TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
(TCEQ)

WATER POLLUTION ABATEMENT PLAN
(WPAP)
&
ORGANIZED SEWAGE COLLECTION SYSTEM
(SCS)

Moore Estates Subd Improvements

8.4-acre property

*Located at: 803 Westlake Drive, West Lake Hills, Te*xas 78746

Prepared for:

Tirres Group, LLC
3507 Native Dancer Cove
Austin, Texas 78746-1434

Thompson Land
Engineering, LLC
(F-10220)

08/27/25

Prepared by:

Mr. Robert Thompson, P.E.
Thompson Land Engineering, LLC
904 N Cuernavaca DR
Austin, Texas 78733

August 2025

Water Pollution Abatement Plan (WPAP) & Organized Sewage Collection System (SCS) Checklist

- ✓ **Edwards Aquifer Application Cover Page (TCEQ-20705)**

- ✓ **General Information Form (TCEQ-0587)**
  - o Attachment A - Road Map
  - o Attachment B - USGS / Edwards Recharge Zone Map
  - o Attachment C - Project Description

  Geologic Assessment Form (TCEQ-0585) - *Not applicable for this Residential Project*
  - o Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
  - o Attachment B - Stratigraphic Column
  - o Attachment C - Site Geology
  - o Attachment D - Site Geologic Map(s)

- ✓ **Water Pollution Abatement Plan Application Form (TCEQ-0584)**
  - o Attachment A - Factors Affecting Water Quality
  - o Attachment B - Volume and Character of Stormwater
  - o Attachment C - Suitability Letter from Authorized Agent (if OSSF is proposed)
  - o Attachment D - Exception to the Required Geologic Assessment (if requesting an exception)
    - ▪ Site Plan

- ✓ **Organized Sewage Collection System Plan (TCEQ-0582)**
  - o Attachment A - SCS Engineering Design Report
  - o Attachment B - Justification and Calculations for Deviation in Straight Alignment Without Manholes
  - o Attachment C - Justification for Variance from Manhole Spacing
  - o Attachment D - Calculations for Slopes for Flows Greater Than 10.0 Feet Per Second
    - ▪ Site Plan
    - ▪ Final Plan and Profile Sheets

- ✓ **Lift Station / Force Main System Application (TCEQ-0624)**
  - o Attachment A - Engineering Design Report
    - ▪ Site Plan
    - ▪ Final Plan and Profile Sheets

- ✓ **Temporary Stormwater Section (TCEQ-0602)**
  - o Attachment A - Spill Response Actions
  - o Attachment B - Potential Sources of Contamination
  - o Attachment C - Sequence of Major Activities
  - o Attachment D - Temporary Best Management Practices and Measures
  - o Attachment E - Request to Temporarily Seal a Feature (if requested)
  - o Attachment F - Structural Practices

- Attachment G - Drainage Area Map
- Attachment H - Temporary Sediment Pond(s) Plans and Calculations
- Attachment I - Inspection and Maintenance for BMPs
- Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

✓ **Permanent Stormwater Section (TCEQ-0600)**

- Attachment A - 20% or Less Impervious Cover Waiver (if requested for multi-family, school, or small business site)
- Attachment B - BMPs for Upgradient Stormwater
- Attachment C - BMPs for On-site Stormwater
- Attachment D - BMPs for Surface Streams
- Attachment E - Request to Seal Features (if sealing a feature)
- Attachment F - Construction Plans
- Attachment G - Inspection, Maintenance, Repair and Retrofit Plan
- Attachment H - Pilot-Scale Field Testing Plan (if proposed)
- Attachment I - Measures for Minimizing Surface Stream Contamination

✓ **Agent Authorization Form (TCEQ-0599), if application submitted by agent**

✓ **Application Fee Form (TCEQ-0574)**

✓ **Check Payable to the "Texas Commission on Environmental Quality"**

✓ **Core Data Form (TCEQ-10400)**

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.

4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Moore Estates Subd Improvements						**2. Regulated Entity No.:**			
3. Customer Name: Tirres Group, LLC						**4. Customer No.:**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		8.4	
9. Application Fee:	$3,650		**10. Permanent BMP(s):**			Vegetated Filter Strips			
11. SCS (Linear Ft.):	1,022		**12. AST/UST (No. Tanks):**			Not applicable; none proposed			
13. County:	Travis		**14. Watershed:**			Little Bee Creek			

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	__	_√_	__
Region (1 req.)	__	_√_	__
County(ies)	__	_√_	__
Groundwater Conservation District(s)	__Edwards Aquifer Authority __Barton Springs/ Edwards Aquifer __Hays Trinity __Plum Creek	_√_Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	__Austin __Buda __Dripping Springs __Kyle __Mountain City __San Marcos __Wimberley __Woodcreek	__Austin __Bee Cave __Pflugerville __Rollingwood __Round Rock __Sunset Valley _√_West Lake Hills	__Austin __Cedar Park __Florence __Georgetown __Jerrell __Leander __Liberty Hill __Pflugerville __Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	__	__	__	__	__
Region (1 req.)	__	__	__	__	__
County(ies)	__	__	__	__	__
Groundwater Conservation District(s)	__ Edwards Aquifer Authority __Trinity-Glen Rose	__Edwards Aquifer Authority	__Kinney	__EAA __Medina	__EAA __Uvalde
City(ies) Jurisdiction	__Castle Hills __Fair Oaks Ranch __Helotes __Hill Country Village __Hollywood Park __San Antonio (SAWS) __Shavano Park	__Bulverde __Fair Oaks Ranch __Garden Ridge __New Braunfels __Schertz	NA	__San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.

Robert C. Thompson

Print Name of Customer/Authorized Agent

Robert C Thompson 08/07/25

Signature of Customer/Authorized Agent Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

General Information Form

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: Robert C. Thompson

Date: July 24, 2025

Signature of Customer/Agent:

08/07/25

Project Information

1. Regulated Entity Name: Moore Estates Subd Improvments
2. County: Travis
3. Stream Basin: Little Bee Creek
4. Groundwater Conservation District (If applicable): Barton Springs/Edwards Aquifer
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☒ WPAP
   ☒ SCS
   ☐ Modification
   ☐ AST
   ☐ UST
   ☐ Exception Request

7. Customer (Applicant):

   Contact Person: Michael Tirres
   Entity: Tirres Group, LLC
   Mailing Address: 3507 Native Dancer Cove
   City, State: Austin, Texas Zip: 78746-1434
   Telephone: 512-422-2880 FAX: N/A
   Email Address: michael@tirreshomes.com

8. Agent/Representative (If any):

   Contact Person: Robert C. Thompson
   Entity: Thompson Land Engineering, LLC
   Mailing Address: 904 N Cuernavaca Drive
   City, State: Austin, Texas Zip: 78733
   Telephone: (512) 328-0002 FAX: none
   Email Address: ric@tleng.net

9. Project Location:

   ☒ The project site is located inside the city limits of West Lake Hills.
   ☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
   ☐ The project site is not located within any city's limits or ETJ.

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

    The site is located on the southeast side of Westlake Drive, south of Yaupon Valley Road and directly east of the intersection of Buckeye Trail and Westlake Drive.

11. ☒ **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

    ☒ Project site boundaries.
    ☒ USGS Quadrangle Name(s).
    ☒ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
    ☒ Drainage path from the project site to the boundary of the Recharge Zone.

13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: (it already has established lots)

14. ☒ **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

☒ Area of the site
☒ Offsite areas
☒ Impervious cover
☒ Permanent BMP(s)
☒ Proposed site use
☒ Site history
☒ Previous development
☒ Area(s) to be demolished

15. Existing project site conditions are noted below:

☐ Existing commercial site
☐ Existing industrial site
☒ Existing residential site
☐ Existing paved and/or unpaved roads
☐ Undeveloped (Cleared)
☒ Undeveloped (Undisturbed/Uncleared)
☐ Other: _____

Prohibited Activities

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

(2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

(3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

(4) The use of sewage holding tanks as parts of organized collection systems; and

(5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. ☒ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
☒ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
☐ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
☐ A request for an extension to a previously approved plan.

19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

☐ TCEQ cashier
☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

ATTACHMENT C – PROJECT DESCRIPTION

This Water Pollution Abatement Plan (**WPAP**) and Organized Sewage Collection System (**SCS**) application is submitted for the proposed residential subdivision construction plan on Lots 1 through 6 in the Moore Estates Subdivision in Travis County, Texas. The total property area is approximately 8.4-acres and Lot 1 is located at 803 Westlake Drive, West Lake Hills, TX 78746.

Total Project area in plan = 8.423-acres
Limits of construction (LOC) area = 1.125-acres
On-site area (within the LOC) = 0.842-acres (with 0.286-acres added Impervious Cover)
Offsite area (within the LOC) = 0.283- acres (with 0.011-acres added IC)
Total Added IC (within plan) = 0.297-acres

Offsite area (outside LOC, but contributing runoff area to water quality control) = 0.439-acres
Impervious Cover (existing roadway IC within Offsite area and outside the LOC) = 0.141-acres

Permanent BMPs = Vegetative Filter Strips

Proposed site use = Single Family Residential
Site History = Lot 1 has had a SF residence since 1959; Lots 2-6 have always been vacant
Previous Development = none (except for the SF development on Lot 1)
Areas to be demolished = two (2) existing driveways and pavement on Lots 1 and 2

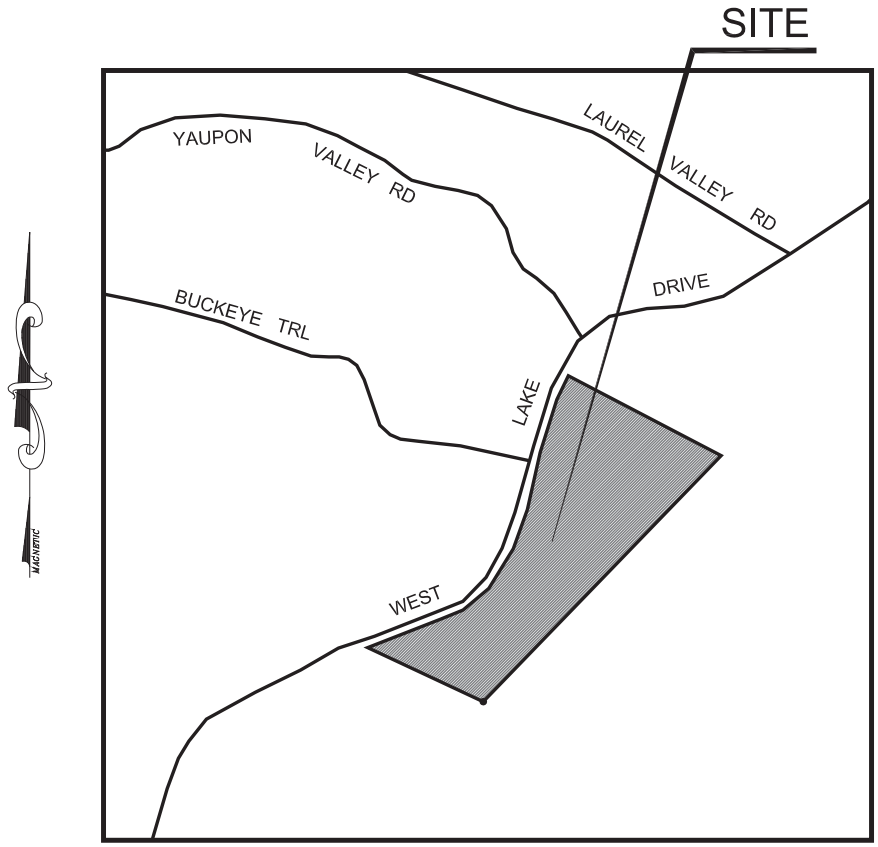
The storm water runoff from the proposed impervious covered areas will be treated by vegetative filter strips (VFS). No detention is expected to be required (or proposed) with this project. This project is proposing for the construction of a shared driveway for Lots 1 through 6 with two (2) driveway approaches along with the extension of a wastewater force main and a water main (as well as the associated service connections for each lot). The proposed work will mostly take place onsite, except for the driveway connections in the Westlake Drive right-of-way and the utility extensions and connections. There are no proposed aboveground or below ground storage tanks planned with this project.

For the total suspended solids (TSS) removal calculations, all proposed impervious cover will be treated by VFS that are planned to be fifteen (15) wide and downgradient of the pavement. The VFS has been designed according to the current TCEQ Technical Guidance Manual; see the attached construction plan sheets for further clarifications.

The SCS will consist of **1,022-linear feet of 2" PVC SDR 21 force main wastewater line** that starts where two (2) proposed service lines combine (where the service line from Lot 2 connects with the service line from Lot 1). There are no cleanouts on the "combined flow line" but each lot connection will have cleanouts.

There are no additional water quality controls that are proposed with this application. No other construction is being planned with this application. There are some existing driveways to be removed for this work before the new pavement is added.

Attachment A – Road Map

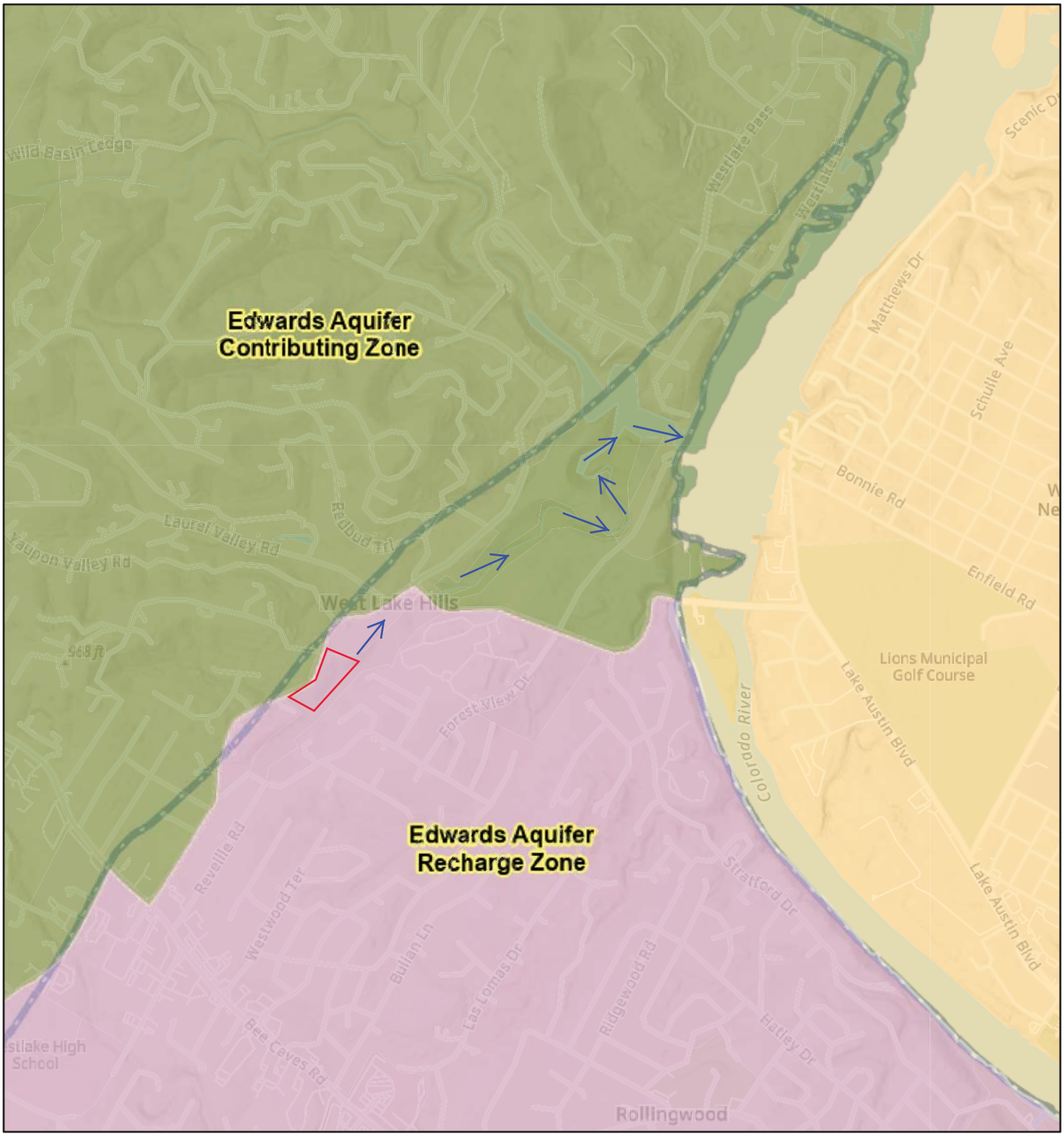


MAP GRID: F24 MAPSCO PG: 853D

LOCATION MAP

SCALE: NTS

Edwards Aquifer Viewer Custom Print



7/24/2025, 1:41:39 PM

1:24,075

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

- TCEQ_EDWARDS_OFFICIAL_MAPS
- 7.5 Minute Quad Grid
- TX Counties

Groundwater Conservation Districts

- Barton Springs/Edwards Aquifer CD
- Southwestern Travis County GCD
- City/Place
- Edwards Aquifer Boundary central line
- Edwards Aquifer Boundary
- Edwards Aquifer Label
- World_Hillshade

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Robert C. Thompson

Date: July 24, 2025

Signature of Customer/Agent:

 08/07/25

Regulated Entity Name: Moore Estates Subd Improvements

Regulated Entity Information

1. The type of project is:

   ☒ Residential: Number of Lots: 6
   ☐ Residential: Number of Living Unit Equivalents: _____
   ☐ Commercial
   ☐ Industrial
   ☐ Other: _____

2. Total site acreage (size of property): 8.4-acres

3. Estimated projected population: 21

4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	0	÷ 43,560 =	0
Parking	0	÷ 43,560 =	0
Other paved surfaces	12,937	÷ 43,560 =	0.297
Total Impervious Cover	12,937	÷ 43,560 =	0.297

Total Impervious Cover 0.297 **÷ Total Acreage** 8.423 **X 100 =** 3.5**% Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

Complete questions 7 - 12 if this application is exclusively for a road project.

7. Type of project:

☐ TXDOT road project.
☐ County road or roads built to county specifications.
☐ City thoroughfare or roads to be dedicated to a municipality.
☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.

Width of R.O.W.: _____ feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

10. Length of pavement area: _____ feet.

Width of pavement area: _____ feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

11. ☐ A rest stop will be included in this project.

☐ A rest stop will not be included in this project.

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

13. ☒ **Attachment B - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

14. The character and volume of wastewater is shown below:

100% Domestic	1,470Gallons/day
0% Industrial	0Gallons/day
0% Commingled	0Gallons/day

TOTAL gallons/day 1,470 (or 12,735-gpd using peaking factor and wet weather flows)

15. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

- ☐ **Attachment C - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.
- ☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

- ☐ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
- ☒ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

- ☐ The SCS was previously submitted on_____.
- ☒ The SCS was submitted with this application.
- ☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☒ The sewage collection system will convey the wastewater to the South Austin Regional (SAR) Wastewater (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

16. ☒ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

17. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 60'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM Map Number 48453C0445K, effective date: Jan. 22, 2020

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, open space, etc. are shown on the plan.

☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, open space, etc. are shown on the site plan.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☐ The wells are in use and comply with 16 TAC §76.

☒ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☒ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

23. ☒ Areas of soil disturbance and areas which will not be disturbed.

24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. ☒ Locations where soil stabilization practices are expected to occur.

26. ☐ Surface waters (including wetlands).

    ☒ N/A

27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☒ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

29. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

ATTACHMENT A – FACTORS AFFECTING WATER QUALITY

The following are believed to be the potential sources of sediment to stormwater runoff:

1) Disturbed earth from rough grading,
2) road base for pavement, and
3) disturbed earth from the construction of the water quality control

The following are believed to be potential pollutants and sources, other than sediment, to stormwater runoff:

1) Construction debris (e.g., wood form boards, nails, tie wire for rebar, survey laths, survey tape, etc.),
2) Items that can float, such as cups and paper,
3) Possibly oils from leaking machinery,
4) Possibly fuel should any refueling activity occur,
5) Possibly concrete materials from truck washout activities (if not bound in the solidifying mass), and
6) Possibly paint from striping activities (if not adhered to something large).

ATTACHMENT B – VOLUME AND CHARACTER OF STORM WATER

The proposed work with this application is not expected to produce a significant amount of volume from the stormwater, due to the relatively small site and disturbance area and the impervious cover will not increase. Additionally, the quality of the stormwater is expected to improve in the existing conditions, since the impervious cover being added will now be treated by a water quality control.

Pre-construction runoff coefficient = 80.00
Post-construction runoff coefficient = 86.09

ATTACHMENT C – SUITABILITY LETTER FROM AUTHORIZED AGENT

This is not applicable for this project

ATTACHMENT D – EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

See correspondence on the next page; this project is Exempt from a GA because it is for a single-family residential subdivision with only six (6) residential lots (not a part of a larger development) that will be constructed on less than ten (10) acres.

RE: Moore Estates Subdivision Improvements WPAP/SCS - Administrative NOD

1 message

James Slone <james.slone@tceq.texas.gov> Mon, Aug 25, 2025 at 2:35 PM
To: Mark Roeder <mark@tleng.net>
Cc: Robert Thompson <ric@tleng.net>

Well, I forgot that provision! You are off the hook. NO Geologic Assessment is required for the project.

Bo

James “Bo” Slone, P.G.

Team Leader

Edwards Aquifer Protection Program

Texas Commission on Environmental Quality

(512) 239-6994

From: Mark Roeder <mark@tleng.net>
Sent: Monday, August 25, 2025 2:22 PM
To: James Slone <james.slone@tceq.texas.gov>
Cc: Robert Thompson <ric@tleng.net>
Subject: Re: Moore Estates Subdivision Improvements WPAP/SCS - Administrative NOD

Ah, okay, we did already contact a GA for a proposal for this property, so hopefully we'll have a quick turnaround.

Just to confirm, though, per the TAC, it looks like it states that ALL Single-family Subdivisions (less than 10-acres) automatically qualify for the exemption, but that is not the case, apparently?

(3) Geologic assessment. For all regulated activities, the applicant must submit a geologic assessment report prepared by a geologist describing the site-specific geology. The report must identify all potential pathways for contaminant movement to the Edwards Aquifer. **Single-family residential subdivisions constructed on less than ten acres are exempt from this requirement.** The geologic assessment report must be signed, sealed, and dated by the geologist preparing the report.

On Mon, Aug 25, 2025 at 2:13 PM James Slone <james.slone@tceq.texas.gov> wrote:

> Sorry, this one will need a Geologic Assessment. There are a lot of features relatively close by. It should be an easy one for the PG,
>
> Bo
>
> James “Bo” Slone, P.G.
>
> Team Leader
>
> Edwards Aquifer Protection Program
>
> Texas Commission on Environmental Quality
>
> (512) 239-6994

From: Mark Roeder <mark@tleng.net>
Sent: Monday, August 25, 2025 2:08 PM
To: James Slone <james.slone@tceq.texas.gov>
Cc: Robert Thompson <ric@tleng.net>
Subject: Re: Moore Estates Subdivision Improvements WPAP/SCS - Administrative NOD

Yes, I should have included the [attached] project description. This will be six (6) single-family residential projects, but we are only preparing a "shared use driveway" and the W/WW utility connections at this time.

This is a separate subdivision (and not part of a larger master-planned community).

Mark

On Mon, Aug 25, 2025 at 2:00 PM James Slone <james.slone@tceq.texas.gov> wrote:

> Mark,
>
> It looks like this is a single -family residential project. (please let me know if not) For single-family residential projects not associated with a larger master-planned community/subdivision, a geologic exception is not required, Please let me know if you have any questions.
>
> Bo
>
> James “Bo” Slone, P.G.
>
> Team Leader
>
> Edwards Aquifer Protection Program
>
> Texas Commission on Environmental Quality
>
> (512) 239-6994

From: Mark Roeder <mark@tleng.net>
Sent: Monday, August 25, 2025 1:13 PM
To: James Slone <james.slone@tceq.texas.gov>
Cc: Robert Thompson <ric@tleng.net>
Subject: Re: Moore Estates Subdivision Improvements WPAP/SCS - Administrative NOD

Greetings Bo,

See attached [location maps and Geotechnical Report] and let us know if this project [at 803 Westlake Drive] qualifies for the Exception to the Geologic Assessment. Let us know if you have any questions or concerns.

Thanks,

Mark Roeder, EIT

Thompson Land Engineering, LLC

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Moore Estates Subd Improvements
Date Prepared: 8/25/2025
Updated:

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Travis	
Total project area included in plan * =	8.423	acres
Predevelopment impervious area within the limits of the plan * =	0.000	acres
Total post-development impervious area within the limits of the plan * =	0.297	acres
Total post-development impervious cover fraction * =	0.035	
P =	32	inches

$L_{M\ TOTAL\ PROJECT}$ = **259** lbs.

Number of drainage basins / outfalls areas leaving the plan area = **2**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**1**		**2**
Total drainage basin/outfall area =	0.933	acres	7.490
Predevelopment impervious area within drainage basin/outfall area =	0.000	acres	0.000
Post-development impervious area within drainage basin/outfall area =	0.297	acres	0.000
Post-development impervious fraction within drainage basin/outfall area =	0.32		0.00
$L_{M\ THIS\ BASIN}$ =	259	lbs.	0

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

Vegetated Filter Strips

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	0.933	acres
A_I =	0.297	acres
A_P =	0.636	acres
L_R =	289	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 289 lbs.

F = **1.00**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	4.00	inches
Post Development Runoff Coefficient =	0.27	
On-site Water Quality Volume =	3623	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.439	acres
Off-site Impervious cover draining to BMP =	0.141	acres
Impervious fraction of off-site area =	0.32	
Off-site Runoff Coefficient =	0.27	
Off-site Water Quality Volume =	1714	cubic feet
Storage for Sediment =	1067	
Total Capture Volume (required water quality volume(s) x 1.20) =	6403	cubic feet

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

There are no calculations required for determining the load or size of vegetative filter strips.
The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(c), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Regulated Entity Name: Moore Estates Subd Improvments

1. ☒ **Attachment A – SCS Engineering Design Report**. This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

Customer Information

2. The entity and contact person responsible for providing the required engineering certification of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

   Contact Person: Michael Tirres
   Entity: Tirres Group, LLC
   Mailing Address: 3507 Native Dancer Cove
   City, State: Austin, Texas Zip: 78746-1434
   Telephone: 512-422-2880 Fax: N/A
   Email Address: michael@tirreshomes.com
   The appropriate regional office must be informed of any changes in this information within 30 days of the change.

3. The engineer responsible for the design of this sewage collection system is:

   Contact Person: Robert C. Thompson
   Texas Licensed Professional Engineer's Number: 69524
   Entity: Thompson Land Engineering, LLC
   Mailing Address: 904 N Cuernavaca
   City, State:Austin, Texas Zip: 78733
   Telephone:(512) 328-0002 Fax:none
   Email Address:ric@tleng.net

Project Information

4. Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):

   ☒ Residential: Number of single-family lots: 6
   ☐ Multi-family: Number of residential units: _____
   ☐ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other: _____

5. The character and volume of wastewater is shown below:

100% Domestic	1,470 gallons/day
_____% Industrial	_____ gallons/day
_____% Commingled	_____ gallons/day

   Total gallons/day: 1,470 (or 12,735-gpd using peaking factor and wet weather flows)

6. Existing and anticipated infiltration/inflow is 6,300 gallons/day. This will be addressed by: using water-tight pipes and joints (include rubber gaskets and PVC compression joints), and size-on-size resilient connectors; testing the installed pipe per TCEQ requirements.

7. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

   ☐ The WPAP application for this development was approved by letter dated _____. A copy of the approval letter is attached.
   ☒ The WPAP application for this development was submitted to the TCEQ on the same date as this application, but has not been approved.
   ☐ A WPAP application is required for an associated project, but it has not been submitted.
   ☐ There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

Pipe Diameter(Inches)	*Linear Feet (1)*	*Pipe Material (2)*	*Specifications (3)*
2	1,022	PVC SDR 21	ASTM D 2241

Total Linear Feet: 1,022

(1) Linear feet - Include stub-outs and double service connections. Do not include private service laterals.
(2) Pipe Material - If PVC, state SDR value.

(3) Specifications - ASTM / ANSI / AWWA specification and class numbers should be included.

9. The sewage collection system will convey the wastewater to the South Austin Regional (SAR) Wastwater (name) Treatment Plant. The treatment facility is:

☒ Existing
☐ Proposed

10. All components of this sewage collection system will comply with:

☒ The City of Austin standard specifications.
☐ Other. Specifications are attached.

11. ☐ No force main(s) and/or lift station(s) are associated with this sewage collection system.

☒ A force main(s) and/or lift station(s) is associated with this sewage collection system and the **Lift Station/Force Main System Application** form (TCEQ-0624) is included with this application.

Alignment

12. ☐ There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.

13. ☐ There are no deviations from straight alignment in this sewage collection system without manholes.

☒ **Attachment B - Justification and Calculations for Deviation in Straight Alignment without Manholes**. A justification for deviations from straight alignment in this sewage collection system without manholes with documentation from pipe manufacturer allowing pipe curvature is attached.

☐ For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

Manholes and Cleanouts

N/A 14. ☐ Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below: (Please attach additional sheet if necessary)

Table 2 - Manholes and Cleanouts

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
Not Applicable (N/A)	Of		
	Of		
	Of		
	Of		
	Of		
	Of		

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
N/A	Of		
	Of		
	Of		
	Of		

N/A 15. ☐ Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.

N/A 16. ☐ The maximum spacing between manholes on this project for each pipe diameter is no greater than:

Pipe Diameter (inches)	**Max. Manhole Spacing (feet)**
6 - 15	500
16 - 30	800
36 - 48	1000
≥54	2000

☐ **Attachment C – Justification for Variance from Maximum Manhole Spacing**. The maximum spacing between manholes on this project (for each pipe diameter used) is greater than listed in the table above. A justification for any variance from the maximum spacing is attached, and must include a letter from the entity which will operate and maintain the system stating that it has the capability to maintain lines with manhole spacing greater than the allowed spacing.

N/A 17. ☐ All manholes will be monolithic, cast-in-place concrete.

☐ The use of pre-cast manholes is requested for this project. The manufacturer's specifications and construction drawings, showing the method of sealing the joints, are attached.

Site Plan Requirements

Items 18 - 25 must be included on the Site Plan.

18. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 20' & 40'.

19. ☒ The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stub outs (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.

20. Lateral stub-outs:

☒ The location of all lateral stub-outs are shown and labeled.

☐ No lateral stub-outs will be installed during the construction of this sewer collection system.

21. Location of existing and proposed water lines:

☒ The entire water distribution system for this project is shown and labeled.
☐ If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
☐ There will be no water lines associated with this project.

22. 100-year floodplain:

☒ After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
☐ After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 3 - 100-Year Floodplain

Line	*Sheet*	*Station*
	of	to
	of	to
	of	to
	of	to

23. 5-year floodplain:

☒ After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.)
☐ After construction is complete, all sections located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 4 - 5-Year Floodplain

Line	*Sheet*	*Station*
	of	to
	of	to
	of	to
	of	to

24. ☒ Legal boundaries of the site are shown.

25. ☒ The ***final plans and technical specifications*** are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

Items 26 - 33 must be included on the Plan and Profile sheets.

26. ☐ All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.

☒ There will be no water line crossings.
☐ There will be no water lines within 9 feet of proposed sewer lines.

Table 5 - Water Line Crossings

Line	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance*	*Vertical Separation Distance*
Note: in the future, private domestic services could cross the force main, but both will use pressure rated pipe.				

27. Vented Manholes:

☒ **No part** of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.
☐ **A portion** of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.
☐ **A portion** of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.
☐ **A portion** of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located within. No vented manholes will be used.

Table 6 - Vented Manholes

Line	*Manhole*	*Station*	*Sheet*

Line	*Manhole*	*Station*	*Sheet*

28. Drop manholes:

☒ There are no drop manholes associated with this project.
☐ Sewer lines which enter new or existing manholes or "manhole structures" higher than 24 inches above the manhole invert are listed in the table below and labeled on the appropriate profile sheets. These lines meet the requirements of 30 TAC §217.55(l)(2)(H).

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*

29. Sewer line stub-outs (For proposed extensions):

☐ The placement and markings of all sewer line stub-outs are shown and labeled.
☒ No sewer line stub-outs are to be installed during the construction of this sewage collection system.

30. Lateral stub-outs (For proposed private service connections):

☐ The placement and markings of all lateral stub-outs are shown and labeled.
☒ No lateral stub-outs are to be installed during the construction of this sewage collection system.

31. Minimum flow velocity (From Appendix A)

☒ Assuming pipes are flowing full; all slopes are designed to produce flows equal to or greater than 2.0 feet per second for this system/line.

32. Maximum flow velocity/slopes (From Appendix A)

☒ Assuming pipes are flowing full, all slopes are designed to produce maximum flows of less than or equal to 10 feet per second for this system/line.
☐ **Attachment D – Calculations for Slopes for Flows Greater Than 10.0 Feet per Second.** Assuming pipes are flowing full, some slopes produce flows which are greater than 10 feet per second. These locations are listed in the table below. Calculations are attached.

Table 8 - Flows Greater Than 10 Feet per Second

Line	*Profile Sheet*	*Station to Station*	*FPS*	*% Slope*	*Erosion/Shock Protection*

33. Assuming pipes are flowing full, where flows are ≥ 10 feet per second, the provisions noted below have been made to protect against pipe displacement by erosion and/or shock under 30 TAC §217.53(l)(2)(B).

☐ Concrete encasement shown on appropriate Plan and Profile sheets for the locations listed in the table above.

☐ Steel-reinforced, anchored concrete baffles/retards placed every 50 feet shown on appropriate Plan and Profile sheets for the locations listed in the table above.

☒ N/A

Administrative Information

34. ☒ The final plans and technical specifications are submitted for TCEQ review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

35. ☒ Standard details are shown on the detail sheets, which are dated, signed, and sealed by the Texas Licensed Professional Engineer, as listed in the table below:

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	7 & 11 of 15
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	n/a of n/a
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	n/a of n/a
Typical trench cross-sections **[Required]**	13 of 15
Bolted manholes **[Required]**	n/a of n/a
Sewer Service lateral standard details **[Required]**	13 of 15
Clean-out at end of line **[Required, if used]**	n/a of n/a
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	n/a of n/a
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	n/a of n/a
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	n/a of n/a

Standard Details	*Shown on Sheet*
Drop manholes **[Required, if a pipe entering a manhole is more than 24 inches above manhole invert]**	n/a of n/a

36. ☒ All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.

37. ☒ All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.

    ☒ Survey staking was completed on this date: (it is already an established lot)

38. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

39. ☒ Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c) and 30 TAC §217 and prepared by:

Print Name of Licensed Professional Engineer: Robert C. Thompson

Date: July 17, 2025

Place engineer's seal here:

Thompson Land Engineering, LLC (F-10220)

Signature of Licensed Professional Engineer:

Robert C Thompson 08/07/25

Appendix A-Flow Velocity Table

Flow Velocity (Flowing Full) All gravity sewer lines on the Edwards Aquifer Recharge Zone shall be designed and constructed with hydraulic slopes sufficient to give a velocity when flowing full of not less than 2.0 feet per second, and not greater than 10 feet per second. The grades shown in the following table are based on Manning's formula and an n factor of 0.013 and shall be the minimum and maximum acceptable slopes unless provisions are made otherwise.

Table 10 - Slope Velocity

Pipe Diameter(Inches)	*% Slope required for minimum flow velocity of 2.0 fps*	*% Slope which produces flow velocity of 10.0 fps*
6	0.50	12.35
8	0.33	8.40
10	0.25	6.23
12	0.20	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.30
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*

**For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.*

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

Figure 1 - Manning's Formula

Where:

v = velocity (ft/sec)
n = Manning's roughness coefficient (0.013)
Rh = hydraulic radius (ft)
S = slope (ft/ft)

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering

SCS ENGINEERING DESIGN REPORT

for:

Moore Estates Subd Improvements

To be located at:

803 Westlake Drive
West Lake Hills, Texas 78746

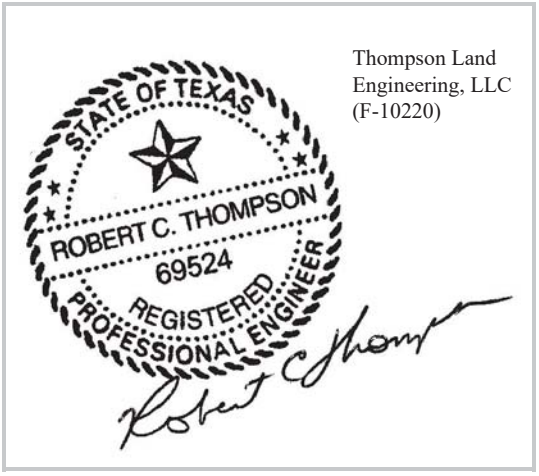
Prepared By:

Thompson Land Engineering, LLC

Robert C. Thompson, P.E.
904 N. Cuernavaca
Austin, Texas 78733
512-328-0002
512-328-1112 (fax)

Preparation Date

July 18, 2025



Thompson Land Engineering, LLC (F-10220)

August 4, 2025

SCS Engineering Design Report

Introduction (and background information)

The application submitted is to permit the Subdivision Construction Plan for an 8.4-acre residential subdivision with six (6) lots. The project will consist of a shared driveway and the extension of the water and wastewater lines within the right-of-way of Westlake Drive, which is within the Edwards Aquifer Recharge Zone. Only the force mains are to be installed with this SCS; any future developments in these single-family lots will include the lift stations (and modified SCS and/or WPAP application, as appropriate) when each lot is developed in future.

The property is within the City limits of West Lake Hills and has mostly been vacant except for a single-family residence that was shown to be built in 1959. The property is legally divided and consists of Lots 1-6 in the Moore Estates Subdivision that was recorded in Document # 202300003 in the Travis County public records.

Floodplain

The nearest drainage feature is a tributary to Little Bee Creek, which is located on the back side of the property; however, there is no portion of this project that will be located within a floodplain, as shown on FEMA FIRM map # 48453C0445K (effective date January 22, 2020).

Edwards Aquifer

This site is located within Edward's Aquifer Recharge Zone. A water quality control (vegetative filter strip) is proposed to treat this proposed shared driveway, which is designed in accordance with the TCEQ Technical Guidance Manual. A Water Pollution Abatement Plan (WPAP) application is being submitted concurrently with this Organized Sewage Collection System (SCS) application. Prior to any construction, the WPAP and SCS will be approved by the TCEQ, (in addition to the Construction Plan set being approved by the City of Westlake, as well as the Westlake Fire Department and the Water District WCID-10).

Soils

Based on the USDA Natural Resources Conservation Services, the soils are primarily Urban land and Brackett soils (UuE) at the front of the lots and Eckrant soils and Urban land (TeE) in the back of the property. These soil types are both classified into the "D" Hydrologic group.

Wastewater Utilities

The existing wastewater lines at the site are listed below, along with the general proposed flows from this project.

Existing WW Force Main	Location:	Size (in):		Material:
	Within the Right-of-Way of Westlake Drive	2"		PVC SDR 21
Proposed Average Dry Weather Flows =		1,470-GPD	=	1.0-gpm (pumped at 20-gpm)
Proposed Peak Dry Weather Flows =		6,435-GPD	=	4.5-gpm (pumped at 20-gpm)
Proposed Peak Wet Weather Flows =		12,735-GPD	=	8.8-gpm (pumped at 20-gpm)

Piping Materials
This project is proposed to install PVC SDR 21 (ASTM D 2241) force main wastewater lines, which can withstand the pressure generated by instantaneous pump stoppage, due to power failure under maximum pumping conditions. See attached Buckling, Wall Crushing and Deflection analyses that are included with this report.

The underground force main pipe joint will include either push-on rubber gaskets or mechanical joints with a pressure rating equal to or greater than that of the force main pipe material. Exposed force main pipe joints will be flanged or flexible and will be adequately secured (to prevent movement due to wastewater surges).

A detectable underground warning tape will be laid in the same trench as a force main pipe. This warning tape will be located above and parallel to the force main and will include the label "PRESSURIZED WASTEWATER" continuously repeated in at least 1.5-inch-tall letters.

Manholes
There are no proposed manholes for this project; lines will be pressurized in the force main. There are no existing wastewater manhole covers that lie within a 100-year floodplain for this project.

Testing, Inspection and Certification
The final plans and specifications will include the pressure testing procedures. A pressure test (using 50 pounds per square inch above the normal operating pressure of a force main) will be included. A valve for pressure testing will be installed (near the discharge point of a force main), which would remain after a test is successfully completed. A pump isolation valve may potentially be used as an opposite termination point. A test will involve filling a force main with water. This proposed pipe is expected to hold the designated test pressure for a minimum of 4.0 hours. The leakage rate should not exceed 10.0 gallons per inch of diameter per mile of pipe per day. The following equation, from Figure: 30 TAC §217.68(g), is used to calculate the acceptable leakage rate in gallons per hour per 1,000 feet of pipe:

Equation C.5. $$L = \frac{SD\sqrt{P}}{155{,}400}$$

Where:
L = Acceptable leakage rate (gallons/hour/1,000 feet of pipe, based on a leakage rate of 10.0 gallons per inch of diameter per mile of pipe per day)
S = Length of pipe (feet)
D = Nominal diameter of pipe (inches)
P = Average test pressure (pounds/square inch)

Occupational Safety, Public Health, and Environmental Protection
The project plans and specifications must ensure that the pipe installation will adhere to the minimum separation distances allowed by Section 217.53(d) of the TCEQ's rules. Additionally, the project plans include the exact reproduction of the separation distance wording detailed in Section 217.53, which ensures that the separation distance between any unknown water lines that are discovered during the installation phase of the project.

There are no manholes anticipated with this project.

Personal gas detectors are required for wear by all personnel whose jobs require entering enclosed spaces (such as manholes and lift stations that can have accumulations of hydrogen sulfide or other harmful gases). Even though these items are not expected for this project, the contractor would be responsible for ensuring the detectors when required.

For environmental protection and controlling erosion, silt fencing will be installed along the downstream perimeter of the limits of construction and any spoils storage areas, due to runoff during construction. A stabilized construction entrance will be installed at the construction entrance to further control sediments being released downstream.

Moore Estates Subd Improvements
WASTEWATER SERVICE CALCULATIONS
FOR TCEQ SCS

7/17/2025

Tract Information

8.4	Total Tract Area
8.4	Drainage Area Acres

LUE Table

Shopping Center	Restaurant; Cafeteria	Office	Office Warehouse	Single Family	Condo	Apart.	
0	**0**	**0**	**0**	**6**	**0**	**0**	Square Feet or Number
1660	200	3000	4000				LUEs/sf
				1	0.7	0.5	LUEs/each
0	0	0	0	6	0	0	Total LUEs per category

Total LUEs in this project = **6.0**

Wastewater Service Calculations

Use Criteria

245	gpd/LUE per UCM 2.9.4 (A)(1) or 70 gal/cap x 3.5 people/LUE)
750	gal/ac/day (Inflow/Infiltration) per UCM 2.9.4(A)(3)

Average Demand

1.0	gpm, Average Dry Weather Flow (ADWF) = gpd/LUE * LUEs

Peak Demands

4.4	Peaking Factor, Pf = [18+(0.0206 x ADWF)½]/[4+(0.0206 x ADWF)½] per UCM 2.9.4(A)(4)
4.5	gpm, Peak Dry Weather Flow (PDWF) = ADWF * Pf
8.8	gpm, Peak Wet Weather Flow = PDWF + I/I per UCM 2.9.4(A)(5)

Required Line Sizes (per UCM 2.9.4(B)(3))

1.3	Size of Main Required at Half Full for PDWF at 2 fps
0.6	Size of Main Required at Half Full for PDWF at 10 fps

Buckling Analysis: 30 TAC 217.10 (c)

1 Calculate allowable and predicted buckling pressure. Predicted and allowable buckling pressures must be calculated for each size of pipe and type of flexible pipe material. For the purposes of this application form, the buckling analysis must be performed using the method outlined below. The method of calculating allowable buckling pressure provided below is only valid for lines which are installed at depths of 2 ft < H < 80 feet.

a) Calculate allowable bucking pressure as follows:

$$q_a = 0.4 * \sqrt[2]{32 * R_w * B' * E_b * (E * I / D^3)}$$

$$R_w = 1 - 0.33 * (h_w / h)$$

$$B' = \frac{1}{1 + 4 * e^{-0.065H}}$$

$$I = (t^3 / 12) * (inches^4 / Linch)$$

1,022-feet gravity wastewater line with a size material = 2" PVC SDR 21

q_a	=	allowable buckling pressure, pounds per square inch (psi)	2" =	71 psi
h	=	height of soil surface above top of pipe in inches (in)	2" =	73.54 inches
h_w	=	height of water surface above top of pipe in inches (in) (groundwater elevation)	2" =	0 inches
R_w	=	Water buoyancy factor. If **h_w = 0, R_w = 1**. If 0 < h_w < h (groundwater elevation is between the top of the pipe and the ground surface), calculate R_w with Equation 2	2" =	1
H	=	Depth of burial in feet (ft) from ground surface to crown of pipe.	2" =	6.13 feet
B'	=	Empirical coefficient of elastic support	2" =	0.27
E_b	=	modulus of soil reaction for the bedding material (psi)	2" =	750 psi
E	=	modulus of elasticity of the pipe material (psi)	2" =	400,000 psi
I	=	moment of inertia of the pipe wall cross section per linear inch of pipe, $inch^4$/lineal inch = $inch^3$. For solid wall pipe, I can be calculated with equation 4. If the pipe used is not solid wall pipe (for example a pipe with a ribbed cross section), the proper moment of inertia formula must be obtained from the manufacturer.	I =	0.0001 cubic inches

t = pipe structural wall thickness (in)

2" = 0.113 inches

D = mean pipe diameter (in)

2" = 2.149 inches

b) Calculate pressure applied to pipe under installed conditions:

$$W_c = \gamma_s * H * (D + t)/144 \qquad q_p = \gamma_w * h_w + R_w * (W_c/D) + L_l$$

W_c = vertical soil load on the pipe per unit length in pounds per linear inch (lb/in)

2" = 11.6 lb/in

γ_w = 0.0361 pounds per cubic inch (pci), specific weight of water

γ_s = specific weight of soil in pounds per cubic foot (pcf) = 120 lbs/cf

q_p = pressure applied to pipe under installed conditions (psi)

2" = 15.4 psi

L_l = Live load as previously determined = 10 for all pipes

2 Report q_a and q_p for each pipe diameter proposed and for each type of pipe material proposed:

2 inches
PVC SDR 21
71 psi
15.4 psi

3 If $q_a > q_p$, specified pipe is acceptable for the proposed installation. If $q_a < q_p$, the wall thickness of the pipe must be increased and/or a pipe with a larger modulus of elasticity (E) must be used. Make the appropriate modifications and repeat the buckling analysis, showing that for the upgraded pipe, $q_a > q_p$. Do all of the proposed pipes for this project meet these requirements?

YES

4 Calculate the maximum depth that the pipe can be bured before **WALL CRUSHING** will occur

$$H = (24 * P_c * A)/(\gamma_s * D_o)$$

D_o = outside pipe diameter (in)

2" = 2.375 in

P_c = compressive stress or hydrostatic design basis (HDB); For typical PVC pipes, assume 4,000-psi

A = surface area of the pipe wall (in^2/ft)

2" = 0.8 in^2/ft

γ_s = specific weight of soil in pounds per cubic foot (pcf) = 120 lbs/cf

24 = conversions and coefficients

H = Depth of burial in feet (ft) from ground surface to crown of pipe

2" = 270 ft

Deflection Analysis: 30 TAC 217.10 (c)

5a Indicate E_b (modulus of soil reaction for the bedding material) in psi. If E_b is greater than 750 psi, justification must be provided:

750 psi

5b Indicate E'_n (modulus of soil reaction for the in-situ soil) in psi:

1,250 psi

6 Based on the above, calculate the ratio of bedding modulus to soil modulus:

E_b/E'_n = 0.6

If this ratio is greater than 1.25, a zeta factor must be calculated by completing **7** and **8**, where zeta is a factor which corrects for the effect of in-situ soil on pipe stability. If the ratio of bedding modulus to soil modulus is **less than or equal to 1.25, assume zeta = 1.0** and skip to **8**.

7 Where native soil is significantly weaker than bedding material, or where predicted deflection approaches 5%, the effect of native soil must be quantified using Leonhardt's Zeta factor. Zeta must be determined for each diameter of pipe and corresponding trench width. Zeta may be estimated graphically or calculated directly. If zeta is estimated graphically, identify the source for tables, figures, etc...(including page numbers and table numbers or figure numbers for each source) which were used to estimate zeta. To calculate zeta directly use the formulas in **7(b)**, below. The calculations which are done to determine the zeta factors for the different pipe diameters must be included with this submittal.

(a) Sources: Not applicable

(b) Calculations:

$$zeta = \frac{1.44}{f + (1.44 - f) * (E_b / E_{n'})}$$

$$f = \frac{b/d_a - 1}{1.154 + 0.444 * (b/d_a - 1)}$$

f = pipe/trench width coefficient

b = trench width

d_a = pipe diameter

E_b = modulus of soil reaction for the bedding material (psi)

$E\not{c}_n$ = modulus of soil reaction for the in-situ soil (psi)

8 For each size of pipe, report zeta factor determined in **6** or **7**:

Pipe Diameter:	2 inches
Trench Width (minumum):	26 inches
Zeta:	1.0

9 Determine pipe stiffness (P_s) in psi. P_s can be determined either by parallel plate test at 5% deflection, based on manufacturer's data or national reference standards; or, calculated using either equation 10 or equation 11. As an example, the minimum pipe stiffness at 5% deflection for PVC pipe less than 15 inches in diameter meeting ASTM D 3034, is 46 psi for SDR-35 and 115 psi for SDR 26. If equation 11 is used, the ring stiffness constant (RSC) is provided by the pipe manufacturer. Show calculations, or provide proper references, for each size of pipe and for each flexible pipe material.

$$P_s = \frac{EI}{0.149 * r^3}$$

or

$$P_s = 0.80 * RSC * (8.337/D)$$

E = modulus of elasticity of the pipe material (psi) = 4.E+05 psi

I = moment of inertia of the pipe wall cross section per linear inch of pipe, $inch^4$/lineal inch = $inch^3$. For solid wall pipe, I can be calculated with equation 4. If the pipe used is not solid wall pipe (for example a pipe with a ribbed cross section), the proper moment of inertia formula must be obtained from the manufacturer.

Shell Thickness, t: 0.113 in
I = t^3/12: 0.0001 in^3

D = mean pipe diameter (in) 2.149 inches

r = mean radius (in) 1.0745 inches

10 Report P_s for each pipe size and each type of flexible pipe material as determined in **9**.

Pipe Diameter: 2 inches
Pipe Material: PVC SDR 21
P_s: 260 psi

11 Because the terms in the denominator of the modified Iowa formula (Equation 13) are added, it is theoretically possible to have zero pipe stiffness (P_s=0) and still predict flexible pipe deflections less than 5%. In order to ensure that the stiffness being provided to the installation has a reasonable contribution from pipe stiffness, and does not rely solely on the stiffness provided by the soil stiffness factor (SSF), the ratio of P_s/SSF must be calculated. If P_s/SSF < 0.15, **9** and **10** must be repeated such that a higher stiffness pipe is chosen for each portion of the project where P_s/SSF < 0.15. The P_s/SSF ratio(s) must then be recalculated for the new higher stiffness pipe. This process must be repeated until P_s/SSF ³ 0.15 exists for all proposed pipe sizes and for all types of flexible pipe materials.

P_s = Pipe stiffness (psi) [from **10**]: 2" = 260 psi

E_b = modulus of soil reaction for the bedding material (psi) [from **5a**] = 2" = 750 psi

zeta = 1.0, or a value calculated with the method in **7** = 2" = 1.0

SSF = soil stiffness factor ($0.061*zeta*E_b$): 2" = 45.75

12 Indicate the final values calculated for P_s/SSF for each diameter of pipe and for each pipe material:

Pipe Diameter:	2 inches
Pipe Material:	PVC SDR 21
P_s/SSF:	5.7

13 Do all proposed pipe sizes and flexible pipe materials have a pipe stiffness to soil stiffness factor ratio of greater than or equal to 0.15?

YES

14 Calculate and report predicted deflection. Predicted deflection must be calculated for each size of pipe and type of flexible pipe material. For the purposes of this application form, predicted deflection must be calculated using the method outlined below. Show calculations and report calculated maximum deflection for each size of pipe and type of flexible pipe material. Maximum allowable deflection in installed lines is 5%, as determined by the deflection analysis and verified by a mandrel test. Some conservatism should be employed in determining allowable predicted deflections. This conservatism is necessary to allow for variability in the quality of installation.

$$L_p = \frac{\gamma_s * H}{144}$$

D = Undeflected mean pipe diameter (in)

2.149 inches

K = Bedding angle constant. (Assumed to be 0.110 unless otherwise justified.)

0.110

γ_s = Unit weight of soil (pcf). γ_s less than 120 pcf must be justified.

120 pcf

H = Depth of burial (ft) from ground surface to crown of pipe.

6.1285 ft

L_p = Prism load (psi). If prism load is calculated using Marston's load formula, or other formulas less conservative than the one provided above, the load should be multiplied by a deflection lag factor D_L = 1.5 to account for long-term deflection of the pipe as the bedding consolidates.

2" = 5.1 psi

%ΔY/D = Predicted % vertical deflection under load.

= Change in vertical pipe diameter under load

= (K*(Lp-Ll)*100)/(0.149Ps+(0.061*Zeta*E'b)) = 0.66 %

(P_s from **12**; *zeta* from **10**; and E_b from **5a**)

- If the predicted %ΔY/D for any proposed pipe size or material is over 5%, the proposed flexible pipe design cannot be approved by the TCEQ. Appropriate design modifications must be made and the analysis must be repeated until a deflection of less than or equal to 5% is predicted.

- If a zeta value of 1.0 was assumed as a result of **6**, and the predicted deflection for any size or type of pipe is determined to be between 4% and 5%, the deflection analysis must be repeated. Repeat the deflection analysis by performing all the same calculations. The difference will be that instead of using an assumed zeta factor of 1.0, the zeta factor must be calculated as outlined in **7**. If the predicted deflection is determined to be above 5% after the deflection analysis is repeated, this flexible pipe design cannot be approved by the TCEQ. Appropriate design modifications must be made and the analysis must be repeated until a deflection of less than or equal to 5% is predicted.

- If the predicted deflection, for a particular pipe, using the deflection analysis method detailed above, is less than or equal to 4%, and a zeta factor of 1.0 was assumed as a result of **6**, that particular pipe is assumed to comply with the TCEQ's requirements for deflection analysis and can therefore be approved.

- If the predicted deflection, for a particular pipe, using the deflection analysis method detailed above, is between 4% and 5%, and the zeta factor which was used in the analysis was determined using the method in **7**, that particular pipe is assumed to comply with the TCEQ's requirements for deflection analysis and can therefore be approved.

$\Delta Y/D(\%)$ = 0.66 %

15 Report the final pipe diameters, types of pipe material proposed for each diameter, type of pipe material, pipe stiffness for each pipe material (P_s), zeta factors assumed or calculated for each pipe diameter, modulus of the pipe bedding material (E_b) as well as the % deflection predicted for each pipe size and type of pipe material.

Type of Pipe Material		PVC SDR 21	
P_s (psi)	**[from #10 above]**	260	psi
Zeta Factor Assumed or Calculated	**[from # 8 above]**	1.0	
E_b (psi)	**[from # 5a above]**	750	psi
% Deflection	**[from #14 above]**	0.66	%

16 Do all pipes proposed for this project have a maximum predicted deflection of 5.0%?

YES

Lift Station / Force Main System Application

Texas Commission on Environmental Quality

for Regulated Activities On the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(c)(3)(B)and(c), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Regulated Entity Name: Moore Estates Subd Improvements

Customer Information

(If different than customer information provided on core data form)

1. The person(s) responsible for providing the engineering certification to the TCEQ pursuant to 30 TAC §213.5(f)(2)(C) during construction and 30 TAC §213.5 (c)(3)(D) upon completion of construction is:

   Contact Person: Michael Tirres
   Entity: Tirres Group, LLC
   Mailing Address: 3507 Native Dancer Cove
   City, State: Austin, Texas Zip: 78746-1434
   Telephone: 512-422-2880 Fax: N/A
   Email Address: michael@tirreshomes.com

2. The engineer responsible for the design of this lift station and force main:

   Contact Person: Robert Thompson
   Entity: Thompson Land Engineering, LLC
   Mailing Address: 904 N Cuernavaca Drive
   City, State: Austin, Texas Zip: 78733
   Telephone: 512-328-0002 Fax: 512-328-1112
   Email Address: ric@tleng.net
   Texas Licensed Professional Engineer's Serial Number: F-10220

Project Information

3. This project is for the construction or replacement of:

   ☐ Lift Station only.

Note: Force main only for this Subdivision. A Lift station will be provided (with either a new or a modified WPAP), when a home is proposed for construction.

☒ Lift Station and Force Main system.
☐ Lift Station, Force Main, and Gravity system.

4. The sewage collection system will convey the wastewater to the South Austin Regional (SAR) (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

5. All components of this lift station/force main system will comply with:

   ☒ The City of West Lake Hills standard specifications.
   ☐ Other. Specifications are attached.

Site Plan Requirements

Items 6-14 must be included on the Site Plan.

6. ☒ The Site Plan must have a minimum scale of 1" = 400'.

   Site Plan Scale: 1" = 40‘.

7. ☒ Lift station/force main system layout meets all requirements of 30 TAC Chapter 217.

8. Geologic or Manmade Features:

   ☐ No geologic or manmade features were identified in the Geologic Assessment.
   ☐ All geologic or manmade features identified in the Geologic Assessment (caves, solution openings, sinkholes, fractures, joints, porous zones, etc.) which exist at the site of the proposed lift station and along the path(s) or within **50 feet of each side** of a proposed force main line are shown on the Site Plan and are listed in the table below. Designs used to protect the integrity of the sewer line crossing each feature are described and labeled on the attached page. A detailed design drawing for each feature is shown on Plan Sheet _____ of _____.
   ☒ No Geologic Assessment is required for this project.

Table 1 - Geologic or Manmade Features

Line	*Station to Station*	*Type of Feature*
	to	
	to	
	to	
	to	
	to	
	to	
	to	
	to	

9. ☒ Existing topographic contours are shown and labeled. The contour interval is 1 feet. (Contour interval must not be greater than 5 feet).

10. ☒ Finished topographic contours are shown and labeled. The contour interval is 1 feet. (Contour interval must not be greater than 5 feet).

    ☒ Finished topographic contours will not differ from the existing topographic configuration and are not shown.

11. 100-year floodplain boundaries

    ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

    ☒ No part of the project site is located within the 100-year floodplain.

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM Map Number 48453C0445K, effective date: Jan. 22, 2020

12. 5-year floodplain:

    ☒ After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above sewer lines.)

    ☐ After construction is complete, all sections of the force main located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 2 - 5-Year Floodplain

Line	*Sheet*	*Station to Station*
	of	to
	of	to
	of	to
	of	to

13. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

    If applicable, this must agree with Item No. 15 on the Geologic Assessment Form.

    ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

    ☐ The wells are not in use and have been properly plugged.
    ☐ The wells are not in use and will be properly plugged.
    ☐ The wells are in use and comply with 16 TAC Chapter 76.

    ☒ There are no wells or test holes of any kind known to exist on the project site.

14. ☒ Legal boundaries of the site are shown.

Plan and Profile Sheets

*The construction drawings and technical specifications will not be considered for review unless they are the **final plans and technical specifications** which will be used by the contractor for bidding and construction.*

Items 15 – 18 must be included on the Plan and Profile sheets.

15. ☐ The equipment installation construction plans must have a minimum scale of 1" = 10'.

    Plan sheet scale: 1" = 20 '.

16. ☒ Locations, descriptions and elevations of all required equipment and piping for the lift station and force main are shown and labeled.

17. ☐ Air Release/Vacuum Valves will be provided at all peaks in elevation of the proposed force main. These locations are listed in the table below and labeled on the appropriate plan and profile sheets.

Table 3 - Air Release / Vacuum Valves

Line	*Station*	*Sheet*
		of
		of
		of
		of
		of
		of

18. ☒ The **final plans and technical specifications** are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

19. ☒ **Attachment A - Engineering Design Report**. An engineering design report with the following required items is attached:

    - ☒ The report is dated, signed, and sealed by a Texas Licensed Professional Engineer.
    - ☒ Calculations for sizing system.
    - ☐ Pump head calculations, including, but not limited to, system head and pump capacity curves, head loss calculations, and minimum and maximum static head C values for normal and peak operational conditions.
    - ☐ 100-year and 25-year flood considerations.
    - ☐ Total lift station pumping capacity with the largest pump out of service.
    - ☐ Type of pumps, including standby units.
    - ☐ Type of pump controllers, including standby air supply for bubbler controllers, as applicable.

☐ Pump cycle time.
☐ Type of wet well ventilation; include number of air changes for mechanical ventilation.
☒ Minimum and maximum flow velocities for the force main.
☐ Lift station security.
☐ Lift station emergency provisions and reliability.

Administrative Information

20. ☐ Upon completion of the wet well excavation, a geologist must certify that the excavation was inspected for the presence of sensitive features and submit the signed, sealed, and dated certification to the appropriate regional office.

21. ☒ The TCEQ Lift Stations and Force Mains General Construction Notes (TCEQ-0591) are included on the General Notes Sheet of the Final Construction Plans for this lift station and/or force main system.

22. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

23. ☒ Any modification of this lift station/force main system application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Lift Station/Force Main System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c)(3)(C) and 30 TAC Chapter 217, and prepared by:

Print Name of Licensed Professional Engineer: Robert Thompson

Place engineer's seal here:

Thompson Land Engineering, LLC (F-10220)

Date: July 18, 2025

Signature of Licensed Professional Engineer:

Robert C Thompson 08/07/25

THOMPSON LAND ENGINEERING, LLC

Land Planning, Site Design, Subdivision Engineering

FORCE MAIN ENGINEERING DESIGN REPORT

for:

Moore Estates Subd Improvements

To be located at:

803 Westlake Drive
West Lake Hills, Texas 78746

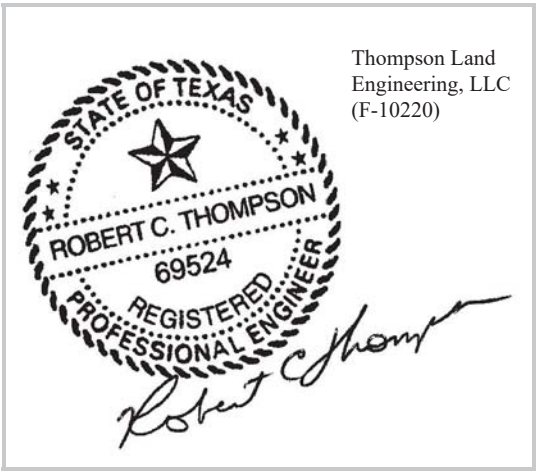
Prepared By:

Thompson Land Engineering, LLC

Robert C. Thompson, P.E.
904 N. Cuernavaca
Austin, Texas 78733
512-328-0002
512-328-1112 (fax)

Preparation Date

July 18, 2025



Thompson Land Engineering, LLC (F-10220)

August 5, 2025

Force Main Engineering Design Report

Calculations (for sizing the force main)
The force main was sized using the City of Austin's Utility Criteria Manual (section 2.9.4) with the minimum size being two (2) inches. Additionally, the size was set to match the existing line to which this connects.

Minimum and Maximum flow velocities (for the force main)
The force main is intended to operate with a minimum pump rate of 20-gpm that would yield a velocity of 2.0-fps. The likelihood of multiple homes pumping at the same time is remote but should half the homes (3 total) all pump at the same time, that total rate would be 60-gpm, yielding a velocity of 6.1-fps. Therefore, reaching the flushing velocity of 5-fps is expected to be difficult, but the situation exists in the line to which this force main will connect (and is also the result of Austin's policy not allowing smaller force mains). Should a velocity of 6.1-fps be experienced, the pipe is understood to be able to withstand the surge pressures as shown in the calculations.

Detention Time
The force main detention time calculations are included in this report, which are performed using a range of flow rates (that represent the flow expected to be delivered to a force main by an upstream pump station during any 24-hour period).

Water Hammer
The water hammer surge pressure was computed to be 31-psi and the pipe is rated for a maximum pressure of 200-psi, therefore, we are computing a factor of safety of over 6. See the following pages for the force main calculations.

Connection to Gravity Main
This project is not proposing for any force main terminations at a collection system manhole or at a manhole or preliminary treatment unit at a wastewater treatment facility, rather, this force main will terminate at an existing force main (and will be an extension of that force main). The existing collection system that would be receiving wastewater from this force main is understood (from the City of West Lake Hill's preliminary approval) to be designed to accept the maximum pump discharge from the force main without surcharging.

Pipe Separation
A separation distance between a force main and any water supply pipe meets the minimum separation requirements established in TAC §217.53(d), relating to Pipe Design.

Odor Control
The force main being proposed is closed and pressure rated with check valves at the ends; therefore, no odor is known to escape this system. When grinder pumps are added (that will be permitted with either a modified or a new SCS application), further control will be addressed at that time.

Air Release Valves in Force Mains
At the single high point along the vertical force main alignment, a combination of air release and air vacuum valves is included. The air release valve will have an isolation valve (between the air release valve and the force main). Additionally, the air release valve will be inside of a vault (that is at least 48 inches in diameter and has a vented access opening of at least 30 inches in diameter). The air release valve will be made of corrosion-resistant material.

Valves
This force main will have valves that are spaced at no more than 2,000-foot intervals (to facilitate initial testing and subsequent maintenance and repairs).

Fatigue Life
The calculations that show the strength of the force main pipe at the end of the 50-year design life are included in this report.

Alignment Changes
No pipe bending is proposed; only 1-degree joint deflections (or the use of manufactured bends) are proposed to adjust the vertical and horizontal alignment.

Maintenance, Inspection, and Rehabilitation of the Collection System
The owner of a collection system is to develop a maintenance and inspection program for its collection system with the assistance of an engineer and licensed operators. The owner is responsible for ensuring that the maintenance and inspection program includes all the information pertaining to inspection, maintenance, and rehabilitation of the collection system necessary to ensure efficient, safe, and environmentally compliant operation. The owner is also responsible for ensuring that all records pertaining to maintenance, inspection, and rehabilitation activities are maintained by the licensed collection system operators.

The inspection program, at a minimum, will include:
(1) a schedule for inspections, cleaning, and maintenance;
(2) methods for inspecting, cleaning, and maintaining each unit within the collection system;
(3) methods for estimating the current condition and life expectancy of each unit; and
(4) a requirement to estimate the structural integrity of each collection system unit.

The plans and specifications for a rehabilitation project must include, at a minimum:
(1) a surface preparation plan that includes:
    (A) a cleaning plan to remove all contaminants;
    (B) references for the cleaning method;
    (C) dewatering or bypassing provisions; and
    (D) field preparation and application logs;
(2) a plan for managing volatile chemicals and dust in confined spaces;
(3) a requirement to follow the manufacturer's installation procedures and specifications;
(4) a requirement to re-inspect the rehabilitation project, including the underlayment and coating, between six months and 11 months after installation; and
(5) a requirement to re-inspect the rehabilitation project, including the underlayment and coating, 18 months after installation.

The owner must maintain records of all activities related to collection system inspection, maintenance, cleaning, and rehabilitation. The records must be made available to the executive director upon request according to the requirements of §217.18 of this title (relating to provisions that apply to all sections in this chapter).

Force Main Calculations
(Based on UCM 2.9.4)

GIVENS:

- General Data

1	ac, Drainage Area (DA) to Lift Station (for infiltration)	***(Assumed; cut off by road & groundwater going under)***
SF	Use (SF, MF, Off/Ware, Retail)	
	if Off/Ware or Retail	
N/A	Floor Area (sf)	
	if SF or MF	
1	Units	***(Checking least flow version (one house))***

- Elevation Data

703.00	Pump Discharge Flowline	***(approximate for house on Lot 1)***
693.08	Forcemain Discharge Flowline (Ed)	***(see plans)***
709.76	High Point (on public)	***(see plans)***
691.59	Low Point (on public)	***(see plans)***

- Pipe Data

	Type "A": PVC, ASTM D2241, SDR-PR, SDR 21(200)
2	in, Size "A" (Force Main diameter)
400,000	psi, E (Young's Modulus)
0.09	in, "A" Pipe Wall Thickness (t)
1,022	ft, Length "A" ***(382 public and 640 private)***

- Pump Data

20	gpm, Pump Rate	***(Pump Rate to get 2 fps)***
0.045	cfs, Pump Rate	
65	gal, Pump on Volume (Von)	
49	gal, Pump off Volume (Voff)	

COMPUTATIONS

1) Peaking Factors

PF(max) = [18 + (pop/1,000)^0.5] / [4 + (pop/1,000)^0.5]
and
PF(min) = 0.2 * (pop/1,000)^0.198

where:

pop = 3.50

therefore:

PF(max) = 4.45
PF(min) = 0.07

2) Flow Rates

a) Avg Dry Weather Flow (Qd)

where:

SF = Use
1 = Units or Floor Area (as applicable)

therefore:

Qd = 350 gpd

b) Equivalent Population (pop)

pop = Qd / (100 gal/cap/day)

therefore:

pop =	3.5	

c) Infiltration (Qi)

Qi = 1,500 gpd/ac * DA

where:

DA =	1	ac

therefore:

Qi =	1,500	gpd

d) Max Wet Weather Flow (Qw(max))

Qw(max) = pop * 100 ppcd * PF(max) + Qi

where:

pop =	3.50	
PF(max) =	4.45	
Qi =	1,500	gpd

therefore:

Qw(max)	3,057	gpd
or	2.1	gpm

e) Max Dry Weather Flow (Qd(max))

Qd(max) = pop * 100 ppcd * PF(max)

where:

pop =	3.50	
PF(max) =	4.45	

therefore:

Qd(max)	1,557	gpd

f) Min Dry Weather Flow (Qd(min))

Qd(min) = pop * 100 ppcd * PF(min)

where:

pop =	3.50	
PF(max) =	0.07	

therefore:

Qd(min)	23	gpd

3) Force Main Velocities

V = P / (3.1415 * d^2 / 4)

where:

P =	0.045	cfs
d =	2	in (Line A)

therefore:

V =	2.0	fps (Line A)

4) Water Hammer

a) pressure wave velocity (a)

$a = 12 / [(1.9379 * (1/300{,}000 + d/(E * t))]$

where:

d =	2	in (Line A)
E =	400,000	psi
t =	0.09	in (Line A)

therefore:

1123 fps (Line A)

b) Surge Pressure (Ps)

$Ps = a * V / 74.382$

therefore:

30.8 psi (Line A)

5) Total Head

a) Elevation Head (He)

$He = Ed - Es$

where:

Ed =	693.08	(Forcemain Discharge Elevation)
Ed =	709.76	Highest FM elevation
Es =	703.00	Lowest Pump Discharge Elev (Estimated)

therefore:

He = 6.76 ft

b) Friction Loss (f)

$f = (V^{1.85} * L) / [(1.318*150)^{1.85} * (d/4/12)^{1.17}]$

where:

V =	2.0	fps (Line A)
L =	1022	ft (Line A)
d =	2	in (Line A)

therefore:

f = 8.92 ft (Line A)

c) Total Head (H)

Note: ignoring minor losses in fittings, entrance, exit

$H = He + F(a)$

therefore:
15.68 ft
or:
6.80 psi

d) Velocity Head (Hv)

$Hv = V^2 / (2 * 32.2)$

Hv = 0.06 ft (Line A)

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

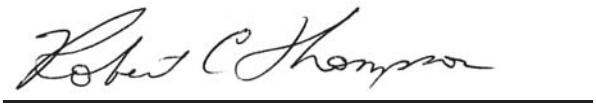
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Robert C. Thompson

Date: July 10, 2025

Signature of Customer/Agent:



Regulated Entity Name: Moore Estates Subd Improvements

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Little Bee Creek

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☒ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

ATTACHMENT A – SPILL RESPONSE ACTIONS

The spill response actions will be in accordance with the current TCEQ RG348:

1.4.16 Spill Prevention and Control

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when the spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.

(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

(3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

(4) Establish a continuing education program to indoctrinate new employees.

(5) Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

(1) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

(2) Store hazardous materials and waste in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runoff during rainfall to the extent that it does not compromise cleanup activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or water courses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

(1) Clean up leaks and spills immediately.

(2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then

the used cleanup materials are also hazardous and must be disposed of as hazardous waste.

(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of it properly. See the waste management BMPs in this Section for specific information.

Minor Spills

(1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

(2) Use absorbent materials on small spills rather than hosing down or burying the spill.

(3) Absorbent materials should be promptly removed and disposed of properly.

(4) Follow the practice below for a minor spill:

(5) Contain the spread of the spill.

(6) Recover spilled materials.

(7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

(1) Contain spread of the spill.

(2) Notify the project foreman immediately.

(3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.

(4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
(5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills
For significant or hazardous spills that are in reportable quantities:

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

(2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.

(3) Notification should first be made by telephone and followed up with a written report.

(4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staff have arrived at the job site.

(5) Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc. More information on spill rules and appropriate responses is available on the TCEQ website at:

http://www.tnrcc.state.tx.us/enforcement/emergency_response.html

ATTACHMENT B – POTENTIAL SOURCES OF CONTAMINATION

The only "pollutants" expected from the work during construction are sediment. Mostly inert materials (i.e. pipe, wood, drywall, concrete, etc.) will be stored or installed on the site. No off-site fill material is expected to be brought onto the site (other than crushed limestone base, asphalt and concrete). No significant chemicals are planned to be stored or distributed on the site. A portable toilet might be on the site during construction, but no spill is expected from maintaining this toilet. Re-fueling of vehicles is the only other perceived threat, but short of an accidental spill, no threat should be posed. The other possible "pollutants" expected after the construction is complete are pesticides, fertilizers, automotive fluids, and air conditioning condensate.

ATTACHMENT C – SEQUENCE OF MAJOR ACTIVITIES

-	Install erosion controls:	less than 0.05-acres
	Control measure: Silt Fence	approximately 1-week
-	Clear, grub, and rough grade site (for the paving):	approximately 0.8-acres
	Control measure: Silt Fence	approximately 2-weeks
-	Install water & WW utilities:	less than 1.0-acres
	Control measure: Silt Fence & Tri. Filter Dykes	approximately 6-weeks
-	Construct Driveway:	less than 0.8-acres
	Control measure: Silt Fence & Tri. Filter Dykes	approximately 3-weeks
-	Install water quality facilities (VFS):	approximately 0.25-acres
	Control measure: Silt Fence	approximately 1-weeks

ATTACHMENT D – TEMPORARY BEST MANAGEMENT PRACTICES (TBMPs)

Silt fence (SF) and triangular filter dikes (TFDs) will be strategically placed to capture the offsite and onsite flows and to prevent any sediment and possible pollutants from leaving the site. No runoff should be able to leave the site

without first being filtered by these temporary controls. Additionally, a stabilized construction entrance (SCE) will be used to prevent the dirt on the wheels of vehicles that leave the site. Inside the property, a concrete washout control is proposed (with SF surrounding it), as shown on the plans, which will be adjacent to the proposed construction staging area.

Any pollutants are expected to be either soil or attached to soil (unless it is trash which will float) and with the silt fence described, that soil (or any floating trash) is expected to be caught and held until removal. Notes are included on the plans (on **sheet 3**), in relation to the Storm Water Pollution Prevention Plan (SW3P) that specify the minimum maintenance required for silt fence, including cleaning of soil and debris. Run-off will still be released after either filtering through the silt fence or infiltrating through the soil.

ATTACHMENT E – REQUEST TO TEMPORARILY SEAL A FEATURE

This is not applicable for this project.

ATTACHMENT F – STRUCTURAL PRACTICES

The SF and TFDs will be located throughout the site to limit runoff discharge of pollutants from exposed areas of the site. (See the discussion under Temporary BMPs and Measures above.)

ATTACHMENT G – DRAINAGE AREA MAP

See sheet 12 (of 16 from the Construction Plan set = *Attachment F* of the *Permanent Stormwater Section*) for the drainage areas and flow patterns.

ATTACHMENT H – TEMPORARY SEDIMENT POND(S) PLAN & CALCS

This is not applicable for this project.

ATTACHMENT I – INSPECTION AND MAINTENANCE FOR BMPs

See the Storm Water Pollution Prevention (SW3P) notes **on sheet 3** and the details (for the stabilized construction entrance, silt fence, etc.) on **sheet 5** in the construction plan set for the inspection plan of each of these temporary BMPs

and measures. Additionally, see the following pages for the attached copies of the maintenance schedule (to be kept onsite during construction), as well as the information taken directly from the TCEQ's Technical Guidance, in addition to the approved construction plan sheets for the storm water pollution prevention plan (SWPPP) notes on the General Notes sheet and the Erosion and Sedimentation Controls (ESC) details (stabilized construction entrance, silt fence and concrete washout area) for the inspection plan of each of these temporary BMPs and measures.

ATTACHMENT J – SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

If portions of the site will have a temporary or permanent cease in construction activity lasting longer than 14 days, soil stabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity resumes prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.

The work at this site is relatively small, will happen quickly, and will occur in one phase. The time from the beginning of grading to stabilization is not expected to be more than 9-months; therefore, there is no particular schedule, other than to complete construction as quickly as possible and then to re-vegetate the site as quickly as possible, in accordance with the re-vegetation notes on the construction plans, which are copied below (and on the following page):

PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:

A. UNLESS DIRECTED OTHERWISE BY THE OWNER, A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND 1-INCH OF TOPSOIL IN OTHER AREAS.

B. THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS:

BROADCAST SEEDING:

1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH A COMBINATION OF 2 POUNDS PER 1000-SF OF UNHULLED BERMUDA AND 7 POUNDS PER 1000 SF OF WINTER RYE WITH A PURITY OF 95% WITH 90% GERMINATION.

2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERMUDA AT A RATE OF 2 POUNDS PER 1000 SF WITH A PURITY OF 95% WITH 85% GERMINATION.

3. OTHER REQUIREMENTS:
   A. FERTILIZER SHALL BE A PELLETED OR GRANULAR SLOW RELEASE WITH AN ANALYSIS OF 15-15-15 TO BE APPLIED ONCE AT PLANTING AND ONCE DURING THE PERIOD OF ESTABLISHMENT AT A RATE OF 1 POUND PER 1000-SF.
   B. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 45 POUNDS PER 1000-SF.

HYDRAULIC SEEDING:

1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH A COMBINATION OF 1 POUND PER 1000-SF OF UNHULLED BERMUDA AND 7 POUNDS PER 1000-SF OF WINTER RYE WITH A PURITY OF 95% WITH 90% GERMINATION.

2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERMUDA AT A RATE OF 1 POUND PER 1000 SF WITH A PURITY OF 95% WITH 85% GERMINATION.

3. OTHER REQUIREMENTS:
   A. FERTILIZER SHALL BE A WATER-SOLUBLE FERTILIZER WITH AN ANALYSIS OF 15-15-15 AT A RATE OF 1.5 POUNDS PER 1000 SF.
   B. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 45 POUNDS PER 1000 SF, WITH SOIL TACKIFIER AT A RATE OF 1.4 POUNDS PER 1000 SF.
   C. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF « INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK.
   D. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1« INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST.

Inspection & Maintenance (Attachment I continuation)

Project Name: Moore Estates Subd Improvements

SWPPP Contact: _____

BEST MANAGEMENT PRACTICE
INSPECTION AND MAINTENANCE REPORT FORM

SILT FENCE

Name of Inspector: _____ Inspection Date: _____
Days Since Last Rainfall: _____ Amount of Last Rainfall: _____inches

Where is the Silt Fence Located?	Is the Bottom of the Fabric Still Buried?	Is the Fabric Torn or Sagging?	Are the Posts Tipping Over?	How Deep is the Sediment?

MAINTENANCE REQUIRED FOR SILT FENCE: _____

_____

_____

_____

_____

_____

_____

TO BE PERFORMED BY: _____ **ON OR BEFORE:** _____

Project Name: Moore Estates Subd Improvements

SWPPP Contact: _____

BEST MANAGEMENT PRACTICE
INSPECTION AND MAINTENANCE REPORT FORM

STABILIZED CONSTRUCTION ENTRANCE

Name of Inspector: _____ Inspection Date: _____
Days Since Last Rainfall: _____ Amount of Last Rainfall: ____inches

Location	Is Sediment Being Tracked onto Road?	Is the Entry Surface Clean or Sediment Filled?	Does All Traffic Use the Entrance?

MAINTENANCE REQUIRED FOR STABILIZED CONSTRUCTION ENTRANCES: _____

_____

_____

_____

_____

_____

_____

_____

_____

TO BE PERFORMED BY: _____ **ON OR BEFORE:** _____

Project Name: Moore Estates Subd Improvements

SWPPP Contact: _____

BEST MANAGEMENT PRACTICE
INSPECTION AND MAINTENANCE REPORT FORM
(Completed weekly or as soon as possible after a significant storm event)

Name of Inspector: _____ Inspection Date: _____
Days Since Last Rainfall: _____
Amount of Last Rainfall: _____

STABILIZATION MEASURES					
Area or Drainage Areas*	**Date Since Last Disturbance**	**Date of Next Disturbance**	**Stabilized (Yes or No)**	**Control Measures Implemented**	**Current Conditions of Control Measures**

* See site map for drainage areas. Site may include borrow sources, haul roads, contractor's yard, stockpiles, etc.
** Areas that will be exposed more than 21 days must be stabilized within 14 days

STABILIZATION REQUIRED: _____

_____

_____

_____

TO BE PERFORMED BY: _____ **ON OR BEFORE:** _____

Control Measure Codes		**Condition Codes**
1. Temporary Seeding	14. Rock Bed at Construction Exit	U – Upgrade Needed
2. Permanent Plant, Sod, or Seed	15. Timber Mat at Construction Entrance	R – Replacement Needed
3. Mulch	16. Channel Liner	M – Maintenance Needed
4. Soil Retention Blanket	17. Sediment Trap	C – Cleaning Needed
5. Buffer Zone	18. Sediment Basin	I – Increase Measures
6. Preserve Natural Resources	19. Storm Inlet Sediment Trap	S – Stable (no action required)
7. Silt Fence	20. Stone Outlet Structure	
8. Hay Bales	21. Curb and Gutter	
9. Rock Berm	22. Storm Sewers	
10. Diversion Dike	23. Velocity Control Devices	
11. Diversion Swale	24. Excess Dirt Removed From Road	
12. Pipe Slope Drain	25. Haul Roads Dampened for Dust	
13. Paved Flume	26. Cleanup of Possible Contaminants	

Project Name: Moore Estates Subd Improvements

SWPPP Contact: _____

BEST MANAGEMENT PRACTICE
INSPECTION AND MAINTENANCE REPORT FORM

CONSTRUCTION ACTIVITIES LOG

Name of Inspector	Date	Major Grading Activities	Temporary Suspension of Construction Activities	Permanent Suspension of Construction Activities	Initiation of Stabilization Measures	Comments

Date	Additional Changes

Corrective Action Log

Project Name: Moore Estates Subd Improvements

SWPPP Contact: _____

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

1.4.2 Temporary Construction Entrance/Exit

The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice should be used at all points of construction ingress and egress. Schematic diagrams of a construction entrance/exit are shown in Figure 1-24 and Figure 1-25.

Excessive amounts of mud can also present a safety hazard to roadway users. To minimize the amount of sediment loss to nearby roads, access to the construction site should be limited to as few points as possible and vegetation around the perimeter should be protected were access is not necessary. A rock stabilized construction entrance should be used at all designated access points.

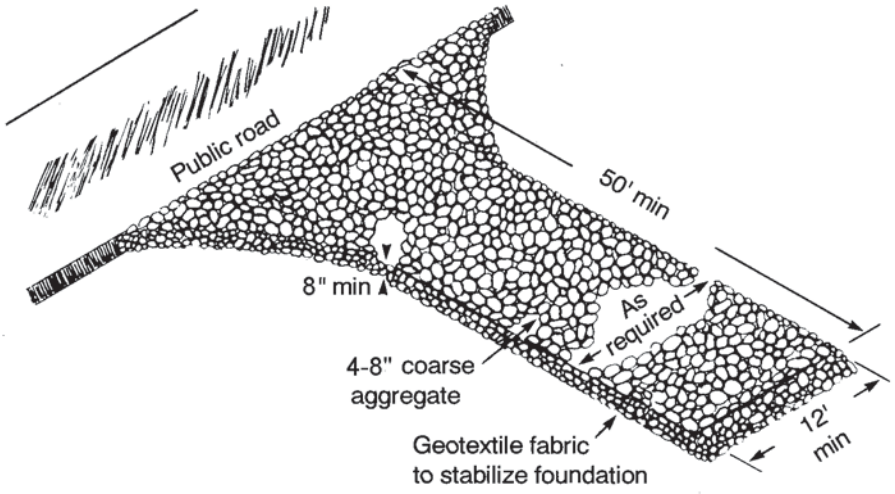


Figure 1-24 Schematic of Temporary Construction Entrance/Exit (after NC, 1993)

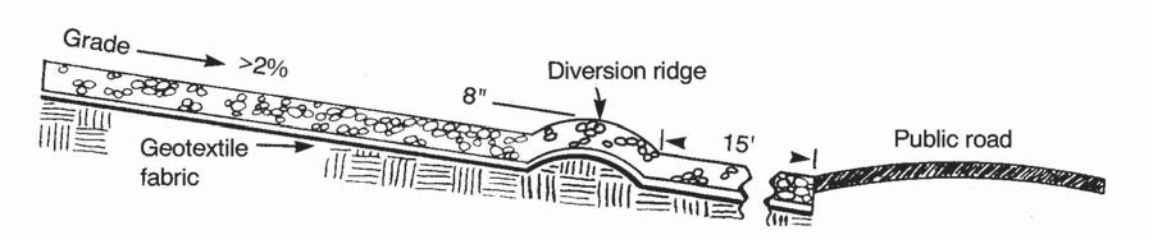


Figure 1-25 Cross-section of a Construction Entrance/Exit (NC, 1993)

Materials:

(1) The aggregate should consist of 4 to 8 inch washed stone over a stable foundation as specified in the plan.

(2) The aggregate should be placed with a minimum thickness of 8 inches.

(3) The geotextile fabric should be designed specifically for use as a soil filtration media with an approximate weight of 6 oz/yd^2, a mullen burst rating of 140 lb/in^2, and an equivalent opening size greater than a number 50 sieve.

(4) If a washing facility is required, a level area with a minimum of 4 inch diameter washed stone or commercial rack should be included in the plans. Divert wastewater to a sediment trap or basin.

Installation: (North Carolina, 1993)

(1) Avoid curves on public roads and steep slopes. Remove vegetation and other objectionable material from the foundation area. Grade crown foundation for positive drainage.

(2) The minimum width of the entrance/exit should be 12 feet or the full width of exit roadway, whichever is greater.

(3) The construction entrance should be at least 50 feet long.

(4) If the slope toward the road exceeds 2%, construct a ridge, 6 to 8 inches high with 3:1 (H:V) side slopes, across the foundation approximately 15 feet from the entrance to divert runoff away from the public road.

(5) Place geotextile fabric and grade foundation to improve stability, especially where wet conditions are anticipated.

(6) Place stone to dimensions and grade shown on plans. Leave surface smooth and slope for drainage.

(7) Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

(8) Install pipe under pad as needed to maintain proper public road drainage.

Common trouble points

(1) Inadequate runoff control – sediment washes onto public road.

(2) Stone too small or geotextile fabric absent, results in muddy condition as stone is pressed into soil.

(3) Pad too short for heavy construction traffic – extend pad beyond the minimum 50 foot length as necessary.

(4) Pad not flared sufficiently at road surface, results in mud being tracked on to road and possible damage to road edge.

(5) Unstable foundation – use geotextile fabric under pad and/or improve foundation drainage.

Inspection and Maintenance Guidelines:

(1) The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.

(2) All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.

(3) When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.

(4) When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.

(5) All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

1.4.3 Silt Fence

A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. If not properly installed, silt fences are not likely to be effective. A schematic illustration of a silt fence is shown in Figure 1-26.

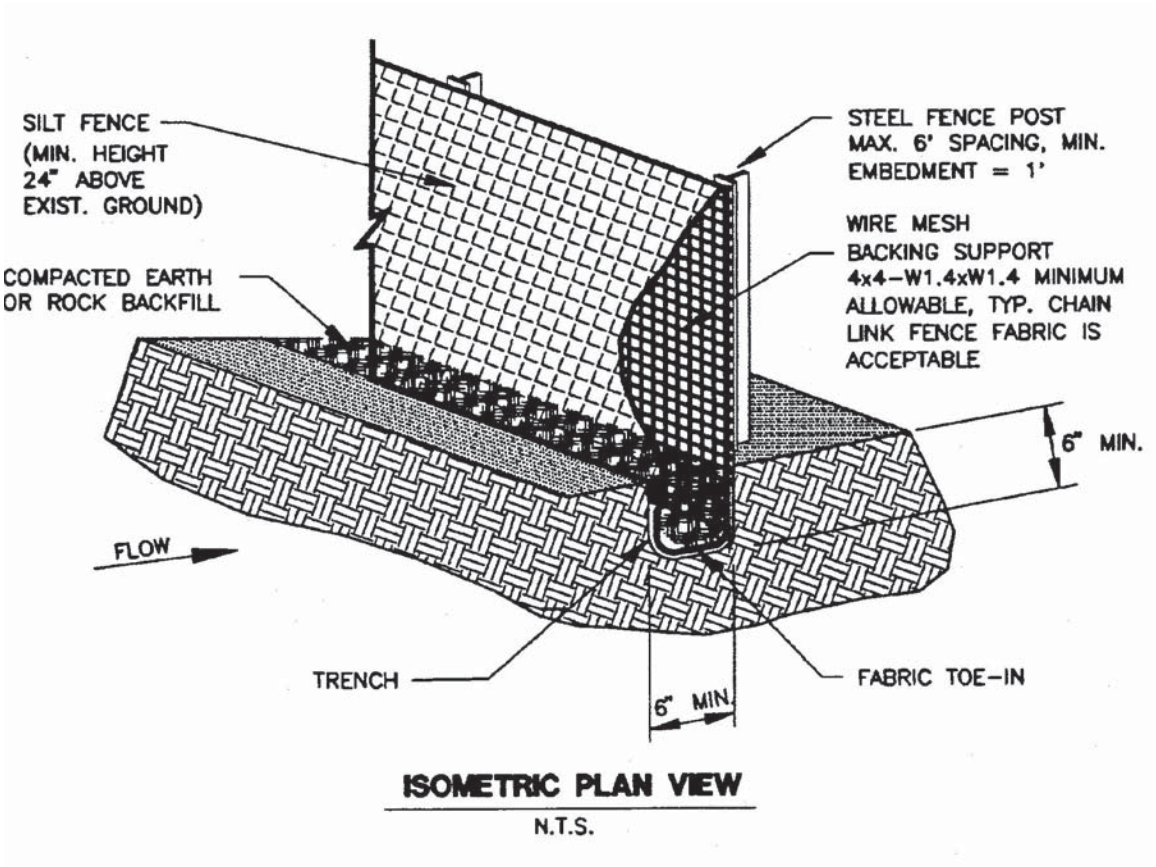


Figure 1-26 Schematic of a Silt Fence Installation (NCTCOG, 1993b)

The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow.

Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

Materials:

(1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in^2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.

(2) Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Y-bar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft^2, and Brindell hardness exceeding 140.

(3) Woven wire backing to support the fabric should be galvanized 2" x 4" welded wire, 12 gauge minimum.

Installation:

(1) Steel posts, which support the silt fence, should be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of l-foot deep and spaced not more than 8 feet on center. Where water concentrates, the maximum spacing should be 6 feet.

(2) Lay out fencing down-slope of disturbed area, following the contour as closely as possible. The fence should be sited so that the maximum drainage area is ¼ acre/100 feet of fence.

(3) The toe of the silt fence should be trenched in with a spade or mechanical trencher, so that the down-slope face of the trench is flat and perpendicular to the line of flow. Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.

(4) The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.

(5) Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post. There should be a 3-foot overlap, securely fastened where ends of fabric meet.

(6) Silt fence should be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

Common Trouble Points:

(1) Fence not installed along the contour causing water to concentrate and flow over the fence.

(2) Fabric not seated securely to ground (runoff passing under fence)

(3) Fence not installed perpendicular to flow line (runoff escaping around sides)

(4) Fence treating too large an area, or excessive channel flow (runoff overtops or collapses fence)

Inspection and Maintenance Guidelines:

(1) Inspect all fencing weekly, and after any rainfall.

(2) Remove sediment when buildup reaches 6 inches.

(3) Replace any torn fabric or install a second line of fencing parallel to the torn section.

(4) Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.

(5) When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

1.4.4 Triangular Sediment Filter Dikes

The purpose of a triangular sediment filter dike (Figure 1-27) is to intercept and detain water-borne sediment from unprotected areas of limited extent. The triangular sediment filter dike is used where there is no concentration of water in a channel or other drainage way above the barrier and the contributing drainage area is less than one acre. If the uphill slope above the dike exceeds 10%, the length of the slope above the dike should be less than 50 feet. If concentrated flow occurs after installation, corrective action should be taken such as placing rock berm in the areas of concentrated flow.

This measure is effective on paved areas where installation of silt fence is not possible or where vehicle access must be maintained. The advantage of these controls is the ease with which they can be moved to allow vehicle traffic, then reinstalled to maintain sediment control.

Materials:

(1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in^2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.

(2) The dike structure should be 6 gauge 6” x 6” wire mesh folded into triangular form being eighteen (18) inches on each side.

Installation:

(1) As shown in the diagram (Figure 1-27), the frame should be constructed of 6” x 6”, 6 gauge welded wire mesh, 18 inches per side, and wrapped with geotextile fabric the same composition as that used for silt fences.

(2) Filter fabric should lap over ends six (6) inches to cover dike to dike junction; each junction should be secured by shoat rings.

(3) Position dike parallel to the contours, with the end of each section closely abutting the adjacent sections.

(4) There are several options for fastening the filter dike to the ground as shown in Figure 1-27. The fabric skirt may be toed-in with 6 inches of compacted material, or 12 inches of the fabric skirt should extend uphill and be secured with a minimum of 3 inches of open graded rock, or with staples or nails. If these two options are not feasible the dike structure may be trenched in 4 inches.

(5) Triangular sediment filter dikes should be installed across exposed slopes during construction with ends of the dike tied into existing grades to prevent failure and should intercept no more than one acre of runoff.

(6) When moved to allow vehicular access, the dikes should be reinstalled as soon as possible, but always at the end of the workday.

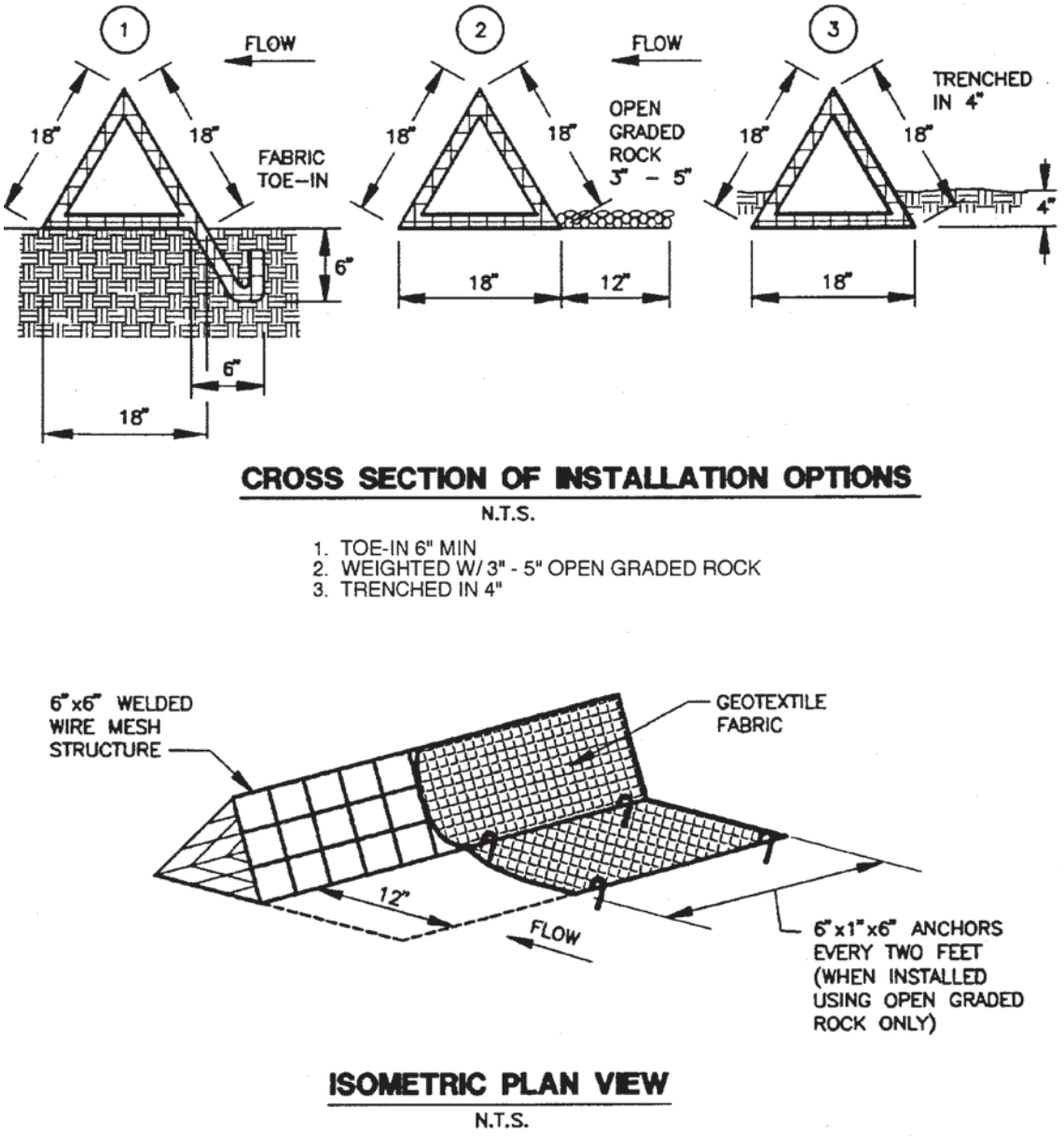


Figure 1-27 Schematic of a Triangular Filter Dike (NCTCOG, 1993)

Common Trouble Points:

(1) Fabric skirt missing, too short, or not securely anchored (flows passing under dike).

(2) Gap between adjacent dikes (runoff passing between dikes).

(3) Dike not placed parallel to contour (runoff flowing around dike).

Inspection and Maintenance Guidelines:

(1) Inspection should be made weekly or after each rainfall event and repair or replacement should be made promptly as needed by the contractor.

(2) Inspect and realign dikes as needed to prevent gaps between sections.

(3) Accumulated silt should be removed after each rainfall, and disposed of in a manner which will not cause additional siltation.

(4) After the site is completely stabilized, the dikes and any remaining silt should be removed. Silt should be disposed of in a manner that will not contribute to additional siltation.

1.4.18 Concrete Washout Areas

The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.

For onsite washout:

- Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.

Below grade concrete washout facilities are typical. These consist of a lined excavation sufficiently large to hold expected volume of washout material. Above grade facilities are used if excavation is not practical. Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this section, with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

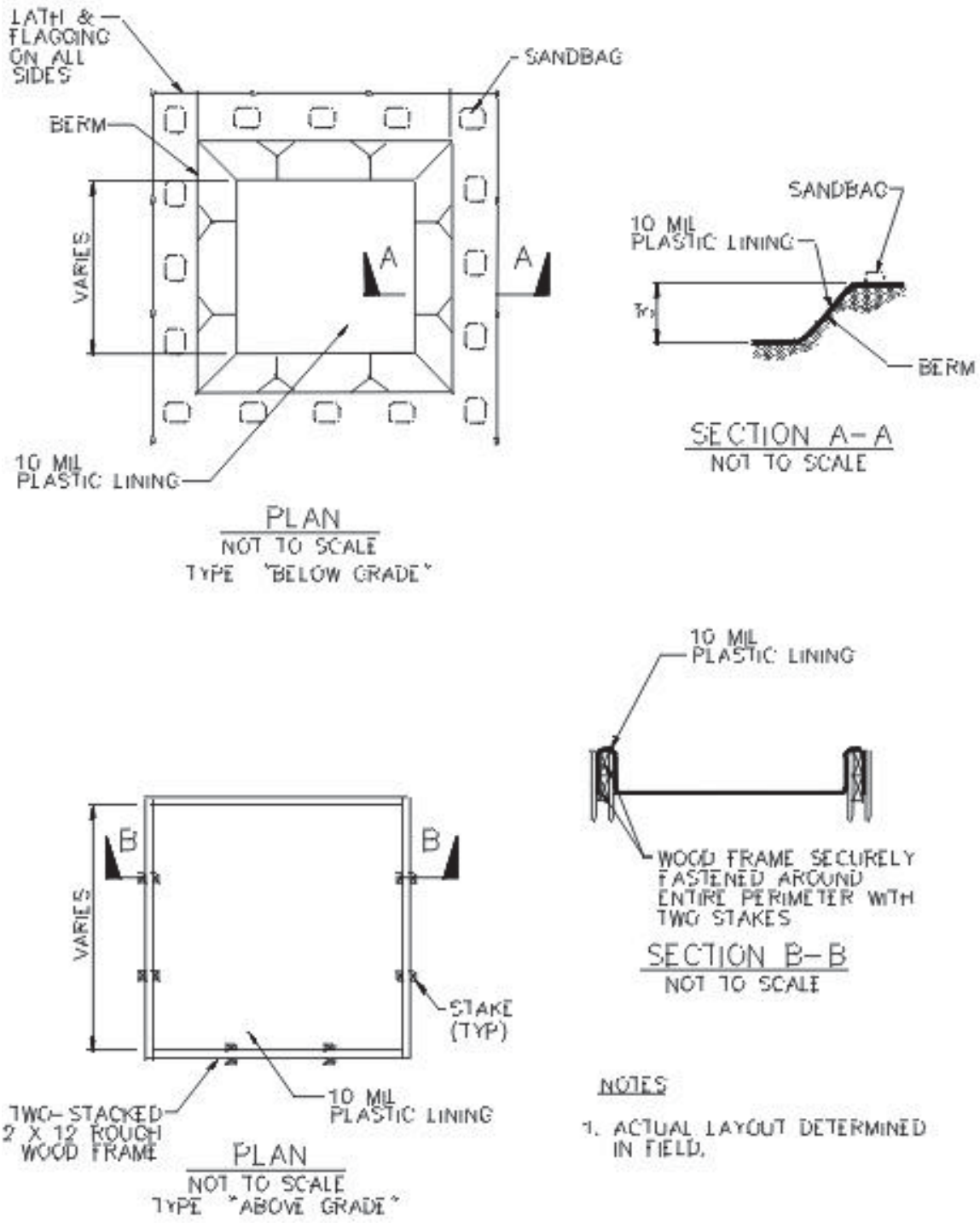


Figure 1-43 Schematics of Concrete Washout Areas

Permanent Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(C), (D)(Ii), (E), and (5), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Permanent Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Robert C. Thompson

Date: July 10, 2025

Signature of Customer/Agent

08/07/25

Regulated Entity Name: Moore Estates Subd Improvements

Permanent Best Management Practices (BMPs)

Permanent best management practices and measures that will be used during and after construction is completed.

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____

☐ N/A

3. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

   ☐ N/A

4. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☒ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☐ The site will not be used for low density single-family residential development.

5. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☒ The site will not be used for multi-family residential developments, schools, or small business sites.

6. ☒ **Attachment B - BMPs for Upgradient Stormwater**.

☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☒ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☒ Design calculations (TSS removal calculations)

☒ TCEQ construction notes

☒ All geologic features

☒ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    ☒ A discussion of record keeping procedures

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

13. ☒ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

Responsibility for maintenance of best management practices and measures after construction is complete.

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

ATTACHMENT A – 20% OR LESS IMPERVIOUS COVER

This is not applicable: this project will be low density single-family residential

ATTACHMENT B – BMPs FOR UPGRADIENT STORMWATER

This is not applicable: separate permanent BMPs (or measures) are not required for the upgradient surface water, groundwater or stormwater, since that area has existing pavement (from Westlake Drive) that will mostly flow across a vegetated area before it flows across the proposed pavement from this project. Additionally, any upgradient surface water (groundwater or stormwater) would also be treated by the proposed BMP (vegetative filter strips) that is proposed for this project; see attachment C below.

ATTACHMENT C – BMPs FOR ON-SITE STORMWATER

Vegetative filter strips (VFS) are proposed to prevent the pollution of surface water or groundwater that originates onsite. The VFS alongside the pavement will be engineered to have less than 20% ground slopes for at least fifteen (15) feet (in the direction of flow). The TCEQ TSS calculations are provided on the sheet 12 of the construction plan set (Joint Use Driveway Plan). From the VFS, water will continue to sheet flow towards the back of the lots and, ultimately, into a tributary of Little Bee Creek.

ATTACHMENT D – BMPs FOR SURFACE STREAMS

The BMP (a VFS, in this case) that is planned above for onsite storm water is the same one that will protect any downstream surface streams. All run-off that contacts the proposed impervious area will flow across the VFS. If there is any pollutant released on this property, it is most likely to be expected on top of the impervious area (or would end up on the impervious cover) and, therefore, will be treated by the VFS (before flowing downstream).

ATTACHMENT E – REQUEST TO SEAL A FEATURE

This is not applicable for this project

ATTACHMENT F – CONSTRUCTION PLANS

See attached construction plan set (that is a total of 16 sheets).

ATTACHMENT G – INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

See next page

ATTACHMENT H – PILOT-SCALE FIELD TESTING PLAN

This is not applicable for this project

ATTACHMENT I – MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

As a result of this construction and development, the storm water flows from this site are planned to be conveyed via sheet flow across a VFS and will continue sheet flow across the site; therefore, there would not be any known increases to stream flashing, the creation of stronger flows or in-stream velocities. Furthermore, no stream contamination or changes to the way water enters a stream is expected or known to be likely from the proposed regulated activities.

ATTACHMENT G

Inspection, Maintenance, Repair and Retrofit (IMRR) Plan

Purpose

This plan is for the "water quality" controls on this site and intended to help the site owner (and whoever is delegated) to maintain the water quality controls.

Construction Plans

This plan is for work constructed under the **Major Residential Permit (_____)** from the City of West Lake Hills. The information and details from those plans are included in this IMRR plan, however, anyone accepting responsibility for maintaining this system should obtain a copy of those plans and become familiar with the construction specifications on those plans.

Description of Controls

The water quality controls are **vegetative filter strips** (VFS), which are engineered grass areas that drain water using gravity. The purpose of these controls is to capture the initial run-off contacting the pavement and treat pollutants washed off from the impervious surfaces before releasing back into the natural ground. Vegetative filter strips are to receive sheet flow from contributing areas (unconcentrated).

General Description of Maintenance Required

The primary components of the water quality control are:

- the vegetated areas (grass).

The anticipated maintenance other than periodic cleaning of accumulated silt and debris in the grass areas will be mowing of the grass. The vegetative filter strips (grass field) should be maintained to allow vegetation to grow and should be kept level so that water distributes evenly.

Specific Maintenance Guidelines

The recommended maintenance guidelines are as follows. Records should be kept of the following and any other maintenance work and inspections, and those records should be kept on site for review by the TCEQ should they request to see them.

Inspections. The water quality control system should be inspected and tested at least six times a year to evaluate facility operation. One of these inspections should be during or immediately following wet weather. Any poor vegetation should be repaired immediately. Items which should be inspected include:

- distressed or dying grass,
- accumulation of silt and/or debris that might block flow,
- areas of water accumulation, and
- eroded areas or areas of uneven flow across the grass

Regular Maintenance.

- Sediment Removal. At a minimum, the sediment needs to be removed when buildup fills to 2 inches, or when it accumulates to such a point that it blocks the flow of water.
- Debris and Litter Removal. The areas should also be checked for accumulation of debris and trash. The debris and trash shall be removed. This should occur no less than 4 times a year. In addition, debris and litter should be removed after each significant rainfall event.
- Mowing and Field Leveling. Regular mowing should occur as often as necessary. If areas have become eroded in the grassy areas, they should be replenished and leveled. Fertilizers should be used at a minimum.

Additional Maintenance:

Once a vegetated area is well established, little additional maintenance is generally necessary. The key to establishing a viable vegetated feature is the care and maintenance it receives in the first few months after it is planted. Once established, some basic maintenance is required to ensure the health of the treatment, including:

- ***Grassy Areas***. Vegetation must be maintained in the designated grassy areas to prevent erosion and provide additional water quality treatment.
- ***Mowing***. The vegetative filter strips must be mowed regularly to discourage wood growth and control weeds. Grass areas in and around basins must be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing is performed, a mulching mower should be used, or grass clippings should be caught and removed.
- ***Debris and Litter Removal***. Debris and litter will accumulate and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the system outfall.
- ***Erosion Control***. The side slopes and embankment may periodically suffer from slumping and erosion, although this should not occur often if the soils are properly compacted during construction. Regrading and revegetation may be required to correct the problems.
- ***Nuisance Control***. Standing water or soggy conditions in the basins can create nuisance conditions for nearby residents. Odors, mosquitoes, weeds, and litter are all occasionally perceived to be problems. Most of these problems are generally a sign that regular inspections and maintenance are not being performed (e.g., mowing and debris removal).

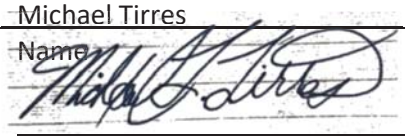
Replacement Parts

- Grass. Standard sods may be obtained at a hardware store (such as Home Depot or Lowes).

The Tirres Group, LLC (DBA Tirres Homes)

Responsible Party: Michael Tirres

Name



Signature

July 30, 2025

Date

Mailing Address: 3507 Native Dancer Cove

City, State: Austin, Texas 78746-1434

Telephone: (512) 422-2880

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Michael Tirres,
Print Name

Owner,
Title - Owner/President/Other

of The Tirres Group, LLC (DBA Tirres Homes),
Corporation/Partnership/Entity Name

have authorized Robert (Ric) Thompson, P.E.
Print Name of Agent/Engineer

of Thompson Land Engineering, LLC
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

8/4/2025
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Michael Tims known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 4 day of August 2025

NOTARY PUBLIC

CODY LANE GRIFFIN
Notary Public, State Of Texas
Expires July 17, 2028
Notary ID# 132583649

Cody Lane Griffin
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 07-17-2028

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Moore Estates Subd Improvements
Regulated Entity Location: 803 Westlake Drive, West Lake, Texas 78746
Name of Customer: Tirres Group, LLC
Contact Person: Michael Tirres Phone: (512) 422-2880
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☒ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☒ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	8.4 Acres	$ 3,000
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	1,022 L.F.	$ 650
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: Robert C Thompson Date: July 24, 2025

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN		**RN**

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

Tirres Group, LLC

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
802510806	32061182229	81-3463637	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☑ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☑ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☑ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:							
	3507 Native Dancer Cove						
City	Austin	**State**	TX	**ZIP**	78746	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
( ) -		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Moore Estates Subd Improvements

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	803 Westlake Drive							
	City	West Lake Hills	**State**	TX	**ZIP**	78746	**ZIP + 4**	1434
24. County								

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	

26. Nearest City	**State**	**Nearest ZIP Code**

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
1771	1521	238110	236115

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Single-family residential subdivsion

34. Mailing Address:								
	City		**State**		**ZIP**		**ZIP + 4**	
35. E-Mail Address:								

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
( ) -		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Mark Roeder	**41. Title:**	Graduate Civil Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 328-0002		**(** N/A **)** -	mark@tleng.net

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	The Tirres Group, LLC (DBA Tirres Homes)	**Job Title:**	Owner		
Name *(In Print):*	Michael Tirres			**Phone:**	( )512-422-2880
Signature:				**Date:**	July 30, 2025

SITE DEVELOPMENT PERMIT PLAN

FOR

MOORE ESTATES SUBD IMPROVEMENTS

SHEET INDEX

SUBMITTAL DATE: JULY 2025 EXPIRATION DATE:

WATERSHED:
THIS PROJECT IS LOCATED IN THE LITTLE BEE CREEK WATERSHED.

EDWARDS AQUIFER
THIS PROJECT LIES OVER THE EDWARDS AQUIFER RECHARGE ZONE.

FLOOD PLAIN NOTE:
A PORTION OF THIS PROJECT IS WITHIN THE 100 YEAR FLOOD PLAIN AND IS LOCATED IN ZONE X ACCORDING TO INFORMATION FROM FEDERAL FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 48453C0445K, EFFECTIVE DATE JANUARY 22, 2020 FOR TRAVIS COUNTY, TEXAS.

SITE DATA:
LOC ACREAGE: 0.88
TAX ID: 978038 - 978043
MAP GRID: F24
DEED: 2025038625
ZONING: R1

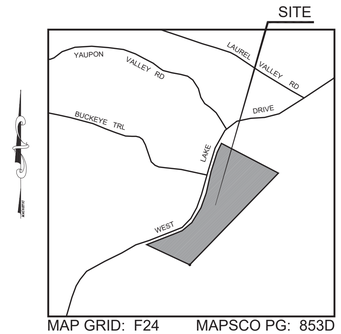
EXISTING LAND USE: SINGLE FAMILY RESIDENTIAL
PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL

LEGAL DESCRIPTION: LOTS 1-6, BLOCK A, MOORE ESTATES SUBDIVISION

RELATED CASES: NONE

ENGINEER: THOMPSON LAND ENGINEERING, LLC
904 N. CUERNAVACA
AUSTIN, TEXAS 78733
(512) 328-0002

OWNER: TIRRES GROUP LLC
3507 NATIVE DANCER CV
AUSTIN, TX 78746-1434



MAP GRID: F24 MAPSCO PG: 853D

LOCATION MAP

SCALE: NTS

WARNING!!!!!
REVIEW THE SEQUENCE OF CONSTRUCTION ON THE GENERAL NOTES SHEET PRIOR TO BEGINNING CONSTRUCTION. MANY NOTIFICATION OBLIGATIONS (AND OTHER OBLIGATIONS) INCLUDED IN THAT SEQUENCE.

TRAVIS COUNTY EMERGENCY SERVICES DISTRICT No. 9 (TC ESD-9) NOTES:
SEE SHEET 7 FOR THESE NOTES.

TRAVIS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 10 CONSTRUCTION NOTES:
SEE SHEET 7 FOR THESE NOTES.

THE APPLICANT/OWNER MUST COORDINATE WITH UTILITY COMPANIES PRIOR TO CONSTRUCTION.

FOR CITY
REVIEWED BY:

CITY ADMINISTRATOR DATE
CITY OF WEST LAKE HILLS

DEVELOPMENT PERMIT NUMBER

FOR WATER
REVIEWED BY:

TRAVIS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT 10 DATE
(WCID 10)

FOR FIRE DEPARTMENT
REVIEWED BY:

TRAVIS COUNTY EMERGENCY SERVICES DISTRICT NO. 9 DATE

	SUBMITTAL DATE:		SUBMITTAL DATE:
TCEQ WATER:	N/A	TDLR:	N/A
TCEQ WASTEWATER:	N/A	COUNTY:	NA
TCEQ EDWARDS AQUIFER:	N/A	FIRE MARSHALL:	JULY 2025
TPDES REPORT:	NA	WATER & WASTEWATER:	N/A

REVISION/CORRECTION TABLE

NO.	DESCRIPTION	REVISE (R) ADD (A) VOID (V) SHEET NO's	TOTAL # SHEETS IN PLAN SET	NET CHANGE IMP. COVER (SQ. FT.)	TOTAL SITE IMP. COVER (SQ. FT.)/ (%)	CITY OF AUSTIN APPROVAL/DATE	TRAVIS COUNTY APPROVAL/DATE	APPROVED BY	DATE IMAGED
△	.	.	.	.	.				

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER

Thompson Land Engineering, LLC (F-10220)

8/20/25

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
www.tleng.net email: rct@tleng.net
TBPE Reg. No. F-10220

DATE
REVISION

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME: COVER SHEET

DATE ISSUED: August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

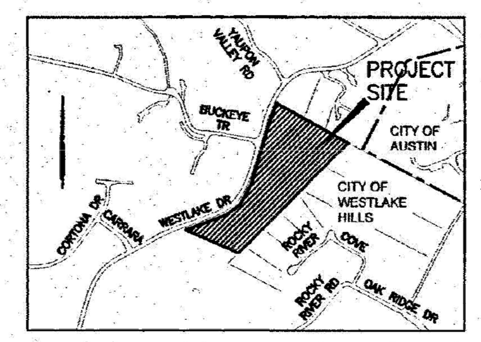
JOB NUMBER: 1959

SHEET: 1 OF 16

WARNING:
DRAWING HAS BEEN REDUCED TO FIT WITHIN THE BORDER. USE BAR SCALE FOR MEASUREMENT

$156.00 01-09-2023 202300003

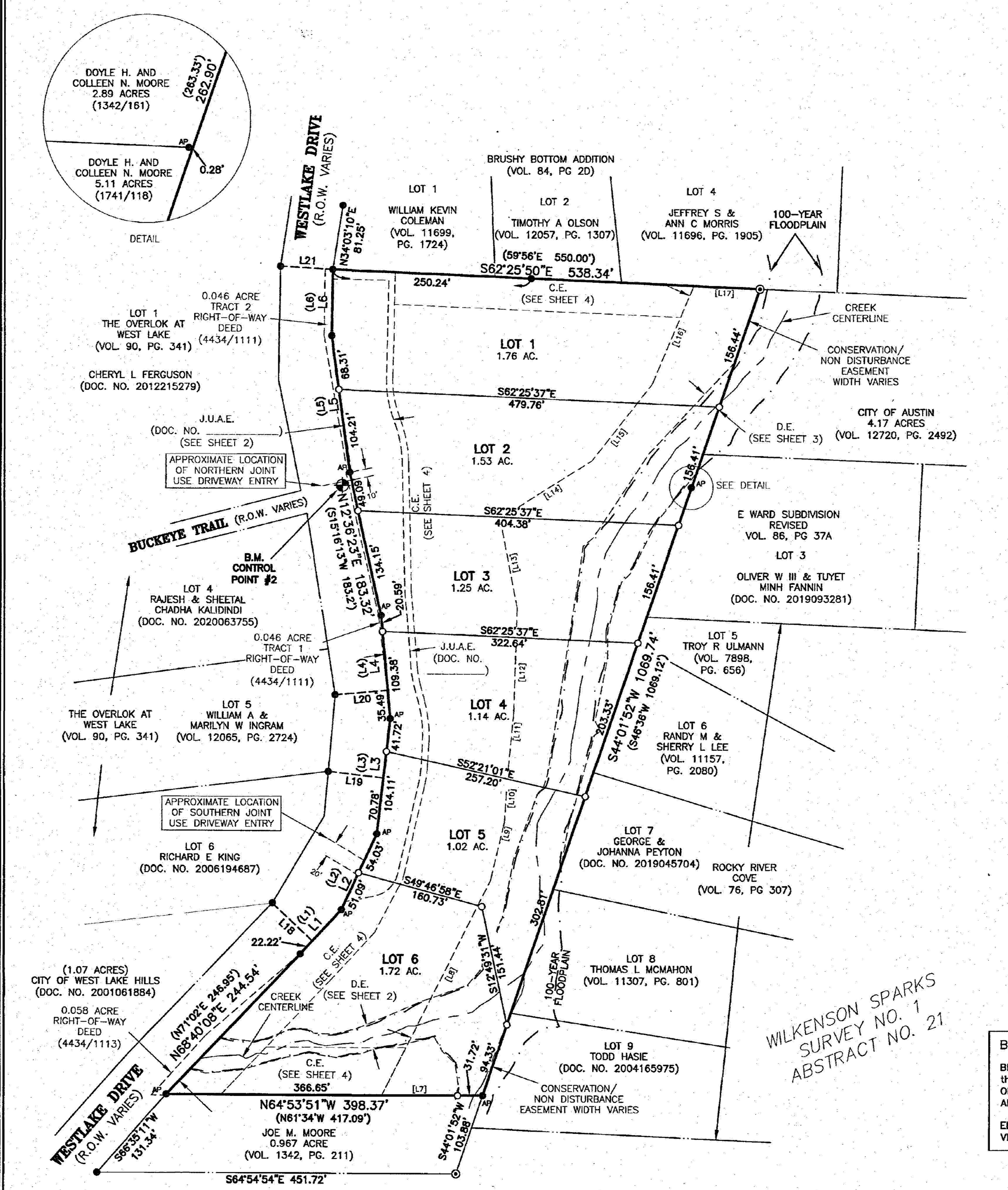
FINAL PLAT
MOORE ESTATES SUBDIVISION
TRAVIS COUNTY, TEXAS



VICINITY MAP
N.T.S.

SCALE: 1" = 100'

GRAPHIC SCALE
100 50 0 100



LEGEND

- ● 1/2" REBAR FOUND (OR AS NOTED)
- ●AP 1/2" REBAR WITH "ALL POINTS" CAP FOUND
- ◉ 1/2" IRON PIPE FOUND
- ○ 1/2" REBAR WITH "CHAPARRAL" CAP SET
- ⊕ CONTROL POINT/BENCHMARK LOCATION
- B.S.L. BUILDING SETBACK LINE
- P.U.E. PRIVATE UTILITY EASEMENT
- J.U.A.E. JOINT USE ACCESS EASEMENT
- D.E. DRAINAGE EASEMENT
- C.E. CONSERVATION EASEMENT
- R.O.W. RIGHT-OF-WAY
- ( ) RECORD INFORMATION
- —·— 100-YEAR FLOODPLAIN
- —-— CREEK CENTERLINE

THIS IS A SURFACE DRAWING.

BEARING BASIS: THE TEXAS COORDINATE SYSTEM OF 1983 (NAD83), CENTRAL ZONE, BASED ON GPS SOLUTIONS FROM THE NATIONAL GEODETIC SURVEY (NGS) ON-LINE POSITIONING USER SERVICE (OPUS) FOR CHAPARRAL CONTROL POINT "2".

60D NAIL SET

SURFACE COORDINATES:
N 10079317.86
E 3095758.07

TEXAS STATE PLANE COORDINATES:
N 10078310.03
E 3095448.53

ELEVATION = 612.32'
VERTICAL DATUM: NAVD 88 (GEOID 12B)

COMBINED SCALE FACTOR = 0.999900010
(FOR SURFACE TO GRID CONVERSION)

INVERSE SCALE FACTOR = 1.000100
(FOR GRID TO SURFACE CONVERSION)

SCALED ABOUT 0,0
THETA ANGLE: 0°00'00"

BENCHMARK INFORMATION:

BM: 60D Nail set on the east side of Westlake Dr. at the end of Buckeye Trail +/- 5' from edge of asphalt. OPUS POINT CHAPARRAL CONTROL POINT #2 (SEE NOTE ABOVE)

ELEVATION = 612.32'
VERTICAL DATUM: NAVD 88 (GEOID 12B)

LOT SUMMARY TABLE

LOT	ACRES	(MIN) FFE
LOT 1:	1.76 ACRES	643
LOT 2:	1.53 ACRES	647
LOT 3:	1.25 ACRES	650
LOT 4:	1.14 ACRES	655
LOT 5:	1.02 ACRES	670
LOT 6:	1.72 ACRES	679
TOTAL:	8.42 ACRES	

LOT PROPERTY LINE TABLE

LINE TABLE			(RECORD LINE TABLE)	
LINE	BEARING	DISTANCE	LINE	(RECORD BEARING)
L1	N67°54'53"E	75.81'	(L1)	(N70°22'59"E 75.8')
L2	N50°02'50"E	105.11'	(L2)	(N52°38'59"E 105.0')
L3	N31°35'25"E	145.82'	(L3)	(N34°13'59"E 145.7')
L4	N19°50'11"E	129.90'	(L4)	(N22°16'59"E 129.8')
L5	N17°24'34"E	172.52'	(L5)	(N19°15'42"E 172.3')
L6	N26°02'52"E	82.79'	(L6)	(N28°31'59"E 83.2')
L18	N22°05'07"W	69.14'		
L19	N58°24'35"W	69.70'		
L20	N70°09'49"W	66.35'		
L21	N61°37'48"W	66.13'		

DATE OF PREPARATION: February 22, 2021

Chaparral Professional Land Surveying, Inc.
Surveying and Mapping
3500 McCall Lane
Austin, Texas 78744
512-443-1724
Firm No. 10124500

PROJECT NO.: 1573-001
DRAWING NO.: 1573-001-PLr6LT
PLOT DATE: 08/30/2022
PLOT SCALE: 1"=100'
DRAWN BY: RGH/PAQ
SHEET 01 OF 05

202300003

FINAL PLAT
MOORE ESTATES SUBDIVISION
TRAVIS COUNTY, TEXAS

STATE OF TEXAS §

COUNTY OF TRAVIS §

WHEREAS, Robin Mallory Moore, Doyle Randall Moore and Sherry Moore Waldrop, beneficiaries under Doyle H. Moore Family Trust, by virtue of a Warranty Deed recorded in Document No. Volume 13112, Page 289, Deed Records of Travis County, Texas are the owners of that certain 8.423 acre tract of land (called 7.875 acres) in the Wilkerson's Spark Survey No. 1 in Travis County, Texas; and

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS: That, the undersigned Trust beneficiaries, owners of the land shown on this plat and described herein and named herein as the Moore Estates Subdivision of the City of West Lake Hills, Travis County, Texas hereby subdivide said property and do hereby dedicate to the use of the Public, the drainage ways, the utility easements, and access easements for utility and emergency vehicle access as shown thereon for the purposes and consideration expressed.

WITNESS MY HAND this ______ day of ______ 2022.

[signature] Robin Mallory Moore

[signature] Doyle Randall Moore

[signature] Sherry Moore Waldrop

STATE OF TEXAS §

COUNTY OF TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared Robin Mallory Moore, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 7th day of DECEMBER 2022.

[signature] Notary Public in and for Travis County, Texas

7-3-2026
Commission Expires

CHRISTINE COLUMBUS
Notary Public, State of Texas
Notary ID #13163032-3
My Commission Expires 07-03-2026

STATE OF TEXAS §

COUNTY OF TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared Doyle Randall Moore, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 7th day of December 2022.

[signature] Notary Public in and for Travis County, Texas

2/19/2025
Commission Expires

JUDY YHU
Notary Public, State of Texas
Notary ID #1077368-3
My Commission Expires 02-19-2025

STATE OF TEXAS §

COUNTY OF TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared Sherry Moore Waldrop, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 7th day of December 2022.

[signature] Notary Public in and for Travis County, Texas

2/19/2025
Commission Expires

JUDY YHU
Notary Public, State of Texas
Notary ID #1077368-3
My Commission Expires 02-19-2025

The tract of land described on this plat is within the boundaries of Travis County Water Control and Improvement District (WCID) No. 10 and has water service available.

DATED: 12-14-22

[signature] Paul C Barker, P.E.
President of the Board WCID No. 10

I, the undersigned, City Administrator of the City of West Lake Hills, Texas, hereby certify that this subdivision plat conforms to all requirements of the subdivision regulations of the City, for which my approval is required.

DATED: 12/8/2022

[signature]
City Administrator, City of West Lake Hills, Texas

I, the undersigned, City Arborist of the City of West Lake Hills, Texas, hereby certify that this subdivision conforms to all the oak wilt requirements of the City of West Lake Hills Code of Ordinances, for which my approval is required.

DATED: 12/5/2022

[signature]
City Arborist, City of West Lake Hills, Texas

This plat has been submitted to and considered by the Zoning and Planning Commission (ZAPCO) of the City of West Lake Hills, Texas.

DATED: 12/09/2022

[signature]
ZAPCO Chairperson, City of West Lake Hills, Texas

Approved and authorized for record by the City Council of the City of West Lake Hills, Texas.

DATED THIS 9th DAY OF December 2022.

[signature] Linda Anthony
MAYOR, CITY OF WEST LAKE HILLS, TEXAS

ATTEST:

[signature] Terry Blanchard
CITY SECRETARY

CITY OF WEST LAKE HILLS CORPORATE SEAL TEXAS

STATE OF TEXAS

COUNTY OF TRAVIS

I, Robert C. Thompson, P.E., am authorized under the State of Texas to practice engineering and hereby certify that a portion of this property is within a special flood hazard area as shown on the Federal Emergency Management Agency Map Community Panel No. 48453 C0445K, dated January 22, 2020.

DATED: 12/02/2022

[signature]
Robert C. Thompson, P.E. 69524
Thompson Land Engineering, LLC
904 N. Cuernavaca Austin, Texas 78733

Thompson Land Engineering, LLC (F-10220)

STATE OF TEXAS ROBERT C. THOMPSON 69524 REGISTERED PROFESSIONAL ENGINEER

STATE OF TEXAS

COUNTY OF TRAVIS

I, the undersigned, a Registered Professional Land Surveyor in the State of Texas, hereby certify that this plat is true and correct and was prepared from the actual survey of the property made under my supervision on the ground.

DATED: ______

[signature] 12-02-2022
Paul J. Flugel, R.P.L.S. 5096
Chaparral Professional Land Surveying, Inc.
Firm No. 10124500
3500 McCall Lane
Austin, Texas 78744
(512) 443-1724

STATE OF TEXAS REGISTERED PAUL J. FLUGEL 5096 PROFESSIONAL LAND SURVEYOR

PLAT NOTES:

1. ALL LOTS IN THIS SUBDIVISION ARE PLANNED TO BE CONNECTED TO THE CITY OF WESTLAKE HILLS PUBLIC SEWER SYSTEM.
2. ACCESS TO THESE LOTS IS ONLY TO BE FROM THE JOINT USE ACCESS EASEMENT AND LIMITED TO ONLY TWO LOCATIONS, THOSE LOCATIONS BEING APPROXIMATELY AT THE TWO LOCATIONS SHOWN ON THE FACE OF THE PLAT. THE PRIVATE DRIVE JOINT USE ACCESS EASEMENT (J.U.A.E.) AND WASTEWATER EASEMENT (W.W.E.) SHOWN ON THE PLAT SHALL BE A TWO WAY J.U.A.E. AND W.W.E. FOR THE BENEFIT OF EACH LOT OWNER AND SHALL BE MAINTAINED BY THE MOORE ESTATES SUBDIVISION HOMEOWNERS ASSOCIATION IN ACCORDANCE WITH THE DECLARATION OF CODES, COVENANTS AND RESTRICTIONS THEREOF RECORDED IN DOCUMENT NO. 2022194897, OFFICIAL PUBLIC RECORDS OF TRAVIS COUNTY, TEXAS. BUILDING OF SUCH PRIVATE DRIVE AND ALL OTHER UTILITY INFRASTRUCTURE SERVING THE SUBDIVISION SHALL BE THE RESPONSIBILITY OF THE OWNER AND/OR DEVELOPER OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY THE CITY COUNCIL OF THE CITY OF WEST LAKE HILLS, TRAVIS COUNTY, TEXAS. THE CITY OF WEST LAKE HILLS, TEXAS, ASSUMES NO RESPONSIBILITY TO BUILD ANY OF THE PRIVATE DRIVES, DRAINAGE OR OTHER UTILITY INFRASTRUCTURE SHOWN ON THIS PLAT. ALL CURB CUTS, ENTRANCES, AND EXITS ONTO PUBLIC STREETS OR HIGHWAYS SHALL FIRST BE APPROVED BY THE CITY OF WEST LAKE HILLS, TEXAS.
3. ALL OF THE LAND DEPICTED ON THIS SUBDIVISION PLAT IS LOCATED WITHIN THE FULL PURPOSE MUNICIPAL BOUNDARIES OF THE CITY OF WEST LAKE HILLS, TEXAS.
4. DUE TO COMPROMISES ON EMERGENCY ACCESS AGREED UPON, LOTS 1 TO 6 SHALL BE PROTECTED THROUGHOUT BY A NATIONAL FIRE PROTECTION ASSOCIATION 13D-COMPLIANT RESIDENTIAL FIRE SPRINKLER SYSTEM. THE SYSTEMS SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE PROTECTION COMPANY OR AN ENDORSED PLUMBER. SPRINKLER PLANS SHALL BE SUBMITTED TO THE EMERGENCY SERVICES DISTRICT NO. 9 FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
5. THE WATER SUPPLY INFRASTRUCTURE FOR THE SUBDIVISION SHALL PROVIDE ADEQUATE FIRE FLOW IN COMPLIANCE WITH THE INTERNATIONAL FIRE CODE APPENDIX B. FOR RESIDENTIAL STRUCTURES UP TO 3,600 SQUARE FEET, 1000 GALLONS PER MINUTE SHALL BE PROVIDED (SEE QUALIFICATIONS BELOW IN ITEM NO. 10).
6. ALL RESIDENTIAL STRUCTURES OVER 3,600 SQUARE FEET SHALL COMPLY WITH THE REQUIREMENTS OF TABLE B105.1 FROM THE INTERNATIONAL FIRE CODE. RESIDENTIAL STRUCTURES WITH AN APPROVED NATIONAL FIRE PROTECTION ASSOCIATION 13D RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL RECEIVE A 50% REDUCTION IN REQUIRED FIRE FLOW. THE RESULTING FIRE FLOW SHALL NOT BE LESS THAN 1000 GALLONS PER MINUTE. IF ADDITIONAL FIRE FLOW REDUCTIONS ARE NEEDED, THEY MIGHT BE OBTAINED THROUGH CONSULTATION WITH THE EMERGENCY SERVICE DISTRICT NO. 9, TRAVIS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 10, AND THE CITY OF WEST LAKE HILLS, TEXAS.
7. NO PARKING ON THE J.U.A.E. DRIVEWAY OR SHOULDER IS ALLOWED SO THAT IT MAY REMAIN OPEN FOR EMERGENCY VEHICLES. TO FACILITATE THIS REQUIREMENT THE ENTIRE J.U.A.E. DRIVEWAY SHALL BE PAINTED WITH RED FIRE LANE/TOW AWAY ZONE STRIPING AND SHALL HAVE NO PARKING SIGNAGE.
8. DEVELOPMENT OF THIS PROPERTY IS SUBJECT TO AND SHALL BE PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS SET OUT IN THE SETTLEMENT AGREEMENT AND RELEASE BY AND BETWEEN SHERRY WALDROP MOORE, DOYLE RANDALL MOORE, AND ROBIN MALLORY MOORE AS CO-TRUSTEES OF THE MOORE FAMILY TRUST, PLAINTIFFS v. CITY OF WEST LAKE HILLS, DEFENDANT IN THAT CERTAIN CAUSE NO. D-1-GN-21-002632, IN THE 98TH JUDICIAL DISTRICT COURT OF TRAVIS COUNTY, TEXAS, INCLUDING THOSE SPECIAL TERMS CONDITIONS, AND COVENANTS RELATING TO TREE SURVEY, CLEARING, AND MITIGATION REQUIREMENTS, JOINT USE DRIVEWAY REQUIREMENT, AND MAXIMUM HEIGHT OF BUILDINGS REQUIREMENT AS PROVIDED THEREIN.
9. SITE CLEARANCE, SITE DISTURBANCE, AND IMPERVIOUS COVER. EVERY LOT OR UNIT IN THIS SUBDIVISION IS SUBJECT TO THE CITY OF WEST LAKE HILLS SITE CLEARANCE PROCEDURES. NO SITE CLEARANCE, EXCAVATION, GRADING OR LANDFILL SHALL COMMENCE UNLESS A PERMIT SHALL HAVE FIRST BEEN ISSUED FOR SAID WORK IN ACCORDANCE WITH THE PROVISION OF APPLICABLE ORDINANCES. IMPERVIOUS COVER SHALL NOT EXCEED MAXIMUM PERCENTAGE PERMITTED UNDER CITY CODE. IN THE EVENT OF CONFLICT BETWEEN THE CODE AND THESE PLAT NOTES, THE PLAT NOTES SHALL CONTROL.
10. LOTS IN THIS SUBDIVISION ARE LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE AND SUBJECT TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY EDWARDS AQUIFER RULES CODIFIED IN 30 TAC CHAPTER 213, AS AMENDED. NO BUILDING PERMIT WILL BE ISSUED BY THE CITY OF WEST LAKE HILLS UNTIL THE PERMITTING REQUIREMENTS OF THE EDWARDS RULES TAC CHAPTER 213 ARE FULLY COMPLIED WITH. THE APPLICANT FOR A BUILDING PERMIT IS RESPONSIBLE TO FURNISH THE CITY WRITTEN COMPLIANCE WITH THE PERMITTING REQUIREMENTS OF THE EDWARDS AQUIFER RULES FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY UNLESS THEY MEET THE <20% IC EXEMPTION WHERE THE TCEQ ISSUES NO REVIEW.

~~STATE OF TEXAS~~

~~COUNTY OF TRAVIS~~

~~I, Rebecca Guerreo, Clerk of the County Court of Travis County, Texas, do hereby certify that on the ______ day of ______, 2022 A.D., the Commissioners Court of Travis County, Texas, passed an Order authorizing the filing for record of this plat, and that said Order has been entered into the Minutes of Said Court, as Document No. ______.~~

~~WITNESS MY HAND AND SEAL OF THE COUNTY COURT OF SAID COUNTY, this ______ day of ______ A.D. 2022.~~

~~Clerk of the County Court, Travis County, Texas~~

~~BY: ______~~
~~Deputy~~

THE STATE OF TEXAS

THE COUNTY OF TRAVIS

I, ~~Rebecca Guerreo~~ Dyana Limon-Mercado, Clerk of the County Court of Travis County, Texas, do hereby certify that the foregoing instrument with its Certification of Authentication was filed in my office at 8:11 O'clock A.M on the 9 day of January 2023, A.D., and duly recorded at 8:11 O'clock A.M on the day of January 9th 2023 A.D. in the Plat Records of Travis County, Texas, as Document No. 202300003.

WITNESS MY HAND AND SEAL OF THE COURT OF TRAVIS COUNTY, TEXAS, this the 9 day of January 2023, A.D.

Clerk of the County Court, Travis County, Texas

BY: [signature]
Deputy Kimberly Johnson

STATE OF TEXAS

COUNTY OF TRAVIS

Filed for record this 9 day of January 2023, A.D., at 8:11 O'clock A.M.

Clerk of the County Court, Travis County, Texas

BY: [signature]
Deputy Kimberly Johnson

Chaparral Professional Land Surveying, Inc.
Surveying and Mapping
3500 McCall Lane
Austin, Texas 78744
512-443-1724
Firm No. 10124500

PROJECT NO.: 1573-001
DRAWING NO.: 1573-001-PLr6LT
PLOT DATE: 12/02/2022
PLOT SCALE: 1"=100'
DRAWN BY: RGH/PAQ
SHEET 05 OF 05

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
www.tleng.net email: ric@tleng.net

DATE | REVISION

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME: PLAT

DATE ISSUED: August, 2025
DESIGNED BY: RCT
DRAFTED BY: BH
JOB NUMBER: 1959

TLE GENERAL CONTRACT NOTES

1) CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING STRUCTURES, UTILITIES, AND FACILITIES PRIOR TO ANY EXCAVATION REQUIRED FOR CONSTRUCTION OF THE PROPOSED IMPROVEMENTS. ANY DISCREPANCIES OR CONFLICTS FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER.

2) CONTRACTOR IS TO TAKE PRECAUTION TO PROTECT EXISTING STRUCTURES, UTILITIES, AND OTHER FACILITIES FROM DAMAGE WHILE CONSTRUCTION OF THE IMPROVEMENTS. ANY DAMAGE TO EXISTING STRUCTURES, UTILITIES OR OTHER FACILITIES INCURRED AS A RESULT OF CONTRACTORS ACTIONS ARE TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

3) CONTRACTOR IS TO GIVE NOTICE TO ALL AFFECTED PARTIES AND ALL REGULATORS OF THE COMMENCEMENT OF WORK AT LEAST 48 HOURS IN ADVANCE OF COMMENCEMENT OF WORK.

4) CONTRACTOR IS RESPONSIBLE FOR THE SOURCE AND TRANSPORT OF ALL POTABLE AND CONSTRUCTION WATER FOR THE PROJECT SITE AND TO THE PROJECT SITE AND THE CONTRACTOR IS RESPONSIBLE FOR PAYMENT OF THE SAME.

5) ANY WATER USED FOR ADDING MOISTURE FOR COMPACTION SHALL BE FREE FROM OIL, WASTE, AND ANY OTHER OBJECTIONABLE MATERIAL.

6) CONTRACTOR IS RESPONSIBLE FOR THE PERFORMANCE AND PAYMENT OF ALL DENSITY TESTS, CONCRETE TESTS, AND ASPHALT TESTS, UNLESS OTHERWISE SPECIFIED. ALL SUCH TESTS ARE TO BE PERFORMED IN ACCORDANCE WITH CITY'S SPECIFICATIONS INCLUDING FREQUENCY, UNLESS OTHERWISE SPECIFIED,. LOCATIONS FOR DENSITY TESTS WILL BE AS SPECIFIED BY THE OWNER OR THEIR REPRESENTATIVE.

7) CONTRACTOR IS RESPONSIBLE FOR THE PERFORMANCE OF AND PAYMENT OF ALL CONSTRUCTION STAKING, UNLESS OTHERWISE SPECIFIED. ENGINEER MAY ASSIST IN CONSTRUCTION STAKING AS REQUIRED BY THE GOVERNING AUTHORITIES OR AS REQUESTED, AND PAID FOR, BY CONTRACTOR.

8) ALL AS-BUILT DIMENSIONS SHALL CONFORM TO THE DESIGN DIMENSIONS PLUS OR MINUS 0.02 FEET. ALL AS-BUILT SLOPES SHALL CONFORM TO THE DESIGNED SLOPES PLUS OR MINUS 0.005 FOOT PER FOOT.

9) THE METHODOLOGY FOR THE CONSTRUCTION OF THE IMPROVEMENTS IS THE RESPONSIBILITY OF THE CONTRACTOR.

10) CONTRACTOR IS TO PROVIDE THE MATERIALS, EQUIPMENT, AND EFFORT TO COMPLETE THE INSTALLATION OF THE PROPOSED IMPROVEMENTS, WHETHER THOSE MATERIALS, EQUIPMENT, OR EFFORT IS SPECIFICALLY MENTIONED IN THESE PLANS OR NOT.

11) CONTRACTOR IS TO COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS AND REGULATIONS, AS WELL AS ANY OTHER APPLICABLE FEDERAL, STATE, OR LOCAL HEALTH AND SAFETY STANDARDS, LAWS, OR REGULATIONS. FAILURE TO COMPLY WITH THE REQUIREMENTS SPECIFIED WILL BE CONSIDERED JUST AND SUFFICIENT CAUSE FOR THE OWNER TO STOP WORK.

12) UNLESS OTHERWISE SPECIFIED BY THE GEOTECHNICAL ENGINEER IN THE GEOTECHNICAL REPORT FOR THIS PROJECT, SELECT BACK FILL SHALL:

- BE SUBSTANTIALLY FREE OF ORGANIC MATERIALS
- HAVE A PLASTICITY INDEX BETWEEN 10 AND 18,
- HAVE A LIQUID LIMIT OF LESS THAN 35, AND
- FREE OF STONES OR ROCKS OVER 2 INCHES IN ANY DIMENSION.

SUCH SELECT FILL, WHEN CALLED FOR ON THE PLANS AND UNLESS OTHERWISE SPECIFIED, SHALL BE PLACED IN LOOSE, HORIZONTAL LAYERS SIX TO NINE INCHES IN THICKNESS AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY OR THE MAXIMUM DENSITY AS SPECIFIED BY TXDOT TEST METHOD TEX-114-E. SANDY LOAM SHALL NOT BE USED FOR SELECT FILL.

13) UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR IS RESPONSIBLE FOR THE PAYMENT OF AND PHYSICAL REMOVAL OF ALL SURPLUS MATERIAL FROM THE SITE. THE REMOVAL OF ANY MATERIAL FROM THE SITE SHALL BE TO A LOCATION APPROVED BY THE GOVERNING AGENCY AND OWNER.

14) UNLESS OTHERWISE SPECIFIED, THE PROVISION OF AND PAYMENT FOR BONDING, INCLUDING BUT NOT LIMITED TO THE PROVISION OF PERFORMANCE AND PAYMENT BONDS, IS TO BE CONSIDERED SUBSIDIARY TO OTHER WORK.

15) UNLESS OTHERWISE SPECIFIED, AND NOT INCLUDING MEASUREMENT AND PAYMENT SECTIONS, ALL WORK ON THESE PLANS SHALL BE IN CONFORMANCE WITH THE CITY'S STANDARD SPECIFICATIONS.

TLE GENERAL DRAINAGE AND GRADING NOTES

1) UNLESS OTHERWISE SPECIFIED, ALL FINISHED EARTHEN SLOPES ARE TO BE FINE GRADED TO PROVIDE A RELATIVELY UNIFORM SURFACE WITH NO ROCKS GREATER THAN 1-INCH IN DIAMETER, NO CLODS OF SOIL GREATER THAN 2-INCHES IN DIAMETER, AND NO DEVIATIONS FROM AN OTHERWISE SMOOTH SURFACE GREATER THAN 4 INCHES IN HEIGHT OR DEPTH WITH NO AREAS OF STANDING WATER.
2) ALL FINISHED SLOPES OF A GRADE OF 3:1 OR GREATER ARE TO BE COVERED WITH A JUTE MAT, CURLEX MATTING, OR SIMILAR PRODUCT AFTER SEEDING WITH HYDROMULCH AND THE JUTE ANCHORED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3) UNLESS OTHERWISE SPECIFIED, ALL CULVERTS 18-INCH AND LARGER SHALL BE ASTM C76 REINFORCED CONCRETE PIPE (RCP) AND ALL CULVERTS LESS THAN 18-INCHES IN DIAMETER SHALL BE SCHEDULE 40 PVC. UNLESS OTHERWISE SPECIFIED, ALL CONCRETE PIPE IN PAVEMENT AREAS SHALL BE CLASS IV. UNLESS OTHERWISE SPECIFIED, ALL CONCRETE PIPE IN NON-TRAFFIC AREAS SHALL BE CLASS III.
4) UNLESS OTHERWISE SHOWN, ALL TRICKLE CHANNELS AND PIPES SHALL HAVE A MINIMUM SLOPE OF 0.5 PERCENT AND ALL EARTHEN SLOPES SHALL HAVE A MINIMUM SLOPE OF 2.0 PERCENT.

TLE GENERAL PAVEMENT NOTES

1) ALL MARKINGS, MARKERS, SIGNAGE, BUTTONS, PAINT AND OTHER TRAFFIC RELATED CONTROLS SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) MANUAL ON UNIFORM TRAFFIC CONTROL DEVISES FOR STREETS AND HIGHWAYS (MUTCD). THESE INCLUDE ANY METHODS, PAVEMENT MARKING, SIGNAGE NECESSARY FOR WARNING MOTORISTS, WARN PEDESTRIANS, AND/OR DIVERTING TRAFFIC DURING CONSTRUCTION AS WELL AS ANY MARKINGS, MARKERS, SIGNAGE, BUTTONS, AND PAINT REQUIRED FOR THE FINISHED PRODUCT.

TLE SPECIAL NOTES FOR STORM WATER POLLUTION PREVENTION PLANS (SW3P)

1) ALL EROSION SEDIMENT CONTROLS SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT SHALL BE PERFORMED AT THE EARLIEST POSSIBLE DATE BUT NO LATER THAN 7 CALENDAR DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT. DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED, TEMPORARILY OR PERMANENTLY, SHALL BE STABILIZED WITHIN 14 CALENDAR DAYS UNLESS THEY ARE SCHEDULED TO AND DO RESUME WITHIN 21 CALENDAR DAYS. THE AREAS ADJACENT TO CREEKS AND DRAINAGE WAYS SHALL HAVE PRIORITY FOLLOWED BY DEVICES PROTECTING STORM SEWER INLETS.
2) AN INSPECTION OF ALL EROSION CONTROLS SHALL BE PERFORMED BY A DESIGNATED INSPECTOR EVERY 7 CALENDAR DAYS AS WELL AS AFTER EVERY HALF INCH OR MORE RAIN AS RECORDED ON A NON-FREEZING RAIN GAUGE TO BE LOCATED ON THE PROJECT SITE. AN INSPECTION AND MAINTENANCE REPORT SHALL BE FILED FOR EACH INSPECTION. BASED ON THE INSPECTION RESULTS, THE CONTROLS SHALL BE REVISED AS PER THE INSPECTION REPORT. CONTRACTOR SHALL CORRECT ANY PROBLEMS IDENTIFIED WITHIN 48 HOURS.
3) EXCEPT AS SPECIFIED ELSEWHERE, ALL WASTE MATERIALS SHALL BE COLLECTED IN A METAL DUMPSTER HAVING A SECURE COVER. THE DUMPSTER SHALL MEET ALL STATE AND LOCAL SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND DEBRIS FROM CONSTRUCTION SHALL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER SHALL BE EMPTIED, AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION, AND HAULED TO A LOCAL APPROVED LAND FILL SITE. THE BURYING OF CONSTRUCTION WASTE ON THE PROJECT SITE SHALL NOT BE PERMITTED.
4) THE SPECIFICATION OF CONCRETE WASHOUT AREAS SHALL BE REQUIRED AND SHALL CONSIST AN APPROVED WASHOUT SYSTEM, SUCH AS RTC SUPPLY VINYL-CON CONCRETE WASHOUT (SIZE BASED ON SIZE OF JOB AND NUMBER OF CONCRETE TRUCKS), OR EQUAL.
5) AS A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORY ARE CONSIDERED TO BE HAZARDOUS: PAINTS, ACIDS, SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, AND CONCRETE CURING COMPOUNDS OR ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE SPILL REMEDIATED IN ACCORDANCE WITH THE LOCAL AND STATE REGULATIONS.
6) ALL SANITARY WASTE SHALL BE COLLECTED FROM PORTABLE UNITS, AS NECESSARY OR AS REQUIRED BY LOCAL REGULATIONS, BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.
7) FUELS AND HAZARDOUS SUBSTANCES ARE NOT TO BE STORED ON SITE.
8) CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS WATERING WITH IRRIGATION TRUCKS AND/OR MULCH.
9) THE LIMITS OF CONSTRUCTION FOR THIS PROJECT IS 0.88-ACRES.

EXPECTED TIME FRAMES FOR SEQUENCE OF CONSTRUCTION FOR SWPPP:	
1.	GET PERMITS, SET UP EROSION CONTROLS, AND HAVE PRE-CONSTRUCTION CONFERENCE (2 WEEKS)
2.	PERFORM ANY DEMOLITION, AND ROUGH GRADE SITE (6 WEEKS)
3.	CHECK ENVIRONMENTAL CONTROLS (ON-GOING ACTIVITY)
4.	INSTALL UNDERGROUND UTILITIES (8 WEEKS)
5.	CONSTRUCTION OF JOINT USE DRIVE (4 WEEKS)
6.	FINISH GRADE SITE, CLEAN UP, LANDSCAPE, AND REVEGETATE (2 WEEKS)

TLE GENERAL WATER AND WASTEWATER NOTES

1) THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, PAYMENT, PROVISION, OPERATION, MAINTENANCE, INSTALLATION, AND REMOVAL OF ANY REQUIRED TRENCH SAFETY SYSTEM.
2) MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, AND OTHER SUCH ITEMS LOCATED WITHIN ANY PROPOSED PAVEMENT OR SIDEWALK SHALL BE RAISED THE FINISHED GRADE PRIOR TO FINAL PAVING.
3) UNLESS OTHERWISE SPECIFIED, PIPE MATERIAL FOR 4-INCH AND LARGER WATER LINES AND MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 200) OR DUCTILE IRON (AWWA C-110 OR AWWA C-153, MIN. CLASS 50 (CLASS 51 FOR 4-INCH)). UNLESS OTHERWISE SPECIFIED, PIPE MATERIAL FOR WATER LINES AND MAINS SMALLER THAN 4-INCHES SHALL BE PVC, SCHEDULE 80.
4) UNLESS OTHERWISE SPECIFIED, PIPE MATERIAL FOR 4-INCH AND LARGER GRAVITY WASTEWATER LINES AND MAINS SHALL BE PVC (ASTM D2241 OR D3034, DR-35 OR BETTER) OR DUCTILE IRON (AWWA C-100, CLASS 50 OR BETTER).
5) UNLESS OTHERWISE SPECIFIED, PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, CLASS 150 OR BETTER) OR DUCTILE IRON (AWWA C-100, CLASS 50).
6) ALL CAST IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH A MINIMUM OF 8-MIL POLYETHYLENE.
7) ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
8) UNLESS OTHERWISE SPECIFIED, ALL MANHOLES SHALL BE IN ACCORDANCE WITH THE STANDARD DRAWINGS OF THE CITY OF AUSTIN EXCEPT THAT, UNLESS OTHERWISE SPECIFIED OR UNLESS LOCATED OVER THE EDWARDS AQUIFER, NO COATING SHALL BE REQUIRED.
9) THE CONTRACTOR SHALL PERFORM STERILIZATION OF ALL WATER LINES AT THEIR EXPENSE. THIS INCLUDES, BUT IS NOT LIMITED TO, EQUIPMENT, SUPPLIES, AND LABOR.
10) THE CONTRACTOR SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER AND WATER PIPE AT THEIR EXPENSE. THIS INCLUDES, BUT IS NOT LIMITED TO, EQUIPMENT, SUPPLIES, AND LABOR. TESTS MAY INCLUDE LEAK TESTS, PRESSURE TESTS, AND MANDREL TESTS.
11) THE CONTRACTOR SHALL CONTACT THE ESD TO PERFORM A VISUAL INSPECTION TO VERIFY THE PIPE TYPE, SIZE, WRAPPED JOINTS, AND PROPER INSTALLATION OF THRUST BLOCKING. DO NOT BURY PIPES BEFORE INSPECTION HAS TAKEN PLACE.
12) THE OWNER OR HIS/HER REPRESENTATIVE IS TO BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF ANY TESTING.
13) UNLESS OTHERWISE SPECIFIED, WATER AND FIRE LINES ARE TO FOLLOW FINISHED GRADE AT THE DEPTHS SHOWN ON THE PLANS. THE CONTRACTOR IS TO MINIMIZE EXCAVATION, WITHIN REASON, FOR WATER AND FIRE LINES.
14) ALL ON-SITE UTILITIES SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE UPC AND UBC CODES. ALL OFF-SITE UTILITIES SHALL BE IN CONFORMANCE WITH THE UTILITY PROVIDER'S CODES.
15) WHERE A WATER LINE CROSSES A SANITARY SEWER LINE, THE WATER LINE IS TO BE A MINIMUM OF 6 INCHES ABOVE THE SEWER LINE (AS MEASURED OUT TO OUT). ADDITIONALLY, ONE "STICK" SHALL BE CENTERED OVER THE CROSSING (I.E. JOINTS SHALL BE A MINIMUM OF 9 FEET FROM THE CROSSING). WHERE A WATER LINE AND SEWER LINE ARE PARALLEL TO EACH OTHER, THE MINIMUM CLEARANCE BETWEEN WATER LINES AND SEWER LINES IS TO BE 9 FEET HORIZONTALLY BETWEEN OUTSIDE OF PIPE DIAMETERS AND THE WATER LINE SHALL BE AT LEAST 6 INCHES ABOVE THE SEWER LINE.

TLE GENERAL CONCRETE NOTES

1) ALL CONCRETE, REINFORCING, AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST ACI CODES AND IBC INCLUDING LAPS, SPLICES, TERMINATIONS, BAR SUPPORTS, AND CONCRETE COVER.
2) UNLESS OTHERWISE SPECIFIED, BARS SHALL BE DEFORMED GRADE 60.
3) UNLESS OTHERWISE SPECIFIED, ALL CONCRETE FOR FLAT WORK, CURBS, AND WALLS 3 FEET IN HEIGHT OR LESS SHALL CONFORM TO CITY OF AUSTIN CLASS A (3000 psi) AND ALL CONCRETE FOR WALLS GREATER THAN 3 FEET IN HEIGHT, AND OTHER VERTICAL STRUCTURES, SHALL CONFORM TO CITY OF AUSTIN CLASS S (4000 psi).
4) UNLESS OTHERWISE SPECIFIED, ALL DOWELS SHALL BE OF THE SAME SIZE AND SPACING AS THE REINFORCEMENT TO WHICH THE DOWEL IS TO BE SPLICED. DOWELS SHALL BE FIRMLY SET PRIOR TO PLACING THE CONCRETE; DOWELS SHALL NOT BE INSERTED INTO FRESH CONCRETE.
5) UNLESS OTHERWISE SPECIFIED, ALL EXPOSED WALL EDGES ARE TO RECEIVE 3/4" CHAMFER.
6) UNLESS OTHERWISE SPECIFIED, ALL EXPOSED VERTICAL SURFACES TO RECEIVE A RUBBED FINISH AND ALL EXPOSED FLAT WORK SURFACES TO RECEIVE A BROOM FINISH.
7) UNLESS OTHERWISE SPECIFIED OR SHOWN, EXPANSION JOINTS AND CONTROL JOINTS SHOULD BE LAID OUT SO THAT NO SECTION OF CONCRETE HAS A CORNER WITH AN ANGLE LESS THAN 60 DEGREES. ANY JOINT FORMING A CORNER WITH AN ANGLE OF LESS THAN 60 DEGREES SHOULD BE REALIGNED TO INCLUDE A STRAIGHT SECTION AT 90 DEGREES THAT IS AT LEAST 6 INCHES IN LENGTH
8) UNLESS OTHERWISE SPECIFIED, CONTROL JOINTS IN CONCRETE FLAT WORK SHALL BE FORMED WITH A TROWEL, 3/4" DEEP, 5 FEET ON CENTER, AND ROUNDED. UNLESS OTHERWISE SPECIFIED, CONTROL JOINTS IN VERTICAL CONCRETE SHALL BE FORMED WITH 3/4" CHAMFER STRIPS AND SHALL BE SPACED NO FURTHER APART THAN 25 FEET ON CENTER.
9) UNLESS OTHERWISE SPECIFIED, EXPANSION JOINTS SHALL BE INCLUDED IN ALL CONCRETE FLAT WORK AT A MAXIMUM SPACING OF 25 FEET ON CENTER AND SHALL BE INCLUDED IN ALL CONCRETE WALLS AT A MAXIMUM SPACING OF 20 FEET ON CENTER. JOINTS SHALL BE 3/4-INCH WIDE AND FILLED WITH ASPHALTIC FIBER BOARD. EXPANSION JOINTS IN WALLS RETAINING WATER SHALL INCLUDE A CONTINUOUS WATER STOP EXTENDING DOWN TO THE FOOTING. DOWELS SHALL BE INCLUDED IN ALL EXPANSION JOINTS THAT ARE AT LEAST OF THE SAME SIZE AND SPACING AS THE REINFORCING

EROSION CONTROL NOTES (COA ECM APPENDIX P-1)

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS, TREE/NATURAL AREA PROTECTIVE FENCING, AND CONDUCT "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE) PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE ENVIRONMENTAL CRITERIA MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. THE COA ESC PLAN SHALL BE CONSULTED AND USED AS THE BASIS FOR A TPDES REQUIRED SWPPP. IF A SWPPP IS REQUIRED, IT SHALL BE AVAILABLE FOR REVIEW BY THE CITY OF AUSTIN ENVIRONMENTAL INSPECTOR AT ALL TIMES DURING CONSTRUCTION, INCLUDING AT THE PRE-CONSTRUCTION MEETING. THE CHECKLIST BELOW CONTAINS THE BASIC ELEMENTS THAT SHALL BE REVIEWED FOR PERMIT APPROVAL BY COA EV PLAN REVIEWERS AS WELL AS COA EV INSPECTORS.
   - – PLAN SHEETS SUBMITTED TO THE CITY OF AUSTIN MUST SHOW THE FOLLOWING:
   - ✓ DIRECTION OF FLOW DURING GRADING OPERATIONS.
   - ✓ LOCATION, DESCRIPTION, AND CALCULATIONS FOR OFF-SITE FLOW DIVERSION STRUCTURES.
   - ✓ AREAS THAT WILL NOT BE DISTURBED; NATURAL FEATURES TO BE PRESERVED.
   - ✓ DELINEATION OF CONTRIBUTING DRAINAGE AREA TO EACH PROPOSED BMP (E.G., SILT FENCE, SEDIMENT BASIN, ETC.).
   - ✓ LOCATION AND TYPE OF E&S BMPS FOR EACH PHASE OF DISTURBANCE.
   - ✓ CALCULATIONS FOR BMPS AS REQUIRED.
   - ✓ LOCATION AND DESCRIPTION OF TEMPORARY STABILIZATION MEASURES.
   - ✓ LOCATION OF ON-SITE SPOILS, DESCRIPTION OF HANDLING AND DISPOSAL OF BORROW MATERIALS, AND DESCRIPTION OF ON-SITE PERMANENT SPOILS DISPOSAL AREAS, INCLUDING SIZE, DEPTH OF FILL AND REVEGETATION PROCEDURES.
   - ✓ DESCRIBE SEQUENCE OF CONSTRUCTION AS IT PERTAINS TO ESC INCLUDING THE FOLLOWING ELEMENTS:

1. INSTALLATION SEQUENCE OF CONTROLS (E.G. PERIMETER CONTROLS, THEN SEDIMENT BASINS, THEN TEMPORARY STABILIZATION, THEN PERMANENT, ETC.)
2. PROJECT PHASING IF REQUIRED (LOC GREATER THAN 25 ACRES)
3. SEQUENCE OF GRADING OPERATIONS AND NOTATION OF TEMPORARY STABILIZATION MEASURES TO BE USED
4. SCHEDULE FOR CONVERTING TEMPORARY BASINS TO PERMANENT WQ CONTROLS
5. SCHEDULE FOR REMOVAL OF TEMPORARY CONTROLS
6. ANTICIPATED MAINTENANCE SCHEDULE FOR TEMPORARY CONTROLS
   - – CATEGORIZE EACH BMP UNDER ONE OF THE FOLLOWING AREAS OF BMP ACTIVITY AS DESCRIBED BELOW:

     3.1 MINIMIZE DISTURBED AREA AND PROTECT NATURAL FEATURES AND SOIL

     3.2 CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

     3.3 STABILIZE SOILS

     3.4 PROTECT SLOPES

     3.5 PROTECT STORM DRAIN INLETS

     3.6 ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS

     3.7 RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES

     3.8 ESTABLISH STABILIZED CONSTRUCTION EXITS

     3.9 ANY ADDITIONAL BMPS
   - – NOTE THE LOCATION OF EACH BMP ON YOUR SITE MAP(S).
   - – FOR ANY STRUCTURAL BMPS, YOU SHOULD PROVIDE DESIGN SPECIFICATIONS AND DETAILS AND REFER TO THEM.
   - – FOR MORE INFORMATION, SEE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL 1.4.

3. THE PLACEMENT OF TREE/NATURAL AREA PROTECTIVE FENCING SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION AND THE APPROVED GRADING/TREE AND NATURAL AREA PLAN.
4. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND ENVIRONMENTAL INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS, TREE/NATURAL AREA PROTECTION MEASURES AND "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE) PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE OWNER OR OWNER'S REPRESENTATIVE SHALL NOTIFY THE DEVELOPMENT SERVICES DEPARTMENT, 512-974-2278 OR BY EMAIL AT ENVIRONMENTAL.INSPECTIONS@AUSTINTEXAS.GOV, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE. COA APPROVED ESC PLAN AND TPDES SWPPP (IF REQUIRED) SHOULD BE REVIEWED BY COA EV INSPECTOR AT THIS TIME.
5. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER, ENVIRONMENTAL SPECIALIST OR CITY ARBORIST AS APPROPRIATE. MAJOR REVISIONS MUST BE APPROVED BY AUTHORIZED COA STAFF. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE ENVIRONMENTAL INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
6. THE CONTRACTOR IS REQUIRED TO PROVIDE A CERTIFIED INSPECTOR THAT IS EITHER A LICENSED ENGINEER (OR PERSON DIRECTLY SUPERVISED BY THE LICENSED ENGINEER) OR CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC OR CPESC - IT), CERTIFIED EROSION, SEDIMENT AND STORMWATER - INSPECTOR (CESSWI OR CESSWI - IT) OR CERTIFIED INSPECTOR OF SEDIMENTATION AND EROSION CONTROLS (CISEC OR CISEC - IT) CERTIFICATION TO INSPECT THE CONTROLS AND FENCES AT WEEKLY OR BI-WEEKLY INTERVALS AND AFTER ONE-HALF (½) INCH OR GREATER RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES OR ONE-THIRD (⅓) OF THE INSTALLED HEIGHT OF THE CONTROL WHICHEVER IS LESS.
7. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
8. ALL WORK MUST STOP IF A VOID IN THE ROCK SUBSTRATE IS DISCOVERED WHICH IS; ONE SQUARE FOOT IN TOTAL AREA; BLOWS AIR FROM WITHIN THE SUBSTRATE AND/OR CONSISTENTLY RECEIVES WATER DURING ANY RAIN EVENT. AT THIS TIME IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO IMMEDIATELY CONTACT A CITY OF AUSTIN ENVIRONMENTAL INSPECTOR FOR FURTHER INVESTIGATION. IN ADDITION, IF THE PROJECT SITE IS LOCATED WITHIN THE EDWARDS AQUIFER, THE PROJECT MANAGER MUST NOTIFY THE TRAVIS COUNTY BALCONES CANYONLANDS CONSERVATION PRESERVE (BCCP) BY EMAIL AT bccp@traviscountytx.gov. CONSTRUCTION ACTIVITIES WITHIN 50 FEET OF THE VOID MUST STOP.
9. TEMPORARY AND PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:
   A. ALL DISTURBED AREAS TO BE REVEGETATED ARE REQUIRED TO PLACE A MINIMUM OF SIX (6) INCHES OF TOPSOIL [SEE STANDARD SPECIFICATION ITEM NO. 601S.3(A)]. DO NOT ADD TOPSOIL WITHIN THE CRITICAL ROOT ZONE OF EXISTING TREES.

TOPSOIL SALVAGED FROM THE EXISTING SITE IS ENCOURAGED FOR USE, BUT IT SHOULD MEET THE STANDARDS SET FORTH IN 601S.

AN OWNER/ENGINEER MAY PROPOSE USE OF ONSITE SALVAGED TOPSOIL WHICH DOES NOT MEET THE CRITERIA OF STANDARD SPECIFICATION 601S BY PROVIDING A SOIL ANALYSIS AND A WRITTEN STATEMENT FROM A QUALIFIED PROFESSIONAL IN SOILS, LANDSCAPE ARCHITECTURE, OR AGRONOMY INDICATING THE ONSITE TOPSOIL WILL PROVIDE AN EQUIVALENT GROWTH MEDIA AND SPECIFYING WHAT, IF ANY, SOIL AMENDMENTS ARE REQUIRED.

SOIL AMENDMENTS SHALL BE WORKED INTO THE EXISTING ONSITE TOPSOIL WITH A DISC OR TILLER TO CREATE A WELL-BLENDED MATERIAL.

THE VEGETATIVE STABILIZATION OF AREAS DISTURBED BY CONSTRUCTION SHALL BE AS FOLLOWS:

TEMPORARY VEGETATIVE STABILIZATION:

1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH OR INCLUDE A COOL SEASON COVER CROP: (WESTERN WHEATGRASS (*PASCOPYRUM SMITHII*) AT 5.6 POUNDS PER ACRE, OATS (*AVENA SATIVA*) AT 4.0 POUNDS PER ACRE, CEREAL RYE GRAIN (*SECALE CEREALE*) AT 45 POUNDS PER ACRE. CONTRACTOR MUST ENSURE THAT ANY SEED APPLICATION REQUIRING A COOL SEASON COVER CROP DOES NOT UTILIZE ANNUAL RYEGRASS (*LOLIUM MULTIFLORUM*) OR PERENNIAL RYEGRASS (*LOLIUM PERENNE*). COOL SEASON COVER CROPS ARE NOT PERMANENT EROSION CONTROL.
2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERMUDA AT A RATE OF 45 POUNDS PER ACRE OR A NATIVE PLANT SEED MIX CONFORMING TO ITEM 604S OR 609S.
   A. FERTILIZER SHALL BE APPLIED ONLY IF WARRANTED BY A SOIL TEST AND SHALL CONFORM TO ITEM NO. 606S, FERTILIZER. FERTILIZATION SHOULD NOT OCCUR WHEN RAINFALL IS EXPECTED OR DURING SLOW PLANT GROWTH OR DORMANCY. CHEMICAL FERTILIZER MAY NOT BE APPLIED IN THE CRITICAL WATER QUALITY ZONE.
   B. HYDROMULCH SHALL COMPLY WITH TABLE 1, BELOW.
   C. TEMPORARY EROSION CONTROL SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH A MINIMUM OF 95% TOTAL COVERAGE SO THAT ALL AREAS OF A SITE THAT RELY ON VEGETATION FOR TEMPORARY STABILIZATION ARE UNIFORMLY VEGETATED, AND PROVIDED THERE ARE NO BARE SPOTS LARGER THAN 10 SQUARE FEET.
   D. WHEN REQUIRED, NATIVE PLANT SEEDING SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL, AND STANDARD SPECIFICATION 604S OR 609S.

TABLE 1: HYDROMULCHING FOR TEMPORARY VEGETATIVE STABILIZATION

MATERIAL	DESCRIPTION	LONGEVITY	TYPICAL APPLICATIONS	APPLICATION RATES
100% OR ANY BLEND OF WOOD, CELLULOSE, STRAW AND/OR COTTON PLANT MATERIAL (EXCEPT NO MULCH SHALL EXCEED 30% PAPER)	70% OR OR GREATER WOOD/STRAW 30% OR LESS PAPER OR NATURAL FIBERS	0 - 3 MONTHS	MODERATE SLOPES; FROM FLAT TO 3:1	1,500 TO 2,000 LBS PER ACRE

PERMANENT VEGETATIVE STABILIZATION:

1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING IS CONSIDERED TO BE TEMPORARY STABILIZATION ONLY. IF COOL SEASON COVER CROPS EXIST WHERE PERMANENT VEGETATIVE STABILIZATION IS DESIRED, THE GRASSES SHALL BE MOWED TO A HEIGHT OF LESS THAN ONE-HALF (½) INCH AND THE AREA SHALL BE RE-SEEDED IN ACCORDANCE WITH TABLE 2 BELOW. ALTERNATIVELY, THE COOL SEASON COVER CROP CAN BE MIXED WITH BERMUDAGRASS OR NATIVE SEED AND INSTALLED TOGETHER, UNDERSTANDING THAT GERMINATION OF WARM-SEASON SEED TYPICALLY REQUIRES SOIL TEMPERATURES OF 60 TO 70 DEGREES.
2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERMUDA AT A RATE OF 45 POUNDS PER ACRE WITH A PURITY OF 95% AND A MINIMUM PURE LIVE SEED (PLS) OF 0.83. BERMUDA GRASS IS A WARM SEASON GRASS AND IS CONSIDERED PERMANENT EROSION CONTROL. PERMANENT VEGETATIVE STABILIZATION CAN ALSO BE ACCOMPLISHED WITH A NATIVE PLANT SEED MIX CONFORMING TO ITEM 604S OR 609S.
   A. FERTILIZER USE SHALL FOLLOW THE RECOMMENDATION OF A SOIL TEST. SEE ITEM 606S, FERTILIZER. APPLICATIONS OF FERTILIZER (AND PESTICIDE) ON CITY-OWNED AND MANAGED PROPERTY REQUIRES THE YEARLY SUBMITTAL OF A PESTICIDE AND FERTILIZER APPLICATION RECORD, ALONG WITH A CURRENT COPY OF THE APPLICATOR'S LICENSE. FOR CURRENT COPY OF THE RECORD TEMPLATE CONTACT THE CITY OF AUSTIN'S IPM COORDINATOR.
   B. HYDROMULCH SHALL COMPLY WITH TABLE 2, BELOW.
   C. WATER THE SEEDED AREAS IMMEDIATELY AFTER INSTALLATION TO ACHIEVE GERMINATION AND A HEALTHY STAND OF PLANTS THAT CAN ULTIMATELY SURVIVE WITHOUT SUPPLEMENTAL WATER. APPLY THE WATER UNIFORMLY TO THE PLANTED AREAS WITHOUT CAUSING DISPLACEMENT OR EROSION OF THE MATERIALS OR SOIL. MAINTAIN THE SEEDBED IN A MOIST CONDITION FAVORABLE FOR PLANT GROWTH. ALL WATERING SHALL COMPLY WITH CITY CODE CHAPTER 6-4 (WATER CONSERVATION), AT RATES AND FREQUENCIES DETERMINED BY A LICENSED IRRIGATOR OR OTHER QUALIFIED PROFESSIONAL, AND AS ALLOWED BY THE AUSTIN WATER UTILITY AND CURRENT WATER RESTRICTIONS AND WATER CONSERVATION INITIATIVES.
   D. PERMANENT EROSION CONTROL SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH A MINIMUM OF 95 PERCENT FOR THE NON-NATIVE MIX, AND 95 PERCENT COVERAGE FOR THE NATIVE MIX SO THAT ALL AREAS OF A SITE THAT RELY ON VEGETATION FOR STABILITY MUST BE UNIFORMLY VEGETATED, AND PROVIDED THERE ARE NO BARE SPOTS LARGER THAN 10 SQUARE FEET.
   E. WHEN REQUIRED, NATIVE PLANT SEEDING SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL, ITEMS 604S AND 609S.

TABLE 2: HYDROMULCHING FOR PERMANENT VEGETATIVE STABILIZATION

MATERIAL	DESCRIPTION	LONGEVITY	TYPICAL APPLICATIONS	APPLICATION RATES
BONDED FIBER MATRIX (BFM)	80% ORGANIC DEFIBRATED FIBERS			
10% TACKIFIER		6 MONTHS	ON SLOPE UP TO 2:1 AND EROSIVE SOIL CONDITIONS	2,500 TO 4,000 LBS PER ACRE (SEE MANUFACTURERS RECOMMENDATIONS)
FIBER REINFORCED MATRIX (BFM)	65% ORGANIC DEFIBRATED FIBERS 25% REINFORCING FIBERS OR LESS 10% TACKIFIER	UP TO 12 MONTHS	ON SLOPE UP TO 1:1 AND EROSIVE SOIL CONDITIONS	3,000 TO 4,500 LBS PER ACRE (SEE MANUFACTURERS RECOMMENDATIONS)

10. DEVELOPER INFORMATION:

    OWNER: TIRRES GROUP LLC

    PHONE #: .

    ADDRESS: 3507 NATIVE DANCER CV, AUSTIN, TX 78746-1434

    OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS: THOMPSON LAND ENGINEERING, LLC

    PHONE #: 512-328-0002

    PERSON OR FIRM RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE: __________

    PHONE #: TBD

    PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE: __________

    PHONE #: TBD

11. THE CONTRACTOR SHALL NOT DISPOSE OF SURPLUS EXCAVATED MATERIAL FROM THE SITE WITHOUT NOTIFYING THE DEVELOPMENT SERVICES DEPARTMENT AT 512-974-2278 AT LEAST 48 HOURS PRIOR WITH THE LOCATION AND A COPY OF THE PERMIT ISSUED TO RECEIVE THE MATERIAL.

SOURCE: RULE NO. R161-15.13, 1-4-2016 ; RULE NO. R161-17.03 , 3-2-2017; RULE NO. R161-19.02 , 3-14-2019.

SEQUENCE OF CONSTRUCTION

TLE	1.	REVIEW THE PLANS FOR ANY ASPECTS WHICH MAY SEEM UNCLEAR AND GET ANY CLARIFICATIONS NEEDED FROM THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION. DO NOT BEGIN CONSTRUCTION UNTIL YOU BELIEVE THAT YOU UNDERSTAND ALL THE NOTES AND GRAPHICS ON THE PLAN VIEWS AND PROFILES, AS WELL AS THE NOTES ON THE GENERAL NOTES SHEET AND THE DETAILS ON THE DETAILS SHEETS.
TLE	2.	VERIFY WHETHER A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED AND, IF ONE IS REQUIRED, FILE A NOTICE OF INTENT (NOI) PRIOR TO COMMENCING CONSTRUCTION. ALSO POST THE REQUIRED CONSTRUCTION SITE NOTICE AND ENSURE A COPY OF THE REPORT IS KEPT IN THE LOCATION CITED ON THE CONSTRUCTION NOTICE.
TLE	3.	MAKE SURE ANY DEMOLITION AND/OR WORK IN THE RIGHT-OF-WAY PERMITS HAVE BEEN OBTAINED. NO CONSTRUCTION IS TO COMMENCE WITHOUT A TRAFFIC CONTROL PLAN APPROVED BY THE CITY OF AUSTIN RIGHT-OF-WAY MANAGEMENT DIVISION.
TLE	4.	VERIFY THAT THESE PLANS ARE THE APPROVED SET AND, IF SO, INSTALL EROSION CONTROLS AND TREE PROTECTION AS SHOWN ON THESE PLANS.
TLE	5.	CHECK THE COVER SHEET TO SEE IF A CONTRIBUTING ZONE PLAN (CZP) OR WATER POLLUTION ABATEMENT PLAN (WPAP) WAS REQUIRED BY TCEQ. IF ONE WAS REQUIRED, MAKE SURE TO OBTAIN A COPY, READ IT, AND KEEP A COPY ON-SITE. ALSO MAKE SURE TO READ THE RELATED NOTES ON THE NOTE SHEET(S) AND NOTIFY THE TCEQ 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALSO MAKE SURE THAT THE NOTICE OF APPROVAL FROM THE TCEQ WAS FILED IN THE COUNTY DEED RECORDS AND PROOF OF THAT RECORDING SUBMITTED TO THE AUSTIN REGIONAL OFFICE. NOTE THAT APPROVAL SHOULD HAVE BEEN RECORDED WITHIN 60 DAYS OF APPROVAL.
COA P-4	6.	TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSTALLED AS INDICATED ON THE APPROVED SITE PLAN OR SUBDIVISION CONSTRUCTION PLAN AND IN ACCORDANCE WITH THE EROSION SEDIMENTATION CONTROL PLAN (ESC) AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) THAT IS REQUIRED TO BE POSTED ON THE SITE. INSTALL TREE PROTECTION, INITIATE TREE MITIGATION MEASURES AND CONDUCT "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE).
COA P-4	7.	THE ENVIRONMENTAL PROJECT MANAGER OR SITE SUPERVISOR MUST CONTACT THE DEVELOPMENT SERVICES DEPARTMENT, ENVIRONMENTAL INSPECTION, AT 512-974-2278, 72 HOURS PRIOR TO THE SCHEDULED DATE OF THE REQUIRED ON-SITE PRECONSTRUCTION MEETING.
COA P-4	8.	THE ENVIRONMENTAL PROJECT MANAGER, AND/OR SITE SUPERVISOR, AND/OR DESIGNATED RESPONSIBLE PARTY, AND THE GENERAL CONTRACTOR WILL FOLLOW THE EROSION SEDIMENTATION CONTROL PLAN (ESC) AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) POSTED ON THE SITE. TEMPORARY EROSION AND SEDIMENTATION CONTROLS WILL BE REVISED, IF NEEDED, TO COMPLY WITH CITY INSPECTOR'S DIRECTIVES, AND REVISED CONSTRUCTION SCHEDULE RELATIVE TO THE WATER QUALITY PLAN REQUIREMENTS AND THE EROSION PLAN.
TLE	9.	CONTRACTOR TO CONTACT COUNTY PRIOR TO CONSTRUCTION FOR ANY PRECONSTRUCTION CONFERENCE FOR ENVIRONMENTAL, DRIVEWAY AND/OR SEPTIC INSPECTIONS.
TLE	10.	CONTRACTOR IS TO EXPOSE ALL TIE-IN POINTS TO VERIFY ELEVATIONS AND NOTIFY ENGINEER OF ANY DIFFERENCES IN HORIZONTAL OR VERTICAL LOCATION.
TLE	11.	VERIFY THAT ALL OF THE POSSIBLE UTILITIES HAVE BEEN MARKED BY ONE CALL AND BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES OR POSSIBLE PROBLEMS OBSERVED.
COA P-4	12.	ROUGH GRADE THE POND(S) AT 100% PROPOSED CAPACITY. EITHER THE PERMANENT OUTLET STRUCTURE OR A TEMPORARY OUTLET MUST BE CONSTRUCTED PRIOR TO DEVELOPMENT OF EMBANKMENT OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF A SUMP PIT OUTLET AND AN EMERGENCY SPILLWAY MEETING THE REQUIREMENTS OF THE DRAINAGE CRITERIA MANUAL AND/OR THE ENVIRONMENTAL CRITERIA MANUAL, AS REQUIRED. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION UNTIL INSTALLATION OF THE PERMANENT WATER QUALITY PONDS
COA P-4	13.	TEMPORARY EROSION AND SEDIMENTATION CONTROLS WILL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE EROSION SEDIMENTATION CONTROL PLAN (ESC) AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) POSTED ON THE SITE.
TLE		(IF THIS PLAN IS PHASED, STEPS 12-21 ARE TO BE REPEATED FOR EACH PHASE)
TLE	14.	PERFORM ANY DEMOLITION OF ANY BUILDINGS AND PAVING.
TLE	15.	CLEAR AND ROUGH GRADE THE SITE.
TLE	16.	CHECK ENVIRONMENTAL CONTROLS AND KEEP LOG OF OBSERVATIONS AS REQUIRED IN THE SWP3. TEMPORARY CONTROLS TO BE INSPECTED AND MAINTAINED EVERY WEEK AND PRIOR TO ANTICIPATED RAINFALL EVENTS AND AFTER RAINFALL EVENTS OF 0.5 INCHES OR MORE. IF DISTURBED AREA IS NOT TO BE WORKED FOR MORE THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING.
TLE	17.	INSTALL UNDERGROUND UTILITIES AND CONSTRUCT POND. NOTE: CONTACT ESD TO PERFORM VISUAL INSPECTION OF FIRE MAINS TO VERIFY PIPE TYPE, SIZE, WRAPPED JOINTS, AND PROPER INSTALLATION OF THRUST BLOCKING. DO NOT BURY PIPES UNTIL INSPECTION HAS BEEN CONDUCTED.
TLE	18.	CONSTRUCT BUILDINGS.
TLE	19.	PAVE THE SITE.
TLE	20.	FINISH GRADE THE SITE INCLUDING ADJUSTING AND FINISHING DRAINAGE FEATURES, PONDS, UTILITIES, AND RETAINING WALL STRUCTURES.
COA P-4	21.	IN THE BARTON SPRINGS ZONE, THE ENVIRONMENTAL PROJECT MANAGER OR SITE SUPERVISOR WILL SCHEDULE A MID-CONSTRUCTION CONFERENCE TO COORDINATE CHANGES IN THE CONSTRUCTION SCHEDULE AND EVALUATE EFFECTIVENESS OF THE EROSION CONTROL PLAN AFTER POSSIBLE CONSTRUCTION ALTERATIONS TO THE SITE. PARTICIPANTS SHALL INCLUDE THE CITY INSPECTOR, PROJECT ENGINEER, GENERAL CONTRACTOR AND ENVIRONMENTAL PROJECT MANAGER OR SITE SUPERVISOR. THE ANTICIPATED COMPLETION DATE AND FINAL CONSTRUCTION SEQUENCE AND INSPECTION SCHEDULE WILL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR.
COA P-4	22.	PERMANENT WATER QUALITY PONDS OR CONTROLS WILL BE CLEANED OUT AND FILTER MEDIA WILL BE INSTALLED PRIOR TO/CONCURRENTLY WITH REVEGETATION OF SITE.
COA P-4	23.	COMPLETE CONSTRUCTION AND START REVEGETATION OF THE SITE AND INSTALLATION OF LANDSCAPING.
COA P-4	24.	UPON COMPLETION OF THE SITE CONSTRUCTION AND REVEGETATION OF A PROJECT SITE, THE DESIGN ENGINEER SHALL SUBMIT AN ENGINEER'S LETTER OF CONCURRENCE BEARING THE ENGINEER'S SEAL, SIGNATURE, AND DATE TO THE DEVELOPMENT SERVICES DEPARTMENT INDICATING THAT CONSTRUCTION, INCLUDING REVEGETATION, IS COMPLETE AND IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED PLANS. AFTER RECEIVING THIS LETTER, A FINAL INSPECTION WILL BE SCHEDULED BY THE APPROPRIATE CITY INSPECTOR.
COA P-4	25.	UPON COMPLETION OF LANDSCAPE INSTALLATION OF A PROJECT SITE, THE LANDSCAPE ARCHITECT SHALL SUBMIT A LETTER OF CONCURRENCE TO THE DEVELOPMENT SERVICES DEPARTMENT INDICATING THAT THE REQUIRED LANDSCAPING IS COMPLETE AND IN SUBSTANTIAL CONFORMITY WITH THE APPROVED PLANS. AFTER RECEIVING THIS LETTER, A FINAL INSPECTION WILL BE SCHEDULED BY THE APPROPRIATE CITY INSPECTOR.
COA P-4	26.	AFTER A FINAL INSPECTION HAS BEEN CONDUCTED BY THE CITY INSPECTOR AND WITH APPROVAL FROM THE CITY INSPECTOR, REMOVE THE TEMPORARY EROSION AND SEDIMENTATION CONTROLS AND COMPLETE ANY NECESSARY FINAL REVEGETATION RESULTING FROM REMOVAL OF THE CONTROLS. CONDUCT ANY MAINTENANCE AND REHABILITATION OF THE WATER QUALITY PONDS OR CONTROLS.
TLE	27.	IF AN SWPPP WAS REQUIRED, FILE A NOTICE OF TERMINATION (NOT).
TLE	28.	IF A CZP OR WPAP WAS REQUIRED, WITHIN 30 DAYS OF COMPLETION, A TEXAS PE MUST CERTIFY IN WRITING THAT THE BMPS WERE CONSTRUCTED AS DESIGNED AND THAT CERTIFICATION PROVIDED TO THE TCEQ AUSTIN REGIONAL OFFICE

SOURCE: RULE NO. R161-17.03, 1-4-2016 , 3-2-2017.

CITY OF WEST LAKE HILLS:

GENERAL NOTES

1. All materials and construction methods for site grading, paving, sitework, and drainage shall be in accordance with the City of Austin Standard Specifications, unless otherwise noted. All work shall be in accordance with the building codes, ordinances, safety codes, and rules and procedures of the City of West Lake Hills.
2. All responsibility for the adequacy of these plans remains with the Engineer who prepared them. In reviewing these plans, the City of West Lake Hills must rely on the adequacy of the work of the design engineer.
3. Prior to any construction, the Contractor shall apply for and secure all proper permits from the appropriate authorities.
4. Blasting or burning shall not be permitted on this project.
5. The contractor shall verify all depths and locations of existing utilities prior to beginning construction. Any discrepancies with the construction plans found in the field shall be brought to the attention of the design engineer immediately. The design engineer shall be responsible for revising the plans as appropriate and submitting a revision to the City.
6. Contractor will be responsible for keeping roads and drives adjacent to and near the site free from soil, sediment, and debris. Contractor will not remove soil, sediment, or debris from any area or vehicle by means of water, only shoveling and sweeping will be allowed. Contractor will be responsible for dust control from the site.
7. Any existing utilities, pavement, curbs, sidewalks, structures, trees, etc., not planned for destruction or removal or other public infrastructure damaged or removed will be by the contractor at his expense before acceptance of the subdivision.
8. After the construction permit has been issued and prior to the beginning construction, the owner or his representative shall schedule a pre-construction conference between the City of West Lake Hills, Design Engineer, Contractor(s), other utility companies, and any other affected parties. The City of West Lake Hills shall be contacted to set up the meeting at least 48 hours prior to the proposed meeting time.
9. Any changes or revisions to these approved plans must be submitted by the design engineer and approved by the City of West Lake Hills prior to construction of the revision.
10. Excess soil shall be removed at the contractor's expense.
11. Available benchmarks that may be utilized for the construction of this project are described as follows:

TRENCH SAFETY NOTES

1. In accordance with the Laws of the State of Texas and the U. S. Occupational Safety and Health Administration regulations, all trenches over 5 feet in depth in either hard and compact or soft and unstable soil shall be sloped, shored, sheeted, braced or otherwise supported. Furthermore, all trenches less than 5 feet in depth shall also be effectively protected when hazardous ground movement may be expected. Trench safety systems to be utilized for this project will be provided by the contractor to the City. Trench safety system plans are on sheet ____of the plan set. OR Trench safety system plans as designed and sealed by a professional engineer will be provided by the contractor.
2. In accordance with the U. S. Occupational Safety and Health Administration regulations, when persons are in trenches 4-feet deep or more, adequate means of exit, such as a ladder or steps, must be provided and located so as to require no more than 25 feet of lateral travel.
3. If trench safety system details were not provided in the plans because trenches were anticipated to be less than 5 feet in depth and during construction it is found that trenches are in fact 5 feet or more in depth or trenches less than 5 feet in depth are in an area where hazardous ground movement is expected, all construction shall cease, the trenched area shall be barricaded and the Engineer notified immediately. Construction shall not resume until appropriate trench safety system details, as designed by a professional engineer, are retained and copies submitted to the City of West Lake Hills.

STREET AND DRAINAGE NOTES

1. All testing shall be done by an independent laboratory at the Applicant's expense. A City Inspector shall be present during all tests. Testing shall be coordinated with the City inspector and he shall be given a minimum of 24 hours notice prior to any testing.
2. Backfill behind the curb shall be compacted to obtain a minimum of 85% maximum density to within 3 inches of top of curb. Material used shall be primarily granular with no rocks larger than 3 inches in the greatest dimension. The remaining 3 inches shall be clean topsoil free from all clods and suitable for sustaining plant life.
3. All RCP shall be minimum Class III.
4. The subgrade material for the streets shown herein was tested by ______________. The paving sections were designed by ____________ in accordance with the current City of Bastrop design criteria. The paving sections are to be constructed as follows:

Street	Station	Flex. Base Thickness	HMAC Thickness	Lime Stab. Thickness

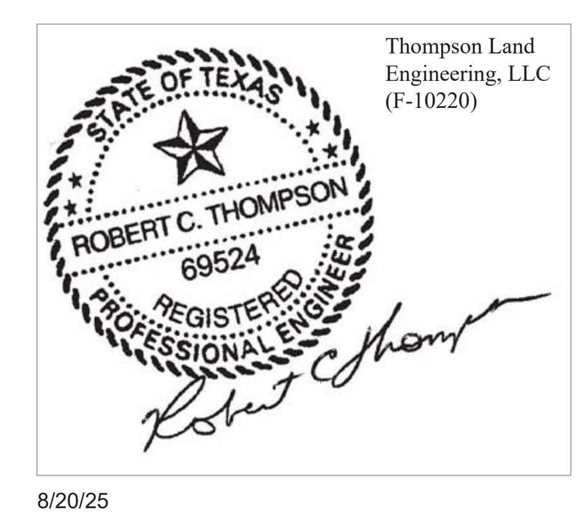
5. A note is required to present flood hazard information. The flood hazard information may be drafted in a statement or list format. Each of the following items must be identified within the list or statement:
   a. Flood Zone and its description,
   b. FIRM panel number, and
   c. FIRM panel effective date.
6. FLOOD WARNING: The degree of flood protection required by the City of West Lake hills Flood Damage Prevention Ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. Acceptance of this plan by the City Council does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. Nor shall acceptance of this plan create liability on the part of the City of West Lake Hills or any official or employee thereof for any flood damages that result from reliance on the information contained within this plan or any administration decision lawfully made hereunder.

TRAFFIC MARKING NOTES

1. Barricades built to the Texas Manual on Uniform Traffic Control Devices standards shall be constructed on all dead-end streets and as necessary during construction to maintain job and public safety.
2. Any methods, street markings, and signage necessary for warning motorists, warning pedestrians, or diverting traffic during construction shall conform to the Texas Manual of Uniform Traffic Control Devices for Streets and Highways, latest edition.
3. All pavement markings, markers, paint, traffic buttons, traffic controls, and signs shall be installed in accordance with the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges and the Texas Manual of Uniform Traffic Control Devices for Streets and Highways, latest editions.

EROSION CONTROL NOTES

1. The contractor shall install erosion/sedimentation controls and tree/natural area protective fencing prior to any site preparation work (clearing, grubbing or excavation). The placement of erosion/sedimentation controls shall be in accordance with the current City West Lake Hills Drainage and Erosion Control Manual and the approved Erosion and Sedimentation Control Plan. No erosion controls shall be placed beyond the property lines of the site unless written permission has been obtained from adjacent property owners.
2. All slopes shall be sodded or seeded with approved grass, grass mixtures, or ground cover suitable to the area and season in which they are applied.
3. Any major variation in materials or locations of controls or fences from those shown on the approved plans will require a revision and must be approved by the Engineer. Major revisions must be approved by the City. Minor changes to be made as field revisions to the Erosion and Sedimentation Control Plan may be required by the City Inspector during the course of construction to correct control inadequacies.
4. The contractor is required to inspect the controls at weekly intervals and after any rainfall event to ensure that they are functioning properly. The person(s) responsible for maintenance of controls and fences shall immediately make any necessary repairs to damaged areas. Silt accumulation at controls must be removed when the depth reaches six (6) inches.
5. All temporary erosion control measures shall not be removed until final inspection and approval of the project by the City Inspector. It shall be the responsibility of the Contractor to maintain all temporary erosion control structures and to remove each structure as approved by the City Inspector.
6. Prior to final acceptance by the City, haul roads and waterway crossings constructed for temporary contractor access must be removed, accumulated sediment removed from the waterway and the area restored to the original grade and revegetated. All land clearing debris shall be disposed of in approved spoil disposal sites.



Thompson Land Engineering, LLC (F-10220)

8/20/25

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
www.tleng.net email: ric@tleng.net

DATE	REVISION

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

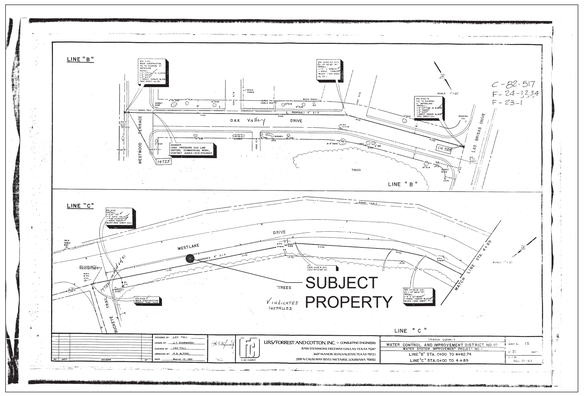
SHEET NAME: GENERAL NOTES

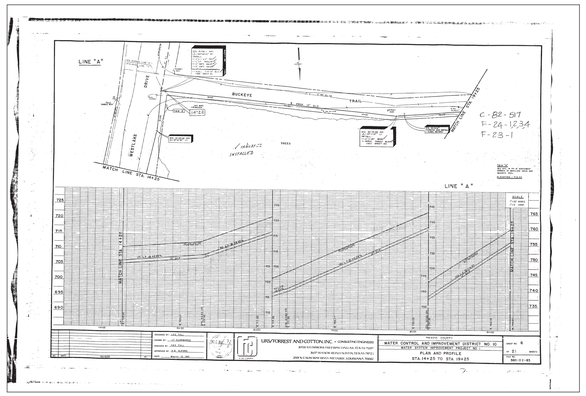
DATE ISSUED: August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER: 1959

WATER





TELEPHONE

COWEN, CHRIS
to me

Apr 15, 2020, 7:14 AM (5 days ago)

Hello Valerie,

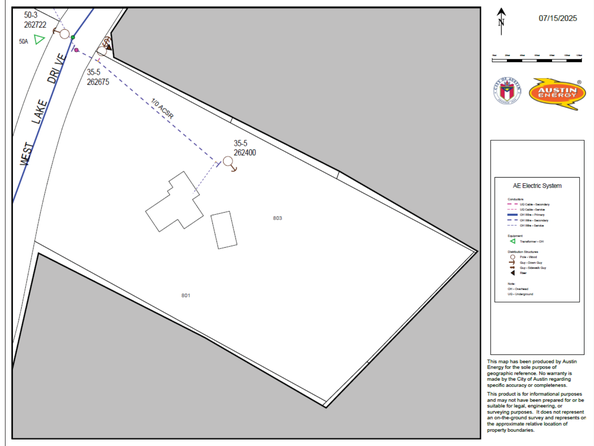
Nothing has changed. We do not provide redlined drawings.

Best Regards,

Chris Cowen
Manager-OSP Planning & Engineering Design
AT&T Texas
512-750-7140 (mobile)
cc2753@att.com

PROVIDER: AT & T
CONTACT: CHRIS COWEN
DATE(S) OF CONTACT: 4-15-2020

ELECTRIC



07/15/2025

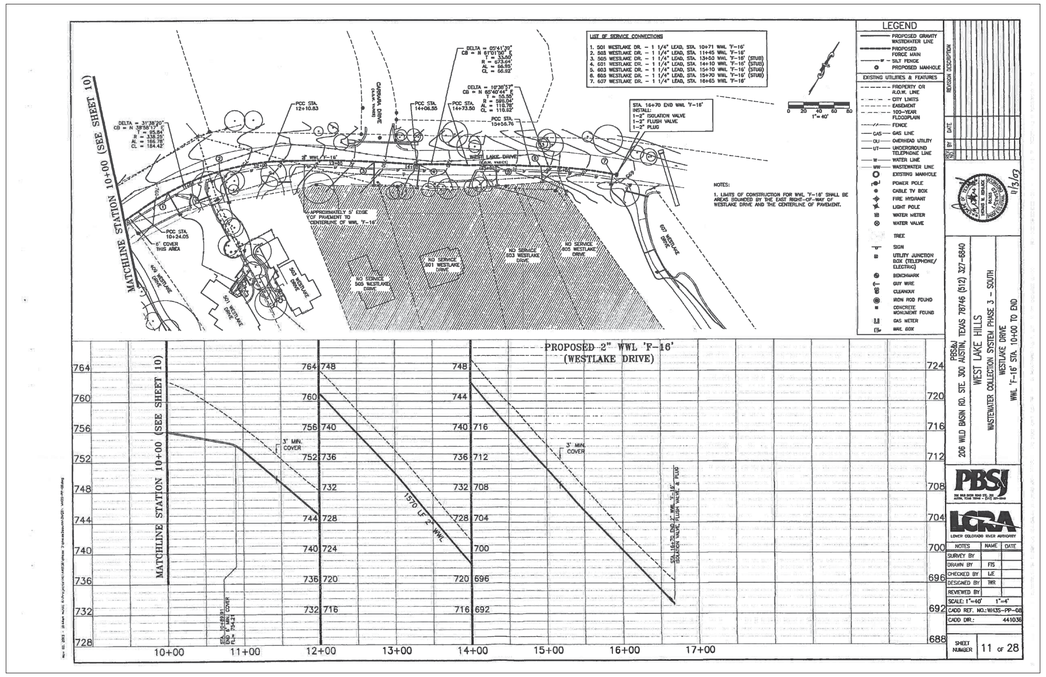
AE Electric System

This map has been produced by Austin Energy for the sole purpose of geographic reference. No warranty is made by the City of Austin regarding specific accuracy or completeness.

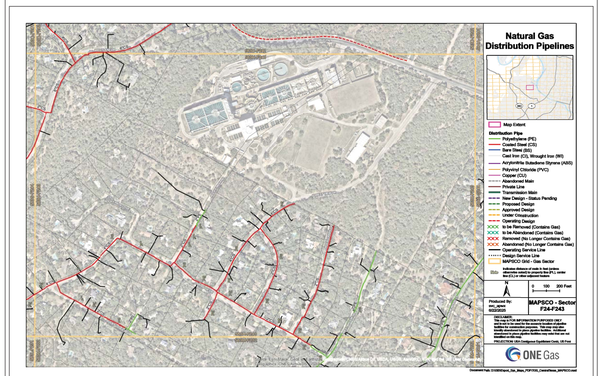
This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents or the approximate relative location of property boundaries.

PROVIDER: AUSTIN ENERGY
CONTACT: AE GIS SERVICES
DATE(S) OF CONTACT: 7-8-2025

WASTEWATER



GAS



CABLE

Thompson Land Engineering, LLC (F-10220)

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER

8/20/25

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
email: rct@tleng.net
www.tleng.net
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DATE
REVISION

PROJECT
MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

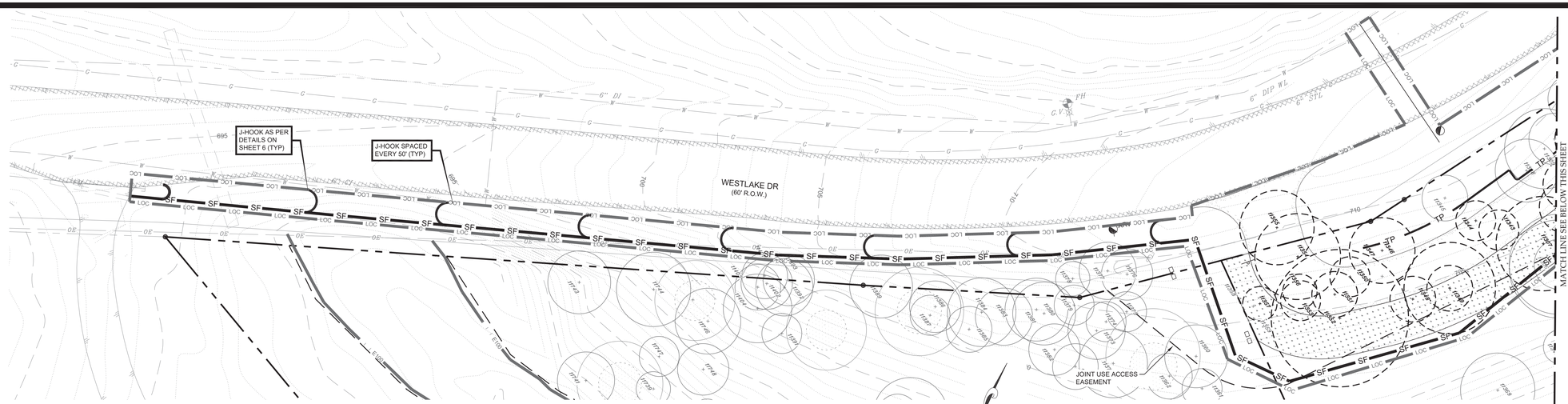
SHEET NAME
UTILITY DATA COLLECTION & PERMITS

DATE ISSUED
August, 2025

DESIGNED BY RCT
DRAFTED BY BH

JOB NUMBER
1959

SHEET
4 OF 16



1 ESC & SEDIMENTATION CONTROL PLAN

SCALE: 1:20

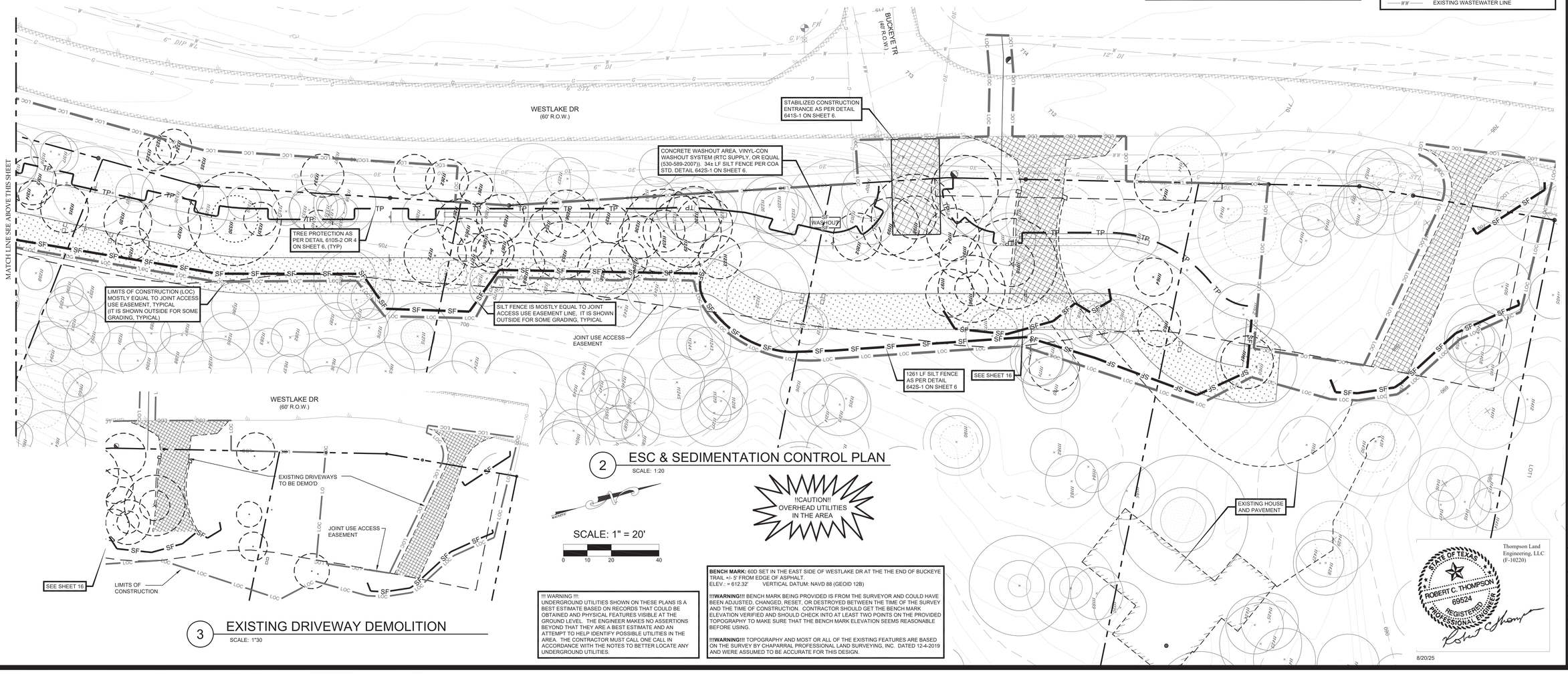
SCALE: 1" = 20'

0 10 20 40

!!! NOTICE !!!:
IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY RESUMES PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE..

LEGEND

- TREE TO REMAIN
- TREE TO BE REMOVED
- PROTECTED TREE
- HERITAGE TREE
- TREE PROTECTION
- EXISTING WATER METER
- EXISTING FIRE HYDRANT
- EXISTING GATE VALVE
- EXISTING POWER POLE
- HATCHED ITEMS TO BE DEMOLISHED AND REMOVED
- STABILIZED CONSTRUCTION ENTRANCE
- CONSTRUCTION STAGING AND TEMP. SPOILS AREA
- LOC — LIMITS OF CONSTRUCTION
- SF — EROSION CONTROL SILT FENCE
- MS — EROSION CONTROL MULCH SOCK
- TFD — TRIANGULAR FILTER DIKE
- RB — ROCK BERM
- IP — STORM INLET PROTECTION
- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED CONTOURS
- OE — EXISTING OVERHEAD ELECTRIC
- UT — EXISTING UNDERGROUND TELEPHONE
- G — EXISTING UNDERGROUND GAS
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE



2 ESC & SEDIMENTATION CONTROL PLAN

SCALE: 1:20

SCALE: 1" = 20'

0 10 20 40

!!CAUTION!!
OVERHEAD UTILITIES
IN THE AREA

3 EXISTING DRIVEWAY DEMOLITION

SCALE: 1"30

!!! WARNING !!!:
UNDERGROUND UTILITIES SHOWN ON THESE PLANS IS A BEST ESTIMATE BASED ON RECORDS THAT COULD BE OBTAINED AND PHYSICAL FEATURES VISIBLE AT THE GROUND LEVEL. THE ENGINEER MAKES NO ASSERTIONS BEYOND THAT THEY ARE A BEST ESTIMATE AND AN ATTEMPT TO HELP IDENTIFY POSSIBLE UTILITIES IN THE AREA. THE CONTRACTOR MUST CALL ONE CALL IN ACCORDANCE WITH THE NOTES TO BETTER LOCATE ANY UNDERGROUND UTILITIES.

BENCH MARK: 60D SET IN THE EAST SIDE OF WESTLAKE DR AT THE THE END OF BUCKEYE TRAIL +/- 5' FROM EDGE OF ASPHALT.
ELEV.: = 612.32' VERTICAL DATUM: NAVD 88 (GEOID 12B)

!!!WARNING!!! BENCH MARK BEING PROVIDED IS FROM THE SURVEYOR AND COULD HAVE BEEN ADJUSTED, CHANGED, RESET, OR DESTROYED BETWEEN THE TIME OF THE SURVEY AND THE TIME OF CONSTRUCTION. CONTRACTOR SHOULD GET THE BENCH MARK ELEVATION VERIFIED AND SHOULD CHECK INTO AT LEAST TWO POINTS ON THE PROVIDED TOPOGRAPHY TO MAKE SURE THAT THE BENCH MARK ELEVATION SEEMS REASONABLE BEFORE USING.

!!!WARNING!!! TOPOGRAPHY AND MOST OR ALL OF THE EXISTING FEATURES ARE BASED ON THE SURVEY BY CHAPARRAL PROFESSIONAL LAND SURVEYING, INC. DATED 12-4-2019 AND WERE ASSUMED TO BE ACCURATE FOR THIS DESIGN.

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER

Thompson Land Engineering, LLC (F-10220)

8/20/25

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
email: rct@tleng.net
www.tleng.net
TBPE Reg. No. F-10220

REVISION | DATE

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

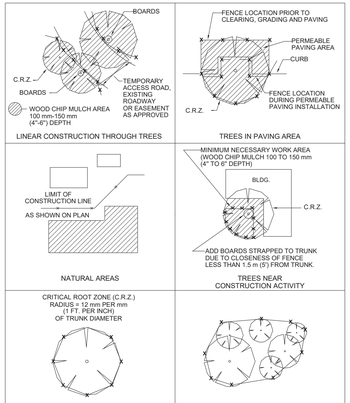
SHEET NAME: EROSION & SEDIMENTATION CONTROL PLAN

DATE ISSUED: August, 2025

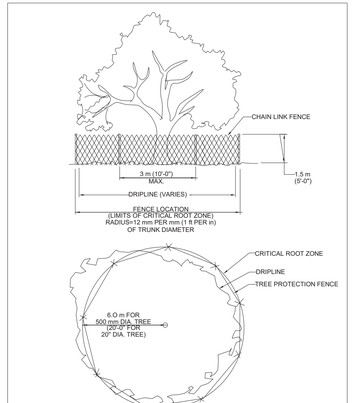
DESIGNED BY: RCT | DRAFTED BY: BH

JOB NUMBER: 1959

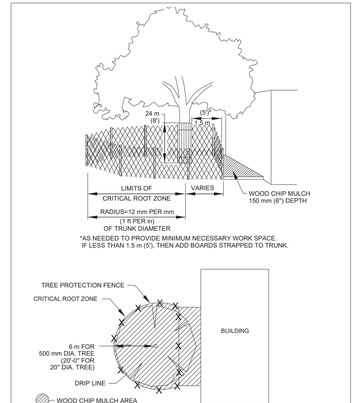
SHEET: 5 OF 16



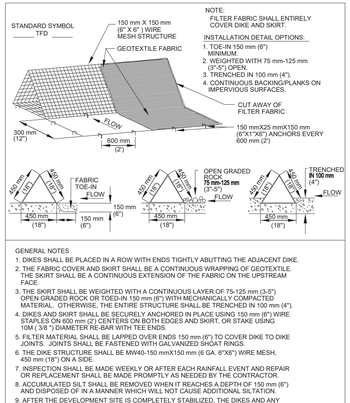
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE LOCATIONS	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-1



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE TYPE A - CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-2

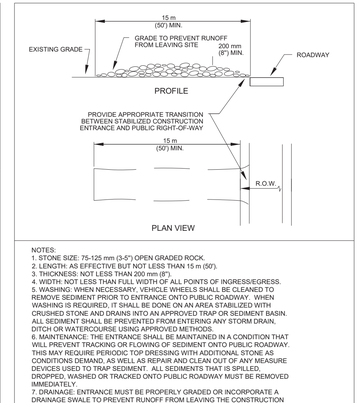


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE MODIFIED TYPE A - CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-4



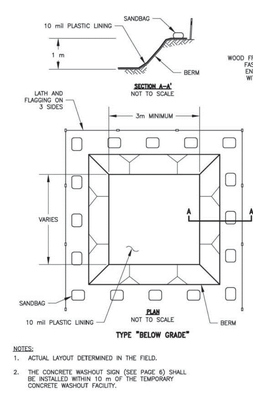
GENERAL NOTES
1. DIKES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT DIKE.
2. THE FABRIC COVER AND SKIRT SHALL BE A CONTINUOUS WRAPPING OF GEOTEXTILE. THE SKIRT SHALL BE A CONTINUOUS EXTENSION OF THE FABRIC ON THE UPSTREAM FACE.
3. THE SKIRT SHALL BE WEIGHTED WITH A CONTINUOUS LAYER OF 75-125 mm (3-5") OPEN GRADED ROCK OR TIED-IN TO 150 mm (6") WITH MECHANICALLY COMPACTED MATERIAL. OTHERWISE, THE ENTIRE STRUCTURE SHALL BE TRENCHED IN 100 mm (4").
4. DIKES AND SKIRT SHALL BE SECURELY ANCHORED IN PLACE USING 150 mm (6") WIRE STAPLES ON 600 mm (2') CENTERS ON BOTH EDGES AND SKIRT, OR STAKE USING 10M (3/8 ") DIAMETER RE-BAR WITH TEE ENDS.
5. FILTER MATERIAL SHALL BE LAPPED OVER ENDS 150 mm-(6") TO COVER DIKE TO DIKE JOINTS . JOINTS SHALL BE FASTENED WITH GALVANIZED STAPLE RINGS.
6. THE DIKE STRUCTURE SHALL BE MW40-150 mmX150 mm (6 GA. 6"X6") WIRE MESH, 450 mm (18") ON A SIDE.
7. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
8. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6") AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.
9. AFTER THE DEVELOPMENT SITE IS COMPLETELY STABILIZED, THE DIKES AND ANY REMAINING SILT SHALL BE REMOVED. SILT SHALL BE DISPOSED OF AS INDICATED IN GENERAL NOTE 8 ABOVE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TRIANGULAR SEDIMENT FILTER DIKE	
RECORD COPY SIGNED BY J. PATRICK MURPHY 3/27/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 628S



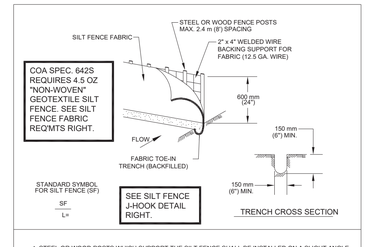
NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1



NOTES:
1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN (SEE PAGE 6) SHALL BE INSTALLED WITHIN 10 m OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CONCRETE WASHOUT DETAILS



COA SPEC. 642S REQUIRES 4.5 OZ "NON-WOVEN" GEOTEXTILE SILT FENCE. SEE SILT FENCE FABRIC REQ'MTS RIGHT.

1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1

Table 1.4.5.G.1: Maximum spacing between silt fences on slopes		
Slope	Spacing Interval (ft)	Max. Drainage Area (sf)
100:1 to 50:1 (1-2%)	500	25,000
50:1 to 30:1 (2-3.3%)	250	15,000
30:1 to 25:1 (3.3-4%)	150	12,000
25:1 to 20:1 (4-5%)	120	10,000
20:1 to 10:1 (5-10%)	100	5,000
10:1 to 5:1 (10-20%)	50	2,500
5:1 to 2:1 (20-50%)	10	1,000

SILT FENCE SPACING TABLE

TABLE 1. Silt Fence Fabric Requirements		
Physical Properties	Method	Requirements
Fabric Weight in ounces per square yard (grams/square meter)	TEX-616-J[1]	5.0 minimum (150 minimum)
Equivalent Sieve Opening Size: US Standard (SI Standard sieve size)	CW-02215[2]	40 to 100 (425 to 150 µm)
Mullen Burst Strength: lbs. per sq. inch (psi) megaPascal (mPa)	ASTM D-3786[3]	280 minimum (1.9 minimum)
Ultraviolet Resistance; % Strength Retention	ASTM D-1682[4]	70 minimum

[1] TxDoT Test Method Tex-616-J, "Testing of Construction Fabrics".
[2] US Army Corps of Engineers Civil Works Construction Guide Specification CW-02215, "Plastic Filter Fabric".
[3] ASTM D-3786, " Test Method for Hydraulic Bursting Strength of Knitting Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method".
[4] ASTM D-1682, "Test Methods for Breaking Load and Elongation of Textile Fabrics ".

SILT FENCE FABRIC REQUIREMENTS

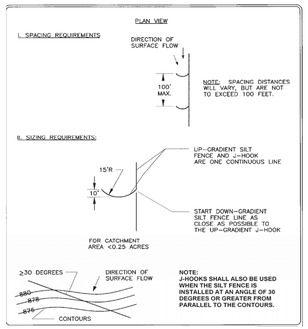
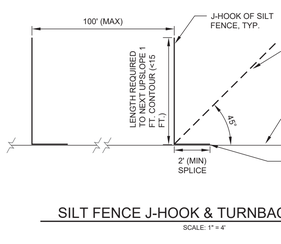
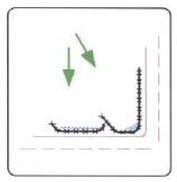


FIGURE 1.4.5.G.4 SILT FENCE J - HOOK DETAILS

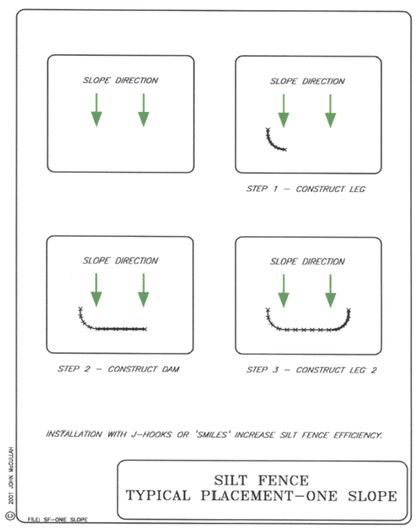


SILT FENCE J-HOOK & TURNBACK DETAIL

SCALE: 1" = 4'



SILT FENCE TURN-BACK DETAIL



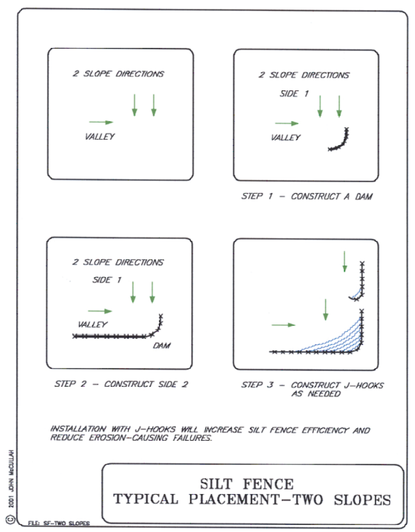


FIGURE 1.4.5.G.3 SILT FENCE PLACEMENT FOR PERIMETER CONTROL

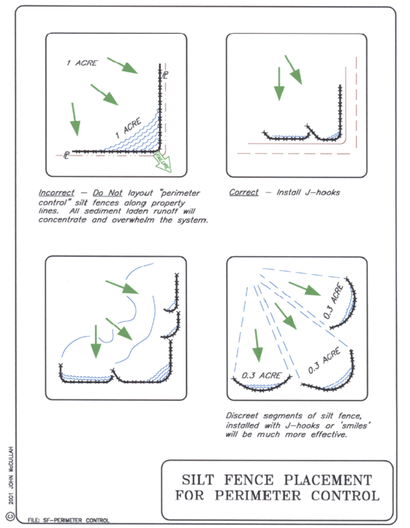
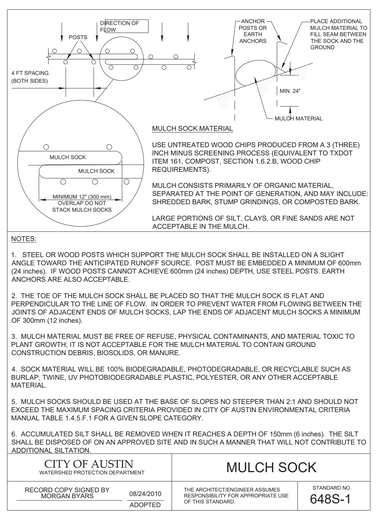


FIGURE 1.4.5.G.3 SILT FENCE PLACEMENT FOR PERIMETER CONTROL



MULCH SOCK MATERIAL

USE UNTREATED WOOD CHIPS PRODUCED FROM A 3 (THREE) INCH MINUS SCREENING PROCESS (EQUIVALENT TO TXDOT ITEM 161, COMPOST, SECTION 1.6.2.B, WOOD CHIP REQUIREMENTS).

MULCH CONSISTS PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, OR COMPOSTED BARK.

LARGE PORTIONS OF SILT, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MULCH.

NOTES:

1. STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 600mm (24 inches). IF WOOD POSTS CANNOT ACHIEVE 600mm (24 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.

2. THE TOE OF THE MULCH SOCK SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT ENDS OF MULCH SOCKS, LAP THE ENDS OF ADJACENT MULCH SOCKS A MINIMUM OF 300mm (12 inches).

3. MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.

4. SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTOBIODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.

5. MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 2:1 AND SHOULD NOT EXCEED THE MAXIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A GIVEN SLOPE CATEGORY.

6. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	MULCH SOCK	
RECORD COPY SIGNED BY MORGAN BYARS 08/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 648S-1

TREE NOTES:
1. TREE NUMBERS IN **BOLD** WITH ** ARE TO BE REMOVED.
2. TREE NUMBER IN *ITALICS* WITH THE PREFIX "H" ARE HERITAGE TREES AND CANNOT BE REMOVED.
3. TREE NUMBERS WITH PREFIX "M" INDICATE MULTI-TRUNK TREES.
4. TREE SURVEY PREPARED 2019 BY CHAPARRAL PROFESSIONAL LAND SURVEYING, INC.

TREE LIST

TREE NO.	<8"	8-19"	19-24"	24"+	DESCRIPTION
**	**11143**		**12**		**12" LO**
**	**11144**		**16**		**16" CDR**
	11145	6			6" LO
** M	**11146**			**22**	**15, 8, 6" LO**
M	11147		10.5		8, 3, 2" UKT
	11148	7			7" LO
** M	**11149**		**15**		**9, 6, 6" LO**
	11160		17		17" CE
**	**11161**		**11**		**11" LO**
	11162		13		13" LO
**	**11163**		**9**		**9" SO**
**	**11164**		**8**		**8" CE**
	11165	7			7" LO
	11166		9		9" LO
	11167		11		11" LO
	11168		9		9" LO
	11169		10		10" LO
M	11174		12		8, 6" LO
** M	**11175**			**25**	**21, 9" SO**
	11176		10		10" CDR
	11177		11		11" CDR
** M	**11178**		**19**		**11, 8, 8" CDR**
**	**11191**		**17**		**17" CDR**
	11192		12		12" CDR
** M	**11193**		**14**		**7, 7, 7" UKT**
**	**11194**		**11**		**11" CDR**
** M	**11195**		**9**		**7, 4" CDR**
** M	**11196**		**14**		**10, 8" CDR**
**	**11197**		**10**		**10" LO**
** M	**11198**		**18**		**12, 12" CDR**
**	**11199**		**12**		**12" LO**
M	11200		11		8, 6" CDR
** M	**11201**			**21.5**	**12, 10, 9" CDR**
**	**11202**		**10**		**10" LO**
	11203	7			7" LO
	11204		10		10" LO
M	11222			23	12, 8, 8, 6" CDR
**	**11223**		**9**		**9" CDR**
	11224		12		12" CDR
M	11225		12		8, 6" CDR
	11226		12		12" CB
	11227		9		9" CDR
**	**11228**		**12**		**12" UKT**
**	**11229**		**15**		**15" CDR**
** M	**11230**		**11.5**		**7, 3, 3, 3" UKT**
** M	**11231**		**14**		**10, 8" CDR**
M	11232		9		6, 3, 3" UKT
	11233		9		9" LO
** M	**11234**		**17.5**		**12, 11" LO**
	11235		8		8" CDR
**	**11236**		**9**		**9" LO**
**	**11237**		**8**		**8" CDR**
**	**11238**		**12**		**12" CDR**
**	**11239**		**8**		**8" LO**
	11252	7			7" CDR
**	**11253**		**12**		**12" CDR**
**	**11254**	7			**7" CDR**
**	**11255**		**15**		**15" CB**
** M	**11256**		**10**		**7, 6" UKT**
	11257		9		9" CDR
** M	**11258**		**16**		**12, 8" CB**
**	**11259**		**10**		**10" CDR**
M	11260		14.5		11, 7" CDR
**	**11261**	7			**7" CB**
**	**11262**		**9**		**9" CB**
	11263		9		9" CDR
** M	**11264**		**9.5**		**7, 5" CDR**
**	**11265**		**9**		**9" UKT**
**	**11266**		**9**		**9" CDR**
**	**11267**	7			**7" CDR**
**	**11268**		**9**		**9" CDR**
	11269	7			7" UKT
	11270	7			7" LO
**	**11271**	7			**7" CDR**
**	**11272**		**13**		**13" CDR**
	11273	6			6" LO
**	**11279**		**15**		**15" LO**
	11280		13		13" LO
** M	**11307**		**16.5**		**9, 7, 4" CDR**
	11308		11		11" CDR
	11309		14		14" CDR
	11310		9		9" CDR
**	**11311**		**9**		**9" CDR**
**	**11312**		**9**		**9" CDR**
**	**11313**		**10**		**10" CDR**
**	**11314**		**6**		**6" CDR**
**	**11315**		**10**		**10" CDR**
**	**11316**		**17**		**17" CDR**
	11317		8		8" LO
M	11318		8.5		6, 3, 2" LO
**	**11319**	7			**7" CDR**
**	**11320**		**10**		**10" CDR**
M	11321		8		7, 2" HB
** M	**11322**	7			**6, 2" CE**
**	**11323**	6			**6" LO**
** M	**11324**	7.5			**6, 3" LO**
**	**11325**	7			**7" HB**
	11326		13		13" CDR
**	**11327**		**13**		**13" CDR**
	11328		11		11" CDR
	11329	7			7" CDR
** M	**11330**			**19.5**	**11, 8, 9" CDR**
**	**11331**	7			**7" CDR**
	11332	6			6" LO
M	11333		8.5		7, 3" LO
** M	**11334**		**10**		**6, 5, 3" UKT**
	11335	6			6" CDR
	11336	6			6" CDR
M	11337		9		7, 4" CDR
	11338		13		13" CDR
	11339	6			6" LO
**	**11340**	6			**6" LO**
** M	**11341**		**8.5**		**7, 3" CDR**
**	**11343**	7			**7" CDR**
**	**11344**	7			**7" CDR**
	11345		8		8" CDR
** M	**11346**		**11.5**		**8, 4, 3" CDR**
**	**11347**		**8**		**8" CDR**
**	**11348**		**8**		**8" CDR**
**	**11349**		**16**		**16" CDR**
**	**11350**	7			**7" CDR**
**	**11351**		**8**		**8" CDR**
** M	**11352**			**24**	**12, 6, 6, 4, 4, 4" CDR**
**	**11353**	7			**7" CDR**
** M	**11354**		**15**		**12, 3, 3" LO**
** M	**11355**		**13**		**10, 6" CDR**
**	**11356**	6			**6" CDR**
**	**11357**	6			**6" CDR**
	11359		8		8" CDR
TOTAL		200.5	1028	129	25

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
email: rct@tleng.net
www.tleng.net

DATE

REVISION

Thompson Land Engineering, LLC (F-10220)

STATE OF TEXAS ROBERT C. THOMPSON 69524 REGISTERED PROFESSIONAL ENGINEER

8/20/25

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME: ESC DETAILS & TREE LIST

DATE ISSUED: August, 2025

DESIGNED BY: RCT | DRAFTED BY: BH

JOB NUMBER: 1959

SHEET: 6 OF 16

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ)
ORGANIZED SEWAGE COLLECTION SYSTEM (SCS)
GENERAL CONSTRUCTION NOTES
TCEQ-0596 (REV. JULY 15, 2015)

EDWARDS AQUIFER PROTECTION PROGRAM CONSTRUCTION NOTES - LEGAL DISCLAIMER

THE FOLLOWING/LISTED "CONSTRUCTION NOTES" ARE INTENDED TO BE ADVISORY IN NATURE ONLY AND DO NOT CONSTITUTE AN APPROVAL OR CONDITIONAL APPROVAL BY THE EXECUTIVE DIRECTOR, NOR DO THEY CONSTITUTE A COMPREHENSIVE LISTING OF RULES OR CONDITIONS TO BE FOLLOWED DURING CONSTRUCTION. FURTHER ACTIONS MAY BE REQUIRED TO ACHIEVE COMPLIANCE WITH TCEQ REGULATIONS FOUND IN TITLE 30, TEXAS ADMINISTRATIVE CODE, CHAPTERS 213 AND 217, AS WELL AS LOCAL ORDINANCES AND REGULATIONS PROVIDING FOR THE PROTECTION OF WATER QUALITY. ADDITIONALLY, NOTHING CONTAINED IN THE FOLLOWING/LISTED "CONSTRUCTION NOTES" RESTRICTS THE POWERS OF THE EXECUTIVE DIRECTOR, THE COMMISSION OR ANY OTHER GOVERNMENTAL ENTITY TO PREVENT, CORRECT, OR CURTAIL ACTIVITIES THAT RESULT OR MAY RESULT IN POLLUTION OF THE EDWARDS AQUIFER OR HYDROLOGICALLY CONNECTED SURFACE WATERS. THE HOLDER OF ANY EDWARDS AQUIFER PROTECTION PLAN CONTAINING "CONSTRUCTION NOTES" IS STILL RESPONSIBLE FOR COMPLIANCE WITH TITLE 30, TEXAS ADMINISTRATIVE CODE, CHAPTERS 213 OR ANY OTHER APPLICABLE TCEQ REGULATION, AS WELL AS ALL CONDITIONS OF AN EDWARDS AQUIFER PROTECTION PLAN THROUGH ALL PHASES OF PLAN IMPLEMENTATION. FAILURE TO COMPLY WITH ANY CONDITION OF THE EXECUTIVE DIRECTOR'S APPROVAL, WHETHER OR NOT IN CONTRADICTION OF ANY "CONSTRUCTION NOTES," IS A VIOLATION OF TCEQ REGULATIONS AND ANY VIOLATION IS SUBJECT TO ADMINISTRATIVE RULES, ORDERS, AND PENALTIES AS PROVIDED UNDER TITLE 30, TEXAS ADMINISTRATIVE CODE § 213.10 (RELATING TO ENFORCEMENT). SUCH VIOLATIONS MAY ALSO BE SUBJECT TO CIVIL PENALTIES AND INJUNCTION. THE FOLLOWING/LISTED "CONSTRUCTION NOTES" IN NO WAY REPRESENT AN APPROVED EXCEPTION BY THE EXECUTIVE DIRECTOR TO ANY PART OF TITLE 30 TEXAS ADMINISTRATIVE CODE, CHAPTERS 213 AND 217, OR ANY OTHER TCEQ APPLICABLE REGULATION.

1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) MUST BE CONSTRUCTED IN ACCORDANCE WITH 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(C), THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES AND ANY LOCAL GOVERNMENT STANDARD SPECIFICATIONS.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROPOSED REGULATED PROJECT MUST BE PROVIDED WITH COPIES OF THE SCS PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS MUST BE REQUIRED TO KEEP ON-SITE COPIES OF THE PLAN AND THE APPROVAL LETTER.

3. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE PRESIDING TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
- THE NAME OF THE APPROVED PROJECT;
- THE ACTIVITY START DATE; AND
- THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

4. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED SCS APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF AN SCS APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.

5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

6. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TCEQ OF THE FEATURE DISCOVERED. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING AND THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.

7. SEWER LINES LOCATED WITHIN OR CROSSING THE 5-YEAR FLOODPLAIN OF A DRAINAGE WAY WILL BE PROTECTED FROM INUNDATION AND STREAM VELOCITIES WHICH COULD CAUSE EROSION AND SCOURING OF BACKFILL. THE TRENCH MUST BE CAPPED WITH CONCRETE TO PREVENT SCOURING OF BACKFILL, OR THE SEWER LINES MUST BE ENCASED IN CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES.

8. BLASTING PROCEDURES FOR PROTECTION OF EXISTING SEWER LINES AND OTHER UTILITIES WILL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION CRITERIA. SAND IS NOT ALLOWED AS BEDDING OR BACKFILL IN TRENCHES THAT HAVE BEEN BLASTED. IF ANY EXISTING SEWER LINES ARE DAMAGED, THE LINES MUST BE REPAIRED AND RETESTED.

9. ALL MANHOLES CONSTRUCTED OR REHABILITATED ON THIS PROJECT MUST HAVE WATERTIGHT SIZE ON SIZE RESILIENT CONNECTORS ALLOWING FOR DIFFERENTIAL SETTLEMENT. IF MANHOLES ARE CONSTRUCTED WITHIN THE 100-YEAR FLOODPLAIN, THE COVER MUST HAVE A GASKET AND BE BOLTED TO THE RING. WHERE GASKETED MANHOLE COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE OR FOR MORE THAN 1500 FEET, ALTERNATE MEANS OF VENTING WILL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE.

THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSION'S RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEET (NOT APPLICABLE) OF 16.

IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.

10. WHERE WATER LINES AND NEW SEWER LINE ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

11. WHERE SEWERS LINES DEVIATE FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER: ______________________.

IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: ______________________.

SPECIFIC CARE MUST BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC §217.54.

12. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS. THE LOCATION OF SUCH STUB OUTS MUST BE MARKED ON THE GROUND SUCH THAT THEIR LOCATION CAN BE EASILY DETERMINED AT THE TIME OF CONNECTION OF THE EXTENSIONS. SUCH STUB OUTS MUST BE MANUFACTURED WYES OR TEES THAT ARE COMPATIBLE IN SIZE AND MATERIAL WITH BOTH THE SEWER LINE AND THE EXTENSION. AT THE TIME OF ORIGINAL CONSTRUCTION, NEW STUB-OUTS MUST BE CONSTRUCTED SUFFICIENTLY TO EXTEND BEYOND THE END OF THE STREET PAVEMENT. ALL STUB-OUTS MUST BE SEALED WITH A MANUFACTURED CAP TO PREVENT LEAKAGE. EXTENSIONS THAT WERE NOT ANTICIPATED AT THE TIME OF ORIGINAL CONSTRUCTION OR THAT ARE TO BE CONNECTED TO AN EXISTING SEWER LINE NOT FURNISHED WITH STUB OUTS MUST BE CONNECTED USING A MANUFACTURED SADDLE AND IN ACCORDANCE WITH ACCEPTED PLUMBING TECHNIQUES.

IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET (NOT APPLICABLE) OF 16. (FOR POTENTIAL FUTURE LATERALS).

THE PRIVATE SERVICE LATERAL STUB-OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEET (NOT APPLICABLE) OF 16 AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEET (NOT APPLICABLE) OF 16.

13. TRENCHING, BEDDING AND BACKFILL MUST CONFORM WITH 30 TAC §217.54. THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE MUST COMPLY WITH THE STANDARDS OF ASTM D-2321, CLASSES IA, IB, II OR III. RIGID PIPE BEDDING MUST COMPLY WITH THE REQUIREMENTS OF ASTM C 12 (ANSI A 106.2) CLASSES A, B OR C.

14. SEWER LINES MUST BE TESTED FROM MANHOLE TO MANHOLE. WHEN A NEW SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN-OUT, IT MUST BE TESTED FROM EXISTING MANHOLE TO NEW MANHOLE. IF A STUB OR CLEAN-OUT IS USED AT THE END OF THE PROPOSED SEWER LINE, NO PRIVATE SERVICE ATTACHMENTS MAY BE CONNECTED BETWEEN THE LAST MANHOLE AND THE CLEANOUT UNLESS IT CAN BE CERTIFIED AS CONFORMING WITH THE PROVISIONS OF 30 TAC §213.5(C)(3)(E).

15. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH 30 TAC §217.57. THE ENGINEER MUST RETAIN COPIES OF ALL TEST RESULTS WHICH MUST BE MADE AVAILABLE TO THE EXECUTIVE DIRECTOR UPON REQUEST. THE ENGINEER MUST CERTIFY IN WRITING THAT ALL WASTEWATER LINES HAVE PASSED ALL REQUIRED TESTING TO THE APPROPRIATE REGIONAL OFFICE WITHIN 30 DAYS OF TEST COMPLETION AND PRIOR TO USE OF THE NEW COLLECTION SYSTEM. TESTING METHOD WILL BE:
(a) FOR A COLLECTION SYSTEM PIPE THAT WILL TRANSPORT WASTEWATER BY GRAVITY FLOW, THE DESIGN MUST SPECIFY AN INFILTRATION AND EXFILTRATION TEST OR A LOW-PRESSURE AIR TEST. A TEST MUST CONFORM TO THE FOLLOWING REQUIREMENTS:
(1) LOW PRESSURE AIR TEST.
(A) A LOW PRESSURE AIR TEST MUST FOLLOW THE PROCEDURES DESCRIBED IN AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) C-828, ASTM C-924, OR ASTM F-1417 OR OTHER PROCEDURE APPROVED BY THE EXECUTIVE DIRECTOR, EXCEPT AS TO TESTING TIMES AS REQUIRED IN TABLE C.3 IN SUBPARAGRAPH (C) OF THIS PARAGRAPH OR EQUATION C.3 IN SUBPARAGRAPH (B)(II) OF THIS PARAGRAPH.
(B) FOR SECTIONS OF COLLECTION SYSTEM PIPE LESS THAN 36 INCH AVERAGE INSIDE DIAMETER, THE FOLLOWING PROCEDURE MUST APPLY, UNLESS A PIPE IS TO BE TESTED AS REQUIRED BY PARAGRAPH (2) OF THIS SUBSECTION.
(i) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.
(ii) ONCE THE PRESSURE IS STABILIZED, THE MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 PSI GAUGE TO 2.5 PSI GAUGE IS COMPUTED FROM THE FOLLOWING EQUATION:

EQUATION C.3

$$T = \frac{0.085 \times D \times K}{Q}$$

WHERE:

T = TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS
K = 0.000419 X D X L, BUT NOT LESS THAN 1.0
D = AVERAGE INSIDE PIPE DIAMETER IN INCHES
L = LENGTH OF LINE OF SAME SIZE BEING TESTED, IN FEET
Q = RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOOT INTERNAL SURFACE

(C) SINCE A K VALUE OF LESS THAN 1.0 MAY NOT BE USED, THE MINIMUM TESTING TIME FOR EACH PIPE DIAMETER IS SHOWN IN THE FOLLOWING TABLE C.3:

Pipe Diameter *(inches)*	Minimum Time *(seconds)*	Maximum Length for Minimum Time *(feet)*	Time for Longer Length *(seconds/foot)*
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

(D) AN OWNER MAY STOP A TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME.
(E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
(F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
(G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33-INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.
(2) INFILTRATION/EXFILTRATION TEST.
(A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.
(B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.
(C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE, OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.
(D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24-HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARAGRAPH (C) OF THIS PARAGRAPH.
(E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.
(b) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:
(1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.
(A) MANDREL SIZING.
(i) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE ASTMS, AMERICAN WATER WORKS ASSOCIATION, UNI-BELL, OR AMERICAN NATIONAL STANDARDS INSTITUTE, OR ANY RELATED APPENDIX.
(ii) IF A MANDREL SIZING DIAMETER IS NOT SPECIFIED IN THE APPROPRIATE STANDARD, THE MANDREL MUST HAVE AN OD EQUAL TO 95% OF THE ID OF A PIPE. IN THIS CASE, THE ID OF THE PIPE, FOR THE PURPOSE OF DETERMINING THE OD OF THE MANDREL, MUST EQUAL BE THE AVERAGE OUTSIDE DIAMETER MINUS TWO MINIMUM WALL THICKNESSES FOR OD CONTROLLED PIPE AND THE AVERAGE INSIDE DIAMETER FOR ID CONTROLLED PIPE.
(iii) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.
(B) MANDREL DESIGN.
(i) A RIGID MANDREL MUST BE CONSTRUCTED OF A METAL OR A RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
(ii) A MANDREL MUST HAVE NINE OR MORE ODD NUMBER OF RUNNERS OR LEGS.
(iii) A BARREL SECTION LENGTH MUST EQUAL AT LEAST 75% OF THE INSIDE DIAMETER OF A PIPE.
(iv) EACH SIZE MANDREL MUST USE A SEPARATE PROVING RING.
(C) METHOD OPTIONS.
(i) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.
(ii) A TEST MAY NOT USE TELEVISION INSPECTION AS A SUBSTITUTE FOR A DEFLECTION TEST.
(iii) IF REQUESTED, THE EXECUTIVE DIRECTOR MAY APPROVE THE USE OF A DEFLECTOMETER OR A MANDREL WITH REMOVABLE LEGS OR RUNNERS ON A CASE-BY-CASE BASIS.
(2) FOR A GRAVITY COLLECTION SYSTEM PIPE WITH AN INSIDE DIAMETER 27 INCHES AND GREATER, OTHER TEST METHODS MAY BE USED TO DETERMINE VERTICAL DEFLECTION.
(3) A DEFLECTION TEST METHOD MUST BE ACCURATE TO WITHIN PLUS OR MINUS 0.2% DEFLECTION.
(4) AN OWNER SHALL NOT CONDUCT A DEFLECTION TEST UNTIL AT LEAST 30 DAYS AFTER THE FINAL BACKFILL.
(5) GRAVITY COLLECTION SYSTEM PIPE DEFLECTION MUST NOT EXCEED FIVE PERCENT (5%).
(6) IF A PIPE SECTION FAILS A DEFLECTION TEST, AN OWNER SHALL CORRECT THE PROBLEM AND CONDUCT A SECOND TEST AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.

16. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58.
(a) ALL MANHOLES MUST PASS A LEAKAGE TEST.
(b) AN OWNER SHALL TEST EACH MANHOLE (AFTER ASSEMBLY AND BACKFILLING) FOR LEAKAGE, SEPARATE AND INDEPENDENT OF THE COLLECTION SYSTEM PIPES, BY HYDROSTATIC EXFILTRATION TESTING, VACUUM TESTING, OR OTHER METHOD APPROVED BY THE EXECUTIVE DIRECTOR.
(1) HYDROSTATIC TESTING.
(A) THE MAXIMUM LEAKAGE FOR HYDROSTATIC TESTING OR ANY ALTERNATIVE TEST METHODS IS 0.025 GALLONS PER FOOT DIAMETER PER FOOT OF MANHOLE DEPTH PER HOUR.
(B) TO PERFORM A HYDROSTATIC EXFILTRATION TEST, AN OWNER SHALL SEAL ALL WASTEWATER PIPES COMING INTO A MANHOLE WITH AN INTERNAL PIPE PLUG, FILL THE MANHOLE WITH WATER, AND MAINTAIN THE TEST FOR AT LEAST ONE HOUR.
(C) A TEST FOR CONCRETE MANHOLES MAY USE A 24-HOUR WETTING PERIOD BEFORE TESTING TO ALLOW SATURATION OF THE CONCRETE.
(2) VACUUM TESTING.
(A) TO PERFORM A VACUUM TEST, AN OWNER SHALL PLUG ALL LIFT HOLES AND EXTERIOR JOINTS WITH A NON-SHRINK GROUT AND PLUG ALL PIPES ENTERING A MANHOLE.
(B) NO GROUT MUST BE PLACED IN HORIZONTAL JOINTS BEFORE TESTING.
(C) STUB-OUTS, MANHOLE BOOTS, AND PIPE PLUGS MUST BE SECURED TO PREVENT MOVEMENT WHILE A VACUUM IS DRAWN.
(D) AN OWNER SHALL USE A MINIMUM 60 INCH/LB TORQUE WRENCH TO TIGHTEN THE EXTERNAL CLAMPS THAT SECURE A TEST COVER TO THE TOP OF A MANHOLE.
(E) A TEST HEAD MUST BE PLACED AT THE INSIDE OF THE TOP OF A CONE SECTION, AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
(F) THERE MUST BE A VACUUM OF 10 INCHES OF MERCURY INSIDE A MANHOLE TO PERFORM A VALID TEST.
(G) A TEST DOES NOT BEGIN UNTIL AFTER THE VACUUM PUMP IS OFF.
(H) A MANHOLE PASSES THE TEST IF AFTER 2.0 MINUTES AND WITH ALL VALVE CLOSED, THE VACUUM IS AT LEAST 9.0 INCHES OF MERCURY.

17. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

AUSTIN REGIONAL OFFICE	SAN ANTONIO REGIONAL OFFICE
12100 PARK 35 CIRCLE, BUILDING A AUSTIN, TEXAS 78753-1808 PHONE (512) 339-2929 FAX (512) 339-3795	14250 JUDSON ROAD SAN ANTONIO, TEXAS 78233-4480 PHONE (210) 490-3096 FAX (210) 545-4329

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

ADDITIONAL TCEQ SCS NOTES

PIPING MATERIALS
THIS PROJECT IS PROPOSED TO INSTALL PVC SDR 21 (ASTM D 2241) FORCE MAIN WASTEWATER LINES, WHICH CAN WITHSTAND THE PRESSURE GENERATED BY INSTANTANEOUS PUMP STOPPAGE, DUE TO POWER FAILURE UNDER MAXIMUM PUMPING CONDITIONS.

THE UNDERGROUND FORCE MAIN PIPE JOINT WILL INCLUDE EITHER PUSH-ON RUBBER GASKETS OR MECHANICAL JOINTS WITH A PRESSURE RATING EQUAL TO OR GREATER THAN THAT OF THE FORCE MAIN PIPE MATERIAL.

EXPOSED FORCE MAIN PIPE JOINTS WILL BE FLANGED OR FLEXIBLE AND WILL BE ADEQUATELY SECURED (TO PREVENT MOVEMENT DUE TO WASTEWATER SURGES).

A DETECTABLE UNDERGROUND WARNING TAPE WILL BE LAID IN THE SAME TRENCH AS A FORCE MAIN PIPE. THIS WARNING TAPE WILL BE LOCATED ABOVE AND PARALLEL TO THE FORCE MAIN AND WILL INCLUDE THE LABEL "PRESSURIZED WASTEWATER" CONTINUOUSLY REPEATED IN AT LEAST 1.5-INCH-TALL LETTERS.

MANHOLES
THERE ARE NO PROPOSED MANHOLES FOR THIS PROJECT; LINES WILL BE PRESSURIZED IN THE FORCE MAIN. THERE ARE NO EXISTING WASTEWATER MANHOLE COVERS THAT LIE WITHIN A 100-YEAR FLOODPLAIN FOR THIS PROJECT.

TESTING, INSPECTION AND CERTIFICATION
THE FINAL PLANS AND SPECIFICATIONS WILL INCLUDE THE PRESSURE TESTING PROCEDURES.

A PRESSURE TEST (USING 50 POUNDS PER SQUARE INCH ABOVE THE NORMAL OPERATING PRESSURE OF A FORCE MAIN) WILL BE INCLUDED.

A VALVE FOR PRESSURE TESTING WILL BE INSTALLED (NEAR THE DISCHARGE POINT OF A FORCE MAIN), WHICH WOULD REMAIN AFTER A TEST IS SUCCESSFULLY COMPLETED.

A PUMP ISOLATION VALVE MAY POTENTIALLY BE USED AS AN OPPOSITE TERMINATION POINT.

A TEST WILL INVOLVE FILLING A FORCE MAIN WITH WATER. THIS PROPOSED PIPE IS EXPECTED TO HOLD THE DESIGNATED TEST PRESSURE FOR A MINIMUM OF 4.0 HOURS. THE LEAKAGE RATE SHOULD NOT EXCEED 10.0 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER DAY.

OCCUPATIONAL SAFETY, PUBLIC HEALTH AND ENVIRONMENTAL PROTECTION
THE PROJECT PLANS AND SPECIFICATIONS MUST ENSURE THAT THE PIPE INSTALLATION WILL ADHERE TO THE MINIMUM SEPARATION DISTANCES ALLOWED BY SECTION 217.53(D) OF THE TCEQ'S RULES.

ADDITIONALLY, THE PROJECT PLANS INCLUDE THE EXACT REPRODUCTION OF THE SEPARATION DISTANCE WORDING DETAILED IN SECTION 217.53, WHICH ENSURES THAT THE SEPARATION DISTANCE BETWEEN ANY UNKNOWN WATER LINES THAT ARE DISCOVERED DURING THE INSTALLATION PHASE OF THE PROJECT.

TRAVIS COUNTY WCID 10 (WATER) STANDARD CONSTRUCTION NOTES

1. CONTRACTOR SHALL NOTIFY MS. CARLA ORTS, WC&ID NO. 10 DISTRICT MANAGER, AT (512) 327-2230 AT LEAST 48-HOURS PRIOR TO BEGINNING ANY CONSTRUCTION INCLUDING MOBILIZATION.
2. CONTRACTOR SHALL COORDINATE WITH WC&ID NO. 10 AND CROSSROADS UTILITY SERVICES, DISTRICT OPERATOR TO LOCATE EXISTING WATER LINES AT LEAST 48-HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
3. CONTRACTOR SHALL NOTIFY MS. CARLA ORTS, WC&ID NO. 10 DISTRICT MANAGER, AT (512) 327-2230 AT LEAST 48-HOURS PRIOR TO CLOSING OR OPENING WATER SERVICES VALVES, AND/OR DISRUPTION OF WATER SERVICES TO ANY CUSTOMER.
4. CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE ANY DISTRICT WATER VALVES. CONTRACTOR SHALL COORDINATE WITH CROSSROADS UTILITY SERVICES, DISTRICT OPERATOR, DISTRICT OPERATOR, TO OPERATE DISTRICT VALVES.
5. CONTRACTOR SHALL SUPPLY CROSSROADS UTILITY SERVICES, DISTRICT OPERATOR, WITH ALL WATER LINE TESTING AND STERILIZATION REPORTS.
6. CONTRACTOR SHALL NOTIFY CROSSROADS UTILITY SERVICES, DISTRICT OPERATOR, 48-HOURS PRIOR TO ANY WET CONNECTIONS OR PRESSURE TAPS TO BE PRESENT AT ANY AND ALL CONNECTIONS AND TAPS.
7. ALL WATERLINES 12" AND SMALLER SHALL BE DUCTILE IRON PIPE (CL-350) OR (PVC C-900, DR-14).
8. ALL 16" WATERLINES SHALL BE DUCTILE IRON (CL-250) OR PVC (C-905, DR-14).

!!! WARNING !!!:
UNDERGROUND UTILITIES SHOWN ON THESE PLANS IS A BEST ESTIMATE BASED ON RECORDS THAT COULD BE OBTAINED AND PHYSICAL FEATURES VISIBLE AT THE GROUND LEVEL. THE ENGINEER MAKES NO ASSERTIONS BEYOND THAT THEY ARE A BEST ESTIMATE AND AN ATTEMPT TO HELP IDENTIFY POSSIBLE UTILITIES IN THE AREA. THE CONTRACTOR MUST CALL ONE CALL IN ACCORDANCE WITH THE NOTES TO BETTER LOCATE ANY UNDERGROUND UTILITIES.

TRAVIS COUNTY ESD #9 (WESTLAKE FIRE DEPARTMENT) NOTES

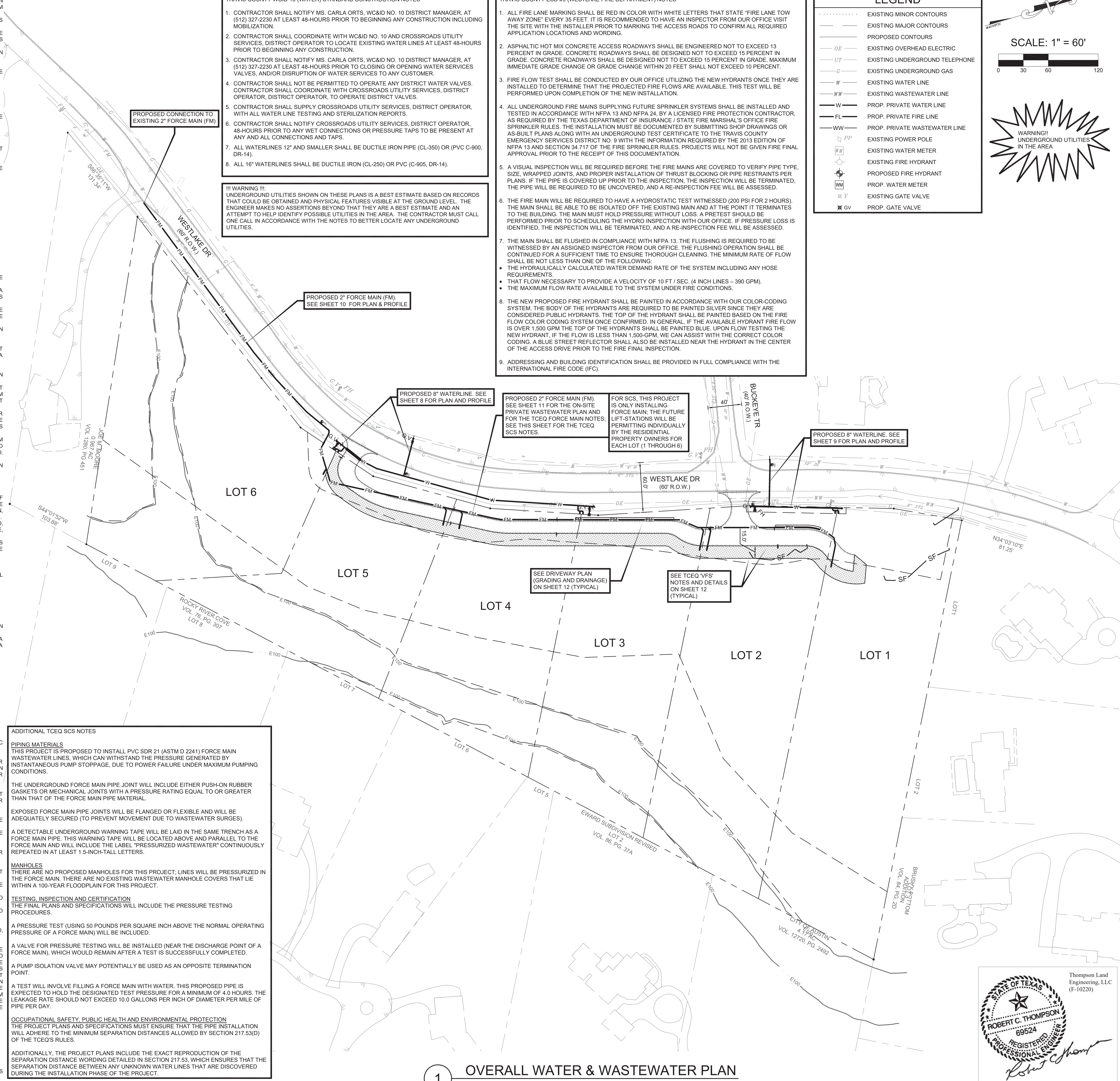
1. ALL FIRE LANE MARKING SHALL BE RED IN COLOR WITH WHITE LETTERS THAT STATE "FIRE LANE TOW AWAY ZONE" EVERY 35 FEET. IT IS RECOMMENDED TO HAVE AN INSPECTOR FROM OUR OFFICE VISIT THE SITE WITH THE INSTALLER PRIOR TO MARKING THE ACCESS ROADS TO CONFIRM ALL REQUIRED APPLICATION LOCATIONS AND WORDING.
2. ASPHALTIC HOT MIX CONCRETE ACCESS ROADWAYS SHALL BE ENGINEERED NOT TO EXCEED 13 PERCENT IN GRADE. CONCRETE ROADWAYS SHALL BE DESIGNED NOT TO EXCEED 15 PERCENT IN GRADE. CONCRETE ROADWAYS SHALL BE DESIGNED NOT TO EXCEED 15 PERCENT IN GRADE. MAXIMUM IMMEDIATE GRADE CHANGE OR GRADE CHANGE WITHIN 20 FEET SHALL NOT EXCEED 10 PERCENT.
3. FIRE FLOW TEST SHALL BE CONDUCTED BY OUR OFFICE UTILIZING THE NEW HYDRANTS ONCE THEY ARE INSTALLED TO DETERMINE THAT THE PROJECTED FIRE FLOWS ARE AVAILABLE. THIS TEST WILL BE PERFORMED UPON COMPLETION OF THE NEW INSTALLATION.
4. ALL UNDERGROUND FIRE MAINS SUPPLYING FUTURE SPRINKLER SYSTEMS SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH NFPA 13 AND NFPA 24, BY A LICENSED FIRE PROTECTION CONTRACTOR, AS REQUIRED BY THE TEXAS DEPARTMENT OF INSURANCE / STATE FIRE MARSHAL'S OFFICE FIRE SPRINKLER RULES. THE INSTALLATION MUST BE DOCUMENTED BY SUBMITTING SHOP DRAWINGS OR AS-BUILT PLANS ALONG WITH AN UNDERGROUND TEST CERTIFICATE TO THE TRAVIS COUNTY EMERGENCY SERVICES DISTRICT NO. 9 WITH THE INFORMATION REQUIRED BY THE 2013 EDITION OF NFPA 13 AND SECTION 34.717 OF THE FIRE SPRINKLER RULES. PROJECTS WILL NOT BE GIVEN FIRE FINAL APPROVAL PRIOR TO THE RECEIPT OF THIS DOCUMENTATION.
5. A VISUAL INSPECTION WILL BE REQUIRED BEFORE THE FIRE MAINS ARE COVERED TO VERIFY PIPE TYPE, SIZE, WRAPPED JOINTS, AND PROPER INSTALLATION OF THRUST BLOCKING OR PIPE RESTRAINTS PER PLANS. IF THE PIPE IS COVERED UP PRIOR TO THE INSPECTION, THE INSPECTION WILL BE TERMINATED, THE PIPE WILL BE REQUIRED TO BE UNCOVERED, AND A RE-INSPECTION FEE WILL BE ASSESSED.
6. THE FIRE MAIN WILL BE REQUIRED TO HAVE A HYDROSTATIC TEST WITNESSED (200 PSI FOR 2 HOURS). THE MAIN SHALL BE ABLE TO BE ISOLATED OFF THE EXISTING MAIN AND AT THE POINT IT TERMINATES TO THE BUILDING. THE MAIN MUST HOLD PRESSURE WITHOUT LOSS. A PRETEST SHOULD BE PERFORMED PRIOR TO SCHEDULING THE HYDRO INSPECTION WITH OUR OFFICE. IF PRESSURE LOSS IS IDENTIFIED, THE INSPECTION WILL BE TERMINATED, AND A RE-INSPECTION FEE WILL BE ASSESSED.
7. THE MAIN SHALL BE FLUSHED IN COMPLIANCE WITH NFPA 13. THE FLUSHING IS REQUIRED TO BE WITNESSED BY AN ASSIGNED INSPECTOR FROM OUR OFFICE. THE FLUSHING OPERATION SHALL BE CONTINUED FOR A SUFFICIENT TIME TO ENSURE THOROUGH CLEANING. THE MINIMUM RATE OF FLOW SHALL BE NOT LESS THAN ONE OF THE FOLLOWING:
   - THE HYDRAULICALLY CALCULATED WATER DEMAND RATE OF THE SYSTEM INCLUDING ANY HOSE REQUIREMENTS.
   - THAT FLOW NECESSARY TO PROVIDE A VELOCITY OF 10 FT / SEC. (4 INCH LINES – 390 GPM).
   - THE MAXIMUM FLOW RATE AVAILABLE TO THE SYSTEM UNDER FIRE CONDITIONS.
8. THE NEW PROPOSED FIRE HYDRANT SHALL BE PAINTED IN ACCORDANCE WITH OUR COLOR-CODING SYSTEM. THE BODY OF THE HYDRANTS ARE REQUIRED TO BE PAINTED SILVER SINCE THEY ARE CONSIDERED PUBLIC HYDRANTS. THE TOP OF THE HYDRANT SHALL BE PAINTED BASED ON THE FIRE FLOW COLOR CODING SYSTEM ONCE CONFIRMED. IN GENERAL, IF THE AVAILABLE HYDRANT FIRE FLOW IS OVER 1,500 GPM THE TOP OF THE HYDRANTS SHALL BE PAINTED BLUE. UPON FLOW TESTING THE NEW HYDRANT, IF THE FLOW IS LESS THAN 1,500-GPM, WE CAN ASSIST WITH THE CORRECT COLOR CODING. A BLUE STREET REFLECTOR SHALL ALSO BE INSTALLED NEAR THE HYDRANT IN THE CENTER OF THE ACCESS DRIVE PRIOR TO THE FIRE FINAL INSPECTION.
9. ADDRESSING AND BUILDING IDENTIFICATION SHALL BE PROVIDED IN FULL COMPLIANCE WITH THE INTERNATIONAL FIRE CODE (IFC).

LEGEND

Symbol	Description
· · · · · ·	EXISTING MINOR CONTOURS
— —	EXISTING MAJOR CONTOURS
——	PROPOSED CONTOURS
— OE —	EXISTING OVERHEAD ELECTRIC
— UT —	EXISTING UNDERGROUND TELEPHONE
— G —	EXISTING UNDERGROUND GAS
— W —	EXISTING WATER LINE
— WW —	EXISTING WASTEWATER LINE
— W —	PROP. PRIVATE WATER LINE
— FL —	PROP. PRIVATE FIRE LINE
— WW —	PROP. PRIVATE WASTEWATER LINE
PP	EXISTING POWER POLE
WM	EXISTING WATER METER
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
WM	PROP. WATER METER
V	EXISTING GATE VALVE
GV	PROP. GATE VALVE

SCALE: 1" = 60'
0 30 60 120

WARNING!! UNDERGROUND UTILITIES IN THE AREA



1 OVERALL WATER & WASTEWATER PLAN
SCALE: 1:40

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
www.tleng.net email: ric@tleng.net

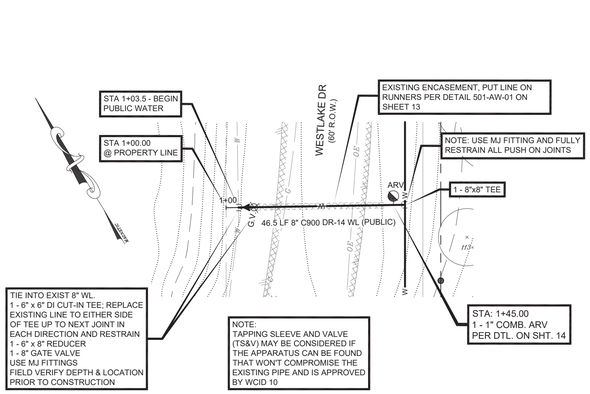
DATE | REVISION

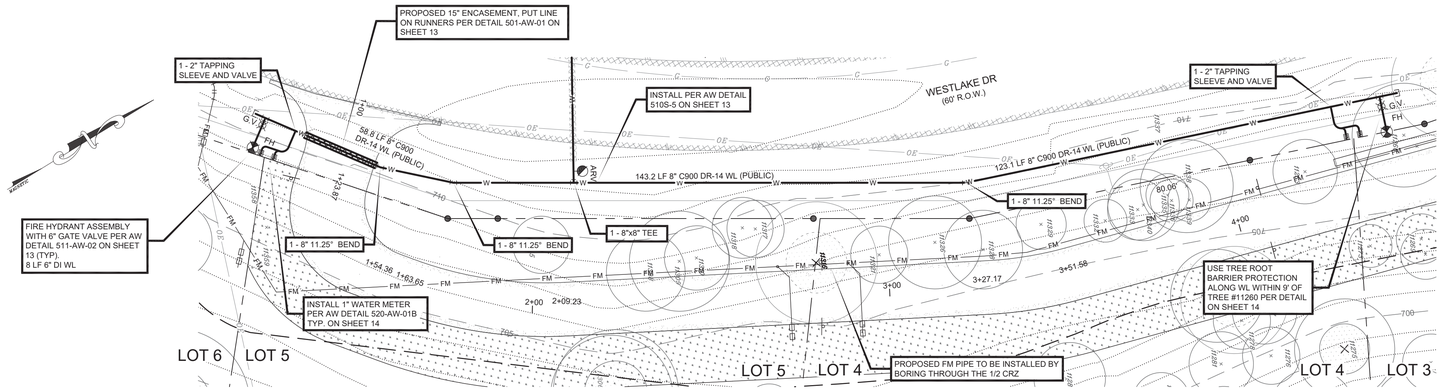
PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME: OVERALL WATER & WASTEWATER PLAN

Thompson Land Engineering, LLC (F-10220)
STATE OF TEXAS ROBERT C. THOMPSON 69524 REGISTERED PROFESSIONAL ENGINEER
8/20/25

DATE ISSUED	
August, 2025	
DESIGNED BY	DRAFTED BY
RCT	BH
JOB NUMBER	
1959	
SHEET	
7 OF 16	





SCALE: 1" = 20'

0 10 20 40

LEGEND

- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED CONTOURS MINOR
- PROPOSED CONTOURS MAJOR
- OE — EXISTING OVERHEAD ELECTRIC
- UT — EXISTING UNDERGROUND TELEPHONE
- G — EXISTING UNDERGROUND GAS
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE
- W — PROP. PRIVATE WATER LINE
- WW — PROP. PRIVATE WASTEWATER LINE
- PROP. STORM SEWER LINE
- PP — EXISTING POWER POLE
- WM — EXISTING WATER METER
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- WM — PROP. WATER METER
- V — EXISTING GATE VALVE
- GV — PROP. GATE VALVE
- (X) — ROW CURVE NUMBER
- (X) — WATER LINE CURVE NUMBER

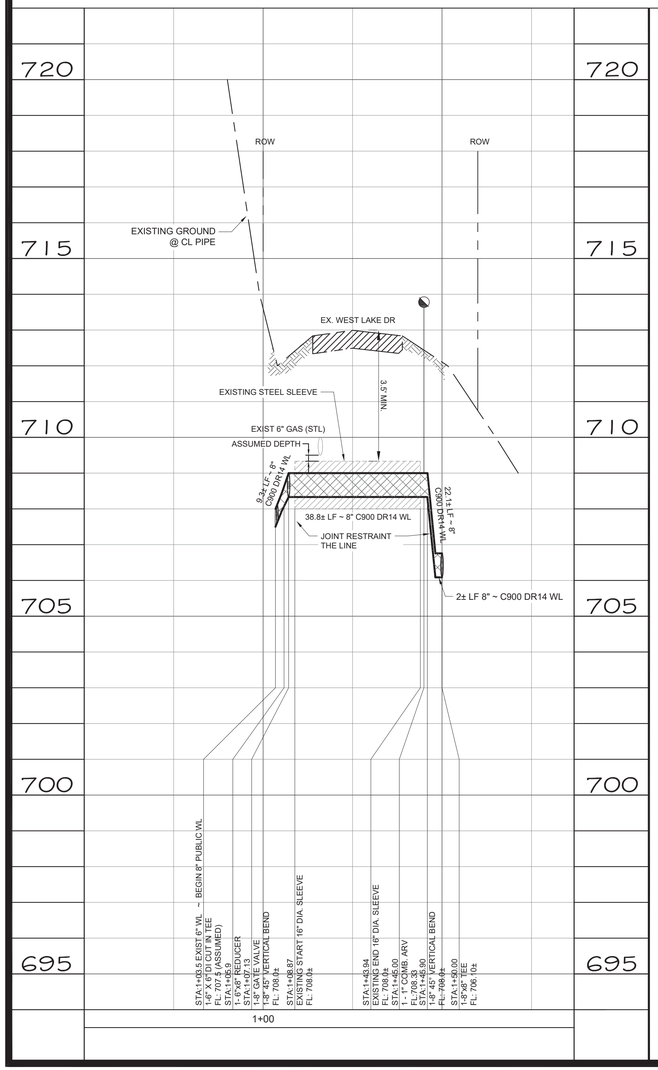
!!!WARNING!!!
TAPE W/TRACER WIRE REQUIRED OVER LINES

LEGEND

- NATURAL GROUND RT.
- NATURAL GROUND L
- NATURAL GROUND LT.
- PROP. T/C LT. & RT.

PROFILE SCALE:
HORIZ. 1" = 20'
VERT. 1" = 2'

WATER LINE 'A'



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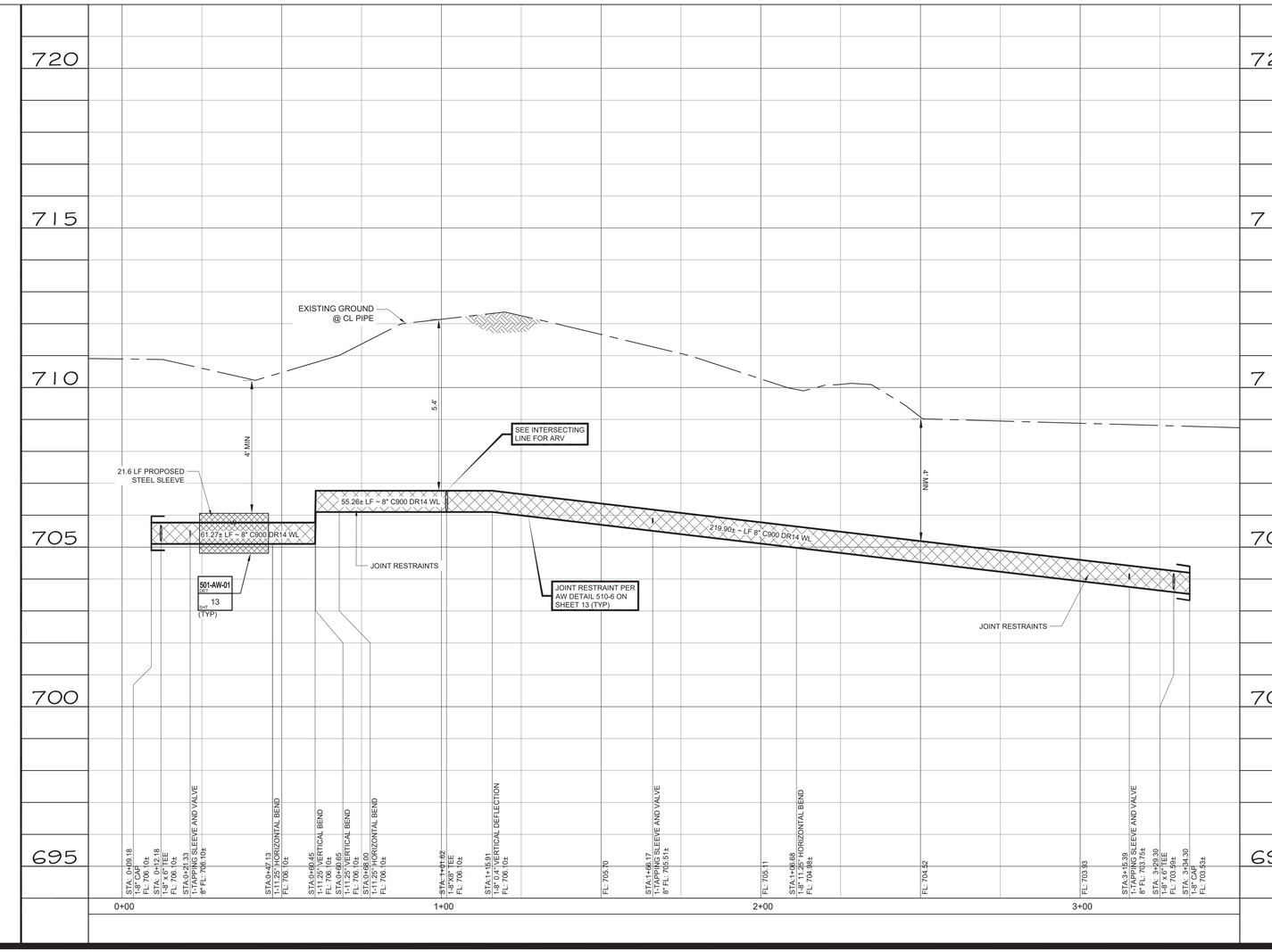


THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
email: rct@tleng.net
www.tleng.net
TBPE Reg. No. F-10220

DATE

REVISION

PROJECT
MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME
WATER PLAN & PROFILE (1 OF 2)

Thompson Land Engineering, LLC (F-10220)

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER

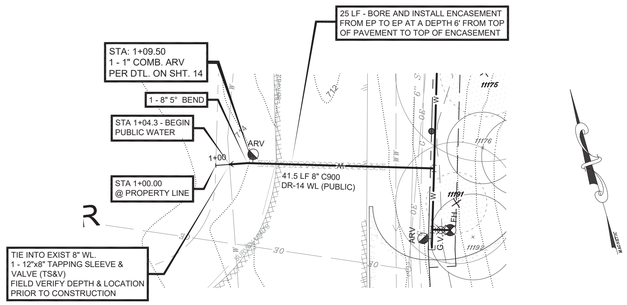
8/20/25

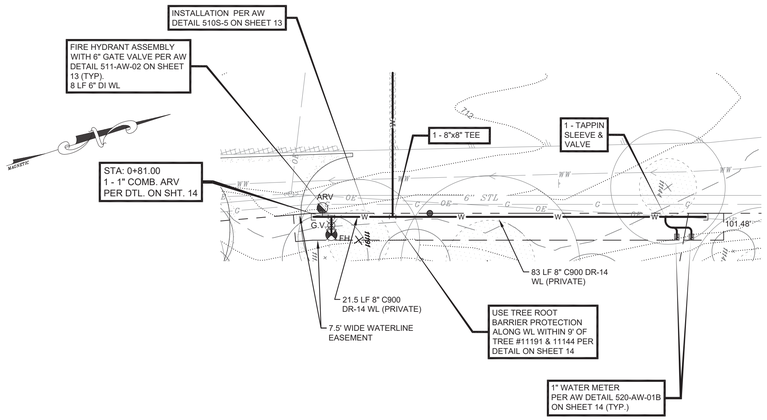
DATE ISSUED
August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER
1959

SHEET
8 OF 16





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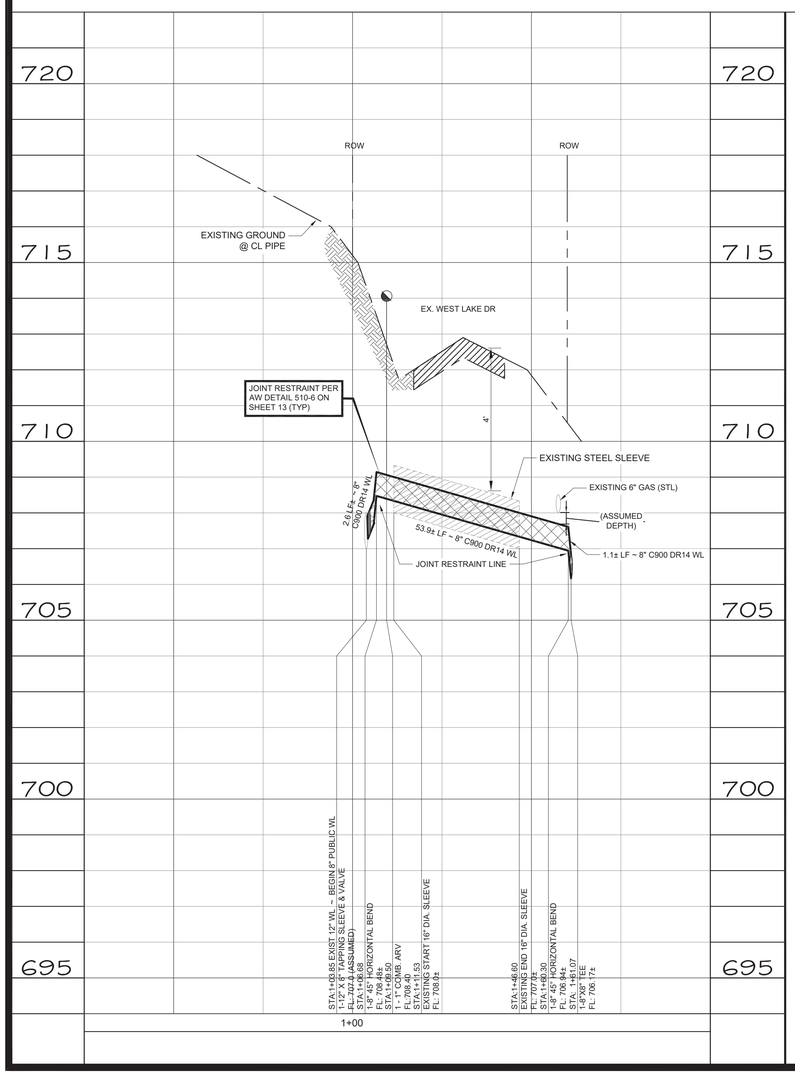
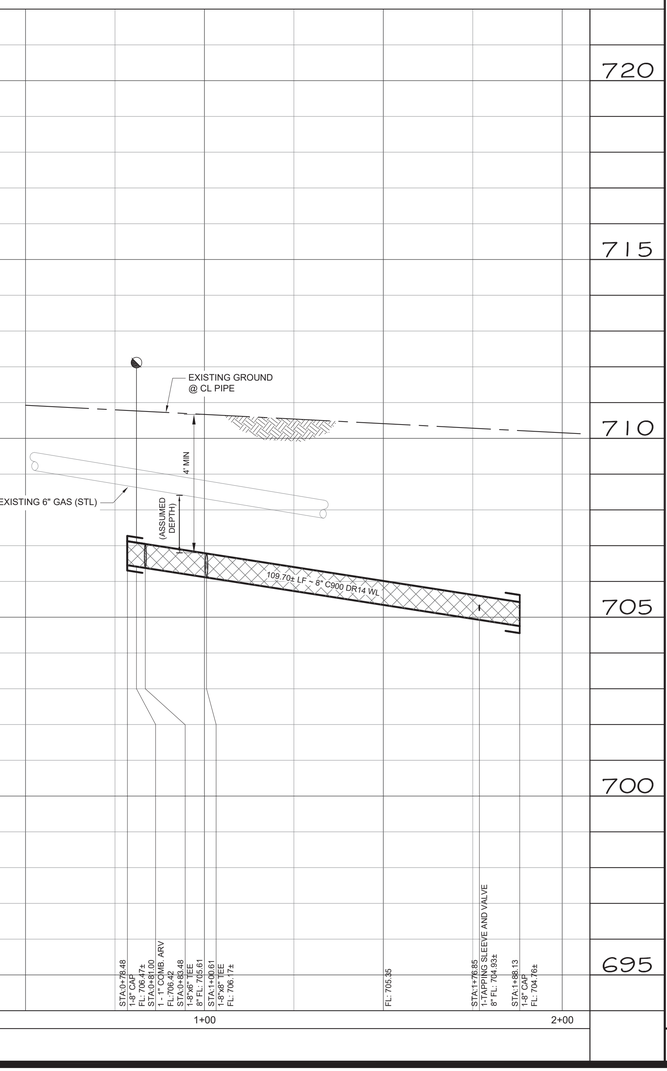


WATERLINE "D"



SCALE: 1" = 20'

0 10 20 40

LEGEND

- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED CONTOURS MINOR
- PROPOSED CONTOURS MAJOR
- OE — EXISTING OVERHEAD ELECTRIC
- UT — EXISTING UNDERGROUND TELEPHONE
- G — EXISTING UNDERGROUND GAS
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE
- W — PROP. PRIVATE WATER LINE
- WW — PROP. PRIVATE WASTEWATER LINE
- PROP. STORM SEWER LINE
- PP — EXISTING POWER POLE
- WM — EXISTING WATER METER
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- WM — PROP. WATER METER
- V — EXISTING GATE VALVE
- GV — PROP. GATE VALVE
- X — ROW CURVE NUMBER
- X — WATER LINE CURVE NUMBER

!!!WARNING!!!
TAPE W/TRACER WIRE REQUIRED OVER LINES

LEGEND

- NATURAL GROUND RT.
- NATURAL GROUND ℄
- NATURAL GROUND LT.
- PROP. T/C LT. & RT.

PROFILE SCALE:
HORIZ. 1" = 20'
VERT. 1" = 2'

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER

Thompson Land Engineering, LLC (F-10220)

8/20/25

THOMPSON LAND ENGINEERING, LLC
Land Planning, Site Design, Subdivision Engineering
P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
email: rct@tleng.net
www.tleng.net

REVISION

DATE

PROJECT
MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

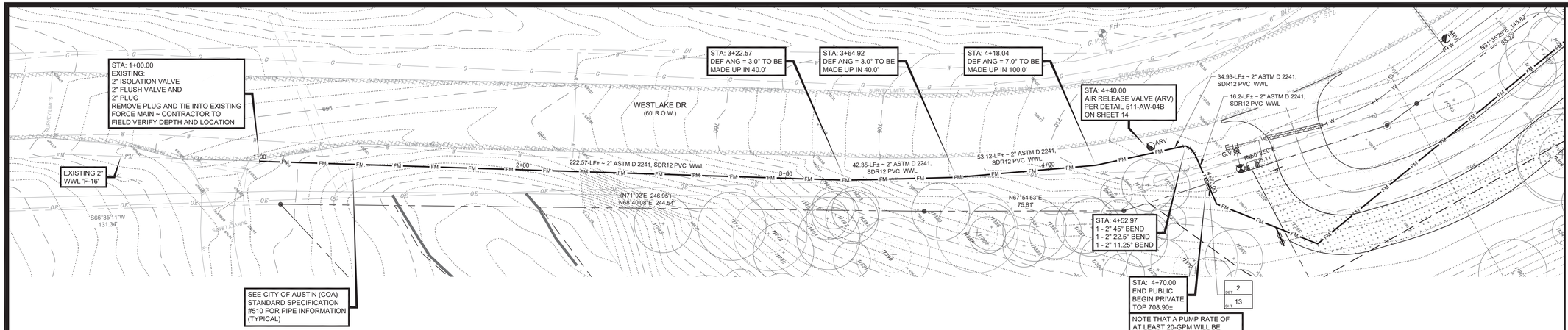
SHEET NAME
WATER PLAN & PROFILE (2 OF 2)

DATE ISSUED
August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER
1959

SHEET
9 OF 16



SCALE: 1" = 20'

0 10 20 40

LEGEND

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- PROPOSED FIRE HYDRANT
- WM PROP. WATER METER
- V EXISTING GATE VALVE
- GV PROP. GATE VALVE
- (X) ROW CURVE NUMBER
- (X) WATER LINE CURVE NUMBER

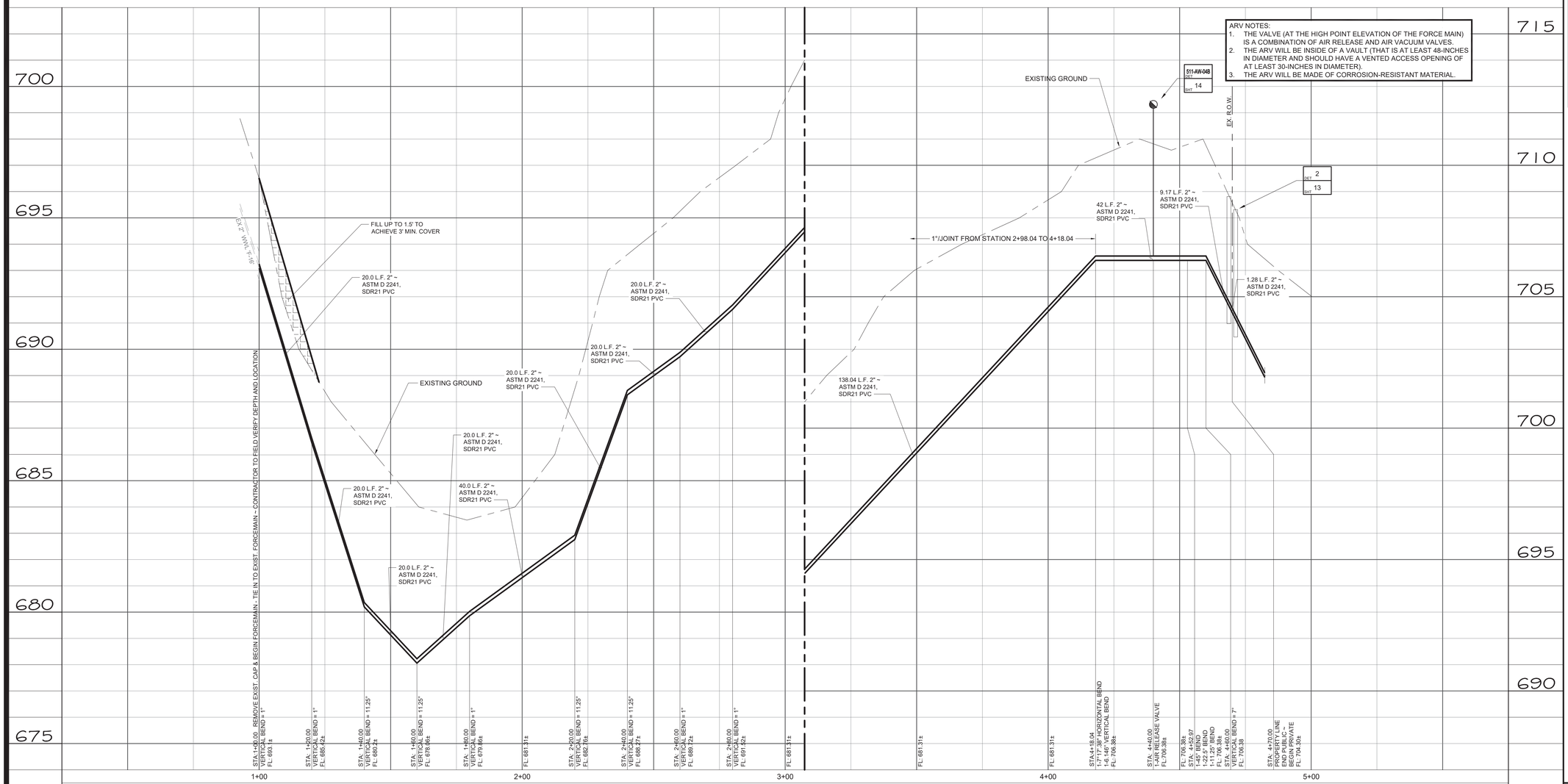
!!!WARNING!!!
TAPE W/TRACER WIRE REQUIRED OVER LINES

LEGEND

- NATURAL GROUND RT.
- NATURAL GROUND ℄
- NATURAL GROUND LT.
- PROP. T/C
- LT. & RT.

PROFILE SCALE:
HORIZ. 1" = 20'
VERT. 1" = 2'

FORCEMAIN PROFILE



ARV NOTES:
1. THE VALVE (AT THE HIGH POINT ELEVATION OF THE FORCE MAIN) IS A COMBINATION OF AIR RELEASE AND AIR VACUUM VALVES.
2. THE ARV WILL BE INSIDE OF A VAULT (THAT IS AT LEAST 48-INCHES IN DIAMETER AND SHOULD HAVE A VENTED ACCESS OPENING OF AT LEAST 30-INCHES IN DIAMETER).
3. THE ARV WILL BE MADE OF CORROSION-RESISTANT MATERIAL.

STATE OF TEXAS
ROBERT C. THOMPSON
68524
REGISTERED PROFESSIONAL ENGINEER

Thompson Land Engineering, LLC (F-10220)

8/20/25

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P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
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TBPE Reg. No. F-10220

DATE

REVISION

PROJECT
MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

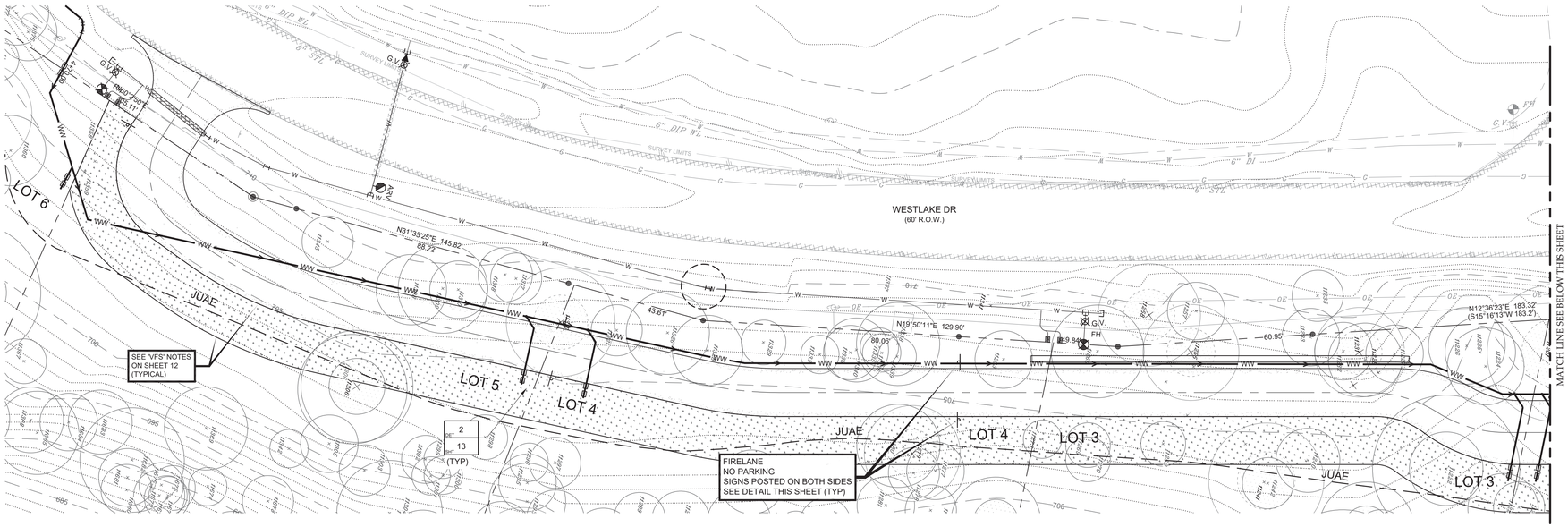
SHEET NAME
FORCEMAIN PLAN & PROFILE SHEET

DATE ISSUED
August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER
1959

SHEET
10 OF 16



1 ON-SITE WASTEWATER PLAN

SCALE: 1:20

!!! WARNING !!!:
UNDERGROUND UTILITIES SHOWN ON THESE PLANS IS A BEST ESTIMATE BASED ON RECORDS THAT COULD BE OBTAINED AND PHYSICAL FEATURES VISIBLE AT THE GROUND LEVEL. THE ENGINEER MAKES NO ASSERTIONS BEYOND THAT THEY ARE A BEST ESTIMATE AND AN ATTEMPT TO HELP IDENTIFY POSSIBLE UTILITIES IN THE AREA. THE CONTRACTOR MUST CALL ONE CALL IN ACCORDANCE WITH THE NOTES TO BETTER LOCATE ANY UNDERGROUND UTILITIES.

SCALE: 1" = 20'

0 10 20 40

LEGEND

- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED CONTOURS
- OE EXISTING OVERHEAD ELECTRIC
- UT EXISTING UNDERGROUND TELEPHONE
- G EXISTING UNDERGROUND GAS
- W EXISTING WATER LINE
- WW EXISTING WASTEWATER LINE
- W PROP. PRIVATE WATER LINE
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- WW PROP. PRIVATE WASTEWATER LINE
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- WM EXISTING WATER METER
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- WM PROP. WATER METER
- V EXISTING GATE VALVE
- GV PROP. GATE VALVE

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
LIFT STATION AND FORCE MAIN
GENERAL CONSTRUCTION NOTES
TCEQ-0591 (REV. 2-26-2016)

EDWARDS AQUIFER PROTECTION PROGRAM CONSTRUCTION NOTES - LEGAL DISCLAIMER

THE FOLLOWING/LISTED "CONSTRUCTION NOTES" ARE INTENDED TO BE ADVISORY IN NATURE ONLY AND DO NOT CONSTITUTE AN APPROVAL OR CONDITIONAL APPROVAL BY THE EXECUTIVE DIRECTOR (ED), NOR DO THEY CONSTITUTE A COMPREHENSIVE LISTING OF RULES OR CONDITIONS TO BE FOLLOWED DURING CONSTRUCTION. FURTHER ACTIONS MAY BE REQUIRED TO ACHIEVE COMPLIANCE WITH TCEQ REGULATIONS FOUND IN TITLE 30, TEXAS ADMINISTRATIVE CODE (TAC), CHAPTERS 213 AND 217, AS WELL AS LOCAL ORDINANCES AND REGULATIONS PROVIDING FOR THE PROTECTION OF WATER QUALITY. ADDITIONALLY, NOTHING CONTAINED IN THE FOLLOWING/LISTED "CONSTRUCTION NOTES" RESTRICTS THE POWERS OF THE ED, THE COMMISSION OR ANY OTHER GOVERNMENTAL ENTITY TO PREVENT, CORRECT, OR CURTAIL ACTIVITIES THAT RESULT OR MAY RESULT IN POLLUTION OF THE EDWARDS AQUIFER OR HYDROLOGICALLY CONNECTED SURFACE WATERS. THE HOLDER OF ANY EDWARDS AQUIFER PROTECTION PLAN CONTAINING "CONSTRUCTION NOTES" IS STILL RESPONSIBLE FOR COMPLIANCE WITH TITLE 30, TAC, CHAPTERS 213 OR ANY OTHER APPLICABLE TCEQ REGULATION, AS WELL AS ALL CONDITIONS OF AN EDWARDS AQUIFER PROTECTION PLAN THROUGH ALL PHASES OF PLAN IMPLEMENTATION. FAILURE TO COMPLY WITH ANY CONDITION OF THE ED'S APPROVAL, WHETHER OR NOT IN CONTRADICTION OF ANY "CONSTRUCTION NOTES," IS A VIOLATION OF TCEQ REGULATIONS AND ANY VIOLATION IS SUBJECT TO ADMINISTRATIVE RULES, ORDERS, AND PENALTIES AS PROVIDED UNDER TITLE 30, TAC § 213.10 (RELATING TO ENFORCEMENT). SUCH VIOLATIONS MAY ALSO BE SUBJECT TO CIVIL PENALTIES AND INJUNCTION. THE FOLLOWING/LISTED "CONSTRUCTION NOTES" IN NO WAY REPRESENT AN APPROVED EXCEPTION BY THE ED TO ANY PART OF TITLE 30 TAC, CHAPTERS 213 AND 217, OR ANY OTHER TCEQ APPLICABLE REGULATION

1. THIS LIFT STATION AND/OR FORCE MAIN MUST BE CONSTRUCTED IN ACCORDANCE WITH 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(C), THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) EDWARDS AQUIFER RULES, AND ANY LOCAL GOVERNMENT STANDARD SPECIFICATIONS.

2. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED LIFT STATION/FORCE MAIN (LSFM) SYSTEM APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF A LSFM SYSTEM APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.

3. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE PRESIDING TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

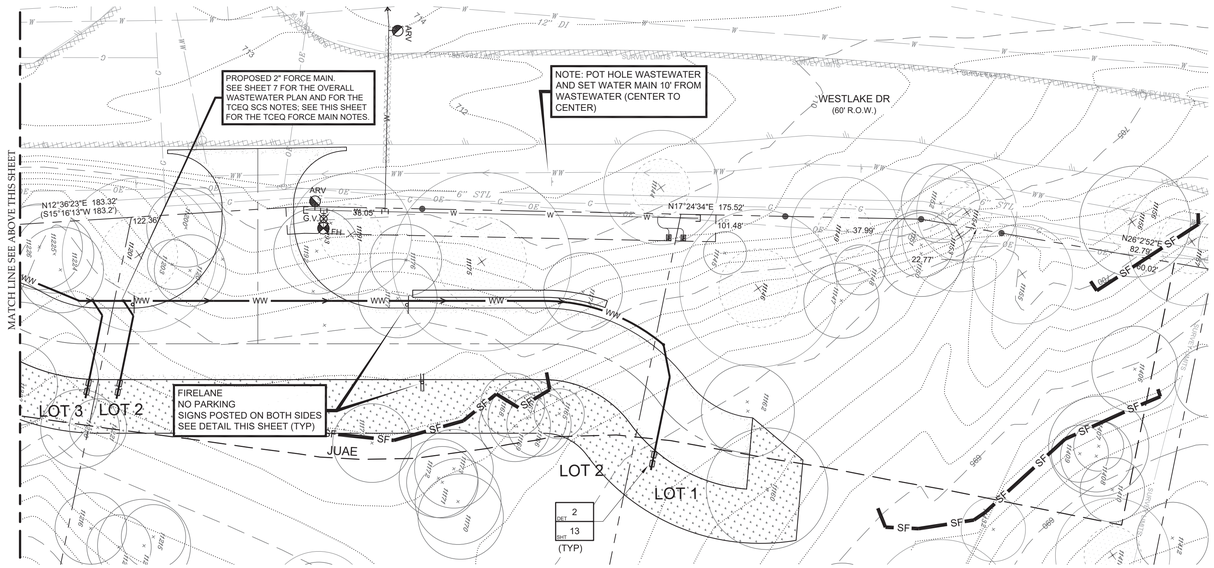
4. UPON COMPLETION OF ANY LIFT STATION EXCAVATION, A GEOLOGIST MUST CERTIFY THAT THE EXCAVATION HAS BEEN INSPECTED FOR THE PRESENCE OF SENSITIVE FEATURES. THE CERTIFICATION MUST BE SIGNED, SEALED, AND DATED BY THE GEOLOGIST PREPARING THE CERTIFICATION. CERTIFICATION THAT THE EXCAVATION HAS BEEN INSPECTED MUST BE SUBMITTED TO THE APPROPRIATE REGIONAL OFFICE.
   - IF SENSITIVE FEATURE(S) ARE IDENTIFIED, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY AND MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY FROM THE LIFT STATION.
   - CONSTRUCTION MAY CONTINUE IF THE GEOLOGIST CERTIFIES THAT NO SENSITIVE FEATURE OR FEATURES WERE PRESENT.

5. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TCEQ OF THE FEATURE DISCOVERY. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING WITHIN TWO WORKING DAYS. THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.

6. ALL FORCE MAIN LINES MUST BE TESTED IN ACCORDANCE WITH 30 TAC §217.68. TESTING METHOD WILL BE:
   - A PRESSURE TEST MUST USE 50 POUNDS PER SQUARE INCH ABOVE THE NORMAL OPERATING PRESSURE OF A FORCE MAIN.
   - A TEMPORARY VALVE FOR PRESSURE TESTING MAY BE INSTALLED NEAR THE DISCHARGE POINT OF A FORCE MAIN AND REMOVED AFTER A TEST IS SUCCESSFULLY COMPLETED.
   - A PUMP ISOLATION VALVE MAY BE USED AS AN OPPOSITE TERMINATION POINT.
   - A TEST MUST INVOLVE FILLING A FORCE MAIN WITH WATER.
   - A PIPE MUST HOLD THE DESIGNATED TEST PRESSURE FOR A MINIMUM OF 4.0 HOURS.
   - THE LEAKAGE RATE MUST NOT EXCEED 10.0 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER DAY.

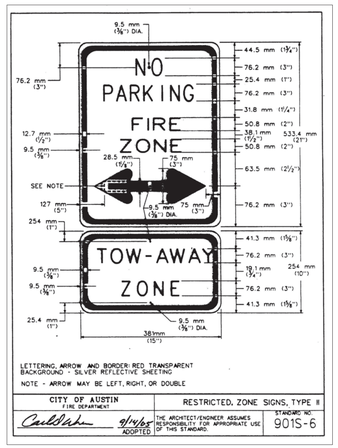
AUSTIN REGIONAL OFFICE	SAN ANTONIO REGIONAL OFFICE
12100 PARK 35 CIRCLE, BUILDING A	14250 JUDSON ROAD
AUSTIN, TEXAS 78753-1808	SAN ANTONIO, TEXAS 78233-4480
PHONE (512) 339-2929	PHONE (210) 490-3096
FAX (512) 339-3795	FAX (210) 545-4329

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.



2 ON-SITE WASTEWATER PLAN

SCALE: 1:20



Thompson Land Engineering, LLC (F-10220)

8/20/25

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P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
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TBPE Reg. No. F-10220

DATE

REVISION

PROJECT
MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME
ON-SITE PRIVATE WASTEWATER PLAN

DATE ISSUED
August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER
1959

SHEET
11 OF 16

IMPERVIOUS COVER ACCOUNTING

		FUTURE		
Lot	Lot Area (ac)	IC (sf)	IC (ac)	% IC
1	1.76	711.51	0.02	0.9%
2	1.53	4374.06	0.10	6.6%
3	1.25	2474.06	0.06	4.5%
4	1.14	2338.87	0.05	4.7%
5	1.02	3043.68	0.07	6.9%
6	1.72	0	0.00	0.0%

TOTAL PROJECT AREA = 'LIMITS OF CONSTRUCTION' = 1,125-ACRES
PRE-DEVELOPMENT IMPERVIOUS WITHIN PLAN LIMITS = 0.000-ACRES
POST-DEVELOPMENT IMPERVIOUS WITHIN PLAN LIMITS = 0.297-ACRES
OFFSITE AREA = RIGHT-OF-WAY DRAINING TO VFS = 0.439-ACRES
OFFSITE IMPERVIOUS AREA DRAINING TO VFS = 0.141-ACRES

NOTE: ACCORDING TO THE "MEDIATED SETTLEMENT AGREEMENT", THE DRIVEWAY IS TO BE ONLY ROUGH CUT AND COVERED WITH BULL ROCK (FOR EMERGENCY VEHICLE SUPPORT) UNTIL THE FIRST CO IS TO BE OBTAINED. THEREFORE, NO CITY OF WEST LAKE HILLS DRAINAGE PLAN IS PROPOSED WITH THIS PLAN BUT INSTEAD WILL BE PROVIDED WITH EACH HOME PLAN AND PERMIT DRAWINGS.

WESTLAKE DR
(60' R.O.W.)

LOT 6 LOT 5 LOT 4 LOT 3 LOT 2 LOT 1

2X2X4 STONE BLOCK
TOP:707.75
BOT:705.75

2X2X4 STONE BLOCK
TOP:708.00
BOT:706.00

2X2X4 STONE BLOCK
TOP:708.00
BOT:706.00

SEE 'VFS' NOTES ON THIS SHEET (TYPICAL)

MATCH LINE SEE BELOW THIS SHEET

MATCH LINE SEE ABOVE THIS SHEET

1 JOINT USE DRIVEWAY PLAN
SCALE: 1:20

2 JOINT USE DRIVEWAY PLAN
SCALE: 1:20

SCALE: 1" = 20'
0 10 20 40

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER POLLUTION ABATEMENT PLAN
GENERAL CONSTRUCTION NOTES
TCEQ-0592 (REV. JULY 15, 2015)

EDWARDS AQUIFER PROTECTION PROGRAM CONSTRUCTION NOTES - LEGAL DISCLAIMER

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1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN (WPAP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.
3. IF ANY SENSITIVE FEATURE(S) (CAVES, SOLUTION CAVITY, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MAY NOT BE RESUMED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE APPROPRIATE PROTECTIVE MEASURES IN ORDER TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.
4. NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE,
5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS, THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
6. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
7. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE,
9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.
10. IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
   - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR:
   - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
   - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED,
12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
   A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
   B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
   C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN,

AUSTIN REGIONAL OFFICE 12100 PARK 35 CIRCLE, BUILDING A AUSTIN, TEXAS 78753-1808 PHONE (512) 339-2929 FAX (512) 339-3795	SAN ANTONIO REGIONAL OFFICE 14250 JUDSON ROAD SAN ANTONIO, TEXAS 78233-4480 PHONE (210) 490-3096 FAX (210) 545-4329

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Moore Estates Subd Improvements**
Date Prepared: **8/25/2025**
Updated:

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Travis	
Total project area included in plan * =	8.423	acres
Predevelopment impervious area within the limits of the plan * =	0.000	acres
Total post-development impervious area within the limits of the plan* =	0.297	acres
Total post-development impervious cover fraction * =	0.035	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	259	lbs.

Number of drainage basins / outfalls areas leaving the plan area = 2

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	1	2
Total drainage basin/outfall area =	0.933 acres	7.490
Predevelopment impervious area within drainage basin/outfall area =	0.000 acres	0.000
Post-development impervious area within drainage basin/outfall area =	0.297 acres	0.000
Post-development impervious fraction within drainage basin/outfall area =	0.32	0.00
$L_{M\ THIS\ BASIN}$ =	259 lbs.	0

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**
Removal efficiency = **85** percent
Vegetated Filter Strips

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_C x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	0.933	acres
A_I =	0.297	acres
A_P =	0.636	acres
L_R =	289	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **289** lbs.

F = **1.00**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	4.00	inches
Post Development Runoff Coefficient =	0.27	
On-site Water Quality Volume =	3823	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.439	acres
Off-site Impervious cover draining to BMP =	0.141	acres
Impervious fraction of off-site area =	0.32	
Off-site Runoff Coefficient =	0.27	
Off-site Water Quality Volume =	1714	cubic feet
Storage for Sediment =	1067	
Total Capture Volume (required water quality volume(s) x 1.20) =	6403	cubic feet

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

There are no calculations required for determining the load or size of vegetative filter strips.
The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 15%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

FOR THE WPAP, THIS PROJECT IS ONLY INSTALLING THE SHARED DRIVEWAY AND ASSOCIATED VFS FOR THE OVERALL SUBDIVISION; ANY FUTURE DEVELOPMENT ON THE LOTS WILL BE REQUIRED TO FILE A MODIFIED WPAP PERMIT(AS WELL AS THE SCS) FOR EACH HOME, AS (AND/OR IF) THEY BECOME AVAILABLE IN THE FUTURE (LOTS 1 THROUGH 6)

ENGINEERED VEGETATIVE FILTER STRIP (VFS) TCEQ NOTES:
1. THE FILTER STRIP SHOULD EXTEND ALONG THE ENTIRE LENGTH OF THE CONTRIBUTING AREA AND THE SLOPE SHOULD NOT EXCEED 20%, THE MINIMUM DIMENSION OF THE FILTER STRIP (IN THE DIRECTION OF FLOW) SHOULD BE NO LESS THAN 15 FEET, THE MAXIMUM WIDTH (IN THE DIRECTION OF FLOW) OF THE CONTRIBUTING IMPERVIOUS AREA SHOULD NOT EXCEED 72 FEET, FOR ROADWAYS WITH A VEGETATED STRIP ALONG BOTH SIDES THE TOTAL WIDTH OF THE ROADWAY SHOULD NOT EXCEED 144 FEET (I.E., 72 FEET DRAINING TO EACH SIDE),
2. THE MINIMUM VEGETATED COVER FOR ENGINEERED STRIPS IS 80%,
3. THE AREA CONTRIBUTING RUNOFF TO A FILTER STRIP SHOULD BE RELATIVELY FLAT SO THAT THE RUNOFF IS DISTRIBUTED EVENLY TO THE VEGETATED AREA WITHOUT THE USE OF A LEVEL SPREADER.
4. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW (SCHUELER, 1987),
5. THE TOP EDGE OF THE FILTER STRIP ALONG THE PAVEMENT WILL BE DESIGNED TO AVOID THE SITUATION WHERE RUNOFF WOULD TRAVEL ALONG THE TOP OF THE FILTER STRIP, RATHER THAN THROUGH IT,
6. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL, OTHERWISE RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT, A LEVEL SPREADER SHOULD NOT BE USED TO DISTRIBUTE RUNOFF TO AN ENGINEERED FILTER STRIP,
7. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.

LEGEND

- TREE TO REMAIN
- STORM WATER FLOW DIRECTIONAL ARROWS
- HERITAGE TREE
- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED CONTOURS MINOR
- PROPOSED CONTOURS MAJOR
- OE EXISTING OVERHEAD ELECTRIC
- UT EXISTING UNDERGROUND TELEPHONE
- G EXISTING UNDERGROUND GAS
- W EXISTING WATER LINE
- WW EXISTING WASTEWATER LINE
- PP EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- WM EXISTING WATER METER
- WM PROP. WATER METER
- V EXISTING GATE VALVE
- GV PROP. GATE VALVE

!!! WARNING !!!:
UNDERGROUND UTILITIES SHOWN ON THESE PLANS IS A BEST ESTIMATE BASED ON RECORDS THAT COULD BE OBTAINED AND PHYSICAL FEATURES VISIBLE AT THE GROUND LEVEL. THE ENGINEER MAKES NO ASSERTIONS BEYOND THAT THEY ARE A BEST ESTIMATE AND AN ATTEMPT TO HELP IDENTIFY POSSIBLE UTILITIES IN THE AREA. THE CONTRACTOR MUST CALL ONE CALL IN ACCORDANCE WITH THE NOTES TO BETTER LOCATE ANY UNDERGROUND UTILITIES.

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER
8/26/25

Thompson Land Engineering, LLC (F-10220)

THOMPSON LAND ENGINEERING, LLC
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P.O. Box 160062, Austin, Texas 78716 (512-328-0002)
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TBPE Reg. No. F-10220

DATE
REVISION

MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746
PROJECT

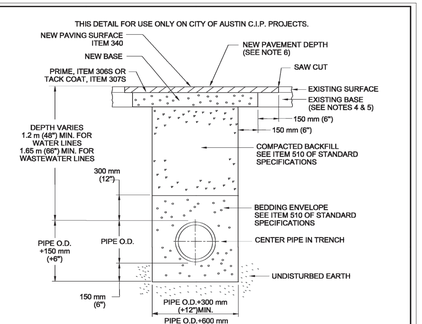
JOINT USE DRIVEWAY PLAN
SHEET NAME

DATE ISSUED
August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER
1959

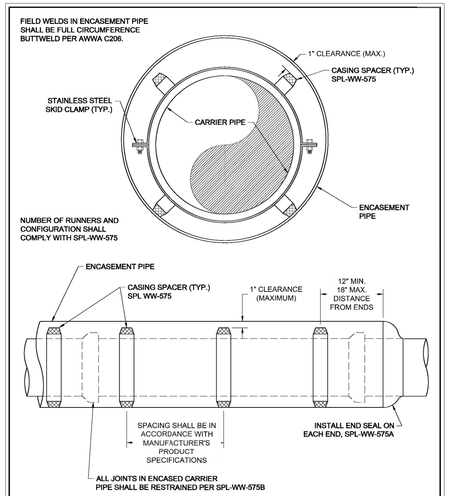
SHEET
12 OF 16



NOTES:

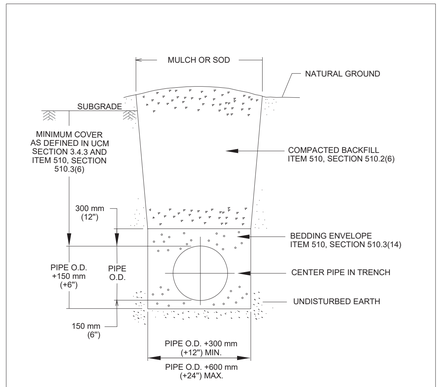
1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE A MINIMUM OF 300 mm (12") WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE SAW CUT 150 mm (6") WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND OF EQUAL THICKNESS, OR MINIMUM BASE THICKNESS OF 250 mm (10"), WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 200 mm (8") OF BASE OR MATCH EXISTING THICKNESS, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 50 mm (2"), WHICHEVER IS GREATER.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY	TYPICAL TRENCH WITH PAVED SURFACE	
RECORD COPY SIGNED BY LEON BARBA 8/19/02 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 510S-3 1 OF 1



APPLICABLE REFERENCES:
STANDARD SPECIFICATION: ITEM 505.4 & 510.3 (19)

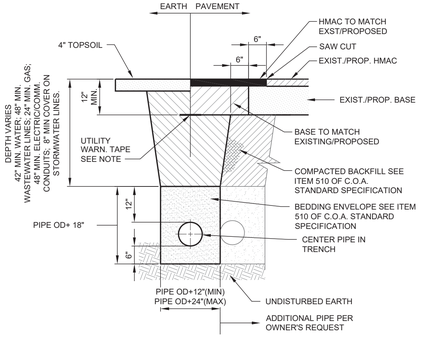
CITY OF AUSTIN AUSTIN WATER	ENCASEMENT PIPE DETAIL WITH CASING SPACERS	
JEFF A. KYLE 02/22/2021 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 501-AW-01 1 OF 1



REFERENCES:

1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW"; SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER"; SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

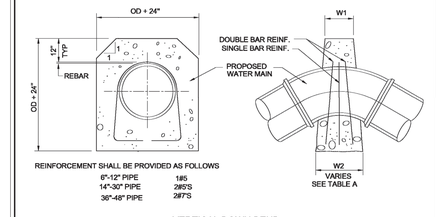
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL TRENCH DETAIL WITH UNFINISHED SURFACE	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S-5



NOTE:
TAPE SHOWN SHALL BE NON-METALLIC UTILITY WARNING TAPE FOR METALLIC PIPE AND METALLIC UTILITY WARNING TAPE FOR NON-METALLIC PIPE.

1 PRIVATE ON-SITE TRENCH WITH PAVED OR EARTHEN SURFACE

SCALE: N.T.S.



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS

6"-12" PIPE	1#5
14"-30" PIPE	2#5'S
36"-48" PIPE	2#7'S

VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH-W2 (in)
6"	6"	0-5	NOTE 2
		5-15	24
		15-25	48
		> 25	NOTE 1
8"	6"	0-5	NOTE 2
		5-9	30
		9-15	36
		>15	NOTE 1
12"	6"	0-5	NOTE 2
		5-15	48
		> 15	NOTE 1
16"	12"	0-5	NOTE 2
		5-10	60
		10-15	96
		> 15	NOTE 1
24" THRU 36" DIA.		>5.0	NOTE 1
42" THRU 48" DIA.		>3.0	NOTE 1

NOTES:

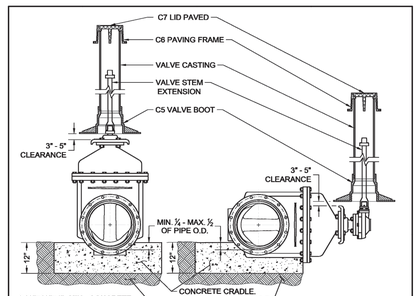
1- FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINED JOINTS SHALL BE INSTALLED

2- FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

THRUST BLOCK DESIGN AS FOLLOWS
A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE
B. MINIMUM SOIL BEARING SEE TABLE BELOW

SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb/Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb/Sq.Ft.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY	CONCRETE THRUST BLOCKING	
RECORD COPY SIGNED BY JAMES E. THOMPSON 2/11/86 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 510-6 1 OF 2



VERTICAL VALVE

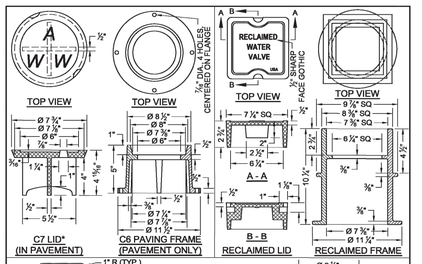
HORIZONTAL VALVE
ONLY TO BE USED WHEN CALLED OUT ON THE DRAWINGS.

NOTES:

1. WELD SOCKET 2⅝" x 2" DEEP TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. [SCH. 80 FOR LENGTHS OVER 10'.]
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-01 1 OF 4



WEIGHTS:
C7 LID: 13 LBS
RECLAIMED LID: 15 LBS
C6 FRAME: 23 LBS
RECLAIMED FRAME: 33 LBS
C5 BASE: 78 LBS

NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURERS IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID, FRAME, COLLAR AND BASE.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. CASTING FINISH BY MANUFACTURER SHALL INCLUDE REMOVAL OF FINS AND FLASHING, AND PAINT WITH BLACK ASPHALT COATING.

* LETTERING SHALL BE 1 ½" 2 PICK BAR SLOTS REQUIRED

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
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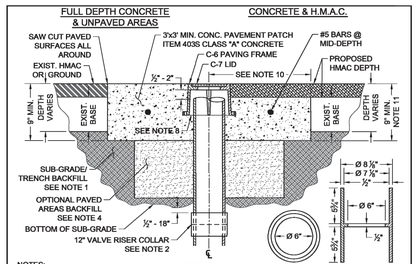


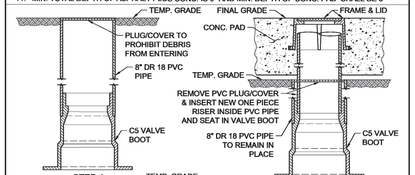
NOTES:

1. SUB-GRADE/TRENCH BACKFILL SHALL BE COMPACTED AS PER ITEM 201S, SUB-GRADE PREPARATION.
2. TO ADJUST VALVE CASTINGS TO FINAL GRADE, REMOVE RISER PIPE BELOW SUB-GRADE AND INSTALL APPROPRIATE LENGTH OF NEW RISER PIPE TO ACHIEVE FINAL GRADE. CONNECT THE TWO PIECES OF RISER PIPE WITH A 6" COLLAR MIN. 12" LENGTH APPROXIMATELY CENTERED ON THE JOINT WITH THE TOP OF SLEEVE LOCATED ½" - 18" BELOW SUB-GRADE. THE INSIDE "LIP" OF COLLAR TO BE PAINTED WITH FLUORESCENT WHITE PAINT OR COVERED WITH FLUORESCENT WHITE TAPE. ALTERNATE: FOR OPTIONAL SINGLE PIECE RISER INSTALLATION SEE SHEET 4 OF 4.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE NUT OF THE VALVE; NUT SHALL OPERATE WITH NO OBSTRUCTION.
4. WHERE CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL (SPEC. ITEM 402S) TO THE UNDERSIDE OF THE CONCRETE. PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
5. REINFORCING STEEL SHALL MEET SPEC. ITEM 440S.7.
6. NO MORE THAN 2 SECTIONS OF PIPE SHALL BE USED FROM VALVE TO FINAL GRADE.
7. BELL AND SPIGOT IS ACCEPTABLE FOR DEPTH OVER 18'.

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-01 3 OF 4

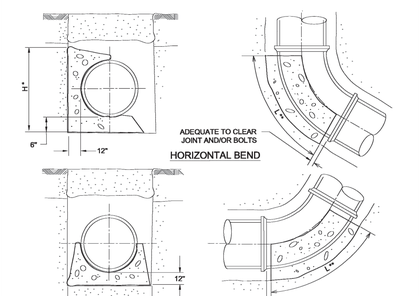
NOTES (CON'T):

8. PAVING FRAME SHALL BE FLUSH WITH THE CONC. PAD AND PLACED ½" - 2" ABOVE RISER PIPE (FRAME SHALL NOT REST ON RISER.)
9. IN UNPAVED AREAS, INSTALL ONE DELINEATOR STAKE IMMEDIATELY ADJACENT TO THE EDGE OF THE CONCRETE PAD. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES.
10. VALVE SHALL TYPICALLY BE CENTERED IN CONCRETE DIAMOND BUT MAY BE OFFSET WITH A MIN. OF 12" FROM CENTER OF VALVE LID TO EDGE OF CONCRETE IN ALL DIRECTIONS.
11. MIN. TOTAL DEPTH OF ASPHALT PLUS CONC. IS 9" AND MIN. DEPTH OF CONC. PAD SHALL BE 5"



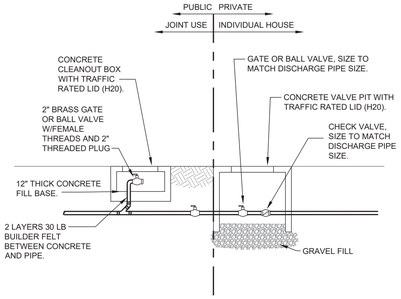
OPTIONAL ONE PIECE VALVE CASTING INSTALLATION

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-01 4 OF 4



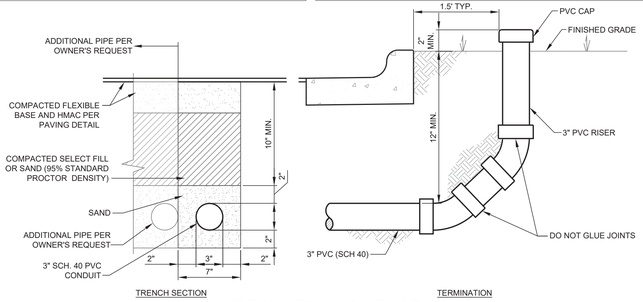
* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

CITY OF AUSTIN WATER AND WASTEWATER UTILITY	CONCRETE THRUST BLOCKING	
RECORD COPY SIGNED BY JAMES E. THOMPSON 2/11/86 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 510-6 2 OF 2



2 PIPE CONNECTION VALVE ASSEMBLY DETAIL

SCALE: N.T.S.



3 IRRIGATION AND/OR ELECTRICAL SLEEVES

SCALE: N.T.S.

Thompson Land Engineering, LLC (F-10220)

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED PROFESSIONAL ENGINEER

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TBPE Reg. No. F-10220 © Copyright 2012

DATE
REVISION

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746

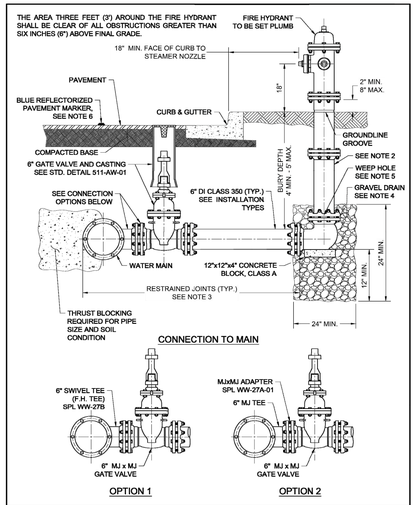
SHEET NAME: WATER & WASTEWATER DETAILS (1 OF 2)

DATE ISSUED: August, 2025

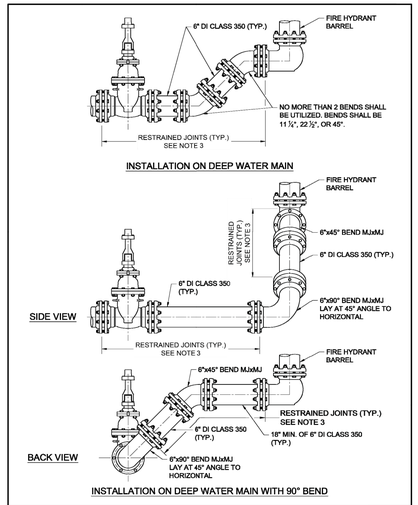
DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER: 1959

SHEET: 13 OF 16



CITY OF AUSTIN AUSTIN WATER	FIRE HYDRANT ASSEMBLY	
JEFF A. KYLE 11/06/2023 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-02 1 OF 3

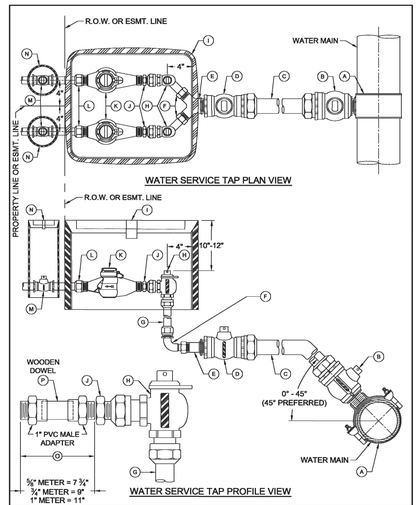


CITY OF AUSTIN AUSTIN WATER	FIRE HYDRANT ASSEMBLY	
JEFF A. KYLE 11/06/2023 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-02 2 OF 3

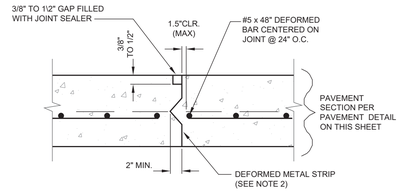
NOTES: APPLICABLE TO ALL INSTALLATION TYPES.

1. NO PART OF A HYDRANT OR ITS NOZZLE CAPS SHALL BE WITHIN 6" OF ANY SIDEWALK OR PEDESTRIAN RAMP. ANY FIRE HYDRANT PLACED NEAR A STREET CORNER SHALL BE LOCATED OUTSIDE THE CURVE RADIUS AND A MINIMUM OF 4' FROM RAMPS.
2. ONE BARREL EXTENSION NOT EXCEEDING 2' LENGTH MAY BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT IN ORDER TO MEET THE REQUIRED BURY DEPTH OF 4' - 5'. BREAK AWAY BOLTS (SHOE TYPES) SHALL BE PROPERLY SPACED AND PLACED.
3. FIRE LINE SHALL HAVE ALL JOINTS RESTRAINED FROM MAIN TO FIRE HYDRANT INCLUDING MJ RESTRAINT OF TEE AT THE MAIN. JOINTS SHOWN MAY VARY. SEE SPL WW-27A, WW-27A-01, AND WW-27B FOR RESTRAINT OPTIONS.
4. BELOW EACH HYDRANT, A DRAINAGE PIT 24" IN DIAMETER AND 12" DEEP SHALL BE EXCAVATED AND FILLED WITH COMPACTED COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND UNDER AND AROUND THE BOWL OF THE HYDRANT, AND TO A LEVEL 12" ABOVE THE HYDRANT DRAIN OPENING (SEE STD. SPEC. 510). THE HYDRANT DRAINAGE PIT SHALL NOT BE CONNECTED TO A SANITARY SEWER. THE DRAIN GRAVEL SHALL BE COVERED WITH FILTER FABRIC PER STD. SPEC. 620.
5. WRAP 8 MIL. POLY-FILM WRAP ON ALL BURIED PIPE AND FITTINGS. CUT SLITS IN POLY-FILM WRAP AT BOOT TO ALLOW WATER TO ESCAPE FROM WEEP HOLES AND POLY-WRAP.
6. A BLUE TYPE II-B-9 REFLECTORIZED PAVEMENT MARKER, CONFORMING TO STANDARD SPECIFICATION ITEM NO. 8635, SHALL BE PLACED 2 TO 3 FEET OFFSET FROM THE CENTERLINE OF PAVED STREETS, ON THE SIDE OF AND IN LINE WITH ALL NEWLY INSTALLED FIRE HYDRANTS.

CITY OF AUSTIN AUSTIN WATER	FIRE HYDRANT ASSEMBLY	
JEFF A. KYLE 11/06/2023 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-02 3 OF 3



CITY OF AUSTIN AUSTIN WATER	WATER SERVICE & METER INSTALLATION - 1" & SMALLER METERS	
RECORD COPY SIGNED JEFF A. KYLE 08/16/2019 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01B 1 OF 2

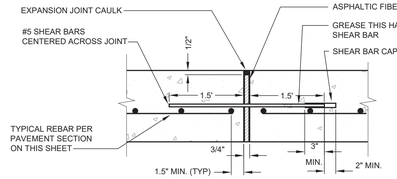


NOTES:
1.) CONTROL JOINTS SHOULD BE SPACED NO GREATER THAN 12.5 FEET FOR 5-INCH THICK CONCRETE AND NO GREATER THAN 15 FEET FOR 6-INCH THICK OR GREATER CONCRETE (OR IN ACCORDANCE WITH GEOTECHNICAL REPORT).

2.) "SCREED KEY JOINT" OR "LOAD KEY JOINT" WITH CAP STRIP AS MANUFACTURED BY DAYTON SUPERIOR OR APPROVED EQUAL. REMOVE CAP AFTER CONCRETE SETS AND FILL REMAINING GAP WITH JOINT SEALER.

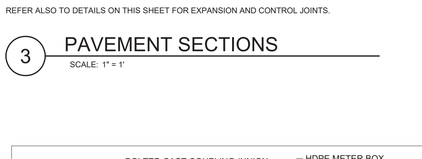
1 CONCRETE PAVEMENT CONTROL JOINT

SCALE: 1" = 0.5' FOR 6" THICKNESS SHOWN



2 DOWEL- CONCRETE PAVEMENT EXPANSION JOINT DETAIL

SCALE: N.T.S.

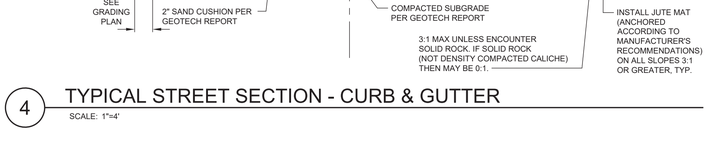


NOTE:
NO GEOTECHNICAL REPORT AVAILABLE AT TIME PLAN PREPARED

REFER ALSO TO DETAILS ON THIS SHEET FOR EXPANSION AND CONTROL JOINTS.

3 PAVEMENT SECTIONS

SCALE: 1" = 1'

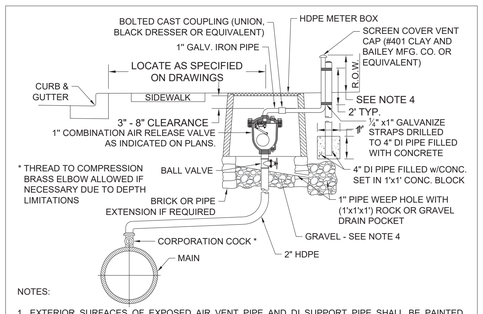


4 TYPICAL STREET SECTION - CURB & GUTTER

SCALE: 1"=4'

5 TYP. SECTION THRU EXIST. AND NEW ASPHALT PAVEMENT

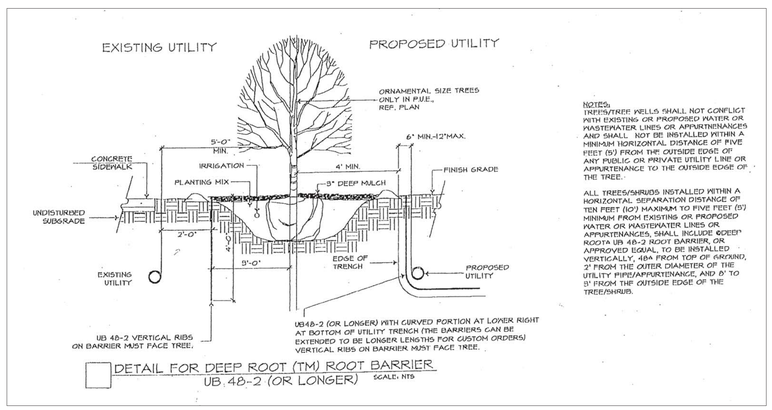
SCALE: 1" = 1'



NOTES:

1. EXTERIOR SURFACES OF EXPOSED AIR VENT PIPE AND DI SUPPORT PIPE SHALL BE PAINTED. POTABLE WATER PIPE SHALL BE PAINTED SAFETY BLUE.
2. AIR VENT PIPE INSTALLATION SHALL BE AS NEAR AS PRACTICAL TO RIGHT-OF-WAY LINE WITH MINIMUM CLEARANCE OF 18" FROM ANY OBSTACLE.
3. HDPE METER BOX PENETRATION SHALL BE CORE BIT DRILLED. VOID SHALL BE FILLED WITH LINKSEAL LS 300 OR APPROVED EQUAL.
4. COMPACTED COARSE GRAVEL OR BROKEN STONE MIXED WITH SAND SLOPED TO DRAIN.
5. IN UNDEVELOPED AREAS, THE AIR VENT PIPE SHALL BE 4' MIN. IN HEIGHT SUPPORTED BY A 4" DIA. DI PIPE WHICH HAS BEEN FILLED WITH CONCRETE (SUPPORT PIPE SHALL BE 6' LONG, BURIED IN CLASS A CONCRETE OR CLSM 3' BELOW FINAL GRADE AND EXTENDING 3' ABOVE FINAL GRADE). INSTALL ONE DELINEATOR STAKE WITHIN 3' OF THE VAULT ON THE VEHICULAR ACCESS SIDE OF VAULT. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES. IN DEVELOPED AREAS, THE AIR VENT PIPE SHALL BE 8" - 12" IN HEIGHT AND LOCATED NOT TO CONFLICT WITH SIDEWALK, DRIVEWAY, OR OTHER PEDESTRIAN TRAFFIC.
6. THE AIR VALVE AND ASSOCIATED PIPING SHALL BE INSTALLED ABOVE THE HIGHEST ELEVATION OF THE WATER MAIN. AIR VALVE PIPING, FROM THE WATER MAIN TO THE AIR VALVE, SHALL MAINTAIN A CONSTANT RISE, WITH NO DIPS, TO THE TOP OF THE GROUND.

AIR RELEASE AND AIR/VACUUM VALVE



DETAIL FOR DEEP ROOT (TM) ROOT BARRIER UB 48-2 (OR LONGER) SCALE: NTS

THOMPSON LAND ENGINEERING, LLC
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TBPE Reg. No. F-10220

DATE
REVISION

PROJECT: MOORE ESTATES SUBD IMPROVEMENTS
803 WEST LAKE DR WEST LAKE HILLS, TX 78746
SHEET NAME: WATER & WASTEWATER DETAILS (2 OF 2)

DATE ISSUED: August, 2025

DESIGNED BY	DRAFTED BY
RCT	BH

JOB NUMBER: 1959

SHEET: 14 OF 16

Thompson Land Engineering, LLC (F-10220)

STATE OF TEXAS ROBERT C. THOMPSON 69524 REGISTERED PROFESSIONAL ENGINEER

8/20/25

Force Main Calculations
(Based on UCM 2.6.2(b))

GIVENS:

- General Data

1	ac, Drainage Area (DA) to Lift Station (for infiltration)	***(Assumed; cut off by road & groundwater going under)***
SF	Use (SF, MF, Off/Ware, Retail)	
	If Off/Ware or Retail	
N/A	Floor Area (sf)	
	If SF or MF	
1	Units	***(Checking least flow version (one house))***

- Elevation Data

703.00	Pump Discharge Flowline	***(approximate for house on Lot 1)***
693.08	Forcemain Discharge Flowline (Ed)	***(see plans)***
709.76	High Point (on public)	***(see plans)***
691.59	Low Point (on public)	***(see plans)***

- Pipe Data

Type "A": PVC, ASTM D2241, SDR-PR, SDR 21(200)

2	in, Size "A" (Force Main diameter)	
400,000	psi, E (Young's Modulus)	
0.09	in, "A" Pipe Wall Thickness (t)	
1,022	ft, Length "A"	***(382 public and 640 private)***

- Pump Data

20	gpm, Pump Rate	***(Pump Rate to get 2 fps)***
0.045	cfs, Pump Rate	
65	gal, Pump on Volume (Von)	
49	gal, Pump off Volume (Voff)	

COMPUTATIONS

1) Peaking Factors

PF(max) = [18 + (pop/1,000)^0.5] / [4 + (pop/1,000)^0.5]
and
PF(min) = 0.2 * (pop/1,000)^0.198

where:
pop = 3.50

therefore:
PF(max) = 4.45
PF(min) = 0.07

2) Flow Rates

a) Avg Dry Weather Flow (Qd) per 2.6.2 B

where:
SF = Use
1 = Units or Floor Area (as applicable)
therefore:

Qd = 350 gpd

b) Equivalent Population (pop)

pop = Qd / (100 gal/cap/day)

therefore:

pop = 3.5

c) Infiltration (Qi)

Qi = 1,500 gpd/ac * DA

where:
DA = 1 ac

therefore:
Qi = 1,500 gpd

d) Max Wet Weather Flow (Qw(max))

Qw(max) = pop * 100 ppcd * PF(max) + Qi

where:
pop = 3.50
PF(max) = 4.45
Qi = 1,500 gpd

therefore:

Qw(max) 3,057 gpd
or 2.1 gpm

e) Max Dry Weather Flow (Qd(max))

Qd(max) = pop * 100 ppcd * PF(max)

where:
pop = 3.50
PF(max) = 4.45

therefore:
Qd(max) 1,557 gpd

f) Min Dry Weather Flow (Qd(min))

Qd(min) = pop * 100 ppcd * PF(min)

where:
pop = 3.50
PF(max) = 0.07

therefore:
Qd(min) 23 gpd

3) Force Main Velocities

V = P / (3.1415 * d^2 / 4)

where:

P = 0.045 cfs
d = 2 in (Line A)

therefore:

V = 2.0 fps (Line A)

4) Water Hammer

a) pressure wave velocity (a)

a = 12 / [(1.9379 * (1/300,000 + d/(E * t))]

where:
d = 2 in (Line A)
E = 400,000 psi
t = 0.09 in (Line A)

therefore:
1123 fps (Line A)

b) Surge Pressure (Ps)

Ps = a * V / 74.382

therefore:

30.8 psi (Line A)

5) Total Head

a) Elevation Head (He)

He = Ed - Es

where:
Ed = 693.08 (Forcemain Discharge Elevation)
Ed = 709.76 Highest FM elevation
Es = 703.00 Lowest Pump Discharge Elev (Estimated)

therefore:
He = 6.76 ft

b) Friction Loss (f)

f = (V^1.85 * L) / [(1.318*150)^1.85 * (d/4/12)^1.17]

where:
V = 2.0 fps (Line A)
L = 1022 ft (Line A)
d = 2 in (Line A)

therefore:
f = 8.92 ft (Line A)

c) Total Head (H)
Note: ignoring minor losses in fittings, entrance, exit

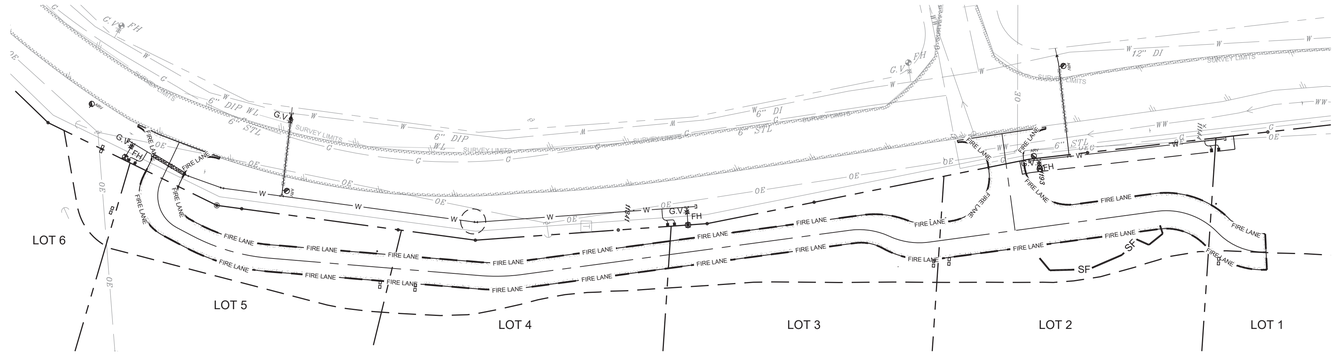
H = He + F(a)

therefore:
15.68 ft
or:
6.80 psi

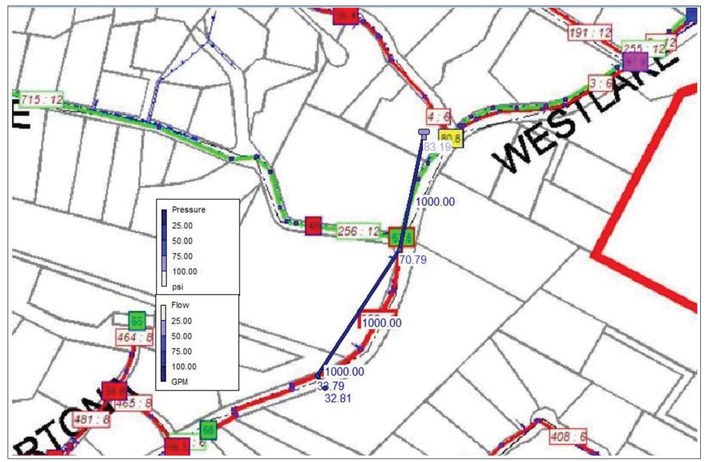
d) Velocity Head (Hv)

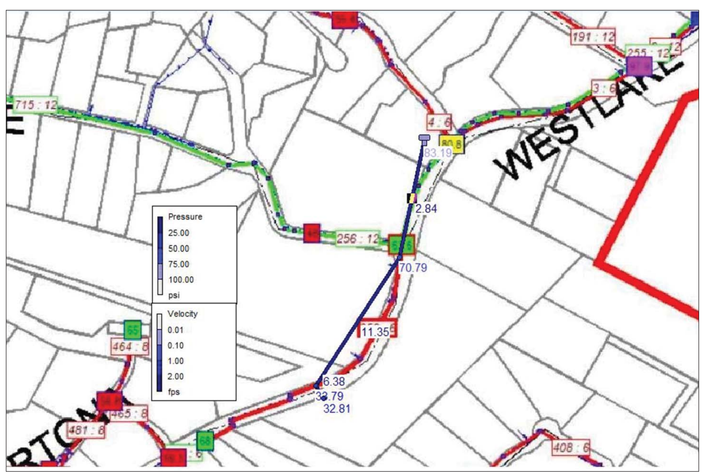
Hv = V^2 / (2 * 32.2)

Hv = 0.06 ft (Line A)



1 EMERGENCY FIRE PROTECTION PLAN
SCALE: 1:40





SCALE: 1" = 40'

0 20 40 80

LEGEND

>	HOSE PULL FIRE HYDRANT
392'	HOSE PULL DISTANCE

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803 WEST LAKE DR WEST LAKE HILLS, TX 78746

SHEET NAME
WATER & WASTEWATER CALCULATIONS

STATE OF TEXAS
ROBERT C. THOMPSON
69524
REGISTERED
PROFESSIONAL ENGINEER

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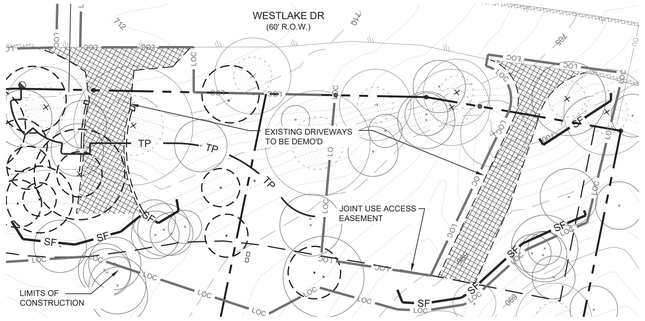

1 EXISTING DRIVEWAY DEMOLITION

SCALE: 1"30

LEGEND

- TREE TO REMAIN
- TREE TO BE REMOVED
- PROTECTED TREE
- HERITAGE TREE
- TREE PROTECTION
- EXISTING WATER METER
- EXISTING FIRE HYDRANT
- EXISTING GATE VALVE
- EXISTING POWER POLE
- HATCHED ITEMS TO BE DEMOLISHED AND REMOVED
- STABILIZED CONSTRUCTION ENTRANCE
- CONSTRUCTION STAGING AND TEMP. SPOILS AREA
- LOC — LIMITS OF CONSTRUCTION
- SF — EROSION CONTROL SILT FENCE
- MS — EROSION CONTROL MULCH SOCK
- TFD — TRIANGULAR FILTER DIKE
- RB — ROCK BERM
- IP — STORM INLET PROTECTION
- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED CONTOURS
- OE — EXISTING OVERHEAD ELECTRIC
- UT — EXISTING UNDERGROUND TELEPHONE
- G — EXISTING UNDERGROUND GAS
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE

!!! NOTICE !!!:
IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY RESUMES PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE..

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