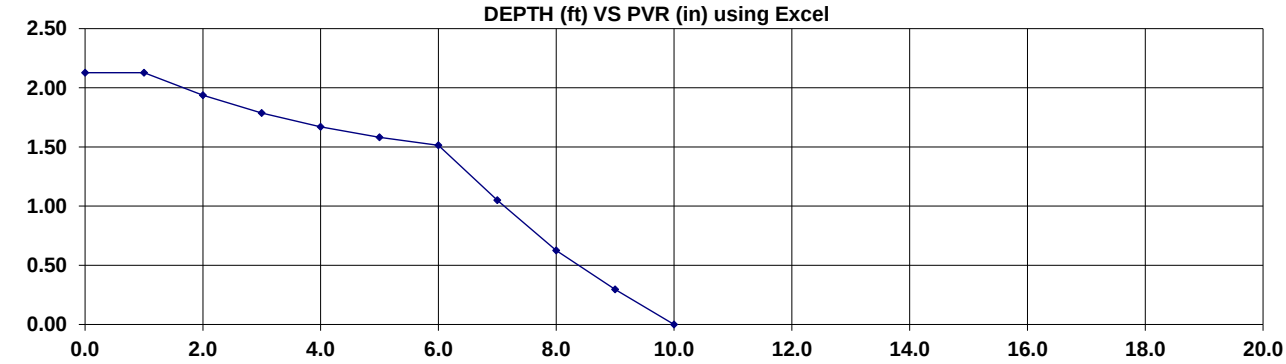
Boring Number:	P-3	Ground Elevation (z):	832.42	Longitude (x):	-97.42106	Latitude (y):	32.8801093

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.13**
1.0	0.5	33	15.6	17.5	10.9	Dry	60.0	21	5.1	8.0	**0.00**	**0.00**	0.00	0.60	1.00	0.00	**2.13**
2.0	1.5	33	15.6	17.5	10.9	Dry	60.0	21	5.1	8.0	**0.00**	**0.32**	0.32	0.60	1.00	0.19	**1.94**
3.0	2.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.32**	**0.57**	0.25	0.60	1.00	0.15	**1.79**
4.0	3.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.57**	**0.76**	0.19	0.60	1.00	0.12	**1.67**
5.0	4.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.76**	**0.91**	0.15	0.60	1.00	0.09	**1.58**
6.0	5.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.91**	**1.02**	0.11	0.60	1.00	0.07	**1.51**
7.0	6.5	76	24.2	37.7	26.7	Dry	87.0	59	17.4	21.2	**3.46**	**3.99**	0.53	0.87	1.00	0.46	**1.05**
8.0	7.5	76	24.2	37.7	26.7	Dry	87.0	59	17.4	21.2	**3.99**	**4.48**	0.49	0.87	1.00	0.42	**0.63**
9.0	8.5	77	24.4	38.2	33.7	Avg	98.0	59	14.4	18.1	**3.69**	**4.03**	0.34	0.98	1.00	0.33	**0.30**
10.0	9.5	77	24.4	38.2	33.7	Avg	98.0	59	14.4	18.1	**4.03**	**4.33**	0.30	0.98	1.00	0.30	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:		Tested By:		Tested Date:	
TX124					

Test Stamp Code:		Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	14+65.62	DIST. FROM CL:	

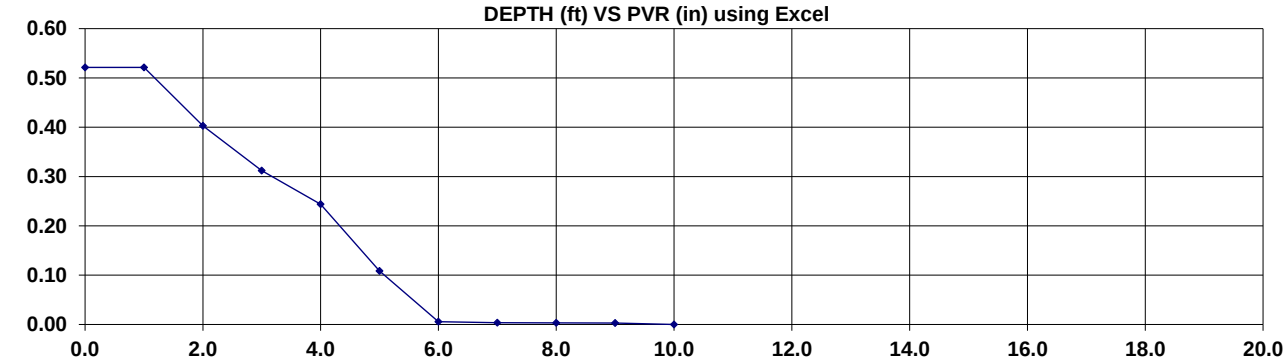
Boring Number:	P-4	Ground Elevation (z):	833.41	Longitude (x):	-97.42106	Latitude (y):	32.8801043

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.52**
1.0	0.5	33	15.6	17.5	10.8	Dry	45.0	17	3.8	6.6	**0.00**	**0.00**	0.00	0.45	1.00	0.00	**0.52**
2.0	1.5	33	15.6	17.5	10.8	Dry	45.0	17	3.8	6.6	**0.00**	**0.26**	0.26	0.45	1.00	0.12	**0.40**
3.0	2.5	33	15.6	17.5	10.3	Dry	45.0	17	3.8	6.6	**0.26**	**0.46**	0.20	0.45	1.00	0.09	**0.31**
4.0	3.5	33	15.6	17.5	10.3	Dry	45.0	17	3.8	6.6	**0.46**	**0.62**	0.15	0.45	1.00	0.07	**0.24**
5.0	4.5	47	18.4	24.1	21.5	Avg	91.0	27	5.0	8.0	**0.76**	**0.91**	0.15	0.91	1.00	0.14	**0.11**
6.0	5.5	47	18.4	24.1	21.5	Avg	91.0	27	5.0	8.0	**0.91**	**1.02**	0.11	0.91	1.00	0.10	**0.01**
7.0	6.5	28	14.6	15.2	17.7	Wet	59.0	11	-0.5	2.1	**0.15**	**0.16**	0.00	0.59	1.00	0.00	**0.00**
8.0	7.5	28	14.6	15.2	17.7	Wet	59.0	11	-0.5	2.1	**0.16**	**0.16**	0.00	0.59	1.00	0.00	**0.00**
9.0	8.5	28	14.6	15.2	13.0	Dry	59.0	11	1.8	4.6	**0.39**	**0.40**	0.00	0.59	1.00	0.00	**0.00**
10.0	9.5	28	14.6	15.2	13.0	Dry	59.0	11	1.8	4.6	**0.40**	**0.40**	0.00	0.59	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition

Test Method:		Tested By:	Tested Date:
TX124			

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	19+77.82	DIST. FROM CL:	

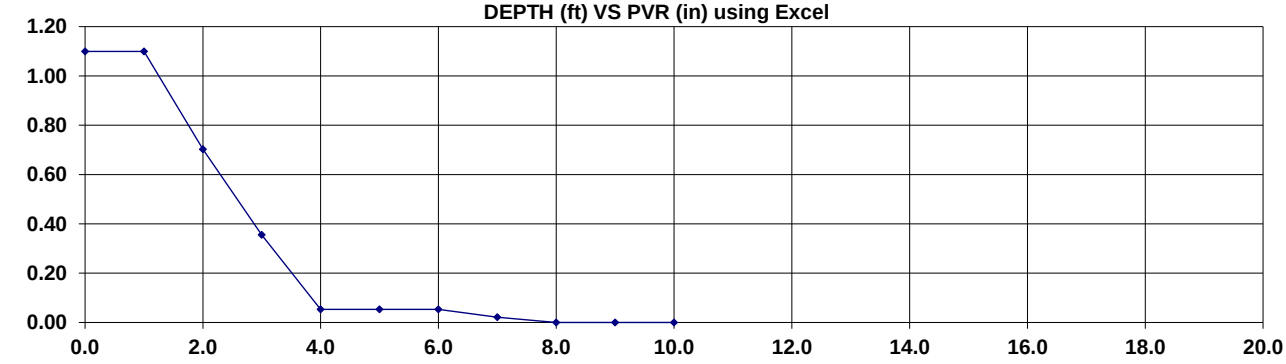
Boring Number:	P-5	Ground Elevation (z):	832.91	Longitude (x):	-97.419413	Latitude (y):	32.880982

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.10**
1.0	0.5	65	22.0	32.6	12.9	Dry	67.0	41	11.6	15.0	**0.00**	**0.00**	0.00	0.67	1.00	0.00	**1.10**
2.0	1.5	65	22.0	32.6	12.9	Dry	67.0	41	11.6	15.0	**0.00**	**0.59**	0.59	0.67	1.00	0.40	**0.70**
3.0	2.5	65	22.0	32.6	19.2	Dry	67.0	41	11.6	15.0	**0.59**	**1.11**	0.52	0.67	1.00	0.35	**0.36**
4.0	3.5	65	22.0	32.6	19.2	Dry	67.0	41	11.6	15.0	**1.11**	**1.56**	0.45	0.67	1.00	0.30	**0.05**
5.0	4.5	0	9.0	2.0	9.3	Wet	35.0	0	-2.9	-0.5	**1.56**	**1.56**	0.00	0.35	1.00	0.00	**0.05**
6.0	5.5	0	9.0	2.0	9.3	Wet	35.0	0	-2.9	-0.5	**1.56**	**1.56**	0.00	0.35	1.00	0.00	**0.05**
7.0	6.5	37	16.4	19.4	17.9	Avg	93.0	22	3.6	6.4	**0.60**	**0.63**	0.03	0.93	1.00	0.03	**0.02**
8.0	7.5	37	16.4	19.4	17.9	Avg	93.0	22	3.6	6.4	**0.63**	**0.65**	0.02	0.93	1.00	0.02	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**0.65**	**0.65**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**0.65**	**0.65**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition, Bed Rock encountered at 8 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	24+41.69	DIST. FROM CL:	

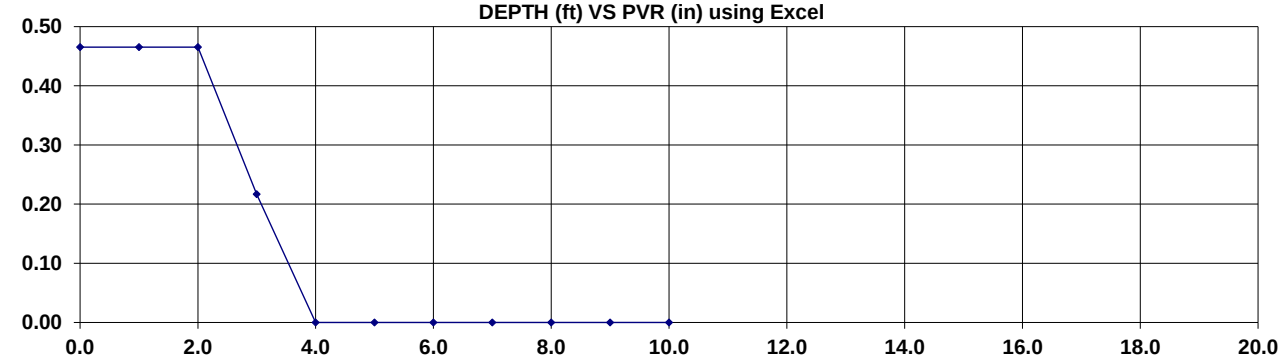
Boring Number:	P-6	Ground Elevation (z):	837.07	Longitude (x):	-97.417901	Latitude (y):	32.881062

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.47**
1.0	0.5	0	9.0	2.0	10.4	Wet	21.0	0	-2.9	-0.5	**0.00**	**0.00**	0.00	0.21	1.00	0.00	**0.47**
2.0	1.5	0	9.0	2.0	10.4	Wet	21.0	0	-2.9	-0.5	**0.00**	**0.00**	0.00	0.21	1.00	0.00	**0.47**
3.0	2.5	57	20.4	28.8	19.6	Dry	48.0	40	11.3	14.6	**0.59**	**1.11**	0.52	0.48	1.00	0.25	**0.22**
4.0	3.5	57	20.4	28.8	19.6	Dry	48.0	40	11.3	14.6	**1.11**	**1.56**	0.45	0.48	1.00	0.22	**0.00**
5.0	4.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
6.0	5.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition, Bed Rock encountered at 4 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in FW	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	29+32.01	DIST. FROM CL:	

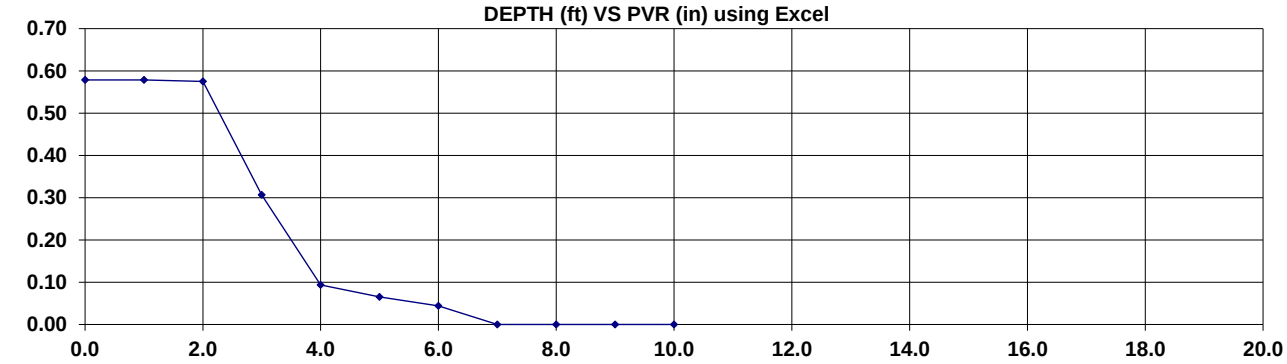
Boring Number:	P-7	Ground Elevation (z):	832.34	Longitude (x):	-97.416304	Latitude (y):	32.881048

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.58**
1.0	0.5	0	9.0	2.0	7.1	Dry	11.0	0	-1.8	0.7	**0.00**	**0.00**	0.00	0.11	1.00	0.00	**0.58**
2.0	1.5	0	9.0	2.0	7.1	Dry	11.0	0	-1.8	0.7	**0.00**	**0.03**	0.03	0.11	1.00	0.00	**0.58**
3.0	2.5	42	17.4	21.7	14.1	Dry	90.0	23	5.7	8.7	**0.37**	**0.67**	0.30	0.90	1.00	0.27	**0.31**
4.0	3.5	42	17.4	21.7	14.1	Dry	90.0	23	5.7	8.7	**0.67**	**0.91**	0.24	0.90	1.00	0.21	**0.09**
5.0	4.5	58	20.6	29.3	29.3	Wet	19.0	36	4.9	7.9	**0.76**	**0.91**	0.15	0.19	1.00	0.03	**0.07**
6.0	5.5	58	20.6	29.3	29.3	Wet	19.0	36	4.9	7.9	**0.91**	**1.02**	0.11	0.19	1.00	0.02	**0.04**
7.0	6.5	58	20.6	29.3	9.8	Dry	19.0	36	10.0	13.2	**1.96**	**2.19**	0.23	0.19	1.00	0.04	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**2.19**	**2.19**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**2.19**	**2.19**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**2.19**	**2.19**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition, Bed Rock encountered at 6.5 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	33+96.28	DIST. FROM CL:	

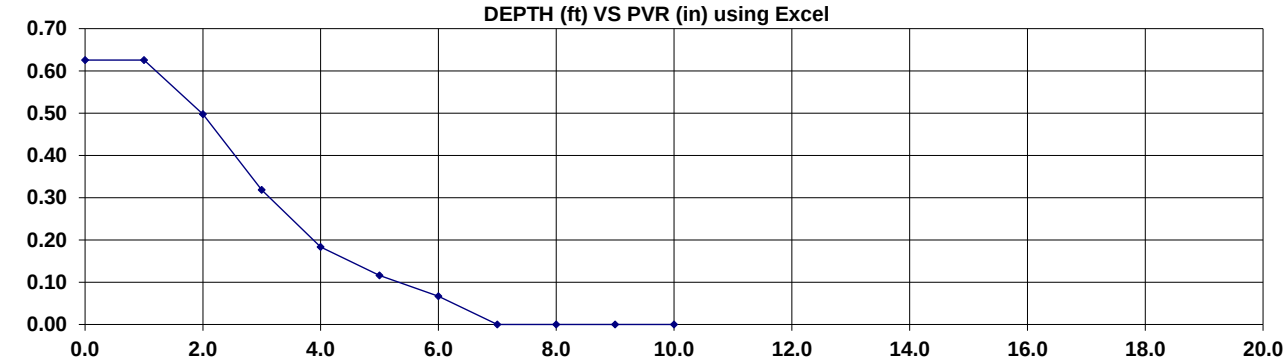
Boring Number:	P-8	Ground Elevation (z):	829.3	Longitude (x):	-97.414792	Latitude (y):	32.881025

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.63**
1.0	0.5	40	17.0	20.8	12.3	Dry	30.0	26	6.7	9.8	**0.00**	**0.00**	0.00	0.30	1.00	0.00	**0.63**
2.0	1.5	40	17.0	20.8	12.3	Dry	30.0	26	6.7	9.8	**0.00**	**0.43**	0.43	0.30	1.00	0.13	**0.50**
3.0	2.5	47	18.4	24.1	24.4	Wet	89.0	32	4.0	6.9	**0.26**	**0.46**	0.20	0.89	1.00	0.18	**0.32**
4.0	3.5	47	18.4	24.1	24.4	Wet	89.0	32	4.0	6.9	**0.46**	**0.62**	0.15	0.89	1.00	0.13	**0.18**
5.0	4.5	40	17.0	20.8	18.5	Avg	60.0	24	4.2	7.0	**0.62**	**0.73**	0.11	0.60	1.00	0.07	**0.12**
6.0	5.5	40	17.0	20.8	18.5	Avg	60.0	24	4.2	7.0	**0.73**	**0.81**	0.08	0.60	1.00	0.05	**0.07**
7.0	6.5	40	17.0	20.8	2.3	Dry	60.0	24	6.1	9.1	**1.24**	**1.35**	0.11	0.60	1.00	0.07	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition, Bed Rock encountered at 6.5 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	38+95.32	DIST. FROM CL:	

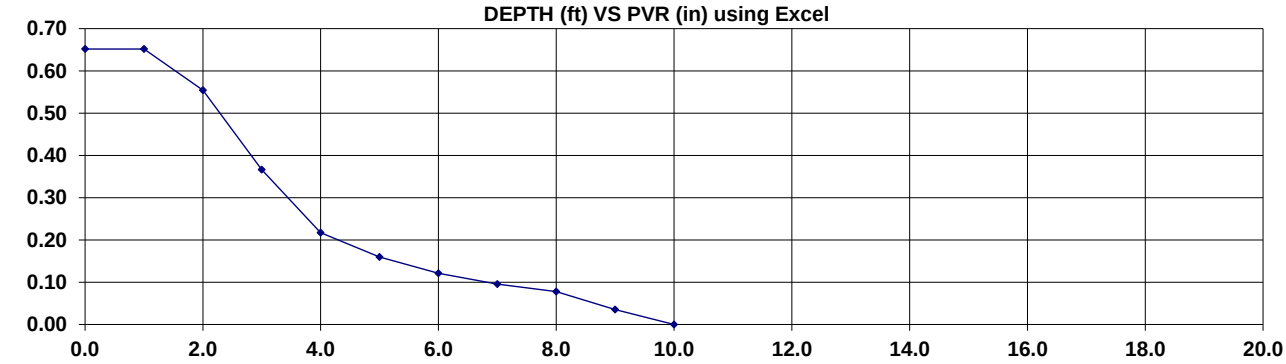
Boring Number:	P-9	Ground Elevation (z):	821.68	Longitude (x):	-97.413168	Latitude (y):	32.880908

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.65**
1.0	0.5	40	17.0	20.8	23.7	Wet	63.0	23	2.1	4.8	**0.00**	**0.00**	0.00	0.63	1.00	0.00	**0.65**
2.0	1.5	40	17.0	20.8	23.7	Wet	63.0	23	2.1	4.8	**0.00**	**0.15**	0.15	0.63	1.00	0.10	**0.55**
3.0	2.5	40	17.0	20.8	8.3	Dry	63.0	23	5.7	8.7	**0.37**	**0.67**	0.30	0.63	1.00	0.19	**0.37**
4.0	3.5	40	17.0	20.8	8.3	Dry	63.0	23	5.7	8.7	**0.67**	**0.91**	0.24	0.63	1.00	0.15	**0.22**
5.0	4.5	29	14.8	15.6	12.7	Dry	76.0	16	3.5	6.3	**0.47**	**0.55**	0.08	0.76	1.00	0.06	**0.16**
6.0	5.5	29	14.8	15.6	12.7	Dry	76.0	16	3.5	6.3	**0.55**	**0.60**	0.05	0.76	1.00	0.04	**0.12**
7.0	6.5	29	14.8	15.6	11.8	Dry	76.0	16	3.5	6.3	**0.60**	**0.63**	0.03	0.76	1.00	0.03	**0.10**
8.0	7.5	29	14.8	15.6	11.8	Dry	76.0	16	3.5	6.3	**0.63**	**0.65**	0.02	0.76	1.00	0.02	**0.08**
9.0	8.5	39	16.8	20.3	19.4	Avg	84.0	26	4.7	7.7	**1.17**	**1.23**	0.05	0.84	1.00	0.04	**0.04**
10.0	9.5	39	16.8	20.3	19.4	Avg	84.0	26	4.7	7.7	**1.23**	**1.27**	0.04	0.84	1.00	0.04	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	44+21.15	DIST. FROM CL:	

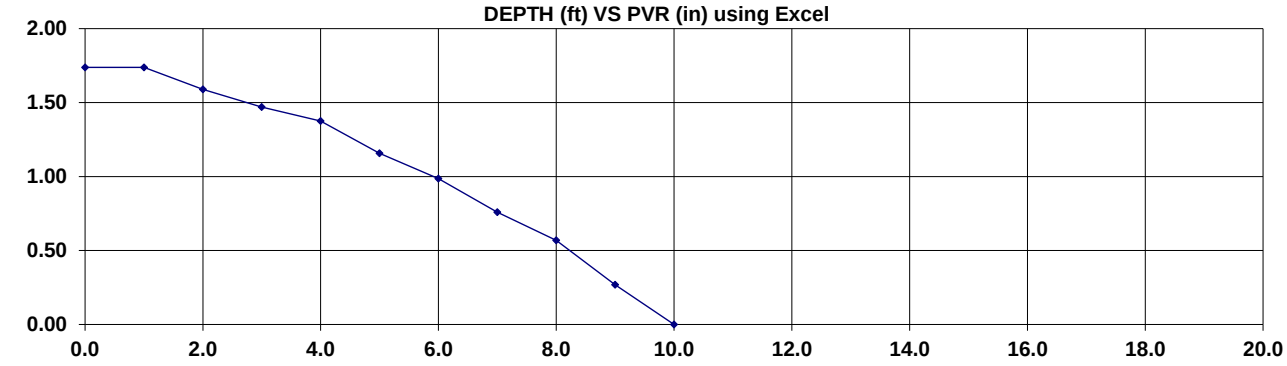
Boring Number:	P-10	Ground Elevation (z):	804.17	Longitude (x):	-97.411454	Latitude (y):	32.880997

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.74**
1.0	0.5	40	17.0	20.8	12.1	Dry	40.0	25	6.4	9.4	**0.00**	**0.00**	0.00	0.40	1.00	0.00	**1.74**
2.0	1.5	40	17.0	20.8	12.1	Dry	40.0	25	6.4	9.4	**0.00**	**0.37**	0.37	0.40	1.00	0.15	**1.59**
3.0	2.5	40	17.0	20.8	12.8	Dry	40.0	25	6.4	9.4	**0.37**	**0.67**	0.30	0.40	1.00	0.12	**1.47**
4.0	3.5	40	17.0	20.8	12.8	Dry	40.0	25	6.4	9.4	**0.67**	**0.91**	0.24	0.40	1.00	0.09	**1.38**
5.0	4.5	71	23.2	35.4	33.6	Wet	98.0	44	6.6	9.7	**1.05**	**1.27**	0.22	0.98	1.00	0.22	**1.16**
6.0	5.5	71	23.2	35.4	33.6	Wet	98.0	44	6.6	9.7	**1.27**	**1.45**	0.18	0.98	1.00	0.17	**0.99**
7.0	6.5	71	23.2	35.4	31.5	Avg	98.0	44	10.0	13.3	**1.96**	**2.19**	0.23	0.98	1.00	0.23	**0.76**
8.0	7.5	71	23.2	35.4	31.5	Avg	98.0	44	10.0	13.3	**2.19**	**2.38**	0.19	0.98	1.00	0.19	**0.57**
9.0	8.5	72	23.4	35.8	26.5	Dry	89.0	51	14.8	18.5	**3.69**	**4.03**	0.34	0.89	1.00	0.30	**0.27**
10.0	9.5	72	23.4	35.8	26.5	Dry	89.0	51	14.8	18.5	**4.03**	**4.33**	0.30	0.89	1.00	0.27	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	48+39.38	DIST. FROM CL:	

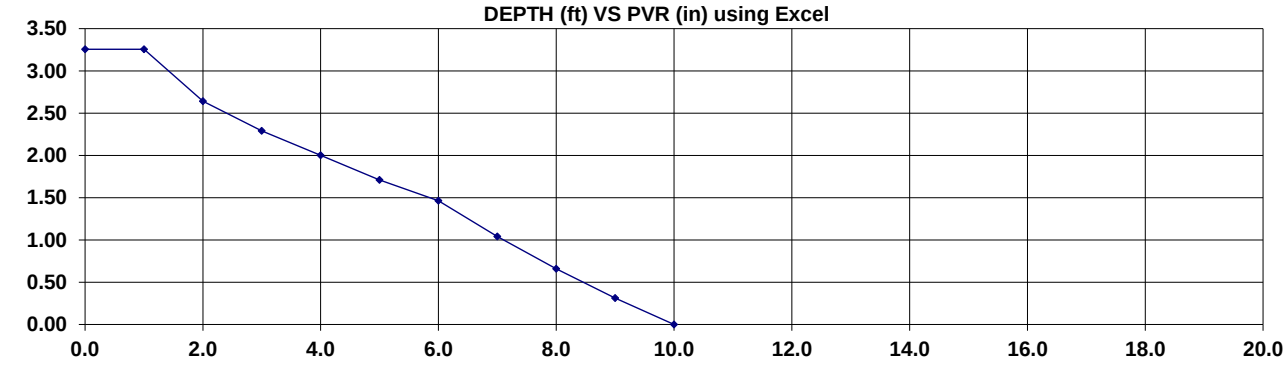
Boring Number:	P-11	Ground Elevation (z):	801.78	Longitude (x):	-97.410093	Latitude (y):	32.880893

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3.26**
1.0	0.5	67	22.4	33.5	11.9	Dry	92.0	48	13.9	17.4	**0.00**	**0.00**	0.00	0.92	1.00	0.00	**3.26**
2.0	1.5	67	22.4	33.5	11.9	Dry	92.0	48	13.9	17.4	**0.00**	**0.67**	0.67	0.92	1.00	0.61	**2.64**
3.0	2.5	67	22.4	33.5	31.0	Wet	92.0	48	7.5	10.6	**0.46**	**0.84**	0.38	0.92	1.00	0.35	**2.29**
4.0	3.5	67	22.4	33.5	31.0	Wet	92.0	48	7.5	10.6	**0.84**	**1.15**	0.31	0.92	1.00	0.29	**2.00**
5.0	4.5	78	24.6	38.7	46.2	Wet	90.0	57	9.5	12.7	**1.36**	**1.68**	0.32	0.90	1.00	0.29	**1.71**
6.0	5.5	78	24.6	38.7	46.2	Wet	90.0	57	9.5	12.7	**1.68**	**1.96**	0.27	0.90	1.00	0.25	**1.46**
7.0	6.5	79	24.8	39.1	33.3	Avg	92.0	61	15.2	18.8	**3.10**	**3.56**	0.46	0.92	1.00	0.42	**1.04**
8.0	7.5	79	24.8	39.1	33.3	Avg	92.0	61	15.2	18.8	**3.56**	**3.98**	0.42	0.92	1.00	0.38	**0.66**
9.0	8.5	79	24.8	39.1	36.7	Wet	92.0	61	15.2	18.8	**3.98**	**4.35**	0.38	0.92	1.00	0.35	**0.31**
10.0	9.5	79	24.8	39.1	36.7	Wet	92.0	61	15.2	18.8	**4.35**	**4.69**	0.34	0.92	1.00	0.31	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	53+16.96	DIST. FROM CL:	

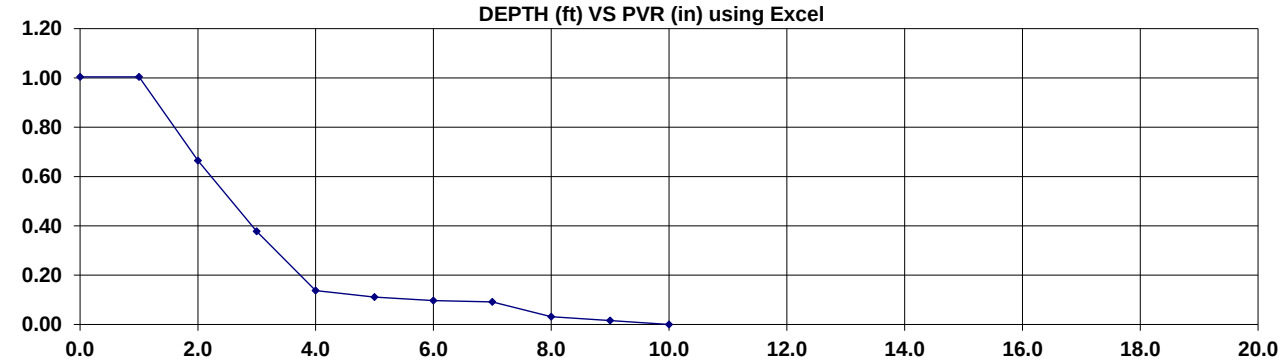
Boring Number:	P-12	Ground Elevation (z):	811.72	Longitude (x):	-97.410093	Latitude (y):	32.880893

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.00**
1.0	0.5	50	19.0	25.5	11.6	Dry	69.0	32	8.7	11.9	**0.00**	**0.00**	0.00	0.69	1.00	0.00	**1.00**
2.0	1.5	50	19.0	25.5	11.6	Dry	69.0	32	8.7	11.9	**0.00**	**0.49**	0.49	0.69	1.00	0.34	**0.66**
3.0	2.5	50	19.0	25.5	17.9	Dry	69.0	32	8.7	11.9	**0.49**	**0.91**	0.42	0.69	1.00	0.29	**0.38**
4.0	3.5	50	19.0	25.5	17.9	Dry	69.0	32	8.7	11.9	**0.91**	**1.26**	0.35	0.69	1.00	0.24	**0.14**
5.0	4.5	27	14.4	14.7	12.1	Dry	69.0	12	2.2	4.9	**0.33**	**0.36**	0.04	0.69	1.00	0.03	**0.11**
6.0	5.5	27	14.4	14.7	12.1	Dry	69.0	12	2.2	4.9	**0.36**	**0.38**	0.02	0.69	1.00	0.01	**0.10**
7.0	6.5	27	14.4	14.7	13.2	Dry	69.0	12	2.2	4.9	**0.38**	**0.39**	0.01	0.69	1.00	0.01	**0.09**
8.0	7.5	36	16.2	18.9	13.2	Dry	92.0	21	5.1	8.0	**1.11**	**1.17**	0.07	0.92	1.00	0.06	**0.03**
9.0	8.5	36	16.2	18.9	17.2	Avg	92.0	21	3.3	6.1	**0.65**	**0.67**	0.02	0.92	1.00	0.02	**0.02**
10.0	9.5	36	16.2	18.9	17.2	Avg	92.0	21	3.3	6.1	**0.67**	**0.69**	0.02	0.92	1.00	0.02	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	58+04.74	DIST. FROM CL:	

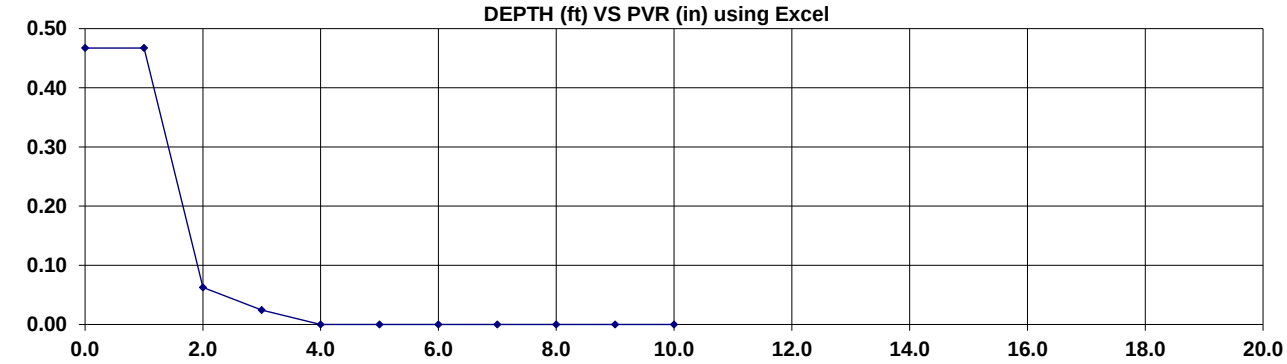
Boring Number:	P-13	Ground Elevation (z):	818.52	Longitude (x):	-97.406949	Latitude (y):	32.880943

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.47**
1.0	0.5	53	19.6	26.9	24.8	Avg	88.0	35	7.4	10.5	**0.00**	**0.00**	0.00	0.88	1.00	0.00	**0.47**
2.0	1.5	53	19.6	26.9	24.8	Avg	88.0	35	7.4	10.5	**0.00**	**0.46**	0.46	0.88	1.00	0.40	**0.06**
3.0	2.5	34	15.8	18.0	18.5	Wet	61.0	15	0.4	3.0	**0.09**	**0.16**	0.06	0.61	1.00	0.04	**0.02**
4.0	3.5	34	15.8	18.0	18.5	Wet	61.0	15	0.4	3.0	**0.16**	**0.20**	0.04	0.61	1.00	0.02	**0.00**
5.0	4.5		9.0	2.0		Dry			0.0	0.0	**0.20**	**0.20**	0.00	0.00	1.00	0.00	**0.00**
6.0	5.5		9.0	2.0		Dry			0.0	0.0	**0.20**	**0.20**	0.00	0.00	1.00	0.00	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**0.20**	**0.20**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**0.20**	**0.20**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**0.20**	**0.20**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**0.20**	**0.20**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition,Bedrock encounterd at 4 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	62+81.22	DIST. FROM CL:	

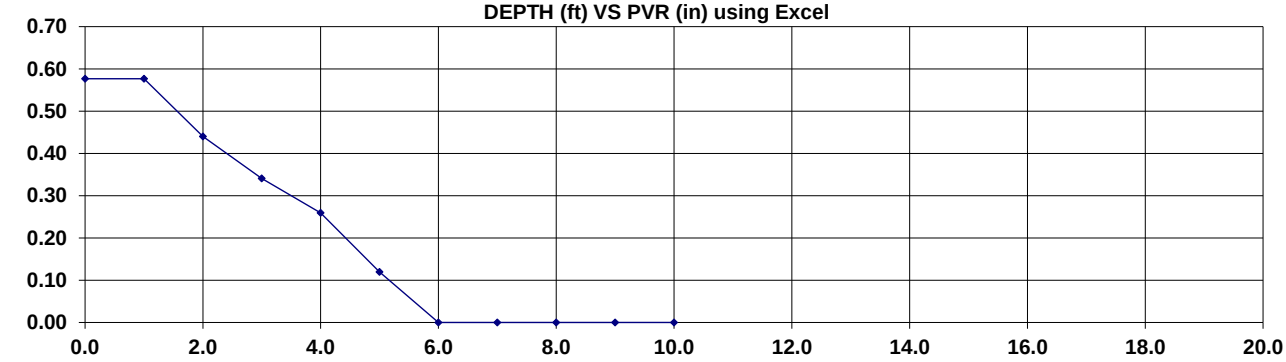
Boring Number:	P-14	Ground Elevation (z):	812.5	Longitude (x):	-97.405396	Latitude (y):	32.881023

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.58**
1.0	0.5	56	20.2	28.3	16.2	Dry	26.0	35	9.6	12.9	**0.00**	**0.00**	0.00	0.26	1.00	0.00	**0.58**
2.0	1.5	56	20.2	28.3	16.2	Dry	26.0	35	9.6	12.9	**0.00**	**0.53**	0.53	0.26	1.00	0.14	**0.44**
3.0	2.5	56	20.2	28.3	24.5	Avg	26.0	35	7.4	10.5	**0.46**	**0.84**	0.38	0.26	1.00	0.10	**0.34**
4.0	3.5	56	20.2	28.3	24.5	Avg	26.0	35	7.4	10.5	**0.84**	**1.15**	0.31	0.26	1.00	0.08	**0.26**
5.0	4.5	57	20.4	28.8	14.9	Dry	39.0	37	10.3	13.6	**1.46**	**1.82**	0.36	0.39	1.00	0.14	**0.12**
6.0	5.5	57	20.4	28.8	14.9	Dry	39.0	37	10.3	13.6	**1.82**	**2.12**	0.31	0.39	1.00	0.12	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition,Bedrock encounterd at 5.5 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Tarrant	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	
COURSE\LIFT:		STATION: 67+78.63	DIST. FROM CL:

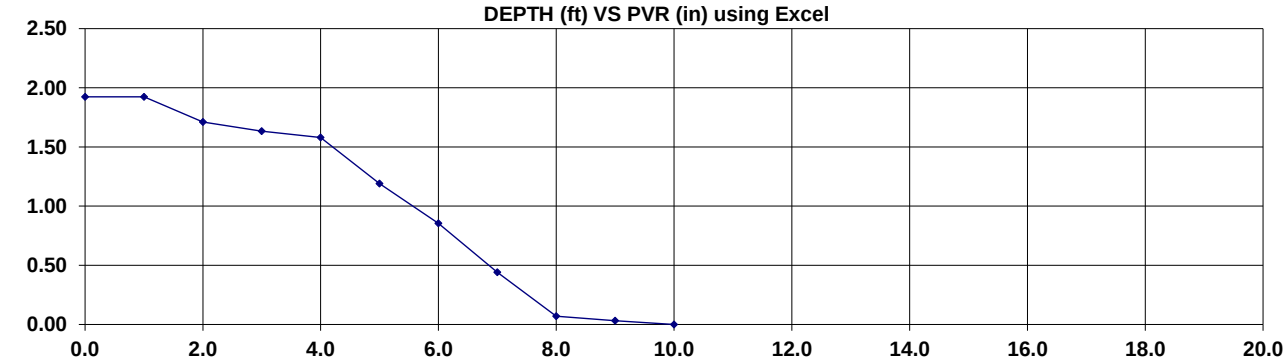
Boring Number:	P-15	Ground Elevation (z):	804.52	Longitude (x):	-97.405396	Latitude (y):	32.881023

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.92**
1.0	0.5	42	17.4	21.7	14.8	Dry	50.0	28	7.4	10.5	**0.00**	**0.00**	0.00	0.50	1.00	0.00	**1.92**
2.0	1.5	42	17.4	21.7	14.8	Dry	50.0	28	7.4	10.5	**0.00**	**0.43**	0.43	0.50	1.00	0.21	**1.71**
3.0	2.5	42	17.4	21.7	33.9	Wet	50.0	28	3.2	6.0	**0.21**	**0.36**	0.15	0.50	1.00	0.08	**1.63**
4.0	3.5	42	17.4	21.7	33.9	Wet	50.0	28	3.2	6.0	**0.36**	**0.47**	0.11	0.50	1.00	0.05	**1.58**
5.0	4.5	71	23.2	35.4	30.4	Avg	99.0	50	11.8	15.2	**1.56**	**1.95**	0.39	0.99	1.00	0.39	**1.19**
6.0	5.5	71	23.2	35.4	30.4	Avg	99.0	50	11.8	15.2	**1.95**	**2.29**	0.34	0.99	1.00	0.34	**0.85**
7.0	6.5	71	23.2	35.4	4.1	Dry	99.0	50	14.5	18.1	**2.90**	**3.32**	0.42	0.99	1.00	0.41	**0.44**
8.0	7.5	47	18.4	24.1	4.1	Dry	99.0	50	14.5	18.1	**3.32**	**3.69**	0.38	0.99	1.00	0.37	**0.07**
9.0	8.5	47	18.4	24.1	6.9	Dry	23.0	34	9.3	12.6	**2.38**	**2.55**	0.16	0.23	1.00	0.04	**0.03**
10.0	9.5	47	18.4	24.1	6.9	Dry	23.0	34	9.3	12.6	**2.55**	**2.69**	0.14	0.23	1.00	0.03	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition

Test Method:		Tested By:	Tested Date:
TX124			

Test Stamp Code:		Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	72+56.95	DIST. FROM CL:	

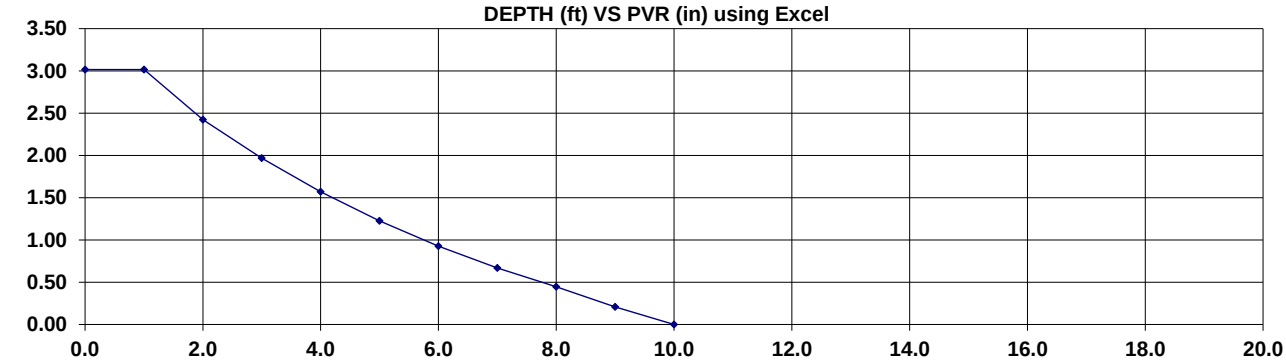
Boring Number:	P-16	Ground Elevation (z):	798.86	Longitude (x):	-97.402218	Latitude (y):	32.880998

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3.02**
1.0	0.5	71	23.2	35.4	26.2	Dry	94.0	45	12.9	16.4	**0.00**	**0.00**	0.00	0.94	1.00	0.00	**3.02**
2.0	1.5	71	23.2	35.4	26.2	Dry	94.0	45	12.9	16.4	**0.00**	**0.63**	0.63	0.94	1.00	0.59	**2.42**
3.0	2.5	70	23.0	34.9	31.0	Avg	88.0	48	11.2	14.6	**0.59**	**1.11**	0.52	0.88	1.00	0.46	**1.97**
4.0	3.5	70	23.0	34.9	31.0	Avg	88.0	48	11.2	14.6	**1.11**	**1.56**	0.45	0.88	1.00	0.40	**1.57**
5.0	4.5	70	23.0	34.9	28.8	Avg	88.0	48	11.2	14.6	**1.56**	**1.95**	0.39	0.88	1.00	0.35	**1.23**
6.0	5.5	70	23.0	34.9	28.8	Avg	88.0	48	11.2	14.6	**1.95**	**2.29**	0.34	0.88	1.00	0.30	**0.93**
7.0	6.5	70	23.0	34.9	26.6	Avg	88.0	48	11.2	14.6	**2.29**	**2.59**	0.29	0.88	1.00	0.26	**0.67**
8.0	7.5	70	23.0	34.9	26.6	Avg	88.0	48	11.2	14.6	**2.59**	**2.84**	0.25	0.88	1.00	0.22	**0.45**
9.0	8.5	76	24.2	37.7	27.7	Avg	92.0	54	13.0	16.5	**3.12**	**3.38**	0.26	0.92	1.00	0.24	**0.21**
10.0	9.5	76	24.2	37.7	27.7	Avg	92.0	54	13.0	16.5	**3.38**	**3.61**	0.23	0.92	1.00	0.21	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	82+32.36	DIST. FROM CL:	

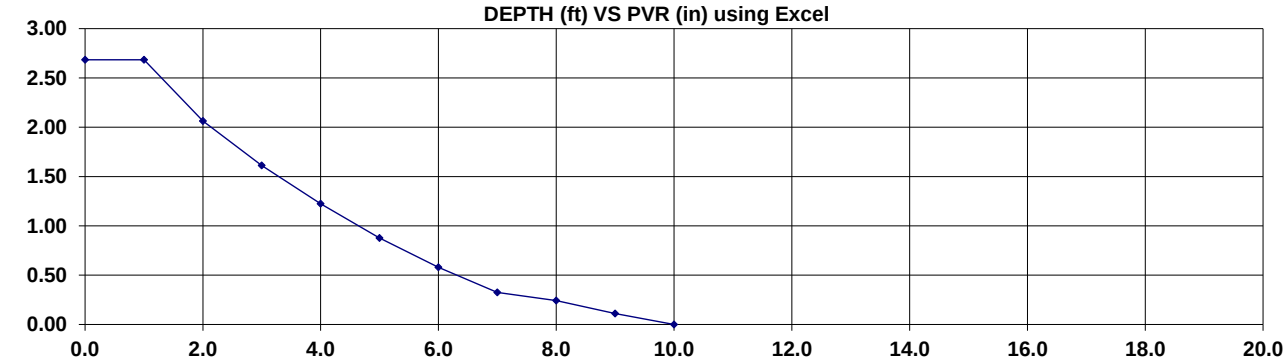
Boring Number:	P-17	Ground Elevation (z):	795.73	Longitude (x):	-97.399091	Latitude (y):	32.880929

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.68**
1.0	0.5	64	21.8	32.1	15.7	Dry	93.0	46	13.2	16.7	**0.00**	**0.00**	0.00	0.93	1.00	0.00	**2.68**
2.0	1.5	64	21.8	32.1	15.7	Dry	93.0	46	13.2	16.7	**0.00**	**0.67**	0.67	0.93	1.00	0.62	**2.06**
3.0	2.5	64	21.8	32.1	25.5	Avg	93.0	46	10.6	14.0	**0.56**	**1.04**	0.48	0.93	1.00	0.45	**1.61**
4.0	3.5	64	21.8	32.1	25.5	Avg	93.0	46	10.6	14.0	**1.04**	**1.46**	0.42	0.93	1.00	0.39	**1.23**
5.0	4.5	65	22.0	32.6	26.0	Avg	97.0	47	10.9	14.3	**1.46**	**1.82**	0.36	0.97	1.00	0.35	**0.88**
6.0	5.5	65	22.0	32.6	26.0	Avg	97.0	47	10.9	14.3	**1.82**	**2.12**	0.31	0.97	1.00	0.30	**0.58**
7.0	6.5	65	22.0	32.6	28.2	Avg	97.0	47	10.9	14.3	**2.12**	**2.39**	0.26	0.97	1.00	0.25	**0.33**
8.0	7.5	58	20.6	29.3	28.2	Wet	96.0	41	6.0	9.0	**1.35**	**1.43**	0.09	0.96	1.00	0.08	**0.24**
9.0	8.5	58	20.6	29.3	26.4	Avg	96.0	41	9.2	12.4	**2.15**	**2.29**	0.14	0.96	1.00	0.13	**0.11**
10.0	9.5	58	20.6	29.3	26.4	Avg	96.0	41	9.2	12.4	**2.29**	**2.41**	0.12	0.96	1.00	0.11	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	87+26.12	DIST. FROM CL:	

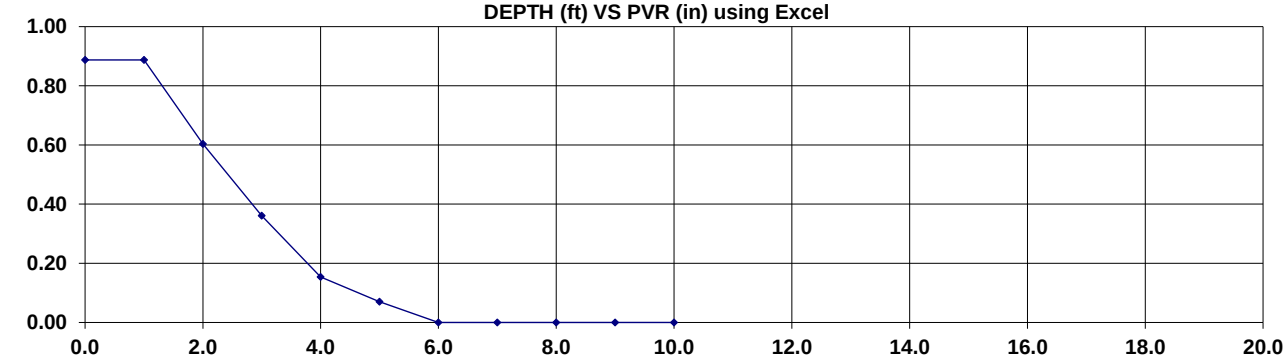
Boring Number:	P-18	Ground Elevation (z):	798.31	Longitude (x):	-97.397934	Latitude (y):	32.880867

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.89**
1.0	0.5	51	19.2	26.0	17.7	Dry	54.0	35	9.6	12.9	**0.00**	**0.00**	0.00	0.54	1.00	0.00	**0.89**
2.0	1.5	51	19.2	26.0	17.7	Dry	54.0	35	9.6	12.9	**0.00**	**0.53**	0.53	0.54	1.00	0.28	**0.60**
3.0	2.5	51	19.2	26.0	15.6	Dry	54.0	35	9.6	12.9	**0.53**	**0.98**	0.45	0.54	1.00	0.24	**0.36**
4.0	3.5	51	19.2	26.0	15.6	Dry	54.0	35	9.6	12.9	**0.98**	**1.36**	0.38	0.54	1.00	0.21	**0.15**
5.0	4.5	50	19.0	25.5	12.4	Dry	29.0	33	9.0	12.2	**1.26**	**1.55**	0.29	0.29	1.00	0.08	**0.07**
6.0	5.5	50	19.0	25.5	12.4	Dry	29.0	33	9.0	12.2	**1.55**	**1.79**	0.24	0.29	1.00	0.07	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition,Bedrock encounterd a 6 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	92+29.69	DIST. FROM CL:	

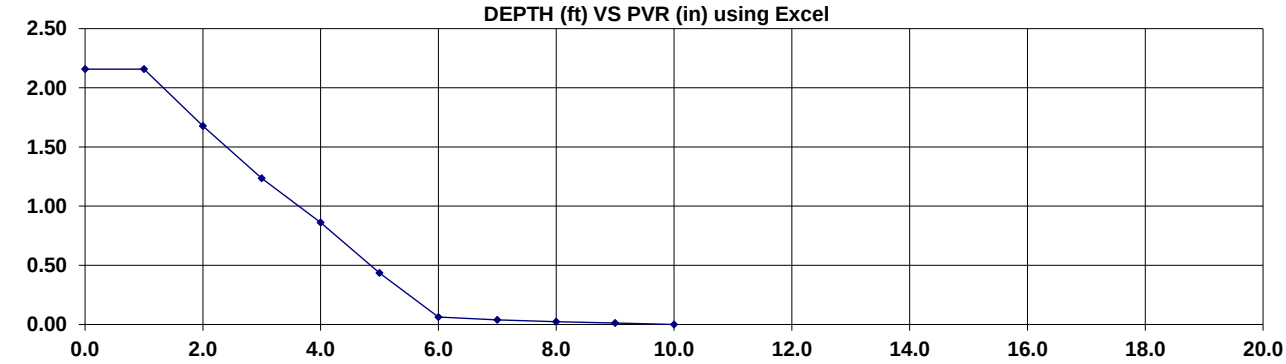
Boring Number:	P-19	Ground Elevation (z):	801.86	Longitude (x):	-97.395793	Latitude (y):	32.880976

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.16**
1.0	0.5	77	24.4	38.2	31.8	Avg	86.0	45	10.3	13.7	**0.00**	**0.00**	0.00	0.86	1.00	0.00	**2.16**
2.0	1.5	77	24.4	38.2	31.8	Avg	86.0	45	10.3	13.7	**0.00**	**0.56**	0.56	0.86	1.00	0.48	**1.68**
3.0	2.5	66	22.2	33.0	29.2	Avg	98.0	43	9.7	13.0	**0.53**	**0.98**	0.45	0.98	1.00	0.44	**1.24**
4.0	3.5	66	22.2	33.0	29.2	Avg	98.0	43	9.7	13.0	**0.98**	**1.36**	0.38	0.98	1.00	0.37	**0.86**
5.0	4.5	66	22.2	33.0	15.5	Dry	98.0	43	12.2	15.7	**1.68**	**2.11**	0.43	0.98	1.00	0.43	**0.44**
6.0	5.5	66	22.2	33.0	15.5	Dry	98.0	43	12.2	15.7	**2.11**	**2.50**	0.38	0.98	1.00	0.37	**0.06**
7.0	6.5	28	14.6	15.2	12.9	Dry	68.0	14	2.8	5.6	**0.60**	**0.63**	0.03	0.68	1.00	0.02	**0.04**
8.0	7.5	28	14.6	15.2	12.9	Dry	68.0	14	2.8	5.6	**0.63**	**0.65**	0.02	0.68	1.00	0.02	**0.02**
9.0	8.5	28	14.6	15.2	10.9	Dry	68.0	14	2.8	5.6	**0.65**	**0.67**	0.02	0.68	1.00	0.01	**0.01**
10.0	9.5	28	14.6	15.2	10.9	Dry	68.0	14	2.8	5.6	**0.67**	**0.69**	0.02	0.68	1.00	0.01	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	76+25.99	DIST. FROM CL:	

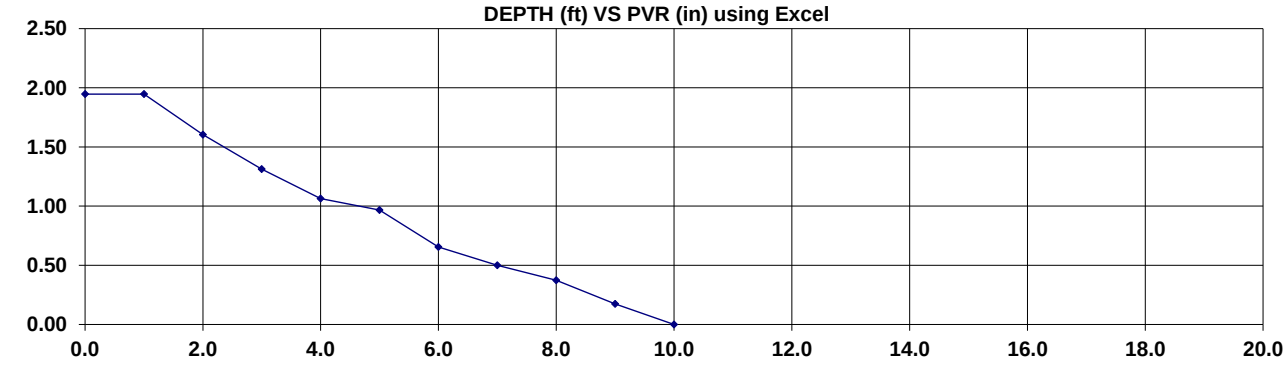
Boring Number:	CB-1	Ground Elevation (z):	795.42	Longitude (x):	-97.395793	Latitude (y):	32.880976

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.95**
1.0	0.5	53	19.6	26.9	14.7	Dry	65.0	36	10.0	13.2	**0.00**	**0.00**	0.00	0.65	1.00	0.00	**1.95**
2.0	1.5	53	19.6	26.9	14.7	Dry	65.0	36	10.0	13.2	**0.00**	**0.53**	0.53	0.65	1.00	0.34	**1.60**
3.0	2.5	53	19.6	26.9	19.8	Dry	65.0	36	10.0	13.2	**0.53**	**0.98**	0.45	0.65	1.00	0.29	**1.31**
4.0	3.5	53	19.6	26.9	19.8	Dry	65.0	36	10.0	13.2	**0.98**	**1.36**	0.38	0.65	1.00	0.25	**1.06**
5.0	4.5	53	19.6	26.9	27.0	Wet	65.0	36	4.9	7.9	**0.76**	**0.91**	0.15	0.65	1.00	0.10	**0.97**
6.0	5.5	69	22.8	34.4	27.0	Avg	92.0	50	11.8	15.2	**1.95**	**2.29**	0.34	0.92	1.00	0.31	**0.65**
7.0	6.5	69	22.8	34.4	33.4	Wet	92.0	50	8.0	11.1	**1.62**	**1.79**	0.17	0.92	1.00	0.15	**0.50**
8.0	7.5	69	22.8	34.4	33.4	Wet	92.0	50	8.0	11.1	**1.79**	**1.92**	0.14	0.92	1.00	0.13	**0.37**
9.0	8.5	69	22.8	34.4	26.5	Avg	92.0	50	11.8	15.2	**2.84**	**3.06**	0.22	0.92	1.00	0.20	**0.17**
10.0	9.5	69	22.8	34.4	26.5	Avg	92.0	50	11.8	15.2	**3.06**	**3.25**	0.19	0.92	1.00	0.17	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Existing Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

APPENDIX F

POTENTIAL VERTICAL RISE (PVR) RESULTS

DRY CONDITION

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	2+82.67	DIST. FROM CL:	

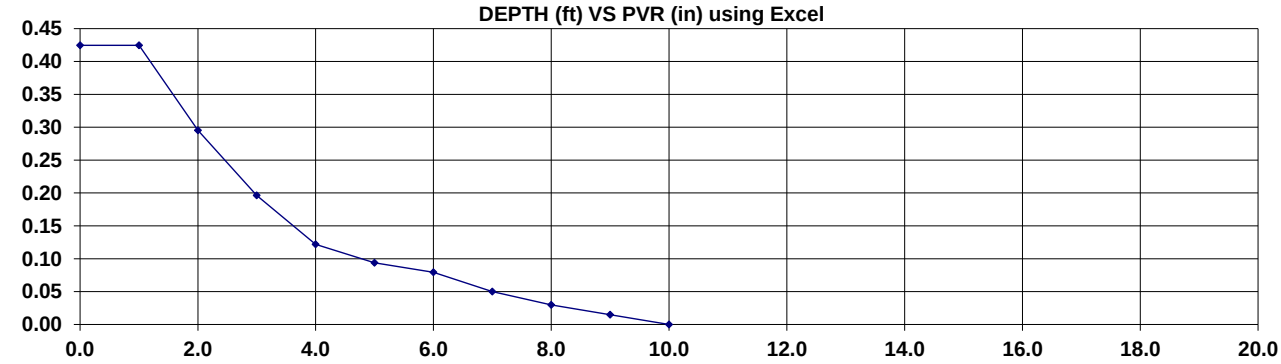
Boring Number:	P-1B	Ground Elevation (z):	843.22	Longitude (x):	-97.424933	Latitude (y):	32.8801034

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.42**
1.0	0.5	32	15.4	17.0	10.8	Dry	49.1	18	4.1	7.0	**0.00**	**0.00**	0.00	0.49	1.00	0.00	**0.42**
2.0	1.5	32	15.4	17.0	10.8	Dry	49.1	18	4.1	7.0	**0.00**	**0.26**	0.26	0.49	1.00	0.13	**0.30**
3.0	2.5	32	15.4	17.0	12.3	Dry	49.1	18	4.1	7.0	**0.26**	**0.46**	0.20	0.49	1.00	0.10	**0.20**
4.0	3.5	32	15.4	17.0	12.3	Dry	49.1	18	4.1	7.0	**0.46**	**0.62**	0.15	0.49	1.00	0.07	**0.12**
5.0	4.5	28	14.6	15.2	12.0	Dry	72.6	12	2.2	4.9	**0.33**	**0.36**	0.04	0.73	1.00	0.03	**0.09**
6.0	5.5	28	14.6	15.2	12.0	Dry	72.6	12	2.2	4.9	**0.36**	**0.38**	0.02	0.73	1.00	0.01	**0.08**
7.0	6.5	28	14.6	15.2	11.6	Dry	86.8	16	3.5	6.3	**0.60**	**0.63**	0.03	0.87	1.00	0.03	**0.05**
8.0	7.5	28	14.6	15.2	11.6	Dry	86.8	16	3.5	6.3	**0.63**	**0.65**	0.02	0.87	1.00	0.02	**0.03**
9.0	8.5	28	14.6	15.2	11.4	Dry	86.8	16	3.5	6.3	**0.65**	**0.67**	0.02	0.87	1.00	0.01	**0.01**
10.0	9.5	28	14.6	15.2	11.4	Dry	86.8	16	3.5	6.3	**0.67**	**0.69**	0.02	0.87	1.00	0.01	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	4+73.59	DIST. FROM CL:	

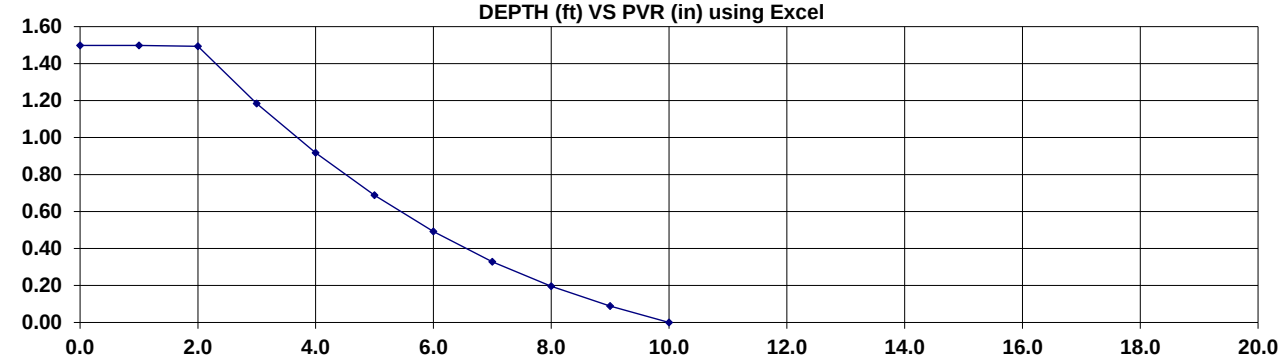
Boring Number:	P-2	Ground Elevation (z):	840.41	Longitude (x):	-97.422674	Latitude (y):	32.8801034

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.50**
1.0	0.5	0	9.0	2.0	3.0	Dry	15.0	0	-1.8	0.7	**0.00**	**0.00**	0.00	0.15	1.00	0.00	**1.50**
2.0	1.5	0	9.0	2.0	3.0	Dry	15.0	0	-1.8	0.7	**0.00**	**0.03**	0.03	0.15	1.00	0.00	**1.49**
3.0	2.5	54	19.8	27.4	19.6	Dry	64.0	39	10.9	14.3	**0.56**	**1.04**	0.48	0.64	1.00	0.31	**1.18**
4.0	3.5	54	19.8	27.4	19.6	Dry	64.0	39	10.9	14.3	**1.04**	**1.46**	0.42	0.64	1.00	0.27	**0.92**
5.0	4.5	54	19.8	27.4	19.2	Dry	64.0	39	10.9	14.3	**1.46**	**1.82**	0.36	0.64	1.00	0.23	**0.69**
6.0	5.5	54	19.8	27.4	19.2	Dry	64.0	39	10.9	14.3	**1.82**	**2.12**	0.31	0.64	1.00	0.20	**0.49**
7.0	6.5	43	17.6	22.2	12.0	Dry	97.0	29	7.7	10.8	**1.62**	**1.79**	0.17	0.97	1.00	0.16	**0.33**
8.0	7.5	43	17.6	22.2	12.0	Dry	97.0	29	7.7	10.8	**1.79**	**1.92**	0.14	0.97	1.00	0.13	**0.20**
9.0	8.5	43	17.6	22.2	17.4	Dry	97.0	29	7.7	10.8	**1.92**	**2.03**	0.11	0.97	1.00	0.11	**0.09**
10.0	9.5	43	17.6	22.2	17.4	Dry	97.0	29	7.7	10.8	**2.03**	**2.13**	0.09	0.97	1.00	0.09	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	9+76.27	DIST. FROM CL:	

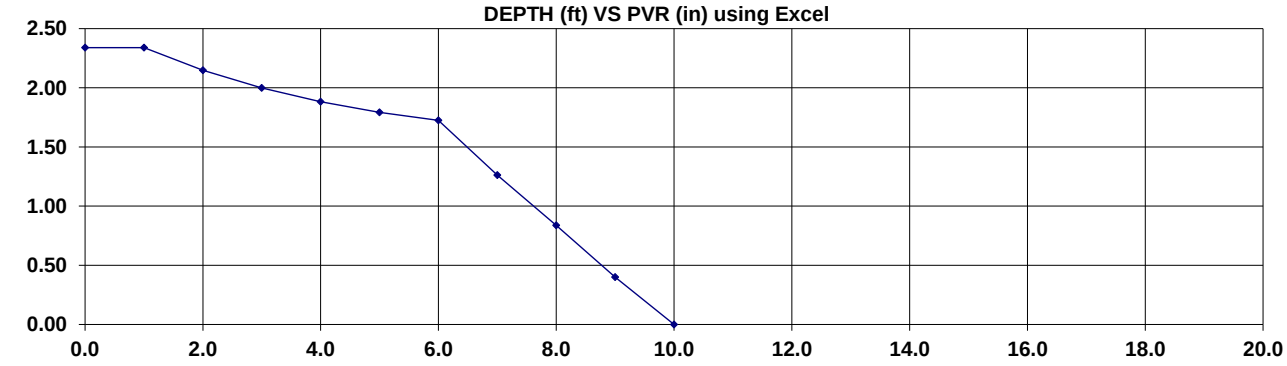
Boring Number:	P-3	Ground Elevation (z):	832.42	Longitude (x):	-97.42106	Latitude (y):	32.8801093

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.34**
1.0	0.5	33	15.6	17.5	10.9	Dry	60.0	21	5.1	8.0	**0.00**	**0.00**	0.00	0.60	1.00	0.00	**2.34**
2.0	1.5	33	15.6	17.5	10.9	Dry	60.0	21	5.1	8.0	**0.00**	**0.32**	0.32	0.60	1.00	0.19	**2.15**
3.0	2.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.32**	**0.57**	0.25	0.60	1.00	0.15	**2.00**
4.0	3.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.57**	**0.76**	0.19	0.60	1.00	0.12	**1.88**
5.0	4.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.76**	**0.91**	0.15	0.60	1.00	0.09	**1.79**
6.0	5.5	33	15.6	17.5	11.5	Dry	60.0	21	5.1	8.0	**0.91**	**1.02**	0.11	0.60	1.00	0.07	**1.73**
7.0	6.5	76	24.2	37.7	26.7	Dry	87.0	59	17.4	21.2	**3.46**	**3.99**	0.53	0.87	1.00	0.46	**1.26**
8.0	7.5	76	24.2	37.7	26.7	Dry	87.0	59	17.4	21.2	**3.99**	**4.48**	0.49	0.87	1.00	0.42	**0.84**
9.0	8.5	77	24.4	38.2	12.0	Dry	98.0	59	17.4	21.2	**4.48**	**4.93**	0.45	0.98	1.00	0.44	**0.40**
10.0	9.5	77	24.4	38.2	12.0	Dry	98.0	59	17.4	21.2	**4.93**	**5.34**	0.41	0.98	1.00	0.40	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:		Tested By:		Tested Date:
TX124				

Test Stamp Code:		Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	14+65.62	DIST. FROM CL:	

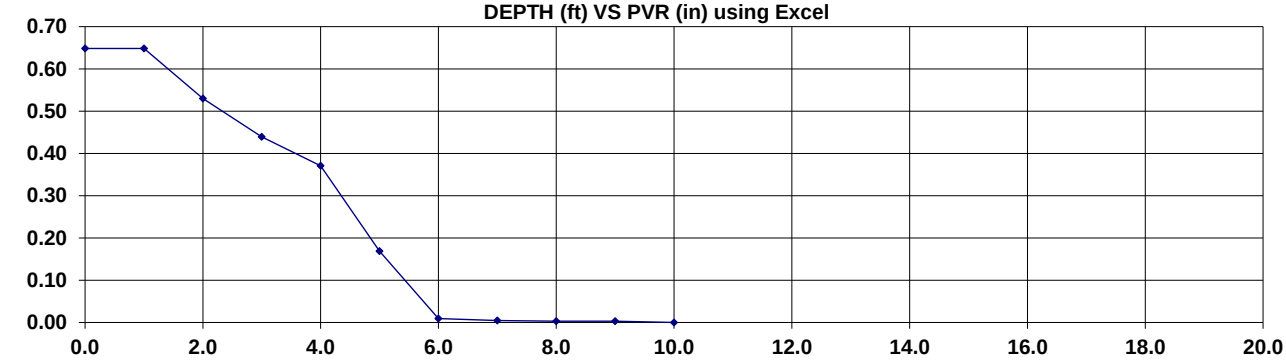
Boring Number:	P-4	Ground Elevation (z):	833.41	Longitude (x):	-97.42106	Latitude (y):	32.8801043

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.65**
1.0	0.5	33	15.6	17.5	10.8	Dry	45.0	17	3.8	6.6	**0.00**	**0.00**	0.00	0.45	1.00	0.00	**0.65**
2.0	1.5	33	15.6	17.5	10.8	Dry	45.0	17	3.8	6.6	**0.00**	**0.26**	0.26	0.45	1.00	0.12	**0.53**
3.0	2.5	33	15.6	17.5	10.3	Dry	45.0	17	3.8	6.6	**0.26**	**0.46**	0.20	0.45	1.00	0.09	**0.44**
4.0	3.5	33	15.6	17.5	10.3	Dry	45.0	17	3.8	6.6	**0.46**	**0.62**	0.15	0.45	1.00	0.07	**0.37**
5.0	4.5	47	18.4	24.1	12.0	Dry	91.0	27	7.0	10.1	**1.05**	**1.27**	0.22	0.91	1.00	0.20	**0.17**
6.0	5.5	47	18.4	24.1	12.0	Dry	91.0	27	7.0	10.1	**1.27**	**1.45**	0.18	0.91	1.00	0.16	**0.01**
7.0	6.5	28	14.6	15.2	12.0	Dry	59.0	11	1.8	4.6	**0.38**	**0.39**	0.01	0.59	1.00	0.00	**0.00**
8.0	7.5	28	14.6	15.2	12.0	Dry	59.0	11	1.8	4.6	**0.39**	**0.39**	0.00	0.59	1.00	0.00	**0.00**
9.0	8.5	28	14.6	15.2	12.0	Dry	59.0	11	1.8	4.6	**0.39**	**0.40**	0.00	0.59	1.00	0.00	**0.00**
10.0	9.5	28	14.6	15.2	13.0	Dry	59.0	11	1.8	4.6	**0.40**	**0.40**	0.00	0.59	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	19+77.82	DIST. FROM CL:	

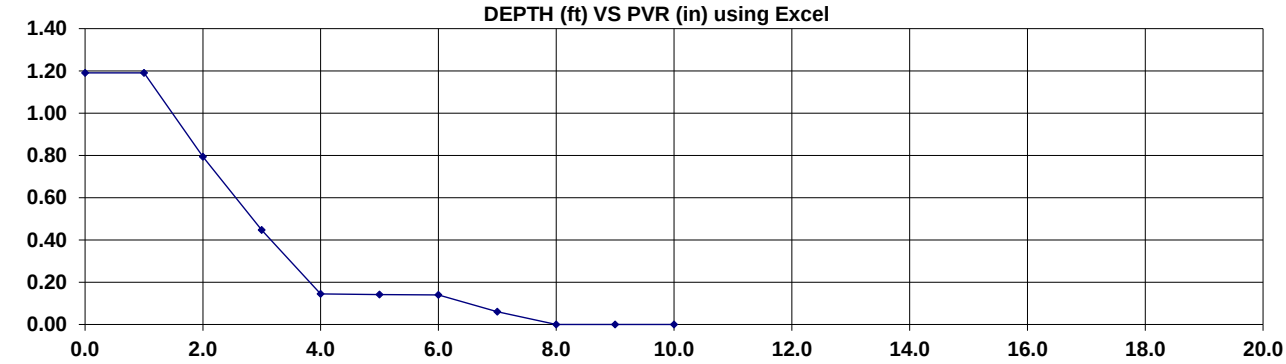
Boring Number:	P-5	Ground Elevation (z):	832.91	Longitude (x):	-97.419413	Latitude (y):	32.880982

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.19**
1.0	0.5	65	22.0	32.6	12.9	Dry	67.0	41	11.6	15.0	**0.00**	**0.00**	0.00	0.67	1.00	0.00	**1.19**
2.0	1.5	65	22.0	32.6	12.9	Dry	67.0	41	11.6	15.0	**0.00**	**0.59**	0.59	0.67	1.00	0.40	**0.79**
3.0	2.5	65	22.0	32.6	19.2	Dry	67.0	41	11.6	15.0	**0.59**	**1.11**	0.52	0.67	1.00	0.35	**0.45**
4.0	3.5	65	22.0	32.6	19.2	Dry	67.0	41	11.6	15.0	**1.11**	**1.56**	0.45	0.67	1.00	0.30	**0.14**
5.0	4.5	0	9.0	2.0	5.0	Dry	35.0	0	-1.8	0.7	**0.07**	**0.07**	0.01	0.35	1.00	0.00	**0.14**
6.0	5.5	0	9.0	2.0	5.0	Dry	35.0	0	-1.8	0.7	**0.07**	**0.08**	0.00	0.35	1.00	0.00	**0.14**
7.0	6.5	37	16.4	19.4	12.0	Dry	93.0	22	5.4	8.4	**1.02**	**1.11**	0.09	0.93	1.00	0.08	**0.06**
8.0	7.5	37	16.4	19.4	12.0	Dry	93.0	22	5.4	8.4	**1.11**	**1.17**	0.07	0.93	1.00	0.06	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.17**	**1.17**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.17**	**1.17**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition, Bed Rock encountered at 8 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	24+41.69	DIST. FROM CL:			

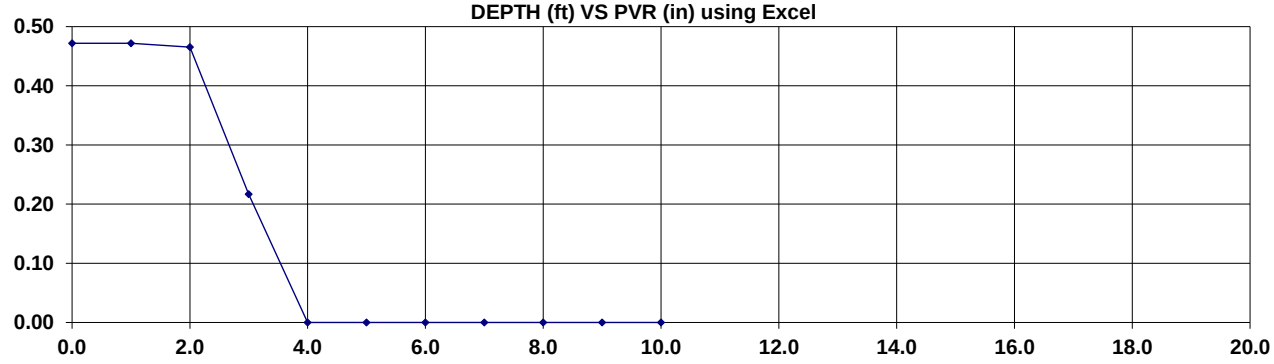
Boring Number:	P-6	Ground Elevation (z):	837.07	Longitude (x):	-97.417901	Latitude (y):	32.881062

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.47**
1.0	0.5	0	9.0	2.0	4.0	Dry	21.0	0	-1.8	0.7	**0.00**	**0.00**	0.00	0.21	1.00	0.00	**0.47**
2.0	1.5	0	9.0	2.0	4.0	Dry	21.0	0	-1.8	0.7	**0.00**	**0.03**	0.03	0.21	1.00	0.01	**0.47**
3.0	2.5	57	20.4	28.8	19.6	Dry	48.0	40	11.3	14.6	**0.59**	**1.11**	0.52	0.48	1.00	0.25	**0.22**
4.0	3.5	57	20.4	28.8	19.6	Dry	48.0	40	11.3	14.6	**1.11**	**1.56**	0.45	0.48	1.00	0.22	**0.00**
5.0	4.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
6.0	5.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.56**	**1.56**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition, Bed Rock encountered at 4 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in FW	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	29+32.01	DIST. FROM CL:	

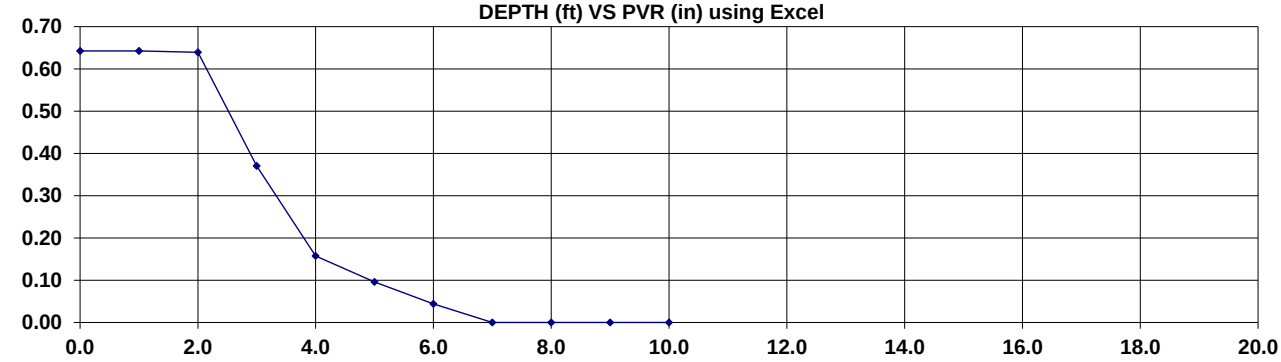
Boring Number:	P-7	Ground Elevation (z):	832.34	Longitude (x):	-97.416304	Latitude (y):	32.881048

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.64**
1.0	0.5	0	9.0	2.0	7.1	Dry	11.0	0	-1.8	0.7	**0.00**	**0.00**	0.00	0.11	1.00	0.00	**0.64**
2.0	1.5	0	9.0	2.0	7.1	Dry	11.0	0	-1.8	0.7	**0.00**	**0.03**	0.03	0.11	1.00	0.00	**0.64**
3.0	2.5	42	17.4	21.7	14.1	Dry	90.0	23	5.7	8.7	**0.37**	**0.67**	0.30	0.90	1.00	0.27	**0.37**
4.0	3.5	42	17.4	21.7	14.1	Dry	90.0	23	5.7	8.7	**0.67**	**0.91**	0.24	0.90	1.00	0.21	**0.16**
5.0	4.5	58	20.6	29.3	10.0	Dry	19.0	36	10.0	13.2	**1.36**	**1.68**	0.32	0.19	1.00	0.06	**0.10**
6.0	5.5	58	20.6	29.3	10.0	Dry	19.0	36	10.0	13.2	**1.68**	**1.96**	0.27	0.19	1.00	0.05	**0.04**
7.0	6.5	58	20.6	29.3	9.8	Dry	19.0	36	10.0	13.2	**1.96**	**2.19**	0.23	0.19	1.00	0.04	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**2.19**	**2.19**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**2.19**	**2.19**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**2.19**	**2.19**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition, Bed Rock encountered at 6.5 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	33+96.28	DIST. FROM CL:	

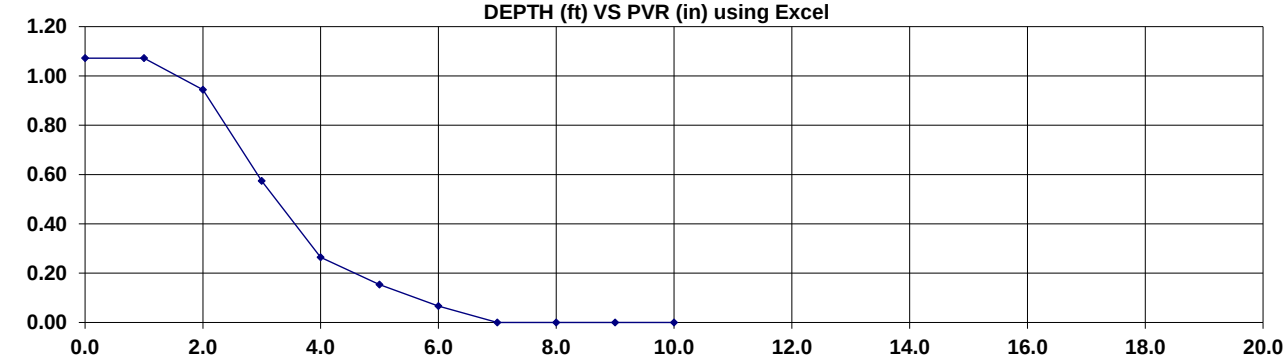
Boring Number:	P-8	Ground Elevation (z):	829.3	Longitude (x):	-97.414792	Latitude (y):	32.881025

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.07**
1.0	0.5	40	17.0	20.8	12.3	Dry	30.0	26	6.7	9.8	**0.00**	**0.00**	0.00	0.30	1.00	0.00	**1.07**
2.0	1.5	40	17.0	20.8	12.3	Dry	30.0	26	6.7	9.8	**0.00**	**0.43**	0.43	0.30	1.00	0.13	**0.94**
3.0	2.5	47	18.4	24.1	12.0	Dry	89.0	32	8.7	11.9	**0.49**	**0.91**	0.42	0.89	1.00	0.37	**0.57**
4.0	3.5	47	18.4	24.1	12.0	Dry	89.0	32	8.7	11.9	**0.91**	**1.26**	0.35	0.89	1.00	0.31	**0.26**
5.0	4.5	40	17.0	20.8	12.0	Dry	60.0	24	6.1	9.1	**0.91**	**1.09**	0.19	0.60	1.00	0.11	**0.15**
6.0	5.5	40	17.0	20.8	12.0	Dry	60.0	24	6.1	9.1	**1.09**	**1.24**	0.14	0.60	1.00	0.09	**0.07**
7.0	6.5	40	17.0	20.8	2.3	Dry	60.0	24	6.1	9.1	**1.24**	**1.35**	0.11	0.60	1.00	0.07	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition, Bed Rock encountered at 6.5 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	38+95.32	DIST. FROM CL:	

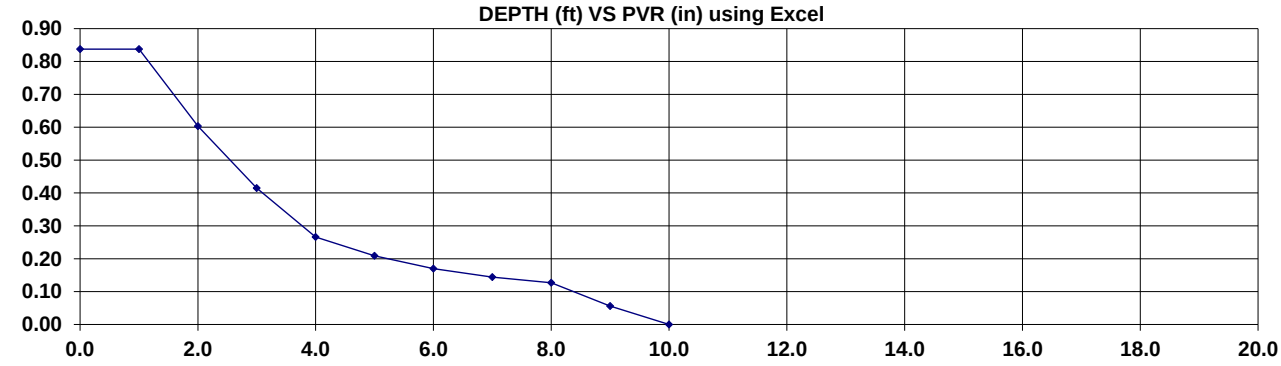
Boring Number:	P-9	Ground Elevation (z):	821.68	Longitude (x):	-97.413168	Latitude (y):	32.880908

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.84**
1.0	0.5	40	17.0	20.8	12.0	Dry	63.0	23	5.7	8.7	**0.00**	**0.00**	0.00	0.63	1.00	0.00	**0.84**
2.0	1.5	40	17.0	20.8	12.0	Dry	63.0	23	5.7	8.7	**0.00**	**0.37**	0.37	0.63	1.00	0.23	**0.60**
3.0	2.5	40	17.0	20.8	8.3	Dry	63.0	23	5.7	8.7	**0.37**	**0.67**	0.30	0.63	1.00	0.19	**0.42**
4.0	3.5	40	17.0	20.8	8.3	Dry	63.0	23	5.7	8.7	**0.67**	**0.91**	0.24	0.63	1.00	0.15	**0.27**
5.0	4.5	29	14.8	15.6	12.7	Dry	76.0	16	3.5	6.3	**0.47**	**0.55**	0.08	0.76	1.00	0.06	**0.21**
6.0	5.5	29	14.8	15.6	12.7	Dry	76.0	16	3.5	6.3	**0.55**	**0.60**	0.05	0.76	1.00	0.04	**0.17**
7.0	6.5	29	14.8	15.6	11.8	Dry	76.0	16	3.5	6.3	**0.60**	**0.63**	0.03	0.76	1.00	0.03	**0.14**
8.0	7.5	29	14.8	15.6	11.8	Dry	76.0	16	3.5	6.3	**0.63**	**0.65**	0.02	0.76	1.00	0.02	**0.13**
9.0	8.5	39	16.8	20.3	12.0	Dry	84.0	26	6.7	9.8	**1.69**	**1.78**	0.08	0.84	1.00	0.07	**0.06**
10.0	9.5	39	16.8	20.3	12.0	Dry	84.0	26	6.7	9.8	**1.78**	**1.85**	0.07	0.84	1.00	0.06	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	44+21.15	DIST. FROM CL:	

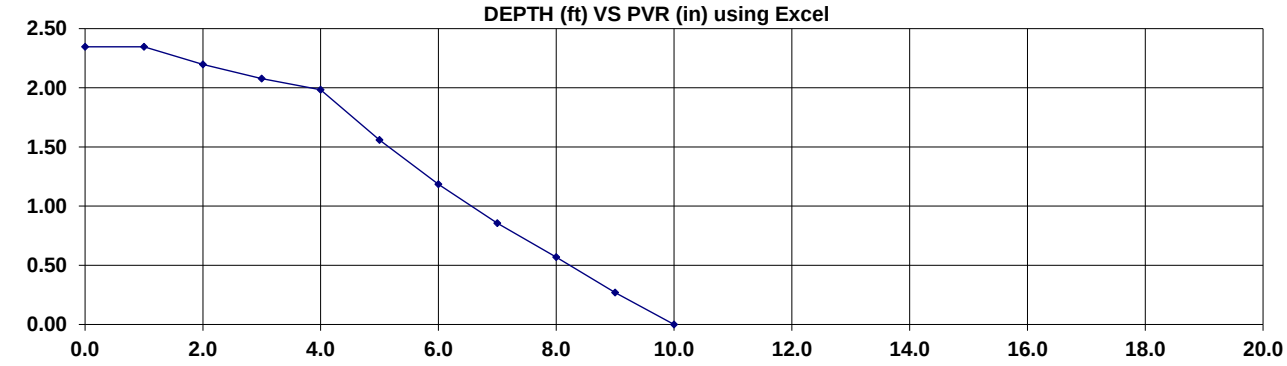
Boring Number:	P-10	Ground Elevation (z):	804.17	Longitude (x):	-97.411454	Latitude (y):	32.880997

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.35**
1.0	0.5	40	17.0	20.8	12.1	Dry	40.0	25	6.4	9.4	**0.00**	**0.00**	0.00	0.40	1.00	0.00	**2.35**
2.0	1.5	40	17.0	20.8	12.1	Dry	40.0	25	6.4	9.4	**0.00**	**0.37**	0.37	0.40	1.00	0.15	**2.20**
3.0	2.5	40	17.0	20.8	12.8	Dry	40.0	25	6.4	9.4	**0.37**	**0.67**	0.30	0.40	1.00	0.12	**2.08**
4.0	3.5	40	17.0	20.8	12.8	Dry	40.0	25	6.4	9.4	**0.67**	**0.91**	0.24	0.40	1.00	0.09	**1.98**
5.0	4.5	71	23.2	35.4	12.0	Dry	98.0	44	12.6	16.0	**1.68**	**2.11**	0.43	0.98	1.00	0.43	**1.56**
6.0	5.5	71	23.2	35.4	12.0	Dry	98.0	44	12.6	16.0	**2.11**	**2.50**	0.38	0.98	1.00	0.37	**1.18**
7.0	6.5	71	23.2	35.4	12.0	Dry	98.0	44	12.6	16.0	**2.50**	**2.83**	0.33	0.98	1.00	0.33	**0.86**
8.0	7.5	71	23.2	35.4	12.0	Dry	98.0	44	12.6	16.0	**2.83**	**3.12**	0.29	0.98	1.00	0.29	**0.57**
9.0	8.5	72	23.4	35.8	12.0	Dry	89.0	51	14.8	18.5	**3.69**	**4.03**	0.34	0.89	1.00	0.30	**0.27**
10.0	9.5	72	23.4	35.8	26.5	Dry	89.0	51	14.8	18.5	**4.03**	**4.33**	0.30	0.89	1.00	0.27	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:		Tested By:		Tested Date:
TX124				

Test Stamp Code:		Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	48+39.38	DIST. FROM CL:	

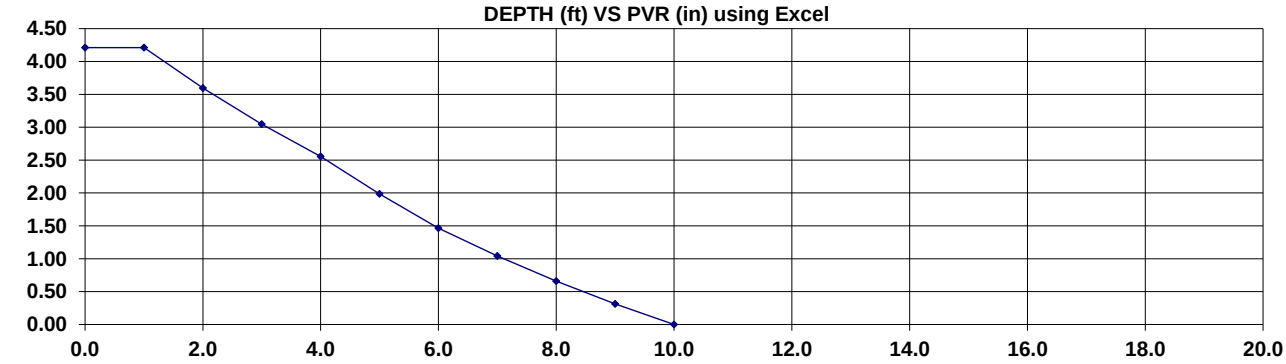
Boring Number:	P-11	Ground Elevation (z):	801.78	Longitude (x):	-97.410093	Latitude (y):	32.880893

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4.21**
1.0	0.5	67	22.4	33.5	11.9	Dry	92.0	48	13.9	17.4	**0.00**	**0.00**	0.00	0.92	1.00	0.00	**4.21**
2.0	1.5	67	22.4	33.5	11.9	Dry	92.0	48	13.9	17.4	**0.00**	**0.67**	0.67	0.92	1.00	0.61	**3.60**
3.0	2.5	67	22.4	33.5	12.0	Dry	92.0	48	13.9	17.4	**0.67**	**1.27**	0.60	0.92	1.00	0.55	**3.05**
4.0	3.5	67	22.4	33.5	12.0	Dry	92.0	48	13.9	17.4	**1.27**	**1.80**	0.53	0.92	1.00	0.49	**2.56**
5.0	4.5	78	24.6	38.7	12.0	Dry	90.0	57	16.8	20.5	**2.25**	**2.88**	0.63	0.90	1.00	0.57	**1.99**
6.0	5.5	78	24.6	38.7	12.0	Dry	90.0	57	16.8	20.5	**2.88**	**3.46**	0.58	0.90	1.00	0.52	**1.46**
7.0	6.5	79	24.8	39.1	12.0	Dry	92.0	61	15.2	18.8	**3.10**	**3.56**	0.46	0.92	1.00	0.42	**1.04**
8.0	7.5	79	24.8	39.1	12.0	Dry	92.0	61	15.2	18.8	**3.56**	**3.98**	0.42	0.92	1.00	0.38	**0.66**
9.0	8.5	79	24.8	39.1	12.0	Dry	92.0	61	15.2	18.8	**3.98**	**4.35**	0.38	0.92	1.00	0.35	**0.31**
10.0	9.5	79	24.8	39.1	12.0	Dry	92.0	61	15.2	18.8	**4.35**	**4.69**	0.34	0.92	1.00	0.31	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	53+16.96	DIST. FROM CL:	

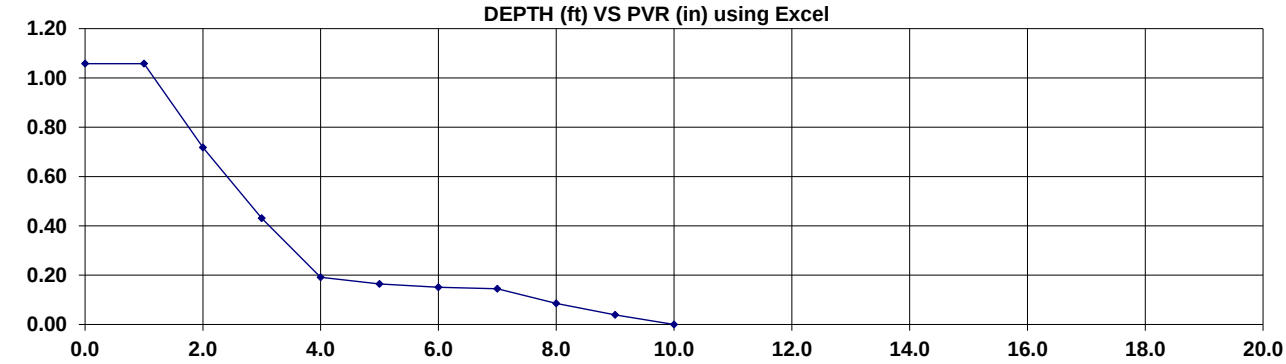
Boring Number:	P-12	Ground Elevation (z):	811.72	Longitude (x):	-97.410093	Latitude (y):	32.880893

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.06**
1.0	0.5	50	19.0	25.5	11.6	Dry	69.0	32	8.7	11.9	**0.00**	**0.00**	0.00	0.69	1.00	0.00	**1.06**
2.0	1.5	50	19.0	25.5	11.6	Dry	69.0	32	8.7	11.9	**0.00**	**0.49**	0.49	0.69	1.00	0.34	**0.72**
3.0	2.5	50	19.0	25.5	17.9	Dry	69.0	32	8.7	11.9	**0.49**	**0.91**	0.42	0.69	1.00	0.29	**0.43**
4.0	3.5	50	19.0	25.5	17.9	Dry	69.0	32	8.7	11.9	**0.91**	**1.26**	0.35	0.69	1.00	0.24	**0.19**
5.0	4.5	27	14.4	14.7	12.1	Dry	69.0	12	2.2	4.9	**0.33**	**0.36**	0.04	0.69	1.00	0.03	**0.16**
6.0	5.5	27	14.4	14.7	12.1	Dry	69.0	12	2.2	4.9	**0.36**	**0.38**	0.02	0.69	1.00	0.01	**0.15**
7.0	6.5	27	14.4	14.7	13.2	Dry	69.0	12	2.2	4.9	**0.38**	**0.39**	0.01	0.69	1.00	0.01	**0.15**
8.0	7.5	36	16.2	18.9	13.2	Dry	92.0	21	5.1	8.0	**1.11**	**1.17**	0.07	0.92	1.00	0.06	**0.09**
9.0	8.5	36	16.2	18.9	12.0	Dry	92.0	21	5.1	8.0	**1.17**	**1.23**	0.05	0.92	1.00	0.05	**0.04**
10.0	9.5	36	16.2	18.9	12.0	Dry	92.0	21	5.1	8.0	**1.23**	**1.27**	0.04	0.92	1.00	0.04	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	58+04.74	DIST. FROM CL:	

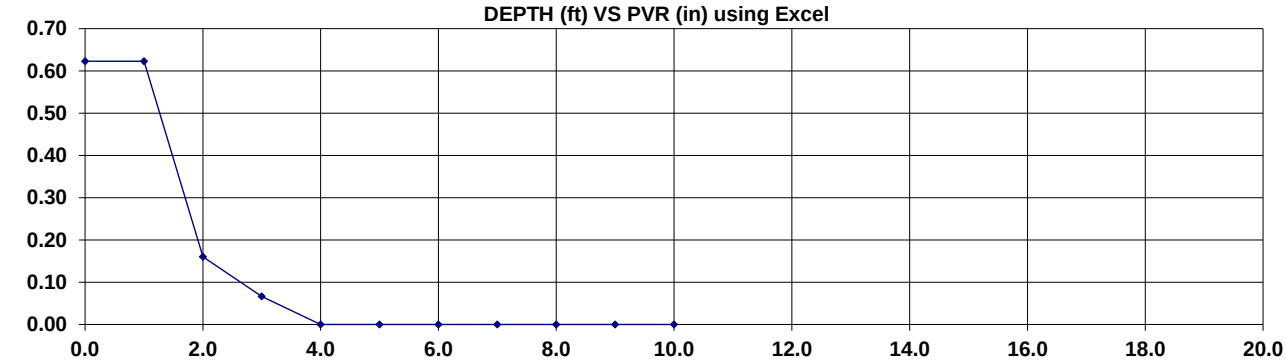
Boring Number:	P-13	Ground Elevation (z):	818.52	Longitude (x):	-97.406949	Latitude (y):	32.880943

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.62**
1.0	0.5	53	19.6	26.9	12.0	Dry	88.0	35	9.6	12.9	**0.00**	**0.00**	0.00	0.88	1.00	0.00	**0.62**
2.0	1.5	53	19.6	26.9	12.0	Dry	88.0	35	9.6	12.9	**0.00**	**0.53**	0.53	0.88	1.00	0.46	**0.16**
3.0	2.5	34	15.8	18.0	12.0	Dry	61.0	15	3.1	5.9	**0.21**	**0.36**	0.15	0.61	1.00	0.09	**0.07**
4.0	3.5	34	15.8	18.0	12.0	Dry	61.0	15	3.1	5.9	**0.36**	**0.47**	0.11	0.61	1.00	0.07	**0.00**
5.0	4.5		9.0	2.0		Dry			0.0	0.0	**0.47**	**0.47**	0.00	0.00	1.00	0.00	**0.00**
6.0	5.5		9.0	2.0		Dry			0.0	0.0	**0.47**	**0.47**	0.00	0.00	1.00	0.00	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**0.47**	**0.47**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**0.47**	**0.47**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**0.47**	**0.47**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**0.47**	**0.47**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition,Bedrock encounterd at 4 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	62+81.22	DIST. FROM CL:	

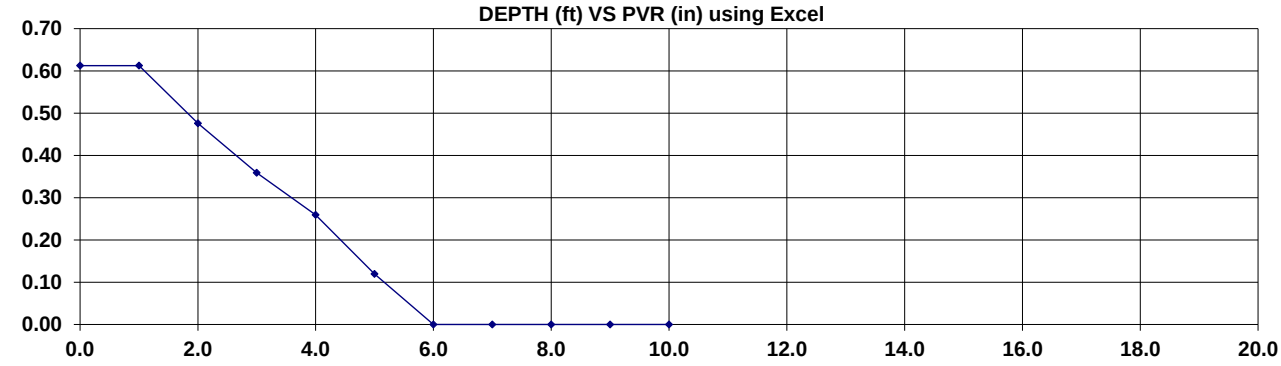
Boring Number:	P-14	Ground Elevation (z):	812.5	Longitude (x):	-97.405396	Latitude (y):	32.881023

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.61**
1.0	0.5	56	20.2	28.3	16.2	Dry	26.0	35	9.6	12.9	**0.00**	**0.00**	0.00	0.26	1.00	0.00	**0.61**
2.0	1.5	56	20.2	28.3	16.2	Dry	26.0	35	9.6	12.9	**0.00**	**0.53**	0.53	0.26	1.00	0.14	**0.48**
3.0	2.5	56	20.2	28.3	12.0	Dry	26.0	35	9.6	12.9	**0.53**	**0.98**	0.45	0.26	1.00	0.12	**0.36**
4.0	3.5	56	20.2	28.3	12.0	Dry	26.0	35	9.6	12.9	**0.98**	**1.36**	0.38	0.26	1.00	0.10	**0.26**
5.0	4.5	57	20.4	28.8	12.0	Dry	39.0	37	10.3	13.6	**1.46**	**1.82**	0.36	0.39	1.00	0.14	**0.12**
6.0	5.5	57	20.4	28.8	12.0	Dry	39.0	37	10.3	13.6	**1.82**	**2.12**	0.31	0.39	1.00	0.12	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**2.12**	**2.12**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition,Bedrock encounterd at 5.5 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Tarrant	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	
COURSE\LIFT:		STATION: 67+78.63	DIST. FROM CL:

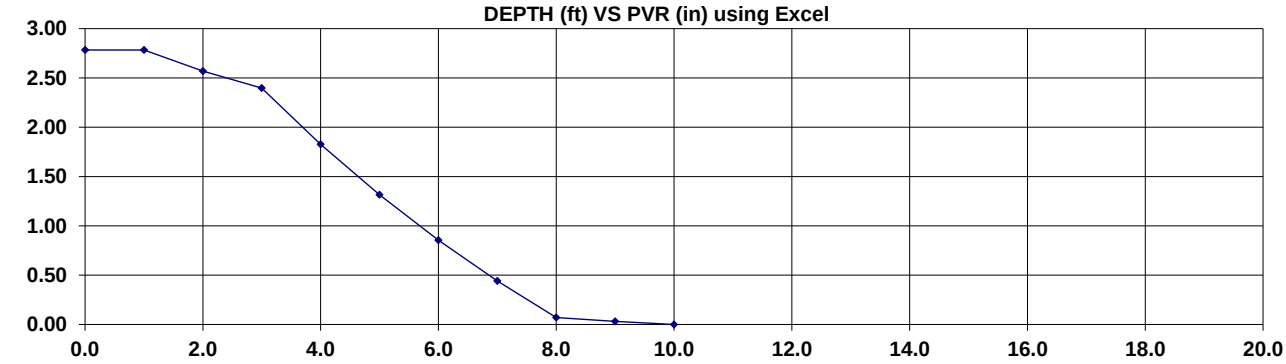
Boring Number:	P-15	Ground Elevation (z):	804.52	Longitude (x):	-97.405396	Latitude (y):	32.881023

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.78**
1.0	0.5	42	17.4	21.7	14.8	Dry	50.0	28	7.4	10.5	**0.00**	**0.00**	0.00	0.50	1.00	0.00	**2.78**
2.0	1.5	42	17.4	21.7	12.0	Dry	50.0	28	7.4	10.5	**0.00**	**0.43**	0.43	0.50	1.00	0.21	**2.57**
3.0	2.5	71	23.2	35.4	12.0	Dry	50.0	28	7.4	10.5	**0.43**	**0.77**	0.35	0.50	1.00	0.17	**2.40**
4.0	3.5	71	23.2	35.4	12.0	Dry	99.0	50	14.5	18.1	**1.34**	**1.92**	0.57	0.99	1.00	0.57	**1.83**
5.0	4.5	71	23.2	35.4	12.0	Dry	99.0	50	14.5	18.1	**1.92**	**2.44**	0.52	0.99	1.00	0.51	**1.32**
6.0	5.5	47	18.4	24.1	12.0	Dry	99.0	50	14.5	18.1	**2.44**	**2.90**	0.47	0.99	1.00	0.46	**0.85**
7.0	6.5	47	18.4	24.1	4.1	Dry	99.0	50	14.5	18.1	**2.90**	**3.32**	0.42	0.99	1.00	0.41	**0.44**
8.0	7.5	47	18.4	24.1	4.1	Dry	99.0	50	14.5	18.1	**3.32**	**3.69**	0.38	0.99	1.00	0.37	**0.07**
9.0	8.5	47	18.4	24.1	6.9	Dry	23.0	34	9.3	12.6	**2.38**	**2.55**	0.16	0.23	1.00	0.04	**0.03**
10.0	9.5	47	18.4	24.1	6.9	Dry	23.0	34	9.3	12.6	**2.55**	**2.69**	0.14	0.23	1.00	0.03	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	72+56.95	DIST. FROM CL:	

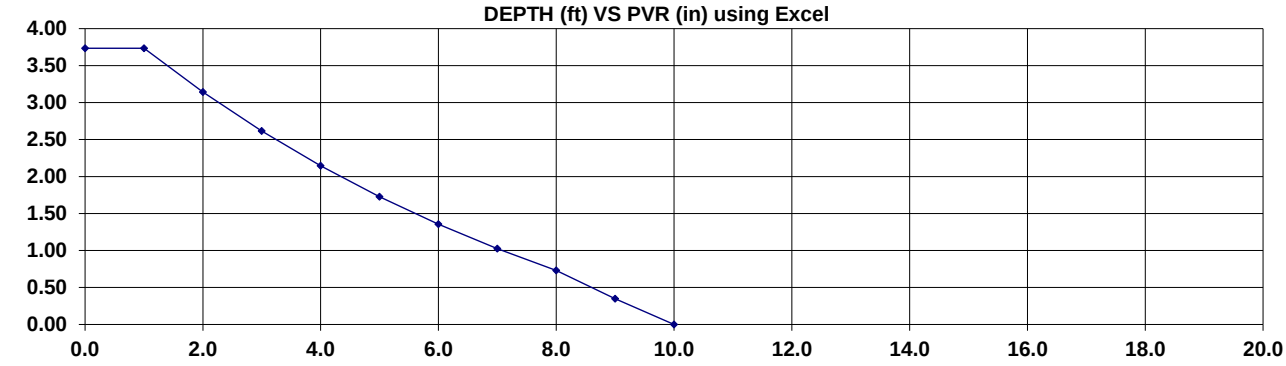
Boring Number:	P-16	Ground Elevation (z):	798.86	Longitude (x):	-97.402218	Latitude (y):	32.880998

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3.73**
1.0	0.5	71	23.2	35.4	26.2	Dry	94.0	45	12.9	16.4	**0.00**	**0.00**	0.00	0.94	1.00	0.00	**3.73**
2.0	1.5	71	23.2	35.4	26.2	Dry	94.0	45	12.9	16.4	**0.00**	**0.63**	0.63	0.94	1.00	0.59	**3.14**
3.0	2.5	70	23.0	34.9	12.0	Dry	88.0	48	13.9	17.4	**0.67**	**1.27**	0.60	0.88	1.00	0.53	**2.62**
4.0	3.5	70	23.0	34.9	12.0	Dry	88.0	48	13.9	17.4	**1.27**	**1.80**	0.53	0.88	1.00	0.47	**2.15**
5.0	4.5	70	23.0	34.9	12.0	Dry	88.0	48	13.9	17.4	**1.80**	**2.28**	0.48	0.88	1.00	0.42	**1.73**
6.0	5.5	70	23.0	34.9	12.0	Dry	88.0	48	13.9	17.4	**2.28**	**2.70**	0.42	0.88	1.00	0.37	**1.36**
7.0	6.5	70	23.0	34.9	12.0	Dry	88.0	48	13.9	17.4	**2.70**	**3.07**	0.38	0.88	1.00	0.33	**1.02**
8.0	7.5	70	23.0	34.9	12.0	Dry	88.0	48	13.9	17.4	**3.07**	**3.41**	0.33	0.88	1.00	0.29	**0.73**
9.0	8.5	76	24.2	37.7	12.0	Dry	92.0	54	15.8	19.5	**4.26**	**4.68**	0.42	0.92	1.00	0.38	**0.35**
10.0	9.5	76	24.2	37.7	12.0	Dry	92.0	54	15.8	19.5	**4.68**	**5.06**	0.38	0.92	1.00	0.35	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	82+32.36	DIST. FROM CL:	

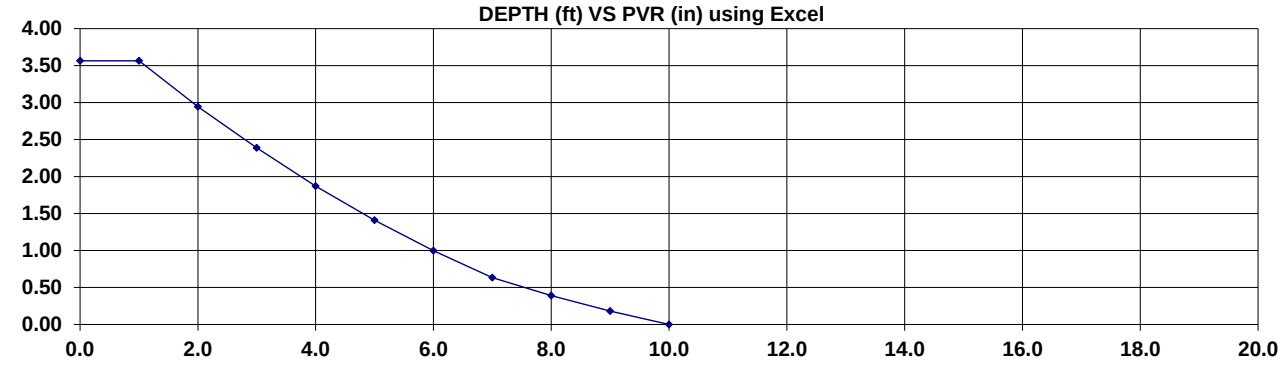
Boring Number:	P-17	Ground Elevation (z):	795.73	Longitude (x):	-97.399091	Latitude (y):	32.880929

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3.57**
1.0	0.5	64	21.8	32.1	15.7	Dry	93.0	46	13.2	16.7	**0.00**	**0.00**	0.00	0.93	1.00	0.00	**3.57**
2.0	1.5	64	21.8	32.1	12.0	Dry	93.0	46	13.2	16.7	**0.00**	**0.67**	0.67	0.93	1.00	0.62	**2.94**
3.0	2.5	64	21.8	32.1	12.0	Dry	93.0	46	13.2	16.7	**0.67**	**1.27**	0.60	0.93	1.00	0.56	**2.39**
4.0	3.5	65	22.0	32.6	12.0	Dry	97.0	47	13.5	17.1	**1.27**	**1.80**	0.53	0.97	1.00	0.52	**1.87**
5.0	4.5	65	22.0	32.6	12.0	Dry	97.0	47	13.5	17.1	**1.80**	**2.28**	0.48	0.97	1.00	0.46	**1.41**
6.0	5.5	65	22.0	32.6	12.0	Dry	97.0	47	13.5	17.1	**2.28**	**2.70**	0.42	0.97	1.00	0.41	**1.00**
7.0	6.5	65	22.0	32.6	12.0	Dry	97.0	47	13.5	17.1	**2.70**	**3.07**	0.38	0.97	1.00	0.37	**0.63**
8.0	7.5	58	20.6	29.3	12.0	Dry	96.0	41	11.6	15.0	**2.59**	**2.84**	0.25	0.96	1.00	0.24	**0.39**
9.0	8.5	58	20.6	29.3	12.0	Dry	96.0	41	11.6	15.0	**2.84**	**3.06**	0.22	0.96	1.00	0.21	**0.18**
10.0	9.5	58	20.6	29.3	12.0	Dry	96.0	41	11.6	15.0	**3.06**	**3.25**	0.19	0.96	1.00	0.18	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	87+26.12	DIST. FROM CL:	

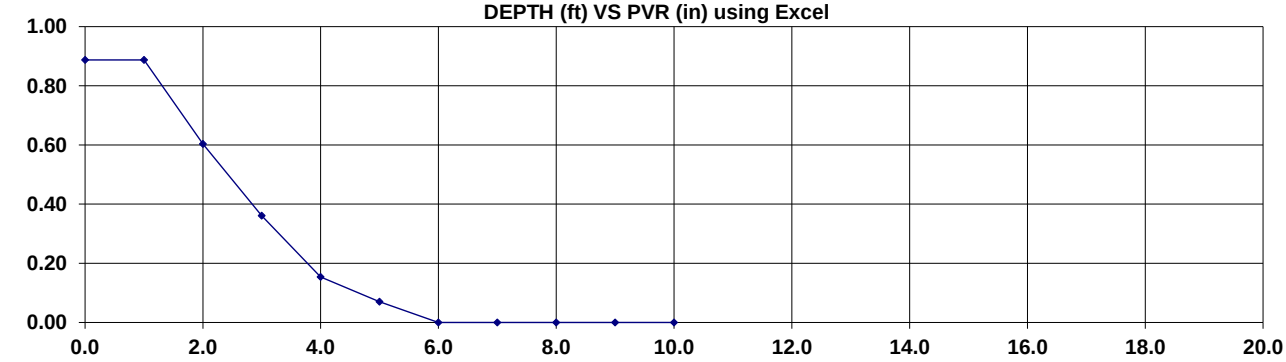
Boring Number:	P-18	Ground Elevation (z):	798.31	Longitude (x):	-97.397934	Latitude (y):	32.880867

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.89**
1.0	0.5	51	19.2	26.0	17.7	Dry	54.0	35	9.6	12.9	**0.00**	**0.00**	0.00	0.54	1.00	0.00	**0.89**
2.0	1.5	51	19.2	26.0	17.7	Dry	54.0	35	9.6	12.9	**0.00**	**0.53**	0.53	0.54	1.00	0.28	**0.60**
3.0	2.5	51	19.2	26.0	15.6	Dry	54.0	35	9.6	12.9	**0.53**	**0.98**	0.45	0.54	1.00	0.24	**0.36**
4.0	3.5	51	19.2	26.0	15.6	Dry	54.0	35	9.6	12.9	**0.98**	**1.36**	0.38	0.54	1.00	0.21	**0.15**
5.0	4.5	50	19.0	25.5	12.4	Dry	29.0	33	9.0	12.2	**1.26**	**1.55**	0.29	0.29	1.00	0.08	**0.07**
6.0	5.5	50	19.0	25.5	12.4	Dry	29.0	33	9.0	12.2	**1.55**	**1.79**	0.24	0.29	1.00	0.07	**0.00**
7.0	6.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**
8.0	7.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**
9.0	8.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**
10.0	9.5		9.0	2.0		Dry			0.0	0.0	**1.79**	**1.79**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition,Bedrock encounterd a 6 feet

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	92+29.69	DIST. FROM CL:	

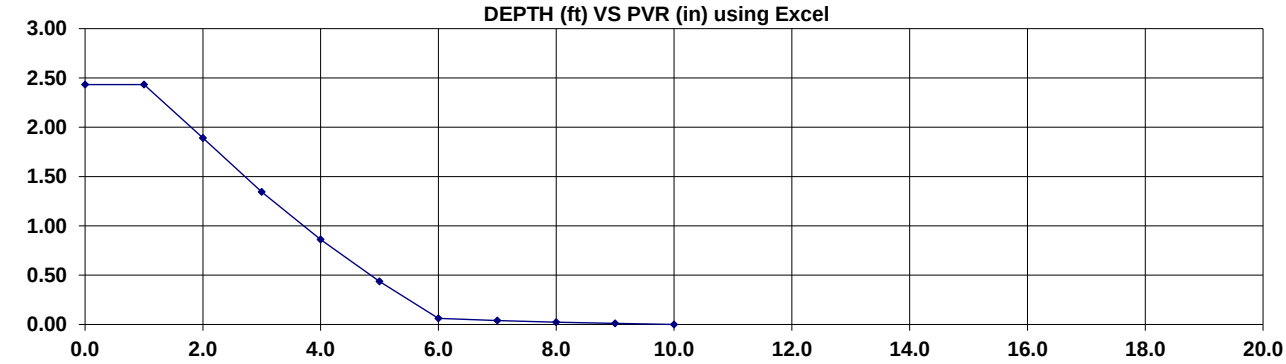
Boring Number:	P-19	Ground Elevation (z):	801.86	Longitude (x):	-97.395793	Latitude (y):	32.880976

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.43**
1.0	0.5	77	24.4	38.2	12.0	Dry	86.0	45	12.9	16.4	**0.00**	**0.00**	0.00	0.86	1.00	0.00	**2.43**
2.0	1.5	77	24.4	38.2	12.0	Dry	86.0	45	12.9	16.4	**0.00**	**0.63**	0.63	0.86	1.00	0.54	**1.89**
3.0	2.5	66	22.2	33.0	12.0	Dry	98.0	43	12.2	15.7	**0.63**	**1.19**	0.56	0.98	1.00	0.55	**1.34**
4.0	3.5	66	22.2	33.0	12.0	Dry	98.0	43	12.2	15.7	**1.19**	**1.68**	0.49	0.98	1.00	0.48	**0.86**
5.0	4.5	66	22.2	33.0	15.5	Dry	98.0	43	12.2	15.7	**1.68**	**2.11**	0.43	0.98	1.00	0.43	**0.44**
6.0	5.5	66	22.2	33.0	15.5	Dry	98.0	43	12.2	15.7	**2.11**	**2.50**	0.38	0.98	1.00	0.37	**0.06**
7.0	6.5	28	14.6	15.2	12.9	Dry	68.0	14	2.8	5.6	**0.60**	**0.63**	0.03	0.68	1.00	0.02	**0.04**
8.0	7.5	28	14.6	15.2	12.9	Dry	68.0	14	2.8	5.6	**0.63**	**0.65**	0.02	0.68	1.00	0.02	**0.02**
9.0	8.5	28	14.6	15.2	10.9	Dry	68.0	14	2.8	5.6	**0.65**	**0.67**	0.02	0.68	1.00	0.01	**0.01**
10.0	9.5	28	14.6	15.2	10.9	Dry	68.0	14	2.8	5.6	**0.67**	**0.69**	0.02	0.68	1.00	0.01	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 11/20/13 11:45:24

SAMPLE ID:		SAMPLED DATE:	5/3/2023
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:	Tarrant	SPEC YEAR:	
SAMPLED BY:	HVJ Associates	SPEC ITEM:	
SAMPLE LOCATION:	W Bailey Boswell Rd in Fort Worth	SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:	76+25.99	DIST. FROM CL:	

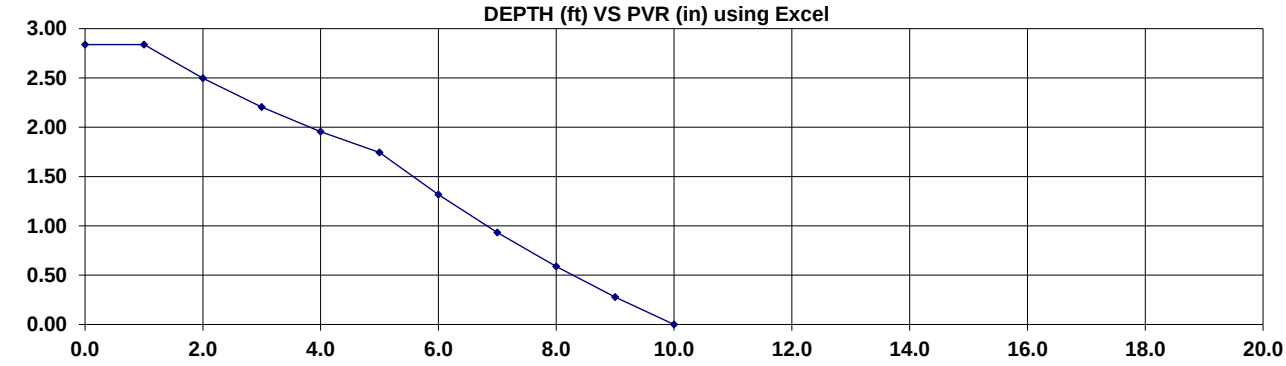
Boring Number:	CB-1	Ground Elevation (z):	795.42	Longitude (x):	-97.395793	Latitude (y):	32.880976

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.84**
1.0	0.5	53	19.6	26.9	14.7	Dry	65.0	36	10.0	13.2	**0.00**	**0.00**	0.00	0.65	1.00	0.00	**2.84**
2.0	1.5	53	19.6	26.9	14.7	Dry	65.0	36	10.0	13.2	**0.00**	**0.53**	0.53	0.65	1.00	0.34	**2.50**
3.0	2.5	53	19.6	26.9	19.8	Dry	65.0	36	10.0	13.2	**0.53**	**0.98**	0.45	0.65	1.00	0.29	**2.20**
4.0	3.5	53	19.6	26.9	19.8	Dry	65.0	36	10.0	13.2	**0.98**	**1.36**	0.38	0.65	1.00	0.25	**1.96**
5.0	4.5	53	19.6	26.9	12.0	Dry	65.0	36	10.0	13.2	**1.36**	**1.68**	0.32	0.65	1.00	0.21	**1.74**
6.0	5.5	69	22.8	34.4	12.0	Dry	92.0	50	14.5	18.1	**2.44**	**2.90**	0.47	0.92	1.00	0.43	**1.32**
7.0	6.5	69	22.8	34.4	12.0	Dry	92.0	50	14.5	18.1	**2.90**	**3.32**	0.42	0.92	1.00	0.38	**0.93**
8.0	7.5	69	22.8	34.4	12.0	Dry	92.0	50	14.5	18.1	**3.32**	**3.69**	0.38	0.92	1.00	0.35	**0.59**
9.0	8.5	69	22.8	34.4	12.0	Dry	92.0	50	14.5	18.1	**3.69**	**4.03**	0.34	0.92	1.00	0.31	**0.28**
10.0	9.5	69	22.8	34.4	12.0	Dry	92.0	50	14.5	18.1	**4.03**	**4.33**	0.30	0.92	1.00	0.28	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:
Dry Moisture Condition

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

GC-4.04 Underground Facilities

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LINESTYLE LEGEND

- ELECTRIC — E1 — Oncor
- ELECTRIC — E1(C) — Oncor
- ELECTRIC — E1(D) — Oncor
- OVERHEAD ELECTRIC — OHE1(C) — Oncor
- OVERHEAD TRANSMISSION — OHE1(C) — Oncor
- ELECTRIC — E2 — City of Fort Worth
- ELECTRIC — E2(C) — City of Fort Worth
- ELECTRIC — E2(D) — City of Fort Worth
- OVERHEAD ELECTRIC — OHE2(C) — City of Fort Worth
- ELECTRIC — E3 — TxDOT
- ELECTRIC — E3(C) — TxDOT
- ELECTRIC — E3(D) — TxDOT
- ELECTRIC — E4 — Private
- ELECTRIC — E4(D) — Private
- ELECTRIC — E3(D) — Private
- FIBER — FO1 — AT&T
- FIBER — FO1(C) — AT&T
- FIBER — FO1(D) — AT&T
- OVERHEAD FIBER OPTIC — OHFO1(C) — AT&T
- FIBER — FO2 — Spectrum
- FIBER — FO2(C) — Spectrum
- FIBER — FO2(D) — Spectrum
- OVERHEAD FIBER OPTIC — OHFO2(C) — Spectrum
- FIBER — FO3 — Zayo
- FIBER — FO3(C) — Zayo
- FIBER — FO3(D) — Zayo
- OVERHEAD FIBER OPTIC — OHFO3(C) — Zayo
- FIBER — FO4 — Eagle Mountain ISD
- FIBER — FO4(C) — Eagle Mountain ISD
- FIBER — FO4(D) — Eagle Mountain ISD
- OVERHEAD FIBER OPTIC — OHFO4(C) — Eagle Mountain ISD
- FIBER — FO5 — Millennium Telecom - OneSource
- FIBER — FO5(C) — Millennium Telecom - OneSource
- FIBER — FO5(D) — Millennium Telecom - OneSorce
- FIBER — FO6 — MCI-Verizon Business
- FIBER — FO6(C) — MCI-Verizon Business
- FIBER — FO6(D) — MCI-Verizon Business
- TELEPHONE — T1 — AT&T
- TELEPHONE — T1(C) — AT&T
- TELEPHONE — T1(D) — AT&T
- OVERHEAD TELEPHONE — OHT1(C) — AT&T
- Cable TV — CATV1 — Spectrum
- Cable TV — CATV1(C) — Spectrum
- Cable TV — CATV1(D) — Spectrum
- OVERHEAD CABLE TV — OHCATV1 — Spectrum
- GAS — G1 — Atmos
- GAS — G1(C) — Atmos
- GAS — G1(D) — Atmos
- GAS — G2 — BKV Barnett Gathering
- GAS — G2(C) — BKV Barnett Gathering
- GAS — G2(D) — BKV Barnett Gathering
- GAS — G3 — Energy Transfer
- GAS — G3(C) — Energy Transfer
- GAS — G3(D) — Energy Transfer
- WATER — W1 — City of Fort Worth
- WATER — W1(C) — City of Fort Worth
- WATER — W1(D) — City of Fort Worth
- STORM SEWER — STM1 — City of Fort Worth
- STORM SEWER — STM1(C) — City of Fort Worth
- STORM SEWER — STM1(D) — City of Fort Worth
- SANITARY SEWER — WW1 — City of Fort Worth
- SANITARY SEWER — WW1(C) — City of Fort Worth
- SANITARY SEWER — WW1(D) — City if Fort Worth

SYMBOL LEGEND

- WATER FAUCET
- FIRE HYDRANT
- WATER VALVE BOX
- CATHODIC PROTECTION
- PHOTO TAKEN HERE
- WASTEWATER MANHOLE
- SEWER CLEAN OUT
- STORM MANHOLE
- STORM SEWER INLET
- STORM CLEAN OUT
- GAS MANHOLE
- GAS METER
- GAS VALVE
- GAS TEST STATION
- CATV PEDESTAL
- CATV SERVICE BOX
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- TELEPHONE POLE
- TELEPHONE HAND HOLE
- TELEPHONE JUNCTION BOX
- TELEPHONE REPEATER
- FIBER OPTIC HAND HOLE
- FIBER OPTIC JUNCTION BOX
- FIBER OPTIC MANHOLE
- UTILITY MARKER POST
- RAILROAD SIGNAL
- TOWER
- WATER MANHOLE
- WATER METER
- AIR RELEASE VALVE
- WATER VALVE
- DETECTOR CHECK VALVE
- ELECTRIC PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- ELECTRIC PULLBOX
- HIGH MAST LIGHTING TOWER
- ELECTRIC TRANSFORMER
- TRAFFIC CAMERA
- LUMINAIRE STANDARD
- SIGNAL CONTROL PANEL
- POWER POLE
- POWER POLE WITH RISER
- ILLUMINATION POLE
- GUY ANCHOR
- GUY POLE DEADMAN
- SOLAR PANEL
- TRAFFIC SIGNAL BOX
- STREET SIGN
- TRAFFIC SIGNAL POLE
- GENERIC MANHOLE
- LEVEL 'A' TEST HOLE
- CONTROL POINT
- TRAFFIC SIGNAL PEDESTAL

GENERAL NOTES

SIZE INFORMATION SHOWN IS TAKEN FROM AVAILABLE UTILITY RECORDS.

UTILITY QUALITY LEVEL A:

PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT.

UTILITY QUALITY LEVEL B:

INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

UTILITY QUALITY LEVEL C:

INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION

UTILITY QUALITY LEVEL D:

INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

QUALITY LEVEL LEGEND

- WW1 — QUALITY LEVEL B
- WW1(C) — WW1(C) — QUALITY LEVEL C
- WW1(D) — WW1(D) — QUALITY LEVEL D
- G1 - ◉ — RECORDS INDICATE ENCASEMENT
- G1(D)-X — G1(D)-X — RECORDS INDICATE ABANDONMENT

LINESTYLE LEGEND

- EXIST. R.O.W.
- LIMITS OF SUE INVESTIGATION
- PROPERTY LINE

CONTACT LIST

COMPANY	UTILITY COORDINATOR	PHONE	E-mail	ADDRESS
AT&T		469-662-4601	g11289@att.com	2513 W E Roberts Dr, Rm 213.26
Atmos			Map.Requests@atmosenergy.com	
BKV Barnett Gathering	Charles Vaughan	817-584-5273	CharlesVaughan@bkvcorp.com	4800 Blue Mound Rd. Fort Worth, TX 76106
City of Fort Worth	James Johnson	817-392-8054	James.K.Johnson@fortworthtexas.gov	200 Texas Street
Eagle Mountain ISD	Billy Kidd	817-296-3363		
Energy Transfer	Timothy L. Spangenberg	713-989-2301	Timothy.Spangenberg@energytransfer.com	1300 Main Street Houton, TX 77002
MCI - Verizon Business				
Millennium Telcom - OneSource	Mary Gibbons	817-992-5276	mary.gibbons@1Scom.com	
Oncor	Brienna Fields		DistributionGIS@oncor.com	777 Main Street, Suite 707 Fort Worth, TX 76102
Spectrum	Mary Pimentel	903-546-5330	forcerelos@kinetic-eng.com	1585 Jameson Rd, Van Alstyne, TX 75495

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no.	revision	by	date

teague nall and perkins, inc
3200 S. Interstate 35E, Suite 1129
Denton, Texas 76210
940.383.4177 ph
www.tnpinc.com
TX-PELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

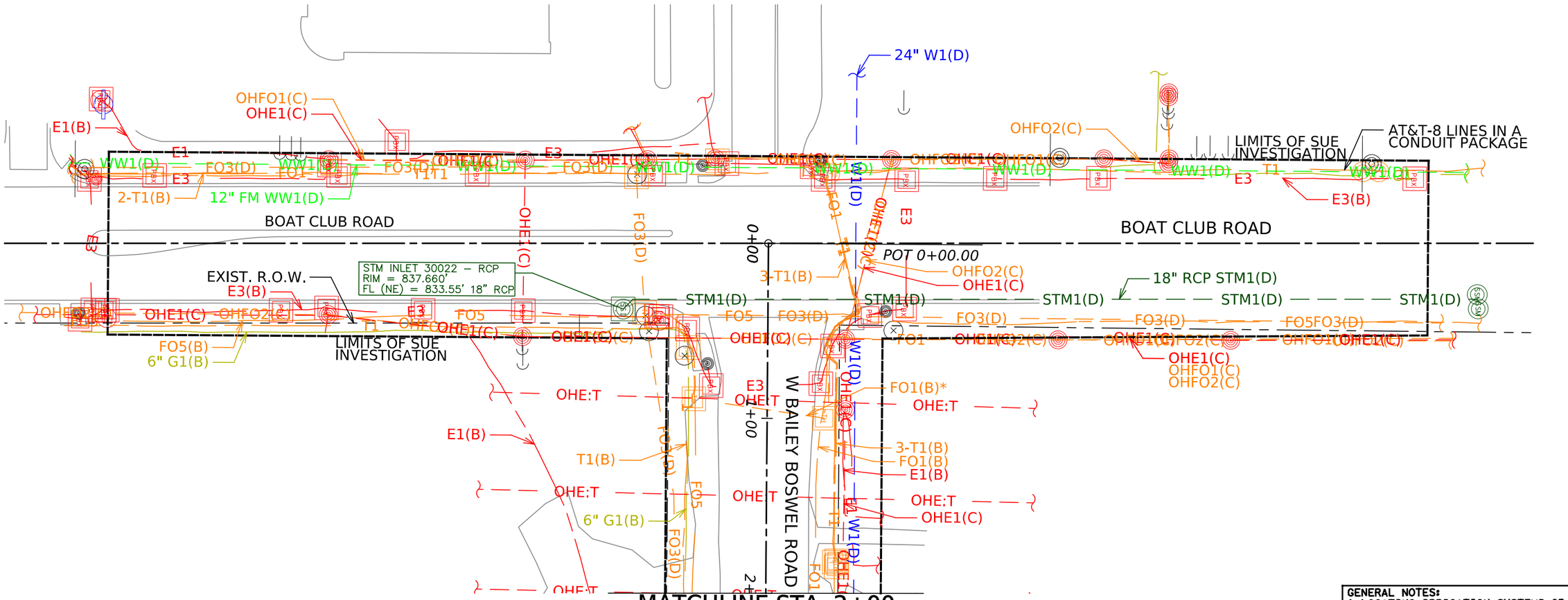
scale
when bar is 1/2" long
horiz N/A
vert N/A
OCT 2025

tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project
FTW 22268
sheet



GENERAL NOTES:
1. LOCATING IRRIGATION SYSTEMS OR INDIVIDUAL SERVICES IS OUTSIDE OF SCOPE OF SUE INVESTIGATION.
2. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY SUE ENGINEER OF ANY DISCREPANCIES.
3. ZAYO DENIED TNP ACCESS TO LOCATE THEIR FIBER OPTIC LINES. THE FIBER LINE LOCATIONS ARE DEPICTED BASED ON DIGTESS MARKINGS

*NOT FOUND IN THE FIELD AND DRAWN IN PER AS-BUILT DRAWINGS

DATE: 10/9/2025 2:41:37 PM
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no.	revision	by	date

teague nall and perkins, inc
3200 S. Interstate 35E, Suite 1129
Denton, Texas 76210
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www.tnpinc.com
TX-PELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

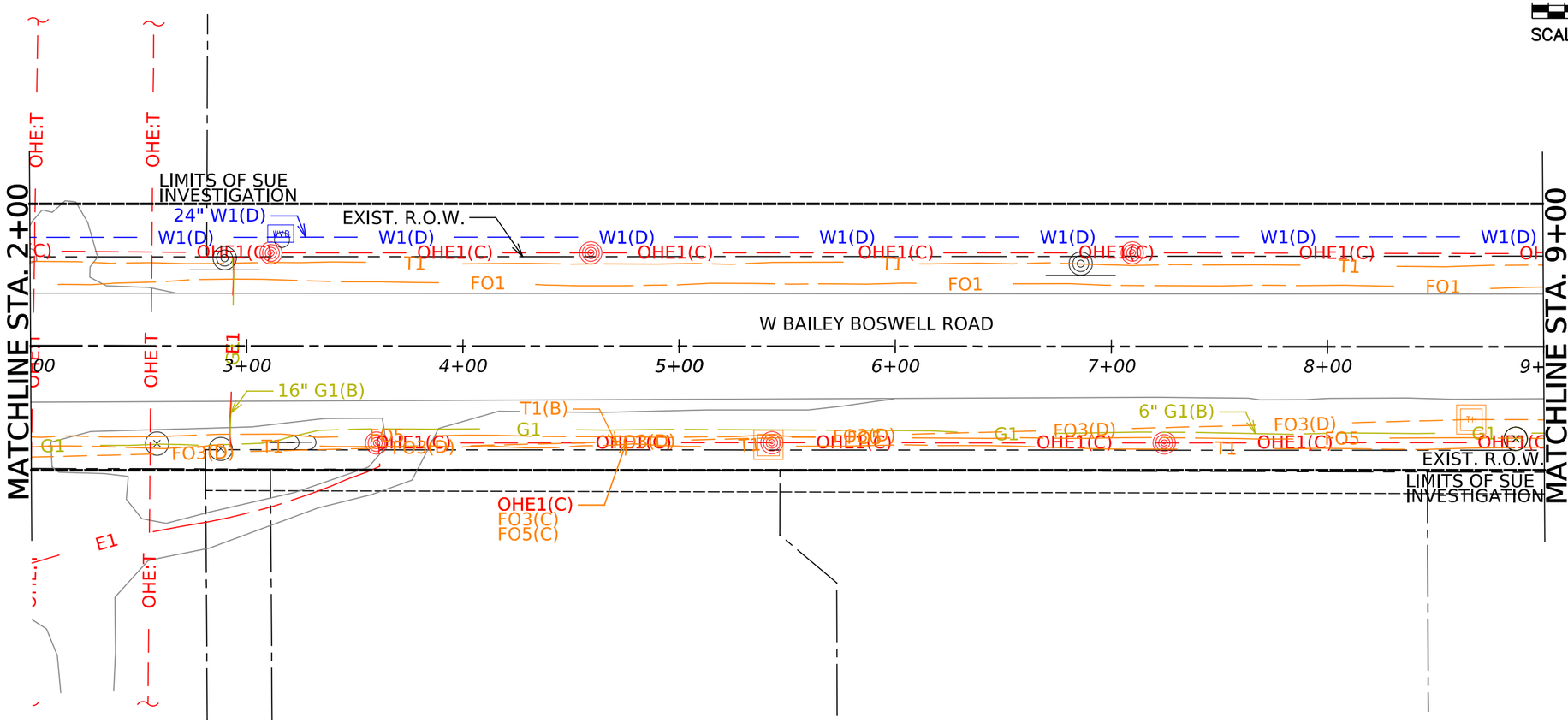
scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet



GENERAL NOTES:
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2. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY SUE ENGINEER OF ANY DISCREPANCIES.
3. ZAYO DENIED TNP ACCESS TO LOCATE THEIR FIBER OPTIC LINES. THE FIBER LINE LOCATIONS ARE DEPICTED BASED ON DIGTESS MARKINGS

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GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet

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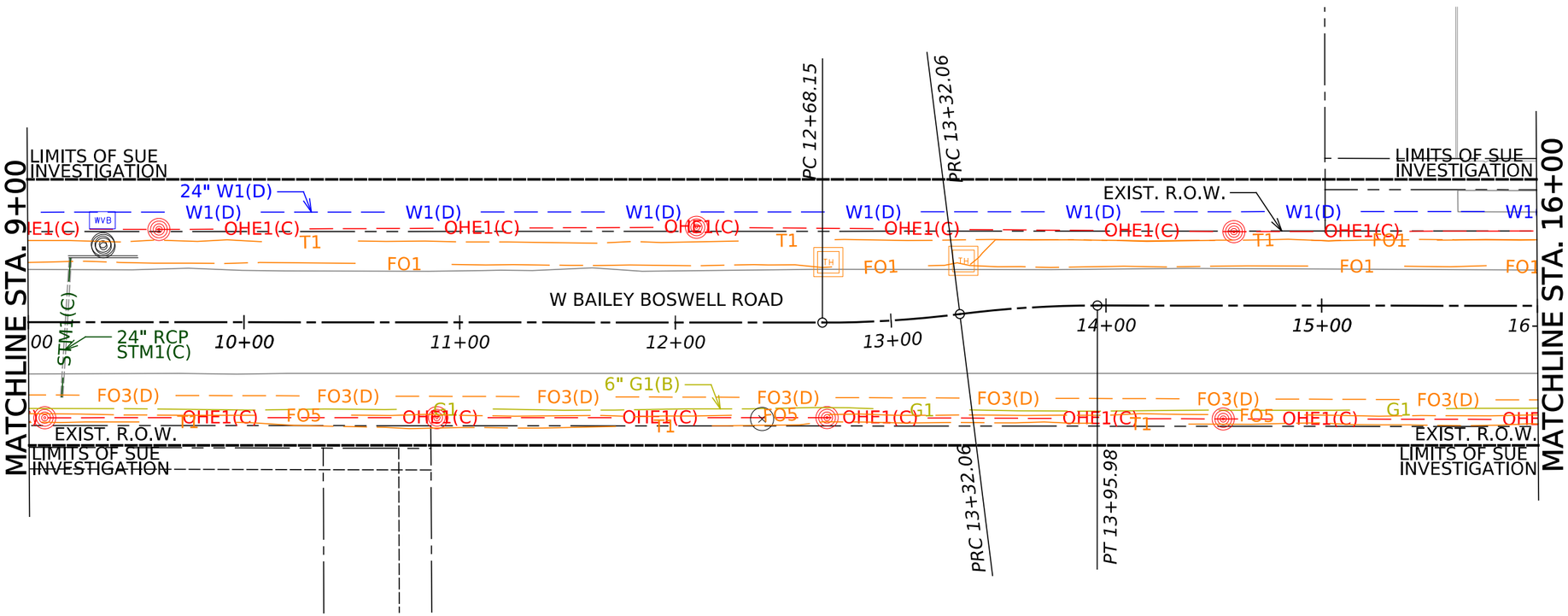

SCALE: 1" = 60' HOR.

GENERAL NOTES:
1. LOCATING IRRIGATION SYSTEMS OR INDIVIDUAL SERVICES IS OUTSIDE OF SCOPE OF SUE INVESTIGATION.
2. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY SUE ENGINEER OF ANY DISCREPANCIES.
3. ZAYO DENIED TNP ACCESS TO LOCATE THEIR FIBER OPTIC LINES. THE FIBER LINE LOCATIONS ARE DEPICTED BASED ON DIGTESS MARKINGS

*NOT FOUND IN THE FIELD AND DRAWN IN PER AS-BUILT DRAWINGS

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no.	revision	by	date

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3200 S. Interstate 35E, Suite 1129
Denton, Texas 76210
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www.tnpinc.com
TX-PELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

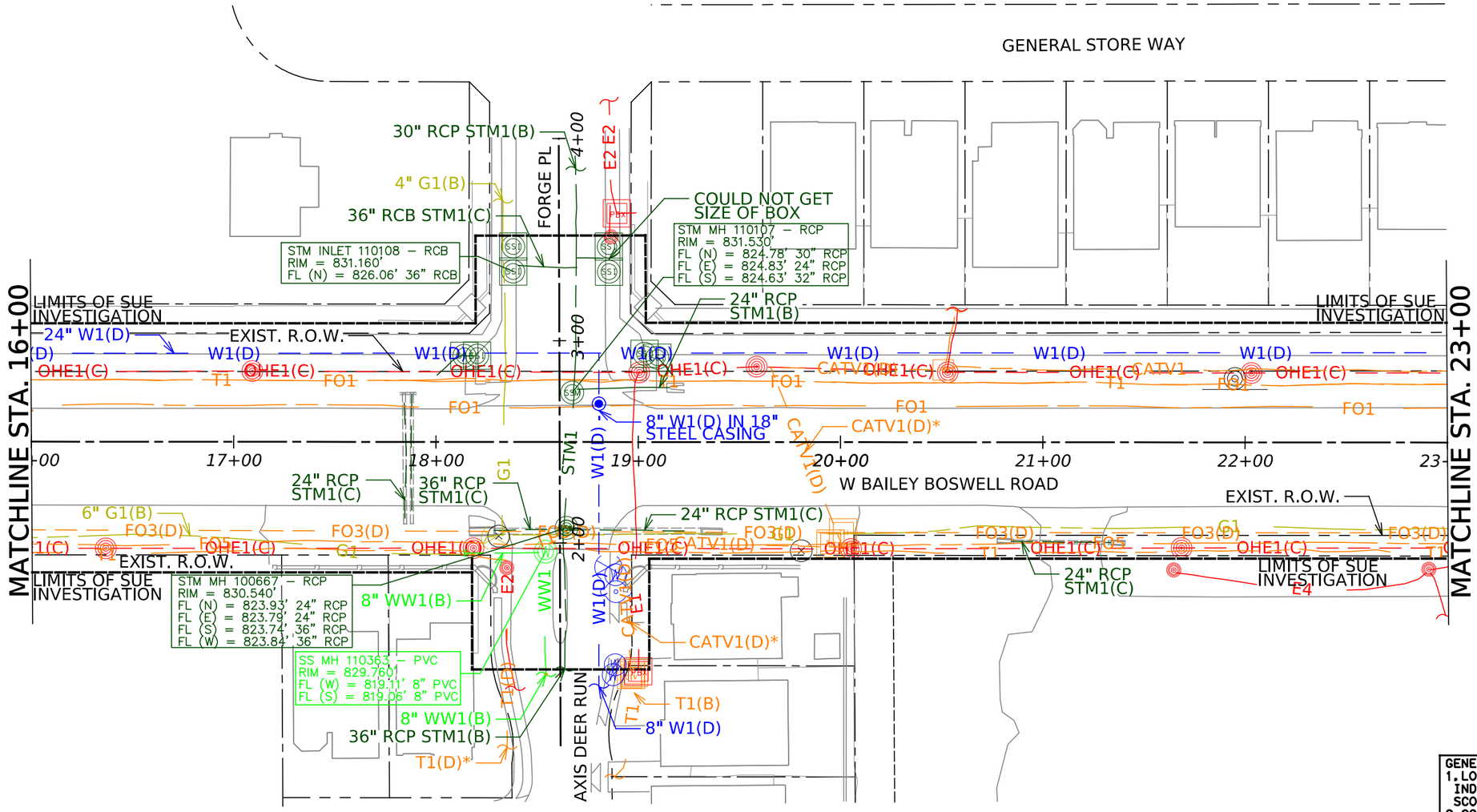
scale	
when bar is 1/2" long	
horiz	1"=60'
vert	N/A
	OCT 2025

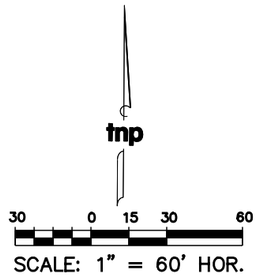
tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet





GENERAL NOTES:
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2. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY SUE ENGINEER OF ANY DISCREPANCIES.
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*NOT FOUND IN THE FIELD AND DRAWN IN PER AS-BUILT DRAWINGS

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no.	revision	by	date

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TX-PELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

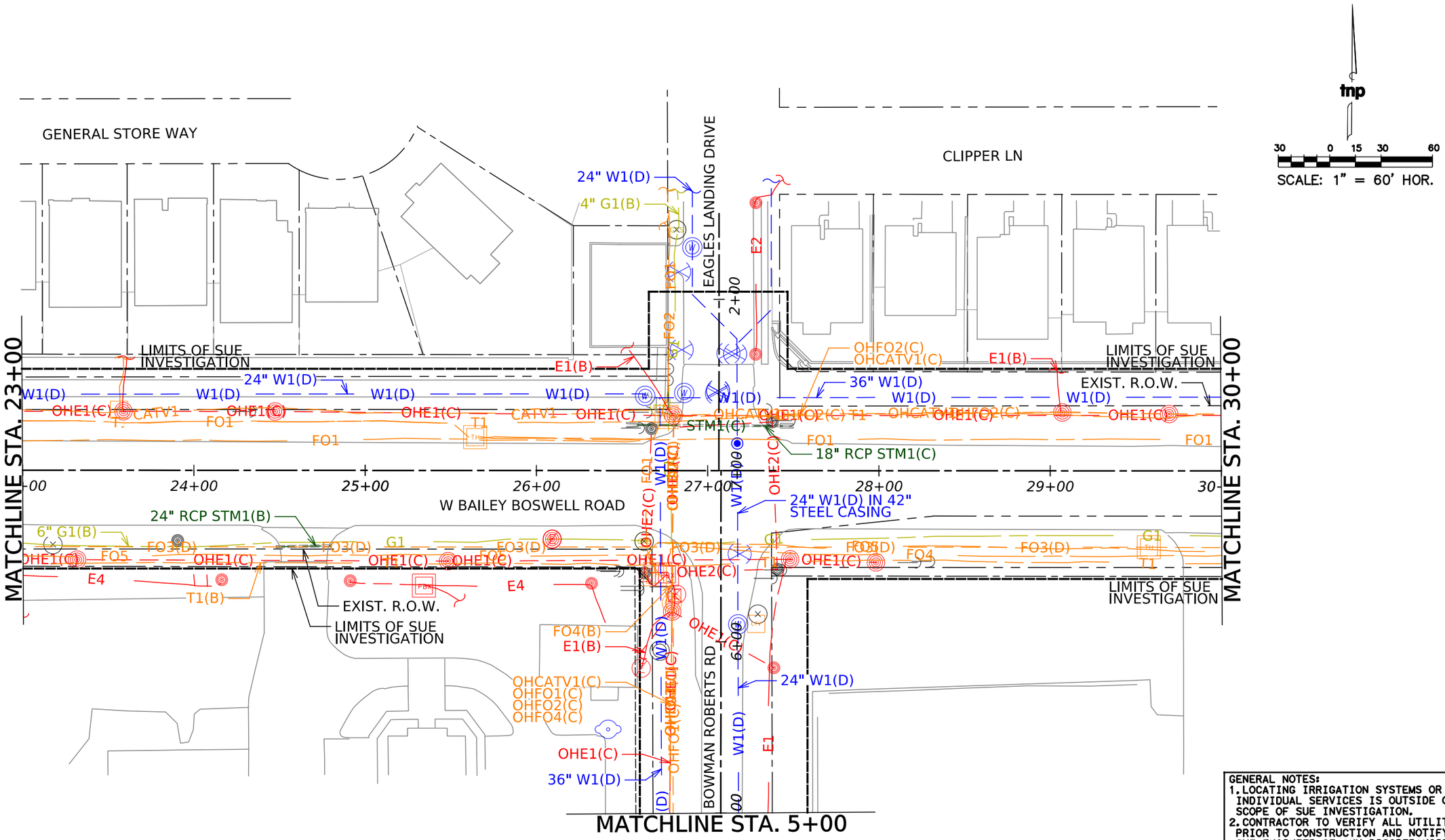
scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet



tnp

30 0 15 30 60

SCALE: 1" = 60' HOR.

GENERAL NOTES:
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*NOT FOUND IN THE FIELD AND DRAWN IN PER AS-BUILT DRAWINGS

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GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

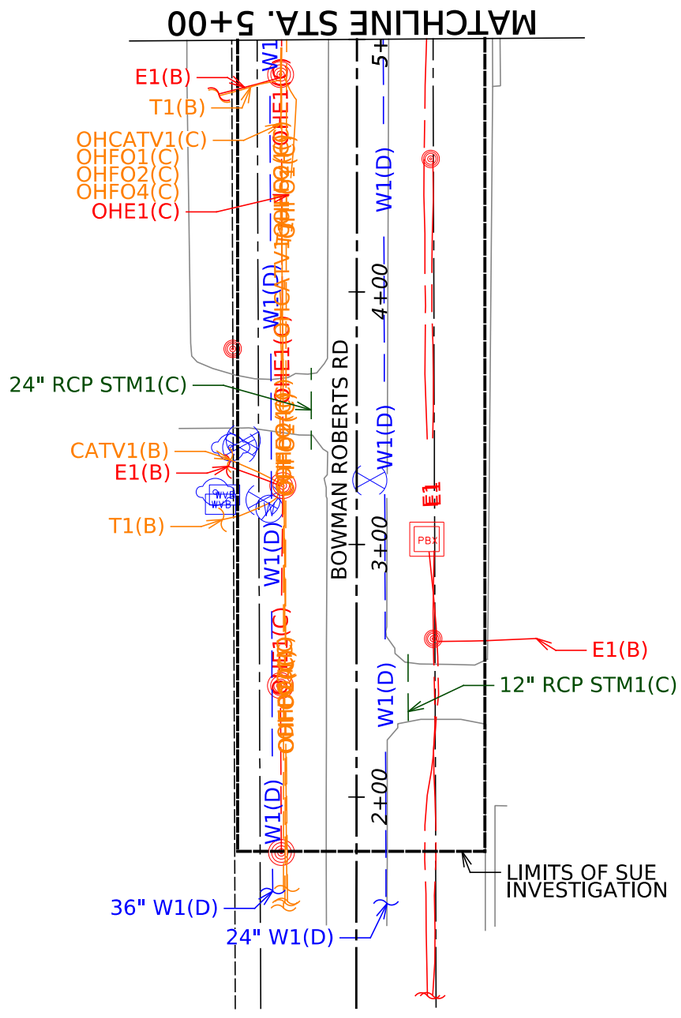
scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

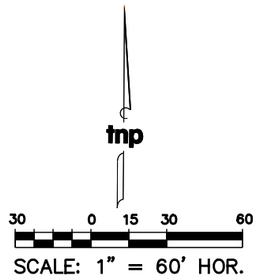
tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet





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FORT WORTH

scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

tnp

STATE OF TEXAS
Dustin C. Ogle
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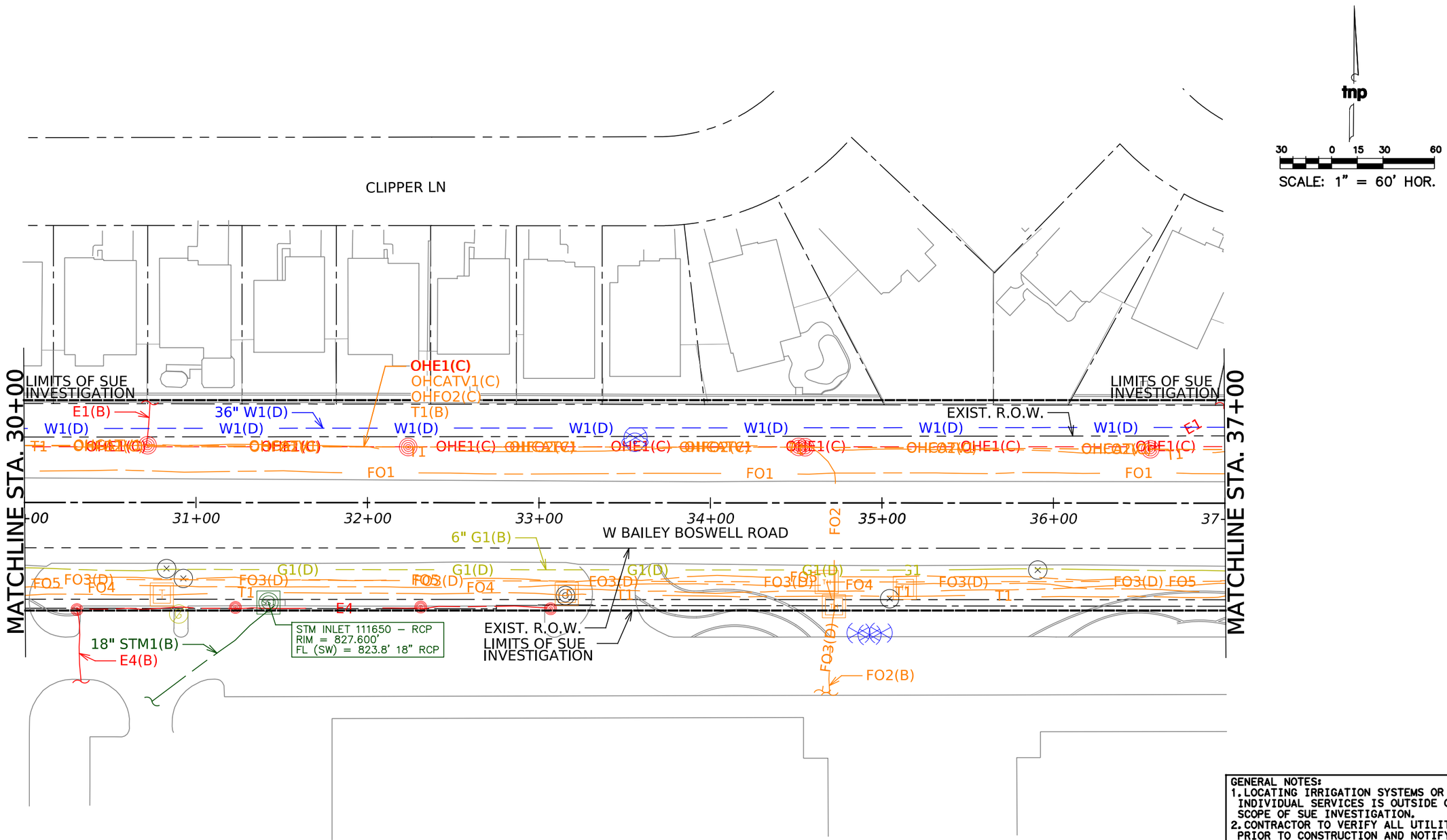
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet



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vert N/A
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City of Fort Worth, Texas
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EXISTING UTILITY PLANS

tnp project FTW 22268
sheet

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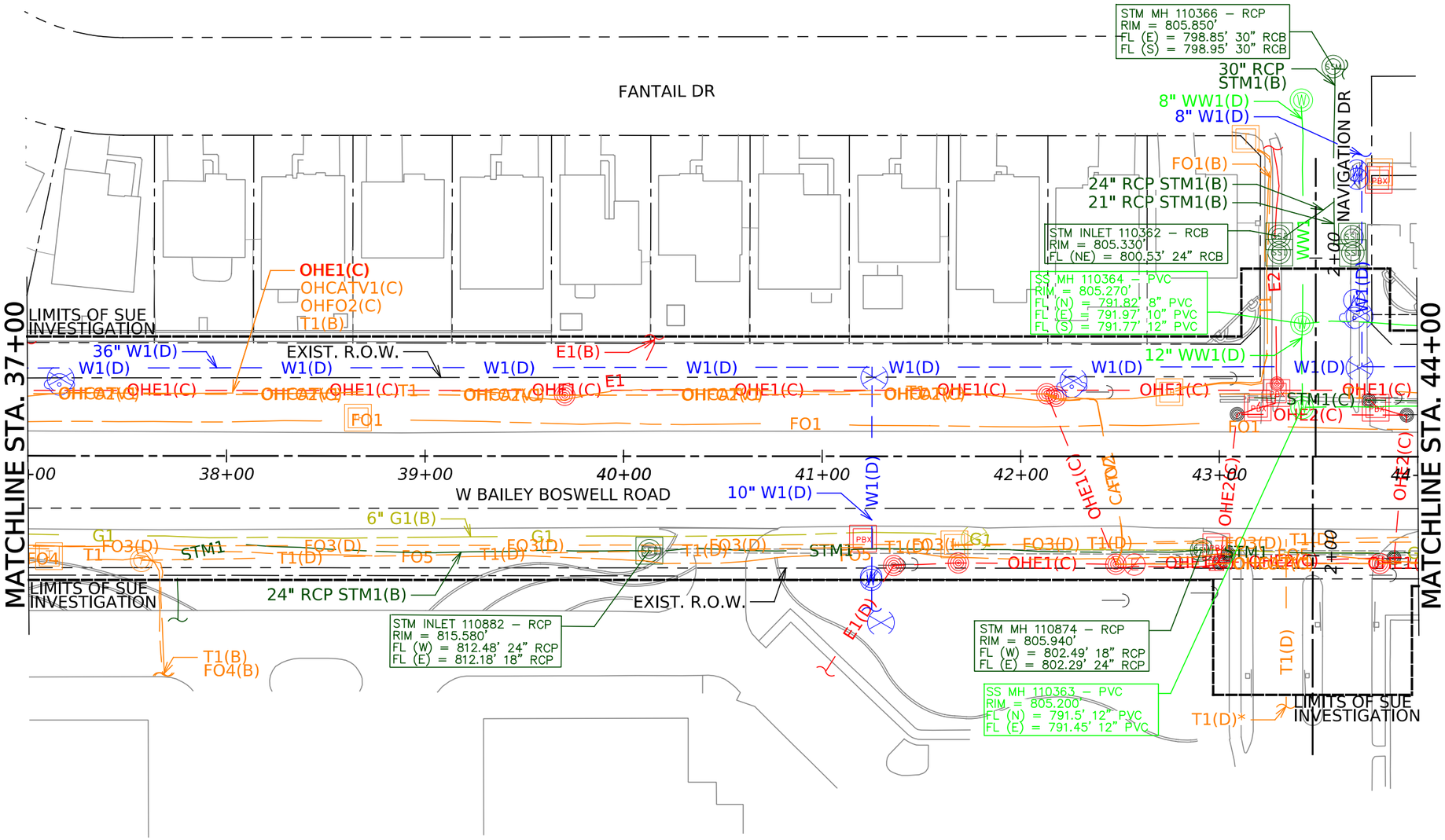

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FORT WORTH

scale
when bar is 1/2" long
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vert N/A
OCT 2025

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City of Fort Worth, Texas
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EXISTING UTILITY PLANS

tnp project FTW 22268
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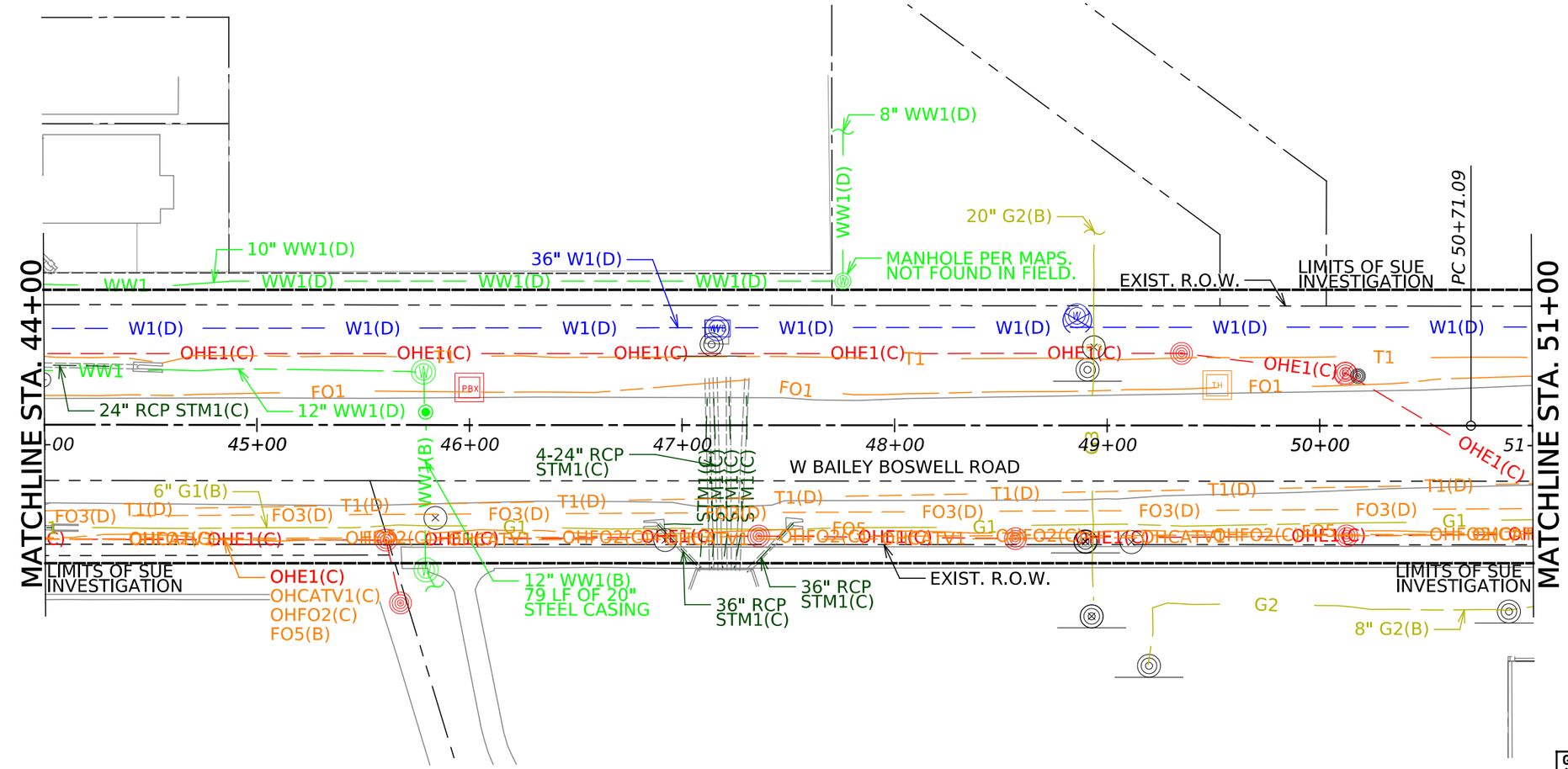

tnp

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scale
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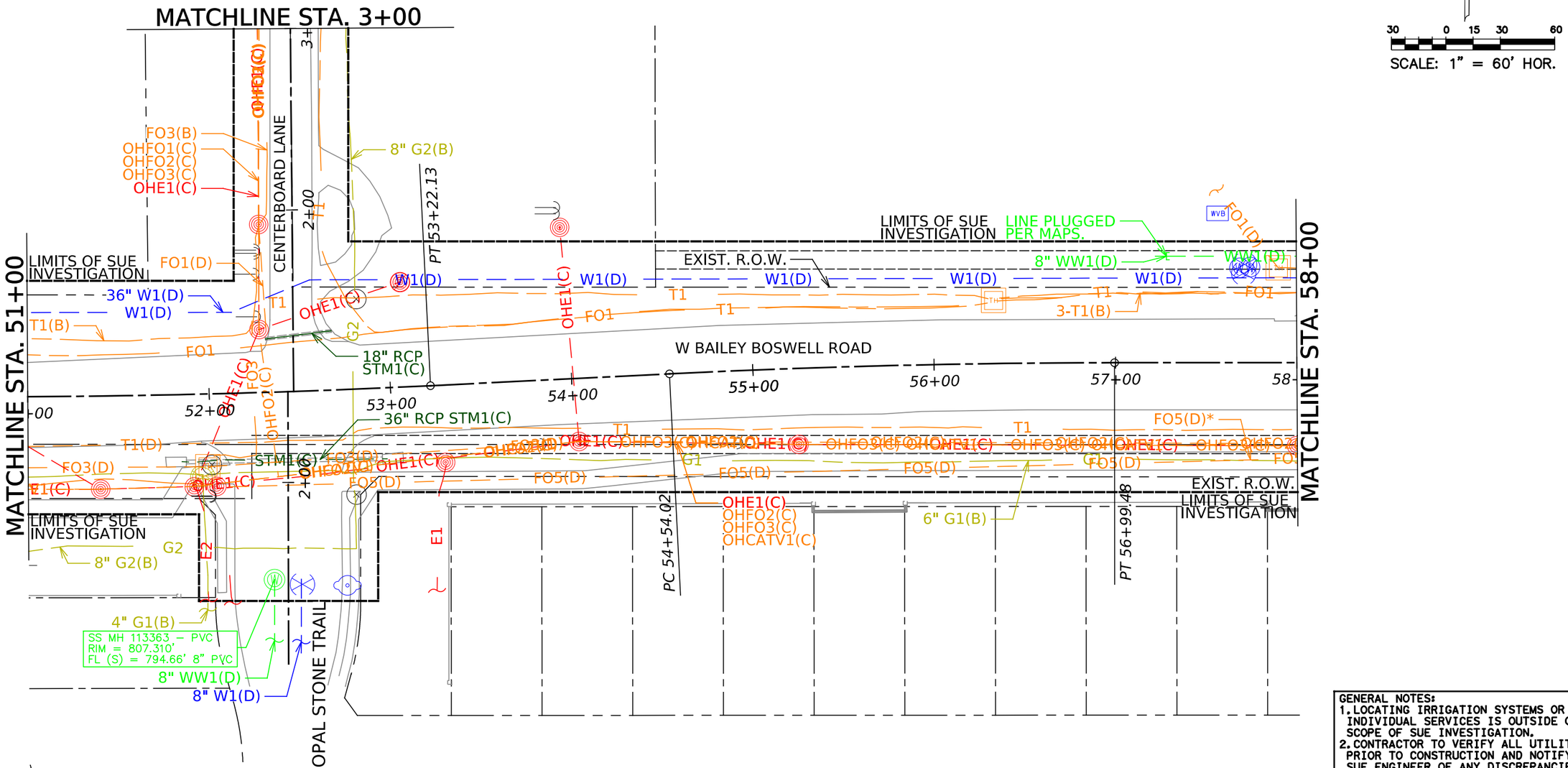

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FORT WORTH

scale
when bar is 1/2" long
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vert N/A
OCT 2025

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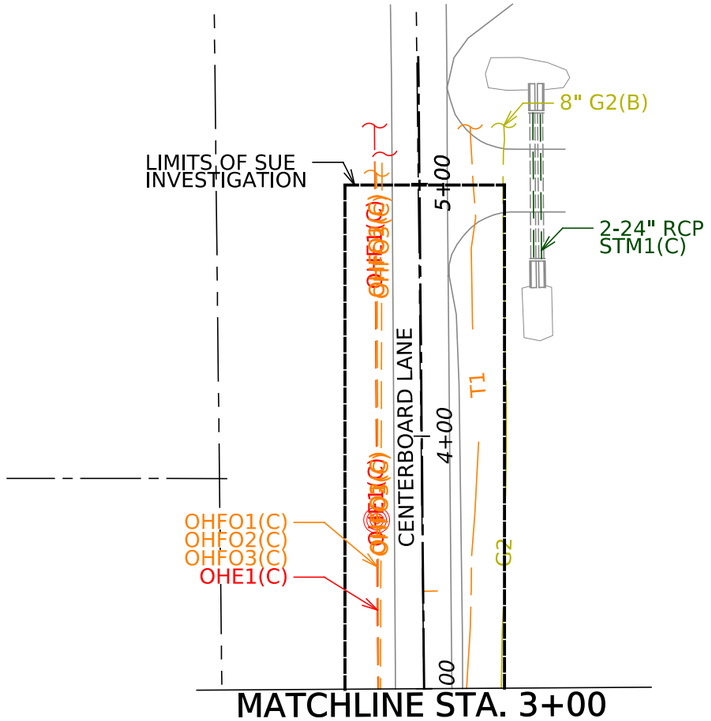
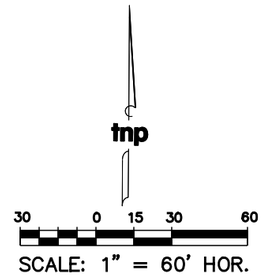
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet





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FORT WORTH

scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

tnp

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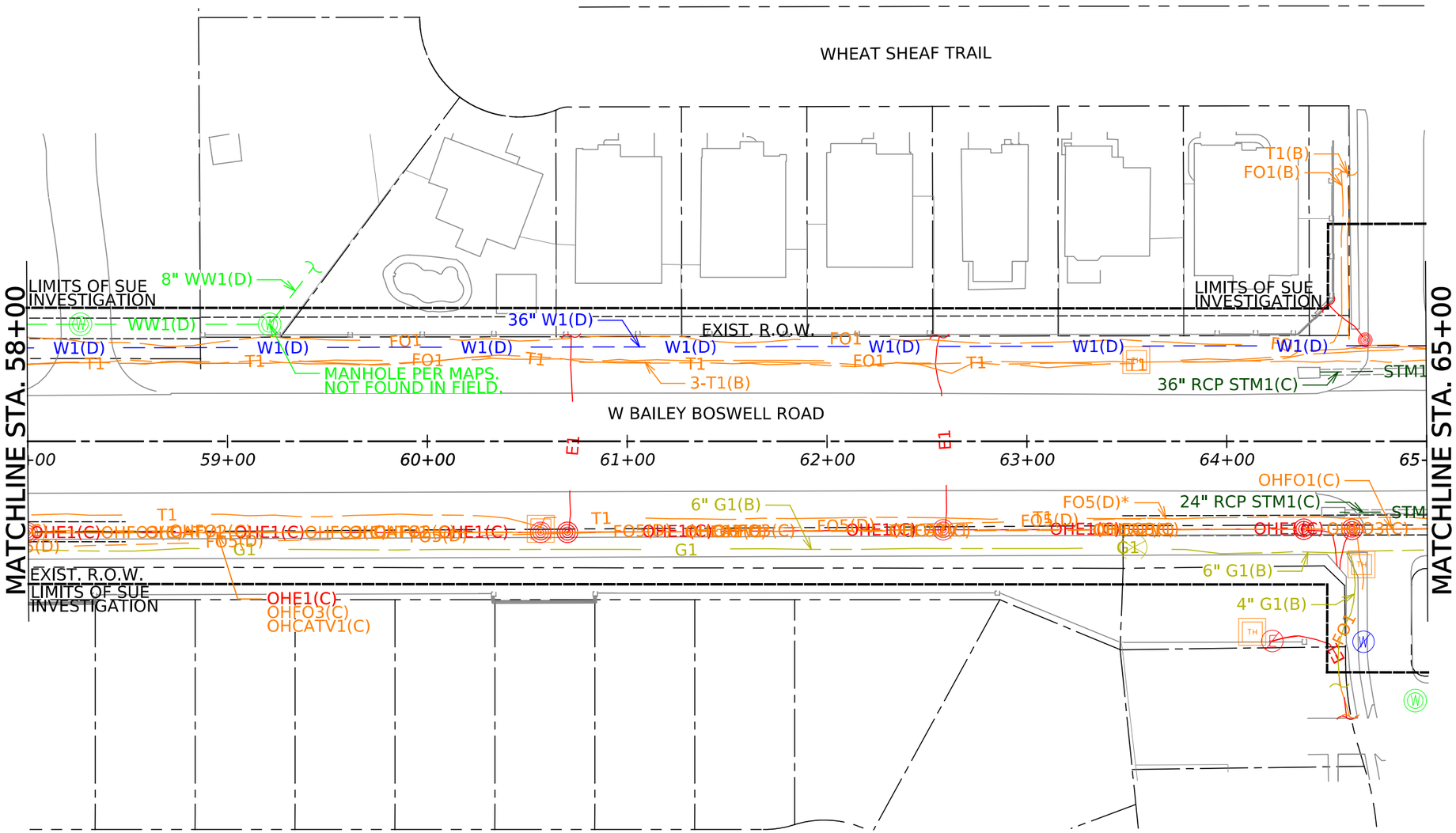
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet



tnp

30 0 15 30 60

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no.	revision	by	date

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GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

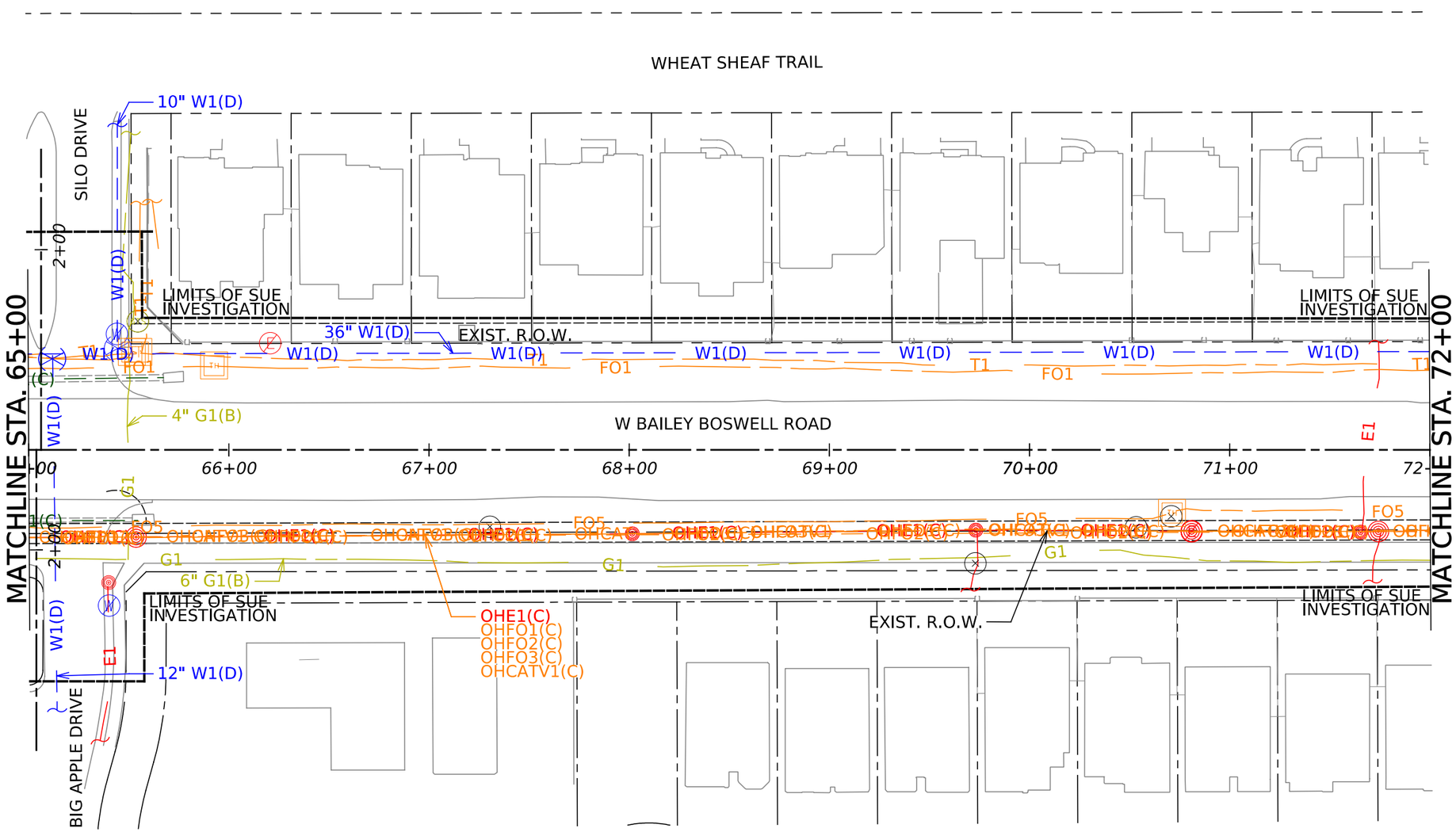
scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

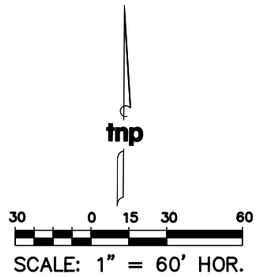
tnp

STATE OF TEXAS
Dustin C. Ogle
91101
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet





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DATE: 10/9/2025 3:04:07 PM
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FORT WORTH

scale
when bar is 1/2" long
horiz 1"=60'
vert N/A
OCT 2025

tnp

STATE OF TEXAS
Dustin C. Ogle
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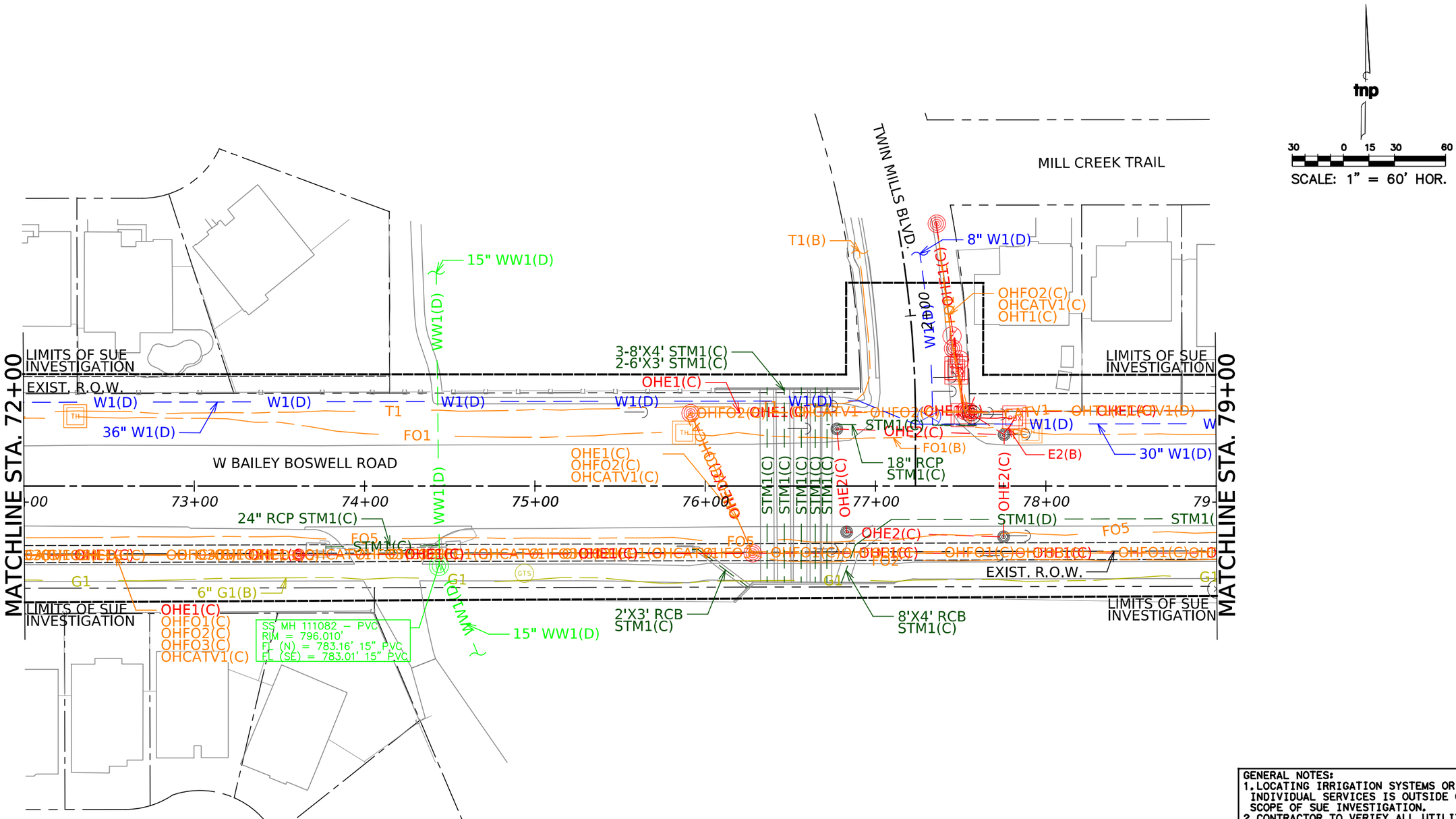
LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet



tnp

30 0 15 30 60

SCALE: 1" = 60' HOR.

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FORT WORTH

scale	
when bar is 1/2" long	
horiz	1"=60'
vert	N/A
	OCT 2025

tnp

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sheet

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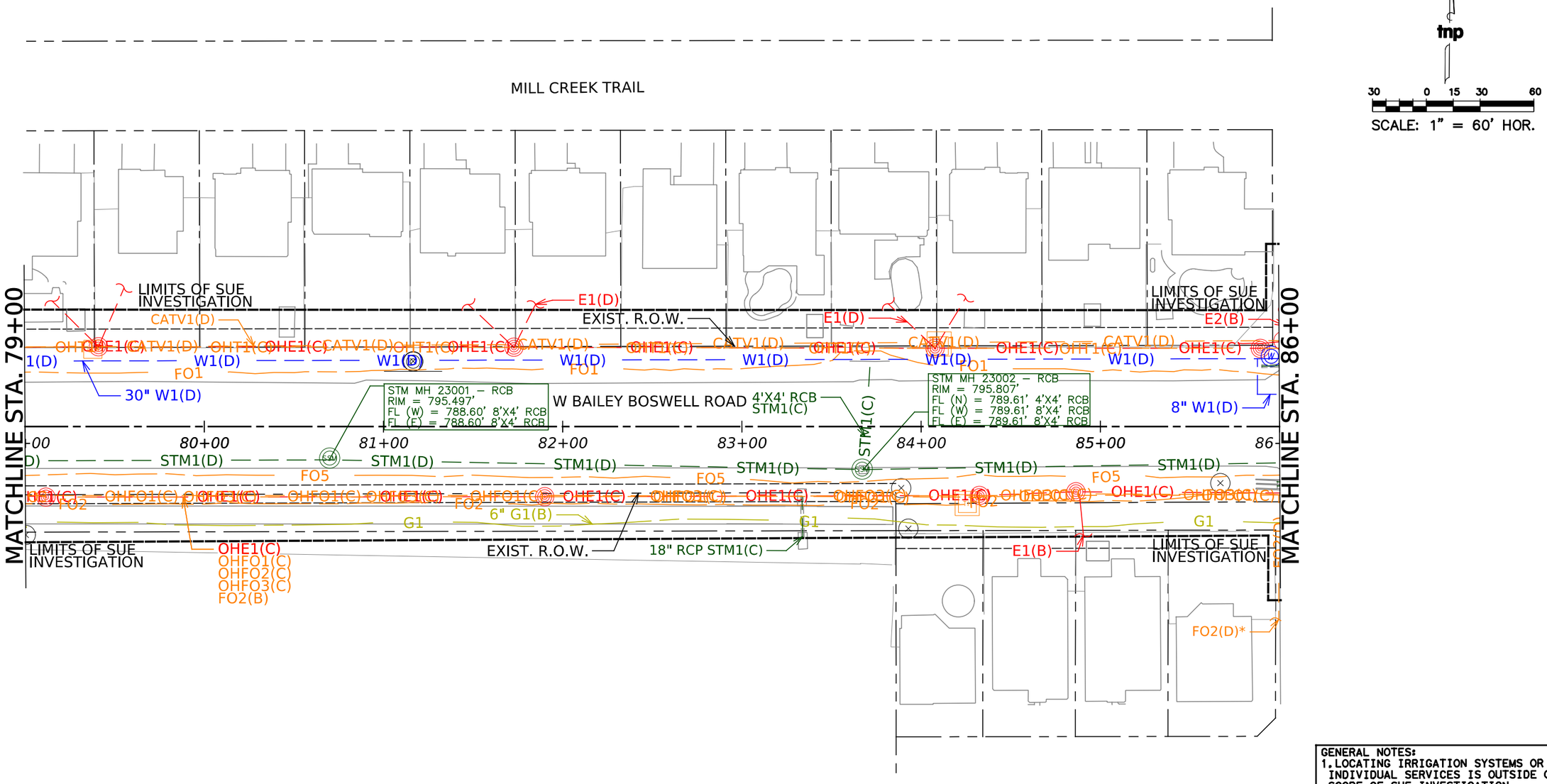

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FORT WORTH

scale
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OCT 2025

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Improvements for
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EXISTING UTILITY PLANS

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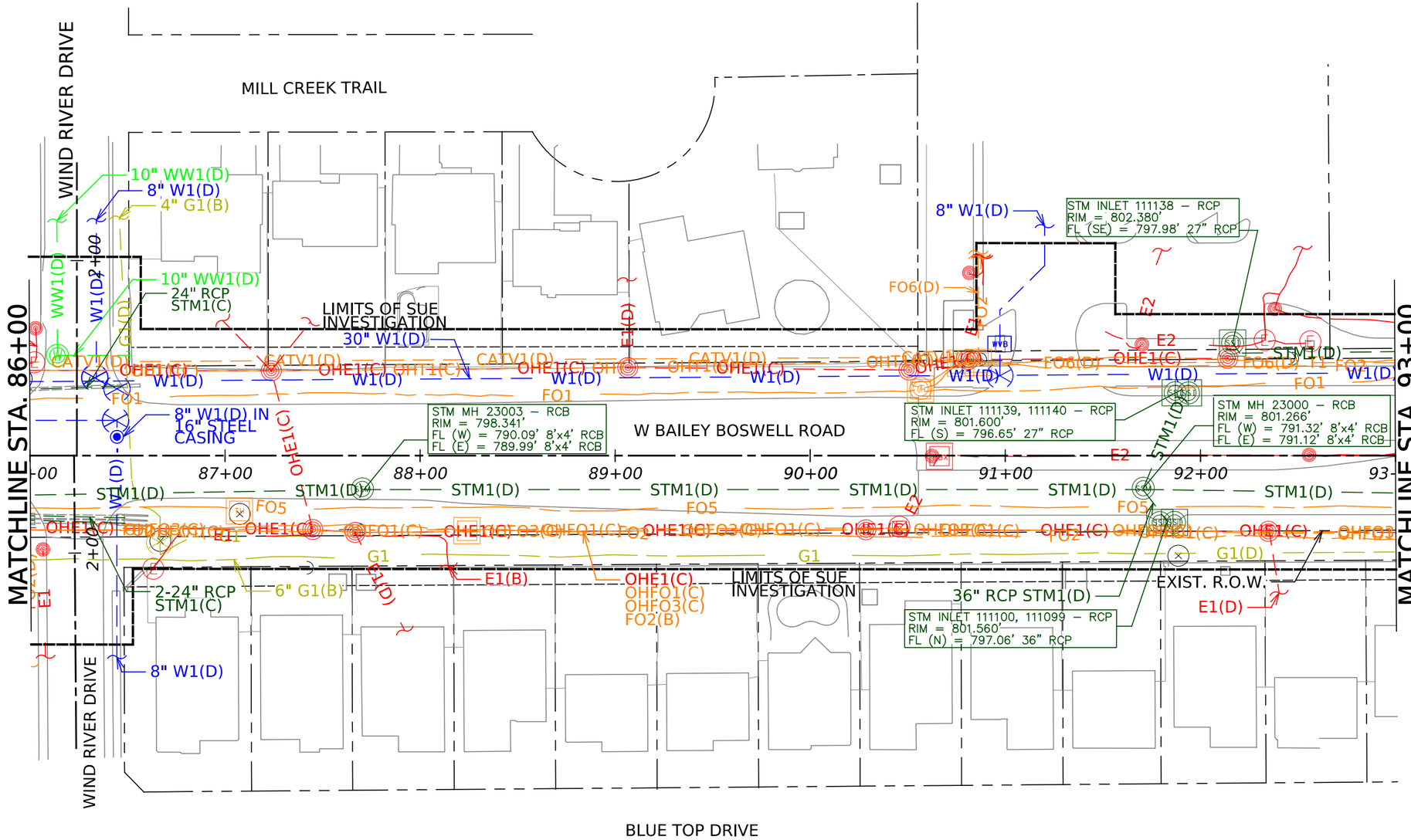

tnp

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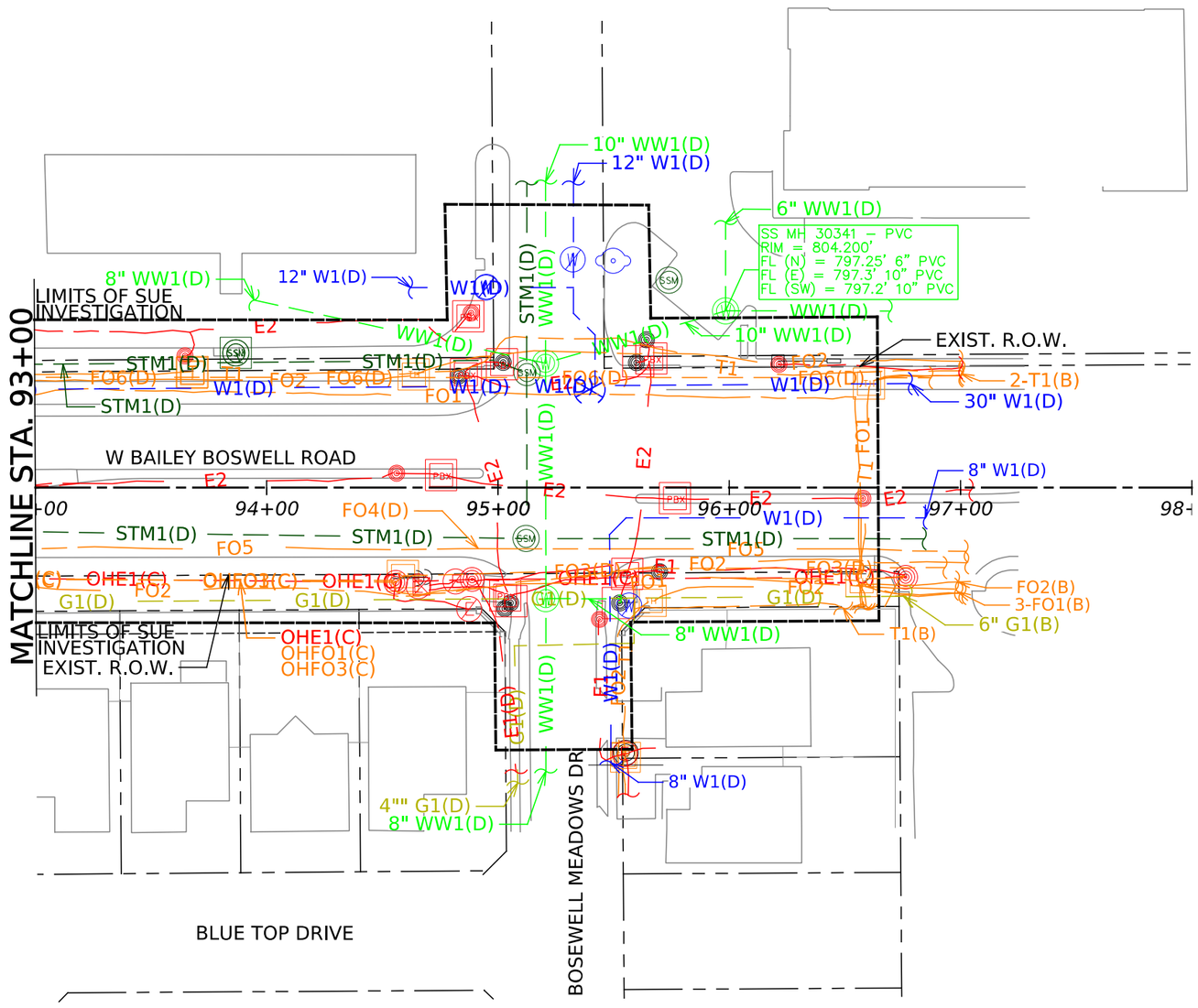

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LICENSED PROFESSIONAL ENGINEER
10/9/2025

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
EXISTING UTILITY PLANS

tnp project FTW 22268
sheet

DATE: 10/9/2025 3:08:58 PM
FILE: T:\Projects\FTW22268\UMT\PROD_SHEETS\20230829 - Sheets\20230824 - sheets\SUE018.dgn

GC-4.06 Hazardous Environmental Condition at Site

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GC-6.06.D Small Business Utilization Form

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Small Business Utilization Form

PRIME BIDDER/OFFEROR COMPANY NAME:				
PROJECT NAME:				
PROJECT NUMBER:			**City's Small Business Goal**	**Bidder/Offeror's Commitment**
BID DATE:			**30 %**	___ **%**
Check applicable box to describe Prime Bidder/Offeror	☐ Not Small Business	☐ Small Business		
ALL SMALL BUSINESS FIRMS MUST BE CERTIFIED BEFORE BID **DOCUMENTATION FROM AN APPROVED CERTIFYING AGENCY MUST BE PROVIDED WITH THIS FORM.**				

Failure to complete this form in its entirety and submit it with the Bid/Offer may result in the bid being considered non-responsive.

Should the City of Fort Worth determine that the Prime Bidder/Offeror is qualified for award of contract, upon execution of said contract, the undersigned Prime Bidder/Offeror shall enter into a formal agreement with the Small Business firm(s) listed in this utilization schedule.

Small Business firms listed toward meeting the project goal must be physically located in the City's marketplace at the time of bid.

The marketplace is Denton, Parker, Wise, Tarrant, and Johnson counties.

Certified means those small business firms that have been certified as Small Businesses by one of the following Certifying Agencies: North Central Texas Regional Certification Agency (NCTRCA), Women's Business Council – Southwest (WBCS), Dallas/Fort Worth Business Council (DFW BC), Texas Historically Underutilized Business (HUB) Program and Texas Unified Certification Program (TUP) DBE/ACDBE and Texas Department of Transportation (TXDOT) SBE Directory.

Prime Bidders/Offerors are required to identify **ALL** subcontractors/suppliers, regardless of status.

Certified Small Business Prime/Bidder/Offeror Contractors, counting their self-performance towards meeting the contract goal, must be certified within those NAICS codes for the work it intends to perform.

The Prime Bidder/Offeror will not make additions, deletions, or substitutions to this list without the prior approval of the City of Fort Worth. Any unjustified change or deletion shall be a material breach of contract and may result in debarment.

Check this box if certified Prime Contractor services will be counted towards the Small Business contracting goal. ☐

List Prime Contractor first and Prime Contractor's participation, expressed in dollars. Next, list certified Small Business firm names, including DBAs, as shown on their certification. Last, list non-small business firms.

NAMES AND ADDRESSES OF CONTRACTORS/SUPPLIERS		**TYPE OF SERVICES/SUPPLIES PROVIDED (NAICS Required)**	
Business Name:		Small Business ☐ Not Small Business ☐	
Address (including County):		**Type of Services/Supplies:**	
Phone:			
Email:		**NAICS Code:**	
Contact Person:		**$ AMOUNT:**	
NAMES AND ADDRESSES OF CONTRACTORS/SUPPLIERS		**TYPE OF SERVICES/SUPPLIES PROVIDED (NAICS Required)**	
Business Name:		Small Business ☐ Not Small Business ☐	
Address (including County):		**Type of Services/Supplies:**	
Phone:			
Email:		**NAICS Code:**	
Contact Person:		**$ AMOUNT:**	

NAMES AND ADDRESSES OF CONTRACTORS/SUPPLIERS		TYPE OF SERVICES/SUPPLIES PROVIDED (NAICS Required)	
Business Name:		Small Business ☐ Not Small Business ☐	
Address (including County):		**Type of Services/Supplies:**	
Phone:			
Email:		**NAICS Code:**	
Contact Person:		**$ AMOUNT:**	
NAMES AND ADDRESSES OF CONTRACTORS/SUPPLIERS		**TYPE OF SERVICES/SUPPLIES PROVIDED (NAICS Required)**	
Business Name:		Small Business ☐ Not Small Business ☐	
Address (including County):		**Type of Services/Supplies:**	
Phone:			
Email:		**NAICS Code:**	
Contact Person:		**$ AMOUNT:**	
NAMES AND ADDRESSES OF CONTRACTORS/SUPPLIERS		**TYPE OF SERVICES/SUPPLIES PROVIDED (NAICS Required)**	
Business Name:		Small Business ☐ Not Small Business ☐	
Address (including County):		**Type of Services/Supplies:**	
Phone:			
Email:		**NAICS Code:**	
Contact Person:		**$ AMOUNT:**	

Please include additional copies of this page if needed to list <u>all</u> subcontractors and suppliers.

Total Dollar Amount of **Certified Prime Bidder/Offeror** Services towards contract goal	**$**
Total Dollar Amount of **Small Business** Subcontractors/Suppliers	**$**
Total Dollar Amount of **Non-Small Business** Subcontractors/Suppliers	**$**
TOTAL AMOUNT BID	**$**

By affixing a signature to this form, the Prime Bidder/Offeror agrees to provide, directly to the City upon request, complete and accurate information regarding actual work performed by all subcontractors. The Prime Bidder/Offeror also agrees to allow an audit and/or examination of any books, records and files held by their company. The Prime Bidder/Offeror agrees to allow an authorized officer or employee of the City to conduct interviews with owners, principals, officers, employees and applicable subcontractors/suppliers participating on the contract to substantiate the actual work performed by the Small Business firms on this contract. A Prime Bidder/Offeror who intentionally and/or knowingly misrepresents material facts shall be debarred for a period of time of not less than one year.

Authorized Signature	**Printed Signature**
Title	**Contact Name and Title (if different)**
Company Name	**Phone Number**
Address	**Email Address**
City/State/Zip Code	**Date**

GC-6.07 Wage Rates

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2013 PREVAILING WAGE RATES
(Heavy and Highway Construction Projects)

CLASSIFICATION DESCRIPTION	Wage Rate
Asphalt Distributor Operator	$ 15.32
Asphalt Paving Machine Operator	$ 13.99
Asphalt Raker	$ 12.69
Broom or Sweeper Operator	$ 11.74
Concrete Finisher, Paving and Structures	$ 14.12
Concrete Pavement Finishing Machine Operator	$ 16.05
Concrete Saw Operator	$ 14.48
Crane Operator, Hydraulic 80 tons or less	$ 18.12
Crane Operator, Lattice Boom 80 Tons or Less	$ 17.27
Crane Operator, Lattice Boom Over 80 Tons	$ 20.52
Crawler Tractor Operator	$ 14.07
Electrician	$ 19.80
Excavator Operator, 50,000 pounds or less	$ 17.19
Excavator Operator, Over 50,000 pounds	$ 16.99
Flagger	$ 10.06
Form Builder/Setter, Structures	$ 13.84
Form Setter, Paving & Curb	$ 13.16
Foundation Drill Operator, Crawler Mounted	$ 17.99
Foundation Drill Operator, Truck Mounted	$ 21.07
Front End Loader Operator, 3 CY or Less	$ 13.69
Front End Loader Operator, Over 3 CY	$ 14.72
Laborer, Common	$ 10.72
Laborer, Utility	$ 12.32
Loader/Backhoe Operator	$ 15.18
Mechanic	$ 17.68
Milling Machine Operator	$ 14.32
Motor Grader Operator, Fine Grade	$ 17.19
Motor Grader Operator, Rough	$ 16.02
Off Road Hauler	$ 12.25
Pavement Marking Machine Operator	$ 13.63
Pipelayer	$ 13.24
Reclaimer/Pulverizer Operator	$ 11.01
Reinforcing Steel Worker	$ 16.18
Roller Operator, Asphalt	$ 13.08
Roller Operator, Other	$ 11.51
Scraper Operator	$ 12.96
Servicer	$ 14.58
Small Slipform Machine Operator	$ 15.96
Spreader Box Operator	$ 14.73
Truck Driver Lowboy-Float	$ 16.24
Truck Driver Transit-Mix	$ 14.14
Truck Driver, Single Axle	$ 12.31
Truck Driver, Single or Tandem Axle Dump Truck	$ 12.62
Truck Driver, Tandem Axle Tractor with Semi Trailer	$ 12.86
Welder	$ 14.84
Work Zone Barricade Servicer	$ 11.68

The Davis-Bacon Act prevailing wage rates shown for Heavy and Highway construction projects were determined by the United States Department of Labor and current as of September 2013. The titles and descriptions for the classifications listed are detailed in the AGC of Texas' Standard Job Classifications and Descriptions for Highway, Heavy, Utilities, and Industrial Construction in Texas.

GC-6.09 Permits and Utilities

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GR-01 60 00 Product Requirements

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CITY OF FORT WORTH TRANSPORTATION/PUBLIC WORKS DEPARTMENT

STANDARD PRODUCTS LIST AS OF 9/30/2025

!!!!!!!! Attention: Mix Designs do not supersede CFW Specifications !!!!!!!!!

Approval	Spec No.	Classification	Manufacturer	Mix ID	Mix Description	Design Strength @ 28 days	Design Rquirements	National Spec
	Concrete							
	Class A (Sidewalk, ADA Ramps, Driveways, Curb/Gutter, Median Pavement)							
9/9/2022	32 13 20	Mix Design	American Concrete Company	30CAF029		3000 psi	3-5" Slump; 3-6% Air	
4/3/2025	32 13 20	Mix Design	Big Town Concrete	2211		3000 psi	3-5" Slump; 3-6% Air	
7/16/2025	322 13 20	Mix Design	Big Town Concrete	22113	With 30% Slag	3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Burnco Texas	30U101AG		3000 psi	3-5" Slump; 3-6% Air	
4/1/2024	32 13 20	Mix Design	Burnco Texas	30U500BG		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Carder Concrete	FWCC502001		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Carder Concrete	FWCC502021		3500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Chisholm Trail Redi Mix	C13020AE		3000 psi	3-5" Slump; 4.5-7.5% Air	
4/28/2025	32 13 20	Mix Design	Chisholm Trail Redi Mix	CT6020A		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	City Concrete Company	30HA20II		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Cow Town Redi Mix	253-W		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Cow Town Redi Mix	250		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Cow Town Redi Mix	350		3000 psi	3-5" Slump; 3-6% Air	
1/29/2024	32 13 20	Mix Design	Estrada Ready Mix	R3050AEWR		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Holcim - SOR, Inc.	1261		3000 psi	3-5" Slump; 3-6% Air	
9/23/2024	32 13 20	Mix Design	Holcim - SOR, Inc.	5177		3000 psi	3-5" Slump; 3-6% Air	
5/8/2025	32 13 20	Mix Design	Holcim - SOR, Inc.	530WA-T1		3000 psi	3-5" Slump; 3-6% Air	
4/7/2023	32 13 20	Mix Design	Liquid Stone	C301D		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Martin Marietta	R2136214		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Martin Marietta	R2136014		3000 psi	3-5" Slump; 3-6% Air	
4/1/2023	32 13 20	Mix Design	Martin Marietta	R2136N14		3000 psi	3-5" Slump; 3-6% Air	
6/1/2023	32 13 20	Mix Design	Martin Marietta	R2136R20		3000 psi	3-5" Slump; 3-6% Air	
6/1/2023	32 13 20	Mix Design	Martin Marietta	R2136N20		3000 psi	3-5" Slump; 3-6% Air	
11/2/2022	32 13 20	Mix Design	Martin Marietta	R2141K24		4000 psi	3-5" Slump; 3-6% Air	
4/7/2023	32 13 20	Mix Design	Martin Marietta	R2136K14		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Martin Marietta	R2131314		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Martin Marietta	R2132214		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Martin Marietta	D9490SC		3000 psi	3-5" Slump; 4.5-7.5% Air	
5/9/2025	32 13 20	Mix Design	Martin Marietta	R2136R14		3000 psi	3-5" Slump; 3-6% Air	
10/4/2023	32 13 20	Mix Design	NBR Ready Mix	CLS A-YY		3000 psi	3-5" Slump; 3-6% Air	
10/4/2023	32 13 20	Mix Design	NBR Ready Mix	CLS A-NY		3000 psi	3-5" Slump; 3-6% Air	
7/10/2023	32 13 20	Mix Design	Osburn	30A50MR		3000 psi	3-5" Slump; 3-6% Air	
1/18/2023	32 13 20	Mix Design	Rapid Redi Mix	RRM5020A		3000 psi	3-5" Slump; 3-6% Air	
1/24/2023	32 13 20	Mix Design	Rapid Redi Mix	RRM5525A		3600 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 20	Mix Design	SRM Concrete	30850	With 20% Fly Ash	3000 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 20	Mix Design	SRM Concrete	30350		3000 psi	3-5" Slump; 3-6% Air	
10/18/2024	32 13 20	Mix Design	SRM Concrete	30050	With 20% Fly Ash	3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Tarrant Concrete	FW5025A		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Tarrant Concrete	CP5020A		3000 psi	3-5" Slump; 3-6% Air	
10/10/2022	32 13 20	Mix Design	Tarrant Concrete	TCFW5020A		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Tarrant Concrete	FW5525A2		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	Titan Ready Mix	3020AE		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	True Grit Redi Mix	0250.230		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 20	Mix Design	True Grit Redi Mix	0250.2301		3000 psi	3-5" Slump; 3-6% Air	
	Class CIP (Inlets, Manholes, Junction Boxes, Encasement, Blocking, Collars, (Spread Footing Pedestal Pole Foundations (Reference Detail 34 41 10-D605A)							
9/9/2022	32 13 13	Mix Design	American Concrete Company	40CNF065		4000 psi	3-5" Slump; 0-3% Air	
9/9/2022	32 13 13	Mix Design	Burnco Texas	40U500BG		4000 psi	3-5" Slump; 3-6% Air	
4/28/2025	32 13 20	Mix Design	Chisholm Trail Redi Mix	CT6020A		3600 psi	3-5" Slump; 3-6% Air	
4/28/2025	32 13 20	Mix Design	Chisholm Trail Redi Mix	CTFW5520A		3600 psi	3-5" Slump; 3-6% Air	
4/28/2025	32 13 20	Mix Design	Chisholm Trail Redi Mix	CTFW6020A		4000 psi	3-5" Slump; 3-6% Air	
8/4/2025	32 13 20	Mix Design	Chisholm Trail Redi Mix	CTFW5020A	With 20% Fly Ash	3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	255-2		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	355		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	255		3500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	270		5000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	370		5000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	353		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	257		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	357		3600 psi	3-5" Slump; 3-6% Air	
5/7/2025	32 13 13	Mix Design	Cow Town Redi Mix	265-42		4200 psi	3-5" Slump; 3-6% Air	
2/7/2025	32 13 13	Mix Design	Holcim - SOR, Inc.	1701		4000 psi	3-5" Slump; 3-6% Air	
2/7/2025	32 13 13	Mix Design	Holcim - SOR, Inc.	1551		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Holcim - SOR, Inc.	5409		4000 psi	3-5" Slump; 3-6% Air	
8/14/2025	32 13 13	Mix Design	Holcim - SOR, Inc.	540WA-T1	With 20% Fly Ash and 30% Slag	4000 psi	3-5" Slump; 3-6% Air	
4/27/2023	32 13 13	Mix Design	Liquid Stone	C361DNFA		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2141230		4000 psi	3-5" Slump; 3-6% Air	
8/4/2023	32 13 13	Mix Design	Martin Marietta	R2141R24		4000 psi	3-5" Slump; 3-6% Air	
11/20/2023	32 13 13	Mix Design	Martin Marietta	R2146R33		4000 psi	3-5" Slump; 3-6% Air	
11/20/2023	32 13 13	Mix Design	Martin Marietta	R2146K33		4000 psi	3-5" Slump; 3-6% Air	

CITY OF FORT WORTH TRANSPORTATION/PUBLIC WORKS DEPARTMENT

STANDARD PRODUCTS LIST AS OF 9/30/2025

!!!!!!!! Attention: Mix Designs do not supersede CFW Specifications !!!!!!!!!

Approval	Spec No.	Classification	Manufacturer	Mix ID	Mix Description	Design Strength @ 28 days	Design Rquirements	National Spec
...Concrete (Continues)								
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2142233		3600 psi	3-5" Slump; 4.5-7.5% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2136224		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2141233		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2146038		4500 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	Martin Marietta	R2146K34		4000 psi	3-5" Slump; 3-6% Air	
5/5/2025	32 13 13	Mix Design	Martin Marietta	R2146R35		4000 psi	3-5" Slump; 3-6% Air	
5/5/2025	33 13 13	Mix Design	Martin Marietta	R2146K35		4000 psi	3-5" Slump; 3-6% Air	
5/5/2025	33 13 13	Mix Design	Martin Marietta	R2146N33		4000 psi	3-5" Slump; 3-6% Air	
9/12/2023	32 13 13	Mix Design	NBR Ready Mix	CLS P1-YY		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	NBR Ready Mix	TX C-YY		3000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	NBR Ready Mix	TX C-NY		3000 psi	3-5" Slump; 3-6% Air	
1/18/2023	32 13 13	Mix Design	Rapid Redi Mix	RRM5320A		3000 psi	3-5" Slump; 3-6% Air	
1/18/2023	32 13 13	Mix Design	Rapid Redi Mix	RRM6020ASS		4000 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	SRM Concrete	40350		4000 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	SRM Concrete	40850		4000 psi	3-5" Slump; 3-6% Air	
9/16/2024	32 13 13	Mix Design	SRM Concrete	35050		3500 psi	3-5" Slump; 3-6% Air	
4/28/2025	32 13 13	Mix Design	SRM Concrete	36850		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW5320A		3000 psi	3-5" Slump; 3-6% Air	
10/10/2022	32 13 13	Mix Design	Tarrant Concrete	TCFW6025A2		4000 psi	3-5" Slump; 3-6% Air	
	Class C (Drilled Shaft for Traffic Signal Pole Foundations Reference Detail 31 41 10-D605)							
9/9/2022	32 13 13	Mix Design	Burnco Texas	36U500BG		3600 psi	5.5-7.5" Slump; 3-6% Air	
6/21/2023	32 13 13	Mix Design	Cow Town Redi Mix	360-DS		3600 psi	5.5-7.5" Slump; 3-6% Air	
10/30/2024	32 13 13	Mix Design	Estrada Ready Mix	R36575AEWR		3600 psi	5.5-7.5" Slump; 3-6% Air	
9/11/2025	32 13 13	Mix Design	Gonzalez Brothers	P6020LA		3600 psi	5.5-7.5" Slump; 3-6% Air	
12/5/2022	32 13 13	Mix Design	Holcim - SOR, Inc.	1822		3600 psi	5.5-7.5" Slump; 0-3% Air	
9/9/2022	32 13 13	Mix Design	Holcim - SOR, Inc.	1859		4000 psi	5.5-7.5" Slump; 3-6% Air	
4/7/2023	32 13 13	Mix Design	Liquid Stone	C361DHR		3600 psi	5.5-7.5" Slump; 3-6% Air	
6/27/2023	32 13 13	Mix Design	Martin Marietta	U2146N41		3600 psi	5-7" Slump; 3-6% Air	
6/27/2023	32 13 13	Mix Design	Martin Marietta	U2146K45		3600 psi	5-7" Slump; 3-6% Air	
5/9/2025	2 13 13	Mix Design	Martin Marietta	U2146R41		3600 psi	5-7" Slump; 3-6% Air	
8/22/2024	32 13 13	Mix Design	NBR Ready Mix	135K2524		3600 psi	5.5" Slump; 3-6% Air	
8/22/2024	32 13 13	Mix Design	NBR Ready Mix	135K0524		3600 psi	5.5" Slump; 3-6% Air	
	Class C (Headwalls, Wing walls, Culverts)							
9/9/2022	32 13 13	Mix Design	Carder Concrete	FWCC602001		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	City Concrete Company	40LA2011		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	260-2		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	360-1		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	260-1		3600 psi	3-5" Slump; 3-6% Air	
8/11/2025	32 13 13	Mix Design	Cow Town Redi Mix	275	With 20% Fly Ash	5000 psi	4-6" Slump; 3-6% Air	
8/11/2025	32 13 13	Mix Design	Cow Town Redi Mix	375		5000 psi	4-6" Slump; 3-6% Air	
1/29/2024	32 13 13	Mix Design	Estrada Ready Mix	R3655AEWR		3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	GCH Concrete Services	GCH4000		4000 psi	3-5" Slump; 3-6% Air	
4/1/2023	32 13 13	Mix Design	Martin Marietta	310LBP		3600 psi	3-5" Slump; 4-7% Air	
8/30/2023	32 13 13	Mix Design	Martin Marietta	R2141R30		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2146035		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	SRM Concrete	40050		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	SRM Concrete	35022	With 20% Fly Ash	3600 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW6020A2		4000 psi	3-5" Slump; 3-6% Air	
	Class P (Machine Placed Paving)							
4/3/2025	32 13 13	Mix Design	Big Town Concrete	4511		3600 psi	1-3" Slump; 3-6% Air	
4/3/2025	32 13 13	Mix Design	Big Town Concrete	4411		3600 psi	1-3" Slump; 3-6% Air	
6/30/2025	32 13 13	Mix Design	Big Town Concrete	5211	With 20% Fly Ash	4000 psi	1-3" Slump; 3-6% Air	
6/30/2025	30 13 13	Mix Design	Big Town Concrete	52113	With 30% Slag	4000 psi	1-3" Slump; 3-6% Air	
6/30/2025	30 13 13	Mix Design	Big Town Concrete	5311		4000 psi	1-3" Slump; 3-6% Air	
9/30/2025	30 13 13	Mix Design	Burnco Texas	40U553BG	With 20% Fly Ash	4000 psi	1-3" Slump; 3-6% Air	
	31 13 13	Mix Design	Burnco Texas	40U553BG		4000 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Carder Concrete	FWCC552091		3600 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Carder Concrete	FWCC602091		4000 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	City Concrete Company	36LA2011		3600 psi	1-3" Slump; 3-6% Air	
9/9/2022	33 13 13	Mix Design	Cow Town Redi Mix	257-M		3600 psi	1-3" Slump; 3-6% Air	
11/14/2022	32 13 13	Mix Design	Cow Town Redi Mix	357-M		3600 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	260-M		4000 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	360-M		4000 psi	1-3" Slump; 3-6% Air	
2/6/2024	32 13 13	Mix Design	Estrada Ready Mix	TD3655AEWR		3600 psi	1-3" Slump; 3-6% Air	
5/20/2025	32 13 13	Mix Design	Gilco Contracting Inc	36MP1643		3600 psi	1-3" Slump; 3-6% Air	
6/20/2025	32 13 13	Mix Design	Gilco Contracting Inc	36MP1629		3600 psi	1-3" Slump; 3-6% Air	
7/29/2025	32 13 13	Mix Design	Gilco Contracting Inc	36MP1655	With 20% Fly Ash	3600 psi	1-3" Slump; 3-6% Air	
7/29/2025	32 13 13	Mix Design	Gilco Contracting Inc	36MP1670		3600 psi	1-3" Slump; 3-6% Air	
5/12/2025	32 13 13	Mix Design	Holcim - SOR, Inc.	1703		4000 psi	1-3" Slump; 3-6% Air	
8/4/2023	32 13 13	Mix Design	Martin Marietta	Q2141R27		4000 psi	1-3" Slump; 3-6% Air	
11/2/2022	32 13 13	Mix Design	Martin Marietta	Q2141K30		4000 psi	1-3" Slump; 3-6% Air	

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!!!!!!!! Attention: Mix Designs do not supersede CFW Specifications !!!!!!!!!

Approval	Spec No.	Classification	Manufacturer	Mix ID	Mix Description	Design Strength @ 28 days	Design Rquirements	National Spec
...Concrete (Continues)								
5/5/2025	32 13 13	Mix Design	Martin Marietta	Q2141N27		4000 psi	1-3" Slump; 3-6% Air	
10/4/2023	32 13 13	Mix Design	NBR Ready Mix	TX C SF-YY		3600 psi	1-3" Slump; 3-6% Air	
10/4/2023	32 13 13	Mix Design	NBR Ready Mix	TX C SF-NY		3600 psi	1-3" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	SRM Concrete	40068		4000 psi	1-3" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	SRM Concrete	40825		4000 psi	1-3" Slump; 3-6% Air	
9/16/2024	32 13 13	Mix Design	SRM Concrete	40025	With 20% Fly Ash	4000 psi	1-3" Slump; 3-6% Air	
10/18/2024	32 13 13	Mix Design	SRM Concrete	35023		3600 psi	1-3" Slump; 3-6% Air	
6/5/2025	32 13 13	Mix Design	SRM Concrete	40324		4000 psi	1-3" Slump; 3-6% Air	
7/21/2025	32 13 13	Mix Design	SINACOLA	24011-4000MP 20%	With 20% Fly Ash	4000 psi	1-3" Slump; 3-6% Air	
7/21/2025	32 13 13	Mix Design	SINACOLA	24011-4000MP Straight Cement		4000 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW5520AMP		3600 psi	1-3" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	True Grit Redi Mix	0255.2301		3600 psi	1-3" Slump; 3.5-6.5% Air	
9/9/2022	32 13 13	Mix Design	True Grit Redi Mix	0260.2302		4000 psi	1-3" Slump; 3.5-6.5% Air	
6/17/2025	32 13 13	Mix Design	True Grit Redi Mix	460.230M		4000 psi	1-3" Slump; 3-6% Air	
6/23/2025	32 13 13	Mix Design	True Grit Redi Mix	360.230M		4000 psi	1-3" Slump; 3-6% Air	
	Class H (Hand Placed Paving, Valley Gutter)							
9/9/2022	32 13 13	Mix Design	American Concrete Company	45CAF076		4500 psi	3-5" Slump; 3-6% Air	
5/2/2023	32 13 13	Mix Design	Big D Concrete	CM14520AE		4500 psi	3-5" Slump; 3-6% Air	
4/3/2025	32 13 13	Mix Design	Big Town Concrete	6211		4500 psi	3-5" Slump; 3-6% Air	
4/3/2025	32 13 13	Mix Design	Big Town Concrete	6311		4500 psi	3-5" Slump; 3-6% Air	
4/5/2025	32 13 13	Mix Design	Big Town Concrete	6017		4500 psi	3-5" Slump; 3-6% Air	
7/16/2025	32 13 13	Mix Design	Big Town Concrete	62113	With 30% Slag	4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Burnco Texas	45U500BG		4500 psi	3-5" Slump; 3-6% Air	
	33 13 13	Mix Design	Burnco Texas	45U100AG		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Carder Concrete	FWCC602021		4500 psi	3-5" Slump; 3-6% Air	
4/28/2025	32 13 13	Mix Design	Chisholm Trail Redi Mix	CTFW6520A		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	City Concrete Company	45NA20II		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	265		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	365		4500 psi	3-5" Slump; 3-6% Air	
1/29/2024	32 13 13	Mix Design	Estrada Ready Mix	R4560AEWR/		4500 psi	3-5" Slump; 4-6% Air	
9/9/2022	32 13 13	Mix Design	GCH Concrete Services	GCH4500		4500 psi	3-5" Slump; 3-6% Air	
5/20/2025	32 13 13	Mix Design	Gilco Contracting Inc	45HP1643		4500 psi	3-5" Slump; 3-6% Air	
6/20/2025	32 13 13	Mix Design	Gilco Contracting Inc	45HP1629		4500 psi	3-5" Slump; 3-6% Air	
7/29/2025	32 13 13	Mix Design	Gilco Contracting Inc	45HP1670		4500 psi	3-5" Slump; 3-6% Air	
10/4/2024	32 13 13	Mix Design	Holcim - SOR, Inc.	5507		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Holcim - SOR, Inc.	1851		4500 psi	3-5" Slump; 3-6% Air	
5/8/2025	32 13 13	Mix Design	Holcim - SOR, Inc.	545WA-T1		4500 psi	3-5" Slump; 3-6% Air	
4/5/2025	32 13 13	Mix Design	Liquid Stone	C451D		4500 psi	3-5" Slump; 3-6% Air	
11/2/2022	32 13 13	Mix Design	Martin Marietta	R2146N35		4500 psi	3-5" Slump; 3-6% Air	
8/4/2023	32 13 13	Mix Design	Martin Marietta	R2146R36		4500 psi	3-5" Slump; 3-6% Air	
11/2/2022	32 13 13	Mix Design	Martin Marietta	R2146N36		4500 psi	3-5" Slump; 3-6% Air	
5/22/2023	32 13 13	Mix Design	Martin Marietta	R2146K37		4500 psi	3-5" Slump; 3-6% Air	
12/22/2023	32 13 13	Mix Design	Martin Marietta	R2146R44		4500 psi	3-5" Slump; 3-6% Air	
12/22/2023	32 13 13	Mix Design	Martin Marietta	R2146K44		4500 psi	3-5" Slump; 3-6% Air	
11/15/2022	32 13 13	Mix Design	Martin Marietta	R2146P36		4500 psi	3-5" Slump; 3-6% Air	
11/15/2022	32 13 13	Mix Design	Martin Marietta	R2146K36		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2147241		4500 psi	3-5" Slump; 4.5-7.5% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2146236		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2146036		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2146242		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Martin Marietta	R2146042		4500 psi	3-5" Slump; 3-6% Air	
6/3/2025	32 13 13	Mix Design	Martin Marietta	R2146K43		4500 psi	3-5" Slump; 3-6% Air	
10/4/2023	32 13 13	Mix Design	NBR Ready Mix	CLS P2-YY		4500 psi	3-5" Slump; 3-6% Air	
10/4/2023	32 13 13	Mix Design	NBR Ready Mix	CLS P2-NY		4500 psi	3-5" Slump; 3-6% Air	
7/10/2023	32 13 13	Mix Design	Osburn	45A60MR		4500 psi	3-5" Slump; 3-6% Air	
1/24/2023	32 13 13	Mix Design	Rapid Redi Mix	RRM6320AHP		4500 psi	3-5" Slump; 3-6% Air	
2/7/2025	32 13 13	Mix Design	SRM Concrete	45023		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	SRM Concrete	45000		4500 psi	3-5" Slump; 3-6% Air	
5/23/2025	32 13 13	Mix Design	SRM Concrete	45300		4500 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	SRM Concrete	45350		4500 psi	3-5" Slump; 3-6% Air	
10/24/2024	32 13 13	Mix Design	SRM Concrete	45850	With 20% Fly Ash	4500 psi	3-5" Slump; 3-6% Air	
10/18/2024	32 13 13	Mix Design	SRM Concrete	45050		4500 psi	3-5" Slump; 3-6% Air	
7/21/2025	32 13 13	Mix Design	SINACOLA	24011-4500HP 20%	With 20% Fly Ash	4500 psi	3-5" Slump; 3-6% Air	
7/21/2025	32 13 13	Mix Design	SINACOLA	24011-4500HP Straight Cement		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW6020AHP		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW60AHP		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	TCFW6020AHP		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Titan Ready Mix	TRC4520		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	True Grit Redi Mix	0260.2301		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	True Grit Redi Mix	0265.2301		4500 psi	3-5" Slump; 3.5-6.5% Air	
9/9/2022	32 13 13	Mix Design	True Grit Redi Mix	270.230		4500 psi	3-5" Slump; 3-6% Air	
6/12/2025	32 13 13	Mix Design	True Grit Redi Mix	465.230H	With 30% Slag	4500 psi	3-5" Slump; 3-6% Air	
6/23/2025	32 13 13	Mix Design	True Grit Redi Mix	365.230H		4500 psi	3-5" Slump; 3-6% Air	
10/9/2024	32 13 13	Mix Design	Wildcatter	4520AI		4500 psi	3-5" Slump; 3-6% Air	

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Approval	Spec No.	Classification	Manufacturer	Mix ID	Mix Description	Design Strength @ 28 days	Design Rquirements	National Spec
	Class HES (High Early Strength Paving)							
9/9/2022	32 13 13	Mix Design	Big D Concrete	14500AE		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	370-1NC		4500 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	375-NC		5000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	370-NC		4500 psi	3-5" Slump; 3-6% Air	
1/18/2023	32 13 13	Mix Design	Cow Town Redi Mix	380-NC		4500 psi	3-5" Slump; 3-6% Air	
1/29/2024	32 13 13	Mix Design	Estrada Ready Mix	4575AESC		4500 psi / 3000 psi @ 3 days	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Holcim - SOR, Inc.	2125		5000 psi	3-5" Slump; 3-6% Air	
1/24/2023	32 13 13	Mix Design	Liquid Stone	C451DHR-A		4500 psi	3-5" Slump; 3-6% Air	
4/7/2023	32 13 13	Mix Design	Martin Marietta	R2161K70		6000 psi / 3000 psi @ 24hr.	3-5" Slump; 3-6% Air	
2/10/2023	32 13 13	Mix Design	SRM Concrete	50310		5000 psi	3-5" Slump; 3-6% Air	
2/7/2025	32 13 13	Mix Design	SRM Concrete	40326		4500 psi / 3000 psi @ 3 days	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW6520AMR		4500 psi / 3000 psi @ 3 days	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Tarrant Concrete	FW7520AMR		4500 psi / 3000 psi @ 3 days	3-5" Slump; 3-6% Air	
	Class S (Bridge Slabs, Top Slabs of Direct Traffic Culverts, Approach Slabs)							
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	260		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	360		4000 psi	3-5" Slump; 3-6% Air	
9/9/2022	32 13 13	Mix Design	Cow Town Redi Mix	365-STX		4000 psi	3-5" Slump; 3-6% Air	
1/29/2024	32 13 13	Mix Design	Estrada Ready Mix	R4060AEWR		4000 psi	4-6" Slump; 3-6% Air	
5/3/2023	32 13 13	Mix Design	Martin Marietta	M7842344		4000 psi	3-5" Slump; 4.5-7.5% Air	
4/1/2023	32 13 13	Mix Design	Martin Marietta	R2146P33		4000 psi	3-5" Slump; 3-6% Air	
8/18/2025	32 13 13	Mix Design	Martin Marietta	610LBT		4000 psi	3-5" Slump; 3-6% Air	
4/15/2024	32 13 13	Mix Design	NBR Ready Mix	TX S-NY		4000 psi	3-5" Slump; 3-6% Air	
4/15/2024	32 13 13	Mix Design	NBR Ready Mix	TX S-YY		4000 psi	3-5" Slump; 3-6% Air	
4/5/2025	32 13 13	Mix Design	SRM Concrete	40850	With 20% Fly Ash	4000 psi	3-5" Slump; 3-6% Air	
4/5/2025	32 13 13	Mix Design	SRM Concrete	40350		4000 psi	3-5" Slump; 3-6% Air	
5/5/2023	32 13 13	Mix Design	SRM Concrete	D100008553CB		4000 psi	3-5" Slump; 3-6% Air	
	Concrete Base Trench Repair							
4/1/2023	03 34 16	Mix Design	Burnco Texas	10YH50BF		1000 psi	Flowable; 8.5-11.5% Air	
9/9/2022	03 34 16	Mix Design	Burnco Texas	08Y450BA		800 psi	5-7" Slump; 3-6% Air	
	03 314 16	Mix Design	Martin Marietta	YN81O001		750 psi	8-12" Slump; 5-10% Air	
	Controlled Low Strength Material (Flowable Fill)							
2/7/2025	03 34 13	Mix Design	Burnco Texas	01Y690BF		100 psi	Flowable; 9.5-11.5% Air	
5/19/2025	03 34 13	Mix Design	Burnco Texas	01Z180AF		100 psi	Flowable; 9.5-11.5% Air	
9/9/2022	03 34 13	Mix Design	Carder Concrete	FWCC359101		50-150 psi	3-5" Slump; 8-12% Air	
9/9/2022	03 34 13	Mix Design	Carder Concrete	FWFF237501		50-150 psi	Flowable; 8.5-11.5% Air	
8/4/2025	03 34 13	Mix Design	Chisholm Trail Redi Mix	CT150FF		50-150 psi	Flowable; 7-9.0% Air	
9/9/2022	03 34 13	Mix Design	City Concrete Company	11-350-FF		50-150 psi	Flowable; 8-12% Air	
9/9/2022	03 34 13	Mix Design	Cow Town Redi Mix	9		70 psi	7-9" Slump; 8-11% Air	
9/9/2025	03 34 13	Mix Design	Cow Town Redi Mix	10		Min 50 psi	Min 9" Slump; 10-20% Air	
5/12/2025	03 34 13	Mix Design	Holcim - SOR, Inc.	3741		100 psi	Flowable; 12.0-24.0% Air	
8/4/2025	03 34 13	Mix Design	Holcim - SOR, Inc.	901		100 psi	9-11" Slump; 10-30% Air	
8/14/2025	03 34 13	Mix Design	Holcim - SOR, Inc.	904		150 psi	9-11" Slump; 10-30% Air	
9/11/2025	03 34 13	Mix Design	Martin Marietta	FLOW25A		150 psi	8"-12" Slump; 10% Air	
10/4/2023	03 34 13	Mix Design	NBR Ready Mix	FTW FLOW FILL		150 psi	7-10" Slump; 8-12% Air	
2/7/2025	03 34 13	Mix Design	SRM Concrete	910		150 psi	Flowable; 8-12% Air	
9/9/2022	03 34 13	Mix Design	Tarrant Concrete	FWFF150CLSM		50-150 psi	Flowable; 8-12% Air	
	Concrete Rip Rap							
4/1/2023	31 37 00	Mix Design	Martin Marietta	R2141030		4000 psi	3-5" Slump; 3-6% Air	
4/1/2023	31 37 00	Mix Design	Martin Marietta	R2146033		4000 psi	3-5" Slump; 3-6% Air	
	Asphalt Paving							
9/9/2022	32 12 16	Mix Design	Austin Asphalt	FT5B117965	FT5B117965 PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	Austin Asphalt	FT1B139965	FT1B139965 PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	Austin Asphalt	FT1B117.2	FT1B117.2 PG64-22 Type B Fine Base			
5/1/2024	32 12 16	Mix Design	Reynolds Asphalt	340-DG-B P	340-DG-B PG64-22 Type B Base Course			
9/9/2022	32 12 16	Mix Design	Reynolds Asphalt	1112B	1112B PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	Reynolds Asphalt	1612B	1612B PG64-22 Type B Fine Base			
4/4/2025	32 12 16	Mix Design	Reynolds Asphalt	2315B	2315B PG64-22 Type B Fine Base			
12/5/2022	33 12 16	Mix Design	Sunmount Paving	3076BV6422	3076BV6422 PG62-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	Sunmount Paving	341-BRAP6422ERG	341-BRAP6422ERG PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	TXBIT	37-211305-20	37-211305-20 PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	TXBIT	44-211305-17	44-211305-17 PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	TXBIT	211305 (1757)	211305 (1757) PG64-22 Type B Fine Base			
9/9/2022	32 12 16	Mix Design	TXBIT	64-224125-18 PG	64-224125-18 PG70-22 Type D Fine Surface			
4/1/2024	32 12 16	Mix Design	TXBIT	344 MAC-SP-D 70-22XR	344 MAC-SP-D 70-22XR SAC A-R Type D Fine Surface			
	Detectable Warning Surface							
9/9/2022	32 13 20	DWS - Pavers	Pine Hall Brick (Winston Salem, NC)		Tactile Pavers			
9/9/2022	32 13 20	DWS - Pavers	Western Brick Co. (Houston, TX)		Detectable Warning Pavers			
9/9/2022	32 13 20	DWS - Composite			Armor Tile			
9/9/2022	32 13 20	DWS - Composite	ADA Solutions (Wilmington, MA)		Heritage Brick CIP Composite Paver			
4/7/2023	32 13 20	DWS - Pavers	ADA Solutions (Wilmington, MA)		Detectable Warning Pavers			

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Approval	Spec No.	Classification	Manufacturer	Mix ID	Mix Description	Design Strength @ 28 days	Design Rquirements	National Spec
Silicone Joint Sealant								
9/9/2022	32 13 73	Joint Sealant	Dow	890SL	890SL - Cold Applied, Single Component, Silicone Joint Sealant			ASTM D5893
9/9/2022	32 13 73	Joint Sealant	Tremco	900SL	900SL - Cold Applied, Single Component, Silicone Joint Sealant			ASTM D5893
9/9/2022	32 13 73	Joint Sealant	Pecora	300SL	300SL - Cold Applied, Single Component, Silicone Joint Sealant			ASTM D5893
9/9/2022	32 13 73	Joint Sealant	Crafco	RoadSaver Silicone	RoadSaver Silicone - Cold Applied, Single Component, Silicone Joint Sealant			ASTM D5893
Utility Trench Embedment Sand								
9/9/2022	33 05 10	Embedment Sand	Silver Creek Materials		Utility Embedment Sand			ASTM C33
9/9/2022	33 05 10	Embedment Sand	Crouch Materials		Utility Embedment Sand			ASTM C33
9/9/2022	33 05 10	Embedment Sand	F and L Dirt Movers		Utility Embedment Sand			ASTM C33
9/9/2022	33 05 10	Embedment Sand	F and L Dirt Movers		Utility Embedment Sand			ASTM C33
9/9/2022	33 05 10	Embedment Sand	Tin Top Martin Marietta		Utility Embedment Sand			ASTM C33
Storm Sewer - Manholes & Bases/Frames & Covers/Standard (Round) 33-05-13								
9/28/2018	33 05 13	Manhole Frames and Covers	AccuCast (Govind Steel Company, LTD)	MHRC #220605	MHRC #220605 (Size - **24" Dia.)			ASTM A48 AASHTO M306
9/28/2018	33 05 13	Manhole Cover	Neenah Foundry	NF-1274-T91	NF-1274-T91 (Size - 32" Dia.)			ASTM A48 AASHTO M306
9/28/2018	33 05 13	Manhole Frames and Cove	Neenah Foundry	NF-1743-LM (Hinged)	NF-1743-LM (Hinged) (Size - 32" Dia.)			ASTM A48 AASHTO M306
9/28/2018	33 05 13	Manhole Frame	Neenah Foundry	NF-1930-30	NF-1930-30 (Size - 32.25" Dia.)			ASTM A48 AASHTO M306
9/28/2018	33 05 13	Manhole Frames and Cove	Neenah Foundry	R-1743-HV	R-1743-HV (Size - 32" Dia.)			ASTM A48 AASHTO M306
4/3/2019	33 05 13	Manhole Frames and Cove	SIP Industries ++	2279ST	2279ST (Size - 24" Dia.)			ASTM A48 AASHTO M306
4/3/2019	33 05 13	Manhole Frames and Cove	SIP Industries ++	2280ST	2280ST (Size - 32" Dia.)			ASTM A48 AASHTO M306
10/8/2020	33 05 13	Manhole Frames and Cove	EJ (Formally East Jordan Iron Works)	EJ1033 Z2/A	EJ1033 Z2/A (Size - 32.25" Dia.)			ASTM A536 AASHTO M306
3/8/2024	33 05 13	Curb Inlet Covers	SIP Industries ++	2296T	2296T (Size - ***24" Dia.)			ASTM A48 AASHTO M306
6/18/2024	33 05 13	Curb Inlet Covers	SIP Industries ++	2279STN	2279STN (Size - 24" Dia.)			ASTM A48 AASHTO M306

Note: All new development and new installation manhole lids shall meet the minimum 30-inch opening requirement as specified in City Specification 33 05 13. Any smaller opening sizes will only be allowed for existing manholes that require replacement frames and covers.

Storm Sewer - Inlet & Structures 33-05-13								
10/8/2020	33 49 20	Curb Inlets	Fonterra		FRT-10x3-405-PRECAST** (Size - 10' X 3')			ASTM C913
10/8/2020	33 49 20	Curb Inlets	Fonterra		FRT-10x3-406-PRECAST** (Size - 10' X 3')			ASTM C913
10/8/2020	33 49 20	Curb Inlets	Fonterra		FRT-10x4.5-407-PRECAST** (Size - 10' X 4.5')			ASTM C913
10/8/2020	33 49 20	Curb Inlets	Fonterra		FRT-10x4.5-420-PRECAST** (Size - 10' X 4.5')			ASTM C913
10/8/2020	33 39 20	Manhole	Fonterra		FRT-4X4-409-PRECAST-TOP (Size - 4' X 4')			ASTM C913
10/8/2020	33 39 20	Manhole	Fonterra		FRT-4X4-409-PRECAST-BASE (Size - 4' X 4')			ASTM C913
10/8/2020	33 39 20	Manhole	Fonterra		FRT-5X5-410-PRECAST-TOP (Size - 5' X 5')			ASTM C913
10/8/2020	33 39 20	Manhole	Fonterra		FRT-5X5-410-PRECAST-BASE (Size - 5' X 5')			ASTM C913
10/8/2020	33 39 20	Manhole	Fonterra		FRT-6X6-411-PRECAST-TOP (Size - 6' X 6')			ASTM C913
10/8/2020	33 39 20	Manhole	Fonterra		FRT-6X6-411-PRECAST-BASE (Size - 6' X 6')			ASTM C913
3/19/2021	33 49 20	Curb Inlets	Thompson Pipe Group		TPG-10X3-405-PRECAST INLET** (Size - 10' X 3')			ASTM 615
3/19/2021	33 49 20	Curb Inlets	Thompson Pipe Group		TPG-15X3-405-PRECAST INLET** (Size - 15' X 3')			ASTM 615
3/19/2021	33 49 20	Curb Inlets	Thompson Pipe Group		TPG-20X3-405-PRECAST INLET** (Size - 20' X 7')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-4X4-409-PRECAST TOP (Size - 4' X 4')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-4X4-409-PRECAST BASE (Size - 4' X 4')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-4X4-412-PRECAST 4-FT RISER (Size - 4' X 4')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-5X5-410-PRECAST TOP (Size - 5' X 5')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-5X5-410-PRECAST BASE (Size - 5' X 5')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-5X5-412-PRECAST 5-FT RISER (Size - 5' X 5')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-6X6-411-PRECAST TOP (Size - 6' X 6')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-6X6-411-PRECAST BASE (Size - 6' X 6')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-6X6-412-PRECAST 6-FT RISER (Size - 6' X 6')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-7X7-411-PRECAST TOP (Size - 7' X 7')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-7X7-411-PRECAST BASE (Size - 7' X 7')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-7X7-412-PRECAST 4-FT RISER (Size - 7' X 7')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-8X8-411-PRECAST TOP (Size - 8' X 8')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-8X8-411-PRECAST BASE (Size - 8' X 8')			ASTM 615
3/19/2021	33 39 20	Manhole	Thompson Pipe Group		TPG-8X8-412-PRECAST 5-FT RISER (Size - 8' X 8')			ASTM 615
3/19/2021	33 49 20	Drop Inlet	Thompson Pipe Group		TPG-4X4-408-PRECAST INLET (Size - 4' X 4')			ASTM 615
3/19/2021	33 49 20	Drop Inlet	Thompson Pipe Group		TPG-5X5-408-PRECAST INLET (Size - 5' X 5')			ASTM 615
3/19/2021	33 49 20	Drop Inlet	Thompson Pipe Group		TPG-6X6-408-PRECAST INLET (Size - 6' X 6')			ASTM 615
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 4' x 4' Stacked Manhole (Size - 4' X 4')			ASTM C478
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 5' x 8' Storm Junction Box (Size - 5' X 8')			ASTM C478
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 4' x 4' Storm Junction Box (Size - 4' X 4')			ASTM C478
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 5' x 5' Storm Junction Box (Size - 5' X 5')			ASTM C478
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 6' x 6' Storm Junction Box (Size - 6' X 6')			ASTM C478
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 8' x 8' Storm Junction Box Base (Size - 8' X 8')			ASTM C478
8/28/2023	33 49 10	Manhole	Oldcastle		Precast 5' x 8' Storm Junction Box Base (Size - 5' X 8')			ASTM C478
8/28/2023	33 49 10	Manhole	Rinker Materials		Reinforced 48" Diameter Spread Footing Manhole (Size - 4' X 4')			ASTM C433

CITY OF FORT WORTH TRANSPORTATION/PUBLIC WORKS DEPARTMENT

STANDARD PRODUCTS LIST AS OF 9/30/2025

!!!!!!!! Attention: Mix Designs do not supersede CFW Specifications !!!!!!!!!

Approval	Spec No.	Classification	Manufacturer	Mix ID	Mix Description	Design Strength @ 28 days	Design Rquirements	National Spec
....Storm Sewer - Inlet & Structures Continues								
8/28/2023	33 39 20	Curb Inlet 10 'x 3' Riser	Thompson Pipe Group		Inlet Riser (Size - 3 FT)			ASTM C913-16
8/28/2023	33 39 20	Curb Inlet 15 'x 3' Riser	Thompson Pipe Group		Inlet Riser (Size - 3 FT)			ASTM C913-16
8/28/2023	33 39 20	Curb Inlet 20' x 3' Riser	Thompson Pipe Group		Inlet Riser (Size - 3 FT)			ASTM C913-16
1/12/2024	33 49 20	Drop Inlet	AmeriTex Pipe &Products		Drop Inlet (4' X 4')			ASTM C913
1/12/2024	33 49 20	Drop Inlet	AmeriTex Pipe &Products		Drop Inlet (5' X 5')			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		Precast 4'x4' Storm Junction Box			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		Precast 5'x5' Storm Junction Box			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		5' Precast Transition MH (4' MH on the top of 5' JB)			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		Precast 6'x6' Storm Junction Box			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		6' Precast Transition MH (4' MH on the top of 6' JB)			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		Precast 8'x8' Storm Junction Box			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		8' Precast Transition MH (4' MH on the top of 8' JB)			ASTM C913
1/19/2024	33 49 20	Manhole	AmeriTex Pipe &Products		Type C Storm Drain Manhole on Box (4' MH on the top of RCB)			ASTM C913
7/16/2024	33 49 20	Curb Inlets	AmeriTex Pipe &Products		10x3 Precast** (Size 10' x 3')			ASTM C913
7/16/2024	33 49 20	Curb Inlets	AmeriTex Pipe &Products		15x3 Precast** (Size 15' x 3')			ASTM C913

Note: Pre-cast inlets are approved for the stage I portion of the structure (basin) only. Stage II portion of the structure are required to be cast in-place. No exceptions to this requirement shall be allowed.

Storm Sewer - Pipes & Boxes 33-05-13								
4/9/2021	33 41 13	Storm Drain Pipes	Advanced Drainage Systems, Inc. (ADS)		ADS HP Storm Polypropylene (PP) Pipe (Size - 12" - 60")			ASTM F2881 & AASHTO M330
8/28/2023	33 41 10	Storm Drain Pipes	Rinker Materials		Reinforced Concrete Pipe Tongue and Groove Joint Pipe (Size - 21" or larger)			ASTM C76, C655
8/28/2023	33 41 10	Culvert Box	Rinker Materials		Reinforced Concrete Box Culvert (Sze - Various)			ASTM C789, C850
10/12/2023	33 41 10	Storm Drain Pipes	AmeriTex Pipe &Products		Reinforced Concrete Pipe Tongue and Groove Joint Pipe* (Size - 15" or larger)			ASTM C76, C506
10/12/2023	34 41 10	Culvert Box	AmeriTex Pipe &Products		Reinforced Concrete Box Culvert (size - Various))			ASTM C1433,C1577
10/18/2023	35 41 10	Storm Drain Pipes	The Turner Co.		Reinforced Concrete Pipe Tongue and Groove Joint Pipe* (Size - 15" or larger)			ASTM C76, C506
10/18/2023	33 41 10	Culvert Box	The Turner Co.		Reinforced Concrete Box Culvert (size - Various)			ASTM C1433,C1577
4/12/2024	33 41 10	Storm Drain Pipes	Thompson Pipe Group		Reinforced Concrete Pipe Tongue and Groove Joint Pipe* (Size Various)			ASTM C76, C506
6/25/2024	33 41 10	Culvert Box	Oldcastle		Reinforced Concrete Box Culvert			ASTM C1433,C1577
6/25/2024	33 41 10	Storm Drain Pipes	Oldcastle		Reinforced Concrete Pipe Tongue and Groove Joint Pipe* (Size Various)			ASTM C76, C506

Revision Comments

(1-29-2025) Removed Argos, Ingram, Redi-Mix, Charley's

(4-3-2025) Bigtown Concrete updated Mix ID's

(4-5-2025) 03 34 13 CLSM specification

CITY OF FORT WORTH
WATER DEPARTMENT
STANDARD PRODUCT LIST

Updated: 6-18-25

Approval	Spec No.	Classsification	Manufacturer	Model No.	National Spec	Size
	Water & Sewer - Manholes & Bases/Components 33-39-10 (Rev 2/3/16)					
07/23/97	33 05 13	Urethane Hydrophilic Waterstop	Asahi Kogyo K.K.	Adeka Ultra-Seal P-201	ASTM D2240/D412/D792	
04/26/00	33 05 13	Offset Joint for 4' Diam. MH	Hanson Concrete Products	Drawing No. 35-0048-001		
04/26/00	33 05 13	Profile Gasket for 4' Diam. MH.	Press-Seal Gasket Corp.	250-4G Gasket	ASTM C-443/C-361	SS MH
1/26/99	33 05 13	HDPE Manhole Adjustment Rings	Ladtech, Inc	HDPE Adjustment Ring		Traffic and Non-traffic area
5/13/05	33 05 13	Manhole External Wrap	Canusa - CPS	WrapidSeal Manhole Encapsulation System		
	Water & Sewer - Manholes & Bases/Fiberglass 33-39-13 (1/8/13)					
1/26/99	33 39 13	Fiberglass Manhole	Fluid Containment, Inc.	Flowtite	ASTM 3753	Non-traffic area
08/30/06	33 39 13	Fiberglass Manhole	L.F. Manufacturing			Non-traffic area
	Water & Sewer - Manholes & Bases/Frames & Covers/Rectangular 33-05-13 (Rev 2/3/16)					
*	33 05 13	Manhole Frames and Covers	Western Iron Works, Bass & Hays Foundry	1001		24"x40" WD
	Water & Sewer - Manholes & Bases/Frames & Covers/Standard (Round) 33-05-13 (Rev 2/3/16)					
*	33 05 13	Manhole Frames and Covers	Western Iron Works, Bass & Hays Foundry	30024		24" Dia.
*	33 05 13	Manhole Frames and Covers	McKinley Iron Works Inc.	A 24 AM		24" Dia.
08/24/18	33 05 13	Manhole Frames and Covers	Neenah Foundry	R-1272	ASTM A48 & AASHTO M306	24" Dia.
08/24/18	33 05 13	Manhole Frames and Covers	Neenah Foundry	NF 1274	ASTM A48 & AASHTO M306	30" Dia.
	33 05 13	Manhole Frames and Covers	Sigma Corporation	MH-144N		
	33 05 13	Manhole Frames and Covers	Sigma Corporation	MH-143N		
	33 05 13	Manhole Frames and Covers	Pont-A-Mousson	GTS-STD		24" dia.
	33 05 13	Manhole Frames and Covers	Neenah Casting			24" dia.
10/31/06	33 05 13	Manhole Frames and Covers (Hinged)	Powerseal	Hinged Ductile Iron Manhole	ASTM A536	24" Dia.
7/25/03	33 05 13	Manhole Frames and Covers	Saint-Gobain Pipelines (Pamrex/rexus)	RE32-R8FS		30" Dia.
01/31/06	33 05 13	30" Dia. MH Ring and Cover	East Jordan Iron Works	V1432-2 and V1483 Designs	AASHTO M306-04	30" Dia.
11/02/10	33 05 13	30" Dia. MH Ring and Cover	Sigma Corporation	MH1651FWN & MH16502		30" Dia
07/19/11	33 05 13	30" Dia. MH Ring and Cover	Star Pipe Products	MH32FTWSS-DC		30" Dia
08/10/11	33 05 13	30" Dia. MH Ring and Cover	Accucast	220700 Heavy Duty with Gasket Ring		30" Dia
10/14/13	33 05 13	30" Dia. MH Ring and Cover (Hinged & Lockable)	East Jordan Iron Works	30" ERGO XL Assembly with Cam Lock/MPIC/T-Gasket	ASSHTO M105 & ASTM A536	30" Dia
06/01/17	34 05 13	30" Dia. MH Ring and Cover (Lockable) CI	SIP Industries	2280 (32")	ASTM A 48	30" Dia.
12/05/23	34 05 13	30" Dia. MH Ring and Cover (Hinged & Lockable) CI	SIP Industries	4267WT - Hinged (32")	ASTM A 48	30" Dia.
09/16/19	33 05 13	30" Dia. MH Ring and Cover	Composite Access Products, L.P.	CAP-ONE-30-FTW, Composite, w/ Lock w/o Hing		30" Dia.
10/07/21	34 05 13	30" Dia. MH Ring and Cover	Trumbull Manufacturing	32"(30") Frame and Cover		30" Dia.
	Water & Sewer - Manholes & Bases/Frames & Covers/Water Tight & Pressure Tight 33-05-13 (Rev 2/3/16)					
*	33 05 13	Manhole Frames and Covers	Pont-A-Mousson	Pamtight		24" Dia.
*	33 05 13	Manhole Frames and Covers	Neenah Casting			24" Dia.
*	33 05 13	Manhole Frames and Covers	Western Iron Works,Bass & Hays Foundry	300-24P		24" Dia.
*	33 05 13	Manhole Frames and Covers	McKinley Iron Works Inc.	WPA24AM		24" Dia.
03/08/00	33 05 13	Manhole Frames and Covers	Accucast	RC-2100	ASTM A 48	24" Dia.
04/20/01	33 05 13	Manhole Frames and Covers	(SIP)Serampore Industries Private Ltd.	300-24-23.75 Ring and Cover	ASTM A 48	24" Dia.
	Water & Sewer - Manholes & Bases/Precast Concrete (Rev 1/8/13)					
*	33 39 10	Manhole, Precast Concrete	Hydro Conduit Corp	SPL Item #49	ASTM C 478	48"
*	33 39 10	Manhole, Precast Concrete	Wall Concrete Pipe Co. Inc.		ASTM C-443	48"
09/23/96	33 39 10	Manhole, Precast Concrete	Concrete Product Inc.	48" I.D. Manhole w/ 32" Cone	ASTM C 478	48" w/32" cone
12/05/23	33 39 10	Manhole, Precast Concrete	The Turner Company	72" I.D. Manhole w/ 32" Cone	ASTM C 478	72"
05/08/18	33 39 10	Manhole, Precast Concrete	The Turner Company	48", 60" I.D. Manhole w/ 32" Cone	ASTM C 478	48", 60"
09/03/24	33 39 10	Manhole, Precast Concrete	Oldcastle Precast Inc.	Manhole, 32" Opening and Flat top, (No Transition Cones)	ASTM C 478	48" to 84" I.D.
06/09/10	33 39 10	Manhole, Precast (Reinforced Polymer)Concrete	US Composite Pipe	Reinforced Polymer Concrete	ASTM C-76	48" to 72"
09/06/19	33 39 20	Manhole, Precast Concrete	Forterra Pipe and Precast	60" & 72" I.D. Manhole w/32" Cone	ASTM C-76	60" & 72"
10/07/21	32 39 20	Manhole, Precast Concrete	Forterra Pipe and Precast	48" I.D. Manhole w/32" Cone	ASTM C-77	48"
10/07/21	33 39 20	Manhole, Precast (Reinforced Polymer) Concrete	Armorock	48" & 60" I.D. Manhole w/32" Cone		48" & 60"
10/07/21	33 39 20	Manhole, Precast (Hybrid) Polymer & PVC	Geneva Pipe and Precast (Predl Systems)	48" & 60" I.D. Manhole w/32" Cone		48" & 60" Non Traffic Areas
03/07/23	33 39 20	Manhole, Precast Concrete	AmeriTex Pipe and Products, LLC	48" & 60" I.D. Manhole w/32" Cone	ASTM C-478; ASTM C-923; ASTM C-443	
03/07/23	33 39 20	Manhole, Precast (Reinforced Polymer) Concrete	P3 Polymers, RockHardscp	48" & 60" I.D. Manhole w/32" Cone		
04/28/07		Manhole, Precast (Reinforced Polymer) Concrete	Amitech USA	Meyer Polycrete Pipe		
	Sewer -(WAC) Wastewater Access Chamber 33 39 40					
12/29/23	33 39 20	Wastewater Access Chamber	Quickstream Solutions, Inc.	Type 8 Maintenace Shaft (Poopit)		For use when Std. MH cannot be installed due to depth
	Water & Sewer - Manholes & Bases/Rehab Systems/Cementitious					
*	E1-14	Manhole Rehab Systems	Quadex			
04/23/01	E1-14	Manhole Rehab Systems	Standard Cement Materials, Inc.	Reliner MSP		
	E1-14	Manhole Rehab Systems	AP/M Permaform			
4/20/01	E1-14	Manhole Rehab System	Strong Company	Strong Seal MS2A Rehab System		
5/12/03	E1-14	Manhole Rehab System (Liner)	Triplex Lining System	MH repair product to stop infiltration	ASTM D5813	
08/30/06		General Concrete Repair	FlexKrete Technologies	Vinyl Polyester Repair Product		Misc. Use

CITY OF FORT WORTH
WATER DEPARTMENT
STANDARD PRODUCT LIST

Updated: 6-18-25

Approval	Spec No.	Classsification	Manufacturer	Model No.	National Spec	Size
	Water & Sewer - Manholes & Bases/Rehab Systems/NonCementitious					
05/20/96	E1-14	Manhole Rehab Systems	Sprayroq,	Spray Wall Polyurethane Coating	ASTM D639/D790	
12/14/01		Coating for Corrosion protection(Exterior)	ERTECH	Series 20230 and 2100 (Asphatic Emulsion)		Structures Only
01/31/06		Coatings for Corrosion Protection	Chesterton	Arc 791, S1HB, S1, S2	Acid Resistance Test	Sewer Applications
8/28/2006		Coatings for Corrosion Protection	Warren Environmental	S-301 and M-301		Sewer Applications
03/19/18	33 05 16, 33 39 10, 33 39 20	Coating for Corrosion protection(Exterior)	Sherwin Williams	RR&C Dampproofing Non-Fibered Spray Grade (Asphatic Emulsion)		For Exterior Coating of Concrete Structures Only
	Water & Sewer - Manhole Inserts - Field Operations Use Only (Rev 2/3/16)					
*	33 05 13	Manhole Insert	Knutson Enterprises	Made to Order - Plastic	ASTM D 1248	For 24" dia.
*	33 05 13	Manhole Insert	South Western Packaging	Made to Order - Plastic	ASTM D 1248	For 24" dia.
*	33 05 13	Manhole Insert	Noflow-Inflow	Made to Order - Plastic	ASTM D 1248	For 24" dia.
09/23/96	33 05 13	Manhole Insert	Southwestern Packing & Seals, Inc.	LifeSaver - Stainless Steel		For 24" dia.
09/23/96	33 05 13	Manhole Insert	Southwestern Packing & Seals, Inc.	TetherLok - Stainless Steel		For 24" dia
	Water & Sewer - Pipe Casing Spacers 33-05-24 (07/01/13)					
11/04/02		Steel Band Casing Spacers	Advanced Products and Systems, Inc.	Carbon Steel Spacers, Model SI		
02/02/93		Stainless Steel Casing Spacer	Advanced Products and Systems, Inc.	Stainless Steel Spacer, Model SSI		
04/22/87		Casing Spacers	Cascade Waterworks Manufacturing	Casing Spacers		
09/14/10		Stainless Steel Casing Spacer	Pipeline Seal and Insulator	Stainless Steel Casing Spacer		Up to 48"
09/14/10		Coated Steel Casin Spacers	Pipeline Seal and Insulator	Coated Steel Casing Spacers		Up to 48"
05/10/11		Stainless Steel Casing Spacer	Powerseal	4810 Powerchock		Up to 48"
03/19/18		Casing Spacers	BWM	SS-12 Casing Spacer(Stainless Steel)		
03/19/18		Casing Spacers	BWM	FB-12 Casing Spacer (Coated Carbon Steel) for Non_pressure Pipe and Grouted Casing		
03/29/22	33 05 13	Casing Spacers	CCI Pipeline Systems	CSC12, CSS12		
09/03/24	33 05 13	Casing Spacers	Raci (Completely HDPE)	Per Manufacturers Requirements (Sewer Applications Only)		8" - 12" (Sewer Only)
	Water & Sewer - Pipes/Ductile Iron 33-11-10(1/8/13)					
*	33 11 10	Ductile Iron Pipe	Griffin Pipe Products, Co.	Super Bell-Tite Ductile Iron Pressure Pipe,	AWWA C150, C151	3" thru 24"
08/24/18	33 11 10	Ductile Iron Pipe	American Ductile Iron Pipe Co.	American Fastite Pipe (Bell Spigot)	AWWA C150, C151	4" thru 30"
08/24/18	33 11 10	Ductile Iron Pipe	American Ductile Iron Pipe Co.	American Flex Ring (Restrained Joint)	AWWA C150, C151	4" thru 30"
*	33 11 10	Ductile Iron Pipe	U.S. Pipe and Foundry Co.		AWWA C150, C151	
*	33 11 10	Ductile Iron Pipe	McWane Cast Iron Pipe Co.		AWWA C150, C151	
	Water & Sewer - Utility Line Marker (08/24/2018)					
	Sewer - Coatings/Epoxy 33-39-60 (01/08/13)					
02/25/02		Epoxy Lining System	Sauereisen, Inc	SewerGard 210RS	LA County #210-1.33	
12/14/01		Epoxy Lining System	Ertech Technical Coatings	Ertech 2030 and 2100 Series		
04/14/05		Interior Ductile Iron Pipe Coating	Induron	Protecto 401	ASTM B-117	Ductile Iron Pipe Only
01/31/06		Coatings for Corrosion Protection	Chesterton	Arc 791, S1HB, S1, S2	Acid Resistance Test	Sewer Applications
8/28/2006		Coatings for Corrosion Protection	Warren Environmental	S-301 and M-301		Sewer Applications
	Sewer - Coatings/Polyurethane					
	Sewer - Combination Air Valves					
05/25/18	33-31-70	Air Release Valve	A.R.I. USA, Inc.	D025LTP02(Composite Body)		2"
	Sewer - Pipes/Concrete					
*	E1-04	Conc. Pipe, Reinforced	Wall Concrete Pipe Co. Inc.		ASTM C 76	
*	E1-04	Conc. Pipe, Reinforced	Hydro Conduit Corporation	Class III T&G, SPL Item #77	ASTM C 76	
*	E1-04	Conc. Pipe, Reinforced	Hanson Concrete Products	~~SPL Item #95-Manhole, #98- Pipe~~	ASTM C 76	
*	E1-04	Conc. Pipe, Reinforced	Concrete Pipe & Products Co. Inc.		ASTM C 76	
	Sewer - Pipe Enlargment System (Method)33-31-23 (01/18/13)					
		PIM System	PIM Corporation	Polyethylene	PIM Corp., Piscata Way, N.J.	Approved Previously
		McConnell Systems	McLat Construction	Polyethylene	Houston, Texas	Approved Previously
		TRS Systems	Trenchless Replacement System	Polyethylene	Calgary, Canada	Approved Previously
	Sewer - Pipe/Fiberglass Reinforced/ 33-31-13(1/8/13)					
7/21/97	33 31 13	Cent. Cast Fiberglass (FRP)	Hobas Pipe USA, Inc.	Hobas Pipe (Non-Pressure)	ASTM D3262/D3754	
03/22/10	33 31 13	Fiberglass Pipe (FRP)	Ameron	Bondstrand RPMP Pipe	ASTM D3262/D3754	
04/09/21	33 31 13	Glass-Fiber Reinforced Polymer Pipe (FRP)	Thompson Pipe Group	Thompson Pipe (Flowtite)	ASTM D3262/D3754	
03/07/23	33 31 13	Fiberglass Pipe (FRP)	Future Pipe Industries	Fiberstrong FRP	ASTM D3262, ASTM D3681, ASTM D4161, AWWA M45	
09/03/24	33 31 13	Fiberglass Pipe (FRP)	Superlit Boru Sanayi A.S.	Superlit FRP	ASTM D3262, ASTM D3517, ASTM 3754, AWWA C950	

* From Original Standard Products List

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Approval	Spec No.	Classsification	Manufacturer	Model No.	National Spec	Size
	Sewer - Pipe/Polymer Pipe					
4/14/05		Polymer Modified Concrete Pipe	Amitech USA	Meyer Polycrete Pipe	ASTM C33, A276, F477	8" to 102", Class V
06/09/10	E1-9	Reinforced Polymer Concrete Pipe	US Composite Pipe	Reinforced Polymer Concrete Pipe	ASTM C-76	
	Sewer - Pipes/HDPE 33-31-23(1/8/13)					
*		High-density polyethylene pipe	Phillips Driscopipe, Inc.	Opticore Ductile Polyethylene Pipe	ASTM D 1248	8"
*		High-density polyethylene pipe	Plexco Inc.		ASTM D 1248	8"
*		High-density polyethylene pipe	Polly Pipe, Inc.		ASTM D 1248	8"
		High-density polyethylene pipe	CSR Hydro Conduit/Pipeline Systems	McConnell Pipe Enlargement	ASTM D 1248	
	Sewer - Pipes/PVC (Pressure Sewer) 33-11-12 (4/1/13)					
12/02/11	33-11-12	DR-14 PVC Pressure Pipe	Pipelife Jetstream	PVC Pressure Pipe	AWWA C900	4" thru 12"
10/22/14	33-11-12	DR-14 PVC Pressure Pipe	Royal Building Products	Royal Seal PVC Pressure Pipe	AWWA C900	4" thru 12"
	Sewer - Pipes/PVC* 33-31-20 (7/1/13)					
*	33-31-20	PVC Sewer Pipe	J-M Manufacturing Co., Inc. (JM Eagle)	SDR-26 (PS115)	ASTM D 3034	4" - 15"
12/23/97*	33-31-20	PVC Sewer Pipe	Diamond Plastics Corporation	SDR-26 (PS115)	ASTM D 3034	4" thru 15"
*	33-31-20	PVC Sewer Pipe	Lamson Vylon Pipe	SDR-26 (PS115)	ASTM D 3034	4" thru 15"
12/05/23	33-31-20	PVC Sewer Pipe	Vinyltech PVC Pipe	SDR-26 (PS115)	ASTM D3034	4" thru 15"
12/05/23	33-31-20	PVC Sewer Pipe	Vinyltech PVC Pipe	Gravity Sewer PS 115	ASTM F 679	18"
*	33-31-20	PVC Sewer Pipe	J-M Manufacturing Co, Inc. (JM Eagle)	PS 115	ASTM F 679	18" - 28"
05/06/05	33-31-20	PVC Solid Wall Pipe	Diamond Plastics Corporation	PS 115	ASTM F-679	18" to 48"
04/27/06	33-31-20	PVC Sewer Fittings	Harco	SDR-26 (PS 115) Gasket Fittings	ASTM D-3034, D-1784, etc	4" - 15"
*	33-31-20	PVC Sewer Fittings	Plastic Trends, Inc.(Westlake)	Gasketed PVC Sewer Main Fittings	ASTM D 3034	
3/19/2018	33 31 20	PVC Sewer Pipe	Pipelife Jet Stream	SDR 26 (PS 115)	ASTM F679	18"- 24"
3/19/2018	33 31 20	PVC Sewer Pipe	Pipelife Jet Stream	SDR 26	ASTM D3034	4"- 15"
3/29/2019	33 31 20	Gasketed Fittings (PVC)	GPK Products, Inc.	SDR 26	ASTM D3034	4"- 15"
10/21/2020	33 31 20	PVC Sewer Pipe	NAPCO(Westlake)	SDR 26	ASTM D3034	4" - 15"
10/22/2020	33 31 20	PVC Sewer Pipe	Sanderson Pipe Corp.	SDR 26	ASTM D3034	4"- 15"
10/21/2020	33 31 20	PVC Sewer Pipe	NAPCO(Westlake)	SDR 26 PS 115	ASTM F-679	18"- 36"

* From Original Standard Products List

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Approval	Spec No.	Classsification	Manufacturer	Model No.	National Spec	Size
	Water - Appurtenances 33-12-10 (07/01/13)					
09/03/24	33-12-10	Double Strap Saddle	Ford Meter Box Co., Inc.	202B		1"-2" SVC, up to 16" Pipe
01/18/18	33-12-10	Double Strap Saddle	Romac	202NS Nylon Coated	AWWA C800	1"-2" SVC, up to 24" Pipe
08/28/02		Double Strap Saddle	Smith Blair	#317 Nylon Coated Double Strap Saddle		
07/23/12	33-12-10	Double Strap Service Saddle	Mueller Company	DR2S Double (SS) Strap DI Saddle	AWWA C800	1"-2" SVC, up to 24" Pipe
03/07/23	33-12-10	Double Strap Service Saddle	Powerseal	3450AS, Incl. Corp. Stop, Dbl Strap, Stainless	NSF ANSI 372	1"-2" SVC, up to 24" Pipe
10/27/87		Curb Stops-Ball Meter Valves	McDonald	6100M,6100MT & 610MT		3/4" and 1"
10/27/87		Curb Stops-Ball Meter Valves	McDonald	4603B, 4604B, 6100M, 6100TM and 6101M		1½" and 2"
5/25/2018	33-12-10	Curb Stops-Ball Meter Valves	Ford Meter Box Co., Inc.	FB600-7NL, FB1600-7-NL, FV23-777-W-NL, L22-77NL	AWWA C800	2"
5/25/2018	33-12-10	Curb Stops-Ball Meter Valves	Ford Meter Box Co., Inc.	FB600-6-NL, FB1600-6-NL, FV23-666-W-NL, L22-66NL	AWWA C800	1-1/2"
5/25/2018	33-12-10	Curb Stops-Ball Meter Valves	Ford Meter Box Co., Inc.	FB600-4-NL, FB1600-4-NL, B11-444-WR-NL, B22444-WR-NL, L28-44NL	AWWA C800	1"
5/25/2018	33-12-10	Curb Stops-Ball Meter Valves	Mueller Co., Ltd.	B-25000N, B-24277N-3, B-20200N-3, H-15000N, , H-1552N, H142276N	AWWA C800, ANSF 61, ANSI/NSF 372	2"
5/25/2018	33-12-10	Curb Stops-Ball Meter Valves	Mueller Co., Ltd.	B-25000N, B-20200N-3, B-24277N-3,H-15000N, H-14276N, H-15525N	AWWA C800, ANSF 61, ANSI/NSF 372	1-1/2"
5/25/2018	33-12-10	Curb Stops-Ball Meter Valves	Mueller Co., Ltd.	B-25000N, B-20200N-3,H-15000N, H-15530N	AWWA C800, ANSF 61, ANSI/NSF 372	1"
01/26/00		Coated Tapping Saddle with Double SS Straps	JCM Industries, Inc.	#406 Double Band SS Saddle		1"-2" Taps on up to 12"
0/5/21/12	33-12-25	Tapping Sleeve (Coated Steel)	JCM Industries, Inc.	412 Tapping Sleeve ESS	AWWA C-223	Up to 30" w/12" Out
03/29/22	33-12-25	Tapping Sleeve (Coated or Stainless Steel)	JCM Industries, Inc.	415 Tapping Sleeve	AWWA C-223	Concrete Pipe Only
05/10/11		Tapping Sleeve (Stainless Steel)	Powerseal	3490AS (Flange) & 3490MJ		4"-8" and 16"
02/29/12	33-12-25	Tapping Sleeve (Coated Steel)	Romac	FTS 420	AWWA C-223	U p to 42" w/24" Out
02/29/12	33-12-25	Tapping Sleeve (Stainless Steel)	Romac	SST Stainless Steel	AWWA C-223	Up to 24" w/12" Out
02/29/12	33-12-25	Tapping Sleeve (Stainless Steel)	Romac	SST III Stainless Steel	AWWA C-223	Up to 30" w/12" Out
05/10/11		Joint Repair Clamp	Powerseal	3232 Bell Joint Repair Clamp		4" to 30"
		Plastic Meter Box w/Composite Lid	DFW Plastics Inc.	DFW37C-12-1EPAF FTW		
		Plastic Meter Box w/Composite Lid	DFW Plastics Inc.	DFW39C-12-1EPAF FTW		
08/30/06		Plastic Meter Box w/Composite Lid	DFW Plastics Inc.	DFW65C-14-1EPAF FTW		Class "A"
		Concrete Meter Box	Bass & Hays	CMB37-B12 1118 LID-9		
		Concrete Meter Box	Bass & Hays	CMB-18-Dual 1416 LID-9		
		Concrete Meter Box	Bass & Hays	CMB65-B65 1527 LID-9		
	Water - Bolts, Nuts, and Gaskets 33-11-05 (01/08/13)					
	None					
	Water - Combination Air Release 33-31-70 (01/08/13)					
*	E1-11	Combination Air Release Valve	GA Industries, Inc.	Empire Air and Vacuum Valve, Model 935	ASTM A 126 Class B, ASTM A	1" & 2"
*	E1-11	Combination Air Release Valve	Multiplex Manufacturing Co.	Crispin Air and Vacuum Valves, Model No.		1/2", 1" & 2"
*	E1-11	Combination Air Release Valve	Valve and Primer Corp.	APCO #143C, #145C and #147C		1", 2" & 3"
	Water - Dry Barrel Fire Hydrants 33-12-40 (01/15/14)					
10/01/87	E-1-12	Dry Barrel Fire Hydrant	American-Darling Valve	Drawing Nos. 90-18608, 94-18560	AWWA C-502	
03/31/88	E-1-12	Dry Barrel Fire Hydrant	American Darling Valve	Shop Drawing No. 94-18791	AWWA C-502	
09/30/87	E-1-12	Dry Barrel Fire Hydrant	Clow Corporation	Shop Drawing No. D-19895	AWWA C-502	
01/12/93	E-1-12	Dry Barrel Fire Hydrant	American AVK Company	Model 2700	AWWA C-502	
08/24/88	E-1-12	Dry Barrel Fire Hydrant	Clow Corporation	Drawings D20435, D20436, B20506	AWWA C-502	
	E-1-12	Dry Barrel Fire Hydrant	ITT Kennedy Valve	Shop Drawing No. D-80783FW	AWWA C-502	
09/24/87	E-1-12	Dry Barrel Fire Hydrant	M&H Valve Company	Shop Drawing No. 13476	AWWA C-502	
10/14/87	E-1-12	Dry Barrel Fire Hydrant	Mueller Company	Shop Drawings No. 6461 A-423 Centurion	AWWA C-502	
01/15/88	E1-12	Dry Barrel Fire Hydrant	Mueller Company	Shop Drawing FH-12 A-423 Super Centurion 200	AWWA C-502	
10/09/87	E-1-12	Dry Barrel Fire Hydrant	U.S. Pipe & Foundry	Shop Drawing No. 960250	AWWA C-502	
09/16/87	E-1-12	Dry Barrel Fire Hydrant	American Flow Control (AFC)	Waterous Pacer WB67	AWWA C-502	
08/12/16	33-12-40	Dry Barrel Fire Hydrant	EJ (East Jordan Iron Works)	WaterMaster 5CD250		
	Water - Meters					
02/05/93	E101-5	Detector Check Meter	Ames Company	Model 1000 Detector Check Valve	AWWA C550	4" - 10"
08/05/04		Magnetic Drive Vertical Turbine	Hersey	Magnetic Drive Vertical	AWWA C701, Class 1	3/4" - 6"

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Approval	Spec No.	Classsification	Manufacturer	Model No.	National Spec	Size
	Water - Pipes/PVC (Pressure Water) 33-31-70 (01/08/13)					
12/05/23	33-11-12	PVC Pressure Pipe	Vinyltech PVC Pipe	DR14	AWWA C900, AWWA C605, ASTM D1784	4"-16"
12/05/23	33-11-12	PVC Pressure Pipe	Vinyltech PVC Pipe	DR18	AWWA C900, AWWA C605, ASTM D1784	16"-18"
09/03/24	33-11-12	PVC Pressure Pipe	Northern Pipe Products	DR14	AWWA C900, AWWA C605, ASTM D1784	4"-16"
09/03/24	33-11-12	PVC Pressure Pipe	Northern Pipe Products	DR18	AWWA C900, AWWA C605, ASTM D1784	16"-18"
3/19/2018	33 11 12	PVC Pressure Pipe	Pipelife Jet Stream	DR14	AWWA C900	4"-12"
3/19/2018	33 11 12	PVC Pressure Pipe	Pipelife Jet Stream	DR18	AWWA C900	16"-24"
5/25/2018	33 11 12	PVC Pressure Pipe	Diamond Plastics Corporation	DR 14	AWWA C900	4"-12"
5/25/2018	33 11 12	PVC Pressure Pipe	Diamond Plastics Corporation	DR 18	AWWA C900	16"-24"
12/6/2018	33 11 12	PVC Pressure Pipe	J-M Manufacturing Co., Inc d/b/a JM Eagle	DR 14	AWWA C900-16 UL 1285 ANSI/NSF 61 FM 1612	4"-28"
12/6/2018	33 11 12	PVC Pressure Pipe	J-M Manufacturing Co., Inc d/b/a JM Eagle	DR 18	AWWA C900-16 UL 1285 ANSI/NSF 61 FM 1612	16"-24"
9/6/2019	33 11 12	PVC Pressure Pipe	Underground Solutions Inc.	DR14 Fusible PVC	AWWA C900	4" - 8"
9/6/2019	33 11 12	PVC Pressure Pipe	NAPCO(Westlake)	DR18	AWWA C900	16" - 24"
9/6/2019	33 11 12	PVC Pressure Pipe	NAPCO(Westlake)	DR14	AWWA C900	4"- 12"
9/6/2019	33 11 12	PVC Pressure Pipe	Sanderson Pipe Corp.	DR14	AWWA C900	4"- 12"
	Water - Pipes/Valves & Fittings/Ductile Iron Fittings 33-11-11 (01/08/13)					
07/23/92	E1-07	Ductile Iron Fittings	Star Pipe Products, Inc.	Mechanical Joint Fittings	AWWA C153 & C110	
*	E1-07	Ductile Iron Fittings	Griffin Pipe Products, Co.	Mechanical Joint Fittings	AWWA C 110	
*	E1-07	Ductile Iron Fittings	McWane/Tyler Pipe/ Union Utilities Division	Mechanical Joint Fittings, SSB Class 350	AWWA C 153, C 110, C 111	
08/11/98	E1-07	Ductile Iron Fittings	Sigma, Co.	Mechanical Joint Fittings, SSB Class 351	AWWA C 153, C 110, C 112	
02/26/14	E1-07	MJ Fittings	Accucast	Class 350 C-153 MJ Fittings	AWWA C153	4"-12"
05/14/98	E1-07	Ductile Iron Joint Restraints	Ford Meter Box Co./Uni-Flange	Uni-Flange Series 1400	AWWA C111/C153	4" to 36"
05/14/98	E1-24	PVC Joint Restraints	Ford Meter Box Co./Uni-Flange	Uni-Flange Series 1500 Circle-Lock	AWWA C111/C153	4" to 24"
11/09/04	E1-07	Ductile Iron Joint Restraints	One Bolt, Inc.	One Bolt Restrained Joint Fitting	AWWA C111/C116/C153	4" to 12"
02/29/12	33-11-11	Ductile Iron Pipe Mechanical Joint Restraint	EBAA Iron, Inc.	Megalug Series 1100 (for DI Pipe)	AWWA C111/C116/C153	4" to 42"
02/29/12	33-11-11	PVC Pipe Mechanical Joint Restraint	EBAA Iron, Inc.	Megalug Series 2000 (for PVC Pipe)	AWWA C111/C116/C153	4" to 24"
08/05/04	E1-07	Mechanical Joint Retainer Glands(PVC)	Sigma, Co.	Sigma One-Lok SLC4 - SLC10	AWWA C111/C153	4" to 10"
03/06/19	33-11-11	Mechanical Joint Retainer Glands(PVC)	Sigma, Co.	Sigma One-Lok SLCS4 - SLCS12	AWWA C111/C153	4" to 12"
08/05/04	E1-07	Mechanical Joint Retainer Glands(PVC)	Sigma, Co.	Sigma One-Lok SLCE	AWWA C111/C153	12" to 24"
08/10/98	E1-07	MJ Fittings(DIP)	Sigma, Co.	Sigma One-Lok SLDE	AWWA C153	4" - 24"
10/12/10	E1-24	Interior Restrained Joint System	S & B Techncial Products	Bulldog System (Diamond Lok 21 & JM	ASTM F-1624	4" to 12"
04/07/69		Interior Restrained Joint System	Hultec	Hydrogrip-R	ASTM D395, D412, D471, D573, D883, D1149, D1229, D1349, D1414, D1415, D1566, F913	4'-12"
08/16/06	E1-07	Mechanical Joint Fittings	SIP Industries(Serampore)	Mechanical Joint Fittings	AWWA C153	4" to 24"
11/07/16	33-11-11	Mechanical Joint Retainer Glands	Star Pipe Products, Inc.	PVC Stargrip Series 4000	ASTM A536 AWWA C111	
11/07/16	33-11-11	Mechanical Joint Retainer Glands	Star Pipe Products, Inc.	DIP Stargrip Series 3000	ASTM A536 AWWA C111	
03/19/18	33-11-11	Mechanical Joint Retainer Glands	SIP Industries(Serampore)	EZ Grip Joint Restraint (EZD) Black For DIP	ASTM A536 AWWA C111	3"-48"
03/19/18	33-11-11	Mechanical Joint Retainer Glands	SIP Industries(Serampore)	EZ Grip Joint Restraint (EZD) Red for C900 DR14 PVC Pipe	ASTM A536 AWWA C111	4"-12"
03/19/18	33-11-11	Mechanical Joint Retainer Glands	SIP Industries(Serampore)	EZ Grip Joint Restraint (EZD) Red for C900 DR18 PVC Pipe	ASTM A536 AWWA C111	16"-24"

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	Water - Pipes/Valves & Fittings/Resilient Seated Gate Valve* 33-12-20 (05/13/15)					
		Resilient Wedged Gate Valve w/no Gears	American Flow Control	Series 2500 Drawing # 94-20247		16"
12/13/02		Resilient Wedge Gate Valve	American Flow Control	Series 2530 and Series 2536	AWWA C515	30" and 36"
08/31/99		Resilient Wedge Gate Valve	American Flow Control	Series 2520 & 2524 (SD 94-20255)	AWWA C515	20" and 24"
05/18/99		Resilient Wedge Gate Valve	American Flow Control	Series 2516 (SD 94-20247)	AWWA C515	16"
10/24/00	E1-26	Resilient Wedge Gate Valve	American Flow Control	Series 2500 (Ductile Iron)	AWWA C515	4" to 12"
08/05/04		Resilient Wedge Gate Valve	American Flow Control	42" and 48" AFC 2500	AWWA C515	42" and 48"
05/23/91	E1-26	Resilient Wedge Gate Valve	American AVK Company	American AVK Resilient Seaded GV	AWWA C509	4" to 12"
01/24/02	E1-26	Resilient Wedge Gate Valve	American AVK Company			20" and smaller
*	E1-26	Resilient Seated Gate Valve	Kennedy			4" - 12"
*	E1-26	Resilient Seated Gate Valve	M&H			4" - 12"
*	E1-26	Resilient Seated Gate Valve	Mueller Co.			4" - 12"
11/08/99		Resilient Wedge Gate Valve	Mueller Co.	Series A2361 (SD 6647)	AWWA C515	16"
01/23/03		Resilient Wedge Gate Valve	Mueller Co.	Series A2360 for 18"-24" (SD 6709)	AWWA C515	24" and smaller
05/13/05		Resilient Wedge Gate Valve	Mueller Co.	Mueller 30" & 36", C-515	AWWA C515	30" and 36"
01/31/06		Resilient Wedge Gate Valve	Mueller Co.	Mueller 42" & 48", C-515	AWWA C515	42" and 48"
01/28/88	E1-26	Resilient Wedge Gate Valve	Clow Valve Co.		AWWA C509	4" - 12"
10/04/94		Resilient Wedge Gate Valve	Clow Valve Co.	16" RS GV (SD D-20995)	AWWA C515	16"
11/08/99	E1-26	Resilient Wedge Gate Valve	Clow Valve Co.	Clow RW Valve (SD D-21652)	AWWA C515	24" and smaller
11/29/04		Resilient Wedge Gate Valve	Clow Valve Co.	Clow 30" & 36" C-515	AWWA C515	30" and 36" (Note 3)
11/30/12		Resilient Wedge Gate Valve	Clow Valve Co.	Clow Valve Model 2638	AWWA C515	24" to 48" (Note 3)
05/08/91	E1-26	Resilient Seated Gate Valve	Stockham Valves & Fittings		AWWA C 509, ANSI 420 - stem,	4" - 12"
*	E1-26	Resilient Seated Gate Valve	U.S. Pipe and Foundry Co.	Metroseal 250, requirements SPL #74		3" to 16"
10/26/16	33-12-20	Resilient Seated Gate Valve	EJ (East Jordan Iron Works)	EJ FlowMaster Gate Valve & Boxes		
08/24/18		Matco Gate Valve	Matco-Norca	225 MR	AWWA/ANSI C115/An21.15	4" to 16"
	Water - Pipes/Valves & Fittings/Rubber Seated Butterfly Valve 33-12-21 (07/10/14)					
*	E1-30	Rubber Seated Butterfly Valve	Henry Pratt Co.		AWWA C-504	24"
*	E1-30	Rubber Seated Butterfly Valve	Mueller Co.		AWWA C-504	24"and smaller
1/11/99	E1-30	Rubber Seated Butterfly Valve	Dezurik Valves Co.		AWWA C-504	24" and larger
06/12/03	E1-30	Valmatic American Butterfly Valve	Valmatic Valve and Manufacturing Corp.	Valmatic American Butterfly Valve.	AWWA C-504	Up to 84" diameter
04/06/07	E1-30	Rubber Seated Butterfly Valve	M&H Valve	M&H Style 4500 & 1450	AWWA C-504	24" to 48"
03/19/18	33 12 21	Rubber Seated Butterfly Valve	G. A. Industries (Golden Anderson)	AWWA C504 Butterfly Valve	AWWA C-504	30"-54"
09/03/24	33 12 21	Rubber Seated Butterfly Valve	American AVK Company	AWWA C504 Butterfly Valve Class 250B	AWWA C-504	24" - 48"
	Water - Polyethylene Encasement 33-11-10 (01/08/13)					
05/12/05	E1-13	Polyethylene Encasment	Flexsol Packaging	Fulton Enterprises	AWWA C105	8 mil LLD
05/12/05	E1-13	Polyethylene Encasment	Mountain States Plastics (MSP) and AEP Ind.	Standard Hardware	AWWA C105	8 mil LLD
05/12/05	E1-13	Polyethylene Encasment	AEP Industries	Bullstrong by Cowtown Bolt & Gasket	AWWA C105	8 mil LLD
09/06/19	33-11-11	Polyethylene Encasment	Northtown Products Inc.	PE Encasement for DIP	AWWA C105	8 mil LLD
	Water - Sampling Station					
03/07/23	**33 12 50**	Water Sampling Station	Kupferle Foundry Company	Eclipse, Number 88 , 12-inch Depth of Bury		As shown in spec. 33 12 50
~~09/02/24~~	~~**33 12 50**~~	~~Water Sampling Station~~	~~Mueller Water Products, Inc.~~	~~Model BSS01-36-MUDG2-CSD-NL, Freeze-Proof, Hasp for Locking Access Hatch~~	**This product removed**	
	Water - Automatic Flusher					
10/21/20		Automated Flushing System	Mueller Hydroguard	HG6-A-IN-2-BRN-LPRR(Portable) HG2-A-IN--2-PVC-018-LPLG(Permanent)		
04/09/21		Automated Flushing System	Kupferle Foundry Company	Eclipse #9800wc		
04/09/21		Automated Flushing System	Kupferle Foundry Company	Eclipse #9700 (Portable)		

The Fort Worth Water Department's Standard Products List has been developed to minimize the submittal review of products which meet the Fort Worth Water Department's Standard Specifications during utility construction projects. When Technical Specifications for specific products, are included as part of the Construction Contract Documents, the requirements of the Technical Specification will override the Fort Worth Water Department's Standard Specifications and the Fort Worth Water Department's Standard Products List and approval of the specific products will be based on the requirements of the Technical Specification whether or not the specific product meets the Fort Worth Water Department's Standard Specifications or is on the Fort Worth Water

Yellow Highlight indicates recent changes

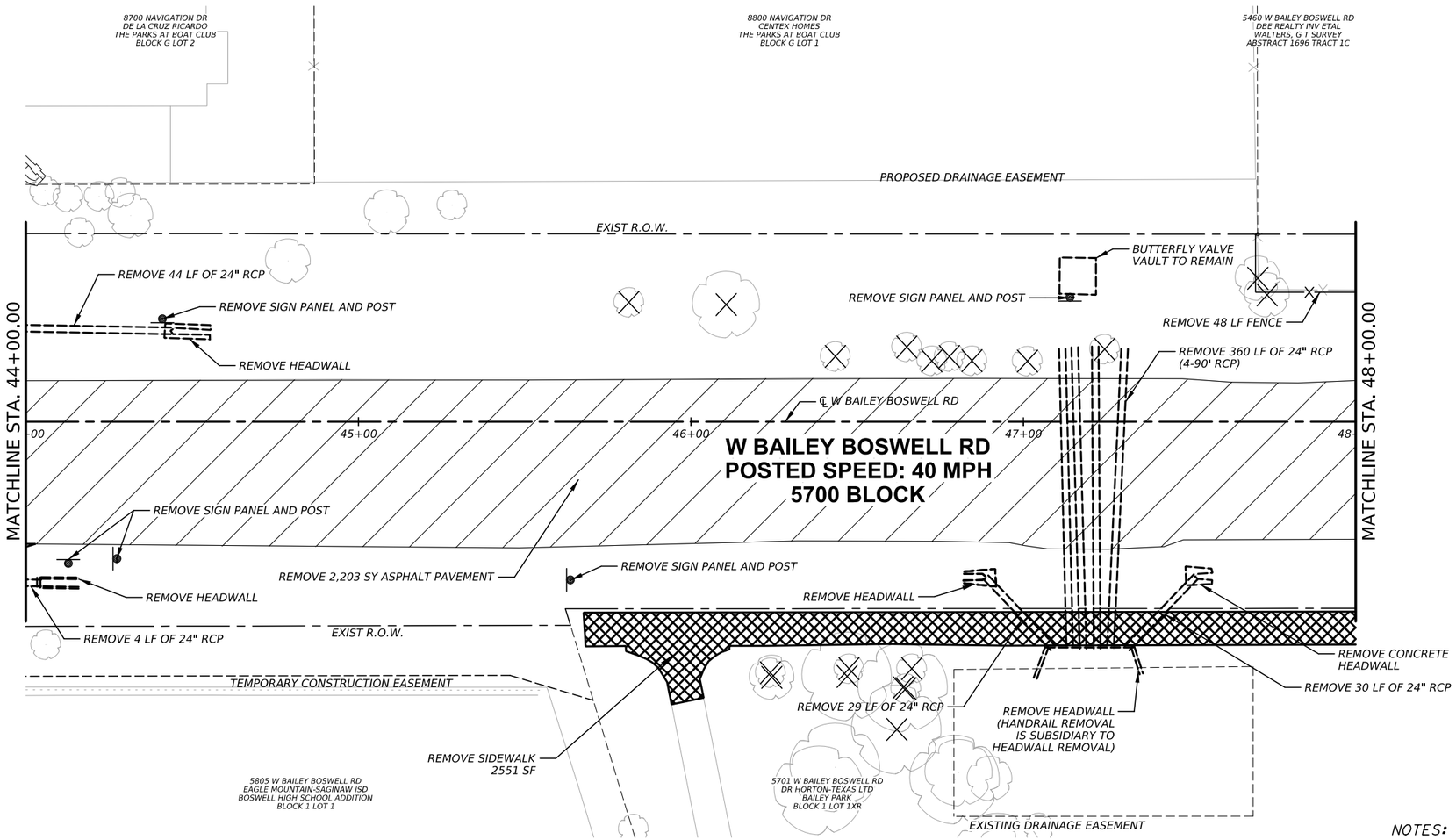
* From Original Standard Products List

CFW Lighting Approved Products List

CFW Product Name	Manufacturer	Manufacturer Product Name & Description
Residential-Standard		
Type 11 Pole	Makers Sales and Marketing, LLC	MRT2470AB-Type 11, 36" or 60" Rise 2/Bolt 8' Arm, Galvanized
	Makers Sales and Marketing, LLC	MRT2470AB-Type 11, 36" or 60" Rise 2/Bolt 8' Arm, Black
	Valmont Industries, Inc	DB01373(page 1 of 6)-Shoe Base Pole Type 11, Galvanized
Type 33B Arm	Makers Sales and Marketing, LLC	Type 33B, 36" Rise Simplex 8' Arm, Galvanized
	Makers Sales and Marketing, LLC	Type 33B, 36" Rise Simplex 8' Arm, Black
	Valmont Industries, Inc	DB01373(page 4 of 6)-Single Arm Type 33B, Galvanized
Residential Luminaire	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P101-Mvolt-R2-3K-MP-NL-P7-AO-RFD325607
	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P101-Mvolt-R4-3K-MP-NL-P7-AO-RFD325606
	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P101-Mvolt-R2-3K-BK-MP-NL-P7-AO-RFD325609
	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P101-Mvolt-R4-3K-BK-MP-NL-P7-AO-RFD325608
Timber Pole	McFarland Cascade	CREOSOTE 30/35 FOOT TIMBER POLE
	Bayou Forest Products	30-35’ .80 CCA Green Timber Pole
Wood Pole Arm	Makers Sales and Marketing, LLC	Wood Pole Arm, 36" Rise Simplex 8' Arm, Galvanized
	Makers Sales and Marketing, LLC	Wood Pole Arm, 36" Rise Simplex 8' Arm, Black
	Valmont Industries, Inc	DB01373(page 6 of 6)-Wood Pole Arm, Galvanized
Arterial-Standard		
Type 18 Pole	Makers Sales and Marketing, LLC	MRT33.585AB-Type 18, 36" or 60" Rise 2/Bolt 8' Arm, Galvanized
	Makers Sales and Marketing, LLC	MRT33.585AB-Type 18, 36" or 60" Rise 2/Bolt 8' Arm, Black
	Valmont Industries, Inc	DB01373(page 2 of 6)-Shoe Base Pole Type 18, Galvanized
Type 33A Arm	Makers Sales and Marketing, LLC	Type 33A, 60" Rise Simplex 8' Arm, Galvanized
	Makers Sales and Marketing, LLC	Type 33A, 60" Rise Simplex 8' Arm, Black
	Valmont Industries, Inc	DB01373(page 3 of 6)-Single Arm Type 33A, Galvanized
Arterial Luminaire	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P303-Mvolt-R2-3K-MP-NL-P7-AO-RFD322792
	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P303-Mvolt-R4-3K-MP-NL-P7-AO-RFD322794
	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P303-Mvolt-R2-3K-BK-MP-NL-P7-AO-RFD322793
	Acuity Brands Lighting, Inc.	American Electric Lighting, ATB0-P303-Mvolt-R4-3K-BK-MP-NL-P7-AO-RFD322795

Timber Pole	McFarland Cascade	CREOSOTE 35/40 FOOT TIMBER POLE
	Bayou Forest Products	30-35’ .80 CCA Green Timber Pole
Wood Pole Arm	Makers Sales and Marketing, LLC	Wood Pole Arm, 60" Rise Simplex 8' Arm, Galvanized
	Makers Sales and Marketing, LLC	Wood Pole Arm, 60" Rise Simplex 8' Arm, Black
	Valmont Industries, Inc	DB01373(page 5 of 6)-Wood Pole Arm, Galvanized
Decorative-Pedestrian		
Washington 10' Pole	Acuity Brands Lighting, Inc.	Holophane, CLA 10.6(0AL)FT J20P07BK-MOD, AB-31-4 RFD110736
Washington 14' Pole	Acuity Brands Lighting, Inc.	Holophane, CLA14FT J20DMODC03BK RFD325026, AB-16-4 SPEC RFD325026
Washington Luminaire	Acuity Brands Lighting, Inc.	Holophane, WFCL3 P40 30K MVOLT FC3 NF BK AO PR7 FRGL RFD338699
Washington Globe Luminaire	Acuity Brands Lighting, Inc.	Holophane, AWDE3 P40 30K MVOLT MS AL3 BK PR7 AO RFD-315548
Oleander Type A Pole	Acuity Brands Lighting, Inc.	Holophane, PDA 12S5L20POBBK-MOD
Oleander Type B Pole	Acuity Brands Lighting, Inc.	Holophane, PDA20S5L20P08BK-MOD
Oleander Type B Arm	Acuity Brands Lighting, Inc.	Holophane, OHC 15IN 2A TN BK
Oleander Luminaire	Acuity Brands Lighting, Inc.	Holophane, AUCL2 P40 30K AS BK L3 N P7 AO RFD338741
Berry 12' Pole	Acuity Brands Lighting, Inc.	Holophane, RSA 12 50 G12 SC BK AB-26-4 RFD326400
Berry 20' Pole	Acuity Brands Lighting, Inc.	Holophane, PD20S5J20P11BK RFD338816
Berry Arm	Acuity Brands Lighting, Inc.	Holophane, VLC 27IN 1A TN QSM BK
Berry Luminaire	Acuity Brands Lighting, Inc.	Holophane, GPLF3 P40 30K MVOLT ASY QSM BK PR7 AO SH
Banner Arms	Acuity Brands Lighting, Inc.	Holophane, BA-24IN-2A-C0-S4J-BL-075P-BK
System		
Conduit	Cantex Inc.	Rigid Nonmetallic Schedule 80 Conduit, Meets UL 651 specifi cations and NEMA TC2, Rated for 90°C Cable, Sunlight Resistant, 10’ Lengths and 20' lengths
	Heritage Plastics	Rigid Nonmetallic Schedule 80 Electric Conduit, Meets UL 651 specifications, RUS listed, NEMA TC-2 and NEMA TC-3, Rated for 90°C Cable, Sunlight & Weather Resistant
	Atkore-Heritage Plastics	PVC Rigid Schedule 80 Conduit, Conforms to UL 651 and NEMA TC 2, Sunlight Resistant, Listed for 90°C conductors or cable
	Prime Conduit, Inc	Schedule 80 PVC Rigid Nonmetallic Conduit, Extra Heavy Wall EPC-80, Sunlight resistant, Rated for use with 90°C conductors, Meets UL651
Splice Kit With Connector	NSi Industries, LLC	Gel Stub Splice Kit with Connector, Easy-Splice, ESSLK Series

Copper Wire/Conductor	Southwire	Type XHHW-2 copper conductor, 600V
	Encore Wire	TYPE XHHW-2 / RW90, copper conductor, Superslick Elite, 600V/1000V
	Encore Wire	THHN / MTW / THWN-2 Copper conductor, 600V
	Service Wire Co	Servicepro-X XHHW-2, 600/1,000 Volt Copper, CT Rated
	Advanced Digital Cable Inc	XHHW-2 Low Smoke Halogen Free, Cross-linked Polyethylene Insulated 14 AWG-750 MCM, 600 Volts, 90°C Dry and wet
Aluminum Wire-Triplex	Priority Wire & Cable, Inc	Triplex Overhead Aluminum Conductor
Fuse & Fuse Holder	Edison	General Purpose, Midget Class MEN Fuses, Voltage Rating: MEN - 250 VAC, Ampere Rating: 0.5 - 30 Amps, Interrupting Rating: 10,000 RMS Amps @ 125V
	Edison	Modular Ferrule Fuse Blocks for Midget Class and CC Fuses
	Cooper	In-line fuse holders for Single-Pole 13/32" x 1 1/2" Fuses HEB-AA
	EATON	Bussmann Series, HEB breakaway and non-breakaway in-line fuse holders for UL 13/32” x 1-1/2”supplemental fuses
	EATON	Bussmann Series, FNM 13⁄32˝ x 1-1⁄2˝ 250Vac time-delay supplemental fuses
Connector	Thomas & Betts	Wire Joints for Copper Conductor, Cat No: 54615, 54620, 54625-TB, 54635, 54640, 54630
Metered Pedestal 120-240V	Electrol Systems, Inc	TY A (120/240) 100(NS)AL(E)PS(U)
	WE Manufacturing & Controls	TY A 120/240 100(NS)AL(E)PS(U)
Metered Pedestal 240-480V	Electrol Systems, Inc	TY A (240/480) 100(NS)AL(E)PS(U)
	WE Manufacturing & Controls	TY A 240/480 100(NS)AL(E)PS(U)
Ground Box	MacLean Highline	Polymer Concrete, PHA132412X0002: TIER 22 (X) 22, 500lbs
	Oldcastle	Polymer Concrete, H-SERIES UNIT, H1730-24 TIER-22 - TXDOT 2x 1/2" CAPTIVE BOLT - 2x BRASS FLOATING NUT
	Oldcastle	Polymer Concrete, H-SERIES UNIT, H1324-24 TIER-15 - TXDOT 2x 1/2" CAPTIVE BOLT - 2x BRASS FLOATING NUT
Kearneys	NSi Industries, LLC	Split Bolt Connectors, Copper Split Bolts 2 Wire, N Series
Photocell	Acuity Brands Lighting, Inc.	Dark To Light, DLL Elite, Electronic Locking, Type Photocontrol, DLL-127 or DLL-480
Shorting Caps	Acuity Brands Lighting, Inc.	Dark To Light, Part # DSHORT SBK U
Interim Products		
Residential Luminaire	TRASTAR INC.	DURA-STR10A-3K-120-3-GR-SCL
Arterial Luminaire	TRASTAR INC.	DURA-STR25-3K-120-3-GR-SCL



LITTLE ACORN PARK

tnp

20 0 10 20 40

GRAPHIC SCALE

LEGEND

- REMOVE CONCRETE SIDEWALK
- REMOVE ASPHALT PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE DRIVEWAY
- REMOVE TREE

SHEET SUMMARY OF ESTIMATED QUANTITIES

ITEM#	DESCRIPTION	UNIT	QTY
0241.0100	REMOVE SIDEWALK	SF	2551
0241.0500	REMOVE FENCE	LF	48
0241.1100	REMOVE ASPHALT PVMT	SY	2203
0241.3015	REMOVE 24" STORM LINE	LF	467
0241.4401	REMOVE HEADWALL/SET	EA	5
3110.0102	6"-12" TREE REMOVAL	EA	12
3110.0103	12"-18" TREE REMOVAL	EA	3
3110.0104	18"-24" TREE REMOVAL	EA	1
3110.0105	24" OR LARGER TREE REMOVAL	EA	3
3441.4108	REMOVE SIGN PANEL AND POST	EA	5

NOTES:

1. CONTRACTOR TO COORDINATE REMOVAL OF MISCELLANEOUS ITEMS WITH OWNER.
2. ALL PHASING AND METHOD OF DEMOLITION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. CONTRACTOR SHALL REMOVE TREES AND BRUSH IN CONFLICT OF CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 3110.0101.
4. CITY APPROVAL OF THESE PLANS IS NOT APPROVAL TO PRUNE OR REMOVE CITY TREES. THE CONTRACTOR SHALL OBTAIN A ROW TREE PERMIT FROM PARD CITY FORESTER PRIOR TO PRUNING OR REMOVING ANY CITY TREE. PRUNING REQUIRES USE OF ISA CERTIFIED ARBORIST. CONTACT: 817-392-5729 OR 817-392-5739 OR CITYTREEPERMITS@FORTWORTHTEXAS.GOV

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no.	revision	by	date

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GA-PELS: PEF007431; TX-AE: BR 2673

FORT WORTH

scale
when bar is 1/2" long
horiz 1" = 40'
vert n/a
NOV 2025

tnp

STATE OF TEXAS
JUSTIN K. BAKER
114172
LICENSED PROFESSIONAL ENGINEER
2/24/2026

City of Fort Worth, Texas
Improvements for
West Bailey Boswell Road
Demolition Plan (12 of 23)

tnp project FTW 22268
sheet 20