ORGANIZED SEWAGE COLLECTION SYSTEM PLAN

ELDORADO SUBDIVISION – PHASE 7 AND PHASE 8 RONALD REAGAN BOULEVARD LIBERTY HILL, WILLIAMSON COUNTY, TEXAS

Prepared For:

PHTB ELDORADO LLC

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Prepared By:

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Firm No. 928 KHA Project No. 069288000

November 2025

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SECTION 1: EDWARDS AQUIFER APPLICATION COVER PAGE

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: Eldorado Subdivision Phase 7 and Phase 8				2. Regulated Entity No.: N/A						
3. Customer Name: PHTB ELDORADO LLC			4. Customer No.: N/A							
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	IEXPIEXIII		Technical Clarification	Optional Enhanced Measures	
7. Land Use: (Please circle/check one)	Resider	ntial	Non-r	Non-residential 8. Sit		e (acres):	50.3			
9. Application Fee:	\$4,08	38	10. P	10. Permanent BMP(s):			s):	Batch Detention		
11. SCS (Linear Ft.):	8,170	5	12. AST/UST (No. Tanks):			ıks):	N/A			
13. County:	Willian	nson	14. W	14. Watershed:				North Fork San Gabriel		

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.)	_		<u>X</u>			
Region (1 req.)		_				
County(ies)						
Groundwater Conservation District(s)	Edwards Aquifer AuthorityBarton Springs/ Edwards AquiferHays TrinityPlum Creek	Barton Springs/ Edwards Aquifer	NA			
City(ies) Jurisdiction	AustinBudaDripping SpringsKyleMountain CitySan MarcosWimberleyWoodcreek	AustinBee CavePflugervilleRollingwoodRound RockSunset ValleyWest Lake Hills	AustinCedar ParkFlorenceGeorgetownJerrellLeander X Liberty HillPflugervilleRound 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			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.				
Benjamin L. Green, P.E.				
Print Name of Customer/Authorized Agent				
Byrk	11/04/2025			
Signature of Customer/Authorized Agent	Date			

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



SECTION 2: GENERAL INFORMATION

General Information Form

Print Name of Customer/Agent: Benjamin L. Green, P.E.

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

Date: 11/04/2025

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

		
Sig	gnature of Customer/Agent:	
E	Byr R	
Pr	Project Information	
1.	Regulated Entity Name: Eldorado Subdivision Phas	e 7 and Phase 8
2.	County: Williamson County	
3.	Stream Basin: <u>Brazo</u> s River	
4.	Groundwater Conservation District (If applicable): N/A	<u>. </u>
5.	Edwards Aquifer Zone:	
	X Recharge Zone Transition Zone	
6.	Plan Type:	
	WPAP X SCS Modification	AST UST Exception Request

7.	ustomer (Applicant):
	ontact Person: Nick McIntyre ntity: PHTB ELDORADO LLC Nailing Address: 3200 SOUTHWEST FWY #STE 2800 ity, State: HOUSTON, TX Zip: 77027 elephone: 210-580-8598 FAX: mail Address: nick.mcintyre@perryhomes.com
8.	gent/Representative (If any):
	ontact Person: Benjamin L. Green, P.E. ntity: Kimley-Horn lailing Address: 5301 Southwest Parkway, Bldg. 2, Ste. 100 ity, State: Austin, Texas Zip: 78735 elephone: +1512-646-2243 FAX: mail Address: ben.green@kimley-horn.com
9.	roject Location:
	The project site is located inside the city limits of The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of Liberty Hill The project site is not located within any city's limits or ETJ.
10.	The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation. The project is located approximately 2 miles north of the intersection of SH-29 and Ronald Reagan Blvd. The site is on the west side of Ronald Reagan Blvd near the Liberty Hill Fire station.
11.	Attachment A – Road Map. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.
12.	Attachment B - USGS / Edwards Recharge Zone Map. A copy of the official 7 $\frac{1}{2}$ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:
	 X Project site boundaries. X USGS Quadrangle Name(s). X Boundaries of the Recharge Zone (and Transition Zone, if applicable). X Drainage path from the project site to the boundary of the Recharge Zone.
13.	The TCEQ must be able to inspect the project site or the application will be returned. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.
	Survey staking will be completed by this date: At the time of construction

14. X	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:
	X Area of the site X Offsite areas X Impervious cover X Permanent BMP(s) X Proposed site use X Site history X Previous development X Area(s) to be demolished
15. Exis	sting 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:
Proh	nibited Activities
16. X	I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:
	(1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
	(2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
	(3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;
	(4) The use of sewage holding tanks as parts of organized collection systems; and
	(5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).
	(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.
17. X	I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:
	(1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground

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

Injection Control);

(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

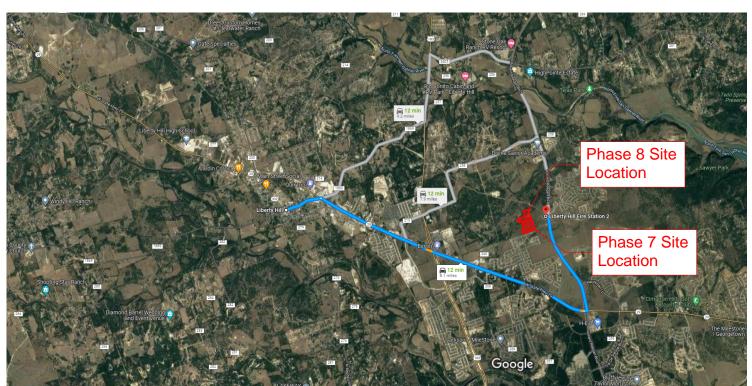
18. The	e fee for the plan(s) is based on:
	For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur. For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines. For a UST Facility 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. X	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 X 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. X	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. X	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

Google Maps Liberty Hill, TX to Liberty Hill Fire Station 2

Drive 8.1 miles, 12 min



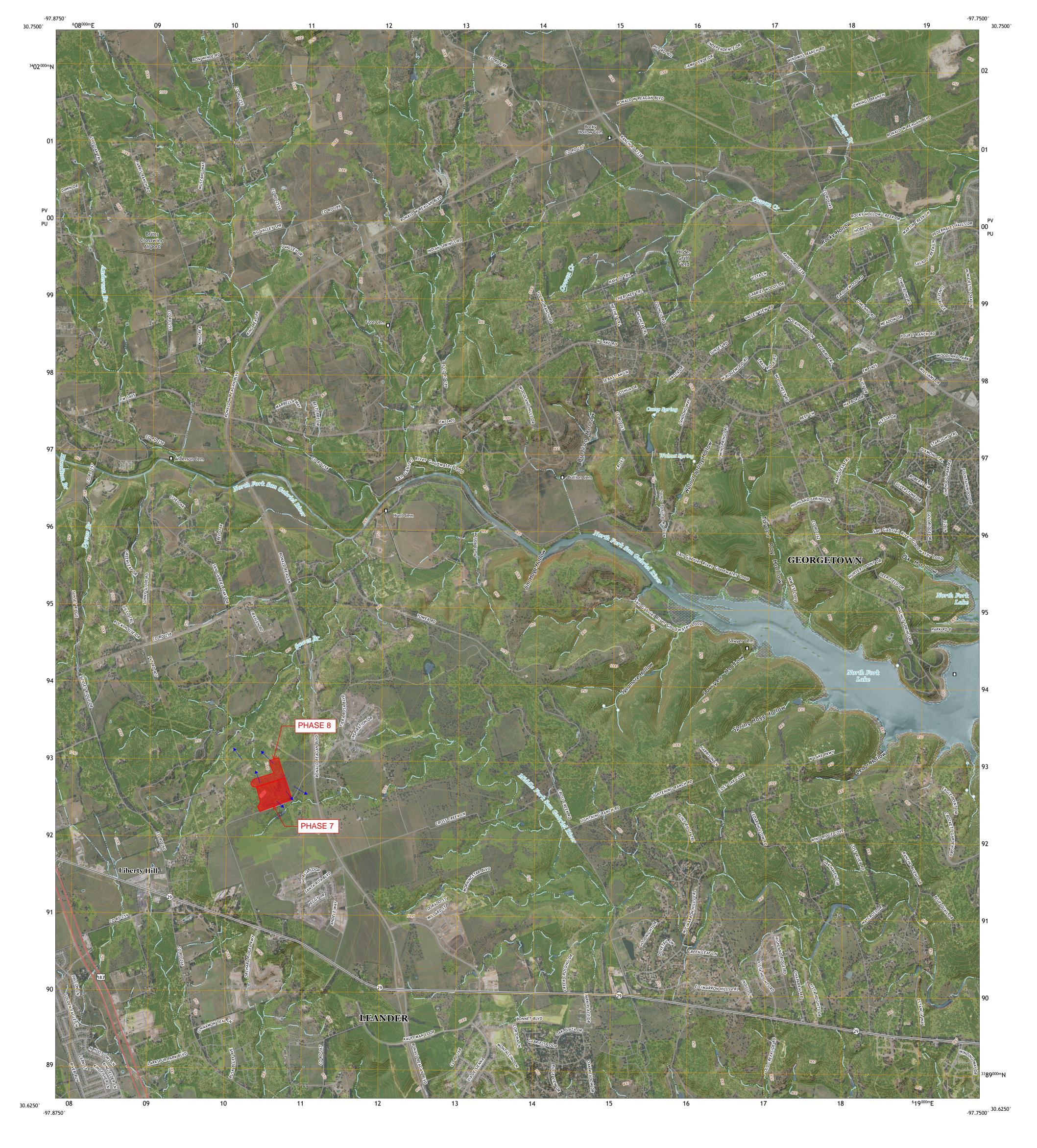
A	via TX-29 E/W State Hwy 29 Best route now due to traffic conditions	12 min 8.1 miles
	via FM1869/Ranch Rd 1869 and Ronald Reagan Blvd	12 min 9.2 miles
a	via Co Rd 258	12 min 7.9 miles

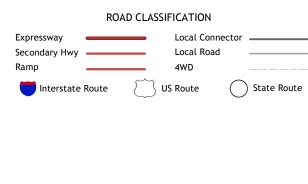
Explore Liberty Hill Fire Station 2

Restaurants Gas stations Parking Lots



Attachment B: USGS / Edwards Recharge Zone Map





QUADRANGLE LOCATION

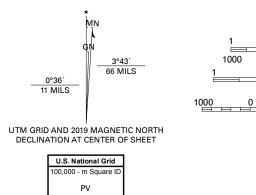
ADJOINING QUADRANGLES

1 Mahomet

2 Florence

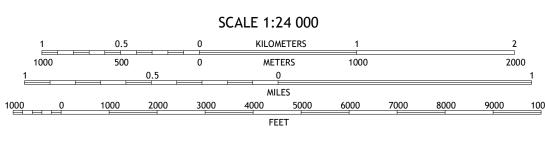
3 Cobbs Caverr 4 Liberty Hill 5 Georgetown 6 Nameless 7 Leander 8 Round Rock

3 Cobbs Cavern



PU

Grid Zone Designation 14R



CONTOUR INTERVAL 10 FEET NORTH AMERICAN VERTICAL DATUM OF 1988 This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011. A metadata file associated with this product is draft version 0.6.18

Attachment C Project Description

Project Description

Introduction

The Eldorado Subdivision Phase 7 and Phase 8 project is proposed on a 50.3-acre tract of land in the City of Liberty Hill ETJ located approximately 2 miles north of the intersection of SH-29 and Ronald Reagan Blvd. The site is on the west side of Ronald Reagan Blvd near the Liberty Hill Fire station. The entire build out of the Eldorado Subdivision consists of 332-acre proposing approximately 918 new single-family homes and three commercial sites that will be located withing the legal boundary of the property.

Phase 1 of the subdivision is currently in construction. The remaining existing 171.593 acre parcel, which is currently undeveloped, is to be subdivided into 134 single family lots and 1 drainage lot shown in the phase 7 and phase 8 construction documents that will be contained in the 50.3 acres. The remaining 121.293 acres will become 1 undeveloped lot until the remaining phases come online.

The proposed improvements for Phase 7 and Phase 8 include mass grading, roadway, water utilities, wastewater utilities, and stormwater management infrastructure. It is important to note that the full build out of the Eldorado subdivision will include several water quality and detention facilities with their associated drainage infrastructure. There will be a total of 8 proposed BMPs. All eight BMPs are proposed to be batch detention. All of the drainage infrastructure has an approved WPAP.

The site is not located in the Federal Emergency Management Agency's (FEMA) 100 year floodplain, according to Flood Insurance Rate Map 48491C0275E. The site is located within the Edwards Aquifer Recharge Zone according to the TCEQ Edwards Aquifer Map.

Current Tract Conditions

Site History

There is no previous SCS history for the Eldorado Subdivision Phase 7 and Phase 8 development. However, there is an approved SCS associated with Phase 1 of the subdivision, (Edwards Aquifer Protection Program ID: 11003441, Regulated identity No.: RN111628756). Additionally, the entire subdivision's water quality detention facilities have an approved WPAP (Edwards Aquifer Protection Program ID: 11003440, Regulated identity No.: RN111628756). It is important to note that Phase 7 and Phase 8 are adjacent to Phase 1, and Phase 2 through 6 will be constructed at a later time.

Legal Description

The legal description of the parcel is as follows:

• AW0417 AW0417 - Manlove, B. Sur., ACRES 171.593

Land Use

Phase 7 and Phase 8 of the Eldorado Subdivision consists of 50.3 acres of undeveloped land. The only areas being demolished are located on Phase 1 of the subdivision which includes removing a portion of an existing wall, and curb and gutter to connect Phase 8 and Phase 1 roadways. This proposed demolition plan is shown on the attached Eldorado Phase 8 plans. The proposed sewage system consists of all public sewer lines. The public line will connect to an existing sewer manhole that was constructed in the Eldorado Phase 1 Construction Documents (permitted number 23-005CON). The manhole connection is shown on sheet 52 at station 1+00 of the Eldorado Phase 7 Construction Documents.

Existing Conditions

Under existing conditions, the 50.3 acre subject sits on a high point and consists of two existing drainage areas and two offsite drainage areas. There is no impervious cover (0%) on the existing site. Each drainage area has its own distinct point of analysis (POA) for outfall. The site's primary drainage pattern directs water northwest towards the floodplain.

This 50.3 -acre parcel features diverse topography, with slopes generally varying between 0.1% and 30%.

Proposed Conditions

The Eldorado Subdivision Phase 7 and Phase 8 project propose 134 single family lots, sidewalks, utility, and storm infrastructure.

The development proposes 28.09 acres (32.92%) of impervious cover. The development will have inlets laid throughout the site and will convey storm runoff through means of pipes into the batch detention basin pond located on the east side of the property. The water quality batch detention basins will be designed for an ultimate site condition of 36% impervious cover and will ensure the required 80 percent removal of the increased load in TSS is met. Once the required volume of water is treated, flows will be discharged through outlet structures that will eventually discharge into the adjacent floodplain located northwest of the site. The outfall structure is designed to release flows at a rate where proposed flows will be less than existing flows at the point of analysis.

Wastewater

The Eldorado Phase 7 and phase 8 development includes 134 single family homes. The homes will be served with wastewater service that is owned and operated by the City of Liberty Hill. The proposed wastewater system consists of 8,176 linear feet of wastewater lines. A variable width wastewater easement will be established offsite of the Eldorado Phase 7 and Phase 8 boundary owned by the City of Liberty Hill, to connect the existing Eldorado Phase 1 manhole. This manhole is connected to a wastewater system that gravity's to the Eldorado Phase 1 lift station. The lift station then pumps to an existing City of Liberty Hill manhole and wastewater line. The wastewater line has been designed to meet both current and future demands, with hydraulic calculations confirming compliance with the City's Utility Criteria Manual (UCM). Peak Wet Weather Flows will remain below 85% of full pipe capacity, and Peak Dry Weather Flows will stay under 65%, ensuring system reliability.

The public wastewater infrastructure is being designed through construction plans 2025-8-CON and 2025-8-CON. Both systems will be built concurrently to ensure seamless integration. All construction activities will adhere to Liberty Hill's Unified Development Code and Texas Commission on Environmental Quality (TCEQ) regulations to show compliance with wastewater design standards.



SECTION 3: GEOLOGIC ASSESSMENT

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

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.

Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213. Print Name of Geologist: Jack D Smitherman Telephone: 512-535-4368 Date: 09/01/2020 Fax: 512-535-4451 Representing: Capitol Environmental, Inc TBPG Firm Registration #50389 (Name of Company and TBPG or TBPE registration number) Signature of Geologist: Regulated Entity Name: Eldorado Estates **Project Information** 1. Date(s) Geologic Assessment was performed: August 13, 2020 2. Type of Project: 9/1/20 WPAP 3. Location of Project: Recharge Zone **Transition Zone**

Contributing Zone within the Transition Zone

		ologic Assessmentable) is attached.		Completed Geo	ogic Asses	sment Table
 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 U				Soil Name	Group*	Thickness(feet)
Characteristics	and Thi	ckness		Eckrant cobbly clay (EaD)	D	1-10'
Soil Name	Group*	Thickness(feet)		ciay (Lab)		1 10
Brackett clay loam(BkE)	D	1-10'		A. Soils	having a h	(Abbreviated) igh infiltration
Denton sillty clay (DnB)	D	1-10'	infiltration rate when thorwetted. 1-10' C. Soils having a slow infiltra			
Denton (DnC) 1-5% slope	D	1-10'				
Doss silty clay (DoC) 1-5%	D	1-10'	rate when thoroughly we D. Soils having a very slow infiltration rate when the			ery slow
*a	dditional soils	on following page	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.						
		e Geologic Map(s Plan. The minimu	-		must be t	he same scale as
Applicant's Site Plan Scale: 1" = <u>250'</u> Site Geologic Map Scale: 1" = <u>250'</u> Site Soils Map Scale (if more than 1 soil type): 1" = <u>250'</u>						
9. Method of co	ollecting p	ositional data:				
=	☐ Global Positioning System (GPS) technology. ☐ Other method(s). Please describe method of data collection:					
10. The proje	ct site and	l boundaries are c	learly sl	hown and labele	d on the Si	te Geologic Map.

Soil Units - Page 2

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Eckrant stony clay (EeB), 0-3 % slope	D	1-10'
Eckrant-Rock outcrop (ErE), rolling	D	1-10'
Fairlie clay (FaA) 0-1% slope	D	1-10'
Fairlie clay (FaB) 1-2% slope	D	1-10%

Soil Name	Group*	Thickness(feet)
Sunev silty clay loam (SuB) 1-3% slope	D	1-10%

- * 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.

11. X Surface geologic units are shown and labeled on the Site Geologic Map.
12. Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
Geologic or manmade features were not discovered on the project site during the field investigation.
13. The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.
 ☐ There are 2 (#) 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 Chapter 76. ☐ There are no wells or test holes of any kind known to exist on the project site.
There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. 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.

Attachment A Geologic Assessment Table

GEOL	OGIC ASS	ESSMENT	TABLE	<u> </u>			PRO	DJE	CT NA	ME:	ELD	ORAD	O ES	TATES						
LOCATION					FEATURE CHARACTERISTICS							EVALUATION			Pŀ	IYSIC	AL SETTING			
1A	1B *	1C*	2A	2B	3		4		5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)				DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY	
						Х	Υ	Z		10						<40	<u>>40</u>	<1.6	<u>>1.6</u>	
F-1	30.657306	-97.852358	0	5	Kc	1	2	0.5					0	10	15	Х		Х		Hillside
F-2	30.659051	-97.850148	0	5	Kc	1	3	0.5					0	10	15	Χ		Χ		Hillside
F-3	30.65874	-97.850739	0	5	Kc	3	4	1.5					0	10	15	Х		Χ		Hillside
F-4	30.662975	-97.845844	0	5	Ked	5	6.5	2					0	10	15	Χ		Χ		Hillside
M-1	30.660995	-97.853277	MB	30	Kkv	Wate	r Well		Contrib	outing	g Zone	:	Χ	0	30	Χ		Χ		Hilltop
M-2	30.667365	-97.849066	MB	30	Kkv	WW (windmill)			Contributing Zone		Χ	0	30	Х		Χ		Hilltop		
S-1	30.660591	-97.856439	0	5	Kbc	Streambed			Contributing Zone		C	5	10	Χ			Χ	Streambed		
S-2	30.668083	-97.853375	0	5	Kgru	Strea	mbed		Contrib				C	5	10	Χ			Χ	Streambed
S-3	30.665324	-97.848341	0	5	Kkv	Strea	mbed		Contrib				С	5	10	Χ			Χ	Streambed
S-4	30.662413	-97.851534	0	5	Kkv	Strea	mbed		Contrib	outing	g Zone		С	5	10	Х			Χ	Streambed

*DATUM: NAD 83 StatePlane Texas Central

2A TYPE	TYPE	21	3 POINTS
С	Cave		30
SC	Solution cavity		20
SF	Solution-enlarged fracture(s)		20
F	Fault		20
0	Other natural bedrock features		5
MB	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
Χ	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.

Acet Switherma

Date: 9-1-20

Sheet:

of <u>1</u>

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

JACK D. SMITHERMAN

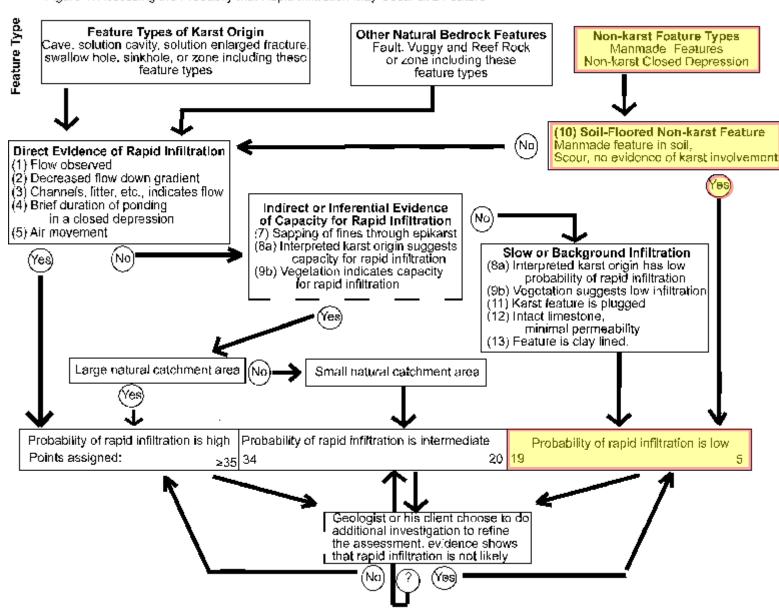
GEOLOGY

868

OCK TO NATIVE GEOSCHE

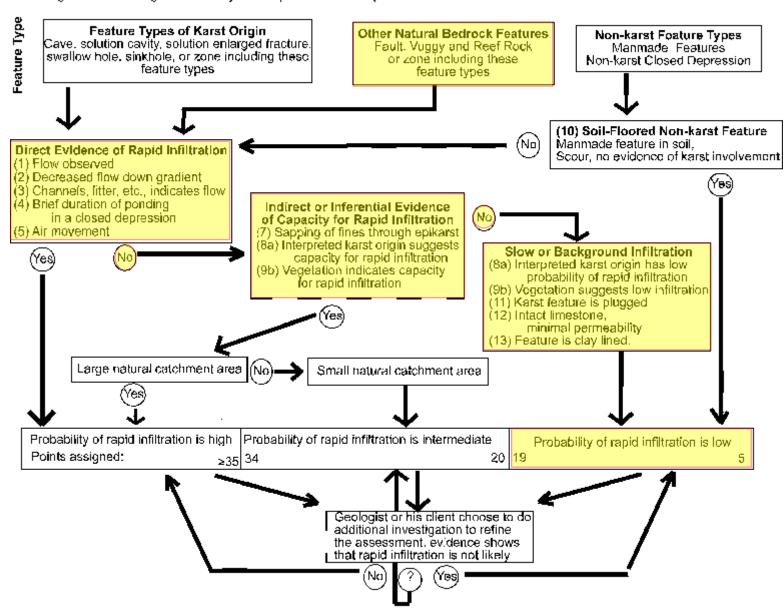
Feature: F-1 (Non-karst Closed Depression)

Figure 1: Assessing the Probabily that Rapid Intitration May Occur at a Feature



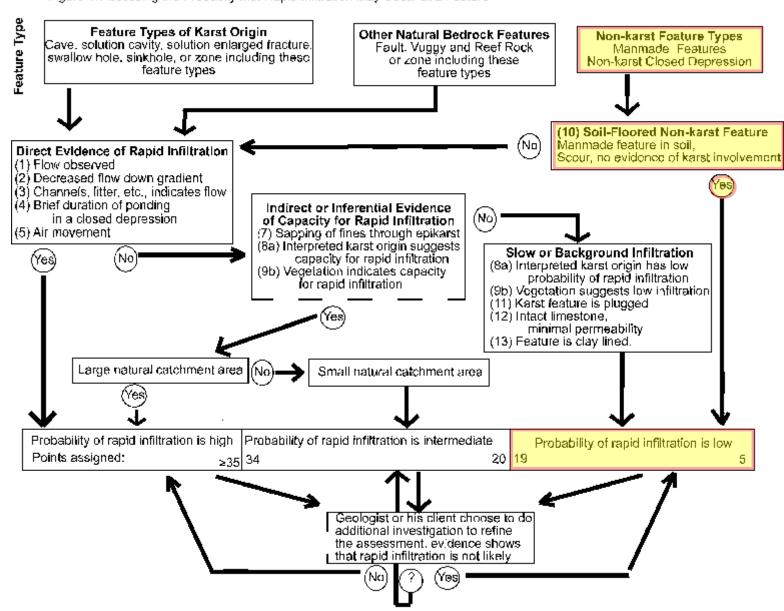
Features: F-2, F-3, F-4

Higure 1: Assessing the Probabily that Rapid Intitration May ∪ccur at a Feature



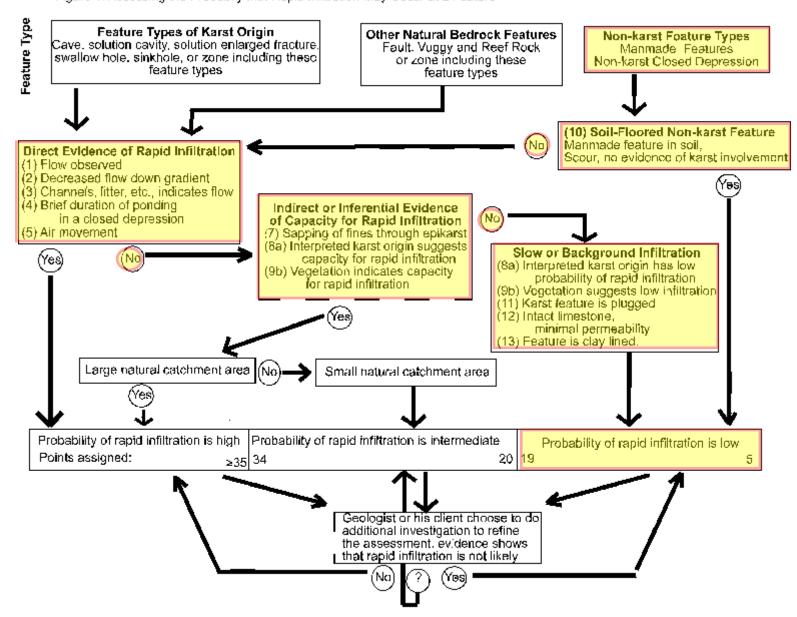
Features: M-1 & M-2 (Water Well & Windmill)

Higure 1: Assessing the Probabily that Rapid Infitration May ∪ccur at a Feature



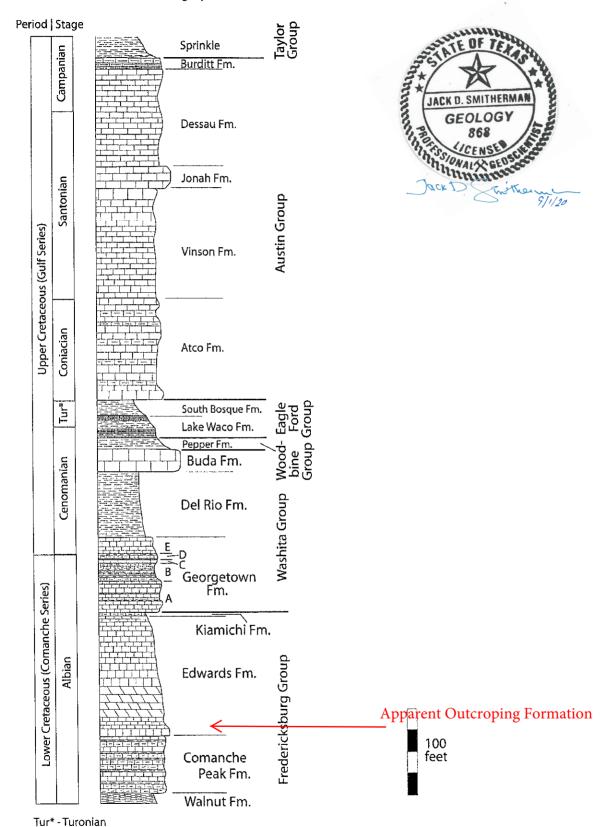
Feature: S-1, S-2, S-3 & S-4 (Streambeds)

Higure 1: Assessing the Probabily that Rapid Intitration May ∪ccur at a Feature



Attachment B Stratigraphic Column

Generalized Stratigraphic Column of the Round Rock Area



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Source:
Bedrock Geology of Round Rock and Surrounding Areas, Williamson and Travis Counties, Texas By: Todd B. Housh



Attachment C Site Geology

Capitol Environmental, Inc. Registered Geosciences Firm Texas Registration No. 50389

NARRATIVE DESCRIPTION OF SITE-SPECIFIC GEOLOGY ELDORADO ESTATES 333.269 ACRE TRACT LIBERTY HILL, WILLIAMSON COUNTY, TEXAS 08/13/2020

LOCATION

The subject site is an approximate 333.269 acres, more or less, tract of land located at County Road 260 in Liberty Hill, Williamson County, Texas at approximately 30.654745° North Latitude and approximately -97.86088° West Longitude. This location lies within the designated Edwards Aquifer Recharge Zone and Edwards Aquifer Contributing Zone. Therefore, future intended development of the site must conform to criteria in accordance with 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).

EXPLANATION OF ASSESSMENT

This assessment follows general guidelines contained in Texas Commission on Environmental Quality (TCEQ) "Instruction for Geologist for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones" (TCEQ Guidance 0585). The site is located on an area of the recharge zone that may contain karst features formed by selective solutioning of limestone minerals by water. Karst features may be expressed as surface features but more commonly tend to persist with depth. This assessment documents the presence or absence of site conditions that were present at the time the site visit that was performed on 08/13/2020. The site visit consisted of a walk-through survey that consisted of a non-intrusive visual observation or survey of readily accessible, easily visible surface property conditions that were present on the subject property at the time of the site visit. Intrusive subsurface testing such as excavation, cave mapping, infiltrometer test, geophysical studies or tracer studies are not required for the geologic assessment of any feature in accordance with this practice.

A sensitive geologic or manmade feature, for the purpose of this practice is a feature on the recharge zone or transition zone of the Edwards Aquifer with a <u>superficial</u> appearance that suggest a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer and that has the apparent potential for rapid infiltration into the subsurface.

PHYSICAL DESCRIPTION OF SITE

The subject site is currently undeveloped land used for livestock pastureland and agricultural pastureland.

SURFACE DRAINAGE

After reviewing the project site topographic survey, surface runoff appears to flow from the mapped Edwards Aquifer Recharge Zone on the property onto the mapped Edwards Aquifer Contributing Zone towards the north-northwest. Thus, geological and hydrological conditions across the Contributing Zone on the subject property do not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer and geologic features on the Contributing Zone are not identified as sensitive features in connection with the subject property.

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SOIL DESCRIPTION

The site soil is composed of:

Brackett gravelly clay loam, 3 to 12 percent slopes (BkE), Hydrologic Group D

The Brackett series consists of very shallow to shallow soils over bedrock. These well drained and moderately permeable soils formed in residuum over chalky limestone bedrock mainly of the Glenrose formation of Cretaceous Age. These soils are on gently sloping to very steep uplands. Slopes range from 1 to 60 percent. Well drained. Runoff is very low on 1 to 3 percent slopes, low on 3 to 5 percent slopes, medium on 5 to 20 percent slopes and high on 20 to 60 percent slopes. Permeability is moderate.

Denton silty clay, 1 to 3 percent slopes (DnB), Hydrologic Group D

The Denton series consist of deep, well drained, slowly permeable soils that formed in clayey materials over residuum weathered from limestone bedrock. These nearly level or gently sloping soils are on uplands and have slopes ranging from 0 to 5 percent. Well drained; medium surface runoff; slow permeability.

Denton silty clay, 3 to 5 percent slopes (DnC), Hydrologic Group D

The Denton series consist of deep, well drained, slowly permeable soils that formed in clayey materials over residuum weathered from limestone bedrock. These nearly level or gently sloping soils are on uplands and have slopes ranging from 0 to 5 percent. Well drained; medium surface runoff; slow permeability.

Doss silty clay, moist, 1 to 5 percent slopes (DoC), Hydrologic Group D

The Doss series consists of shallow to weakly cemented limestone, well drained, moderately slow permeable soils that formed in calcareous loamy and clayey residuum derived from marls and limestone. These very gently to moderately sloping soils occur on hill slopes on dissected plateaus. Slope ranges from 1 to 8 percent. Mean annual precipitation is about 762 mm (30 in), and mean annual air temperature is about 18.9 degrees C (66 degrees F). Well drained. Permeability is moderately slow. Runoff is medium on 1 to 5 percent slopes and high on 5 to 8 percent slopes.

Eckrant cobbly clay, 1 to 8 percent slopes (EaD), Hydrologic Group D

The Eckrant series consists of soils that are very shallow and shallow to indurated limestone bedrock and interbedded cryptocrystalline quartz, chert, marl, and chalk. These well drained soils formed in residuum derived from limestone. These nearly level to very steep soils are on summits, shoulders, and backslopes of ridges on dissected plateaus. Slope ranges from 1 to 60 percent. Mean annual air temperature is about 20 degrees C (68 degrees F), and the mean annual precipitation is about 668 mm (26 in). Well drained. Permeability is moderately slow. Runoff is very low on 1 to 3 percent slopes, low on 3 to 5 percent slopes, medium on 5 to 20 percent slopes, and high on 20 to 60 percent slopes.

Eckrant extremely stony clay, 0 to 3 percent slopes (EeB), Hydrologic Group D

The Eckrant series consists of soils that are very shallow and shallow to indurated limestone

Capitol Environmental, Inc. Registered Geosciences Firm Texas Registration No. 50389

bedrock and interbedded cryptocrystalline quartz, chert, marl, and chalk. These well drained soils formed in residuum derived from limestone. These nearly level to very steep soils are on summits, shoulders, and backslopes of ridges on dissected plateaus. Slope ranges from 1 to 60 percent. Mean annual air temperature is about 20 degrees C (68 degrees F), and the mean annual precipitation is about 668 mm (26 in). Well drained. Permeability is moderately slow. Runoff is very low on 1 to 3 percent slopes, low on 3 to 5 percent slopes, medium on 5 to 20 percent slopes, and high on 20 to 60 percent slopes.

Eckrant-Rock outcrop complex, rolling (ErE), Hydrologic Group D

The Eckrant series consists of soils that are very shallow and shallow to indurated limestone bedrock and interbedded cryptocrystalline quartz, chert, marl, and chalk. These well drained soils formed in residuum derived from limestone. These nearly level to very steep soils are on summits, shoulders, and backslopes of ridges on dissected plateaus. Slope ranges from 1 to 60 percent. Mean annual air temperature is about 20 degrees C (68 degrees F), and the mean annual precipitation is about 668 mm (26 in). Well drained. Permeability is moderately slow. Runoff is very low on 1 to 3 percent slopes, low on 3 to 5 percent slopes, medium on 5 to 20 percent slopes, and high on 20 to 60 percent slopes.

Fairlie clay, 0 to 1 percent slopes (FaA), Hydrologic Group D

The Fairlie series consists of deep, moderately well drained, very slowly permeable soils. These soils are on nearly level to gently sloping uplands. The slope is typically 1 to 3 percent but ranges from 0 to 5 percent. Fairlie soils are moderately well drained and very slow permeablility. Water enters the soil rapidly when it is dry and cracked, and very slow when the soil is saturated. Runoff is low on 0 to 1 percent slopes; moderate on 1 to 3 percent slopes; and high on 3 to 5 percent slopes.

Fairlie clay, 1 to 2 percent slopes (FaB), Hydrologic Group D

The Fairlie series consists of deep, moderately well drained, very slowly permeable soils. These soils are on nearly level to gently sloping uplands. The slope is typically 1 to 3 percent but ranges from 0 to 5 percent. Fairlie soils are moderately well drained and very slow permeablility. Water enters the soil rapidly when it is dry and cracked, and very slow when the soil is saturated. Runoff is low on 0 to 1 percent slopes; moderate on 1 to 3 percent slopes; and high on 3 to 5 percent slopes.

Sunev silty clay loam, 1 to 3 percent slopes (SuB), Hydrologic Group B

The Sunev series consists of very deep, well drained soils that formed in loamy alluvium. These soils are on nearly level to moderately steep stream terraces or footslopes of valleys and ridges. Slope ranges from 0 to 15 percent. Mean annual air temperature is about 17 to 21 degrees C (62 to 69 degrees F), and mean annual precipitation is about 711 to 864 cm (28 to 34 in). Well drained. Permeability is moderate. Runoff is negligible on slopes less than 1 percent, low on 1 to 5 percent slopes, and moderate on 5 to 15 percent slopes.

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GEOLOGY

The site is located on the:

Comanche Peak Limestone (Kc)

The Comanche Peak Limestone consist of fine to very fine grained, fairly hard, nodular, light gray, weathers white, extensively burrowed, burrow fillings slightly coarser and darker, typically crops out in scarp face beneath Edwards Limestone; thickness up to 80 feet, feathers out southward near Williamson-Travis County line.

Edwards Limestone (Ked)

The Edwards Limestone consist of limestone, dolomite, and chert; limestone aphanitic to fine grained, massive to thin bedded, hard, brittle, in part rudistid biostromes, much miliolid biosparite; dolomite fine to very fine grained, porous, medium gray to grayish brown; chert, nodules and plates common, varies in amount from bed to bed, some intervals free of chert, mostly white to light gray; in zone of weathering considerably recrystallized, "honeycombed," and cavernous forming an aquifer; forms flat areas and plateaus bordered by scarps; thickness 60-350 feet, thins northward

Bee Cave Marl (Kbc)

The Bee Cave Marl consist of lithologically and faunally similar to Keys Valley Marl, except Exogyra texana are more abundant and ammonites are scarce; thickness 25-40 feet.

Upper Glen Rose Formation (Kgru)

The Upper Glen Rose Formation consist of Limestone, dolomite, and marl subdivided into two units by Corbula bed C; alternating resistant and recessive beds forming stairstep topography; limestone aphanitic to fine grained, hard to soft and marly, light gray to yellowish gray; dolomite, fine grained, porous, yellowish brown; marine megafossils include molluscan steinkerns, rudistids, oysters, and echinoids; upper part, relatively thinner bedded, more dolomitic, and less fossiliferous than the lower part, thickness about 220 feet; thickness of Glen Rose Formation 380± feet.

Keys Valley Marl (Kky)

The Keys Valley Marl consist of soft, white; marine megafossils include Exogyra texana, Gryphaea mucronata, and other pelecypods, ammonites, gastropods, and echinoids; thickness up to 50 feet, feathers out southward near Williamson-Travis County line.

Fluviatile terrace deposits (Qt)

The Fluviatile terrace deposits consist of Terraces along streams, consist of three or more levels which may correspond to coastal Pleistocene units; gravel, sand, silt, and clay in various proportions with gravel more prominent in the older, higher terraces; gravel along Guadalupe River, siliceous, coarse, along Colorado River, mostly dolomite, limestone, chert, quartz, and various igneous and metamorphic rocks from the Llano region and dolomite, limestone, and chert from the Edwards Plateau; sand mostly quartz.

STRUCTURAL TREND and FEATURES:

The subject site is located on the Edwards Plateau within the Balcones / Ouachita structural province in central Texas. The Balcones / Ouachita structural province is an arcuate band of mostly down-to-the-coast normal faults that sub-parallels the Gulf of Mexico. In Williamson County, the regional structural trend of the Balcones / Ouachita province is generally southwest to northeast.

(Source: "Lineament Analysis and Inference of Geologic Structure-Examples from the Balcones/Ouachita Trend of Texas." Curan, Woodfruff, Jr, and Thompson, 1982)

The site is located in the vicinity of mapped regional faulting. No surface expressions of local structural features were observed during this assessment.

SITE SPECIFIC GEOLOGIC FEATURE DESCRIPTIONS Identified 08/13/2020

To the extent that surface property features were readily accessible and observable at the time the site was evaluated on 08/13/2020 no geologic features were identified on the subject tract of land that has observed potential to affect recharge to the Edwards Aquifer except for the following:

F-1 CD: Non-Karst Closed Depression: This feature appears to be a natural, soil floored topographic depression. Non-karst closed depressions are not formed by karst processes and are not bedrock floored. This Closed Depression, as observed at the time of the assessment, is relatively shallow, soil floored with evidence of activity around opening indicative of a large animal burrow.

Surface conditions observed in connection with this feature are not believed to persist in the subsurface at depth and do not appear to have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. Therefore, this feature is not identified as sensitive feature at this time.

<u>F-2 O</u>: Other Natural Bedrock Feature - Surface Out Crop: Feature F-2 is located on a high-standing erosional remnant of limestone outcrop of the Edwards Group. This feature appears to be a localized surface area of enhanced solutioning associated with fractured slabs or blocks of limestone in the weathering profile. Dissolution of limestone in connection with this feature appears to have been controlled by localized bedding and shallow fracturing of exposed limestone bedrock located in a zone of apparent Epikarst. Epikarst is used herein to identify the zone of weathering at the upper surface of a limestone that includes the solutionally modified (karren) bedrock surface and associated regolith. The extent of weathering and dissolution diminishes with depth at this feature and, when probed with a wooden rod, terminates in apparently consolidated bedrock.

The feature's ability to capture rainfall runoff appears to be limited to only what falls directly within its' immediate vicinity which is estimated to be much less than 1.6 acres.

Conditions observed in connection with this feature are not believed to persist in the subsurface at depth and do not appear to have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. Therefore, this feature is <u>not</u> identified as a sensitive feature at this time.

F-3 O:

Other Natural Bedrock Feature - Surface Out Crop: Feature F-3 is located on a high-standing erosional remnant of limestone outcrop of the Edwards Group. This feature appears to be a localized surface area of enhanced solutioning associated with fractured slabs or blocks of limestone in the weathering profile. Dissolution of limestone in connection with this feature appears to have been controlled by localized bedding and shallow fracturing of exposed limestone bedrock located in a zone of apparent Epikarst. Epikarst is used herein to identify the zone of weathering at the upper surface of a limestone that includes the solutionally modified (karren) bedrock surface and associated regolith. The extent of weathering and dissolution diminishes with depth at this feature and, when probed with a wooden rod, terminates in apparently consolidated bedrock.

The feature's ability to capture rainfall runoff appears to be limited to only what falls directly within its' immediate vicinity which is estimated to be much less than 1.6 acres.

Conditions observed in connection with this feature are not believed to persist in the subsurface at depth and do not appear to have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. Therefore, this feature is not identified as a sensitive feature at this time.

F-4 O:

Other Natural Bedrock Feature - Surface Out Crop: Feature F-4 is located on a high-standing erosional remnant of limestone outcrop of the Edwards Group. This feature appears to be a localized surface area of enhanced solutioning associated with fractured slabs or blocks of limestone in the weathering profile. Dissolution of limestone in connection with this feature appears to have been controlled by localized bedding and shallow fracturing of exposed limestone bedrock located in a zone of apparent Epikarst. Epikarst is used herein to identify the zone of weathering at the upper surface of a limestone that includes the solutionally modified (karren) bedrock surface and associated regolith. The extent of weathering and dissolution diminishes with depth at this feature and, when probed with a wooden rod, terminates in apparently consolidated bedrock.

The feature's ability to capture rainfall runoff appears to be limited to only what falls directly within its' immediate vicinity which is estimated to be much less than 1.6 acres.

Conditions observed in connection with this feature are not believed to persist in the subsurface at depth and do not appear to have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. Therefore, this feature is not identified as a sensitive feature at this time.

<u>M-1 MB</u>:

Manmade Feature - Water Well: Assuming that this water well was properly completed in accordance with Texas Department of Licensing and Regulation Water Well Drillers and Pump Installers 16 TAC § 76 (TOC § 1901.253 Completing Water Wells), this feature should not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. Therefore, this feature is <u>not</u> identified as a sensitive feature at this time.

M-2 MB:

Manmade Feature - Wind Mill (Water Well): Assuming that this water well was properly completed in accordance with Texas Department of Licensing and

Regulation Water Well Drillers and Pump Installers 16 TAC § 76 (TOC § 1901.253 Completing Water Wells), this feature should not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. Therefore, this feature is not identified as a sensitive feature at this time.

<u>S-1 0</u>:

Non-Karst Feature – Streambed: This non-karst topographic feature is a natural drainage way that is designated as an intermittent Stream by the United States Geological Survey's (USGS's) National Hydrography Dataset (NHD). An Intermittent Stream is a dry drainage way that flows only at certain times of the year and does not flow continuously. In accordance with the TCEQ Edwards Aquifer Protection Program, streambeds, including dry drainage ways, may be significant because run-off is focused to them. Karst features in streambeds and natural drainage ways are likely to receive large volumes of recharge from surface run-off and are often a part of hydrologically integrated flow paths due to enhanced erosion and solutioning. To the extent that surface conditions were observed in connection with this feature, there was no indication of sensitive karst features such as open fractures, swallets or swallow holes observed within the streambed at the time of Capitol's assessment.

This streambed is located in the mapped Contributing Zone of the Edwards Aquifer. 30 TAC §213.22 (2) defines the Contributing Zone of the Edwards Aquifer as the area or watershed where runoff from precipitation flows downgradient towards the Recharge Zone of the Edwards Aquifer. Topographic mapping indicates that intermittent run off into the subject streambed, however, flows away from the Recharge Zone of the Edwards Aquifer.

Topographic conditions and stratigraphy observed in connection with this feature, therefore, do not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer and this feature is <u>not</u> identified as a sensitive feature at this time.

S-2 O:

Non-Karst Feature – Streambed: This non-karst topographic feature is a natural drainage way that is designated as an intermittent Stream by the United States Geological Survey's (USGS's) National Hydrography Dataset (NHD). An Intermittent Stream is a dry drainage way that flows only at certain times of the year and does not flow continuously. In accordance with the TCEQ Edwards Aquifer Protection Program, streambeds, including dry drainage ways, may be significant because run-off is focused to them. Karst features in streambeds and natural drainage ways are likely to receive large volumes of recharge from surface run-off and are often a part of hydrologically integrated flow paths due to enhanced erosion and solutioning. To the extent that surface conditions were observed in connection with this feature, there was no indication of sensitive karst features such as open fractures, swallets or swallow holes observed within the streambed at the time of Capitol's assessment.

This streambed is located in the mapped Contributing Zone of the Edwards Aquifer. 30 TAC §213.22 (2) defines the Contributing Zone of the Edwards Aquifer as the area or watershed where runoff from precipitation flows downgradient towards the Recharge Zone of the Edwards Aquifer. Topographic mapping indicates that intermittent run off into the subject streambed, however, flows away from the Recharge Zone of the Edwards Aquifer.

Topographic conditions and stratigraphy observed in connection with this feature, therefore, do not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer and this feature is <u>not</u> identified as a sensitive feature at this time.

<u>S-3 O</u>:

Non-Karst Feature – Streambed: This non-karst topographic feature is a natural drainage way that is designated as an intermittent Stream by the United States Geological Survey's (USGS's) National Hydrography Dataset (NHD). An Intermittent Stream is a dry drainage way that flows only at certain times of the year and does not flow continuously. In accordance with the TCEQ Edwards Aquifer Protection Program, streambeds, including dry drainage ways, may be significant because run-off is focused to them. Karst features in streambeds and natural drainage ways are likely to receive large volumes of recharge from surface run-off and are often a part of hydrologically integrated flow paths due to enhanced erosion and solutioning. To the extent that surface conditions were observed in connection with this feature, there was no indication of sensitive karst features such as open fractures, swallets or swallow holes observed within the streambed at the time of Capitol's assessment.

This streambed is located in the mapped Contributing Zone of the Edwards Aquifer. 30 TAC §213.22 (2) defines the Contributing Zone of the Edwards Aquifer as the area or watershed where runoff from precipitation flows downgradient towards the Recharge Zone of the Edwards Aquifer. Topographic mapping indicates that intermittent run off into the subject streambed, however, flows away from the Recharge Zone of the Edwards Aquifer.

Topographic conditions and stratigraphy observed in connection with this feature, therefore, do not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer and this feature is <u>not</u> identified as a sensitive feature at this time.

S-4 O:

Non-Karst Feature – Streambed: This non-karst topographic feature is a natural drainage way that is designated as an intermittent Stream by the United States Geological Survey's (USGS's) National Hydrography Dataset (NHD). An Intermittent Stream is a dry drainage way that flows only at certain times of the year and does not flow continuously. In accordance with the TCEQ Edwards Aquifer Protection Program, streambeds, including dry drainage ways, may be significant because run-off is focused to them. Karst features in streambeds and natural drainage ways are likely to receive large volumes of recharge from surface run-off and are often a part of hydrologically integrated flow paths due to enhanced erosion and solutioning. To the extent that surface conditions were observed in connection with this feature, there was no indication of sensitive karst features such as open fractures, swallets or swallow holes observed within the streambed at the time of Capitol's assessment.

This streambed is located in the mapped Contributing Zone of the Edwards Aquifer. 30 TAC §213.22 (2) defines the Contributing Zone of the Edwards Aquifer as the area or watershed where runoff from precipitation flows downgradient towards the Recharge Zone of the Edwards Aquifer. Topographic mapping indicates that intermittent run off into the subject streambed, however, flows away from the Recharge Zone of the Edwards Aquifer.

Topographic conditions and stratigraphy observed in connection with this feature, therefore, do not have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer and this feature is <u>not</u> identified as a sensitive feature at this time.

OBSERVATIONS

To the extent that surface property features were readily accessible and observable at the time the site was evaluated on <u>08/13/2020</u> no sensitive features were identified on the subject tract of land that has observed potential to affect recharge to the Edwards Aquifer.

CONCLUDING STATEMENTS

The Client understands that no non-intrusive visual observation or survey can wholly eliminate uncertainty regarding the possible presence of geologic conditions in connection with the subject property. Due to the inherent limits in connection with the agreed Scope of Work, this report does not address uncertainty about site conditions across those portions of the subject property not specifically addressed in this report.

Development of the site is planned. Additional modification of site surface conditions can be expected as construction proceeds. Unsuspected solution enlarged fractures, caves and cavities may be discovered during construction operations.

This assessment does not address the possible presence of subsurface conditions that may be exposed during construction operations. Should solution features or conditions be exposed during construction operations 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 Texas Commission on Environmental Quality (TCEQ) Edwards Aquifer Protection Program should be contacted immediately in accordance with 30 TAC §213.5(f)(2).

Respectfully,

Jack D. Smitherman, P.G.

Project Geologist

Capitol Environmental, Inc TBPG Firm Registration #50389 Austin, Texas

Capitol Environmental, Inc. Registered Geosciences Firm Texas Registration No. 50389

DISCLAIMER:

Under standard geologic assessment practice, this assessment is an assessment of surface property conditions that were readily accessible and easily visible at the time of the assessment.

Services performed under this contract were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. Under standard geologic assessment practice, information developed in this report represents an assessment of environmental conditions observed as present or absent on portions of the surface of the subject property at the time of the assessment. The field observations, measurements and research reported in this report are considered sufficient in detail and scope to form a contained assessment of discrete portions of the subject property. Capitol warrants that the findings and conclusions contained in this report have been prepared in accordance with generally accepted methods normal for the subject site described in this report.

Not every property will warrant the same level of assessment. Consistent with good commercial and customary practice, the appropriate level of assessment will be guided by the type of property subject to assessment, the expertise and risk tolerance of the Client and information developed in the course of the inquiry. The Assessment has been developed to provide the Client with information regarding apparent indications of the presence of absence of geologic conditions relating to the surface of the subject site. The Geologic Assessment report is necessarily limited to the conditions observed and to the information available at the time the work was performed. Due to the limited nature of the work, there is a possibility that conditions may exist in connection with the subject site which could not be identified within the scope of this assessment practice or which were not easily visible or not disclosed at the time the report was prepared.

It is also possible that assessment methods employed at the time the report was prepared may be later superseded by more discrete assessment methods. The definition of a "sensitive geologic feature" and / or a "critical environmental feature" can also change statutorily over time. Capitol does not warrant the content or findings of this report in the event of changes in conditions in connection with the subject property; in the event of changes in assessment methods; or in the event of changes in statute that may apply to the subject property in the future.

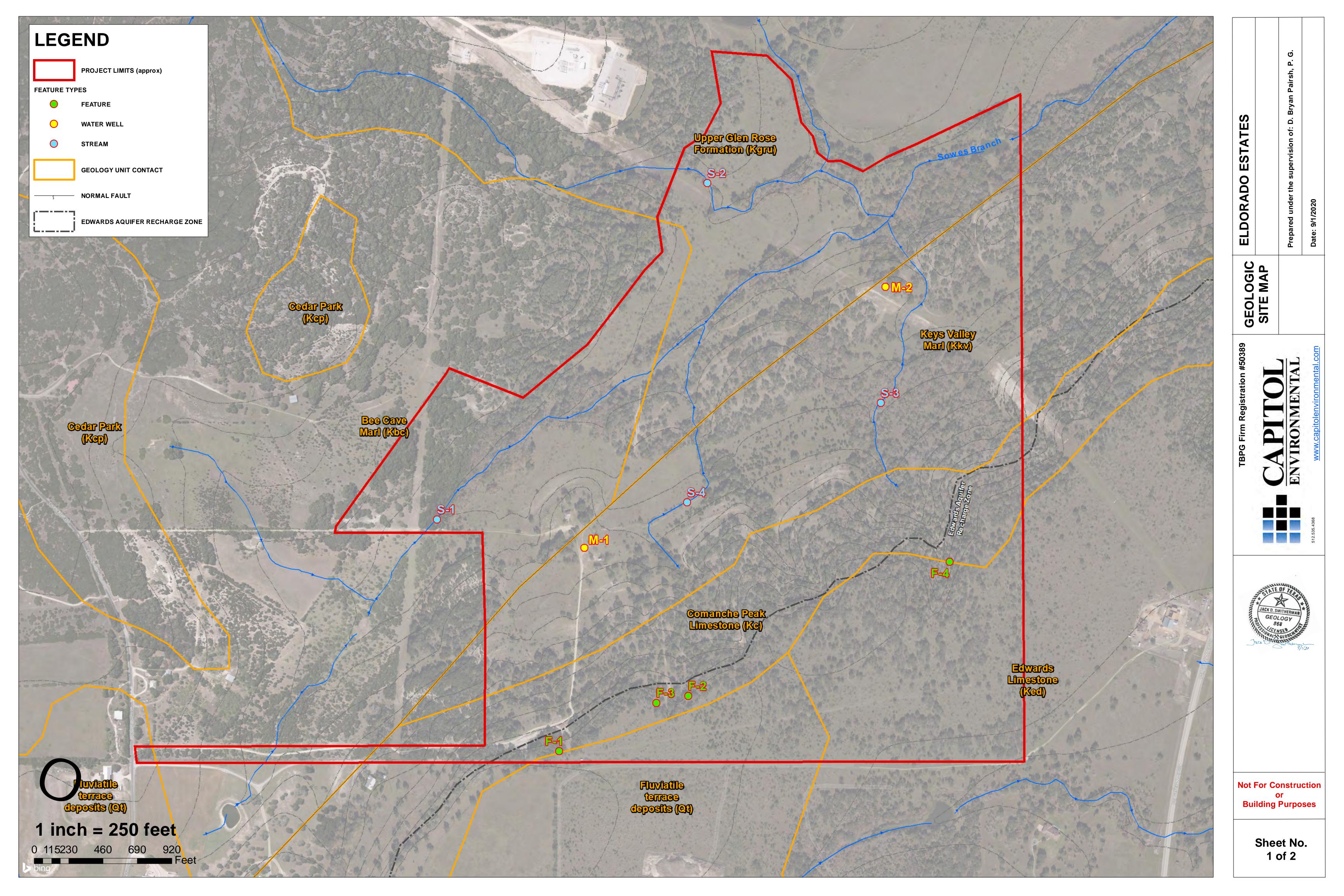
In preparing this report, Capitol has relied on information derived from third party sources and personal interviews, as well as other investigative work. Except as set forth in this report, Capitol has made no independent investigation as to the accuracy or completeness of the information derived from third party sources.

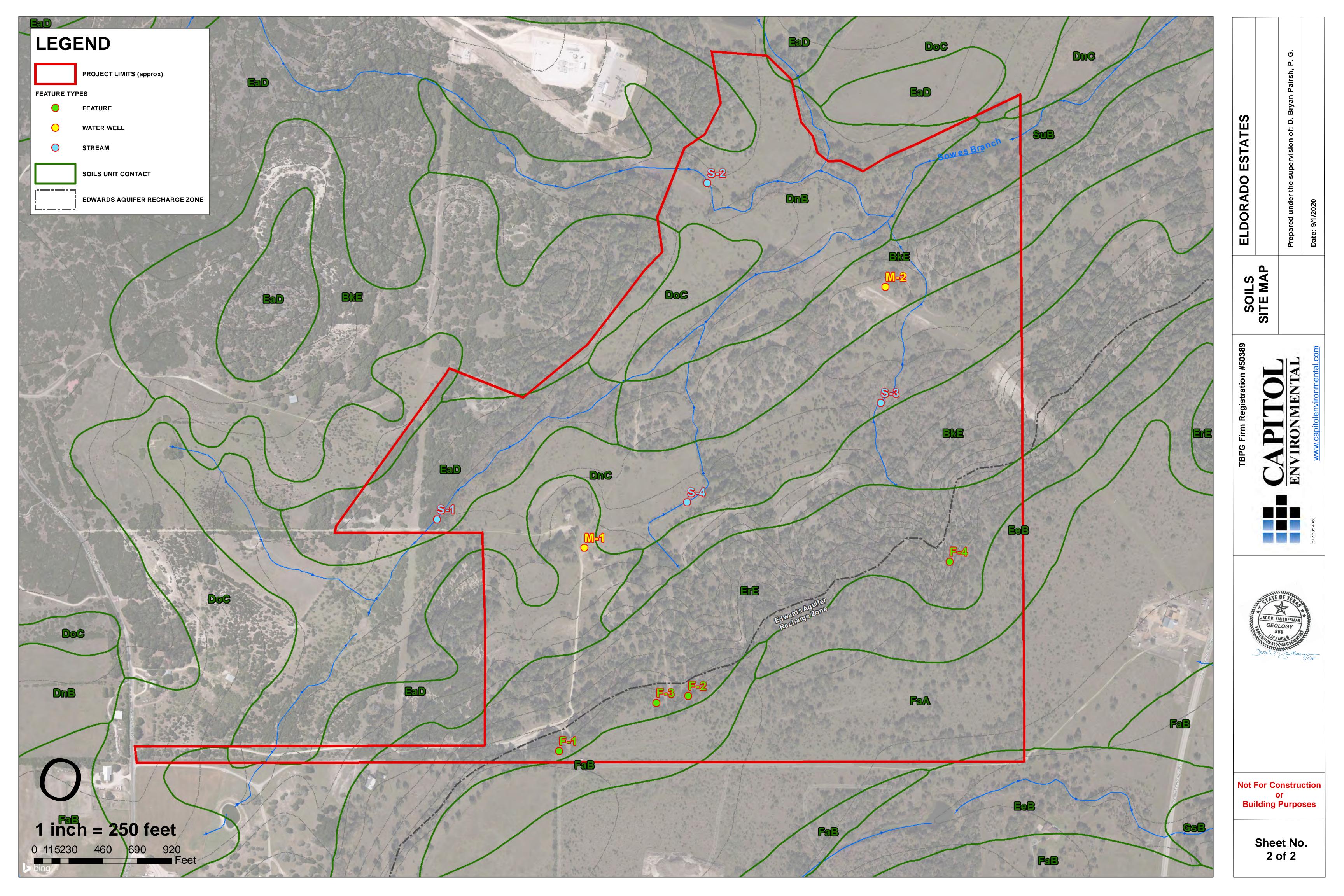
This report does not address uncertainty about site conditions across those portions of the subject property not specifically assessed in this report. The Client understands that no surface assessment can wholly eliminate uncertainty regarding the possible presence of geologic conditions at depth in connection with the subject property. The Client should recognize that conditions elsewhere in the assessment area may differ from those at the study /sample locations, and that surface conditions described in the assessment practice herein may change at depth. This assessment should not to be used as a basis for engineering design.

This report was prepared for the Client, to identify the presence or absence of geologic conditions on surface portions of the subject property. Any use of this report for other purposes or any use of information presented in this report by other parties other than the Client is the Client's responsibility.



Attachment D Site Geologic Map(s)





SECTION 4: ORGANIZED SEWAGE COLLECTION SYSTEM PLAN

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: Eldorado Subdivision Phase 7 & 8

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 ApplicationForm.

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: Nick McIntyre

Entity: PHTB ELDORADO LLC

Mailing Address: 3200 Southwest Fwy #Ste 2800

City, State: Houston, TX Zip: 77027

Telephone: (210) 580-8598 Fax: N/A

Email Address: nick.mcintyre@perryhomes.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: Benjamin L. Green, P.E

Texas Licensed Professional Engineer's Number: 132190

Entity: Kimley-Horn and Associates, Inc.

Mailing Address: 5301 Southwest Parkway, Building 2, Suite 100, Austin,

City, State: Austin, TX Zip: 78735 Telephone: +1 512-646-2243 Fax:N/A

Email Address: ben.green@kimley-horn.com

Project Information

4.	Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):						
	Residential: Number of single-family lots: 134 Multi-family: Number of residential units: Commercial Industrial Off-site system (not associated with any development)						
	Other:	•	,,				
5.	The character and vo	lume of wastewater is s	hown below:				
	100% Domestic		116,681 gallons/	'day			
	% Industrial		gallons/da	ау			
	% Commingled Total gallons/day		gallons/da	эу			
6.		ed infiltration/inflow is	37,500 gallons/day. This	s will be addressed by:			
7.							
8.	Pipe description:						
Ta	able 1 - Pipe Descrip	otion	T	T			
	Pipe Diameter(Inches)	Linear Feet (1)	Pipe Material (2)	Specifications (3)			
	8	8176	PVC	AWWA C900			

Total Linear Feet: 8176

- (1) Linear feet Include stub-outs and double service connections. Do not include private service laterals.
- (2) Pipe Material If PVC, state SDR value.
- (3) Specifications ASTM / ANSI / AWWA specification and class numbers should be included.

9.	=	n system will convey th nt Plant. The treatmen	ne wastewater to the <u>Libe</u> It facility is:	erty Hill
10.	The City of <u>Lik</u>	is sewage collection sy perty Hill standard spec ications are attached.		
11.	A force main(s) a	nd/or lift station(s) is a	e associated with this sev ssociated with this sewagolication form (TCEQ-062	ge collection system and
		ations from uniform gra th open cut constructio	ade in this sewage collecton.	tion system without
13.	system without r Attachment B - Ju Alignment without N A justification for dev system without man pipe curvature is atta	nanholes. Istification and Calcula Manholes. Viations from straight a holes with documentat ached.	gnment in this sewage contions for Deviation in State alignment in this sewage of the form pipe manufactor. The notes (TCEQ-0596) and collection system.	raight collection urer allowing
	anholes and $igotimes$	Cleanouts	of each sewer line(s). The	ese locations are listed
Ta	ble 2 - Manholes ai	nd Cleanouts	Г	T
	Line	Shown on Sheet	Station	Manhole or Clean- out?
	WWTR-A PH7	57 OF 86	2+47.01	MANHOLE
	WWTR-A PH7	57 OF 86	3+42.64	MANHOLE

2	οf	1	Λ	
`	()		11	

MANHOLE

MANHOLE

MANHOLE

MANHOLE

WWTR-A PH7

WWTR-A PH7

WWTR-A PH7

WWTR-A PH7

57 OF 86

57 OF 86

58 OF 86

58 OF 86

6+80.45

9+02.44

10+90.28

14+76.20

WWTR-A PH7	58 OF 86	15+68.38	MANHOLE
WWTR-A PH7	59 OF 86	18+99.49	MANHOLE
WWTR-A PH7	59 OF 86	20+39.44	MANHOLE
WWTR-A PH7	59 OF 86	21+95.34	MANHOLE
WWTR-A PH7	60 OF 86	24+58.73	MANHOLE
WWTR-A PH7	60 OF 86	27+89.50	MANHOLE
WWTR-A PH7	60 OF 86	28+51.40	MANHOLE
WWTR-A PH7	61 OF 86	34+73.40	MANHOLE
WWTR-A PH7	61 OF 86	38+07.52	MANHOLE
WWTR-B PH7	62 OF 86	6+80.00	MANHOLE
WWTR-B PH7	62 OF 86	8+69.41	MANHOLE
WWTR-C PH7	63 OF 86	3+98.48	MANHOLE
WWTR-C PH7	63 OF 86	6+84.90	MANHOLE
WWTR-D PH7	64 OF 86	3+99.94	MANHOLE
WWTR-D PH7	64 OF 86	6+27.91	MANHOLE
WWTR-D PH7	64 OF 86	8+55.89	MANHOLE
WWTR-D PH7	64 OF 86	9+35.55	MANHOLE
WWTR-E PH7	65 OF 86	1+00.00	MANHOLE
WWTR-F PH7	66 OF 86	2+06.88	MANHOLE
WWTR-A PH8	37 OF 58	2+72.98	MANHOLE
WWTR-A PH 8	37 OF 58	4+78.14	MANHOLE
WWTR-A PH8	37 OF 58	8+53.08	MANHOLE
WWTR-B PH8	38 OF 58	2+04.94	MANHOLE
WWTR-B PH8	38 OF 58	5+92.77	MANHOLE

15. Manholes are installed at all Points of Curvatur line.	e and Points of Termination of a sewer
16. The maximum spacing between manholes on t greater than:	his project for each pipe diameter is no
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 spacing between manholes on this greater than listed in the table above. A justification maximum spacing is attached, and must incluse operate and maintain the system stating that manhole spacing greater than the allowed spacing.	project (for each pipe diameter used) is cation for any variance from the de a letter from the entity which will it has the capability to maintain lines with
17. All manholes will be monolithic, cast-in-place	concrete.
The use of pre-cast manholes is requested for specifications and construction drawings, showing that attached.	
Site Plan Requirements	
Items 18 - 25 must be included on the Site Plan.	
18. The Site Plan must have a minimum scale of 1"	= 400'.
Site Plan Scale: 1" = <u>100</u> '.	
19. The Site Plan must include the sewage collection manholes with station numbers, and sewer pi overlain by topographic contour lines, using a feet and showing the area within both the five floodplain of any drainage way.	pe stub outs (if any). Site plan must be contour interval of not greater than ten
 20. Lateral stub-outs: The location of all lateral stub-outs are shown No lateral stub-outs will be installed during the system. 	

21. Location of existing and prop	21. Location of existing and proposed water lines:							
 The entire water distribution system for this project is shown and labeled. If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems. There will be no water lines associated with this project. 								
22. 100-year floodplain:	2. 100-year floodolain:							
After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.) After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.) Table 3 - 100-Year Floodplain								
Line	Sheet	Station						
	of	to						
	of	to						
	of to							
	of	to						
23. 5-year floodplain:								
After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.) After construction is complete, all sections located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)								
Table 4 - 5-Year Floodplain								
Line	Sheet	Station						
	of	to						
	of	to						
	of	to						

24. Legal boundaries of the site are shown.

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

to

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

26.	$oxedsymbol{\boxtimes}$ All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated
	pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.
	There will be no water line crossings.There will be no water lines within 9 feet of proposed sewer lines.

Table 5 - Water Line Crossings

Line	Station or Closest Point	Crossing or Parallel	Horizontal Separation Distance	Vertical Separation Distance
			Distance	
WATR-A PH7	WWTR-A PH 7 1+21.50	CROSSING	-	10'
WATR-A PH7	WWTR-A PH 7 3+68.50	CROSSING	-	4.9'
WATR-C PH7	WWTR-E PH 7 1+31.50	CROSSING	-	7.5'
WATR-C PH 7	WWTR-E PH 7 3+79.62	CROSSING	-	13.8′
WATR-B-PH 7	WWTR-F PH 7 1+21.50	CROSSING	-	3.3′

No part of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.

=	an 1500 feet located wit	· · · · · · · · · · · · · · · · · · ·					
=		· · · · · · · · · · · · · · · · · · ·					
=		· · · · · · · · · · · · · · · · · · ·					
A portion of this sewer line is within the 100-year floodplain; however, there is no							
alternative means is described on the following page.							
venting shall be p	provided at less than 150	0 feet intervals. A descr	iption of the				
A portion of this sewer line is within the 100-year floodplain and an alternative means of							
_ the table below a	and labeled on the appro	priate profile sheets.					
be provided at less than 1500 foot intervals. These water-tight manholes are listed in							
A portion of this sewer line is within the 100-year floodplain and vented manholes will							
	be provided at lead the table below and A portion of this seem that the province of the provin	be provided at less than 1500 foot interval the table below and labeled on the approach A portion of this sewer line is within the 1 venting shall be provided at less than 150	be provided at less than 1500 foot intervals. These water-tight m the table below and labeled on the appropriate profile sheets. A portion of this sewer line is within the 100-year floodplain and a venting shall be provided at less than 1500 feet intervals. A descr				

Ta

Line	Manhole	Station	Sheet

27. Drop manholes:						
There are no drop m	There are no drop manholes associated with this project.					
	nter new or existing manholes or "		ures" higher than 24			
inches above the ma	nhole invert are listed in the table					
	neets. These lines meet the requir	ements of 30 Ta	AC			
§217.55(I)(2)(H).	Jac					
Table 7 - Drop Manho	Manhole	Station	Sheet			
WWTR-A PH7	5' DROP MANHOLE	31+56.40	60 OF 86			
WWTR-B PH7	5' DROP MANHOLE	1+00.00	62 OF 86			
WWTR-B PH7	5' DROP MANHOLE	3+95.00	62 OF 86			
WWTR-C PH7	5' DROP MANHOLE	1+00.00	63 OF 86			
WWTR-D PH7	5' DROP MANHOLE	1+00.00	64 OF 86			
WWTR-E PH7	5' DROP MANHOLE	4+01.12	65 OF 86			
WWTR-E PH7	5' DROP MANHOLE	7+51.12	65 OF 86			
WWTR-F PH7	5' DROP MANHOLE	1+00.00	66 OF 86			
28. Sewer line stub-outs (For proposed extensions):						
The placement and markings of all sewer line stub-outs are shown and labeled. No sewer line stub-outs are to be installed during the construction of this sewage collection system.						
29. Lateral stub-outs (Fo	r proposed private service connec	tions):				
	☐ The placement and markings of all lateral stub-outs are shown and labeled. ☐ No lateral stub-outs are to be installed during the construction of this sewage collection					
30. Minimum flow veloci	ty (From Appendix A)					
Assuming pipes are flowing full; all slopes are designed to produce flows equal to or						

Attachment D – Calculations for Slopes for Flows Greater Than 10.0 Feet per Second. Assuming pipes are flowing full, some slopes produce flows which are greater than 10 feet per second. These locations are listed in the table below. Calculations are attached.

Assuming pipes are flowing full, all slopes are designed to produce maximum flows of

greater than 2.0 feet per second for this system/line.

less than or equal to 10 feet per second for this system/line.

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

Table 8 - Flows Greater Than 10 Feet per Second

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

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

- 33. 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.
- 34. 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]	N/A
Manhole, showing inverts comply with 30 TAC §217.55(I)(2) [Required]	82 OF 86
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	83 OF 86
Typical trench cross-sections [Required]	79 OF 86
Bolted manholes [Required]	N/A
Sewer Service lateral standard details [Required]	83 of 86
Clean-out at end of line [Required, if used]	N/A
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	N/A
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	83 OF 86
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	of
Drop manholes [Required, if a pipe entering a manhole is more than 24 inches above manhole invert]	82 OF 86

35. All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.	
36. All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment to TCEQ executive director approval. If the alignments of the proposed sewer lines are walkable on that date, the application will be deemed incomplete and returned.	
Survey staking was completed on this date:	
37. 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 coin which the project will be located. The TCEQ will distribute the additional copies to the jurisdictions. The copies must be submitted to the appropriate regional office.	ınty
38. 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: Benjamin L. Green, P.E.

Date: 11/4/2025

Place engineer's seal here:



Signature of Licensed Professional Engineer:

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.

Figure 1 - Manning's Formula

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

Where:

v = velocity (ft/sec)

n = Manning's roughness coefficient (0.013)

Rh = hydraulic radius (ft) S = slope(ft/ft)

ENGINEERING REPORT

Eldorado Subdivision Sewage Collection System 22700 Ronald Reagan Blvd Liberty Hill, Texas 78642

October 23, 2022

Prepared For:

Texas Commission on Environmental Quality 12100 Park 35 Circle Austin, Texas 78753

Prepared By:

Kimley » Horn

2600 Via Fortuna Terrace I, Suite 300 Austin, Texas 78746

TEXAS REGISTRATION #928

Job No. 063451834



Attachment A: SCS Engineering Design Report

TABLE OF CONTENTS

- I. PROJECT OVERVIEW
- **II. CURRENT TRACT CONDITIONS**

Legal Description Land Use

- III. PROPOSED DEVELOPMENT
- IV. ENGINEERING ANALYSIS

Existing Collection System Infrastructure Proposed Collection System Infrastructure

- V. SUMMARY AND CONCLUSIONS
- VI. EXHIBIT A

Sewer Collection System Design

I. PROJECT OVERVIEW

The content of this report is based on 333.23-acre tract of land. The property in acquisition is located on the west side of Ronald Regan Blvd, Northwest of the intersection of Highway 183 and Ronald Reagan, in Liberty Hill, Texas. The client is proposing 918 single family lots along with 2 open space lots, and two other lots allocated for a school and amenity center totaling 942 lots. Kimley-Horn has prepared this Drainage Report to evaluate the existing drainage conditions and highlight the proposed drainage system needed to serve a proposed 918-lot single-family subdivision.

The proposed improvements include mass grading, building construction, road construction, and utilities. This project is located within the Northfork – San Gabriel River Watershed of the Brazos River Basin

No portion of this site is located in the Federal Emergency Management Agency's 100-year floodplain per the Flood Insurance Rate Map 48491C0275E dated September 26, 2008, for Williamson County, Texas. No floodplain modifications are proposed.

The entire 333.23 tract is located within the Edwards Aquifer Recharge and Contributing Zone Zone.

II. CURRENT TRACT CONDITIONS

Legal Description

AW0417 AW0417 - Manlove, B. Sur., ACRES 255.924 AW0417 MANLOVE, B. SUR., ACRES 72.0

Land Use

The land is currently undeveloped.

III. PROPOSED DEVELOPMENT

The proposed development includes the construction of public roads, sidewalks, landscaping, stormwater management infrastructure, water and sanitary sewer utilities. The subdivision will consist of 942 total lots; 918 of these will be single-family, 22 denoted for open space and amenities, and the remaining 2 will designated for other uses.

IV. ENGINEERING ANALYSIS

Existing Collection System Infrastructure

The City of Liberty Hill owns a 24" Wastewater Line that runs along the western boundary of the project. This waterwater line is located within the ROW of County Road 260. This sites wastewater collection system will connect to this line.

Proposed Collection System Infrastructure

The proposed development includes 918 single family homes. The homes will be serve with wastewater service that is owned and operated by the City of Liberty Hill. Each home will be provide either a double service or single service connection as required by the City of Liberty Hill.

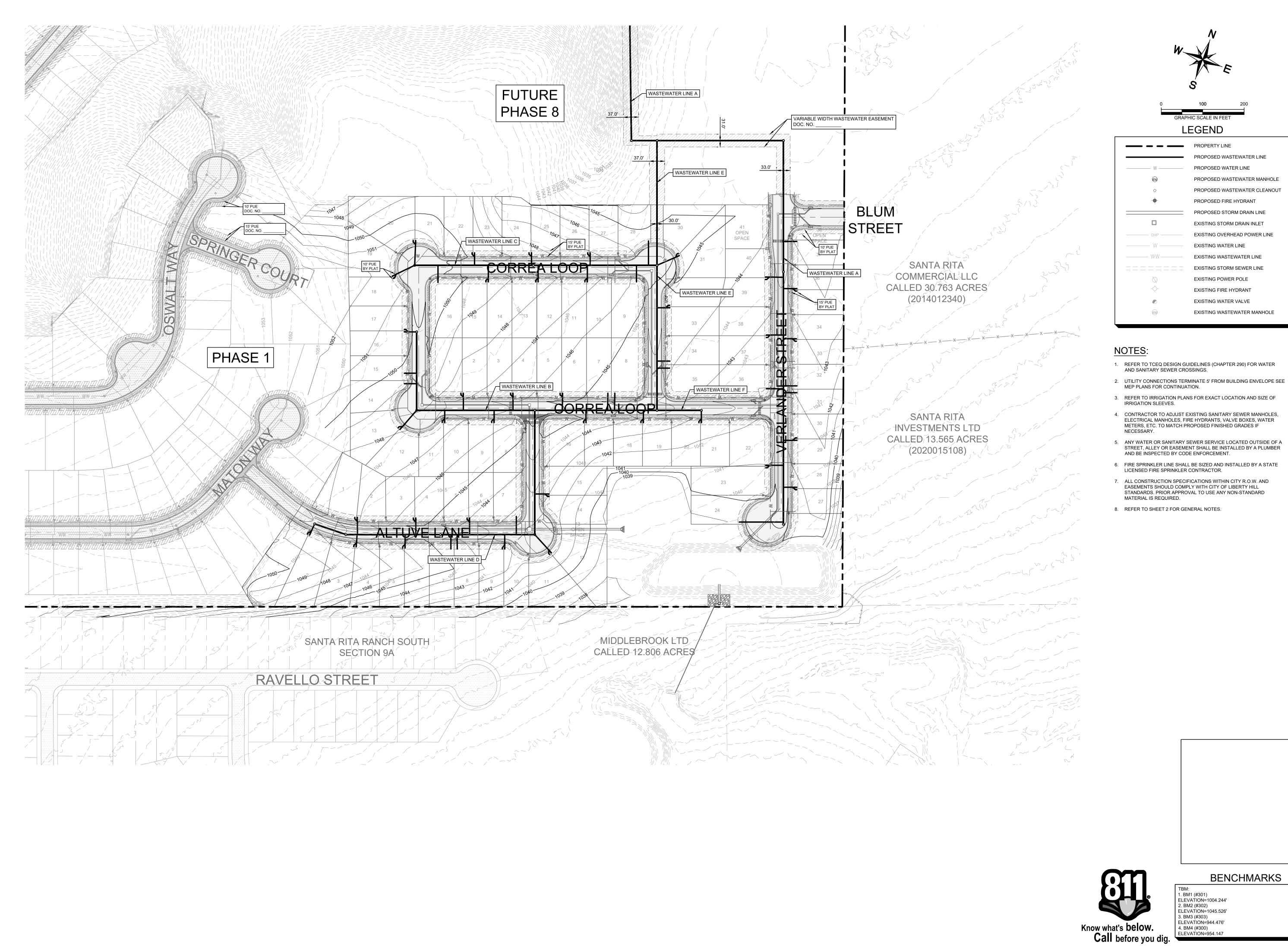
The collection system flows were designed using the following calculations:

Wastewater Design Flows						
Service Population	569.25	people				
Building Square Footage (retail)	0	sq ft				
Building Square Footage (office)	0	sq ft				
Dwelling Units (SF)	225	units				
Dwelling Units (MF)	0	units				
Contributing Drainage Area	0	acres				
Average Dry Weather Flow - flow rates (ADWF)						
Single-Family	225	gal/day/dwelling unit				
Multi-Family	112	gal/day/dwelling unit				
Retail	225	gal/day/1000 sq ft				
Office	65	gal/day/1000 sq ft				
Peak Dry Weather Flow (PDWF)						
PDWF = ADWF * P						
PF = (18 + 0.139 * (F^0.5	5)) / (4 + 0.1	L39 *(F^0.5))				
average wastewater flow	100	gal/day/capita				
F	39.53	gal/min				
PF	3.87	unitless				
PDWF (Single-Family)	196041.03	gal/day				
PDWF (Multi-Family)	0.00	gal/day				
PDWF (Retail)	0.00	gal/day				
PDWF (Office)	0.00	gal/day				
Peak Wet Weather Flow (PWWF)						
PWWF = AD	WF * PF + I,	/I				
		gal/day/acre of				
I/I = Inflow/Infiltration	750	contibuting drainage				
		area				
1/1	0	gal/day				
PWWF (Single-Family)	196041.03	gal/day				
PWWF (Multi-Family)	0.00	gal/day				
PWWF (Retail)	0.00	gal/day				
PWWF (Office)	0.00	gal/day				

Using the flow calculations derived from the above tables, a sewer collection system was design. See exhibit A for a full detail of the SCS design.

V. CONCLUSIONS

This report and exhibit have fully documented the design of the sewer collection system for the Eldorado Subdivision. This design meets the criteria of the City of Liberty Hill and TCEQ for sewer collection systems.



BENJAMIN L. GREEN

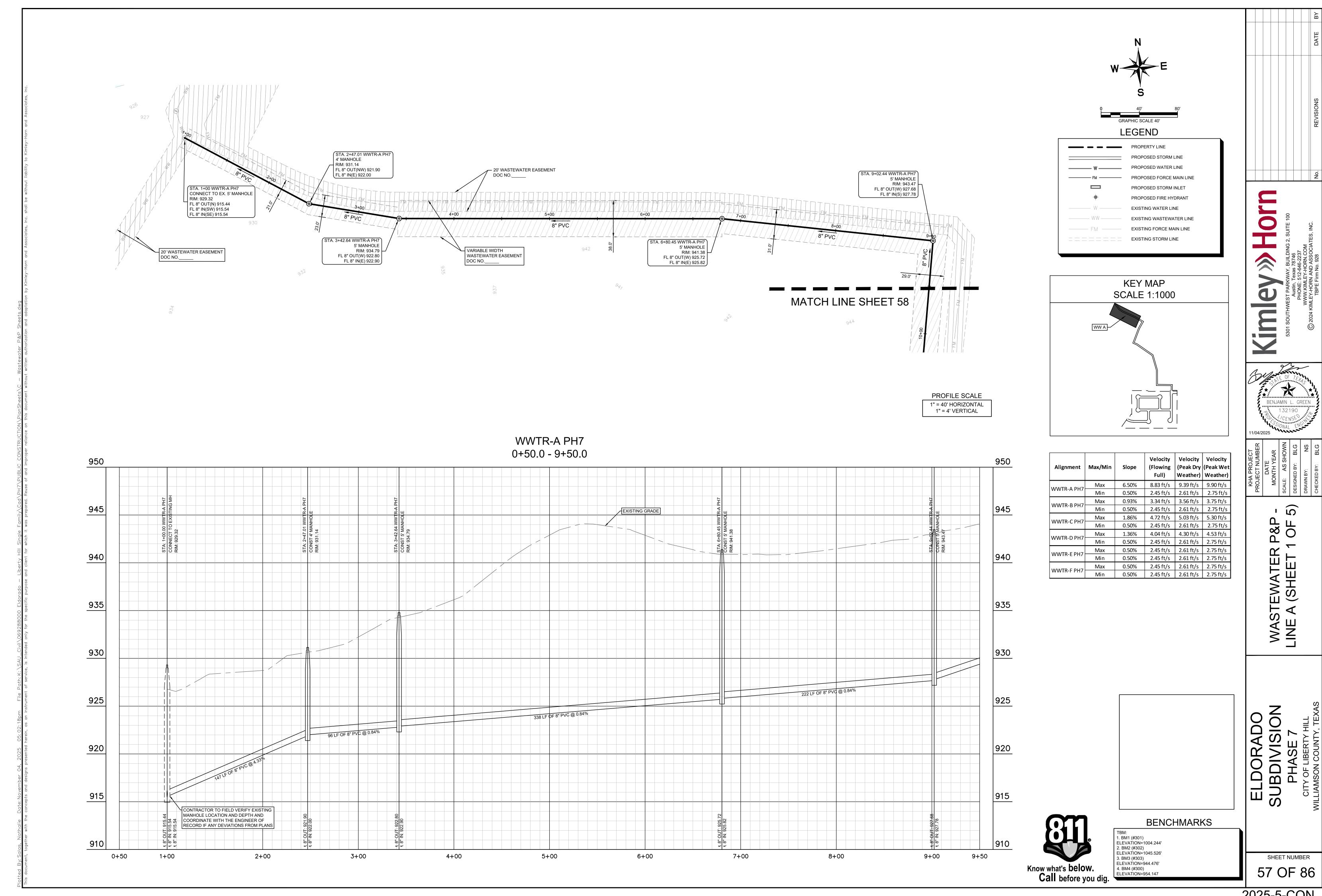
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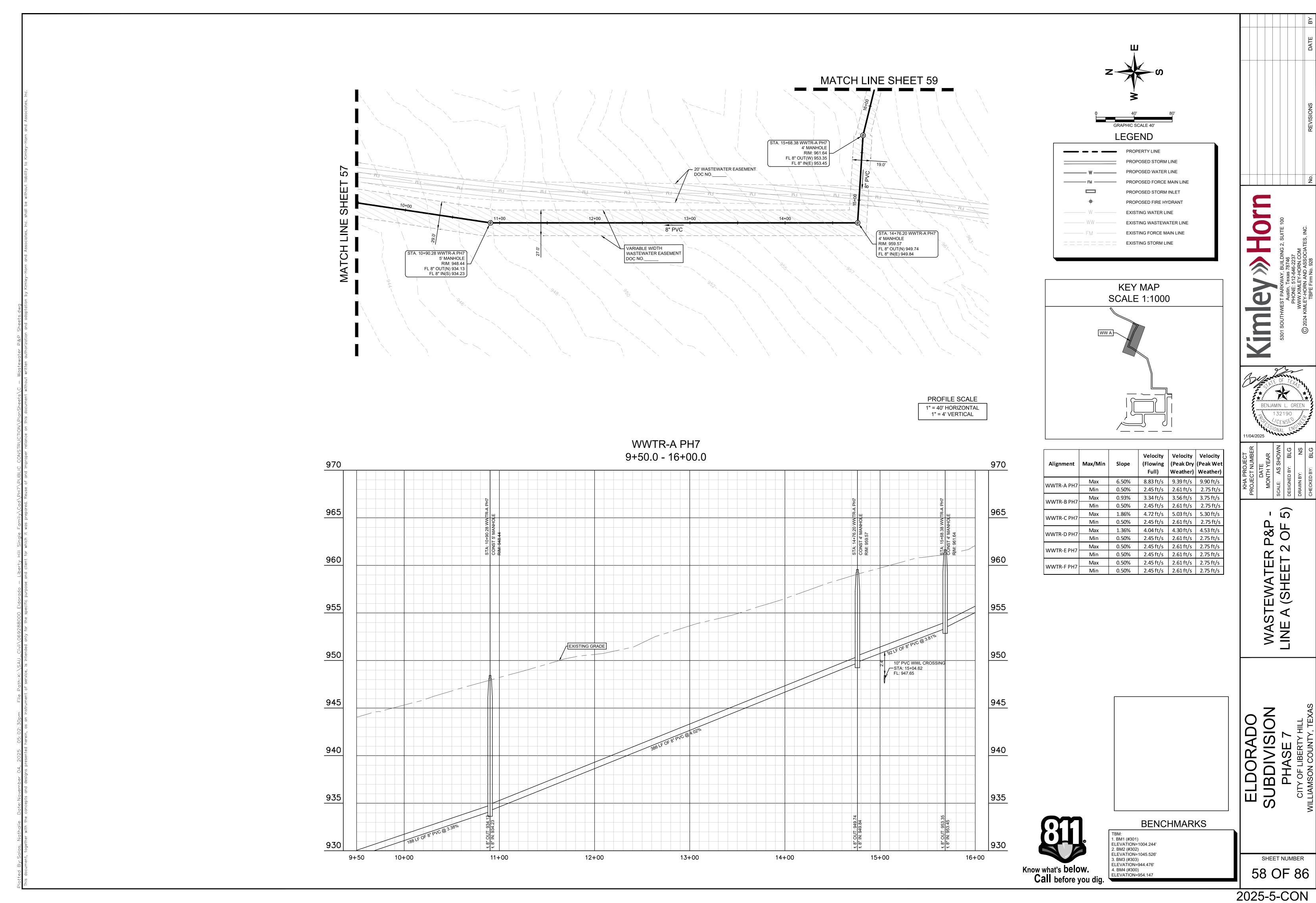
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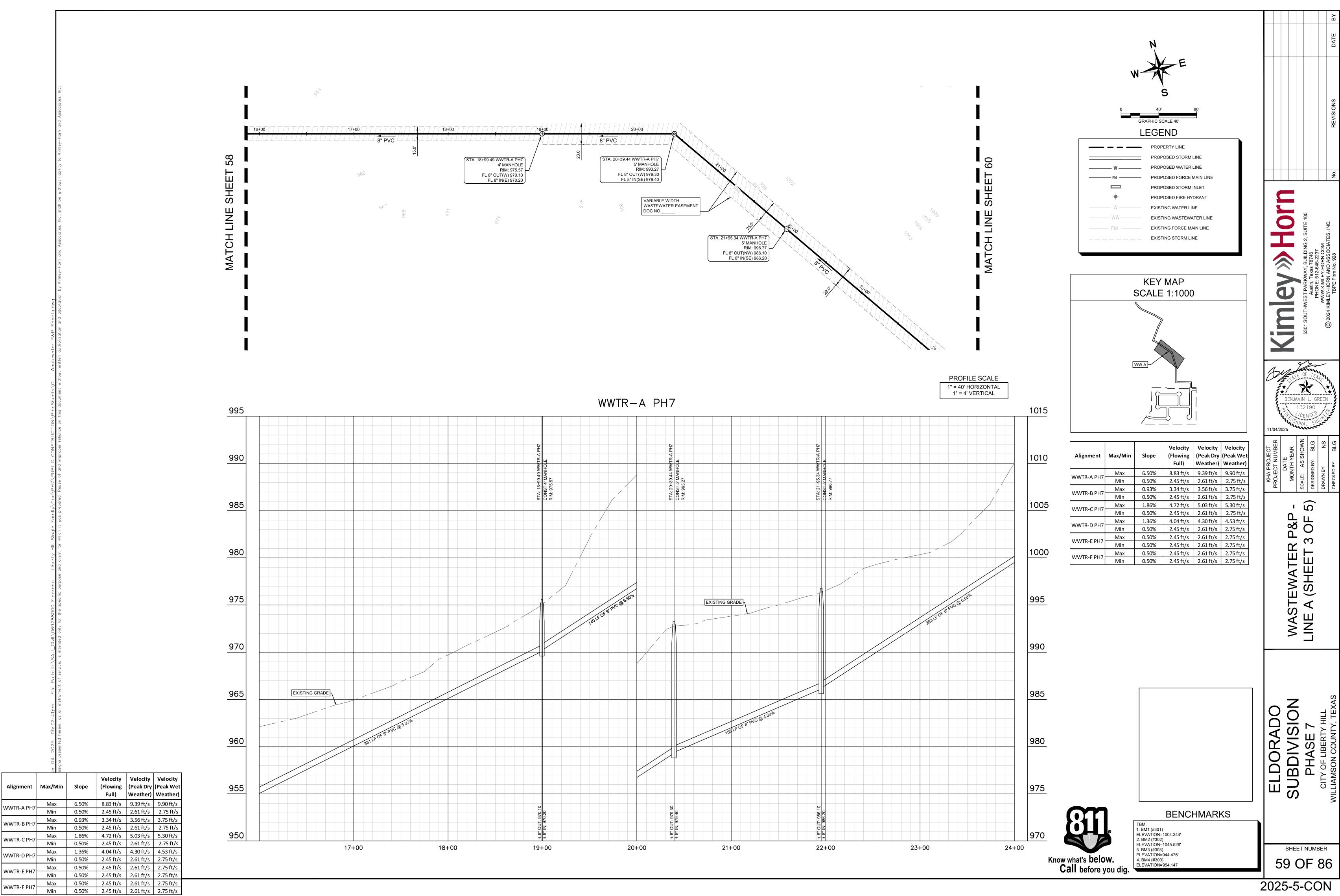
ELDORADO SUBDIVISION PHASE 7

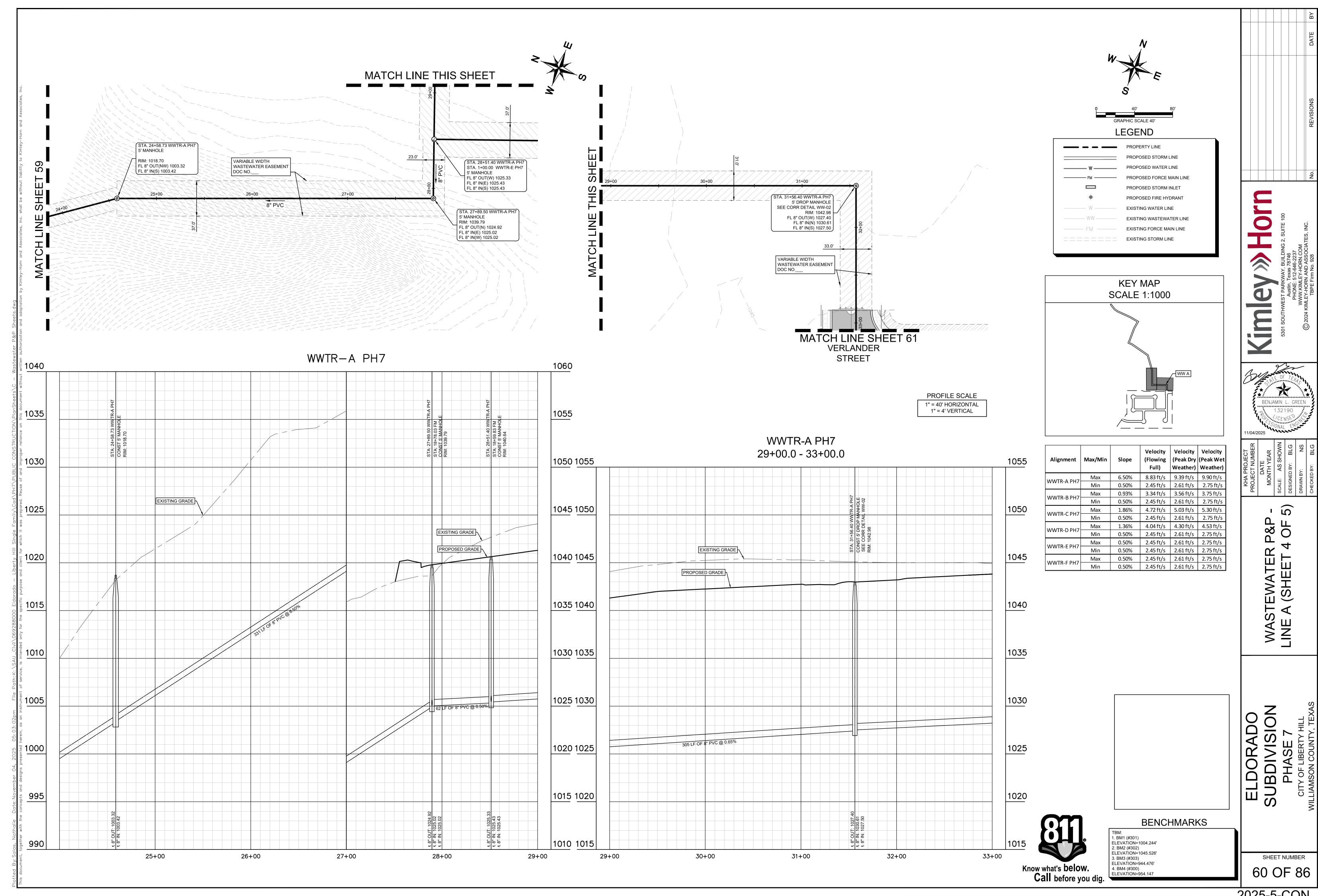
TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

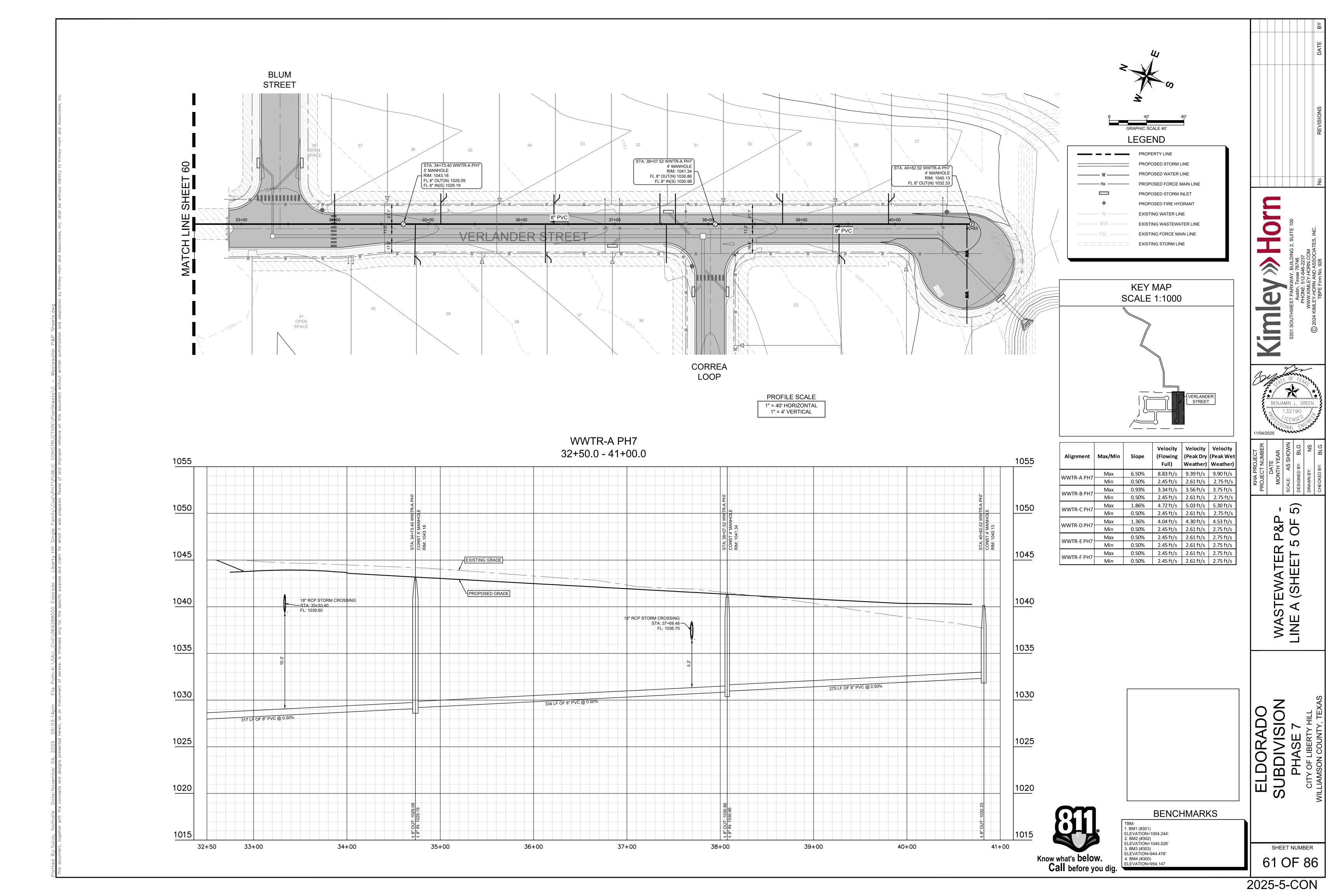
SHEET NUMBER 56 OF 86

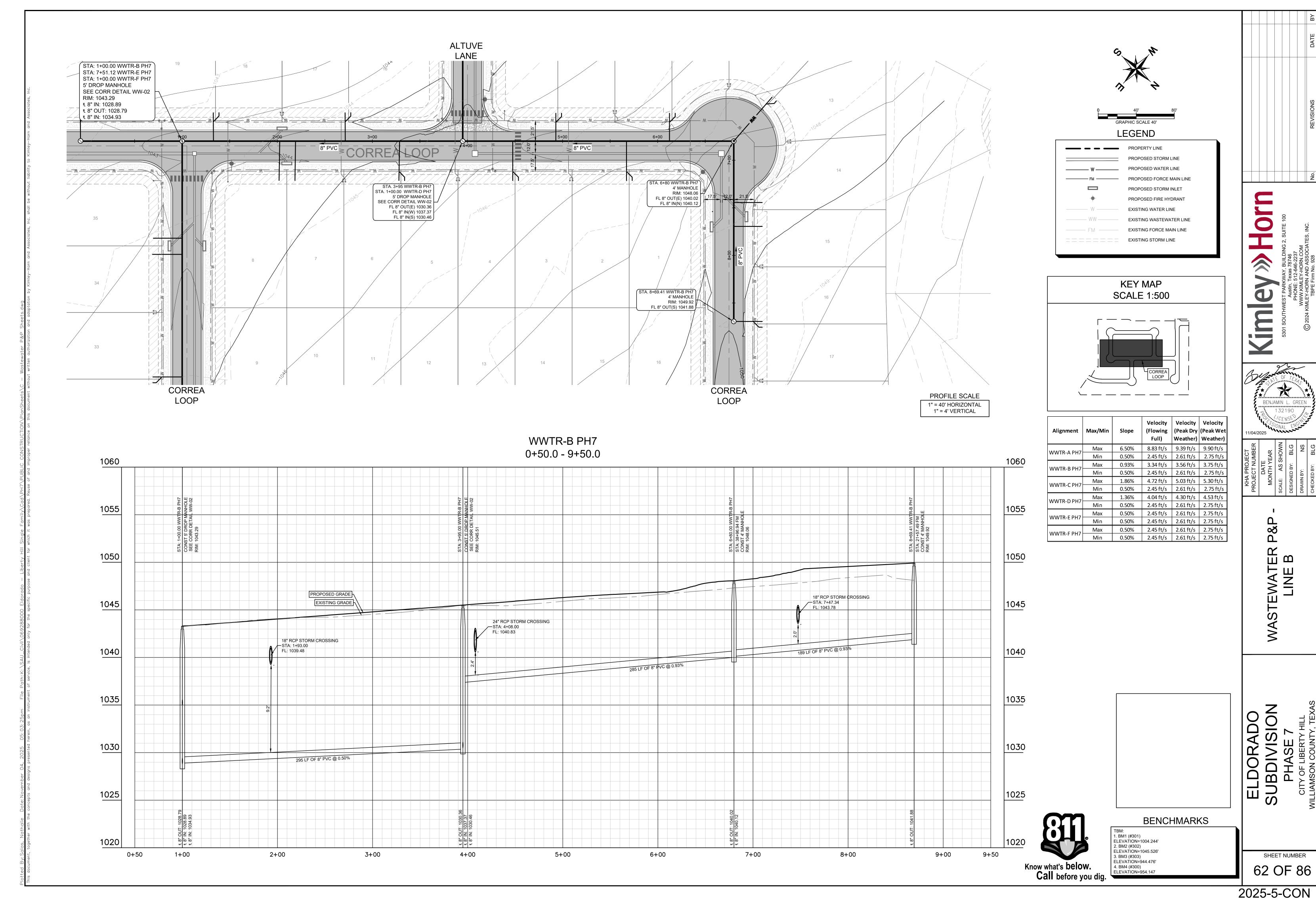


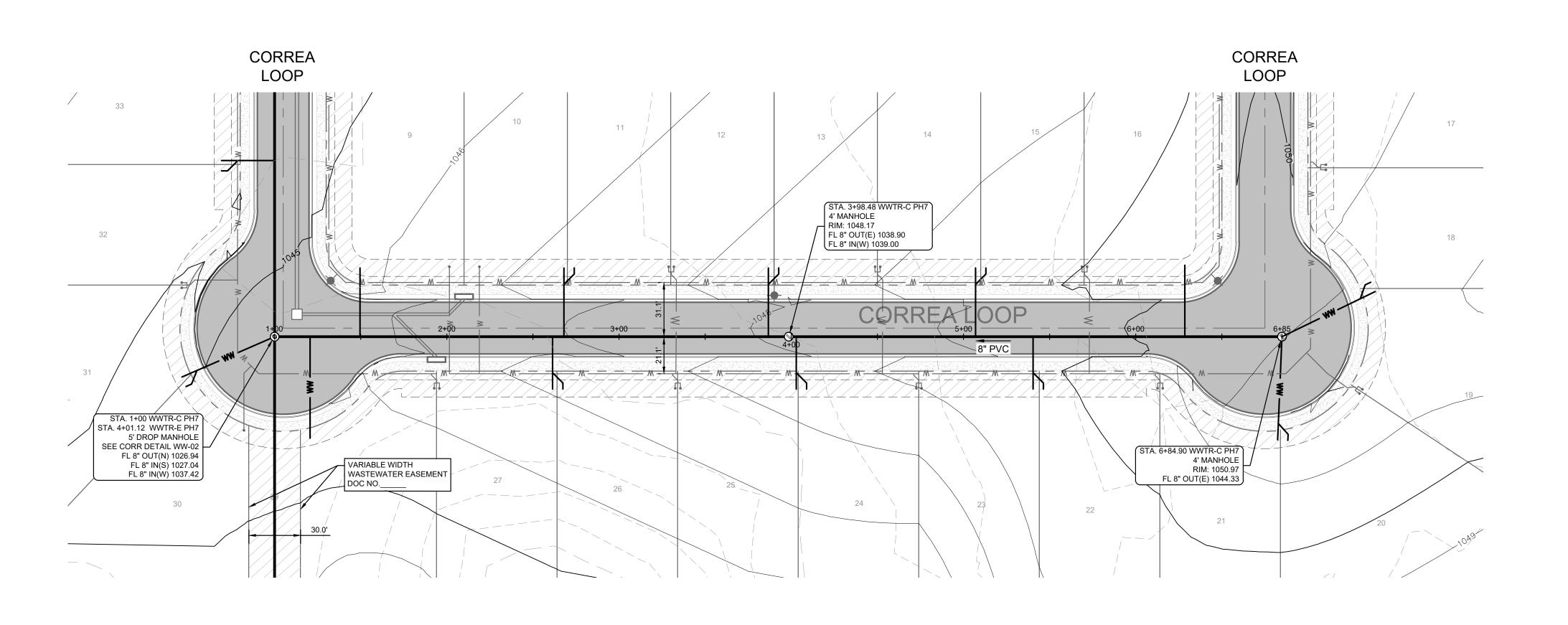




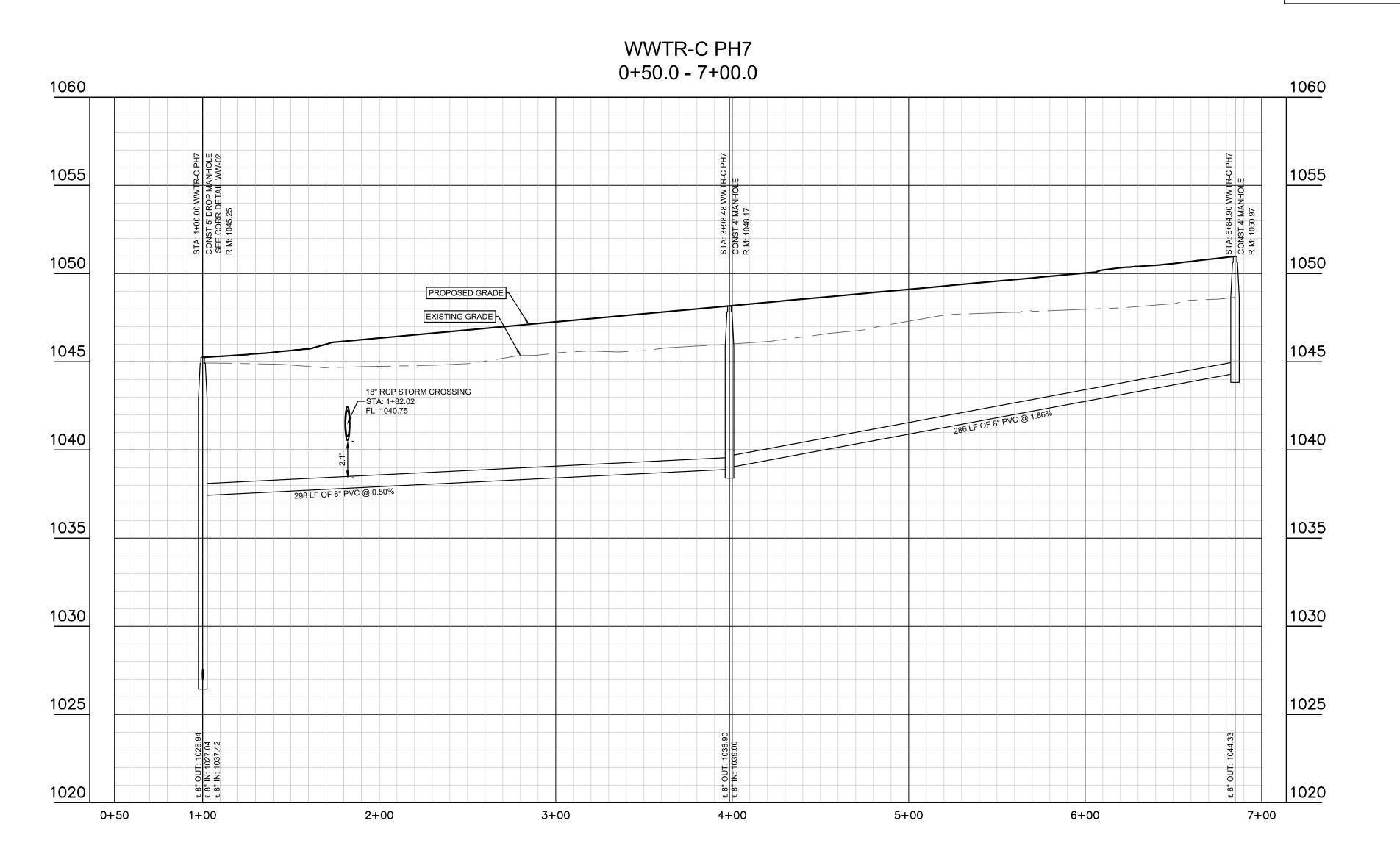


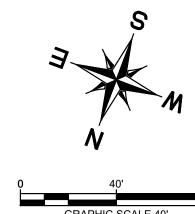








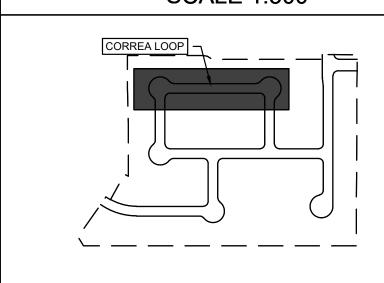




LEGEND

	PROPERTY LINE
	PROPOSED STORM LINE
—— w——	PROPOSED WATER LINE
	PROPOSED FORCE MAIN LINE
	PROPOSED STORM INLET
+	PROPOSED FIRE HYDRANT
W	EXISTING WATER LINE
WW	EXISTING WASTEWATER LINE
FM	EXISTING FORCE MAIN LINE
	EXISTING STORM LINE





Alignment	Max/Min	Slope	Velocity (Flowing Full)	Velocity (Peak Dry Weather)	Velocity (Peak Wo Weathe
\^\^\TD	Max	6.50%	8.83 ft/s	9.39 ft/s	9.90 ft/s
WWTR-A PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/
MAATE B BUZ	Max	0.93%	3.34 ft/s	3.56 ft/s	3.75 ft/s
WWTR-B PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/
MANA/TD C DUIZ	Max	1.86%	4.72 ft/s	5.03 ft/s	5.30 ft/s
WWTR-C PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/
ANA/TD D DUZ	Max	1.36%	4.04 ft/s	4.30 ft/s	4.53 ft/s
WWTR-D PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
MANATO E DUZ	Max	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
WWTR-E PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
MANATO F DUZ	Max	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
WWTR-F PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s

WASTEWATER P&P - LINE C

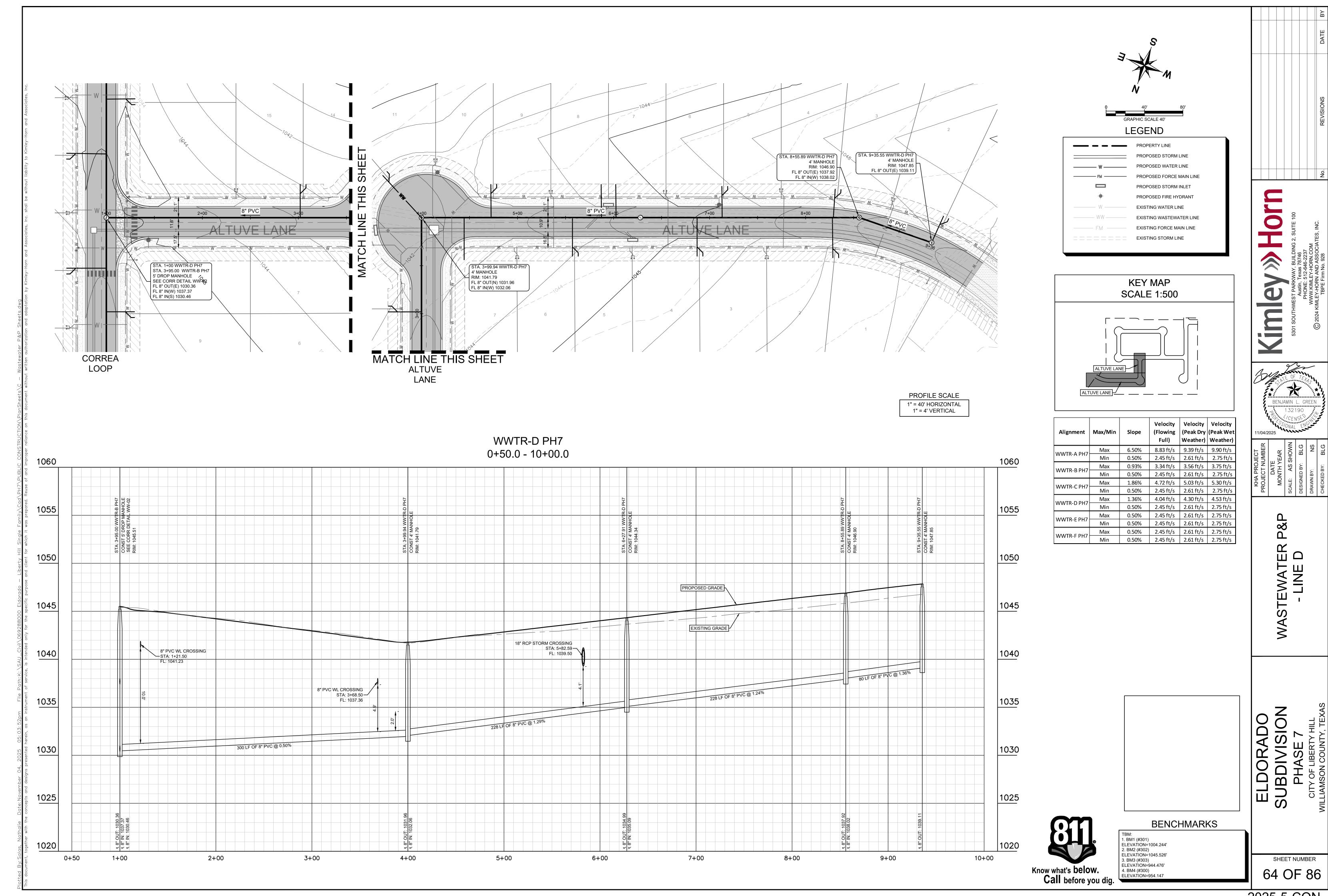
ELDORADO
SUBDIVISION
PHASE 7
CITY OF LIBERTY HILL
WILLIAMSON COUNTY, TEXAS

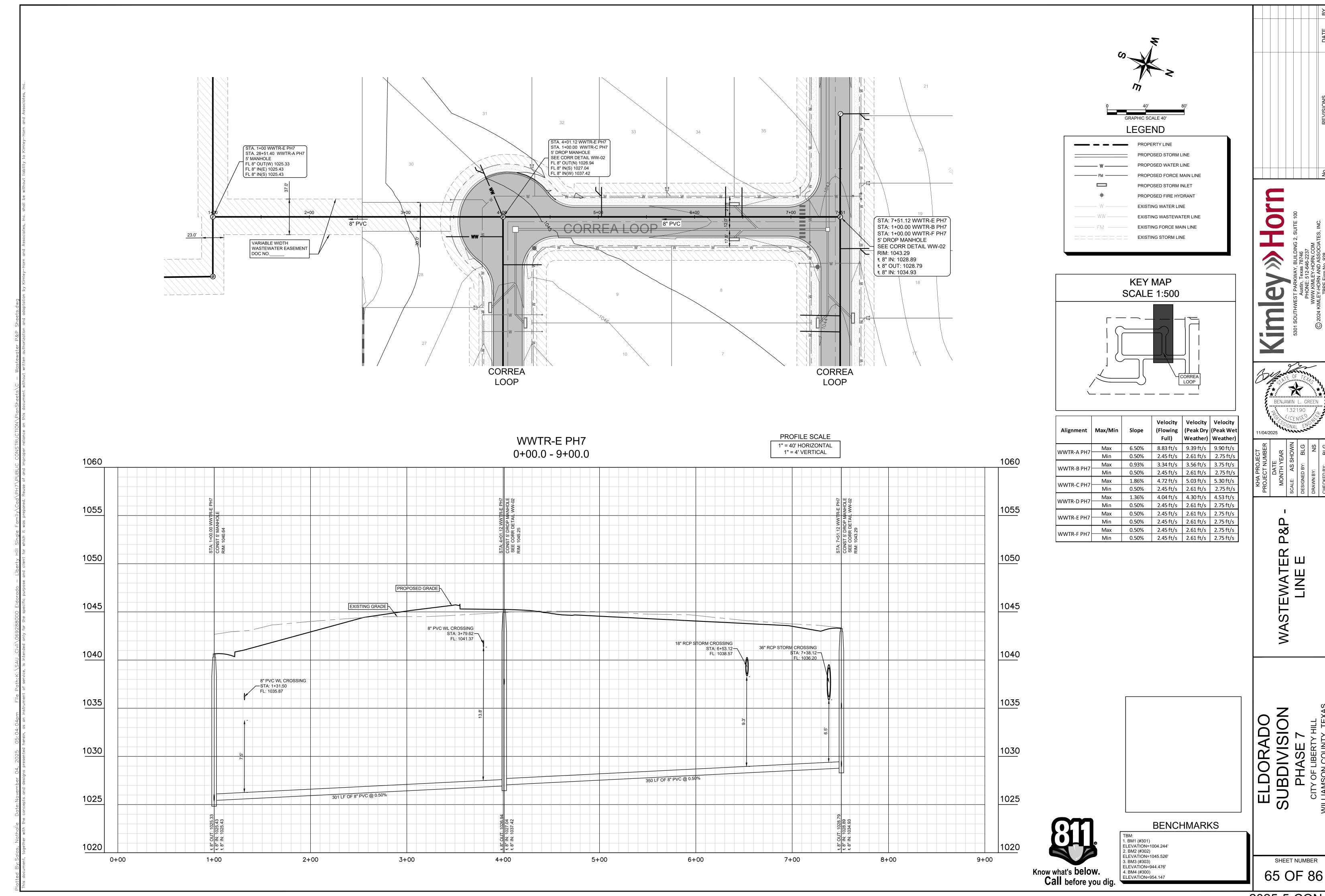
BENCHMARKS TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

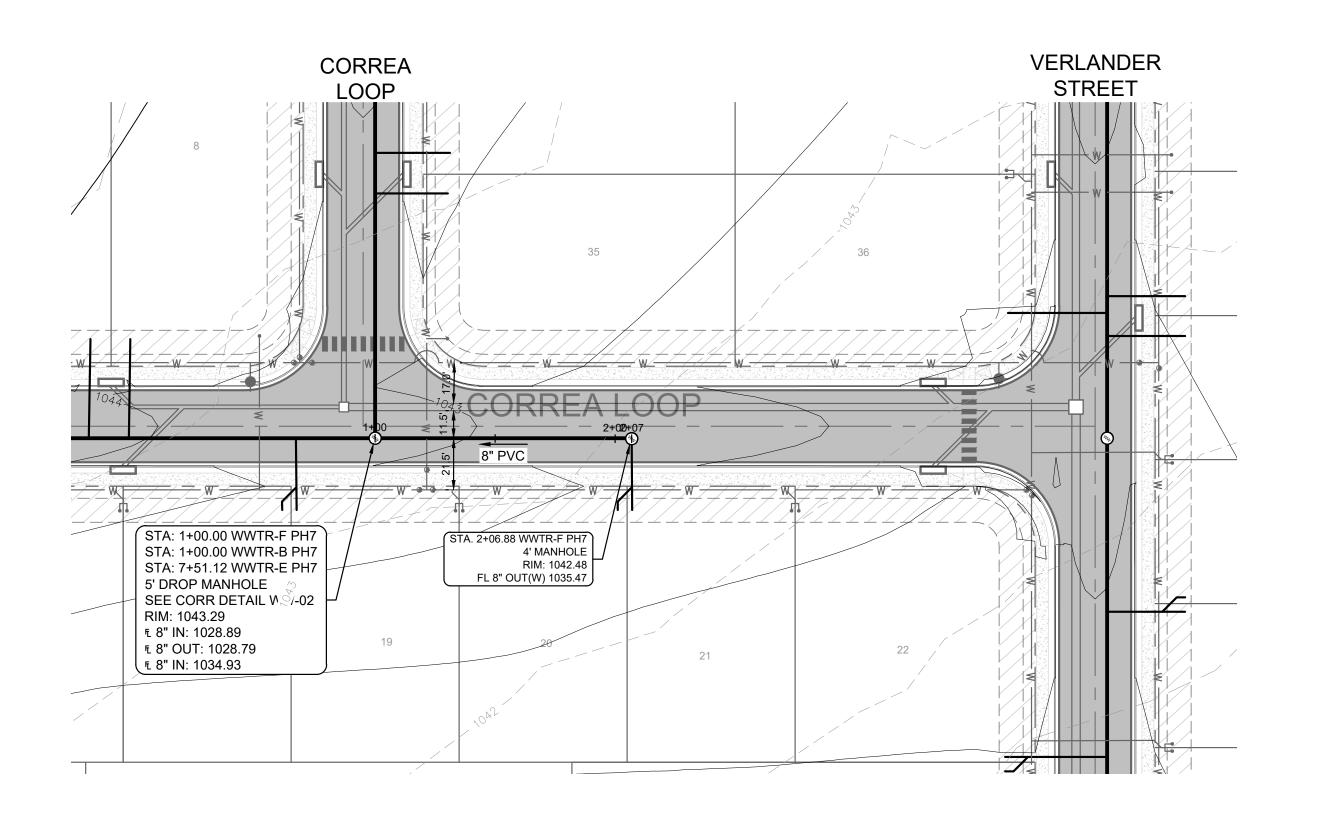
Know what's below.

Call before you dig.

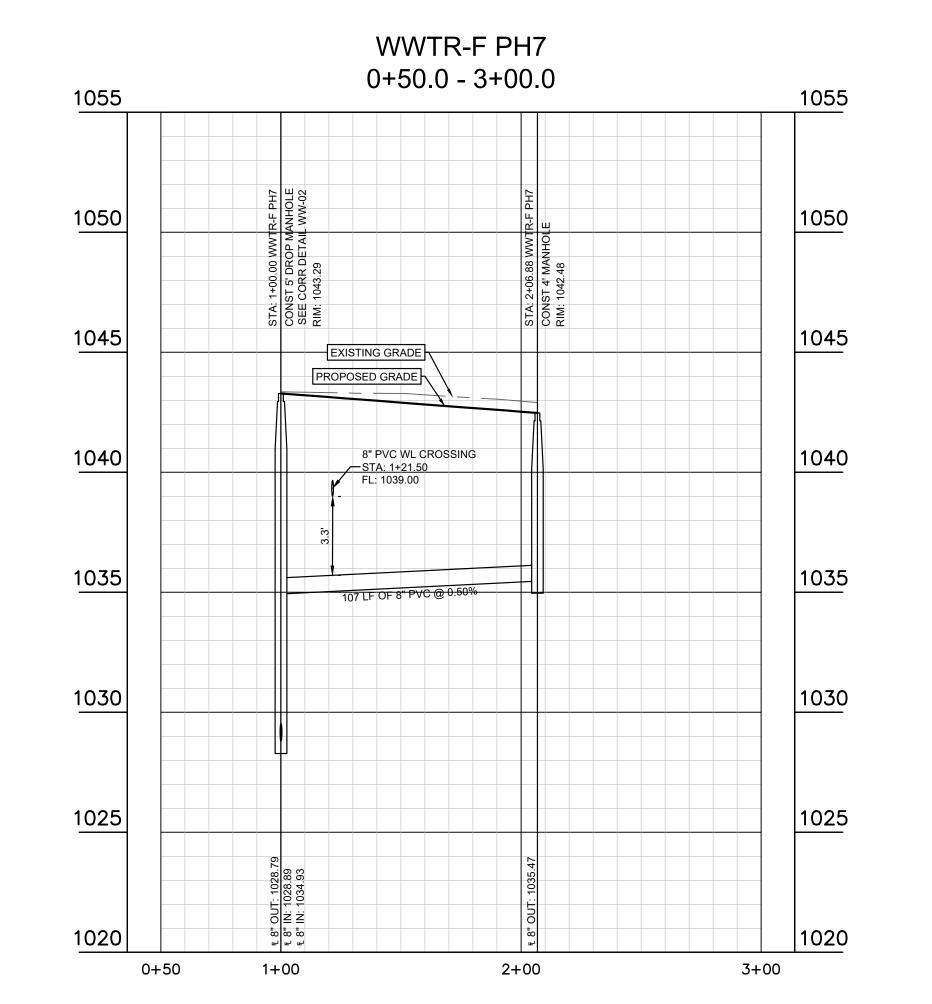
SHEET NUMBER 63 OF 86

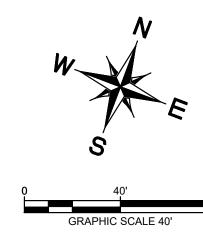


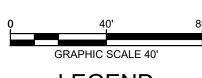




PROFILE SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL



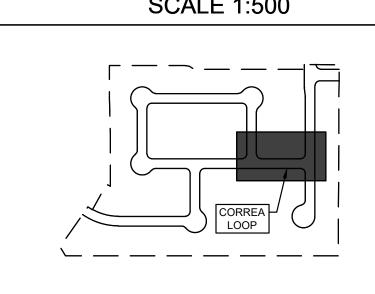




LEGEND

	PROPERTY LINE
	PROPOSED STORM LINE
w	PROPOSED WATER LINE
	PROPOSED FORCE MAIN LINE
	PROPOSED STORM INLET
-	PROPOSED FIRE HYDRANT
W	EXISTING WATER LINE
WW	EXISTING WASTEWATER LINE
FM	EXISTING FORCE MAIN LINE
=======	EXISTING STORM LINE





Alignment	Max/Min	Slope	Velocity (Flowing Full)	Velocity (Peak Dry Weather)	Velocity (Peak Wet Weather)
MANA/TD A DUZ	Max	6.50%	8.83 ft/s	9.39 ft/s	9.90 ft/s
WWTR-A PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
MAATE D DIIZ	Max	0.93%	3.34 ft/s	3.56 ft/s	3.75 ft/s
WWTR-B PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
MAATE COUR	Max	1.86%	4.72 ft/s	5.03 ft/s	5.30 ft/s
WWTR-C PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
MAATE E DIIZ	Max	1.36%	4.04 ft/s	4.30 ft/s	4.53 ft/s
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MAATE F DUZ	Max	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s
WWTR-F PH7	Min	0.50%	2.45 ft/s	2.61 ft/s	2.75 ft/s

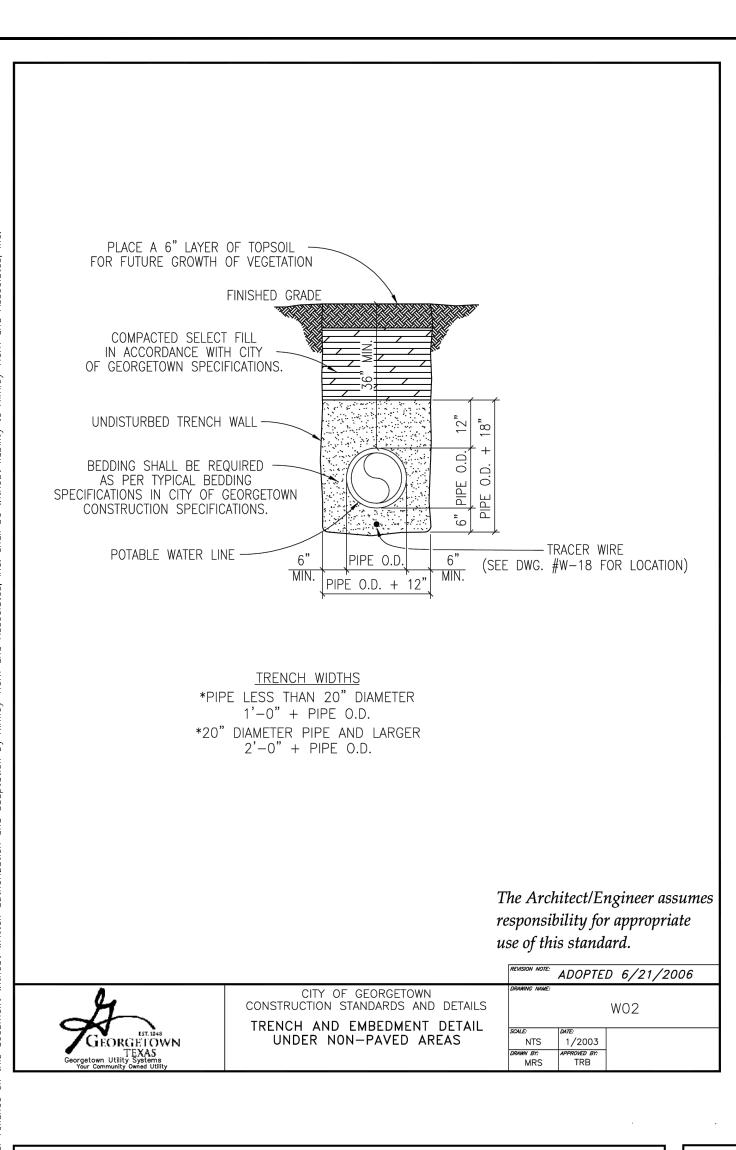
Р&Р

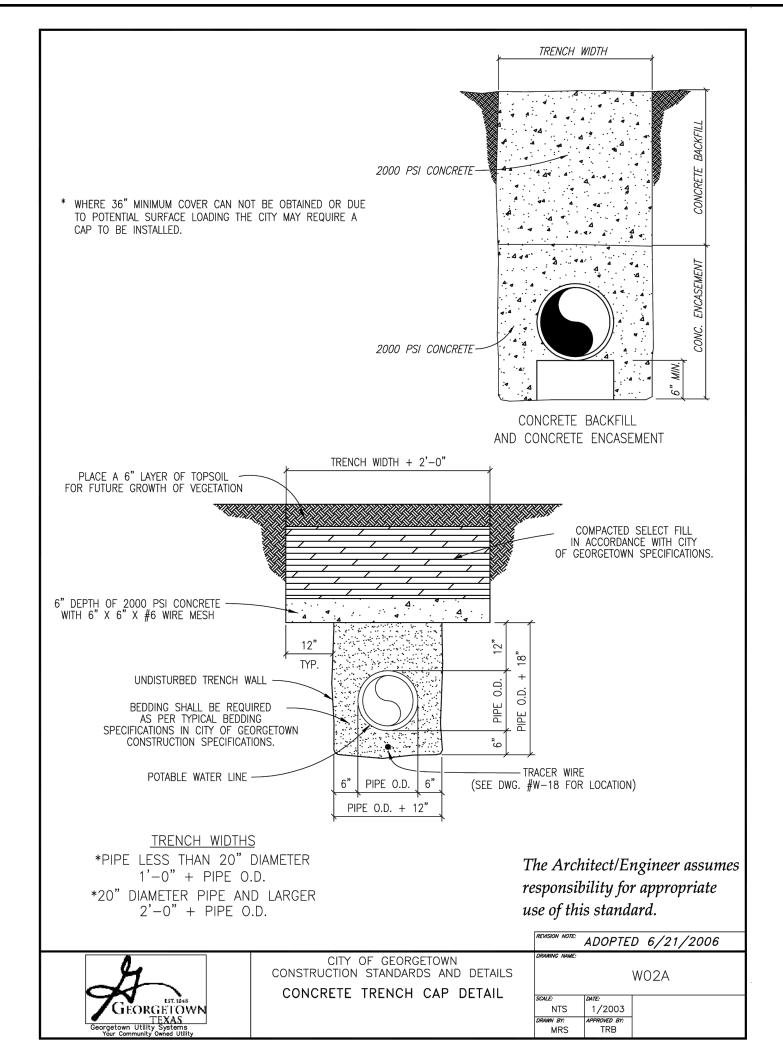
ELDORADO
SUBDIVISION
PHASE 7
CITY OF LIBERTY HILL
WILLIAMSON COUNTY, TEXAS

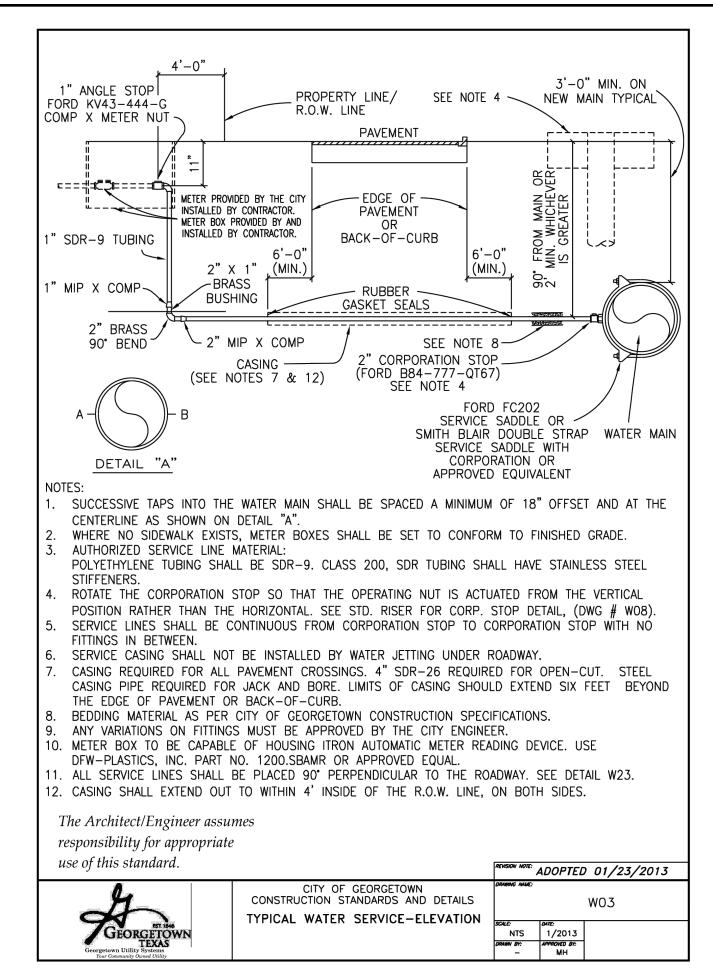
SHEET NUMBER 66 OF 86

BENCHMARKS TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147 Know what's below.

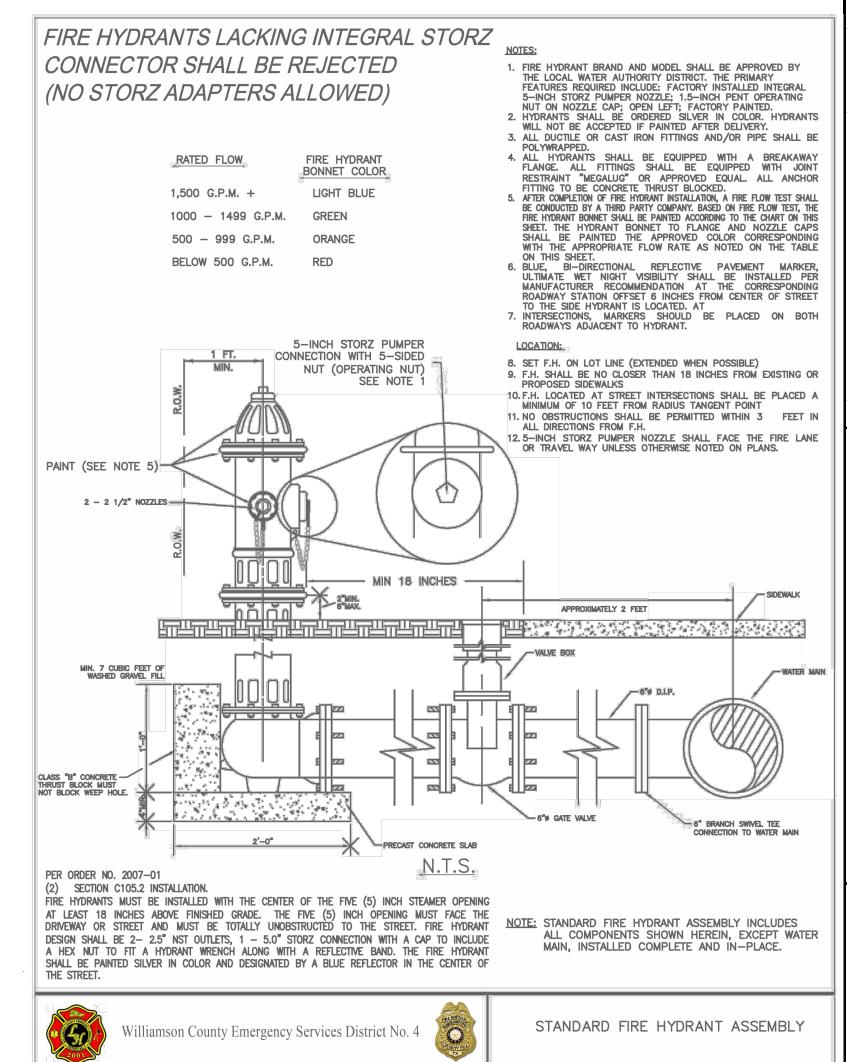
Call before you dig.

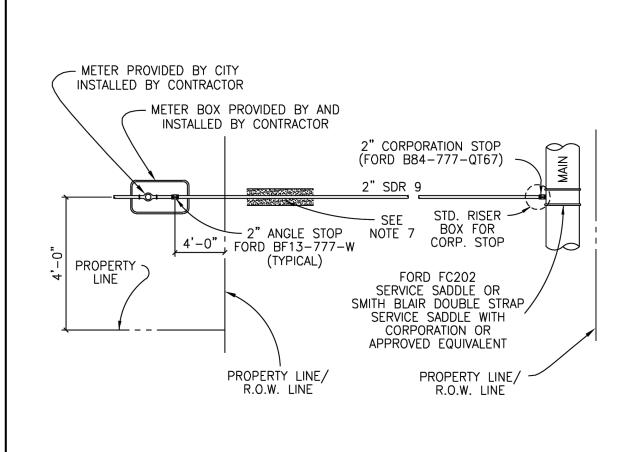






The Architect/Engineer assumes





AUTHORIZED SERVICE LINE MATERIAL:

POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.

ANGLE STOP SHALL BE 1" MINIMUM.

1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP

AND METER FLANGE. 6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" imes2" X 48" TREATED WOOD STAKE, PAINTED BLUE.

BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE

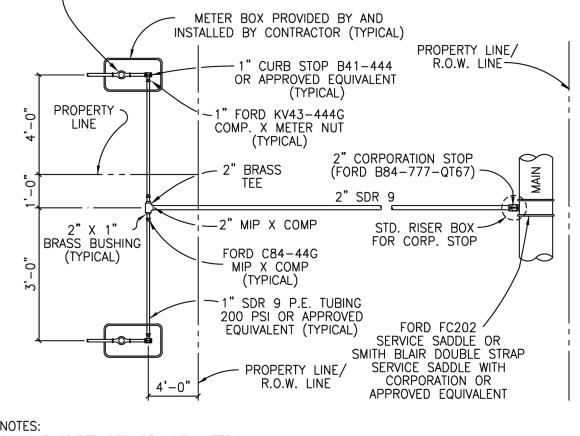
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER. 10. ALL SERVICE LINES SHALL BE PLACED 90' PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes

responsibility for appropriate use of this standard.

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS SINGLE WATER SERVICE PLAN

REVISION NOTE: ADOPTED 01/23/2013



METER PROVIDED BY THE CITY

INSTALLED BY THE CONTRACTOR

(TYPICAL)

 AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.

ANGLE STOP SHALL BE 1" MINIMUM. 3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.

4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS. 5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND

MFTFR FLANGE. 6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2"

X 48" TREATED WOOD STAKE, PAINTED BLUE. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.

8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.

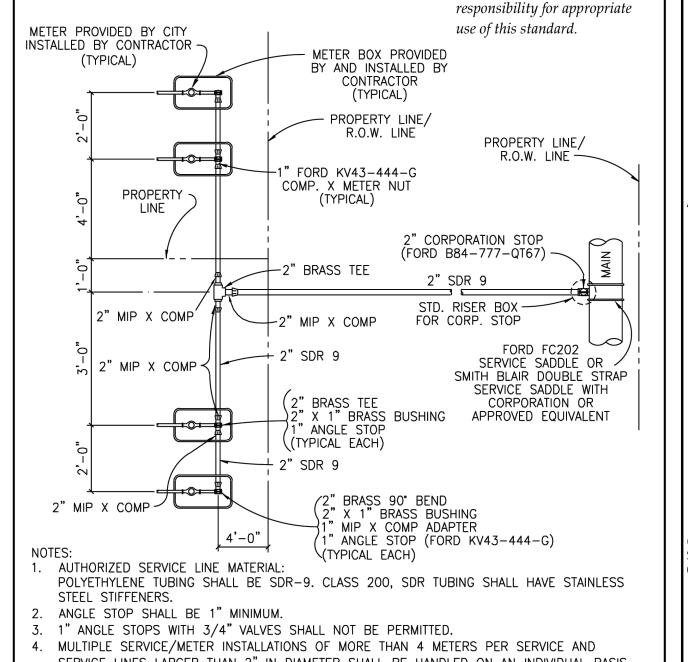
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate use of this standard. CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS GEORGETOWN
Own Utility Swit-

DOUBLE WATER SERVICE PLAN NTS 1/2013

| DRAWN BY: APPROVED BY: | MH

REVISION NOTE: ADOPTED 01/23/2013



SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND

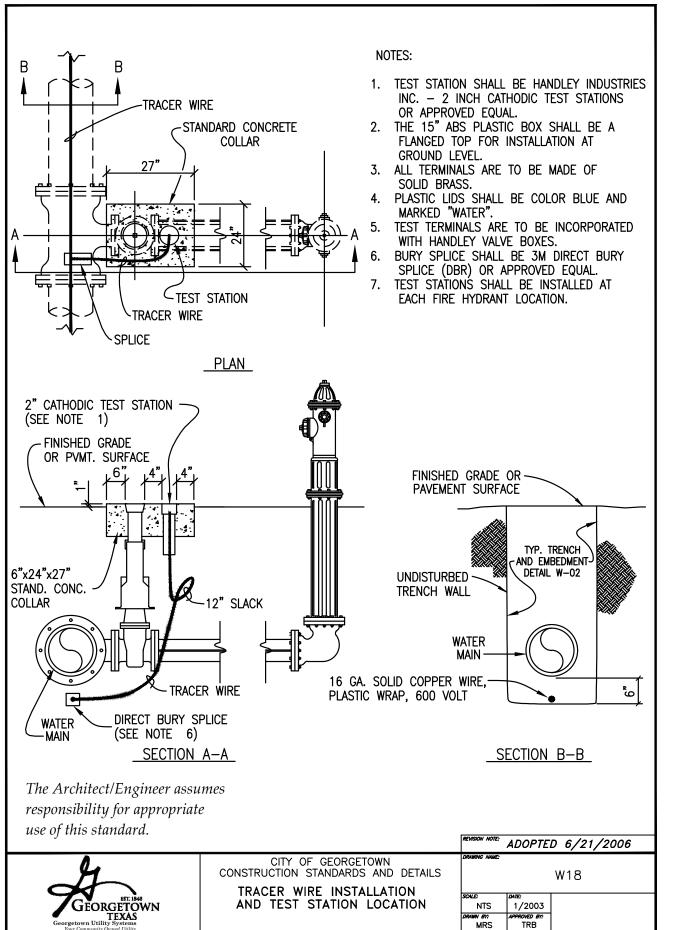
6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2"

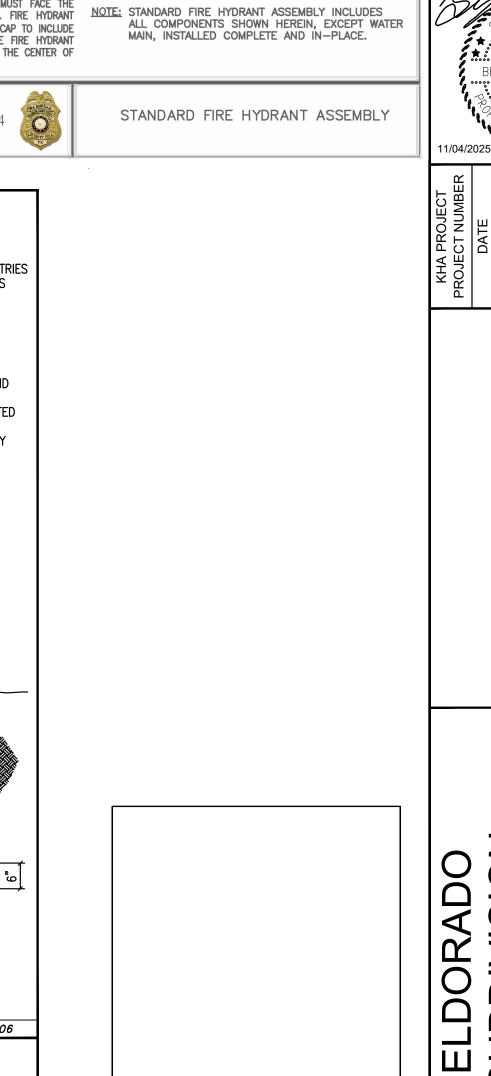
X 48" TREATED WOOD STAKE, PAINTED BLUE. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.

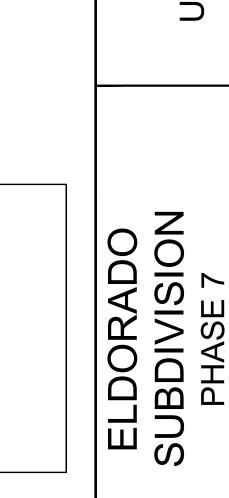
8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7. 9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER. 10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY

EVISION NOTE: ADOPTED 01/23/2013 CONSTRUCTION STANDARDS AND DETAILS QUADRUPLE WATER SERVICE PLAN NTS 1/2013

| DRAWN BY: APPROVED BY: | MH





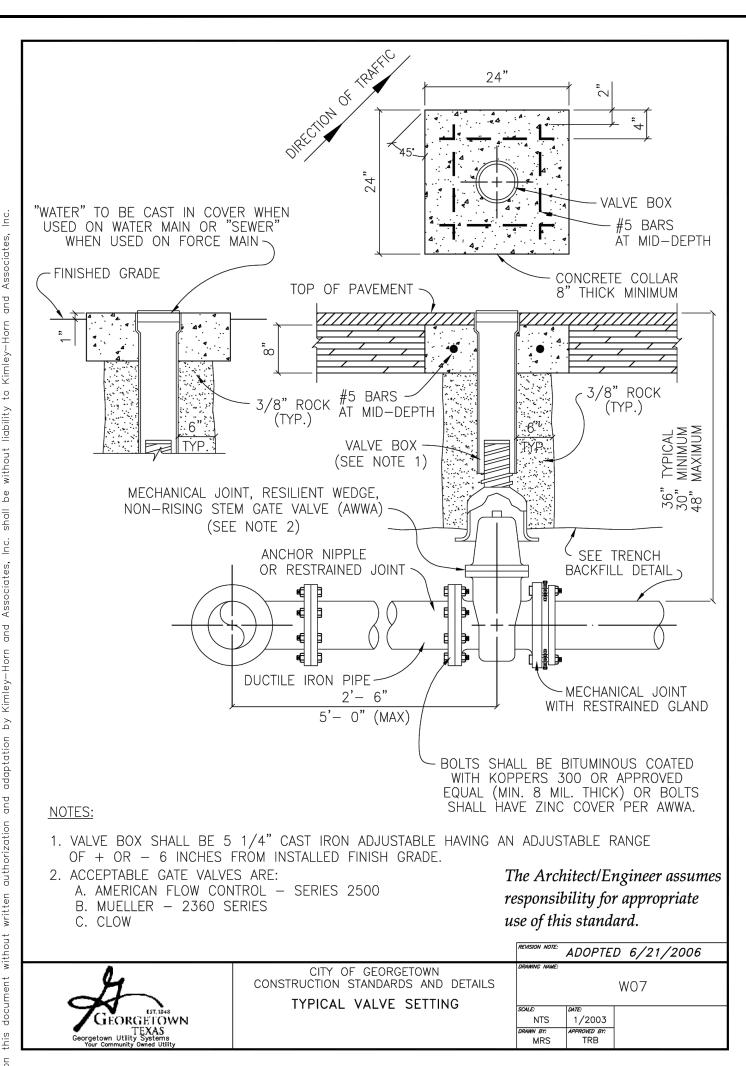


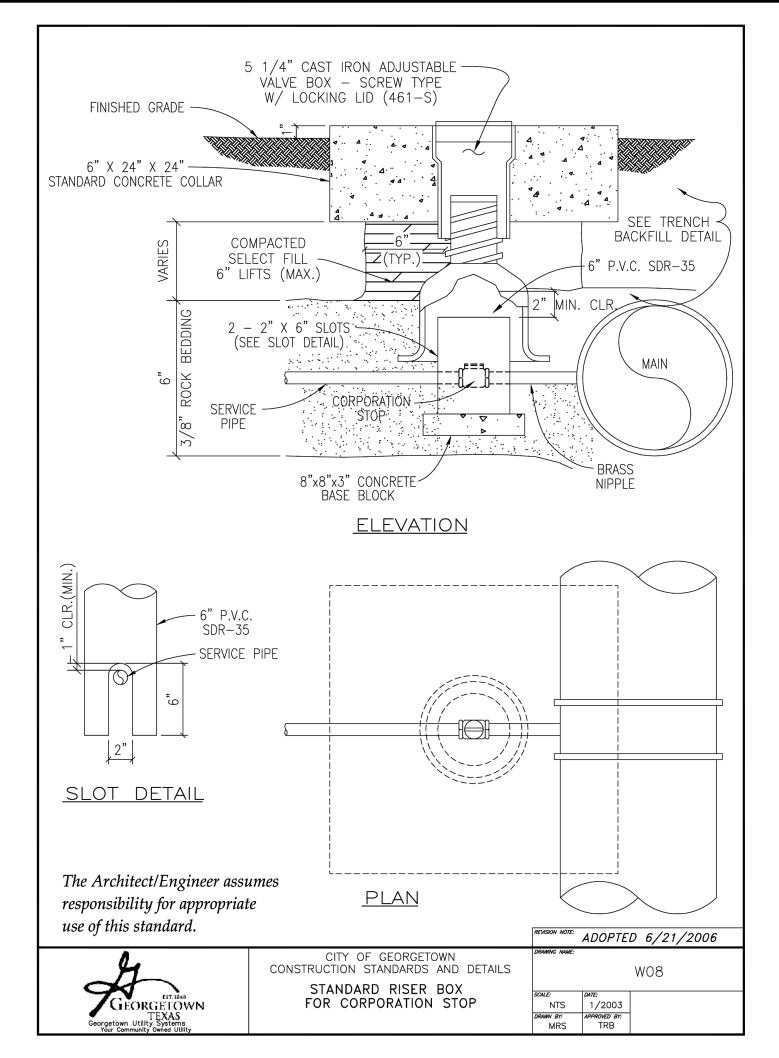
SHEET NUMBER 79 OF 86

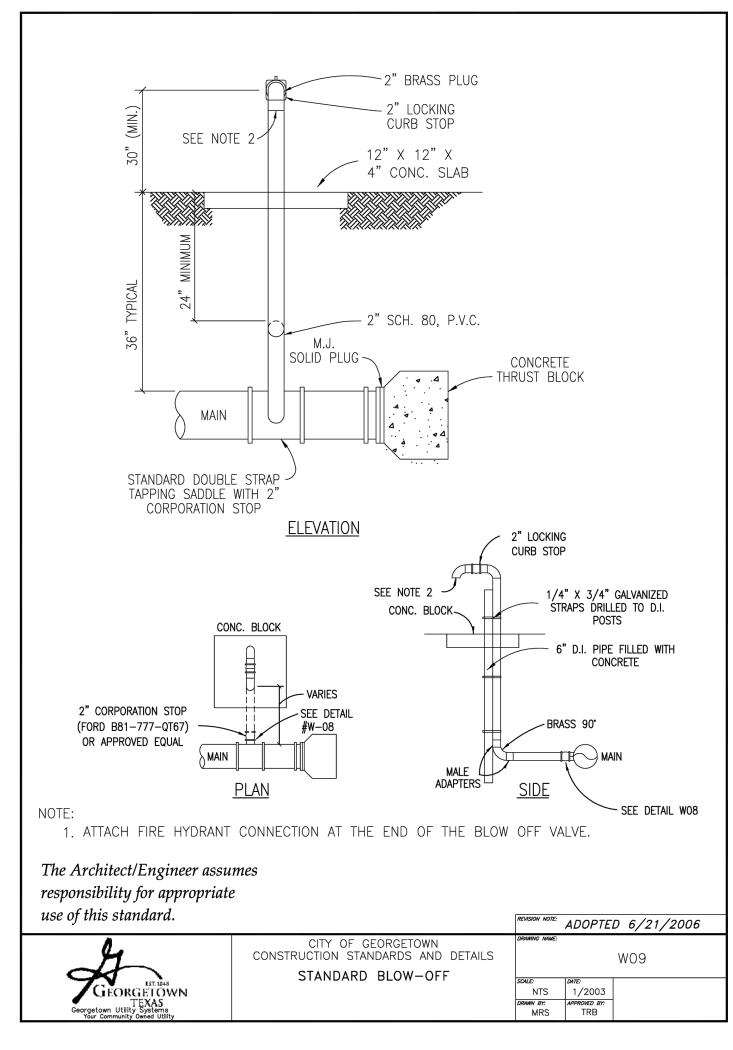
BENJAMIN L. GREEN

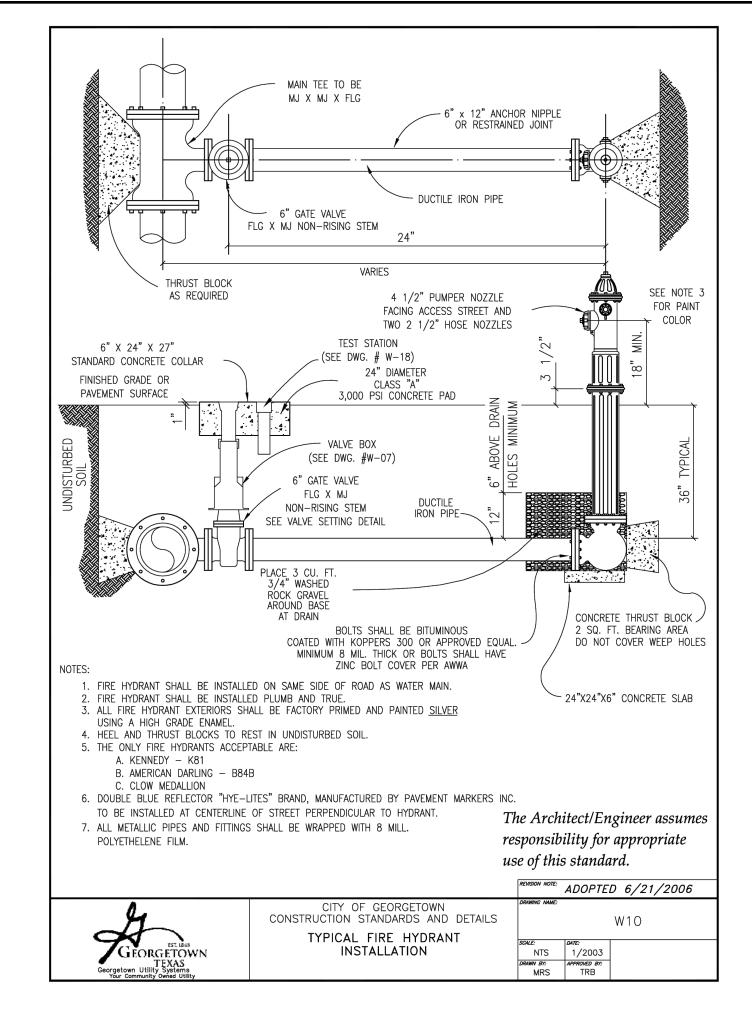
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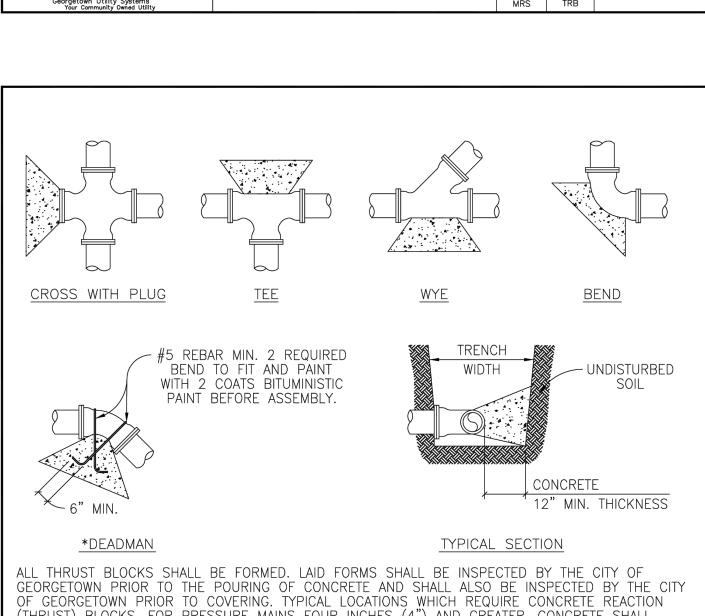
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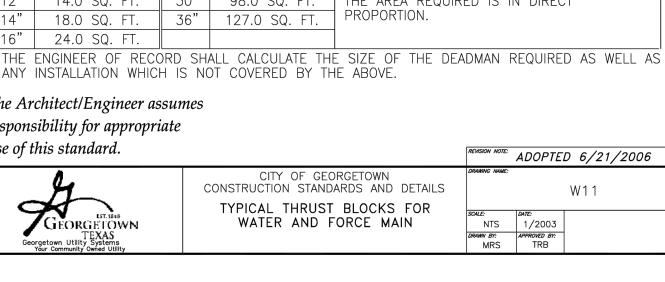


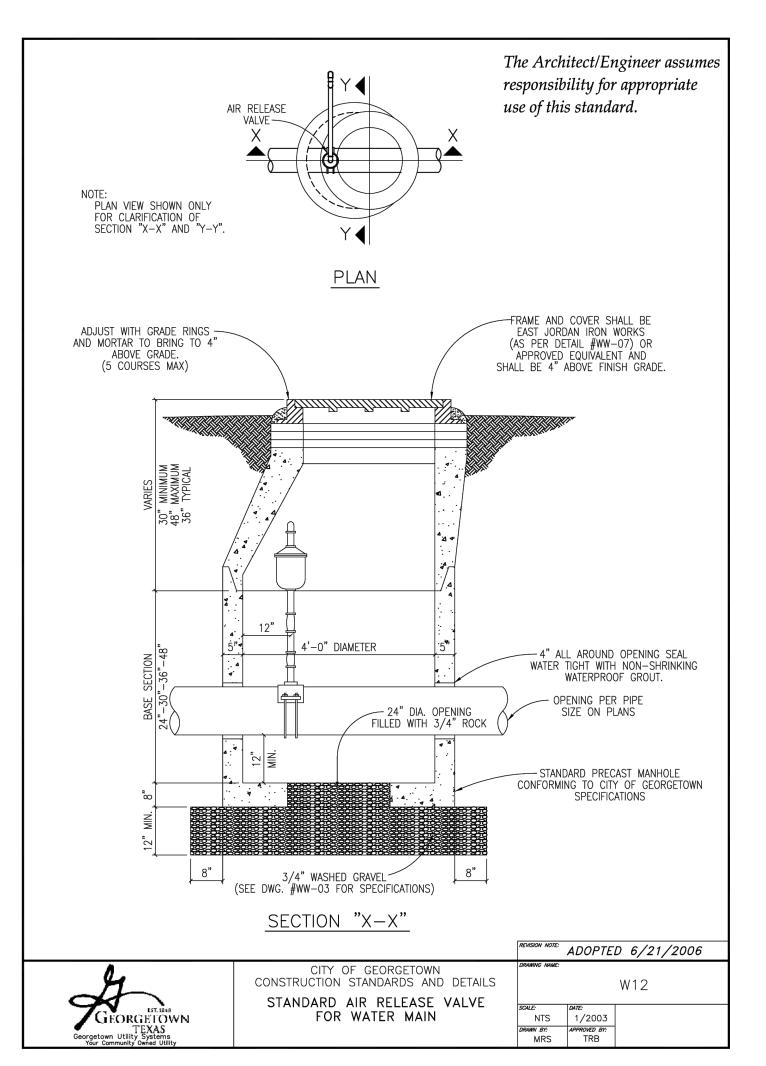
(THRUST) BLOCKS, FOR PRESSURE MAINS FOUR INCHES (4") AND GREATER. CONCRETE SHALL HAVE 2,500 P.S.I. MINIMUM STRENGTH AT TWENTY EIGHT (28) DAYS AND BEAR AGAINST UNDISTURBED STABLE SOILS, AREA OF CONTACT SHALL BE GOVERNED BY PIPE SIZE, MAXIMUM PRESSURE IN PIPE, AND BEARING CAPACITY OF SOIL. PROTECT FITTINGS, BOLTS, ETC. BY COVERING WITH VISQUEEN OR OTHER ACCEPTABLE MATERIAL. CONCRETE SHALL BE A MINIMUM OF TWELVE INCHES (12") THICK.

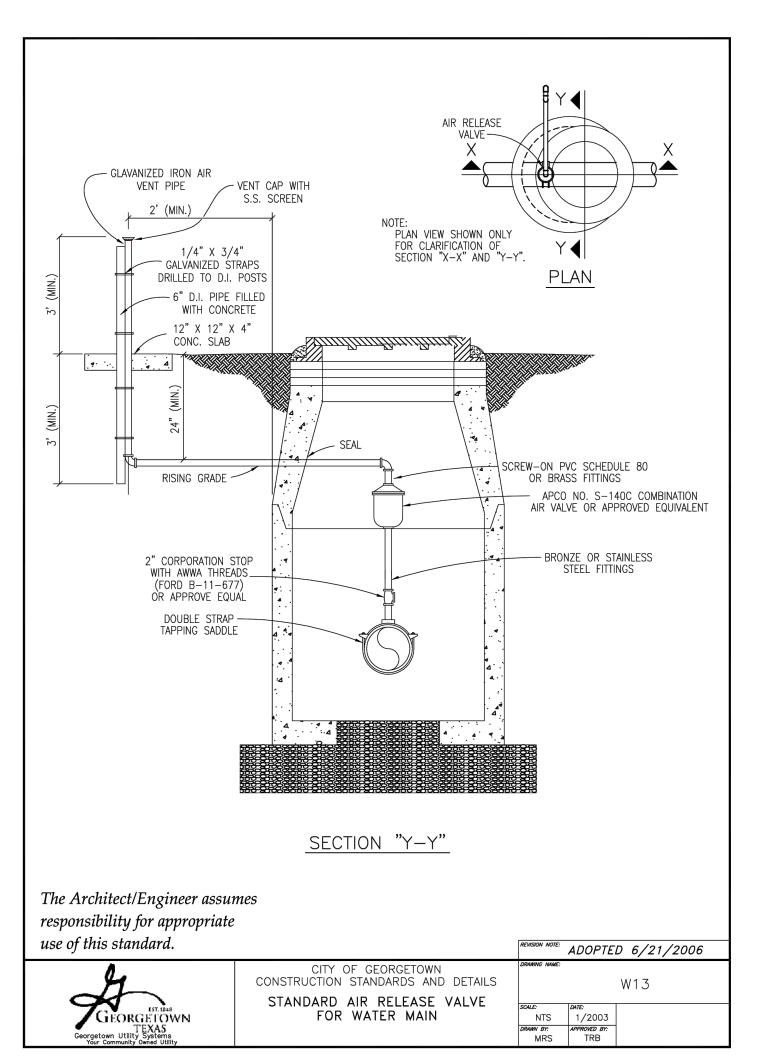
REMARKS

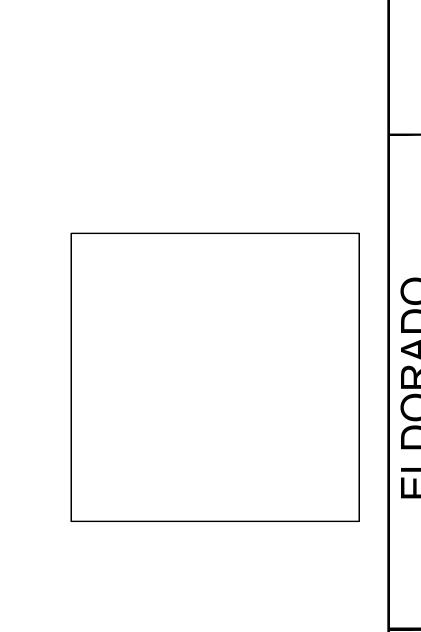
PIPE THRUST BLOCK PIPE THRUST BLOCK SIZE AREA REQUIRED SIZE AREA REQUIRED

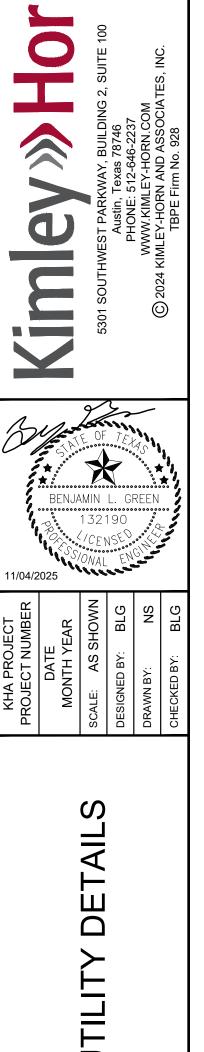
ı	4 ''	0.0.00 FT	4.0"	70.0.00 FT	
ı	4"	2.0 SQ. FT.	18"	30.0 SQ. FT.	
l	6"	4.0 SQ. FT.	20"	37.0 SQ. FT.	VALUES ARE FOR 90° BENDS, BASED ON
l	8"	6.6 SQ. FT.	24"	53.0 SQ. FT.	2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. PLUS 33% SAFETY
l	10"	10.0 SQ. FT.	27"	80.0 SQ. FT.	FACTOR FOR OTHER SOILS AND PRESSURES,
l	12"	14.0 SQ. FT.	30"	98.0 SQ. FT.	THE AREA REQUIRED IS IN DIRECT
l	14"	18.0 SQ. FT.	36"	127.0 SQ. FT.	PROPORTION.
l	16"	24.0 SQ. FT.			
				ALL CALCULATE THI OT COVERED BY TH	E SIZE OF THE DEADMAN REQUIRED AS WELL AS IE ABOVE.
		chitect/Engineer as			
	respons	sibility for appropri	ate		
		his standard.			REVISION NOTE: A DORTED 6/21/2006



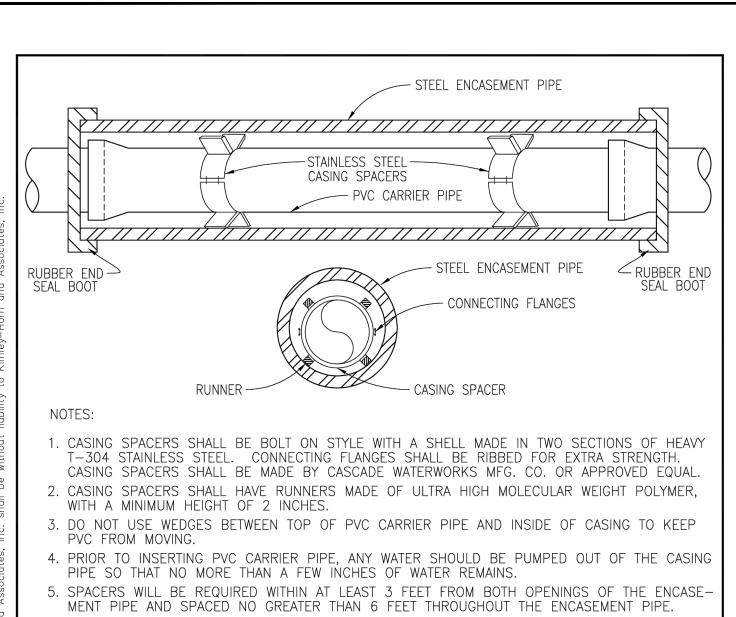








SHEET NUMBER 80 OF 86



6. ENCASEMENT PIPE SHALL BE SMOOTH STEEL 35,000 PSI YIELD STRENGTH WITH THICKNESS ACCORDING TO THE FOLLOWING TABLE:

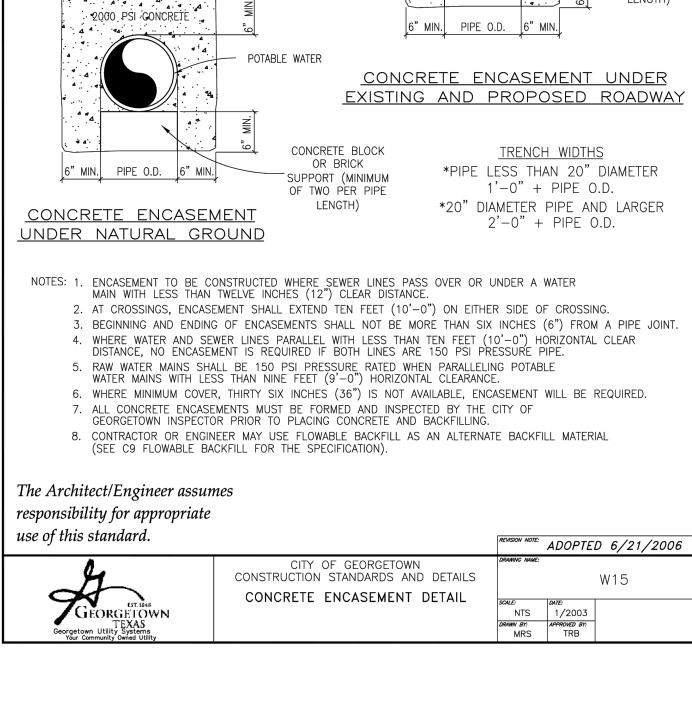
7. WHEN CASING IS REQUIRED UNDER PAVEMENT WITHIN THE R.O.W., THE CASING SHALL EXTEND OUT TO WITHIN 4' INSIDE OF THE R.O.W. LINE, ON BOTH SIDES. 8. ALL JOINTS SHALL BE RESTRAINED ON PVC CARRIER PIPE.

PIPE_SIZE-CARRIER	PIPE SIZE-CASING	MINIMUM PIF	E THICKNESS
(DIAMETER) 6"	(DIAMETER)(MIN.) 16"	(INC	HES)
6″	16″		
8"	18"	1/4	0.2500
10"	20"	5/16	0.3125
12" - 14"	24"	3/8	0.3750
16" - 18"	30"	7/16	0.4375
20"	36"	1/2	0.5000
24"	42"	1/2	0.5000
30"	48"	1/2	0.5000

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

use of this stantaura.	
91_	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAIL
GEORGETOWN TEXAS Georgetown Utility Systems	INSTALLATION OF P.V.C. PIPE THROUGH CASING

REVISION NOTE: ADOPTED 6/21/2006 W14 DRAWN BY: APPROVED BY:



2" HMAC TYPE "D" _____

COMPACTED

SELECT FILL IN

ACCORDANCE WITH

CITY OF

SPECIFICATIONS

GEORGETOWN

2000 PSI CONCRETE

-POTABLE WATER

CONCRETE BLOCK

SUPPORT (MINIMUM

OR BRICK

LENGTH)

OF TWO PER PIPE

8" COMPACTED FLEXIBLE

SPECIFICATIONS.

SEE TRENCH WIDTHS

.

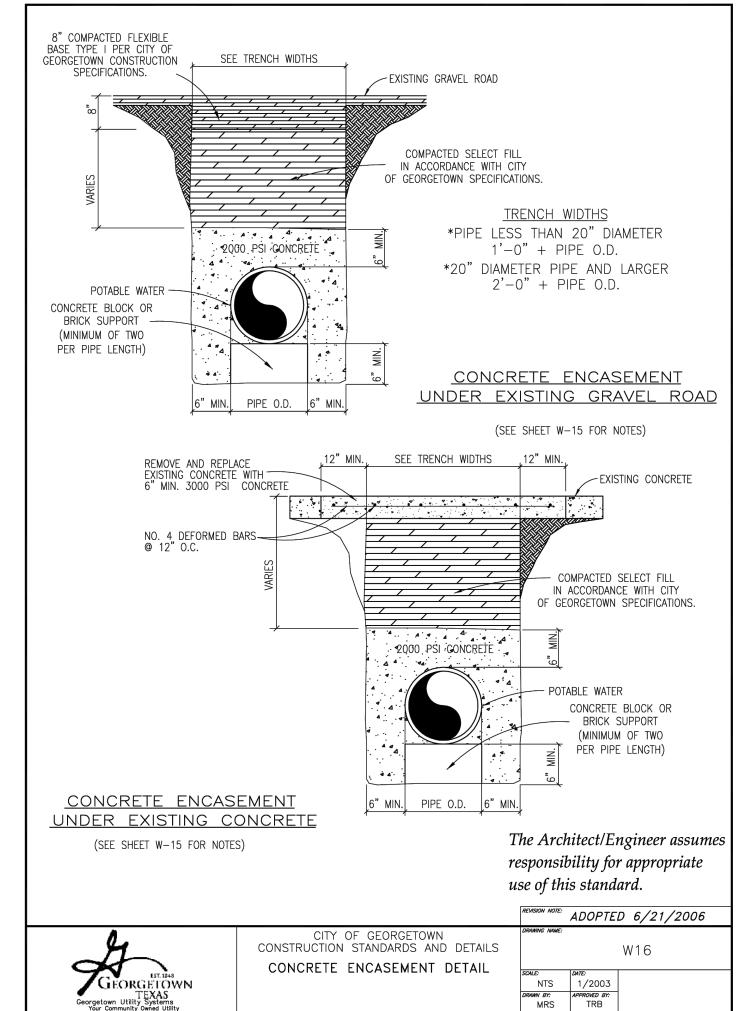
PLACE A 6" LAYER OF

EXISTING TOPSOIL FOR FUTURE

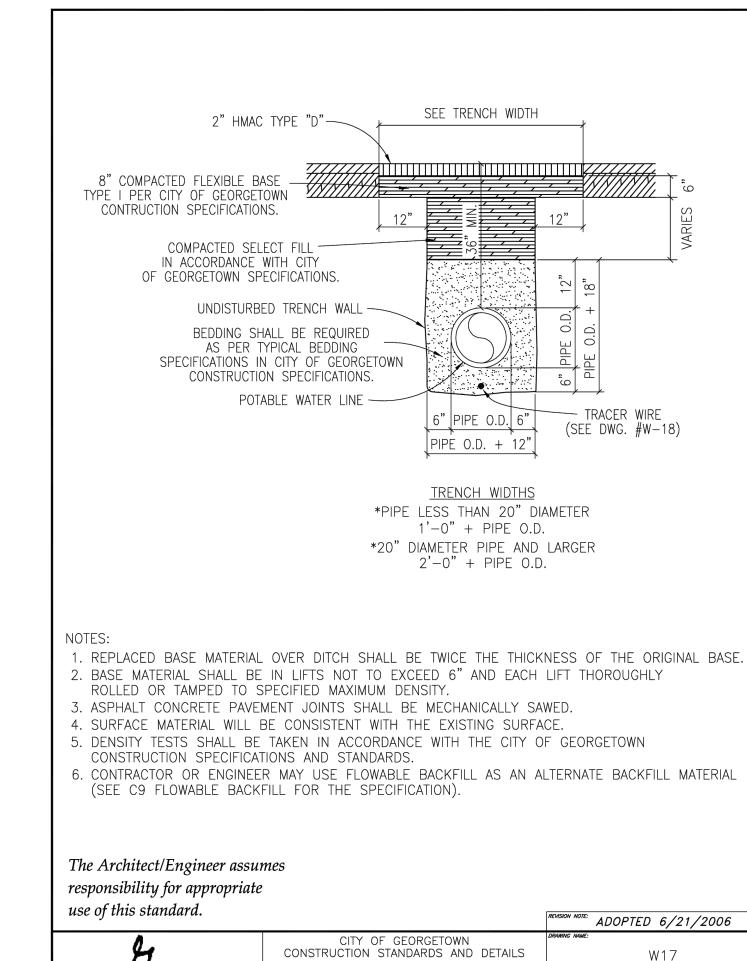
GROWTH OF

VEGETATION

BASE TYPE I PER CITY OF GEORGETOWN CONSTRUCTION



GEORGETOWN



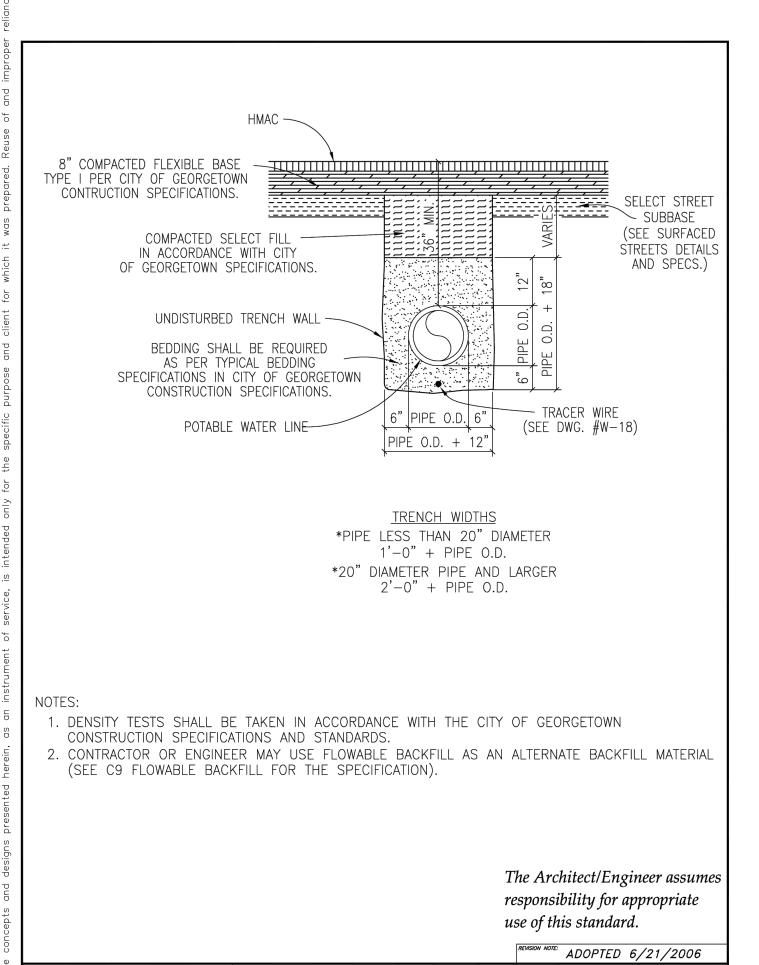
TRENCH AND EMBEDMENT AND

PAVEMENT REPLACEMENT DETAIL

UNDER EXISTING ROADWAY

NTS 1/2003

| DRAWN BY: APPROVED BY: | TRB



CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS

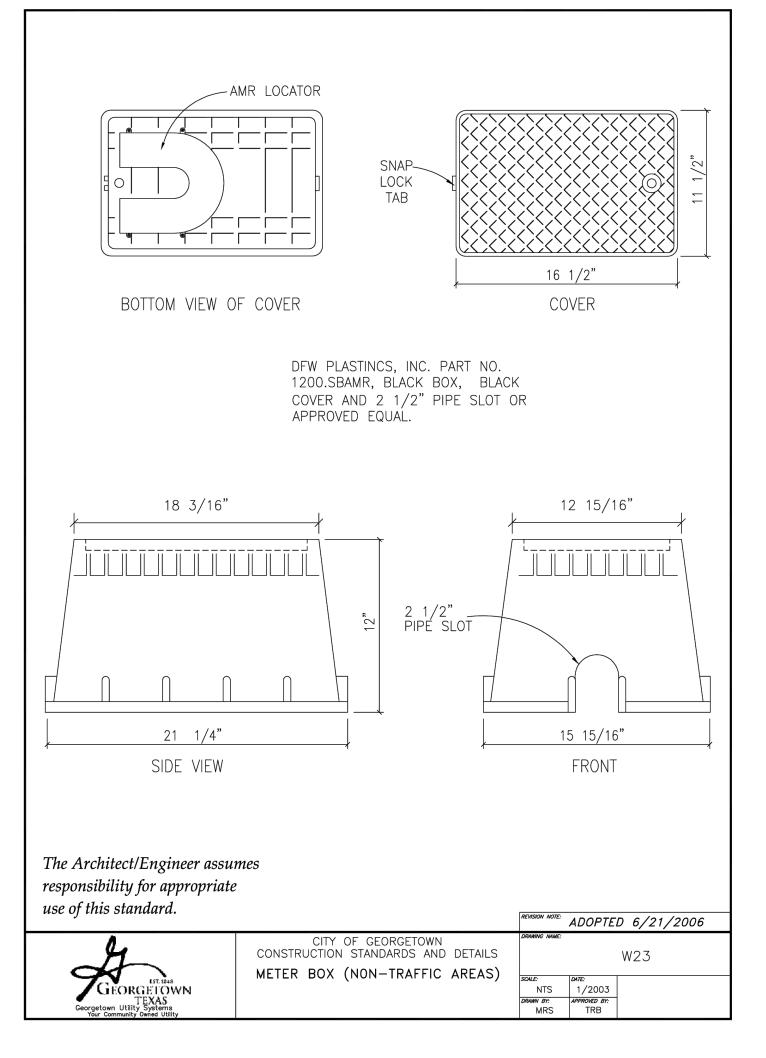
TRENCH AND EMBEDMENT DETAIL

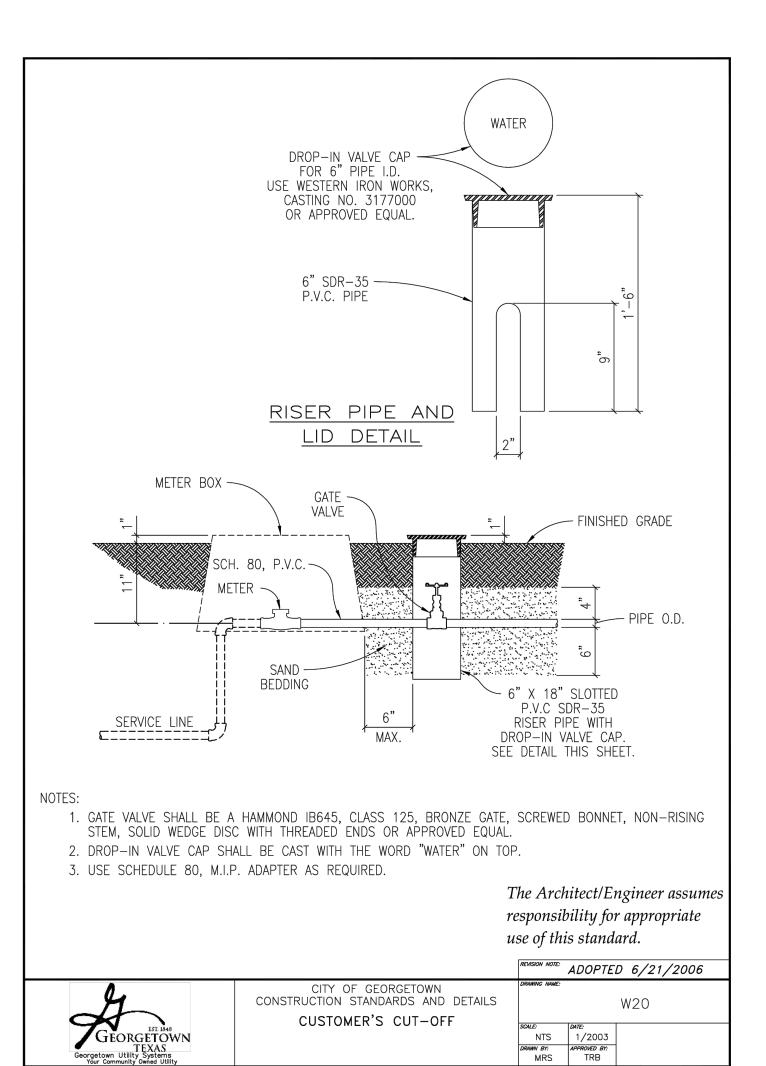
UNDER PROPOSED ROADWAY

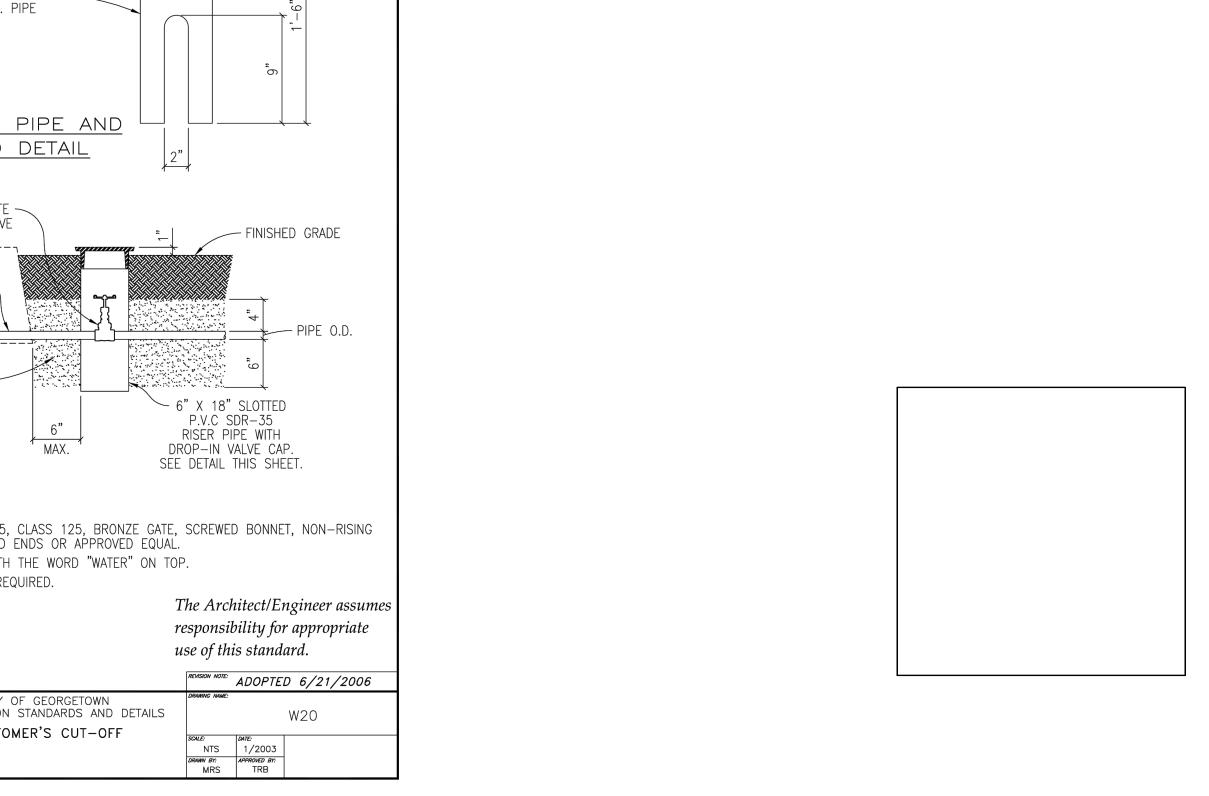
W22

NTS 1/2003

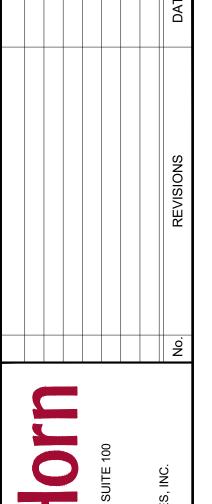
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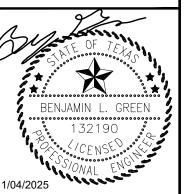






GEORGETOWN

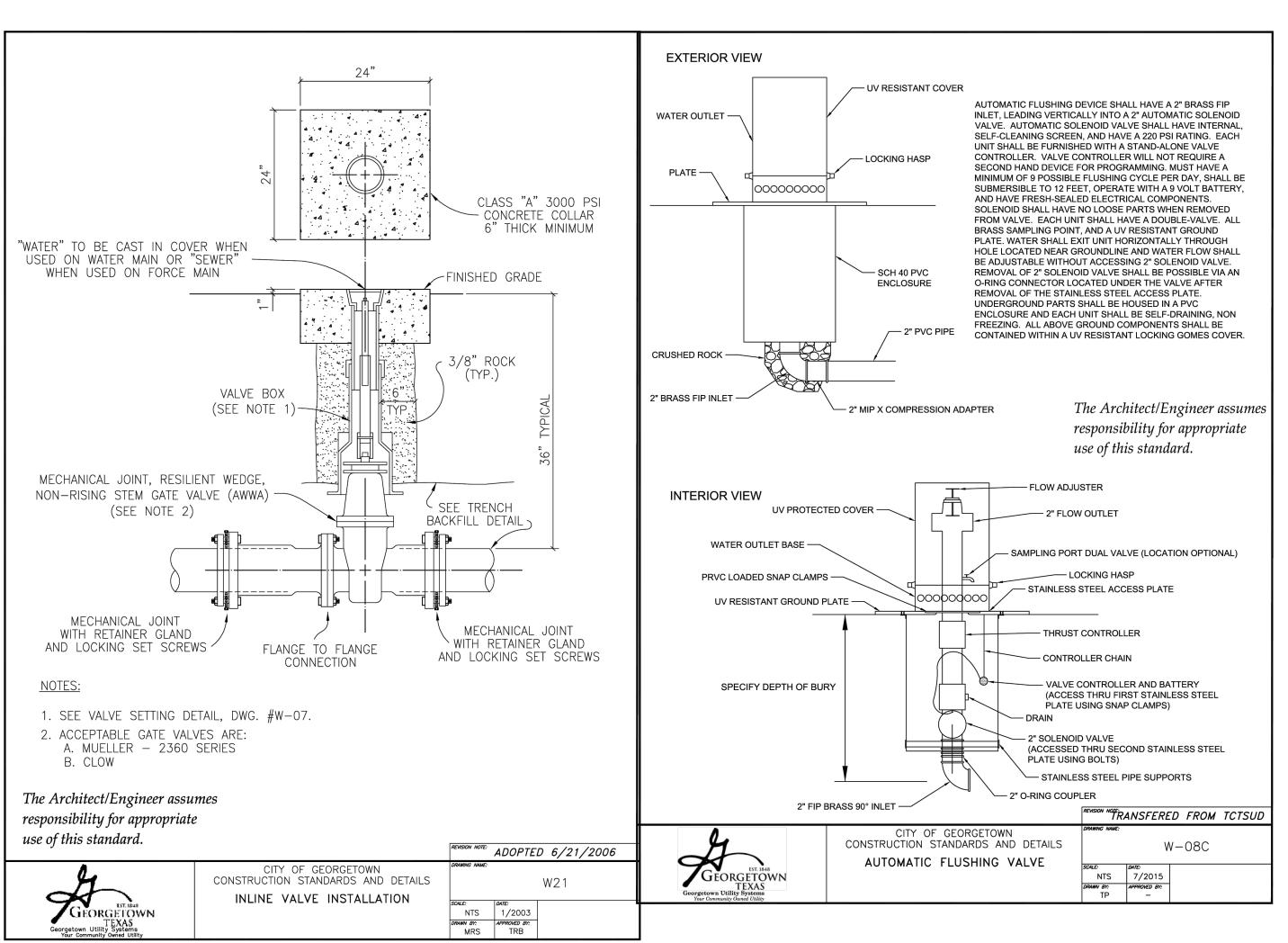


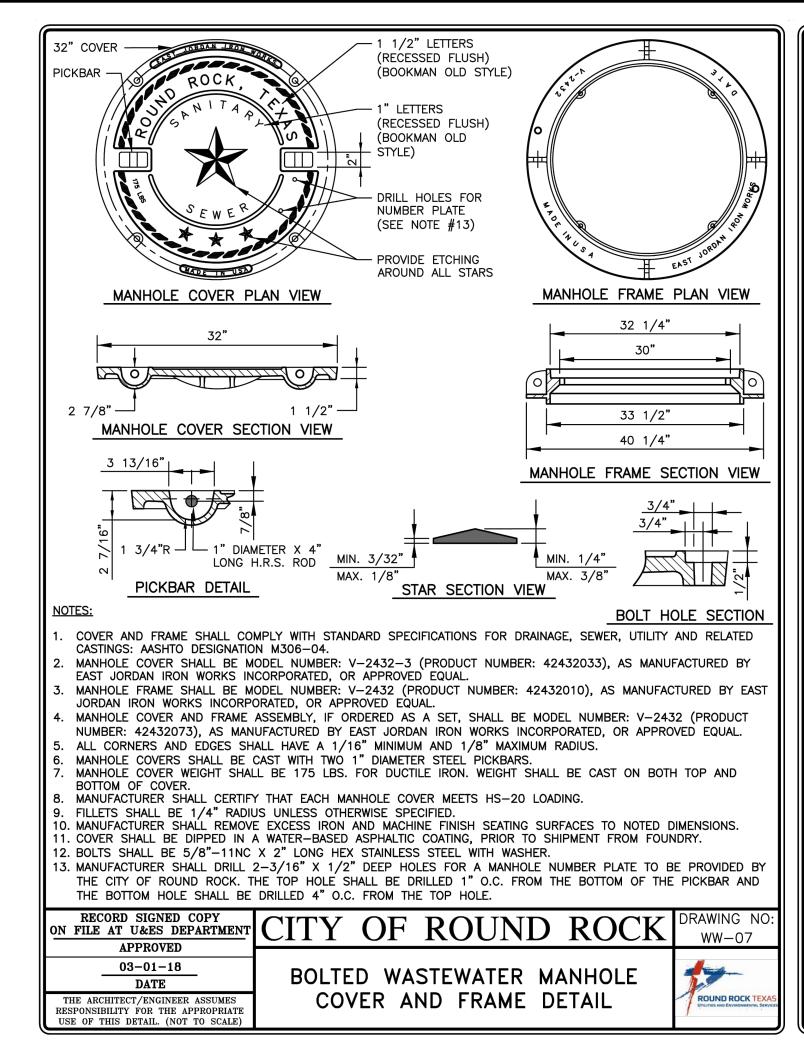


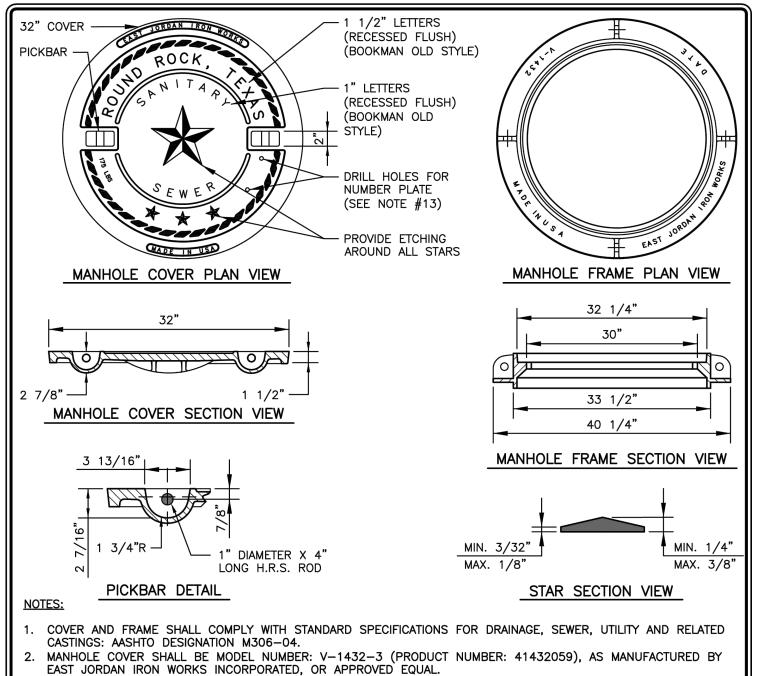
DETAIL ITILITY

PHAS SUBDIV

SHEET NUMBER 81 OF 86







MANHOLE FRAME SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432010), AS MANUFACTURED BY EAST JORDAN IRON WORKS INCORPORATED, OR APPROVED EQUAL.

MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432089), AS MANUFACTURED BY EAST JORDAN IRON WORKS INCORPORATED, OR APPROVED EQUAL. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.

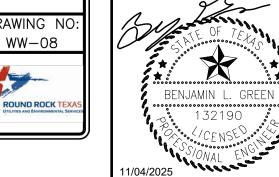
MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS. MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND

BOTTOM OF COVER. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING

FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED. . MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.

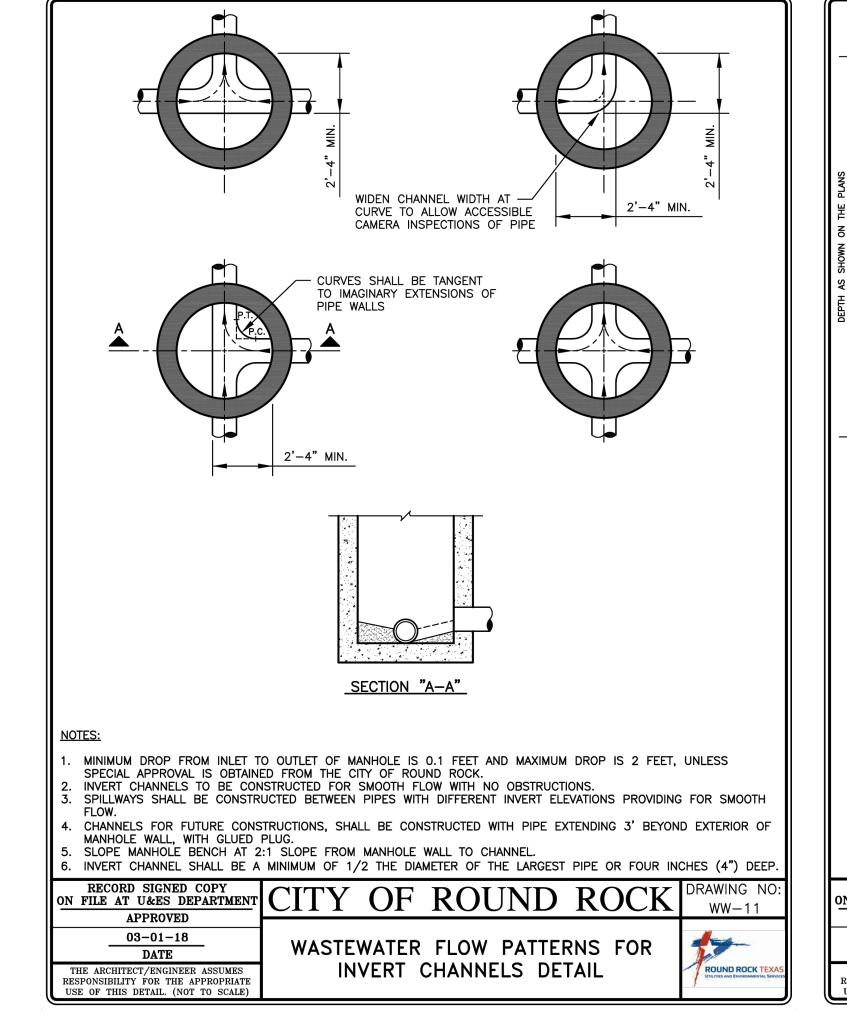
. MANUFACTURER SHALL DRILL 2-3/16" X 1/2" DEEP HOLES FOR A MANHOLE NUMBER PLATE TO BE PROVIDED BY THE CITY OF ROUND ROCK. THE TOP HOLE SHALL BE DRILLED 1" O.C. FROM THE BOTTOM OF THE PICKBAR AND THE BOTTOM HOLE SHALL BE DRILLED 4" O.C. FROM THE TOP HOLE.

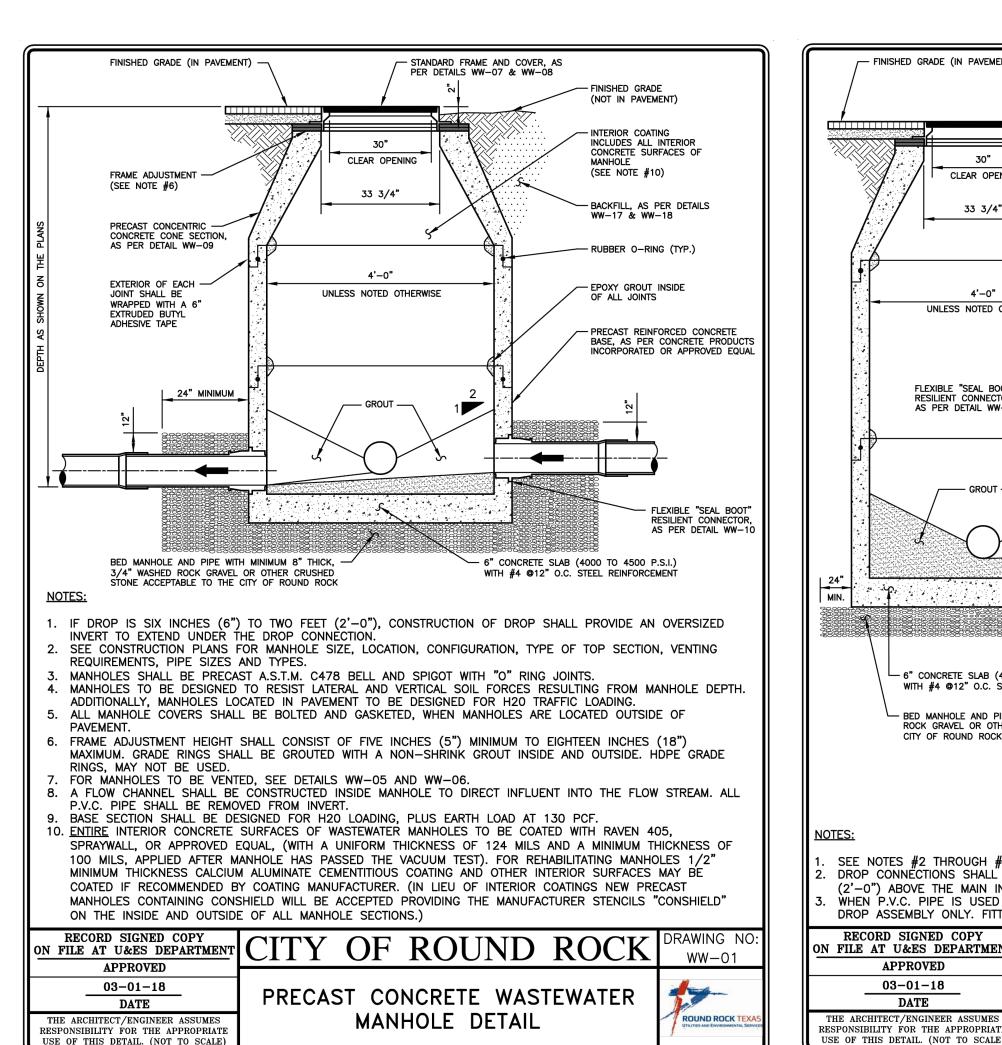
RECORD SIGNED COPY N FILE AT U&ES DEPARTMEN APPROVED 03-01-18 NON-BOLTED WASTEWATER MANHOLE 📆 DATE COVER AND FRAME DETAIL RESPONSIBILITY FOR THE APPROPRIATI

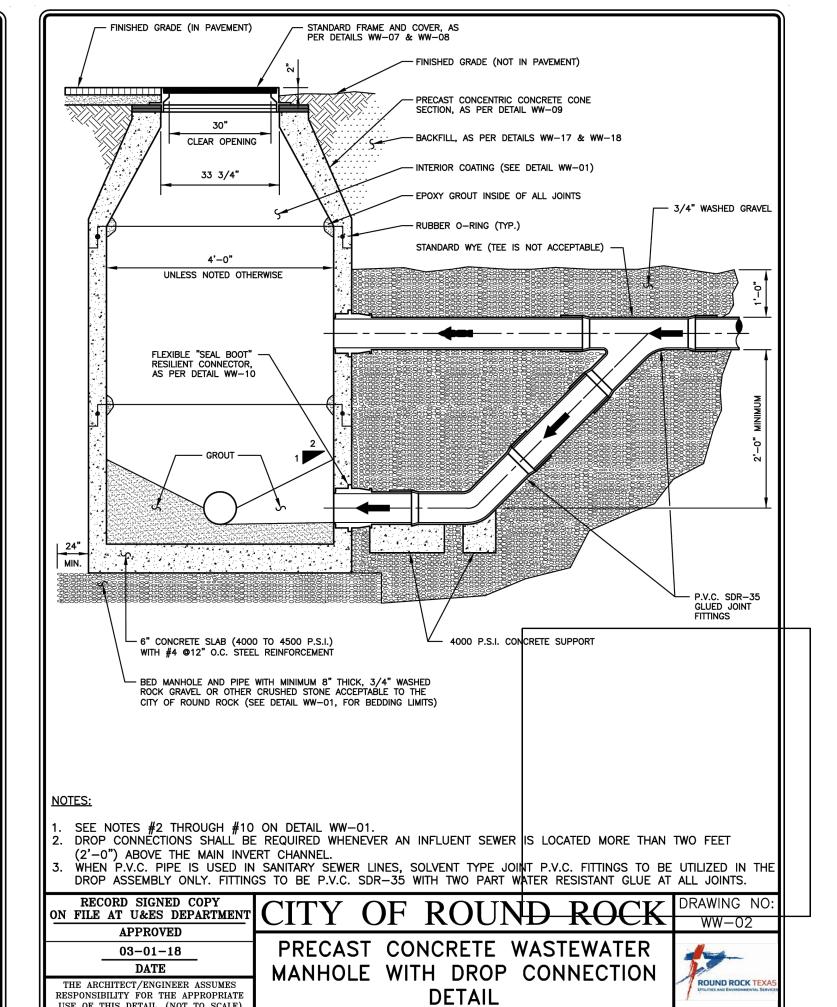


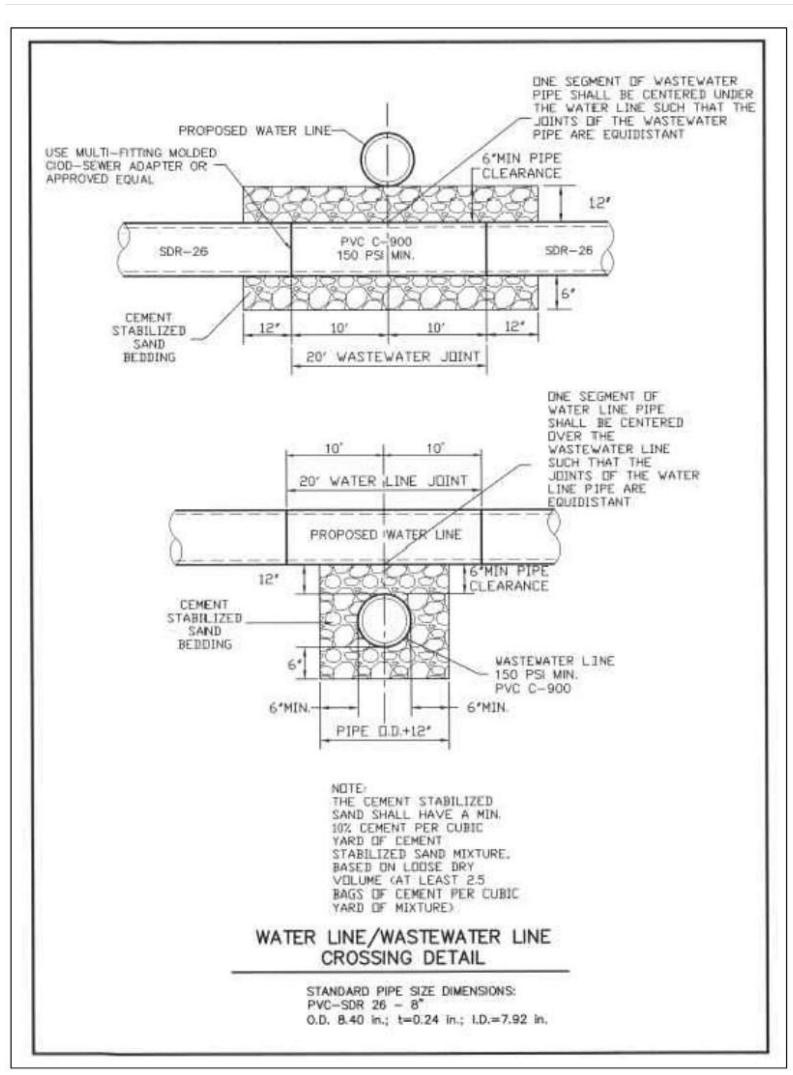
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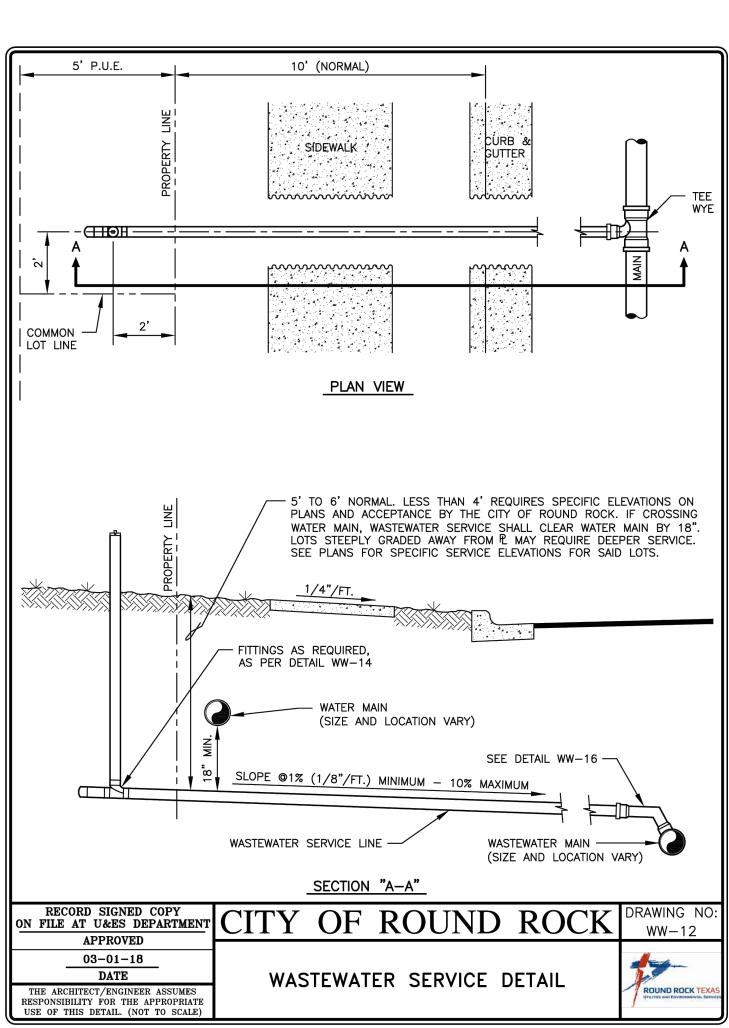


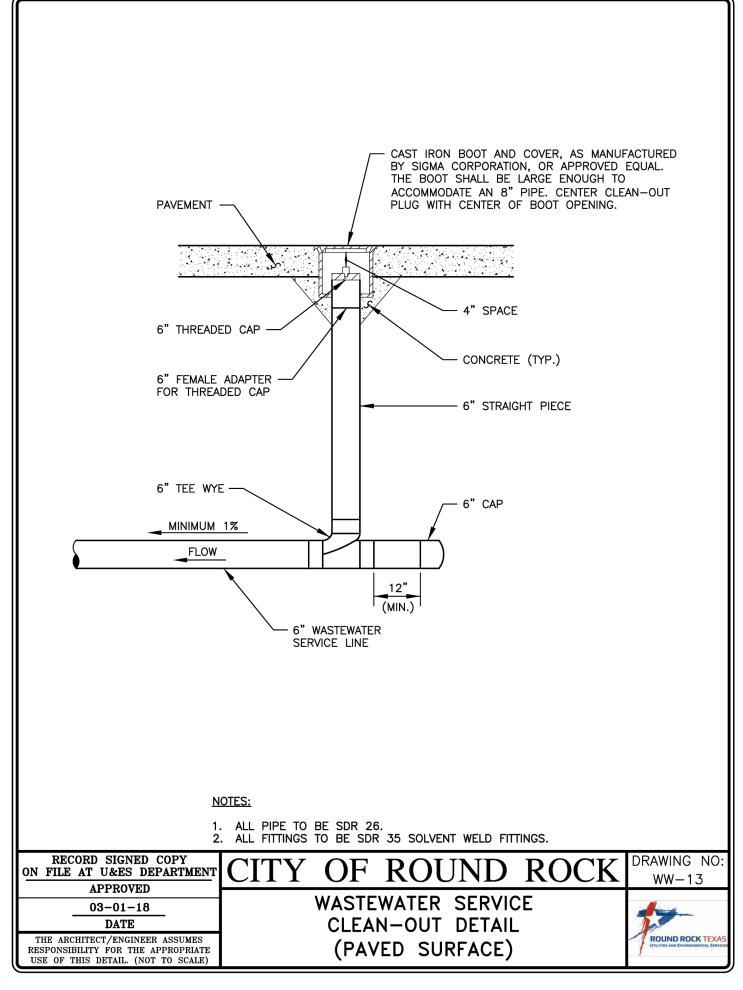


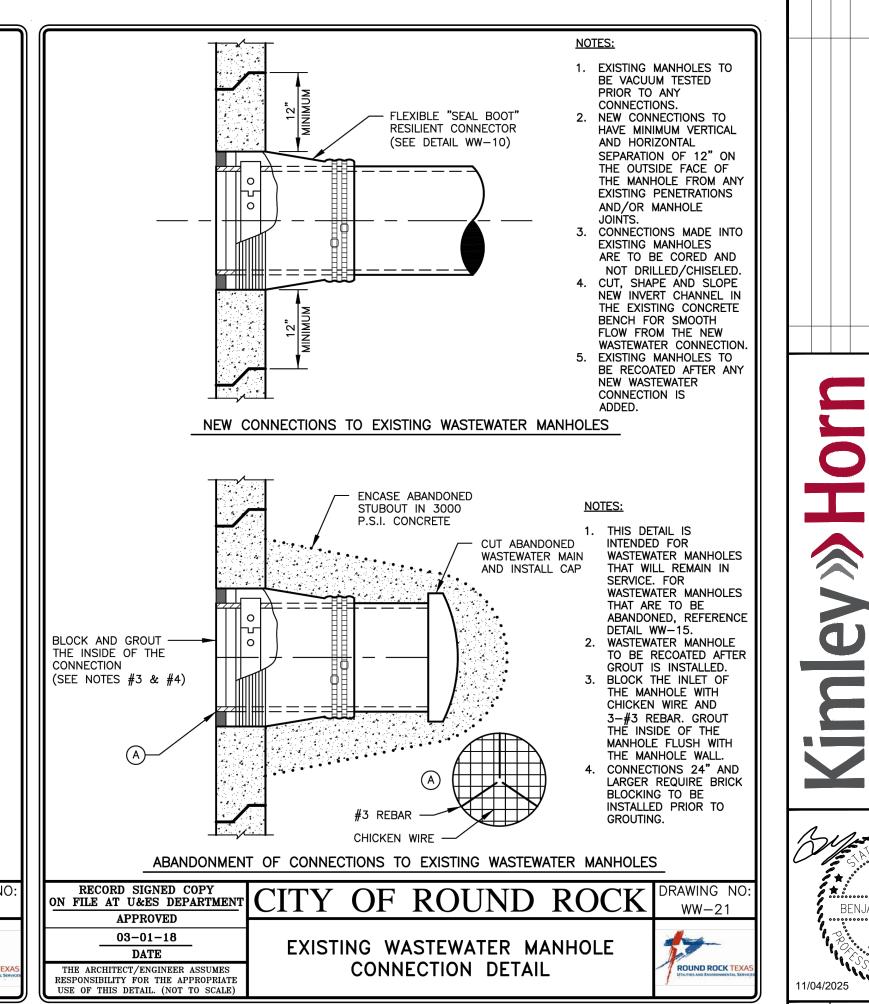


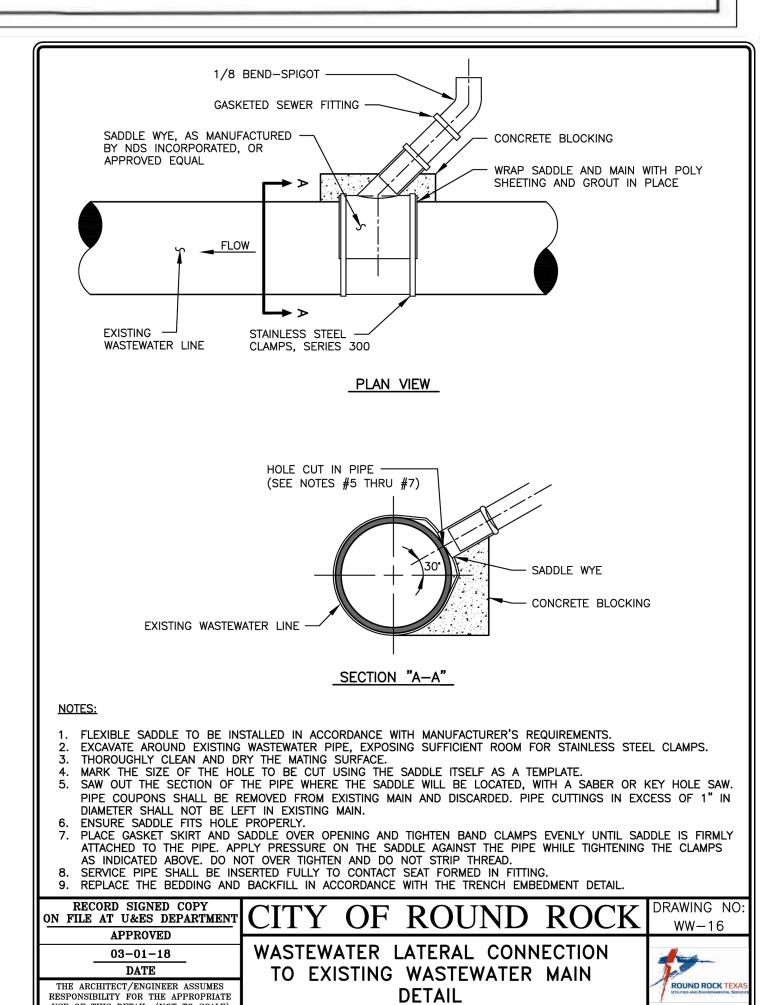




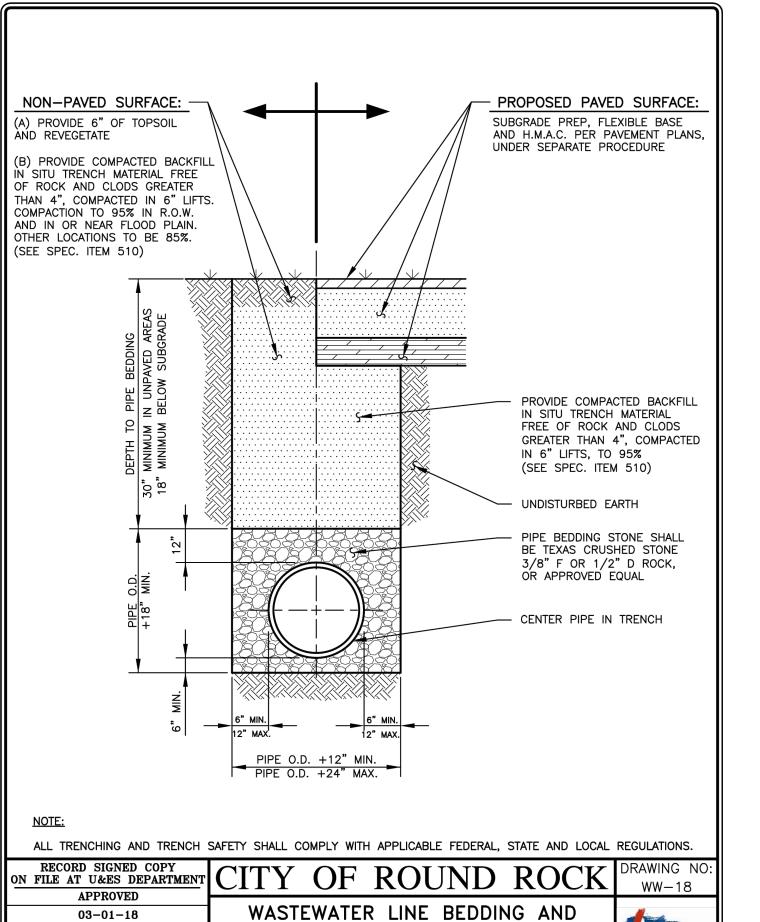








USE OF THIS DETAIL. (NOT TO SCALE)



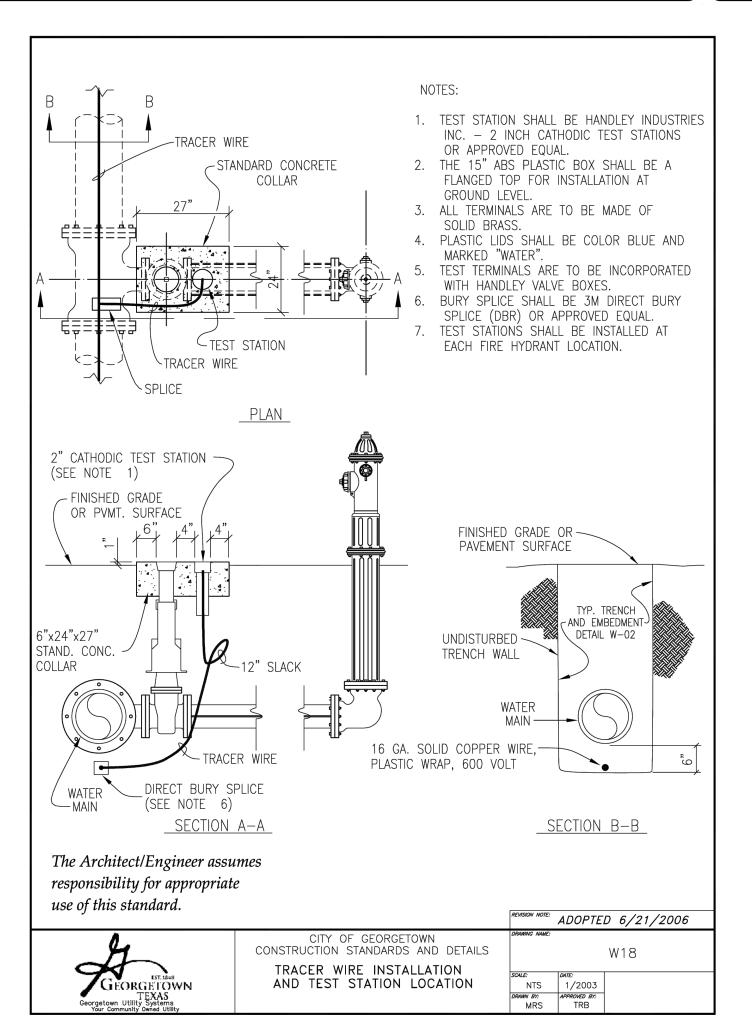
SURFACE REPAIR DETAIL

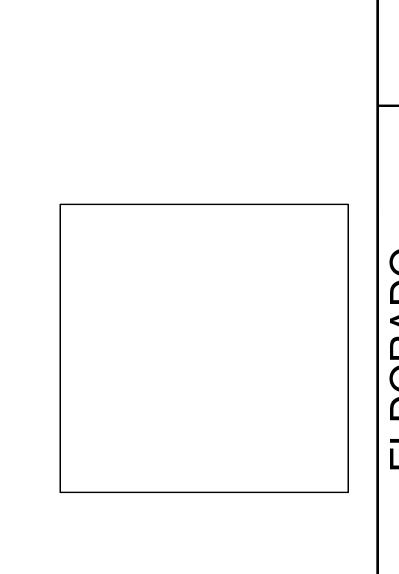
(NON-PAVED & PROPOSED PAVED SURFACE)

DATE

USE OF THIS DETAIL. (NOT TO SCALE)

THE ARCHITECT/ENGINEER ASSUMES



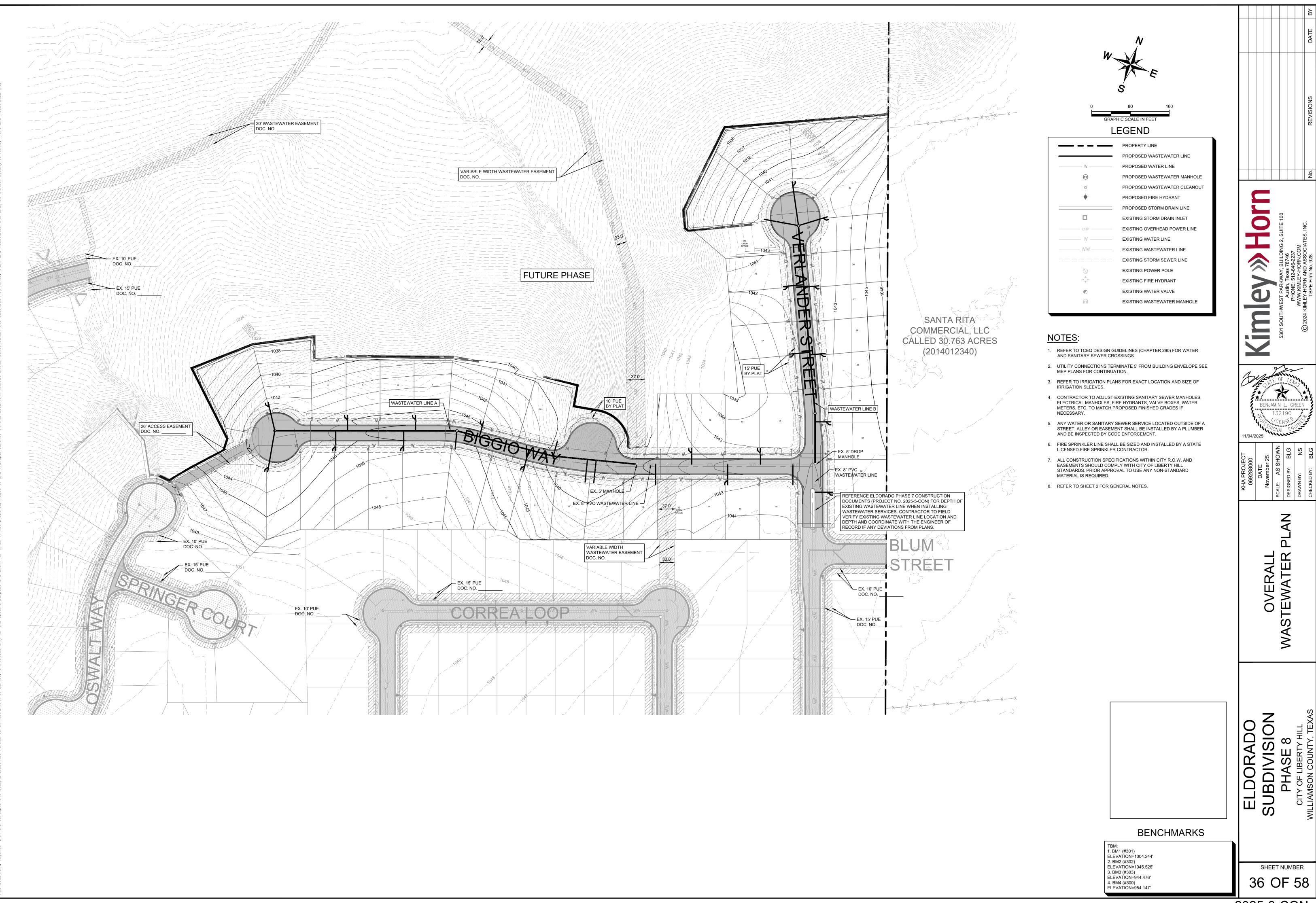


ELDORADO SUBDIVISION PHASE 7

BENJAMIN L. GREEN

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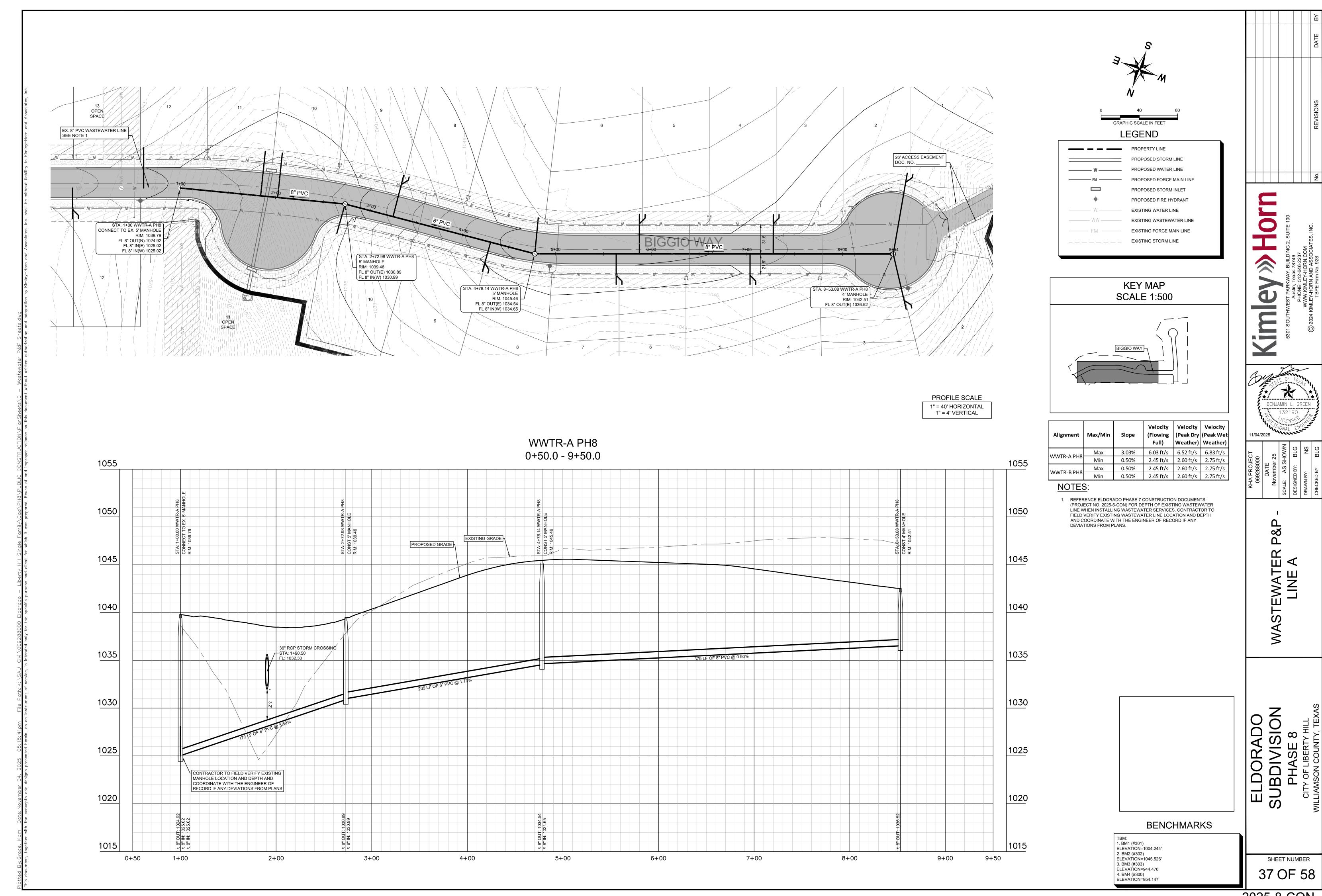


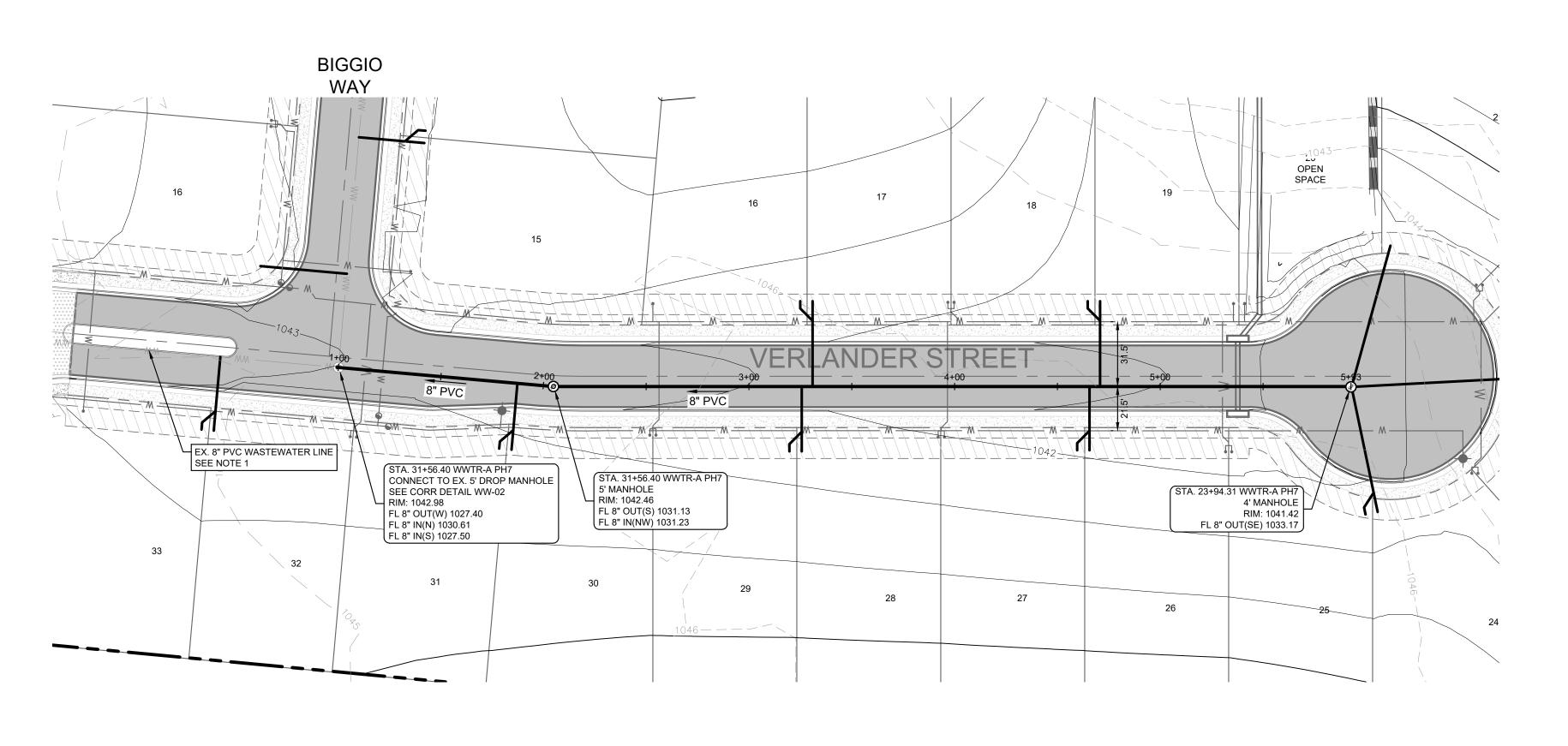
36 OF 58

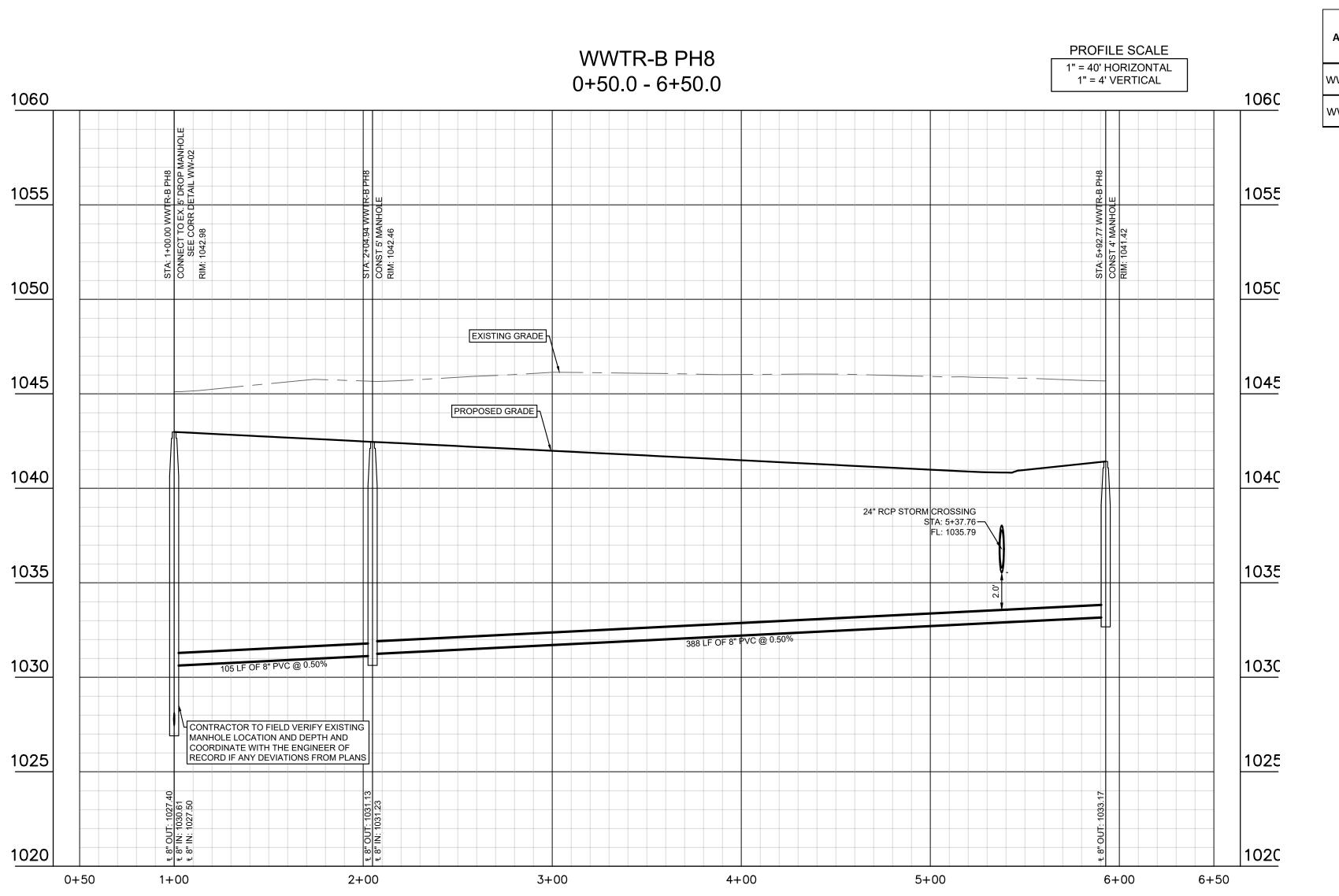
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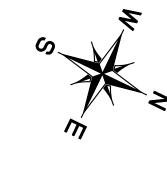
OVERALL WASTEWATER F

2025-8-CON



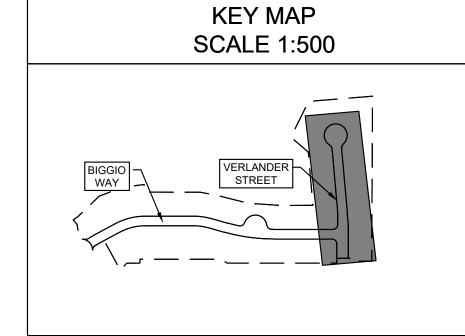






GRAPHIC SCALE IN FEET LEGEND

–	
	PROPERTY LINE
	PROPOSED STORM LINE
w	PROPOSED WATER LINE
	PROPOSED FORCE MAIN LINE
	PROPOSED STORM INLET
+	PROPOSED FIRE HYDRANT
W	EXISTING WATER LINE
WW	EXISTING WASTEWATER LINE
FM	EXISTING FORCE MAIN LINE
	EXISTING STORM LINE



Alignment	Max/Min	Slope	Velocity (Flowing Full)	1,	Velocity (Peak We Weather)
WWTR-A PH8	Max	3.03%	6.03 ft/s	6.52 ft/s	6.83 ft/s
	Min	0.50%	2.45 ft/s	2.60 ft/s	2.75 ft/s
WWTR-B PH8	Max	0.50%	2.45 ft/s	2.60 ft/s	2.75 ft/s
	Min	0.50%	2.45 ft/s	2.60 ft/s	2.75 ft/s

NOTES:

1. REFERENCE ELDORADO PHASE 7 CONSTRUCTION DOCUMENTS (PROJECT NO. 2025-5-CON) FOR DEPTH OF EXISTING WASTEWATER LINE WHEN INSTALLING WASTEWATER SERVICES. CONTRACTOR TO FIELD VERIFY EXISTING WASTEWATER LINE LOCATION AND DEPTH AND COORDINATE WITH THE ENGINEER OF RECORD IF ANY DEVIATIONS FROM PLANS.

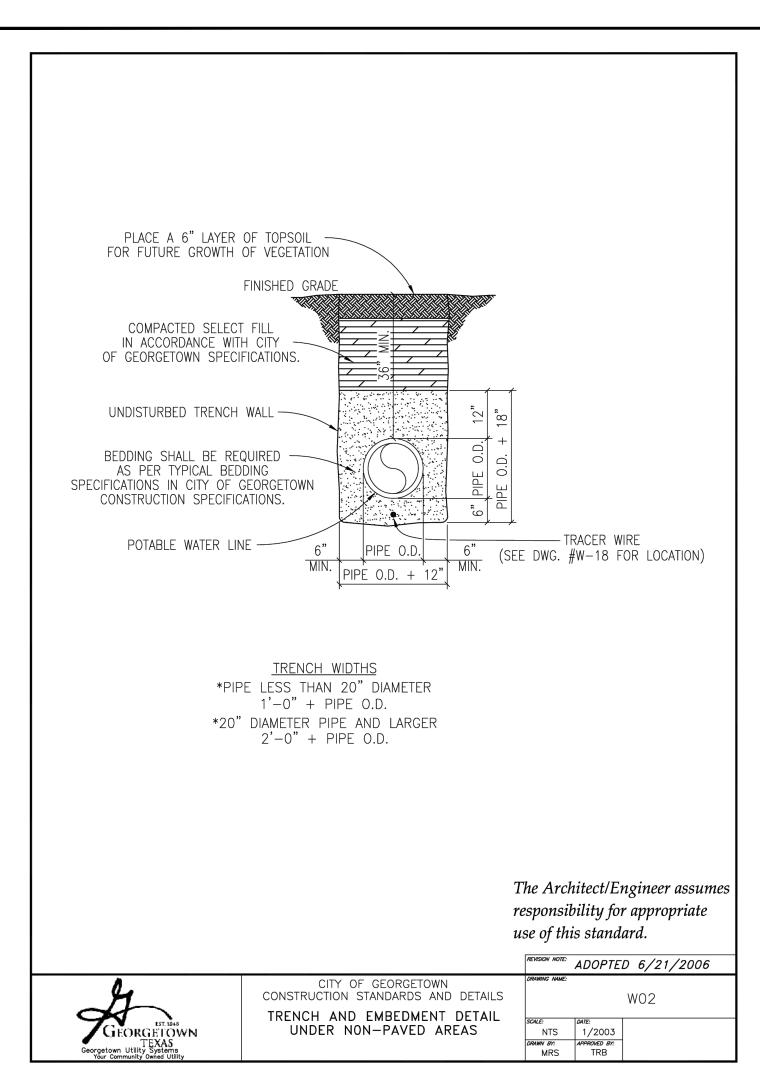


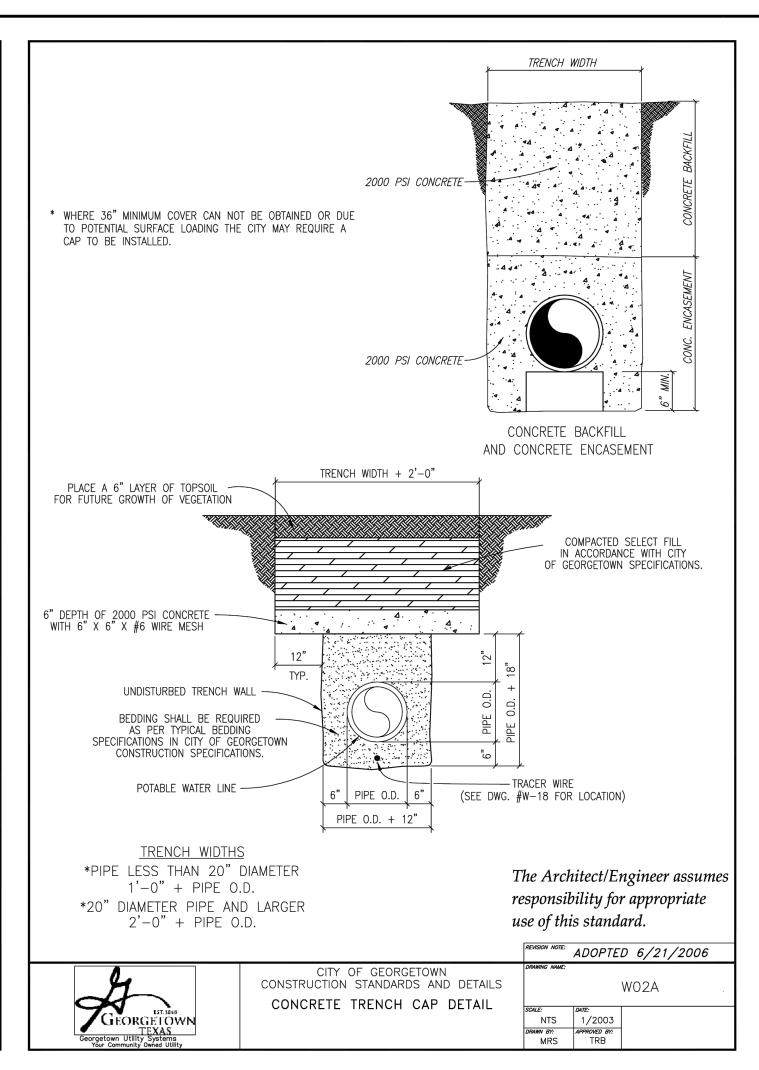
BENCHMARKS

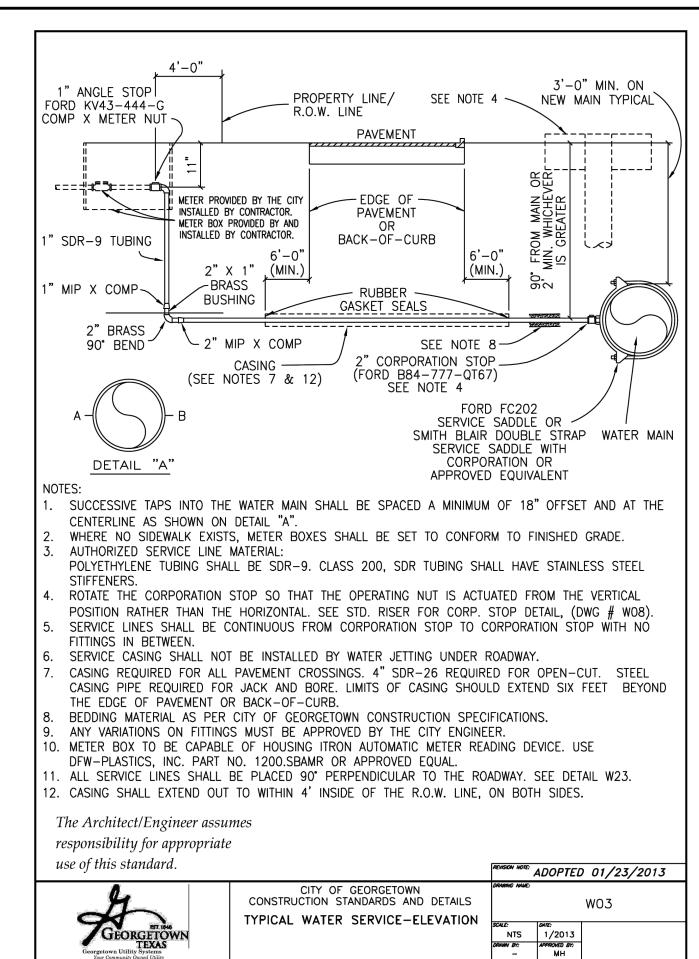
TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147'

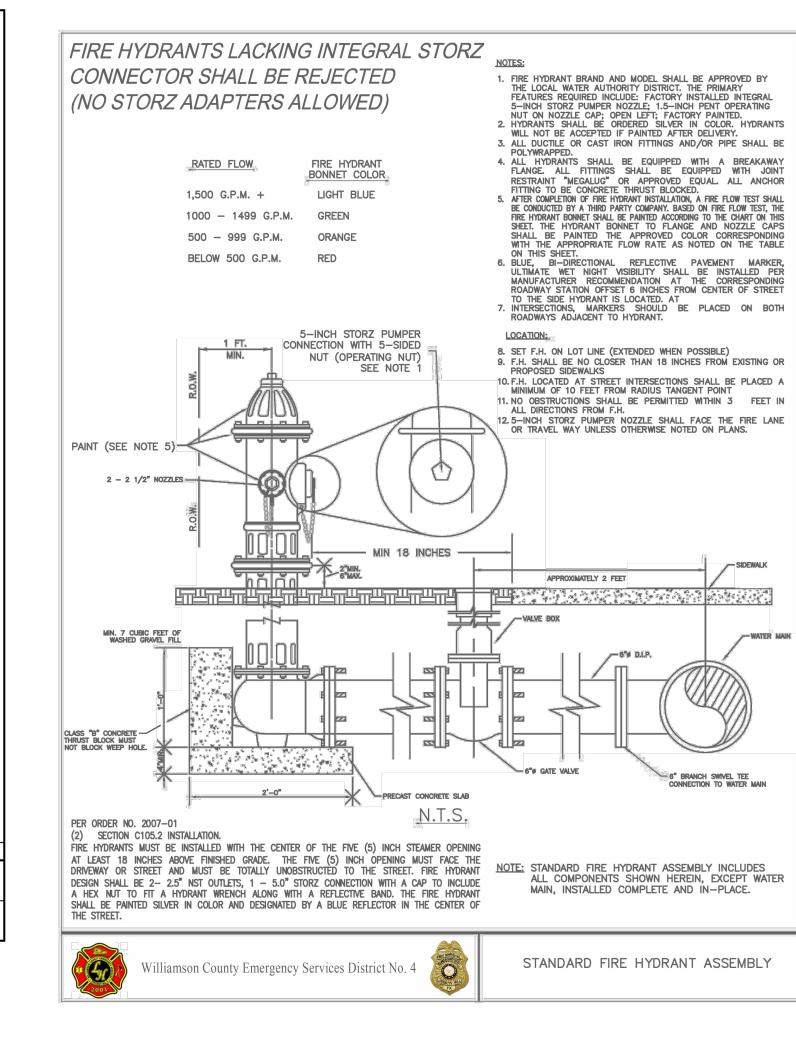
SHEET NUMBER
38 OF 58

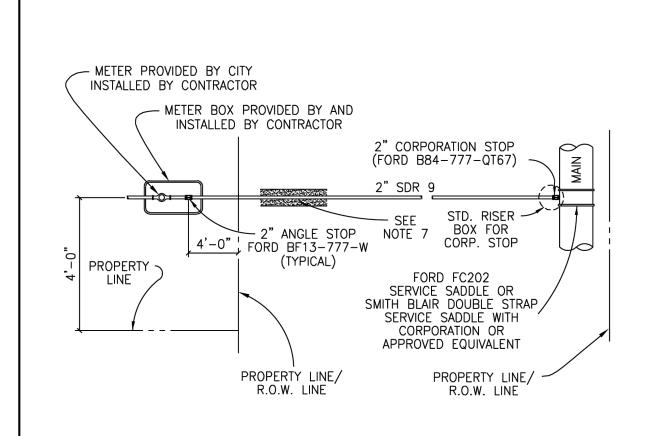
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AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS

STEEL STIFFENERS.

ANGLE STOP SHALL BE 1" MINIMUM.

1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.

ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X

2" X 48" TREATED WOOD STAKE, PAINTED BLUE. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.

CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE

ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.

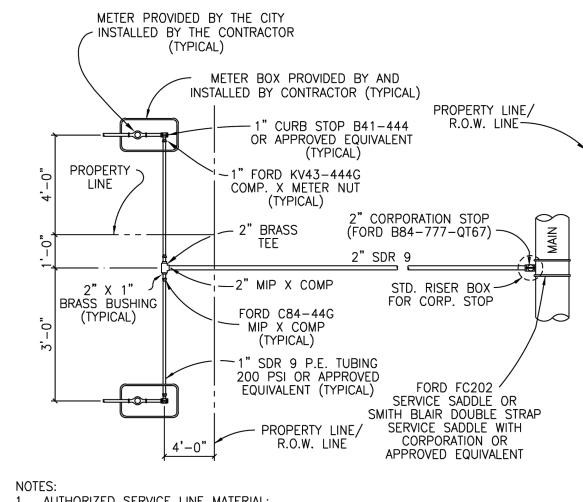
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate

use of this standard.

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS SINGLE WATER SERVICE PLAN

REVISION NOTE: ADOPTED 01/23/2013



AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.

2. ANGLE STOP SHALL BE 1" MINIMUM

3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.

4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.

5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND

METER FLANGE.

6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.

BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS. 8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7.

9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.

10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

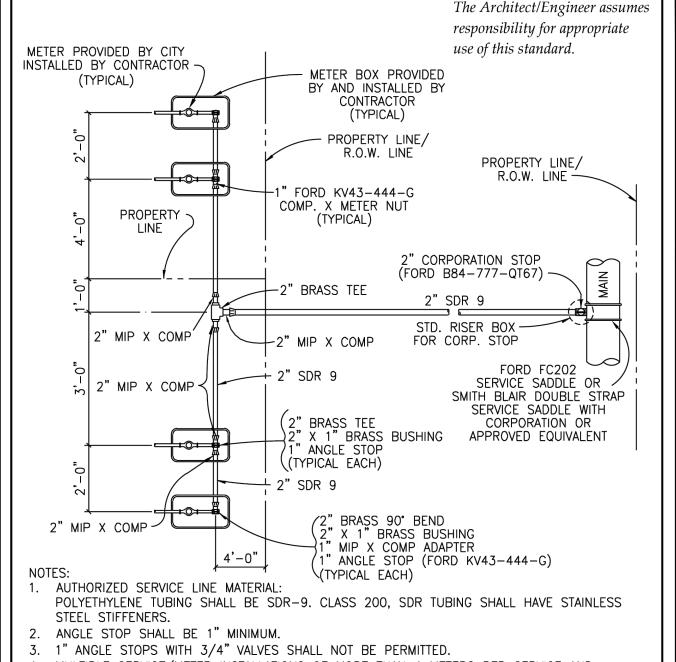
The Architect/Engineer assumes responsibility for appropriate use of this standard.

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CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS DOUBLE WATER SERVICE PLAN

REVISION NOTE: ADOPTED 01/23/2013 1/2013 DRAWN BY: APPROVED BY:

- MH



. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS. 5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND

6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.

BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS . CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7 9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.

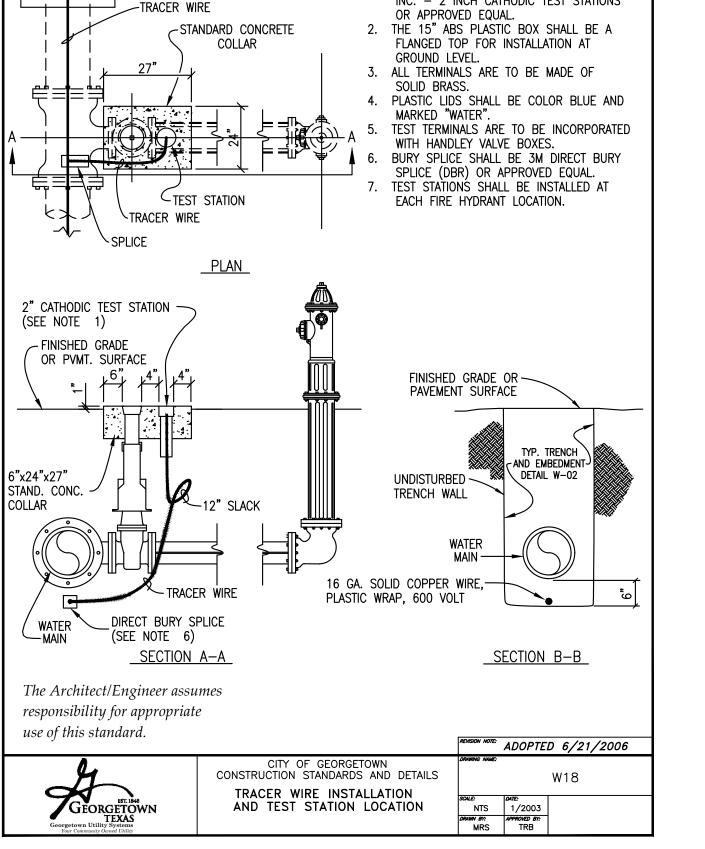
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY



CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS QUADRUPLE WATER SERVICE PLAN 1/2013 DRAWN BY: APPROVED BY:

— MH

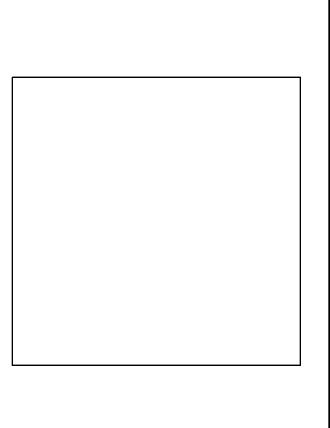
EVISION NOTE: ADOPTED 01/23/2013



NOTES:

1. TEST STATION SHALL BE HANDLEY INDUSTRIES

INC. - 2 INCH CATHODIC TEST STATIONS



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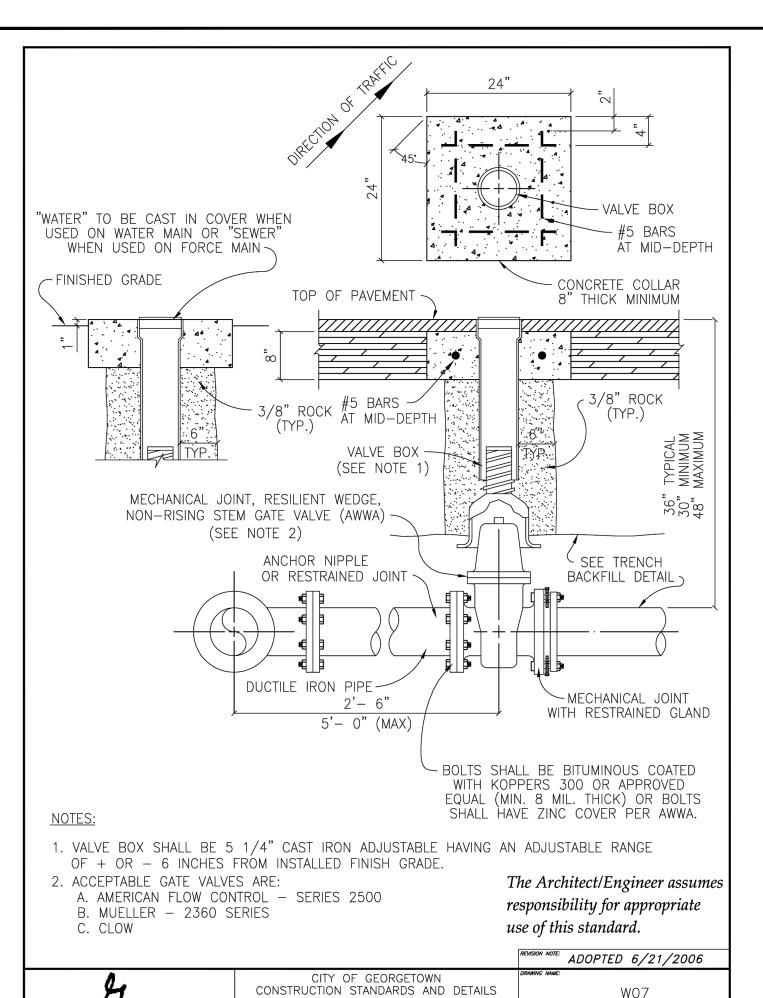
BENJAMIN L. GREEN

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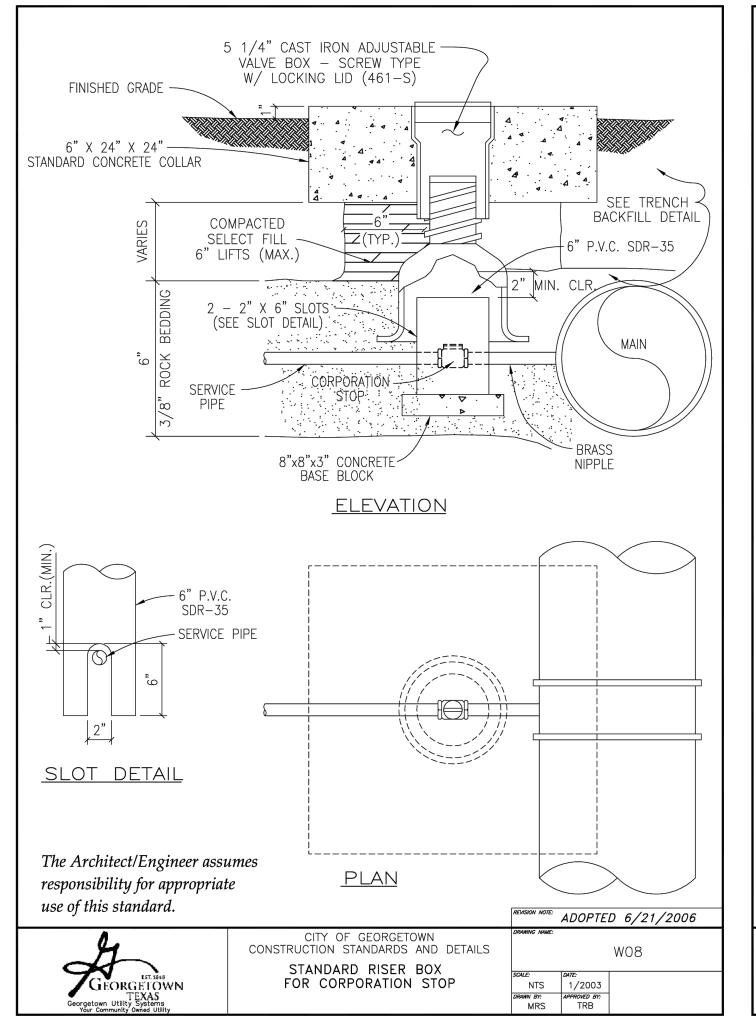
SHEET NUMBER 51 OF 58

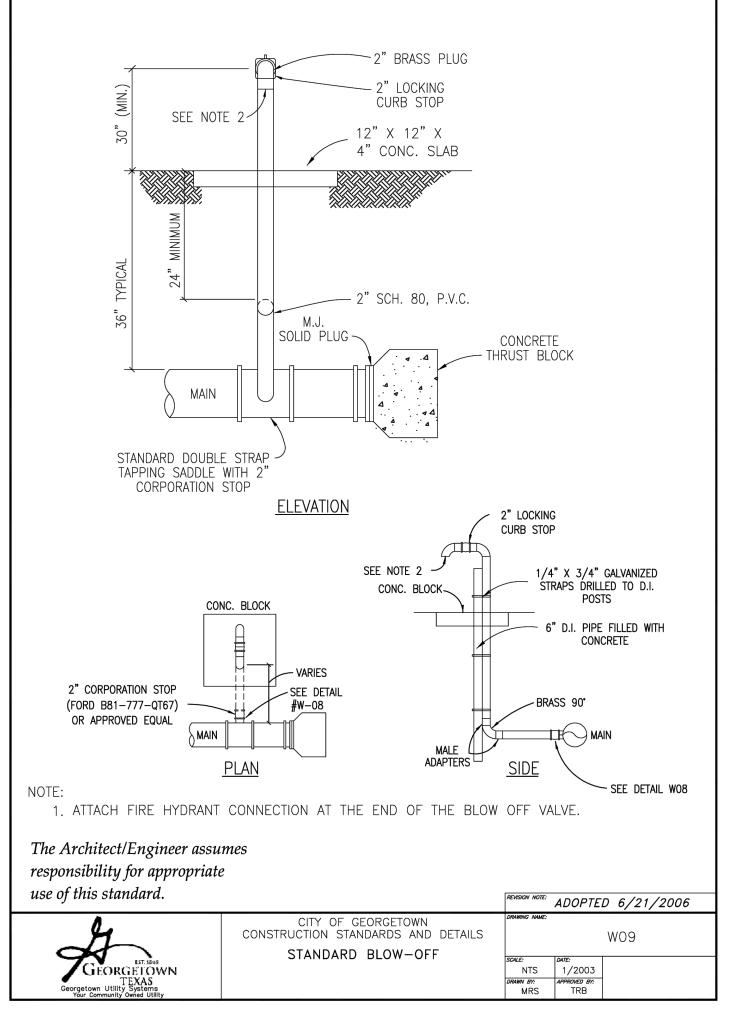


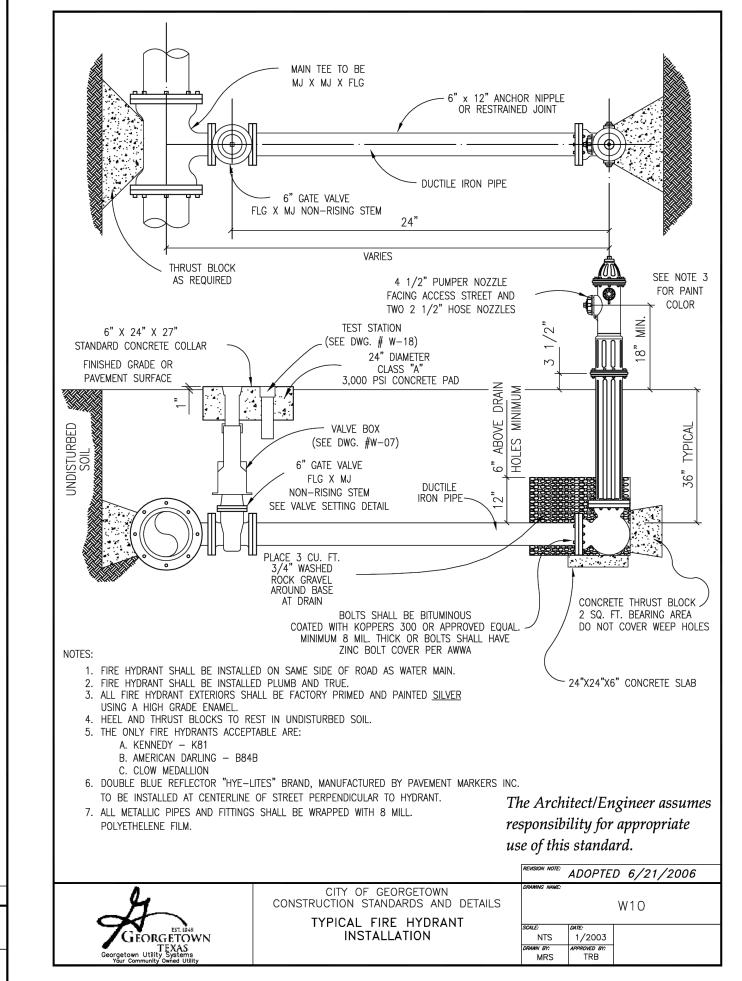
TYPICAL VALVE SETTING

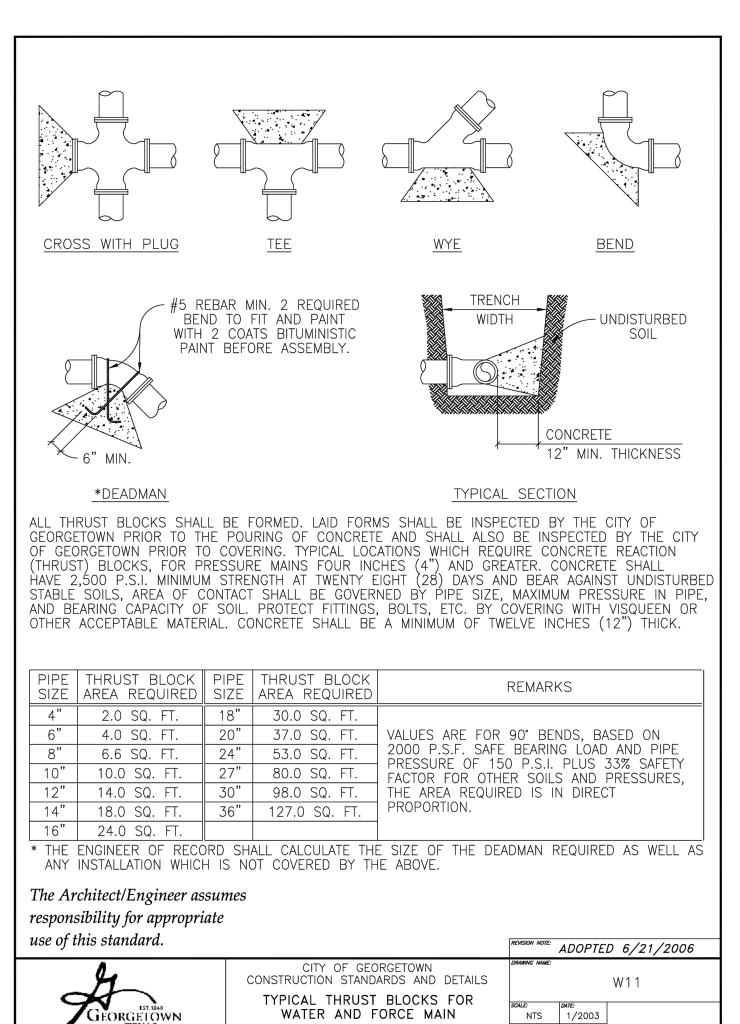
NTS 1/2003

| DRAWN BY: | APPROVED BY: | TRB





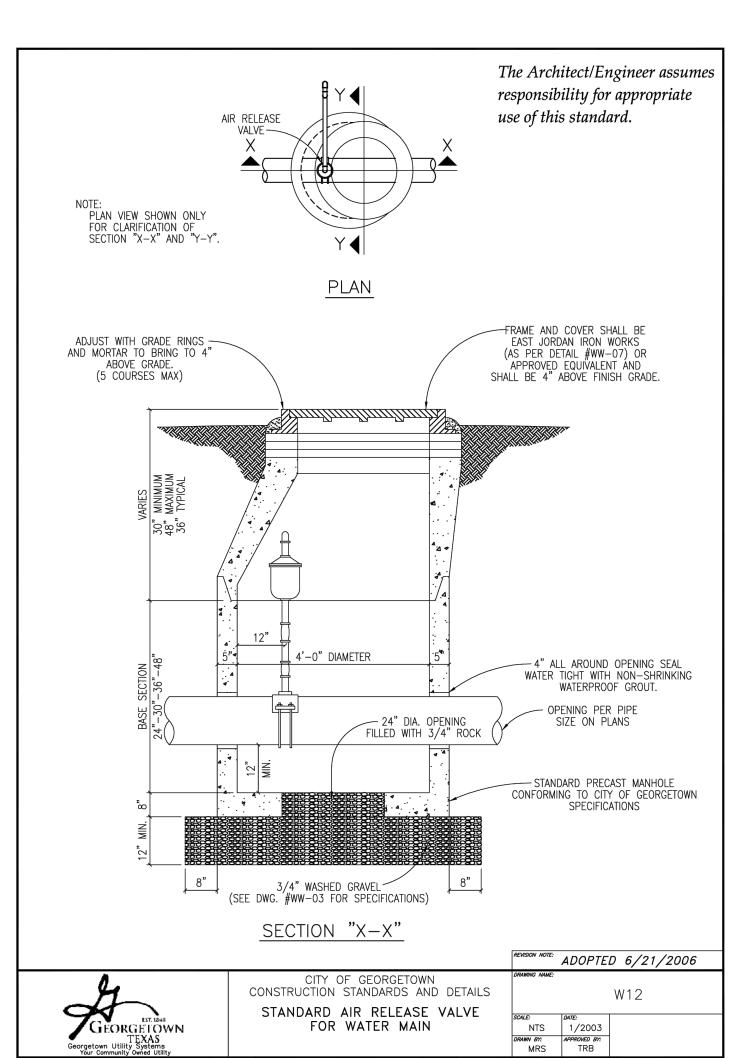


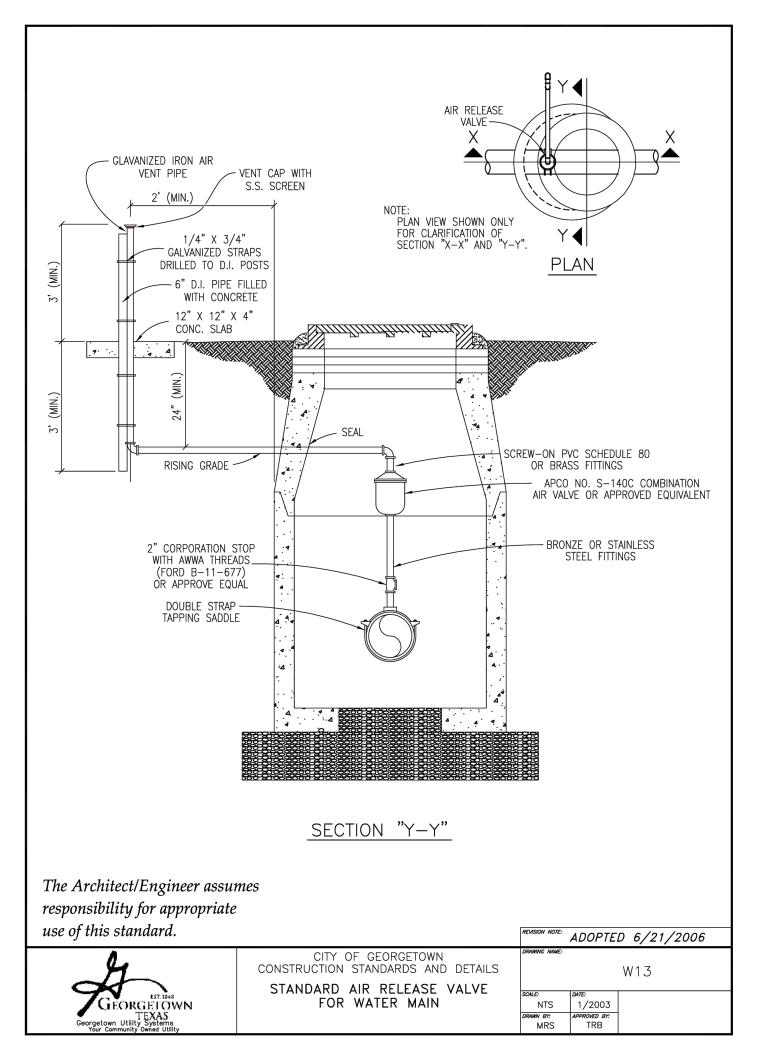


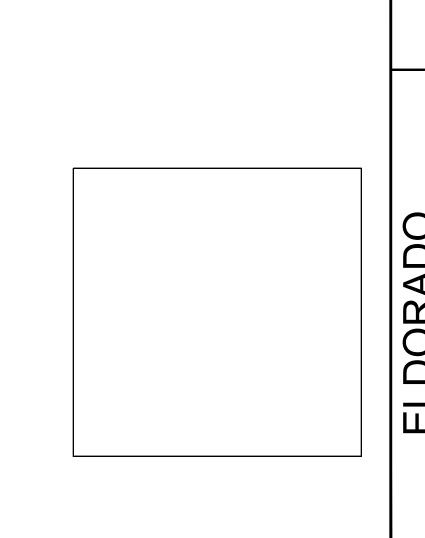
WATER AND FORCE MAIN

NTS 1/2003

| DRAWN BY: | APPROVED BY: | TRB





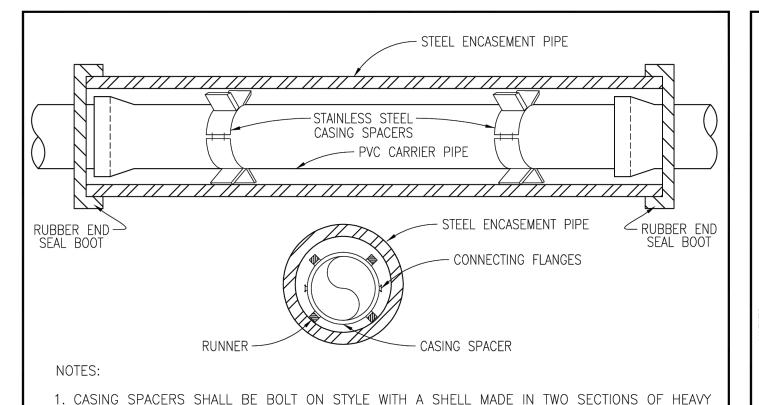


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SHEET NUMBER 52 OF 58



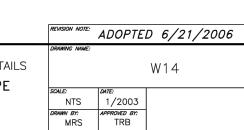
- 1. CASING SPACERS SHALL BE BOLT ON STYLE WITH A SHELL MADE IN TWO SECTIONS OF HEAVY T-304 STAINLESS STEEL. CONNECTING FLANGES SHALL BE RIBBED FOR EXTRA STRENGTH. CASING SPACERS SHALL BE MADE BY CASCADE WATERWORKS MFG. CO. OR APPROVED EQUAL. 2. CASING SPACERS SHALL HAVE RUNNERS MADE OF ULTRA HIGH MOLECULAR WEIGHT POLYMER, WITH A MINIMUM HEIGHT OF 2 INCHES.
- 3. DO NOT USE WEDGES BETWEEN TOP OF PVC CARRIER PIPE AND INSIDE OF CASING TO KEEP PVC FROM MOVING.
- 4. PRIOR TO INSERTING PVC CARRIER PIPE, ANY WATER SHOULD BE PUMPED OUT OF THE CASING PIPE SO THAT NO MORE THAN A FEW INCHES OF WATER REMAINS.
- 5. SPACERS WILL BE REQUIRED WITHIN AT LEAST 3 FEET FROM BOTH OPENINGS OF THE ENCASE-MENT PIPE AND SPACED NO GREATER THAN 6 FEET THROUGHOUT THE ENCASEMENT PIPE. 6. ENCASEMENT PIPE SHALL BE SMOOTH STEEL 35,000 PSI YIELD STRENGTH WITH THICKNESS
- ACCORDING TO THE FOLLOWING TABLE: 7. WHEN CASING IS REQUIRED UNDER PAVEMENT WITHIN THE R.O.W., THE CASING SHALL EXTEND
- OUT TO WITHIN 4' INSIDE OF THE R.O.W. LINE, ON BOTH SIDES. 8. ALL JOINTS SHALL BE RESTRAINED ON PVC CARRIER PIPE.

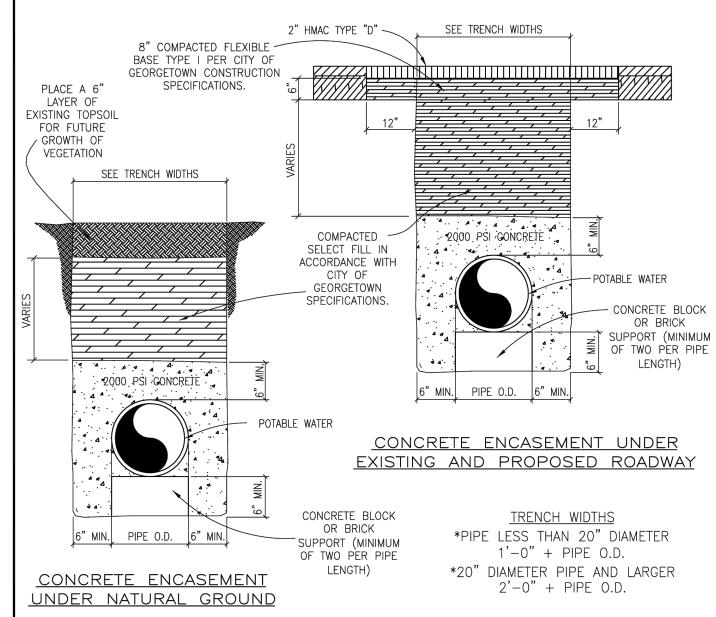
PIPE_SIZE-CARRIER (DIAMETER) 6"	PIPE_SIZE—CASING (DIAMETER)(MIN.) 16"		E THICKNESS HES)
8"	18"	1/4	0.2500
10"	20"	5/16	0.3125
12" - 14"	24"	3/8	0.3750
16" - 18"	30"	7/16	0.4375
20"	36"	1/2	0.5000
24"	42"	1/2	0.5000
30"	48"	1/2	0.5000

The Architect/Engineer assumes responsibility for appropriate

use of this standard.	
GEORGETOWN TEXAS Georgetown Utility Systems Your Community Owned Utility	

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS INSTALLATION OF P.V.C. PIPE THROUGH CASING





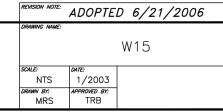
NOTES: 1. ENCASEMENT TO BE CONSTRUCTED WHERE SEWER LINES PASS OVER OR UNDER A WATER MAIN WITH LESS THAN TWELVE INCHES (12") CLEAR DISTANCE.

- 2. AT CROSSINGS, ENCASEMENT SHALL EXTEND TEN FEET (10'-0") ON EITHER SIDE OF CROSSING. 3. BEGINNING AND ENDING OF ENCASEMENTS SHALL NOT BE MORE THAN SIX INCHES (6") FROM A PIPE JOINT.
- 4. WHERE WATER AND SEWER LINES PARALLEL WITH LESS THAN TEN FEET (10'-0") HORIZONTAL CLEAR DISTANCE, NO ENCASEMENT IS REQUIRED IF BOTH LINES ARE 150 PSI PRESSURE PIPE.
- 5. RAW WATER MAINS SHALL BE 150 PSI PRESSURE RATED WHEN PARALLELING POTABLE WATER MAINS WITH LESS THAN NINE FEET (9'-0") HORIZONTAL CLEARANCE. 6. WHERE MINIMUM COVER, THIRTY SIX INCHES (36") IS NOT AVAILABLE, ENCASEMENT WILL BE REQUIRED.
- 7. ALL CONCRETE ENCASEMENTS MUST BE FORMED AND INSPECTED BY THE CITY OF
- GEORGETOWN INSPECTOR PRIOR TO PLACING CONCRETE AND BACKFILLING. 8. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL
- (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

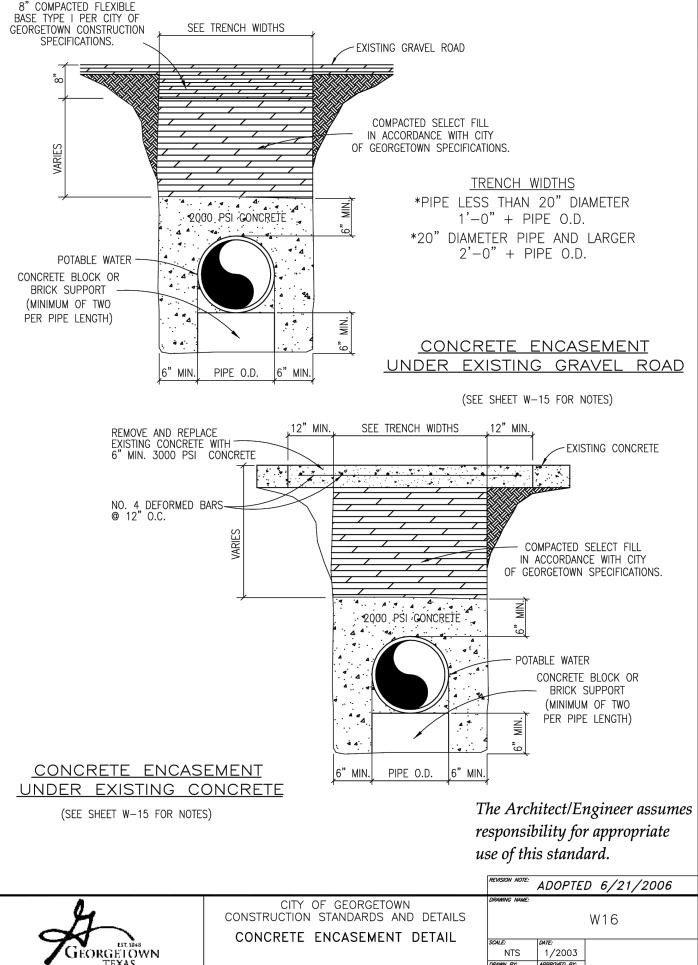
The Architect/Engineer assumes responsibility for appropriate

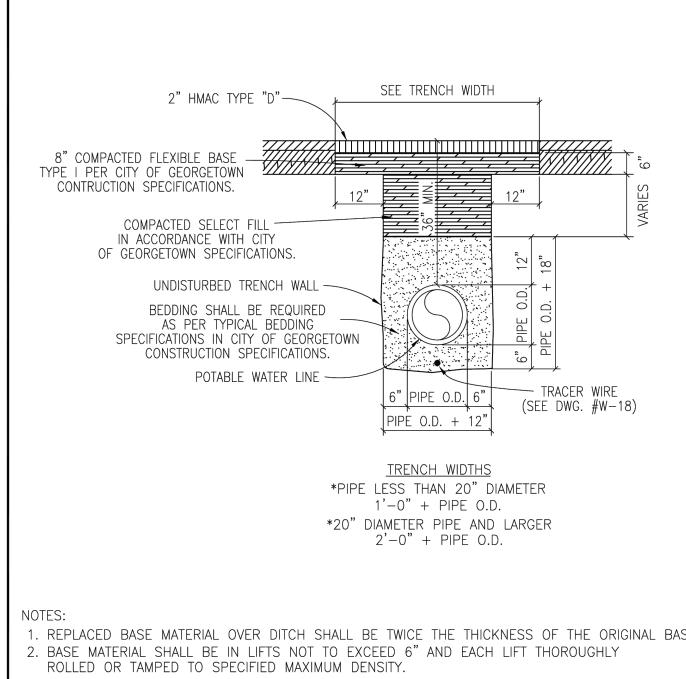


CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS CONCRETE ENCASEMENT DETAIL



GEORGETOWN



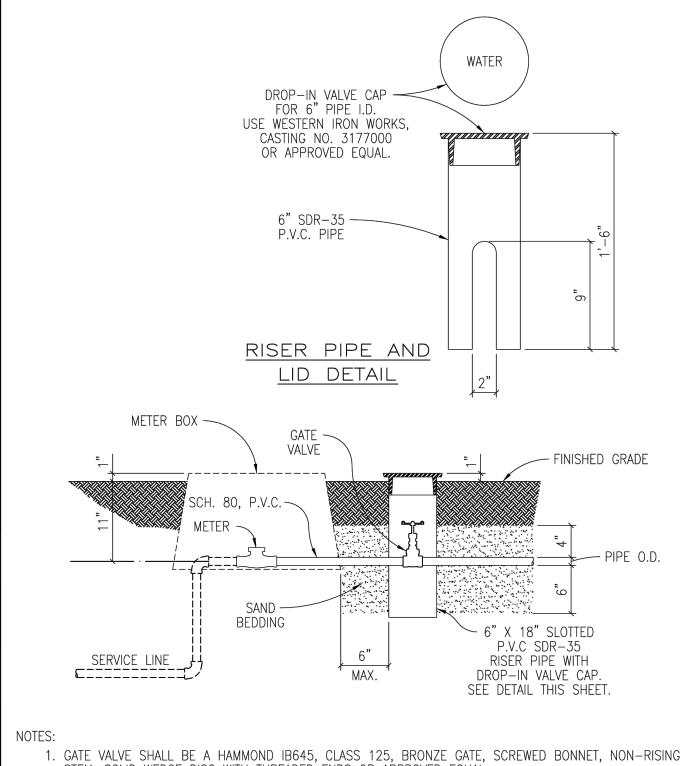


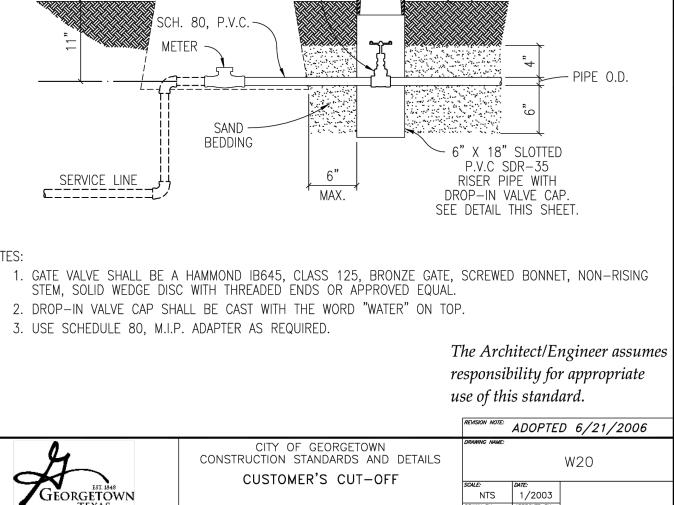
- . REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE.
- ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
- . SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS AND STANDARDS
- CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

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

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS TRENCH AND EMBEDMENT AND PAVEMENT REPLACEMENT DETAIL UNDER EXISTING ROADWAY

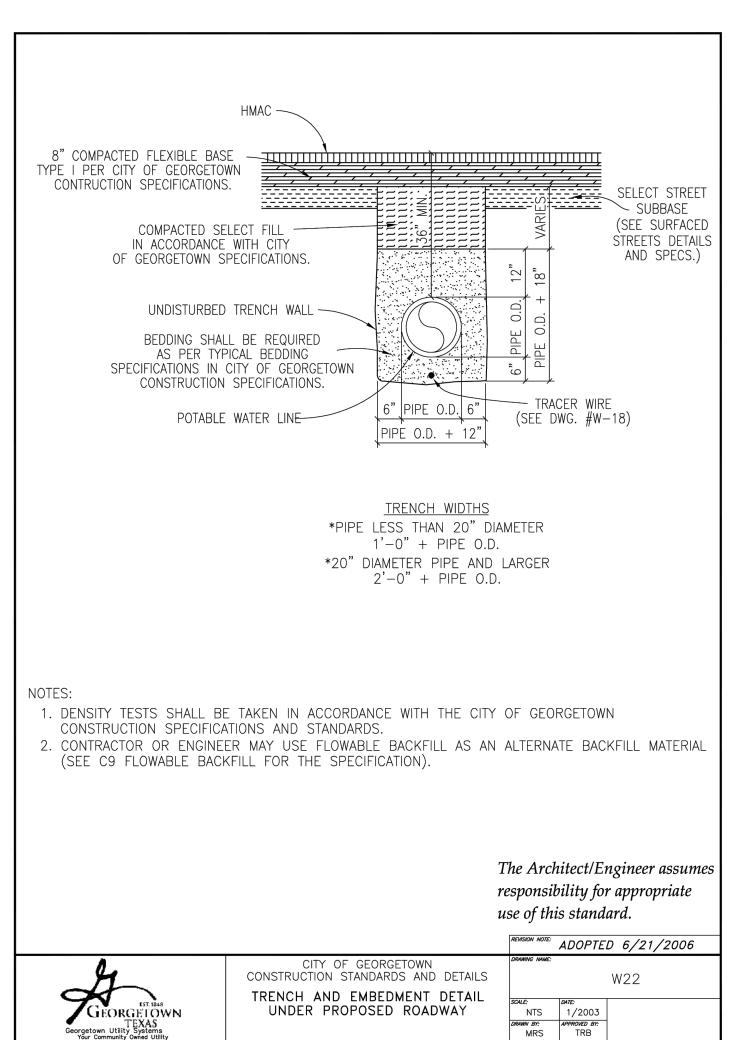
REVISION NOTE: ADOPTED 6/21/2006 1/2003

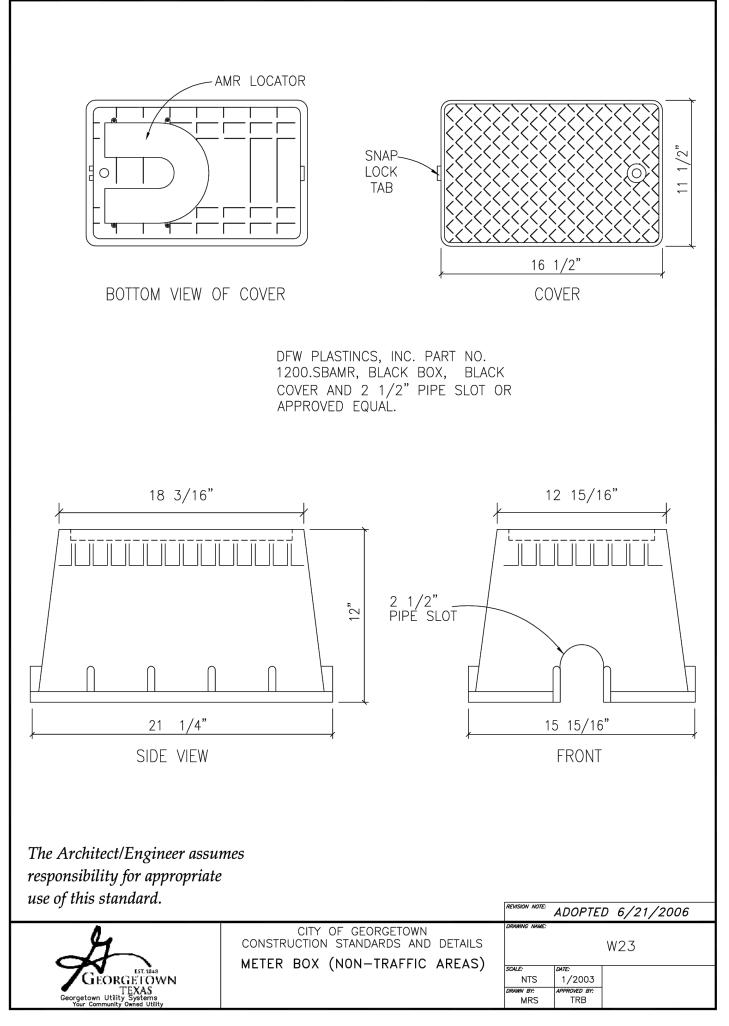


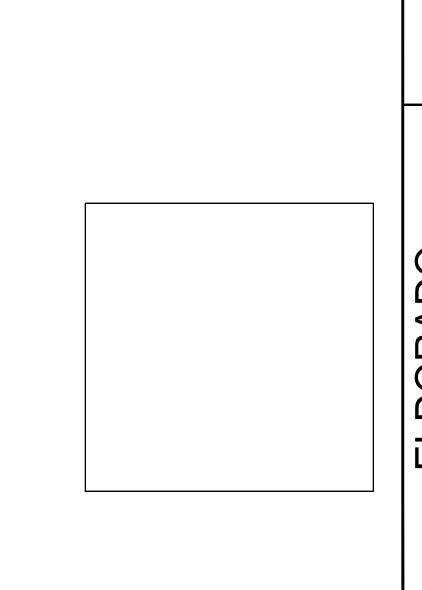


DRAWN BY: APPROVED BY:

MRS TRB







SUBDIV PHA

BENJAMIN L. GREEN

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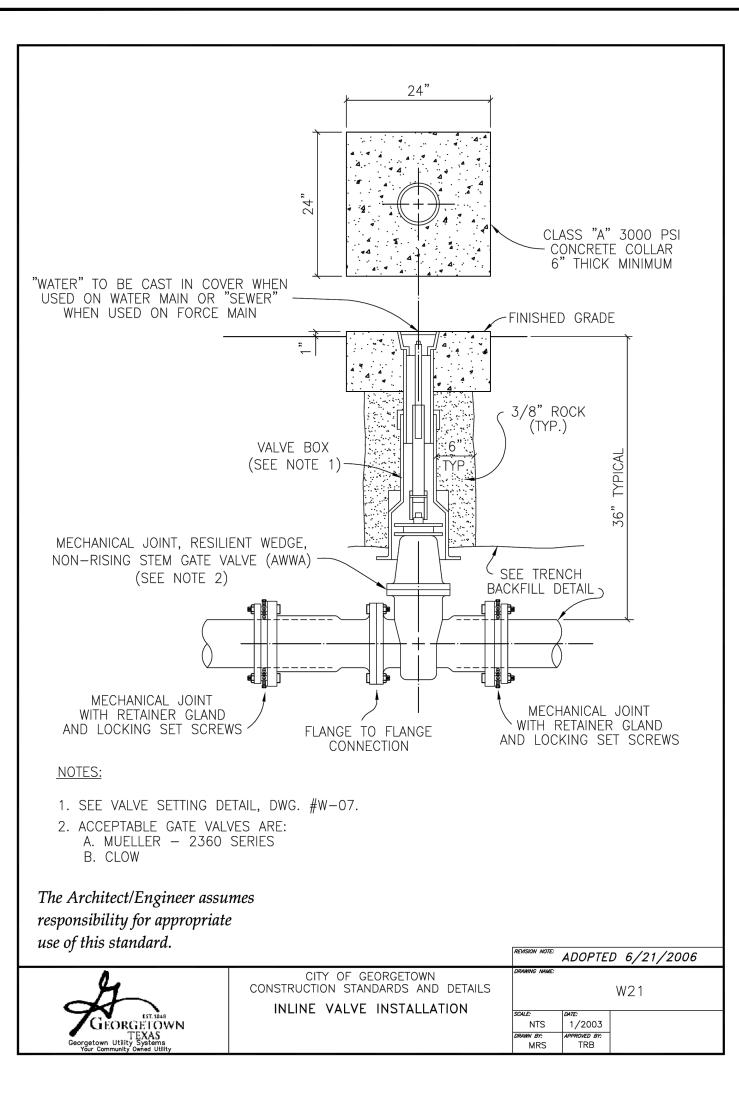
ETA OF

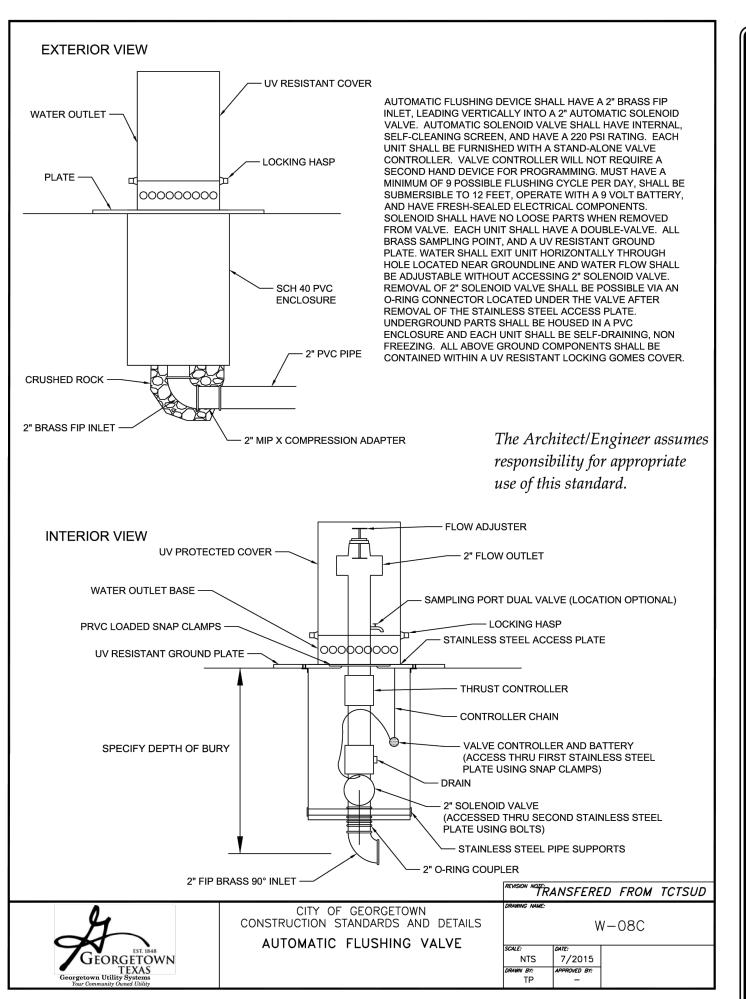
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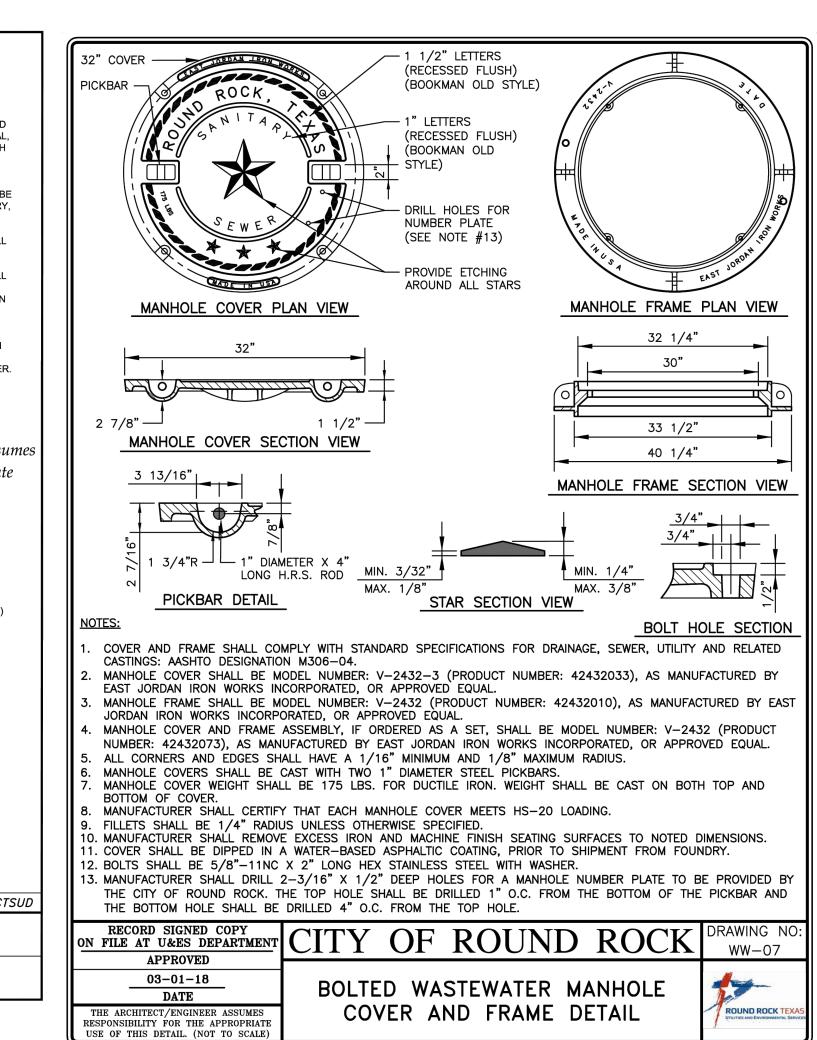
1/04/2025

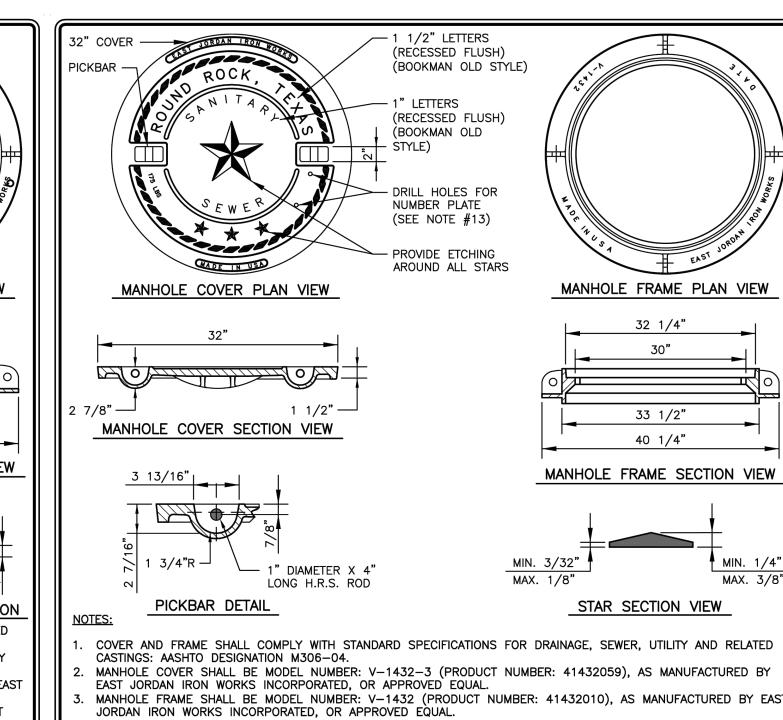
SHEET NUMBER 53 OF 58

2025-8-CON







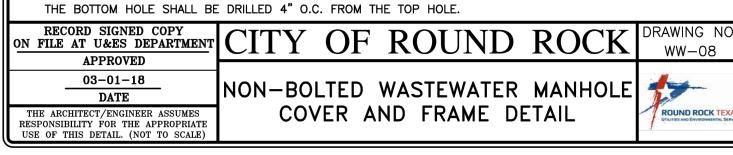


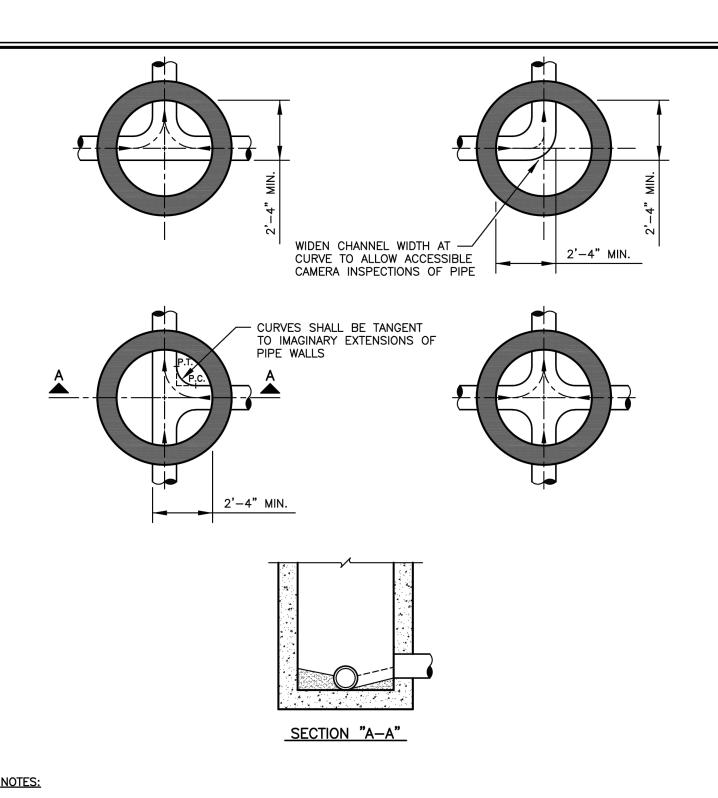
MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432089), AS MANUFACTURED BY EAST JORDAN IRON WORKS INCORPORATED, OR APPROVED EQUAL. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS. MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS.

MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING.

9. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED. 10. MANUFACTURER SHAĹL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

1. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY. 12. MANUFACTURER SHALL DRILL 2-3/16" X 1/2" DEEP HOLES FOR A MANHOLE NUMBER PLATE TO BE PROVIDED BY THE CITY OF ROUND ROCK. THE TOP HOLE SHALL BE DRILLED 1" O.C. FROM THE BOTTOM OF THE PICKBAR AND





MINIMUM DROP FROM INLET TO OUTLET OF MANHOLE IS 0.1 FEET AND MAXIMUM DROP IS 2 FEET, UNLESS

SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING FOR SMOOTH

CHANNELS FOR FUTURE CONSTRUCTIONS, SHALL BE CONSTRUCTED WITH PIPE EXTENDING 3' BEYOND EXTERIOR OF

INVERT CHANNEL SHALL BE A MINIMUM OF 1/2 THE DIAMETER OF THE LARGEST PIPE OR FOUR INCHES (4") DEEP.

WASTEWATER FLOW PATTERNS FOR

INVERT CHANNELS DETAIL

SPECIAL APPROVAL IS OBTAINED FROM THE CITY OF ROUND ROCK.

SLOPE MANHOLE BENCH AT 2:1 SLOPE FROM MANHOLE WALL TO CHANNEL

MANHOLE WALL, WITH GLUED PLUG.

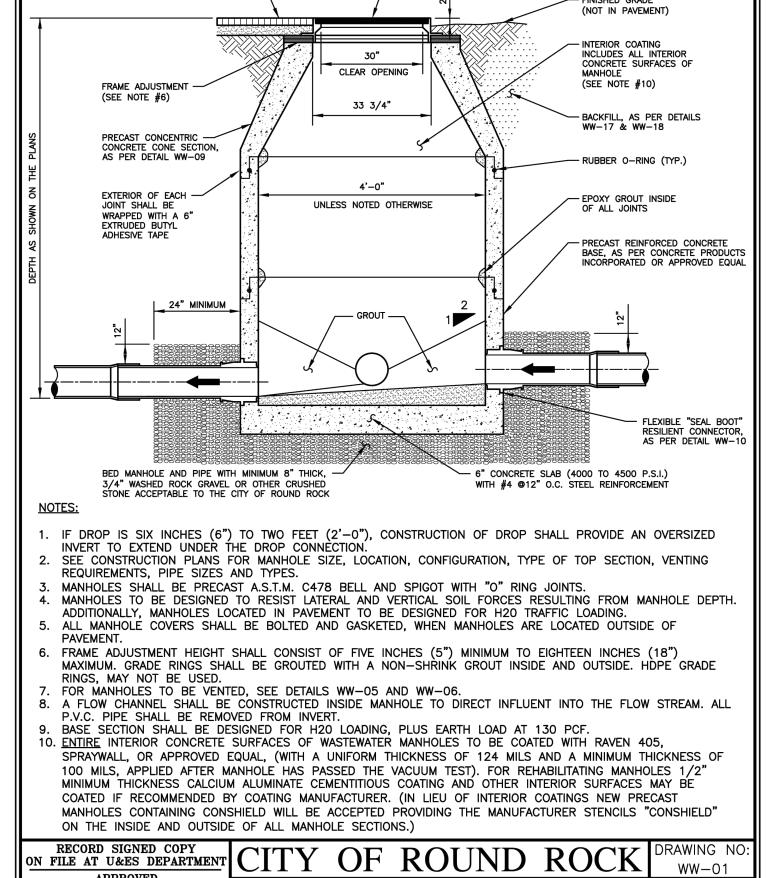
DATE

THE ARCHITECT/ENGINEER ASSUMES

USE OF THIS DETAIL. (NOT TO SCALE)

INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.

ON FILE AT USES DEPARTMENT CITY OF ROUND ROCK



PRECAST CONCRETE WASTEWATER

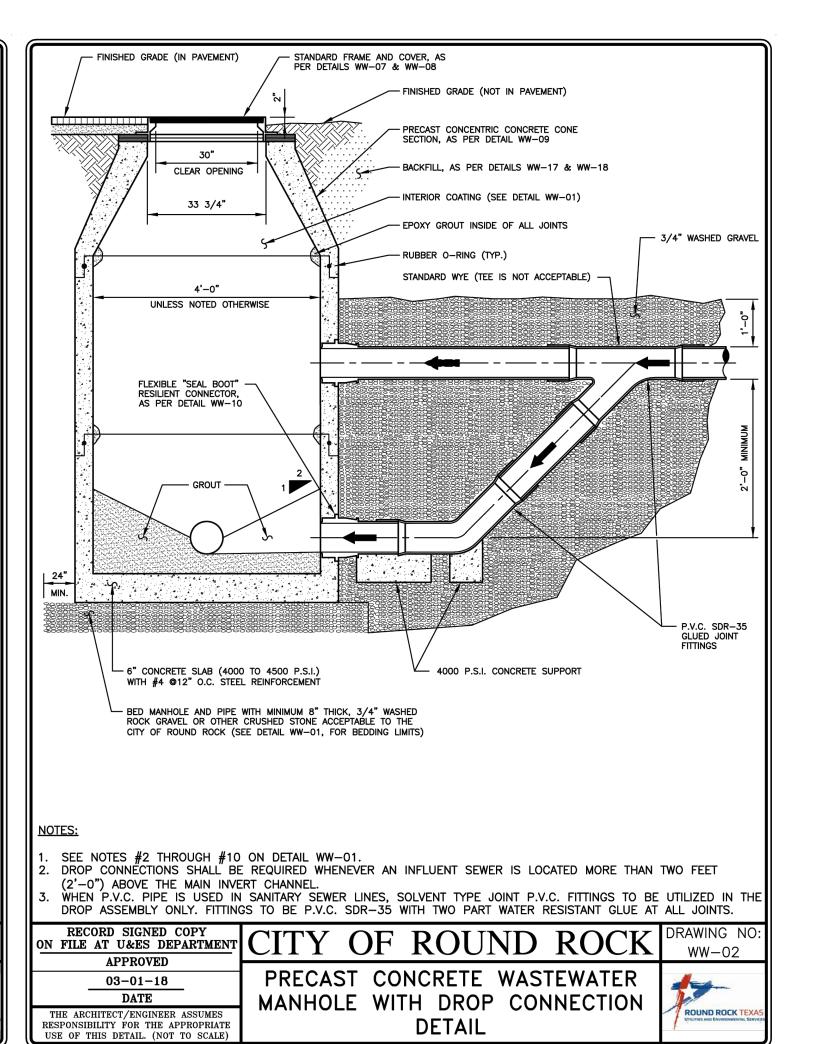
MANHOLE DETAIL

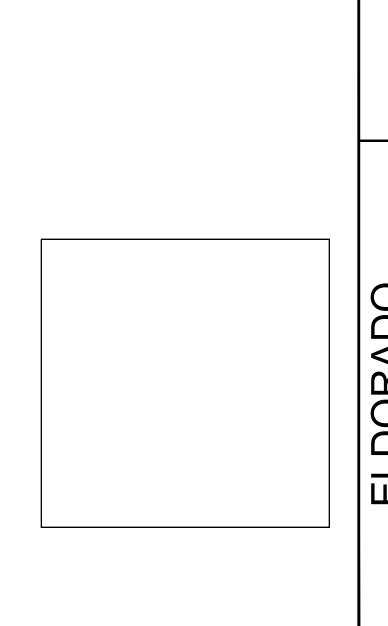
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USE OF THIS DETAIL. (NOT TO SCALE)

PER DETAILS WW-07 & WW-08





SHEET NUMBER 54 OF 58

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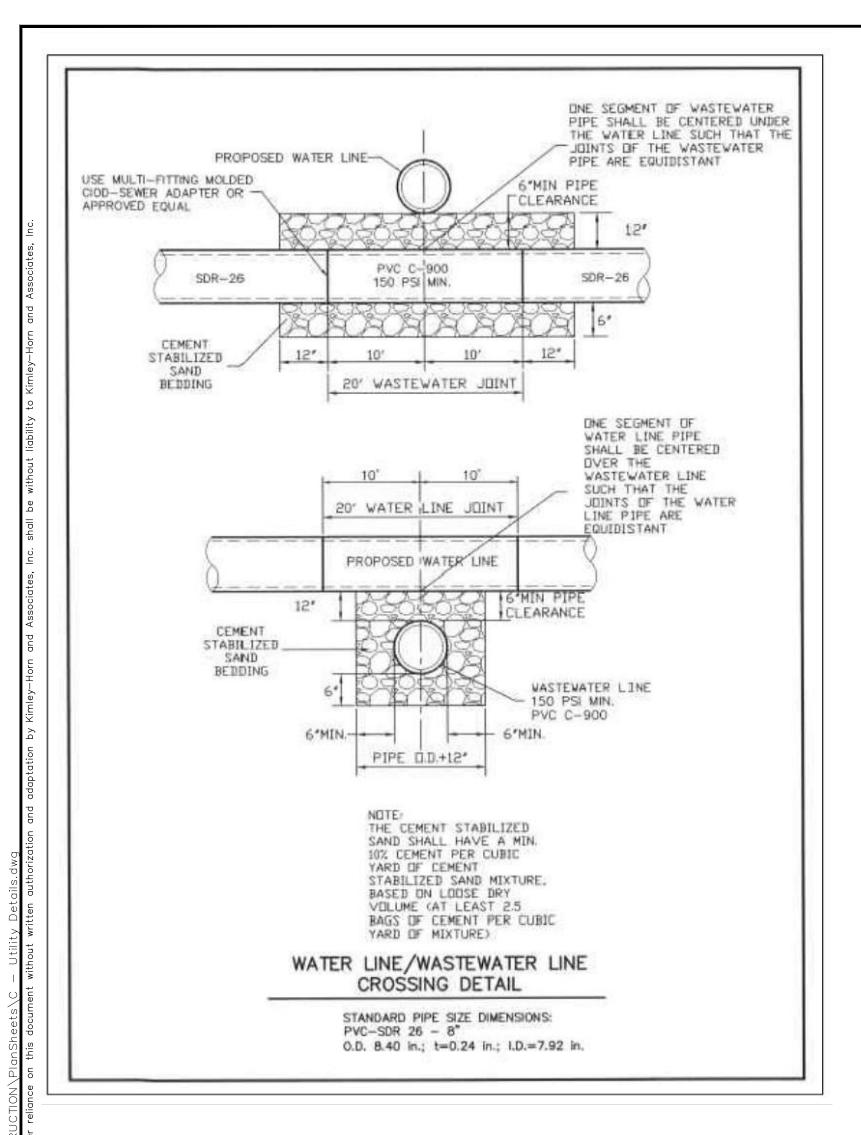
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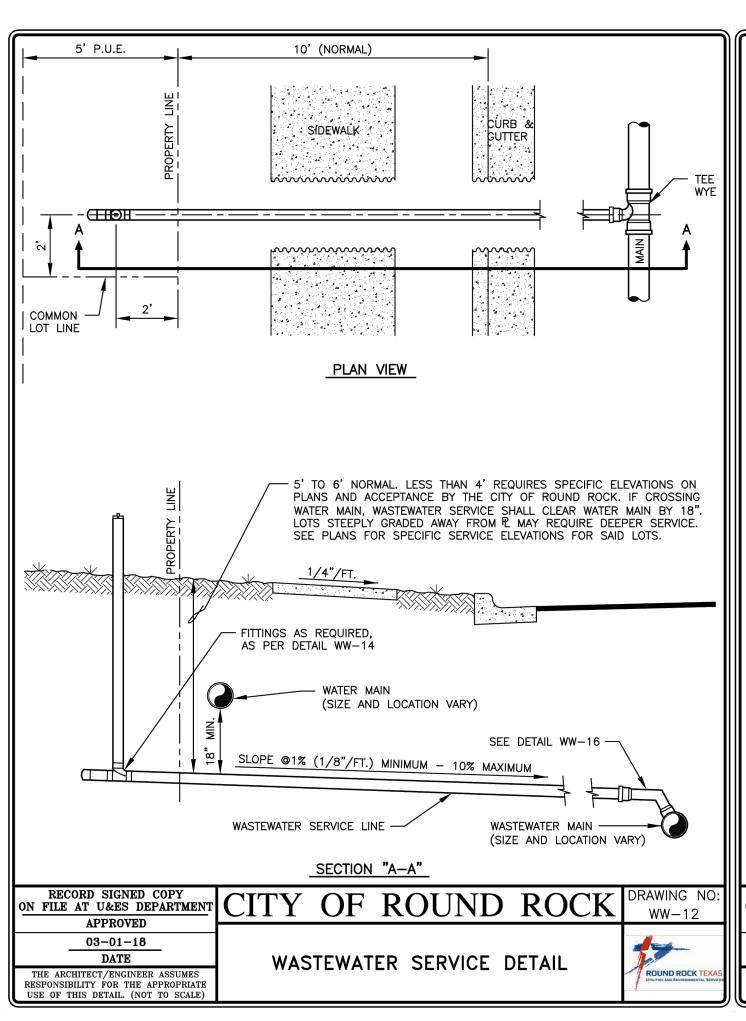
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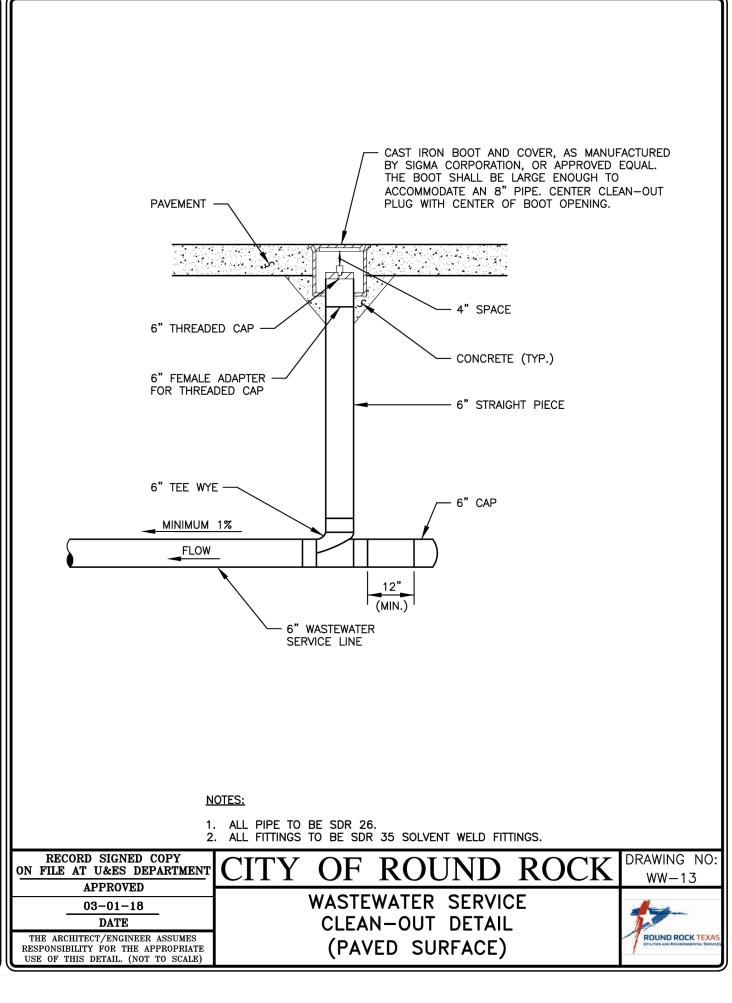
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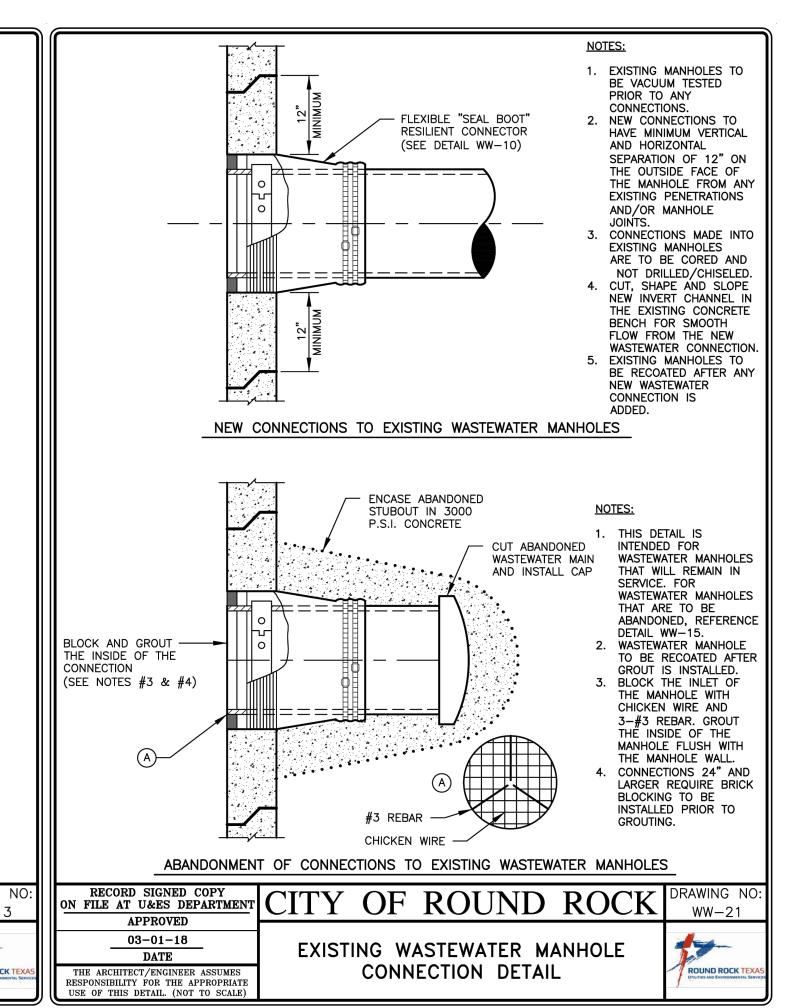
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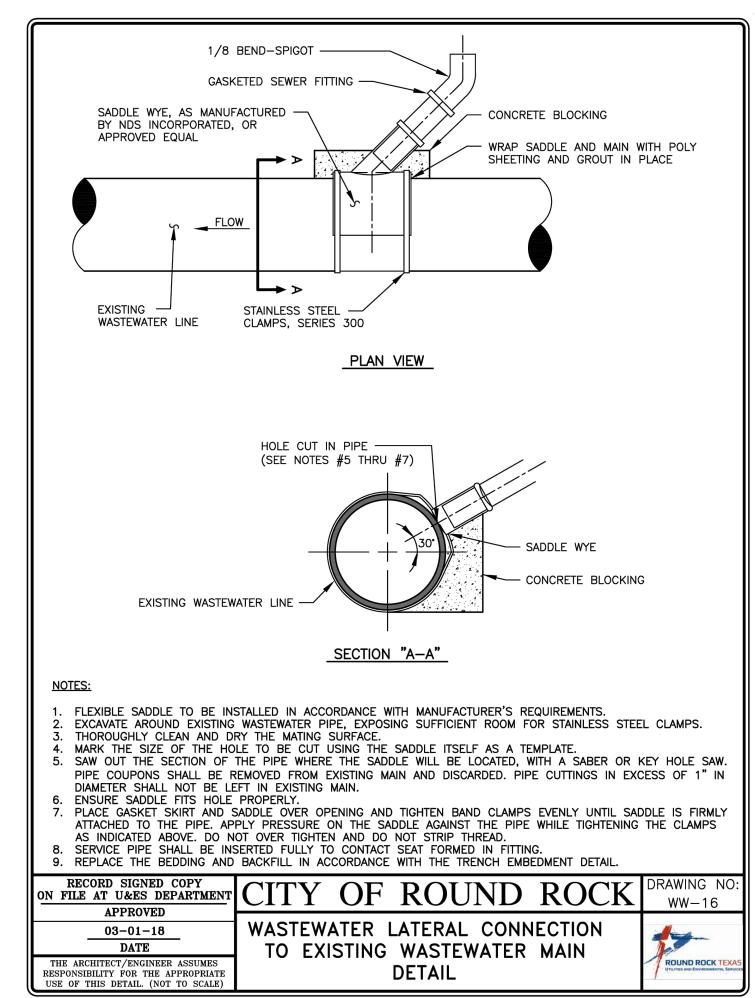
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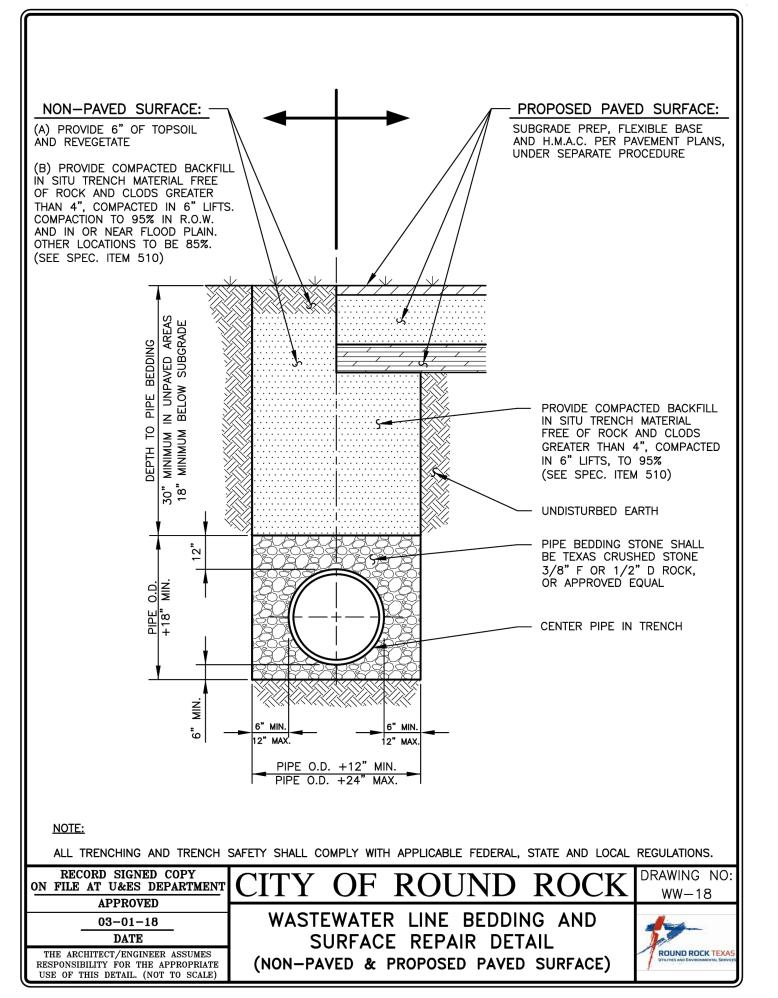


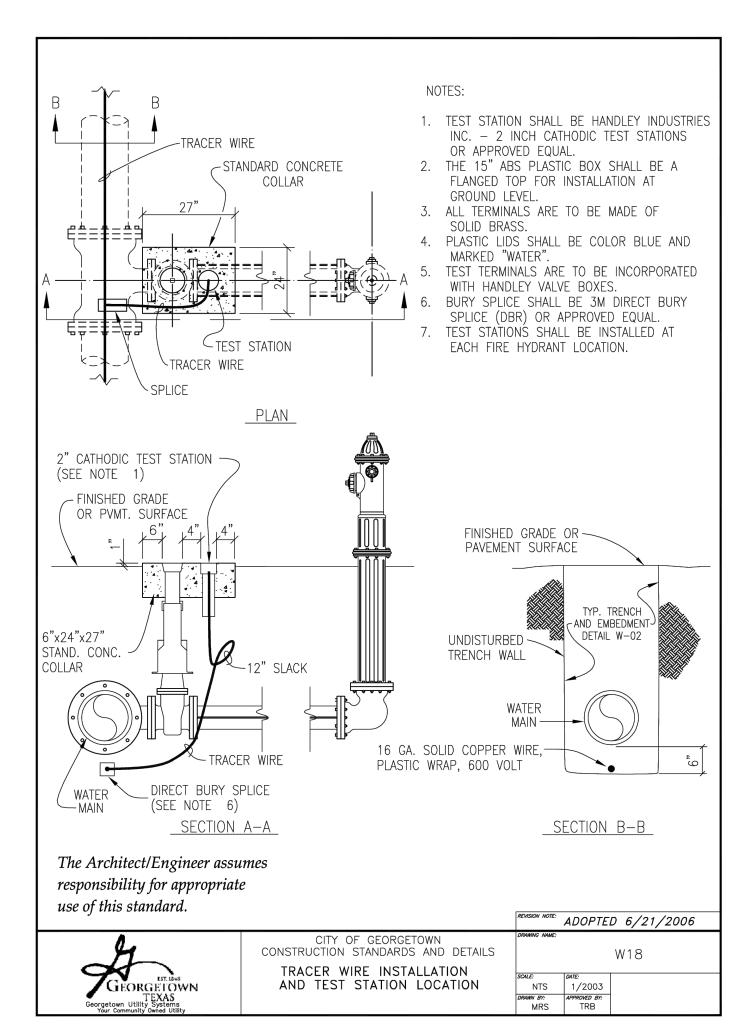


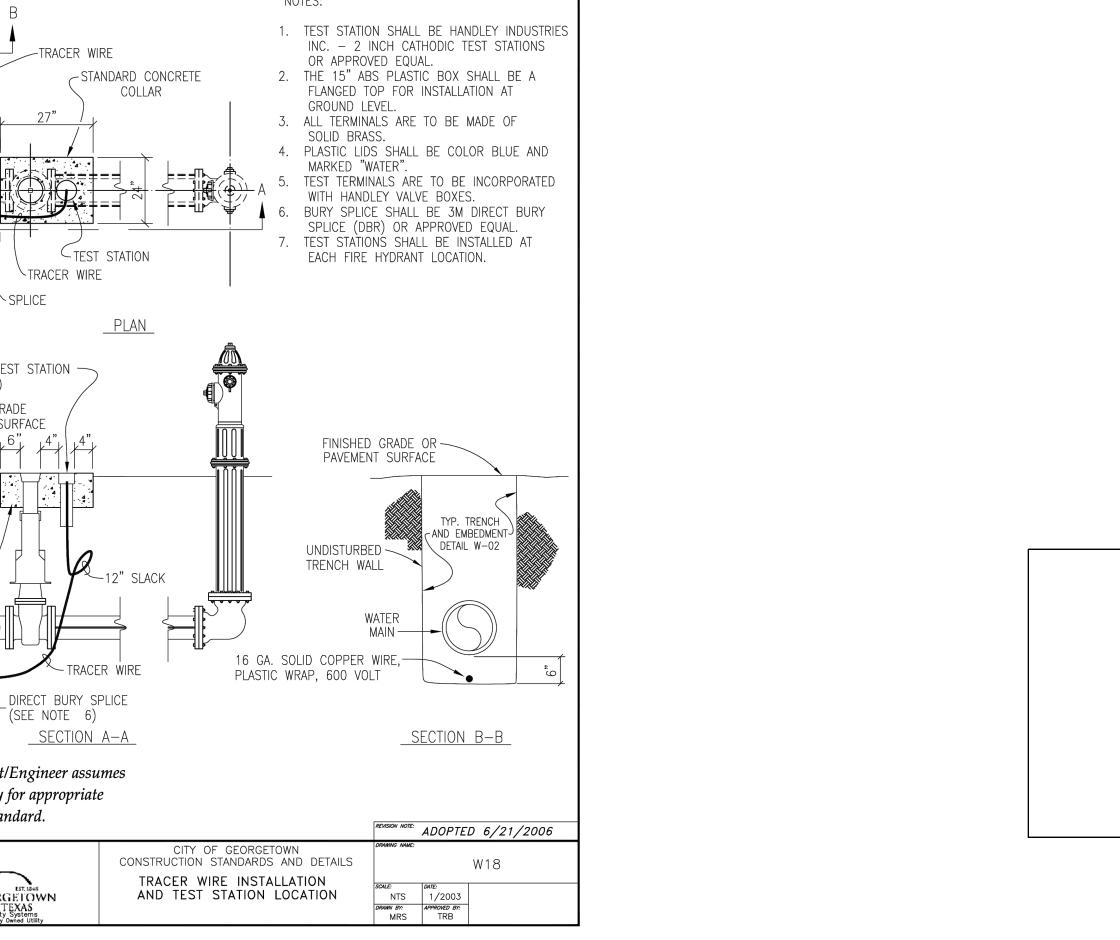












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SHEET NUMBER 55 OF 58

SECTION 5: TEMPORARY STORMWATER SECTION

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: Benjamin L. Green, P.E.

Date: <u>11/4/2025</u>

Signature of Customer/Agent:

Regulated Entity Name: Eldorado Subdivision Phase 7 & 8

Project Information

Potential Sources of Contamination

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

1.	Fuels for construction equipment and hazardous substances which will be used during construction:
	☐ The following fuels and/or hazardous substances will be stored on the site:
	These fuels and/or hazardous substances will be stored in:
	 □ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year. □ Aboveground storage tanks with a cumulative storage capacity between 250 gallons
	and 499 gallons will be stored on the site for less than one (1) year.

		Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
		Fuels and hazardous substances will not be stored on the site.
2.		Attachment A - Spill Response Actions . A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.
3.		Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
4.		Attachment B - Potential Sources of Contamination . A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.
S	equ	ience of Construction
5.		Attachment C - Sequence of Major Activities . A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.
		 For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given. For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.
6.		Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: <u>Sowes Branch</u>
T	e <i>m</i> ,	porary Best Management Practices (TBMPs)
sta co ba	abiliz nstru sins.	control examples: tree protection, interceptor swales, level spreaders, outlet ation, blankets or matting, mulch, and sod. Sediment control examples: stabilized action exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment Please refer to the Technical Guidance Manual for guidelines and specifications. All ral 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.
3.	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.
Э.	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. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area. There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.
11.	Attachment H - Temporary Sediment Pond(s) Plans and Calculations. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information

must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.
N/A
12. Attachment I - Inspection and Maintenance for BMPs. A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.
13. All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. \(\simega\) Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
Soil Stabilization Practices
Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.
17. Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices. A schedule of the interim and permanent soil stabilization practices for the site is attached.
18. Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
19. Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.
Administrative Information
20. All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

- 21. If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
- 22. Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

Attachment A Spill Response Actions

Spill Response Actions

If there is an accidental spill on site, the contractor shall respond with appropriate action. The contractor will be required to contact the owner and in turn the owner will contact the TCEQ in the event of a spill on site. In addition to the following guidance, reference the latest version of TCEQ's Technical Guidance Manual (TGM) RG-348 Section 1.4.16.

Cleanup

- Clean up leaks and spills immediately.
- 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.
- 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

- 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.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
 - Contain the spread of the spill.
 - Recover spilled materials.
 - 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:

- Contain spread of the spill.
- Notify the project foreman immediately.
- 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.
- If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
- 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:

• 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.

- 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.
- Notification should first be made by telephone and followed up with a written report.
- 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.
- Other agencies which may need to be consulted include, but not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

Attachment B Potential Sources of Contamination

Potential Sources of Contamination

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

Preventative Measures: Vehicle maintenance will be performed within the construction staging area or 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. Any 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 stock piled on site.

Preventative Measures: Silt fence shall be installed on the down gradient side of the stock piled 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

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 to be disturbed is listed in parentheses next to each activity.

Intended Schedule or Sequence of Major Activities:

- Construct Access (0.099 Acres)
- 2. Installation of Temporary BMPs (up to 50.3 Acres)
- 3. Initiate Grubbing and Topsoil Stripping of Site (32.9 Acres)
- 4. Rough Subgrade Preparation (earthwork, grading, street and drainage excavation and embankment) (50.3 Acres)
- 5. Wet and Dry Utility Construction (up to 1.127 Acres)
- 6. Topsoil, Irrigation and Landscaping (up to 32.9 Acres)
- 7. Site cleanup and Removal of Temporary BMPs (50.3 Acres)

Maximum total construction time is not expected to exceed 24 months.

Attachment D Temporary Best Management Practices and Measures

Temporary Best Management Practices and Measures

- **A.** There is no storm water that originates up gradient from the site that will flow across the site.
- **B.** Temporary 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 on each phase to reduce vehicle "tracking" onto adjoining streets. A concrete washout pit will be used to collect all excess concrete during construction.

BMPs for this project will protect surface water or groundwater from turbid water, phosphorus, sediment, oil, and other contaminants, which may mobilize in storm water flows by slowing the flow of runoff to allow sediment and suspended solids to settle out of the runoff.

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.

- **C.** There are no sensitive features or surface streams within the boundaries of the project. However, the site will discharge into a Sowes Branch surface stream. 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.
- **D.** There were no sensitive features identified on the 332- acre site identified during the geologic assessment. However, the BMPs for this project are designed to allow water to pass through after sedimentation has occurred. Existing flow patterns will be maintained to any naturally-occurring sensitive features that are discovered during construction.

Attachment F Structural Practices

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 downgradient 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 BMP's are shown on the erosion control plan sheet and details and specifications are provided on the erosion control details sheet which can be found at the end of this report under Section 8.

Description of Temporary BMPs

Temporary Construction Entrance/Exit

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

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

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.

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.

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

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

Staging and Spoils Area

A staging and spoils area serves as a designated space for temporarily storing materials, equipment, and excavated soils (spoils) during construction activities. Its main purpose is to organize and centralize resources, making loading, unloading, and assembly more efficient, and to reduce clutter and congestion around the active work zone.

These areas are most effective when located on flat, stable ground that's close enough to the work site for easy access, but far enough to avoid interfering with daily operations or causing safety hazards. Placement on previously disturbed or paved ground is ideal to minimize environmental impact and facilitate later site restoration. Staging and spoils areas help streamline workflow, improve safety for crews and equipment, and support compliance with environmental and operational requirements.

Inlet Protection

Inlet protections are temporary sediment control barriers installed around storm drain inlets during construction activities to prevent sediment, debris, and pollutants from entering the storm drain system. Their primary purpose is to filter runoff and minimize water pollution, ensuring compliance with environmental regulations and protecting downstream water quality.

Temporary Vegetation

The purpose of temporary vegetation is to stabilize disturbed areas that will be idle for 14 days or more but less than 12 months. It involves planting rapid-growing annual grasses, small grains, or legumes to provide initial ground cover. This practice is particularly useful during construction activities, on slopes, washouts, topsoil stockpiles, and temporary excavation areas. Temporary vegetation helps reduce sediment runoff, prevents mud and dust production, and protects earthen structures such as dikes and sediment basins. It's especially valuable when final grading is incomplete or when it's not the appropriate season for establishing permanent vegetation. While temporary vegetation offers quick soil protection, it's often used in conjunction with mulch or other temporary covers to ensure immediate erosion control until the vegetation becomes established

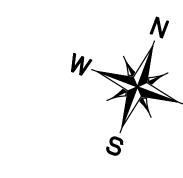
Hydraulic Mulch

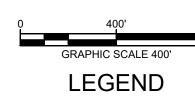
Hydraulic mulch is a versatile erosion control method that involves spraying a slurry mixture onto exposed soil surfaces. This slurry typically consists of water, fiber mulch, seed, fertilizer, and a tackifier or soil binder. When applied, it forms a protective layer that adheres to the soil, providing immediate erosion control by shielding the surface from wind and water erosion. The mulch helps retain moisture, promotes

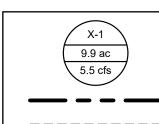
seed germination, and aids in establishing vegetation. It's particularly useful for stabilizing steep slopes, large areas, or locations that are difficult to access with traditional seeding methods.

Attachment G Drainage Area Map

Drainage Area Maps







AREA DESIGNATOR AREA IN ACRES Q100 FLOW IN CFS

========= EXISTING STORM DRAIN LINE

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	BASE CN (COMPOSITE)	TC (MIN)*	Q₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)
EDA-01	299.83	2%	78	29.9	528.51	1019.13	1364.38	1938.7
		POA-A			528.51	1019.13	1364.38	1938.7
EDA-02	39.79	0%	78	31.2	67.46	131.50	175.86	249.64
		POA-B			67.46	131.50	175.86	249.64
EDA-03	9.41	0%	78	22.6	18.48	35.96	48.03	68.31
		POA-C			18.48	35.96	48.03	68.31
EDA-04	6.94	2%	78	24.7	13.30	25.70	34.36	48.74
		POA-D			13.30	25.70	34.36	48.74

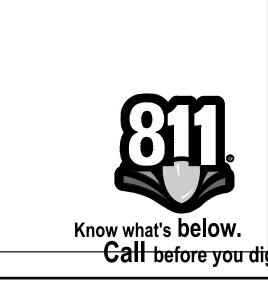
EXISTING TIME OF CONCENTRATION CALCULATIONS

EDA-01					
Sheet Fl	ow	Shal	low	Channe	el Flow
n=	0.15	paved?	no	v (fps)=	E
S (ft/ft)=	0.010	S (ft/ft)=	0.080	L (ft)=	3217
L (ft)=	100	L (ft)=	2316		
T _{t1} =	12.5	T _{t2} =	8.5	T _{t3} =	8.9
Total TC =	29.9	mins			
			_		

EDA-02					
Sheet Fl	ow	Shal	low	Channe	el Flow
n=	0.15	paved?	no	v (fps)=	6
S (ft/ft)=	0.010	S (ft/ft)=	0.010	L (ft)=	1175.0
L (ft)=	100	L (ft)=	1500		
T _{t1} =	12.5	T _{t2} =	15.5	T _{t3} =	3.3
Total TC =	31.2	mins			

EDA-03					
Sheet Fl	ow	Shal	low	Channe	el Flow
n=	0.15	paved?	no	v (fps)=	6
S (ft/ft)=	0.006	S (ft/ft)=	0.006	L (ft)=	0
L (ft)=	100	L (ft)=	546		
T _{t1} =	15.3	T _{t2} =	7.3	T _{t3} =	0.0
Total TC =	22.6	mins			

EDA-04					
Sheet Fl	ow	Shal	low	Channe	el Flow
n=	0.15	paved?	no	v (fps)=	6
S (ft/ft)=	0.010	S (ft/ft)=	0.008	L (ft)=	0
L (ft)=	100	L (ft)=	1063		
T _{t1} =	12.5	T _{t2} =	12.3	T _{t3} =	0.0
Total TC =	24.7	mins			

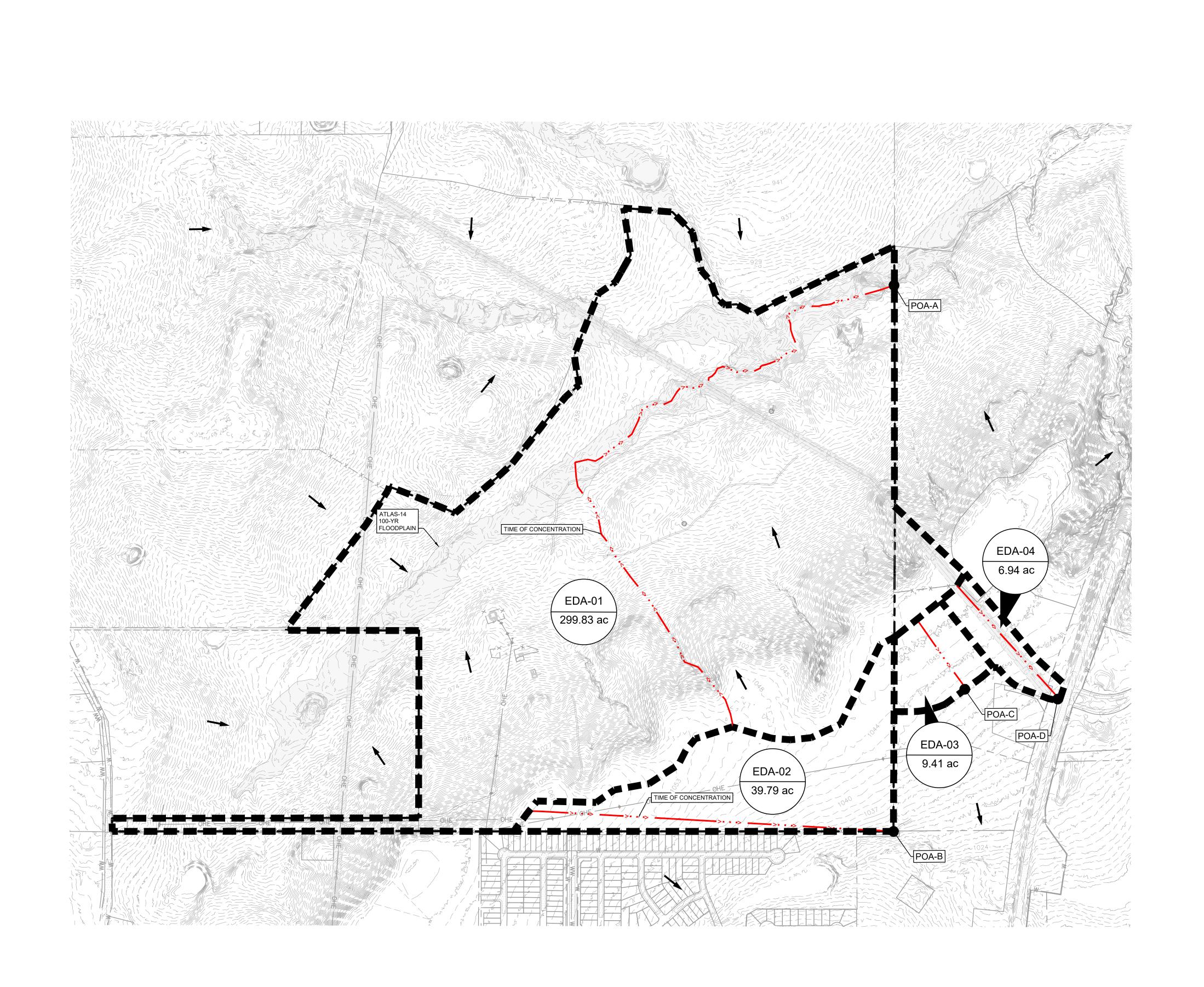


BENCHMARKS

TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

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2025-5-CON



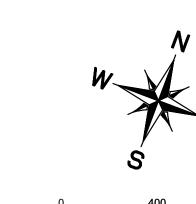
EXISTING DRAINAGE DIVIDE TIME OF CONCENTRATION EXISTING FLOW DIRECTION EXISTING CONTOUR

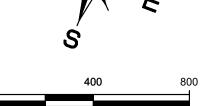
EXISTING DRAINAGE AREA MAP

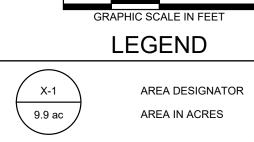


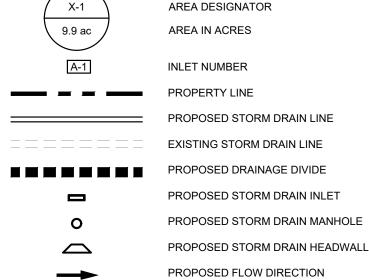
EXISTING C	ONDITIO	NS						
DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	BASE CN (COMPOSITE)	TC (MIN)*	Q₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)
EDA-01	299.83	2%	78	29.9	528.51	1019.13	1364.38	1938.71
		POA-A			528.51	1019.13	1364.38	1938.71
EDA-02	39.79	0%	78	31.2	67.46	131.50	175.86	249.64
		POA-B			67.46	131.50	175.86	249.64
EDA-03	9.41	0%	78	22.6	18.48	35.96	48.03	68.31
		POA-C			18.48	35.96	48.03	68.31
EDA-04	6.94	2%	78	24.7	13.30	25.70	34.36	48.74
		POA-D			13.30	25.70	34.36	48.74
*MINIMUM	TIME OF C	ONCENTRATI	ON USED FOR D	ESIGN = 5 M	IINUTES			

DRAINAGE	AREA	IMPERVIOUS	BASE CN	TC (MIN)*	Q ₂	Q ₁₀	Q ₂₅	Q ₁₀₀
AREA	(AC.)	COVER	(COMPOSITE)	` ′	(CFS)	(CFS)	(CFS)	(CFS)
PDA-01	127.15	48.31%	78	29.0	315.85	531.88	675.05	909.36
PDA-05	63.60	43.50%	78	19.3	182.82	311.01	395.85	534.71
PDA-06	46.62	39.13%	78	24.3	109.71	187.05	238.34	322.26
PDA-07	20.02	46.99%	78	21.6	56.09	95.05	120.82	162.99
PDA-08	50.05	37.34%	78	28.7	116.45	202.31	259.58	353.39
		POA-A			526.28	1011.43	1361.15	1938.37
PDA-02	36.05	48.75%	78	26.0	94.15	158.76	201.52	271.49
		POA-B			64.27	131.06	175.34	244.58
PDA-03	7.43	0.00%	78	21.9	14.72	28.56	38.18	54.43
		POA-C			14.72	28.56	38.18	54.43
PDA-04	5.02	26.95%	78	19.0	13.02	23.23	30.08	41.30
		POA-D			13.02	23.23	30.08	41.30









PROPOSED CONTOUR EXISTING CONTOUR

PDA-01									
Sheet Fl	ow	Shal	low	Sha	llow	Channel Flo	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.027	L (ft)=	1251	L (ft)=	1727
L (ft)=	100	L (ft)=	215	L (ft)=	320				
T _{t1} =	18.2	T _{t2} =	2.2	T _{t2} =	1.6	T _{t3} =	3.5	T _{t3} =	3.6
Total TC -	20.0	mine							

PDA-02									
Sheet Fl	ow	Shal	low	Sha	llow	Channel Fl	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	2031
L (ft)=	100	L (ft)=	86	L (ft)=	468				
T _{t1} =	18.2	T _{t2} =	0.9	T _{t2} =	2.7	T _{t3} =	0.0	T _{t3} =	4.2

PDA-03									
Sheet Flo	ow	Shal	low	Sha	llow	Channel Fl	ow	Pipe Flow	
n=	0.15	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.006	S (ft/ft)=	0.006	S (ft/ft)=	0.006	L (ft)=	0	L (ft)=	0
L (ft)=	100	L (ft)=	496	L (ft)=	0				
T _{t1} =	15.3	T _{t2} =	6.6	T _{t2} =	0.0	T _{t3} =	0.0	T _{t3} =	0.0
Total TC =	21.9	mins							

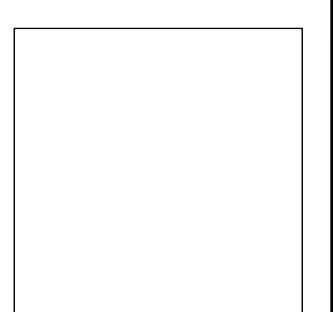
Sheet Flo	wc	Shal	low	Shal	low	Channel Flo	W	Pipe Flow	
n=	0.15	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	
S (ft/ft)=	0.010	S (ft/ft)=	0.011	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	
L (ft)=	100	L (ft)=	374	L (ft)=	481				
T _{t1} =	12.5	T _{t2} =	3.7	T _{t2} =	2.8	T _{t3} =	0.0	T _{t3} =	0.

OA-05									
Sheet Fl	ow	Shal	low	Shal	llow	Channel Fl	ow	Pipe Flow	
:	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
ft/ft)=	0.030	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	1468.337	L (ft)=	1017.892
ft)=	100	L (ft)=	195	L (ft)=	41				
T ₊₁ =	11 7	T ₊₂ =	1 2	T ₊₂ =	0.2	T ₊₂ =	<i>4</i> 1	T _{to} :	= 21

PDA-06									
Sheet Fl	ow	Shal	low	Shal	llow	Channel Fl	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	2127
L (ft)=	100	L (ft)=	54	L (ft)=	247				
T _{t1} =	18.2	T _{t2} =	0.3	T _{t2} =	1.4	T _{t3} =	0.0	T _{t3} =	4.4
Total TC -	24.2								

PDA-07									
Sheet F	low	Shal	low	Sha	llow	Channel Fl	ow	Pipe Flow	
า=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	1069
_ (ft)=	100	L (ft)=	36	L (ft)=	167				
T _{t1} =	= 18.2	T _{t2} =	0.2	T _{t2} =	1.0	T _{t3} =	0.0	T _{t3} =	2.2
Total TC =	21.6	mins							

Sheet Fl	ow	Shal	low	Shal	llow	Channel Flo	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.020	L (ft)=	1248.22	L (ft)=	1666.15
L (ft)=	100	L (ft)=	92	L (ft)=	454				
T _{t1} =	18.2	T _{t2} =	1.0	T _{t2} =	2.7	T _{t3} =	3.5	T _{t3} =	3.5



BENCHMARKS

TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

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PROPOSED DRAINAGE AREA MAP

Attachment I Inspection and Maintenance for BMPs

Inspection and Maintenance for BMPs

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. The contractor is to provide an inspector with a CPESC, CESSWI, or CISEC certification. Documentation of the inspector's qualifications is to be included in the attached Inspector Qualifications Log.

Inspection Schedule

 \Box

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

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

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:

- 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.

Maintenance

Below are some maintenance practices to be used to maintain erosion and sediment controls:

- All measures will be maintained in good working order. The operator should correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than seven (7) calendar days after the inspection.
- For perimeter controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.
- Silt fence will be inspected for depth of sediment, tears, to see of the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Inlet protections will be inspected and repaired as necessary.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- If sediment escapes the site, accumulations must be removed at a frequency that minimizes offsite impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee must work with the owner or operator of the property to remove the sediment.

• Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

To maintain the above practices, the following will be performed:

• Maintenance and repairs will be conducted before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. Following an inspection, deficiencies should be corrected no later than seven (7) calendar days after the inspection.

BMP-Specific Inspection and Maintenance Schedules

Temporary Vegetation

- Temporary vegetation should be inspected weekly and after each rain event to locate and repair any erosion.
- Erosion from storms or other damage should be repaired as soon as practical by regrading the area and applying new seed.
- If the vegetated cover is less than 80%, the area should be reseeded.

Hydraulic Mulch

- Mulched areas should be inspected weekly and after each rain event to locate and repair any damage.
- Areas damaged by storms or normal construction activities should be regraded and hydraulic mulch reapplied as soon as practical.

Construction Entrance/Exit

- 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 onto public rights-of-way should be removed immediately by contractor.
- When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-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.

Silt Fence

- Inspect all fencing weekly, and after any rainfall.
- Remove sediment when buildup reaches 6 inches.
- Replace any torn fabric or install a second line of fencing parallel to the torn section.
- 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.
- 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.

Inspector Qualifications Log*

Inspector Name:
Qualifications (Check as appropriate and provide description): □ Training Course
□ Supervised Experience □ Other
U 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:
Qualifications (Check as appropriate and provide description): □ Training Course
□ Supervised Experience
□ Other
In an actor Name.
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

^{*} 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]



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 Schedule and Reason for Change



Rain Gauge Log

Date	Location of Rain Gauge	Gauge Reading



			General Inform	nation			
Name of Project				Tracking No.		Inspection Date	
Inspector Name, Tontact Information							
Present Phase of C	onstruction						
Inspection Location inspections are required location where this in being conducted)	red, specify						
- Once per	uency: \(\bar{V}\) \(\bar{V}\	Every 7 days and within 24	arid, semi-arid, or droug	ht-stricken areas durin	g seasonally dry period	s or during drought)	
If yes, how did Rain gauge or	you determin site	by a 0.25" storm event? [ined whether a 0.25" stor Weather station representat triggered the inspection (m event has occurr ive of site. Specify wea	red? ther station source:			
If "yes", co	nine that any implete the f	y portion of your site was	_)		
- Location	(s) where condi	itions 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 or 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			
10.	□Yes □No	□Yes □No			



Condition and Effectiveness of Pollution Prevention (P2) Practices				
Type/Location of P2 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		
10.	□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:		
5.		☐ YES ☐ NO If yes, provide date:		
	Description of	f 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 Location	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? 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:			
3.	signs of erosion and/or sediment accur If yes, describe what you see, specify th	s and banks of surface waters in the immedia nulation that can be attributed to your disch- ne location(s) where these conditions were fo ve action is needed to resolve the issue:	arge? 🔲 Yes 🔲 No	



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:			



Section A – Initial Report (Complete this section <u>within 24 hours</u> of discovering the condition that triggered corrective action)					
Name of Project	Tracking 1	No.		Today's Date	
Date Problem First Disco	vered		Time Problem Firs	st Discovered	
Name and Contact Inform	nation of Individual Completing this				
☐ A required stormwater ☐ The stormwater contr	What site conditions triggered the requirement to conduct corrective action: A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3 The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards A prohibited discharge has occurred or is occurring				
Provide a description of t	he problem:				
	corrective action (Enter date that is eit ork within the first 7 days, enter the da				d the problem, or (2) if it is
	completion falls after the 7-day deadlir I for making the new or modified storm				n 7 days, and (2) why the
	Secti on (Complete this section <u>no later than 7 c</u>		ctive Action Progr er discovering the cond		
Section B.1 – Why the					
Cause(s) of Problem (Add	l an additional sheet if necessary)		How This Was De	termined and the Date You Deter	mined the Cause
1.			1.		
2.			2.		
3.			3.		
Section B.2 – Stormw	Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem				
List of Stormwater Contr Problem (Add an addition	ol Modification(s) Needed to Correct nal sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes	
1.			□Yes □No Date:		
2.			□Yes □No Date:		
3.			☐Yes ☐No Date:		



Section A — Initial Report (Complete this section <u>within 24 hours</u> of discovering the condition that triggered corrective action)					
Name of Project	Tracking 1	No.		Today's Date	
Date Problem First Disco	vered		Time Problem Firs	st Discovered	
Name and Contact Information of Individual Completing this Form					
☐ A required stormwater ☐ The stormwater contr	What site conditions triggered the requirement to conduct corrective action: A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3 The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards A prohibited discharge has occurred or is occurring				
Provide a description of t	he problem:				
	corrective action (Enter date that is eit ork within the first 7 days, enter the da				d the problem, or (2) if it is
If your estimated date of date you have established	completion falls after the 7-day deadlir I for making the new or modified storm	ne, explain (1) v nwater control (why you believe it is a pperational is the so	infeasible to complete work within onest practicable timeframe:	n 7 days, and (2) why the
	Section (Complete this section no later than 7 c		ctive Action Progr er discovering the cond		
Section B.1 – Why the	Problem Occurred				
Cause(s) of Problem (Add	l an additional sheet if necessary)		How This Was De	termined and the Date You Deter	mined the Cause
1.			1.		
2.			2.		
3.			3.		
Section B.2 – Stormw	ater Control Modifications to be l	Implemented	to Correct the Pr	oblem	
List of Stormwater Contr Problem (Add an addition	ol Modification(s) Needed to Correct nal sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes	
1.			☐Yes ☐No Date:		
2.			☐Yes ☐No Date:		
3.			☐Yes ☐No		



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:			

Attachment J Schedule of Interim and Permanent Soil Stabilization Practices

Schedule of Interim and Permanent Soil 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 for construction activity. Records of the following shall be maintained:

- a) The dates when major grading activities occur;
- b) The dates when construction activities temporarily or permanently cease on a portion of the site; and
- c) 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 that fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased:

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.



SECTION 6: ADDITIONAL FORMS

Agent Authorization Form

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

1	Nick McIntyre	
	Print Name	
	Senior VP Land	
	Title - Owner/President/Other	
of	PHTB ELDORADO LLC	
	Corporation/Partnership/Entity Name	
have authorized	Benjamin L. Green, P.E.	
N	Print Name of Agent/Engineer	
of	Kimley-Horn and Associates, Inc.	
	Print Name of Firm	

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

I also understand that:

- 1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
- 2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
- 3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.
- 4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.
- 5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:	
Applicant's Signature	11/5/2025 Date
, pp. nooning organization	Sate
THE STATE OF TEXCIS	
County of Travis §	
to me to be the person whose name is s	on this day personally appeared <u>lick Manufecknown</u> subscribed to the foregoing instrument, and acknowledged to bose and consideration therein expressed.
GIVEN under my hand and seal of office	on this 5th day of <u>hovember</u> 2025
Comm. Expires 04-18-2028 Notary ID 134859401	TARY PUBLIC ONCY Maddex ed or Printed Name of Notary
MY	COMMISSION EXPIRES: 04/18/2028

Application Fee Form

Texas Commission on Environmental Quality Name of Proposed Regulated Entity: Eldorado Subdivision Phase 7 & 8 Regulated Entity Location: 22700 Ronald Reagan Blvd, Liberty Hill, TX 78642 Name of Customer: PHTB ELDORADO LLC Contact Person: Nick McIntyre Phone: (210) 580-8598 Customer Reference Number (if issued): N/A Regulated Entity Reference Number (if issued): Click or tap here to enter text. **Austin Regional Office (3373)** Hays Travis Williamson San Antonio Regional Office (3362) Bexar Medina Uvalde Comal Kinney Application fees must be paid by check, certified check, or money order, payable to the Texas Commission on Environmental Quality. Your canceled check will serve as your receipt. This form must be submitted with your fee payment. This payment is being submitted to: Austin Regional Office San Antonio Regional Office Mailed to: TCEQ - Cashier Overnight Delivery to: TCEQ - Cashier **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 Type of Plan Size Fee Due Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling Acres \$ Water Pollution Abatement Plan, Contributing Zone Plan:

Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	
Sewage Collection System	8,176 L.F.	\$ 4,088
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$

Signature: Of L

Date: <u>11/4/2025</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 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	\$1,500 \$3,000 \$4,000 \$6,500 \$8,000 \$10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	<1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	\$3,000 \$4,000 \$5,000 \$6,500 \$8,000 \$10,000

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	Fee
Exception Request	\$500

Extension of Time Requests

Project	Fee
Extension of Time Request	\$150



Check Payable to the "Texas Commission on Environmental Quality"



Core Data Form



TCEQ Core Data Form

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

SECTION I: General Information

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

New Pern	nit, Registra	ition or Authorization (Core Data Form	should be s	submitte	ed with	the prog	ram application.)					
Renewal (Core Data Form should be submitted with the renewal form)							Other						
2. Customer Reference Number (if issued)				Follow this link to search for CN or RN numbers in Central Registry**									
CN													
SECTION	V II:	Customer	Inform	ation	L								
4. General Customer Information 5. Effective Date for					ıstome	r Info	rmation	Updates (mm/dd,	/уууу)				
New Custor	mer		pdate to Custon	ner Informat	tion		Char	nge in Regulated En	tity Own	ership			
Change in Le	egal Name (Verifiable with the Tex	as Secretary of	State or Tex	as Comp	otrolle				•			
		ibmitted here may b oller of Public Accou	-	tomaticall	ly base	d on v	vhat is c	urrent and active	e with th	ne Texas Sec	retary of State		
6. Customer l	Legal Nam	e (If an individual, prii	nt last name firs	t: eg: Doe, J	ohn)			If new Customer,	enter pro	evious Custom	<u>ner below:</u>		
PHTB ELDORAL	OO LLC												
7. TX SOS/CP	A Filing Nu	umber	8. TX State T	ax ID (11 di	igits)			9. Federal Tax	ID		10. DUNS Number (if		
0806016823 3209			32099963962	2099963962			(9 digits)		applicable)				
11. Type of C	ustomer:		ion				☐ Individual P			rtnership: General Limited			
		County Federal		Other		1	Sole Proprietorship O						
12. Number o	of Employ	ees						13. Independe	ntly Ow	ned and Op	erated?		
□ 0-20 ☑ 21-100 □ 101-250 □ 251-500 □ 501 and higher ☑ Yes □ No													
14. Customer	Role (Prop	posed or Actual) – as it	t relates to the F	Regulated En	ntity liste	ed on t	his form.	Please check one o	f the follo	owing			
⊠Owner ☐Occupation	al Licensee	Operator Responsible Par		ner & Opera CP/BSA App				☐ Other	:				
3200 SOUTHWEST FWY													
15. Mailing	#STE 280	#STE 2800											
Address:	City	HOUSTON		State	TX		ZIP	77027		ZIP + 4			
16. Country N	16. Country Mailing Information (if outside USA)						17. E-Mail Address (if applicable)						
,		(5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	,				•	()	,				

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16. Telephone Number	19. Extension of	coue		20. Fax Number (ij applicable)						
(210) 580-8598						() -				
SECTION III: F	Regula	ited Ent	ity Inforn	natior	<u>1</u>					
21. General Regulated Ent	ity Informa	tion (If 'New Reg	ulated Entity" is selec	cted, a new p	permit applica	ation is also	o required.)			
New Regulated Entity	Update to	Regulated Entity	Name	to Regulated	l Entity Inforn	nation				
The Regulated Entity Namas Inc, LP, or LLC).	e submitted	d may be updat	ted, in order to me	et TCEQ Co	re Data Sta	ndards (r	emoval of or	ganization	al endings such	
22. Regulated Entity Name	e (Enter name	e of the site wher	e the regulated action	n is taking pi	lace.)					
ELDORADO SUBDIVISION PHA	SE 7 & 8									
23. Street Address of the Regulated Entity:										
(No PO Boxes)	City		State		ZIP			ZIP + 4		
24. County										
		If no Stree	et Address is provid	ded, fields	25-28 are re	equired.				
25. Description to	LOCATED AP	PROXIMATELY 2 N	MILES NORTH OF THE	INTERSECTI	ON OF SH-29	AND RONA	ALD REAGAN B	LVD. THE SIT	E IS ON THE WEST	
Physical Location:	SIDE OF RON	IALD REAGAN BL\	/D NEAR THE LIBERTY	' HILL FIRE S	TATION.					
26. Nearest City						State		Near	est ZIP Code	
LIBERTY HILL						TX		7864	2	
Latitude/Longitude are re used to supply coordinate.	-	-	-		Data Stando	ards. (Ged	ocoding of th	e Physical A	Address may be	
27. Latitude (N) In Decimal: 30.660810			28. Longitude			W) In Dec	imal:	-97.845509		
Degrees	Minutes		Seconds	Degr	ees	Minutes			Seconds	
30		39	38.9		97			50 43.8		
29. Primary SIC Code	30.	Secondary SIC	Code	31. Prima	ry NAICS Co	ode	32. Seco	ndary NAIC	S Code	
(4 digits)	(4 di	gits)		(5 or 6 dig	gits)		(5 or 6 digits)			
1512	1531	<u> </u>		237210			236115	236115		
33. What is the Primary Bo	usiness of t	his entity? (Do	o not repeat the SIC o	r NAICS desc	cription.)					
SINGLE-FAMILY										
	3200 SOUT	HWEST FWY								
34. Mailing	#STE 2800									
Address:	City	HOUSTON	State	тх	ZIP	77027		ZIP + 4		
35. E-Mail Address:										
36. Telephone Number			37. Extension or	Code	38. I	Fax Numb	er (if applicab	nle)		
(210) 580-8598		(() -							

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39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance. ☐ Dam Safety Districts Edwards Aquifer ☐ Emissions Inventory Air ☐ Industrial Hazardous Waste ☐ New Source OSSF ☐ Petroleum Storage Tank ☐ PWS Review Air Sludge Storm Water ☐ Title V Air ☐ Tires Used Oil ☐ Voluntary Cleanup ■ Wastewater ■ Wastewater Agriculture ■ Water Rights Other: **SECTION IV: Preparer Information** 40. Name: BENJAMIN GREEN, P.E. 41. Title: PROJECT ENGINEER 42. Telephone Number 43. Ext./Code 44. Fax Number 45. E-Mail Address (512) 795-1623 BEN.GREEN@KIMLEY-HORN.COM **SECTION V: Authorized Signature** 46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39. Company: Job Title: KIMLEY-HORN Name (In Print): BENJAMIN GREEN, P.E. Phone: (512)646-2243 Signature: Date: 11/4/2025

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SECTION 7: EXHIBITS

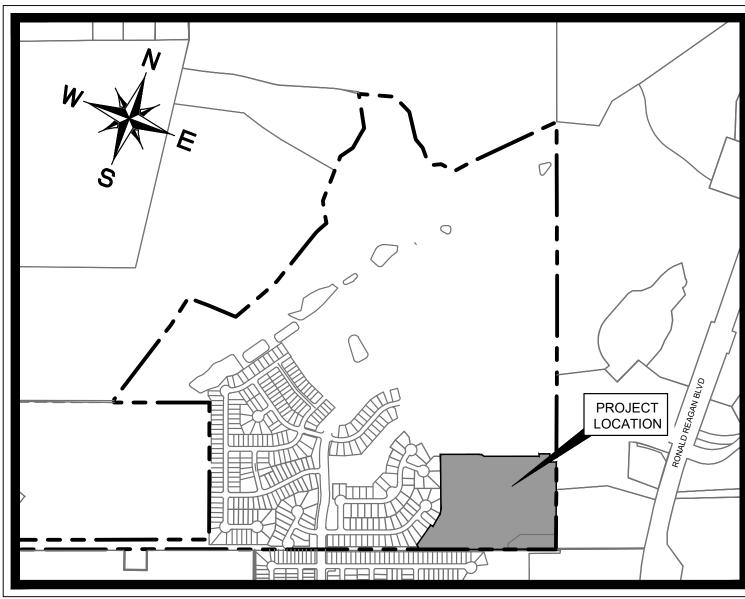
FIRST SUBMITTAL 1/13/2025 SECOND SUBMITTAL 1/19/2025

PUBLIC IMPROVEMENT CONSTRUCTION PLANS

ELDORADO SUBDIVISION

PHASE 7

RONALD REAGAN BLVD, LIBERTY HILL, WILLIAMSON COUNTY, TX 78642 WILLIAMSON COUNTY MUD 37



VICINITY MAP

AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN

I CERTIFY THAT THESE ENGINEERING DOCUMENTS ARE COMPLETE, ACCURATE AND ADEQUATE FOR

THE INTENDED PURPOSES, INCLUDING CONSTRUCTION, BUT ARE NOT AUTHORIZED FOR

DISTRICT ENGINEER, REVIEW OF PLANS BY DISTRICT IS LIMITED TO WATER, WASTEWATER AND DRAINAGE DATE

REVIEWED FOR COMPLIANCE WITH COUNTY REQUIREMENTS (WCSR 2021A)

CONSTRUCTION PRIOR TO FORMAL CITY APPROVAL

FOR WILLIAMSON COUNTY CERTICATE OF COMPLIANCE # CC-2021-21836

BASED ON THE DESIGN ENGINEER'S CERTIFICATE OF COMPLIANCE WITH ALL THE APPLICABLE CITY, STATE AND FEDERAL REGULATIONS, THE PLANS AND SPECIFICATIONS CONTAINED HEREIN HAVE BEEN REVIEWED AND ARE FOUND TO BE IN THE COMPLIANCE WITH THE REQUIREMENTS OF THE CITY OF

WILLIAMSON COUNTY, ADAM BOATRIGHT P.E., COUNTY ENGINEER

CITY OF LIBERTY HILL, JENNIFER GLAESS P.E., CITY ENGINEER

CITY OF LIBERTY HILL, MCKENZI HICKS, INTERIM DIRECTOR OF PLANNING

SHEET NO.	DESCRIPTION
1 2	GENERAL NOTES
3	TCEQ NOTES
4	KIMLEY-HORN GENERAL NOTES
5	PRELIM PLAT (SHEET 1 OF 5)
6	PRELIM PLAT (SHEET 2 OF 5)
7	PRELIM PLAT (SHEET 3 OF 5)
8	PRELIM PLAT (SHEET 4 OF 5)
9	PRELIM PLAT (SHEET 5 OF 5)
10	EXISTING CONDITIONS AND DEMO PLAN
11	EROSION CONTROL PLAN (SHEET 1 OF 2)
12	EROSION CONTROL PLAN (SHEET 2 OF 2)
13	OVERALL STREET LAYOUT
14	PAVING P&P - ALTUVE LANE (1)
15 16	PAVING P&P - ALTUVE (2) & ALTUVE (1) TO ALTUVE (2) CDS PAVING P&P - CORREA LOOP (2) & CORREA LOOP (1) TO (2) CDS
17	PAVING P&P - CORREA LOOP (3)
18	PAVING P&P - CORREA (2) TO (3) CDS & CORREA (3) TO (4) CDS
19	PAVING P&P - CORREA LOOP (4)
20	PAVING P&P - CORREA LOOP (1)
21	PAVING P&P - VERLANDER STREET
22	PAVING P&P - BLUM STREET AND VERLANDER CDS
23	GRADING PLAN (SHEET 1 OF 3)
24	GRADING PLAN (SHEET 2 OF 3)
25	GRADING PLAN (SHEET 3 OF 3)
26	EXISTING DRAINAGE AREA MAP
27	PROPOSED DRAINAGE AREA MAP
28	WATER QUALITY CALCULATIONS (SUEET 1 OF 3)
29	WATER QUALITY CALCULATIONS (SHEET 1 OF 3)
30	WATER QUALITY CALCULATIONS (SHEET 2 OF 3)
31 32	WATER QUALITY CALCULATIONS (SHEET 3 OF 3) INLET DRAINAGE AREA MAP
33	INLET CALCS
34	POND PLAN
35	WATER QUALITY POND H (FUTURE PHASE)
36	POND H WATER QUALITY DETAIL
37	OVERALL STORM PLAN
38	STORM P&P - LINE A (SHEET 1 OF 2)
39	STORM P&P - LINES A (SHEET 2 OF 2) & A1
40	STORM P&P - LINES A2 A3
41	STORM P&P - LINE B (SHEET 1 OF 2)
42	STORM P&P - LINE B (SHEET 2 OF 2) & B1
43	STORM P&P - LINE C
44	STORM P&P - LINES C1 C2 C3
45 46	STORM P&P - LINES C4 & C5
46	STORM P&P - LINES C6 & C7 STORM P&P - LINE D
48	STORM P&P - LINE D STORM P&P - LINES D2 D3
49	OVERALL WATER PLAN
50	WATER P&P - LINE A
51	WATER P&P - LINE B (SHEET 1 OF 2)
52	WATER P&P - LINE B (SHEET 2 OF 2)
53	WATER P&P - LINE C (SHEET 1 OF 2)
54	WATER P&P - LINE C (SHEET 2 OF 2)
55	WATER P&P - LINE D
56	OVERALL WASTEWATER PLAN
57	WASTEWATER P&P - LINE A (SHEET 1 OF 5)
58 59	WASTEWATER P&P - LINE A (SHEET 2 OF 5) WASTEWATER P&P - LINE A (SHEET 3 OF 5)
60	WASTEWATER P&P - LINE A (SHEET 3 OF 5) WASTEWATER P&P - LINE A (SHEET 4 OF 5)
61	WASTEWATER P&P - LINE A (SHEET 5 OF 5) WASTEWATER P&P - LINE A (SHEET 5 OF 5)
62	WASTEWATER P&P - LINE B WASTEWATER P&P - LINE B
63	WASTEWATER P&P - LINE B
64	WASTEWATER P&P - LINE D
65	WASTEWATER P&P - LINE E
66	WASTEWATER P&P - LINE F
67	SIDEWALK PLAN
68	STREET LIGHT, SIGN & SLEEVING PLAN
69	PAVING DETAILS
70	PAVING DETAILS
71	PAVING DETAILS
72	PAVING DETAILS
73	PAVING DETAILS
74	STORM DRAIN DETAILS
75	STORM DRAIN DETAILS
76	STORM DRAIN DETAILS
77	STORM DRAIN DETAILS
78	STORM DRAIN DETAILS
79 80	UTILITY DETAILS
80 81	UTILITY DETAILS UTILITY DETAILS
82	UTILITY DETAILS
83	UTILITY DETAILS
84	EROSION CONTROL DETAILS
	EROSION CONTROL DETAILS
85	LICOSON CONTINUE DETAILO

STUDIES/PERMIT'S STATE OF APPROVAL:

CITY OF GEORGETOWN WATER CITY OF LIBERTY HILL CITY OF LIBERTY HILL FIRE (WCESD NO.4) WILLIAMSON COUNTY (FORMAL) WILLIAMSON COUNTY (DRAINAGE) WILLIAMSON COUNTY (FINAL PLAT)

APPROVED (4/10/25) **UNDER REVIEW** APPROVED (12/30/24) UNDER REVIEW **UNDER REVIEW** NOT SUBMITTED APPROVED (5/12/23)

SHEET NUMBER

LEGAL DESCRIPTION AW0417 AW0417 - MANLOVE, B. SUR., ACRES 254.914 AW0417 MANLOVE, B. SUR., ACRES 72.0

GENERAL PLAN NOTES:

CONTRACTOR WILL FOLLOW WILLIAMSON COUNTY'S MOST CURRENT CONSTRUCTION SPECIFICATIONS.

- ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE REGISTERED PROFESSIONAL ENGINEER WHO PREPARED THEM. IN REVIEWING THESE PLANS THE WILLIAMSON COUNTY MUST RELY UPON THE
- NO PORTION OF THIS SITE IS LOCATED WITHIN THE 100YR FLOOD PLAIN, AS DESCRIBED IN FEMA FIRM PANEL NO. 48491C0275E, DATED SEPTEMBER 26,
- 4. NO STRUCTURES CAN BE BUILT WITHIN WATER & WASTEWATER
- 5. THIS PROJECT IS SUBJECT TO TCEQ'S TPDES SWPPP REGULATIONS PER TEXAS WATER CODE CHAPTER 26. IF NOT ALREADY DONE, HAVE A TX PE CPESC. OR QPSWPPP DEVELOP/AMEND A PROJECT-SPECIFIC SWPPP AND SEEK APPLICABLE TPDES PERMIT TXR150000 COVERAGE IMMEDIATELY PER TXR150000 PARTS I-III AND CITY CODE SECTION 86.529(B)(2) OR 86.529(C)(3). A HARD-COPY OF THE SWPPP, INCLUDING FULL-SIZE MAP, MUST BE AVAILABLE AT THE PRE-CON MEETING, KEPT ONSITE, AND UPDATED TO MATCH SITE CONDITIONS DURING THE PROJECT.
- THESE PLANS WERE DESIGNED USING AASHTO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS"
- 7. THE CONTRACTOR SHALL OBTAIN A "NOTICE OF PROPOSED INSTALLATION COMMISSIONERS COURT IF ANY ROAD CLOSURE IS INVOLVED.
- 8. ALL FITTINGS AND WYES SHALL BE PRECAST ELEMENTS AND NOT CAST-IN PLACE WITHOUT PRIOR APPROVAL FROM THE COUNTY
- 9. ASSOCIATED DETENTION PONDS MUST BE IN PLACE PRIOR TO CONSTRUCTION OF THIS PHASE.
- 10. THE CONTRACTOR SHALL AVOID INSTALLATION OF IRRIGATION, PLANTING, SILT FENCE, ETC. IN THE BASE OVERBUILD.
- 11. ADEQUACY OF THESE PLANS FOR CONSTRUCTION IS THE RESPONSIBILITY OF THE SIGNING/SEALING ENGINEER.
- 12. IT IS THE RESPONSIBILITY OF THE SIGNING/SEALING ENGINEER TO PROVIDE DOCUMENTATION OF TDLR APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING.
- 13. THE CITY OF LIBERTY HILL HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. IT IS THE RESPONSIBILITY OF THE OWNER TO PROVIDE COMPLIANCE WITH ALL LEGISLATION RELATED TO ACCESSIBILITY WITHIN THE LIMITS OF CONSTRUCTION SHOWN IN THESE PLANS.
- 14. BASED ON THE ENGINEER'S CERTIFICATION OF COMPLIANCE WITH ALL APPLICABLE CITY, STATE AND FEDERAL REGULATIONS, THE WASTEWATER PORTION OF THESE PLANS AND SPECIFICATIONS CONTAINED HEREIN HAVE BEEN REVIEWED AND ARE FOUND TO BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE CITY OF LIBERTY HILL.

STREET SUMMARY									
STREET	TYPE	ROW	STREET LENGTH	SPEED DESIGN	PAVEMENT WIDTH	URBAN/RURAL	PUBLIC/PRIVATE		
CORREA LOOP	LOCAL	50'	2125'	25 MPH	30'	URBAN	PUBLIC		
VERLANDER STREET	LOCAL	50'	714'	25 MPH	30'	URBAN	PUBLIC		
VERLANDER STREET	LOCAL	60'	90'	25 MPH	40'	URBAN	PUBLIC		
BLUM STREET	LOCAL	50'	151'	25 MPH	30'	URBAN	PUBLIC		
ALTUVELANE	LOCAL	50'	882'	25 MPH	30'	LIRRAN	PLIBLIC		

THIS NOTE IS BEING PLACED ON THE PLAN SET IN PLACE OF A TEMPORARY TRAFFIC CONTROL STRATEGY WITH THE FULL UNDERSTANDING THAT, AT A MINIMUM OF 6 WEEKS PRIOR TO THE START OF CONSTRUCTION, A TEMPORARY TRAFFIC CONTROL PLAN MUST BE REVIEWED AND APPROVED BY THE RIGHT OF WAY MANAGEMENT DIVISION AND TXDOT AS APPLICABLE. THE OWNER/REPRESENTATIVE FURTHER RECOGNIZES THAT A REVIEW FEE, AS PRESCRIBED BY THE MOST CURRENT VERSION OF THE CITY'S FEE ORDINANCE, SHALL BE PAID EACH TIME A PLAN OR PLAN REVISION IS SUBMITTED TO RIGHT OF WAY MANAGEMENT DIVISION FOR REVIEW.

PERRY HOMES (PH): (512) 484-7469 ATTN: NICK MCINTYRE

SANTA RITA COMMERCIAL LLC 8200 N MOPAC, SUITE 300 AUSTIN, TX 78759

SANTA RITA INVESTMENTS LTD 8300 N MOPAC, SUITE 300 AUSTIN, TX 78759

KIMLEY-HORN 5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100 AUSTIN, TX 78735 PH: (512) 646-2243 ATTN: BENJAMIN GREEN

CITY OF GEORGETOWN

300-1 INDUSTRIAL AVE. PO BOX 409 GEORGETOWN, TEXAS 78627 PH: (512) 930-3558

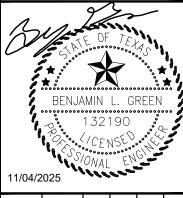
CITY OF LIBERTY HILL 926 LOOP 332

PO BOX 1920 LIBERTY HILL, TX 78642 PH: (512) 745-1222

PEDERNALES ELECTRIC COOP, INC.

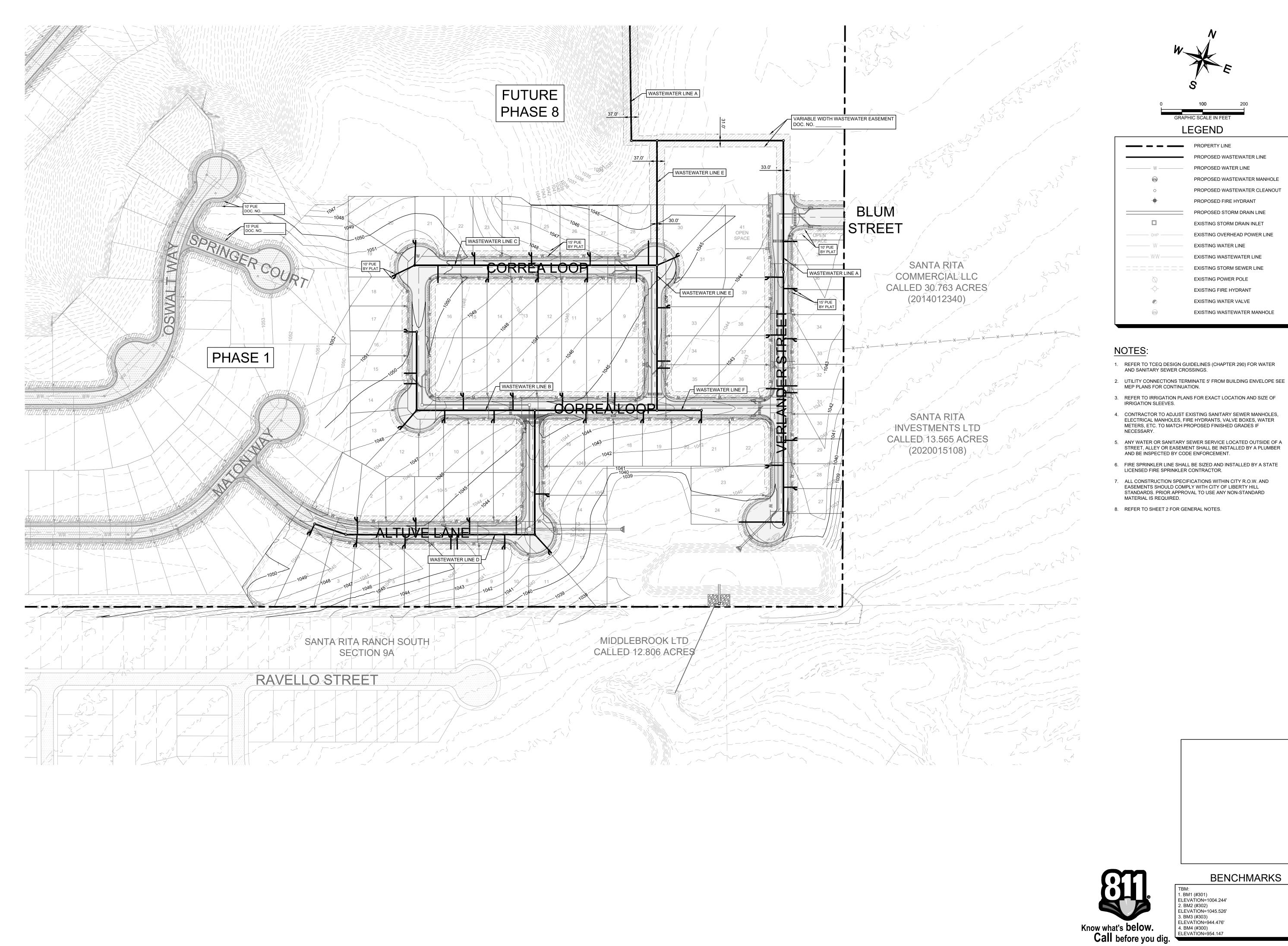
JOHNSON CITY, TEXAS 78636 PH: (800) 868-4791

AUSTIN, TEXAS 78746 CERTIFICATE OF REGISTRATION #928



BDI

OF 86



BENJAMIN L. GREEN

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OVERALL WASTEWATER F

ELDORADO SUBDIVISION PHASE 7

TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

SHEET NUMBER 56 OF 86

CITY OF LIBERTY HILL GENERAL NOTES:

- THE HORIZONTAL LAYOUTS AND ALIGNMENTS SHOWING GEOMETRIC DATA AND OTHER PERTINENT DESIGN DETAILS. THE HORIZONTAL LAYOUT SHALL ALSO SHOW THE DIRECTION OF STORM WATER FLOW AND THE LOCATION OF MANHOLES, INLETS AND
- 2. VERTICAL LAYOUTS AND ALIGNMENTS SHOWING EXISTING AND PROPOSED CENTER LINE, RIGHT AND LEFT RIGHT-OF-WAY LINE ELEVATIONS ALONG EACH PROPOSED ROADWAY.
- 3. TYPICAL RIGHT-OF-WAY CROSS SECTIONS SHOWING PERTINENT DESIGN DETAILS AND ELEVATIONS AS PRESCRIBED IN THE CITY STANDARD DETAILS AND SPECIFICATIONS. USE ROUND ROCK TRANSPORTATION CRITERIA MANUAL
- 4. TYPICAL PAVING SECTIONS SHOWING RIGHT-OF-WAY WIDTH, LANE WIDTHS, MEDIAN WIDTHS, SHOULDER WIDTHS, AND PAVEMENT
- 5. ATTENDANT DOCUMENTS CONTAINING ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED ROADWAY IMPROVEMENTS, INCLUDING GEOTECHNICAL INFORMATION AND TRAFFIC IMPACT STUDIES.
- 6. SHOW ANY TRANSPORTATION IMPROVEMENTS REQUIRED BY A TIA ON THE PROPERTY

 DETAILED DESIGN OF ALL DRAINAGE FACILITIES AS INDICATED IN THE PRELIMINARY PLAT PHASE, INCLUDING TYPICAL CHANNEL OR PAVING SECTION, STORM SEWERS AND OTHER STORM WATER CONTROL FACILITIES.

- 2. ADEQUATE ACCESS IS PROVIDED FOR MAINTENANCE OF AND REPAIR TO DRAINAGE FACILITIES.
- 3. TYPICAL CHANNEL CROSS-SECTIONS, PLAN AND PROFILE DRAWINGS OF EVERY CONDUIT/CHANNEL SHALL BE SHOWN
- 4. EXISTING AND PROPOSED TOPOGRAPHIC CONDITIONS INDICATING ONE (1) FOOT CONTOUR INTERVALS FOR SLOPES LESS THAN 5%, TWO (2) FOOT CONTOUR INTERVALS FOR SLOPES BETWEEN 5% AND 10%, AND FIVE (5) FOOT CONTOUR INTERVALS FOR SLOPES EXCEEDING 10%, AND REFERENCED TO A UNITED STATES GEOLOGICAL SURVEY OR COASTAL AND GEODETIC SURVEY
- 5. ATTENDANT DOCUMENTS CONTAINING DESIGN COMPUTATIONS IN ACCORDANCE WITH THE SUBDIVISION ORDINANCE FOR THE CITY OF LIBERTY HILL, AND ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED DRAINAGE IMPROVEMENTS
- 6. A COPY OF THE COMPLETE APPLICATION FOR FLOOD PLAIN MAP AMENDMENT OR REVISION, AS REQUIRED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), IF APPLICABLE.
- 7. NON-RESIDENTIAL AND MULTI-FAMILY DRAINAGE AND DETENTION FACILITIES: 7.1.NON-RESIDENTIAL AND MULTI-FAMILY DRAINAGE FACILITIES INCLUDE ALL DETENTION PONDS, WATER QUALITY PONDS,

IMPROVEMENTS. ROADSIDE SWALES AND INLETS ARE NOT INCLUDED.

PROPOSED FILL OR OTHER STRUCTURE ELEVATING TECHNIQUES, LEVEES, CHANNEL MODIFICATIONS AND DETENTION FACILITIES.

2. EXISTING AND PROPOSED TOPOGRAPHIC CONDITIONS WITH VERTICAL INTERVALS NOT GREATER THAN ONE (1) FOOT REFERENCED TO A UNITED STATES GEOLOGICAL SURVEY OR COASTAL AND GEODETIC SURVEY BENCH MARK OR MONUMENT.

OUTLET STRUCTURES, BERMS, IMPROVED CHANNELS OR OTHER IMPROVEMENTS ASSOCIATED WITH THE DRAINAGE

- 3. THE LOCATION, SIZE, AND CHARACTER OF ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL FACILITIES WITH SPECIFICATIONS DETAILING ALL ON-SITE EROSION CONTROL MEASURES WHICH WILL BE ESTABLISHED AND MAINTAINED DURING ALL PERIODS OF DEVELOPMENT AND CONSTRUCTION.
- CONTRACTOR STAGING AREAS, VEHICLE ACCESS AREAS, TEMPORARY AND PERMANENT SPOILS STORAGE AREAS.
- 5. A PLAN FOR RESTORATION FOR THE MITIGATION OF EROSION IN ALL AREAS DISTURBED DURING CONSTRUCTION.
- 6. IF SPOILS SITES ARE PROPOSED TO REMAIN AFTER SUBDIVISION ACCEPTANCE, INCLUDE THE FOLLOWING NOTES AND CONFIRM THAT THE PROPOSED LOCATION MEETS THIS CRITERIA. FILL MATERIAL ORIGINATING FROM THE LAND THAT IS THE SUBJECT OF A SUBDIVISION APPLICATION MAY BE TEMPORARILY
- STORED ON SAID LAND PROVIDED THAT THE DEVELOPER COMPLIES AT ALL TIMES WITH THE FOLLOWING REQUIREMENTS: (a) THE FILL MATERIAL SHALL BE STORED AT THE LOCATION SHOWN ON THE APPROVED CONSTRUCTION PLANS. (b) THE FILL MATERIAL SHALL CONSIST OF EARTHEN MATERIAL ORIGINATING FROM THE SUBDIVISION ONLY, SHALL REMAIN
- FREE FROM DEBRIS, AND SHALL BE SUITABLE FOR USE AS FILL MATERIAL ON THE FUTURE PHASES OF THE SUBDIVISION. THE FILL MATERIAL MAY NOT INCLUDE ANY MATERIAL FROM OUTSIDE OF THE SUBDIVISION (c) STORAGE OF THE FILL MATERIAL SHALL COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN INCLUDING REVEGETATION OF DISTURBED AREAS AND OTHER SEDIMENTATION AND EROSION CONTROLS ADOPTED BY THE TEXAS
- COMMISSION ON ENVIRONMENTAL QUALITY (d) THE FILL MATERIAL WILL BE PLACED AND STORED IN SUCH MANNER SO THAT IT IS STABLE, WITH THE SIDE SLOPES NO STEEPER THAN A 3:1 (H:V) SLOPE.
- THE FILL MATERIAL WILL BE LOCATED SO AS NOT TO DISTURB ANY WETLAND AREAS THAT MAY EXIST IN THE SUBDIVISION, AND WILL BE PLACED IN A MANNER AND LOCATION SO AS NOT TO ADVERSELY AFFECT THE NATURAL
- COURSE OF DRAINAGE ACROSS THE LAND OR IMPEDE DRAINAGE FROM NEIGHBORING PROPERTIES. (f) FISCAL SURETY THAT COMPLIES WITH SECTION 28 OF THIS ORDINANCE IN AN AMOUNT EQUAL TO 110% OF THE COST OF REMOVAL OF THE FILL MATERIAL WILL BE FILED WITH THE CITY PRIOR TO THE ACCEPTANCE OF THE SUBDIVISION THAT GENERATES THE FILL MATERIAL. THE FISCAL SURETY WILL BE BASED ON AN ESTIMATE PREPARED BY THE ENGINEER FOR THE SUBDIVISION AND APPROVED BY THE CITY ENGINEER.
- (g) THE HEIGHT OF THE FILL MATERIAL SHALL NOT EXCEED TEN (10') FEET. PERMISSION TO STORE FILL MATERIAL IN THE SUBDIVISION WILL EXPIRE AND TERMINATE IN THE EVENT THAT A
- PRELIMINARY PLAT, CONSTRUCTION PLANS, OR A FINAL PLAT FOR ANY PORTION OF THE LAND EXPIRES, OR AT SUCH TIME THAT THE IMPROVEMENTS FOR THE LAST PHASE OF THE SUBDIVISION ARE ACCEPTED.

- 1. THE LAYOUT, SIZE, AND SPECIFIC LOCATION OF THE EXISTING AND PROPOSED WATER MAINS, PUMP STATIONS, STORAGE TANKS, AND OTHER RELATED STRUCTURES SUFFICIENT TO SERVE THE PROPOSED LAND USES AND DEVELOPMENT AS IDENTIFIED IN THE PRELIMINARY PLAT PHASE AND IN ACCORDANCE WITH THE CITY STANDARDS AND DETAILS AND SPECIFICATIONS.
- 2. THE EXISTING AND PROPOSED LOCATION OF FIRE HYDRANTS, VALVES, METERS AND OTHER FITTINGS.
- 3. DESIGN DETAILS SHOWING THE CONNECTION WITH THE EXISTING CITY WATER SYSTEM.
- 4. THE SPECIFIC LOCATION AND SIZE OF ALL WATER SERVICE CONNECTIONS FOR EACH INDIVIDUAL LOT.
- 5. ATTENDANT DOCUMENTS CONTAINING ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED WATER DISTRIBUTION SYSTEM.

- 1. THE LAYOUT, SIZE AND SPECIFIC LOCATION OF THE EXISTING AND PROPOSED WASTEWATER LINES, MANHOLES, LIFT STATIONS, AND OTHER RELATED STRUCTURES SUFFICIENT TO SERVE THE LAND USES AND DEVELOPMENT AS IDENTIFIED IN THE PRELIMINARY PLAT PHASE, IN ACCORDANCE WITH ALL CURRENT CITY STANDARDS, SPECIFICATIONS, AND CRITERIA FOR CONSTRUCTIONS OF WASTEWATER SYSTEMS.
- 2. PLAN AND PROFILE DRAWINGS FOR EACH LINE IN PUBLIC RIGHTS-OF-WAY OR PUBLIC UTILITY EASEMENTS, SHOWING EXISTING GROUND LEVEL ELEVATION AT CENTER LINE OF PIPE, PIPE SIZE AND FLOW LINE ELEVATION AT ALL BENDS, DROPS, TURNS, AND STATION NUMBERS AT FIFTY (50) FOOT INTERVALS.
- 3. DESIGN DETAILS FOR MANHOLES AND SPECIAL STRUCTURES. FLOW LINE ELEVATIONS SHALL BE SHOWN AT EVERY POINT WHERE THE LINE ENTERS OR LEAVES THE MANHOLES.
- 4. DETAILED DESIGN FOR LIFT STATIONS, PACKAGE PLANTS OR OTHER SPECIAL WASTEWATER STRUCTURES.
- 5. ATTENDANT DOCUMENTS CONTAINING ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED WASTEWATER SYSTEM, AND COMPLETE AN APPLICATION FOR STATE HEALTH DEPARTMENT APPROVAL.

TRAFFIC CONTROL, STREET LIGHTS & SIGNS:

- I. THE LOCATION, SIZE, TYPE AND DESCRIPTION OF STREET LIGHTS ACCORDING TO CITY STANDARD DETAILS AND SPECIFICATIONS.
- 2. THE ELECTRICAL DESIGN SIGNED AND SEALED BY AN ENGINEER FOR THE LED STREET LIGHT SYSTEM ON A METERED CIRCUIT 3. THE LOCATION, SIZE, TYPE AND DESCRIPTION OF STREET SIGNS ACCORDING TO CITY STANDARD DETAILS AND SPECIFICATIONS
- 4. SHOW PAVEMENT MARKINGS AND LOCATION OF STOP BARS AND OTHER MARKINGS (IF APPLICABLE) AS REQUIRED IN THE LATEST VERSION OF THE TEXAS MANUAL UNIFORM TRAFFIC CONTROL DEVICES.
- 5. PROVIDE CITY OF LIBERTY HILL STREET SIGN DETAIL.
- 6. THE LOCATION, SIZE (WHERE APPLICABLE) AND TYPE OF SPEED LIMIT SIGNS AND PERMANENT TRAFFIC BARRICADES ACCORDING TO CITY STANDARD DETAILS AND SPECIFICATIONS.

- 1. THE LOCATION, SIZE AND TYPE OF SIDEWALKS AND PEDESTRIAN RAMPS ACCORDING TO CITY STANDARD DETAILS AND
- 2. THOSE SIDEWALKS NOT ABUTTING A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL LOTS (INCLUDING SIDEWALKS ALONG STREET FRONTAGES OF LOTS PROPOSED FOR SCHOOLS, CHURCHES, PARK LOTS, DETENTION LOTS, DRAINAGE LOTS, LANDSCAPE LOTS, OR

- SIMILAR LOTS), SIDEWALKS ON ARTERIAL STREETS TO WHICH ACCESS IS PROHIBITED, SIDEWALKS ON DOUBLE FRONTAGE LOTS ON THE SIDE TO WHICH ACCESS IS PROHIBITED, AND ALL SIDEWALKS ON SAFE SCHOOL ROUTES ARE SHOWN ON THE PLANS TO BE INSTALLED WITH THE SUBDIVISION IMPROVEMENTS.
- 3. PROVIDE A SIDEWALK PLAN LABELING THE SIDEWALKS TO BE BUILT BY THE HOMEBUILDER AND SIDEWALKS TO BE BUILT BY THE SUBDIVISION DEVELOPER.
- 4. FOR SINGLE-FAMILY RESIDENTIAL SUBDIVISIONS THAT ARE NOT REGISTERED WITH TDLR, PROVIDE DOCUMENTATION FROM A REGISTERED ACCESSIBILITY SPECIALIST (RAS) THAT THE PEDESTRIAN INFRASTRUCTURE

PARKLAND, IMPROVEMENTS & OTHER PUBLIC OR COMMON AREAS

1. PROOF OF HOA ESTABLISHMENT (ONE COPY OF THE HOMEOWNER'S ASSOCIATION CREATION DOCUMENTS INCLUDING RESPONSIBILITIES FOR PARK AND/OR LANDSCAPED ENTRANCE MAINTENANCE IS PROVIDED IF SUCH FACILITIES ARE PROVIDED.

- 2. PROOF OF OWNERSHIP, DEDICATION, PERPETUAL USE & MAINTENANCE (PROVIDE A RECORDED DEED, AGREEMENT, CONVEYANCE AND/OR RESTRICTIONS DEMONSTRATING THAT THE PRIVATE PARK LAND AND FACILITIES ARE RESTRICTED TO PARK AND RECREATIONAL PURPOSES BY A RECORDED COVENANT THAT RUNS WITH THE LAND IN FAVOR OF THE FUTURE OWNERS OF PROPERTY THAT CANNOT BE DEFEATED OR ELIMINATED WITHOUT THE CONSENT OF THE CITY COUNCIL. THE RECORDED DEED, AGREEMENT, CONVEYANCE AND/OR RESTRICTIONS SHOULD ADEQUATELY PROVIDE FOR PRIVATE OWNERSHIP AND PERPETUAL MAINTENANCE.)
- 3. PARK CONCEPT PLAN (PROVIDE ONE COPY OF PLAN WITH SUBMISSION ON THE DISK)

WITHIN THE PUBLIC RIGHT-OF-WAY COMPLIES WITH THE TEXAS ACCESSIBILITY STANDARDS.

- 4. FISCAL GUARANTEE OF COMPLETION (PROVIDE A FISCAL NOTE COVERING THE COST OF CONSTRUCTING ALL PARK IMPROVEMENTS SHOWN ON THE APPROVED PARK CONCEPT PLAN. IF PHASING IS PLANNED THE FISCAL NOTE SHOULD COVER ALL
- 5. SHOW ALL FACILITIES INCLUDED ON THE APPROVED PARK CONCEPT PLAN AND LABEL IMPROVEMENT PHASES, IF APPLICABLE.

LANDSCAPE PLAN:

1. THE LOCATION, SIZE AND DESCRIPTION OF ALL SIGNIFICANT TREES (TO REMAIN OR TO BE REMOVED), AND REPLACEMENT TREES TO MEET THE REQUIREMENTS OF THE CITY OF LIBERTY HILL SUBDIVISION ORDINANCE.

- 2. THE LOCATION, SIZE AND DESCRIPTION OF ALL LANDSCAPING AND SCREENING MATERIALS.
- 3. PROVIDE AN APPROVED LICENSE AGREEMENT ASSOCIATED WITH ANY LANDSCAPING OR SIGNAGE LOCATED IN THE PUBLIC RIGHT-OF-WAY.

1. FINAL DESIGN CRITERIA, REPORTS, CALCULATIONS AND ALL OTHER RELATED COMPUTATIONS, IF NOT PREVIOUSLY SUBMITTED WITH THE PRELIMINARY PLAT.

- 1. A COST ESTIMATE OF EACH REQUIRED IMPROVEMENT, PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS.
- 2. VERIFICATION AND ADJUSTMENT OF THE CONSTRUCTION COST IS REQUIRED PRIOR TO CITY ACCEPTANCE. A FINAL ENGINEER'S SIGNED AND SEALED CERTIFIED COPY OF THE FINAL COST OF ALL IMPROVEMENTS DEDICATED TO THE CITY OR EQUIVALENT PRIVATE INFRASTRUCTURE IS REQUIRED IN THE CLOSE OUT PACKAGE AS PART OF THE FINAL ACCEPTANCE.

1. AFTER ALL COMMENTS HAVE BEEN ADDRESSED, THE APPLICANT WILL BE REQUIRED TO SUBMIT ONE UNBOUND FINAL SET OF CONSTRUCTION PLANS FOR SIGNATURES.

- 2. AFTER THE PLANS HAVE BEEN SIGNED, THEY WILL BE STAMPED AND RETURNED TO THE APPLICANT.
- 3. THE APPLICANT WILL BE RESPONSIBLE FOR MAKING THREE COLLATED AND STAPLED FINAL COPIES OF THE SIGNED PLANS AND A SCANNED COPY OF THE PLANS.
- 4. PLANS MUST BE SCANNED AT 300 DPI, UNCOMPRESSED FORMAT TIF TO THE ORIGINAL APPROVED SCALE. THE DIGITAL COPY OF THE PLANS NEEDS TO BE SUBMITTED TO THE PLANNING DEPARTMENT ON A DISK.
- 5. UPON RECEIPT OF THE FINAL PLAN, A PRE-CONSTRUCTION MEETING WILL BE SCHEDULED.

6. CONSTRUCTION MAY NOT START UNTIL AFTER THE PRE-CONSTRUCTION MEETING AND THE CONSTRUCTION PLAN PERMIT IS ISSUED.

WILLIAMSON COUNTY BASE MATERIAL NOTES:

1. BASE MATERIAL SHALL CONFORM TO ITEM 247 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, "FLEXIBLE BASE". THE BASE MATERIAL SHALL BE TYPE A GRADE 4, OR AS APPROVED BY THE COUNTY ENGINEER. 3RADE 4 MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TABLE B6.1 BELOW: TABLE B6.1: GRADATION SPECIFICATION FOR TY A, GRADE 4

MASTER GRADATION	CUMULATIVE
SIEVE SIZE	RETAINED
2 1/2"	-
1 3/4"	0
7/8"	10% - 35%
3/8"	30% - 65%
#4	45% - 75%
#40	70% - 90%
#200	87% - 95%

- 2. EACH LAYER OF BASE COURSE SHALL BE TESTED FOR IN-PLACE DRY DENSITY AND MEASURED FOR COMPACTED THICKNESS. THE NUMBER AND LOCATION OF ALL BASE TEST SAMPLES SHALL BE DETERMINED BY THE COUNTY ENGINEER.
- 3. THE BASE SHALL BE PREPARED AND COMPACTED TO ACHIEVE A MINIMUM OF 100% OF THE MAXIMUM (PROCTOR) DRY DENSITY OR AS APPROVED BY THE COUNTY ENGINEER UPON RECOMMENDATION BY THE TESTING LABORATORY. THE MAXIMUM LIFT SHALL NOT EXCEED SIX INCHES. THE BASE MUST BE INSPECTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY AND A CERTIFIED COPY OF THE TEST RESULTS FURNISHED TO THE COUNTY ENGINEER FOR APPROVAL. PRIOR TO THE PLACEMENT OF THE FIRST LIFT OF BASE, THE STOCKPILE SHALL BE TESTED FOR THE SPECIFICATIONS FOUND IN ITEM 247 TABLE 1 AND THE RESULT FURNISHED TO THE COUNTY ENGINEER FOR APPROVAL
- WILLIAMSON COUNTY BITUMINOUS NOTES:
- 1. URBAN ROADS REQUIRE A MINIMUM 2 INCH WEARING SURFACE OF HMAC TYPE D. THE MIX SHALL BE FROM A TXDOT CERTIFIED PLANT AND THE MIX DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE
- 2. IF PROVIDING MIXTURE TYPE C OR D, USE PERFORMANCE GRADE (PG) BINDER 70-22. PROVIDE PG BINDER THAT DOES NOT CONTAIN RECYCLED ENGINE OIL BOTTOMS (REOBS) OR POLY PHOSPHORIC ACID (PPA). RECYCLED ASPHALT PAVEMENT (RAP) IS NOT PERMITTED FOR USE AS A COMPONENT OF THE HMACP. THE CONTRACTOR IS ALSO NOT PERMITTED THE USE RECYCLED ASPHALT SHINGLES (RAS) AS A COMPONENT OF THE HMACP.
- 3. IF PROVIDING MIXTURE TYPE B, USE PG BINDER 64-22. PROVIDE PG BINDERS THAT DO NOT CONTAIN REOBS OR PPA. FOR SUBSURFACE COURSE TYPE B, THE USE OF TWENTY PERCENT (20%) RAP IS PERMITTED IN THE MIX DESIGN. THE CONTRACTOR IS NOT PERMITTED TO USE RAS AS A COMPONENT OF THE HMACP.
- 4. TARGET LABORATORY MOLDED DENSITY IS 96.5% FOR ALL MIXTURES WITHOUT RAP AND WHEN USING A TEXAS GYRATORY COMPACTOR (TGC) FOR DESIGNING THE MIXTURE. WHEN USING SUPERPAVE GYRATORY COMPACTOR (SGC) TO DESIGN MIXTURES, SUBMIT THE SGC MIX DESIGN TO THE ENGINEER FOR APPROVAL.
- 5. ALL MIXTURES MUST MEET THE HAMBURG REQUIREMENT AS STATED IN THE TABLE BELOW.

HIGH-TEMPERATURE BINDER GRADE		HAMBURG WHEEL TEST REQUIREMENTS MINIMUN # OF PASSESS @ 0.5" RUT DEPTH, TESTED @ 122°F
PG 64 OR LOWER	TEX-242-F	7,000
PG 70	TEXT-242-F	15,000
PG 76 OR HIGHER	TEXT-242-F	20,000

6. SUBMIT ANY PROPOSED ADJUSTMENTS OR CHANGES TO A JOB MIX FORMULA TO THE COUNTY ENGINEER BEFORE PRODUCTION

7. UNLESS OTHERWISE APPROVED, PROVIDE TYPE B MIXTURES THAT HAVE NO LESS THAN 4.5% ASPHALT BINDER, AND TY C AND D

- MIXTURES WITH NO LESS THAN 4.7% BINDER 8. FOR MIXTURE DESIGN VERIFICATION, PROVIDE THE ENGINEER WITH TWO 5-GALLON BUCKETS OF EACH AGGREGATE STOCKPILE
- TO BE USED ON THE PROJECT AND THREE GALLONS OF EACH PG BINDER TO BE USED ON THE PROJECT. ALSO PROVIDE SUFFICIENT QUANTITIES OF ANY OTHER ADDITIVES THAT WILL BE USED IN THE HMA MIXTURE. THIS MUST BE DONE PRIOR TO APPROVAL OF THE MIX DESIGN, UNLESS ALREADY PERFORMED WITHIN A ONE-YEAR TIME PERIOD.
- 9. PRIOR TO ALLOWING PRODUCTION OF THE TRIAL BATCH, THE ENGINEER WILL USE THE MATERIALS PROVIDED BY THE CONTRACTOR TO PERFORM THE FOLLOWING TESTS TO VERIFY THE HMA MIXTURE DESIGN.
- 1. INDIRECT TENSILE TEST IN ACCORDANCE WITH TEX-226-F 2. HAMBURG WHEEL TEST IN ACCORDANCE WITH TEX-242-F
- 3. OVERLAY TEST IN ACCORDANCE WITH TEX-248-F 4. CANTABRO TEST IN ACCORDANCE WITH TEX-245-F
- FOR MIXTURES DESIGNED WITH A TEXAS GYRATORY COMPACTOR (TGC), THE ENGINEER MAY REQUIRE THAT THE TARGET LABORATORY MOLDED DENSITY BE RAISED TO NO MORE THAN 97.5% OR MAY LOWER THE DESIGN NUMBER OF GYRATIONS TO NO
- LESS THAN 35 FOR MIXTURES DESIGNED WITH AN SGC IF ANY OF THE FOLLOWING CONDITIONS EXIST. 1. THE INDIRECT TENSILE TEST RESULTS IN A VALUE GREATER THAN 200 PSI

- 2. THE HAMBURG WHEEL TEST RESULTS IN A VALUE LESS THAN 3.0 MM
- 3. THE OVERLAY TEST RESULTS IN A VALUE LESS THAN 100 CYCLES 4. THE CANTABRO TEST RESULTS IN A VALUE OF MORE THAN 20% LOSS
- IN LIEU OF, OR IN ADDITION TO EVALUATING THE MIXTURE DESIGN PRIOR TO ALLOWING A TRIAL BATCH TO BE PRODUCED, THE ENGINEER MAY ALSO EVALUATE THE MIXTURE PRODUCED DURING THE TRIAL BATCH FOR COMPLIANCE WITH THE 4 TESTS LISTED

10. CONTRACTOR'S QUALITY CONTROL (CQC) TEST REPORTS SHALL BE SUBMITTED TO THE COUNTY ENGINEER ON A DAILY BASIS. AS A MINIMUM, DAILY CQC TESTING ON THE PRODUCED MIX SHALL INCLUDE: SIEVE ANALYSIS TEX-200-F, ASPHALT CONTENT TEX-236-F, HVEEM STABILITY TEX-208-F, LABORATORY COMPACTED DENSITY TEX-207-F, AND MAXIMUM SPECIFIC GRAVITY TEX-227-F. THE NUMBER AND LOCATION OF ALL HMAC TESTS SHALL BE DETERMINED BY THE COUNTY ENGINEER WITH A MINIMUM OF THREE, 6-INCH DIAMETER FIELD CORES SECURED AND TESTED BY THE CONTRACTOR FROM EACH DAY'S PAVING. EACH HMAC COURSE SHALL BE TESTED FOR IN-PLACE DENSITY, BITUMINOUS CONTENT AND AGGREGATE GRADATION, AND SHALL BE MEASURED FOR COMPACTED THICKNESS. THE NUMBER AND LOCATION OF ALL HMAC TEST SAMPLES SHALL BE DETERMINED BY THE COUNTY ENGINEER.

- 11. RURAL ROADS MAY USE EITHER THE SPECIFICATIONS FOUND IN SECTION B7.1 OR A TWO-COURSE SURFACE IN ACCORDANCE WITH ITEM 316, TREATMENT WEARING SURFACE, OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. THE TYPE AND RATE OF ASPHALT AND AGGREGATE SHALL BE INDICATED ON THE PLANS AS A BASIS OF ESTIMATE AND SHALL BE DETERMINED AT THE PRECONSTRUCTION CONFERENCE. AGGREGATE USED IN THE MIX SHALL BE ON THE TXDOT QUALITY MONITORING SCHEDULE. AGGREGATE SHALL BE TYPE B GRADE 4. GRADATION TESTS SHALL BE REQUIRED FOR EACH 300 CUBIC YARDS OF MATERIAL PLACED WITH A MINIMUM OF TWO TESTS PER EACH GRADE PER EACH PROJECT. TEST RESULTS SHALL BE REVIEWED BY THE COUNTY ENGINEER PRIOR TO APPLICATION OF THE MATERIAL.
- 1. IN LIEU OF BITUMINOUS PAVEMENT, PORTLAND CEMENT CONCRETE PAVEMENT MAY BE USED. IN SUCH CASES, THE PAVEMENT THICKNESS SHALL BE A MINIMUM OF 9 INCHES OF CONCRETE, AND SHALL BE JOINTED AND REINFORCED IN ACCORDANCE WITH THE DETAIL INCLUDED IN APPENDIX I. THE MIX SHALL BE FROM A TXDOT CERTIFIED PLANT. THE MIX DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.
- WILLIAMSON COUNTY CONCRETE GENERAL NOTES:

1. UNLESS OTHERWISE SPECIFIED, CONCRETE SHALL BE IN ACCORDANCE WITH ITEM 421 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND BE PLACED IN ACCORDANCE WITH THE APPLICABLE ITEM.

2. ALL CONCRETE SHALL BE TESTED FOR COMPRESSIVE STRENGTH. ONE SET OF THREE CONCRETE TEST CYLINDERS SHALL BE MOLDED FOR EVERY 50 CUBIC YARDS OF CONCRETE PLACED FOR EACH CLASS OF CONCRETE PER DAY, OR AT ANY OTHER INTERVAL AS DETERMINED BY THE COUNTY ENGINEER. A SLUMP TEST SHALL BE REQUIRED WITH EACH SET OF TEST CYLINDERS. ONE CYLINDER SHALL BE TESTED FOR COMPRESSIVE STRENGTH AT AN AGE OF SEVEN DAYS AND THE REMAINING TWO CYLINDERS SHALL BE TESTED AT 28 DAYS OF AGE.

STANDARD MUD PLAN NOTE

- A) THE DISTRICT ENGINEER, JONES-HEROY & ASSOCIATES, INC. (KEN HEROY, PH: 512/989-2200) SHALL BE CONTACTED 48 HOURS
- I) PRE-CONSTRUCTION MEETINGS; II) BEGINNING EACH PHASE OF CONSTRUCTION;
- III) TESTING OF WATER AND/OR WASTEWATER LINES; AND,
- IV) FINAL WALK-THROUGH OF FACILITIES. B) REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO DISTRICT OWNED FACILITIES AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

CITY OF GEORGETOWN CONSTRUCTION GENERAL 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 HEREBY 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 IN EFFECT AT THE TIME OF SUBMITTAL OF THE
- 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 TCEQ REQUIREMENTS.
- 8. WASTEWATER MANHOLES SHALL BE VACUUM TESTED AND COATED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN

9. WASTEWATER MAINS SHALL BE CAMERA TESTED BY THE CONTRACTOR AND SUBMITTED TO THE CITY ON 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 MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 200 PSI FOR 15 MINUTES AND 150 PSI FOR 2 HOURS.
- 13. ALL BENDS AND CHANGES IN DIRECTION 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
- 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 ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.
- 20. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTABLE 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. RECORD DRAWINGS OF PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANCE OF THE PROJECT. THESE DRAWINGS SHALL BE A PDF EMAILED TO THE CITY DEVELOPMENT ENGINEER.

WATER NOTES:

CONTRACTOR.

- NOTE: CONTRACTOR SHALL CONTACT CITY OF GEORGETOWN UTILITY SYSTEMS AT (512) 930-2550, FOR A LIST OF REQUIRED WATER UTILITY INSPECTIONS AND TO REQUEST INSPECTION.
- 1. THE TOP OF VALVE STEMS SHALL BE AT LEAST 18", AND NO MORE THAN 36", BELOW FINISHED GRADE. VALVE STEM RISERS SHALL
- 2. PIPE MATERIALS TO BE USED FOR CONSTRUCTION OF UTILITY LINES: WATER PVC SCH. 40 PIPE AND FILLINGS.
- 3. ALL WATER LINES, INCLUDING SERVICE LINES, SHALL BE PRESSURE AND LEAK TESTED PER GEORGETOWN UTILITY SYSTEMS STANDARD SPECIFICATIONS AN WITNESSED BY THE GEORGETOWN REPRESENTATIVE. ALL TESTING IS TO B THE RESPONSIBILITY OF THE CONTRACTOR, AND THE CONTRACTOR MAY BE REQUIRED TO RE-TEST LINES IF THE TESTING IS NOT WITNESSED BY GEORGETOWN UTILITY SYSTEMS. CONTRACTOR MUST NOTIFY GEORGETOWN 48 HOURS PRIOR TO ANY TESTING.
- 4. ALL WATER LINES SHALL BE STERILIZED AND BACTERIOLOGICAL TESTED IN ACCORDANCE WITH TCEQ STANDARDS. THE CONTRACTOR IS RESPONSIBLE FOR STERILIZATION AND GEORGETOWN UTILITY SYSTEMS IS RESPONSIBLE FOR SUBMITTING BACTERIOLOGICAL SAMPLES TO THE STATE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING COST.
- 5. DENSITY TESTING OF COMPACTED BACKFILL SHALL BE MADE AT A RATE OF ONE TEST PER TWO FOOT LIFTS PER 300 FEET OF 6. CONTRACTOR TO OBTAIN A WATER METER FROM GEORGETOWN FOR ANY WATER THAT MAY BE REQUIRED DURING
- 7. ALL WATER METER BOXES SHALL BE FORD GULF BOX WITH LOCKING LID. THE FOD CATALOG NUMBER FOR THE SINGLE METER BOX IS G-148-233. FOR THE DOUBLE BOX WITH AN ANGLED INLET THE NUMBER IS DG-148-243.

8. MANHOLE FRAMES AND COVERS AND WATER VALVE BOXES SHALL BE RAISED TO FINISHED PAVEMENT GRADE AT THE OWNER'S EXPENSE BY THE CONTRACTOR WITH COUNTY INSPECTION. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL

PAVING CONSTRUCTION. 9. THE LOCATION OF ANY EXISTING UTILITY LINES SHOWN ON THESE PLANS IS THE BEST AVAILABLE AND MAY NOT BE TOTALLY ACCURATE. ANY DAMAGE TO EXISTING UTILITY LINES, BOTH KNOWN AND UNKNOWN, SHALL BE REPAIRED AT THE EXPENSE OF THE

- 11. ALL WATER MAINS AND SERVICE LINES SHALL MEET GEORGETOWN UTILITY SYSTEMS CONSTRUCTION STANDARDS MINIMUM COVER REQUIREMENTS. ALL STREETS ARE TO BE CUT TO SUBGRADE PRIOR TO INSTALLATION OF WATER MAINS OR CUTS WILL BE
- 13. ALL WATER PIPE BEDDING MATERIAL SHALL CONFORM TO GEORGETOWN UTILITY SYSTEMS SPECIFICATIONS.
- 14. TRACER TAPE SHALL BE INSTALLED ON ALL WATER MAINS IN ACCORDANCE WITH GEORGETOWN UTILITY SYSTEMS CONSTRUCTION STANDARDS.
- REINFORCING STEEL TO BE ASTM A615 60.
- 16. ALL WATER VALVES WILL BE OPERATED BY GEORGETOWN UTILITY SYSTEMS PERSONNEL ONLY. THE CONTRACTOR MAY NOT
- OPERATE ANY WATER VALVE. THE GENERAL CONTRACTOR MAY BE FINED IF A WATER VALVE IS OPERATED, REGARDLESS OF WHO OPERATED THE VALVE.
- 17. THRUST BLOCKING TO BE VERIFIED BY THE FIRE CODE OFFICIAL
- 18. HYDROSTATIC TESTING OF THE FIRE LINES, HYDRANTS, AND FDC TO BE CONDUCTED AND VERIFIED BY THE FIRE CODE OFFICIAL.

- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE. B. INSTALL STORM DRAINS AND OTHER UTILITIES AS SPECIFIED ON PLAN SHEETS.

C. REMOVE EROSION CONTROL DEVICES WHEN GROUND COVER ESTABLISHED.

- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE. REMOVE AS NEEDED TO PAVE.
- C. PAVE PARKING LOT AND SIDEWALKS AS SPECIFIED ON PLAN SHEETS. D. REMOVE TEMPORARY CONSTRUCTION ENTRANCE.
- A RE-VEGETATE LOT AND PARKWAYS B. LANDSCAPE CONTRACTOR SHALL RE-VEGETATE ALL AREAS RESERVED FOR LANDSCAPE VEGETATIVE COVERS.
- 1. THE DISTRICT ENGINEER, JONES-HEROY & ASSOCIATES, INC. (KEN HEROY, PH: 512/989-2200) SHALL BE CONTACTED 48 HOURS
- 1.1. PRE-CONSTRUCTION MEETINGS;
- TESTING OF WATER AND/OR WASTEWATER LINES; AND, FINAL WALK-THROUGH OF FACILITIES.
- ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

10. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH AT LEAST 8 MIL POLYETHYLENE WRAP.

- 12. CONTRACTOR TO NOTIFY GEORGETOWN UTILITY SYSTEMS 48 HOURS PRIOR TO CONNECTING TO EXISTING WATER UTILITIES.

- 15. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER ALL CONCRETE IS TO BE CLASS "A" (5 SACK, 300 PSI ~ 28-DAYS), AND ALL

SEQUENCE OF CONSTRUCTION:

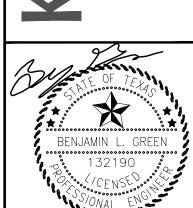
THE PROJECT SHALL GENERALLY CONFORM TO THE FOLLOWING:

A. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE, SILT FENCE, AND TREE PROTECTION FENCE ACCORDING TO THE

- APPROXIMATE LOCATION AND SHOWN ON EROSION CONTROL PLAN, NOTES & DETAIL SHEET, AND LANDSCAPE PLANS. B. BEGIN CLEARING AND GRADING OF SITE. C. SEED AND RE-VEGETATE SLOPES WHERE SHOWN.
- PHASE 2 UTILITIES
- C. INSTALL INLET PROTECTION AS INLETS ARE INSTALLED.
- B. STABILIZE SUBGRADE.
- PHASE 4 LANDSCAPING AND SOIL STABILIZATION

- STANDARD MUD NOTES:
- BEGINNING EACH PHASE OF CONSTRUCTION:
- REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO DISTRICT OWNED FACILITIES AND DOES NOT INDICATE A REVIEW OF THE





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.
- 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
- 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.
- 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

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- 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. 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.
- A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.
- (A) The total exfiltration, as determined by a hydrostatic head test, must not

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(2) Infiltration/Exfiltration Test.

- 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.
- 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 paragraph.
- (E) If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

- 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.
- 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.
- Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).
- Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: ___

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

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.

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.

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> 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.
- All dimensions must meet the appropriate standard
- Mandrel Design.
- (i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
- 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.
- 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% deflection.
- An owner shall not conduct a deflection test until at least 30 days after the final backfill.
- Gravity collection system pipe deflection must not exceed five percent (5%).
- 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.
- All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58. All manholes must pass a leakage test.

(1) Hydrostatic Testing.

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.

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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 __ of __ and marked after backfilling as shown in the detail on Plan Sheet __ of __.

- 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)(ii) of this paragraph. For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
 - (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the
 - 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 $0.085 \times D \times K$

- 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

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- (A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth
- 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. A test for concrete manholes may use a 24-hour wetting period before
- testing to allow saturation of the concrete. (2) Vacuum Testing.
- (A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
- 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. A test head must be placed at the inside of the top of a cone section.
- and the seal inflated in accordance with the manufacturer's recommendations.
- There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
- 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.
- 17. All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city inspector must visually inspect the private service lateral and the connection to the sewage collection system, and certify that it is constructed in conformity with the applicable provisions of this section. The owner of the collection system must maintain such certifications for five years and forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

Austin Regional Office San Antonio Regional Office 12100 Park 35 Circle, Building A 14250 Judson Road Austin, Texas 78753-1808 San Antonio, Texas 78233-4480 Phone (210) 490-3096 Phone (512) 339-2929 Fax (210) 545-4329 Fax (512) 339-3795

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

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SHEET NUMBER 3 OF 86

ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, CITY (OR TOWN) STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING

SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION AND DETAIL SHALL BE FOLLOWED. 2. THE CONTRACTOR SHALL COMPLY WITH CITY (OR TOWN) "GENERAL NOTES" FOR CONSTRUCTION. IF EXISTING AND REQUIRED BY THE CITY. FOR INSTANCES WHERE THEY CONFLICT WITH THESE KH GENERAL NOTES, THEN THE MORE RESTRICTIVE SHALL APPLY. 3. THE CONTRACTOR SHALL FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE AUTHORITIES' SPECIFICATIONS AND REQUIREMENTS. 4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXISTING CONDITIONS.

5. THE EXISTING CONDITIONS SHOWN ON THESE PLANS WERE PROVIDED BY THE TOPOGRAPHIC SURVEY PREPARED BY THE PROJECT SURVEYOR, AND ARE BASED ON THE BENCHMARKS SHOWN. THE CONTRACTOR SHALL REFERENCE THE SAME BENCHMARKS. 6. THE CONTRACTOR SHALL REVIEW AND VERIFY THE EXISTING TOPOGRAPHIC SURVEY SHOWN ON THE PLANS REPRESENTS EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES FOUND TO THE OWNER AND ENGINEER

7. IF THE CONTRACTOR DOES NOT ACCEPT THE EXISTING TOPOGRAPHIC SURVEY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED PROFESSIONAL LAND SURVEYOR TO THE OWNER AND ENGINEER FOR REVIEW

8. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION SURVEYING AND STAKING.

27. CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES

9. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL, INCLUDING BENCHMARKS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS. PROPERTY LINES AND CORNERS SHALL BE HELD AS THE HORIZONTAL CONTROL. 10 THE CONTRACTOR SHALL REVIEW AND VERIEY ALL DIMENSIONS FLEVATIONS AND FIFLD CONDITIONS THAT MAY AFFECT CONSTRUCTION. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT, ENGINEER, AND IF APPLICABLE THE CITY AND OWNER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE CITY. ENGINEER. AND OWNER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM. 11. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO

12.IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK TO HAVE THEM LOCATE THEIR EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION

COMMENCING CONSTRUCTION. OWNER/ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH

13. CONTRACTOR SHALL CALL TEXAS 811 AN ADEQUATE AMOUNT OF TIME PRIOR TO COMMENCING CONSTRUCTION OR ANY EXCAVATION. 14. CONTRACTOR SHALL USE EXTREME CAUTION AS THE SITE CONTAINS VARIOUS KNOWN AND UNKNOWN PUBLIC AND PRIVATE UTILITIES. 15. THE LOCATIONS, ELEVATIONS, DEPTH, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY MAPS AND PLANS, AND ARE CONSIDERED APPROXIMATE AND INCOMPLETE. IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY THE PRESENCE, LOCATION, ELEVATION, DEPTH, AND DIMENSION OF EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE ENGINEER SHALL BE NOTIFIED WHEN A PROPOSED IMPROVEMENT CONFLICTS WITH AN EXISTING LITH ITY

16 THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY ADJUSTMENTS AND RELOCATIONS OF EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO, ADJUSTING EXISTING MANHOLES TO MATCH PROPOSED GRADE, RELOCATING EXISTING POLES AND GUY WIRES THAT ARE LOCATED IN PROPOSED DRIVEWAYS, ADJUSTING THE HORIZONTAL OR VERTICAL ALIGNMENT OF EXISTING UNDERGROUND UTILITIES TO ACCOMMODATE PROPOSED GRADE OR CROSSING WITH A PROPOSED UTILITY, AND ANY OTHERS THAT MAY BE ENCOUNTERED THAT ARE UNKNOWN AT THIS TIME AND NOT SHOWN ON THESE PLANS 17. CONTRACTOR SHALL ARRANGE FOR OR PROVIDE, AT ITS EXPENSE, ALL GAS, TELECOMMUNICATIONS, CABLE, OVERHEAD AND

UNDERGROUND POWER LINE. AND UTILITY POLE ADJUSTMENTS NEEDED. 18. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF FRANCHISE UTILITIES THAT ARE NECESSARY FOR ON-SITE AND OFF-SITE CONSTRUCTION, AND SERVICE TO THE PROPOSED DEVELOPMENT. 19. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTORS' FAILURE TO EXACTLY LOCATE AND

PRESERVE ALL UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED BY THE CONTRACTOR AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK. 20.BRACING OF UTILITY POLES MAY BE REQUIRED BY THE UTILITY COMPANIES WHEN TRENCHING OR EXCAVATING IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR, WITH NO SEPARATE PAY ITEM FOR THIS WORK.

THE COST IS INCIDENTAL TO THE PAY ITEM. 21.CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND UTILITY OWNER REGULATIONS PERTAINING TO WORK SETBACKS FROM POWER LINES

22.THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS, APPROVALS, AND BONDS PRIOR TO 23. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, GEOTECHNICAL REPORT AND ADDENDA, PROJECT AND CITY SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS FROSION CONTROL PLANS SWPPP AND INSPECTION REPORTS

SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, SO THAT NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE 25.ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES, AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO USE OF THE FACILITY AND THE FINAL CONNECTION OF SERVICES. 26. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

24.ALL SHOP DRAWINGS AND OTHER DOCUMENTS THAT REQUIRE ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR

28.ALL SYMBOLS SHOWN ON THESE PLANS (E.G. FIRE HYDRANT, METERS, VALVES, INLETS, ETC....) ARE FOR PRESENTATION PURPOSES ONLY AND ARE NOT TO SCALE. CONTRACTOR SHALL COORDINATE FINAL SIZES AND LOCATIONS WITH APPROPRIATE CITY INSPECTOR. 29. THE SCOPE OF WORK FOR THE CIVIL IMPROVEMENTS SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. REFERENCE THE BUILDING PLANS (E.G. ARCHITECTURAL, STRUCTURAL, MEP) FOR AREAS WITHIN 5-FEET OF THE BUILDING AND WITHIN THE BUILDING FOOTPRINT

30 REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR ALL FINAL BUILDING DIMENSIONS 31. THE PROPOSED BUILDING FOOTPRINT(S) SHOWN IN THESE PLANS WAS PROVIDED TO KIMLEY-HORN AND ASSOCIATES, INC. (KH) BY THE PROJECT ARCHITECT AT THE TIME THESE PLANS WERE PREPARED. IT MAY NOT BE THE FINAL CORRECT VERSION BECAUSE THE BUILDING DESIGN WAS ONGOING. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING THE FINAL CORRECT VERSION OF THE BUILDING FOOTPRINT WITH THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO LAYOUT. DIMENSIONS AND/OR COORDINATES SHOWN ON THESE PLANS WERE BASED ON THE ABOVE STATED ARCHITECTURAL FOOTPRINT, AND ARE THEREFORE A PRELIMINARY LOCATION OF THE BUILDING. THE CONTRACTOR IS SOLELY RESPONSIBLE TO VERIFY WHAT PART OF THE BUILDING THE ARCHITECT'S FOOTPRINT REPRESENTS (E.G. SLAB, OUTSIDE WALL, MASONRY LEDGE, ETC) AND TO CONFIRM ITS FINAL POSITION ON THE SITE BASED ON THE FINAL ARCHITECTURAL FOOTPRINT, CIVIL DIMENSION CONTROL PLAN, SURVEY BOUNDARY AND/OR PLAT. ANY

DIFFERENCES FOUND SHALL BE REPORTED TO KH IMMEDIATELY. 32. ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING

SUBSEQUENT ADDENDA 33. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL MATERIALS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND COMPLY WITH CITY STANDARD SPECIFICATIONS AND GEOTECHNICAL REPORT. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING MATERIALS. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR MATERIALS TESTING. 34.ALL COPIES OF MATERIALS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING

35.IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE MATERIALS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS 36.DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO

GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING. 37.ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS OUTSIDE OF THE WORK AREA WILL BE ALLOWED. ANY DAMAGE RESULTING THEREFROM SHALL BE CONTRACTOR'S SOLE RESPONSIBILITY TO REPAIR. 38. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES. UTILITIES. MANHOLES. POLES. GUY WIRES. VALVE COVERS. VAULT

LIDS, FIRE HYDRANTS, COMMUNICATION BOXES/PEDESTALS, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES AT NO COST TO THE OWNER. 39. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY OR PUBLIC IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCES, WALLS, SIGNS, PAVEMENT, CURBS, UTILITIES, SIDEWALKS, GRASS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS, ETC TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE OWNER.

40.ALL AREAS IN EXISTING RIGHT-OF-WAY DISTURBED BY SITE CONSTRUCTION SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER, INCLUDING AS NECESSARY GRADING, LANDSCAPING, CULVERTS, AND PAVEMENT. 41.THE CONTRACTOR SHALL SALVAGE ALL EXISTING POWER POLES, SIGNS, WATER VALVES, FIRE HYDRANTS, METERS, ETC... THAT ARE TO BE RELOCATED DURING CONSTRUCTION.

42.CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES. 43.THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

44.THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER. 45.SITE SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR 46.THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE ENGINEER'S SEAL HEREON DOES NOT EXTEND

TO ANY SUCH SAFETY SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL REQUIRED SAFETY PROCEDURES AND PROGRAMS. 47.SIGNS RELATED TO SITE OPERATION OR SAFETY ARE NOT INCLUDED IN THESE PLANS. 48.CONTRACTOR OFFICE AND STAGING AREA SHALL BE AGREED ON BY THE OWNER AND CONTRACTOR PRIOR TO BEGINNING OF

CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS FOR THE CONSTRUCTION OFFICE, TRAILER, STORAGE, AND STAGING OPERATIONS AND LOCATIONS. 49.LIGHT POLES, SIGNS, AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN ACCESSIBLE ROUTES.

50.ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM 51.TOP RIM ELEVATIONS OF ALL EXISTING AND PROPOSED MANHOLES SHALL BE COORDINATED WITH TOP OF PAVEMENT OR FINISHED

GRADE AND SHALL BE ADJUSTED TO BE FLUSH WITH THE ACTUAL FINISHED GRADE AT THE TIME OF PAVING. 52.CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED VALVES, FIRE HYDRANTS, AND OTHER UTILITY APPURTENANCES TO MATCH ACTUAL FINISHED GRADES AT THE TIME OF PAVING. 53. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND PHASING, AND SHALL CONTACT THE APPROPRIATE CITY

OFFICIALS, INCLUDING BUILDING OFFICIAL, ENGINEERING INSPECTOR, AND FIRE MARSHALL TO LEARN OF ANY REQUIREMENTS. 54. CONTRACTOR IS RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY THE CITY OF A TRAFFIC CONTROL PLAN PRIOR TO THE START OF CONSTRUCTION. AND THEN THE IMPLEMENTATION OF THE PLAN.

55.CONTRACTOR SHALL KEEP A NEAT AND ACCURATE RECORD OF CONSTRUCTION, INCLUDING ANY DEVIATIONS OR VARIANCES FROM 56. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT PLANS TO THE ENGINEER AND CITY IDENTIFYING ALL DEVIATIONS

AND VARIATIONS FROM THESE PLANS MADE DURING CONSTRUCTION.

THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.

2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000" 3. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START

4. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE

5. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION

CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE. 6. CONTRACTOR SHALL DOCUMENT THE DATES OF INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL FOR EACH BMP

EMPLOYED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE. 7. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS.

8. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED. 9. CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES NEEDED DUE TO PROJECT PHASING. 10. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT

EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL

11. OFF-SITE SOIL BORROW. SPOIL. AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.

12. ALL STAGING, STOCKPILES, SPOIL, AND STORAGE SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. PROTECTIVE MEASURES SHALL BE PROVIDED IF NEEDED TO ACCOMPLISH THIS REQUIREMENT, SUCH AS COVERING OR ENCIRCLING THE AREA WITH AN APPROPRIATE BARRIER. 13. CONTRACTORS SHALL INSPECT ALL EROSION CONTROL DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS

WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN THE SWPPP BOOKLET IF APPLICABLE. TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY 14. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH CITY SPECIFICATIONS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT

ALL TIMES FOR ALL INGRESS/EGRESS. 15. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND

16. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY OWNER AND CITY. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS. 17. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA

STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP. 18. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND CITY STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE PLANS. THEN THE CONTRACTOR SHALL ARRANGE FOR AN APPROPRIATE DESIGN TO BE PROVIDED.

19. ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR. 20. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE. 21.TEMPORARY SEEDING OR OTHER APPROVED STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE. 22.CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE

MATERIAL, AND TRASH AS CONSTRUCTION PROGRESSES. 23.UPON COMPLETION OF FINE GRADING, ALL SURFACES OF DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS ACHIEVED WHEN THE AREA IS EITHER COVERED BY PERMANENT IMPERVIOUS STRUCTURES, SUCH AS BUILDINGS, SIDEWALK, PAVEMENT. OR A UNIFORM PERENNIAL VEGETATIVE COVER. 24.AT THE CONCLUSION OF THE PROJECT, ALL INLETS, DRAIN PIPE, CHANNELS, DRAINAGEWAYS AND BORROW DITCHES AFFECTED BY THE

ACCORDANCE WITH APPLICABLE REGULATIONS.

REMOVED IMMEDIATELY

CONTRACTOR SHALL COMPLY WITH ALL TCEQ AND EPA STORM WATER POLLUTION PREVENTION REQUIREMENTS 2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000.

CONSTRUCTION SHALL BE DREDGED, AND THE SEDIMENT GENERATED BY THE PROJECT SHALL BE REMOVED AND DISPOSED IN

3. THE CONTRACTOR SHALL ENSURE THAT ALL PRIMARY OPERATORS SUBMIT A NOI TO TCEQ AT LEAST SEVEN DAYS PRIOR TO COMMENCING CONSTRUCTION (IF APPLICABLE), OR IF UTILIZING ELECTRONIC SUBMITTAL, PRIOR TO COMMENCING CONSTRUCTION. ALL PRIMARY OPERATORS SHALL PROVIDE A COPY OF THE SIGNED NOI TO THE OPERATOR OF ANY MS4 (TYPICALLY THE CITY) RECEIVING DISCHARGE FROM THE SITE. 4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF

APPLICABLE, INCLUDING POSTING SITE NOTICE, INSPECTIONS, DOCUMENTATION, AND SUBMISSION OF ANY INFORMATION REQUIRED BY THE TCEQ AND EPA (E.G. NOI). ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN THE REQUIRED CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP. 6. A COPY OF THE SWPPP, INCLUDING NOI, SITE NOTICE, CONTRACTOR CERTIFICATIONS, AND ANY REVISIONS, SHALL BE SUBMITTED TO

THE CITY BY THE CONTRACTOR AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION. 7. A NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO TCEQ BY ANY PRIMARY OPERATOR WITHIN 30 DAYS AFTER ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY STRUCTURES, A TRANSFER OF OPERATIONAL CONTROL HAS OCCURRED, OR THE OPERATOR HAS OBTAINED ALTERNATIVE AUTHORIZATION UNDER A DIFFERENT PERMIT. A COPY OF THE NOT SHALL BE PROVIDED TO

. KH IS NOT RESPONSIBLE FOR THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THIS DEMOLITION PLAN. THIS PRELIMINARY DEMOLITION PLAN SIMPLY INDICATES THE KNOWN OBJECTS ON THE SUBJECT TRACT THAT ARE TO BE DEMOLISHED AND REMOVED FROM THE SITE 2. KH DOES NOT WARRANT OR REPRESENT THAT THE PLAN. WHICH WAS PREPARED BASED ON SURVEY AND UTILITY INFORMATION PROVIDED BY OTHERS, SHOWS ALL IMPROVEMENTS AND UTILITIES, THAT THE IMPROVEMENTS AND UTILITIES ARE SHOWN ACCURATELY, OR THAT THE UTILITIES SHOWN CAN BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ITS OWN SITE RECONNAISSANCE TO SCOPE ITS WORK AND TO CONFIRM WITH THE OWNERS OF IMPROVEMENTS AND UTILITIES THE ABILITY AND

PROCESS FOR THE REMOVAL OF THEIR FACILITIES. 3. THIS PLAN IS INTENDED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR. 4. CONTRACTOR IS STRONGLY CAUTIONED TO REVIEW THE FOLLOWING REPORTS DESCRIBING SITE CONDITIONS PRIOR TO BIDDING AND

 a. ENVIRONMENTAL SITE ASSESSMENT PROVIDED BY THE OWNER. ASBESTOS BUILDING INSPECTION REPORT(S) PROVIDED BY THE OWNER,

THE OPERATOR OF ANY MS4 RECEIVING DISCHARGE FROM THE SITE.

c. GEOTECHNICAL REPORT PROVIDED BY THE OWNER. d. OTHER REPORTS THAT ARE APPLICABLE AND AVAILABLE.

IMPLEMENTING THE DEMOLITION PLAN-

5. CONTRACTOR SHALL CONTACT THE OWNER TO VERIFY WHETHER ADDITIONAL REPORTS OR AMENDMENTS TO THE ABOVE CITED REPORTS HAVE BEEN PREPARED AND TO OBTAIN/REVIEW/AND COMPLY WITH THE RECOMMENDATION OF SUCH STUDIES PRIOR TO STARTING ANY WORK ON THE SITE. 6. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW THE SITE, DETERMINE THE APPLICABLE REGULATIONS, RECEIVE THE REQUIRED PERMITS AND AUTHORIZATIONS. AND COMPLY.

. KH DOES NOT REPRESENT THAT THE REPORTS AND SURVEYS REFERENCED ABOVE ARE ACCURATE, COMPLETE, OR COMPREHENSIVE SHOWING ALL ITEMS THAT WILL NEED TO BE DEMOLISHED AND REMOVED. 8. SURFACE PAVEMENT INDICATED MAY OVERLAY OTHER HIDDEN STRUCTURES, SUCH AS ADDITIONAL LAYERS OF PAVEMENT FOUNDATIONS OR WALLS, THAT ARE ALSO TO BE REMOVED.

1. THE CONTRACTOR AND GRADING SUBCONTRACTOR SHALL VERIFY THE SUITABILITY OF EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE CIVIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. CONTRACTOR SHALL OBTAIN ANY REQUIRED GRADING PERMITS FROM THE CITY.

3. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREA REFLECT TOP OF PAVEMENT SURFACE. IN LOCATIONS ALONG A CURB LINE, ADD 6-INCHES (OR THE HEIGHT OF THE CURB) TO THE PAVING GRADE FOR TOP OF CURB 4. PROPOSED SPOT ELEVATIONS AND CONTOURS OUTSIDE THE PAVEMENT ARE TO TOP OF FINISHED GRADE.

5. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY. ALL FINISHED GRADES SHALL TRANSITION UNIFORMLY BETWEEN THE FINISHED ELEVATIONS SHOWN . CONTOURS AND SPOT GRADES SHOWN ARE ELEVATIONS OF TOP OF THE FINISHED SURFACE. WHEN PERFORMING THE GRADING OPERATIONS, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE ELEVATION HOLD-DOWN ALLOWANCE FOR THE THICKNESS OF PAVEMENT, SIDEWALK, TOPSOIL, MULCH, STONE, LANDSCAPING, RIP-RAP AND ALL OTHER SURFACE MATERIALS THAT WILL CONTRIBUTE TO THE TOP OF FINISHED GRADE. FOR EXAMPLE, THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF THE

3. NO REPRESENTATIONS OF EARTHWORK QUANTITIES OR SITE BALANCE ARE MADE BY THESE PLANS. THE CONTRACTOR SHALI PROVIDE THEIR OWN EARTHWORK CALCULATION TO DETERMINE THEIR CONTRACT QUANTITIES AND COST. ANY SIGNIFICANT VARIANCE FROM A BALANCED SITE SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CIVIL ENGINEER. 9. ALL GRADING AND EARTHWORK SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING

10. ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE 11. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF GRADING. REFERENCE EROSION CONTROL PLAN, DETAILS, GENERAL NOTES, AND SWPPP FOR ADDITIONAL INFORMATION AND

12.BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF THE PROJECT'S PROPERTY LINE AND SITE IMPROVEMENTS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK. 13. CONTRACTOR TO DISPOSE OF ALL EXCESS EXCAVATION MATERIALS IN A MANNER THAT ADHERES TO LOCAL, STATE AND FEDERAL

LAWS AND REGULATIONS. THE CONTRACTOR SHALL KEEP A RECORD OF WHERE EXCESS EXCAVATION WAS DISPOSED, ALONG WITH THE RECEIVING LANDOWNER'S APPROVAL TO DO SO 14. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF TOPSOIL AT THE COMPLETION OF FINE GRADING. CONTRACTOR SHALL REFER TO LANDSCAPE ARCHITECTURE PLANS FOR SPECIFICATIONS AND REQUIREMENTS FOR TOPSOIL.

15. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES. 16.NO EARTHWORK FILL SHALL BE PLACED IN ANY EXISTING DRAINAGE WAY, SWALE, CHANNEL, DITCH, CREEK, OR FLOODPLAIN FOR ANY REASON OR ANY LENGTH OF TIME, UNLESS THESE PLANS SPECIFICALLY INDICATE THIS IS REQUIRED. 17. TEMPORARY CULVERTS MAY BE REQUIRED IN SOME LOCATIONS TO CONVEY RUN-OFF.

18. REFER TO DIMENSION CONTROL PLAN, AND PLAT FOR HORIZONTAL DIMENSIONS. 19. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND CONDITION FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO

20.CONTRACTOR IS RESPONSIBLE FOR ALL SOILS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL SOILS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND SHALL COMPLY WITH CITY STANDARD SPECIFICATIONS AND THE GEOTECHNICAL REPORT. SOILS TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING SOILS. THE OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR SOILS TESTING. 21.ALL COPIES OF SOILS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING 22.IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE SOILS, THAT THE WORK

CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS. 23.THE SCOPE OF WORK FOR CIVIL IMPROVEMENT SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND STRUCTURAL PLANS AND SPECIFICATIONS FILL, CONDITIONING, AND PREPARATION IN THE BUILDING PAD. 24.DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED

FLATWORK ADJACENT TO THE BUILDING. IF NONE IS CURRENTLY EXISTING. 25.CONTRACTOR SHALL ENSURE THAT SUFFICIENT POSITIVE SLOPE AWAY FROM THE BUILDING, UNLESS NOTED OTHERWISE OF THE PROPOSED BUILDING(S) DURING GRADING OPERATIONS AND IN THE FINAL CONDITION. IF THE CONTRACTOR OBSERVES THAT THIS WILL NOT BE ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO REVIEW THE LOCATION 26.THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY

BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO

SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY, AT NO ADDITIONAL COST TO THE OWNER. 27.CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS NEEDED FOR GRADING OPERATIONS AND TO ACCOMMODATE PROPOSED GRADE, INCLUDING THE UNKNOWN UTILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL REFER TO THE GENERAL NOTES "OVERALL" SECTION THESE PLANS FOR ADDITIONAL INFORMATION 28.EXISTING TREE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES FOUND

IN THE FIELD THAT AFFECT THE GRADING PLAN TO THE CIVIL ENGINEER.

29.CONTRACTOR SHALL FIELD VERIFY ALL PROTECTED TREE LOCATIONS, INDIVIDUAL PROTECTED TREE CRITICAL ROOT ZONES, AND PROPOSED SITE GRADING, AND NOTIFY THE CIVIL ENGINEER AND LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH THE TREE PRESERVATION PLAN BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING THE WORK. 30.TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY STANDARD TREE PROTECTION DETAILS AND THE

APPROVED TREE PRESERVATION PLANS BY THE LANDSCAPE ARCHITECT

31.CONTRACTOR SHALL REFER TO THE LANDSCAPING AND TREE PRESERVATIONS PLANS FOR ALL INFORMATION AND DETAILS REGARDING EXISTING TREES TO BE REMOVED AND PRESERVED. 32.NO TREE SHALL BE REMOVED UNLESS A TREE REMOVAL PERMIT HAS BEEN ISSUED BY THE CITY, OR CITY HAS OTHERWISE CONFIRMED

IN WRITING THAT ONE IS NOT NEEDED FOR THE TREE(S) 33.NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE

EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE AND GRADING IMPACT TO THEM HELD TO A MINIMUM 34 AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING AND INADEQUATE SLOPE FOR DRAINAGE. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORMWATER RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER AND ENGINEER IF ANY AREAS OF POOR DRAINAGE ARE DISCOVERED.

35.CONTRACTOR FIELD ADJUSTMENT OF PROPOSED SPOT GRADES IS ALLOWED, IF THE APPROVAL OF THE CIVIL ENGINEER IS OBTAINED.

AT THE TOP AND BOTTOM OF THE WALL. 2. RETAINING WALL TYPE OR SYSTEM SHALL BE SELECTED BY THE OWNER DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE 3. RETAINING WALL DESIGN SHALL BE PROVIDED BY OTHERS AND SHALL FIT IN THE WALL ZONE OR LOCATION SHOWN ON THESE PLANS. STRUCTURAL DESIGN AND PERMITTING OF RETAINING WALLS, RAILINGS, AND OTHER WALL SAFETY DEVICES SHALL BE PERFORMED BY A LICENSED ENGINEER AND ARE NOT PART OF THIS PLAN SET 4. RETAINING WALL DESIGN SHALL MEET THE INTENT OF THE GRADING PLAN AND SHALL ACCOUNT FOR ANY INFLUENCE ON ADJACENT BUILDING FOUNDATIONS, UTILITIES, PROPERTY LINES AND OTHER CONSTRUCTABILITY NOTES. RETAINING WALL ENGINEER SHALL CONSULT THESE PLANS AND THE GEOTECHNICAL REPORT FOR POTENTIAL CONFLICTS.

> 1. ALL PAVING MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS. THE CITY STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION/DETAIL SHALL BE FOLLOWED. ALL PRIVATE ON-SITE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST

> EDITION), INCLUDING ALL ADDENDA. 3. ALL FIRELANE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARDS AND DETAILS. IF THESE ARE DIFFERENT THAN THOSE IN THE GEOTECHNICAL REPORT. THEN THE MORE RESTRICTIVE SHALL BE FOLLOWED 4. ALL PUBLIC PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS. 5. CONTRACTOR IS RESPONSIBLE FOR ALL PAVING AND PAVING SUBGRADE TESTING AND CERTIFICATION. UNLESS SPECIFIED OTHERWISE BY OWNER. ALL PAVING AND PAVING SUBGRADE TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR.

TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING PAVING AND SUBGRADE. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR PAVING AND PAVING SUBGRADE TESTING 6. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW. BY THE STANDARD TESTING PROCEDURES OF THE PAVING AND PAVING SUBGRADE, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS. 7. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO

GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING. IF NONE IS CURRENTLY EXISTING. 8. CURB RAMPS ALONG PUBLIC STREETS AND IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BASED ON THE CITY STANDARD CONSTRUCTION DETAIL AND SPECIFICATIONS

9. PRIVATE CURB RAMPS ON THE SITE (I.E. OUTSIDE PUBLIC STREET RIGHT-OF-WAY) SHALL CONFORM TO ADA AND TAS STANDARDS AND

SHALL HAVE A DETECTABLE WARNING SURFACE THAT IS FULL WIDTH AND FULL DEPTH OF THE CURB RAMP, NOT INCLUDING FLARES.

10. ALL ACCESSIBLE RAMPS, CURB RAMPS, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA AND TAS STANDARDS, LATEST 11. ANY COMPONENTS OF THE PROJECT SUBJECT TO RESIDENTIAL USE SHALL ALSO CONFORM TO THE FAIR HOUSING ACT, AND COMPLY WITH THE FAIR HOUSING ACT DESIGN MANUAL BY THE US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. 12 CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT TO MATCH EXISTING PAVEMENT WITH A SMOOTH FLUSH CONNECTION 13. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING

SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT AND PAVEMENT MARKINGS SHALL ADHERE TO CITY AND OWNER STANDARDS. 14. REFER TO GEOTECHNICAL REPORT FOR PAVING JOINT LAYOUT PLAN REQUIREMENTS FOR PRIVATE PAVEMENT. 15. REFER TO CITY STANDARD DETAILS AND SPECIFICATIONS FOR JOINT LAYOUT PLAN REQUIREMENTS FOR PUBLIC PAVEMENT 16. ALL REINFORCING STEEL SHALL CONFORM TO THE GEOTECHNICAL REPORT, CITY STANDARDS, AND ASTM A-615, GRADE 60, AND SHALL

BE SUPPORTED BY BAR CHAIRS. CONTRACTOR SHALL USE THE MORE STRINGENT OF THE CITY AND GEOTECHNICAL STANDARDS. 17. ALL JOINTS SHALL EXTEND THROUGH THE CURB. 18. THE MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS SHALL BE 2 FEET. 19. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO THE ENGINEER AND OWNER PRIOR TO BEGINNING ANY OF THE PAVING WORK. 20.ALL SAWCUTS SHALL BE FULL DEPTH FOR PAVEMENT REMOVAL AND CONNECTION TO EXISTING PAVEMENT.

22.UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED. 23.CONTRACTOR IS RESPONSIBLE FOR INSTALLING NECESSARY CONDUIT FOR LIGHTING, IRRIGATION, ETC. PRIOR TO PLACEMENT OF PAVEMENT. ALL CONSTRUCTION DOCUMENTS (CIVIL, MEP, LANDSCAPE, IRRIGATION, AND ARCHITECT) SHALL BE CONSULTED. 24.BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE ACCESSIBLE PEDESTRIAN ROUTES (PER ADA, TAS, AND FHA) EXIST TO AND FROM EVERY DOOR AND ALONG SIDEWALKS, ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND ACCESSIBLE

ROUTES, IN NO CASE SHALL AN ACCESSIBLE RAMP SLOPE EXCEED 1 VERTICAL TO 12 HORIZONTAL, IN NO CASE SHALL SIDEWALK CROSS SLOPE EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPE EXCEED 5.0 PERCENT. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 2.0 PERCENT SLOPE IN ANY DIRECTION 25.CONTRACTOR SHALL TAKE FIELD SLOPE MEASUREMENTS ON FINISHED SUBGRADE AND FORM BOARDS PRIOR TO PLACING PAVEMENT TO VERIFY THAT ADA/TAS SLOPE REQUIREMENTS ARE PROVIDED. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR ADA AND TAS SLOPE COMPLIANCE ISSUES.

1. ALL STORM SEWER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND

21.FIRE LANES SHALL BE MARKED AND LABELED AS A FIRELANE PER CITY STANDARDS.

SPECIFICATIONS 2. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER

3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING STORM SEWER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY STORM SEWER, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED 4. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER 5. FLOW LINE, TOP-OF-CURB, RIM, THROAT, AND GRATE ELEVATIONS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE GRADING PLAN NO

AND FIELD CONDITIONS PRIOR TO THEIR INSTALLATION. 6. ALL PUBLIC STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS. 7. ALL PRIVATE STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE.

CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS. 8. ALL PVC TO RCP CONNECTIONS AND ALL STORM PIPE CONNECTIONS ENTERING STRUCTURES OR OTHER STORM PIPES SHALL HAVE A CONCRETE COLLAR AND BE GROUTED TO ASSURE THE CONNECTION IS WATERTIGHT. 9. ALL PUBLIC STORM SEWER LINES SHALL BE MINIMUM CLASS III RCP. PRIVATE STORM SEWER LINES 18-INCHES AND GREATER SHALL BE CLASS III RCP OR OTHER APPROVED MATERIAL

10. WHERE COVER EXCEEDS 20-FEET OR IS LESS THAN 2-FEET, CLASS IV RCP SHALL BE USED. 11.IF CONTRACTOR PROPOSES TO USE HDPE OR PVC IN LIEU OF RCP FOR PRIVATE STORM SEWER, CONTRACTOR SHALL SUBMIT TECHNICAL DATA TO THE OWNER, ENGINEER AND CITY ENGINEER/INSPECTOR FOR APPROVAL PRIOR TO ORDERING THE MATERIAL. ANY PROPOSED HDPE AND PVC SHALL BE WATERTIGHT. 12. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL STORM SEWER LINES.

13. EMBEDMENT FOR ALL STORM SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS. 14. ALL WYE CONNECTIONS AND PIPE BENDS ARE TO BE PREFABRICATED AND INSTALLED PER MANUFACTURERS SPECIFICATIONS. 15.USE 4 FOOT JOINTS WITH BEVELED ENDS IF RADIUS OF STORM SEWER IS LESS THAN 100 FEET 16. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

17. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

ANY PONDS THAT ARE INTENDED TO HOLD WATER INDEFINITELY SHALL BE CONSTRUCTED WATERTIGHT 2. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR POND LINER SPECIFICATIONS

3. A GEOTECHNICAL ENGINEER SHALL REVIEW AND APPROVE ALL POND LINER MATERIAL, PLACEMENT PROCEDURES, AND PROVIDE TESTING TO ENSURE THE POND LINER MATERIAL PLACED IS WATERTIGHT. 4. STORM SEWER PIPES AND HEADWALLS THAT CONNECT TO A POND INTENDED TO HOLD WATER INDEFINITELY SHALL BE INSTALLED WITH WATERTIGHT JOINTS TO AT LEAST 1-FOOT ABOVE THE NORMAL POOL WATER SURFACE ELEVATION. 5. ANY GRAVEL OR OTHER PERVIOUS EMBEDMENT AROUND PIPES OR OUTFALL STRUCTURES NEAR THE POND SHALL BE ELIMINATED FOR TCEQ

AT LEAST 20-FEET FROM THE POND SO NO ROUTE FOR WATER TO LEAK THROUGH THE EMBEDMENT MATERIAL IS PROVIDED. BACKFILL IN THESE AREAS SHALL BE OF IMPERVIOUS MATERIAL. 6. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE WATER LEVEL FOLLOWING COMPLETION AND FILLING OF THE POND SHALL BE MONITORED BY THE CONTRACTOR FOR AT LEAST 60 DAYS TO OBSERVE WATER INFLOW, OUTFLOW, AND CALCULATE EVAPORATION TO VERIFY THAT THE POND IS WATERTIGHT

7. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE POND WATER LEVEL SHALL ALSO BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION SO THAT IT REMAINS FULL TO ITS DESIGN WATER LEVEL, AND IS NOT LOWERED, AS THIS MAY DRY-OUT THE POND LINER AND RISK ITS WATERTIGHT PROPERTIES.

. ALL WATER AND WASTEWATER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS

2. CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING WATER AND WASTEWATER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY WATER OR WASTEWATER CONSTRUCTION, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. 3. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING.

STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

4. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATION OF ALL UTILITY CROSSINGS PRIOR TO THE INSTALLATION OF ANY PIPE 5. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE WATER AND WASTEWATER IMPROVEMENTS 6. ALL PUBLIC WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS

PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS 8. FIRE SPRINKLER LINES SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE SPRINKLER CONTRACTOR, AND COMPLY TO THE APPLICABLE CODES AND INSPECTIONS REQUIRED. THESE PLANS WERE PREPARED WITHOUT THE BENEFIT OF THE FIRE SPRINKLER DESIGN. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES. 9. EMBEDMENT FOR ALL WATER AND WASTEWATER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS 10. CONTRACTOR SHALL TAKE REQUIRED SANITARY PRECAUTIONS, FOLLOWING ANY CITY, TCEQ, AND AWWA STANDARDS, TO KEEP

7. ALL PRIVATE WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE

WATER PIPE AND FITTINGS CLEAN AND CAPPED AT TIMES WHEN INSTALLATION IS NOT IN PROGRESS 11. CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL WATER AND WASTEWATER LINES 13. CONTRACTOR SHALL COMPLY WITH CITY REQUIREMENTS FOR WATER AND WASTEWATER SERVICE DISRUPTIONS AND THE AMOUNT OF PRIOR NOTICE THAT IS REQUIRED, AND SHALL COORDINATE DIRECTLY WITH THE APPROPRIATE CITY DEPARTMENT. 14. CONTRACTOR SHALL SEQUENCE WATER AND WASTEWATER CONSTRUCTION TO AVOID INTERRUPTION OF SERVICE TO SURROUNDING

15. CONTRACTOR SHALL MAINTAIN WATER SERVICE AND WASTEWATER SERVICE TO ALL CUSTOMERS THROUGHOUT CONSTRUCTION (IF NECESSARY, BY USE OF TEMPORARY METHODS APPROVED BY THE CITY AND OWNER). THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED 16. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL WATER AND WASTEWATER LINES CROSSING THE PROJECT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED LINES IMMEDIATELY. ALL REPAIRS OF EXISTING WATER MAINS, WATER SERVICES, SEWER MAINS, AND SANITARY SEWER SERVICES ARE SUBSIDIARY TO THE WORK, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED

17. VALVE ADJUSTMENTS SHALL BE CONSTRUCTED SUCH THAT THE COVERS ARE AT FINISHED SURFACE GRADE OF THE PROPOSEI

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18. THE ENDS OF ALL EXISTING WATER MAINS THAT ARE CUT, BUT NOT REMOVED, SHALL BE PLUGGED AND ABANDONED IN PLACE. THIS WORK SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED

19. ALL FIRE HYDRANTS, VALVES, TEES, BENDS, WYES, REDUCERS, FITTINGS, AND ENDS SHALL BE MECHANICALLY RESTRAINED AND/OR THRUST BLOCKED TO CITY STANDARDS. 20.CONTRACTOR SHALL INSTALL A FULL SEGMENT OF WATER OR WASTEWATER PIPE CENTERED AT ALL UTILITY CROSSINGS SO THAT THE

JOINTS ARE GREATER THAN 9-FEET FROM THE CROSSING 21.ALL CROSSINGS AND LOCATIONS WHERE WASTEWATER IS LESS THAN 9-FEET FROM WATER, WASTEWATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 217.53.

22.ALL CROSSING AND LOCATIONS WHERE WATER IS LESS THAN 9-FEET FROM WASTEWATER. WATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 290.44. 23.ALL WATER AND WASTEWATER SHALL BE TESTED IN ACCORDANCE WITH THE CITY, AWWA, AND TCEQ STANDARDS AND

SPECIFICATIONS. AT A MINIMUM, THIS SHALL CONSIST OF THE FOLLOWING:

a. ALL WATERLINES SHALL BE HYDROSTATICALLY TESTED AND CHLORINATED BEFORE BEING PLACED INTO SERVICE. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. b. WASTEWATER LINES AND MANHOLES SHALL BE PRESSURE TESTED. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. AFTER COMPLETION OF THESE TESTS, A TELEVISION . RETAINING WALLS SHOWN ARE FOR SITE GRADING PURPOSES ONLY, AND INCLUDE ONLY LOCATION AND SURFACE SPOT ELEVATIONS

INSPECTION SHALL BE PERFORMED AND PROVIDED TO THE CITY AND OWNER ON A DVD. 24. CONTRACTOR SHALL INSTALL DETECTABLE WIRING OR MARKING TAPE A MINIMUM OF 12" ABOVE WATER AND WASTEWATER LINES.

MARKER DECALS SHALL BE LABELED "CAUTION - WATER LINE" OR "CAUTION - SEWER LINE" DETECTABLE WIRING AND MARKING TAPE SHALL COMPLY WITH CITY STANDARDS, AND SHALL BE INCLUDED IN THE COST OF THE WATER AND WASTEWATER PIPE. 25.DUCTILE IRON PIPE SHALL BE PROTECTED FROM CORROSION BY A LOW-DENSITY POLYETHYLENE LINER WRAP THAT IS AT LEAST A SINGLE LAYER OF 8-MIL. ALL DUCTILE IRON JOINTS SHALL BE BONDED. 26.WATERLINES SHALL BE INSTALLED AT NO LESS THAN THE MINIMUM COVER REQUIRED BY THE CITY.

27.CONTRACTOR SHALL PROVIDE CLEAN-OUTS FOR PRIVATE SANITARY SEWER LINES AT ALL CHANGES IN DIRECTION AND 100-FOOT

INTERVALS, OR AS REQUIRED BY THE APPLICABLE PLUMBING CODE. CLEAN-OUTS REQUIRED IN PAVEMENT OR SIDEWALKS SHALL

HAVE CAST IRON COVERS FLUSH WITH FINISHED GRADE. 28.CONTRACTOR SHALL PROVIDE BACKWATER VALVES FOR PLUMBING FIXTURES AS REQUIRED BY THE APPLICABLE PLUMBING CODE (E.G FLOOR ELEVATION OF FIXTURE UNIT IS BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER). CONTRACTOR SHALL REVIEW BOTH MEP AND CIVIL PLANS TO CONFIRM WHERE THESE ARE REQUIRED. 29. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN. PREPARED BY A PROFESSIONAL

ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY. 30.THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

ABBREVIATIONS AND DEFINITIONS: ADA AMERICANS WITH DISABILITIES ACT AMERICAN WATER WORKS ASSOCIATION B-B BACK TO BACK BEGIN CURVE BACK OF CURB BCR BEGIN CURB RETURN BEST MANAGEMENT PRACTICE BOC BACK OF CURB BEGIN VERTICAL CURVE ELEVATION **BVCS** BEGIN VERTICAL CURVE STATION BOTTOM OF WALL BW CUBIC FEET PER SECOND CITY CITY, TOWN, OR OTHER APPLICABLE LOCAL GOVERNMENT JURISDICTION CENTERLINE CENTERLINE CONCRETE CUBIC YARD CY **DEMO** DEMOLITION DG DECOMPOSED GRANITE DETAIL EACH **END CURVE** END CURB RETURN **FCR** EXISTING GROUND FI EVATION ELECTRICAL / ELECTRICITY ELEV ELEVATION UNITES STATES ENVIRONMENTAL PROTECTION AGENCY FASEMENT **END VERTICAL CURVE ELEVATION** END VERTICAL CURVE STATION **EXISTING** FACE TO FACE

EVCS

FINISHED GROUND FIRE HYDRANT FLOW LINE FOC FACE OF CURB FEET

HYDRAULIC GRADE LINE HGL KIMLEY-HORN AND ASSOCIATES, INC KIMLEY-HORN AND ASSOCIATES, INC. LATERAL LINEAR FEET

MAXIMUM MATCH EXISTING ELEVATION MANHOLE

NOTICE OF INTENT, REF. TCEQ GENERAL PERMIT NOTICE OF TERMINATION, REF. TCEQ GENERAL PERMIT NOT TO SCALE ON CENTER

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION POINT OF CURVATURE PORTLAND CEMENT CONCRETE / POINT OF COMPOUND CURVATURE PROPOSED GRADE LINE

POINT OF INFLECTION PROP PROPOSED POINT OF REVERSE CURVATURE POUNDS PER SQUARE INCH POINT OF TANGENCY POLYVINYL CHLORIDE

POINT OF VERTICAL INFLECTION PVMT PAVEMENT REINFORCED CONCRETE PIPE ROW RIGHT OF WAY

SQUARE FEET SANITARY SEWER SANITARY SEWER MANHOLE STATION STANDARD SQUARE YARD

ARCHITECTURAL BARRIERS TEXAS ACCESSIBILITY STANDARDS TOP OF CURB TEXAS COMMISSION OF ENVIRONMENTAL QUALITY TEMPORARY

TXDOT TEXAS DEPARTMENT OF TRANSPORTATION TXMUTCD TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES TW TOP OF WALL **TYPICAL**

VERTICAL CURVE WTR WATER WASTEWATER WW UTILITY CONTACTS: 1. TELECOM COMPANY, WILLIAM THOCKMORTON, SPECTRUM

512-531-3252 2. <u>ELECTRIC COMPANY</u>, **RHONDA REEL, PEDERNALES ELECTRIC COOPERATIVE** 888-554-4732 CASEY BENJAMIN, TEXAS GAS SERVICE GAS COMPANY, 800-700-2443 JAY HOLMES, CITY OF LIBERTY HILL WASTEWATER 512-745-1222 DAVID MUNK, PE, CITY OF GEORGETOWN 512-930-3558

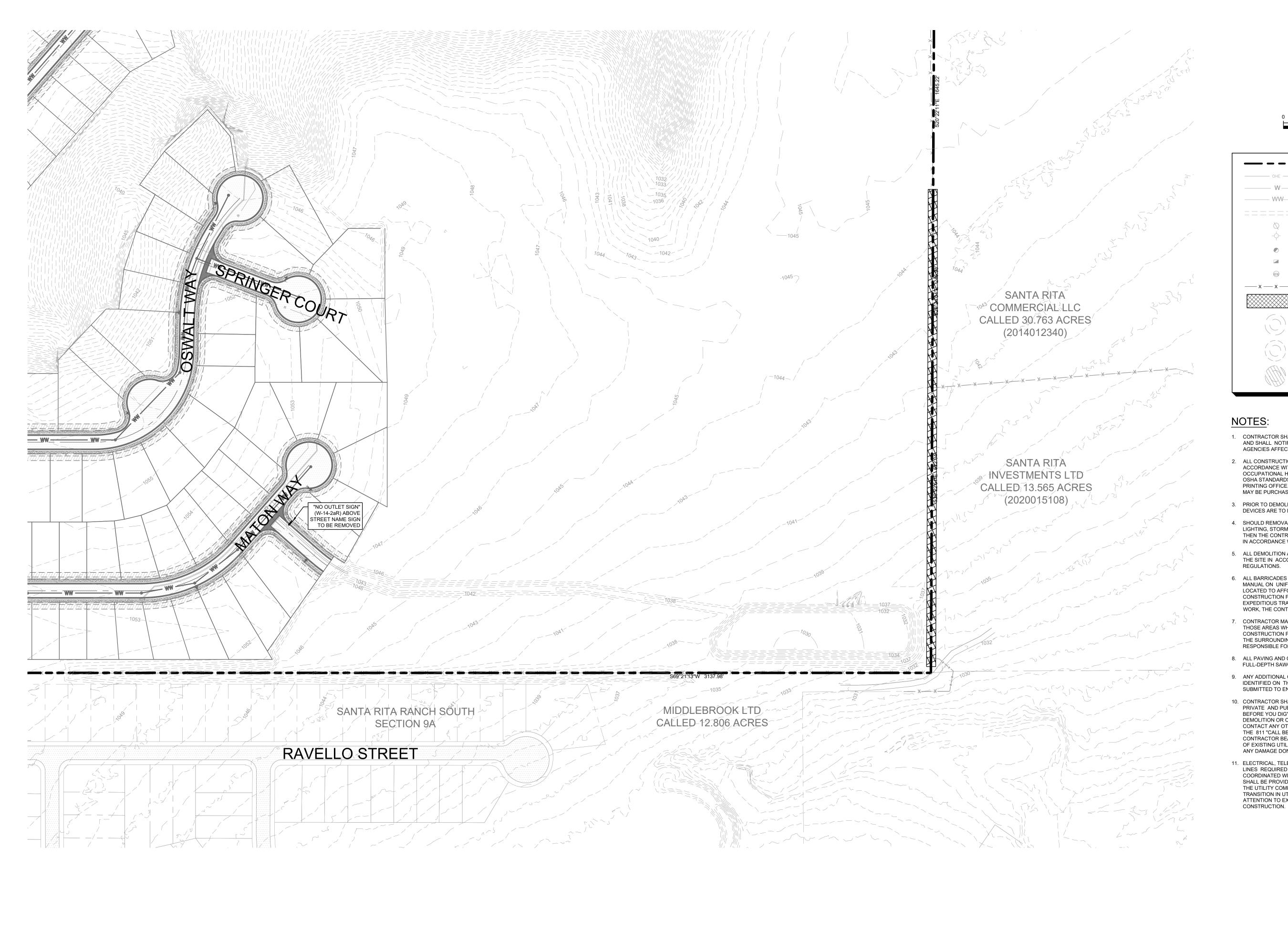
THESE PLAN AND GENERAL NOTES REFER TO: GEOTECHNICAL INVESTIGATION PAVEMENT THICKNESS RECOMMENDATIONS MLA GEOTECHNICAL TBPE FIRM # F-2684 ENGINEER'S JOB #22101100.135

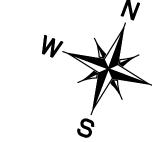
INCLUDING ALL REVISIONS AND ADDENDA TO THIS

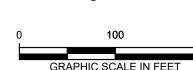
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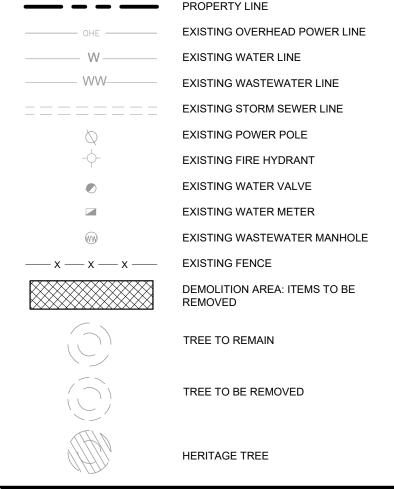
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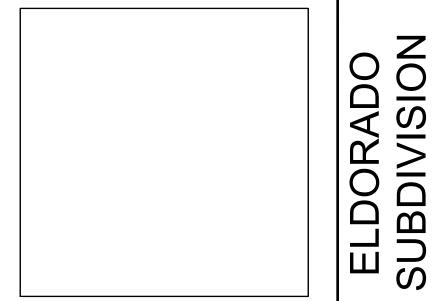




LEGEND



- CONTRACTOR SHALL SECURE ALL PERMITS REQUIRED FOR DEMOLITION AND SHALL NOTIFY ALL RESPECTIVE GOVERNMENTAL AND UTILITY AGENCIES AFFECTED BY DEMOLITION PRIOR TO STARTING DEMOLITION.
- 2. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION. COPIES OF OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA.
- 3. PRIOR TO DEMOLITION, PROPER PHASING OF EROSION CONTROL DEVICES ARE TO BE INSTALLED.
- 4. SHOULD REMOVAL AND/OR RELOCATION ACTIVITIES DAMAGE FENCING, LIGHTING, STORM INLET STRUCTURES OR ANY OTHER APPURTENANCE, THEN THE CONTRACTOR SHALL PROVIDE NEW MATERIALS/STRUCTURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- ALL DEMOLITION AND CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS.
- 6. ALL BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ARE GENERALLY LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES. DURING THE PROGRESS OF WORK, THE CONTRACTOR SHALL PROVIDE ACCESS FOR LOCAL TRAFFIC.
- 7. CONTRACTOR MAY LIMIT SAW CUT & PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THE CONSTRUCTION PLANS, BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL, REPLACEMENT, AND/OR REPAIR.
- 8. ALL PAVING AND CURB TO BE REMOVED ARE TO BE REMOVED USING FULL-DEPTH SAWCUT 2' OFF EXISTING BACK OF CURB.
- 9. ANY ADDITIONAL CONCRETE PAVING, FOOTINGS OR STRUCTURES NOT IDENTIFIED ON THIS PLAN SHALL BE LOCATED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR APPROVAL.
- 10. CONTRACTOR SHALL EXERCISE EXTREME CAUTION AS SITE CONTAINS PRIVATE AND PUBLIC UTILITIES. CONTRACTOR SHALL CALL 811 "CALL BEFORE YOU DIG" AT LEAST 72 HOURS PRIOR TO COMMENCING DEMOLITION OR CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL CONTACT ANY OTHER UTILITY COMPANIES WHO DO NOT SUBSCRIBE TO THE 811 "CALL BEFORE YOU DIG" PROGRAM FOR LINE MARKINGS. THE CONTRACTOR BEARS SOLE RESPONSIBILITY FOR VERIFYING LOCATIONS OF EXISTING UTILITIES, SHOWN OR NOT SHOWN, AND FOR REPAIRING ANY DAMAGE DONE TO THESE FACILITIES.
- 11. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE, AND GAS LINES REQUIRED TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN ROAD RIGHT OF WAYS DURING CONSTRUCTION.





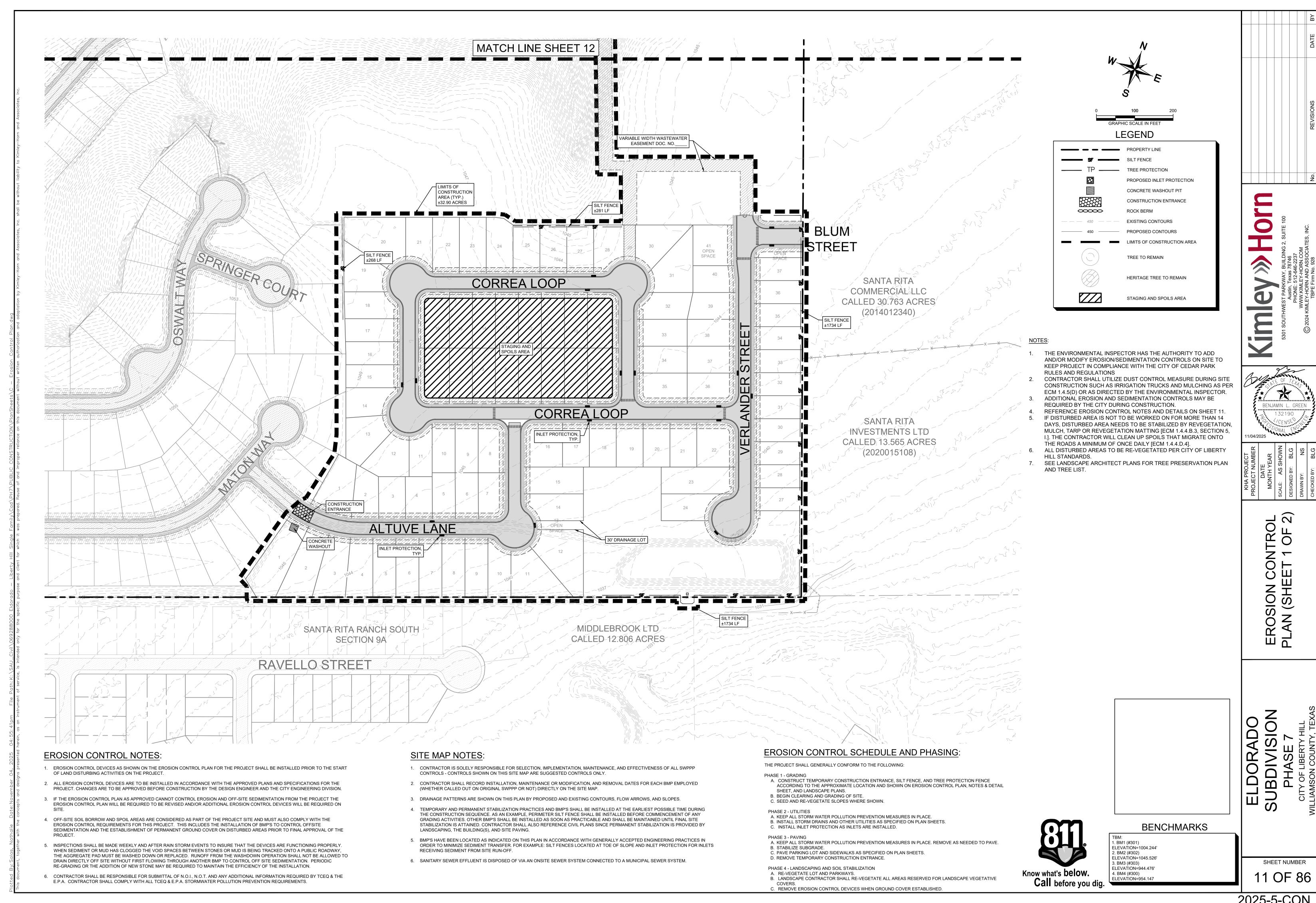
BENCHMARKS

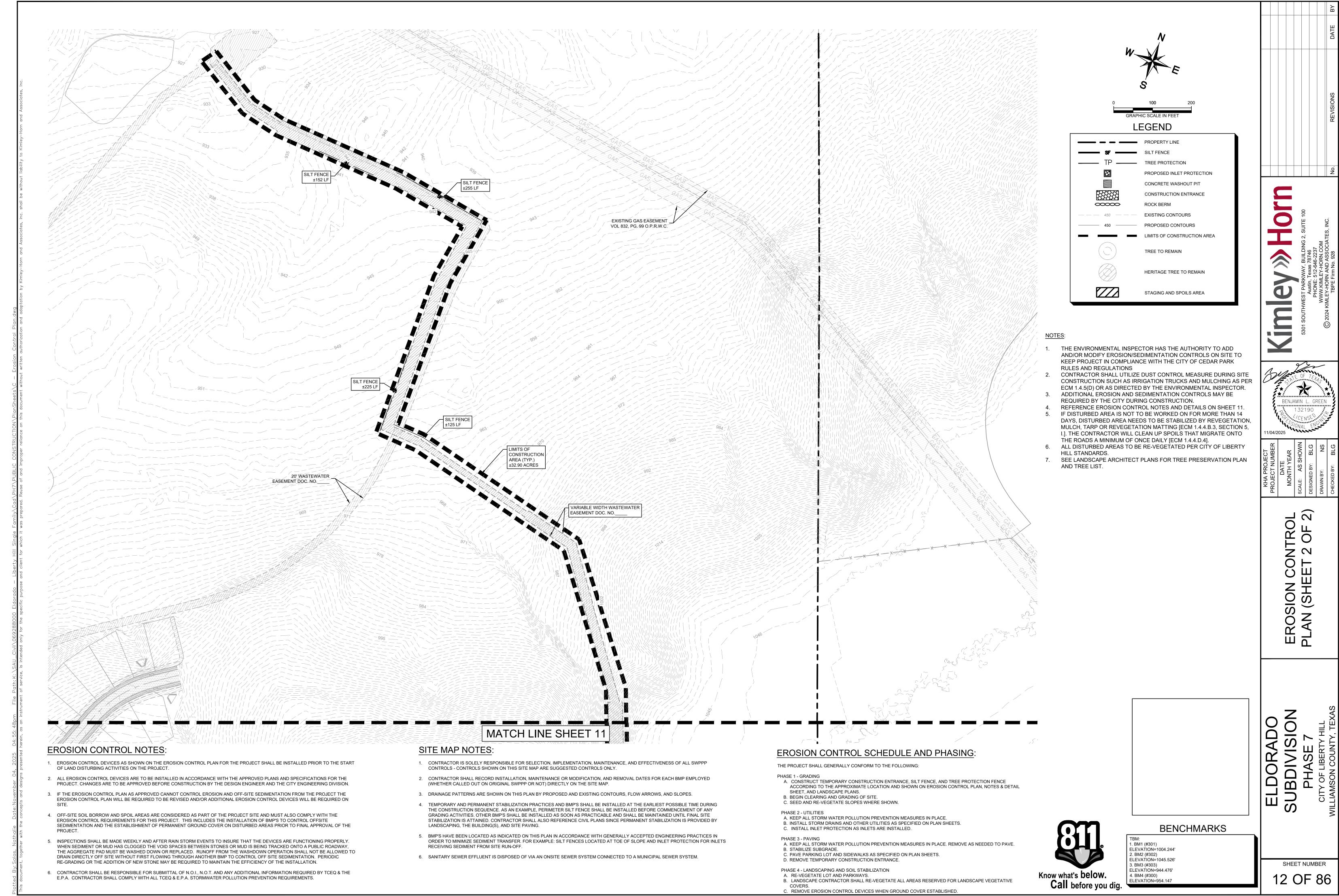
TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

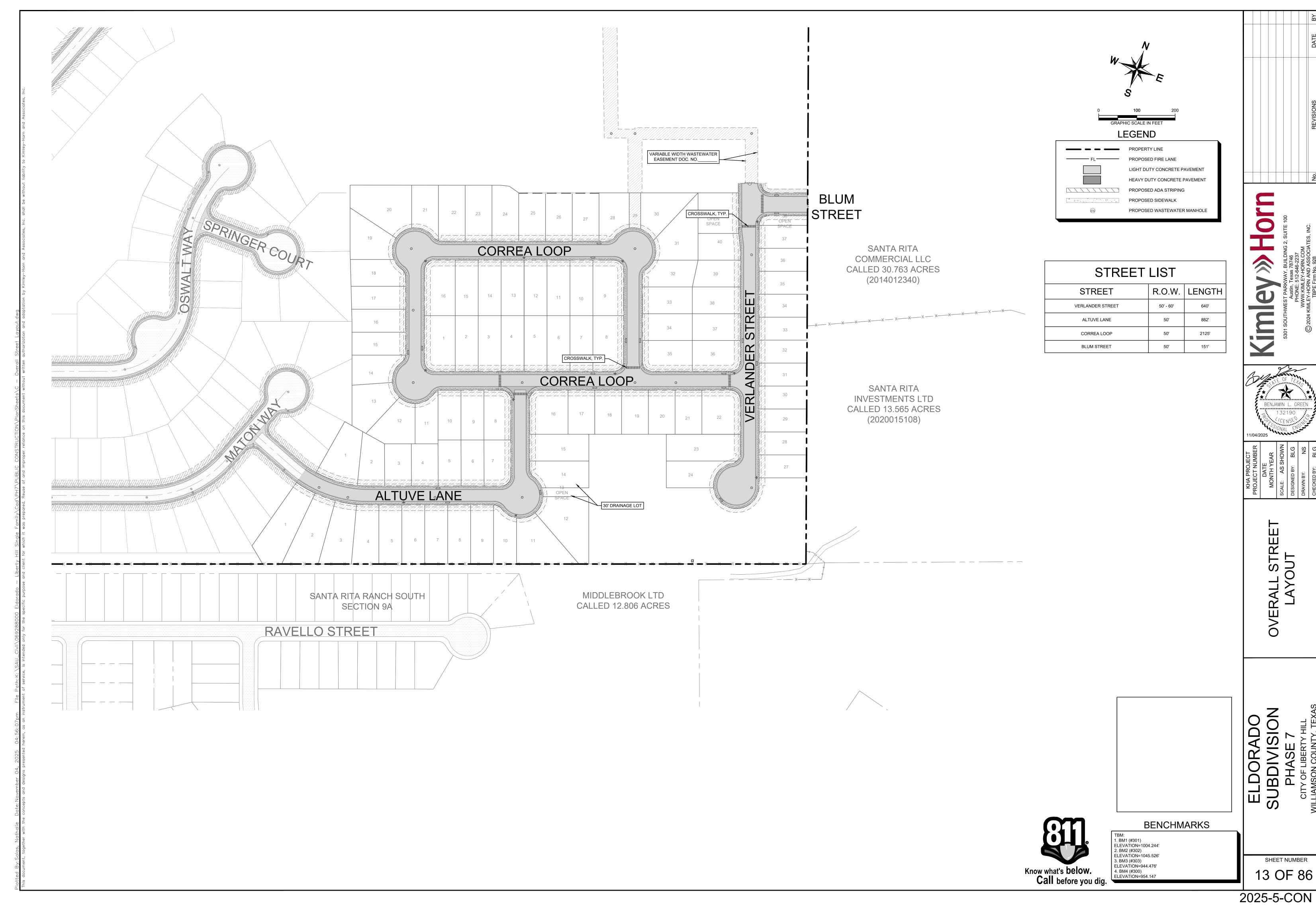
SHEET NUMBER

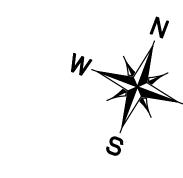
10 OF 86

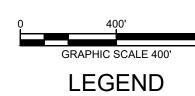
XISTING CONDITIONS AND DEMO PLAN

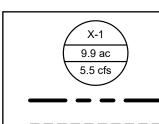












AREA DESIGNATOR AREA IN ACRES Q100 FLOW IN CFS

========= EXISTING STORM DRAIN LINE

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	BASE CN (COMPOSITE)	TC (MIN)*	Q₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)
EDA-01	299.83	2%	78	29.9	528.51	1019.13	1364.38	1938.7
		POA-A			528.51	1019.13	1364.38	1938.7
EDA-02	39.79	0%	78	31.2	67.46	131.50	175.86	249.64
		POA-B			67.46	131.50	175.86	249.64
EDA-03	9.41	0%	78	22.6	18.48	35.96	48.03	68.31
		POA-C			18.48	35.96	48.03	68.31
EDA-04	6.94	2%	78	24.7	13.30	25.70	34.36	48.74
		POA-D			13.30	25.70	34.36	48.74

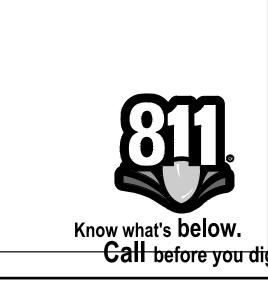
EXISTING TIME OF CONCENTRATION CALCULATIONS

EDA-01						
Sheet Flow		Shallow		Channel Flow		
n=	0.15	paved?	no	v (fps)=	E	
S (ft/ft)=	0.010	S (ft/ft)=	0.080	L (ft)=	3217	
L (ft)=	100	L (ft)=	2316			
T _{t1} = 12.5		T _{t2} =	8.5	T _{t3} =	8.9	
Total TC =	29.9	mins				
			_			

EDA-02						
Sheet Fl	ow	Shal	low	Channel Flow		
n=	0.15	paved?	no	v (fps)=	6	
S (ft/ft)=	0.010	S (ft/ft)=	0.010	L (ft)=	1175.0	
L (ft)=	100	L (ft)=	1500			
T _{t1} =	12.5	T _{t2} =	15.5	T _{t3} =	3.3	
Total TC =	31.2	mins				

EDA-03					
Sheet Fl	ow	Shal	low	Channe	el Flow
n=	0.15	paved?	no	v (fps)=	6
S (ft/ft)=	0.006	S (ft/ft)=	0.006	L (ft)=	0
L (ft)=	100	L (ft)=	546		
T _{t1} =	15.3	T _{t2} =	7.3	T _{t3} =	0.0
Total TC =	22.6	mins			

EDA-04					
Sheet Fl	ow	Shal	low	Channe	el Flow
n=	0.15	paved?	no	v (fps)=	6
S (ft/ft)=	0.010	S (ft/ft)=	0.008	L (ft)=	0
L (ft)=	100	L (ft)=	1063		
T _{t1} =	12.5	T _{t2} =	12.3	T _{t3} =	0.0
Total TC =	24.7	mins			

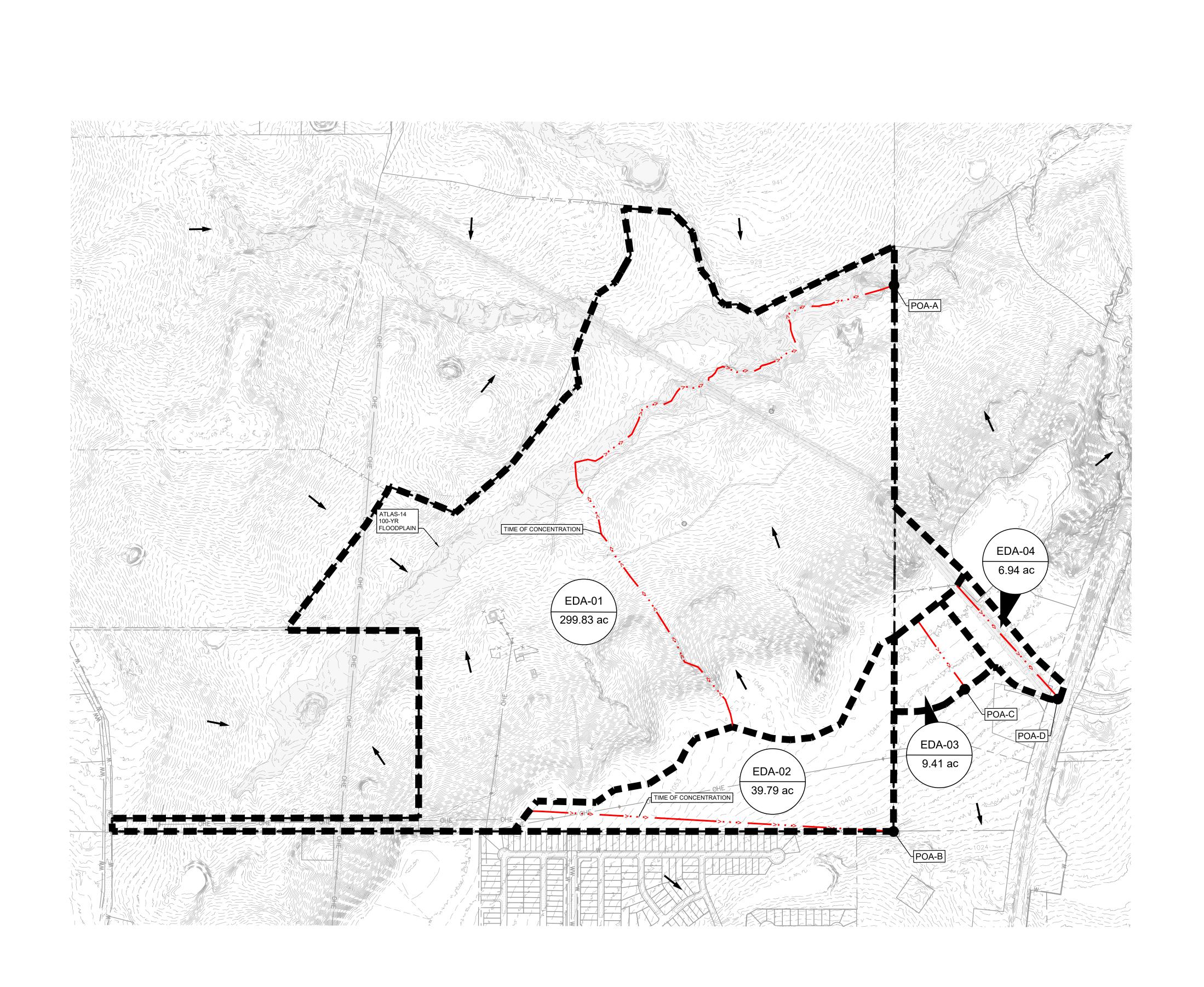


BENCHMARKS

TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

SHEET NUMBER 26 OF 86

2025-5-CON



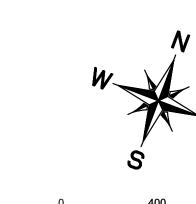
EXISTING DRAINAGE DIVIDE TIME OF CONCENTRATION EXISTING FLOW DIRECTION EXISTING CONTOUR

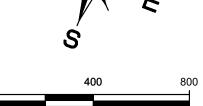
EXISTING DRAINAGE AREA MAP

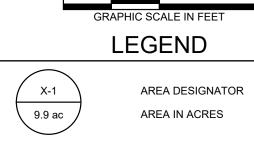


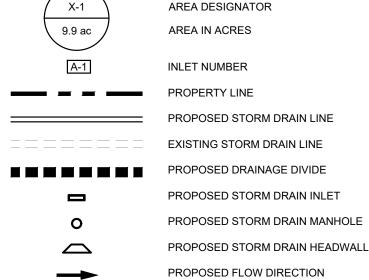
EXISTING C	ONDITIO	NS							
DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	BASE CN (COMPOSITE)	TC (MIN)*	Q₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)	
EDA-01	299.83	2%	78	29.9	528.51	1019.13	1364.38	1938.71	
POA-A					528.51	1019.13	1364.38	1938.71	
EDA-02	39.79	0%	78	31.2	67.46	131.50	175.86	249.64	
		POA-B			67.46	131.50	175.86	249.64	
EDA-03	9.41	0%	78	22.6	18.48	35.96	48.03	68.31	
		POA-C			18.48	35.96	48.03	68.31	
EDA-04	6.94	2%	78	24.7	13.30	25.70	34.36	48.74	
		POA-D			13.30	25.70	34.36	48.74	
*MINIMUM	MINIMUM TIME OF CONCENTRATION USED FOR DESIGN = 5 MINUTES								

DRAINAGE	AREA	IMPERVIOUS	BASE CN	TC (MIN)*	Q ₂	Q ₁₀	Q ₂₅	Q ₁₀₀
AREA	(AC.)	COVER	(COMPOSITE)	` ′	(CFS)	(CFS)	(CFS)	(CFS)
PDA-01	127.15	48.31%	78	29.0	315.85	531.88	675.05	909.36
PDA-05	63.60	43.50%	78	19.3	182.82	311.01	395.85	534.71
PDA-06	46.62	39.13%	78	24.3	109.71	187.05	238.34	322.26
PDA-07	20.02	46.99%	78	21.6	56.09	95.05	120.82	162.99
PDA-08	50.05	37.34%	78	28.7	116.45	202.31	259.58	353.39
		POA-A			526.28	1011.43	1361.15	1938.37
PDA-02	36.05	48.75%	78	26.0	94.15	158.76	201.52	271.49
		POA-B			64.27	131.06	175.34	244.58
PDA-03	7.43	0.00%	78	21.9	14.72	28.56	38.18	54.43
		POA-C			14.72	28.56	38.18	54.43
PDA-04	5.02	26.95%	78	19.0	13.02	23.23	30.08	41.30
		POA-D			13.02	23.23	30.08	41.30









PROPOSED CONTOUR EXISTING CONTOUR

PDA-01									
Sheet Flow		Shallow		Shallow		Channel Flo	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.027	L (ft)=	1251	L (ft)=	1727
L (ft)=	100	L (ft)=	215	L (ft)=	320				
T _{t1} =	18.2	T _{t2} =	2.2	T _{t2} =	1.6	T _{t3} =	3.5	T _{t3} =	3.6
Total TC -	20.0	mine							

PDA-02									
Sheet Flow		Shal	low	Sha	llow	Channel Fl	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	2031
L (ft)=	100	L (ft)=	86	L (ft)=	468				
T _{t1} =	18.2	T _{t2} =	0.9	T _{t2} =	2.7	T _{t3} =	0.0	T _{t3} =	4.2

PDA-03									
Sheet Flow		Shallow		Shallow		Channel Fl	ow	Pipe Flow	
n=	0.15	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.006	S (ft/ft)=	0.006	S (ft/ft)=	0.006	L (ft)=	0	L (ft)=	0
L (ft)=	100	L (ft)=	496	L (ft)=	0				
T _{t1} =	15.3	T _{t2} =	6.6	T _{t2} =	0.0	T _{t3} =	0.0	T _{t3} =	0.0
Total TC =	21.9	mins							

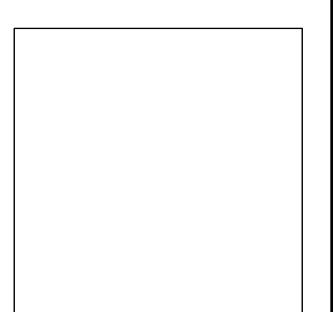
Sheet Flow		Shal	low	Shal	low	Channel Flo	W	Pipe Flow	
n=	0.15	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	
S (ft/ft)=	0.010	S (ft/ft)=	0.011	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	
L (ft)=	100	L (ft)=	374	L (ft)=	481				
T _{t1} =	12.5	T _{t2} =	3.7	T _{t2} =	2.8	T _{t3} =	0.0	T _{t3} =	0.

OA-05										
Sheet Flow		Shallow		Shallow		Channel Fl	ow	Pipe Flow		
:	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8	
ft/ft)=	0.030	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	1468.337	L (ft)=	1017.892	
ft)=	100	L (ft)=	195	L (ft)=	41					
T ₊₁ =	11 7	T ₊₂ =	1 2	T ₊₂ =	0.2	T ₊₂ =	<i>4</i> 1	T _{to} :	= 21	

PDA-06									
Sheet Flow		Shal	low	Shal	llow	Channel Fl	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	2127
L (ft)=	100	L (ft)=	54	L (ft)=	247				
T _{t1} =	18.2	T _{t2} =	0.3	T _{t2} =	1.4	T _{t3} =	0.0	T _{t3} =	4.4
Total TC -	24.2								

PDA-07									
Sheet F	low	Shallow		Shallow		Channel Fl	ow	Pipe Flow	
า=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	1069
_ (ft)=	100	L (ft)=	36	L (ft)=	167				
T _{t1} =	= 18.2	T _{t2} =	0.2	T _{t2} =	1.0	T _{t3} =	0.0	T _{t3} =	2.2
Total TC =	21.6	mins							

Sheet Flow		Shallow		Shallow		Channel Flo	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.020	L (ft)=	1248.22	L (ft)=	1666.15
L (ft)=	100	L (ft)=	92	L (ft)=	454				
T _{t1} =	18.2	T _{t2} =	1.0	T _{t2} =	2.7	T _{t3} =	3.5	T _{t3} =	3.5

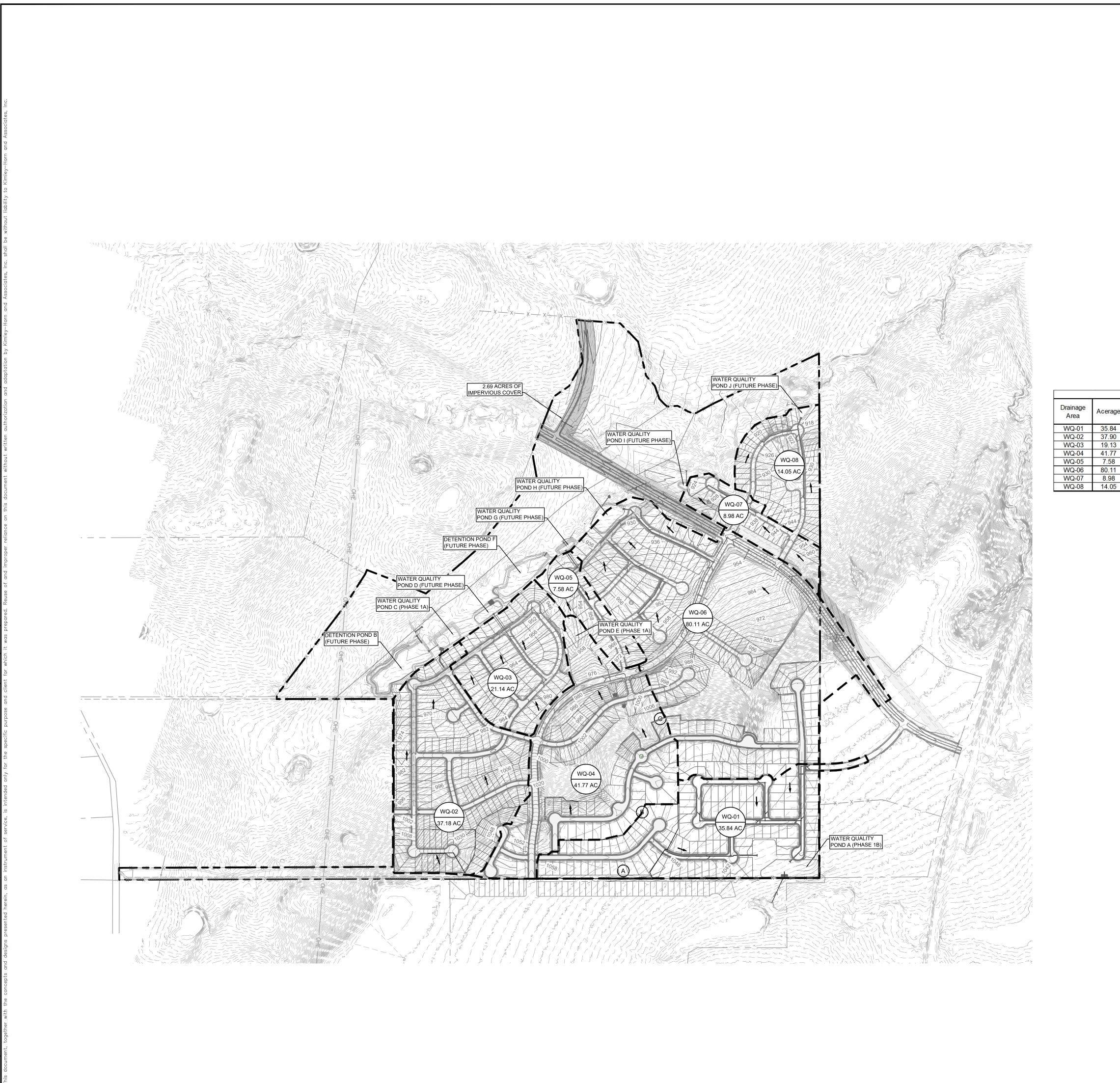


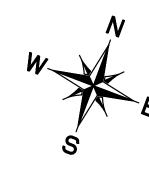
BENCHMARKS

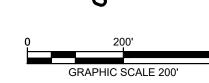
TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147

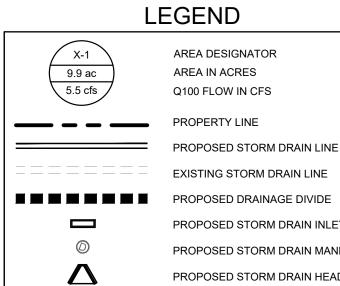
SHEET NUMBER 27 OF 86

PROPOSED DRAINAGE AREA MAP









AREA DESIGNATOR AREA IN ACRES Q100 FLOW IN CFS

PROPERTY LINE PROPOSED STORM DRAIN LINE EXISTING STORM DRAIN LINE PROPOSED STORM DRAIN INLET

PROPOSED STORM DRAIN MANHOLE PROPOSED CONTOUR

PROPOSED STORM DRAIN HEADWALL PROPOSED FLOW DIRECTION EXISTING CONTOUR

Load Load Available Removed Removal Removal Volume 73168.8 70630.9 102951 45654.8 92848.6

Required Remaining Water Quality Water Quality Water Quality
 18637.3
 16860.0
 90%

 10218.6
 8703.6
 85%

 18262.3
 16272.5
 89%

 3617.0
 3300.0
 91%

 WQ-05
 7.58
 3.53
 46.6%
 3617.0
 3300.0
 91%
 102951
 42354.8
 20153.6
 21756.35

 WQ-06
 80.11
 38.10
 47.6%
 39043.9
 32958.0
 84%
 102951
 9396.8
 151422.4
 151802.00

 WQ-07
 8.98
 3.28
 36.6%
 3397.2
 2970.0
 87%
 102951
 6426.8
 16355.8
 17012.69

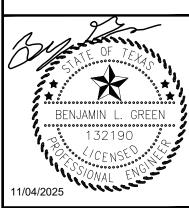
 WQ-08
 14.05
 6.98
 49.7%
 7143.3
 6460.0
 90%
 102951
 -33.2
 37009.1
 38039.34
 935.00 925.00 922.00 915.00

WATER QUALITY DRAINAGE AREA MAP

SHEET NUMBER 28 OF 86

Texas Commission on Environmental Quality				Texas Commission on Environmental Quality		Т	Texas Commission on Environmental Q	uality		
TSS Democral Coloulations 04 20 2000		Businet Names Eldows	40 CE	TSS Bamayal Calculations 04 20 2000	Businest Names Eldovodo CE	7	TSS Demoval Calculations 04 20 2000		usia at Nama a Eldovo do	C.E.
TSS Removal Calculations 04-20-2009		Project Name: Eldora Date Prepared: 10/4/20		TSS Removal Calculations 04-20-2009	Project Name: Eldorado SF Date Prepared: 10/4/2022		TSS Removal Calculations 04-20-2009		roject Name: Eldorado : te Prepared: 10/4/2022	
		Date Frepared. 10/4/20	022		Bute Frepured. 10/4/2022				10/4/2022	
Additional information is provided for cells with a red triang	le in the upper right co	rner. Place the cursor	over the cell.	Additional information is provided for cells with a red triang	le in the upper right corner. Place the cursor over the cell.	I. A	Additional information is provided for cells w	th a red triangle in the upper right corner.	Place the cursor ove	er the cell.
Text shown in blue indicate location of instructions in the Technic	al Guidance Manual - RG-	348.		Text shown in blue indicate location of instructions in the Technica	al Guidance Manual - RG-348.		Text shown in blue indicate location of instruction			
Characters shown in red are data entry fields.				Characters shown in red are data entry fields.			Characters shown in red are data entry fields			
Characters shown in black (Bold) are calculated fields. Ch	anges to these fields w	ill remove the equation	is used in the spreadsheet.	Characters shown in black (Bold) are calculated fields. Characters	anges to these fields will remove the equations used in the	e spreadsneet.	Characters shown in black (Bold) are calcula	ed fields. Changes to these fields will rem	nove the equations us	sed in the spreadshee
1. The Required Load Reduction for the total project:	Calculations from RG-348	Pages 3-	-27 to 3-30	1. The Required Load Reduction for the total project:	Calculations from RG-348 Pages 3-27 to 3-30	1.	1. The Required Load Reduction for the total project:	Calculations from RG-348	Pages 3-27 to	10 3-30
Page 3-29 Equation 3.3: L _M =	27.2(A _N x P)			Page 3-29 Equation 3.3: L _M =	27.2(A _N x P)		Page 3-29	Equation 3.3: $L_{M} = 27.2(A_{N} \times P)$		
where: LM TOTAL PROJECT	- Dequired TCC removal regulti	ng from the proposed develop	oment = 80% of increased load	where: L _M TOTAL PROJECT =	Required TSS removal resulting from the proposed development = 80% of in	noreaced lead	where:	L _{M TOTAL PROJECT} = Required TSS removal resulting from	n the proposed development	at = 90% of increased load
	Net increase in impervious ar		official – 60% of filtreased load		Net increase in impervious area for the project	ncreased load	where.	A_N = Net increase in impervious area for		t - 60% of increased load
	Average annual precipitation,				Average annual precipitation, inches			P = Average annual precipitation, inches	5 5	
Site Data: Determine Required Load Removal Based on the Entire Proje	ct Williamson			Site Data: Determine Required Load Removal Based on the Entire Proje	ct Williamson		Site Data: Determine Required Load Removal Based	county = Williamson		
Total project area included in plan *	332.00 acres			Total project area included in plan *=	332.00 acres		Total project area i	ncluded in plan * = 332.00 acres		
Predevelopment impervious area within the limits of the plan *	0.00 acres 118.28 acres			Predevelopment impervious area within the limits of the plan * =	0.00 acres 118.28 acres		Predevelopment impervious area within the li			
Total post-development impervious area within the limits of the plan* = Total post-development impervious cover fraction * =	200 E 100 State 200			Total post-development impervious area within the limits of the plan* = Total post-development impervious cover fraction * =	0.36 acres		Total post-development impervious area within the Total post-development imperviou	The state of the s		
P :	inches			P =	32 inches		,	P = 32 inches		
SAME SET STEEL BY 10 B 1	102951 lbs.			300 000 000 000 000 000 000 000 000	102951 lbs.			L _{M TOTAL PROJECT} = 102951 lbs.		
The values entered in these fields should be for the total project are	a.			* The values entered in these fields should be for the total project area	a.	*	The values entered in these fields should be for the	total project area.		
Number of drainers begins / suffells are a lander (. 7			Number of drainage basins / suffells are a leaving the	2		Number of drainage basins /	ing the plan area =		
Number of drainage basins / outfalls areas leaving the plan area	1			Number of drainage basins / outfalls areas leaving the plan area =	0		Number of drainage basins / outfalls areas leave	ig the plan area = 8		
Drainage Basin Parameters (This information should be provided fo	r each basin):			2. Drainage Basin Parameters (This information should be provided for	reach basin):	2.	2. Drainage Basin Parameters (This information shoul	d be provided for each basin):		
Drainage Basin/Outfall Area No. :	1 1			Drainage Basin/Outfall Area No. =	2		Drainage Basin/	Outfall Area No. = 3		
Total drainage basin/outfall area	35.84 acres			Total drainage basin/outfall area =	37.90 acres		Total drainage	pasin/outfall area = 19.13 acres		
Predevelopment impervious area within drainage basin/outfall area				Predevelopment impervious area within drainage basin/outfall area =			Predevelopment impervious area within drainage			
Post-development impervious area within drainage basin/outfall area = Post-development impervious fraction within drainage basin/outfall area =				Post-development impervious area within drainage basin/outfall area = Post-development impervious fraction within drainage basin/outfall area =			Post-development impervious area within drainage Post-development impervious fraction within drainage			
	15458 lbs.			L _M This Basin =			1 ost development impervious illustratif within drainage	L _{M THIS BASIN} = 8704 lbs.		
								III III DICIN		
ndicate the proposed BMP Code for this basin.				3. Indicate the proposed BMP Code for this basin.		3.	3. Indicate the proposed BMP Code for this basin.			
Proposed BMP :	Batch Detention			Proposed BMP =	Batch Detention			Proposed BMP = Batch Detention		
Removal efficiency				Removal efficiency =	91 percent		R	emoval efficiency = 91 percent		
		Aqualogi Bioretent	ic Cartridge Filter		Aqualogic Cartridge Filter Bioretention	er			Aqualogic Ca Bioretention	
			StormFilter		Contech StormFilter				Contech Stor	
			cted Wetland		Constructed Wetland				Constructed \	
		Extended Grassy S	d Detention		Extended Detention Grassy Swale				Extended De Grassy Swale	
		-	n / Irrigation		Retention / Irrigation				Retention / In	
		Sand Filt			Sand Filter				Sand Filter	
		Stormce Vegetate	eptor ed Filter Strips		Stormceptor Vegetated Filter Strips				Stormceptor Vegetated Fil	
		Vortechs	S		Vortechs				Vortechs	
		Wet You			Wet Basin Wet Vault				Wet Basin Wet Vault	
alculate Maximum TSS Load Removed (L _R) for this Drainage Basi	by the selected BMP Type.	Wet Vau	JIL .	4. Calculate Maximum TSS Load Removed (L _R) for this Drainage Basin		4.	4. Calculate Maximum TSS Load Removed (L _R) for th	s Drainage Basin by the selected BMP Type.	vvet vauit	
3 8/										
RG-348 Page 3-33 Equation 3.7: L _R =	(BMP efficiency) x P x (A _I x	34.6 + A _P x 0.54)		RG-348 Page 3-33 Equation 3.7: L _R =	(BMP efficiency) x P x (A _I x 34.6 + A _P x 0.54)		RG-348 Page 3-33	Equation 3.7: $L_R = (BMP \text{ efficiency}) \times P \times (A_1 \times 34.6 + A_2 \times A_3 \times A_4 \times A_4$	A _P x 0.54)	
bass	Tatal On Cita duainana ana i	u the DMD established area		Whore	Total On-Site drainage area in the BMP catchment area		whore	A _C = Total On-Site drainage area in the E	OMD patabases area	
_	Total On-Site drainage area in Impervious area proposed in				Impervious area proposed in the BMP catchment area		where:	$A_C = \text{Total On-Site drainage area in the E}$ $A_1 = \text{Impervious area proposed in the BN}$		
·	Pervious area remaining in the				Pervious area remaining in the BMP catchment area			A _P = Pervious area remaining in the BMF		
	TSS Load removed from this		sed BMP		TSS Load removed from this catchment area by the proposed BMP			L _R = TSS Load removed from this catchr		BMP
		and by the propor							, p. opecod L	
	35.84 acres				37.90 acres			A _C = 19.13 acres		
	17.76 acres			A ₁ =				A _I = 10.00 acres		
A _P :	_			A _P =				A _P = 9.13 acres		
L _R :	18178 lbs			L _R =	18637 lbs			L _R = 10219 lbs		
	#- II			E Calculate Francisco Company	Mall area		Colombre From Co.			
Calculate Fraction of Annual Runoff to Treat the drainage basin / ou	<u>πaii area</u>			5. Calculate Fraction of Annual Runoff to Treat the drainage basin / ou	παιι area	<u> </u>	5. Calculate Fraction of Annual Runoff to Treat the dr	inage pasin / outfall area		
Desired L _{M THIS BASIN}	15460 lbs.			Desired L _{M THIS BASIN} =	16860 lbs.		Des	ired L _{M THIS BASIN} = 8704 lbs.		
								_		
F :	0.85			F =	0.90			F = 0.85		
Ilculate Capture Volume required by the BMP Type for this draina	ge basin / outfall area	Calculations from RG-348	Pages 3-34 to 3-36	6. Calculate Capture Volume required by the BMP Type for this drainage	ge basin / outfall area. Calculations from RG-348 Pages 3-34	4 to 3-36	6. Calculate Capture Volume required by the BMP Ty	pe for this drainage basin / outfall area. Calcula	itions from RG-348	Pages 3-34 to 3-36
							,, <u>,</u>			
Rainfall Depth :	1.32 inches			Rainfall Depth =	1.70 inches			Rainfall Depth = 1.32 inches		
Post Development Runoff Coefficient =				Post Development Runoff Coefficient =	0.35		Post Development F	•		
On-site Water Quality Volume				On-site Water Quality Volume =	10 Section 2015			r Quality Volume = 33945 cubic feet		
	Calculations from RG-348 F	Pages 3-36 to 3-37			Calculations from RG-348 Pages 3-36 to 3-37			Calculations from RG-348 Pages	3-36 to 3-37	
	1							, and the second		
Off-site area draining to BMP = Off-site Impervious cover draining to BMP =				Off-site area draining to BMP = Off-site Impervious cover draining to BMP =			Off-site area Off-site Impervious cover	draining to BMP = acres draining to BMP = acres		
Impervious fraction of off-site area				Impervious fraction of off-site area =	0		Impervious fracti	on of off-site area = 0		
Off-site Runoff Coefficient :	0.00			Off-site Runoff Coefficient =				Runoff Coefficient = 0.00		
Off-site Water Quality Volume :	cubic feet			Off-site Water Quality Volume =	cubic feet		Off-site Water	r Quality Volume = 0 cubic feet		
Storage for Sediment =	12195			Storage for Sediment =	16217		Stor	age for Sediment = 6789		

5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100
Austin, Texas 78746
PHONE: 512-646-2237
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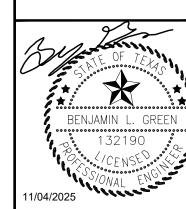
PROJECT NUMBER
DATE
MONTH YEAR
SCALE: AS SHOWN

WATER QUALITY CALCULATIONS (SHEET 1 OF 3)

ELDORADO
SUBDIVISION
PHASE 7
CITY OF LIBERTY HILL
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
29 OF 86

Texas Commission on Environmental Quality			Texas Commission on Environmental Quality			Texas Commission on Environmental Quality		
SS Removal Calculations 04-20-2009	Project Name: Eldora	do SE	TSS Removal Calculations 04-20-2009	Project Name	e: Eldorado SF	TSS Removal Calculations 04-20-2009	Project Name: Eldorado SF	
CO Nemevar Canadadano 04 20 2000	Date Prepared: 10/4/20		700 Kemovai Galculations 04-20-2000	Date Prepared			Date Prepared: 10/4/2022	
Additional information is provided for cells with a red triang		over the cell.	Additional information is provided for cells with a red triangle in the up	│ per right corner. Place the	e cursor over the cell.	Additional information is provided for cells with a red triang		
ext shown in blue indicate location of instructions in the Technic	al Guidance Manual - RG-348.		Text shown in blue indicate location of instructions in the Technical Guidance I	Manual - RG-348.		Text shown in blue indicate location of instructions in the Technical	I Guidance Manual - RG-348.	
Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Ch	anges to these fields will remove the equations	s used in the spreadsheet.	Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to the	ese fields will remove the	equations used in the spreadsheet.	Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Cha	inges to these fields will remove the equations used in the	spreadsheet.
								•
. The Required Load Reduction for the total project:	Calculations from RG-348 Pages 3-	27 to 3-30	1. The Required Load Reduction for the total project: Calculations fr	rom RG-348	Pages 3-27 to 3-30	1. The Required Load Reduction for the total project:	Calculations from RG-348 Pages 3-27 to 3-30	
Page 3-29 Equation 3.3: L _M =	= 27.2(A _N x P)		Page 3-29 Equation 3.3: L _M = 27.2(A _N x P)			Page 3-29 Equation 3.3: L _M =	27.2(A _N x P)	
where: L _{M TOTAL} PROJECT =	Required TSS removal resulting from the proposed develop	ment = 80% of increased load	where: L _{M TOTAL PROJECT} = Required TSS	romand reculting from the proper	sed development = 80% of increased load	where: LM TOTAL PROJECT =	Required TSS removal resulting from the proposed development = 80% of inc	ocreased load
	Net increase in impervious area for the project	Herit 50% of inforcased load		n impervious area for the project	Sed development – 00% of increased load		Net increase in impervious area for the project	loredoca loda
P =	Average annual precipitation, inches		P = Average annua	al precipitation, inches		P =	Average annual precipitation, inches	
Site Data: Determine Required Load Removal Based on the Entire Projection			Site Data: Determine Required Load Removal Based on the Entire Project			Site Data: Determine Required Load Removal Based on the Entire Project		
County = Total project area included in plan * =	= Williamson = 332.00 acres		County = Williamson Total project area included in plan * = 332.00	acres		County = Total project area included in plan * =	Williamson 332.00 acres	
Predevelopment impervious area within the limits of the plan * = Total post-development impervious area within the limits of the plan* =			Predevelopment impervious area within the limits of the plan * = 0.00 Total post-development impervious area within the limits of the plan* = 118.28	acres		Predevelopment impervious area within the limits of the plan * = Total post-development impervious area within the limits of the plan* =	0.00 acres 118.28 acres	
Total post-development impervious cover fraction * =	= 0.36		Total post-development impervious cover fraction * = 0.36	acies		Total post-development impervious cover fraction * =	0.36	
P =	= 32 inches		P = 32	inches		P =	32 inches	
L _M TOTAL PROJECT	= 102951 lbs.		L _{M TOTAL PROJECT} = 102951	lbs.		L _{M TOTAL PROJECT} =	102951 lbs.	
The values entered in these fields should be for the total project are	a.		* The values entered in these fields should be for the total project area.			* The values entered in these fields should be for the total project area		
Number of drainage basins / outfalls areas leaving the plan area =	= 8		Number of drainage basins / outfalls areas leaving the plan area = 8			Number of drainage basins / outfalls areas leaving the plan area =	8	
. Drainage Basin Parameters (This information should be provided fo	r each hasin).		Drainage Basin Parameters (This information should be provided for each basin):			Drainage Basin Parameters (This information should be provided for	each hasin):	
Drainage Basin/Outfall Area No. =	= 4		Drainage Basin/Outfall Area No. = 5			Drainage Basin/Outfall Area No. =	6	
Total drainage basin/outfall area = Predevelopment impervious area within drainage basin/outfall area =				acres acres		Total drainage basin/outfall area = Predevelopment impervious area within drainage basin/outfall area =	80.11 acres 0.00 acres	
Post-development impervious area within drainage basin/outfall area =	= 17.75 acres		Post-development impervious area within drainage basin/outfall area = 3.53	acres		Post-development impervious area within drainage basin/outfall area =	38.10 acres	
Post-development impervious fraction within drainage basin/outfall area = L _{M THIS BASIN} =	•		Post-development impervious fraction within drainage basin/outfall area = 0.47 L _{M THIS BASIN} = 3069	lbs		Post-development impervious fraction within drainage basin/outfall area = L _{M THIS BASIN} =	•	
. Indicate the proposed BMP Code for this basin.			3. Indicate the proposed BMP Code for this basin.			3. Indicate the proposed BMP Code for this basin.		
Proposed BMP = Removal efficiency =	Batch Detention 91 percent		Proposed BMP = Batch Detent Removal efficiency = 91	i <mark>on</mark> percent		Proposed BMP = Removal efficiency =		
		Cartridge Filter			Aqualogic Cartridge Filter Bioretention		Aqualogic Cartridge Filter Bioretention	
	Contech	StormFilter			Contech StormFilter		Contech StormFilter	
		ted Wetland Detention			Constructed Wetland Extended Detention		Constructed Wetland Extended Detention	
	Grassy S	wale / Irrigation			Grassy Swale Retention / Irrigation		Grassy Swale Retention / Irrigation	
	Sand Filt	er			Sand Filter		Sand Filter	
	Stormcer Vegetate	otor drilter Strips			Stormceptor Vegetated Filter Strips		Stormceptor Vegetated Filter Strips	
	Vortechs Wet Basi	n			Vortechs Wet Basin		Vortechs Wet Basin	
	Wet Vaul				Wet Vault		Wet Vault	
. Calculate Maximum TSS Load Removed (L _R) for this Drainage Basin	n by the selected BMP Type.		4. Calculate Maximum TSS Load Removed (L _R) for this Drainage Basin by the selected	ed BMP Type.		4. Calculate Maximum TSS Load Removed (L _R) for this Drainage Basin	by the selected BMP Type.	
RG-348 Page 3-33 Equation 3.7: L _R =	(BMP efficiency) x P x (A _I x 34.6 + A _P x 0.54)		RG-348 Page 3-33 Equation 3.7: L _R = (BMP efficience	cy) x P x (A _I x 34.6 + A _P x 0.54)		RG-348 Page 3-33 Equation 3.7: L _R =	(BMP efficiency) x P x (A _I x 34.6 + A _P x 0.54)	
where: A _C =	Total On-Site drainage area in the BMP catchment area		where: A _C = Total On-Site	drainage area in the BMP catchm	nent area	where: A _C =	Total On-Site drainage area in the BMP catchment area	
	Impervious area proposed in the BMP catchment area			ea proposed in the BMP catchmer		·	Impervious area proposed in the BMP catchment area	
	 Pervious area remaining in the BMP catchment area TSS Load removed from this catchment area by the propos 	ed BMP		remaining in the BMP catchment noved from this catchment area by			Pervious area remaining in the BMP catchment area TSS Load removed from this catchment area by the proposed BMP	
					, ,			
	= 41.77 acres = 17.75 acres			acres acres		-	80.11 acres 38.10 acres	
A _P =	= 24.02 acres			acres			42.01 acres	
L _R =	= 18262 lbs		L _R = 3617	lbs		L _R =	39044 lbs	
. Calculate Fraction of Annual Runoff to Treat the drainage basin / ou	utfall area		5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area	•		5. Calculate Fraction of Annual Runoff to Treat the drainage basin / out	fall area	
Desired L _{M THIS BASIN} =	- 16273 The		Desired L _{M THIS BASIN} = 3300	lhe		Desired L _{M THIS BASIN} =	32058 The	
				ibs.				
F =	= 0.89		F = 0.91			F =	0.84	
Calculate Capture Volume required by the BMP Type for this draina	ge basin / outfall area. Calculations from RG-348	Pages 3-34 to 3-36	6. Calculate Capture Volume required by the BMP Type for this drainage basin / outf	fall area. Calculations from R	RG-348 Pages 3-34 to 3-36	6. Calculate Capture Volume required by the BMP Type for this drainage	<u>le basin / outfall area.</u> Calculations from RG-348 Pages 3-34 t	to 3-36
	160			inahas			4.26	
Rainfall Depth = Post Development Runoff Coefficient =	0.32		Post Development Runoff Coefficient = 0.34	inches		Rainfall Depth = Post Development Runoff Coefficient =	0.34	
On-site Water Quality Volume =	= 77374 cubic feet		On-site Water Quality Volume = 16795	cubic feet		On-site Water Quality Volume =	126185 cubic feet	
	Calculations from DC 249 Pages 2.26 to 2.27			mm PG 249 Dogge 2 20 to 0 07			Calculations from DC 249 Pages 2.20 to 2.27	
	Calculations from RG-348 Pages 3-36 to 3-37			rom RG-348 Pages 3-36 to 3-37			Calculations from RG-348 Pages 3-36 to 3-37	
						Off-site area draining to BMP =	acres	
Off-site area draining to BMP =			Off-site area draining to BMP = Off-site Impervious cover draining to BMP =	acres acres				
Off-site Impervious cover draining to BMP = Impervious fraction of off-site area =	acres 0		Off-site Impervious cover draining to BMP = Impervious fraction of off-site area = 0	acres acres		Off-site Impervious cover draining to BMP = Impervious fraction of off-site area =	acres 0	
Off-site Impervious cover draining to BMP =	= acres = 0 = 0.00		Off-site Impervious cover draining to BMP = Impervious fraction of off-site area = 0 Off-site Runoff Coefficient = 0.00			Off-site Impervious cover draining to BMP =	0 0.00	
Off-site Impervious cover draining to BMP = Impervious fraction of off-site area = Off-site Runoff Coefficient =	= acres = 0 = 0.00 = 0 cubic feet		Off-site Impervious cover draining to BMP = Impervious fraction of off-site area = 0 Off-site Runoff Coefficient = 0.00	acres		Off-site Impervious cover draining to BMP = Impervious fraction of off-site area = Off-site Runoff Coefficient =	acres 0 0.00 cubic feet	



WATER QUALITY CALCULATIONS (SHEET 2 OF 3)

ELDORADO
SUBDIVISION
PHASE 7
CITY OF LIBERTY HILL
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER 30 OF 86

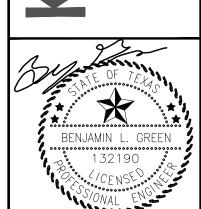
<i>i</i> ∃														
Texas Commission on Environmental Quality					Toyas Con	omission on Environmental Quality								
					Texas Con	nmission on Environmental Quality								<u>1.</u>
TSS Removal Calculations 04-20-2009		Project Name: Date Prepared:	Eldorado SF 10/4/2022		TSS Remov	al Calculations 04-20-2009			Project Name: Date Prepared:					
Additional information is provided for cells with a red trian			cursor over the ce	ell.		nformation is provided for cells with a red triang				cursor ove	er the cel			
Text shown in blue indicate location of instructions in the Technic	al Guidance	Manual - RG-348.				blue indicate location of instructions in the Technic	al Guidance I	Manual - RC	S-348.					
Characters shown in red are data entry fields.	4 . 41.			 		shown in red are data entry fields.	4 4		20 4				11	
Characters shown in black (Bold) are calculated fields. Ch	langes to th	lese fields will remove the ed	quations used in t	ne spreadsneet.	Characters	shown in black (Bold) are calculated fields. Ch	anges to the	ese fielas v	viii remove the ed	quations u	sea in th	e spread	isneet.	
The Required Load Reduction for the total project:	Calculations	from PG 348	Pages 3-27 to 3-30		1 The Beguire	d Load Paduation for the total projects	Calculations for	om DC 240		Dagga 2 27 t	0 2 20			
1. The Required Load Reduction for the total project.	Calculations	IIIII NG-340	rages 3-27 to 3-30		1. The Require	d Load Reduction for the total project:	Calculations fi	OIII RG-348		Pages 3-27 t	0 3-30			
Page 3-29 Equation 3.3: L _M	= 27 2(A _N x P)					Page 3-29 Equation 3.3: L _M =	= 27 2(A., v D)							
						r ago o zo Equation o.o. L _{III}	27.2(1)(1)							
where: L _M TOTAL PROJECT	= Required TSS	S removal resulting from the propose	ed development = 80% o	of increased load	where:	LM TOTAL PROJECT	Required TSS	removal resu	ting from the propose	d developmen	t = 80% of i	increased I	oad	. -
A _N	= Net increase	in impervious area for the project							area for the project					
P	= Average annu	ual precipitation, inches				P :	= Average annua	al precipitation	n, inches					L
Site Data: Determine Required Load Removal Based on the Entire Proje					0.1 D 1									1
	= Williamson	17			Site Data:	Determine Required Load Removal Based on the Entire Proje	ect = Williamson	•						-
Total project area included in plan *		acres				Total project area included in plan * =		acres						
Predevelopment impervious area within the limits of the plan *:		acres				redevelopment impervious area within the limits of the plan st =	0.00	acres						
Total post-development impervious area within the limits of the plan*	= 118.28 = 0.36	acres			Total pos	st-development impervious area within the limits of the plan*	= 118.28 = 0.36	acres						
Total post-development impervious cover fraction *		inches			-	Total post-development impervious cover fraction * = P =		inches						
·					1									
L _M total project	= 102951	lbs.				Lm total project =	102951	lbs.						
* The values entered in these fields should be for the total project are					* The values e	entered in these fields should be for the total project are								
						and the project the								
Number of drainage basins / outfalls areas leaving the plan area	= 8	1			Nun	nber of drainage basins / outfalls areas leaving the plan area	- 8	•						
					1,441	g and a sec								
					1									
2. Drainage Basin Parameters (This information should be provided for	or each basin):	<u>:</u>			2. Drainage Ba	sin Parameters (This information should be provided fo	r each basin):							
	_													
Drainage Basin/Outfall Area No.	= 7				-	Drainage Basin/Outfall Area No. =	= 8	1						
Total drainage basin/outfall area		acres				Total drainage basin/outfall area =	14.05	acres						
Predevelopment impervious area within drainage basin/outfall area	= 0.00	acres				velopment impervious area within drainage basin/outfall area =	0.00	acres						
Post-development impervious area within drainage basin/outfall area		acres				velopment impervious area within drainage basin/outfall area		acres						
Post-development impervious fraction within drainage basin/outfall area	1 4 175 17 11	lbs.			Post-develo	opment impervious fraction within drainage basin/outfall area	12 12	10						
L _M This basin	= 2001	IDS.				L _M THIS BASIN ⁼	5 60/5	lbs.						
3. Indicate the proposed BMP Code for this basin.					3. Indicate the	proposed BMP Code for this basin.								
Proposed BMP		100 to 10				Proposed BMP =								
Removal efficiency	= 91	percent	Aqualogic Cartridge Fil	Itor		Removal efficiency =	= 91	percent		Aqualogic Ca	ntridgo Eilto	Ar.		
-			Bioretention	itei						Bioretention	ininage Filte	:1		
			Contech StormFilter							Contech Stor	mFilter			
			Constructed Wetland							Constructed				
			Extended Detention Grassy Swale							Extended De Grassy Swal				
			Retention / Irrigation							Retention / Ir				
			Sand Filter							Sand Filter				
			Stormceptor							Stormceptor				
			Vegetated Filter Strips Vortechs	5						Vegetated Fi Vortechs	iter Strips			
			Wet Basin							Wet Basin				
			Wet Vault							Wet Vault				
4. Calculate Maximum TSS Load Removed (L _R) for this Drainage Basi	n by the selec	ted BMP Type.			4. Calculate Ma	aximum TSS Load Removed (L _R) for this Drainage Basii	by the select	ed BMP Type	<u>e.</u>					
RG-348 Page 3-33 Equation 3.7: L _R	- (DMD official	20V) v D v (A v 24 G t A v 0 54)			-	DO 240 Daws 2 22 Eminutes 2.7: 1	- (DMD -#-:-	W) v D v /^	316+1054					
RG-346 Mage 3-33 Equation 3.71 LR	- (DIVIP efficien	юу, х г х (A х э4.0 + Ap X U.54)				RG-348 Page 3-33 Equation 3.7: L _R =	- (DIVIP EITICIENC	.y, x ⊢ X (A _l X	34.0 + Ap X U.54)					
where: A _C	= Total On-Site	e drainage area in the BMP catchme	ent area		where:	A ₀ =	Total On-Site	drainage area	in the BMP catchmer	nt area				
-	_	rea proposed in the BMP catchment							the BMP catchment					
·		a remaining in the BMP catchment a			1		-	15 8	the BMP catchment a					
·		moved from this catchment area by t							s catchment area by t		ВМР			
A _C :		acres				A _C =		acres						
Aı		acres				A _I =		acres						
Ap		acres				A _P =		acres						
L _R :	= 3397	lbs				L _R =	7143	lbs						
					-									
					-									
5. Calculate Fraction of Annual Runoff to Treat the drainage basin / or	utfall area				5. Calculate Fr	action of Annual Runoff to Treat the drainage basin / ou	ıtfall area	•						
		lh.					0.400	\16-						
Desired L _{M THIS BASIN}	= 2970	lbs.				Desired L _{M THIS BASIN}	6460	lbs.						
F:	= 0.87	•				F:	= 0.90	•						
	0.07					·								
6. Calculate Capture Volume required by the BMP Type for this draina	ge basin / out	tfall area. Calculations from RG	G-348 Pages 3-	-34 to 3-36	6. Calculate Ca	apture Volume required by the BMP Type for this draina	ge basin / outf	all area.	Calculations from RG	-348	Pages 3-3	4 to 3-36		
Rainfall Depth	= 1.44	inches				Rainfall Depth =	= 1.70	inches						
Post Development Runoff Coefficient =	0.29	1				Post Development Runoff Coefficient =	0.36	1						
On-site Water Quality Volume		cubic feet				On-site Water Quality Volume =		cubic feet						
	Calculations	from RG-348 Pages 3-36 to 3-37					Calculations fr	om RG-348	Pages 3-36 to 3-37					
							'							
Off-site area draining to BMP		acres				Off-site area draining to BMP		acres						
Off-site Impervious cover draining to BMP Impervious fraction of off-site area		acres				Off-site Impervious cover draining to BMP = Impervious fraction of off-site area =		acres						
Off-site Runoff Coefficient	= 0.00					Off-site Runoff Coefficient =	0.00	•						
Off-site Water Quality Volume	= 0	cubic feet				Off-site Water Quality Volume =	= 0	cubic feet						
<u> </u>							A 1 = -							
Storage for Sediment	= 2726	autic fact				Storage for Sediment	6168							

STEP 1 OF THE TSS REMOVAL CALCULATIONS FOR PHASE 1

e Require	d Load Reduction for the total project:	Calculations fr	om RG-348		Pages 3-27 to	3-30	
	Page 3-29 Equation 3.3: L _M =	27.2(A _N x P)					
where:	L _M total project =	Required TSS	removal resul	Iting from the propose	ed development	t = 80% c	of increase
	A _N =	Net increase in	n impervious a	area for the project			
	P =	Average annua	l precipitation	n, inches			
o:							
Site Data:	Determine Required Load Removal Based on the Entire Project						
	County =	Williamson					
	Total project area included in plan *=	45.12	acres				
Р	redevelopment impervious area within the limits of the plan * =	0.00	acres				
Total po	st-development impervious area within the limits of the plan* =	27.07	acres				
	Total post-development impervious cover fraction * =	0.60					
	P =	32	inches				
			lbs.				

NOTE: AS SHOWN ABOVE, THE *REQUIRED* TSS REMOVAL FOR PHASE 1 IS 23,563 LBS. THE AMOUNT OF TSS REMOVED FROM THE THREE PROPOSED PONDS IN PHASE 1 (POND A, B AND D) IS 48592.5 LBS.

WEST PARKWAY, BUILDING 2, SUITE 100
Austin, Texas 78746
PHONE: 512-646-2237
WWW.KIMLEY-HORN.COM
IMLEY-HORN AND ASSOCIATES, INC.



DATE

DATE

MONTH YEAR

SCALE: AS SHOWN

DESIGNED BY: BLG

WATER QUALITY CALCULATIONS (SHEET 3 OF 3)

ELDORADO
SUBDIVISION
PHASE 7
CITY OF LIBERTY HILL
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
31 OF 86

FIRST SUBMITTAL 1/13/2025 SECOND SUBMITTAL 1/19/2025

PUBLIC IMPROVEMENT CONSTRUCTION PLANS

LEGAL DESCRIPTION:

AW0417 AW0417 - MANLOVE, B. SUR., ACRES 254.914 AW0417 MANLOVE, B. SUR., ACRES 72.0

GENERAL PLAN NOTES:

- CONTRACTOR WILL FOLLOW WILLIAMSON COUNTY'S MOST CURRENT CONSTRUCTION SPECIFICATIONS.
- 2. ADEQUACY OF THESE PLANS FOR CONSTRUCTION IS THE RESPONSIBILITY OF THE SIGNING/SEALING ENGINEER. IN REVIEWING THESE PLANS WILLIAMSON COUNTY MUST RELY UPON THE ADEQUACY OF THE WORK OF
- 3. IT IS THE RESPONSIBILITY OF THE SIGNING/SEALING ENGINEER TO PROVIDE DOCUMENTATION OF TDLR APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING.
- 4. THE CITY OF LIBERTY HILL HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. IT IS THE RESPONSIBILITY OF THE OWNER TO PROVIDE COMPLIANCE WITH ALL LEGISLATION RELATED TO ACCESSIBILITY WITHIN THE LIMITS OF CONSTRUCTION SHOWN IN THESE PLANS.
- 5. BASED ON THE DESIGN ENGINEER'S CERTIFICATION OF COMPLIANCE WITH ALL APPLICABLE CITY, STATE AND FEDERAL REGULATIONS, THE WASTEWATER PORTION OF THE PLANS AND SPECIFICATIONS CONTAINED HEREIN HAVE BEEN REVIEWED AND ARE FOUND TO BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE CITY OF LIBERTY HILL.
- 6. NO PORTION OF THIS SITE IS LOCATED WITHIN THE 100YR FLOOD PLAIN, AS DESCRIBED IN FEMA FIRM PANEL NO. 48491C0275E, DATED SEPTEMBER 26,
- 7. NO STRUCTURES CAN BE BUILT WITHIN WATER & WASTEWATER EASEMENTS.
- 8. THIS PROJECT IS SUBJECT TO TCEQ'S TPDES SWPPP REGULATIONS PER TEXAS WATER CODE CHAPTER 26. IF NOT ALREADY DONE, HAVE A TX PE, CPESC, OR QPSWPPP DEVELOP/AMEND A PROJECT-SPECIFIC SWPPP AND SEEK APPLICABLE TPDES PERMIT TXR150000 COVERAGE IMMEDIATELY PER TXR150000 PARTS I-III AND CITY CODE SECTION 86.529(B)(2) OR 86.529(C)(3). A HARD-COPY OF THE SWPPP, INCLUDING FULL-SIZE MAP, MUST BE AVAILABLE AT THE PRE-CON MEETING, KEPT ONSITE, AND UPDATED TO MATCH SITE CONDITIONS DURING THE PROJECT.
- 9. THESE PLANS WERE DESIGNED USING AASHTO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS"
- 10. THE CONTRACTOR SHALL OBTAIN A "NOTICE OF PROPOSED INSTALLATION OF UTILITY LINE" PERMIT FROM WILLIAMSON COUNTY FOR ANY WORK PERFORMED IN THE EXISTING COUNTY RIGHT-OF-WAY (DRIVEWAY APRON, WATER MAIN TIE-IN, ETC) THIS PERMIT APPLICATION WILL REQUIRE A LIABILITY AGREEMENT, A CONSTRUCTION COST ESTIMATE FOR WORK WITHIN THE RIGHT-OF-WAY INCLUDING PAVEMENT REPAIR (IF NEEDED), A PERFORMANCE BOND, CONSTRUCTION PLANS AND, IF NECESSARY, A TRAFFIC CONTROL PLAN. AN INSPECTION FEE, AND A PRE-CONSTRUCTION MEETING MAY ALSO BE REQUIRED, DEPENDING ON THE SCOPE OF WORK. THE PERMIT WILL BE REVIEWED AND APPROVED BY THE COUNTY ENGINEER, AND MUST ALSO BE APPROVED BY THE WILLIAMSON COUNTY COMMISSIONERS COURT IF ANY ROAD CLOSURE IS INVOLVED.
- 11. ALL FITTINGS AND WYES SHALL BE PRECAST ELEMENTS AND NOT CAST-IN PLACE WITHOUT PRIOR APPROVAL FROM THE COUNTY
- 12. ASSOCIATED DETENTION PONDS MUST BE IN PLACE PRIOR TO CONSTRUCTION OF THIS PHASE.
- 13. ANY IMPROVEMENTS ON A COUNTY MAINTAINED ROADWAY PROPOSED WITHIN THE RIGHT-OF-WAY INCLUDING, BUT NOT LIMITED TO, IRRIGATION, LANDSCAPING, SIDEWALKS, SUBDIVISION IDENTIFICATION SIGNS, ETC. SHALL BE MAINTAINED IN ACCORADANCE WITH AN EXECUTED LICENSE AGREEMENT BETWEEN THE COUNTY AND THE OWNER.

	STREET SUMMARY										
	STREET	TYPE	ROW	STREET LENGTH	SPEED DESIGN	PAVEMENT WIDTH	URBAN/RURAL	PUBLIC/PRIVATE			
	OSWALT WAY	LOCAL	50'	1410'	25 MPH	30'	URBAN	PUBLIC			
	VERLANDER STREET	LOCAL	50'	421'	25 MPH	30'	URBAN	PUBLIC			
Ī	VERLANDER STREET	MINOR COLLECTOR	60'	221'	25 MPH	40'	LIRBAN	PUBLIC			

TRAFFIC CONTROL NOTES

THIS NOTE IS BEING PLACED ON THE PLAN SET IN PLACE OF A TEMPORARY TRAFFIC CONTROL STRATEGY WITH THE FULL UNDERSTANDING THAT, AT A MINIMUM OF 6 WEEKS PRIOR TO THE START OF CONSTRUCTION, A TEMPORARY TRAFFIC CONTROL PLAN MUST BE REVIEWED AND APPROVED BY THE RIGHT OF WAY MANAGEMENT DIVISION AND TXDOT AS APPLICABLE. THE OWNER/REPRESENTATIVE FURTHER RECOGNIZES THAT A REVIEW FEE, AS PRESCRIBED BY THE MOST CURRENT VERSION OF THE CITY'S FEE ORDINANCE, SHALL BE PAID EACH TIME A PLAN OR PLAN REVISION IS SUBMITTED TO RIGHT OF WAY MANAGEMENT DIVISION FOR REVIEW.

OWNER: PERRY HOMES (PH): (512) 484-7469

(PH): (512) 484-7469 ATTN: NICK MCLNTYRE

SANTA RITA COMMERCIAL LLC 8200 N MOPAC, SUITE 300 AUSTIN, TX 78759

SANTA RITA INVESTMENTS LTD 8300 N MOPAC, SUITE 300 AUSTIN, TX 78759

ENGINEER KIMLEY-HORN 5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100 AUSTIN, TX 78735 PH: (512) 646-2243

ATTN: BENJAMIN GREEN

AUSTIN, TEXAS 78746

CERTIFICATE OF REGISTRATION #928

WATER: CITY OF GEORGETOWN 300-1 INDUSTRIAL AVE. PO BOX 409

WASTEWATER: CITY OF LIBERTY HILL 926 LOOP 332 PO BOX 1920

LIBERTY HILL, TX 78642 PH: (512) 745-1222

PH: (512) 930-3558

GEORGETOWN, TEXAS 78627

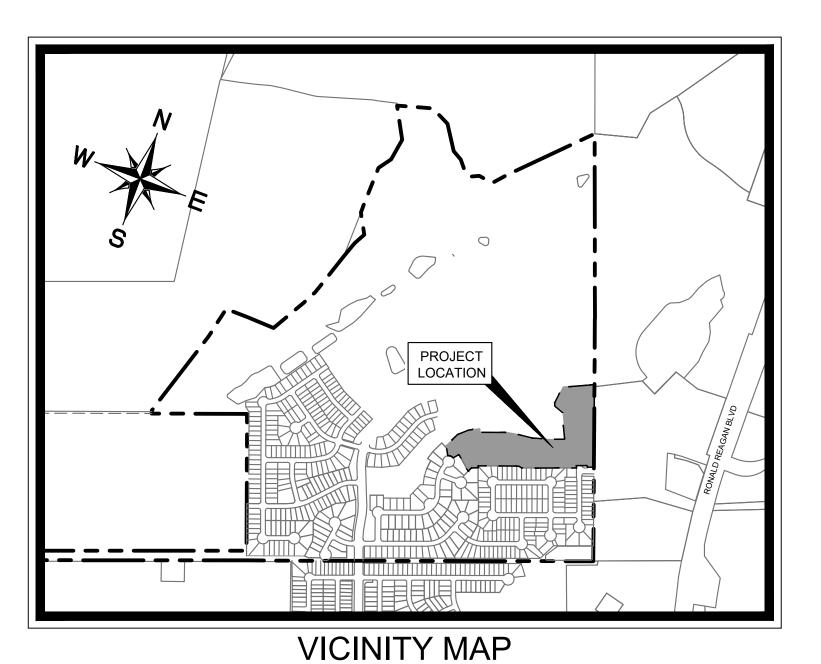
ELECTRIC PROVIDER:
PEDERNALES ELECTRIC COOP, INC.
PO BOX 1
JOHNSON CITY, TEXAS 78636
PH: (800) 868-4791

Kimley» Horn

el. No.(512) 646-2237

ELDORADO - PHASE 8

RONALD REAGAN BLVD, LIBERTY HILL, WILLIAMSON COUNTY, TX 78642 WILLIAMSON COUNTY MUD 37



DISTRICT ENGINEER, REVIEW OF PLANS BY DISTRICT IS LIMITED TO WATER, WASTEWATER AND DRAINAGE AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN

I CERTIFY THAT THESE ENGINEERING DOCUMENTS ARE COMPLETE, ACCURATE AND ADEQUATE FOR THE INTENDED PURPOSES, INCLUDING CONSTRUCTION, BUT ARE NOT AUTHORIZED FOR CONSTRUCTION PRIOR TO FORMAL CITY APPROVAL.

REVIEWED FOR COMPLIANCE WITH COUNTY REQUIREMENTS (WCSR 2021A)

FOR WILLIAMSON COUNTY CERTICATE OF COMPLIANCE # CC-2021-21836

BASED ON THE DESIGN ENGINEER'S CERTIFICATE OF COMPLIANCE WITH ALL THE APPLICABLE CITY, STATE AND FEDERAL REGULATIONS, THE PLANS AND SPECIFICATIONS CONTAINED HEREIN HAVE BEEN REVIEWED AND ARE FOUND TO BE IN THE COMPLIANCE WITH THE REQUIREMENTS OF THE CITY OF LIBERTY HILL.

WILLIAMSON COUNTY, ADAM BOATRIGHT P.E., COUNTY ENGINEER

CITY OF LIBERTY HILL, MCKENZI HICKS, INTERIM DIRECTOR OF PLANNING

CITY OF LIBERTY HILL, JENNIFER GLAESS, CITY ENGINEER

SHEET INDEX

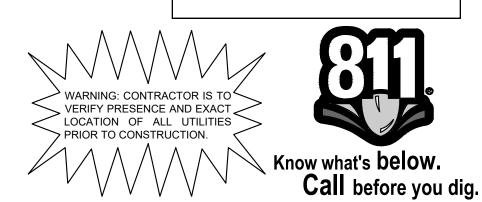
CHEET NO DESCRIPTION

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	TCEQ NOTES
4	PRELIM PLAT (SHEET 1 OF 5)
5	PRELIM PLAT (SHEET 2 OF 5)
6	PRELIM PLAT (SHEET 3 OF 5)
7	PRELIM PLAT (SHEET 4 OF 5)
8	PRELIM PLAT (SHEET 5 OF 5)
9	KIMLEY-HORN GENERAL NOTES
10	EXISTING CONDITIONS AND DEMO PLAN
11	EROSION CONTROL PLAN
12	OVERALL STREET LAYOUT
13	PAVING P&P - BIGGIO WAY (SHEET 1 OF 2)
14	PAVING P&P - BIGGIO WAY (SHEET 2 OF 2)
15	PAVING P&P - VERLANDER STREET
16	PAVING P&P - BIGGIO KNUCKLE AND VERLANDER CULDESAC
17	FIRE ACCESS P&P
18	GRADING PLAN
19	EXISTING DRAINAGE AREA MAP
20	PROPOSED DRAINAGE AREA MAP
21	INTERIM WATER QUALITY MAP
22	INLET DRAINAGE AREA MAP
23	INLET CALCS
24	DETENTION POND F (PHASE 8)
25	WATER QUALITY POND G
26	POND E WATER QUALITY DETAIL
27	WATER QUALITY POND H
28	POND F WATER QUALITY DETAIL
29	OVERALL STORM PLAN
30	STORM P&P - LINE B
31	STORM P&P - LINE C
32	OVERALL WATER PLAN
33	WATER P&P - LINE A
34	WATER P&P - LINE B (SHEET 1 OF 2)
35	WATER P&P - LINE B (SHEET 2 OF 2)
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46	STORM DRAIN DETAILS (SHEET 1 OF 5)
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51	UTILITY DETAILS (SHEET 1 OF 5)
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56	EROSION CONTROL DETAILS (SHEET 1 OF 3)
57	EROSION CONTROL DETAILS (SHEET 2 OF 3) EROSION CONTROL DETAILS (SHEET 3 OF 3)
58	LINUSION CONTROL DETAILS (SHEET 3 UF 3)
IT'S STATE OF REVIEW/AP	DDU/VI ·

STUDIES/PERMIT'S STATE OF REVIEW/APPROVAL

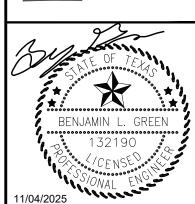
CITY OF GEORGETOWN WATER
CITY OF LIBERTY HILL
CITY OF LIBERTY HILL FIRE (WCESD NO.4)
WILLIAMSON COUNTY (FORMAL)
WILLIAMSON COUNTY (DRAINAGE)
WILLIAMSON COUNTY (FINAL PLAT)

UNDER REVIEW
UNDER REVIEW
UNDER REVIEW
UNDER REVIEW
UNDER REVIEW
NOT SUBMITTED
APPROVED (5/12/23)



No. REVISIONS

5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100
Austin, Texas 78746
PHONE: 512-646-2237
WWW.KIMLEY-HORN.COM
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.



DATE

November 25

SCALE: AS SHOWN

DESIGNED BY: BLG

DRAWN BY: NS

OVER SHEET

BDIVISION
PHASE 8

sheet number

1 OF 58

CITY OF LIBERTY HILL GENERAL NOTES:

ELEVATIONS ALONG EACH PROPOSED ROADWAY.

- STREET & ROADWAY THE HORIZONTAL LAYOUTS AND ALIGNMENTS SHOWING GEOMETRIC DATA AND OTHER PERTINENT DESIGN DETAILS. THE HORIZONTAL LAYOUT SHALL ALSO SHOW THE DIRECTION OF STORM WATER FLOW AND THE LOCATION OF MANHOLES, INLETS AND
- 2. VERTICAL LAYOUTS AND ALIGNMENTS SHOWING EXISTING AND PROPOSED CENTER LINE, RIGHT AND LEFT RIGHT-OF-WAY LINE
- 3. TYPICAL RIGHT-OF-WAY CROSS SECTIONS SHOWING PERTINENT DESIGN DETAILS AND ELEVATIONS AS PRESCRIBED IN THE CITY STANDARD DETAILS AND SPECIFICATIONS. USE ROUND ROCK TRANSPORTATION CRITERIA MANUAL
- 4. TYPICAL PAVING SECTIONS SHOWING RIGHT-OF-WAY WIDTH, LANE WIDTHS, MEDIAN WIDTHS, SHOULDER WIDTHS, AND PAVEMENT
- ATTENDANT DOCUMENTS CONTAINING ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED ROADWAY IMPROVEMENTS, INCLUDING GEOTECHNICAL INFORMATION AND TRAFFIC IMPACT STUDIES.
- 6. SHOW ANY TRANSPORTATION IMPROVEMENTS REQUIRED BY A TIA ON THE PROPERTY

- DETAILED DESIGN OF ALL DRAINAGE FACILITIES AS INDICATED IN THE PRELIMINARY PLAT PHASE, INCLUDING TYPICAL CHANNEL OR PAVING SECTION, STORM SEWERS AND OTHER STORM WATER CONTROL FACILITIES.
- 2. ADEQUATE ACCESS IS PROVIDED FOR MAINTENANCE OF AND REPAIR TO DRAINAGE FACILITIES.
- 3. TYPICAL CHANNEL CROSS-SECTIONS, PLAN AND PROFILE DRAWINGS OF EVERY CONDUIT/CHANNEL SHALL BE SHOWN
- 4. EXISTING AND PROPOSED TOPOGRAPHIC CONDITIONS INDICATING ONE (1) FOOT CONTOUR INTERVALS FOR SLOPES LESS THAN 5%, TWO (2) FOOT CONTOUR INTERVALS FOR SLOPES BETWEEN 5% AND 10%, AND FIVE (5) FOOT CONTOUR INTERVALS FOR SLOPES EXCEEDING 10%, AND REFERENCED TO A UNITED STATES GEOLOGICAL SURVEY OR COASTAL AND GEODETIC SURVEY
- 5. ATTENDANT DOCUMENTS CONTAINING DESIGN COMPUTATIONS IN ACCORDANCE WITH THE SUBDIVISION ORDINANCE FOR THE CITY OF LIBERTY HILL, AND ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED DRAINAGE IMPROVEMENTS
- 6. A COPY OF THE COMPLETE APPLICATION FOR FLOOD PLAIN MAP AMENDMENT OR REVISION, AS REQUIRED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), IF APPLICABLE.
- 7. NON-RESIDENTIAL AND MULTI-FAMILY DRAINAGE AND DETENTION FACILITIES:
- 7.1.NON-RESIDENTIAL AND MULTI-FAMILY DRAINAGE FACILITIES INCLUDE ALL DETENTION PONDS, WATER QUALITY PONDS, OUTLET STRUCTURES, BERMS, IMPROVED CHANNELS OR OTHER IMPROVEMENTS ASSOCIATED WITH THE DRAINAGE IMPROVEMENTS. ROADSIDE SWALES AND INLETS ARE NOT INCLUDED.

PROPOSED FILL OR OTHER STRUCTURE ELEVATING TECHNIQUES, LEVEES, CHANNEL MODIFICATIONS AND DETENTION FACILITIES.

- 2. EXISTING AND PROPOSED TOPOGRAPHIC CONDITIONS WITH VERTICAL INTERVALS NOT GREATER THAN ONE (1) FOOT REFERENCED TO A UNITED STATES GEOLOGICAL SURVEY OR COASTAL AND GEODETIC SURVEY BENCH MARK OR MONUMENT.
- 3. THE LOCATION, SIZE, AND CHARACTER OF ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL FACILITIES WITH SPECIFICATIONS DETAILING ALL ON-SITE EROSION CONTROL MEASURES WHICH WILL BE ESTABLISHED AND MAINTAINED DURING ALL PERIODS OF DEVELOPMENT AND CONSTRUCTION.
- 4. CONTRACTOR STAGING AREAS, VEHICLE ACCESS AREAS, TEMPORARY AND PERMANENT SPOILS STORAGE AREAS.
- A PLAN FOR RESTORATION FOR THE MITIGATION OF EROSION IN ALL AREAS DISTURBED DURING CONSTRUCTION.
- IF SPOILS SITES ARE PROPOSED TO REMAIN AFTER SUBDIVISION ACCEPTANCE, INCLUDE THE FOLLOWING NOTES AND CONFIRM THAT THE PROPOSED LOCATION MEETS THIS CRITERIA. FILL MATERIAL ORIGINATING FROM THE LAND THAT IS THE SUBJECT OF A SUBDIVISION APPLICATION MAY BE TEMPORARILY
- STORED ON SAID LAND PROVIDED THAT THE DEVELOPER COMPLIES AT ALL TIMES WITH THE FOLLOWING REQUIREMENTS: (a) THE FILL MATERIAL SHALL BE STORED AT THE LOCATION SHOWN ON THE APPROVED CONSTRUCTION PLANS. (b) THE FILL MATERIAL SHALL CONSIST OF EARTHEN MATERIAL ORIGINATING FROM THE SUBDIVISION ONLY, SHALL REMAIN
- FREE FROM DEBRIS, AND SHALL BE SUITABLE FOR USE AS FILL MATERIAL ON THE FUTURE PHASES OF THE SUBDIVISION. THE FILL MATERIAL MAY NOT INCLUDE ANY MATERIAL FROM OUTSIDE OF THE SUBDIVISION. (c) STORAGE OF THE FILL MATERIAL SHALL COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN INCLUDING
- REVEGETATION OF DISTURBED AREAS AND OTHER SEDIMENTATION AND EROSION CONTROLS ADOPTED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY.
- (d) THE FILL MATERIAL WILL BE PLACED AND STORED IN SUCH MANNER SO THAT IT IS STABLE, WITH THE SIDE SLOPES NO STEEPER THAN A 3:1 (H:V) SLOPE.
- THE FILL MATERIAL WILL BE LOCATED SO AS NOT TO DISTURB ANY WETLAND AREAS THAT MAY EXIST IN THE SUBDIVISION, AND WILL BE PLACED IN A MANNER AND LOCATION SO AS NOT TO ADVERSELY AFFECT THE NATURAL COURSE OF DRAINAGE ACROSS THE LAND OR IMPEDE DRAINAGE FROM NEIGHBORING PROPERTIES.
- (f) FISCAL SURETY THAT COMPLIES WITH SECTION 28 OF THIS ORDINANCE IN AN AMOUNT EQUAL TO 110% OF THE COST OF REMOVAL OF THE FILL MATERIAL WILL BE FILED WITH THE CITY PRIOR TO THE ACCEPTANCE OF THE SUBDIVISION THAT GENERATES THE FILL MATERIAL. THE FISCAL SURETY WILL BE BASED ON AN ESTIMATE PREPARED BY THE ENGINEER FOR THE SUBDIVISION AND APPROVED BY THE CITY ENGINEER.
- (g) THE HEIGHT OF THE FILL MATERIAL SHALL NOT EXCEED TEN (10') FEET.
-) PERMISSION TO STORE FILL MATERIAL IN THE SUBDIVISION WILL EXPIRE AND TERMINATE IN THE EVENT THAT A PRELIMINARY PLAT, CONSTRUCTION PLANS, OR A FINAL PLAT FOR ANY PORTION OF THE LAND EXPIRES, OR AT SUCH TIME THAT THE IMPROVEMENTS FOR THE LAST PHASE OF THE SUBDIVISION ARE ACCEPTED.

- 1. THE LAYOUT, SIZE, AND SPECIFIC LOCATION OF THE EXISTING AND PROPOSED WATER MAINS, PUMP STATIONS, STORAGE TANKS, AND OTHER RELATED STRUCTURES SUFFICIENT TO SERVE THE PROPOSED LAND USES AND DEVELOPMENT AS IDENTIFIED IN THE PRELIMINARY PLAT PHASE AND IN ACCORDANCE WITH THE CITY STANDARDS AND DETAILS AND SPECIFICATIONS.
- 2. THE EXISTING AND PROPOSED LOCATION OF FIRE HYDRANTS, VALVES, METERS AND OTHER FITTINGS.
- 3. DESIGN DETAILS SHOWING THE CONNECTION WITH THE EXISTING CITY WATER SYSTEM.
- 4. THE SPECIFIC LOCATION AND SIZE OF ALL WATER SERVICE CONNECTIONS FOR EACH INDIVIDUAL LOT.
- 5. ATTENDANT DOCUMENTS CONTAINING ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED WATER DISTRIBUTION SYSTEM.

- I. THE LAYOUT, SIZE AND SPECIFIC LOCATION OF THE EXISTING AND PROPOSED WASTEWATER LINES, MANHOLES, LIFT STATIONS, AND OTHER RELATED STRUCTURES SUFFICIENT TO SERVE THE LAND USES AND DEVELOPMENT AS IDENTIFIED IN THE PRELIMINARY PLAT PHASE, IN ACCORDANCE WITH ALL CURRENT CITY STANDARDS, SPECIFICATIONS, AND CRITERIA FOR CONSTRUCTIONS OF WASTEWATER SYSTEMS.
- 2. PLAN AND PROFILE DRAWINGS FOR EACH LINE IN PUBLIC RIGHTS-OF-WAY OR PUBLIC UTILITY EASEMENTS, SHOWING EXISTING GROUND LEVEL ELEVATION AT CENTER LINE OF PIPE, PIPE SIZE AND FLOW LINE ELEVATION AT ALL BENDS, DROPS, TURNS, AND STATION NUMBERS AT FIFTY (50) FOOT INTERVALS.
- 3. DESIGN DETAILS FOR MANHOLES AND SPECIAL STRUCTURES. FLOW LINE ELEVATIONS SHALL BE SHOWN AT EVERY POINT WHERE THE LINE ENTERS OR LEAVES THE MANHOLES.
- 4. DETAILED DESIGN FOR LIFT STATIONS, PACKAGE PLANTS OR OTHER SPECIAL WASTEWATER STRUCTURES.
- 5. ATTENDANT DOCUMENTS CONTAINING ANY ADDITIONAL INFORMATION REQUIRED TO EVALUATE THE PROPOSED WASTEWATER SYSTEM, AND COMPLETE AN APPLICATION FOR STATE HEALTH DEPARTMENT APPROVAL.

TRAFFIC CONTROL, STREET LIGHTS & SIGNS:

- I. THE LOCATION, SIZE, TYPE AND DESCRIPTION OF STREET LIGHTS ACCORDING TO CITY STANDARD DETAILS AND SPECIFICATIONS.
- 2. THE ELECTRICAL DESIGN SIGNED AND SEALED BY AN ENGINEER FOR THE LED STREET LIGHT SYSTEM ON A METERED CIRCUIT 3. THE LOCATION, SIZE, TYPE AND DESCRIPTION OF STREET SIGNS ACCORDING TO CITY STANDARD DETAILS AND SPECIFICATIONS
- 4. SHOW PAVEMENT MARKINGS AND LOCATION OF STOP BARS AND OTHER MARKINGS (IF APPLICABLE) AS REQUIRED IN THE
- LATEST VERSION OF THE TEXAS MANUAL UNIFORM TRAFFIC CONTROL DEVICES.
- 5. PROVIDE CITY OF LIBERTY HILL STREET SIGN DETAIL.
- 6. THE LOCATION, SIZE (WHERE APPLICABLE) AND TYPE OF SPEED LIMIT SIGNS AND PERMANENT TRAFFIC BARRICADES ACCORDING TO CITY STANDARD DETAILS AND SPECIFICATIONS.

1. THE LOCATION, SIZE AND TYPE OF SIDEWALKS AND PEDESTRIAN RAMPS ACCORDING TO CITY STANDARD DETAILS AND

2. THOSE SIDEWALKS NOT ABUTTING A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL LOTS (INCLUDING SIDEWALKS ALONG STREET FRONTAGES OF LOTS PROPOSED FOR SCHOOLS, CHURCHES, PARK LOTS, DETENTION LOTS, DRAINAGE LOTS, LANDSCAPE LOTS, OR

- SIMILAR LOTS), SIDEWALKS ON ARTERIAL STREETS TO WHICH ACCESS IS PROHIBITED, SIDEWALKS ON DOUBLE FRONTAGE LOTS ON THE SIDE TO WHICH ACCESS IS PROHIBITED, AND ALL SIDEWALKS ON SAFE SCHOOL ROUTES ARE SHOWN ON THE PLANS TO BE INSTALLED WITH THE SUBDIVISION IMPROVEMENTS.
- 3. PROVIDE A SIDEWALK PLAN LABELING THE SIDEWALKS TO BE BUILT BY THE HOMEBUILDER AND SIDEWALKS TO BE BUILT BY THE SUBDIVISION DEVELOPER.
- 4. FOR SINGLE-FAMILY RESIDENTIAL SUBDIVISIONS THAT ARE NOT REGISTERED WITH TDLR, PROVIDE DOCUMENTATION FROM A REGISTERED ACCESSIBILITY SPECIALIST (RAS) THAT THE PEDESTRIAN INFRASTRUCTURE

PARKLAND, IMPROVEMENTS & OTHER PUBLIC OR COMMON AREAS

- 1. PROOF OF HOA ESTABLISHMENT (ONE COPY OF THE HOMEOWNER'S ASSOCIATION CREATION DOCUMENTS INCLUDING RESPONSIBILITIES FOR PARK AND/OR LANDSCAPED ENTRANCE MAINTENANCE IS PROVIDED IF SUCH FACILITIES ARE PROVIDED.
- 2. PROOF OF OWNERSHIP, DEDICATION, PERPETUAL USE & MAINTENANCE (PROVIDE A RECORDED DEED, AGREEMENT, CONVEYANCE AND/OR RESTRICTIONS DEMONSTRATING THAT THE PRIVATE PARK LAND AND FACILITIES ARE RESTRICTED TO PARK AND RECREATIONAL PURPOSES BY A RECORDED COVENANT THAT RUNS WITH THE LAND IN FAVOR OF THE FUTURE OWNERS OF PROPERTY THAT CANNOT BE DEFEATED OR ELIMINATED WITHOUT THE CONSENT OF THE CITY COUNCIL. THE RECORDED DEED, AGREEMENT, CONVEYANCE AND/OR RESTRICTIONS SHOULD ADEQUATELY PROVIDE FOR PRIVATE OWNERSHIP AND PERPETUAL MAINTENANCE.)
- 3. PARK CONCEPT PLAN (PROVIDE ONE COPY OF PLAN WITH SUBMISSION ON THE DISK)

WITHIN THE PUBLIC RIGHT-OF-WAY COMPLIES WITH THE TEXAS ACCESSIBILITY STANDARDS.

- 4. FISCAL GUARANTEE OF COMPLETION (PROVIDE A FISCAL NOTE COVERING THE COST OF CONSTRUCTING ALL PARK IMPROVEMENTS SHOWN ON THE APPROVED PARK CONCEPT PLAN. IF PHASING IS PLANNED THE FISCAL NOTE SHOULD COVER ALL
- 5. SHOW ALL FACILITIES INCLUDED ON THE APPROVED PARK CONCEPT PLAN AND LABEL IMPROVEMENT PHASES, IF APPLICABLE.

LANDSCAPE PLAN:

- 1. THE LOCATION, SIZE AND DESCRIPTION OF ALL SIGNIFICANT TREES (TO REMAIN OR TO BE REMOVED), AND REPLACEMENT TREES TO MEET THE REQUIREMENTS OF THE CITY OF LIBERTY HILL SUBDIVISION ORDINANCE.
- 2. THE LOCATION, SIZE AND DESCRIPTION OF ALL LANDSCAPING AND SCREENING MATERIALS.
- 3. PROVIDE AN APPROVED LICENSE AGREEMENT ASSOCIATED WITH ANY LANDSCAPING OR SIGNAGE LOCATED IN THE PUBLIC RIGHT-OF-WAY.

1. FINAL DESIGN CRITERIA, REPORTS, CALCULATIONS AND ALL OTHER RELATED COMPUTATIONS, IF NOT PREVIOUSLY SUBMITTED WITH THE PRELIMINARY PLAT.

- 1. A COST ESTIMATE OF EACH REQUIRED IMPROVEMENT, PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS.
- 2. VERIFICATION AND ADJUSTMENT OF THE CONSTRUCTION COST IS REQUIRED PRIOR TO CITY ACCEPTANCE. A FINAL ENGINEER'S SIGNED AND SEALED CERTIFIED COPY OF THE FINAL COST OF ALL IMPROVEMENTS DEDICATED TO THE CITY OR EQUIVALENT PRIVATE INFRASTRUCTURE IS REQUIRED IN THE CLOSE OUT PACKAGE AS PART OF THE FINAL ACCEPTANCE.

- 1. AFTER ALL COMMENTS HAVE BEEN ADDRESSED, THE APPLICANT WILL BE REQUIRED TO SUBMIT ONE UNBOUND FINAL SET OF CONSTRUCTION PLANS FOR SIGNATURES.
- 2. AFTER THE PLANS HAVE BEEN SIGNED, THEY WILL BE STAMPED AND RETURNED TO THE APPLICANT.
- 3. THE APPLICANT WILL BE RESPONSIBLE FOR MAKING THREE COLLATED AND STAPLED FINAL COPIES OF THE SIGNED PLANS AND A SCANNED COPY OF THE PLANS.
- 4. PLANS MUST BE SCANNED AT 300 DPI, UNCOMPRESSED FORMAT TIF TO THE ORIGINAL APPROVED SCALE. THE DIGITAL COPY OF THE PLANS NEEDS TO BE SUBMITTED TO THE PLANNING DEPARTMENT ON A DISK.
- 5. UPON RECEIPT OF THE FINAL PLAN, A PRE-CONSTRUCTION MEETING WILL BE SCHEDULED.
- 6. CONSTRUCTION MAY NOT START UNTIL AFTER THE PRE-CONSTRUCTION MEETING AND THE CONSTRUCTION PLAN PERMIT IS ISSUED.

WILLIAMSON COUNTY BASE MATERIAL NOTES:

1. BASE MATERIAL SHALL CONFORM TO ITEM 247 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, "FLEXIBLE BASE". THE BASE MATERIAL SHALL BE TYPE A GRADE 4, OR AS APPROVED BY THE COUNTY ENGINEER. GRADE 4 MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TABLE B6.1 BELOW: TABLE B6.1: GRADATION SPECIFICATION FOR TY A, GRADE 4

MASTER GRADATION	CUMULATIVI
SIEVE SIZE	RETAINED
2 1/2"	-
1 3/4"	0
7/8"	10% - 35%
3/8"	30% - 65%
#4	45% - 75%
#40	70% - 90%
#200	070/ OE0/

- 2. EACH LAYER OF BASE COURSE SHALL BE TESTED FOR IN-PLACE DRY DENSITY AND MEASURED FOR COMPACTED THICKNESS. THE NUMBER AND LOCATION OF ALL BASE TEST SAMPLES SHALL BE DETERMINED BY THE COUNTY ENGINEER.
- 3. THE BASE SHALL BE PREPARED AND COMPACTED TO ACHIEVE A MINIMUM OF 100% OF THE MAXIMUM (PROCTOR) DRY DENSITY OR AS APPROVED BY THE COUNTY ENGINEER UPON RECOMMENDATION BY THE TESTING LABORATORY. THE MAXIMUM LIFT SHALL NOT EXCEED SIX INCHES. THE BASE MUST BE INSPECTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY AND A CERTIFIED COPY OF THE TEST RESULTS FURNISHED TO THE COUNTY ENGINEER FOR APPROVAL. PRIOR TO THE PLACEMENT OF THE FIRST LIFT OF BASE, THE STOCKPILE SHALL BE TESTED FOR THE SPECIFICATIONS FOUND IN ITEM 247 TABLE 1 AND THE RESULT FURNISHED TO THE COUNTY ENGINEER FOR APPROVAL.
- WILLIAMSON COUNTY BITUMINOUS NOTES:
- 1. URBAN ROADS REQUIRE A MINIMUM 2 INCH WEARING SURFACE OF HMAC TYPE D. THE MIX SHALL BE FROM A TXDOT CERTIFIED PLANT AND THE MIX DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE
- 2. IF PROVIDING MIXTURE TYPE C OR D, USE PERFORMANCE GRADE (PG) BINDER 70-22. PROVIDE PG BINDER THAT DOES NOT CONTAIN RECYCLED ENGINE OIL BOTTOMS (REOBS) OR POLY PHOSPHORIC ACID (PPA). RECYCLED ASPHALT PAVEMENT (RAP) IS NOT PERMITTED FOR USE AS A COMPONENT OF THE HMACP. THE CONTRACTOR IS ALSO NOT PERMITTED THE USE RECYCLED ASPHALT SHINGLES (RAS) AS A COMPONENT OF THE HMACP.
- 3. IF PROVIDING MIXTURE TYPE B, USE PG BINDER 64-22. PROVIDE PG BINDERS THAT DO NOT CONTAIN REOBS OR PPA. FOR SUBSURFACE COURSE TYPE B, THE USE OF TWENTY PERCENT (20%) RAP IS PERMITTED IN THE MIX DESIGN. THE CONTRACTOR IS NOT PERMITTED TO USE RAS AS A COMPONENT OF THE HMACP.
- 4. TARGET LABORATORY MOLDED DENSITY IS 96.5% FOR ALL MIXTURES WITHOUT RAP AND WHEN USING A TEXAS GYRATORY COMPACTOR (TGC) FOR DESIGNING THE MIXTURE. WHEN USING SUPERPAVE GYRATORY COMPACTOR (SGC) TO DESIGN MIXTURES, SUBMIT THE SGC MIX DESIGN TO THE ENGINEER FOR APPROVAL.
- 5. ALL MIXTURES MUST MEET THE HAMBURG REQUIREMENT AS STATED IN THE TABLE BELOW.

HIGH-TEMPERATURE BINDER GRADE	TEST METHOD	HAMBURG WHEEL TEST REQUIREMENTS MINIMUN # OF PASSESS @ 0.5" RUT DEPTH, TESTED @ 122°F
PG 64 OR LOWER	TEX-242-F	7,000
PG 70	TEXT-242-F	15,000
PG 76 OR HIGHER	TEXT-242-F	20,000

- 6. SUBMIT ANY PROPOSED ADJUSTMENTS OR CHANGES TO A JOB MIX FORMULA TO THE COUNTY ENGINEER BEFORE PRODUCTION
- 7. UNLESS OTHERWISE APPROVED, PROVIDE TYPE B MIXTURES THAT HAVE NO LESS THAN 4.5% ASPHALT BINDER, AND TY C AND D MIXTURES WITH NO LESS THAN 4.7% BINDER
- 8. FOR MIXTURE DESIGN VERIFICATION, PROVIDE THE ENGINEER WITH TWO 5-GALLON BUCKETS OF EACH AGGREGATE STOCKPILE TO BE USED ON THE PROJECT AND THREE GALLONS OF EACH PG BINDER TO BE USED ON THE PROJECT. ALSO PROVIDE SUFFICIENT QUANTITIES OF ANY OTHER ADDITIVES THAT WILL BE USED IN THE HMA MIXTURE. THIS MUST BE DONE PRIOR TO APPROVAL OF THE MIX DESIGN, UNLESS ALREADY PERFORMED WITHIN A ONE-YEAR TIME PERIOD.
- 9. PRIOR TO ALLOWING PRODUCTION OF THE TRIAL BATCH, THE ENGINEER WILL USE THE MATERIALS PROVIDED BY THE CONTRACTOR TO PERFORM THE FOLLOWING TESTS TO VERIFY THE HMA MIXTURE DESIGN.
- 1. INDIRECT TENSILE TEST IN ACCORDANCE WITH TEX-226-F 2. HAMBURG WHEEL TEST IN ACCORDANCE WITH TEX-242-F

1. THE INDIRECT TENSILE TEST RESULTS IN A VALUE GREATER THAN 200 PSI

- 3. OVERLAY TEST IN ACCORDANCE WITH TEX-248-F 4. CANTABRO TEST IN ACCORDANCE WITH TEX-245-F
- FOR MIXTURES DESIGNED WITH A TEXAS GYRATORY COMPACTOR (TGC), THE ENGINEER MAY REQUIRE THAT THE TARGET LABORATORY MOLDED DENSITY BE RAISED TO NO MORE THAN 97.5% OR MAY LOWER THE DESIGN NUMBER OF GYRATIONS TO NO LESS THAN 35 FOR MIXTURES DESIGNED WITH AN SGC IF ANY OF THE FOLLOWING CONDITIONS EXIST.

2. THE HAMBURG WHEEL TEST RESULTS IN A VALUE LESS THAN 3.0 MM

4. THE CANTABRO TEST RESULTS IN A VALUE OF MORE THAN 20% LOSS

3. THE OVERLAY TEST RESULTS IN A VALUE LESS THAN 100 CYCLES

- IN LIEU OF, OR IN ADDITION TO EVALUATING THE MIXTURE DESIGN PRIOR TO ALLOWING A TRIAL BATCH TO BE PRODUCED, THE ENGINEER MAY ALSO EVALUATE THE MIXTURE PRODUCED DURING THE TRIAL BATCH FOR COMPLIANCE WITH THE 4 TESTS LISTED
- 10. CONTRACTOR'S QUALITY CONTROL (CQC) TEST REPORTS SHALL BE SUBMITTED TO THE COUNTY ENGINEER ON A DAILY BASIS. AS A MINIMUM, DAILY CQC TESTING ON THE PRODUCED MIX SHALL INCLUDE: SIEVE ANALYSIS TEX-200-F, ASPHALT CONTENT TEX-236-F, HVEEM STABILITY TEX-208-F, LABORATORY COMPACTED DENSITY TEX-207-F, AND MAXIMUM SPECIFIC GRAVITY TEX-227-F. THE NUMBER AND LOCATION OF ALL HMAC TESTS SHALL BE DETERMINED BY THE COUNTY ENGINEER WITH A MINIMUM OF THREE, 6-INCH DIAMETER FIELD CORES SECURED AND TESTED BY THE CONTRACTOR FROM EACH DAY'S PAVING. EACH HMAC COURSE SHALL BE TESTED FOR IN-PLACE DENSITY, BITUMINOUS CONTENT AND AGGREGATE GRADATION, AND SHALL BE MEASURED FOR COMPACTED THICKNESS. THE NUMBER AND LOCATION OF ALL HMAC TEST SAMPLES SHALL BE DETERMINED BY THE COUNTY ENGINEER.
- 11. RURAL ROADS MAY USE EITHER THE SPECIFICATIONS FOUND IN SECTION B7.1 OR A TWO-COURSE SURFACE IN ACCORDANCE WITH ITEM 316, TREATMENT WEARING SURFACE, OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. THE TYPE AND RATE OF ASPHALT AND AGGREGATE SHALL BE INDICATED ON THE PLANS AS A BASIS OF ESTIMATE AND SHALL BE DETERMINED AT THE PRECONSTRUCTION CONFERENCE. AGGREGATE USED IN THE MIX SHALL BE ON THE TXDOT QUALITY MONITORING SCHEDULE. AGGREGATE SHALL BE TYPE B GRADE 4. GRADATION TESTS SHALL BE REQUIRED FOR EACH 300 CUBIC YARDS OF MATERIAL PLACED WITH A MINIMUM OF TWO TESTS PER EACH GRADE PER EACH PROJECT. TEST RESULTS SHALL BE REVIEWED BY THE COUNTY ENGINEER PRIOR TO APPLICATION OF THE MATERIAL.

- 1. IN LIEU OF BITUMINOUS PAVEMENT, PORTLAND CEMENT CONCRETE PAVEMENT MAY BE USED. IN SUCH CASES, THE PAVEMENT THICKNESS SHALL BE A MINIMUM OF 9 INCHES OF CONCRETE, AND SHALL BE JOINTED AND REINFORCED IN ACCORDANCE WITH THE DETAIL INCLUDED IN APPENDIX I. THE MIX SHALL BE FROM A TXDOT CERTIFIED PLANT. THE MIX DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.
- WILLIAMSON COUNTY CONCRETE GENERAL NOTES:
- 1. UNLESS OTHERWISE SPECIFIED, CONCRETE SHALL BE IN ACCORDANCE WITH ITEM 421 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND BE PLACED IN ACCORDANCE WITH THE APPLICABLE ITEM.
- 2. ALL CONCRETE SHALL BE TESTED FOR COMPRESSIVE STRENGTH. ONE SET OF THREE CONCRETE TEST CYLINDERS SHALL BE MOLDED FOR EVERY 50 CUBIC YARDS OF CONCRETE PLACED FOR EACH CLASS OF CONCRETE PER DAY, OR AT ANY OTHER INTERVAL AS DETERMINED BY THE COUNTY ENGINEER. A SLUMP TEST SHALL BE REQUIRED WITH EACH SET OF TEST CYLINDERS. ONE CYLINDER SHALL BE TESTED FOR COMPRESSIVE STRENGTH AT AN AGE OF SEVEN DAYS AND THE REMAINING TWO CYLINDERS SHALL BE TESTED AT 28 DAYS OF AGE.

STANDARD MUD PLAN NOTE

- A) THE DISTRICT ENGINEER, JONES-HEROY & ASSOCIATES, INC. (KEN HEROY, PH: 512/989-2200) SHALL BE CONTACTED 48 HOURS
- I) PRE-CONSTRUCTION MEETINGS; II) BEGINNING EACH PHASE OF CONSTRUCTION;
- III) TESTING OF WATER AND/OR WASTEWATER LINES; AND, IV) FINAL WALK-THROUGH OF FACILITIES
- B) REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO DISTRICT OWNED FACILITIES AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

CITY OF GEORGETOWN CONSTRUCTION GENERAL 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 HEREBY 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 IN EFFECT AT THE TIME OF SUBMITTAL OF THE
- 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 TCEQ 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 ON 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 MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 200 PSI FOR 15 MINUTES AND 150 PSI FOR 2 HOURS.
- 13. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.
- 14. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.

16. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.

- 15. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND
- 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 ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.
- 20. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTABLE 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. RECORD DRAWINGS OF PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANCE OF THE PROJECT. THESE DRAWINGS SHALL BE A PDF EMAILED TO THE CITY DEVELOPMENT ENGINEER.

WATER NOTES:

- NOTE: CONTRACTOR SHALL CONTACT CITY OF GEORGETOWN UTILITY SYSTEMS AT (512) 930-2550, FOR A LIST OF REQUIRED WATER UTILITY INSPECTIONS AND TO REQUEST INSPECTION.
- 1. THE TOP OF VALVE STEMS SHALL BE AT LEAST 18", AND NO MORE THAN 36", BELOW FINISHED GRADE. VALVE STEM RISERS SHALL
- 2. PIPE MATERIALS TO BE USED FOR CONSTRUCTION OF UTILITY LINES: WATER PVC SCH. 40 PIPE AND FILLINGS.
- 3. ALL WATER LINES, INCLUDING SERVICE LINES, SHALL BE PRESSURE AND LEAK TESTED PER GEORGETOWN UTILITY SYSTEMS STANDARD SPECIFICATIONS AN WITNESSED BY THE GEORGETOWN REPRESENTATIVE. ALL TESTING IS TO B THE RESPONSIBILITY OF THE CONTRACTOR, AND THE CONTRACTOR MAY BE REQUIRED TO RE-TEST LINES IF THE TESTING IS NOT WITNESSED BY GEORGETOWN UTILITY SYSTEMS. CONTRACTOR MUST NOTIFY GEORGETOWN 48 HOURS PRIOR TO ANY TESTING.
- 4. ALL WATER LINES SHALL BE STERILIZED AND BACTERIOLOGICAL TESTED IN ACCORDANCE WITH TCEQ STANDARDS. THE CONTRACTOR IS RESPONSIBLE FOR STERILIZATION AND GEORGETOWN UTILITY SYSTEMS IS RESPONSIBLE FOR SUBMITTING BACTERIOLOGICAL SAMPLES TO THE STATE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING COST.
- 5. DENSITY TESTING OF COMPACTED BACKFILL SHALL BE MADE AT A RATE OF ONE TEST PER TWO FOOT LIFTS PER 300 FEET OF 6. CONTRACTOR TO OBTAIN A WATER METER FROM GEORGETOWN FOR ANY WATER THAT MAY BE REQUIRED DURING
- 7. ALL WATER METER BOXES SHALL BE FORD GULF BOX WITH LOCKING LID. THE FOD CATALOG NUMBER FOR THE SINGLE METER BOX IS G-148-233. FOR THE DOUBLE BOX WITH AN ANGLED INLET THE NUMBER IS DG-148-243.

8. MANHOLE FRAMES AND COVERS AND WATER VALVE BOXES SHALL BE RAISED TO FINISHED PAVEMENT GRADE AT THE OWNER'S EXPENSE BY THE CONTRACTOR WITH COUNTY INSPECTION. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL

PAVING CONSTRUCTION. 9. THE LOCATION OF ANY EXISTING UTILITY LINES SHOWN ON THESE PLANS IS THE BEST AVAILABLE AND MAY NOT BE TOTALLY ACCURATE. ANY DAMAGE TO EXISTING UTILITY LINES, BOTH KNOWN AND UNKNOWN, SHALL BE REPAIRED AT THE EXPENSE OF THE

CONTRACTOR.

- 10. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH AT LEAST 8 MIL POLYETHYLENE WRAP.
- 11. ALL WATER MAINS AND SERVICE LINES SHALL MEET GEORGETOWN UTILITY SYSTEMS CONSTRUCTION STANDARDS MINIMUM COVER REQUIREMENTS. ALL STREETS ARE TO BE CUT TO SUBGRADE PRIOR TO INSTALLATION OF WATER MAINS OR CUTS WILL BE
- 12. CONTRACTOR TO NOTIFY GEORGETOWN UTILITY SYSTEMS 48 HOURS PRIOR TO CONNECTING TO EXISTING WATER UTILITIES.
- 13. ALL WATER PIPE BEDDING MATERIAL SHALL CONFORM TO GEORGETOWN UTILITY SYSTEMS SPECIFICATIONS.
- 14. TRACER TAPE SHALL BE INSTALLED ON ALL WATER MAINS IN ACCORDANCE WITH GEORGETOWN UTILITY SYSTEMS CONSTRUCTION STANDARDS.
- 15. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER ALL CONCRETE IS TO BE CLASS "A" (5 SACK, 300 PSI ~ 28-DAYS), AND ALL REINFORCING STEEL TO BE ASTM A615 60.
- 16. ALL WATER VALVES WILL BE OPERATED BY GEORGETOWN UTILITY SYSTEMS PERSONNEL ONLY. THE CONTRACTOR MAY NOT OPERATE ANY WATER VALVE. THE GENERAL CONTRACTOR MAY BE FINED IF A WATER VALVE IS OPERATED, REGARDLESS OF WHO
- 17. THRUST BLOCKING TO BE VERIFIED BY THE FIRE CODE OFFICIAL
- 18. HYDROSTATIC TESTING OF THE FIRE LINES, HYDRANTS, AND FDC TO BE CONDUCTED AND VERIFIED BY THE FIRE CODE OFFICIAL.

SEQUENCE OF CONSTRUCTION:

THE PROJECT SHALL GENERALLY CONFORM TO THE FOLLOWING:

- A. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE, SILT FENCE, AND TREE PROTECTION FENCE ACCORDING TO THE APPROXIMATE LOCATION AND SHOWN ON EROSION CONTROL PLAN, NOTES & DETAIL SHEET, AND LANDSCAPE PLANS.
- B. BEGIN CLEARING AND GRADING OF SITE C. SEED AND RE-VEGETATE SLOPES WHERE SHOWN.
- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE.
- B. INSTALL STORM DRAINS AND OTHER UTILITIES AS SPECIFIED ON PLAN SHEETS. C. INSTALL INLET PROTECTION AS INLETS ARE INSTALLED.
- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE. REMOVE AS NEEDED TO PAVE. B. STABILIZE SUBGRADE.
- C. PAVE PARKING LOT AND SIDEWALKS AS SPECIFIED ON PLAN SHEETS. D. REMOVE TEMPORARY CONSTRUCTION ENTRANCE.
- PHASE 4 LANDSCAPING AND SOIL STABILIZATION
 - A. RE-VEGETATE LOT AND PARKWAYS B. LANDSCAPE CONTRACTOR SHALL RE-VEGETATE ALL AREAS RESERVED FOR LANDSCAPE VEGETATIVE COVERS. C. REMOVE EROSION CONTROL DEVICES WHEN GROUND COVER ESTABLISHED.

STANDARD MUD NOTES:

- THE DISTRICT ENGINEER, JONES-HEROY & ASSOCIATES, INC. (KEN HEROY, PH: 512/989-2200) SHALL BE CONTACTED 48 HOURS
- 1.1. PRE-CONSTRUCTION MEETINGS; BEGINNING EACH PHASE OF CONSTRUCTION;
- TESTING OF WATER AND/OR WASTEWATER LINES; AND, FINAL WALK-THROUGH OF FACILITIES.
- REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO DISTRICT OWNED FACILITIES AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.



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.
- Any modification to the activities described in the referenced SCS application following the date of approval may require the submittal of an SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.
- 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.
- 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

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.

executive director has reviewed and approved the methods proposed to protect the sensitive

- 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.
- 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.

- Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).
- 11. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe

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.

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- 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. 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
- 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.
- A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.
- Infiltration/Exfiltration Test.

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outlined above or until failure.

- 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.
- 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.
- For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.
- If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

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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.
- Mandrel Design.
 - (i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
- A mandrel must have nine or more odd number of runners or
- A barrel section length must equal at least 75% of the inside
- Each size mandrel must use a separate proving ring.
- Method Options.
- (i) An adjustable or flexible mandrel is prohibited. (ii) A test may not use television inspection as a substitute for a
- deflection test. (iii) If requested, the executive director may approve the use of a
- deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
- (2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
- A deflection test method must be accurate to within plus or minus 0.2%
- An owner shall not conduct a deflection test until at least 30 days after the final backfill.
- Gravity collection system pipe deflection must not exceed five percent (5%).
- 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. (1) Hydrostatic Testing.

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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 __ of __ and marked after backfilling as shown in the detail on Plan Sheet __ of __.

- 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:
 - (A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924. or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph
 - (B)(ii) of this paragraph. For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be
 - tested as required by paragraph (2) of this subsection. (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the
 - (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 $0.085 \times D \times K$

(1) Low Pressure Air Test.

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

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- K = 0.000419 X D X L, but not less than 1.0
- D = average inside pipe diameter in inches
- - The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth
 - 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.
 - A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.
- (2) Vacuum Testing. (A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
 - 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. A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's
- recommendations. There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
- A test does not begin until after the vacuum pump is off.
- 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.
- 17. All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city inspector must visually inspect the private service lateral and the connection to the sewage collection system, and certify that it is constructed in conformity with the applicable provisions of this section. The owner of the

collection system must maintain such certifications for five years and forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

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THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.



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BUILDING FOOTPRINT.

SUBSEQUENT ADDENDA

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, CITY (OR TOWN) STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING
- SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION AND DETAIL SHALL BE FOLLOWED. 2. THE CONTRACTOR SHALL COMPLY WITH CITY (OR TOWN) "GENERAL NOTES" FOR CONSTRUCTION. IF EXISTING AND REQUIRED BY THE CITY. FOR INSTANCES WHERE THEY CONFLICT WITH THESE KH GENERAL NOTES, THEN THE MORE RESTRICTIVE SHALL APPLY.
- 3. THE CONTRACTOR SHALL FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE AUTHORITIES' SPECIFICATIONS AND REQUIREMENTS. 4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXISTING CONDITIONS. 5. THE EXISTING CONDITIONS SHOWN ON THESE PLANS WERE PROVIDED BY THE TOPOGRAPHIC SURVEY PREPARED BY THE PROJECT
- SURVEYOR, AND ARE BASED ON THE BENCHMARKS SHOWN. THE CONTRACTOR SHALL REFERENCE THE SAME BENCHMARKS. 6. THE CONTRACTOR SHALL REVIEW AND VERIFY THE EXISTING TOPOGRAPHIC SURVEY SHOWN ON THE PLANS REPRESENTS EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES FOUND TO THE OWNER AND ENGINEER
- 7. IF THE CONTRACTOR DOES NOT ACCEPT THE EXISTING TOPOGRAPHIC SURVEY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED PROFESSIONAL LAND SURVEYOR TO THE OWNER AND ENGINEER FOR REVIEW. 8. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION SURVEYING AND STAKING.
- 9. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL, INCLUDING BENCHMARKS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS. PROPERTY LINES AND CORNERS SHALL BE HELD AS THE HORIZONTAL CONTROL. 10. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS, ELEVATIONS, AND FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR
- APPROVAL OF THE ARCHITECT, ENGINEER, AND IF APPLICABLE THE CITY AND OWNER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE CITY, ENGINEER, AND OWNER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM. 11. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. OWNER/ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH
- 12.IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK TO HAVE THEM LOCATE THEIR EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.
- 13. CONTRACTOR SHALL CALL TEXAS 811 AN ADEQUATE AMOUNT OF TIME PRIOR TO COMMENCING CONSTRUCTION OR ANY EXCAVATION. 14. CONTRACTOR SHALL USE EXTREME CAUTION AS THE SITE CONTAINS VARIOUS KNOWN AND UNKNOWN PUBLIC AND PRIVATE UTILITIES. 15. THE LOCATIONS, ELEVATIONS, DEPTH, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY MAPS AND PLANS, AND ARE CONSIDERED APPROXIMATE AND INCOMPLETE. IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY THE PRESENCE, LOCATION, ELEVATION, DEPTH, AND DIMENSION OF EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE ENGINEER SHALL BE NOTIFIED WHEN A PROPOSED IMPROVEMENT CONFLICTS WITH AN EXISTING UTILITY
- 16. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY ADJUSTMENTS AND RELOCATIONS OF EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO, ADJUSTING EXISTING MANHOLES TO MATCH PROPOSED GRADE, RELOCATING EXISTING POLES AND GUY WIRES THAT ARE LOCATED IN PROPOSED DRIVEWAYS, ADJUSTING THE HORIZONTAL OR VERTICAL ALIGNMENT OF EXISTING UNDERGROUND UTILITIES TO ACCOMMODATE PROPOSED GRADE OR CROSSING WITH A PROPOSED UTILITY, AND ANY OTHERS THAT MAY BE ENCOUNTERED THAT ARE UNKNOWN AT THIS TIME AND NOT SHOWN ON THESE PLANS
- 17. CONTRACTOR SHALL ARRANGE FOR OR PROVIDE, AT ITS EXPENSE, ALL GAS, TELECOMMUNICATIONS, CABLE, OVERHEAD AND UNDERGROUND POWER LINE, AND UTILITY POLE ADJUSTMENTS NEEDED. 18. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF FRANCHISE UTILITIES THAT ARE NECESSARY FOR ON-SITE AND
- OFF-SITE CONSTRUCTION, AND SERVICE TO THE PROPOSED DEVELOPMENT. 19. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTORS' FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED BY THE CONTRACTOR AND THEIR
- PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK. 20.BRACING OF UTILITY POLES MAY BE REQUIRED BY THE UTILITY COMPANIES WHEN TRENCHING OR EXCAVATING IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR, WITH NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE PAY ITEM.
- 21.CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND UTILITY OWNER REGULATIONS PERTAINING TO WORK SETBACKS FROM POWER LINES
- 22.THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS, APPROVALS, AND BONDS PRIOR TO CONSTRUCTION. 23. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS,
- GEOTECHNICAL REPORT AND ADDENDA, PROJECT AND CITY SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS FROSION CONTROL PLANS SWPPP AND INSPECTION REPORTS 24.ALL SHOP DRAWINGS AND OTHER DOCUMENTS THAT REQUIRE ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, SO THAT NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE
- 25.ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES, AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO USE OF THE FACILITY AND THE FINAL CONNECTION OF SERVICES. 26. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
- 27. CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES 28.ALL SYMBOLS SHOWN ON THESE PLANS (E.G. FIRE HYDRANT, METERS, VALVES, INLETS, ETC....) ARE FOR PRESENTATION PURPOSES ONLY AND ARE NOT TO SCALE. CONTRACTOR SHALL COORDINATE FINAL SIZES AND LOCATIONS WITH APPROPRIATE CITY INSPECTOR. 29. THE SCOPE OF WORK FOR THE CIVIL IMPROVEMENTS SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. REFERENCE THE BUILDING PLANS (E.G. ARCHITECTURAL, STRUCTURAL, MEP) FOR AREAS WITHIN 5-FEET OF THE BUILDING AND WITHIN THE
- 30 REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR ALL FINAL BUILDING DIMENSIONS 31. THE PROPOSED BUILDING FOOTPRINT(S) SHOWN IN THESE PLANS WAS PROVIDED TO KIMLEY-HORN AND ASSOCIATES. INC. (KH) BY THE PROJECT ARCHITECT AT THE TIME THESE PLANS WERE PREPARED. IT MAY NOT BE THE FINAL CORRECT VERSION BECAUSE THE BUILDING DESIGN WAS ONGOING. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING THE FINAL CORRECT VERSION OF THE BUILDING FOOTPRINT WITH THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO LAYOUT. DIMENSIONS AND/OR COORDINATES SHOWN ON THESE PLANS WERE BASED ON THE ABOVE STATED ARCHITECTURAL FOOTPRINT. AND ARE THEREFORE A PRELIMINARY LOCATION OF THE BUILDING. THE CONTRACTOR IS SOLELY RESPONSIBLE TO VERIFY WHAT PART OF THE BUILDING THE ARCHITECT'S FOOTPRINT REPRESENTS (E.G. SLAB. OUTSIDE WALL, MASONRY LEDGE, ETC.....) AND TO CONFIRM ITS FINAL POSITION ON THE SITE
- BASED ON THE FINAL ARCHITECTURAL FOOTPRINT, CIVIL DIMENSION CONTROL PLAN, SURVEY BOUNDARY AND/OR PLAT. ANY DIFFERENCES FOUND SHALL BE REPORTED TO KH IMMEDIATELY. 32.ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING
- 33. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL MATERIALS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND COMPLY WITH CITY STANDARD SPECIFICATIONS AND GEOTECHNICAL REPORT. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING MATERIALS. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR MATERIALS TESTING. 34.ALL COPIES OF MATERIALS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING
- 35.IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE MATERIALS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS 36.DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO
- GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING. 37.ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS OUTSIDE OF THE WORK AREA WILL BE
- ALLOWED. ANY DAMAGE RESULTING THEREFROM SHALL BE CONTRACTOR'S SOLE RESPONSIBILITY TO REPAIR. 38. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, MANHOLES, POLES, GUY WIRES, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, COMMUNICATION BOXES/PEDESTALS, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES AT NO COST TO THE OWNER. 39. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY OR PUBLIC
- IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCES, WALLS, SIGNS, PAVEMENT, CURBS, UTILITIES, SIDEWALKS, GRASS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS, ETC.... TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE OWNER. 40.ALL AREAS IN EXISTING RIGHT-OF-WAY DISTURBED BY SITE CONSTRUCTION SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER, INCLUDING AS NECESSARY GRADING, LANDSCAPING, CULVERTS, AND PAVEMENT.
- 41.THE CONTRACTOR SHALL SALVAGE ALL EXISTING POWER POLES, SIGNS, WATER VALVES, FIRE HYDRANTS, METERS, ETC... THAT ARE TO BE RELOCATED DURING CONSTRUCTION. 42.CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
- 43.THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY. 44.THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER. 45.SITE SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR
- 46.THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE ENGINEER'S SEAL HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL REQUIRED SAFETY PROCEDURES AND PROGRAMS
- 47.SIGNS RELATED TO SITE OPERATION OR SAFETY ARE NOT INCLUDED IN THESE PLANS. 48.CONTRACTOR OFFICE AND STAGING AREA SHALL BE AGREED ON BY THE OWNER AND CONTRACTOR PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS FOR THE CONSTRUCTION OFFICE, TRAILER, STORAGE, AND STAGING OPERATIONS AND LOCATIONS.
- 49.LIGHT POLES, SIGNS, AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN ACCESSIBLE ROUTES. 50.ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM
- 51.TOP RIM ELEVATIONS OF ALL EXISTING AND PROPOSED MANHOLES SHALL BE COORDINATED WITH TOP OF PAVEMENT OR FINISHED GRADE AND SHALL BE ADJUSTED TO BE FLUSH WITH THE ACTUAL FINISHED GRADE AT THE TIME OF PAVING. 52.CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED VALVES, FIRE HYDRANTS, AND OTHER UTILITY APPURTENANCES TO MATCH
- ACTUAL FINISHED GRADES AT THE TIME OF PAVING. 53.THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND PHASING, AND SHALL CONTACT THE APPROPRIATE CITY OFFICIALS, INCLUDING BUILDING OFFICIAL, ENGINEERING INSPECTOR, AND FIRE MARSHALL TO LEARN OF ANY REQUIREMENTS. 54. CONTRACTOR IS RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY THE CITY OF A TRAFFIC CONTROL PLAN PRIOR TO
- THE START OF CONSTRUCTION. AND THEN THE IMPLEMENTATION OF THE PLAN. 55.CONTRACTOR SHALL KEEP A NEAT AND ACCURATE RECORD OF CONSTRUCTION, INCLUDING ANY DEVIATIONS OR VARIANCES FROM
- 56.THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT PLANS TO THE ENGINEER AND CITY IDENTIFYING ALL DEVIATIONS AND VARIATIONS FROM THESE PLANS MADE DURING CONSTRUCTION.

- THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.
- 2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000" 3. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START
- 4. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE 5. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION
- CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE. 6. CONTRACTOR SHALL DOCUMENT THE DATES OF INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL FOR EACH BMP EMPLOYED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE.
- 7. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS. 8. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED.
- 9. CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES NEEDED DUE TO PROJECT PHASING. 10. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT

- EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL
- 11. OFF-SITE SOIL BORROW. SPOIL. AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.
- 12. ALL STAGING, STOCKPILES, SPOIL, AND STORAGE SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. PROTECTIVE MEASURES SHALL BE PROVIDED IF NEEDED TO ACCOMPLISH THIS REQUIREMENT, SUCH AS COVERING OR ENCIRCLING THE AREA WITH AN APPROPRIATE BARRIER. 13. CONTRACTORS SHALL INSPECT ALL EROSION CONTROL DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS
- THE SWPPP BOOKLET IF APPLICABLE. TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY 14. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH CITY SPECIFICATIONS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT ALL TIMES FOR ALL INGRESS/EGRESS

WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN

- 15. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE 3. RETAINING WALL DESIGN SHALL BE PROVIDED BY OTHERS AND SHALL FIT IN THE WALL ZONE OR LOCATION SHOWN ON THESE PLANS. REMOVED IMMEDIATELY
- 16. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY OWNER AND CITY. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS.
- 17. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP. 18. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND CITY STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE
- PLANS, THEN THE CONTRACTOR SHALL ARRANGE FOR AN APPROPRIATE DESIGN TO BE PROVIDED. 19 ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR 20. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE.
- 21.TEMPORARY SEEDING OR OTHER APPROVED STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE. 22.CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE MATERIAL, AND TRASH AS CONSTRUCTION PROGRESSES. 23.UPON COMPLETION OF FINE GRADING, ALL SURFACES OF DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS
- ACHIEVED WHEN THE AREA IS EITHER COVERED BY PERMANENT IMPERVIOUS STRUCTURES, SUCH AS BUILDINGS, SIDEWALK, PAVEMENT, OR A UNIFORM PERENNIAL VEGETATIVE COVER. 24.AT THE CONCLUSION OF THE PROJECT, ALL INLETS, DRAIN PIPE, CHANNELS, DRAINAGEWAYS AND BORROW DITCHES AFFECTED BY THE CONSTRUCTION SHALL BE DREDGED, AND THE SEDIMENT GENERATED BY THE PROJECT SHALL BE REMOVED AND DISPOSED IN ACCORDANCE WITH APPLICABLE REGULATIONS.

STORM WATER DISCHARGE AUTHORIZATION

- . CONTRACTOR SHALL COMPLY WITH ALL TCEQ AND EPA STORM WATER POLLUTION PREVENTION REQUIREMENTS 2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000. 3. THE CONTRACTOR SHALL ENSURE THAT ALL PRIMARY OPERATORS SUBMIT A NOI TO TCEQ AT LEAST SEVEN DAYS PRIOR TO
- COMMENCING CONSTRUCTION (IF APPLICABLE), OR IF UTILIZING ELECTRONIC SUBMITTAL, PRIOR TO COMMENCING CONSTRUCTION. ALL PRIMARY OPERATORS SHALL PROVIDE A COPY OF THE SIGNED NOI TO THE OPERATOR OF ANY MS4 (TYPICALLY THE CITY) RECEIVING DISCHARGE FROM THE SITE. 4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF
- APPLICABLE, INCLUDING POSTING SITE NOTICE, INSPECTIONS, DOCUMENTATION, AND SUBMISSION OF ANY INFORMATION REQUIRED BY THE TCEQ AND EPA (E.G. NOI). ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN THE REQUIRED CONTRACTOR
- CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP. 6. A COPY OF THE SWPPP, INCLUDING NOI, SITE NOTICE, CONTRACTOR CERTIFICATIONS, AND ANY REVISIONS, SHALL BE SUBMITTED TO THE CITY BY THE CONTRACTOR AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION. 7. A NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO TCEQ BY ANY PRIMARY OPERATOR WITHIN 30 DAYS AFTER ALL SOIL
- DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY STRUCTURES, A TRANSFER OF OPERATIONAL CONTROL HAS OCCURRED, OR THE OPERATOR HAS OBTAINED ALTERNATIVE AUTHORIZATION UNDER A DIFFERENT PERMIT. A COPY OF THE NOT SHALL BE PROVIDED TO THE OPERATOR OF ANY MS4 RECEIVING DISCHARGE FROM THE SITE.

- . KH IS NOT RESPONSIBLE FOR THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THIS DEMOLITION PLAN. THIS PRELIMINARY DEMOLITION PLAN SIMPLY INDICATES THE KNOWN OBJECTS ON THE SUBJECT TRACT THAT ARE TO BE DEMOLISHED AND REMOVED FROM THE SITE
- 2. KH DOES NOT WARRANT OR REPRESENT THAT THE PLAN. WHICH WAS PREPARED BASED ON SURVEY AND UTILITY INFORMATION PROVIDED BY OTHERS, SHOWS ALL IMPROVEMENTS AND UTILITIES, THAT THE IMPROVEMENTS AND UTILITIES ARE SHOWN ACCURATELY, OR THAT THE UTILITIES SHOWN CAN BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ITS OWN SITE RECONNAISSANCE TO SCOPE ITS WORK AND TO CONFIRM WITH THE OWNERS OF IMPROVEMENTS AND UTILITIES THE ABILITY AND PROCESS FOR THE REMOVAL OF THEIR FACILITIES.
- 3. THIS PLAN IS INTENDED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR. 4. CONTRACTOR IS STRONGLY CAUTIONED TO REVIEW THE FOLLOWING REPORTS DESCRIBING SITE CONDITIONS PRIOR TO BIDDING AND
- IMPLEMENTING THE DEMOLITION PLANa. ENVIRONMENTAL SITE ASSESSMENT PROVIDED BY THE OWNER. . ASBESTOS BUILDING INSPECTION REPORT(S) PROVIDED BY THE OWNER,
- c. GEOTECHNICAL REPORT PROVIDED BY THE OWNER. d. OTHER REPORTS THAT ARE APPLICABLE AND AVAILABLE.
- 5 CONTRACTOR SHALL CONTACT THE OWNER TO VERIEV WHETHER ADDITIONAL REPORTS OR AMENDMENTS TO THE ABOVE CITED. REPORTS HAVE BEEN PREPARED AND TO OBTAIN/REVIEW/AND COMPLY WITH THE RECOMMENDATION OF SUCH STUDIES PRIOR TO
- STARTING ANY WORK ON THE SITE. 6. CONTRACTOR SHALL COMPLY WITH ALL LOCAL STATE AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW
- THE SITE DETERMINE THE APPLICABLE REGULATIONS RECEIVE THE REQUIRED PERMITS AND ALITHORIZATIONS, AND COMPLY . KH DOES NOT REPRESENT THAT THE REPORTS AND SURVEYS REFERENCED ABOVE ARE ACCURATE, COMPLETE, OR COMPREHENSIVE SHOWING ALL ITEMS THAT WILL NEED TO BE DEMOLISHED AND REMOVED.

8. SURFACE PAVEMENT INDICATED MAY OVERLAY OTHER HIDDEN STRUCTURES, SUCH AS ADDITIONAL LAYERS OF PAVEMENT FOUNDATIONS OR WALLS. THAT ARE ALSO TO BE REMOVED.

- 1. THE CONTRACTOR AND GRADING SUBCONTRACTOR SHALL VERIFY THE SUITABILITY OF EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE CIVIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
- CONTRACTOR SHALL OBTAIN ANY REQUIRED GRADING PERMITS FROM THE CITY 3. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREA REFLECT TOP OF PAVEMENT SURFACE. IN LOCATIONS ALONG A CURB LINE, ADD 6-INCHES (OR THE HEIGHT OF THE CURB) TO THE PAVING GRADE FOR TOP OF CURB 4. PROPOSED SPOT ELEVATIONS AND CONTOURS OUTSIDE THE PAVEMENT ARE TO TOP OF FINISHED GRADE.
- 5. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY. ALL FINISHED GRADES SHALL TRANSITION UNIFORMLY BETWEEN THE FINISHED ELEVATIONS SHOWN
- . CONTOURS AND SPOT GRADES SHOWN ARE ELEVATIONS OF TOP OF THE FINISHED SURFACE. WHEN PERFORMING THE GRADING OPERATIONS, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE ELEVATION HOLD-DOWN ALLOWANCE FOR THE THICKNESS OF PAVEMENT SIDEWALK TOPSOIL MULCH STONE LANDSCAPING RIP-RAP AND ALL OTHER SURFACE MATERIALS THAT WILL CONTRIBUTE TO THE TOP OF FINISHED GRADE. FOR EXAMPLE, THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF THE 3. NO REPRESENTATIONS OF EARTHWORK QUANTITIES OR SITE BALANCE ARE MADE BY THESE PLANS. THE CONTRACTOR SHAL
- PROVIDE THEIR OWN EARTHWORK CALCULATION TO DETERMINE THEIR CONTRACT QUANTITIES AND COST. ANY SIGNIFICANT VARIANCE FROM A BALANCED SITE SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CIVIL ENGINEER. 9. ALL GRADING AND EARTHWORK SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING 10. ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL
- WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE 11. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF GRADING. REFERENCE EROSION CONTROL PLAN, DETAILS, GENERAL NOTES, AND SWPPP FOR ADDITIONAL INFORMATION AND
- 12.BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF THE PROJECT'S PROPERTY LINE AND SITE IMPROVEMENTS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK. 13. CONTRACTOR TO DISPOSE OF ALL EXCESS EXCAVATION MATERIALS IN A MANNER THAT ADHERES TO LOCAL, STATE AND FEDERAL
- LAWS AND REGULATIONS. THE CONTRACTOR SHALL KEEP A RECORD OF WHERE EXCESS EXCAVATION WAS DISPOSED, ALONG WITH THE RECEIVING LANDOWNER'S APPROVAL TO DO SO. 14. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF TOPSOIL AT THE COMPLETION OF FINE GRADING. CONTRACTOR SHALL REFER TO LANDSCAPE ARCHITECTURE PLANS FOR SPECIFICATIONS AND REQUIREMENTS FOR TOPSOIL.
- 15. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES. 16.NO EARTHWORK FILL SHALL BE PLACED IN ANY EXISTING DRAINAGE WAY, SWALE, CHANNEL, DITCH, CREEK, OR FLOODPLAIN FOR ANY REASON OR ANY LENGTH OF TIME, UNLESS THESE PLANS SPECIFICALLY INDICATE THIS IS REQUIRED.
- 17. TEMPORARY CULVERTS MAY BE REQUIRED IN SOME LOCATIONS TO CONVEY RUN-OFF. 18. REFER TO DIMENSION CONTROL PLAN, AND PLAT FOR HORIZONTAL DIMENSIONS. 19. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND CONDITION FILL PER THE PROJECT GEOTECHNICAL
- ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO 20.CONTRACTOR IS RESPONSIBLE FOR ALL SOILS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL SOILS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND SHALL COMPLY WITH CITY STANDARD SPECIFICATIONS AND THE GEOTECHNICAL REPORT. SOILS TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY
- FOR TESTING SOILS. THE OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR SOILS TESTING. 21.ALL COPIES OF SOILS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING 22.IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE SOILS, THAT THE WORK
- 23.THE SCOPE OF WORK FOR CIVIL IMPROVEMENT SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND STRUCTURAL PLANS AND SPECIFICATIONS FILL, CONDITIONING, AND PREPARATION IN THE BUILDING PAD. 24.DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO

CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.

- FLATWORK ADJACENT TO THE BUILDING. IF NONE IS CURRENTLY EXISTING. 25.CONTRACTOR SHALL ENSURE THAT SUFFICIENT POSITIVE SLOPE AWAY FROM THE BUILDING PAD IS ACHIEVED FOR ENTIRE PERIMETER OF THE PROPOSED BUILDING(S) DURING GRADING OPERATIONS AND IN THE FINAL CONDITION. IF THE CONTRACTOR OBSERVES THAT THIS WILL NOT BE ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO REVIEW THE LOCATION 26.THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY
- SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY, AT NO ADDITIONAL COST TO THE OWNER. 27.CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS NEEDED FOR GRADING OPERATIONS AND TO ACCOMMODATE PROPOSED GRADE, INCLUDING THE UNKNOWN UTILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL REFER TO THE GENERAL NOTES "OVERALL" SECTION THESE PLANS FOR ADDITIONAL INFORMATION
- 28.EXISTING TREE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES FOUND IN THE FIELD THAT AFFECT THE GRADING PLAN TO THE CIVIL ENGINEER. 29.CONTRACTOR SHALL FIELD VERIFY ALL PROTECTED TREE LOCATIONS, INDIVIDUAL PROTECTED TREE CRITICAL ROOT ZONES, AND PROPOSED SITE GRADING, AND NOTIFY THE CIVIL ENGINEER AND LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH THE TREE PRESERVATION PLAN BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING THE WORK. 30.TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY STANDARD TREE PROTECTION DETAILS AND THE

- APPROVED TREE PRESERVATION PLANS BY THE LANDSCAPE ARCHITECT.
- 31.CONTRACTOR SHALL REFER TO THE LANDSCAPING AND TREE PRESERVATIONS PLANS FOR ALL INFORMATION AND DETAILS REGARDING EXISTING TREES TO BE REMOVED AND PRESERVED.
- 32.NO TREE SHALL BE REMOVED UNLESS A TREE REMOVAL PERMIT HAS BEEN ISSUED BY THE CITY, OR CITY HAS OTHERWISE CONFIRMED IN WRITING THAT ONE IS NOT NEEDED FOR THE TREE(S)
- 33.NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE
- EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE AND GRADING IMPACT TO THEM HELD TO A MINIMUM 34.AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING AND INADEQUATE SLOPE FOR DRAINAGE. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORMWATER RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER AND ENGINEER IF ANY AREAS OF POOR DRAINAGE ARE DISCOVERED.
- 35.CONTRACTOR FIELD ADJUSTMENT OF PROPOSED SPOT GRADES IS ALLOWED, IF THE APPROVAL OF THE CIVIL ENGINEER IS OBTAINED.
- . RETAINING WALLS SHOWN ARE FOR SITE GRADING PURPOSES ONLY, AND INCLUDE ONLY LOCATION AND SURFACE SPOT ELEVATIONS AT THE TOP AND BOTTOM OF THE WALL. 2. RETAINING WALL TYPE OR SYSTEM SHALL BE SELECTED BY THE OWNER STRUCTURAL DESIGN AND PERMITTING OF RETAINING WALLS, RAILINGS, AND OTHER WALL SAFETY DEVICES SHALL BE PERFORMED BY
- A LICENSED ENGINEER AND ARE NOT PART OF THIS PLAN SET. 4. RETAINING WALL DESIGN SHALL MEET THE INTENT OF THE GRADING PLAN AND SHALL ACCOUNT FOR ANY INFLUENCE ON ADJACENT BUILDING FOUNDATIONS, UTILITIES, PROPERTY LINES AND OTHER CONSTRUCTABILITY NOTES. RETAINING WALL ENGINEER SHALL CONSULT THESE PLANS AND THE GEOTECHNICAL REPORT FOR POTENTIAL CONFLICTS.
- 1. ALL PAVING MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS. THE CITY STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING
- SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION/DETAIL SHALL BE FOLLOWED 2. ALL PRIVATE ON-SITE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING ALL ADDENDA. 3. ALL FIRÉLANE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARDS AND DETAILS. IF THESE ARE DIFFERENT THAN
- THOSE IN THE GEOTECHNICAL REPORT. THEN THE MORE RESTRICTIVE SHALL BE FOLLOWED 4. ALL PUBLIC PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS 5. CONTRACTOR IS RESPONSIBLE FOR ALL PAVING AND PAVING SUBGRADE TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL PAVING AND PAVING SUBGRADE TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING PAVING AND SUBGRADE. OWNER SHALL
- APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR PAVING AND PAVING SUBGRADE TESTING 6. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE PAVING AND PAVING SUBGRADE, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS. 7. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO
- FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING. 8. CURB RAMPS ALONG PUBLIC STREETS AND IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BASED ON THE CITY STANDARD CONSTRUCTION DETAIL AND SPECIFICATIONS 9. PRIVATE CURB RAMPS ON THE SITE (I.E. OUTSIDE PUBLIC STREET RIGHT-OF-WAY) SHALL CONFORM TO ADA AND TAS STANDARDS AND

SHALL HAVE A DETECTABLE WARNING SURFACE THAT IS FULL WIDTH AND FULL DEPTH OF THE CURB RAMP, NOT INCLUDING FLARES

- 10. ALL ACCESSIBLE RAMPS, CURB RAMPS, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA AND TAS STANDARDS, LATEST 11. ANY COMPONENTS OF THE PROJECT SUBJECT TO RESIDENTIAL USE SHALL ALSO CONFORM TO THE FAIR HOUSING ACT, AND COMPLY WITH THE FAIR HOUSING ACT DESIGN MANUAL BY THE US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. 12 CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT TO MATCH EXISTING PAVEMENT WITH A SMOOTH FLUSH CONNECTION
- 13. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT AND PAVEMENT MARKINGS SHALL ADHERE TO CITY AND OWNER STANDARDS. 14. REFER TO GEOTECHNICAL REPORT FOR PAVING JOINT LAYOUT PLAN REQUIREMENTS FOR PRIVATE PAVEMENT.
- 15. REFER TO CITY STANDARD DETAILS AND SPECIFICATIONS FOR JOINT LAYOUT PLAN REQUIREMENTS FOR PUBLIC PAVEMENT 16. ALL REINFORCING STEEL SHALL CONFORM TO THE GEOTECHNICAL REPORT, CITY STANDARDS, AND ASTM A-615, GRADE 60, AND SHALL BE SUPPORTED BY BAR CHAIRS. CONTRACTOR SHALL USE THE MORE STRINGENT OF THE CITY AND GEOTECHNICAL STANDARDS. 17. ALL JOINTS SHALL EXTEND THROUGH THE CURB. 18. THE MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS SHALL BE 2 FEET. 19. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO THE ENGINEER AND OWNER PRIOR TO BEGINNING ANY OF THE PAVING WORK.
- 20.ALL SAWCUTS SHALL BE FULL DEPTH FOR PAVEMENT REMOVAL AND CONNECTION TO EXISTING PAVEMENT 21.FIRE LANES SHALL BE MARKED AND LABELED AS A FIRELANE PER CITY STANDARDS 22.UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED. 23.CONTRACTOR IS RESPONSIBLE FOR INSTALLING NECESSARY CONDUIT FOR LIGHTING, IRRIGATION, ETC. PRIOR TO PLACEMENT OF

PAVEMENT. ALL CONSTRUCTION DOCUMENTS (CIVIL, MEP, LANDSCAPE, IRRIGATION, AND ARCHITECT) SHALL BE CONSULTED.

24.BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE ACCESSIBLE PEDESTRIAN ROUTES (PER ADA, TAS, AND FHA) EXIST TO AND FROM EVERY DOOR AND ALONG SIDEWALKS, ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND ACCESSIBLE ROUTES. IN NO CASE SHALL AN ACCESSIBLE RAMP SLOPE EXCEED 1 VERTICAL TO 12 HORIZONTAL. IN NO CASE SHALL SIDEWALK CROSS SLOPE EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPE EXCEED 5.0 PERCENT. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 2.0 PERCENT SLOPE IN ANY DIRECTION 25.CONTRACTOR SHALL TAKE FIELD SLOPE MEASUREMENTS ON FINISHED SUBGRADE AND FORM BOARDS PRIOR TO PLACING PAVEMENT TO VERIFY THAT ADA/TAS SLOPE REQUIREMENTS ARE PROVIDED. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR ADA AND TAS SLOPE COMPLIANCE ISSUES.

- 1. ALL STORM SEWER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND **SPECIFICATIONS**
- 2. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER 3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING STORM SEWER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY STORM SEWER, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.
- 4. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER. 5. FLOW LINE, TOP-OF-CURB, RIM, THROAT, AND GRATE ELEVATIONS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE GRADING PLAN NO AND FIELD CONDITIONS PRIOR TO THEIR INSTALLATION.
- 6. ALL PUBLIC STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS. 7. ALL PRIVATE STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
- 8. ALL PVC TO RCP CONNECTIONS AND ALL STORM PIPE CONNECTIONS ENTERING STRUCTURES OR OTHER STORM PIPES SHALL HAVE A CONCRETE COLLAR AND BE GROUTED TO ASSURE THE CONNECTION IS WATERTIGHT. 9. ALL PUBLIC STORM SEWER LINES SHALL BE MINIMUM CLASS III RCP. PRIVATE STORM SEWER LINES 18-INCHES AND GREATER SHALL BE
- CLASS III RCP OR OTHER APPROVED MATERIAL 10. WHERE COVER EXCEEDS 20-FEET OR IS LESS THAN 2-FEET, CLASS IV RCP SHALL BE USED. 11.IF CONTRACTOR PROPOSES TO USE HDPE OR PVC IN LIEU OF RCP FOR PRIVATE STORM SEWER, CONTRACTOR SHALL SUBMIT
- TECHNICAL DATA TO THE OWNER, ENGINEER AND CITY ENGINEER/INSPECTOR FOR APPROVAL PRIOR TO ORDERING THE MATERIAL. ANY PROPOSED HDPE AND PVC SHALL BE WATERTIGHT. 12. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL STORM SEWER LINES. 13.EMBEDMENT FOR ALL STORM SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS.
- 14. ALL WYE CONNECTIONS AND PIPE BENDS ARE TO BE PREFABRICATED AND INSTALLED PER MANUFACTURERS SPECIFICATIONS. 15.USE 4 FOOT JOINTS WITH BEVELED ENDS IF RADIUS OF STORM SEWER IS LESS THAN 100 FEET. 16 THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN. PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

- ANY PONDS THAT ARE INTENDED TO HOLD WATER INDEFINITELY SHALL BE CONSTRUCTED WATERTIGHT 2. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR
- TESTING TO ENSURE THE POND LINER MATERIAL PLACED IS WATERTIGHT. 4. STORM SEWER PIPES AND HEADWALLS THAT CONNECT TO A POND INTENDED TO HOLD WATER INDEFINITELY SHALL BE INSTALLED
- WITH WATERTIGHT JOINTS TO AT LEAST 1-FOOT ABOVE THE NORMAL POOL WATER SURFACE ELEVATION. IN THESE AREAS SHALL BE OF IMPERVIOUS MATERIAL.
- SHALL BE MONITORED BY THE CONTRACTOR FOR AT LEAST 60 DAYS TO OBSERVE WATER INFLOW, OUTFLOW, AND CALCULATE EVAPORATION TO VERIFY THAT THE POND IS WATERTIGHT 7. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE POND WATER LEVEL SHALL ALSO BE MAINTAINED BY THE

- 2. CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING WATER AND CONSTRUCTION, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.
- ALL UTILITY SERVICES ENTERING THE BUILDING. 4. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATION OF ALL UTILITY CROSSINGS PRIOR TO THE INSTALLATION OF ANY PIPE.
- STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS. 7. ALL PRIVATE WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS
- 9. EMBEDMENT FOR ALL WATER AND WASTEWATER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS 10. CONTRACTOR SHALL TAKE REQUIRED SANITARY PRECAUTIONS, FOLLOWING ANY CITY, TCEQ, AND AWWA STANDARDS, TO KEEP WATER PIPE AND FITTINGS CLEAN AND CAPPED AT TIMES WHEN INSTALLATION IS NOT IN PROGRESS 11. CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL WATER AND WASTEWATER LINES
- 15. CONTRACTOR SHALL MAINTAIN WATER SERVICE AND WASTEWATER SERVICE TO ALL CUSTOMERS THROUGHOUT CONSTRUCTION (IF NECESSARY, BY USE OF TEMPORARY METHODS APPROVED BY THE CITY AND OWNER). THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED
- SANITARY SEWER SERVICES ARE SUBSIDIARY TO THE WORK, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. 17. VALVE ADJUSTMENTS SHALL BE CONSTRUCTED SUCH THAT THE COVERS ARE AT FINISHED SURFACE GRADE OF THE PROPOSEI 18. THE ENDS OF ALL EXISTING WATER MAINS THAT ARE CUT, BUT NOT REMOVED, SHALL BE PLUGGED AND ABANDONED IN PLACE. THIS

WORK SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED

- 19. ALL FIRE HYDRANTS, VALVES, TEES, BENDS, WYES, REDUCERS, FITTINGS, AND ENDS SHALL BE MECHANICALLY RESTRAINED AND/OR THRUST BLOCKED TO CITY STANDARDS. 20.CONTRACTOR SHALL INSTALL A FULL SEGMENT OF WATER OR WASTEWATER PIPE CENTERED AT ALL UTILITY CROSSINGS SO THAT THE
- JOINTS ARE GREATER THAN 9-FEET FROM THE CROSSING
- MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 217.53.
- SHALL COMPLY WITH TCEQ CHAPTER 290.44.
- 23.ALL WATER AND WASTEWATER SHALL BE TESTED IN ACCORDANCE WITH THE CITY, AWWA, AND TCEQ STANDARDS AND SPECIFICATIONS. AT A MINIMUM, THIS SHALL CONSIST OF THE FOLLOWING:
- b. WASTEWATER LINES AND MANHOLES SHALL BE PRESSURE TESTED. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. AFTER COMPLETION OF THESE TESTS, A TELEVISION
- INSPECTION SHALL BE PERFORMED AND PROVIDED TO THE CITY AND OWNER ON A DVD. 24. CONTRACTOR SHALL INSTALL DETECTABLE WIRING OR MARKING TAPE A MINIMUM OF 12" ABOVE WATER AND WASTEWATER LINES. MARKER DECALS SHALL BE LABELED "CAUTION - WATER LINE" OR "CAUTION - SEWER LINE" DETECTABLE WIRING AND MARKING TAPE
- SHALL COMPLY WITH CITY STANDARDS, AND SHALL BE INCLUDED IN THE COST OF THE WATER AND WASTEWATER PIPE.
- 26.WATERLINES SHALL BE INSTALLED AT NO LESS THAN THE MINIMUM COVER REQUIRED BY THE CITY.
- ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCI SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

- ADA AMERICANS WITH DISABILITIES ACT AMERICAN WATER WORKS ASSOCIATION B-B BACK TO BACK **BEGIN CURVE** BACK OF CURB BCR BEGIN CURB RETURN BEST MANAGEMENT PRACTICE BACK OF CURB BEGIN VERTICAL CURVE ELEVATION BEGIN VERTICAL CURVE STATION **BVCS** BOTTOM OF WALL BW CUBIC FEET PER SECOND CITY, TOWN, OR OTHER APPLICABLE LOCAL GOVERNMENT JURISDICTION CITY CENTERLINE CENTERLINE CONCRETE CUBIC YARD CY
- **DEMO** DEMOLITION DG DECOMPOSED GRANITE
- FACH END CURVE **FCR** END CURB RETURN **EXISTING GROUND** ELEVATION
- ELEV UNITES STATES ENVIRONMENTAL PROTECTION AGENCY EASEMENT END VERTICAL CURVE ELEVATION
- **EVCS** END VERTICAL CURVE STATION **EXISTING** FACE TO FACE FINISHED GROUND FIRE HYDRANT
- FLOW LINE FOC FACE OF CURB FEET HYDRAULIC GRADE LINE HGL KIMLEY-HORN AND ASSOCIATES, INC
- LINEAR FEET MAXIMUM MATCH EXISTING ELEVATION
- MANHOLE
- NOTICE OF TERMINATION, REF. TCEQ GENERAL PERMIT NOT TO SCALE ON CENTER
- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION POINT OF CURVATURE
 - PORTLAND CEMENT CONCRETE / POINT OF COMPOUND CURVATURE PROPOSED GRADE LINE POINT OF INFLECTION
 - PROP PROPOSED POINT OF REVERSE CURVATURE POUNDS PER SQUARE INCH POINT OF TANGENCY

TOP OF WALL

PVM1 PAVEMENT REINFORCED CONCRETE PIPE ROW RIGHT OF WAY

TW

- 17. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER. SQUARE FEET SANITARY SEWER SANITARY SEWER MANHOLE
- POND LINER SPECIFICATIONS 3. A GEOTECHNICAL ENGINEER SHALL REVIEW AND APPROVE ALL POND LINER MATERIAL, PLACEMENT PROCEDURES, AND PROVIDE
- 5. ANY GRAVEL OR OTHER PERVIOUS EMBEDMENT AROUND PIPES OR OUTFALL STRUCTURES NEAR THE POND SHALL BE ELIMINATED FOR TCEQ AT LEAST 20-FEET FROM THE POND SO NO ROUTE FOR WATER TO LEAK THROUGH THE EMBEDMENT MATERIAL IS PROVIDED. BACKFILL
- 6. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE WATER LEVEL FOLLOWING COMPLETION AND FILLING OF THE POND CONTRACTOR FOR THE DURATION OF CONSTRUCTION SO THAT IT REMAINS FULL TO ITS DESIGN WATER LEVEL, AND IS NOT LOWERED,
- AS THIS MAY DRY-OUT THE POND LINER AND RISK ITS WATERTIGHT PROPERTIES. . ALL WATER AND WASTEWATER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND
- WASTEWATER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY WATER OR WASTEWATER 3. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF
- 5. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE WATER AND WASTEWATER IMPROVEMENTS 6. ALL PUBLIC WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS
- 8. FIRE SPRINKLER LINES SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE SPRINKLER CONTRACTOR, AND COMPLY TO THE APPLICABLE CODES AND INSPECTIONS REQUIRED. THESE PLANS WERE PREPARED WITHOUT THE BENEFIT OF THE FIRE SPRINKLER DESIGN. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES.
- 12. ALL WATER AND WASTEWATER SERVICES SHALL TERMINATE 5-FEET OUTSIDE THE BUILDING, UNLESS NOTED OTHERWISE 13. CONTRACTOR SHALL COMPLY WITH CITY REQUIREMENTS FOR WATER AND WASTEWATER SERVICE DISRUPTIONS AND THE AMOUNT OF PRIOR NOTICE THAT IS REQUIRED, AND SHALL COORDINATE DIRECTLY WITH THE APPROPRIATE CITY DEPARTMENT. 14. CONTRACTOR SHALL SEQUENCE WATER AND WASTEWATER CONSTRUCTION TO AVOID INTERRUPTION OF SERVICE TO SURROUNDING
- 16. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL WATER AND WASTEWATER LINES CROSSING THE PROJECT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED LINES IMMEDIATELY. ALL REPAIRS OF EXISTING WATER MAINS, WATER SERVICES, SEWER MAINS, AND
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- 21.ALL CROSSINGS AND LOCATIONS WHERE WASTEWATER IS LESS THAN 9-FEET FROM WATER, WASTEWATER CONSTRUCTION AND
- 22.ALL CROSSING AND LOCATIONS WHERE WATER IS LESS THAN 9-FEET FROM WASTEWATER. WATER CONSTRUCTION AND MATERIALS
- a. ALL WATERLINES SHALL BE HYDROSTATICALLY TESTED AND CHLORINATED BEFORE BEING PLACED INTO SERVICE. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS.

- 25.DUCTILE IRON PIPE SHALL BE PROTECTED FROM CORROSION BY A LOW-DENSITY POLYETHYLENE LINER WRAP THAT IS AT LEAST A SINGLE LAYER OF 8-MIL. ALL DUCTILE IRON JOINTS SHALL BE BONDED.
- 27.CONTRACTOR SHALL PROVIDE CLEAN-OUTS FOR PRIVATE SANITARY SEWER LINES AT ALL CHANGES IN DIRECTION AND 100-FOOT INTERVALS, OR AS REQUIRED BY THE APPLICABLE PLUMBING CODE. CLEAN-OUTS REQUIRED IN PAVEMENT OR SIDEWALKS SHALL HAVE CAST IRON COVERS FLUSH WITH FINISHED GRADE.
- 28.CONTRACTOR SHALL PROVIDE BACKWATER VALVES FOR PLUMBING FIXTURES AS REQUIRED BY THE APPLICABLE PLUMBING CODE (E.G FLOOR ELEVATION OF FIXTURE UNIT IS BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER). CONTRACTOR SHALL REVIEW BOTH MEP AND CIVIL PLANS TO CONFIRM WHERE THESE ARE REQUIRED. 29 THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL

30.THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

ABBREVIATIONS AND DEFINITIONS: DETAIL ELECTRICAL / ELECTRICITY ELEVATION

 \Box

SHEET NUMBER

KIMLEY-HORN AND ASSOCIATES, INC. I ATFRAI

NOTICE OF INTENT, REF. TCEQ GENERAL PERMIT

POLYVINYL CHLORIDE POINT OF VERTICAL INFLECTION

STATION STANDARD ARCHITECTURAL BARRIERS TEXAS ACCESSIBILITY STANDARDS

TEXAS COMMISSION OF ENVIRONMENTAL QUALITY TEMPORARY TXDOT TEXAS DEPARTMENT OF TRANSPORTATION

TXMUTCD TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

TYPICAL VERTICAL CURVE WTR WATER WASTEWATER WW UTILITY CONTACTS: 1. TELECOM COMPANY, WILLIAM THOCKMORTON, SPECTRUM

512-531-3252

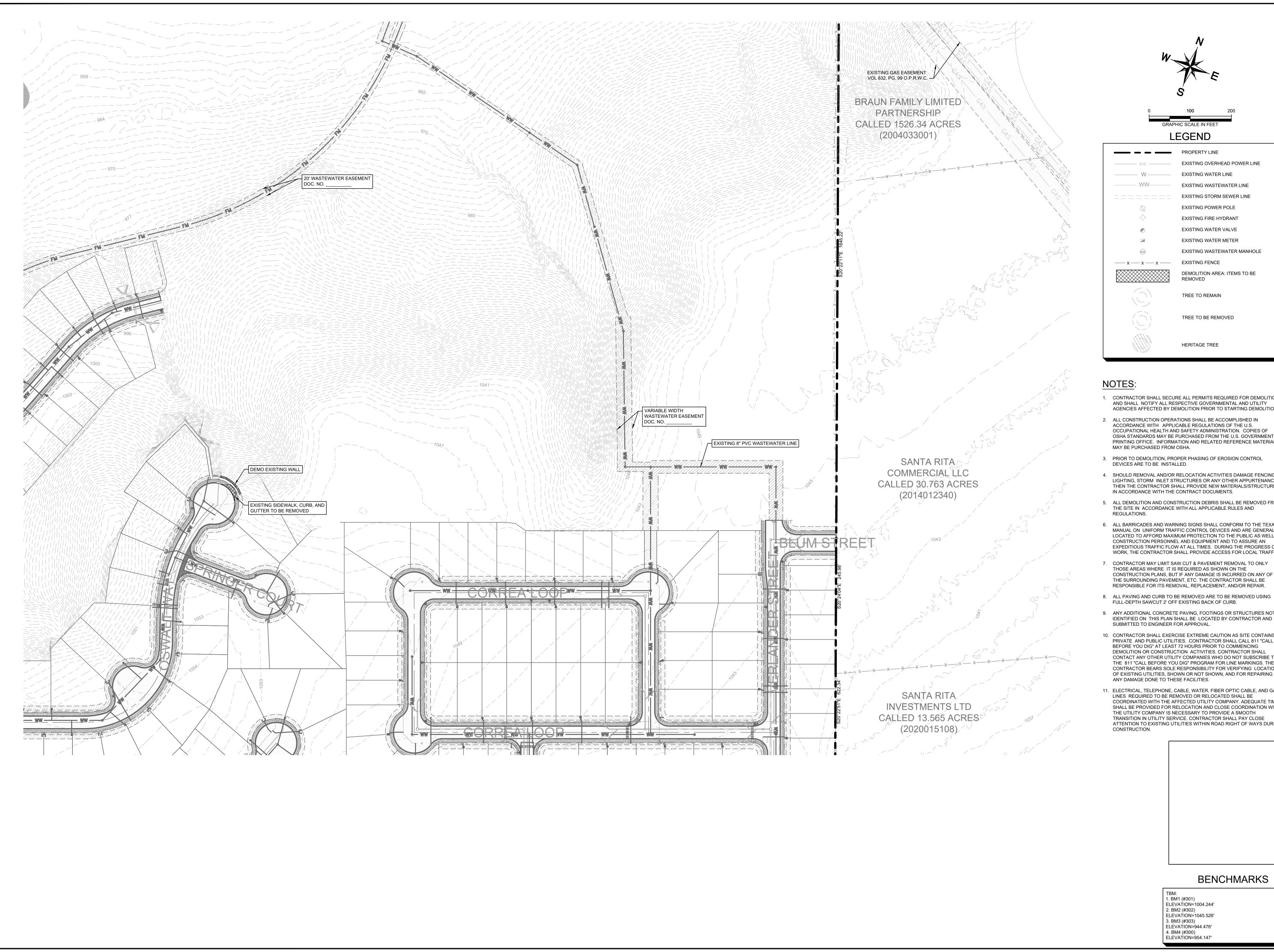
888-554-4732

CASEY BENJAMIN, TEXAS GAS SERVICE GAS COMPANY, 800-700-2443 JAY HOLMES, CITY OF LIBERTY HILL 4. <u>WASTEWATER</u> 512-745-1222 DAVID MUNK, PE, CITY OF GEORGETOWN 512-930-3558

2. <u>ELECTRIC COMPANY</u>, **RHONDA REEL, PEDERNALES ELECTRIC COOPERATIVE**

THESE PLAN AND GENERAL NOTES REFER TO: GEOTECHNICAL INVESTIGATION PAVEMENT THICKNESS RECOMMENDATIONS MLA GEOTECHNICAL TBPE FIRM # F-2684 ENGINEER'S JOB #22101100.135 INCLUDING ALL REVISIONS AND ADDENDA TO THIS REPORT THAT MAY HAVE BEEN RELEASED AFTER

THE NOTED DATE.



EXISTING OVERHEAD POWER LINE EXISTING WATER LINE EXISTING WASTEWATER LINE EXISTING STORM SEWER LINE EXISTING POWER POLE EXISTING FIRE HYDRANT EXISTING WATER VALVE EXISTING WATER METER EXISTING WASTEWATER MANHOLE DEMOLITION AREA: ITEMS TO BE TREE TO BE REMOVED

- 1. CONTRACTOR SHALL SECURE ALL PERMITS REQUIRED FOR DEMOLITION AND SHALL NOTIFY ALL RESPECTIVE GOVERNMENTAL AND UTILITY AGENCIES AFFECTED BY DEMOLITION PRIOR TO STARTING DEMOLITION.
- ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION. COPIES OF OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS
- 3. PRIOR TO DEMOLITION, PROPER PHASING OF EROSION CONTROL
- 4. SHOULD REMOVAL AND/OR RELOCATION ACTIVITIES DAMAGE FENCING, LIGHTING, STORM INLET STRUCTURES OR ANY OTHER APPURTENANCE, THEN THE CONTRACTOR SHALL PROVIDE NEW MATERIALS/STRUCTURES
- 5. ALL DEMOLITION AND CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND
- ALL BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ARE GENERALLY LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES. DURING THE PROGRESS OF WORK, THE CONTRACTOR SHALL PROVIDE ACCESS FOR LOCAL TRAFFIC.
- THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THE CONSTRUCTION PLANS, BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL, REPLACEMENT, AND/OR REPAIR.
- FULL-DEPTH SAWCUT 2' OFF EXISTING BACK OF CURB.
- 9. ANY ADDITIONAL CONCRETE PAVING, FOOTINGS OR STRUCTURES NOT IDENTIFIED ON THIS PLAN SHALL BE LOCATED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR APPROVAL.
- 10. CONTRACTOR SHALL EXERCISE EXTREME CAUTION AS SITE CONTAINS PRIVATE AND PUBLIC UTILITIES. CONTRACTOR SHALL CALL 811 "CALL BEFORE YOU DIG" AT LEAST 72 HOURS PRIOR TO COMMENCING DEMOLITION OR CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL CONTACT ANY OTHER UTILITY COMPANIES WHO DO NOT SUBSCRIBE TO THE 811 "CALL BEFORE YOU DIG" PROGRAM FOR LINE MARKINGS. THE CONTRACTOR BEARS SOLE RESPONSIBILITY FOR VERIFYING LOCATIONS OF EXISTING UTILITIES, SHOWN OR NOT SHOWN, AND FOR REPAIRING
- 11. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE, AND GAS LINES REQUIRED TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN ROAD RIGHT OF WAYS DURING



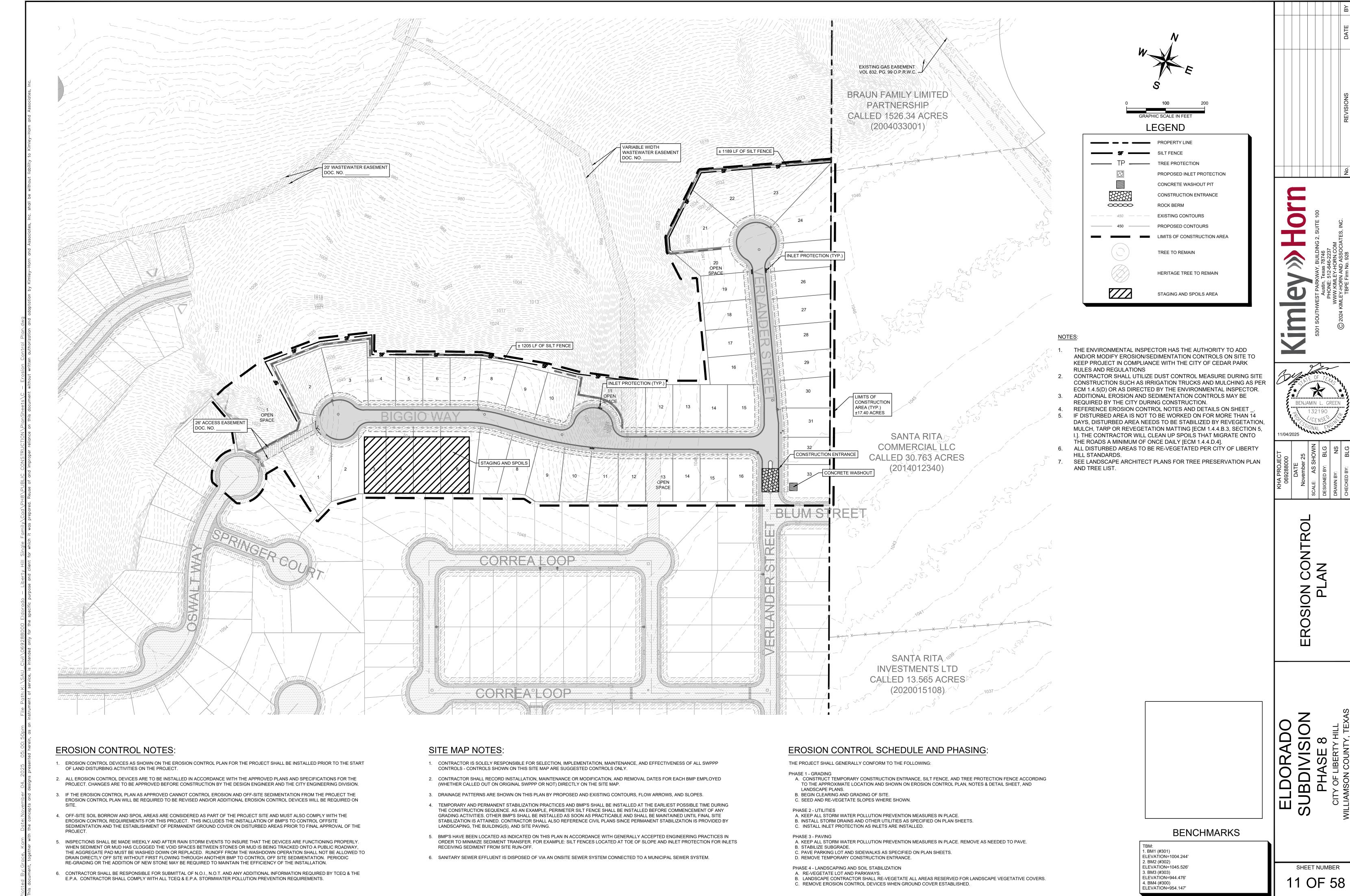
BENCHMARKS

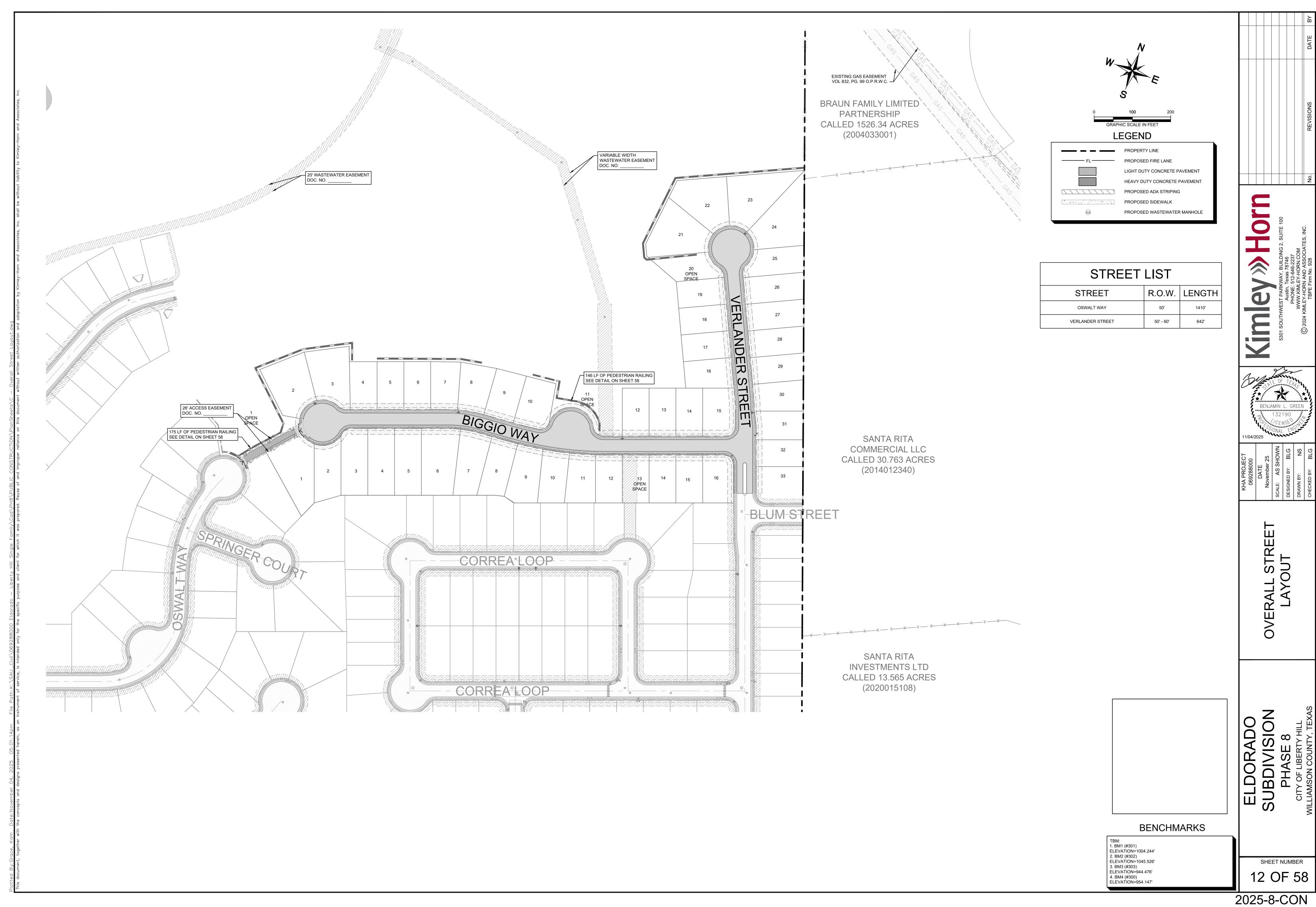
ELDORADO
SUBDIVISION
PHASE 8
CITY OF LIBERTY HILL

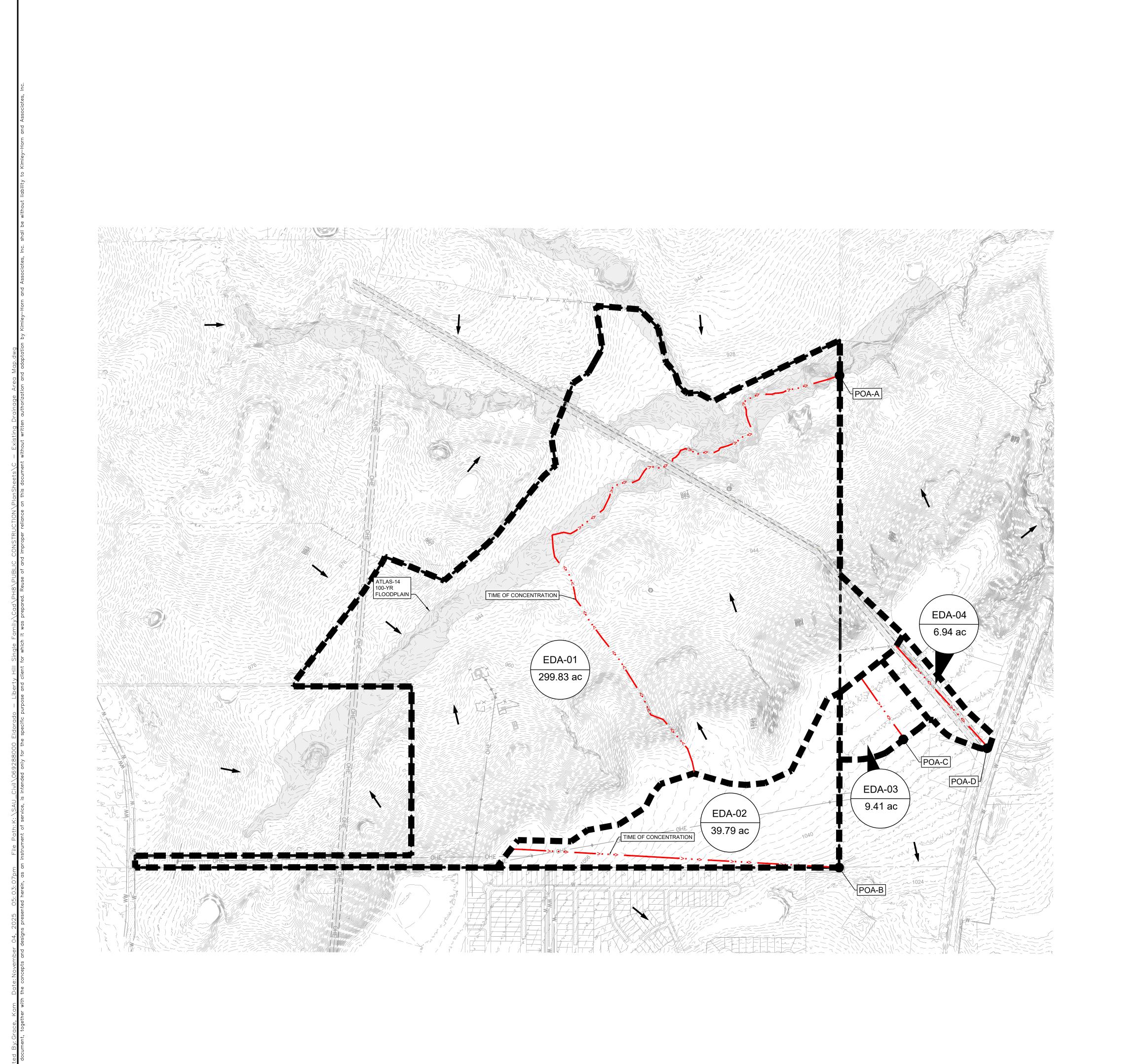
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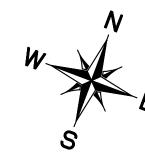
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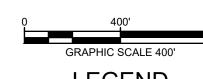
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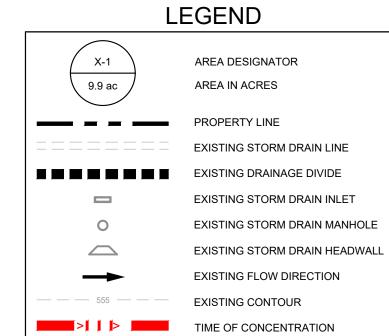












DRAINAGE	AREA	IMPERVIOUS	BASE CN	TC (MIN)*	Q₂	Q ₁₀	Q ₂₅	Q ₁₀₀
AREA	(AC.)	COVER	(COMPOSITE)		(CFS)	(CFS)	(CFS)	(CFS)
EDA-01	299.83	2%	78	29.9	528.51	1019.13	1364.38	1938.7
POA-A					528.51	1019.13	1364.38	1938.7
EDA-02	39.79	0%	78	31.2	67.46	131.50	175.86	249.64
РОА-В				•	67.46	131.50	175.86	249.64
EDA-03	9.41	0%	78	22.6	18.48	35.96	48.03	68.31
		POA-C			18.48	35.96	48.03	68.31
EDA-04	6.94	2%	78	24.7	13.30	25.70	34.36	48.74
		POA-D		•	13.30	25.70	34.36	48.74

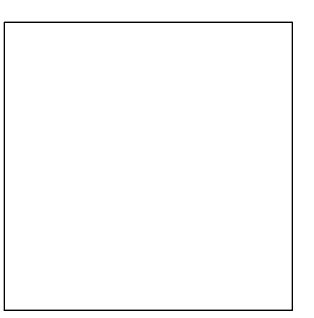
EXISTING TIME OF CONCENTRATION CALCULATIONS

EDA-01						
Sheet Flow		Shal	low	Channel Flow		
n=	0.15	paved?	no	v (fps)=	6	
S (ft/ft)=	0.010	S (ft/ft)=	0.080	L (ft)=	3217	
L (ft)=	100	L (ft)=	2316			
T _{t1} =	12.5	T _{t2} =	8.5	T _{t3} =	8.9	
Total TC =	29.9	mins				

EDA-02									
Sheet Fl	ow	Shal	low	Channel Flow					
n=	0.15	paved?	no	v (fps)=	6				
S (ft/ft)=	0.010	S (ft/ft)=	0.010	L (ft)=	1175.0				
L (ft)=	100	L (ft)=	1500						
T _{t1} =	12.5	T _{t2} =	15.5	T _{t3} =	3.3				
Total TC =	31.2	mins							

EDA-03						
Sheet Fl	ow	Shal	low	Channel Flow		
n=	0.15	paved?	no	v (fps)=	6	
S (ft/ft)=	0.006	S (ft/ft)=	0.006	L (ft)=	0	
L (ft)=	100	L (ft)=	546			
T _{t1} =	15.3	T _{t2} =	7.3	T _{t3} =	0.0	
Total TC =	22.6	mins				

EDA-04						
Sheet Fl	ow	Shal	low	Channel Flow		
n=	0.15	paved?	no	v (fps)=	6	
S (ft/ft)=	0.010	S (ft/ft)=	0.008	L (ft)=	0	
L (ft)=	100	L (ft)=	1063			
T _{t1} =	12.5	T _{t2} =	12.3	T _{t3} =	0.0	
Total TC =	24.7	mins				



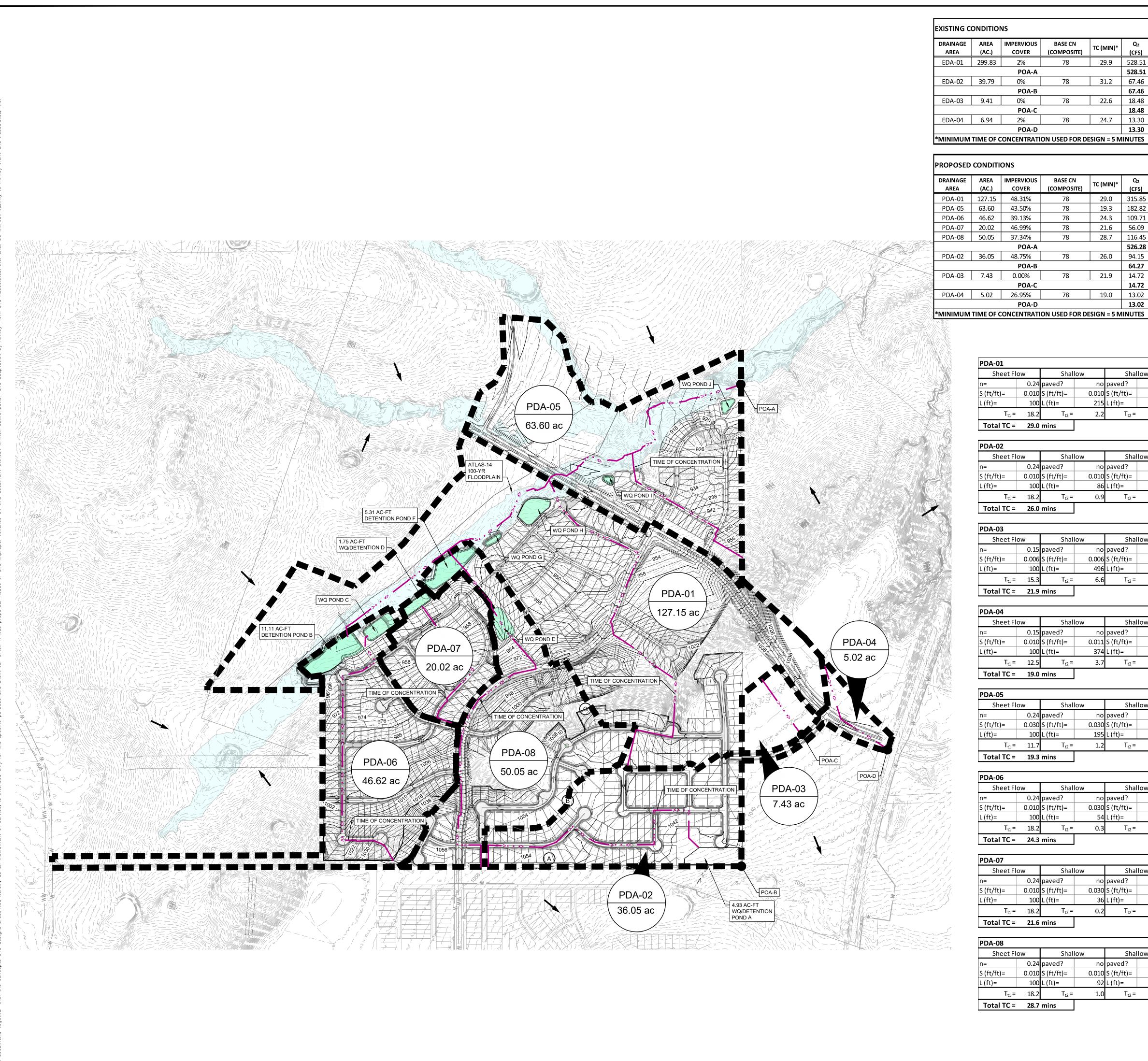
BENCHMARKS

TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147'

SHEET NUMBER

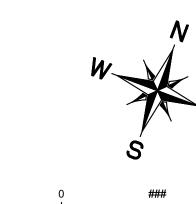
19 OF 58

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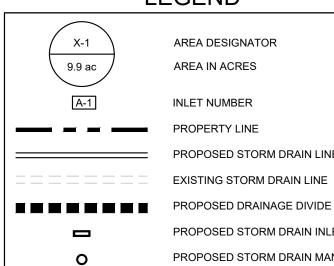
EXISTING C	EXISTING CONDITIONS										
DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	BASE CN (COMPOSITE)	TC (MIN)*	Q₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)			
EDA-01	299.83	2%	78	29.9	528.51	1019.13	1364.38	1938.71			
		POA-A			528.51	1019.13	1364.38	1938.71			
EDA-02	39.79	0%	78	31.2	67.46	131.50	175.86	249.64			
		POA-B			67.46	131.50	175.86	249.64			
EDA-03	9.41	0%	78	22.6	18.48	35.96	48.03	68.31			
		POA-C			18.48	35.96	48.03	68.31			
EDA-04	6.94	2%	78	24.7	13.30	25.70	34.36	48.74			
		POA-D			13.30	25.70	34.36	48.74			
*MINIMUM	MINIMUM TIME OF CONCENTRATION USED FOR DESIGN = 5 MINUTES										

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	BASE CN (COMPOSITE)	TC (MIN)*	Q₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)
PDA-01	127.15	48.31%	78	29.0	315.85	531.88	675.05	909.36
PDA-05	63.60	43.50%	78	19.3	182.82	311.01	395.85	534.71
PDA-06	46.62	39.13%	78	24.3	109.71	187.05	238.34	322.26
PDA-07	20.02	46.99%	78	21.6	56.09	95.05	120.82	162.99
PDA-08	50.05	37.34%	78	28.7	116.45	202.31	259.58	353.39
		POA-A			526.28	1011.43	1361.15	1938.3
PDA-02	36.05	48.75%	78	26.0	94.15	158.76	201.52	271.49
		POA-B			64.27	131.06	175.34	244.58
PDA-03	7.43	0.00%	78	21.9	14.72	28.56	38.18	54.43
		POA-C			14.72	28.56	38.18	54.43
PDA-04	5.02	26.95%	78	19.0	13.02	23.23	30.08	41.30
		POA-D			13.02	23.23	30.08	41.30





LEGEND



EXISTING CONTOUR

	PROPOSED STORM DRAIN LINE
	EXISTING STORM DRAIN LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM DRAIN INLET
0	PROPOSED STORM DRAIN MANHOLE
	PROPOSED STORM DRAIN HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR

PDA-01									
Sheet Fl	ow	Shal	low Shallow		llow	Channel Flow		Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.027	L (ft)=	1251	L (ft)=	1727
L (ft)=	100	L (ft)=	215	L (ft)=	320				
T _{t1} =	18.2	T _{t2} =	2.2	T _{t2} =	1.6	T _{t3} =	3.5	T _{t3} =	3.6
Total TC -	20.0	minc							

PDA-02									
Sheet Fl	ow	Shall	low	Sha	llow	Channel Flo	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	2031
L (ft)=	100	L (ft)=	86	L (ft)=	468				
T _{t1} =	18.2	T _{t2} =	0.9	T _{t2} =	2.7	T _{t3} =	0.0	T _{t3} =	4.2

Total To	C = 26.0	mins

PDA-03									
Sheet Fl	ow	Shal	low	Sha	llow	Channel Flo	ow	Pipe Flow	
n=	0.15	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.006	S (ft/ft)=	0.006	S (ft/ft)=	0.006	L (ft)=	0	L (ft)=	0
L (ft)=	100	L (ft)=	496	L (ft)=	0				
T _{t1} =	15.3	T _{t2} =	6.6	T _{t2} =	0.0	T _{t3} =	0.0	T _{t3} =	0.0
Total TC =	21.9	mins							

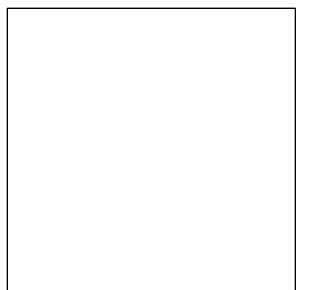
Sheet F	low	Shall	ow	Shal	low	Channel Flov	V	Pipe Flow	
n=	0.15	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.011	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	C
L (ft)=	100	L (ft)=	374	L (ft)=	481				
T _{t1} =	12.5	T _{t2} =	3.7	T _{t2} =	2.8	T _{t3} =	0.0	T _{t3} =	0.0

PDA-05									
Sheet Fl	ow	Shal	low	Sha	llow	Channel Fl	ow	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.030	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	1468.337	L (ft)=	1017.892
L (ft)=	100	L (ft)=	195	L (ft)=	41				
T _{t1} =	11.7	T _{t2} =	1.2	T _{t2} =	0.2	T _{t3} =	4.1	T _{t3} =	2.1

Sheet Flow n= S (ft/ft)=	-	Shall paved?		Shalpaved?		Channel Flo		Pipe Flow	
	0.24	paved?	no	naved?	7,05	v/fps\-	_	/5>	0
S (ft/ft)=				pavear	yes	v (fps)=	б	v (fps)=	8
3 (16)16)-	0.010	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	2127
L (ft)=	100	L (ft)=	54	L (ft)=	247				
T _{t1} =	18.2	T _{t2} =	0.3	T _{t2} =	1.4	T _{t3} =	0.0	T _{t3} =	4.4

PDA-07									
Sheet Flow Sha		Shal	low	Shallow		Channel Flow		Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.030	S (ft/ft)=	0.020	L (ft)=	0	L (ft)=	1069
L (ft)=	100	L (ft)=	36	L (ft)=	167				
T _{t1} =	18.2	T _{t2} =	0.2	T _{t2} =	1.0	T _{t3} =	0.0	T _{t3} =	2.2

PDA-08									
Sheet Fl	ow	Shal	low	Sha	llow	Channel Flo	wc	Pipe Flow	
n=	0.24	paved?	no	paved?	yes	v (fps)=	6	v (fps)=	8
S (ft/ft)=	0.010	S (ft/ft)=	0.010	S (ft/ft)=	0.020	L (ft)=	1248.22	L (ft)=	1666.15
L (ft)=	100	L (ft)=	92	L (ft)=	454				
T _{t1} =	18.2	T _{t2} =	1.0	T _{t2} =	2.7	T _{t3} =	3.5	T _{t3} =	3.5
Total TC -	20.7	mina							



BENCHMARKS

TBM:
1. BM1 (#301)
ELEVATION=1004.244'
2. BM2 (#302)
ELEVATION=1045.526'
3. BM3 (#303)
ELEVATION=944.476'
4. BM4 (#300)
ELEVATION=954.147'

ELDORADO SUBDIVISION PHASE 8

SHEET NUMBER 20 OF 58

PROPOSED DRAINAGE AREA MAP

