WATER POLLUTION ABATEMENT PLAN AND SEWAGE COLLECTION SYSTEM APPLICATION

FOR

TERRAVISTA VIEW SUBDIVISION

2530 FM 1460 GEORGETOWN, TEXAS 78626

Prepared For:

TERRAVISTA VIEW, LLC 823 S AUSTIN AVE GEORGETOWN, TX 78626

Prepared By:



Sandlin Services, LLC TBPELS Firm # 21356 P: (806) 679-7303

April 20, 2023





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Edwards Aquifer Application Cover Page (TCEQ-20705)

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. <u>Edwards Aquifer applications</u> 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: Teravista View Subdivision				2. Regulated Entity No.:				
3. Customer Name: Teravista View, LLC		4. Customer No.:						
5. Project Type: (Please circle/check one)	New	Modif	Modification Extension		nsion	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. Sit		e (acres):	7.38 AC	
9. Application Fee:	\$5,687.50	10. Permanent B		BMP(s):		Batch Detention Pond		
11. SCS (Linear Ft.):	1,374.5	12. AST/UST (No. Tank			ıks):	N/A		
13. County:	Williamson	14. Watershed:				Granger Lake-San Gabriel River		

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.)	_	_	_1_	
Region (1 req.)	_	_	_1_	
County(ies)	_	_	_1_	
Groundwater Conservation District(s)	Edwards Aquifer AuthorityBarton Springs/ Edwards AquiferHays TrinityPlum Creek	Barton Springs/ Edwards Aquifer	NA	
AustinBudaDripping SpringsKyleMountain CitySan MarcosWimberleyWoodcreek		AustinBee CavePflugervilleRollingwoodRound RockSunset ValleyWest Lake Hills	AustinCedar ParkFlorence _1_GeorgetownJerrellLeanderLiberty HillPflugerville 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 HillsFair Oaks Ranch _Helotes _Hill Country Village _Hollywood Park _San Antonio (SAWS) _Shavano Park	BulverdeFair Oaks RanchGarden RidgeNew BraunfelsSchertz	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.			
NICK SANDLIN, P.E. (SANDLIN SERVICES, LL	NICK SANDLIN, P.E. (SANDLIN SERVICES, LLC)		
Print Name of Customer/Authorized Agent			
Nick Bole	4/20/2023		
Signature of Customer/Authorized Agent	Date		

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



General Information Form (TCEQ-0587)

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

	uifer. This General Information Form is hereby submitted for TCEQ review. The application as prepared by:
Pri	nt Name of Customer/Agent: <u>Nicholas Sandlin</u>
Da	te: <u>4/20/2023</u>
Sig	nature of Customer/Agent:
_/	Nicholas R. Sandlin
P	roject Information
1.	Regulated Entity Name: Teravista View Subdivision
2.	County: Williamson Vike Bellin
3.	Stream Basin: Brazos River Basin
4.	Groundwater Conservation District (If applicable): N/A
5.	Edwards Aquifer Zone:
	Recharge Zone Transition Zone
6.	Plan Type:
	WPAP □ AST SCS □ UST □ Modification □ Exception Request 1 of 4
	I OI 4

7.	Customer (Applicant):	
	Contact Person: <u>Christopher Aldridge</u> Entity: <u>Teravista View, LLC</u> Mailing Address: <u>823 S Austin Ave</u> City, State: <u>Georgetown, TX</u> Telephone: <u>512-330-1270</u> Email Address: <u>christopheraldridge@outlook.com</u>	Zip: <u>78626-5819</u> FAX:
8.	Agent/Representative (If any):	
	Contact Person: NICK SANDLIN, P.E. Entity: SANDLIN SERVICES, LLC Mailing Address: 8500 N. Mopac Expy Suite 820 City, State: Austin, TX Telephone: 806-679-7303 Email Address: nick@sandlinservices.com	Zip: <u>78759</u> FAX:
9.	Project Location:	
	 ☐ The project site is located inside the city limits ☐ The project site is located outside the city limit jurisdiction) of ☐ The project site is not located within any city's 	s but inside the ETJ (extra-territorial
10.	The location of the project site is described bel detail and clarity so that the TCEQ's Regional st boundaries for a field investigation.	
	2530 FM 1460, Georgetown, TX 78626	
11.	Attachment A – Road Map. A road map showing project site is attached. The project location are the map.	
12.	Attachment B - USGS / Edwards Recharge Zon USGS Quadrangle Map (Scale: 1" = 2000') of th The map(s) clearly show:	
	 ☑ Project site boundaries. ☑ USGS Quadrangle Name(s). ☑ Boundaries of the Recharge Zone (and Trance) ☑ Drainage path from the project site to the keep to be a site to be a site	
13.	The TCEQ must be able to inspect the project sufficient survey staking is provided on the protect the boundaries and alignment of the regulated features noted in the Geologic Assessment.	ject to allow TCEQ regional staff to locate
	Survey staking will be completed by this date:	

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. X I am aware that the following activities are prohibited on the Recharge Zone and are no 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 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. X I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:
 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	e 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 A: Road Map



Source: Google Earth Pro accessed 04/24/2023




General Information Form (TCEQ-0587)

Attachment B: USGS Quadrangle Map Edwards Aquifer Recharge Zone Map FEMA FIRM Map



Source: Portion of USGS Quadrangle Map (TX_Round_Rock_20190223_TM)

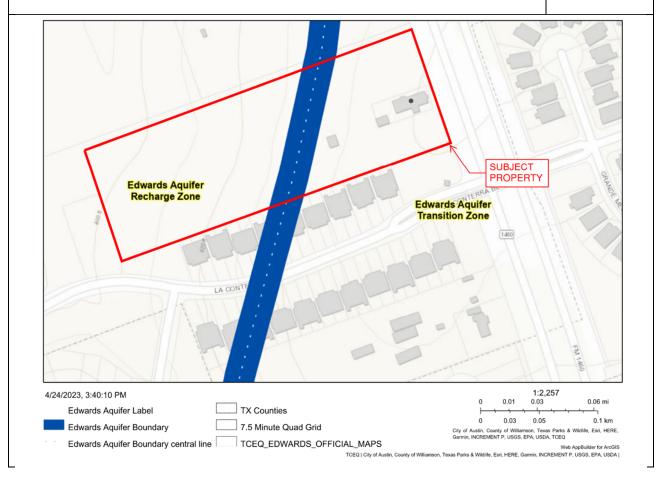




EDWARDS AQUIFER ZONE MAP

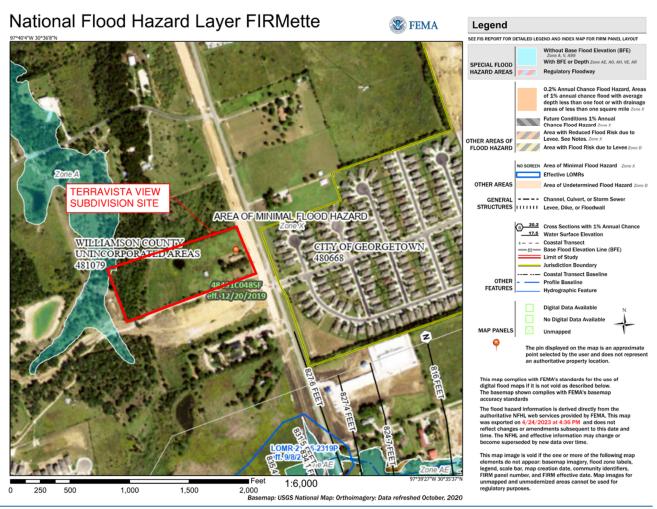
2530 FM1460, Georgetown, TX 78626 Source: TCEQ Edwards Aquifer Viewer Prepared: April 20, 2023



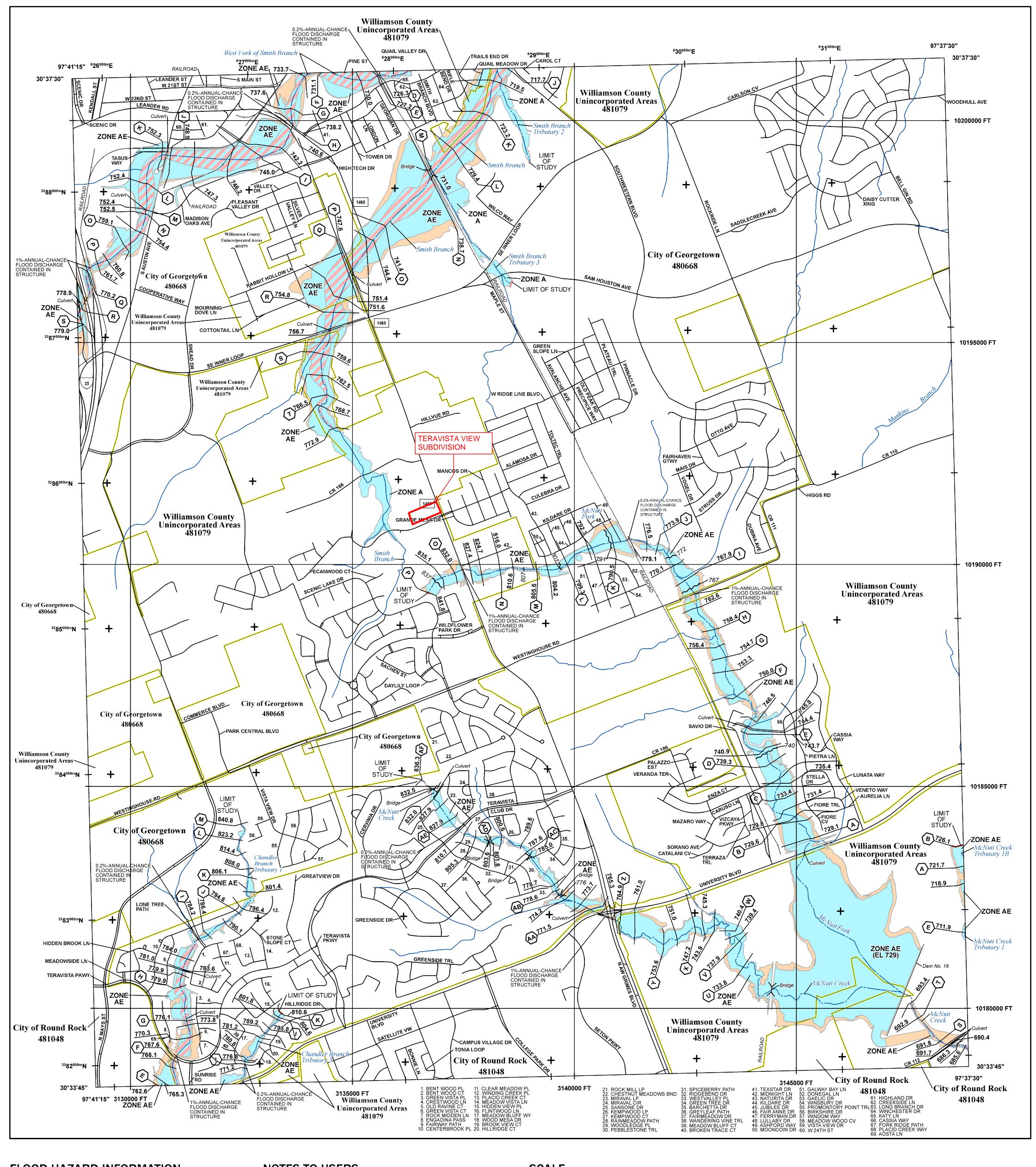




FEMA FIRM MAP PANEL

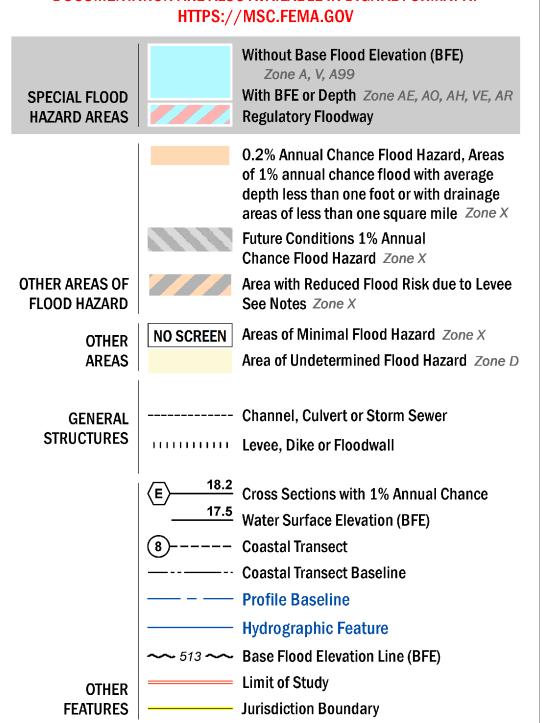


Source: Portion of FEMA FIRMETTE 48491C0485F (effective 12/20/2019)



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING **DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT**



NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well

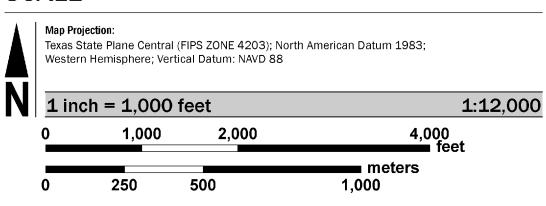
as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

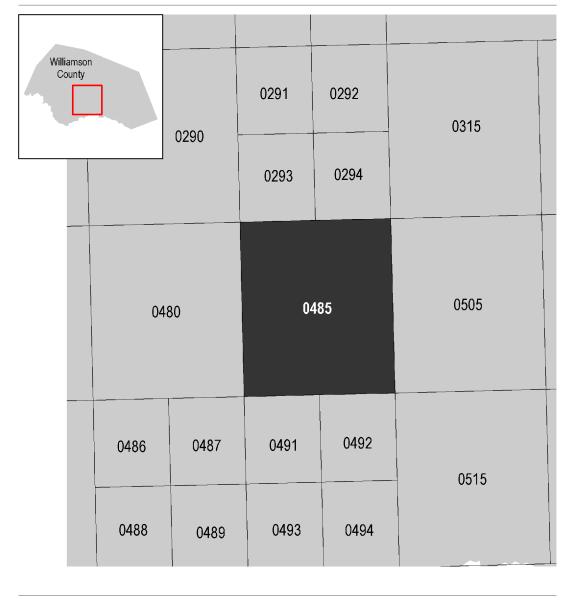
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from digital data obtained from Texas Natural Resource Information Systems (TNRIS), dated 2000; United States Census Bureau, dated 2015; United States Geological Survey, dated 2005, and the Williamson County Geographic Information Systems (GIS) Department, dated 2014 and 2017.

SCALE



PANEL LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP WILLIAMSON COUNTY, **TEXAS** and Incorporated Areas PANEL 485 OF 750

Panel Contains: COMMUNITY

GEORGETOWN, CITY OF

National Flood Insurance Program

FEMA

NUMBER PANEL SUFFIX 480668 0485 481048 0485

ROUND ROCK, CITY OF WILLIAMSON COUNTY 481079 0485

> **VERSION NUMBER** 2.3.3.3 **MAP NUMBER** 48491C0485F **MAP REVISED**

DECEMBER 20, 2019



General Information Form (TCEQ-0587)

Attachment C: Project Description

Proposed Development

The 7.38 AC lot is located at 2530 FM 1460, Georgetown, Texas 78626 and is within the City of Georgetown in Williamson County. The project consists of 21 3,480 SF, and 2 2,900 SF duplexes with associated paving, drainage, and utility infrastructure in accordance with the City of Georgetown Code of Ordinances. The project site is primarily undeveloped, and a vicinity map is provided in Attachment A. The property is within the Edwards Aquifer Recharge Zone and shown here is a Water Pollution Abatement Plan (WPAP) for the two-family tracts. The proposed development will utilize a proposed water quality and detention pond to treat and reduce flows post-development. Temporary BMPs will also be employed during construction to mitigate erosion from construction activities.

Site Description and History

The property is currently owned by Teravista View, LLC and the parcel ID is R330874.

The total tract size is 7.38 AC with slopes ranging from 0% - 25%. The elevation is approximately between 803 FT and 865 FT. Vegetation at the undeveloped site consists primarily of pecan and elm trees.

Access

Access to the site will be from FM 1460, with emergency access along La Conterra Blvd.

Impervious Cover (IC)

The existing impervious cover is 1.76% of 7.38 acres. This project proposes 44.9% impervious cover for the site (144,275 sf). A water quality and detention pond is proposed to maintain drainage flows from the site below existing conditions.

Existing and proposed areas of impervious cover will be treated as shown in the permanent stormwater section.

Watershed and FEMA Floodplain Information

The project is within the Granger Lake-San Gabriel River watershed. No portion of the subject is in the 100-yr floodplain as shown on the FEMA Flood Insurance Rate Map (FIRM) 4849C0485F, dated

TERAVISTA VIEW SUBDIVISION WATER POLLUTION ABATEMENT PLAN



December 20, 2019, included in Exhibit B. The project is located within the Edwards Aquifer Recharge Zone. No surface streams run across the property. Surface drainage at the undeveloped site is generally to the west.

Temporary Best Management Practices (BMPs)

Construction practices shall disturb the minimal amount of existing ground cover as required for land clearing, grading, and construction activity for the shortest amount of time possible to minimize the potential of erosion and sedimentation from the site.

Prior to soil disturbing construction activity, temporary BMPs will be installed. Silt fencing will be installed along the down-gradient sides of the property to intercept and detain waterborne sediment from unprotected areas. The silt fence shall remain in place until the disturbed area is permanently stabilized.

Permanent Best Management Practices (BMPs)

The proposed batch detention pond BMP is designed to treat and contain stormwater drainage and water quality from the developed project site. Stormwater infrastructure has been designed and will be installed to convey developed, undetained flows from the impervious cover added within this subdivision.

After construction activities are complete, the permanent BMP will be maintained as described in Attachment G of the Permanent Stormwater Section. Permanent seeding, sodding or mulching will be utilized as described in Attachment J of the Temporary Stormwater Section. Permanent BMPs for trash, herbicide/pesticide use, and general maintenance of the BMPs are also described in Attachment G of the Permanent Stormwater Section.

Offsite Areas

No offsite areas are anticipated to be affected by pre and post construction activities at the site. Temporary BMPs will minimize any anticipated effects of the proposed construction activities. The proposed subdivision detention pond permanent BMP is designed to convey and contain any anticipated stormwater flows from the developed site. See included Construction Plans for all calculations.

Areas to be Demolished

Existing on-site structures and will be demolished as shown within the Subdivision Construction Plans.



Geologic Assessment Form (TCEQ-0585)

Geologic Assessment TCEQ-0585

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), 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

Woodburn, P.G.

Print Name of Geologist: James R.

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. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Telephone: 512-335-1785x133

WC	oodburn, P.G.	Fax: 512-335-05	<u>27</u>
Da	te: <u>03/10/2022</u>		_
	presenting: <u>Ranger Environmental Services, LLC (</u> TBPE registration number)	<u>(TBPG #50140)</u> (N	lame of Company and TBPG
Sig	nature of Geologist:		Na Rodhu
/	Jones R Wordhu		ATE OF TEATS
Re	gulated Entity Name: FM 1460 Duplexes		
Pı	roject Information		James R. Woodburn GEOLOGY
1.	Date(s) Geologic Assessment was performed: <u>0</u>	3/02/2022	No. 12307
2.	Type of Project:		3/10/2022
3.	WPAP SCS Location of Project:	AST UST	3/10/2022
	Recharge Zone Transition Zone Contributing Zone within the Transition Zon	e	

- 4. Attachment A Geologic Assessment Table. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.
- 5. Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
HeiD3 - Heiden clay, 5 to 8 percent slopes	D	1.33 - 5.42
BktD - Brackett association, 1 to 8 percent slopes	D	0.41 - 1.67
HesE - Heiden extremely stony clay, 3 to 12 percent slopes	D	>6.67

Soil Name	Group*	Thickness(feet)
AwD3 -		
Austin-		
Whitewrigth		
complex, 2 to		
6 percent		
slopes, eroded	D	1.33 - 3.33
AsB - Austin		
silty clay, 1 o 3		
percent slopes	D	1.83 - 3.25

- * Soil Group Definitions (Abbreviated)
 - A. Soils having a high infiltration rate when thoroughly wetted.
 - B. Soils having a moderate infiltration rate when thoroughly wetted.
 - C. Soils having a slow infiltration rate when thoroughly wetted.
 - D. Soils having a very slow infiltration rate when thoroughly wetted.
- 6. Attachment B Stratigraphic Column. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.
- 7. Attachment C Site Geology. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8.		Attachment D – Site Geologic Map(s) . The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'
	S	applicant's Site Plan Scale: 1" = <u>50</u> ' ite Geologic Map Scale: 1" = <u>50</u> ' ite Soils Map Scale (if more than 1 soil type): 1" = <u>208</u> '
9.	Meth	nod of collecting positional data:
	_	ilobal Positioning System (GPS) technology. Other method(s). Please describe method of data collection:
10.	X T	he project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11.	⊠ Sı	urface geologic units are shown and labeled on the Site Geologic Map.
12.	ir	reologic or manmade features were discovered on the project site during the field nivestigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
		seologic or manmade features were not discovered on the project site during the field investigation.
13.	X T	he Recharge Zone boundary is shown and labeled, if appropriate.
14.		nown wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If cable, the information must agree with Item No. 20 of the WPAP Application Section.
		here are 1 (#) wells present on the project site and the locations are shown and abeled. (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 Chapter 76. here are no wells or test holes of any kind known to exist on the project site.
A	dmi	nistrative Information
15.	n co	ubmit one (1) original and one (1) copy of the application, plus additional copies as eeded for each affected incorporated city, groundwater conservation district, and ounty in which the project will be located. The TCEQ will distribute the additional opies to these jurisdictions. The copies must be submitted to the appropriate regional office.

ATTACHMENT A

Geological Assessment Table TCEQ-0585 Table

GEOLOGIC ASSESSMENT TABLE						PROJECT NAME: FM 1460 Duplexes														
LOCATION				FEATURE CHARACTERISTICS								EVALUATION			PHYSICAL SETTING					
1A	1B *	1C*	2A	2B	3		4		5	5A	6	7	8A	8B	9	1	10	1	1	12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)		ENSIONS (FEET)		MOD	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY			ENT AREA RES)	TOPOGRAPHY
						Х	Υ	Z		10						<40	<u>>40</u>	<1.6	<u>>1.6</u>	
S-1	N 30° 35' 50.23"	W 97° 39' 54.46"	CD	5	Kbu	12	30	1	-	-	-	-	-	5	10	Χ	-	Χ	-	Hillside
S-2	N 30° 35' 52.16"	W 97° 39' 45.91"	MB	30	Kef	-	-	-	-	1	-	-	-	5	35	Χ	-	Χ	ı	Hilltop

* DATUM WGS84

2A TYPE	TYPE	2B POINTS
С	Cave	30
sc	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
0	Other natural bedrock features	5
МВ	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

	8A INFILLING
N	None, exposed bedrock
С	Coarse - cobbles, breakdown, sand, gravel
0	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
Х	Other materials

12 TOPOGRAPHY Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.

My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

) Nording

Date

TCEQ-0585-Table (Rev. 10-01-04)

James R. Woodburn

GEOLOGY

No. 12307

No. 12307

James R. Woodburn

GEOLOGY

No. 12307

James R. Woodburn

GEOLOGY

No. 12307

James R. Woodburn

Sheet _____ of ____

ATTACHMENT B

Stratigraphic Column

Edwards Aquifer

Eagle Ford Formation (Kef) Interbedded silty limestone and shale

Buda Formation (Kbu) Limestone

Del Rio Formation (Kdr) Clay

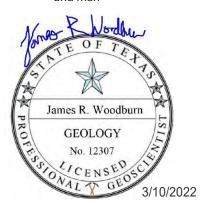
Georgetown Formation (Kgt) Limestone and marl

Edwards Limestone (Ked) Limestone and dolostone

Comanche Peak Formation (Kc) Limestone and marl

Walnut Formation (Kwa) Limestone and marl

Glen Rose Formation (Kgr) Limestone, dolostone, and marl



RANGER ENVIRONMENTAL SERVICES

Stratigraphic Column FM 1460 Duplexes 2530 FM 1460 Georgetown, TX

Ranger Project No. 6445

COMMENTS: NOT FOR CONSTRUCTION

Adapted from the Bureau of Economic Geology, 1990, Hydrogeology of the Northern Segment of the Edwards Aquifer, Austin Region, Report of Investigations No. 192, Figure 4

ATTACHMENT C

Site Geology



GEOLOGIC ASSESSMENT FM 1460 Duplexes 2530 FM 1460, Georgetown, Texas 78626 Williamson County March 10, 2022

INTRODUCTION

Ranger Environmental Services, Inc. (Ranger) was contracted to conduct a Geologic Assessment of the referenced property. This location lies within the designated Edwards Aquifer Recharge Zone and Edwards Aquifer Transition Zone. The subject property, rectangular in shape and listed to be approximately 7.380 acres in size, was observed to primarily support undeveloped or unimproved land with one residence and four structures on-site. No surface water or drainage features were observed at the subject site. Since the subject site is located over the Edwards Aquifer Recharge/Transition Zones, site development should adhere to the Texas Commission on Environmental Quality (TCEQ) Edwards Aquifer Protection Program Rules in accordance with Title 30 of the Texas Administrative Code, Section 213 (30 TAC§ 213).

PROJECT DESCRIPTION

The subject site consists of one approximate 7.380-acre lot, more or less, located at 2530 FM 1460, Georgetown, in Williamson County, Texas at approximate GPS coordinates 30.597856° N and 97.663352° W.

The property is surrounded by the following:

To the North	Undeveloped land supporting native vegetation.						
To the East	FM 1460 is located directly east, and across the street are multiple residences.						
To the South	Multiple residences and duplexes.						
To the West Undeveloped land supporting native vegetation.							

METHODOLOGY

This assessment follows general guidelines contained in Texas Commission on Environmental Quality (TCEQ) guidance "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones" (TCEQ Guidance 0585). The site is located on an area of the recharge and transition zones that may contain karst features within the outcropping limestone. Karst features may be expressed as surface features but more commonly tend to persist with depth.

STATE OF TEXAS PROFESSIONAL GEOSCIENTIST FIRM NO. 50140 • STATE OF TEXAS PROFESSIONAL ENGINEERING FIRM NO. F-6160

P.O. BOX 201179 AUSTIN, TX 78720 OFFICE: 512/335-1785 FAX: 512/335-0527

A field geologic assessment was conducted by James R. Woodburn, P.G., on March 2, 2022. The subject property, rectangular in shape and listed to be approximately 7.380 acres in size, was observed to primarily support undeveloped or unimproved land with one residence and four other structures on-site. The four structures consisted of a barn, a work shed, a storage shed, and a water well house. No surface water or drainage features were observed at the subject site; however, it appears that a man-made stock pond was present prior to recent activities at the site. When Ranger arrived on March 2, 2022 for the assessment, the berms around the stock pond had been breached to allow for the pond to drain into the nearby creek to the west of the property.

The walking geologic survey was conducted on 50-foot center transects, where possible. No intrusive testing was conducted. If present, features identified in the field were photographed and recorded with a hand held global positioning system (GPS). Features include, but were not limited to, caves, solution cavities, solution-enlarged fractures, faults, manmade features in bedrock, swallow holes, sinkholes, non-karst closed depressions, and zone clustered or aligned features.

The geologic assessment table, stratigraphic column, site geology, site soils, FEMA floodplain, and topographic maps are included herein. It should be noted that a very small portion of the far northwest corner of the property lies within the 100-year FEMA floodplain as shown in the attachment provided.

RESEARCH INFORMATION

Prior to conducting the geologic survey, Ranger conducted a review of existing geologic data and maps to prepare for the field survey. Reviewed references included, but are not limited to:

- Barnes, V.E. 1974. *Geologic Atlas of Texas, Austin Sheet*. The University of Texas at Austin, Bureau of Economic Geology.
- Senger, R.K., E.W. Collins and C.W. Kreitler. 1990. <u>Hydrogeology of the Northern</u> Segment of the Edwards Aquifer, Austin Region, Report of Investigations 192. The University of Texas at Austin, Bureau of Economic Geology.
- Texas Commission on Environmental Quality. 1999. <u>Complying with the Edwards Aquifer Rules: Administrative Guidance</u>.
- Texas Commission on Environmental Quality. Revised 2004. <u>Instructions to Geologist for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones.</u>
- Sellards, E.H., W.S. Adkins and F.B. Plummer. 1932. <u>The University of Texas Bulletin No. 3232. The Geology of Texas</u>. Volume 1, Stratigraphy.
- U.S. Department of Agriculture National Resources Conversation Services (www.nrcs.usda.gov).
- Texas Commission on Environmental Quality (www.tceg.state.tx.us).
- FEMA Flood Plain Maps.
- Center for Geospatial Technology, Texas Tech University, obtained from the Texas Geologic Atlas of Texas.
- USGS Topographic Maps Terrain Navigator Pro 2015.
- Environmental Systems Research Institute (ESRI).

SITE GEOLOGY

The subject site is underlain by Cretaceous sedimentary strata. In general, the Cretaceous strata dip regionally one degree towards the southeast. The area lies within the Balcones Fault Zone, a geologic province characterized in this region by north-northeast trending en echelon normal faults with the downthrown side most commonly to the east of the fault planes.

Referencing the <u>Geologic Atlas of Texas</u>, <u>Austin Sheet</u>, and <u>The University of Texas Bulletin No. 3232</u>, <u>The Geology of Texas</u>, <u>Volume 1</u>, the local stratigraphic units that outcrop at the site are the Cretaceous age Eagle Ford Group (Kef), the Buda Limestone (Kbu), and the Del Rio Clay and Georgetown Formation (Kdg) in Williamson County. The Eagle Ford Group generally consists of five facies including shale, flagstone, clay, chalky limestone, and marginal facies. The shale facies is a well laminated black or pinkish black shale that weathers to gray. Throughout central and east Texas, the Eagle Ford Group contains much bentonite and similar clayey material in thin seams interbedded with the flagstones and shale. The Eagle Ford Group was present in the topographic high hilltop along the central and eastern portions of the subject site, but no outcrops were observed.

The Eagle Ford Group is underlain by the Buda Limestone at the site. The Buda Limestone is a generally hard to massive, poorly bedded to nodular limestone. The Buda Limestone is typically light grey which weathers to dark grey to brown. The limestone is argillaceous near the upper contact. Burrows are present and typically filled with chalky marl. During the on-site field investigation, Ranger personnel observed minor outcrops of the Buda Limestone on the central-western portion of the property just east of the low-lying drainage feature off-site.

The Cretaceous Del Rio Clay is primarily calcareous, gypsiferous, and fossiliferous clay. The clay is medium gray and weathers to light gray to yellow gray with thin beds of calcareous siltstone. In the un-weathered section, the clay typically contains kaolinite and illite. The Del Rio Clay typically is approximately 65 feet thick and provides a confining layer to the underlying Georgetown Formation. The Georgetown Formation consists primarily of nodular limestones interbedded with marls. Georgetown limestones are typically massive and fossiliferous. Small vugs may occur within the formation but are not common. The formation thickens to the north from approximately 65 feet to 110 feet. The Georgetown limestones represent the uppermost Edwards aquifer strata. At the site, the Del Rio Clay and Georgetown Formation outcrops were present along the western edge of the property at the topographic low portions near the off-site drainage feature.

The subject site was noted to be primarily undeveloped land assessed for future use. The natural soil found on-site appears to be a stony, silty clay, which is shallow soil that overlies the limestone and Eagle Ford Group bedrock. No vugs, faults, seeps, fractures, caves, or solution cavities were observed during the site geologic inspection. The only site specific geologic features observed were a non-karst closed depression and a manmade feature in bedrock described in the section below.

SITE SPECIFIC GEOLOGIC FEATURES

The following geologic features, as defined in Texas Commission on Environmental Quality (TCEQ) guidance "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones" (TCEQ Guidance 0585), were observed at the site:

- S-1 (CD) Non-Karst Closed Depression. A small closed depression was observed on the western portion of the property and had dimensions of approximately 12 feet by 30 feet and 1 foot deep. The depression is up-gradient (east) of an off-site drainage feature on the western portion of the property. Loose soil, leaves, and rocks were observed in the closed depression. The potential for rapid infiltration is low. The catchment area is less than 1.6 acres.
- S-2 (MB) Manmade Feature in Bedrock, Active Water Well. The observed water well was located southwest of the residence inside of a well house on the eastern portion of the property. The diameter of the water well was unknown because a concrete cap was covering the well casing. Additionally, the well depth and completion information is unknown. The potential for rapid infiltration is low. The catchment area is less than 1.6 acres.

SOIL DESCRIPTION

According to the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) *Web Soil Survey*, the site is noted to contain five soil units. The following are the mapped soil units within the property boundary:

- HeiD3 Heiden clay, 5 to 8 percent slopes;
- HesE Heiden extremely stony clay, 3 to 12 percent slopes;
- BktD Brackett association, 1 to 8 percent slopes;
- AwD3 Austin-Whitewright complex, 2 to 6 percent slopes, eroded;
- AsB Austin silty clay, 1 to 3 percent slopes.

Please see attached USDA NRCS Custom Soil Resource Report for the detailed soil description.

TOPOGRAPHY AND DRAINAGE

The elevation at the site was noted to be highly sloped to the west toward the off-site drainage feature. The general surface flow-drainage at the site was noted to be toward the west from all portions of the property with the exception of the southeastern portion of the property which appeared to flow to the south-southwest.

CONCLUSIONS AND RECOMMENDATIONS

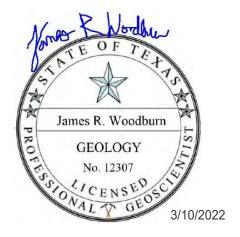
Ranger Environmental Services, Inc. conducted a Geologic Assessment of the site in accordance with 30 TAC§ 213. Ranger concludes that no sensitive features as defined by the TCEQ (30 TAC§ 213) were observed at the site.

This assessment does not address the possible presence of subsurface conditions that may be exposed during future construction and/or development. Should solution features or conditions be exposed during site construction activities that indicate a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer, operations in the vicinity of the feature should be halted and the TCEQ Edwards Aquifer Protection Program should be contacted immediately in accordance with 30 TAC §213.5(f)(2).

LIMITATIONS

It should be noted that only areas readily accessible were inspected. There may be geologic features present that were not identified as part of this study. This non-intrusive visual field assessment cannot wholly eliminate the possibility of sensitive features at the site.

Prepared by:



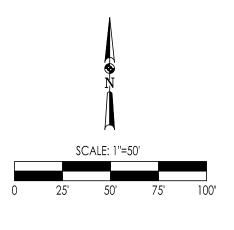
James R. Woodburn, P.G.

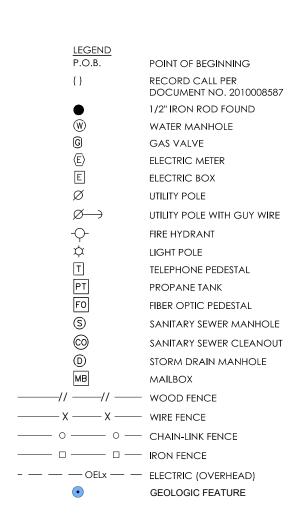
ATTACHMENT D

Site Geologic Map(s)



SURVEY SHOWING A 7.380 ACRE TRACT OF LAND, LOCATED IN THE FRANCIS A. HUDSON SURVEY, ABSTRACT NO. 295, WILLIAMSON COUNTY, TEXAS, SAID 7.380 ACRE TRACT, BEING THE REMAINING PORTION OF THAT CALLED 8.0 ACRE TRACT OF LAND RECORDED IN DOCUMENT NO. 2010008587, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.





			TBM TABLE	
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
5000	10191355.444	3136799.115	864.59	5/8 IRON ROD W / ORANGE CONTROL CAP
5002	10191569.810	3136715.074	862.04	MAG NAIL SET IN CONCRETE
5004	10191144.068	3136871.922	859.50	MAG NAIL S ET IN CONCRETE
5006	10190784.087	3135835.464	814.73	MAG NAIL SET IN CONCRETE

TREE SUMMARY TABLE			
		TRUNK DIAMETER AT	
KEY	TREE #	BREAST HEIGHT (DBH(in))	SPECIES
HT	9013	33.38" (25, 16.75)	PECAN
HT	9014	44" (37, 14)	PECAN
HT	9015	9"	PECAN
HT	9016	29.5"	PECAN
Р	9020	25.5" (17.75, 15.5)	PECAN
HT	9021	38" (26, 18.5, 5.5)	PECAN
Р	9034	17"	PECAN
Р	9048	14.5"	ELM
Р	9049	8.5"	ELM
Р	9050	13.63" (10.25, 6.75)	ELM
Р	9051	10.5"	ELM

NOTES:

1) FIELD WORK PERFORMED ON: JANUARY 4, 2022

2) OWNER: HANDRICK, ELSIE IDA 3) ADDRESS: 2530 F.M. 1460, GEORGETOWN, TEXAS

4) HORIZONTAL DATUM: TEXAS STATE PLANE, CENTRAL ZONE, NAD83 5) VERTICAL DATUM: NAVD88

5) THIS SURVEY IS BASED ON A TITLE COMMITMENT ISSUED BY FIRST AMERICAN TITLE GUARANTY COMPANY, G.F. NUMBER 15375-2693301, ISSUED DATE OF NOVEMBER 18, 2021, EFFECTIVE DATE OF NOVEMBER 8, 2021 AND IS SUBJECT TO ALL TERMS, CONDITIONS, LEASES AND ENCUMBRANCES STIPULATED THEREIN. THERE MAY BE OTHER EASEMENTS, RESTRICTIONS, OR ENCUMBRANCES NOT SHOWN.THE SURVEYOR DID NOT COMPLETE AN ABSTRACT OF TITLE.

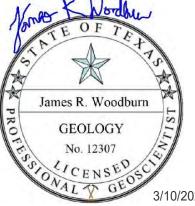
6) ACCORDING TO THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NUMBER 48491C0485F, EFFECTIVE DATE DECEMBER 20, 2019, THIS PROPERTY LIES IN ZONE "X", WHICH IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE OF THE 100 YEAR FLOOD PLAIN. THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP IS FOR USE IN ADMINISTERING THE NATIONAL FLOOD INSURANCE PROGRAM; IT DOES NOT NECESSARILY IDENTIFY ALL AREAS SUBJECT TO FLOODING, PARTICULARLY FROM LOCAL DRAINAGE SOURCES OF SMALL SIZE, OR ALL PLANIMETRIC FEATURES OUTSIDE SPECIAL FLOOD HAZARD AREAS. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR STRUCTURES LOCATED THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. THE FLOOD HAZARD AREA IS SUBJECT TO CHANGE AS DETAILED STUDIES OCCUR AND/OR WATERSHED OR CHANNEL CONDITIONS CHANGE. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.

SCHEDULE B EXCEPTIONS:

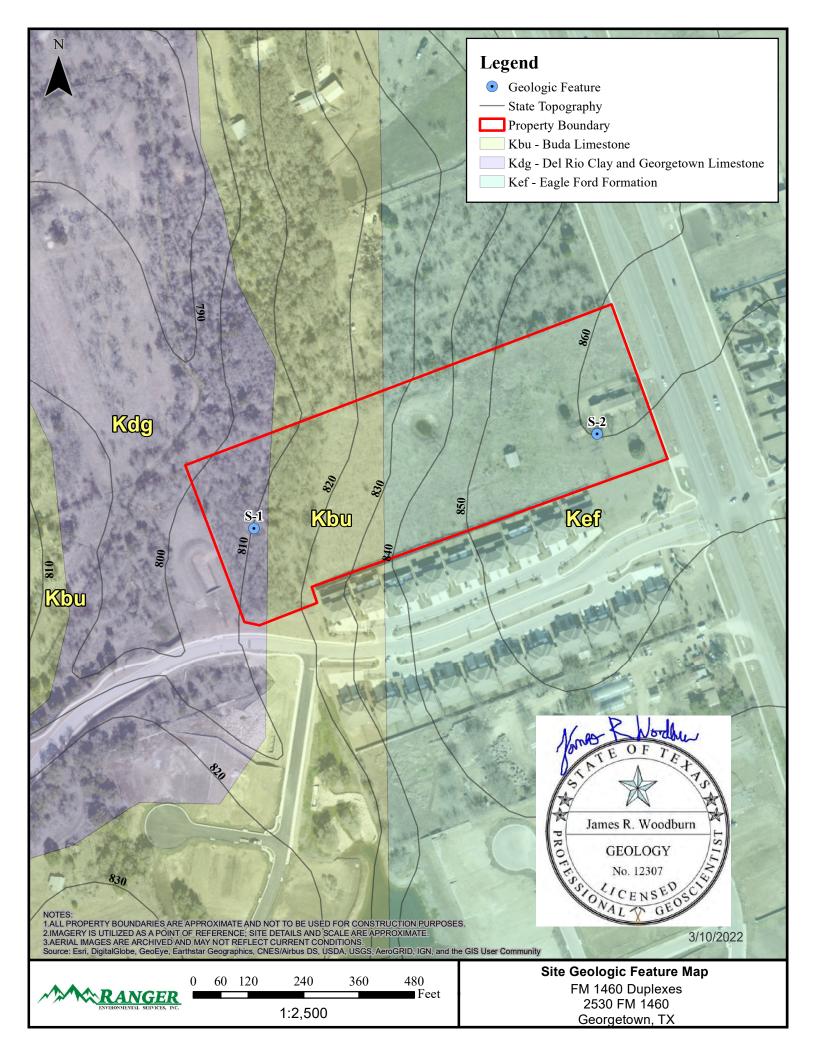
10e. RIGHT-OF-WAY EASEMENT - RECORDED IN VOLUME 385, PAGE 476, DEED RECORDS, WILLIAMSON COUNTY, TEXAS. (DOES NOT APPLY, LOCATED NORTH OF PROPERTY)

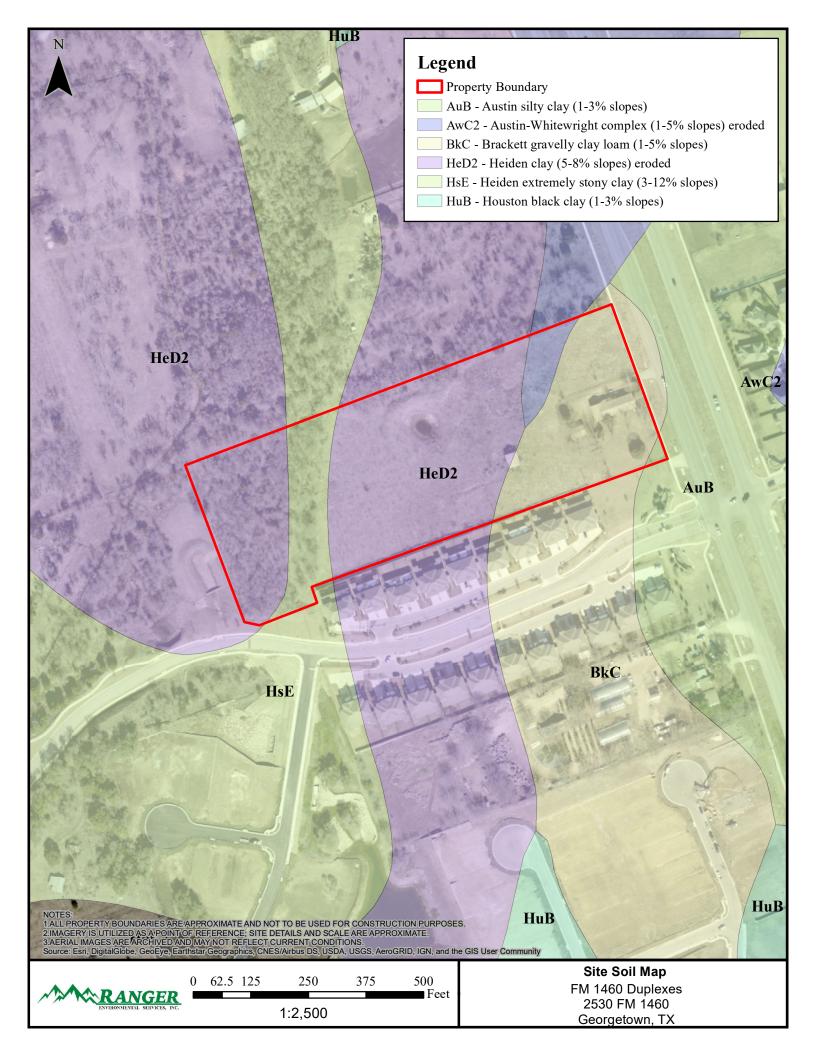
10f. RIGHT-OF-WAY EASEMENT - RECORDED IN VOLUME 475, PAGE 461, DEED RECORDS, WILLIAMSON COUNTY, TEXAS. (DOES NOT APPLY, LOCATED NORTH OF PROPERTY)

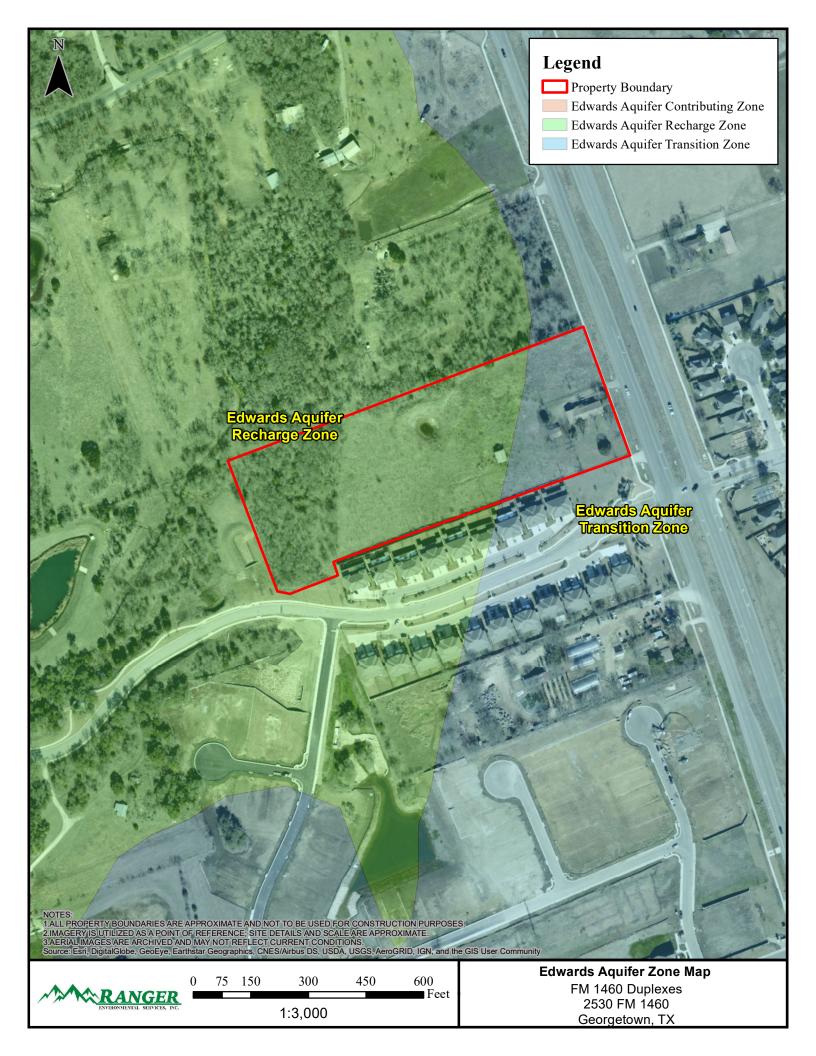
* FIGURE MODIFIED BY RANGER ENVIRONMENTAL SERVICES, INC. ON 3/9/2022.

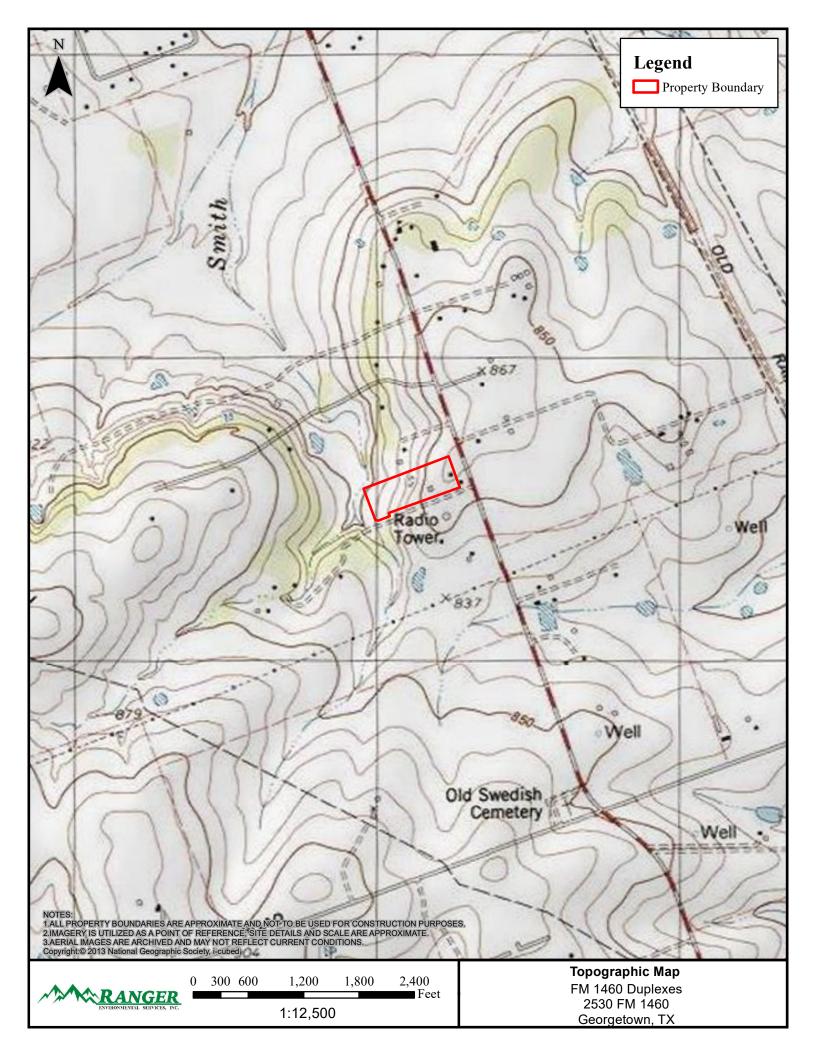














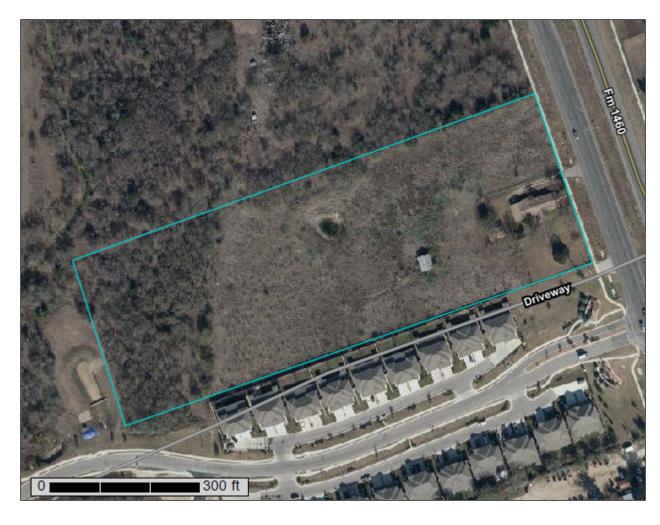




Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Williamson County, Texas

FM 1460 Duplexes



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

-

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

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Blowout

 \boxtimes

Borrow Pit

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Clay Spot

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Closed Depression

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Gravel Pit

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Gravelly Spot

0

Landfill Lava Flow

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Marsh or swamp

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Mine or Quarry

W.

Miscellaneous Water

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Perennial Water
Rock Outcrop

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Saline Spot

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Sandy Spot

Slide or Slip

Severely Eroded Spot

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Sinkhole

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Sodic Spot

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Spoil Area



Stony Spot
Very Stony Spot



Wet Spot Other

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Special Line Features

Water Features

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Streams and Canals

Transportation

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Rails

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Interstate Highways

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US Routes

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Major Roads

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Local Roads

Background

Marie Control

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20.000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Texas Survey Area Data: Version 22, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50.000 or larger.

Date(s) aerial images were photographed: Nov 17, 2020—Dec 3, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
AsB	Austin silty clay, 1 to 3 percent slopes	0.0	0.5%	
AwD3	Austin-Whitewright complex, 2 to 6 percent slopes, eroded	0.3	3.8%	
BktD	Brackett association, 1 to 8 percent slopes	2.0	25.1%	
HeiD3	Heiden clay, 5 to 8 percent slopes, eroded	4.8	60.5%	
HesE	Heiden extremely stony clay, 3 to 12 percent slopes	0.8	10.1%	
Totals for Area of Interest	·	7.9	100.0%	

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Williamson County, Texas

AsB—Austin silty clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2vtgj Elevation: 440 to 810 feet

Mean annual precipitation: 30 to 40 inches Mean annual air temperature: 63 to 70 degrees F

Frost-free period: 228 to 293 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Austin and similar soils: 90 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Austin

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Interfluve

Down-slope shape: Linear Across-slope shape: Convex

Parent material: Residuum weathered from chalk

Typical profile

Ap - 0 to 16 inches: silty clay Bw - 16 to 22 inches: silty clay Bk - 22 to 29 inches: silty clay Cr - 29 to 57 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: 22 to 39 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high

(0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 85 percent

Maximum salinity: Nonsaline to very slightly saline (0.5 to 2.1 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: R086AY007TX - Southern Clay Loam

Hydric soil rating: No

Minor Components

Houston black

Percent of map unit: 10 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Interfluve Microfeatures of landform position: Linear gilgai

Down-slope shape: Convex, linear Across-slope shape: Convex, linear

Ecological site: R086AY011TX - Southern Blackland

Hydric soil rating: No

AwD3—Austin-Whitewright complex, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2s1qt

Elevation: 550 to 740 feet

Mean annual precipitation: 34 to 37 inches Mean annual air temperature: 67 to 69 degrees F

Frost-free period: 255 to 266 days

Farmland classification: Not prime farmland

Map Unit Composition

Austin, moderately eroded, and similar soils: 55 percent Whitewright, severely eroded, and similar soils: 35 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Austin, Moderately Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Interfluve

Down-slope shape: Linear Across-slope shape: Convex

Parent material: Calcareous clayey residuum weathered from chalk

Typical profile

Ap - 0 to 16 inches: silty clay Bw - 16 to 22 inches: silty clay Bk - 22 to 29 inches: silty clay Cr - 29 to 57 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 16 to 40 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high

(0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 85 percent

Maximum salinity: Nonsaline to very slightly saline (0.5 to 2.1 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: D

Ecological site: R086AY007TX - Southern Clay Loam

Hydric soil rating: No

Description of Whitewright, Severely Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Shoulder Landform position (three-dimensional): Interfluve

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Residuum weathered from austin chalk formation

Typical profile

Ap - 0 to 6 inches: silty clay loam Bk - 6 to 16 inches: silty clay loam Cr - 16 to 34 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 11 to 28 inches to paralithic bedrock

Drainage class: Well drained Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high

(0.00 to 0.28 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 70 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm) Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: D

Ecological site: R086AY002TX - Southern Chalky Ridge

Hydric soil rating: No

Minor Components

Houston black

Percent of map unit: 10 percent

Landform: Ridges

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai

Down-slope shape: Convex, linear Across-slope shape: Convex, linear

Ecological site: R086AY011TX - Southern Blackland

Hydric soil rating: No

BktD—Brackett association, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t26h Elevation: 550 to 1,920 feet

Mean annual precipitation: 30 to 35 inches
Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Brackett and similar soils: 87 percent Minor components: 13 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brackett

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 5 inches: clay loam Bk - 5 to 14 inches: clay loam Cr - 14 to 60 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent

Depth to restrictive feature: 5 to 20 inches to paralithic bedrock

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high

(0.06 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 80 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm) Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R081CY355TX - Adobe 29-35 PZ

Hydric soil rating: No

Minor Components

Eckrant

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R081CY360TX - Low Stony Hill 29-35 PZ

Hydric soil rating: No

Doss

Percent of map unit: 3 percent

Landform: Ridges

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Convex Across-slope shape: Linear

Ecological site: R081CY574TX - Shallow 29-35 PZ

Hydric soil rating: No

Bolar

Percent of map unit: 3 percent Landform: Ridges on plateaus

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R081CY357TX - Clay Loam 29-35 PZ

Hydric soil rating: No

Krum

Percent of map unit: 2 percent

Landform: Stream terraces on plateaus

Landform position (three-dimensional): Riser, tread

Down-slope shape: Concave Across-slope shape: Linear

Ecological site: R081CY357TX - Clay Loam 29-35 PZ

Hydric soil rating: No

HeiD3—Heiden clay, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vd

Elevation: 250 to 940 feet

Mean annual precipitation: 33 to 40 inches Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 245 to 278 days

Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Clayey residuum weathered from mudstone

Typical profile

A1 - 0 to 8 inches: clay A2 - 8 to 22 inches: clay Bss - 22 to 44 inches: clay CBd - 44 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent

Depth to restrictive feature: 40 to 65 inches to densic material

Drainage class: Well drained Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 12.0

Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R086AY009TX - Southern Eroded Blackland

Hydric soil rating: No

Minor Components

Ferris, moderately eroded

Percent of map unit: 10 percent

Landform: Ridges

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai

Down-slope shape: Linear Across-slope shape: Convex

Ecological site: R086AY009TX - Southern Eroded Blackland

Hydric soil rating: No

Heiden, severely eroded

Percent of map unit: 5 percent

Landform: Ridges

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai

Down-slope shape: Convex Across-slope shape: Concave

Ecological site: R086AY009TX - Southern Eroded Blackland

Hydric soil rating: No

HesE—Heiden extremely stony clay, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: djq8 Elevation: 400 to 1,000 feet

Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 225 to 275 days

Farmland classification: Not prime farmland

Map Unit Composition

Heiden and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden

Setting

Landform: Ridges

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Clayey residuum weathered from clayey shale of eagleford shale

or taylor marl

Typical profile

H1 - 0 to 8 inches: very stony clay

H2 - 8 to 60 inches: clay

Properties and qualities

Slope: 3 to 12 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 40 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 12.0

Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R086AY011TX - Southern Blackland

Hydric soil rating: No

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Water Pollution Abatement Plan Application Form (TCEQ-0584)

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: NICK SANDLIN, P.E. (SANDLIN SERVICES, LLC)

Date: <u>4/20/2023</u>

Signature of Customer/Agent:

Vick Sole

Regulated Entity Name: <u>TERAVISTA VIEW SUBDIVISION</u>

Regulated Entity Information

1. The type of project is:

Residential: Number of Lots:______
Residential: Number of Living Unit Equivalents:<u>46</u>

Commercial
Industrial
Other:

- 2. Total site acreage (size of property): 7.38
- 3. Estimated projected population: 161
- 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	78,880	÷ 43,560 =	1.81
Parking	0	÷ 43,560 =	0
Other paved surfaces	65,395	÷ 43,560 =	1.50
Total Impervious Cover	144,275	÷ 43,560 =	3.31

Total Impervious Cover $3.31 \div$ Total Acreage $7.38 \times 100 = 44.9 \%$ 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 \times W = $ $Ft^2 \div 43,560 Ft^2/Acre = acres.$
10.	Length of pavement area: feet.
	Width of pavement area: feet. L x W = $Ft^2 \div 43,560 \ Ft^2/Acre = acres.$ Pavement area acres \div 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.

TCEQ Executive Director. Modifications	than one-half (1/2) the width of one (1) existing
Stormwater to be generated	by the Proposed Project
occur from the proposed project is atta quality and quantity are based on the a	of Stormwater. A detailed description of the cy) of the stormwater runoff which is expected to eiched. The estimates of stormwater runoff area and type of impervious cover. Include the re-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% Industrial% Commingled TOTAL gallons/day 48,528	48,528 Gallons/dayGallons/dayGallons/day
15. Wastewater will be disposed of by:	
On-Site Sewage Facility (OSSF/Septic Ta	ınk):
will be used to treat and dispose of licensing authority's (authorized ago the land is suitable for the use of pr the requirements for on-site sewag relating to On-site Sewage Facilities Each lot in this project/developmen size. The system will be designed b	the wastewater from this site. The appropriate ent) written approval is attached. It states that rivate sewage facilities and will meet or exceed e facilities as specified under 30 TAC Chapter 285 s. It is at least one (1) acre (43,560 square feet) in y a licensed professional engineer or registered at installer in compliance with 30 TAC Chapter
Sewage Collection System (Sewer Lines):
to an existing SCS.	stewater generating facilities will be connected stewater generating facilities will be connected
 ☐ The SCS was previously submitted of ☐ The SCS was submitted with this ap ☐ The SCS will be submitted at a later be installed prior to Executive Direct 	plication. date. The owner is aware that the SCS may not

	□ The sewage collection system will convey the wastewater to the San Gabriel Wastewater Treatment Plant (Owned/Operated by the City of Georgetown) (name) Treatment Plant. The treatment facility is: □ Existing. □ Proposed.
16.	. All private service laterals will be inspected as required in 30 TAC §213.5.
Si	ite Plan Requirements
lte	rms 17 – 28 must be included on the Site Plan.
17.	. \boxtimes The Site Plan must have a minimum scale of 1" = 400'.
	Site Plan Scale: 1" = <u>20</u> '.
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 Panel 48491C0485F (effective 12/20/2019)
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.):
	\boxtimes There are <u>1</u> (#) 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).
\boxtimes	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.
Adm	inistrative 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 Surface Water Quality

Our proposed 78,880 SF two-family development has twenty-three buildings with associated driveways, parking, and civil infrastructure. The use of this impervious cover generates TSS which affects surface water quality. No springs or streams are located onsite and the conveyance of the captured stormwater to the proposed BMP mitigates the factors that affect surface water quality. Please see the included construction plans for detailed calculations and the infrastructure proposed.



Attachment B: Volume and Character of Stormwater

An analysis of the 2-, 10-, 25-, and 100-yr return period (i.e., 50-, 10-, 4-, and 1-percent annual chance exceedance) storm events was performed to evaluate the potential impacts of the proposed developments impervious cover. Existing offsite impervious coverage data were obtained from the City of Georgetown asbuilts, and onsite impervious coverage was determined by a survey provided by Quick, Inc. An NRCS Web Soil Survey, provided in Attachment B, determined the subject lots to possess mainly Heiden Clay and Brackett association, soil classification group D. Curve numbers (CN) for each drainage area were obtained using the City of Georgetown's Drainage Criteria Manual, Table 3-4 Runoff Curve Numbers for Urban Areas and found to be 84. Offsite and onsite times of concentration were calculated based on site topography. See the Subdivision Construction Plans for drainage parameters and calculations. Flows were analyzed using ATLAS 14 Data for both existing and proposed conditions using the SCS Unit Hydrograph Method. A model was developed for both existing and proposed conditions using HEC-HMS. The study determined the peak of the existing condition flows are greater than the proposed conditions peak flow for the 2-, 10-, 25-, and 100-yr storm events for three points of confluence as shown in the Subdivision Construction Plans. As determined by this study, the proposed development and drainage infrastructure do not result in offsite peak flow increases for the 2-, 10-, 25-, and 100-yr storm events.



Attachment C:
Suitability Letter from authorized Agent
N/A - OSSF is not proposed



Attachment D: Exception to the Required Geologic Assessment

N/A - An exception to the GA is not proposed.

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: TERAVISTA VIEW SUBDIVISION

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: Christopher Aldridge

Entity: Teravista View, LLC

Mailing Address: 823 S Austin Ave

City, State: Georgetown, TX Zip: 78626-5819

Telephone: <u>512-330-1270</u> Fax: _____

Email Address: christopheraldridge@outlook.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: Nicholas Sandlin, PE

Texas Licensed Professional Engineer's Number: 124404

Entity: Sandlin Services, LLC

Mailing Address: 8500 N Mopac Ste 820

City, State: Austin TX Zip: 78759
Telephone: 806-679-7303 Fax:_____

Email Address: nick@sandlinservices.com

Project Information

	•				
4.		development to be serv vance for institutional ar	red (estimated future pop nd commercial flows):	ulation to be served,	
	Residential: Number of single-family lots: Multi-family: Number of residential units: 46 Commercial Industrial Off-site system (not associated with any development) Other:				
5.	The character and v	olume of wastewater is	shown below:		
	<u>100</u> % Domestic		48,528 gallons/da	ay	
	% Industrial		gallons/da		
	% Commingle	d	gallons/da	У	
	Total gallons/da	y: <u>48,528</u>			
6.	Existing and anticipa	ated infiltration/inflow i	s gallons/day. This	will be addressed by:	
7.		·	is required for construction to the construction is required on the Recharge	•	
	 □ 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 4/20/2023, 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:				
Та	ble 1 - Pipe Descri	ption	_		
	Pipe				
	Diameter(Inches)	Linear Feet (1)	Pipe Material (2)	Specifications (3)	
	6	1374.5	PVC SDR-26	ASTM D3034	

Total Linear Feet: <u>1374.5</u>

- (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.

Э.		e sewage collection system will convey the wastewater to the <u>San Gabriel WWTP (City of orgetown)</u> (name) Treatment Plant. The treatment facility is: Existing Proposed
10.	All	components of this sewage collection system will comply with:
		☐ The City of Georgetown 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.
Αl	igi	nment
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.
M	an	holes and Cleanouts
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?
A	1 Of 5	1+00	Manhole
А	1 Of 5	2+54.53	Manhole
A	1 Of 5	3+71.44	Manhole
A	1 Of 5	4+17.53	Manhole
A	2 Of 5	8+00.00	Manhole
A	2 Of 5	10+89.23	Manhole
А	2 Of 5	12+41.93	Manhole

Line	Shown on Sheet	Station	Manhole or Clean- out?
А	2 Of 5	13+16.51	Manhole
В	3 Of 5	2+58.07	Manhole
	Of		

15. 🛭	Manholes are installed at all Po	oints of Curvature and	l Points of Terminati	on of a sewer
	line			

16. The maximum spacing be	etween manholes on this project for e	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.

- 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. \square The Site Plan must have a minimum scale of 1" = 400'.
 - Site Plan Scale: 1" = <u>40</u>'.
- 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 collectior
system.

If not shown on the Sit sewer systems.	bution system for this project is sho te Plan, a Utility Plan is provided sho lines associated with this project.	
22. 100-year floodplain:		
floodplain, either natu lined channels construction is construction is construction is construction is construction is constructed on the Site constructed above seventable 3 - 100-Year Floodp	plain	ot include streets or concrete- the 100-year floodplain will the table below and are shown oncrete-lined channels
Line	Sheet	Station
Lille	•	to
Line	of	.0
Line	of of	to
Line		
Line	of	to

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 concretelined channels constructed above sewer lines.)

Table 4 - 5-Year Floodplain

Line	Sheet	Station
	of	to

- 24. \times 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		Horizontal	Vertical			
Line	Station or Closest Point	Crossing or Parallel	Separation Distance	Separation Distance			
WWTR A	4+44.55	Crossing	n/a	8 ft			
 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	Manho	ole :	Station	Sheet			
							

Line	Manhole	Station	Sheet
28. Drop manholes:			
Sewer lines which Sewer lines which Sewer lines which seems above	p manholes associated with enter new or existing in the manhole invert are liftle sheets. These lines note.	manholes or "manhole st listed in the table below	and labeled on the
Table 7 - Drop Manh		T -	
Line	Manhole	Station	Sheet
29. Sewer line stub-out	s (For proposed extensio	ns):	
$oxed{\boxtimes}$ The placement a	and markings of all sewer ub-outs are to be installe	line stub-outs are show	
30. Lateral stub-outs (F	or proposed private serv	ice connections):	
	and markings of all latera outs are to be installed d		
31. Minimum flow velo	city (From Appendix A)		
	are flowing full; all slope feet per second for this		e flows equal to or
32. Maximum flow velo	city/slopes (From Appen	dix A)	
Assuming pipes less than or equ Attachment D – Assuming pipes	are flowing full, all slope al to 10 feet per second Calculations for Slopes are flowing full, some slo	s are designed to productor for this system/line. for Flows Greater Than 1 opes produce flows which	LO.0 Feet per Second. n are greater than 10

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 \geq 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(I)(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]	5 of 5
Manhole, showing inverts comply with 30 TAC §217.55(I)(2) [Required]	5 of 5
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	5 of 5
Typical trench cross-sections [Required]	5 of 5
Bolted manholes [Required]	5 of 5
Sewer Service lateral standard details [Required]	5 of 5
Clean-out at end of line [Required, if used]	of
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	of
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	1 of 5
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	of

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

- 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: <u>12/5/2022 please call when TCEQ schedules a visit</u>
- 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: Nicholas Sandlin, PE

Date: 4/20/2023

Place engineer's seal here:

Signature of Licensed Professional Engineer:

9 of 10

Vick Sole

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)



Organized Sewage Collection Plan Application Form (TCEQ-0582)

Attachment A – SCS Engineering Design Report and Site Plan

Wastewater System Summary.

To service the proposed 23 duplexes, an 8" public wastewater main will be utilized along the west property line. The connection to the 8" main will be with a 4' manhole and per the City of Georgetown specifications. Individual on-site service laterals will extend from the proposed 6" wastewater main running throughout the site and will be composed of SDR-26 PVC pipe. All flows from the buildings enter the OSCS main line and have greater than 3 and less than 10 feet per second of velocity as it enters the existing 8" wastewater main. The total Linear Footage of the proposed 6" main is 1,374.5 LF with 9 total four ft wide standard manholes as shown in the Construction Plans. There are 23 wastewater service laterals totaling 592.4 LF each serving an individual duplex. Flows from this site enter the system and lead to the San Gabriel Wastewater Treatment Plant at 1107 N College St, Georgetown, TX 78626. The wastewater treatment plant is owned and operated by the City of Georgetown.



TERAVISTA VIEW SUBDIVISION ORGANIZED SEWAGE COLLECTION SYSTEM PLAN

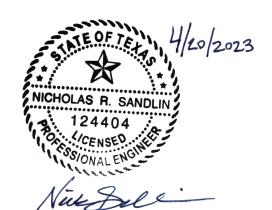
Engineering Design Report per TAC Rule 217.10(e)

For

Teravista View Subdivision

By: Nicholas Sandlin, PE TX #124404 Sandlin Services, LLC TBPELS Firm # 21356

April 25, 2023



The Project known as Teravista View Subdivision is a subdivision plan proposing 23 duplexes on a 7.38 AC lot. The lot is primarily undeveloped. The site is within the city of Georgetown and lies over the Edwards Aquifer Recharge Zone.

This report addresses the requirements of TAC rule 217.10(e). The proposed sanitary sewer system for Teravista View Subdivision will connect to an existing system that will flow to the San Gabriel Wastewater Treatment Plant. The capacity of the plant will treat the estimated 46 LUE's proposed. The treatment plant and wastewater system is owned, operated, and maintained by the City of Georgetown.

(1) Maps of current, proposed, and future service areas have been included within the Construction Plans:

a. Proposed Service Area – the proposed service area is the 7.38 acres of land known as Teravista View Subdivision. The proposed system consists of approximately 1,374.5 linear feet of wastewater main (6-inch SDR 26 PVC pipe), 592.4 linear feet of service lateral (6-inch SDR 26 PVC pipe), nine (9) 4-foot diameter manholes, and 23 single service connections.

(2) Topographic Features of current, proposed, and future service areas:

The topography of this development shows the site sloping towards the South Fork of the San Gabriel River, which flows east to west across the development.

(3) Description of Design Flow Determination:

The design flows for the sanitary sewer collection system lines are calculated by the Living Unit Equivalent (LUE) method prescribed by the City of Georgetown. One LUE consists of 3.5 individuals which produce an average flow of 75 gallons per day in accordance with Table B.1 of TCEQ Chapter 217.32 and the City of Georgetown design guidelines. An LUE is intended to represent one single family residence with typical wastewater usage rates for the City's service area.

The LUEs were calculated by totaling the number of services to residential lots that contribute to the particular pipe section or the upstream manhole. The population was derived by multiplying the number of LUEs by the given 3.5 individuals per household factor. The average flow was determined by multiplying the "population" by the factor of 75 gallons per person per day (flow is in units of gallons per day). The peak dry flow has been calculated by multiplying the average flow by a peaking factor of 4.0 as prescribed by TCEQ Chapter 217.32(a)(2). The derivation of the peak wet flow is described in "Section (7) Inflow and Infiltration". The "Full-Flow Capacity" has been calculated because all pipes are 6-inch PVC SDR 26, the only other variable that affects pipe capacity is the slope of the pipe, and the proposed system has pipes of slopes ranging from 0.50% to 6.50%. The full-flow capacity greatly exceeds the designed peak flows which will ensure conveyance through a 50-year life cycle.

(4) Minimum and Maximum Grades for each size and type of Pipe:

The minimum and maximum slopes of the pipes within the proposed system can be found in the plan sheets. All pipes are 6-inch, and the minimum and maximum pipe slopes are 0.50% and 6.50%, respectively.

In accordance with "Appendix A" of the TCEQ form #TCEQ-0582, a 6-inch pipe shall have a minimum slope of 0.50% and a maximum slope of 12.35% which complies with the proposed design.

(5) Minimum and Maximum Velocities in the System:

The design velocities for both peak dry flow and peak wet flow have been calculated by solving for the depth of flow through the pipe using an interpolative process. In accordance with "Appendix A" of the TCEQ form #TCEQ-00582, when assuming full-flow conditions, a 6-inch pipe shall be designed with slopes between 0.50% and 12.35% to produce a minimum flow velocity of 2.0 $^{\rm ft}/_{\rm s}$ and a maximum of 10.0 $^{\rm ft}/_{\rm s}$. The design slopes and velocities for the pipes in the proposed system falls within these criteria.

(6) Proposed System's Effect on Existing System's Capacity

The proposed system will connect to the existing 8" sanitary sewer line that runs along the west property line of the subject property. None of the existing infrastructure will be affected.

(7) Inflow and Infiltration

Inflow and infiltration flows were calculated for the wastewater line portions of the proposed system per the City of Georgetown design standards. The Inflow and infiltration rate is 750 gallons per day per acre of drainage basin. This is a very conservative estimate for modern materials and construction methods. For each section of pipe on the proposed system a drainage area was determined as seen in **Exhibit 2**. The calculated inflow and infiltration rates were used to determine the peak wet flow rates by adding them to the peak dry flows.

(8) Ability of Existing and Proposed Trunk and Interceptor wastewater collection systems

The existing downstream system has the capacity to accommodate the peak flow for this development. Most of the existing elements of this portion of the collection system will be gravity fed until it reaches the existing Wastewater treatment plant.

(9) Capability of receiving treatment facility to receive and treat the anticipated peak flow

The proposed system will contribute to an existing wastewater collection system that is routed to the San Gabriel Wastewater Treatment Plant. This treatment facility has been designed to accommodate the increase in flow from the proposed development.

(10) Engineering Analysis of Structural Design, Minimization of Odor-Causing Conditions, and Pipe Design Requirements of TAC §217.55

Structural Analysis for Flexible Pipe per TAC §217.53(k)(2)

(A) Live Load Calculations:

The Uni-Bell Handbook, page 210, Table 6.6 Live Loads on Pipe, is referenced to determine live load based on burial depth and classification of vehicular traffic. Accordingly, a live load of 2.78 psi will be the maximum live load the pipe will experience at any point, based on a minimum burial depth of four feet and the highway classification H20.

The following structural analysis of flexible pipe considers both the maximum live load (at 4 feet minimum depth) and the maximum earth load (at 16.9 feet maximum depth) simultaneously when calculating deflection. Therefore, the analysis is conservative.

(B) Allowable Buckling Pressure Determinations:

For the purposes of this application, the buckling analysis has been 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 feet \leq H \leq 80 feet.

(Equation 1)
$$FS = 2.5 \text{ for } \frac{h}{D_0} > 2$$

(Equation 2)
$$R_w = 1 - 0.33(h_w/h)$$

(Equation 3)
$$B' = \frac{1}{1 + 4 * e^{-0.065*H}}$$

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

(Equation 5)
$$q_a = \frac{1}{FS} \left(32 R_W B^I E_b \frac{EI}{D_0^S} \right)^{1/2}$$

Or, where FS = 2.5,
$$q_{\alpha} = 0.4^{\circ} \sqrt{32R_W B' E_b \frac{EI}{D_0^{\circ}}}$$

h = maximum height of soil surface above top pipe (in) 6" PVC SDR 26, h = 202.8 in

 D_0 = outside diameter of the pipe (in)

6" PVC SDR 26, $D_0 = 6.625$ in

FS = design factor of safety See Equation 1

6" PVC SDR 26, FS = 2.5

 h_w = height of ground water surface above top of pipe (in) 6" PVC SDR 26, h_w = 0 in

 R_w = water buoyancy factor. If h_w =0, R_w =1. If $0 \le h_w \le h$ (groundwater elevation is between the top of the pipe and the ground surface), calculate R_w with Equation 2.

See Equation 2 6" PVC SDR 26, R_w = 1

H = depth of burial from ground surface to crown of pipe (ft) 6" PVC SDR 26, H = 16.9 ft

B' = empirical coefficient of elastic support See Equation 3 6" PVC SDR 26, B' = 0.429

t = pipe wall thickness (in) 6" PVC SDR 26, t = 0.316 in

I = moment of inertia of pipe wall cross-section per linear inch of pipe (inch⁴/lineal inch = inch³). For solid wall pipe, moment of inertia 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.

See Equation 4

6" PVC SDR 26, I = 0.0026 cubic inches

 E_b = modulus of soil reaction for the bedding material (psi) 6" PVC SDR 26, E_b = 2,000 psi

Reference: USDA NRCS Part 636 Structural Engineering National Engineering Handbook

E = modulus of elasticity of pipe material (psi) 6" PVC SDR 26, E = 400,000 psi

Reference: USDA NRCS Part 636 Structural Engineering National Engineering Handbook

 q_a = allowable buckling pressure (psi) See Equation 5 6" PVC SDR 26, q_a = 50.14 psi

a) Calculate pressure applied to pipe under installed conditions:

(Equation 6) $W_c = \gamma_s * H * (D+t) / 144$

(Equation 7)
$$q_p = \gamma_w * h_w + R_w * (W_c / D) + L_l$$

 y_s = specific weight of soil in pounds per cubic foot (pcf) $y_s = 139 \text{ pcf}$

Reference: Table 3.1 – Dense angular-grained silty sand and Table 3.2 - $\gamma_{\text{Edd}} = \gamma_{\text{d}} + (\frac{\epsilon}{1+\epsilon})\gamma_{\text{W}}$, Page 57 of Das Braja, Principles of Geotechnical Engineering Sixth Edition, Nelson: Toronto, Ontario, Canada, 2006.

H = depth of burial from ground surface to crown of pipe (ft) 6" PVC SDR 26, H = 16.9 ft

D = mean pipe diameter (in) 6" PVC SDR 26, D = 6 in

t = pipe wall thickness (in) 6" PVC SDR 26, t = 0.316 in

W_c = vertical soil load on the pipe per unit length in pounds per linear inch (lb/in)
See Equation 6
6" PVC SDR 26, W_c = 103.03 lb/in

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

 h_w = height of ground water surface above top of pipe (in) 6" PVC SDR 26, h_w = 0 in

 $R_{\rm w}=$ water buoyancy factor. If $h_{\rm w}=0$, $R_{\rm w}=1$. If $0\le h_{\rm w}\le h$ (groundwater elevation is between the top of the pipe and the ground surface), calculate $R_{\rm w}$ with Equation 2. See Equation 2

6" PVC SDR 26, $R_{\rm w}=1$

 L_l = Live Load (psi) 6" PVC SDR 26, L_l = 2.78 psi

Reference: Uni-Bell Handbook, page 210, Table 6.6 Live Loads on Pipe, for highway H20 live load. The minimum depth of burial from ground surface to crown of pipe is four feet, which requires a live load of 2.78 psi.

 q_p = pressure applied to pipe under installed conditions (psi) See Equation 7 6" PVC SDR 26, q_p = 19.95 psi

If $q_a \ge q_p$, the specified pipe is acceptable f. If $q_a \le q_p$, the wall thickness of the pipe must be increased and/or a pipe with a larger modulus of elasticity must be used. In which case, appropriate modifications must be made and the buckling analysis must be repeated, showing that for the upgraded pipe, $q_a \ge q_p$. Reported below in Table 1 are q_a and q_p values for the type and size of the

proposed pipe material. All pipe proposed for this project meets the requirement of $q_a \ge q_p$.

Table 1 - Allowable Buckling Pressure and Pressure Applied to Pipe under Installed Conditions

6-in	ch PVC Si 26	DR
q _a =	50.14	psi
$q_p =$	19.95	psi

(C) Prism Load Calculations:

The prism load, L_p, value, calculated below, is utilized in Section (F) to calculate vertical deflection.

(Equation 8)
$$L_p = \frac{\gamma_s \times H}{144}$$

$$y_s$$
 = specific weight of soil (pcf)
 $y_s = 139 \text{ pcf}$

Reference: Table 3.1 – Dense angular-grained silty sand and Table 3.2 - $\gamma_{gat} = \gamma_d + (\frac{s}{1+s})\gamma_w$, Page 57 of Das Braja, Principles of Geotechnical Engineering Sixth Edition, Nelson: Toronto, Ontario, Canada, 2006.

$$L_p$$
 = 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.

See Equation 8

6" PVC SDR 26, $L_p = 16.31 \text{ psi}$

(D) Wall Crushing Determinations:

 \mathcal{A}

Wall crushing determinations are necessary for rigid pipe only. The proposed pipe material is flexible. Also, no section of the proposed pipe will be installed in rigid encasement. The calculations for determining a maximum depth that the pipe may be buried before wall crushing will occur for rigid pipe, based on TCEQ-10243, are provided below as supplemental information, rather than directly applicable information. Analysis was determined per linear foot of pipe section.

(Equation 9)
$$H = \frac{24 * P_c * A}{\gamma_s * D_0}$$

$$24 = \text{conversions and coefficients}$$

$$Pc = \text{compressive stress or hydrostatic design basis (HDB); For typical PVC pipes, assume 4,000 psi}$$

surface area of the pipe wall cross-section (in²/ft)

6" PVC SDR 26,
$$A = 6.20 \text{ in}^2/\text{ft}$$

$$y_s$$
 = specific weight of soil (pcf)
 y_s = 139 pcf

Reference: Table 3.1 – Dense angular-grained silty sand and Table 3.2 - $\gamma_{\text{gat}} = \gamma_{\text{d}} + (\frac{5}{1+\epsilon})\gamma_{\text{W}}$, Page 57 of Das Braja, Principles of Geotechnical Engineering Sixth Edition, Nelson: Toronto, Ontario, Canada, 2006.

$$D_O$$
 = outside diameter of the pipe (in)
6" PVC SDR 26, D_O = 6.625 in

H = maximum allowable depth of burial from ground surface to crown of pipe (ft)
See Equation 9
6" PVC SDR 26, H = 646 ft

The maximum proposed depth is approximately 16.9 feet for 6" PVC SDR 26, which is well less than the maximum allowable burial depth provided above.

(E) Strain Prediction:

There are no special conditions of this installation which would create significant potential for a strain related failure. Tensile strength data is provided by manufacturers and is based on ASTM standards. Harrison Machine & Plastic Corporation specifies PVC cell class 12454 pipe with a tensile strength of 7,450 psi based on ASTM-D-1784.

(F) Long Term Pipe Deflection:

The ratio of bedding modulus to in-situ soil modulus is $E_b/E' = 2,000$ psi / 1,500 psi = 1.33 (justification for these values is provided in Section (G)(i)). Since this ratio is greater than 1.25, a zeta factor must be calculated. 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, a zeta value of one can be assumed. The following are direct calculations for zeta based on equations provided by TCEQ in various documents including TCEQ-10243 dated 10/01/04.

(Equation 10)
$$f = \frac{b/d_a - 1}{1.154 + 0.444 \times (b/d_a - 1)}$$

(Equation 11)
$$zeta = \frac{1.44}{f + (1.44 - f) \times (\frac{E_b}{E_n})}$$

Reference: City of Georgetown Trench and Embedment Detail Under Proposed Roadway.

$$d_a$$
 = outside pipe diameter (in)
6" PVC SDR 26, d_a = 6.625 in

$$E_b$$
 = modulus of soil reaction for bedding material (psi)
6" PVC SDR 26, E_b = 2,000 psi

Reference: USDA NRCS Part 636 Structural Engineering National Engineering Handbook

Reference: Principles of Geotechnical Engineering Sixth Edition by Braja Das, page 306, Table 10.2.

Pipe Stiffness (P_s) is based on manufacturer's data and national reference standards. The J-M Eagle pipe catalog is referenced in Section G as justification for a pipe stiffness value of 115 psi and is in compliance with ASTM 3034 standards. Pipe stiffness may also be calculated by Equation 12 and 13 as referenced in TCEQ documents, including TCEQ-10243 and the Texas Administrative Code, Chapter 217.

(Equation 12)
$$P_s = \frac{EI}{0.149* r^3} \qquad \text{or} \qquad$$

(Equation 13)
$$P_s = 0.80 * RSC * (\frac{8.337}{D})$$

where RSC = Ring Stiffness Coefficient based on manufacturer's data and D = mean diameter in inches

E = modulus of elasticity of the pipe material (psi)
6" PVC SDR 26,
$$E_b = 400,000$$
 psi

Reference: USDA NRCS Part 636 Structural Engineering National Engineering Handbook

I = moment of inertia of pipe wall cross-section per linear inch of pipe (inch4/lineal inch = inch3). For solid wall pipe, moment of inertia 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.
$$I = (t^3/12)*(inches4/Linch)$$

6" PVC SDR 26, I = 0.0026 cubic inches

r = mean radius (in)
$$6$$
" PVC SDR 26, $r = 3$ in

In a conservative effort, the following calculations will utilize the manufacture's pipe stiffness value of 115 psi.

Because the terms in the denominator of the Modified Iowa Formula (Equation 15) are added, it is theoretically possible to have zero pipe stiffness 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 pipe stiffness to soil stiffness factor (P_s/SSF) must be calculated. If $P_s/SSF < 0.15$, a higher stiffness pipe must be chosen.

(Equation 14)
$$\frac{P_s}{SSF} = \frac{P_s}{0.061 \times zeta \times E_b}$$

$$P_s = \text{pipe stiffness (psi) - per national reference standards } 6" \text{ PVC SDR 26, } P_s = 115 \text{ psi}$$

$$zeta = \text{Leonhardt's Zeta factor } See \text{ Equation 11}$$

$$6" \text{ PVC SDR 26, zeta = 0.893}$$

$$E_b = \text{modulus of soil reaction for bedding material (psi)}$$

$$6" \text{ PVC SDR 26, } E_b = 2,000 \text{ psi}$$

Reference: USDA NRCS Part 636 Structural Engineering National Engineering Handbook

$$SSF = Soil Stiffness Factor$$
 $See Equation 14$
 $6" PVC SDR 26, SSF = 106.23 psi$
 $P_s / SSF = stiffness ratio$
 $See Equation 14$

6" PVC SDR 26, P_s /SSF = 1.06

Therefore, since Ps/SSF > 0.15, 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.

Finally, predicted deflection must be calculated. For the purposes of this application, predicted deflection shall be calculated using the method outlined below. Maximum allowable deflection 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 in the quality of installation.

(Equation 15)
$$\Delta Y/D(\%) = \frac{K \times (L_p + L_l) \times 100}{(0.149 \times P_s) + (0.061 \times zeta \times E_b)}$$

K = Bending angle constant, assumed to be 0.110 unless otherwise justified 6" PVC SDR 26, K = 0.110

 L_p = Prism Load (psi) See Equation 8

6" PVC SDR 26, $L_p = 16.31 \text{ psi}$

 L_l = Live Load (psi)

6" PVC SDR 26, $L_1 = 2.78 \text{ psi}$

Reference: Uni-Bell Handbook, page 210, Table 6.6 Live Loads on Pipe, for highway H20 live load. The minimum depth of burial from ground surface to crown of pipe is four feet, which requires a live load of 2.78 psi.

 P_s = pipe stiffness (psi) – per national reference standards

6" PVC SDR 26, $P_s = 115 \text{ psi}$

zeta = Leonhardt's Zeta factor

See Equation 11

6" PVC SDR 26, zeta = 0.893

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

6" PVC SDR 26, E_b = 2,000 psi

Reference: USDA NRCS Part 636 Structural Engineering National Engineering Handbook

 $\Delta Y/D\%$ = Percent predicted vertical deflection under load

Or, change in vertical pipe diameter under load

See Equation 15

8" PVC SDR 26, $\Delta Y/D = 1.67\%$

The predicted deflection is approximately 1.67% for 6" PVC SDR 26, which is less than the maximum allowable deflection of 5%. Therefore, the specified pipe size and material are structurally justified for the proposed use.

(G) Justification for Parameters and Assumptions:

(i) Determination of Modulus of Soil Reaction for Bedding and In-Situ Material: The parameters representing soil conditions are based on the geotechnical report specific to this project, national standards and references, as well as engineering judgment. Reference to the United States Department of Agriculture Natural Resources Conservation Service's National Engineering Handbook, Part 636 Structural Engineering Table 52-2, as provided below, was made in order to specify the modulus of soil reaction for bedding. Per City of Georgetown Standards, the degree of compaction of bedding must be 95%.

Table 2 - USDA NRCS National Engineering Handbook, Part 636 Structural Engineering

Table 52-2 Average values of the modulus of soil reaction for the Modified Iowa Equation

Soil type – pipe bedding material (Unified Soil Classification – ASTM D2487)	E' f	or degree of compac Slight, < 85% proctor, < 40% relative density	tion of bedding, lb/ Moderate, 85-95% proctor, 40-70% relative density	/in ^{2 I/} High, > 95% proctor, > 70% relative density
Fine-grained soil (LL>50) $^{2\!\!/}$ Soil with medium to high plasticity CH, MH, CH-MH		vailable, use E' : ical engineer	= 0 or consult v	vith a
Fine-grained soil (LL<50) soil with medium to no plasticity CL, ML, ML-CL, with less than 25% coarse-grained particles	50	200	400	1,000
Fine-grained soil (LL<50) soil with medium to no plasticity CL, ML, ML-CL, with more than 25% coarse-grained particles. Coarse-grained soil with fines GM, GC, SM, SC contains more than 12% fines	100	400	1,000	2,000
Coarse-grained soil with little or no fines GW, GP, SW, SP contains less than 12% fines	200	1,000	2,000	3,000
Crushed rock	1,000	3,000	3,000	3,000

 $^{1/\,\,}$ Source ASCE Journal of Geotechnical Engineering Division, January 1977 $2/\,\,$ LL = liquid limit

The modulus of soil reaction for in-situ materials is developed with reference to the geotechnical report and the text, Principles of Geotechnical Engineering Sixth Edition by Braja Das, specifically, page 306, Table 10.2.

(ii) Pipe Diameters and Materials:

Pipe dimensions such as inside, outside and average diameters, thickness, and stiffness are based on pipe catalogs from manufacturers. Specifically, the J-M Eagle pipe catalog, referenced to ASTM 3034 standards, was referenced.

Modulus of Elasticity:

The modulus of elasticity values for the project pipe material, 8-inch PVC SDR 26, is based on values provided by the United States Department of Agriculture Natural Resources Conservation Service's National Engineering Handbook, Part 636 Structural Engineering, Page 52-11 and 52-12.

(iv) Tensile Strength:

Tensile strength data is provided by manufacturers and is based on ASTM standards. Harrison Machine & Plastic Corporation specifies PVC cell class 12454 pipe with a tensile strength of 7,450 psi based on ASTM-D-1784.

(v) Conversion of Pipe or Ring Stiffness Constant to Pipe Stiffness:

Pipe stiffness and Ring Stiffness constant are based on pipe catalogs from manufacturers. Specifically, the J-M Eagle pipe catalog was used, which complies with ASTM 3034 standards.

(vi) Leonhardt's Zeta Factor:

Leonhardt's Zeta Factor and other equations (Equations 1-15) are referenced in TCEQ form TCEQ-10243 dated 10/01/04 and the Texas Administrative Code Title 30 Chapter 217 available via the TCEQ website. In addition, some formulas may be found in the USDA NRCS National Engineering Handbook Part 636 Structural Engineering.

(vii) Trench Width:

Trench width is in accordance with the City of Georgetown standard details and specifications. The minimum trench width shall be 18. The proceeding calculations confirm the soundness of the design.

(viii) Depth of Cover:

The depth of cover ranges from approximately 4.00 feet to 16.9 feet below finished grade as provided in the construction plans.

(ix) Water Table Elevation:

Groundwater conditions will be monitored during construction.

(x) Unit Weight of Soil:

The unit weight of soil is developed with reference to the geotechnical report and the text: Principles of Geotechnical Engineering Sixth Edition by Braja Das, specifically, Table 3.1 and Table 3.2 on page 57. Table 3.1 provides the dry unit weight for dense angular-grained silty sand while Table 3.2 provides the saturated unit weight based on the following equation, $\gamma_{\text{soft}} = \gamma_d + (\frac{s}{1+s})\gamma_w$. The saturated unit weight is used in a conservative effort.

Odor Control per TAC §217.53(h)

No odor issues are to be anticipated, however, if odor becomes a nuisance after operation, measures such as ventilation can be applied as necessary. Based on estimated flows upon operation through a 50-year expected life cycle odor production is estimated to be insignificant.

Pipe Design Requirements per TAC §217.55

- a. Manholes are included in the wastewater system at:
 - i. All points of change in alignment, grade, or size;
 - ii. At the intersections of three or more pipes; and
 - iii. At the end of all pipes that may be extended at a future date.
 - iv. There are future extensions of the system from Mayfield Office Park; therefore, manholes located at the ends of the system include stubs and plugs.
 - v. Clean-outs with water tight plugs are not used within the public Right-of-Way. They are used at all terminal points of the private wastewater system.
 - vi. Per the TCEQ Organized Sewage Collection System General Notes located within the plan set, all cleanout installations must pass the testing requirements outlined for gravity collection pipes in TAC §217.57.

b. Types (Materials):

- Manholes shall be made of either pre-cast or cast-in-place concrete bases and sections.
 The grade adjustment rings shall be made only of concrete.
- ii. The use of bricks to adjust manholes is prohibited by notes on the wastewater layout sheets and by a note within the TCEQ General Notes

c. Spacing:

- i. The maximum manhole spacing allowed is 500 linear feet for all proposed pipe sizes in this design. The maximum designed manhole spacing is 480 LF
- ii. There are no tunnels proposed with this plan.
- d. Diameter/Size:
- e. All manholes shall be 48" inside diameter per City of Georgetown Standard Detail
- f. Manhole Covers:
 - i. All manholes shall have a 30" cover that is heavy duty load rated and stamped "Sanitary Sewer" per City of Georgetown Standard Detail.
 - ii. No manholes are to be located within the 100-year floodplain.
 - iii. Manholes are to be constructed of cast iron. For more detail reference East Jordan Iron Works, Inc. Catalog No. 1480A V-1420/1480Z1.

g. Manhole Inverts:

- i. Manhole inverts shall be constructed for smooth flow in accordance with the City of Georgetown Standard Detail.
- ii. Inflow pipes greater than 24" above the flow line out will be required to be drop manholes.

h. Manhole Steps:

i. Manhole steps are not included within the standard manhole details per the City of Georgetown

i. Connections:

i. Rubber, water-tight gaskets are required for connections of wastewater pipes to manholes per City of Georgetown Standard Detail.

j. Venting:

i. No gasketed and/or bolted manholes are proposed and no manhole separations exceed 1,500 feet; therefore, special ventilation will not be required.

k. Cleanouts:

- There are no proposed cleanouts for the proposed development of Mayfield Office Park
- l. All manholes are all located in the pavement areas within the right-of-ways on the proposed development.

(11) Description of areas not initially served by this project, the projected means of providing service to said areas

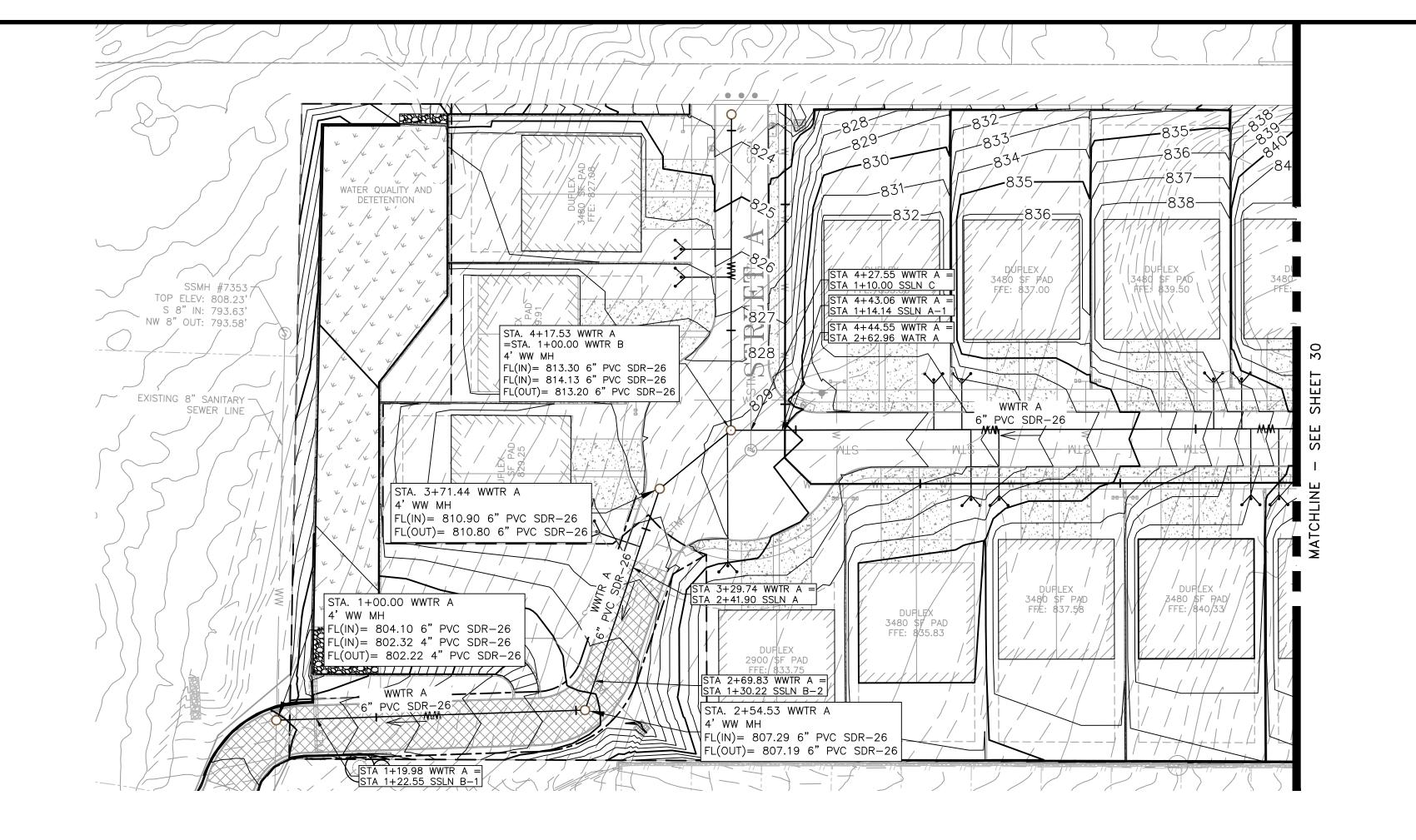
As previously stated, the system is designed to serve the proposed development. The overall development includes future service areas outside of the proposed service area, as depicted in Exhibit 1, the Service Area Map. Portions of the future service area will connect to the proposed system via wastewater line 'E' at a later date.

(12) Safety considerations incorporated into the project design:

The design includes safety features commensurate with standard engineering practice and the standards and specifications of the Texas Commission on Environmental Quality, the City of Georgetown, and OSHA practices.

I certify that to the best of my knowledge, the proposed wastewater collection system for Mayfield Office Park is in compliance with "Chapter 217 – Design Criteria for Domestic Wastewater Systems". No variances from the listed criteria will be necessary for the proposed system as it was designed and approved. Please let me know if there is any additional information that will be required.

Nicholas R. Sandlin, PE	TBPELS #124404



WWTR A 1"=4' VERT - 1"=40' HORZPROPOSED GRADE 830 -STA. 4+27.55 -=1+10.00 SSLN C _FL=817.24 24" RCP_ -∕-STA. 4+44.55-=2+62.96 WATR A FL=823.96 12" PVC C-900 825 825 _STA. 4+43.06 =1+14.14 SSLN A-1 _FL=817.54 30" RCP___ 820 820 EXISTING GRADE STA. 3+29.74 =2+41.90 SSLN A -STA. 1+19.98 FL=812.44 36" RCP =1+22.55 SSLN B-1 _FL=814.36 24" RCP_ 815 810 155 LF. 6" PVC SDR-26 AT 2.00% SLOPE 805 800 800 830.51 1+00 2+50

3+00

3+50

4+00

4+50

5+00

5+50

6+00

6+50

1 + 50

2+00

UTILITY NOTES:

ALL NON-CITY INFRASTRUCTURE (INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, CABLE, AND TELECOMMUNICATIONS) SHALL TRAVERSE UNDERNEATH CITY INFRASTRUCTURE (INCLUDED BUT NOT LIMITED TO WATERLINES, WASTEWATER LINES, AND STORMWATER LINES) WITH A MINIMUM OUTSITE-TO-OUTSIDE CLEARANCE OF 18". WHERE NON-CITY INFRASTRUCTURE WOULD HAVE TO BE PLACED AT A DEPTH OF 8' OR GREATER TO MEET THE PRECEDING REQUIREMENT, TRAVERSING ABOVE THE CITY INFRASTRUCTURE MAY BE ALLOWED, SUBJECT TO APPROVAL OF THE DEVELOPMENT SERVICES ENGINEERING REVIEWER, BUT ONLY IN CONFORMANCE WITH CROSS-SECTIONS, PROFILES, AND OR OTHER DETAILED INFORMATION INCORPORATED IN THESE PLANS.

CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

A MINIMUM 24" SEPARATION DISTANCE IS REQUIRED AT ALL WATER AND WASTEWATER CROSSINGS. CENTER ONE JOINT OF WATER PIPE AT EACH CROSSING.

MHERE A NINE FOOT SEPARATION DISTANCE BETWEEN WATER AND WASTEWATER CANNOT BE ACHIEVED, PVC WITH MINIMUM PRESSURE RATING OF 150 PSI SHALL BE USED, A MINIMUM SEPARATION DISTANCE OF 6 INCHES BETWEEN OUTSIDE DIAMETERS OF PIPES SHALL BE ACHIEVED, WASTEWATER SHALL BE BELOW WATER, AND JOINTS SHALL BE LOCATED AS FAR AS POSSIBLE FROM THE INTERSECTION, IN ACCORDANCE WITH TAC TITLE 30 217.53(d)(3)(B)(i).

- 1. CLEANOUTS IN SIDEWALK MUST BE FLUSH TO PREVENT TRIPPING HAZARD.
- 2. SEE BUILDING PLAN FOR CONNECTIONS TO BUILDINGS.

ARE PRIVATE AND CONNECT VIA A FORCE MAIN.

PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.

- 3. DO NOT PLANT TREES OVER CAPS. ALL CAPS TO HAVE 6" PVC STAND PIPES 6" ABOVE PROPOSED GRADE.
- 4. SEE BUILDING PLAN FOR WATER AND WASTEWATER INTERNAL DESIGN
- 5. WASTEWATER MANHOLES OUTSIDE OF PAVEMENT, SEE SPECIFIC DETAIL. ALL GRINDER PUMPS
- 6. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE ASSOCIATED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND
- 7. ALL WATER LINES AND SERVICE LINES WILL BE INSTALLED WITH TRACER TAPE.
- 8. NO WATER METERS LOCATED IN SIDEWALK OR DRIVEWAY AREAS.
- 9. FIRE HYDRANTS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. SEE DETAIL SHEET FOR PLACEMENT OF APPURTENANCES. FIRE HYDRANTS ASSEMBLY CONSISTS OF, BUT NOT LIMITED TO, 514" FIRE HYDRANT, 6" GATE VALVE, 6" D.I. FIRE LEAD.

10. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS. TEE'S AND DEAD-END'S SHALL BE RESTRAINED TO THE WATER MAIN USING MECHANICAL JOINT RESTRAINT DEVICES.

- 11. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION. P.I.'5 LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION. IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SINGLE DEFLECTION IS GREATER THAN 80% OF THE MAXIMUM.
- 12. ALL FILL AREAS SHALL BE COMPACTED TO 95% PRIOR TO UTILITY INSTALLATION. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.
- 13. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL
- 14. A RPZ BACKFLOW PREVENTOR IS TO BE INSTALLED ON ALL SERVICES OUTSIDE OF PAVEMENT, SIDEWALKS, ROW, & EASEMENTS. ALL TO BE LOCATED ON THE CUSTOMER SIDE OF THE METERS



THIS PLAN SET FOR REVIEW ONLY NOT FOR CONSTRUCTION

UTILITY LEGEND PROPOSED PROPERTY/ PROJECT BOUNDARY LINE EXISTING R.O.W./PROPERTY LINE EXISTING EASEMENT LINE PROPOSED CURB & GUTTER EXISTING CONTOURS PROPOSED CONTOURS

-W---- EX. WATER LINE -----₩----- PR. WATER LINE

EX. FIRE HYDRANT PR. FIRE HYDRANT WM EX. WATER METER PR. WATER METER

PR. WASTEWATER MANHOLE - FLOW ARROW FITTINGS AS NOTED GATE VALVE AS NOTED T | ELECTRIC TRANSFORMER

O WW CLEAN OUT UTILITY POLE

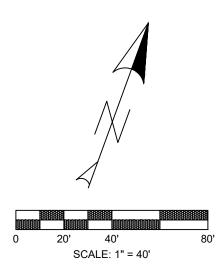
BFP BACK FLOW PREVENTER _____F FIRE LINE

EXISTING TREE

(TO REMAIN)

o100\ EXISTING TREE (TO BE REMOVED)

SEWER LINE



IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



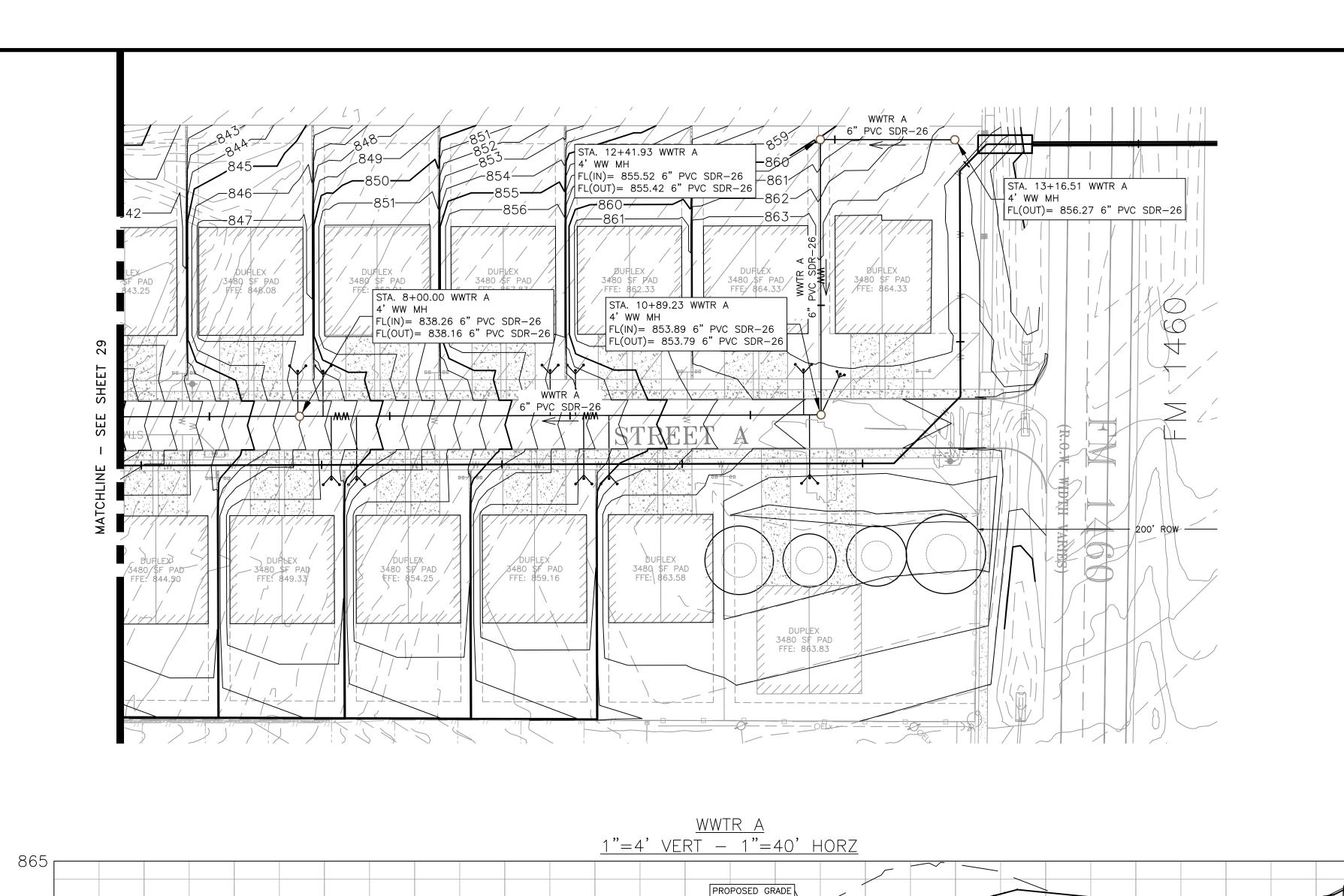


TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

WASTEWATER LINE A (1+00 TO 7+00)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET



EXISTING GRADE

860

855

845

840

835

830

6+50

7+00

7+50

8+00

8+50

9+00

9+50

UTILITY NOTES:

ALL NON-CITY INFRASTRUCTURE (INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, CABLE, AND TELECOMMUNICATIONS) SHALL TRAVERSE UNDERNEATH CITY INFRASTRUCTURE (INCLUDED BUT NOT LIMITED TO WATERLINES, WASTEWATER LINES, AND STORMWATER LINES) WITH A MINIMUM OUTSITE-TO-OUTSIDE CLEARANCE OF 18". WHERE NON-CITY INFRASTRUCTURE WOULD HAVE TO BE PLACED AT A DEPTH OF 8' OR GREATER TO MEET THE PRECEDING REQUIREMENT, TRAVERSING ABOVE THE CITY INFRASTRUCTURE MAY BE ALLOWED, SUBJECT TO APPROVAL OF THE DEVELOPMENT SERVICES ENGINEERING REVIEWER, BUT ONLY IN CONFORMANCE WITH CROSS-SECTIONS, PROFILES, AND OR OTHER DETAILED INFORMATION INCORPORATED IN THESE PLANS.

CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

A MINIMUM 24" SEPARATION DISTANCE IS REQUIRED AT ALL WATER AND WASTEWATER CROSSINGS. CENTER ONE JOINT OF WATER PIPE AT EACH CROSSING.

 IMPORTANT

 WHERE A NINE FOOT SEPARATION DISTANCE BETWEEN WATER AND WASTEWATER CANNOT BE
 ACHIEVED, PVC WITH MINIMUM PRESSURE RATING OF 150 PSI SHALL BE USED, A MINIMUM SEPARATION DISTANCE OF 6 INCHES BETWEEN OUTSIDE DIAMETERS OF PIPES SHALL BE ACHIEVED, WASTEWATER SHALL BE BELOW WATER, AND JOINTS SHALL BE LOCATED AS FAR AS

POSSIBLE FROM THE INTERSECTION, IN ACCORDANCE WITH TAC TITLE 30 217.53(d)(3)(B)(i).

860

75 LF. 6" PVC SDR-26 AT 1.00% SLOPE

12 + 50

12+00

13+00

153 LF. 6" PVC SDR-26 AT 1.00% SLOPE

1. CLEANOUTS IN SIDEWALK MUST BE FLUSH TO PREVENT TRIPPING HAZARD.

2. SEE BUILDING PLAN FOR CONNECTIONS TO BUILDINGS.

3. DO NOT PLANT TREES OVER CAPS. ALL CAPS TO HAVE 6" PVC STAND PIPES 6" ABOVE PROPOSED GRADE.

4. SEE BUILDING PLAN FOR WATER AND WASTEWATER INTERNAL DESIGN

5. WASTEWATER MANHOLES OUTSIDE OF PAVEMENT, SEE SPECIFIC DETAIL. ALL GRINDER PUMPS ARE PRIVATE AND CONNECT VIA A FORCE MAIN.

6. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE ASSOCIATED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

7. ALL WATER LINES AND SERVICE LINES WILL BE INSTALLED WITH TRACER TAPE.

8. NO WATER METERS LOCATED IN SIDEWALK OR DRIVEWAY AREAS.

9. FIRE HYDRANTS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. SEE DETAIL SHEET FOR PLACEMENT OF APPURTENANCES. FIRE HYDRANTS ASSEMBLY CONSISTS OF, BUT NOT LIMITED TO, 514" FIRE HYDRANT, 6" GATE VALVE, 6" D.I. FIRE LEAD.

10. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS. TEE'S AND DEAD-END'S SHALL BE RESTRAINED TO THE WATER MAIN USING MECHANICAL JOINT RESTRAINT DEVICES.

11. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION. P.I.'5 LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION. IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SINGLE DEFLECTION IS GREATER THAN 80%

12. ALL FILL AREAS SHALL BE COMPACTED TO 95% PRIOR TO UTILITY INSTALLATION. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.

13. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.

14. A RPZ BACKFLOW PREVENTOR IS TO BE INSTALLED ON ALL SERVICES OUTSIDE OF PAVEMENT, SIDEWALKS, ROW, & EASEMENTS. ALL TO BE LOCATED ON THE CUSTOMER SIDE OF THE METERS

分 NICHOLAS R. SANDLIN 124404 CENSEO

THIS PLAN SET FOR REVIEW ONLY NOT FOR CONSTRUCTION

UTILITY LEGEND PROPOSED PROPERTY/ PROJECT BOUNDARY LINE EXISTING R.O.W./PROPERTY LINE EXISTING EASEMENT LINE

PROPOSED CURB & GUTTER EXISTING CONTOURS

—W—— EX. WATER LINE ———W—— PR. WATER LINE SEWER LINE

EX. FIRE HYDRANT PR. FIRE HYDRANT M EX. WATER METER PR. WATER METER

PR. WASTEWATER MANHOLE

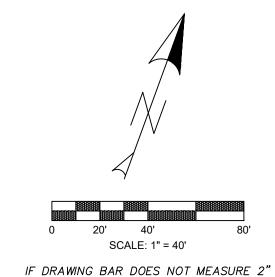
- FLOW ARROW FITTINGS AS NOTED GATE VALVE AS NOTED T | ELECTRIC TRANSFORMER —— UTILITY POLE

BFP BACK FLOW PREVENTER _____F FIRE LINE

EXISTING TREE (TO REMAIN)

o100\ EXISTING TREE (TO BE REMOVED)

PROPOSED CONTOURS



THIS PRINT IS NOT TO SCALE



WARNING !!!! CONTRACTOR TO FIELD VERIFY ALL EXIST. UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO CONTACT ENGINEER IF ANY EXISTING UTILITY INFORMATION
DIFFERS FROM DATA SHOWN IN THE PLANS.
CALL 811 BEFORE YOU DIG.



TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

WASTEWATER LINE A (7+00 TO END)

TERAVISTA VIEW SUBDIVISION

SHEET

30

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION

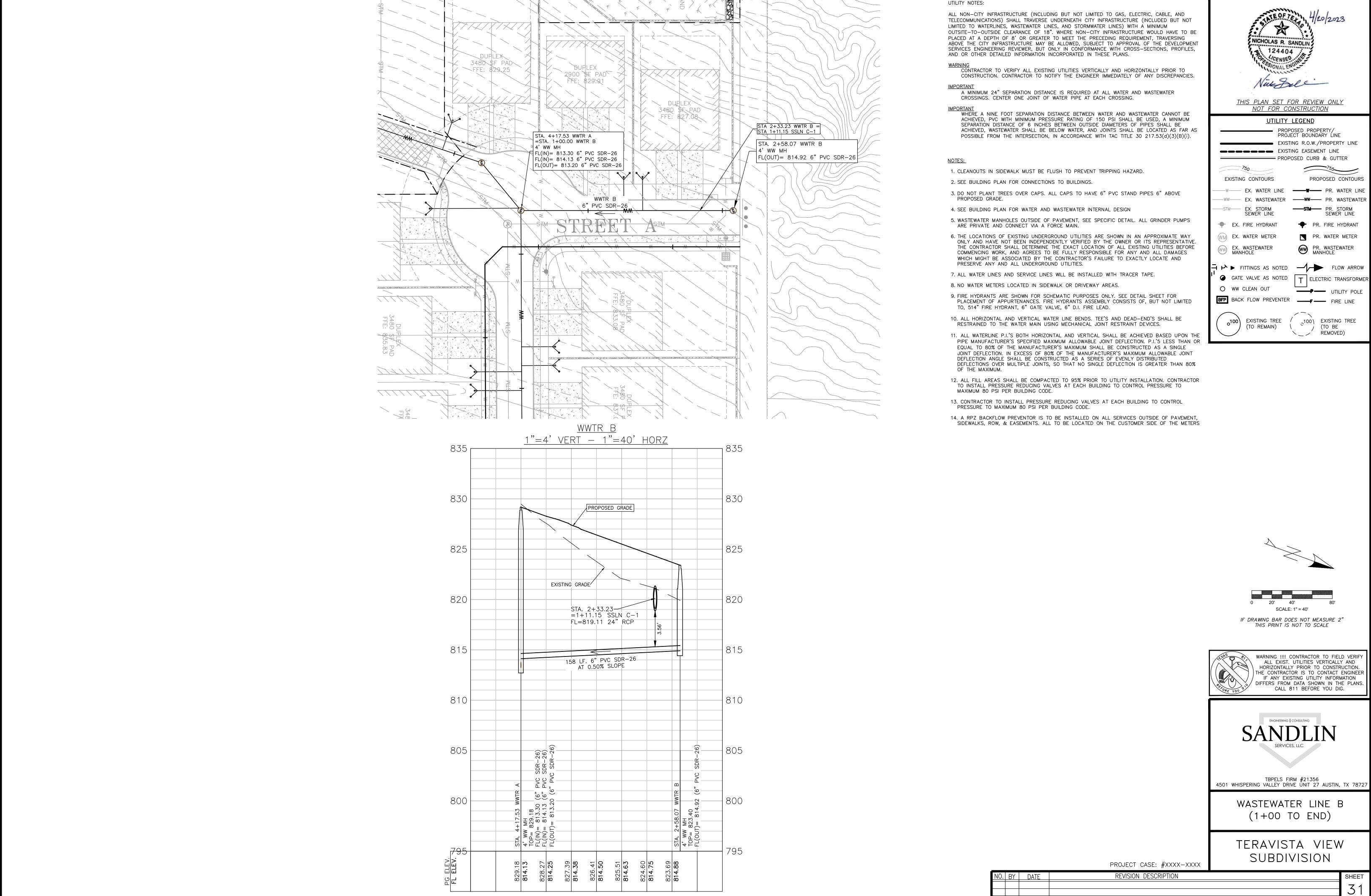
845 840 848.67 839.61 857.35 **846.32** 859.99 **849.00** 860.94 **850.34** 861.64 **851.69** 862.59 **853.99** 861.56 **855.85**

10+00

10+50

11+00

11+50

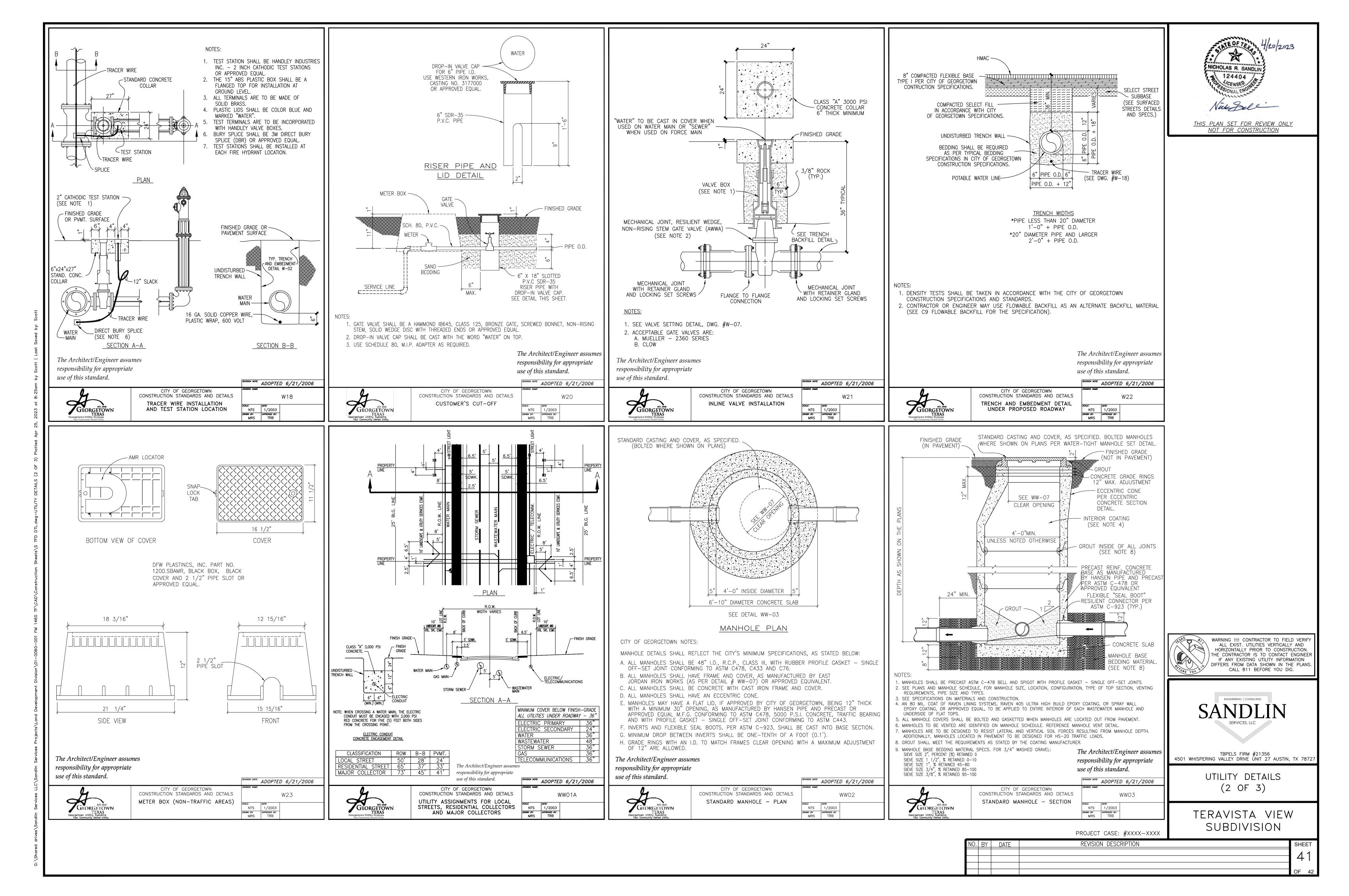


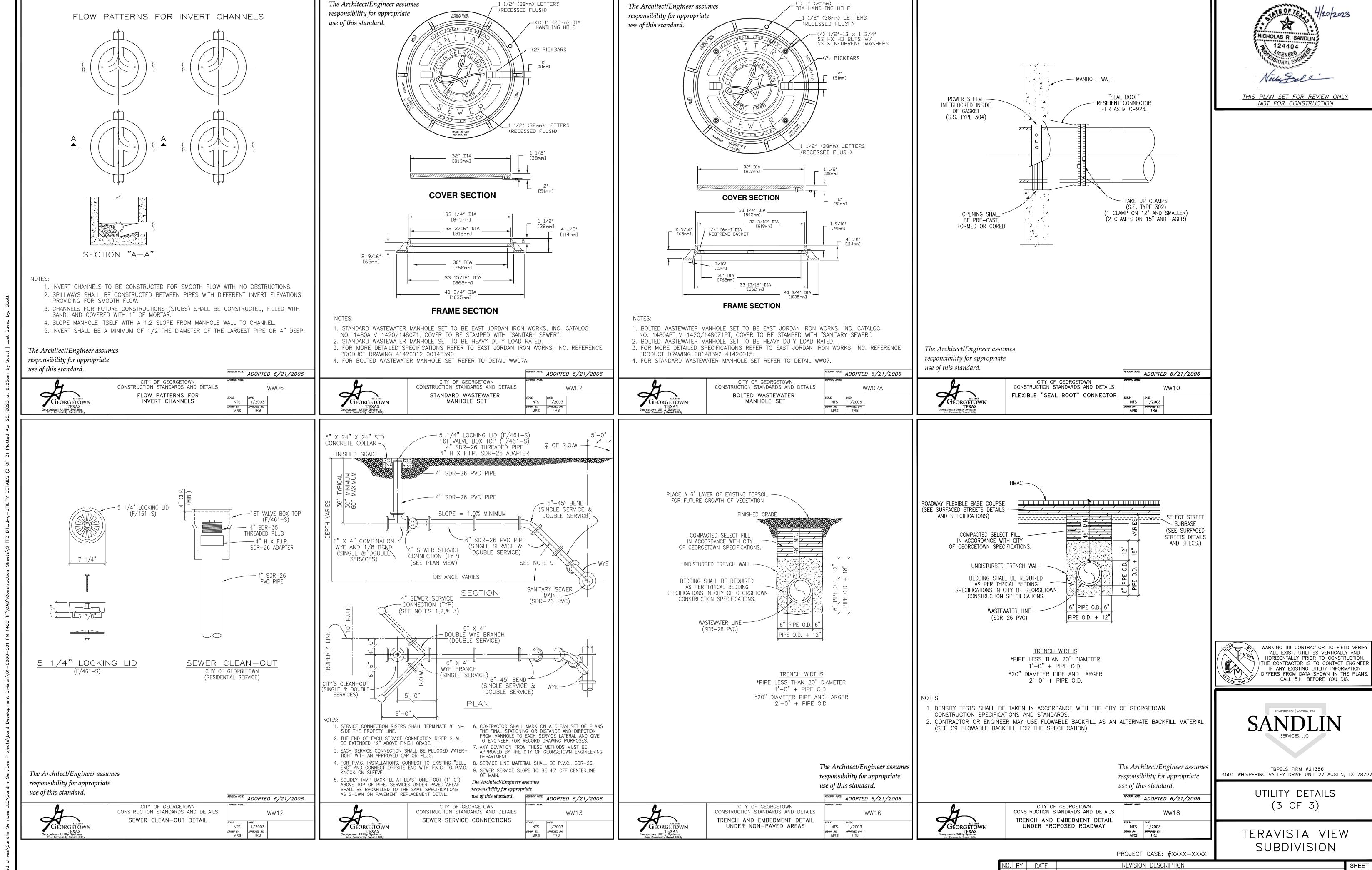
2+50

2+00

1+00

1+50





The Architect/Engineer assumes

_1 1/2" (38mm) LETTERS



Temporary Stormwater Section (TCEQ-0602)

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: NICK SANDLIN, P.E. (SANDLIN SERVICES, LLC)

Date: 4/20/2023
Signature of Customer/Agent:

Nick Substitute of Customer/Agent:

Regulated Entity Name: TERAVISTA VIEW SUBDIVISION

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.

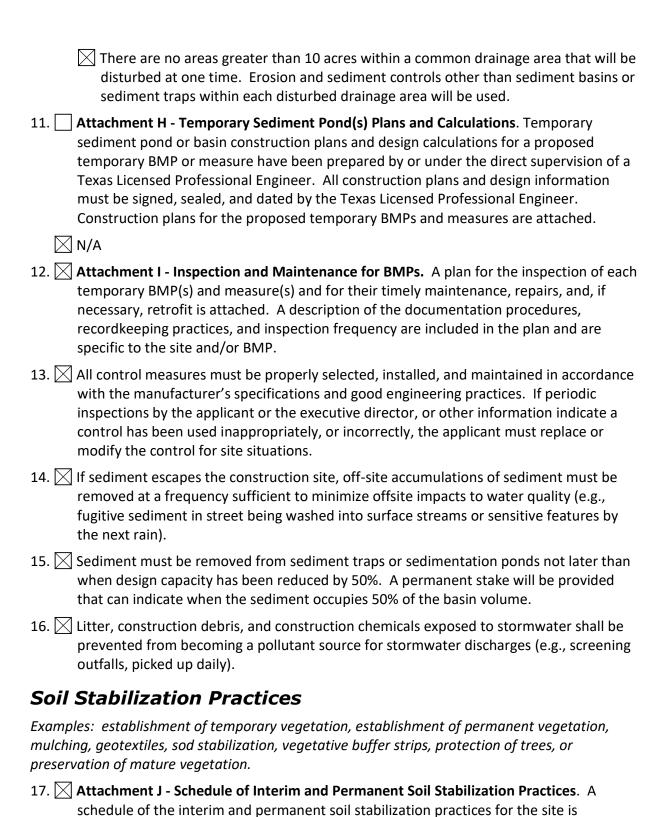
	 Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year. Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
	igotimes 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.
S	equence 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.
5 .	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: South Fork of the San Gabriel River

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.



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

Spill Response Actions

In the event of an accidental spill, immediate action shall be undertaken by the General Contractor to contain and remove the spilled material. Onsite personnel shall be trained to perform and be knowledgeable of the spill response actions. All hazardous materials, including contaminated soil and liquid concrete waste (if applicable), shall be disposed of by the Contractor in the manner specified by Federal, State and Local regulations and by the manufacturer of such products. As soon as possible, the spill shall be reported to the appropriate agencies. As required under the provisions of the Clean Water Act, any spill or discharge entering waters of the United States shall be properly reported. The General Contractor shall prepare a written record of any spill and associated clean-up activities of petroleum products or hazardous materials in excess of 1 gallon or reportable quantities, whichever is less. The General Contractor shall provide notice to the Owner immediately upon identification of a reportable spill.

All spills of petroleum products or hazardous materials in excess of Reportable Quantities as defined by EPA or the State or Local agency regulations, shall be immediately reported within 24 hours to the EPA National Response Center (1-800-424-8802), TCEQ (1-800-832-8224), and local Fire Department (911).

The reportable quantity for hazardous materials can be found in 40 CFR 302:

Reportable Quantities								
Material	Media Released to	Reportable Quantities						
Engine Oil, Fuel, Hydraulic &	Land	25 gallons						
Brake Fluid								
Engine Oil, Fuel, Hydraulic &	Water	Visible sheen						
Brake Fluid								
Antifreeze	Land	100 lbs (13 gal.)						
Battery Acid	Land, Water	100 lbs						
Refrigerant	Air	1 lb						
Gasoline	Air, Land, Water	100 lbs						
Engine Degreasers	Air, Land, Water	100 lbs						

Please visit https://www.tceq.texas.gov/response/spills/spill-rq.html for more information

In order to minimize the potential for a spill of petroleum product or hazardous materials to come in contact with stormwater, the following steps shall be implemented.



- a) All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids paints, paint solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) shall be stored in a secure location, under cover and in appropriate, tightly sealed containers when not in use.
- b) The minimum practical quantity of all such materials shall be kept on the job site and scheduled for delivery as close to the time of use as practical. Post 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.
- c) A spill control and containment kit (containing for example: absorbent material such as kitty litter or sawdust, acid neutralizing agent, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) shall be provided on the construction site and construction employees shall be trained in when and how to use spill containment materials.
- d) The contractor personnel will immediately clean up any oil, fuel or hydraulic fluid if observed being released from equipment or vehicles. Vehicles or equipment will cease operation until required repairs are made to the equipment.
- e) All of the product in a container shall be used before the container is disposed of. All such containers shall be triple rinsed with water prior to disposal. The rinse water used in these containers shall be disposed of in a manner in compliance with State and Federal regulations and shall not be allowed to mix with stormwater discharges.
- f) All products shall be stored in and used from the original container with the original product label.
- g) All products shall be used in strict compliance with instructions on the product label.
- h) The disposal of the excess or used products shall be in strict compliance with instructions on the products label.

Spill Prevention and Control

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 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 wastes 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 runon during rainfall to the extent that it doesn't 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 watercourses. 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 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 staffs 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.

Vehicle and Equipment Maintenance

- 1.) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- 2.) Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
- 3.) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- 4.) Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- 5.) Place drip pans or absorbent materials under paving equipment when not in use.
- 6.) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- 7.) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.



- 8.) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- 9.) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- 1.) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- 2.) Discourage "topping off" of fuel tanks.
- 3.) Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

SPILL REPORT FORM

Notes to General Contractor:

- Control and contain the spill.
- Contact the appropriate regulatory agencies if the spill exceeds the applicable reportable quantity.
- Clean up the spill and dispose of waste according to federal, state and local regulations.
- Complete the Spill Report Form in full for each spill that exceeds the applicable reportable quantity and submit to the Owner.
- Call the Owner.
- Resolve as appropriate and as required by regulatory authorities.



DATE.

SPILL REPORT FORM

PROJECT: PROJECT ADDRESS:		
Spill Reported By:		
Date / Time of Spill:		
Describe spill location and events leading to spill:		
Material Spilled:		
Source of Spill:		
Amount Spilled:		
Amount Spilled to Waterway (Name Waterway):		
Containment or Clean up Action:		
Approximate depth (yards) of soil excavation:		
List injuries or Personal Contamination:		
Action to be taken to prevent future spills:		
Agencies notified of spill:		
Contractor Signature and Printed Name	Date	_

AFTER NOTIFYING GOVERNING AUTHORITIES, IMMEDIATELY COMPLETE THIS FORM AND CONTACT THE OWNER IF THE SPILL EXCEEDS THE REPORTABLE QUANTITY FOR THE GOVERNING AGENCY



Attachment B: Potential Sources of Contamination

Potential Sources of Contamination and Preventive Measures:

Potential Source: Concrete and concrete products used on-site during construction.

Preventive Measures: Concrete washout structure will be used if necessary.

Potential Source: Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle

dripping.

Preventative Measures: Vehicle maintenance will be performed at a local maintenance shop.

Potential Source: Miscellaneous trash and litter from construction workers and material wrappings.

Preventative Measures: Trash containers will be placed throughout the site to encourage proper disposal of trash.

Potential Source: Silt leaving the site.

Preventative Measures: Contractor will install all temporary best management practices prior to start of construction

including the stabilized construction entrance to prevent tracking onto adjoining streets.

Potential Source: Construction debris

Preventative Measures: Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.

Potential Source: Soil and mud from construction vehicle tires as they leave the site.

Preventative Measures: a stabilized construction exit shall be utilized as vehicles leave the site. And soil, mud, etc. carried from the project onto public roads shall be cleaned up within 24 hours.

Potential Source: Sediment from soil, sand, gravel, and excavated materials stockpiled on site.

Preventative Measures: Silt fence shall be installed on the down gradient side of the stockpiled materials. Reinforced rock berms shall be installed at all downstream discharge locations.

Potential Source: Portable toilet spill

Preventative Measures: Toilets on the site will be emptied on a regular basis by the contracted toilet company.



Attachment C: Sequence of Major Activities

The installation of erosion and sedimentation controls shall occur prior to any excavation of materials or major disturbances on the site. The sequence of major construction activities will be as follows. Approximate acreage (AC) expected to be disturbed is listed in parentheses next to each activity.

Intended Schedule or Sequence of Major Activities:

- 1. Submit written notice of construction to TCEQ regional office at least 48 hours prior to the start of any regulated activities. (See Permanent Stormwater Section Attachment F)
- 2. A pre-construction conference prior to commencement of construction. 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. Contractors must follow requirements as outlined in TCEQ General Construction Notes for the Contributing Zone Plan (CZP). CZP Construction Notes are listed in the Construction Plans (Attachment M of the Contributing Zone Plan Application section).
- 4. Prior to beginning any construction activity, all temporary erosion and sedimentation BMPs and control measures must be properly installed and maintained in accordance with the approved plans and manufacturers specifications (7.88 Acres).
- 5. Evaluate temporary erosion control installation. 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. Review construction schedule and the Contributing Zone Plan (CZP) requirements.
- 7. Complete Permanent BMP construction and install landscaping (7.88 Acres).
- 8. Topsoil, Irrigation and Landscaping: Revegetate all disturbed areas according to plan.
- 9. Site cleanup and removal of temporary erosion/sedimentation BMP controls. (7.88 Acres)

Maximum total construction time is not expected to exceed 12 months.



Attachment D: Temporary Best Management Practices and Measures

- 1. There are 0.0 AC of storm water that originate up gradient from the site and flow across the site through an onsite BMP. No upstream stormwater exists.
- 2. Temporary BMPs will be installed prior to soil disturbing construction activity. Silt fencing will be placed along the down-gradient sides of the property and limits of construction to prevent silt from escaping the construction area during permanent BMP construction.
- 3. A gravel construction entrance will be installed on site to reduce vehicle "tracking" onto adjoining streets. A concrete washout pit may be used to collect all excess concrete during construction, if needed.
- 4. Temporary BMPs for this project will protect surface water or groundwater from turbid water, phosphorus, sediment, oil and other contaminants, which may mobilize in stormwater flows by slowing the flow of runoff to allow sediment and suspended solids to settle out of the runoff. Inlet protection will be utilized per the City of Round Rock specifications.
- 5. Practices may also be implemented on site for interim and permanent stabilization. Stabilization practices may include but are not limited to establishment of temporary vegetation; establishment of permanent vegetation; mulching; geotextiles; sod stabilization; vegetative buffer strips; protection of existing trees and vegetation; and other similar measures.
- 6. There are no sensitive features or surface streams within the boundaries of the project that would require temporary BMPs. The temporary onsite BMPs will be used to treat stormwater runoff before it leaves the project and prevent pollutants from entering into surface streams or any sensitive features down gradient of the site.



Attachment E: Request to Temporarily Seal a Feature (NOT APPLICABLE)



Attachment F: Structural Practices

Structural BMPs will be used to limit runoff discharge of pollutants from exposed areas of the site. BMPs will be installed prior to soil disturbing construction activity. Silt fencing will be placed along the down-gradient sides of the property to prevent silt from escaping the construction area. A temporary construction entrance will be placed at the site entry/exit point to reduce tracking onto adjoining streets. A construction staging area will be used onsite to perform all vehicle maintenance and for equipment and material storage. A concrete truck washout pit will be placed on site to provide containment and easier cleanup of waste from concrete operations. The location of all structural temporary BMPs are shown within the Site Plans.

Description of Temporary BMPs

Construction Entrance/Exit:

The purpose of a 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. This practice should be used at all point of construction ingress and egress. 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 where access is not necessary. A rock stabilized construction entrance exists and will be used at all designated access points.

Silt Fence:

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.

Triangular Sediment Filter Dikes

Triangular sediment filter dikes (18"x18"x18" filter material with 6" square folded wire mesh frame) will be installed downgradient of the AST construction area with filter cloth placed over any existing stormwater



collection drains. The dike and filter cloth will be held in place with cloth sandbags. The facility's existing topography will not change as the AST will be placed on existing crushed rock.

Concrete Washout Area

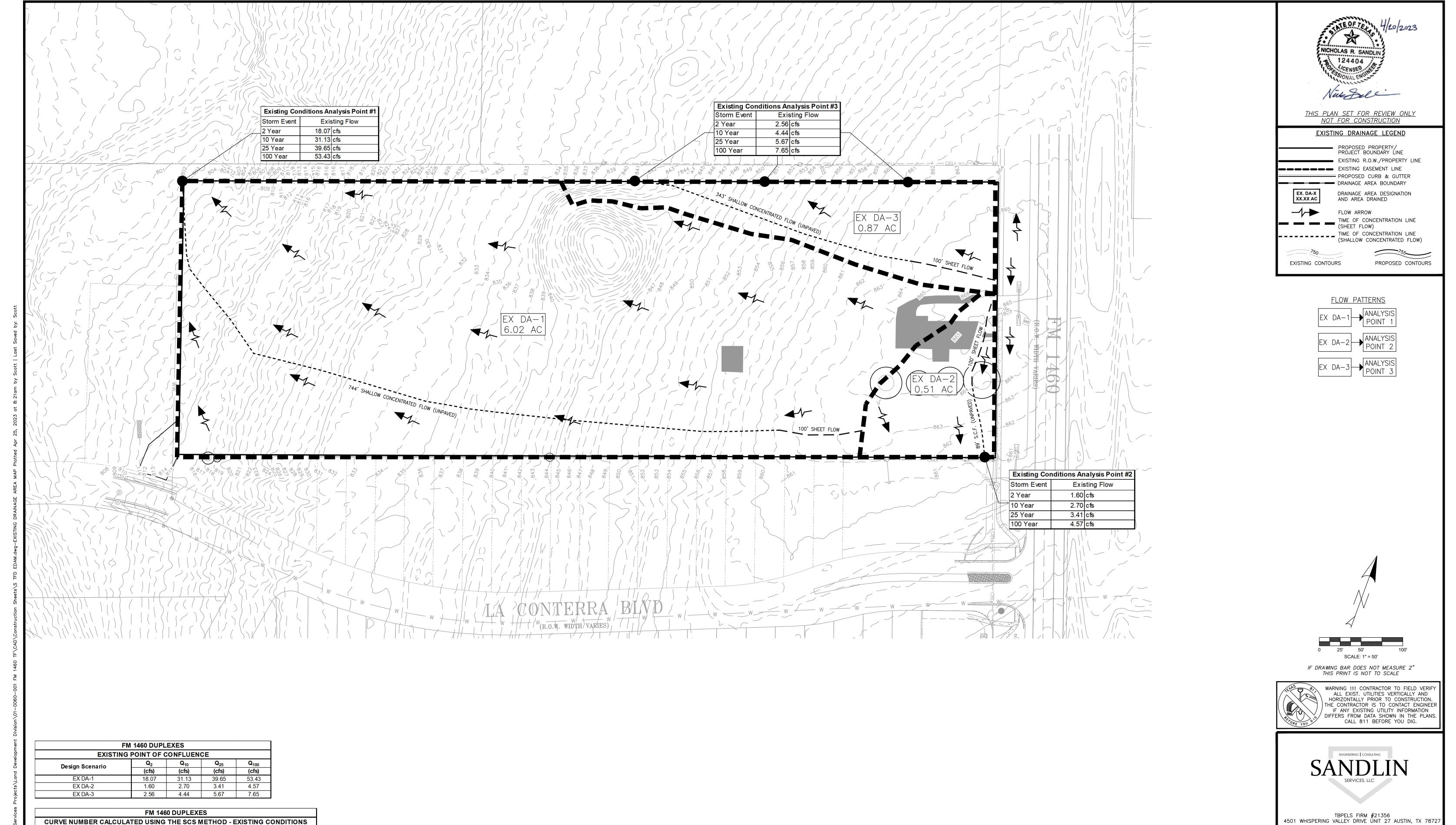
The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

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.



Attachment G: Drainage Area Map



FM 1460 DUPLEXES								
CURVE NUMBER CALC	CURVE NUMBER CALCULATED USING THE SCS METHOD - EXISTING CONDITIONS							
Drainage Basin	Drainage	Drainage	Impervious Area	I.C.				
Diamage Basin	Area (sf)	Area (ac)	(sf)	(%)				
EX DA-1	262,231	6.02	3,509	1.34%				
EX DA-2	22,216	0.51	2,173	9.78%				
EX DA-3	37,897	0.87	0	0.00%				

	FM 1460 DUPLEXES													
	EXISTING "Tc" VALUE CALCULATIONS													
	Sheet Flow Shallow Concentrated Flow (Unpaved)						Unpaved Channel Flow					Total Allowe		
Drainage	Area	Length	Slope	n	Tt	Length	Slope	Tt	Length	V	n	Slope	Tt	Тс
Area	(ac)	(ft)	(ft/ft)		(min)	(ft)	(ft/ft)	(min)	(ft)	(ft/sec)		(ft/ft)	(min)	(min)
EX DA-1	6.02	100	0.030	0.15	8.04	744	0.078	2.75	-	Œ	-	-	0.00	10.79
EX DA-2	0.51	100	0.020	0.15	9.45	89	0.034	0.50	-	<u>=</u>	-	-	0.00	9.95
EX DA-3	0.87	100	0.018	0.15	9.97	343	0.066	1.38		-	-	-	0.00	11.35

PROJECT CASE: #XXXX-XXXX

NO. BY DATE REVISION DESCRIPTION

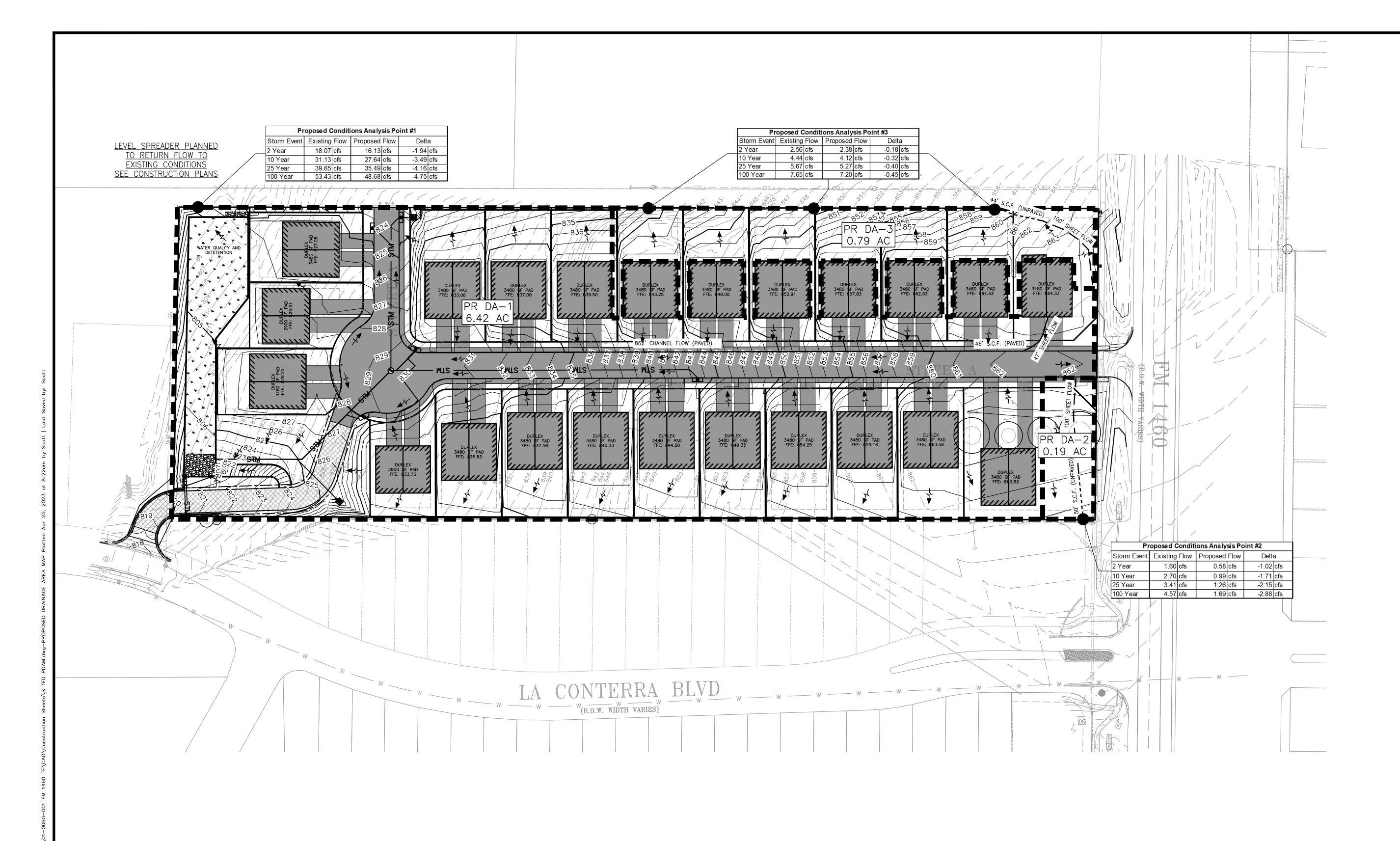
SHEET

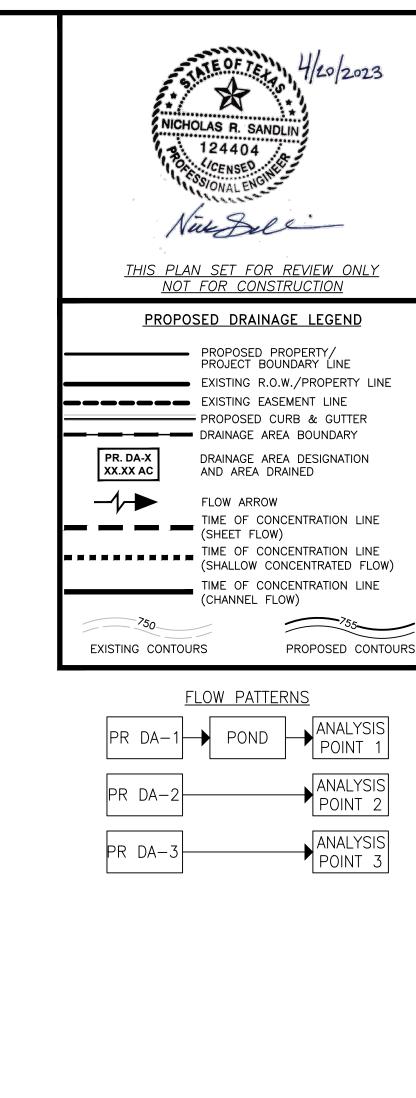
15

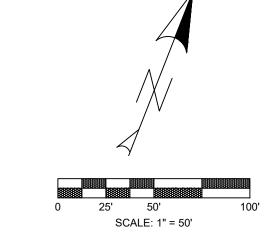
EXISTING DRAINAGE AREA MAP

TERAVISTA VIEW

SUBDIVISION







IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



WARNING !!!! CONTRACTOR TO FIELD VERIFY ALL EXIST. UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO CONTACT ENGINEER IF ANY EXISTING UTILITY INFORMATION
DIFFERS FROM DATA SHOWN IN THE PLANS.
CALL 811 BEFORE YOU DIG.

ANALYSIS POINT 2



TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

PROPOSED DRAINAGE AREA MAP

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET 16

FM 1460 DUPLEXES								
DEVELOPED POINT OF CONFLUENCE								
Design Scenario	Q_2	Q ₁₀	Q ₂₅	Q ₁₀₀				
Design ocenano	(cfs)	(cfs)	(cfs)	(cfs)				
POND	16.29	27.79	35.63	48.79				
PR DA-1	29.41	46.14	57.05	75.05				
PR DA-2	0.58	0.99	1.26	1.69				
PR DA-3	2.38	4.12	5.27	7.20				

FM 1460 DUPLEXES								
CURVE NUMBER CALCULATED USING THE SCS METHOD - DEVELOPED CONDITION								
Drainage Basin	Drainage	Drainage	Impervious Area	I.C.				
Diallage Basili	Area (sf)	Area (ac)	(sf)	(%)				
PR DA-1	279,655	6.42	144,275	51.59%				
PR DA-2	8,276	0.19	221	2.67%				
PR DA-3	34,412	0.79	0	0.00%				

	FM 1460 DUPLEXES													
	DEVELOPED "Tc" VALUE CALCULATIONS													
			Sh	eet Flow		Shallo	w Concentrate	ed Flow	Unpaved Channel Flow				Total Allowed	
Drainage	Area	Length	Slope	n	Tt	Length	Slope	Tt	Length	V	n	Slope	Tt	Tc
Area	(ac)	(ft)	(ft/ft)		(min)	(ft)	(ft/ft)	(min)	(ft)	(ft/sec)		(ft/ft)	(min)	(min)
PR DA-1	6.42 Ac.	47	0.019	0.011	0.66	46	0.013	0.33	857	9.28	0.04	0.053	1.54	5.00
PR DA-2	0.19 Ac.	100	0.020	0.15	9.45	50	0.040	0.26	-		-	-	0.00	9.71
PR DA-3	0.79 Ac.	100	0.030	0.15	8.04	44	0.050	0.20	-	1-	=	-	0.00	8.24



Attachment H: Temporary Sediment Pond(s) Plans and Calculations (NOT APPLICABLE)



Attachment I: Inspection and Maintenance for BMPs

Inspection and Maintenance Guidelines for Construction BMPs

Silt Fence – Section 1.4.3

- (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.

Rock Berms – Section 1.4.5

- (1) Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.
- (2) Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
- (3) Repair any loose wire sheathing.
- (4) The berm should be reshaped as needed during inspection.
- (5) The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
- (6) The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

<u>Inlets – Section 1.4.11</u>

- (1) Inspection should be made weekly and after each rainfall. Repair or replacement should be made promptly as needed by the contractor.
- (2) Remove sediment when buildup reaches a depth of 3 inches. Removed sediment should be deposited in a suitable area and in such a manner that it will not erode.
- (3) Check placement of device to prevent gaps between device and curb.
- (4) Inspect filter fabric and patch or replace if torn or missing.



(5) Structures should be removed and the area stabilized only after the remaining drainage area has been properly stabilized.

Temporary Construction Entrance/Exit – Section 1.4.2

- (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.

Personnel Responsible for Inspections

The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. Documentation of the inspector's qualifications is to be included in the attached Inspector Qualifications Log.

<u>Inspection Schedule</u>

The primary operator is required to choose one of the two inspections listed below.

□ Option 1: Once every seven calendar days. If this alternative schedule is developed, then the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

□ Option 2: Once every 14 calendar days and within 24 hours of the end of a storm event of two inches or greater.

The inspections may occur on either schedule provided that documentation reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented (e.g., end of "dry" season and beginning of "wet" season).

If option 2 is the chosen frequency of inspections a rain gauge must be properly maintained on site or the storm event information from a weather station that is representative of the site location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, proper documentation of the total rainfall measured for that day must be recorded.

Personnel provided by the permittee must inspect:

• Inspect and maintain the silt fence, stabilized construction entrance, concrete washout area, inlet protection,



- disturbed areas of the construction site that have not been finally stabilized,
- areas used for storage of materials that are exposed to precipitation,
- structural controls (for evidence of, or the potential for, pollutants entering the drainage system),
- sediment and erosion control measures identified in the SWP3 (to ensure they are operating correctly), and
- locations where vehicles enter or exit the site (for evidence of off-site sediment tracking).

Reductions in Inspection Frequency

Where sites have been finally or temporarily stabilized or where runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists), inspections must be conducted at least once every month. In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.5 inches or greater. A record of the total rainfall measured, as well as the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections in the attached Rain Gauge Log.

In the event of flooding or other uncontrollable situations which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable.

Inspection Report Forms

Use the Inspection Report Forms given as a checklist to ensure that all required areas of the construction site are addressed. There is space to document the inspector's name as well as when the inspections regularly take place. The tables will document that the required area was inspected. (If there were any areas of concern, briefly describe them in this space with a more detailed description in the narrative section. Use the last table to document any discharges found during the inspections).

Describe how effective the installed BMPs are performing. Describe any BMP failures that were noted during the investigation and describe any maintenance required due to the failure. If new BMPs are needed as the construction site changes, the inspector can use the space at the bottom of the section to list BMPs to be implemented before the next inspection.

Describe the inspector's qualifications, how the inspection was conducted, and describe any areas of non-compliance in detail. If an inspection report does not identify any incidents of non-compliance, then it must contain a certifying signature stating that the facility or site is in compliance. The report must be signed by a person and in a manner required by 30 TAC 305.128. There is space at the end of the form to allow for this certifying signature.

Whenever an inspection shows that BMP modifications are needed to better control pollutants in runoff, the changes must be completed within seven calendar days following the inspection. If existing BMPs are modified or if additional BMPs are needed, you must describe your implementation schedule, and wherever possible, make the required BMP changes before the next storm event.

The Inspection Report Form functions as the required report and must be signed in accordance with TCEQ rules at 30 TAC 305.128.



Corrective Action

Personnel Responsible for Corrective Actions

Both Primary and Secondary Operators are responsible for maintaining all necessary Corrective Actions. If an individual is specifically identified as the responsible party for modifying the contact information for that individual should be documented in the attached Inspector Qualifications Log.

Corrective Action Forms

The Temporary BMPs must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the attached forms and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable. Actions taken as a result of inspections must be properly documented by completing the corrective action forms given.



Inspector Qualifications Log*

Inspector Name:
Qualifications (Check as appropriate and provide description):
☐ Training Course
□ Supervised Experience
□ Other
Inspector Name:Qualifications (Check as appropriate and provide description):
Qualifications (Check as appropriate and provide description):
☐ Training Course
□ Supervised Experience
□ Other
Inspector Name:
Qualifications (Check as appropriate and provide description):
Training Course
□ Supervised Experience
□ Other
Inspector Name:
Qualifications (Check as appropriate and provide description):
☐ Training Course
□ Supervised Experience
□ Other
Inspector Name:
☐ Training Course
□ Supervised Experience
□ Other
Inspector Name:
Qualifications (Check as appropriate and provide description):
☐ Training Course
□ Supervised Experience
□ Other

*The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. The contractor is to provide an inspector with a CPESC, CESSWI, or CISEC certification.



Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
		Timenament	[14ame(s) and 11de]

Construction Activity Sequence Log*

Name of Operator	Projected Dates Month/Year	Activity Disturbing Soil clearing, excavation, etc.	Location on-site where activity will be conducted	Acreage being disturbed

^{*}Construction activity sequences for linear projects may be conducted on a rolling basis. As a result, construction activities may be at different stages at different locations in the project area. The Contractor is required to complete and update the schedule and adjust as necessary.

Stormwater Control Installation and Removal Log

Stormwater Control	Location On-Site	Installation Date	Removal Date

Stabilization Activities Log*

Date Activity Initiated	Description of Activity	Description of Stabilization Measure and Location	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated

^{*}Stabilization and erosion control practices may include, but are not limited to, establishing temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, and protecting existing trees and vegetation. List practices used where they are located, when they will be implemented, and whether they are temporary (interim) or permanent.

Inspection Frequency Log

Date	Frequency



Rain Gauge Log

Date	Location of Rain Gauge	Gauge Reading

General Information					
Name of Project	Tracking Number	Inspection Date			
Inspector Name, Title & Contact		·			
Information					
Present Phase of Construction					
Inspection Location (if multiple					
inspections are required, specify location					
where this inspection is being conducted)					
Inspection Frequency					
Standard Frequency: Week	dy DEvery 14 days and within 24 hours of a 0.25" rain				
	y 7 days and within 24 hours of a 0.25" rain				
Reduced Frequency:					
☐ Once per month (for s	stabilized areas)				
☐ Once per month and v	within 24 hours of a 0.25" rain (for arid, semi-arid, or drought	t-stricken areas during seasonally dry periods or during			
drought)		0 , , , 1			
0 ,	Frozen conditions where earth-disturbing activities are being c	conducted)			
Was this inspection triggered by a 0.25"					
If yes, how did you determine whether a					
☐ Rain gauge on site ☐Weathe	er station representative of site. Specify weather station source	2.			
Total rainfall amount that triggered the inspection (in inches):					
Unsafe Conditions for Inspection					
Did you determine that any por	tion of your site was unsafe for inspection? \Box Yes \Box	lNo			
If "yes," complete the following	:				
	hat prevented you from conducting the inspection in this loca	ation:			
o Location(s) where conditions were found:					



Condition and Effectiveness of Erosion and Sediment (E&S) Controls				
Type / Location of E&S Control	Repairs or Other Maintenance Needed?	Corrective Action Required?	Date on Which Maintenance of Corrective Action First Identified?	Notes
1.	□ Yes □ No	□ Yes □ No		
2.	□ Yes □ No	□ Yes □ No		
3.	□ Yes □ No	□ Yes □ No		
4.	□ Yes □ No	□ Yes □ No		
5.	□ Yes □ No	□ Yes □ No		
6.	□ Yes □ No	□ Yes □ No		
7.	□ Yes □ No	□ Yes □ No		
8.	□ Yes □ No	□ Yes □ No		
9.	□ Yes □ No	□ Yes □ No		



Condition and Effectiveness of Pollution Prevention (P2) Practices				
Type / Location of P ₂ Practices	Repairs or Other Maintenance Needed?	Corrective Action Required?	Identification Date	Notes
1.	□ Yes □ No	□ Yes □ No		
2.	□ Yes □ No	□ Yes □ No		
3.	□ Yes □ No	□ Yes □ No		
4.	□ Yes □ No	□ Yes □ No		
5.	□ Yes □ No	□ Yes □ No		
6.	□ Yes □ No	□ Yes □ No		
7.	□ Yes □ No	□ Yes □ No		
8.	□ Yes □ No	□ Yes □ No		
9.	□ Yes □ No	□ Yes □ No		



Stabilization of Exposed Soil				
Stabilization Area	Stabilization Method	Have you Initiated Stabilization?	Notes	
1.		□ YES □ NO		
		If yes, provide date:		
2.		□ YES □ NO		
		If yes, provide date:		
3.		□ YES □ NO		
		If yes, provide date:		
4.		□ YES □ NO		
		If yes, provide date:		
	Description	of Discharges		
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? YES NO If "YES," provide the following information for each point of discharge:				
Discharge Locations	Observations			
1.	Describe the discharge:			
	At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and /			
	or sediment accumulation that can be attributed to your discharge? YES. NO			
	If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:			
2.	Describe the discharge:			
At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and				
	or sediment accumulation that can be attributed to your discharge? \square YES. \square NO			
	If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance,			
	or corrective action is needed to resolve the issue:			
3.	Describe the discharge:			
	At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and /			
	or sediment accumulation that can be attributed to your discharge? YES. NO			
	If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance,			
	or corrective action is needed to resolve the issue:			



Contractor or Subcontractor Certification and Signature		
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."		
Signature of Contractor or Subcontractor: Date:		
Printed Name and Affiliation:		
Certification and Signature by Pe	ermittee	
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."		
Signature of Permittee or "Duly Authorized Representative": Date:		
Printed Name and Affiliation:		



Section A – Initial Report				
(Complete this section within 24 hours of discovering the condition that triggered corrective action.)				
Name of Project:	Tracking Nu	mber:	Today's Date	
Date Problem First Discovered:		Time Probler	n First Discovered:	
Name of Individual Completing this Form:		Contact Info		
What site conditions triggered the requirement to conduct corrective act	ion:	Contact Info	illiation.	
☐ A required stormwater control was never installed, was installed inco		ordance with the requireme	ents in Part 2 and/or	Part 3
☐ The stormwater controls that have been installed and maintained are				
☐ A prohibited discharge has occurred or is occurring	not effective enough	r for the discharge to meet	appreasie water quar	ity startards
In promoted discharge has occurred of is occurring				
Provide a description of the problem:				
Deadline for completing corrective action (Enter date that is either: (1) r	no more than 7 calend	dar days after the date you	discovered the proble	em, or (2) if it is infeasible to complete work
within the first 7 days, enter the date that is as soon as practicable follow	ring the 7th day):			
If your estimated date of completion falls after the 7-day deadline, explain	n (1) why you believ	e it is infeasible to complet	e work within 7 days	and (2) why the date you have established
for making the new or modified stormwater control operational is the so			e work within / days,	, and (2) why the date you have established
	P-44-1-4-1-4-1-4-1-4-1-4-1-4-1-4-1-4-1-4			
		- Corrective Action Pr		
(Complete this section no late	r than 7 calendar d	lays after discovering the	condition that trig	gered corrective action.)
Section B.1 – Why the Problem Occurred				
Cause(s) of Problem (Add an additional sheet if necessary)		How This Was Determin	ed and the Date You	Determined the Cause
1.		1.		
2.		2.		
Section B.2 – Stormwater Control Modifications to be Imple	emented to Correc	ct the Problem		
List of Stormwater control Modification(s) Needed to Correct	Completion Date	SWPPP Update	Notes	
Problem (Add an additional sheet if necessary)		Necessary?		
1.		☐ Yes ☐ No		
		Date:		
2.		☐ Yes ☐ No		
		Date:		



Section A – Initial Report (Complete this section within 24 hours of discovering the condition that triggered corrective action.)				
Name of Project:	liours of discover	Tracking No		Today's Date
Date Problem First Discovered:		Time Proble	em First Discovered:	
Name of Individual Completing this Form:		Contact Info	ormation:	
What site conditions triggered the requirement to conduct corrective ac	tion:			
☐ A required stormwater control was never installed, was installed inco	rrectly, or not in acco	ordance with the requirem	ents in Part 2 and/or 1	Part 3
☐ The stormwater controls that have been installed and maintained are	not effective enough	for the discharge to meet	t applicable water qual	ity standards
☐ A prohibited discharge has occurred or is occurring	_	-		
Provide a description of the problem: Deadline for completing corrective action (Enter date that is either: (1)	no more than 7 calen	dar days after the date you	u discovered the proble	em or (2) if it is infeasible to complete work
within the first 7 days, enter the date that is as soon as practicable follow	ving the 7th day):	dar days after the date you	u discovered the probl	em, or (2) if it is inteasible to complete work
within the first + days, effect the date that is as soon as praedicable follows	ing the ramij.			
	If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:			
	Section B.	- Corrective Action P	rooress	
(Complete this section no late				goered corrective action)
Section B.1 – Why the Problem Occurred	er than / earthear t	ays arter thocovering tr	ie contanton that the	sered corrective actions
Cause(s) of Problem (Add an additional sheet if necessary)		How This Was Determ	ined and the Date You	Determined the Cause
1.		1.		
2.		2.		
Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem				
List of Stormwater control Modification(s) Needed to Correct	Completion Date	SWPPP Update	Notes	
Problem (Add an additional sheet if necessary)		Necessary?		
1.		☐ Yes ☐ No Date:		
2.		☐ Yes ☐ No		
		Date:		



Contractor or Subcontractor Certification and Signature		
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."		
Signature of Contractor or Subcontractor: Date:		
Printed Name and Affiliation:		
Certification and Signature by Permittee		
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."		
Signature of Permittee or "Duly Authorized Representative": Date:		
Printed Name and Affiliation:		



Temporary Stormwater Section TCEQ-0602)

Attachment J: Schedule of Interim and Permanent Soil Stabilization Practices

Interim V egetative Stabilization

Interim soil stabilization will not be required.

Permanent Vegetative Stabilization

Construction practices shall disturb the minimal amount of existing ground cover as required for land clearing, grading, and construction activity for the shortest amount of time possible to minimize the potential of erosion and sedimentation from the site. Existing vegetation shall be maintained and left in place until it is necessary to disturb construction activity. For this project, the following stabilization practices will be implemented:

- 1. Hydraulic Mulch and Seeding: Disturbed areas subject to erosion shall be stabilized with hydraulic mulch and/or seeded and watered to provide interim stabilization.
- 2. Sodding and Wood Mulch: As per the project landscaping plan, sodding and wood mulch will be applied to landscaped areas to provide permanent stabilization prior to project completion.

Records of the following shall be maintained:

- 1. The dates when major grading activities occur,
- 2. The dates when construction activities temporarily or permanently cease on a portion of the site, and
- 3. The dates when stabilization measures are initiated.

Stabilization measures must be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, and except as provided in the following, must be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased:

TERAVISTA VIEW SUBDIVISION WATER POLLUTION ABATEMENT PLAN



Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practical.

Where construction activity on a portion of the site is temporarily ceased and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site.

In arid areas (areas with an average rainfall of 0-10 inches), semiarid areas (areas with an average annual rainfall of 10 to 20 inches), and areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practical.

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: NICK SANDLIN, P.E. (SANDLIN SERVICES, LLC) Date: 4/20/2023 Signature of Customer/Agent Regulated Entity Name: TERAVISTA VIEW SUBDIVISION 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. l In/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.

1/20/2023

	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 multifamily 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

	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
12.	N/A Attachment H - Pilot-Scale Field Testing Plan. Pilot studies for BMPs that are not
12.	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
Res po	N/A
Responser	N/A ponsibility for Maintenance of Permanent BMP(s) nsibility for maintenance of best management practices and measures after
Responser	ponsibility for Maintenance of Permanent BMP(s) Insibility for maintenance of best management practices and measures after fuction is complete. 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
Respondent 14.	ponsibility for Maintenance of Permanent BMP(s) insibility for maintenance of best management practices and measures after action is complete. 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.



Attachment A: 20% or Less Impervious Cover Waiver (if requested for multifamily, school, or small business site)



Attachment B: BMPs for Upgradient Stormwater

Per the Construction Plans and Drainage study, no upgradient stormwater from our site exists.



Attachment C: BMPs for On-Site Stormwater

The Commercial project will increase impervious cover (IC) and the volume of potential on-site stormwater. The proposed water quality and detention pond BMP is designed to capture and mitigate potential onsite stormwater flows.

In developed conditions, stormwater runoff from a 6.42 AC drainage area will be routed through a subsurface pipe network to the proposed detention facility on the west end of the site. The detention pond will treat runoff from the site for water quality in accordance with design criteria provided by the City of Georgetown Drainage Criteria Manual. All water quality calculations are shown in the Subdivision Construction Plans.



Attachment D: BMPs for Surface Streams

There are no existing surface streams on site.



Attachment E:
Request to Seal Features (if sealing a feature)
(NOT APPLICABLE)



Attachment F: Construction Plans

(806)679 - 7303CONTACT: NICHOLAS SANDLIN, P.E. www.sandlinservices.com

ARCHITECT: LAND SURVEYOR:

QUICK, INC 1430 N. ROBERTSON ROAD SALADO, TX 76571 512-915-4950

MCGREGOR MURPHY ARCHITECTURE 310 WHITEWING LN MURPHY, TEXAS 75094 (817)454-2384 CONTACT: JENNA MCGREGOR

www.mcmarc.com

ELECTRIC PROVIDER: WATER AND WASTEWATER: GEORGETOWN UTILITY SYSTEMS 350 TEXAS AVENUE 300 INDUSTRIAL AVE.

GEORGETOWN, TX 78626 ROUND ROCK, TX 512-244-5693 512 930 3640 CONTACT: DAVID MUNK www.oncor.com www.gus.georgetown.org

UTILITY	WEBSITE	TELEPHONE
Dig Tess/One CallTxDOTAT&TAtmos EnergySpectrum	call811.comtxdot.govatt.comatmosenergy.comspectrum.com	811 512.930.540 512.259.777 888.286.670 855.388.743

GEORGETOWN NOTES:

- 1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER, AND SUCCESSORS TO THE CURRENT PROPERTY OWNER, TO ENSURE THE SUBJECT PROPERTY AND ANY IMPROVEMENTS ARE MAINTAINED IN CONFORMANCE WITH THIS SITE DEVELOPMENT PLAN.
- 2. THIS DEVELOPMENT SHALL COMPLY WITH ALL STANDARDS OF THE UNIFIED DEVELOPMENT CODE (UDC), THE CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL, THE DEVELOPMENT MANUAL AND ALL OTHER APPLICABLE CITY STANDARDS.
- 3. THIS SITE DEVELOPMENT SHALL MEET THE UDC STORM WATER REQUIREMENTS
- 4. ALL SIGNAGE REQUIRES A SEPARATE APPLICATION AND APPROVAL FROM THE INSPECTION SERVICES DEPARTMENT. NO SIGNAGE IS APPROVED WITH THE SITE DEVELOPMENT PLAN
- 5. SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH THE UDC
- 6. DRIVEWAYS WILL REQUIRE APPROVAL BY THE DEVELOPMENT ENGINEER OF THE CITY OF GEORGETOWN.
- 7. OUTDOOR LIGHTING SHALL COMPLY WITH SECTION 7.04 OF THE UDC.
- 8. SCREENING OF MECHANICAL EQUIPMENT DUMPSTER AND PARKING SHALL COMPLY WITH CHAPTER 8 OF THE UDC. THE SCREENING IS SHOWN ON THE LANDSCAPE AND ARCHITECTURAL DRAWINGS.
- 9. THE COMPANION LANDSCAPE PLAN HAS BEEN DESIGNED AND PLANT MATERIALS SHALL BE INSTALLED TO MEET ALL REQUIREMENTS OF THE UDC.
- 10. ALL MAINTENANCE OF REQUIRED LANDSCAPE PLAN SHALL COMPLY WITH THE MAINTENANCE STANDARDS OF CHAPTER 8 OF THE UDC.
- 11. A SEPARATE IRRIGATION PLAN SHALL BE REQUIRED AT THE TIME OF BUILDING PERMIT APPLICATION.
- 12. THERE ARE NO HERITAGE OR PROTECTED TREES ONSITE.
- 13. THE CONSTRUCTION PORTION OF THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
- 14. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT
- 15. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BY RELOCATED, IT SHALL BE RE-INSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.
- 16. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.
- 17. SCREENING AND LOCATION OF OUTDOOR STORAGE SHALL COMPLY WITH SECTION 5.09 OF THE UDC.
- 18. THE PROPERTY SUBJECT TO THIS APPLICATION IS SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN.
- 19. A GEOLOGIC ASSESSMENT, IN ACCORDANCE WITH THE CITY OF GEORGETOWN WATER REGULATIONS, WAS COMPLETED ON 3/2/2022 BY RANGER ENVIRONMENTAL SERVICES. ANY SPRINGS AND STREAMS AS IDENTIFIED IN THE GEOLOGIC ASSESSMENT ARE SHOWN HEREIN.

- 1. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN REVIEWING THESE PLANS, THE CITY MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.
- 2. THIS SITE IS LOCATED WITHIN THE CITY OF GEORGETOWN (FULL PURPOSE).
- 3. THIS SITE LIES OVER THE EDWARDS AQUIFER TRANSITION AND RECHARGE ZONE. A TCEQ CZP IS REQUIRED.
- 4. RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION, AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.
- 5. ALL POTABLE WATER SYSTEM COMPONENTS INSTALLED AFTER JANUARY 4, 2014, SHALL BE ESSENTIALLY "LEAD FREE" ACCORDING TO THE US SAFE DRINKING WATER ACT. EXAMPLES ARE VALVES (CORPORATION STOP, CURB STOP, AND PRESSURE REDUCING), NIPPLES, BUSHINGS, PIPE, FITTINGS AND BACKFLOW PREVENTERS. FIRE HYDRANTS, TAPPING SADDLES AND 2 INCH AND LARGER GATE VALVES ARE THE ONLY COMPONENTS EXEMPT FROM THIS REQUIREMENT. COMPONENTS THAT ARE NOT CLEARLY IDENTIFIED BY THE MANUFACTURER AS MEETING THIS REQUIREMENT EITHER BY MARKINGS ON THE COMPONENT OR ON THE PACKAGING SHALL NOT BE INSTALLED.
- 6. ACCORDING TO THE NATIONAL FLOOD INSURANCE RATE MAP COMMUNITY PANEL NO 48491C0485F, DATED 12/20/2019, THIS TRACT LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE OF THE 500 YEAR FLOODPLAIN.
- 7. THE CONTRACTOR OR SURVEYOR WILL OBTAIN A DIGITAL COPY OF THE CAD FILES THAT REPRESENT THESE IMPROVEMENTS; SANDLIN SERVICES, LLC AND IT'S ASSOCIATES TAKE NO RESPONSIBILITY FOR THE LOCATION OF THESE IMPROVEMENTS IN ANY COORDINATE SYSTEM. DIGITAL FILES USED TO PRODUCE THESE PLANS WERE PARTIALLY CREATED BY PARTIES OTHER THAN SANDLIN SERVICES, LLC AND ARE NOT INTENDED FOR USE IN CONSTRUCTION STAKING. VERTICAL AND HORIZONTAL DATA SHALL BE INDEPENDENTLY VERIFIED BY CONTRACTOR'S R.P.L.S.
- 8. SANDLIN SERVICES, LLC HAS ENDEAVORED TO DESIGN THESE PLANS COMPLIANT WITH ADA/TDLR AND OTHER ACCESSIBILITY REQUIREMENTS. HOWEVER, THE CONTRACTOR SHALL NOT BE RELIEVED OF ANY RESPONSIBILITY FOR CONSTRUCTING THESE IMPROVEMENTS COMPLIANT WITH ALL APPLICABLE ACCESSIBILITY STANDARDS. IF THE CONTRACTOR NOTICES ANY DISCREPANCIES BETWEEN THESE PLANS AND ACCESSIBILITY LAWS/RULES, HE IS TO STOP WORK IN THE AREA OF CONFLICT AND NOTIFY THE ENGINEER IMMEDIATELY FOR A RESOLUTION AND/OR REVISION TO THESE PLANS. SANDLIN SERVICES, LLC SHALL NOT BE HELD RESPONSIBLE FOR CONSTRUCTING THIS SITE COMPLIANT WITH ACCESSIBILITY LAWS/RULES REGARDLESS OF WHAT IS SHOWN IN THESE PLANS.

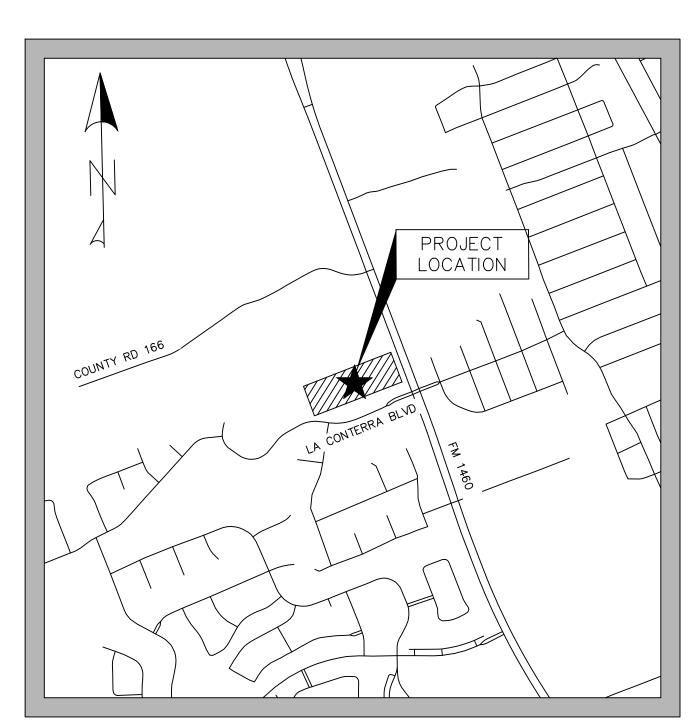
CORRECTIONS RECORD

NO.	DESCRIPTION	REVISE (R) ADD (D) VOID (V) SHEET NO.'s	TOTAL # SHEETS IN PLAN SET	NET CHANGE IMP. COVER (sq.ft.)	TOTAL SITE IMP. COVER (sq.ft.)/%	APPROVAL/ DATE	DATE IMAGED

SUBDIVISION CONSTRUCTION PLANS

ADDRESS: 2530 FM 1460 GEORGETOWN, TEXAS 78626

2023-XX-SDP



PROJECT LOCATION MAP

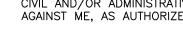
SITE PLAN/DEVELOPMENT PERMIT NUMBER AND DIGITAL APPROVAL STAMP

*APPROVAL OF THESE PLANS BY THE CITY OF GEORGETOWN INDICATES COMPLIANCE WITH APPLICABLE CITY REGULATIONS ONLY. APPROVAL BY OTHER GOVERNMENT ENTITIES MAY BE REQUIRED PRIOR TO THE START OF CONSTRUCTION. THE APPLICANT IS RESPONSIBLE FOR DETERMINING WHAT ADDITIONAL APPROVALS MAY BE NECESSARY.



SUBMITTED BY:

I, NICHOLAS R. SANDLIN, PE #124404, DO HEREBY CERTIFY THAT THE ENGINEERING WORK BEING SUBMITTED HEREIN COMPLIES WILL ALL THE PROVISIONS OF THE TEXAS ENGINEERING PRACTICE ACT, INCLUDING 131.52 (E). I HEREBY ACKNOWLEDGE THAT ANY MISRÉPRESENTATION REGARDING THIS CERTIFICATION CONSTITUTES A VIOLATION C THE ACT, AND MAY RESULT IN CRIMINAL, CIVIL AND/OR ADMINISTRATIVE PENALTIES AGAINST ME, AS AUTHORIZED BY THE ACT.



BENCHMARK NOTE:

ALL ELEVATIONS SHOWN HEREON ARE BASED ON THE FOLLOWING BENCHMARKS AND INFORMATION:

	Sheet List Table
Sheet	Sheet Title
Number_	
	COVER SHEET
2	GENERAL NOTES (1 OF 2)
3	GENERAL NOTES (2 OF 2)
4	PRELIMINARY PLAT TREE PRESERVATION, MITIGATION, AND DEMOLITION
5	PLAN
6	EROSION CONTROL AND CRZ PROTECTION PLAN
7	STREET A (1+00 TO 5+00) & PRIVATE FIRE LANE
8	STREET A (5+00 TO 9+00)
9	STREET A (7+50 TO END)
10	STREET A (NORTH, 1+00 TO END)
11	GRADING PLAN (1 OF 2)
12	GRADING PLAN (2 OF 2)
13	STRUCTURAL WALL PLAN
14	TXDOT DRIVEWAY PLAN
15	EXISTING DRAINAGE AREA MAP
16	PROPOSED DRAINAGE AREA MAP
17	SUB DRAINAGE AREA MAP
18	OVERALL STORM SEWER PLAN
19	STORM DRAIN A (1+00 TO END)
20	STORM DRAIN A LATERALS
21	STORM DRAIN B (1+00 TO END)
22	STORM DRAIN C (1+00 TO END)
23	WATER QUALITY & DETENTION POND PLAN (1 OF 2)
24	WATER QUALITY & DETENTION POND PLAN (2 OF 2)
25	WATER QUALITY CALCULATIONS
26	WATER QUALITY DETAILS
27	WATER DISTRIBUTION PLAN
28	WATER LINE A (1+00 TO 7+00)
29	WASTEWATER LINE A (1+00 TO 7+00)
30	WASTEWATER LINE A (7+00 TO END)
31	WASTEWATER LINE B (1+00 TO END)
32	TRAFFIC CONTROL PLAN
33	TRAFFIC CONTROL DETAILS
34	EROSION CONTROL DETAILS (1 OF 2)
35	EROSION CONTROL DETAILS (2 OF 2)
36	CONSTRUCTION DETAILS (1 OF 4)
37	CONSTRUCTION DETAILS (2 OF 4)
38	CONSTRUCTION DETAILS (3 OF 4)
39	CONSTRUCTION DETAILS (4 OF 4)
40	UTILITY DETAILS (1 OF 3)
41	UTILITY DETAILS (2 OF 3)
42	UTILITY DETAILS (3 OF 3)



<u>THIS PLAN SET FOR REVIEW ONLY</u> NOT FOR CONSTRUCTION

CONTRACTOR NOTES:

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE, HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR DELIVERING THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND

CONTRACTOR IS TO CONTACT ENGINEER AND OWNER PRIOR TO CONSTRUCTING ANY ITEMS THAT REQUIRE A CONTRACT CHANGE ORDER, THE ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR INFRASTRUCTURE PLACED BASED ON ASSUMPTIONS AND THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY RELOCATIONS.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM 1-800-245-4545, OR THE OWNER OF EACH INDIVIDUAL UTILITY. FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

ENVIRONMENTAL INSPECTION HAS THE AUTHORITY TO MODIFY/CHANGE EROSION AND SEDIMENTATION CONTROLS TO KEÉP THE PROJECT IN COMPLIANCE.

DATE OF SUBMITTAL: 4/14/2023

FIRST RESUBMITTAL: X/X/2023

PROPOSED USE: TWO FAMILY HOMES

WATERSHED: GRANGER LAKE-SAN GABRIEL RIVER

FEMA PANEL: 48491C0485F

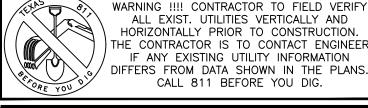
TRACT SIZE: 7.38 ACRES

IMPERVIOUS COVER: 144,275 SF = 3.31 AC(44.9%)

ZONING DISTRICT: TF - TWO FAMILY

THIS SITE LIES ALONG THE CITY OF GEORGETOWN SCENIC-NATURAL OVERLAY

<u>LEGAL DESCRIPTION:</u>
TERRAVISTA VIEW SUBDIVISION — SEE PLAT



ALL EXIST. UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO CONTACT ENGINEER IF ANY EXISTING UTILITY INFORMATION $^{\prime}$ DIFFERS FROM DATA SHOWN IN THE PLANS. CALL 811 BEFORE YOU DIG.



4501 WHISPERING VALLEY DRIVE ÜNIT 27 AUSTIN, TX 78727

COVER SHEET

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION

GEORGETOWN NOTES:

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A

TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S

CONCURRENCE OF COMPLIANCE. THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HERBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY. STATE, AND FEDERAL REQUIREMENTS AND CODES.

2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS AND UDC REGULATIONS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.

3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN. 4. WASTEWATER MAINS AND SERVICE LINES SHALL BE SDR 26 PVC.

5. WASTEWATER MAINS SHALL BE INSTALLED WITHOUT HORIZONTAL OR VERTICAL BENDS.

6. MAXIMUM DISTANCE BETWEEN WASTEWATER MANHOLES IS 500 FEET.

7 WASTEWATER MAINS SHALL BE LOW PRESSURE AIR TESTED AND MANDREL TESTED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEO REQUIREMENTS.

8. WASTEWATER MANHOLES SHALL BE VACUUM TESTED AND COATED BY THE CONTRACTOR

ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS. 9. WASTEWATER MAINS SHALL BE CAMERA TESTED BY THE CONTRACTOR AND SUBMITTED TO

THE CITY IN DVD FORMAT PRIOR TO PAVING THE STREETS. 10. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.

11. PRIVATE WATER SYSTEM FIRE LINES SHALL BE DUCTILE IRON PIPING FROM THE WATER MAIN TO THE BUILDING SPRINKLER SYSTEM. AND 200 PSI C900 PVC FOR ALL OTHERS.

12. PUBLIC WATER SYSTEM FIRE LINES SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.

13. ALL BENDS AND CHANGES IN DIRECTIONS ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED. 14. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.

15. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.

16. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY. 17. FLEXIBLE BASE MATERIAL FOR PUBLIC STREETS SHALL BE TXDOT TYPE A GRADE 1.

18. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE D UNLESS OTHERWISE SPECIFIED AND SHALL BE A MINIMUM OF 2 INCHES THICK ON PUBLIC STREETS AND ROADWAYS.

19. ALL SIDEWALK RAMPS AND PUBLIC AREA SIDEWALKS (LE., NOT ADJACENT TO INDIVIDUAL LOTS) ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.

20. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY

PRIOR TO ACCEPTANCE OF THE PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 2 YEARS IN THE AMOUNT OF 10% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.

21. THE CITY OF GEORGETOWN SHALL BE CONTACTED 48 HOURS IN ADVANCE FOR CONNECTIONS AND TESTING.

<u>GENERAL NOTES — SIDEWALKS</u>

1. SIDEWALKS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE T.A.S. AS ADMINISTERED BY THE TDLR ("TDLR COMPLIANT").

2. SIDEWALKS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UDC. SECTION 12.02.020.

GEOMETRIC AND DESIGN STANDARDS FOR SIDEWALKS

DESIGN AND CONSTRUCTION OF SIDEWALKS SHALL OCCUR IN COMPLIANCE WITH THE FOLLOWING STANDARDS:

A. IN ORDER TO PROVIDE SAFE AND ADEQUATE ACCESS ON CITY SIDEWALKS. ALL SIDEWALKS SHALL MEET MINIMUM CLEAR WIDTH REQUIREMENTS AROUND ALL OBSTRUCTIONS, NATURAL OR MANMADE, AS DESCRIBED HEREIN. CLEAR WIDTH SHALL MEAN THE DISTANCE AS MEASURED FROM THE OUTSIDE EDGE OF THE OBSTRUCTION TO THE OUTSIDE EDGE OF THE SIDEWALK OR FROM THE INSIDE EDGE OF THE OBSTRUCTION TO THE INSIDE EDGE OF THE SIDEWALK. IF THE CLEAR WIDTH IS TO BE OBTAINED BETWEEN THE INSIDE EDGE OF THE SIDEWALK AND OBSTRUCTION, GIVEN THAT THE SIDEWALK IS PLACED AGAINST THE BACK OF CURB. THE CLEAR WIDTH SHALL BE A MINIMUM OF FIVE FEET. IN ALL OTHER CASES, THE MINIMUM CLEAR WIDTH SHALL BE FOUR FEET.

B. ALL SIDEWALKS SHALL MEET CITY STANDARDS AND SPECIFICATIONS. SIDEWALKS MAY BE PLACED DISTANCE FROM BACK OF CURB, PROVIDED THAT THE MINIMUM IMDTH AND DISTANCE FROM BACK OF CURB IS NOT REDUCED.

C. GIVEN THAT A COMBINATION OR VARIATION FROM THE TWO PLACEMENT METHODS IS NECESSARY OR DESIRED OR THAT AN OBSTRUCTION IS LOCATED WITHIN THE PAVED AREA. THE FOLLOWING CRITERIA

SHALL BE SATISFIED 1. ALL RADII IN THE TRANSITION SECTION SHALL BE A MINIMUM OF TEN FEET.

BENCHMARK AND SCALE FACTOR INFORMATION

SURVEYOR'S NOTES:

1. THE SITE BENCHMARK IS A MAG NAIL WITH A METAL WASHER STAMPED "JPH LAND SURVEYING" SET IN A CONCRETE DRAINAGE HEADWALL IN THE EAST MARGIN OF F.M. 1460, APPROXIMATELY 200 FEET NORTHWESTERLY FROM THE INTERSECTION OF F.M. 1460 AND WESTINGHOUSE ROAD. BENCHMARK ELEVATION = 846.53' (NAVD'88). SEE VICINITY MAP FOR GENERAL LOCATION.

2. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE COMMITMENT. COMPLETE COPIES OF THE RECORD DESCRIPTION OF THE PROPERTY, ANY RECORD EASEMENTS BENEFITING THE PROPERTY. THE RECORD EASEMENTS OR SERVITUDES AND COVENANTS AFFECTING THE PROPERTY ("RECORD DOCUMENTS"), DOCUMENTS OF RECORD REFERRED TO IN THE RECORD DOCUMENTS, AND ANY OTHER DOCUMENTS CONTAINING DESIRED APPROPRIATE INFORMATION AFFECTING THE PROPERTY BEING SURVEYED AND TO WHICH THE SURVEY SHALL MAKE REFERENCE WERE NOT PROVIDED TO THIS SURVEYOR FOR NOTATION ON THE SURVEY. THEREFORE, EASEMENTS, AGREEMENTS, OR OTHER DOCUMENTS, EITHER RECORDED, OR UNRECORDED MAY EXIST THAT AFFECT THE SUBJECT PROPERTY THAT ARE NOT SHOWN ON THIS SURVEY.

3. THE SITE SURFACE IS NATURAL GROUND/DIRT, UNLESS NOTED OTHERWISE.

4. SUBJECT PROPERTY'S RECORD DESCRIPTION'S ERROR OF CLOSURE, 0.0006'.

5. THE FIELD WORK WAS COMPLETED ON APRIL 8, 2020.

SEQUENCE OF CONSTRUCTION NOTES:

1.INSTALL TEMPORARY SILT FENCE, TREE PROTECTION AND STABILIZED CONSTRUCTION ENTRANCE ACCORDING TO THE CONSTRUCTION PLANS PRIOR TO CLEARING, GRADING, EXCAVATION, ETC. CONTRACTOR SHALL INSPECT AND REPAIR TEMPORARY EROSION CONTROLS ON A REGULAR BASIS AND REMOVE ACCUMULATED SEDIMENT WHEN SIX (6) INCHES OF SEDIMENT HAS

2.INSTALL TREE PROTECTION AND INITIATE TREE MITIGATION MEASURES WHERE APPLICABLE

3.THE CONTRACTOR SHALL CONTACT CITY OF GEORGETOWN AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION TO ARRANGE A PRE-CONSTRUCTION MEETING.

4.PRE-CONSTRUCTION MEETING ONSITE

5.EVALUATE TEMPORARY EROSION CONTROL INSTALLATION.

6.BEGIN SITE CLEARING/DEMOLITION

7.ESTABLISH SUB-GRADE FOR PARKING, BUILDING PAD, DETENTION AND WATER QUALITY POND.

8.INSTALLATION OF UTILITIES (TRENCHING).

9.CONSTRUCTION OF BUILDING AND PAVED AREAS.

10. COMPLETE TESTING REQUIREMENTS

11. COMPLETE CONSTRUCTION AND INSTALL LANDSCAPING

12. CLEAN SITE AND REVEGETATE ALL DISTURBED AREAS IN ACCORDANCE WITH RESTORATION REQUIREMENTS SHOWN ON THE CONSTRUCTION PLANS.

13. PROJECT ENGINEER INSPECTS JOB AND WRITES CONCURRENCE LETTER TO THE CITY. FINAL INSPECTION IS SCHEDULED UPON

14. RECEIVE OPERATING PERMIT AND CITY CLEARANCE FOR OCCUPANCY

15. REMOVE TEMPORARY EROSION CONTROL MEASURES AND TREE PROTECTION AFTER ALL DISTURBED AREAS ARE COMPLETELY RESTORED AND REVEGETAGED.

PAVING NOTES:

1. ALL CONSTRUCTION SHALL BE IN GENERAL ACCORDANCE WITH THESE PLANS, CITY OF GEORGETOWN, TX STANDARD SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND COMMONLY

ACCEPTED CONSTRUCTION STANDARDS. 2. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PAVING IMPROVEMENTS SHALL BE PERFORMED BY AN APPROVED AGENCY FOR TESTING MATERIALS. THE NOMINATION OF THE TESTING LABORATORY AND THE PAVEMENT OF SUCH TESTING SERVICES SHALL BE MADE BY THE CONTRACTOR. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY STANDARD TESTING PROCEDURES, THAT THE WORK CONSTRUCTED DOES MEET THE REQUIREMENTS OF THE CITIES SPECIFICATIONS AND THESE PLANS.

BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAY APPROACHES PER CITY STANDARD. . ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDINGS AS SHOWN ON THE PLANS. ALL PAINT FOR PAVEMENT MARKINGS SHALL ADHERE TO CITY OF GEORGETOWN STANDARD DETAILS AND

REFER TO GEOTECHNICAL REPORT FOR PAVING JOINT LAYOUT PLAN, REINFORCEMENT STEEL, AND SOIL COMPACTION SPECIFICATIONS. ALL HANDICAP RAMPING, STRIPING AN PAVEMENT MARKINGS SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT THAT IS MOST CURRENT. SEE GEORGETOWN STANDARD CONSTRUCTION DETAILS.

CONTRACTOR RESPONSIBLE FOR PREPARATION, SUBMITTAL AN APPROVAL BY CITY OF GEORGETOWN, TX OF TRAFFIC CONTROL PLAN PRIOR TO START OF CONSTRUCTION. SIDEWALKS ADJACENT TO CURB SHALL BE CONNECTED TO BACK OF CURB USING LONGITUDINAL BUTT JOINT. 10. UNLESS THE PLANS SPECIFICALLY DICTATE OTHERWISE, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE LOCATED OUT OF THE PEDESTRIAN AND AUTOMOBILE ROUTES AND SHALL BE LOCATED BETWEEN THREE TO FIVE FEET BEHIND THE NEAREST BACK OF CURB. SIGN HEIGHT, LOCATION AND STRUCTURE SHALL BE SUCH THAT THE SIGN POSE TO THREAT TO

PUBLIC SAFETY. ALSO, ONSITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY AR INTENDED. FIELD ADJUSTMENTS OF LOCATION AND ORIENTATION OF THE SIGNS ARE TO BE MADE TO ACCOMPLISH THIS. 11. THE CONTRACTOR SHALL NOT PLACE ANY PERMANENT PAVEMENT UNTIL ALL SLEEVING FOR ELECTRIC, GAS, TELEPHONE, CABLE, SITE IRRIGATION OR ANY OTHER UNDERGROUND UTILITY

HAS BEEN INSTALLED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONFIRM THAT ALL SLEEVING IS IN PLACE PRIOR TO PLACEMENT OF PERMANENT PAVEMENT. 12. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE HANDICAPPED ROUTES, PER A.D.A. AND T.A.S., EXIST TO AND FROM EVERY DOOR. HANDICAP RAMP SLOPES SHALL NOT EXCEED 1 VERTICAL TO 12 HORIZONTAL. SIDEWALK CROSS SLOPES SHALL NOT EXCEED 2.0 PERCENT AND LONGITUDINAL SLOPE 5.0 PERCENT. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR A.D.A. AND T.A.S. COMPLIANCE

13. STREETS, SIDEWALKS, DRIVEWAYS, AND STORM DRAINAGE FACILITIES IN THE PUBLIC RIGHT-OF WAY SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CITY OF GEORGETOWN INFRASTRUCTURE DESIGN AND DEVELOPMENT STANDARDS MANUAL, LATEST EDITION.

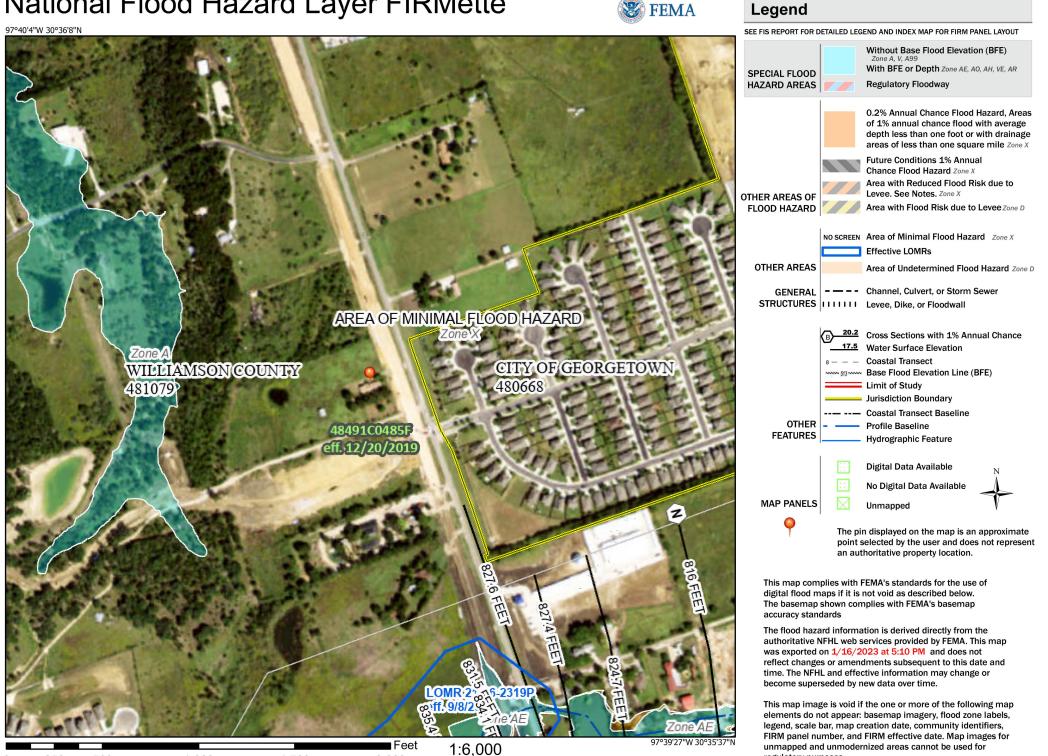
14. FIRE LANES SHALL REMAIN OPEN/ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION. FIRE LANE SHALL BE INSTALLED AND ACCEPTED BY THE CITY PRIOR TO ANY CONSTRUCTION ABOVE THE FOUNDATION.



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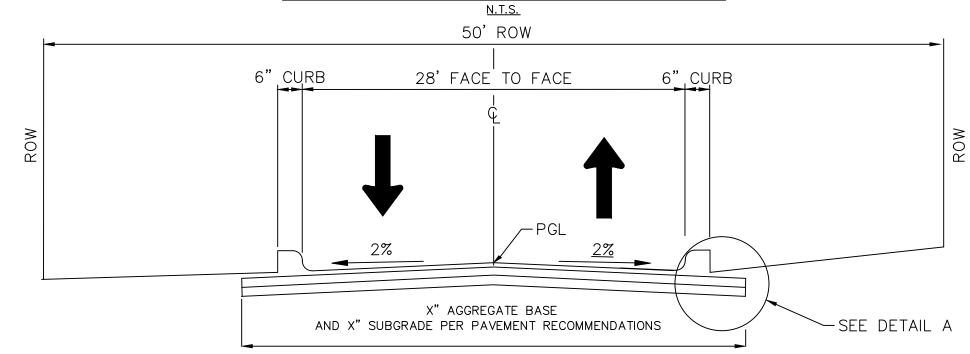
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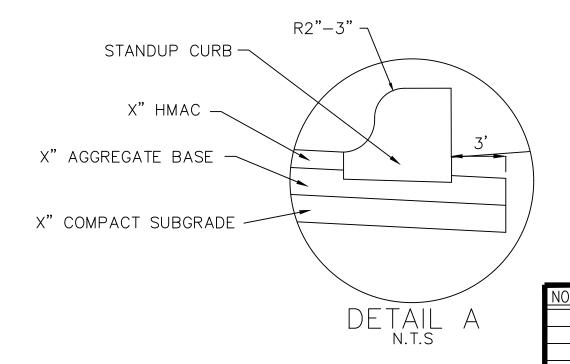


TYPICAL ROADWAY SECTION WITHOUT SIDE SWALE

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

egulatory purposes.







NICHOLAS R. SANDLIN

124404

CENSEO.

<u>THIS PLAN SET FOR REVIEW ONLY</u>

NOT FOR CONSTRUCTION



4501 WHISPERING VALLEY DRIVE ÜNIT 27 AUSTIN, TX 78727

GENERAL NOTES (1 OF 2)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION

SHEET

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. 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
- 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.
- 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.
- 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.
- 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,
- 7. Sediment must be removed from the sediment traps or sedimentation basins not later than

TCEQ-0592 (Rev. July 15, 2015)

Page 1 of 2

when it occupies 50% of the basin's design capacity.

- Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.
- 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 abatemen plan for the placement of fill material or mass grading prior to the placement of spoils at the
- 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:
 - 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;
 - 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;
 - 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.

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Page 2 of 2

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

Texas Commission on Environmental Quality Organized Sewage Collection System **General Construction Notes**

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.

- 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.
- 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.
- 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
- 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.
- 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.
- 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 __ of __.

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 §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

If pipe flexure is proposed, the following method of preventing deflection of the joint must be

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 __ of __. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet 31 of 41 and marked after backfilling as shown in the detail on Plan

- 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
- 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) 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. A pipe must be pressurized to 3.5 pounds per square inch (psi)
 - greater than the pressure exerted by groundwater above the (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 $0.085 \times D \times K$

(B)(ii) of this paragraph.

- T = time for pressure to drop 1.0 pound per square inch gauge in
- 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

(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.

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. 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

(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. A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.

A mandrel must have nine or more odd number of runners or A barrel section length must equal at least 75% of the inside

diameter of a pipe. Each size mandrel must use a separate proving ring

Method Options. An adjustable or flexible mandrel is prohibited.

A test may not use television inspection as a substitute for a

(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.

A deflection test method must be accurate to within plus or minus 0.2% (4) An owner shall not conduct a deflection test until at least 30 days after the final

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. 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. Hvdrostatic Testing. (A) The maximum leakage for hydrostatic testing or any alternative test

(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

methods is 0.025 gallons per foot diameter per foot of manhole depth

(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.

testing to allow saturation of the concrete.

No grout must be placed in horizontal joints before testing. Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.

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

(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 valves closed, the vacuum is at least 9.0 inches of mercury.

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 12100 Park 35 Circle, Building A	San Antonio Regional Office 14250 Judson Road
Austin, Texas 78753-1808	San Antonio, Texas 78233-4480
Phone (512) 339-2929 Fax (512) 339-3795	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.



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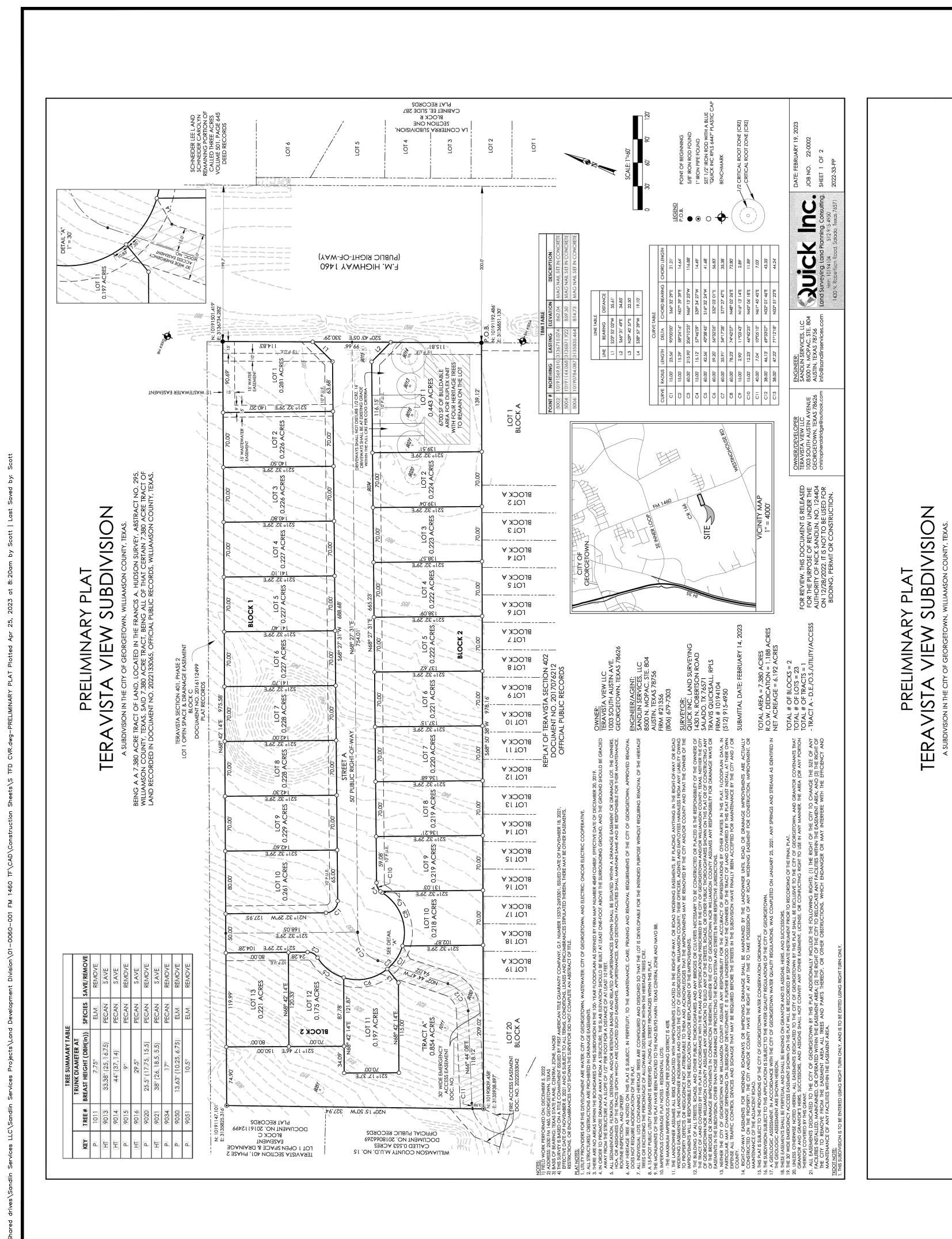
4501 WHISPERING VALLEY DRIVE ÜNIT 27 AUSTIN, TX 78727

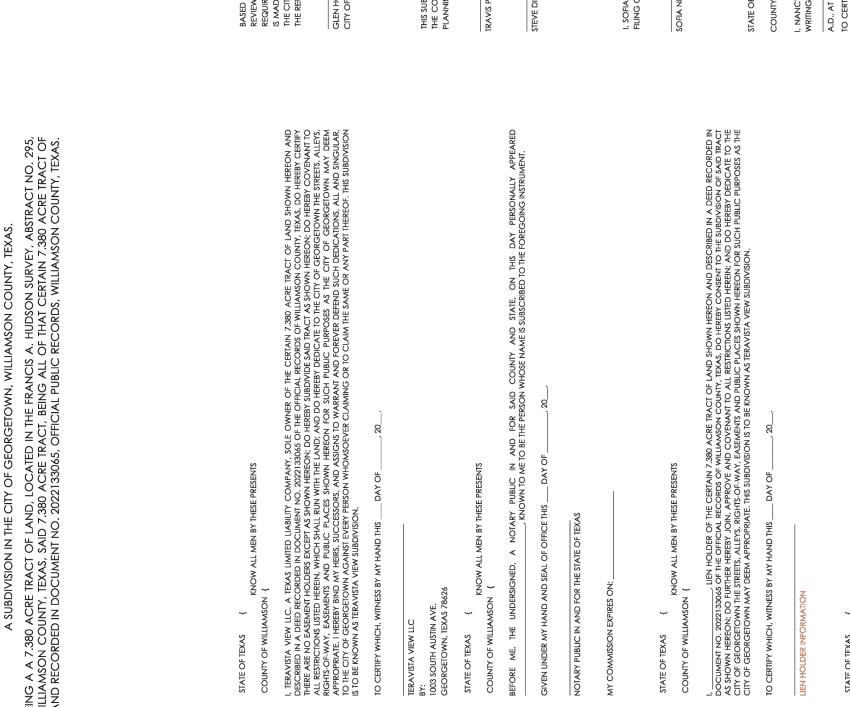
GENERAL NOTES (2 OF 2)

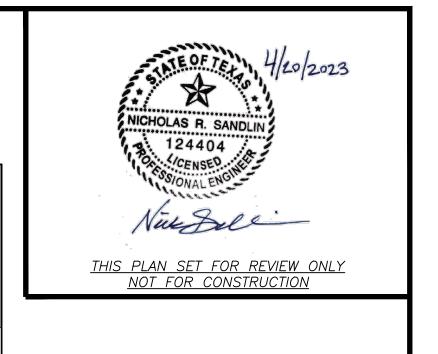
TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX

REVISION DESCRIPTION SHEET







Ind. Consulting.

Land Surveying. Land Plan



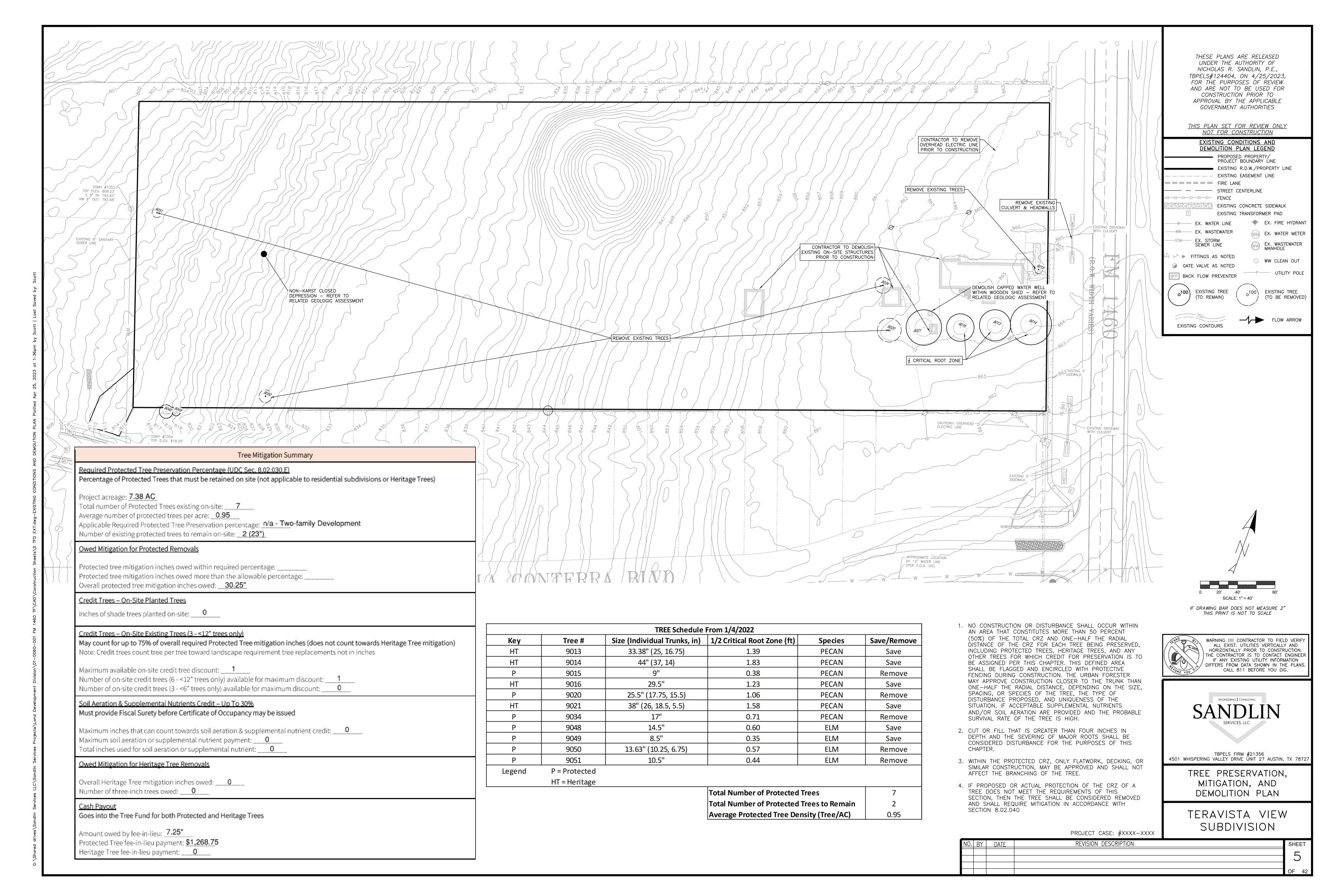
TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

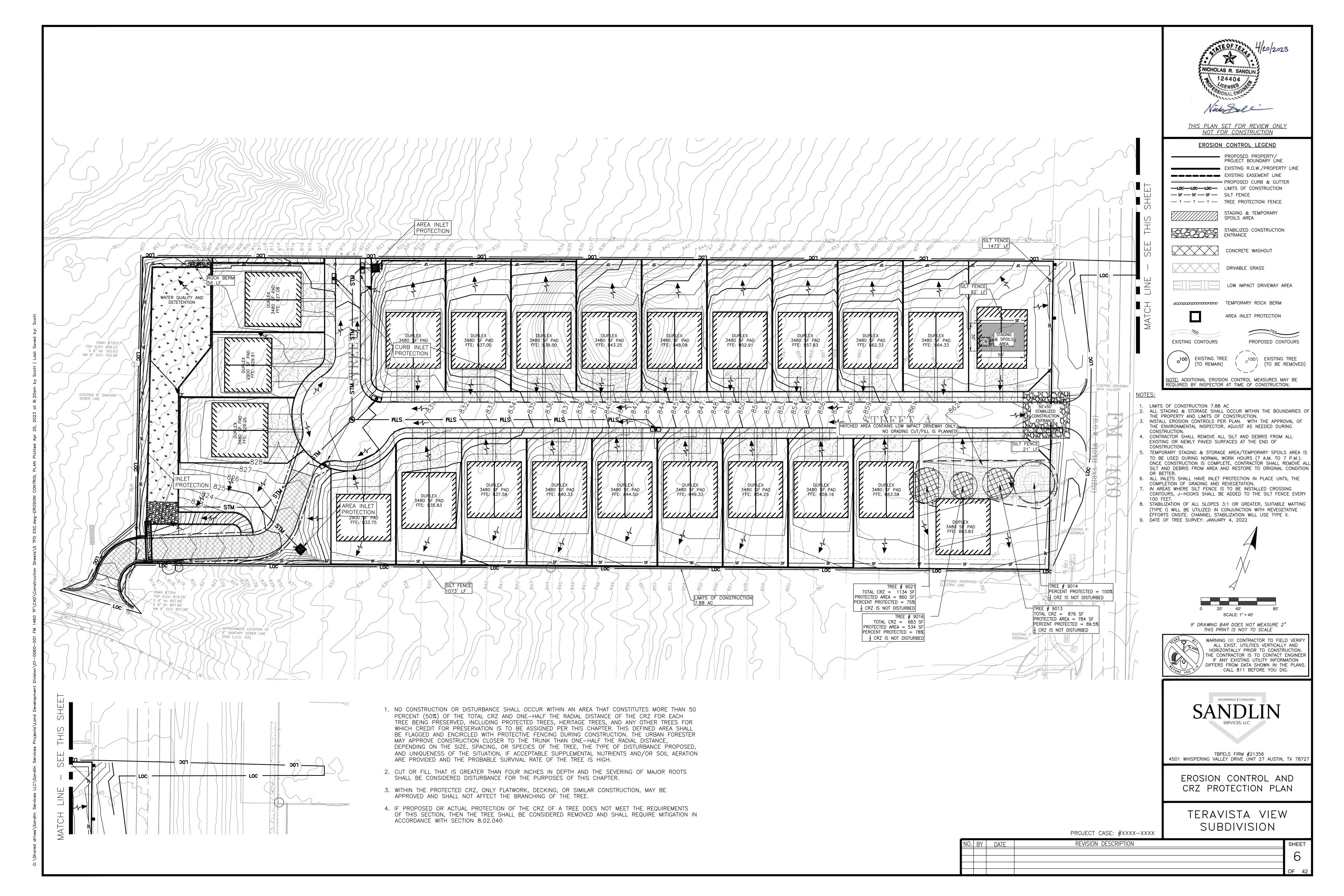
PRELIMINARY PLAT

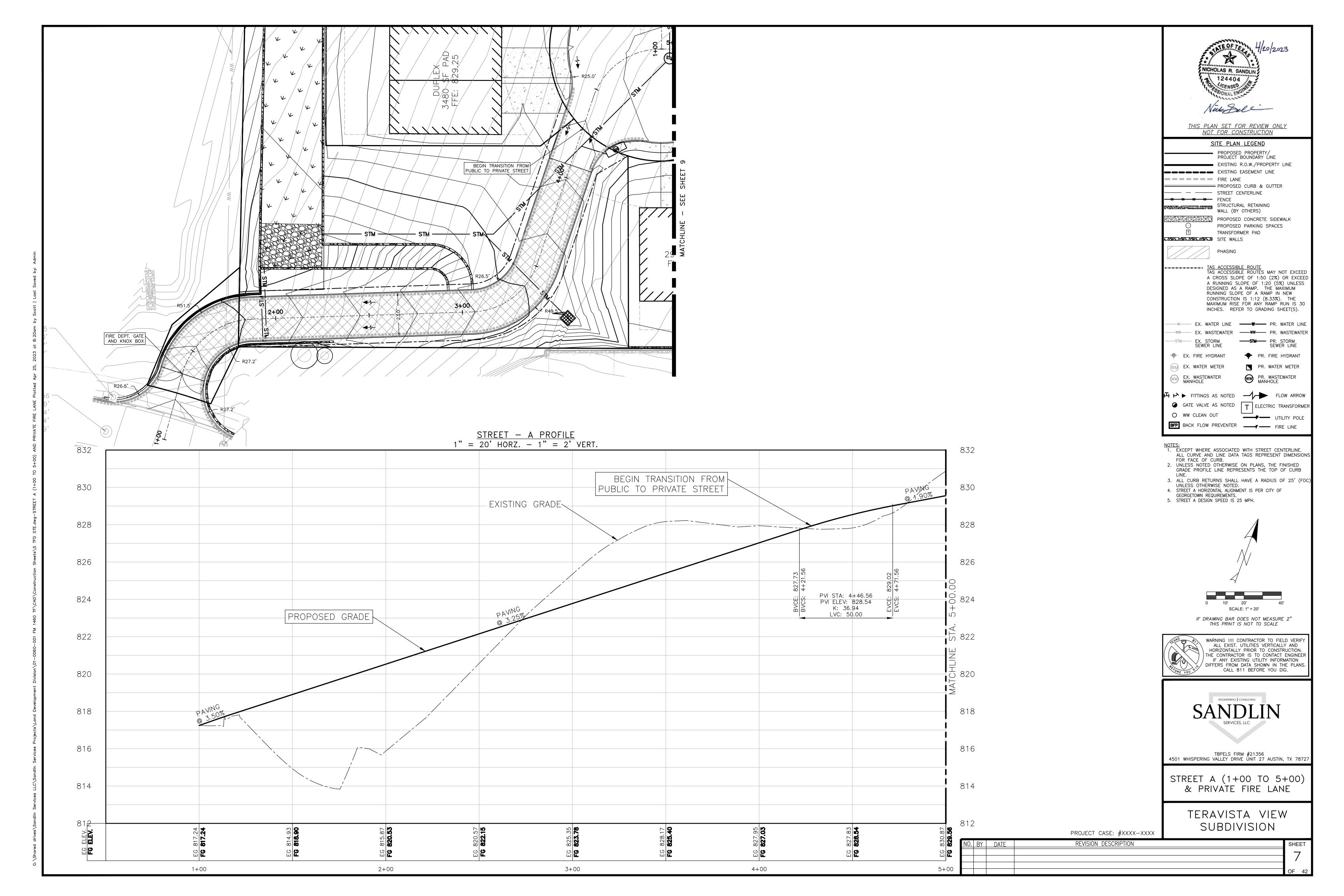
TERAVISTA VIEW SUBDIVISION

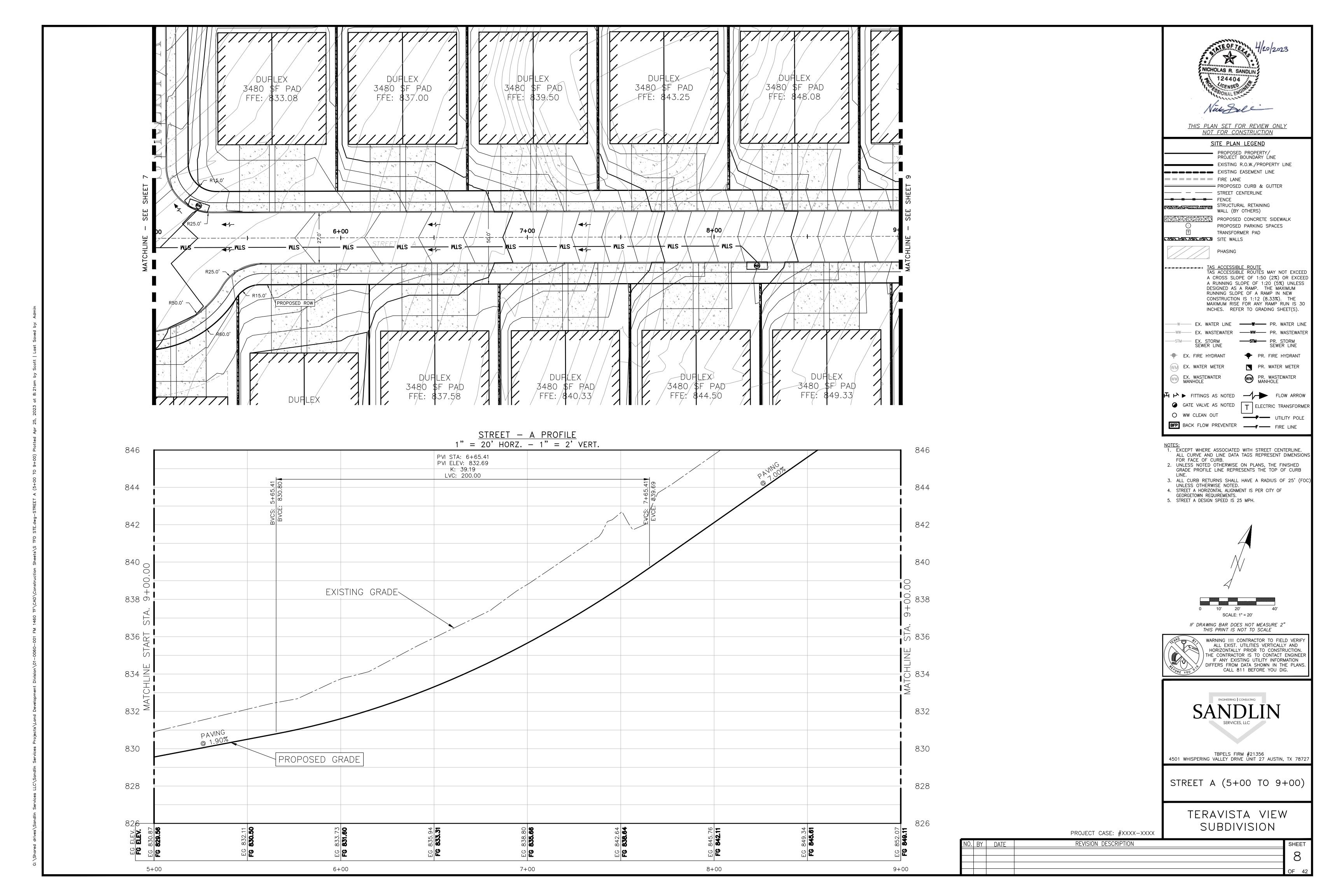
SHEET

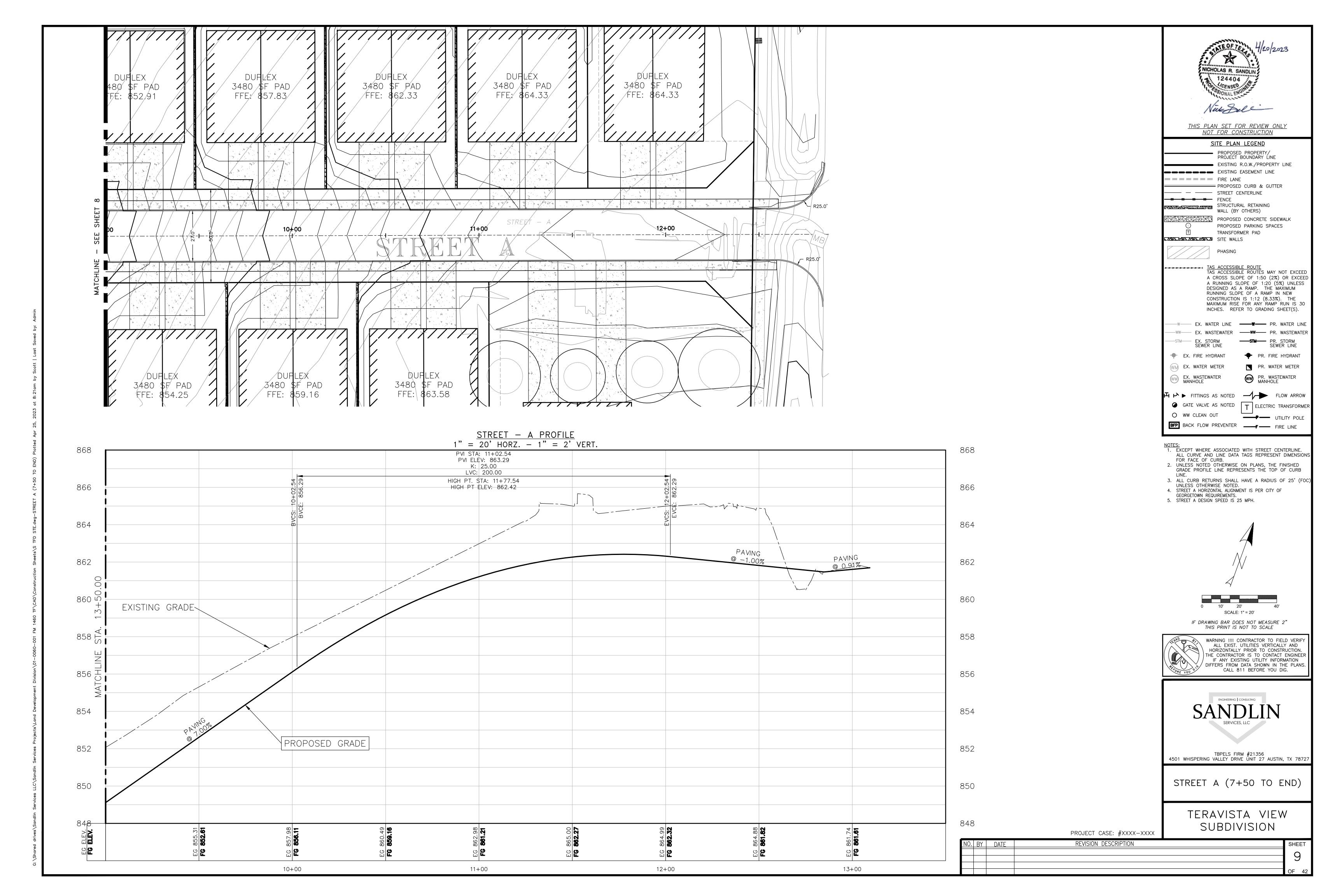
NO. BY DATE REVISION DESCRIPTION

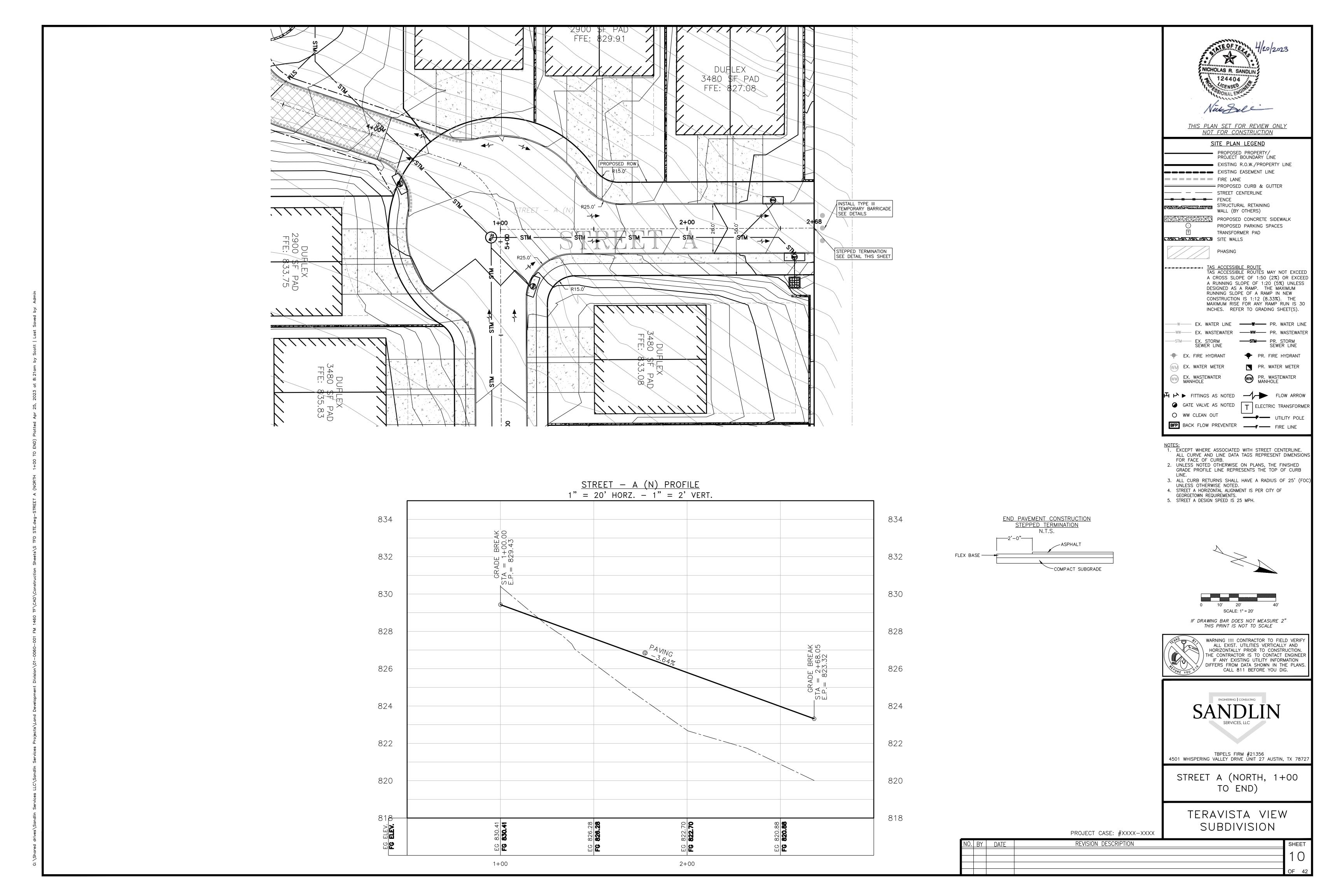


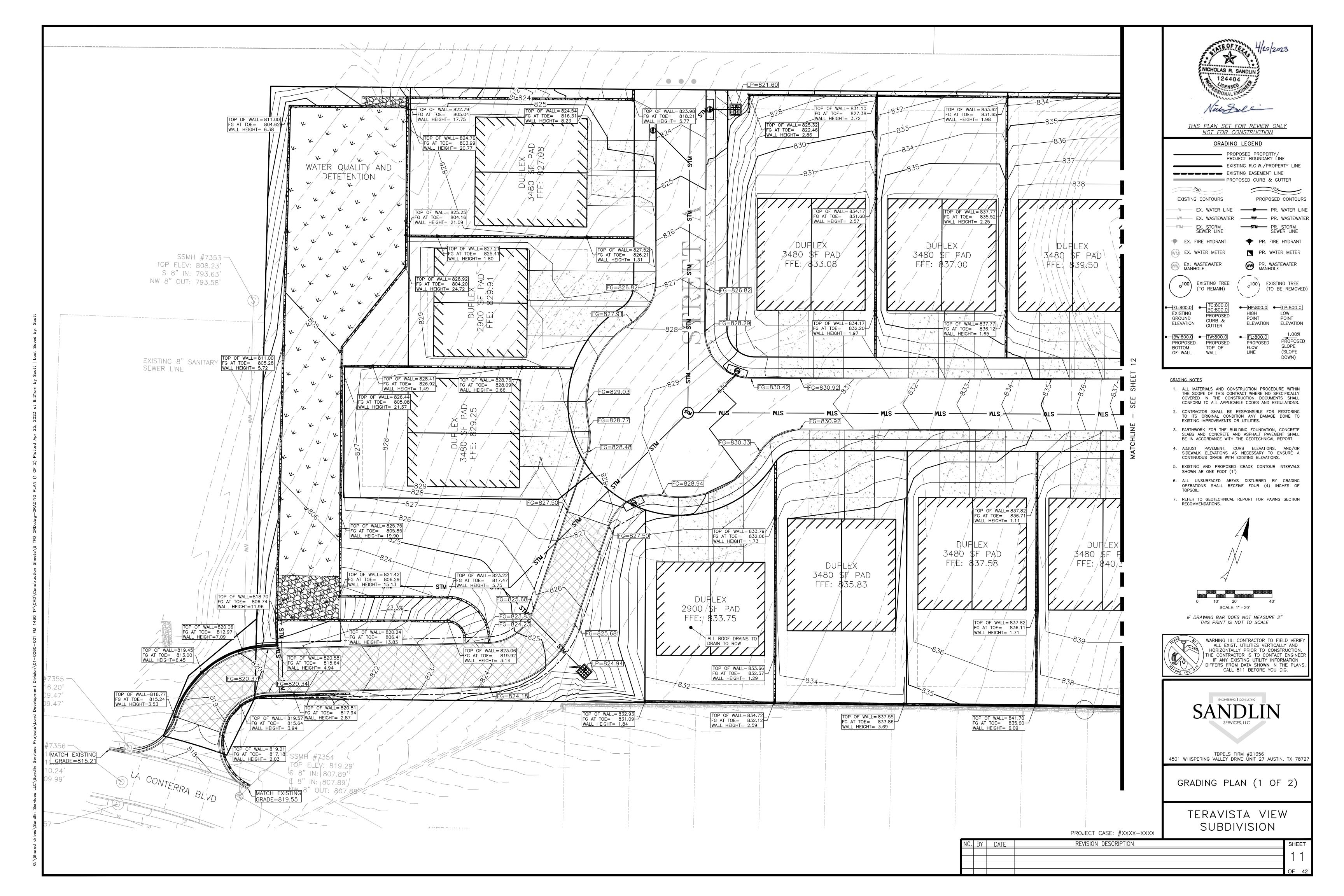


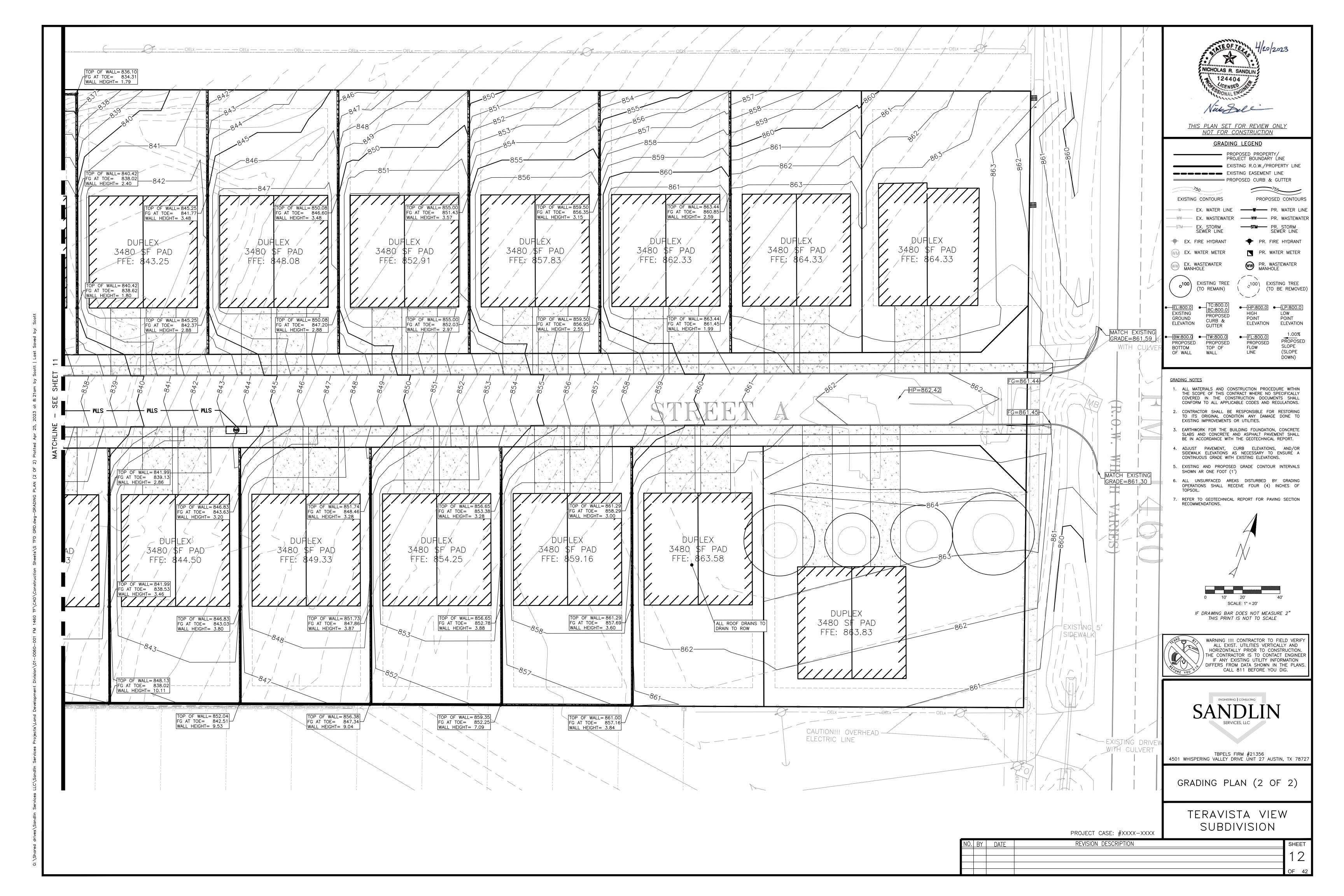


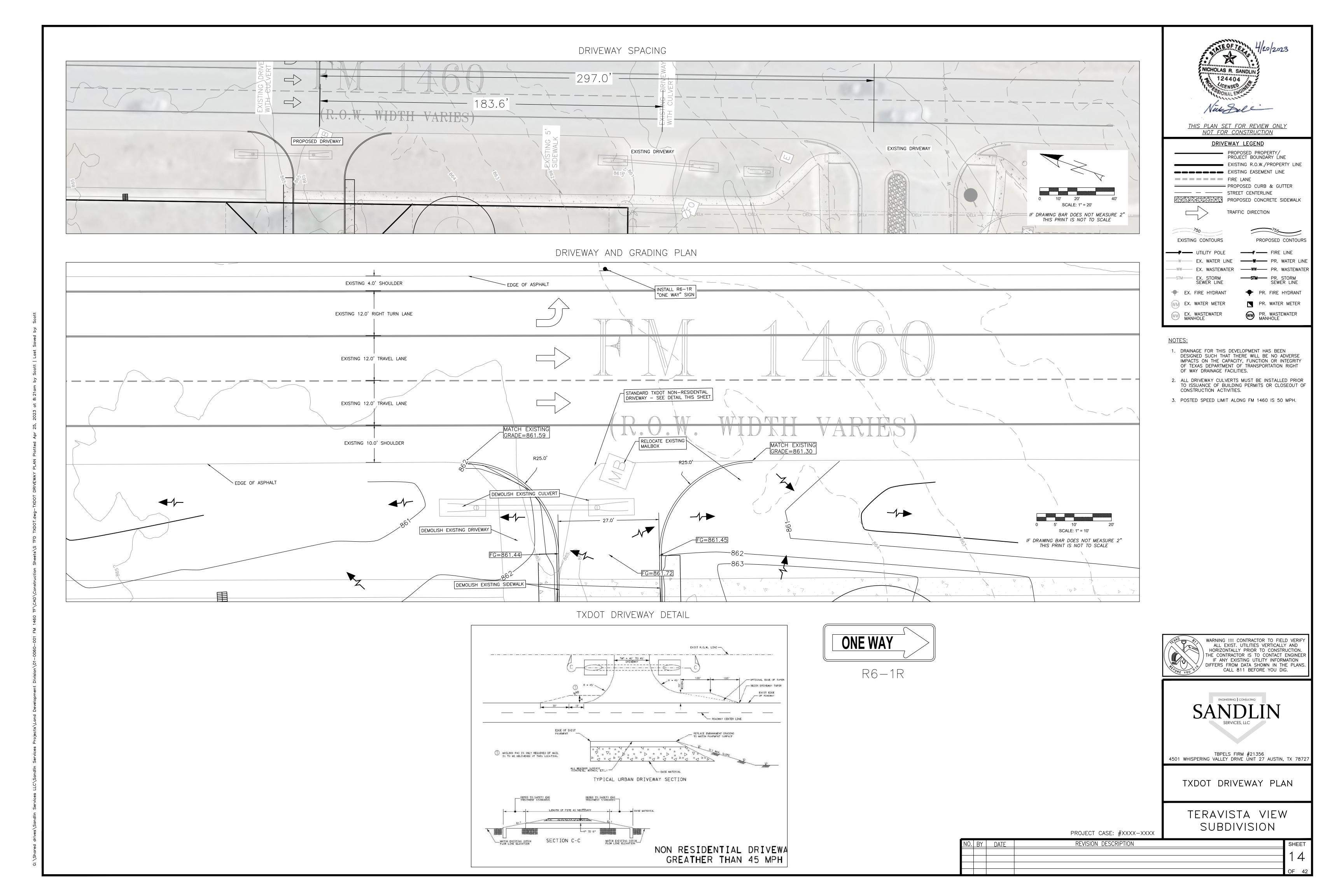


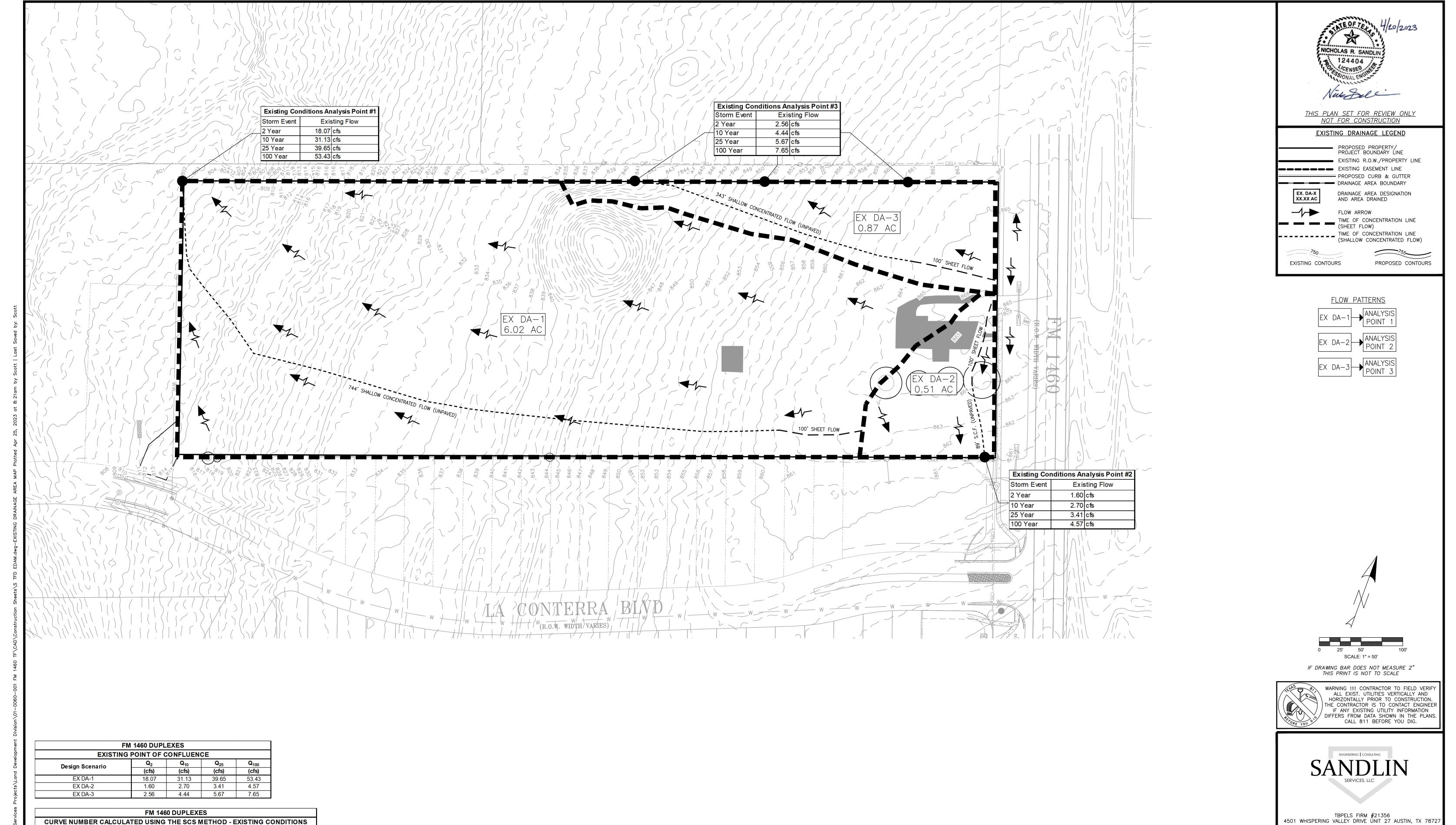












FM 1460 DUPLEXES											
CURVE NUMBER CALCULATED USING THE SCS METHOD - EXISTING CONDITIONS											
Drainage Basin	Drainage	Drainage	Impervious Area	I.C.							
Diamage Basin	Area (sf)	Area (ac)	(sf)	(%)							
EX DA-1	262,231	6.02	3,509	1.34%							
EX DA-2	22,216	0.51	2,173	9.78%							
EX DA-3	37,897	0.87	0	0.00%							

FM 1460 DUPLEXES														
EXISTING "Tc" VALUE CALCULATIONS														
Sheet Flow Shallow Concentrated Flow (Unpaved)								Unpaved Channel Flow				Total Allowe		
Drainage	Area	Length	Slope	n	Tt	Length	Slope	Tt	Length	V	n	Slope	Tt	Тс
Area	(ac)	(ft)	(ft/ft)		(min)	(ft)	(ft/ft)	(min)	(ft)	(ft/sec)		(ft/ft)	(min)	(min)
EX DA-1	6.02	100	0.030	0.15	8.04	744	0.078	2.75	-	Œ	-	-	0.00	10.79
EX DA-2	0.51	100	0.020	0.15	9.45	89	0.034	0.50	-	Œ	-	-	0.00	9.95
EX DA-3	0.87	100	0.018	0.15	9.97	343	0.066	1.38		-	-	-	0.00	11.35

PROJECT CASE: #XXXX-XXXX

NO. BY DATE REVISION DESCRIPTION

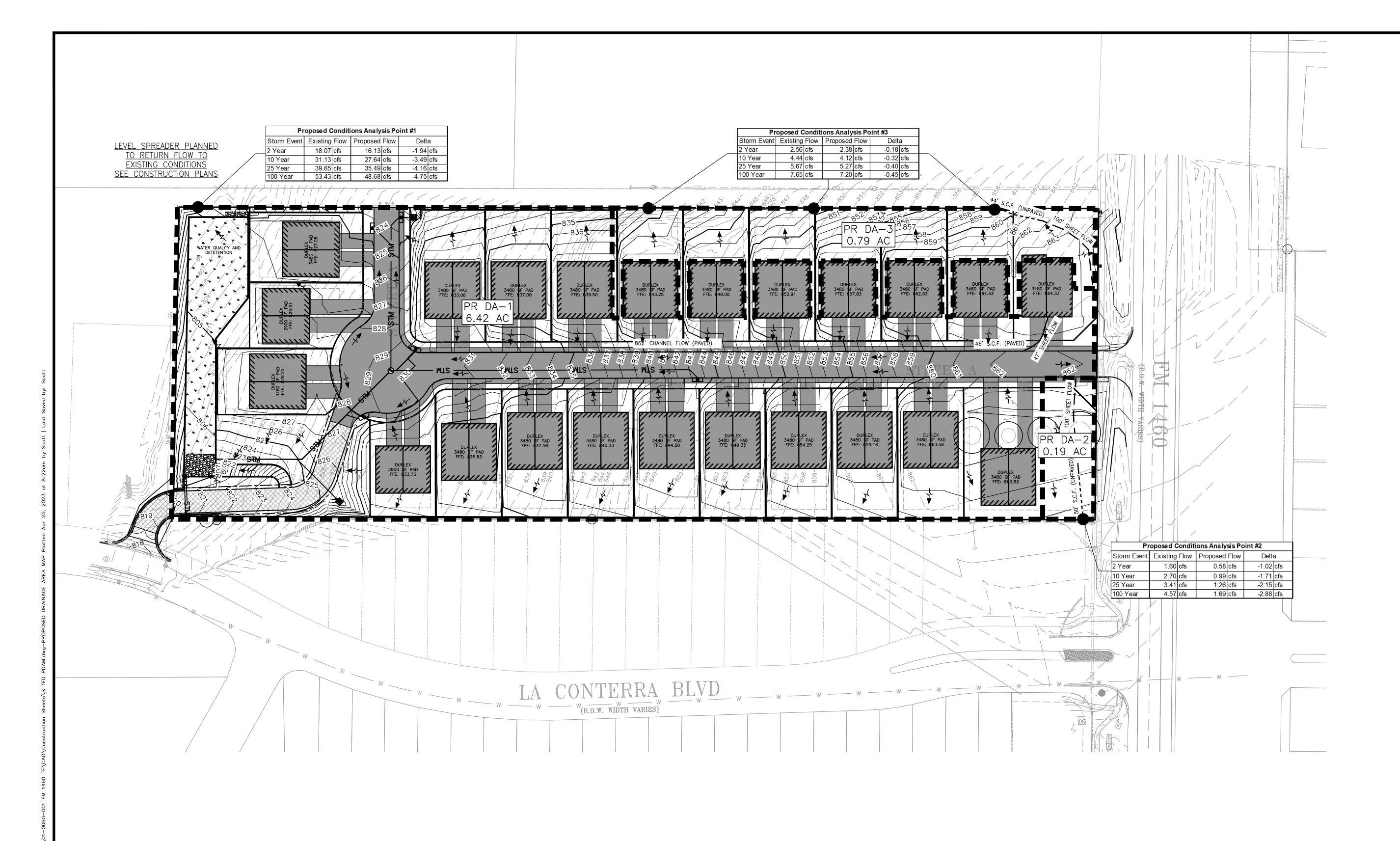
SHEET

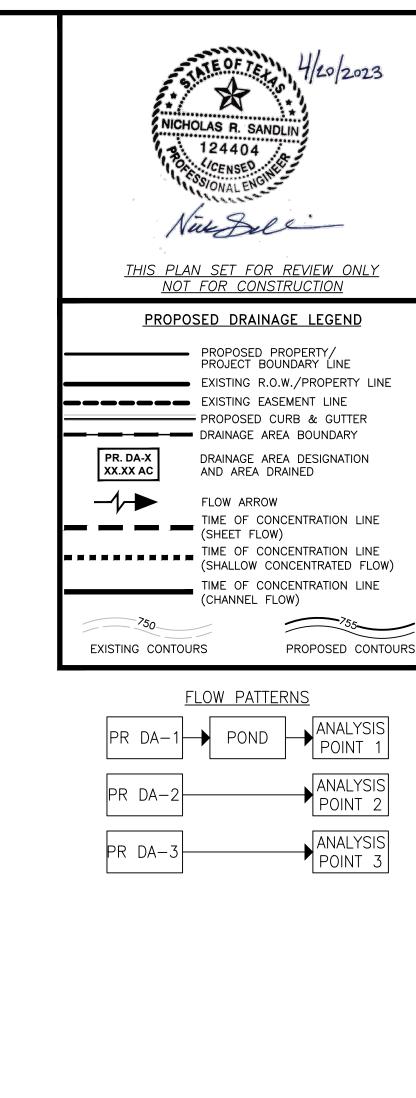
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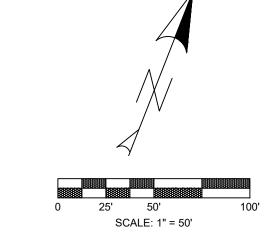
EXISTING DRAINAGE AREA MAP

TERAVISTA VIEW

SUBDIVISION







IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



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ANALYSIS POINT 2



TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

PROPOSED DRAINAGE AREA MAP

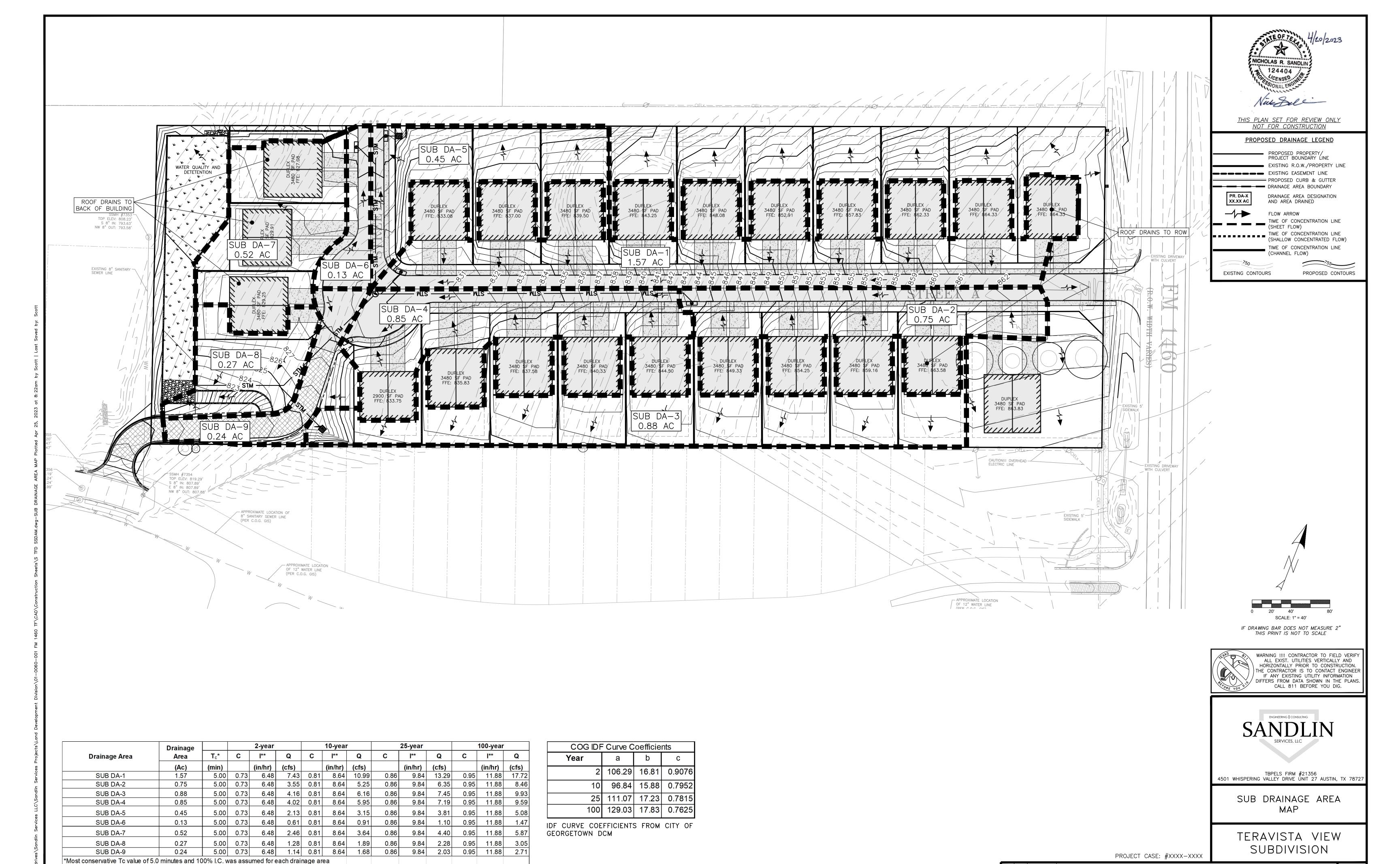
TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET 16

FM 1460 DUPLEXES											
DEVELOPED POINT OF CONFLUENCE											
Design Scenario	Q_2	Q ₁₀	Q ₂₅	Q ₁₀₀							
Design ocenano	(cfs)	(cfs)	(cfs)	(cfs)							
POND	16.29	27.79	35.63	48.79							
PR DA-1	29.41	46.14	57.05	75.05							
PR DA-2	0.58	0.99	1.26	1.69							
PR DA-3	2.38	4.12	5.27	7.20							

	FM 1460 DUPLEXES												
	CURVE NUMBER CALCULATED USING THE SCS METHOD - DEVELOPED CONDITIO												
	Drainage Basin	Drainage	Drainage	Impervious Area	I.C.								
		Area (sf)	Area (ac)	(sf)	(%)								
	PR DA-1	279,655	6.42	144,275	51.59%								
	PR DA-2	8,276	0.19	221	2.67%								
	PR DA-3	34,412	0.79	0	0.00%								

	FM 1460 DUPLEXES													
	DEVELOPED "Tc" VALUE CALCULATIONS													
	Sheet Flow Shallow Concentrated Flow						Unpaved Channel Flow				Total Allowed			
Drainage	Area	Length	Slope	n	Tt	Length	Slope	Tt	Length	V	n	Slope	Tt	Tc
Area	(ac)	(ft)	(ft/ft)		(min)	(ft)	(ft/ft)	(min)	(ft)	(ft/sec)		(ft/ft)	(min)	(min)
PR DA-1	6.42 Ac.	47	0.019	0.011	0.66	46	0.013	0.33	857	9.28	0.04	0.053	1.54	5.00
PR DA-2	0.19 Ac.	100	0.020	0.15	9.45	50	0.040	0.26	-		-	-	0.00	9.71
PR DA-3	0.79 Ac.	100	0.030	0.15	8.04	44	0.050	0.20	-	1-	=	-	0.00	8.24

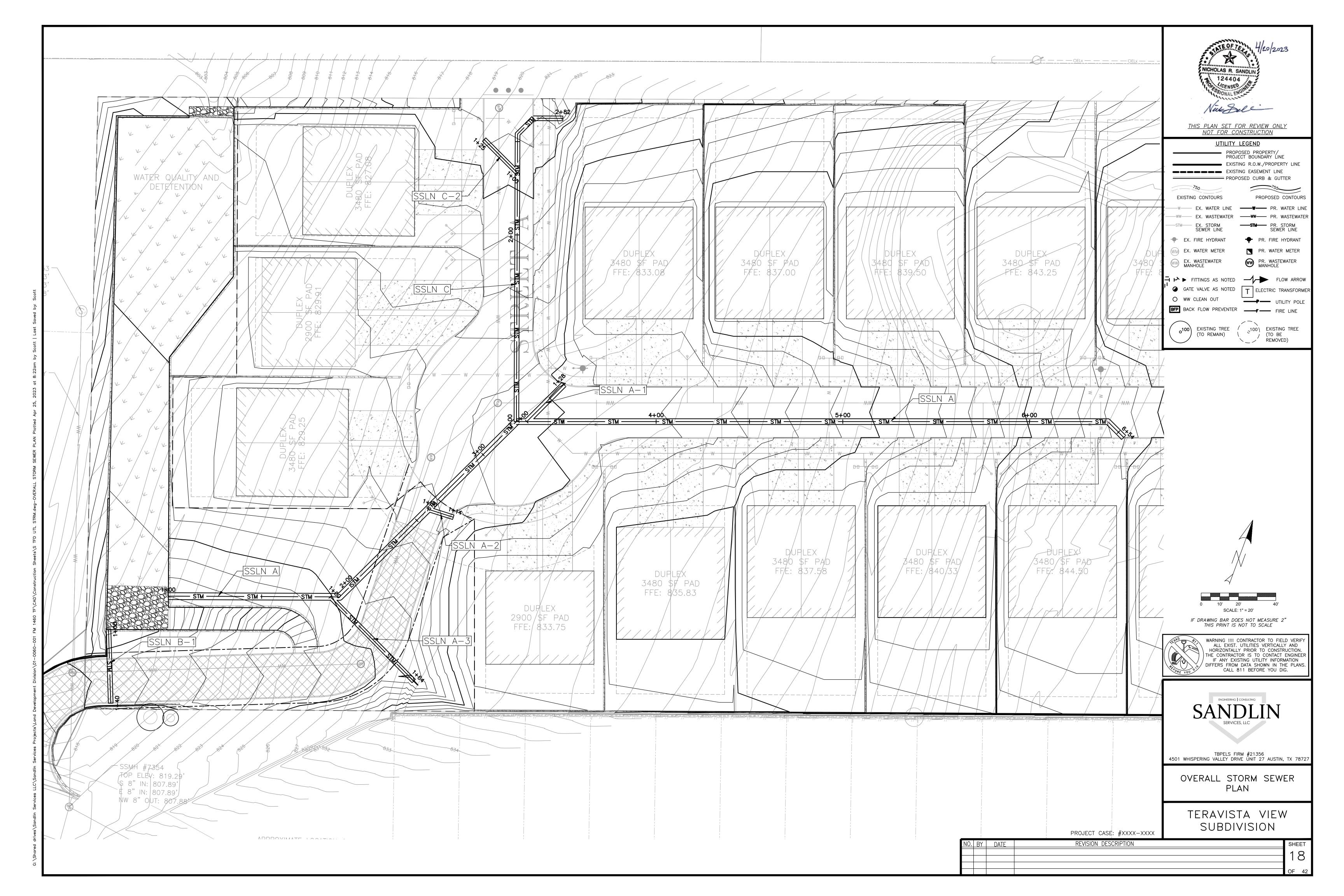


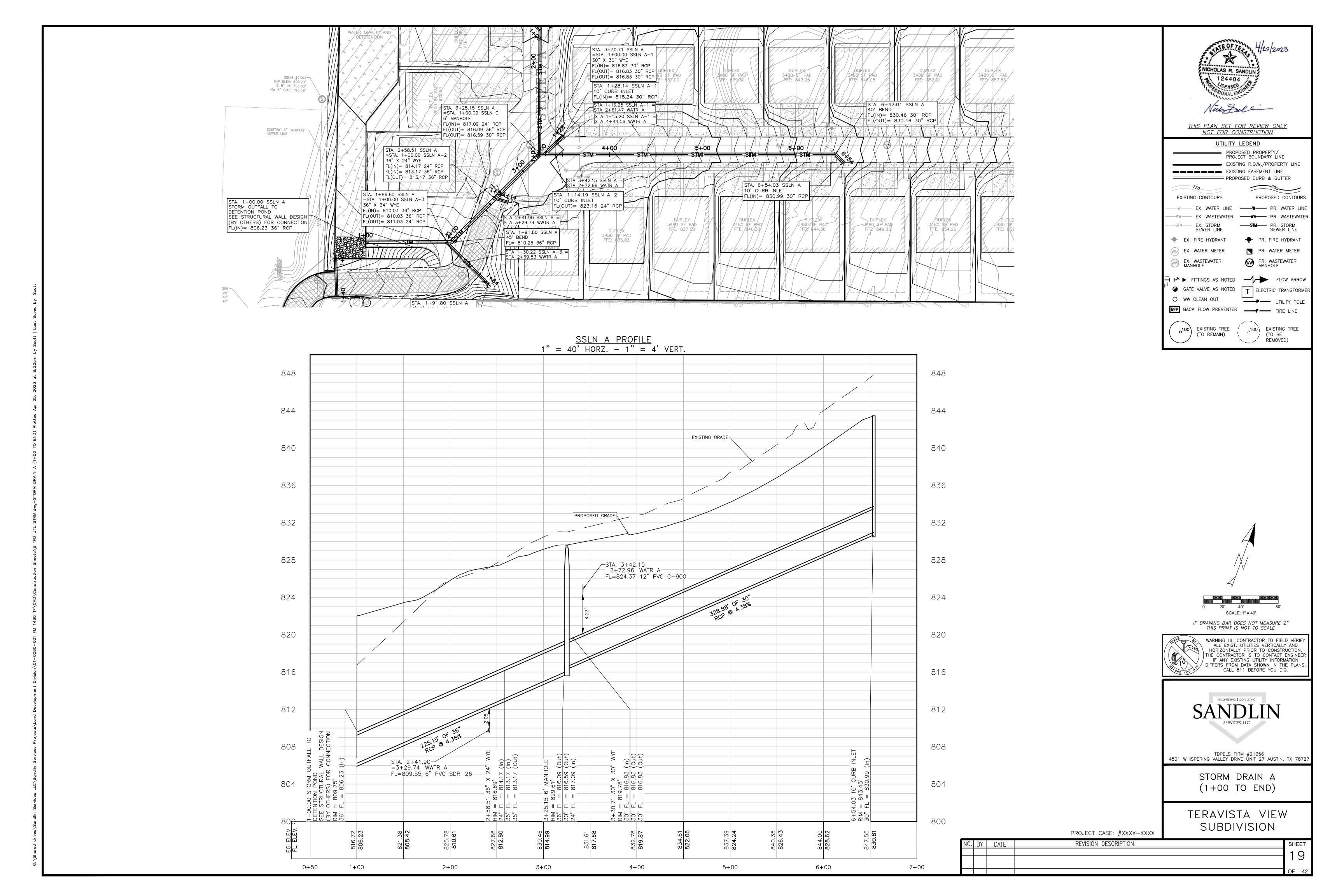
**City of Georgetown IDF curve coefficients used to calculate intensity values

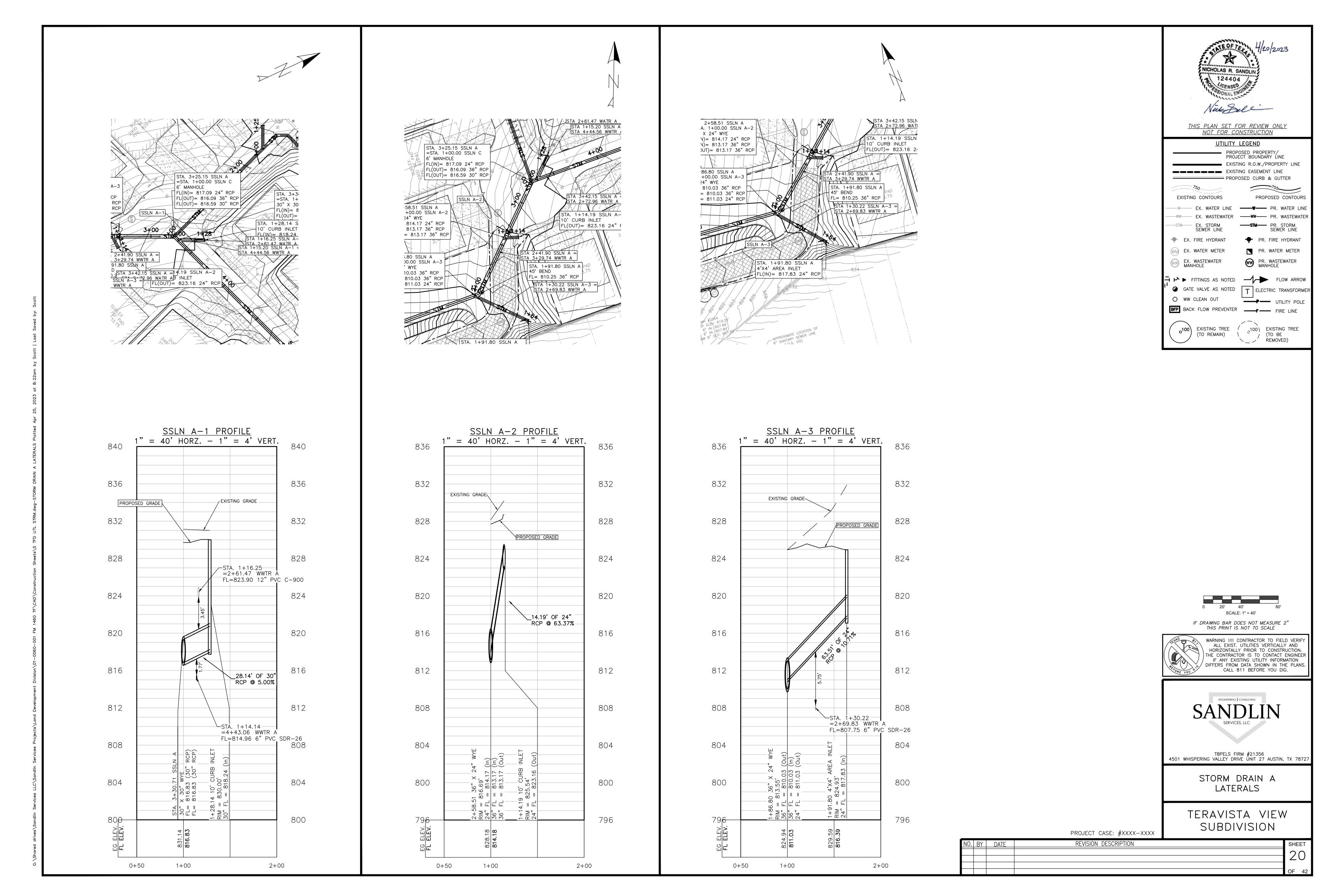
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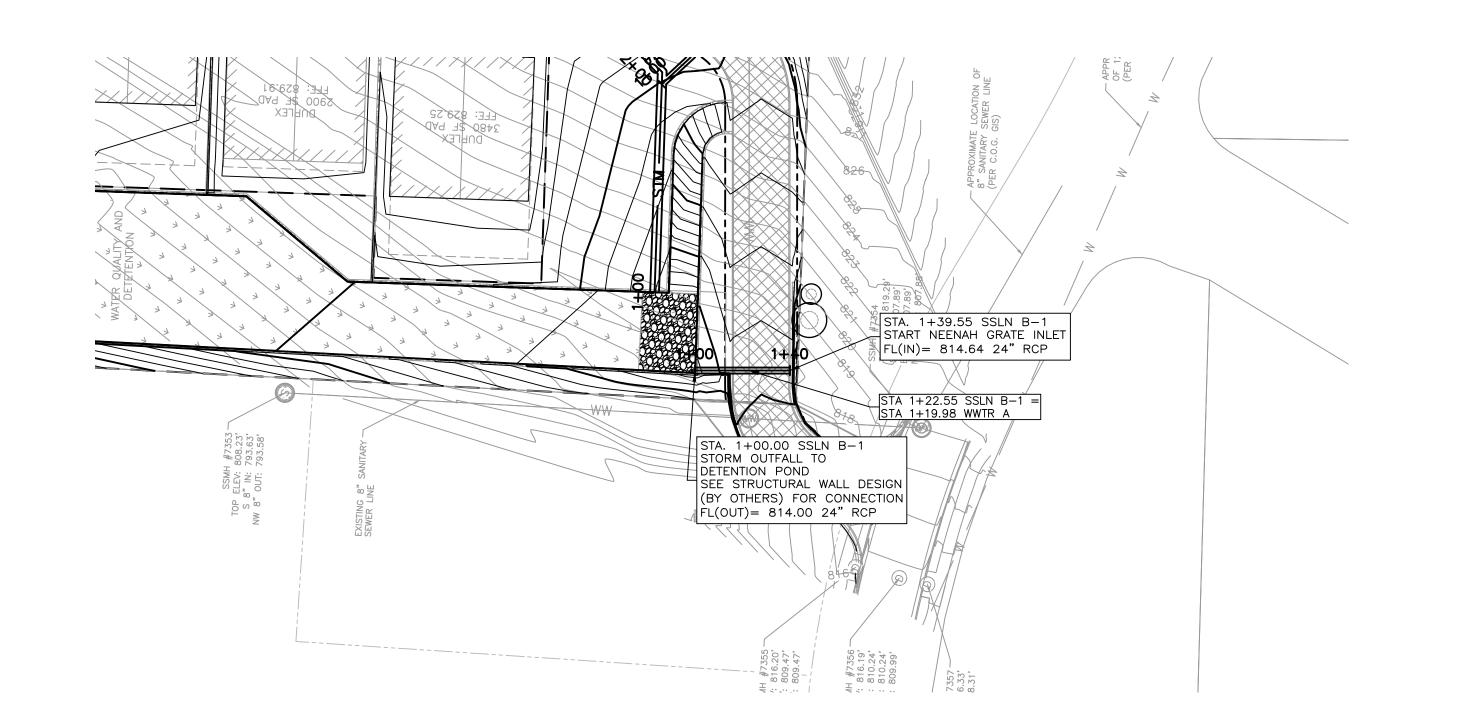
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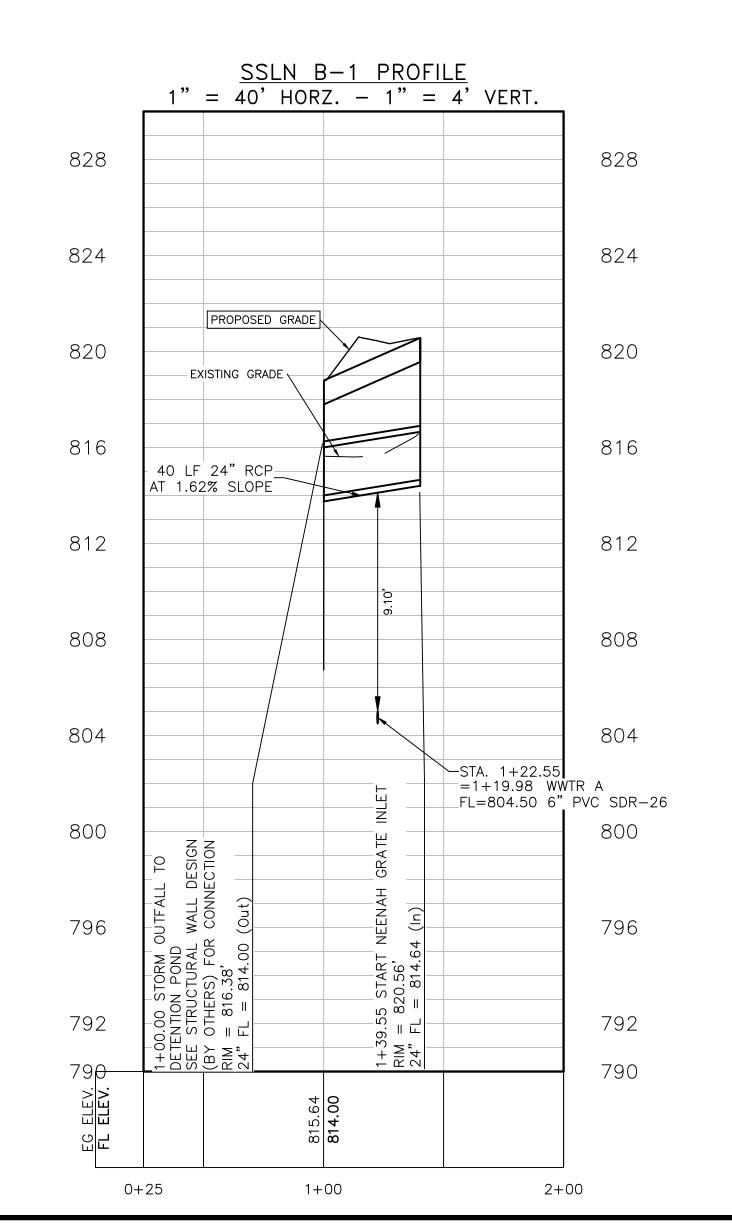
OF 43













THIS PLAN SET FOR REVIEW ONLY NOT FOR CONSTRUCTION

UTILITY LEGEND PROPOSED PROPERTY/ PROJECT BOUNDARY LINE

EXISTING R.O.W./PROPERTY LINE **EXISTING EASEMENT LINE** PROPOSED CURB & GUTTER

EXISTING CONTOURS

PROPOSED CONTOURS —W—— EX. WATER LINE ——₩—— PR. WATER LINE

PR. STORM SEWER LINE EX. FIRE HYDRANT PR. FIRE HYDRANT

WM EX. WATER METER EX. WASTEWATER MANHOLE

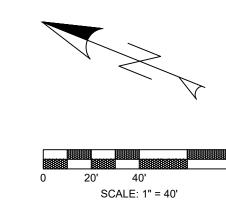
PR. WATER METER PR. WASTEWATER MANHOLE

→ FITTINGS AS NOTED → FLOW ARROW O WW CLEAN OUT

GATE VALVE AS NOTED T ELECTRIC TRANSFORMER UTILITY POLE

BFP BACK FLOW PREVENTER _____F ___ FIRE LINE

o100) EXISTING TREE (100) EXISTING TREE (TO BE REMOVED)



IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



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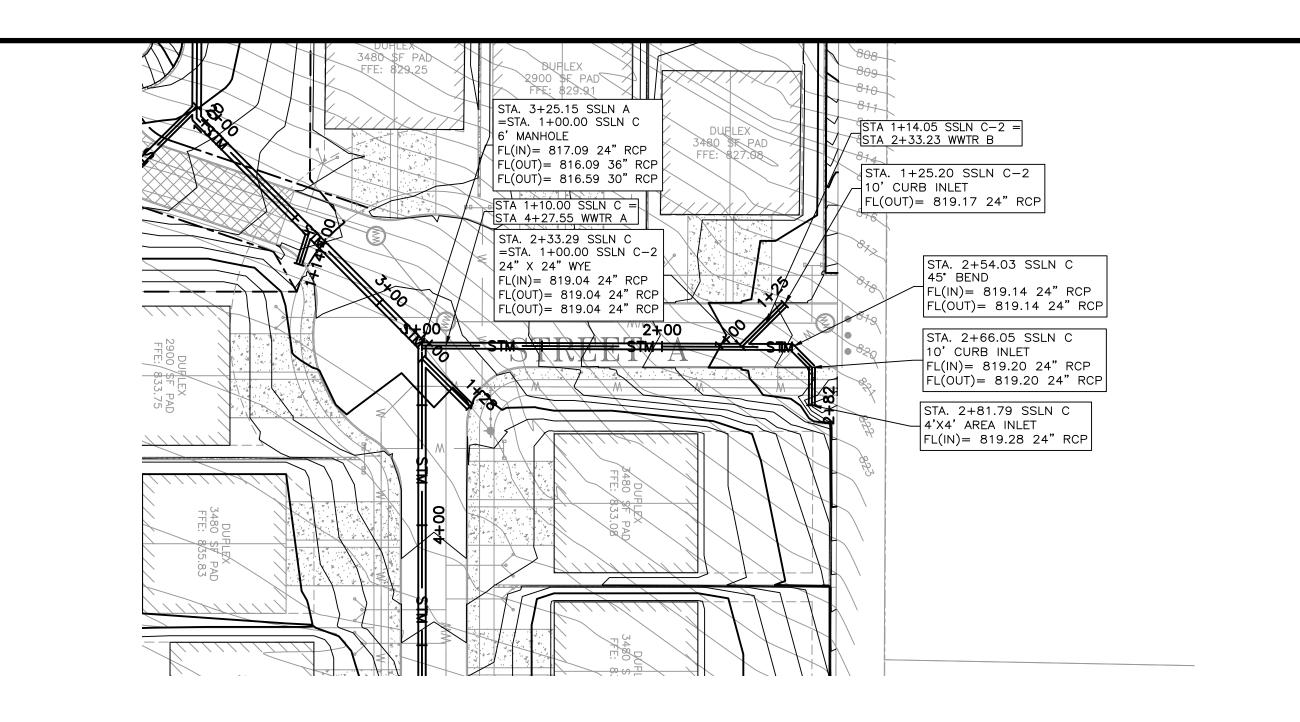
TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

STORM DRAIN B (1+00 TO END)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX

REVISION DESCRIPTION SHEET



836

832

828

824

820

816

812

808

 $\frac{\text{SSLN C PROFILE}}{\text{1"} = 40' \text{ HORZ.} - \text{1"} = 4' \text{ VERT.}}$

EXISTING GRADE -

133.29' OF 24" RCP @ 1.46%

STA. 1+10.00 =4+27.55 WWTR A FL=813.95 6" PVC SDR-26

PROPOSED GRADE

20.74' OF 24" RCP @ 0.50%

24" × 24 1.42' 819.04 819.04

2+33.29 24 RIM = 821.. 24" FL = 8 24" FL = 8 24" FL = 8

2+00

__15.73' OF 24"-√ RCP @ 0.50%

3+00

3+50

836

832

828

824

820

816

812

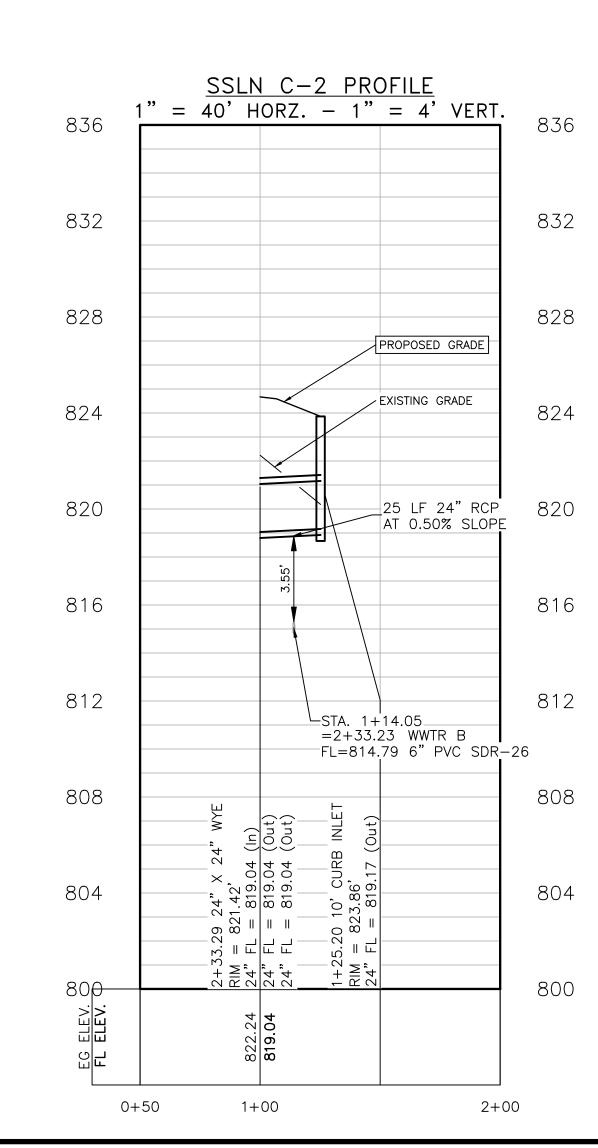
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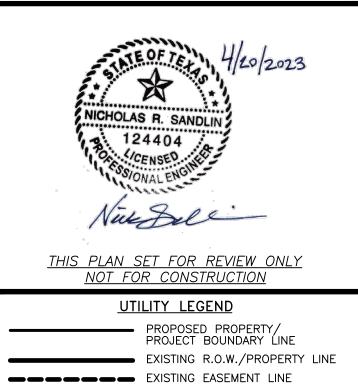
804

EG ELEV. FL ELEV.

0+50

1+00





PROPOSED CURB & GUTTER

EXISTING CONTOURS

──W── EX. WATER LINE **───₩──** PR. WATER LINE PR. STORM SEWER LINE

EX. FIRE HYDRANT (WM) EX. WATER METER

PR. FIRE HYDRANT PR. WATER METER PR. WASTEWATER MANHOLE WW EX. WASTEWATER MANHOLE

O WW CLEAN OUT

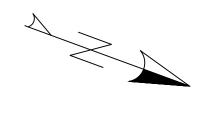
FLOW ARROW GATE VALVE AS NOTED T ELECTRIC TRANSFORMER UTILITY POLE

PROPOSED CONTOURS

BFP BACK FLOW PREVENTER _____F FIRE LINE

o100) EXISTING TREE (TO REMAIN)

(100) EXISTING TREE (TO BE REMOVED)



IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



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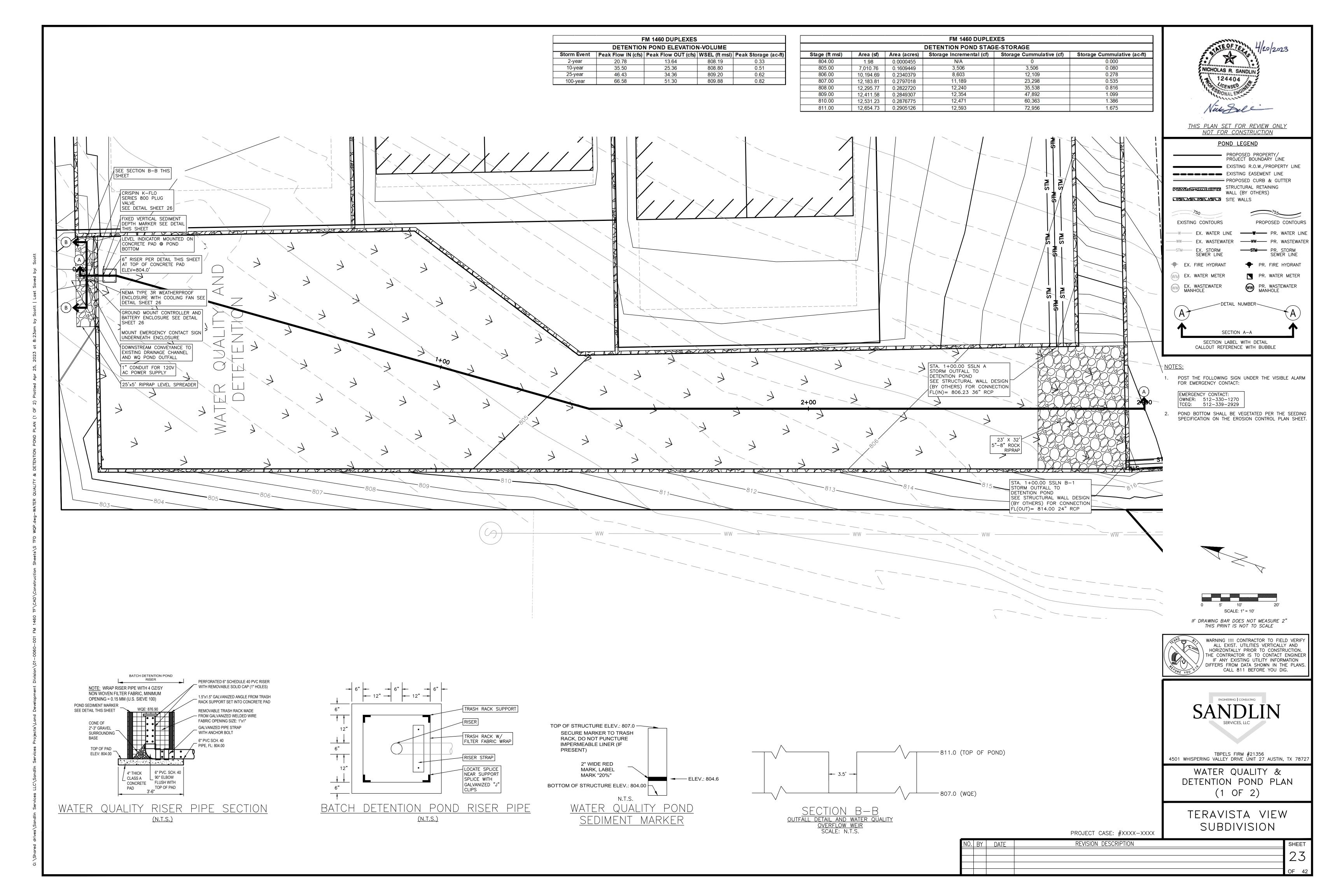
TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

STORM DRAIN C (1+00 TO END)

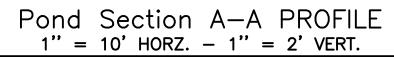
TERAVISTA VIEW SUBDIVISION

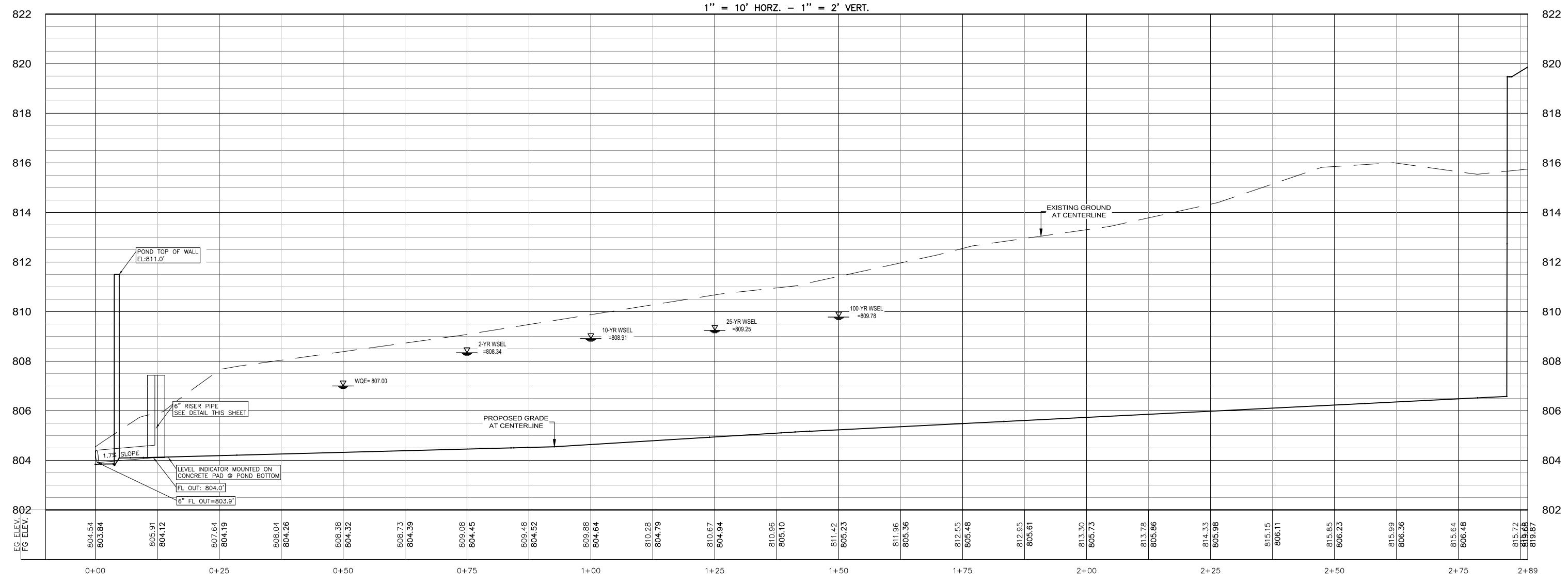
PROJECT CASE: #XXXX-XXXX

NO.	BY	DATE	REVISION DESCRIPTION	SHEET
				$\gamma \gamma$
				\angle
				OF 42









	FM 1460 DUPLEXES											
	DETENTION POND STAGE-STORAGE											
	Stage (ft msl)	Area (sf)	Area (acres)	Storage Incremental (cf)	Storage Cummulative (cf)	Storage Cummulative (ac-ft)						
	804.00	1.98	0.0000455	N/A	0	0.000						
	805.00	7,010.76	0.1609449	3,506	3,506	0.080						
	806.00	10,194.69	0.2340379	8,603	12,109	0.278						
WQE	807.00	12,183.81	0.2797018	11,189	23,298	0.535						
	808.00	12,295.77	0.2822720	12,240	35,538	0.816						
	809.00	12,411.58	0.2849307	12,354	47,892	1.099						
	810.00	12,531.23	0.2876775	12,471	60,363	1.386						
	811.00	12,654.73	0.2905126	12,593	72,956	1.675						

	FM 1460 DUPLEXES									
DETENTION POND ELEVATION-VOLUME										
Storm Event	Peak Flow IN (cfs)	Peak Flow OUT (cfs)	WSEL (ft msl)	Freeboard (ft)	Peak Storage (ac-ft)					
2-year	29.17	16.13	808.33	2.67	0.37					
10-year	45.94	27.64	808.91	2.09	0.54					
25-year	56.88	35.49	809.25	1.75	0.64					
100-year	74.92	48.68	809.78	1.22	0.79					





TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

WATER QUALITY & DETENTION POND PLAN (2 OF 2)

TERAVISTA VIEW SUBDIVISION

SHEET
21
Z4
OF 42

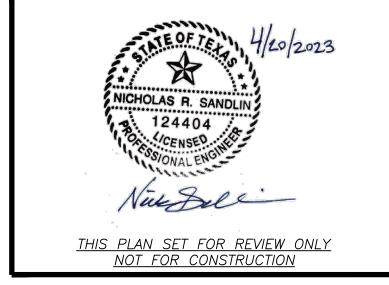
PROJECT CASE: #XXXX-XXXX

CITY OF GEORGETOWN TSS CALCULATIONS

Characters shown in black (Gold) are calculated fields. Charges to these fields will remove the equations used in the spreadsheet. The Resulted Load Reduction for the load crudest (Model are calculated fields. Charges to these fields will remove the equations used in the spreadsheet. The Resulted Load Reduction for the load crudest. Page 540 Ecostrol 3.3. Lp. 27 July at P.; where: Page 540 Ecostrol 3.3. Lp. 27 July at P.;							
A processing from the service of the	ns 04-20-2009			Project Name: Date Prepared:		plexes	
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Characters shown in red are data entry fields. Amanchers shown in back (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadcheet. The Required Load Reduction for the total project. **Page 3.21 layouth 2.1 layout	e location of instructions in the Technical Guid						
The Remarked Lood Reduction for the model moties. The Remarked Lood Reduction for the moties of the moties. The Remarked Lood Remoties See facilities. The Remarked Remoties See facilities. The Remoties See facilities. The Remarked Remoties See facilities. The Remoties See fa	l are data entry fields.						
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there: Limits Autumn 2.5 Light State Colors 193 carroot casting from the project of the project of the colors of	ion for the total project: Calcu	culations from	RG-348		Pages 3-27 to 3	3-30	
where: Lyson, moper - Require 150 removal menting from the process of development - 60% of immerced code As P Ref. (recoss in reported sector proposit) P - Awange control perfect on the proposed of the proposition of the proposed of the	Page 3-29 Equation 3.3: L _M = 28.93	13/Λv.D\ <-	Increase	ad to 28 93 per Georg	getown standa	rd of 85%	removal
where: Lyson, moper - Require 150 removal menting from the process of development - 60% of immerced code As P Ref. (recoss in reported sector proposit) P - Awange control perfect on the proposed of the proposition of the proposed of the	r age 3-29 Equation 3.3. E _M = 20.930	(A) X 1) X-1	- Increase	ed to 20.33 per G eorg	ge town standa	14 01 03/0	cilioval
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As The Increases in Improvious area by the project P = Authory arrange property in provious area with a complete in the Project P = Authory arrange provided in the Project Total project area in the finite of the pin 1	$A_N = Net ir$	increase in im	npervious a	area for the project			
Sile Data Determine Required Lead Removal Based on the Entire Project Frequency of the Project and selected Carlos and Selection of Carlos and Select	P = Avera	rage annual pr	recipitation	n, inches			
Site Data Datemans Required Local Sprance is Based on the Entire Project This project are included to Contry - Williamson							
Calculate Maximum TSS Load Removal Based on the Emile Polycet Total option of Removal Based on the Emile Polycet Total option of the Calculate Maximum TSS Load Removal Based on the Emile Polycet Total polyceter improvisors are sufficient in processes and the process of the process of the Polyceter improvisors are sufficient in processes and the process of the Polyceter improvisors are sufficient in processes are values entered in these fields should be for the total project area. Number of distinge basins / cutfills areas lessing the plan area = 1 PRED-1	uired Load Removal Based on the Entire Project	_					
Size Date December Required Coal Permond States on the Chart Project Total protection protection are admitted in your years	County = Willi Total project area included in plan * = 7		res				
Total project was produced as a second manufacture of the project was produced as an expension of the project was an expension			res				
Productopromat improvious area within the limit of the job of the plant of the job of th		3.31 ac	res				
Total post-decignment injectious area within the limits of the plan 0.45 0.		0.45					
Total past-development importance core fraction = 0.45	P =	32 inc	ches				
P = 32 Inches	L _M TOTAL PROJECT = 2	2945 lbs	2				
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Productions from the proposed BMP Code for this basin. Proposed BMP Code for this basin the selected BMP Type. RG-349 Page 3-35 Equation 3.7. L _q = (BMP efficiency) x P x (A ₁ x 3.46 + A ₂ x 0.54) where: A ₂ = Provious area proposed in the BMP cotchment area A ₃ = Provious area proposed in the BMP cotchment area A ₄ = Provious area proposed in this basin pin the BMP cotchment area A ₄ = Provious area proposed in this basin pin the BMP cotchment area A ₄ = Provious area proposed in this basin pin the BMP cotchment area A ₅ = A ₅ = 3.31 A ₅ = 3.31 A ₇ = 3.31 A ₇ = 3.31 A ₇ = 3.31 A ₇ = 3.33 B ₈ = 3.34 Desired L ₈ map point area Calculations from RG-348 Pages 3.34 to 3.36 S. Calculate Capture Volume required by the BMP Type for this drainage basin in outfall area Choosing Water Quality Volume Calculations from RG-348 Pages 3.35 to 3.37 Calculate Capture Volume required S. Calculate Capture Volume required S. Calculate Capture Volume required Desired Coefficient to Coeff	rs (This information should be provided for each	h basin):					
arisage Basin Parameters (This Information should be provided for each basin): Production P	Drainage Basin/Outfall Area No. =	1 100	R DA-1				
Drainage BasiniOutfall Area No. = 1 PR DA-1 Total drainage basin/outfall area = 7 Cold development importous are Post-development importous are Post-development importous area within drainage basin/outfall area = 3.31 pares Post-development importous fraction within drainage basin/outfall area = 0.02 Post-development importous fraction within drainage basin/outfall area = 0.02 Larma soan = 2.013 bs. Proposed BMP Code for this basin. Proposed BMP = Batch Detention Removal efficiency = 11 percent Removal efficiency = 11 percent Removal efficiency = 11 percent Removal efficiency = 12 percent Removal efficiency =	Diamage Dasin/Outlan Alea NO	. PF	, DU-1				
Drainage BasiniOutfall Area No. = 1 PR DA-1 Total drainage basin/outfall area = 7 Cold development importous are Post-development importous are Post-development importous area within drainage basin/outfall area = 3.31 pares Post-development importous fraction within drainage basin/outfall area = 0.02 Post-development importous fraction within drainage basin/outfall area = 0.02 Larma soan = 2.013 bs. Proposed BMP Code for this basin. Proposed BMP = Batch Detention Removal efficiency = 11 percent Removal efficiency = 11 percent Removal efficiency = 11 percent Removal efficiency = 12 percent Removal efficiency =			res				
Drainage Basin/Outfall Area No. = 1		0.08 acc					
Total drainage basin/outfall area = " 6.42 acres		0.52	ies				
Productopment improvius area within datalage basinifoutfall area = 7 0.08 acres Post-development improvius fraction within datalage basinifoutfall area = 9 0.52 Lutries busin = 2813 lbs. dicate the proposed BMP Code for this basin. Proposed BMP = Batch Determinant Romoid officiency = 91 purcent Romoid offic		2992 lbs	S .				
Post-development impervious area within drainage basin/outfall area 0.52 Lin the Beath 2.51 10.5 Lin the Beath 2.51 10.5 Lin the Beath 2.51 10.5 Ros-348 Page 3-33 Equation 3.7: Lin = (BMP efficiency) x P x (A) x 3.4.6 + A x x 0.54) Ros-348 Page 3-33 Equation 3.7: Lin = (BMP efficiency) x P x (A) x 3.4.6 + A x x 0.54) where: A c = Total On-Site drainage area in the BMP catchment area A c = Pervious area remaining in the BMP catchment area A c = Pervious area remaining in the BMP catchment area A c = Pervious area remaining in the BMP catchment area A c = Total On-Site drainage area in the BMP catchment a							
Post-development impervious fraction within drainage basin/outfall area = 2813 lbs. Calculate the proposed BMP Code for this basin.	Code for this basin.						
Late the proposed BMP Code for this basin. Proposed BMP = Batch Detention Remotel efficiency = 91 percent Iduate Maximum TSS Load Removed (Lin) for this Drainage Basin by the selected BMP Type. RG-346 Page 3-33 Equation 3.7: Line (BMP efficiency) x P x (A x 3.6 + Ap x 0.54)	Proposed BMP = Batch	ch Detention					
dicate the proposed BMP Code for this basin. Proposed BMP = Batch Detention Removal officiency = 91 porcent RCG-348 Page 3-33 Equation 3.7: L _{tt} = (BMP efficiency) x P x (A ₁ x 34.8 + A _p x 0.54) Where: A _c = Total On-Site drainage area in the BMP catchment area A _s = Imperious area proposed in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = Perious area remaining in the BMP catchment area A _s = A _s	Removal efficiency =	91 pe	rcent				
Proposed BMP = Satch Detention Removal efficiency = 91 percent alculate Maximum TSS Load Removed (L _i) for this Drainage Basin by the selected BMP Type. RG-348 Page 3-33 Equation 3.7: L _i = (BMP efficiency) x P x (A ₁ x 34.6 + A _i 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 _i = Pervious area remaining in the BMP catchment area A _i = Fisch acres A _i = Revious area remaining in the BMP catchment area A _i = Total On-Site drainage area in the BMP ca					Aqualogic Cartr Bioretention	idge Filter	
Removal efficiency = 91 percent alculate Maximum TSS Load Removed (L _n) for this Drainage Basin by the selected BMP Type. RG-348 Page 3-33 Equation 3.7. L _n = (6MP efficiency) x P x (Ax 34.6 + A _p x 0.54) where: A _c = Total On-Site drainage area in the BMP catchment area A _r = Pervious area proposed in the BMP catchment area A _r = Pervious area remaining in the BMP catchment area A _r = TSS Load removed from this catchment area A _r = TSS Load removed from this catchment area A _r = TSS Load removed from this catchment area by the proposed BMP where: A _r = 6.42 acros A _r = 3.31 acros A _r = 3.38 b bs Balculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M THIS BASIN} = 2813 bs. Desired L _{M THIS BASIN} = 2813 bs. S. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area. Calculations from RG-348 Pages 3.34 to 3.36 S. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3.36 to 3.37					Contech Storm	Filter	
Removel efficiency = 91 percent lateulate Maximum TSS Load Removed (L _n) for this Drainage Basin by the selected BMP Type. RG-348 Page 3-33 Equation 3.7: L _R = (6MP efficiency) x P x (A ₁ x 34.6 + A ₂ x 0.54) where: A ₁ = Trapen-lous area proposed in the BMP catchment area A ₂ = Pervious area proposed in the BMP catchment area A ₃ = Pervious area remaining in the BMP catchment area A ₄ = Pervious area remaining in the BMP catchment area A ₅ = Pervious area remaining in the BMP catchment area A ₆ = R6.42 acres A ₇ = R5S Load removed from this catchment area by the proposed BMP Where: A ₇ = R6.42 acres A ₈ = 3.331 acres A ₈ = 3.11 acres A ₈ = 3.38 b bs L _R = 3388 b bs S. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M THIS BASIN} = 2813 bs. S. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area, Calculations from RG-348 Pages 3-34 to 3-36 S. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area, On-site Water Quality Volume = 1.20 inches On-site Water Quality Volume = 10.248 cubic feet					Constructed We		
alculate Maximum TSS Load Removed (L _{ii}) 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 ₁ x 34.6 + A ₂ x 0.54) where: A ₂ = Total On-Site drainage area in the BMP catchment area A ₃ = Pervious area proposed in the BMP catchment area A ₄ = Pervious area remaining in the BMP catchment area A ₅ = Pervious area remaining in the BMP catchment area A ₆ = Folia and the BMP catchment area A ₇ = Pervious area remaining in the BMP catchment area A ₈ = Pervious area remaining in the BMP catchment area A ₈ = Folia and the BMP cat					Extended Deter	ntion	
RG-348 Page 3-33 Equation 3.7: L _R = (BMP efficiency) x P x (A ₁ x 34.6 + A ₁₇ x 0.54) where: A ₂ = Total On-Site drainage area in the BMP catchment area A ₃ = Impervious area proposed in the BMP catchment area A ₄ = Penkous area remaining in the BMP catchment area A ₅ = Penkous area remaining in the BMP catchment area A ₆ = Total On-Site drainage basin / outfall area A ₇ = Penkous area remaining in the BMP catchment area A ₈ = Total On-Site drainage basin / outfall area A ₈ = 3.11 acres A ₈ = 3.11 bs. Desired L _{M THIS SKASH} = 2813 bs. Desired L _{M THIS SKASH} = 0.83 bs. 5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 G. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. On-site Water Quality Volume = Calculations from RG-348 Pages 3-36 to 3-37					Grassy Swale Retention / Irriga	ation	
RG-348 Page 3-33 Equation 3.7: L _R = (BMP efficiency) x P x (A ₁ x 34.6 + A ₁₇ x 0.54) where: A ₂ = Total On-Site drainage area in the BMP catchment area A ₃ = Impervious area proposed in the BMP catchment area A ₄ = Penkous area remaining in the BMP catchment area A ₅ = Penkous area remaining in the BMP catchment area A ₆ = Total On-Site drainage basin / outfall area A ₇ = Penkous area remaining in the BMP catchment area A ₈ = Total On-Site drainage basin / outfall area A ₈ = 3.11 acres A ₈ = 3.11 bs. Desired L _{M THIS SKASH} = 2813 bs. Desired L _{M THIS SKASH} = 0.83 bs. 5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 G. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. On-site Water Quality Volume = Calculations from RG-348 Pages 3-36 to 3-37					Sand Filter		
where: A _C = Total On-Site drainage area in the BMP catchment area A _I = Impervious area proposed in the BMP catchment area A _C = Pervious area remaining in the BMP catchment area A _C = Pervious area remaining in the BMP catchment area E _R = TSS Load removed from this catchment area by the proposed BMP where: A _C = 6.42 acres A _I = 3.31 acres A _I = 3.31 acres E _R = 3386 bs Ibs Desired L _{M TRIS BASIN} = 2813 bs. Desired L _{M TRIS BASIN} = 2813 bs. S. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M TRIS BASIN} = 2813 bs. S. Calculate Fraction of Annual Runoff by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. On-site Water Quality Volume = 10248 cubic feet					Stormceptor Vegetated Filter	Ctrino	
where: A _C = Total On-Site drainage area in the BMP catchment area A _I = Impervious area proposed in the BMP catchment area A _I = Impervious area remaining in the BMP catchment area A _I = TSS Load removed from this catchment area B _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area by the proposed BMP where: A _I = TSS Load removed from this catchment area A _I = TSS Load removed BMP where: A _I = TSS Lo					Vegetated Filter	Strips	
Impervious area proposed in the BMP catchment area A _P = Pervious area remaining in the BMP catchment area F A _P = Pervious area remaining in the BMP catchment area F A _P = TSS Load removed from this catchment area by the proposed BMP where. A _P = 3.11 acres A _P = 3.11 acres A _P = 3.31 acres A _P = 3.31 acres A _P = 3.386 Ibs Ibs Ibs Ibs Iculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M THIS BASIN} = 2813 Ibs. 5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-36 to 3-37 Calculate Capture Volume required Do-site Water Quality Volume = 10248 Calculations from RG-348 Pages 3-36 to 3-37 Description of Annual Runoff Coefficient = 1.20 Inches Calculations from RG-348 Pages 3-36 to 3-37 Description of Annual Runoff Coefficient = 1.20 Inches Do-site Water Quality Volume = 10248 Calculations from RG-348 Pages 3-36 to 3-37 Description of Annual Runoff Coefficient = 1.20 Inches					Wet Basin		
A Impervious area proposed in the BMP catchment area A Pervious area remaining in the BMP catchment area L TSS Load removed from this catchment area by the proposed BMP Where: A F 6.42 acres A F 3.31 acres A F 3.31 acres L F 3.386 bis Iculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L THIS BASIN F 0.83 bis. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Rainfall Depth 1.20 inches Post Development Runoff Coefficient 0.37 Calculations from RG-348 Pages 3-36 to 3-37 Calculations from RG-348 Pages 3-36 to 3-37 Pages 3-36 to 3-37 Pages 3-36 to 3-37	and Pamayad //) for this Drainage Pagin by the s	a cleated DME	Tuno		Wet Vault		
Ap = Pervious area remaining in the BMP catchment area L _R = TSS Load removed from this catchment area by the proposed BMP where: Ac = 6.42 acres A _i = 6.42 acres A _i = 3.31 acres L _R = 3386 lbs lculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M THIS BASIN} = 2813 lbs. Desired L _{M THIS BASIN} = 2813 lbs. 5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-36 to 3-37	Dad Removed (LR) for this Drainage Basin by the st	selected Bivir	P Type.				
L _R = TSS Load removed from this catchment area by the proposed BMP where: A _C = 6.42 acres A _I = 3.31 acres A _P = 3.11 acres L _R = 3386 ibs L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3386 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R = 1 L _R = 3.31 los L _R =	RG-348 Page 3-33 Equation 3.7: L _R = (BMP	P efficiency) x	(P x (A ₁ x	x 34.6 + A _P x 0.54)			
Ac = 6.42 acres A _I = 3.31 acres A _P = 3.11 acres L _R = 3386 lbs Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M THIS BASIN} = 2813 lbs.							
A ₁ = 3.31 acres A _P = 3.11 acres L _R = 3386 lbs Culate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M This BASIN} = 2813 lbs.	A _C = Total	ıl On-Site draiı	nage area	in the BMP catchmen	nt area		
A ₁ = 3.31 acres A _P = 3.11 acres L _R = 3386 lbs Culate Fraction of Annual Runoff to Treat the drainage basin / outfall area Desired L _{M This BASIN} = 2813 lbs.			•	n the BMP catchment a			
Calculations from RG-348 Pages 3-36 to 3-37 Acres Ap = 3.11 Acres Ap = 3.386 Ap =				the BMP catchment ar			
Leulate Fraction of Annual Runoff to Treat the drainage basin / outfall area	$L_{R} = TSS L$	Load remove	d from this	s catchment area by th	he proposed BM	IP	
Desired L _{M THIS BASIN} = 2813 lbs. Desired L _{M THIS BASIN} = 2813 lbs. F = 0.83 5. Calculate Fraction of Annual Runce F = 0.83 6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Rainfall Depth = 1.20 inches Post Development Runoff Coefficient = 0.37 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37 Pages 3-36 to 3-37	A _C = 6	6.42 ac	res				
Desired L _{M THIS BASIN} = 2813 lbs. F = 0.83 Alculate 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 = 1.20 inches Post Development Runoff Coefficient = 0.37 On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37		3.31 ac					
Desired L _{M THIS BASIN} = 2813 Ibs. F = 0.83 Iculate 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 = 1.20 inches Post Development Runoff Coefficient = 0.37 On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37	- 1	3.11 ac					
Desired L _{M THIS BASIN} = 2813 lbs. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36		3386 lbs					
Second Computer Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36	-11						
S. Calculate Fraction of Annual Runce S. C							
Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36	ıal Runoff to Treat the drainage basin / outfall ar	area					
Iculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36 6. Calculate Capture Volume require From RG-348 Pages 3-34 to 3-36 Calculate Capture Volume require Calculations from RG-348 Pages 3-36 to 3-37 Calculations from RG-348 Pages 3-36 to 3-37							
Rainfall Depth = 1.20 inches Post Development Runoff Coefficient = 0.37 On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37	Desired L _{M THIS BASIN} = 2	2992 Ibs	S.				
Rainfall Depth = 1.20 inches Post Development Runoff Coefficient = 0.37 On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37							
Rainfall Depth = 1.20 inches Post Development Runoff Coefficient = 0.37 On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37	F = 0	0.88					
Rainfall Depth = 1.20 inches Post Development Runoff Coefficient = 0.37 On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37	required by the BMP Type for this drainage bas	sin / outfall a	area.	Calculations from RG-	-348	Pages 3-3	4 to 3-36
On-site Water Quality Volume = 10248 cubic feet Calculations from RG-348 Pages 3-36 to 3-37							
Calculations from RG-348 Pages 3-36 to 3-37	Rainfall Depth = 1	1.50 inc	hes				
Calculations from RG-348 Pages 3-36 to 3-37		0.37	71100				
	· ·	12810 cu	bic feet				
	Calcu	culations from	RG-348	Pages 3-36 to 3-37			
Off-site area draining to BMP = 0.00 acres		•		222 2 33 10 0 01			
Off-site Impervious cover draining to BMP = 0.00 acres		0.00 ac					
Impervious fraction of off-site area = 0 Off-site Runoff Coefficient = 0.00	•	0.00 ac	res				
Off-site Runoπ Coefficient = 0.00 Off-site Water Quality Volume = 0 cubic feet	TOTAL PROOF PROPERTY AND ANALYSIS OF A STATE AND ANALYSIS OF A STATE OF A STA	0.00					
Silono maior quality votario	Off-site Water Quality Volume =		bic feet				
Storage for Sediment = 2050		2500					
Total Cantura Valuma (raquirad water quality valuma(a) v 1 20) = 12207 aubia foot	5	2562 15372 cul	hic foot				
Total Capitale Volume (require	required water quality volume(s) x 1.20) = 1: sed to calculate the required water quality volun			d BMP.			

BATCH DETENTION PO	OND	
Contributing Drainage Area =	PR DA-1	
Total Drainage Area =	6.42	acre
Pre-Development I.C. =	0.13	acre
Post-Development I.C. =	3.31	acre
Post-Development I.C. Fraction =	0.45	
L _{M TOTAL PROJECT} =	2945	Ibs
$A_{C} = $	6.42	acre
$A_1 =$	3.31	acre
A _P =	3.11	acre
L _R =	3386	Ibs
Fraction of Annual Runoff (F) =	0.88	
Rainfall Depth =	1.50	inch
Post Development Runoff Coefficient =	0.37	IIICII
On-site Water Quality Volume =	12810	cubic ft
,		
Off-site area draining to BMP =	0.00	acre
Off-site Impervious cover draining to BMP =	0.00	acre
Impervious fraction of off-site area =	-	
Off-site Runoff Coefficient =	-	
Off-site Water Quality Volume =	0	cubic ft
Storage for Sediment =	2562	cubic ft
Total Capture Volume Required =	15372	cubic ft
Total Capture Volume Provided =	23749	cubic ft

BATCH DETENTION POND - DRAWDOWN CALCUALTIONS									
01	0		Deletion	T-4-1 1/-1	Relative	Cumulative	Outflow		
Stage (ft.amsl)	Cumulative	∐ood (ft)	Relative	Total Volume	Time To Drain (hr)	Time To	Velocity		
(ft amsl)	Storage (cf)	Head (ft)	Volume (cf)	(cf)	, ,		(fps)		
804.00	0	0.10	0	0	0.00	0.00	0.00		
805.00	3506	1.10	3506	3506	0.95	0.95	5.22		
806.00	12109	2.10	8603	12109	1.69	2.64	7.21		
807.00	23298	3.10	11189	23298	1.81	4.45	8.76		
808.00	35538	4.10	12240	35538	1.72	6.16	10.07		
809.00	47892	5.10	12354	47892	1.56	7.72	11.24		
810.00	60363	6.10	24825	60363	2.86	9.02	12.29		
811.00	72956	7.10	12593	72956	1.34	10.37	13.26		
			Cor	nplete Drawd	own Time	10.37	hr		
Elevation	of Downstrean	n WSE =	803.9		ft asml				
Orifice Dia	ameter (inches	s) =	6		in				
24-Hour	Drawdown Vo	olume =	203719.10		cf				



WARNING !!!! CONTRACTOR TO FIELD VERIFY
ALL EXIST. UTILITIES VERTICALLY AND
HORIZONTALLY PRIOR TO CONSTRUCTION.
THE CONTRACTOR IS TO CONTACT ENGINEER
IF ANY EXISTING UTILITY INFORMATION
DIFFERS FROM DATA SHOWN IN THE PLANS.
CALL 811 BEFORE YOU DIG.



TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

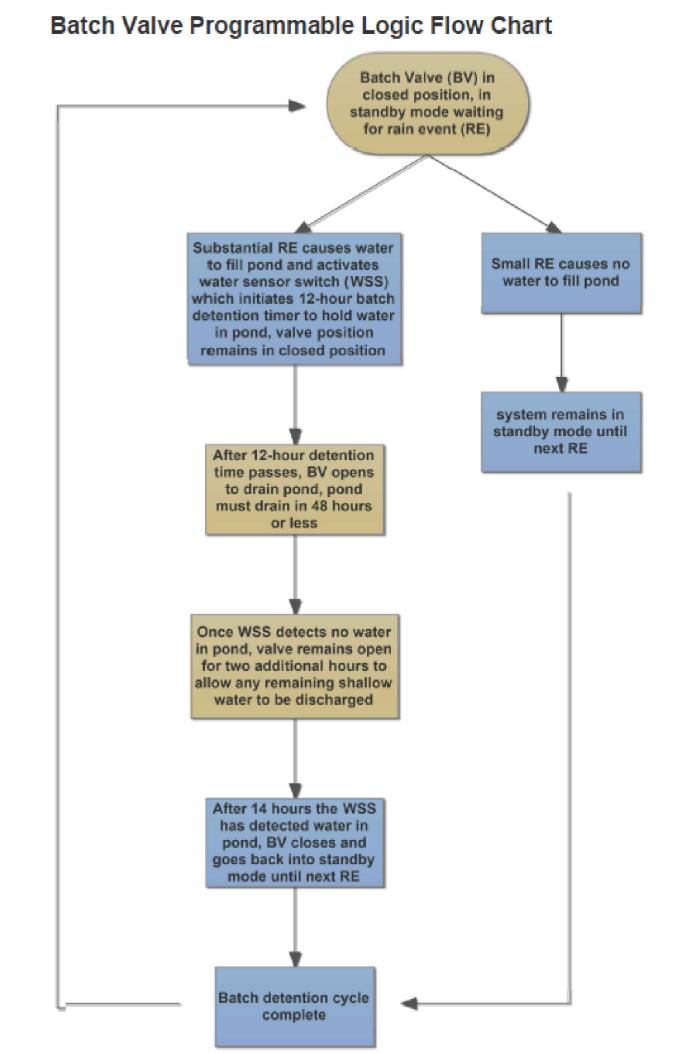
WATER QUALITY CALCULATIONS

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET 25

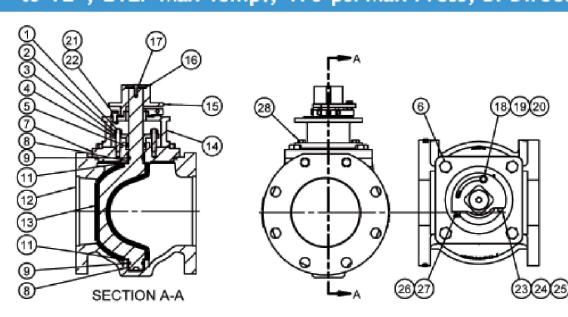
- Standard boxes are fabricated from .125" thick 5052--H32 aluminum
- Heavy--duty stainless steel continuous
- Heavy--duty stainless steel continuous hinge
- Seams are continuously welded and then sanded
- Adjustable tension stainless steel padlock hasp
- Removable component mounting plate
- Standard finish is a bright white polyester powder--coat inside and out
- Two 7/8" diameter wire holes
- Built to NEMA 3R specifications
- Filtered or screened ventilation louvers

- Hinged front door with PORON door gasket
- Supplied with u--bolts (when pole specified)



800 SERIES MATERIAL LIST

2.5" to 12", 212F Max Temp., 175 psi Max Press, Bi-Directional

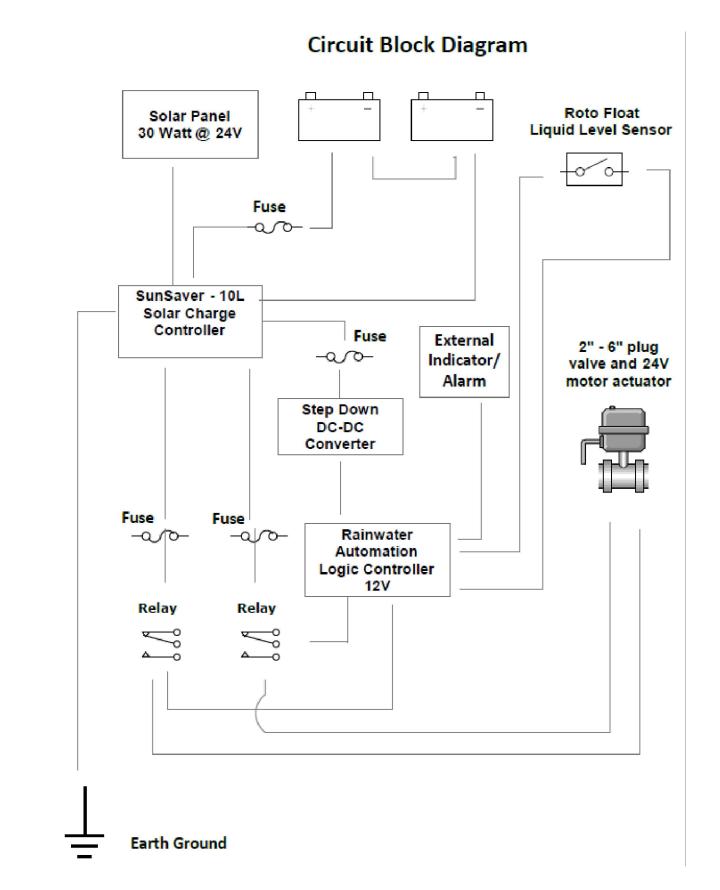


Iten	n Description	Material	Item	Description	Material
1	Gland Stud	Stainless Steel	15	Torque Collar	A536 GR 65-45-12
2	Hex Nut	Stainless Steel	16	Flat Washer	Q235-A Zinc Plated
3	Flat Washer	Stainless Steel	17	Socket Head Capscrew	Stainless Steel
4	Gland	ASTM A126 CL B	18	Hex Head Capscrew	Stainless Steel
5	V-Ring Set	NBR	19	Hex Nut	Stainless Steel
6	Hex Head Capscrew	Stainless Steel	20	Flat Washer	Stainless Steel
7	Cover	ASTM A126 CL B	21	Socket Head Capscrew	Stainless Steel
8	Bearing	SST, Sintered	22	Lock Washer	Stainless Steel
9	O-Ring	NBR	23	Socket Head Capscrew	Stainless Steel
10	O-Ring	NBR	24	Hex Nut	Stainless Steel
11	Thrust Washer	PTFE	25	Flat Washer	Stainless Steel
12	Body	ASTM A126 CL B	26	Hex Head Capscrew	Stainless Steel
13	Plug Molded	A536 GR 65-45-12 +NBR	27	Hex Nut	Stainless Steel
14	Torque Collar Adapter (Buried)	ASTM A126 CL B	28	Hex Head Capscrew	Stainless Steel

800 SERIES Cv Data (GPM@1PSI)

Size	2.5	3	4	5	6	8	10	12
Cv	425	680	1190	2000	2400	4600	5800	9100

Crispin/K-Flo Valves, 600 Fowler Ave., Berwick PA 18603 T: 800-247-VALV W: www.kflovalves.com



TCEQ CONSTRUCTION NOTES:

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE OR CONSTRUCTION ACTIVITIES. THIS NOTICE MUST

- 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

WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN (CZP) AND THE TCEQ

INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED

ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ONSITE.

3. NO HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A

SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE. 4. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND

CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH

MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY,

OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY

5. 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,

SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS WHEN IT OCCUPIES

50% OF THE BASIN'S DESIGN CAPACITY. 7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER

PREVENTED FROM BEING DISCHARGED OFFSITE. 8. ALL EXCAVATED MATERIAL THAT WILL BE STORED ON-SITE MUST HAVE PROPER E&S

9. IF PORTIONS OF THE SITE WILL HAVE A 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 10. THE FOLLOWING RECORDS SHOULD 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.

11. THE HOLDER OF ANY APPROVED CZP MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE

A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES (BMPS) OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS. DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;

B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED; C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF

THE EDWARDS AQUIFER; OR D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE APPROVED CONTRIBUTING ZONE PLAN.



Actuator Specifications	F	4	P	5	P6			
Torque "lb/Nm	3500"lb:	s/400Nm	4400"lb:	s/500Nm	5750"lbs	s/650Nn		
Supply Voltage	12vac/vdc	24vac/vdc	12vac/vdc	24vac/vdc	12vac/vdc	24vac/vd		
Max Inrush Current	16.1A	9.2A	13.5A	9.0A	12.5A	8.5A		
Running Current	16.1A	8.5A	14.1A	7.5A	12.3A	7.0A		
Motor			DC Bru	sh Type				
Runtime (90°@60Hz/vdc)	16	sec	22	sec	28	sec		
Runtime (90°@50Hz)	16	sec	22	sec	28	sec		
Duty Cycle			75	5%				
Motor Starts	1200 per hour							
Weight	47lbs/22kg							
Mechanical Connections		IS	D5211 F1	0 8pt 35r	nm			
Electrical Entry			(2) 3/4	1" NPT				
Electrical Terminations			12-1	16ga				
Environmental Rating	NEMA 4/4X							
Manual Override	7.6" Handwheel							
Control	On/Off-Jog, Proportional							
Actuator Case material	Aluminum Alloy, Powder coated							
Motor Drotaction	230°F/110°C Thermal F* Class							
Motor Protection	*Totally Enclosed Non-Ventilated Motors							
Ambient Temperature		•	-22°F to	+125°F				
Operating Range	-30°C to +52°C							



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NICHOLAS R. SANDLIN

124404 CENSEO ...

THIS PLAN SET FOR REVIEW ONLY NOT FOR CONSTRUCTION



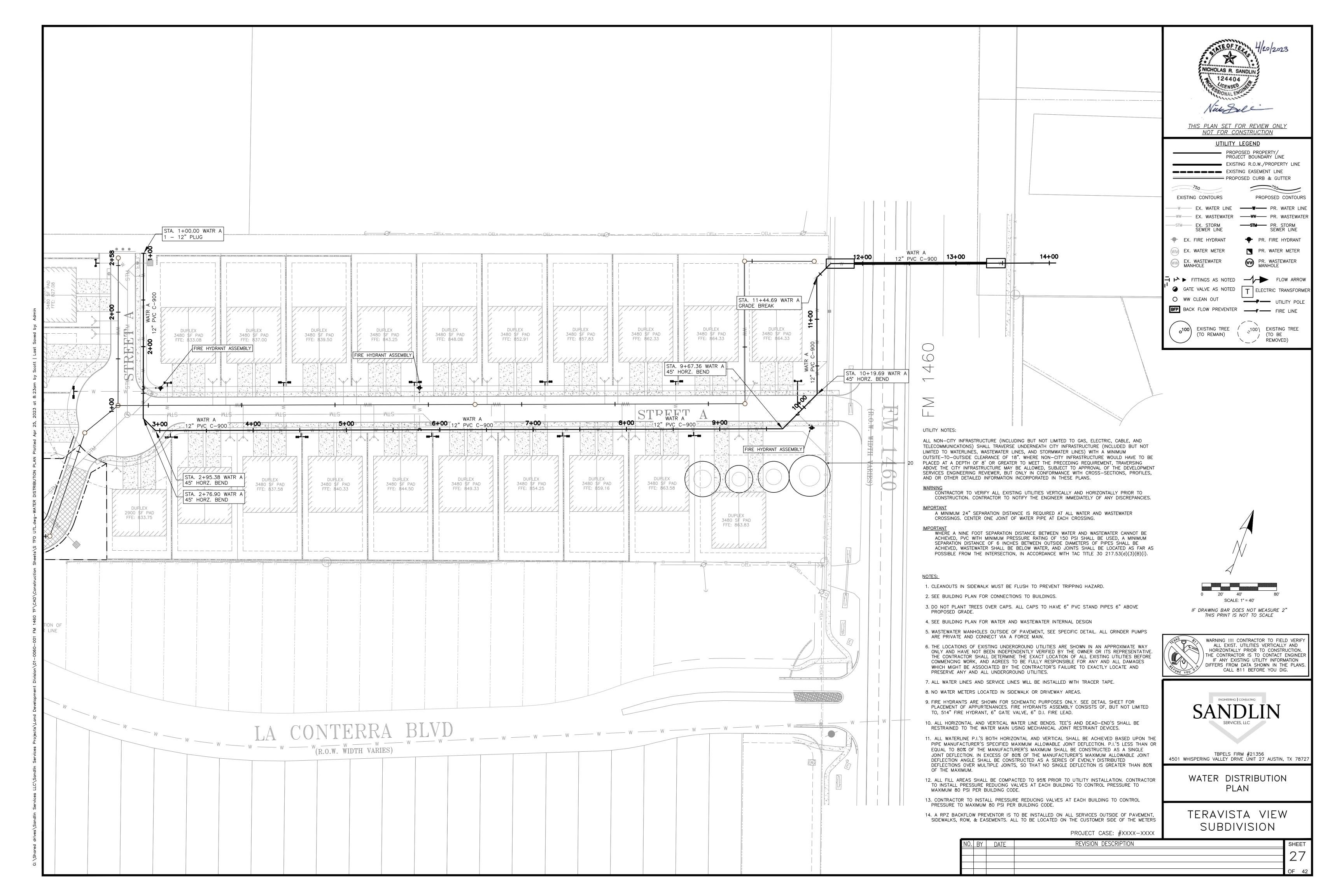
TBPELS FIRM #21356
4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

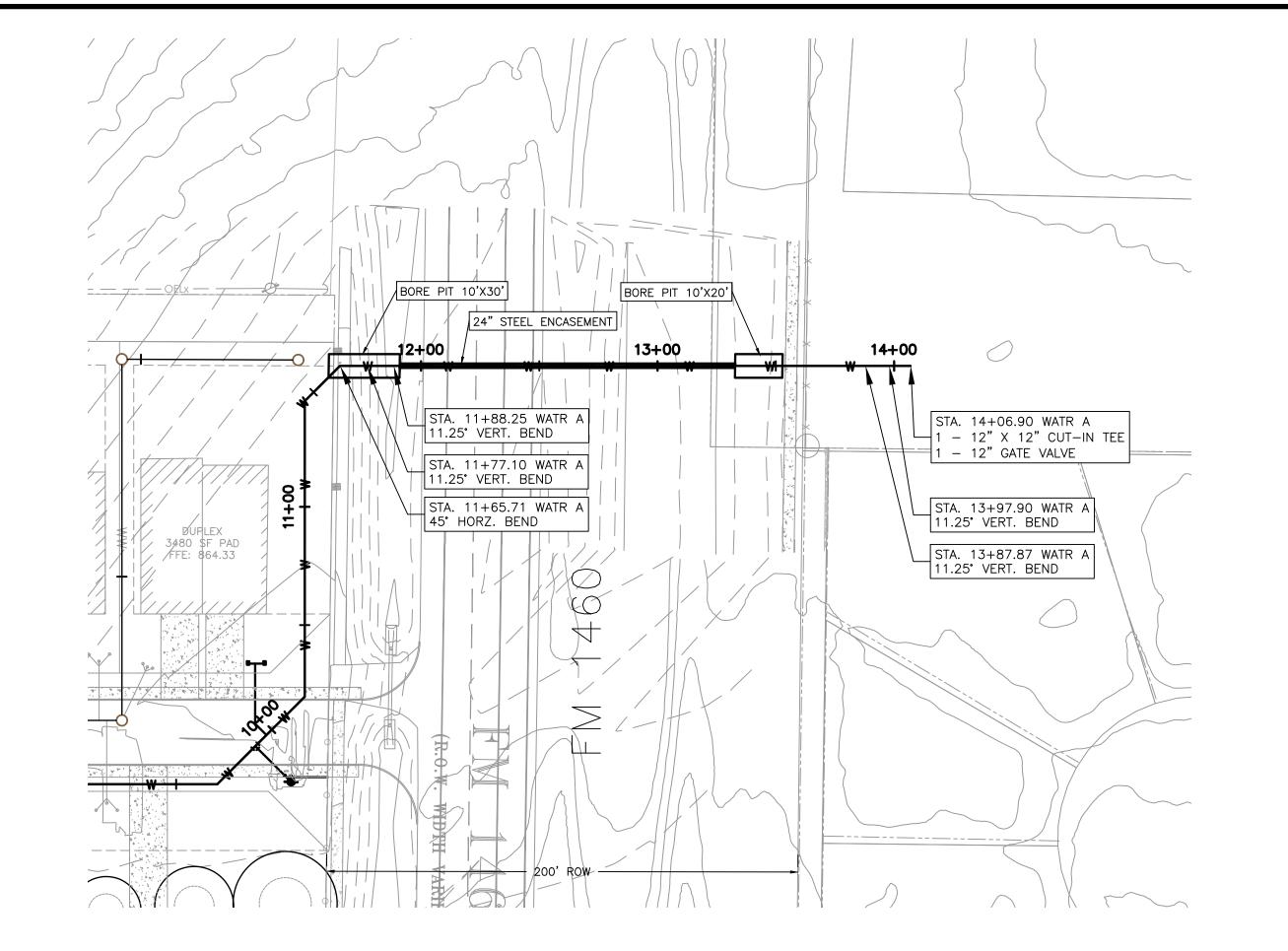
WATER QUALITY DETAILS

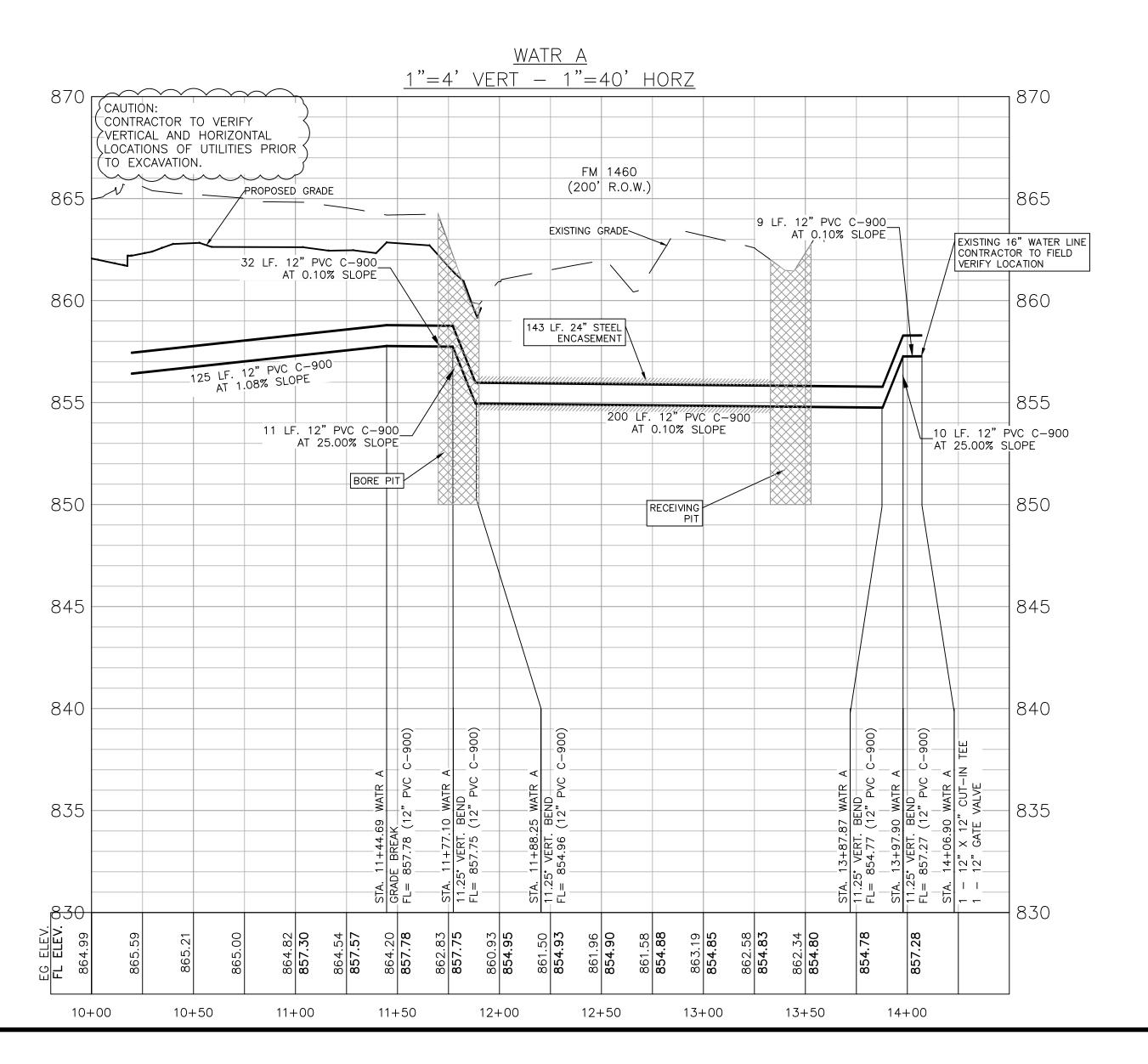
TERAVISTA VIEW SUBDIVISION

SHEET

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION







UTILITY NOTES:

ALL NON-CITY INFRASTRUCTURE (INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, CABLE, AND TELECOMMUNICATIONS) SHALL TRAVERSE UNDERNEATH CITY INFRASTRUCTURE (INCLUDED BUT NOT LIMITED TO WATERLINES, WASTEWATER LINES, AND STORMWATER LINES) WITH A MINIMUM OUTSITE-TO-OUTSIDE CLEARANCE OF 18". WHERE NON-CITY INFRASTRUCTURE WOULD HAVE TO BE PLACED AT A DEPTH OF 8' OR GREATER TO MEET THE PRECEDING REQUIREMENT, TRAVERSING ABOVE THE CITY INFRASTRUCTURE MAY BE ALLOWED, SUBJECT TO APPROVAL OF THE DEVELOPMENT SERVICES ENGINEERING REVIEWER, BUT ONLY IN CONFORMANCE WITH CROSS-SECTIONS, PROFILES, AND OR OTHER DETAILED INFORMATION INCORPORATED IN THESE PLANS.

WARNING
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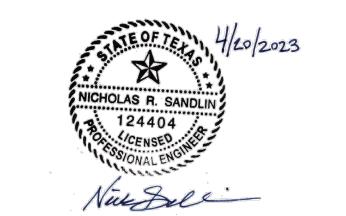
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IMPORTANT
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NOTES:

- 1. CLEANOUTS IN SIDEWALK MUST BE FLUSH TO PREVENT TRIPPING HAZARD.
- 2. SEE BUILDING PLAN FOR CONNECTIONS TO BUILDINGS.
- 3. DO NOT PLANT TREES OVER CAPS. ALL CAPS TO HAVE 6" PVC STAND PIPES 6" ABOVE PROPOSED GRADE.
- 4. SEE BUILDING PLAN FOR WATER AND WASTEWATER INTERNAL DESIGN
- 5. WASTEWATER MANHOLES OUTSIDE OF PAVEMENT, SEE SPECIFIC DETAIL. ALL GRINDER PUMPS ARE PRIVATE AND CONNECT VIA A FORCE MAIN.
- 6. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE ASSOCIATED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- 7. ALL WATER LINES AND SERVICE LINES WILL BE INSTALLED WITH TRACER TAPE.
- 8. NO WATER METERS LOCATED IN SIDEWALK OR DRIVEWAY AREAS.
- 9. FIRE HYDRANTS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. SEE DETAIL SHEET FOR PLACEMENT OF APPURTENANCES. FIRE HYDRANTS ASSEMBLY CONSISTS OF, BUT NOT LIMITED TO, 514" FIRE HYDRANT, 6" GATE VALVE, 6" D.I. FIRE LEAD.
- 10. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS. TEE'S AND DEAD-END'S SHALL BE RESTRAINED TO THE WATER MAIN USING MECHANICAL JOINT RESTRAINT DEVICES.
- 11. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION. P.I.'5 LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION. IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SINGLE DEFLECTION IS GREATER THAN 80% OF THE MAXIMUM.
- 12. ALL FILL AREAS SHALL BE COMPACTED TO 95% PRIOR TO UTILITY INSTALLATION. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.
- 13. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.
- 14. A RPZ BACKFLOW PREVENTOR IS TO BE INSTALLED ON ALL SERVICES OUTSIDE OF PAVEMENT, SIDEWALKS, ROW, & EASEMENTS. ALL TO BE LOCATED ON THE CUSTOMER SIDE OF THE METERS



THIS PLAN SET FOR REVIEW ONLY NOT FOR CONSTRUCTION

UTILITY LEGEND PROPOSED PROPERTY/ PROJECT BOUNDARY LINE EXISTING R.O.W./PROPERTY LINE EXISTING EASEMENT LINE PROPOSED CURB & GUTTER EXISTING CONTOURS PROPOSED CONTOURS —W—— EX. WATER LINE ——₩—— PR. WATER LINE

PR. FIRE HYDRANT WM EX. WATER METER PR. WATER METER

PR. WASTEWATER MANHOLE → FITTINGS AS NOTED → FLOW ARROW

EX. WASTEWATER

GATE VALVE AS NOTED T ELECTRIC TRANSFORMER O WW CLEAN OUT —— UTILITY POLE

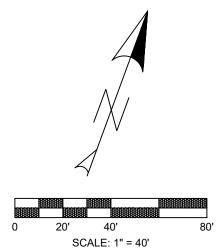
BFP BACK FLOW PREVENTER _____F FIRE LINE

o100) EXISTING TREE (TO REMAIN)

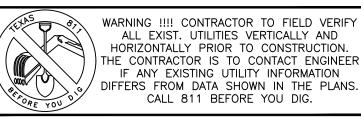
o100\ EXISTING TREE

(TO BE ŘEMOVED)

SEWER LINE



IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



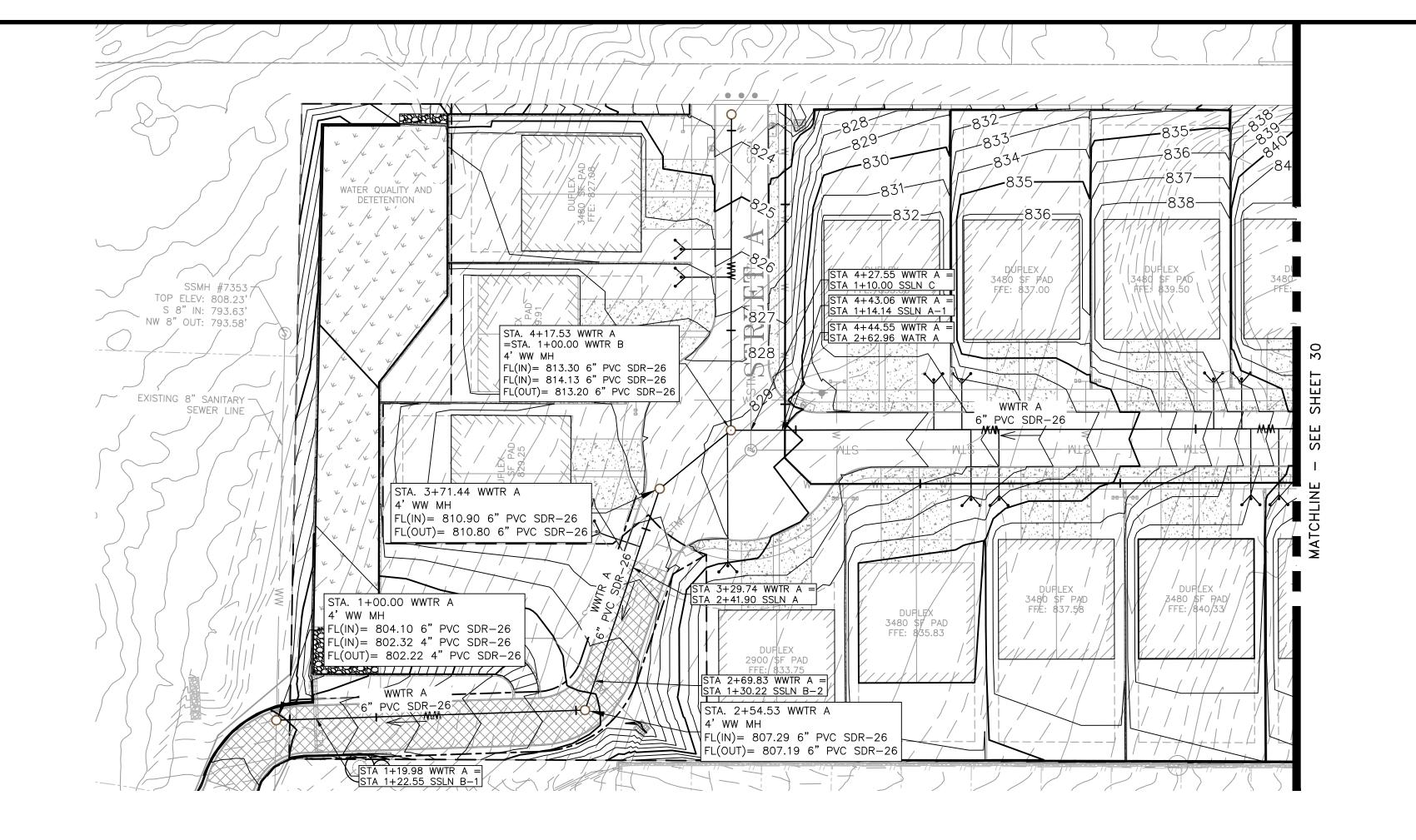


TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

WATER LINE A (1+00 TO 7+00)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET 28



WWTR A 1"=4' VERT - 1"=40' HORZPROPOSED GRADE 830 -STA. 4+27.55 -=1+10.00 SSLN C _FL=817.24 24" RCP_ -∕-STA. 4+44.55-=2+62.96 WATR A FL=823.96 12" PVC C-900 825 825 _STA. 4+43.06 =1+14.14 SSLN A-1 _FL=817.54 30" RCP___ 820 820 EXISTING GRADE STA. 3+29.74 =2+41.90 SSLN A -STA. 1+19.98 FL=812.44 36" RCP =1+22.55 SSLN B-1 _FL=814.36 24" RCP_ 815 810 155 LF. 6" PVC SDR-26 AT 2.00% SLOPE 805 800 800 830.51 1+00 2+50

3+00

3+50

4+00

4+50

5+00

5+50

6+00

6+50

1 + 50

2+00

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CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

A MINIMUM 24" SEPARATION DISTANCE IS REQUIRED AT ALL WATER AND WASTEWATER CROSSINGS. CENTER ONE JOINT OF WATER PIPE AT EACH CROSSING.

MHERE A NINE FOOT SEPARATION DISTANCE BETWEEN WATER AND WASTEWATER CANNOT BE ACHIEVED, PVC WITH MINIMUM PRESSURE RATING OF 150 PSI SHALL BE USED, A MINIMUM SEPARATION DISTANCE OF 6 INCHES BETWEEN OUTSIDE DIAMETERS OF PIPES SHALL BE ACHIEVED, WASTEWATER SHALL BE BELOW WATER, AND JOINTS SHALL BE LOCATED AS FAR AS POSSIBLE FROM THE INTERSECTION, IN ACCORDANCE WITH TAC TITLE 30 217.53(d)(3)(B)(i).

- 1. CLEANOUTS IN SIDEWALK MUST BE FLUSH TO PREVENT TRIPPING HAZARD.
- 2. SEE BUILDING PLAN FOR CONNECTIONS TO BUILDINGS.

ARE PRIVATE AND CONNECT VIA A FORCE MAIN.

PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.

- 3. DO NOT PLANT TREES OVER CAPS. ALL CAPS TO HAVE 6" PVC STAND PIPES 6" ABOVE PROPOSED GRADE.
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UTILITY LEGEND PROPOSED PROPERTY/ PROJECT BOUNDARY LINE EXISTING R.O.W./PROPERTY LINE EXISTING EASEMENT LINE PROPOSED CURB & GUTTER EXISTING CONTOURS PROPOSED CONTOURS

-W---- EX. WATER LINE -----₩----- PR. WATER LINE

EX. FIRE HYDRANT PR. FIRE HYDRANT WM EX. WATER METER PR. WATER METER

PR. WASTEWATER MANHOLE - FLOW ARROW FITTINGS AS NOTED GATE VALVE AS NOTED T | ELECTRIC TRANSFORMER

O WW CLEAN OUT UTILITY POLE

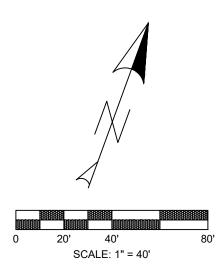
BFP BACK FLOW PREVENTER _____F FIRE LINE

EXISTING TREE

(TO REMAIN)

o100\ EXISTING TREE (TO BE REMOVED)

SEWER LINE



IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE



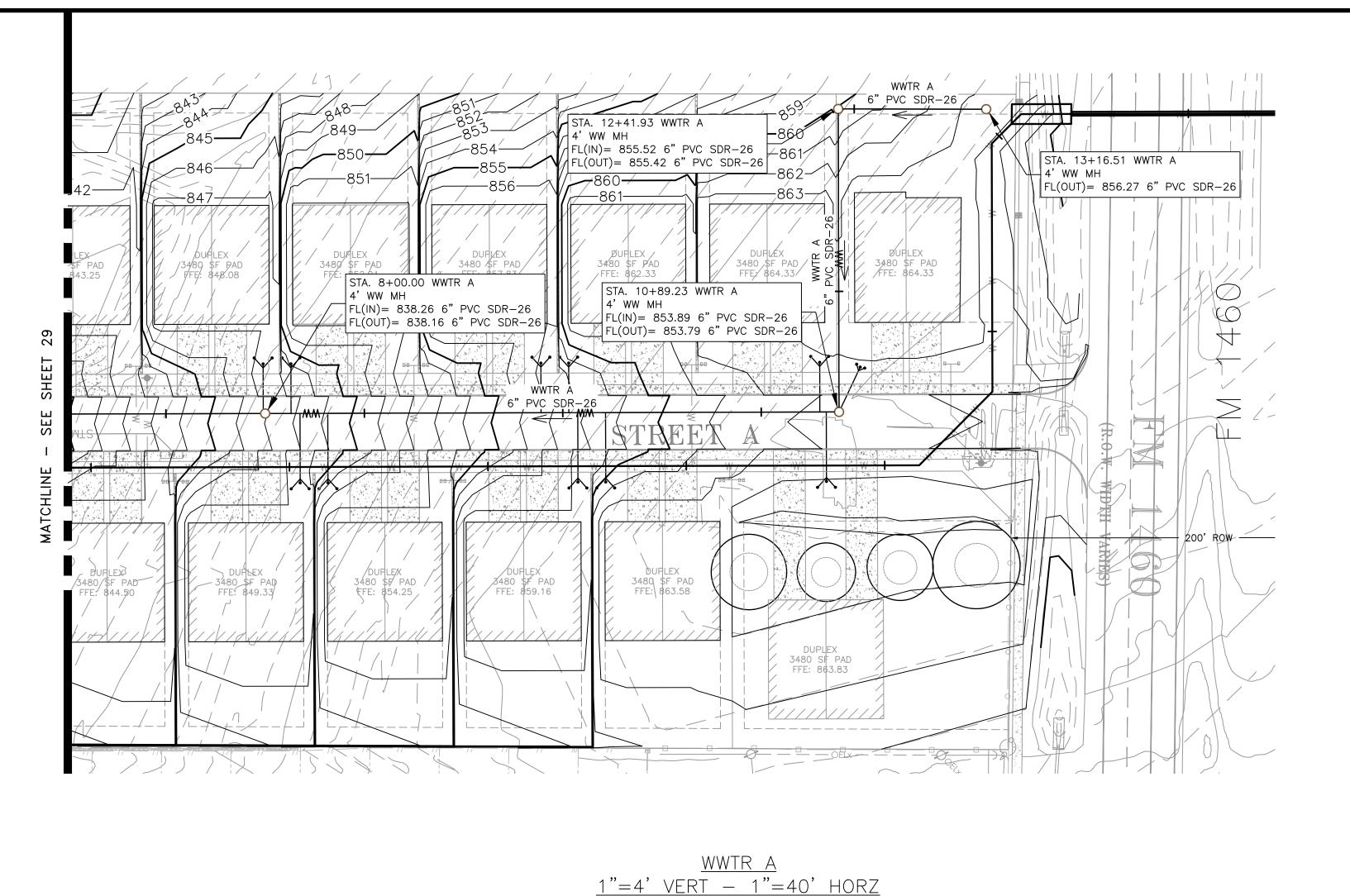


TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

WASTEWATER LINE A (1+00 TO 7+00)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET



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12 + 50

12+00

13+00

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11. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION. P.I.'5 LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION. IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SINGLE DEFLECTION IS GREATER THAN 80%

12. ALL FILL AREAS SHALL BE COMPACTED TO 95% PRIOR TO UTILITY INSTALLATION. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.

14. A RPZ BACKFLOW PREVENTOR IS TO BE INSTALLED ON ALL SERVICES OUTSIDE OF PAVEMENT, SIDEWALKS, ROW, & EASEMENTS. ALL TO BE LOCATED ON THE CUSTOMER SIDE OF THE METERS

13. CONTRACTOR TO INSTALL PRESSURE REDUCING VALVES AT EACH BUILDING TO CONTROL PRESSURE TO MAXIMUM 80 PSI PER BUILDING CODE.

分 NICHOLAS R. SANDLIN 124404 CENSEO

THIS PLAN SET FOR REVIEW ONLY NOT FOR CONSTRUCTION

UTILITY LEGEND PROPOSED PROPERTY/ PROJECT BOUNDARY LINE

EXISTING R.O.W./PROPERTY LINE EXISTING EASEMENT LINE PROPOSED CURB & GUTTER

EXISTING CONTOURS

PROPOSED CONTOURS —W—— EX. WATER LINE ———W—— PR. WATER LINE

EX. FIRE HYDRANT

PR. FIRE HYDRANT M EX. WATER METER PR. WATER METER PR. WASTEWATER MANHOLE

FITTINGS AS NOTED

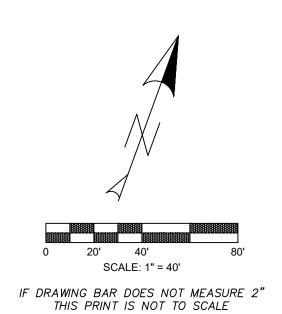
- FLOW ARROW GATE VALVE AS NOTED T | ELECTRIC TRANSFORMER

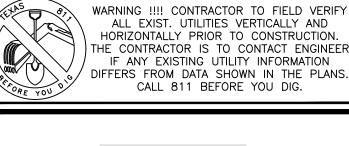
—— UTILITY POLE BFP BACK FLOW PREVENTER _____F FIRE LINE

EXISTING TREE (TO REMAIN)

o100\ EXISTING TREE (TO BE REMOVED)

SEWER LINE





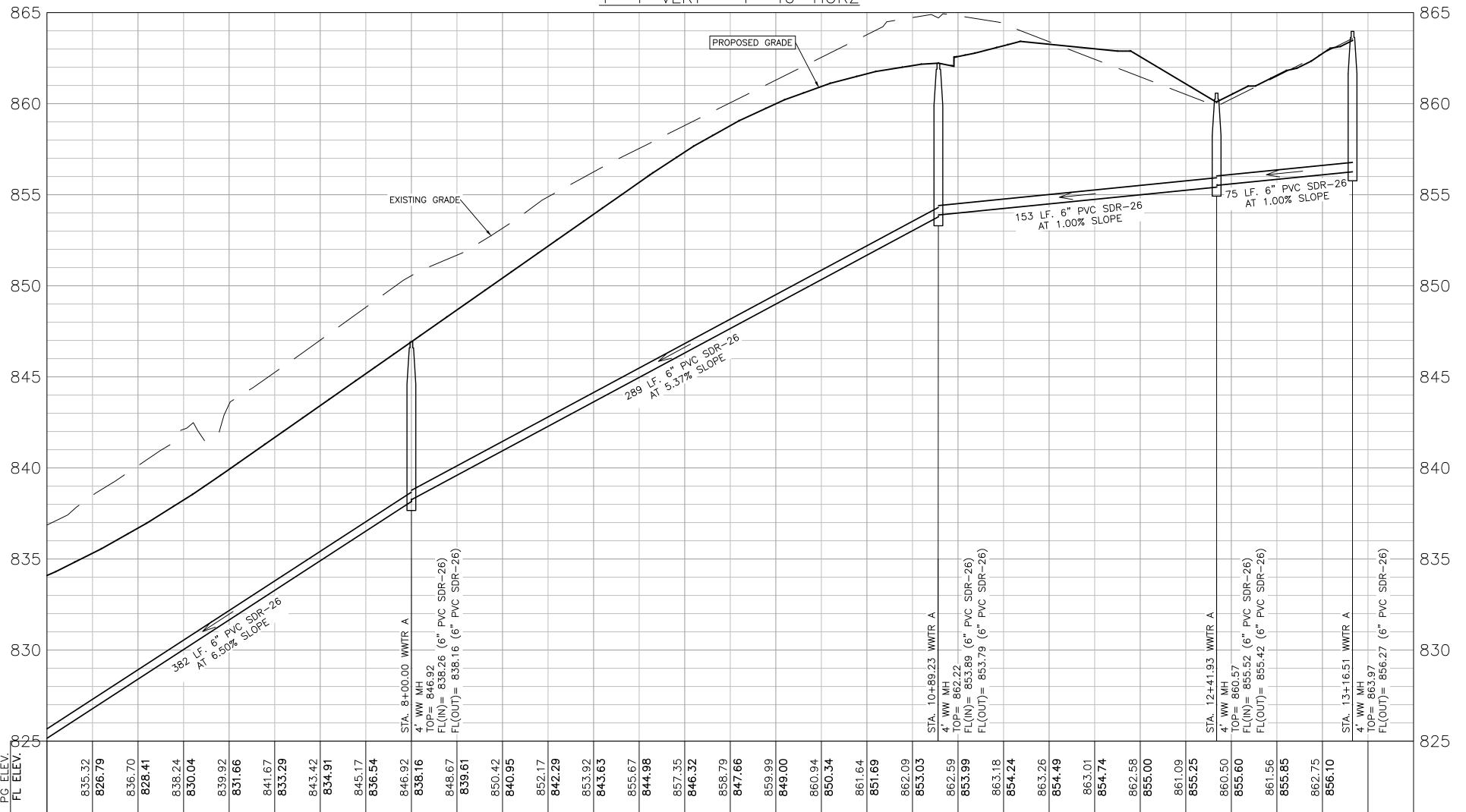


TBPELS FIRM #21356 4501 WHISPERING VALLEY DRIVE UNIT 27 AUSTIN, TX 78727

WASTEWATER LINE A (7+00 TO END)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION SHEET 30



6+50

7+00

7+50

8+00

8+50

9+00

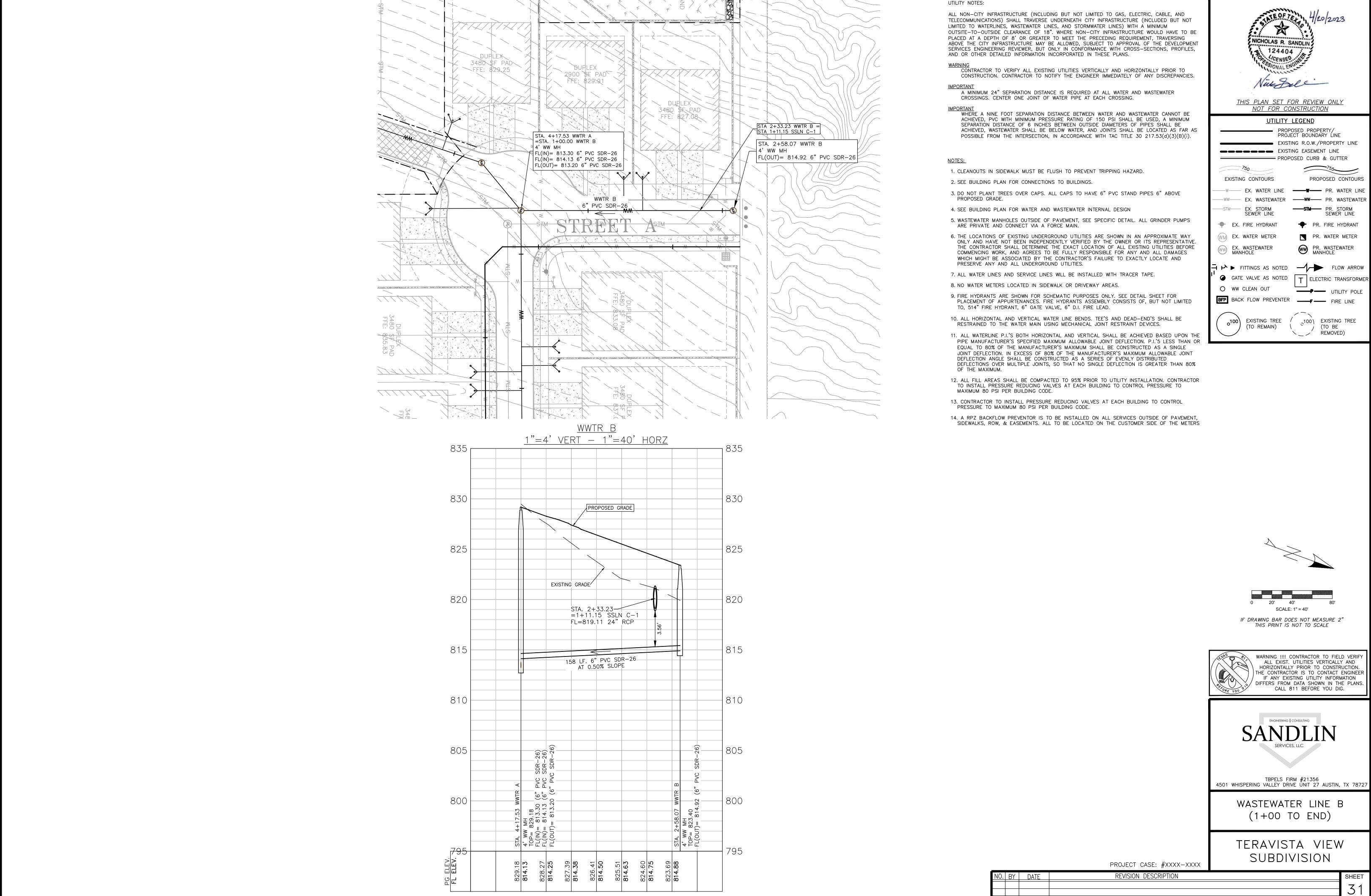
9+50

10+00

10+50

11+00

11+50

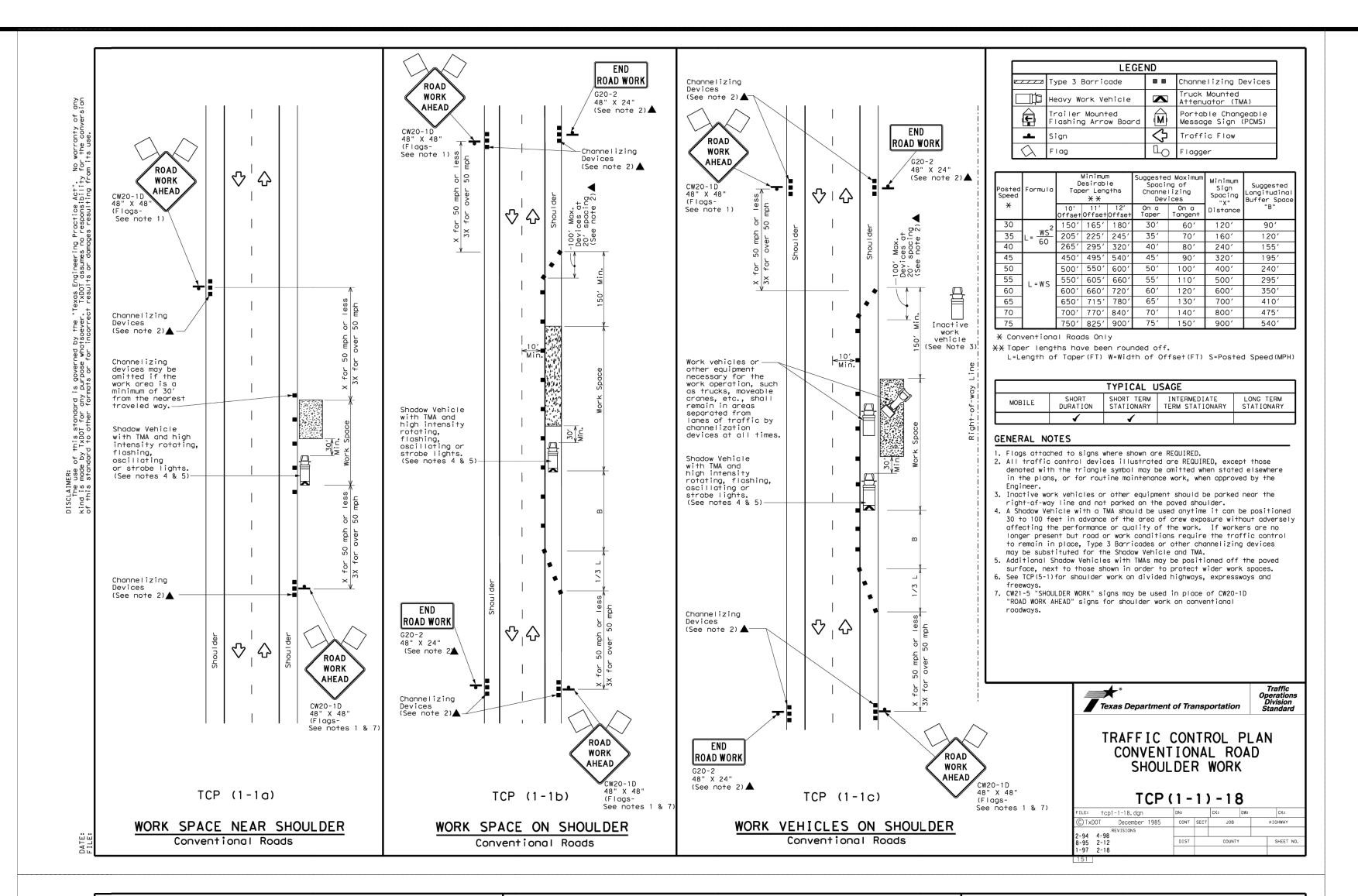


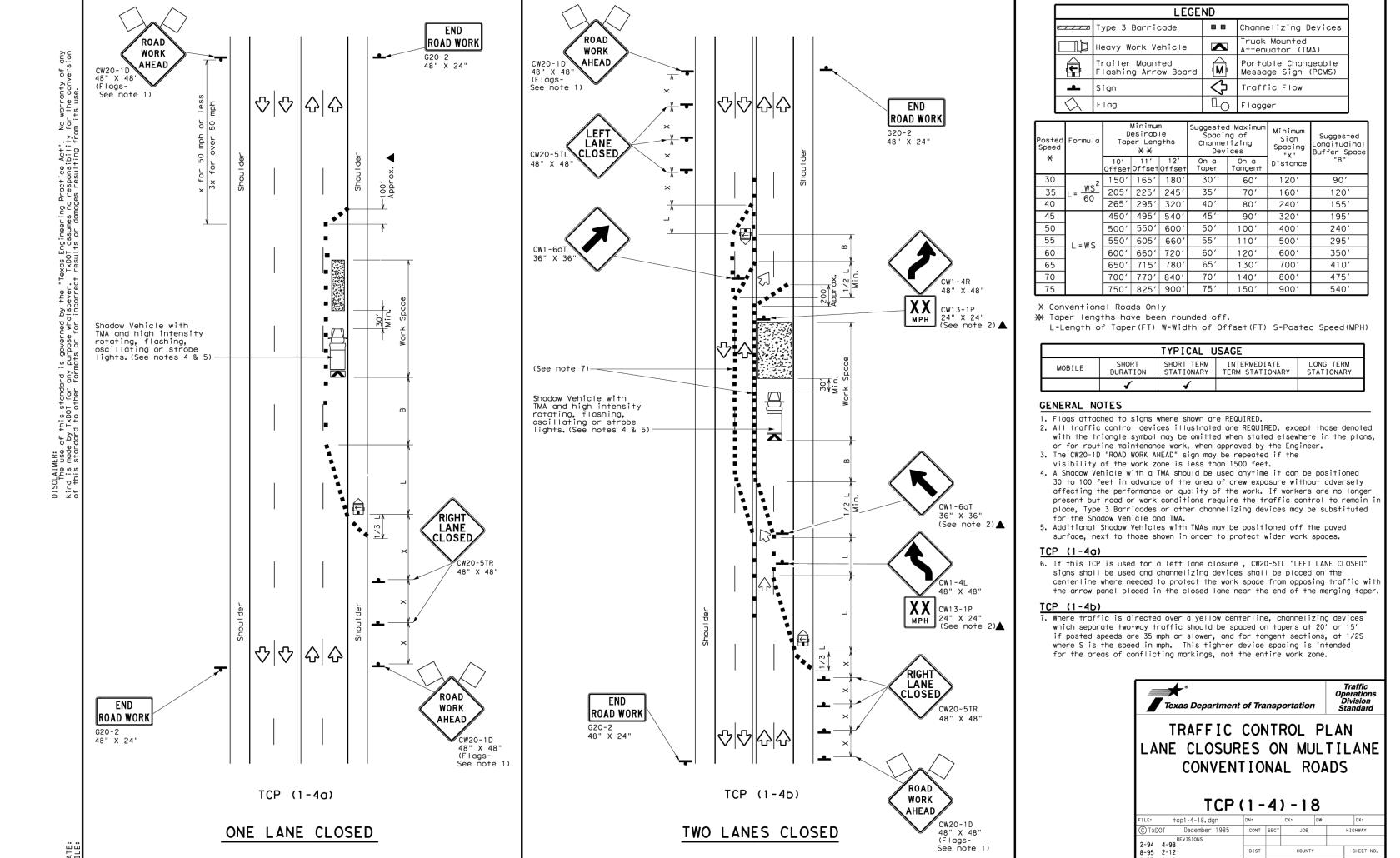
2+50

2+00

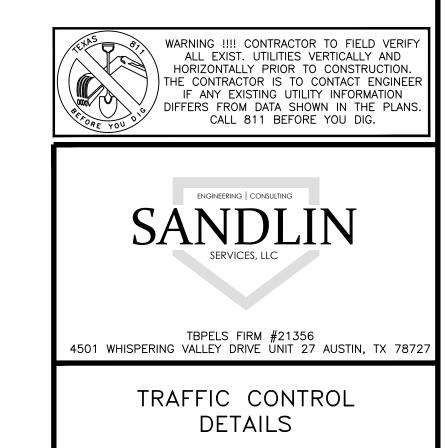
1+00

1 + 50









TERAVISTA VIEW

SUBDIVISION

PROJECT CASE: #XXXX-XXXX

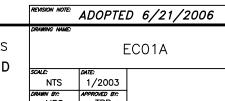
NO.	BY	DATE	REVISION DESCRIPTION	SHEET
				33
				OF 4

- 1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION). CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
- 2. ALL PROJECTS WITHIN THE RECHARGE ZONE OF THE EDWARD'S AQUIFER SHALL SUBMIT A BEST MANAGEMENT PRACTICES AND WATER POLLUTION AND ABATEMENT PLAN TO THE TNRCC FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
- 3. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN AND WATER POLLUTION ABATEMENT PLAN. DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNER'S REPRESENTATIVE.
- 4. ALL PLANTING SHALL BE DONE BETWEEN MAY 1 AND SEPTEMBER 15 EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING. IF PLANTING IS AUTHORIZED TO BE DONE OUTSIDE THE DATES SPECIFIED, THE SEED SHALL BE PLANTED WITH THE ADDITION OF WINTER FESCUE (KENTUCKY 31) AT A RATE OF 1001b/ACRE. GRASS SHALL BE COMMON BERMUDA GRASS, HULLED, MINIMUM 82% PURE LIVE SEED. ALL GRASS SEED SHALL BE FREE FROM NOXIOUS WEED, GRADE "A" RECENT CROP, RECLEANED AND TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. SEED SHALL BE FURNISHED IN SEALED, STANDARD CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
- 5. ALL DISTURBED AREAS TO BE RESTORED AS NOTED IN THE WATER POLLUTION ABATEMENT PLAN.
- 6. THE PLANTED AREA TO BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF FOUR (4) INCHES. THE IRRIGATION TO OCCUR AT 10-DAY INTERVALS DURING THE FIRST TWO MONTHS TO INSURÈ GERMINATION AND ESTABLISHMENT OF THE GRASS . RAINFALL OCCURRENCES OF 1/2 INCH OR GREATER TO POSTPONE THE WATERING SCHEDULE ONE WEEK.
- 7. RESTORATION TO BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1-1/2 INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 25 SQUARE FEET EXIST.
- 8. A MINIMUM OF FOUR (4) INCHES OF TOPSOIL TO BE PLACED IN ALL AREAS DISTURBED BY CONSTRUCTION. 9. THE CONTRACTOR TO HYDROMULCH OR SOD (AS SHOWN ON PLANS) ALL EXPOSED CUTS AND FILLS UPON COMPLETION
- 10. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN
- SOIL BUILDUP WITHIN TREE DRIPLINE. 11. TO AVOID SOIL COMPACTION, CONTRACTOR SHALL NOT ALLOW VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IN THE TREE DRIPLINE AREAS.
- 12. WHERE A FENCE IS CLOSER THAN FOUR (4) FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF EIGHT (8) FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE FENCING.
- 13. TREES TO BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED. 14. ANY ROOT EXPOSED BY CONSTRUCTION ACTIVITY TO BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS
- 15. CONTRACTOR TO PRUNE VEGETATION TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.). ALL FINISHED PRUNING TO BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE "NATIONAL ARBORIST ASSOCIATION PRUNING
- STANDARDS FOR SHADE TREES"). 16. THE CONTRACTOR IS TO INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/4 INCH TO VERIFY THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY ACCUMULATED SEDIMENT AFTER A
- SIGNIFICANT RAINFALL TO BE REMOVED AND PLACED IN THE OWNER DESIGNATED SPOIL DISPOSAL SITE. THE CONTRACTOR TO CONDUCT PERIODIC INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROLS AND TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE. 17. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT IMMEDIATELY ADJACENT TO A PROTECTED TREE, ERECT THE FENCE APPROXIMATELY TWO TO FOUR FEET (2'-4') BEHIND THE AREA IN QUESTION.
- 18. NO ABOVE AND/OR BELOW GROUND TEMPORARY FUEL STORAGE FACILITIES TO BE STORED ON THE PROJECT SITE.
- 19. IF EROSION AND SEDIMENTATION CONTROL SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER'S REPRESENTATIVE AND THE CONTRACTOR TO EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS FOR DAMAGE PRIOR TO CONSTRUCTION. ANY DAMAGE TO PREEXISTING EROSION AND SEDIMENTATION CONTROLS NOTED TO BE REPAIRED AT OWNERS EXPENSE.
- 20. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATED SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS Titility System

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES



GUIDELINES FOR DESIGN AND INSTALLATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

TYPE OF STRUCTURE	REACH LENGTH	MAXIMUM DRAINAGE AREA	SLOPE
SILT FENCE	N/A	2 ACRES	0 - 10%
	200 FEET	2 ACRES	10 - 20%
	100 FEET	1 ACRE	20 - 30%
	50 FEET	1/2 ACRE	> 30%
TRIANGLE FILTER DIKE	100 FEET	1/2 ACRE	< 30% SLOPE
	50 FEET	1/4 ACRE	> 30% SLOPE
ROCK BERM *, **	500 FEET	< 5 ACRES	0 - 10%

* FOR ROCK BERM DESIGN WHERE PARAMETERS ARE OTHER THAN STATED, DRAINAGE AREA CALCULATIONS AND ROCK BERM DESIGN MUST BE SUBMITTED FOR REVIEW.

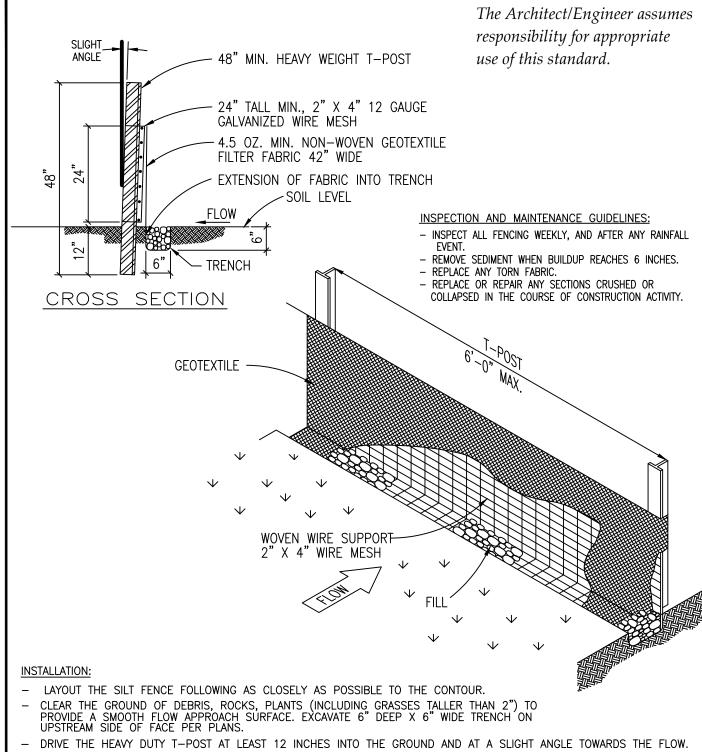
** HIGH SERVICE ROCK BERMS MAY BE REQUIRED IN AREAS OF ENVIRONMENTAL SIGNIFICANCE AS DETERMINED BY THE CITY OF GEORGETOWN.

The Architect/Engineer assumes responsibility for appropriate

use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS TEMPORARY EROSION AND SEDIMENTATION CONTROL GUIDELINES NTS 1/2003

REVISION NOTE: ADOPTED 6/21/2006



- ATTACH THE 2" X 4" 12 GAUGE WELDED WIRE MESH TO THE T-POST WITH 11 1/2 GAUGE GALVANIZED T-POST CLIPS. THE TOP OF THE WIRE TO BE 24" ABOVE GROUND LEVEL. THE WELDED WIRE MESH TO BE OVERLAPPED 6" AND TIED AT LEAST 6 TIMES WITH HOG RINGS.
- THE SILT FENCE TO BE INSTALLED WITH A SKIRT A MINIMUM OF 6" WIDE PLACED ON THE UPHILL SIDE OF THE FENCE INSIDE EXCAVATED TRENCH. THE FABRIC TO OVERLAP THE TOP OF THE WIRE BY 1'
- ANCHOR THE SILT FENCE BY BACKFILLING WITH EXCAVATED DIRT AND ROCKS (NOT LARGER THAN 2"). GEOTEXTILE SPLICES SHOULD BE A MINIMUM OF 18" WIDE ATTACHED IN AT LEAST 6 PLACES. SPLICES IN CONCENTRATED
- FLOW AREAS WILL NOT BE ACCEPTED. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

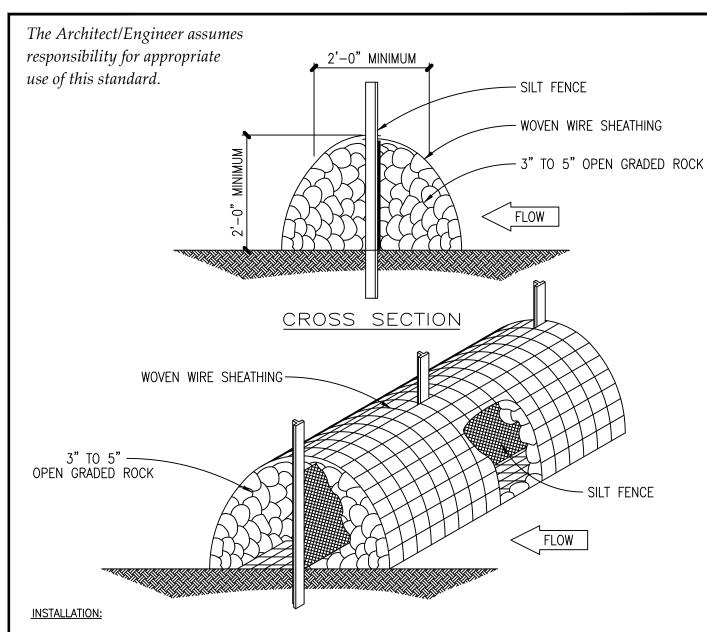
CITY OF GEORGETOWN SILT FENCE DETAIL

NTS 1/2003

REVISION NOTE: ADOPTED 6/21/2006

EC02

CONSTRUCTION STANDARDS AND DETAILS



LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
 CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
 PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE

THE FINISHED SIZE OF THE BERM. - INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT. INSTALLATION SHOULD BE AS DESCRIBED IN DRAWING NO. EC-02 "SILT FENCE DETAIL". · PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND ON BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT. WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE

- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

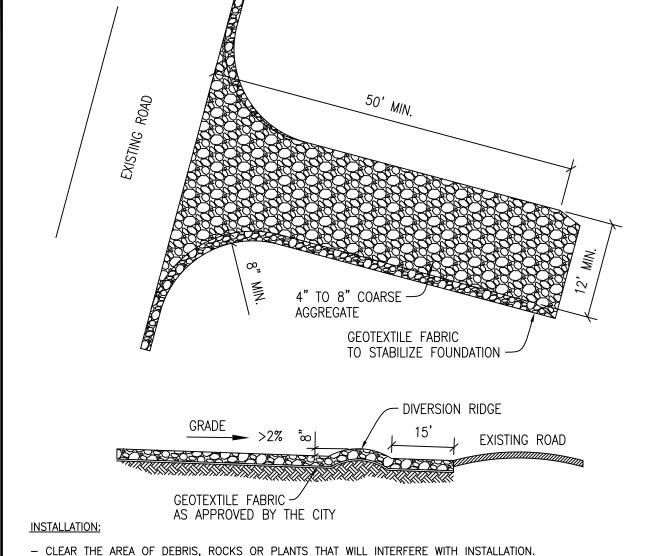
INSPECTION AND MAINTENANCE GUIDELINES:

- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE CONTRACTOR. FOR THE INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE ON ROCK BERM. - REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED

- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION. - THE BERM SHOULD BE REPLACES WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS HIGH SERVICE ROCK BERM DETAIL

REVISION NOTE: ADOPTED 6/21/2006 NTS 1/2003



- CLEAR THE AREA OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION. - GRADE THE AREA FOR THE ENTRANCE TO FLOW BACK ON TO THE CONSTRUCTION SITE. RUNOFF FROM THE STABILIZED CONSTRUCTION - PLACE GEOTEXTILE FABRIC AS APPROVED BY THE CITY.

- PLACE ROCK AS APPROVED BY THE CITY.

INSPECTIONS AND MAINTENANCE GUIDELINES:

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. - ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY

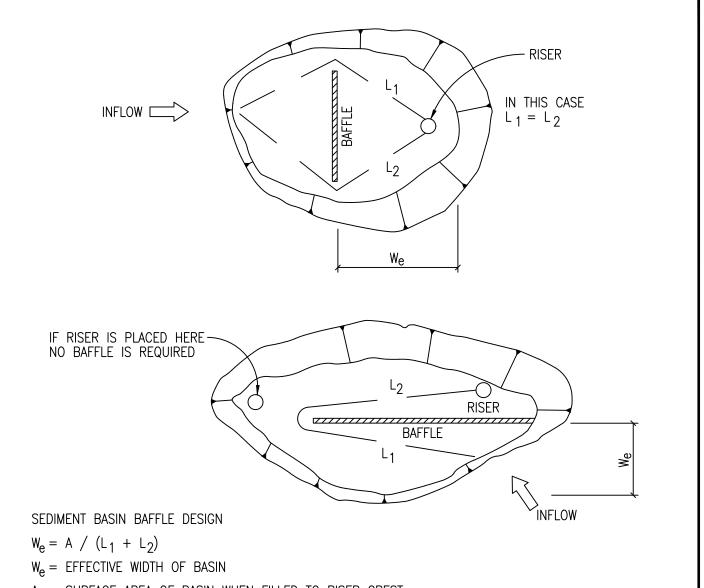
WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. - WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

– ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

The Architect/Engineer assumes responsibility for appropriate

use of this standard.

REVISION NOTE: ADOPTED 6/21/2006 CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS STABILIZED CONSTRUCTION ENTRANCE NTS 1/2003



A = SURFACE AREA OF BASIN WHEN FILLED TO RISER CREST

 L_1 , L_2 = SHORTEST TRAVEL DISTANCE AROUND THE BAFFLE FROM INLET TO OUTLET

INSPECTION AND MAINTENANCE GUIDELINES:

- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. REPAIR SHOULD BE MADE PROMPTLY AS NEEDED BY THE TRASH AND OTHER DEBRIS SHOULD BE REMOVED AFTER EACH RAINFALL TO PREVENT CLOGGING OF THE OUTLET STRUCTURE. ACCUMULATED SILT SHOULD BE REMOVED AND THE BASIN SHOULD BE RE-GRADED TO ITS ORIGINAL DIMENSIONS AT SUCH POINT

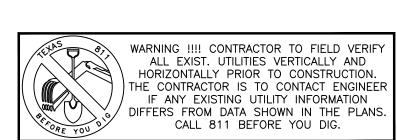
THAT THE CAPACITY OF THE IMPOUNDMENT HAS BEEN REDUCED TO 1/2 OF ITS ORIGINAL STORAGE CAPACITY. - THE REMOVED SEDIMENT SHOULD BE STOCKPILED OR REDISTRIBUTED IN AREAS THAT ARE PROTECTED FROM EROSION.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

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EST. 1848	
GEORGETOWN	
Georgetown Utility Systems	
Your Community Owned Utility	

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS SEDIMENT BASIN BAFFLE DESIGN

REVISION NOTE: ADOPTED 6/21/2006 NTS 1/2003



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NICHOLAS R. SANDLIN

THIS PLAN SET FOR REVIEW ONLY

NOT FOR CONSTRUCTION

124404

CENSEO.



4501 WHISPERING VALLEY DRIVE ÜNIT 27 AUSTIN, TX 78727

EROSION CONTROL

TERAVISTA VIEW

PROJECT CASE: #XXXX-XXXX

REVISION DESCRIPTION

DETAILS (1 OF 2)

SUBDIVISION

NOTES:

- 1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
- 2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; WILL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
- A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
- B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6") CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
- C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
- D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
- 3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:

 A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
- B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'-0") TO BUILDING.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS Georgetown Utility Systems Your Community Onned Utility CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION —
CHAIN LINK FENCE

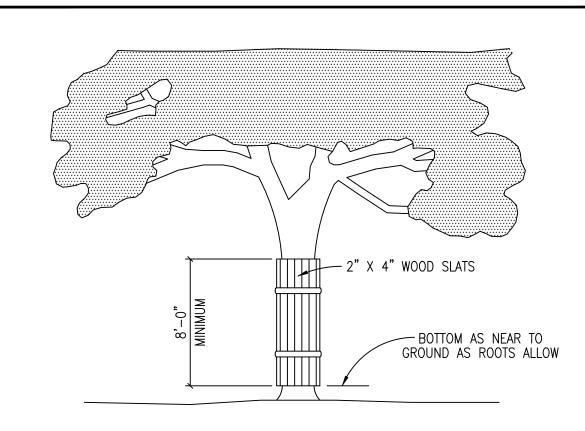
DETAILS

REVISION NOTE: ADOPTED 6/21/2006

DETAILS

ECO9

SCALE: DATE: NTS 1/2003



NOTES:

- 1. WHERE ANY EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN FOUR FEET (4'-0") TO A TREE TRUNK; PROTECT THE TRUNK WITH STRAPPED-ON-PLANKING TO A HEIGHT OF EIGHT FEET (8'-0"), OR TO THE LIMITS OF LOWER BRANCHING IN ADDITION TO THE REDUCED FENCING PROVIDED.
- 2. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO (2) DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE, AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
- 3. PRIOR EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINE. MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
- 4. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.
- 5. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
- 6. NO LANDSCAPE TOPSOIL DRESSING GREATER THE FOUR INCHES (4") SHALL BE PERMITTED WITHIN THE DRIPLINE OF A TREE. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
- 7. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE

BEFORE CONSTRUCTION BEGINS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS Georgetown Utility Systems

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION — WOOD SLATS

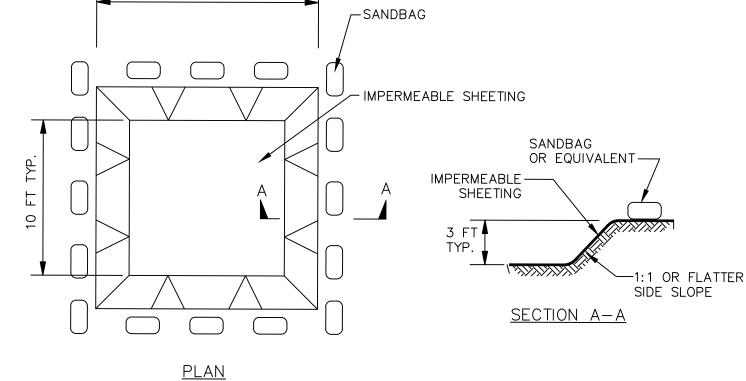
REVISION NOTE: ADOPTED 6/21/2006

DRAINING NAME: EC10

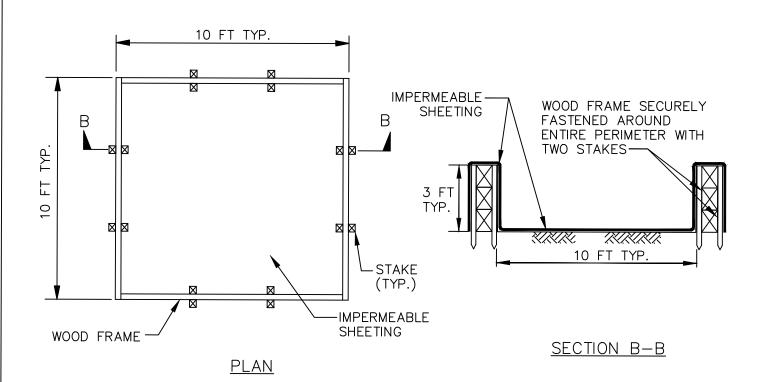
SCALE: NTS 1/2003

DRAINN RY: APPRICED BY:

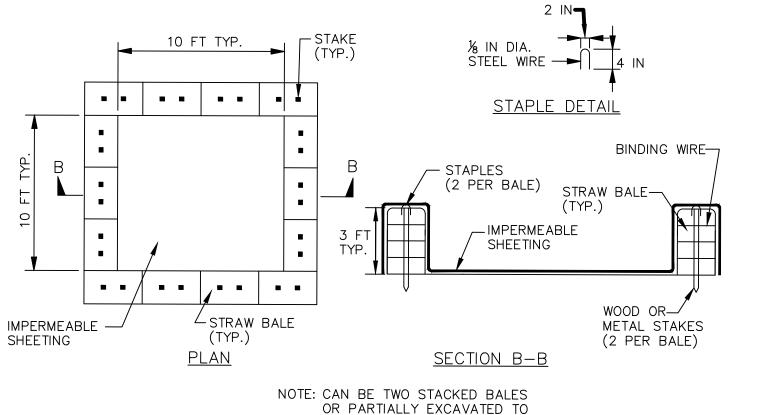
ONSITE CONCRETE WASHOUT STRUCTURE



EXCAVATED WASHOUT STRUCTURE



WASHOUT STRUCTURE WITH WOOD PLANKS

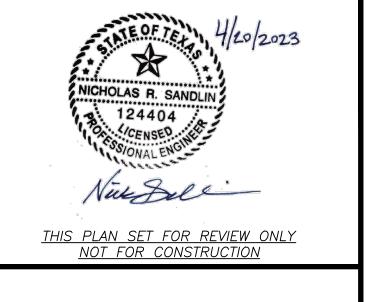


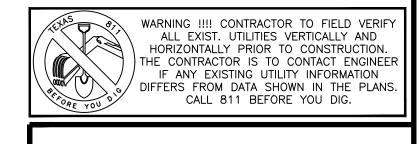
WASHOUT STRUCTURE WITH STRAW BALES

REACH 3 FT DEPTH

CONSTRUCTION SPECIFICATIONS

- 1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
- 2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
- 3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
- 4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
- 5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.







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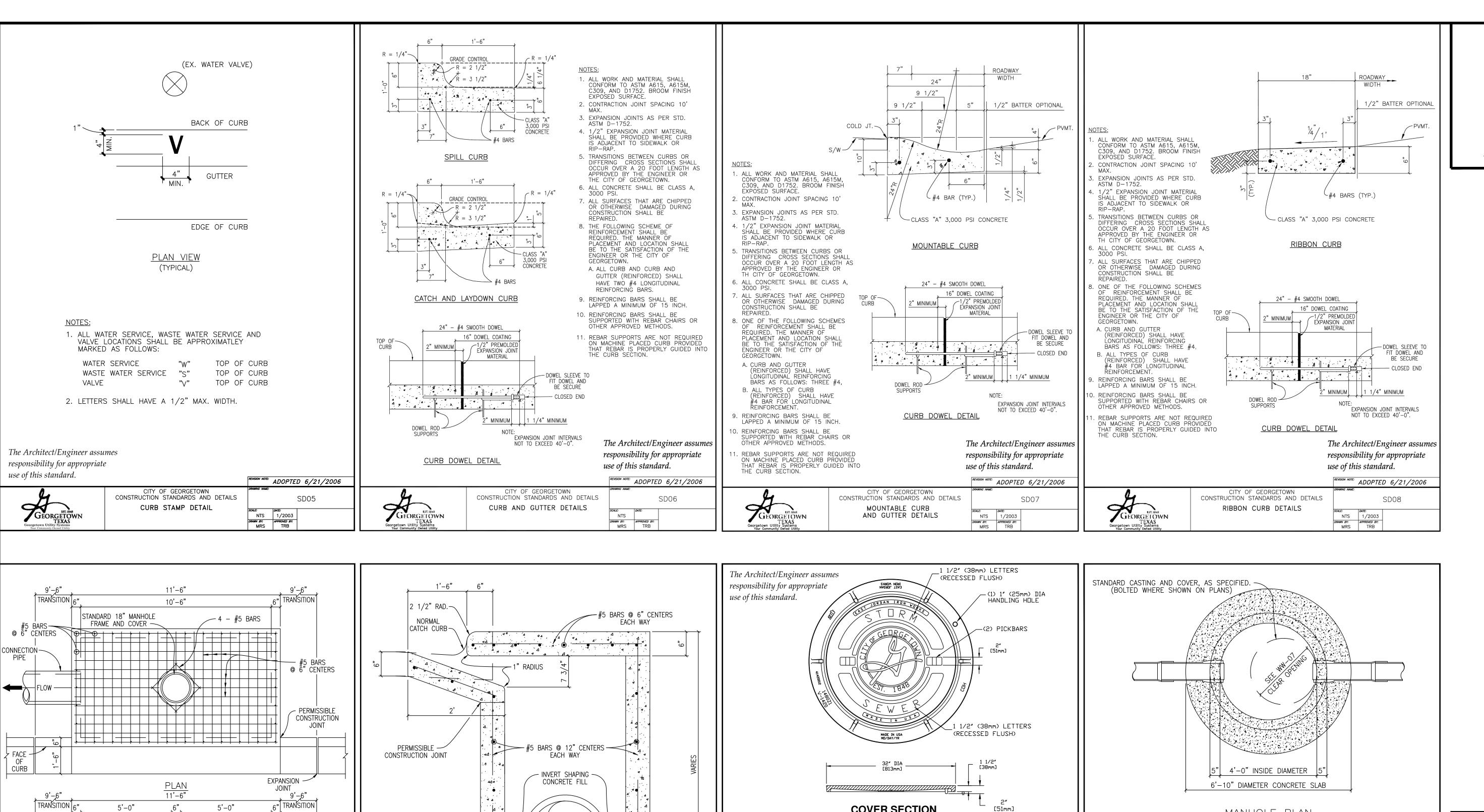
EROSION CONTROL DETAILS (2 OF 2)

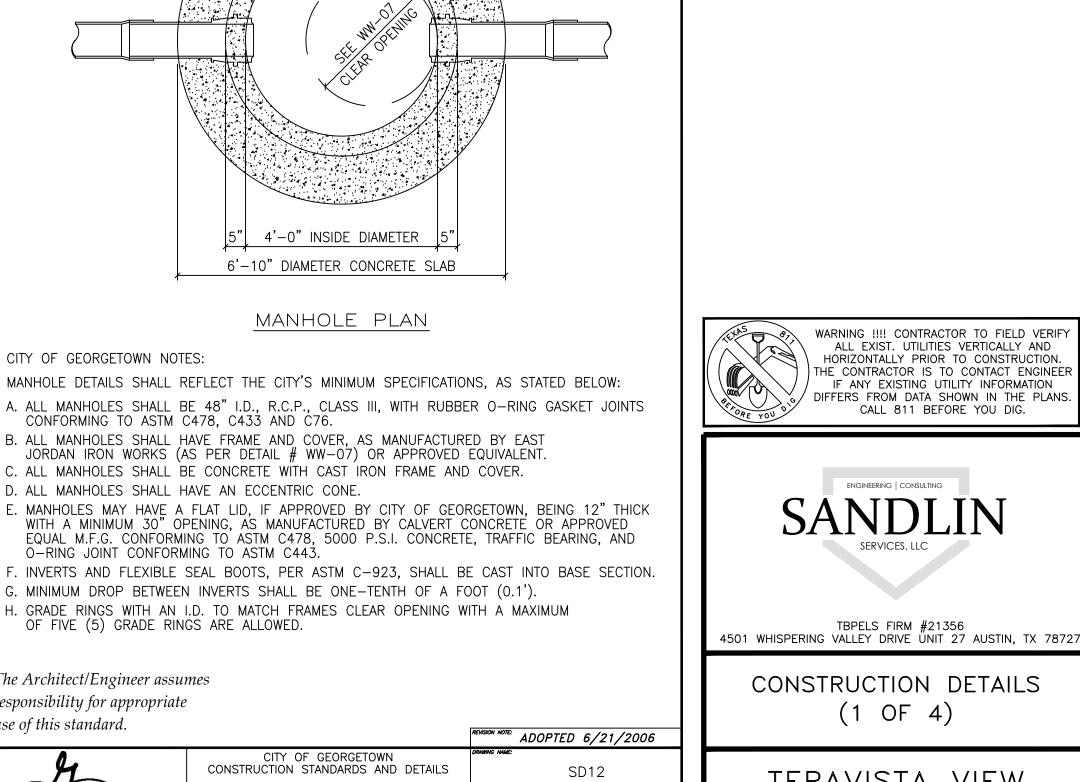
TERAVISTA VIEW SUBDIVISION

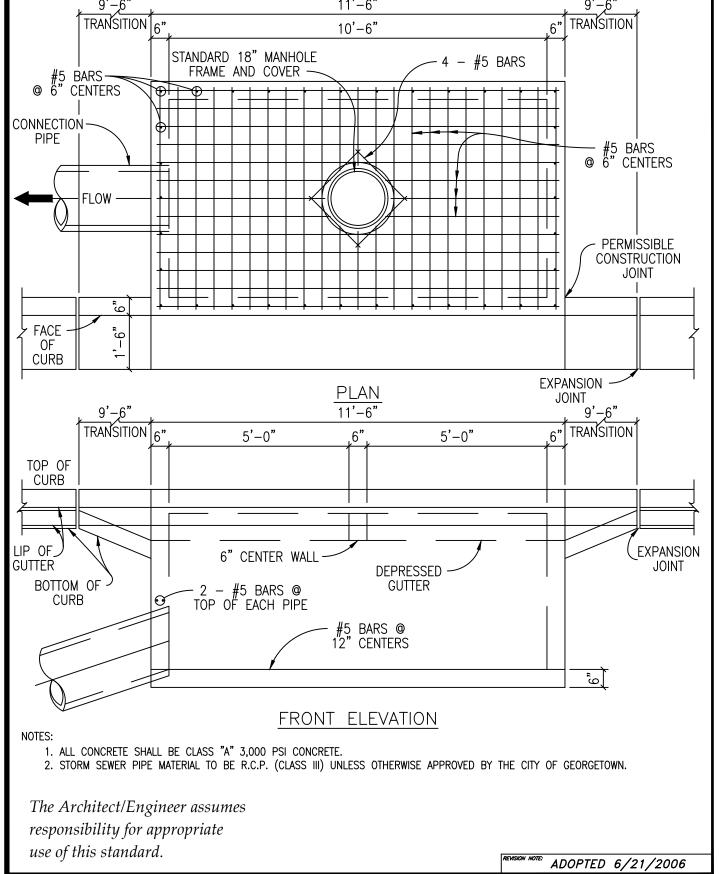
PROJECT CASE: #XXXX-XXXX

NO. BY DATE REVISION DESCRIPTION

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CITY OF GEORGETOWN

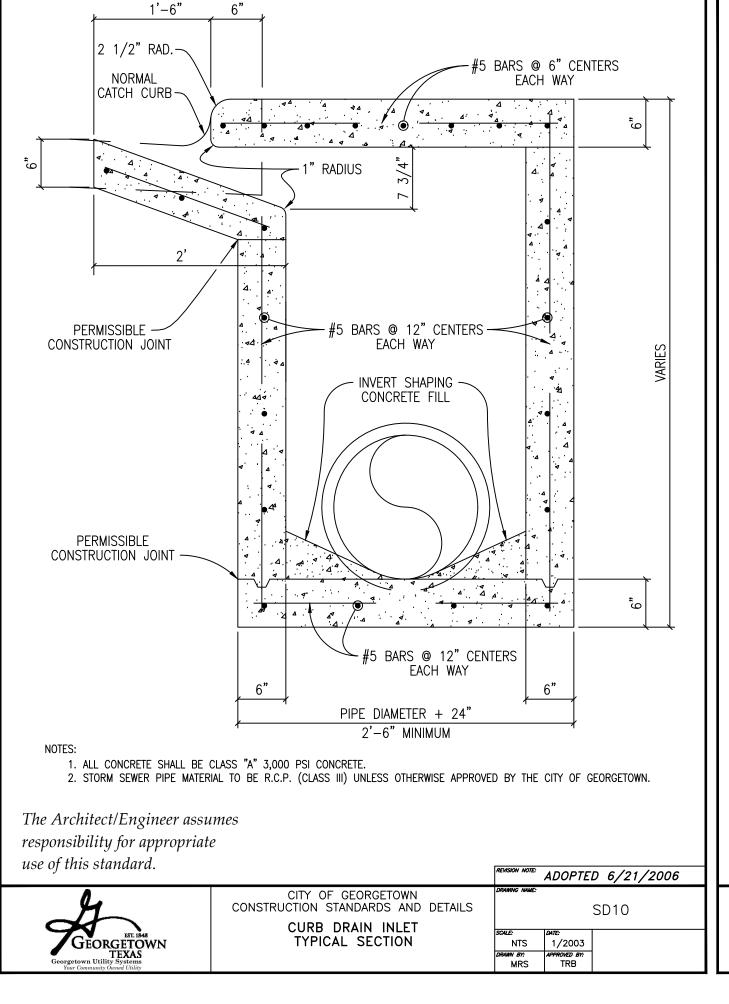
CONSTRUCTION STANDARDS AND DETAILS

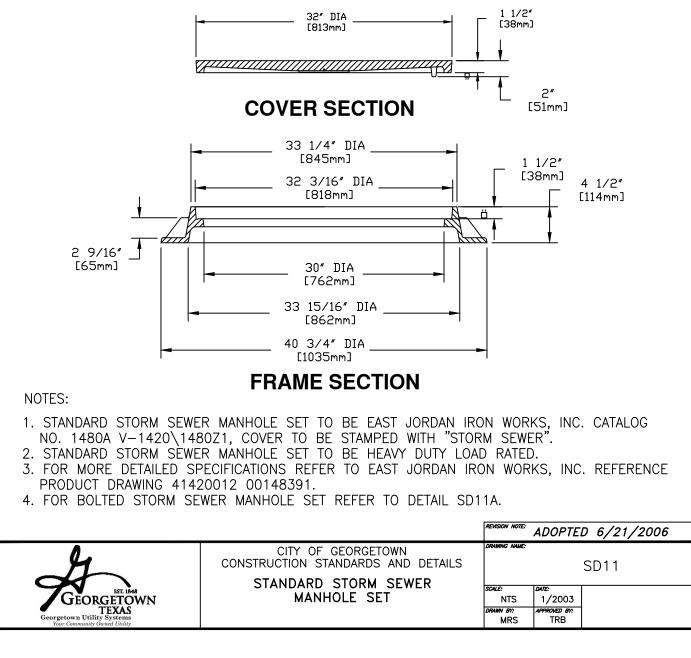
CURB INLET DETAIL

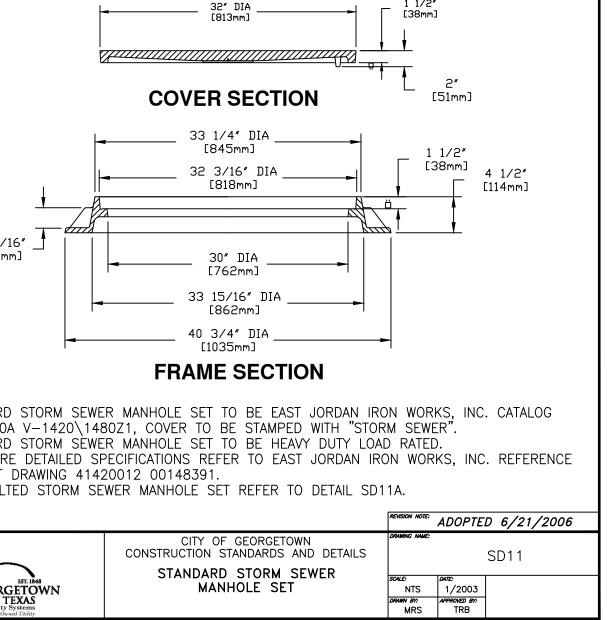
NTS 1/2003

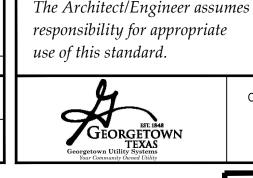
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GEORGETOWN TEXAS on Utility System









CITY OF GEORGETOWN NOTES:

CONSTRUCTION STANDARDS AND DETAILS STANDARD STORM SEWER MANHOLE PLAN

NTS 1/2003

DOCUMENT OF THE STREET OF THE ST

TERAVISTA VIEW

SUBDIVISION

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NICHOLAS R. SANDLIN

Nie Sele

<u>THIS PLAN SET FOR REVIEW ONLY</u>

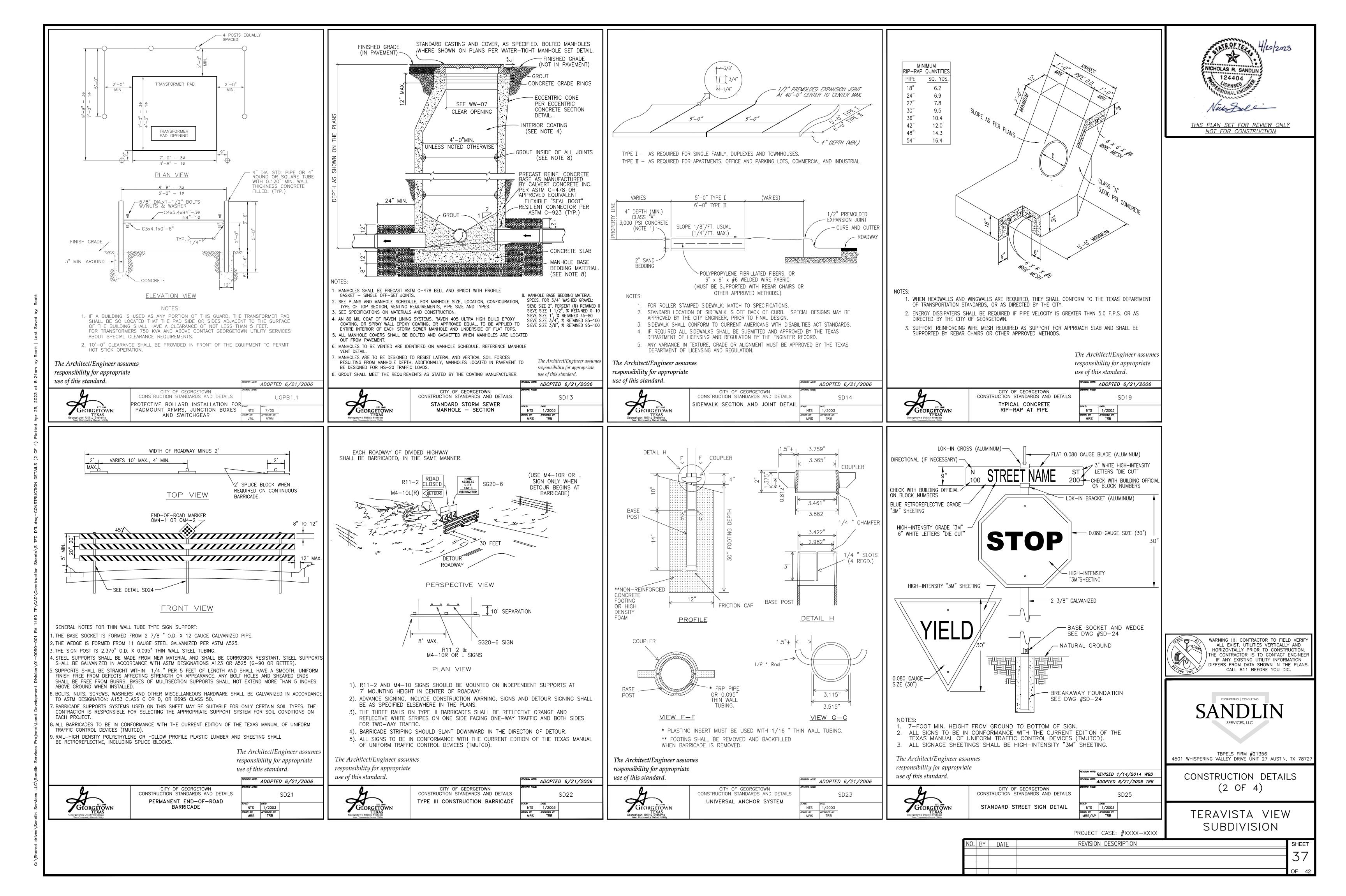
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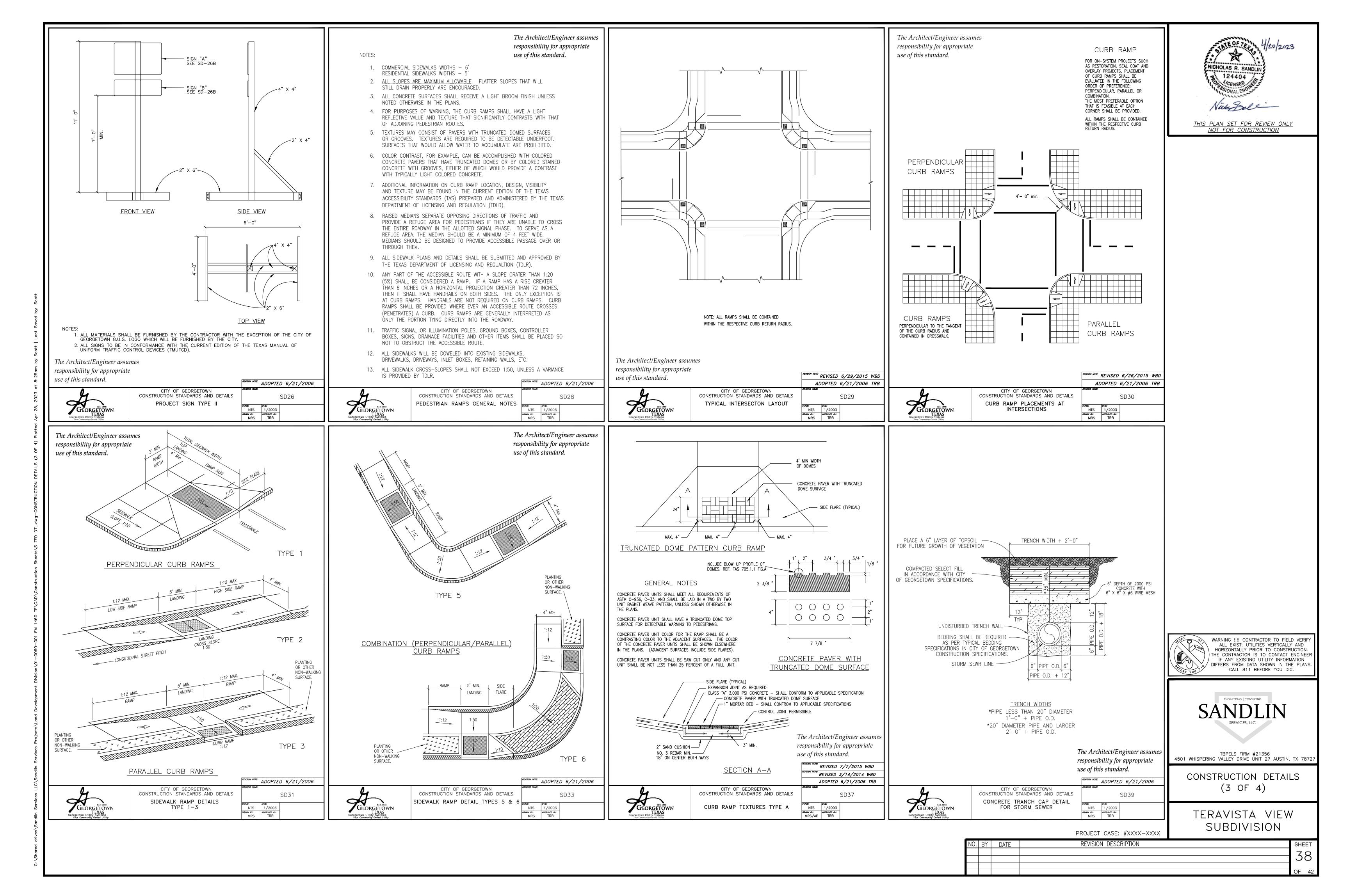
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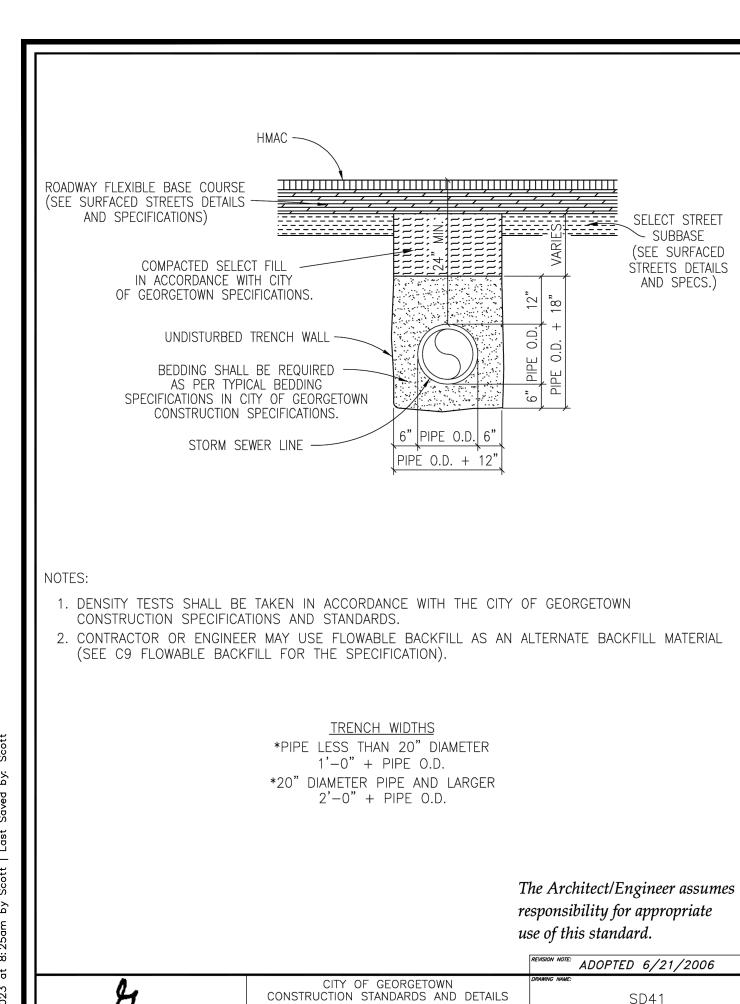
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REVISION DESCRIPTION

36





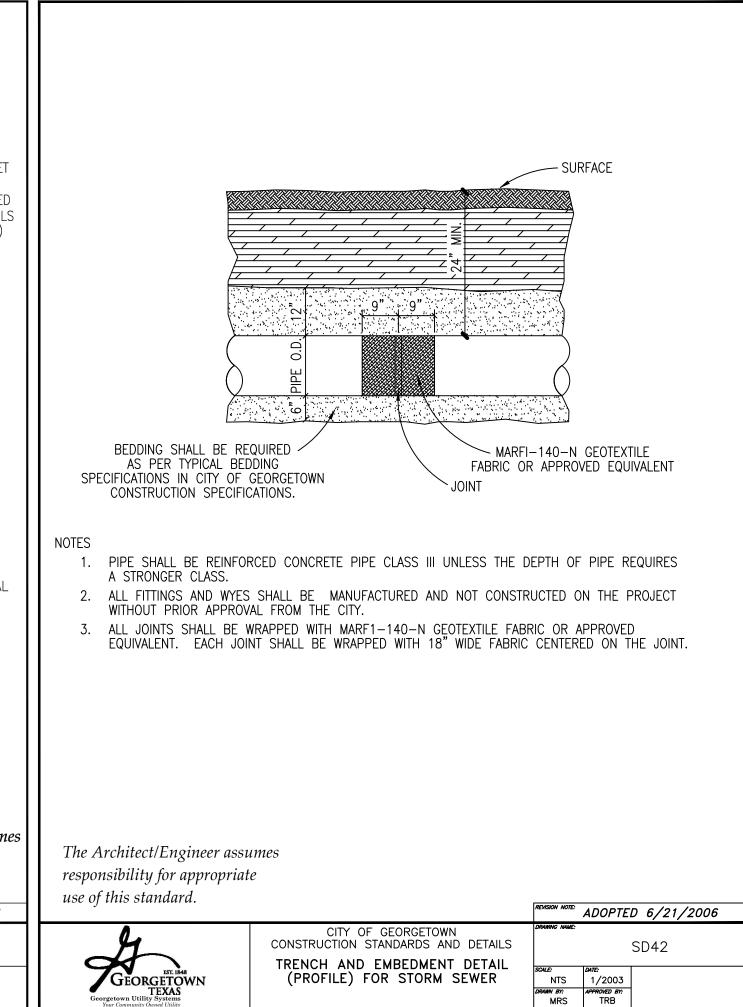


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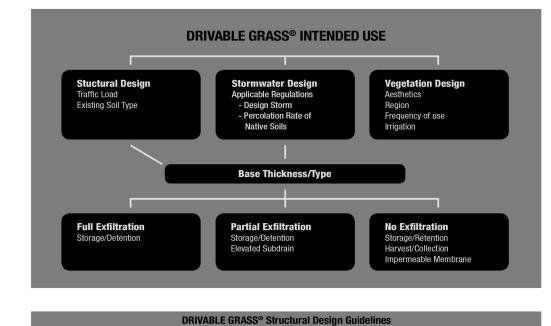
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DRAWN BY: APPROVED BY:



PERMEABLE PAVEMENT DETAIL

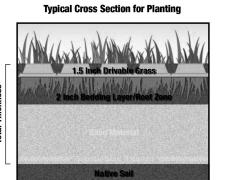
Design Considerations



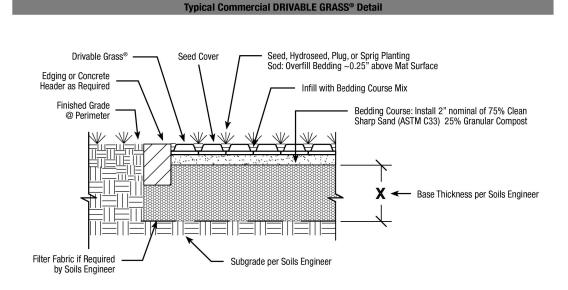
Subgrade	Gravels/Clean Sand	Sands	Clay/Silt
USCS Classification	GW - Well Graded Gravels GP - Poorly Graded Gravels GM - Silty Gravels GC - Clayey Gravels SW - Well Graded Sands SP - Poorly Graded Sands	SM - Silty Sands SC - Clayey Sands	ML - Inorganic Silts of Low Plasticity CL - Inorganic Clays of Low Plasticity MH - Inorganic Silts of High Plasticity CH - Inorganic Clays of High Plasticity
Typical R- Value Range	30-70	10-40	5-15
Typical CBR Value Range	40-80	10-40	3-15
Application	Base Thickness (in.)		
Firelane	6-8	6-10	10-12
Parking Lots Stalls	4-8	6-10	8-12
Parking Lots Traveled Way	6-12	8-14	12-16
Residential Driveways	0-4	2-6	6-10
Walkways	0	0	0-4

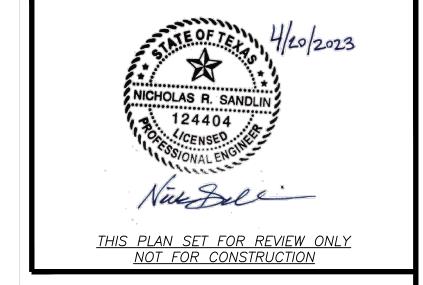
NOTE: These recommendations are to be used as a general quide. Refer to your Civil or Geotechnical engineer for actual base thickness design. Recommendations words. These recommendations are to be used as a general guide, neter to your own or electerinical engineer for actual base unickness design, necommendations were generated using Crushed Miscellaneous Base (CMB) as the typical base material, other types of base material can be used, CMB has a gravel factor of GF=1.1.

Actual base thickness will be dependant on the Traffic Index (TI) and the Gravel Factor (GF) generated by the Engineer of Record for the project based on site specific conditions. Estimated Traffic Index (T) values that were used for the generation of the recommended base thickness provided in the table are: Firelane TI=4.0, Parking stall TI=4.0, Traveled Way TI=5.5. Filter Fabric and subdrains may be required for soils with a low value of permeability and strength. Soils not recommended for use as subgrade material are the OL. OH. PT type soils. Storm water requirements may ultimately govern the design of the base thickness.



Property	Value
Nominal Area LxWxH	24"X 24" X 1.5"
Gross Area of Each Mat	4 S.F.
Concrete Strength	5000 Psi
Weight of Each Mat	45 Lbs
Flexibility Min. Radius of Curvature	12 ln
Plantable Area	60% / 100% for Sod
Concrete Surface Area	40%
Concrete Bearing Area	88%
Mats Per Pallet	60
Area Covered Per Pallet	240 S.F.
Color*	Buff/Tan, Grey, Terracotta





Installation Overview

Step 1 - Subgrade Preparation Excavate and prepare subgrade as specified Install filter fabric, if required

Step 2 - Install Base Materials, Edge Restraints, Sub-Drains and Irrigation as required Step 3 - Install Bedding Layer (see Typical Commercial Detail) Compact to get a uniform level surface before placing DRIVABLE GRASS® mats - Install specified bedding mix makeup per manufacturers recommendations Non-planted: add a thin layer of sand for leveling

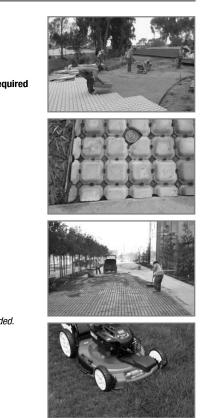
Step 4 - Install the DRIVABLE GRASS® Mats Place the mats butted up against each other • Grid can be cut with utility knife or chisel. Mats can be cut with masonry blade Lightly compact before infill to set mat into bedding course layer Non-planted: staking may be required based on application and infill material

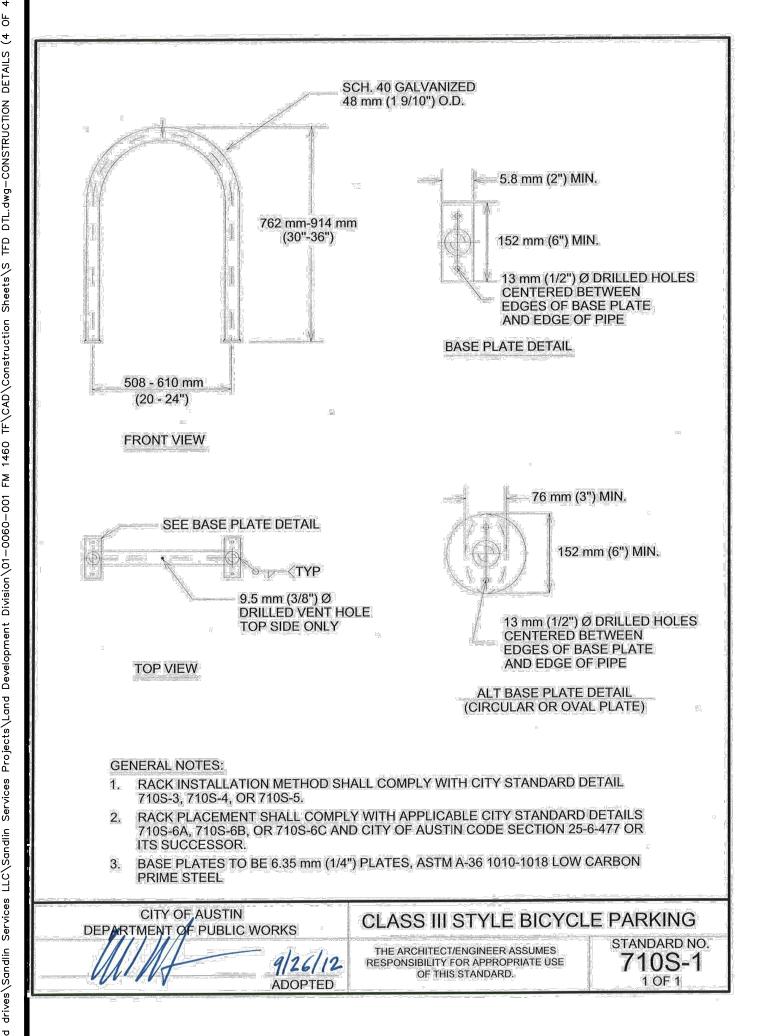
Step 5 - Infill (and Plant) Infill with same bedding mix makeup as bedding layer - Seed: Broom in to 1/4" off top of mat surface before applying seed. - Use seed cover and keep moist to promote germination - Sod: Overfill mats 1/4" above surface before laying sod, then roll to set

• Non-planted: Broom in specified infill below mat surface. Overfill is not recommended. Step 6 - Plant Establishment - Protect area until root system is established. Driving can typically begin after the second mowing.

- Hydroseed: Mix seed with hydromulch and apply as specified

For complete Installation Instructions see our website www.soilretention.com/drivable-grass/professional/

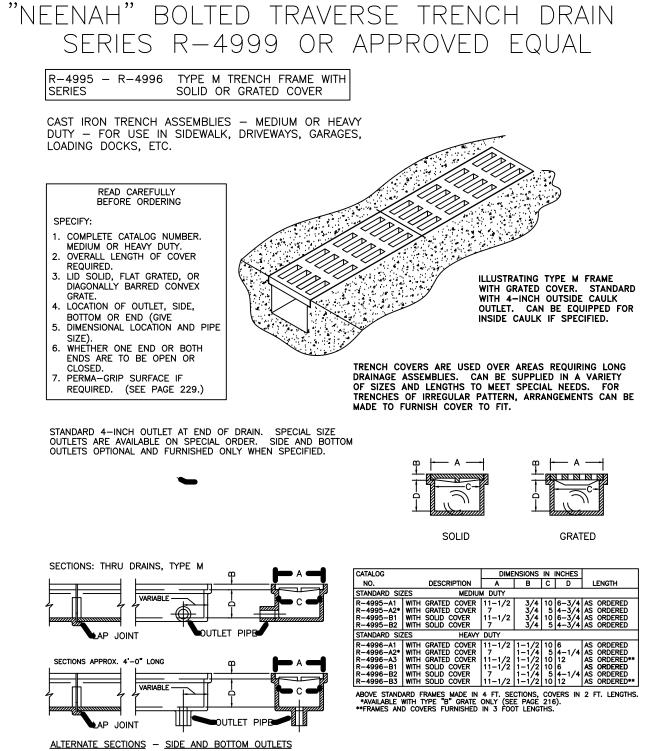




TRENCH AND EMBEDMENT DETAIL

UNDER PROPOSED ROADWAY

FOR STORM SEWER

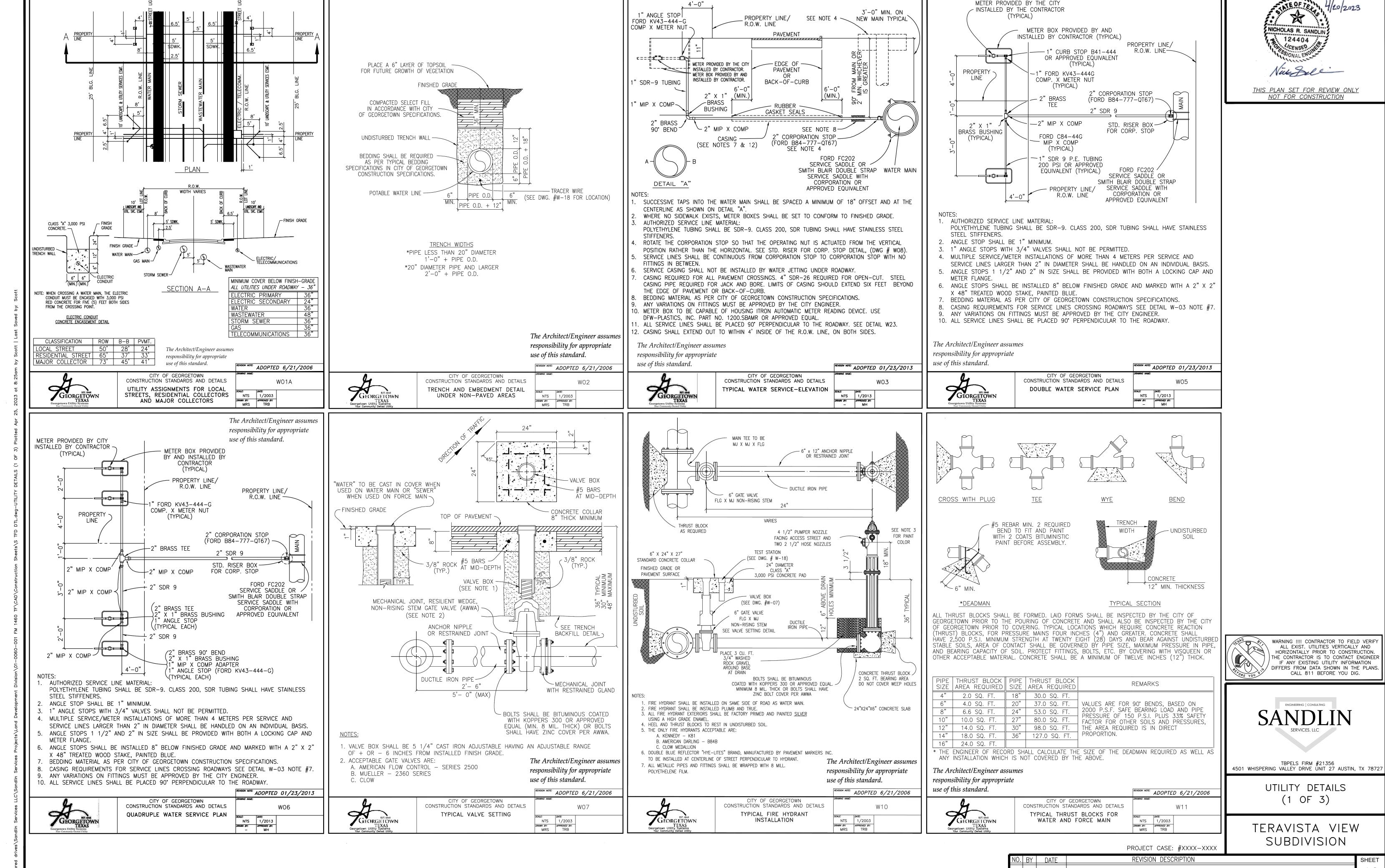


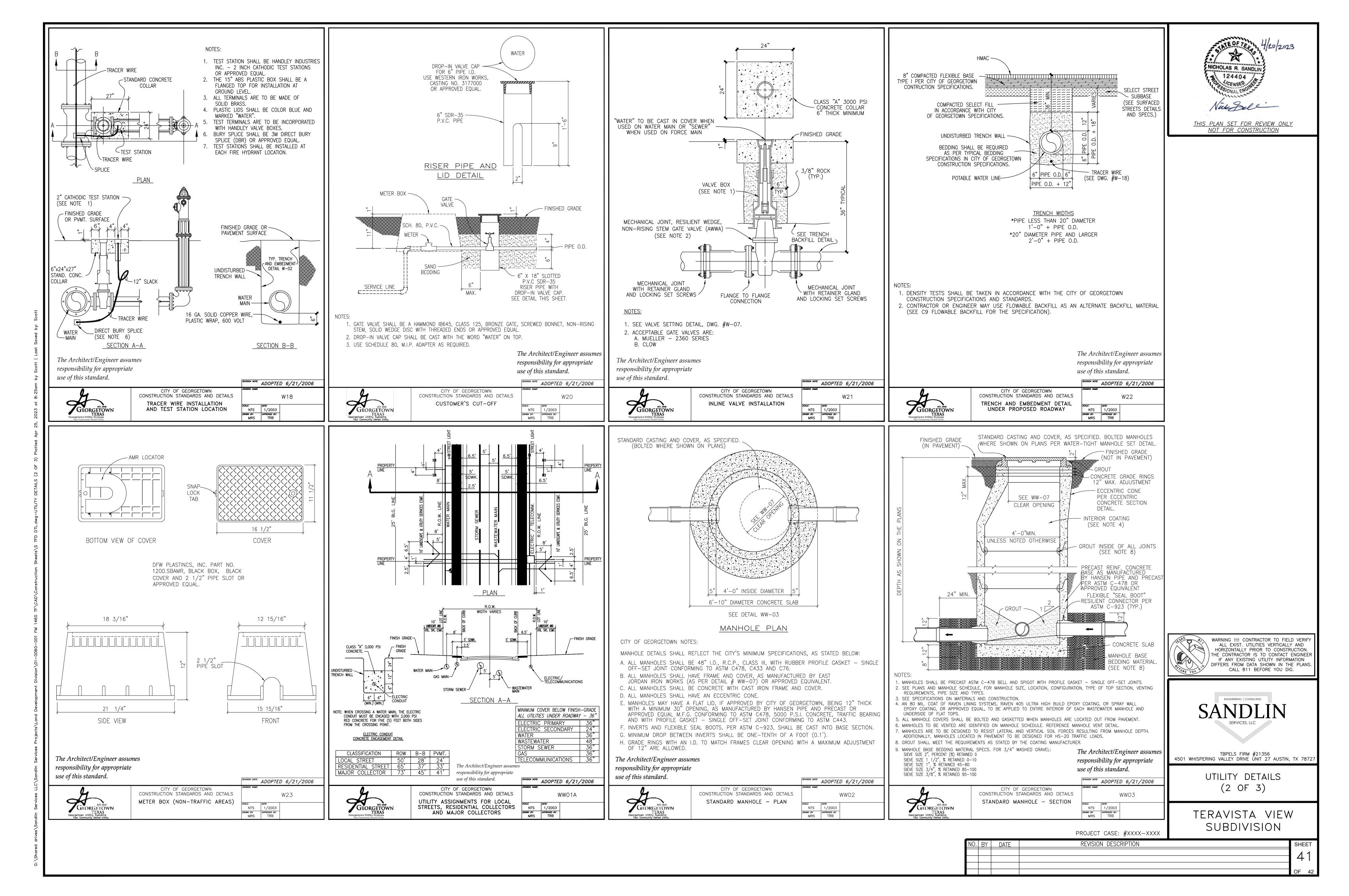


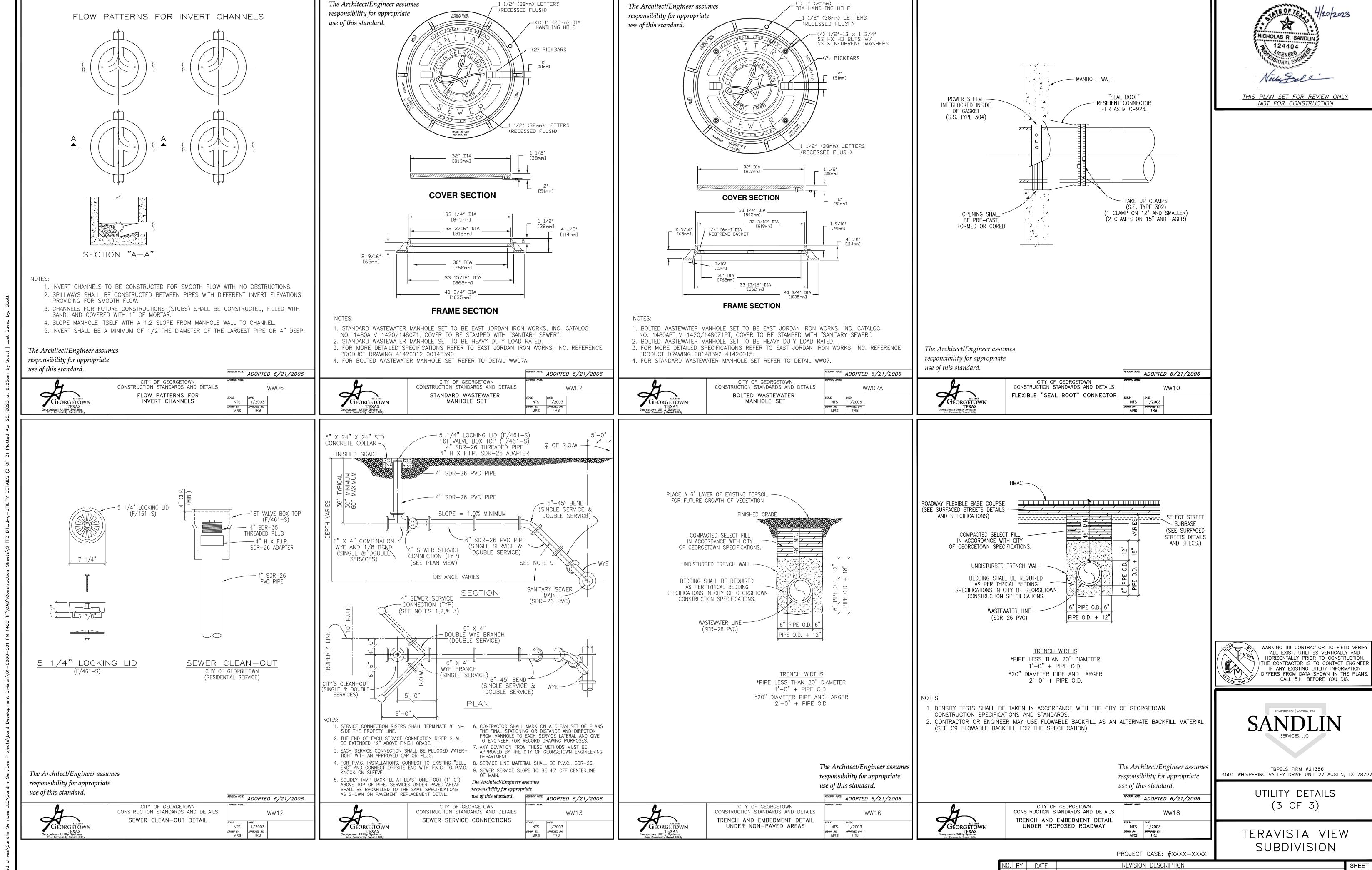
CONSTRUCTION DETAILS (4 OF 4)

TERAVISTA VIEW SUBDIVISION

PROJECT CASE: #XXXX-XXXX REVISION DESCRIPTION







The Architect/Engineer assumes

_1 1/2" (38mm) LETTERS



Permanent Stormwater Section (TCEQ-0600)

Attachment G: Inspection, Maintenance, Repair and Retrofit Plan

Recommended Maintenance Guidelines for Batch Detention Pond BMP

Batch detention ponds capture and temporarily detain the water quality volume. They capture the first flush of stormwater, allowing the solids fraction to settle, and they limit downstream erosion by controlling peak flow rates during erosive events. A batch detention pond can be used in combination with grassy swales to achieve water quality and drainage goals. Batch detention ponds may have moderate to somewhat higher maintenance requirements since they are active stormwater controls. There are many factors that may affect a batch detention pond's operation and that will be periodically checked. These factors can include mowing, removal of accumulated bottom sediments, removal of debris from all inflow and outflow structures, unclogging of orifice perforations, and the upkeep of all physical structures that are within the batch detention pond area.

Inspections

The batch detention pond inspections should take place a minimum of twice a year. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. The remaining inspection(s) should occur between storm events so that manual operation of the valve and controller can be verified. The level sensor in the pond should be inspected and any debris or sediment in the area should be removed. The outlet structure and the trash screen should be inspected for signs of clogging. Debris and sediment should be removed from the orifice and outlets(s) as described below. Debris obstructing the valve should be removed. During each inspection, erosion areas inside and downstream of the BMP should be identified and repaired/revegetated immediately.

Mowing

The pond basin must be mowed to prevent woody growth and control weeds. A mulching mower or trimmer should be used, and the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. Access to the pond bottom will be through a wall mounted maintenance ladder on the west side of the detention pond wall.

Litter and Debris Removal

Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the pond basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed.

TERAVISTA VIEW SUBDIVISION WATER POLLUTION ABATEMENT PLAN



Erosion Control

The pond basin side slopes and embankment all may periodically suffer from slumping and erosion. To correct these problems, corrective action, such as regrading and revegetation, may be necessary. Correction of erosion control should take place whenever required based on the periodic inspections.

Nuisance Control

Standing water or soggy conditions may occur in the pond basin. Some standing water may occur after a storm event since the valve may close with 2 to 3 inches of water in the basin. Some flow into the pond basin may also occur between storms due to spring flow and residential water use that enters the storm sewer system. Twice a year, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.) particularly in areas of permanent standing water.

Structural Repairs and Replacement

With each inspection, any damage to the structural elements of the pond basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a pond basin will eventually deteriorate and must be replaced.

Sediment Removal

A professionally designed batch detention pond will accumulate quantities of sediment over time. The accumulated sediment can detract from the appearance of the facility and reduce the pollutant removal performance of the facility. The sediment also tends to accumulate near the outlet structure and can interfere with the level sensor operation. Sediment shall be removed from the pond basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours. Care should be taken not to compromise the pond basin lining during maintenance.

Logic Controller

The Logic Controller should be inspected as part of the twice-yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.

Record Keeping

Maintenance and inspection records should be kept on file by the Owner of the permanent BMPs for a period of at least three (3) years. Repair and retrofit records should be kept on file by the Owner of the permanent BMPs for a period of at least five (5) years.



TERAVISTA VIEW SUBDIVISION WATER POLLUTION ABATEMENT PLAN

General Owner Responsibility

Christopher Aldridge

Print Name

The OWNER or SUBSEQUENT OWNER shall bear all expenses for the operation and maintenance of this Permanent Water Quality Control (PWQC) system including but not limited to all general maintenance activities needed to keep this system in proper operation condition. If this system is abused or not maintained, then it may contribute to malfunction of the storm water system. All designated PWQC VFS areas shall remain free of construction, development, and encroachments.

You as the OWNER of this property have a responsibility to provide any SUBSEQUENT OWNER or your real estate agent with a copy of this Best Management Practices (BMP) Maintenance Plan if this facility is sold so that the BMPs can be properly maintained and operated. The same rights, duties, and responsibilities borne by the current OWNER shall be borne by each subsequent OWNER.

OWNER ACKNOWLEDGEMENT AND ACCEPTANCE:

TERAVISTA VIEW SUBDIVISION DEVELOPMENT.

Managing Member	
Title	_
DocuSigned by:	
Christopher Aldridge	4/25/2023
Signature	Date
PREPARED AND CERTIFIED BY ENGINEER	:
Nick Sole	4/20/2023
Nick Sandlin, P.E.	Date



Permanent Stormwater Section (TCEQ-0600)

Attachment H: Pilot-Scale Field Testing Plan (if proposed) (NOT APPLICABLE)

A pilot-scale field testing plan is not applicable. All BMP design and calculations are based on and comply with Edwards Aquifer Technical Guidance for Edwards Aquifer Rules (RG-348, revised July 2005).



Permanent Stormwater Section (TCEQ-0600)

Attachment I: Measures for Minimizing Surface Stream Contamination

No surface streams flow across the property. The property drains northwest toward the South Fork of the San Gabriel River located approximately 2.5 miles from the site. The proposed Batch Detention Pond BMP will address onsite water quality and stormwater drainage to mitigate and minimize offsite surface stream contamination.



Agent Authorization Form (TCEQ-0599)

Agent Authorization Form

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

I	Harry Gibbs	
	Print Name	
	Managing Member	
	Title - Owner/President/Other	
of	Teravista View, LLC	
	Corporation/Partnership/Entity Name	
have authorized	Nicholas Sandlin	
	Print Name of Agent/Engineer	
of	Sandlin Services, 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:

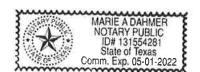
- 1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
- 2. For those submitting an application who are not the property 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:	
Ham	February 11, 2022
Applicant's Signature	Date
<i>t</i>	

THE STATE OF LEXAS & County of WILLIAMSON &

BEFORE ME, the undersigned authority, on this day personally appeared <u>Harry Qubbs</u> 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 (day of <u>Jels</u>. ,2022



Marie Dahmer

NOTARY PUBLIC

MARIE DAHMER

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 5/22



Application Fee Form (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality Name of Proposed Regulated Entity: <u>TERAVISTA VIEW SUBDIVISION</u>			
Regulated Entity Location: <u>2530 FM 1460, Georgetown, TX 78626</u>			
Name of Customer: <u>Teravista View, LLC</u>			
Contact Person: Christopher Aldridg	<u>ge</u> Pho	ne: <u>512-330-1270</u>	
Customer Reference Number (if issu	ued):CN		
Regulated Entity Reference Number	r (if issued):RN	_ .	
Austin Regional Office (3373)			
Hays San Antonio Regional Office (3362)	Travis	⊠w	illiamson
Bexar	Medina	Пυν	/alde
Comal	Kinney		varac
Application fees must be paid by ch Commission on Environmental Qua form must be submitted with your	eck, certified check, ality. Your canceled	check will serve as you	r receipt. This
Austin Regional Office			
Mailed to: TCEQ - Cashier	=	Overnight Delivery to: 1	
Revenues Section		12100 Park 35 Circle	
Mail Code 214		Building A, 3rd Floor	
P.O. Box 13088		Austin, TX 78753	
Austin, TX 78711-3088		(512)239-0357	
Site Location (Check All That Apply):			
Recharge Zone Contributing Zone Transition Zone			tion Zone
Type of Plan		Size	Fee Due
Water Pollution Abatement Plan, Co	ontributing Zone		
Plan: One Single Family Residential Dwelling		Acres	\$
Water Pollution Abatement Plan, Contributing Zone			
Plan: Multiple Single Family Resider		Acres	\$
Water Pollution Abatement Plan, Co	ontributing Zone		
Plan: Non-residential		7.38 Acres	\$ 5,000.00
Sewage Collection System		1,375 L.F.	\$ 687.50
Lift Stations without sewer lines		Acres	\$
Underground or Aboveground Storage Tank Facility		Tanks	\$
Piping System(s)(only)		Each	\$
Exception		Each	\$
Extension of Time	•		\$

Date: <u>4/20/2023</u>

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	\$1,500
	5 < 10	\$3,000
	10 < 40	\$4,000
	40 < 100	\$6,500
	100 < 500	\$8,000
	≥ 500	\$10,000
Non-residential (Commercial, industrial, institutional,	< 1	\$3,000
multi-family residential, schools, and other sites	1 < 5	\$4,000
where regulated activities will occur)	5 < 10	\$5,000
	10 < 40	\$6,500
	40 < 100	\$8,000
	≥ 100	\$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				



Check Payable to the "Texas Commission on Environmental Quality"



Core Data Form (TCEQ-10400)

TCEQ Use Only



TCEQ Core Data Form

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

SECTION I: General Information

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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 Customer Reference Number (if issued) Follow this link to search 3. Regulated Entity Reference Number (if issued)											16 t 1)				
2. Customer	Reference	Follow this link to sear for CN or RN numbers				3. Regulated Entity Reference Number (if issued)						it issuea)			
CN				egistry**											
SECTION II: Customer Information															
4. General C	ustomer In	Date for Customer Information Updates (mm/dd/yyyy) 4/20/2023							2023						
☑ 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															
			_	-				-				current	ana	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:															
Teravista View LLC															
7. TX SOS/C			8. TX State	Tax ID	(11 digit	fe)			9. Fed	leral T	ax ID (9 digit	(s) 10.	DUN	S Number (if applicable)	
08042869	-		3208163		(ii uigii	,		9. Federal Tax ID (9 digits)				To Botto Hambot (if applicable)			
11. Type of 0	Customer:		on		☐ Individual Partnership: ☐ Gene				eneral 🗌 Lir	ral 🔲 Limited					
Government:	☐ City ☐ Co	ounty 🔲 Federal 🗀	☐ State ☐ Other			Sole Pro	opriet	orshi	p [☐ Ot	her:				
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	nal License	☐ Operat e ☐ Respo	or nsible Party			wner & 0 oluntary			Applica	ant	Other:				
	823 S A	ustin Ave													
15. Mailing Address:															
Address.	City	Georgetowr	State			TX		ZIP	IP 78626			ZIP +	4	5819	
16. Country	Mailing Info	ormation (if outsi	de USA)	•			17. E	7. E-Mail Address (if applicable)							
18. Telephor	19. Extension or Code				20. Fax Number (if applicable)										
(512)33	()						-	-							
SECTION	III: Re	gulated En	tity Info	·mati	<u>on</u>										
21. General I	Regulated E	ntity Informati	ion (If 'New R	egulated	d Entit	ty" is sel	ected	belo	w this	form s	should be a	ccompanie	ed by	a permit application)	
⊠ New Regulated Entity															
The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).															
22. Regulate	d Entity Na	me (Enter name	of the site wher	e the reg	ulated	action is	takin	g plac	:e.)						
TERAVISTA VIEW SUBDIVISION															
l															

TCEQ-10400 (02/21) Page 1 of 2

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Georg	Georgetown										X	78626					
27. Lat	-atitude (N) In Decimal: 30.5968563 28. I									itude (W)	In Decimal:	-97.663387					
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29. Primary SIC Code (4 digits) 30. Secondary SIC Code (4 digits) 31. Pr										AICS Cod	32. S (5 or 6	econdary NA digits)	ICS Code				
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9. TCEQ	Programs	and ID	Number	rs Che	ck all Prograr	ns and	d write in the per	mits/registra	ation r	numbers tha	t will be affected	by the updates	submitted on this				
	Safety		nstructions for additional guidance. □ Districts □ Edwards Aquifer						☐ Emissions Inventory Ai			☐ Industrial Hazardous Waste					
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☐ Munio	cipal Solid Wa	aste	☐ Nev	w Source	ce Review Air	· [OSSF			Petroleum	Storage Tank	☐ PWS					
Sludg	је		Storm Water Title \							Tires		Used Oil	Used Oil				
□ Voluntary Cleanup □ Waste Water □ Wastewa						☐ Wastewater A	griculture	ure Water Rights Other:									
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40. Name:	Nicholas Sandlin 41.								tle: Professional Engineer								
	varne:											ss					
(806) 679-7303 () - nick@sandlinservices.com																	
SECT	ION V:	Autl	ıorize	ed Si	gnature	<u>;</u>											
16. By m	y signature	below,	I certify,	to the	best of my	know					nis form is true required for th		, and that I have ne ID numbers				
Compar	ny:	SANDL	.IN SER	VICES	S, LLC			Job Titl	e:	Presider	nt and Principal	pal					
Name (/			SANDLIN					1			Phone:	(806)679-	7303				
Signatu	re:	Niele	Sel	, -							Date:	4/20/202	3				
											- 4.01	., _ 3, _ 32	-				

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