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

FOR

12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS

Williamson County, Texas

June 2023

6/16/2023

HR Green Project No: 2302047-0000

Prepared for:

12 Oaks Village, L.P.
7801 N. Capital of Texas Hwy,
Suite 390
Austin, Texas 78731

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SECTION 1: EDWARD AQUIFER APPLICATION COVER PAGE (TCEQ-20705)

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

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

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

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

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

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

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

Technical Review

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

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

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

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

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: 12 Oaks Village						**2. Regulated Entity No.:** 111738357			
3. Customer Name: 12 Oaks Village, L.P.						**4. Customer No.:** 606140317			
5. Project Type: **(Please circle/check one)**	New ✓		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP ✓	CZP	SCS ✓	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential ✓			**8. Site (acres):**		47.67	
9. Application Fee:	$8,650.00		**10. Permanent BMP(s):**			Contech Jellyfish Filter			
11. SCS (Linear Ft.):	1,061		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Williamson		**14. Watershed:**			North Fork San Gabriel River			

Application Distribution

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

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

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

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

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

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

Xavier Garza, P.E.

Print Name of Customer/Authorized Agent

06/16/2023

Signature of Customer/Authorized Agent Date

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

SECTION 2: GENERAL INFORMATION FORM (TCEQ-0587)

General Information Form

Texas Commission on Environmental Quality

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

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

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

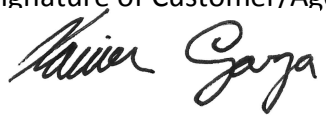
Signature

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

Print Name of Customer/Agent: Xavier Garza, P.E.

Date: 06/16/2023

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: 12 Oaks Village
2. County: Williamson
3. Stream Basin: North Fork San Gabriel
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   ☑ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Thomas Mote
   Entity: 12 Oaks Village, LP
   Mailing Address: 7801 N. Capital of Texas Highway, Suite 390
   City, State: Austin, Texas Zip: 78731
   Telephone: 512-901-9800 FAX: _____
   Email Address: tom@jwdevelopmentinc.com

8. Agent/Representative (If any):

   Contact Person: Xavier Garza, P.E.
   Entity: HR Green
   Mailing Address: 5508 Highway 290 West, Suite 150
   City, State: Austin, TX Zip: 78735
   Telephone: 512.872.6696 FAX: 713.965.0044
   Email Address: xavier.garza@hrgreen.com

9. Project 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 City 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.
    Northeast of the intersection of State Highway 29 West & Ronald Reagan Blvd in Liberty Hill, Texas 78642

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

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

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

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

    ☐ Survey staking will be completed by this date: _____

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

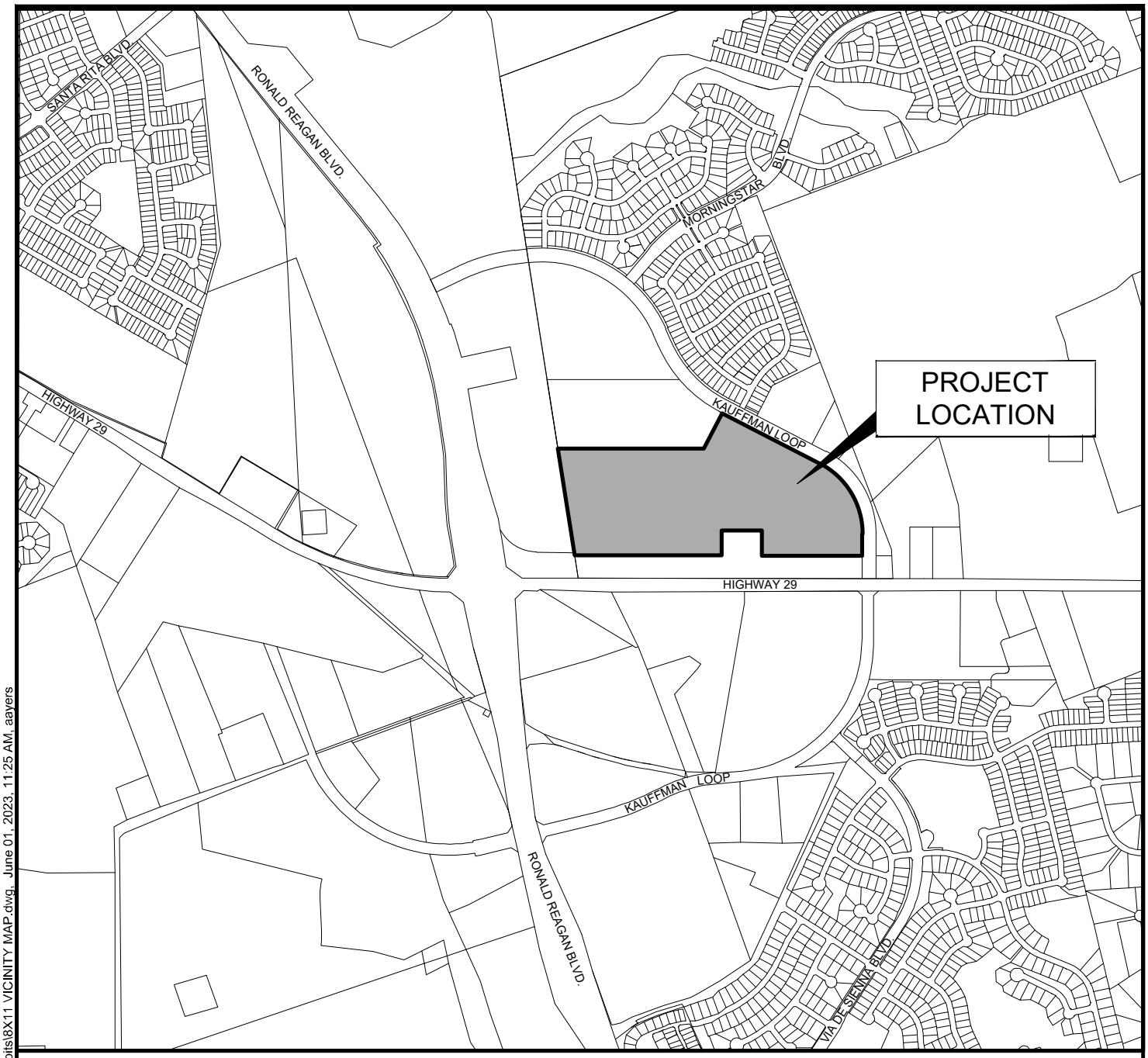
- [x] For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
- [x] For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
- [ ] For a UST Facility Plan or Modification 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.



VICINITY MAP

N.T.S.

HRGreen.
DEVELOPMENT TX

5508 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

12 OAKS VILLAGE - PHASE 1
SPINE INFRASTRUCTURE

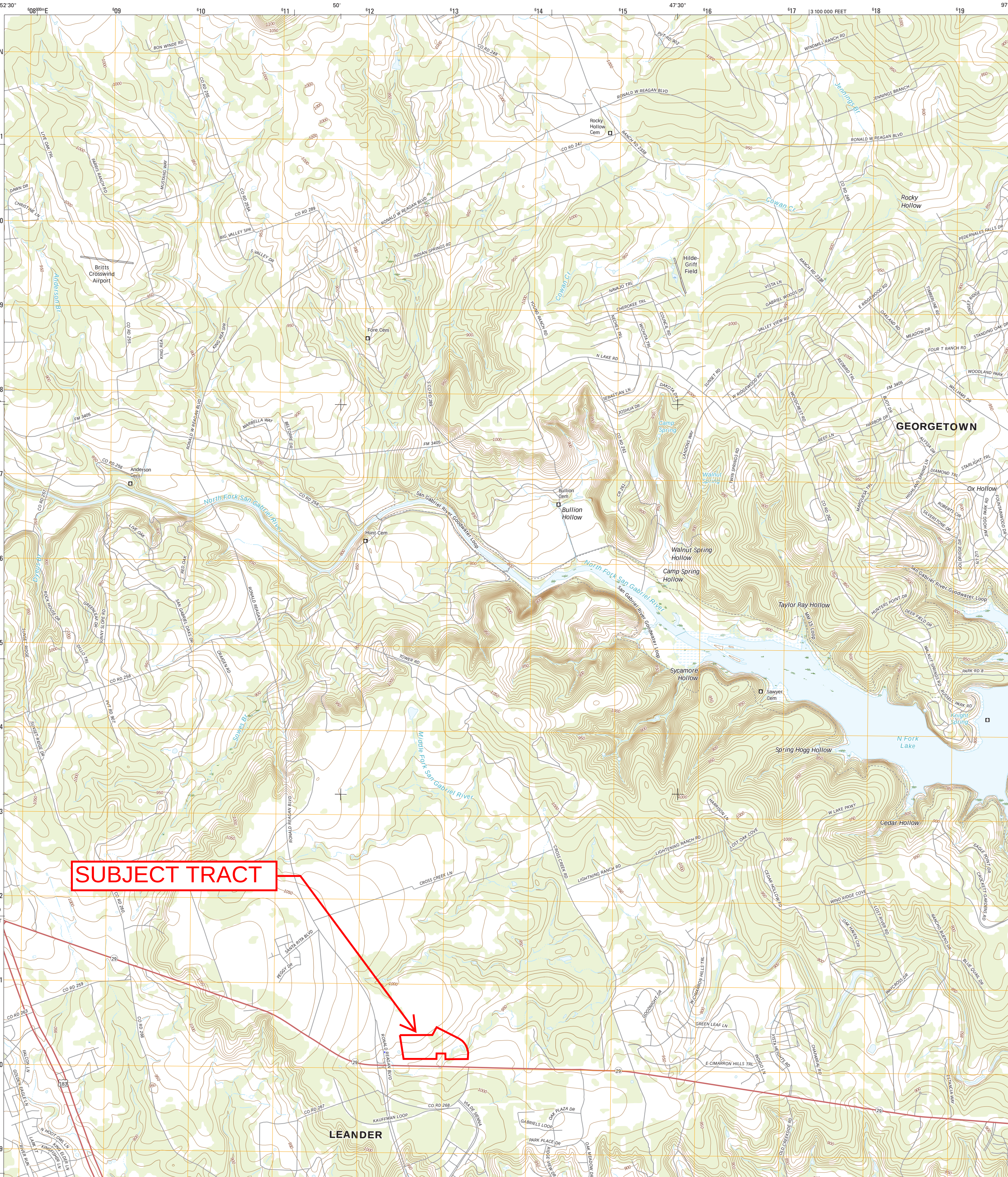
P:\New Growth\2302047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\4_Exhibits\8X11 VICINITY MAP.dwg, June 01, 2023, 11:25 AM, aayers

USGS science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

LEANDER NE QUADRANGLE
TEXAS-WILLIAMSON CO.
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 14R
10 000-foot ticks: Texas Coordinate System of 1983 (central zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery....NAIP, July 2014
Roads.... U.S. Census Bureau, 2014 - 2015
Names....GNIS, 2015
Hydrography....National Hydrography Dataset, 2014
Contours....National Elevation Dataset, 2004
Boundaries....Multiple sources; see metadata file 1972 - 2015

Wetlands....FWS National Wetlands Inventory 1977 - 2014

MN GN 4° 6´ 73 MILS 0° 36´ 11 MILS
UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID PV / PU ^{34}00
Grid Zone Designation 14R

SCALE 1:24 000

KILOMETERS 1 0.5 0 1 2
METERS 1000 500 0 1000 2000
MILES 1 0.5 0 1
FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

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 0.6.19

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES

1 Mahomet
2 Florence
3 Cobbs Cavern
4 Liberty Hill
5 Georgetown
6 Nameless
7 Leander
8 Round Rock

ROAD CLASSIFICATION

Expressway	Local Connector
Secondary Hwy	Local Road
Ramp	4WD
Interstate Route	US Route / State Route

LEANDER NE, TX
2016

NSN. 7643016396982
NGA REF NO. USGSX24K25239

ATTACHMENT C – PROJECT DESCRIPTION

The 12 Oaks Village – Phase 1 Spine Infrastructure Plans consist of a proposed private road and associated infrastructure that will provide access to the 12 Oaks Village Development. The proposed spine infrastructure is located in Liberty Hill Extraterritorial Jurisdiction (ETJ) and Williamson County. The site is located within the Middle Fork San Gabriel River sub-watershed of the North Fork San Gabriel River watershed. The overall project site encompasses a 47.67-acre tract of land located northeast of the intersection of SH 29 and Ronald Regan Boulevard. The limits of the construction are roughly 2.73 acres which encompass the extent of land disturbance associated with this project.

The main portion of the project site is undeveloped land with grass and scattered trees. A tree removal plan is provided with the 12 Oaks Village – Phase 1 Spine Infrastructure Plans. Please refer to sheets 8 & 9 of the 12 Oaks Village – Phase 1 Spine Infrastructure Plans for further details. There is no portion of the project site located within the 100-year floodplain as defined by FEMA FIRM Panel No. 48491C0275E, September 26, 2008. All development will remain outside of the FEMA floodplain. The proposed infrastructure includes 0.58 acres of impervious cover, roughly 1.2% of the total site area. There will be no proposed impacts on the existing jurisdictional waters by construction.

The project site is located within the Edwards Aquifer Recharge Zone. There is an existing natural channel running through the south-central portion of the site. In existing conditions, onsite drainage flows to this natural channel. Offsite areas to the north and west of the site concentrate at an upstream location along the tributary before flowing through the south-central portion of the site along the southern boundary of the construction area. A majority of the offsite areas contributing to the onsite channel flow are undeveloped with one area of single-family residential and one area of commercial development.

The proposed infrastructure improvements will produce an additional load of 505 lbs/yr of TSS. A total of 0.55 acres (94.8%) of the infrastructure improvements impervious cover will be directed toward the proposed Contech Jellyfish for water quality treatment. The Contech Jellyfish will remove more than the required 80% of the increase in TSS load, for a total load removal of 528 lbs/yr of TSS.

The Contech Jellyfish and associated infrastructure improvements are currently proposed to be constructed and installed by the 12 Oaks Village – Phase 1 Spine Infrastructure Plans. Detention for the 12 Oaks Village – Phase 1 Spine Infrastructure improvements will be handled by the 12 Oaks Village Regional Detention Pond.

Required Load Reduction for the Total Project

Calculations from RG-348
Pages 3-27 to 3-30

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

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

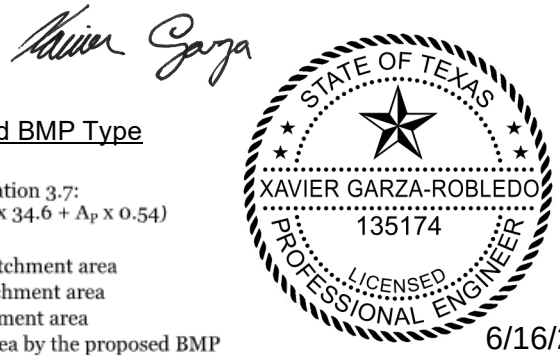
Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Williamson**	
Total project area included in plan * =	**47.67**	acres
Predevelopment impervious area within the limits of the plan * =	**0.04**	acres
Total post-development impervious area within the limits of the plan* =	**0.62**	acres
Total post-development impervious cover fraction * =	**0.01**	
P =	**32**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**505**	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	**1**	

Xavier Garza

STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER

6/16/2023



6/16/2023

Maximum TSS Load Remove for Drainage Basins by Selected BMP Type

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

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

A_C =	**0.87**	acres
A_I =	**0.55**	acres
A_P =	**0.32**	acres
L_R =	**528**	lbs.

The proposed site's SCS system will be composed of 296 LF of 8-inch (8") gravity wastewater line and 765 LF of 12-inch (12") gravity wastewater line. The proposed improvements tie into the existing Morningstar Lift Station #1, which is located across Kauffman Loop on Omega Ranch Blvd. A bore is proposed to cross Kauffman Loop for this connection.

SECTION 3: GEOLOGIC ASSESSMENT FORM (TCEQ-0585)

Horizon™
Environmental Services, Inc.

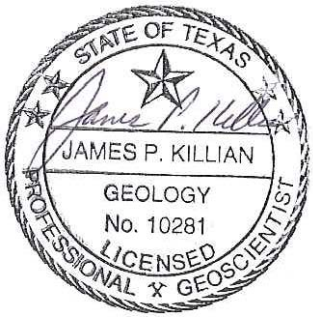
GEOLOGIC ASSESSMENT
MORNINGSTAR RANCH (DIPPREY TRACT)
LEANDER, WILLIAMSON COUNTY, TEXAS
HJN 140011 GA

PREPARED FOR:

MARLIN ATLANTIS GROUP
DALLAS, TEXAS

PREPARED BY:

HORIZON ENVIRONMENTAL SERVICES, INC.
TBPG FIRM REGISTRATION NO. 50488



SEPTEMBER 2014

CORPORATE HEADQUARTERS
1507 South IH 35 ★ Austin, Texas 78741 ★ 512.328.2430 ★ Fax 512.328.1804 ★ www.horizon-esi.com
Certified WBE/HUB/DBE/SBE

Horizon
Environmental Services, Inc.

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Horizon
Environmental Services, Inc.

TCEQ GEOLOGIC ASSESSMENT FORM

For Regulated Activities
on The Edwards Aquifer Recharge/Transition Zones
and Relating to 30 TAC 213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: Morningstar Ranch; Leander, Williamson County, Texas

TYPE OF PROJECT: X WPAP _ AST X SCS _ UST

LOCATION OF PROJECT: X Recharge Zone __ Transition Zone __ Contributing Zone

PROJECT INFORMATION

Figure 1 shows the Site Location and Edwards Aquifer Recharge Zone.

1. X Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE** provided in Appendix C.

2. X Soil cover on the project site is summarized in the table below (Table 1) and uses the Soil Conservation Service (SCS) Hydrologic Soil Groups* (*Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A*, SCS, 1986) (NRCS, 1975, and Werchan et al., 1983).

TABLE 1 – SURFACE SOILS

Soil Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
CfB - Crawford clay, 1-3% slopes	D	1 - 2
FaA - Fairlie clay, 0-1% slopes	D	1 - 2
FaB - Fairlie clay, 1-2% slopes	D	1 - 2
GeB - Georgetown clay loam, 0-2% slopes	D	2 - 3
GsB - Georgetown stony clay loam, 1-3% slopes	D	1 - 2

* 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.

3. X A **STRATIGRAPHIC COLUMN** is attached at the end of this form in the additional comments section and shows formations, members, and thicknesses. The

outcropping unit should be at the top of the stratigraphic column (Appendix A, Figure 5).

4. X A **NARRATIVE DESCRIPTION OF SITE-SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. X Appropriate **SITE GEOLOGIC MAP(S)** are attached in Appendix B:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

Applicant's Site Plan Scale	1" = 400'
Site Geologic Map Scale	1" = 400'
Site Soils Map Scale (if more than 1 soil type)	1" = 1100'

6. Method of collecting positional data:
   X Global Positioning System (GPS) technology.
   _ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map (Appendix B).

8. X Surface geologic units are shown and labeled on the Site Geologic Map (Appendix B).

9. X Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map (Appendix B) and are described in the attached Geologic Assessment Table (Appendix C).

   _ Geologic or manmade features were not discovered on the project site during the field investigation.

10. X The Recharge Zone boundary is shown and labeled, if appropriate (Appendix A, Figure 2).

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

   _ There are ___ (#) wells and ___ test wells present on the project site, and the locations are shown and labeled. (Check all of the following that apply.)
      _ The test well is not in use and has been properly abandoned.
      _ The wells are not in use and will be properly abandoned.
      _ The wells are in use and comply with 16 TAC §76.

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

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ADMINISTRATIVE INFORMATION

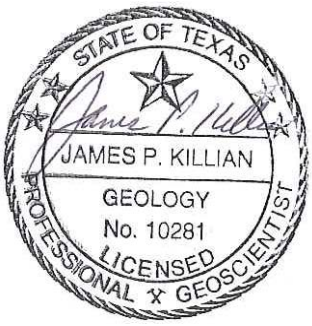
12. X Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies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

Date(s) Geologic Assessment was performed: 10, 13, and 23 June 2014; 6 and 7 August 2014; and 17 September 2014
Date(s)

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 213.

For Horizon Environmental Services, Inc.

James Killian, PG[1]
Print Name of Geologist



(512) 328-2430, Ext. 112
Telephone

(512) 328-2633
Fax

Signature of Geologist

18 September 2014
Date

Representing: Horizon Environmental Services, Inc., Austin, Texas

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

[1] Registered Professional Geologist, State of Texas

TCEQ GEOLOGIC ASSESSMENT
ADDITIONAL COMMENTS

1.0 INTRODUCTION AND METHODOLOGY

This report and the planned abatement measures are intended to fulfill Texas Commission on Environmental Quality (TCEQ) reporting requirements (TCEQ, 1999). This geologic assessment includes a review of the site for potential aquifer recharge and documentation of general geologic characteristics for the subject site. Horizon conducted the necessary field and literature studies according to TCEQ Instructions to Geologists for completing Geologic Assessments within the Edwards Aquifer Recharge Zone (TCEQ, 2004).

Horizon walked transects spaced less than 50 feet apart and mapped the location of features using a subfoot accurate Trimble GeoHX handheld GPS and post-processed data utilizing aerial photographs, topographic maps, and GPS Pathfinder Office software. Horizon also searched the area around any potential recharge features that were encountered to look for any additional features.

The Geologic Assessment Table in Appendix C provides a description of any features that meet the TCEQ definition of potential recharge features (TCEQ, 2004). Features that do not meet the TCEQ definition, which include surface weathering, karren, or animal burrows, were evaluated in the field and omitted from this report. While walking transects, Horizon removed loose rocks and soil (by hand), when necessary, to preliminarily assess each feature's subsurface extent. However, labor-intensive excavation was not conducted.

The results of this survey do not preclude the possibility of finding subsurface voids or abandoned test or water wells during the clearing or construction phases of the proposed project. If a subsurface void is encountered during any phase of the project, construction should be halted until the TCEQ (or appropriate agency) is contacted and a geologist can investigate the feature.

2.0 ENVIRONMENTAL SETTING

2.1 LAND USE

The current use of the subject site is undeveloped rangeland, woodlands, and agricultural land with local electrical and water utilities. The subject site consists of approximately ±530 acres that are currently used to raise beef cattle in west-central Williamson County, Texas. Access to the site is along State Highway 29 (Appendix A, Figure 1). Surrounding land use is predominantly undeveloped rangeland and/or rural residential.

2.2 TOPOGRAPHY AND SURFACE WATER

The subject site is situated on gently to moderately sloping terrain within the Middle Fork of the San Gabriel River watershed (Appendix A, Figures 2 and 3). Surface elevations on the subject site vary from a minimum of approximately 940 feet above mean sea level (amsl) at the northeastern portion of the property corner to a maximum of approximately 1020 feet amsl at the western limits of the proposed right-of-way (ROW) connector (Kauffman Loop) to Ronald Reagan Boulevard. Drainage on most of the site occurs primarily by overland sheet flow in multiple directions based on location near several unnamed tributaries of the Middle Fork of the San Gabriel River.

2.3 EDWARDS AQUIFER ZONE

As shown in Appendix A, Figure 2, the subject site is found within the Edwards Aquifer Recharge Zone, as mapped by TCEQ Recharge Zone Boundary Maps (TCEQ, 2014).

2.4 SURFACE SOILS

Mapping by the Natural Resources Conservation Service (NRCS, 2014) shows approximately 5 soil mapping units within the subject site (Appendix A, Figure 4) associated with the soil series described below.

Crawford clay, 1 to 3% slopes (CfB): This gently sloping soil is on mesas, foot slopes, and at the head of drainage ways on uplands. Typically, the uppermost layer is neutral clay about 27 inches thick. It is brown in the upper 6 inches and dark reddish brown below that. The underlying material is whitish, fractured hard limestone. This soil is well drained, and the available water capacity is low. When the soil is dry and cracked, permeability is rapid; but when the soil is wet and the cracks are closed, permeability is very slow. Runoff is medium.

Fairlie clay, 0 to 1% slopes (FaA) and 1 to 2% slopes (FaB): This nearly level soil is on broad plateaus, slightly depressed areas near the head of drains, and in shallow valleys on uplands. Typically, this soil has a dark gray clay upper layer about 36 inches thick. The layer below that, which extends to about 46 inches, is gray clay. The underlying material to a depth of 55 inches is weakly cemented limestone interbedded with limy material. This soil is calcareous and moderately alkaline. This soil is moderately well drained. When dry, it has wide cracks, and water enters it rapidly. However, when this soil is wet and the cracks are sealed, water enters it very slowly. Surface runoff is slow when this soil is dry and cracked. The available water capacity is high and erosion is a slight hazard.

Fairlie clay, 1 to 2% slopes (FaB): This gently sloping soil is along broad flats and on the edges of drainageways on uplands. Typically, this soil has a dark gray clay upper layer about 21 inches thick. The layer below that, to 46 inches, is clay that is gray in the upper part and dark grayish brown in the lower part. The underlying material is weakly cemented limestone interbedded with limy material. This soil is calcareous and moderately alkaline throughout. This soil is moderately well drained. When dry, this soil cracks extensively, and water enters it rapidly. When this soil is wet and

the cracks are closed, water enters the soil very slowly. Runoff is medium. The available water capacity is high. Erosion is a slight hazard.

Georgetown clay loam, 0 to 2% slopes (GeB): This nearly level to gently sloping soil is on uplands. Most areas are irregular in shape and range from 10 to 50 acres. Typically, the surface layer is slightly acidic, brown clay loam about 7 inches thick. The subsoil extends to about 35 inches; it is neutral to slightly acidic, reddish brown clay in the upper part and cobbly clay in the lower part. The underlying material is indurated limestone that has limy earth imbedded in the crevices. This soil is well drained. Permeability is slow. Surface runoff is medium. The available water capacity is low.

Georgetown stony clay loam, 1 to 3% slopes (GsB). This gently sloping soil is mostly on the higher parts of uplands. Typically, this soil has a slightly acidic, brown stony clay loam surface layer about 7 inches thick and few to common stones on or near the surface. The subsoil, which extends down to a depth of about 35 inches, is neutral, reddish brown clay in the upper part and slightly acidic, reddish brown cobbly clay in the lower part. The underlying material is indurated, fractured limestone that has clay loam in crevices and fractures. This soil is well drained. Permeability is slow, and surface runoff is medium. The available water capacity is low. Reaction is neutral to slightly acidic. The erosion hazard ranges to slight.

2.5 GEOLOGY

A review of existing literature shows most of the subject site is underlain by the undifferentiated Edwards Limestone Formation (Ked) (Bureau of Economic Geology [UT-BEG, 1995]) with an estimated maximum thickness of about 40 feet at higher elevations located along the west-southwest side. In addition, Quaternary-age terrace deposits (terraces along streams [Qt]) occur at the highest elevations located near the west and central portions of the subject site with an estimated thickness of less than 20 feet. In general, the rock strata beneath the site dip to the southeast at about 10 to 30 feet per mile.

The subject site is located several miles west of the Balcones Fault Zone, and available geologic reports indicate the immediate area has not been affected by geologically inactive, normal faulting. A normal fault is an inclined fault in which the hanging wall appears to have slipped downward relative to the footwall. The nearest mapped fault is about 2 miles west of the site, and strikes N30°E (UT-BEG, 1995).

Table 2 depicts the stratigraphic relationship and approximate thicknesses of the uppermost geologic unit found at the subject site.

TABLE 2 – GEOLOGIC STRATIGRAPHIC COLUMN

Geologic Period	Hydrologic Unit	Geologic Unit	Geologic Member	Approximate Thickness (feet)	Description
Quaternary	--	Terraces along streams (Qt)	--	Up to 20	Gravel, sand, silt, and clay in various proportions with gravel more prominent in the older, higher terraces. Eroded fragments of dolomite, limestone, and chert from the Edwards Plateau; sand mostly quartz. No cave development.
Lower Cretaceous	Edwards Aquifer	Edwards Formation (Ked)	--	40	Gray to light brownish-gray, thin to medium-bedded, dense, dolomite, dolomitic limestone, and limestone containing rudists (long, conical bivalves). Gray to black chert is common. Low to moderate cave development.
Lower Cretaceous	Edwards Aquifer	Comanche Peak Formation (Kc)	--	50	Gray to very light brown, fine-grained, nodular limestone, marly limestone, and marl. No cave development.
Lower Cretaceous	Confining Unit	Walnut Formation (Kwa)	--	175	Composed of 4 thinly bedded limestone and marl members (Keys Valley Marl, Cedar Park Limestone, Bee Cave Marl, and Bull Creek Limestone). Uppermost member is Keys Valley Marl, fine- to very fine-grained, cream colored, fossiliferous marl with some thin interbeds of soft limestone. Low cave development.

2.6 WATER WELLS

A search was made for water wells on and within 0.5 miles of the subject site. A review of the records of the TCEQ and the Texas Water Development Board (TWDB) revealed no water wells at the subject site or within 0.5 miles from the subject site (TWDB, 2014). No evidence of water wells was present on the subject site during the field investigation. The results of this survey do not preclude the existence of an abandoned well.

Abandoned wells must be capped or properly abandoned according to the Administrative Rules of the Texas Department of Licensing and Regulation, 16 Texas Administrative Code (TAC), Chapter 76, effective 3 January 1999. A plugging report must be submitted (by a licensed water well driller) to the Texas Department of Licensing and Regulation, Water Well Driller's Program, Austin, Texas. If a well is intended for use, it must comply with 16 TAC §76.

2.7 GEOLOGIC AND MANMADE FEATURES

Field surveys of the subject site were conducted by a licensed Horizon geologist on 10, 13, and 23 June 2014; 6 and 7 August 2014; and 17 September 2014. Four natural geologic features (F-1 to F-4) were identified within the subject site. Five manmade features (M-1 to M-5) (all are stock

ponds) were observed at the subject site. These stock ponds appear to have been constructed over several years ago and are located within various unnamed tributaries of the Middle Fork of the San Gabriel River. Based on the presence of thick deposits of predominately very fine-grained (clay) fluvial sediments, all of the manmade features have very low relative infiltration rates.

Geologic Feature F-1: Sinkhole measuring approximately 7 feet in diameter x 1.5 feet deep with 2 drainage portal openings (1 foot in diameter x 1 to 1.5 feet deep) located along its clay and rock-laden floor. No air flow conductivity was noted at the openings. Probing with a steel rod encountered clay soil and cobbles about 2 feet below the feature's floor. On 6 August 2014, Horizon staff excavated an area about 6 feet long x 4 feet wide x 5 feet deep near the center of the sinkhole. No voids and/or drainage portals were observed along its floor or walls, and probing with a steel rod encountered very dense, weathered soil and rock about 2 feet below the lowest point of the excavation. Excavation was partially refilled due to the presence of livestock on the site. This feature has a low infiltration rate and a surface runoff catchment of less than 0.1 acres.

Geologic Feature F-2: Solution cavity measuring approximately 2 feet long x 1.5 feet wide x 0.5 feet deep with a semi-open drainage portal amongst loose rocks and soil. No air flow conductivity was noted at the opening. Probing with a steel rod encountered loose clay soil and cobbles about 1 foot below the feature's floor. On 6 August 2014, Horizon staff excavated an area about 5 feet long x 2 feet wide x 5.5 feet deep near the center of the feature. No voids and/or drainage portals were observed along its floor or walls, and probing with a steel rod encountered very dense, weathered soil and rock about 2 feet below the lowest point of the excavation. Excavation was refilled to existing grade due to the presence of livestock on the site. This feature has a low infiltration rate and a surface runoff catchment of less than 0.1 acres.

Geologic Feature F-3: Upland sinkhole measuring approximately 11 feet long x 9 feet wide x 2 feet deep with 2 drainage portal openings located along the edge of a rock headwall. Slight air flow conductivity was noted at the openings. Probing with a steel rod encountered loose cobbles and soil about 3 feet below the feature's floor. On 6 and 7 August 2014, Horizon staff excavated an area (6 feet long x 3 feet wide x 4.5 feet deep) along the north side of the rock headwall and discovered a low, horizontal bedding plane void (4 feet long x 3 feet wide x 1 to 0.3 feet high) about 2 feet below the surface that slopes down toward the south. No other voids and/or drainage portals were observed along the excavated floor or walls. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature F-4: Upland sinkhole measuring approximately 9 feet long x 6 feet wide x 2 feet deep with 2 semi-open drainage portal openings (0.8 feet in diameter and 0.9 feet in diameter x 1 foot deep) amongst loose clay and cobbles. No air flow conductivity was noted. Probing with a steel rod encountered firm clay soil and cobbles about 2 feet below the feature's floor. On 6 August 2014, Horizon staff excavated an area about 5 feet long x 3 feet wide x 3 feet deep near the center of the sinkhole. No voids and/or drainage portals were observed along its floor or walls, and probing with a steel rod encountered very dense, weathered soil and rock about 2 feet below the lowest point of the excavation. Excavation was partially refilled due to the presence of livestock on the site. This feature has a low infiltration rate and a surface runoff catchment of less than 0.1 acres.

A map detailing site geology and the location of the geologic features is provided in Appendix B. Further information pertaining to the geologic features is provided in the Geologic Assessment Table (Appendix C). Photographs of the geologic features are also provided in Appendix D.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Four natural geologic features and 5 manmade features were identified at the subject site. All of the features were evaluated for their potential to be significant pathways for fluid movement into the Edwards Aquifer. The Geologic Assessment Table (Appendix C) summarizes this evaluation and assigns each feature's sensitivity a total point value. Those with a point value of 40 or higher are deemed to be sensitive groundwater recharge features and should be protected during site development pursuant to TCEQ rules for protection of the Edwards Aquifer (30 TAC 213).

One geologic feature (F-3) has been evaluated as sensitive for groundwater recharge capability and would therefore require a TCEQ protective setback buffer. In general, a protective buffer encompassing a sensitive feature is recommended to meet the TCEQ guidance for a setback of at least 50 feet in all directions from the feature's areal extent (perimeter), plus its watershed catchment up to 200 feet from the perimeter of the feature. Three geologic features (F-1, F-2, and F-4) have been evaluated as non-sensitive for groundwater recharge capability and would therefore not require TCEQ protective setback buffers. No further action is recommended for these non-sensitive geologic features.

Five manmade features (M-1 to M-5) have been evaluated as non-sensitive for groundwater recharge capability and would therefore not require TCEQ protective setback buffers. No further action is recommended for these non-sensitive manmade features.

The site appears generally well-suited to development prospectus. It should be noted that soil and drainage erosion would increase with ground disturbance. Native grasses and the cobbly content of the soil aid to prevent erosion. Soil and sedimentation fencing should be placed in all appropriate areas prior to any site construction activities.

Because the project site is located over the Edwards Aquifer Recharge Zone, it is possible that subsurface voids underlie the site. The nature of the sub-grade is fault-influenced, which can result with variable-sized voids in materials that may otherwise not be noted as void or cave forming. If any subsurface voids are encountered during the proposed development, construction should halt immediately so that a geologist may assess potential for the void(s) to provide meaningful recharge to the Edwards Aquifer.

4.0 REFERENCES

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(NRCS) Natural Resources Conservation Service (formerly the Soil Conservation Service) US Department of Agriculture, Engineering Division Soil Series and Hydrologic Soil Groups of Urban Hydrology for Small Watersheds, Technical Release No. 55, Engineering Division, January 1975.

_____. US Department of Agriculture, Natural Resources Conservation Service. 2014a. Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed 15 September 2014.

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_____. Texas Commission on Environmental Quality. Edwards Aquifer Protection Program. Edwards Aquifer Viewer, <http://tceq4apmgwebp1.tceq.texas.gov:8080/edwards Aquifer/>. Accessed 15 September 2014.

(TWDB) Texas Water Development Board. Water Information Integration and Dissemination System. TWDB Groundwater Database (ArcIMS), <http://wiid.twdb.state. tx.us/ims/wwm_drl/viewer.htm?>. Accessed 15 September 2014.

(USDA) US Department of Agriculture. National Agriculture Imagery Program, Farm Service Agency, Aerial Photography Field Office. Williamson County, Texas. 2012.

(USGS) US Geological Survey. 7.5-minute series topographic maps, Leander, Texas, quadrangle, 1987.

(UT-BEG) The University of Texas at Austin Bureau of Economic Geology; C.V. Proctor, Jr., T.E. Brown, J.H. McGowen, N.B. Waechter, and V.E. Barnes. *Geologic Atlas of Texas*, Austin Sheet. Francis Luther Whitney Memorial Edition. 1974; revised 1995.

(Werchan et al.) Werchan, L. E., and J. L. Coker. Soil survey of Williamson County, Texas. Soil Conservation Service, US Department of Agriculture, Washington, D.C. 1983.

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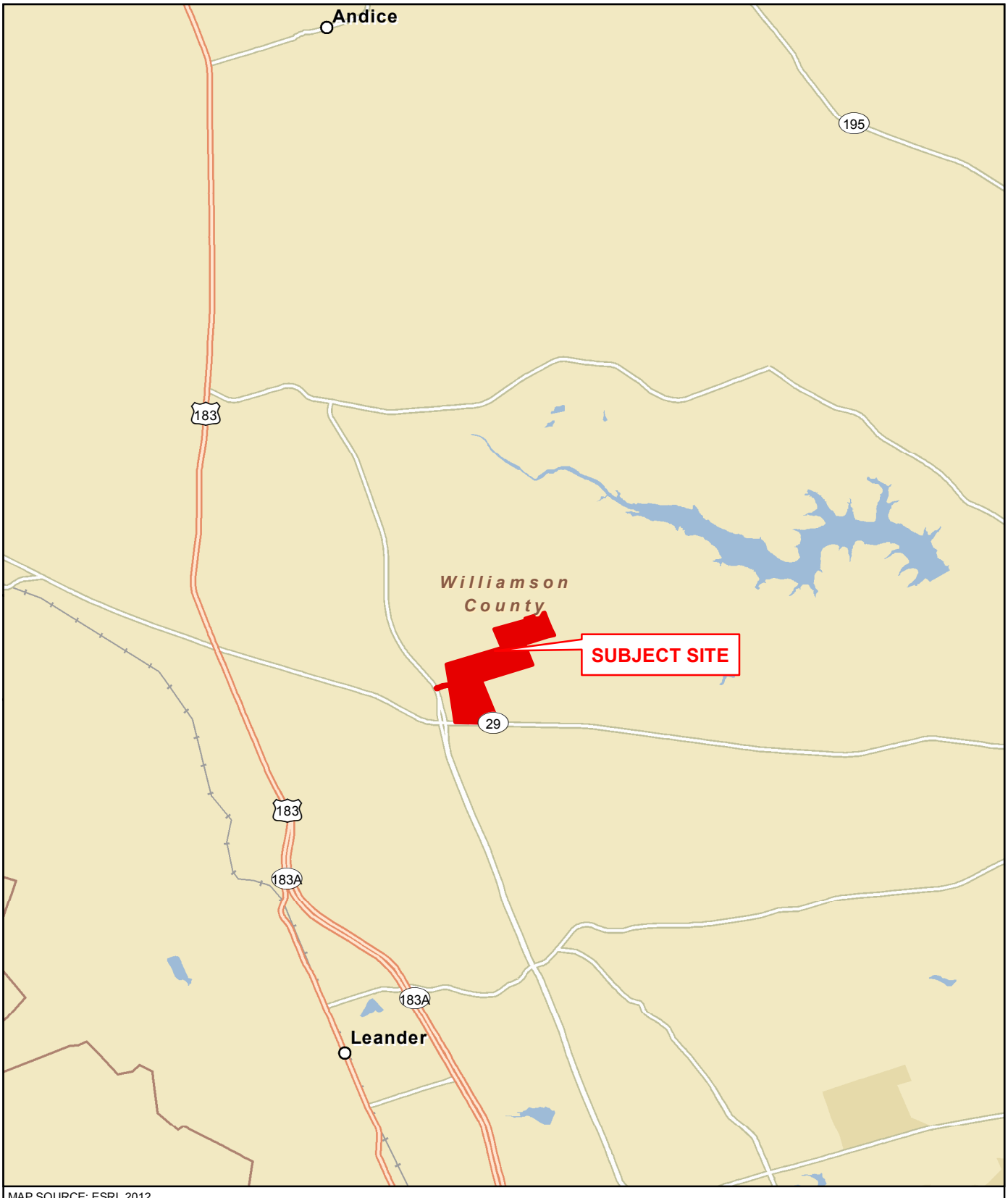
APPENDIX A

PROJECT FIGURES



140011 - 530-Acre Dipprey Tract Pl\Graphics\GA\140011A01GA_Vicinity Map.mxd | REM | 07-15-2014 | CEC | 9-17-2014

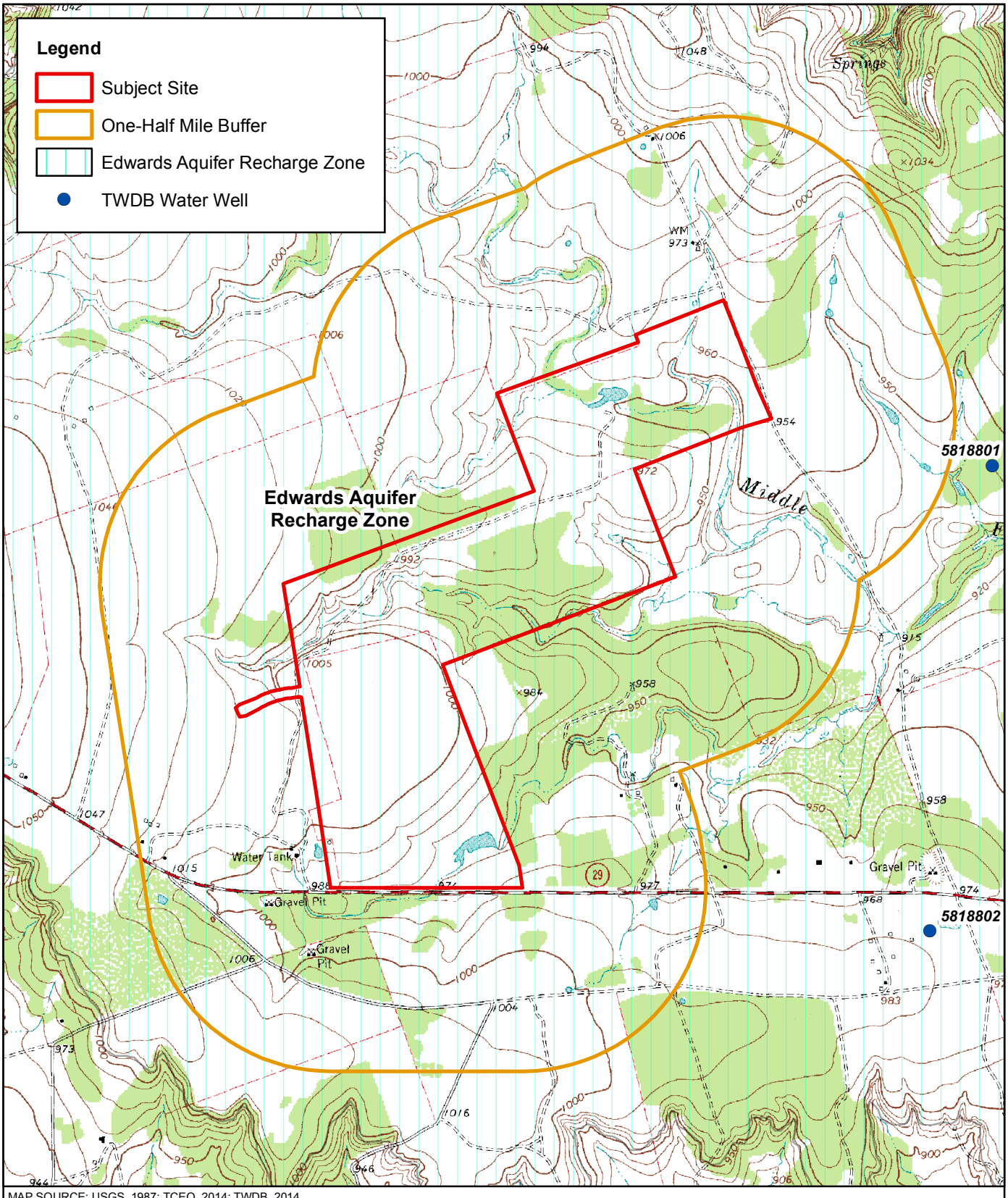
MAP SOURCE: ESRI, 2012.

0 1 2
Miles

Horizon
Environmental Services, Inc.

APPENDIX A, FIGURE 1

VICINITY MAP
MORNINGSTAR RANCH
GEORGETOWN,
WILLIAMSON COUNTY, TEXAS



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MAP SOURCE: USGS, 1987; TCEQ, 2014; TWDB, 2014.

0 1,000 2,000
Feet

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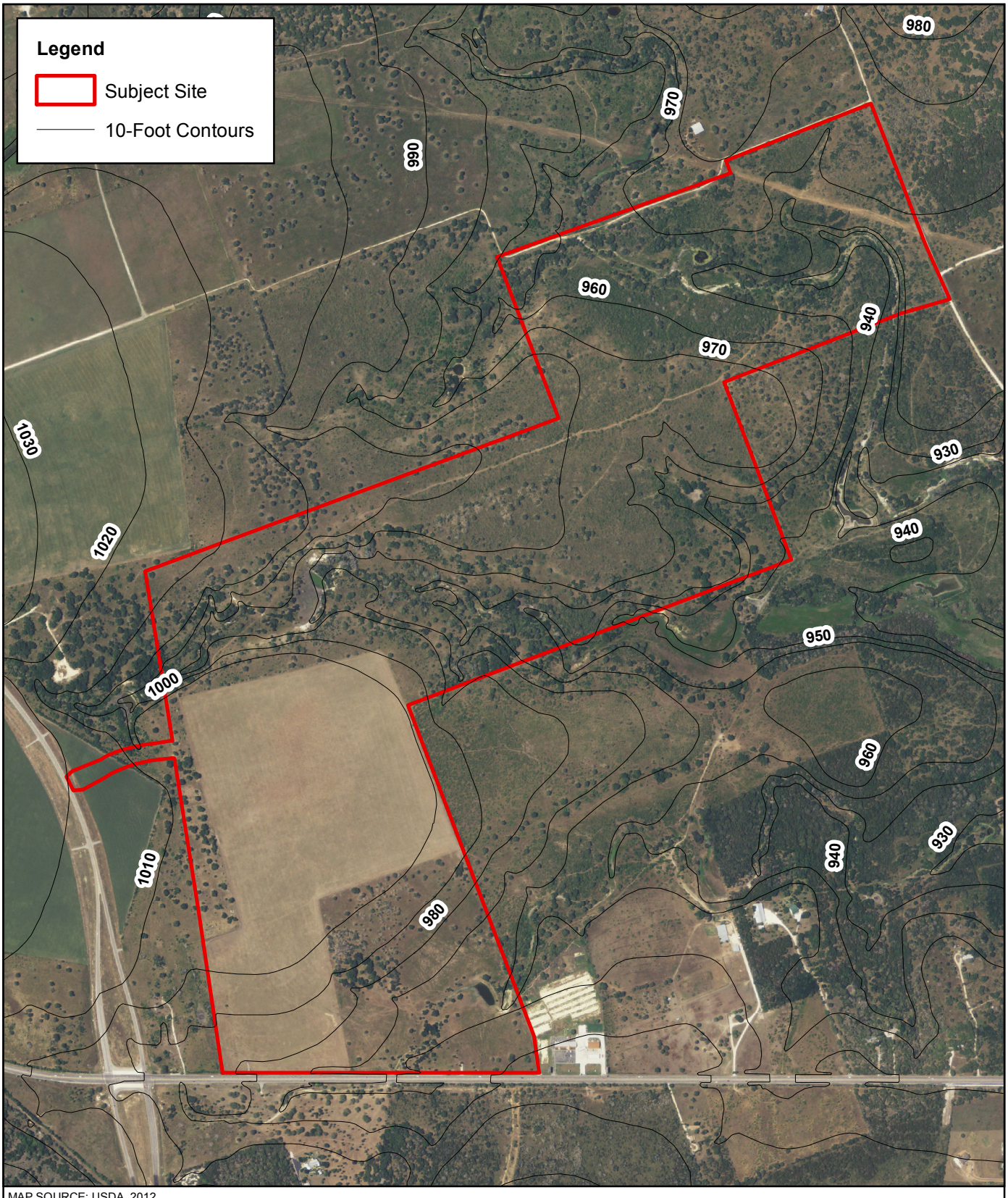
APPENDIX A, FIGURE 2

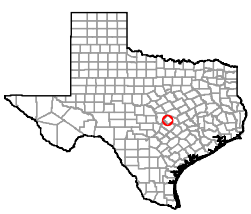
TOPOGRAPHY AND HYDROGEOLOGY MAP
MORNINGSTAR RANCH
GEORGETOWN,
WILLIAMSON COUNTY, TEXAS



140011 - 530-Acre Dipprey Tract P\Graphics\GA\140011A03GA_Topo.mxd | REM | 07-15-2014 | CEC | 9-15-2014

MAP SOURCE: USDA, 2012.

0 550 1,100
Feet



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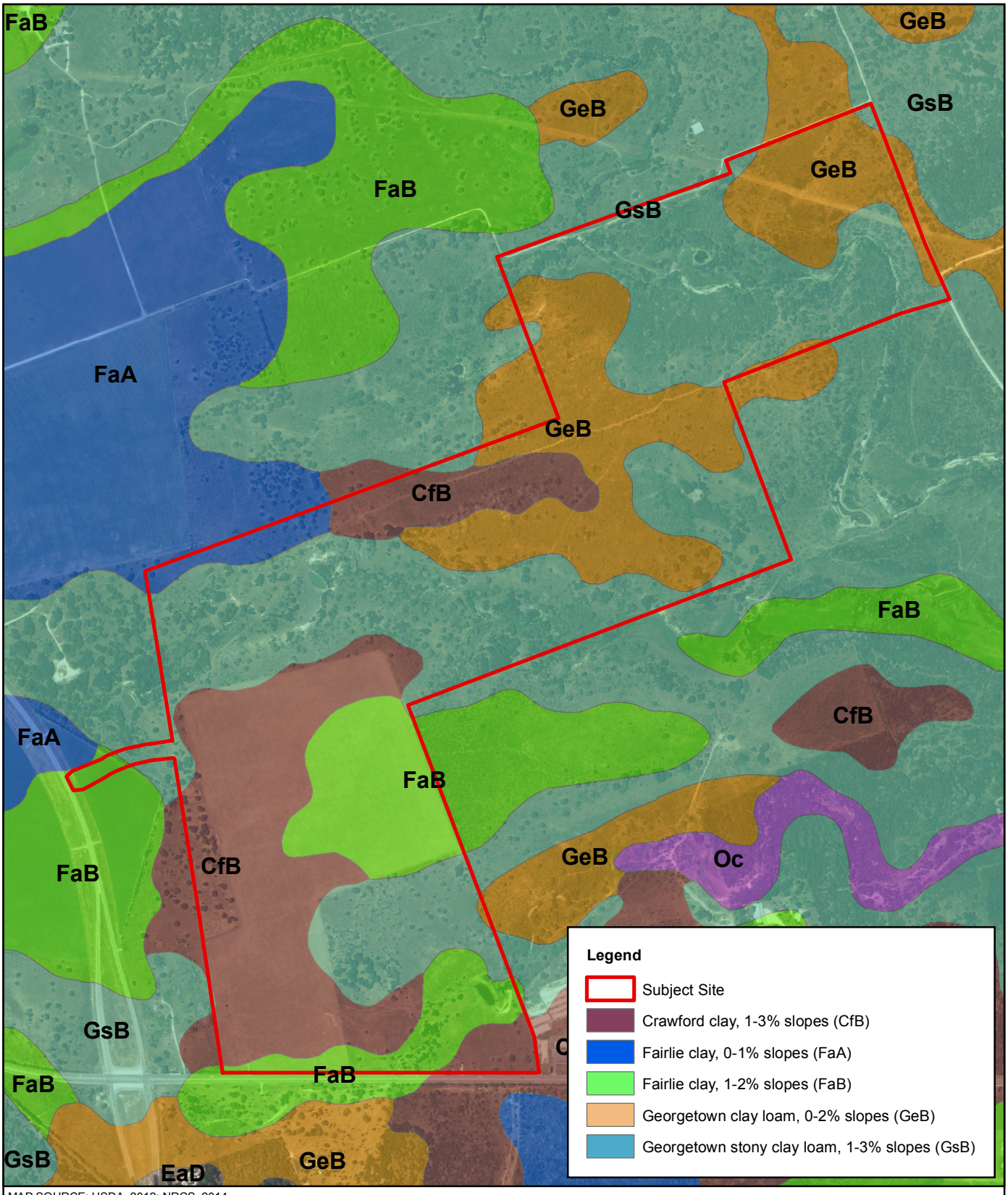
APPENDIX A, FIGURE 3

SITE TOPOGRAPHY MAP
MORNINGSTAR RANCH
GEORGETOWN,
WILLIAMSON COUNTY, TEXAS

140011 - 530-Acre Dipprey Tract PI\Graphics\GA\140011A04GA_Soils.mxd | REM | 07-15-2014 I CEC I 9-15-2014



MAP SOURCE: USDA, 2012; NRCS, 2014.

STATE OF TEXAS
JAMES P. KILLIAN
GEOLOGY
No. 10281
LICENSED
PROFESSIONAL GEOSCIENTIST

0 550 1,100
Feet

Horizon
Environmental Services, Inc.

APPENDIX A, FIGURE 4

SURFACE SOILS MAP
MORNINGSTAR RANCH
GEORGETOWN,
WILLIAMSON COUNTY, TEXAS

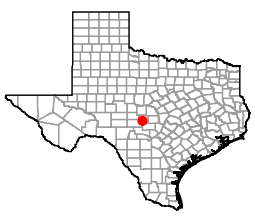
140011 - 530-Acre Dipprey Tract Pl\Graphics\GA\140011A05GA_Strat.mxd | REM | 07-15-2014 | CEC | 9-15-2014

Geologic Unit	Hydrologic Unit	Approx. Thickness at Project Site (ft)	Elevation (ft msl)	Depth (ft)
			1020	0
Terraces along streams (Qt)	-	20		
			1000	20
Edwards Formation (Ked)	Edwards Aquifer	40		
			960	60
Comanche Peak Formation (Kc)		50		
			910	110
Walnut Formation (Kwa)	Confining Unit	175		
			735	285

Note: Unit elevation and thickness given with respect to a ground surface elevation of 1020 ft on the western limit of proposed ROW connector (Kauffman Loop) at the project site.

Horizon Environmental Services, Inc.

STATE OF TEXAS
JAMES P. KILLIAN
GEOLOGY
No. 10281
LICENSED
PROFESSIONAL GEOSCIENTIST



APPENDIX A, FIGURE 5

STRATIGRAPHIC COLUMN
APPROXIMATELY 530-ACRE
MORNINGSTAR RANCH
GEORGETOWN,
WILLIAMSON COUNTY, TEXAS

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APPENDIX B

SITE GEOLOGIC MAP

140011 - 530-Acre Dipprey Tract PI\Graphics\GA\140011D01GA_SGM.mxd | REM | 07-21-2014

Qt

Qt

Ked

Qt

Ked

F-1

M-3

M-4

M-2

M-5

F-4

F-3

F-2

M-1

Legend

- Geologic Features
- Subject Site
- ROW Connector
- Manmade Features
- Terraces along streams (Qt)
- Edwards Formation (Ked)

MAP SOURCE: UT-BEG, 1974; USDA, 2012.

STATE OF TEXAS
JAMES P. KILLIAN
GEOLOGY
No. 10281
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
Feet

Scale: 1" = 400'

APPENDIX B, FIGURE 1

SITE GEOLOGIC MAP
MORNINGSTAR RANCH
GEORGETOWN,
WILLIAMSON COUNTY, TEXAS

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APPENDIX C

SITE GEOLOGIC ASSESSMENT TABLE

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Morningstar Ranch; SH 29; Georgetown, Texas

LOCATION			FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL 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)			TREND (DEGREES)	DIM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
F-1	30.65743	-97.80857	SH	20	Ked	7	7	1.5	--		--	--	C,F,O	12	32	X		X		Drainage
F-2	30.642261	97.818755	SC	20	Ked	2	1.5	0.5	--		--	--	C,F,O	10	30	X		X		Hillside
F-3	30.64369	-97.82655	SH	20	Ked	11	9	2	--		--	--	C,F,O	28	48		X	X		Hilltop
F-4	30.64388	-97.82603	SH	20	Ked	9	6	2	--		--	--	C,F,O	10	30	X		X		Hilltop
M-1	30.475226	-97.687841	MB	30	Ked	300	60	7	--		--	--	C,F,O	5	35	X		X		Drainage
M-2	30.64997	-97.82309	MB	30	Ked	300	50	6					C,F,O	5	35	X		X		Drainage
M-3	30.65704	-97.81167	MB	30	Ked	100	60	5					C,F,O	5	35	X		X		Drainage
M-4	30.65154	-97.81226	MB	30	Ked	50	50	4					C,F,O	5	35	X		X		Drainage
M-5	30.64884	-97.8171	MB	30	Ked	75	50	4					C,F,O	5	35	X		X		Drainage

* DATUM:_____

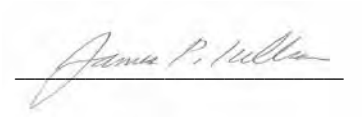
2A TYPI	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	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
X	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.

Date : August 15, 2014



Sheet 1 of 1

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

Horizon
Environmental Services, Inc.

APPENDIX D

SITE PHOTOGRAPHS

PHOTO 1
View of geologic feature F-1 (sinkhole), facing southwest

PHOTO 2
Close up view of F-1, after excavation

PHOTO 3
View of geologic feature F-2 (solution cavity), facing east

PHOTO 4
Close up view of F-2, after excavation

Horizon
Environmental Services, Inc.

PHOTO 5
View of geologic feature F-3 (sinkhole), facing north

PHOTO 6
View of F-3 after excavation, facing southeast

PHOTO 7
View of geologic feature F-4 (sinkhole), with two partially open drainage portals, facing down

PHOTO 8
Close up view of F-4, after excavation

Horizon
Environmental Services, Inc.

SECTION 4: WATER POLLUTION ABATEMENT PLAN APPLICATION FORM (TCEQ-0584)

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Xavier Garza, P.E.

Date: 06/16/2023

Signature of Customer/Agent:

Regulated Entity Name: 12 Oaks Village

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☐ Commercial
   ☐ Industrial
   ☑ Other: Roadway Infrastructure

2. Total site acreage (size of property): 47.67 (2.73 LOC)

3. Estimated projected population: N/A

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	N/A	÷ 43,560 =	0
Parking	N/A	÷ 43,560 =	0
Other paved surfaces	25,246	÷ 43,560 =	0.58
Total Impervious Cover	25,246	÷ 43,560 =	0.58

Total Impervious Cover 0.58 **÷ Total Acreage** 47.67 **X 100 =** 1.2 **% Impervious Cover**

5. ☑ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.
6. ☑ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☑ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): N/A feet. (Private)

   Width of R.O.W.: N/A feet.
   L x W = N/A Ft² ÷ 43,560 Ft²/Acre = N/A acres.

10. Length of pavement area: 504 feet.

    Width of pavement area: varies feet.(median)
    L x W = 22,386 Ft² ÷ 43,560 Ft²/Acre = 0.51 acres.
    Pavement area 0.51 acres ÷ R.O.W. area N/A acres x 100 = N/A % impervious cover.

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

N/A % Domestic	_____ Gallons/day
N/A % Industrial	_____ Gallons/day
N/A % Commingled	_____ Gallons/day
TOTAL gallons/day N/A	

15. Wastewater will be disposed of by:

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

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

☑ Sewage Collection System (Sewer Lines):

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

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

☑ The sewage collection system will convey the wastewater to the City of Liberty Hill WWTP Treatment Plant. The treatment facility is:

☑ Existing.
☐ Proposed.

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 40 '.

18. 100-year floodplain boundaries:

☑ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☐ No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): Floodplain Analysis conducted by HR Green March 2023

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

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

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

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

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

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

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

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

22. ☑ The drainage patterns and approximate slopes anticipated after major grading activities.
23. ☑ Areas of soil disturbance and areas which will not be disturbed.
24. ☑ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
25. ☑ Locations where soil stabilization practices are expected to occur.
26. ☐ Surface waters (including wetlands).
    ☑ N/A
27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.
    ☑ There will be no discharges to surface water or sensitive features.
28. ☑ Legal boundaries of the site are shown.

Administrative Information

29. ☑ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
30. ☑ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

ATTACHMENT A – FACTORS AFFECTING WATER QUALITY

Potential sources of pollution that may be expected to affect the quality of the stormwater discharges from the construction site include the following:

- Soil erosion due to the clearing of the site for drainage structures.
- Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle drippings.
- Miscellaneous trash and litter from construction.

Potential sources of pollution that may be expected to affect the quality of the stormwater discharges from the site after construction is completed include the following:

- Oil, grease, fuel, and hydraulic fluid contamination from vehicle drippings.
- Dirt and dust from vehicles.
- Trash and litter.

ATTACHMENT B – VOLUME AND CHARACTER OF STORMWATER

The project site is located within the Edwards Aquifer Recharge Zone. There is an existing natural channel running through the south-central portion of the site. The proposed infrastructure includes 0.58 acres of impervious cover, roughly 1.2% of the total site area. The proposed infrastructure improvements will produce an additional load of 505 lbs/yr of TSS. A total of 0.55 acres (94.8%) of the infrastructure improvements impervious cover will be directed toward the proposed Contech Jellyfish for water quality treatment. The Contech Jellyfish will remove more than the required 80% of the increase in TSS load, for a total load removal of 528 lbs/yr of TSS.

The Contech Jellyfish and associated infrastructure are currently proposed to be constructed and installed by the 12 Oaks Village – Phase 1 Spine Infrastructure Plans. Detention for the 12 Oaks Village – Phase 1 Spine Infrastructure improvements will be handled by the 12 Oaks Village Regional Detention Pond.

Required Load Reduction for the Total Project

Calculations from RG-348
Pages 3-27 to 3-30

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

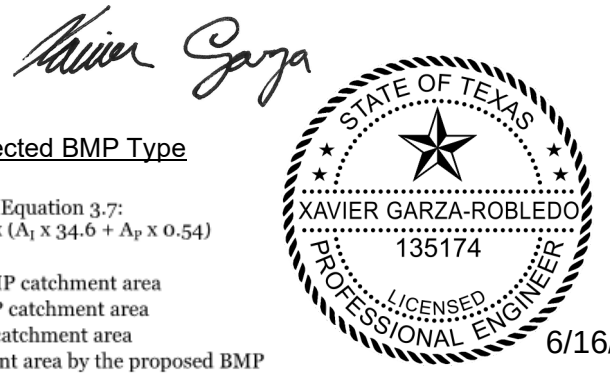
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	**Williamson**	
Total project area included in plan * =	**47.67**	acres
Predevelopment impervious area within the limits of the plan * =	**0.04**	acres
Total post-development impervious area within the limits of the plan* =	**0.62**	acres
Total post-development impervious cover fraction * =	**0.01**	
P =	**32**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**505**	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	**1**	

STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER

6/16/2023



6/16/2023

Maximum TSS Load Remove for Drainage Basins by Selected BMP Type

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

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

A_C =	**0.87**	acres
A_I =	**0.55**	acres
A_P =	**0.32**	acres
L_R =	**528**	lbs.

There are existing jurisdictional waters along the natural channel running through the south-central portion of the site. One non-sensitive manmade feature is located on site as identified in the Geological Assessment. There are no proposed impacts to the existing jurisdictional waters or the manmade feature by construction.

Detailed existing and fully developed flow data for the points of interest are provided on the drainage plan as part of the construction documents submitted with this application. Refer to Sheets 10 and 11 on 12 Oaks Village – Phase 1 Spine Infrastructure Plans, for the Existing and Proposed Drainage Plans.

In this analysis, the proposed conditions represent the full development of the entire 12 Oaks Village property. This proposed drainage analysis was conducted with the 12 Oaks Village Regional Detention Pond study. The analysis was used to determine the proper sizing of the regional detention pond as proposed with the 12 Oaks Village Regional Detention Pond construction plans which is to serve all future 12 Oaks Village development. The drainage analysis accounts for all proposed impervious cover associated with the 12 Oaks Village – Phase 1 Spine Infrastructure Plans as all areas were modeled at maximum future impervious cover. Specifically, the proposed impervious cover associated with the 12 Oaks Village – Phase 1 Spine Infrastructure Plans is contained within drainage area DEV-C1. Summary tables are also provided below.

Routing Analysis Inputs - Existing Conditions							
Drainage Areas		Land Use		TOC Calculation Table	HEC-HMS Inputs		
Contributing Area	Area (ac)	Base Curve Number	Existing Impervious Cover (ac)	TOC (min)	Area (sq. mi.)	Impervious Cover (%)	Lag Time (min)
EX-A	570.09	80	77.20	101.46	0.89076	13.54%	60.88
EX-B	49.24	80	4.64	49.53	0.07694	9.43%	29.72
EX-C	71.64	80	0.00	40.49	0.11194	0.00%	24.29
EX-D1	11.97	80	0.00	21.60	0.01870	0.00%	12.96
EX-D2	1.80	80	0.89	5.00	0.00281	49.66%	3.00
EX-E	9.89	80	4.47	15.11	0.01545	45.20%	9.06

Routing Analysis Inputs - Proposed Conditions							
Drainage Areas		Land Use		TOC Calculation Table	HEC-HMS Inputs		
Contributing Area	Area (ac)	Curve Number	Total Impervious Cover (ac)	TOC (min)	Area (sq. mi.)	Impervious Cover (%)	Lag Time
DEV-A	570.09	80	77.20	101.46	0.89076	13.54%	60.88
DEV-B	46.19	80	4.64	49.53	0.07218	10.05%	29.72
DEV-C1	52.95	80	42.36	5.00	0.08273	80.00%	3.00
DEV-C2	18.92	80	15.13	5.00	0.02956	80.00%	3.00
DEV-D1	13.33	80	8.67	5.00	0.02083	65.00%	3.00
DEV-D2	2.91	80	0.89	5.00	0.00455	30.65%	3.00
DEV-E	9.89	80	4.47	15.11	0.01545	45.20%	9.06

12 Oaks Village - Regional Detion Pond - Hydrology Summary Table												
Analysis Point	Existing Peak Flow (cfs)				Proposed Peak Flow (cfs)				Δ Peak Flow (cfs)			
	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}
POI-A4	511	948	1,258	1,787	511	948	1,258	1,787	0	0	0	0
POI-A3	544	1,011	1,343	1,910	542	1,007	1,338	1,902	-2	-4	-5	-8
POI-A2	585	1,093	1,455	2,075	564	1,051	1,399	2,000	-21	-42	-56	-75
POI-A1	590	1,104	1,470	2,098	554	1,056	1,395	1,971	-36	-48	-75	-127
POI-A0	594	1,111	1,480	2,114	557	1,061	1,403	1,983	-37	-50	-77	-131

ATTACHMENT C – SUITABILITY LETTER FROM AUTHORIZED AGENT

Item not applicable.

ATTACHMENT D – EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

Item not applicable.

SECTION 5: ORGANIZED SEWAGE COLLECTION SYSTEM PLAN (TCEQ-0582)

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: 12 Oaks Village

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

Customer Information

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

   Contact Person: Thomas Mote
   Entity: 12 Oaks Village, LP
   Mailing Address: 7801 N. Capital of Texas Highway, Suite 390
   City, State: Austin,Texas Zip: 78731
   Telephone: 512-901-9800 Fax: _____
   Email Address: tom@jwdevelopmentinc.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: Xavier Garza, P.E.
   Texas Licensed Professional Engineer's Number: 135174
   Entity: HR Green
   Mailing Address: 5508 Highway 290 West, Suite 150
   City, State:Austin, Texas Zip: 78735
   Telephone:512.872.6696 Fax:713.965.0044
   Email Address:xavier.garza@hrgreen.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: _____
   ☒ Multi-family: Number of residential units: 300
   ☒ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other:

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

100% Domestic	150,686 gallons/day
_____% Industrial	_____ gallons/day
_____% Commingled	_____ gallons/day

   Total gallons/day: 150,686

6. Existing and anticipated infiltration/inflow is 42,669 (per City of Austin Utilities Criteria Manual s of 750 gallons/day/acre) gallons/day. This will be addressed by: using standard manholes and included in out calculations for pipe design and flow determination.

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

   ☐ The WPAP application for this development was approved by letter dated _____. A copy of the approval letter is attached.
   ☒ The WPAP application for this development was submitted to the TCEQ on 06/16/2023, but has not been approved.
   ☐ A WPAP application is required for an associated project, but it has not been submitted.
   ☐ There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

Pipe Diameter(Inches)	*Linear Feet (1)*	*Pipe Material (2)*	*Specifications (3)*
8"	276	SDR-26	ASTM D-3034
12"	765	SDR-26	ASTM D-3034
8"	20	SDR-26	ASTM D-2241

Total Linear Feet: 1,061

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

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

9. The sewage collection system will convey the wastewater to the City of Liberty Hill WWTP (name) Treatment Plant. The treatment facility is:

☒ Existing
☐ Proposed

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

☒ The City of Liberty Hill ETJ standard specifications.
☐ Other. Specifications are attached.

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

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

Alignment

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

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

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

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

Manholes and Cleanouts

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

Table 2 - Manholes and Cleanouts

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
A1	27 Of 32	1+08.22	Manhole
A4	27 Of 32	4+50.88	Manhole
A8	27 Of 32	7+98.52	Manhole
A11	27 Of 32	10+46.16	Manhole
	Of		
	Of		

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

15. ☒ Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.

16. ☒ The maximum spacing between manholes on this project for each pipe diameter is no greater than:

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

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

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

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 40'.

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

20. Lateral stub-outs:

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

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

21. Location of existing and proposed water lines:

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

22. 100-year floodplain:

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

Table 3 - 100-Year Floodplain

Line	***Sheet***	***Station***
WW Line A	27 of 32	3+40.92 to 4+03.98
	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***
WWL-A	27 of 32	3+71.19 to 3+57.43
	of	to
	of	to
	of	to

24. ☒ Legal boundaries of the site are shown.

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

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

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

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

Table 5 - Water Line Crossings

Line	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance*	*Vertical Separation Distance*
WL-A	1+32.45	Crossing	0	3.76'

27. Vented Manholes:

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

Table 6 - Vented Manholes

Line	*Manhole*	*Station*	*Sheet*

Line	*Manhole*	*Station*	*Sheet*

28. Drop manholes:

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

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*
WWL-A	A4	4+50.88	27 of 23

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

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

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

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

31. Minimum flow velocity (From Appendix A)

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

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

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

Table 8 - Flows Greater Than 10 Feet per Second

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

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

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

Administrative Information

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

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

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	26 (Notes) of 33
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	31 of 33
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	31 of 33
Typical trench cross-sections **[Required]**	30 of 33
Bolted manholes **[Required]**	30 of 33
Sewer Service lateral standard details **[Required]**	31of 33
Clean-out at end of line **[Required, if used]**	NA of NA
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	NA of NA
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	31of 33
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	NA of NA

Standard Details	*Shown on Sheet*
Drop manholes **[Required, if a pipe entering a manhole is more than 24 inches above manhole invert]**	31 of 33

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

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

    ☐ Survey staking was completed on this date: _____

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

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

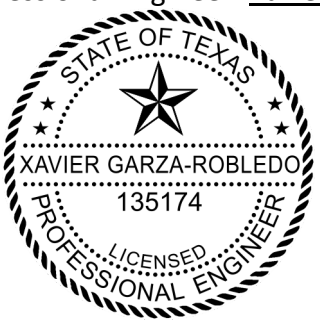
Signature

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

Print Name of Licensed Professional Engineer: Xavier Garza, P.E.

Date: 06/16/2023

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.*

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

Figure 1 - Manning's Formula

Where:

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

ATTACHMENT A – ENGINEERING DESIGN REPORT

Williamson County, Texas

12 Oaks Village
Phase 1 Spine Infrastructure
Organized Sewage Collection System

June 2023

HR Green Project No: 2302047.100

Prepared For:
Texas Commission on Environmental Quality

Prepared By:
Xavier Garza, P.E.

HR Green
5508 Highway 290 Wes
Austin, TX 78735

Firm #:16384

TABLE OF CONTENTS

INTRODUCTION

The SCS and WPAP accompanying this submittal detail the proposed improvements associated with the 12 Oaks Village – Phase 1 Spine Infrastructure Plans. This proposed infrastructure will server the future 12 Oaks Village development which is a master planned retail and commercial development in Williamson County, Texas, within the City of Liberty Hill's ETJ. The property consists of 47.67 acres located within the Edwards Aquifer recharge zone just east of Ronald Reagan Blvd and north of TX-29. The proposed site's SCS system will be composed of 296 LF of 8-inch (8") gravity wastewater line and 765 LF of 12-inch (12") service line gravity wastewater line. The proposed improvements tie into the existing Omega Ranch Lift Station #1. All flows will then be conveyed to the City of Liberty Hill Wastewater Treatment Plant (existing).

WASTEWATER COLLECTION SYSTEM DESIGN

The wastewater collection system was designed based on a wastewater flow rate of 245 gallons per day per LUE per the City of Austin Utilities Criteria Manual (as referred by the City of Liberty Hill regulations). Based on the flow rate and slopes of the system, an 8-inch (8") and 12-inch (12") gravity sewer pipe was selected for the collection system.

The SCS and waterline system have one (1) utility crossing at STA 1+88.92 (WW-B) with a vertical separation of 3.76 feet (3.76'). For further detail, refer to the Wastewater Plan & Profiles on Sheets 27-28. This crossing is designed per the specifications of 30 TAC section 217.53(d). All other portions of the wastewater and waterline system will maintain 9 feet of separation as required.

The gravity sewage collection system in 12 Oaks Village – Phase 1 Spine Infrastructure plans (all 26-SDR-PVC pipe) will remain within the TCEQ minimum and maximum slopes requirements. The minimum and maximum slopes for the proposed pipes are detailed in Table 1 below. According to Manning's equation for an 8" pipe with a Manning's coefficient of 0.013 at a 0.40% slope, the velocity at full flow is 2.18 feet per second. The velocity of an 8" pipe at a slope of 8.40% is 9.99 feet per second. The velocity of a 12" pipe at a slope of 0.25% is 2.24 feet per second. The velocity of an 12" pipe at a slope of 0.40% is 2.83 feet per second. Flow through the system will remain above the TCEQ required minimum of 2 feet per second and below the maximum of 10 feet per second when flowing full.

TABLE 1: MINIMUM AND MAXIMUM PIPE SLOPES

Size of Pipe (inches)	Min Slope (%)	Max Slope (%)
8	0.40	8.40
12	0.25	0.40

PROPOSED TYPE OF PIPE

SDR 26 Propoerties – 8" Pipe

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ATSM D-3212
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	7.754
Average Outer Diameter (inch):	8.400
Wall Thickness (inch):	0.323
Approximate Trenching Width (feet):	2.70
Minimum Pip Depth (Cover) used (feet):	7.58
Maximum Pipe Depth (Cover) used (feet):	15.18

SDR 26 Propoerties – 8" Pipe

Pipe Compliance:	ASTM D-2241
Joint Compliance:	ATSM D-2672
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	7.98
Average Outer Diameter (inch):	8.625
Wall Thickness (inch):	0.332
Approximate Trenching Width (feet):	2.72
Minimum Pip Depth (Cover) used (feet):	7.76
Maximum Pipe Depth (Cover) used (feet):	9.89

SDR 26 Propoerties – 12” Pipe

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ATSM D-3212
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	11.538
Average Outer Diameter (inch):	12.5
Wall Thickness (inch):	0.481
Approximate Trenching Width (feet):	3.04
Minimum Pip Depth (Cover) used (feet):	7.83
Maximum Pipe Depth (Cover) used (feet):	18.16

WATER/WASTEWATER CROSSING

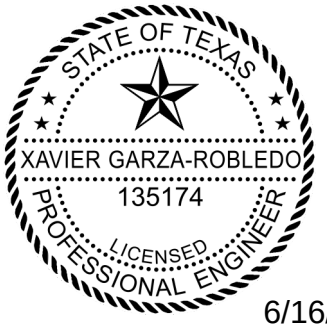
The SCS and waterline system have one (1) utility crossing with less than 9 feet of separation. The water/wastewater crossing occurs at STA 1+88.92 (WW-B) with a vertical separation of 3.76 feet (3.76’). The following protection measures will be taken:

- The crossing shall be centered between the joints of the water and wastewater pipe. The wastewater main and lateral shell be embedded in cement stabilized sand for the total length of one pipe segment plus 12 inches (12”) beyond the joint on each end.
- Provided 20 foot (20’) segment of 150 PSI SDR-26 ASTM D-2241 PVC pipe centered on crossing with Royal Building Products PVC gasketed coupling, or an approved equal.
- 150 psi casing pipe shall be sealed at both ends with a manufactured joint seal, per TAC 217(d)(7)(c)(i).

Should you have any questions regarding this submittal, please email me at Xavier.Garza@hrgreen.com or call 512-872-6696.

Sincerely,

HR GREEN DEVELOPMENT TX, LLC



6/16/2023

Xavier Garza, P.E.

Project Manager – Land Development

SECTION 6: TEMPORARY STORMWATER SECTION (TCEQ-0602)

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

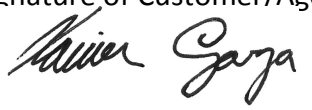
Signature

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

Print Name of Customer/Agent: Xavier Garza, P.E.

Date: 06/16/2023

Signature of Customer/Agent:



Regulated Entity Name: 12 Oaks Village

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

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

Sequence of Construction

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

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

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

6. ☑ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: North Fork San Gabriel River

Temporary Best Management Practices (TBMPs)

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

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

- [x] 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.
- [x] 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.
- [x] A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
- [x] A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. [x] 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.
   - [x] There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. [x] **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. [x] **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

    - [ ] For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.
    - [ ] For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.
    - [ ] For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.
    - [ ] There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

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

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

☑ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

ATTACHMENT A – SPILL RESPONSE ACTIONS

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

The following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dustpans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well-ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the Owner and the appropriate State or local government agency, regardless of the size.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- The site superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.
- Any reportable quantity hydrocarbon or hazardous material spill should be reported to the TCEQ at the following 24-hour toll-free number 1-800-832-8224.

For a spill of Reportable Quantity:

- Initial notification:
  Upon the determination that a reportable discharge or spill has occurred, the responsible person shall notify the agency as soon as possible but not later than 24 hours after the discovery of the spill or discharge.
- Method of notification:
  The responsible person shall notify the agency in any reasonable manner including by telephone, in person, or by any other method approved by the agency. In all cases, the initial notification shall provide, to the extent known, the information listed in subsection (d) of Title 30, Part I, Chapter 327, Rule §327.3. Notice provided under this section satisfies the federal requirement to notify the State Emergency Response Commission in the State of Texas.
- Notification of local government authorities:
  If the discharge or spill creates an imminent health threat, the responsible person shall immediately notify and cooperate with local emergency authorities. The responsible party will cooperate with the local emergency authority in providing support to implement appropriate notification and response actions. The local emergency authority, as necessary, will implement its emergency management plan, which may include notifying and evacuating affected persons. In the absence of a local emergency authority, the responsible person shall take reasonable measures to notify potentially affected persons of the imminent health threat.
- As soon as possible, but no later than two (2) weeks after discovery of the spill or discharge, the Contractor shall reasonably attempt to notify the Owner (if identifiable) or Occupant of the property upon

which the discharge or spill occurred as well as the occupants of any property that the Contractor believes is adversely affected.

More information on spill rules and appropriate responses is available on the TCEQ website at: http://www.tceq.texas.gov /response/

Vehicle and Equipment Maintenance:

- If maintenance must occur onsite, use a designated area and secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
    - Place drip pans or absorbent materials under paving equipment when not in use.
    - Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
    - Promptly transfer used fluids to the proper waste or recycling drums. Do not leave full drip pans or other containers lying around.
    - Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over the waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
    - Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all of the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

ATTACHMENT B – POTENTIAL SOURCES OF CONTAMINATION

Once grading activities begin, erosion of bare soil during rainfall events is the most common source of contamination. Silt fences will be installed at the beginning of the grading operation to minimize the potential for transport of the soil offsite.

Asphalt products will be used on this project. After the placement of asphalt, emulsion, or coatings, the applicant will be responsible for immediate cleanup should an unexpected rain event occur. For the duration of the asphalt curing time, the applicant should maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain event occur.

During construction activities, potential sources of contamination would include petroleum products leaking from construction equipment. The contractor will be advised to keep the equipment in working order and report any spills per the spill response plan.

Other potential sources of contamination include hydraulic fluid and diesel fuel from mechanical equipment and vehicles, as well as paints and chemicals used on site. Any spills shall be handled according to the Spill Response Actions in **Attachment A**.

ATTACHMENT C – SEQUENCE OF MAJOR ACTIVITIES

The first activity of construction will be to install the erosion control measures, consisting of silt fences, tree protection, rock berm, temporary spoils area, concrete washout area, and stabilized construction entrances. Temporary erosion control measures will remain in place throughout the duration of construction and will be required to be maintained by the contractor to ensure proper functionality, especially after storm events. All disturbed areas to remain pervious will be vegetated using the procedures detailed in the construction plans and all temporary erosion control measures will be removed upon revegetation. Construction activities associated with this application are expected to disturb 2.73 acres of the site.

Major Construction Activities and Sequencing:

The major construction activities for this project will include and be sequenced as follows:

1. Established Best Management Practices: Installation of silt fencing, a rock berm, a temporary spoils area, a concrete truck washout pit, and a temporary construction entrance (Estimated area to be disturbed = 0.69 Acres). These items are to remain and be maintained throughout all construction activities.
2. Demo existing structures. (Estimated area to be disturbed = 0.30 Acres)
3. Site grading operation. (Estimated area to be disturbed =1.72Acres)
4. Installation of utilities including storm, water, and wastewater. (Estimated area to disturbed = 0.97 Acres)
5. Construction of street pavement including backfill behind curbs. (Estimated area to be disturbed = 1.44 Acres)

The contractor is responsible for implementing and maintaining the stormwater pollution prevention plan which includes maintaining all the necessary erosion controls throughout construction.

ATTACHMENT D – TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

As shown on the Construction Erosion Control Plans, temporary BMP practices and measures will include installing silt fences, a rock berm, stabilized construction entrances, a concrete truck washout, and a temporary spoils area prior to beginning grading operations on the site. Temporary measures are intended to provide a method of slowing the upgradient flow, onsite flow or runoff from the construction site in order to allow sediment and suspended solids to settle out of the water. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features. As a temporary BMP, a silt fence will be installed to reduce pollutants. BMP measures utilized in this plan are intended to allow stormwater to continue downstream after passing through for treatment.

Site Preparation:

The methodology for pollution prevention of all on-site stormwater will include a) the erection of silt fences along the downgradient boundary of the construction staging area and concrete washout, b) installation of a stabilized construction entrance to reduce the dispersion of sediment from the site, c) installation of rock berm at the culvert on the downgradient boundary of the site, and d) installation of a construction staging area.

Construction:

All installed erosion control measures will be inspected, and if necessary, repaired before any additional construction begins, as well as periodically throughout the construction process. The contractor will be responsible for all maintenance of erosion control measures, as well as the installation of all remaining on-site control measures, including the concrete truck washout, as necessary.

ATTACHMENT E – REQUEST TO TEMPORARILY SEAL A FEATURE

There are no sensitive features on site.

ATTACHMENT F – STRUCTURAL PRACTICES

The proposed structural practices to control erosion and sedimentation include a stabilized construction entrance, silt fence, rock berm, concrete truck washout, and temporary spoils area. Upgradiant flows will flow around improvement areas. The onsite flow will be directed toward the downstream rock berm.

ATTACHMENT G – DRAINAGE AREA MAPS

Refer to sheets 10 and 11 of the 12 Oaks Village – Phase 1 Spine Infrastructure Plans included at the end of this package.

ATTACHMENT H – TEMPORARY SEDIMENT POND(S) PLANS AND CALCULATIONS

There are no temporary sediment ponds associated with this plan.

ATTACHMENT I – INSPECTION AND MAINTENANCE FOR BMPS

See the construction plans included with this application submittal.

Temporary Best Management Practices (BMPs) and measures will be used during construction to prevent pollution of groundwater, surface water, and naturally occurring environmental features. Silt fence, stabilized construction entrance, tree protection, rock berm, concrete washout area, and a temporary spoils area will be installed prior to beginning construction and prior to commencement of any of the activities defined in the sequence of construction as **Attachment C**. Inspection and maintenance of the on-site controls shall be performed during the site clearing and rough grading process. Refer to sheets 8 and 9 on 12 Oaks Village – Phase 1 Spine Infrastructure Plans attached for specific controls and details.

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 run-off from the site, through the use of silt fences placed immediately downstream of disturbed areas. Additionally, a rock berm will be placed on the downgradient of the onsite swale at the project boundary to prevent sedimentation runoff. These controls will remain in place throughout the entirety of construction. The Contractor is expected to inspect the controls weekly and after significant rainfalls to ensure proper function. When silt accumulates six (6) inches in depth the Contractor shall promptly remove the silt from the controls.

BMPs and measures will prevent pollutants from entering surface streams, or the aquifer by interception of stormwater potentially carrying sediment and other pollutants. BMPs and measures will implement one (1) stabilized construction entrance and a construction stockpiling/staging area to help minimize pollutant run-off and erosion generated during construction. Paved streets and driveways adjacent to these sites will be cleaned regularly to remove excess mud, dirt, or rock tracked from the site. Sedimentation will be concentrated only in these areas for efficient maintenance. Water trucks will be on-site as necessary to aid be cleaned regularly to remove excess mud, dirt or rock tracked from the site. Sedimentation will be concentrated only in these areas for efficient maintenance. Water trucks will be on-site as necessary to aid in controlling dust. BMPs will be implemented to limit/prevent contaminated inflow from entering surface streams or the aquifer. These practices are to include the following measure: the use of silt fence and a rock berm. The fabricated silt fence barricade will provide help to reduce the likelihood of contaminated runoff from entering the aquifer. If any sensitive features

are identified by TCEQ inspections, or during excavation or construction, measures appropriate to the sensitivity of the discovered feature will be enacted. No blasting is proposed.

Temporary Erosion and Sedimentation Notes:

1. The Contractor shall maintain/install erosion/sedimentation controls and tree/natural protective fencing prior to any site preparation work (clearing, grubbing, or excavation).
2. The placement of erosion/sedimentation controls and tree/natural area protective fencing shall be in accordance with the TCEQ Technical Guidance Manual and the approved Erosion and Sedimentation Control Plan. No erosion controls shall be placed beyond the property lines of the site unless written permission has been obtained from adjacent property owners.
3. A pre-construction conference shall be held on-site with the Contractor, design engineer/permit applicant and Environmental Inspector after installation of the erosion/sedimentation and tree/natural area protection measures and prior to beginning any site preparation work. The Contractor shall notify the Environmental Inspector at least three (3) days prior to the meeting date.
4. Any major variation in materials or locations of controls or fences from those shown on the approved plans will require a revision and must be approved by the reviewing engineer, environmental specialist, or city arborist as appropriate. Minor changes to be made as field revisions to the Erosion and Sedimentation Control Plan may be required by the Environmental Inspector during the course of construction to correct control inadequacies.
5. The Contractor is required to inspect the controls at weekly intervals and after significant rainfall events to ensure that they are functioning properly. The person(s) responsible for maintenance of controls shall immediately make any necessary repairs to damaged areas. Silt accumulation at controls must be removed when the depth reaches six (6) inches.
6. Prior to final acceptance by the City, haul roads and waterway crossing constructed for temporary Contractor access must be removed, accumulated sediment removed from the waterway and the area restored to the original grade and revegetated. All land-clearing debris shall be disposed of in approved soil disposal sites.
7. All work must stop if a void in the rock substrate is discovered, which is one (1) square foot in total area, blows air from within the substrate, and/or consistently received water during any rain event. At this time it is the responsibility of the project manager to immediately contact an Environmental Inspector for further investigation.
8. All slopes shall be sodded or seeded with approved grass, grass mixtures or ground cover suitable to the area and season in which they are applied.
9. Silt fences and similarly recognized techniques and materials shall be employed during construction to prevent point source sedimentation loading of downstream facilities. Such installation shall be regularly inspected for effectiveness. Additional measures may be required if, in the opinion of the City Engineer, they are warranted.
10. All temporary erosion control measures shall not be removed until final inspection and approval of the project by the engineer. It shall be the responsibility of the Contractor to maintain all temporary erosion control structures and to remove each structure as approved by the engineer.
11. Any dirt, mud, rocks, debris, etc., that is spilled, tracked, or otherwise deposited on any existing paved street shall be cleaned up immediately.

Dewatering Operations

1. Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP area under way, inspect weekly to verify continued BMP implementation.
2. Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
3. Unit-specific maintenance requirements are included with the description of each technology.
4. Sediment removed during the maintenance of a dewatering device may be either spread onsite and stabilized, or disposed of at a disposal site.

5. Sediment that is commingled with other pollutants must be disposed of in accordance with all applicable laws and regulations.

ATTACHMENT J – SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

Contractors will ensure that existing vegetation is preserved where attainable and that disturbed portions of the site will be stabilized. Stabilization practices may include but are not limited to temporary seeding, permanent seeding, mulching, geotextiles, sodding, tree protection, preservation of natural vegetation and other appropriate measures. All slopes shall be sodded or seeded with approved grass, grass mixtures or ground cover suitable to the area and season in which they are applied. Except as noted below, stabilization shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the activity has temporarily or permanently ceased. Refer to the 12 Oaks Village – Phase 1 Spine Infrastructure plans for the Existing Conditions & Tree Survey, and the Erosion & Sedimentation Control Plan, respectively.

SECTION 7: PERMANENT STORMWATER SECTION (TCEQ-0600)

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Xavier Garza, P.E.

Date: 06/16/2023

Signature of Customer/Agent

Regulated Entity Name: 12 Oaks Village

Permanent Best Management Practices (BMPs)

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

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

   ☐ N/A

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

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

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

☐ N/A

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

   ☐ N/A

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

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

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

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

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

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

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

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

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

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

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

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

   ☐ N/A

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

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

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

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

    ☑ Design calculations (TSS removal calculations)
    ☑ TCEQ construction notes
    ☑ All geologic features
    ☑ All proposed structural BMP(s) plans and specifications

    ☐ N/A

11. ☑ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:
    - ☑ Prepared and certified by the engineer designing the permanent BMPs and measures
    - ☑ Signed by the owner or responsible party
    - ☑ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    - ☑ A discussion of record keeping procedures

    ☐ N/A

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

    ☑ N/A

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

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

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

    ☐ N/A

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

    ☐ N/A

ATTACHMENT A – 20% OR LESS IMPERVIOUS COVER WAIVER

Not applicable.

ATTACHMENT B – BMPS FOR UPGRADIENT STORMWATER

There are no offsite flows that will be captured in the proposed storm infrastructure. A majority of upgradient flow concentrates upstream of the site in the tributary of the North Fork San Gabrial River which flows through the south-central portion of the site. A small portion of existing upgradient drainage flows via overland flow to the tributary. The portion of overland flow will be directed around the area of improvements towards the tributary via an existing swale along the eastern site boundary or the proposed culverts. All upgradient flow will leave the site along the eastern boundary via the tributary. The proposed development will not cause an adverse impact on the water quality of upgradient stormwater flowing through the site.

ATTACHMENT C – BMPS FOR ON-SITE STORMWATER

The project site is located within the Edwards Aquifer Recharge Zone. There is an existing natural channel running through the south-central portion of the site. The proposed infrastructure includes 0.58 acres of impervious cover, roughly 1.2% of the total site area. The proposed infrastructure improvements will produce an additional load of 505 lbs/yr of TSS. A total of 0.55 acres (94.8%) of the infrastructure improvements impervious cover will be directed toward the proposed Contech Jellyfish for water quality treatment. The Contech Jellyfish will remove more than the required 80% of the increase in TSS load, for a total load removal of 528 lbs/yr of TSS.

The Contech Jellyfish and associated infrastructure are currently proposed to be constructed and installed by the 12 Oaks Village – Phase 1 Spine Infrastructure plans. Detention for the 12 Oaks Village – Phase 1 Spine Infrastructure improvements will be handled by the 12 Oaks Village Regional Detention Pond.

ATTACHMENT D – BMP'S FOR SURFACE STREAMS

No portion of this project is located within the 100-year floodplain as defined by FEMA FIRM Pannel No. 48491C0275E, September 26, 2008. Stormwater from the improvement area will be treated before entering the tributary on site. Detention will be handled via the inline pond as designed with the 12 Oaks Village Regional Detention Pond plans to ensure no increase in velocities. There will be no other impacts on the existing jurisdiction waters by construction.

ATTACHMENT E – REQUEST TO SEAL FEATURES

Not applicable.

ATTACHMENT F – CONSTRUCTION PLANS

The 12 Oaks Village – Phase 1 Spine Infrastructure plans are included at the end of this package.

ATTACHMENT G - INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

Jellyfish Filter

These maintenance guidelines were prepared at the request of the TCEQ with regard to their approval of an Edwards Aquifer Protection Plan for the 12 Oaks Village Phase 1 Spine Infrastructure Plans. These guidelines apply to the permanent stormwater controls constructed for this project. The Jellyfish Filter is approved for inclusion in "Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices" (Revised July 5, 2005).

General

The Jellyfish Filter is an engineered stormwater quality treatment technology featuring unique membrane filtration in a compact stand-alone treatment system that removes a wide variety of stormwater pollutants. The Jellyfish Filter integrates pre-treatment and filtration with passive self-cleaning mechanisms. The system utilizes membrane filtration cartridges with very high filtration surface area and flow capacity, which provide the advantages of high sediment capacity and low filtration flux rate (flow per unit surface area) at a relatively low driving head.

Each lightweight Jellyfish Filter cartridge consists of multiple detachable membrane-encased filter elements ("filtration tentacles") attached to a cartridge head plate.

Limiting requirements for the Jellyfish Filter are as follows:

- Typically requires 18 inches of drop across the system (can be as low as 9 inches)
- Requires regular (minimum annually) inspection and/or maintenance

The Jellyfish Filter for the 12 Oaks Village Phase 1 Spine Infrastructure Plan shall be per the specification as described in the detail provided in the construction plans. The owner shall operate the Jellyfish Filter per the guidelines in the Jellyfish Filter Owner's Manual.

Maintenance

The primary purpose of the Jellyfish Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, captured pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to ensure the proper functioning of the system. Maintenance frequencies and requirements of the Jellyfish Filter are site-specific and vary depending on pollutant loading.

Maintenance activities typically include some combination of the following:

- Removal of sediment for depths 12 inches or greater or every 3 years (whichever occurs first)
- Removal of oil, floatable trash, and debris
- Deck cleaned and free from sediment
- Rinsing and re-installing the filter cartridges every 12 months at minimum or as required based on the most recent inspection results (whichever occurs first)
- Replace filter cartridge tentacles, as needed
- Replace or repair damages or missing components

The unit maintenance and cleaning must be performed annually at a minimum as described here and as outlined in the Jellyfish Filter Owner's Manual. Additionally, the unit is required to be cleaned immediately after an oil, fuel, or chemical spill and is recommended to be cleaned after a major runoff event. The Jellyfish Filter should be inspected and maintained by professional vacuum cleaning service providers with experience in the

maintenance of underground tanks, sewers, and catch basins. Only professional service providers trained in confined space entry procedures should enter the vessel.

Filter cartridges should be tested for adequate flow rate every 12 months and cleaned, re-commissioned, or replaced if necessary. A manual backflush must be performed on a single draindown cartridge using a Jellyfish Cartridge Backflush Pipe as described in the Jellyfish Filter Owner's Manual. If the time required to drain 14 gallons of backflush water from the Backflush Pipe (from the top of pipe to the top of the open flapper valve) exceeds 15 seconds, it is recommended to perform a manual backflush on each of the cartridges. After the manual backflush, the draindown test should be repeated on a single cartridge to determine if the cartridge can drain 14 gallons of water in 15 seconds. If the cartridge still does not achieve the design flow rate, it must be replaced.

External rinsing of the cartridge is performed by removing the cartridge from the cartridge deck and externally rinsing the filtration tentacles using a low-pressure water sprayer, as described in the Jellyfish Filter Owner's Manual. If this procedure is performed within the structure, the cartridge or individual filtration tentacles should be rinsed while safely suspended over the maintenance access wall opening in the cartridge deck, such that rinse water flows into the lower chamber of the Jellyfish Filter. If the rinsing procedure is performed outside the structure, the cartridge or individual filtration tentacles should be rinsed in a suitable basin such as a plastic barrel or tub, and rinse water subsequently poured into the maintenance access wall opening in the cartridge deck. Sediment is subsequently removed from the lower chamber by standard vacuum service.

Inspections

Inspection activities are typically conducted from the surface and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the maintenance access wall or inlet bay for vault systems

Post-construction inspection is required prior to placing the Jellyfish Filter into service. All construction debris or construction-related sediment within the device must be removed, and any damage to system components repaired. Inspection should be performed every 4 months during the first year (12 months) of operation to accurately assess the sediment and floatable pollutant accumulation, and to ensure that the automatic backwash feature is functioning properly. After the first year of operation, inspection shall occur on an annual basis at a minimum. Additional inspections are required to be performed immediately after an upstream oil, fuel, or other chemical spill and are recommended to occur after each major storm event.

An amended copy of this document will be provided to the TCEQ within thirty (30) days if any changes in the following information:

Responsible Party for Maintenance:	12 Oaks Village, LP
Address:	7801 N. Capital of Texas Highway, Suite 390
City, State, Zip:	Austin, TX 78731
Telephone Number:	512.901.9800

Signature of Responsible Party

Thomas Mote | Sr. Vice President

ATTACHMENT H – PILOT-SCALE FIELD TESTING PLAN

Not applicable.

ATTACHMENT I – MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Stormwater from the improvement area will be treated before entering the tributary on-site. Detention will be handled via the inline pond as designed with the 12 Oaks Village Regional Detention Pond plans to ensure no increase in velocities. There will be no other impacts on the existing jurisdiction waters by construction.

SECTION 8: AGENT AUTHORIZATION FORM (TCEQ-0599)

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

I Thomas Mote,
Print Name

Sr. Vice President,
Title - Owner/President/Other

of 12 Oaks Village, LP,
Corporation/Partnership/Entity Name

have authorized Xavier Garza, P.E.
Print Name of Agent/Engineer

of HR Green
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

4/24/23
Date

THE STATE OF Texas §

County of Travis §

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

GIVEN under my hand and seal of office on this 24 day of April, 2023.

CANDACE KUXHOUSE
My Notary ID # 133648392
Expires March 16, 2026

NOTARY PUBLIC

Candace Kuxhouse
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 3/16/2026

SECTION 9: APPLICATION FEE FORM (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: 12 Oaks Village
Regulated Entity Location: Highway 29 W, LIBERTY HILL, TX 78642
Name of Customer: 12 Oaks Village, L.P.
Contact Person: Xavier Garza, P.E. Phone: 512.872.6696
Customer Reference Number (if issued):CN 606140317
Regulated Entity Reference Number (if issued):RN 111738357

Austin Regional Office (3373)

☐ Hays ☐ Travis ☑ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☑ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***		***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	N/A	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	N/A	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	47.67	Acres	$ 8,000.00
Sewage Collection System	1,061	L.F.	$ 650.00
Lift Stations without sewer lines	N/A	Acres	$
Underground or Aboveground Storage Tank Facility	N/A	Tanks	$
Piping System(s)(only)	N/A	Each	$
Exception	N/A	Each	$
Extension of Time	N/A	Each	$

Signature: Xavier Garza Date: 6/16/2023

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

SECTION 10: CORE DATA FORM (TCEQ-10400)

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 606140317		RN 111738357

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy) 3/18/2021

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

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

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

12 Oaks Village, LP

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0803980717	32078317453		

11. Type of Customer:

☐ Corporation ☐ Individual Partnership: ☐ General ☒ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees

☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?

☐ **Yes** ☐ **No**

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

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

15. Mailing Address:	8310 N CAPITAL OF TX HWY						
	STE 150						
	City	AUSTIN	**State**	TX	**ZIP**	78731	**ZIP + 4**

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

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

(512) 901-9800		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

12 Oaks Village

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	Ronald Regan Blvd and State Highway 29							
	City	Liberty Hill	**State**	TX	**ZIP**	78642	**ZIP + 4**	
24. County	Williamson							

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

25. Description to Physical Location:	Northeast at the intersectin of Ronald Regan Blvd and State Highway 29				
26. Nearest City			**State**	**Nearest ZIP Code**	
Liberty Hill			TX	78642	

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

27. Latitude (N) In Decimal:	30.638889		**28. Longitude (W) In Decimal:**	-97.819444	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	38	20	97	49	10

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
6552	6512	237210	236220

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

Land Developement

34. Mailing Address:	**8310 N CAPITAL OF TX HWY**							
	STE 150							
	City	**AUSTIN**	**State**	**TX**	**ZIP**	**78731**	**ZIP + 4**	
35. E-Mail Address:	**tom@jwdevelopmentinc.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 901-9800		( ) -

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

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

SECTION IV: Preparer Information

40. Name:	Xavier Garza, P.E.	**41. Title:**	Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 872-6696		**(** 713 **)** 965-0044	xavier.garza@hrgreen.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:	HR Green	**Job Title:**	Engineer	
Name *(In Print):*	Xavier Garza		**Phone:**	**(** 512 **)** 872- **6696**
Signature:			**Date:**	06/16/2023

CONSTRUCTION PLANS FOR
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS 78642

FLOODPLAIN INFORMATION:

NO PORTION OF THIS TRACT IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0275E, EFFECTIVE SEPTEMBER 26, 2008 , COMMUNITY: WILLIAMSON COUNTY.

BENCHMARK:

BENCHMARK LIST: NAVD 88 - OPUS

BM 1: SQUARE CUT ON TOP OF CURB ON THE NOSE OF THE MEDIAN AT KAUFFMAN LOOP AND S.H. HWY. 29, NORTH SIDE OF S.H. HWY. 29.
ELEVATION = 982.16'.

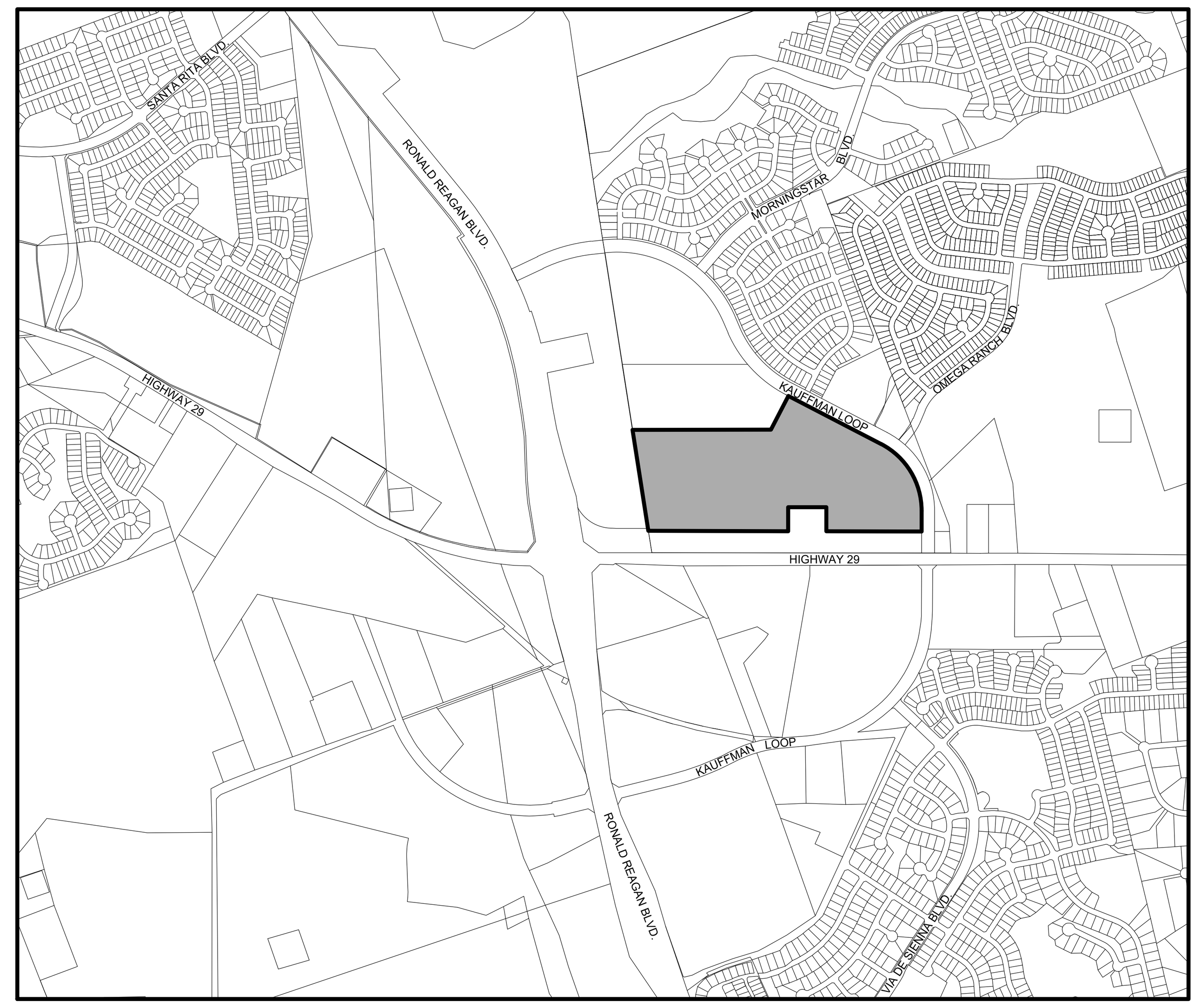
BM 23: SQUARE WITH CUT X ON NORTH CORNER OF A CONCRETE TRANSFORMER PAD LOCATED APPROXIMATELY 940 FEET NORTH OF S.H. 29 NORTH EDGE OF PAVEMENT AND APPROXIMATELY 90 FEET SOUTHWEST OF THE CENTER OF MEDIAN OF KAUFFMAN LOOP.
ELEVATION = 968.52'

COUNTY NOTE:

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

NOTE TO CONTRACTOR:

ALL FITTINGS AND WYES SHALL BE PRECAST ELEMENTS AND NOT CAST-IN-PLACE WITHOUT PRIOR APPROVAL FROM THE COUNTY.



VICINITY MAP
SCALE: 1"=1300'

SHEET LIST TABLE

NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	PLAT 1 OF 1
4	PLAT 2 OF 3
5	PLAT 3 OF 3
6	EXISTING CONDITIONS, TREE & DEMOLITION PLAN 1 OF 2
7	EXISTING CONDITIONS, TREE & DEMOLITION PLAN 2 OF 2
8	EROSION, SEDIMENTATION CONTROL & TREE PLAN 1 OF 2
9	EROSION, SEDIMENTATION CONTROL & TREE PLAN 2 OF 2
10	PRE DEVELOPED DRAINAGE AREA MAP
11	DEVELOPED DRAINAGE AREA MAP
12	SITE & DIMENSION PLAN 1 OF 2
13	SITE & DIMENSION PLAN 2 OF 2
14	SIGN LAYOUT PLAN
15	GRADING PLAN
16	SPINE A PLAN & PROFILE
17	DECELERATION LANE PLAN (SOUTH)
18	DECELERATION LANE PLAN (NORTH)
19	OVERALL UTILITY PLAN
20	INLET DRAINAGE MAP
21	OVERALL STORM PLAN
22	CULVERT A & STORM A PLAN & PROFILE
23	CULVERT B & CULVERT C PLAN & PROFILE
24	OVERALL WATER PLAN
25	WATER LINE A PLAN & PROFILE
26	OVERALL WASTEWATER PLAN
27	WASTEWATER LINE A PLAN & PROFILE
28	WASTEWATER LINE B & C PLAN & PROFILE
29	CONSTRUCTION DETAILS 1 OF 3
30	CONSTRUCTION DETAILS 2 OF 3
31	CONSTRUCTION DETAILS 3 OF 3
32	TxDOT STANDARD DETAILS 1 OF 3
33	TxDOT STANDARD DETAILS 2 OF 3

LEGAL DESCRIPTION

49.564 ACRES OF LAND IN THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, WILLIAMSON COUNTY, TEXAS; BEING A PORTION OF THAT CALLED 92.314 ACRE TRACT OF LAND DESCRIBED IN THE SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO 12 OAKS VILLAGE, LP OF RECORD IN DOCUMENT NO. 2021100741, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, AND CORRECTED IN THE CORRECTION AFFIDAVIT OF RECORD IN DOCUMENT NO. 2021195904, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

APPLICATION SUBMITTAL DATE:
MAY 2023

CERTIFICATE OF THE LICENSED ENGINEER

THE STATE OF TEXAS
CITY OF LIBERTY HILL

KNOW ALL MEN BY THESE PRESENTS

THAT, I XAVIER GARZA-ROBLEDO, P.E., DO HEREBY CERTIFY THAT THE INFORMATION CONTAINED ON THESE CONSTRUCTION PLANS COMPLIES WITH THE SUBDIVISION REGULATIONS FOR THE CITY OF LIBERTY HILL, TEXAS AND THAT THE 100 YEAR FLOODPLAIN IS AS SHOWN AND WILL BE CONTAINED WITHIN THE DRAINAGE EASEMENT AND OR DRAINAGE RIGHT-OF-WAY, AS SHOWN HEREON.

STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED
PROFESSIONAL ENGINEER

Xavier Garza — 06/16/2023

XAVIER GARZA-ROBLEDO P.E. — DATE
HR GREEN
5508 HIGHWAY 290 WEST, SUITE 150
AUSTIN, TEXAS 78735
512 872-6696

OWNER:

12 OAKS VILLAGE, L.P.
7801 N. CAPITAL OF TEXAS HWY,
SUITE 390
AUSTIN, TEXAS 78731

ENGINEER/SURVEYOR:

HRGreen
DEVELOPMENT TX
TBPE NO: 16384 - TBPLS NO: 10194101
5508 HIGHWAY 290 WEST SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM

APPROVED AND ACCEPTANCE:

CITY OF LIBERTY HILL DIRECTOR OF PLANNING

CITY OF LIBERTY HILL CITY ENGINEER
CURTIS R. STEGER, P.E.

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.

GEORGETOWN UTILITY SYSTEM

REVIEWED FOR COMPLIANCE WITH COUNTY REQUIREMENTS (WCSR2021B):

WILLIAMSON COUNTY

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.

REVISIONS / CORRECTIONS

Number	Description	Revise (R) Add (A) Void (V) Sheet No.'s	Sheets in Plan set	City of Liberty Hill Approval	Approval Date

NO.	REVISION	BY	DATE

811
Know what's below. Call before you dig.

5508 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

HRGreen
DEVELOPMENT TX

COVER SHEET
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 1 OF 33

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) GENERAL CONSTRUCTION NOTES

1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES 30 TEXAS ADMINISTRATIVE CODE (TAC) §§213.5(C) AND 217.51 - 217.70 AND 30 TAC CHAPTER 217, SUBCHAPTER D, AND THE CITY OF LIBERTY HILL STANDARD SPECIFICATIONS.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROPOSED REGULATED PROJECT MUST BE PROVIDED WITH COPIES OF THE SEWAGE COLLECTION SYSTEM PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS MUST BE REQUIRED TO KEEP ON-SITE COPIES OF THE PLAN AND THE APPROVAL LETTER.

3. NO LATER THAN 48 HOURS PRIOR TO COMMENCING ANY REGULATED ACTIVITY, THE APPLICANT OR HIS AGENT MUST NOTIFY THE REGIONAL OFFICE, IN WRITING, OF THE DATE ON WHICH THE REGULATED ACTIVITY WILL BEGIN.

4. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED SCS APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF AN SCS APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.

5. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION, MUST BE MAINTAINED DURING CONSTRUCTION, AND MUST BE REMOVED WHEN SUFFICIENT VEGETATION IS ESTABLISHED TO CONTROL THE EROSION AND SEDIMENTATION AND THE CONSTRUCTION AREA IS STABILIZED.

6. THE SEWER LINE TRENCH DETAILS SHOWING THE CROSS SECTION WITH THE DIMENSIONS, PIPE PLACEMENT, AND BACKFILL INSTRUCTIONS ARE INCLUDED ON PLAN SHEET 30 OF 30 OF THESE PLANS. ALL SEWER PIPES JOINTS MUST MEET THE REQUIREMENTS IN 30 TAC §§217.53(C) AND 217.65. GRAVITY LINES MUST HAVE A SDR 26 OR LESS. PRESSURIZED SEWER SYSTEMS MUST HAVE PIPE WITH A MINIMUM WORKING PRESSURE RATING OF 150 PSI. THE ASTM, ANSI, OR AWWA SPECIFICATION NUMBERS FOR THE PIPE(S) AND JOINTS ARE ASTM D 3034 AND ASTM 2214. THE PIPE MATERIAL, THE PRESSURE CLASSES, AND THE SDR AND/OR DR DESIGNATIONS ARE SDR 26 PVC-160 PSI.

7. 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 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY 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 WITHIN TWO WORKING DAYS. THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.

8. 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 SIX (6) INCHES.

9. 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.

10. 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 30 OF 30.

    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.

11. 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).

12. WHERE SEWERS LINES DEVIATE FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER: ________________________
    IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: ________________________

    SPECIFIC CARE MUST BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC §217.54.

13. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS. THE LOCATION OF SUCH STUB OUTS MUST BE MARKED ON THE GROUND SUCH THAT THEIR LOCATION CAN BE EASILY DETERMINED AT THE TIME OF CONNECTION OF THE EXTENSIONS. SUCH STUB OUTS MUST BE MANUFACTURED WYES OR TEES THAT ARE COMPATIBLE IN SIZE AND MATERIAL WITH BOTH THE SEWER LINE AND THE EXTENSION. AT THE TIME OF ORIGINAL CONSTRUCTION, NEW STUB-OUTS MUST BE CONSTRUCTED SUFFICIENTLY TO EXTEND BEYOND THE END OF THE STREET PAVEMENT. ALL STUB-OUTS MUST BE SEALED WITH A MANUFACTURED CAP TO PREVENT LEAKAGE. EXTENSIONS THAT WERE NOT ANTICIPATED AT THE TIME OF ORIGINAL CONSTRUCTION OR THAT ARE TO BE CONNECTED TO AN EXISTING SEWER LINE NOT FURNISHED WITH STUB OUTS MUST BE CONNECTED USING A MANUFACTURED SADDLE AND IN ACCORDANCE WITH ACCEPTED PLUMBING TECHNIQUES.

    IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET __ OF __. (FOR POTENTIAL FUTURE LATERALS).

    THE PRIVATE SERVICE LATERAL STUB-OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEET __ OF __ AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEET __ OF __.

14. TRENCHING, BEDDING AND BACKFILL MUST CONFORM WITH 30 TAC §217.54. THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE MUST COMPLY WITH THE STANDARDS OF ASTM D-2321, CLASSES IA, IB, II OR III. RIGID PIPE BEDDING MUST COMPLY WITH THE REQUIREMENTS OF ASTM C 12 (ANSI A 106.2) CLASSES A, B OR C.

15. 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).

16. 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) LOW PRESSURE AIR TEST MUST FOLLOW THE PROCEDURES DESCRIBED IN AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) C-828, ASTM C-924, OR ASTM F-1417 OR OTHER PROCEDURE APPROVED BY THE EXECUTIVE DIRECTOR, EXCEPT AS TO TESTING TIMES AS REQUIRED IN TABLE C.3 IN SUBPARAGRAPH (C) OF THIS PARAGRAPH OR EQUATION C.3 IN SUBPARAGRAPH (B)(II) OF THIS PARAGRAPH.

(B) FOR SECTIONS OF COLLECTION SYSTEM PIPE LESS THAN 36 INCH AVERAGE INSIDE DIAMETER, THE FOLLOWING PROCEDURE MUST APPLY, UNLESS A PIPE IS TO BE TESTED AS REQUIRED BY PARAGRAPH (2) OF THIS SUBSECTION.
(I) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.

(II) ONCE THE PRESSURE IS STABILIZED, THE MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 PSI GAUGE TO 2.5 PSI GAUGE IS COMPUTED FROM THE FOLLOWING EQUATION:

EQUATION C.3

$$T = \frac{0.085 \times D \times K}{Q}$$

WHERE:
T = TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS
K = 0.000419 X D X L, BUT NOT LESS THAN 1.0
D = AVERAGE INSIDE PIPE DIAMETER IN INCHES
L = LENGTH OF LINE OF SAME SIZE BEING TESTED, IN FEET
Q = RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOOT INTERNAL SURFACE

(C) SINCE A K VALUE OF LESS THAN 1.0 MAY NOT BE USED, THE MINIMUM TESTING TIME FOR EACH PIPE DIAMETER IS SHOWN IN THE FOLLOWING TABLE C.3:

(A) AN OWNER MAY STOP A TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME.
(E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
(F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
(G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.
(2) INFILTRATION/EXFILTRATION TEST.

(A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.

(B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.

(C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE, OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.

(D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARGRAPH (C) OF THIS PARAGRAPH.

(E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.

(B) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:

(1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.

(A) MANDREL SIZING.
(I) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE ASTMS, AMERICAN WATER WORKS ASSOCIATION, UNI-BELL, OR AMERICAN NATIONAL STANDARDS INSTITUTE, OR ANY RELATED APPENDIX.

(II) IF A MANDREL SIZING DIAMETER IS NOT SPECIFIED IN THE APPROPRIATE STANDARD, THE MANDREL MUST HAVE AN OD EQUAL TO 95% OF THE ID OF A PIPE. IN THIS CASE, THE ID OF THE PIPE, FOR THE PURPOSE OF DETERMINING THE OD OF THE MANDREL, MUST EQUAL BE THE AVERAGE OUTSIDE DIAMETER MINUS TWO MINIMUM WALL THICKNESSES FOR OD CONTROLLED PIPE AND THE AVERAGE INSIDE DIAMETER FOR ID CONTROLLED PIPE.

(III) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.

(B) MANDREL DESIGN.

(I) A RIGID MANDREL MUST BE CONSTRUCTED OF A METAL OR A RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.

(II) A MANDREL MUST HAVE NINE OR MORE ODD NUMBER OF RUNNERS OR LEGS.

(III) A BARREL SECTION LENGTH MUST EQUAL AT LEAST 75% OF THE INSIDE DIAMETER OF A PIPE.

(IV) EACH SIZE MANDREL MUST USE A SEPARATE PROVING RING.

(C) METHOD OPTIONS.
(I) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.

(II) A TEST MAY NOT USE TELEVISION INSPECTION AS A SUBSTITUTE FOR A DEFLECTION TEST.

(III) IF REQUESTED, THE EXECUTIVE DIRECTOR MAY APPROVE THE USE OF A DEFLECTOMETER OR A MANDREL WITH REMOVABLE LEGS OR RUNNERS ON A CASE-BY-CASE BASIS.

(2) FOR A GRAVITY COLLECTION SYSTEM PIPE WITH AN INSIDE DIAMETER 27 INCHES AND GREATER, OTHER TEST METHODS MAY BE USED TO DETERMINE VERTICAL DEFLECTION.

(3) A DEFLECTION TEST METHOD MUST BE ACCURATE TO WITHIN PLUS OR MINUS 0.2% DEFLECTION.

(4) AN OWNER SHALL NOT CONDUCT A DEFLECTION TEST UNTIL AT LEAST 30 DAYS AFTER THE FINAL BACKFILL.

(5) GRAVITY COLLECTION SYSTEM PIPE DEFLECTION MUST NOT EXCEED FIVE PERCENT (5%).

(6) IF A PIPE SECTION FAILS A DEFLECTION TEST, AN OWNER SHALL CORRECT THE PROBLEM AND CONDUCT A SECOND TEST AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.

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

17. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58.
(A) ALL MANHOLES MUST PASS A LEAKAGE TEST.
(B) AN OWNER SHALL TEST EACH MANHOLE (AFTER ASSEMBLY AND BACKFILLING) FOR LEAKAGE, SEPARATE AND INDEPENDENT OF THE COLLECTION SYSTEM PIPES, BY HYDROSTATIC EXFILTRATION TESTING, VACUUM TESTING, OR OTHER METHOD APPROVED BY THE EXECUTIVE DIRECTOR.
(1) HYDROSTATIC TESTING.
(A) THE MAXIMUM LEAKAGE FOR HYDROSTATIC TESTING OR ANY ALTERNATIVE TEST METHODS IS 0.025 GALLONS PER FOOT DIAMETER PER FOOT OF MANHOLE DEPTH PER HOUR.
(B) TO PERFORM A HYDROSTATIC EXFILTRATION TEST, AN OWNER SHALL SEAL ALL WASTEWATER PIPES COMING INTO A MANHOLE WITH AN INTERNAL PIPE PLUG, FILL THE MANHOLE WITH WATER, AND MAINTAIN THE TEST FOR AT LEAST ONE HOUR.
(C) A TEST FOR CONCRETE MANHOLES MAY USE A 24-HOUR WETTING PERIOD BEFORE TESTING TO ALLOW SATURATION OF THE CONCRETE.
(2) VACUUM TESTING.
(A) TO PERFORM A VACUUM TEST, AN OWNER SHALL PLUG ALL LIFT HOLES AND EXTERIOR JOINTS WITH A NON-SHRINK GROUT AND PLUG ALL PIPES ENTERING A MANHOLE.
(B) NO GROUT MUST BE PLACED IN HORIZONTAL JOINTS BEFORE TESTING.
C) STUB-OUTS, MANHOLE BOOTS, AND PIPE PLUGS MUST BE SECURED TO PREVENT MOVEMENT WHILE A VACUUM IS DRAWN.
(D) AN OWNER SHALL USE A MINIMUM 60 INCH/LB TORQUE WRENCH TO TIGHTEN THE EXTERNAL CLAMPS THAT SECURE A TEST COVER TO THE TOP OF A MANHOLE.
(E) A TEST HEAD MUST BE PLACED AT THE INSIDE OF THE TOP OF A CONE SECTION, AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
(F) THERE MUST BE A VACUUM OF 10 INCHES OF MERCURY INSIDE A MANHOLE TO PERFORM A VALID TEST.
(G) A TEST DOES NOT BEGIN UNTIL AFTER THE VACUUM PUMP IS OFF.
(H) A MANHOLE PASSES THE TEST IF AFTER 2.0 MINUTES AND WITH ALL VALVES CLOSED, THE VACUUM IS AT LEAST 9.0 INCHES OF MERCURY.

18. 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.

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABATEMENT PLAN GENERAL CONSTRUCTION NOTES

1. WRITTEN CONSTRUCTION NOTIFICATION MUST BE GIVEN TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION MUST INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR AND THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.

3. IF ANY SENSITIVE FEATURE IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.

4. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM IS INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL, OR OTHER SENSITIVE FEATURE.

5. PRIOR TO COMMENCEMENT OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE TEMPORARY STORM WATER SECTION OF THE APPROVED EDWARDS AQUIFER PROTECTION PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

6. 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).

7. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

8. 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).

9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.

10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 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 TEMPORARY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;

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

    C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

IMPERVIOUS COVER ASSUMPTIONS
LOTS <10K SQ FT= 3500 SQ FT
LOTS >10K SQ FT= 4000 SQ FT

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY STANDARD SPECIFICATIONS MANUAL.
2. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., NOT PLANNED FOR DESTRUCTION OR REMOVAL THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED AT HIS EXPENSE.
3. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH THE CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER WHO SHALL BE RESPONSIBLE FOR REVISING THE PLANS ARE APPROPRIATE.
4. MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, ETC. SHALL BE RAISED TO FINISHED GRADE PRIOR TO FINAL PAVING CONSTRUCTION.
5. THE CONTRACTOR SHALL GIVE THE CITY 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. TELEPHONE 218-5555 (ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT).
6. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. REVEGETATION OF ALL DISTURBED OR EXPOSED AREAS SHALL CONSIST OF SODDING OR SEEDING, AT THE CONTRACTOR'S OPTION. HOWEVER, THE TYPE OF REVEGETATION MUST EQUAL OR EXCEED THE TYPE OF VEGETATION PRESENT BEFORE CONSTRUCTION.
7. PRIOR TO ANY CONSTRUCTION, THE ENGINEER SHALL CONVENE A PRECONSTRUCTION CONFERENCE BETWEEN THE CITY , HIMSELF, THE CONTRACTOR, OTHER UTILITY COMPANIES, ANY AFFECTED PARTIES AND ANY OTHER ENTITY THE CITY OR ENGINEER MAY REQUIRE.
8. THE CONTRACTOR AND THE ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY ACCURATE "AS-BUILT" DRAWINGS FOLLOWING COMPLETION OF ALL CONSTRUCTION. THESE "AS-BUILT" DRAWINGS SHALL MEET WITH THE SATISFACTION OF THE ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT PRIOR TO FINAL ACCEPTANCE.
9. THE ROUND ROCK CITY COUNCIL SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
10. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND ANY TEMPORARY EASEMENTS. PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. CLEAN-UP SHALL BE TO THE SATISFACTION OF THE CITY ENGINEER.
11. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL APPLY FOR AND SECURE ALL PROPER PERMITS FROM THE APPROPRIATE AUTHORITIES.
12. AVAILABLE BENCHMARKS (CITY DATUM) THAT MAY BE UTILIZED FOR THE CONSTRUCTION OF THIS PROJECT ARE DESCRIBED AS FOLLOWS:
13. MAXIMUM OF 80% IMPERVIOUS COVER PER LOT, OTHERWISE STORMWATER MANAGEMENT CONTROLS SHALL BE DESIGNED, CONSTRUCTED AND MAINTAINED BY OWNER. IF IMPERVIOUS COVER IS PROPOSED TO EXCEED MAXIMUM PERCENTAGE ALLOWED, CONTACT WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATION TO REVIEW THE STORMWATER MANAGEMENT CONTROLS PROPOSED ON LOT.
14. A FLOODPLAIN DEVELOPMENT PERMIT MAY BE REQUIRED FOR BLOCK A LOT 2 PRIOR TO ANY CONSTRUCTION OR DEVELOPMENT. THE NEED FOR A FLOODPLAIN DEVELOPMENT PERMIT WILL BE DETERMINED BY WLLIAMSON COUNTY UPON REVIEW OF THE PROPOSED STRUCTURE LOCATION.
15. THE MINIMUM FINISHED FLOOR ELEVATIONS (FFE) FOR LOTS SHOWN ON THIS PLAT ARE DETERMINED BY A STUDY PREPARED BY HR GREEN, LLC, DATED MARCH 9, 2023.
16. FLOODPLAIN INFORMATION, SUCH AS FLOODPLAIN BOUNDARIES, DEPTHS, ELEVATIONS, AND THE MINIMUM FINISHED FLOOR ELEVATIONS SHOWN ON THIS PLAT, WILL CHANGE OVER TIME WITH BETTER DATA AND FLOOD STUDIES. THE FLOODPLAIN INFORMATION SHOWN ON THIS PLAT WAS ACCURATE AT THE TIME OF PLATTING, BUT MAY BE SUPERSEDED AT THE TIME OF CONSTRUCTION. THE BEST AVAILABLE FLOODPLAIN DATA SHALL BE UTILIZED AT THE TIME OF CONSTRUCTION, AS DETERMINED BY THE WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATOR. A FLOODPLAIN DEVELOPMENT PERMIT APPLICATION MUST BE SUBMITTED AND APPROVED PRIOR TO ANY CONSTRUCTION OR DEVELOPMENT WITHIN OR ADJACENT TO A REGULATED FLOODPLAIN.
17. DETENTION IS PROVIDED BY DETENTION POND LOCATED ON LOT 2 BLOCK A, AND IN ACCORDANCE WITH THE TERMS OF THE DEVELOPMENT AGREEMENT BETWEEN 12 OAKS VILLAGE, LP, KAUFFMAN MULTIFAMILY PARTNERS, LLC, AND WILLIAMSON COUNTY DATED, OCTOBER 5TH, 2022.

CITY OF GEORGETOWN GENERAL NOTES

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S CONCURRENCE 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 PROJECT OF THE CITY
3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.
4. WASTEWATER MAINS AND SERVICE LINES SHALL BE SDR 26 PVC.
5. WASTEWATER MAINS SHALL BE INSTALLED WITHOUT HORIZONTAL OR VERTICAL BENDS.
6. MAXIMUM DISTANCE BETWEEN WASTEWATER MANHOLES IS 500 FEET.
7. WASTEWATER MAINS SHAFT 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 CREATED 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 SHAFT 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 150 PSI FOR,4 HOURS.
13. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTIAINED AND THRUST BLOCKED.
14. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
15. ALL WATER LINES ARE TO BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.
16. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.
17. FLEXIBLE BASE MATERIAL FOR PUBLIC STREETS SHAFT 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 ACCEPTANCE OF THE PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 1 YEAR IN THE AMOUNT OF 25% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.
21. RECORD DRAWINGS OF THE PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANŒ OF THE PROJECT. THESE DRAWINGS SHALL BE ON MYLAR OR ON TIFF OR PDF (300P DPI). IF A DISK IS SUBMITTED, A BOND SET SHALL BE INCLUDED WITH THE DISK.

TRENCH SAFETY NOTES:

1. IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U. S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES OVER 5 FEET IN DEPTH IN EITHER HARD AND COMPACT OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT (WILL BE PROVIDED BY THE CONTRACTOR; ARE ON SHEET _______, ETC.).
2. IN ACCORDANCE WITH THE U. S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, WHEN PERSONS ARE IN TRENCHES 4-FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.
3. IF TRENCH SAFETY SYSTEM DETAILS WERE NOT PROVIDED IN THE PLANS BECAUSE TRENCHES WERE ANTICIPATED TO BE LESS THAN 5 FEET IN DEPTH AND DURING CONSTRUCTION IT IS FOUND THAT TRENCHES ARE IN FACT 5 FEET OR MORE IN DEPTH OR TRENCHES LESS THAN 5 FEET IN DEPTH ARE IN AN AREA WHERE HAZARDOUS GROUND MOVEMENT IS EXPECTED, ALL CONSTRUCTION SHALL CEASE, THE TRENCHED AREA SHALL BE BARRICADED AND THE ENGINEER NOTIFIED IMMEDIATELY. CONSTRUCTION SHALL NOT RESUME UNTIL APPROPRIATE TRENCH SAFETY SYSTEM DETAILS, AS DESIGNED BY A PROFESSIONAL ENGINEER, ARE RETAINED AND COPIES SUBMITTED TO THE CITY .

STREET AND DRAINAGE NOTES:

1. ALL TESTING SHALL BE DONE BY AN INDEPENDENT LABORATORY AT THE OWNER'S EXPENSE. ANY RETESTING SHALL BE PAID FOR BY THE CONTRACTOR. A CITY INSPECTOR SHALL BE PRESENT DURING ALL TESTS. TESTING SHALL BE COORDINATED WITH THE CITY INSPECTOR AND HE SHALL BE GIVEN A MINIMUM OF 24 HOURS NOTICE PRIOR TO ANY TESTING. TELEPHONE (512) 778-5449 (INSPECTIONS).
2. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 3" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 3" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE.
3. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT INCLUDING GAS, ELECTRIC, TELEPHONE, CABLE TV, WATER SERVICES, ETC., SHALL BE A MINIMUM OF 30" BELOW SUBGRADE.
4. STREET RIGHTS-OF-WAY SHALL BE GRADED AT A SLOPE OF 1/4" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT 1/4" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT.
5. BARRICADES BUILT TO CITY STANDARDS SHALL BE CONSTRUCTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
6. ALL R.C.P. SHALL BE MINIMUM CLASS III.
7. WHERE PI'S ARE OVER 20, SUBGRADES MUST BE STABILIZED UTILIZING A METHOD ACCEPTABLE TO THE CITY ENGINEER. THE GEOTECHNICAL ENGINEER SHALL RECOMMEND AN APPROPRIATE SUBGRADE STABILIZATION IF SULFATES ARE DETERMINED TO BE PRESENT.

WATER AND WASTEWATER NOTES:

1. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 200), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200 PSI, DR 9).
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE CITY ENGINEER, DEPTH OF COVER FOR ALL LINES OUT OF THE PAVEMENT SHALL BE 42" MIN., AND DEPTH OF COVER FOR ALL LINES UNDER PAVEMENT SHALL BE A MIN. OF 30" BELOW SUBGRADE.
4. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C-100, MIN. CLASS 200).
5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL POLYETHYLENE AND SEALED WITH DUCT TAPE OR EQUAL ACCEPTED BY THE CITY ENGINEER.
6. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR AT (512) 778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING TO EXISTING LINES.
7. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
8. THE CONTRACTOR MUST OBTAIN A BULK WATER PERMIT OR PURCHASE AND INSTALL A WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
9. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE SCHEDULED WITH THE WATER & WASTEWATER SUPERINTENDENT, TELEPHONE (512) 778-5449
10. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM STERILIZATION OF ALL POTABLE WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING TEST GAUGES), SUPPLIES (INCLUDING CONCENTRATED CHLORINE DISINFECTING MATERIAL), AND NECESSARY LABOR REQUIRED FOR THE STERILIZATION PROCEDURE. THE STERILIZATION PROCEDURE SHALL BE MONITORED BY CITY PERSONNEL. WATER SAMPLES WILL BE COLLECTED BY THE CITY TO VERIFY EACH TREATED LINE HAS ATTAINED AN INITIAL CHLORINE CONCENTRATION OF 50 PPM. WHERE MEANS OF FLUSHING IS NECESSARY, THE CONTRACTOR, AT HIS EXPENSE, SHALL PROVIDE FLUSHING DEVICES AND REMOVE SAID DEVICES PRIOR TO FINAL ACCEPTANCE BY THE CITY .
11. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL. AT THE CONTRACTOR'S REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY NOT LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY. THE CONTRACTOR SHALL SUPPLY A CHECK OR MONEY ORDER, PAYABLE TO THE CITY , TO COVER THE FEE CHARGED FOR TESTING EACH WATER SAMPLE. CITY FEE AMOUNTS MAY BE OBTAINED BY CALLING THE ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT AT (512) 778-5449.
12. 12 THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY CITY PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY OF INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING OR PRESSURE TESTING.
14. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE CITY .
15. ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
16. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS:
    WATER SERVICE "W" ON TOP OF CURB
    WASTEWATER SERVICE "S" ON TOP OF CURB
    VALVE "V" ON FACE OF CURB

    TOOLS FOR MARKING THE CURB SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF MARKING SERVICE AND VALVE LOCATIONS SHALL BE PROVIDED IN AREAS WITHOUT CURBS. SUCH MEANS OF MARKING SHALL BE AS SPECIFIED BY THE ENGINEER AND ACCEPTED BY THE CITY .
17. CONTACT CITY ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT AT 218-5555 FOR ASSISTANCE IN OBTAINING EXISTING WATER AND WASTEWATER LOCATIONS.
18. THE CITY FIRE DEPARTMENT SHALL BE NOTIFIED 48 HOURS PRIOR TO TESTING OF ANY BUILDING SPRINKLER PIPING IN ORDER THAT THE FIRE DEPARTMENT MAY MONITOR SUCH TESTING.
19. SAND, AS DESCRIBED IN SPECIFICATION ITEM 510 PIPE, SHALL NOT BE USED AS BEDDING FOR WATER AND WASTEWATER LINES. ACCEPTABLE BEDDING MATERIALS ARE PIPE BEDDING STONE, PEA GRAVEL AND IN LIEU OF SAND, A NATURALLY OCCURRING OR MANUFACTURED STONE MATERIAL CONFORMING TO ASTM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:
20. SIEVE SIZE PERCENT RETAINED BY WEIGHT

1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

21. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY OUTSIDE NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12 A.M. AND 6 P.M.
22. ALL WASTEWATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, 30 TAC CHAPTER 213 AND 317, AS APPLICABLE. WHENEVER TCEQ AND CITY SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.

TRAFFIC MARKING NOTES:

1. ANY METHODS, STREET MARKINGS AND SIGNAGE NECESSARY FOR WARNING MOTORISTS, WARNING PEDESTRIANS OR DIVERTING TRAFFIC DURING CONSTRUCTION SHALL CONFORM TO THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, LATEST EDITION.
2. ALL PAVEMENT MARKINGS, MARKERS, PAINT, TRAFFIC BUTTONS, TRAFFIC CONTROLS AND SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES AND, THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, LATEST EDITIONS.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. EROSION CONTROL MEASURES, SITE WORK AND RESTORATION WORK SHALL BE IN ACCORDANCE WITH THE CITY EROSION AND SEDIMENTATION CONTROL ORDINANCE.
2. ALL SLOPES SHALL BE SODDED OR SEEDED WITH APPROVED GRASS, GRASS MIXTURES OR GROUND COVER SUITABLE TO THE AREA AND SEASON IN WHICH THEY ARE APPLIED.
3. SILT FENCES, ROCK BERMS, SEDIMENTATION BASINS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED BY THE CITY FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED IF, IN THE OPINION OF THE CITY ENGINEER, THEY ARE WARRANTED.
4. ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.
5. ALL MUD, DIRT, ROCKS, DEBRIS, ETC., SPILLED, TRACKED OR OTHERWISE DEPOSITED ON EXISTING PAVED STREETS, DRIVES AND AREAS USED BY THE PUBLIC SHALL BE CLEANED UP IMMEDIATELY.

CITY OF GEORGETOWN UTILITY SYSTEM

WATER NOTES:

1. THESE WATER SYSTEM 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 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 WATER PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
3. THAT THE PUBLIC WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.
4. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED ACCORDING TO CITY DETAILS.
5. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
6. ALL WATER LINES SHALL BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.
7. WATER AND WASTEWATER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.

WILLIAMSON COUNTY EMERGENCY SERVICE DISTRICT No. 4
LIBERTY HILL FIRE DEPARTMENT

(2) SECTION C105.2 INSTALLATION.
FIRE HYDRANTS MUST BE INSTALLED WITH THE CENTER OF THE FIVE (5) INCH STEAMER OPENING AT LEAST 18 INCHES ABOVE FINISHED GRADE. THE FIVE (5) INCH OPENING MUST FACE THE DRIVEWAY OR STREET AND MUST BE TOTALLY UNOBSTRUCTED TO THE STREET. FIRE HYDRANT DESIGN SHALL BE 2- 2.5" NST OUTLETS, 1 - 5.0" STORZ CONNECTION WITH A CAP TO INCLUDE A HEX NUT TO FIT A HYDRANT WRENCH ALONG WITH A REFLECTIVE BAND. THE FIRE HYDRANT SHALL BE PAINTED SILVER IN COLOR AND DESIGNATED BY A BLUE REFLECTOR IN THE CENTER OF THE STREET.

DATE | BY | REVISION | NO.

811 Know what's below. Call before you dig.

5508 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101
HRGreen® DEVELOPMENT TX

STATE OF TEXAS — XAVIER GARZA-ROBLEDO — 135174 — LICENSED PROFESSIONAL ENGINEER
06/16/2023

GENERAL NOTES
12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 2 OF 33

FINAL PLAT
12 OAKS VILLAGE

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.

OWNERS: TR4 HOLDING 1, LLC.
22701 MARY NELL LANE
SPICEWOOD, TEXAS 78669

TWELVE OAKS PROFESSIONAL PARK COMMERCIAL LP,
14205 N. MOPAC EXPRESSWAY
SUITE 450
AUSTIN, TEXAS 78728

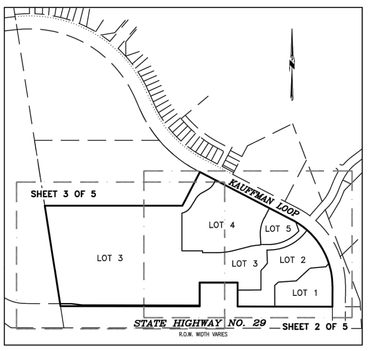
12 OAKS VILLAGE, L.P.
7801 N. CAPITAL OF TEXAS HWY,
SUITE 390
AUSTIN, TEXAS 78731

SURVEYOR: ERNESTO NAVARRETE, R.P.L.S.
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 6642 – STATE OF TEXAS
HR GREEN DEVELOPMENT TX, LLC
550B HWY 290 WEST, SUITE 150
AUSTIN, TEXAS 78735
512.872.6696
ERNESTO.NAVARRETE@HRGREEN.COM
TBPLS FIRM NO. 10194101

ENGINEER: JUDD T. WILLMANN, P.E.
REGISTERED PROFESSIONAL ENGINEER
NO. 90356– STATE OF TEXAS
HR GREEN DEVELOPMENT TX, LLC
550B HWY 290 WEST, SUITE 150
AUSTIN, TEXAS 78735
512.872.6696
JUDD.WILLMANN@HRGREEN.COM
TBPE FIRM NO. F–16384

SURVEY: GREENLEAF FISK SURVEY, ABSTRACT NO. 5

VICINITY MAP
1" = 3000'



SHEET INDEX
N.T.S.

ACREAGE: 53.19 ACRES
NUMBER OF BLOCKS: 1
LINEAR FEET OF NEW STREET: 0'
NUMBER OF LOTS: 5
PATENT SURVEY: GREENLEAF FISK SURVEY, ABST. A–5

NOTES:

1. BEARING BASIS IS TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NAD83(2011), GRID.
2. DISTANCES SHOWN HEREON ARE BASED ON SURFACE MEASUREMENTS, TO CONVERT SURFACE DISTANCES TO GRID, MULTIPLY BY THE COMBINED SCALE FACTOR.
3. THE COMBINED SCALE FACTOR FOR THIS PROJECT IS 0.9998532817.
4. COORDINATES SHOWN HEREON ARE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NAD83(2011), GRID.

NOTES:

THE FOLLOWING DOCUMENTS OF RECORD AFFECT THE SUBJECT TRACT AS SHOWN HEREON:

TERMS, CONDITIONS, AND STIPULATIONS IN THE DEVELOPMENT AGREEMENT AS RECORDED IN DOCUMENT NUMBER 2006035818, OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

TERMS, CONDITIONS, AND STIPULATIONS IN THE PETITION FOR CREATION OF A MUNICIPAL UTILITY DISTRICT, AS RECORDED IN DOCUMENT NUMBER 2006096636, OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

ACCESS EASEMENT AGREEMENT, BY INSTRUMENT DATED 7/2/2021, RECORDED IN/UNDER DOCUMENT NO. 2021100747, OF THE OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.

ALL TERMS, CONDITIONS AND PROVISIONS OF THAT CERTAIN MEMORANDUM OF DEVELOPMENT AGREEMENT, DATED 7/2/2021, FILED 7/6/2021, RECORDED IN/UNDER DOCUMENT NO. 2021100749, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.

SHEET INDEX

STREET INDEX
NO NEW STREETS

BENCHMARK: NAVD88 – OPUS

BM 1: SQUARE CUT ON TOP OF CURB ON THE NOSE OF THE MEDIAN AT KAUFFMAN LOOP AND S.H. HWY. 29, NORTH SIDE OF S.H. HWY. 29. ELEVATION = 982.16'.

BM 23: SQUARE WITH CUT X ON NORTH CORNER OF A CONCRETE TRANSFORMER PAD LOCATED APPROXIMATELY 940 FEET NORTH OF S.H. 29 NORTH EDGE OF PAVEMENT AND APPROXIMATELY 90 FEET SOUTHWEST OF THE CENTER OF MEDIAN OF KAUFFMAN LOOP. ELEVATION = 968.52'

SUBMITTED: _____ OCTOBER 04, 2022

CITY PROJECT NUMBER 2022-_-_

FILE No: 1386

No:	REVISION:	BY:	DATE:
	PLAT PREPARATION DATE		SEPTEMBER, 2022
	APPLICATION SUBMITTAL DATE		
1	CITY COMMENTS	M.B.	12-20-22
2	ACCESS EASEMENT ADDED	M.B.	01-05-23
3	STAFF REVIEW COMMENTS	M.B.	02-16-23
4	LOT REVISIONS & R.O.W. DEDICATION	M.B.	05-19-23

HRGreen DEVELOPMENT TX
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SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
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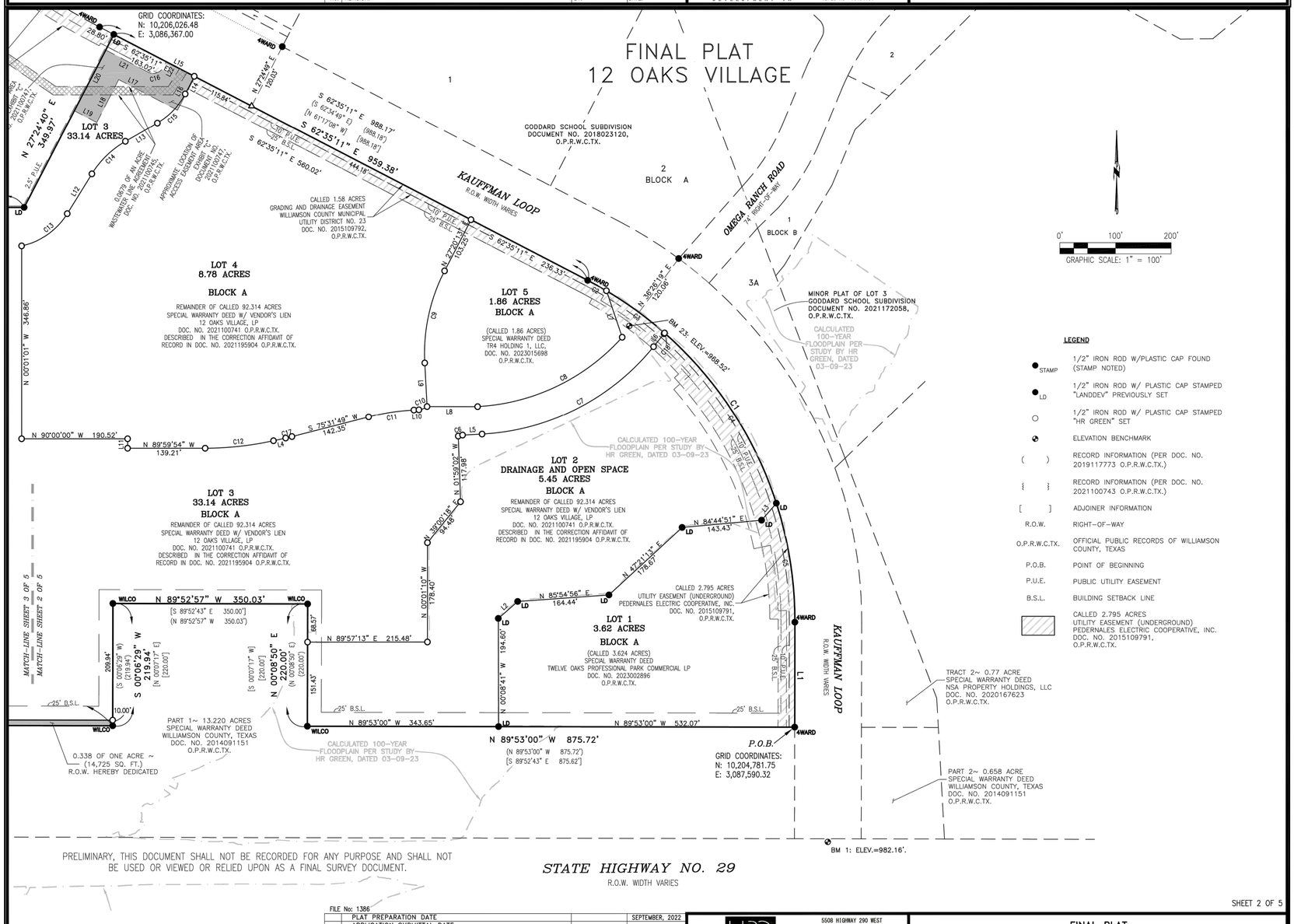
FINAL PLAT
12 OAKS VILLAGE
GREENLEAF FISK SURVEY, A–5
WILLIAMSON COUNTY, TEXAS



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SUBMITTED: _____ OCTOBER 04, 2022

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FINAL PLAT
12 OAKS VILLAGE
GREENLEAF FISK SURVEY, A–5
WILLIAMSON COUNTY, TEXAS

FINAL PLAT
12 OAKS VILLAGE

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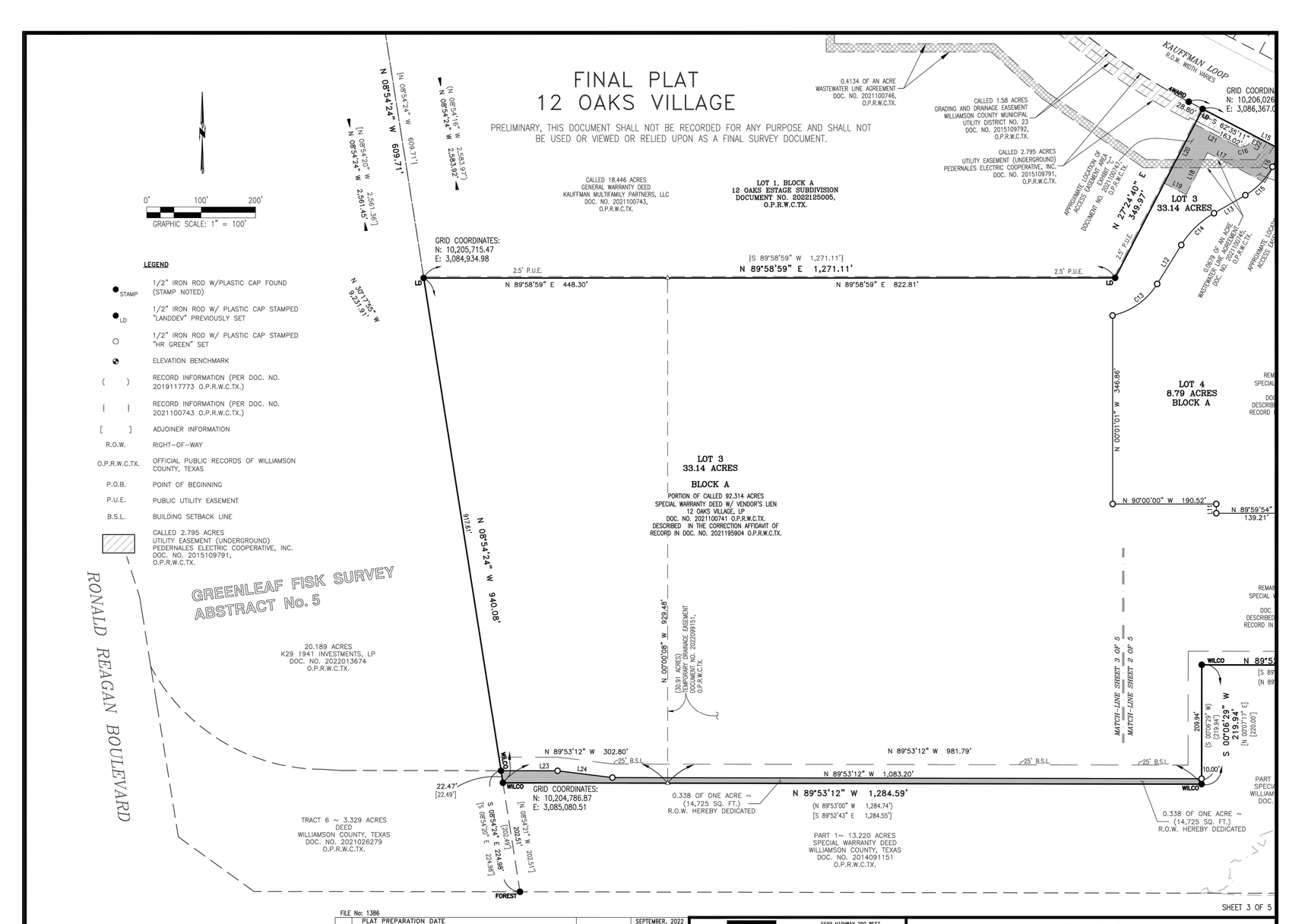

LEGEND

- ● STAMP — 1/2" IRON ROD W/PLASTIC CAP FOUND (STAMP NOTED)
- ● LD — 1/2" IRON ROD W/ PLASTIC CAP STAMPED "LANDDEV" PREVIOUSLY SET
- ○ — 1/2" IRON ROD W/ PLASTIC CAP STAMPED "HR GREEN" SET
- ◆ — ELEVATION BENCHMARK
- ( ) — RECORD INFORMATION (PER DOC. NO. 2019117773 O.P.R.W.C.TX.)
- { } — RECORD INFORMATION (PER DOC. NO. 2021100743 O.P.R.W.C.TX.)
- [ ] — ADJOINER INFORMATION
- R.O.W. — RIGHT-OF-WAY
- O.P.R.W.C.TX. — OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS
- P.O.B. — POINT OF BEGINNING
- P.U.E. — PUBLIC UTILITY EASEMENT
- B.S.L. — BUILDING SETBACK LINE
- CALLED 2.795 ACRES UTILITY EASEMENT (UNDERGROUND) PEDERNALES ELECTRIC COOPERATIVE, INC. DOC. NO. 2015109791, O.P.R.W.C.TX.

GRAPHIC SCALE: 1" = 100'

FILE No: 1386			
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SUBMITTED: OCTOBER 04, 2022

CITY PROJECT NUMBER 2022-_-_

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FINAL PLAT
12 OAKS VILLAGE
GREENLEAF FISK SURVEY, A-5
WILLIAMSON COUNTY, TEXAS

FINAL PLAT
12 OAKS VILLAGE

FIELD NOTES DESCRIPTION

DESCRIPTION OF 53.19 ACRES OF LAND IN THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, WILLIAMSON COUNTY, TEXAS; BEING A PORTION OF A CERTAIN CALLED 92.314 ACRE TRACT OF LAND CONVEYED IN THE SPECIAL WARRANTY DEED W/VENDOR'S LIEN TO 12 OAKS VILLAGE, LP OF RECORD IN DOCUMENT NO. 2021100741, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, AND DESCRIBED IN THE CORRECTION AFFIDAVIT OF RECORD IN DOCUMENT NO. 2021195904, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; SAID 53.19 ACRES OF LAND, AS SURVEYED BY HR GREEN DEVELOPMENT TX, LLC, BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING at a 1/2-inch iron rod with a plastic cap stamped "4WARD BOUNDARY" found in the intersecting north right-of-way line of State Highway No. 29, a variable width right-of-way and the west right-of-way line of Kauffman Loop, a variable width right-of-way, and also in the west line of a certain called 12.35 acre tract described in the Deed to Williamson County, Texas, of record in Document No. 2016016908, Official Public Records of Williamson County, Texas, same being the most easterly northeast corner of that certain called 13.220 acre tract of land designated as Part 1 and described in the Special Warranty Deed to Williamson County, Texas, of record in Document No. 2014091151, Official Public Records of Williamson County, Texas, at the southerly southeast corner of the said 92.314 acre tract, for the southeast corner and POINT OF BEGINNING of the tract described herein, from which the approximate southwest corner of the said Greenleaf Fisk Survey, Abstract No. 5, bears approximately S 00°27'20" E, a distance of 10,733 feet;

THENCE leaving the west right-of-way line of said Kauffman Loop and the west line of the said 12.35 acre tract, with the north right-of-way line of said State Highway No. 29 and the north line of the said 13.220 acre tract, with the south line of the said 92.314 acre tract, with the south line of the tract described herein, the following five (5) courses and distances:

1. N 89°53'00" W, a distance of 875.72 feet to a 5/8-inch iron rod with an aluminum cap stamped "WILCO ROW" found at an angle point,
2. N 00°08'50" E, a distance of 220.00 feet to a 5/8-inch iron rod with an aluminum cap stamped "WILCO ROW" found at an angle point,
3. N 89°52'57" W, a distance of 350.03 feet to a 5/8-inch iron rod with an aluminum cap stamped "WILCO ROW" found at an angle point,
4. S 00°06'29" W, a distance of 219.94 feet to a 5/8-inch iron rod with an aluminum cap stamped "WILCO ROW" found at an angle point, and
5. N 89°53'12" W, a distance of 1,284.59 feet to a 5/8-inch iron rod with an aluminum cap stamped "WILCO ROW" found in the east line of a certain called 3.329 acre tract of land designated as Tract 6 and described in the Deed to Williamson County, Texas, of record in Document No. 2021026279, Official Public Records of Williamson County, Texas, at the southwest corner of the said 92.314 acre tract, same being the westerly northwest corner of the said 13.220 acre tract, for the southwest corner of the tract described herein;

THENCE N 08°54'24" W, leaving the westerly northwest corner of the said 13.220 acre tract, with the east line of the said 3.329 acre tract and the west line of the said 92.314 acre tract, with the west line of the tract described herein, a distance of 22.47 feet to a 5/8-inch iron rod with an aluminum cap stamped "WILCO ROW" found at the northeast corner of the said 3.329 acre tract, same being the southeast corner of a certain called 20.189 acre tract conveyed in the deed to K29 1941 Investments, LP of record in Document No. 2022013674, Official Public Records of Williamson County, Texas, and described in the Correction Affidavit as to Deed of record in Document No. 2022013674, Official Public Records of Williamson County, Texas, for a point-on-line in the west line of the said 92.314 acre tract and in the west line of the tract described herein;

THENCE N 08°54'24" W, leaving the northeast corner of the said 3.329 acre tract, continuing with the west line of the said 92.314 acre tract, with the east line of the said 20.189 acre tract, with the west line of the tract described herein, a distance of 917.61 feet to a 1/2-inch iron rod with a plastic cap stamped "LANDDEV" previously set for the southwest corner of a certain called 18.446 acre tract described in the General Warranty Deed to Kauffman Multifamily Partners, LLC of record in Document No. 2021100743, Official Public Records of Williamson County, Texas, for the northwest corner of the tract described herein;

THENCE leaving the east line of the said 20.189 acre tract, crossing the said 92.314 acre tract, with the south line of the said 18.446 acre tract, with the north line of the tract described herein, the following two (2) courses and distances:

1. N 89°58'59" E, a distance of 1,271.11 feet to a 1/2-inch iron rod with a plastic cap stamped "LANDDEV" previously set for the southeast corner of the said 18.446 acre tract, for an angle point in the north line of the tract described herein, and
2. N 27°24'40" E, a distance of 349.97 feet to a 1/2-inch iron rod with a plastic cap stamped "LANDDEV" previously set in the southwest right-of-way line of said Kauffman Loop and the southwest line of the said 12.35 acre tract, same being the east line of the said 92.314 acre tract, for an east corner of the said 18.446 acre tract, for a north corner of the tract described herein, from which a 1/2-inch iron rod with a plastic cap stamped "4WARD BOUNDARY" found at a point-of-curvature in the southwest right-of-way line of said Kauffman Loop and the southwest line of the said 12.35 acre tract, same being the east line of the said 92.314 acre tract and the east line of the said 18.446 acre tract bears N 62°35'11" W, a distance of 28.80 feet;

THENCE with the southwest and west right-of-way line of said Kauffman Loop and the southwest and west line of the said 12.35 acre tract, with the east line of the said 92.314 acre tract, with the east line of the tract described herein, the following three (3) courses and distances:

1. S 62°35'11" E, a distance of 959.38 feet to a 1/2-inch iron rod with a plastic cap stamped "4WARD BOUNDARY" found at a point-of-curvature,
2. With the arc of a curve to the right, having a radius of 690.00 feet, an arc distance of 755.30 feet, and a chord which bears S 31°13'11" E, a distance of 718.15 feet to a 1/2-inch iron rod with a plastic cap stamped "4WARD BOUNDARY" found at a point-of-tangency, and
3. S 00°07'00" W, a distance of 189.05 feet to the POINT OF BEGINNING and containing 53.19 acres of land, more or less.

Bearing Basis: Texas Coordinate System, Central Zone, NAD83, Grid.

LINE TABLE		
LINE #	BEARING	DISTANCE
L1	S 00°07'00" W	189.05'
L2	S 48°42'08" W	46.32'
L3	S 41°11'01" W	40.34'
L4	S 77°39'44" W	22.37'
L5	N 86°57'58" E	34.98'
L6	N 38°55'18" E	29.95'
L7	S 18°47'25" E	88.08'
L8	N 89°52'31" W	90.74'
L9	N 03°02'02" W	78.42'
L10	S 86°57'58" W	8.93'
L11	N 00°00'00" W	17.00'
L12	N 31°44'59" E	84.08'
L13	N 60°03'39" E	66.39'
L14	N 27°25'11" E	35.69'
L15	S 62°35'11" E	58.43'
L16	S 27°43'01" W	67.74'
L17	N 62°35'10" W	118.99'
L18	S 27°03'43" W	86.48'
L19	N 62°29'16" W	45.49'
L20	N 27°24'40" E	122.64'
L21	S 62°34'13" E	85.69'
L22	N 27°22'47" E	11.35'
L23	S 89°52'43" E	103.98'
L24	S 83°00'29" E	101.66'

CURVE TABLE				
CURVE #	RADIUS	ARC DISTANCE	CHORD BEARING	CHORD DISTANCE
C1	690.00'	755.30'	S 31°13'11" E	718.15'
C2	690.00'	38.48'	N 60°58'53" W	38.47'
C3	690.00'	129.33'	N 54°00'51" W	129.14'
C4	690.00'	370.56'	N 33°15'35" W	366.12'
C5	690.00'	216.94'	N 08°52'04" W	216.04'
C6	24.50'	8.05'	S 77°33'26" W	8.01'
C7	425.00'	356.38'	N 62°56'38" E	346.03'
C8	375.00'	295.98'	N 64°21'17" E	288.36'
C9	323.00'	171.21'	S 12°09'06" W	169.22'
C10	25.00'	16.09'	N 68°31'52" E	15.81'
C11	413.50'	82.50'	S 81°15'00" W	82.37'
C12	587.00'	123.76'	N 83°42'17" E	123.53'
C13	128.50'	103.22'	N 54°45'42" E	100.47'
C14	171.50'	84.74'	S 45°54'19" W	83.88'
C15	128.50'	73.21'	N 43°44'25" E	72.22'
C16	20.00'	31.78'	N 72°26'55" E	28.54'
C17	313.50'	11.66'	N 76°35'46" E	11.66'
C18	24.50'	1.66'	S 40°52'00" W	1.66'

GENERAL NOTES:

1. IT IS UNDERSTOOD THAT THE BUILDING OF ALL ROADS, AND OTHER PUBLIC THOROUGHFARES AND ANY BRIDGES OR CULVERTS NECESSARY TO BE CONSTRUCTED OR PLACED IS THE RESPONSIBILITY OF THE OWNER(S) OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY WILLIAMSON COUNTY, TEXAS. THE CITY NOR THE COUNTY ASSUME ANY OBLIGATION TO BUILD ANY OF THE ROADS, OR OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT, OR OF CONSTRUCTING ANY OF THE BRIDGES OR DRAINAGE IMPROVEMENTS IN THE CONNECTION THEREWITH. NEITHER THE CITY NOR THE COUNTY ASSUME ANY RESPONSIBILITY FOR DRAINAGE WAYS OR EASEMENTS IN THE SUBDIVISION, OTHER THAN THOSE DRAINING OR PROTECTING THE ROAD SYSTEM.
2. IT IS THE RESPONSIBILITY OF THE OWNER(S), NOT THE COUNTY OR THE CITY, TO ASSURE COMPLIANCE WITH THE PROVISIONS OF ALL APPLICABLE STATE, FEDERAL AND LOCAL LAWS AND REGULATIONS RELATING TO THE PLATTING AND DEVELOPMENT OF THIS PROPERTY. THE CITY OF LIBERTY HILL NOR WILLIAMSON COUNTY ASSUME RESPONSIBILITY FOR THE ACCURACY OF REPRESENTATIONS BY OTHER PARTIES IN THIS PLAT. FLOODPLAIN DATA, IN PARTICULAR, MAY CHANGE. IT IS FURTHER UNDERSTOOD THAT THE OWNER(S) OF THE TRACT OF LAND COVERED BY THIS PLAT MUST INSTALL AT THEIR OWN EXPENSE ALL TRAFFIC CONTROL DEVICES AND SIGNAGE THAT MAY BE REQUIRED BEFORE THE ROADS IN THE SUBDIVISION HAVE FINALLY BEEN ACCEPTED FOR MAINTENANCE BY THE WCMUD #23.
3. ALL UTILITY LINES MUST BE LOCATED UNDERGROUND.
4. THIS SUBDIVISION IS WHOLLY CONTAINED WITHIN THE EXTRA TERRITORIAL JURISDICTION OF THE CITY OF LIBERTY HILL, WILLIAMSON COUNTY, TEXAS.
5. NO LOT IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO PERMITTED WATER DISTRIBUTION AND WASTEWATER COLLECTION FACILITIES.
6. PROPERTY OWNERS SHALL PROVIDE FOR ACCESS TO DRAINAGE EASEMENTS AS MAY BE NECESSARY AND SHALL NOT PROHIBIT ACCESS BY THE CITY OF LIBERTY HILL.
7. ALL EASEMENTS ON PRIVATE PROPERTY SHALL BE MAINTAINED BY THE PROPERTY OWNER OR HIS OR HER ASSIGNS.
8. ALL PUBLIC ROADWAYS AND EASEMENTS AS SHOWN ON THIS PLAT ARE FREE OF LIENS.
9. NO CONSTRUCTION, PLANTING OR GRADING SHALL BE PERMITTED TO INTERFERE WITH SIGHT EASEMENTS BETWEEN THE HEIGHTS OF THREE AND EIGHT FEET AS MEASURED FROM THE CROWNS OF THE ADJACENT STREETS.
10. UTILITY PROVIDERS:
    WATER SERVICE – GEORGETOWN UTILITY SYSTEMS
    WASTEWATER SERVICE – CITY OF LIBERTY HILL
11. MAINTENANCE RESPONSIBILITY FOR DRAINAGE WILL NOT BE ACCEPTED BY THE COUNTY OTHER THAN THAT ACCEPTED IN CONNECTION WITH DRAINING OR PROTECTING THE ROAD SYSTEM. MAINTENANCE RESPONSIBILITY FOR STORM WATER MANAGEMENT CONTROLS WILL REMAIN WITH THE OWNER.
12. THE MINIMUM FINISHED FLOOR ELEVATION SHALL BE AT LEAST ONE FOOT ABOVE THE ADJACENT FINISHED GRADE AND BASE FLOOD ELEVATION. EXCEPTIONS CAN BE MADE AT ENTRANCE AND EGRESS POINTS, WHERE NECESSARY, TO MEET THE AMERICANS WITH DISABILITIES ACT (ADA). RECREATIONAL VEHICLE PARKING PADS MUST ALSO BE PLACED AT LEAST ONE FOOT ABOVE BASE FLOOD ELEVATION.
13. NO LOT IN THIS SUBDIVISION IS ENCROACHED BY A SPECIAL FLOOD HAZARD AREA(S) INUNDATED BY THE 100-YEAR (1% CHANCE) FLOOD AS IDENTIFIED BY THE U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 48491C0275E, EFFECTIVE DATE SEPTEMBER 26, 2008 FOR WILLIAMSON COUNTY, TEXAS.
14. NO STRUCTURE OR LAND IN THIS PLAT SHALL HEREAFTER BE LOCATED OR ALTERED WITHOUT FIRST OBTAINING A CERTIFICATE OF COMPLIANCE OR FLOODPLAIN DEVELOPMENT PERMIT FROM THE WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATOR.
15. THIS SUBDIVISION IS SUBJECT TO STORMWATER MANAGEMENT CONTROLS AS REQUIRED BY WILLIAMSON COUNTY SUBDIVISION REGULATIONS SECTION B11.1, ON NEW DEVELOPMENT THAT WOULD EVOKE SUCH CONTROLS BEYOND EXISTING CONDITIONS.
16. IMPROVEMENTS WITHIN THE COUNTY ROAD RIGHT-OF-WAY INCLUDING, BUT NOT LIMITED TO, LANDSCAPING, IRRIGATION LIGHTING, CUSTOM SIGNS, IS PROHIBITED WITHOUT FIRST OBTAINING AND EXECUTED LICENSE AGREEMENT WITH WILLIAMSON COUNTY.
17. ALL SIDEWALKS SHALL BE MAINTAINED BY THE PROPERTY OWNERS.
18. THE PURPOSE OF THIS PLAT IS TO SHOW THE PROPOSED IMPROVEMENTS TO THE OWNER'S PROPERTY, INCLUDING THE EXISTING TOPOGRAPHY, TO EVALUATE THE EXISTING AND PROPOSED DRAINAGE PATTERNS. THERE ARE NO IMPROVEMENTS OR SUBDIVISION OF LOTS 1–5, BLOCK A PROPOSED WITH THIS PLAT. A REVISED PRELIMINARY PLAT SHALL BE SUBMITTED AND APPROVED PRIOR TO ANY DIVISION OF LOTS 1–5, BLOCK A INTO TWO OR MORE PARTS TO LAY OUT (1) A SUBDIVISION OF THE TRACT, INCLUDING AN ADDITION; (2) LOTS; OR (3) STREETS, ALLEYS, SQUARES, PARKS, OR OTHER PARTS OF THE TRACT INTENDED TO BE DEDICATED TO PUBLIC USE OR FOR THE USE OF PURCHASERS OR OWNERS OF LOTS FRONTING ON OR ADJACENT TO THE STREETS, ALLEYS, SQUARES, PARKS, OR OTHER PARTS. A LOT IS ANY PARCEL OR TRACT OF LAND EXCLUSIVE OF ANY ADJOINING ROAD OR ROAD RIGHT-OF-WAY THAT IS SEPARATED FROM OTHER PARCELS BY A LEGAL DESCRIPTION, A SUBDIVISION OF RECORD, OR SURVEY MAP. THE TERMS "STREET" OR "ROAD" ARE INTERCHANGEABLE AND ARE USED TO DESCRIBE ALL VEHICULAR WAYS, REGARDLESS OF ANY OTHER DESIGNATION THEY MAY CARRY OR WHETHER THE STREET OR ROAD WILL BE PUBLIC OR PRIVATELY OWNED.
19. NO OBSTRUCTION, INCLUDING BUT NOT LIMITED TO FENCING OR STORAGE, SHALL BE PERMITTED IN ANY DRAINAGE EASEMENTS SHOWN HEREON.
20. A TEN (10') P.U.E. ABUTTING AND ALONG THE STREET SIDE PROPERTY LINE IS HEREBY DEDICATED FOR ALL STREET SIDE PROPERTY LOTS SHOWN HEREON.
21. RECIPROCAL JOINT ACCESS AND PARKING BETWEEN ALL LOTS DEPICTED ON THIS FINAL PLAT IS HEREBY GRANTED. THE JOINT ACCESS MUST ALLOW PEDESTRIAN AND/OR VEHICULAR TRAFFIC/PARKING TO MOVE FREELY TO THE ADJACENT PUBLIC RIGHT-OF-WAY, OR BETWEEN THE TRACTS, OR BOTH. EACH OWNER MUST MAINTAIN ITS TRACT, AND THAT PORTION OF THE ACCESS AND PARKING AREA LOCATED ON ITS TRACT IF ANY, AND ALL IMPROVEMENTS, TO ALLOW CONTINUOUS FREE VEHICULAR AND PEDESTRIAN INGRESS AND EGRESS.
22. MAXIMUM OF 80% IMPERVIOUS COVER PER LOT, OTHERWISE STORMWATER MANAGEMENT CONTROLS SHALL BE DESIGNED, CONSTRUCTED AND MAINTAINED BY OWNER. IF IMPERVIOUS COVER IS PROPOSED TO EXCEED MAXIMUM PERCENTAGE ALLOWED, CONTACT WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATION TO REVIEW THE STORMWATER MANAGEMENT CONTROLS PROPOSED ON LOT.
23. DRIVEWAY MAINTENANCE WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. IF OBSTRUCTIONS OCCUR WITHIN THE DRIVEWAY CULVERT, THE COUNTY RESERVES THE RIGHT TO CLEAR OBSTRUCTIONS THAT ARE CAUSING ADVERSE IMPACTS TO THE ROADWAY.
24. A FLOODPLAIN DEVELOPMENT PERMIT MAY BE REQUIRED FOR BLOCK A LOT 2 PRIOR TO ANY CONSTRUCTION OR DEVELOPMENT. THE NEED FOR A FLOODPLAIN DEVELOPMENT PERMIT WILL BE DETERMINED BY WILLIAMSON COUNTY UPON REVIEW OF THE PROPOSED STRUCTURE LOCATION.
25. BASED ON THE CONDUCTED FLOODPLAIN STUDY PERFORMED BY HR GREEN, DATED MARCH 9, 2023, THE MINIMUM FINISHED FLOOR ELEVATION (FFE) WILL BE SET AT 972 FEET FOR LOTS ADJACENT TO THE FLOODPLAIN.
26. FLOODPLAIN INFORMATION, SUCH AS FLOODPLAIN BOUNDARIES, DEPTHS, ELEVATIONS, AND THE MINIMUM FINISHED FLOOR ELEVATIONS SHOWN ON THIS PLAT, WILL CHANGE OVER TIME WITH BETTER DATA AND FLOOD STUDIES. THE FLOODPLAIN INFORMATION SHOWN ON THIS PLAT WAS ACCURATE AT THE TIME OF PLATTING, BUT MAY BE SUPERSEDED AT THE TIME OF CONSTRUCTION. THE BEST AVAILABLE FLOODPLAIN DATA SHALL BE UTILIZED AT THE TIME OF CONSTRUCTION, AS DETERMINED BY THE WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATOR. A FLOODPLAIN DEVELOPMENT PERMIT APPLICATION MUST BE SUBMITTED AND APPROVED PRIOR TO ANY CONSTRUCTION OR DEVELOPMENT WITHIN OR ADJACENT TO A REGULATED FLOODPLAIN.
27. DETENTION IS PROVIDED BY DETENTION POND LOCATED ON LOT 2 BLOCK A, AND IN ACCORDANCE WITH THE TERMS OF THE DEVELOPMENT AGREEMENT BETWEEN 12 OAKS VILLAGE, LP, KAUFFMAN MULTIFAMILY PARTNERS, LLC, AND WILLIAMSON COUNTY DATED, OCTOBER 5TH, 2022.

FILE No: 1386			
	PLAT PREPARATION DATE		SEPTEMBER, 2022
	APPLICATION SUBMITTAL DATE		
1	CITY COMMENTS	M.B.	12-20-22
2	ACCESS EASEMENT ADDED	M.B.	01-05-23
3	STAFF REVIEW COMMENTS	M.B.	02-16-23
4	LOT REVISIONS & R.O.W. DEDICATION	M.B.	05-19-23
No:	REVISION:	BY:	DATE:

SUBMITTED: OCTOBER 04, 2022

CITY PROJECT NUMBER 2022-_-_

HRGreen. DEVELOPMENT TX
5508 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

FINAL PLAT
12 OAKS VILLAGE
GREENLEAF FISK SURVEY, A-5
WILLIAMSON COUNTY, TEXAS

FINAL PLAT
12 OAKS VILLAGE

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

WE, 12 OAKS VILLAGE, LP, OWNER OF 47.37 ACRES OF LAND IN THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, WILLIAMSON COUNTY, TEXAS; BEING A PORTION OF THAT CALLED 92.314 ACRE TRACT OF LAND DESCRIBED IN THE SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO 12 OAKS VILLAGE, LP OF RECORD IN DOCUMENT NO. 2021100741, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, AND CORRECTED IN THE CORRECTION AFFIDAVIT OF RECORD IN DOCUMENT NO. 2021195904, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; SAID 47.37 ACRES OF LAND AS SHOWN HEREON, AND DO CONSENT TO ALL PLAT REQUIREMENTS SHOWN HEREON, AND HEREBY DEDICATE TO THE PUBLIC THE STREETS, RIGHTS-OF-WAY, EASEMENTS, AND PUBLIC PLACES SHOWN HEREON. IT IS THE RESPONSIBILITY OF THE OWNERS, NOT THE COUNTY, TO ASSURE COMPLIANCE WITH THE PROVISIONS OF ALL APPLICABLE STATE, FEDERAL AND LOCAL LAWS AND REGULATIONS RELATED TO THE ENVIRONMENT, INCLUDING (BUT NOT LIMITED TO) THE ENDANGERED SPECIES ACT, STATE AQUIFER REGULATIONS AND MUNICIPAL WATERSHED ORDINANCES. THIS SUBDIVISION IS TO BE KNOWN AS:

12 OAKS VILLAGE

TO CERTIFY WHICH, WITNESS BY MY HAND THIS_____ DAY OF_____, 20_____.

_____
TOM MOORE
12 OAKS VILLAGE, L.P.
7801 N. CAPITAL OF TEXAS HWY,
SUITE 390
AUSTIN, TEXAS 78731

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS DAY PERSONALLY APPEARED _____, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS_____ DAY OF_____, 20__.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS
MY COMMISSION EXPIRES ON: _____

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

THAT, FRONTIER BANK OF TEXAS, LIEN HOLDER OF A PORTION OF 47.37 ACRES OF LAND SHOWN HEREON AND DESCRIBED IN DOCUMENT NO. 2021100741, AND CORRECTED IN DOCUMENT NO. 2021195904, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID 47.37 ACRES AS SHOWN HEREON, AND DOES FURTHER HEREBY, JOIN, APPROVE AND CONSENT TO ALL PLAT NOTE REQUIREMENTS SHOWN HEREON, AND DOES HEREBY DEDICATE TO THE CITY OF LIBERTY HILL THE STREETS, ALLEYS, RIGHTS-OF-WAY, EASEMENTS AND PUBLIC PLACES SHOWN HEREON FOR SUCH PUBLIC PURPOSES AS THE CITY OF LIBERTY HILL MAY DEEM APPROPRIATE. THIS SUBDIVISION IS TO BE KNOWN AS:

12 OAKS VILLAGE

TO CERTIFY WHICH, WITNESS BY MY HAND THIS _____ DAY OF _____, 20___.

_____

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS DAY PERSONALLY APPEARED _____, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS _____ DAY OF _____, 20___.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS
MY COMMISSION EXPIRES ON: _____

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

WE, TR4 HOLDING 1, LLC, OWNER OF 1.86 ACRES OF LAND IN THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, WILLIAMSON COUNTY, TEXAS; BEING ALL OF A CALLED 1.86 ACRE TRACT OF LAND DESCRIBED IN THE SPECIAL WARRANTY DEED TO TR4 HOLDING 1, LLC, OF RECORD IN DOCUMENT NO. 2023015698, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; SAID 1.86 ACRES OF LAND AS SHOWN HEREON, AND DO CONSENT TO ALL PLAT REQUIREMENTS SHOWN HEREON, AND HEREBY DEDICATE TO THE PUBLIC THE STREETS, RIGHTS-OF-WAY, EASEMENTS, AND PUBLIC PLACES SHOWN HEREON. IT IS THE RESPONSIBILITY OF THE OWNERS, NOT THE COUNTY, TO ASSURE COMPLIANCE WITH THE PROVISIONS OF ALL APPLICABLE STATE, FEDERAL AND LOCAL LAWS AND REGULATIONS RELATED TO THE ENVIRONMENT, INCLUDING (BUT NOT LIMITED TO) THE ENDANGERED SPECIES ACT, STATE AQUIFER REGULATIONS AND MUNICIPAL WATERSHED ORDINANCES. THIS SUBDIVISION IS TO BE KNOWN AS:

12 OAKS VILLAGE

TO CERTIFY WHICH, WITNESS BY MY HAND THIS_____ DAY OF_____, 20_____.

_____
TR4 HOLDING 1, LLC.
22701 MARY NELL LANE
SPICEWOOD, TEXAS 78669

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS DAY PERSONALLY APPEARED _____, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS_____ DAY OF_____, 20__.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS
MY COMMISSION EXPIRES ON: _____

SUBMITTED: _____ OCTOBER 04, 2022

CITY PROJECT NUMBER 2022-_-_

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

WE, TWELVE OAKS PROFESSIONAL PARK COMMERCIAL LP, OWNER OF 3.624 ACRES OF LAND IN THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, WILLIAMSON COUNTY, TEXAS; BEING ALL OF A CALLED 3.624 ACRE TRACT OF LAND DESCRIBED IN THE SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO TWELVE OAKS PROFESSIONAL PARK COMMERCIAL LP, OF RECORD IN DOCUMENT NO. 2023002896, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; SAID 3.624 ACRES OF LAND AS SHOWN HEREON, AND DO CONSENT TO ALL PLAT REQUIREMENTS SHOWN HEREON, AND HEREBY DEDICATE TO THE PUBLIC THE STREETS, RIGHTS-OF-WAY, EASEMENTS, AND PUBLIC PLACES SHOWN HEREON. IT IS THE RESPONSIBILITY OF THE OWNERS, NOT THE COUNTY, TO ASSURE COMPLIANCE WITH THE PROVISIONS OF ALL APPLICABLE STATE, FEDERAL AND LOCAL LAWS AND REGULATIONS RELATED TO THE ENVIRONMENT, INCLUDING (BUT NOT LIMITED TO) THE ENDANGERED SPECIES ACT, STATE AQUIFER REGULATIONS AND MUNICIPAL WATERSHED ORDINANCES. THIS SUBDIVISION IS TO BE KNOWN AS:

12 OAKS VILLAGE

TO CERTIFY WHICH, WITNESS BY MY HAND THIS_____ DAY OF_____, 20_____.

_____
TWELVE OAKS PROFESSIONAL PARK COMMERCIAL LP,
14205 N. MOPAC EXPRESSWAY
SUITE 450
AUSTIN, TEXAS 78728

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS DAY PERSONALLY APPEARED _____, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS_____ DAY OF_____, 20__.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS
MY COMMISSION EXPIRES ON: _____

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

THAT, CADENCE BANK, A MISSISSIPPI STATE CHARTERED BANK, LIEN HOLDER OF 3.624 ACRES OF LAND SHOWN HEREON AND DESCRIBED IN DOCUMENT NO. 2023002896, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID 3.624 ACRES AS SHOWN HEREON, AND DOES FURTHER HEREBY, JOIN, APPROVE AND CONSENT TO ALL PLAT NOTE REQUIREMENTS SHOWN HEREON, AND DOES HEREBY DEDICATE TO THE CITY OF LIBERTY HILL THE STREETS, ALLEYS, RIGHTS-OF-WAY, EASEMENTS AND PUBLIC PLACES SHOWN HEREON FOR SUCH PUBLIC PURPOSES AS THE CITY OF LIBERTY HILL MAY DEEM APPROPRIATE. THIS SUBDIVISION IS TO BE KNOWN AS:

12 OAKS VILLAGE

TO CERTIFY WHICH, WITNESS BY MY HAND THIS _____ DAY OF _____, 20___.

_____

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS DAY PERSONALLY APPEARED _____, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS _____ DAY OF _____, 20___.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS
MY COMMISSION EXPIRES ON: _____

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.

BASED UPON THE REPRESENTATIONS OF THE ENGINEER OR SURVEYOR WHOSE SEAL IS AFFIXED HERETO, AND AFTER REVIEW OF THE PLAT AS REPRESENTED BY THE SAID ENGINEER OR SURVEYOR, I FIND THAT THIS PLAT COMPLIES WITH THE WILLIAMSON COUNTY FLOODPLAIN REGULATIONS. THIS CERTIFICATION IS MADE SOLELY UPON SUCH REPRESENTATIONS AND SHOULD NOT BE RELIED UPON FOR VERIFICATION OF THE FACTS ALLEGED. WILLIAMSON COUNTY DISCLAIMS ANY RESPONSIBILITY TO ANY MEMBER OF THE PUBLIC FOR INDEPENDENT VERIFICATION OF THE REPRESENTATIONS, FACTUAL OR OTHERWISE, CONTAINED IN THIS PLAT AND THE DOCUMENTS ASSOCIATION WITHIN IT.

_____ _____,
J. TERRON EVERTSON, P.E. COUNTY ENGINEER DATE
WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATOR

I, JERRY L. MILLARD, JR., DIRECTOR OF PLANNING, DESIGNEE, OF THE CITY OF LIBERTY HILL, TEXAS, UNDER THE AUTHORITY GRANTED ME IN SECTION 3.09.02 OF THE UNIFIED DEVELOPMENT CODE, IN ACCORDANCE WITH THE TEXAS LOCAL GOVERNMENT CODE, DO HEREBY CERTIFY THIS PLAT AS APPROVED FOR FILING OF RECORD WITH THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.

_____ _____
JERRY L. MILLARD, JR., DIRECTOR OF PLANNING DATE

ROAD NAMES AND ADDRESS ASSIGNMENTS VERIFIED THIS THE _____ DAY OF _____, 20_____ A.D.,

_____
CINDY BRIDGES, ENP
WILLIAMSON COUNTY ADDRESSING COORDINATOR
512-943-3708
CBRIDGES@WILCO.ORG

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF TRAVIS §

I, ERNESTO NAVARRETE, REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT I PREPARED THIS PLAT FROM AN ACTUAL AND ACCURATE ON-THE-GROUND SURVEY OF THE LAND AND THAT THE MONUMENTS SHOWN THEREON WERE PROPERLY PLACED UNDER MY PERSONAL SUPERVISION, IN ACCORDANCE WITH CHAPTER 5, SUBDIVISIONS, CITY OF LIBERTY HILL UNIFIED DEVELOPMENT. LOT CORNERS WILL BE SET AFTER THE PLAT IS RECORDED AND SITE GRADING IS COMPLETE. ALL EASEMENTS OF RECORDS ARE SHOWN OR NOTED ON THE PLAT, AND ARE BASED ON THE TITLE COMMITMENT PREPARED BY STEWART TITLE GUARANTY COMPANY, GF NO. 1594366, EFFECTIVE DATE FEBRUARY 15, 2022.

TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT AUSTIN, TRAVIS, COUNTY TEXAS, THIS _____ DAY OF _____, 20_____.

_____
ERNESTO NAVARRETE, R.P.L.S.
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 6642 - STATE OF TEXAS
HR GREEN DEVELOPMENT TX, LLC
5508 HWY 290 WEST, SUITE 150
AUSTIN, TEXAS 78735
512.872.6696
ERNESTO.NAVARRETE@HRGREEN.COM
TBPLS FIRM NO. 10194101

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF TRAVIS §

I, JUDD T. WILLMANN, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS PLAT IS IN COMPLIANCE WITH THE CODES AND ORDINANCES OF THE CITY OF LIBERTY HILL, TEXAS.

TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT AUSTIN, TRAVIS, COUNTY TEXAS, THIS _____ DAY OF _____, 20_____.

_____
JUDD T. WILLMANN, P.E.
REGISTERED PROFESSIONAL ENGINEER
NO. 90356 - STATE OF TEXAS
HR GREEN DEVELOPMENT TX, LLC
5508 HWY 290 WEST, SUITE 150
AUSTIN, TEXAS 78735
512.872.6696
JUDD.WILLMANN@HRGREEN.COM
TBPE FIRM NO. F-16384

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS
COUNTY OF WILLIAMSON §

I, NANCY E. RISTER, CLERK OF THE COUNTY COURT OF SAID COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IN WRITING, WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE_____ DAY OF_____, 20__, A.D., AT _____ O'CLOCK, _____M., AND DULY RECORDED THIS THE____ DAY OF_____, 20____ A.D., AT_ O'CLOCK____M., IN THE OFFICIAL PUBLIC RECORDS OF SAID COUNTY IN INSTRUMENT NO. _____.

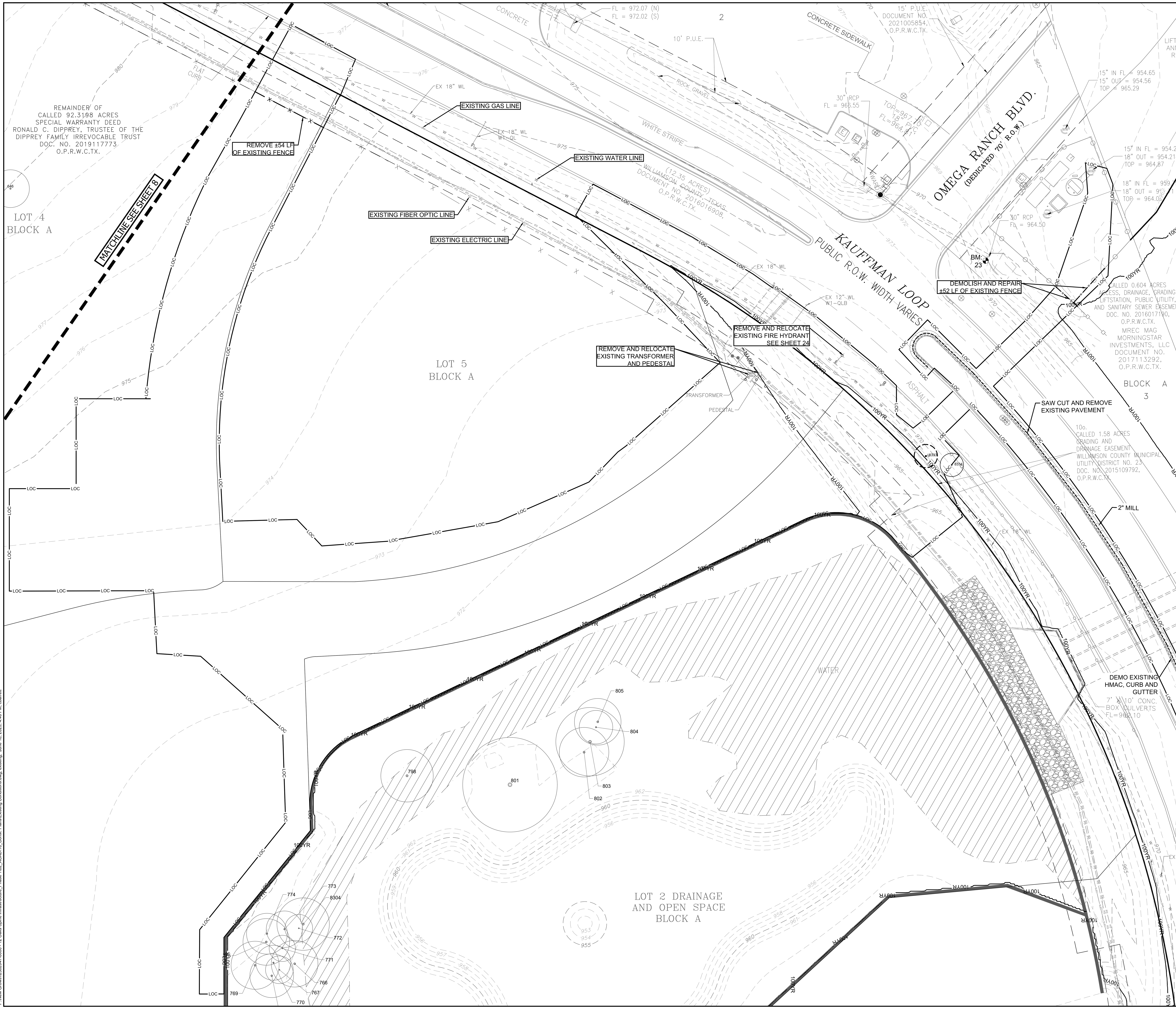
TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT THE COUNTY COURT OF SAID COUNTY, AT MY OFFICE IN GEORGETOWN, TEXAS, THE DATE LAST SHOWN ABOVE WRITTEN.

BY: _____
NANCY E. RISTER
CLERK, COUNTY COURT
WILLIAMSON COUNTY, TEXAS

FILE No: 1386			
	PLAT PREPARATION DATE		SEPTEMBER, 2022.
	APPLICATION SUBMITTAL DATE		
1	CITY COMMENTS	M.B.	12-20-22
2	ACCESS EASEMENT ADDED	M.B.	01-05-23
3	STAFF REVIEW COMMENTS	M.B.	02-16-23
4	LOT REVISIONS & R.O.W. DEDICATION	M.B.	05-19-23
No:	REVISION:	BY:	DATE:

HRGreen. DEVELOPMENT TX
5508 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

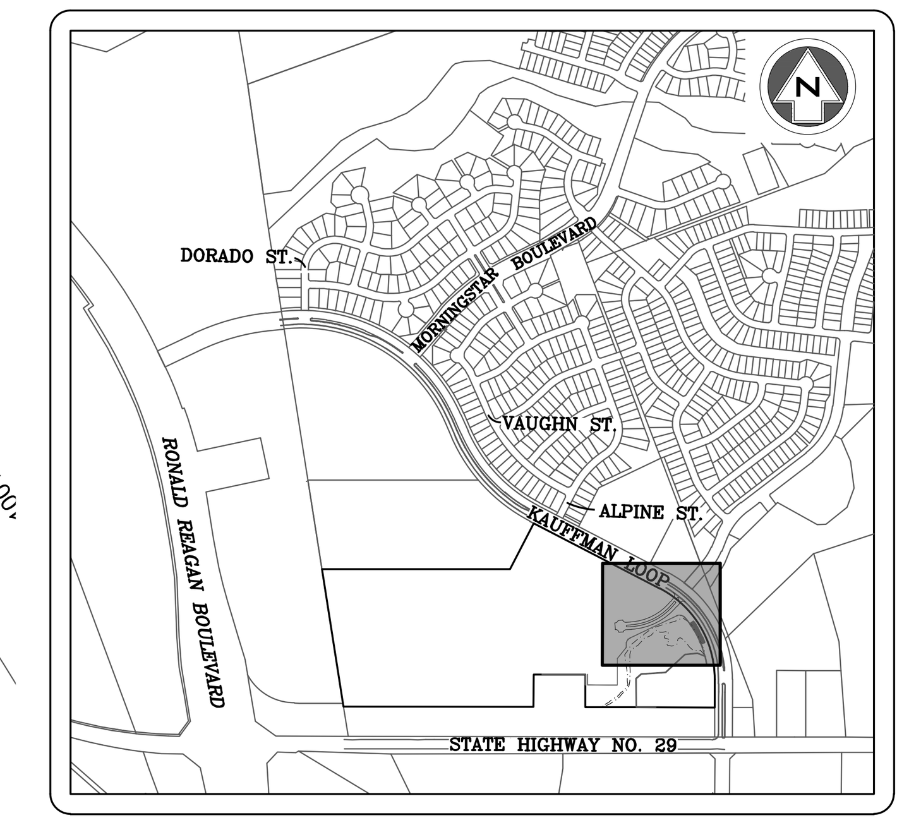
FINAL PLAT
12 OAKS VILLAGE
GREENLEAF FISK SURVEY, A-5
WILLIAMSON COUNTY, TEXAS



![N] SCALE: 1" = 30' (0, 30', 60')

LEGEND

Symbol	Description
	EXISTING MINOR CONTOUR
505	EXISTING MAJOR CONTOUR
	OVERALL PROPERTY BOUNDARY
	LOT LINE
	EASEMENT
	JURISDICTIONAL WATER
—x—x—	EXISTING FENCE TO BE REMOVED
	EXISTING AREA TO BE DEMOLISHED
LOC	LIMITS OF CONSTRUCTION
XXXX	TREE TO BE REMOVED
XXXX	TREE TO REMAIN
	SAWCUT LINE
	RIP RAP
	DEMO AREA
	2" MILL
	1 ROW SOIL RET. BLANKET CLASS 1, TYPE A



KEY MAP
N.T.S.

TREE LIST

POINT	DESCRIPTION	MULTI TRUNK	HERITAGE	REMOVE
8333	8" CEDAR ELM			X
8334	8" CEDAR ELM			

NO.	REVISION	BY	DATE

811 Know what's below. Call before you dig.

5508 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

HRGreen®
DEVELOPMENT TX

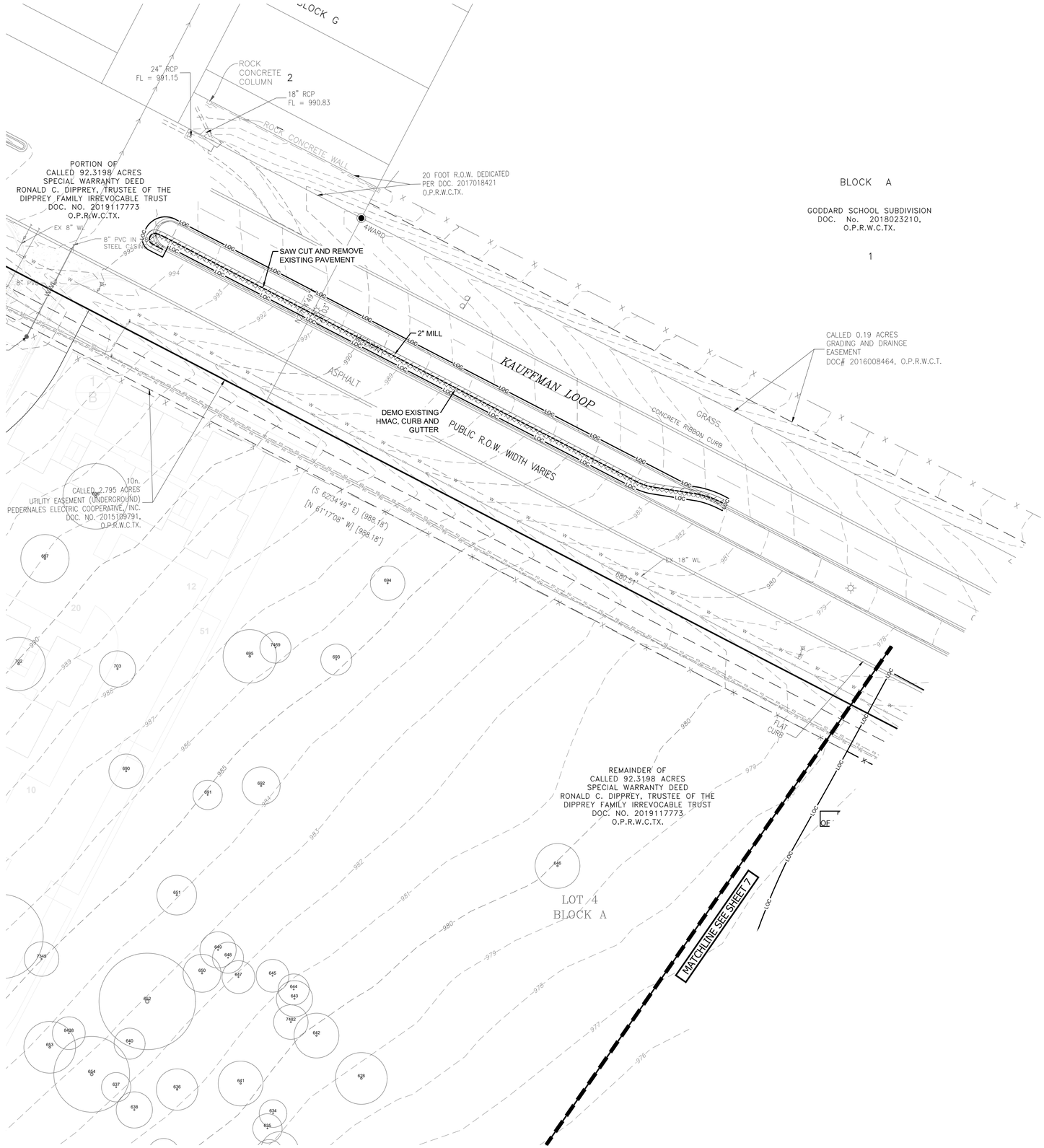
STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED
PROFESSIONAL ENGINEER
06/16/2023

EXISTING CONDITIONS, TREE & DEMOLITION PLAN 1 OF 2
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 6 OF 33

P:\New Growth\2302047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\Existing Conditions.dwg, existing, June 16, 2023, 4:40 PM, cbarrett

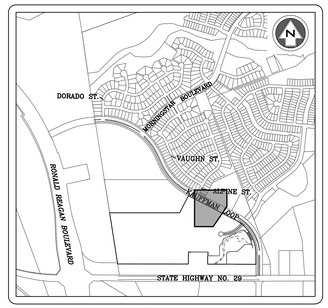


0 30' 60'

SCALE: 1" = 30'

LEGEND

- EXISTING MINOR CONTOUR
- 505 EXISTING MAJOR CONTOUR
- OVERALL PROPERTY BOUNDARY
- LOT LINE
- EASEMENT
- JURISDICTIONAL WATER
- EXISTING FENCE TO BE REMOVED
- EXISTING AREA TO BE DEMOLISHED
- LOC LIMITS OF CONSTRUCTION
- XXXX TREE TO BE REMOVED
- XXXX TREE TO REMAIN
- SAWCUT LINE
- RIP RAP
- DEMO AREA
- 2" MILL
- 1 ROW SOIL RET. BLANKET CLASS 1, TYPE A



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

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HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

HRGreen

DEVELOPMENT TX

STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

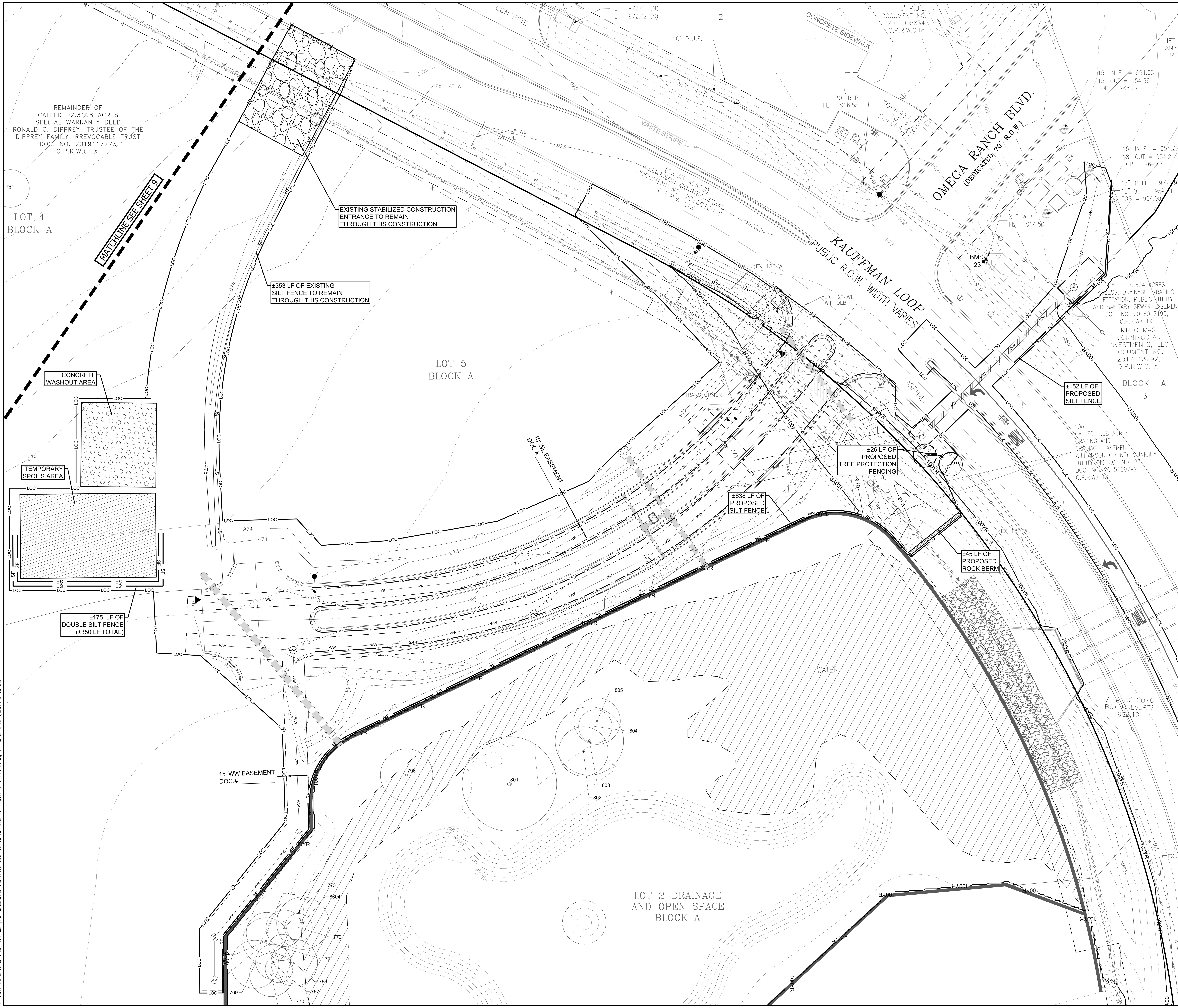
EXISTING CONDITIONS, TREE & DEMOLITION PLAN 2 OF 2

12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

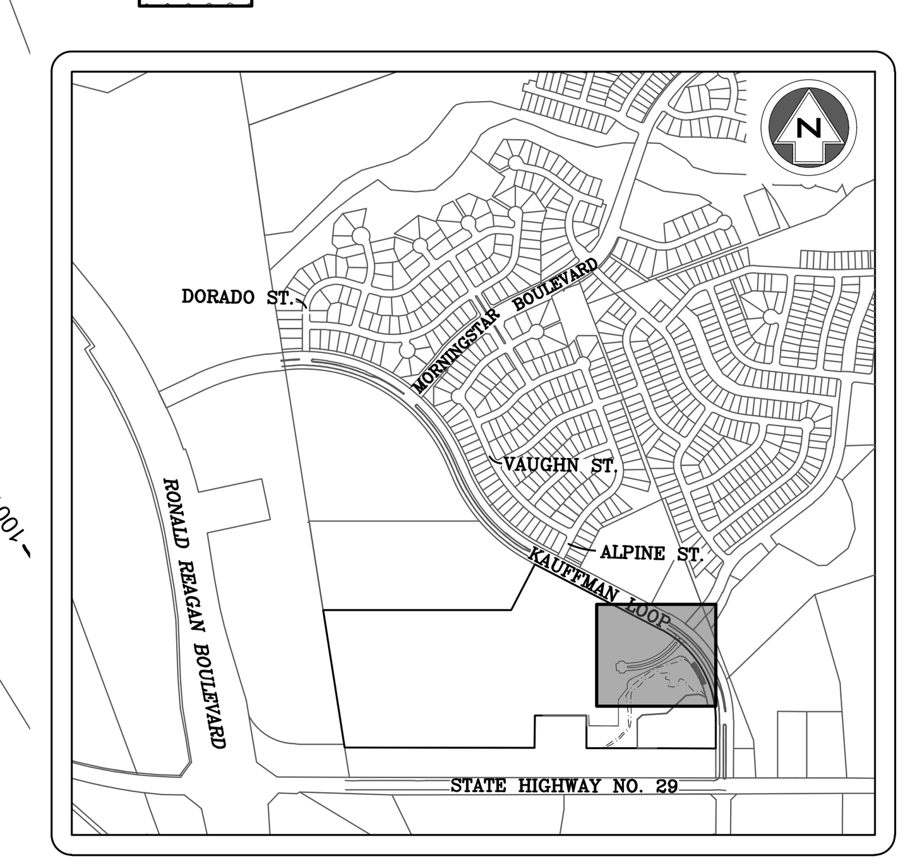
SHT. 7 OF 33

P:\New Growth\2302047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const Plans\EXISTING CONDITIONS.dwg, existing (2), June 16, 2023, 4:40 PM, cbarnett


MATCHLINE SEE SHEET 9
REMAINDER OF CALLED 92.3198 ACRES SPECIAL WARRANTY DEED RONALD C. DIPPREY, TRUSTEE OF THE DIPPREY FAMILY IRREVOCABLE TRUST DOC. NO. 2019117773 O.P.R.W.C.TX.
LOT 4 BLOCK A
LOT 5 BLOCK A
EXISTING STABILIZED CONSTRUCTION ENTRANCE TO REMAIN THROUGH THIS CONSTRUCTION
±353 LF OF EXISTING SILT FENCE TO REMAIN THROUGH THIS CONSTRUCTION
CONCRETE WASHOUT AREA
TEMPORARY SPOILS AREA
±175 LF OF DOUBLE SILT FENCE (±350 LF TOTAL)
10' WL EASEMENT DOC.#
15' WW EASEMENT DOC.#
±638 LF OF PROPOSED SILT FENCE
±26 LF OF PROPOSED TREE PROTECTION FENCING
±45 LF OF PROPOSED ROCK BERM
±152 LF OF PROPOSED SILT FENCE
KAUFFMAN LOOP PUBLIC R.O.W. WIDTH VARIES
OMEGA RANCH BLVD. (DEDICATED 70' R.O.W.)
CONCRETE SIDEWALK
15' P.U.E. DOCUMENT NO. 2021005854, O.P.R.W.C.TX.
10' P.U.E.
(12.35 ACRES) WILLIAMSON COUNTY, TEXAS DOCUMENT NO. 2016016908, O.P.R.W.C.TX.
CALLED 0.604 ACRES ACCESS, DRAINAGE, GRADING, LIFTSTATION, PUBLIC UTILITY, AND SANITARY SEWER EASEMENT DOC. NO. 2016017190, O.P.R.W.C.TX.
MREC MAG MORNINGSTAR INVESTMENTS, LLC DOCUMENT NO. 2017113292, O.P.R.W.C.TX.
BLOCK A 3
10o. CALLED 1.58 ACRES GRADING AND DRAINAGE EASEMENT WILLIAMSON COUNTY MUNICIPAL UTILITY DISTRICT NO. 23 DOC. NO. 2015109792, O.P.R.W.C.TX.
7' x 10' CONC. BOX CULVERTS FL=962.10
LOT 2 DRAINAGE AND OPEN SPACE BLOCK A
WATER
BM 23
SCALE: 1" = 30'

LEGEND

	EXISTING MINOR CONTOUR
505	EXISTING MAJOR CONTOUR
504	PROPOSED MINOR CONTOUR
505	PROPOSED MAJOR CONTOUR
	PROPERTY BOUNDARY
	EASEMENT
	STORM DRAIN LINE
	FLOW ARROW
	PROPOSED WALL
	JURISDICTIONAL WATER
	TREE TO BE REMOVED
	TREE TO REMAIN
LOC	LIMITS OF CONSTRUCTION
SF	EXISTING SILT FENCE
SF	PROPOSED SILT FENCE
TP	TREE PROTECTION FENCING
	ROCK BERM
	STABILIZED CONSTRUCTION ENTRANCE
	TEMPORARY SPOILS AREA
	CONCRETE WASHOUT AREA



KEY MAP
N.T.S.

SUMMARY OF EROSION & SEDIMENTATION CONTROLS

ITEM	QUANTITY
SILT FENCE (PROPOSED)	1,128 LF
SILT FENCE (EXISTING)	353 LF
ROCK BERM	45 LF
TREE PROTECTION	26 LF
STABILIZED CONSTRUCTION ENTRANCE (EXISTING)	1 EA
LIMITS OF CONSTRUCTION	2.73 AC

NO.	REVISION	BY	DATE

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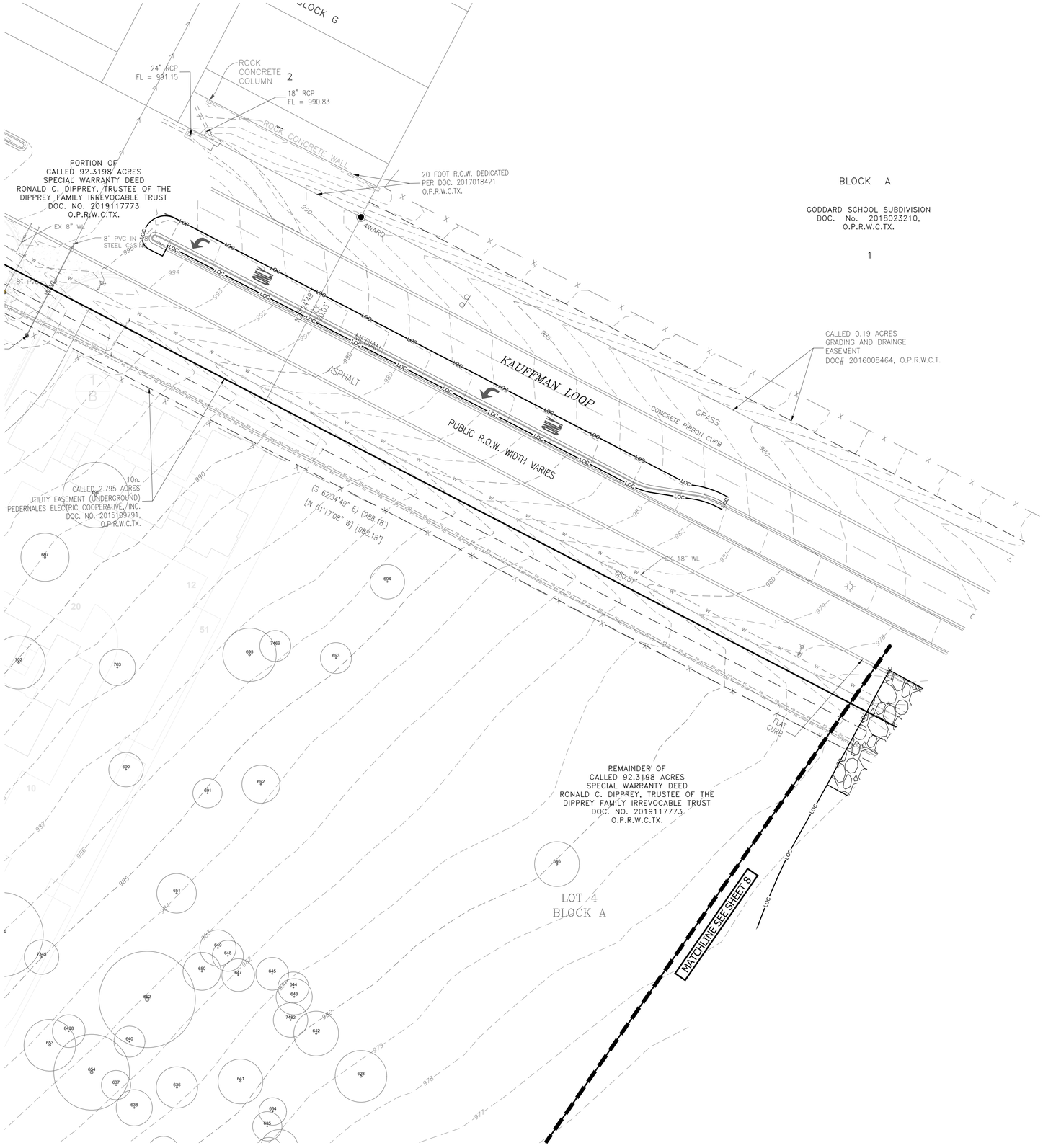
TBPE NO.: 16384 TBPLS NO.: 10194101

STATE OF TEXAS XAVIER GARZA-ROBLEDO 135174 LICENSED PROFESSIONAL ENGINEER
06/16/2023

EROSION, SEDIMENTATION CONTROL & TREE PLAN 1 OF 2
12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

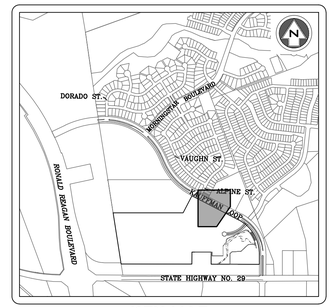


0 30' 60'

SCALE: 1" = 30'

LEGEND

- EXISTING MINOR CONTOUR
- 505 EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 505 PROPOSED MAJOR CONTOUR
- PROPERTY BOUNDARY
- EASEMENT
- STORM DRAIN LINE
- FLOW ARROW
- PROPOSED WALL
- JURISDICTIONAL WATER
- TREE TO BE REMOVED
- TREE TO REMAIN
- LOC LIMITS OF CONSTRUCTION
- SF EXISTING SILT FENCE
- SF PROPOSED SILT FENCE
- TP TREE PROTECTION FENCING
- ROCK BERM
- STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY SPOILS AREA
- CONCRETE WASHOUT AREA



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

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TBPE NO: 16384
TBPLS NO: 10194101

HRGreen

DEVELOPMENT TX

XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

EROSION, SEDIMENTATION CONTROL & TREE PLAN 2 OF 2

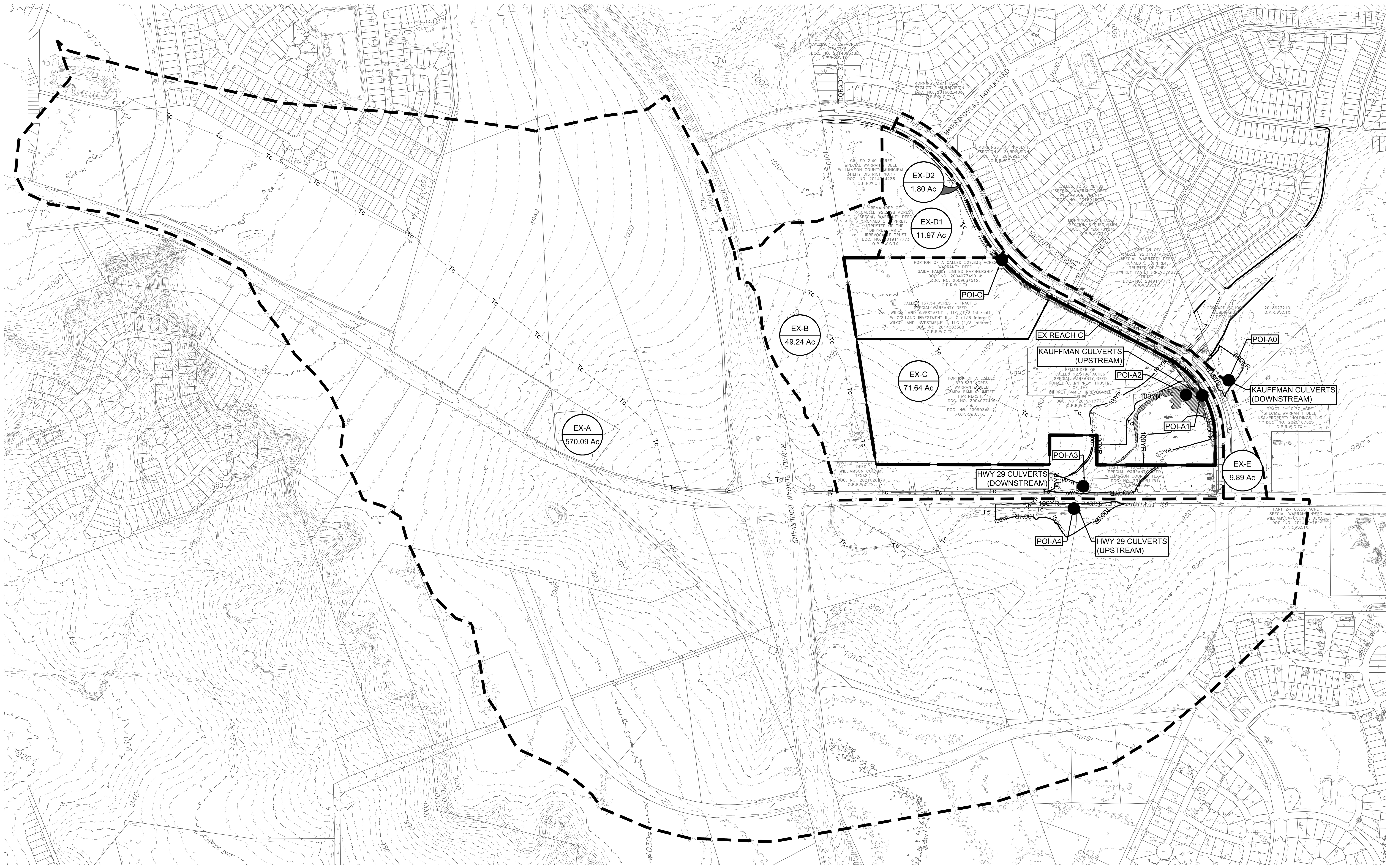
12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS

LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 9 OF 33

P:\New Growth\28\28047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\EROSION CONTROL PLAN.dwg, ES (2), June 16, 2023, 4:41 PM, dbarrett



SCALE: 1" = 400'

LEGEND

835	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
Tc	TIME OF CONCENTRATION
100YR	CALCULATED 100-YEAR EXISTING FLOOD PLAIN
	FLOW ARROW
	EXISTING DRAINAGE LINE
DA-1 xx.xx ac	EXISTING DRAINAGE LABEL
POI A	POINT OF INTEREST

Kauffman Loop Existing Culverts Outfall Rating

Elevation	Q (cfs)
962.10	0
962.65	10
962.76	30
962.84	50
963.07	80
963.42	120
963.97	200
964.82	350
965.03	390
965.07	400
965.52	500
966.28	700
966.95	900
967.27	1000
967.86	1200
968.43	1400
968.96	1600
969.47	1800
969.96	2000
970.44	2200
970.90	2400
971.34	2600
971.82	2800
971.90	3000
973.23	5000
974.57	10000

Kauffman Loop Culverts Existing Water Surface Elevation

Storm	WSE
2-YR	965.87
10-YR	967.59
25-YR	968.62
100-YR	970.20

Routing Analysis Inputs - Existing Conditions

Drainage Areas		Land Use		TOC Calculation Table	HEC-HMS Inputs		
Contributing Area	Area (ac)	Base Curve Number	Existing Impervious Cover (ac)	TOC (min)	Area (sq. mi.)	Impervious Cover (%)	Lag Time (min)
EX-A	570.09	80	77.20	101.46	0.89076	13.54%	60.88
EX-B	49.24	80	4.64	49.53	0.07694	9.43%	29.72
EX-C	71.64	80	0.00	40.49	0.11194	0.00%	24.29
EX-D1	11.97	80	0.00	21.60	0.01870	0.00%	12.96
EX-D2	1.80	80	0.89	5.00	0.00281	49.66%	3.00
EX-E	9.89	80	4.47	15.11	0.01545	45.20%	9.06

Reach Lag Calculations

Reach Name	Length (ft)	Velocity (ft/s)	T_c (min)	Lag Time (min)
EX R-D	1754	4.50	6.50	3.90

Time of Concentration Calculations - Existing Conditions

Contributing Area	*Sheet Flow*					*Shallow Concentrated Flow (Unpaved)*				*Total Tc*
	Length (ft)	*Delta (ft)*	*Slope (ft/ft)*	*Roughness Coefficient*	T_{sheet}	*Length (ft)*	*Delta (ft)*	*Slope (ft/ft)*	$T_{unpaved}$ *(min)*	T_c **(min)**
EX-A	100	0.5	0.0050	0.24	22.39	8478.0	104	0.0123	79.07	**101.46**
EX-B	100	0.65	0.0065	0.24	20.16	3362.0	47	0.0140	29.37	**49.53**
EX-C	100	1	0.0100	0.24	16.97	2899.0	47.0	0.0162	23.52	**40.49**
EX-D1	Tc = 21.6 min (Morningstar New Growth Plans)									**21.60**
EX-D2	Tc = 5 min									**5.00**
EX-E	100	3.1	0.0310	0.24	10.79	692.0	19	0.0275	4.31	**15.11**

Existing Hydrology Summary

Key Analysis Point	Peak Flow (cfs)			
	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}
POI-A4	511	948	1,258	1,787
POI-A3	544	1,011	1,343	1,910
POI-A2	585	1,093	1,455	2,075
POI-A1	590	1,104	1,470	2,098
POI-A0	594	1,111	1,480	2,114

NO.	REVISION	BY	DATE

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TBPLS NO: 10194101

HRGreen® DEVELOPMENT TX

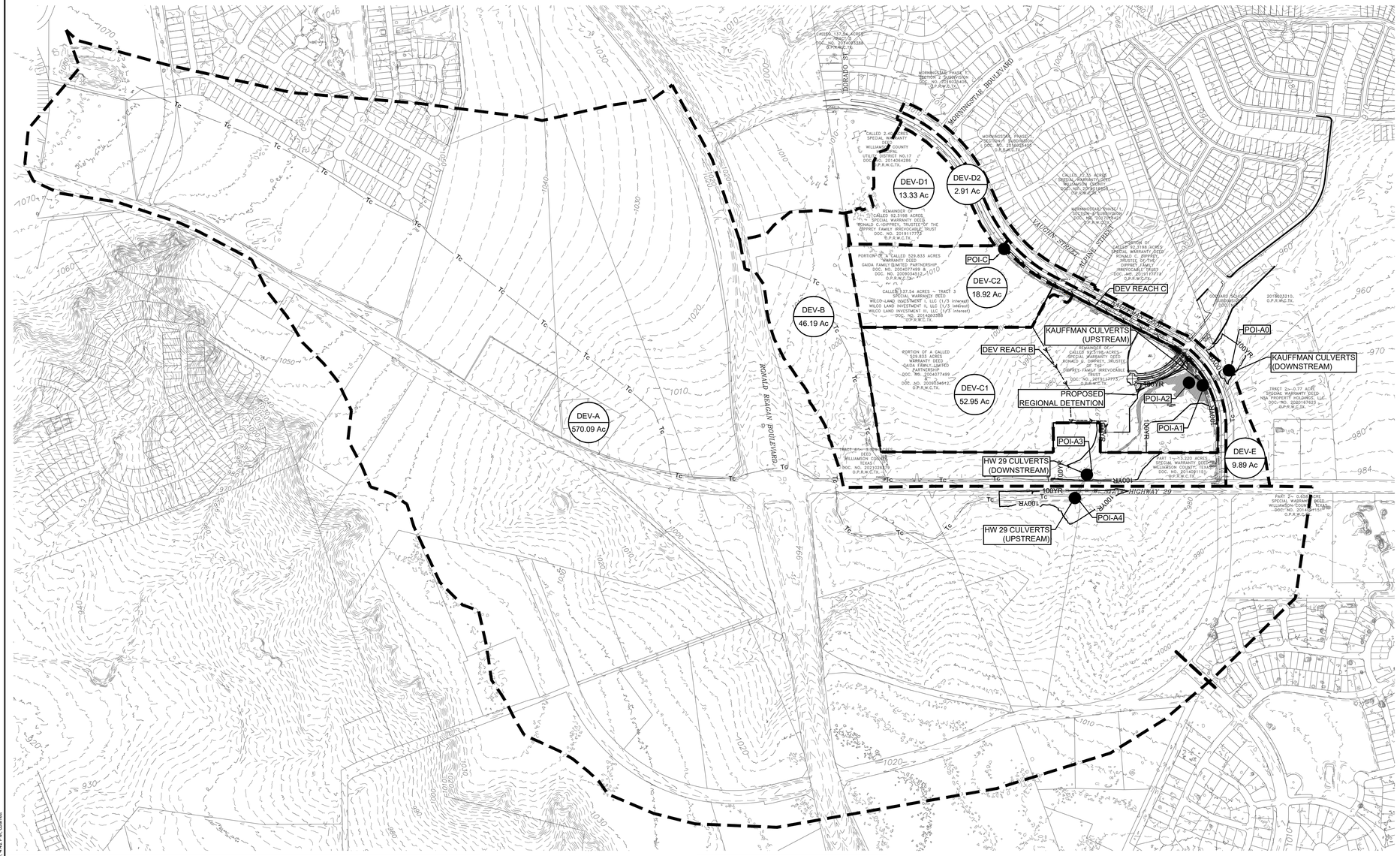
STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

PRE DEVELOPED DRAINAGE AREA MAP

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

P:\New Growth\2302047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\EXISTING DRAINAGE MAP.dwg, exda, June 16, 2023, 4:41 PM, cbarrett



0 400' 800'

SCALE: 1" = 400'

LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- FLOW ARROW
- SWALE
- CALCULATED 100-YEAR PROPOSED FLOOD PLAIN
- TIME OF CONCENTRATION
- REACH
- PROPOSED DRAINAGE BOUNDARY
- STORM DRAIN LINE
- DA-1 / xx.xx ac — PROPOSED DRAINAGE LABEL
- POI A — POINT OF INTEREST

12 Oaks Regional Pond : Elevation-Area-Storage				
Elevation	Area (sf)	Area (ac)	Total Storage (cf)	Total Storage (Ac-Ft)
962.10	0	0.0000	0	0
963.00	101,852	2.3382	30,556	0.70
964.00	148,475	3.4085	154,989	3.56
965.00	176,573	4.0536	317,310	7.28
966.00	202,983	4.6599	506,934	11.64
967.00	240,965	5.5318	728,637	16.73
968.00	272,966	6.2664	985,436	22.62
969.00	299,047	6.8652	1,271,344	29.19
970.00	327,308	7.5140	1,584,415	36.37
971.00	359,650	8.2564	1,927,767	44.26

Kauffman Loop Culverts Proposed Water Surface Elevation	
Storm	WSE
2-YR	965.22
10-YR	966.17
25-YR	968.26
100-YR	969.83

Routing Analysis Inputs - Proposed Conditions							
Drainage Areas		Land Use		TOC Calculation Table	HEC-HMS Inputs		
Contributing Area	Area (ac)	Curve Number	Total Impervious Cover (ac)	TOC (min)	Area (sq. mi.)	Impervious Cover (%)	Lag Time
DEV-A	570.09	80	77.20	101.46	0.89076	13.54%	60.88
DEV-B	46.19	80	4.64	49.53	0.07218	10.05%	29.72
DEV-C1	52.95	80	42.36	5.00	0.08273	80.00%	3.00
DEV-C2	18.92	80	15.13	5.00	0.02956	80.00%	3.00
DEV-D1	13.33	80	8.67	5.00	0.02083	65.00%	3.00
DEV-D2	2.91	80	0.89	5.00	0.00455	30.65%	3.00
DEV-E	9.89	80	4.47	15.11	0.01545	45.20%	9.06

Time of Concentration Calculations - Proposed Conditions										
Contributing Area	*Sheet Flow*					*Shallow Concentrated Flow (Unpaved)*				*Total Tc (min)*
	Length	*Delta (ft)*	*Slope (ft/ft)*	*Roughness Coefficient*	T_{sheet}	*Length (ft)*	*Delta (ft)*	*Slope (ft/ft)*	$T_{unpaved}$	T_c **(min)**
DEV-A	100	0.5	0.0050	0.24	22.39	8478.0	104	0.0123	79.07	**101.46**
DEV-B	100	0.65	0.0065	0.24	20.16	3362.0	47.0	0.0140	29.37	**49.53**
DEV-C1										**5.00**
DEV-C2										**5.00**
DEV-D1										**5.00**
DEV-D2										**5.00**
DEV-E	100	3.1	0.0310	0.24	10.79	692.0	19	0.0275	4.31	**15.11**

Reach Lag Calculations				
Reach Name	Length (ft)	Velocity (ft/s)	T_c **(min)**	Lag Time (min)
DEV R-C	1130	4.50	4.19	2.51
DEV R-D	1754	4.50	6.50	3.90

Proposed Hydrology Summary				
Key Analysis Point	Peak Flow (cfs)			
	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}
POI-A4	511	948	1,258	1,787
POI-A3	542	1,007	1,338	1,902
POI-A2	564	1,051	1,399	2,000
POI-A1	554	1,056	1,395	1,971
POI-A0	557	1,061	1,403	1,983

Summary Table: Existing vs. Proposed												
Analysis Point	Pre-Developed Peak Flow (cfs)				Developed Peak Flow (cfs)				Δ Peak Flow (cfs)			
	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}	A14 Q_2	A14 Q_{10}	A14 Q_{25}	A14 Q_{100}
POI-A4	511	948	1,258	1,787	511	948	1,258	1,787	0	0	0	0
POI-A3	544	1,011	1,343	1,910	542	1,007	1,338	1,902	-2	-4	-5	-8
POI-A2	585	1,093	1,455	2,075	564	1,051	1,399	2,000	-21	-42	-56	-75
POI-A1	590	1,104	1,470	2,098	554	1,056	1,395	1,971	-36	-48	-75	-127
POI-A0	594	1,111	1,480	2,114	557	1,061	1,403	1,983	-37	-50	-77	-131

NO.	REVISION	BY	DATE

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DEVELOPMENT TX

XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

DEVELOPED DRAINAGE AREA MAP

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS

LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 11 OF 33

P:\New Growth\2020\47-2000 - 12 Oaks Spine Infrastructure_Phase 1\02_ADAS\10_Const. Plans\PROPOSED DRAINAGE.dwg, PROA, June 16, 2023, 4:42 PM, dsarrett

REMAINDER OF
CALLED 92.3198 ACRES
SPECIAL WARRANTY DEED
RONALD C. DIPPREY, TRUSTEE OF THE
DIPPREY FAMILY IRREVOCABLE TRUST
DOC. NO. 2019117773
O.P.R.W.C.TX.

MATCHLINE SEE SHEET 13

GODDARD SCHOOL SUBDIVISION
DOC. No. 2018023210,
O.P.R.W.C.TX.

BLOCK A

2

LOT 5
BLOCK A

10n.
CALLED 2.795 ACRES
UTILITY EASEMENT (UNDERGROUND)
PEDERNALES ELECTRIC COOPERATIVE, INC.
DOC. NO. 2015109791,
O.P.R.W.C.TX.

10o.
CALLED 1.58 ACRES
GRADING AND DRAINAGE EASEMENT
WILLIAMSON COUNTY MUNICIPAL
UTILITY DISTRICT NO. 23
DOC. NO. 2015109792,
O.P.R.W.C.TX.

CALLED 0.604 ACRES
ACCESS, DRAINAGE, GRADING,
LIFTSTATION, PUBLIC UTILITY,
AND SANITARY SEWER EASEMENT
DOC. NO. 2016017190,
O.P.R.W.C.TX.

MREC MAG
MORNINGSTAR
INVESTMENTS, LLC
DOCUMENT NO.
2017113292,
O.P.R.W.C.TX.

(123.35 ACRES)
WILLIAMSON COUNTY, TEXAS
DOCUMENT NO. 2016016906,
O.P.R.W.C.TX.

OMEGA RANCH BLVD.
(DEDICATED 70' R.O.W.)

KAUFFMAN LOOP
PUBLIC R.O.W. WIDTH VARIES

BLOCK A
3

PROPOSED
RELOCATED
FIRE HYDRANT

PROPOSED
FIRE HYDRANT

PROPOSED E.O.P.

WHITE ARROW

WHITE WORD

8" WIDE SOLID
WHITE STRIPING

12' LANE

385' TOTAL LENGTH

215'

265' DECEL LENGTH

50' TAPER

45.0'R

40.0'R

10' P.U.E.

15' P.U.E.
DOCUMENT NO.
2021005854,
O.P.R.W.C.TX.

10' SIDEWALK

6' SIDEWALK

10' WW EASEMENT
DOC.#

15' WL EASEMENT
DOC.#

EX 18" WL

EX 18" WL
W1—QL

EX 12" WL
W1—QLB

EX 8" WL

CONCRETE SIDEWALK

WHITE STRIPE

30" RCP
FL = 966.55

15" IN FL = 954.65
15" OUT = 954.56
TOP = 965.29

18" IN FL = 959.79
18" OUT = 959.71
TOP = 964.09

30" RCP
FL = 964.50

BM 23

PEDESTAL
TRANSFORMER

100YR

798
805
804
803
802
801
774
773
8304
772
771
69
766
767
770
768
743
761
762
742

KEY MAP
N.T.S.

0 30' 60'
SCALE: 1" = 30'

LEGEND

- PROPOSED BOUNDARY
- EASEMENT
- BERM
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED ROLL CURB (SPILL)
- FIRE LANE STRIPING
- SIDEWALKS
- FIRE HYDRANT
- JURISDICTIONAL WATER
- TREE TO REMAIN

NOTE:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. SIDEWALK RAMPS ARE TO BE CONSTRUCTED BY DEVELOPER.
3. THE PAVEMENT BASE COURSE SHALL EXTEND 18 INCHES BEYOND THE BACK OF THE CURB (BOTH CATCH AND SPILL). THE OWNER MUST AVOID INSTALLATION OF IRRIGATION, PLANTINGS, SILT FENCE, ETC. IN THE OVERBUILD. ALL URBAN SUBDIVISIONS SHALL UTILIZE CONCRETE CURB AND GUTTER. ALL CONCRETE CURB SHALL CONTAIN STEEL REINFORCEMENT

NO.	REVISION	BY	DATE

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HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

DEVELOPMENT TX

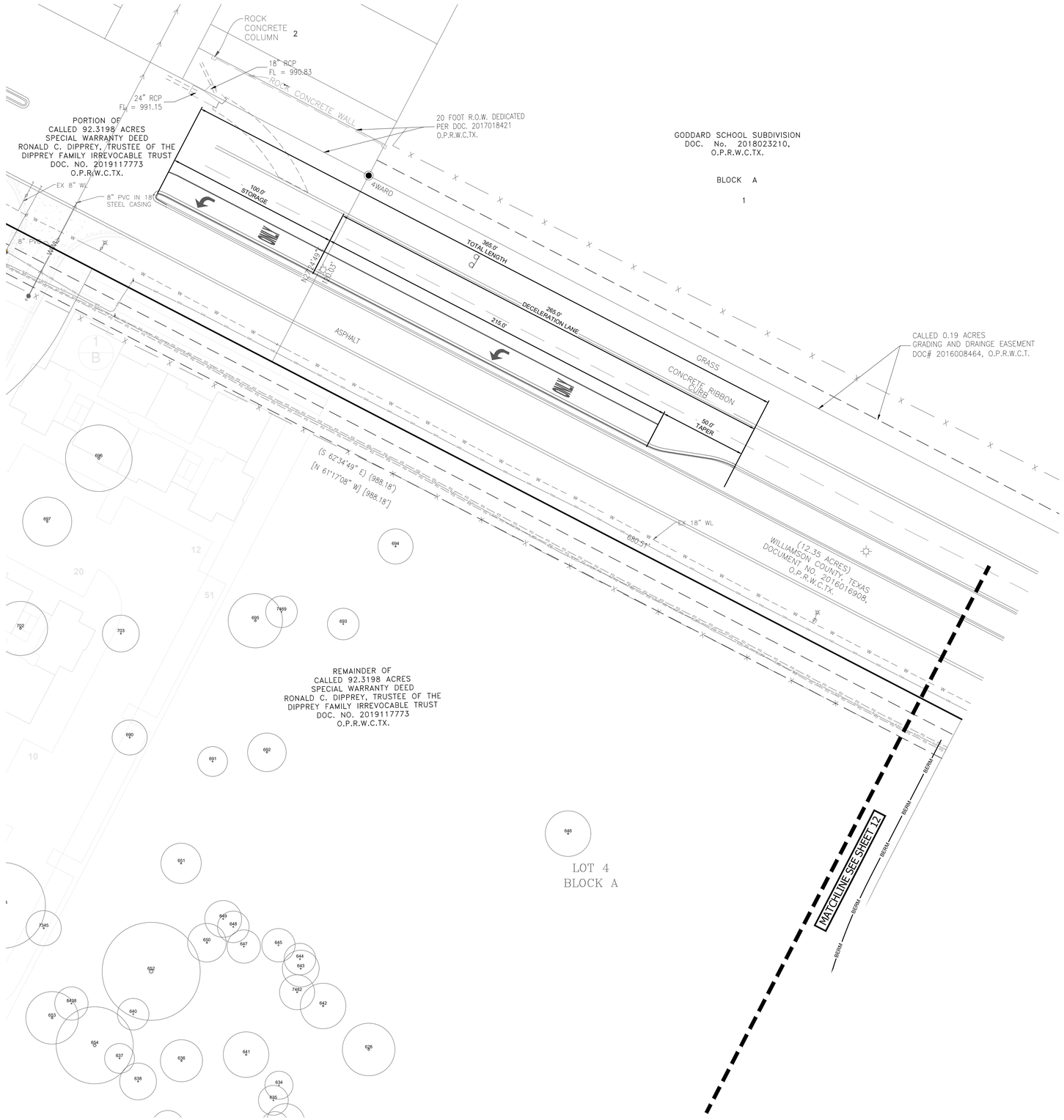
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

SITE & DIMENSION PLAN 1 OF 2
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 12 OF 33

P:\New Growth\29200\47-2000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const Plans\SITE PLAN.dwg, SITE, June 16, 2023, 1:42 PM, cbarrett

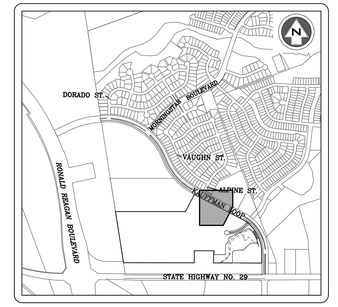


LEGEND

- PROPOSED BOUNDARY
- EASEMENT
- BERM
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED ROLL CURB (SPILL)
- FIRE LANE STRIPING
- SIDEWALKS
- FIRE HYDRANT
- JURISDICTIONAL WATER
- TREE TO REMAIN

NOTE:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. SIDEWALK RAMPS ARE TO BE CONSTRUCTED BY DEVELOPER.
3. THE PAVEMENT BASE COURSE SHALL EXTEND 18 INCHES BEYOND THE BACK OF THE CURB (BOTH CATCH AND SPILL). THE OWNER MUST AVOID INSTALLATION OF IRRIGATION, PLANTINGS, SILT FENCE, ETC. IN THE OVERBUILD. ALL URBAN SUBDIVISIONS SHALL UTILIZE CONCRETE CURB AND GUTTER. ALL CONCRETE CURB SHALL CONTAIN STEEL REINFORCEMENT



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

Know what's below. Call before you dig.

5809 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

HRGreen

DEVELOPMENT TX

XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2025

SITE & DIMENSION PLAN 2 OF 2

12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
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APPROVED BY: XG

SHT. 13 OF 33

P:\New Growth\29200\47-2000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\SITE PLAN.dwg, SITE (2), June 16, 2025, 4:43 PM, cbarrett

REMAINDER OF
CALLED 92.3198 ACRES
SPECIAL WARRANTY DEED
RONALD C. DIPPREY, TRUSTEE OF THE
DIPPREY FAMILY IRREVOCABLE TRUST
DOC. NO. 2019117773
O.P.R.W.C.TX.

GODDARD SCHOOL SUBDIVISION
DOC. No. 2018023210,
O.P.R.W.C.TX.

BLOCK A

2

LOT 5
BLOCK A

10n.
CALLED 2.795 ACRES
UTILITY EASEMENT (UNDERGROUND)
PEDERNALES ELECTRIC COOPERATIVE, INC.
DOC. NO. 2015109791,
O.P.R.W.C.TX.

10o.
CALLED 1.58 ACRES
GRADING AND DRAINAGE EASEMENT
WILLIAMSON COUNTY MUNICIPAL
UTILITY DISTRICT NO. 23
DOC. NO. 2015108792,
O.P.R.W.C.TX.

(12.35 ACRES)
WILLIAMSON COUNTY, TEXAS
DOCUMENT NO. 2016016906,
O.P.R.W.C.TX.

CALLED 0.604 ACRES
ACCESS, DRAINAGE, GRADING,
LIFTSTATION, PUBLIC UTILITY,
AND SANITARY SEWER EASEMENT
DOC. NO. 2016017190,
O.P.R.W.C.TX.

MREC MAG
MORNINGSTAR
INVESTMENTS, LLC
DOCUMENT NO.
2017113292,
O.P.R.W.C.TX.

BLOCK A

OMEGA RANCH BLVD.
(DEDICATED 70' R.O.W.)

KAUFFMAN LOOP
PUBLIC R.O.W. WIDTH VARIES

EX 18" WL

EX 18" WL
W1-QL

EX 12" WL
W1-QLB

EX 8" WL

10' P.U.E.

15' P.U.E.
DOCUMENT NO.
2021005854,
O.P.R.W.C.TX.

CONCRETE SIDEWALK

WHITE STRIPE

30" RCP
INV = 966.55

15" IN FL = 954.65
15" OUT = 954.56
TOP = 965.29

18" IN FL = 959.79
18" OUT = 959.71
TOP = 964.09

30" RCP
FL = 964.50

BM 23

SPEED LIMIT 25 M.P.H.

NO OUTLET

PEDESTAL
TRANSFORMER

BERM

100YR

WHITE ARROW

PROPOSED E.O.P.

WHITE WORD

8" WIDE SOLID
WHITE STRIPING

4.0

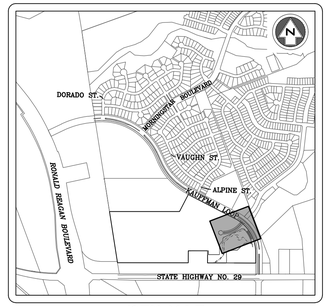
ONLY

798
805
804
801
803
802
774
773
8304
772
771
69
766
770
767
768
743
761
762
742

0 30' 60'
SCALE: 1" = 30'

LEGEND

- STREET END BARRICADE
- STREET SIGN POST
- STOP BAR / LIMIT LINE
- ADA RAMP
- STOP — STOP SIGN CALLOUT
- SPEED LIMIT 25 M.P.H. — SPEED LIMIT SIGN
- NO OUTLET — NO OUTLET/ SIGN (W14-2A)
- STREET LIGHT



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

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SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

HRGreen

DEVELOPMENT TX

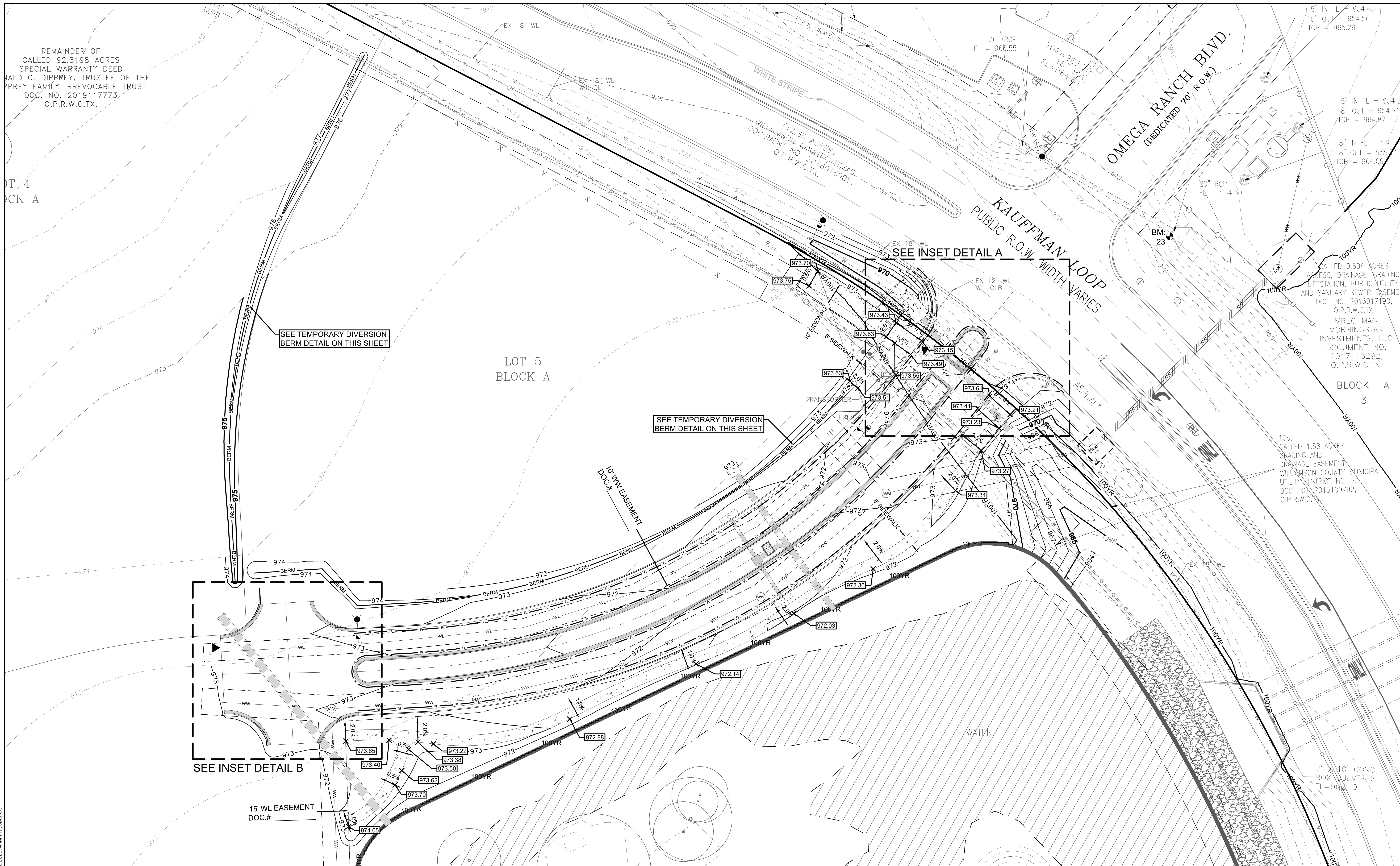
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

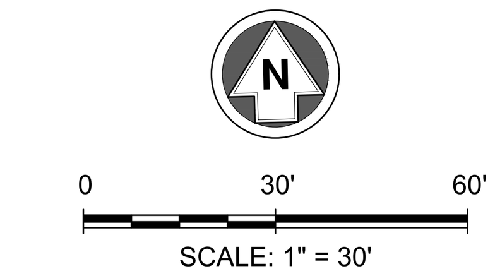
SIGN LAYOUT PLAN
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 14 OF 33

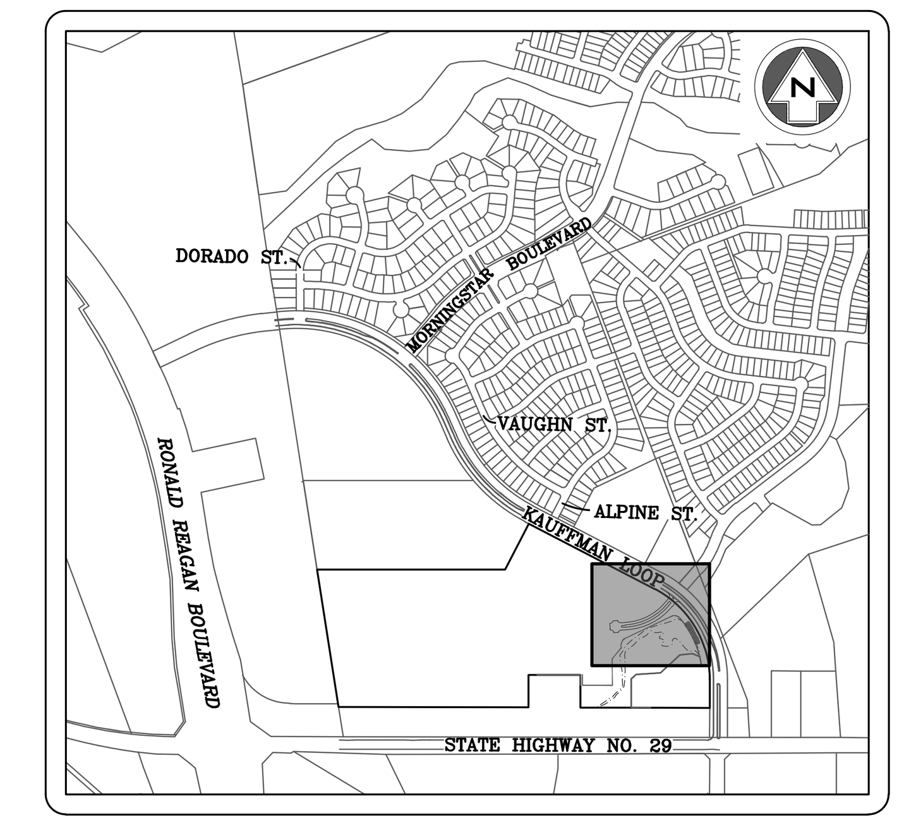
P:\New Growth\29200\47-2000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\SIGN LAYOUT PLAN.dwg, SIGN, June 16, 2023, 4:43 PM, cbarrett





LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPERTY BOUNDARY
- EASEMENT
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED ROLL CURB (SPILL)
- FIRE LANE STRIPING
- BERM
- STORM DRAIN LINE
- SIDEWALKS
- FLOW ARROW
- JURISDICTIONAL WATER
- TREE TO REMAIN
- EP — EDGE OF PAVEMENT / LIP OF GUTTER
- TC — TOP OF CURB
- BC — BOTTOM OF CURB
- SW — SIDEWALK



KEY MAP
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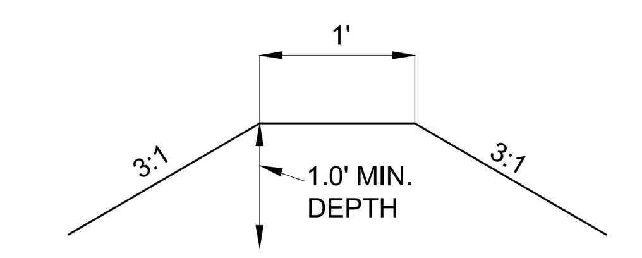
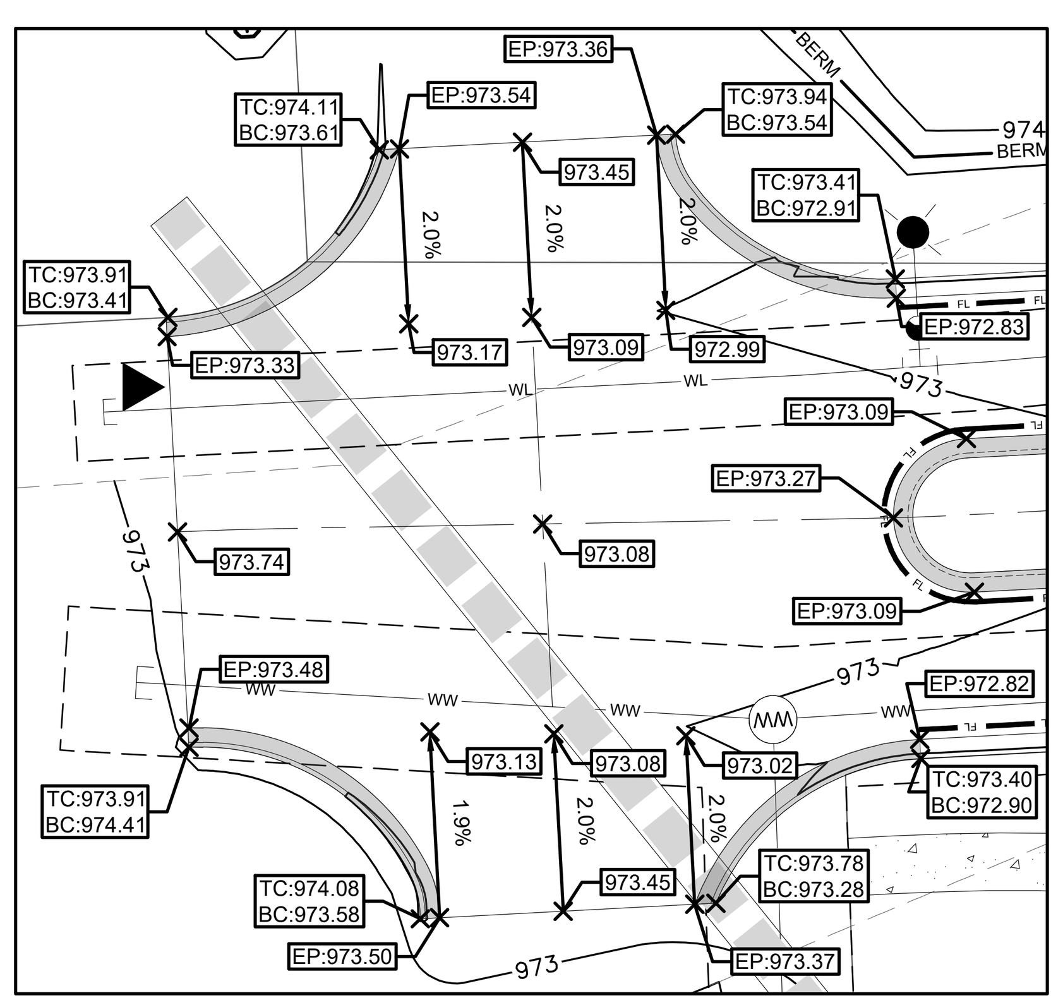
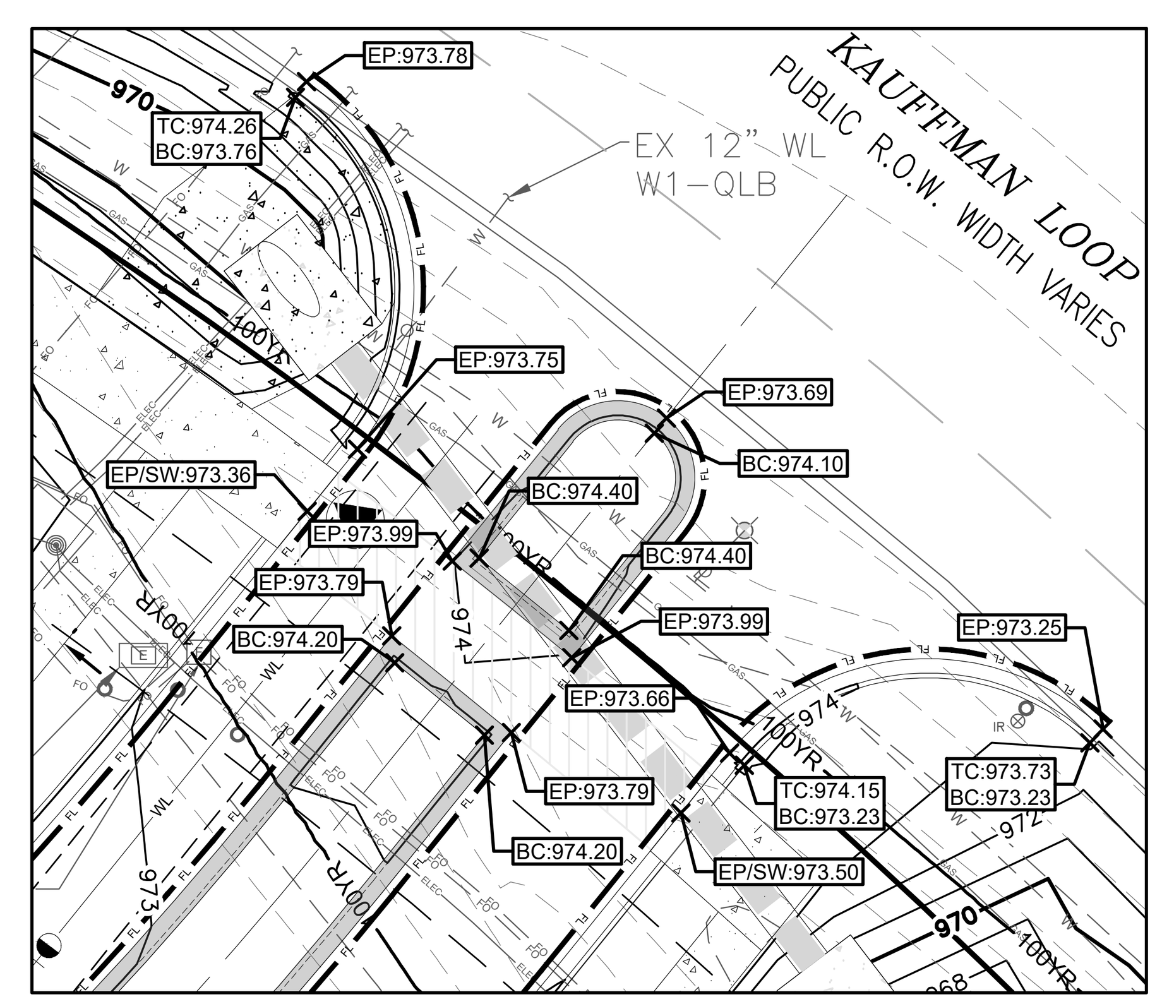


TEMPORARY DIVERSION BERM DETAIL
N.T.S.



INSET DETAIL B
SCALE: 1"=20'



INSET DETAIL A
SCALE: 1"=20'

NO.	REVISION	BY	DATE

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HRGreen® DEVELOPMENT TX

STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

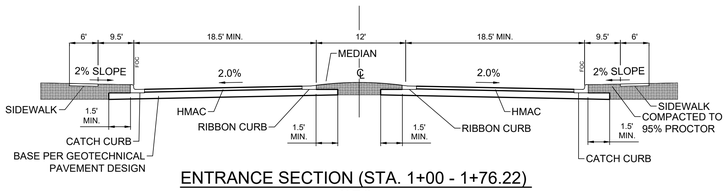
GRADING PLAN

12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

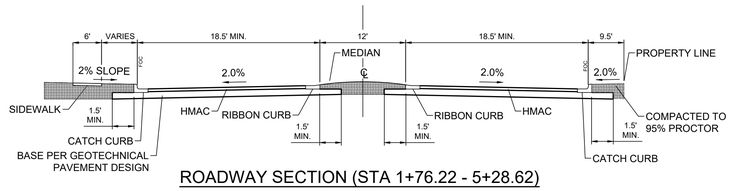
SHT. 15 OF 33

P:\New Growth\2302047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\GRADING OVERALL PLAN.dwg, GRADING, June 16, 2023, 4:44 PM, cbarnett



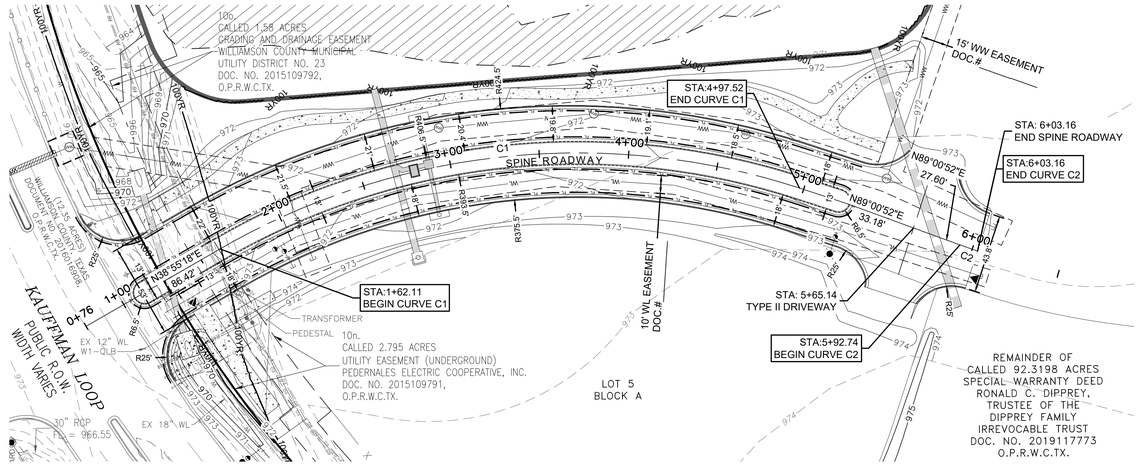
ENTRANCE SECTION (STA. 1+00 - 1+76.22)

N.T.S.



ROADWAY SECTION (STA 1+76.22 - 5+28.62)

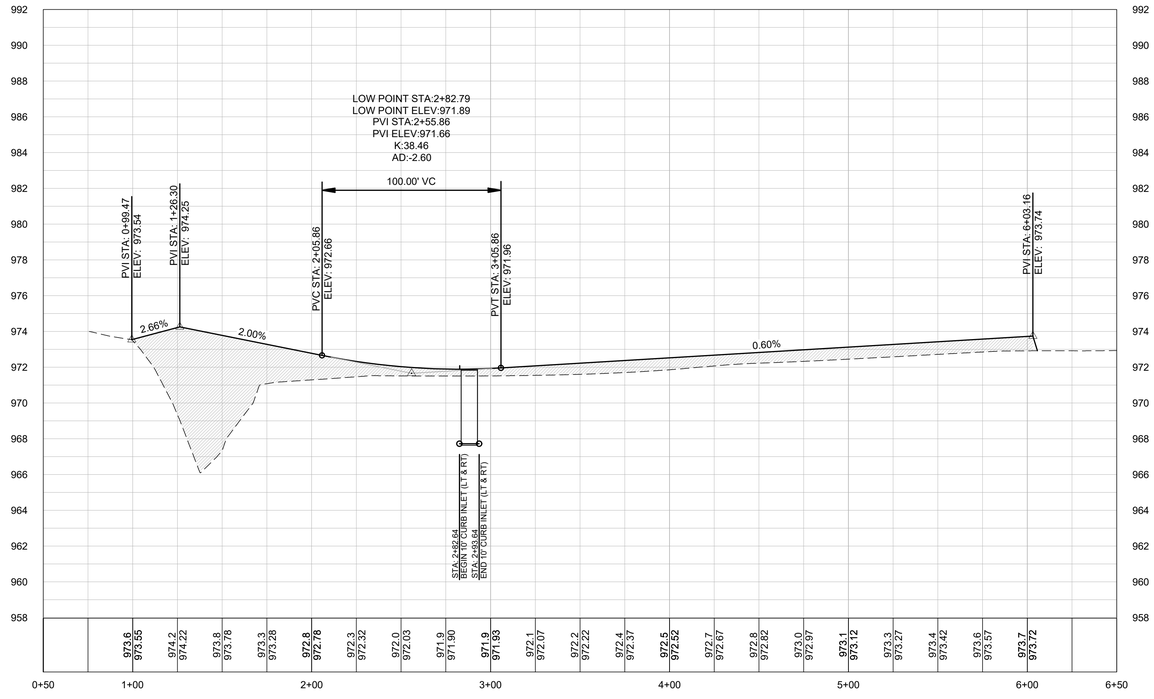
N.T.S.



CURVE TABLE					
NUMBER	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	335.41'	400.00'	48.044°	N62° 56' 38"E	325.67
C2	10.42'	300.00'	1.990°	S88° 01' 10"W	10.42

SPINE ROADWAY

30 MPH DESIGN SPEED



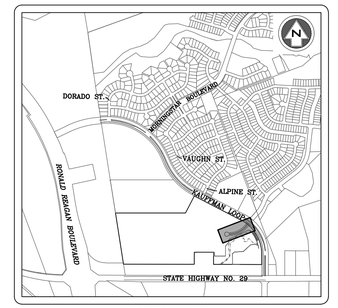
LEGEND

- EXISTING CONTOUR (505)
- PROPOSED CONTOUR (505)
- PROPOSED BOUNDARY
- RIGHT OF WAY
- ETJ / CITY / COUNTY LINE
- FEMA 100-YEAR FLOOD PLAIN (FEMA)
- EASEMENT
- FIRE HYDRANT
- WATER VALVE
- STORM SEWER MANHOLE
- STORM SEWER AREA INLET
- CURB INLET
- WASTE WATER MANHOLE
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED ROLL CURB (SPILL)
- FIRE LANE STRIPING (FL)
- PROPOSED SIDEWALK (HOMEBUILDER)
- PROPOSED SIDEWALK (DEVELOPER)
- SIDEWALK RAMP

PROFILE SCALE	PROFILE LEGEND
1" = 40' HORIZ. 1" = 4' VERT.	CL TOP OF PAVEMENT BOTTOM OF SUBGRADE EXISTING GRADE (CENTER)
CUT / FILL	EXISTING GROUND 900.10 → PROPOSED STREET CL 897.10

NOTE:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. SIDEWALK RAMPS ARE TO BE CONSTRUCTED BY DEVELOPER.
3. THE PAVEMENT BASE COURSE SHALL EXTEND 18 INCHES BEYOND THE BACK OF THE CURB (BOTH CATCH AND SPILL). THE OWNER MUST AVOID INSTALLATION OF IRRIGATION, PLANTINGS, SILT FENCE, ETC. IN THE OVERBUILD. ALL URBAN SUBDIVISIONS SHALL UTILIZE CONCRETE CURB AND GUTTER. ALL CONCRETE CURB SHALL CONTAIN STEEL REINFORCEMENT



KEY MAP

N.T.S.

NO.	REVISION	BY	DATE

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512.872.6696
HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

HRGreen

DEVELOPMENT TX

XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

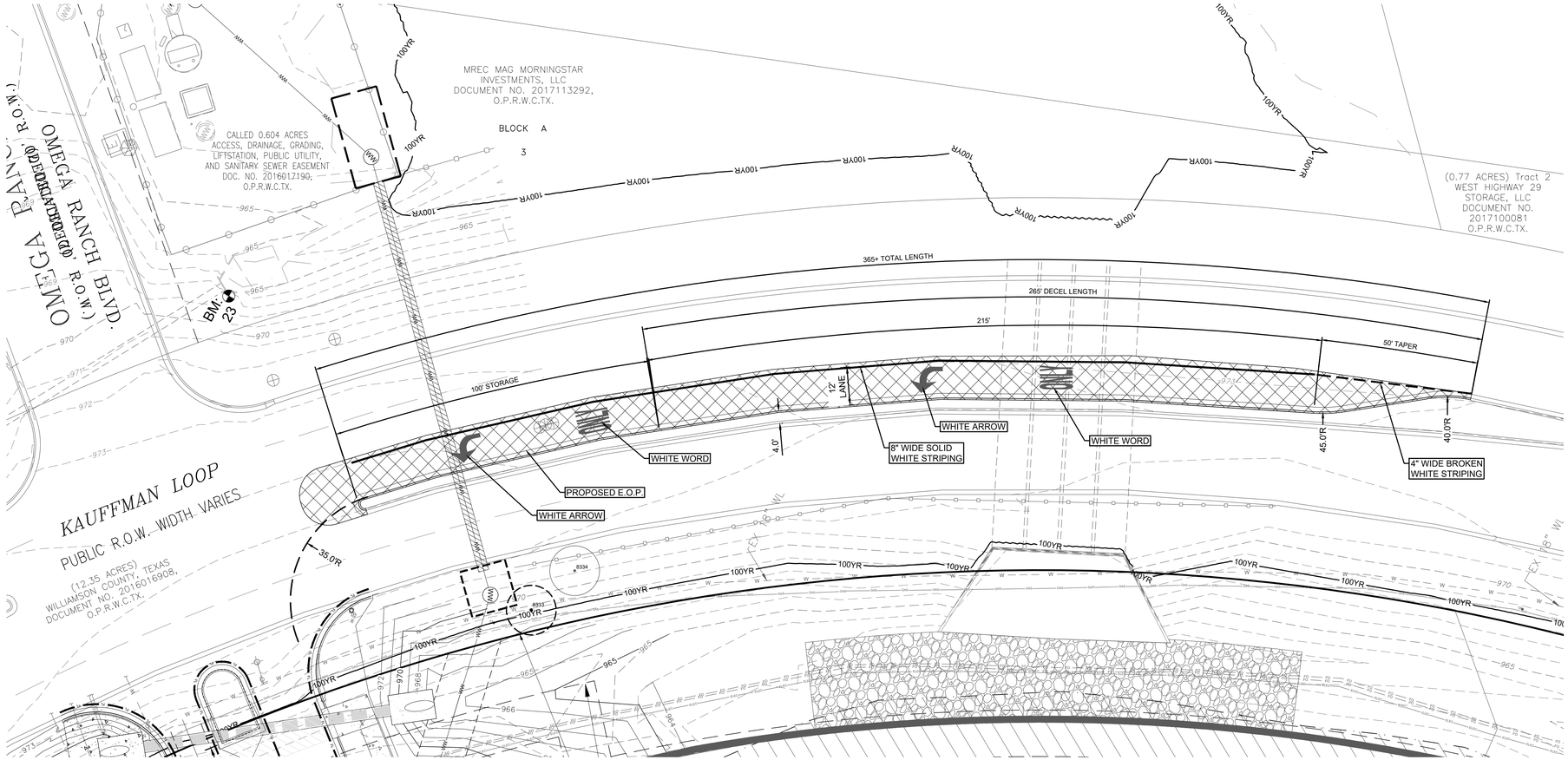
SPINE A PLAN & PROFILE

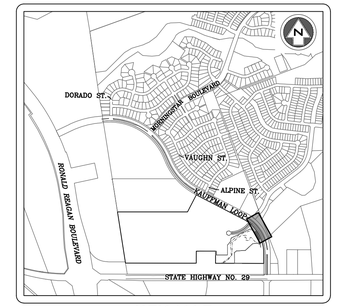
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 16 OF 33

P:\New Growth\2020047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\SPINE A PLAN & PROFILE.dwg, SPINE A, June 16, 2023, 4:44 PM, cbarrett





KEY MAP
N.T.S.

0 20' 40'

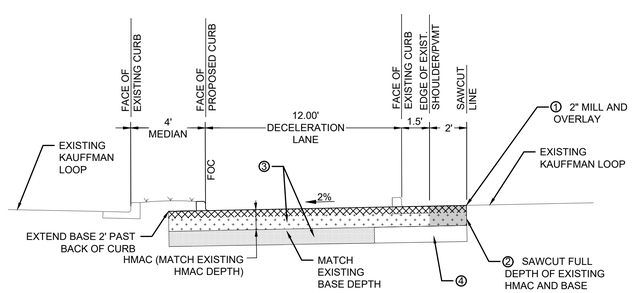
SCALE: 1" = 20'

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED BOUNDARY
- EASEMENT
- BERM
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- SIDEWALKS
- FIRE HYDRANT
- JURISDICTIONAL WATER
- TREE TO REMAIN
- PROPOSED PAVEMENT

CONSTRUCTION NOTES

1. MILL 2' WIDE STRIP OF EXISTING SHOULDER ADJACENT TO EXISTING EDGE OF DRIVE LANE, 1" DEEP. OVERLAY WITH ITEM 340.
2. SAWCUT FULL DEPTH, REMOVE EXISTING HMAC (APPROXIMATELY 12") BASE TO REMAIN
3. CONSTRUCT FULL DEPTH PAVEMENT AND BASE SECTION TO MATCH EXISTING THICKNESSES.
4. ASSUMED 3' EXTENSION OF EXISTING BASE BEYOND EXISTING SHOULDER TO REMAIN. PLACE NEW BASE TO MATCH IF NOT EXISTING.



DECELERATION LANE
(NO SCALE)

NO.	REVISION	BY	DATE

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SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

HR Green
DEVELOPMENT TX

Xavier Garza
STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

DECELERATION LANE PLAN (SOUTH)

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS

LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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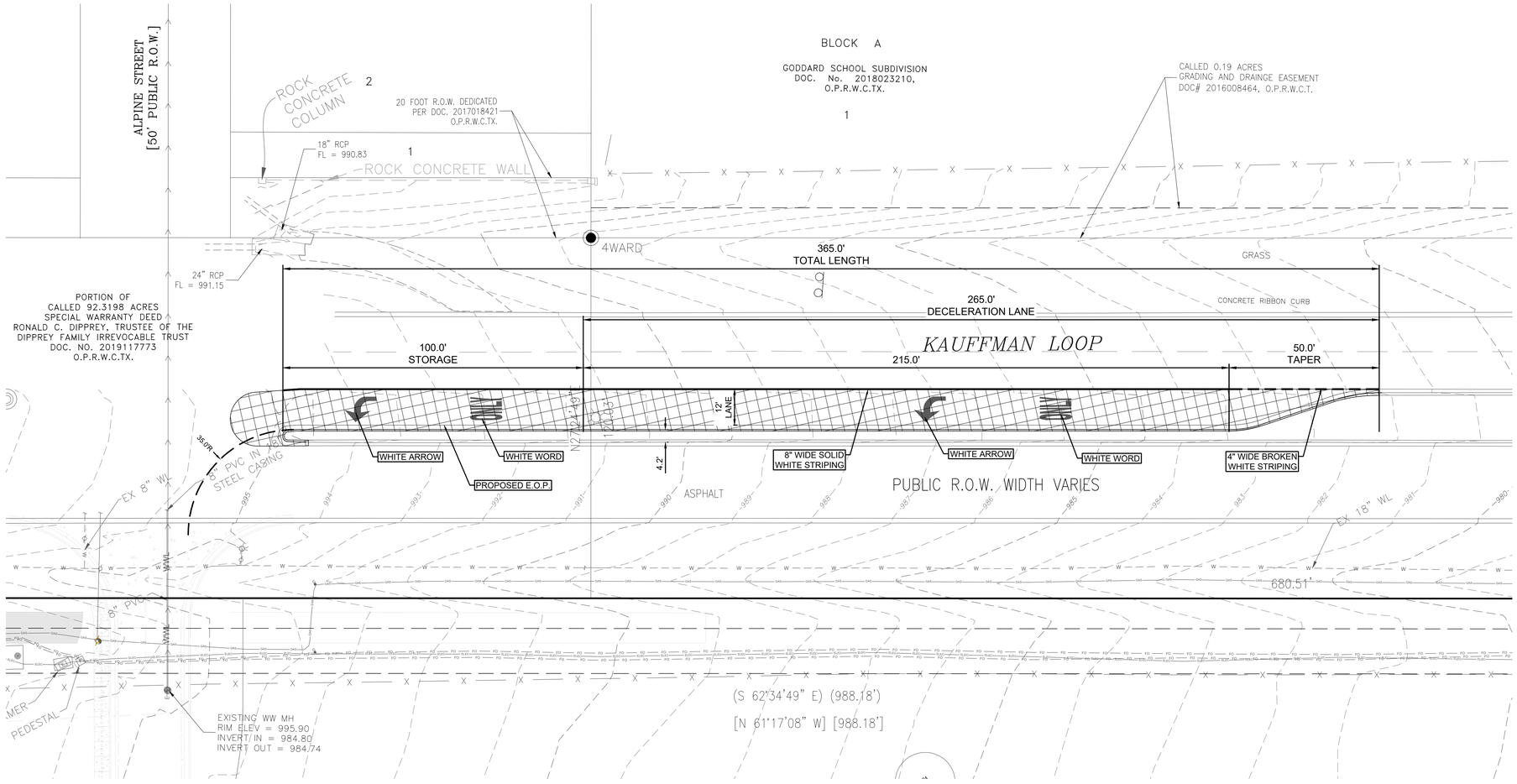
P:\New Growth\29320047-2000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\DECELERATION PLAN.dwg, DECEL, June 16, 2023, 4:45 PM, cbarrett

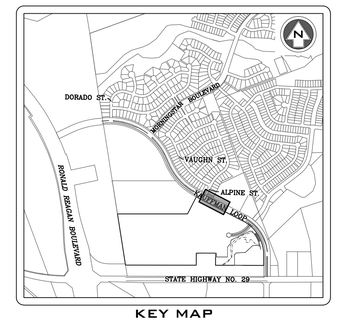


0 20' 40'

SCALE: 1" = 20'

LEGEND

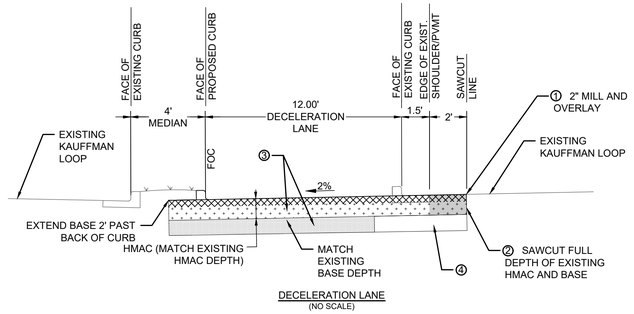
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED BOUNDARY
- EASEMENT
- BERM
- PROPOSED CURB AND GUTTER (CATCH)
- PROPOSED CURB AND GUTTER (SPILL)
- SIDEWALKS
- FIRE HYDRANT
- JURISDICTIONAL WATER
- TREE TO REMAIN
- PROPOSED PAVEMENT



KEY MAP
N.T.S.

CONSTRUCTION NOTES

1. MILL 2' WIDE STRIP OF EXISTING SHOULDER ADJACENT TO EXISTING EDGE OF DRIVE LANE, 1" DEEP. OVERLAY WITH ITEM 340.
2. SAWCUT FULL DEPTH, REMOVE EXISTING HMAC (APPROXIMATELY 12") BASE TO REMAIN
3. CONSTRUCT FULL DEPTH PAVEMENT AND BASE SECTION TO MATCH EXISTING THICKNESSES.
4. ASSUMED 3' EXTENSION OF EXISTING BASE BEYOND EXISTING SHOULDER TO REMAIN. PLACE NEW BASE TO MATCH IF NOT EXISTING.



DECELERATION LANE
(NO SCALE)

NO.	REVISION	BY	DATE

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SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM

TBPE NO: 16384
TBPLS NO: 10194101

HRGreen

DEVELOPMENT TX

STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
10/16/2023

DECELERATION LANE PLAN (NORTH)

12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 18 OF 33

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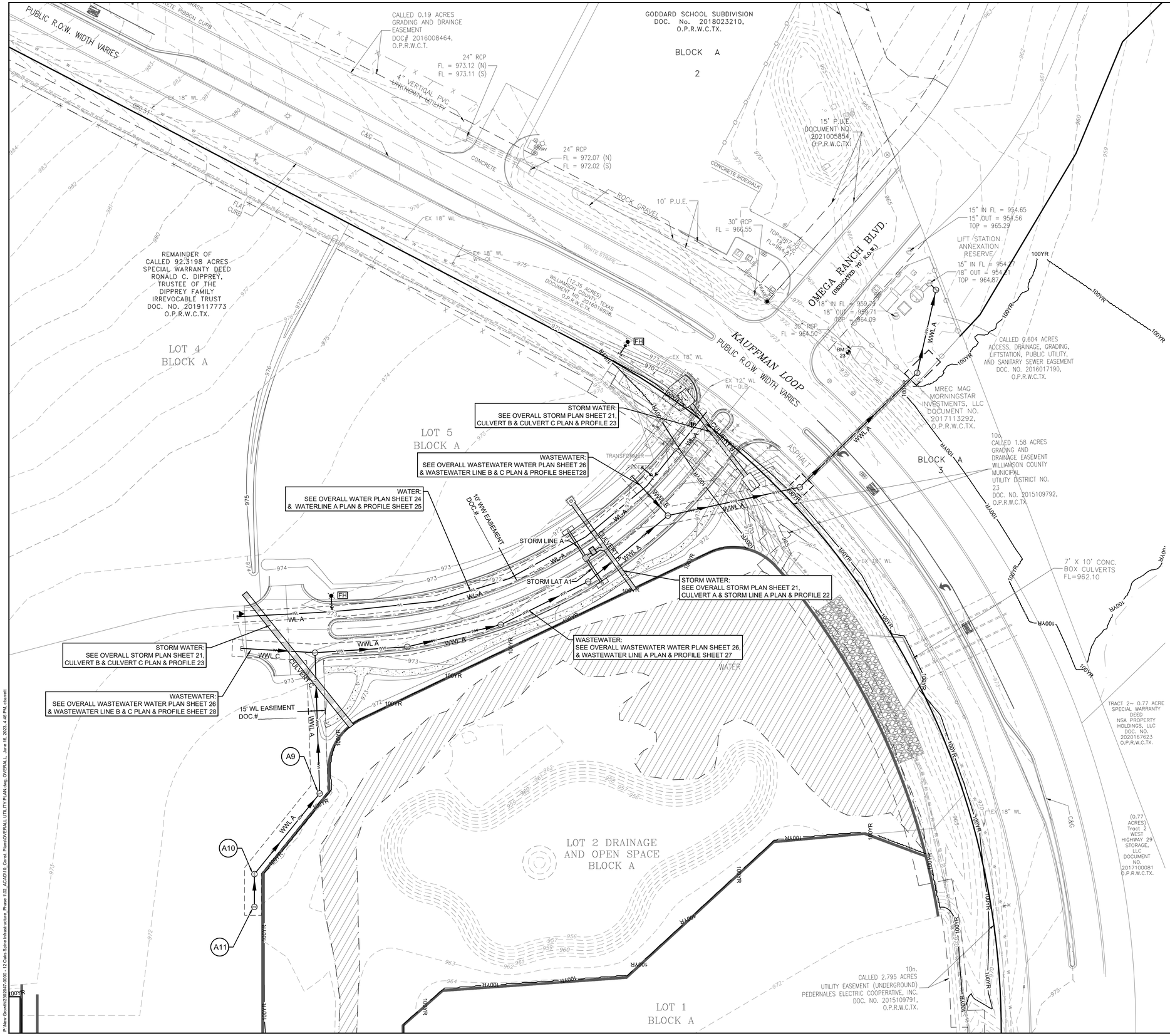


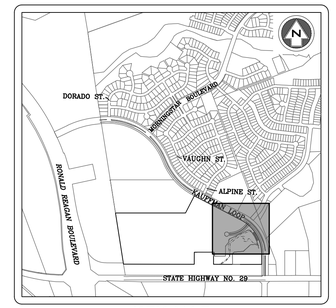
N

0 40' 80'

SCALE: 1" = 40'

LEGEND

- EXISTING MINOR CONTOUR
- 505 EXISTING MAJOR CONTOUR
- PROPERTY BOUNDARY
- RIGHT OF WAY
- JURISDICTIONAL WATER
- FEMA FEMA 100-YEAR FLOODPLAIN
- EASEMENT
- PROPOSED STORM DRAIN LINE
- STORM JUNCTION BOX
- STORM DRAIN MANHOLE
- JELLYFISH FILTER
- STORM CURB INLET
- AREA INLET
- WW PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER MANHOLE
- WL PROPOSED WATER LINE
- FH FIRE HYDRANT LOCATION



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

811 Know what's below. Call before you dig.

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HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

HRGreen. DEVELOPMENT TX

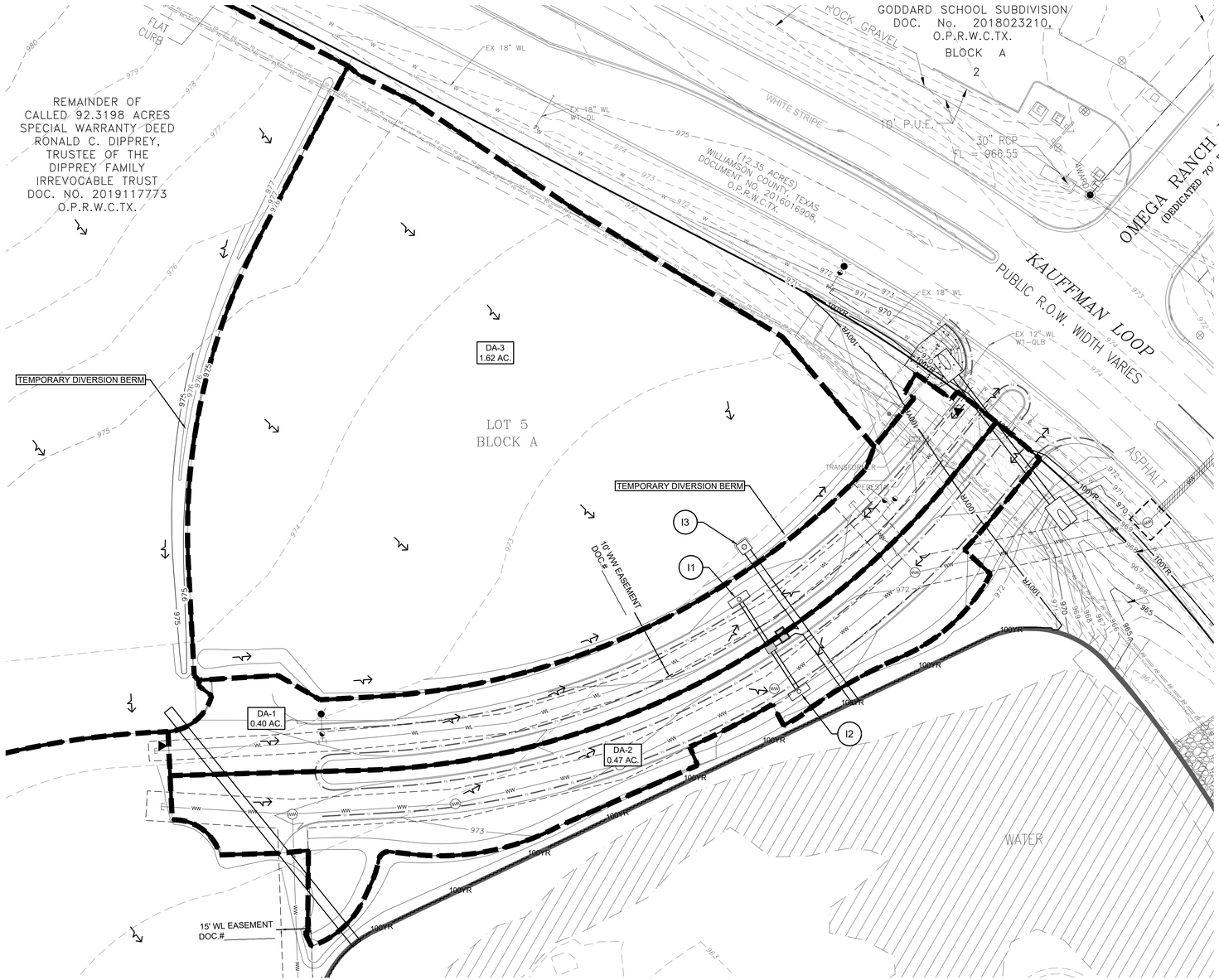
STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

OVERALL UTILITY PLAN
12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 19 OF 33

P:\New Grove\0020247.0000 - 12 Oaks Spine Infrastructure_Phase 1\02 ACAD\10 Civil Plans\OVERALL UTILITY PLAN.dwg, OVERALL, Jun 16, 2023, 4:45 PM, cbarrett



0 30' 60'

SCALE: 1" = 30'

LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- FEMA 100 YEAR FLOOD PLAIN
- FLOW ARROW
- SWALE
- TIME OF CONCENTRATION
- PROPOSED DRAINAGE BOUNDARY
- STORM DRAIN LINE
- DRAINAGE AREA LABEL (DA-XX, XX.XX AC.)
- POINT OF INTEREST (POI A)

Contech Engineered Solutions Calculations for Texas Commission on Environmental Quality
TSS Removal Calculations

Project Name: 12 Oaks Village
Date Prepared: 6/6/2023

1. The Required Load Reduction for the total project:

Calculations from RG-348 Pages 3-27 to 3-30

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

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

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

County =	Williamson	
Total project area included in plan * =	47.67	acres
Predevelopment impervious area within the limits of the plan * =	0.04	acres
Total post-development impervious area within the limits of the plan* =	0.62	acres
Total post-development impervious cover fraction * =	0.01	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	505	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	1	

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

Drainage Basin/Outfall Area No. = DA-1 & 2

Total drainage basin/outfall area =	0.87	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.55	acres
Post-development impervious fraction within drainage basin/outfall area =	0.63	
$L_{M\ THIS\ BASIN}$ =	479	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	JF	abbreviation
Removal efficiency =	86	percent

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

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

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

A_C =	0.87	acres
A_I =	0.55	acres
A_P =	0.32	acres
L_R =	528	lbs.

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

Desired $L_{M\ THIS\ BASIN}$ =	505	lbs.
F =	0.96	

6. Calculate Treated Flow required by the BMP Type for this drainage basin / outfall area.

Offsite area draining to BMP =	0.00	acres
Offsite impervious cover draining to BMP =	0.00	acres

Calculations from RG-348 Pages Section 3.2.22

Rainfall Intensity =	1.80	inches per hour
Effective Area =	0.50	acres
Cartridge Length =	54	inches
Peak Treatment Flow Required =	0.92	cubic feet per second

7. Jellyfish
Designed as Required in RG-348 Section 3.2.22

Flow Through Jellyfish Size	Vault
Jellyfish Size for Flow-Based Configuration =	JFPD0406-5-1
Jellyfish Treatment Flow Rate =	0.98 cfs

RATIONAL METHOD FLOW CALCULATIONS FOR STORM INLETS

ROUTED TO	BASIN LABEL	INLET LABEL	INLET TYPE*	AREA (AC)	IMPERVIOUS %	PERVIOUS %	TC (MIN)	2-YR C	2-YR I	2-YR Q	10-YR C	10-YR I	10-YR Q	25-YR C	25-YR I	25-YR Q	100-YR C	100-YR I	100-YR Q	Contributing Area
I1	DA-A1	I1	CSAG	0.40	59.23	40.77	5.00	0.52	6.06	1.26	0.58	8.85	2.06	0.63	10.61	2.67	0.71	13.34	3.79	DA-A1
I2	DA-A2	I2	CSAG	0.47	67.24	32.76	5.00	0.56	6.06	1.59	0.63	8.85	2.60	0.67	10.61	3.35	0.76	13.34	4.74	DA-A2
I3	DA-A3	I3	ASAG	1.62	80.00	20.00	5.00	0.63	6.06	6.16	0.70	8.85	10.03	0.75	10.61	12.84	0.83	13.34	18.01	DA-A3

Curb Inlets in Sump Calculation Summary: 25 year

Drainage Area No.	Inlet No.	Q_{25} (cfs)	Qpass (cfs)	Qtotal (cfs)	W (ft)	Inlet Depression, a (ft)	Curb opening height, h (ft)	Reduction Factor	Length (ft)	d_{weir} Above S_x (ft)	$d_{orifice}$ above S_x (ft)	Depth of Ponding over S_w, d (ft)	S_x (%)	z	Ponded Width (ft)
DA-A1	I1	2.67	15.76	18.42	1.50	0.42	0.52	1.00	10.00	0.74	0.27	0.31	2.00%	50.00	15.46
DA-A2	I2	3.35	0.00	3.35	1.50	0.42	0.52	1.00	10.00	0.24	0.00	0.24	2.00%	50.00	11.81

Curb Inlets in Sump Calculation Summary: 100 year

Drainage Area No.	Inlet No.	Q_{100} (cfs)	Qpass (cfs)	Qtotal (cfs)	W (ft)	Inlet Depression, a (ft)	Curb opening height, h (ft)	Reduction Factor	Length (ft)	d_{weir} Above S_x (ft)	$d_{orifice}$ above S_x (ft)	Depth of Ponding over S_w, d (ft)	S_x (%)	z	Ponded Width (ft)
DA-A1	I1	3.79	29.50	33.29	1.50	0.42	0.52	1.00	10.00	1.09	1.25	1.25	2.00%	50.00	62.67
DA-A2	I2	4.74	0.00	4.74	1.50	0.42	0.52	1.00	10.00	0.30	0.00	0.30	2.00%	50.00	14.87

Drop Curb Inlet/Area Zone Drain/Area Inlet/Yard Inlet in Sag Calculation Summary: 25 year

Drainage Area No.	Inlet No.	Q_{25} (cfs)	Qpass (cfs)	Qtotal (cfs)	Throat Height, h (in)	Inlet Length, L (ft)	Yard Cross Slope, Sx (%)	Weir Depth above FL (in)	Orifice Depth above FL (in)	Ponded Depth, d (in)	Ponding Spread, T (ft)
DA-A3	I3	12.84	0.00	12.84	5.00	16.00	33.00%	0.41	0.34	0.41	1.25

Drop Curb Inlet/Area Zone Drain/Area Inlet/Yard Inlet in Sag Calculation Summary: 100 year

Drainage Area No.	Inlet No.	Q_{100} (cfs)	Qpass (cfs)	Qtotal (cfs)	Throat Height, h (in)	Inlet Length, L (ft)	Yard Cross Slope, Sx (%)	Weir Depth above FL (in)	Orifice Depth above FL (in)	Ponded Depth, d (in)	Ponding Spread, T (ft)
DA-A3	I3	18.01	0.00	18.01	5.00	16.00	33.00%	0.52	0.46	0.52	1.57

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XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

INLET DRAINAGE MAP
12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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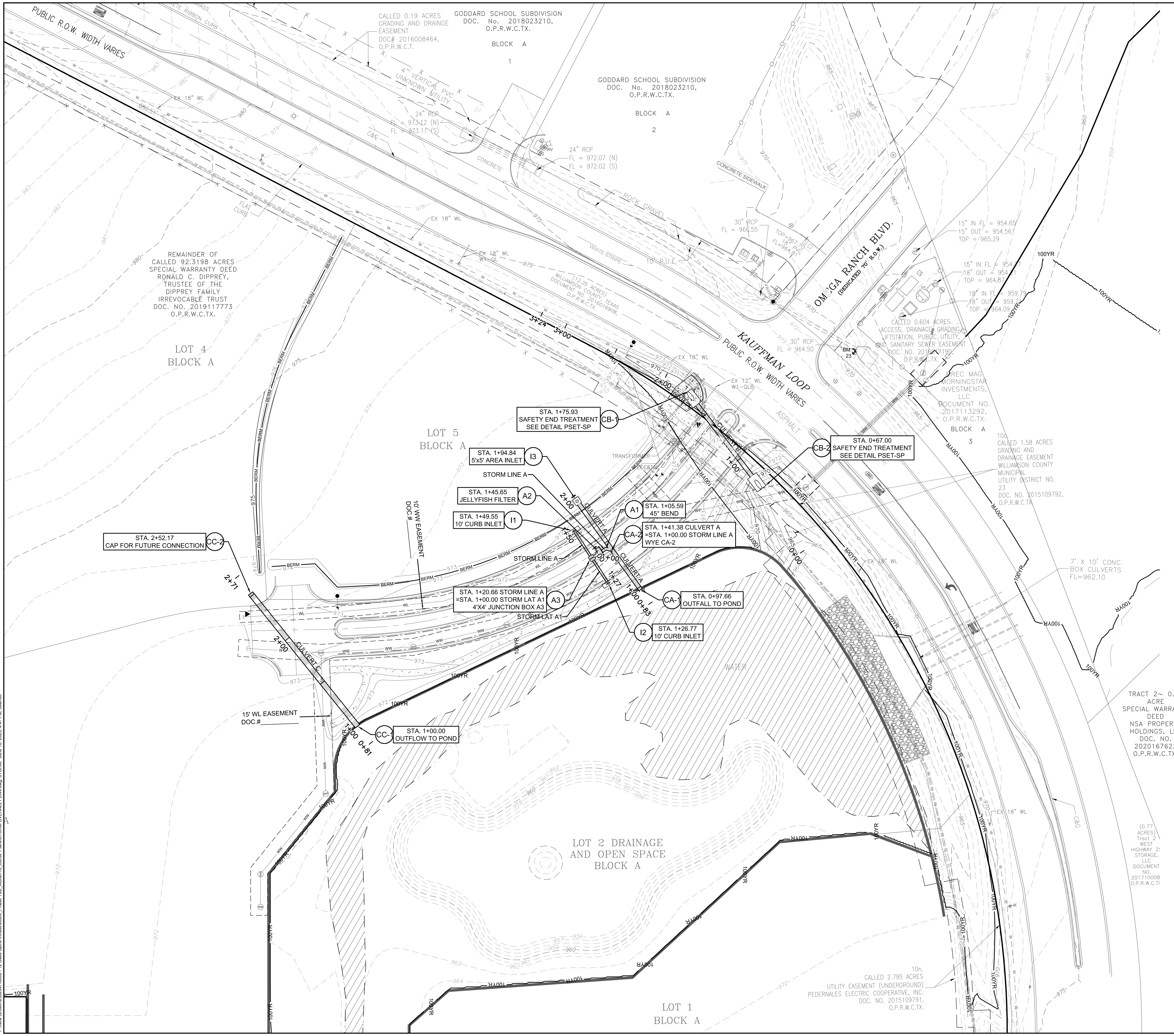
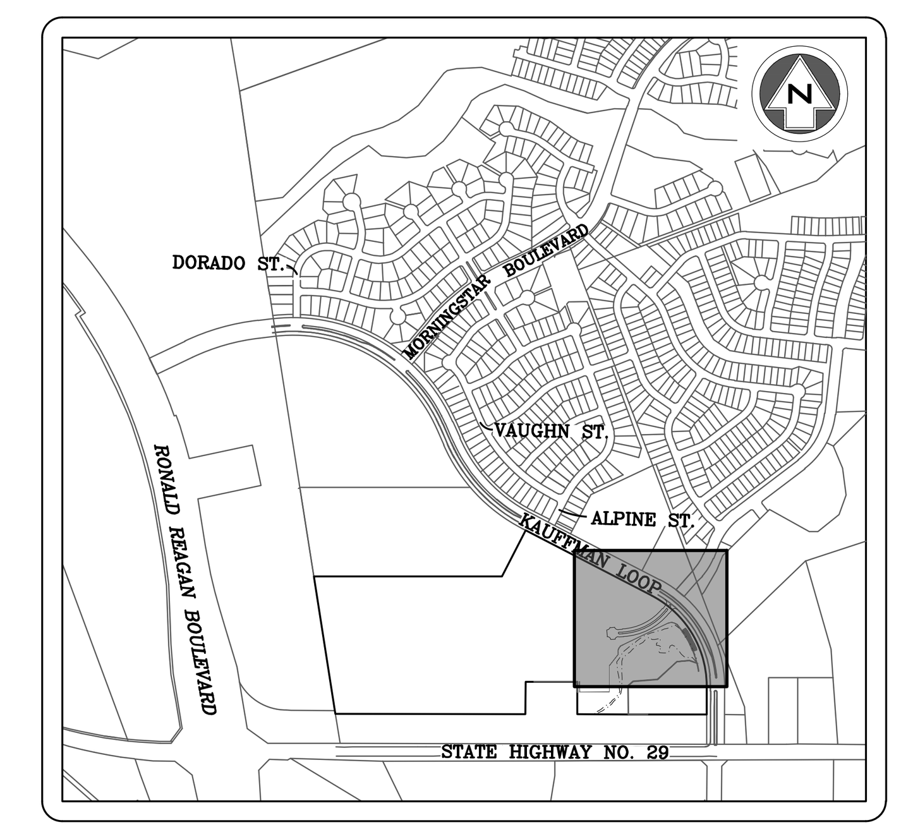
P:\New Growth\2020\247-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Civil_Plans\INLET DRAINAGE.dwg, INLET DA, June 16, 2023, 4:48 PM, cbarrett



LEGEND

	EXISTING MINOR CONTOUR
505	EXISTING MAJOR CONTOUR
	PROPERTY BOUNDARY / RIGHT OF WAY
	ETJ / CITY / COUNTY LINE
FEMA	FEMA 100-YEAR FLOODPLAIN
	EASEMENT
WL	PROPOSED WATER LINE
FM	PROPOSED FORCEMAIN
WW	PROPOSED WASTEWATER LINE
	PROPOSED WASTEWATER MANHOLE
	FLOW ARROW
BERM	BERM
>	SWALE
	STORM DRAIN LINE
	STORM JUNCTION BOX
	STORM DRAIN MANHOLE
	JELLYFISH FILTER
	STORM CURB INLET
	AREA INLET
C1	PROPOSED STORM PART NAME



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

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HRGreen DEVELOPMENT TX

XAVIER GARZA-ROBLEDO 135174 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 06/16/2023

OVERALL STORM PLAN

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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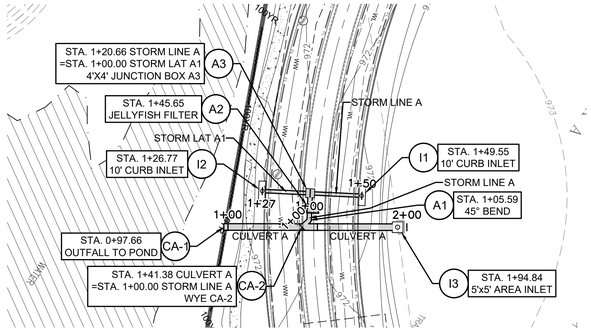
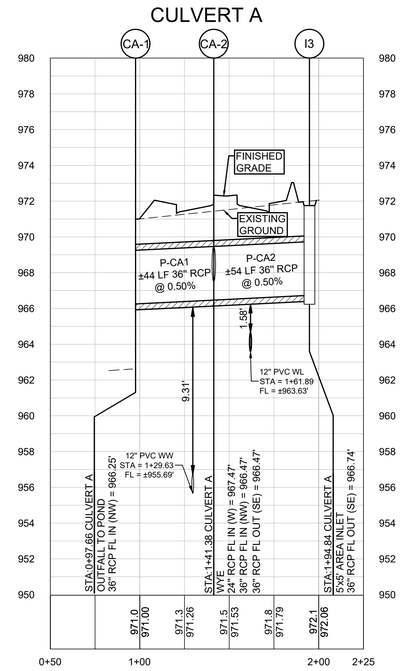
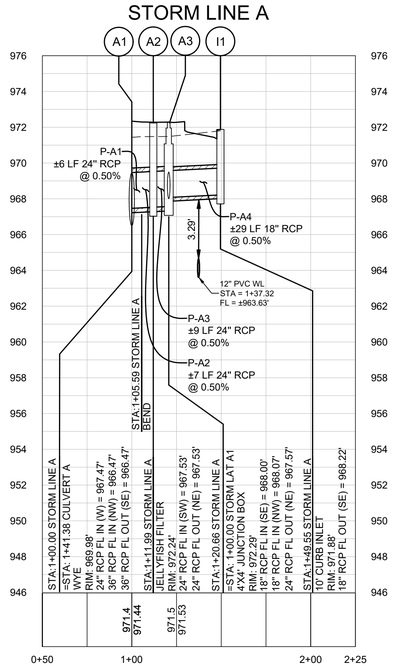
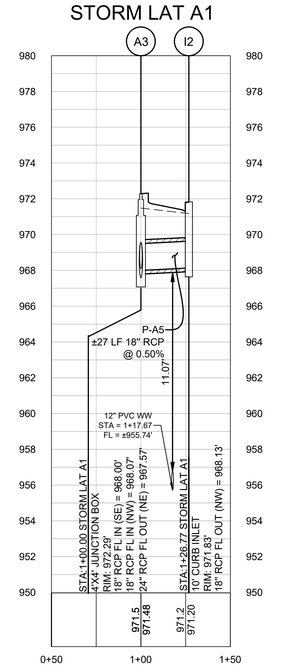








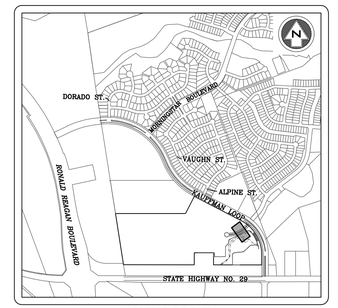
LEGEND

- EXISTING CONTOUR (504)
- PROPOSED CONTOUR (505)
- BOUNDARY
- RIGHT OF WAY
- ETJ / CITY / COUNTY LINE
- EASEMENT
- PROPOSED STORM DRAIN LINE
- STORM DRAIN CURB INLET
- STORM DRAIN MANHOLE
- STORM DRAIN JUNCTION BOX
- STORM DRAIN AREA INLET
- XXX — DRAINAGE STRUCTURE LABEL
- WL — PROPOSED WATER LINE
- FM — PROPOSED FORCEMAIN
- FIRE HYDRANT
- GATE VALVE
- PROPOSED WASTEWATER MANHOLE

PROFILE SCALE
1" = 40' HORIZ.
1" = 4' VERT.

PROFILE LEGEND
PROPOSED FINISHED GRADE
PROPOSED SUBGRADE
EXISTING GRADE (CENTER)
25 YR HYDRAULIC GRADE LINE
100 YR HYDRAULIC GRADE LINE

NOTE:
1. ALL FILL AREAS SHALL BE COMPACTED TO 95% PROCTOR DENSITY PRIOR TO INSTALLATION OF UTILITIES.



KEY MAP
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CULVERT A & STORM A PLAN & PROFILE
12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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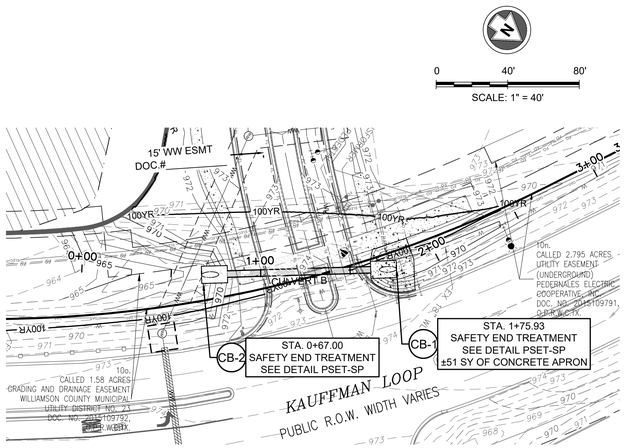

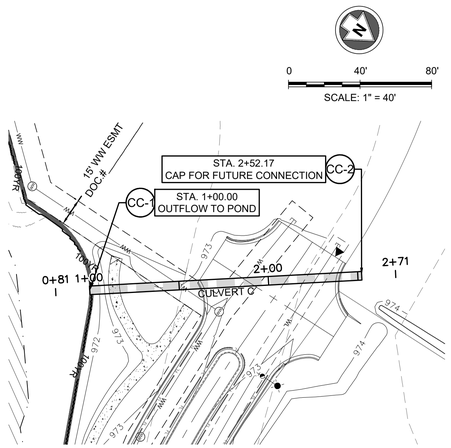

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- BOUNDARY
- RIGHT OF WAY
- ETJ / CITY / COUNTY LINE
- EASEMENT
- PROPOSED STORM DRAIN LINE
- STORM DRAIN CURB INLET
- STORM DRAIN MANHOLE
- STORM DRAIN JUNCTION BOX
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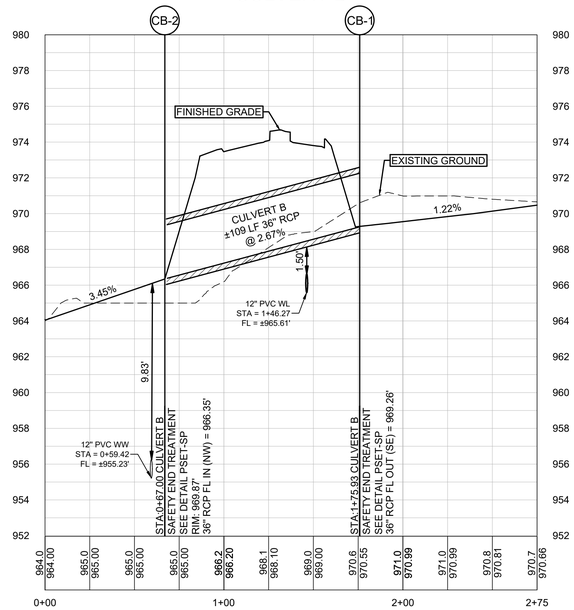
- FIRE HYDRANT
- GATE VALVE
- PROPOSED WASTEWATER MANHOLE

PROFILE SCALE
1" = 40' HORIZ.
1" = 4' VERT.

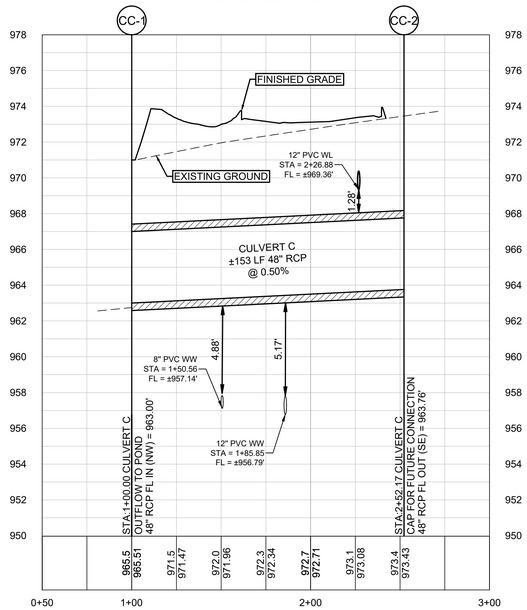
PROFILE LEGEND
PROPOSED FINISHED GRADE
PROPOSED SUBGRADE
EXISTING GRADE (CENTER)
25 YR HYDRAULIC GRADE LINE
100 YR HYDRAULIC GRADE LINE

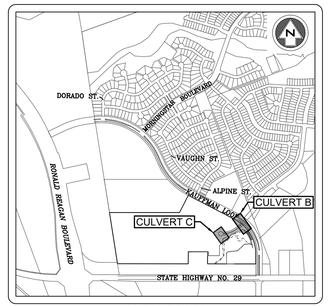
NOTE:
1. ALL FILL AREAS SHALL BE COMPACTED TO 95% PROCTOR DENSITY PRIOR TO INSTALLATION OF UTILITIES.

CULVERT B



CULVERT C





KEY MAP
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06/16/2023

CULVERT B & CULVERT C PLAN & PROFILE

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS

LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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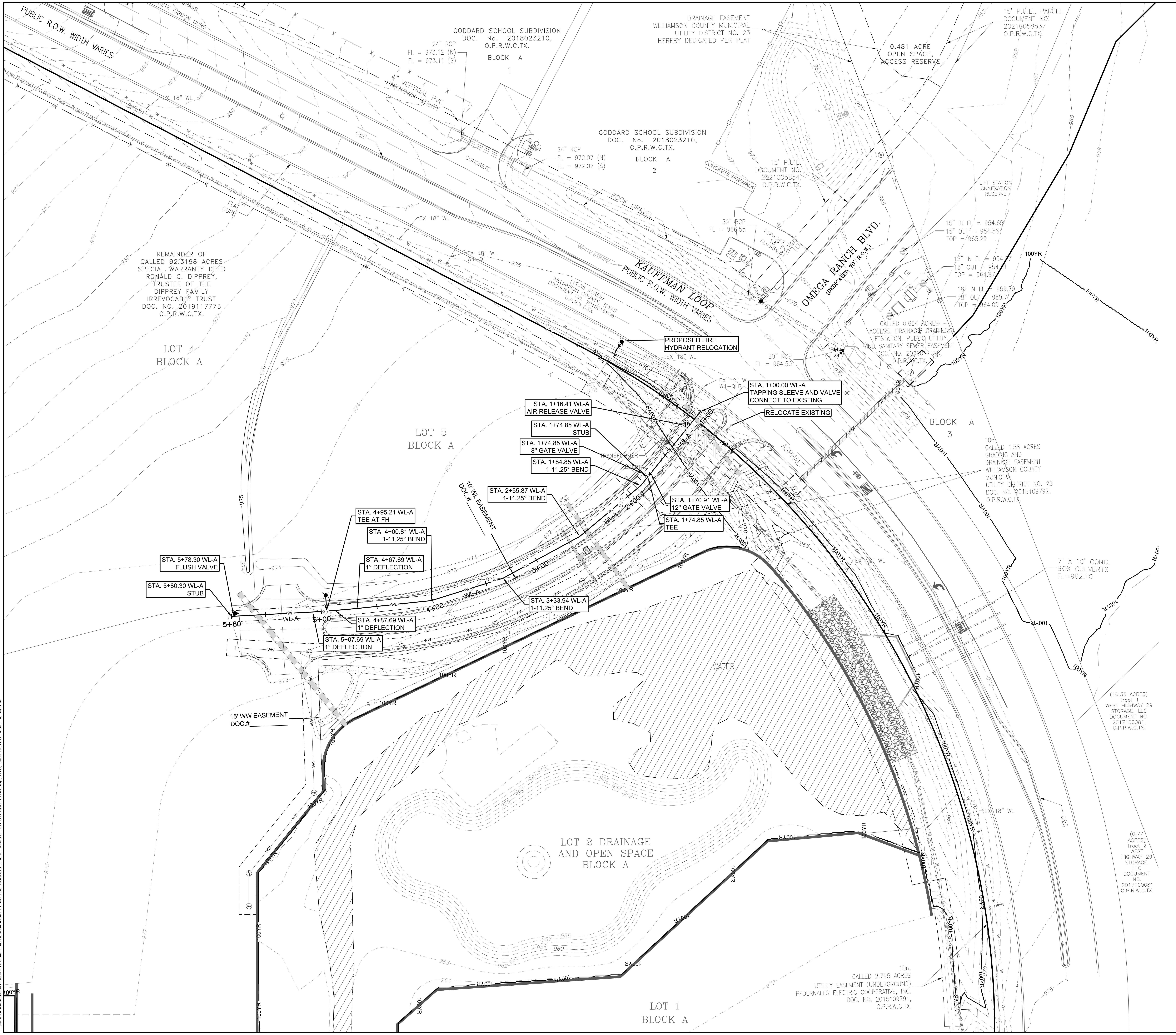
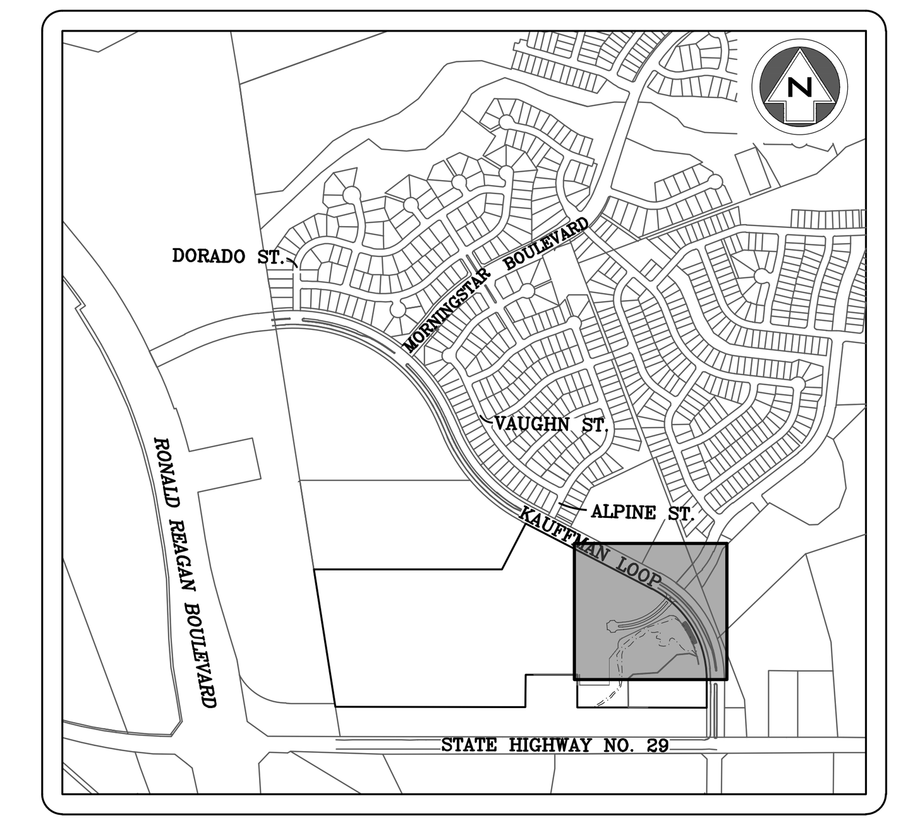

PUBLIC R.O.W. WIDTH VARIES
GODDARD SCHOOL SUBDIVISION DOC. No. 2018023210, O.P.R.W.C.TX. BLOCK A 1
GODDARD SCHOOL SUBDIVISION DOC. No. 2018023210, O.P.R.W.C.TX. BLOCK A 2
DRAINAGE EASEMENT WILLIAMSON COUNTY MUNICIPAL UTILITY DISTRICT NO. 23 HEREBY DEDICATED PER PLAT
15' P.U.E., PARCEL DOCUMENT NO. 2021005853, O.P.R.W.C.TX.
0.481 ACRE OPEN SPACE, ACCESS RESERVE
24" RCP FL = 973.12 (N) FL = 973.11 (S)
24" RCP FL = 972.07 (N) FL = 972.02 (S)
15' P.U.E. DOCUMENT NO. 2021005854, O.P.R.W.C.TX.
CONCRETE SIDEWALK
LIFT STATION ANNEXATION RESERVE
30" RCP FL = 966.55
15" IN FL = 954.65
15" OUT = 954.56
TOP = 965.29
KAUFFMAN LOOP
PUBLIC R.O.W. WIDTH VARIES
OMEGA RANCH BLVD. (DEDICATED 70' R.O.W.)
REMAINDER OF CALLED 92.3198 ACRES SPECIAL WARRANTY DEED RONALD C. DIPPREY, TRUSTEE OF THE DIPPREY FAMILY IRREVOCABLE TRUST DOC. NO. 2019117773 O.P.R.W.C.TX.
LOT 4 BLOCK A
LOT 5 BLOCK A
BLOCK A 3
PROPOSED FIRE HYDRANT RELOCATION
CALLED 0.604 ACRES ACCESS, DRAINAGE, GRADING, LIFTSTATION, PUBLIC UTILITY, AND SANITARY SEWER EASEMENT DOC. NO. 2015071081 O.P.R.W.C.TX.
30" RCP FL = 964.50
STA. 1+00.00 WL-A TAPPING SLEEVE AND VALVE CONNECT TO EXISTING
RELOCATE EXISTING
STA. 1+16.41 WL-A AIR RELEASE VALVE
STA. 1+74.85 WL-A STUB
STA. 1+74.85 WL-A 8" GATE VALVE
STA. 1+84.85 WL-A 1-11.25° BEND
STA. 2+55.87 WL-A 1-11.25° BEND
STA. 1+70.91 WL-A 12" GATE VALVE
STA. 1+74.85 WL-A TEE
STA. 4+95.21 WL-A TEE AT FH
STA. 4+00.81 WL-A 1-11.25° BEND
STA. 4+67.69 WL-A 1° DEFLECTION
STA. 5+78.30 WL-A FLUSH VALVE
STA. 5+80.30 WL-A STUB
STA. 3+33.94 WL-A 1-11.25° BEND
STA. 4+87.69 WL-A 1° DEFLECTION
STA. 5+07.69 WL-A 1° DEFLECTION
10' WL EASEMENT DOC.#
15' WW EASEMENT DOC.#
10a. CALLED 1.58 ACRES GRADING AND DRAINAGE EASEMENT WILLIAMSON COUNTY MUNICIPAL UTILITY DISTRICT NO. 23 DOC. NO. 2015109792, O.P.R.W.C.TX.
7' X 10' CONC. BOX CULVERTS FL=962.10
(10.36 ACRES) Tract 1 WEST HIGHWAY 29 STORAGE, LLC DOCUMENT NO. 2017100081, O.P.R.W.C.TX.
(0.77 ACRES) Tract 2 WEST HIGHWAY 29 STORAGE, LLC DOCUMENT NO. 2017100081 O.P.R.W.C.TX.
WATER
LOT 2 DRAINAGE AND OPEN SPACE BLOCK A
10n. CALLED 2.795 ACRES UTILITY EASEMENT (UNDERGROUND) PEDERNALES ELECTRIC COOPERATIVE, INC. DOC. NO. 2015109791, O.P.R.W.C.TX.
LOT 1 BLOCK A

SCALE: 1" = 40'

LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- BOUNDARY
- RIGHT OF WAY
- ETJ / CITY / COUNTY LINE
- FEMA 100-YEAR FLOODPLAIN
- EASEMENT
- PROPOSED STORM DRAIN LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER MANHOLE
- PROPOSED WATER LINE
- FIRE HYDRANT LOCATION



KEY MAP
N.T.S.

WATER PRESSURE TABLE			
	Lot Elevation (FT)	PRESSURE / ELEVATION RANGE (FT)	
		1,138	1,178
Block A, Lot 1	1,004	58	75
Block A, Lot 5	973	71	89

*LOTS WITH PRESSURE GREATER THAN 80 PSI WILL REQUIRE PRIVATE RESIDENTIAL PRVS.

PVC C900 Joint Restraints

Pipe Size	Fitting	Bend Angle	Restraint Length
8"	Gate Valve	-	103'
8"	Stub		103'
12"	Horizontal Bend	11.25	6'
12"	Horizontal Bend	22.5	11'
12"	Horizontal Bend	45	22'
12"	Horizontal Bend	90	53'
12"	Vertical Bend	11.25	15'
12"	Vertical Bend	22.5	30'
12"	Vertical Bend	45	61'
12"	12"X8" TEE		1'
12"	Gate Valve	-	146'
12"	Stub		146'

* Assumes 4' bury depth, 200 psi test pressure, trench type of 5, safety factor of 2.0, and CH granular soil
*Source - rlc.ebaa.com/calculator.php

NO.	REVISION	BY	DATE

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STATE OF TEXAS
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
06/16/2023

OVERALL WATER PLAN

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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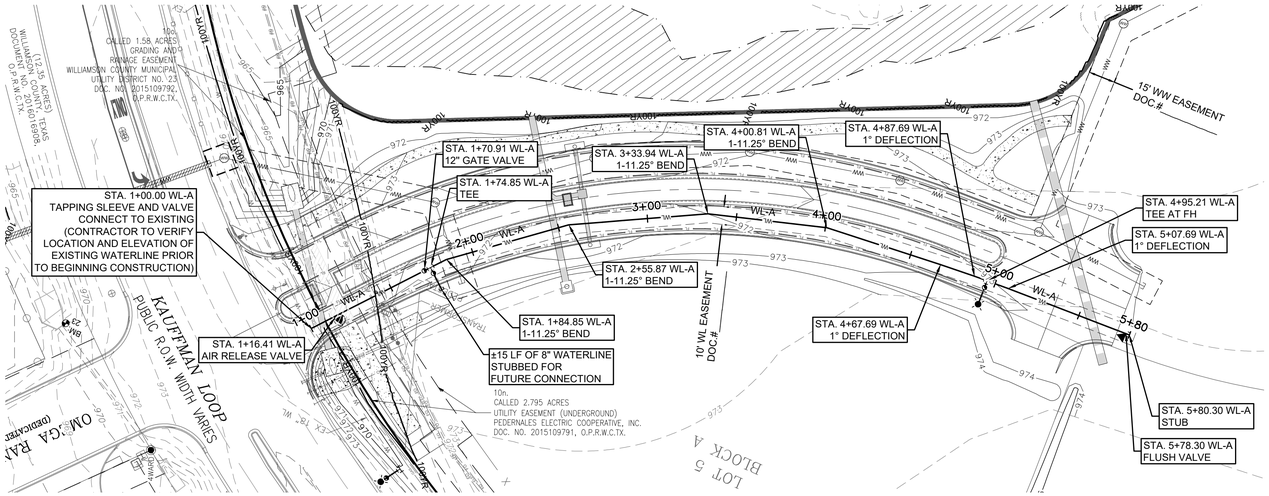

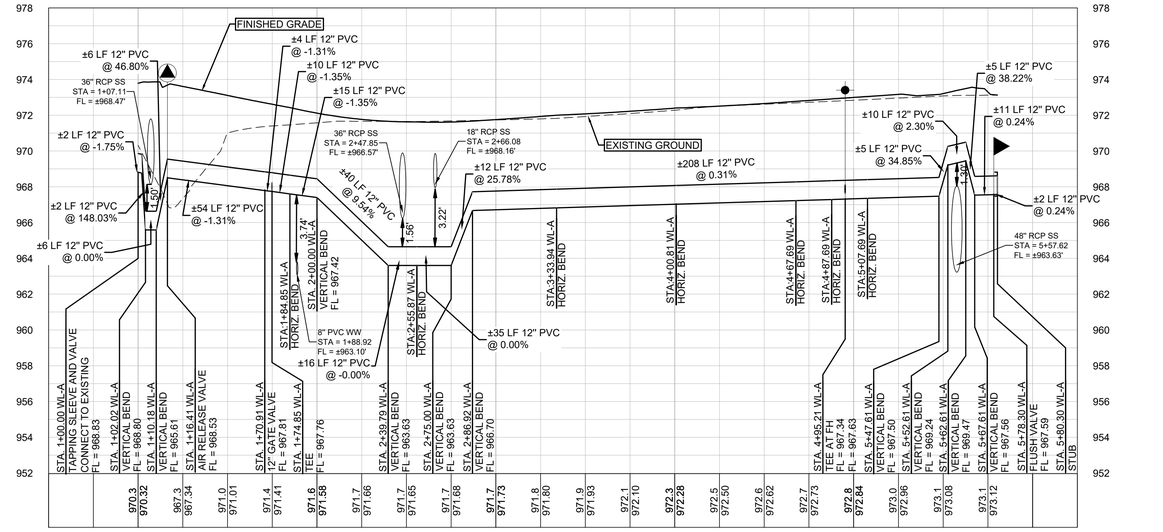

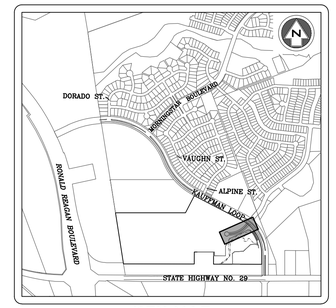

KEY MAP
N.T.S.

0 40' 80'
SCALE: 1" = 40'

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- BOUNDARY
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN LINE
- PROPOSED WASTEWATER MANHOLE
- PROPOSED WASTEWATER MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED TEE
- PROPOSED CROSS
- PROPOSED BEND
- AUTO FLUSH VALVE
- AIR RELEASE VALVE
- D.I. DUCTILE IRON
- M.J. MECHANICAL JOINT

PROFILE SCALE
1" = 40' HORIZ.
1" = 4' VERT.

PROFILE LEGEND
- PROPOSED FINISHED GRADE (ROAD CL)
- PROPOSED BOTTOM OF SUBGRADE
- EXISTING GRADE (CENTER)

NO.	REVISION	BY	DATE

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DEVELOPMENT TX

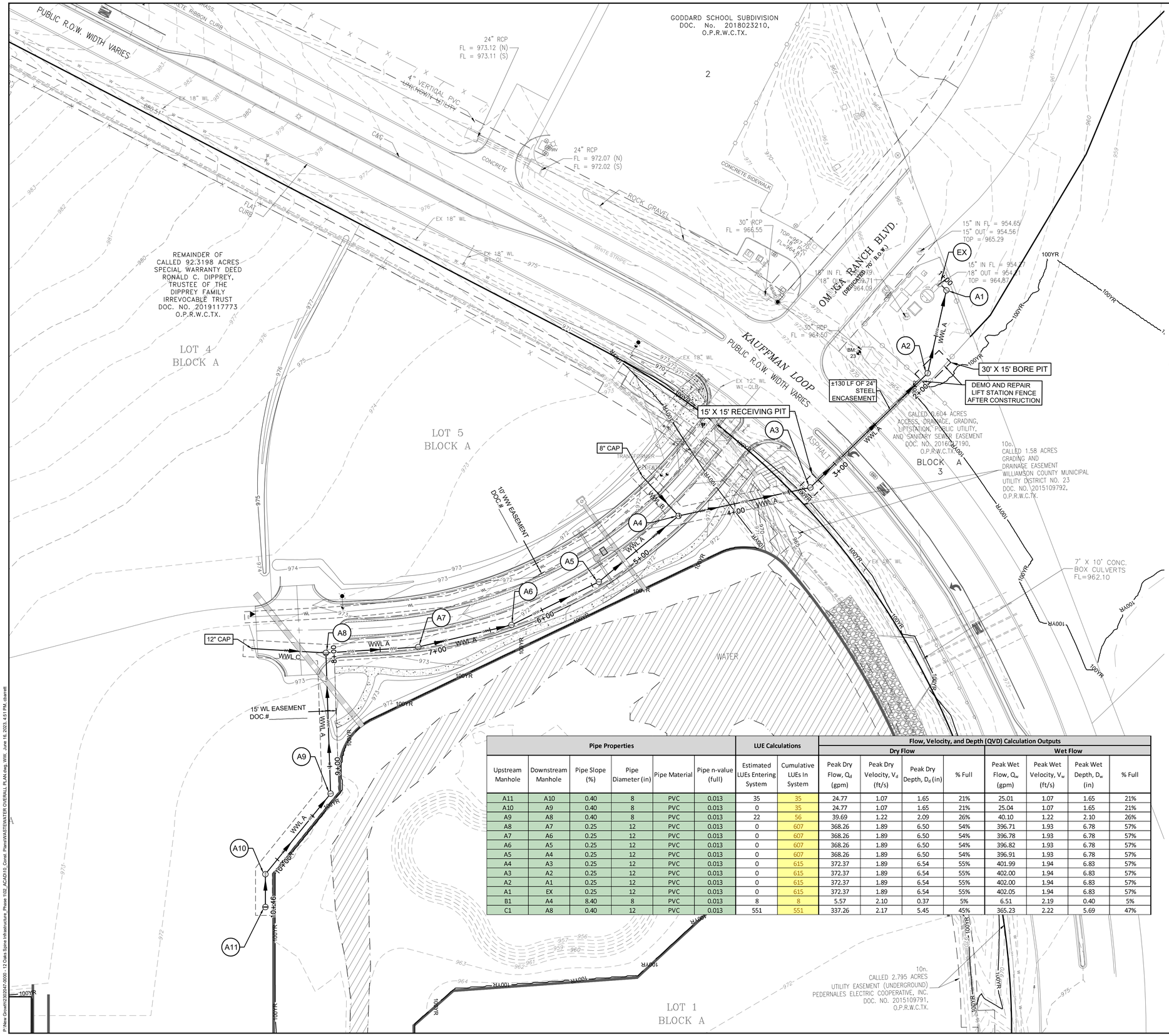
XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

WATER LINE A PLAN & PROFILE
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 25 OF 33

P:\New Growth\2020047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Grnd_Plans\WATER LINE A PLAN & PROFILE.dwg WTR PWP - June 16, 2023, 4:51 PM, cbarrett



Pipe Properties						LUE Calculations		Flow, Velocity, and Depth (QVD) Calculation Outputs							
								Dry Flow				Wet Flow			
Upstream Manhole	Downstream Manhole	Pipe Slope (%)	Pipe Diameter (in)	Pipe Material	Pipe n-value (full)	Estimated LUEs Entering System	Cumulative LUEs In System	Peak Dry Flow, Q_d (gpm)	Peak Dry Velocity, V_d (ft/s)	Peak Dry Depth, D_d (in)	% Full	Peak Wet Flow, Q_w (gpm)	Peak Wet Velocity, V_w (ft/s)	Peak Wet Depth, D_w (in)	% Full
A11	A10	0.40	8	PVC	0.013	35	35	24.77	1.07	1.65	21%	25.01	1.07	1.65	21%
A10	A9	0.40	8	PVC	0.013	0	35	24.77	1.07	1.65	21%	25.04	1.07	1.65	21%
A9	A8	0.40	8	PVC	0.013	22	56	39.69	1.22	2.09	26%	40.10	1.22	2.10	26%
A8	A7	0.25	12	PVC	0.013	0	607	368.26	1.89	6.50	54%	396.71	1.93	6.78	57%
A7	A6	0.25	12	PVC	0.013	0	607	368.26	1.89	6.50	54%	396.78	1.93	6.78	57%
A6	A5	0.25	12	PVC	0.013	0	607	368.26	1.89	6.50	54%	396.82	1.93	6.78	57%
A5	A4	0.25	12	PVC	0.013	0	607	368.26	1.89	6.50	54%	396.91	1.93	6.78	57%
A4	A3	0.25	12	PVC	0.013	0	615	372.37	1.89	6.54	55%	401.99	1.94	6.83	57%
A3	A2	0.25	12	PVC	0.013	0	615	372.37	1.89	6.54	55%	402.00	1.94	6.83	57%
A2	A1	0.25	12	PVC	0.013	0	615	372.37	1.89	6.54	55%	402.00	1.94	6.83	57%
A1	EX	0.25	12	PVC	0.013	0	615	372.37	1.89	6.54	55%	402.05	1.94	6.83	57%
B1	A4	8.40	8	PVC	0.013	8	8	5.57	2.10	0.37	5%	6.51	2.19	0.40	5%
C1	A8	0.40	12	PVC	0.013	551	551	337.26	2.17	5.45	45%	365.23	2.22	5.69	47%

0 40' 80'

SCALE: 1" = 40'

LEGEND

- EXISTING MINOR CONTOUR
- 505 EXISTING MAJOR CONTOUR
- PROPERTY BOUNDARY
- RIGHT OF WAY
- JURISDICTIONAL WATER
- FEMA — FEMA 100-YEAR FLOODPLAIN
- EASEMENT
- PROPOSED STORM DRAIN LINE
- WL — PROPOSED WATER LINE
- FM — PROPOSED FORCEMAIN
- PROPOSED DOUBLE WASTEWATER SERVICE
- PROPOSED SINGLE WASTEWATER SERVICE
- FLOW ARROW
- WW — PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER MANHOLE
- B6 — PROPOSED WASTEWATER MANHOLE NUMBER

WASTEWATER NOTES:

1. ALL WASTEWATER PIPE SHALL BE GREEN-COLORED ASTM D3034 SDR26.
2. 6" WIDE MAGNETIC TAPE GREEN IN COLOR MARKED "WASTEWATER" SHALL BE PLACED 24" ABOVE THE TOP OF PIPE.
3. CONTRACTOR IS RESPONSIBLE FOR MANDREL TESTING ON ALL GRAVITY MAINS 30 DAYS OR MORE AFTER TRENCHES HAVE BEEN BACKFILLED.
4. AT ALL WATER/WASTEWATER CROSSINGS,
   A) THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WATER AND WASTEWATER PIPE. THE WASTEWATER MAIN AND LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES (12") BEYOND THE JOINT ON EACH END.
   B) PROVIDE 20 FOOT (20') SEGMENT OF 150 PSI SDR-26 ASTM 2241 PVC PIPE CENTERED ON CROSSING WITH ROYAL BUILDING PRODUCTS PVC GASKETED COUPLING, OR APPROVED EQUAL.
   C) 150 PSI CASING PIPE SHALL BE SEALED AT BOTH ENDS WITH A MANUFACTURED JOINT SEAL, PER TAC 217(d)(7)(C)(i).
5. CEMENT STABILIZED SAND BEDDING SHALL HAVE MINIMUM 10% CEMENT PER CUBIC YARD OF MIXTURE, BASED ON LOOSE DRY WEIGHT. THE BEDDING SHALL BE A MINIMUM OF 6 INCHES (6") ABOVE AND 4 INCHES (4") BELOW THE WASTEWATER MAIN AND LATERAL.
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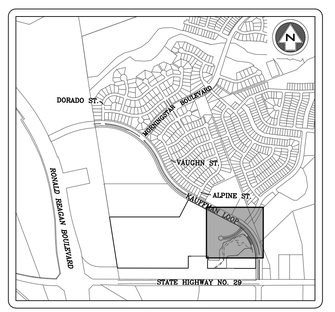
10. ALL FILL AREAS SHALL BE COMPACTED TO 95% PROCTOR DENSITY PRIOR TO INSTALLATION OF UTILITIES.
11. A CONSTRUCTION METHOD THAT FLEXES A PIPE JOINT IS PROHIBITED, UNLESS A JOINT DEFLECTION IS LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S RECOMMENDED MAXIMUM DEFLECTION.



KEY MAP
N.T.S.

NO.	REVISION	BY	DATE

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HRGreen. DEVELOPMENT TX

XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
06/16/2023

OVERALL WASTEWATER PLAN
12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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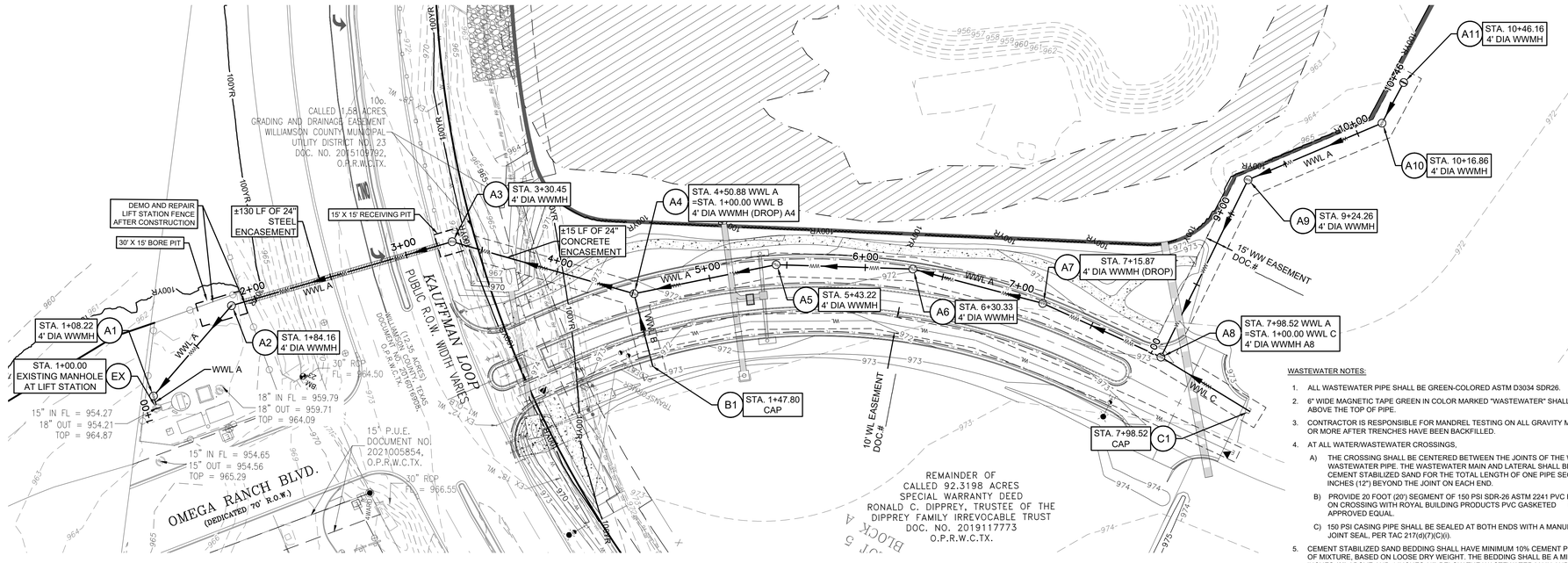
P:\New Growth\2020\47-0000 - 12 Oaks Spine Infrastructure_Phase 1\00_ACAD\10 Const. Plans\WASTEWATER OVERALL PLAN.dwg, WW - June 16, 2023, 4:51 PM, cbarrett



0 40' 80'

SCALE: 1" = 40'

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- BOUNDARY
- RIGHT OF WAY
- EASEMENT
- JURISDICTIONAL WATER
- PROPOSED STORM DRAIN LINE
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- PROPOSED FINISHED GRADE (ROAD CL)
- BOTTOM OF PROPOSED SUBGRADE
- EXISTING GRADE (CENTER)

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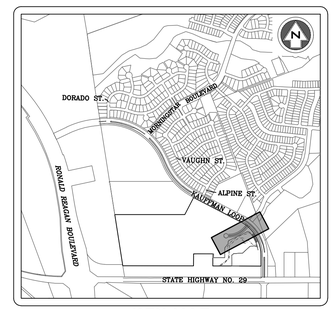
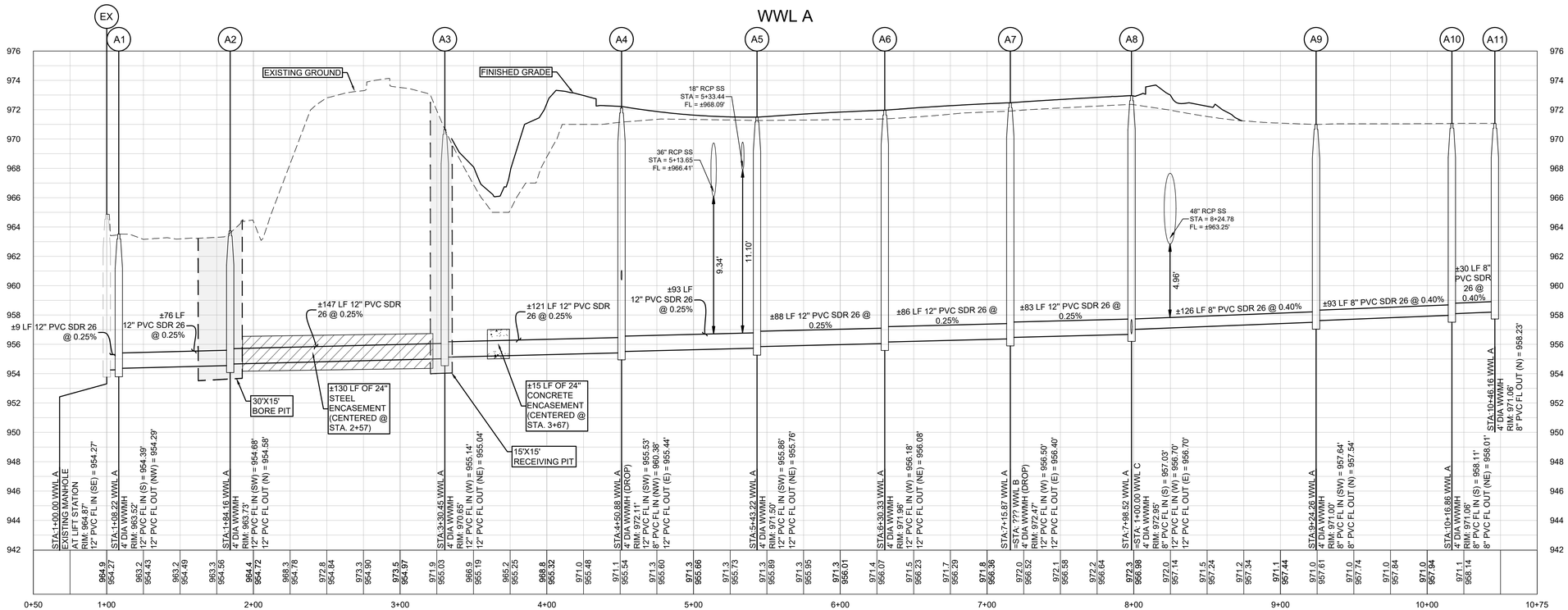


KEY MAP
N.T.S.



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DEVELOPMENT TX

WASTEWATER LINE A PLAN & PROFILE
12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

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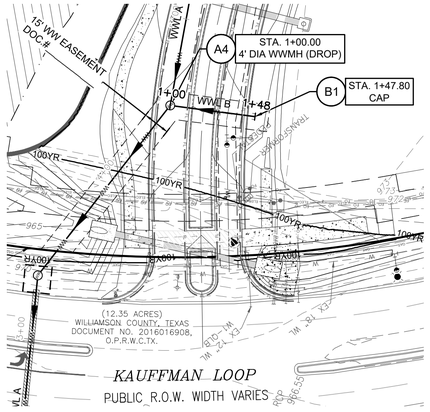
P:\New Growth\2020\041000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const Plans\WASTEWATER LINE A PLAN & PROFILE.dwg, WWPA1-1, June 16, 2023, 4:52 PM, dbarrett



0 40' 80'

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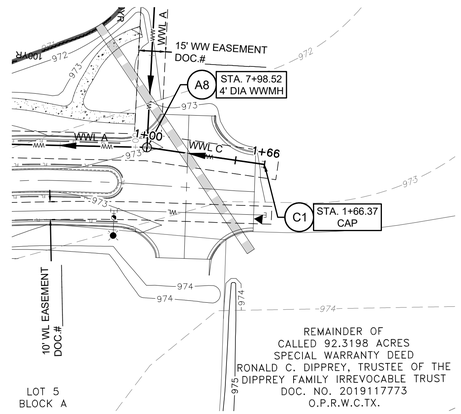

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LEGEND

- EXISTING CONTOUR (504)
- PROPOSED CONTOUR (505)
- BOUNDARY
- RIGHT OF WAY
- EASEMENT
- JURISDICTIONAL WATER
- PROPOSED STORM DRAIN LINE
- STORM DRAIN INLET
- STORM DRAIN MANHOLE
- PROPOSED WATER LINE (WL)
- PROPOSED FORCEMAIN (FM)
- FIRE HYDRANT
- GATE VALVE
- PROPOSED WASTEWATER LINE (WW)
- PROPOSED WASTEWATER MANHOLE (WW)
- FLOW ARROW
- DOUBLE WASTEWATER SERVICE
- SINGLE WASTEWATER SERVICE

PROFILE SCALE
1" = 40' HORIZ.
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PROFILE LEGEND
- PROPOSED FINISHED GRADE (ROAD CL)
- BOTTOM OF PROPOSED SUBGRADE
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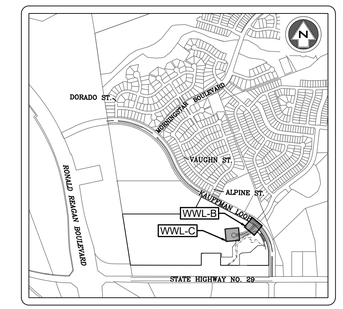

KEY MAP
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XAVIER GARZA-ROBLEDO
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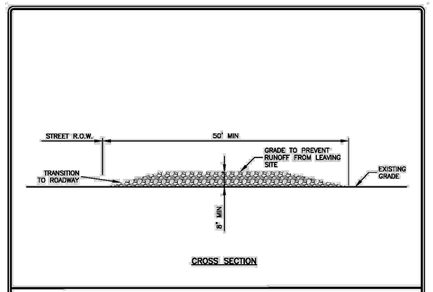
WASTEWATER LINE B & C
PLAN & PROFILE

12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 28 OF 33

P:\New Growth\2302047.0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const Plans\WASTEWATER LINE B PLAN & PROFILE.dwg, WWPR, June 16, 2023, 4:53 PM, cbarrett

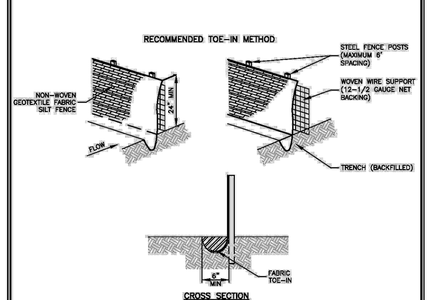


CROSS SECTION

NOTES:

1. STONE SIZE SHALL BE 3" – 8" OPEN GRADED ROCK.
2. THICKNESS OF CRUSHED STONE PAD TO BE NOT LESS THAN 6".
3. LENGTH SHALL BE A MINIMUM OF 50' FROM ACTUAL ROADWAY, AND WIDTH NOT LESS THAN FULL WIDTH OF INGRESS/EGRESS.
4. ENTRANCE SHALL BE PROPERLY GRADED TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
5. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY BY CONTRACTOR.
6. AS NECESSARY, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-25-11	STABILIZED CONSTRUCTION ENTRANCE DETAIL	EC-09
DATE		
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		ROUND ROCK TEXAS

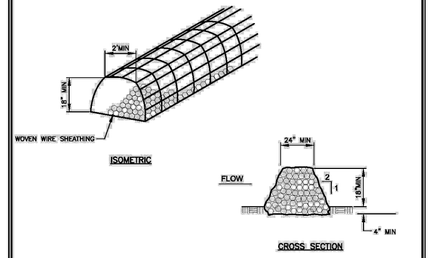


CROSS SECTION

NOTES:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MIN. OF ONE (1') FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT) WEIGHT FABRIC FLAP WITH WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHALL BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS SECURELY FASTENED TO THE STEEL FENCE POSTS.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES. THE SILT SHALL BE DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
8. SILT FENCE SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-25-11	SILT FENCE DETAIL	EC-10
DATE		
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		ROUND ROCK TEXAS



CROSS SECTION

NOTES:

1. USE ONLY OPEN GRADED ROCK (3- to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1" OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/ OR FABRIC CORE–WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH OF 6", THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTATION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

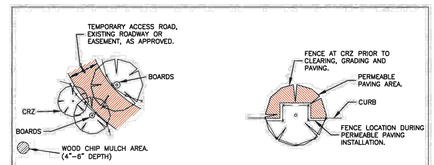
RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-25-11	ROCK BERM DETAIL	EC-12
DATE		
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		ROUND ROCK TEXAS

1. ALL TREES NOT LOCATED WITHIN THE LIMITS OF CONSTRUCTION AND OUTSIDE OF DISTURBED AREAS SHALL BE PRESERVED. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL TREES TO BE PRESERVED FROM HIS ACTIVITIES.
2. ALL TREES SHOWN TO BE RETAINED ON THE PLANS, SHALL BE PROTECTED DURING CONSTRUCTION WITH FENCING. SEE: TREE PROTECTION TREE WELLS (EC–02), TREE PROTECTION TREE LOCATION (EC–03) AND TREE PROTECTION FENCE–CHAIN LINK (EC–04).
3. TREE PROTECTION FENCES SHALL BE ERECTED ACCORDING TO CITY STANDARDS FOR TREE PROTECTION, INCLUDING TYPES OF FENCING AND SIGNAGE.
4. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR GRADING) AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF THE CONSTRUCTION PROJECT.
5. EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILD–UP WITHIN TREE DRIPLINES.
6. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES, LOCATED AT THE OUTERMOST LIMITS OF THE TREE BRANCHES (DRIPLINE) OR CRITICAL ROOT ZONE (CRZ), WHICHEVER IS GREATER. AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   6A. SOIL COMPACTION IN CRZ AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIAL.
   6B. CRZ DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 6 INCHES CUT OR FILL) OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE FORESTRY MANAGER.
   6C. WOUNDS TO EXPOSED ROOTS, TRUNK, OR LIMBS BY MECHANICAL EQUIPMENT.
   6D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CONCRETE TRUCK CLEANING, AND FIRES.
7. EXCEPTIONS TO INSTALLING TREE FENCES AT THE TREE DRIPLINES OR CRZ, WHICHEVER IS GREATER, MAY BE PERMITTED IN THE FOLLOWING CASES:
   7A. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, OR TREE WELL;
   7B. WHERE IMPERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   7C. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN 6 FEET TO THE BUILDING.
   7D. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE FORESTRY MANAGER TO DISCUSS ALTERNATIVES.
8. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE THAT IS CLOSER THAN 5 FEET TO A TREE TRUNK, THE TRUNK SHALL BE PROTECTED BY STRAPPED–ON PLANKING TO A HEIGHT OF 8 FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE REDUCED FENCING PROVIDED.
9. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN AREAS OF UNPROTECTED ROOT ZONES UNDER THE DRIPLINE OR CRZ, WHICHEVER IS GREATER, THOSE AREAS SHOULD BE COVERED WITH 4 INCHES OF ORGANIC MULCH TO MINIMIZE SOIL COMPACTION.
10. ALL GRADING WITHIN CRZ AREAS SHALL BE DONE BY HAND OR WITH SMALL EQUIPMENT TO MINIMIZE ROOT DAMAGE. PRIOR TO GRADING, RELOCATE PROTECTIVE FENCING TO 2 FEET BEHIND THE GRADE CHANGE AREA.
11. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL AND BACKFILLED WITH GOOD QUALITY TOP SOIL WITHIN TWO DAYS. IF EXPOSED ROOT AREAS CANNOT BE BACKFILLED WITHIN 2 DAYS, AN ORGANIC MATERIAL WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION SHALL BE PLACED TO COVER THE ROOTS UNTIL BACKFILL CAN OCCUR.
12. PRIOR TO EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINES, A CLEAN CUT SHALL BE MADE BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT, IN A LOCATION AND TO A DEPTH APPROVED BY THE FORESTRY MANAGER, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
13. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES WILL BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS ARE TO BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON LEAVES.
14. WHEN INSTALLING CONCRETE ADJACENT TO THE ROOT ZONE OF A TREE, A PLASTIC VAPOR BARRIER SHALL BE PLACED BEHIND THE CONCRETE TO PROHIBIT LEACHING OF LIME INTO THE CRZ.
15. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
16. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN FOUR (4) INCHES SHALL BE PERMITTED WITHIN THE DRIPLINE OR CRZ OF TREES, WHICHEVER IS GREATER. NO TOPSOIL IS PERMITTED ON ROOT FLARES OF ANY TREE.
17. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND CONSTRUCTION EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS. ALL PRUNING MUST BE DONE ACCORDING TO CITY STANDARDS AND AS OUTLINED IN LITERATURE PROVIDED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA PRUNING TECHNIQUES).
18. ALL OAK TREE CUTS, INTENTIONAL OR UNINTENTIONAL, SHALL BE SEALED WITH AN APPROVED PRUNING SEALER IMMEDIATELY (WITHIN 10 MINUTES). PRUNING SEAL OR TREE PAINT MUST BE KEPT ON SITE AT ALL TIMES.
19. THE FORESTRY MANAGER HAS THE AUTHORITY TO REQUIRE ADDITIONAL TREE PROTECTION BEFORE OR DURING CONSTRUCTION.
20. TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED. REFER TO THE CITY OF ROUND ROUND ROCK TREE TECHNICAL MANUAL FOR APPROPRIATE REMOVAL METHODS.
21. PRIOR TO CONSTRUCTION, ALL LOWER TREE LIMBS OVER ROADWAYS MUST BE PRUNED TO A HEIGHT OF 14 FEET USING THE TECHNIQUES DESCRIBED IN THE CITY OF ROUND ROCK TREE TECHNICAL MANUAL.
22. DEVIATIONS FROM THE ABOVE NOTES MAY BE CONSIDERED ORDINANCE VIOLATIONS IF THERE IS NON COMPLIANCE OR IF A TREE SUSTAINS DAMAGE AS A RESULT.

FOR QUESTIONS CONCERNING THIS DETAIL, PLEASE CONTACT THE FORESTRY MANAGER.

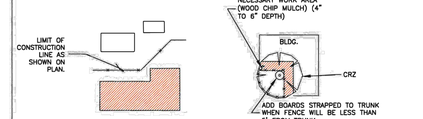
SCALE: NTS

RECORD SIGNED COPY ON FILE	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 01-28-21	TREE PROTECTION NOTES	EC–01
DATE		SHEET 1 of 1
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		ROUND ROCK TEXAS



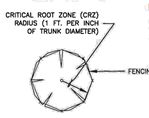
LINEAR CONSTRUCTION THROUGH TREES

TREES IN PAVING AREA



NATURAL AREAS

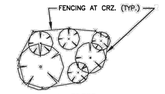
TREES NEAR CONSTRUCTION ACTIVITY



INDIVIDUAL TREE

NOTE:

LIMITS OF MULCH AREAS AND DISTANCE FROM TRUNKS TO WORK/ PERMEABLE PAVING AREAS SHALL BE SUBJECT TO THE APPROVAL OF THE FORESTRY MANAGER.

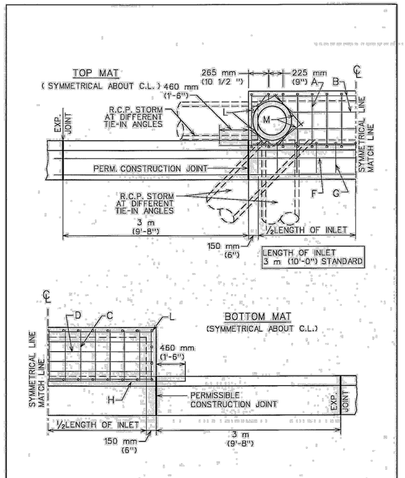


GROUP OF TREES

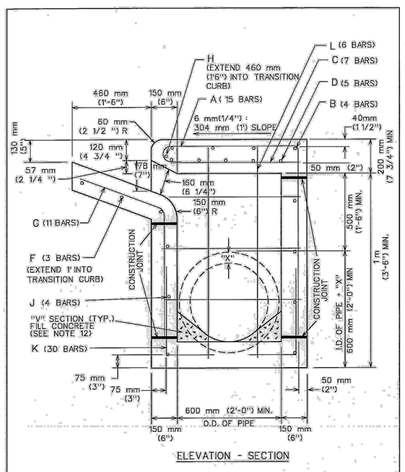
FOR QUESTIONS CONCERNING THIS DETAIL, PLEASE CONTACT THE FORESTRY MANAGER.

SCALE: NTS

RECORD SIGNED COPY ON FILE	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 01-28-21	TREE PROTECTION FENCE LOCATIONS	EC–03
DATE		SHEET 1 of 1
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		ROUND ROCK TEXAS



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 1 OF 4



ELEVATION - SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 2 OF 4

NOTES:

1. ALL CONCRETE SHALL BE CLASS "A"
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (380 mm or 15" MIN. LAP) IN THE LOWER ONE-HALF OF ALL INLET WALLS.S. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
5. QUANTITIES SHOWN HEREON ARE FOR THE CONTRACTOR'S INFORMATION ONLY. PAYMENT WILL BE MADE FOR EACH INLET OF THE TYPE SPECIFIED, COMPLETE IN PLACE INCLUDING MANHOLE FRAME AND OVER.
7. CHAMFER ALL EXPOSED EDGES 20 mm (3/4 ").
8. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S-1.
9. THE CONTRACTOR MAY PROPOSE ALTERNATE PROCEDURES FOR THE CONSTRUCTION OF INLETS, INCLUDING PRECAST UNITS. PLANS FOR SUCH PROPOSED ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE CONSTRUCTION.
10. ALL INLET WALLS SHALL BE FORMED EXCEPT WHERE THE NATURE OF THE SURROUNDING MATERIAL IS SUCH THAT IT CAN BE TRIMMED TO A SMOOTH VERTICAL FACE. WHEN INLET WALLS ARE PLACED TO NEAT EXCAVATION LINES THE WALL THICKNESS SHALL NOT EXCEED 10 INCHES.
11. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
12. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE, SHAPED AS "Y" SECTION
13. NO SPLICING OF REINFORCING STEEL SHALL BE PERMITTED UNLESS OTHERWISE NOTED ON THE PLANS OR PERMITTED IN WRITING BY THE ENGINEER.

REFERENCES:

FOR EXPANSION JOINT DOWEL AND DOWEL LOCATION DETAILS SEE STD. 430S-3, "CURB EXPANSION JOINT DOWEL DETAIL".

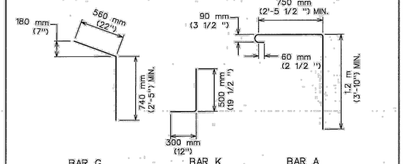
FOR 18" MANHOLE FRAME AND COVER DETAILS SEE STD. 503S-1, "18" COVER AND FRAME".

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 4 OF 4

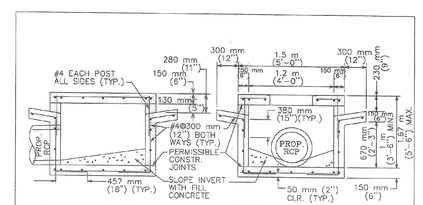
TABLE OF QUANTITIES
FOR 18" OUTLET PIPE
REINFORCING STEEL QUANTITIES

BARS	SIZE	SPACING	NUMBER	LENGTH	WEIGHT
A	4	230mm (9")•	15	2 m (7'–0")	73
B	4	250 mm (10")	4	3.25 m (10'–8")	29
C	4	460 mm (18")	7	760 mm (2'–6")	12
D	6	150 mm (6")	5	3.25 m (10'–8")	80
E	4	300 mm (12")	6	760 mm (2'–6")	10
F	4	250 mm (10")	3	4 m (13'–0")	35
G	4	300 mm (12")	11	1.25 m (4'–3")	31
H	6	-	1	4.25 m (14'–0")	20
J	4	300 mm (12")	7	3.25 m (10'–8")	50
K	4	230 mm (9")•	30	800 mm (2'–7 1/2")	52
L	4	300 mm (12")•	8	1.3 m (4'–4")	17
M	4	-	4	500 mm (1'–8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.06

• EXCEPT AS SHOWN ON PLAN

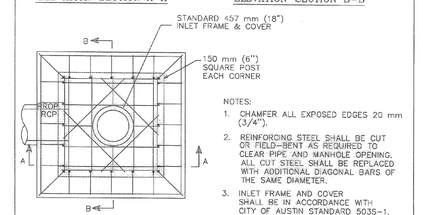


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 3 OF 4



ELEVATION–SECTION A–A

ELEVATION–SECTION B–B



PLAN

N.T.S.

NOTES:

1. CHAMFER ALL EXPOSED EDGES 20 mm (3/4").
2. REINFORCING STEEL SHALL BE CUT OR FIELD–BENT AS REQUIRED TO CLEAR PIPE AND MANHOLE OPENING. ALL CUT STEEL SHALL BE REPLACED WITH ADDITIONAL DIAGONAL BARS OF THE SAME DIAMETER.
3. INLET FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S–1.
4. CONCRETE COVERAGE OF STEEL SHALL BE 50 mm (2") MIN. AT ALL SURFACES.
5. ANY MODIFICATION TO THIS STANDARD SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	4–SIDED AREA INLET	
Keith C. Rivers, P.E. 5/13/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD NO. 508S-9

NO.	REVISION	BY	DATE

811 Know what's below. Call before you dig.

HRGreen DEVELOPMENT TX
5609 HIGHWAY 290 WEST
SUITE 150
AUSTIN, TX 78735
512.872.6696
HRGREEN.COM
TBPE NO: 16384
TBPLS NO: 10194101

XAVIER GARZA-ROBLEDO 135174 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 06/16/2023

CONSTRUCTION DETAILS 1 OF 3

12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

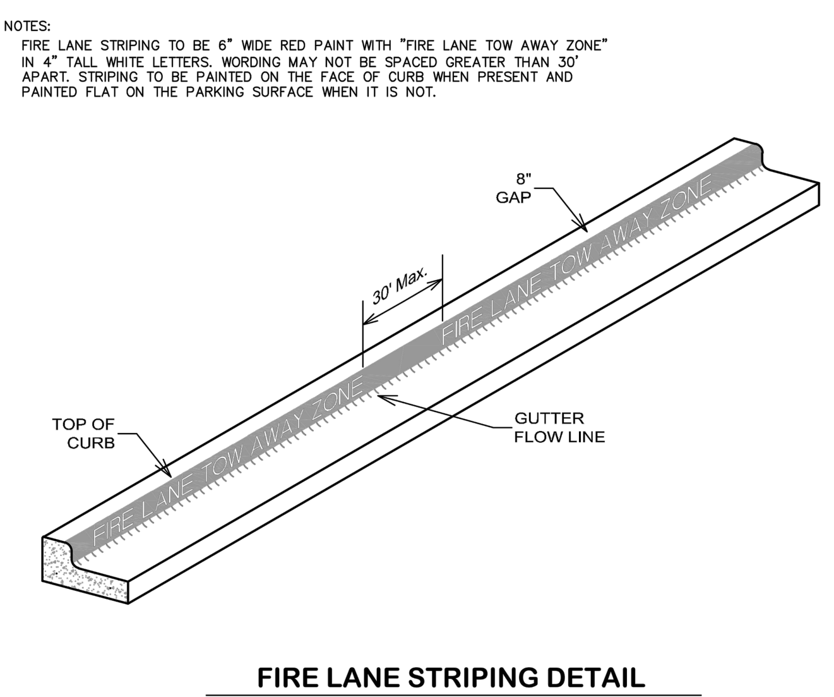
SHT. 29 OF 33

P:\New Growth\2020\047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Cover Plans\CONST DETAILS.dwg, DTL1, June 16, 2023, 4:53 PM, cbarrett

Williamson County Emergency Services District No. 4

Fire Lane Detail

NOTES:
FIRE LANE STRIPING TO BE 6" WIDE RED PAINT WITH "FIRE LANE TOW AWAY ZONE" IN 4" TALL WHITE LETTERS. WORDING MAY NOT BE SPACED GREATER THAN 30' APART. STRIPING TO BE PAINTED ON THE FACE OF CURB WHEN PRESENT AND PAINTED FLAT ON THE PARKING SURFACE WHEN IT IS NOT.

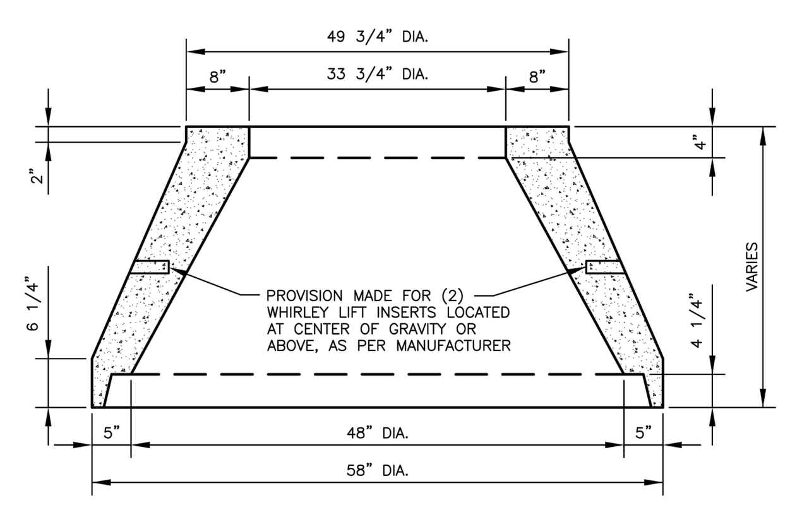


FIRE LANE STRIPING DETAIL

not to scale

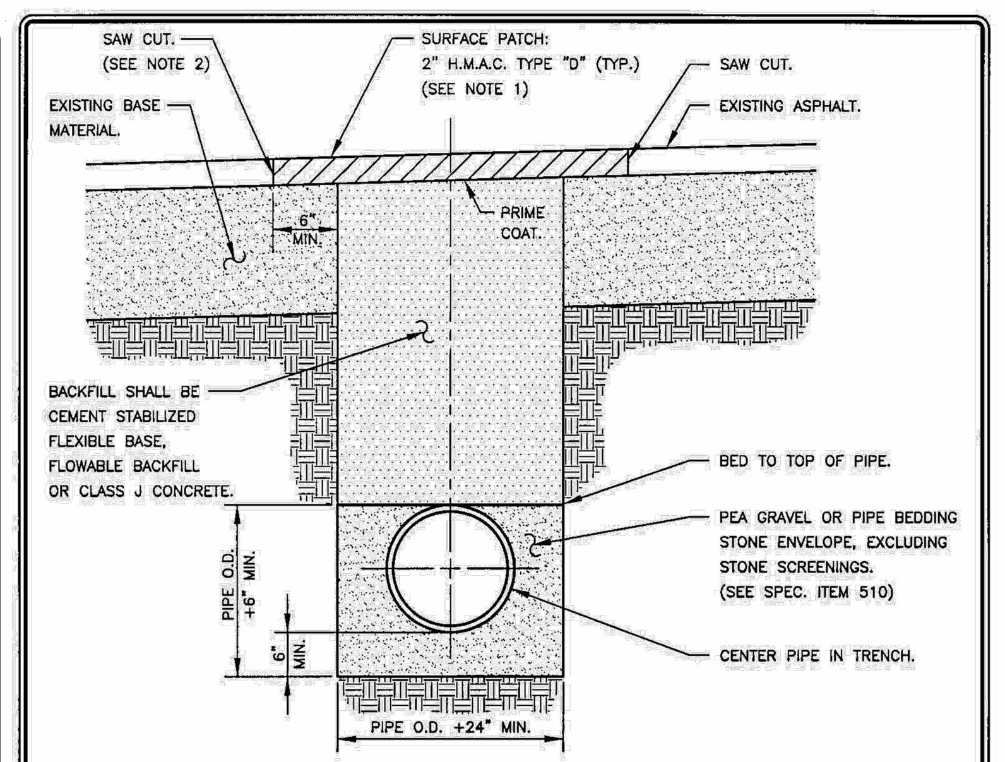
D:\Standards\Const-Stnds\Fire-Lane-Striping_Curb.dwg

Jay Engineering Company, Inc. P.O. Box 1220 Leander, Texas 78646-1220 TEXAS REGISTERED ENGINEERING FIRM F-4780	FIRE LANE STRIPING DETAIL			
ENGINEER	DATE	DRAWN BY	PROJECT NO.	DRAWING NO.
FRANK T. PHELAN, P.E.	04 - 25 - 19	JJD	01	1 OF 1



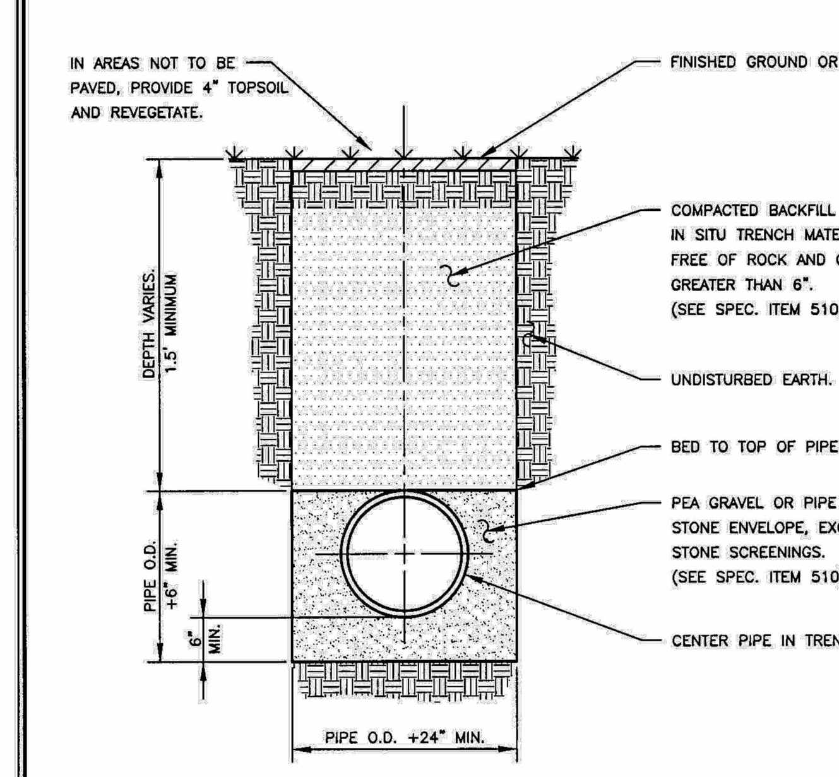
NOTE:
CONCENTRIC CONCRETE CONE SECTION SHALL BE MANUFACTURED USING 4000 TO 4500 P.S.I. CONCRETE, 28 DAY STRENGTH AND IN ACCORDANCE WITH A.S.T.M. C478, AS MANUFACTURED BY CONCRETE PRODUCTS INCORPORATED, OR APPROVED EQUAL.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT APPROVED 03-01-18 DATE	CITY OF ROUND ROCK	DRAWING NO: WW-09
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)	PRECAST 48" CONCENTRIC CONCRETE CONE SECTION DETAIL	ROUND ROCK TEXAS



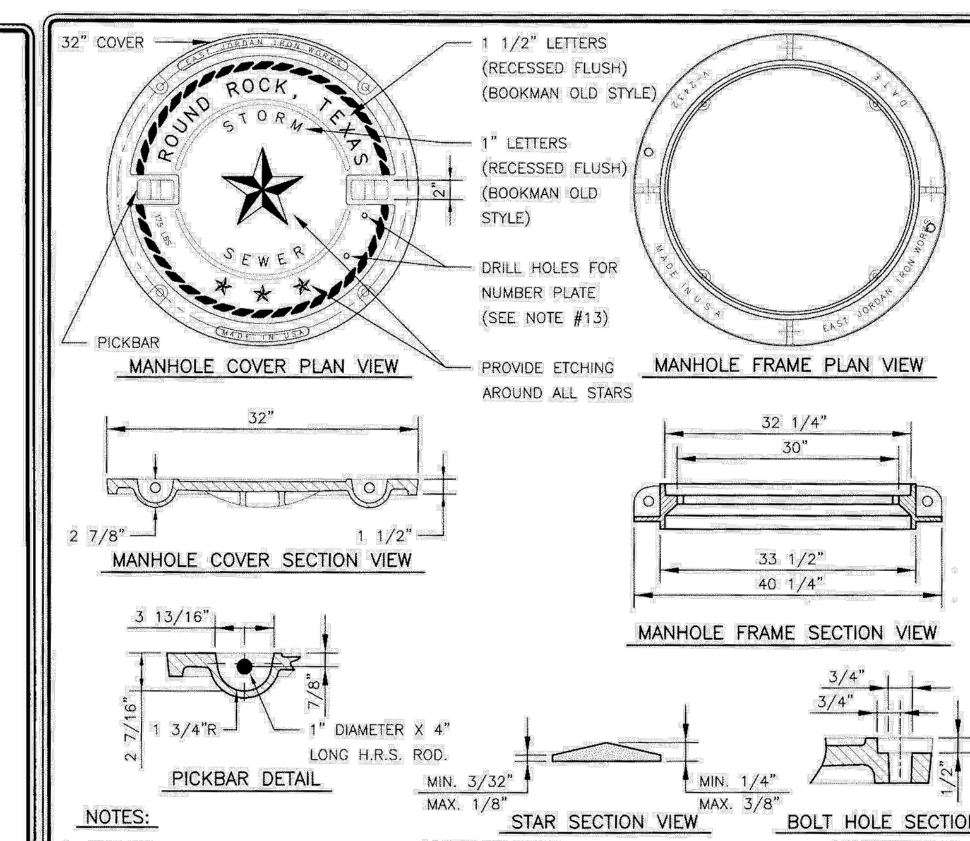
NOTES:
1. H.M.A.C. SHOWN IN THIS DETAIL IS SEPARATE FROM ANY ADDITIONAL THICKNESS CREATED BY ANY OVERLAY ITEM IN CONTRACT.
2. THE CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING PAVEMENT A MINIMUM OF 6" BEYOND EITHER THE EDGE OF THE STORM SEWER TRENCH OR THE POINT WHERE EXISTING PAVEMENT IS DAMAGED DUE TO TRENCHING OPERATIONS, WHICHEVER IS GREATER.
3. INSTALLATION OF BACKFILL, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND SURFACE PATCH, SHALL NOT BE PAID FOR SEPARATELY. COSTS FOR THESE ITEMS SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE.
4. THE CONTRACTOR SHALL PROVIDE STEEL PLATES TO SPAN THE TRENCH AS NECESSARY OR TO ALLOW BACKFILL TO CURE. SUCH PLATES SHALL BE SUITABLE FOR VEHICLE PASSAGE OVER THE TRENCH AND SHALL BE SATISFACTORILY ANCHORED IN PLACE. COSTS FOR THIS ITEM SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE.
5. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS APPROVED 08-21-03 DATE	CITY OF ROUND ROCK	DRAWING NO: D-01
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	STORM SEWER LINE BEDDING DETAIL (EXISTING PAVED SURFACE)	



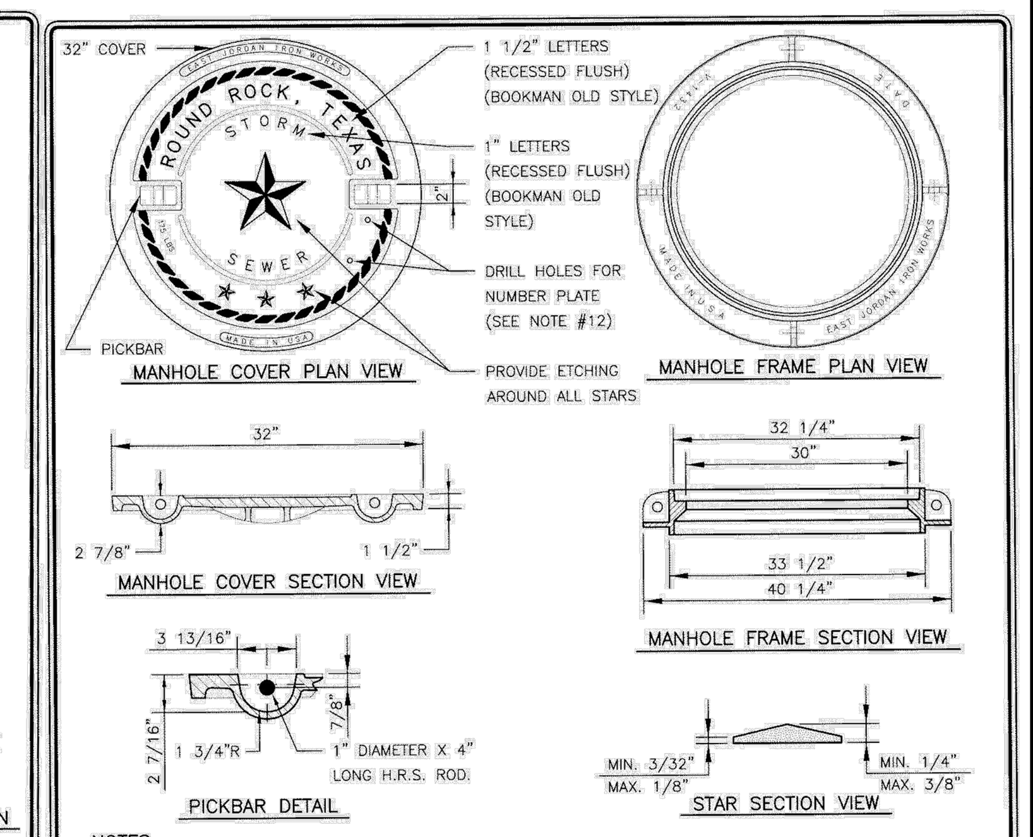
NOTE:
ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS APPROVED 08-21-03 DATE	CITY OF ROUND ROCK	DRAWING NO: D-02
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	STORM SEWER LINE BEDDING DETAIL (NON-PAVED SURFACE)	



NOTES:
1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. MANHOLE COVER SHALL BE MODEL NUMBER: V-2432-3 (PRODUCT NUMBER: 42432032), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
3. MANHOLE FRAME SHALL BE MODEL NUMBER: V-2432 (PRODUCT NUMBER: 42432010), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
4. MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-2432 (PRODUCT NUMBER: 42432072), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
5. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.
6. MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS.
7. MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
8. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING.
9. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
10. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
11. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.
12. BOLTS SHALL BE 5/8"-11NC X 2" LONG HEX STAINLESS STEEL WITH WASHER.
13. MANUFACTURER SHALL DRILL 2-3/16"X1/2" 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 ON FILE AT PUBLIC WORKS APPROVED 08-09-05 DATE	CITY OF ROUND ROCK	DRAWING NO: DR-05
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	BOLTED STORMSEWER MANHOLE COVER AND FRAME DETAIL	ROUND ROCK, TEXAS

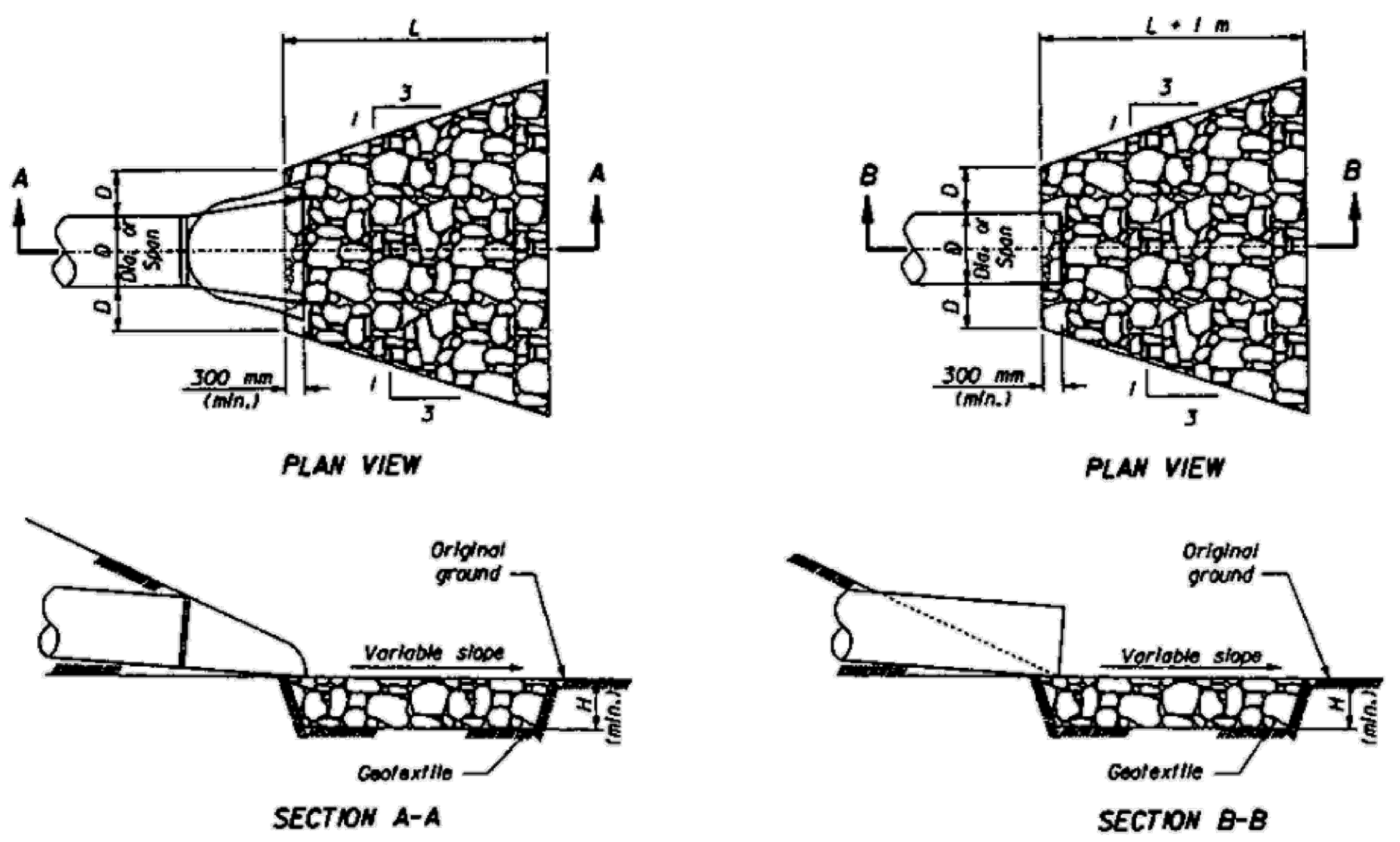


NOTES:
1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. MANHOLE COVER SHALL BE MODEL NUMBER: V-1432-3 (PRODUCT NUMBER: 41432058), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
3. MANHOLE FRAME SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432010), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
4. MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432080), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
5. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.
6. MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS.
7. MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
8. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING.
9. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
10. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
11. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.
12. MANUFACTURER SHALL DRILL 2-3/16"X1/2" 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 ON FILE AT PUBLIC WORKS APPROVED 08-09-05 DATE	CITY OF ROUND ROCK	DRAWING NO: DR-06
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	NON-BOLTED STORMSEWER MANHOLE COVER AND FRAME DETAIL	ROUND ROCK, TEXAS

RIPRAP APRON DETAIL (CM251-50)

N.T.S.



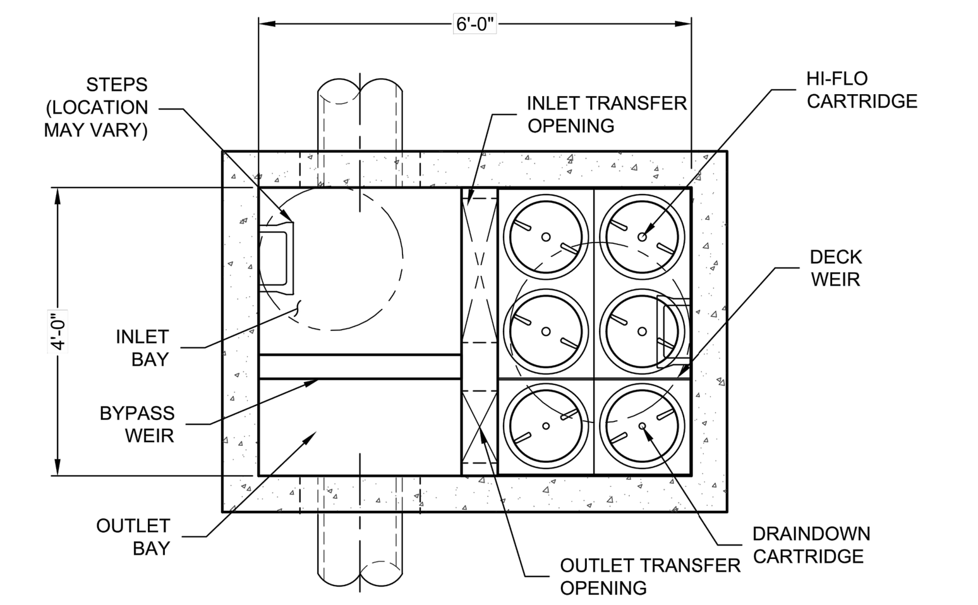
NOTE:
1. Excavation for placement of riprap will not be measured for payment.
2. Furnish geotextile conforming to subsection 714.01 (a), type IV-E.
3. Dimensions not labeled are in millimeters.

APRON TYPE	CLASS RIPRAP	LENGTH OF APRON L (METER)	DEPTH OF APRON H (METER)
1	2	4 x D	0.5
2	3	5 x D	0.6
3	4	6 X D	0.8

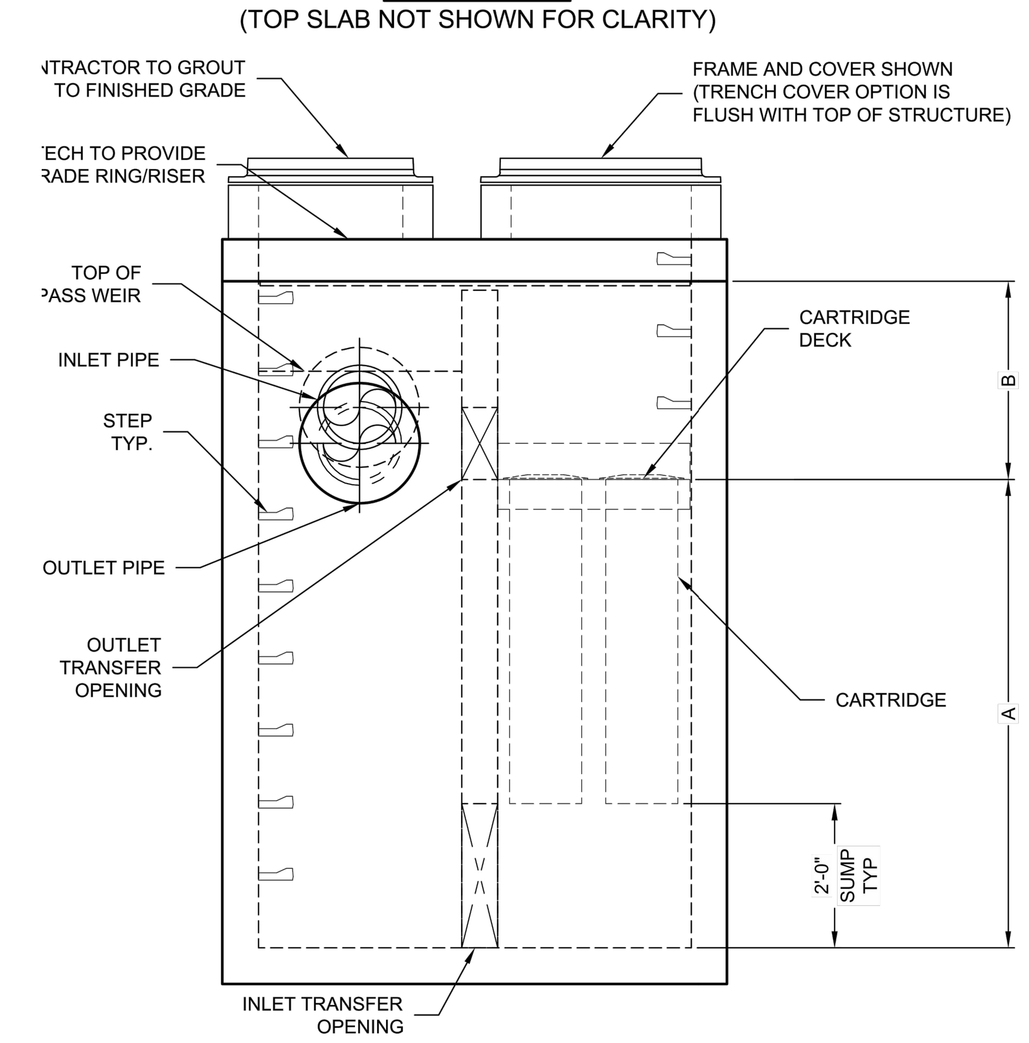
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
METRIC DETAIL PLACED RIPRAP AT CULVERTS	
DETAIL APPROVED FOR USE 07/2004 REVISED:	DETAIL CM251-50

PROTECTIVE APRON AT CULVERT OUTLET

FIGURE 10.4 FROM HEC-14



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

Jellyfish® Filter

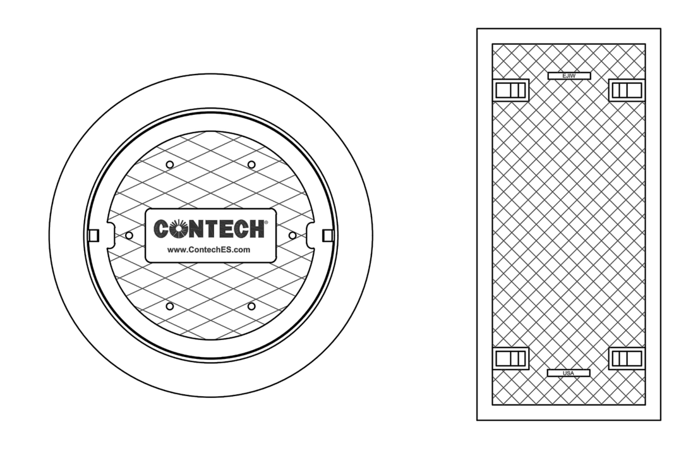
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,726; 8,221,618; US 8,123,935; OTHER INTERNATIONAL PATENTS PENDING

JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT, CURB INLET OR SHALLOW PIPE INLET OPTIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.

CARTRIDGE SELECTION

CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.89	0.67	0.45	0.25
DECK TO INSIDE TOP (MIN) (B)	5'-0"	4'-0"	4'-0"	4'-0"



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

24" TRENCH COVER
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID					LINE A
WATER QUALITY FLOW RATE (cfs)					0.82
PEAK FLOW RATE (cfs)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
# OF CARTRIDGES REQUIRED (HF / DD)					4/2
CARTRIDGE LENGTH					54"
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	967.53	RCP	24"	*	*
INLET #2	*	*	*	*	*
OUTLET	967.53	RCP	24"	*	*
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.					
RIM ELEVATION					972.24
ANTI-FLOTATION BALLAST			WIDTH		HEIGHT
			*		*
NOTES/SPECIAL REQUIREMENTS: TOP OF WEIR ELEVATION = 969.03'					
* PER ENGINEER OF RECORD					

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION AND SITE SPECIFIC EARTH COVER REQUIREMENT. TYPICAL CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE (WHERE APPLICABLE) AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

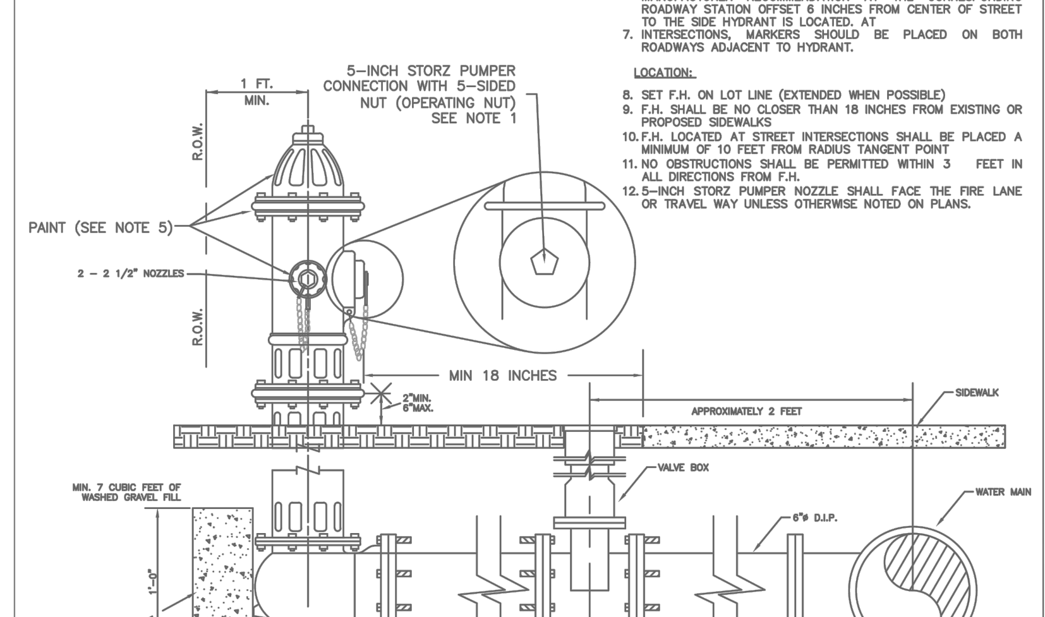
CONTECH ENGINEERED SOLUTIONS LLC www.ContechES.com 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069 800-338-1122 513-645-7000 513-645-7993 FAX	JELLYFISH JFPD0406 STANDARD DETAIL PEAK DIVERSION CONFIGURATION

FIRE HYDRANTS LACKING INTEGRAL STORZ CONNECTOR SHALL BE REJECTED (NO STORZ ADAPTERS ALLOWED)

RATED FLOW	FIRE HYDRANT BONNET COLOR
1,500 G.P.M. +	LIGHT BLUE
1000 - 1499 G.P.M.	GREEN
500 - 999 G.P.M.	ORANGE
BELOW 500 G.P.M.	RED

NOTES:
1. FIRE HYDRANT BRAND AND MODEL SHALL BE APPROVED BY THE LOCAL WATER AUTHORITY DISTRICT. THE PRIMARY FEATURES REQUIRED INCLUDE: FACTORY INSTALLED INTEGRAL 5-INCH STORZ PUMPER NOZZLE; 1.5-INCH PENT OPERATING NUT ON NOZZLE CAP; OPEN LEFT; FACTORY PAINTED.
2. HYDRANTS SHALL BE ORDERED SILVER IN COLOR. HYDRANTS WILL NOT BE ACCEPTED IF PAINTED AFTER DELIVERY.
3. ALL DUCTILE OR CAST IRON FITTINGS AND/OR PIPE SHALL BE POLYWRAPPED.
4. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE. ALL FITTINGS SHALL BE EQUIPPED WITH JOINT RESTRAINT "MEGALUG" OR APPROVED EQUAL. ALL ANCHOR FITTING TO BE CONCRETE THRUST BLOCKED.
5. AFTER COMPLETION OF FIRE HYDRANT INSTALLATION, A FIRE FLOW TEST SHALL BE CONDUCTED BY A THIRD PARTY COMPANY. BASED ON FIRE FLOW TEST, THE FIRE HYDRANT BONNET SHALL BE PAINTED ACCORDING TO THE CHART ON THIS SHEET. THE HYDRANT BONNET TO FLANGE AND NOZZLE CAPS SHALL BE PAINTED THE APPROVED COLOR CORRESPONDING WITH THE APPROPRIATE FLOW RATE AS NOTED ON THE TABLE ON THIS SHEET.
6. BLUE, BI-DIRECTIONAL REFLECTIVE PAVEMENT MARKER, ULTIMATE WET NIGHT VISIBILITY SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATION AT THE CORRESPONDING ROADWAY STATION OFFSET 6 INCHES FROM CENTER OF STREET TO THE SIDE HYDRANT IS LOCATED. AT
7. INTERSECTIONS, MARKERS SHOULD BE PLACED ON BOTH ROADWAYS ADJACENT TO HYDRANT.

LOCATION:
8. SET F.H. ON LOT LINE (EXTENDED WHEN POSSIBLE)
9. F.H. SHALL BE NO CLOSER THAN 18 INCHES FROM EXISTING OR PROPOSED SIDEWALKS
10. F.H. LOCATED AT STREET INTERSECTIONS SHALL BE PLACED A MINIMUM OF 10 FEET FROM RADIUS TANGENT POINT
11. NO OBSTRUCTIONS SHALL BE PERMITTED WITHIN 3 FEET IN ALL DIRECTIONS FROM F.H.
12. 5-INCH STORZ PUMPER NOZZLE SHALL FACE THE FIRE LANE OR TRAVEL WAY UNLESS OTHERWISE NOTED ON PLANS.

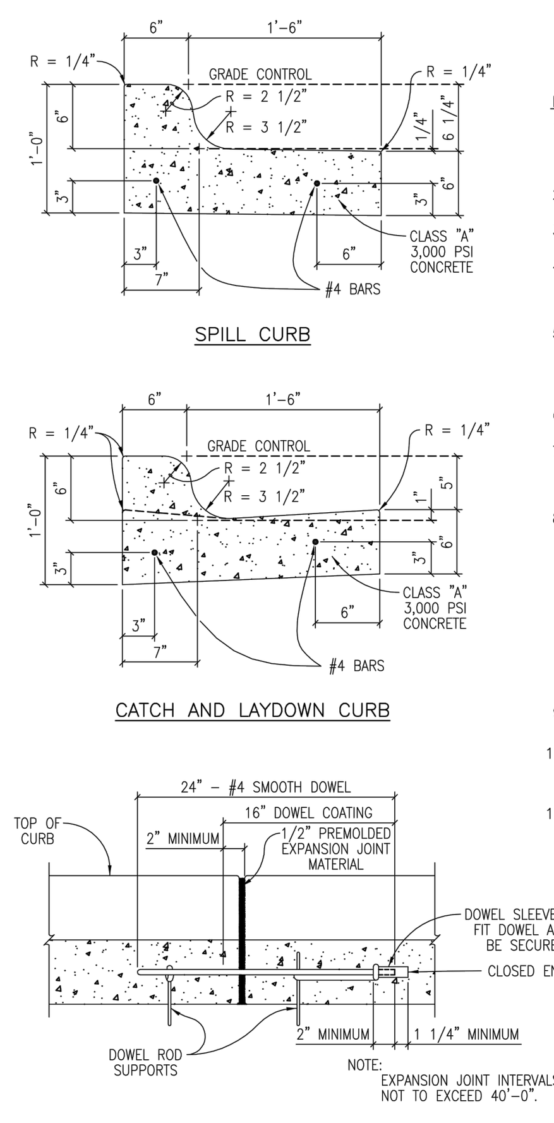


N.T.S.

PER ORDER NO. 2007-01
(2) SECTION C105.2 INSTALLATION.
FIRE HYDRANTS MUST BE INSTALLED WITH THE CENTER OF THE FIVE (5) INCH STEAMER OPENING AT LEAST 18 INCHES ABOVE FINISHED GRADE. THE FIVE (5) INCH OPENING MUST FACE THE DRIVEWAY OR STREET AND MUST BE TOTALLY UNOBSTRUCTED TO THE STREET. FIRE HYDRANT DESIGN SHALL BE 2- 2.5" NST OUTLETS, 1 - 5.0" STORZ CONNECTION WITH A CAP TO INCLUDE A HEX NUT TO FIT A HYDRANT WRENCH ALONG WITH A REFLECTIVE BAND. THE FIRE HYDRANT SHALL BE PAINTED SILVER IN COLOR AND DESIGNATED BY A BLUE REFLECTOR IN THE CENTER OF THE STREET.

NOTE: STANDARD FIRE HYDRANT ASSEMBLY INCLUDES ALL COMPONENTS SHOWN HEREIN, EXCEPT WATER MAIN, INSTALLED COMPLETE AND IN-PLACE.

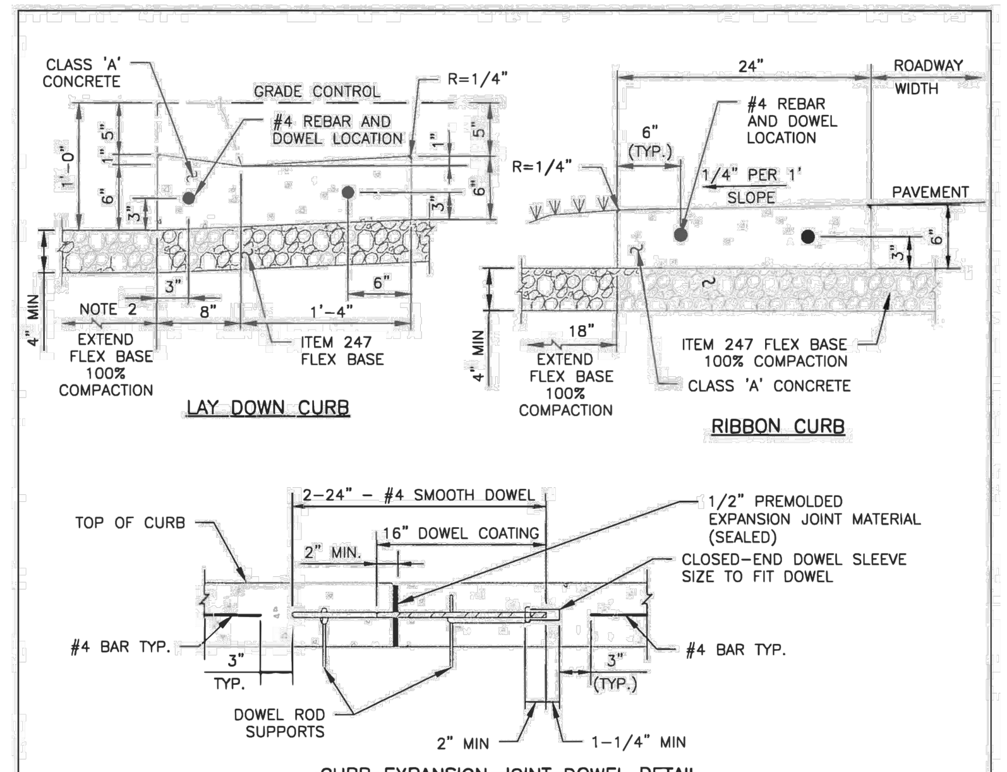
WILLIAMSON COUNTY EMERGENCY SERVICE DISTRICT NO. 4	STANDARD FIRE HYDRANT ASSEMBLY



NOTES:
1. ALL WORK AND MATERIAL SHALL CONFORM TO ASTM A615, A615M, C309, AND D1752. BROOM FINISH EXPOSED SURFACE.
2. CONTRACTION JOINT SPACING 10' MAX.
3. EXPANSION JOINTS AS PER STD. ASTM D-1752.
4. 1/2" EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB IS ADJACENT TO SIDEWALK OR RIP-RAP.
5. TRANSITIONS BETWEEN CURBS OR DIFFERING CROSS SECTIONS SHALL OCCUR OVER A 20 FOOT LENGTH AS APPROVED BY THE ENGINEER OR THE CITY OF GEORGETOWN.
6. ALL CONCRETE SHALL BE CLASS A, 3000 PSI.
7. ALL SURFACES THAT ARE CHIPPED OR OTHERWISE DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED.
8. THE FOLLOWING SCHEME OF REINFORCEMENT SHALL BE REQUIRED. THE MANNER OF PLACEMENT AND LOCATION SHALL BE TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF GEORGETOWN.
   A. ALL CURB AND CURB AND GUTTER (REINFORCED) SHALL HAVE TWO #4 LONGITUDINAL REINFORCING BARS.
9. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 15 INCH.
10. REINFORCING BARS SHALL BE SUPPORTED WITH REBAR CHAIRS OR OTHER APPROVED METHODS.
11. REBAR SUPPORTS ARE NOT REQUIRED ON MACHINE PLACED CURB PROVIDED THAT REBAR IS PROPERLY GUIDED INTO THE CURB SECTION.

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

GEORGETOWN TEXAS EST. 1848 Georgetown Utility Systems Your Community Owned Utility	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS CURB AND GUTTER DETAILS	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: SD06 SCALE: NTS DATE: DRAWN BY: MRS APPROVED BY: TRB



NOTES:
1. ALL WORK AND MATERIALS SHALL CONFORM TO SPECIFICATION ITEM 529, "CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER", AND THESE DETAILS (INDEPENDENT OF THE CONSTRUCTION METHODS USED).
2. ALL CURBS SHALL HAVE A MINIMUM OF 4 INCHES OF COMPACTED FLEXIBLE BASE BETWEEN THE BOTTOM OF THE CURB AND TOP OF SUBGRADE. THE FLEXIBLE BASE MATERIAL, COMPACTED TO 100% DENSITY, SHALL EXTEND 18 INCHES BEHIND BACK OF CURB, OR 36 INCHES IF THE SUBGRADE P.I. IS GREATER THAN 20.
3. CONCRETE IS CLASS 'A' MEDIUM BROOM FINISH.
4. REINFORCING BARS ARE #4 BARS UNLESS OTHERWISE SHOWN.
5. PLACE EXPANSION JOINT AT A MAXIMUM SPACING OF 40 FEET. TERMINATE WORKDAY PRODUCTION AT AN EXPANSION JOINT.
6. PLACE 1/2" WIDE EXPANSION JOINTS AT STRUCTURES, CURB RETURNS AND INCREMENTS NO GREATER THAN 40 FEET.
7. FORM CONTROL JOINTS, 1/4 INCH WIDE AND 3/4 INCH DEEP AT A MAXIMUM SPACING OF 10 FEET. WHEN CURB ABUTS CONCRETE PAVEMENT, MATCH PAVEMENT JOINT SPACING.
8. ROUND EXPOSED EDGES AND JOINTS TO A 1/4 INCH RADIUS.
9. COAT 16 INCHES OF 24 INCH LONG DOWELS WITH GREASE OR APPROVED DEBONDING LUBRICANT, INSTALL DOWEL CAP ON LUBRICATED END OF THE DOWELS.

RECORD SIGNED COPY ON FILE APPROVED 01-28-21 DATE	CITY OF ROUND ROCK	SCALE: NTS DRAWING NO: ST-05 SHEET 1 of 1
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	LAYDOWN AND RIBBON CURB DETAIL (WITH EXPANSION JOINT DOWEL DETAIL)	ROUND ROCK TEXAS

P:\New Growth\2302047-0000 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\CONST DETAILS.dwg, DTL2, June 16, 2023, 4:53 PM, cbarrett

NO.	REVISION	BY	DATE

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XAVIER GARZA-ROBLEDO
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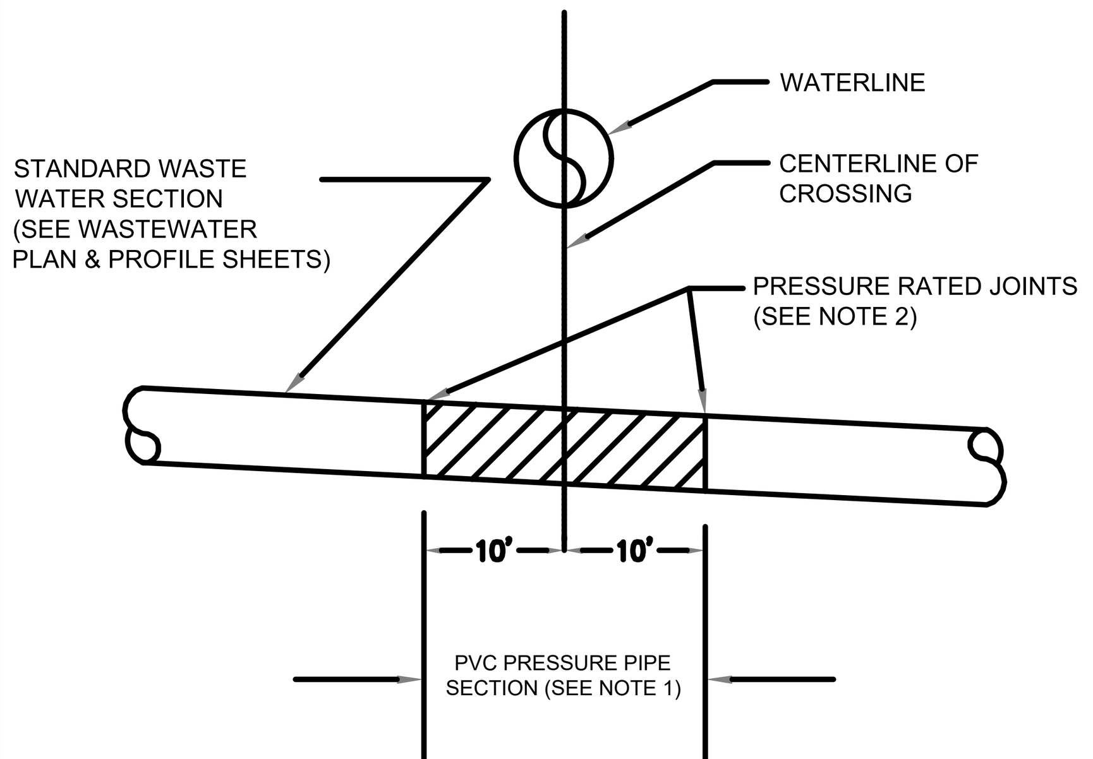
LICENSED PROFESSIONAL ENGINEER
06/16/2023

CONSTRUCTION DETAILS 2 OF 3

12 OAKS VILLAGE PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 30 OF 33

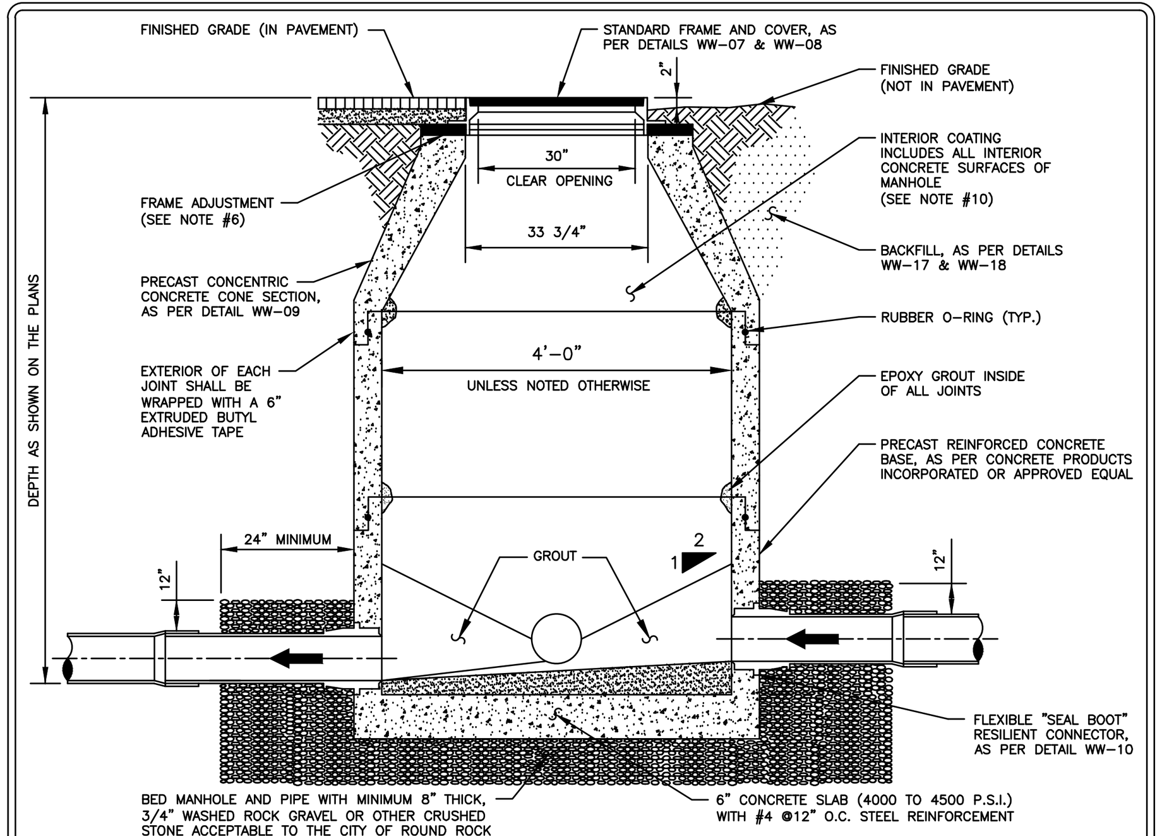


NOTES:

1. ONE (1) 20 FOOT SECTION OF ASTM D2241 SDR-26 PVC PRESSURE PIPE IS TO BE CENTERED ON WATER LINE CROSSINGS.
2. PVC PRESSURE PIPE CONNECTIONS ARE TO COMPLY WITH ASTM D3139 AND TEXAS ADMINISTRATIVE CODE RULE § 217.53 (C)
3. ALL SDR26 TO BE ASTM D 3034 UNLESS OTHERWISE SPECIFIED.

WATER/WASTEWATER CROSSING

SCALE: NTS

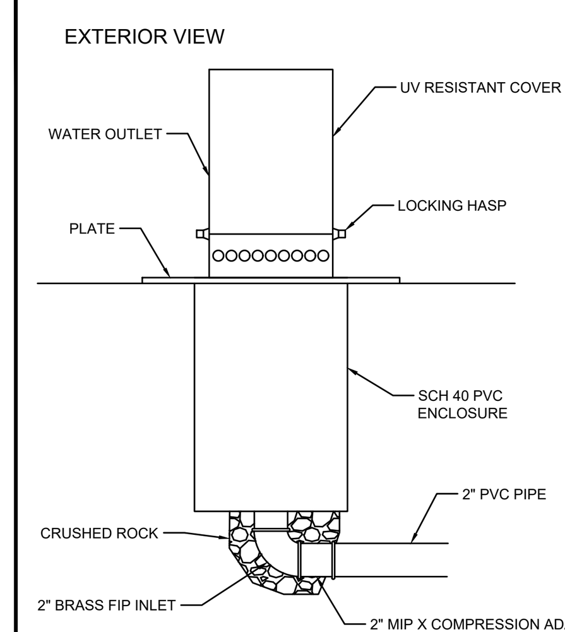


NOTES:

1. IF DROP IS SIX INCHES (6") TO TWO FEET (2'–0"), CONSTRUCTION OF DROP SHALL PROVIDE AN OVERSIZED INVERT TO EXTEND UNDER THE DROP CONNECTION.
2. SEE CONSTRUCTION PLANS FOR MANHOLE SIZE, LOCATION, CONFIGURATION, TYPE OF TOP SECTION, VENTING REQUIREMENTS, PIPE SIZES AND TYPES.
3. MANHOLES SHALL BE PRECAST A.S.T.M. C478 BELL AND SPIGOT WITH "O" RING JOINTS.
4. MANHOLES TO BE DESIGNED TO RESIST LATERAL AND VERTICAL SOIL FORCES RESULTING FROM MANHOLE DEPTH. ADDITIONALLY, MANHOLES LOCATED IN PAVEMENT TO BE DESIGNED FOR H20 TRAFFIC LOADING.
5. ALL MANHOLE COVERS SHALL BE BOLTED AND GASKETED, WHEN MANHOLES ARE LOCATED OUTSIDE OF PAVEMENT.
6. FRAME ADJUSTMENT HEIGHT SHALL CONSIST OF FIVE INCHES (5") MINIMUM TO EIGHTEEN INCHES (18") MAXIMUM. GRADE RINGS SHALL BE GROUTED WITH A NON–SHRINK GROUT INSIDE AND OUTSIDE. HDPE GRADE RINGS, MAY NOT BE USED.
7. FOR MANHOLES TO BE VENTED, SEE DETAILS WW–05 AND WW–06.
8. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO THE FLOW STREAM. ALL P.V.C. PIPE SHALL BE REMOVED FROM INVERT.
9. BASE SECTION SHALL BE DESIGNED FOR H20 LOADING, PLUS EARTH LOAD AT 130 PCF.
10. ENTIRE INTERIOR CONCRETE SURFACES OF WASTEWATER MANHOLES TO BE COATED WITH RAVEN 405, SPRAYWALL, OR APPROVED EQUAL, (WITH A UNIFORM THICKNESS OF 124 MILS AND A MINIMUM THICKNESS OF 100 MILS, APPLIED AFTER MANHOLE HAS PASSED THE VACUUM TEST). FOR REHABILITATING MANHOLES 1/2" MINIMUM THICKNESS CALCIUM ALUMINATE CEMENTITIOUS COATING AND OTHER INTERIOR SURFACES MAY BE COATED IF RECOMMENDED BY COATING MANUFACTURER. (IN LIEU OF INTERIOR COATINGS NEW PRECAST MANHOLES CONTAINING CONSHIELD WILL BE ACCEPTED PROVIDING THE MANUFACTURER STENCILS "CONSHIELD" ON THE INSIDE AND OUTSIDE OF ALL MANHOLE SECTIONS.)

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW–01
APPROVED 03–01–18 DATE	PRECAST CONCRETE WASTEWATER MANHOLE DETAIL	ROUND ROCK TEXAS Utilities and Environmental Services
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

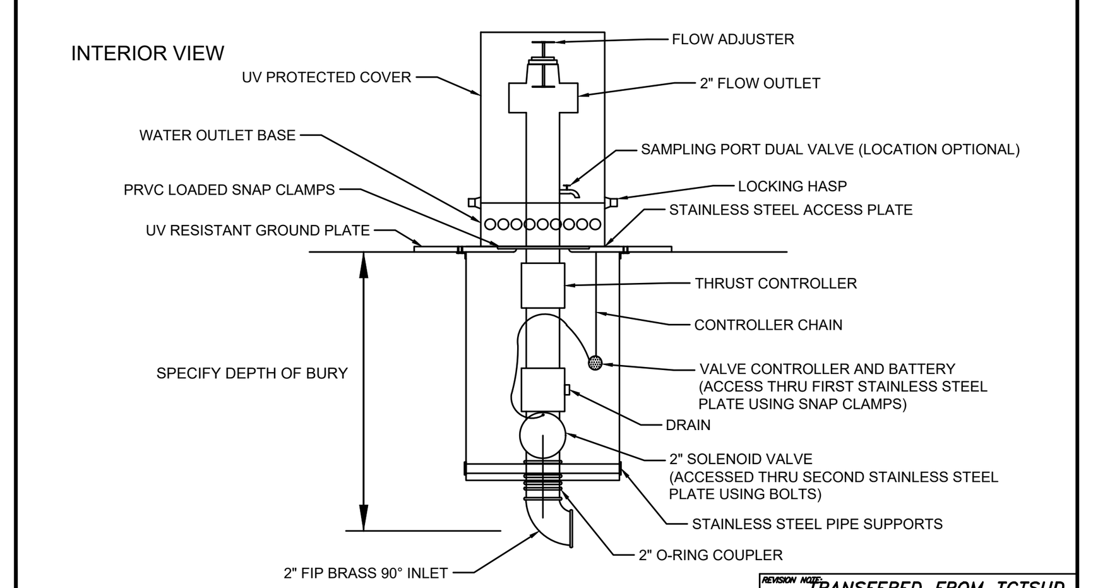
EXTERIOR VIEW



AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" BRASS FIP INLET, LEADING VERTICALLY INTO A 2" AUTOMATIC SOLENOID VALVE. AUTOMATIC SOLENOID VALVE SHALL HAVE INTERNAL, SELF-CLEANING SCREEN, AND HAVE A 220 PSI RATING. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND DEVICE FOR PROGRAMMING. MUST HAVE A MINIMUM OF 9 POSSIBLE FLUSHING CYCLE PER DAY, SHALL BE SUBMERSIBLE TO 12 FEET, OPERATE WITH A 9 VOLT BATTERY, AND HAVE FRESH-SEALED ELECTRICAL COMPONENTS. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. EACH UNIT SHALL HAVE A DOUBLE-VALVE. ALL BRASS SAMPLING POINT, AND A UV RESISTANT GROUND PLATE. WATER SHALL EXIT UNIT HORIZONTALLY THROUGH HOLE LOCATED NEAR GROUNDLINE AND WATER FLOW SHALL BE ADJUSTABLE WITHOUT ACCESSING 2" SOLENOID VALVE. REMOVAL OF 2" SOLENOID VALVE SHALL BE POSSIBLE VIA AN O-RING CONNECTOR LOCATED UNDER THE VALVE AFTER REMOVAL OF THE STAINLESS STEEL ACCESS PLATE. UNDERGROUND PARTS SHALL BE HOUSED IN A PVC ENCLOSURE AND EACH UNIT SHALL BE SELF-DRAINING, NON FREEZING. ALL ABOVE GROUND COMPONENTS SHALL BE CONTAINED WITHIN A UV RESISTANT LOCKING GOMES COVER.

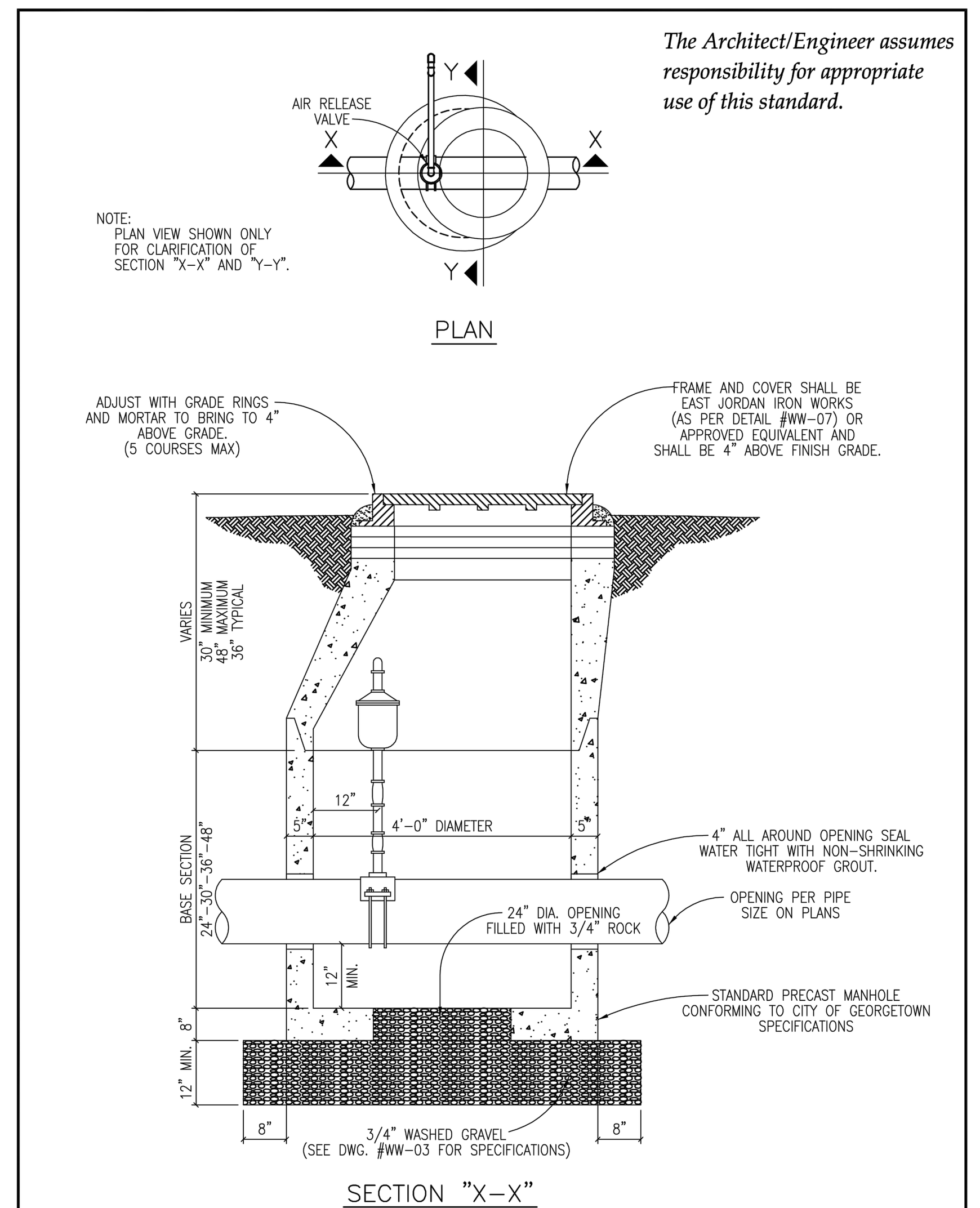
The Architect/Engineer assumes responsibility for appropriate use of this standard.

INTERIOR VIEW

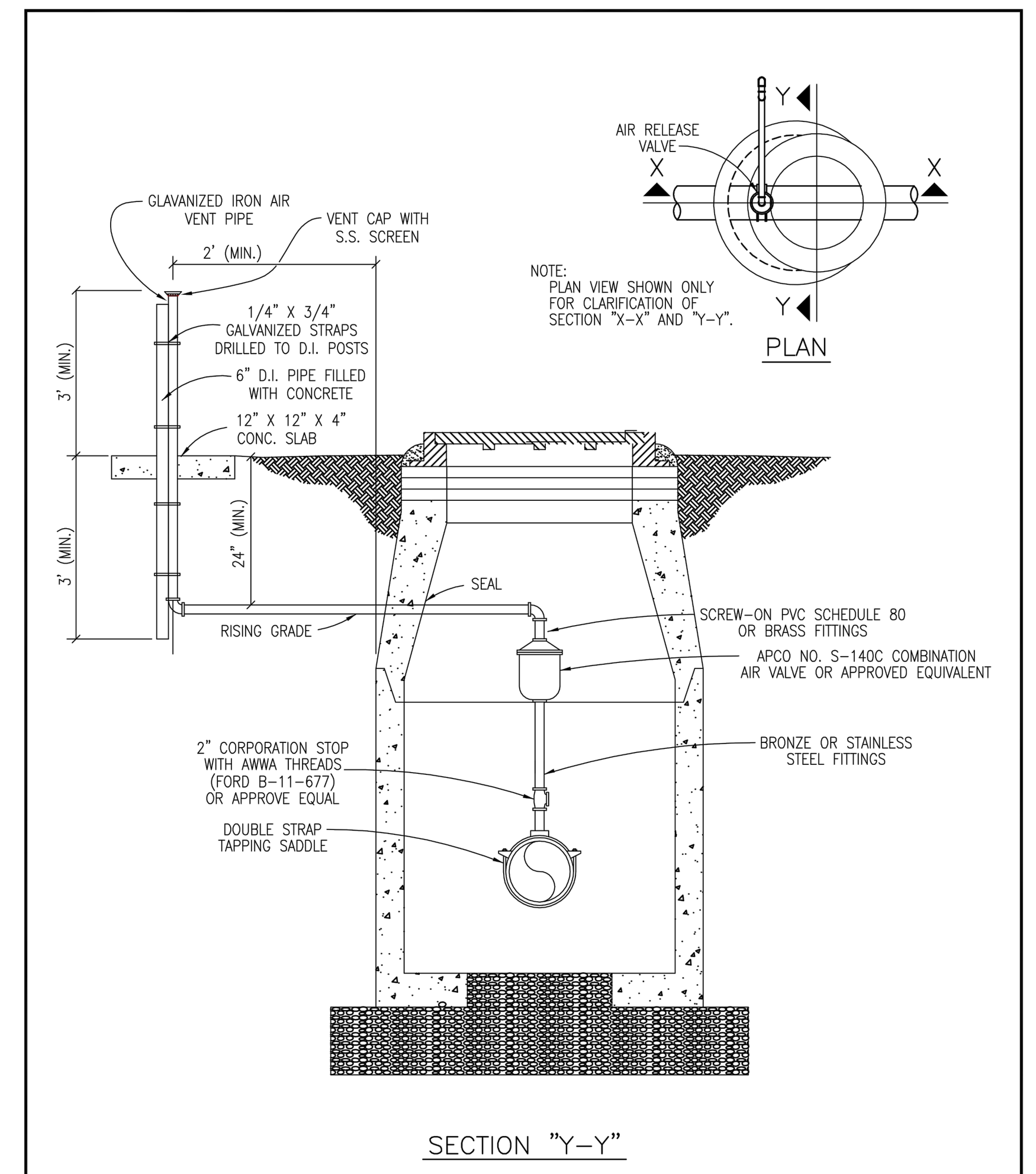


Georgetown Texas, Est. 1848 — Georgetown Utility Systems, Your Community Owned Utility	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: TRANSFERED FROM TCTSUD
	AUTOMATIC FLUSHING VALVE	DRAWING NAME: W–08C
		SCALE: NTS; DATE: 7/2015; DRAWN BY: TP; APPROVED BY: –

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

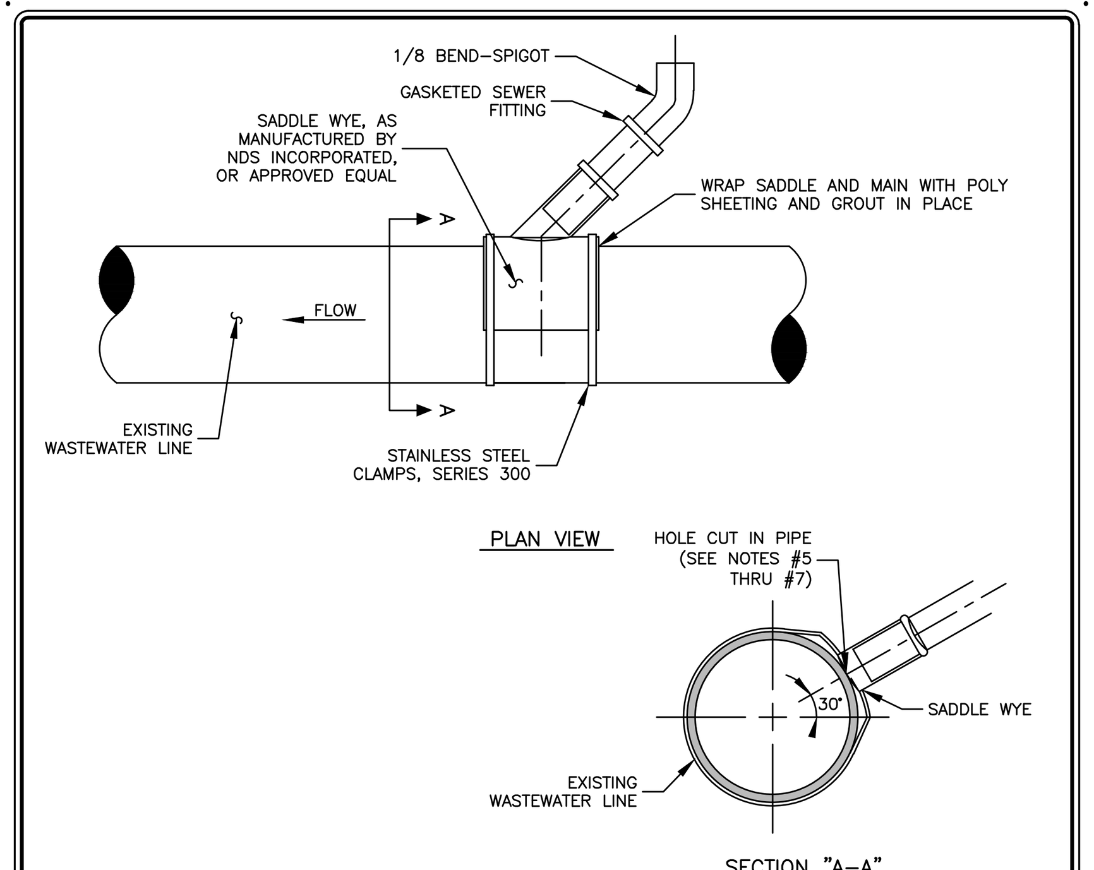


Georgetown Texas, Est. 1848 — Georgetown Utility Systems, Your Community Owned Utility	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006
	STANDARD AIR RELEASE VALVE FOR WATER MAIN	DRAWING NAME: W12
		SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB



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

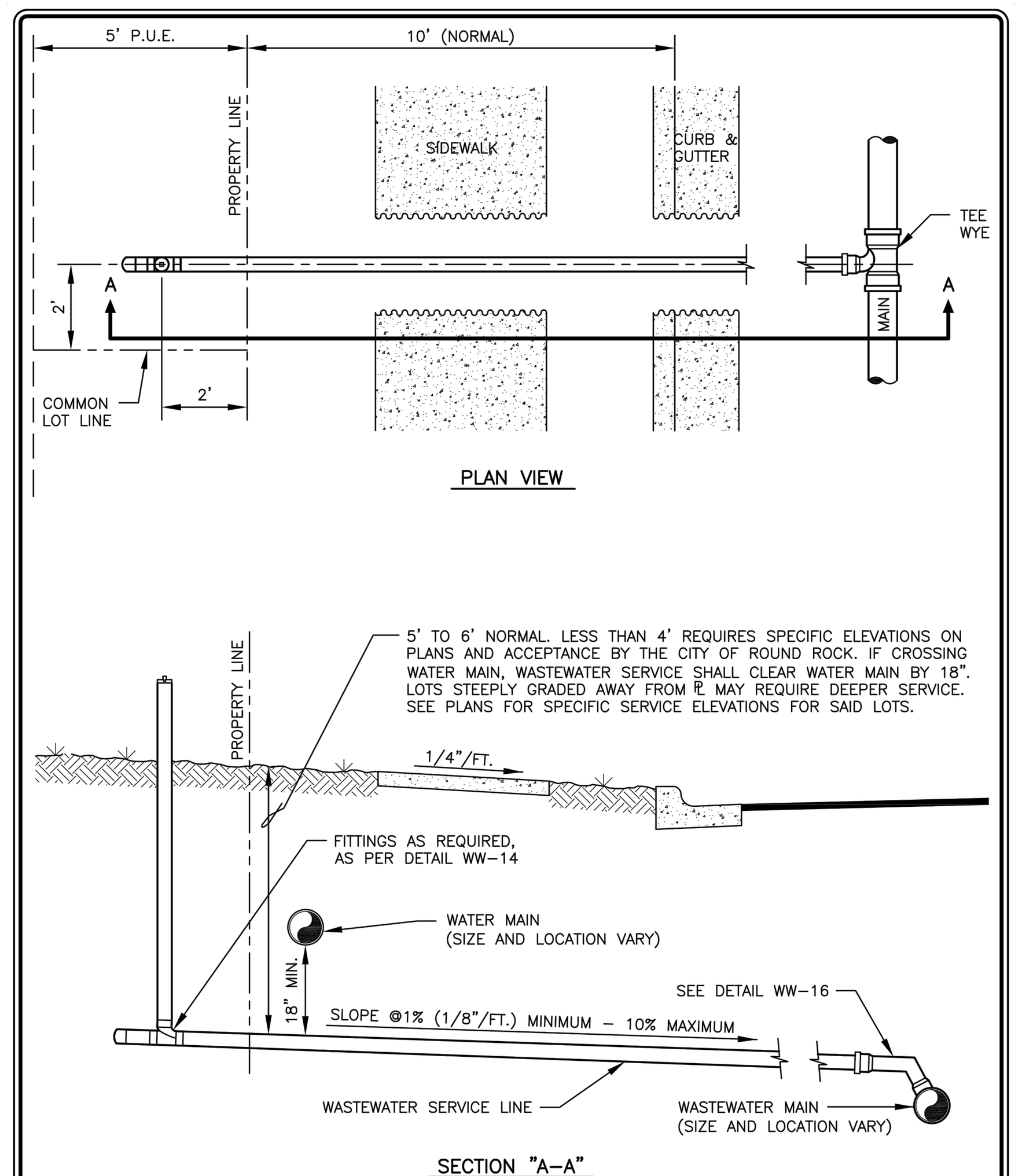
Georgetown Texas, Est. 1848 — Georgetown Utility Systems, Your Community Owned Utility	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006
	STANDARD AIR RELEASE VALVE FOR WATER MAIN	DRAWING NAME: W13
		SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB



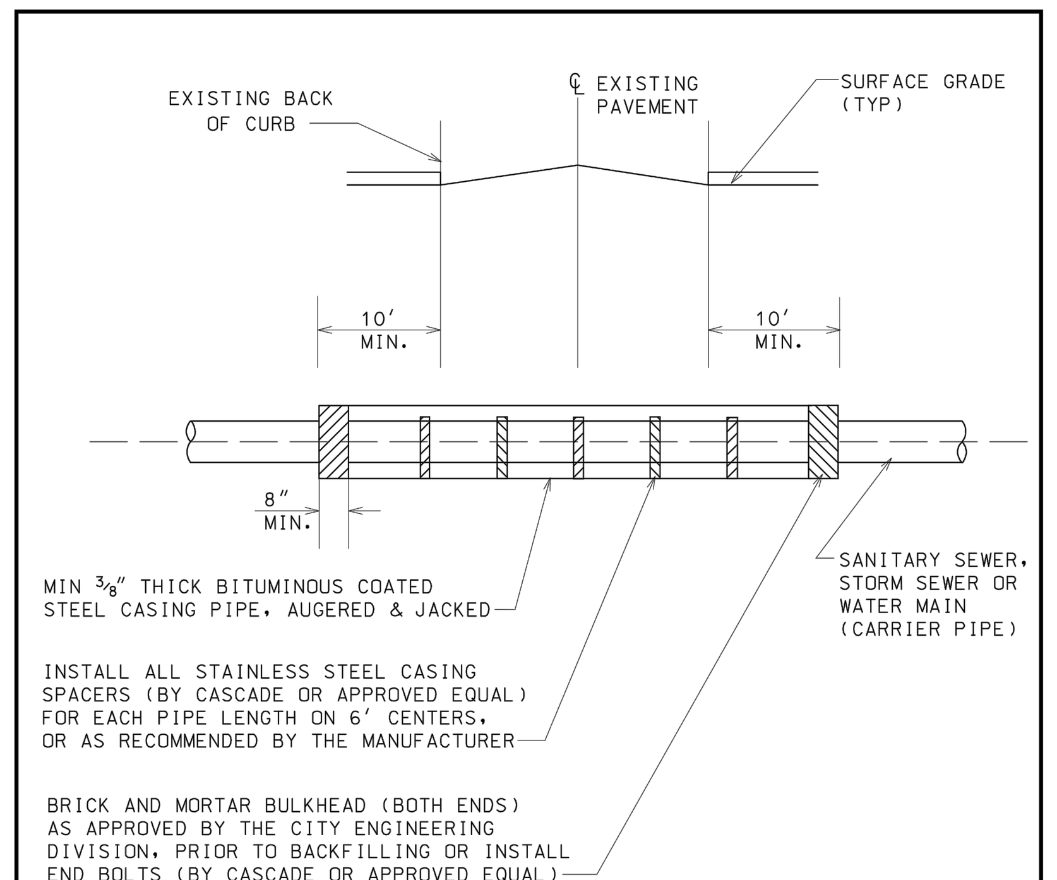
NOTES:

1. FLEXIBLE SADDLE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
2. EXCAVATE AROUND EXISTING WASTEWATER PIPE, EXPOSING SUFFICIENT ROOM FOR STAINLESS STEEL CLAMPS.
3. THOROUGHLY CLEAN AND DRY THE MATING SURFACE.
4. MARK THE SIZE OF THE HOLE TO BE CUT USING THE SADDLE ITSELF AS A TEMPLATE.
5. SAW OUT THE SECTION OF THE PIPE WHERE THE SADDLE WILL BE LOCATED, WITH A SABER OR KEY HOLE SAW. PIPE COUPONS SHALL BE REMOVED FROM EXISTING MAIN AND DISCARDED. PIPE CUTTINGS IN EXCESS OF 1" IN DIAMETER SHALL NOT BE LEFT IN EXISTING MAIN.
6. ENSURE SADDLE FITS HOLE PROPERLY.
7. PLACE GASKET SKIRT AND SADDLE OVER OPENING AND TIGHTEN BAND CLAMPS EVENLY UNTIL SADDLE IS FIRMLY ATTACHED TO THE PIPE. APPLY PRESSURE ON THE SADDLE AGAINST THE PIPE WHILE TIGHTENING THE CLAMPS AS INDICATED ABOVE. DO NOT OVER TIGHTEN, DO NOT STRIP THREAD.
8. SERVICE PIPE SHALL BE INSERTED FULLY TO CONTACT SEAT FORMED IN FITTING.
9. REPLACE THE BEDDING AND BACKFILL IN ACCORDANCE WITH THE TRENCH EMBEDMENT DETAIL.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: WW–16
APPROVED 04–01–10 DATE	WASTEWATER LATERAL CONNECTION TO EXISTING WASTEWATER MAIN DETAIL	ROUND ROCK, TEXAS PURPOSE. PASSION. PROSPERITY.
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW–12
APPROVED 03–01–18 DATE	WASTEWATER SERVICE DETAIL	ROUND ROCK TEXAS Utilities and Environmental Services
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

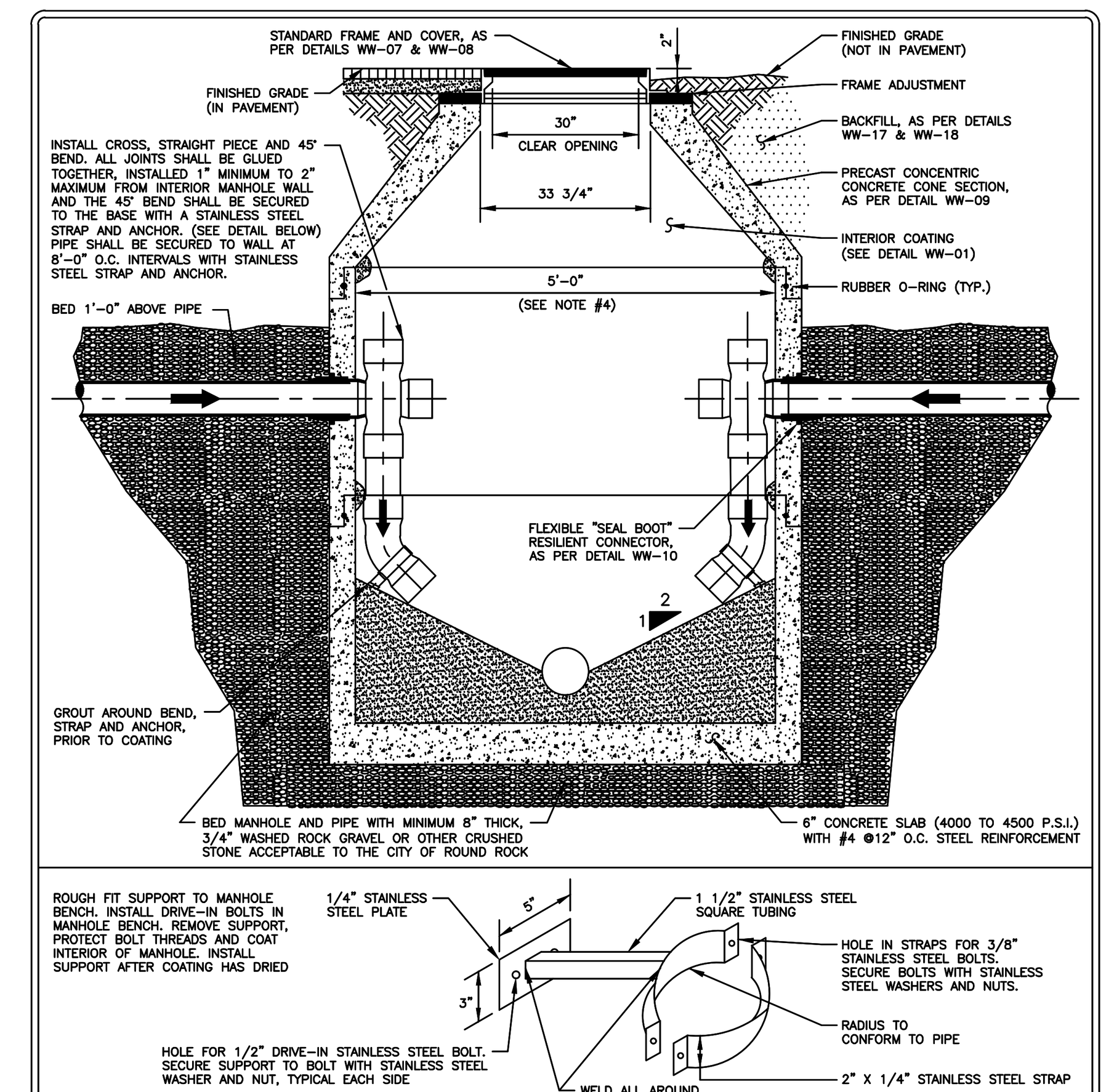
1. CASING PIPE IS REQUIRED UNDER ALL EXISTING ROADWAYS, OR AS OTHERWISE DIRECTED BY THE ENGINEERING DIVISION WHERE OPEN CUTS ARE NOT PERMITTED, EXCEPT FOR WATER SERVICE LINES UP TO 2" IN DIAMETER.
2. WATER MAIN CASING SPACERS SHALL BE RESTRAINED IN POSITION.
3. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE DETERMINED BY CONTRACTOR BUT IN NO CASE SHALL IT BE LESS THAN 8" LARGER THAN THE DIAMETER OF THE CARRIER PIPE TO ALLOW AMPLE SPACE FOR BELLS, AND CARRIER PIPE SLOPE (FOR GRAVITY PIPE).
4. ALL AUGER PITS TO BE BACKFILLED WITH IDOT CA-7 VIRGIN CRUSHED LIMESTONE MATERIAL.
5. POLY WRAPPED WATER MAIN REQUIRED IN CASING.

NOT TO SCALE

DATE: 11-2-09

CASING PIPE DETAIL

G-4



NOTES:

1. SEE NOTES #2 THROUGH #10 ON DETAIL WW–01.
2. DROP SERVICES SHALL BE REQUIRED WHENEVER AN INFLUENT SEWER SERVICE IS LOCATED MORE THAN TWO FEET (2'–0") ABOVE THE MAIN INVERT CHANNEL.
3. WHEN P.V.C. PIPE IS USED IN SANITARY SEWER LINES, SOLVENT TYPE JOINT P.V.C. FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY. FITTINGS TO BE PVC SDR–35 WITH A TWO PART WATER RESISTANT GLUE AT ALL JOINTS.
4. A 5'–0" MANHOLE IS REQUIRED FOR 1 OR 2 DROP SERVICES. IF THERE ARE MORE THAN 2 DROP SERVICES, A 6'–0" DIAMETER MANHOLE IS REQUIRED.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW–03
APPROVED 03–01–18 DATE	PRECAST CONCRETE WASTEWATER MANHOLE WITH DROP SERVICE DETAIL	ROUND ROCK TEXAS Utilities and Environmental Services
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

NO.	REVISION	BY	DATE

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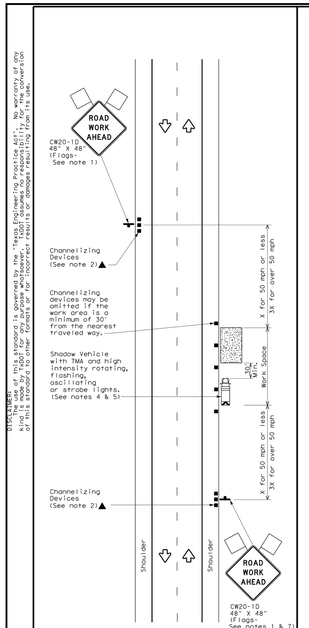
STATE OF TEXAS — XAVIER GARZA-ROBLEDO — 135174 — LICENSED PROFESSIONAL ENGINEER
06/16/2023

CONSTRUCTION DETAILS 3 OF 3

12 OAKS VILLAGE PHASE 1 SPINE INFRASTRUCTURE PLANS LIBERTY HILL, TEXAS

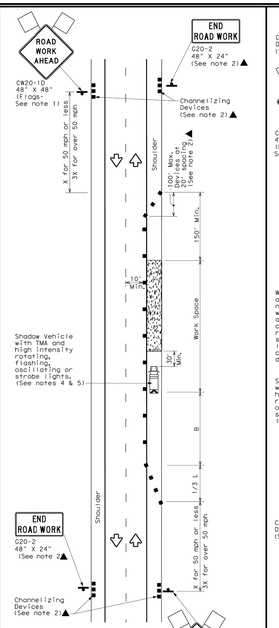
DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 31 OF 33



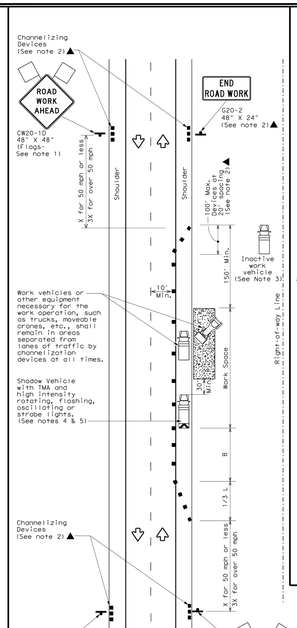
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade	■■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10° Offset	11° Offset	12° Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L=WS	500'	550'	600'	50'	100	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

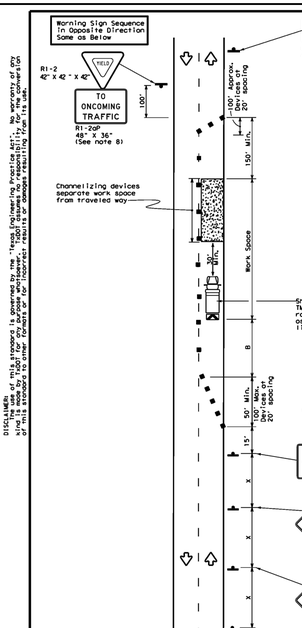
1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD SHOULDER WORK
TCP(1-1)-18

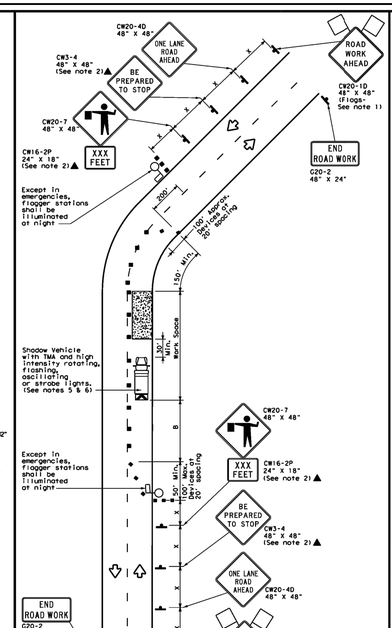
FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 5-03 1-97 2-18	DIST	COUNTY		SHEET NO.

151



TCP (1-2a)

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade	■■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 11° Offset	12° Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50	L=WS	500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2P "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

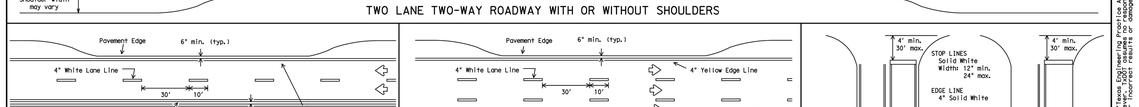
9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation — Traffic Operations Division Standard

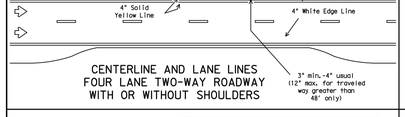
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL
TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	DIST	COUNTY		SHEET NO.

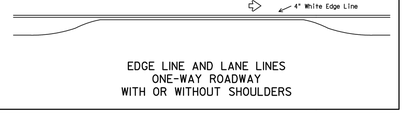
152



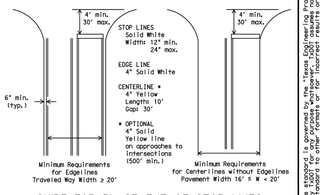
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



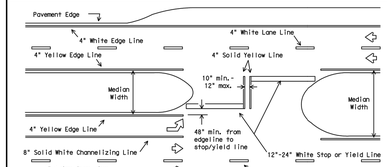
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

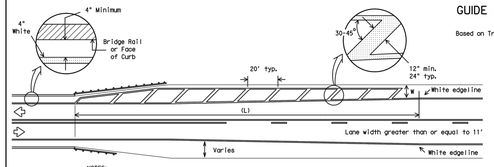


GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER
WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where operating speeds normally exceed the posted speed limit. Posted speed limit should be rounded up to nearest 5 foot increment.

L=Length of Crosshatching (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:
L = 8 x 70 = 560 ft.

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:
$L = 4(40)^2 / 60 = 106.67$ ft. rounded to 110 ft.

Texas Department of Transportation — Traffic Operations Division

TYPICAL STANDARD
PAVEMENT MARKINGS
PM(1)-12

©TxDOT November 1978	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS 8-95 2-12 5-00 8-00 3-03	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

224

GENERAL NOTES

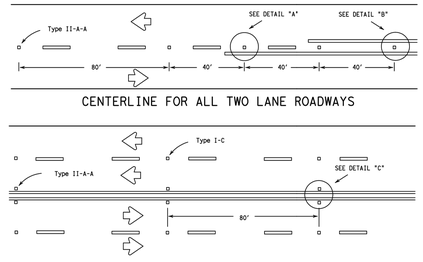
1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 4 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

YIELD LINES

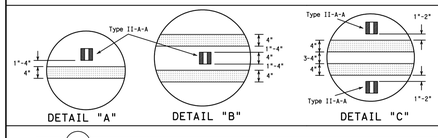
REFLECTIVE RAISED PAVEMENT MARKERS
FOR VEHICLE POSITIONING GUIDANCE

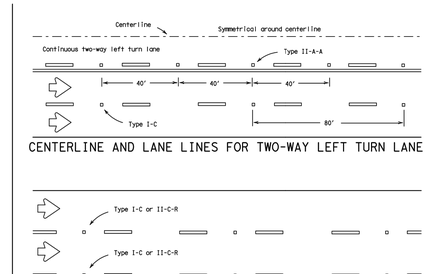


CENTERLINE FOR ALL TWO LANE ROADWAYS

CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

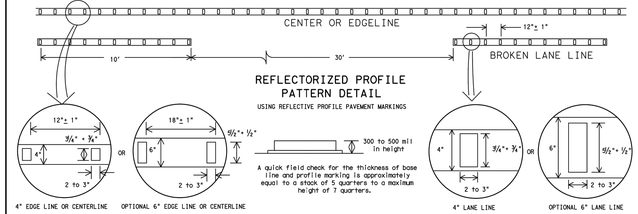
Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

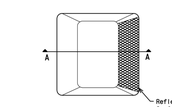
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



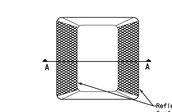
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

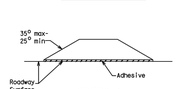
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Operations Division

POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS
PM(2)-12

©TxDOT April 1977	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS 4-92 2-10 5-00 2-12 8-00 2-08	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

228

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DEVELOPMENT TX

NO.	REVISION	BY	DATE

XAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
10/16/2023

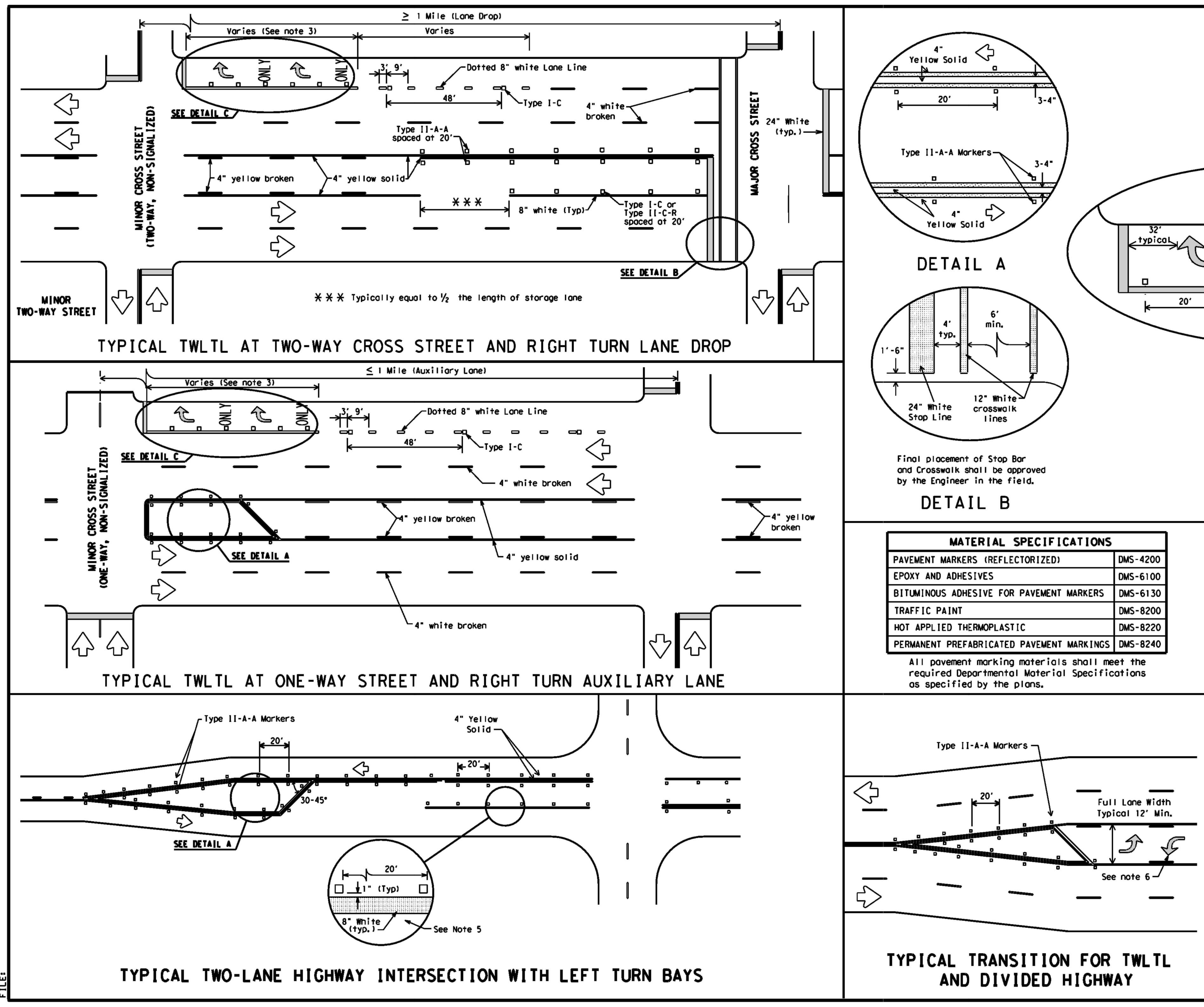
TXDOT STANDARD DETAILS 1 OF 3
12 OAKS VILLAGE
PHASE 1
SPINE INFRASTRUCTURE PLANS
LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG

SHT. 32 OF 33

P:\New Growth\2020\047-2020 - 12 Oaks Spine Infrastructure_Phase 1\02_ACAD\10_Const. Plans\TxDOT STANDARD DETAILS.dwg, TXDOT, June 16, 2023, 4:54 PM, cbarrett

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES, DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS — PM(3)-12


TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE
TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS
DETAIL A
DETAIL B
DETAIL C
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY
Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows as shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS

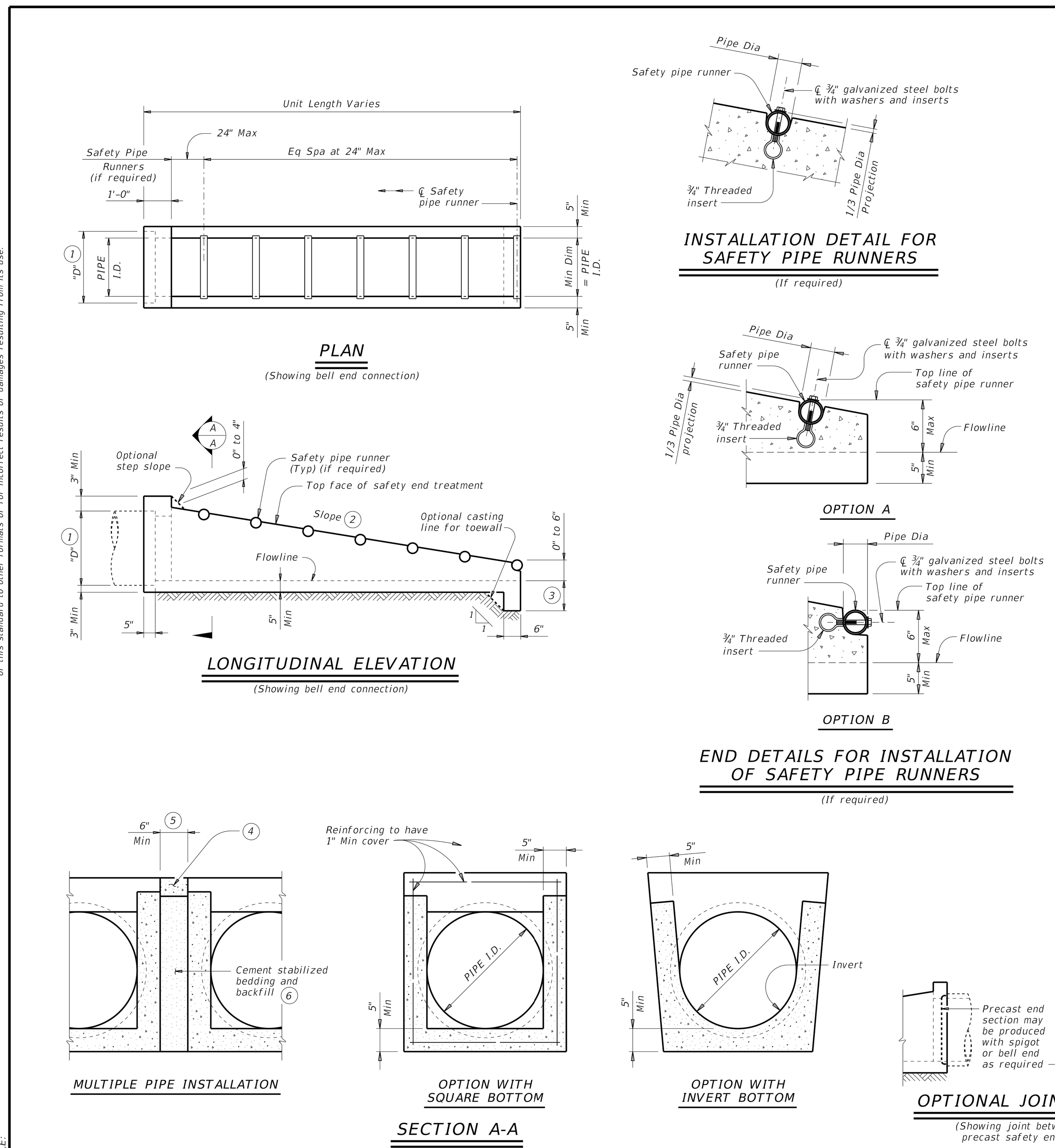
PM(3)-12

©TxDOT April 1998	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS 5-00 2-12 8-00 3-03 2-10	CONT / SECT	JOB	HIGHWAY	
	DIST	COUNTY	SHEET NO.	

22C

DATE:
FILE:

PRECAST SAFETY END TREATMENT — TYPE II ~ PARALLEL DRAINAGE — PSET-SP


PLAN
(Showing bell end connection)
LONGITUDINAL ELEVATION
(Showing bell end connection)
INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS
(If required)
OPTION A
OPTION B
END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS
(If required)
MULTIPLE PIPE INSTALLATION
OPTION WITH SQUARE BOTTOM
OPTION WITH INVERT BOTTOM
SECTION A-A
OPTIONAL JOINT FOR RCP
(Showing joint between RCP and precast safety end treatment)

PIPE I.D.	RCP WALL "B" THICKNESS	TP WALL THICKNESS (7)	"D" (1)	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED: SINGLE PIPE	PIPE RUNNERS REQUIRED: MULTIPLE PIPE	REQUIRED PIPE RUNNER SIZES: NOMINAL DIA.	O.D.	I.D.
12"	2"	1.15"	17"	6:1	4'-9"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
15"	2.25"	1.30"	20.50"	6:1	6'-5"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
18"	2.50"	1.60"	24"	6:1	8'-0"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31"	6:1	11'-3"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
30"	3.50"	2.65"	38.50"	6:1	14'-8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17'-11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4.50"	N/A	52.50"	6:1	21'-2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on Reinforced Concrete Pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For Thermoplastic Pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item "Safety End Treatment".

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe". Connect TP by grouting. See PBGC standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation — Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-SP

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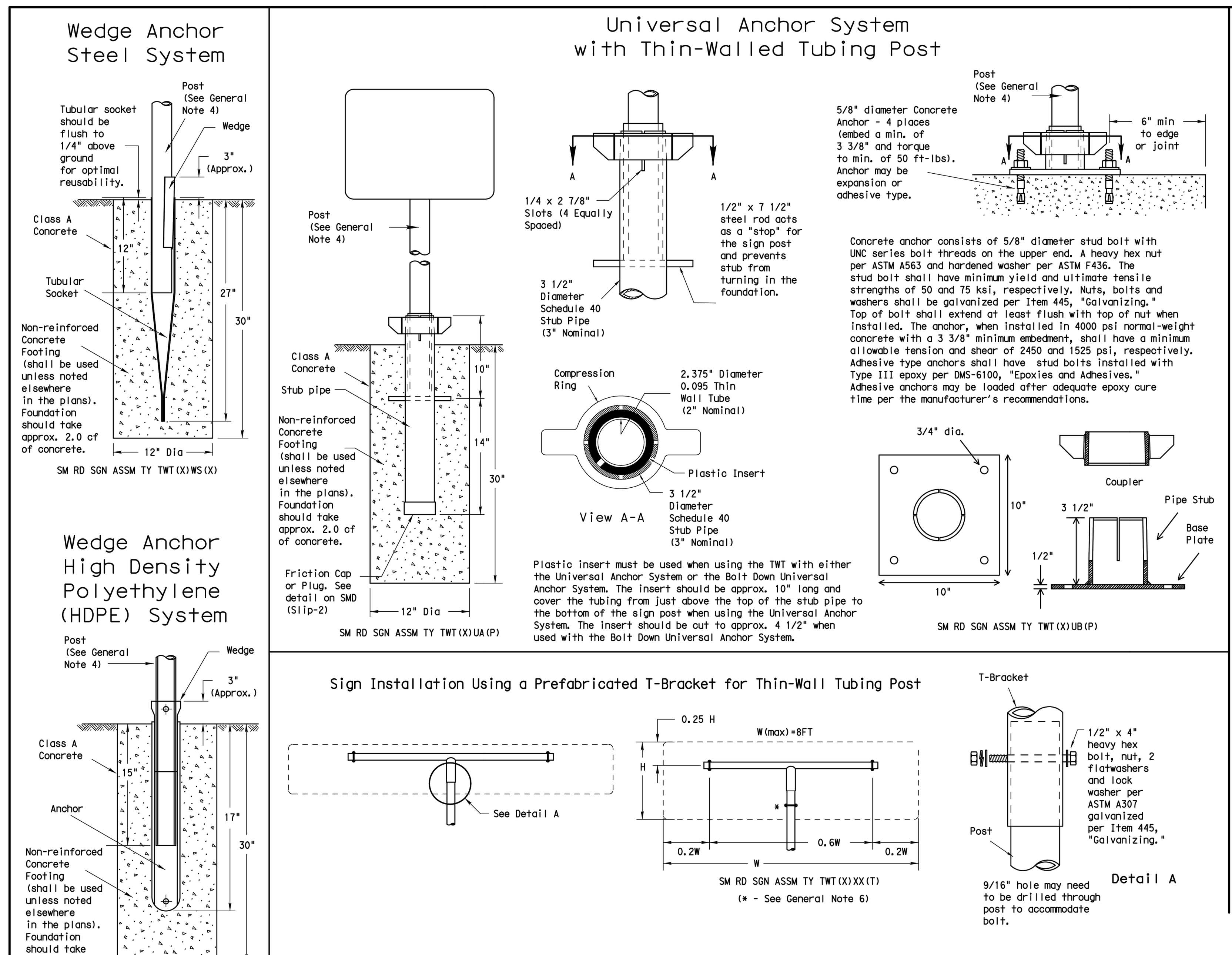
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST — SMD(TWT)-08


Wedge Anchor Steel System
SM RD SGN ASSM TY TWT(X)WS(X)
Wedge Anchor High Density Polyethylene (HDPE) System
SMD RD SGN ASSM TY TWT(X)WP(X)
Universal Anchor System with Thin-Walled Tubing Post
SM RD SGN ASSM TY TWT(X)UA(P)
SM RD SGN ASSM TY TWT(X)UB(P)
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post
SM RD SGN ASSM TY TWT(X)XX(T)
Detail A

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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KAVIER GARZA-ROBLEDO
135174
LICENSED PROFESSIONAL ENGINEER
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811 Know what's below. Call before you dig.

NO.	REVISION	BY	DATE

TXDOT STANDARD DETAILS 2 OF 3

12 OAKS VILLAGE PHASE 1

SPINE INFRASTRUCTURE PLANS

LIBERTY HILL, TEXAS

DESIGNED BY: XG/AA
DRAWN BY: CB
CHECKED BY: XG
APPROVED BY: XG