TCEQ WPAP & SCS APPLICATION

for

SANTA RITA RANCH PHASE 2B SECTION 2
WILLIAMSON COUNTY, TEXAS

Prepared For:

SRFV Development, LLC
Attn: James Edward Horne
1700 Cross Creek Lane, Suite 100
Liberty Hill, TX 78642
(512) 502-2050

Prepared By:

Steven P. Cates, P.E.
CARLSON, BRIGANCE & DOERING, INC.
5501 West William Cannon Drive
Austin, Texas 78749
(512) 280-5160
Firm #F3791

Carlson, Brigance & Doering, Inc.
Civil Engineering ❖ Surveying

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F-3791

12-20-2024

CBD No. 5559
December 2024

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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: **Santa Rita Ranch Phase 2B SECTION 2**					**2. Regulated Entity No.:**				
3. Customer Name: SRFV Development, LLC					**4. Customer No.: 605894914**				
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):**		58.11	
9. Application Fee:	$9,843.00		**10. Permanent BMP(s):**			Batch Detention			
11. SCS (Linear Ft.):	6,686		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Williamson		**14. Watershed:**			North Fork San Gabriel River			

Application Distribution

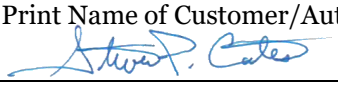
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which 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.)	___	___	_x_
Region (1 req.)	___	___	_x_
County(ies)	___	___	_x_
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 _x_Georgetown ___Jerrell ___Leander _x_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. Santa Rita KC, LLC / Carlson, Brigance, & Doering, Inc.
Print Name of Customer/Authorized Agent  **12-20-2024** Signature of Customer/Authorized Agent Date

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

General Information Form

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Steven P. Cates, P.E.

Date: 12/20/2024

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Santa Rita Ranch Phase 2B Section 2
2. County: Williamson
3. Stream Basin: North Fork San Gabriel River
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: James Edward Horne
Entity: SRFV Development, LLC
Mailing Address: 1700 Cross Creek Lane, Suite 100
City, State: Liberty Hill, TX Zip: 78642
Telephone: 512-502-2050 FAX: _____
Email Address: ed@srraustin.com

8. Agent/Representative (If any):

Contact Person: Steven P. Cates, P.E.
Entity: Carlson, Brigance & Doering, Inc.
Mailing Address: 501 W. William Cannon Blvd.
City, State: Austin, Texas Zip: 78749
Telephone: 512-280-5160 FAX: 512-280-5165
Email Address: steve@cbdeng.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 the 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.

South of Ex. Tower Rd, East of Flower Valley Pkwy

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: 12/25/2024

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

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

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

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

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

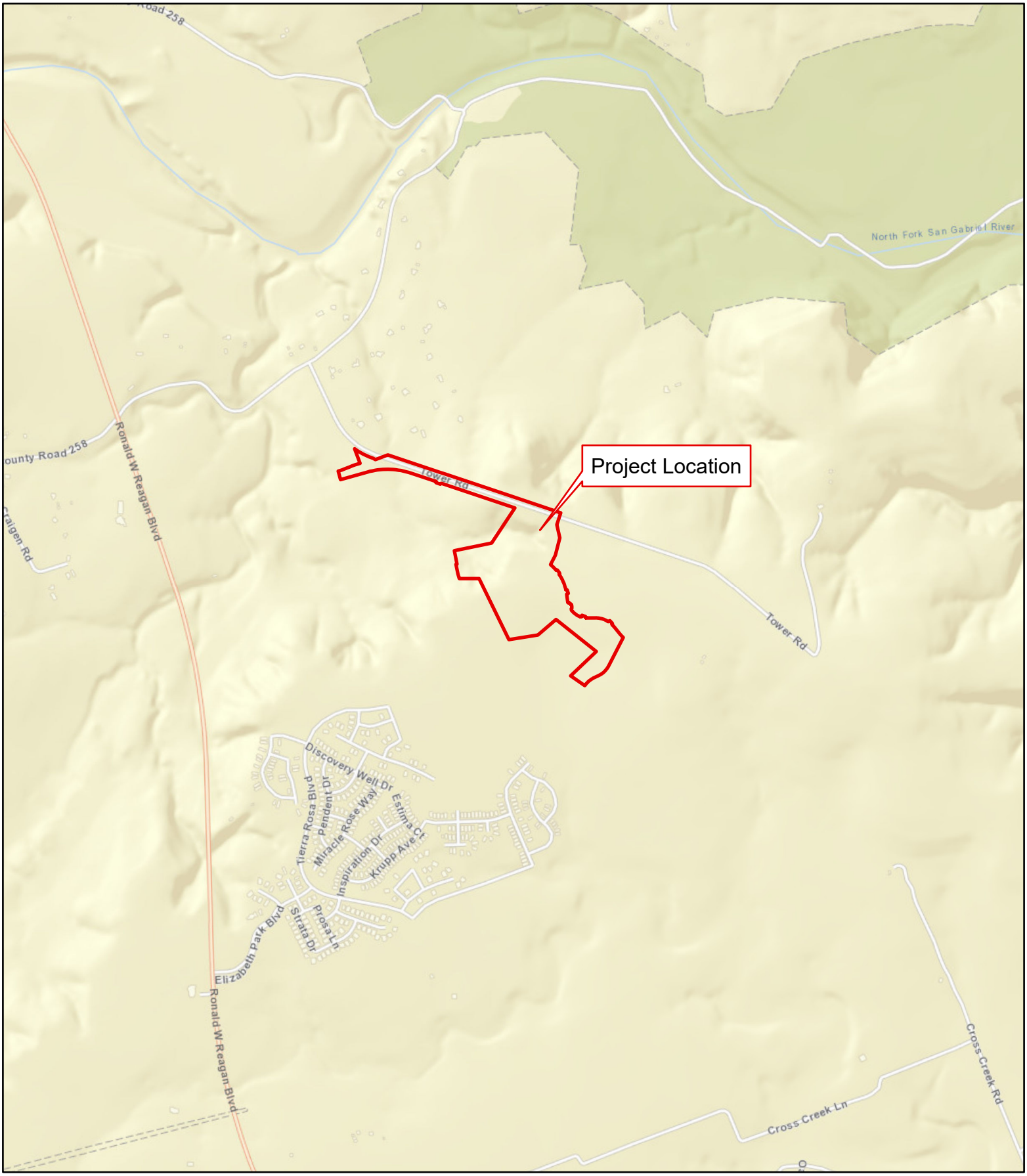
General Information Form
ATTACHMENT A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

ROAD MAP



Santa Rita Ranch

Water Pollution Abatement Plan Map

Leander NE Quadrant

N

0 1,000 2,000 4,000 Feet

Carlson, Brigance & Doering, Inc.

Civil Engineering ❖ Surveying

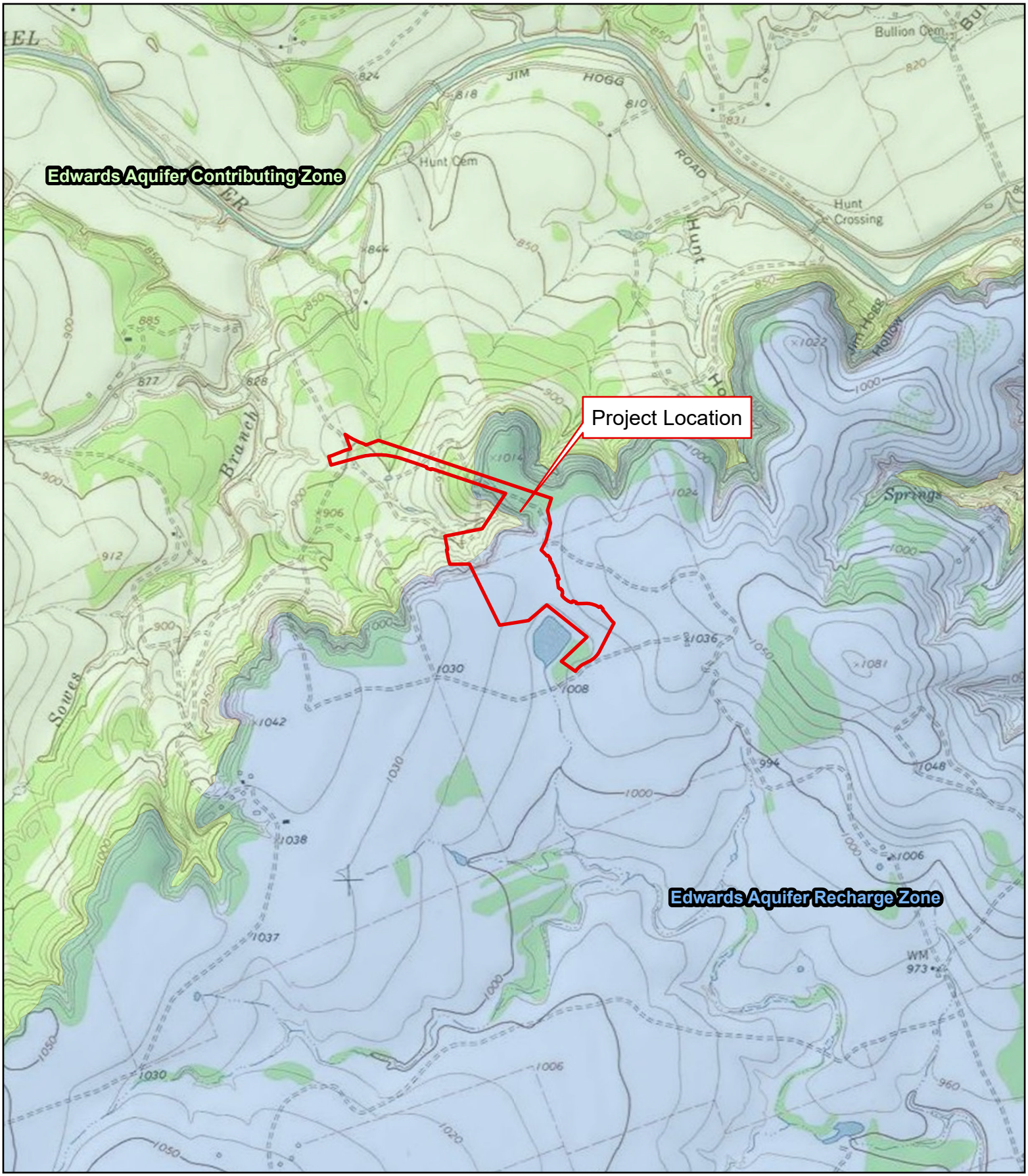
General Information Form
ATTACHMENT B

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

USGS / EDWARDS AUQUIFER RECHARGE ZONE MAP



Santa Rita Ranch

Water Pollution Abatement Plan Map

Leander NE Quadrant

N

0 1,000 2,000 4,000 Feet

Carlson, Brigance & Doering, Inc.
Civil Engineering ❖ Surveying

General Information Form
ATTACHMENT C

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Project Description:

Santa Rita Ranch Phase 2B Section 2 is a 58.11-acre residential development that is composed of 95 single-family lots. The project is located on the east side of Flower Valley Parkway and Santa Rita Ranch Phase 2B Section 1, and just south of existing Tower Rd. The project is located within the City of Liberty Hill ETJ, in Williamson County, Texas. This project includes 7,405 linear feet of roadway, 5,984 linear feet of water main line, 5,219 linear feet of 8" SDR 26 PVC ASTM D3034 wastewater main line, 160 linear feet of 8" C900 (150 psi) PVC AWWA C900 wastewater main line at water crossings, and 1,307 linear feet of 6" SDR 26 PVC ASTM D3034 of wastewater service line.

The proposed wastewater line will flow into an existing SCS gravity system to the approved Lift Station 2A and then the Liberty Hill Wastewater Treatment Plant.

The site may have soil imported. The fill material shall consist of crushed limestone, select fill, and topsoil. The fill material will be used to facilitate drainage, roadway construction, revegetation of the property, and to elevate the building foundations.

This project is located within the Edwards Aquifer Recharge Zone. Flows were calculated using the National Resource Conservation hydrologic method. Water Quality will be provided by existing batch detention ponds constructed in previous sections.

Within the 58.11-acre improvement area, approximately 16.09 acres of impervious cover will be installed (27.69% of total project site). The existing batch detention pond 14 and existing batch detention pond 2A-4 have been designed in accordance with the January 20, 2017 Addendum Sheet to RG-348 which establishes Batch Detention Basins as Section 3.2.17 of RG-348. They have been sized to treat and detain for Phase 2A-4 & 5 and Phase 2B Section 1 & 2, and future sections.

Horizon™
Environmental Services, Inc.

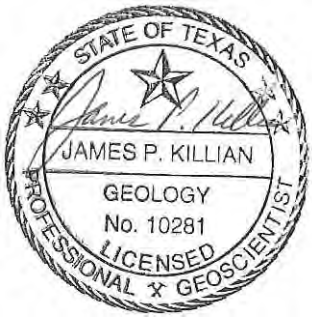
GEOLOGIC ASSESSMENT
SANTA RITA NORTH, C7 RANCH, AND MIDDLEBROOK
WILLIAMSON COUNTY, TEXAS
HJN 130065 GA

PREPARED FOR:

SANTA RITA C7 INVESTMENTS, LLC
AUSTIN, TEXAS

PREPARED BY:

HORIZON ENVIRONMENTAL SERVICES, INC.



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.

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LIST OF APPENDICES

Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

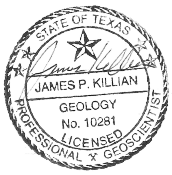
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: James Killian Telephone: 512 328-2430

Date: 19 December 2019 Fax: 512 328-1804

Representing: Horizon Environmental Services, Inc. and TBPG Firm Registration No. 50488
(Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Santa Rita North, C7 Ranch, and Middlebrook; Williamson County, Texas

Project Information

1. Date(s) Geologic Assessment was performed: 26 June 2014; 2, 7-9, 14, 16, 17, 21, 23, 24, 28-31 July 2014; 4-8, 11, 12, and 15 August 2014
2. Type of Project:

   ☐ WPAP ☐ AST
   ☒ SCS ☐ UST
3. Location of Project:

   ☒ Recharge Zone
   ☐ Transition Zone

☒ Contributing Zone within the Transition Zone

4. ☒ **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
BkE - Brackett gravelly clay loam, 3-12% slopes	C	1-4
BkG - Brackett-Rock outcrop Real complex, 8-30% slopes	C	1-2
CfA - Crawford clay, 0-1% slopes	D	1-2
CfB - Crawford clay, 1-3% slopes	D	1-2
DnB - Denton silty clay, 1-3% slopes	D	1-3

** Soil Group Definitions (Abbreviated)*

A. *Soils having a high infiltration rate when thoroughly wetted.*
B. *Soils having a moderate infiltration rate when thoroughly wetted.*
C. *Soils having a slow infiltration rate when thoroughly wetted.*
D. *Soils having a very slow infiltration rate when thoroughly wetted.*

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 400'

Site Geologic Map Scale: 1" = 400'
Site Soils Map Scale (if more than 1 soil type): 1" = 2300'

9. Method of collecting positional data:

   ☒ Global Positioning System (GPS) technology.
   ☐ Other method(s). Please describe method of data collection: _____

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.

11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

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

13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☒ There are 14 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    ☐ The wells are not in use and have been properly abandoned.
    ☒ The wells are not in use and will be properly abandoned.
    ☒ The wells are in use and comply with 16 TAC Chapter 76.
    ☒ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

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

TABLE 1 – SURFACE SOILS, CON'T.

Soil Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
DnC - Denton silty clay, 3-5% slopes	D	1 - 3
DoC - Doss silty clay, moist, 1-5% slopes	C	2 - 4
EaD - Eckrant cobbly clay, 1-8% slopes	D	0 - 1
EeB - Eckrant extremely stony clay, 0-3% slopes	D	1 – 1.5
ErE - Eckrant-Rock outcrop complex, rolling	D	0 – 1.5
ErG - Eckrant-Rock outcrop complex, hilly	D	0 – 1.5
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 - 3
SuB - Sunev silty clay loam, 1-3% slopes	B	3 - 5

* 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.

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 subject site consists of approximately 2976 acres of mostly undeveloped rangeland, farmland, and woodland that are currently used to raise beef cattle and/or for row crop production in West-Central Williamson County, Texas. The site is divided into 3 separate tracts identified as Santa Rita North (±1472 acres), C7 Ranch (±1100 acres), and Middlebrook (±404 acres). Access to the site is along Ronald Reagan Boulevard, and/or State Highway 29 (Appendix A, Figure 1). One newly developing residential subdivision is present to the west of Ronald Reagan Boulevard within the Middlebrook tract. A second residential development is under construction along the east side of Ronald Reagan Boulevard at Elizabeth Park Road, within a portion of Santa Rita North. No residential developments are currently under construction within C7 Ranch. Surrounding land use is predominantly undeveloped rangeland, farmland, and/or rural residential.

2.2 TOPOGRAPHY AND SURFACE WATER

The subject site is situated on gently to steeply sloping terrain within the North and Middle Forks of the San Gabriel River watershed (Appendix A, Figures 2 and 3). Surface elevations on the subject site vary from a minimum of approximately 840 feet above mean sea level (amsl) along Sowes Branch at the northern site boundary of Santa Rita North to a maximum of approximately 1070 feet amsl at the west side of Middlebrook. Drainage on most of the site occurs primarily by overland sheet flow, in multiple directions based on location, near several unnamed tributaries of the North and Middle Forks of the San Gabriel River.

2.3 EDWARDS AQUIFER ZONE

As shown in Appendix A, Figure 2, most of the subject site (approximately 2392 acres) is found within the Edwards Aquifer Recharge Zone, as mapped by TCEQ Recharge Zone Boundary Maps. However, approximately 584 acres of Santa Rita North is located outside of the recharge zone and is mapped within the Edwards Aquifer Contributing Zone (TCEQ, 2014).

2.4 SURFACE SOILS

Mapping by the Natural Resources Conservation Service (NRCS, 2014) shows approximately 16 soil mapping units within the subject site (Appendix A, Figure 4) associated with the soil series described below.

Brackett gravelly clay loam, 3 to 12% slopes (BkE) occurs within Santa Rita North. This soil has a moderately alkaline, pale brown, clay loam surface layer about 5 inches thick with about 15% cover of limestone fragments that range from 4 to 12 inches in diameter. The subsoil, to 16 inches, is moderately alkaline, pale yellow clay loam with about 5% weakly cemented fine limestone fragments. The underlying layer is very pale brown, interbedded, calcareous loam and limestone. This soil is well-drained, permeability is moderately slow, and available water capacity is very low. Runoff is rapid.

Brackett-Rock outcrop Real complex, 8 to 30% slopes (BkG) occurs within Santa Rita North and consists of hilly to steep Brackett soils and Rock outcrop on uplands. This complex is made up of about 50% Brackett soils, about 25% Rock outcrop, and 25% other soils. Typically, the Brackett soils have a moderately alkaline, grayish-brown, gravelly, silty clay loam surface layer about 4 inches thick. About 60 to 80% of the surface is covered with limestone pebbles, cobbles, stones, and a few boulders. The subsoil, which extends to a depth of about 12 inches, is moderately alkaline, light brownish-gray, gravelly, silty clay loam. The underlying material is interbedded limestone and marl. The Brackett soils are well-drained. Runoff is rapid, and available water capacity is very low. Erosion is a moderate to severe hazard. Rock outcrop consists of narrow horizontal bands and random areas of marl outcrop. Loose cobbles, stones, and boulders are common on the surface.

Crawford clay, 0 to 1% slopes (CfA) occurs along the southwest side of Middlebrook. Typically, the surface layer is neutral, dark grayish-brown clay about 6 inches thick. The layer below that, to 32 inches, is neutral, dark brown clay. The substratum is fractured, whitish limestone. This soil is well-drained, and permeability is very slow. This soil swells when wet and shrinks when dry. Water enters the soil rapidly when the soil is dry and very slowly when the soil is moist. The available water capacity is low, and runoff is slow.

Crawford clay, 1 to 3% slopes (CfB): This gently sloping soil is on footslopes and at the heads of drainageways on uplands at Santa Rita North and C7 Ranch. 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.

Denton silty clay, 1 to 3% slopes (DnB): This soil occurs near Sowes Branch within Santa Rita North. Typically, the upper layer is dark brown, silty clay about 33 inches thick. The layer below that, to 36 inches, is very pale brown, silty clay loam. The underlying material is fractured limestone and limy material. The soil is calcareous and moderately alkaline throughout. It is well-drained and slowly permeable soil. Runoff is medium, and the available water capacity is medium. This soil cracks when dry, and erosion is a slight hazard.

Denton silty clay, 3 to 5% slopes (DnC) occurs on either side of Sowes Branch within Santa Rita North. Typically, the upper layer is dark brown, silty clay about 18 inches thick. The subsoil, to a depth of about 25 inches, is light brown, silty clay. The layer below that, to 32 inches, is pale brown, silty clay loam. The underlying material is limestone interbedded with weathered limestone and limy material. The soil is calcareous and moderately alkaline. This soil is well-drained, and runoff is medium. Permeability is slow. When dry, the soil cracks and water enters the soil rapidly; but, when the soil is wet, water enters it slowly. The available water capacity is medium, and erosion is a moderate hazard.

Doss silty clay, 1 to 5% (DoC). This gently sloping soil occurs on uplands within the northwest corner of Santa Rita North. Typically, this soil has a dark grayish-brown, silty clay surface layer about 9 inches thick. The subsoil, to 19 inches, is brown, silty clay loam. The underlying material is weakly cemented limy earth interbedded with fragments of limestone. This soil is calcareous and moderately alkaline. This soil is well-drained and has a low available water capacity. Permeability is moderately slow, and runoff is medium. Erosion is a moderate hazard.

Eckrant cobbly clay, 1 to 8% slopes (EaD) occurs within Santa Rita North. This soil has a surface layer about 13 inches thick. The upper part is dark grayish-brown, cobbly clay and the lower part is dark brown, cobbly clay. The underlying material is coarsely fractured, indurated limestone. This soil is calcareous and moderately alkaline. The surface has about 50% cover of limestone fragments that are mostly 4 to 8 inches across. This soil is well-drained, permeability is moderately slow, and runoff is rapid. The available water capacity is very low.

Eckrant extremely stony clay, 0 to 3% slopes (EeB) occurs within Middlebrook and Santa Rita North. Typically, this soil has an extremely stony, very dark gray, clay surface layer about 11 inches thick. The underlying material is indurated limestone. About 25% of the surface is covered with fragments of limestone; most are about 6 inches across, but range from 3 inches to 3 feet across and are as much as 10 inches thick. The soil is calcareous, moderately alkaline, and well-drained. Permeability is moderately slow, and surface runoff is rapid. The fragments of limestone on the surface help to prevent erosion. The available water capacity is very low because of the shallowness of the soil and stones in the soil.

Eckrant-Rock outcrop complex, rolling (ErE) occurs within Santa Rita North and consists of Eckrant soils and Rock outcrop located along hills, ridges, and on sides of drainageways on uplands. This complex is made up of about 70% Eckrant soils, 15% Rock outcrop, and 15% other soils. Typically, the surface layer of Eckrant soils is calcareous, moderately alkaline, dark grayish-brown, extremely stony clay about 8 inches thick. The underlying material is fractured, indurated limestone. Fragments of limestone from 6 inches to 2 feet across cover about 35% of the surface. Rock outcrop consists of exposed limestone bedrock in narrow bands within areas of Eckrant soils. Loose cobbles and stones on the surface are common. Permeability is moderately slow, and surface runoff is rapid. The available water capacity is very low.

Eckrant-Rock outcrop complex, hilly (ErG) occurs within the northeast corner of Santa Rita North, consisting of Eckrant soils and Rock outcrop, mostly along major streams where erosion has formed sharp hills, ridges, and ravines. This complex is made up of about 41% Eckrant soils, 38% Rock outcrop, and 21% other soils. Typically, the Eckrant soils have a calcareous, moderately alkaline, extremely stony, dark grayish-brown, silty clay loam surface layer about 11 inches thick. The underlying material is indurated limestone. About 55% of the soil surface is covered with fragments of limestone that are 1 to 6 feet across. Rock outcrop consists of exposed limestone bedrock below the crests of hills and ridges. Loose cobbles and stones on the surface are common. The other soil included in this complex is Doss. The soils are well-drained, permeability is moderately slow, and surface runoff is rapid. The available water capacity is low.

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 heads of drains, and in shallow valleys on uplands throughout the site. 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.

Georgetown clay loam, 0 to 2% slopes (GeB): This nearly level to gently sloping soil is on uplands along the southeast part of C7 Ranch. 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, and surface runoff is medium. The available water capacity is low.

Georgetown stony clay loam, 1 to 3% slopes (GsB). This gently sloping soil occurs within upland areas of Santa Rita North and C7 Ranch. Typically, this soil has a slightly acidic, brown, stony clay loam surface layer about 7 inches thick and few 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.

Sunev silty clay loam, 1 to 3% slopes (SuB) occurs along the stream terraces of Sowes Branch at Santa Rita North. The upper layer is dark grayish-brown, silty clay loam about 18 inches thick. The subsoil, to 52 inches, is light yellowish-brown silty clay loam. The underlying layer, which extends to 60 inches, is reddish-yellow silty clay loam and has many soft masses and concretions of calcium carbonate. This soil is calcareous and moderately alkaline throughout. This soil is well-drained, permeability is moderate, and surface runoff is medium. The available water capacity is moderate, and erosion is a slight hazard (NRCS, 2014).

2.5 GEOLOGY

A review of existing literature shows most of the subject site is underlain by the undifferentiated Edwards Limestone Formation (Ked) (UT-BEG, 2014) with an estimated maximum thickness of about 85 feet at higher elevations located along the east sides of Santa Rita North and C7 Ranch. The Edwards Formation consists mostly of gray to light brownish-gray, thin to medium-bedded, dense dolomite, dolomitic limestone, and limestone.

The Comanche Peak Limestone Formation (Kc) underlies the Edwards and crops out on the steep, north-facing slopes located above Sowes Branch within Santa Rita North. It is approximately 50 feet thick and consists of white, soft, nodular limestone interbedded with marl and calcareous clay.

Underlying the Comanche Peak Limestone is the Walnut Formation (Kw), which crops out along the moderate to gently sloping areas located near Sowes Branch within Santa Rita North. The uppermost 50 ft of the Walnut is named the Keys Valley Marl Member (Kwkv) and consists of cream-colored, fossiliferous marl with some thin interbeds of soft limestone. The Keys Valley Marl is underlain by the Cedar Park Limestone (Kwcp) and Bee Creek Marl (Kwbc) members of the Walnut Formation.

The Upper Member of the Glen Rose Limestone (Kgru) crops out in the northwest corner of Santa Rita North with an estimated thickness of up to 220 feet. It consists of alternating resistant and recessive beds of light gray to yellowish-gray limestone, dolomite, and marl.

An overlying mantle of recent (Quaternary-age) terrace deposits (QTa) occurs throughout most of the Middlebrook tract and at the West-Central part of C7 Ranch with an estimated thickness of less than 10 feet. These deposits consist of clay, silt, sand, and gravel. In addition, thin deposits (less than 10 feet) of terraces along streams (Qt) occur within an unnamed tributary at the South-Central portion of C7 Ranch. Terraces along streams are predominately gravel, sand, silt, and clay. Thickness varies depending on distance from the floodplain source.

The subject site is located several miles west of the Balcones Fault Zone. However, available geologic reports indicate the immediate area has 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 located through a portion of Santa Rita North within the Contributing Zone, trending from southwest to northeast at N25-30°E (UT-BEG, 1995 and 2014). In general, the rock strata beneath the site dip to the east-southeast at approximately 35 to 45 feet per mile.

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 (QTa)	--	Up to 10	Gravel, sand, silt, and clay
Quaternary	--	Terraces along streams (Qt)	--	Up to 10	Gravel, sand, silt, and clay in various proportions, with gravel more prominent in the older, higher terraces
Lower Cretaceous	Edwards Aquifer	Edwards Formation (Ked)	--	85	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)	Keys Valley Marl (Kwkv) Cedar Park Limestone (Kwcp) Bee Cave Marl (Kwbc)	50 40 35	Keys Valley Marl - chalky, soft, white, with marine megafossils; no cave development. Cedar Park Ls - lithologically and faunally similar to Comanche Peak Ls; low to moderate cave development Bee Cave Marl - lithologically and faunally similar to Keys Valley Marl, except Exogyra texana more abundant and ammonites are scarce; low cave development
Lower Cretaceous	Confining Unit	Glen Rose Formation (Kgr)	Upper (Kgru)	220	Alternating resistant and recessive beds of limestone, dolomite, and marl; limestone is aphanitic to fine-grained, hard to soft and marly, light gray to yellowish-gray; dolomite is fine-grained, porous, yellowish-brown; marine megafossils include molluscan steinherns, rudistids, oysters, and echinoids; upper part is relatively thinner bedded, more dolomitic, and less fossiliferous than the lower part; some surface 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 and only 1 well within 0.5 miles from the subject site (TWDB, 2014). However, there was evidence of numerous water wells present during the field investigation. A total of 14 water wells were identified (M-4, M-6 to M-10, M-13, M-14, M-16, M-19, and M-20 to M-23). Approximately 6 of these wells (M-8, M-9, M-10, M-13, M-16, and M-21) appear to be currently unused and/or abandoned. Several recently drilled water wells (M-6, M-7, M-14, M-20, and M-22) were observed during the field investigation. The results of this survey do not preclude the existence of additional unused/abandoned wells at the subject site.

Private water well (No. 5818403) was found within 0.5 miles from the subject site (TWDB, 2014). This water well is reported to have been completed in the Glen Rose Formation (Upper and/or Middle Trinity aquifers) at a total depth of 152 feet and is powered by a windmill for domestic use.

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 with support staff on 26 June 2014; 2, 7 to 9, 14, 16, 17, 21, 23, 24, and 28 to 31 July 2014; 4 to 8, 11, 12, and 15 August 2014. Previous geologic assessments were conducted on portions of the subject site at Santa Rita North by SWCA Environmental Consultants (SWCA, 2006) and J. Jackson Harper, PG Geological and Hydrogeological Consulting (Harper, 2013). SWCA identified approximately 9 geologic features (SF-11 and SF-13 to SF-20) and 1 manmade feature (SF-12, now M-13). Harper identified 1 geologic feature (G-02) and 1 manmade feature (G-01).

A total of 38 natural geologic features (C7 Ranch: C-1 to C-8; Santa Rita North: G-02, SF-11, SF-13 to SF-20, and SR-1 to SR-20) were identified within the subject site. No geologic features were found at Middlebrook. Geologic features at the subject site are prefixed with the following nomenclature: SF, SR, and G for Santa Rita North and C for C7 Ranch.

A total of 25 manmade features (G-01 and M-1 to M-24) were identified at the subject site, 11 of which are stock ponds (G-01, M-1 to M-3, M-5, M-11, M-12, M-15, M-17, M-18, and M-24) and 14 of which are water wells (previously discussed).

Approximately 7 springs (SPG-1 to SPG-7) were identified at the subject site at Santa Rita North within Sowes Branch; however, these springs (discharge features) are located within the

contributing zone of the Edwards Aquifer. No apparent springs were identified within the recharge zone at the subject site. However, the closest spring known to be occupied by a federally listed salamander species is approximately 2.09 miles northeast of the subject site. According to the Texas Parks and Wildlife Department (TPWD) Natural Diversity Database (NDD) data, Walnut Spring, which is located within the North Fork of the San Gabriel River (upstream of Lake Georgetown), is documented habitat for the federally listed Georgetown Salamander species (Eurycea naufragia) (NDD, 2014).

Geologic features at the subject site are described below. 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.

C7 RANCH GEOLOGIC FEATURES

Geologic Feature C-1: Sinkhole measuring approximately 10 feet in diameter x 2.5 feet deep with 2 semi-open drainage portal openings (0.5 and 1 foot in diameter x 1 foot deep) located along its weathered rock/clay 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. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature C-2: Sinkhole measuring approximately 8 feet long x 5 feet wide x 1.5 feet deep with an apparent animal burrow opening amongst loose rocks and soil. No air flow conductivity was noted at the opening. Probing with a steel rod encountered loose to firm clay soil and cobbles about 2.5 feet below the feature's floor. This feature has a low infiltration rate and a surface runoff catchment of less than 0.1 acres.

Geologic Feature C-3: Two solution cavities spaced about 15 feet apart within an open, scattered cactus area. The larger cavity measures approximately 1.8 feet long x 1 foot wide x 1.5 feet deep and the smaller (due west/northwest) measures 0.3 feet in diameter x 1 foot deep. Slight air flow conductivity was noted at the openings. Probing with a steel rod encountered loose cobbles and soil about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature C-4: Solution cavity in open area measuring approximately 1.5 feet long x 0.5 feet wide x 1 foot deep with smaller open drainage portal openings amongst loose cobbles and soil. Slight air flow conductivity was noted. Probing with a steel rod encountered a snake skin and loose cobbles about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature C-5: Two small solution cavities spaced about 6 feet apart near a small cedar elm tree. The larger cavity measures approximately 1 foot long x 0.3 feet wide x 1 foot deep and the smaller (due southeast next to the tree trunk) measures 0.3 feet in diameter x 1 foot deep. Slight air flow conductivity was noted at the openings. Probing with a steel rod encountered loose

cobbles and soil about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature C-6: Solution-enlarged fracture (azimuth:N215°W) measuring approximately 2.5 feet long x 0.5 feet wide x 1 foot deep with smaller semi-open drainage portal openings amongst loose cobbles and soil. No air flow conductivity was noted. Probing with a steel rod encountered firm soil and cobbles about 2 feet below the feature's floor. This feature has a low to intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature C-7: Large upland sinkhole with a cedar elm tree near its center that is covered with grape vines. The sinkhole measures approximately 18 feet in diameter x 4 feet deep with 1 open drainage portal (1 foot long x 0.5 feet wide x 1 foot deep) located along its rock/clay floor. Very slight air flow conductivity was noted at the opening. Probing with a steel rod encountered clay soil and cobbles about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature C-8: Next to brush thicket, a solution cavity measuring approximately 1 foot in diameter x 1 feet deep that narrows down to a 0.2 feet x 1 foot deep drainage portal opening. Air flow conductivity was noted. Probing with a steel rod encountered loose cobbles/soil about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

SANTA RITA NORTH GEOLOGIC FEATURES

Geologic Feature G-02: This feature has been previously assessed by J. Jackson Harper, PG, as a closed depression measuring approximately 6 feet long x 6 feet wide x 2.5 feet deep resulting from an apparent animal burrow located beneath roots of adjacent oak trees. At the base of the hole, the burrow continued laterally along a soft, thinly bedded, chalky rock layer for a distance of about 1.5 feet before terminating. The burrow contained loose, dry, clayey soil and leaves over weathered, intact limestone. This feature has a very low infiltration rate and was classified as a non-sensitive feature. No protective measures were proposed for this feature (Harper, 2013).

Geologic Feature SF-11: This feature has been previously assessed by SWCA as an unnamed cave within a sinkhole (SWCA, 2006). It measures approximately 12 feet in diameter x 2.5 feet deep and drops into an open portal about 4 feet long x 3 feet wide x 6 feet deep. Two young vultures were observed nesting inside the entrance, which prevented closer investigation. A few semi-open drainage portals were observed along the entrance drop floor amongst rocks, soil, and cobbles. Slight to moderate air flow conductivity was noted near the entrance drop. Based on the presence of air flow conductivity and a very well-defined sinkhole perimeter, the potential for additional subgrade passage is very probable. This feature meets the requirements to be classified as a potential **cave**, based on it being a natural, underground, open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This feature has a high infiltration rate and an apparent surface runoff catchment greater than 1.6 acres.

Geologic Feature SF-13: This feature has been previously assessed by SWCA as a sinkhole (SWCA, 2006). It measures approximately 10 feet in diameter x 2.5 feet deep and has an open drainage portal near its center about 1 foot long x 0.5 feet wide x 4 feet deep. Slight air flow conductivity was noted. This feature has an intermediate infiltration rate and an apparent surface runoff catchment less than 0.4 acres.

Geologic Feature SF-14: This feature has been previously assessed by SWCA as a sinkhole (SWCA, 2006). It measures approximately 6 feet in diameter x 1.5 feet deep with a large boulder and several smaller boulders within the feature. Small semi-open drainage portals were observed amongst the rocks and loose soil about 0.5 feet in diameter x 1 foot deep. Slight air flow conductivity was noted. This feature has an intermediate infiltration rate and an apparent surface runoff catchment less than 0.4 acres.

Geologic Feature SF-15: This feature has been previously assessed by SWCA as 2 small sinkholes that were partially filled with discarded trash (barbed wire and scrap metal) (SWCA, 2006). However, the feature is actually 1 large sinkhole (~50 feet long x 25 feet wide x 3 feet deep) and 1 open solution cavity (~3 feet long x 1.5 feet wide x 6 feet deep) that is located within the sinkhole's catchment area. Near the center of the sinkhole is a partially filled trash area with an open drainage portal about 5 feet long x 3 feet wide x 4 feet deep. Slight to moderate air flow conductivity was noted amongst the trashed portal opening. The solution cavity is located about 20 feet due southeast from the lowest part of the sinkhole with some discarded trash (barbed wire and bottles). It had slight air flow conductivity, and the floor of the cavity appears to slope back towards the sinkhole drainage portal. Based on the presence of air flow conductivity and a very well-defined sinkhole perimeter, the potential for additional subgrade passage is very probable. This feature meets the requirements to be classified as a potential **cave**, based on it being a natural, underground, open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This feature has a high infiltration rate and an apparent surface runoff catchment greater than 3 acres.

Geologic Feature SF-16: This feature has been previously assessed by SWCA as an unnamed cave within a sinkhole that is rimmed with boulders and cobble debris (SWCA, 2006). The sinkhole measures approximately 120 to 130 feet long x 40 to 60 feet wide x 3 to 6 feet deep and funnels into a large, open vertical shaft about 10 feet in diameter x 5 feet deep. Along the west side of the shaft floor is an opening measuring 5 feet long x 4 to 6 feet deep that connects to an apparent low bedding plane void extending about 20 feet (north to south) x 10 feet wide x 3 to 4 feet high. Several internal open drains were observed along the floor at the lowest points of the void. Moderate to strong air flow conductivity was noted along the main shaft opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. The sinkhole/cave is located in a broader drainage area that appears to have originally drained in excess of 10 acres. An adjacent stock pond (manmade feature M-15) to the northwest/west appears to have impounded half or more of the original drainage area. This cave has a very high infiltration rate and a surface runoff catchment greater than 6 acres.

Geologic Feature SF-17: This feature has been previously assessed by SWCA as a non-karst closed depression (SWCA, 2006). However, an open drainage portal about 0.3 feet in diameter x 1 foot deep was observed within the loose leaves and soil/rock at its lowest point. This feature is identified a sinkhole about 20 feet in diameter x 3 feet deep with an apparent drainage portal. Slight air flow conductivity was noted at the opening. This feature has an intermediate infiltration rate and an apparent surface runoff catchment less than 0.4 acres.

Geologic Feature SF-18: This feature has been previously assessed by SWCA as a solution cavity (SWCA, 2006). It measures approximately 1.5 feet in diameter x 1 foot deep and is located within an exposed slab of limestone about 4 feet x 4 feet. No drainage portals or air flow conductivity were observed along the firm, clay-filled floor. The feature appears to be epikarstic due to surficial weathering processes. This feature has a very low infiltration rate and an apparent surface runoff catchment less than 0.1 acres.

Geologic Feature SF-19: This feature has been previously assessed by SWCA as a sinkhole that has large boulders slumping into it that may have been the result of past ranching activities, such as land clearing (SWCA, 2006). It measures approximately 15 feet long x 12 feet wide x 3 feet deep with several semi-open drainage portals around apparent in-filled (bladed) rocks and boulders. Slight air flow conductivity was noted. This feature has an intermediate infiltration rate and an apparent surface runoff catchment less than 0.4 acres.

Geologic Feature SF-20: This feature has been previously assessed by SWCA as 2 adjacent sinkholes spaced about 15 feet apart (SWCA, 2006). The larger sinkhole measures approximately 15 feet in diameter x 5 feet deep with several semi-open drainage portals amongst solutioned bedrock and/or boulders. The smaller sinkhole measures approximately 10 feet in diameter x 5 feet deep with semi-open drainage portals amongst loose rock and soil. Slight air flow conductivity was noted at both sinkholes. This feature has an intermediate infiltration rate and an apparent surface runoff catchment less than 1 acre.

Geologic Feature SR-1: Small, upland sinkhole measuring approximately 6.5 feet long x 5 feet wide x 1.5 feet deep, rimmed with large rocks, and with a drainage portal opening along the south side about 1.5 feet long x 0.3 feet wide x 1 foot deep. Slight air flow conductivity was noted at the opening. Probing with a steel rod encountered clay soil and cobbles about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-2: Small, upland sinkhole, located about 20 feet due south of SR-1, measuring approximately 6 feet in diameter x 1.5 feet deep with open drainage portals amongst loose rock and leaves. This feature was lightly excavated, revealing a low bedding plane void about 2 feet long x 0.5 feet high with moderate air flow conductivity noted at the opening. Probing with a steel rod encountered loose clay soil and cobbles about 3 feet down below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-3: Small, upland sinkhole, located between 2 live oak trees, measuring approximately 6 feet in diameter x 1 foot deep with an open drainage portal amongst

loose rocks and soil. This feature was lightly excavated, revealing a portal about 0.5 feet in diameter x 1 foot deep with slight air flow conductivity. Probing with a steel rod encountered loose clay soil and cobbles about 2 feet down below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-4: Solution cavity measuring approximately 0.5 feet in diameter x 1 foot deep, in an open area, that narrows down to a 0.2 feet diameter x 1 foot deep drainage portal opening. Slight air flow conductivity was noted. Probing with a steel rod encountered loose cobbles/soil about 2.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-5: Two solution cavities spaced about 8 feet apart in an open area near a cactus patch. Both cavities measure approximately 1 foot in diameter x 1 to 1.5 feet deep. Slight to moderate air flow conductivity was noted at the openings. Probing with a steel rod encountered loose cobbles and soil about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-6: Solution cavity, near a cedar elm tree, measuring approximately 0.5 feet in diameter x 1.5 feet deep. Slight to moderate air flow conductivity was noted. Probing with a steel rod encountered loose soil and rocks about 2.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-7: Small, upland sinkhole measuring approximately 5 feet in diameter x 1 foot deep, located under a cluster of live oak trees, with a semi-open drainage portal about 0.5 feet in diameter x 1.5 feet deep. Very slight air flow conductivity was noted. Probing with a steel rod encountered loose leaves, cobbles, and soil about 2.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-8: Two solution cavities spaced about 3 feet apart next to a cedar elm tree. The larger cavity measures approximately 0.5 feet in diameter x 1 foot deep and the smaller cavity measures 0.2 feet in diameter x 0.5 feet deep. Slight air flow conductivity was noted at the openings. Probing with a steel rod encountered loose cobbles and soil about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-9: Small, upland sinkhole measuring approximately 6 feet long x 4 feet wide x 1 foot deep with an open solution cavity drainage portal near the center about 1.5 feet long x 1 foot wide x 2.5 feet deep. Slight air flow conductivity was noted. Probing with a steel rod encountered loose leaves, cobbles, and soil about 3.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-10: Large, upland sinkhole located near a persimmon tree thicket that measures approximately 18 feet long x 15 feet wide x 3 feet deep with 1 open drainage portal (0.5 feet in diameter x 1 foot deep) located along its rock/clay floor. Slight to moderate air flow conductivity was noted at the opening. Probing with a steel rod encountered loose soil and cobbles

about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.5 acres.

Geologic Feature SR-11: Solution cavity located near live oak trees and cactus patch. A large rock covering the cavity was removed to facilitate inspection. This feature measures approximately 2 feet long x 1.5 feet wide x 2.5 feet deep with slight to moderate air flow conductivity. Probing with a steel rod encountered loose soil and rocks about 4 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-12: Upland sinkhole measuring approximately 10 feet long x 7 feet wide x 2 feet deep with open drainage portals near the center amongst loose cobbles and soil. Slight to moderate air flow conductivity was noted. Probing with a steel rod encountered loose cobbles and soil about 3.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-13: Large, upland sinkhole located amongst scattered mesquite and cedar elm trees. It measures approximately 20 feet long x 10 feet wide x 2.5 feet deep with 2 open drainage portals (1.9 feet long x 0.9 feet wide x 3 feet deep and 0.5 feet in diameter x 1 foot deep) located along its rock/clay floor. Slight air flow conductivity was noted at both openings. Probing with a steel rod encountered firm to loose soil and cobbles about 4 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.5 acres.

Geologic Feature SR-14: Small, upland sinkhole measuring approximately 6 feet long x 4 feet wide x 2.5 feet deep with a semi-open drainage portal near the center about 0.5 feet in diameter x 1 foot deep. No air flow conductivity was noted. Probing with a steel rod encountered firm soil and cobbles about 3 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-15: Solution cavity, located near the bases of mesquite and persimmon trees, measuring approximately 2.5 feet long x 0.5 feet wide x 1.5 feet deep, with semi-open drainage portals amongst vuggy rock and loose soil. No air flow conductivity was noted. Probing with a steel rod encountered loose to firm soil and rocks about 2.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-16: Solution cavity measuring approximately 1.3 feet long x 0.8 feet wide x 4.5 feet deep within a very small rock sink (3 feet in diameter x 1 foot deep). Slight air flow conductivity was noted. Probing with a steel rod encountered loose soil and rocks about 5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-17: Solution cavity about 35 feet due southwest of SR-16. It measures approximately 1.5 feet long x 1 foot wide x 3.5 feet deep within a very small rock sink (3 feet in diameter x 1 foot deep). Slight to moderate air flow conductivity was noted. Probing with a

steel rod encountered loose soil and rocks about 4.5 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-18: Solution cavity measuring approximately 1 foot long x 0.5 feet wide x 1 foot deep with semi-open drainage portals amongst loose rocks and soil. Slight air flow conductivity was noted. Probing with a steel rod encountered loose soil and rocks about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-19: Solution cavity measuring approximately 3 feet long x 1.5 feet wide x 1.5 feet deep with semi-open drainage portals amongst loose clay soil and rocks. Slight air flow conductivity was noted. Probing with a steel rod encountered loose soil and rocks about 2 feet below the feature's floor. This feature has an intermediate infiltration rate and a surface runoff catchment of less than 0.4 acres.

Geologic Feature SR-20: Mapped normal fault located in Santa Rita North within the contributing zone of the Edwards Aquifer. This feature has an apparent low infiltration rate and is not located in the recharge zone of the Edwards Aquifer. Therefore, it is a non-sensitive feature that would require no protective measures.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Thirty-eight natural geologic features and 25 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).

Thirty-four geologic features (C-1, C-3 to C-8, SF-11, SF-13 to SF-17, SF-19, SF-20, and SR-1 to SR-19) have 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. However, a larger protective buffer for 3 of these (cave) features (SF-11, SF-15, and SF-16) is recommended to meet the TCEQ guidance for a setback for each cave with an undetermined subsurface footprint. The cave footprint is assumed to extend 150 feet in all directions from the surface opening(s) and then a protective buffer zone extending an additional 50 feet in all directions from the footprint is applied, plus each cave's watershed catchment up to 200 feet from the footprint. Caves with a known subsurface footprint (i.e., surveyed/mapped) include a protective buffer zone extending an additional 50 feet in all directions from the footprint, plus each cave's watershed catchment up to 200 feet from the footprint.

Four geologic features (C-2, G-02, SF-18, and SR-20) 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.

All of the manmade features (G-01 and M-1 to M-24) 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.

Additionally, no springs were identified within the recharge zone of the subject site that would require protection or mitigation pursuant to the City of Georgetown Edwards Aquifer Recharge Zone Water Quality Ordinance No. 2013-59. However, several streams were identified within the recharge zone of the subject site that would require protection per the City of Georgetown's ordinance.

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 part of the subject 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 the potential for the void(s) to provide meaningful recharge to the Edwards Aquifer.

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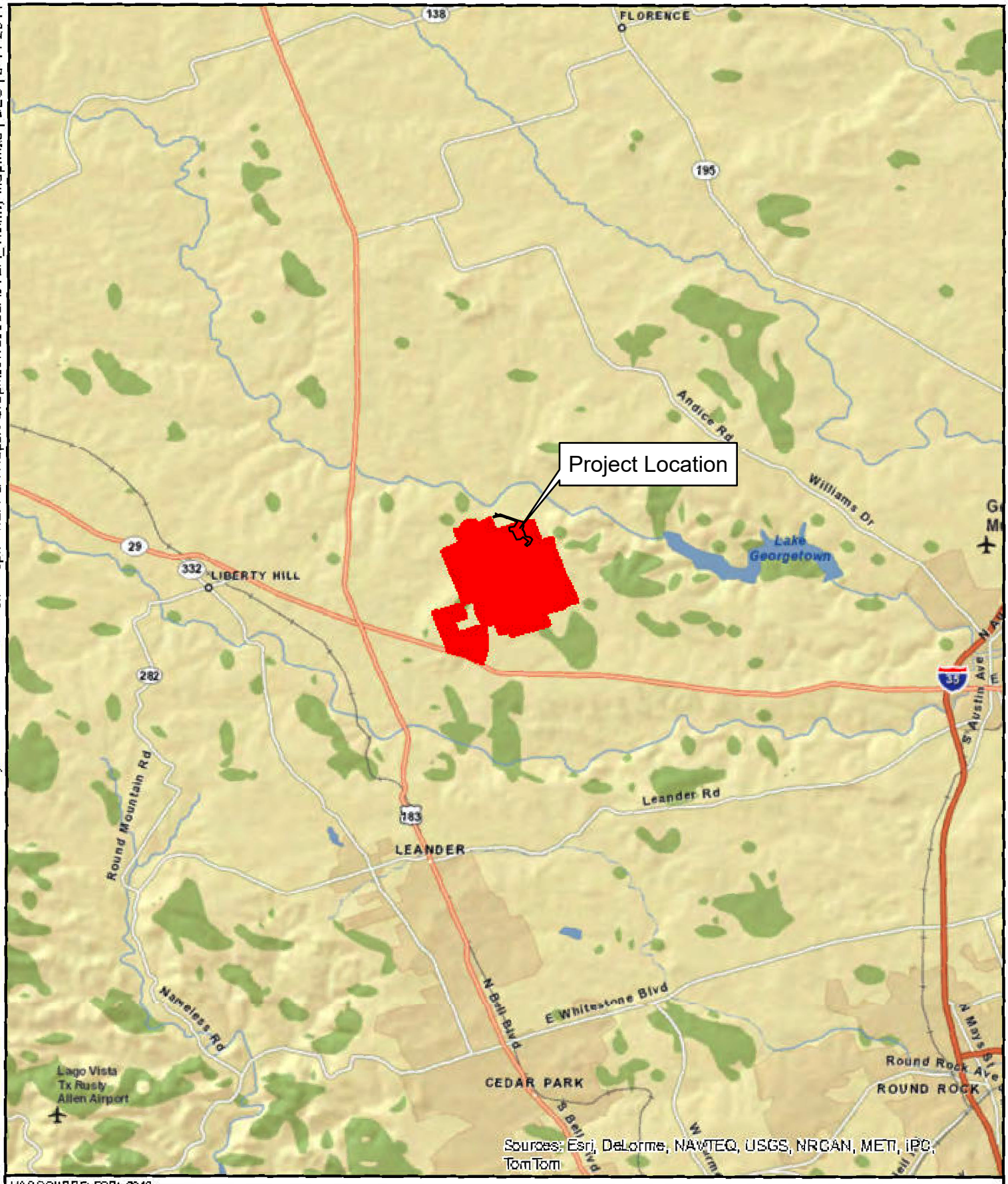
APPENDIX A

PROJECT FIGURES

R:\Proj\2013\130065 - C7 Ranch\Graphics\GA\GA Report Graphics\130065A01GA_Vicinity Map.mxd | CEC | 8-14-2014



MAP SOURCE: ESRI, 2012.

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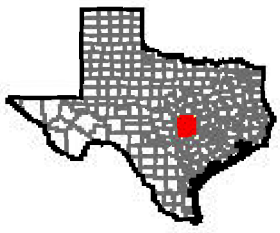
Miles



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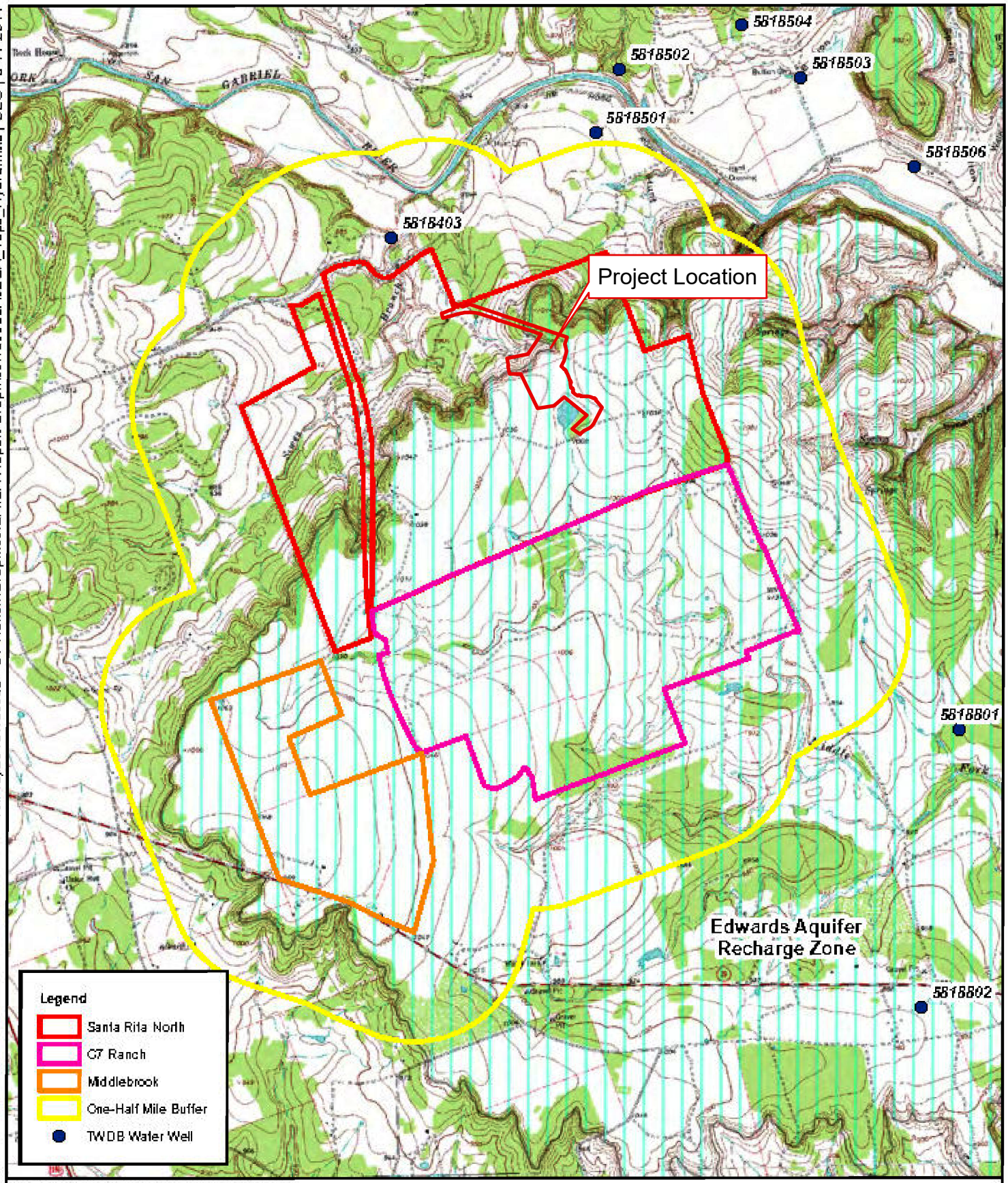
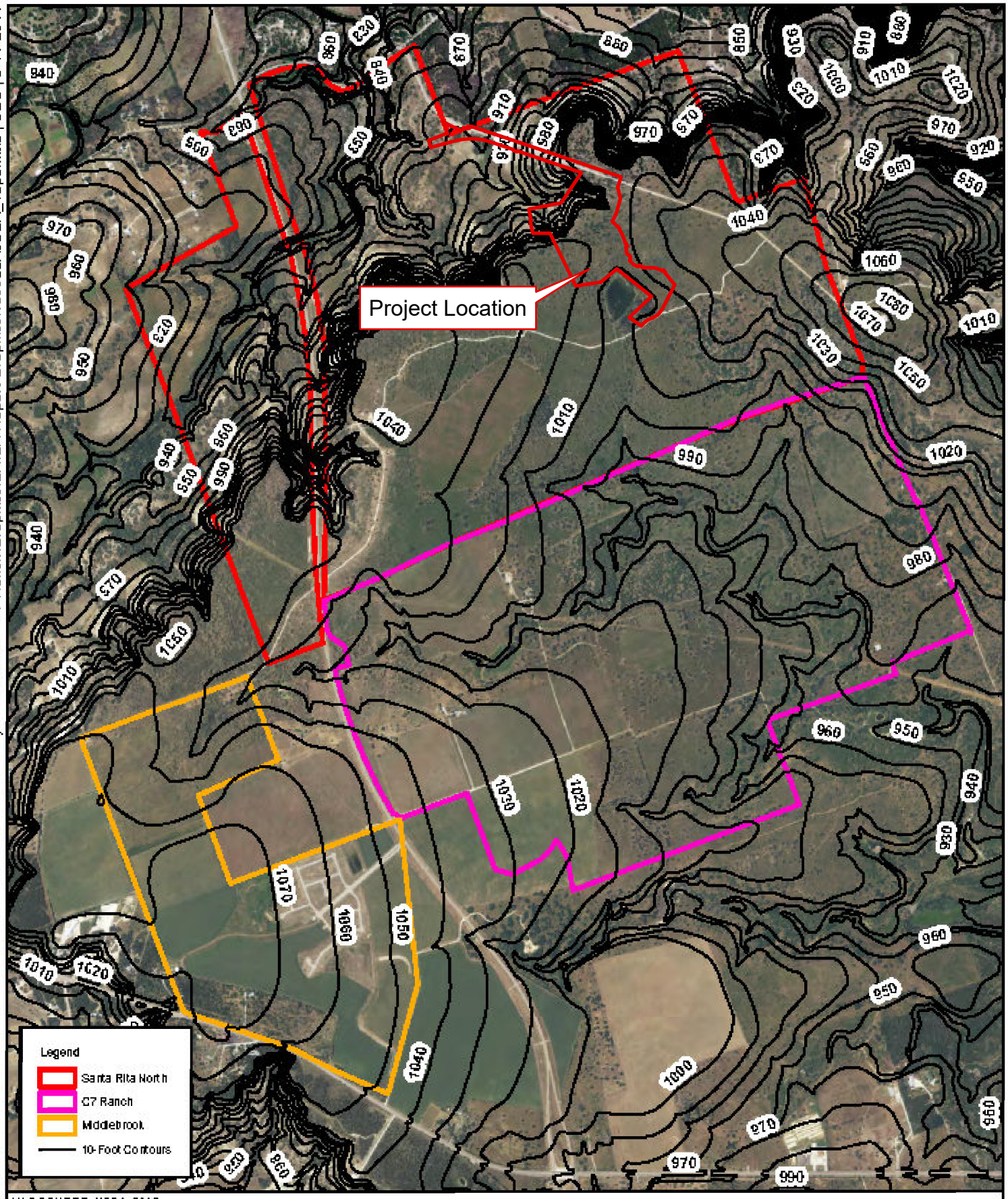
APPENDIX A, FIGURE 1

VICINITY MAP
SANTA RITA NORTH, MIDDLEBROOK, AND C7 RANCH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS



APPENDIX A, FIGURE 2

TOPOGRAPHY AND
HYDROGEOLOGY MAP
SANTA RITA NORTH, MIDDLEBROOK,
AND C7 RANCH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS



MAP SOURCE: USDA, 2012.

0 1,100 2,200
Feet

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APPENDIX A, FIGURE 3

SITE TOPOGRAPHY MAP
SANTA RITA NORTH, MIDDLEBROOK, AND C7 RANCH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS

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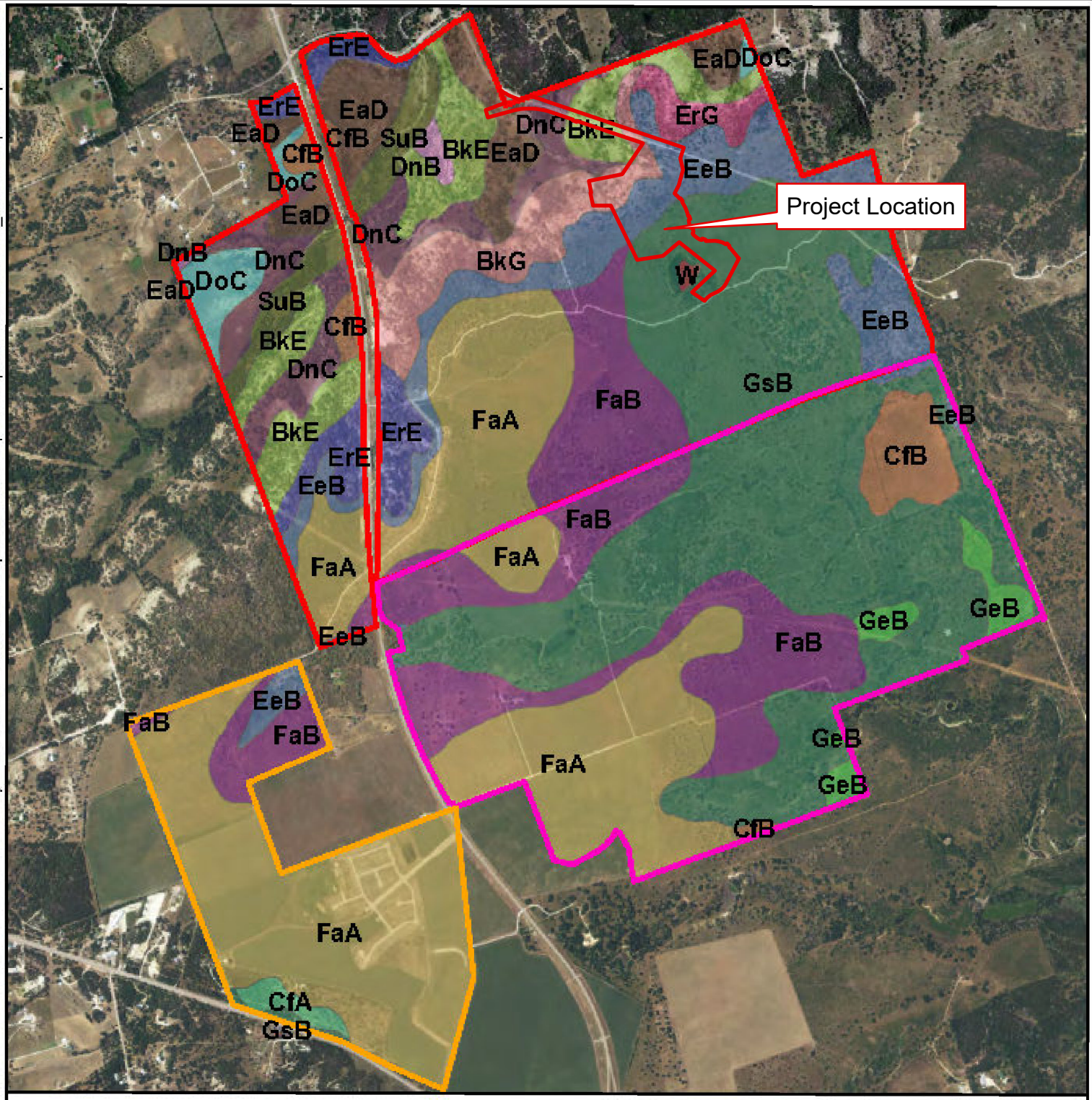

Legend

- Middlebrook
- C7 Ranch
- Santa Rita North
- Brackett gravelly clay loam, 3-12% slopes (BkE)
- Brackett-Rock outcrop Real complex, 3-30% slopes (BkG)
- Crawford clay, 0-1% slopes (CfA)
- Crawford clay, 1-3% slopes (CfB)
- Denton silty clay, 1-3% slopes (DnB)
- Denton silty clay, 3-5% slopes (DnC)
- Doss silty clay, moist, 1-5% slopes (DoC)
- Eckrant cobbly clay, 1-8% slopes (EaD)
- Eckrant extremely stony clay, 0-3% slopes (EeB)
- Eckrant-Rock outcrop complex, rolling (ErE)
- Eckrant-Rock outcrop complex, hilly (ErG)
- Fairlie clay, 0-1% slopes (FaA)
- Fairlie clay, 1-2% slopes (FaB)
- Georgetown clay loam, 0-2% slopes (GeB)
- Georgetown stony clay loam, 1-3% slopes (GsB)
- Sunev silty clay loam, 1-3% slopes (SuB)
- Water

MAP SOURCE: USDA, 2012; NRCS, 2014.

0 1,150 2,300
Feet

N

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APPENDIX A, FIGURE 4

SURFACE SOILS MAP
SANTA RITA NORTH, MIDDLEBROOK, AND C7 RANCH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS

Geologic Unit	Hydrologic Unit	Approx. Thickness at Project Site (ft)	Elevation (ft msl)	Depth (ft)
			1070	0
Terraces (QTa) and Terraces along streams (Qt)	-	10	1060	10
Edwards Formation (Ked)	Edwards Aquifer	85	975	95
Comanche Peak Formation (Kc)		50	925	145
Keys Valley Marl (KwKv)	Confining Unit	50	875	195
Cedar Park Limestone (Kwcp)		40	835	235
Bee Cave Marl (Kwbc)		35	800	270
Upper Glen Rose Limestone (Kgru)		220	580	490

Note: Unit elevation and thickness given with respect to a ground surface elevation of 1070 ft on the southwestern corner of the project site.

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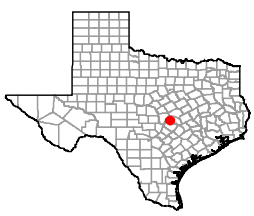
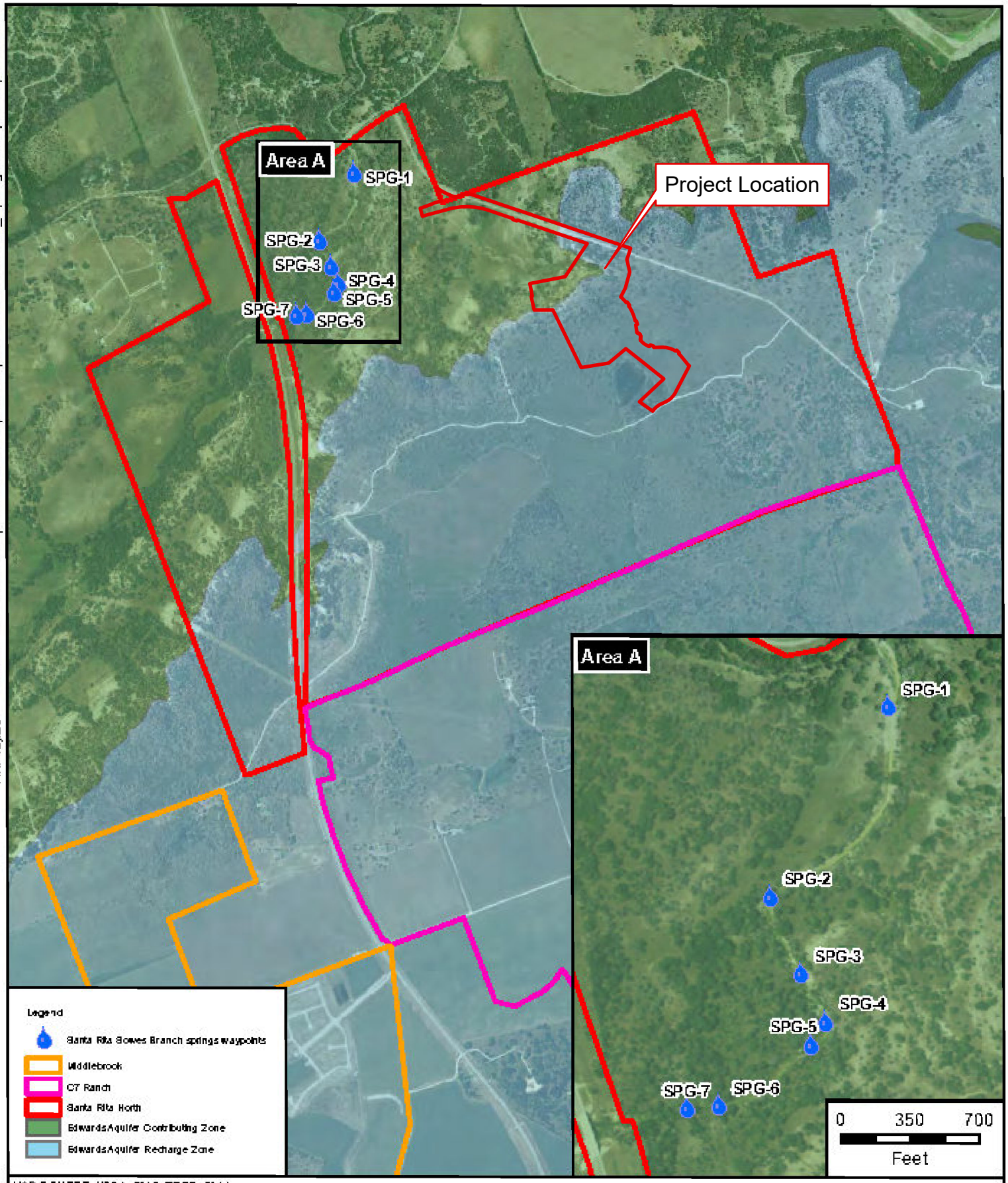
STATE OF TEXAS
JAMES P. KILLIAN
GEOLOGY
No. 10281
LICENSED
PROFESSIONAL GEOSCIENTIST



APPENDIX A, FIGURE 5

STRATIGRAPHIC COLUMN
SANTA RITA NORTH, MIDDLEBROOK, AND C7 RANCH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS



MAP SOURCE: USDA, 2012; TCEQ, 2014.

0 1,000 2,000
Feet

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APPENDIX A, FIGURE 6

SANTA RITA SPRINGS MAP
SANTA RITA NORTH, MIDDLEBROOK, AND C7 RANCH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS

Horizon
Environmental Services, Inc.

APPENDIX B

SITE GEOLOGIC MAP

130065 - C7 Ranch\Graphics\GA\GA Report Graphics\130065D01GA_SR_SGM_26X40.mxd | REM | 8-25-2014

Project Location

SR-1 SR-2 SR-4 SR-5 SR-6 SR-7 SR-8 SR-9 SR-10 SR-11 SR-12 SR-13 SR-14 SR-15 SR-16 SR-17 SR-18 SR-19 SR-20
SF-11 SF-13 SF-14 SF-15 SF-16 SF-17 SF-18 SF-19 SF-20
C-4 C-5 C-7 C-8
M-11 M-13 M-14 M-15 M-16 M-17 M-18 M-19 M-20 M-24
G-01 G-02

Qt
Kwcpbc
Ked
KwKv
Kc
Kgru
QTa
U
D

Legend

- Manmade Feature
- Non-Sensitive Feature
- Sensitive Feature
- Middlebrook
- C7 Ranch
- Santa Rita North
- Fault (U / D)
- Terraces Along Streams (Qt)
- Terraces (QTa)
- Edwards Limestone (Ked)
- Commanche Peak Limestone (Kc)
- Keys Valley Marl (KwKv)
- Cedar Park Limestone; Bee Cave Marl (Kwcpbc)
- Upper Glen Rose Formation (Kgru)

MAP SOURCE: USDA, 2012; UT-BEG, 2014.

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

Horizon Environmental Services, Inc.

0 200 400
Feet

Scale: 1" = 400'

APPENDIX B, FIGURE 1

SITE GEOLOGIC MAP
SANTA RITA NORTH
LIBERTY HILL,
WILLIAMSON COUNTY, TEXAS

Horizon
Environmental Services, Inc.

APPENDIX C

SITE GEOLOGIC ASSESSMENT TABLE

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: 2976-ac Santa Rita North, C7 Ranch, Middlebrook, Williamson Co., TX

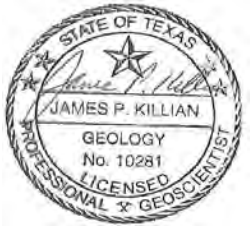
LOCATION			FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	≥40	<1.6	≥1.6	
C-1	30.658391	-97.816697	SH	20	Ked	10	10	2.5	--	0	--		C,F,O	25	45		X	X		Hillside
C-2	30.658554	-97.816288	SH	20	Ked	3	1.5	1.5	--	0	--		C,F,O	18	38	X		X		Hillside
C-3	30.666383	-97.809982	SC	20	Ked	1.8	1	1.5	--	0	--		C,F,O	30	50		X	X		Hillside
C-4	30.66883	-97.811714	SC	20	Ked	1.5	0.5	1	--	0	--		C,F,O	30	50		X	X		Hillside
C-5	30.669181	-97.809834	SC	20	Ked	1	0.3	1	--	0	--		C,F,O	28	48		X	X		Hillside
C-6	30.664682	-97.809834	SF	20	Ked	2.5	0.5	1	--	0	--		C,F,O	20	40		X	X		Hillside
C-7	30.667255	-97.816043	SH	20	Ked	18	18	4	--	0	--		C,F,O	30	50		X	X		Hillside
C-8	30.670156	-97.815144	SC	20	Ked	1	1	1	--	0	--		C,F,O	30	50		X	X		Hillside
G-02	30.666026	-97.838744	CD	5	Ked	6	6	2.5	--	0	--		C,F,O	10	15	X		X		Hillside
SF-11	30.671298	-97.815299	SH/C	30	Ked	12	12	8.5	--	0	--		C,F,O	45	75		X		X	Hillside
SF-13	30.671193	-97.81813	SH	20	Ked	10	10	2.5	--	0	--		C,F,O	30	50		X	X		Hillside

* DATUM: State Plane Texas Central

2A TYPE	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 : 3 September 2014

Sheet ___1___ of __6____

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

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: 2976-ac Santa Rita North, C7 Ranch, Middlebrook, Williamson Co., TX

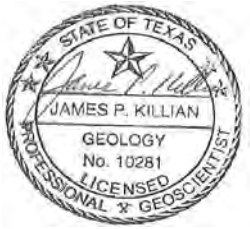
LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
SF-14	30.67206	-97.820227	SH	20	Ked	6	6	1.5	--	0	--		C,F,O	30	50		X	X		Hillside
SF-15	30.679111	-97.823843	SH/C	30	Ked	50	25	7	--	0	--		C,F,O	35	65		X		X	Hilltop
SF-16	30.675387	-97.823553	SH/C	30	Ked	130	60	11	--	0	--		C,F,O	65	95		X		X	Hilltop
SF-17	30.671916	-97.821637	SH	20	Ked	20	20	3	--	0	--		C,F,O	28	48		X	X		Hillside
SF-18	30.691678	-97.820842	SC	20	Ked	1.5	1.5	1	--	0	--		C,F,O	10	30	X		X		Hillside
SF-19	30.680412	-97.822505	SC	20	Ked	15	12	3	--	0	--		C,F,O	35	55		X	X		Hillside
SF-20	30.676327	-97.827169	SH	20	Ked	15	15	5	--	0	--		C,F,O	35	55		X	X		Hillside
SR-1	30.671914	-97.812342	SH	20	Ked	6.5	5	1.5	--	0	--		C,F,O	25	45		X	X		Hillside
SR-2	30.67192	-97.812485	SH	20	Ked	6	6	1.5	--	0	--		C,F,O	35	55		X	X		Hillside
SR-3	30.675314	-97.819649	SH	20	Ked	6	6	1	--	0	--		C,F,O	25	45		X	X		Hillside
SR-4	30.673724	-97.814153	SC	20	Ked	0.5	0.5	1	--	0	--		C,F,O	25	45		X	X		Hillside

* DATUM: State Plane Texas Central

2A TYPE	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



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Date : 3 September 2014

Sheet ___2___ of __6____

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

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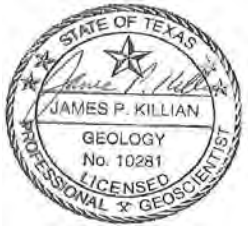
						X	Y	Z		10						<40	>40	<1.6	>1.6	
SR-5	30.673941	-97.815961	SC	20	Ked	1	1	1.5	--	0	--		C,F,O	30	50		X	X		Hillside
SR-6	30.673001	-97.815382	SC	20	Ked	0.5	0.5	1.5	--	0	--		C,F,O	30	50		X	X		Hillside
SR-7	30.674121	-97.816575	SH	20	Ked	5	5	1	--	0	--		C,F,O	22	42		X	X		Hillside
SR-8	30.672952	-97.815509	SC	20	Ked	0.5	0.5	1	--	0	--		C,F,O	25	45		X	X		Hillside
SR-9	30.672567	-97.81578	SH	20	Ked	6	4	1	--	0	--		C,F,O	30	50		X	X		Hillside
SR-10	30.673796	-97.816829	SH	20	Ked	18	15	3	--	0	--		C,F,O	35	55		X	X		Hillside
SR-11	30.674772	-97.818781	SC	20	Ked	2	1.5	2.5	--	0	--		C,F,O	40	60		X	X		Hillside
SR-12	30.672494	-97.820046	SH	20	Ked	10	7	2	--	0	--		C,F,O	30	50		X	X		Hillside
SR-13	30.675893	-97.826807	SH	20	Ked	20	10	2.5	--	0	--		C,F,O	28	48		X	X		Hillside
SR-14	30.678613	-97.824318	SH	20	Ked	6	4	2.5	--	0	--		C,F,O	25	45		X	X		Hilltop
SR-15	30.677735	-97.825099	SC	20	Ked	2.5	0.5	1.5	--	0	--		C,F,O	22	42		X	X		Hilltop

* DATUM: State Plane Texas Central

2A TYPE	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



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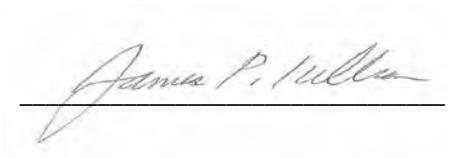

Sheet ___3___ of __6____

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

GEOLOGIC ASSESSMENT TABLE

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						X	Y	Z		10						<40	>40	<1.6	>1.6	
SR-16	30.681607	-97.820807	SC	20	Ked	1.3	0.8	4.5	--	0	--		C,F,O	35	55		X	X		Hilltop
SR-17	30.681526	-97.820942	SC	20	Ked	1.5	1	3.5	--	0	--		C,F,O	35	55		X	X		Hilltop
SR-18	30.679626	-97.8248	SC	20	Ked	1	0.5	1	--	0	--		C,F,O	25	45		X	X		Hilltop
SR-19	30.679644	-97.823785	SC	20	Ked	3	1.5	1.5	--	0	--		C,F,O	28	48		X	X		Hilltop
SR-20	30.685264	-97.837461	F	20	Kgru/Kw	5776	75	>100	--	0	--		C,F,O	15	35	X		X		Hilltop
G-01	30.667687	-97.828721	MB	30	Ked	184	180	6	--	0	--		F	5	35	X		X		Drainage
M-1	30.654518	-97.818719	MB	30	Ked	100	75	6	--	0	--		F	5	35	X		X		Drainage
M-2	30.660492	-97.830379	MB	30	Ked	200	100	6	--	0	--		F	5	35	X		X		Drainage
M-3	30.65993	-97.831945	MB	30	Ked	400	60	6	--	0	--		F	5	35	X		X		Drainage
M-4	30.657995	-97.833944	MB	30	Ked	0.3	0.3	--	--	0	--		X	5	35	X		X		Hillside
M-5	30.660606	-97.83676	MB	30	Ked	400	200	6	--	0	--		F	5	35	X		X		Drainage

* DATUM: State Plane Texas Central

2A TYPE	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
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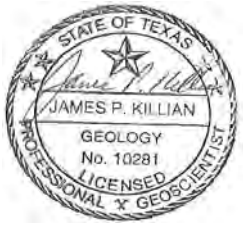
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

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



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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)	DOM	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	
M-6	30.65973	-97.836782	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hillside
M-7	30.659633	-97.836189	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hillside
M-8	30.666906	-97.810477	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hillside
M-9	30.666978	-97.810644	MB	30	Ked	0.7	0.7	--	--	0	--		X	5	35	X		X		Hillside
M-10	30.663087	-97.808239	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hillside
M-11	30.667335	-97.816923	MB	30	Ked	50	50	3	--	0	--		F	5	35	X		X		Drainage
M-12	30.663011	-97.814184	MB	30	Ked	100	70	6	--	0	--		F	5	35	X		X		Drainage
M-13	30.6755	-97.818701	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hilltop
M-14	30.675505	-97.818599	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hilltop
M-15	30.675615	-97.824592	MB	30	Ked	350	200	6	--	0	--		C,F	5	35	X		X		Drainage
M-16	30.68035	-97.831044	MB	30	Kwkv	0.5	0.5	--	--	0	--		X	5	35	X		X		Hillside

* DATUM: State Plane Texas Central

2A TYPE	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
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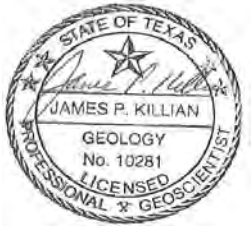

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1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
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						X	Y	Z		10						<40	>40	<1.6	>1.6	
M-17	30.680562	-97.830596	MB	30	Kwkv	200	100	6	--	0	--		F	5	35	X		X		Hillside
M-18	30.681799	-97.831428	MB	30	Kwkv	50	50	6	--	0	--		F	5	35	X		X		Hillside
M-19	30.670528	-97.838242	MB	30	Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hilltop
M-20	30.686109	-97.835242	MB	30	Kwcpbc	0.5	0.5	--	--	0	--		X	5	35	X		X		Hilltop
M-21	30.643785	-97.840569	MB	30	Qta/Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hillside
M-22	30.645662	-97.842722	MB	30	Qta/Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hilltop
M-23	30.645795	-97.844327	MB	30	Qta/Ked	0.5	0.5	--	--	0	--		X	5	35	X		X		Hilltop
M-24	30.658504	-97.844387	MB	30	Ked	390	160	6	--	0	--		F	5	35	X		X		Drainage

* DATUM: State Plane Texas Central

2A TYPE	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
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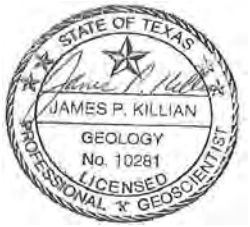

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Sheet ___6___ of __6____

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

Horizon
Environmental Services, Inc.

APPENDIX D

SITE PHOTOGRAPHS

PHOTO 1
View of geologic feature C-1 (sinkhole), facing down

PHOTO 2
View of geologic feature C-2 (sinkhole), facing east

PHOTO 3
View of geologic feature C-3 (2 solution cavities at upper left and lower right), facing southeast

PHOTO 4
View of geologic feature C-4 (solution cavity), facing northwest

Horizon
Environmental Services, Inc.

PHOTO 5
View of geologic feature C-5, facing south
(2 solution cavities by tree and white paper),

PHOTO 6
View of geologic feature C-6, facing northwest
(solution-enlarged fracture)

PHOTO 7
View of geologic feature C-7, facing northwest
(sinkhole under grape arbor)

PHOTO 8
View of geologic feature C-8, facing southeast
(solution cavity in front of brush)

Horizon
Environmental Services, Inc.

PHOTO 9
View of geologic feature SF-11 (sinkhole/cave), facing northeast

PHOTO 10
View of entrance drop of SF-11 (cave) with young vultures inside, facing down

PHOTO 11
View of geologic feature SF-13 (sinkhole), facing southeast

PHOTO 12
View of geologic feature SF-14 (sinkhole), facing north

Horizon
Environmental Services, Inc.

PHOTO 13
View along south side of geologic feature SF-15, facing north (large sinkhole with solution cavity/potential cave)

PHOTO 14
View looking down open solution cavity at SF-15

PHOTO 15
View along north side of SF-15, facing south

PHOTO 16
View along south side of SF-16, facing north (very large sinkhole/cave)

Horizon
Environmental Services, Inc.

PHOTO 17
View along north side of geologic feature SF-16, facing south

PHOTO 18
View open vertical shaft drop near center of SF-16, facing southwest

PHOTO 19
Another view of shaft drop/cave entrance near center of SF-16, facing down

PHOTO 20
View of geologic feature SF-17 (sinkhole), facing north

Horizon
Environmental Services, Inc.

PHOTO 21
View of geologic feature SF-18 (solution cavity), facing south

PHOTO 22
View of geologic feature SF-19 (sinkhole), facing north

PHOTO 23
View of geologic feature SF-20, facing southeast (2 closely spaced sinkholes)

PHOTO 24
View of geologic feature SR-1 (sinkhole), facing south

Horizon
Environmental Services, Inc.

PHOTO 25
View of geologic feature SR-2 (sinkhole), facing down

PHOTO 26
View of geologic feature SR-3, facing north (sinkhole between oak trees)

PHOTO 27
View of geologic feature SR-4 (solution cavity), facing north

PHOTO 28
View of geologic feature SR-5, facing north (2 solution cavities)

Horizon
Environmental Services, Inc.

PHOTO 29
View of geologic feature SR-6 (solution cavity), facing south

PHOTO 30
View of geologic feature SR-7 (sinkhole), facing southeast

PHOTO 31
View of geologic feature SR-8, facing east (2 closely spaced solution cavities)

PHOTO 32
View of geologic feature SR-9 (sinkhole), facing south

PHOTO 33
View of geologic feature SR-10 (large sinkhole), facing southwest

PHOTO 34
View of geologic feature SR-11 (solution cavity), facing northeast

PHOTO 35
View of geologic feature SR-12 (sinkhole), facing southeast

PHOTO 36
View of geologic feature SR-13 (large sinkhole), facing southwest

Horizon
Environmental Services, Inc.

PHOTO 37
View of geologic feature SR-14 (sinkhole), facing northeast

PHOTO 38
View of geologic feature SR-15 (solution cavity), facing west

PHOTO 39
View of geologic feature SR-16 (solution cavity), facing down

PHOTO 40
View of geologic feature SR-17 (solution cavity), facing south

Horizon
Environmental Services, Inc.

PHOTO 41

View of geologic feature SR-18 (solution cavity), facing south

PHOTO 42

View of geologic feature SR-19 (solution cavity), facing east

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: Steven P. Cates, P.E.

Date: 12/20/2024

Signature of Customer/Agent:

Regulated Entity Name: Santa Rita Ranch Phase 2B Section 2

Regulated Entity Information

1. The type of project is:

   ☒ Residential: Number of Lots:95
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☐ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):58.11

3. Estimated projected population:285

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	356,321	÷ 43,560 =	8.18
Parking	0	÷ 43,560 =	0
Other paved surfaces	344,559	÷ 43,560 =	7.91
Total Impervious Cover	700,880	÷ 43,560 =	16.09

Total Impervious Cover 16.09 **÷ Total Acreage** 58.11 **X 100 =** 27.69**% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100% Domestic	19,950Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day

TOTAL gallons/day 19,950

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 Liberty Hill Wastewater Treatment Plant (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 50'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA- FIRM Panel #48491C0275E Williamson County, Texas and incorporated areas: Effective Date: September 26, 2008

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.

Water Pollution Abatement Plan Application

ATTACHMENT A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Factors Affecting Water Quality:

During Construction

Non-Stormwater Discharges: The Following non-stormwater discharges may occur from the site during the construction period:

- Utility water line flushing during the initial line testing must use uncontaminated water that is not hyperchlorinated.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred)
- Groundwater (from dewatering of excavation) must be uncontaminated.
- Water used to wash vehicles or control dust must be accomplished using potable water without detergents.

All non-stormwater discharge will be directed to the temporary Erosion and Sedimentation Controls (Best Management Practices) to remove any suspended solids contained therein.
Stormwater during construction will remove loose material and transport it downstream.

Post Construction

Non-stormwater discharges after construction has been completed which can affect water quality include:

- Fertilizers and pesticides
- Household chemicals
- Pet Waste
- Used oil
- Car washing
- Mulching
- Sediment

Post Construction stormwater discharges typically transport sediment in the form of dirt and dust accumulated on the streets and other impervious flatwork, rooftops, and sediment from erosion of grassy areas. That material will be transported through the storm sewer system to the wet basins, where most of the pollutants will be removed.

Water Pollution Abatement Plan Application

ATTACHMENT B

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Volume and Character of Stormwater:

Existing and developed hydrology models were created in HEC-HMS, v.4.8. A 24-hour frequency storm was applied to the meteorological models for the 2, 10, 25, and 100-year storm events. The model was run over a 24-hour period with a computational time interval of 1 minute. Subbasins utilized an SCS Curve Number Loss Method and SCS Unit Hydrograph Transform Method. Reaches utilized either a Muskingum-Cunge or Lag Routing Method. See below for specific model input data.

Meteorological Model

Frequency storms with the following parameters were used to model storm events:

HEC-HMS Meteorological Model Parameters

Probability	2-yr = 50%, 10-yr = 10%, 25-100-yr = Other
Input Type	Partial Duration
Output Type	Annual Duration (only applicable for 2-10-yr)
Intensity Duration	5 Minutes
Storm Duration	1 Day
Intensity Position	50%
Storm Area	(Blank if less than 10 mi²)
Curve	Uniform for all subbasins

Partial-duration precipitation depths are per the Depth-Duration-Frequency Estimates for the San Gabriel River Zone in Williamson County, Texas, according to NOAA Atlas 14, Volume 11, Version 2. See the table below:

Precipitation Depths (in) per Recurrence Interval

Duration	2-YR	10-YR	25-YR	100-YR
5-min	0.51	0.757	0.921	1.19
15-min	1.02	1.51	1.84	2.37
60-min	1.88	2.79	3.4	4.39
2-hr	2.3	3.55	4.43	5.98
3-hr	2.55	4.02	5.09	7.06
6-hr	2.98	4.81	6.18	8.75
12-hr	3.44	5.54	7.12	10.1
24-hr	3.94	6.3	8.04	11.2

Land Use & Curve Numbers

In existing conditions, the soils are primarily hydrologic soil group D, as per the USDA Web Soil Survey. The soils map and data have been included in Appendix B. The curve numbers were selected from Urban

Hydrology for Small Watersheds[1] based on hydrologic soil groups and aerial maps. See table below. Curve numbers were assessed independently from impervious cover.

Runoff Curve Numbers

Cover Type	Hydrologic Condition	Hydrologic Soil Group	Curve Number
Pasture	Good	D	80
Woods-grass combination	Good	D	79
Meadow	Good	D	78

Existing impervious cover was determined from aerial imagery. Proposed impervious cover was estimated from the proposed and anticipated future layout using TCEQ assumptions for residential tracts. Impervious cover was calculated as a percent of the total drainage basin. Curve number and impervious cover percents were loss inputs for subbasins in the model.

Time of Concentration

All time of concentration calculations were generated using SCS methodology provided in Urban Hydrology for Small Watersheds[2] for sheet, shallow concentrated, and channel flow. A maximum of 100 feet was used for sheet flow calculations. Lag times were calculated as 60 percent of the time of concentration. Lag times were transform inputs for subbasins and reaches in the model. Times of concentration for future developed drainage areas were approximated based on assumed basin size.

Reaches

Reaches representing the Middle Fork San Gabriel River were modeled using the Muskingum-Cunge routing method with 8-point cross-sections. In developed conditions, reaches contributing to the Middle Fork were modeled with the Lag method.

Reservoirs

All reservoirs were modeled using outflow structures with an elevation-storage method. Initial conditions were elevations set to the bottom of pond elevation for batch detention facilities. The model assumed no tailwater condition. Future batch detention ponds were modeled with a generic stage-storage and outflow spillways assigned to the assumed water quality volume elevation.

[1] Natural Resources Conservation Service, Conservation Engineering Division. 1986. Urban Hydrology for Small Watersheds. Technical Release 55. U.S. Department of Agriculture. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf
[2] Ibid.

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: Steven P. Cates, P.E.

Date: 12/20/2024

Signature of Customer/Agent:

Regulated Entity Name: Santa Rita Ranch Phase 2B Section 2

Project Information

Potential Sources of Contamination

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

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

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

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

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

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

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

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

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

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

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

Sequence of Construction

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

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

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

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

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☐ 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.

Temporary Stormwater Section
ATTACHMENT A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Spill Response Actions:

1. Contain the spill.
2. Immediately stake off area.
3. Notify Hazardous Material team (if necessary); notify TCEQ:
   (512) 339-2929 or Emergency # 1-800-832-8224
4. Take necessary steps to clean up, i.e. notify remediation contractor if large spill, or small spills will be cleaned by the construction contractor.

All site personnel will be made aware of the manufactures' recommended methods for spill cleanup, and the location of the information and cleanup supplies.

Spills will be reported according to the Reportable Quantity, attached on the following page.

Materials and equipment necessary for spill cleanup will be kept onsite in an accessible location known to site personnel.

All Spills will be cleaned up immediately upon discovery. Any spill of hydrocarbons or hazardous substances greater than 25 gallons will require notification to the fire Department Hazardous Materials Team and TCEQ. As with all spills, an effort shall be made to prevent material from entering surface streams and storm drains by using rock or earth berms to contain the material.

Kind of spill	Where discharged	Reportable quantity	Rule, statute, or responsible agency
Hazardous substance	onto land	"Final RQ" in Table 302.4 in 40 CFR 302.4 (PDF)	30 TAC 327
	into water	"Final RQ" or 100 lbs, whichever is **less**	
Any oil	coastal waters	as required by the Texas General Land Office	Texas General Land Office
Crude oil, oil that is neither a petroleum product nor used oil	onto land	210 gallons (five barrels)	30 TAC 327
	directly into water	enough to create a sheen	
Petroleum product, used oil	onto land, from an exempt PST facility	210 gallons (five barrels)	30 TAC 327
	onto land, or onto land from a non-exempt PST facility	25 gallons	
	directly into water	enough to create a sheen	
Associated with the exploration, development and production of oil, gas, or geothermal resources	under the jurisdiction of the Railroad Commission of Texas	as required by the Railroad Commission of Texas	Railroad Commission of Texas
Industrial solid waste or other substances	into water	100 lbs	30 TAC 327
From petroleum storage tanks, underground or aboveground	into water	enough to create a sheen on water	30 TAC 334.75-81
From petroleum storage tanks, underground or aboveground	onto land	25 gallons or equal to the RQ under 40 CFR 302	30 TAC 327
Other substances that may be useful or valuable and are not ordinarily considered to be waste, but will cause pollution if discharged into water in the state	into water	100 lbs	30 TAC 327

1.4.16 Spill Prevention and Control

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

Education

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.
(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
(3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
(4) Establish a continuing education program to indoctrinate new employees.
(5) Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

(1) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
(2) Store hazardous materials and wastes in covered containers and protect from vandalism.
(3) Place a stockpile of spill cleanup materials where it will be readily accessible.
(4) Train employees in spill prevention and cleanup.
(5) Designate responsible individuals to oversee and enforce control measures.
(6) Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
(7) Do not bury or wash spills with water.
(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
(12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

(1) Clean up leaks and spills immediately.
(2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

(1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
(2) Use absorbent materials on small spills rather than hosing down or burying the spill.
(3) Absorbent materials should be promptly removed and disposed of properly.
(4) Follow the practice below for a minor spill:
(5) Contain the spread of the spill.
(6) Recover spilled materials.
(7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

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

Spills should be cleaned up immediately:

(1) Contain spread of the spill.
(2) Notify the project foreman immediately
(3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
(4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
(5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512- 339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
(2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
(3) Notification should first be made by telephone and followed up with a written report.
(4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
(5) Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

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

Vehicle and Equipment Maintenance

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

Vehicle and Equipment Fueling

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

Temporary Stormwater Section
ATTACHMENT B

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Potential Sources of Contamination:

Gasoline, Diesel, and Hydraulic Fluid from construction equipment,
Asphalt products,
Construction Materials,
Trash and Debris,
Paint,
Concrete,
Gypsum from sheet rock,
Sediment.

All materials shall be hauled in a manner consistent with the manufacturer's recommendations. Disposal of waste material shall be in conformance with all state and local laws

Temporary Stormwater Section
ATTACHMENT C

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Sequence of Major Activities:

1. Install and maintain Erosion Control and Tree Protection per the Approved Plans and specifications prior to any clearing and grubbing, grading, excavating, etc... Notify Construction Inspection Division when installed.

2. Prior to beginning construction, the owner or his representative shall hold a Pre-Construction Conference between TCEQ, Williamson County, Contractor, and any other affected parties. Notify TCEQ at least 48 hours prior to the time of the conference and 48 hours prior to beginning construction. Prior to Pre-Construction Conference.

3. Hold Pre-Construction Conference with contractor, TCEQ, EV Inspector, Engineer, and owner or his representative.

4. Rough grade roadway.
   (Estimate of disturbed area = 7.91 ac)

5. Begin installation of storm sewer. Upon completion, restore as much disturbed areas as possible, particularly channels and large open areas. (Estimate of disturbed area = 0.0 ac)

6. Regrade streets to subgrade (Estimate of disturbed area = 4.81 ac)

7. Ensure that all underground utility crossings are completed. Lay first course base material on all streets. (4.81 ac)

8. Install curb and gutter. (Estimate of disturbed area = 0.58 ac)

9. Place concrete for common area 4’ sidewalk. (Estimate of disturbed area = 1.17 ac)

10. Lay final base course on all streets. (4.81 ac)

11. Lot grading. (Estimate of disturbed area = 22.00ac)

12. Lay asphalt. (6.14 ac)

13. Clean site and revegetate all disturbed area according to the plans and specifications. Stabilization measures should include seeding and/or mulching.

14. Complete permanent erosion control and restoration of site vegetation.

15. Project Engineer to provide a written concurrence letter, and scheduling final inspection with EV Inspector, prior to the removal of erosion controls.

16. Remove and dispose of temporary erosion/sedimentation control measures.

17. Complete any necessary final dress up of areas disturbed by Item 16.

18. Conduct a final inspection and complete all punch list items.

Clearing and grubbing under a development permit, solely for the purpose of surveying and soil exploration, shall be a hand-cutting or blade-up operation.

Temporary Stormwater Section
ATTACHMENT D

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Temporary Best Management Practices and Measures:

Install temporary erosion control measures, stabilized construction entrance, concrete washout area, inlet protection, and tree protection according to the plans and specifications prior to any clearing and grubbing, grading, excavating, etc. Upgradient stormwaters during construction crossing disturbed areas will be filtered utilizing standard Best Management Practices, such as erosion logs and silt fences, prior to leaving the site. The silt fences will be placed along down gradient areas of the site to prevent any sediment from entering storm sewers or surface streams.

Geological features on this site are located within the limits of Construction in the downstream area. Silt fences will be placed along the down gradient areas of sensitive features to prevent stormwater, from the disturbed areas, draining to the geological features.

Temporary Stormwater Section
ATTACHMENT F

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Structural Practices:

For areas that will have more than 10 acres within a common drainage area disturbed at one time, a combination of temporary BMPs and measures will be used to protect down slope and side slope boundaries of the construction area. For areas that will have less than 10 acres within a common drainage area disturbed at one time, a combination of a sediment basin and other erosion control measures, such as silt fences and rock berms, will be provided. For any areas not draining to sediment ponds, silt fences shall be provided.

Structural erosion control and pollution prevention practices shall be implemented to limit runoff discharge of pollutants from exposed soils. The structural practices utilized include:

Silt Fence

- Barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site.
    1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in2 , ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
    2) Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Ybar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft2 , and Brindell hardness exceeding 140.
    3) Woven wire backing to support the fabric should be galvanized 2” x 4” welded wire, 12 gauge minimum.

Fiber Rolls

- Placed at the toe and on the face of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff.
    1) Core material: Core material should be biodegradable or recyclable. Material may be compost, mulch, aspen wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or similar materials.
    2) Containment Mesh: Containment mesh should be 100% biodegradable, photodegradable or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or similar material. When the fiber role will remain in place as part of a vegetative system use biodegradable or photodegradable mesh. For temporary installation recyclable mesh is recommended.

Stabilized Construction Entrance

- Stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area.

1) The aggregate should consist of 4 to 8 inch washed stone over a stable foundation as specified in the plan.
2) The aggregate should be placed with a minimum thickness of 8 inches.
3) The geotextile fabric should be designed specifically for use as a soil filtration media with an approximate weight of 6 oz/yd2 , a mullen burst rating of 140 lb/in2 , and an equivalent opening size greater than a number 50 sieve.
4) If a washing facility is required, a level area with a minimum of 4 inch diameter washed stone or commercial rack should be included in the plans. Divert wastewater to a sediment trap or basin.

Inlet Protection

- Filter barrier protection installed around stormwater inlets that provide protection against silt transport or accumulation in storm sewer systems.
    1) Filter fabric should be a nylon reinforced polypropylene fabric which meets the following minimum criteria: Tensile Strength, 90 lbs.; Puncture Rating, 60 lbs.; Mullen Burst Rating, 280 psi; Apparent Opening Size, U.S. Sieve No. 70.
    2) Posts for fabric should be 2” x 4” pressure treated wood stakes or galvanized steel, tubular in cross-section or they may be standard fence “T” posts.
    3) Concrete blocks should be standard 8” x 8” x 16” concrete masonry units.
    4) Wire mesh should be standard hardware cloth or comparable wire mesh with an opening size not to exceed 1/2 inch.

Concrete Washout

- Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing washout in a designated area, and training employees and subcontractors.
    1) Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

Temporary Sediment Basin

- Intercepts sediment-laden runoff and trap the sediment in order to protect drainage ways, properties and rights of way downstream.
    1) Riser should be corrugated metal or reinforced concrete pipe or box and should have watertight fittings or end to end connections of sections.
    2) An outlet pipe of corrugated metal or reinforced concrete should be attached to the riser and should have positive flow to a stabilized outlet on the downstream side of the embankment.
    3) An anti-vortex device and rubbish screen should be attached to the top of the riser and should be made of polyvinyl chloride or corrugated metal.

Rock Berm

- Serve as a check dam in areas of concentrated flow, to intercept sediment-laden runoff, detain the sediment and release the water in sheet flow.
    1) The berm structure should be secured with a woven wire sheathing having maximum opening of 1 inch and a minimum wire diameter of 20 gauge galvanized and should be secured with shoat rings.
    2) Clean, open graded 3- to 5-inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5- to 8-inch diameter rocks may be used.

Temporary Stormwater Section
ATTACHMENT G

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Drainage Area Map:

An overall drainage area map is included within the plan set submitted with this application.

Temporary Stormwater Section

ATTACHMENT H

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Temporary Sediment Pond(s) Plans and Calculations:

A temporary sediment basin will be built with Phase 2B-2. This is located downstream to the south of the project. This basin in combination with temporary BMPs will be installed to control sediment transport during construction of the site.

Per 30 TAC 213.5(b)(4)(D)(i), temporary sediment ponds shall provide: 1) storage for a calculated volume of runoff from a two-year, 24-hour storm from each disturbed acre drained; 2) storage equivalent to 3,600 cubic feet of storage per acre drained; or 3) equivalent control measures until final stabilization of the site.

The table below provides the required storage equivalent to 3,600 cubic feet per disturbed acre from the proposed site draining to each pond. The proposed batch detention ponds have sufficient storage within the provided water quality storage to collect sediment runoff during construction activities until final stabilization of the site.

Proposed Ponds	On-site Disturbed Area (ac)	Required Storage (cf)	Provided WQV (cf)
Pond 14	35.78	128,821	252,080

*Sediment control will be provided by a combination of a temporary sediment basin and other structural BMPs such as silt fence, rock berms, and temporary rolled erosion control matting prior to final stabilization.

Temporary Stormwater Section
ATTACHMENT I

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Inspection and Maintenance for Best Management Practices:

The Best Management Practices installed during construction will be maintained in accordance with the requirements of the EPA's NPDES/TPDES storm water pollution prevention program (SWPPP). The following maintenance procedures shall be followed until permanent stabilization is complete.

Silt Fence

a. Inspect weekly or after each rainfall event and repair or replacement shall be made promptly as needed.
b. Silt Fence shall be removed when the site is completely stabilized so as to not block or impede storm flow or drainage.
c. Accumulated silt shall be removed when it reaches a depth of 6 inches. The Silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation.

Fiber Rolls

a. Inspect prior to forecast rain, daily during extended rain events, after rain events, and weekly.
b. Repair of replace split, torn, unraveling, or slumping fiber rolls.
c. If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates behind the role shall be periodically removed tin order to maintain its effectiveness. Sediment shall be removed when the accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed of at an appropriate location.

Stabilized Construction Entrance

a. The entrance shall be maintained in a condition that will prevent tracking or flowing of sediment onto a public roadway. This may require periodic top dressing with additional stone as conditions demand, as well as repair and clean out of any devices used to trap sediment.
b. Entrance must be properly graded to incorporate a drain swale or similar measure to prevent runoff from leaving the construction site.

Inlet Protection

a. Inspection shall be made weekly or after each rainfall event and replacement or repair shall be made promptly as needed.
b. Accumulated silt shall be removed when it reaches a depth of 6 inches. The Silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation
c. The dyke shall be removed when the site is completely stabilized so as to not block or impede storm flow or drainage.

Temporary Sediment Basins

a. Inspection shall be made weekly or after each rainfall event. Check the embankment spillways, and outlet for erosion damage, and inspect the embankment for piping and settlement. Repair should be made promptly as needed.
b. Trash and other debris should be removed after each rainfall event to prevent clogging of the outlet structure.
c. Accumulated silt should be removed and the basin should be regraded to its original dimensions at such point that the capacity of the impoundment has been reduced to 75% of its storage capacity.
d. The removed sediment should be stockpiled or redistributed in areas that are protected from erosion.

Concrete Washout

a. Inspection shall be made daily or after each rainfall event to check for leaks, identify any plastic linings and sidewalls which have been damaged by construction activities.
b. When the washout container is filled over 75 % of its capacity, the washwater should be vacuumed off or allowed to evaporate to avoid overflows. When the remaining cementitious solids have hardened, they should be removed and recycled.
c. Damages to the container should be repaired promptly and as needed.
d. Before heavy rains, the washout containers liquid level should be lowered or the container should be covered to avoid an overflow during the rain event.

The owner shall hire an E&S compliance company to inspect E&S measures and keep reports of onsite inspections with deficiencies and solutions.

Temporary Stormwater Section
ATTACHMENT J

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Schedule of Interim and Permanent Soil Stabilization Practices:

Soil Stabilization for all disturbed areas shall be accomplished by hydraulic planting. Following is an outline to accomplish the required stabilization.

1. Preparing Seed Bed. After the designated areas have been rough graded to the lines, grades and typical sections indicated in the Drawings or as provided for in other items of this contract and for any other soil area disturbed by the construction, a suitable seedbed shall be prepared. The seedbed shall consist of a minimum of either 4 inches (100 millimeters) of approved topsoil or 4 inches (100 millimeters) of approved salvaged topsoil, cultivated and rolled sufficiently to enhance the soil to a state of good health, when the soil particles on the surface are small enough and lie closely enough together to prevent the seed from being covered too deeply for optimum germination. The optimum depth for seeding shall be 114 inch (6 millimeters). Water shall be gently applied as required to prepare the seedbed prior to the planting operation either by broadcast seeding or hydraulic planting. Bare soils should be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days. Seeding shall be performed in accordance with the requirements hereinafter described.

2. Watering. All watering shall comply with Santa Rita Ranch Rules and Regulations. Broadcast seeded areas shall immediately be watered with a minimum of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed and in the marmer and quantity as directed by the Engineer or designated representative. Hydraulic seeded areas and native grass seeded areas shall be watered commencing after the tackifier has dried with a minimum of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed to keep the seedbed in a wet condition favorable for the growth of grass. Watering applications shall constantly maintain the seedbed in a wet condition favorable for the growth of grass. Watering shall continue until the grass is uniformly 1 1/2 inches (40 mm) in height and accepted by the Engineer or designated representative. Watering can be postponed immediately after a 1/2 inch (12.5 mm) or greater rainfall on the site but shall be resumed before the soil dries out.

3. Hydraulic Planting. The seedbed shall be prepared as specified above and hydraulic planting equipment, which is capable of placing all materials in a single operation, shall be used.

March 1 to September 15

Hydraulic planting mixture and minimum rate of application pounds per 1000 square feet (kilograms per 100 square meters):

Planting Mixture			
Hulled Bermuda Seed (PLS=0.83)	Fiber Mulch		Soil Tackifier
	Cellulose	Wood	
1 lbs/1000 ft2 (0.5 kgs/100 m2)	45.9 Lbs/1000 ft2 (22.5 kgs/100m2)		1.4 lbs/1000 ft2 (0.7 kgs/100 m2)
		57.4 lbs/1000 ft2 (28.01 kgs/100 m2)	1.5 lbs/1000 ft2 (0.75 kgs/100 m2)

September 15 to March 1

Add 1.5 pounds per 1000 square feet (0.75 kgs/ 100 m@) of cool season cover crop (see table 1) to above mixture. The fertilizer shall conform to City of Austin Standard Specification Item No. 606S, “Fertilizer”.

Table 1 : Cool Season Cover Crop			
Common Name	Botanical Name	Application rates	
		Lbs/1000 feet^2	Kg/ 100 meter^2
Wheat	Triticum aestivum	0.5	0.25
Oats	Avena sativa	0.5	0.25
Cereal Rye Grain	Secale cereal	0.5	0.25
Total Cool Season Cover Crop Seeding Rate		1.5	0.75
Total Cool Season Seeding Rate (Grass Wildflowers, & Cover Crop)		4.5	2.25

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: Steven P. Cates, P.E.

Date: 12/20/2024

Signature of Customer/Agent

Regulated Entity Name: Santa Rita Ranch Phase 2B Section 2

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

Permanent Stormwater Section
ATTACHMENT B

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Best Management Practices for Upgradient Stormwater:

Upgradient stormwater will travel overland to the curb and gutter and captured by the curb inlets to be conveyed to existing Batch Detention Pond 14 EAPP ID No. 11002420 (Approved 6/2/2021) and existing Batch Detention Pond 2A-4 EAPPID No. 11002666 (Approved 11/5/2021). The Batch Detention Ponds 14 and 2A-4 will treat future development as well.

Permanent Stormwater Section
ATTACHMENT C

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Best Management Practices for On-site Stormwater:

Stormwater runoff from Phase 2B Section 2 will sheet flow across lawns, be captured in gutters and curb inlets, and piped into existing Batch Detention Pond 14 EAPP ID No. 11002420 (Approved 6/2/2021) and existing Batch Detention Pond 2A-4 EAPPID No. 11002666 (Approved 11/5/2021). Existing Batch Detention Ponds 14 and 2A-4 will treat future development. These water quality ponds provide TSS removal for the upstream sections. The water quality volume provided in these ponds will be sufficient to accommodate TSS removal for Phase 2B Section 2.

TCEQ project and drainage area maps are provided in the included construction plans. TCEQ TSS removal calculations are provided in Appendix A of this application. TCEQ WPAP & SCS approval letters are provided in Appendix B.

Permanent Stormwater Section
ATTACHMENT D

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Best Management Practices for Surface Stream Stormwater:

Stormwater runoff from drainage areas A to H will sheet flow across lawns, be captured in gutters and curb inlets, and piped into existing Batch Detention Pond 14 and existing Batch Detention Pond 2A-4 as shown on the Drainage Area Plan.

The batch ponds discharge through rock rip-rap and rock berms which will deter heavy floods from entering streams and aid in collection sediment. The remaining site stormwater runoff will sheet flow across the lots and discharge directly into the North Fork of the San Gabriel River.

Permanent Stormwater Section
ATTACHMENT F

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Construction Plans:

Construction Plans for the erosion and sedimentation control measures proposed with this development are included at the end of this report.

Permanent Stormwater Section
ATTACHMENT G

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Inspection, Maintenance, Repair and Retrofit Plan:

Maintenance Guidelines for Batch Detention Basins

Batch detention basins may have somewhat higher maintenance requirements than an extended detention basin since they are active stormwater controls. The maintenance activities are identical to those of extended detention basins with the addition of maintenance and inspections of the automatic controller and the valve at the outlet.

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

- ***Mowing*.** The basin, basin side-slopes, and embankment of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas.

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

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

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

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

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

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

Ultimately, these facilities will be owned, operated and maintained by the proposed Williamson County MUD No. 19F. Until the ownership of facilities is transferred to the MUD, Santa Rita KC, LLC. will be responsible for maintenance of these facilities in accordance with the above stated requirements.

Acknowledged by: _____

James Edward Horne
SRFV Development, LLC.

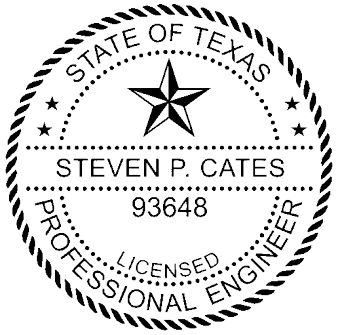
BMP DESIGN FIRM INFORMATION

Carlson, Brigance & Doering, Inc.
Mr. Steven P. Cates, P.E.
Phone: (512) 280-5160
5501 West William Cannon
Austin, TX 78749

The above Inspection, Maintenance, Repair, and Retrofit Plan has been prepared by the undersigned Engineer, and I hereby certify that the above Plan conforms with the minimum requirements of the TCEQ Technical Guidance on Best Management Practices, RG-348.

_____
Steven P. Cates, P.E.

12-20-2024
Date



CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

Permanent Stormwater Section

ATTACHMENT I

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Measures for Minimizing Surface Stream Contamination:

The development minimizes surface stream contamination by maintaining the naturally occurring sheet flow across the lots. Drainage from this development will be directed towards batch detention ponds which will reduce the developed flow rated to predeveloped flow rates. There are no surface streams within this site.

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: Santa Rita Ranch Phase 2B Section 2

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: James Edward Horne
   Entity: SRFV Development, LLC.
   Mailing Address: 1700 Cross Creek Lane, Suite 100
   City, State: Liberty Hill, Texas Zip: 78642
   Telephone: 512-502-2050 Fax: _____
   Email Address: ed@srraustin.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: Steven P. Cates, P.E.
   Texas Licensed Professional Engineer's Number: 93648
   Entity: Carlson, Brigance, and Doering, Inc.
   Mailing Address: 5501 W. William Cannon Dr.
   City, State:Austin, Texas Zip: 78749
   Telephone:512-280-5160 Fax:512-280-5165
   Email Address:steve@cbdeng.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: 95
   ☐ Multi-family: Number of residential units: _____
   ☐ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other: _____

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

100% Domestic	19,950 gallons/day
_____% Industrial	_____ gallons/day
_____% Commingled	_____ gallons/day

   Total gallons/day: 19,950

6. Existing and anticipated infiltration/inflow is 42,020 gallons/day. This will be addressed by: SDR 26 PVC with gasketed joints.

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 this application, but has not been approved.
   ☐ A WPAP application is required for an associated project, but it has not been submitted.
   ☐ There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

Pipe Diameter(Inches)	*Linear Feet (1)*	*Pipe Material (2)*	*Specifications (3)*
6"	1,307	SDR 26 PVC	ASTM D3034
6"	0	C900 DR-18 PVC	AWWA C900
8"	5,219	SDR 26 PVC	ASTM D3034
8"	160	C900 (150 psi) PVC	AWWA C900
6"	0	C900 (150 psi) PVC	ASTM D3034

Total Linear Feet: 6,686

(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 Liberty Hill Wastewater (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 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?*
A	60 Of 70	28+68.85	CO
B	62 Of 70	10+00.75	MH
C	63 Of 70	3+96.04	MH
D	63 Of 70	3+43.27	MH
E	65 Of 70	0+25.63	CO
F	65 Of 70	0+37.86	CO
G	64 Of 70	6+32.44	MH

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
H	65 Of 70	0+44.21	CO
J	65 Of 70	0+29.66	CO
	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*
	of	to
	of	to
	of	to
	of	to

23. 5-year floodplain:

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

Table 4 - 5-Year Floodplain

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

24. ☒ Legal boundaries of the site are shown.

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

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

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

☐ There will be no water line crossings.

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

Table 5 - Water Line Crossings

Line	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance*	*Vertical Separation Distance*
WWLN A	11+81.88	CROSSING		73
WWLN A	14+28.11	CROSSING		57
WWLN A	17+77.30	CROSSING		49
WWLN A	22+44.40	CROSSING		57
WWLN A	26+22.82	CROSSING		57
WWLN B	0+31.50	CROSSING		58
WWLN B	3+05.77	CROSSING		43
WWLN G	0+38.72	CROSSING		50

27. Vented Manholes:

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

☐ **A portion** of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.

☐ **A portion** of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.

☐ **A portion** of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located within. No vented manholes will be used.

Table 6 - Vented Manholes

Line	*Manhole*	*Station*	*Sheet*

Line	*Manhole*	*Station*	*Sheet*

28. Drop manholes:

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

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*

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

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

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

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

31. Minimum flow velocity (From Appendix A)

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

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

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

Table 8 - Flows Greater Than 10 Feet per Second

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

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

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

Administrative Information

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

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

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	70 of 70
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	70 of 70
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	70 of 70
Typical trench cross-sections **[Required]**	70 of 70
Bolted manholes **[Required]**	70 of 70
Sewer Service lateral standard details **[Required]**	70 of 70
Clean-out at end of line **[Required, if used]**	70 of 70
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	N/A of N/A
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	70 of 70
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	N/A of N/A

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

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

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

    ☒ Survey staking was completed on this date: 12/25/2024

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

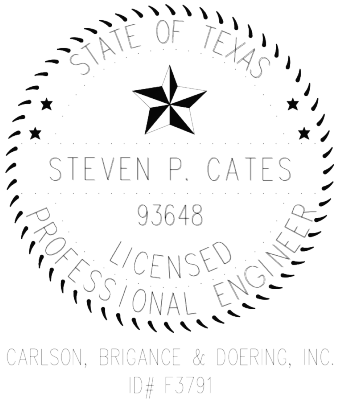
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director 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: Steven P. Cates, P.E.

Date: 12/20/2024

Place engineer's seal here:

Signature of Licensed Professional Engineer:



Santa Rita Ranch
Phase 2B Section 2

SCS Engineering Design Report

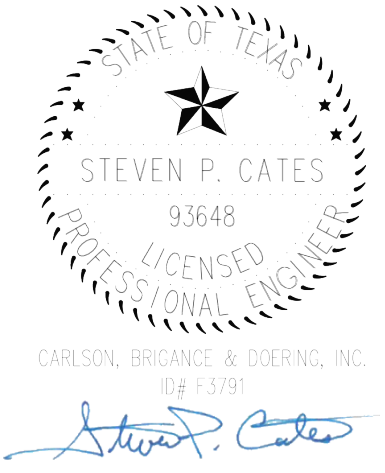
Prepared by:

Steven P. Cates, P.E.
Carlson, Brigance & Doering, Inc.
5501 W. William Cannon
Austin, Texas 78749
(512)-280-5160
Firm # F3791

Prepared for:

SRFV Development, LLC.
Atten: James Edward Horne
1700 Cross Creek Lane, Suite 100
Liberty Hill, Texas 78642
(512)-502-2050

December 2024
CBD No. 5559



12-20-2024

Santa Rita Ranch
Phase 2B Section 2

SCS Engineering Design Report

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Santa Rita Ranch
Phase 2B Section 2

SCS Engineering Design Report

I. GENERAL

Santa Rita Ranch Phase 2B Section 2 is a 58.11-acre residential development that is composed of 95 single-family lots. The project is located on the east side of Flower Valley Parkway and Santa Rita Ranch Phase 2B Section 1, and just south of existing Tower Rd. The project is located within the City of Liberty Hill ETJ, in Williamson County, Texas. This project includes 7,405 linear feet of roadway, 5,984 linear feet of water main line, 5,219 linear feet of 8" SDR 26 PVC ASTM D3034 wastewater main line, 160 linear feet of 8" C900 (150 psi) PVC AWWA C900 wastewater main line at water crossings, and 1,307 linear feet of 6" SDR 26 PVC ASTM D3034 of wastewater service line. The proposed wastewater line will flow into an existing SCS gravity system to the approved Lift Station 2A and then the Liberty Hill Wastewater Treatment Plant.

Flow was calculated using LCRA design criteria (210 gallons per LUE, 1,000 gal/acre/day) assuming 3 people per LUE at 70 gpd/person for residential use.

II. DESCRIPTION OF PROPOSED SYSTEM

The gravity mains and manholes meet the TCEQ requirements of Chapter 217. All the gravity mains with this project are PVC SDR-26 ATSM D3034. The construction plans consist of the following:

Linear Feet	Pipe Material	National Standard Specification for Pipe
5,219	PVC SDR-26	ASTM D3034
160	PVC C900 (150 psi)	AWWA C900

The pipes are designed with a slope that will provide a velocity of at least 2 feet per second, as calculated using Manning's equation with an "n" value of 0.013. Additionally, the collection system is designed to ensure that, with pipes flowing full, the velocities will be less than 10 feet per second.

Pipe Diameter: 8" Min. Slope: 0.34% Max. Slope: 7.49%

The plans and specifications, which describe the project identified in the report, are in compliance with all the requirements of Chapter 217. Refer to the calculations at the end of the report for all the analysis for flows & deflection.

Santa Rita Ranch
Phase 2B Section 2

SCS Engineering Design Report

III. Pipe Deflection Calculations

6", 8", & 12" SDR 26 ATSM D3034 – 6ft-16ft Depth of Bury

Given: 6" & 8" SDR 26 PVC ATSM D3034 Pipe
H= 6 ft (Depth of Bury)
γ = 120 lbs/cf (Backfill Soil Unit Weight)
D_L = 1.0 (Deflection Lag Factor)
K = 0.085 (Bedding Constant)
W' = 16,000 moving wheel load (live load)
PS = 144 psi (Pipe Stiffness for PVC SDR 26)
E^1 = 3,000 psi (Soil Modulus for Limestone)

PIPE DEFLECTION, %
(2 Trucks Passing Live Load)

Including a 16000 Lb MOVING Wheel Load
Effective Length of Wheel Load: 3.00 Ft

DLF = 1.00 K = 0.085 PS = 144 psi E' = 3000 psi

Prism Load, Wp, Condition

Backfill Weight = 120 Lb / Ft ^ 3

	Outside Diameters, ins.			
Depth, Ft	6.275	8.400	12.500	15.300
6.00	0.32 %	0.32 %	0.32 %	0.32 %
8.00	0.35 %	0.35 %	0.35 %	0.35 %
10.00	0.40 %	0.40 %	0.40 %	0.40 %
12.00	0.46 %	0.46 %	0.46 %	0.46 %
14.00	0.52 %	0.52 %	0.52 %	0.52 %
16.00	0.58 %	0.58 %	0.58 %	0.58 %
18.00	0.65 %	0.65 %	0.65 %	0.65 %

Deflection = 0.58% < 2.0% ok

Santa Rita Ranch
Phase 2B Section 2

SCS Engineering Design Report

6" & 8" SDR 18 PVC AWWA C900 Pipe

Given 6" & 8" SDR 18 PVC AWWA C900 Pipe
H= 3 ft (Mi. Depth of Bury)
γ = 120 lbs/cf (Backfill Soil Unit Weight)
D_L = 1.0 (Deflection Lag Factor)
K = 0.085 (Bedding Constant)
W' = 16,000 moving wheel load (live load)
PS = 455 psi (Pipe Stiffness for PVC SDR 18)
E^1 = 3,000 psi (Soil Modulus for Limestone)

PIPE DEFLECTION, %
(2 Trucks Passing Live Load)

Including a 16000 Lb MOVING Wheel Load
Effective Length of Wheel Load: 3.00 Ft

DLF = 1.00 K = 0.085 PS = 455 psi E' = 3000 psi

Prism Load, Wp, Condition

Backfill Weight = 120 Lb / Ft ^ 3

	Outside Diameters, ins.	
Depth, Ft	6.900	9.050
3.00	0.35 %	0.35 %
5.00	0.26 %	0.26 %
7.00	0.27 %	0.27 %
9.00	0.31 %	0.31 %
11.00	0.35 %	0.35 %
13.00	0.40 %	0.40 %
15.00	0.45 %	0.45 %

Deflection = 0.55% < 2.0% ok

Santa Rita Ranch
Phase 2B Section 2

SCS Engineering Design Report

IV. System Design

Flow Calculations:

DEV. TYPE	LUE's	Population (PPL)	gpd/LUE	Flow (gpm)	I&I Area (ac)
Single Family Lots	95	285	210	13.85	42.02

Peaking Factor (PF) = 4.09
PF = (18+(PPL/1000)^0.5)/((4+(PPL/1000)^0.5))

Minimum Flow Factor (MF) = 0.16
MF= 0.2(PPL/1000)^0.198

Inflow & Infiltration (I&I) =29.18 gpm
I&I = 1000gpd/ac*(I&I Area) ac./1440

Minimum Dry Weather Flow (Min.DWF) = 2.16 gpm
Min.DWF = (PPL)*70*(MF)/1440gpd/gpm

Average Dry Weather Flow (ADWF) = 13.85 gpm
ADWF = (PPL)*70/1440gpd/gpm

Maximum Dry Weather Flow (Max.DWF) = 56.63 gpm
Max.DWF = (PPL)*70*(PF)/1440gpd/gpm

Maximum Wet Weather Flow (MWWF) **= 85.81 gpm**
MWWF = Max.DWF + I&I

Pipe Capacity:

85.81 gpm / (448.8 gpm/cfs) = 0.19 cfs

Full Flow of 8" pipe at 0.34% (assuming n = 0.013) = 0.65 cfs

0.19 cfs / 0.65 cfs = 29% pipe capacity

Lift Station Capacity:

Per the Santa Rita Ranch Phase 2A Lift Station Engineering Report, the receiving systems have sufficient capacity to treat flows from proposed Phase 2B Section 2.

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)

Appendix A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

BMP TSS Removal Worksheet

Phase 2B Section 2

SITES

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: SANTA RITA PHASE 2B SECTION 2
Date Prepared: 12/17/2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

where:

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

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

County = **Williamson**

* **The values entered in these fields should be for the total project area.**

SANTA RITA RANCH PHASE 2B SECTION 2

Total project area included in plan * =	58.11	acres
Predevelopment impervious area within the limits of the plan * =	1.42	acres
Total post-development impervious area within the limits of the plan* =	16.09	acres
Total post-development impervious cover fraction * =	0.28	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	12770	lbs.

EXISTING BATCH DETENTION POND 14

EXISITNG SANTA RITA RANCH PHASE 2B, SECTION 1

Total project area included in plan * =	16.49	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	3.26	acres
Total post-development impervious cover fraction * =	0.19	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	2838	lbs.

PROPOSED SANTA RITA RANCH PHASE 2B, SECTION 2

Total project area included in plan * =	56.00	acres
Predevelopment impervious area within the limits of the plan * =	1.42	acres
Total post-development impervious area within the limits of the plan* =	15.07	acres
Total post-development impervious cover fraction * =	0.27	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	11881	lbs.

FUTURE SANTA RITA RANCH PHASE 2B

Total project area included in plan * =	9.43	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	1.93	acres
Total post-development impervious cover fraction * =	0.20	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	1680	lbs.

FUTURE SANTA RITA RANCH PHASE 2C

Total project area included in plan * =	30.36	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	10.72	acres
Total post-development impervious cover fraction * =	0.35	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	9331	lbs.

$L_{M\ TOTAL}$ = 25730 lbs.

EXISTING BATCH DETENTION POND 2A-4

EXISITNG SANTA RITA RANCH PHASE 2A, SECTION 4

Total project area included in plan * =	33.68	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	9.10	acres
Total post-development impervious cover fraction * =	0.27	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	7921	lbs.

EXISITNG SANTA RITA RANCH PHASE 2A, SECTION 5

Total project area included in plan * =	23.26	acres

Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	9.43	acres
Total post-development impervious cover fraction * =	0.41	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	8208	lbs.

EXISITNG SANTA RITA RANCH PHASE 2B, SECTION 1

Total project area included in plan * =	7.32	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	2.31	acres
Total post-development impervious cover fraction * =	0.32	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	2011	lbs.

PROPOSED SANTA RITA RANCH PHASE 2B, SECTION 2

Total project area included in plan * =	2.11	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	1.02	acres
Total post-development impervious cover fraction * =	0.48	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	888	lbs.

$L_{M\ TOTAL}$ =	19027	lbs.

CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

Appendix A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

BMP TSS Removal Worksheet

Phase 2B Section 2

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Santa Rita Ranch Phase 2B Section
Date Prepared: 12-17-2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
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Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

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

County =	Williamson	
Total project area included in plan * =	58.11	acres
Predevelopment impervious area within the limits of the plan * =	1.42	acres
Total post-development impervious area within the limits of the plan* =	16.09	acres
Total post-development impervious cover fraction * =	0.28	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	12769	lbs.

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	58.11	acres
Predevelopment impervious area within drainage basin/outfall area =	1.42	acres
Post-development impervious area within drainage basin/outfall area =	16.09	acres
Post-development impervious fraction within drainage basin/outfall area =	0.28	
$L_{M\ THIS\ BASIN}$ =	12769	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

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

4

A_C =	58.11	acres
A_I =	16.09	acres
A_P =	42.02	acres
L_R =	16872	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 12769 lbs.

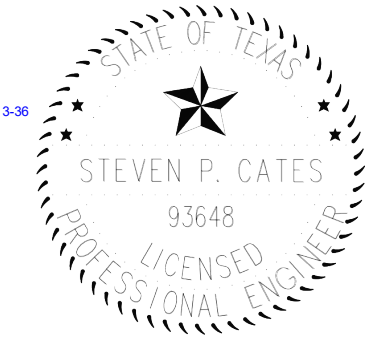
F = 0.76

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

Rainfall Depth =	0.94	inches
Post Development Runoff Coefficient =	0.25	
On-site Water Quality Volume =	48995	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	9799	
Total Capture Volume (required water quality volume(s) x 1.20) =	58794	cubic feet



CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

Appendix A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

BMP TSS Removal Worksheet

Drainage Basin Pond 14

(Overall)

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Batch detention Pond 14
Date Prepared: 12-17-2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
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Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

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

County =	Williamson	
Total project area included in plan * =	112.28	acres
Predevelopment impervious area within the limits of the plan * =	1.42	acres
Total post-development impervious area within the limits of the plan* =	30.98	acres
Total post-development impervious cover fraction * =	0.28	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	25730	lbs.

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	96.42	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	30.00	acres
Post-development impervious fraction within drainage basin/outfall area =	0.31	
$L_{M\ THIS\ BASIN}$ =	26112	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

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

4

A_C =	89.20	acres
A_I =	27.67	acres
A_P =	61.53	acres
L_R =	28847	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 25730 lbs.

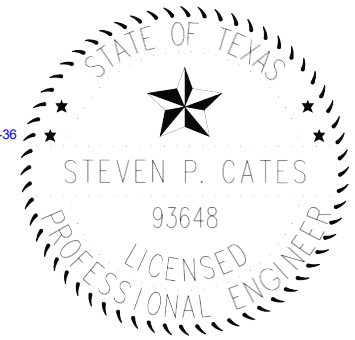
F = 0.89

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

Rainfall Depth =	1.60	inches
Post Development Runoff Coefficient =	0.26	
On-site Water Quality Volume =	136422	cubic feet

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

Off-site area draining to BMP =	7.22	acres
Off-site Impervious cover draining to BMP =	2.33	acres
Impervious fraction of off-site area =	0.32	
Off-site Runoff Coefficient =	0.27	
Off-site Water Quality Volume =	11305	cubic feet
Storage for Sediment =	29545	
Total Capture Volume (required water quality volume(s) x 1.20) =	177272	cubic feet



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ID# F-3791

12-20-2024

Appendix A

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

BMP TSS Removal Worksheet

Drainage Basin Pond 2A-4

(Overall)

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Batch Detention Pond 2A-4
Date Prepared: 12-17-2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

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

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

County =	Williamson	
Total project area included in plan * =	66.37	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	21.86	acres
Total post-development impervious cover fraction * =	0.33	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	19027	lbs.

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	54.20	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	20.49	acres
Post-development impervious fraction within drainage basin/outfall area =	0.38	
$L_{M\ THIS\ BASIN}$ =	17834	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

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

4	A_C =	54.43	acres
	A_I =	20.49	acres
	A_P =	33.94	acres
	L_R =	21178	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 19027 lbs.

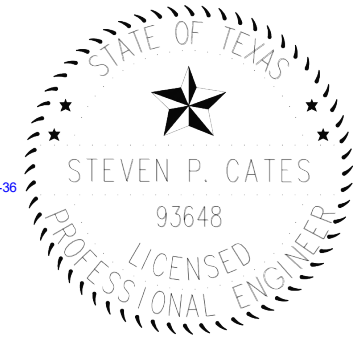
F = 0.90

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

Rainfall Depth =	1.70	inches
Post Development Runoff Coefficient =	0.30	
On-site Water Quality Volume =	99293	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	19859	
Total Capture Volume (required water quality volume(s) x 1.20) =	119151	cubic feet



CARLSON, BRIGANCE & DOERING, INC.
ID# F-3791

12-20-2024

Appendix B

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

WPAP and SCS Approval Letters

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 2, 2021

Mr. James Edward Horne
Santa Rita KC, LLC
1700 Cross Creek Lane, Suite 100
Liberty Hill, Texas 78642

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Santa Rita Ranch Phase 1 Section 14; Located North of Rosetta Loop and Tierra Rosa Blvd.; Liberty Hill (ETJ), Texas

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP) and an Organized Sewage Collection System (SCS); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program (EAPP) ID Nos. 11002420 (WPAP) and 11002421 (SCS); Regulated Entity No. RN107097248

Dear Mr. Horne:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP and SCS applications for the above-referenced project submitted to the Austin Regional Office by Carlson, Brigance & Doering, Inc. on behalf of Santa Rita KC, LLC on March 10, 2021. Final review was completed after additional material was received on May 10, 2021 and May 26, 2021. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213 and Chapter 217. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The Santa Rita Ranch Phase 1 Sections 20A, 20B, and 20C WPAP approved by letter dated July 16, 2018 (EAPP ID No. 11001069) included the construction of 112 single-family residential lots,

roads and drives, utilities, a water quality basin (Pond 20), and associated appurtenances. Pond 20 was designed to treat 75.32 acres of impervious cover from a drainage area of 160.98 acres, and constructed to have a permanent pool volume of 532,431 cf, and a water quality volume of 804,065 cf, as certified by Mr. Steve Cates, P.E. with Carlson, Brigance & Doering, Inc. on March 24, 2020.

PROJECT DESCRIPTION

The proposed single-family residential project will have an area of approximately 34.23 acres. It will include the development of 42 single-family residential lots, roads and drives, utilities, a proposed batch detention (Pond 1-14), and vegetative filter strips. The impervious cover will be 7.10 acres (20.74 percent). Batch detention 1-14 is constructed to treat stormwater runoff from future developments and is designed to have a water quality volume of 252,080 cf. It will not treat any stormwater runoff from Phase 1 Section 14, but it will be used only for detention purposes in this phase of the development.

Additionally, the proposed SCS will consist of approximately 485 linear feet of 6-inch diameter SDR 26 PVC ASTM D3034, 2,399 linear feet of 8-inch diameter SDR 26 PVC ASTM D3034, and 40 linear feet of 8-inch diameter PVC AWWA C900, with associated manholes and stub-outs.

Project wastewater will be disposed of by conveyance to the existing Liberty Hill Wastewater Treatment Plant and will comply with the City of Liberty Hill specifications.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, an existing water quality basin (modified wet basin Pond 20) and engineered vegetative filtered strips, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 6,180 pounds of TSS generated from the 7.10 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

GEOLOGY

According to the Geologic Assessment (GA) included with the application, two sensitive geologic features, sinkholes SF-20 and SR-13, are located within the boundary of the site. The site is underlain by the Edwards Group Limestone (Ked) in the Edwards Aquifer Recharge Zone. The natural buffer zone proposed for sinkholes SF-20 and SR-13 are illustrated on the Drainage Area Plan (Sheet 11 of 43) of the construction plans. No regulated activities (such as construction or soil disturbing activities) will take place within the natural buffers.

The buffer areas described above will encompass and protect sinkholes SF-20 and SR-13. Physical barriers and sediment controls such as fencing, rock berms and/or silt fences are required at the edges of these buffers prior to the commencement of construction.

The TCEQ site assessment conducted on May 7, 2021 revealed the site to be generally as described by the GA.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the 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). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director 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.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
18. No part of the system shall be used as a holding tank for a pump-and-haul operation.

After Completion of Construction:

19. 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 Austin Regional Office within 30 days of site completion.

20. The applicant shall be 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. A copy of the transfer of responsibility must be filed with the executive director through Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
21. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
22. Certification by a Texas Licensed Professional Engineer of the testing of sewage collection systems required by 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office within 30 days of test completion and prior to the new sewage collection system being put into service. The certification should include the project name as it appeared on the approved application, the program ID number, and two copies of a site plan sheet(s) indicating the wastewater lines and manholes that were tested and are being certified as complying with the appropriate regulations. 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. Should any test result fail to meet passing test criteria and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.

    Every five years after the initial certification, the sewage collection system shall be retested. Any lines that fail the test must be repaired and retested. Certification that the system continues to meet the requirements of 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office. The certification should include the project name as it appeared on the approved application, the program ID number and two copies of a site plan sheet(s) indicating the wastewater lines and manholes that were tested and are being certified as complying with the appropriate regulations. Should any test result fail to meet passing test criteria, and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.
23. If ownership of this organized sewage collection system is legally transferred (e.g., developer to city or Municipal Utility District), the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
24. An Edwards Aquifer protection plan approval or extension will expire, and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

25. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Mihaela (Miki) Chilarescu, P.E. of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Lori Wilson for

David Van Soest
Regional Director
Austin and Waco Regions
Texas Commission on Environmental Quality

DVS/mec

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 5, 2021

Mr. James Edward Horne
SRFV Development, LLC
1700 Cross Creek Ln., Ste. 100
Liberty Hill, Texas 78642

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Santa Rita Ranch Phase 2A Section 4; Located E. of Ronald Reagan Blvd. and Tower Rd.; Liberty Hill, Texas

TYPE OF PLAN: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Edwards Aquifer Protection Program ID No. 11002666; Regulated Entity No. RN110918299

Dear Mr. Horne:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP application for the above-referenced project submitted to the Austin Regional Office by Carlson, Brigance & Doering, Inc. on behalf of SRFV Development, LLC on September 3, 2021. Final review of the CZP was completed after additional material was received on October 26, 2021. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected, and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed, and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The Santa Rita Ranch Phase 2A Section 1 CZP approved by letter dated March 6, 2020 (EAPP ID No. 11001858) included the construction of roadways, utilities, and a water quality basin. The water quality basin was designed to treat 25.85 acres of impervious cover from a drainage area of 72.38 acres.

PROJECT DESCRIPTION

The proposed residential project will have an area of approximately 35.33 acres. It will include 60 single-family lots, water and wastewater utilities, roadways, and a water quality basin (Pond 2A-4). The impervious cover will be 11.35 acres (32.13 percent). Project wastewater will be disposed of by conveyance to the existing Liberty Hill Wastewater Treatment Plant.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, an existing batch detention basin (Pond 1, EAPP ID 11001858) and a proposed batch detention basin (Pond 2A-4), designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be utilized to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 9,879 pounds of TSS generated from the 11.35 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

SPECIAL CONDITIONS

I. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

II. All sediment and/or media removed from the water quality basin during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number

for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

<u>During Construction:</u>

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the 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). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. 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).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director 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. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.
15. The applicant shall be 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. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire, and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Colin Gearing of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Lillian Butler

Lillian Butler, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

Enclosure: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

Cc: Mr. Steven P. Cates, P.E., Carlson, Brigance and Doering, Inc.

Appendix C

TCEQ WPAP & SCS APPLICATION

Santa Rita Ranch Phase 2B Section 2

Williamson County, Texas

Water Quality Calculation

Spreadsheet

SANTA RITA RANCH PHASE 2B SECTION 2

Table 1 - Impervious Cover per Section

Contributing Sections	TCEQ Project Area Per Section						Onsite Drainage Basin to BMP Per Section						TSS Removal Required (lbs)
	Project Area (ac)	# Lots	Impervious Areas (ac)				Drainage Basin (ac)	# Lots	Impervious Areas (ac)				
			Lots	ROW	Misc.	Total			Lots	ROW	Misc.	Total	
EXISTING BATCH DETENTION POND 14													
2B-1	16.49	24	2.07	1.19	0.00	3.26	13.77	24	2.07	1.19	0.00	3.26	2,838
2B-2	56.00	95	8.18	6.89	0.00	15.07	35.64	73	6.29	5.47	0.00	11.76	11,881
FUTURE 2B	9.43	19	1.62	0.31	0.00	1.93	9.43	19	1.62	0.31	0.00	1.93	1,680
FUTURE 2C	30.36	81	6.92	3.80	0.00	10.72	30.36	81	6.92	3.80	0.00	10.72	9,331
EXISTING BATCH DETENTION POND 2A-4													
2A-4	33.68	60	5.18	3.92	0.00	9.10	23.74	51	4.43	3.92	0.00	8.35	7,921
2A-5	23.26	70	5.89	3.54	0.00	9.43	21.03	63	5.27	3.54	0.00	8.81	8,208
2B-1	7.32	22	1.85	0.46	0.00	2.31	7.32	22	1.85	0.46	0.00	2.31	2,011
2B-2	2.11	0	0.00	1.02	0.00	1.02	2.11	0	0.00	1.02	0.00	1.02	888
SANTA RITA RANCH PHASE 2B SECTION 2													
2B-2	58.11	95	8.18	7.91	0.00	16.09							12,769

Table 2 - BMP Treatment Requirements

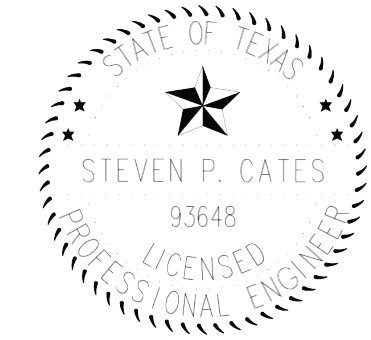
Project Area			Drainage Basin						Batch Pond	
			Onsite		Offsite		Total		Capacity at WQV (cf)	
Total (ac)	Impv Area (ac)	Required TSS Removal (lbs)	Total (ac)	Impv Area (ac)	Total (ac)	Impv Area (ac)	Total (ac)	Impv Area (ac)	Required	Provided
EXISTING BATCH DETENTION POND 14										
112.28	30.98	25,730	89.20	27.67	7.22	2.33	96.42	30.00	177,272	252,080
EXISTING BATCH DETENTION POND 2A-4										
66.37	21.86	19,027	54.20	20.49	0.00	0.00	54.20	20.49	119,151	142,457

Existing Pond 14 Stage-Storage

Stage	Area (sf)	Area (ac)	Incremental Storage (cf)	Cumulative Storage (cf)	Cumulative Storage (ac-ft)	
908.00	15	0.00	0	0	0.00	Pond Bottom
909.00	19,760	0.45	9,888	9,888	0.23	
910.00	56,080	1.29	37,920	47,808	1.10	
911.00	106,887	2.45	81,484	129,291	2.97	
912.00	138,690	3.18	122,789	252,080	5.79	WQV Provided
913.00	152,718	3.51	145,704	397,784	9.13	
914.00	159,076	3.65	155,897	553,681	12.71	
915.00	164,387	3.77	161,732	715,412	16.42	
916.00	169,681	3.90	167,034	882,446	20.26	
917.00	175,069	4.02	172,375	1,054,821	24.22	
918.00	182,603	4.19	178,836	1,233,657	28.32	Top of Berm

Existing Pond 2A-4 Stage-Storage

Stage	Area (sf)	Area (ac)	Incremental Storage (cf)	Cumulative Storage (cf)	Cumulative Storage (ac-ft)	
850.00	25	0.00	0	0	0.00	Pond Bottom
851.00	11,950	0.27	5,988	5,988	0.14	
852.00	26,695	0.61	19,323	25,310	0.58	
853.00	39,841	0.91	33,268	58,578	1.34	
854.00	47,836	1.10	43,839	102,417	2.35	
854.80				142,457		WQV Provided
855.00	52,264	1.20	50,050	152,467	3.50	
856.00	56,759	1.30	54,512	206,978	4.75	
857.00	61,326	1.41	59,043	266,021	6.11	Top of Berm



CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

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

I James Edward Horne,
Print Name

Vice President,
Title - Owner/President/Other

of SRFV Development, LLC,
Corporation/Partnership/Entity Name

have authorized Steven P. Cates, P.E.
Print Name of Agent/Engineer

of Carlson, Brigance & Doering, Inc.
Print Name of Firm

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

I also understand that:

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

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

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

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

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

SIGNATURE PAGE:

Applicant's Signature

11-26-2024
Date

THE STATE OF TEXAS §

County of TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared JAMES EDUARDO HORNE 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 26th day of Nov., 2024.

SUSAN O MARTIN
Notary Public, State of Texas
My Commission Expires
November 07, 2027
NOTARY ID 10425934

NOTARY PUBLIC

SUSAN O. MARTIN
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 11/07/2027

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Santa Rita Ranch Phase 2B Section 2
Regulated Entity Location: South of Ex. Tower Rd, East of Flower Valley Pkwy
Name of Customer: SRFV Development, LLC.
Contact Person: James Edward Horne Phone: 512-280-5160
Customer Reference Number (if issued):CN 605894914
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	58.11 Acres	$ 6,500
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	6,686 L.F.	$ 3,343.00
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____

Date: 12/20/2024

Application Fee Schedule

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	***Fee***
Extension of Time Request	$150

TCEQ Core Data Form

TCEQ Use Only

For detailed instructions regarding completion of 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 605894914		RN

SECTION II: Customer Information

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

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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

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

SRFV Development, LLC

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
800901906	32034201288	203420128	N/A

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ 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 ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

1700 Cross Creek Lane

Suite 100

City	State	ZIP	ZIP + 4
Liberty Hill	TX	78642	

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 502-2050		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☒ 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 Agency 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.)*

Santa Rita Ranch Phase 2B Section 2

23. Street Address of the Regulated Entity: *(No PO Boxes)*								
	City		**State**		**ZIP**		**ZIP + 4**	
24. County								

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	South of Ex. Tower Rd, East of Flower Valley Parkway

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

27. Latitude (N) In Decimal:	30.679247	**28. Longitude (W) In Decimal:**	-97.827000

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	40	45.29	97	49	37.20

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)
1521		236115	

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

Single Family Residential Development

34. Mailing Address:	**Santa Rita KC, LLC**							
	1700 Cross Creek Lane, Suite 100							
	City	**Liberty Hill**	**State**	**TX**	**ZIP**	**78642**	**ZIP + 4**	
35. E-Mail Address:	**ed@srraustin.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 502-2050		**( ) -**

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	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Steven P. Cates, P.E.	**41. Title:**	Senior Project Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 280-5160		(512) 280-5165	steve@cbdeng.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:	Carlson, Brigance & Doering, Inc.	**Job Title:**	Senior Project Engineer
Name*(In Print)* **:**	Steven P. Cates	**Phone:**	(512) 280-5160
Signature:		**Date:**	12/20/2024

SANTA RITA RANCH
PHASE 2B SECTION 2

WILLIAMSON COUNTY, TEXAS
CONSTRUCTION PLANS

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN ACCEPTING THESE PLANS, WILLIAMSON COUNTY MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR 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.

SUBMITTED BY:

12-20-2024

STEVEN P. CATES, P.E. *DATE*
REGISTERED PROFESSIONAL ENGINEER No. 93648

ACCEPTED FOR CONSTRUCTION (PROJECT 2025- -WD):

CITY OF GEORGETOWN (2024-88-WD) *DATE*
(WATER SYSTEM ONLY)

ACCEPTED FOR CONSTRUCTION (PROJECT 2025- -CON):

JENNIFER GLAESS, P.E., PUBLIC WORKS DIRECTOR *DATE*
(WASTEWATER SYSTEM PLAN)

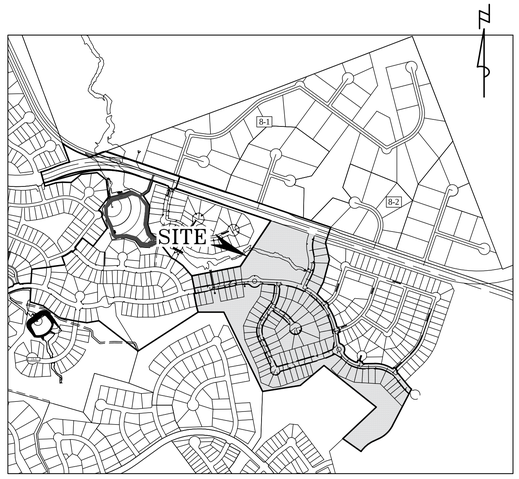
PAUL BRANDENBURG, CITY MANAGER *DATE*
(WASTEWATER SYSTEM PLAN)

Based on the design engineer's certification of compliance with all applicable City, State and Federal regulations 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.

REVIEWED FOR COMPLIANCE WITH COUNTY REQUIREMENTS (WCSR 2021B):

FOR WILLIAMSON COUNTY *DATE*

WILLIAMSON COUNTY M.U.D. #19C *DATE*



LOCATION MAP
SCALE: 1" = 500'

WATER POLLUTION ABATEMENT PLAN AND ORGANIZED SEWAGE COLLECTION SYSTEM PLAN
APPROVED BY TCEQ ON _____, 2024
30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 213 AND CHAPTER 217 EDWARDS AQUIFER
EDWARDS AQUIFER PROTECTION PROGRAM ID NO. _____ (WPAP) AND _____ (SCS)

OWNER:

SRFV DEVELOPMENT, LLC.,
1700 CROSS CREEK DRIVE, STE. 100
LIBERTY HILL, TX 78642

ENGINEER & SURVEYOR:
CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE
AUSTIN, TEXAS 78749
(512) 280-5160 phone
(512) 280-5165 fax

TOTAL ACREAGE: 58.109 ACRES

SURVEY: GEORGE W. GLASSCOCK SURVEY, ABSTRACT NO. 266 AND
WILLIAM W. SMITH SURVEY, ABSTRACT NO. 591

F.E.M.A. MAP NO. 48491C 0275E
WILLIAMSON COUNTY, TEXAS AND
INCORPORATED AREAS.
DATED: SEPTEMBER 26, 2008

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

SHEET INDEX

REV. NO.	SHT. NO.	DESCRIPTION OF REVISION	ACCEPTED	DATE	ACCEPTED	DATE	ACCEPTED	DATE	ACCEPTED	DATE
			WILLIAMSON COUNTY		CITY OF GEORGETOWN		CITY OF LIBERTY HILL		W.C. M.U.D. #19C	

DESIGNED BY: SPC
DRAFTED BY: CEJ

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas
Phone No. (512) 280-5160
North Office
12129 RR 620 N. Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: COVER SHEET
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 1 OF 70
SHEET NO.: 1

FILE PATH:J:\ACD\5559\dwg\5559-COVER.dwg - Dec 23, 2024 - 8:50am

CONSTRUCTION SEQUENCING

1. GENERAL CONTRACTOR TO INSTALL AND MAINTAIN EROSION CONTROLS AND TREE PROTECTION PER APPROVED PLANS.
2. HOLD PRE-CONSTRUCTION CONFERENCE. PROVIDE 72 HOUR NOTIFICATION TO THE OWNER, THE DESIGN ENGINEER, THE CONTRACTOR AND SUBCONTRACTORS, THE M.U.D. ENGINEER (512) 836-4817, THE CITY OF LIBERTY HILL (512) 778-5449, (WAYNE BONNET, DIRECTOR OF PUBLIC WORKS), WILLIAMSON COUNTY INSPECTIONS SUPERVISOR, GEORGE MAYFIELD (512) 943-3324, AND THE CITY OF GEORGETOWN UTILITY SYSTEM (512)930-3640. SEE WILLIAMSON COUNTY SUBDIVISION REGULATIONS CONSTRUCTION-GENERAL NOTE #1 ON THIS SHEET.
3. ROUGH CUT ALL REQUIRED OR NECESSARY PONDS. EITHER THE PERMANENT OUTLET STRUCTURE OR A TEMPORARY OUTLET MUST BE CONSTRUCTED PRIOR TO DEVELOPMENT OF ANY EMBANKMENT OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF A LOW-LEVEL OUTLET AND AN EMERGENCY OVERFLOW. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION UNTIL FINAL RESTORATION IS ACHIEVED.
4. ROUGH GRADE STREETS. NO DEVELOPMENT OF EMBANKMENT WILL BE PERMITTED AT THIS TIME. ONCE STREETS ARE ROUGH CUT, THE GEOTECHNICAL ENGINEER IS TO FIELD VERIFY PAVEMENT DESIGN IS APPROPRIATE, AND MODIFY RECOMMENDATIONS ACCORDINGLY.
5. INSTALL ALL UTILITIES UNDER THE PROPOSED PAVEMENT.
6. BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE AS MUCH DISTURBED AREA AS MUCH AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.
7. REGRADE STREETS TO SUBGRADE.
8. INSURE THAT ALL UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY FIRST COURSE BASE MATERIAL ON ALL STREETS.
9. INSTALL CURB AND GUTTER.
10. LAY FINAL BASE COURSE ON ALL STREETS.
11. LAY ASPHALT.
12. COMPLETE ALL UNDERGROUND INSTALLATIONS WITHIN THE R.O.W.
13. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.
14. THE PROJECT ENGINEER INSPECTS JOB AND WRITES CONCURRENCE LETTER TO THE CITY. FINAL INSPECTION IS SCHEDULED UPON RECEIPT OF LETTER. FINAL INSPECTION WITH THE M.U.D. ENGINEER, EV INSPECTOR, THE CITY OF LIBERTY HILL, WILLIAMSON COUNTY, AND THE CITY OF GEORGETOWN PRIOR TO THE REMOVAL OF EROSION CONTROLS.
15. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS. TREE PROTECTION SHALL BE REQUIRED TO BE MAINTAINED AND REMAIN IN PLACE FOR EACH RESIDENTIAL LOT THROUGH RECEIPT OF THE CONCURRENCE LETTER TO THE RESIDENTIAL CERTIFICATE OF OCCUPANCY.
16. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED BY ITEM 15.

GEORGETOWN UTILITY SYSTEMS GENERAL NOTES:

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT OF THE CITY.
3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.
4. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.
5. 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.
6. PUBLIC WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.
7. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRINED AND THRUST BLOCKED.
8. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
9. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.
10. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.
11. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO TEH CITY PRIOR TO APPROVAL OF THE PUBLIC IMPROVMENTS. THIS BOND SHALL BE ESTABLISHED FOR 2 YEARS IN THE AMOUNT OF 10% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.
12. RECORD DRAWINGS OF THE PUBLIC IMPROVMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTACNE OF THE PROJECT. THESE DRAWINGS SHALL BE SUBMITTED AS A PDF (300P DPI) ON A FLASH DRIVE, OR BY A CLOUD SOURCE.

STREET AND DRAINAGE NOTES:

1. ROADWAY CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT "WILLIAMSON COUNTY SUBDIVISION REGULATIONS," AS APPLICABLE.
2. ALL MATERIALS SHALL BE SAMPLED AND TESTED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE COUNTY ENGINEER. THE OWNER SHALL PAY FOR ALL TESTING SERVICES AND SHALL FURNISH THE COUNTY ENGINEER WITH CERTIFIED COPIES OF THESE TEST RESULTS. ANY RETESTING SHALL BE PAID FOR BY THE CONTRACTOR. THE COUNTY ENGINEER MUST APPROVE THE TEST RESULTS PRIOR TO CONSTRUCTING THE NEXT COURSE OF THE ROADWAY STRUCTURE. ANY MATERIAL WHICH DOES NOT MEET THE MINIMUM REQUIRED TEST SPECIFICATIONS SHALL BE REMOVED AND RECOMPACTED OR REPLACED UNLESS ALTERNATIVE REMEDIAL ACTION IS APPROVED IN WRITING FROM THE COUNTY ENGINEER.
3. 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.
4. 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.
5. 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 COUNTY ENGINEER. BARRICADES BUILT TO WILLIAMSON COUNTY 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, UNLESS OTHERWISE NOTED.
7. THE PREPARATION OF SUBGRADE SHALL FOLLOW GOOD ENGINEERING PRACTICES AS DIRECTED BY THE COUNTY ENGINEER AND IN CONJUNCTION WITH THE OUTLINED IN THE GEOTECHNICAL REPORT BY MLA LABS, INC., DATED MARCH 13, 2023. THE PAVING SECTIONS ARE TO BE CONSTRUCTED AS FOLLOWS:

RECOMMENDATIONS PAVEMENT THICKNESS SECTIONS

Street Classification	Subgrade Material	Hot Mix Asphaltic Concrete, in	Crushed Limestone Base, in	Lime Stabilized Subgrade, in
Local Streets	Subgrade PI < 20	2.0	12	–
	Subgrade 20 < PI < 35	2.0	12	8
	Subgrade 35 < PI < 55	2.0	14	8
Collectors	Subgrade PI < 20	2.0	14	–
	Subgrade 20 < PI < 35	2.0	17	8
	Subgrade 35 < PI < 55	2.0	17	8

Notes:
1. Where the subgrade is comprised of limestone or low PI clay (PI < 20), lime stabilization may be omitted.
2. The surface clay must first be tested for sulfate reaction and a mix design should be completed to determine the proper lime content, lime bype, mixing procedure and curing conditions required.
3. The subgrade improvement should be extended a min. 18" beyound the back of curb line, unless lime treatments being used, base should extended 3 feet beyond the back of the curb line.
4. These pavement thickness designs are intended to transfer the load from the anticipated traffic conditions.
5. The responsibility of assigning street classification to the streets in this project is left to the civil engineer.
6. If pavement designs other than those listed above are desired, please contact MLA labs, inc.

THE GEOTECHNICAL ENGINEER SHALL INSPECT THE SUBGRADE FOR COMPLIANCE WITH THE DESIGN ASSUMPTIONS MADE DURING PREPARATION OF THE SOILS REPORT. ANY ADJUSTMENTS THAT ARE REQUIRED SHALL BE MADE THROUGH REVISION OF THE CONSTRUCTION PLANS.

8. WHERE PI'S ARE OVER 20, SUBGRADES MUST BE STABILIZED UTILIZING A METHOD ACCEPTABLE TO THE COUNTY ENGINEER. THE GEOTECHNICAL ENGINEER SHALL RECOMMEND AN APPROPRIATE SUBGRADE STABILIZATION IF SULFATES ARE DETERMINED TO BE PRESENT. SEE THE GEOTECHNICAL REPORT FOR DESIGN GUIDES FOR DIFFERENT PI VALUES.
9. CONTRACTOR IS TO AVOID INSTALLATION OF IRRIGATION, PLANTINGS, SILT FENCE, ETC. IN THE SUBGRADE IMPROVEMENT EXTENDED BEHIND THE CURB.

PER THE WILLIAMSON COUNTY ENGINEER, THERE MUST BE A TxDOT HMAC WEARTING SURFACE 340 TYPE D, WITHOUT "RAS". WILLIAMSON COUNTY REQUIRES THE 2 INCH WEARING SURFACE TO BE "VIRGIN MIX"

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH WILLIAMSON COUNTY, CITY OF ROUND ROCK (WASTEWATER), AND GEORGETOWN UTILITY SYSTEMS (WATER) SPECIFICATIONS.
2. DESIGN PROCEDURES ARE IN COMPLETE COMPLIANCE WITH THE CITY OF AUSTIN DRAINAGE CRITERIA MANUAL AND ALL VARIANCES TO THE MANUAL ARE NOTED. VARIANCES REQUESTED: (NONE)
3. 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 THE CONTRACTOR'S EXPENSE.
4. 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. FAILURE TO COMPLETE THIS STEP PRIOR TO THE COMMENCEMENT OF CONSTRUCTION MAY RESULT IN SIGNIFICANT DELAYS AND OR EXPENDITURES FOR WHICH THE CITY SHALL NOT BE LIABLE.
5. MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, ETC. SHALL BE RAISED TO FINISHED GRADE PRIOR TO FINAL PAVING CONSTRUCTION.
6. THE CONTRACTOR SHALL GIVE THE CITY OF LIBERTY HILL 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. TELEPHONE 512-778-5449 (PLANNING & DEVELOPMENT DEPARTMENT)
7. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THIS INCLUDES ANY AREAS LOCATED OUTSIDE THE DEFINED LIMITS OF CONSTRUCTION (LOC), IN RIGHTS-OF-WAY (ROW), OR LOCATED ON ADJACENT PROPERTIES. REVEGETATION OF ALL DISUBED OR EXPOSED AREAS SHALL CONSIST OF SODDING OR SEEDING, AT THE CONTRACTOR'S DISCREPANCY, AS OUTLINED IN THE CITY OF ROUND ROCK'S DESIGN AND CONSTRUCTION STANDARDS. THE TYPE OF REVEGETATION MUST EQUIVALENT TO OR EXCEED THE TYPE OF VEGETATION PRESENT PRIOR TO CONSTRUCTION.
8. THE CONTRACTOR AND THE ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF LIBERTY HILL ACCURATE "AS-BUILT" DRAWINGS FOLLOWING COMPLETION OF ALL CONSTRUCTION. THESE "AS-BUILT" DRAWINGS SHALL MEET WITH THE SATISFACTION OF THE PLANNING & DEVELOPMENT DEPARTMENT PRIOR TO FINAL APPROVAL.
9. THE LIBERTY HILL CITY COUNCIL SHALL NOT BE PETITIONED FOR APPROVAL 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 APPROVAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. CLEANUP SHALL BE TO THE SATISFACTION OF THE COUNTY ENGINEER.
11. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL APPLY FOR AND SECURE ALL PROPER PERMITS FROM THE APPROPRIATE AUTHORITIES.
12. AVAILABLE BENCHMARKS THAT MAY BE UTILIZED FOR THE CONSTRUCTION OF THIS PROJECT ARE DESCRIBED AS FOLLOWS:

BENCHMARKS:

Point #	DESCRIPTION	ELEVATION	NORTHING	EASTING
55004	MAG NAIL SET ON TRANSFORMER PAD AT NE CORNER OF E. SANTA RITA BLVD. AND SINGING DOVE WAY	1,020.29	10,210,674.0710	3,084,333.0300
55006	MAG NAIL SET ON TOP OF CURB ON THE NORTH SIDE OF E. SANTA RITA BLVD. EAST OF MIRA MESA DRIVE	1,002.99	10,211,255.7040	3,085,781.6710

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.
2. IN ACCORDANCE WITH THE U. S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, WHEN PERSONS ARE IN TRENCHES 4-FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.
3. IF TRENCH SAFETY SYSTEM DETAILS WERE NOT PROVIDED IN THE PLANS BECAUSE TRENCHES WERE ANTICIPATED TO BE LESS THAN 5 FEET IN DEPTH AND DURING CONSTRUCTION IT IS FOUND THAT TRENCHES ARE IN FACT 5 FEET OR MORE IN DEPTH OR TRENCHES LESS THAN 5 FEET IN DEPTH ARE IN AN AREA WHERE HAZARDOUS GROUND MOVEMENT IS EXPECTED, ALL CONSTRUCTION SHALL CEASE, THE TRENCHED AREA SHALL BE BARRICADED AND THE ENGINEER NOTIFIED IMMEDIATELY. CONSTRUCTION SHALL NOT RESUME UNTIL APPROPRIATE TRENCH SAFETY SYSTEM DETAILS, AS DESIGNED BY A PROFESSIONAL ENGINEER, ARE RETAINED AND COPIES SUBMITTED TO THE CITY OF LIBERTY HILL.

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 OF LIBERTY HILL 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 OF LIBERTY HILL 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.

WILLIAMSON COUNTY SUBDIVISION REGULATIONS
APPENDIX B
ADOPTED AND EFFECTIVE AS OF JUNE 22, 2021

B4 – CONSTRUCTION – GENERAL

B4.1 A PRECONSTRUCTION MEETING SHALL BE SCHEDULED PRIOR TO THE START OF CONSTRUCTION. THE DESIGN ENGINEER, OWNER, CONTRACTOR, SUBCONTRACTORS, AND COUNTY ENGINEER SHALL ATTEND THIS MEETING. ALL ROADS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AS APPROVED BY THE COUNTY ENGINEER AND IN ACCORDANCE WITH THE SPECIFICATIONS FOUND IN THE CURRENT VERSION OF THE "TEXAS DEPARTMENT OF TRANSPORTATION MANUAL STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES" UNLESS OTHERWISE STATED ON THE CONSTRUCTION DOCUMENTS APPROVED BY THE COUNTY ENGINEER.

B4.2 ALL MATERIALS SHALL BE SAMPLED AND TESTED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE COUNTY ENGINEER. THE OWNER SHALL PAY FOR ALL TESTING SERVICES AND SHALL FURNISH THE COUNTY ENGINEER WITH CERTIFIED COPIES OF THESE TEST RESULTS. THE COUNTY ENGINEER MUST APPROVE THE TEST RESULTS PRIOR TO CONSTRUCTING THE NEXT COURSE OF THE ROADWAY STRUCTURE. ANY MATERIAL WHICH DOES NOT MEET THE MINIMUM REQUIRED TEST SPECIFICATIONS SHALL BE REMOVED AND RECOMPACTED OR REPLACED UNLESS ALTERNATIVE REMEDIAL ACTION IS APPROVED IN WRITING FROM THE COUNTY ENGINEER.

B4.3 EXCEPT FOR ELECTRICAL LINES, ALL UNDERGROUND NONFERROUS UTILITIES WITHIN A RIGHT-OF-WAY OR EASEMENT MUST BE ACCOMPANIED BY FERROUS METAL LINES TO AID IN TRACING THE LOCATION OF SAID UTILITIES THROUGH THE USE OF A METAL DETECTOR.

B4.4 ALL PAVEMENTS ARE TO BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER. THE DESIGN SHALL BE BASED ON A 20-YEAR DESIGN LIFE AND IN CONJUNCTION WITH RECOMMENDATIONS BASED UPON A SOILS REPORT OF SAMPLES TAKEN ALONG THE PROPOSED ROADWAYS. TEST BORINGS SHALL BE PLACED AT A MAXIMUM SPACING OF 500 FEET OR OTHER SAMPLING FREQUENCY APPROVED BY THE COUNTY ENGINEER BASED ON RECOMMENDATIONS PROVIDED BY THE GEOTECHNICAL ENGINEER. BORINGS SHALL BE TO A DEPTH OF TEN FT OR, IF SOLID ROCK IS ENCOUNTERED, ONE FT BELOW NON-FRACTURED ROCK. THE SOILS REPORT AND PAVEMENT DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR REVIEW. THE PAVEMENT DESIGN MUST BE APPROVED BY THE COUNTY ENGINEER PRIOR TO OR CONCURRENTLY WITH THE REVIEW AND APPROVAL OF THE CONSTRUCTION PLANS. IN ADDITION TO THE BASIS OF THE PAVEMENT DESIGN, THE SOILS REPORT SHALL CONTAIN THE RESULTS OF SAMPLED AND TESTED SUBGRADE FOR PLASTICITY INDEX.

B5 – SUBGRADE

B5.1 THE PREPARATION OF THE SUBGRADE SHALL FOLLOW GOOD ENGINEERING PRACTICES AS DIRECTED BY THE COUNTY ENGINEER IN CONJUNCTION WITH RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT. WHEN THE PLASTICITY INDEX (PI) IS GREATER THAN 20, A SUFFICIENT AMOUNT OF LIME SHALL BE ADDED AS DESCRIBED IN ITEM 260 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNTIL THE PI IS LESS THAN 20. IF THE ADDITION OF LIME AS DESCRIBED IN ITEM 260 IS NOT FEASIBLE, AN ALTERNATE STABILIZING DESIGN SHALL BE PROPOSED AND SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL. THE SUBGRADE SHALL BE PREPARED AND COMPACTED TO ACHIEVE A DRY DENSITY PER TXDOT ITEM 132. IN ADDITION, PROOF ROLLING MAY BE REQUIRED BY THE COUNTY ENGINEER.

B5.2 IF LIME IS NECESSARY, THEN A SUFFICIENT AMOUNT OF LIME SHALL BE ADDED, AS DESCRIBED IN ITEM 260 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION TO PROPERLY STABILIZE SUBGRADE. THE USE OF HYDRATED LIME OR LIME SLURRY IS APPROVED; HOWEVER, THE USE OF PELLETIZED LIME IS NOT APPROVED.

B5.3 PRIOR TO LIME STABILIZATION, A SULFATE TEST OF IN SITU SOILS SHALL BE PERFORMED BY DEVELOPER TO CONFIRM THE APPROPRIATE MEANS AND METHODS OF STABILIZATION. PROVIDE SULFATE TEST TO COUNTY ENGINEER PRIOR TO STABILIZATION.

B5.4 ANY VARIATION TO THE COUNTY'S STABILIZATION REQUIREMENTS MUST BE APPROVED BY THE COUNTY ENGINEER.

B5.5 THE SUBGRADE SHALL BE PREPARED AND COMPACTED TO ACHIEVE A DRY DENSITY PER TXDOT ITEM 132. IN ADDITION, PROOF ROLLING MAY BE REQUIRED BY THE COUNTY ENGINEER.

B5.6 THE SUBGRADE SHALL BE INSPECTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY AND A CERTIFIED COPY OF ALL INSPECTION REPORTS FURNISHED TO THE COUNTY ENGINEER. THE COUNTY ENGINEER MUST APPROVE THE REPORT PRIOR TO APPLICATION OF THE BASE MATERIAL. ALL DENSITY TEST REPORTS SHALL INCLUDE A COPY OF THE WORK SHEET SHOWING THE PERCENTAGE OF THE MAXIMUM DRY (PROCTOR) DENSITY. THE NUMBER AND LOCATION OF ALL SUBGRADE TESTS SHALL BE DETERMINED BY THE COUNTY ENGINEER.

B6 – BASE MATERIAL

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

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

B6.2 EACH LAYER OF BASE COURSE SHALL BE TESTED FOR IN-PLACE DRY DENSITY AND MEASURED FOR COMPACTED THICKNESS. THE NUMBER AND LOCATION OF ALL BASE TEST SAMPLES SHALL BE DETERMINED BY THE COUNTY ENGINEER.

B6.3 THE BASE SHALL BE PREPARED AND COMPACTED TO ACHIEVE A MINIMUM OF 100% OF THE MAXIMUM (PROCTOR) DRY DENSITY OR AS APPROVED BY THE COUNTY ENGINEER UPON RECOMMENDATION BY THE TESTING LABORATORY. THE MAXIMUM LIFT SHALL NOT EXCEED SIX INCHES. THE BASE MUST BE INSPECTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY AND A CERTIFIED COPY OF THE TEST RESULTS FURNISHED TO THE COUNTY ENGINEER FOR APPROVAL. PRIOR TO THE PLACEMENT OF THE FIRST LIFT OF BASE, THE STOCKPILE SHALL BE TESTED FOR THE SPECIFICATIONS FOUND IN ITEM 247 TABLE 1 AND THE RESULT FURNISHED TO THE COUNTY ENGINEER FOR APPROVAL.

B7 – BITUMINOUS PAVEMENT

B7.1 URBAN ROADS REQUIRE A MINIMUM 2 INCH WEARING SURFACE OF HMAC TYPE D. THE MIX SHALL BE FROM A TXDOT CERTIFIED PLANT AND THE MIX DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.

B7.2 IF PROVIDING MIXTURE TYPE C OR D, USE PERFORMANCE GRADE (PG) BINDER 70-22. PROVIDE PG BINDER THAT DOES NOT CONTAIN RECYCLED ENGINE OIL BOTTOMS (REOBS) OR POLY PHOSPHORIC ACID (PPA). RECYCLED ASPHALT PAVEMENT (RAP) IS NOT PERMITTED FOR USE AS A COMPONENT OF THE HMACP. THE CONTRACTOR IS ALSO NOT PERMITTED THE USE RECYCLED ASPHALT SHINGLES (RAS) AS A COMPONENT OF THE HMACP.

B7.3 IF PROVIDING MIXTURE TYPE B, USE PG BINDER 64-22. PROVIDE PG BINDERS THAT DO NOT CONTAIN REOBS OR PPA. FOR SUBSURFACE COURSE TYPE B, THE USE OF TWENTY PERCENT (20%) RAP IS PERMITTED IN THE MIX DESIGN. THE CONTRACTOR IS NOT PERMITTED TO USE RAS AS A COMPONENT OF THE HMACP.

B7.4 TARGET LABORATORY MOLDED DENSITY IS 96.5% FOR ALL MIXTURES WITHOUT RAP AND WHEN USING A TEXAS GYRATORY COMPACTOR (TGC) FOR DESIGNING THE MIXTURE. WHEN USING SUPERPAVE GYRATORY COMPACTOR (SGC) TO DESIGN MIXTURES, SUBMIT THE SGC MIX DESIGN TO THE ENGINEER FOR APPROVAL.

B7.5 ALL MIXTURES MUST MEET THE HAMBURG REQUIREMENT AS STATED IN THE TABLE BELOW.

HIGH-TEMPERATURE BINDER GRADE	TEST METHOD	MINIMUM # OF PASSES @ 0.5" RUT DEPTH (TESTED @ 122°F)
PG 64 OR LOWER	TEX-242-F	7,000
PG 70	TEX-242-F	15,000
PG-76 OR HIGHER	TEX-242-F	20,000

* THE COUNTY ENGINEER MAY ACCEPT HAMBURG WHEEL TEST RESULTS FOR PRODUCTION AND PLACEMENT IF NO MORE THAN 1OF THE 5 MOST RECENT TESTS IS BELOW THE SPECIFIED NUMBER OF PASSES AND THE FAILING TEST IS NO MORE THAN 2,000 PASSES BELOW THE SPECIFIED NUMBER OF PASSES.

B7.6 SUBMIT ANY PROPOSED ADJUSTMENTS OR CHANGES TO A JOB MIX FORMULA TO THE COUNTY ENGINEER BEFORE PRODUCTION OF THE NEW JOB MIX FORMULA.

B7.7 UNLESS OTHERWISE APPROVED, PROVIDE TYPE B MIXTURES THAT HAVE NO LESS THAN 4.5% ASPHALT BINDER, AND TY C AND D MIXTURES WITH NO LESS THAN 4.7% BINDER.

B7.8 FOR MIXTURE DESIGN VERIFICATION, PROVIDE THE ENGINEER WITH TWO 5-GALLON BUCKETS OF EACH AGGREGATE STOCKPILE TO BE USED ON THE PROJECT AND THREE GALLONS OF EACH PG BINDER TO BE USED ON THE PROJECT. ALSO PROVIDE SUFFICIENT QUANTITIES OF ANY OTHER ADDITIVES THAT WILL BE USED IN THE HMA MIXTURE. THIS MUST BE DONE PRIOR TO APPROVAL OF THE MIX DESIGN, UNLESS ALREADY PERFORMED WITHIN A ONE-YEAR TIME PERIOD.

B7.9 PRIOR TO ALLOWING PRODUCTION OF THE TRIAL BATCH, THE ENGINEER WILL USE THE MATERIALS PROVIDED BY THE CONTRACTOR TO PERFORM THE FOLLOWING TESTS TO VERIFY THE HMA MIXTURE DESIGN.
1. INDIRECT TENSILE TEST IN ACCORDANCE WITH TEX-226-F
2. HAMBURG WHEEL TEST IN ACCORDANCE WITH TEX-242-F
3. OVERLAY TEST IN ACCORDANCE WITH TEX-248-F
4. CANTABRO TEST IN ACCORDANCE WITH TEX-245-F

FOR MIXTURES DESIGNED WITH A TEXAS GYRATORY COMPACTOR (TGC), THE ENGINEER MAY REQUIRE THAT THE TARGET LABORATORY MOLDED DENSITY BE RAISED TO NO MORE THAN 97.5% OR MAY LOWER THE DESIGN NUMBER OF GYRATIONS TO NO LESS THAN 35 FOR MIXTURES DESIGNED WITH AN SGC IF ANY OF THE FOLLOWING CONDITIONS EXIST.
1. THE INDIRECT TENSILE TEST RESULTS IN A VALUE GREATER THAN 200 PSI
2. THE HAMBURG WHEEL TEST RESULTS IN A VALUE LESS THAN 3.0 MM
3. THE OVERLAY TEST RESULTS IN A VALUE LESS THAN 100 CYCLES
4. THE CANTABRO TEST RESULTS IN A VALUE OF MORE THAN 20% LOSS

IN LIEU OF, OR IN ADDITION TO EVALUATING THE MIXTURE DESIGN PRIOR TO ALLOWING A TRIAL BATCH TO BE PRODUCED, THE ENGINEER MAY ALSO EVALUATE THE MIXTURE PRODUCED DURING THE TRIAL BATCH FOR COMPLIANCE WITH THE 4 TESTS LISTED ABOVE.

B7.10 CONTRACTOR'S QUALITY CONTROL (CQC) TEST REPORTS SHALL BE SUBMITTED TO THE COUNTY ENGINEER ON A DAILY BASIS. AS A MINIMUM, DAILY CQC TESTING ON THE PRODUCED MIX SHALL INCLUDE: SIEVE ANALYSIS TEX-200-F, ASPHALT CONTENT TEX-236-F, HVEEM STABILITY TEX-208-F, LABORATORY COMPACTED DENSITY TEX-207-F, AND MAXIMUM SPECIFIC GRAVITY TEX-227-F. THE NUMBER AND LOCATION OF ALL HMAC TESTS SHALL BE DETERMINED BY THE COUNTY ENGINEER WITH A MINIMUM OF THREE, 6-INCH DIAMETER FIELD CORES SECURED AND TESTED BY THE CONTRACTOR FROM EACH DAY'S PAVING. EACH HMAC COURSE SHALL BE TESTED FOR IN-PLACE DENSITY, BITUMINOUS CONTENT AND AGGREGATE GRADATION, AND SHALL BE MEASURED FOR COMPACTED THICKNESS. THE NUMBER AND LOCATION OF ALL HMAC TEST SAMPLES SHALL BE DETERMINED BY THE COUNTY ENGINEER.

B7.11 RURAL ROADS MAY USE EITHER THE SPECIFICATIONS FOUND IN SECTION B7.1 OR A TWO-COURSE SURFACE IN ACCORDANCE WITH ITEM 316, TREATMENT WEARING SURFACE, OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. THE TYPE AND RATE OF ASPHALT AND AGGREGATE SHALL BE INDICATED ON THE PLANS AS A BASIS OF ESTIMATE AND SHALL BE DETERMINED AT THE PRECONSTRUCTION CONFERENCE. AGGREGATE USED IN THE MIX SHALL BE ON THE TXDOT QUALITY MONITORING SCHEDULE. AGGREGATE SHALL BE TYPE B GRADE 4. GRADATION TESTS SHALL BE REQUIRED FOR EACH 300 CUBIC YARDS OF MATERIAL PLACED WITH A MINIMUM OF TWO TESTS PER EACH GRADE PER EACH PROJECT. TEST RESULTS SHALL BE REVIEWED BY THE COUNTY ENGINEER PRIOR TO APPLICATION OF THE MATERIAL.

B8 – CONCRETE PAVEMENT

B8.1 IN LIEU OF BITUMINOUS PAVEMENT, PORTLAND CEMENT CONCRETE PAVEMENT MAY BE USED. IN SUCH CASES, THE PAVEMENT THICKNESS SHALL BE A MINIMUM OF 9 INCHES OF CONCRETE, AND SHALL BE JOINTED AND REINFORCED IN ACCORDANCE WITH THE DETAIL INCLUDED IN APPENDIX J. THE MIX SHALL BE FROM A TXDOT CERTIFIED PLANT. THE MIX DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.

B9 – CONCRETE – GENERAL

B9.1 UNLESS OTHERWISE SPECIFIED, CONCRETE SHALL BE IN ACCORDANCE WITH ITEM 421 OF THE CURRENT EDITION OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND BE PLACED IN ACCORDANCE WITH THE APPLICABLE ITEM.

B9.2 ALL CONCRETE SHALL BE TESTED FOR COMPRESSIVE STRENGTH. ONE SET OF THREE CONCRETE TEST CYLINDERS SHALL BE MOLDED FOR EVERY 50 CUBIC YARDS OF CONCRETE PLACED FOR EACH CLASS OF CONCRETE PER DAY, OR AT ANY OTHER INTERVAL AS DETERMINED BY THE COUNTY ENGINEER. A SLUMP TEST SHALL BE REQUIRED WITH EACH SET OF TEST CYLINDERS. ONE CYLINDER SHALL BE TESTED FOR COMPRESSIVE STRENGTH AT AN AGE OF SEVEN DAYS AND THE REMAINING TWO CYLINDERS SHALL BE TESTED AT 28 DAYS OF AGE.

B10 – ROAD NAMES, SIGNS AND MARKERS

B10.1 ALL ROADS SHALL BE NAMED, WITH PRIOR APPROVAL FOR SAID NAME FROM THE WILLIAMSON COUNTY 911 ADDRESSING COORDINATOR. ROADS MUST BE NAMED IN A MANNER TO AVOID CONFUSION IN IDENTIFICATION. ROADS THAT ARE EXTENSIONS OF EXISTING ROADS MUST CARRY THE NAMES OF THOSE IN EXISTENCE. ROADS THAT ARE NOT CONTINUOUS, OR WHICH HAVE 90 DEGREE TURNS, SHALL HAVE DIFFERENT NAMES. THE OWNER SHALL PROVIDE THE COORDINATOR WITH TWO DIGITAL FILES OF THE PLAT. ONE FILE SHALL BE IN AN ADOBE .PDF FORMAT, AND THE OTHER FILE SHALL BE IN AN AUTOCAD .DWG FORMAT GEOREFERENCED TO NAD 1983 STATE PLANE GRID COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), WITH DRAWING UNITS OF US FEET. THE ROAD NAMES SHALL BE DISPLAYED ON STANDARD INTERSECTION ROAD MARKER SIGNS ERECTED BY THE OWNER IN COMPLIANCE WITH THE TXMUTCD "STREET NAME SIGNS" AND AT THE LOCATIONS AS INDICATED ON THE CONSTRUCTION PLANS.

B10.2 TRAFFIC CONTROL SIGNS (SUCH AS STOP, YIELD, AND SPEED LIMIT SIGNS) SHALL BE INSTALLED BY THE OWNER OF SAID SUBDIVISION IN COMPLIANCE WITH THE LATEST VERSION OF THE TXMUTCD AND AT THE LOCATIONS AS INDICATED ON THE APPROVED CONSTRUCTION PLANS. OTHER TRAFFIC CONTROL SIGNS, AS SHOWN ON THE CONSTRUCTION PLANS, SHALL BE INSTALLED TO INDICATE ANY UNUSUAL TRAFFIC OR ROAD HAZARD OR CONDITIONS THAT MAY EXIST. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN COMPLIANCE WITH LATEST VERSION OF THE TXMUTCD AND THE CONSTRUCTION COST SHALL BE BORNE BY THE OWNER.

B11 – DRAINAGE AND FLOOD CONTROL

B11.1 STORMWATER MANAGEMENT CONTROLS SHALL BE DESIGNED, CONSTRUCTED, AND MAINTAINED TO RESTRICT THE RATE OF DRAINAGE FROM THE PLATTED AREA TO THE RATE OF DRAINAGE OF THE LAND IN ITS EXISTING CONDITION. WHEN A DEVELOPMENT SHALL HAVE SEVERAL SECTIONS, STORMWATER MANAGEMENT CONTROLS FOR THE ULTIMATE DEVELOPED AREA SHALL BE CONSTRUCTED IF NOT LOCATED IN THE FIRST PLATTED SECTION. STORMWATER MANAGEMENT CONTROLS ARE TO BE DESIGNED BY A PROFESSIONAL ENGINEER USING A BASIS OF A 2, 10, 25, AND 100-YEAR STORM. IF PROPOSED DEVELOPMENT IS DETENTION EXEMPT, A DETENTION EXEMPTION LETTER, REQUESTING THE DETENTION EXEMPTION TO BE UTILIZED, SHALL BE PROVIDED IN PLACE OF A DRAINAGE REPORT AND THE PLAT SHALL CONTAIN A CORRESPONDING PLAT NOTE FROM APPENDIX C12.

B11.2 THE PROPOSED TIME OF CONCENTRATIONS AND LAND COVER ROUGHNESS N-VALUES, USED TO CALCULATE TIME OF CONCENTRATION, SHOULD BE CONSISTENT FROM EXISTING TO PROPOSED CONDITIONS.

B11.3 WHEN CALCULATING PEAK FLOWS, THE RUNOFF CURVE NUMBER SHALL REMAIN THE SAME BETWEEN EXISTING AND PROPOSED CONDITIONS, USING THE ASSUMPTION OF RAW (UNDEVELOPED) LAND WITH NO IMPERVIOUS COVER. THE EXISTING AND PROPOSED PERCENTAGE OF IMPERVIOUS COVER SHALL BE INPUT INDIVIDUALLY FOR EACH CONDITION. FOR THE PROPOSED CONDITIONS, THE MAXIMUM POTENTIAL PERCENTAGE OF IMPERVIOUS COVER SHALL BE USED.

B11.4 DETENTION VOLUME SHALL BE SIZED BY COMPARING THE EXISTING PEAK RUNOFF PRODUCED BY THE SITE VERSUS THE PROPOSED PEAK RUNOFF PRODUCED BY THE SITE, FOR THE 2, 10, 25 AND 100-YEAR FREQUENCY RAINFALL EVENT. METHODS USED TO ANALYZE THE PRE AND POST DEVELOPMENT CONDITIONS SHOULD FOCUS ON THE PROPOSED CHANGES IN IMPERVIOUS COVER AND TIME OF CONCENTRATION ASSOCIATED WITH DEVELOPMENT OF THE SITE. THE POINTS OF ANALYSIS MUST BE CONSISTENT BETWEEN EXISTING AND PROPOSED SCENARIOS FOR A DIRECT AND ACCURATE ASSESSMENT OF IMPACTS. THE TIMING OF HYDROGRAPHS MAY NOT BE USED TO DEMONSTRATE A DECREASE OF PROPOSED PEAK FLOWS FROM THE DEVELOPED SITE.

B11.5 FOR DETENTION DESIGN, NOAA ATLAS 14 PRECIPITATION VALUES SHALL BE TAKEN FROM THE WILLIAMSON COUNTY RAINFALL ZONES FOR A 24-HOUR DURATION STORM. THESE ZONES AND RAINFALL DATA CAN BE FOUND IN EXHIBIT 2 AND THE ASSOCIATED TABLES.

B11.6 FOR DETENTION DESIGN, MAJOR CHANNEL DESIGN AND ANALYSIS, DETERMINATION OF PEAK FLOW RATES FOR FLOODPLAIN MODELING, AND HYDROLOGIC CHANNEL ROUTING, THE U.S. ARMY CORPS OF ENGINEERS HEC-HMS SOFTWARE IS RECOMMENDED. NOAA ATLAS 14 RAINFALL, PER EXHIBIT 2 – RAINFALL DATA, SHALL BE UTILIZED FOR ALL HYDROLOGIC ANALYSES. IF HEC-HMS IS NOT UTILIZED, THE FULL MODEL INPUT AND OUTPUT SHALL BE PROVIDED INCLUDING STRUCTURE AND OUTLET DETAILS AS MODELED.

B11.7 IMPERVIOUS COVER ASSUMPTIONS MUST BE CLEARLY STATED WITHIN THE DRAINAGE REPORT.

B11.8 FOR FLOODPLAIN STUDIES, MAJOR CHANNEL DESIGN AND ANALYSIS, AND DETERMINATION OF FINISHED FLOOR ELEVATIONS, THE U.S. ARMY CORPS OF ENGINEERS HEC-RAS SOFTWARE MUST BE UTILIZED.

B11.9 DRAINAGE CALCULATIONS AND DESIGN SHALL BE MADE USING THE LATEST EDITION OF THE CITY OF AUSTIN'S DRAINAGE CRITERIA MANUAL EXCEPT WHERE OTHERWISE SPECIFIED IN THE REGULATIONS HEREIN, OR OTHER METHODS SATISFACTORY TO THE COUNTY ENGINEER. ALL DATA AND CALCULATIONS MUST BE PRESENTED TO THE COUNTY ENGINEER AS PART OF THE CONSTRUCTION PLANS OR DRAINAGE REPORT. THE FOLLOWING REQUIREMENTS SHALL BE INCORPORATED INTO THE DESIGN:

B11.9.1 BRIDGES AND CROSS DRAINAGE STRUCTURES FOR ARTERIAL, COLLECTOR, AND LOCAL ROADS SHALL BE DESIGNED TO CONVEY THE 25-YEAR STORM WITHOUT OVERTOPPING THE FACILITY.

B11.9.2 ALL LONGITUDINAL DRAINAGE STRUCTURES SHALL BE DESIGNED TO CONVEY THE 10-YEAR STORM.

B11.10 ALL DRAINAGE STRUCTURES AND APPURTENANCES SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER. A PROFILE SHALL BE SHOWN IN THE CONSTRUCTION PLANS FOR ALL DRAINAGE STRUCTURES. EACH PROFILE SHALL SHOW THE DESIGN FLOW, VELOCITY, INVERT ELEVATIONS, AND THE HYDRAULIC GRADE LINE.

B11.11 THE USE OF THERMOPLASTIC PIPES (INCLUDING BUT NOT LIMITED TO POLY VINYL CHLORIDE (PVC) PIPE, HIGH DENSITY POLYETHYLENE PIPE (HDPE), POLYPROPYLENE PIPE, ETC.) IS SPECIFICALLY PROHIBITED FROM USE FOR CROSS DRAINAGE, PARALLEL DRAINAGE, STORM DRAINS AND ALL OTHER STORMWATER CONVEYANCE WITHIN THE RIGHT OF WAY AND/OR EASEMENTS IN CONNECTION WITH DRAINING OR PROTECTING THE ROAD SYSTEM.

B11.12 ALL PIPE USED FOR CROSS DRAINAGE, PARALLEL DRAINAGE, STORM DRAINS, AND ALL OTHER STORM WATER CONVEYANCES WITHIN THE RIGHT OF WAY AND/OR EASEMENTS IN CONNECTION WITH DRAINING OR PROTECTING THE ROAD SYSTEM SHALL BE DESIGNED AND CONSTRUCTED WITH THE CRITERIA IN TABLE B11.12 (PIPE CRITERIA). CAST-IN-PLACE IS PROHIBITED WITHOUT PRIOR APPROVAL FROM COUNTY ENGINEER. PIPES MUST HAVE A MINIMUM INTERIOR DIAMETER OF 18" OR EQUIVALENT.

B11.15 DRIVEWAY CULVERTS SHALL HAVE A MINIMUM INTERIOR DIAMETER OF 18" OR EQUAL AND A MINIMUM LENGTH OF 22 FEET AND SHALL INCLUDE A CONCRETE APRON SAFETY END TREATMENT IN ACCORDANCE WITH CURRENT TXDOT SAFETY END TREATMENT STANDARDS. LARGER OR LONGER CULVERTS SHALL BE INSTALLED IF NECESSARY, TO ACCOMMODATE DRAINAGE BASED UPON A 10-YEAR FLOW FREQUENCY.

B11.16 AT SOME POINT WITHIN THE FIRST TEN FEET FROM THE EDGE OF THE ROADWAY GUTTER, THE ENTIRE WIDTH OF A DRIVEWAY SHALL HAVE THE SAME OR GREATER ELEVATION AS THE TOP OF THE CURB AT THE EDGE OF THE ROADWAY.

B11.17 MAINTENANCE RESPONSIBILITY FOR DRAINAGE WILL NOT TO 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.

B11.18 EASEMENTS SHALL BE PROVIDED, WHERE NECESSARY, FOR ALL DRAINAGE COURSES AND IDENTIFIED FLOODPLAINS IN AND ACROSS PROPERTY TO BE PLATTED. THE LOCATION AND WIDTH SHALL BE SHOWN ON THE PLAT AND MARKED "DRAINAGE EASEMENT" OR "DRAINAGE AND UNDERGROUND UTILITIES EASEMENT". IN GENERAL, A "DRAINAGE EASEMENT" SHALL BE A MINIMUM OF 20 FEET IN WIDTH AND A "DRAINAGE AND UNDERGROUND UTILITIES EASEMENT" SHALL BE A MINIMUM OF 30 FEET IN WIDTH.

B11.19 ALL ROADSIDE DITCHES SHALL HAVE A MINIMUM DEPTH, AS MEASURED FROM THE EDGE OF THE ROAD PAVEMENT, EQUAL TO THE DIAMETER OF THE DRIVEWAY CULVERT PIPE(S) PLUS NINE INCHES, AND A BOTTOM WIDTH EQUAL TO THE DIAMETER OF THE DRIVEWAY CULVERT PIPE(S). THE SIDE SLOPES OF THE DITCHES ARE TO BE 3:1 OR FLATTER, EXCEPT AT PARALLEL CULVERTS WHICH SHALL BE 4:1 OR FLATTER TO ACCOMMODATE A STANDARD SAFETY END TREATMENT.

B11.20 WHERE ALL LOTS ARE 2 ACRES OR MORE AND EXEMPT FROM DETENTION, ROADSIDE DITCHES MAY BE ELIMINATED WITHIN A RURAL SUBDIVISION PROVIDED THAT THE ROAD HAS 18-INCH RIBBON CURBS, THE ROADWAY SURFACE HAS AN ADEQUATE CROSS SLOPE, AND THE OVERALL DRAINAGE PATTERNS THROUGHOUT THE SUBDIVISION REMAIN AS IN AN UNDEVELOPED STATE. IF INTERNAL SUBDIVISION ROADWAYS ARE PROPOSED WITHIN A NATURAL DRAINAGE PATTERN OR SHEET FLOW SUBDIVISION, A TYPICAL SECTION IS REQUIRED WITHIN CONSTRUCTION PLANS REQUIRING THE CONTRACTOR TO INSURE A MINIMUM 1.5" DROP ON FINISHED GRADE, WITH GRASS OR OTHER LAND COVER, FROM THE BACK OF CURB TO THE SHOULDER ON THE DOWNSLOPE SIDE OF ALL SHEET FLOW STREET SECTIONS, TO INSURE POSITIVE DRAINAGE FROM THE ROADWAY. IT IS THE PROPERTY OWNER'S RESPONSIBILITY TO ENSURE TOP OF GRASS AND OTHER LANDSCAPING ALONG RIBBON CURB, ON THE DOWNSLOPE SIDE OF THE ROADWAY, DOES NOT OBSTRUCT OR REDIRECT FLOW WITHIN THE RIGHT-OF-WAY.

B11.21 STORMWATER MANAGEMENT CONTROLS AND INFRASTRUCTURE, INCLUDING BUT NOT LIMITED TO DETENTION AND WATER QUALITY PONDS, SHALL NOT BE LOCATED WITHIN THE RIGHT-OF-WAY NOR ANY ROADWAY EASEMENTS. STORMWATER MANAGEMENT CONTROLS SHALL BE CONTAINED WITHIN A SEPARATE LOT OR EASEMENT FOR DRAINAGE, DETENTION OR WATER QUALITY PURPOSES AND DEDICATED TO THE ENTITY THAT WILL BE RESPONSIBLE FOR THEIR MAINTENANCE. NO PORTION OF ANY STORMWATER MANAGEMENT CONTROLS INCLUDING BUT NOT LIMITED TO WALLS, IMPOUNDMENT STRUCTURES, INLET/OUTLET STRUCTURES, UNDERGROUND VAULTS OR LEVEL SPREADERS SHALL BE PHYSICALLY CONNECTED TO THE ROADWAY, ROADWAY EMBANKMENT OR THE CROSS-DRAINAGE SYSTEM THAT DRAINS THE ROADWAY. THE ROADWAY EMBANKMENT SHALL NOT BE USED FOR THE DUAL PURPOSE OF TEMPORARILY OR PERMANENTLY IMPOUNDING WATER FOR STORMWATER MANAGEMENT OR DETENTION PURPOSES.

DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE	REVISION

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SHEET NAME: GENERAL NOTES (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STEVEN P. CATES
93648

CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

Steven P. Cates
12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 2 OF 70

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

EDWARDS AQUIFER PROTECTION PROGRAM CONSTRUCTION NOTES - LEGAL DISCLAIMER

THE FOLLOWING/LISTED "CONSTRUCTION NOTES" ARE INTENDED TO BE ADVISORY IN NATURE ONLY AND DO NOT CONSTITUTE AN APPROVAL OR CONDITIONAL APPROVAL BY THE EXECUTIVE DIRECTOR (ED), NOR DO THEY CONSTITUTE A COMPREHENSIVE LISTING OF RULES OR CONDITIONS TO BE FOLLOWED DURING CONSTRUCTION. FURTHER ACTIONS MAY BE REQUIRED TO ACHIEVE COMPLIANCE WITH TCEQ REGULATIONS FOUND IN TITLE 30, TEXAS ADMINISTRATIVE CODE (TAC), CHAPTERS 213 AND 217, AS WELL AS LOCAL ORDINANCES AND REGULATIONS PROVIDING FOR THE PROTECTION OF WATER QUALITY. ADDITIONALLY, NOTHING CONTAINED IN THE FOLLOWING/LISTED "CONSTRUCTION NOTES" RESTRICTS THE POWERS OF THE ED, THE COMMISSION OR ANY OTHER GOVERNMENTAL ENTITY TO PREVENT, CORRECT, OR CURTAIL ACTIVITIES THAT RESULT OR MAY RESULT IN POLLUTION OF THE EDWARDS AQUIFER OR HYDROLOGICALLY CONNECTED SURFACE WATERS. THE HOLDER OF ANY EDWARDS AQUIFER PROTECTION PLAN CONTAINING "CONSTRUCTION NOTES" IS STILL RESPONSIBLE FOR COMPLIANCE WITH TITLE 30, TAC, CHAPTERS 213 OR ANY OTHER APPLICABLE TCEQ REGULATION, AS WELL AS ALL CONDITIONS OF AN EDWARDS AQUIFER PROTECTION PLAN THROUGH ALL PHASES OF PLAN IMPLEMENTATION. FAILURE TO COMPLY WITH ANY CONDITION OF THE ED'S APPROVAL, WHETHER OR NOT IN CONTRADICTION OF ANY "CONSTRUCTION NOTES," IS A VIOLATION OF TCEQ REGULATIONS AND ANY VIOLATION IS SUBJECT TO ADMINISTRATIVE RULES, ORDERS, AND PENALTIES AS PROVIDED UNDER TITLE 30, TAC § 213.10 (RELATING TO ENFORCEMENT). SUCH VIOLATIONS MAY ALSO BE SUBJECT TO CIVIL PENALTIES AND INJUNCTION. THE FOLLOWING/LISTED "CONSTRUCTION NOTES" IN NO WAY REPRESENT AN APPROVED EXCEPTION BY THE ED TO ANY PART OF TITLE 30 TAC, CHAPTERS 213 AND 217, OR ANY OTHER TCEQ APPLICABLE REGULATION

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

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

3. IF ANY SENSITIVE FEATURE(S) (CAVES, SOLUTION CAVITY, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MAY NOT BE RESUMED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE APPROPRIATE PROTECTIVE MEASURES IN ORDER TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.

4. NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.

5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

6. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.

7. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.

8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.

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

10. IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.

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

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

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

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

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

AUSTIN REGIONAL OFFICE
12100 PARK 35 CIRCLE, BUILDING A
AUSTIN, TEXAS 78753-1808
PHONE (512) 339-2929
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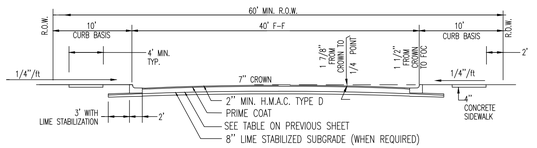
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

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

TCEQ-0592 (REV. JULY 15, 2015)



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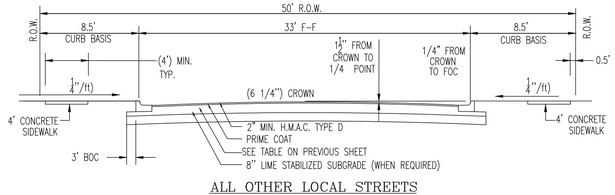

ALL OTHER LOCAL STREETS
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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ORGANIZED SEWAGE COLLECTION SYSTEM
GENERAL CONSTRUCTION NOTES

EDWARDS AQUIFER PROTECTION PROGRAM CONSTRUCTION NOTES - LEGAL DISCLAIMER

THE FOLLOWING/LISTED "CONSTRUCTION NOTES" ARE INTENDED TO BE ADVISORY IN NATURE ONLY AND DO NOT CONSTITUTE AN APPROVAL OR CONDITIONAL APPROVAL BY THE EXECUTIVE DIRECTOR, NOR DO THEY CONSTITUTE A COMPREHENSIVE LISTING OF RULES OR CONDITIONS TO BE FOLLOWED DURING CONSTRUCTION. FURTHER ACTIONS MAY BE REQUIRED TO ACHIEVE COMPLIANCE WITH TCEQ REGULATIONS FOUND IN TITLE 30, TEXAS ADMINISTRATIVE CODE, CHAPTERS 213 AND 217, AS WELL AS LOCAL ORDINANCES AND REGULATIONS PROVIDING FOR THE PROTECTION OF WATER QUALITY. ADDITIONALLY, NOTHING CONTAINED IN THE FOLLOWING/LISTED "CONSTRUCTION NOTES" RESTRICTS THE POWERS OF THE EXECUTIVE DIRECTOR, THE COMMISSION OR ANY OTHER GOVERNMENTAL ENTITY TO PREVENT, CORRECT, OR CURTAIL ACTIVITIES THAT RESULT OR MAY RESULT IN POLLUTION OF THE EDWARDS AQUIFER OR HYDROLOGICALLY CONNECTED SURFACE WATERS. THE HOLDER OF ANY EDWARDS AQUIFER PROTECTION PLAN CONTAINING "CONSTRUCTION NOTES" IS STILL RESPONSIBLE FOR COMPLIANCE WITH TITLE 30, TEXAS ADMINISTRATIVE CODE, CHAPTERS 213 OR ANY OTHER APPLICABLE TCEQ REGULATION, AS WELL AS ALL CONDITIONS OF AN EDWARDS AQUIFER PROTECTION PLAN THROUGH ALL PHASES OF PLAN IMPLEMENTATION. FAILURE TO COMPLY WITH ANY CONDITION OF THE EXECUTIVE DIRECTOR'S APPROVAL, WHETHER OR NOT IN CONTRADICTION OF ANY "CONSTRUCTION NOTES," IS A VIOLATION OF TCEQ REGULATIONS AND ANY VIOLATION IS SUBJECT TO ADMINISTRATIVE RULES, ORDERS, AND PENALTIES AS PROVIDED UNDER TITLE 30, TEXAS ADMINISTRATIVE CODE § 213.10 (RELATING TO ENFORCEMENT). SUCH VIOLATIONS MAY ALSO BE SUBJECT TO CIVIL PENALTIES AND INJUNCTION. THE FOLLOWING/LISTED "CONSTRUCTION NOTES" IN NO WAY REPRESENT AN APPROVED EXCEPTION BY THE EXECUTIVE DIRECTOR TO ANY PART OF TITLE 30 TEXAS ADMINISTRATIVE CODE, CHAPTERS 213 AND 217, OR ANY OTHER TCEQ APPLICABLE REGULATION.

1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) MUST BE CONSTRUCTED IN ACCORDANCE WITH 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(C), THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES AND ANY LOCAL GOVERNMENT STANDARD SPECIFICATIONS.

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

3. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE PRESIDING TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

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

5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TCEQ OF THE FEATURE DISCOVERED. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING AND THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.

7. SEWER LINES LOCATED WITHIN OR CROSSING THE 5-YEAR FLOODPLAIN OF A DRAINAGE WAY WILL BE PROTECTED FROM INUNDATION AND STREAM VELOCITIES WHICH COULD CAUSE EROSION AND SCOURING OF BACKFILL. THE TRENCH MUST BE CAPPED WITH CONCRETE TO PREVENT SCOURING OF BACKFILL, OR THE SEWER LINES MUST BE ENCASED IN CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES.

8. BLASTING PROCEDURES FOR PROTECTION OF EXISTING SEWER LINES AND OTHER UTILITIES WILL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION CRITERIA. SAND IS NOT ALLOWED AS BEDDING OR BACKFILL IN TRENCHES THAT HAVE BEEN BLASTED. IF ANY EXISTING SEWER LINES ARE DAMAGED, THE LINES MUST BE REPAIRED AND RETESTED.

9. ALL MANHOLES CONSTRUCTED OR REHABILITATED ON THIS PROJECT MUST HAVE WATERTIGHT SIZE ON SIZE RESILIENT CONNECTORS ALLOWING FOR DIFFERENTIAL SETTLEMENT. IF MANHOLES ARE CONSTRUCTED WITHIN THE 100-YEAR FLOODPLAIN, THE COVER MUST HAVE A GASKET AND BE BOLTED TO THE RING. WHERE GASKETED MANHOLE COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE OR FOR MORE THAN 1500 FEET, ALTERNATE MEANS OF VENTING WILL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE.

   THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSION'S RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEET 55 - 65 OF 70.

   IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.

10. WHERE WATER LINES AND NEW SEWER LINE ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

11. WHERE SEWERS LINES DEVIATE FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER: THERE SHALL BE NO CURVATURE OF SANITARY SEWER LINE PIPES.

    IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: THERE SHALL BE NO FLEXURE OF SANITARY SEER LINE PIPES.

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

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

    THE PRIVATE SERVICE LATERAL STUB-OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEET 70 OF 70 AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEET 70 OF 70.

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

14. SEWER LINES MUST BE TESTED FROM MANHOLE TO MANHOLE. WHEN A NEW SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN-OUT, IT MUST BE TESTED FROM EXISTING MANHOLE TO NEW MANHOLE. IF A STUB OR CLEAN-OUT IS USED AT THE END OF THE PROPOSED SEWER LINE, NO PRIVATE SERVICE ATTACHMENTS MAY BE CONNECTED BETWEEN THE LAST MANHOLE AND THE CLEANOUT UNLESS IT CAN BE CERTIFIED AS CONFORMING WITH THE PROVISIONS OF 30 TAC §213.5(C)(3)(E).

15. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH 30 TAC §217.57. THE ENGINEER MUST RETAIN COPIES OF ALL TEST RESULTS WHICH MUST BE MADE AVAILABLE TO THE EXECUTIVE DIRECTOR UPON REQUEST. THE ENGINEER MUST CERTIFY IN WRITING THAT ALL WASTEWATER LINES HAVE PASSED ALL REQUIRED TESTING TO THE APPROPRIATE REGIONAL OFFICE WITHIN 30 DAYS OF TEST COMPLETION AND PRIOR TO USE OF THE NEW COLLECTION SYSTEM. TESTING METHOD WILL BE:

(a. FOR A COLLECTION SYSTEM PIPE THAT WILL TRANSPORT WASTEWATER BY GRAVITY FLOW, THE DESIGN MUST SPECIFY AN INFILTRATION AND EXFILTRATION TEST OR A LOW-PRESSURE AIR TEST. A TEST MUST CONFORM TO THE FOLLOWING REQUIREMENTS:

(1) LOW PRESSURE AIR TEST.

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

(B) FOR SECTIONS OF COLLECTION SYSTEM PIPE LESS THAN 36 INCH AVERAGE INSIDE DIAMETER, THE FOLLOWING PROCEDURE MUST APPLY, UNLESS A PIPE IS TO BE TESTED AS REQUIRED BY PARAGRAPH (2) OF THIS SUBSECTION.

(i) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.

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

EQUATION C.3

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

WHERE:

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

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

PIPE DIAMETER *(INCHES)*	Minimum Time (seconds)	Maximum Length for Minimum Time (feet)	Time for Longer Length (seconds/foot)
6	340	398	0.8550
8	454	298	1.5200
10	567	239	2.3740
12	680	199	3.4190
15	850	159	5.3420
18	1020	133	7.6930
21	1190	114	10.4710
24	1360	100	13.6760
27	1530	88	17.3090
30	1700	80	21.3690
33	1870	72	25.8560

(D) AN OWNER MAY STOP A TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME. IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.

(E) 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.

(F) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.

(2) INFILTRATION/EXFILTRATION TEST.

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

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

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

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

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

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

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

(A) MANDREL SIZING.

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

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

(iii) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.

(B) *MANDREL DESIGN*.

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

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

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

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

(C) *METHOD OPTIONS.*

(i) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.

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

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

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

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

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

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

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

1. 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.

2. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

AUSTIN REGIONAL OFFICE
12100 PARK 35 CIRCLE, BUILDING A
AUSTIN, TEXAS 78753-1808
PHONE (512) 339-2929
FAX (512) 339-3795

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

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

TCEQ-0596 (REV. JULY 15, 2015)

TCEQ WATER DISTRIBUTION SYSTEM
GENERAL CONSTRUCTION NOTES

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. At a minimum, construction for public water systems must always meet TCEQ's "Rules and Regulations for Public Water Systems."

2. All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI [§290.44(a)(1)].

3. Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less [§290.44(a)(2)].

4. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply [§290.44(a)(3)].

5. All water line crossings of wastewater mains shall be perpendicular [§290.44(e)(4)(B)].

6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface [§290.44(a)(4)].

7. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures is 0.25 percent [§290.44(b)].

8. The contractor shall install appropriate air release devices with vent openings to the atmosphere covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent [§290.44(d)(1)].

9. The contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation [§290.44(f)(1)].

10. When waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the waterline shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested [§290.44(f)(2)].

11. Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.
    - The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

      $$Q = \frac{LD\sqrt{P}}{148{,}000}$$

      Where:

      - Q = the quantity of makeup water in gallons per hour,
      - L = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

    - The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

      $$L = \frac{SD\sqrt{P}}{148{,}000}$$

      Where:

      - L = the quantity of makeup water in gallons per hour,
      - S = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

12. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet §290.44(e)(1)-(4).

13. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant [§290.44(e)(5)].

14. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction [§290.44(e)(6)].

15. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line [§290.44(e)(7)].

16. Waterlines shall not be installed closer than ten feet to septic tank drainfields [§290.44(e)(8)].

17. The contractor shall disinfect the new waterlines in accordance with AWWA Standard C-651-14 or most recent, then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer [§290.44(f)(3)].

18. Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent.

Revised October 2017

DESIGNED BY: SPC
DRAFTED BY: CEL

DATE	REVISION

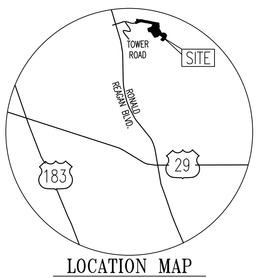
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr.
Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N., Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: GENERAL NOTES (2 OF 2)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STEVEN P. CATES
93648
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
Steven P. Cates
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 3 OF 70
SHEET NO. 3

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT



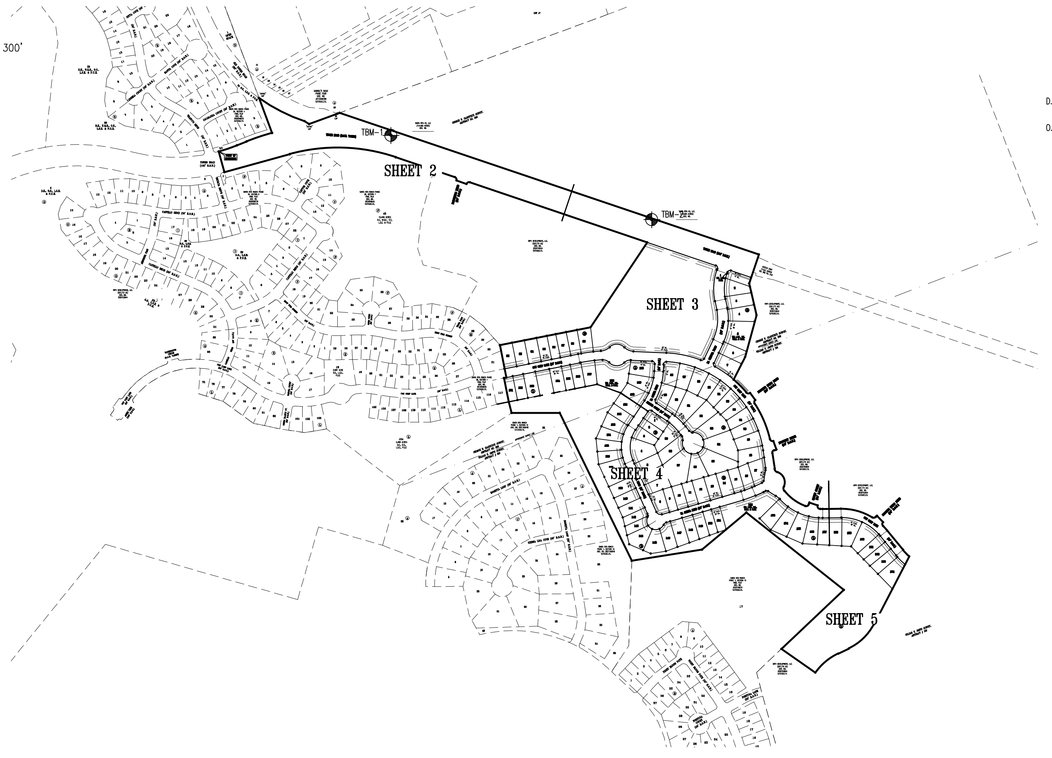
LOCATION MAP

GRAPHIC SCALE

300 0 150 300 600

(IN FEET)
1 inch = 300 ft.

SCALE: 1" = 300'



LEGEND

- ● CAPPED 1/2" IRON ROD FOUND STAMPED "CBD SETSTONE" (UNLESS NOTES)
- ○ CAPPED 1/2" CAPPED IRON ROD SET STAMPED "CBD SETSTONE"
- B.L. BUILDING SETBACK LINE
- D.E. DRAINAGE EASEMENT
- L.S.E. LANDSCAPE EASEMENT
- P.U.E. PUBLIC UTILITY EASEMENT
- O.S. OPEN SPACE
- D.R.W.C.TX. DEED RECORDS OF WILLIAMSON COUNTY, TEXAS
- O.P.R.W.C.TX. OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS

ORIGINAL SUBMITTAL DATE: _____

REVISED DATE: DECEMBER 16, 2024

OWNER:
SRFV DEVELOPMENT, LLC.
1700 CROSS CREEK DRIVE, STE. 100
LIBERTY HILL, TX 78642

SANTA RITA KC, LLC.
1700 CROSS CREEK DRIVE, STE. 100
LIBERTY HILL, TX 78642

DEVELOPER:
SRFV DEVELOPMENT, LLC.
1700 CROSS CREEK LANE, STE. 100
LIBERTY HILL, TX 78642

SURVEYOR:
CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE
AUSTIN, TEXAS 78749
(512) 280-5160 PHONE

ENGINEER:
CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE
AUSTIN, TEXAS 78749
(512) 280-5160 PHONE

TOTAL ACREAGE: 58.109 ACRES

SURVEY: GEORGE W. GLASSCOCK SURVEY, ABSTRACT NO. 266 AND WILLIAM W. SMITH SURVEY, ABSTRACT NO. 591

F.E.M.A. MAP NO. 48491C0275E
WILLIAMSON COUNTY, TEXAS AND INCORPORATED AREAS.
DATED: SEPTEMBER 26, 2008

TBM 1:
CAPPED 1/2 INCH IRON ROD SET STAMPED "CONTROL"
N = 10220913.74
E = 3083105.25
ELEVATION = 908.45' (NAVD '88)

TBM 2:
CAPPED 1/2 INCH IRON ROD SET STAMPED "CONTROL"
N = 10220440.10
E = 2084571.90
ELEVATION = 1013.31' (NAVD '88)

BASIS OF BEARINGS – TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83

ELEVATION DATUM – NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88)

TOTAL OF LOTS	99
SINGLE FAMILY LOTS:	96
W.Q.E., D.E., O.S., L.S.E. & P.U.E. LOTS:	3

ROAD TABLE

STREET NAMES	LINEAR FOOTAGE	R.O.W. WIDTH	PAVEMENT WIDTH	DESIGN SPEED	DESIGNATION	CLASSIFICATION
AMADOR COURT	342'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
BARCELLUS BEND	83'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
COW CAMP LANE	2,859'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
HUNTLEY DRIVE	46'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
LA COLINA BEND	1,704'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
LA CRESTA PASS	649'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
PIONEER HILLS BEND	83'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
QUEEN COURT	49'	50' R.O.W.	33' FOC-FOC	25 M.P.H.	PUBLIC	LOCAL
TOWER ROAD	3,138'	136' R.O.W./R.O.W. VARIES	48' FOC-FOC	45 M.P.H.	PUBLIC	ARTERIAL
TOTAL	8,953'					

SHEET NO. 1 OF 8

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J:\AC3D\5559\Survey\PLAT – SRR 2B-2

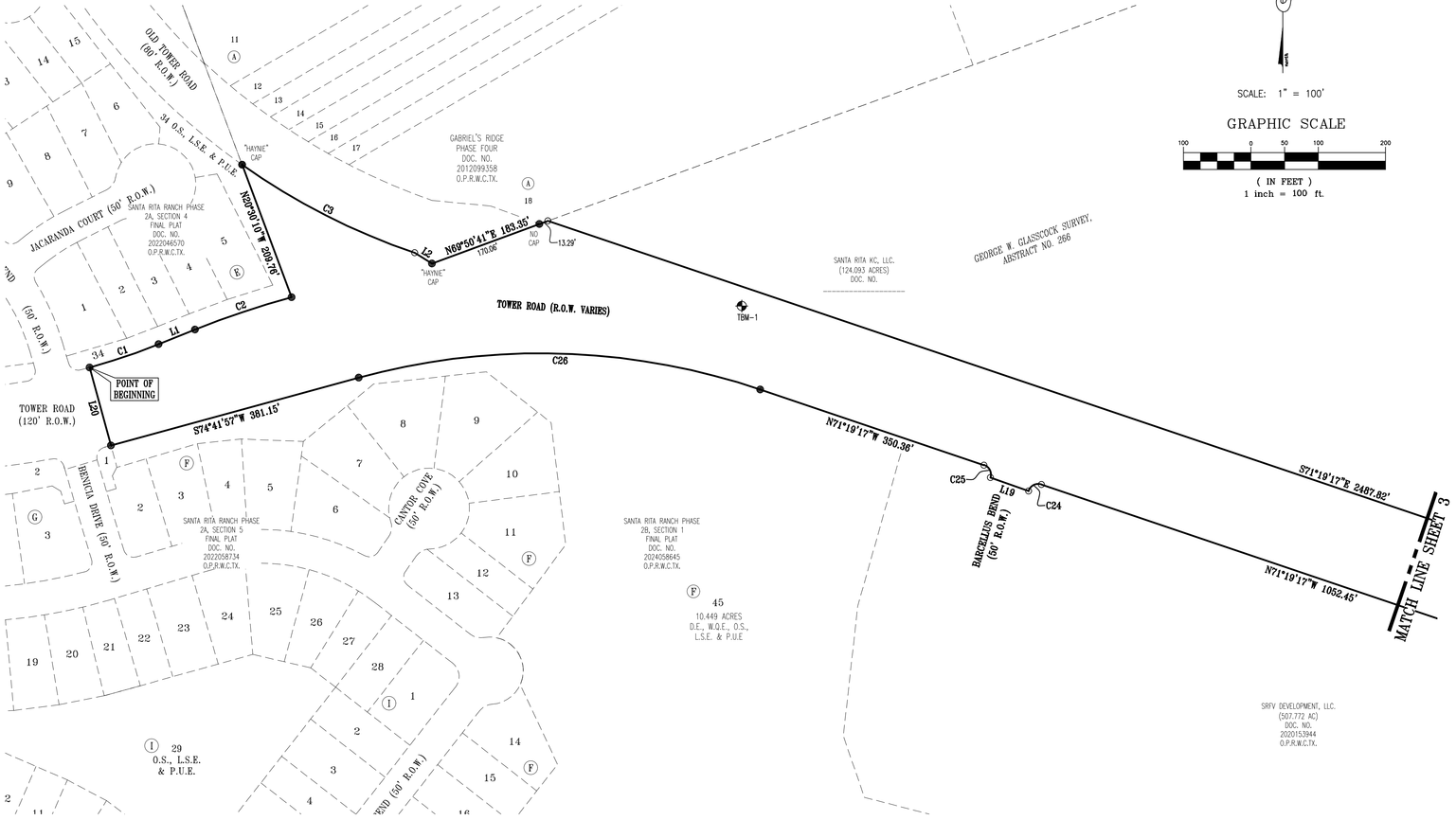
SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT

SCALE: 1" = 100'

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.



SHEET NO. 2 OF 8

Carlson, Brigance & Doering, Inc.
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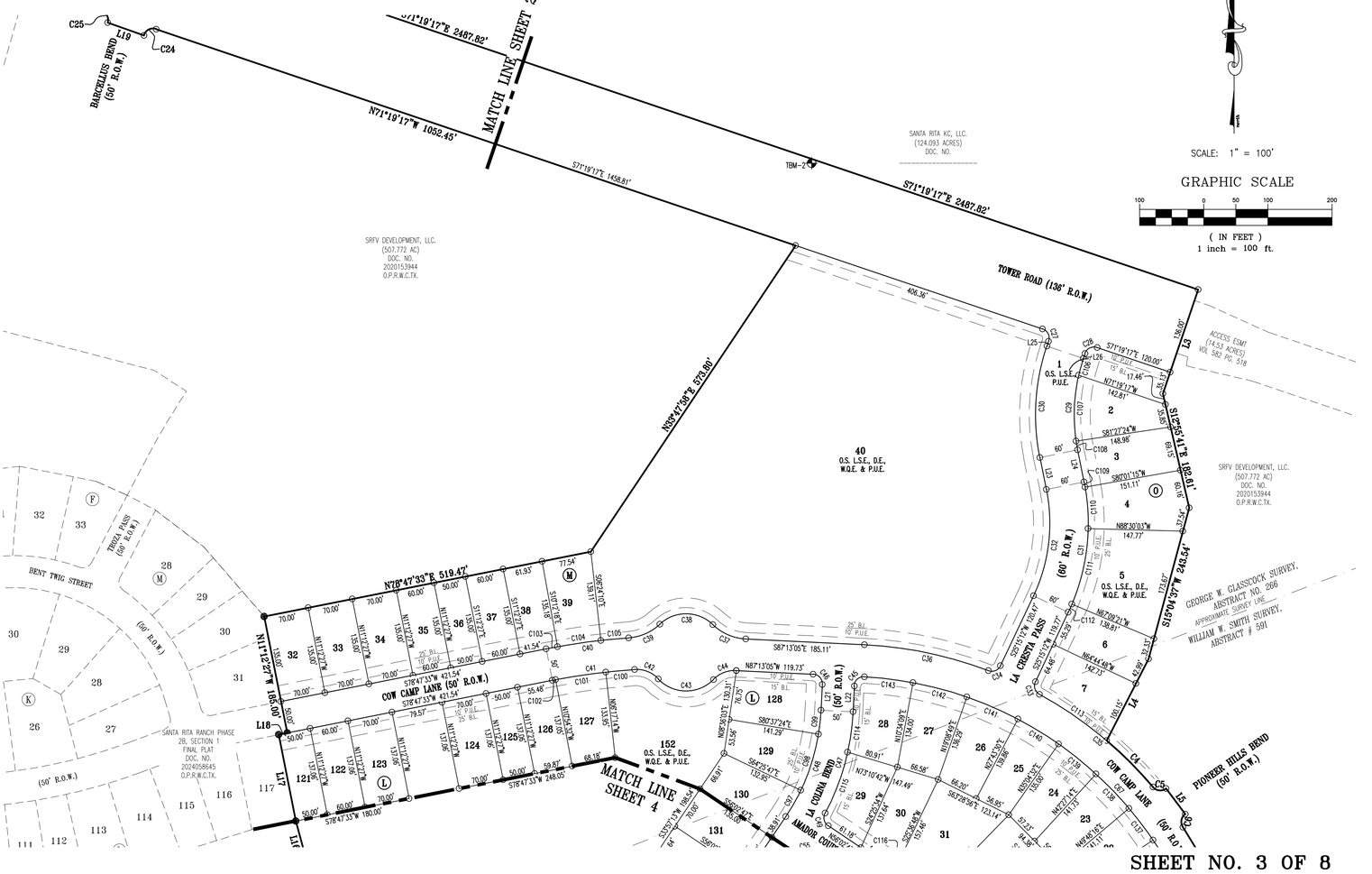
J:\AC3D\5559\Survey\PLAT – SRR 2B-2

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT

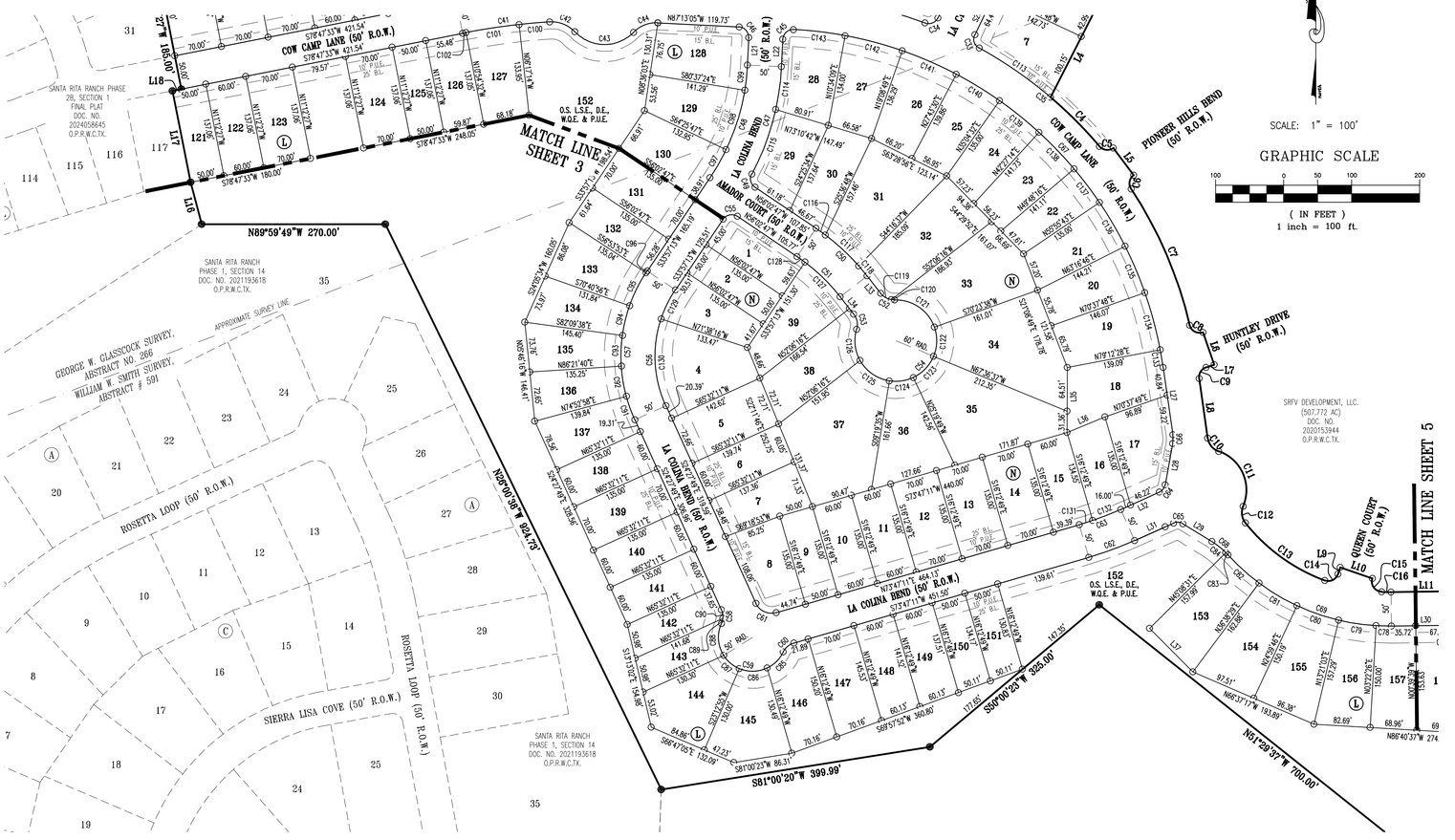


SHEET NO. 3 OF 8

Carlson, Brigance & Doering, Inc.
FIRM ID #F3791 ◆ REG. # 10024900
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
Phone No. (512) 280-5160 ◆ Fax No. (512) 280-5165

J:\AC3D\5559\Survey\PLAT - SRR 2B-2

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT



SHEET NO. 4 OF 8

Carlson, Brigance & Doering, Inc.
FIRM ID #F3791 ◆ REG. # 10024900
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
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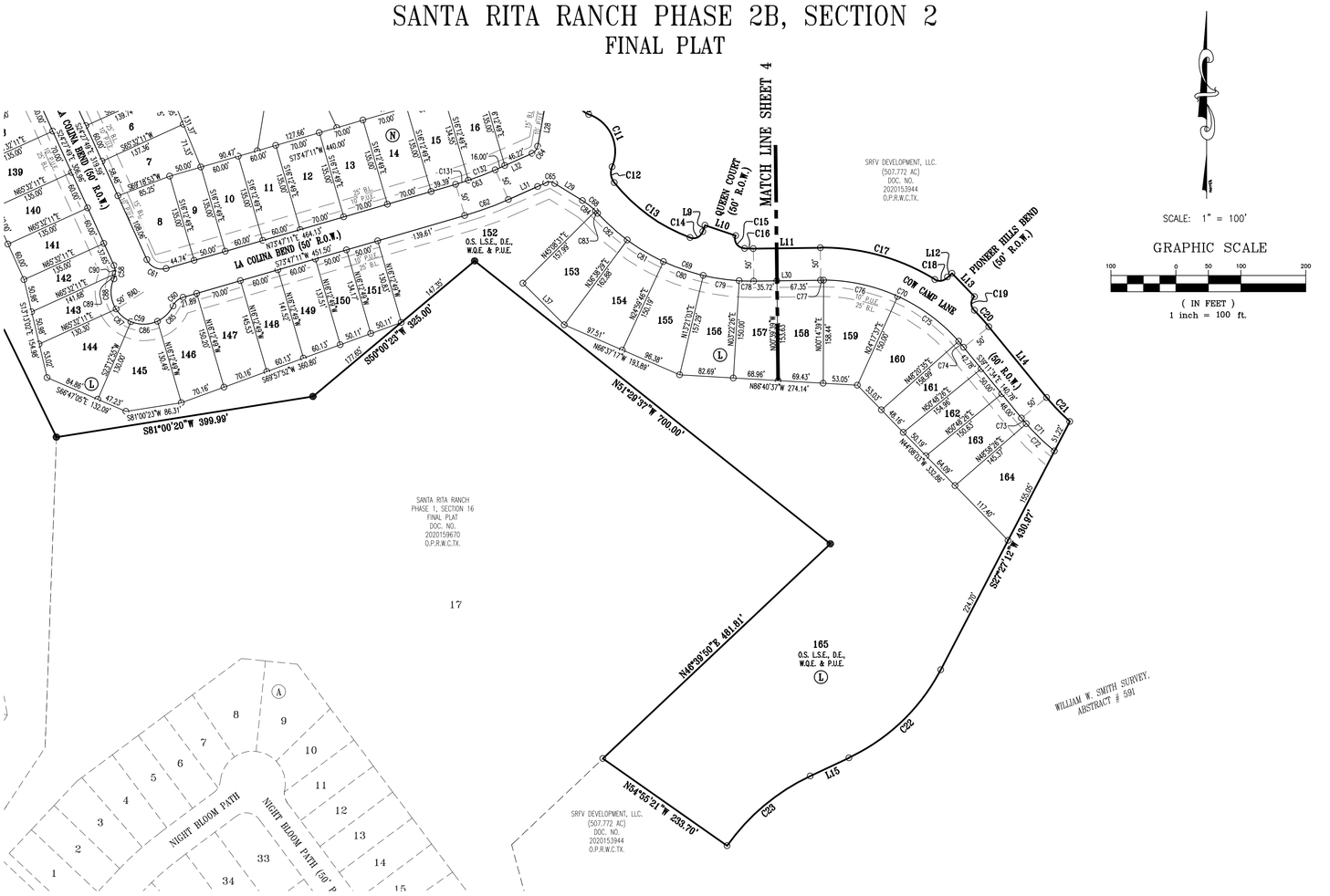
J:\AC3D\5559\Survey\PLAT - SRR 2B-2

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT



SHEET NO. 5 OF 8

Carlson, Brigance & Doering, Inc.
FIRM ID #F3791 ◆ REG. # 10024900
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
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J:\AC3D\5559\Survey\PLAT – SRR 2B-2

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C1	108.02	940.00	N71°24'25"E	107.96	54.07	6°35'03"
C2	151.28	1300.00	N71°26'55"E	151.19	75.72	6°40'02"
C3	288.53	994.93	S62°59'03"E	287.52	145.28	16°36'56"
C4	102.31	630.00	S44°57'20"E	102.19	51.27	9°18'15"
C5	22.63	15.00	S83°31'33"E	20.54	14.10	86°26'40"
C6	22.63	15.00	S17°01'47"W	20.54	14.10	86°26'40"
C7	219.08	630.00	S23°13'50"E	217.97	110.65	19°55'26"
C8	25.08	15.00	S81°09'47"E	22.26	16.60	95°47'20"
C9	20.71	15.00	S31°23'22"W	19.10	12.39	79°06'23"
C10	26.52	24.00	S39°49'03"E	25.19	14.80	63°18'27"
C11	99.27	60.00	S24°04'32"E	88.33	65.24	94°47'29"
C12	25.94	24.00	S07°38'24"E	24.69	14.40	61°55'13"
C13	145.92	270.00	S59°04'58"E	144.15	74.79	30°57'54"
C14	24.00	15.00	N64°35'23"E	21.52	15.45	91°41'25"
C15	27.88	15.00	S34°30'43"E	24.04	20.09	106°30'46"
C16	13.63	270.00	S89°12'52"E	13.63	6.82	2°53'33"
C17	185.49	330.00	S74°33'29"E	183.06	95.27	32°12'20"
C18	19.74	15.00	N83°56'31"E	18.35	11.59	75°24'21"
C19	23.86	15.00	S00°33'49"W	21.43	15.30	91°09'04"
C20	33.52	330.00	S42°06'08"E	33.50	16.77	5°49'09"
C21	51.29	300.00	S44°05'26"E	51.23	25.71	9°47'45"

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C22	199.33	305.00	S46°10'33"W	195.80	103.37	37°26'41"
C23	169.15	325.00	S49°59'16"W	167.25	86.54	29°49'15"
C24	23.94	15.00	S82°57'11"W	21.48	15.38	91°27'04"
C25	23.18	15.00	N27°02'49"W	20.94	14.62	88°32'56"
C26	604.92	1020.00	N88°18'40"W	596.09	311.65	33°58'46"
C27	23.56	15.00	N26°19'17"W	21.21	15.00	90°00'00"
C28	23.56	15.00	S63°40'43"W	21.21	15.00	90°00'00"
C29	144.44	275.00	S03°37'55"W	142.78	73.93	30°05'37"
C30	175.95	335.00	S03°37'55"W	173.94	90.06	30°05'37"
C31	207.99	325.00	N06°55'09"E	204.46	107.70	36°40'06"
C32	169.60	265.00	N06°55'09"E	166.72	87.82	36°40'06"
C33	22.63	15.00	S17°58'08"E	20.54	14.10	86°26'40"
C34	22.40	15.00	N68°01'49"E	20.37	13.88	85°33'14"
C35	229.67	630.00	N50°44'50"W	228.40	116.13	20°53'16"
C36	198.20	630.00	N78°12'19"W	197.38	99.92	18°01'31"
C37	57.16	79.50	S66°37'08"E	55.94	29.88	41°11'53"
C38	91.10	60.00	N89°31'08"W	82.60	56.94	86°59'46"
C39	54.17	79.50	N66°30'10"E	53.13	28.18	39°02'27"
C40	129.99	1030.00	S82°24'29"W	129.90	65.08	7°13'51"
C41	129.34	980.00	S82°34'25"W	129.25	64.76	7°33'43"
C42	41.09	47.00	N68°35'53"W	39.80	21.96	50°05'41"

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C43	96.04	60.00	S89°24'24"E	86.11	61.82	91°42'43"
C44	39.41	47.00	S68°45'35"W	38.27	20.95	48°02'41"
C45	23.62	15.00	S47°53'57"W	21.26	15.06	90°14'02"
C46	23.56	15.00	N42°13'05"W	21.21	15.00	90°00'00"
C47	165.18	375.00	N15°24'04"E	163.85	83.95	25°14'17"
C48	176.82	325.00	N18°22'04"E	174.64	90.65	31°10'18"
C49	22.01	15.00	S14°00'47"E	20.09	13.52	84°04'00"
C50	102.96	325.00	N46°58'16"W	102.53	51.91	18°09'03"
C51	87.12	275.00	N46°58'16"W	86.75	43.93	18°09'03"
C52	23.55	25.00	S64°52'47"E	22.69	12.73	53°58'05"
C53	23.55	25.00	N10°54'42"W	22.69	12.73	53°58'05"
C54	301.53	60.00	N52°06'16"E	70.59	43.64	287°56'10"
C55	23.56	15.00	S78°57'13"W	21.21	15.00	90°00'00"
C56	178.43	175.00	S04°44'42"W	170.80	97.84	58°25'02"
C57	229.40	225.00	S04°44'42"W	219.60	125.79	58°25'02"
C58	21.03	25.00	N07°22'08"W	20.41	11.18	48°11'23"
C59	155.45	50.00	S65°20'19"E	99.99	3062.64	178°07'46"
C60	21.03	25.00	S49°41'30"W	20.41	11.18	48°11'23"
C61	35.67	25.00	S65°20'19"E	32.72	21.64	81°45'00"
C62	71.80	525.00	N69°52'06"E	71.75	35.96	7°50'11"
C63	64.97	475.00	N69°52'06"E	64.91	32.53	7°50'11"

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C64	14.46	15.00	N38°19'50"E	13.91	7.85	55°14'22"
C65	14.58	15.00	N86°12'19"W	14.01	7.92	55°41'21"
C66	12.91	40.00	N01°05'10"E	12.86	6.51	18°29'58"
C67	797.89	580.00	N47°34'26"W	736.45	476.59	78°49'13"
C68	30.76	110.00	N50°20'55"W	30.66	15.48	16°01'26"
C69	269.90	320.00	S66°29'54"E	261.97	143.56	48°19'30"
C70	251.52	280.00	N64°55'36"W	243.15	134.96	51°28'05"
C71	71.85	350.00	S45°04'25"E	71.72	36.05	11°45'43"
C72	60.65	350.00	N45°59'25"W	60.57	30.40	9°55'42"
C73	11.20	350.00	N40°06'34"W	11.20	5.60	1°50'01"
C74	12.04	280.00	N40°25'29"W	12.04	6.02	2°27'51"
C75	117.53	280.00	N53°40'54"W	116.67	59.64	24°02'58"
C76	117.53	280.00	N77°43'52"W	116.67	59.64	24°02'58"
C77	4.42	280.00	S89°47'30"W	4.42	2.21	0°54'18"
C78	22.53	320.00	N88°38'37"W	22.53	11.27	4°02'05"
C79	55.72	320.00	N81°38'15"W	55.65	27.93	9°58'38"
C80	65.04	320.00	N70°49'35"W	64.93	32.63	11°38'43"
C81	65.04	320.00	N59°10'52"W	64.93	32.63	11°38'43"
C82	61.56	320.00	N47°50'50"W	61.47	30.88	11°01'22"
C83	4.84	110.00	N43°35'51"W	4.84	2.42	2°31'17"
C84	25.92	110.00	N51°36'34"W	25.86	13.02	13°30'09"

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C85	34.23	50.00	S45°12'33"W	33.57	17.82	39°13'30"
C86	42.23	50.00	S89°01'06"W	40.99	22.47	48°23'36"
C87	30.47	50.00	N49°19'38"W	30.00	15.72	34°54'55"
C88	48.52	50.00	N04°04'18"W	46.64	26.36	55°35'45"
C89	8.11	25.00	N14°25'44"E	8.08	4.09	18°35'40"
C90	12.91	25.00	N09°39'58"W	12.77	6.60	29°35'43"
C91	36.70	225.00	N19°47'26"W	36.66	18.39	9°20'47"
C92	45.08	225.00	N09°22'41"W	45.00	22.61	11°28'42"
C93	45.08	225.00	N02°06'01"E	45.00	22.61	11°28'42"
C94	45.08	225.00	N13°34'43"E	45.00	22.61	11°28'42"
C95	54.13	225.00	N26°12'35"E	54.00	27.20	13°47'03"
C96	3.34	225.00	N33°31'40"E	3.34	1.67	0°51'06"
C97	47.55	325.00	N29°45'43"E	47.51	23.82	8°23'00"
C98	91.85	325.00	N17°28'24"E	91.55	46.24	16°11'37"
C99	37.41	325.00	N06°04'46"E	37.39	18.72	6°35'41"
C100	45.18	980.00	S85°02'01"W	45.18	22.60	2°38'30"
C101	79.05	980.00	S81°24'07"W	79.03	39.55	4°37'19"
C102	5.10	980.00	S78°56'30"W	5.10	2.55	0°17'54"
C103	18.02	1030.00	N79°17'38"E	18.02	9.01	1°00'09"
C104	68.35	1030.00	N81°41'46"E	68.34	34.19	3°48'08"
C105	43.61	1030.00	N84°48'37"E	43.61	21.81	2°25'34"

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C106	27.16	275.00	S15°50'56"W	27.15	13.59	5°39'34"
C107	103.49	275.00	S02°14'17"W	102.88	52.37	21°33'46"
C108	13.78	275.00	S09°58'45"E	13.78	6.89	2°52'18"
C109	8.14	325.00	S10°41'50"E	8.14	4.07	1°26'08"
C110	65.11	325.00	S04°14'24"E	65.00	32.66	11°28'42"
C111	121.08	325.00	S12°10'18"W	120.38	61.25	21°20'43"
C112	13.66	325.00	S24°02'56"W	13.66	6.83	2°24'33"
C113	127.37	630.00	N50°23'58"W	127.15	63.90	11°35'01"
C114	63.54	375.00	S07°38'09"W	63.46	31.84	9°42'27"
C115	101.65	375.00	S20°15'18"W	101.34	51.14	15°31'50"
C116	17.02	325.00	S54°32'47"E	17.02	8.51	3°00'00"
C117	67.02	325.00	S47°08'18"E	66.91	33.63	11°48'58"
C118	18.92	325.00	S39°33'47"E	18.91	9.46	3°20'05"
C119	18.79	25.00	S59°25'44"E	18.35	9.86	43°04'00"
C120	4.76	25.00	S86°24'47"E	4.75	2.39	10°54'05"
C121	75.67	60.00	S55°44'06"E	70.75	43.80	72°15'27"
C122	43.98	60.00	S01°23'30"W	43.00	23.03	41°59'46"
C123	44.28	60.00	S43°31'47"W	43.28	23.20	42°16'46"
C124	36.29	60.00	S81°59'53"W	35.74	18.72	34°39'24"
C125	54.19	60.00	N54°47'58"W	52.37	29.10	51°44'54"
C126	47.12	60.00	N00°25'36"W	45.92	24.85	44°59'52"

Curve Table						
Curve #	Length	Radius	Chord Direction	Chord Length	Tangent	DELTA
C127	72.88	275.00	N45°29'15"W	72.66	36.65	15°11'01"
C128	14.24	275.00	N54°33'46"W	14.24	7.12	2°58'01"
C129	47.62	175.00	S26°09'29"W	47.47	23.96	15°35'29"
C130	130.80	175.00	S03°03'02"E	127.78	68.63	42°49'33"
C131	20.62	475.00	N72°32'34"E	20.62	10.31	2°29'14"
C132	44.35	475.00	N68°37'29"E	44.33	22.19	5°20'57"
C133	26.61	580.00	N09°28'40"W	26.61	13.31	2°37'42"
C134	86.83	580.00	N15°04'52"W	86.75	43.50	8°34'40"
C135	74.41	580.00	N23°02'43"W	74.36	37.26	7°21'02"
C136	74.41	580.00	N30°23'46"W	74.36	37.26	7°21'02"
C137	62.00	580.00	N37°08'00"W	61.97	31.03	6°07'27"
C138	74.41	580.00	N43°52'15"W	74.36	37.26	7°21'02"
C139	74.69	580.00	N51°14'07"W	74.64	37.40	7°22'42"
C140	74.41	580.00	N58°35'59"W	74.36	37.26	7°21'02"
C141	86.83	580.00	N66°33'51"W	86.75	43.50	8°34'40"
C142	86.83	580.00	N75°08'31"W	86.75	43.50	8°34'40"
C143	76.46	580.00	N83°12'27"W	76.40	38.28	7°33'11"

Line Table		
Line #	Length	Direction
L1	58.28	N68°06'53"E
L2	30.05	S57°57'37"E
L3	171.13	S18°40'43"W
L4	143.14	S27°05'09"W
L5	50.00	S36°44'53"E
L6	50.00	S19°03'23"E
L7	12.79	S70°56'33"W
L8	88.71	S08°09'49"E
L9	10.41	N18°44'40"E
L10	50.00	S71°15'20"E
L11	103.07	N89°20'21"E
L12	11.06	N44°08'21"E
L13	50.00	S43°51'39"E
L14	140.78	S39°11'34"E
L15	65.98	S84°53'54"W
L16	63.85	N14°56'50"W
L17	137.06	N11°12'27"W
L18	13.51	N78°47'33"E
L19	60.04	N70°35'47"W

Line Table		
Line #	Length	Direction
L20	120.00	N15°18'03"W
L21	40.25	N02°46'55"E
L22	40.25	S02°46'55"W
L23	50.88	S11°24'54"E
L24	50.88	S11°24'54"E
L25	7.88	S18°40'43"W
L26	7.88	N18°40'43"E
L27	100.06	N08°09'49"W
L28	61.55	N10°20'08"E
L29	50.08	N58°21'38"W
L30	103.07	N89°20'21"E
L31	62.71	S65°57'00"W
L32	62.22	N65°57'00"E
L33	32.57	N37°53'44"W
L34	32.57	N37°53'44"W
L35	95.87	S00°12'56"W
L36	60.36	N67°29'35"E
L37	90.30	N44°51'29"W

GENERAL:

1. BEARINGS ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83.
2. THIS SUBDIVISION LIES WITHIN THE CITY OF LIBERTY HILL EXTRA-TERRITORIAL JURISDICTION.
3. IT IS THE RESPONSIBILITY OF THE OWNER, NOT THE COUNTY, TO ASSURE COMPLIANCE WITH PROVISIONS OF ALL APPLICABLE STATE, FEDERAL AND LOCAL LAWS, AND REGULATIONS RELATING TO PLATTING AND DEVELOPMENT OF THIS PROPERTY. THE COUNTY ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF REPRESENTATIONS BY OTHER PARTIES IN THIS PLAT. FLOODPLAIN DATA, IN PARTICULAR, MAY CHANGE. IT IS FURTHER UNDERSTOOD THAT THE OWNERS 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 COUNTY.
4. THIS PROPERTY IS SUBJECT TO A BLANKET-TYPE UTILITY EASEMENT GRANTED TO CHISHOLM TRAIL WATER SUPPLY CORPORATION IN VOLUME 939, PAGE 271, DEED RECORDS OF WILLIAMSON COUNTY, TEXAS.
5. ALL PUBLIC ROADWAYS AND EASEMENTS AS SHOWN ON THIS PLAT ARE FREE OF LIENS.

DRAINAGE AND FLOODPLAIN:

1. EXCEPT IN CERTAIN ISOLATED AREAS REQUIRED TO MEET ACCESSIBILITY REQUIREMENTS, THE MINIMUM LOWEST FINISHED FLOOR ELEVATION SHALL BE ONE FOOT HIGHER THAN THE HIGHEST SPOT ELEVATION THAT IS LOCATED WITHIN FIVE FEET OUTSIDE THE PERIMETER OF THE BUILDING, OR ONE FOOT ABOVE THE BFE, WHICHEVER IS HIGHER.
2. A DE FACTO CERTIFICATE OF COMPLIANCE IS HEREBY ISSUED FOR ALL LOTS WITHIN THIS SUBDIVISION EXCEPT LOTS 25-33, BLOCK F, LOTS 75-80, BLOCK L, AND LOTS 28-30, BLOCK M. THIS CERTIFICATE IS VALID UNTIL SUCH TIME AS FEMA REVISES OR NEWLY ADOPTS FLOODPLAIN BOUNDARIES IN THIS AREA.
3. THE PROPOSED 100-YR WATER SURFACE ELEVATION PER ATLAS 14 SHOWN ON THE PLAT WAS DETERMINED BY A STUDY PREPARED BY CALRSON, BRIGANCE & DOERING, INC., DATED DECEMBER 29, 2023. THE MINIMUM FINISHED FLOOR ELEVATIONS SHOWN ON THE PLAT WERE DETERMINED BY ADDING ONE (1) FOOT TO THE PROPOSED 100-YR WATER SURFACE ELEVATION PER ATLAS 14.
4. THIS SUBDIVISION IS SUBJECT TO STORM-WATER MANAGEMENT CONTROLS AS REQUIRED BY WILLIAMSON COUNTY SUBDIVISION REGULATIONS, SECTION 811.1, ON NEW DEVELOPMENT THAT WOULD EVOKE SUCH CONTROLS BEYOND EXISTING CONDITIONS.
5. 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.
6. ANY PROPOSED DEVELOPMENT THAT OBSTRUCTS OR DIVERTS FLOW WITHIN A DRAINAGE EASEMENT MAY NOT BE PERMITTED AND IS AT THE DISCRETION OF THE FLOODPLAIN ADMINISTRATOR.

WATER AND WASTEWATER:

1. NO LOT IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTION IS MADE TO AN APPROVED PUBLIC SEWER SYSTEM.
2. NO LOT IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL WATER SATISFACTORY FOR HUMAN CONSUMPTION IS AVAILABLE FROM A SOURCE IN ADEQUATE AND SUFFICIENT SUPPLY.
3. WATER SERVICE IS PROVIDED BY: WILLIAMSON COUNTY MUD 19C/ GEORGETOWN UTILITY SYSTEMS
4. WASTEWATER SERVICE IS PROVIDED BY: WILLIAMSON COUNTY MUD 19C/CITY OF LIBERTY HILL
5. ELECTRIC SERVICE IS PROVIDED BY: PEC

ROADWAY AND RIGHT-OF-WAY:

1. IN APPROVING THIS PLAT BY THE COMMISSIONERS COURT OF WILLIAMSON COUNTY, TEXAS, 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 THE COMMISSIONERS COURT OF WILLIAMSON COUNTY, TEXAS. SAID COMMISSIONERS COURT ASSUMES NO OBLIGATION TO BUILD ANY OF THE ROADS, OR PUBLIC THOROUGHFARES SHOWN ON THIS PLAT, OR OF CONSTRUCTING ANY OF THE BRIDGES OR DRAINAGE IMPROVEMENTS IN CONNECTION THEREWITH. THE COUNTY WILL ASSUME NO RESPONSIBILITY FOR DRAINAGE WAYS OR EASEMENTS IN THE SUBDIVISION, OTHER THAN THOSE DRAINING OR PROTECTING THE ROAD SYSTEM.
2. SIDEWALKS SHALL BE MAINTAINED BY THE HOMEOWNERS' ASSOCIATION.
3. DRIVEWAY ACCESS TO LOTS WITHIN THIS SUBDIVISION FROM SIDE STREETS IS PROHIBITED.
4. IMPROVEMENTS WITHIN THE COUNTY ROAD RIGHT-OF-WAY INCLUDING, BUT NOT LIMITED TO LANDSCAPING, IRRIGATION, LIGHTING, CUSTOM SIGNS, ARE PROHIBITED WITHOUT FIRST OBTAINING AN EXECUTED LICENSE AGREEMENT WITH WILLIAMSON COUNTY.
5. 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.
6. THE OWNER SHALL CREATE A MANDATORY HOMEOWNERS' ASSOCIATION THAT SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND LIABILITY OF ANY LANDSCAPING, IRRIGATION, SIDEWALKS, ILLUMINATION, SUBDIVISION IDENTIFICATION SIGNS, WATER QUALITY FEATURES, ETC. PLACED WITHIN THE WILLIAMSON COUNTY RIGHT-OF-WAY. THIS ASSOCIATION SHALL HAVE ASSESSMENT AUTHORITY TO ENSURE THE PROPER FUNDING FOR MAINTENANCE.
7. A PUBLIC UTILITY EASEMENT 10 FEET WIDE IS HEREBY DEDICATED ADJACENT TO ALL STREET RIGHT-OF-WAY.

SHEET NO. 6 OF 8

Carlson, Brigance & Doering, Inc.
FIRM ID #F3791 ◆ REG. # 10024900
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
Phone No. (512) 280-5160 ◆ Fax No. (512) 280-5165

J:\AC3D\5559\Survey\PLAT – SRR 2B-2

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT

METES AND BOUNDS

BEING ALL OF A 58.109 ACRE TRACT OF LAND SITUATED IN THE GEORGE W. GLASSCOCK SURVEY, ABSTRACT NUMBER 417, AND THE WILLIAM W. SMITH SURVEY, ABSTRACT NUMBER 591, WILLIAMSON COUNTY, TEXAS, BEING A PORTION OF A CALLED 507.772 ACRE TRACT CONVEYED TO SRFV DEVELOPMENT, LLC. BY DEED RECORDED IN DOCUMENT NUMBER 2020153944, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, AND A PORTION OF A CALLED 124.093 ACRE TRACT OF LAND CONVEYED TO SANTA RITA KC, LLC. BY DEED RECORDED IN ______________________, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, SAID 58.109 ACRE TRACT OF LAND BEING MORE FULLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING, AT A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" AT THE NORTHEAST TERMINUS CORNER OF TOWER ROAD (120' R.O.W.), BEING ON THE SOUTH LINE OF LOT 34, BLOCK E, SANTA RITA RANCH PHASE 2A, SECTION 4 FINAL PLAT, A SUBDIVISION RECORDED IN DOCUMENT NUMBER 2022046570, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, SAME BEING AT THE BEGINNING OF A CURVE TO THE LEFT, FOR THE NORTHWEST CORNER AND THE POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT,

THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT, AND WITH THE SOUTH AND EAST LINES OF SAID SANTA RITA RANCH PHASE 2A, SECTION 4, THE FOLLOWING FOUR (4) COURSES AND DISTANCES, NUMBERED 1 THROUGH 4,

1) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 940.00 FEET, AN ARC LENGTH OF 108.02 FEET, AND A CHORD THAT BEARS N71°24'25"E, A DISTANCE OF 107.96 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
2) N68°06'53"E, A DISTANCE OF 58.28 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
3) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 1,300.00 FEET, AN ARC LENGTH OF 151.28 FEET, AND A CHORD THAT BEARS N71°26'55"E, A DISTANCE OF 151.19 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER, AND
4) N20°30'10"W, A DISTANCE OF 209.76 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "HAYNIE" ON THE EAST LINE OF SAID LOT 34, BEING ON THE SOUTH RIGHT-OF-WAY LINE OF OLD TOWER ROAD (80' R.O.W.), SAME BEING ON THE NORTH LINE OF SAID 507.772 ACRE TRACT, FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,

THENCE, WITH THE COMMON LINE OF SAID OLD TOWER ROAD AND SAID 507.772 ACRE TRACT OF LAND, THE FOLLOWING TWO (2) COURSES AND DISTANCES, NUMBERED 1 AND 2,

1) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 994.93 FEET, AN ARC LENGTH OF 288.53 FEET, AND A CHORD THAT BEARS S62°59'03"E, A DISTANCE OF 287.52 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, AND
2) S57°57'37"E, A DISTANCE OF 30.05 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "HAYNIE" FOR CORNER,

THENCE, N69°50'41"E, OVER AND ACROSS SAID OLD TOWER ROAD, PASSING AT A DISTANCE OF 170.06 FEET A 1/2 INCH IRON ROD FOUND ON THE NORTH LINE OF SAID OLD TOWER ROAD, BEING AT A CORNER ON THE NORTH LINE OF SAID 507.772 ACRE TRACT OF LAND, SAME BEING AT THE SOUTHWEST CORNER OF SAID 124.093 ACRE TRACT OF LAND, ALSO BEING AT THE SOUTH CORNER OF LOT 18, BLOCK A, GABRIEL'S RIDGE PHASE FOUR, A SUBDIVISION RECORDED IN DOCUMENT NUMBER 2012099358, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, AND CONTINUING WITH THE SOUTHEAST LINE OF SAID LOT 18, FOR A TOTAL DISTANCE OF 183.35 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,

THENCE, S71°19'17"E, OVER AND ACROSS SAID 124.093 ACRE TRACT OF LAND, A DISTANCE OF 2,487.82 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" AT A CORNER ON THE SOUTH LINE OF SAID 124.093 ACRE TRACT, FOR THE NORTHEAST CORNER OF THE HEREIN DESCRIBED TRACT OF LAND,

THENCE, S18°40'43"W, PASSING A CORNER ON THE SOUTH LINE OF SAID 124.093 ACRE TRACT, AND OVER AND ACROSS SAID 507.772 ACRE TRACT OF LAND, A DISTANCE OF 171.13 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT OF LAND, THE FOLLOWING THIRTY-SIX (36) COURSES AND DISTANCES, NUMBERED 1 THROUGH 36,

1) S12°55'41"E, A DISTANCE OF 182.61 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
2) S15°04'37"W, A DISTANCE OF 243.54 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
3) S27°05'09"W, A DISTANCE OF 143.14 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
4) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 630.00 FEET, AN ARC LENGTH OF 102.31 FEET, AND A CHORD THAT BEARS S44°57'20"E, A DISTANCE OF 102.19 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
5) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 22.63 FEET, AND A CHORD THAT BEARS S83°31'33"E, A DISTANCE OF 20.54 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
6) S36°44'53"E, A DISTANCE OF 50.00 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
7) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 22.63 FEET, AND A CHORD THAT BEARS S10°01'47"W, A DISTANCE OF 20.54 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
8) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 630.00 FEET, AN ARC LENGTH OF 219.08 FEET, AND A CHORD THAT BEARS S23°13'50"E, A DISTANCE OF 217.97 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
9) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 25.08 FEET, AND A CHORD THAT BEARS S61°09'47"E, A DISTANCE OF 22.26 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
10) S19°03'27"E, A DISTANCE OF 50.00 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
11) S70°56'33"W, A DISTANCE OF 12.79 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
12) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 20.71 FEET, AND A CHORD THAT BEARS S31°23'22"W, A DISTANCE OF 19.10 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
13) S08°09'49"E, A DISTANCE OF 88.71 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
14) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 24.00 FEET, AN ARC LENGTH OF 26.52 FEET, AND A CHORD THAT BEARS S39°49'03"E, A DISTANCE OF 25.19 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
15) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 60.00 FEET, AN ARC LENGTH OF 99.27 FEET, AND A CHORD THAT BEARS S24°04'32"E, A DISTANCE OF 88.33 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
16) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 24.00 FEET, AN ARC LENGTH OF 25.94 FEET, AND A CHORD THAT BEARS S07°38'24"E, A DISTANCE OF 24.69 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
17) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 270.00 FEET, AN ARC LENGTH OF 145.92 FEET, AND A CHORD THAT BEARS S54°04'58"E, A DISTANCE OF 144.15 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
18) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 24.00 FEET, AND A CHORD THAT BEARS N64°35'23"E, A DISTANCE OF 21.52 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
19) N18°44'40"E, A DISTANCE OF 10.41 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
20) S71°15'20"E, A DISTANCE OF 50.00 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
21) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 27.88 FEET, AND A CHORD THAT BEARS S34°30'43"E, A DISTANCE OF 24.04 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
22) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 270.00 FEET, AN ARC LENGTH OF 13.63 FEET, AND A CHORD THAT BEARS S89°12'52"E, A DISTANCE OF 13.63 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
23) N89°20'21"E, A DISTANCE OF 103.07 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
24) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 330.00 FEET, AN ARC LENGTH OF 185.49 FEET, AND A CHORD THAT BEARS S74°33'29"E, A DISTANCE OF 183.06 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
25) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 19.74 FEET, AND A CHORD THAT BEARS N83°50'31"E, A DISTANCE OF 18.35 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
26) N46°08'21"E, A DISTANCE OF 11.06 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
27) S43°51'39"E, A DISTANCE OF 50.00 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
28) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 23.86 FEET, AND A CHORD THAT BEARS S00°33'49"W, A DISTANCE OF 21.43 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
29) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 330.00 FEET, AN ARC LENGTH OF 33.52 FEET, AND A CHORD THAT BEARS S42°06'08"E, A DISTANCE OF 33.50 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
30) S39°11'34"E, A DISTANCE OF 140.78 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
31) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 300.00 FEET, AN ARC LENGTH OF 51.29 FEET, AND A CHORD THAT BEARS S44°05'26"E, A DISTANCE OF 51.23 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
32) S27°27'12"W, A DISTANCE OF 430.97 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE RIGHT,
33) ALONG SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 305.00 FEET, AN ARC LENGTH OF 199.33 FEET, AND A CHORD THAT BEARS S46°10'33"W, A DISTANCE OF 195.80 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
34) S64°53'54"W, A DISTANCE OF 65.98 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
35) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 325.00 FEET, AN ARC LENGTH OF 169.15 FEET, AND A CHORD THAT BEARS S49°59'16"W, A DISTANCE OF 167.25 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
36) N54°55'21"W, A DISTANCE OF 233.70 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" ON THE SOUTHEAST LINE OF LOT 17, BLOCK A, SANTA RITA RANCH PHASE 1, SECTION 16, A SUBDIVISION RECORDED IN DOCUMENT NUMBER 2020159670, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, FOR CORNER,

THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT, AND ALONG THE SOUTHEAST, NORTHEAST AND NORTHWEST LINES OF SAID LOT 17, THE FOLLOWING FOUR(4) COURSES AND DISTANCES, NUMBERED 1 THOUGH 4,

1) N46°39'50"E, A DISTANCE OF 481.81 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
2) N51°29'37"W, A DISTANCE OF 700.00 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
3) S50°00'23"W, A DISTANCE OF 325.00 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
4) S81°00'20"W, A DISTANCE OF 399.99 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" AT THE NORTHWEST CORNER OF SAID LOT 17 FOR CORNER, BEING AT A CORNER ON THE EAST LINE OF LOT 35, BLOCK A, SANTA RITA RANCH PHASE 1, SECTION 14, A SUBDIVISION RECORDED IN DOCUMENT NUMBER 2021193618, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, FOR CORNER,

THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT, AND ALONG THE EAST LINE OF SAID LOT 35, THE FOLLOWING TWO (2) COURSES AND DISTANCES, NUMBERED 1 AND 2,

1) N26°00'38"W, A DISTANCE OF 924.73 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER, AND
2) N89°59'49"W, A DISTANCE OF 270.00 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" ON THE NORTH LINE OF SAID LOT 35, BEING AT THE SOUTHEAST CORNER OF LOT 104, BLOCK L, SAID SANTA RITA RANCH PHASE 2B, SECTION 1, FOR CORNER,

THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT OF LAND, AND WITH THE EAST LINE OF SAID SANTA RITA RANCH PHASE 2B, SECTION 1, THE FOLLOWING FOUR (4) COURSES AND DISTANCES, NUMBERED 1 THROUGH 4,

1) N14°59'50"W, A DISTANCE OF 63.85 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
2) N11°12'27"W, A DISTANCE OF 137.06 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
3) N78°47'33"E, A DISTANCE OF 13.51 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER, AND
4) N11°12'27"W, A DISTANCE OF 185.00 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" AT A CORNER ON THE EAST LINE OF LOT 30, BLOCK M, SAID SANTA RITA RANCH PHASE 2B, SECTION 1, FOR CORNER,

THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT OF LAND, THE FOLLOWING SEVEN (7) COURSES AND DISTANCES, NUMBERED 1 THROUGH 7,

1) N78°47'33"E, A DISTANCE OF 519.47 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
2) N33°47'58"E, A DISTANCE OF 573.80 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
3) N71°19'17"W, A DISTANCE OF 1,052.45 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
4) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 23.94 FEET, AND A CHORD THAT BEARS S62°57'11"W, A DISTANCE OF 21.48 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER,
5) N70°35'47"W, A DISTANCE OF 60.04 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,
6) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 15.00 FEET, AN ARC LENGTH OF 23.18 FEET, AND A CHORD THAT BEARS N27°02'49"W, A DISTANCE OF 20.94 FEET TO A CAPPED 1/2 INCH IRON ROD SET STAMPED "CBD SETSTONE" FOR CORNER, AND
7) N71°19'17"W, PASSING THE NORTHEAST CORNER OF LOT 45, BLOCK F, SANTA RITA RANCH PHASE 2B, SECTION 1, A SUBDIVISION RECORDED IN DOCUMENT NUMBER 2024058645, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, AND CONTINUING WITH THE NORTH LINE OF SAID LOT 45, A TOTAL DISTANCE OF 350.36 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER, BEING AT THE BEGINNING OF A CURVE TO THE LEFT,

THENCE, OVER AND ACROSS SAID 507.772 ACRE TRACT OF LAND, AND WITH THE NORTH LINE OF SAID LOT 45 THE FOLLOWING TWO (2) COURSES AND DISTANCES, NUMBERED 1 AND 2,

1) ALONG SAID CURVE TO THE LEFT, HAVING A RADIUS OF 1020.00 FEET, AN ARC LENGTH OF 604.92 FEET, AND A CHORD THAT BEARS N88°18'40"W, A DISTANCE OF 596.09 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" FOR CORNER,
2) S74°41'57"W, A DISTANCE OF 381.15 FEET TO A CAPPED 1/2 INCH IRON ROD FOUND STAMPED "CBD SETSTONE" AT THE NORTHEAST CORNER OF LOT 1, BLOCK F, SAID SANTA RITA RANCH PHASE 2B, SECTION 1, BEING AT THE SOUTH TERMINUS CORNER OF SAID TOWER ROAD, SAME BEING AT THE SOUTHEAST CORNER OF SAID SANTA RITA RANCH PHASE 2A, SECTION 4, FOR CORNER,

THENCE, N15°18'03"W, WITH THE TERMINUS LINE OF SAID TOWER ROAD, A DISTANCE OF 120.00 FEET TO THE POINT OF BEGINNING AND CONTAINING 58.109 ACRES OF LAND.

SHEET NO. 7 OF 8

Carlson, Brigance & Doering, Inc.
FIRM ID #F3791 ◆ REG. # 10024900
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
Phone No. (512) 280-5160 ◆ Fax No. (512) 280-5165

SANTA RITA RANCH PHASE 2B, SECTION 2
FINAL PLAT

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

I, JAMES EDWARD HORNE, VICE PRESIDENT, SRFV DEVELOPMENT, LLC, OWNER A CALLED 507.772 ACRE TRACT OF LAND CONVEYED IN DOCUMENT NUMBER 2020153944, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, AND THE OWNER OF A CALLED 124.093 ACRE TRACT OF LAND CONVEYED IN DOCUMENT NUMBER ________________, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS, SITUATED IN THE GEORGE W. GLASSCOCK SURVEY, ABSTRACT NUMBER 266, AND THE WILLIAM W. SMITH SURVEY, ABSTRACT NUMBER 591, WILLIAMSON COUNTY, TEXAS, AND DO HEREBY SUBDIVIDE SAID TRACTS AS SHOWN HEREON, AND DO HEREBY CONSENT TO ALL PLAT NOTE REQUIREMENTS SHOWN HEREON, AND DO HEREBY FOREVER DEDICATE TO THE PUBLIC THE ROADS, ALLEYS, RIGHTS-OF-WAY, EASEMENTS AND PUBLIC PLACES SHOWN HEREON FOR SUCH PUBLIC PURPOSES AS WILLIAMSON COUNTY MAY DEEM APPROPRIATE. THIS SUBDIVISION IS TO BE KNOWN AS,

"SANTA RITA RANCH PHASE 2B, SECTION 2 FINAL PLAT"

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

SRFV DEVELOPMENT, LLC.
A TEXAS LIMITED LIABILITY COMPANY

BY: ______________________________
JAMES EDWARD HORNE, VICE PRESIDENT
1700 CROSS CREEK LANE, STE. 100
LIBERTY HILL, TX 78642

STATE OF TEXAS §

COUNTY OF WILLIAMSON §

BEFORE ME THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED JAMES EDWARD HORNE, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT OF WRITING, AND HE ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

WITNESS MY HAND AND SEAL OF OFFICE, THIS THE ______ DAY OF ______________, 20___ A.D.

____
NOTARY PUBLIC IN AND FOR WILLIAMSON COUNTY, TEXAS

SANTA RITA KC, LLC.
A TEXAS LIMITED LIABILITY COMPANY

BY: ______________________________
JAMES EDWARD HORNE, VICE PRESIDENT
1700 CROSS CREEK LANE, STE. 100
LIBERTY HILL, TX 78642

STATE OF TEXAS §

COUNTY OF WILLIAMSON §

BEFORE ME THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED JAMES EDWARD HORNE, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT OF WRITING, AND HE ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

WITNESS MY HAND AND SEAL OF OFFICE, THIS THE ______ DAY OF ______________, 20___ A.D.

____
NOTARY PUBLIC IN AND FOR WILLIAMSON COUNTY, TEXAS

CONSENT OF MORTGAGEE

THE UNDERSIGNED, BEING THE HOLDER OF TWO DEEDS OF TRUST LIENS SECURED BY THE PROPERTY, THE FIRST DATED OCTOBER 31, 2013 RECORDED AS DOCUMENT NO. 2013103003 IN THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, SECURING A NOTE OF EVEN DATE THEREWITH, AND THE SECOND DATED JANUARY 31, 2018 RECORDED AS DOCUMENT NO. 2018009177, SECURING A NOTE OF EVEN DATE THEREWITH, EXECUTES THIS DECLARATION SOLELY FOR THE PURPOSES OF EVIDENCING ITS CONSENT TO THE TERMS AND PROVISIONS HEREOF.

INTERNATIONAL BANK OF COMMERCE,
A TEXAS BANKING ASSOCIATION

BY: ______________________________

PRINTED NAME: ________________________

TITLE: ______________________________

STATE OF TEXAS
COUNTY OF ____________________

BEFORE ME ON THIS DAY PERSONALLY APPEARED ____________________, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS THE ______ DAY OF _________________, 20___, A.D.

BY: ______________________________
NOTARY PUBLIC, STATE OF TEXAS

PRINTED NAME: ________________________

MY COMMISSION EXPIRES: ______________

CITY OF LIBERTY HILL APPROVAL

THE CITY OF LIBERTY HILL, TEXAS ACKNOWLEDGES RECEIPT OF THIS PLAT FOR REVIEW AND/OR APPROVAL IN CONJUNCTION WIH PLANNING PURPOSES AND PAYMENT OF APPLICABLE FEES FOR THE PROVISION OF WATER AND/OR WASTEWATER SERVICES.

______________________________ ________________
PAUL BRANDENBURG, CITY MANAGER DATE
CITY OF LIBERTY HILL, TEXAS

ROAD NAME & 911 ADDRESSING APPROVAL

ROAD NAME AND ADDRESS ASSIGNMENTS VERIFIED THIS THE ____ DAY OF ______________ , 20___ A.D.

____
WILLIAMSON COUNTY ADDRESSING COORDINATOR
WILLIAMSON COUNTY, TEXAS

PRINTED NAME:____

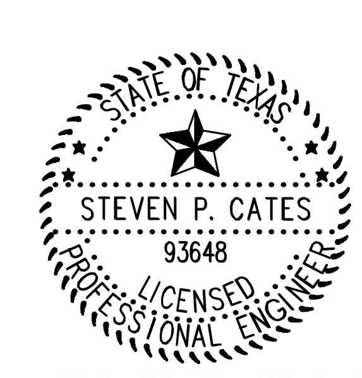
STATE OF TEXAS §

COUNTY OF TRAVIS §

NO PORTION OF THIS TRACT IS WITHIN THE 100 YEAR FLOOD PLAIN AS SHOWN ON FLOOD INSURANCE RATE COMMUNITY PANEL #48491C0275E, EFFECTIVE SEPTEMBER 26, 2008 FOR WILLIAMSON COUNTY, TEXAS.

I, STEVEN P. CATES, P.E., AM AUTHORIZED UNDER THE LAWS OF THE STATE OF TEXAS, TO PRACTICE THE PROFESSION OF ENGINEERING, AND HEREBY CERTIFY THAT THIS SUBDIVISION PLAT COMPLIES WITH THE REQUIREMENTS OF WILLIAMSON COUNTY.

ENGINEERING BY:____
STEVEN P. CATES, P.E. NO. 93648 DATE
CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE,
AUSTIN, TEXAS 78749



CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

THIS FLOOD STATEMENT, AS DETERMINED BY A H.U.D.-F.I.A. FLOOD INSURANCE RATE MAP, DOES NOT IMPLY THAT THE PROPERTY OR THE IMPROVEMENTS THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS, GREATER FLOODS CAN AND WILL OCCUR, AND FLOOD HEIGHTS MAY INCREASE BY MAN-MADE OR NATURAL CAUSES.
THIS STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF ENGINEER OR SURVEYOR.

STATE OF TEXAS §

COUNTY OF TRAVIS §

I, AARON V. THOMASON, R.P.L.S., AM AUTHORIZED UNDER THE LAWS OF THE STATE OF TEXAS, TO PRACTICE THE PROFESSION OF SURVEYING, AND HEREBY CERTIFY THAT THIS SUBDIVISION PLAT COMPLIES WITH THE WILLIAMSON COUNTY SUBDIVISION ORDINANCE. ALL EASEMENTS OF RECORD ARE SHOWN OR NOTED ON THE PLAT AS FOUND ON THE TITLE POLICY ISSUED BY TITLE RESOURCES GUARANTY COMPANY, GF NO. 2010289-COM, EFFECTIVE DATE JUNE 10, 2020, ISSUED DATE JUNE 19, 2020.

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. FOR REVIEW PURPOSES ONLY. RELEASED DECEMBER 10, 2024

SURVEYED BY:____
AARON V. THOMASON, R.P.L.S. NO. 6214 DATE
CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE,
AUSTIN, TEXAS 78749
AARON@CBDENG.COM

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

I, BILL GRAVELL JR., COUNTY JUDGE OF WILLIAMSON COUNTY, TEXAS, DO HEREBY CERTIFY THAT THIS MAP OR PLAT, WITH FIELD NOTES HEREON, FOR A SUBDIVISION HAVING BEEN FULLY PRESENTED TO THE COMMISSIONERS COURT OF WILLIAMSON COUNTY, TEXAS, AND BY THE SAID COURT DULY CONSIDERED, WERE ON THIS DAY APPROVED AND THAT THIS PLAT IS AUTHORIZED TO BE REGISTERED AND RECORDED IN THE PROPER RECORDS OF THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.

______________________ ____________
BILL GRAVELL JR., COUNTY JUDGE DATE
WILLIAMSON COUNTY, TEXAS

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

I, NANCY 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.

NANCY RISTER, CLERK COUNTY COURT
OF WILLIAMSON COUNTY, TEXAS

BY: ____________________________, DEPUTY

PRINTED NAME:______________________

SHEET NO. 8 OF 8

Carlson, Brigance & Doering, Inc.
FIRM ID #F3791 ◆ REG. # 10024900
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
Phone No. (512) 280-5160 ◆ Fax No. (512) 280-5165

CONCRETE WASHOUT
SEE DETAIL SHEET X

CONTRACTOR STAGING
AND TEMPORARY
SPOILS AREA

STABILIZED
CONSTRUCTION
ENTRANCE
(50'L x 20'W)

INLET
PROTECTION
(TYP.)

LOC AND SILT FENCE AT
PROPERTY LINE. LINES
ARE SHOWN OFFSET FOR
GRAPHICAL PURPOSE ONLY

BARCELLUS BEND

FUTURE
SANTA RITA RANCH
PHASE 2B SECTION 3

COW CAMP LANE

LA CRESTA

PIONEER HILLS BEND

LA COLINA

AMADOR COURT

HUNTLEY DRIVE

LEGEND

- SF — SILT FENCE
- JH — SILT FENCE J-HOOK
- LOC — LIMITS OF CONSTRUCTION
- TEMPORARY ORANGE CONSTRUCTION FENCING
- IP — INLET PROTECTION
- RB — ROCK BERM
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- DIVERSION BERM
- SEEDING & TOPSOIL (PERMANENT) WITHIN THE ROW ONLY
- ROLLED EROSION CONTROL MATTING, SEEDING & TOPSOIL (PERMANENT) FOR SLOPES 5:1 & STEEPER
- SEEDING & TOPSOIL (PERMANENT) FOR EASEMENTS, OPEN SPACE LOTS, AND VEGETATIVE FILTER STRIPS ON ALL SLOPES FLATTER THAN 5:1

*ALL AREAS DISTURBED OUTSIDE OF THE SINGLE FAMILY LOTS ARE REQUIRED TO BE REVEGETATED BY THE CONTRACTOR

0 60' 120'

SCALE: 1" = 60'

DESIGNED BY:	DRAFTED BY:
SPC	CEJ

DATE

REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas
Phone No. (512) 280-5160
North Office
12129 RR 620 N. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: EROSION CONTROL PLAN (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
BJF F3791
12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 7 OF 70

SHEET NO.: 7

FILE PATH: J:\ACAD\5559\dwg\5559-EROSION.dwg - Dec 19, 2024 - 7:38am

INLET PROTECTION (TYP.)

LOC AND SILT FENCE AT PROPERTY LINE. LINES ARE SHOWN OFFSET FOR GRAPHICAL PURPOSE ONLY

PIONEER HILLS BEND

COW CAMP LANE

LA COLINA

AMADOR COURT

HUNTLEY DRIVE

FUTURE
SANTA RITA RANCH
PHASE 2C SECTION 1

QUEEN COURT

LEGEND

- SF — SILT FENCE
- JH — SILT FENCE J-HOOK
- LOC — LIMITS OF CONSTRUCTION
- TEMPORARY ORANGE CONSTRUCTION FENCING
- IP — INLET PROTECTION
- RB — ROCK BERM
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- SEEDING & TOPSOIL (PERMANENT) WITHIN THE ROW ONLY
- ROLLED EROSION CONTROL MATTING, SEEDING & TOPSOIL (PERMANENT) FOR SLOPES 5:1 & STEEPER
- SEEDING & TOPSOIL (PERMANENT) FOR EASEMENTS, OPEN SPACE LOTS, AND VEGETATIVE FILTER STRIPS ON ALL SLOPES FLATTER THAN 5:1

*ALL AREAS DISTURBED OUTSIDE OF THE SINGLE FAMILY LOTS ARE REQUIRED TO BE REVEGETATED BY THE CONTRACTOR

0 60' 120'

SCALE: 1" = 60'

DESIGNED BY: SPC	DRAFTED BY: CEJ
DATE	
REVISION	

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749 Phone No. (512) 280-5160
North Office: 12129 RR 620 N, #300, Austin, Texas 78750 Fax No. (512) 280-5165

SHEET NAME: EROSION CONTROL PLAN (2 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 8 OF 70

SHEET NO.: 8

Specifications

Western Excelsior manufactures a full line of Rolled Erosion Control Products (RECPs). Excel SS-2 temporary Erosion Control Blanket is composed of a 100% certified weed free agricultural straw matrix mechanically (stitch) bound on two inch centers between two photodegradable, synthetic nets. Excel SS-2 is intended for use in channels or on slopes requiring erosion protection for a period up to twelve months. Actual field longevity is dependent on soil and climatic conditions.

Each roll of EXCEL SS-2 is made in the USA and manufactured under Western Excelsior's Quality Assurance Program to ensure a continuous distribution of fibers and consistent thickness. Typical manufactured properites are provided in Table 1 and product characteristics are provided in Table 2.

Table 1 - Specified Expected Values

Tested Property	Test Method	Value
Tensile Strength (MD) x (TD)	ASTM D6818	10.0 lb/in (1.8 kN/m) x 6.2 lb/in (1.1 kN/m)
Elongation (MD) x (TD)	ASTM D6818	20 % x 26 %
Mass Per Unit Area	ASTM D6475	8.0 oz/yd^2 (271 g/m^2)
Thickness	ASTM D6525	0.28 in (7 mm)
Light Penetration	ASTM D6567	22 % open
Water Absorption	ASTM D1117	450 %

Table 2 - Netting

Top Net Type	Synthetic, Photodegradable
Bottom Net Type	Synthetic, Photodegradable
Top Net Opening Dimensions	0.5 in (13 mm) x 0.5 in (13 mm)
Bottom Net Opening Dimensions	0.5 in (13 mm) x 0.5 in (13 mm)

Excel SS-2 is available in multiple roll sizes ranging in width from 8.0 ft to 16.0 ft. and 112.5 ft to 600 ft in length. Standard roll sizes are 100 square yards, measuring 8.0 ft wide by 112.5 ft long. Custom roll sizes are available upon request.

Document # WE_DICD_SS2_SPEC. This document has been developed to provide the characteristic properties of the product described. For questions, to request performance data or installation recommendations, contact Western Excelsior at 866-540-9810 or wexcotech@westernexcelsior.com. Updated 4/14/2014.

I. PERMANENT EROSION CONTROL:

1. All disturbed areas outside of the single family lots shall be revegetated as noted below.
2. All revegetated areas require a minimum of four (4) inches of topsoil be placed prior to revegetation. Do not add topsoil within the critical root zone of existing trees.
3. All revegetated areas are required to be watered immediately after installation to achieve germination and a healthy stand of plants that can ultimately survive without supplemental water. Apply the water uniformly to the planted areas without causing displacement or erosion of the materials or soil. Maintain the seedbed in a moist condition favorable for grass growth. A temporary sprinkler system must be installed in areas not accessible to a water truck. The sprinkler system must remain in place until acceptable grass growth per #4 below is established.
4. Permanent erosion control shall be acceptable when the grass has grown at least 1½ inches high with a minimum of 95 percent with no bare spots larger than 10 square feet.

II. VEGETATIVE STABILIZATION:

1. Seed Mix:
   a) Seed mix shall be ordered from Native American Seed - 10101 FM 1102 New Braunfels, TX 78130 – (800) 728-4043
   b) Dam Slope Mix Item #2808MIX 31222 (see mix below). You must submit to the engineer (via email at steve@cbdeng.com), a receipt showing total pounds purchased is equal to the seed rate multiplied by the total square footage of area to be revegetated. The dam slope mix seed rate is 2 lbs. per 1000 sq.ft. for Hydromulch.

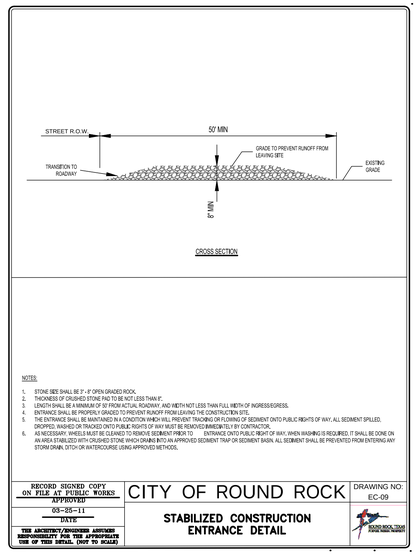
Name	% by wt	Test Date	Germination	Dormant	Total Germ
Prairie Wildrye	16.70%	8/2022	15%	70%	85%
Virginia Wildrye	14.32%	8/2022	7%	85%	92%
Sideoats Grama	11.93%	8/2022	54%	14%	68%
Big Bluestem	11.93%	7/2022	97%	2%	99%
Tall Dropseed	8.95%	11/2022	31%	51%	82%
Indiangrass	5.97%	7/2022	51%	47%	98%
Purity: 85.18%	Inert: 14.81%	Other: 0.01%	Weed: 0%	Noxious: None	**Origin: USA**
Germ: 39.47%	Dormant: 45.22%	Ttl Germ: 84.69%	PLS: 72.14%	Seeds/lb: 264,245	**Net Weight: 50 Lbs**

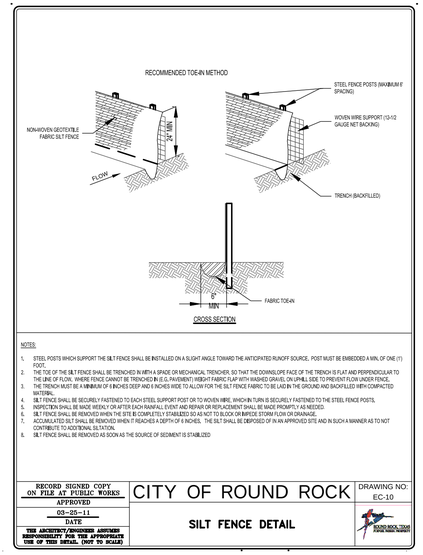
Little Bluestem 4.89%, Blue Grama 4.89%, Little Bluestem - Pineywoods 4.89%, Buffalograss 2.98%, Western Wheatgrass 2.98%, Switchgrass 1.79%, Eastern Gamagrass 1.12%, Sand Lovegrass 1.01%, Cane Bluestem 0.89%, Sand Dropseed 0.89%, Curly Mesquite 0.36%, Texas Cupgrass 0.18%, Slender Grama 0.030%

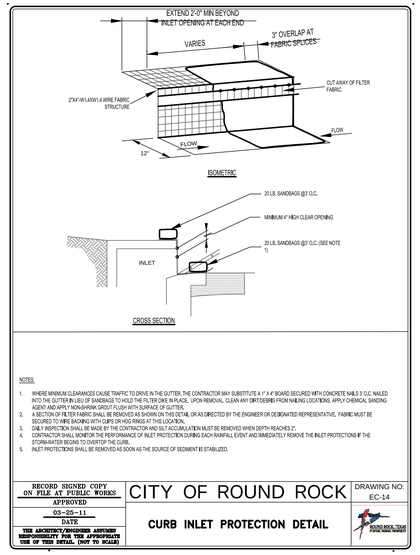
2. Revegetation between September 15th to March 1st:
   a) Add Cereal Rye Grain to Dam Slope Mix. You must submit to the engineer (via email at steve@cbdeng.com), a receipt showing total pounds purchased is equal to the seed rate multiplied by the total square footage of area to be revegetated. The cereal rye grain seed rate is 10 lbs. per 1000 sq.ft. for Hydromulch.
   b) Hydromulch shall comply with Table 1, below.

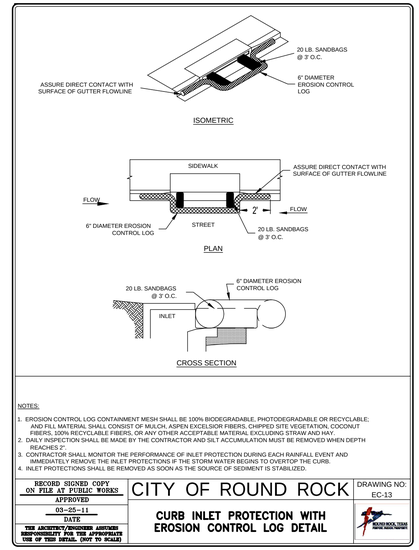
Material	Description	Longevity	Typical Applications	Application Rates
Bonded Fiber Matrix (BFM)	80% Organic defibrated fibers			
10% Tackifier		6 months	On slopes up to 2:1 and erosive soil conditions	2,500 to 4,000 lbs per acre (see manufacturers recommendations)
Fiber Reinforced Matrix (FRM)	65% Organic defibrated fibers 25% Reinforcing Fibers or less 10% Tackifier	Up to 12 months	On slopes up to 1:1 and erosive soil conditions	3,000 to 4,500 lbs per acre (see manufacturers recommendations)

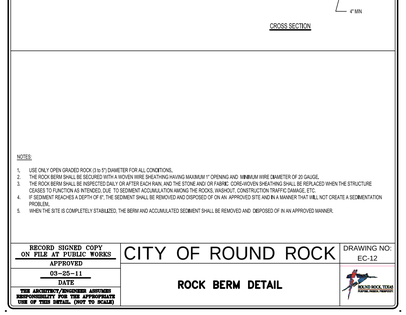
1. Erosion Control Matting:
   a) Erosion control matting shall be installed within areas delineated on the Erosion Control Plan. Matting shall be EXCEL SS-2 per the specification on this sheet.

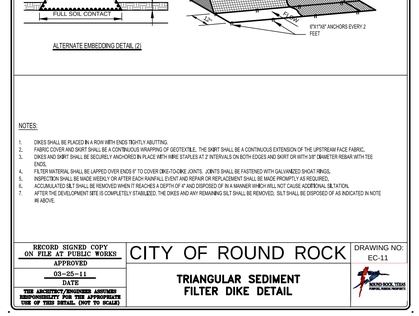


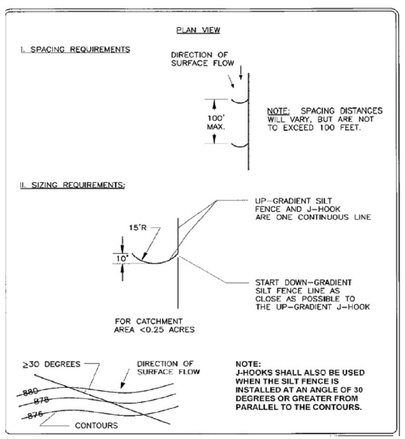


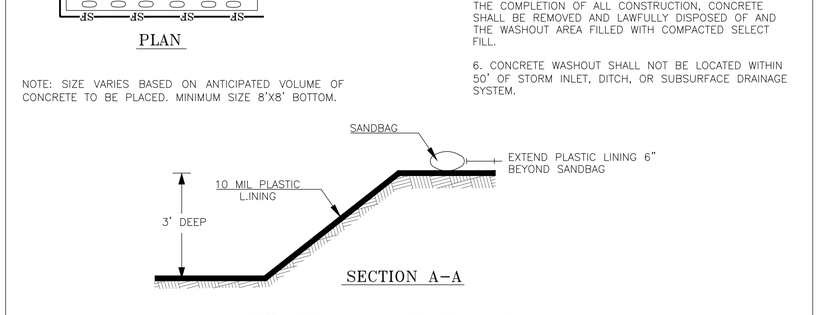












CONCRETE WASHOUT AREA NOTES:

1. WASHOUT SHALL BE INSTALLED PRIOR TO PLACING ANY CONCRETE ON-SITE.
2. INSTALL DIRECTIONAL SIGNS AS NECESSARY TO INDICATE WASHOUT LOCATION TO CONCRETE SUPPLY VEHICLES.
3. WASHOUT SHALL BE INSPECTED WEEKLY AND AFTER RAIN EVENTS IN ACCORDANCE WITH SWPPP.
4. CONTRACTOR TO MAINTAIN, REPAIR, ENLARGE OR RELOCATE WASHOUT AS NECESSARY TO MEET PROJECT REQUIREMENTS.
5. WHEN NECESSARY DURING CONSTRUCTION, OR AT THE COMPLETION OF ALL CONSTRUCTION, CONCRETE SHALL BE REMOVED AND LAWFULLY DISPOSED OF AND THE WASHOUT AREA FILLED WITH COMPACTED SELECT FILL.
6. CONCRETE WASHOUT SHALL NOT BE LOCATED WITHIN 50' OF STORM INLET, DITCH, OR SUBSURFACE DRAINAGE SYSTEM.

CONCRETE WASHOUT DETAIL
N.T.S

DESIGNED BY: SPC | DRAFTED BY: CEL

REVISION	DATE

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
5501 West William Cannon Dr. 78749
Austin, Texas
Phone No. (512) 280-5160
North Office
12129 RR 620 N. Suite 600
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Fax No. (512) 280-5165

SHEET NAME: EROSION CONTROL NOTES & DETAILS
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F-3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 9 OF 70
SHEET NO.: 9

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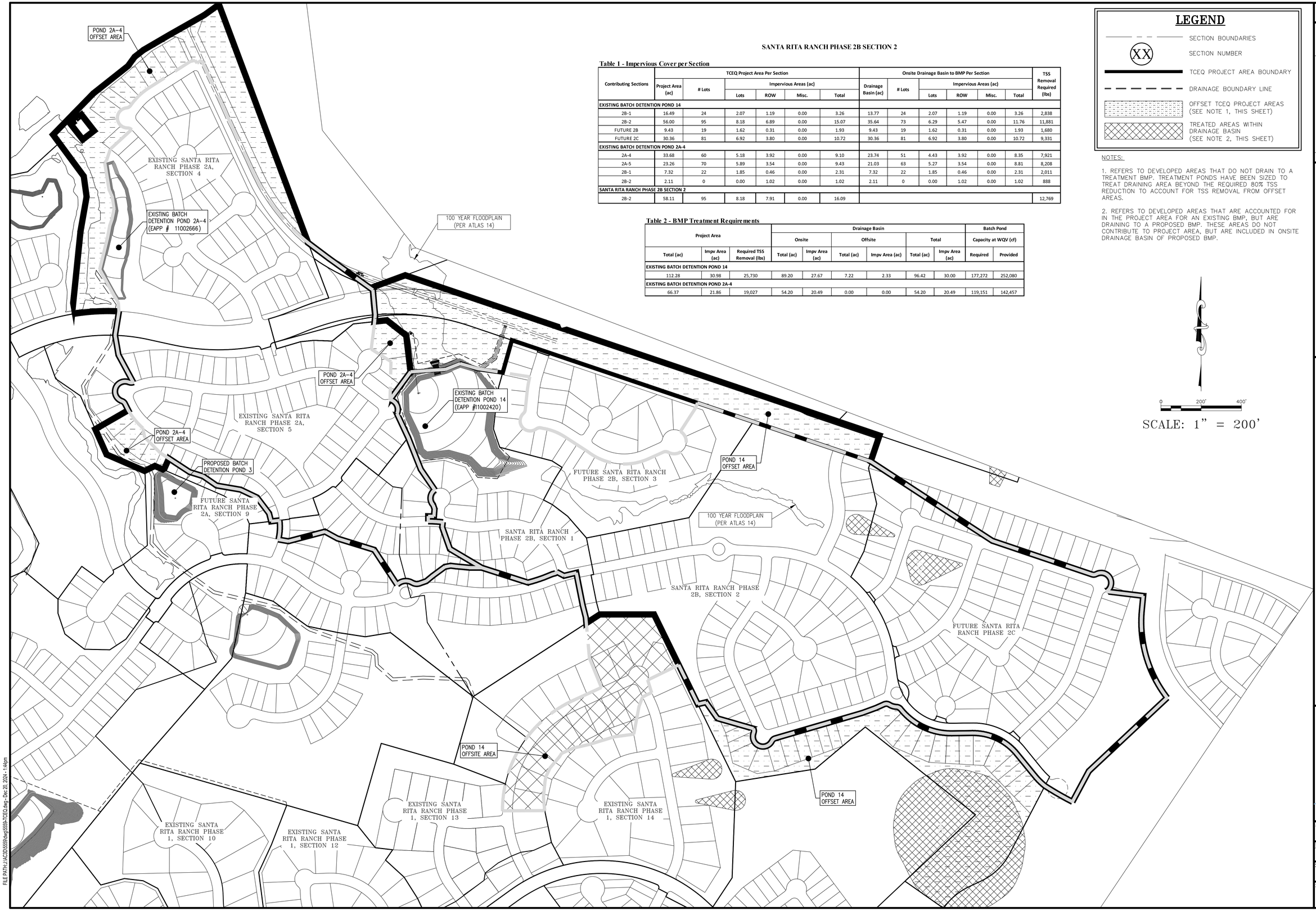

SANTA RITA RANCH PHASE 2B SECTION 2

Table 1 - Impervious Cover per Section

Contributing Sections	TCEQ Project Area Per Section						Onsite Drainage Basin to BMP Per Section						TSS Removal Required (lbs)
	Project Area (ac)	# Lots	Impervious Areas (ac)				Drainage Basin (ac)	# Lots	Impervious Areas (ac)				
			Lots	ROW	Misc.	Total			Lots	ROW	Misc.	Total	
EXISTING BATCH DETENTION POND 14													
2B-1	16.49	24	2.07	1.19	0.00	3.26	13.77	24	2.07	1.19	0.00	3.26	2,838
2B-2	56.00	95	8.18	6.89	0.00	15.07	35.64	73	6.29	5.47	0.00	11.76	11,881
FUTURE 2B	9.43	19	1.62	0.31	0.00	1.93	9.43	19	1.62	0.31	0.00	1.93	1,680
FUTURE 2C	30.36	81	6.92	3.80	0.00	10.72	30.36	81	6.92	3.80	0.00	10.72	9,331
EXISTING BATCH DETENTION POND 2A-4													
2A-4	33.68	60	5.18	3.92	0.00	9.10	23.74	51	4.43	3.92	0.00	8.35	7,921
2A-5	23.26	70	5.89	3.54	0.00	9.43	21.03	63	5.27	3.54	0.00	8.81	8,208
2B-1	7.32	22	1.85	0.46	0.00	2.31	7.32	22	1.85	0.46	0.00	2.31	2,011
2B-2	2.11	0	0.00	1.02	0.00	1.02	2.11	0	0.00	1.02	0.00	1.02	888
SANTA RITA RANCH PHASE 2B SECTION 2													
2B-2	58.11	95	8.18	7.91	0.00	16.09							12,769

Table 2 - BMP Treatment Requirements

Project Area			Drainage Basin						Batch Pond	
			Onsite		Offsite		Total		Capacity at WQV (cf)	
Total (ac)	Impv Area (ac)	Required TSS Removal (lbs)	Total (ac)	Impv Area (ac)	Total (ac)	Impv Area (ac)	Total (ac)	Impv Area (ac)	Required	Provided
EXISTING BATCH DETENTION POND 14										
112.28	30.98	25,730	89.20	27.67	7.22	2.33	96.42	30.00	177,272	252,080
EXISTING BATCH DETENTION POND 2A-4										
66.37	21.86	19,027	54.20	20.49	0.00	0.00	54.20	20.49	119,151	142,457

LEGEND

- SECTION BOUNDARIES
- XX — SECTION NUMBER
- TCEQ PROJECT AREA BOUNDARY
- DRAINAGE BOUNDARY LINE
- OFFSET TCEQ PROJECT AREAS (SEE NOTE 1, THIS SHEET)
- TREATED AREAS WITHIN DRAINAGE BASIN (SEE NOTE 2, THIS SHEET)

NOTES:

1. REFERS TO DEVELOPED AREAS THAT DO NOT DRAIN TO A TREATMENT BMP. TREATMENT PONDS HAVE BEEN SIZED TO TREAT DRAINING AREA BEYOND THE REQUIRED 80% TSS REDUCTION TO ACCOUNT FOR TSS REMOVAL FROM OFFSET AREAS.

2. REFERS TO DEVELOPED AREAS THAT ARE ACCOUNTED FOR IN THE PROJECT AREA FOR AN EXISTING BMP, BUT ARE DRAINING TO A PROPOSED BMP. THESE AREAS DO NOT CONTRIBUTE TO PROJECT AREA, BUT ARE INCLUDED IN ONSITE DRAINAGE BASIN OF PROPOSED BMP.

0 200' 400'

SCALE: 1" = 200'

DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

Carlson, Brigance & Doering, Inc.
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SHEET NAME: TCEQ PROJECT AND DRAINAGE MAP

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
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CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 12 OF 70

SHEET NO.: 12

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SCALE: 1" = 100'

LEGEND

- PROPERTY BOUNDARY
- DRAINAGE BOUNDARY LINE
- FUTURE DRAINAGE BOUNDARY
- (A1) DRAINAGE AREA LABEL
- 940 EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- FLOW ARROW
- HP/LP HIGH POINT/LOW POINT

DESIGNED BY:	DRAFTED BY:
SPC	CEJ

DATE

REVISION

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SHEET NAME: DRAINAGE PLAN (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
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CARLSON, BRIGANCE & DOERING, INC.
ID # F3791
12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 13 OF 70

SHEET NO.: 13

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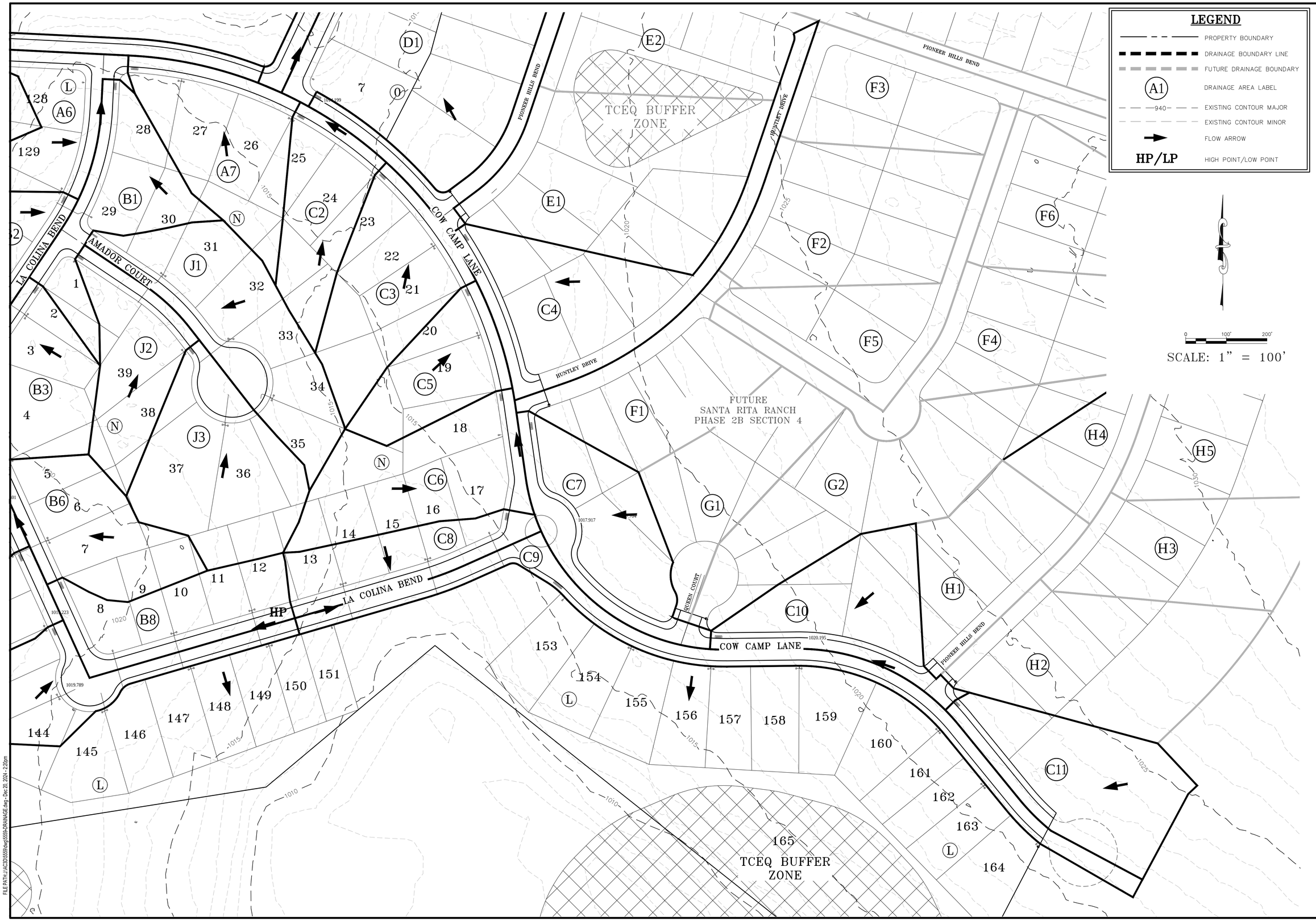

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DESIGNED BY: SPC
DRAFTED BY: CEJ
DATE
REVISION

SHEET NAME: DRAINAGE PLAN (2 OF 2)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 14 OF 70
SHEET NO.: 14

FILE PATH: J:\ACAD\5559\dwg\5559-DRAINAGE.dwg - Dec 20, 2024 - 2:20pm

Area No.	Area (Acre)	T_C (Min.)	Perv. (%)	Imperv. (%)	C 10	C 25	C 100	I_{10} In/Hr	I_{25} In/Hr	I_{100} In/Hr	Q_{10} CFS	Q_{25} CFS	Q_{100} CFS	C10*A	C25*A	C100*A	AREA NO.
A1	0.51	10	44	56	0.61	0.65	0.73	7.26	8.78	11.23	2.2	2.9	4.2	0.31	0.33	0.37	A1
A2	6.53	12	55	45	0.58	0.63	0.71	6.74	8.18	10.52	25.7	33.6	48.7	3.82	4.11	4.62	A2
A3	0.49	10	23	77	0.68	0.73	0.82	7.26	8.78	11.23	2.4	3.1	4.5	0.33	0.36	0.40	A3
A4	0.27	10	32	68	0.66	0.71	0.80	7.26	8.78	11.23	1.3	1.7	2.4	0.18	0.19	0.21	A4
A5	1.28	10	55	45	0.58	0.63	0.71	7.26	8.78	11.23	5.4	7.1	10.2	0.75	0.81	0.91	A5
A6	0.66	13	45	55	0.56	0.61	0.69	6.62	8.04	10.36	2.4	3.2	4.7	0.37	0.40	0.45	A6
A7	1.01	15	50	50	0.53	0.58	0.66	6.15	7.49	9.69	3.3	4.4	6.4	0.54	0.58	0.66	A7
B1	0.81	12	47	53	0.59	0.64	0.72	6.74	8.18	10.52	3.2	4.2	6.1	0.48	0.52	0.58	B1
B2	0.45	11	45	55	0.60	0.65	0.73	7.03	8.51	10.92	1.9	2.5	3.6	0.27	0.29	0.33	B2
B3	0.83	10	48	52	0.59	0.63	0.71	7.15	8.66	11.09	3.5	4.6	6.6	0.49	0.53	0.59	B3
B4	1.16	13	52	48	0.57	0.62	0.70	6.54	7.94	10.24	4.3	5.7	8.3	0.66	0.72	0.81	B4
B5	1.09	12	51	49	0.57	0.62	0.70	6.79	8.24	10.59	4.2	5.6	8.1	0.62	0.67	0.76	B5
B6	0.90	15	51	49	0.53	0.57	0.65	6.26	7.61	9.85	3.0	3.9	5.8	0.47	0.51	0.59	B6
B7	1.10	14	53	47	0.51	0.56	0.64	6.33	7.70	9.95	3.6	4.7	7.0	0.57	0.62	0.70	B7
B8	0.80	12	44	56	0.56	0.61	0.69	6.68	8.11	10.44	3.0	3.9	5.8	0.45	0.49	0.55	B8
B9	1.50	14	48	52	0.54	0.59	0.67	6.38	7.75	10.01	5.2	6.8	10.0	0.81	0.88	1.00	B9
C1	0.95	21	36	64	0.61	0.65	0.74	5.25	6.43	8.41	3.0	4.0	5.9	0.58	0.62	0.70	C1
C2	0.72	15	51	49	0.53	0.57	0.65	6.25	7.61	9.84	2.4	3.1	4.6	0.38	0.41	0.47	C2
C3	1.02	14	51	49	0.53	0.57	0.65	6.35	7.72	9.98	3.4	4.5	6.6	0.54	0.58	0.66	C3
C4	1.42	13	42	58	0.58	0.62	0.71	6.49	7.88	10.17	5.3	7.0	10.2	0.82	0.89	1.00	C4
C5	0.66	13	50	50	0.53	0.58	0.66	6.47	7.87	10.15	2.3	3.0	4.4	0.35	0.38	0.43	C5
C6	1.12	13	52	48	0.52	0.57	0.64	6.51	7.91	10.20	3.8	5.0	7.4	0.58	0.63	0.72	C6
C7	1.06	22	47	53	0.55	0.59	0.67	5.20	6.36	8.32	3.0	4.0	5.9	0.58	0.63	0.71	C7
C8	0.65	14	44	56	0.57	0.61	0.69	6.44	7.83	10.10	2.4	3.1	4.6	0.37	0.40	0.45	C8
C9	0.86	10	21	79	0.69	0.74	0.83	7.26	8.78	11.23	4.3	5.6	8.0	0.60	0.64	0.71	C9
C10	0.99	14	48	52	0.59	0.64	0.72	6.33	7.71	9.96	3.7	4.8	7.1	0.58	0.63	0.71	C10
C11	1.15	15	48	52	0.54	0.59	0.67	6.25	7.61	9.84	3.9	5.1	7.5	0.62	0.67	0.77	C11
D1	3.18	15	53	47	0.57	0.61	0.69	6.19	7.53	9.75	11.1	14.6	21.4	1.80	1.94	2.19	D1
D2	0.41	10	26	74	0.66	0.71	0.80	7.26	8.78	11.23	2.0	2.6	3.7	0.27	0.29	0.33	D2
D3	1.18	21	50	50	0.53	0.58	0.66	5.33	6.52	8.51	3.3	4.4	6.6	0.63	0.68	0.77	D3
E1	1.96	14	52	48	0.52	0.56	0.64	6.33	7.70	9.95	6.4	8.5	12.5	1.01	1.10	1.26	E1
E2	1.40	12	48	52	0.59	0.64	0.72	6.76	8.20	10.55	5.6	7.3	10.6	0.83	0.89	1.00	E2
E3	0.80	15	29	71	0.65	0.69	0.78	6.24	7.60	9.82	3.2	4.2	6.1	0.52	0.55	0.62	E3
F1	1.09	14	49	51	0.54	0.58	0.66	6.44	7.82	10.10	3.8	5.0	7.3	0.58	0.63	0.72	F1
F2	1.49	16	52	48	0.52	0.56	0.64	6.05	7.37	9.55	4.7	6.2	9.2	0.77	0.84	0.96	F2
F3	1.30	18	44	56	0.56	0.61	0.69	5.70	6.96	9.05	4.2	5.5	8.1	0.73	0.79	0.90	F3
F4	1.49	20	46	54	0.55	0.60	0.68	5.46	6.68	8.71	4.5	5.9	8.8	0.82	0.89	1.01	F4
F5	1.03	16	40	60	0.58	0.63	0.71	6.07	7.39	9.58	3.6	4.8	7.0	0.60	0.65	0.73	F5
F6	1.30	22	51	49	0.52	0.57	0.65	5.22	6.40	8.36	3.6	4.7	7.0	0.68	0.74	0.84	F6
G1	0.99	14	52	48	0.52	0.57	0.65	6.35	7.73	9.98	3.3	4.3	6.4	0.52	0.56	0.64	G1
G2	1.80	20	53	47	0.51	0.56	0.64	5.38	6.58	8.59	5.0	6.6	9.8	0.92	1.00	1.15	G2
H1	0.98	21	48	52	0.54	0.59	0.67	5.23	6.40	8.37	2.8	3.7	5.5	0.53	0.57	0.65	H1
H2	1.58	16	52	48	0.52	0.56	0.64	6.01	7.33	9.50	4.9	6.5	9.6	0.82	0.89	1.01	H2
H3	1.20	15	52	48	0.52	0.56	0.64	6.25	7.61	9.84	3.9	5.1	7.6	0.62	0.68	0.77	H3
H4	0.71	20	39	61	0.59	0.64	0.72	5.44	6.65	8.67	2.3	3.0	4.4	0.42	0.45	0.51	H4
H5	1.73	15	52	48	0.52	0.56	0.64	6.16	7.50	9.71	5.5	7.3	10.8	0.90	0.98	1.11	H5
H6	1.45	17	51	49	0.52	0.57	0.65	5.82	7.10	9.22	4.4	5.9	8.7	0.76	0.82	0.94	H6
J1	1.26	14	48	52	0.54	0.59	0.67	6.36	7.73	9.99	4.3	5.7	8.4	0.68	0.74	0.84	J1
J2	0.76	13	49	51	0.58	0.63	0.71	6.50	7.90	10.19	2.9	3.8	5.5	0.44	0.48	0.54	J2
J3	1.23	12	52	48	0.57	0.62	0.70	6.79	8.24	10.59	4.8	6.2	9.1	0.70	0.76	0.86	J3

AREA NO. 1st / Junc.#	AREA NO. 2nd / Junc.#	AREA NO. 3rd	Junction (JC) or End of Line (X)	ADD Tc (min)	AREAS COMBINED	T_C (Min.)	C_{25}*A	C_{100}*A	I_{25} In/Hr	I_{100} In/Hr	Q_{25} CFS	Q_{100} CFS
C11			X			15	0.67	0.77	7.61	9.84	5.1	7.5
H6	H5					17	1.80	2.05	7.10	9.22	12.8	18.9
H4						20	2.25	2.57	6.65	8.67	15.0	22.2
H3						20	2.93	3.34	6.65	8.67	19.5	28.9
H2						20	3.82	4.35	6.65	8.67	25.4	37.7
H1			X			21	4.39	5.00	6.40	8.37	28.1	41.9
C11	H1		JC			21	5.06	5.77	6.40	8.37	32.4	48.3
C10			X			21	5.69	6.48	6.40	8.37	36.5	54.2
G2	G1		X			20	1.56	1.79	6.58	8.59	10.3	15.3
C10	G2		JC			21	7.26	8.26	6.40	8.37	46.5	69.1
C9						21	7.90	8.97	6.40	8.37	50.5	75.1
C8						21	8.29	9.43	6.40	8.37	53.1	78.9
C7			X			22	8.92	10.14	6.36	8.32	56.8	84.4
F6	F5					22	1.39	1.58	6.40	8.36	8.9	13.2
F4						22	2.28	2.58	6.40	8.36	14.6	21.6
F3						22	3.07	3.48	6.40	8.36	19.6	29.1
F2						22	3.91	4.44	6.40	8.36	25.0	37.1
F1			X			22	4.54	5.16	6.40	8.36	29.0	43.2
C7	F1		JC			22	13.46	15.30	6.36	8.32	85.7	127.3
C6						22	14.10	16.02	6.36	8.32	89.7	133.3
C5						22	14.48	16.46	6.36	8.32	92.1	136.9
C4			X			22	15.36	17.46	6.36	8.32	97.7	145.2
E3	E2					15	1.44	1.62	7.60	9.82	11.0	16.0
E1			X			15	2.54	2.88	7.60	9.82	19.3	28.3
C4	E1		JC			22	17.91	20.34	6.36	8.32	113.9	169.2
C3						22	18.49	21.00	6.36	8.32	117.6	174.7
C2						22	18.90	21.47	6.36	8.32	120.3	178.6
C1			X			22	19.52	22.17	6.36	8.32	124.2	184.5
D3	D2					21	0.97	1.10	6.52	8.51	6.3	9.4
D1			X			21	2.91	3.29	6.52	8.51	19.0	28.0
D1	C1		JC			22	22.43	25.46	6.36	8.32	142.7	211.9
						#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
B9	B8					14	1.37	1.55	7.75	10.01	10.6	15.5
B7						14	1.98	2.25	7.70	9.95	15.3	22.4
B6						15	2.50	2.84	7.61	9.85	19.0	28.0
B5						15	3.17	3.60	7.61	9.85	24.1	35.5
B4						15	3.89	4.41	7.61	9.85	29.6	43.4
B3			X			15	4.41	5.00	7.61	9.85	33.6	49.3
J3	J2					13	1.24	1.39	7.90	10.19	9.8	14.2
J1			X			14	1.97	2.23	7.73	9.99	15.3	22.3
B3	J1		JC			15	6.39	7.24	7.61	9.85	48.6	71.3
B2						15	6.68	7.56	7.61	9.85	50.8	74.5
B1						15	7.19	8.15	7.61	9.85	54.8	80.2
A7						15	7.78	8.81	7.49	9.69	58.2	85.4
A6						15	8.18	9.26	7.49	9.69	61.2	89.8
A5						15	8.98	10.17	7.49	9.69	67.2	98.6
A4						15	9.17	10.38	7.49	9.69	68.7	100.6
A3						15	9.53	10.78	7.49	9.69	71.4	104.5
A2						15	13.64	15.41	7.49	9.69	102.1	149.3
A1			X			15	13.97	15.78	7.49	9.69	104.6	153.0

25 - YEAR INLET FLOW CALCULATION TABLE

INLET NUMBER	DRAINAGE AREA NO.	Q (CFS)	Q PASS (CFS)	Q SPILL (CFS)	Q ADD (CFS)	Q TOTAL (QA) (CFS)	SLOPE (%)	a (FT)	Yo (FT)	PAVEMENT WIDTH	PONDED WIDTH (FT)	Qa/La	La (FT)	LENGTH (FT)	L/La	a/Yo	Q/Qa	REMARK
A1	A1	2.8	0.0	0.0	0.0	2.8	1.00	0.42	0.16	33	2.80	0.62	4.51	10	2.22	2.69	1.00	
A3	A3	3.1	0.0	0.0	0.0	3.1	7.00	0.42	0.12	33	2.09	0.58	5.42	10	1.85	3.59	1.00	
A4	A4	1.7	0.0	0.0	0.0	1.7	7.50	0.42	0.09	33	1.68	0.56	3.02	10	3.32	4.47	1.00	
A6	A6	3.2	0.0	0.0	0.0	3.2	7.50	0.42	0.12	33	2.08	0.58	5.54	10	1.81	3.60	1.00	
A7	A7	4.4	0.0	0.0	0.0	4.4	4.10	0.42	0.14	33	2.56	0.60	7.21	10	1.39	2.94	1.00	
B1	B1	4.2	0.0	0.0	0.0	4.2	0.55	0.42	0.20	33	3.62	0.66	6.43	10	1.56	2.12	1.00	
B2	B2	2.5	0.0	0.0	0.0	2.5	0.55	0.42	0.17	33	2.99	0.63	3.97	10	2.52	2.53	1.00	
B3	B3	4.6	0.0	0.0	0.0	4.6	2.03	0.42	0.16	33	2.94	0.62	7.31	10	1.37	2.57	1.00	
B4	B4	5.7	0.0	0.0	0.0	5.7	2.03	0.42	0.18	33	3.18	0.64	8.95	10	1.12	2.39	1.00	
B5	B5	5.6	0.0	0.0	0.0	5.6	0.50	0.42	0.22	33	4.08	0.68	8.17	10	1.22	1.90	1.00	
B6	B6	3.9	0.0	0.0	0.0	3.9	0.50	0.42	0.20	33	3.58	0.66	5.97	10	1.67	2.14	1.00	
B7	B7	4.7	0.0	0.0	0.0	4.7	0.50	0.42	0.21	33	3.84	0.67	7.09	10	1.41	2.01	1.00	
B8	B8	3.9	0.0	0.0	0.0	3.9	0.50	0.42	0.20	33	3.59	0.66	6.02	10	1.66	2.13	1.00	
B9	B9	6.8	0.0	0.0	0.0	6.8	0.50	0.42	0.24	33	4.41	0.70	9.80	10	1.02	1.78	1.00	
C1	C1	4.0	0.0	0.0	0.0	4.0	0.50	0.42	0.20	33	3.61	0.66	6.09	10	1.64	2.12	1.00	
C2	C2	3.1	0.0	0.0	0.0	3.1	0.50	0.42	0.18	33	3.30	0.64	4.87	10	2.05	2.31	1.00	
C3	C3	4.5	0.0	0.0	0.0	4.5	0.50	0.42	0.21	33	3.77	0.66	6.77	10	1.48	2.04	1.00	
C4	C4	7.0	0.0	0.0	0.0	7.0	0.50	0.42	0.24	33	4.45	0.70	10.01	10	**1.00**	1.76	1.00	
C5	C5	3.0	0.0	0.0	0.0	3.0	0.50	0.42	0.18	33	3.25	0.64	4.67	10	2.14	2.34	1.00	
C6	C6	5.0	0.0	0.0	0.0	5.0	0.50	0.42	0.21	33	3.92	0.67	7.45	10	1.34	1.97	1.00	
C7	C7	4.0	0.0	0.0	0.0	4.0	0.50	0.42	0.20	33	3.61	0.66	6.09	10	1.64	2.12	1.00	
C8	C8	3.1	0.0	0.0	0.0	3.1	0.50	0.42	0.18	33	3.30	0.64	4.85	10	2.06	2.31	1.00	
C9	C9	5.6	0.0	0.0	0.0	5.6	LP	0.42	0.25	33	4.68	-	-	15	-	1.68	1.00	
C10	C10	4.8	0.0	0.0	0.0	4.8	0.50	0.42	0.21	33	3.88	0.67	7.23	10	1.38	1.99	1.00	
C11	C11	5.1	0.0	0.0	0.0	5.1	0.50	0.42	0.21	33	3.96	0.67	7.61	10	1.31	1.95	1.00	
D1	D1	14.6	0.0	0.0	0.0	14.6	LP	0.42	0.47	33	11.51	-	-	15	-	0.89	1.00	
D2	D2	2.6	0.0	0.0	0.0	2.6	LP	0.42	0.15	33	2.65	-	-	15	-	2.84	1.00	
D3	D3	4.4	0.0	0.0	0.0	4.4	0.50	0.42	0.20	33	3.75	0.66	6.68	10	1.50	2.05	1.00	
J1	J1	5.7	0.0	0.0	0.0	5.7	2.00	0.42	0.18	33	3.19	0.64	8.96	10	1.12	2.38	1.00	
J2	J2	3.8	0.0	0.0	0.0	3.8	2.00	0.42	0.15	33	2.76	0.61	6.14	10	1.63	2.73	1.00	
J3	J3	6.2	0.0	0.0	0.0	6.2	2.00	0.42	0.18	33	3.30	0.64	9.73	10	1.03	2.31	1.00	

100 - YEAR INLET FLOW CALCULATION TABLE

INLET NUMBER	DRAINAGE AREA NO.	Q (CFS)	Q PASS (CFS)	Q SPILL (CFS)	Q ADD (CFS)	Q TOTAL (QA) (CFS)	SLOPE (%)	a (FT)	Yo (FT)	PAVEMENT WIDTH	PONDED WIDTH (FT)	Qa/La	La (FT)	LENGTH (FT)	L/La	a/Yo	Q/Qa	REMARK
A1	A1	4.0			2.7	6.7	1.00	0.42	0.21	33	3.84	0.67	10.03	10	**1.00**	2.01		
A3	A3	4.5				4.5	7.00	0.42	0.13	33	2.36	0.59	7.56	10	1.32	3.18		
A4	A4	2.4	2.7		6.3	6.0	7.50	0.42	0.14	33	2.58	0.61	9.93	10	1.01	2.92	1.00	PASS 2.7 CFS TO A1
A6	A6	4.7	6.3		7.6	6.0	7.50	0.42	0.14	33	2.58	0.61	9.90	10	1.01	2.92	1.00	PASS 6.3 CFS TO A4
A7	A7	6.4	0.2			6.2	4.10	0.42	0.16	33	2.90	0.62	10.01	10	**1.00**	2.61	1.00	PASS 0.2 CFS TO A6
B1	B1	6.1	3.1		3.9	6.9	0.55	0.42	0.23	33	4.35	0.69	10.00	10	1.00	1.79	1.00	PASS 3.1 CFS TO A6
B2	B2	3.6	2.7		6.0	6.9	0.55	0.42	0.23	33	4.34	0.69	9.94	10	1.01	1.80	1.00	PASS 2.7 CFS TO A6
B3	B3	6.6	0.2			6.4	2.03	0.42	0.18	33	3.32	0.64	9.93	10	1.01	2.30	1.00	PASS 0.2 CFS TO B1
B4	B4	8.3	6.0		4.1	6.4	2.03	0.42	0.18	33	3.32	0.64	9.93	10	1.01	2.30	1.00	PASS 4.9 CFS TO B2
B5	B5	8.1	4.1		3.0	7.0	0.50	0.42	0.24	33	4.44	0.70	9.98	10	1.00	1.76	1.00	PASS 4.1 CFS TO B2
B6	B6	5.8				5.8	0.50	0.42	0.22	33	4.14	0.68	8.46	10	1.18	1.88	1.00	
B7	B7	7.0	3.0		3.0	7.0	0.50	0.42	0.24	33	4.45	0.70	10.03	10	**1.00**	1.76	1.00	PASS 3.0 CFS TO B5
B8	B8	5.8				5.8	0.50	0.42	0.22	33	4.13	0.68	8.44	10	1.18	1.88	1.00	
B9	B9	10.0	3.0			7.0	0.50	0.42	0.24	33	4.45	0.70	10.05	10	**1.00**	1.76	1.00	PASS 3.0 CFS TO B7
C1	C1	5.9	2.1		3.2	7.0	0.50	0.42	0.24	33	4.45	0.70	10.02	10	**1.00**	1.76	1.00	PASS 2.1 CFS TO D1
C2	C2	4.6				4.6	0.50	0.42	0.21	33	3.80	0.67	6.92	10	1.45	2.02	1.00	
C3	C3	6.6				6.6	0.50	0.42	0.23	33	4.36	0.69	9.56	10	1.05	1.79	1.00	
C4	C4	10.2	3.2			7.0	0.50	0.42	0.24	33	4.45	0.70	10.01	10	**1.00**	1.76	1.00	PASS 3.2 CFS TO C1
C5	C5	4.4			0.4	4.8	0.50	0.42	0.21	33	3.86	0.67	7.16	10	1.40	2.00	1.00	
C6	C6	7.4	0.4			7.0	0.50	0.42	0.24	33	4.44	0.70	10.00	10	1.00	1.76	1.00	PASS 0.4 CFS TO C5
C7	C7	5.9			0.7	6.6	0.50	0.42	0.23	33	4.36	0.69	9.58	10	1.04	1.79	1.00	
C8	C8	4.6				4.6	0.50	0.42	0.21	33	3.79	0.67	6.84	10	1.46	2.03	1.00	
C9	C9	8.0				8.0	LP	0.42	0.32	33	6.24	-	-	15	-	1.33	1.00	
C10	C10	7.1	0.7		0.6	7.0	0.50	0.42	0.24	33	4.44	0.70	9.98	10	1.00	1.76	1.00	PASS 0.7 CFS TO C7
C11	C11	7.5	0.6			6.9	0.50	0.42	0.24	33	4.44	0.70	9.96	10	1.00	1.77	1.00	PASS 0.6 CFS TO C10
D1	D1	21.4		7.7	2.1	15.8	LP	0.42	0.50	33	13.00	-	-	15	-	0.85	1.00	SPILL 7.7 CFS TO D2
D2	D2	3.7			7.7	11.4	LP	0.42	0.40	33	8.60	-	-	15	-	1.05	1.00	
D3	D3	6.6				6.6	0.50	0.42	0.23	33	4.35	0.69	9.52	10	1.05	1.80	1.00	
J1	J1	8.4	2.0			6.4	2.00	0.42	0.18	33	3.33	0.64	9.93	10	1.01	2.29	1.00	PASS 2.0 CFS TO B1
J2	J2	5.5	1.7		2.6	6.4	2.00	0.42	0.18	33	3.33	0.64	9.94	10	1.01	2.29	1.00	PASS 1.7 CFS TO B1
J3	J3	9.1	2.6			6.5	2.00	0.42	0.18	33	3.34	0.64	10.04	10	**1.00**	2.28	1.00	PASS 2.6 CFS TO J2

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
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North Office: 121 29 RR 620 N, Suite 600 Austin, Texas 78750 | Fax No. (512) 280-5165

DESIGNED BY: SPC | DRAFTED BY: CEL

REVISION | DATE

SHEET NAME: DRAINAGE CALCS

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 15 OF 70

SHEET NO.: 15

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LEGEND

- 936 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 936 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- FLOW ARROW

0 60' 120'

SCALE: 1" = 60'

DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE	REVISION

Carlson, Brigance & Doering, Inc.
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SHEET NAME: GRADING PLAN (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 16 OF 70

SHEET NO.: 16

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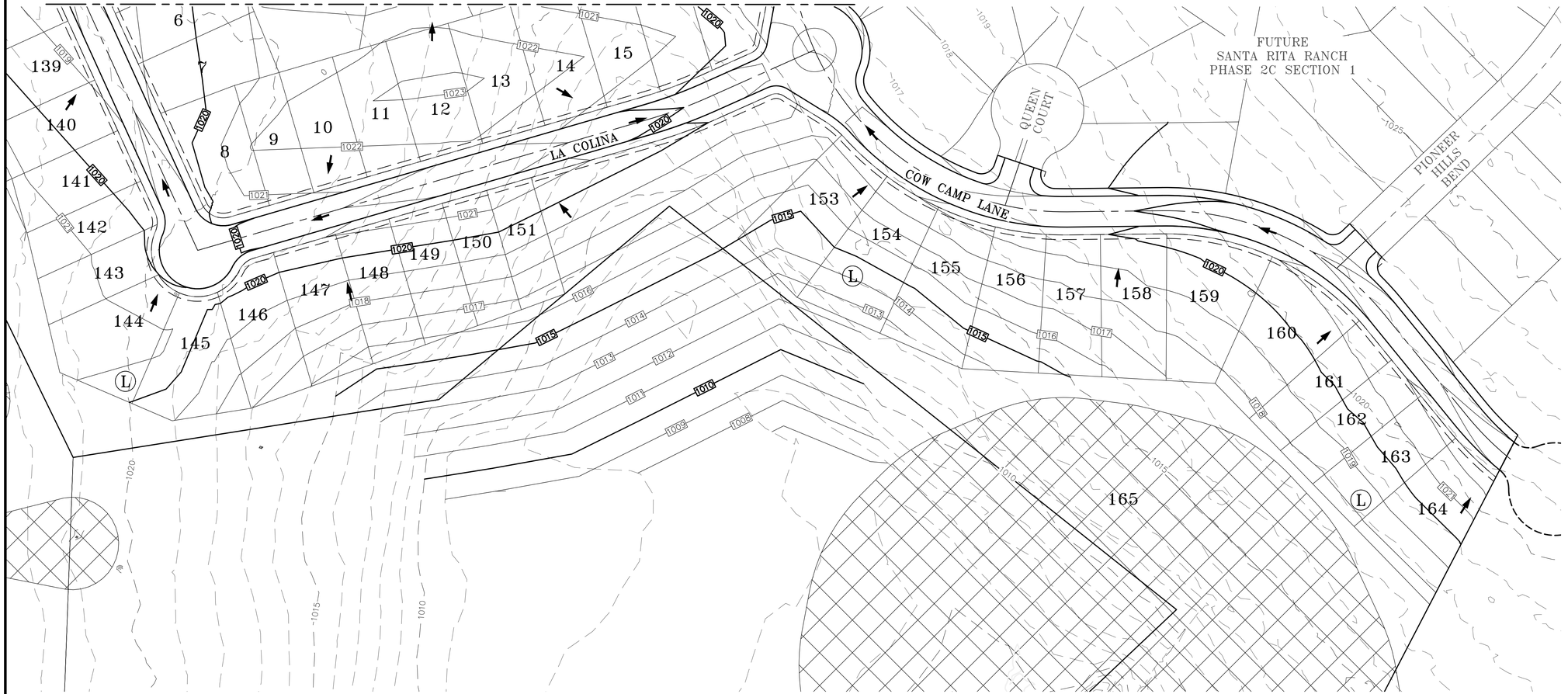
MATCH LINE
SEE PREVIOUS SHEET FOR CONTINUATION



LEGEND

- 936 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 936 — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- FLOW ARROW

0 60' 120'

SCALE: 1" = 60'

DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE

REVISION

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SHEET NAME: GRADING PLAN (2 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
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93648
LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE & DOERING, INC.
@ F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 17 OF 70

SHEET NO.: 17

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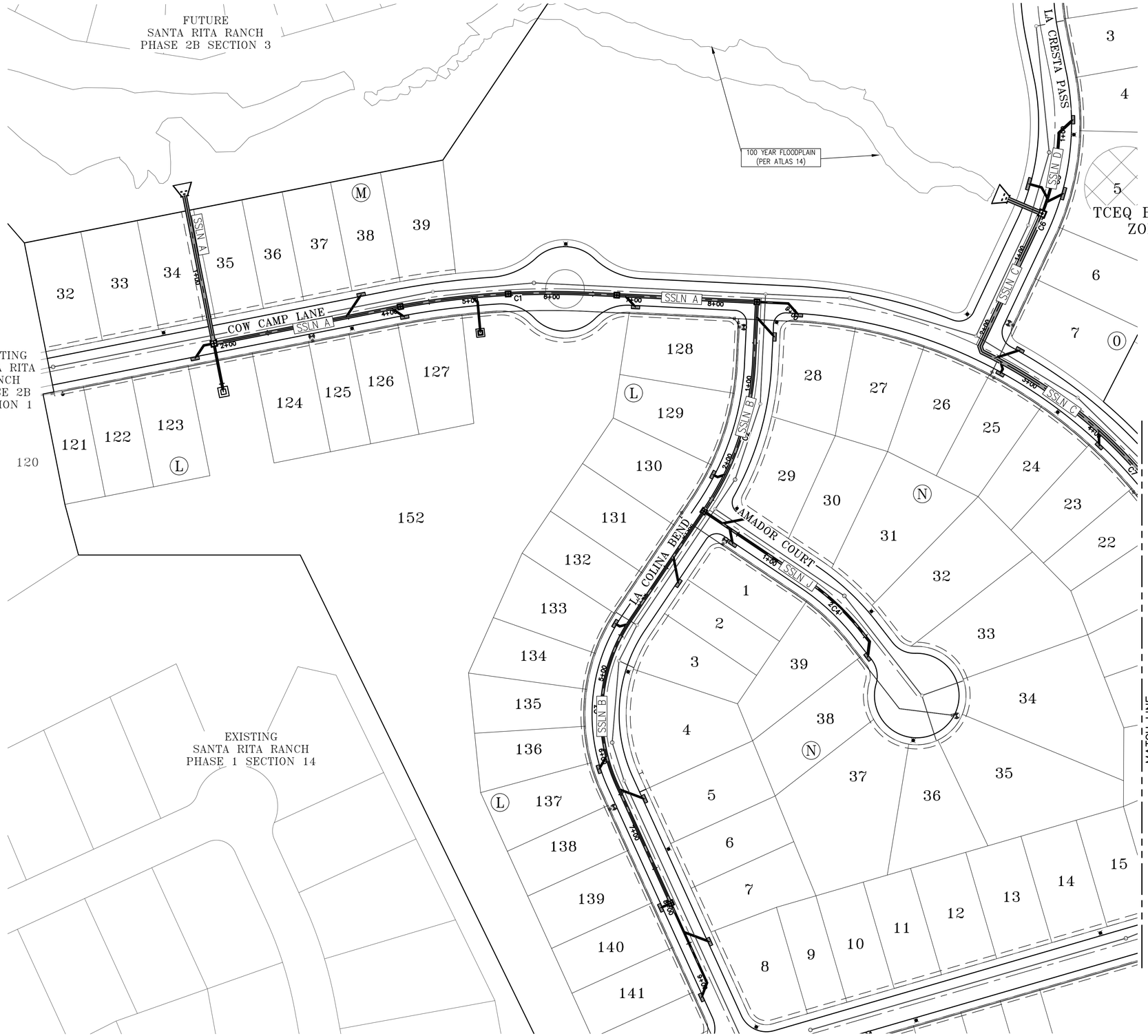

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24 – HOURS PRIOR TO COMMENCING CONSTRUCTION.

NOTES:

1. THE DESIGN INTENT OF THESE PLANS IS FOR ALL CONNECTIONS, BENDS, AND REDUCTIONS TO BE MADE WITH PRE-CAST FITTINGS MANUFACTURED IN ACCORDANCE WITH ASTM C-76, CLASS 3 REQUIREMENTS. IF THE CONTRACTOR ELECTS TO USE ALTERNATE CONNECTION METHODS THEN A SUBMITTAL SHALL BE APPROVED BY THE ENGINEER AND WILLIAMSON COUNTY PRIOR TO COMMENCING PIPE LAYING OPERATIONS.
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DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas 78759
Phone No. (512) 280-5160 Fax No. (512) 280-5165
North Office
121 2nd RR 620 N, Suite 300
Austin, Texas 78734

SHEET NAME: OVERALL SS (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER

CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 41 OF 70

SHEET NO.: 41

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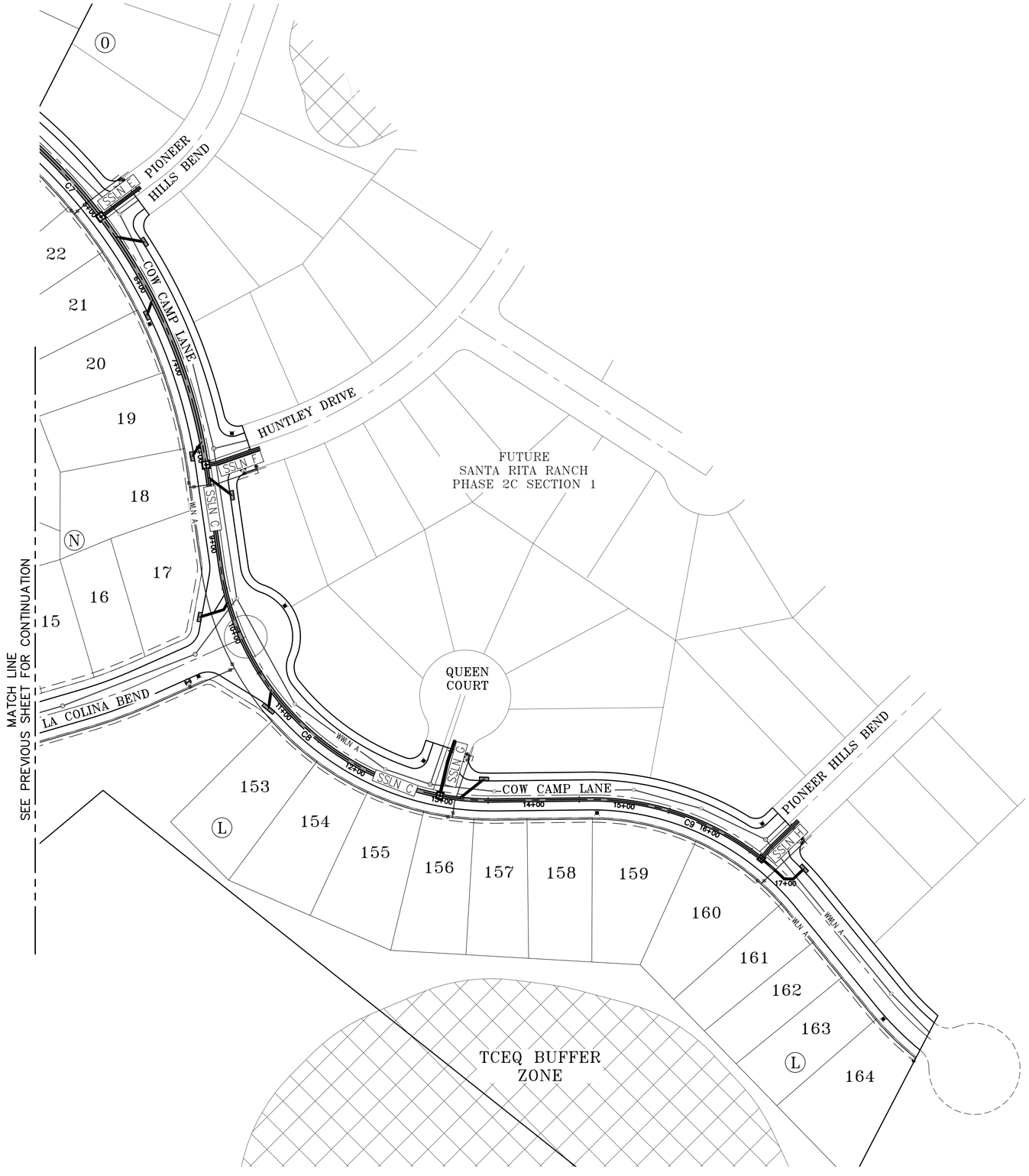

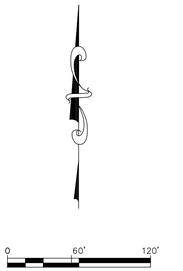

SCALE: 1" = 60'

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DESIGNED BY:	DRAFTED BY:
SPC	CEL

REVISION	DATE

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr.
Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N, Suite 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: OVERALL SS (2 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER

CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 42 OF 70

SHEET NO.: 42

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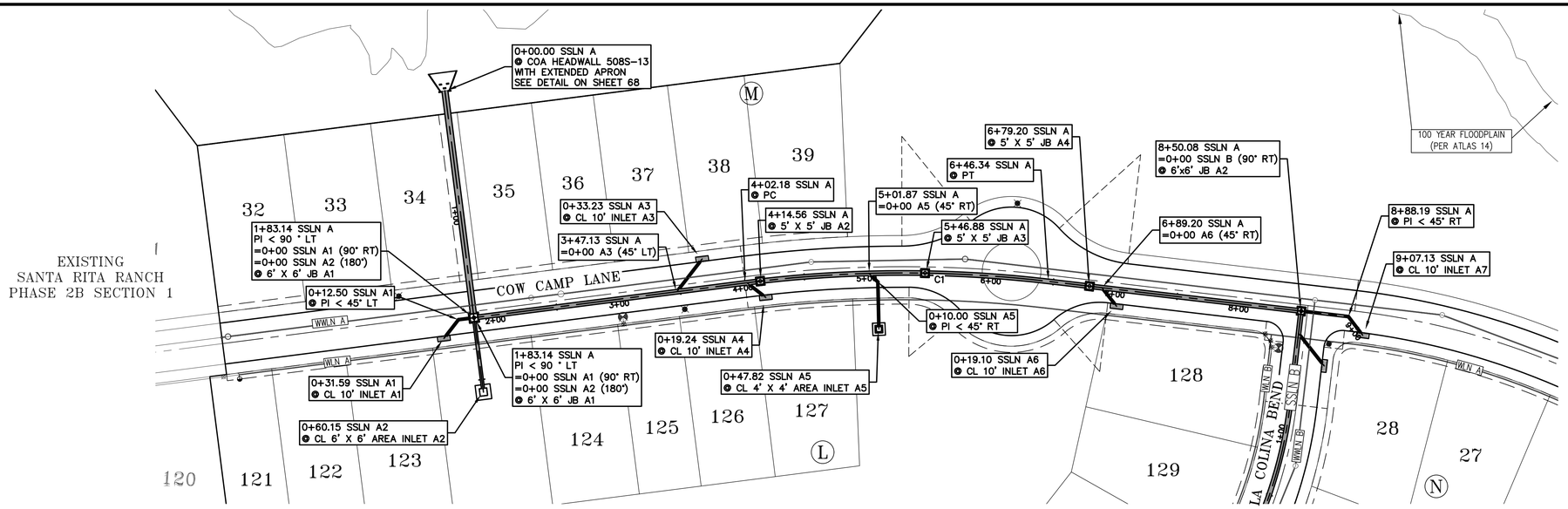
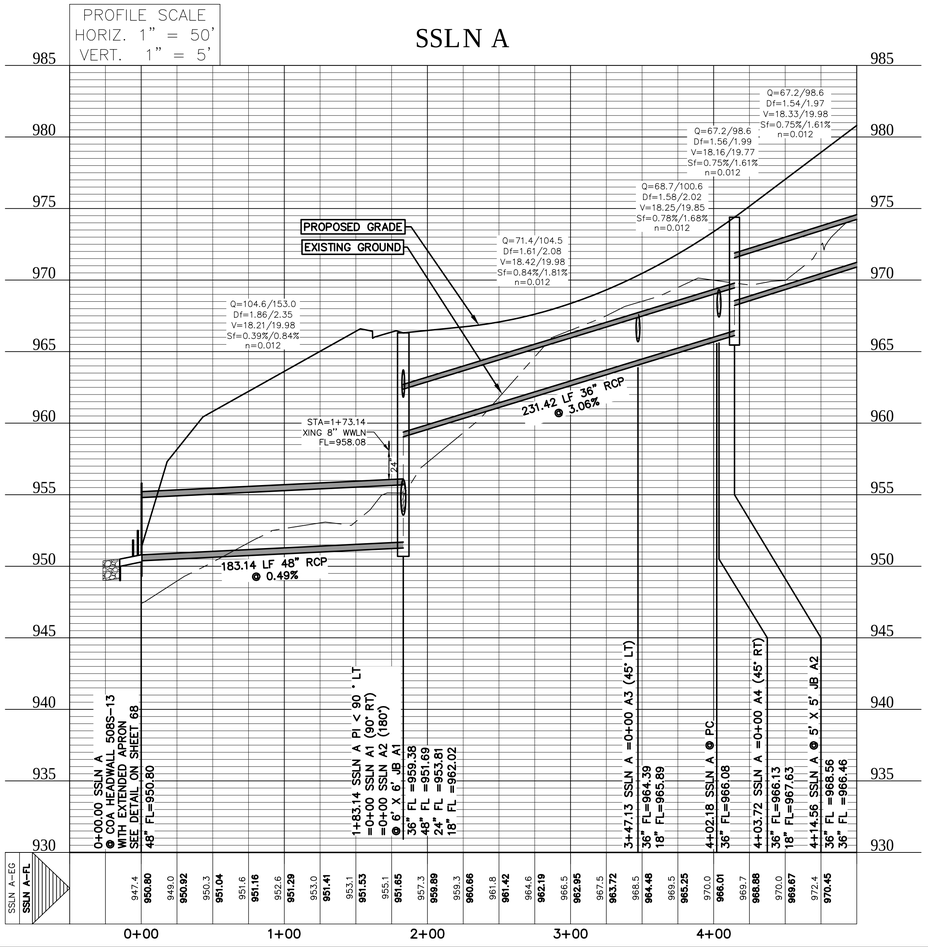


SCALE: 1" = 50'

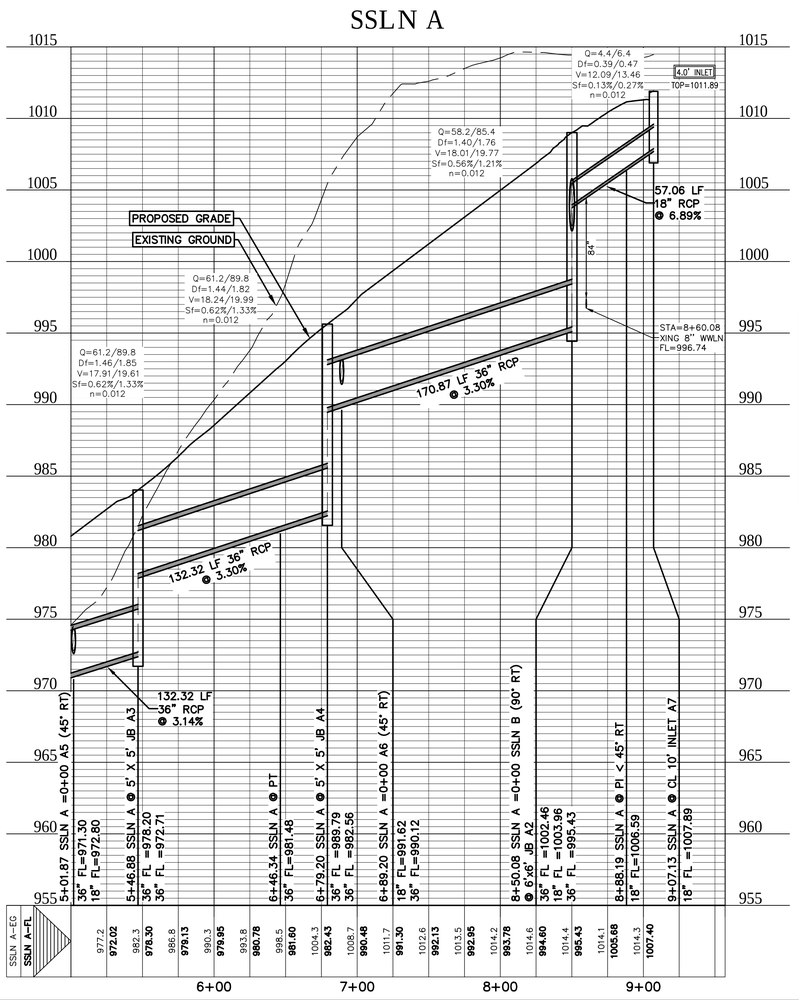
Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C1	1000.00'	122.69'	013°59'22"	243.55'	244.16'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

SSLN A



SSLN A



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DESIGNED BY: SPC
DRAFTED BY: CEL
DATE
REVISION

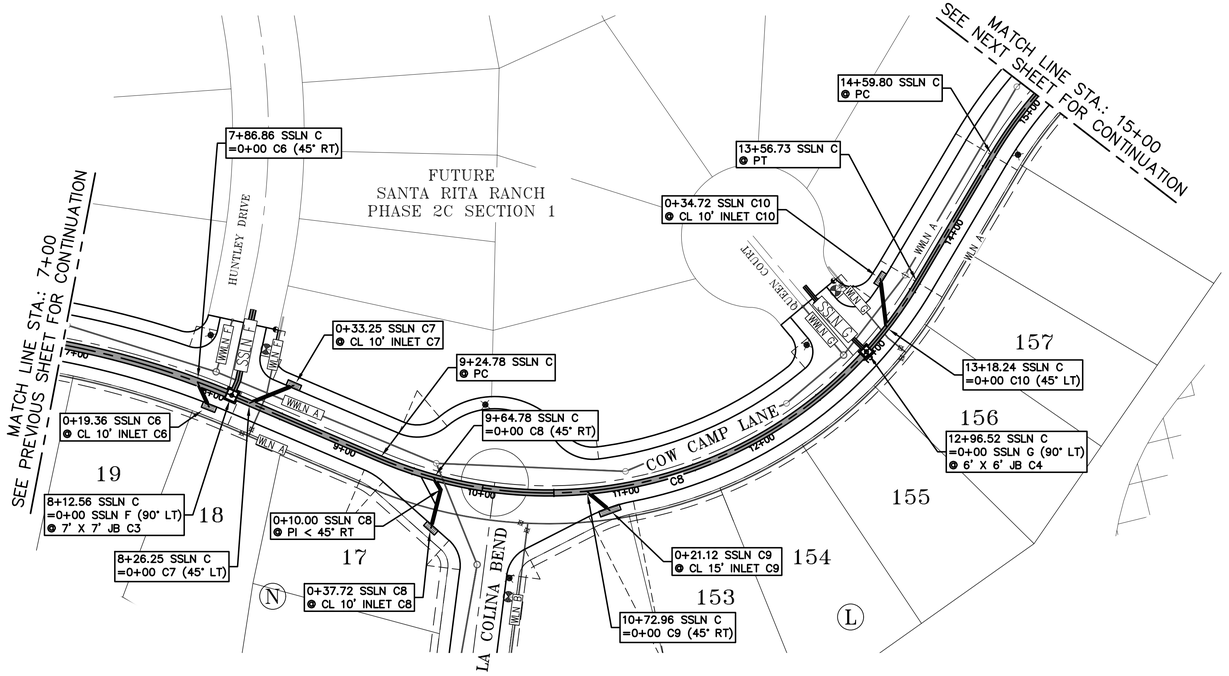
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N. Suite 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: STORMSEWEW LINE A (0+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 43 OF 70
SHEET NO.: 43

FILE PATH:J:\AC\2\5559\dwg\5559-STORM.dwg - Dec 22, 2024 - 3:38pm

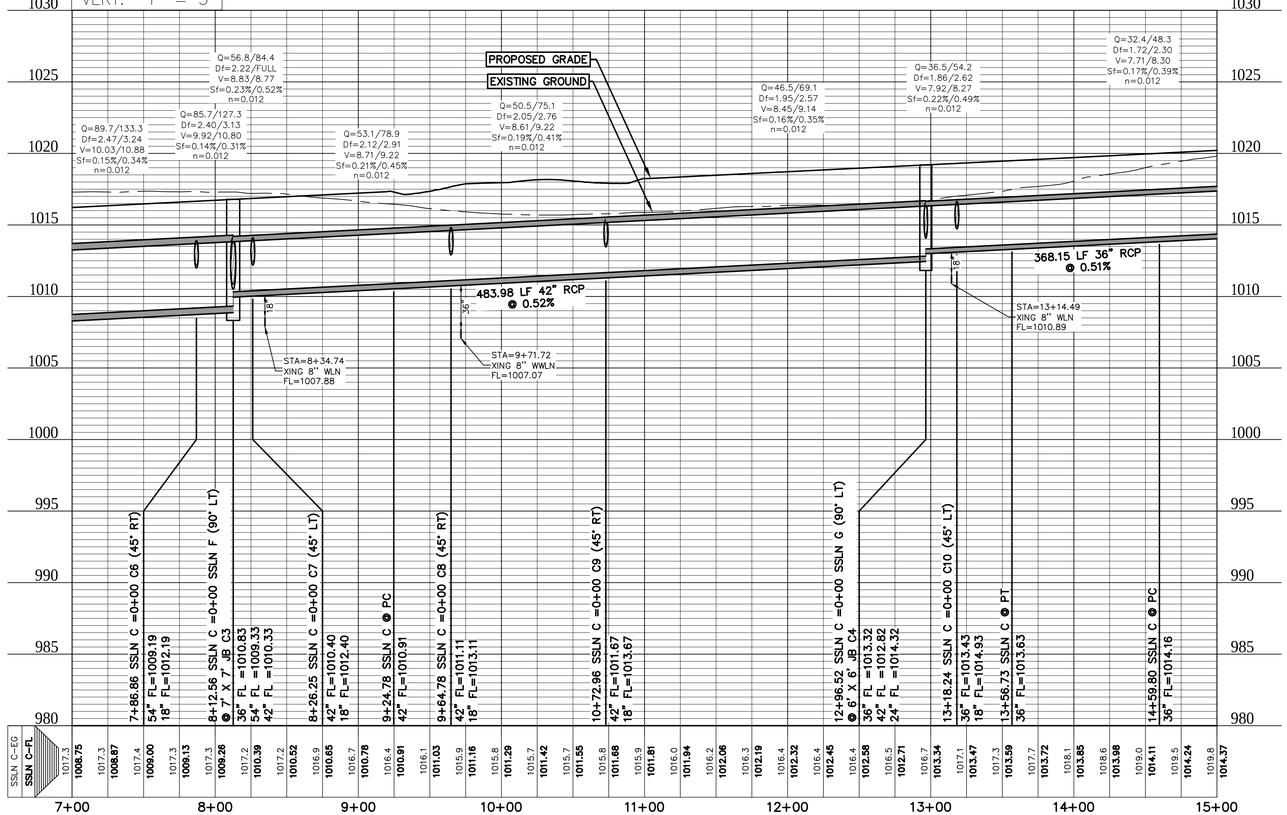


SCALE: 1" = 50'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C8	299.99'	263.08'	082°30'03"	395.59'	431.95'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

SSLN C



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DESIGNED BY: SPC
DRAFTED BY: CEJ
DATE
REVISION

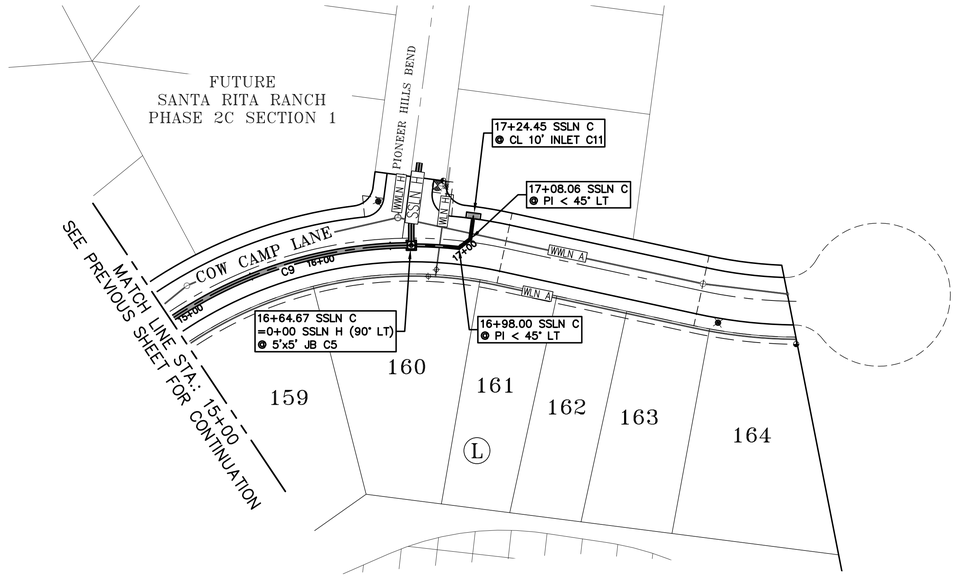
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N, Suite 600
Austin, Texas 78750
Fax No. (512) 280-5165

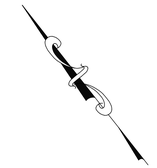
SHEET NAME: STORMSEWER LINE C (7+00 TO 15+00)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 46 OF 70
SHEET NO.: 46

FILE PATH: J:\ACAD\5559\dwg\5559-STORM.dwg - Dec 22, 2024 - 4:11pm

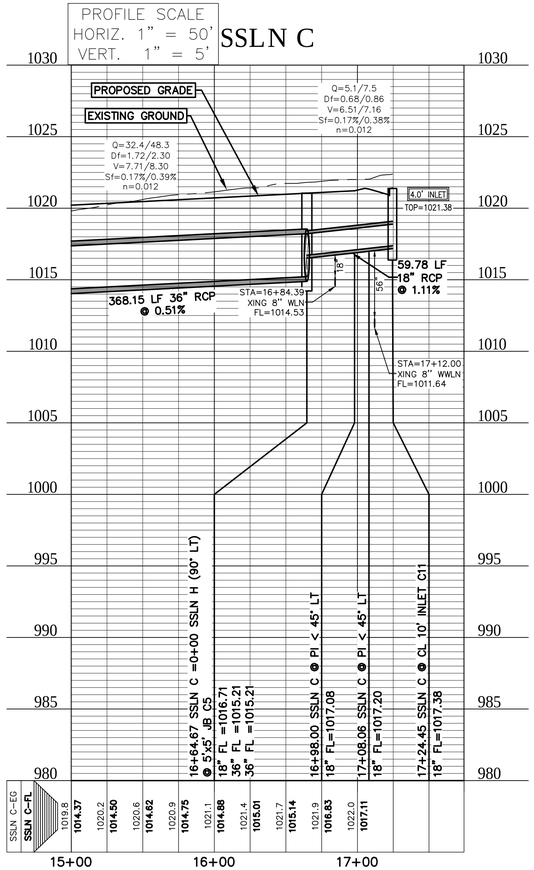




0 50' 100'

SCALE: 1" = 50'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C9	300.00'	106.61'	039°07'41"	200.92'	204.87'



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DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

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Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas
Phone No. (512) 280-5160
North Office
1120 RR 620 N, Suite 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: STORMSEWER LINE C (15+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
@ F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 47 OF 70
SHEET NO.: 47

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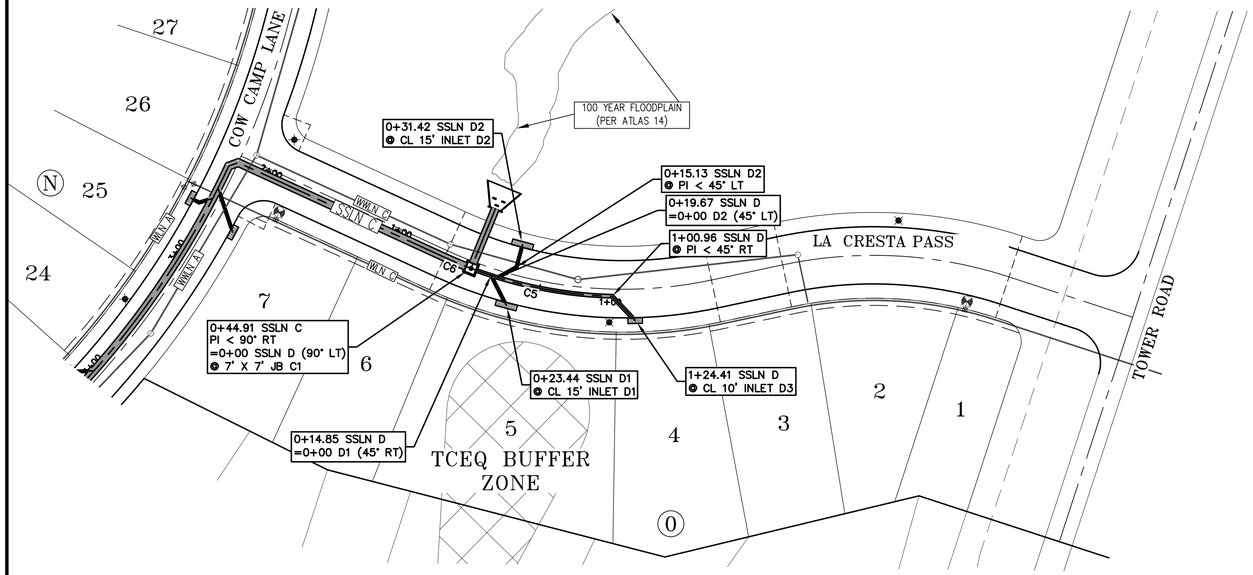
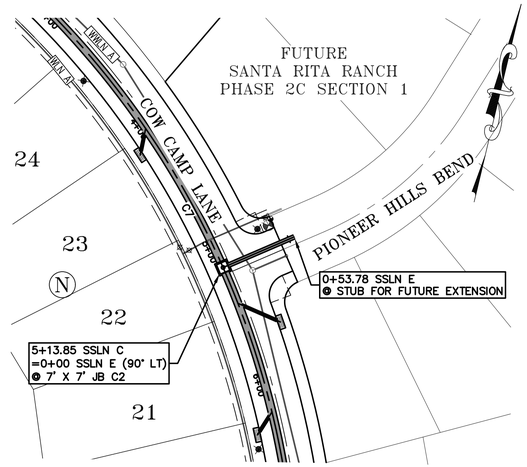
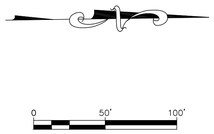




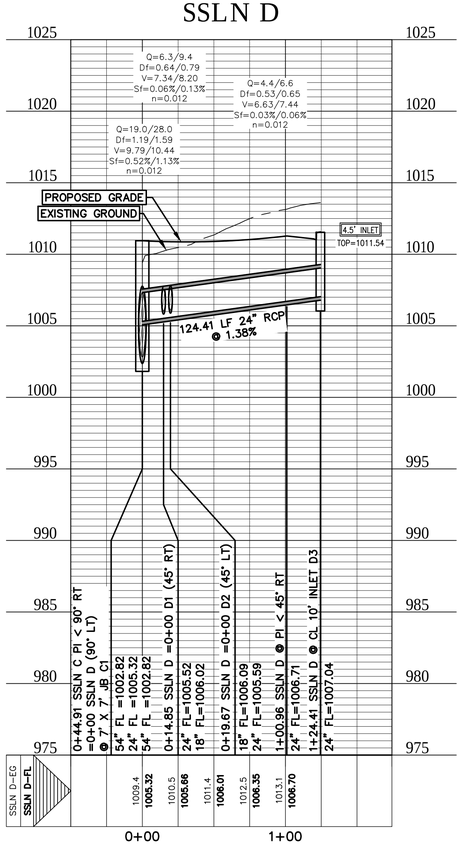


SCALE: 1" = 50'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C5	300.00'	50.96'	019°16'55"	100.48'	100.96'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

SSLN D



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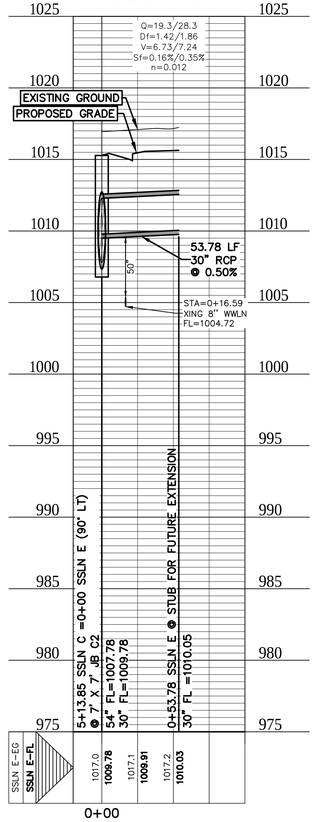

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DESIGNED BY: SPC
DRAFTED BY: CEJ

DATE
REVISION

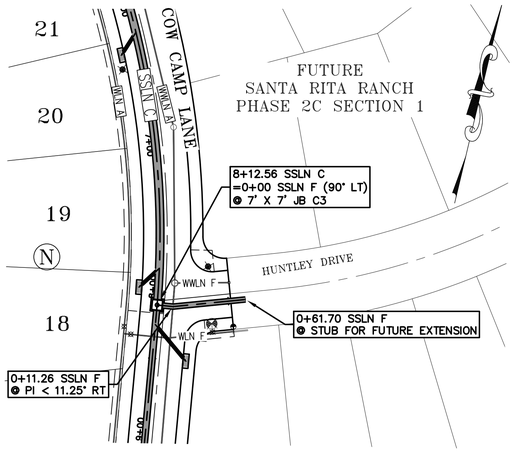
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 120 RR 620 S., Ste. 600
Austin, Texas 78749 Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

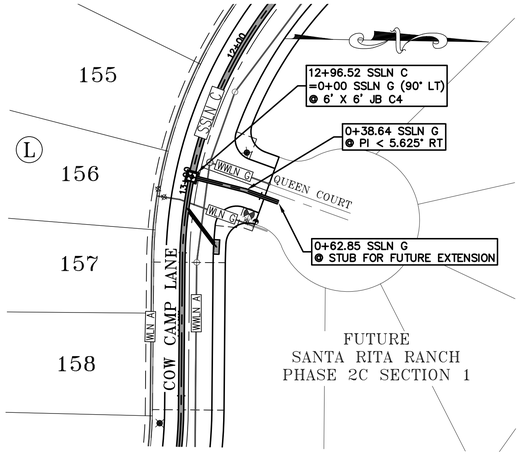
SHEET NAME: STORMSEWER LINE D E (0+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

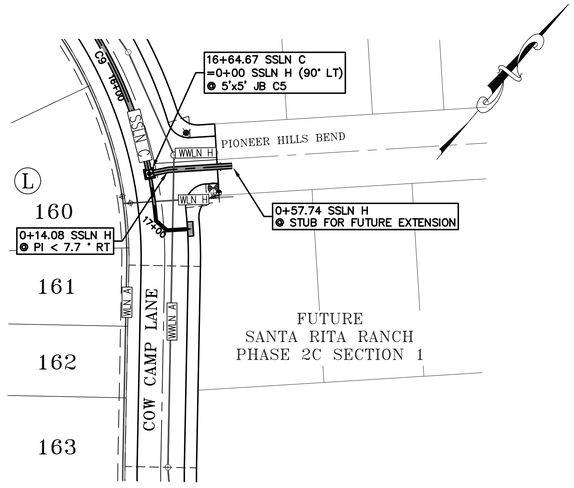
STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE
DEC 2024
JOB NUMBER
5559
SHEET
48 OF 70
SHEET NO.
48

FILE PATH:J:\ACAD\5559\dwg\5559-STORM.dwg - Dec 22, 2024 - 4:15pm





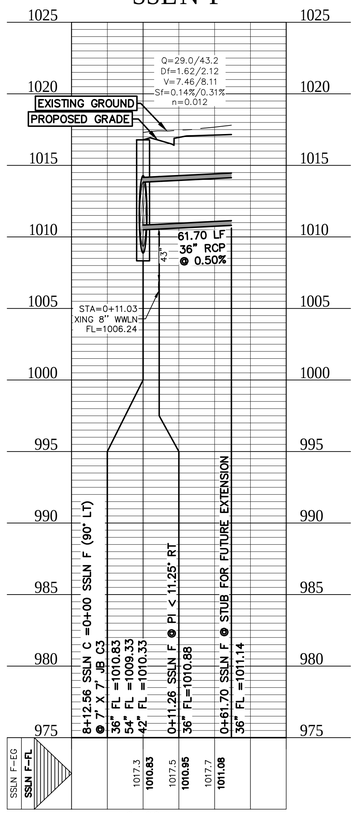


0 50' 100'

SCALE: 1" = 50'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

SSLN F



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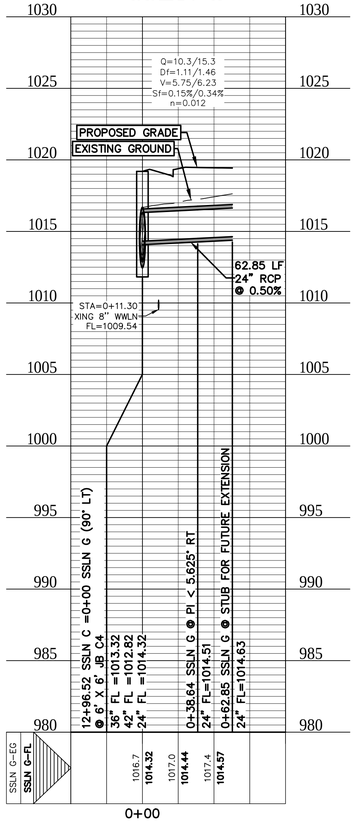

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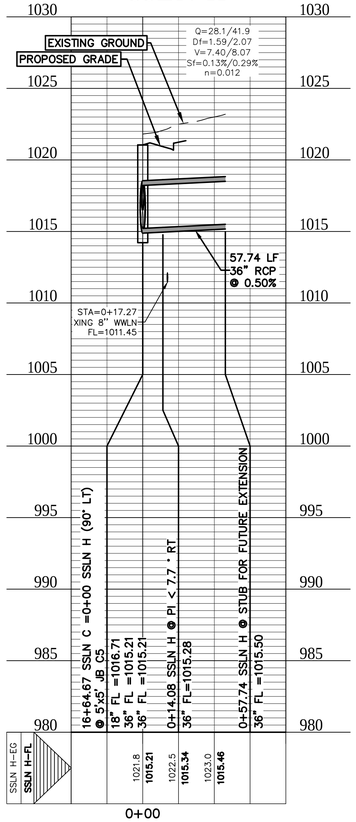

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2. WHERE STORM DRAINAGE IS SHOWN TO BE INSTALLED ON A CURVE THE CONTRACTOR SHALL SUBMIT A LAYING SCHEDULE DEMONSTRATING ANTICIPATED JOINT SEPARATIONS USING 8' JOINTS, A COMBINATION OF 8' AND 4' JOINTS, OR LONG RADIUS PIPE TO ACHIEVE THE NECESSARY RADIUS WITHOUT EXCESSIVE JOINT SEPARATION. PROPOSED INSTALLATION METHOD SHALL BE APPROVED BY THE ENGINEER AND WILLIAMSON COUNTY PRIOR TO COMMENCING PIPE LAYING OPERATIONS.

DESIGNED BY: SPC
DRAFTED BY: CEL
DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas
Phone No. (512) 280-5160
North Office
Suite 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: STORMSEWER LINES F G H (0+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 49 OF 70
SHEET NO.: 49

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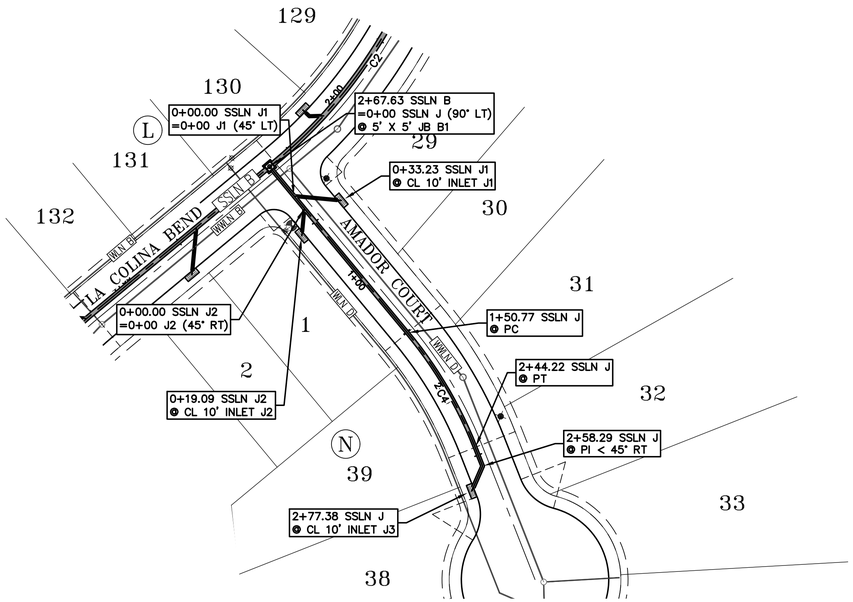
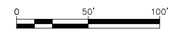


PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'



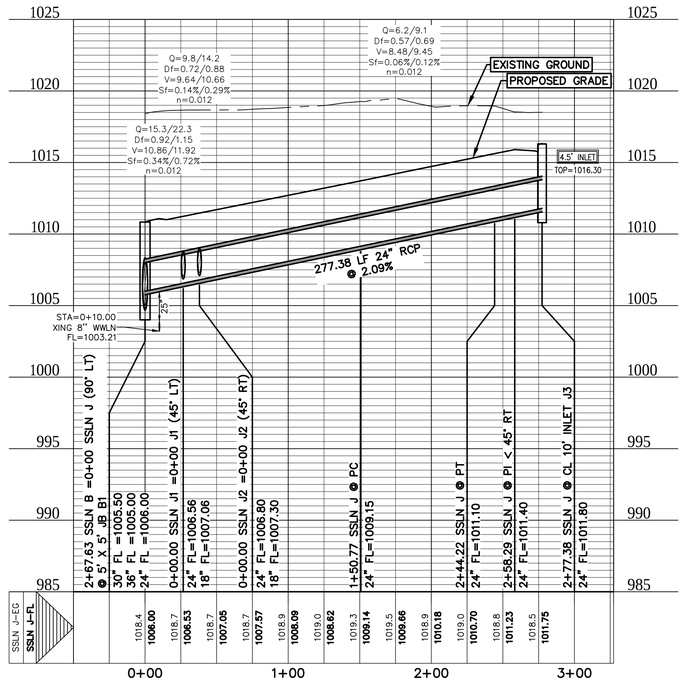
SCALE: 1" = 50'

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24 – HOURS PRIOR TO COMMENCING CONSTRUCTION.

NOTES:

1. THE DESIGN INTENT OF THESE PLANS IS FOR ALL CONNECTIONS, BENDS, AND REDUCTIONS TO BE MADE WITH PRE-CAST FITTINGS MANUFACTURED IN ACCORDANCE WITH ASTM C-76, CLASS 3 REQUIREMENTS. IF THE CONTRACTOR ELECTS TO USE ALTERNATE CONNECTION METHODS THEN A SUBMITTAL SHALL BE APPROVED BY THE ENGINEER AND WILLIAMSON COUNTY PRIOR TO COMMENCING PIPE LAYING OPERATIONS.
2. WHERE STORM DRAINAGE IS SHOWN TO BE INSTALLED ON A CURVE THE CONTRACTOR SHALL SUBMIT A LAYING SCHEDULE DEMONSTRATING ANTICIPATED JOINT SEPARATIONS USING 8' JOINTS, A COMBINATION OF 8' AND 4' JOINTS, OR LONG RADIUS PIPE TO ACHIEVE THE NECESSARY RADIUS WITHOUT EXCESSIVE JOINT SEPARATION. PROPOSED INSTALLATION METHOD SHALL BE APPROVED BY THE ENGINEER AND WILLIAMSON COUNTY PRIOR TO COMMENCING PIPE LAYING OPERATIONS.

SSLN J



DESIGNED BY: SPC
DRAFTED BY: CEL

DATE
REVISION

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Fax No. (512) 280-5165

SHEET NAME: STORMSEWER LINE J (0+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE
DEC 2024
JOB NUMBER
5559
SHEET
50 OF 70
SHEET NO.
50

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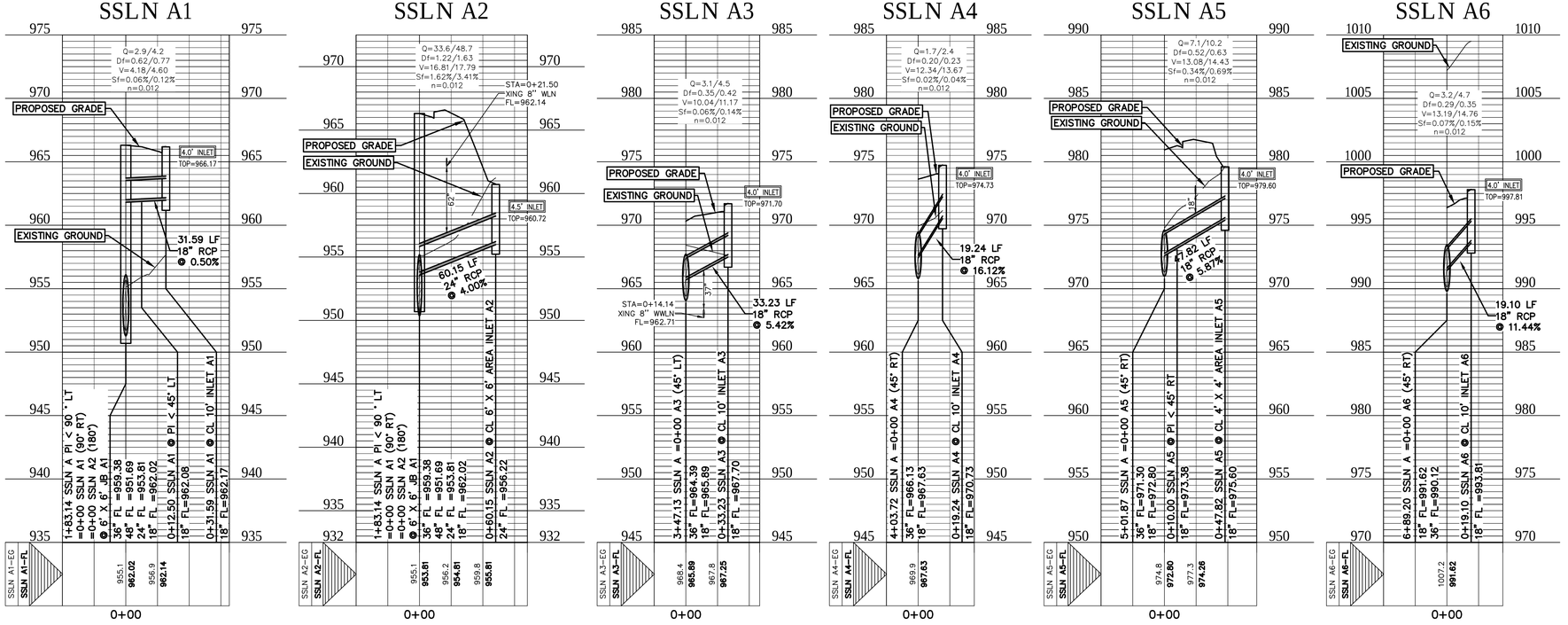

DESIGNED BY: SPC

DRAFTED BY: CEI

DATE

REVISION

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SHEET NAME: STORMSEWER LATERALS (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER

CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 51 OF 70

SHEET NO.: 51

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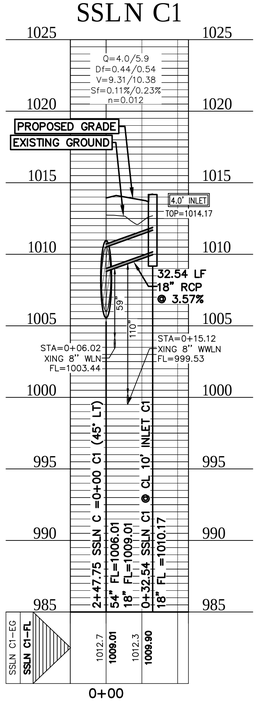

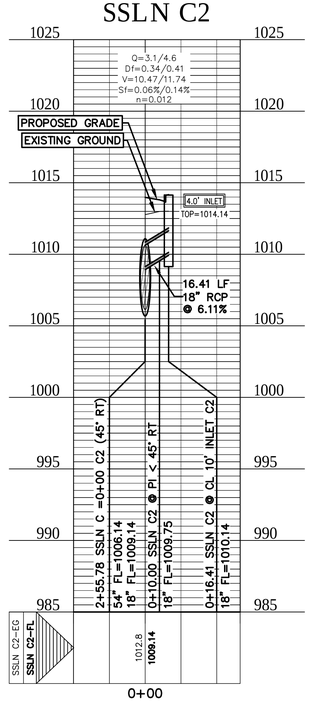

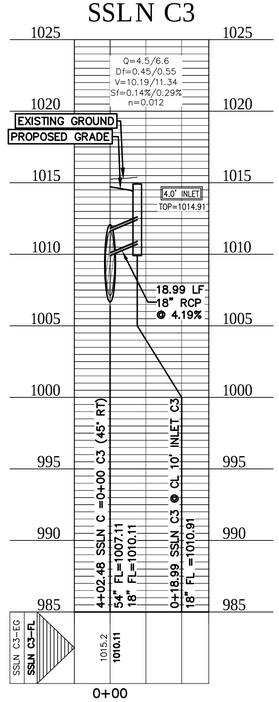

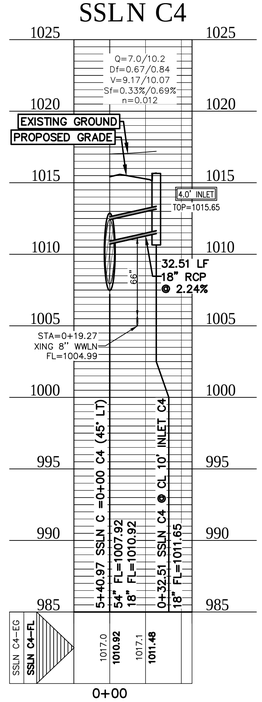

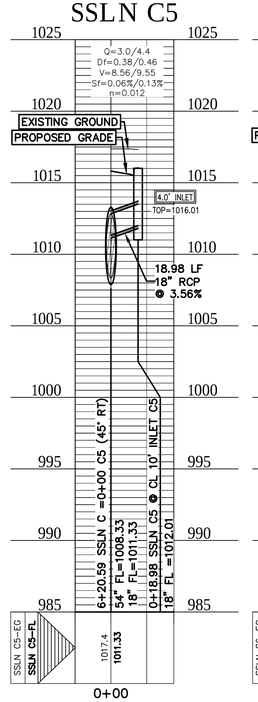

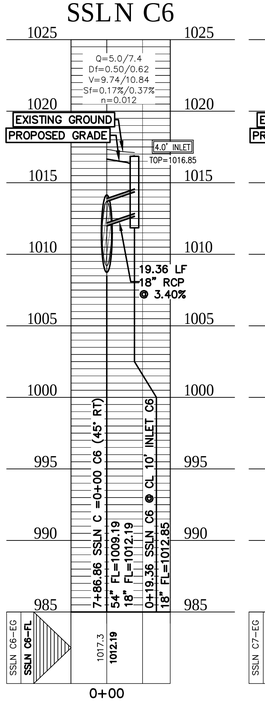

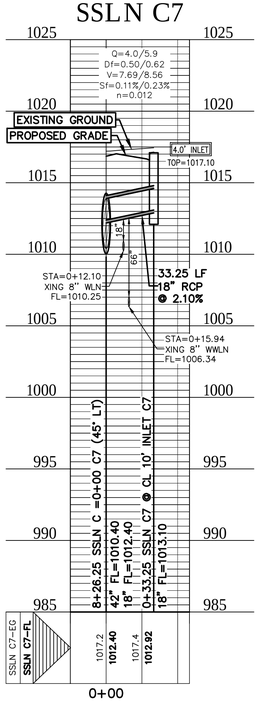

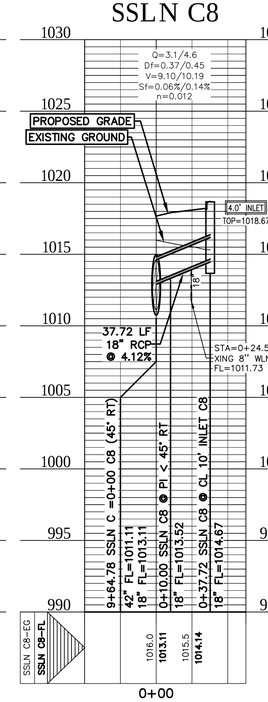

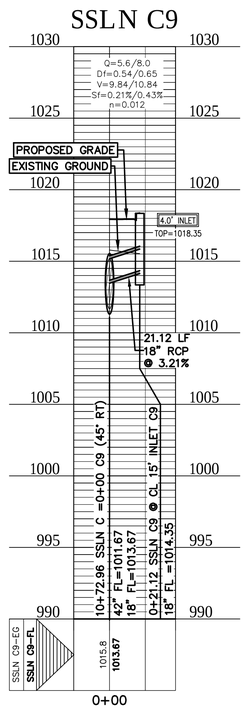

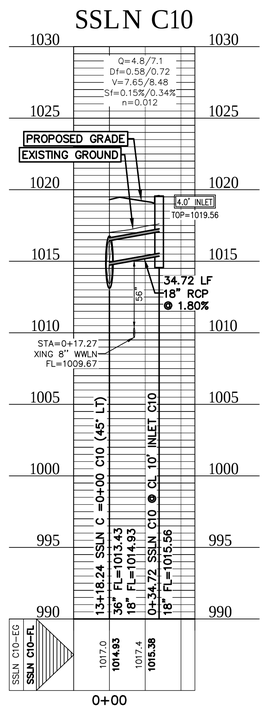

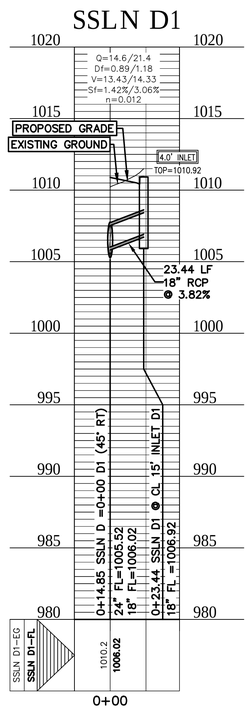

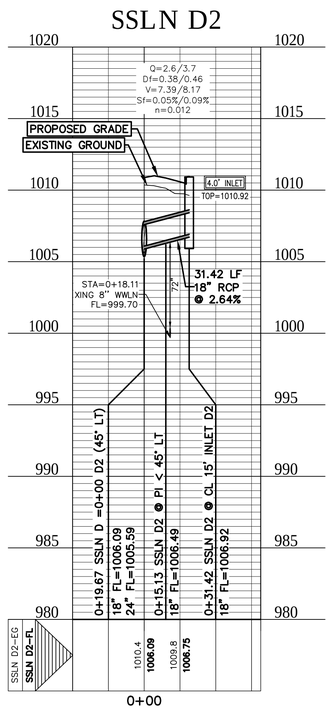

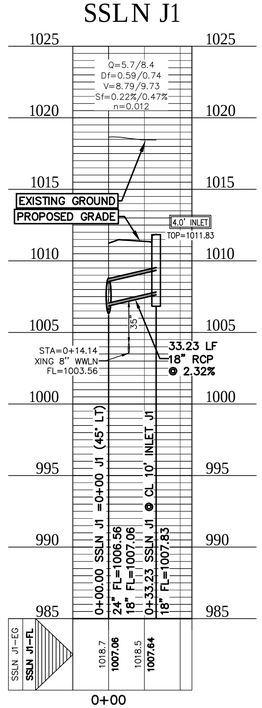

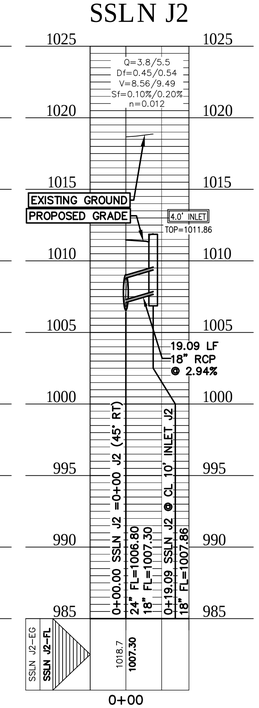

DESIGNED BY: SPC
DRAFTED BY: CEJ

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
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Fax No. (512) 280-5165
Phone No. (512) 280-5160

SHEET NAME: STORMSEWER LATERALS (2 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE
DEC 2024

JOB NUMBER
5559

SHEET
52 OF 70

SHEET NO.
52

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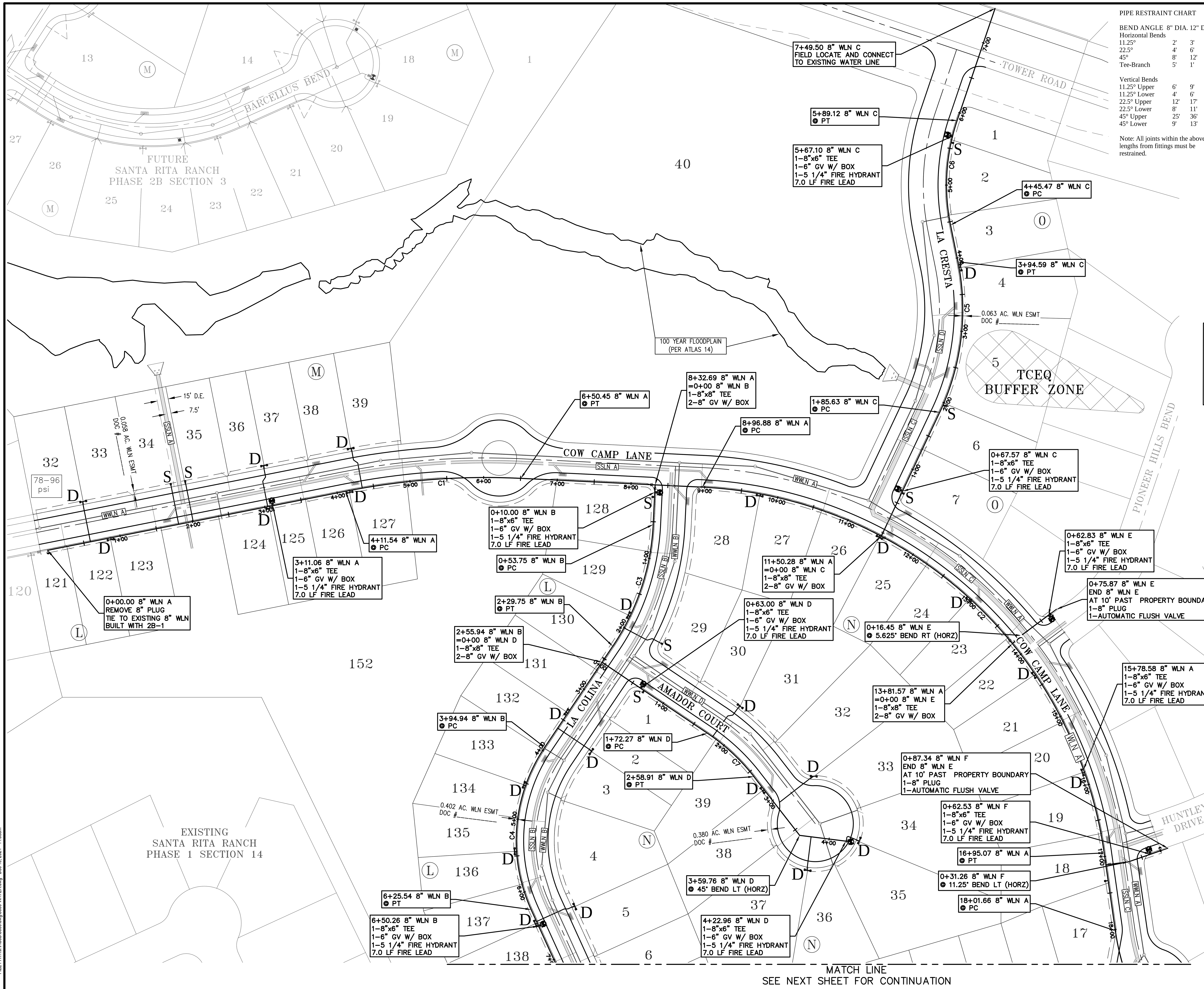

PIPE RESTRAINT CHART

BEND ANGLE	8" DIA.	12" DIA.
Horizontal Bends		
11.25°	2'	3'
22.5°	4'	6'
45°	8'	12'
Tee-Branch	5'	1'
Vertical Bends		
11.25° Upper	6'	9'
11.25° Lower	4'	6'
22.5° Upper	12'	17'
22.5° Lower	8'	11'
45° Upper	25'	36'
45° Lower	9'	13'

Note: All joints within the above lengths from fittings must be restrained.

WATER LEGEND

- S PROPOSED DOUBLE SERVICE
- D PROPOSED DOUBLE SERVICE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE & BOX
- EXISTING FIRE HYDRANT
- WV EXISTING GATE VALVE & BOX
- 67–85 psi LOWEST AND HIGHEST PRESSURE RANGE (PER 1138–1178 PRESSURE PLANE)

SCALE: 1" = 60'

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24 – HOURS PRIOR TO COMMENCING CONSTRUCTION.

Curve Table

Curve #	Radius	Tangent	Delta	Chord	Arc Length
C1	978.50'	120.05'	013°59'22"	238.32'	238.91'
C2	578.50'	477.34'	079°03'15"	736.36'	798.19'
C3	323.50'	90.24'	031°10'18"	173.84'	176.00'
C4	226.50'	126.36'	058°18'47"	220.70'	230.52'
C5	326.50'	108.20'	036°40'06"	205.41'	208.95'
C6	273.50'	73.52'	030°05'37"	142.01'	143.65'
C7	273.29'	43.69'	018°09'53"	86.28'	86.64'

NOTES:

1.) ALL ONSITE UTILITY MATERIALS AND WORK SHALL CONFORM TO THE CURRENT PLUMBING CODE.

2.) ALL WATER LINES MUST BE CONSTRUCTED IN COMPLIANCE WITH TCEQ RULE 30 TAC SEC. 290.44 RELATED TO WATER DISTRIBUTION LINES. WATER LINES SHALL HAVE A MINIMUM 9' SEPARATION FROM SEWER MAINS. WHERE 9 FEET SEPARATION CANNOT BE ACHEIVED CONTRACTOR MUS FOLLOW 290.44(e)(4)(A).

3.) PRESSURE REDUCING VALVES SHALL BE INSTALLED ON THE PROPERTY OWNERS SIDE OF THE WATER METER WHERE SERVICE PRESSURE IS 80 psi OR GREATER

4.) FIRE HYDRANTS SPACED MAX. OF 500

5.) 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 STREET AND MUST BE TOTALLY UNOBSTRUCTED TO THE STREET. FIRE HYDRANT DESIGN SHELL BE 2–2.5" NST OUTLETS. 1–5" 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 PANTED SILVER IN COLOR AND DESIGNATED BY BLUE REFLECTOR IN THE CENTER OF THE ROAD.

6.) ALL WATER LINES SHALL BE CONSTRUCTED WITH AWWA C–900 DR18 UNLESS OTHERWISE SPECIFIED.

7.) WATERLINE TO BE INSTALLED WITH A MAX 1° JOINT DEFLECTION THROUGH ALL CURVES

DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
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Main Office: 5501 West William Cannon Dr. Austin, Texas 78749
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Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: OVERALL WASTEWATER PLAN (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC. ID# F3791
12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 53 OF 70

SHEET NO.: 53

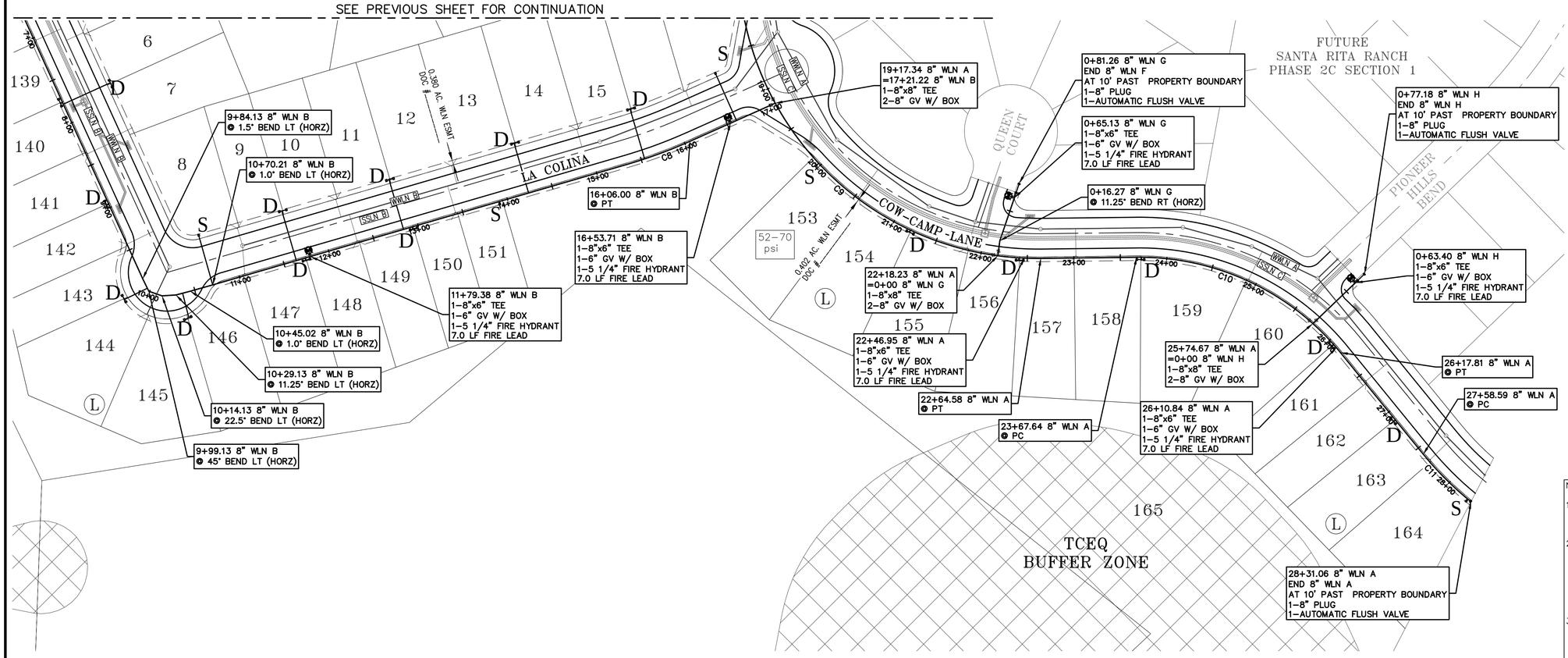
FILE PATH: J:\AC3D\5559\dwg\5559-WATER.dwg - Dec 19, 2024 - 11:38am

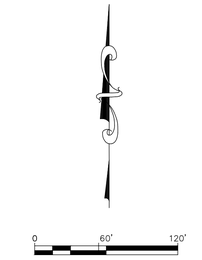
THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24 – HOURS PRIOR TO COMMENCING CONSTRUCTION.

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C8	526.50'	36.06'	007°50'11"	71.95'	72.01'
C9	321.50'	281.93'	082°29'50"	423.95'	462.91'
C10	278.50'	134.24'	051°28'05"	241.85'	250.17'
C11	351.50'	36.36'	011°48'43"	72.34'	72.46'

WATER LEGEND

- S PROPOSED DOUBLE SERVICE
- D PROPOSED DOUBLE SERVICE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE & BOX
- EXISTING FIRE HYDRANT
- WV EXISTING GATE VALVE & BOX
- 67–85 psi LOWEST AND HIGHEST PRESSURE RANGE (PER 1138–1178 PRESSURE PLANE)





SCALE: 1" = 60'

PIPE RESTRAINT CHART

BEND ANGLE 8" DIA. 12" DIA.		
Horizontal Bends		
11.25°	2'	3'
22.5°	4'	6'
45°	8'	12'
Tee-Branch	5'	1'
Vertical Bends		
11.25° Upper	6'	9'
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22.5° Upper	12'	17'
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45° Upper	25'	36'
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Note: All joints within the above lengths from fittings must be restrained.

NOTES:

1.) ALL ONSITE UTILITY MATERIALS AND WORK SHALL CONFORM TO THE CURRENT PLUMBING CODE.

2.) ALL WATER LINES MUST BE CONSTRUCTED IN COMPLIANCE WITH TCEQ RULE 30 TAC SEC. 290.44 RELATED TO WATER DISTRIBUTION LINES. WATER LINES SHALL HAVE A MINIMUM 9' SEPARATION FROM SEWER MAINS. WHERE 9 FEET SEPARATION CANNOT BE ACHEIVED CONTRACTOR MUS FOLLOW 290.44(e)(4)(A).

3.) PRESSURE REDUCING VALVES SHALL BE INSTALLED ON THE PROPERTY OWNERS SIDE OF THE WATER METER WHERE SERVICE PRESSURE IS 80 psi OR GREATER

4.) FIRE HYDRANTS SPACED MAX. OF 500

5.) 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 STREET AND MUST BE TOTALLY UNOBSTRUCTED TO THE STREET. FIRE HYDRANT DESIGN SHELL BE 2–2.5" NST OUTLETS. 1–5" 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 PANTED SILVER IN COLOR AND DESIGNATED BY BLUE REFLECTOR IN THE CENTER OF THE ROAD.

6.) ALL WATER LINES SHALL BE CONSTRUCTED WITH AWWA C–900 DR18 UNLESS OTHERWISE SPECIFIED.

7.) WATERLINE TO BE INSTALLED WITH A MAX 1° JOINT DEFLECTION THROUGH ALL CURVES

DESIGNED BY: SPC
DRAFTED BY: CEL

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
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Fax No. (512) 280-5165

SHEET NAME: OVERALL WATER PLAN (2 OF 2)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 54 OF 70
SHEET NO.: 54

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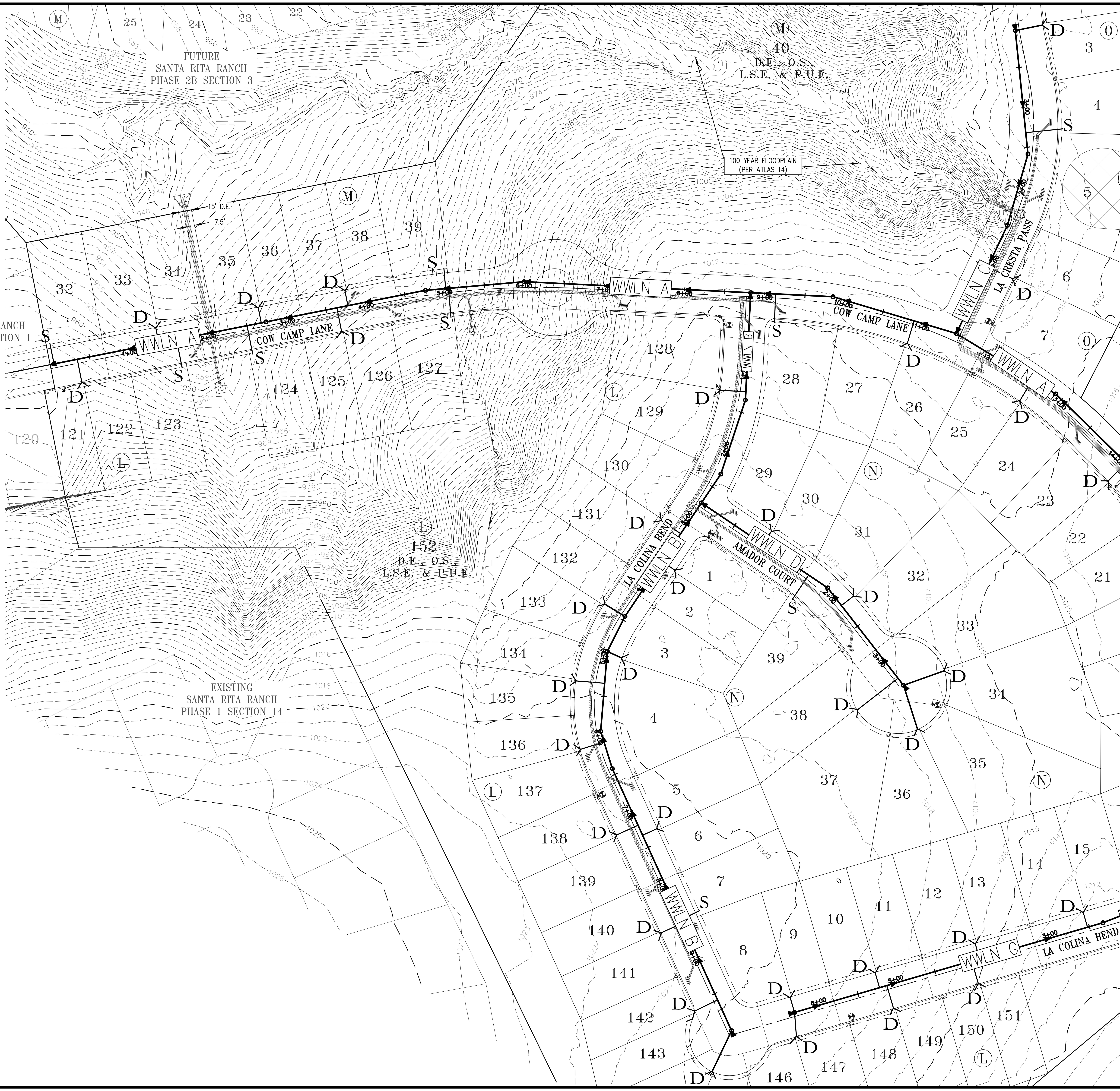

WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW

0 60' 120'

SCALE: 1" = 60'

WASTEWATER NOTES

1. ALL STREETS ARE TO BE BUILT TO SUB-GRADE PRIOR TO UTILITY INSTALLATION.
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), SDR26. HIGHER PRESSURE RATED (160 PSI). OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATRIAL FOR GRAVITY WASTEWATER MAINS SHALL BE SDR26 PVC, PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, MINIMUM DEPTH OF COVER FOR ALL LINES OUTSIDE OF THE PAVED AREAS SHALL BE 42" BELOW FINISHED GRADE AND 30" BELOW SUBGRADE FOR ALL LINES LOCATED IN PAVED AREAS.
4. THE CONTRACTOR SHALL CONTACT THE CITY OF LIBERTY HILL INSPECTOR @ 512-778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING EXISTING LINES.
5. CONTRACTOR SHALL FIELD LOCATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ANY PROPOSED CITY OF LIBERTY HILL UTILITY CONNECTION PRIOR TO CONSTRUCTION. NO CONNECTION OR MODIFICATION TO AN EXISTING CITY OF LIBERTY HILL UTILITY SHALL BE MADE WITHOUT THE PRESENCE OF A CITY OF LIBERTY HILL REPRESENTATIVE.
6. ALL MANHOLES TO HAVE 0.1' DROP ACROSS MANHOLE.
7. ALL MANHOLES ARE 48" DIA. MANHOLE, UNLESS NOTED OTHERWISE.
8. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS AND GASKETED COVERS AND HAVE RIM ELEVATIONS 6" MIN. ABOVE FINISHED GRADE. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
9. FOR ALL MANHOLES SHOWING RESIDENTIAL CONNECTIONS, NO CORING OF MANHOLE SHALL BE ALLOWED TO MAKE THESE CONNECTIONS. MANHOLES SHALL BE ORDERED AND DELIVERED WITH THE CONNECTIONS AND INVERTS SHOWN ON THE PLANS.
10. ALL MANHOLES SHALL BE LINED WITH RAVEN LINING SYSTEMS RAVEN 405 OR APPROVED EQUAL.
11. ALL WASTEWATER SERVICES MUST HAVE 2' MINIMUM SEPARATION FROM WATER LINES.
12. THE CONTRACTOR, AT CONTRACTOR'S EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GUAGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY THE CITY OF LIBERTY HILL PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY OF LIBERTY HILL INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING, OR PRESSURE TESTING.
14. CONTACT THE CITY OF LIBERTY HILL WATER & WASTEWATER SUPERINTENDENT @ 512-778-5449 FOR ASSISTANCE IN OBTAINING EXISTING WASTEWATER LOCATIONS.
15. 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 ATSM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE BY WEIGHT	PERCENT RETAINED
1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

16. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTION 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 12AM AND 6AM.
17. 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 OF LIBERTY HILL SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.
18. ALL WASTEWATER SERVICE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS:
    - WASTEWATER SERVICE – "S" ON TOP OF CURB
    - TOOLS FOR MARKING THE CURB SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF MARKING SHALL BE SPECIFIED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
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DESIGNED BY: SPC
DRAFTED BY: CEL

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr.
Austin, Texas 78749
North Office
12129 RR 620 N., Ste. 600
Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: OVERALL WASTEWATER PLAN (1 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED
PROFESSIONAL ENGINEER

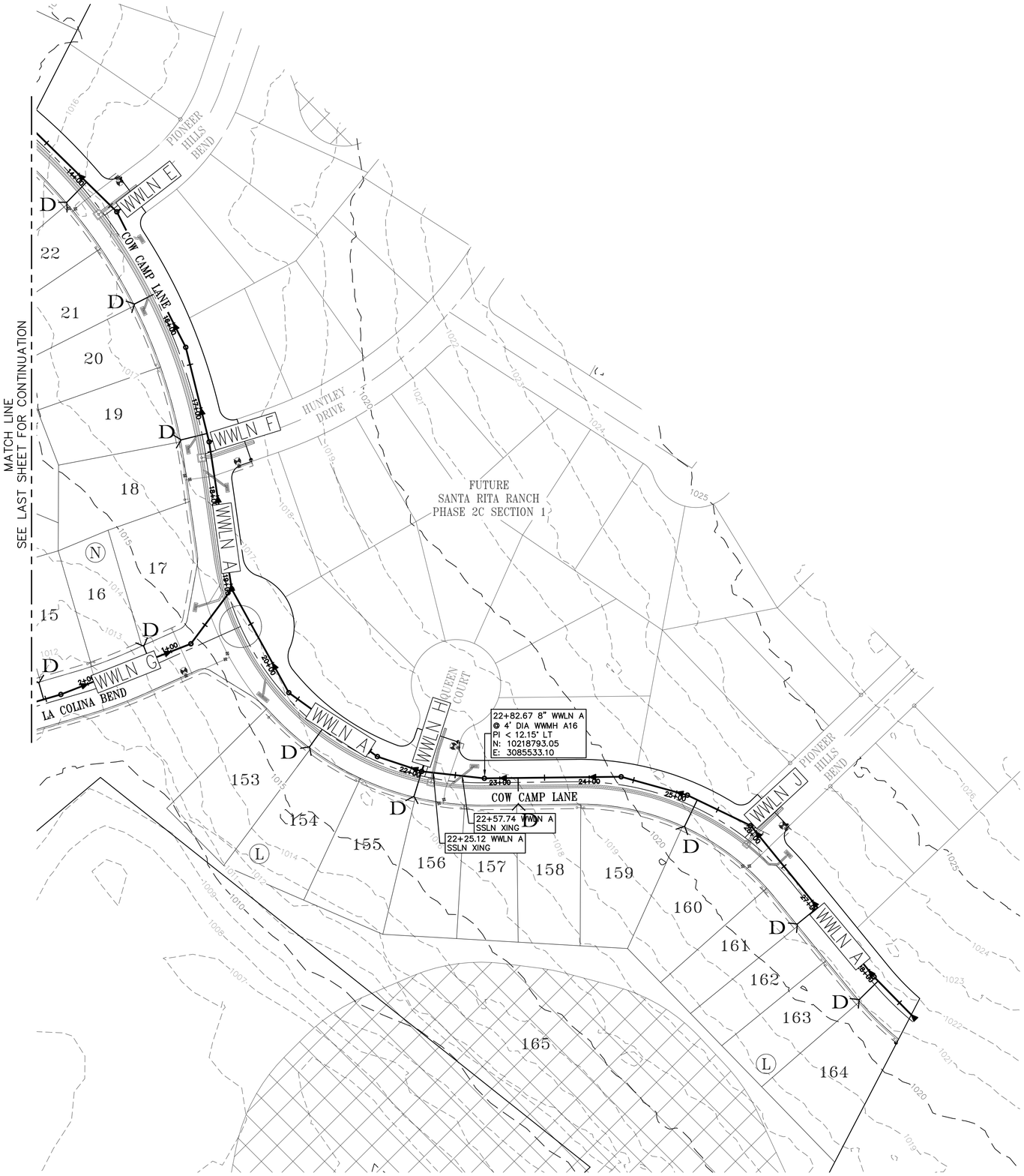
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 55 OF 70



WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW

0 60' 120'

SCALE: 1" = 60'

WASTEWATER NOTES

1. ALL STREETS ARE TO BE BUILT TO SUB-GRADE PRIOR TO UTILITY INSTALLATION.
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), SDR26. HIGHER PRESSURE RATED (160 PSI). OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATRIAL FOR GRAVITY WASTEWATER MAINS SHALL BE SDR26 PVC, PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, MINIMUM DEPTH OF COVER FOR ALL LINES OUTSIDE OF THE PAVED AREAS SHALL BE 42" BELOW FINISHED GRADE AND 30" BELOW SUBGRADE FOR ALL LINES LOCATED IN PAVED AREAS.
4. THE CONTRACTOR SHALL CONTACT THE CITY OF LIBERTY HILL INSPECTOR @ 512-778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING EXISTING LINES.
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6. ALL MANHOLES TO HAVE 0.1' DROP ACROSS MANHOLE.
7. ALL MANHOLES ARE 48" DIA. MANHOLE, UNLESS NOTED OTHERWSE.
8. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS AND GASKETED COVERS AND HAVE RIM ELEVATIONS 6" MIN. ABOVE FINISHED GRADE. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
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SIEVE SIZE BY WEIGHT	PERCENT RETAINED
1"	0
3/8"	0-2
#4	40-85
#10	95-100

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DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE

REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749 Phone No. (512) 280-5160
North Office: 1212 RR 620 N, Ste. 600 Austin, Texas 78750 Fax No. (512) 280-5165

SHEET NAME: OVERALL WASTEWATER PLAN (2 OF 2)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 56 OF 70

SHEET NO.: 56

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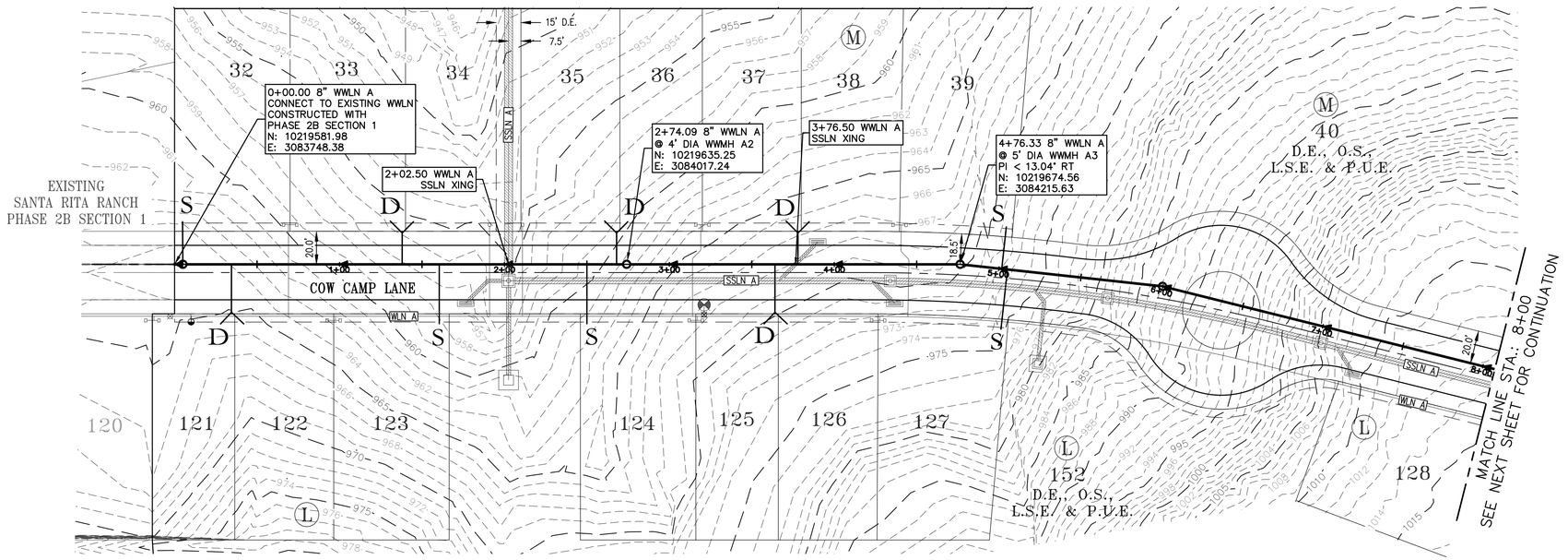
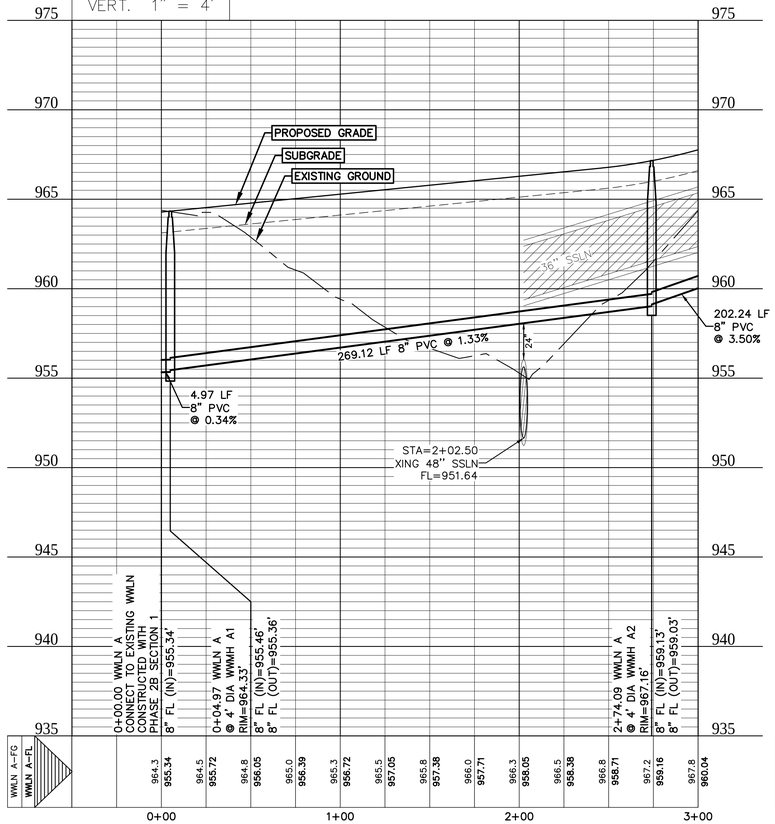
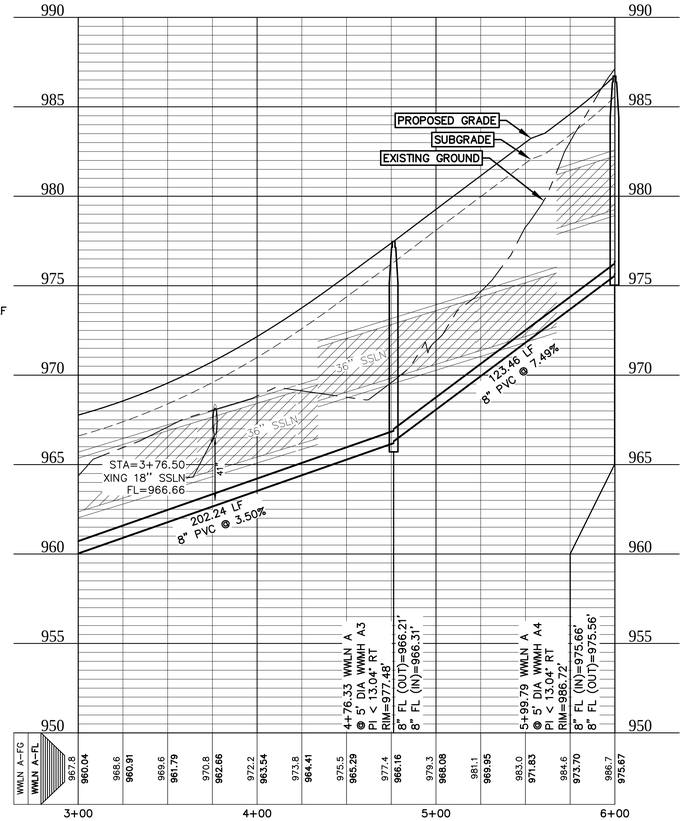
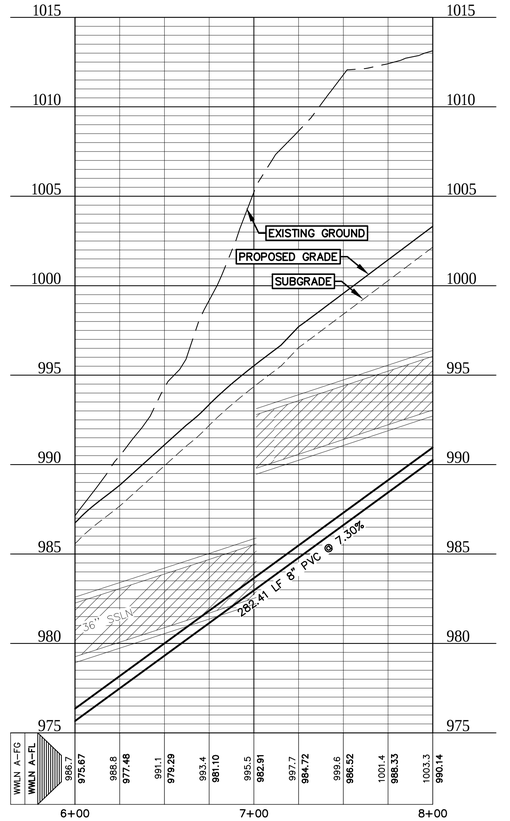


WWLN "A"
8" SDR-26 PVC STA. 0+00 TO 08+00

PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'







WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW

SCALE: 1" = 40'

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SIEVE SIZE	PERCENT RETAINED
BY WEIGHT	
1"	0
3/4"	0-2
#4	40-85
#10	95-100

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DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
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Austin, Texas 78735
Phone No. (512) 280-5160
North Office
1120 RR 620 S. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: WASTEWATER LINE A (0+00 TO 8+00)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 57 OF 70
SHEET NO.: 57

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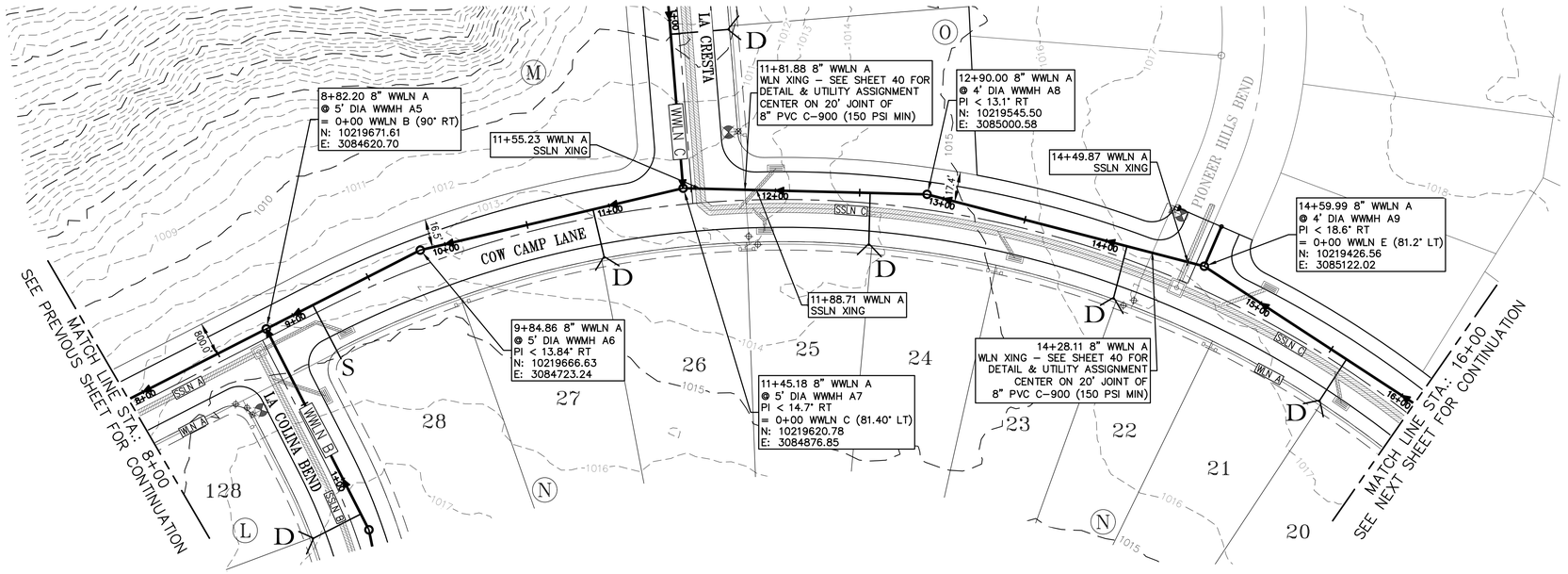

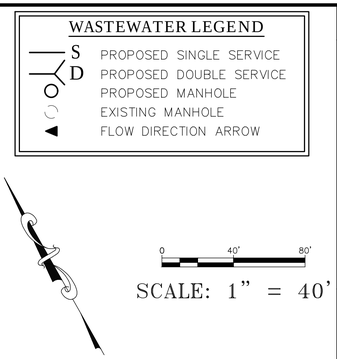

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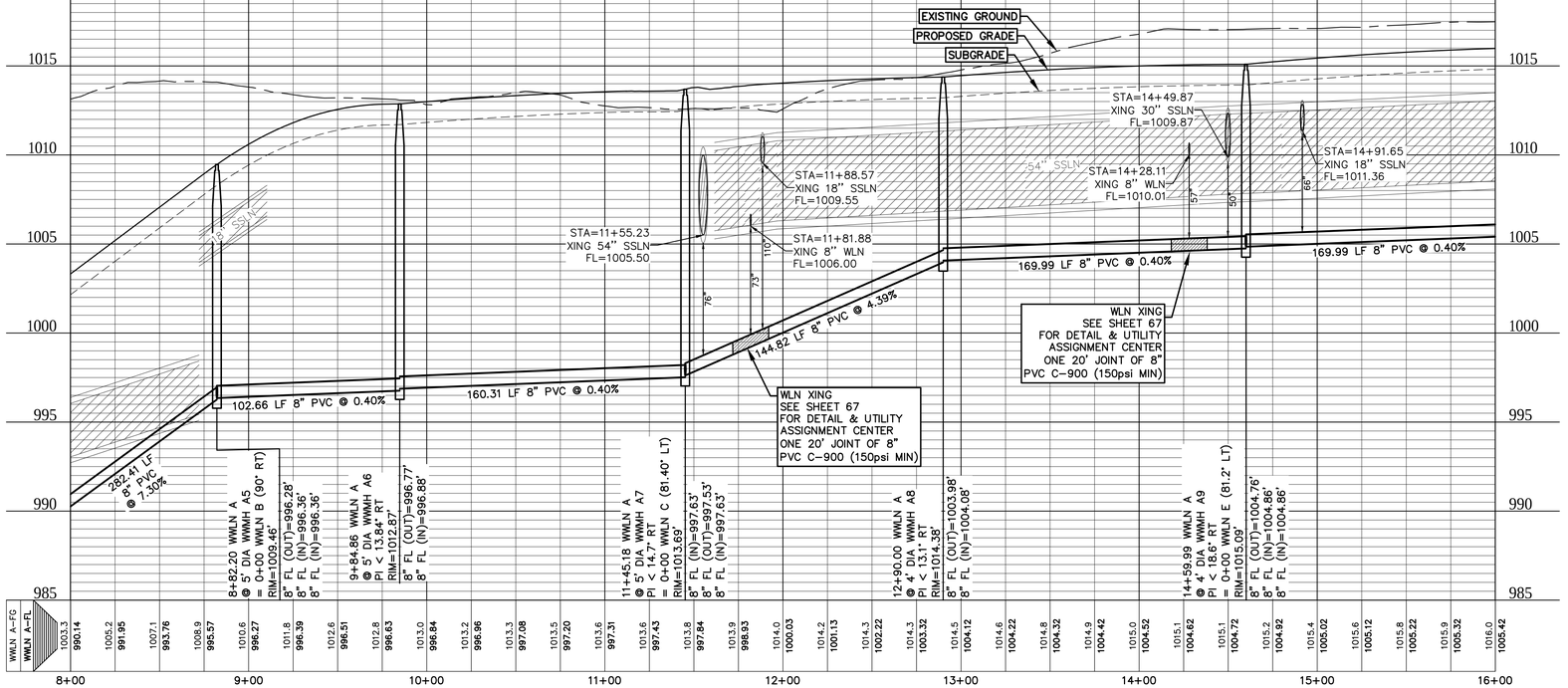
WWLN "A"
8" SDR-26 PVC STA. 8+00 TO 16+00

PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'



	8+00	9+00	10+00	11+00	12+00	13+00	14+00	15+00	16+00
WWLN A–FG	1003.3	1005.2	1007.1	1008.9	1010.6	1011.8	1012.6	1012.8	1013.0
WWLN A–FL	990.14	991.95	993.76	995.57	996.27	996.39	996.51	996.63	996.84
					8+82.20 WWLN A @ 5' DIA WWMH A5 = 0+00 WWLN B (90° RT) RIM=1008.46'	8" FL (OUT)=996.28' 8" FL (IN)=996.36' 8" FL (IN)=996.36'		9+64.86 WWLN A @ 5' DIA WWMH A6 PI < 13.84° RT RIM=1012.87'	8" FL (OUT)=996.77' 8" FL (IN)=996.88'
	13+2	13+3	13+5	13+6	13+6	13+8	13+9	14+0	14+0
	996.96	997.08	997.20	997.31	997.43	997.84	998.93	1000.03	1001.13
					11+45.18 WWLN A @ 5' DIA WWMH A7 PI < 14.7° RT = 0+00 WWLN C (81.40° LT) RIM=1013.69'	8" FL (OUT)=997.63' 8" FL (OUT)=997.53' 8" FL (IN)=997.63'			
	14+2	14+3	14+3	14+4	14+5	14+5	14+6	14+8	14+9
	1001.13	1002.22	1003.32	1004.12	1004.22	1004.32	1004.42	1004.52	1004.62
			12+90.00 WWLN A @ 4' DIA WWMH A8 PI < 13.1° RT RIM=1014.38'	8" FL (OUT)=1003.98' 8" FL (IN)=1004.08'					14+59.99 WWLN A @ 4' DIA WWMH A9 PI < 18.6° RT = 0+00 WWLN E (81.2° LT) RIM=1015.09'
	15+1	15+2	15+4	15+6	15+8	15+9	16+0		
	1004.72	1004.92	1005.02	1005.12	1005.22	1005.32	1005.42		
		8" FL (OUT)=1004.76' 8" FL (IN)=1004.86' 8" FL (IN)=1004.86'							

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
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North Office: 121 29RR SOUTH, #600 Austin, Texas 78750 Fax No. (512) 280-5165

DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE

REVISION

SHEET NAME: WASTEWATER LINE A (8+00 TO 16+00)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

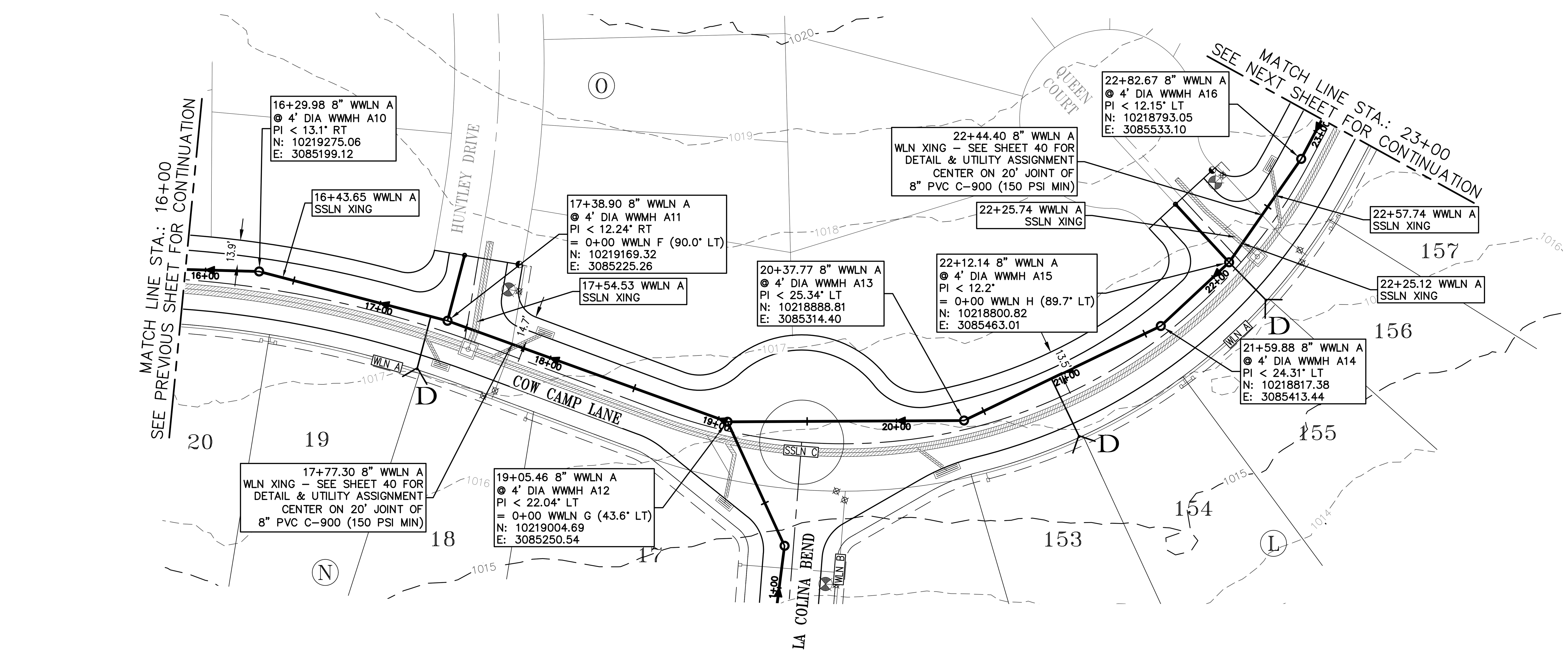
12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

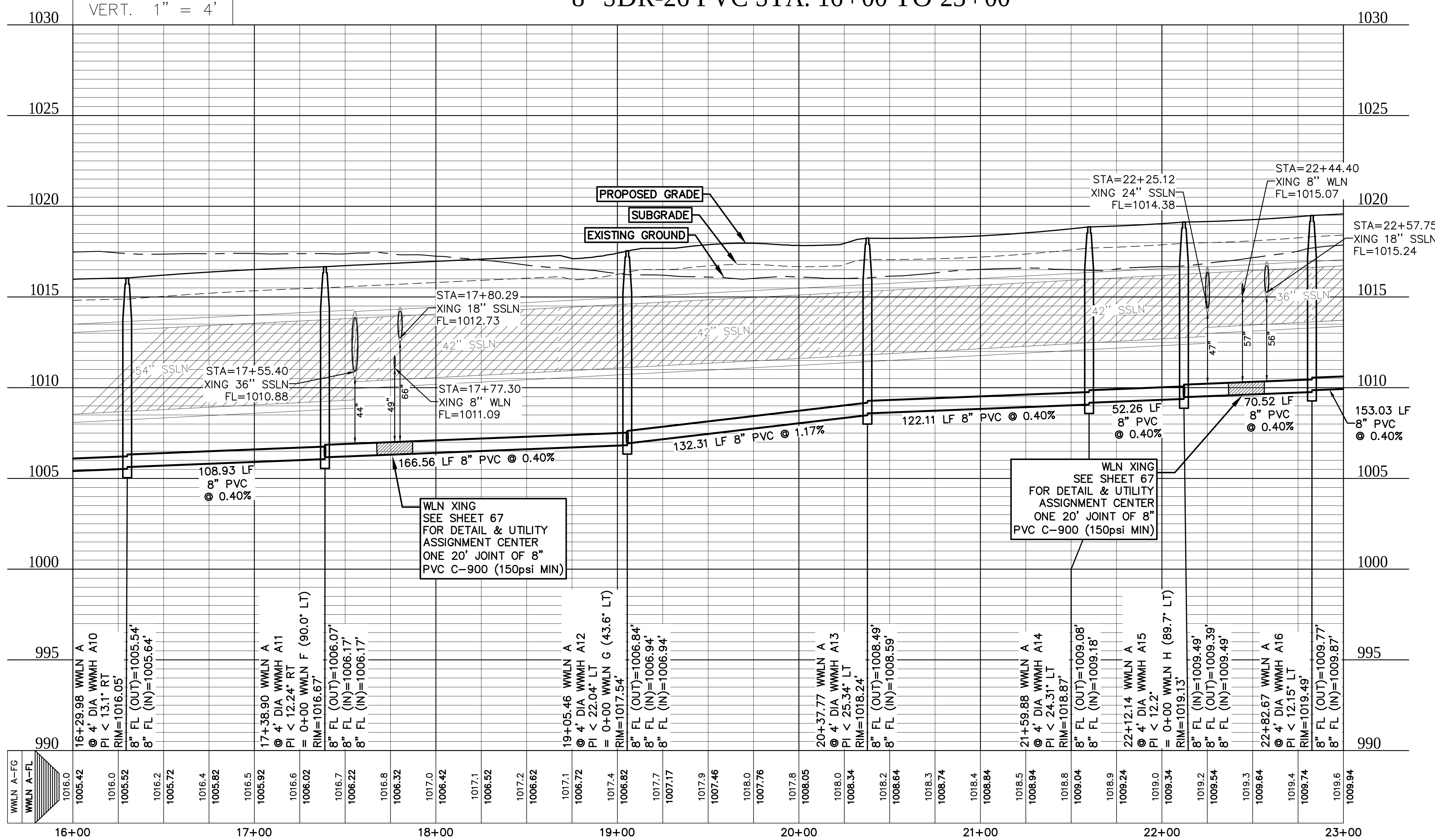
SHEET: 58 OF 70

SHEET NO.: 58



WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW



WASTEWATER NOTES

1. ALL STREETS ARE TO BE BUILT TO SUB-GRADE PRIOR TO UTILITY INSTALLATION.
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), SDR26. HIGHER PRESSURE RATED (160 PSI). OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATRIAL FOR GRAVITY WASTEWATER MAINS SHALL BE SDR26 PVC, PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, MINIMUM DEPTH OF COVER FOR ALL LINES OUTSIDE OF THE PAVED AREAS SHALL BE 42" BELOW FINISHED GRADE AND 30" BELOW SUBGRADE FOR ALL LINES LOCATED IN PAVED AREAS.
4. THE CONTRACTOR SHALL CONTACT THE CITY OF LIBERTY HILL INSPECTOR @ 512-778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING EXISTING LINES.
5. CONTRACTOR SHALL FIELD LOCATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ANY PROPOSED CITY OF LIBERTY HILL UTILITY CONNECTION PRIOR TO CONSTRUCTION. NO CONNECTION OR MODIFICATION TO AN EXISTING CITY OF LIBERTY HILL UTILITY SHALL BE MADE WITHOUT THE PRESENCE OF A CITY OF LIBERTY HILL REPRESENTATIVE.
6. ALL MANHOLES TO HAVE 0.1' DROP ACROSS MANHOLE.
7. ALL MANHOLES ARE 48" DIA. MANHOLE, UNLESS NOTED OTHERWISE.
8. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS AND GASKETED COVERS AND HAVE RIM ELEVATIONS 6" MIN. ABOVE FINISHED GRADE. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
9. FOR ALL MANHOLES SHOWING RESIDENTIAL CONNECTIONS, NO CORING OF MANHOLE SHALL BE ALLOWED TO MAKE THESE CONNECTIONS. MANHOLES SHALL BE ORDERED AND DELIVERED WITH THE CONNECTIONS AND INVERTS SHOWN ON THE PLANS.
10. ALL MANHOLES SHALL BE LINED WITH RAVEN LINING SYSTEMS RAVEN 405 OR APPROVED EQUAL.
11. ALL WASTEWATER SERVICES MUST HAVE 2' MINIMUM SEPARATION FROM WATER LINES.
12. THE CONTRACTOR, AT CONTRACTOR'S EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GUAGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY THE CITY OF LIBERTY HILL PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY OF LIBERTY HILL INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING, OR PRESSURE TESTING.
14. CONTACT THE CITY OF LIBERTY HILL WATER & WASTEWATER SUPERINTENDENT @ 512-778-5449 FOR ASSISTANCE IN OBTAINING EXISTING WASTEWATER LOCATIONS.
15. 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 ATSM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE BY WEIGHT	PERCENT RETAINED
1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

16. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTION 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 12AM AND 6AM.
17. 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 OF LIBERTY HILL SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.
18. ALL WASTEWATER SERVICE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS:
    - WASTEWATER SERVICE - "S" ON TOP OF CURB
    - TOOLS FOR MARKING THE CURB SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF MARKING SHALL BE SPECIFIED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
19. 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 DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
20. FRANCHISE UTILITY NOTE; OTHER UTILITIES SUCH AS GAS, ELECTRIC, TELEPHONE, CABLE, ETC. MAY SHARE THE WASTEWATER SERVICE LINE TRENCH PROVIDED SUCH UTILITIES ARE OFFSET A MINIMUM OF 5' FROM THE WASTEWATER SERVICE LINE.

DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749 Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600 Austin, Texas 78750 Fax No. (512) 280-5165

SHEET NAME: WASTEWATER LINE A (16+00 TO 23+00)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC. ID# F3791
12-20-2024

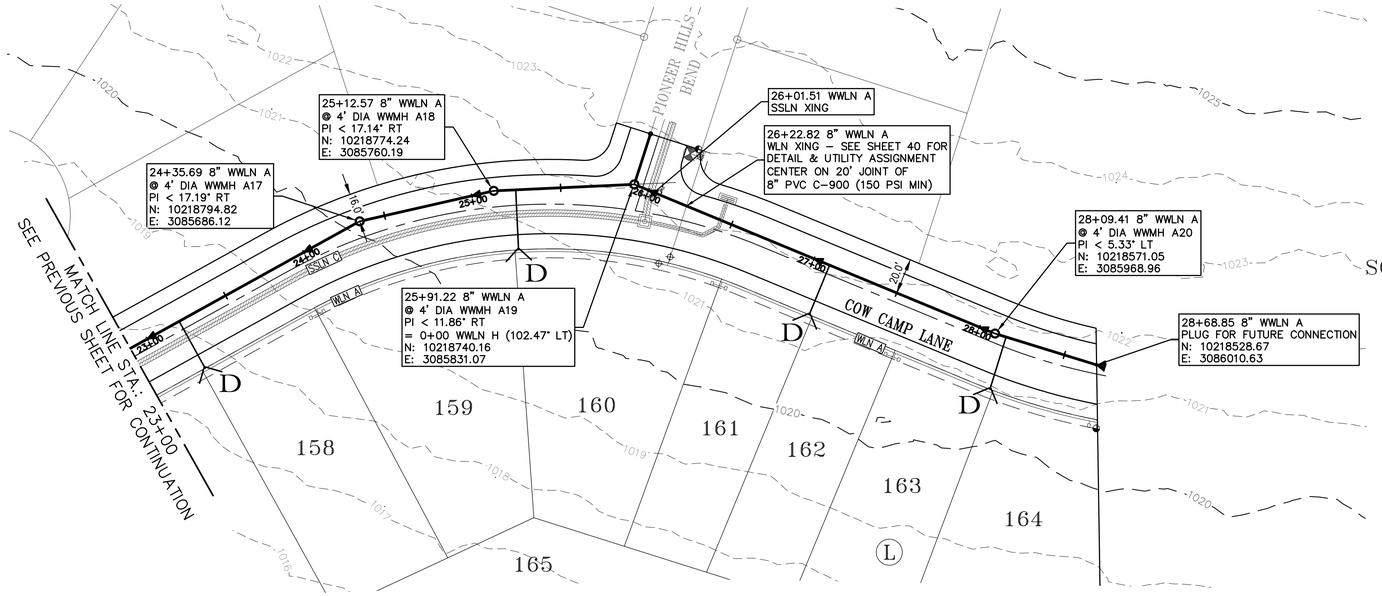
DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 59 OF 70

SHEET NO. 59

FILE PATH: J:\AC3D\5559\dwg\5559-WASTEWATER.dwg - Dec 23, 2024 - 7:25am



SCALE: 1" = 40'

WASTEWATER LEGEND

- S / D — PROPOSED SINGLE SERVICE
- S / D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
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3. UNLESS OTHERWISE ACCEPTED BY THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, MINIMUM DEPTH OF COVER FOR ALL LINES OUTSIDE OF THE PAVED AREAS SHALL BE 42" BELOW FINISHED GRADE AND 30" BELOW SUBGRADE FOR ALL LINES LOCATED IN PAVED AREAS.
4. THE CONTRACTOR SHALL CONTACT THE CITY OF LIBERTY HILL INSPECTOR @ 512-778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING EXISTING LINES.
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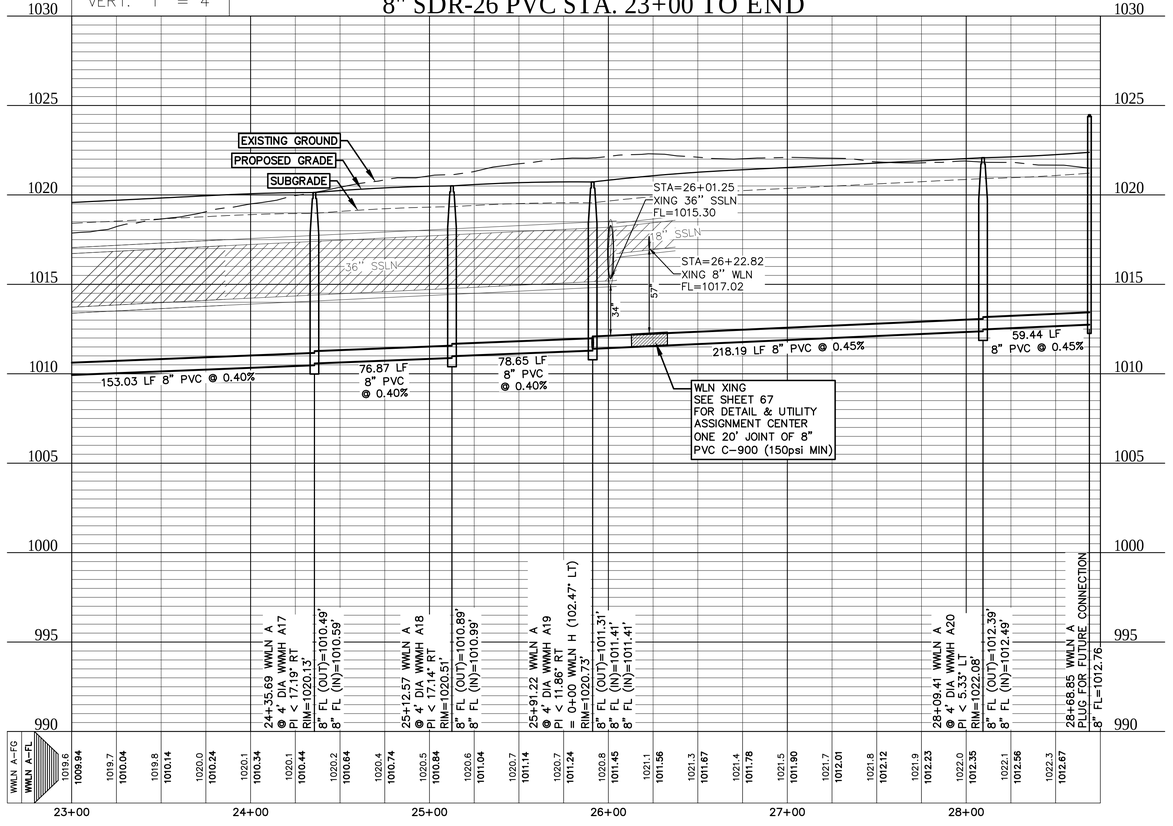
PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

WWLN "A"
8" SDR-26 PVC STA. 23+00 TO END



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North Office: 121 29 RR 620 N. Suite 600 Austin, Texas 78726 Fax No. (512) 280-5165

DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

SHEET NAME: WASTEWATER LINE A (23+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 60 OF 70
SHEET NO.: 60

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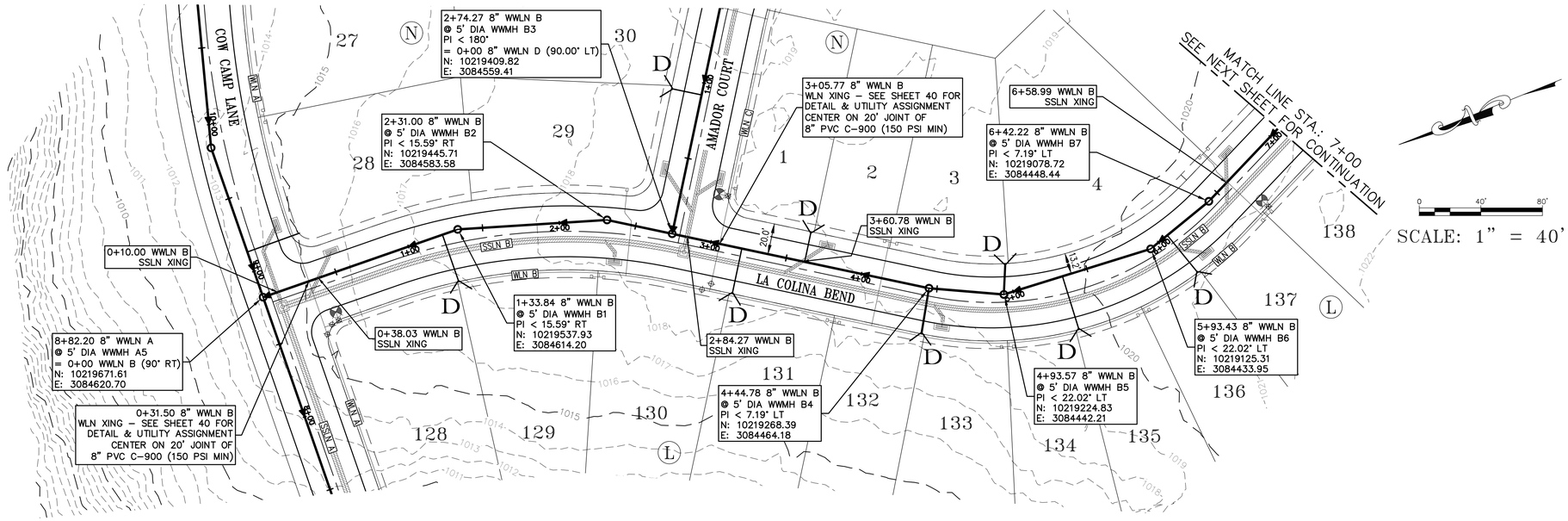

WASTEWATER LEGEND

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SIEVE SIZE BY WEIGHT	PERCENT RETAINED
1½"	0
⅜"	0-2
#4	40-85
#10	95-100

16. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTION 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 12AM AND 6AM.
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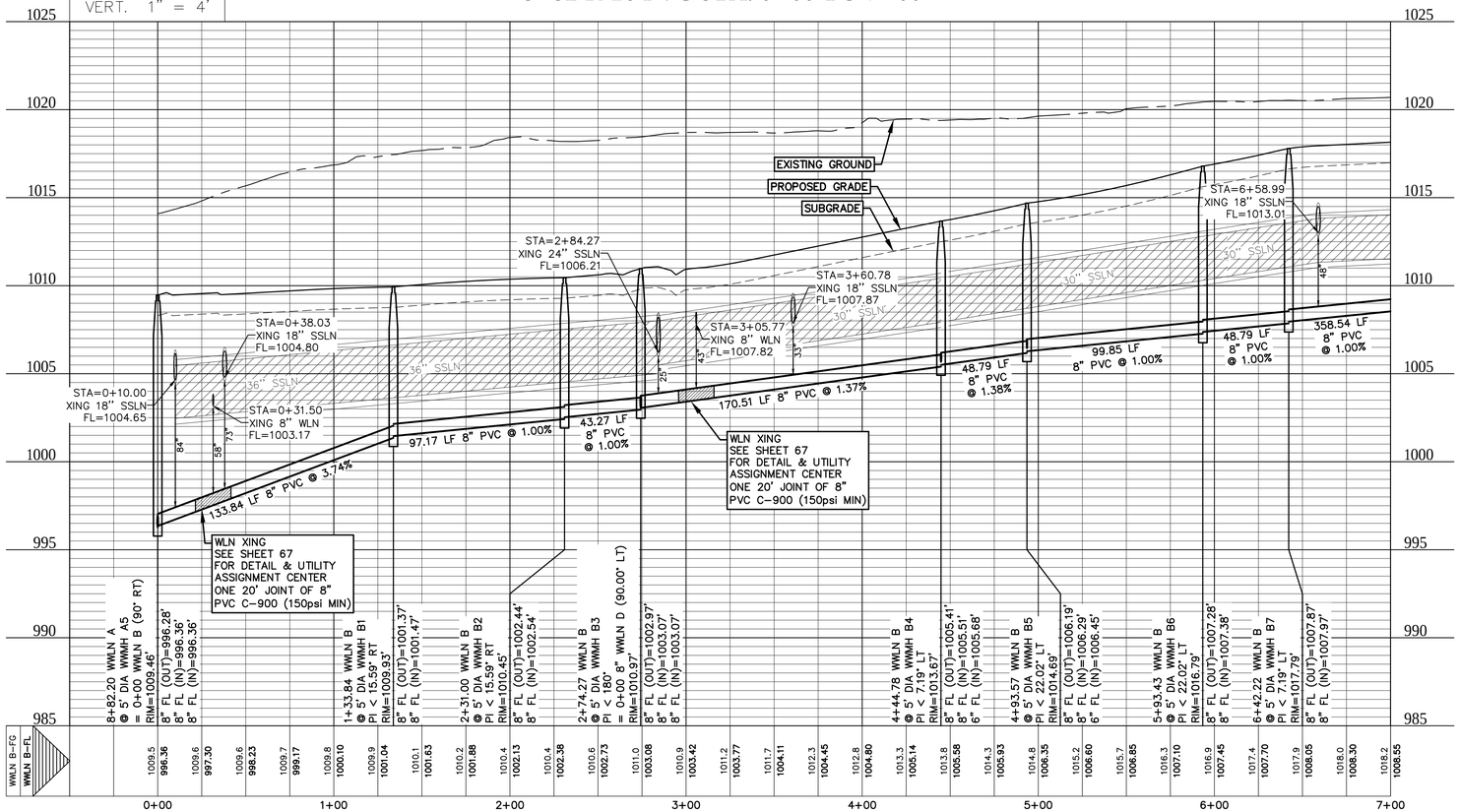
PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

WWLN "B"
8" SDR-26 PVC STA. 0+00 TO 7+00



	0+00	1+00	2+00	3+00	4+00	5+00	6+00	7+00
WWLN B-FG	1009.5	1009.6	1009.8	1010.1	1010.2	1010.4	1011.0	1011.2
WWLN B-FL	996.36	997.30	998.23	999.17	1000.10	1001.04	1001.63	1001.88

	7+00	8+82.20 WWLN A @ 5' DIA WWMH A5 = 0+00 WWLN B (90° RT)	1+33.84 WWLN B @ 5' DIA WWMH B1 PI < 15.59° RT	2+31.00 WWLN B @ 5' DIA WWMH B2 PI < 15.59° RT	2+74.27 WWLN B @ 5' DIA WWMH B3 PI < 180°	= 0+00 8" WWLN D (90.00° LT)	4+44.78 WWLN B @ 5' DIA WWMH B4 PI < 7.19° LT	4+93.57 WWLN B @ 5' DIA WWMH B5 PI < 22.02° LT	5+93.43 WWLN B @ 5' DIA WWMH B6 PI < 22.02° LT	6+42.22 WWLN B @ 5' DIA WWMH B7 PI < 7.19° LT
WWLN B-FG	1011.7	1009.5	1009.6	1010.1	1010.2	1010.4	1010.6	1011.0	1013.3	1014.3
WWLN B-FL	1004.11	RIM=1009.46' 8" FL (OUT)=996.28' 8" FL (IN)=996.36' 8" FL (IN)=996.36'	RIM=1009.93' 8" FL (OUT)=1001.37' 8" FL (IN)=1001.47'	RIM=1010.45' 8" FL (OUT)=1002.44' 8" FL (IN)=1002.54'	RIM=1010.97' 8" FL (OUT)=1002.97' 8" FL (IN)=1003.07' 8" FL (IN)=1003.07'		RIM=1013.67' 8" FL (OUT)=1005.41' 8" FL (IN)=1005.51' 8" FL (IN)=1005.68'	RIM=1014.69' 8" FL (OUT)=1006.19' 8" FL (IN)=1006.29' 6" FL (IN)=1006.45'	RIM=1016.79' 8" FL (OUT)=1007.28' 8" FL (IN)=1007.38'	RIM=1017.79' 8" FL (OUT)=1007.87' 8" FL (IN)=1007.97'
WWLN B-FL	1004.93						1005.58	1005.93	1006.35	1007.45

	7+00
WWLN B-FG	1015.2
WWLN B-FL	1006.60

	7+00
WWLN B-FG	1015.7
WWLN B-FL	1006.85

	7+00
WWLN B-FG	1016.3
WWLN B-FL	1007.10

	7+00
WWLN B-FG	1016.9
WWLN B-FL	1007.45

	7+00
WWLN B-FG	1017.4
WWLN B-FL	1007.70

	7+00
WWLN B-FG	1017.9
WWLN B-FL	1008.05

	7+00
WWLN B-FG	1018.0
WWLN B-FL	1008.30

	7+00
WWLN B-FG	1018.2
WWLN B-FL	1008.55

FILE PATH: J:\AC2D\5559\dwg\5559-WASTEWATER.dwg - Dec 23, 2024 - 7:28am

DESIGNED BY: SPC
DRAFTED BY: CEJ
DATE
REVISION

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SHEET NAME: WASTEWATER LINE B (0+00 TO 7+00)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

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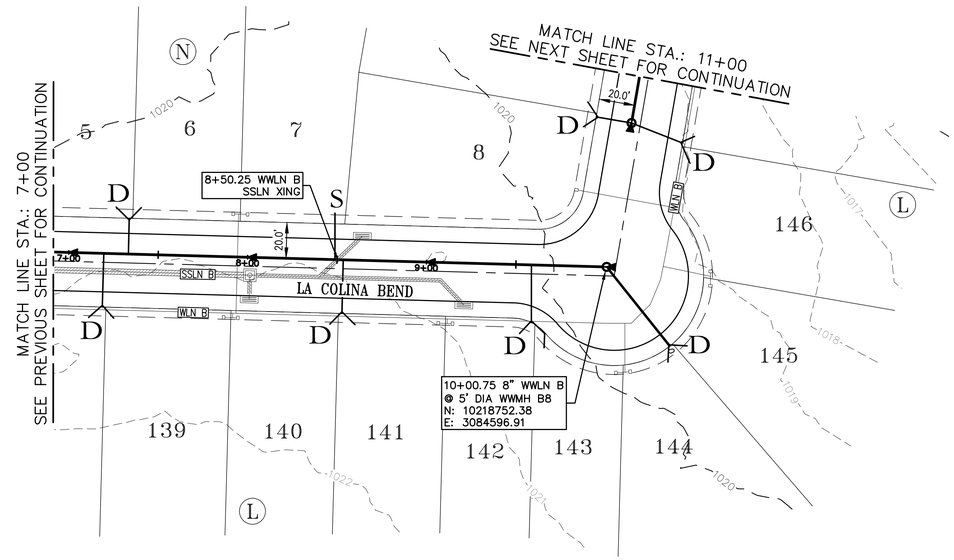
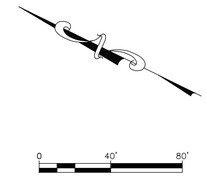
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 61 OF 70
SHEET NO.: 61



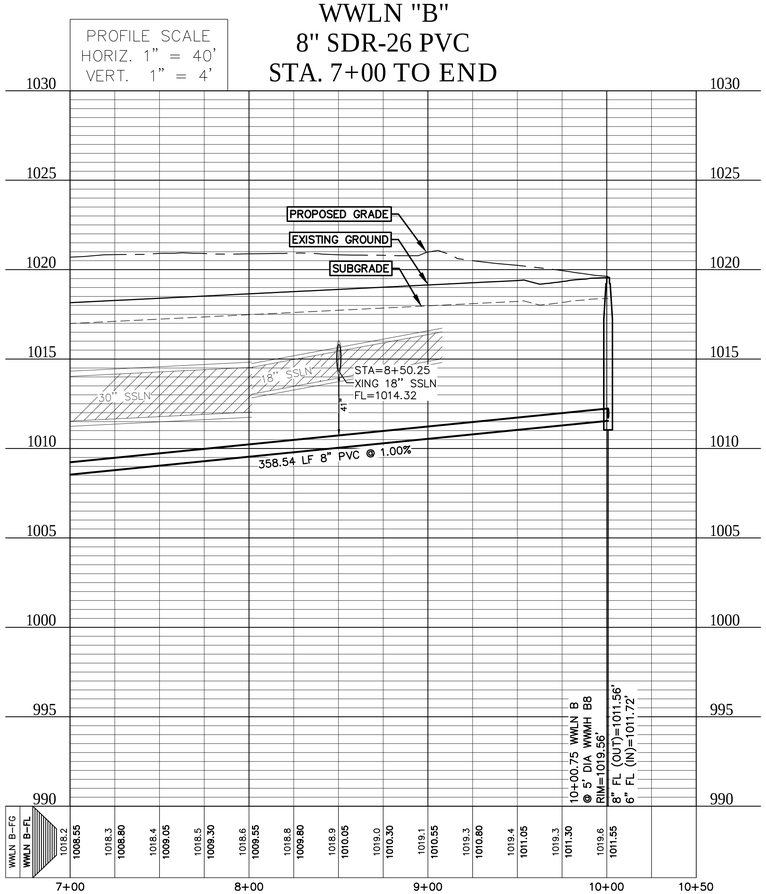


SCALE: 1" = 40'

WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW

WWLN "B"
8" SDR-26 PVC
STA. 7+00 TO END



WASTEWATER NOTES

1. ALL STREETS ARE TO BE BUILT TO SUB-GRADE PRIOR TO UTILITY INSTALLATION.
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), SDR26. HIGHER PRESSURE RATED (160 PSI). OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATRIAL FOR GRAVITY WASTEWATER MAINS SHALL BE SDR26 PVC, PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, MINIMUM DEPTH OF COVER FOR ALL LINES OUTSIDE OF THE PAVED AREAS SHALL BE 42" BELOW FINISHED GRADE AND 30" BELOW SUBGRADE FOR ALL LINES LOCATED IN PAVED AREAS.
4. THE CONTRACTOR SHALL CONTACT THE CITY OF LIBERTY HILL INSPECTOR @ 512-778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING EXISTING LINES.
5. CONTRACTOR SHALL FIELD LOCATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ANY PROPOSED CITY OF LIBERTY HILL UTILITY CONNECTION PRIOR TO CONSTRUCTION. NO CONNECTION OR MODIFICATION TO AN EXISTING CITY OF LIBERTY HILL UTILITY SHALL BE MADE WITHOUT THE PRESENCE OF A CITY OF LIBERTY HILL REPRESENTATIVE.
6. ALL MANHOLES TO HAVE 0.1' DROP ACROSS MANHOLE.
7. ALL MANHOLES ARE 48" DIA. MANHOLE, UNLESS NOTED OTHERWSE.
8. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS AND GASKETED COVERS AND HAVE RIM ELEVATIONS 6" MIN. ABOVE FINISHED GRADE. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
9. FOR ALL MANHOLES SHOWING RESIDENTIAL CONNECTIONS, NO CORING OF MANHOLE SHALL BE ALLOWED TO MAKE THESE CONNECTIONS. MANHOLES SHALL BE ORDERED AND DELIVERED WITH THE CONNECTIONS AND INVERTS SHOWN ON THE PLANS.
10. ALL MANHOLES SHALL BE LINED WITH RAVEN LINING SYSTEMS RAVEN 405 OR APPROVED EQUAL.
11. ALL WASTEWATER SERVICES MUST HAVE 2' MINIMUM SEPARATION FROM WATER LINES.
12. THE CONTRACTOR, AT CONTRACTOR'S EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GUAGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY THE CITY OF LIBERTY HILL PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY OF LIBERTY HILL INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING, OR PRESSURE TESTING.
14. CONTACT THE CITY OF LIBERTY HILL WATER & WASTEWATER SUPERINTENDENT @ 512-778-5449 FOR ASSISTANCE IN OBTAINING EXISTING WASTEWATER LOCATIONS.
15. 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 ATSM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE BY WEIGHT	PERCENT RETAINED
1"	0
3/8"	0-2
#4	40-85
#10	95-100

16. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTION 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 12AM AND 6AM.
17. 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 OF LIBERTY HILL SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.
18. ALL WASTEWATER SERVICE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS:
    - WASTEWATER SERVICE – "S" ON TOP OF CURB
    - TOOLS FOR MARKING THE CURB SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF MARKING SHALL BE SPECIFIED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
19. 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 DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
20. FRANCHISE UTILITY NOTE: OTHER UTILITIES SUCH AS GAS, ELECTRIC, TELEPHONE, CABLE, ETC. MAY SHARE THE WASTEWATER SERVICE LINE TRENCH PROVIDED SUCH UTILITIES ARE OFFSET A MINIMUM OF 5' FROM THE WASTEWATER SERVICE LINE.

DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749
North Office: 12129 RR 620 N, Suite 600 Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: WASTEWATER LINE B (7+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 62 OF 70
SHEET NO.: 62

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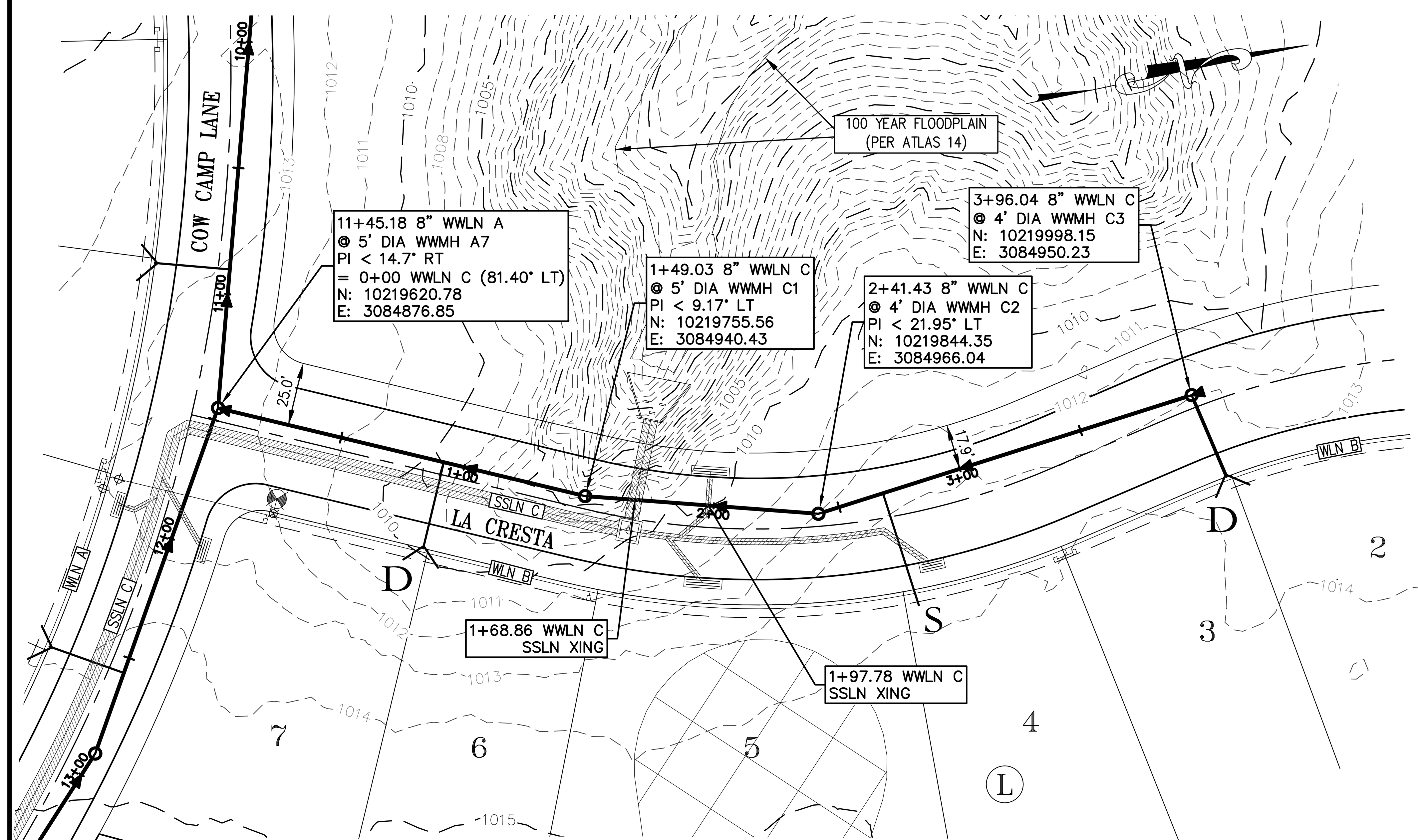
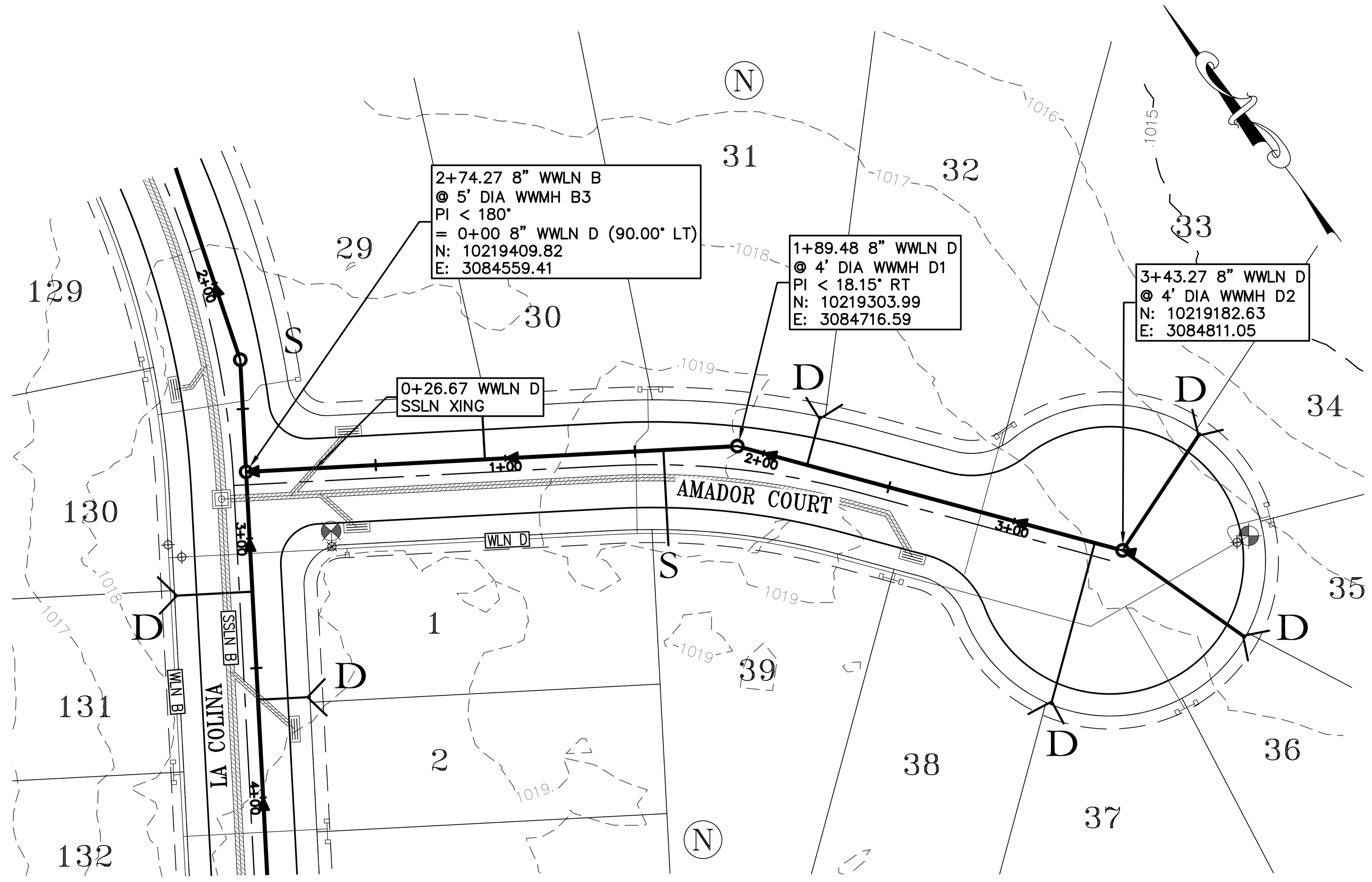




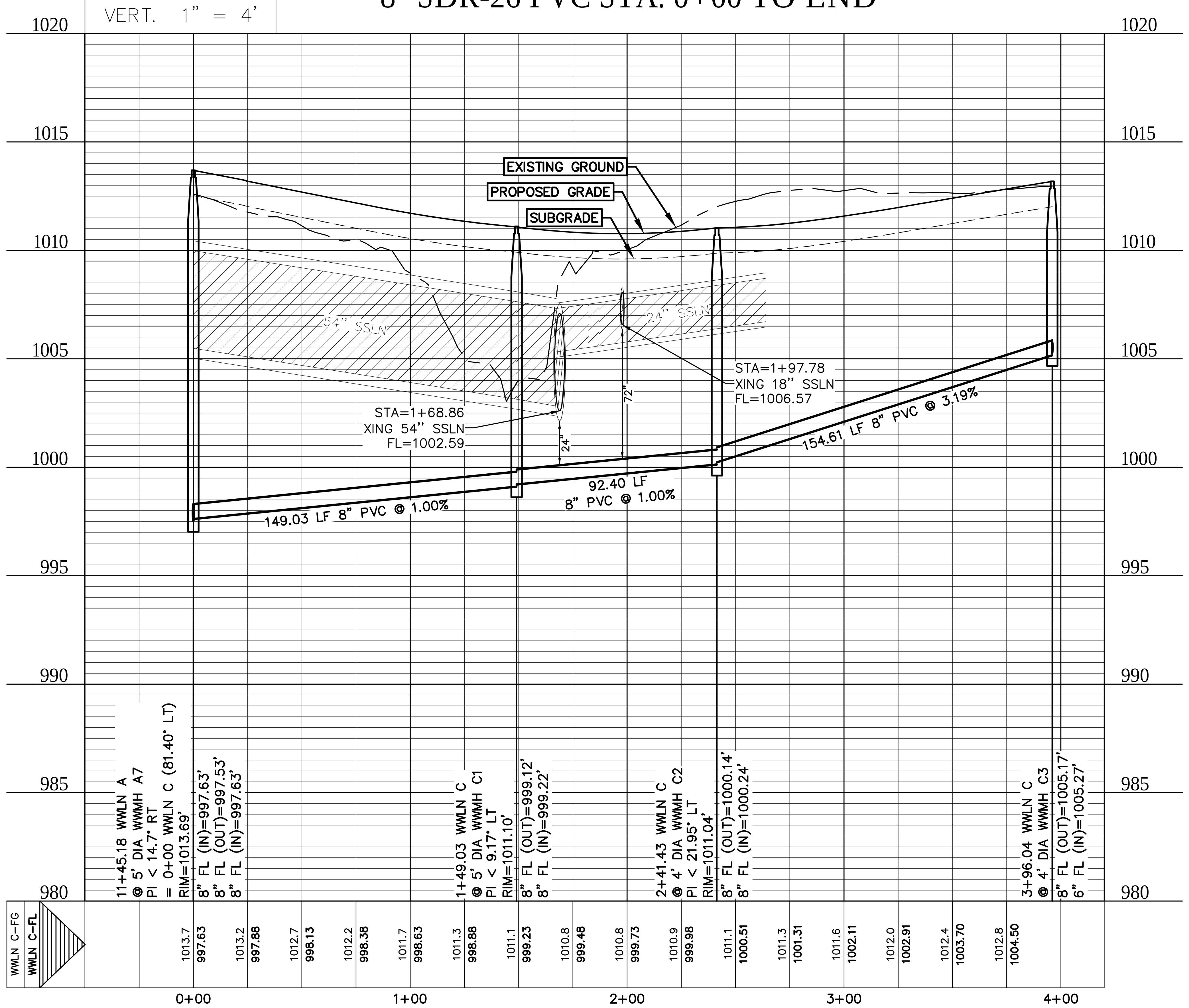
WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW

SCALE: 1" = 40'

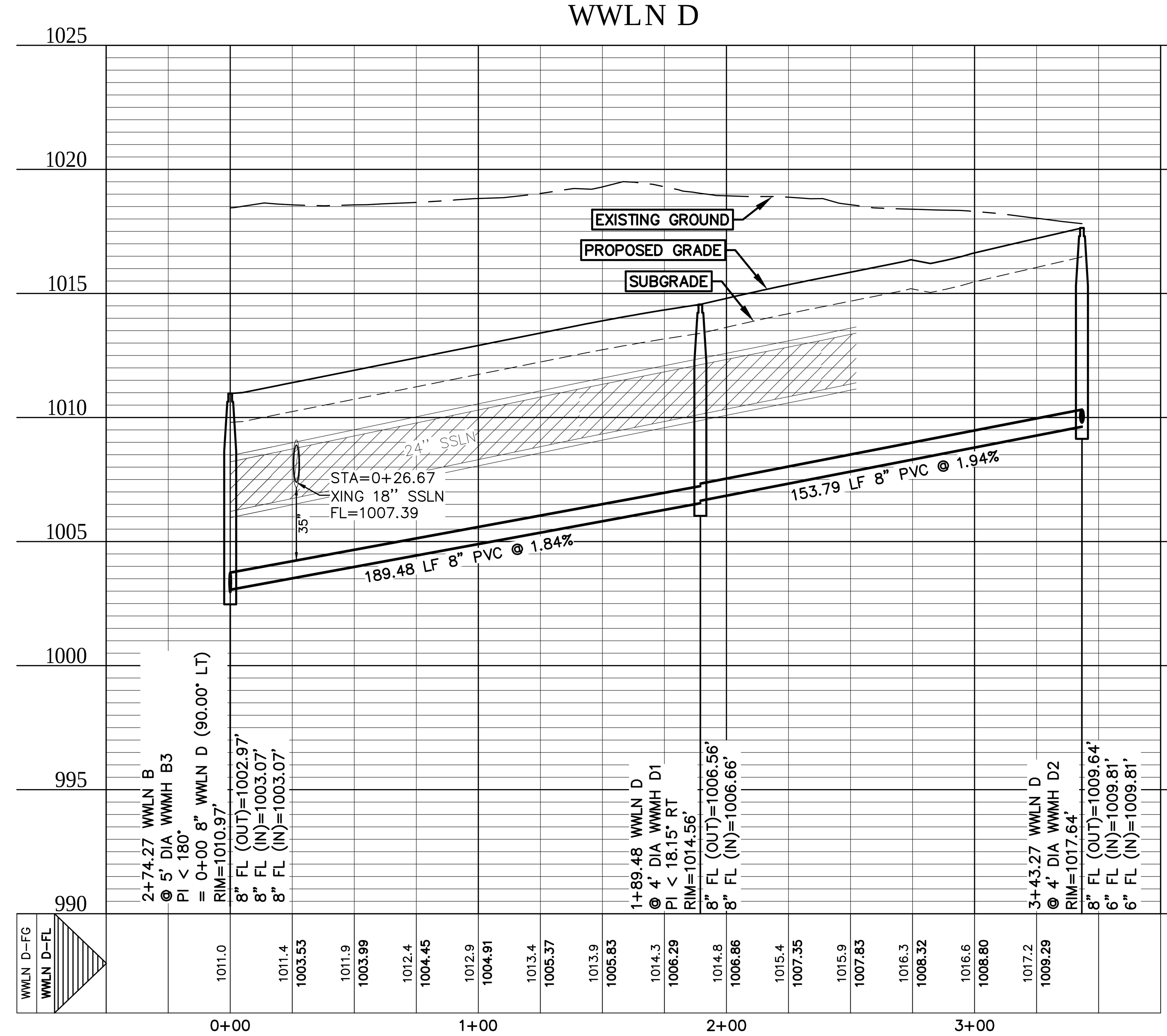
PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

WWLN "C"
8" SDR-26 PVC STA. 0+00 TO END



WWLN "D"
8" SDR-26 PVC STA. 0+00 TO END

WWLN D



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Civil Engineering ◆ Surveying
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Main Office: 5501 West William Cannon Dr., Austin, Texas 78749, Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600, Austin, Texas 78750, Fax No. (512) 280-5165

SHEET NAME: WASTEWATER LINES C AND D (0+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC. ID# F3791
12-20-2024

DATE: DEC 2024
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SHEET: 63 OF 70
SHEET NO. 63

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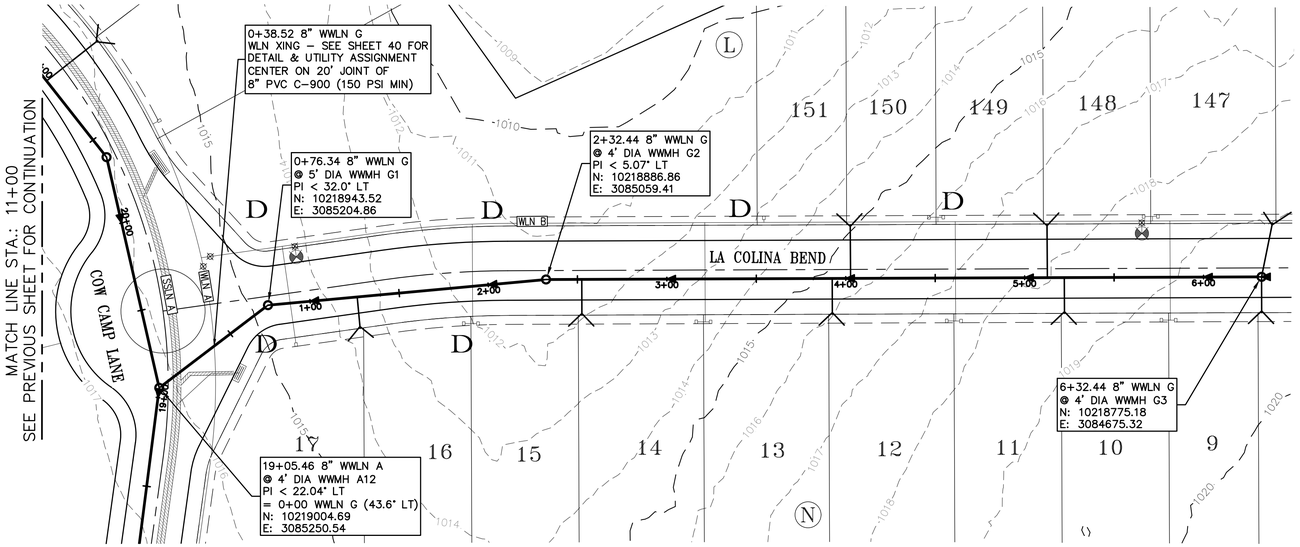

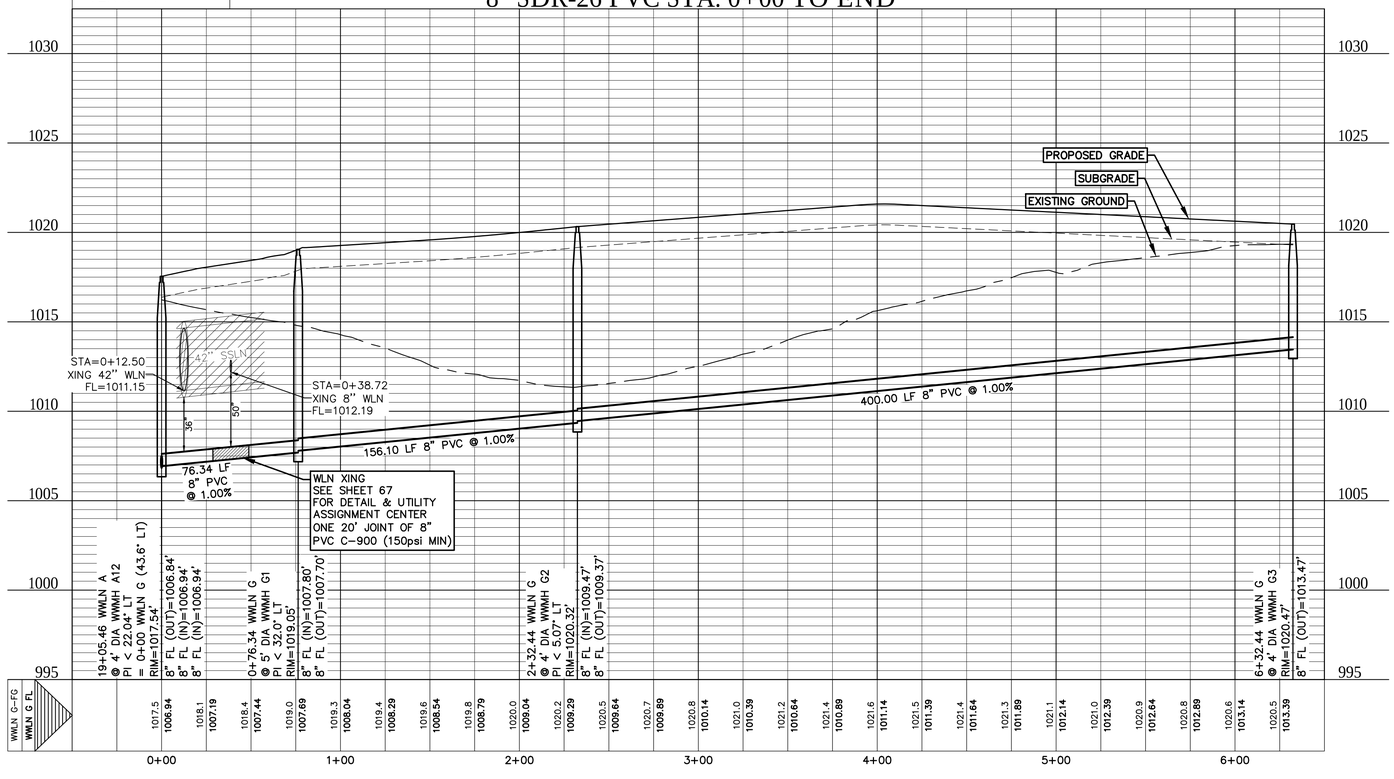

WASTEWATER LEGEND

S	PROPOSED SINGLE SERVICE
D	PROPOSED DOUBLE SERVICE
○	PROPOSED MANHOLE
○	EXISTING MANHOLE
◄	FLOW DIRECTION ARROW

SCALE: 1" = 40'

PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

WWLN "G"
8" SDR-26 PVC STA. 0+00 TO END

WWLN G–FG	1017.5	1018.1	1018.4	1019.0	1019.3	1019.4	1019.6	1019.8	1020.0	1020.2	1020.5	1020.7	1020.8	1021.0	1021.2	1021.4	1021.6	1021.5	1021.4	1021.3	1021.1	1021.0	1020.9	1020.8	1020.6	1020.5
WWLN G FL	**1006.94**	**1007.19**	**1007.44**	**1007.69**	**1008.04**	**1008.29**	**1008.54**	**1008.79**	**1009.04**	**1009.29**	**1009.64**	**1009.89**	**1010.14**	**1010.39**	**1010.64**	**1010.89**	**1011.14**	**1011.39**	**1011.64**	**1011.89**	**1012.14**	**1012.39**	**1012.64**	**1012.89**	**1013.14**	**1013.39**

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SPC	CEL

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Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: WASTEWATER LINE G (0+00 TO END)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STEVEN P. CATES
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Steven P. Cates
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SHEET
64 OF 70

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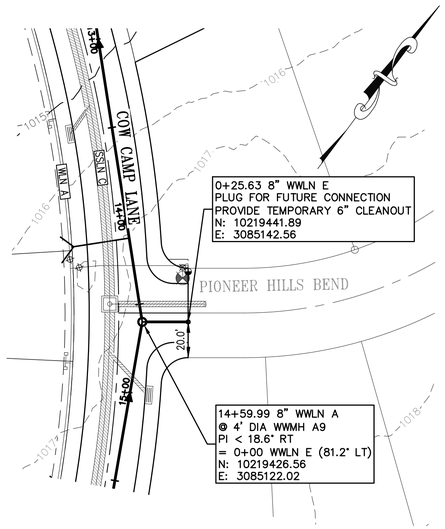
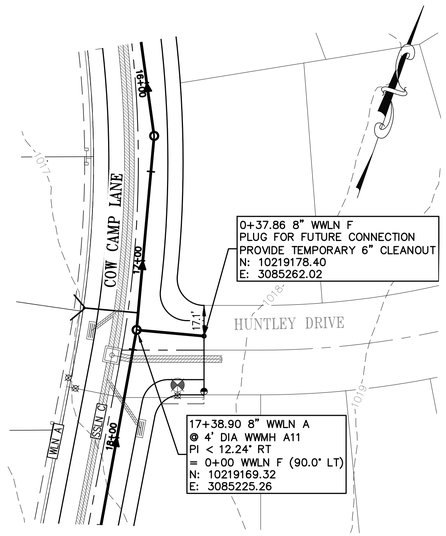
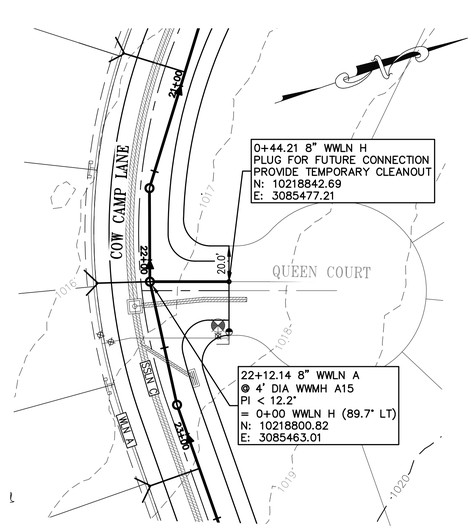
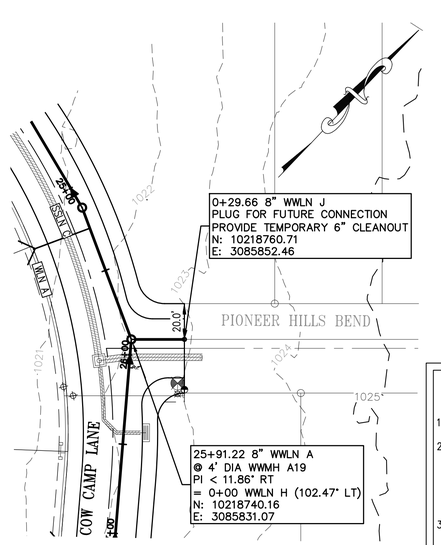
FILE PATH:J:\AC3D\5559\dwg\5559-WASTEWATER.dwg - Dec 23, 2024 - 7:27am



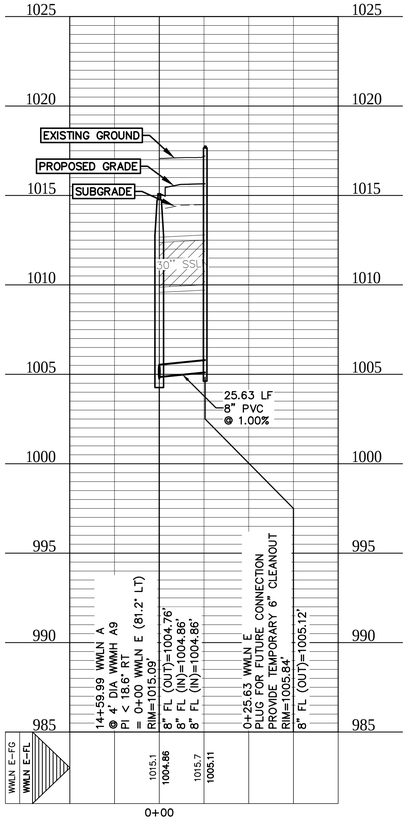






PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

WWLN "E"
8" SDR-26 PVC STA. 0+00 TO END



WWLN "F"
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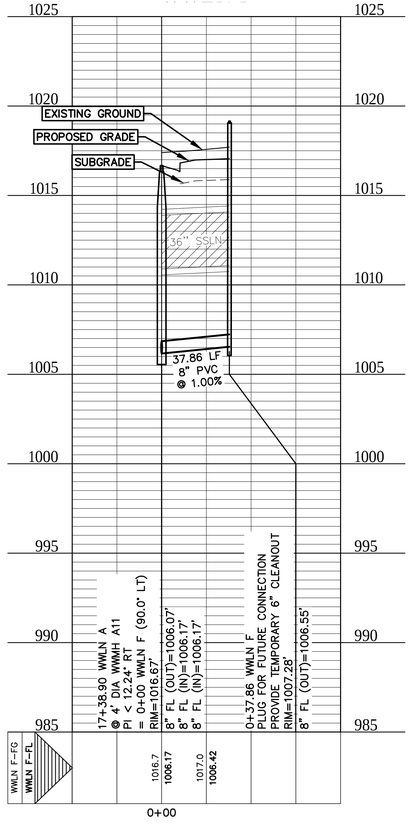
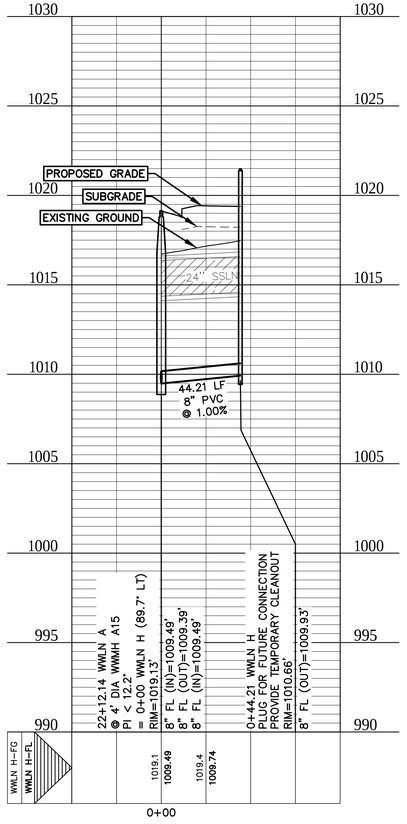
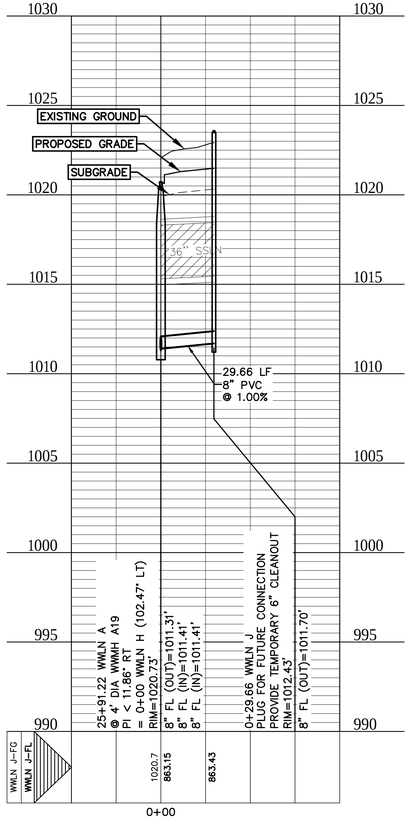


WWLN "H"
8" SDR-26 PVC STA. 0+00 TO END



WWLN "J"
8" SDR-26 PVC STA. 0+00 TO END



WASTEWATER LEGEND

- S — PROPOSED SINGLE SERVICE
- D — PROPOSED DOUBLE SERVICE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- FLOW DIRECTION ARROW

0 40' 80'

SCALE: 1" = 40'

WASTEWATER NOTES

1. ALL STREETS ARE TO BE BUILT TO SUB-GRADE PRIOR TO UTILITY INSTALLATION.
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), SDR26. HIGHER PRESSURE RATED (160 PSI). OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATRIAL FOR GRAVITY WASTEWATER MAINS SHALL BE SDR26 PVC, PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, MINIMUM DEPTH OF COVER FOR ALL LINES OUTSIDE OF THE PAVED AREAS SHALL BE 42" BELOW FINISHED GRADE AND 30" BELOW SUBGRADE FOR ALL LINES LOCATED IN PAVED AREAS.
4. THE CONTRACTOR SHALL CONTACT THE CITY OF LIBERTY HILL INSPECTOR @ 512-778-5449 TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING EXISTING LINES.
5. CONTRACTOR SHALL FIELD LOCATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ANY PROPOSED CITY OF LIBERTY HILL UTILITY CONNECTION PRIOR TO CONSTRUCTION. NO CONNECTION OR MODIFICATION TO AN EXISTING CITY OF LIBERTY HILL UTILITY SHALL BE MADE WITHOUT THE PRESENCE OF A CITY OF LIBERTY HILL REPRESENTATIVE.
6. ALL MANHOLES TO HAVE 0.1' DROP ACROSS MANHOLE.
7. ALL MANHOLES ARE 48" DIA. MANHOLE, UNLESS NOTED OTHERWISE.
8. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS AND GASKETED COVERS AND HAVE RIM ELEVATIONS 6" MIN. ABOVE FINISHED GRADE. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
9. FOR ALL MANHOLES SHOWING RESIDENTIAL CONNECTIONS, NO CORING OF MANHOLE SHALL BE ALLOWED TO MAKE THESE CONNECTIONS. MANHOLES SHALL BE ORDERED AND DELIVERED WITH THE CONNECTIONS AND INVERTS SHOWN ON THE PLANS.
10. ALL MANHOLES SHALL BE LINED WITH RAVEN LINING SYSTEMS RAVEN 405 OR APPROVED EQUAL.
11. ALL WASTEWATER SERVICES MUST HAVE 2' MINIMUM SEPARATION FROM WATER LINES.
12. THE CONTRACTOR, AT CONTRACTOR'S EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GUAGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY THE CITY OF LIBERTY HILL PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY OF LIBERTY HILL INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING, OR PRESSURE TESTING.
14. CONTACT THE CITY OF LIBERTY HILL WATER & WASTEWATER SUPERINTENDENT @ 512-778-5449 FOR ASSISTANCE IN OBTAINING EXISTING WASTEWATER LOCATIONS.
15. 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 ATSM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE	PERCENT
BY WEIGHT	RETAINED
1"	0
3/8"	0-2
#4	40-85
#10	95-100

16. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTION 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 12AM AND 6AM.
17. 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 OF LIBERTY HILL SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.
18. ALL WASTEWATER SERVICE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS:
    - WASTEWATER SERVICE - "S" ON TOP OF CURB
    - TOOLS FOR MARKING THE CURB SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF MARKING SHALL BE SPECIFIED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
19. 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 DESIGN ENGINEER AND APPROVED BY THE CITY OF ROUND ROCK.
20. FRANCHISE UTILITY NOTE; OTHER UTILITIES SUCH AS GAS, ELECTRIC, TELEPHONE, CABLE, ETC. MAY SHARE THE WASTEWATER SERVICE LINE TRENCH PROVIDED SUCH UTILITIES ARE OFFSET A MINIMUM OF 5' FROM THE WASTEWATER SERVICE LINE.

DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE

REVISION

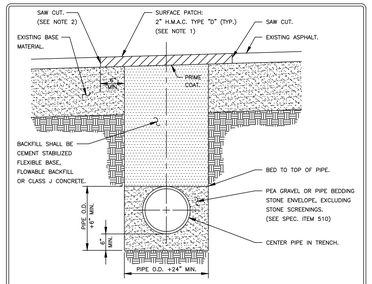
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas 78735
North Office
12129 RR 620 N. 600
Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

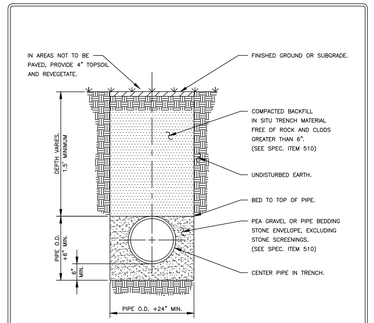
SHEET NAME: WASTEWATER LINES E, F, H AND J (0+00 TO END)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

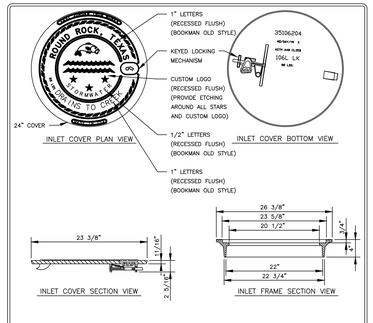
STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
@ F3791
12-20-2024

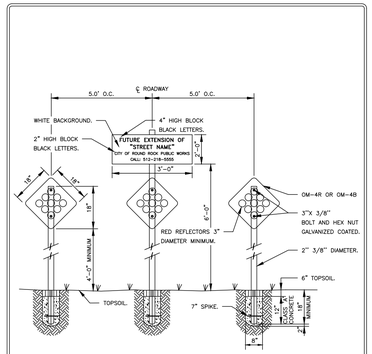
DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 65 OF 70
SHEET NO.: 65

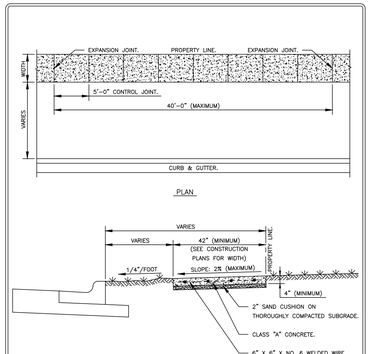
FILE PATH: J:\ACD\5559\dwg\5559-WASTEWATER.dwg - Dec 23, 2024 - 7:27pm











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
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DR-01
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
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DR-02
STORM SEWER LINE BEDDING DETAIL (NON-PAVED SURFACE)

MANHOLE COVER SHALL NOT REFERENCE THE CITY OF ROUND ROCK.

NOTES:

1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. INLET COVER SHALL BE MODEL NUMBER: 106L LK (PRODUCT NUMBER: 35106204), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
3. INLET FRAME SHALL BE MODEL NUMBER: 106L LK (PRODUCT NUMBER: 35206004), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
4. INLET COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: 106L-4L LK (PRODUCT NUMBER: 35506204), 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. INLET COVER WEIGHT SHALL BE 88 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
7. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
9. INLET COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
09-13-05
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DR-07
STORM SEWER INLET COVER AND FRAME DETAIL
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
08-21-03
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: ST-09
STREET END MARKER DETAIL

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
07-11-06
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: ST-01
SIDEWALK DETAIL

MANHOLE COVER SHALL NOT REFERENCE THE CITY OF ROUND ROCK.

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
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DR-05
BOLTED STORMSEWER MANHOLE COVER AND FRAME DETAIL
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

MANHOLE COVER SHALL NOT REFERENCE THE CITY OF ROUND ROCK.

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
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DR-06
NON-BOLTED STORMSEWER MANHOLE COVER AND FRAME DETAIL
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

FOR ADDITIONAL GENERAL NOTES, SEE DETAIL DU-01

NOTES:

1. ALL TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
2. STEEL PLATES OF SUITABLE WEIGHT TO SPAN THE TRENCH FOR VEHICLE TRAFFIC, MUST BE AVAILABLE ON SITE BEFORE ANY PAVEMENT IS CUT.
3. STEEL PLATES SHALL BE CONTRACTOR PROVED AND PLACED AS NECESSARY FOR TRENCH SAFETY AND TO ALLOW FOR FLOWABLE FILL CURING TIME.
4. STEEL PLATES SHALL BE ANCHORED IN PLACE WHEN INSTALLED TO ASSURE NO DISPLACEMENT UNDER TRAFFIC.
5. SURFACE SHALL BE CUT PRIOR TO EXCAVATION.
6. FLOWABLE FILL SHALL BE PLACED AROUND THE ENCASEMENT IN A PROCESS TO ASSURE NO DISPLACEMENT FROM BEING CENTERED IN THE TRENCH BOTTOM. FLOWABLE FILL SHALL BE STRUCK OFF AT THE TOP OF THE EXISTING BASE OR 2" BELOW EXISTING FINISHED SURFACE, WHICHEVER IS GREATER.
7. UPON COMPLETION OF THE BACKFILL, MAKE ADDITIONAL SAW CUTS, AS NECESSARY TO REMOVE EXISTING PAVEMENT AT A MINIMUM DEPTH OF 2" TO CREATE A 6" MINIMUM SHOULDER OR TO THE POINT WHERE EXISTING PAVEMENT IS NOT DAMAGED, WHICHEVER IS GREATER. SAW CUTS SHOULD HAVE A MINIMUM NUMBER OF ANGLE POINTS.
8. TACKING MATERIAL SHALL BE AC15PW OR A CORR APPROVED EQUAL.
9. TACK COAT A MINIMUM 12" WIDTH OF NON-WOVEN GEO-TEXTILE FABRIC OVER THE EXISTING BASE AND FLOWABLE FILL JOINT LINE WITH 0.3 GALS/SY, PLACING FABRIC BEFORE TACK SETS.
10. GEO-TEXTILE FABRIC SHALL WITHSTAND 300° FAHRENHEIT (TREVIRA SPUDBOND 011/120, CONTECH C-38NW, OR C.O.R.R. APPROVED EQUAL).
11. SINGLE COURSE SEAL COAT THE AREA TO BE HMAC PATCHED, WITH 0.33 GALS/SY TACK AND 3/8" CRUSHED LIMESTONE COVER AT 21 LBS/SY.
12. VACUUM UP LOOSE GRAVEL BEFORE PLACING SURFACE PATCH WITH HMAC HOT LAID; AT A MINIMUM THICKNESS OF 2".
13. TRENCH PAST THE BACK OF CURB TO MATCH THE AREA (SIDEWALK, TOP SOIL, SOD, ETC.), WITH JOINTS NOT TO ALIGN WITH TRENCH WALL.
14. IF SIDEWALK, CURB, CURB AND GUTTER, OR DRIVEWAY REQUIRES REMOVAL, THIS MUST BE REPLACED IN UNITS THAT ARE FROM SCORE JOINT TO SCORE JOINT. FULL DEPTH SAW CUT ALL JOINTS. DRILL AND EPOXY SET #4 DOWELS INTO THE STRUCTURE TO REMAIN AT MAXIMUM OF 18" ON CENTER.
15. ENCASEMENT MUST EXTEND 10' PAST THE BACK OF CURB, UNLESS OTHERWISE STATED IN THE PERMIT. BEDDING AND BACKFILL FROM THE POINT WHERE THE BASE ENDS TO THE END OF THE ENCASEMENT, SHALL ADHERE TO: PROPOSED PAVEMENT AREA TRENCH (PPAT) (DU-04) DETAIL.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
02-10-06
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DU-03
ASPHALT PAVED AREA TRENCH (APAT) DETAIL
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

FOR ADDITIONAL GENERAL NOTES, SEE DETAIL DU-01

NOTES:

1. THIS DETAIL IS APPLICABLE WHERE FUTURE PAVEMENT IS SCHEDULED TO BE INSTALLED WITHIN TWO YEARS.
2. ALL TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
3. ENCASEMENT MUST EXTEND 10' PAST THE PROPOSED BACK OF CURB.
4. WORK ON INSTALLATION MUST BE COMPLETE THROUGH CLEAN UP BEFORE WORK RELATED TO PAVEMENT INSTALLATION IS SCHEDULED TO START, EXCEPT IN THE CASES THAT THE ROAD CONTRACTOR HAS AGREED TO ROUGH CUT BEFORE UTILITY TRENCHING OR THE SAME CONTRACTOR IS PERFORMING BOTH UTILITY AND ROAD WORK.
5. SPOILS MAY BE USED IF THEY MEET SELECT MATERIAL STANDARDS. THE INSPECTOR MAY STOP BACKFILL OPERATIONS UNTIL THE CONTRACTOR OBTAINS LAB TEST RESULTS IF THERE IS ANY QUESTION OF ACCEPTABILITY.

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APPROVED
02-10-06
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DU-04
PROPOSED PAVEMENT AREA TRENCH (PPAT) DETAIL
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. ALL WORK AND MATERIAL SHALL CONFORM TO ASTM A615, A615M, C309 AND D1752. BROOM FINISH EXPOSED SURFACE.
2. CONTROL JOINT SPACING SHALL NOT EXCEED 10'-0'.
3. EXPANSION JOINTS AS PER STANDARD ASTM D-1752.
4. EXPANSION JOINT INTERVALS NOT TO EXCEED 40'-0" FOR ALL CURBS AND CONSTRUCTION METHODS.
5. ALL CURBS SHALL HAVE A MINIMUM OF 4" OF COMPACTED FLEXIBLE BASE BETWEEN BOTTOM OF CURB AND TOP SUBGRADE THAT SHALL EXTEND A MINIMUM OF 18" BEHIND BACK OF CURB. TOTAL DEPTH OF FLEXIBLE BASE UNDER AND BEHIND CURB SHALL BE: (TOTAL DEPTH OF FLEXIBLE BASE) LESS (6-INCHES).
6. ALL CURBS SHALL CONFORM TO THESE DETAILS INDEPENDENT OF THE CONSTRUCTION METHODS USED.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
08-21-03
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: ST-05
SPILL AND CATCH CURB DETAIL (WITH CURB EXPANSION JOINT DOWEL DETAIL)

UTILITY PLACEMENT WITHIN CORR CONTROLLED AREA

GENERAL NOTES SHEET

1. UTILITY LINE IS A PUBLIC OR PRIVATE POWER, COMMUNICATION, TELEVISION, GAS, FIBER OPTIC AND IRRIGATION (DRY OR PRESSURE) LINE, CABLE, CONDUIT, PIPE OR TUBING.
2. UTILITY CLUSTER IS ANY NUMBER AND MIX OF DIRECT BURIED "DRY" UTILITY LINES IN A VERTICAL, HORIZONTAL OR BUNDLE CONFIGURATION.
3. ENCASEMENT IS ANY NUMBER OF CONDUITS, CASING PIPES (CONCRETE, PVC, CONDUIT BANK, WELDED STEEL, ETC.), AND/OR PROTECTIVE ARMOR BEDDING (CONCRETE, FLOWABLE FILL, ETC.)
4. ALL TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
5. UTILITY WORK SITE IS THE LOCATION WHERE A UTILITY IS MAINTAINED, REPAIRED AND/OR INSTALLED.
6. A COPY OF THE PERMIT IS REQUIRED ON THE UTILITY WORK SITE IN/ON CORR OWNED/LEASED PROPERTY, ROW, CORR EASEMENT OR PUE IMPACTING VEHICLE/PEDESTRIAN TRAFFIC, SAFETY OR CAUSES LIABILITY (TEMPORARY/LONG TERM). THIS EXCLUDES UNACCEPTED SUBDIVISIONS, CIP, STATE OR FEDERAL CONTROLLED PROPERTY, PRIVATELY CONTROLLED EASEMENTS & PRIVATELY OWNED PROPERTY.
7. VARIANCE FROM THESE STANDARDS IS ONLY ALLOWED, IF DETAILED PLANS HAVE WRITTEN APPROVAL BY THE CORR BEFORE CONSTRUCTION STARTS.
8. PUBLIC AREA EXCAVATION MUST BE BARRICADED WITH APPROVED VEHICLE AND PEDESTRIAN TRAFFIC CONTROL DEVICES BEFORE CONSTRUCTION STARTS.
9. INACTIVE (NO PERSONNEL PRESENT) EXCAVATION OUTSIDE OF AN EXISTING PAVEMENT, LEFT OPEN OVERNIGHT, MUST HAVE PEDESTRIAN FENCING & PLATING.
10. INACTIVE EXCAVATION MAY NOT REMAIN OPEN OVER A WEEKEND OR HOLIDAY WITHOUT PRIOR WRITTEN APPROVAL FROM THE CORR AND SAFE GUARDS.
11. TOTAL TRENCH WIDTH SHALL BE THE SUM OF THE OUTSIDE DIMENSION (OD) OF THE UTILITY CLUSTER OR ENCASEMENT PLUS A MINIMUM OF 2" IF THE OD IS LESS THAN 6 1/2", PLUS 6" IF THE OD IS BETWEEN 6 1/2" & 18", PLUS 12" IF THE OD IS MORE THAN 18" WITH A MAXIMUM OF 24".
12. FOR A UTILITY WORK SITE IN AN AREA THAT IS SCHEDULED FOR FUTURE PAVEMENT, SEE: ASPHALT PAVED AREA TRENCH (APAT) (DU-03) DETAIL.
13. FOR A UTILITY WORK SITE IN AN AREA THAT HAS EXISTING PAVEMENT, SEE: PROPOSED PAVEMENT AREA TRENCH (PPAT) (DU-04) DETAIL.
14. FOR A CROSSING OF A CORR OWNED UTILITY, SEE: UTILITY CROSSING INSTALLATION (UC) (DU-05) DETAIL.
15. REQUIRED ENCASEMENT MAY BE SCHEDULE 40 PVC, EXCEPT GAS, WHICH MUST BE SCHEDULE 40 WELDED JOINT STEEL OR SCHEDULE 80 PVC. OTHER TYPES OF ENCASEMENT REQUIRE CORR WRITTEN APPROVAL.
16. ALL ELECTRICAL CONDUCTIVE LINES (OVER 60 VOLTS) MUST BE ENCASED.
17. ALL UTILITY LINES MUST BE ENCASED UNDER EXISTING AND PROPOSED PAVEMENT, CROSSING ABOVE CORR LINES AND UNDER PROTECTED TREES.
18. WASHED SAND BEDDING MUST BE USED IN THE INSTALLATION WHEN WITHIN 10' OF A CORR OWNED UTILITY LINE, EXCEPT IN EXISTING PAVEMENT.
19. REQUIRED WASHED SAND BEDDING IN A TRENCH WITH SIDE WALL CLEARANCE LESS THAN 3" IS SMALL GRAIN (MAXIMUM 1/16") AND IN A TRENCH WITH SIDE WALL CLEARANCE MORE THAN 3" IS LARGE GRAIN (MAXIMUM 3/16"). BEDDING MUST BE CONSOLIDATED TO MINIMIZE AIR VOIDS.
20. ALL OF THE AREA(S) DISTURBED DIRECTLY BY, INDIRECTLY BY OR BECAUSE OF THE UTILITY WORK, WILL BE INCLUDED IN THE CLEAN UP.
21. CLEAN UP INCLUDES DRESS-OUT, EROSION CONTROL MAINTENANCE/REMOVAL, RESTORATION, DEBRIS REMOVAL/DISPOSAL & PAVEMENT SWEEPING/WASHING.
22. RESTORATION AS A MINIMUM, SHALL INCLUDE, FERTILIZER:
    - A) ANY LAWN LIKE AREAS – SOLID SODDING WITH GRASS LIKE EXISTING OR APPROVED BETTER.
    - B) GRADES 5% OR LESS – HYDRO-MULCHED.
    - C) GRADES ABOVE 5% UP TO 10% – MATTED AND HYDRO-MULCHED.
    - D) GRADES ABOVE 10% UP TO 25% – SOLID SODDING WITH GRASS LIKE EXISTING OR APPROVED BETTER.
    - E) GRADES ABOVE 25% – DETAIL PLANS AND CORR WRITTEN APPROVAL REQUIRED.

LEGEND FOR DU SHEETS	
PVC	POLYVINYL CHLORIDE PIPE OR CONDUIT
OD	OUTSIDE DIAMETER
GALS	UNITED STATES GALLONS – UNIT OF VOLUME
LBS	UNITED STATES POUNDS – UNIT OF WEIGHT
CORR	CITY OF ROUND ROCK
PUE	PUBLIC UTILITY EASEMENT
SY	UNITED STATES SQUARE YARDS – UNIT OF AREA
"	UNITED STATES INCH OR INCHES – UNIT OF LENGTH
'	UNITED STATES FOOT OR FEET – UNIT OF LENGTH
ETC	ABBREVIATION FOR ET CETERA, IN HENCE TO BE "AND SO FORTH"
ROW	RIGHT OF WAY OR RIGHTS OF WAY
LAB	ABBREVIATION FOR LABORATORY
°	UNITED STATES DEGREE – UNIT OF ANGLE
TV	TELEVISION

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
02-10-06
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DU-01
DRY UTILITY DETAILS GENERAL NOTES SHEET
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

FOR ADDITIONAL GENERAL NOTES, SEE DETAIL DU-01

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02-10-06
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: DU-02
UNPAVED AREA TRENCH (UAT) DETAIL
ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
2. CONCRETE SHALL BE CLASS "A".
3. MONOLITHIC CURB & GUTTER SHALL BE MEASURED BY PLAN SQUARE FEET AND PAID AS VALLEY GUTTER.
4. THE UPSTREAM CURB MID POINT MUST BE AT OR LOWER THAN THE BEGINNING P.C. AND .5% (MIN.) HIGHER THAN THE OPPOSING MID POINT.
5. ALLOWABLE CONSTRUCTION JOINT AT ℄ WHEN TRAFFIC FLOW MUST BE MAINTAINED, CONSTRUCTED AS A CONTROL JOINT. PROVIDE EXPANSION JOINT @ ℄ FOR WIDTHS GREATER THAN 40 FEET.
6. ALL EXPANSION JOINTS SHALL BE CONSTRUCTED WITH 1/2" PREMOLDED EXPANSION JOINT MATERIAL AND DOWELS AND CAPS (SEE STANDARD CURB DOWEL DETAIL).

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APPROVED
08-21-03
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: ST-06
CONCRETE VALLEY GUTTER DETAIL

NOTE:

1. THE SIDEWALK AREA OF THE DRIVEWAY SHALL SLOPE TOWARD THE STREET PAVING AT NO MORE THAN 2%.

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APPROVED
11-08-01
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: ST-02
CONCRETE DRIVEWAY DETAIL (RESIDENTIAL)

NOTES:

1. SIDEWALKS SHALL BE A MINIMUM OF 4'-0" WIDE.
2. THE RAMP SHALL HAVE A DETECTABLE WARNING AND CONTRASTING COLORED SURFACE. THE RAMP SHALL BE STAMPED AND DYED CONCRETE OR APPROVED EQUAL.
3. THE POSITION OF THE RAMP MAY BE ALTERED IN THE FIELD BY THE ENGINEER, BUT ONLY WITH THE PUBLIC WORKS DEPARTMENT APPROVAL.
4. SAW CUTTING IS APPLICABLE FOR INSTALLATION WHERE THE CURB LAYDOWN FOR THE RAMP IS NOT PROVIDED.
5. THE SIDEWALK PEDESTRIAN RAMP SHALL MEET ALL APPLICABLE A.D.A. REQUIREMENTS.

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APPROVED
08-21-03
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.
CITY OF ROUND ROCK
DRAWING NO: ST-07
SIDEWALK PEDESTRIAN RAMP DETAIL (TYPE 1)

DESIGNED BY:	DRAFTED BY:
SPC	CEL

DATE	REVISION

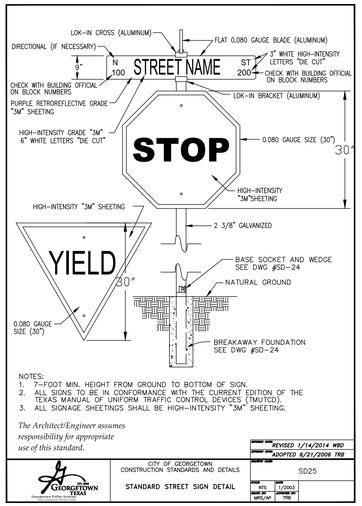
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr.
Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N., Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: CONSTRUCTION DETAILS (1 OF 3)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STEVEN P. CATES
93648
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
Steven P. Cates
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 66 OF 70
SHEET NO.: 66

FILE PATH:J:\AC3D\5559\dwg\5559-CONSTRUCTION DETAILS.dwg - Dec 23, 2024 - 7:01am



NOTES:
1. 7-FOOT MIN. HEIGHT FROM GROUND TO BOTTOM OF SIGN.
2. ALL SIGNS TO BE IN CONFORMANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. ALL SIGNAGE SHEETINGS SHALL BE HIGH-INTENSITY "3M" SHEETING.

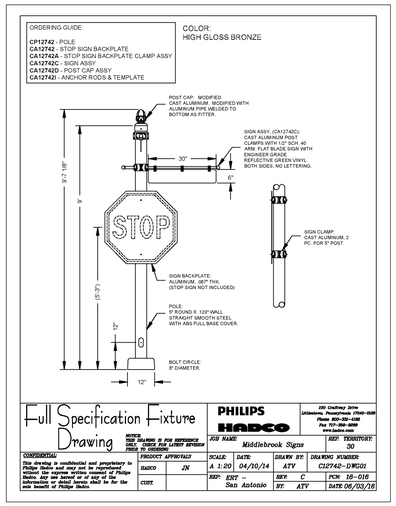
The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISED 1/14/2014 WBD	ADOPTED 6/21/2006 TRB

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS

STANDARD STREET SIGN DETAIL

SD25



Full Specification Fixture Drawing

PHILIPS HADCO

100 Craftway Drive, Littlestown, Pennsylvania 17340-9599
Phone 800-331-4085
Fax 717-359-9289
www.hadco.com

JOB NAME: Middlebrook Signs

REF: TERRITORY: 30

PRODUCT APPROVALS	
HADCO	JN
CUST.	

SCALE: A 1:20 | DATE: 04/10/14 | DRAWN BY: ATV | DRAWING NUMBER: C12742-DWG01

REV: ERT - San Antonio | REV: C | PCN: 16-016

BY: ATV | DATE 06/05/16

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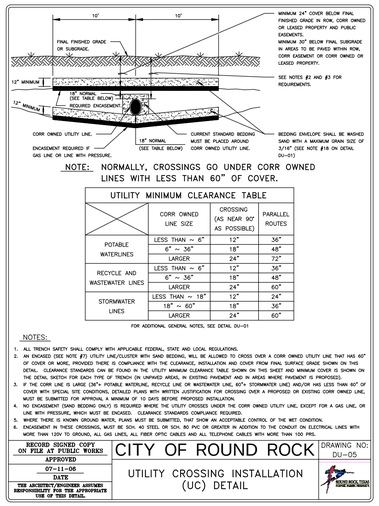

NOTE: NORMALLY, CROSSINGS GO UNDER CORR OWNED LINES WITH LESS THAN 60" OF COVER.

UTILITY MINIMUM CLEARANCE TABLE

	CORR OWNED LINE SIZE	CROSSING (AS NEAR 90° AS POSSIBLE)	PARALLEL ROUTES
POTABLE WATERLINES	LESS THAN ~ 6"	12"	36"
	6" ~ 36"	18"	48"
	LARGER	24"	72"
RECYCLE AND WASTEWATER LINES	LESS THAN ~ 6"	12"	36"
	6" ~ 36"	18"	48"
	LARGER	24"	60"
STORMWATER LINES	LESS THAN ~ 18"	12"	24"
	18" ~ 60"	18"	36"
	LARGER	24"	60"

FOR ADDITIONAL GENERAL NOTES, SEE DETAIL DU-01

NOTES:
1. ALL TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
2. AN ENCASED (SEE NOTE #7) UTILITY LINE/CLUSTER WITH SAND BEDDING, WILL BE ALLOWED TO CROSS OVER A CORR OWNED UTILITY LINE THAT HAS 60" OF COVER OR MORE. PROVIDED THERE IS COMPLIANCE WITH THE CLEARANCE, INSTALLATION AND COVER FROM FINAL SURFACE GRADE SHOWN ON THIS DETAIL. CLEARANCE STANDARDS CAN BE FOUND IN THE UTILITY MINIMUM CLEARANCE TABLE SHOWN ON THIS SHEET AND MINIMUM COVER IS SHOWN ON THE DETAIL SHEETS FOR EACH TYPE OF TRENCH (IN UNPAVED AREAS, IN EXISTING PAVEMENT AND IN AREAS WHERE PAVEMENT IS PROPOSED).
3. IF THE CORR LINE IS LARGE (36"+ POTABLE WATERLINE, RECYCLE LINE OR WASTEWATER LINE, 60"+ STORMWATER LINE) AND/OR HAS LESS THAN 60" OF COVER WITH SPECIAL SITE CONDITIONS, DETAILED PLANS WITH WRITTEN JUSTIFICATION FOR CROSSING OVER A PROPOSED OR EXISTING CORR OWNED LINE, MUST BE SUBMITTED FOR APPROVAL A MINIMUM OF 10 DAYS BEFORE PROPOSED INSTALLATION.
4. NO ENCASEMENT (SAND BEDDING ONLY) IS REQUIRED WHERE THE UTILITY CROSSES UNDER THE CORR OWNED UTILITY LINE, EXCEPT FOR A GAS LINE, OR LINE WITH PRESSURE, WHICH MUST BE ENCASED. CLEARANCE STANDARDS COMPLIANCE REQUIRED.
5. WHERE THERE IS KNOWN GROUND WATER, PLANS MUST BE SUBMITTED, THAT SHOW AN ACCEPTABLE CONTROL OF THE WET CONDITION.
6. ENCASEMENT IN THESE CROSSINGS, MUST BE SCH. 40 STEEL OR SCH. 80 PVC OR GREATER IN ADDITION TO THE CONDUIT ON ELECTRICAL LINES WITH MORE THAN 125V TO GROUND, ALL GAS LINES, ALL FIBER OPTIC CABLES AND ALL TELEPHONE CABLES WITH MORE THAN 100 PRS.

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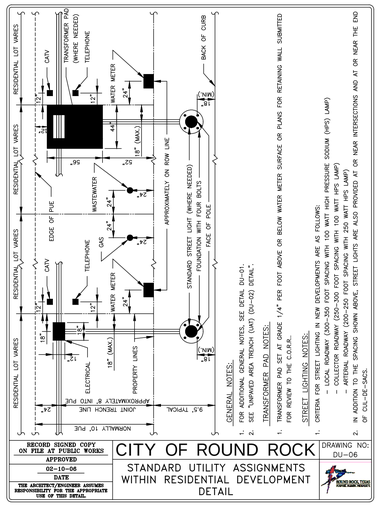
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.

CITY OF ROUND ROCK

UTILITY CROSSING INSTALLATION (UC) DETAIL

DRAWING NO: DU-05



GENERAL NOTES:
FOR ADDITIONAL GENERAL NOTES, SEE DETAIL DU-01.
1. CONSULT WITH UTILITY PROVIDERS FOR FINAL DESIGN.
2. SEE "SHARED AREA TRENCH (UAT) (DU-20) DETAIL".

TRANSFORMER PAD NOTES:
1. TRANSFORMER PAD SET AT GRADE 1/4" PER FOOT ABOVE OR BELOW WATER SURFACE OR PLANS FOR RETAINING WALL SUBMITTED FOR REVIEW TO THE C.O.R.R.

STREET LIGHTING NOTES:
1. CRITERIA FOR STREET LIGHTING IN NEW DEVELOPMENTS ARE AS FOLLOWS:
   - LOCAL ROADWAY (300~350 FOOT SPACING WITH 100 WATT HIGH PRESSURE SODIUM (HPS) LAMP)
   - COLLECTOR ROADWAY (250~300 FOOT SPACING WITH 150 WATT HPS LAMP)
   - ARTERIAL ROADWAY (200~250 FOOT SPACING WITH 250 WATT HPS LAMP)
2. IN ADDITION TO THE SPACING SHOWN ABOVE, STREET LIGHTS ARE ALSO PROVIDED AT OR NEAR INTERSECTIONS AND AT OR NEAR THE END OF CUL-DE-SACS.

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THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.

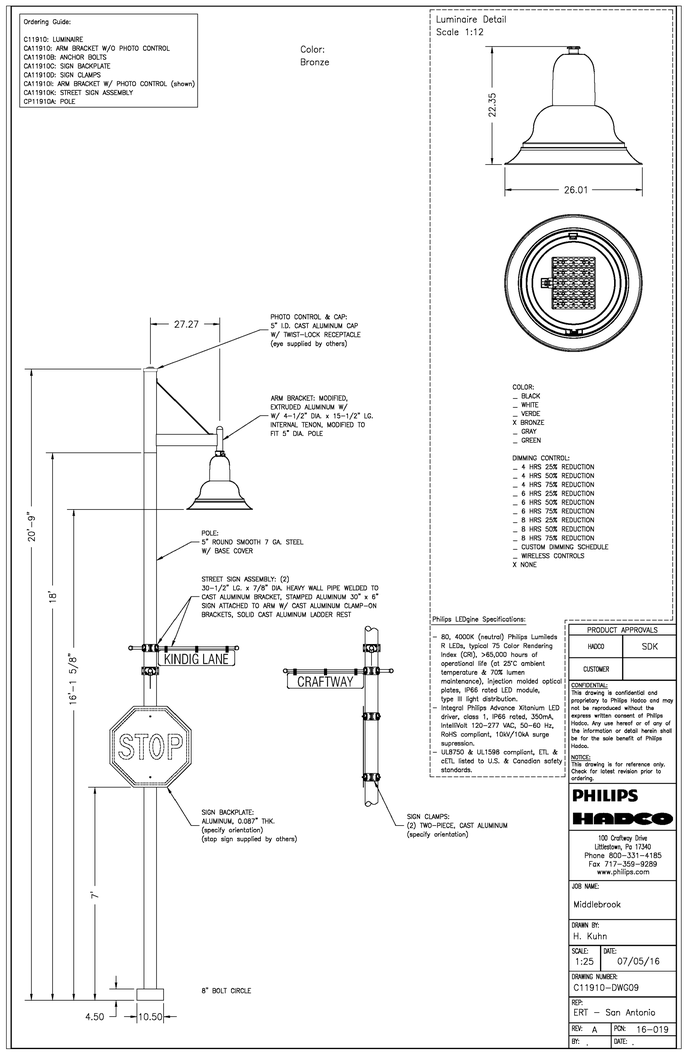
CITY OF ROUND ROCK

STANDARD UTILITY ASSIGNMENTS WITHIN RESIDENTIAL DEVELOPMENT DETAIL

DRAWING NO: DU-06

Ordering Guide:
- C11910: LUMINAIRE
- CA11910: ARM BRACKET W/O PHOTO CONTROL
- CA11910B: ANCHOR BOLTS
- CA11910C: SIGN BACKPLATE
- CA11910D: SIGN CLAMPS
- CA11910I: ARM BRACKET W/ PHOTO CONTROL (shown)
- CA11910K: STREET SIGN ASSEMBLY
- CP11910A: POLE

Color: Bronze



Luminaire Detail
Scale 1:12

COLOR:
- _ BLACK
- _ WHITE
- _ VERDE
- X BRONZE
- _ GRAY
- _ GREEN

DIMMING CONTROL:
- _ 4 HRS 25% REDUCTION
- _ 4 HRS 50% REDUCTION
- _ 4 HRS 75% REDUCTION
- _ 6 HRS 25% REDUCTION
- _ 6 HRS 50% REDUCTION
- _ 6 HRS 75% REDUCTION
- _ 8 HRS 25% REDUCTION
- _ 8 HRS 50% REDUCTION
- _ 8 HRS 75% REDUCTION
- _ CUSTOM DIMMING SCHEDULE
- _ WIRELESS CONTROLS
- X NONE

Philips LEDgine Specifications:
- 80, 4000K (neutral) Philips Lumileds R LEDs, typical 75 Color Rendering Index (CRI), >85,000 hours of operational life (at 25°C ambient temperature & 70% lumen maintenance), injection molded optical plates, IP66 rated LED module, type III light distribution.
- Integral Philips Advance Xitanium LED driver, class 1, IP66 rated, 350mA, IntelliVolt 120-277 VAC, 50-60 Hz, RoHS compliant, 10kV/10kA surge suppression.
- UL8750 & UL1598 compliant, ETL & cETL listed to U.S. & Canadian safety standards.

PRODUCT APPROVALS	
HADCO	SDK
CUSTOMER	

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PHILIPS HADCO

100 Craftway Drive
Littlestown, Pa 17340
Phone 800-331-4185
Fax 717-359-9289
www.philips.com

JOB NAME: Middlebrook

DRAWN BY: H. Kuhn

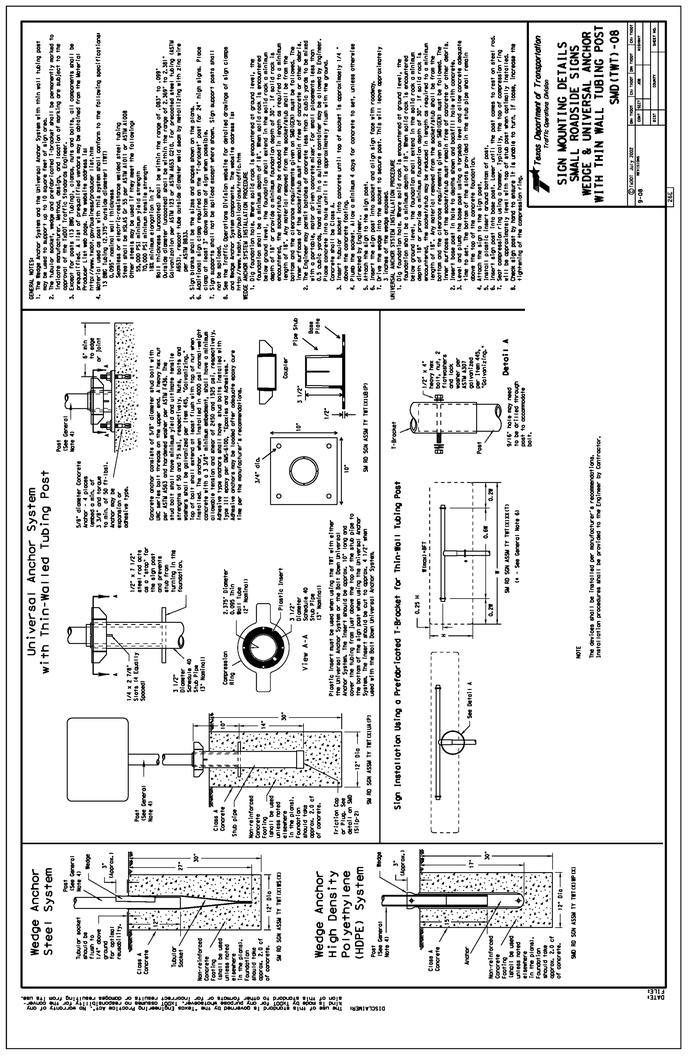
SCALE: 1:25 | DATE: 07/05/16

DRAWING NUMBER: C11910-DWG09

REP: ERT - San Antonio

REV: A | PCN: 16-019

BY: | DATE:


GENERAL NOTES:
1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post shall be designed by the manufacturer.
2. The tubular socket, wedge and prefabricated template shall be permanently marked to identify the manufacturer, the model number and the size of the post for which it is designed.
3. Anchor rods or posts with nuts, washers and bolts, all components shall be hot dip galvanized (ASTM A153).
4. Anchor rods or posts with nuts, washers and bolts, all components shall be stainless steel (ASTM A276, Type 304).
5. Concrete shall be Class A.
6. Concrete shall develop a minimum compressive strength of 3,000 PSI at the end of 28 days.
7. Reinforcing steel shall be deformed billet steel conforming to the following specifications:
   U.S. Customary units: ASTM A615, Grade 60
   Sheet steel for POLES 25 ft per ASTM A1011 or ASTM A1008
   Structural steel for POLES per ASTM A572
   55,000 PSI minimum yield strength
   80,000 PSI minimum tensile strength
   SI Units: ASTM A615, Grade 420
   SI Metric equivalent is #13
8. Anchor rods or posts to be within the range of .483° to .498°.
9. Sign plates shall be the sizes and shapes shown on the signs. Sign plates shall be fabricated from aluminum conforming to the following:
   Sheet and plate: ASTM B209, Alloy 6061-T6
   Extrusions: ASTM B221, Alloy 6063-T6
   Minimum elongation in 2"
   Minimum tensile strength 35,000 PSI
   Minimum yield strength 30,000 PSI
10. Sign plates shall be fitted with a 1" wide aluminum hem. Sign plates shall be attached to the sign posts with 3/16" diameter aluminum rivets.
11. Sign plates shall be fabricated from one piece of aluminum sheet. Where more than one piece is required to make a complete sign, the pieces shall be welded together.
12. Welding shall be done by a welder certified by the Texas Department of Transportation.
13. Sign plates shall be flat and free of warp, twist, bend or other defects.
14. Sign plates shall be finished with a reflective sheeting of the type specified in the plans.
15. Sign plates shall be cleaned and degreased before the sheeting is applied.
16. Sign plates shall be fabricated in accordance with the requirements of the Texas Manual on Uniform Traffic Control Devices.

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE
1. Sign plates shall be attached to the posts after the posts have been installed in the ground level. The foundation shall extend in the soil to a minimum depth of 5'-0" or to a minimum depth of 4'-0" if a rock formation is encountered, the anchor may be reduced to a length of 3'-0" if a minimum of 6" of concrete is placed between the bottom of the anchor and the rock formation. The diameter requirements given in SMD(SIGN) shall be followed. The Engineer may permit backhoe excavation for the foundations. The Engineer may permit backhoe of concrete less than 3 sacks per cy to be placed in the bottom of the excavation. Concrete placed in the bottom shall be 6.5 sacks mix, hand placed, to a suitable consistency to be placed by Engineer. Concrete shall be placed in the excavation to a minimum of 4" above the concrete footing.
2. Sign plates shall be set at least 7'-0" above the roadway surface.
3. Concrete shall be Class A. Concrete shall top of mount is approximately 1/4" above the concrete footing.
4. Concrete shall develop a minimum compressive strength of 3,000 PSI at the end of 28 days.
5. Reinforcing steel shall be deformed billet steel conforming to the following specifications:
   U.S. Customary units: ASTM A615, Grade 60
   SI Units: ASTM A615, Grade 420
   SI Metric equivalent is #13
6. Anchor rods or posts to be within the range of .483° to .498°.
7. Sign plates shall be the sizes and shapes shown on the signs. Sign plates shall be fabricated from aluminum conforming to the following:
   Sheet and plate: ASTM B209, Alloy 6061-T6
   Extrusions: ASTM B221, Alloy 6063-T6
   Minimum elongation in 2"
   Minimum tensile strength 35,000 PSI
   Minimum yield strength 30,000 PSI
8. Sign plates shall be hot dip galvanized after fabrication.
9. Sign plates shall be fitted with a 1" wide aluminum hem. Sign plates shall be attached to the sign posts with 3/16" diameter aluminum rivets.
10. Sign plates shall be fabricated from one piece of aluminum sheet. Where more than one piece is required to make a complete sign, the pieces shall be welded together.
11. Welding shall be done by a welder certified by the Texas Department of Transportation.
12. Sign plates shall be flat and free of warp, twist, bend or other defects.
13. Sign plates shall be cleaned and degreased before the sheeting is applied.
14. Sign plates shall be finished with a reflective sheeting of the type specified in the plans.
15. Sign plates shall be fabricated in accordance with the requirements of the Texas Manual on Uniform Traffic Control Devices.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE
1. Sign plates shall be attached to the posts after the posts have been installed in the ground level. The foundation shall be a minimum depth of 5'. Bore hole is encountered at ground level, the anchor may be reduced to a length of 3'-0" if a minimum depth of 4'-0" of the foundation is placed between the bottom of the anchor and the rock formation. The diameter requirements given in SMD(SIGN) shall be followed. The Engineer may permit backhoe excavation for the foundations. The anchor may be placed in holes drilled with rock augers. The inner surfaces of the excavation must resist rate of concrete or other earth. Concrete placed in the bottom shall be 6.5 sacks mix, hand placed, to a suitable consistency to be placed by Engineer.
2. Level and plumb the base plate using a torque level on the concrete encasing the anchor. Concrete shall be placed in the excavation to a minimum of 4" above the top of the concrete footing.
3. Concrete shall be Class A. Concrete shall top of mount is approximately 1/4" above the concrete footing.
4. Concrete shall develop a minimum compressive strength of 3,000 PSI at the end of 28 days.
5. Reinforcing steel shall be deformed billet steel conforming to the following specifications:
   U.S. Customary units: ASTM A615, Grade 60
   SI Units: ASTM A615, Grade 420
   SI Metric equivalent is #13
6. Anchor rods or posts to be within the range of .483° to .498°.
7. Sign plates shall be the sizes and shapes shown on the signs. Sign plates shall be fabricated from aluminum conforming to the following:
   Sheet and plate: ASTM B209, Alloy 6061-T6
   Extrusions: ASTM B221, Alloy 6063-T6
   Minimum elongation in 2"
   Minimum tensile strength 35,000 PSI
   Minimum yield strength 30,000 PSI
8. Sign plates shall be hot dip galvanized after fabrication.
9. Sign plates shall be fitted with a 1" wide aluminum hem. Sign plates shall be attached to the sign posts with 3/16" diameter aluminum rivets.
10. Sign plates shall be fabricated from one piece of aluminum sheet. Where more than one piece is required to make a complete sign, the pieces shall be welded together.
11. Welding shall be done by a welder certified by the Texas Department of Transportation.
12. Sign plates shall be flat and free of warp, twist, bend or other defects.
13. Sign plates shall be cleaned and degreased before the sheeting is applied.
14. Sign plates shall be finished with a reflective sheeting of the type specified in the plans.
15. Sign plates shall be fabricated in accordance with the requirements of the Texas Manual on Uniform Traffic Control Devices.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
WEDGE & UNIVERSAL ANCHOR
WITH THIN WALL TUBING POST
SMD(TWT)-08

© TxDOT	JULY	2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
FILE:	smd(twt)-08.dgn					
8-08			CONT	SECT	JOB	HIGHWAY

Universal Anchor System with Thin-Walled Tubing Post

Wedge Anchor Steel System

Wedge Anchor High Density Polyethylene (HDPE) System

Sign Installation Using a Perforated T-Bracket for Thin-Wall Tubing Post

Detail A

NOTE
The anchors shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

DISCLAIMER:
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DATE:
FILE:

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749
North Office: 12129 RR 620 N. Suite 600 Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

DESIGNED BY: SPC	DRAFTED BY: CEL

DATE	REVISION

SHEET NAME: CONSTRUCTION DETAILS (2 OF 3)

JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791

12-20-2024

DATE: DEC 2024

JOB NUMBER: 5559

SHEET: 67 OF 70

SHEET NO.: 67

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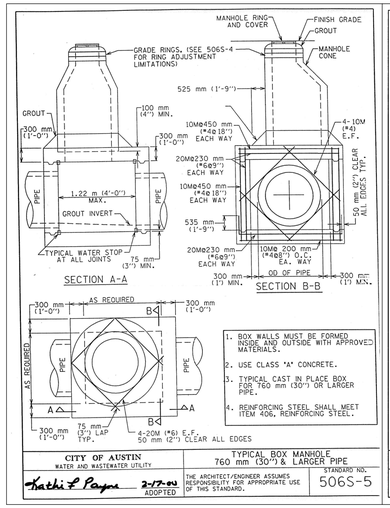
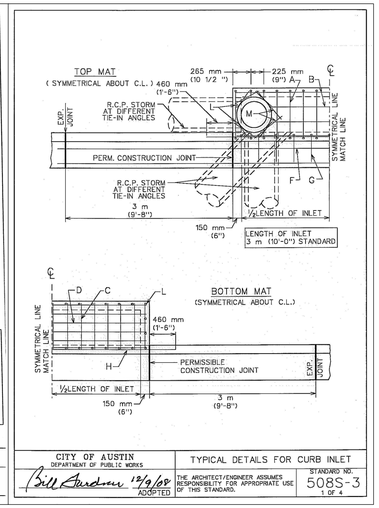
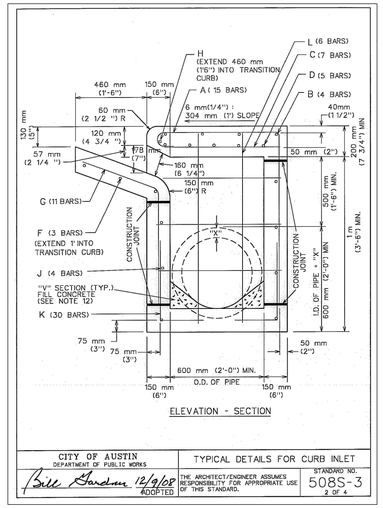


CITY OF AUSTIN WATER AND WASTEWATER UTILITY	TYPICAL BOX MANHOLE 760 mm (30") & LARGER PIPE	STANDARD NO.
Kathi L Payne 2-17-09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	506S-5



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-3 1 OF 4



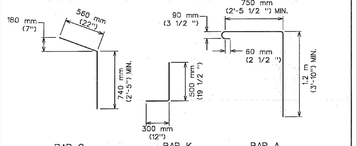
ELEVATION - SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-3 2 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")	28
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")±	6	1.3 m (4'-4")	17
M	4	-	4	500 mm (1'-8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.05

• EXCEPT AS SHOWN ON PLAN

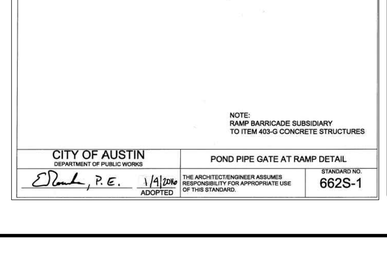


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-3 3 OF 4

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.
6. CHAMFER ALL EXPOSED EDGES 20 mm (3/4 ").
7. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S-1.
8. 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.
9. 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.
10. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
11. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE, SHAPED AS "V" SECTION
12. NO SPLICING OF REINFORCING STEEL SHALL BE PERMITTED UNLESS OTHERWISE NOTED ON THE PLANS OR PERMITTED IN WRITING BY THE ENGINEER.

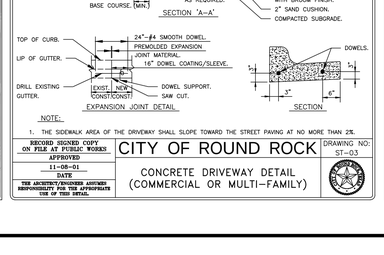
REFERENCES:
FOR EXPANSION JOINT DOWEL AND DOWEL LOCATION DETAILS SEE STD. 430S-3, "CURB EXPANSION JOINT DOWEL DETAIL".
FOR 18" MANHOLE FRAME AND COVER DETAILS SEE STD. 503S-1, "18" COVER AND FRAME".

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-3 4 OF 4

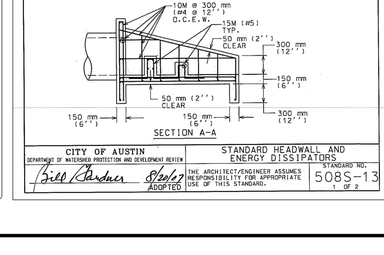


NOTES:
1. ALL CONCRETE SHALL BE CLASS "A" AS PER ITEM 403S.
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S-1
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
6. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB, IN ACCORDANCE WITH CITY OF AUSTIN STANDARD INLET DESIGN.
7. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE BY CONTRACTOR, SHAPED AS "V" SECTION
8. THE INLET AS DESIGNED EXCEEDS THE REQUIREMENTS OF ASTM C478.
9. THIS STANDARD COMPLIES WITH THE CITY OF AUSTIN STANDARD SPECIFICATIONS ITEM NO. 504S.
10. FOR INLET CONNECTION VARIATIONS FOR MAKING A 6 m (20'-0") CURB INLET FROM STANDARD 3 m (10'-0") INLETS, SEE DALWORTH CURB INLET CONNECTION DETAIL SHEET DD-86-103.

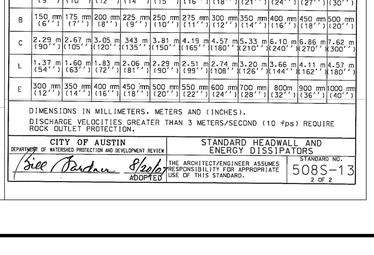
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CURB INLET 3 m (10') PRECAST TYPE 1 OR TYPE 1-R	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-4 1 OF 5



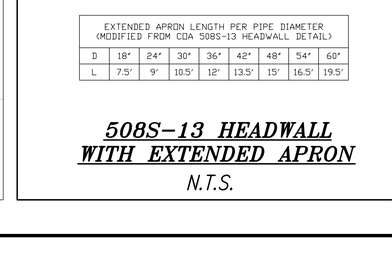
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CURB INLET 3 m (10') PRECAST TYPE 1 OR TYPE 1-R	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-4 2 OF 5



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CURB INLET 3 m (10') PRECAST TYPE 1 OR TYPE 1-R	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-4 3 OF 5



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CURB INLET 3 m (10') PRECAST TYPE 1 OR TYPE 1-R	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-4 4 OF 5



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CURB INLET 3 m (10') PRECAST TYPE 1 OR TYPE 1-R	STANDARD NO.
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-4 5 OF 5

NOTE:
RAMP BARRICADE SUBSIDIARY TO ITEM 403-G CONCRETE STRUCTURES

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	POND PIPE GATE AT RAMP DETAIL	STANDARD NO.
E Rivera, P.E. 1/4/2006 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	662S-1

NOTE:
1. THE SIDEWALK AREA OF THE DRIVEWAY SHALL SLOPE TOWARD THE STREET PAVING AT NO MORE THAN 2%.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 11-08-01 DATE THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS DETAIL	CONCRETE DRIVEWAY DETAIL (COMMERCIAL OR MULTI-FAMILY)	ST-03

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	STANDARD NO.
Bill Gardner 8/26/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-13 1 OF 2

NOTES:
1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S. CONCRETE FOR STRUCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

	D	A	B	C	L	E
	457 mm (18")	225 mm (9")	150 mm (6")	2.29 m (90")	1.37 m (54")	300 mm (12")
	533 mm (21")	250 mm (10")	175 mm (7")	2.67 m (105")	1.60 m (63")	350 mm (14")
	610 mm (24")	300 mm (12")	200 mm (8")	3.05 m (120")	1.83 m (72")	400 mm (16")
	685 mm (27")	350 mm (14")	225 mm (9")	343 m (135")	2.06 m (81")	450 mm (18")
	765 mm (30")	375 mm (15")	250 mm (10")	3.81 m (150")	2.29 m (90")	500 mm (20")
	838 mm (33")	400 mm (16")	275 mm (11")	4.19 m (165")	2.51 m (99")	550 mm (22")
	914 mm (36")	450 mm (18")	300 mm (12")	4.57 m (180")	2.74 m (108")	600 mm (24")
	1.067 m (42")	525 mm (21")	350 mm (14")	5.33 m (210")	3.20 m (126")	700 mm (28")
	1.219 m (48")	600 mm (24")	400 mm (16")	6.10 m (240")	3.66 m (144")	800m (32")
	1.372 m (54")	675 mm (27")	450 mm (18")	6.86 m (270")	4.11 m (162")	900 mm (36")
	1.524 m (60")	750 mm (30")	500 mm (20")	7.62 m (300")	4.57 m (180")	1000 mm (40")

DIMENSIONS IN MILLIMETERS. METERS AND (INCHES).
DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	STANDARD NO.
Bill Gardner 8/26/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S-13 2 OF 2

EXTENDED APRON LENGTH PER PIPE DIAMETER
(MODIFIED FROM COA 508S-13 HEADWALL DETAIL)

D	18"	24"	30"	36"	42"	48"	54"	60"
L	7.5'	9'	10.5'	12'	13.5'	15'	16.5'	19.5'

508S-13 HEADWALL WITH EXTENDED APRON

N.T.S.

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749
North Office: 12129 RR 620 N, #300 Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

DESIGNED BY: SPC	DRAFTED BY: CEL

DATE	REVISION

SHEET NAME: CONSTRUCTION DETAILS (3 OF 3)
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC.
F3791
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 68 OF 70
SHEET NO.: 68

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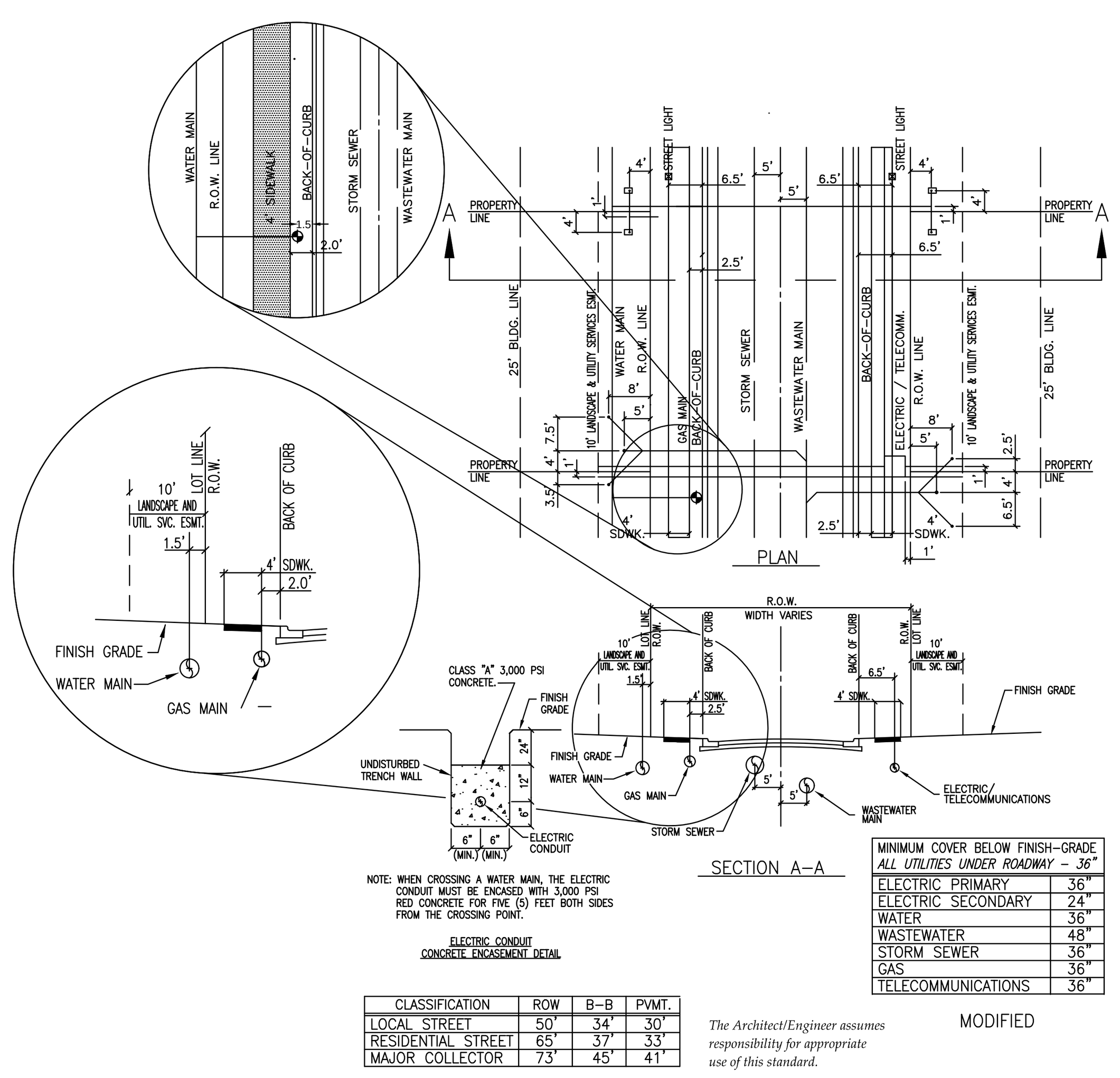
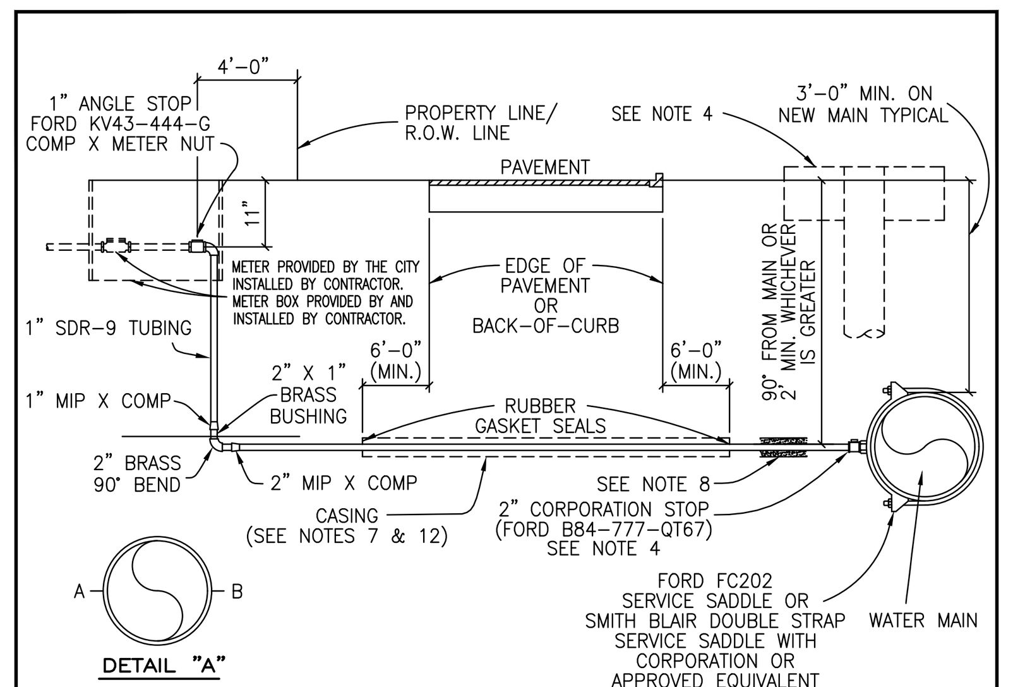


MODIFIED

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

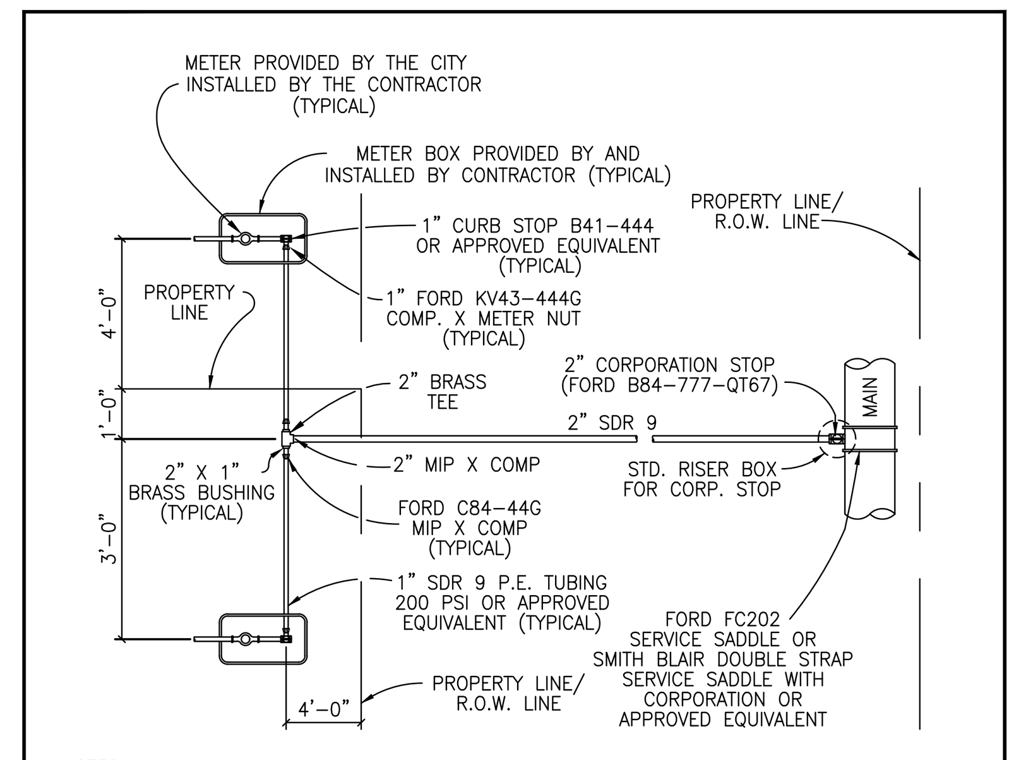


NOTES:
1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" OFFSET AND AT THE CENTERLINE AS SHOWN ON DETAIL "A".
2. WHERE NO SIDEWALK EXISTS, METER BOXES SHALL BE SET TO CONFORM TO FINISHED GRADE.
3. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR–9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
4. ROTATE THE CORPORATION STOP SO THAT THE OPERATING NUT IS ACTUATED FROM THE VERTICAL POSITION RATHER THAN THE HORIZONTAL. SEE STD. RISER FOR CORP. STOP DETAIL, (DWG # W08).
5. SERVICE LINES SHALL BE CONTINUOUS FROM CORPORATION STOP TO CORPORATION STOP WITH NO FITTINGS IN BETWEEN.
6. SERVICE CASING SHALL NOT BE INSTALLED BY WATER JETTING UNDER ROADWAY.
7. CASING REQUIRED FOR ALL PAVEMENT CROSSINGS. 4" SDR–26 REQUIRED FOR OPEN–CUT. STEEL CASING PIPE REQUIRED FOR JACK AND BORE. LIMITS OF CASING SHOULD EXTEND SIX FEET BEYOND THE EDGE OF PAVEMENT OR BACK–OF–CURB.
8. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. METER BOX TO BE CAPABLE OF HOUSING ITRON AUTOMATIC METER READING DEVICE. USE DFW–PLASTICS, INC. PART NO. 1200.SBAMR OR APPROVED EQUAL.
11. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY. SEE DETAIL W23.
12. CASING SHALL EXTEND OUT TO WITHIN 4' INSIDE OF THE R.O.W. LINE, ON BOTH SIDES.

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

ADOPTED 01/23/2013

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TYPICAL WATER SERVICE–ELEVATION
W03 | NTS | 1/2013 | – | MH

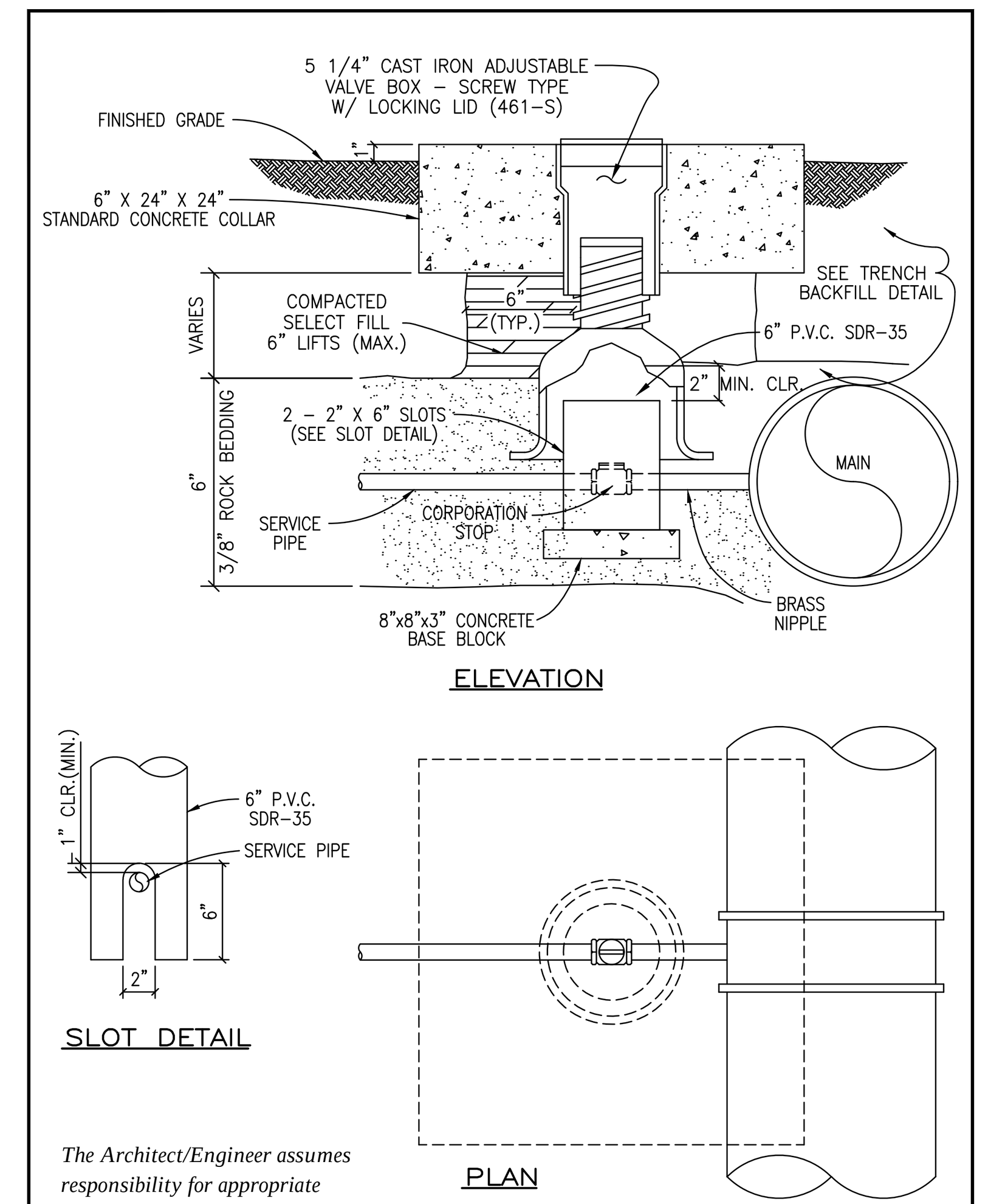


NOTES:
1. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR–9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
2. ANGLE STOP SHALL BE 1" MINIMUM.
3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.
4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE.
6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.
7. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W–03 NOTE #7.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

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

ADOPTED 01/23/2013

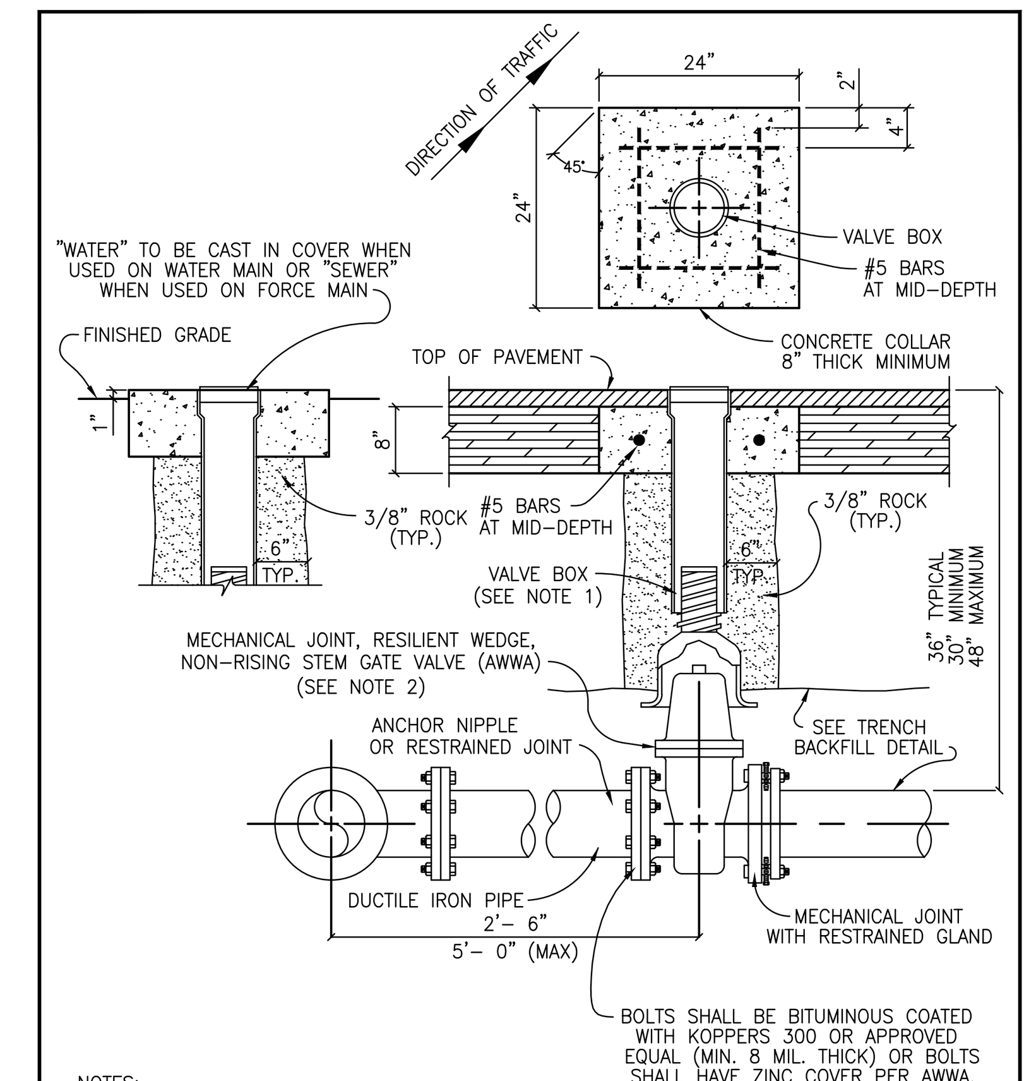
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
DOUBLE WATER SERVICE PLAN
W05



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

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
STANDARD RISER BOX FOR CORPORATION STOP
W08

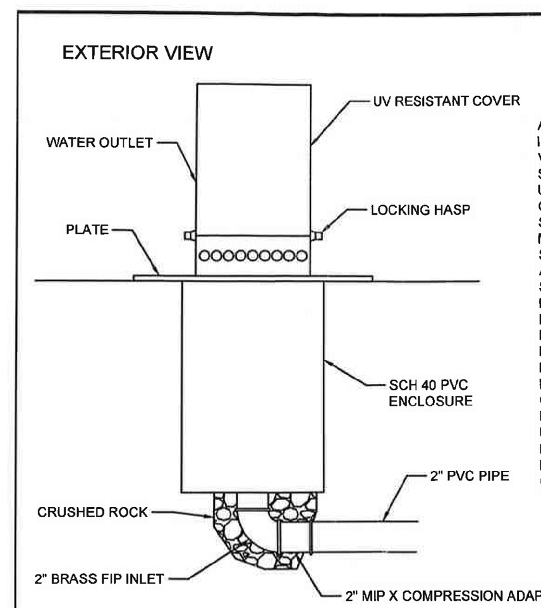


NOTES:
1. VALVE BOX SHALL BE 5 1/4" CAST IRON ADJUSTABLE HAVING AN ADJUSTABLE RANGE OF + OR – 6 INCHES FROM INSTALLED FINISH GRADE.
2. ACCEPTABLE GATE VALVES ARE:
   A. AMERICAN FLOW CONTROL – SERIES 2500
   B. MUELLER – 2360 SERIES
   C. CLOW

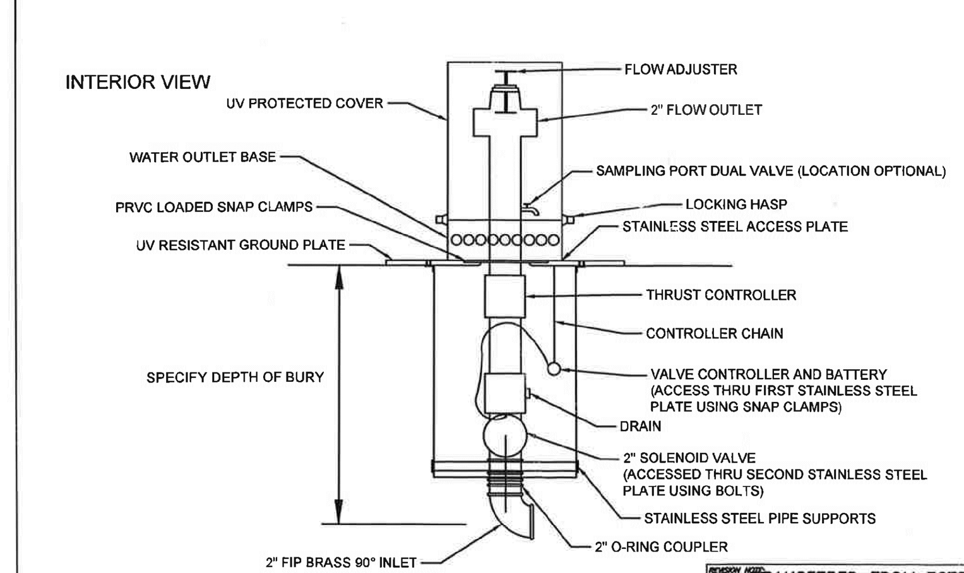
The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TYPICAL VALVE SETTING
W07 | NTS | 1/2003 | MRS | TRB

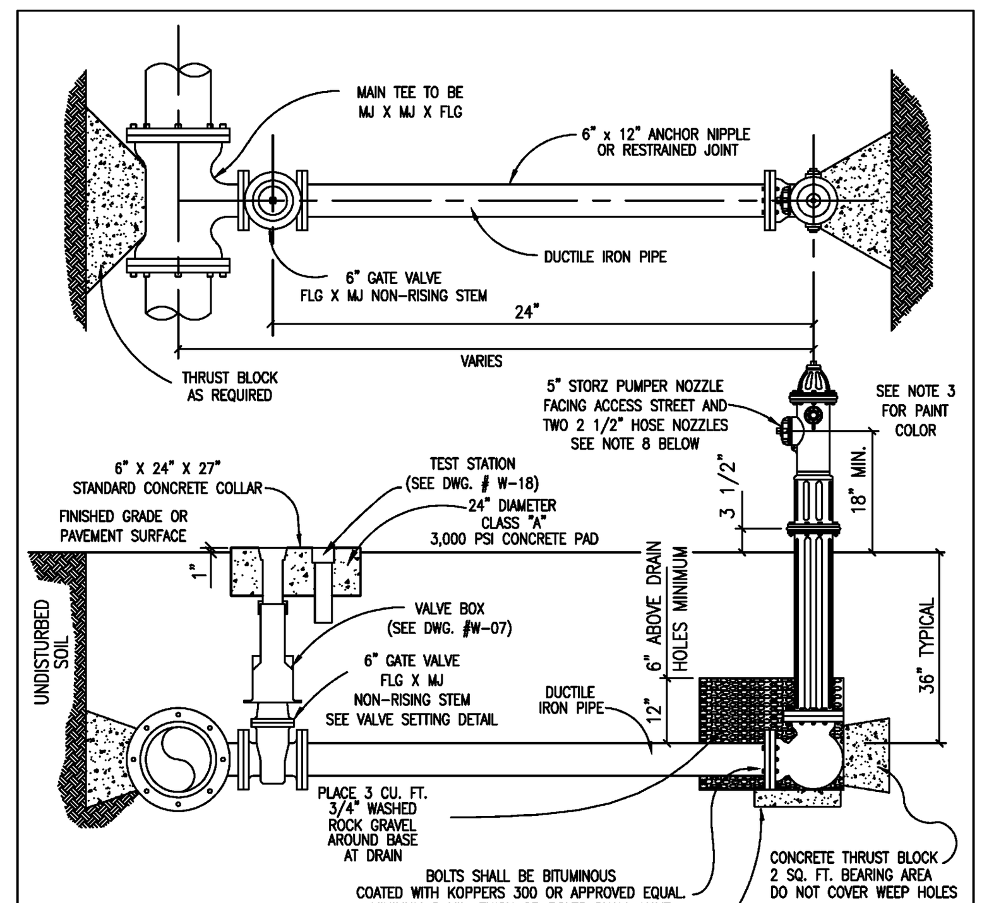


AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" BRASS FIP INLET, LEADING VERTICALLY INTO A 2" AUTOMATIC SOLENOID VALVE. AUTOMATIC SOLENOID VALVE SHALL HAVE INTERNAL, SELF-CLEANING SCREEN, AND HAVE A 220 PSI RATING. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. VALVE CONTROLLER WILL NOT 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.



TRANSFERED FROM TCTSUD

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
AUTOMATIC FLUSHING VALVE
W–08C | NTS | 7/2015 | TP | –

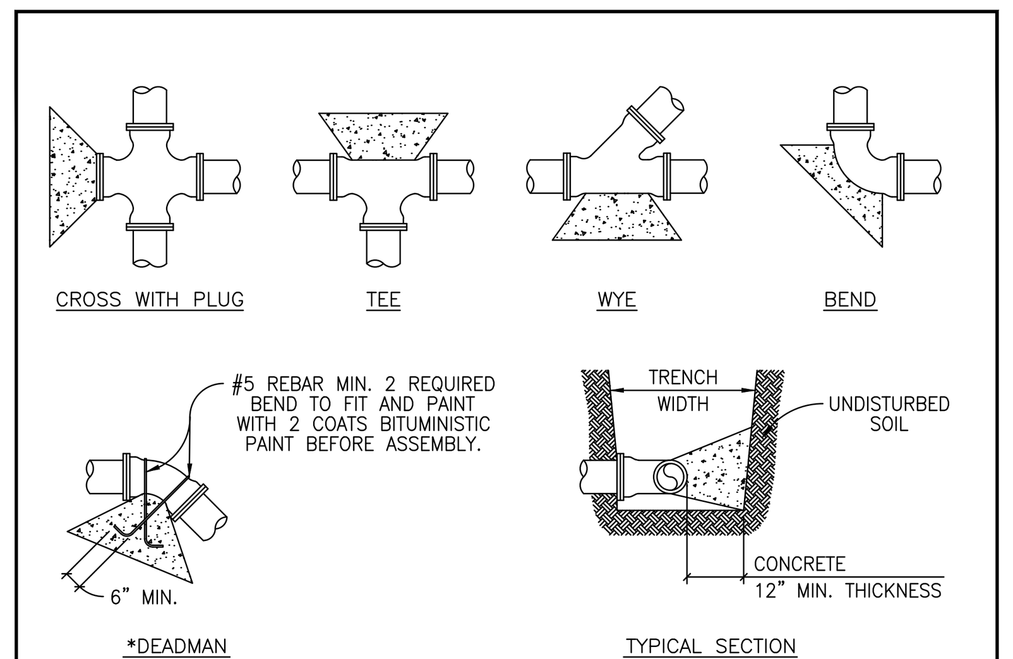


NOTES:
1. FIRE HYDRANT SHALL BE INSTALLED ON SAME SIDE OF ROAD AS WATER MAIN.
2. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE.
3. ALL FIRE HYDRANT EXTERIORS SHALL BE FACTORY PRIMED AND PAINTED SILVER USING A HIGH GRADE ENAMEL.
4. HEEL AND THRUST BLOCKS TO REST IN UNDISTURBED SOIL.
5. THE ONLY FIRE HYDRANTS ACCEPTABLE ARE:
   A. KENNEDY – K81
   B. AMERICAN DARLING – B84B
   C. CLOW MEDALLION
6. DOUBLE BLUE REFLECTOR "HYE–LITES" BRAND, MANUFACTURED BY PAVEMENT MARKERS INC. TO BE INSTALLED AT CENTERLINE OF STREET PERPENDICULAR TO HYDRANT.
7. ALL METALLIC PIPES AND FITTINGS SHALL BE WRAPPED WITH 8 MILL. POLYETHELENE FILM.
8. FIRE HYDRANT DESIGN SHALL BE 2–2.5" NST OUTLETS, 1–5.0" STORZ PUMPER NOZZLE WITH A 1.5", 5–SIDED OPERATING NUT ON THE NOZZLE CAP THAT OPENS LEFT, ALONG WITH A REFLECTIVE BAND.

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

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TYPICAL FIRE HYDRANT INSTALLATION
W10 | NTS | 1/2003 | MRS | TRB



ALL THRUST BLOCKS SHALL BE FORMED. LAID FORMS SHALL BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO THE POURING OF CONCRETE AND SHALL ALSO BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO COVERING. TYPICAL LOCATIONS WHICH REQUIRE CONCRETE REACTION (THRUST) BLOCKS, FOR PRESSURE MAINS FOUR INCHES (4") AND GREATER. CONCRETE SHALL HAVE 2,500 P.S.I. MINIMUM STRENGTH AT TWENTY EIGHT (28) DAYS AND BEAR AGAINST UNDISTURBED STABLE SOILS, AREA OF CONTACT SHALL BE GOVERNED BY PIPE SIZE, MAXIMUM PRESSURE IN PIPE, AND BEARING CAPACITY OF SOIL. PROTECT FITTINGS, BOLTS, ETC. BY COVERING WITH VISQUEEN OR OTHER ACCEPTABLE MATERIAL. CONCRETE SHALL BE A MINIMUM OF TWELVE INCHES (12") THICK.

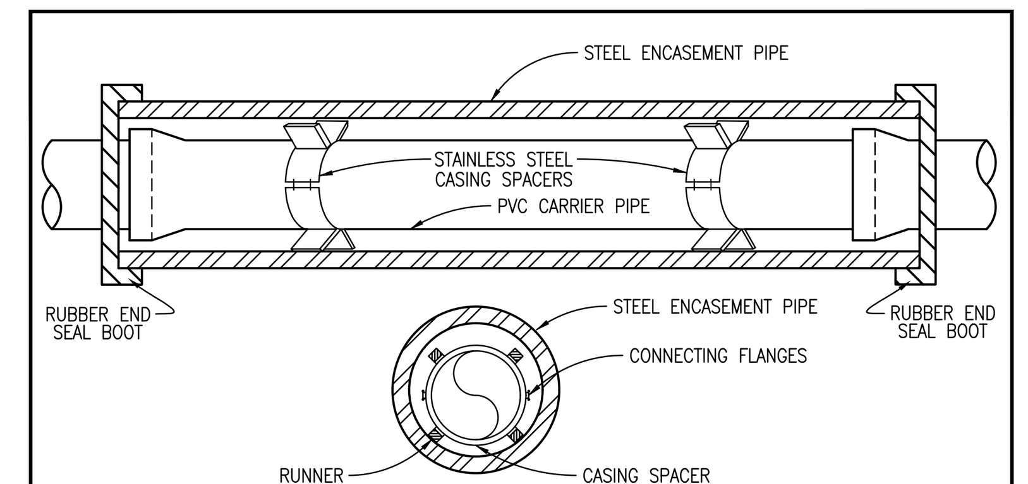
PIPE SIZE	THRUST BLOCK AREA REQUIRED	PIPE SIZE	THRUST BLOCK AREA REQUIRED	REMARKS
4"	2.0 SQ. FT.	18"	30.0 SQ. FT.	VALUES ARE FOR 90° BENDS, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. PLUS 33% SAFETY FACTOR FOR OTHER SOILS AND PRESSURES, THE AREA REQUIRED IS IN DIRECT PROPORTION.
6"	4.0 SQ. FT.	20"	37.0 SQ. FT.	
8"	6.6 SQ. FT.	24"	53.0 SQ. FT.	
10"	10.0 SQ. FT.	27"	80.0 SQ. FT.	
12"	14.0 SQ. FT.	30"	98.0 SQ. FT.	
14"	18.0 SQ. FT.	36"	127.0 SQ. FT.	
16"	24.0 SQ. FT.			

* THE ENGINEER OF RECORD SHALL CALCULATE THE SIZE OF THE DEADMAN REQUIRED AS WELL AS ANY INSTALLATION WHICH IS NOT COVERED BY THE ABOVE.

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

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TYPICAL THRUST BLOCKS FOR WATER AND FORCE MAIN
W11 | NTS | 1/2003



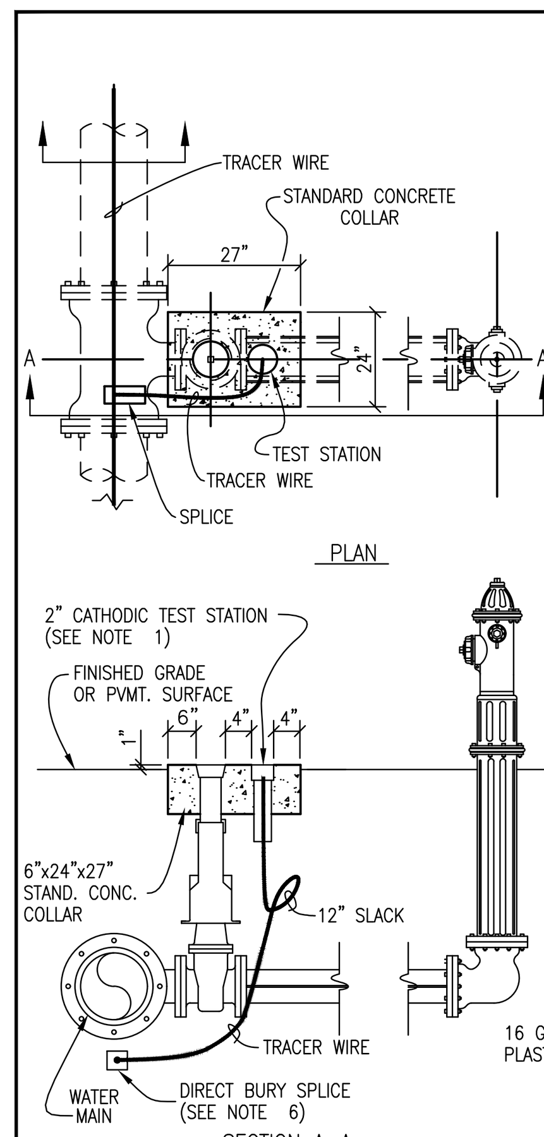
NOTES:
1. CASING SPACERS SHALL BE BOLT ON STYLE WITH A SHELL MADE IN TWO SECTIONS OF HEAVY T–304 STAINLESS STEEL. CONNECTING FLANGES SHALL BE RIBBED FOR EXTRA STRENGTH. CASING SPACERS SHALL BE MADE BY CASCADE WATERWORKS MFG. CO. OR APPROVED EQUAL.
2. CASING SPACERS SHALL HAVE RUNNERS MADE OF ULTRA HIGH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

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

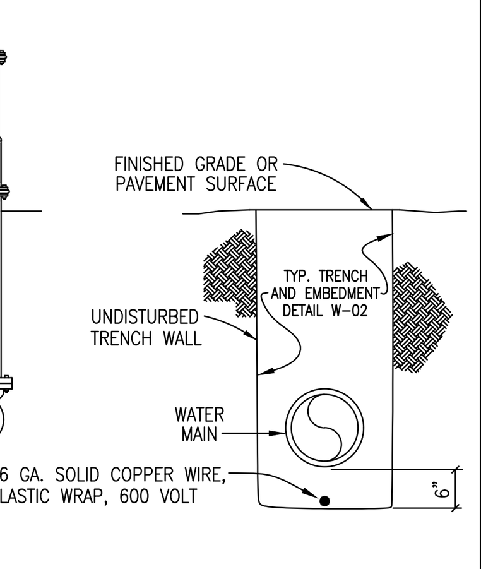
The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
INSTALLATION OF P.V.C. PIPE THROUGH CASING
W14 | NTS | 1/2003



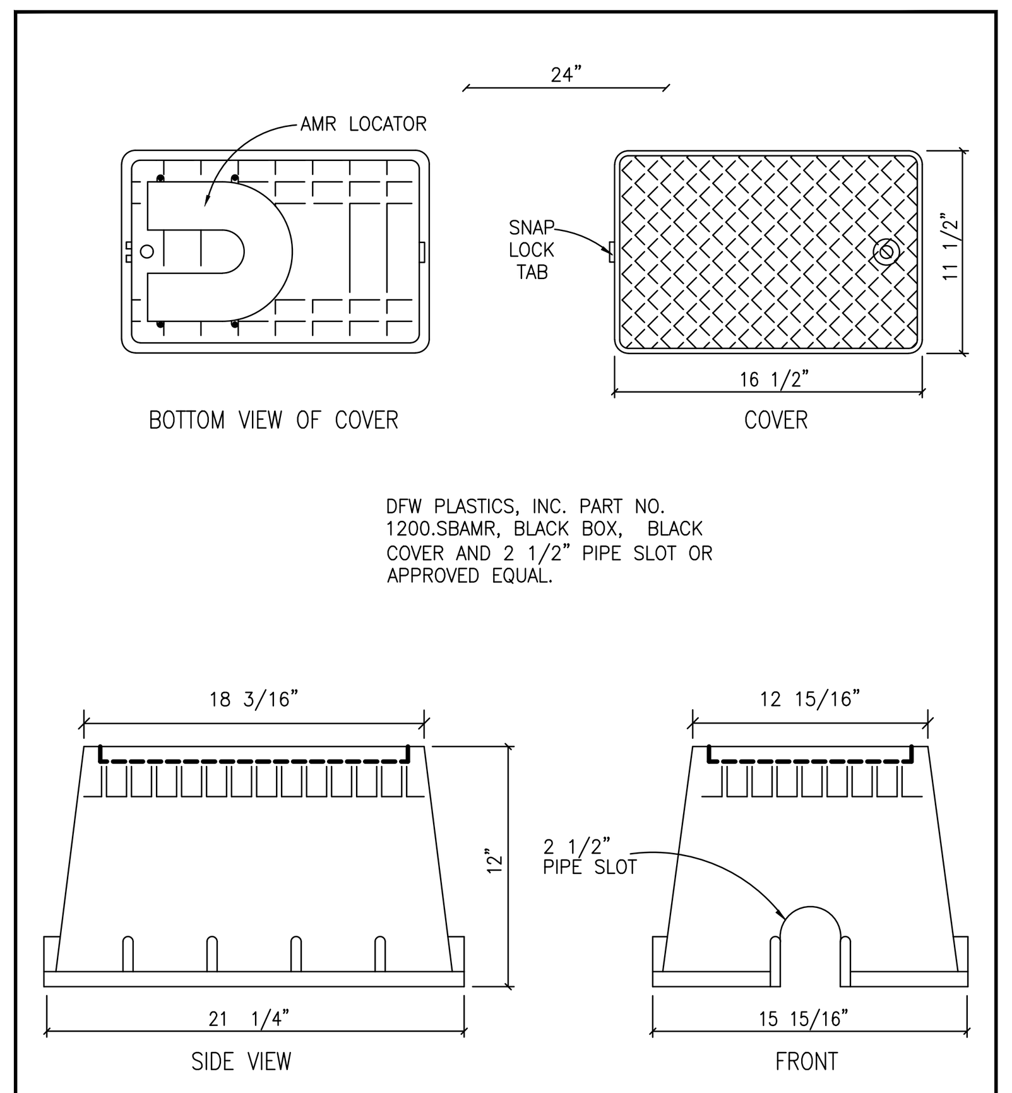
1. TEST STATION SHALL BE HANDLEY INDUSTRIES INC. – 2 INCH CATHODIC TEST STATIONS OR APPROVED EQUAL.
2. THE 15" ABS PLASTIC BOX SHALL BE A FLANGED TOP FOR INSTALLATION AT GROUND LEVEL.
3. ALL TERMINALS ARE TO BE MADE OF SOLID BRASS.
4. PLASTIC LIDS SHALL BE COLOR BLUE AND MARKED "WATER".
5. TEST TERMINALS ARE TO BE INCORPORATED WITH HANDLEY VALVE BOXES.
6. BURY SPLICE SHALL BE 3M DIRECT BURY SPLICE (DBR) OR APPROVED EQUAL.
7. TEST STATIONS SHALL BE INSTALLED AT EACH FIRE HYDRANT LOCATION.



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

ADOPTED 6/21/2006

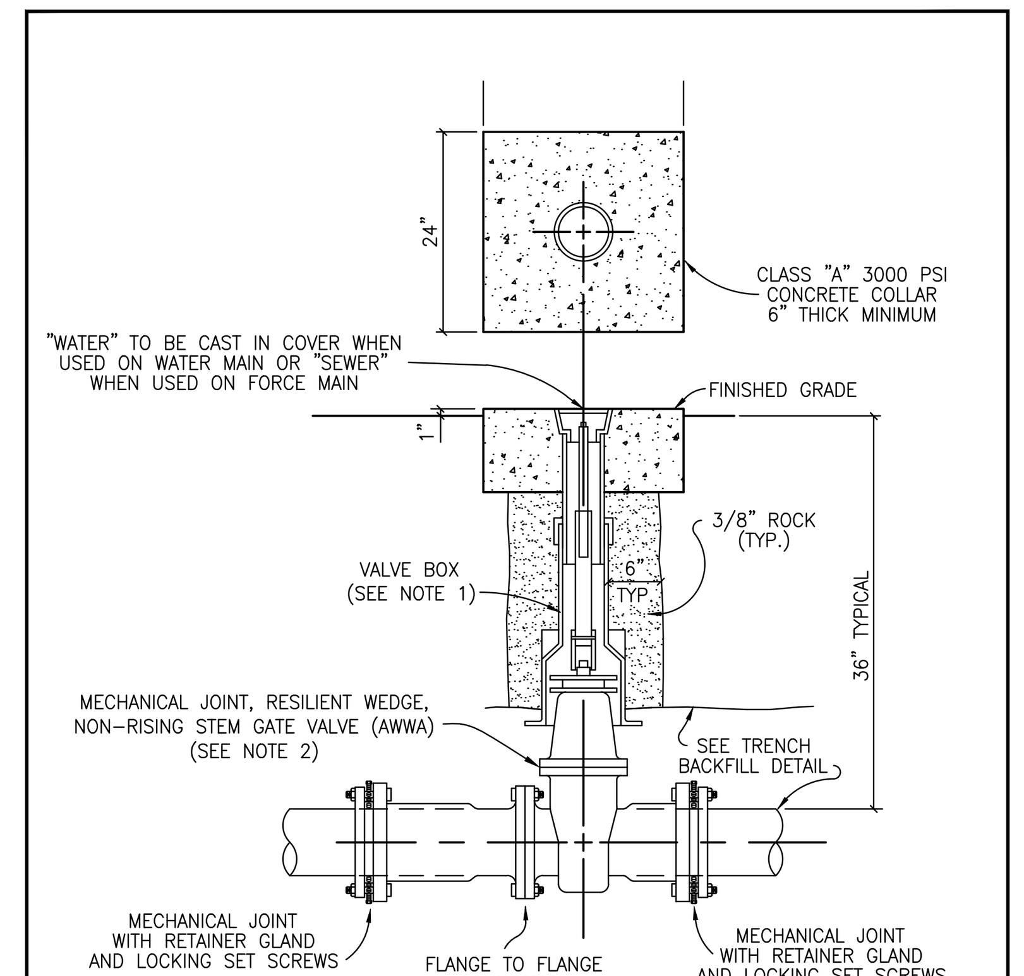
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TRACER WIRE INSTALLATION AND TEST STATION LOCATION
W18



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

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
METER BOX (NON-TRAFFIC AREAS)
W23

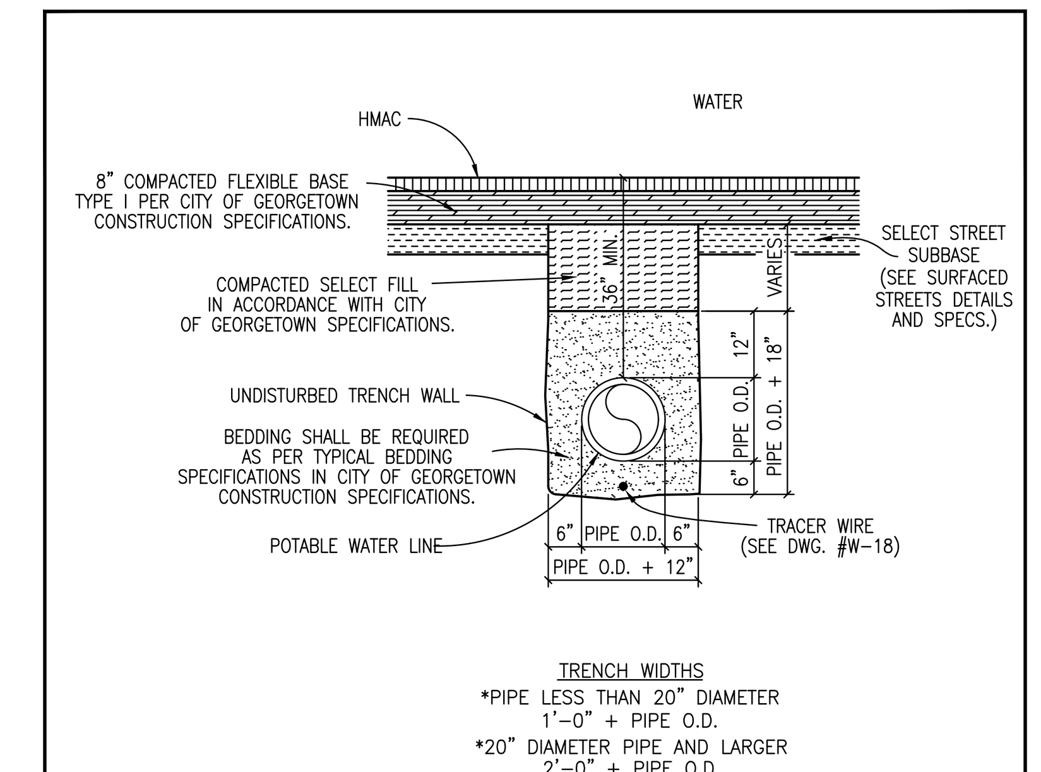


NOTES:
1. SEE VALVE SETTING DETAIL, DWG. #W–07.
2. ACCEPTABLE GATE VALVES ARE:
   A. MUELLER – 2360 SERIES
   B. CLOW

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

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
INLINE VALVE INSTALLATION
W21



TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER 1'–0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER 2'–0" + PIPE O.D.

NOTES:
1. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS AND STANDARDS.
2. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

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

ADOPTED 6/21/2006

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TRENCH AND EMBEDMENT DETAIL UNDER PROPOSED ROADWAY
W22

DESIGNED BY: SPC | DRAFTED BY: CEL

DATE | REVISION

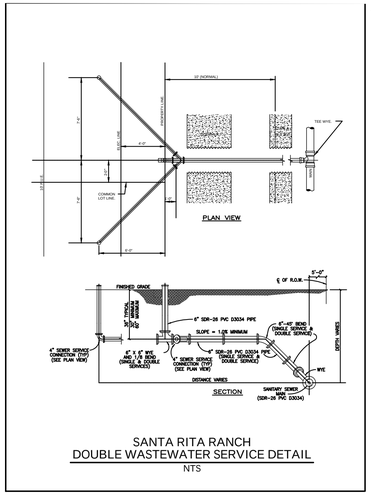
Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr., Austin, Texas 78749, Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600, Austin, Texas 78750, Fax No. (512) 280-5165

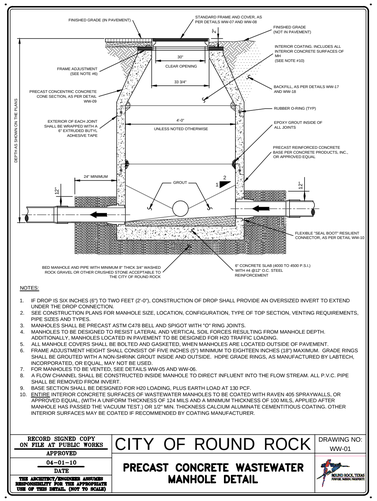
SHEET NAME: WATER DETAILS
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

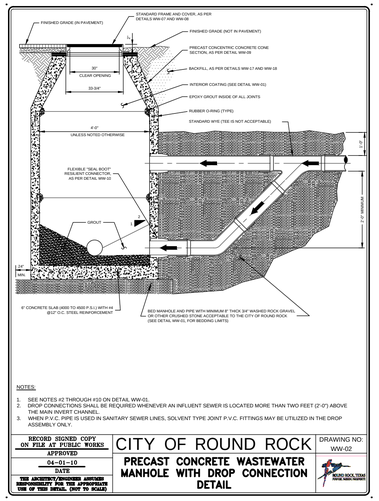
STATE OF TEXAS
STEVEN P. CATES
93648
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE & DOERING, INC. ID# F3791
12-20-2024

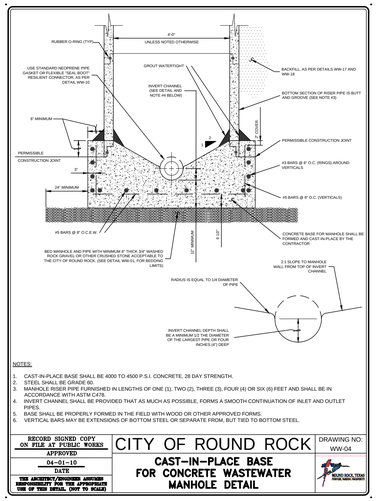
DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 69 OF 70
SHEET NO. 69

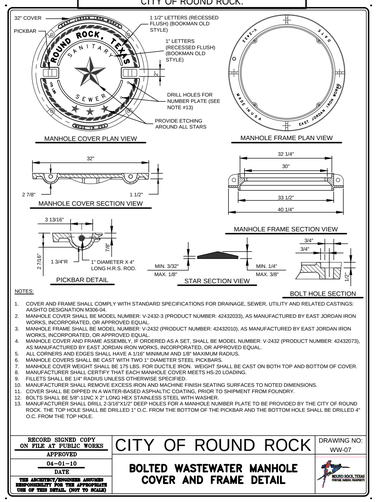
FILE PATH: J:\AC3D\5559\dwg\5559\WATER DETAILS.dwg - Dec 19, 2024 - 11:30am

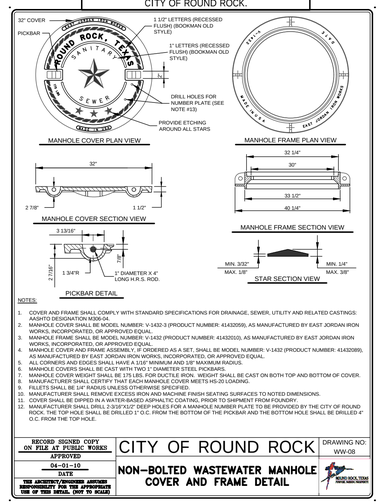


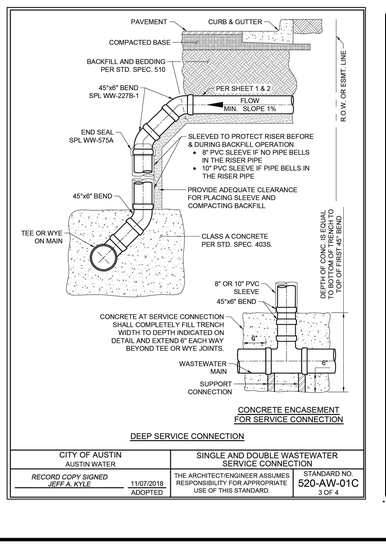


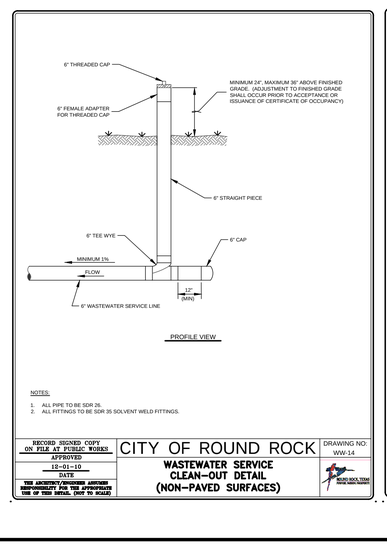


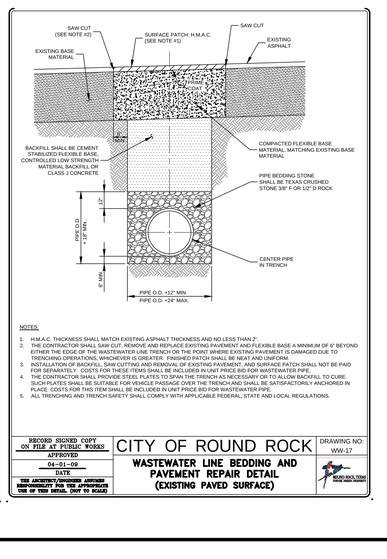


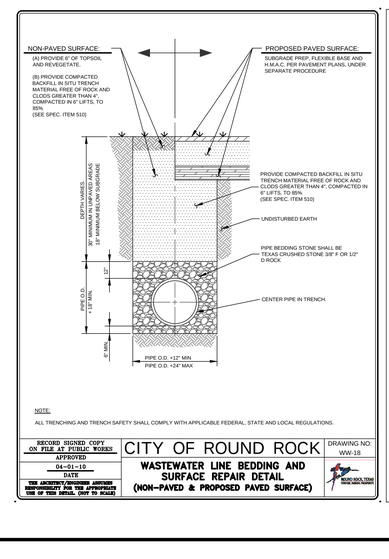


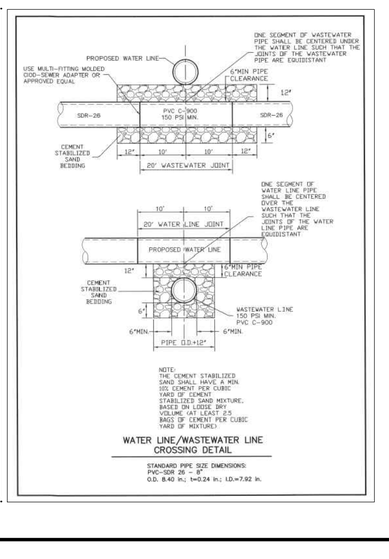












SANTA RITA RANCH
DOUBLE WASTEWATER SERVICE DETAIL

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 ASTM 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, AS MANUFACTURED BY LABTECH, INCORPORATED, OR EQUAL, 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 SPRAYWALLS, 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.) OR 1/2" MIN. THICKNESS CALCIUM ALUMINATE CEMENTITIOUS COATING. OTHER INTERIOR SURFACES MAY BE COATED IF RECOMMENDED BY COATING MANUFACTURER.

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APPROVED
04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

PRECAST CONCRETE WASTEWATER MANHOLE DETAIL

DRAWING NO: WW-01

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. SEE NOTES #2 THROUGH #10 ON DETAIL WW-01.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT SEWER 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 MAY BE UTILIZED IN THE DROP ASSEMBLY ONLY.

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CITY OF ROUND ROCK

PRECAST CONCRETE WASTEWATER MANHOLE WITH DROP CONNECTION DETAIL

DRAWING NO: WW-02

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. CAST-IN-PLACE BASE SHALL BE 4000 TO 4500 P.S.I. CONCRETE, 28 DAY STRENGTH.
2. STEEL SHALL BE GRADE 60.
3. MANHOLE RISER PIPE FURNISHED IN LENGTHS OF ONE (1), TWO (2), THREE (3), FOUR (4) OR SIX (6) FEET AND SHALL BE IN ACCORDANCE WITH ASTM C478.
4. INVERT CHANNEL SHALL BE PROVIDED THAT AS MUCH AS POSSIBLE, FORMS A SMOOTH CONTINUATION OF INLET AND OUTLET PIPES.
5. BASE SHALL BE PROPERLY FORMED IN THE FIELD WITH WOOD OR OTHER APPROVED FORMS.
6. VERTICAL BARS MAY BE EXTENSIONS OF BOTTOM STEEL OR SEPARATE FROM, BUT TIED TO BOTTOM STEEL.

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04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

CAST-IN-PLACE BASE FOR CONCRETE WASTEWATER MANHOLE DETAIL

DRAWING NO: WW-04

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

MANHOLE COVER SHALL NOT REFERENCE THE CITY OF ROUND ROCK.

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: 42432033), 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: 42432073), 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.

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04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

BOLTED WASTEWATER MANHOLE COVER AND FRAME DETAIL

DRAWING NO: WW-07

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

MANHOLE COVER SHALL NOT REFERENCE THE CITY OF ROUND ROCK.

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: 41432059), 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: 41432089), 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.

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CITY OF ROUND ROCK

NON-BOLTED WASTEWATER MANHOLE COVER AND FRAME DETAIL

DRAWING NO: WW-08

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

SANTA RITA RANCH
SINGLE WASTEWATER SERVICE DETAIL

NTS

NOTE:

CONCENTRIC CONCRETE CONE SECTION SHALL BE MANUFACTURED USING 4000 TO 4500 P.S.I. CONCRETE, 28 DAY STRENGTH AND IN ACCORDANCE WITH ASTM C478, AS MANUFACTURED BY CONCRETE PRODUCTS, INCORPORATED, OR APPROVED EQUAL.

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04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

PRECAST 48" CONCENTRIC CONCRETE CONE SECTION DETAIL

DRAWING NO: WW-09

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

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APPROVED
04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

FLEXIBLE "SEAL BOOT" RESILIENT CONNECTOR DETAIL

DRAWING NO: WW-10

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. MINIMUM DROP FROM INLET TO OUTLET OF MANHOLE IS 0.1 FEET AND MAXIMUM DROP IS 2.5 FEET, UNLESS SPECIAL APPROVAL IS OBTAINED FROM THE CITY OF ROUND ROCK.
2. INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
3. SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING FOR SMOOTH FLOW.
4. CHANNELS FOR FUTURE CONSTRUCTIONS, SHALL BE CONSTRUCTED WITH PIPE EXTENDING 3' BEYOND EXTERIOR OF MANHOLE WALL, WITH GLUED PLUG.
5. SLOPE MANHOLE BENCH AT 2:1 SLOPE FROM MANHOLE WALL TO CHANNEL.
6. INVERT CHANNEL SHALL BE A MINIMUM OF 1/2 THE DIAMETER OF THE LARGEST PIPE OR FOUR INCHES (4") DEEP.

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04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

WASTEWATER FLOW PATTERNS FOR INVERT CHANNELS DETAIL

DRAWING NO: WW-11

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. ALL PIPE TO BE SDR 26.
2. ALL FITTINGS TO BE SDR 35 SOLVENT WELD FITTINGS.

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12-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

WASTEWATER SERVICE CLEAN-OUT DETAIL (PAVED SURFACES)

DRAWING NO: WW-13

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

DEEP SERVICE CONNECTION

CITY OF AUSTIN
AUSTIN WATER

SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION

RECORD COPY SIGNED
JEFF A. KYLE
11/07/2018
ADOPTED

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO.
520-AW-01C
3 OF 4

NOTES:

1. ALL PIPE TO BE SDR 26.
2. ALL FITTINGS TO BE SDR 35 SOLVENT WELD FITTINGS.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
12-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

WASTEWATER SERVICE CLEAN-OUT DETAIL (NON-PAVED SURFACES)

DRAWING NO: WW-14

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTES:

1. H.M.A.C. THICKNESS SHALL MATCH EXISTING ASPHALT THICKNESS AND NO LESS THAN 2".
2. THE CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING PAVEMENT AND FLEXIBLE BASE A MINIMUM OF 6" BEYOND EITHER THE EDGE OF THE WASTEWATER LINE TRENCH OR THE POINT WHERE EXISTING PAVEMENT IS DAMAGED DUE TO TRENCHING OPERATIONS, WHICHEVER IS GREATER. FINISHED PATCH SHALL BE NEAT AND UNIFORM.
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 BID FOR WASTEWATER 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 BID FOR WASTEWATER 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
04-01-09
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

WASTEWATER LINE BEDDING AND PAVEMENT REPAIR DETAIL (EXISTING PAVED SURFACE)

DRAWING NO: WW-17

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTE:

ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
04-01-10
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

WASTEWATER LINE BEDDING AND SURFACE REPAIR DETAIL (NON-PAVED & PROPOSED PAVED SURFACE)

DRAWING NO: WW-18

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

NOTE:
THE CEMENT STABILIZED SAND SHALL HAVE A MIN. 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE)

WATER LINE/WASTEWATER LINE CROSSING DETAIL

STANDARD PIPE SIZE DIMENSIONS:
PVC-SDR 26 – 8"
O.D. 8.40 in.; t=0.24 in.; I.D.=7.92 in.

DESIGNED BY: SPC
DRAFTED BY: CEL

DATE	REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791

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SHEET NAME: WASTEWATER DETAILS
JOB NAME: SANTA RITA RANCH PHASE 2B SECTION 2
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

STEVEN P. CATES
93648
CARLSON, BRIGANCE & DOERING, INC.
ID# F3791
Steven P. Cates
12-20-2024

DATE: DEC 2024
JOB NUMBER: 5559
SHEET: 70 OF 70
SHEET NO.: 70

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