Innovative approaches
Practical results
Outstanding service

Organized Sewage Collection System Plan

for

New Braunfels Utilities

Gruene Wastewater Siphon

Prepared for:

TCEQ-Region 13 Office

San Antonio, Texas

May 2025

Prepared by:

FREESE AND NICHOLS, INC.
10431 Morado Circle, Suite 300
Austin, Texas 78759
512-617-3100

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: Gruene Wastewater Siphon					**2. Regulated Entity No.:**				
3. Customer Name: New Braunfels Utilities					**4. Customer No.: CN600522957**				
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):**			
9. Application Fee:	$1,437.50		**10. Permanent BMP(s):**			Erosion control blanket, vegetated soil-rock riprap			
11. SCS (Linear Ft.):	2,875		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Comal		**14. Watershed:**			Comal- Guadalupe River			

Application Distribution

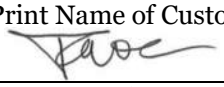
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which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

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

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	_X_	___	___	___
Region (1 req.)	___	_X_	___	___	___
County(ies)	___	_X_	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	_X_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 _X_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. Tam Tran
Print Name of Customer/Authorized Agent  05-14-2025
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):	

TCEQ Correspondence

Tam Tran

From: Hunter Patterson <Hunter.Patterson@tceq.texas.gov>
Sent: Tuesday, February 25, 2025 1:19 PM
To: Erin Mills; Tam Tran
Cc: Carolina Juarez; Jaime Sifuentes
Subject: RE: NBU Gruene Siphon Improvement Project

Erin,

After discussion with our team, we are only requesting an SCS application to be submitted to our program for review of the proposed project.

Thank you,

Hunter Patterson
Environmental Investigator III
Edwards Aquifer Protection Program
TCEQ San Antonio Regional Office
Office: 210-403-4026
Email: hunter.patterson@tceq.texas.gov

From: Erin Mills <Erin.Mills@freese.com>
Sent: Tuesday, February 25, 2025 9:06 AM
To: Hunter Patterson <Hunter.Patterson@tceq.texas.gov>; Tam Tran <Tam.Tran@freese.com>
Cc: Carolina Juarez <Carolina.Juarez@freese.com>; Jaime Sifuentes <Jaime.Sifuentes@freese.com>
Subject: RE: NBU Gruene Siphon Improvement Project

Hunter,
Thanks for getting back to us. See answers below.

1. Is the proposed project making changes to alignment, size of piping, changing the type of manholes? Rehabilitation or upgrade of materials would require an SCS plan to be submitted.

   The alignment will change, slightly. We will install the new force mains parallel to the existing, so we can avoid excessive bypass.

2. If the proposed project is to replace piping and associated appurtenances with the same type and size of piping and appurtenances, then that is seen as maintenance activity that does not require a plan to be submitted.

The new force mains will be HDPE and we will upsize the pipe from 6” & 8” to 8” and 8” & 10”.

It sounds like we will need an SCS based on the changes to the existing. Will we need a WPAP?

Thanks!

Erin Mills, P.E.

9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
210-298-3898 office
361-331-1119 mobile
erin.mills@freese.com

FREESE AND NICHOLS

Malcolm Baldrige
National Quality Award
Recipient 2010 & 2024

From: Hunter Patterson <Hunter.Patterson@tceq.texas.gov>
Sent: Monday, February 24, 2025 4:06 PM
To: Tam Tran <Tam.Tran@freese.com>
Cc: Erin Mills <Erin.Mills@freese.com>
Subject: RE: NBU Gruene Siphon Improvement Project

Tam,

Some additional questions to consider:

1. Is the proposed project making changes to alignment, size of piping, changing the type of manholes? Rehabilitation or upgrade of materials would require an SCS plan to be submitted.

2. If the proposed project is to replace piping and associated appurtenances with the same type and size of piping and appurtenances, then that is seen as maintenance activity that does not require a plan to be submitted.

Hunter Patterson
Environmental Investigator III
Edwards Aquifer Protection Program
TCEQ San Antonio Regional Office
Office: 210-403-4026
Email: hunter.patterson@tceq.texas.gov

From: Hunter Patterson
Sent: Monday, February 24, 2025 3:41 PM
To: 'Tam Tran' <Tam.Tran@freese.com>
Cc: Erin Mills <Erin.Mills@freese.com>
Subject: RE: NBU Gruene Siphon Improvement Project

Hey Tam,

Do you know if there's an existing SCS approval letter for the wastewater line in the Recharge Zone?

Hunter Patterson
Environmental Investigator III
Edwards Aquifer Protection Program
TCEQ San Antonio Regional Office
Office: 210-403-4026
Email: hunter.patterson@tceq.texas.gov

From: Tam Tran <Tam.Tran@freese.com>
Sent: Monday, February 24, 2025 2:07 PM
To: Hunter Patterson <Hunter.Patterson@tceq.texas.gov>
Cc: Erin Mills <Erin.Mills@freese.com>
Subject: FW: NBU Gruene Siphon Improvement Project

Good afternoon Hunter,
I hope you are doing well. I tried to call you earlier today but received a voicemail. I am working for the NBU on a wastewater line replacement project. I was wondering if you would be able to assist me with determining if the project described below can be completed with a WPAP Exception. Thank you for your time and consideration,

Tam H. Tran | *Environmental Scientist* | *Project Manager* | Freese and Nichols, Inc. | 512-381-1830 | Tam.Tran@freese.com

From: Tam Tran
Sent: Tuesday, February 4, 2025 10:00 AM
To: EAPP <eapp@tceq.texas.gov>
Cc: Erin Mills <Erin.Mills@freese.com>
Subject: NBU Gruene Siphon Improvement Project

To whom it may concern,
New Braunfels Utilities (NBU; CN600522957) is proposing to replace an existing wastewater line located within the City of Gruene, Comal County, Texas. The project purpose is to replace the aging wastewater and connect it to a new permanent odor control facility in Gruene. The wastewater line will follow Gruene Rd and cross the Guadalupe River (KMZ attached).

The sewage line project area is located within the boundary of the Edwards Aquifer Recharge and Transition Zones. Approximately 1,360 LF of the wastewater line is located within the EA Recharge Zone. There will be **no increase in impervious cover** associated with the replacement of the wastewater line. Temporary and permanent BMPs would include silt fencing, inlet protection, and revegetation of disturbed areas.

We request an exemption from submitting a WPAP since there are no increases in impervious cover. In addition, NBU would like an exemption from submitting the Organized Sewage Collection System (SCS) Plan. Can you please confirm that an SCS and WPAP Exemption or Exception is appropriate before we proceed with preparing these reports? Thank you for your time and consideration,

Tam H. Tran
Environmental Scientist | Project Manager
Western Gulf Coast Integrated Water Management Division
Freese and Nichols, Inc.
10431 Morado Circle, Suite 300
Austin, TX 78759
Office: 512-381-1830
Mobile: 512-203-5701
Tam.Tran@freese.com

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: Tam Tran

Date: 05/12/2025

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Gruene Wastewater Siphon
2. County: Comal
3. Stream Basin: Guadalupe River Basin
4. Groundwater Conservation District (If applicable): Comal Trinity GCD & Edwards Aquifer Authority
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☒ Transition Zone

6. Plan Type:

   ☐ WPAP
   ☒ SCS
   ☐ Modification
   ☐ AST

☐ UST ☐ Exception Request

7. Customer (Applicant):

Contact Person: Adam Willard, PE.
Entity: New Braunfels Utilities
Mailing Address: 355 FM 306
City, State: New Braunfels, TX Zip: 78130
Telephone: (830)608-8943 FAX: _____
Email Address: awillard@nbutexas.com

8. Agent/Representative (If any):

Contact Person: Tam Tran
Entity: Freese and Nichols, Inc.
Mailing Address: 10431 Morado Circle, Suite 300
City, State: Austin, TX Zip: 78759
Telephone: (512)381-1830 FAX: (512)617-3101
Email Address: tam.tran@freese.com

9. Project Location:

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

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

The project is located along Gruene Road from Hunter Road to Ervendberg Avenue in New Braunfels, Texas.

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: prior to construction: October 2025

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

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

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

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

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

Attachment A. Road Map

FREESE AND NICHOLS, INC
10431 Morado Cir
Suite 300, Austin, TX
78759
(512) 617-3100

City of New Braunfels

Gruene Siphon Improvements Project

Road Map

FN JOB NO	NBU20253
FILE NAME	NBU20253.mxd
DATE	4/24/2025
Scale	1:3,000
DRAFTED	CS

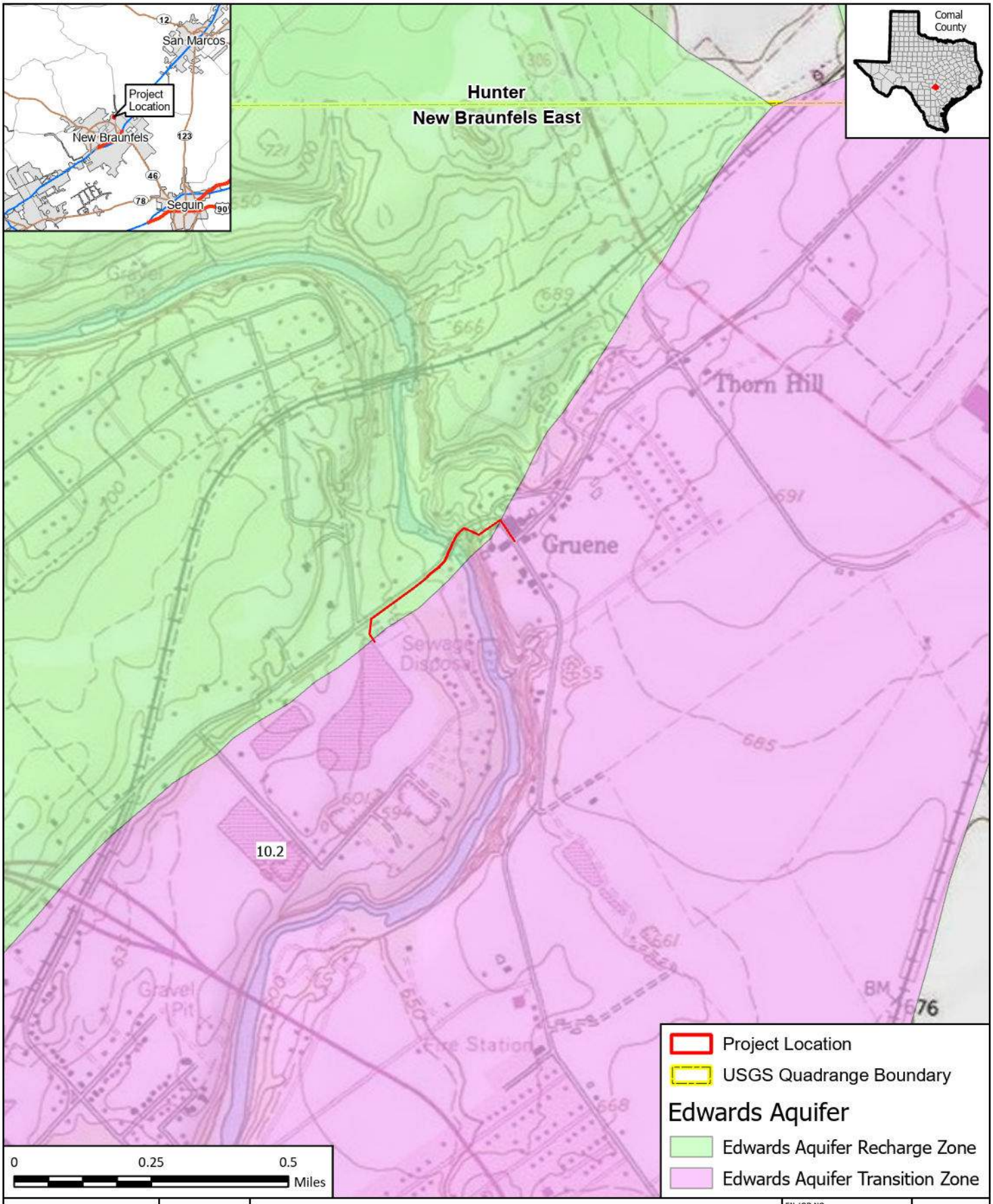
A

Attachment

Path: H:\ENVIRONMENTAL\Working\CS_Working\NBU20253\NBU20253.aprx

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

Attachment B. USGS/ Edwards Aquifer Zone Map



FREESE AND NICHOLS, INC
10431 Morado Cir
Suite 300, Austin, TX
78759
(512) 617-3100

City of New Braunfels

Gruene Siphon Improvements Project

USGS Topographic Map

USGS Quad: New Braunfels East

FN JOB NO	NBU20253
FILE NAME	NBU20253.mxd
DATE	4/24/2025
DESIGNED	CS
DRAFTED	CS

B

Attachment

Path: H:\ENVIRONMENTAL\Working\CS_Working\NBU20253\NBU20253.aprx

NAD 1983 StatePlane Texas North Central FIPS 4202 Feet

Attachment C

Project Description

The Gruene Wastewater Siphon project is located within the City of New Braunfels, Comal County, Texas. The purpose of the project is to replace the aging wastewater line and connect to a new permanent odor control facility in the Historic Gruene District. The wastewater line will follow Gruene Rd and cross the Guadalupe River. The sewage line project area is located within the boundary of the Edwards Aquifer Recharge and Transition Zones. Approximately 1,360 LF of the wastewater line is located within the EA Recharge Zone. The total length of the wastewater line is 2,875 LF. The new alignment will change slightly, paralleling the existing force main line to avoid excessive bypass. The new force mains will be made of high-density polyethylene (HDPE) and will be upsized from 6" & 8" to 8" & 10" diameter pipe.

The existing site is developed, parallels a roadway, and contains existing impervious cover. The surrounding area is commercial development and associated roadways. There will be no increase in impervious cover associated with the replacement of the wastewater line. Temporary BMP will include silt fencing. Silt fencing will be placed downgradient of construction activity and soil disturbances. Permanent BMPs will include erosion control blankets and vegetated soil-rock riprap. The erosion control blankets would be placed on disturbed soils and prevent erosion. The vegetated soil-rock riprap will be placed downgradient of disturbed areas to capture and prevent sedimentation. Permanent BMPs will be installed post-construction in disturbed areas for erosion and sediment control.

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

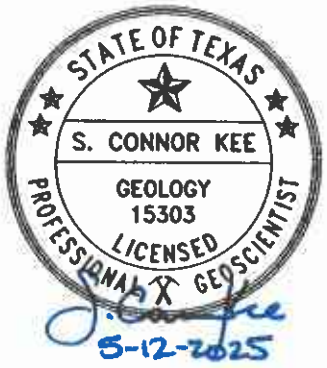
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: S. Connor Kee Telephone: (817)-735-7531

Date: 2025-05-12 Fax: _____

Representing: Freese and Nichols, Inc. (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Gruene Wastewater & Inverted Siphon Improvements

Project Information

1. Date(s) Geologic Assessment was performed: 2025-04-29
2. Type of Project:
   - ☐ WPAP
   - ☒ SCS
   - ☐ AST
   - ☐ 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)
Purves clay	D	0.7 to 1.7
Oakalla silty clay loam	B	5 to 6.7
Boerne fine sandy loam	A	>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.

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" = 400'

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 _____ (#) 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.

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Gruene Wastewater & Inverted Siphon Improvements

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)	DIP	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	
1	29°44'14.88"N	98°6'24.98"W	CD	5	Qt	3	3	0.83	-	-	-	-	O, F, V	5 - Low	10	10			✔	Floodplain
2	29°44'16.00"N	98°6'23.24"W	CD	5	Qt	100	4	1	-	-	-	-	N	5 - Low	10	10			✔	Drainage
3	29°44'16.88"N	98°6'22.36"W	CD	5	Kp	>300	100	4	-	-	-	-	C, F	5 - Low	10	10			✔	Streambed
4	29°44'19.14"N	98°6'21.34"W	CD	5	Kp	200	4	1	-	-	-	-	N	5 - Low	10	10			✔	Drainage
5	29°44'19.67"N	98°6'20.01"W	CD	5	Kp	15	3	0.5	-	-	-	-	C, O, F	15 - Low	20	20			✔	Hillside
6	29°44'19.40"N	98°6'20.06"W	CD	5	Kp	0.5	0.5	1.25	-	-	-	-	C, F	10 - Low	15	15			✔	Hillside

* DATUM: D WGS 1984

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 5-12-2025

Sheet 1 of 1

STATE OF TEXAS
S. CONNOR KEE
GEOLOGY
15303
LICENSED
PROFESSIONAL GEOSCIENTIST

5-12-2025

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

Attachment B

Stratigraphic Column[1, 2, 3]

System	Series	Group	Formation	Member	Thickness (Feet)
Quaternary	Recent	Alluvium (Qal)			0-15 ±
		Terrace Deposits (Qt)			5-20 ±
		Leona (Qle)			2-80 ±
Upper Cretaceous	Gulfian	Upper confining units, undivided (Ku)			
		Navarro and Taylor (Knt)			600 ±
		Austin (Ka)			130-350 ±
		Eagle Ford (Kef)			30-150 ±
	Comanche	Washita	Buda (Kb)		40-90 ±
			Del Rio (Kdr)		40-110 ±
			Georgetown (Kg)		2-20 ±
Lower Cretaceous		Edwards	Person (Kp)	Cyclic and marine (Kpcm)	10-100 ±
				Leached and collapsed (Kplc)	70-100 ±
				Regional dense (Kprd)	16-24 ±
			Kainer	Grainstone (Kkg)	50-60 ±
				Kirschberg evaporite (Kkke)	50-60 ±
				Dolomitic (Kkd)	110-140 ±
				Basal nodular (Kkbn)	20-70 ±
		Trinity	Glen Rose	Upper (Kgru)	350-800 ±

[1]Blome, C.D., Faith, J.R., Pedraza, D.E., Ozuna, G.B., Cole, J.C., Clark, A.K., Small, T.A., and Morris, R.R. 2005. Geologic Map of the Edwards Aquifer Recharge Zone, South-Central Texas. U.S. Geological Survey, U.S. Department of the Interior. Scientific Investigations Map 2873. Version 1.1. Scale 1:200,000

[2]Condon, S.M. and T.S. Dyman. 2006. "Chapter 2: 2003 Geologic Assessment of Undiscovered Conventional Oil and Gas Resources in the Upper Cretaceous Navarro and Taylor Groups, Western Gulf Province, Texas" in Petroleum Systems and Geologic Assessment of Undiscovered Oil and Gas, Navarro and Taylor Groups, Western Gulf Province. Western Gulf Province Assessment Team, U.S. Geological Survey, U.S. Department of the Interior.

[3]Martin, K.G. 1962. Stratigraphy of the Washita Group, South-Central Texas. Contributions to Geology of South Texas, South Texas Geological Society Special Publications.

Attachment C

Narrative Description of Site-Specific Geology

Project Description

The City of New Braunfels is proposing interceptor and siphon improvements along Gruene Road in Comal County. FNI personnel performed a literature review of project site geology and conducted a field survey on April 29, 2025.

Geological Stratigraphy and Structural Characteristics

The stratigraphy at the project site includes Quaternary alluvial deposits (Qal), terrace deposits (Qt), and the Leona formation (Qle), as well as the Cretaceous age Person formation (Kp). The collective thickness of the Person formation is approximately 170 to 180 feet in Comal County.

The project is located near the Balcones fault zone, so there is potential for faults and outcrops to exist within the project area. The project is also located near the boundary between the recharge zone and transition zone of the Edwards aquifer, where weathering and erosion have created an aquifer system of honeycomb and cave formations in the porous limestone. A known normal fault is shown on geologic maps of the surrounding area, roughly 1,200 feet to the northwest of the project site; however, no faults are mapped within the project site itself. FNI documented six features during the site visit, as discussed below. FNI did not observe any faults or bedrock outcrops during the site visit.

Soil Profiles

The Purves series consists of shallow, well drained soils with moderately slow permeability formed in interbedded limestone and marl. These soils occur on gently sloping to steep upland divides at slopes generally ranging from 1 to 40 percent.

The Oakalla series consists of very deep, well-drained soils formed in loamy alluvium derived from Cretaceous age limestone. These soils occur on floodplains and in river valleys at gentle slopes ranging from 0 to 2 percent.

The Boerne series consists of very deep, well-drained soils with moderately rapid to moderate permeability that formed in calcareous loamy alluvium derived from limestone. These soils occur on nearly level to gently sloping floodplains, terraces, and dissected plateaus at slopes ranging from 0 to 5 percent.

The above soils occur on the project site in the following associations:

Purves clay, 1 to 5 percent slopes (PuC): This association typically consists of clay and gravelly clay with bedrock below 48 inches. The soil type is well-drained and is not classified as prime farmland.

Oakalla silty clay loam, 0 to 2 percent slopes, frequently flooded (Ok): This association typically consists of silty clay loam with bedrock below 80 inches. The soil type is well-drained and is not classified as prime farmland.

Boerne fine sandy loam, 1 to 3 percent slopes, rarely flooded (BoB): This association typically consists of fine sandy loam and loam with bedrock below 62 inches. This soil type is well-drained and is not classified as prime farmland.

Site Assessment

FNI personnel conducted a site visit on April 29, 2025. The site visit focused on identifying karstic features around the proposed interceptor and siphon improvements. The geologic formations present in the surrounding area are well known for the development of karstic features close to the Balcones fault system. FNI conducted the site visit to search for specific karstic or dissolution features as potential indicators of active karst.

The proposed project includes interceptor and siphon improvements along Gruene Road that cross the Guadalupe River. The site generally drains to the Guadalupe River via stormwater runoff ditches. The field team did not observe any bedrock or geologic features within the project area. FNI documented six features during the site visit, all of which were classified as non-karst, closed depressions. All of these features have a low probability to facilitate rapid infiltration into the subsurface and are considered non-sensitive.

Photo 1. Feature 1. A 3-foot by 3-foot by 10-inch closed depression adjacent to Gruene Road to the west of the Guadalupe River. The depression was filled with organics, fine and coarse soil, and vegetation on initial inspection. Bedrock was not present.

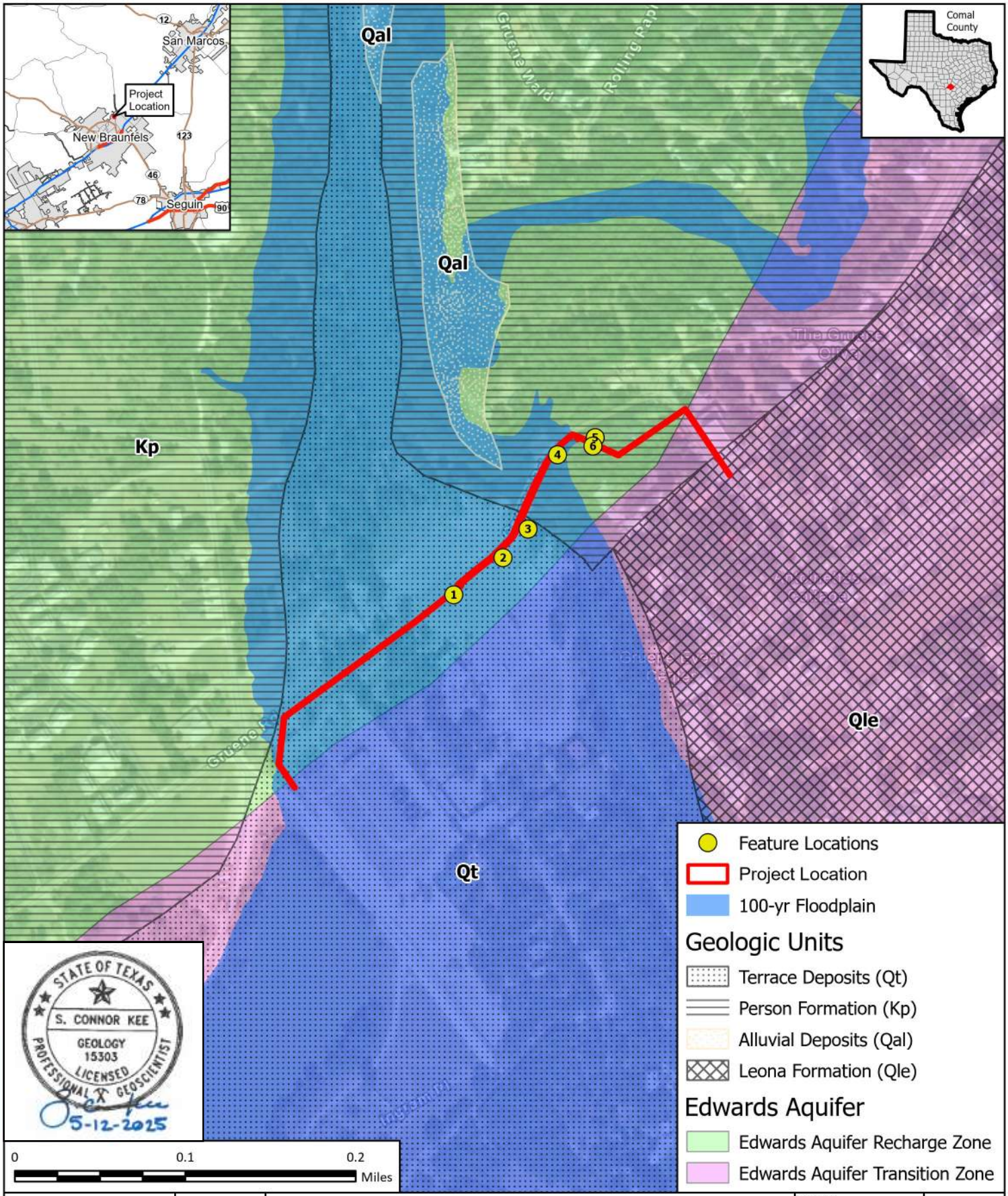
Photo 2. Feature 2. A drainage channel on the western bank of the Guadalupe River that conveys runoff. Bedrock was not observed.

Photo 4. Feature 3. Representative conditions along the Guadalupe River. The riverbed was covered by fine and coarse sediment; bedrock was not observed.

Photo 2. Feature 4. A drainage channel on the eastern bank of the Guadalupe River that conveys runoff. Bedrock was not observed.

Photo 3. Feature 5. Erosion under clay soil on a hillslope adjacent to Gruene Road to the east of the Guadalupe River. The maximum depth of these voids was 4 feet. Bedrock was not observed. Additionally, this area was located on a topographic high.

Photo 4. Feature 6. Unknown, unmapped pipes on a hillslope east adjacent to Gruene Road to the east of the Guadalupe River. The pipe was filled with soil and organic debris and could only be probed to a depth of 1.25 feet.



STATE OF TEXAS
S. CONNOR KEE
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PROFESSIONAL GEOSCIENTIST
5-12-2025

FREESE AND NICHOLS
FREESE AND NICHOLS, INC
10431 Morado Cir
Suite 300, Austin, TX
78759
(512) 617-3100

N W E S

City of New Braunfels

Gruene Siphon Improvements Project

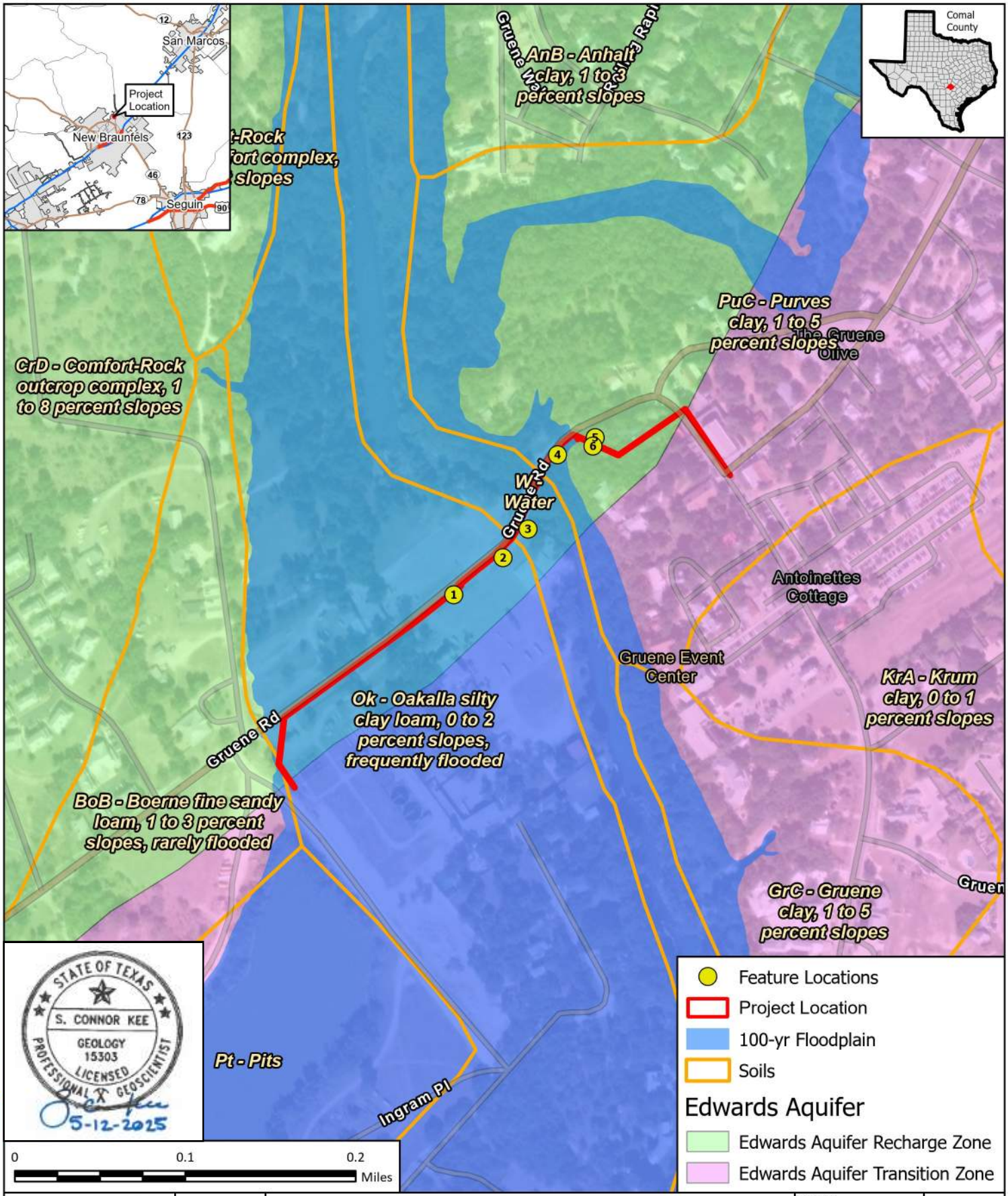
USGS Geologic Map

FN JOB NO	NBU20253
FILE NAME	NBU20253.mxd
DATE	5/12/2025
DESIGNED	CS
DRAFTED	CS

D.1
Attachment

Path: H:\ENVIRONMENTAL\Working\CS_Working\NBU20253\NBU20253.aprx

NAD 1983 StatePlane Texas North Central FIPS 4202 Feet



STATE OF TEXAS
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FREESE AND NICHOLS, INC
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Suite 300, Austin, TX
78759
(512) 617-3100

City of New Braunfels

Gruene Siphon Improvements Project

NRCS Soils Map

FN JOB NO	NBU20253
FILE NAME	NBU20253.mxd
DATE	5/12/2025
DESIGNED	CS
DRAFTED	CS

D.2
Attachment

Path: H:\ENVIRONMENTAL\Working\CS_Working\NBU20253\NBU20253.aprx

NAD 1983 StatePlane Texas North Central FIPS 4202 Feet

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: Gruene Wastewater Siphon

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: Adam Willard, P.E. / NBU Chief Engineer of Water Services
   Entity: New Braunfels Utilities
   Mailing Address: 355 FM 306
   City, State: New Braunfels, TX Zip: 78130
   Telephone: (830) 608-8943 Fax: _____
   Email Address: awillard@nbutexas.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: Erin Mills, P.E.
   Texas Licensed Professional Engineer's Number: 120172
   Entity: Freese & Nichols, Inc.
   Mailing Address: 9601 McAllister Freeway, Unit 1008
   City, State:San Antonio, Texas Zip: 78216
   Telephone:(210) 298-3898 Fax:_____
   Email Address:erin.mills@freese.com

Project Information

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

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

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

   100% Domestic _____ gallons/day
   _____% Industrial _____ gallons/day
   _____% Commingled _____ gallons/day
   Total gallons/day: _____

6. Existing and anticipated infiltration/inflow is 0 gallons/day. This will be addressed by: N/A.

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 _____, 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)*
See Attached Table Page			

Total Linear Feet: 2,875

(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 Gruene Road Water Reclamation Facility (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

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

   ☒ The City of NBU 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?*
18" SDR26 PVC WW Line	WW-5 Of --	9+84.75	Exisitng Manhole
18" SDR26 PVC WW Line	WW-5 Of --	10+08.12	Proposed Manhole
18" SDR26 PVC WW Line	WW-5 Of --	11+80.33	Proposed Manhole
18" SDR26 PVC WW Line	WW-6 Of --	14+47.53	Proposed Manhole

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
18" SDR26 PVC WW Line	WW-6 Of --	14+77.22	Proposed Manhole
18" SDR26 PVC WW Line	WW-8 Of --	28+35.00	Proposed Manhole
18" SDR26 PVC WW Line	WW-9 Of --	29+43.00	Proposed Manhole
18" SDR26 PVC WW Line	WW-9 Of --	31+89.63	Proposed Manhole
	Of		
	Of		

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

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

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

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

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

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 500'.

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***
Improvement 3 - 18" SDR26 PVC	WW-5 of	9+84.75 to 14+00
Improvement 3 - 18" SDR26 PVC	WW-8 of	25+39.01 to 29+00
	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*
Not Applicable	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*
See Attached Table Page				

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*
18" SDR26 PVC WW Line	MH-109	14+77.22	WW-6
18" SDR26 PVC WW Line	MH-111	29+43.03	WW-9

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*
18" SDR26 PVC WW Line	MH-111	29+43.03	WW-9
18" SDR26 PVC WW Line	MH-112	31+89.63	WW-9

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*
Not Applicable					

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]**	N/A of
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	DT-5 of

Standard Details	*Shown on Sheet*
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	N/A of
Typical trench cross-sections **[Required]**	of
Bolted manholes **[Required]**	DT-6 of
Sewer Service lateral standard details **[Required]**	N/A of
Clean-out at end of line **[Required, if used]**	DT-4 of
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	N/A of
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	DT-11 of
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	N/A of
Drop manholes **[Required, if a pipe entering a manhole is more than 24 inches above manhole invert]**	DT-5 of

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

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

    ☐ Survey staking was completed on this date: _____

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: Erin C. Mills

Date: 5/8/2025

Place engineer's seal here:

05/16/2025

Signature of Licensed Professional Engineer:

Appendix A-Flow Velocity Table

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

Table 10 - Slope Velocity

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

Pipe Diameter(Inches)	*% Slope required for minimum flow velocity of 2.0 fps*	*% Slope which produces flow velocity of 10.0 fps*
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)

Table 1. Pipe Description

Sheet No.	*Pipe Diameter (Inches)*	*Linear Feet (1)*	*Pipe Material (2)*	*Specifications (3)*
WW-5	18	415	SDR-26 PVC	NBU Item No. 510
WW-6	18	77	SDR-26 PVC	NBU Item No. 510
WW-6	10	423	HDPE	NBU Item No. 510
WW-6	8	423	HDPE	NBU Item No. 510
WW-7	10	231	HDPE	NBU Item No. 510
WW-7	8	121	HDPE	NBU Item No. 510
WW-7	6	110	HDPE	NBU Item No. 510
WW-8	10	249	HDPE	NBU Item No. 510
WW-8	8	148	HDPE	NBU Item No. 510
WW-8	6	101	HDPE	NBU Item No. 510
WW-8	18	197	SDR-26 PVC	NBU Item No. 510
WW-9	18	290	SDR-26 PVC	NBU Item No. 510

Table 5. Water Line Crossings

Sheet	*Line*	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance (LF)*	*Vertical Separation Distance (LF)*
WW-5	18" SDR26 PVC	STA 13+63	Crossing	N/A: Crossing Line	6.5
WW-5	18" SDR26 PVC	STA 13+22	Crossing	N/A: Crossing Line	4.5
WW-5	18" SDR26 PVC	STA XX to STA 14+00	Parallel	45	N/A: Runs Parallel
WW-6	18" SDR26 PVC	STA 14+00 to STA 19+00	Parallel	Min: 20; Max: 27	N/A: Runs Parallel
WW-6	18" SDR26 PVC	STA XX to STA 19+00	Parallel	Min: 4; Max: 9	N/A: Runs Parallel
WW-7	10" Siphon Pipe	STA 19+00 to STA 21+40	Parallel	Min: 5.5; Max: 9	N/A: Runs Parallel
WW-7	8" Siphon Pipe	STA 19+00 to STA 21+40	Parallel	Min: 9; Max: 26	N/A: Runs Parallel
WW-7	8" & 10" Siphon Pipe	STA 19+56	Crossing	N/A: Crossing Line	
WW-8	8" & 10" Siphon Pipe	STA 25+57	Crossing	N/A: Crossing Line	2.5
WW-8	10" Siphon Pipe	STA 24+00 to STA XX	Parallel	25	N/A: Runs Parallel
WW-8	18" SDR26 PVC	STA XX to STA 29+00	Parallel	Min: 2; Max: 8	N/A: Runs Parallel
WW-9	18" SDR26 PVC	STA 31+54	Crossing	N/A: Crossing Line	6.67
WW-9	18" SDR26 PVC	STA 29+43 to STA 31+35	Parallel	Min: 13; Max: 16	N/A: Runs Parallel

Attachment A. SCS Engineering Design Report

Innovative approaches
Practical results
Outstanding service

Gruene Wastewater and Inverted Siphon Improvements Project

Preliminary Engineering Report

Prepared for:

New Braunfels Utilities

March 2021

FNI Project Number:
NBU20253

Prepared for:

New Braunfels Utilities

Prepared by:

1251 Sadler Drive Bldg. One, Suite 1150
San Marcos, Texas 78666

Gruene Wastewater and Inverted Siphon Improvements Project

Preliminary Engineering Report

Prepared for:

New Braunfels Utilities

FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

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Prepared by:

FREESE AND NICHOLS, INC.
1251 Sadler Drive Bldg. One, Suite 1150
San Marcos, Texas 78666

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND AND DESCRIPTION

New Braunfels Utilities (NBU) has engaged the services of Freese and Nichols, Inc. (FNI) to prepare a Preliminary Engineering Report (PER) for the Gruene Wastewater and Inverted Siphon Improvements Project. The purpose of this report is to evaluate and provide recommendations on improvements for three (3) locations of the sanitary sewer collection system being impacted by the relocation of the existing Gruene Waste Water Treatment Plant (WWTP) to the new Gruene Water Reclamation Facility (WRF). The report will also include an analysis of any easement and permitting requirements, assessment of constructability, projected schedule, and estimated construction costs. Additionally, schematic layout drawings of existing conditions and a proposed site plan including piping and alternates will be provided. These improvements will occur at the three (3) locations which can be seen in **Figure 1**. This figure is also included in **Appendix A**.

Figure 1: Overall Map of Improvements 1, 2, and 3 Within the Gruene WRF Collection System

1.2 SUMMARY OF IMPROVEMENTS

1.2.1 Improvement 1

Improvement 1 is located at the new Gruene WRF where an existing 18-inch gravity main currently runs adjacent the new WRF and continues north to the existing Gruene WWTP. All flows will be rerouted to the new WRF; therefore, NBU intends to abandon a segment of the 18-inch line crossing the adjacent Koepp Property to the north of the new Gruene WRF.

1.2.2 Improvement 2

Improvement 2 is located along Gruene Road south of the Loop 337 bridge and less than 1000 feet west from the new Gruene WRF site. Approximately 100 linear feet (LF) of 18-inch sewer main downstream of NBU Manhole 2511 has been left unimproved while various projects have updated the system around it. NBU desires to bring this small segment to date with the rest of the collection system. Additionally, a new manhole will be installed on Gruene Road under the Loop 337 bridge and NBU Manhole 2511 will be replaced. The limits of this replacement include the 100 LF of sewer downstream of NBU Manhole 2511 and will terminate at the new manhole.

1.2.3 Improvement 3

Improvement 3 is located upstream of the existing Gruene WWTP. An inverted siphon is collecting sewer flows north of the Guadalupe River and running along Gruene Road under the bridge. The system is not operating as intended and NBU's operations department is unable to perform routine maintenance and inspections. Improvement 3 includes an evaluation and recommendations for the existing inverted siphon along Gruene Road as it crosses the Guadalupe River.

1.3 SITE INSPECTIONS

FNI conducted site inspections of existing conditions for Improvements 2 and 3. Improvement 1's location was not visited during the site inspection as it is an active construction site on which the New Gruene WRF is being built. FNI will visit this improvement site during Final Design Phase to observe field conditions in the vicinity of the proposed improvements.

1.3.1 Improvement 2 Site

While on Gruene Road observing Improvement 2's location, FNI observed NBU Manholes 7549, 2511 and a recently installed new manhole just south of the Loop 337 overpass. All three manholes are located to the west and just off the Gruene Road pavement within the right-of-way (ROW). The primary observation of note in this area was an outfall for a concrete storm culvert located approximately 10-feet north of Manhole 2511. The new manhole is approximately 40-feet north of the edge of the concrete culvert. To install a new sanitary sewer line from Manhole 2511 to the new manhole, the concrete outfall will have to be removed during the construction phase of Improvement 2 to allow for removal and replacement of the existing 18" line. The culvert will then be repaired following completion of the improvement. The culvert and manholes in relation to the culvert are shown in **Figures 5 through 7**.

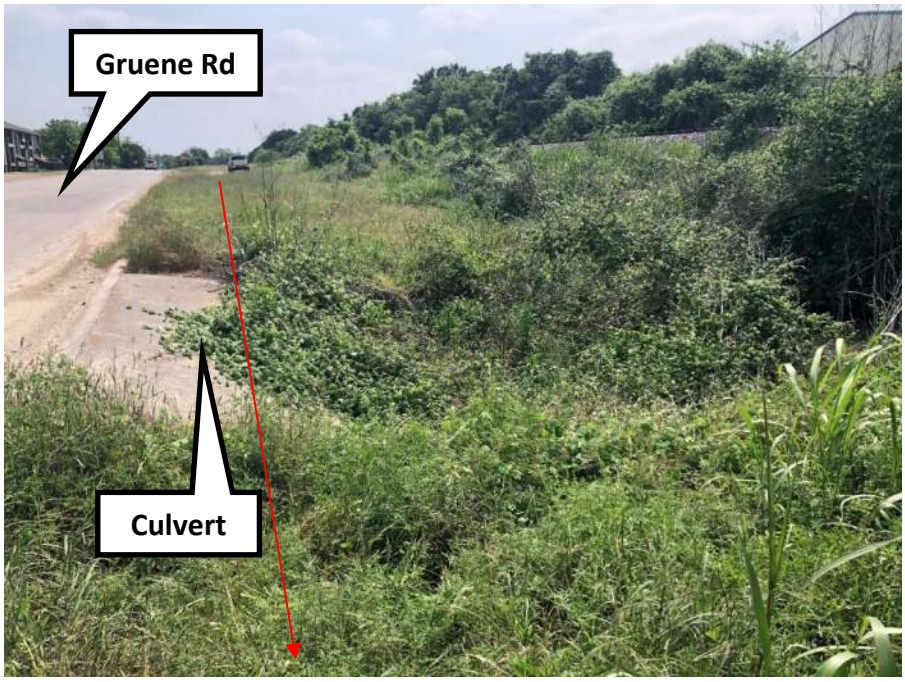


Figure 5: Storm Culvert Outfall on Gruene Rd (View to SW)

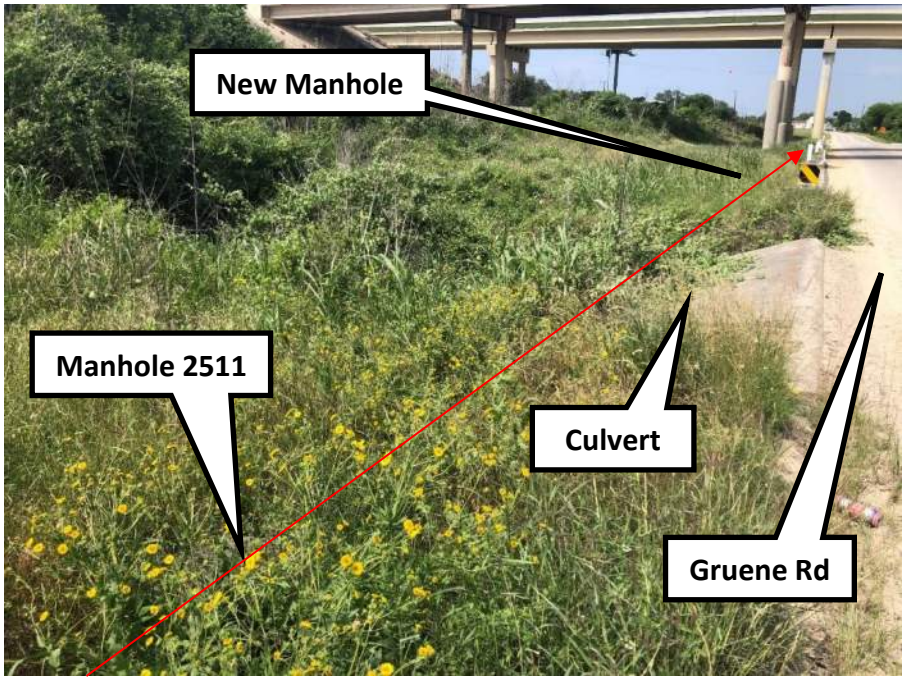


Figure 6: Manhole 2511 South of Culvert (View to NE)

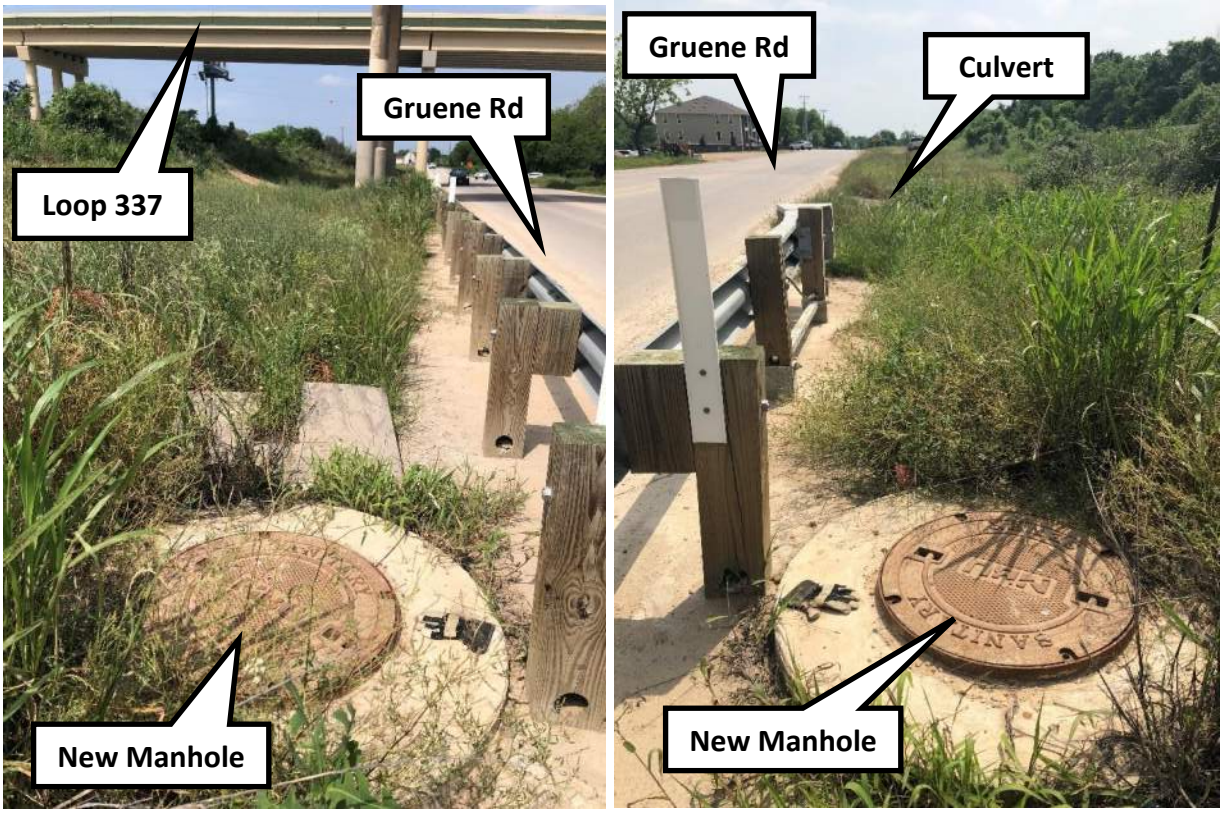


Figure 7: New Manhole North of Culvert (View to NE and SW, respectively)

1.3.2 Improvement 3 Site

While visiting Improvement 3's site, FNI identified the manhole in Gruene Road where the 12-inch sanitary sewer traversers across Gruene Road and then through Cantina del Rio restaurant parking lot, then feeds by gravity into the siphon collection structure located on a hill behind Cantina del Rio as seen in **Figure 8**.

Figure 8: Manhole in Gruene Road with 12" Gravity Sanitary Sewer to Siphon Structure (View to SW)

FNI was able to locate the siphon collection structure located on a hill behind the Cantina del Rio on the north side of the Gruene Road bridge. This structure is an approximately 10-foot-diameter structure with manhole access as pictured in **Figures 9 and 11**. The manhole lid is bolted down to aid in reducing emission of gas and odors. Downstream of the structure, the discharging lines appear to traverse west down a steep hill (approximately 45-feet) towards the bridge. Just north of the bridge's concrete footings and on the road shoulder FNI located three (3) valve boxes. Based off record data, this appears to be the location of the bends where NBU operators have experienced maintenance issues. These valve boxes can be seen in **Figure 12**.

Figure 9: Gruene Road Siphon Structure (View to SW along alignment)

Figure 10: Gruene Road Siphon Structure (View to NE to Cantina del Rio)

Figure 11: Gruene Road Siphon Structure (View inside structure)

Figure 12: Gruene Road Siphon Valve Boxes North of the Gruene Road Bridge (View to SW)

Figure 13: Inverted Siphon Alignment uphill to Collection Structure from Valves (View to NE)

Downstream of these valve boxes, the lines travel underneath the Gruene Road bridge. Currently NBU has one (1) 6-inch line and one (1) 10-inch line in service according to GIS data. These lines can be seen underneath the bridge in **Figure 15**. Based on a visual inspection, it appears that the lines and hangers are in good condition. The 6-inch and 10-inch lines were identified to be IPS – DR17 – PF3408 – AWWA C906 – PC100 – ASTM F714 C3 lines per line markings. Two (2) additional 12-inch HDPE lines were observed underneath the bridge on the far ends on either side of the inverted siphon lines and are unrelated to this project.

Figure 14: Gruene Road Bridge with Siphon Line Underneath (View to SW)

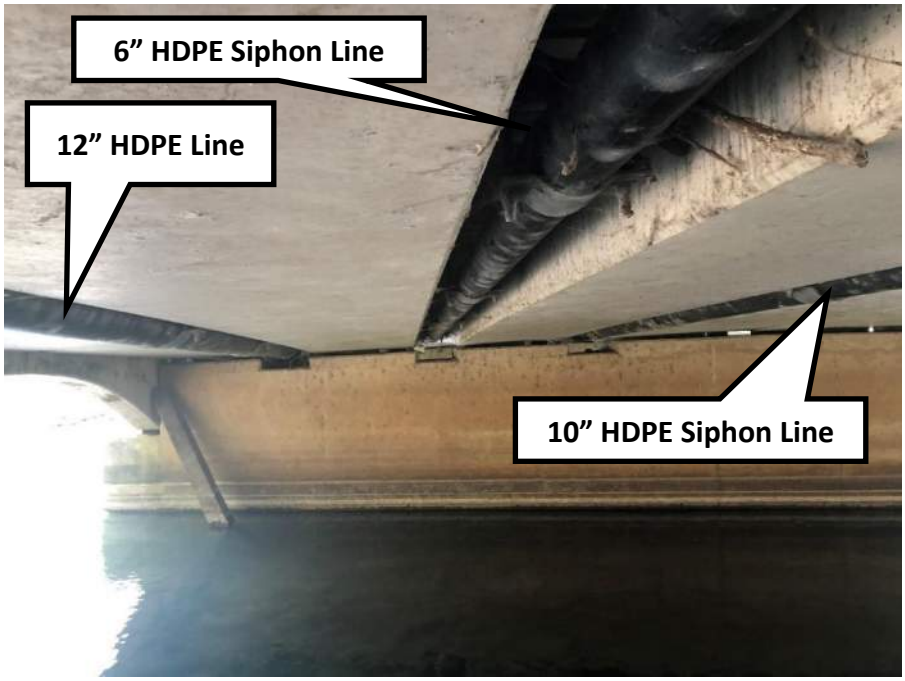


Figure 15: Siphon Lines Underneath the Gruene Road Bridge (View to SW)

The 6-inch and 10-inch HDPE lines continue for approximately 250-ft south of the Gruene Road Bridge. An effluent line from the existing Gruene WWTP to the Guadalupe River runs parallel to the siphon lines, as seen in **Figures 16 and 17.** FNI assumes this line will be abandoned once the new WRF comes online.

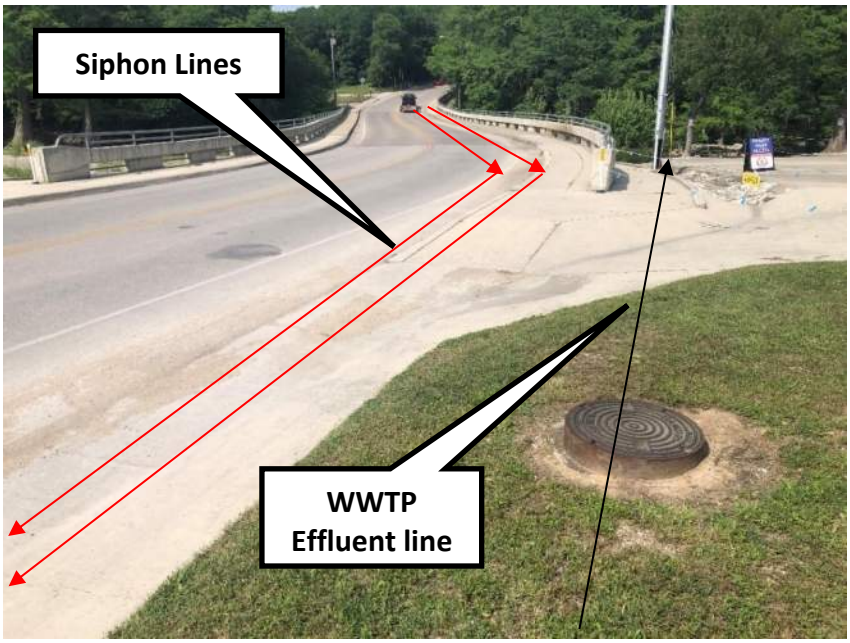


Figure 16: Siphon Lines parallel Effluent Line (View to NE)

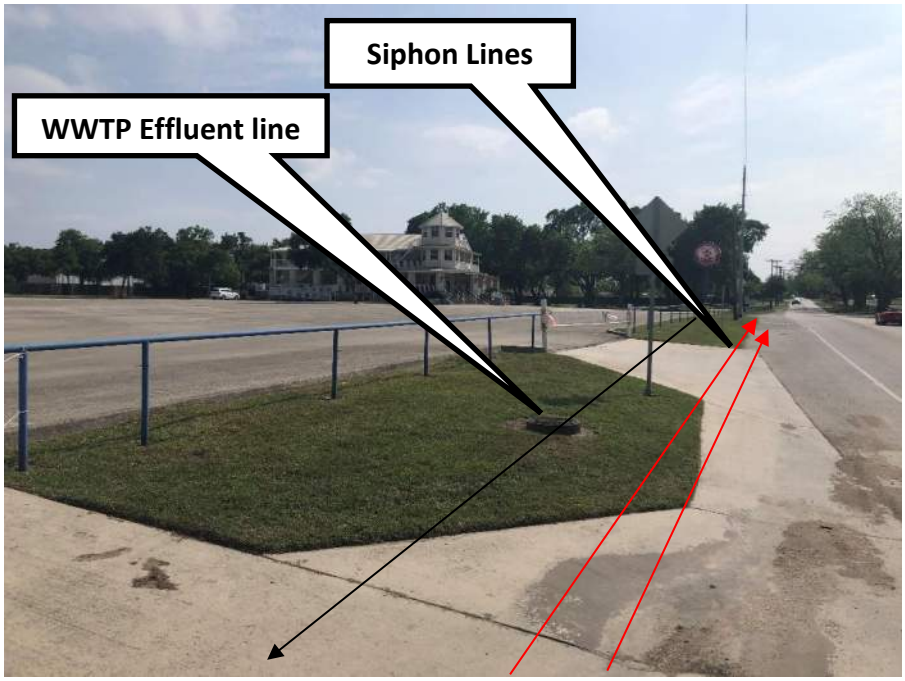


Figure 17: Rockin' R Business along Siphon Alignment (View to S)

The siphon lines run to additional valves where they bend to tie to the original cast iron lines as seen in **Figure 18**.

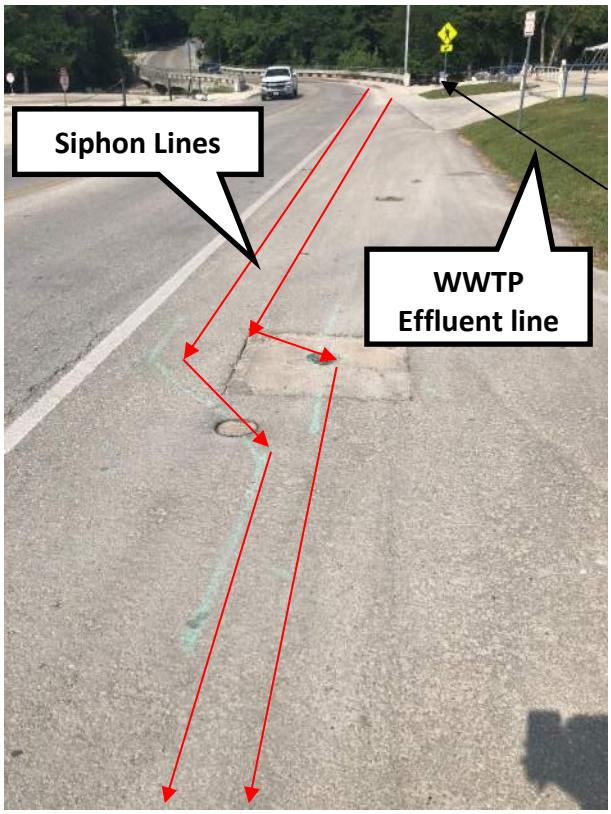


Figure 18: Siphon Line Bends and Valve Boxes (View to NE)

The siphon lines continue to run along Gruene Road before discharging into the existing Gruene WWTP headworks structure as seen in **Figures 19 and 20.**

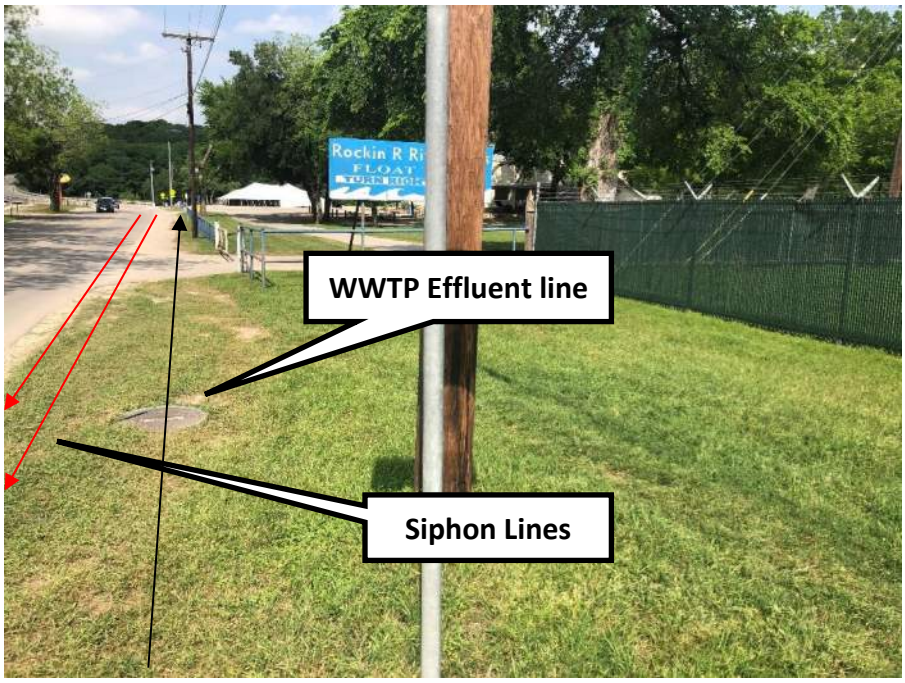


Figure 19: Northeast Corner of Existing Gruene WWTP (View to NE)

Figure 20: Existing Gruene WWTP Headworks (View to SE)

2.0 HYDRAULIC MODELING AND SIZING

Based on capacity analysis of the sewer segments discussed in this report, each segment of sewer is of sufficient size and does not need to be upsized at this time. For each improvement, capacity analysis conducted during preparation of NBU's 2018 Water and Wastewater Impact Fee Report (prepared by FNI) indicated that existing sewer size is capable of conveying peak wet weather flows through 2038 without surcharging the lines. Since no upsizing is required, each improvement should be sized the same as the existing infrastructure being replaced or rehabilitated.

Using Manning's equation, FNI completed initial hydraulic calculations for Improvements 1 and 2 based on existing line sizes using minimum and maximum velocities as defined by the Texas Commission on Environmental Quality (TCEQ) in 30 TAC §217.53(l). The minimum velocity for a gravity sewer line is 2 feet per second (fps), and the maximum velocity is 10 fps. The minimum and maximum allowable slopes are shown in **Table 1**.

Table 1: Hydraulic Calculations for Improvements 1 and 2

Improvement	Size (in)	Cross-Sectional Area (ft^2)	Hydraulic Radius (ft)	$R^{2/3}$	Min Velocity (fps)	Max Velocity (fps)	Min Slope	Max Slope
1	18	1.77	0.375	0.52	2	10	0.113%	2.83%
2	18	1.77	0.375	0.52	2	10	0.113%	2.83%

During design, FNI will endeavor to stay within the minimum and maximum slopes shown in **Table 1**. If this is not possible due to site constraints (natural grade, tie-in elevations, etc.), FNI will submit a variance request to TCEQ.

Improvement 3 is an inverted siphon, which is a pressure pipe. There are no slope requirements for pressure pipe. Per 30 TAC §217.53(l), the minimum velocity for an inverted siphon is 3 fps, and the maximum velocity is 10 fps. It has been noted by NBU operators that flows in the 8-inch siphon may not meet the minimum velocity requirement of 3 fps. One goal of Improvement 3 will be to bring the 8-inch siphon into compliance with TCEQ's minimum velocity requirements.

3.0 DESCRIPTION OF IMPROVEMENTS

3.1 IMPROVEMENT 1

The primary purpose of improvement 1 is to abandon the portion of the 18-inch sanitary sewer line that runs northeast across the Koepp Property adjacent to and north of the new Gruene WRF site. The existing 18-inch gravity main flows northeast along the northwest corner of the new Gruene WRF site and then approximately 750 feet across the adjacent north property owner before discharging into a manhole at Ewelling Lane. The extent of the abandonment includes land between the new Gruene WRF site and Ewelling Lane. From there the existing gravity lines convey flows to the existing Gruene WWTP, which is currently still in service. The new 36-inch Gruene WRF Interceptor re-routes flows from the existing Gruene WWTP to the new Gruene WRF and is being constructed as part of NBU's Gruene WRF project anticipated to be completed at the end of 2020. The existing Gruene WWTP is located approximately 3,200 LF to the north of the new facility site. However, since the plant is being relocated, flows in this gravity main need to be re-routed to the new WRF.

Improvement 1 will re-route the existing 18-inch gravity main installed in 1977 from the existing Gruene WWTP to the new Gruene WRF. Based on information obtained from, and discussions with FNI's Master Planning group, it appears that this area of the collection system is currently over-sized. Hydraulic modeling shows that 2038 peak wet weather flows in this area of the collection system can be conveyed by a sewer diameter as small as 12 inches. Improvement 1 consists of a new 12-inch gravity main that will connect the existing 12-inch main to the newly constructed 36-inch gravity main at the new Gruene WRF. This 36-inch gravity main discharges into the new Gruene WRF headworks.

FNI considered two alternative alignments when assessing this improvement. The first was to route the 12-inch line to the east in TxDOT ROW along the Loop 337 service road, then connect to the 36-inch gravity main (Gruene WRF Interceptor) on the south side of the new Gruene WRF. However, this alignment is not ideal, as it would require TxDOT permitting and coordination. The second route considered was to route the 12-inch gravity main east along the property line on the north side of the new Gruene WRF to connect to the 36-inch gravity main. This route is entirely in NBU-owned property and will not require any additional easements. Thus, FNI recommends that NBU construct the route option on the north side of the WRF. This improvement is shown in **Figure 21** and is included in **Appendix A**.

In discussions with NBU, and NBU Electric, and the City of New Braunfels (CoNB), FNI has identified the intent to install solar panels, walking trails, and other landscaping features throughout the property of the

new Gruene WRF site. Based on a preliminary figure developed by FNI which consolidates the work proposed by all parties involved, FNI has identified the potential for the presence of NBU Electric solar panels along the north side of the property in the vicinity of the recommended route. This figure is included in **Appendix B**. Further coordination with NBU Electric, the City of New Braunfels, and NBU pertaining to the placement of future solar panels and any other landscaping features along the north side of the property will need to occur prior to finalizing the alignment.

Based on record data for the existing 18-inch and 36-inch gravity mains, one notable design consideration identified by FNI is the approximate 40-foot elevation difference between the east and west sides of the new Gruene WRF property. Due to this elevation difference, FNI anticipates the need to install two (2) drop manholes in the alignment of the new 12-inch gravity main. Drop manholes will be designed in accordance with NBU standards and will have a maximum 8-foot drop distance. Additionally, the proposed 12-inch line should be installed at a 4.88% slope, which is the maximum per TCEQ standards. Plan and profile arrangements of the proposed 12-inch sanitary sewer will be developed in the detailed design phase of the project once topographic survey data has been obtained.

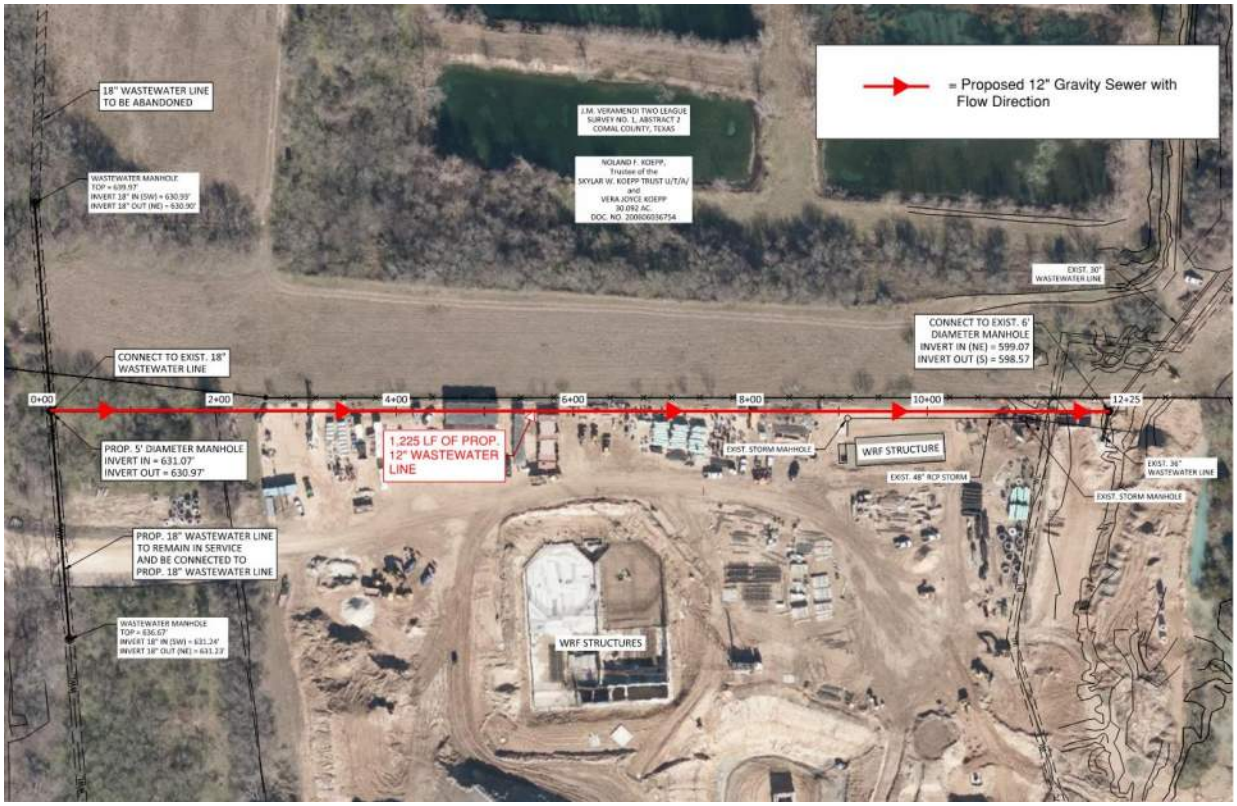


Figure 21: Improvement 1 at Gruene WRF

3.2 IMPROVEMENT 2

Improvement 2 consists of replacing approximately 100 LF of existing 18-inch sewer downstream of NBU Manhole 2511. Based on the information from FNI's Master Planning group, it appears that this area of the collection system is also currently over-sized. Similar to Improvement 1, hydraulic modeling shows that 2038 peak wet weather flows in this area of the collection system can be conveyed by a sewer diameter as small as 12 inches. In addition to replacing this segment of sewer, this improvement includes replacement of Manhole 2511 and construction of a new manhole at the end of the sewer replacement. This improvement is located on Gruene Road south of the Loop 337 bridge and the new Gruene WRF. All service connections which currently exist at Manhole 2511 will be maintained with the replacement manhole. The improvement serves to rehabilitate aging infrastructure in the area and allow for additional maintenance access with the addition of the new manhole. Conditions downstream of the 18-inch segment of sewer under the bridge is currently unknown. Once the lift station upstream of this sewer segment is abandoned, this 18-inch line can be inspected and a timeline with regards to replacement can be established. Upon inspection, if there is no immediate need to rehabilitate the segment of sewer, this segment can be replaced in 2024. The entirety of this improvement is in City of New Braunfels (CoNB) ROW, so no permanent easements will be required. However, a CoNB Road/Right-of-Way Excavation Permit will be required, as discussed in **Section 5**. Bypass pumping will be required throughout the duration of construction to transfer flows downstream in the system. This improvement can be seen in **Figure 22** of this report and is included in **Appendix A**.

Figure 22: Improvement 2 and Existing Infrastructure on Gruene Road

3.3 IMPROVEMENT 3

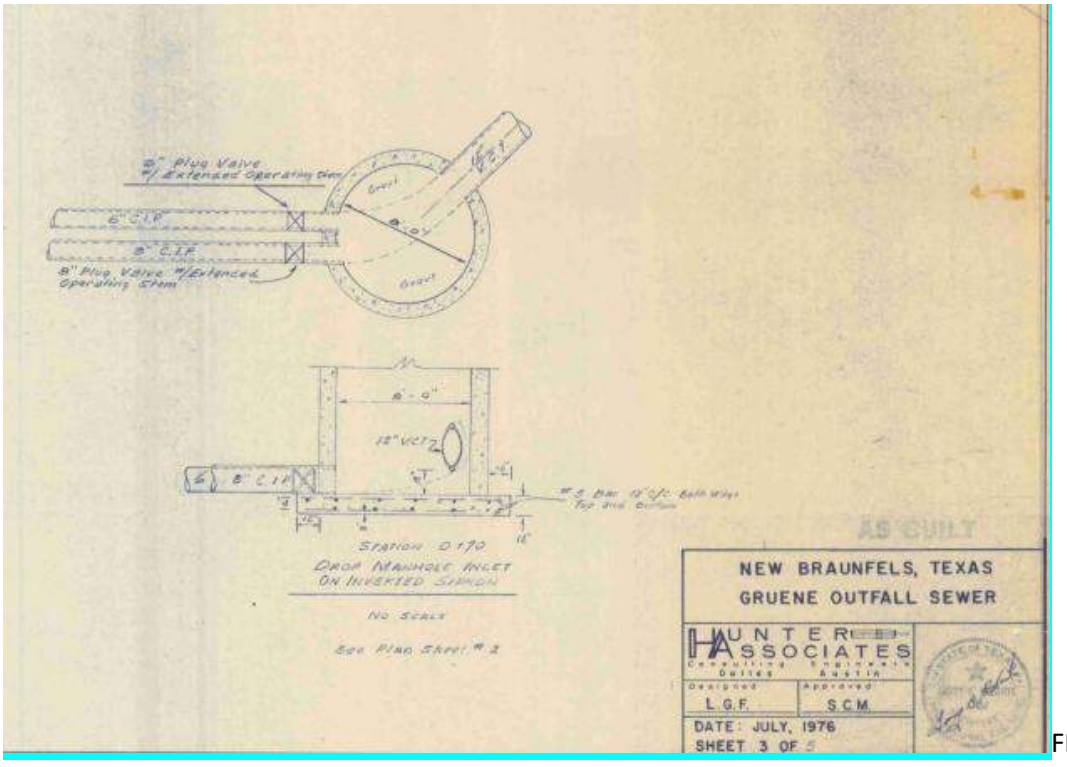
The existing inverted siphon extends from a 10-foot-diameter inlet structure on the north side of the Guadalupe River bridge, runs approximately 1,660-LF along Gruene Road, and terminates at the existing Gruene WWTP. The siphon conveys sanitary sewage through two cast iron lines originally installed in 1976. In 2007, the double-barrel lines were upgraded to 10-inch and 6-inch HDPE lines for the segments under the bridge as part of a TxDOT bridge project, but only for the segments traveling under the bridge. The inlet manhole and the lines upstream and downstream of the bridge are original components from the 1976 system. The first siphon line starts as a 6-inch cast iron line, transitions to a 6-inch HDPE (DR13.5 with an internal diameter of 5.58 inches) line under the bridge, and then transitions back to a 6-inch cast iron line after the bridge. The second siphon line starts as an 8-inch cast iron line, transitions to a 10-inch HDPE (DR13.5 with an internal diameter of 9.03 inches) line under the bridge, then transitions back to an 8-inch cast iron line after the bridge. The siphon lines ultimately discharge to the existing Gruene WWTP headworks, but the lines will be connected to a new structure designed by others as part of the Gruene WRF relocation. At the transitions between cast iron and HDPE both upstream and downstream of the bridge, the lines have a 45-degree bend and a gate valve. The inverted siphon is shown in **Figure 23**, which is also included in **Appendix A**.

Figure 23: Existing Gruene Road Siphon and Wastewater Infrastructure

Based on discussions with NBU maintenance personnel, FNI understands the current system is difficult to maintain due to the length of the siphon, the 45-degree bends, and the lack of access ports. NBU operators are currently unable to inspect or drain the barrels for routine cleaning. Although the lines cannot be inspected, clogging is occurring in the lines, as decreased flows have been observed where the siphon piping outfalls into the existing Gruene WWTP headworks.

FNI identified the following concerns that will serve as a focus for Improvement 3:

- The system does not have the capability of diverting flows to one barrel so that the other barrel can be taken out of service for cleaning and inspection.
- NBU has received odor complaints from businesses near the upstream inlet structure.
- The length of the siphon (approximately 1,660 LF) is longer than NBU can clean and inspect using closed-circuit television (CCTV) and NBU has indicated that the 45-degree bends could be causing the clogging that has been observed in the siphon.



FNI reviewed NBU's sewer system hydraulic model, which indicated that the 6-inch line reaches a velocity of 5.4 fps (170 gpm) but the 8-inch line only reaches 2.6 fps (245 gpm) and is probably lower once the line transitions to a 10-inch line. According to the model, the larger line is currently not reaching the minimum required

flushing velocity of 3 fps required by TCEQ. Inadequate flushing velocities could be contributing to the clogging the siphon is experiencing. FNI recommends the removal and replacement of the existing inlet structure, a 10-foot diameter manhole installed in 1976. The structure has a 12-inch line and 6-inch line entering from the north, and the siphon lines leaving to the west. The invert of the siphon lines exits at the same elevations according to the record drawings and FNI visual inspection. The siphon inlet structure record drawing is shown in **Figure 24**.

As previously discussed, NBU's sewer system hydraulic model indicates that the velocity in the smaller line is 5.4 fps but only 2.6 fps in the larger line. TCEQ requires a minimum velocity of 3 fps to be maintained in the siphon. The new inlet structure will include an adjustment to the flow split for both lines to ensure a minimum velocity of 3 fps is maintained in both lines during all flow conditions. Replacing the inlet structure will require replacement of approximately 130 LF of both siphon lines between the inlet structure and the bridge.

The odor nuisance at the inlet structure was reported by businesses just north of the structure. Siphons often result in the generation of unpleasant odors, primarily due to wastewater traveling long distances in a pressure pipe without ventilation. Hydrogen Sulfide (H_2S) is the predominate odor- and corrosion-causing compound in wastewater, and there are various technologies that can help reduce or eliminate the odor. To investigate the odor complaints further, FNI coordinated with Premier Magnesia to install hydrogen sulfide (H_2S) monitors in the manholes at the Casa Del Rio Restaurant and one in the downstream manhole on Gruene Road. These monitors indicated that in the month of July 2020, there were significant spikes in H_2S levels at both manhole locations. Readings reached highs between 40 and 50 parts per million (ppm). These spikes lasted for approximately two weeks then subsided during August to approximately 1 ppm at the Casa Del Rio and 2 ppm at the Gruene Road manhole. Occasional spikes did occur at both locations in August, however these were for very short durations before subsiding to insignificant levels. Monitoring logs for these monitors are presented in **Appendix C**. FNI recommends installing a vapor-phase odor control treatment unit at the inlet structure site to help control odors. For ease of operation, an activated carbon media is recommended. The life expectancy of this type of media has increased significantly in recent years, providing a cost-effective approach to eliminating odor problems. Depending on the volume of air needed to be treated the system footprint could fit within the structure and not require external power (passive system) or sit in a small footprint adjacent to the structure and require external power to operate and monitor. FNI will develop an in-depth analysis of what will be the most cost-effective system to reduce the odor nuisance at this location during the Final

Design Phase. Alternatives to vapor-phase treatment technology include a biological filtration system with and without second stage carbon polishing.

FNI also evaluated improvements to address NBU's concerns with cleaning and inspection of the siphon. FNI recommends replacing and realigning, to remove the 45 degree bends, the approximately 900 LF segment of lines between the inlet structure and HDPE section of lines on the bridge and the approximately 900 LF segment of lines between the bridge and the downstream outlet structure. Also adding vaulted access ports to both lines upstream and downstream of the bridge crossing the Guadalupe River bridge. The proposed access ports should be installed upstream and downstream of the bridge as shown in **Appendix A** and **Figure 25** below. With four access points (the inlet and outlet structures and the two additional ports), NBU will only need to have a reach of approximately 400 LF in either direction for cleaning and inspections via CCTV.

Figure 25: Existing Gruene Road Siphon Proposed Access Ports locations

The improvements can be completed in phases or all at once, depending on NBU preference. The improvements will require bypass pumping for most of the construction period, traffic control for the closure of one lane of traffic, and coordination with CoNB, TxDOT, and TCEQ. Most of the improvements are within TxDOT ROW and will require approval. As the site is within the Edward Aquifer Recharge Zone (EARZ), an Organized Sewage Collection System (SCS) Plan must be submitted to TCEQ for approval. Note

that if improvements are completed at different times, coordination, permitting, and approvals will need to be repeated.

4.0 SUMMARY OF EASEMENTS

FNI anticipates that NBU will not need to obtain permanent easements. Temporary construction easements may be required in some areas of Improvements 2 and 3 for construction purposes. Improvement 1 will be constructed within property NBU currently owns and thus will not require any easements for construction of the new line. Improvement 2 is within TxDOT ROW and may require temporary easements to install. Coordination with TxDOT should occur for both Improvements 2 and 3. The portion of Improvement 3 off Gruene Road in the vicinity of the siphon collection structure is in an existing NBU easement. The segment of lines that run under the bridge across the Guadalupe River fall under the jurisdiction of the Government Land Office (GLO). Further coordination with the GLO should be conducted to obtain an easement if the improvements impact this segment. FNI is not currently recommending any modification to the lines under the bridge therefore a GLO easement is not required.

The primary purpose of the improvement 1 is to abandon the portion of sanitary sewer line across the north property owners land between the Gruene WRF site and Ewelling Lane. Coordination between NBU and the property owner will be required during Final Design to facilitate if the existing sanitary sewer line will be abandoned in place or completely removed. If the line is abandoned in place, it will need to be determined if NBU will require the existing easement to remain at the abandoned line.

5.0 PERMITTING REQUIREMENTS

5.1 CITY OF NEW BRAUNFELS

For improvements that will require construction in CoNB ROW, a CoNB Road/Right-of-Way Excavation Permit will be required. Before construction can begin, the permit application must be completed, submitted, and approved by the City. The Design Team will work with NBU to submit the required CoNB permits when design is finalized.

5.2 TEXAS DEPARTMENT OF TRANSPORTATION

For improvements that will require construction in TxDOT ROW, a TxDOT ROW permit will be required. TxDOT ROW permits are acquired by submitting relevant sealed project drawings and a Utility Installation

Request Form, or Form 1082, via TxDOT's online Utility Installation Request (UIR) system. The Design Team will work with NBU to submit the required TxDOT permits when design is finalized.

5.3 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Because portions of Improvement 3 are located in the Edwards Aquifer recharge zone, an Organized Sewage Collection System (SCS) Plan must be submitted to TCEQ for approval. An SCS is required when any public or private sewerage system for the collection and conveyance of sewage to a treatment and disposal system. SCS is required when improvements include lift stations, force mains, gravity lines, and all appurtenances necessary for conveying wastewater from a generating facility to a treatment plant. An SCS Plan is a detailed plan that outlines best management practices that will be implemented in order to protect water quality when an organized SCS is constructed in the Edwards Aquifer recharge zone. An SCS Plan is not required for construction in the Edwards Aquifer transition or contributing zones.

An SCS plan must be submitted, reviewed, and approved prior to starting construction. It is common to submit the SCS plan when the project drawings are submitted for review. The fee for an SCS Plan is assessed at $0.50 per linear foot. The minimum fee is $650, and the maximum is $6,500. The Design Team will work with NBU to submit the required SCS Plan when design is finalized.

Based on the information obtained from TCEQ and the Environmental Protection Agency (EPA), there are no nationally documented environmental concerns within the locations of the Project. In a desktop review of U.S. Department of Agriculture (USDA) resources, it appears that the unified soil classification (UCS) in the vicinity of Improvements 1 and 2 is inorganic clay with low plasticity (CL). For Improvement 3, the UCS is inorganic clay with high plasticity (CH).

FNI has identified the presence of cultural resources on the western side of the new Gruene WRF site. This area should be avoided when routing Improvement 1's 18-inch gravity main so as not to disturb the area. Ensuring this area is not disturbed will alleviate additional permitting concerns, regulatory oversight, and potential fines associated with the cultural resources.

6.0 TRAFFIC CONTROL AND IMPACTS TO THE PUBLIC

Improvements 1 and 2 are located on NBU property or in CoNB ROW with construction access that will not significantly impact the public. Improvement 1 is located entirely on the NBU-owned Gruene WRF

site, and access to the site will be similar to the current construction access road from Gruene Road at the northwest corner of the property.

Improvement 2 is located in CoNB ROW, and the majority of construction will take place outside the pavement of Gruene Road. Traffic control for the improvement is expected to be limited to temporary flaggers directing traffic during construction and one lane closure. The Texas Manual of Uniform Traffic Control Devices (TMUTCD) provides the minimum traffic control guidelines for the project. TxDOT standard traffic control details will be used for the project, and special details or notes will be added to the construction plans where required by the regulatory agency.

Improvement 3 will require a detailed traffic plan to address the public and traffic control requirements. Although construction will be primarily outside of Gruene Road pavement limits, siphon improvements may be required on the northeast corner of the bridge with limited construction space next to the road. The concrete apron where the existing siphon valves are located next to the road also serves as a pedestrian walkway (but not an ADA-compliant sidewalk). There is limited visibility for vehicles traveling from the south across the bridge at the corner where the construction will occur. Flaggers and potential lane shutdowns will be required to direct vehicles and pedestrians to the other side of the road/bridge during construction. Similar traffic and pedestrian control measures will be required for the construction occurring south of the bridge to the existing WWTP, especially with Rockin' R River Rides and other tourist attractions located along the sanitary sewer alignment.

7.0 PROJECT SCHEDULE

FNI considered both phasing and duration when compiling the schedule. Due to the odor concerns of the nearby businesses, the odor control design of Improvement 3 will be the first phase of final design with an expedited design schedule that will lead straight to construction. NBU has indicated that construction of Improvements 1 and 2 are currently not within the 5-year Capital Improvements Plan (CIP) budget and therefore FNI will complete design of those improvements but construction may not occur for several years. The major project schedule milestones are outlined below:

- Final Design Start: March 2021
- Final Design Completion (Odor Control): August 2021
- Final Design Completion (Non-Odor Control): September 2021

- Advertise/Bid/Award (Odor Control): August – November 2021
- Construction (Odor Control): November 2021 – March 2022
- Construction (Non-Odor Control): TBD

7.1 CONSTRUCTION PHASING AND SEQUENCING

FNI has not identified any engineering or design considerations which would require one improvement to be finished before any other besides the need to install odor control for Improvement 3, so the improvements do not need to be phased in any specific order for design purpose. However, FNI does recommend that NBU require the contractor to complete Improvement 3 outside of the summer months. Also, as previously stated, only construction of the odor control for Improvement 3 is currently within the NBU 5-year CIP budget.

With Rockin' R River Rides located on the south side of the bridge off the east side of Gruene Road, construction would be least disruptive to tourism activities if the improvements are completed outside of the peak months of this business. Additionally, completing the improvements before summer would resolve the concerns of the owners of the Gristmill Restaurant and Cantina del Rio regarding odors from the siphon collection structure prior to peak season. These restaurants are located on the north side of the Gruene Road bridge, just east of the collection structure.

7.2 DURATION

As for the odor control improvements, FNI estimates 90 days of construction to reach substantial completion and 30 days to reach final completion. This construction schedule does not include mobilization or submittal reviews. In this estimation, FNI did not assume that improvements would be constructed simultaneously. However, it is possible that a contractor may choose to construct the improvements simultaneously to reduce the construction duration. It is estimated that Improvement 1 will take approximately one month, Improvement 2 will take three weeks. The remaining non-odor control items of Improvement 3 is anticipate to take two months.

8.0 OPINION OF PROBABLE CONSTRUCTION COSTS

An Opinion of Probable Construction Costs (OPCC) is an attempt to provide a reasonable estimate for construction costs for a project. Not included in OPCCs are fees associated with design, surveying, environmental studies, geotechnical studies, land acquisition, legal fees, etc.

The American Association of Cost Engineers (AACE, now AACE International) defines five levels of cost estimates for a project in their Recommended Practice No. 56R-08. AACE classifications are a widely accepted guideline within the heavy civil construction industry for defining levels of design deliverable maturity and expected range of accuracy for associated project cost opinions. AACE classifications range from Class 5 to Class 1 for the lowest to highest level of project definition. The purpose of the AACE classifications is to improve communication among project stakeholders involved with preparing, evaluating, and using cost opinions. The guidelines are intended to help avoid inappropriate decisions caused by misunderstandings of cost opinions and what they are expected to represent.

This is a Class 4 OPCC. Per AACE, a Class 4 estimate corresponds to a maturity level of project design deliverables between 1 and 15 percent. Based on AACE guidelines and experience on similar projects, FNI estimates that the true project construction cost for the proposed design concept can be expected to fall within -20 to +30 percent of the Class 4 OPCC.

Preparation of an OPCC involves the use of data derived from several sources with an overall goal of obtaining a reasonable and defensible expectation of costs for a specific level of project maturity. Sources of data used in preparation of this OPCC include, but are not limited to, construction data aggregation services (e.g., RSMeans), similar past projects performed by FNI, professional experience and engineering judgment, vendor quotes, and manufacturer and supplier quotes.

Unit prices shown in the OPCC are assumed to include direct project costs, overhead, and profit for each line item. Except where explicitly noted, indirect project costs (e.g., bonds, safety program, quality control, surveying, insurance, warranties, taxes, etc.) are assumed to be subsidiary to the major construction work items listed in the OPCC. Unit prices referenced from past projects have been adjusted to 2020 dollars using the Engineering News-Record Construction Cost Index.

An OPCC is a prediction based on available information at the present time to represent a forecast of conditions at some point in the future. As such, an OPCC is necessarily an approximation and thus has an inherent level of uncertainty. Unit prices and quantities associated with each line item shown in the OPCC

are subject to some variability. In addition, most large-scale construction projects encounter cost requirements during bidding and/or construction that could not have been reasonably identified during the design phase. An overall contingency of 30 percent has been included in the OPCC to account for this uncertainty. This amount was selected based on the quantity and quality of available information for design, the current maturity of the project, experience on similar past projects, and engineering judgment.

The contingency is the cost assigned to the unknowns in the definition of the project. It is intended to account for construction costs that have not yet been identified due to the project maturity and should be expected to be fully used for construction. Many project owners or funding agencies include their own contingency to a budgetary allocation to establish the amount of funding necessary to construct the project. This additional contingency is intended to provide a ceiling so that costs are more likely to fall below the budget allocation and additional funding requests are avoided. This additional contingency has not been included in the OPCC.

Unless otherwise stated, all dollar values presented in this report can be assumed to be nominal values with a price base of 2020. If values are to be used in a year other than 2020, they should be adjusted for factors that affect nominal prices over time, as appropriate.

Appendix D summarizes the OPCC for the Gruene Wastewater and Inverted Siphon Improvements Project. This Class 4 OPCC is $1,826,244. Please note FNI's OPCC does not include any factors to account for the ongoing COVID-19 government-enforced closures worldwide which could potentially impact material, equipment, and/or labor costs on the project. In addition, the impact on construction schedules due to the COVID-19 pandemic is unknown.

9.0 SUMMARY AND RECCOMENDATIONS

Three improvements were evaluated and discussed in this report of the proposed Gruene Wastewater Improvements Project. Each of these improvements were derived from detailed discussions with NBU operations based on the inefficiencies within the Gruene WRF collection basin. **Figure 1** shows the location of the improvements. **Section 3** describes each in detail. Following the recommendations based on the analysis of each improvement:

1. Improvement 1 connects the existing 18-inch gravity main which runs north on Gruene Road to the influent piping of the new Gruene WRF by a new 1,225 LF 12-inch gravity main. The remaining gravity main through the Koepp property approximately (800-LF) is to be abandoned in place.

2. Improvement 2 will replace approximately 100 LF of 18-inch sewer main downstream of NBU Manhole 2511. This replacement will be in place of the existing sewer and include new 12-inch line. Additionally, NBU Manhole 2511 will be replaced and a new manhole will be installed at the end of this line replacement to increase maintenance accessibility of the line.

3. Improvement 3 will occur at the existing inverted siphon on Gruene Road. FNI recommends four improvements that will address maintenance, odor control and improve the system reliability. These improvements include the following:

    - Install a temporary odor control treatment unit at the inlet structure site to help control odors. These improvements will provide the immediate concerns identified by NBU operations.

    - Replace the existing inlet structure that will include an adjustment to the flow split for both lines to ensure a minimum velocity of 3 fps is maintained in both lines during all flow conditions. This improvement will be required if TCEQ finds the velocity in the siphon is below minimum requirements.

    - Replace the existing siphon lines from the inlet structure to the HDPE section north of the river and south of the Guadalupe River to the outlet structure.

    - Install access ports and force main clean-outs to both siphon lines, which will allow NBU to pump the lines dry, clean them, and inspect via CCTV in both directions.

NBU can choose to implement all Improvements as separate projects over several years or as one project. Due to the odor concerns of the nearby businesses, the odor control design of Improvement 3 will be the first phase of final design with an expedited design schedule that will lead straight to construction. Implementing all the remaining improvements as one construction project will save on construction dollars and time will have less of an impact to the community.

The total cost for the improvements as recommended in this report as presented in **Section 8** is $1,826,244. The odor control improvements are estimated to take 30 days for submittal reviews, 90 days to reach substantial completion and 30 days to reach final completion for a total of 150 days of construction time.

APPENDIX A
Report Figures

Two-Way Cleanout Locations

Inlet Structure

Outfall at Headworks

Gruene Lift Station

Sleepy Hollow Lift Station

Gruene WWTP

ERVENDBERG AVE

Guadalupe River

NEW BRAUNFELS ST

HUNTER RD

RAPIDS RD

GRUENE RD

SUNNYBROOK DR

KNIGHT CV

8" F.M.

4" F.M.

12" F.M.

WWTP

LS

0 150

SCALE IN FEET

FIGURE 1
NEW BRAUNFELS WATER UTILITIES
GRUENE BRIDGE SIPHON
LEGEND

- Lift Station
- WWTP
- Existing Wastewater Line
- Existing Siphon
- Force Main
- Road
- Stream
- City Limit
- 100 yr Flood Plain

NBU

FREESE AND NICHOLS

Created By Freese and Nichols, Inc.
Job No.: NBU20253
Location: H:\PIPES_PUMPS\Final_Exhibits\Figure_1-Gruene_Siphon.mxd
Updated: Tuesday, September 15, 2020 10:59:10 AM

Segment Updated in 2007

Inlet Structure

Outfall at Headworks

Gruene Lift Station

Sleepy Hollow Lift Station

Gruene WWTP

Guadalupe River

ERVENDBERG AVE

NEW BRAUNFELS ST

HUNTER RD

RAPIDS RD

GRUENE RD

SUNNYBROOK DR

KNIGHT CV

8 F.M.

4 F.M.

12 F.M.

WWTP

LS

0 150

SCALE IN FEET

FIGURE 1
NEW BRAUNFELS WATER UTILITIES
GRUENE BRIDGE SIPHON
LEGEND

- Lift Station
- WWTP
- Existing Wastewater Line
- Existing Siphon
- Force Main
- Road
- Stream
- City Limit
- 100 yr Flood Plain

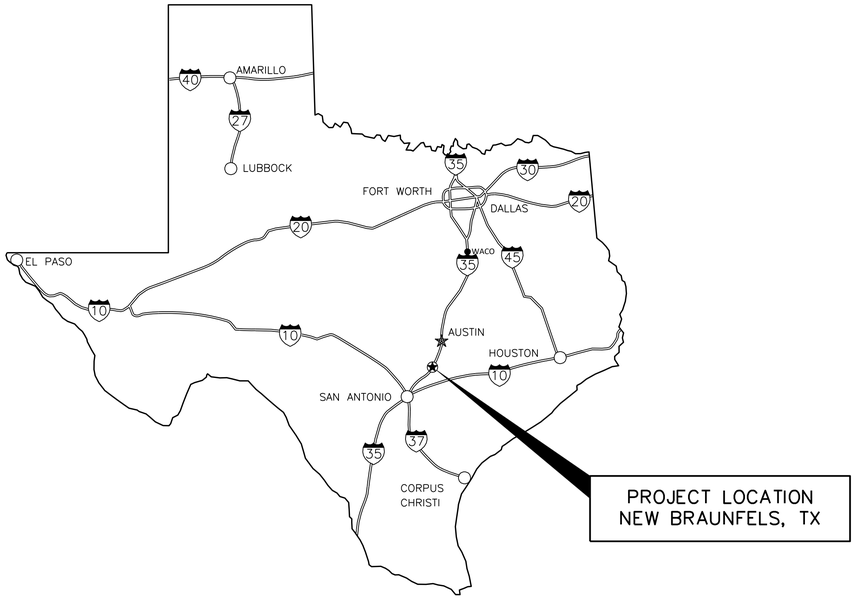
NBU

FREESE AND NICHOLS

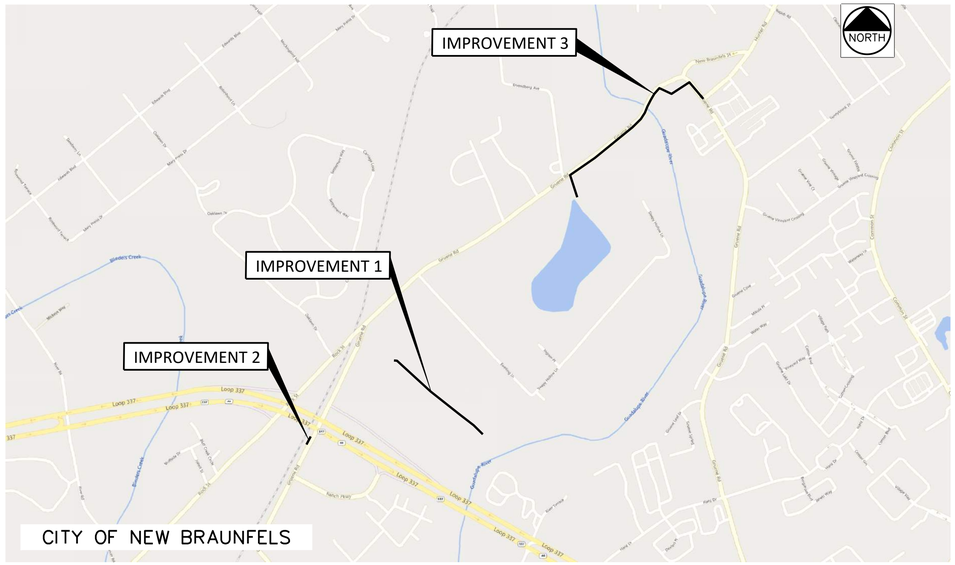
Created By Freese and Nichols, Inc.
Job No.: NBU20253
Location: K:\PIPES_PUMPS\Final_Exhibits\Figure_1-Gruene_Siphon.mxd
Updated: Tuesday, September 15, 2020 10:59:10 AM

Site Plans and Final Plan and Profile Sheets

NEW BRAUNFELS UTILITIES
GRUENE ROAD SEWER MAIN
REHABILITATION / RELOCATION
(GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS)



PROJECT LOCATION
N.T.S.



VICINITY MAP
N.T.S.

CITY OF NEW BRAUNFELS NOTES:

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID. THE MOST CURRENT EDITIONS OF THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS STANDARD DETAILS.
2. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF WORK OF THE ENGINEER OF RECORD.
3. PRIOR TO THE START OF THE CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF NEW BRAUNFELS TO SCHEDULE A PRECONSTRUCTION MEETING.
4. FOR PUBLIC INFRASTRUCTURE PERMIT (SC) OR SITE PREP PERMIT (SD) PROJECTS:
   - FOR INSPECTIONS, YOU MUST CALL BEFORE 12:00 P.M., 48 HOURS PRIOR TO YOUR INSPECTION REQUEST.
   - EACH INSPECTION WILL BE ALLOTTED 1 HOUR UNLESS YOU REQUEST MORE TIME.
   - ONCE YOUR REQUEST HAS BEEN ACCEPTED, YOU WILL RECEIVE A CALL FROM THE CITY OF NEW BRAUNFELS INSPECTOR.
5. TYPE 3 DEVELOPMENT
6. FIRM PANEL NO. 48091C0455F EFFECTIVE DATE 9/2/2009. FEMA FLOOD ZONES X AND AE.
7. LOCATED IN THE EDWARD'S AQUIFER TRANSITION ZONE AND EDWARD'S AQUIFER RECHARGE ZONE.

New Braunfels Utilities

APRIL 2025
ISSUED FOR CONSTRUCTION

FREESE AND NICHOLS
9601 McAllister Freeway Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Fax - (210) 298-3801
Web - www.freese.com

FNI PROJECT NO. NBU20253

WATER IS A PRECIOUS COMMODITY IN THE STATE OF TEXAS AND NEW BRAUNFELS UTILITIES (NBU) IS PASSIONATE ABOUT PROTECTING THE LOCAL RESOURCE. NBU'S CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ACQUIRING A FIRE HYDRANT METER SO THAT ALL WATER USED FOR CONSTRUCTION OR TESTING PURPOSES ARE PROPERLY ACCOUNTED FOR. NBU WILL NOT TOLERATE ANY WATER THEFT, REGARDLESS OF THE AMOUNT. IF WATER THEFT IS DISCOVERED NBU'S CONTRACTOR SHALL BE SUBJECT TO MONETARY PENALTIES, CRIMINAL CHARGES, AND STOPPAGE OF ALL CONSTRUCTION ACTIVITIES RELATED TO THE PROJECT. COSTS ASSOCIATED WITH ANY WORK STOPPAGE RESULTING FROM WATER THEFT SHALL BE AT THE FULL EXPENSE OF THE CONTRACTOR.

DOCUMENTS ISSUED FOR CONSTRUCTION

These "Issued for Construction" Contract Documents have been prepared by revising the Bidding Documents to record references to addenda, field orders or change orders issued as of 04/18/2025

The Bidding Documents may have been revised to incorporate these revisions directly into the "Issued for Construction" Contract Documents. Contractor is responsible for determining that these documents are consistent with their understanding of the Bidding Documents as modified per the appropriate provisions of the Contract Documents. The Bidding Documents, as modified per the appropriate provisions of the Contract Documents, take precedence over these "Issued for Construction" documents.

STATE OF TEXAS
ERIN C. MILLS
120172
LICENSED PROFESSIONAL ENGINEER
04/22/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

SHEET INDEX

SHEET # DESCRIPTION

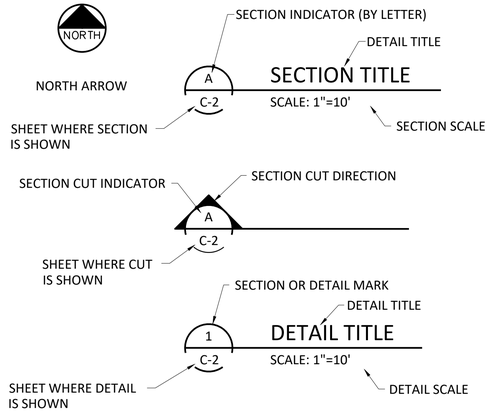
* SHEET PROVIDED BY BIOAIR

EXISTING KEY LEGEND:

- OHE — OVERHEAD UTILITY LINE
- UE — UNDERGROUND ELECTRIC
- EDGE OF PAVEMENT
- BACK OF CURB
- X — FENCE
- SLOPE TOP (GRADE)
- SLOPE BOTTOM (GRADE)
- GRADE BREAK (GRADE)
- EDGE OF CONCRETE
- GUTTER FLOWLINE
- PROPERTY/RIGHT-OF-WAY LINE
- EDGE OF GRAVEL
- SS — SANITARY SEWER LINE
- WL — WATER LINE
- RAILROAD TRACK
- G — UNDERGOUND GAS
- STORM DRAIN LINE
- TREE CANOPY
- UTILITY EASEMENT
- BUILDING
- EDGE OF WATER
- RETAINING WALL
- CENTERLINE OF ROAD
- UT — UNDERGROUND TELEPHONE
- FLOODPLAIN
- LOC — LIMITS OF CONSTRUCTION

PROPOSED LEGEND:

- SANITARY SEWER LINE
- /SS/ — /WL/ — UTILITY TO BE ABANDONED AND GROUT FILLED
- SF — PROPOSED SILT FENCE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STEEL CASING
- PROPOSED FENCE (WOOD)
- PROPOSED ASPHALT PAVEMENT REPAIR
- PROPOSED GRAVEL REPAIR
- PROPOSED CONCRETE REPAIR HATCH
- PROPOSED TXDOT 432 12 IN DRY RIPRAP



EXISTING SYMBOL LEGEND:

- 1/2 INCH IRON ROD FOUND
- 1/2 INCH IRON ROD WITH YELLOW PLASTIC CAP"4233" FOUND
- 1/2 INCH IRON ROD WITH ALUMINUM DISK STAMPED "LCRA" FOUND
- 1/2 INCH IRON ROD WITH YELLOW PLASTIC CAP "KOLODOZIE" FOUND
- 1/2 INCH IRON ROD WITH YELLOW PLASTIC CAP "4907" FOUND
- 1 INCH IRON BAR FOUND
- 60D NAIL SET FOR TRAVERSE POINT
- MAG NAIL FOUND
- MONITORING WELL
- WATER METER
- WV — WATER VALVE
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- SPRINKLER HEAD
- WATER SPIGOT/FAUCET
- SANITARY SEWER MANHOLE
- C.O. — SANITARY CLEAN OUT
- GV — GAS VALVE
- GAS METER
- POWER POLE
- ANCHOR GUY WIRE
- CONDUIT RISER
- CONTROL POINT
- M — METER ASSEMBLY WITH BOX
- CONTROL POINT
- BORING POINT
- EBOX — ELECTRICAL BOX
- JB — JUNCTION BOX
- ELECTRICAL VAULT
- LIGHT POST
- ELECTRIC METER
- STORM MANHOLE
- COLUMN
- TREE STUMP
- BUSH
- 560 — TREE AND TAG NUMBER
- A/C — AIR CONDITION PAD
- BRACE POLE
- MARKER POST
- FLAG POLE
- POST
- BOLLARD
- MAILBOX
- TRASH RECEPTACLE/CAN
- SIGN
- SINGLE POST SIGN
- BORE
- TRAFFIC CONTROL BOX
- RAILROAD SIGNAL
- GUARD POST
- GRILL
- HANDICAP RAMP
- BENCH
- GATE
- COL — COLUMN PIER

ABBREVIATIONS

PROP.	PROPOSED
EXIST.	EXISTING
TOC	PROP. TOP OF CONCRETE ELEVATION
FF	PROP. BUILDING FINISH FLOOR ELEVATION
FL	PROP. FLOW LINE ELEVATION
℄	CENTER LINE
R.O.W.	RIGHT OF WAY
TBM	TEMPORARY BENCH MARK
WL	WATER LINE
SS	SANITARY SEWER
DI	DUCTILE IRON
MJ	MECHANICAL JOINT
CAV	COMBINATION AIR/VACUUM VALVE
ARV	AIR RELEASE VALVE
SAN.	SANITARY
T.O.P.	TOP OF PIPE ELEVATION
T.O.S.	TOP OF SLAB ELEVATION
TP1594.50	PROP. TOP OF PAVEMENT ELEVATION
NG	NATURAL GROUND
NSPI	NO SEPARATE PAY ITEM
MH	MANHOLE
V.C.	VITRIFIED CLAY
A.C.	ASBESTOS CEMENT
BFV	BUTTERFLY VALVE
NSPI	NO SEPARATE PAY ITEM
R.O.W.	RIGHT OF WAY
CMP	CORRUGATED METAL PIPE
INV.	INVERT ELEVATION
CMU	CONCRETE MASONRY UNIT
PM	POLYMER CONCRETE MANHOLE
FRP	FIBERGLASS REINFORCED PLASTIC

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS — ERIN C. MILLER — 120172 — LICENSED PROFESSIONAL ENGINEER — 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
GENERAL

SHEET INDEX AND LEGEND

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
DRAWN CJG
CHECKED -
FILE NAME GN-ALL-NOTES.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET G-1
SEQ.

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UTILITY COMPANY NOTIFICATION:

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (SEWER, WATER , ELECTRIC)	830-629-8400
TIME WARNER CABLE	210-835-1459
AT&T	210-283-1626
CENTERPOINT GAS	830-643-6434
TEXAS ONE CALL	800-545-6005

NEW BRAUNFELS UTILITIES GENERAL CONSTRUCTION NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THE PROJECT SHALL BE APPROVED BY NEW BRAUNFELS UTILITIES AND COMPLY WITH THE CURRENT "NEW BRAUNFELS UTILITIES WATER SYSTEMS CONNECTION/CONSTRUCTION POLICY".
2. CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE PLANS FROM THE CONSULTANT OR ENGINEER AND NOTIFY NBU WATER SYSTEMS ENGINEERING AT 830-608-8971 WITH AT LEAST TWO (2) WORKING DAYS (48 HOURS) NOTICE. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED FROM NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
3. ~~THE DEVELOPER DEDICATES THE WATER / WASTEWATER MAINS UPON COMPLETION BY THE CONTRACTOR AND ACCEPTANCE BY THE NEW BRAUNFELS UTILITIES WATER SYSTEM. NBU WILL OWN AND MAINTAIN SAID WATER / WASTEWATER MAINS WHICH ARE LOCATED WITHIN PLATTED UTILITY EASEMENTS OR PUBLIC ROW OF PROPOSED DEVELOPMENTS. (AS APPLICABLE).~~
4. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER AND HIS EMPLOYEES, PARTNERS OFFICERS, DIRECTORS, OR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER, ENGINEER'S DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.
5. CONTRACTOR TO CONTACT THE ENGINEER-OF-RECORD (EOR) FOR ANY FIELD CHANGES. ANY REVISIONS OR CHANGES TO THE APPROVED CONSTRUCTION PLANS WILL REQUIRE ADDITIONAL APPROVAL BY NBU IN WRITING.
6. CONTRACTOR AND / OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION, ANY DAMAGE TO EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, LANDSCAPING AND STRUCTURES, AND EXISTING UTILITIES (NOT ADJUSTED ON PLANS). COST OF RESTORATION, IF ANY, SHALL BE THE CONTRACTOR'S ENTIRE EXPENSE.
8. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE (1) INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION.
9. CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES AND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
10. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
11. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.THE CONTRACTOR SHALL NOT PLACE ANY MATERIALS ON THE RECHARGE ZONE OF THE EDWARDS AQUIFER WITHOUT AN APPROVED WATER POLLUTION ABATEMENT PLAN FROM THE TCEQ 31 TAC 313.4 AND 31 TAC 313.9.
12. BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (TMUTCD) AND SHALL BE LOCATED TO PROVIDE MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT WHILE PROVIDING CONTINUOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL DEVICES DURING CONSTRUCTION.
13. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.
14. THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHOWN WITHIN THE RIGHT OF WAY ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION OPERATIONS.
15. OSHA REGULATIONS PROHIBIT OPERATIONS THAT WILL BRING PERSONS OR EQUIPMENT WITHIN 10 FEET OF AN ENERGIZED LINE. WHERE WORKMEN AND/OR EQUIPMENT MUST WORK CLOSE TO AN ENERGIZED ELECTRICAL LINE, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL POWER COMPANY INVOLVED AND MAKE WHATEVER ADJUSTMENTS NECESSARY TO ENSURE THE SAFETY OF THOSE WORKMEN.
16. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION. CONTRACTORS SHALL CALL THE ONE CALL SYSTEM FOR WATER/WASTEWATER LOCATION.
17. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192 (8), GAS COMPANIES MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
18. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC CONTROL DEVICES, AND FLAGGERS. THE CONSTRUCTION METHODS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC. THE CONTINUOUS MOVEMENT OF THE TRAFFIC IN ONE DIRECTION, AT MINIMUM, SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ANY LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS AT THE END OF EACH WORKDAY.
19. PRIOR TO ORDERING MATERIALS TO BE USED IN CONSTRUCTION, CONTRACTOR SHALL PROVIDE THE ENGINEER WITH FOUR (4) COPIES OF THE SOURCE, TYPE, GRADATION, MATERIAL SPECIFICATION DATA AND / OR SHOP DRAWINGS, AS APPLICABLE, TO SATISFY THE REQUIREMENTS OF THE FOLLOWING ITEMS AND ALL MATERIAL ITEMS REFERRED TO IN THESE LISTED ITEMS:
    a. WATER MAINS AND SERVICES
    b. WASTEWATER MAINS AND SERVICES
20. WATER JETTING THE BACKFILL WITHIN A STREET WILL NOT BE PERMITTED. WASTEWATER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO NBU CONNECTION AND CONSTRUCTION POLICY MANUAL.
21. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
22. UTILITY TRENCH COMPACTION WITH STREET R.O.W.
    a. ALL UTILITY TRENCH COMPACTION TEST WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE ~~DEVELOPER'S GEO-TECHNICAL ENGINEER~~. CONTRACTOR.
    b. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE.
    c. EACH LAYER OF MATERIAL SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEXT METHODS TEX-113-E, TEX- 114-E, TEX-115-E.
    d. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR.
    e. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

CITY OF NEW BRAUNFELS CONSTRUCTION NOTES: (MARCH 2020)

IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

THE MOST CURRENT EDITIONS OF THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS STANDARD DETAILS.

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF NEW BRAUNFELS TO SCHEDULE A PRECONSTRUCTION MEETING.

FOR PUBLIC INFRASTRUCTURE PERMIT OR GRADING PERMIT PROJECTS:
- FOR INSPECTIONS, CONTRACTOR MUST CALL BEFORE 12:00 P.M., 48 HOURS PRIOR TO THE INSPECTION REQUEST.
- EACH INSPECTION WILL BE ALLOTTED 1 HOUR UNLESS YOU REQUEST FOR MORE TIME.
- ONCE THE REQUEST HAS BEEN ACCEPTED, CONTRACTOR WILL RECEIVE A CALL FROM THE CITY OF NEW BRAUNFEL INSPECTOR.

FOR COMMERCIAL PERMIT (CP) PROJECTS:
- ALL INSPECTIONS ARE TO BE CALLED IN AT 830-221-4068 OR,
- FAXED IN AT 830-608-2117 OR,
- E-MAILED AT INSPECTIONS@NBTEXAS.ORG.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS AND LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. IF, IN THE OPINION OF THE ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES MAY BE ORDERED BY THE ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

A TXDOT TYPE II B-B BLUE REFLECTIVE RAISED PAVEMENT MARKER SHALL BE INSTALLED IN THE CENTER OF THE ROADWAY ADJACENT TO ALL FIRE HYDRANTS. IN LOCATIONS WHERE HYDRANTS ARE SITUATED ON CORNERS, BLUE REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON BOTH APPROACHES WHICH FRONT THE HYDRANT. THE RAISED PAVEMENT MARKER SHALL MEET TXDOT MATERIAL, EPOXY AND ADHESIVE SPECIFICATIONS.

GROUNDWATER
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, SUBCONTRACTORS, BUILDERS, GEO-TECHNICAL ENGINEER, AND PROJECT ENGINEER TO IMMEDIATELY NOTIFY THE OFFICE OF THE CITY ENGINEER AND PROJECT ENGINEER IF THE PRESENCE OF GROUNDWATER WITHIN THE SITE IS EVIDENT. UPON NOTIFICATION THE PROJECT ENGINEER SHALL RESPOND WITH PLAN REVISIONS FOR THE MITIGATION OF THE GROUNDWATER ISSUE. THE CITY ENGINEER SHALL RESPOND WITHIN TWO (2) BUSINESS DAYS UPON RECEIPT OF THE MITIGATION PLAN. ALL CONSTRUCTION ACTIVITY, IMPACTED BY THE DISCOVERY OF GROUNDWATER, SHALL BE SUSPENDED UNTIL THE CITY ENGINEER GRANTS A WRITTEN APPROVAL OF THE GROUNDWATER MITIGATION PLAN.

RECORD DRAWINGS
AS PER PLATTING ORDINANCE SECTION 118-38M.: WHEN ALL OF THE IMPROVEMENTS ARE FOUND TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND WITH THE CITY'S STANDARDS, AND UPON RECEIPT OF ONE SET OF "RECORD DRAWING" PLANS, AND A DIGITAL COPY OF ALL PLANS (PDF COPY) THE CITY ENGINEER SHALL ACCEPT SUCH IMPROVEMENTS FOR THE CITY OF NEW BRAUNFELS, SUBJECT TO THE GUARANTY OF MATERIAL AND WORKMANSHIP PROVISIONS IN THIS SECTION.

CONSTRUCTION NOTE
ENGINEER OF RECORD IS RESPONSIBLE TO ENSURE THAT EROSION CONTROL MEASURES AND STORMWATER CONTROL SUFFICIENT TO MITIGATE OFF SITE IMPACTS ARE IN PLACE AT ALL STAGES OF CONSTRUCTION.

DRAINAGE NOTE
DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER.

FINISHED FLOOR ELEVATIONS
THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORMWATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORMWATER CONVEYANCE STRUCTURES MUST HAVE FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE.

SOILS TESTING
PROCTORS SHALL BE SAMPLED FROM ON-SITE MATERIAL (ON-SITE IS DEFINED AS LIMITS OF CONSTRUCTION FOR THIS PLAN SET) AND A COPY OF THE PROCTOR RESULTS SHALL BE DELIVERED TO THE CITY OF NEW BRAUNFELS STREET INSPECTOR PRIOR TO ANY DENSITY TESTS.

ROADWAY
ALL ROADWAY COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FLEXIBLE BASE OR FILL/EMBANKMENT MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED EIGHT INCHES (8") LOOSE. THE REQUIRED DENSITY FOR THE FILL/EMBANKMENT MATERIAL SHALL MEET THE REQUIREMENTS OF TXDOT'S SPECIFICATION ITEM 132. THE REQUIRED DENSITY FOR THE FLEXIBLE BASE MATERIAL SHALL MEET THE REQUIREMENTS OF TXDOT'S SPECIFICATION ITEM 247. EACH LAYER OF MATERIAL, INCLUSIVE OF SUBGRADE, SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT. UPON COMPLETION OF TESTING, THE GEOTECHNICAL ENGINEER WILL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FLEXIBLE BASE, AND FILL MATERIAL, AND SUBGRADE, HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

ITEM 340
ASPHALTIC CONCRETE PAVEMENT SHALL BE THE TYPE OF HOT MIX ASPHALT AS DEFINED IN TXDOT'S STANDARD SPECIFICATIONS FOR CURRENT TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREET AND BRIDGES.

THE CITY OF NEW BRAUNFELS WILL NOT ACCEPT THE USE OF RECYCLED ASPHALT PAVEMENT (RAP) OR RECYCLED ASPHALT SHINGLES (RAS) IN ASPHALT MIXTURES FOR NEW ROADWAYS. ANY DEBRIS INCLUSIONS WITHIN NEW ASPHALT PAVEMENTS WILL RESULT IN ASPHALT REMOVAL AND REPLACEMENT FROM CURB TO CURB FOR LIMITS TO BE DETERMINED BY THE CITY OF NEW BRAUNFELS.

THE ASPHALTIC CONCRETE PAVEMENT SURFACE COURSE SHALL BE PLANT MIXED, HOT LAID TYPE "D" MEETING THE SPECIFICATION REQUIREMENTS OF TXDOT ITEM 340. THE ASPHALTIC CONCRETE PAVEMENT SUB-SURFACE COURSES SHALL BE PLANT MIXED, HOT LAID TYPE "B" MEETING THE SPECIFICATION REQUIREMENTS OF TXDOT ITEM 340. THE MIXTURE SHALL BE DESIGNED PER THE DESIGN REQUIREMENTS SPECIFIED IN TXDOT ITEM 340 AND SHALL BE COMPACTED TO BETWEEN 91 AND 95 PERCENT OF THE MAXIMUM THEORETICAL DENSITY AS DETERMINED BY TXDOT TEST METHOD TEX-227-F. PLACE THE MIXTURE WHEN THE ROADWAY SURFACE TEMPERATURE IS AT OR ABOVE 60°F. COMPLETE ALL COMPACTION OPERATIONS BEFORE THE PAVEMENT TEMPERATURE DROPS BELOW 160°F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHALL FALL WITHIN A TOLERANCE OF +0.5 PERCENT FROM A SPECIFIC MIX DESIGN.

UTILITY TRENCH COMPACTION
(ADDED TO THE CONSTRUCTION PLANS ON ALL UTILITY PLAN SHEETS).
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

CURB CUT DUE TO CONSTRUCTION OF NEW RIGHT-OF-WAY CONSTRUCTION
(INDICATE THE 2 OPTIONS ON THE CONSTRUCTION PLANS).
1.SAWCUT EXISTING STREET AND MATCH TO NEW CONSTRUCTION.
2.SAWCUT EXISTING CURB TO TIE INTO EXISTING CONSTRUCTION.

CONSTRUCTION STABILIZED ENTRANCE
SAWCUT CURB FOR CONSTRUCTION ENTRANCE.
STABILIZED CONSTRUCTION AREA SHALL BE CONSTRUCTED OF 3"X5" ROCK TO BE PLACED A MINIMUM LENGTH OF 25-FT. AND MAINTAINED SO THAT CONSTRUCTION DEBRIS DOES NOT FALL WITHIN THE CITY RIGHT-OF-WAY. RIGHT-OF-WAY MUST BE CLEARED FROM MUD, ROCKS, ETC. AT ALL TIMES.

(NOTES TO BE PLACED ON ALL WW PLAN & DETAIL SHEETS)
ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

SIGNING AND PAVEMENT MARKING PLAN NOTES
THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREETS NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.
THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST TWENTY-FOUR (24 HOURS) PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

SEEDING AND ESTABLISHMENT OF VEGETATION WITHIN EARTHEN CHANNELS, STORMWATER BASINS AND DISTURBED AREAS
SEEDING FOR THE PURPOSE OF ESTABLISHING VEGETATION WITHIN CONSTRUCTED EARTHEN CHANNELS, BASINS AND DISTURBED AREAS SHALL BE CONDUCTED IN ACCORDANCE WITH ITEM 164 (SEEDING FOR EROSION CONTROL) OF TXDOT'S STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES MANUAL. ONLY SEED TYPES AND MIXES SPECIFIED FOR THE SAN ANTONIO DISTRICT (DISTRICT 15 IN TABLES 1 AND 2 UNDER ITEM 164) SHALL BE UTILIZED. DURING THE COOL SEASON (SEPT 1-NOV 30, CEREAL RYE AND SEED SPECIES SPECIFIED FOR THE SAN ANTONIO DISTRICT IN TABLE 3 MAY BE USED. FOR COOL SEASON SEEDING APPLICATIONS.

IT MAY BE DEEMED NECESSARY TO INCORPORATE TOPSOIL AND SOIL AMENDMENTS (I.E. COMPOST/ FERTILIZER) INTO EXISTING SOIL IN ORDER TO FACILITATE VEGETATION GROWTH. TOPSOIL, COMPOST AND FERTILIZER ADDITIONS SHALL BE CONDUCTED ACCORDING TO ITEMS 160, 161 AND 166 OF TXDOT'S STANDARD SPECIFICATIONS MANUAL, RESPECTIVELY.

AREAS REQUIRING PERMANENT VEGETATION (EARTHEN CHANNELS, PONDS, ETC.) ARE REQUIRED TO MEET TXDOT SPECIFICATIONS FOR ITEM 160 TOPSOIL. TESTING PER TEX-128-E WILL BE REQUIRED AT THE CITY'S REQUEST.

WATERING MAY ALSO BE NECESSARY TO FACILITATE AND EXPEDITE THE SPROUTING AND GROWTH OF VEGETATION. ITEM 168 OF TXDOT'S STANDARD SPECIFICATIONS MANUAL SHALL BE ADHERED TO FOR VEGETATIVE WATERING.

IF EXTENDED DROUGHT CONDITIONS EXIST THAT HINDER OR PROHIBIT THE GROWTH AND ESTABLISHMENT OF VEGETATION, THE CONTRACTOR/ ~~DEVELOPER~~ SHALL PROVIDE A PLAN TO THE CITY OF NEW BRAUNFELS DESCRIBING THE MEASURES THAT WILL BE TAKEN TO STABILIZE EARTHEN DRAINAGE INFRASTRUCTURE UNTIL A TIME WHEN GROWING CONDITIONS BECOME MORE FAVORABLE.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
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STATE OF TEXAS — ERIN C. MILLER — 120177 — LICENSED PROFESSIONAL ENGINEER — 04/22/2025

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
GENERAL

GENERAL NOTES I

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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DATE 4/16/2025
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WASTEWATER NOTES:

1. THE POINT OF DELIVERY FOR AN NBU OWNED AND MAINTAINED WASTEWATER LINE IS TYPICALLY THE CLEANOUT, PROPERTY LINE, OR EDGE OF EASEMENT OR AS DETERMINED BY NBU.
2. THE CONTRACTOR SHALL MAINTAIN SERVICE TO THE EXISTING WASTEWATER SYSTEM AT ALL TIMES DURING CONSTRUCTION.
3. ALL NEW WASTEWATER MAINS AND FITTINGS SHALL BE MINIMUM 8-INCH DIAMETER (ASTM D-3034 SDR-26 PVC).
4. ALL RESIDENTIAL WASTEWATER SERVICE LATERALS SHALL BE EXTENDED FOUR (4) FEET INTO THE PUBLIC UTILITY EASEMENT AND A CLEANOUT INSTALLED AT THE ROW LINE PER NBU STANDARD DETAILS. SERVICES TO LOTS WILL EXTEND FOUR (4) FEET PAST THE UNDERGROUND ELECTRIC CONDUIT IF ELECTRIC IS INSTALLED IN THE FRONT EASEMENT.
5. ALL SEWER CLEANOUTS THAT LEAD TO NBU MAINS SHALL BE INSTALLED WITH A PROTECTIVE UTILITY SHROUD AND PIVOTING MARKER POLE DURING TIME OF CONSTRUCTION.
6. PIPE BEDDING OF WASTEWATER LINES SHALL BE COMPLIANT WITH NBU SPECIFICATION NO. 120, “UTILITY TRENCHING AND BACKFILL”.
7. WASTEWATER MAINS SHALL HAVE A MINIMUM OF 48 INCHES OF COVER TO FINISHED GRADE AND WASTEWATER LATERALS MUST HAVE A MINIMUM OF 36 INCHES OF COVER TO FINISHED GRADE. CONCRETE ENCASEMENT WILL BE REQUIRED IF MINIMUM COVER CANNOT BE MET.
8. ALL GRAVITY WASTEWATER PIPES SHALL HAVE GASKETED, COMPRESSION OR FUSED JOINTS PER 30 TAC §217.53 (C) (2).
9. FOR WASTEWATER LINES LESS THAN 24 INCHES IN DIAMETER, SELECT INITIAL BACKFILL MATERIAL SHALL BE PLACED IN TWO LIFTS.
    a. THE FIRST LIFT SHALL BE SPREAD UNIFORMLY AND SIMULTANEOUSLY ON EACH SIDE AND UNDER THE SHOULDERS OF THE PIPE TO THE MID-POINT OR SPRING LINE OF THE PIPE.
    b. THE SECOND LIFT SHALL BE PLACED TO A DEPTH AS SHOWN ON THE PIPE BACKFILL DETAIL. FOR PIPES LARGER THAN 24-INCH, 12-INCH MAXIMUM LIFTS SHALL BE USED.
10. ALL MANHOLES SHALL BE WATER-TIGHT, EITHER MONOLITHIC, CAST-IN-PLACE CONCRETE STRUCTURES OR PREFABRICATED MANHOLES SPECIFICALLY APPROVED BY NBU. POLYMER CONCRETE IS REQUIRED FOR MANHOLES ON MAINS 18-INCH DIAMETER AND LARGER, AT FORCE MAIN DISCHARGE POINTS, OR AT DROP MANHOLES WITH HIGH CORROSION POTENTIAL.
11. MANHOLES SHALL HAVE BOLTED WATER-TIGHT RINGS AND COVERS. IN NON-PAVED AREAS, A MANHOLE MARKER ASSEMBLY SHALL BE INSTALLED ON THE MANHOLE COVER.
12. MANHOLE VENTS SHALL BE INSTALLED AT INTERVALS NO GREATER THAN 1500 FEET.
13. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP OF THE RING IS SIX INCHES (6”) ABOVE SURROUNDING GROUND IN NON-PAVED AREAS. IN PAVED AREAS, THE MANHOLE RING SHALL BE FLUSH WITH PAVEMENT.
14. ALL NEW MANHOLES, UNLESS APPROVED BY NBU, SHALL HAVE COVERS WITH 32-INCH OPENINGS.
15. WASTEWATER PIPE CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS OR MECHANICAL “BOOT TYPE” JOINT AS APPROVED BY NBU.
16. EXISTING MANHOLES SHALL BE LINED, COATED, OR REPLACED WITH A CORROSION RESISTANT MATERIAL IF A NEW CONNECTION IS MADE BY A MAIN OR LATERAL.
17. WASTEWATER MAINS SHALL BE TESTED FROM MANHOLE TO MANHOLE.
18. IN AREAS WHERE A NEW WASTEWATER MANHOLE IS TO BE CONSTRUCTED OVER AN EXISTING WASTEWATER SYSTEM, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TEST THE EXISTING MANHOLES BEFORE CONSTRUCTION. AFTER THE PROPOSED MANHOLE(S) HAS BEEN BUILT, THE CONTRACTOR SHALL RE-TEST THE EXISTING SYSTEM TO THE SATISFACTION OF THE CONSTRUCTION INSPECTOR, NO SEPARATE PAY.
19. NBU INSPECTOR TO BE PRESENT FOR ALL WASTEWATER LINES TO BE INSTALLED AT DEPTHS OF 15 FEET OR GREATER FROM FINAL GRADE.
20. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN WASTEWATER LINES AND WATER LINES / MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF WASTEWATER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ REQUIREMENTS. THE WASTEWATER LINE SHALL BE CONSTRUCTED OF ASTM D2241 PVC OR AWWA C900 PVC WITH PRESSURE RATING OF 150 PSI AND SHALL BE IN ACCORDANCE WITH 30 TAC §217.53 (D) (3) (A) (I).
21. CONTRACTOR SHALL COORDINATE WITH THE ASSIGNED WATER/WASTEWATER INSPECTOR FOR COMPLETION OF THE FIELD ACCEPTANCE CHECKLIST. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION. ALL TESTING AND ACCEPTANCE SHALL CONFORM TO NBU SPECIFICATIONS BE COMPLETED IN THE FOLLOWING ORDER:
    a. PIPE DEFLECTION TEST (MANDREL TEST)
    b. PIPE LOW PRESSURE AIR TEST
    c. MANHOLE VACUUM TEST
    d. MANHOLE PROTECTIVE COATING TEST
    e. CCTV INSPECTION (WITHIN 72 HOURS OF CLEANING AND FLUSHING)
22. TCEQ AND EPA REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF WASTEWATER COLLECTION SYSTEMS. ~~DEVELOPER~~ CONTRACTOR OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTES ON THE PROJECT'S PLAN AND PROFILE SHEETS. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY NBU WATER SYSTEMS

NBU WATER NOTES:

1. THE POINT OF DELIVERY FOR AN OWNED AND MAINTAINED WATER LINE IS TYPICALLY THE DOMESTIC OR IRRIGATION WATER METER, FIRE LINE UP TO THE CONTAINMENT BACKFLOW DEVICE, OR HYDRANT METER OR AS DETERMINED BY NBU.
2. WATER INFRASTRUCTURE MUST BE CONSTRUCTED IN ACCORDANCE WITH THE NBU WATER CONNECTION POLICY.
3. ALL WATER MAINS SHALL BE CONSTRUCTED OF AWWA C900 DR 14 PVC, AWWA C900 DR 18 PVC OR MINIMUM CL 250 DUCTILE IRON PIPE.
4. ALL RESIDENTIAL WATER SERVICES SHALL BE SINGLE SERVICES CONSTRUCTED OF 1-INCH ASTM B88 TYPE K COPPER TUBING. 1-INCH AWWA C901 SDR9 CTS POLYETHYLENE TUBING MAY BE PERMITTED WITH SPECIAL APPROVAL FROM NBU ONLY.
5. ALL 2-INCH SERVICE LINES SHALL BE CONSTRUCTED OF AWWA C901 SDR9 CTS POLYETHYLENE TUBING.
6. WATER MAINS SHALL HAVE A MINIMUM OF 48 INCHES OF COVER TO FINISHED GRADE. CONCRETE ENCASEMENT WILL BE REQUIRED IF MINIMUM COVER CANNOT BE MET.
7. PIPE BEDDING OF WATER LINES SHALL BE COMPLIANT WITH NBU SPECIFICATION NO. 120, “UTILITY TRENCHING AND BACKFILL”.
8. CONTRACTOR SHALL INSTALL LINE STOPPERS AT THEIR COST FOR AN OUTAGE DURING CONSTRUCTION IF SYSTEM VALVES ARE NOT AVAILABLE OR THE EXISTING VALVES DO NOT FUNCTION. LINE STOPPERS WILL BE REQUIRED BASED ON THE FOLLOWING CRITERIA:
    a. IF THE NUMBER OF RESIDENTIAL CUSTOMERS AFFECTED IS GREATER THAN 20 AND EXPECTED TO LAST MORE THAN 4 HOURS.
    b. IF ANY COMMERCIAL CUSTOMERS ARE AFFECTED BY THE OUTAGE THEN THE USE OF LINE STOPPERS WILL BE DETERMINED ON A CASE BY CASE BASIS.
    c. IF ANY CRITICAL CARE CUSTOMERS ARE AFFECTED BY THE OUTAGE THEN THE USE OF LINE STOPPERS WILL BE DETERMINED ON A CASE BY CASE BASIS.
    d. SYSTEM CONDITIONS MAY REQUIRE A LINE STOPPER AND MAY NOT BE KNOWN UNTIL CONSTRUCTION COMMENCES.
9. CONTRACTOR WILL KEEP THE AREA ON TOP OF, AROUND, AND WITHIN THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
10. PLACEMENT OF METER BOXES OR VAULTS IN SIDEWALKS, DRIVEWAYS, DRIVE AISLES, PARKING AREAS, OR OTHER AREAS EXPOSED TO VEHICULAR TRAFFIC IS NOT PERMITTED. ANY METER BOXES OR VAULTS SET IN THESE AREAS WILL BE RELOCATED AT THE CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
11. METER BOXES OR VAULTS MUST BE SET AT PROPOSED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
12. METER BOXES FOR 5/8-INCH AND 1-INCH METERS MUST BE DFW PLASTICS DFW38C- 14-AF1MP.
13. METER BOXES FOR 1.5” METERS MUST BE DFW PLASTICS DFW65C-14-AF1MP.
14. METER BOXES FOR 2” METERS MUST BE DFW PLASTICS DFW1730F-12-AF1MP.
15. THRUST BLOCKS ARE NOT PERMITTED WITHOUT SPECIAL APPROVAL. JOINTS MUST BE RESTRAINED WITH RESTRAINING SYSTEMS APPROVED BY NBU AND RESTRAINT LENGTH SHALL BE SUBMITTED TO NBU AT THE TIME OF PLAN SUBMITTAL.
16. CONTRACTOR SHALL INSTALL TRACER WIRE ON TOP OF NON-FERROUS WATER MAINS IN ACCORDANCE WITH NBU SPECIFICATIONS. TRACER WIRE SHOULD RUN FROM VALVE TO VALVE AND EXIT AT A TRACER WIRE ACCESS POINT. THE TRACER WIRE SHOULD BE ATTACHED TO THE TOP OF THE PIPE USING TAPE. EXCESS WIRE SHOULD BE COILED WITHIN THE TRACER WIRE ACCESS POINT RISER.
17. CONTRACTOR SHALL COORDINATE WITH THE ASSIGNED WATER/WASTEWATER INSPECTOR FOR COMPLETION OF THE FIELD ACCEPTANCE CHECKLIST. ALL TESTING AND ACCEPTANCE SHALL CONFORM TO NBU SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO:
    a. BACTERIOLOGICAL TESTING
    b. HYDROSTATIC TESTING (PERFORMED VALVE TO VALVE)
18. THE NBU WATER SYSTEM SHALL BE PROTECTED FROM HAZARDS WITH APPROPRIATE BACKFLOW PREVENTION ASSEMBLIES INSTALLED ON ALL IRRIGATION SYSTEMS, FIRE SUPPRESSION SYSTEMS AND MULTI-UNIT COMPLEXES ALONG WITH MULTI-LEVEL PROPERTIES ON THE DOMESTIC METER CONTAINMENT. NBU CAN ASSIST WITH THE DECISION ON APPROPRIATE BACKFLOW ASSEMBLIES ON A CASE-BY-CASE BASIS. CONTACT NBU BACKFLOW PREVENTION SPECIALIST FOR MORE DETAILS. EMAIL QUESTIONS TO CROSSCONNECTION@NBUTEXAS.COM
19. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE TESTED UPON INSTALLATION AND REPORTS SENT TO NBU VIA THE ONLINE TRACKING SYSTEM. CONTACT AN NBU BACKFLOW PREVENTION SPECIALIST FOR MORE DETAILS. EMAIL QUESTIONS TO CROSSCONNECTION@NBUTEXAS.COM
20. ALL RESIDENTIAL AND COMMERCIAL PROPERTIES SHALL HAVE A CUSTOMER SERVICE INSPECTION CERTIFICATE (CSI INSPECTION) COMPLETED UPON COMPLETION OF THE BUILDING OR HOME STRUCTURE. CONTACT AN NBU BACKFLOW PREVENTION SPECIALIST FOR MORE DETAILS. EMAIL QUESTIONS TO CROSSCONNECTION@NBUTEXAS.COM

GENERAL NOTES:

1. CONTRACTOR SHALL ALLOW 24-HOUR ACCESS AND ENSURE ACCESSIBILITY TO ENTIRE SITE FOR NBU AND OTHER CONTRACTORS.
2. CONTRACTOR SHALL COORDINATE AND SEQUENCE WORK WITH CONSTRUCTION BY OTHER CONTRACTORS.
3. SWPPP WILL BE PREPARED AND IMPLEMENTED BY CONTRACTOR.
4. CONTRACTOR TO MAINTAIN DRIVEWAY ACCESS TO PROPERTY OWNER AND CUSTOMERS AT ALL TIMES. PIPELINE INSTALLATION THROUGH DRIVEWAYS (FROM EXCAVATION TO PAVEMENT RESTORATION) SHALL BE LIMITED TO 3 CONSECUTIVE DAYS UNLESS OTHERWISE APPROVED BY NBU OR ENGINEER.
5. CONTRACTOR IS RESPONSIBLE FOR KEEPING THE ROADS FREE OF CONSTRUCTION DEBRIS AND DUST (RE: 4/DT-3).

EROSION/SEDIMENTATION CONTROL PLAN:

EROSION / SEDIMENTATION CONTROLS SHALL CONSIST OF SILT FENCES, ROCK BERM, CURB INLET PROTECTION, AND TEMPORARY CONSTRUCTION ENTRANCE/EXIT CONSTRUCTED DOWN GRADIENT FROM THE CONSTRUCTION AREAS IN ACCORDANCE WITH NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC. 12. SEE DETAIL SHEET DT-3. HAY BALES SHALL NOT BE USED FOR TEMPORARY EROSION AND SEDIMENTATION CONTROLS.

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION BY THE CONTRACTOR. THE CONTROLS SHALL BE REMOVED BY THE CONTRACTOR WHEN VEGETATION IS ESTABLISHED AND THE CONSTRUCTION AREA IS STABILIZED 31 TAC 313.5 (C)(12). ADDITIONAL PROTECTION MAY BE REQUIRED IF EXCESSIVE SOLIDS ARE BEING DISCHARGED FROM THE SITE.

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER / ENGINEER. CONTRACTOR WILL PREPARE AND IMPLEMENT SWPPP. THE CONTRACTOR SHALL INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY SIGNIFICANT RAINFALL TO ENSURE DISTURBANCE OF THE STRUCTURES HAS NOT OCCURRED. SEDIMENT DEPOSITED AFTER A RAINFALL SHALL BE REMOVED FROM THE SITE OR PLACED IN AN ENGINEER APPROVED DESIGNATED DISPOSAL AREA.

ALL EROSION CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONING PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR NOI, NOT AND SWPPP. THIS IS A NON-SEPARATE PAY ITEM AND IS SUBSIDIARY TO CIVIL SITEWORK.

EROSION & SEDIMENTATION CONTROL SCHEDULE:

PRIOR TO CONSTRUCTION

1. REVIEW APPROVED SCS.
2. INSTALL CONSTRUCTION ENTRANCE/EXIT.
3. INSTALL ALL SILT FENCE, ROCK BERM, AND CURB INLET GRAVEL FILTERS.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS — ERIN C. MILLER — 120173 — LICENSED PROFESSIONAL ENGINEER — 04/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
GENERAL
GENERAL NOTES II

F&N JOB NO. NBU20253
DATE 4/16/2025
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SHEET G-3

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ORGANIZED SEWAGE COLLECTION SYSTEM
GENERAL CONSTRUCTION NOTES (OCTOBER 01, 2010)
(THESE ARE MINIMUM REQUIREMENTS AND MAY BE SUPERCEDED BY MORE STRINGENT REQUIREMENTS PROVIDED IN THE PLANS AND SPECIFICATIONS)

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

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

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

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

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

6. THE SEWER LINE TRENCH DETAILS SHOWING THE CROSS SECTION WITH THE DIMENSIONS, PIPE PLACEMENT, AND BACKFILL INSTRUCTIONS ARE INCLUDED ON PLAN SHEET DT-2 OF THESE PLANS. ALL SEWER PIPES JOINTS MUST MEET THE REQUIREMENTS IN 30 TAC §§217.53(C) AND 217.65.

   GRAVITY LINES MUST HAVE A SDR 35 OR LESS. PRESSURIZED SEWER SYSTEMS MUST HAVE PIPE WITH A MINIMUM WORKING PRESSURE RATING OF 150 PSI.

   REFER TO SPECIFICATIONS FOR THE ASTM, ANSI, OR AWWA SPECIFICATION NUMBERS FOR THE PIPE(S) AND JOINTS

   REFER TO SPECIFICATIONS FOR THE PIPE MATERIAL, THE PRESSURE CLASSES, AND THE SDR AND/OR DR DESIGNATIONS

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

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

9. 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 SS-2.

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

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

12. WHERE SEWER LINES DEVIATE FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER:

    IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED

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

13. 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

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

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

(C) SINCE A K VALUE OF LESS THAN 1.0 MAY NOT BE USED, THERE ARE MINIMUM TIMES FOR EACH PIPE DIAMETER AS OUTLINED BELOW:

PIPE DIAMETER (INCHES)	MINIMUM TIME (SECONDS)	LENGTH FOR MINIMUM (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.
(E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
(F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
(G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.
(2) INFILTRATION/EXFILTRATION TEST.
(A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.
(B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.
(C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE, OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.
(D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARGRAPH (C) OF THIS PARAGRAPH.
(E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.
(b) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:
(1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.
(A) MANDREL SIZING.
(i) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE 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.

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

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

NOTE:

1. THE INDICATED REQUIREMENTS ARE THE MINIMUM REQUIREMENTS AS REQUIRED BY THE TCEQ. IF CONFLICTS EXIST BETWEEN THESE NOTES AND AS SPECIFIED IN THE PLANS AND SPECIFICATIONS THE MOST STRINGENT REQUIREMENT SHALL SUPERCEDE AS DETERMINED BY THE ENGINEER.

2. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.

3. ANY EXCAVATIONS WITHIN THE EXISTING CITY RIGHT OF WAY, INCLUDING OPEN CUTS, STREET CUTS, AND/OR BORING OPERATIONS REQUIRE THE APPROVAL OF THE STREETS AND DRAINAGE DIVISION MANAGER. SUCH WORK WILL ALSO REQUIRE A ROW EXCAVATION PERMIT IN ADDITION TO ANY BUILDING PERMIT.

4. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE CONSTRUCTION AREA AT THE END OF EACH DAY. ANY EXCAVATION IN AN AREA THAT IS NOT FENCED SHALL BE FILLED OR COVERED WITH STEEL PLATES.

5. CONTRACTOR SHALL RESTORE STAGING AND OTHER AREAS IMPACTED BY CONSTRUCTION ACTIVITIES TO PRE-EXISTING CONDITIONS OR BETTER AFTER CONSTRUCTION, N.S.P.I.

6. ALL RECLAIMED WATER LINES MUST BE PURPLE PER TCEQ 210.25.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120172 · LICENSED · PROFESSIONAL ENGINEER · 04/22/2025

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NEW BRAUNFELS UTILITIES / BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
GENERAL

GENERAL NOTES III

NO.	ISSUE	BY	DATE
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F&N JOB NO. NBU20253
DATE 4/16/2025
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FILE NAME GN-ALL-NOTES.dwg

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SURVEY NOTES:

1. GRID BEARINGS AND DISTANCES SHOWN HEREON ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983, TEXAS SOUTH CENTRAL ZONE 4204, AND ARE BASED ON THE NORTH AMERICAN DATUM OF 1983(2011) EPOCH 2010.00. (RECORD BEARING/DISTANCE).

2. ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), GEOID 12B AND DETERMINED BY GPS OBSERVATIONS AND ARE REFERENCED BASED ON THE NGS DATA SHEET:

   HORIZONTAL COORDINATES BASED ON GPS OBSERVATIONS TO COOP CORS BASE STATION SGI1, NAD83 (NA2011) EPOCH 2010.0000. ORTHOMETRIC HEIGHTS OBTAINED USING GEOID 12A.

   COORDINATES ARE TEXAS STATE PLANE SOUTH CENTRAL ZONE SCALED TO SURFACE USING A PROJECT SCALE FACTOR OF 1.00014.

   DESIGNATION F 1308
   PID - AY1567
   PUBLISHED ELEVATION=626.84' [OBSERVED=626.72']

   GRID NORTHING:13801166.31
   GRID EASTING:2252395.04

3. THIS MAP WAS PREPARED FROM FIELD DATA OBTAINED FROM BASELINE SURVEYORS IN JULY 2022.

4. THIS IS NOT A BOUNDARY SURVEY.

5. SOME FEATURES SHOWN ON THIS SURVEY MAY BE OUT OF SCALE FOR CLARITY.

6. THIS TOPOGRAPHIC MAP WAS CREATED FOR DESIGN PURPOSES ONLY.

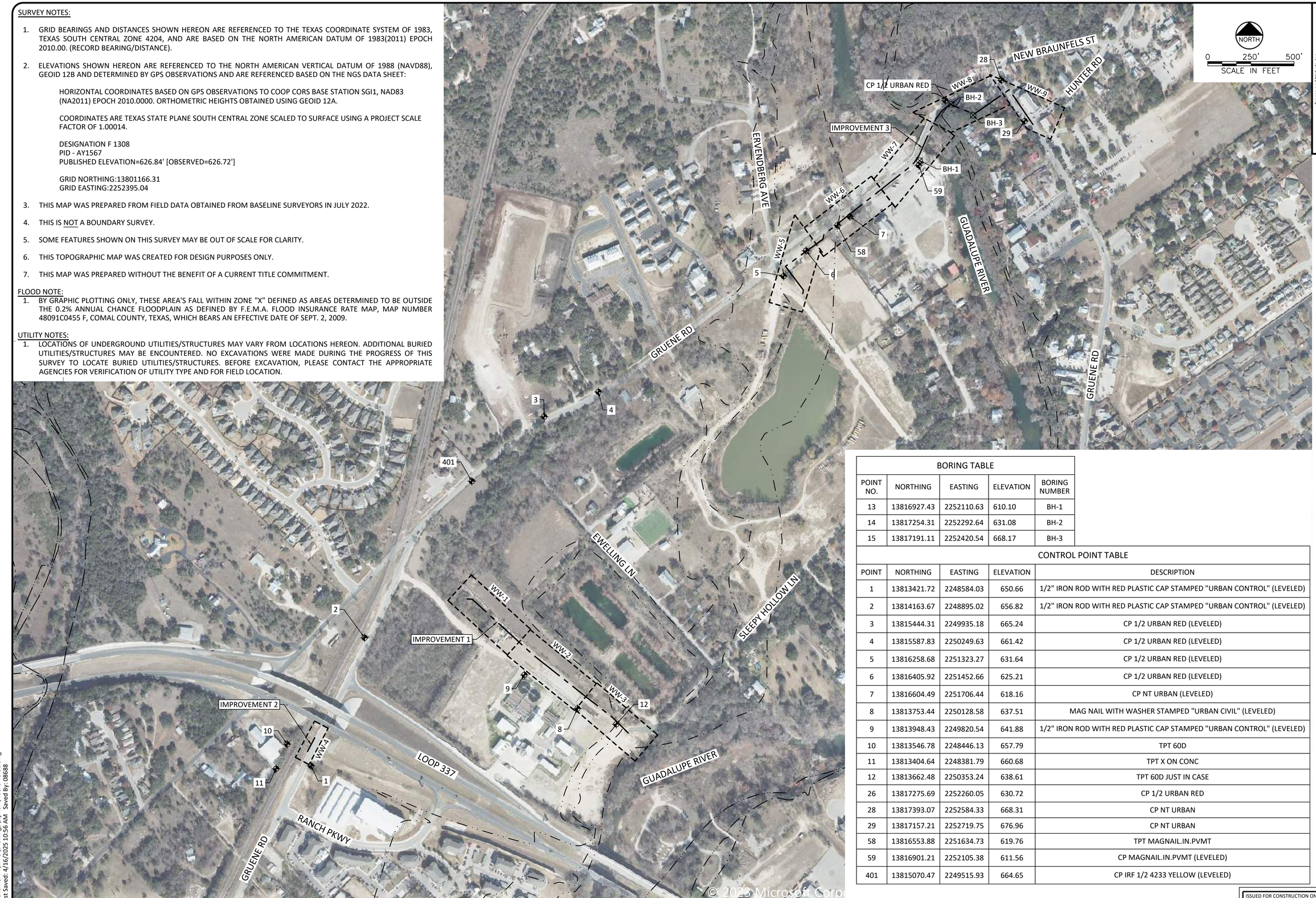
7. THIS MAP WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE COMMITMENT.

FLOOD NOTE:

1. BY GRAPHIC PLOTTING ONLY, THESE AREA'S FALL WITHIN ZONE "X" DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS DEFINED BY F.E.M.A. FLOOD INSURANCE RATE MAP, MAP NUMBER 48091C0455 F, COMAL COUNTY, TEXAS, WHICH BEARS AN EFFECTIVE DATE OF SEPT. 2, 2009.

UTILITY NOTES:

1. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES. BEFORE EXCAVATION, PLEASE CONTACT THE APPROPRIATE AGENCIES FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATION.



BORING TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	BORING NUMBER
13	13816927.43	2252110.63	610.10	BH-1
14	13817254.31	2252292.64	631.08	BH-2
15	13817191.11	2252420.54	668.17	BH-3

CONTROL POINT TABLE

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	13813421.72	2248584.03	650.66	1/2" IRON ROD WITH RED PLASTIC CAP STAMPED "URBAN CONTROL" (LEVELED)
2	13814163.67	2248895.02	656.82	1/2" IRON ROD WITH RED PLASTIC CAP STAMPED "URBAN CONTROL" (LEVELED)
3	13815444.31	2249935.18	665.24	CP 1/2 URBAN RED (LEVELED)
4	13815587.83	2250249.63	661.42	CP 1/2 URBAN RED (LEVELED)
5	13816258.68	2251323.27	631.64	CP 1/2 URBAN RED (LEVELED)
6	13816405.92	2251452.66	625.21	CP 1/2 URBAN RED (LEVELED)
7	13816604.49	2251706.44	618.16	CP NT URBAN (LEVELED)
8	13813753.44	2250128.58	637.51	MAG NAIL WITH WASHER STAMPED "URBAN CIVIL" (LEVELED)
9	13813948.43	2249820.54	641.88	1/2" IRON ROD WITH RED PLASTIC CAP STAMPED "URBAN CONTROL" (LEVELED)
10	13813546.78	2248446.13	657.79	TPT 60D
11	13813404.64	2248381.79	660.68	TPT X ON CONC
12	13813662.48	2250353.24	638.61	TPT 60D JUST IN CASE
26	13817275.69	2252260.05	630.72	CP 1/2 URBAN RED
28	13817393.07	2252584.33	668.31	CP NT URBAN
29	13817157.21	2252719.75	676.96	CP NT URBAN
58	13816553.88	2251634.73	619.76	TPT MAGNAIL.IN.PVMT
59	13816901.21	2252105.38	611.56	CP MAGNAIL.IN.PVMT (LEVELED)
401	13815070.47	2249515.93	664.65	CP IRF 1/2 4233 YELLOW (LEVELED)

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
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STATE OF TEXAS — ERIN C. MILLS — 120172 — LICENSED PROFESSIONAL ENGINEER — 04/22/2025

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
CIVIL

SURVEY CONTROL POINTS AND BORING LAYOUT

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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F&N JOB NO. NBU20253
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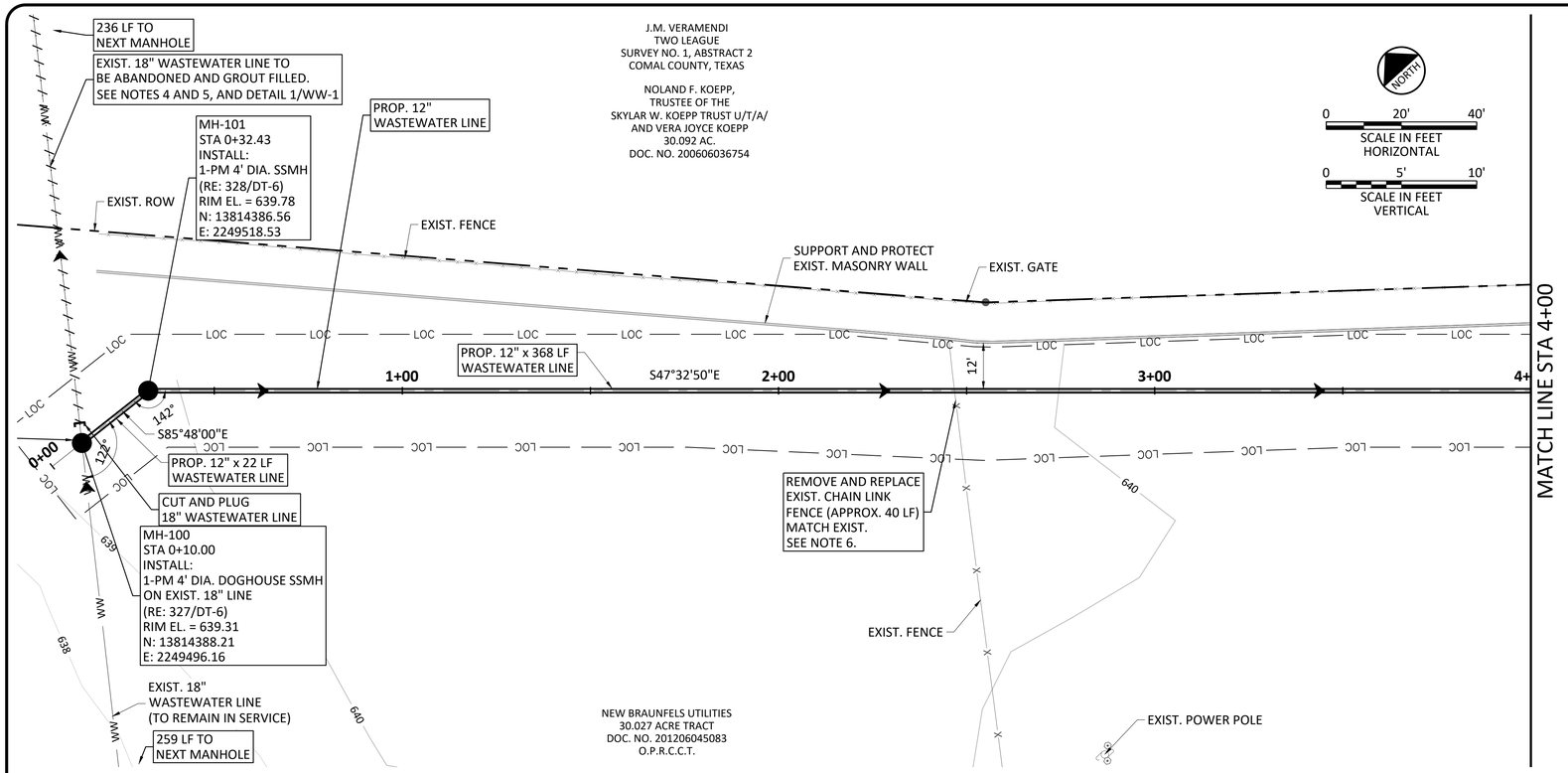
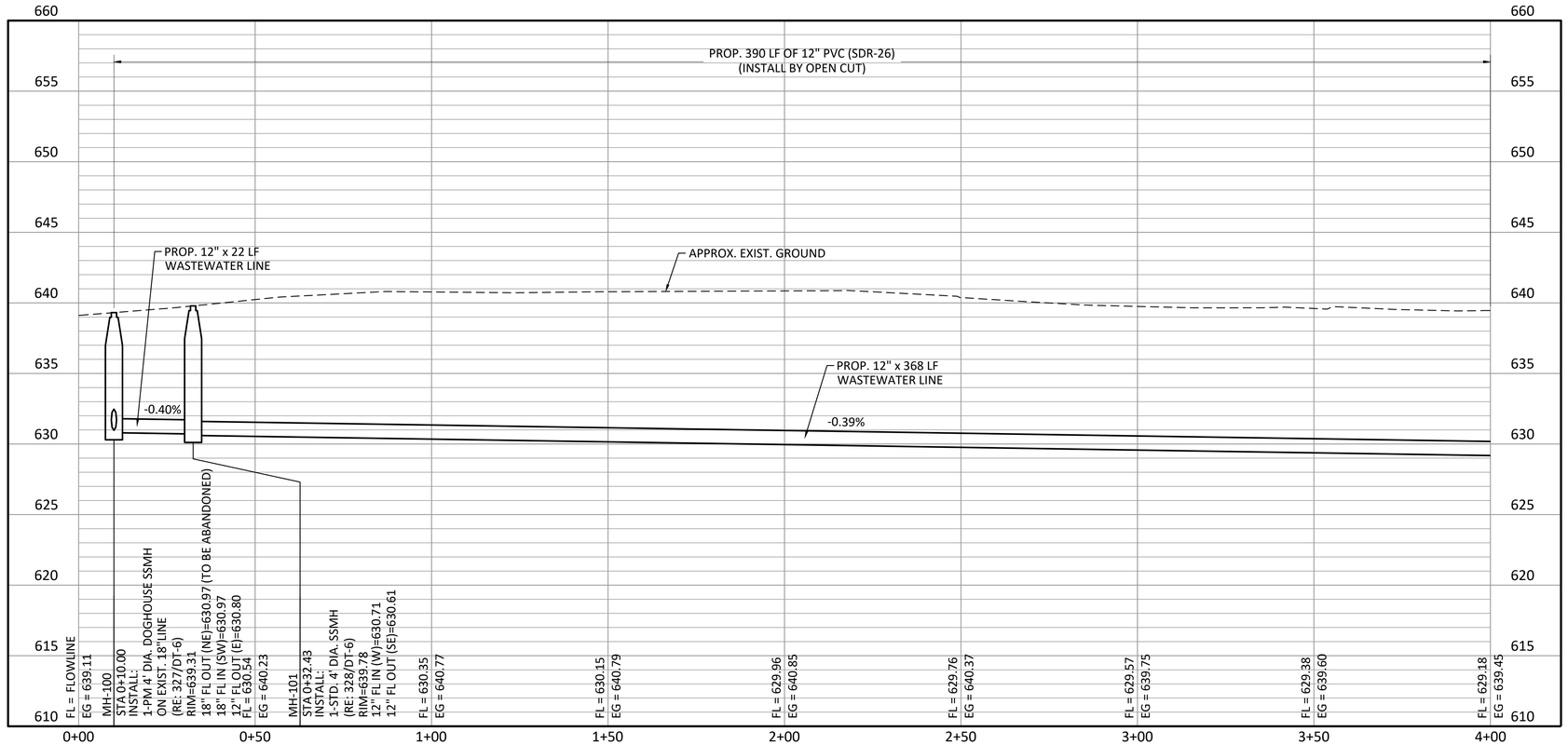


1 - WASTEWATER LINE ABANDONMENT
1"=100'



NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
4. CONTRACTOR SHALL ABANDON APPROXIMATELY 800 LF OF EXISTING 18" WASTEWATER PIPELINE AND 1 SANITARY SEWER MANHOLE BETWEEN PROP MH-100 AND EXISTING MANHOLE 2506 AT EWELLING LANE. SEE DETAIL ON DT-4 FOR MANHOLE ABANDONMENT REQUIREMENTS. CONTRACTOR SHALL CAP THE END OF THE 18" WASTEWATER LINE DOWNSTREAM OF PROPOSED MH-100 AND UPSTREAM OF THE MH AT EWELLING LANE. SEE DETAIL 1 ON THIS SHEET FOR EXTENT OF REQUIRED WASTEWATER LINE/MANHOLE ABANDONMENT.
5. CONTRACTOR SHALL CONFIRM THERE ARE NO SERVICES ON THE SECTION OF WASTEWATER LINE BEING ABANDONED PRIOR TO ABANDONMENT (NSPI).
6. CONTRACTOR SHALL INSTALL TEMPORARY FENCING AS NECESSARY TO SECURE THE WATER TREATMENT PLANT DURING CONSTRUCTION IN ACCORDANCE WITH TAC 290.42 (m).
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
8. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE LIMITS OF CONSTRUCTION.

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLS · 120172 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
WASTEWATER
IMPROVEMENT 1 WASTEWATER PLAN AND PROFILE STA. 0+00 TO 4+00

F&N JOB NO.	NBU20253
DATE	4/16/2025
DESIGNED	REV
DRAWN	CJG
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NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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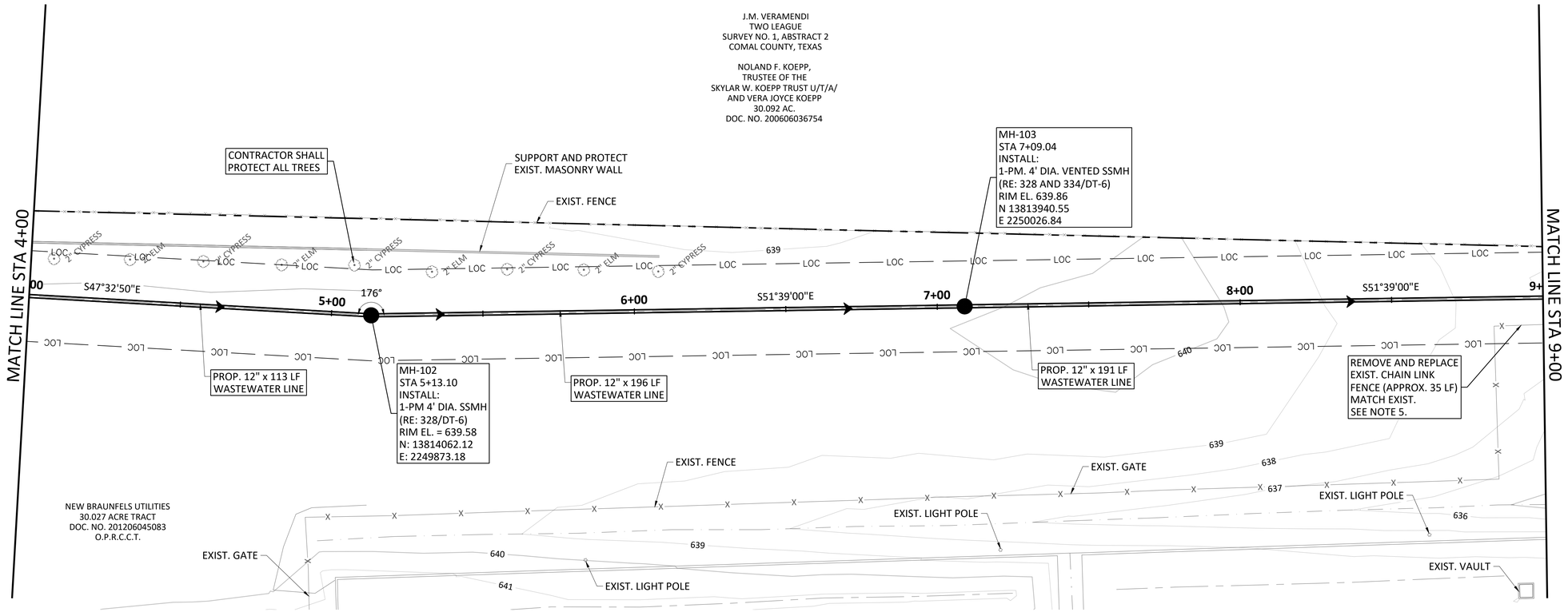

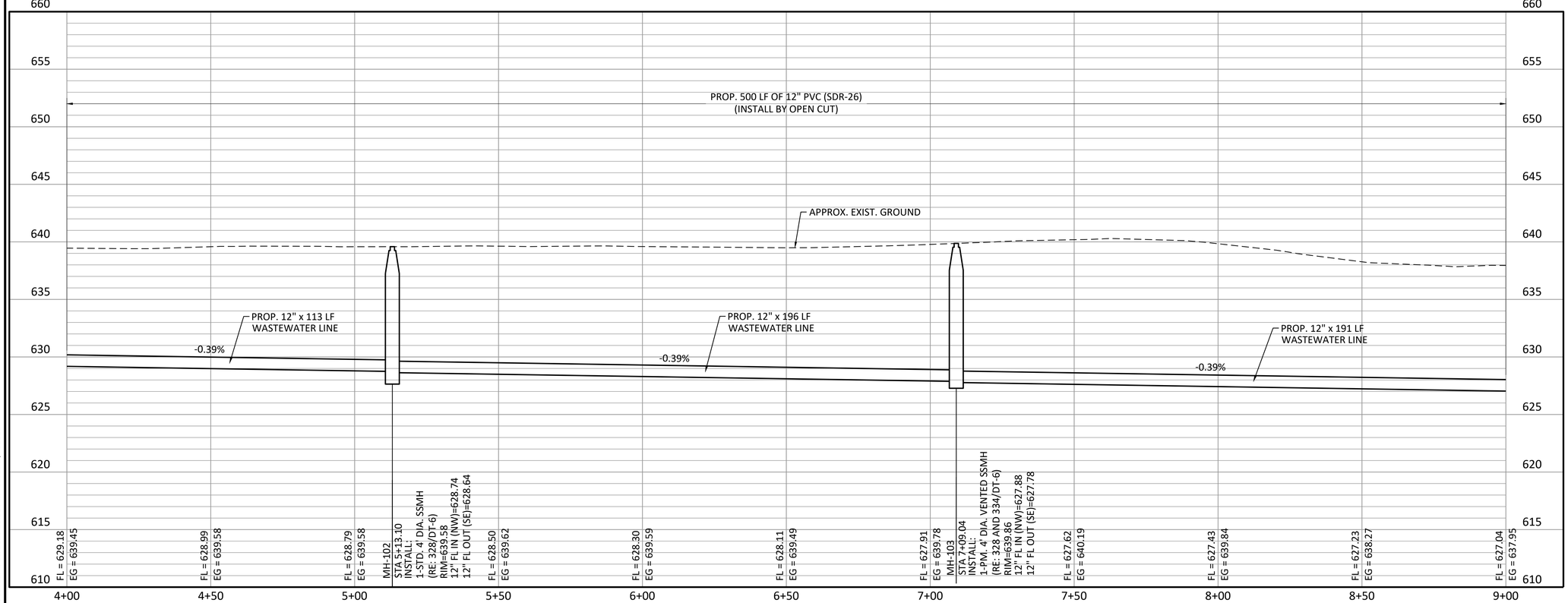

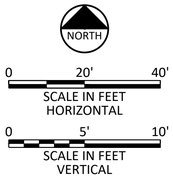

NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
4. EXISTING TREES TO BE PROTECTED UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL INSTALL TEMPORARY FENCING AS NECESSARY TO SECURE THE WATER TREATMENT PLANT DURING CONSTRUCTION IN ACCORDANCE WITH TAC 290.42 (m).
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
7. 7. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE LIMITS OF CONSTRUCTION.

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

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STATE OF TEXAS
ERIN C. MILLER
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NEW BRAUNFELS UTILITIES

GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS

WASTEWATER

IMPROVEMENT 1 WASTEWATER PLAN AND PROFILE STA. 4+00 TO 9+00

NO.	ISSUE	BY	DATE
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F&N JOB NO. NBU20253
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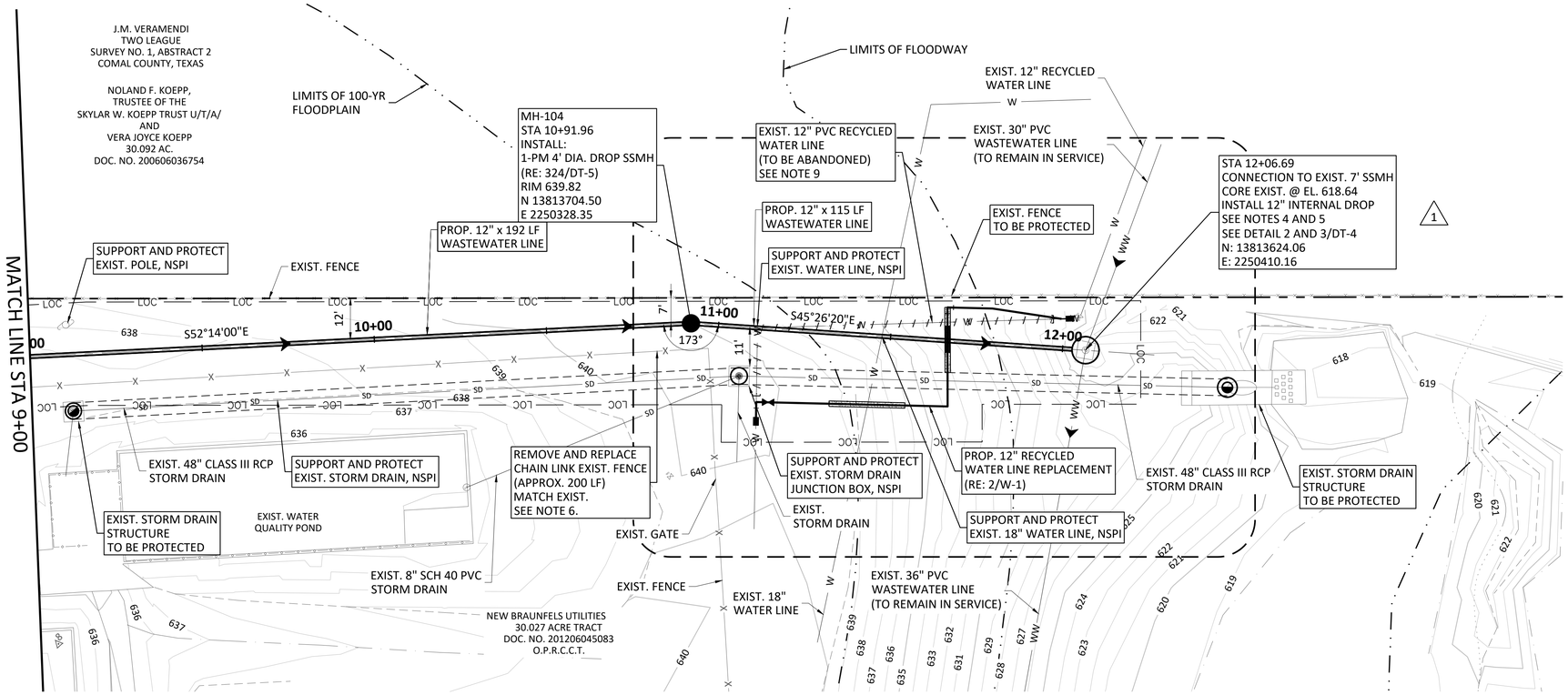

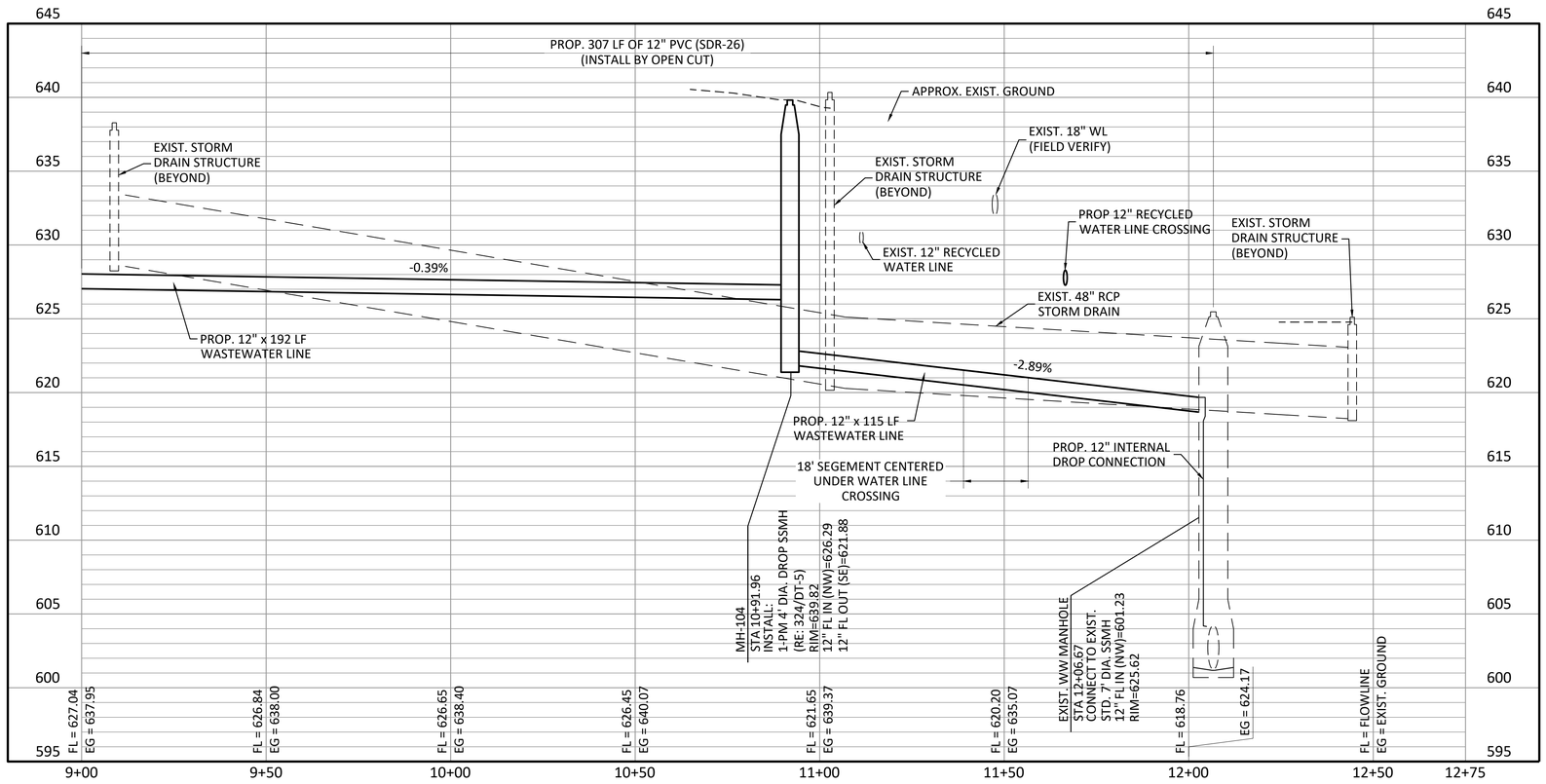

SCALE IN FEET
HORIZONTAL
0 20' 40'

SCALE IN FEET
VERTICAL
0 5' 10'

NOTES:

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2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
4. CONTRACTOR SHALL REPAIR THE EXISTING WASTEWATER MANHOLE AND REPAIR MANHOLE COATINGS FOLLOWING THE CONNECTION OF THE PROPOSED 12" PVC WASTEWATER LINE. NSPI.
5. FLEXIBLE, RESILIENT, AND WATER-TIGHT CONNECTORS BETWEEN PIPE AND MANHOLE STRUCTURES SHALL CONFORM TO ASTM C923.
6. CONTRACTOR SHALL INSTALL TEMPORARY FENCING AS NECESSARY TO SECURE THE WATER TREATMENT PLANT DURING CONSTRUCTION IN ACCORDANCE WITH TAC 290.42 (m).
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
8. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE LIMITS OF CONSTRUCTION.
9. CONTRACTOR SHALL REMOVE THE 12" RECYCLED WATER LINE AS NEEDED FOR INSTALLATION OF THE PROPOSED 12" WASTEWATER LINE. (NSPI)

UTILITY TRENCH COMPACTION NOTE:

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Texas Registered Engineering Firm F-2144
STATE OF TEXAS · ERIN C. MILLER · 120173 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER &
INVERTED SIPHON IMPROVEMENTS
WASTEWATER
IMPROVEMENT 1 WASTEWATER PLAN AND PROFILE
STA. 9+00 TO END

NO.	ISSUE	BY	DATE
2	ISSUED FOR CONSTRUCTION	ECM	04/18/2025
1	ADDENDUM #1	ECM	03/26/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1"

F&N JOB NO.	NBU20253
DATE	4/16/2025
DESIGNED	REV
DRAWN	CJG
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FILE NAME	NBU-CV-PP-WTR02.dwg

SHEET WW-3
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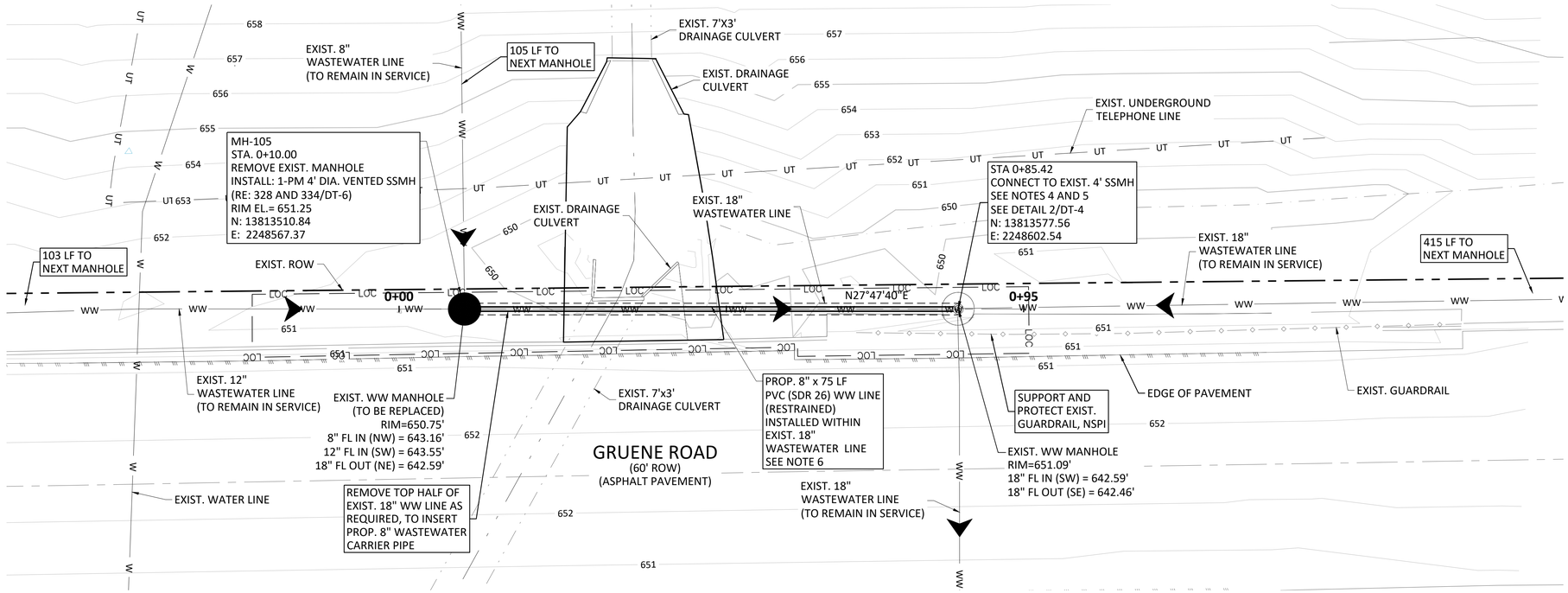

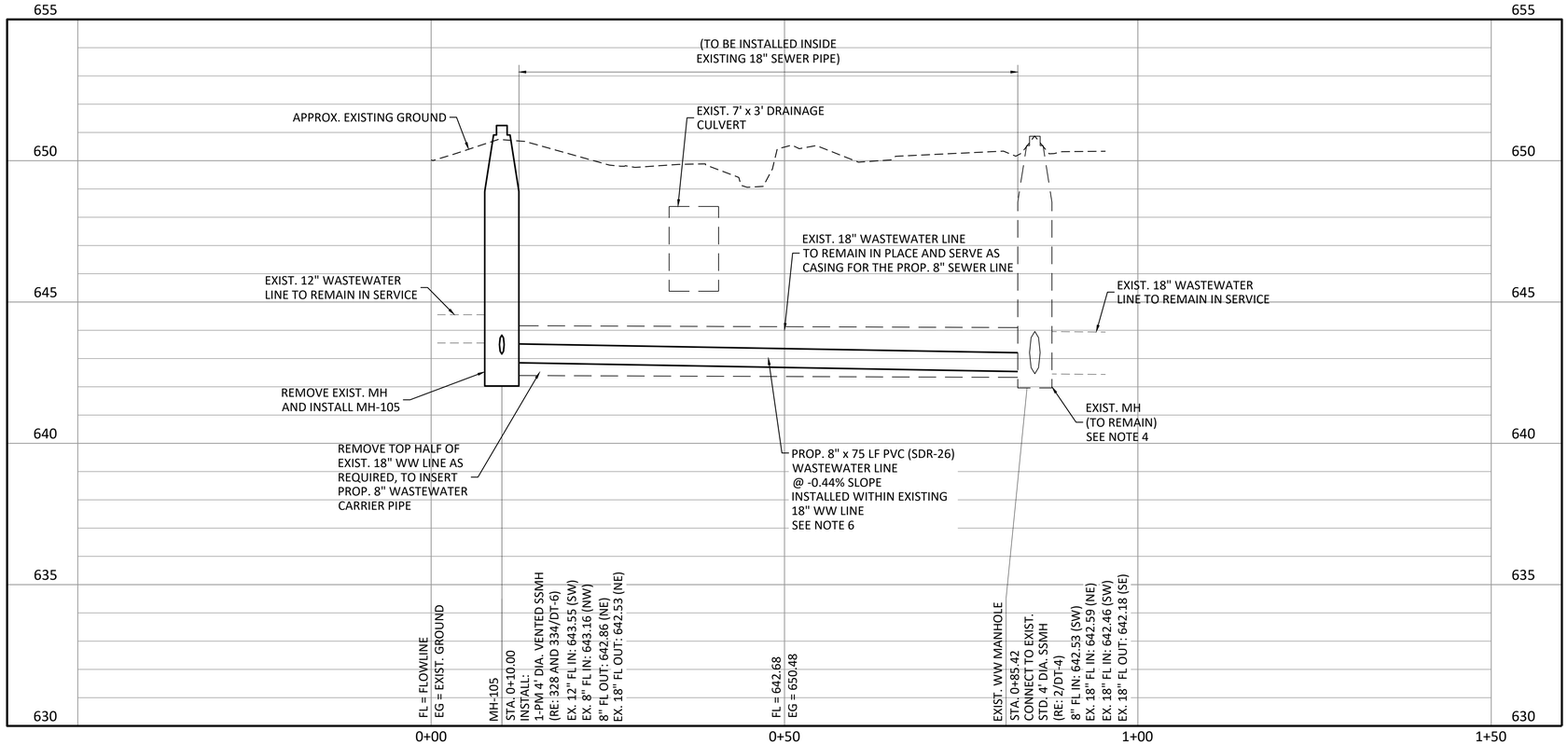

NORTH

0 10' 20'
SCALE IN FEET
HORIZONTAL

0 2.5' 5'
SCALE IN FEET
VERTICAL

NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
4. CONTRACTOR SHALL REHAB THE EXISTING WASTEWATER MANHOLE AND REPAIR MANHOLE COATINGS FOLLOWING THE CONNECTION OF THE PROPOSED 8" PVC WASTEWATER LINE.
5. FLEXIBLE, RESILIENT, AND WATER-TIGHT CONNECTORS BETWEEN PIPE AND MANHOLE STRUCTURES SHALL CONFORM TO ASTM C923.
6. THE PROPOSED 8" WASTEWATER LINE INSTALLED WITHIN THE EXISTING 18" WASTEWATER LINE SHALL HAVE A MINIMUM SLOPE OF 0.35%. SEE DETAIL 420/DT-2.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
8. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE LIMITS OF CONSTRUCTION.

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120173 · LICENSED · PROFESSIONAL · ENGINEER · 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES

GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS

WASTEWATER

IMPROVEMENT 2 WASTEWATER PLAN AND PROFILE STA. 0+00 TO END

F&N JOB NO.	NBU20253
DATE	4/16/2025
DESIGNED	REV
DRAWN	CJG
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FILE NAME	NBU-CV-PP-WTR01.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1"

SHEET WW-4

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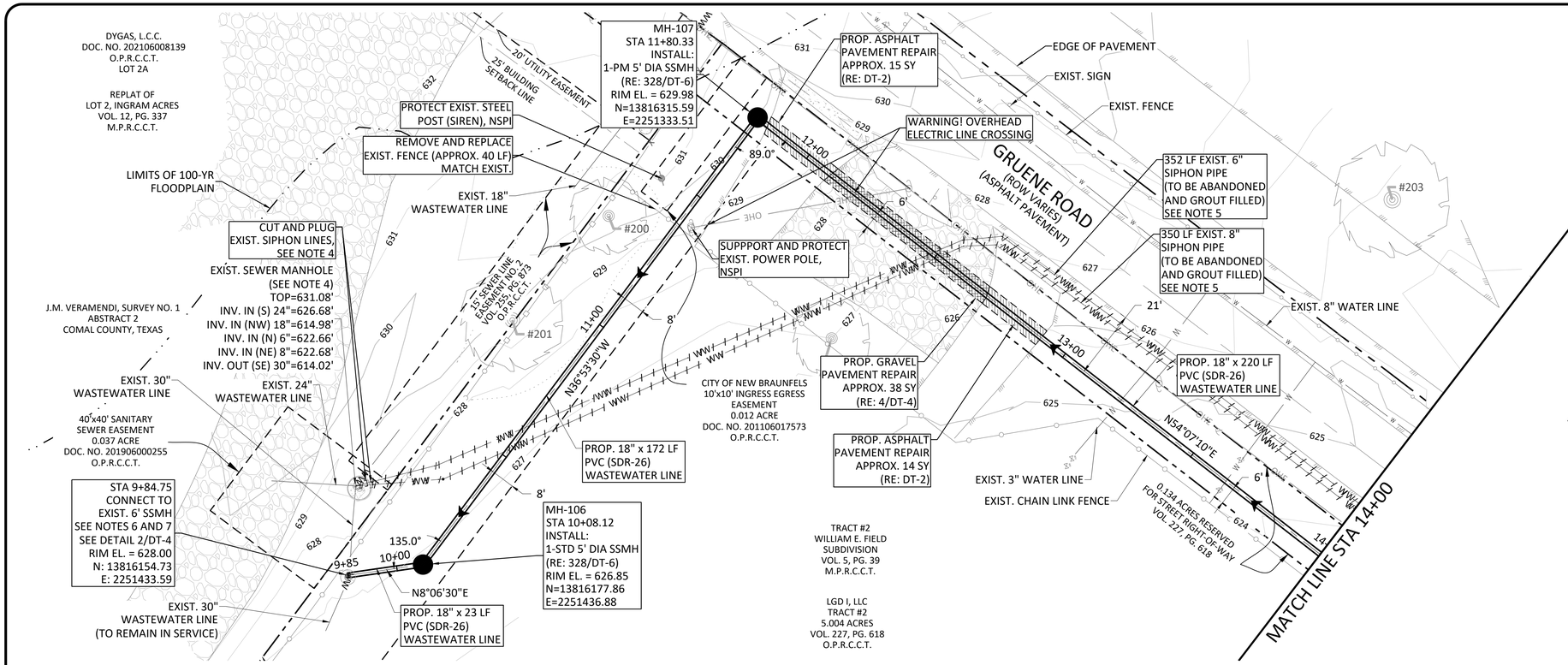

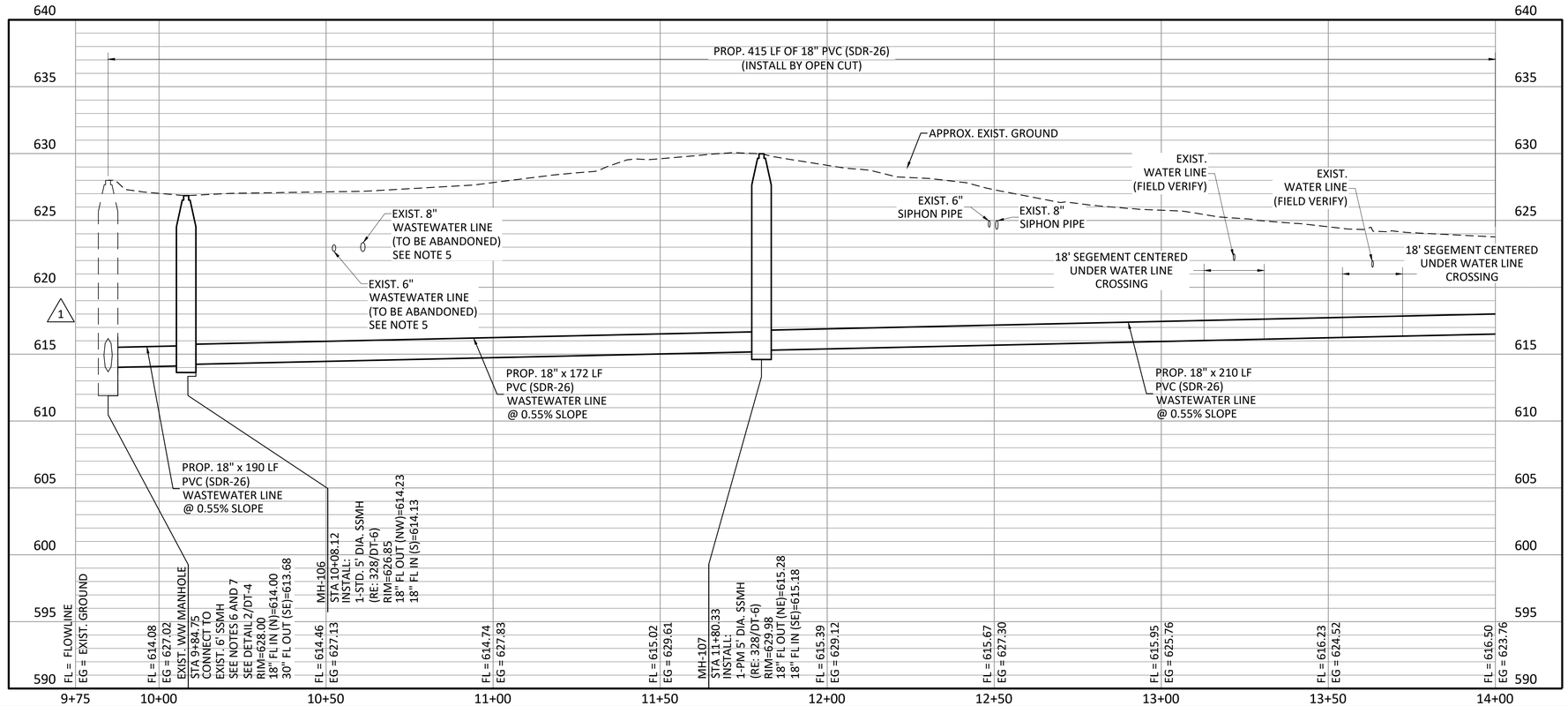

NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
4. CONTRACTOR SHALL PLUG THE EXISTING 6" AND 8" WASTEWATER SIPHON LINES AT THE MANHOLE CONNECTION LOCATION. (NSPI)
5. EXISTING SIPHON PIPES SHALL BE REMOVED AS NEEDED FOR INSTALLATION OF THE PROPOSED SIPHON PIPES. (NSPI)
6. CONTRACTOR SHALL REPAIR THE EXISTING WASTEWATER MANHOLE AND REPAIR MANHOLE COATINGS FOLLOWING THE CONNECTION OF THE PROPOSED 18" PVC WASTEWATER LINE. NSPI.
7. FLEXIBLE, RESILIENT, AND WATER-TIGHT CONNECTORS BETWEEN PIPE AND MANHOLE STRUCTURES SHALL CONFORM TO ASTM C923.
8. CONTRACTOR SHALL RESTORE ANY PAVEMENT MARKINGS DAMAGED BY CONSTRUCTION ACTIVITIES. (NSPI)
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
10. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE NBU EASEMENT AND RIGHT-OF-WAY.

UTILITY TRENCH COMPACTION NOTE:

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ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
ERIN C. MILLS
120173
LICENSED
PROFESSIONAL
ENGINEER
04/22/2025

FREESE NICHOLS
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
WASTEWATER
IMPROVEMENT 3 WASTEWATER PLAN AND PROFILE STA. 10+00 TO STA. 14+00

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
DRAWN CJG
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FILE NAME NBU-CV-PP-WTR03.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025
1	ADDENDUM #1	ECM	03/26/2025

VERIFY SCALE 0 1" Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

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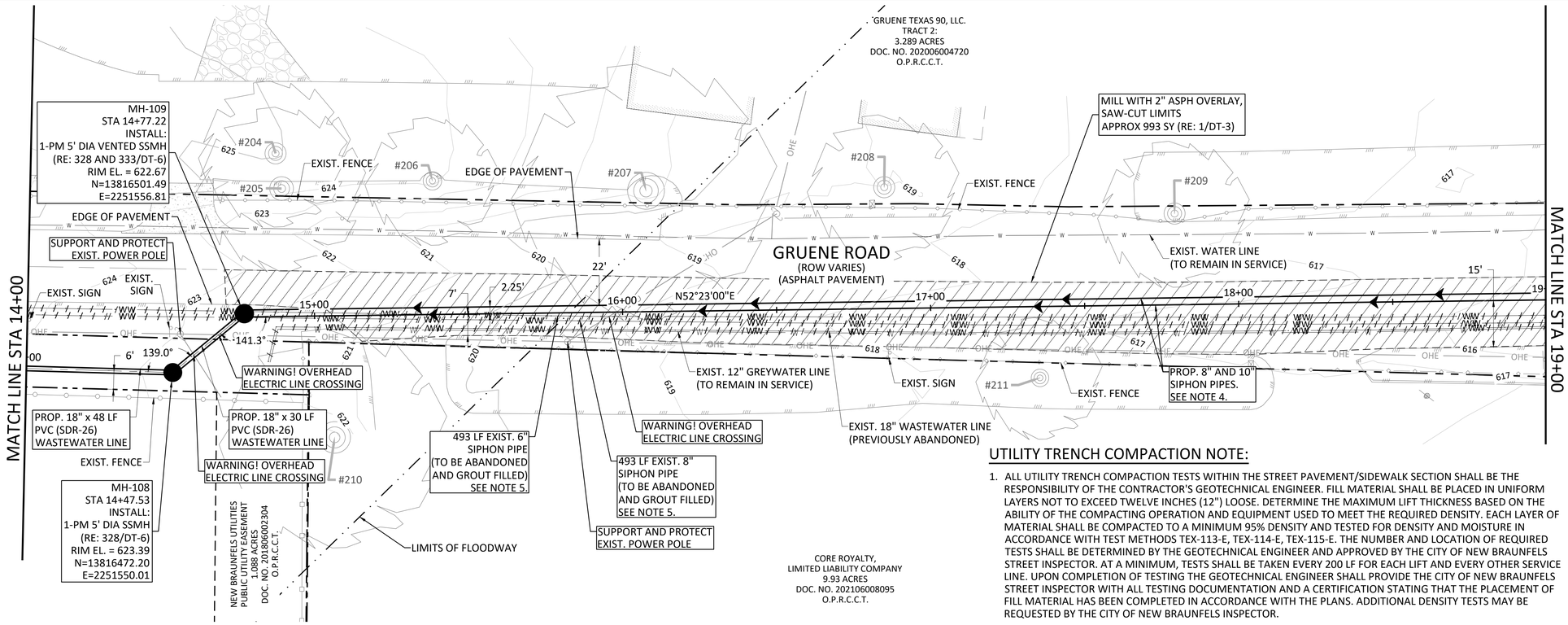

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NOTES:

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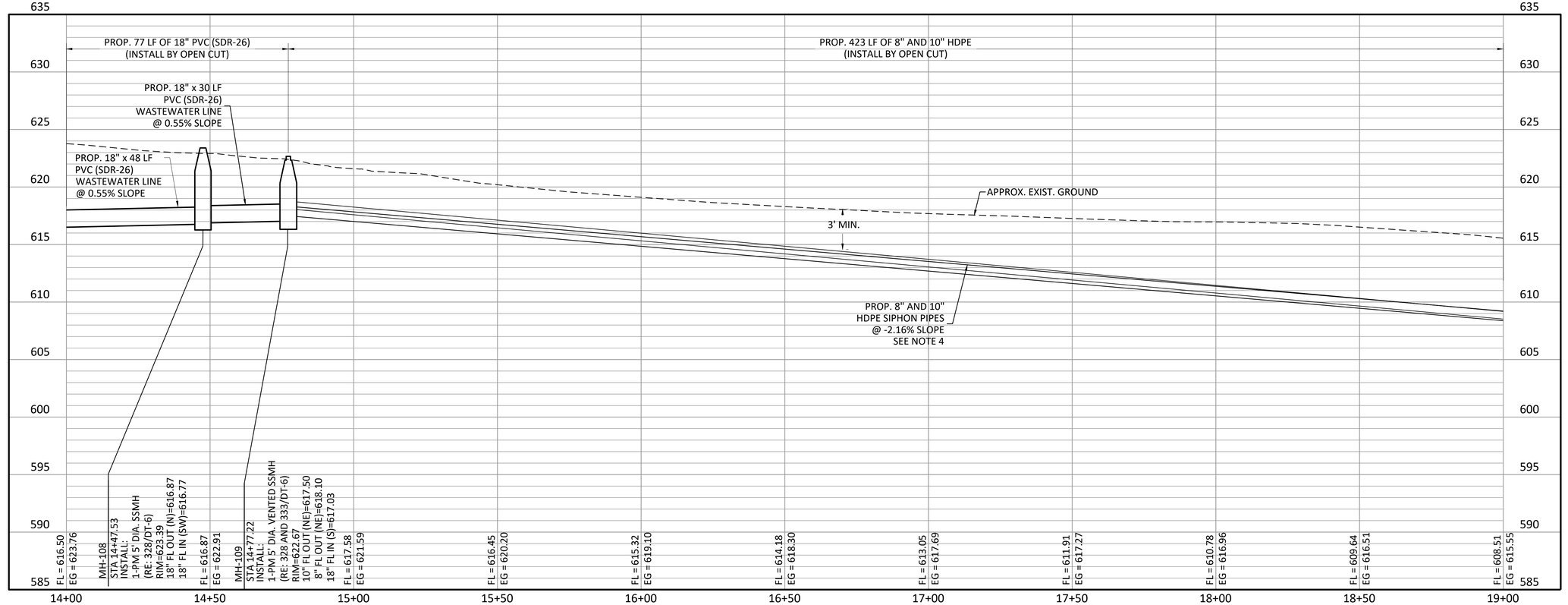
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
4. SIPHON PIPES INSTALLED BENEATH THE ROADWAY SHALL BE FLOWABLE FILL/CONCRETE ENCASED IN ACCORDANCE WITH DETAIL 3 ON SHEET DT-2. SIPHON PIPES INSTALLED OUTSIDE OF THE ROADWAY SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL 2 ON SHEET DT-2.
5. EXISTING SIPHON PIPES SHALL BE REMOVED AS NEEDED FOR INSTALLATION OF THE PROPOSED SIPHON PIPES. (NSPI)
6. CONTRACTOR SHALL RESTORE ANY PAVEMENT MARKINGS DAMAGED BY CONSTRUCTION ACTIVITIES. (NSPI)
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
8. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE NBU EASEMENT AND RIGHT-OF-WAY.



ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120172 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER &
INVERTED SIPHON IMPROVEMENTS
WASTEWATER
WASTEWATER PLAN AND PROFILE
IMPROVEMENT 3 WASTEWATER PLAN AND PROFILE
STA. 14+00 TO STA. 19+00

NO.	ISSUE	BY	DATE
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F&N JOB NO. NBU20253
DATE 4/16/2025
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FILE NAME NBU-CV-PP-WTR03.dwg

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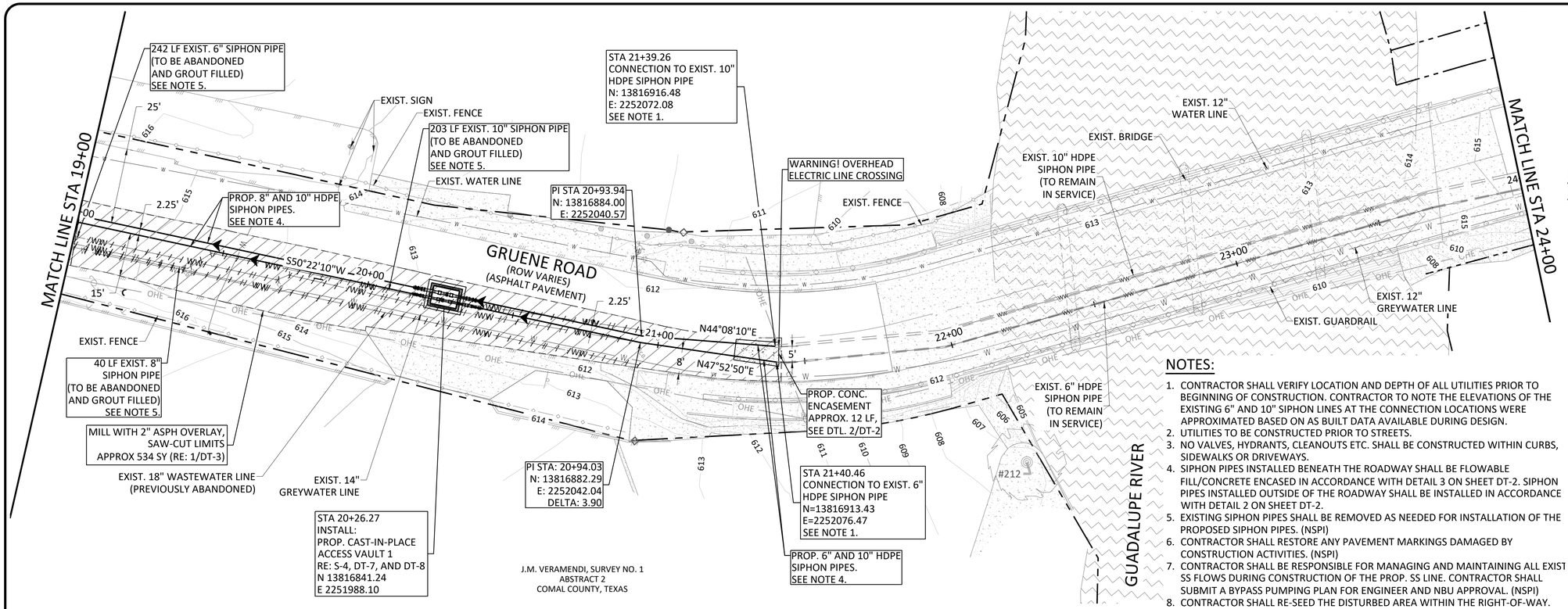


NORTH

0 20' 40'
SCALE IN FEET
HORIZONTAL

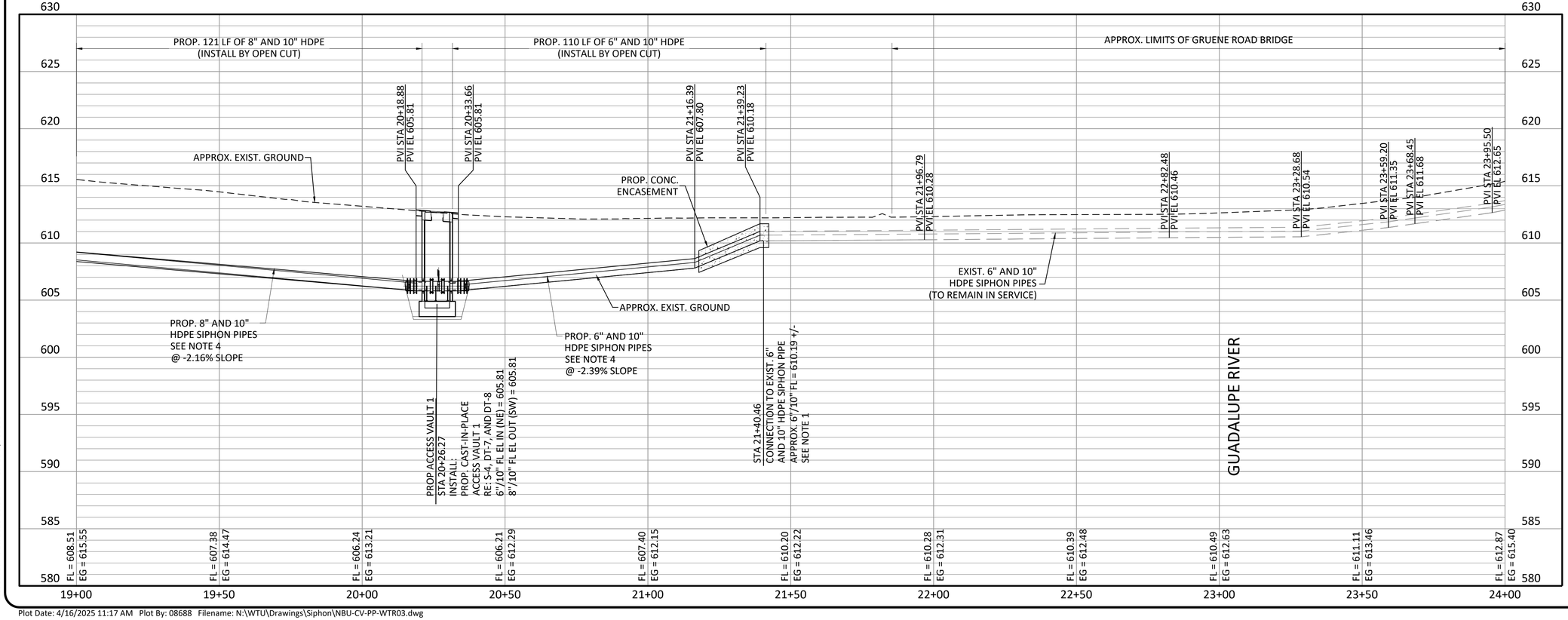
0 5' 10'
SCALE IN FEET
VERTICAL

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR TO NOTE THE ELEVATIONS OF THE EXISTING 6" AND 10" SIPHON LINES AT THE CONNECTION LOCATIONS WERE APPROXIMATED BASED ON AS BUILT DATA AVAILABLE DURING DESIGN.
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
4. SIPHON PIPES INSTALLED BENEATH THE ROADWAY SHALL BE FLOWABLE FILL/CONCRETE ENCASED IN ACCORDANCE WITH DETAIL 3 ON SHEET DT-2. SIPHON PIPES INSTALLED OUTSIDE OF THE ROADWAY SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL 2 ON SHEET DT-2.
5. EXISTING SIPHON PIPES SHALL BE REMOVED AS NEEDED FOR INSTALLATION OF THE PROPOSED SIPHON PIPES. (NSPI)
6. CONTRACTOR SHALL RESTORE ANY PAVEMENT MARKINGS DAMAGED BY CONSTRUCTION ACTIVITIES. (NSPI)
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
8. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE RIGHT-OF-WAY.



ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

FREESE NICHOLS
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STATE OF TEXAS
ERIN C. MILLS
120172
LICENSED
PROFESSIONAL ENGINEER
04/22/2025

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
WASTEWATER

IMPROVEMENT 3 WASTEWATER PLAN AND PROFILE STA. 19+00 TO STA. 24+00

F&N JOB NO. NBU20253
DATE 4/16/2025
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FILE NAME NBU-CV-PP-WTR03.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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SHEET WW-7
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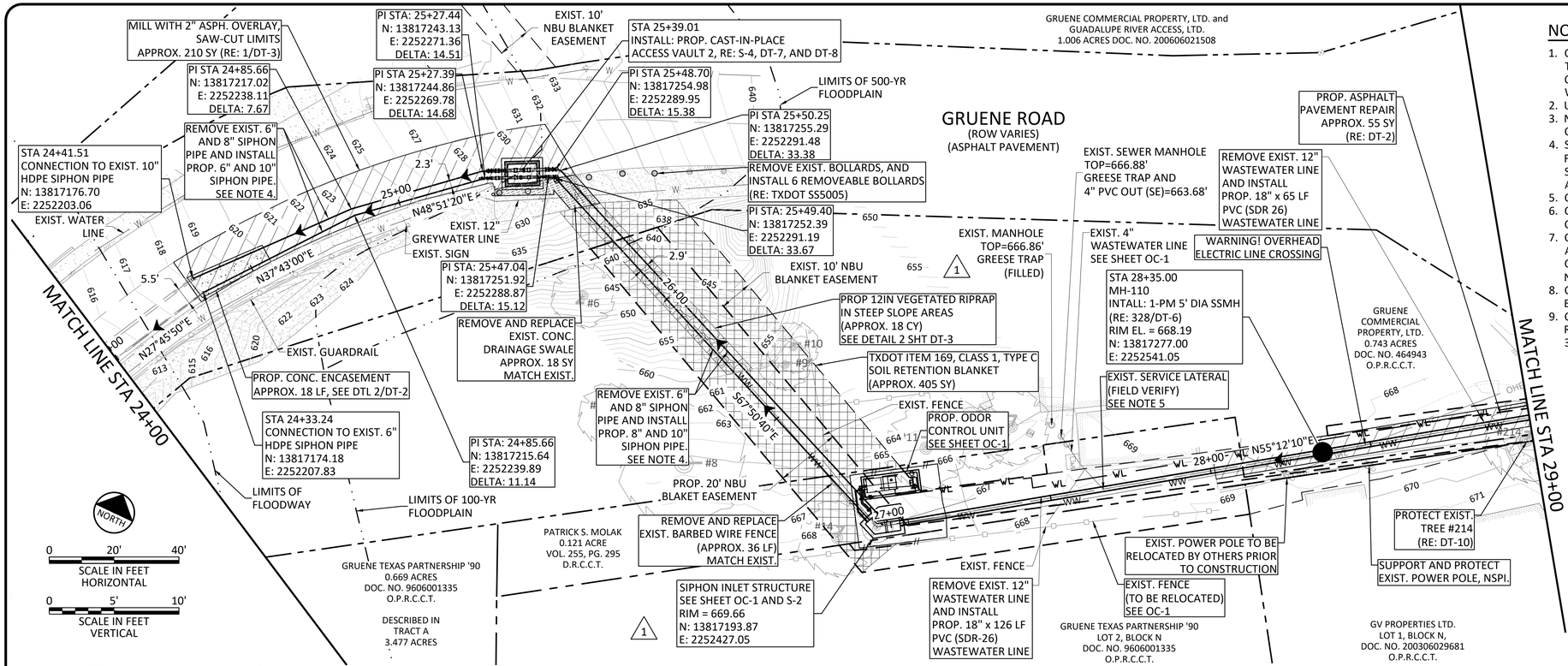

NOTES:

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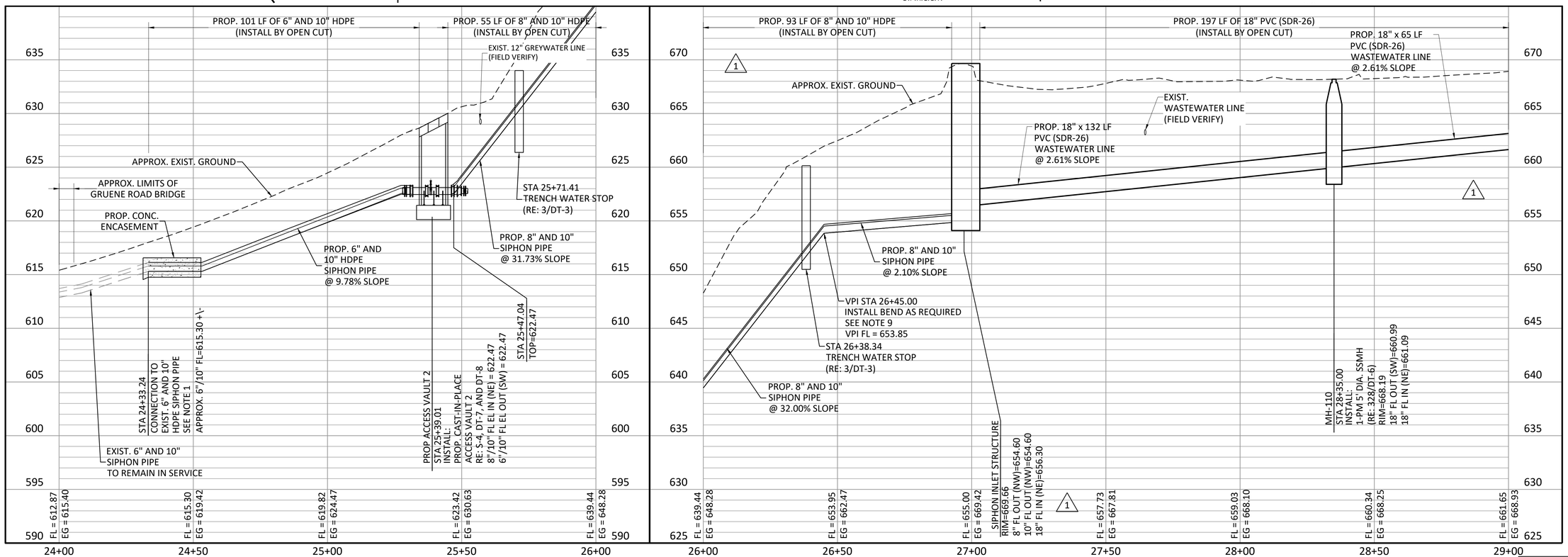
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
4. SIPHON PIPES INSTALLED BENEATH THE ROADWAY SHALL BE FLOWABLE FILL/CONCRETE ENCASED IN ACCORDANCE WITH DETAIL 3 ON SHEET DT-2. SIPHON PIPES INSTALLED OUTSIDE OF THE ROADWAY SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL 2 ON SHEET DT-2.
5. CONTRACTOR SHALL RECONNECT ALL EXISTING SERVICE LATERALS.
6. CONTRACTOR SHALL RESTORE ANY PAVEMENT MARKINGS DAMAGED BY CONSTRUCTION ACTIVITIES. (NSPI)
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
8. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE NBU EASEMENT AND RIGHT-OF-WAY.
9. CONTRACTOR SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS FOR BENDING OF HDPE PIPE. SEE SPECIFICATION 33 31 13.16.

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.



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WASTEWATER

IMPROVEMENT 3 WASTEWATER PLAN AND PROFILE
STA. 24+00 TO STA. 29+00

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1	ADDENDUM #1	ECM	03/26/2025

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SHEET WW-8
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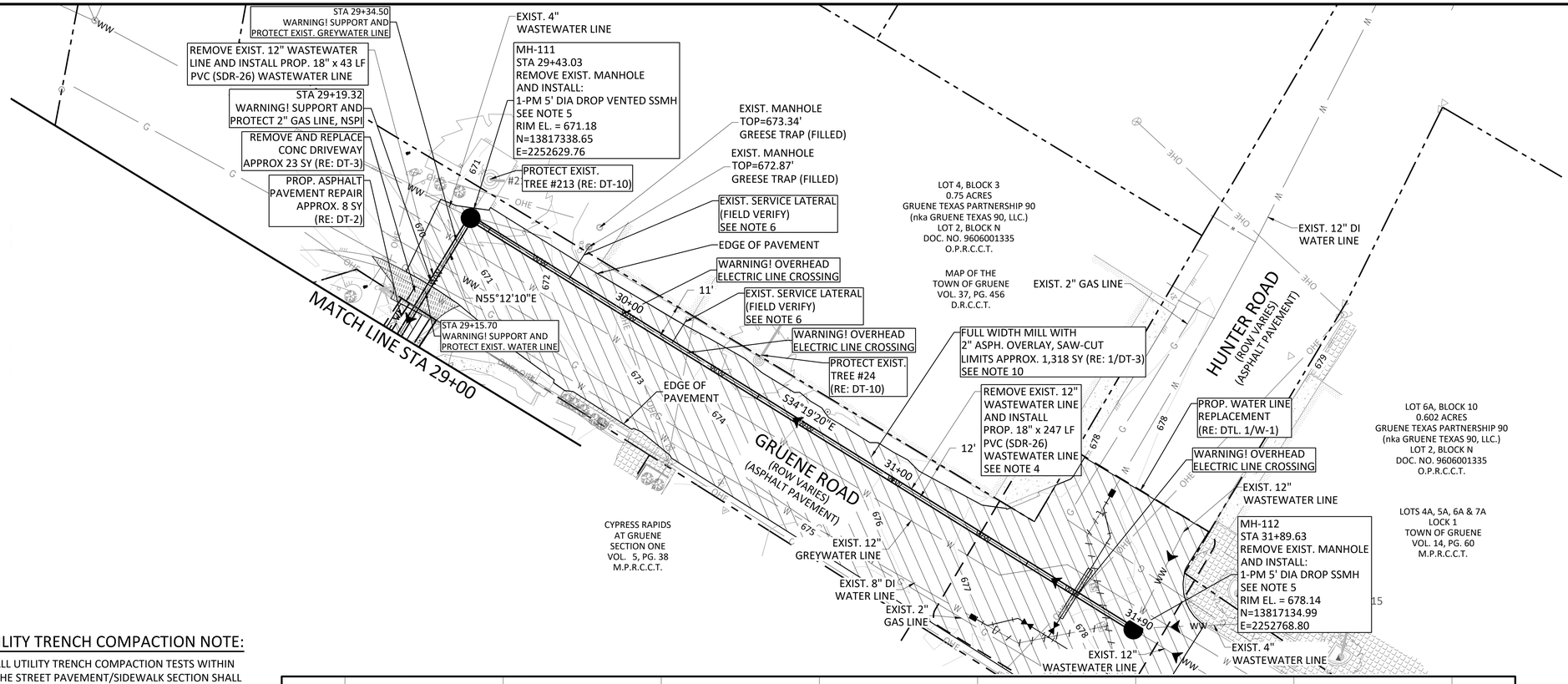
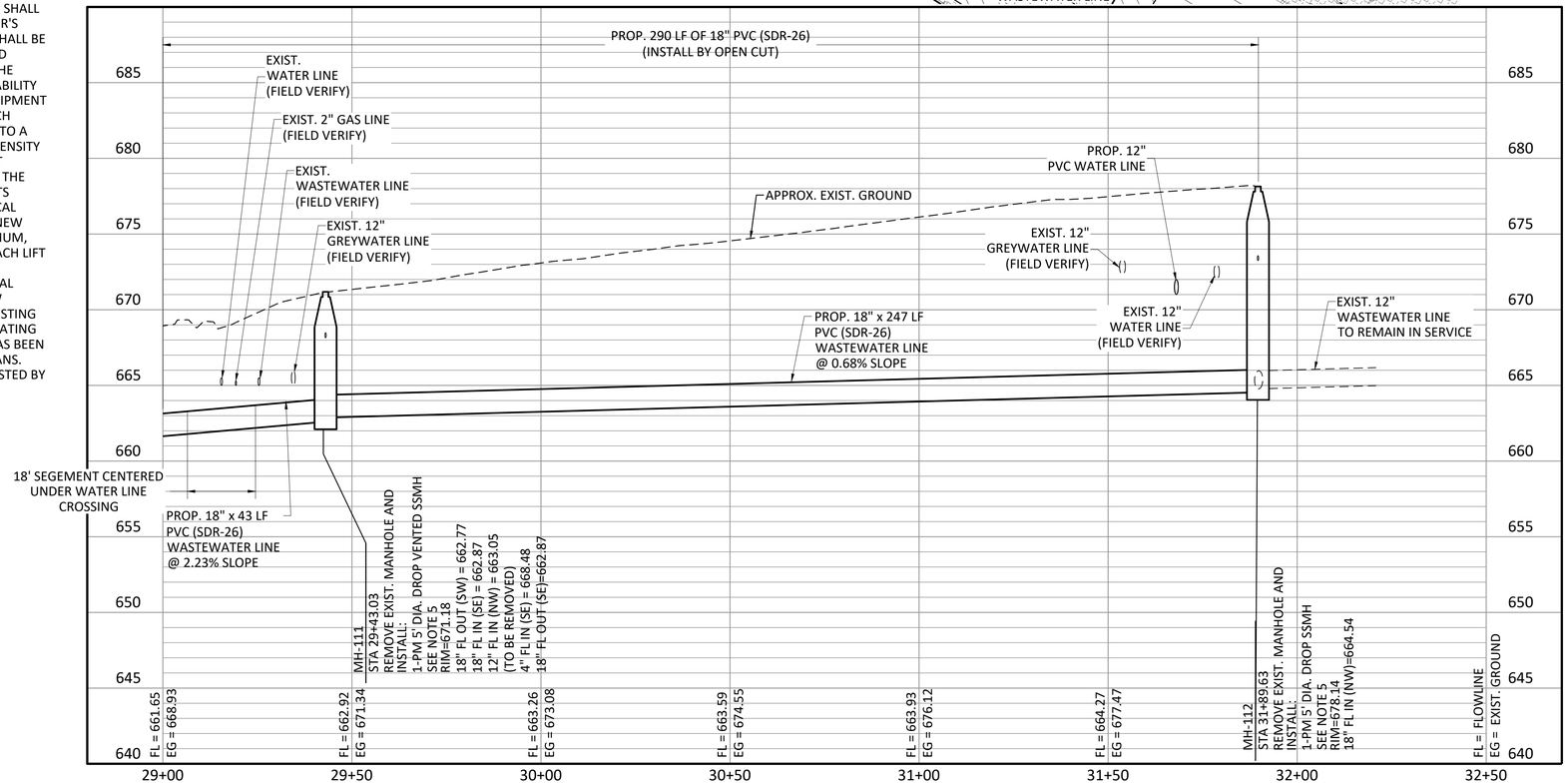


UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.



NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
4. RAPID SET FLOWABLE FILL SHALL BE USED FOR TRENCH REPAIR WITHIN THE GRUENE ROAD ROW. SEE DETAIL SHEET DT-2.
5. CONTRACTOR SHALL INSTALL AN EXTERNAL DROP CONNECTION FOR THE EXISTING 4" WASTEWATER LINE. SEE DETAIL 325 ON SHEET DT-5.
6. CONTRACTOR SHALL RECONNECT ALL EXISTING SERVICE LATERALS.
7. CONTRACTOR SHALL RESTORE ANY PAVEMENT MARKINGS DAMAGED BY CONSTRUCTION ACTIVITIES. (NSPI)
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING AND MAINTAINING ALL EXIST. SS FLOWS DURING CONSTRUCTION OF THE PROP. SS LINE. CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN FOR ENGINEER AND NBU APPROVAL. (NSPI)
9. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE NBU EASEMENT AND RIGHT-OF-WAY.
10. SEE SHEET BP-1 FOR ADDITIONAL GRUENE AND HUNTER ROAD PAVEMENT RESTORATION REQUIREMENTS.
11. THE FOLLOWING PROVISIONS APPLY BETWEEN MH-111 AND MH-112:
    - SETTLEMENT MONITORING REQUIRED, EVERY 10 FT BETWEEN STA. 29+43.03 AND STA 31+89.63. NSPI.
    - PRE-CONSTRUCTION OBSERVATION OF EXISTING STRUCTURE WITH PHOTOS AND/OR VIDEO TO BE SUBMITTED TO NBU AND ENGINEER PRIOR TO STARTING CONSTRUCTION. CONTRACTOR SHALL PROVIDE VIBRATION MONITORING AT ALL TIMES FOR TUNNELING/BORING ACTIVITIES.
    - BETWEEN STA 29+43.03 AND 31.89.63 VIBRATION DATA SHALL BE PROVIDED AS RECORD DATA TO OWNER AND ENGINEER. PEAK VELOCITY:
    I. LESS THAN 15 HZ; 12 MM/S
    II. 15 HZ TO 40 HZ; 20 MM/S
    III. GREATER THAN 40 HZ; 50 MM/S IF THE VIBRATION LIMITS ARE EXCEEDED THE CONTRACTOR SHALL STOP CONSTRUCTION ACTVITIES NEAR THE BUILDING AND COORDINATE WITH THE ENGINEER AND OWNER PRIOR TO CONTINUING WORK

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
ERIN C. MILLS
120173
LICENSED PROFESSIONAL ENGINEER
04/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
WASTEWATER
IMPROVEMENT 3 WASTEWATER PLAN AND PROFILE
STA. 29+00 TO END

FAN JOB NO.	NBU20253			
DATE	4/16/2025			
DESIGNED	REV			
DRAWN	CJG			
CHECKED	.			
REVISED				
DATE				
BY				
NO.	ISSUE	DATE	BY	
1	ISSUED FOR CONSTRUCTION	04/18/2025	ECM	

FILE NAME: NBU-CV-PP-WTR03.dwg

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SHEET
WW-9

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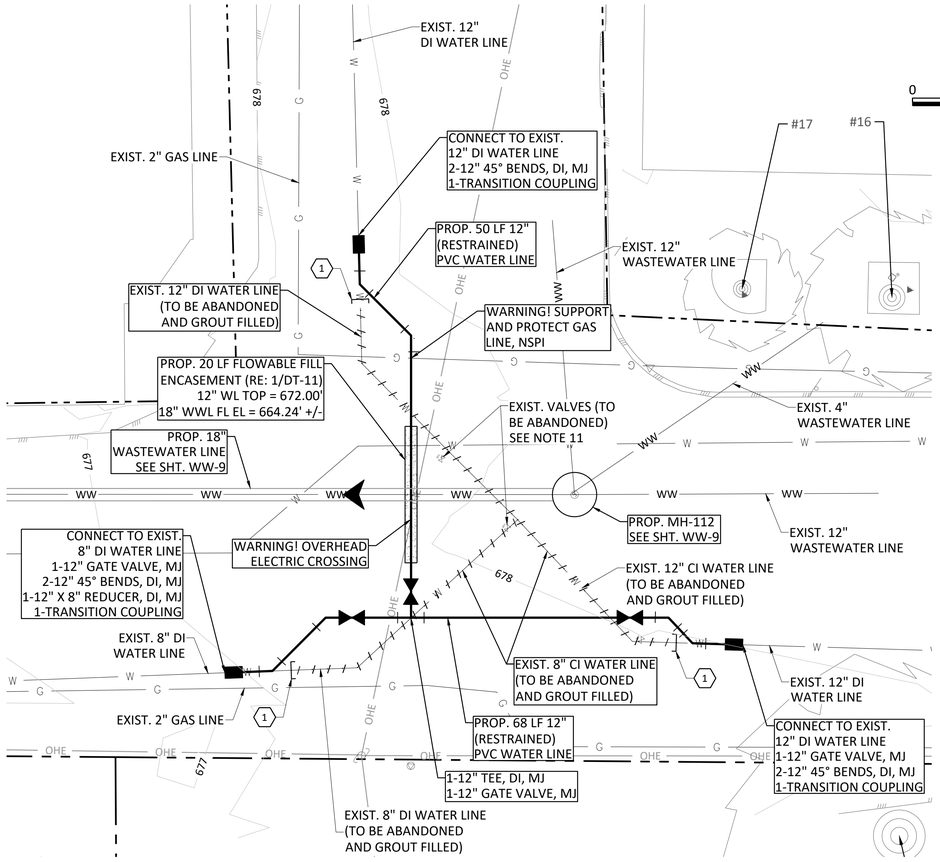
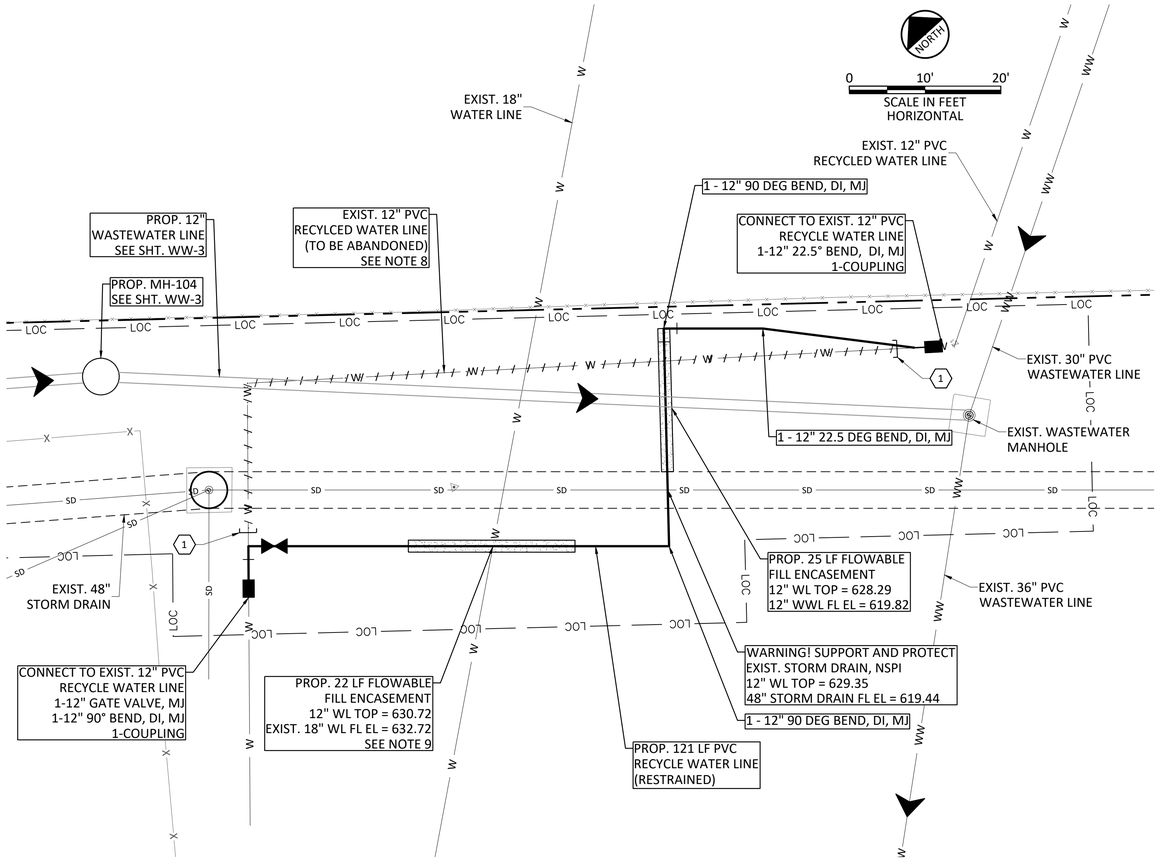


1 W-1 PROP. WATER LINE REPLACEMENT - IMPROVEMENT 3

1"=10'



2 W-1 PROP. RECYCLE WATER LINE REPLACEMENT - IMPROVEMENT 1

1"=10'

NOTES:

1. UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
2. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. DEFLECT JOINTS AS REQUIRED TO ACHIEVE GRADES AND BENDS AS SHOWN. ALLOWABLE JOINT DEFLECTION SHALL BE NO GREATER THAN 75% OF THE PIPE MANUFACTURER'S RECOMMENDED MAXIMUM.
4. CONTRACTOR SHALL COMPLETE CONNECTIONS TO EXISTING RECYCLE WATER LINES ONCE THE RECYCLE WATER LINE IS TESTED AND APPROVED BY THE INSPECTOR. CONTRACTOR SHALL COORDINATE WITH NBU TO SHUT VALVES PRIOR TO CONNECTING TO EXISTING RECYCLE WATER LINES.
5. RECYCLE WATER MAINS SHALL HAVE A MINIMUM OF 48 INCHES OF COVER TO FINISHED GRADE. CONCRETE ENCASEMENT WILL BE REQUIRED IF MINIMUM COVER CANNOT BE MET.
6. ALL TIE-INS ARE SUBSIDIARY TO THE PRICE OF PIPE.
7. FIELD VERIFY SIZE, HORIZONTAL, AND VERTICAL LOCATION OF EXISTING UTILITIES PRIOR TO ORDER OF WATER PIPE AND MATERIALS. WATER LINE TIE-IN LOCATIONS NEED TO BE FIELD VERIFIED AND MAY NEED TO BE FIELD ADJUSTED.
8. CONTRACTOR SHALL REMOVE THE 12" RECYCLED WATER LINE AS NEEDED FOR INSTALLATION OF THE PROPOSED 12" WASTEWATER LINE. (NSPI)
9. FLOWABLE FILL ENCASEMENT SHALL EXTEND FROM THE TOP OF THE PROPOSED 12" RECYCLED WATER LINE TO THE BOTTOM OF THE EXISTING 18" WATER LINE.
10. ALL WATER PIPE INSTALLED SHALL BE FULLY RESTRAINED.
11. EXISTING VALVES TO BE ABANDONED SHALL HAVE THE VALVE BOX AND EXTENSION REMOVED IN ITS ENTIRETY AND FILLED WITH FLOWABLE FILL TO 2" BELOW THE SURFACE IN ACCORDANCE WITH CITY OF NEW BRAUNFELS' PAVEMENT REPAIR STANDARDS (RE: DT-2).

NOTES BY SYMBOL "⬡"

⬡1 CUT, PLUG AND ABANDON EXISTING WATER LINE, NSPI

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120172 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025

FREESE NICHOLS
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
WATER

PROP. WATER LINE REPLACEMENT

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
DRAWN CJG
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FILE NAME NBU-CV-PP-WTR04.dwg

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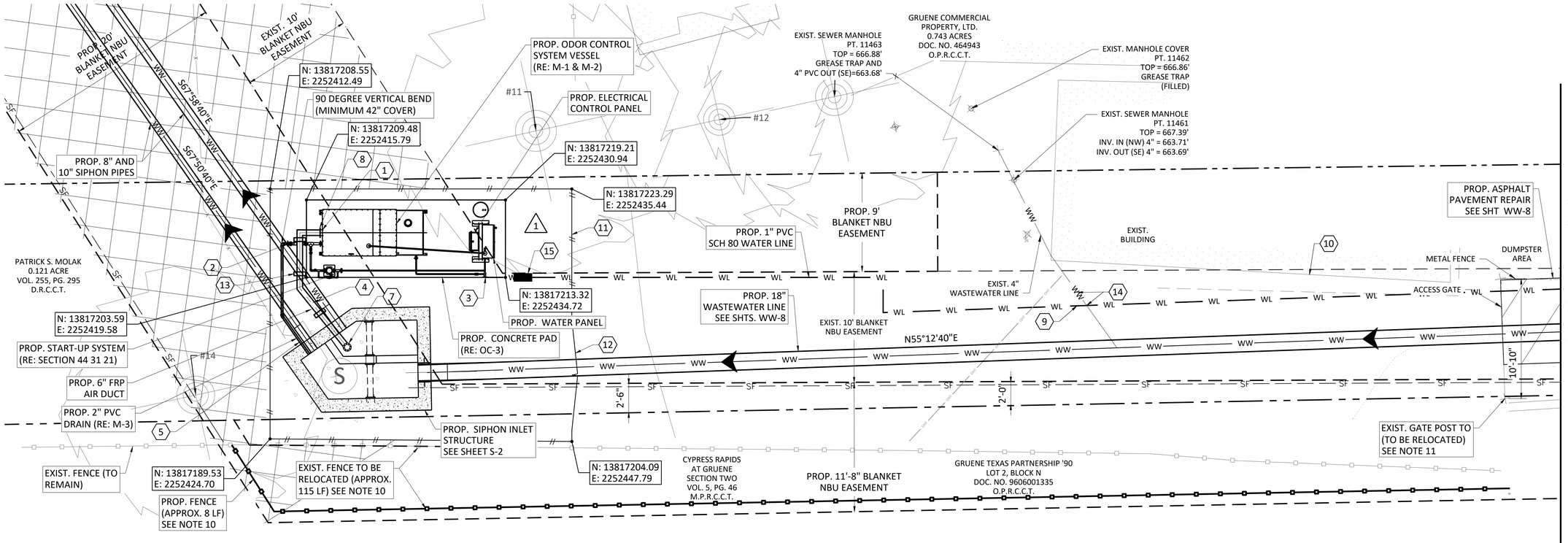
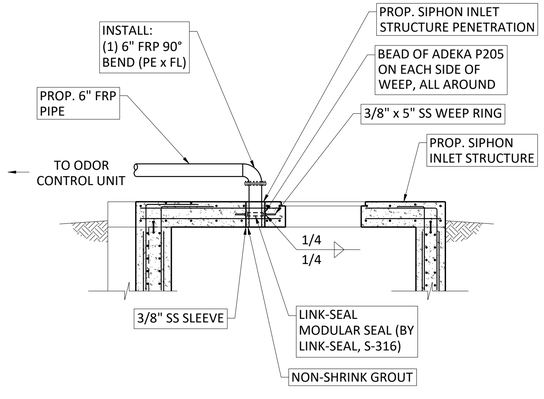


GENERAL NOTES:

1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
2. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. THE 2" PVC DRAIN FROM THE IMPROVEMENT 3 ODOR CONTROL SYSTEM SHALL BE TYPE 1, GRADE 1, POLYVINYL CHLORIDE,SCHEDULE 80 PIPE CONFORMING TO ASTM D1785. INSTALLATION OF THE 2" PVC DRAIN SHALL BE IN ACCORDANCE WITH THE PLANS.
4. THE 2" PVC DRAIN FROM THE IMPROVEMENT 3 ODOR CONTROL SYSTEM SHALL BE INSTALLED TO HAVE A MINIMUM COVER OF 42 INCHES AND A SLOPE BETWEEN 2.5% AND 10%. THE 2" PVC DRAIN SHALL EXTEND 12" BEYOND THE INSIDE SURFACE OF
5. THE PROPOSED SIPHON INLET STRUCTURE. DISCHARGE MUST BE DIRECTED TOWARD THE BOTTOM OF THE PROPOSED SIPHON INLET STRUCTURE UTILIZING A 90 DEGREE BEND.
6. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE NBU EASEMENT.
7. CONTRACTOR SHALL PROVIDE A LOCKABLE DIAMOND PLATED ALUMINUM CONTAINER FOR STOP LOG STORAGE. THE STORAGE CONTAINER SHALL BE PLACED ON TOP OF THE SIPHON STRUCTURE (NSPI).
8. CONTRACTOR SHALL INSTALL BILCO ACCESS HATCH WITH FALL PROTECTION SAFETY GATE (NSPI). ACCESS HATCH SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. SEE SHEET S-2 FOR SIZING OF THE HATCH.
9. CONTRACTOR SHALL PROVIDE A STOP LOG LOWERING MECHANISM TO PERMIT INSTALLATION AND REMOVAL OF THE STOP LOGS WITHOUT ENTERING THE SIPHON STRUCTURE (NSPI). THE LOWERING MECHANISM SHALL INCLUDE A DAVIT CRANE, MOUNTING PLATE, AND ALL APPURTENANCES REQUIRED FOR OPERATION. CONTRACTOR SHALL COORDINATE THE LOCATION OF THE CRANE WITH NBU OPERATIONS AND THE ENGINEER PRIOR TO INSTALLATION.
10. THE EXISTING FENCE SHALL BE RELOCATED TO BE ADJACENT TO THE SOUTHERN 11'-8" BLANKET NBU EASEMENT BOUNDARY. CONTRACTOR SHALL INSTALL APPROXIMATELY 8' OF ADDITIONAL FENCING TO ENSURE THERE ARE NO GAPS BETWEEN THE RELOCATED AND EXISTING FENCE LINES. THE PROPOSED FENCING SHALL MATCH THE EXISTING FENCING. SEE DETAIL 1 ON SHEET DT-2.
11. THE EXISTING GATE POST SHALL BE RELOCATED TO A LOCATION REVIEWED AND APPROVED BY THE INSPECTOR AND OWNER TO PROVIDE A 14' GATE OPENING. CONTRACTOR SHALL INSTALL A 14' DOUBLE SWING GATE MATCHING THE MATERIAL, HEIGHT, AND FINISHING OF THE EXISTING GATE FOLLOWING CONSTRUCTION. SEE DETAIL 4 ON SHEET DT-2 FOR A PHOTO OF THE EXISTING GATE.

NOTES BY SYMBOL "⬡"

1. 6" FRP AIR DUCT CONNECTION TO THE ODOR CONTROL SYSTEM (RE: SECTION 44 31 21 FOR MANUFACTURER DRAWING AND CONNECTION DETAIL)
2. 2" PVC DRAIN CONNECTION FROM THE ODOR CONTROL SYSTEM TO SIPHON STRUCTURE (RE: SECTION 44 31 21 FOR MANUFACTURER DRAWING AND CONNECTION DETAIL)
3. 1" PVC WATER LINE CONNECTION TO THE ODOR CONTROL SYSTEM (RE: SECTION 44 31 21 FOR MANUFACTURER DRAWING AND CONNECTION DETAIL)
4. 6" FRP AIR DUCT
5. 2" PVC DRAIN PENETRATION INTO THE PROPOSED SIPHON INLET STRUCTURE (RE: STRUCTURAL)
6. 1" PVC WATER LINE CONNECTION TO AN EXISTING WATER MAIN (RE: M-3)
7. 6" FRP AIR DUCT PENETRATION INTO THE PROPOSED SIPHON INLET STRUCTURE (RE: 1/OC-1)
8. 6" FRP AIR DUCT EXPANSION JOINT (RE: M-3)
9. THE CENTER PIPE JOINT FOR THE PROPOSED WATER LINE SHALL BE AT LEAST 2' ABOVE OR BELOW THE EXISTING SEWER LINE.
10. CONTRACTOR SHALL PROTECT EXIST. BUILDING DURING CONSTRUCTION (NSPI)
11. 8' TALL WOOD FENCE (RE: DT-9)
12. 10' WIDE WOOD FENCE GATE (RE:DT-9)
13. 6" FRP AIR DUCT PIPE SUPPORT (RE: M-3)
14. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE SANITARY SEWER SERVICE. THE SANITARY SEWER SERVICE LINE SHALL BE LOWERED TO A MINIMUM DEPTH OF 5' BELOW FINISHED GRADE (NSPI). AS PER 30 TAC § 290.44(E)(4)(B), THE PROPOSED WATER LINE SHALL BE MINIMUM OF 2 FEET ABOVE THE EXISTING SANITARY SEWER LINE. ADJUSTMENT OF THE VERTICAL ALIGNMENT OF THE LINE SHALL BE IN ACCORDANCE WITH 30 TAC §217.53(1)(2)(A).
15. BACKFLOW PREVENTER (ZURN 375XL) AND FLIP TOP FIBERGLASS ENCLOSURE. ⚠1



1 / OC-1 — 6" FRP SIPHON INLET PENETRATION

NTS

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NORTH

0 5' 10'

SCALE IN FEET

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS — ERIN C. MILLS — 120173 — LICENSED PROFESSIONAL ENGINEER — 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
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Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
ODOR CONTROL

ODOR CONTROL SITE PLAN (1 OF 2)

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED — REV
DRAWN CJG
CHECKED
FILE NAME NBU-CV-PL-SITE-01.dwg

NO.	ISSUE	BY	DATE
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1	ADDENDUM #1	ECM	03/26/2025

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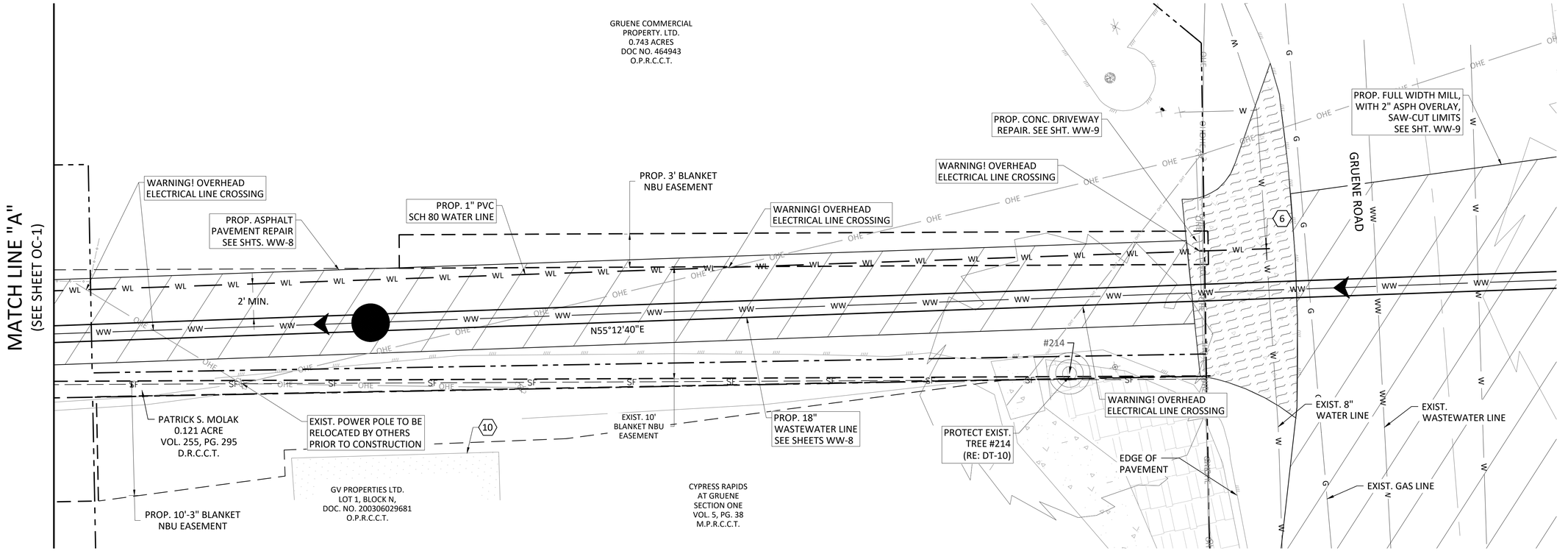

GENERAL NOTES:

1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
2. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. CONTRACTOR SHALL RE-SEED THE DISTURBED AREA WITHIN THE NBU EASEMENT AND RIGHT-OF-WAY.
4. CONTRACTOR SHALL COORDINATE WITH THE INSPECTOR AND OWNER TO DETERMINE THE LOCATION OF THE METER BOX AND RP BACKFLOW DEVICE PRIOR TO CONNECTING TO THE EXISTING WATER LINE.

UTILITY TRENCH COMPACTION NOTE:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NOTES BY SYMBOL "⬡"

1. 6" FRP AIR DUCT CONNECTION TO THE ODOR CONTROL SYSTEM (RE: SECTION 44 31 21 FOR MANUFACTURER DRAWING AND CONNECTION DETAIL)
2. 2" PVC DRAIN CONNECTION FROM THE ODOR CONTROL SYSTEM TO SIPHON STRUCTURE (RE: SECTION 44 31 21 FOR MANUFACTURER DRAWING AND CONNECTION DETAIL)
3. 1" PVC WATER LINE CONNECTION TO THE ODOR CONTROL SYSTEM (RE: SECTION 44 31 21 FOR MANUFACTURER DRAWING AND CONNECTION DETAIL)
4. 6" FRP AIR DUCT
5. 2" PVC DRAIN PENETRATION INTO THE PROPOSED SIPHON INLET STRUCTURE (RE: STRUCTURAL)
6. 1" PVC WATER LINE CONNECTION TO AN EXISTING WATER MAIN, SEE NOTE 4 (RE: M-3)
7. 6" FRP AIR DUCT PENETRATION INTO THE PROPOSED SIPHON INLET STRUCTURE (RE: 1/OC-1)
8. 6" FRP AIR DUCT EXPANSION JOINT (RE: M-3)
9. THE CENTER PIPE JOINT FOR THE PROPOSED WATER LINE SHALL BE AT LEAST 2' ABOVE OR BELOW THE EXISTING SEWER LINE.
10. CONTRACTOR SHALL PROTECT EXIST. BUILDING DURING CONSTRUCTION (NSPI)
11. 8' TALL WOOD FENCE (RE: DT-9)
12. 10' WIDE WOOD FENCE GATE (RE:DT-9)
13. 6" FRP AIR DUCT PIPE SUPPORT (RE: M-3)
14. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE SANITARY SEWER SERVICE. THE SANITARY SEWER SERVICE LINE SHALL BE LOWERED TO A MINIMUM DEPTH OF 5' BELOW FINISHED GRADE (NSPI). AS PER 30 TAC § 290.44(E)(4)(B), THE PROPOSED WATER LINE SHALL BE MINIMUM OF 2 FEET ABOVE THE EXISTING SANITARY SEWER LINE. ADJUSTMENT OF THE VERTICAL ALIGNMENT OF THE LINE SHALL BE IN ACCORDANCE WITH 30 TAC §217.53(1)(2)(A).

NORTH

0 5' 10'
SCALE IN FEET

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

ERIN C. MILLS
120172
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
04/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER &
INVERTED SIPHON IMPROVEMENTS
ODOR CONTROL

ODOR CONTROL SITE PLAN (2 OF 2)

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED -
DRAWN -
CHECKED -

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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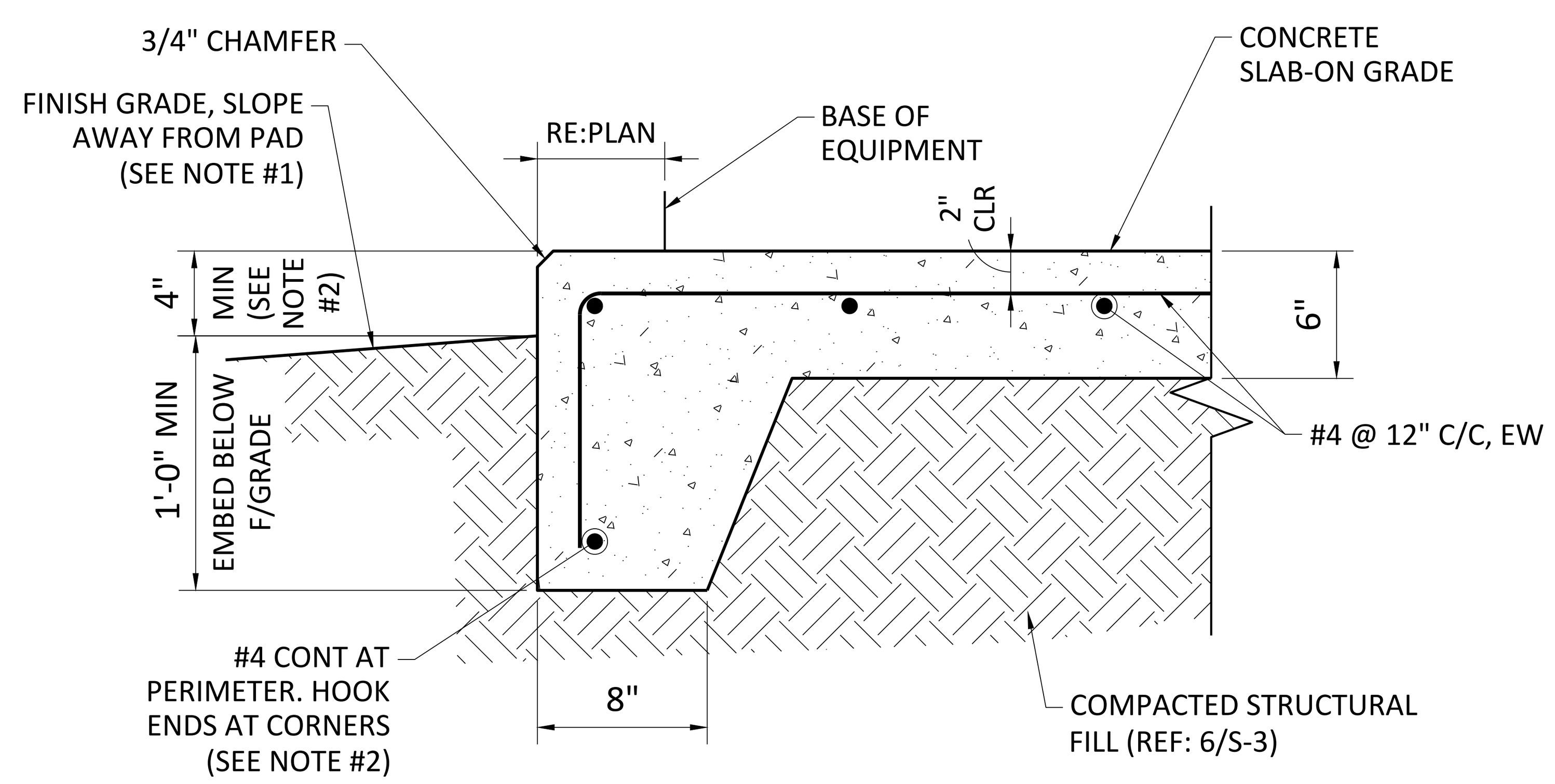
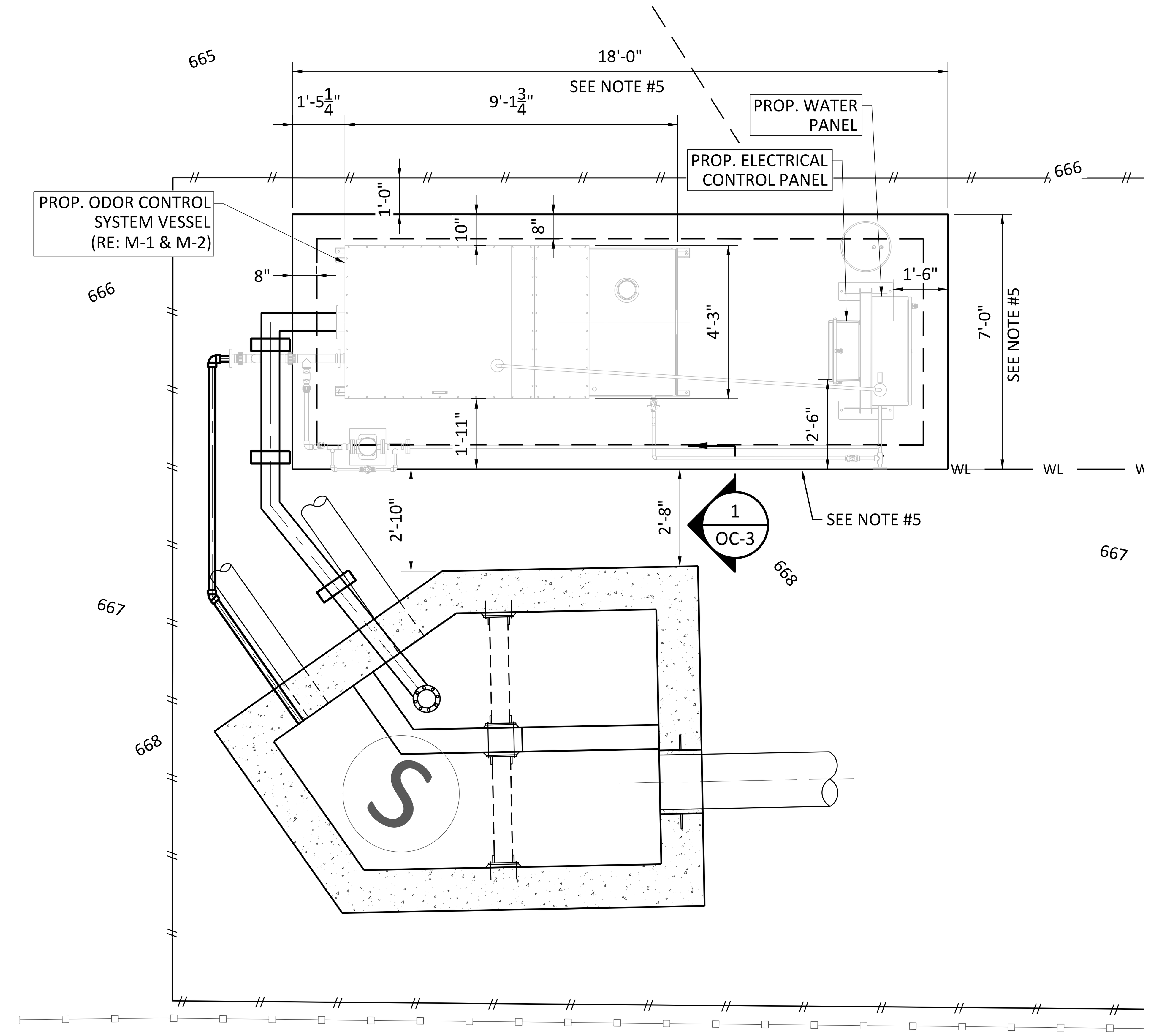


DETAIL NOTES:

1. ANCHOR EQUIPMENT TO SLAB AS RECOMMENDED BY EQUIPMENT MANUFACTURER.
2. WHERE HEIGHT OF SLAB ABOVE GRADE EXCEEDS 6", PROVIDE AN ADDITIONAL HORIZONTAL ROW OF #4 PERIMETER REINFORCING.

1 / OC-3 TYPICAL EXTERIOR EQUIPMENT PAD

0 4" 8" 1'
1-1/2"=1'-0"



0 1' 2' 4'
3/8"=1'-0

STRUCTURAL GENERAL NOTES:

1. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60, DEFORMED.
3. REMOVE ALL SURFICIAL MATERIALS BELOW SLAB TO THE EXTENTS SHOWN IN 6/S-3. NO ORGANIC MATERIAL SHALL REMAIN BELOW SLAB. EXPOSE SUBGRADE AND PROOF ROLL WITH HAND-DIRECTED EQUIPMENT. TWO PASSES IN EACH DIRECTION. BACKFILL BELOW SLAB WITH MATERIAL SHOWN.
4. OVERALL PAD DIMENSIONS SHOWN SHALL BE COORDINATED WITH EQUIPMENT MANUFACTURER PRIOR TO FABRICATION OR CONSTRUCTION. AT A MINIMUM, EQUIPMENT ANCHOR BOLTS SHALL BE AT LEAST 4" FROM EDGE OF SLAB, BUT NOT LESS THAN THAT SHOWN OR AS REQUIRED BY EQUIPMENT MANUFACTURER. ANY DIMENSIONAL CHANGES TO THE PAD SHALL BE AT THE CONTRACTOR'S EXPENSE.
5. CONTRACTOR SHALL VERIFY TOP OF SLAB IS A MINIMUM OF 4" ABOVE FINISHED GRADE IN ACCORDANCE WITH DETAIL #1. CONTRACTOR SHALL BE RESPONSIBLE FOR GRADING EQUIPMENT PAD TO ENSURE DRAINAGE AWAY FROM SLAB.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
FREESE AND NICHOLS
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
ODOR CONTROL
ODOR CONTROL SITE PLAN NOTES, FOUNDATION PLAN, AND SECTION

F&N JOB NO.	NBU20253
DATE	4/16/2025
DESIGNED	BNW
DRAWN	CJG
REVISED	
CHECKED	PAB
FILE NAME	NBU-ST-DT-MISC01.dwg

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GENERAL

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE, INCLUDING LOCAL SUPPLEMENTS, EXCEPT WHERE APPLICABLE CODES OR THE CONTRACT DOCUMENTS ARE MORE RESTRICTIVE.

2. DESIGN IS IN ACCORDANCE WITH 2018 INTERNATIONAL BUILDING CODE, LOCAL AMENDMENTS, AND APPLICABLE CODE REFERENCED STANDARDS.

3. PRIOR TO FABRICATION OR CONSTRUCTION:
   A. REVIEW OTHER DISCIPLINE DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, EQUIPMENT REQUIREMENTS, ETCETERA, WHICH ARE NOT SHOWN ON STRUCTURAL DRAWINGS.
   B. VERIFY DIMENSIONS AND LOCATIONS OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, EQUIPMENT REQUIREMENTS, ETCETERA.
   C. FIELD VERIFY ALL EXISTING CONDITIONS, INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES.
   D. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN DISCIPLINES, CONSTRUCTABILITY ISSUES, OR EXISTING CONDITIONS.

4. PROVIDE EXCAVATION SHORING TO PROTECT AND SUPPORT FOUNDATION SOILS UNDER EXISTING STRUCTURES.

5. THE STRUCTURE IS DESIGNED FOR STABILITY IN THE FINAL CONDITION ONLY. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY DURING CONSTRUCTION.

6. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

7. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.

LOADS

1. FLOOR LIVE LOADS:
   A. TOP OF SIPHON BOX: 150 PSF

FOUNDATION

1. EXCAVATION DESIGN AND SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. ANY SLOPES SHOWN ARE A MAXIMUM AND SHALL BE DECREASED AS REQUIRED FOR SAFETY OR TO MEET OSHA REQUIREMENTS.

2. BACKFILL SHALL BE ON-SITE EXCAVATED SOILS FREE OF ORGANIC MATERIALS AND PARTICLES LARGER THEN 3 INCHES.

3. ALL BELOW GRADE FOUNDATION ELEMENTS ARE DESIGNED WITH FORMED SIDES.

4. DO NOT BACKFILL FOUNDATION WALLS UNTIL THE RESTRAINING SLABS OR ADEQUATE BRACING ARE IN PLACE.

5. ALL FOUNDATIONS SHALL BEAR ON SOUND, UNDISTURBED, LEVEL EXCAVATIONS. REMOVE ANY AND ALL LOOSE DEBRIS FROM EXPOSED BEARING SURFACE. SUITABLE BEARING MATERIAL SHALL BE VERIFIED BY A GEOTECHNICAL PROFESSIONAL ENGINEER

6. ALLOWABLE NET BEARING PRESSURES USED FOR FOUNDATION DESIGNS ARE AS FOLLOWS:
   A. ONSITE MATERIAL: 1,500 PSF

7. MOISTURE CONTENT IN FOOTING EXCAVATIONS SHALL BE MAINTAINED UNTIL FOOTING IS PLACED. FOOTINGS SHALL BE PLACED AS SOON AS PRACTICAL AFTER EXCAVATIONS ARE COMPLETED.

8. MUD SLABS, WHERE INDICATED, SHALL BE PLACED THE SAME DAY EXCAVATION IS COMPLETED. THE GEOTECHNICAL ENGINEER SHALL VERIFY THAT THE BEARING SURFACE IS FREE OF LOOSE AND/OR DELETERIOUS MATERIAL BEFORE PLACEMENT OF MUD SLAB.

CONCRETE

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF ACI 301 AND ACI 350.

2. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. CONCRETE FOR METER VAULTS SHALL HAVE A MINIMUM 7-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

3. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60, DEFORMED.

4. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE AS LISTED BELOW, UNLESS NOTED OTHERWISE.
   A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
   B. EXPOSED TO SEWAGE: 3"
   C. ALL OTHER: 2"
   D. SEE DRAWINGS FOR EXCEPTIONS

5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS ON SLABS UNLESS NOTED OTHERWISE.

6. ALL CONSTRUCTION JOINTS (CXJ) SHALL BE THOROUGHLY CLEANED AND PURPOSELY ROUGHENED TO 1/4" PRIOR TO PLACING ADJACENT CONCRETE.

7. ADDITIONAL CONSTRUCTION JOINTS SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.

8. PENETRATIONS OTHER THAN SHOWN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

9. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED DUE TO THE LIMITED EXTENT OF THE ADJACENT CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.

11. UNLESS NOTED OTHERWISE, HOOKS SHOWN ON DRAWINGS SHALL BE ASSUMED TO BE STANDARD HOOKS PER ACI 318.

12. UNLESS NOTED OTHERWISE, LAP SPLICES IN BEAMS AND WALLS SHALL BE STAGGERED.

13. ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP 48 BAR DIAMETERS OF SMALLER BAR LAPPED, UNLESS NOTED OTHERWISE. ALL REBAR EMBEDMENT LENGTHS SHALL BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

POST-INSTALLED ANCHORS (EXPANSION OR ADHESIVE)

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII), BUT NOT LESS THAN THAT INDICATED BELOW.

2. ADHESIVE ANCHORS SHALL ONLY BE INSTALLED BY CONSTRUCTION PERSONNEL CERTIFIED UNDER ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM OR APPROVED EQUAL. SUBMIT CERTIFICATIONS AS RECORD DATA PRIOR TO ANCHOR INSTALLATION.

3. ANCHOR DIAMETER AND EMBEDMENT SHALL BE AS INDICATED.

4. HOLES SHALL BE DRILLED USING ROTARY HAMMER DRILLS WITH ANSI MATCHED TOLERANCE CARBIDE-TIPPED DRILL BITS. DRILL BIT DIAMETER SHALL MATCH DIAMETER RECOMMENDED BY MANUFACTURER. DRILL HOLES USING HILTI SAFESET TECHNOLOGY OR APPROVED EQUAL.

5. EXPANSION ANCHORS SHALL BE A STUD BOLT TYPE WITH HEX HEAD NUT AND SHALL BE GALVANIZED 316 STAINLESS STEEL UNLESS NOTED OTHERWISE, AND AS NOTED BELOW:
   A. ANCHORS SHALL BE HILTI KWIK BOLT TZ2 OR AN APPROVED EQUAL. SUBMIT PUBLISHED COMPARISONS BETWEEN EACH SPECIFIED AND EACH ALTERNATE ANCHOR.
   B. VERIFY HOLE IS CLEAR OF DUST AND DEBRIS.
   C. DRIVE ANCHOR INTO HOLE WITH A HAMMER AND THEN TIGHTEN TO SPECIFIED TORQUE.

6. ADHESIVE ANCHORS SHALL BE DEFORMED REINFORCING BARS (ASTM A615, GR 60) OR 316 STAINLESS STEEL THREADED ROD ASTM A193, GRADE B8M, CLASS 1,UNLESS NOTED OTHERWISE, AND AS NOTED BELOW:
   A. ADHESIVE SHALL BE HILTI HIT-RE 500 V3OR AN APPROVED EQUAL. SUBMIT PUBLISHED COMPARISONS BETWEEN EACH SPECIFIED AND EACH ALTERNATE ANCHOR.
   B. PRIOR TO INSTALLATION: ALL DEFORMED BARS AND THREADED ROD SHALL BE CLEAN, FREE OF OIL, GREASE, OR OTHER RESIDUE, IN ACCORDANCE WITH MPII.
   C. VERIFY HOLE IS CLEAR OF DUST AND DEBRIS.
   D. INSTALL ADHESIVE STARTING AT BACK OF HOLE. AS REQUIRED BY MPII, USE MANUFACTURER SUPPLIED PISTON PLUG INJECTION SYSTEM FOR ALL HORIZONTAL AND VERTICALLY INCLINED HOLES.
   E. INSTALL ANCHOR BY SIMULTANEOUSLY TWISTING AND INSERTING INTO HOLE.
   F. ALLOW ANCHOR TO SET REQUIRED TIME. DO NOT DISTURB.
   G. TIGHTEN NUT. DO NOT OVER-TORQUE.
   H. MINIMUM CONCRETE AGE AT TIME OF INSTALLATION: 28 DAYS
   I. CONCRETE TEMPERATURE RANGE AT TIME OF INSTALLATION SHALL BE: 41DEG F TO 104DEG F.
   J. CONCRETE MOISTURE CONDITION AT TIME OF INSTALLATION: DRY.

STAINLESS STEEL

1. STAINLESS STEEL MATERIAL SHALL BE IN ACCORDANCE WITH:
   A. PLATES: ASTM A240, S31603, Fy = 25KSI, Fu = 70 KSI
   B. BOLTS: ASTM A193, GRADE B8M, CLASS 1.
2. WELDING QUALIFICATIONS: QUALIFY PROCE3DURS AND PERSONNEL ACCORDING TO AWS D1.6, "STRUCTURAL WELDING CODE – STAINLESS STEEL".
3. MILL CERTIFICATES TO BE SUBMITTED PRIOR TO FABRICATION AND BE SIGNED BY MANUFACTURERS OF STAINLESS-STEEL CERTIFYING THAT PRODUCTS FURNISHED COMPLY WITH REQUIREMENTS.

ISSUED FOR CONSTRUCTION ON 4/22/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
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149910
LICENSED
PROFESSIONAL ENGINEER
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STRUCTURAL
SIPHON INLET STRUCTURE GENERAL NOTES

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FILE NAME ST-NBU-GN-NOTE.dwg

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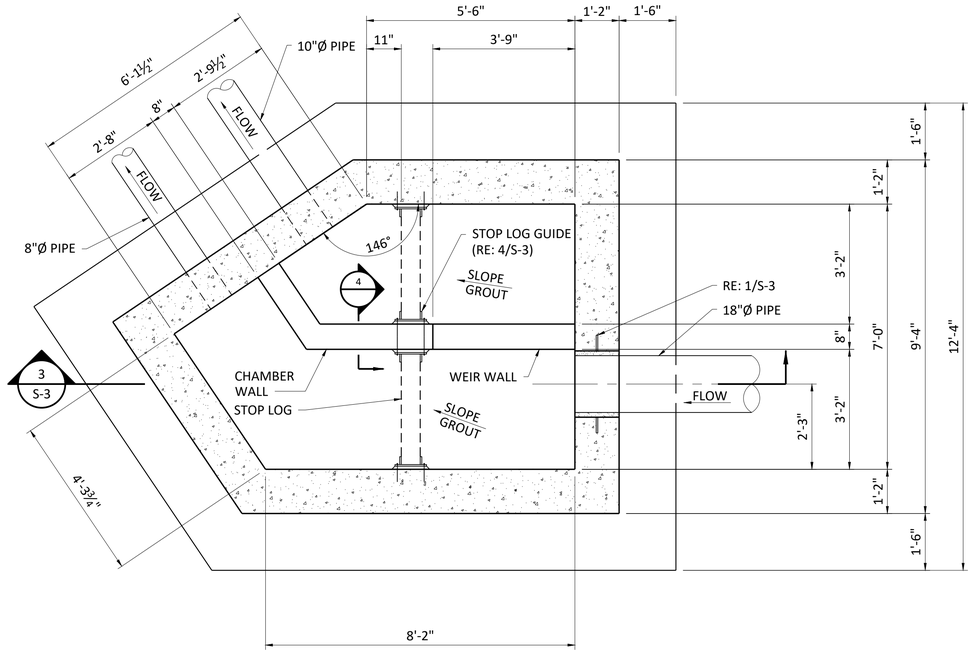
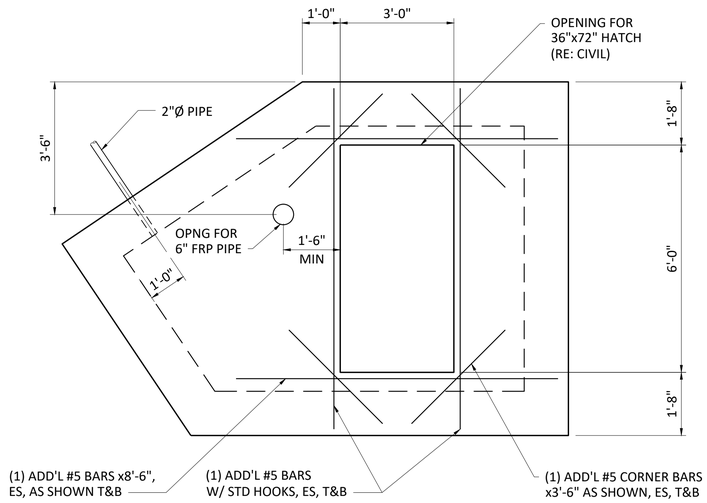


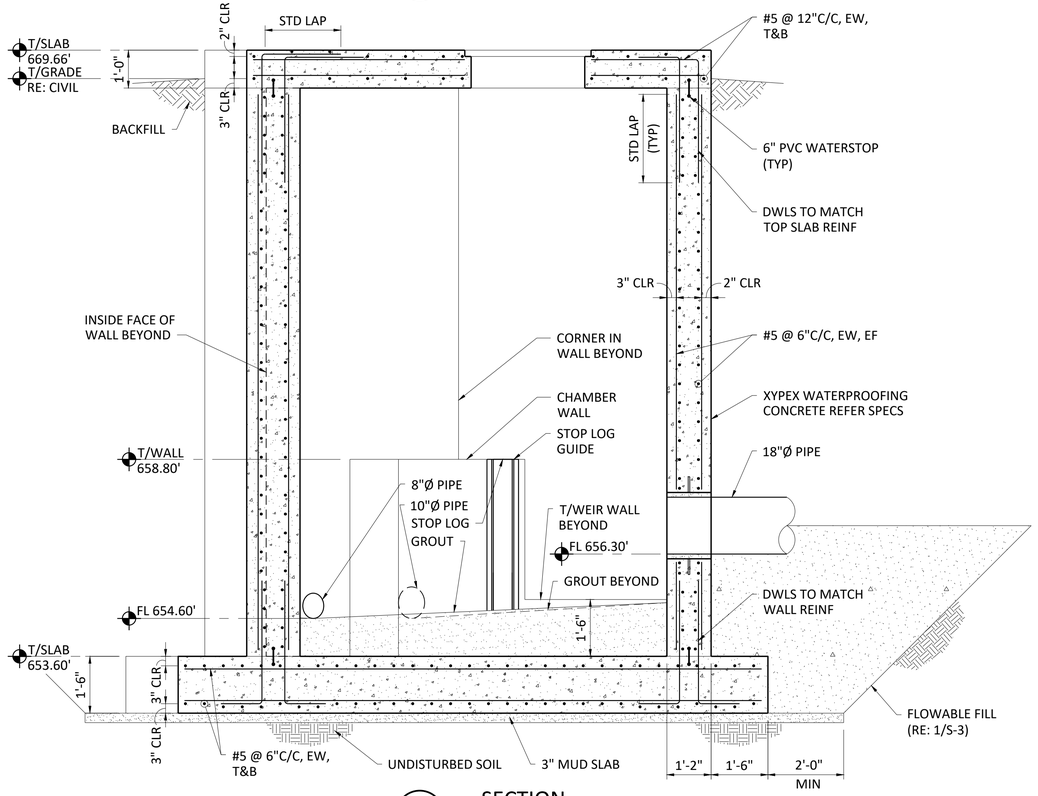
1 SECTIONAL PLAN AT 657.05'

1/2" = 1'-0"



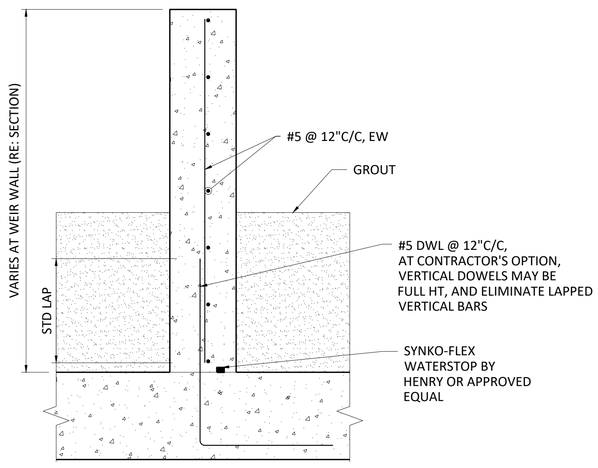
2 TOP PLAN

1/2" = 1'-0"



3 S-2 SECTION

1/2" = 1'-0"



4 WALL SECTION

3/4" = 1'-0"

0 6" 1' 2'
3/4"=1'-0

0 1' 2' 4'
1/2"=1'-0"

NORTH

ISSUED FOR CONSTRUCTION ON 4/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER &
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STRUCTURAL

SIPHON INLET STRUCTURE
PLANS AND SECTIONS

NO.	ISSUE	BY	DATE
1	ISSUE FOR CONSTRUCTION VERIFY SCALE Bar is one inch on original drawing, if not one inch on this sheet, adjust scale.	BNW	04/22/25

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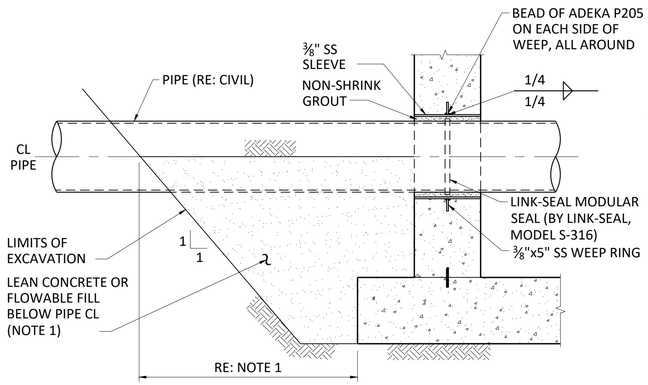
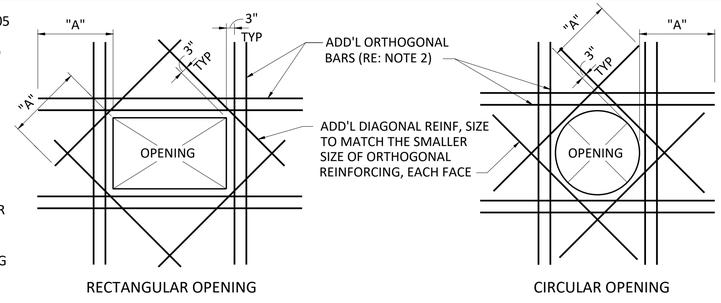


DETAIL NOTE:

1. CONCRETE FILL SHALL EXTEND TO THE LIMITS OF THE EXCAVATION, BUT NOT LESS THAN THE PIPE DIAMETER OR 1'-0", WHICHEVER IS GREATER. THE WIDTH OF FILL BELOW PIPE SHALL NOT BE LESS THAN 2'-0" PLUS THE WIDTH OF PIPE OUTSIDE DIAMETER.
2. DO NOT ENCASE RESTRAINED OR UNRESTRAINED COUPLINGS.
3. COORDINATE WITH SEAL MANUFACTURER FOR SIZE OF STEEL SLEEVE.
4. INSTALL PIPE IN A WAY SUCH THAT SEAL WILL NOT BE COMPRESSED BY WEIGHT OF PIPE.
5. INSTALL SEAL PER MANUFACTURER'S INSTRUCTIONS.

1 PIPE PENETRATION DETAIL

NOT TO SCALE



RECTANGULAR OPENING

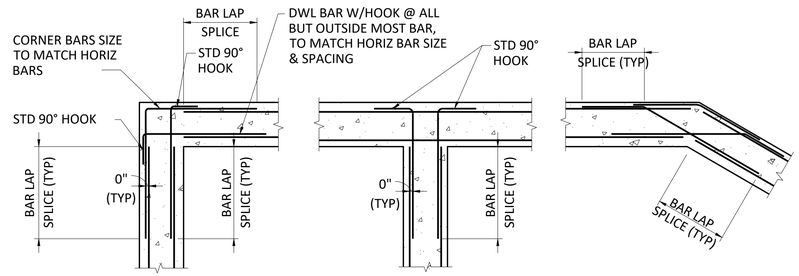
CIRCULAR OPENING

DETAIL NOTES:

1. TRIM TYPICAL REINFORCEMENT AT OPENING.
2. ADDITIONAL ORTHOGONAL BARS: UNLESS NOTED OTHERWISE, PROVIDE (2) ADDITIONAL BARS AT EACH SIDE OF OPENING AND AT EACH FACE OF SLAB/WALL OF EQUIVALENT SIZE TO TYPICAL REINFORCEMENT INTERRUPTED BY OPENING.
3. UNLESS NOTED OTHERWISE, EXTEND BARS DISTANCE "A" EQUAL TO THE LARGER OF:
   - 48 BAR DIAMETERS
   - LARGEST DIMENSION OF THE OPENING
4. ADDITIONAL BARS SHALL EXTEND ACROSS CONSTRUCTION JOINTS.
5. SEE MECHANICAL DRAWINGS FOR SLAB AND WALL OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.
6. ADDITIONAL ORTHOGONAL REINFORCEMENT NOT REQUIRED WHEN TYPICAL REINFORCING IS NOT CUT. REGARDLESS, ADDITIONAL DIAGONAL REINFORCING IS REQUIRED.
7. ALL REINFORCING SPACING SHALL BE GREATER THEN 3" CENTER TO CENTER.

2 TYPICAL WALL OR SLAB OPENING ADDITIONAL REINFORCEMENT

NOT TO SCALE

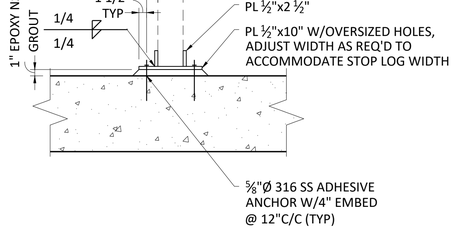


DETAIL NOTES:

1. REINFORCING SHOWN APPLIES TO ALL TOP, BOTTOM AND SIDE BARS. ALL REQUIRED BARS ARE NOT SHOWN IN DETAIL.
2. AT CONTRACTOR'S OPTION, UNLESS NOTED OTHERWISE, ELIMINATE DOWELS AND CORNER BAR AND TERMINATE HORIZONTAL BARS WITH STANDARD HOOKS.

3 CORNER REINFORCEMENT

NOT TO SCALE

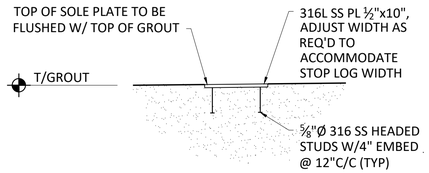


DETAIL NOTES:

1. SPACING PER MANUFACTURER, 6" MAX.
2. STAGGER ANCHOR BOLTS ON OPPOSITE SIDES OF THE CHAMBER WALL.
3. PLATES, HARDWARE, AND ANCHOR BOLTS SHALL BE 316L SS.
4. STOP LOGS SHALL BE 316L SS.
5. EPOXY GROUT SHALL BE SIKADUR 42 OR APPROVED EQUAL.

4 STOP LOG GUIDE DETAIL

NOT TO SCALE

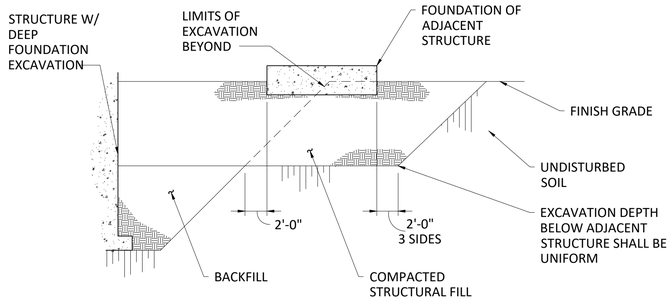


DETAIL NOTES:

1. COORDINATE WIDTH WITH STOP LOG MANUFACTURER.

5 STOP LOG SILL DETAIL

NOT TO SCALE



DETAIL NOTES:

1. COMPACTED STRUCTURAL FILL SHALL BE TXDOT ITEM 247 GRADE 1-2, TYPE D COMPACTED IN ACCORDANCE WITH TXDOT ITEM 247.

6 EXCAVATION BELOW ADJACENT STRUCTURE FOUNDATIONS

NOT TO SCALE

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GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS

STRUCTURAL

SIPHON INLET STRUCTURE SECTIONS AND DETAILS

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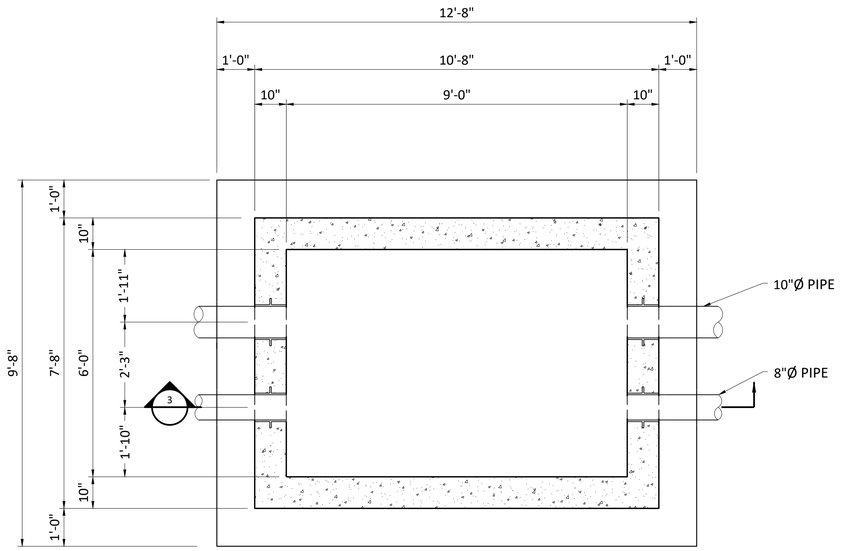
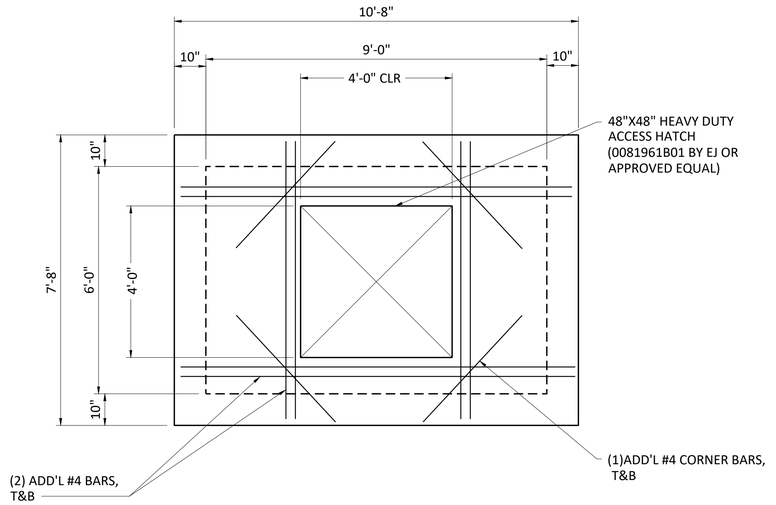
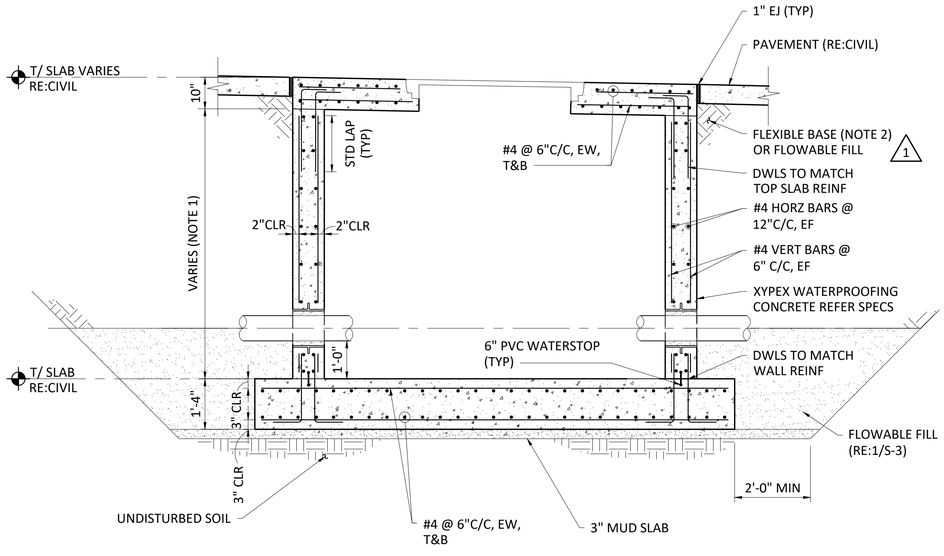


PLAN NOTES:
1. CONCRETE FOR METER VAULTS SHALL HAVE A MINIMUM 7-DAY COMPRESSIVE STRENGTH OF 4,000 PSI

1 SECTION
1/2" = 1'-0"



2 SECTION
1/2" = 1'-0"



DETAIL NOTES:
1. WALL HEIGHT DEPENDENT ON MATCHING DRIVING SURFACE. VAULT 1 WALL HEIGHT 6'-6" MAXIMUM, VAULT 2 WALL HEIGHT 7'-6" MAXIMUM.
2. FLEXIBLE BASE IN ACCORDANCE WITH TxDOT 2014 STANDARD SPECIFICATIONS, ITEM 247, GRADE 1 OR 2, TYPE A OR D.

3 SECTION
1/2" = 1'-0"

0 1' 2' 4'
1/2"=1'-0"

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	ISSUE FOR CONSTRUCTION	BNW	04/22/25
1	ADDENDUM #1	BNW	03/26/25

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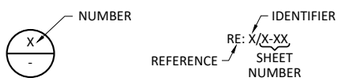
ABBREVIATIONS	
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR OR GRADE
AG	ABOVE GRADE
AGSB	ABOVE GROUND SPLICE BOX
AIC	AMPERES INTERRUPTING CAPACITY
AL OR ALUM	ALUMINUM
AMP OR A	AMPERE
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C.	CONDUIT
CB	CIRCUIT BREAKER
C/C	CENTER TO CENTER
CHH	COMMUNICATION MANHOLE/HANDHOLE
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CONT.	CONTINUATION
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH OR COMBINATION STARTER
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DIA	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
EC	EMPTY CONDUIT
EHH	ELECTRICAL MANHOLE
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MANHOLE/HANDHOLE
EO	ELECTRICALLY OPERATED
ETM	ELAPSED TIME METER
EUC	ELECTRIC UTILITY CO.
EXIST.	EXISTING
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FT	FEET
FU	FUSE
G. OR GRND	GROUND
GA.	GAUGE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GFS	GROUND FAULT SENSING
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HP	HORSEPOWER
HT	HEIGHT
HTP	HEAT TRACE PANEL
HTR	HEATER
HZ	HERTZ
ID	INTERNAL DIAMETER
IMH	INSTRUMENT MANHOLE
INST	INSTRUMENT
IRP	INTERPOSING RELAY PANEL
JB	JUNCTION BOX
kAIC	KILO AMPERE INTERRUPTING CAPACITY
kVA	KILOVOLT-AMPERE
kW	KILOWATT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LCS	LOCAL CONTROL STATION
LED	LIGHT EMITTING DIODE
LP	LIGHTING PANEL
LSI	LONG, SHORT, INSTANTANEOUS
LSIG	LONG, SHORT, INSTANTANEOUS, GROUND
LTG/LTNG	LIGHTS/LIGHTING
MBFV	MOTOR OPERATED BUTTERFLY VALVE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MFR'S	MANUFACTURER'S
MH	MANHOLE
ML	MULTILIN
MLO	MAIN LUGS ONLY
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
MR	MULTIRATIO
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH

ABBREVIATIONS	
NC or N.C.	NORMALLY CLOSED
NF	NON-FUSED
NO or N.O.	NORMALLY OPEN OR NUMBER
NO.	NUMBER
OD	OUTSIDE DIAMETER
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
P	POLE
PB	PULL BOX OR PUSH BUTTON
PC	PHOTOCELL
PCC	PUMP CONTROL CONSOLE
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAILURE RELAY
PH	PHASE
PL.	PLATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PoE	POWER OVER ETHERNET
PPR	PHASE PROTECTIVE RELAY
PQM	POWER QUALITY METER
PR.	PAIR OR PAIR CABLE
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RC	REMOTE CONTROL
RCP	RELAY CONTROL PANEL
REC.	CIRCUIT RECLOSURE
RECP	RECEPTACLES
REQ'D	REQUIRED
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCTB	SHORT CIRCUIT TERMINAL BLOCK
SEC	SECONDS OR SECONDARY
SHLD. OR SH	SHIELD OR SHIELDED
SHT	SHEET
SN OR S/N	SOLID NEUTRAL
SPD	SURGE PROTECTION DEVICES
SSRVS	SOLID-STATE REDUCED VOLTAGE STARTER
SS	STAINLESS STEEL
ST	STARTER
STA.	STATION
STC	SIGNAL TERMINATION CABINET
SV	SOLENOID VALVE
SW	SWITCH
SWGR	SWITCHGEAR
Sz#	MOTOR STARTER WITH SIZE
TC	TERMINATION CABINET OR TRAY CABLE
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TR.	TRIAD
TS	TEMPERATURE SWITCH
TW	TWISTED
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR CABLE
V	VOLTS
VAR.	VARIABLE
VFD	VARIABLE FREQUENCY DRIVE
VFI	VACUUM FAULT INTERUPTER
VO	VALVE OPERATOR
W	WITH, WIRE OR WATT
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF

NOTE:
THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.



PLAN SYMBOL	DESCRIPTION
b A	LIGHTING FIXTURE "A" - FIXTURE TYPE "b" - SWITCH NUMBER
A	EMERGENCY BATTERY PACK LIGHT FIXTURE "A" - FIXTURE TYPE
X	CEILING MOUNTED EXIT SIGN "X" - FIXTURE TYPE
X	WALL MOUNTED EXIT SIGN ARROW INDICATES DIRECTION OF EGRESS "X" - FIXTURE TYPE
FACP	FIRE ALARM CONTROL PANEL
F	MANUAL PULL STATION
	CEILING MOUNTED STROBE
	WALL MOUNTED STROBE
	SMOKE DETECTOR
	HEAT DETECTOR
	HORN
	COMBINATION STROBE/HORN
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCT BANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
OHE	OVERHEAD ELECTRIC LINE
UGE	UNDERGROUND ELECTRIC LINE
OHP	OVERHEAD PRIMARY LINE
UGP	UNDERGROUND PRIMARY LINE
OHS	OVERHEAD SECONDARY LINE
UGS	UNDERGROUND SECONDARY LINE
OHC	OVERHEAD COMMUNICATION LINE
UGC	UNDERGROUND COMMUNICATION LINE
OHFO	OVERHEAD FIBER OPTIC LINE
UGFO	UNDERGROUND FIBER OPTIC LINE
	FLEXIBLE METAL CONDUIT
	HEAT TRACE
2 (3 #3/0, #2G., 3"C.)	DENOTES A QUANTITY OF TWO (2) 3" CONDUITS EACH CONTAINING THREE (3) NO. 3/0 AWG CONDUCTORS AND ONE (1) NO.2 AWG GROUND CONDUCTOR
2-2/C#16	DENOTES A QUANTITY OF TWO (2) INSTRUMENT CABLES. EACH CONSISTS OF TWO (2) NO.16 AWG CONDUCTORS
3-4"C.	THREE (3) 4" CONDUITS
MC1-XXX 4 #14, #14G., 3/4"C. (2 #14 SPARE)	CABLE TAG FOUR (4) #14 CONTROL OR POWER CONDUCTORS, ONE (1) #14 GROUND CONDUCTOR. ALL CONDUCTORS IN A 3/4" CONDUIT. TWO (2) OF THE FOUR (4) #14 CONTROL OR POWER CONDUCTORS ARE SPARE
LA-1,3	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL "LA" 2 #12, #12G., 3/4"C. UNLESS NOTED OTHERWISE
$b	SINGLE POLE SWITCH "b" - INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" - DESIGNATION
$Xc	MULTI POLE SWITCH "x" - INDICATES NUMBER OF POLE "c" - INDICATES SWITCH SHALL CONTROL LIGHT FIXTURES WITH "c" DESIGNATION
$M	MANUAL MOTOR STARTER /DISCONNECT
$3	3 WAY SWITCH
$4	4 WAY SWITCH
$D D	DIMMER LIGHTING CONTROL SWITCH
$TM TM	TIME SWITCH
	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W ✳ "C" - MOUNTED ABOVE COUNTERTOP "GFI" OR "GF" - GROUND FAULT INTERRUPTER TYPE "WP" - WEATHERPROOF
F	FLOOR MOUNTED RECEPTACLE
	SIMPLEX RECEPTACLE, GROUNDED TYPE
	SPECIAL RECEPTACLE
	QUADPLEX RECEPTACLE

PLAN SYMBOL	DESCRIPTION
J J	JUNCTION BOX
PB	PULL BOX
TC	TERMINAL CABINET
OS	OCCUPANCY SENSOR
PC	PHOTOCELL
PW	PREWIRED
MH	MANHOLE
M	UTILITY METER
M	MOTORIZED LOUVER
DAMP	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 12 CONSTRUCTION UNLESS OTHERWISE NOTED
WET	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4 CONSTRUCTION UNLESS OTHERWISE NOTED
CORROSIVE	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4X CONSTRUCTION UNLESS OTHERWISE NOTED
CLASS I, DIV.1, GROUP D	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL CONFORM TO N.E.C REQUIREMENTS FOR THE HAZARDOUS AREA CLASSIFICATION SHOWN

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	OR	PANEL
5	M	MOTOR, NUMBER DESIGNATES HORSEPOWER
VM ✳	–	VOLTMETER (WITH SWITCH IF 3-PHASE)
AM ✳	–	AMMETER (WITH SWITCH IF 3-PHASE)
✳	–	METER ✳ WM - WATTMETER WHM - WATTHOUR METER WHDM - WATTHOUR DEMAND METER WHDR - WATTHOUR DEMAND RECORDER PF - POWER FACTOR METER ETM - ELAPSED TIME METER TRANSDUCER AX - CURRENT TRANSDUCER WX - WATT TRANSDUCER
#	–	RELAY, NO. AS INDICATED 25 - SYNCHRONISM CHECK RELAY 27 - UNDER VOLTAGE RELAY 38 - BEARING PROTECTIVE DEVICE 40 - LOSS OF EXCITATION RELAY 42 - RUNNING CONTACTOR/PILOT RELAY 46 - REVERSE PHASE/PHASE BALANCE/CURRENT RELAY 47 - PHASE SEQUENCE VOLTAGE RELAY 48 - MACHINE OR TRANSFORMER THERMAL RELAY 50 - INSTANTANEOUS OVERCURRENT RELAY 50G - INSTANTANEOUS GROUND 51 - TIME OVER CURRENT RELAY, GROUNDING RESISTOR TYPE 51N - TIME OVERCURRENT RELAY, RESIDUAL TYPE 51V - TIME OVERCURRENT RELAY WITH VOLTAGE RESTRAINT 59 - OVER VOLTAGE RELAY 60 - NEGATIVE SEQUENCE VOLTAGE RELAY 62 - TIME DELAY RELAY 63 - OVER PRESSURE RELAY 67 - AC DIRECTIONAL OVERCURRENT RELAY 83 - AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY 86 - LOCKING-OUT RELAY 87 - DIFFERENTIAL PROTECTIVE RELAY B - SUFFIX INDICATES "BUS" G - SUFFIX INDICATES "GENERATOR" GF - GROUND FAULT IR - INTERPOSING RELAY PFR - PHASE FAILURE, PHASE REVERSAL, UNDERVOLTAGE, OVERVOLTAGE RELAY ST - SHUNT TRIP T - SUFFIX INDICATES "TRANSFORMER" TRP CAP - CAPACITOR TRIP X - SUFFIX INDICATES "AUXILIARY"

ISSUED FOR CONSTRUCTION ON 4/22/2025

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Texas Registered Engineering Firm F-2144
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04/22/2025
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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
ELECTRICAL

LEGEND I

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	RS	04/22/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO.	NBU20253
DATE	4/22/2025
DESIGNED	CSC
DRAWN	MHC
CHECKED	RS
FILE NAME	EL-ALL-GN-LGND01.dwg

SHEET E-1

SEQ. .

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Last Saved: 4/21/2025 4:24 PM Saved By: 03823
Plot Date: 4/22/2025 7:29 AM Plot By: 03823 Filename: N:\ELEC\EL-ALL-GN-LGND01.dwg

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
CR#	–	AC INDUSTRIAL CONTROL RELAY COIL, # - NUMBER AS INDICATED
M#	–	MOTOR STARTER COIL, # - NUMBER AS INDICATED
✳	–	SPECIAL CAPACITOR ✳ SC - SURGE CAPACITOR PF - POWER FACTOR CORRECTION CAPACITOR
	–	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	–	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
	–	EMERGENCY STOP PUSH BUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
OFF ON	–	OFF/ON SELECTOR SWITCH
B A C X00 00X	–	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O-OPEN X-CLOSED (A/B/C) HOA - HAND/OFF/AUTO HOR - HAND/OFF/REMOTE LOR - LOCAL/OFF/REMOTE OCS - OPEN/CLOSE/STOP OOA - ON/OFF/AUTO NOTE: 2 POSITION MULTI-CONTACT SWITCH FOLLOWS SAME CONVENTION
PTT	–	INDICATING LAMP, COLOR INDICATED ✳ R - RED G - GREEN B - BLUE W - WHITE A - AMBER O - ORANGE PTT - PUSH TO TEST
52	–	MEDIUM VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER
AF AT A P	CB	LOW VOLTAGE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED A - AMP TRIP, P - POLES
MCP		MOTOR CIRCUIT PROTECTOR
MCP ✳ Sz#		COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE NOTED: ✳FVR - FULL VOLTAGE REVERSING FVNR - FULL VOLTAGE, NON REVERSING RVNR - REDUCED VOLTAGE NON-REVERSING 2S1W - TWO SPEED, ONE WINDING 2S2W - TWO SPEED, TWO WINDING Sz# - NEMA SIZE OF STARTER
✳		NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE ✳ AMPERE RATING NOTED
✳ ✸		FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED ✳ AMPERE RATING NOTED ✸ FUSE RATING
	–	DRAWOUT TYPE EQUIPMENT OR DEVICE
	–	MEDIUM VOLTAGE CABLE TERMINATION
	–	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	–	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
	–	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER FUSED CONTACTOR DRAWOUT TYPE
VAC	–	VACUUM CONTACTOR
	–	SPEED POTENTIOMETER

POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT
A	X	O	O
B	0	O	O
C	0	O	X

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
TR#		TIMING RELAY RANGE AS NOTED, SET POINT AS NOTED #-NUMBER AS INDICATED TDD-TIME DELAY AFTER DE-ENERGIZATION-OFF DELAY TDE-TIME DELAY AFTER ENERGIZATION-ON DELAY
	–	NOTC-NORMALLY OPEN, TIMED CLOSING WHEN ENERGIZED
		NCTO-NORMALLY CLOSED, TIMED OPENING WHEN ENERGIZED
		NOTO-NORMALLY OPEN, TIMED OPENING WHEN DE-ENERGIZED
		NCTC-NORMALLY CLOSED, TIMED CLOSING WHEN DE-ENERGIZED
✳ -##	✳ -##	FIELD INSTRUMENT, TAG NO. OR LOOP NO. AS INDICATED ✳ - INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS ## - INDICATES LOOP NO.
	OR ⊗	LIQUID LEVEL (FLOAT) SWITCH NORMALLY CLOSED, OPENS ON FALLING LEVEL
		NORMALLY OPEN, CLOSES ON FALLING LEVEL
		NORMALLY CLOSED, OPENS ON RISING LEVEL
		NORMALLY OPEN, CLOSES ON RISING LEVEL
	PS OR ⊗	PRESSURE OR VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE
		NORMALLY CLOSED, OPENS ON RISING PRESSURE
		NORMALLY OPEN, CLOSES ON DROPPING PRESSURE
		NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
	T OR TS OR ⊗	TEMPERATURE SWITCH OR THERMOSTAT NORMALLY OPEN, CLOSES ON RISING TEMPERATURE
		NORMALLY OPEN, CLOSES ON DROPPING TEMPERATURE
		NORMALLY CLOSED, OPENS ON RISING TEMPERATURE
		NORMALLY CLOSED, OPENS ON DROPPING TEMPERATURE
	FS OR ⊗	FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSES ON INCREASED FLOW
		NORMALLY CLOSED, OPENS ON INCREASED FLOW
	ZS OR ⊗	POSITION (LIMIT) SWITCH NORMALLY OPEN
		NORMALLY OPEN - HELD CLOSED
		NORMALLY CLOSED
		NORMALLY CLOSED - HELD OPEN
	TQ OR ⊗	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
	T	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED
#CT'S A	–	CURRENT TRANSFORMER # - QUANTITY A - RATIO
#PT'S	–	POTENTIAL TRANSFORMER # - QUANTITY
#CT'S A	–	GROUND CURRENT SENSOR TRANSFORMER # - QUANTITY A - RATIO
	–	CONTROL TRANSFORMER
	–	CONTROL POWER TRANSFORMER
G	–	GENERATOR, RATINGS AND CONNECTIONS AS NOTED
#A ATS-1 N I I S	–	TRANSFER SWITCH ATS - AUTOMATIC TRANSFER SWITCH MTS - MANUAL TRANSFER SWITCH "N" - INDICATES NORMAL SOURCE "S" - INDICATES STANDBY SOURCE #A - INDICATES CONTINUOUS CURRENT RATING
	–	MOTOR OVERLOAD OVERLOAD RELAY HEATER

SYMBOL	DESCRIPTION
▽	DATA
▼	TELEPHONE
▽▼	COMBINATION TELEPHONE/DATA
▼	FLOOR MOUNTED DATA OUTLET
▽	FLOOR MOUNTED TELEPHONE OUTLET
	POKE-THRU DEVICE COMBINATION POWER/DATA/VOICE OUTLET
	FLOOR COMBINATION POWER/DATA/VOICE OUTLET
	CATV
✳	SECURITY CAMERA ✳ F - FIXED Z - PAN/TILT/ZOOM
##	SECURITY DEVICE SEC - SECURITY PANEL MAG - MAGNETIC LOCK CR - CARD READERS DR - REMOTE DOOR RELEASE MD - MOTION DETECTOR SK - SECURITY KEYPAD ES - ELECTRIC STRIKE DS - DOOR SWITCH IC - INTERCOM STATION SB - SECURITY PANIC BUTTON

NOTE:
THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	–	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	–	CONDUCTORS ELECTRICALLY CONNECTED
	–	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
LA	–	LIGHTNING ARRESTER
	G	GROUND ROD
		GROUND ROD TEST WELL
30A	–	FUSE, AMPERE RATING AS NOTED
	–	HEATER
	–	INDUCTOR
	–	CONTACT, NORMALLY OPEN (NO)
	–	CONTACT, NORMALLY CLOSED (NC)
OL	–	OVERLOAD CONTACT
OR K #	–	KIRK KEY INTERLOCK
	–	MECHANICAL INTERLOCK
	–	TERMINAL
	–	NODE
TB	–	TERMINAL OR TEST BLOCK
OR	–	PUSH BUTTON STATION, REFER TO ELECTRICAL SCHEMATIC FOR NUMBER OF DEVICES.
	–	LOCATED AT SCADA RTU
	–	LOCATED REMOTE
	–	LOCATED AT MOTOR
	–	FUSED SWITCH/FUSED CUTOUT
M	M	UTILITY METER

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
ELECTRICAL
LEGEND II

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	RS	04/22/2025

R&N JOB NO. NBU20253
DATE 4/22/2025
DESIGNED CSC
DRAWN MHC
REVISED -
CHECKED RS
FILE NAME EL-ALL-GN-LGND02.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET E-2
SEQ. .

ISSUED FOR CONSTRUCTION ON 4/22/2025

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Last Saved: 4/21/2025 4:26 PM Saved By: 03823
Plot Date: 4/22/2025 7:29 AM Plot By: 03823 Filename: N:\ELEC\EL-ALL-GN-LGND02.dwg

UTILITY TRENCH COMPACTION NOTE:

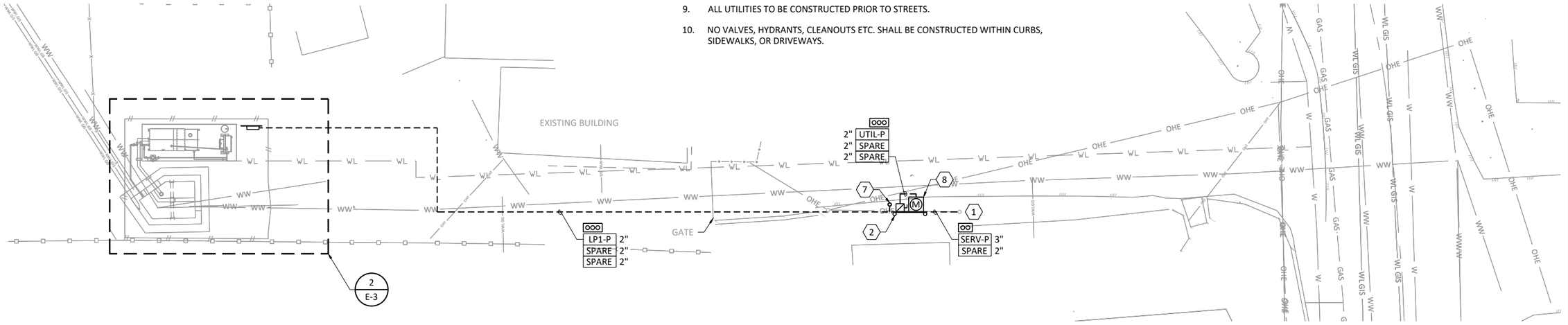
1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

GENERAL NOTES:

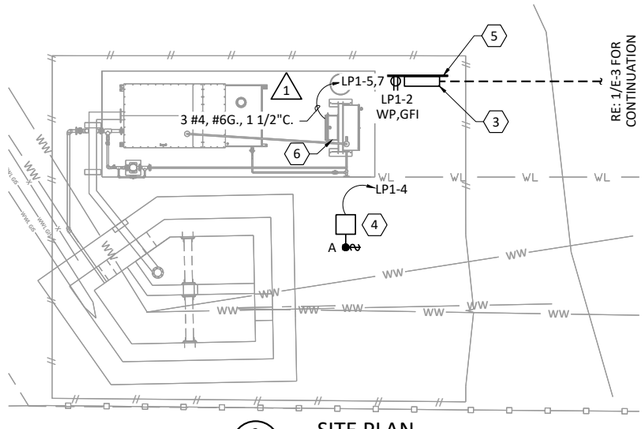
1. NEW BRAUNFELS UTILITY CONTACT: MICHAEL NAJERA (830)608-8957. NOTIFY NBU ELECTRIC 60 DAYS PRIOR TO REQUEST FOR ELECTRICAL SERVICE
2. MINIMUM SIZED CONDUIT ROUTED UNDERGROUND SHALL BE 2".
3. ALL LIGHTING AND RECEPTACLE WIRING SHALL BE 2 #12, #12G., 3/4"C. UNLESS INDICATED OTHERWISE
4. MATERIALS AND WORKMANSHIP OF THE METER, METER RACK, CONDUITS FROM THE EXISTING UTILITY POWER POLE TO THE METER RACK SHALL BE INSPECTED BY NBU (ELECTRIC UTILITY) PRIOR TO COVER UP. CONTACT NBU (ELECTRIC UTILITY) A MINIMUM OF 36 HOURS IN ADVANCE FOR SCHEDULING THE INSPECTION. CONTRACTOR SHALL HAVE NBU SPECIFICATION IN POSSESSION AT THE TIME OF THE INSPECTION(S). COORDINATE ALL REQUIREMENTS WITH NBU PRIOR TO BID AND INSTALLATION, REFER TO APPENDIX A FOR NBU REQUIREMENTS. THE INFORMATION IN APPENDIX A IS FOR INFORMATION ONLY, THE CONTRACTOR SHALL COORDINATE THE NBU (ELECTRIC UTILITY) TO OBTAIN THE MOST CURRENT REQUIREMENTS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND SIZING JUNCTION BOXES, PULL BOXES, AND MANHOLES PER THE NATIONAL ELECTRIC CODE.
6. ALL JUNCTION BOXES, CONDUIT SUPPORTS, AND FITTING SHALL BE 316 STAINLESS STEEL.
7. CAP AND PROVIDE A PULLSTRING IN SPARE CONDUITS. CAP AND LABEL ALL SPARE CONDUIT IN PULL BOX/MANHOLE.
8. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL AS REQUIRED FOR A COMPLETE GROUNDING SYSTEM. THE CONTRACTOR SHALL GROUND ALL EQUIPMENT IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND SPECIFICATION 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
9. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
10. NO VALVES, HYDRANTS, CLEANOUTS ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

NOTES BY SYMBOL "⬡"

1. EXISTING POLE MOUNTED TRANSFORMER.
2. SERVICE RACK WITH METER AND SERVICE RATED FUSED DISCONNECT SWITCH. REFER TO DRAWING EU-020 IN APPENDIX B FOR SERVICE RACK.
3. PANELBOARD "LP-1".
4. MOUNT WEATHERPROOF LIGHT SWITCH AT BASE OF POLE.
5. ELECTRICAL RACK. RE: E-5 FOR DETAIL.
6. ELECTRICAL CONTROL PANEL OF ECOPURE MINI, PROVIDED WITH UNIT.
7. STUB-UP AND CAP SPARE AT RACK
8. METER PROVIDED BY NBU ELECTRIC.



1 - OVERALL SITE PLAN
1"=10'



2 - SITE PLAN
1"=5'

NORTH

0 10' 20'
SCALE IN FEET

0 5' 10'
SCALE IN FEET

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
ELECTRICAL

SITE PLAN

NO.	ISSUE	BY	DATE
1	ADDENDUM NO.1	RS	03/26/2025
0	ISSUED FOR CONSTRUCTION	RS	04/22/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO.	NBU20253
DATE	4/22/2025
DESIGNED	CSC
DRAWN	MHC
REVISED	-
CHECKED	RS
FILE NAME	EL-ALL-PL-SITE01.dwg

SHEET E-3
SEQ. .

ACAD Rel: 24.2s (LMS Tech)
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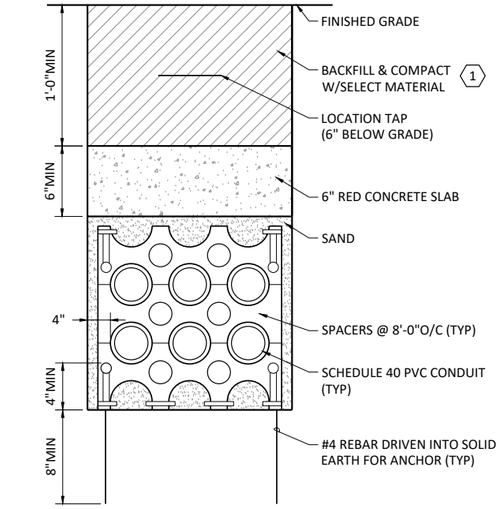
Last Saved: 4/21/2025 4:35 PM Saved By: 03823

Plot Date: 4/22/2025 7:30 AM Plot By: 03823 Filename: N:\ELEC\EL-ALL-PL-SITE01.dwg

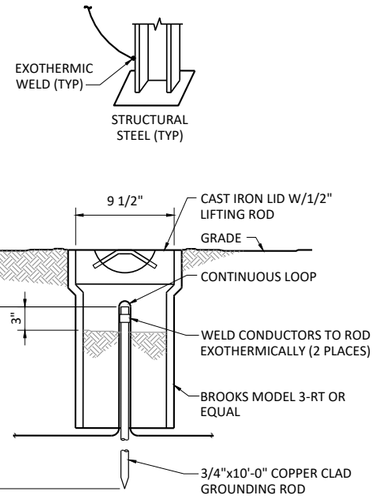


NO.1 NOTES BY SYMBOL "1"

1. SELECT BACKFILL TO BE CLASS 4 EARTH FILL. FILL SHALL CONSIST OF MATERIALS WHICH ARE CLASSIFIED AS SP, SM, SC, CL OR DUAL CLASSIFICATIONS THEREOF, WHICH HAVE A LIQUID LIMIT LESS THAN OR EQUAL TO 35 AND A PLASTICITY INDEX OF A MINIMUM OF 4 AND A MAXIMUM OF 15, WHICH ARE FREE OF ORGANIC MATERIALS.

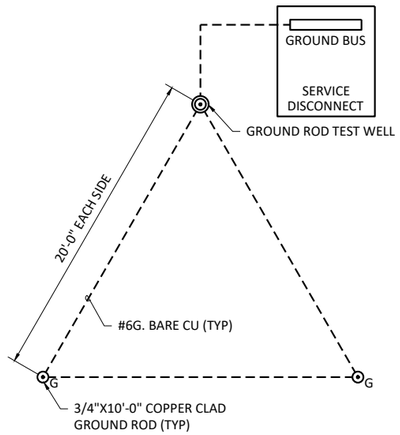
1 - CONCRETE CAPPED DUCT BANK DETAIL

NOT TO SCALE



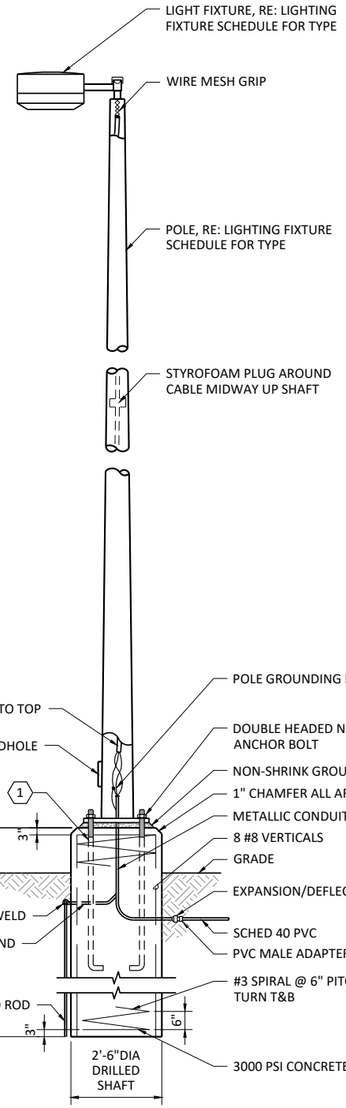
2 - GROUND ROD DETAIL

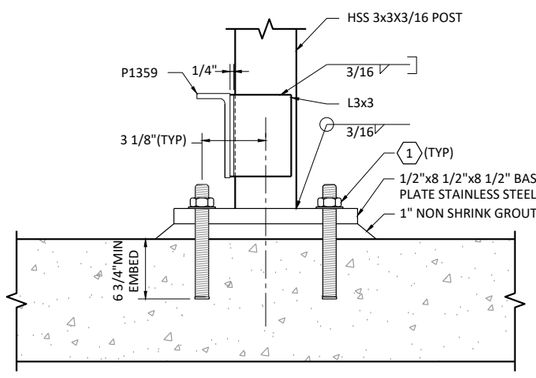
NOT TO SCALE



3 - GROUND MAT

NOT TO SCALE



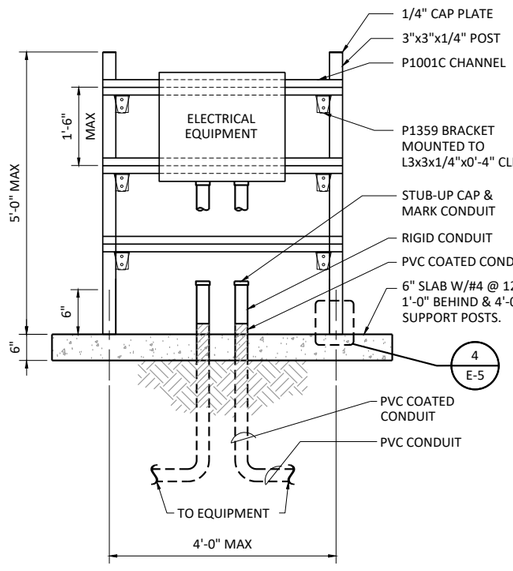


NO.4 NOTES BY SYMBOL "1"

1. 3/4"DIA 304L STAINLESS STEEL EPOXY ANCHOR (TYP OF 4). DO NOT DAMAGE STRUCTURE DURING ANCHOR INSTALLMENT.

4 - EQUIPMENT RACK SUPPORT DETAIL

NOT TO SCALE



5 - ELECTRICAL EQUIPMENT RACK DETAIL

NOT TO SCALE

NO.5 GENERAL NOTES:

1. ALL MEMBERS SHOWN AND REQUIRED CONNECTING HARDWARE SHALL BE STAINLESS STEEL.
2. MEMBERS ARE INDICATED BY UNISTRUT PART NUMBERS. PROVIDE ALL MEMBERS AND CONNECTING HARDWARE BY UNISTRUT OR APPROVED EQUAL.
3. SLOPE SLAB-ON-GRADE TO DRAIN.
4. RACKS SHALL BE GROUNDED PER THE NATIONAL ELECTRICAL CODE. PROVIDE AS A MINIMUM ONE 3/4"x10'-0" COPPER CLAD GROUND ROD ON EACH SIDE OF THE ELECTRICAL EQUIPMENT RACK.
5. ALL NUTS, BOLTS, WASHERS, OTHER FASTENERS AND HARDWARE ON ELECTRICAL EQUIPMENT RACK SHALL BE STAINLESS STEEL.
6. PROVIDE (2) 9/16"DIA BOLT HOLES IN OUTSTANDING LEG OF L3x3 CLIP ANGLE OF ATTACHMENT OF UNISTRUT P1359 BRACKET.

NO.6 GENERAL NOTES:

1. ALL BOLTS, WASHERS, NUTS AND OTHER FASTENERS SHALL BE STAINLESS STEEL.

NO.6 NOTES BY SYMBOL "1"

1. ANCHOR BOLTS. SIZE, LENGTH, NUMBER AND PATTERN PER MANUFACTURER'S DATA.

6 - LIGHT POLE & BASE

NOT TO SCALE

ISSUED FOR CONSTRUCTION ON 4/22/2025

Freese and Nichols, Inc.
Texas Registered Engineering # F-2144

REBECCA SANDOVAL
102369
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
ELECTRICAL

DETAILS I

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	RS	04/22/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

0 1

F&N JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED
NBU20253	4/22/2025	CSC	MHC	RS	RS

FILE NAME EL-ALL-DT-MISC01.dwg

SHEET E-5

SEQ. .

ACAD Rel: 24.2s (LMS Tech)
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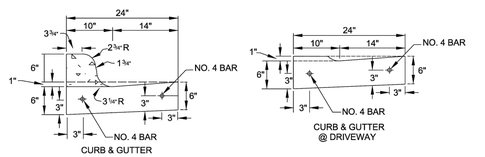
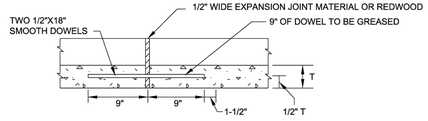
Last Saved: 4/21/2025 4:32 PM Saved By: 03823

Plot Date: 4/22/2025 7:30 AM Plot By: 03823 Filename: N:\ELEC\EL-ALL-DT-MISC01.dwg

CURB AND GUTTER





LONGITUDINAL SECTION THRU CURB AND GUTTER
SHOWING TYPICAL EXPANSION JOINT DETAILS.
REINFORCING STEEL SHALL NOT CROSS EXPANSION JOINTS.
STEEL SHALL BE TERMINATED 3" (+ OR -) 1" FROM FACE OF THE JOINT.

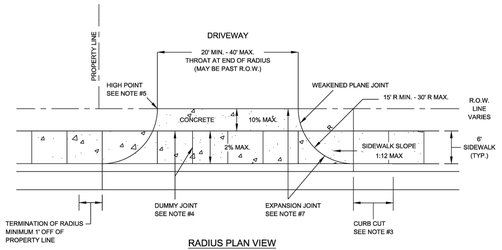
NOTES:

1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT ± 10'. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS NO GREATER THAN 100' AND AT ALL ADJACENT STRUCTURES.
4. UNLESS OTHERWISE SHOWN, TRANSITIONS BETWEEN CURBS OR CURBS AND GUTTER OF DIFFERING CROSS SECTION SHALL BE ACCOMPLISHED OVER A 10' LENGTH OR AS APPROVED BY THE CITY ENGINEER.
5. ALL CONCRETE TO BE CLASS "A" 3000 PSI CONCRETE.
6. ALL EXPOSED CONCRETE SURFACES TO BE BRUSHED SMOOTH AND UNIFORM.

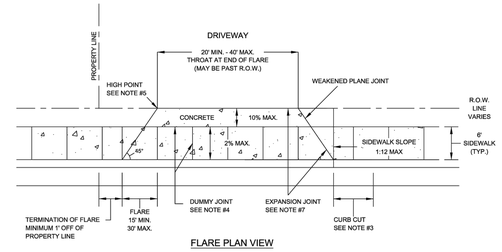
DATE APPROVED: 07/2008	DWG. NO: ST-013	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: CURB & GUTTER		

City of New Braunfels ENGINEERING DEPARTMENT

DRIVEWAY APRON
(COMMERCIAL - MULTIFAMILY - INDUSTRIAL)
(RADIAL/FLARED)



RADIUS PLAN VIEW

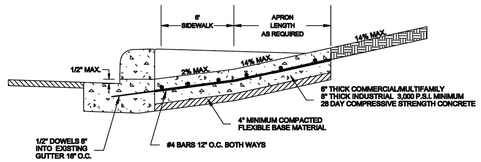


FLARE PLAN VIEW

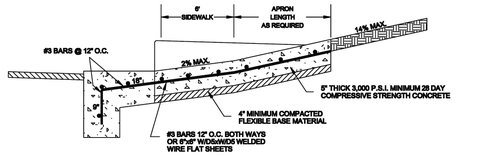
DATE APPROVED: 07/2008	DWG. NO: ST-015.1	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 2	
FILENAME: DRIVEWAY (COMMERCIAL - MULTIFAMILY - INDUSTRIAL)		

City of New Braunfels ENGINEERING DEPARTMENT

DRIVEWAY APRON
(COMMERCIAL - MULTIFAMILY - INDUSTRIAL)



STRUCTURAL SECTION



NO EXISTING CURB STRUCTURAL SECTION

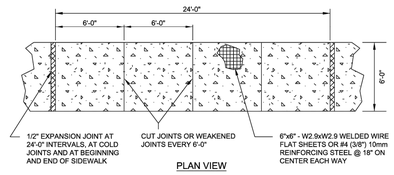
NOTES:

1. **WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6" WIDE 1' DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.**
2. **PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED PROVIDED CROSS SLOPE OF SIDEWALK IS NO GREATER THAN 2%.**
3. **CURB CUT LENGTH NO GREATER THAN AS REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.**
4. **DUMMY JOINTS TO BE PROVIDED AT MINIMUM 4-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.**
5. **PROVIDE A MINIMUM 7" HIGH POINT. HIGH POINT HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.**
6. **DRIVEWAY THROAT TRANSITION MAY OCCUR OUTSIDE OF ROW.**
7. **PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 18" O.C.**
8. **ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.**

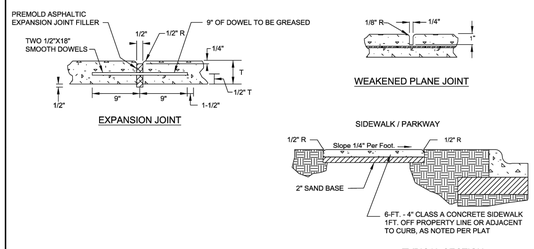
DATE APPROVED: 7/08	DWG. NO: ST-015.2	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 2 OF 2	
FILENAME: DRIVEWAY (Commercial - Multifamily - Industrial)		
P:\CURRENT NEW BRAUNFELS DETAILS\2009\		

City of New Braunfels ENGINEERING DEPARTMENT

SIDEWALK
(COMMERCIAL - INDUSTRIAL)



PLAN VIEW



EXPANSION JOINT

WEAKENED PLANE JOINT

TYPICAL SECTION

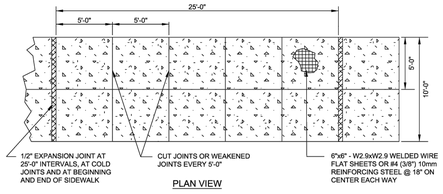
NOTES:

1. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
2. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
3. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

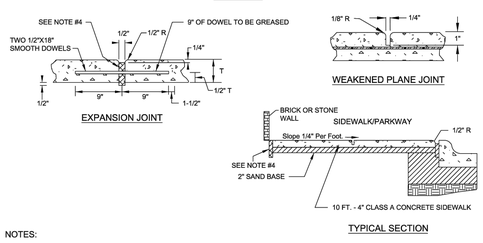
DATE APPROVED: 07/2008	DWG. NO: ST-017	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: SIDEWALK (COMMERCIAL - INDUSTRIAL)		

City of New Braunfels ENGINEERING DEPARTMENT

SIDEWALK
(BUSINESS)



PLAN VIEW



EXPANSION JOINT

WEAKENED PLANE JOINT

TYPICAL SECTION

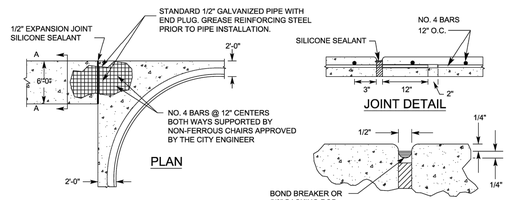
NOTES:

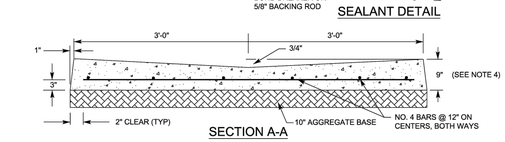
1. LONGITUDINAL WEAKENED PLANE JOINT REQUIRED AT MIDPOINT OF SIDEWALK 10'-0" OR WIDER.
2. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
3. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
4. ADJOINING BRICK OR STONE WALLS, SUCH JOINTS TO BE COMPOSED OF PREMOLD ASPHALTIC EXPANSION JOINT FILLER.
5. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

DATE APPROVED: 07/2008	DWG. NO: ST-018	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: SIDEWALK (BUSINESS)		

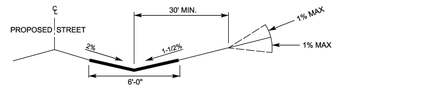
City of New Braunfels ENGINEERING DEPARTMENT

CROSS GUTTER





SECTION A-A



TYPICAL PROFILE AT LOCAL RESIDENTIAL STREET INTERSECTION

NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI.
2. FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH CROSS GUTTER LIP.
3. CONSTRUCTION OF CROSS GUTTER IS NOT ALLOWED ACROSS MAJOR COLLECTOR OR ARTERIAL STREETS.
4. ADJACENT SPANDREL SHALL BE 9" THICK CLASS "A" 3,000 PSI CONCRETE.

DATE APPROVED: 07/2008	DWG. NO: ST-020	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: CROSS GUTTER		

City of New Braunfels ENGINEERING DEPARTMENT

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
ERIN C. MILLS
120172
LICENSED
PROFESSIONAL
ENGINEER
04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS

STANDARD DETAILS I

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1

F&N JOB NO.	NBU20253
DATE	4/16/2025
DESIGNED	REV
DRAWN	CJG
REVISED	-
CHECKED	-
FILE NAME	NBU-DT-MISC-01.dwg

SHEET DT-1
SEQ.

ACAD Rel: 25.0s (LMS Tech)
Filename: N:\WTU\Drawings\Siphon\NBU-DT-MISC-01.dwg
Last Saved: 4/16/2025 10:59 AM Saved By: 08688

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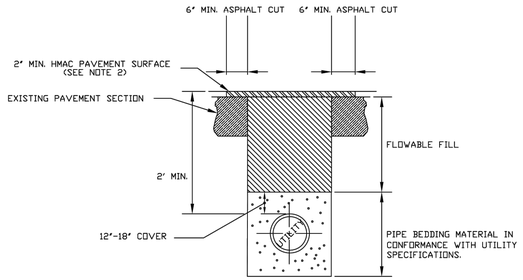
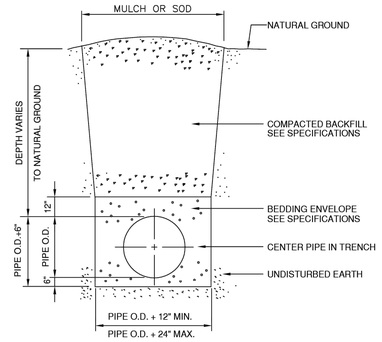


NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE AT A MINIMUM OF 12" WIDER THAN UNDISTURBED SIDES OF THE TRENCH SYMMETRICAL ABOUT THE CENTERLINE OF THE EXCAVATION.
2. REPLACEMENT HMAC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   A) MIN. 2" HMAC TYPE "D" FOR TRENCH REPAIRS IN LOCAL/RESIDENTIAL STREETS.
   B) MIN. 3" HMAC TYPE "C" FOR TRENCH REPAIRS IN COLLECTOR/ARTERIAL STREETS.
3. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED
4. PRIME AND TACK COAT ALL EXPOSED EDGES AND SURFACES.
5. HOT LAY BLACK BASE LAYED IN 8" LIFTS @ 95% COMPACTION.
6. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX AC OR TEMPORARY HMAC.
7. CALICHE OR EXISTING MATERIAL SHALL NOT BE USED TO BACKFILL THE UTILITY EXCAVATION.

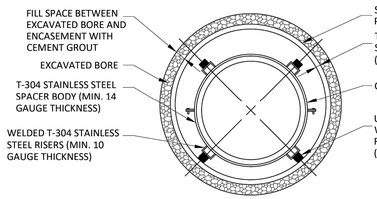
TRENCH REPAIR DETAIL FLOWABLE FILL	
ISSUE DATE: APRIL 2015	SCALE: N.T.S
DRAWN BY: AMF	CONTACT: GF

CITY OF NEW BRAUNFELS
ENGINEERING DIVISION
424 S. CASTELL AVE.
NEW BRAUNFELS, TEXAS 78130
PHONE: 830 221 4500
FAX: 830 626 3600

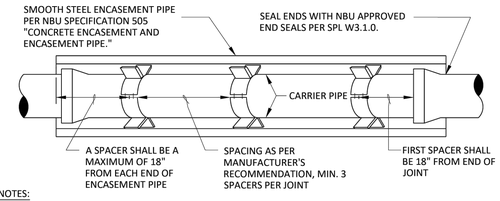


NBU NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: H Shadrock	STANDARD DRAWING: TYPICAL TRENCH WITH UNFINISHED SURFACE			
APPROVED BY:	UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 422



CARRIER PIPE (DIAMETER)	ENCASEMENT PIPE MIN. DIAMETER	MINIMUM ENCASEMENT PIPE THICKNESS (INCHES)	
6"	16"	1/4	0.2500
8"	18"	1/4	0.2500
12"	24"	3/8	0.3750
16"	30"	7/16	0.4375
20"	36"	1/2	0.5000
24"	42"	1/2	0.5000
30"	48"	1/2	0.5000



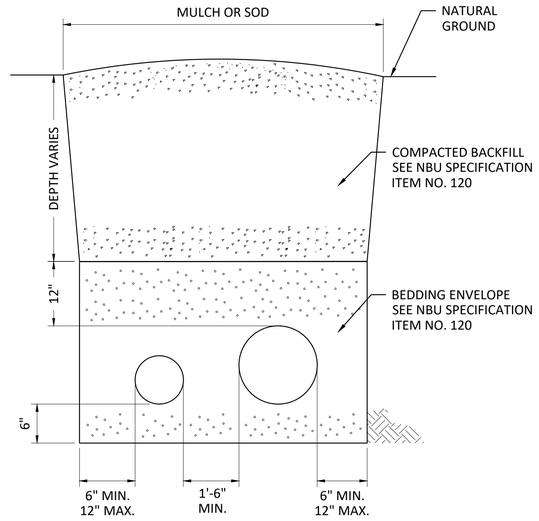
NOTES:

1. CASING SPACER CONFIGURATION AND SPACING SHALL BE AS SHOWN ON MANUFACTURER'S DRAWINGS FOR SPECIFIC WORK; THESE MUST BE ACCEPTABLE TO NEW BRAUNFELS UTILITIES.
2. CASING SPACERS SHALL BE AS APPROVED ON NBU STANDARD PRODUCTS LIST ITEM W17.0.0.
3. ALL WATER MAIN AND FORCE MAIN CARRIER PIPE JOINTS INSIDE ENCASEMENT MUST BE RESTRAINED WITH APPROVED JOINT RESTRAINTS PER NBU SPL W9.2.0.
4. PROPOSED ENCASEMENT DIAMETERS SHALL BE AS SHOWN ON THE CONSTRUCTION PLANS, BUT IN NO CASE SHALL THE ENCASEMENT DIAMETER BE LESS THAN SHOWN IN THE TABLE ABOVE. CASING PIPE SHALL BE SIZED PER PROJECT CONDITIONS, CARRIER PIPE MATERIAL, AND JOINT RESTRAINT SYSTEM.

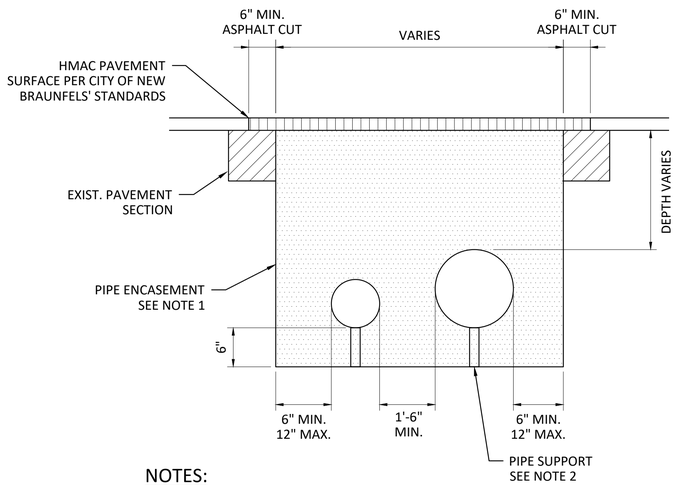
NBU NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: EWL	STANDARD DRAWING: ENCASEMENT DETAIL WITH CASING SPACERS			
APPROVED BY: A. WILLARD	DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 420

1 DT-2 EXISTING FENCE - ODOR CONTROL



2 DT-2 TYPICAL SIPHON PIPE TRENCH SECTION
NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL INSTALL CLASS D CONCRETE PER NBU SPECIFICATION ITEM NO. 505 WHERE CONCRETE ENCASEMENT IS SPECIFIED IN THE PLANS. AT ALL OTHER LOCATIONS BENEATH THE EXISTING ROADWAY, THE SIPHON PIPE SHALL BE ENCASED IN RAPID SET FLOWABLE FILL IN ACCORDANCE WITH TXDOT ITEM NO. 401.
2. PIPE SUPPORTS SHALL BE APPROPRIATE FOR THE TYPE AND SIZE OF SIPHON PIPE (6"/8"/10"). PIPE SUPPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION OF THE SIPHON PIPE.
3. CONTRACTOR SHALL TAKE REQUIRED PREVENTATIVE MEASURES TO HOLD PIPE IN PLACE TO PREVENT FLOATATION DURING PLACEMENT OF CONCRETE/FLOWABLE FILL.

3 DT-2 SIPHON PIPE ENCASEMENT BENEATH EXIST. ROADWAY
NOT TO SCALE

4 DT-2 EXISTING GATE - ODOR CONTROL

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120172 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS II

STANDARD DETAILS II

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
DRAWN CJG
CHECKED -
FILE NAME NBU-DT-MISC-02.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1

SHEET DT-2
SEQ.

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Last Saved: 4/16/2025 10:49 AM Saved By: 08688

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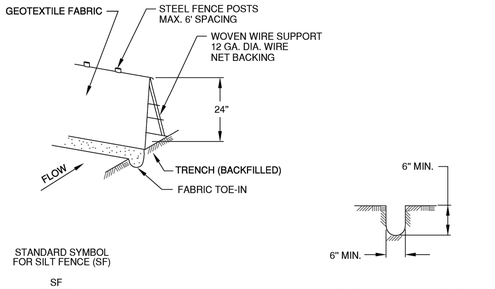


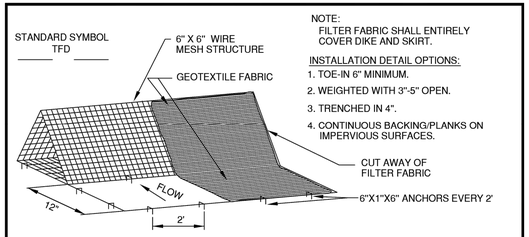
TRENCH CROSS SECTION

NOTES:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1".
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CAN NOT BE TRENCHED INTO THE SURFACE (E.G. PAVEMENT), THE FABRIC FLAP SHALL BE WEIGHTED DOWN WITH WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 inches DEEP AND 6 inches WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 inches. THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: H Shadrock	STANDARD DRAWING: SILT FENCE				
APPROVED BY:	UPDATED: 4-29-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 501	



NOTE:
FILTER FABRIC SHALL ENTIRELY COVER DIKE AND SKIRT.

INSTALLATION DETAIL OPTIONS:

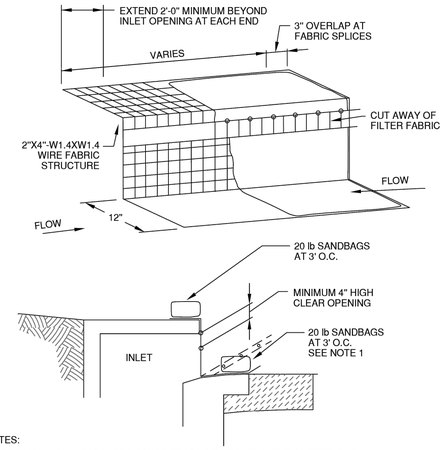
1. TOE-IN 6" MINIMUM.
2. WEIGHTED WITH 3"-5" OPEN.
3. TRENCHED IN 4".
4. CONTINUOUS BACKING/PLANKS ON IMPERVIOUS SURFACES.

GENERAL NOTES

1. DIKES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT DIKE.
2. THE FABRIC COVER AND SKIRT SHALL BE A CONTINUOUS WRAPPING OF GEOTEXTILE. THE SKIRT SHALL BE A CONTINUOUS EXTENSION OF THE FABRIC ON THE UPSTREAM FACE.
3. THE SKIRT SHALL BE WEIGHTED WITH A CONTINUOUS LAYER OF 3"-5" OPEN GRADED ROCK OR TOED-IN 6" WITH MECHANICALLY COMPACTED MATERIAL. OTHERWISE, THE ENTIRE STRUCTURE SHALL BE TRENCHED IN 4".
4. DIKES AND SKIRT SHALL BE SECURELY ANCHORED IN PLACE USING 6" WIRE STAPLES ON 2' CENTERS ON BOTH EDGES AND SKIRT, OR STAKE USING 3/8 " DIAMETER RE-BAR WITH TEE ENDS.
5. FILTER MATERIAL SHALL BE LAPPED OVER ENDS 6" TO COVER DIKE TO DIKE JOINTS. JOINTS SHALL BE FASTENED WITH GALVANIZED SHOAT RINGS.
6. THE DIKE STRUCTURE SHALL BE MW40-6 GA. 6"X6" WIRE MESH, 18" ON A SIDE.
7. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
8. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6" AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.
9. AFTER THE DEVELOPMENT SITE IS COMPLETELY STABILIZED, THE DIKES AND ANY REMAINING SILT SHALL BE REMOVED. SILT SHALL BE DISPOSED OF AS INDICATED IN GENERAL NOTE 8 ABOVE.

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: H Shadrock	STANDARD DRAWING: TRIANGULAR SEDIMENT FILTER DIKE				
APPROVED BY:	UPDATED: 4-29-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 503	

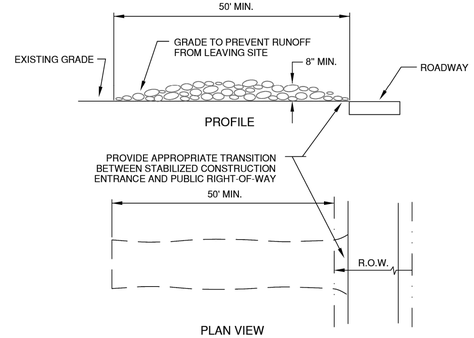


NOTES:

1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, THE CONTRACTOR MAY SUBSTITUTE A 1" X 4" BOARD SECURED WITH CONCRETE NAILS 3' O.C. NAILED INTO THE GUTTER IN LIEU OF SANDBAGS TO HOLD THE FILTER DIKE IN PLACE. UPON REMOVAL, CLEAN ANY DIRT/DEBRIS FROM NAILING LOCATIONS, APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH SURFACE OF GUTTER.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVER-TOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: H Shadrock	STANDARD DRAWING: FILTER DIKE CURB INLET PROTECTION				
APPROVED BY:	UPDATED: 4-29-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 505	

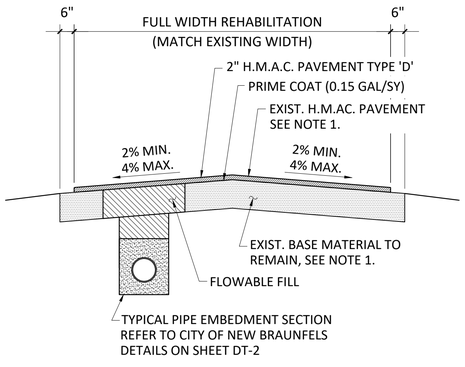


NOTES:

1. STONE SIZE: 3"-5" OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 50'.
3. THICKNESS: NOT LESS THAN 8".
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

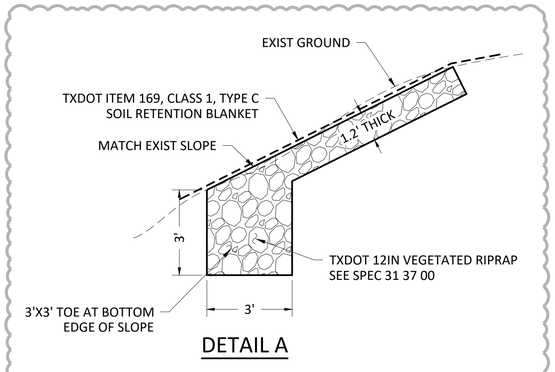
DRAWN BY: H Shadrock	STANDARD DRAWING: STABILIZED CONSTRUCTION ENTRANCE				
APPROVED BY:	UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 506	



NOTES:

1. AFTER INSTALLATION OF SEWER MAIN, CONTRACTOR SHALL REMOVE EXISTING H.M.A.C. PAVEMENT ALONG ENTIRE SECTION OF ROADWAY. INSTALL 2" OF H.M.A.C. PAVEMENT (TYPE D) OVER PRIME COAT (0.15 GAL/SY).
2. IF EXISTING BASE IS LESS THAN 9" (CONTRACTOR SHALL FIELD VERIFY) SUPPLEMENT WITH TYPE 'A' FLEXIBLE BASE AND COMPACT AS SPECIFIED.

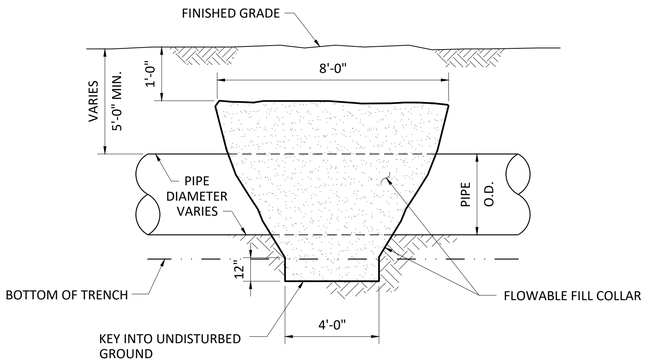
1 DT-3 FULL WIDTH REHABILITATION
NOT TO SCALE



DETAIL A

1

2 DT-3 VEGETATED ROCK RIPRAP DETAIL
NOT TO SCALE



NOTES:

1. SEE PLAN & PROFILE SHEETS FOR LOCATION OF TRENCH DAMS.
2. TWO SACK (PER CUBIC YARD) FIELD-MIXED FLOWABLE FILL BACKFILL MAY BE USED.

3 DT-3 TRENCH WATER STOP DETAIL
NOT TO SCALE

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120172 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025

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Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER &
INVERTED SIPHON IMPROVEMENTS

STANDARD DETAILS

STANDARD DETAILS III

F&N JOB NO. NBU20253				
DATE 4/16/2025				
DESIGNED REV				
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REVISED .				
CHECKED .				
FILE NAME NBU-DT-MISC-03.dwg				

NO.	ISSUE	BY	DATE
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0	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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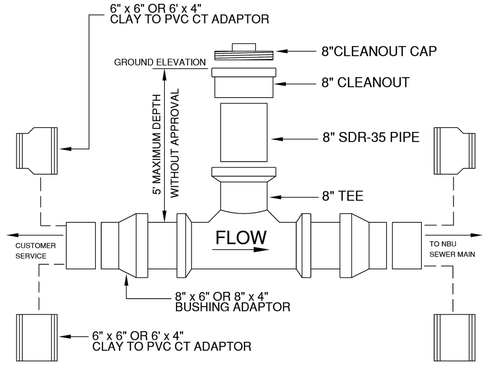
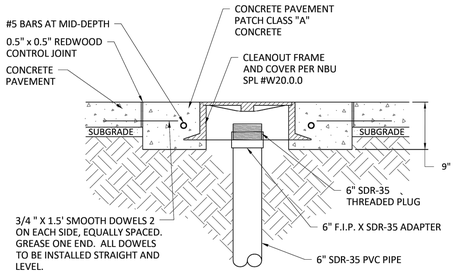
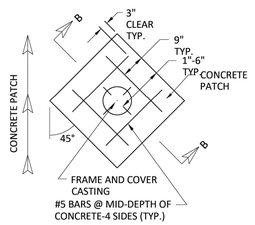


NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: H Shadrock	APPROVED BY:	STANDARD DRAWING: WASTEWATER SAMPLING SITE FOR SERVICE 5' AND UNDER IN DEPTH (FROM GROUND ELEV.)			
			UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 304



SECTION B-B

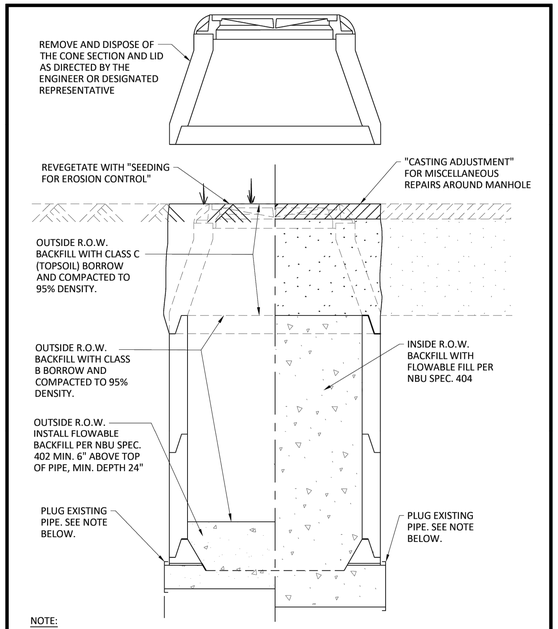


PLAN VIEW

NOTES:

1. SERVICES MUST BE DESIGNED TO AVOID PLACEMENT WITHIN SIDEWALK AND DRIVEWAYS. DETAIL APPROVED FOR USE ON EXISTING SERVICES ONLY.
2. SUBGRADE SHALL BE COMPACTED PER CITY OF NEW BRAUNFELS SPECIFICATIONS.

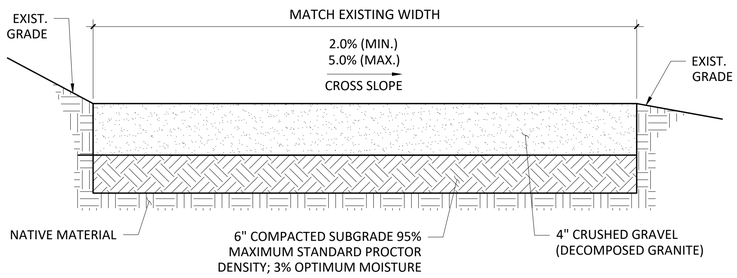
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	APPROVED BY: A. WILLARD	STANDARD DRAWING: WASTEWATER CLEANOUT ADJUSTMENT TO GRADE IN DRIVEWAYS			
		DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 306



NOTE:

1. THE PLUG SHOULD BE COMPOSED OF A MATERIAL SIMILAR TO THE EXISTING PIPE AS INSTRUCTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	APPROVED BY: A. WILLARD	STANDARD DRAWING: ABANDONED MANHOLE			
		DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 340

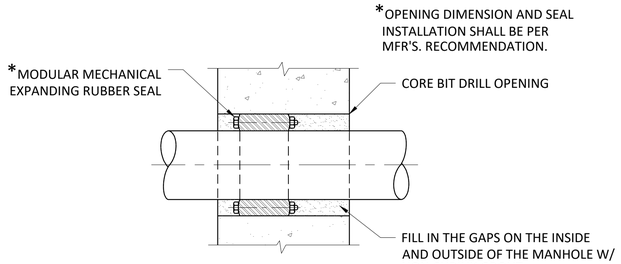


NOTES:

1. CRUSHED GRAVEL PAVING (DECOMPOSED GRANITE) SHALL BE FLUSH WITH ADJACENT WALKING/ACCESSIBLE SURFACE.
2. CRUSHED GRAVEL PAVING (DECOMPOSED GRANITE) SHALL MEET THE FOLLOWING SIEVE ANALYSIS:
   - 3/8" 100% PASSING
   - #4 90-100% PASSING
   - #8 75-80% PASSING
   - #16 55-65% PASSING
   - #30 40-50% PASSING
   - #50 25-35% PASSING
   - #100 15-20% PASSING
   - #200 10-15% PASSING
3. CRUSHED GRAVEL SCREENINGS SHALL BE FREE FROM CLAY LUMPS, VEGETATIVE MATTER, AND DELETERIOUS MATERIAL INCLUDING NOXIOUS WEED SEEDS.
4. CRUSHED GRAVEL PAVING (DECOMPOSED GRANITE) SHALL BE GOLD IN COLOR.
5. BINDER SHALL BE USED IN ALL CRUSHED GRAVEL PAVING (DECOMPOSED GRANITE) APPLICATIONS AND SHALL BE PRE-MIXED OFF SITE BY THE SUPPLIER.
6. BINDER SHALL BE PATENTED, NON-TOXIC ORGANIC BINDER THAT IS A COLORLESS AND ODORLESS CONCENTRATED POWDER THAT BINDS CRUSHED GRAVEL PAVING TO PRODUCE A FIRM SURFACE.

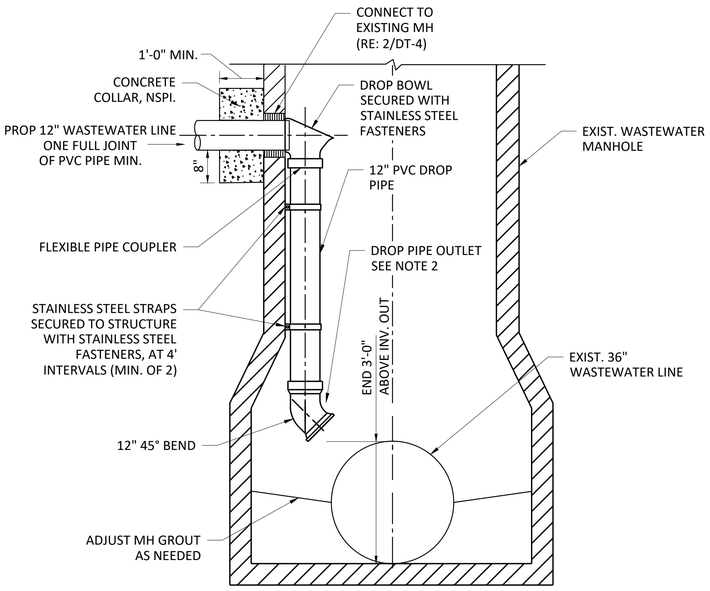
1 / DT-4 TYPICAL GRAVEL PAVEMENT SECTION

NOT TO SCALE



2 / DT-4 FOR EXISTING WALLS PIPE PENETRATION DETAIL

NOT TO SCALE



NOTE:

1. ALL PIPING SHALL BE PVC. FITTINGS SHALL BE RESTRAINED JOINT.
2. THE DROP PIPE OUTLET SHALL BE AT THE SAME ELEVATION AS THE TOP OF THE EXISTING 36" WASTEWATER LINE.

3 / DT-4 INTERNAL DROP CONNECTION

NOT TO SCALE

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS ERIN C. MILLER 120173 LICENSED PROFESSIONAL ENGINEER 04/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS

SANITARY SEWER DETAILS I

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

F&N JOB NO. NBU20253
DATE 4/16/2025
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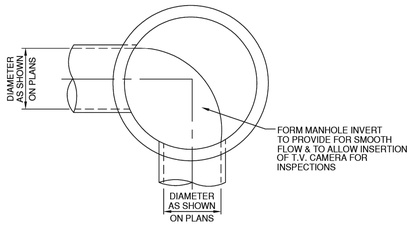
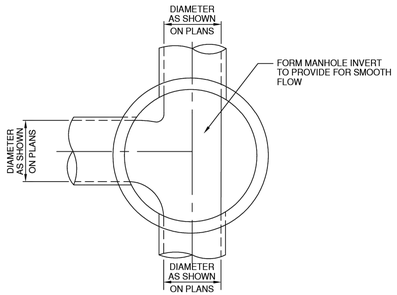


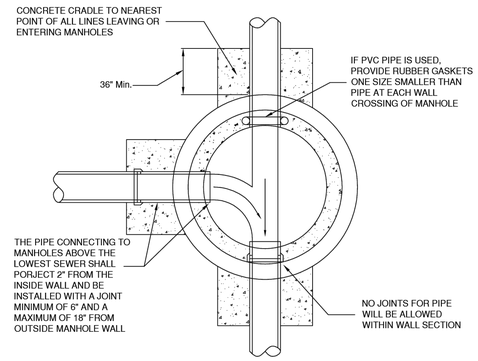
TYPICAL MANHOLE AT ANGLE IN SEWER



TYPICAL JUNCTION MANHOLE

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: JD Amaro	STANDARD DRAWING: MANHOLE INVERT PLAN			
	APPROVED BY:	UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 2	DRAWING NO. 320

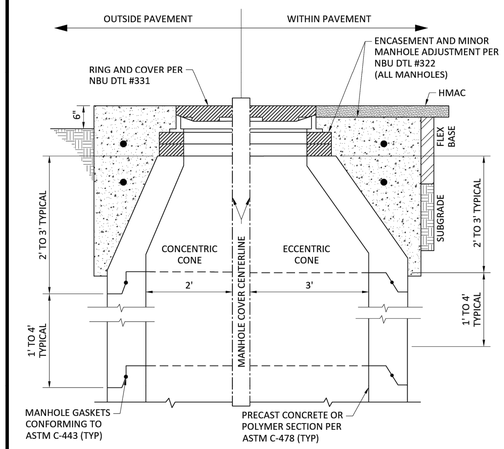
STANDARD MANHOLE



MANHOLE FLOOR PLAN

AUGUST 1998

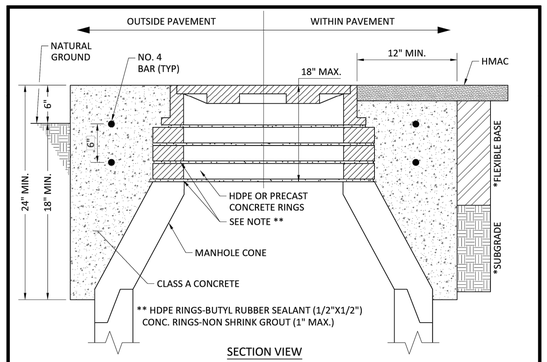
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: H Shadrock	STANDARD DRAWING: STANDARD MANHOLE MANHOLE FLOOR PLAN			
	APPROVED BY:	UPDATED: 5-5-03	SCALE: N.T.S.	SHEET: 2 OF 2	DRAWING NO. 320



NOTES:

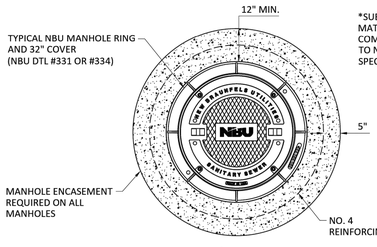
1. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH THE WRITTEN APPROVAL OF THE INSPECTOR. GASKETS SHALL NOT BE REUSED.
2. ANY COMBINATION OF REMOVING THE CONCRETE RINGS, AND / OR THE MANHOLE CONE, AND/OR THE STRAIGHT RISER SECTION OF THE MANHOLE SHALL BE ACCEPTABLE TO TEMPORARILY LOWER THE MANHOLE GRADE FOR ROADWAY RECONSTRUCTION.
3. WHILE THE MANHOLE IS TEMPORARILY LOWERED, A SHEET OF STEEL SUITABLE TO SUPPORT ALL IMPOSED LOADS SHALL BE USED TO COVER THE OPENING. THE STEEL PLATE SHALL BE SET IN MORTAR TO PREVENT LEAKAGE.
4. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED TO 95% AND 100% DENSITIES, RESPECTIVELY, COMPACTION SHALL BE BY MECHANICAL TAMPING TO THE DENSITIES SPECIFIED.
5. MANHOLE SHALL BE SET SO RING AND COVER MATCH STREET SLOPE.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING: MAJOR MANHOLE ADJUSTMENT			
	APPROVED BY: A. WILLARD	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 321
	DRAWING DATE: 2/1/24				



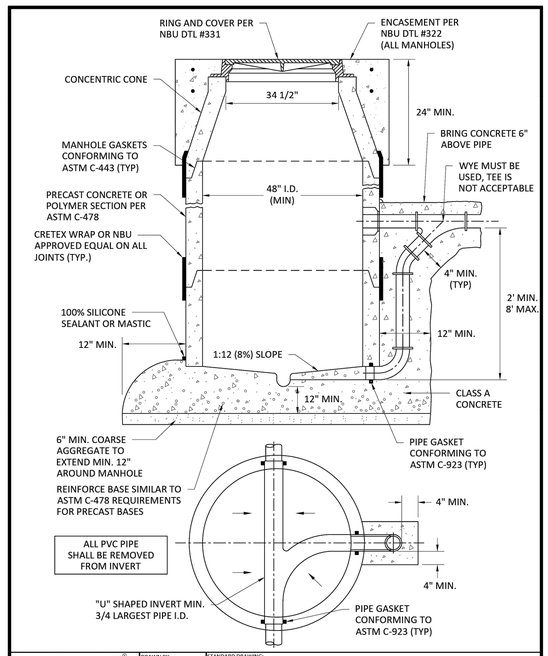
** HDPE RINGS-BUTYL RUBBER SEALANT (1/2"X1/2")
CONC. RINGS-NON SHRINK GROUT (1" MAX.)

SECTION VIEW

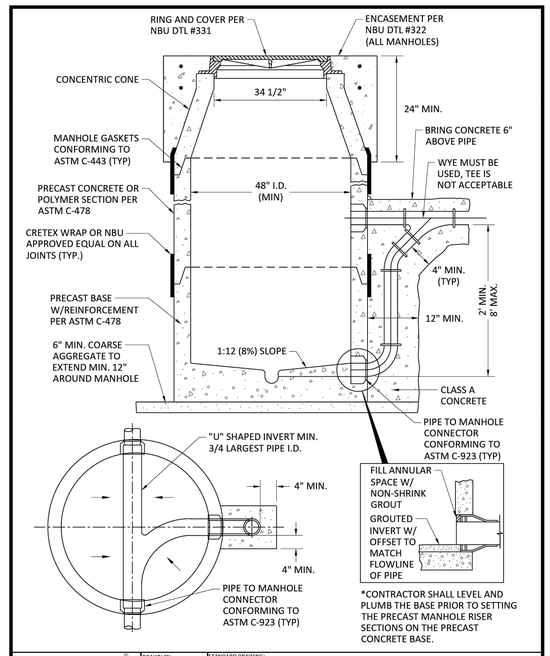


TOP VIEW

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING: NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENT			
	APPROVED BY: A. WILLARD	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 322
	DRAWING DATE: 2/1/24				



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING: WASTEWATER MANHOLE W/DROP INLET ON CAST IN PLACE BASE			
	APPROVED BY: A. WILLARD	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 324
	DRAWING DATE: 2/1/24				



*CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING: WASTEWATER MANHOLE W/DROP INLET ON CAST IN PLACE BASE			
	APPROVED BY: A. WILLARD	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 325
	DRAWING DATE: 2/1/24				

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS

SANITARY SEWER DETAILS II

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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FILE NAME	NBU-DT-MISC-05.dwg

SHEET DT-5

SEQ.

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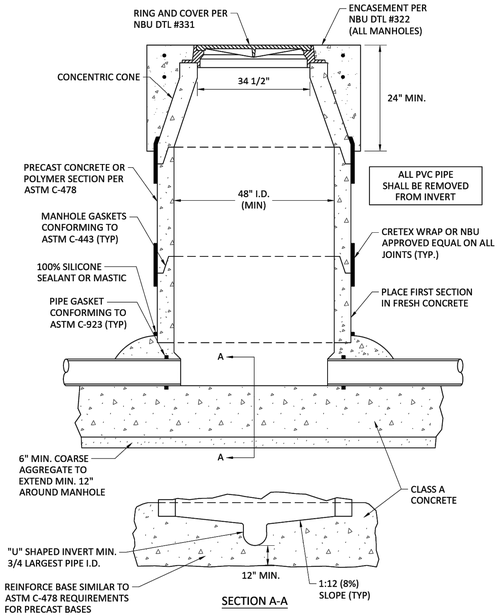
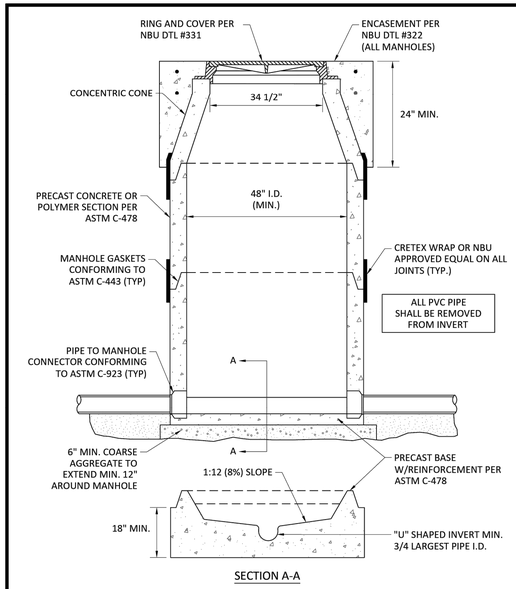


SECTION A-A

NBU	DRAWN BY: EWL	APPROVED BY: A. WILLARD	DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 327

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

STANDARD DRAWING: WASTEWATER MANHOLE ON CAST IN PLACE FOUNDATION



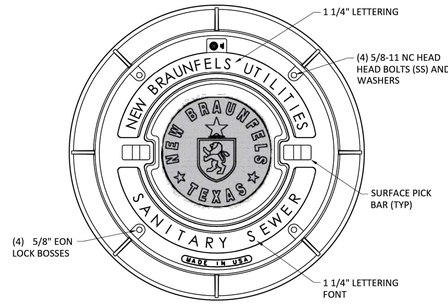
SECTION A-A

*CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.

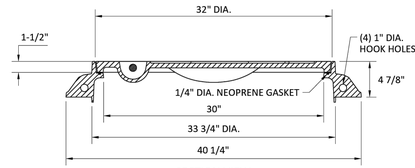
NBU	DRAWN BY: EWL	APPROVED BY: A. WILLARD	DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 328

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

STANDARD DRAWING: WASTEWATER MANHOLE ON PRECAST BASE



PLAN VIEW



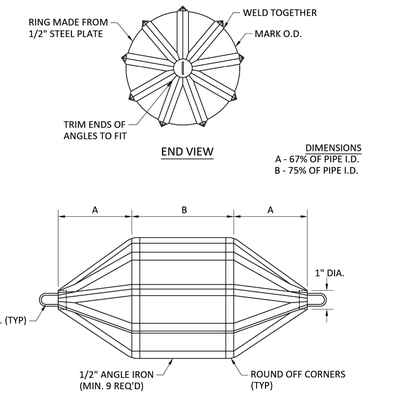
SECTION VIEW

MATERIAL: DUCTILE IRON ASTM A536 GRADE 70-50-05

NBU	DRAWN BY: EWL	APPROVED BY: A. WILLARD	DRAWING DATE: 8/17/21	UPDATED: 2023-12-20	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 331

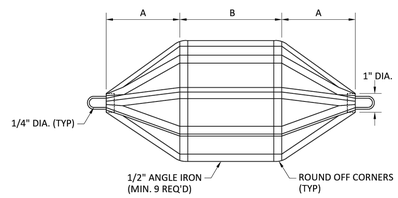
NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

STANDARD DRAWING: SANITARY SEWER MANHOLE COVER



END VIEW

DIMENSIONS
A - 67% OF PIPE I.D.
B - 75% OF PIPE I.D.



SIDE OR TOP VIEW

MANDREL REQUIREMENTS:

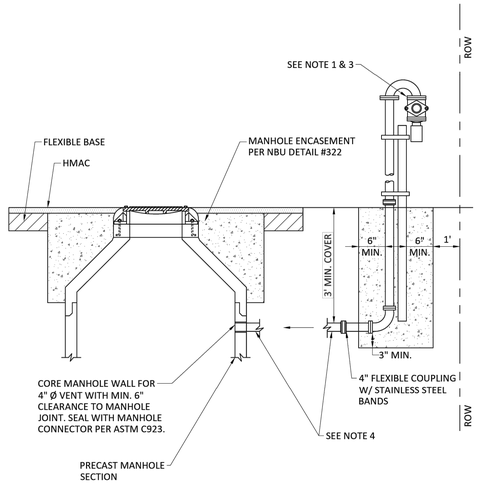
1. O.D. NOT LESS THAN 95% OF THE I.D. OF THE PIPE, AS SPECIFIED BY THE APPLICABLE ASTM, AWWA, UNI-BELL OR ANSI STANDARD.
2. ABLE TO WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
3. ODD NUMBER OF RUNNERS OR LEGS.

*THIS INFORMATION IS PROVIDED AS A REFERENCE. ALL DEFLECTION TESTING SHALL BE DONE IN ACCORDANCE WITH TCEQ CHAPTER 217.

NBU	DRAWN BY: EWL	APPROVED BY: A. WILLARD	DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 350

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

STANDARD DRAWING: GO, NO GO DEFLECTION TESTING MANDREL



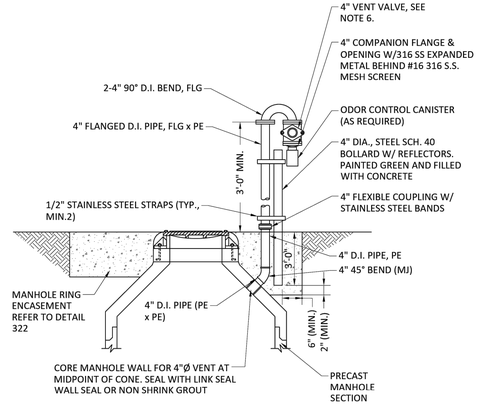
NOTES:

1. VENT PIPING AND COATINGS PER NBU DETAIL 334.
2. MANHOLE VENT AND SUPPORT PIPING SHALL NOT BE INSTALLED IN SIDEWALK, PARKING AREAS, OR DRIVE AISLES.
3. BOTTOM OF FLANGE SHALL BE MIN. 2'-6" ABOVE GRADE, 3'-6" MAX.
4. VENT PIPING FROM MANHOLE TO 90 DEG. VERTICAL BEND MUST BE LAID TO DRAIN TO THE MANHOLE AT MIN. 2% SLOPE.

NBU	DRAWN BY: EWL	APPROVED BY: A. WILLARD	DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 333

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

STANDARD DRAWING: MANHOLE VENT PAVED AREAS



NOTES:

1. ALL BOLTS AND HARDWARE TO BE 316 STAINLESS STEEL.
2. DUCTILE IRON PIPE AND FITTINGS TO HAVE FACTORY APPLIED PROTECTO 401 EPOXY INTERIOR COATING.
3. EXTERIOR OF DUCTILE IRON PIPES AND FITTINGS TO BE FACTORY COATED WITH FACTORY APPLIED PRIME COAT AND SURFACE COAT OF GREEN FUSION BONDED EPOXY.
4. CONTRACTOR TO FIELD COAT WITH PENETRATING EPOXY PRE-PRIMER AND HIGH SOLIDS EPOXY SILOXANE PER NBU SPECIFICATION 530.
5. PROVIDE ODOR CONTROL CANISTERS ON VENTS WHERE INDICATED ON THE PLANS.
6. BOTTOM OF COMPANION FLANGE MUST BE 1' ABOVE THE FEMA BASE FLOOD ELEVATION (BFE), MAXIMUM HEIGHT ABOVE GRADE OF 6'. INSTALL WAGER 1700 VENT VALVE, OR APPROVED EQUAL, WHERE BFE IS MORE THAN 18" ABOVE PROPOSED GRADE.

NBU	DRAWN BY: EWL	APPROVED BY: A. WILLARD	DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 334

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

STANDARD DRAWING: MANHOLE VENT NON-PAVED AREAS

Freese and Nichols, Inc.
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ENGINEER
04/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS

SANITARY SEWER DETAILS III

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
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FILE NAME NBU-DT-MISC-06.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

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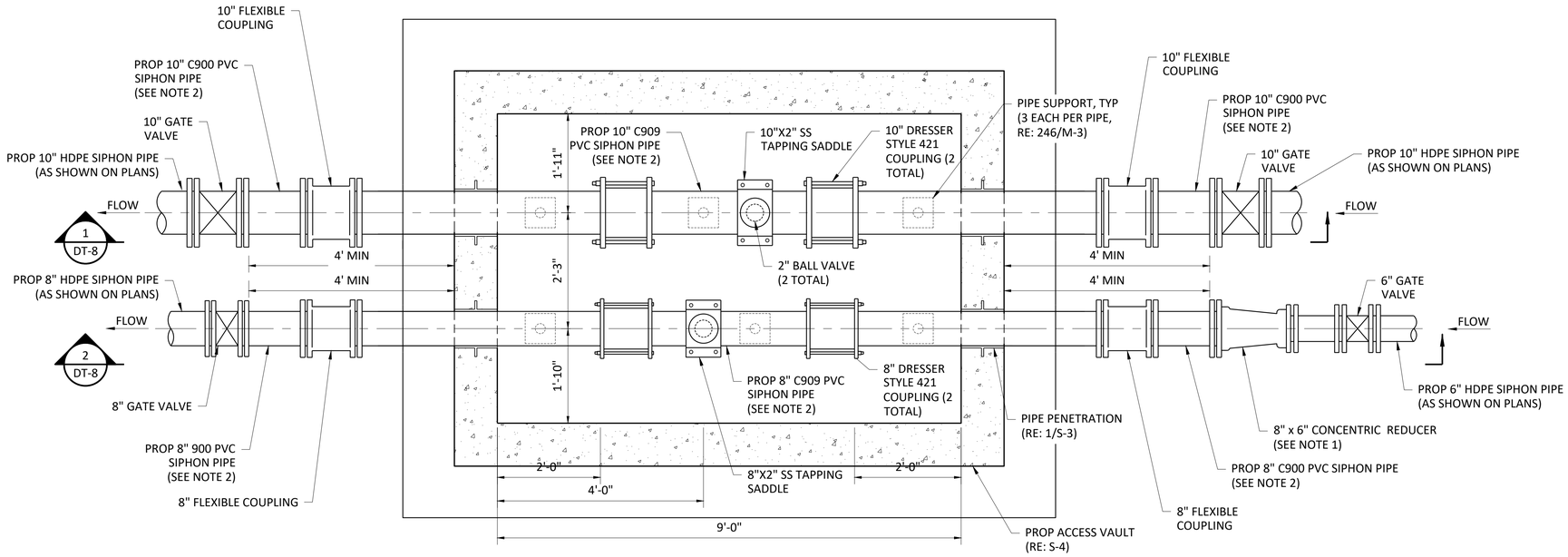

NOTE:

1. PIPE CONFIGURATION SHOWN IS FOR ACCESS VAULT 1. FOR ACCESS VAULT 2, THE 8" GATE VALVE SHALL BE REPLACED BY THE 6" GATE VALVE AND 8"X6" REDUCER, AND VICE VERSA.
2. CONTRACTOR SHALL INSTALL PVC C900 PIPE BETWEEN THE GATE VALVES AND DRESSER STYLE 421 COUPLINGS. A MINIMUM 4' SEGMENT OF PVC C909 PIPE SHALL BE INSTALLED BETWEEN THE DRESSER STYLE 421 COUPLINGS (BOTH PIPES).

1 / DT-7 — ACCESS VAULT - PLAN VIEW

3/4" = 1'

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc
Texas Registered Engineering Firm F-2144

STATE OF TEXAS — ERIN C. MILLS — 120172 — LICENSED — PROFESSIONAL ENGINEER — 04/22/2025

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS

STANDARD DETAILS

ACCESS VAULT DETAILS I

F&N JOB NO. NBU20253
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FILE NAME NBU-DT-MISC-08.dwg

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SHEET DT-7

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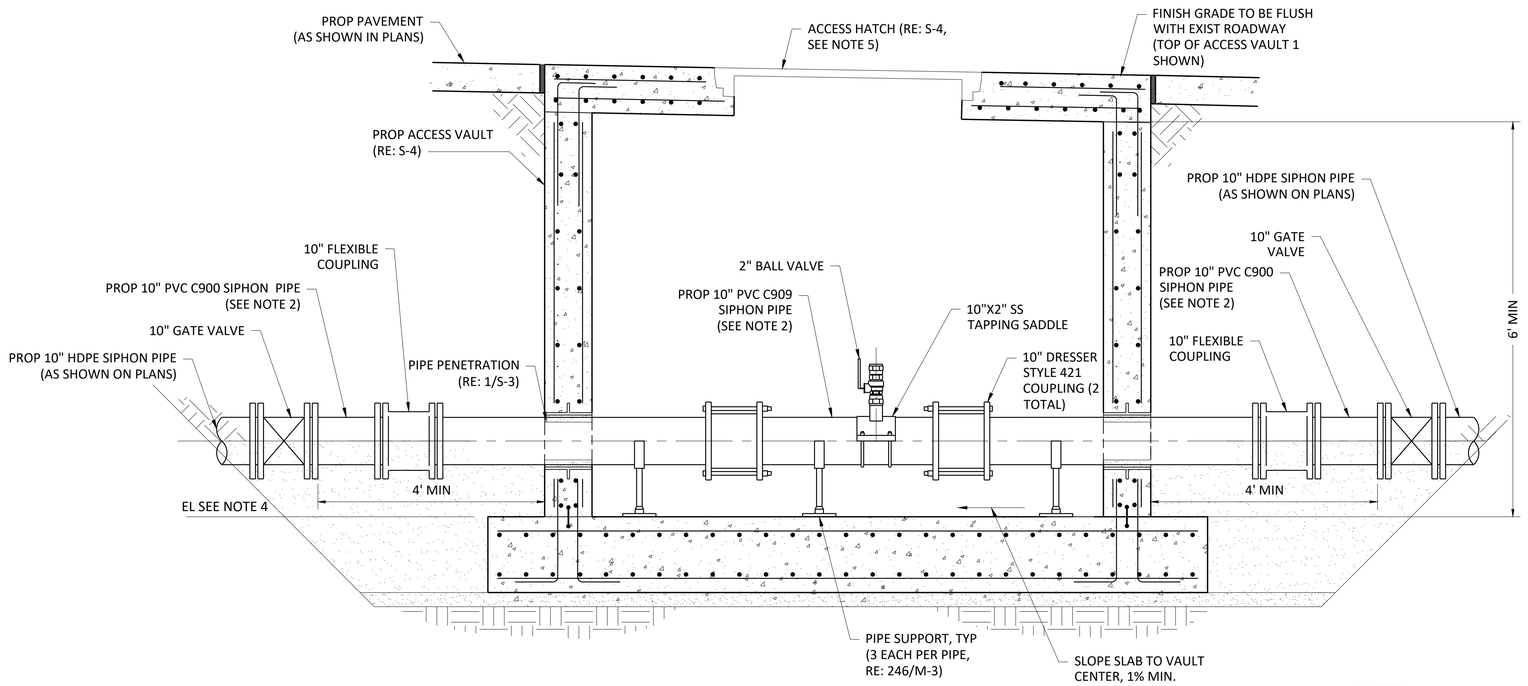
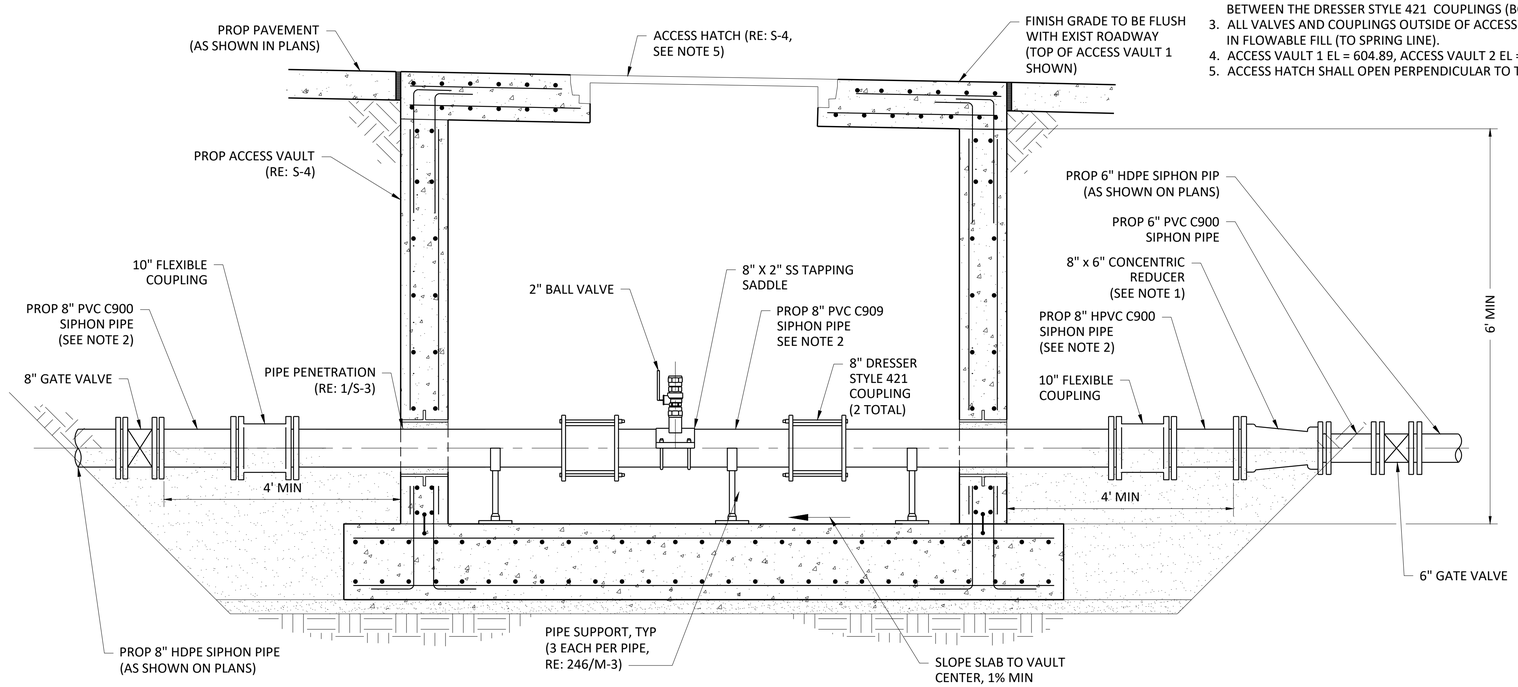


1 DT-8 ACCESS VAULT - SECTION I

3/4" = 1'

NOTES:

1. PIPE CONFIGURATION SHOWN IS FOR ACCESS VAULT 1. FOR ACCESS VAULT 2, THE 8" GATE VALVE SHALL BE REPLACED BY THE 6" GATE VAVLE AND 8"X6" REDUCER, AND VICE VERSA.
2. CONTRACTOR SHALL INSTALL PVC C900 PIPE BETWEEN THE GATE VALVES AND DRESSER STYLE 421 COUPLINGS. A MINIMUM 4' SEGMENT OF PVC C909 PIPE SHALL BE INSTALLED BETWEEN THE DRESSER STYLE 421 COUPLINGS (BOTH PIPES).
3. ALL VALVES AND COUPLINGS OUTSIDE OF ACCESS VAULT SHALL BE INSTALLED ENCASED IN FLOWABLE FILL (TO SPRING LINE).
4. ACCESS VAULT 1 EL = 604.89, ACCESS VAULT 2 EL = 621.46
5. ACCESS HATCH SHALL OPEN PERPENDICULAR TO THE FLOW OF TRAFFIC.



2 DT-8 ACCESS VAULT - SECTION II

3/4" = 1'

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Texas Registered Engineering Firm F-2144

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ERIN C. MILLS
120173
LICENSED
PROFESSIONAL ENGINEER
04/22/2025

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NEW BRAUNFELS UTILITIES
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STANDARD DETAILS

ACCESS VAULT DETAILS II

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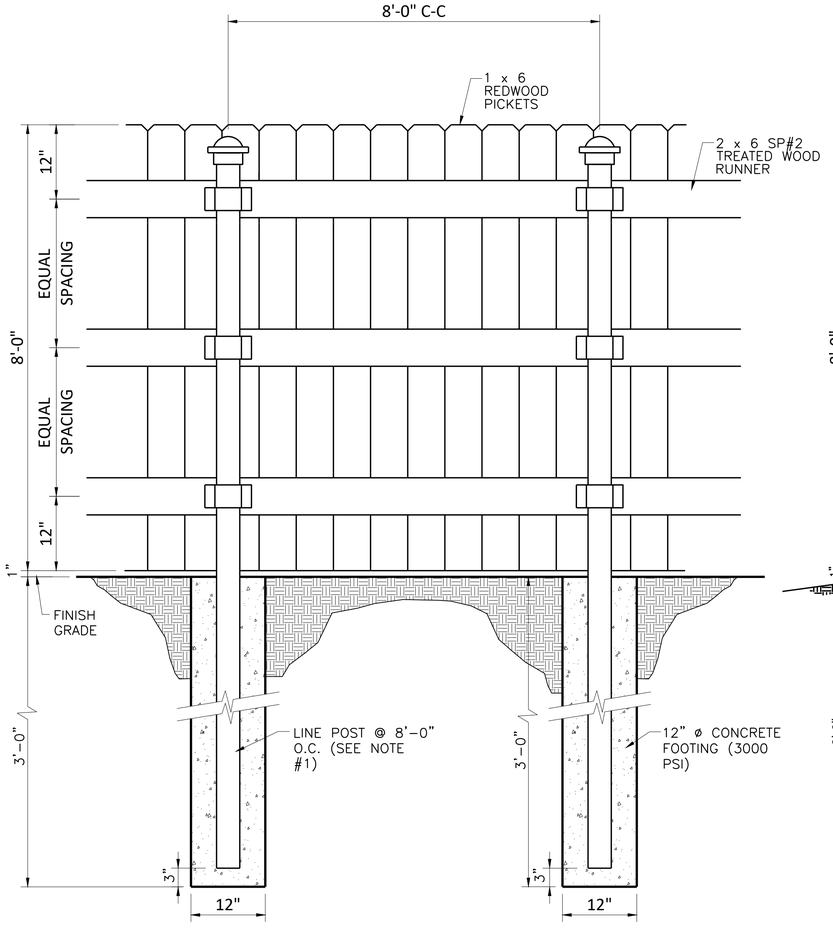
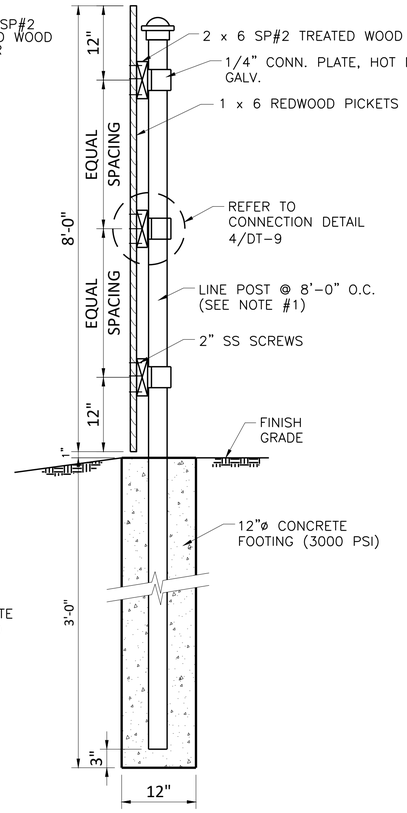


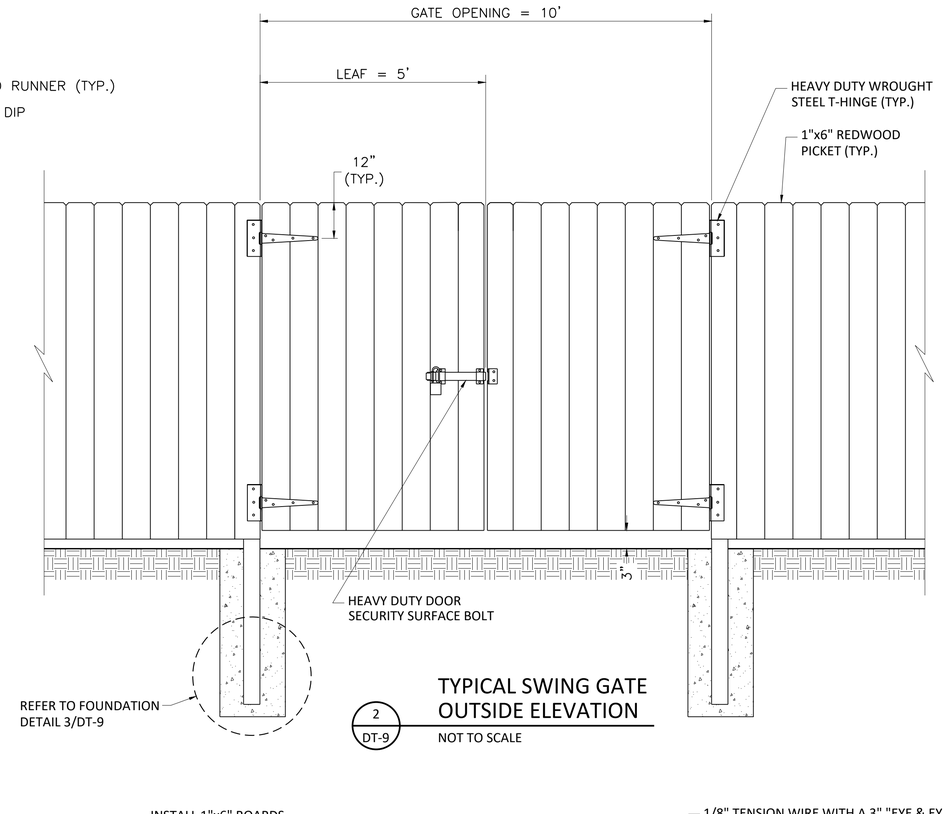
1 DT-9 WOOD FENCE ELEVATION

NOT TO SCALE



A DT-9 FENCE POST SECTION

NOT TO SCALE

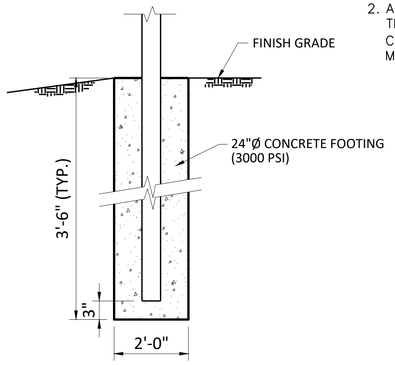


2 DT-9 TYPICAL SWING GATE OUTSIDE ELEVATION

NOT TO SCALE

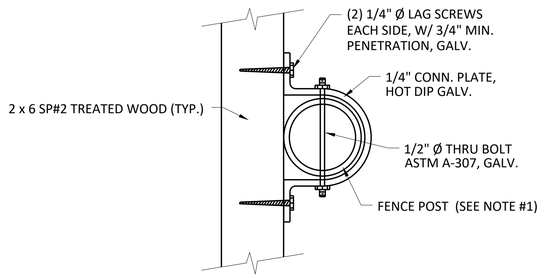
WOOD FENCE AND GATE NOTES:

1. STANDARD PIPE SIZES INDICATED ARE NOMINAL DIAMETER, SCHEDULE 40, PER AMERICAN STANDARDS ASSOCIATION (ASA) B 36.10. LINE POSTS SHALL BE 4". GATE POSTS AND CORNER POSTS SHALL BE 6".
2. ALL TREATED WOOD CALLED FOR ON FENCE DETAILS SHALL BE PRESERVATIVE PRESSURE TREATED AS PER AWPA C2. PRESERVATIVE CHEMICALS SHALL CONSIST OF CHROMATED COPPER ARSENATE (CCA) MATERIALS SHALL BE KILN-DRY AFTER TREATMENT TO A MAXIMUM MOISTURE CONTENT OF 19% FOR LUMBER.



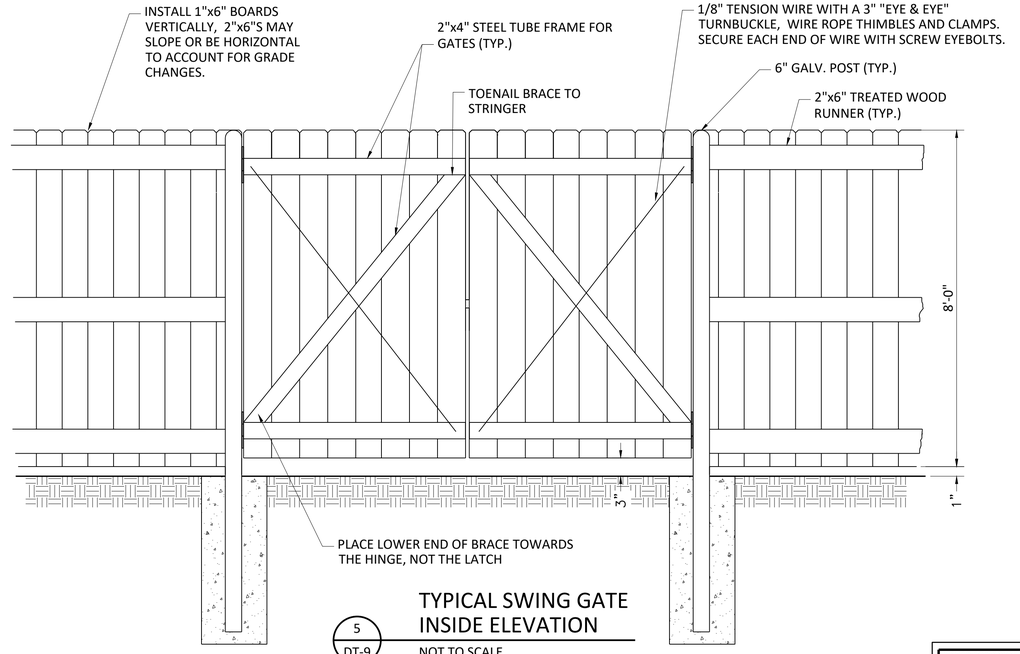
3 DT-9 TYPICAL CORNER POST/GATE POST FOUNDATION DETAIL

NOT TO SCALE



4 DT-9 CONNECTION DETAIL

NOT TO SCALE



5 DT-9 TYPICAL SWING GATE INSIDE ELEVATION

NOT TO SCALE

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NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS

STANDARD DETAILS

WOOD FENCE DETAILS

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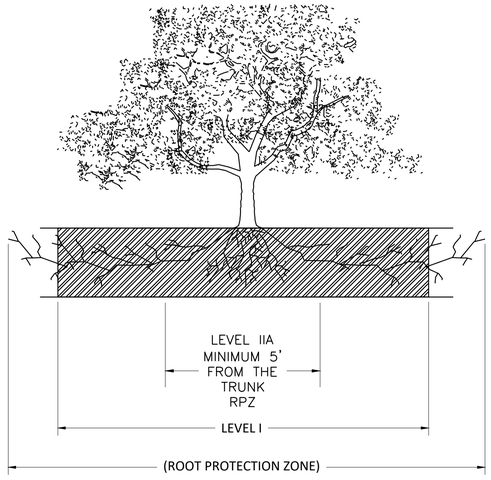
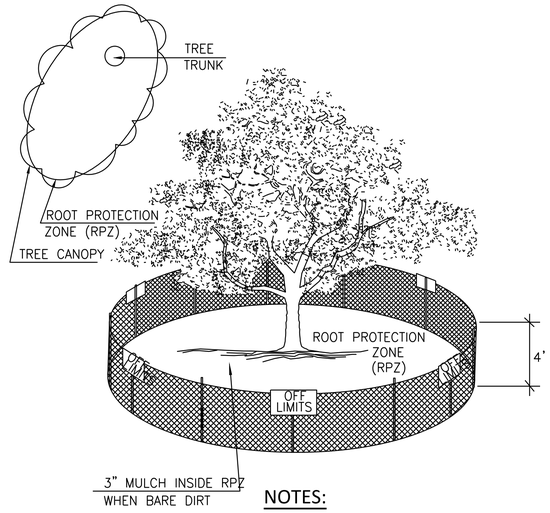


ROOT PROTECTION ZONE-THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.

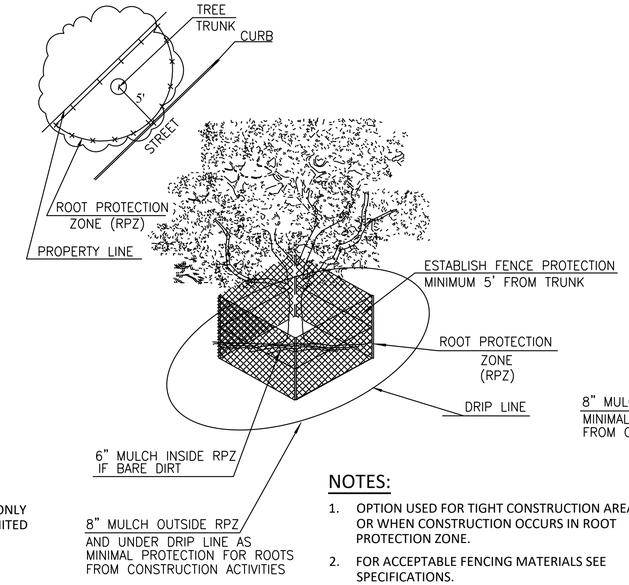
1 DT-10 **ELEVATION**
NOT TO SCALE



NOTES:

1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY AND WILL CONFORM TO THE DRIP LINE AND LIMITED TO PROJECT BOUNDARY.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.
3. LEVEL I FENCE PROTECTION MUST BE USED IN ALL TREE PROTECTION AREA UNLESS THEY ARE TIGHT AREAS.

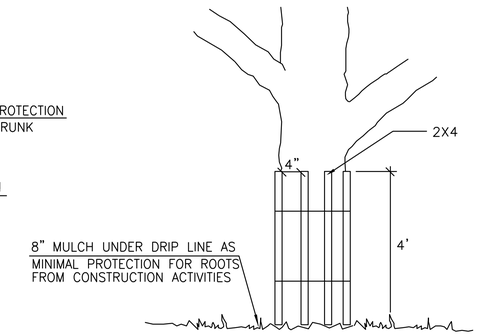
2 DT-10 **LEVEL I FENCE PROTECTION**
NOT TO SCALE



NOTES:

1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

3 DT-10 **LEVEL II A FENCE PROTECTION**
NOT TO SCALE



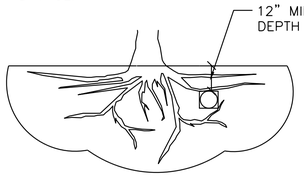
NOTE:

1. WRAP TREE TRUNK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

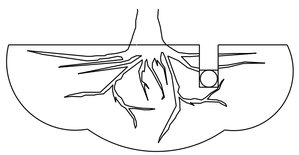
4 DT-10 **LEVEL II B FENCE POTECTION**
NOT TO SCALE

TREES THAT ARE MARKED TO BE PRESERVED ON A SITE PLAN AND FOR WHICH UTILITIES MUST PASS TROUGH THEIR ROOT PROTECTION ZONES MAY REQUIRE TUNNELING AS OPPOSED TO OPEN TRENCHES. THE DECISION TO TUNNEL WILL BE DETERMINED ON A CASE BY CASE BASIS BY THE ENGINEER.

TUNNELS SHALL BE DUG THROUGH THE ROOT PROTECTION ZONE IN ORDER TO MINIMIZE ROOT DAMAGE.

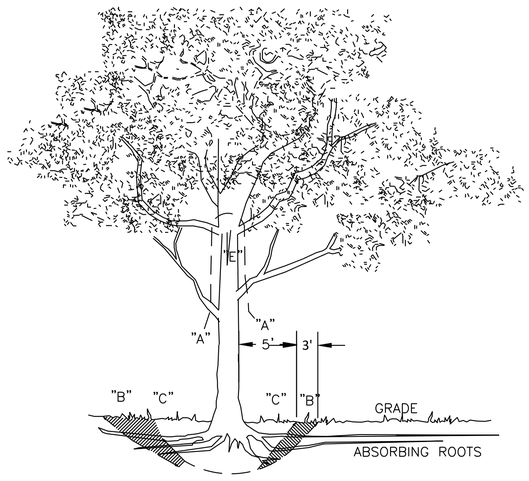


TUNNEL TO MINIMIZE ROOT DAMAGE (TOP) AS OPPOSED TO SURFACE–DUG TRENCHES IN ROOT PROTECTION ZONE WHEN THE 5' MINIMUM DISTANCE FROM TRUNK CAN NOT BE ACHIEVED.



OPEN TRENCHING MAY BE USED IF EXPOSED TREE ROOTS DO NOT EXCEED 3" OR ROOTS CAN BE BENT BACK.

5 DT-10 **BORING THRU TREE ROOT ZONE**
NOT TO SCALE



NOTES:

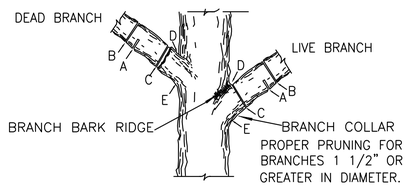
A" REMOVE BULKY TREE PARTS "SHRED" AND/OR HAUL SEPARATELY.

"B" BEGIN EXCAVATION APPROX. 8' FROM THE TRUNK - CUT THRU ANCHOR ROOTS AT AN ANGLE - 3' TO 4' DEEP

"C" USING TREE TRUNK AS A LEVER PUSH AT POINT "E" TO REMOVE TREE BOLE AND LARGE FEEDER ROOTS (4" TO 10" IN DIAM.)

"D" BACKFILL HOLE AND CLEAN UP.

6 DT-10 **TREE REMOVAL DIAGRAM**
NOT TO SCALE



NOTE: DO NOT CUT FROM D to E.

A. FIRST CUT - TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT - TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT - ALLOW FOR HEALING COLLAR BUT NO STUBS
D. BRANCH RIDGES - INDENT PROPERLY BRANCH RIDGES WHICH ARE SITE FOR DECAY.

FOR OAKS ONLY: PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK WILT.

7 DT-10 **BRANCH PRUNING DETAIL**
NOT TO SCALE

NOTES:

1. PROTECT ALL TREES WITH DIAMETERS GREATER THAN 8 INCHES WITH TEMPORARY CONSTRUCTION EASEMENT. ALL TREES WITHIN PERMANENT CONSTRUCTION EASEMENT MAY BE REMOVED AS NEEDED UNLESS OTHERWISE NOTED.
2. NO SITE PREPARATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED.
3. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION.
4. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN THREE INCHES IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE INSPECTOR.
5. THE ROOT PROTECTION ZONE IS THAT AREA SURROUNDING A TREE, AS MEASURED BY A RADIUS FROM THE TREE TRUNK, IN WHICH NO EQUIPMENT, VEHICLES OR MATERIALS MAY OPERATE OR BE STORED. THE REQUIRED RADIUS LENGTH IS 1 FOOT PER DIAMETER INCH OF THE TREE. FOR EXAMPLE, A 10-INCH DIAMETER TREE WOULD HAVE A 5-FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES THAT ARE IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. LIVE OAK WOUNDS SHALL BE PAINTED OVER, WITHIN 20 MINUTES TO PREVENT OAK WILT.
6. ACCESS TO FENCED AREAS WILL BE PERMITTED ONLY WITH THE APPROVAL OF THE ENGINEER OR CITY INSPECTOR.
7. GRADING, IF REQUIRED, SHALL BE LIMITED TO A 3 INCH CUT OR FILL WITHIN THE FENCED ROOT ZONE AREAS.
8. TREES, SHRUBS OR BUSHES TO BE CLEARED FROM PROTECTED ROOT ZONE AREAS SHALL BE REMOVED BY HAND AS DIRECTED BY THE PROJECT MANAGER OR INSPECTOR.
9. TREES DAMAGED OR LOST DUE TO CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE ENGINEER'S SATISFACTION.
10. EXPOSED ROOTS SHALL BE COVERED AT THE END OF EACH DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH OR WET BURLAP.

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS
ERIN C. MILLS
120173
LICENSED
PROFESSIONAL ENGINEER
04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER &
INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS

TREE PROTECTION DETAILS

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
DRAWN CJG
CHECKED -
FILE NAME NBU-M-DT-MISC05.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1

SHEET DT-10
SEQ.

ACAD Rel: 25.0s (LMS Tech)
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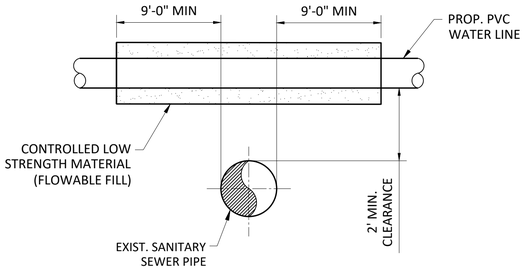


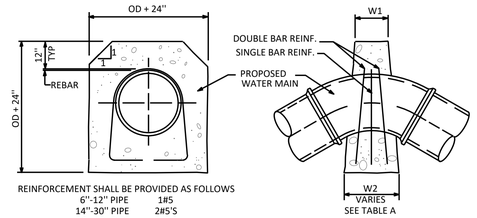
NOTE:

1. IF 2' VERTICAL CLEARANCE CANNOT BE OBTAINED, NOTIFY THE ENGINEER.

PROPOSED WATER LINE CROSSING ABOVE NON-PRESSURE RATED SANITARY SEWER LINE DETAIL (TAC 290.44.E.4.B)

1
DT-11

NOT TO SCALE



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS

6"-12" PIPE	1#5
14"-30" PIPE	2#5'S
36"-48" PIPE	2#7'S

VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH-W2 (in)
6"	6"	0-5	NOTE 2
		5-15	24
		15-25	48
		► 25	NOTE 1
8"	6"	0-5	NOTE 2
		5-9	30
		9-15	36
		►15	NOTE 1
12"	6"	0-5	NOTE 2
		5-15	48
		► 15	NOTE 1
16"	12"	0-5	NOTE 2
		5-10	60
		10-15	96
		► 15	NOTE 1
24" THRU 36" DIA.		►5.0	NOTE 1
42" THRU 48" DIA.		►3.0	NOTE 1

NOTES:

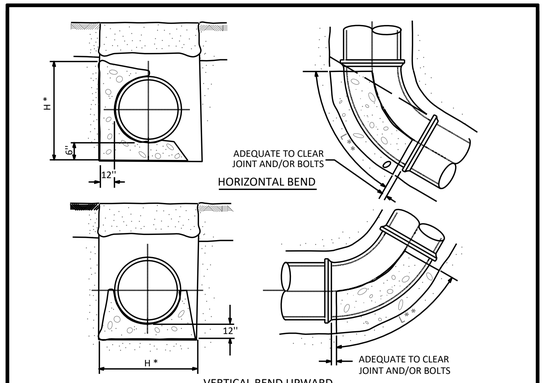
1. FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINED JOINTS SHALL BE INSTALLED.
2. FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.
3. THRUST BLOCK SHALL NOT BE INSTALLED WITHOUT APPROVAL FROM NBU WATER ENGINEERING.

THRUST BLOCK DESIGN AS FOLLOWS
A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE
B. MAXIMUM SOIL BEARING SEE TABLE BELOW

SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb/Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb/Sq.Ft.

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

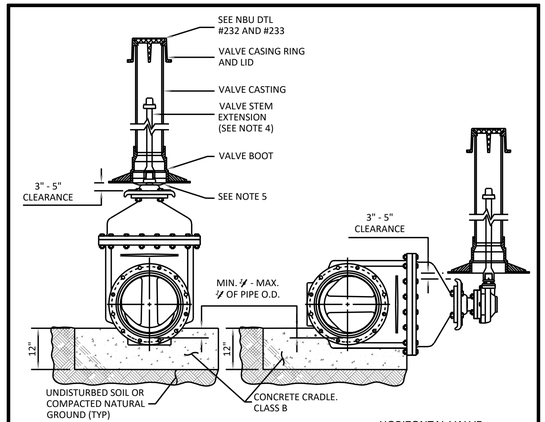
DRAWN BY:	STANDARD DRAWING:	
EWL	CONCRETE THRUST BLOCKING	
APPROVED BY: A. WILLARD		
DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S. / SHEET: 1 OF 2 / DRAWING NO. 221



* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
EWL	CONCRETE THRUST BLOCKING	
APPROVED BY: A. WILLARD		
DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S. / SHEET: 2 OF 2 / DRAWING NO. 221



VERTICAL VALVE

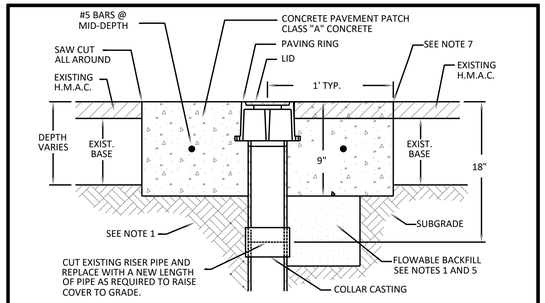
HORIZONTAL VALVE
USE ONLY WHEN SPECIFIED IN DRAWINGS AND WITH NBU STAFF APPROVAL

NOTES:

1. WELD SOCKET 2 ½" X 2" DEEP TO 1" SCH, 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. [SCH.80 FOR LENGTHS OVER 10'.]
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.
5. TRUMBULL VALVE BOX ALIGNMENT DEVICE OR APPROVED EQUAL.

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

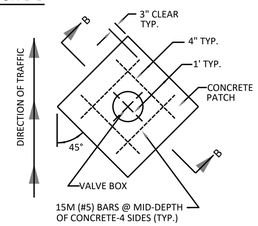
DRAWN BY:	STANDARD DRAWING:	
EWL	TYPICAL GATE VALVE	
APPROVED BY: A. WILLARD		
DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S. / SHEET: 1 OF 1 / DRAWING NO. 230



SECTION B-B

NOTES:

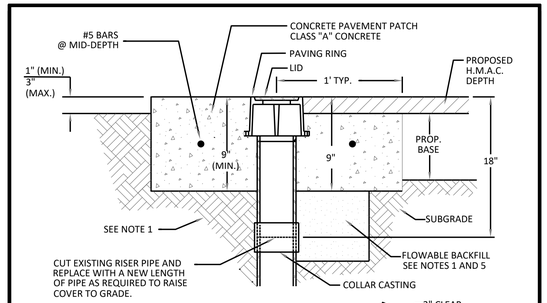
1. SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
4. REMOVE EXISTING RISER PIPE DOWN 18" AND REPLACE TO THE NEW ELEVATION USING NEW PIPE AND A COLLAR CASTING.
5. WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS.
7. CONCRETE DIAMOND SHALL BE INSTALLED BELOW HMAC IN CITY OF NEW BRAUNFELS ROW.



PLAN VIEW

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

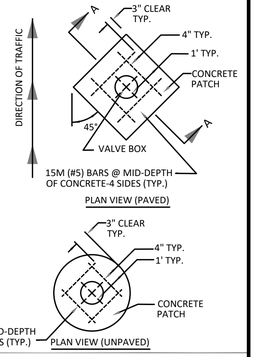
DRAWN BY:	STANDARD DRAWING:	
EWL	WATER VALVE BOX ADJUSTMENT TO GRADE W/FULL DEPTH CONCRETE FOR EXISTING STREETS	
APPROVED BY: A. WILLARD		
DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S. / SHEET: 1 OF 1 / DRAWING NO. 232



SECTION A-A

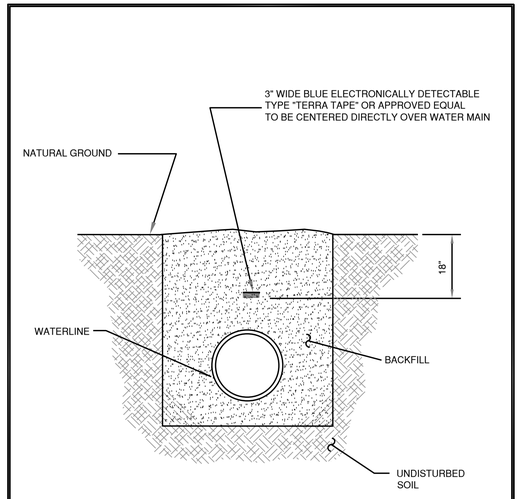
NOTES:

1. SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
4. REMOVE EXISTING RISER PIPE DOWN 18" AND REPLACE TO THE NEW ELEVATION USING NEW PIPE AND A COLLAR CASTING.
5. WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS.
7. WHERE VALVE IS INSTALLED IN UNPAVED AREA, CONTRACTOR MAY USE CIRCULAR FORM WITH REINFORCING STEEL.



NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
EWL	WATER VALVE BOX ADJUSTMENT TO GRADE FOR NEW STREETS AND UNPAVED AREAS	
APPROVED BY: A. WILLARD		
DRAWING DATE: 2/1/24	UPDATED:	SCALE: N.T.S. / SHEET: 1 OF 1 / DRAWING NO. 233



WATERLINE SURFACE IDENTIFICATION DETAIL

NOT TO SCALE

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
[illegible]	PLACEMENT OF INDUCTIVE TRACER DETECTION TAPE	
APPROVED BY:		
UPDATED: 2-23-23	SCALE: N.T.S.	SHEET: 1 OF 1 / DRAWING NO. 424

ISSUED FOR CONSTRUCTION ON 4/18/2025

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · ERIN C. MILLER · 120172 · LICENSED PROFESSIONAL ENGINEER · 04/22/2025

FREESE NICHOLS
9601 McAllister Freeway, Suite 1008
San Antonio, Texas 78216
Phone - (210) 298-3800
Web - www.freese.com

NEW BRAUNFELS UTILITIES
GRUENE WASTEWATER & INVERTED SIPHON IMPROVEMENTS
STANDARD DETAILS

WATER DETAILS

F&N JOB NO. NBU20253
DATE 4/16/2025
DESIGNED REV
DRAWN NBL
CHECKED -
FILE NAME NBU-M-DT-MISC09.dwg

NO.	ISSUE	BY	DATE
1	ISSUED FOR CONSTRUCTION	ECM	04/18/2025

0 VERIFY SCALE 1
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SHEET DT-11
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Last Saved: 4/16/2025 11:12 AM Saved By: 08688

Plot Date: 4/16/2025 11:20 AM Plot By: 08688 Filename: N:\WTU\Drawings\Siphon\NBU-M-DT-MISC09.dwg

Lift Station/Force Main System Application

Texas Commission on Environmental Quality

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

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

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

Regulated Entity Name: Gruene Wastewater Siphon

Customer Information

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

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

   Contact Person: Adam Willard, P.E. / NBU Chief Engineer of Water Services
   Entity: New Braunfels Utilities
   Mailing Address: 355 FM 306
   City, State: New Braunfels, Texas Zip: 78130
   Telephone: (830) 608-8943 Fax: _____
   Email Address: awillard@nbutexas.com

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

   Contact Person: Erin Mills, P.E.
   Entity: Freese & Nichols, Inc.
   Mailing Address: 9601 McAllister Freeway, Unit 1008
   City, State: San Antonio, Texas Zip: 78216
   Telephone: (210) 298-3898 Fax: _____
   Email Address: erin.mills@freese.com
   Texas Licensed Professional Engineer's Serial Number: _____

Project Information

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

   ☐ Lift Station only.

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

4. The sewage collection system will convey the wastewater to the Gruene Road Water Reclamation Facility (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

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

   ☒ The City of New Braunfels and New Braunfels Utilities standard specifications.
   ☐ Other. Specifications are attached.

Site Plan Requirements

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

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

   Site Plan Scale: 1" = 500‘.

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

8. Geologic or Manmade Features:

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

Table 1 - Geologic or Manmade Features

Line	*Station to Station*	*Type of Feature*
No karst features were identified during the GA	to	
	to	
	to	
	to	
	to	
	to	
	to	

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

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

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

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

11. 100-year floodplain boundaries

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

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

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA Flood Maps (Effective 9/2/2009), confirmed by survey data received 7/2022.

12. 5-year floodplain:

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

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

Table 2 - 5-Year Floodplain

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

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

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

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

    ☐ The wells are not in use and have been properly plugged.

    ☐ The wells are not in use and will be properly plugged.

    ☐ The wells are in use and comply with 16 TAC Chapter 76.

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

14. ☒ Legal boundaries of the site are shown.

Plan and Profile Sheets

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

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

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

    Plan sheet scale: 1" = Varies per sheet '.

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

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

Table 3 - Air Release/Vacuum Valves

Line	*Station*	*Sheet*
N/A - Inverted siphon line proposed. Peaks will be at proposed siphon structure downstreem MH-109		of
		of
		of
		of
		of
		of

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

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

    ☒ The report is dated, signed, and sealed by a Texas Licensed Professional Engineer.
    ☒ Calculations for sizing system.

- ☐ Pump head calculations, including, but not limited to, system head and pump capacity curves, head loss calculations, and minimum and maximum static head C values for normal and peak operational conditions.
- ☒ 100-year and 25-year flood considerations.
- ☐ Total lift station pumping capacity with the largest pump out of service.
- ☐ Type of pumps, including standby units.
- ☐ Type of pump controllers, including standby air supply for bubbler controllers, as applicable.
- ☐ Pump cycle time.
- ☐ Type of wet well ventilation; include number of air changes for mechanical ventilation.
- ☒ Minimum and maximum flow velocities for the force main.
- ☐ Lift station security.
- ☐ Lift station emergency provisions and reliability.

Administrative Information

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

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

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

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

Signature

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

Print Name of Licensed Professional Engineer: Erin C. Mills

Place engineer's seal here:

Date: 05/08/2025

Signature of Licensed Professional Engineer:

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: Tam Tran

Date: 05/12/2025

Signature of Customer/Agent:

Regulated Entity Name: Gruene Wastewater Siphon

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: gasoline, diesel

   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: Guadalupe 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.

Attachment A

Spill Response Actions

The TCEQ's spill response rules (30 TAC § 327.1-5) define what is considered a reportable spill and outline reporting requirements to the state, local government, and affected persons or property owners. Response and follow-up written report requirements are also identified.

The reportable quantities (RQ) for hazardous substances shall be:

(1) for spills or discharges onto land--the quantity designated as the Final Reportable Quantity (RQ) in Table 302.4 in 40 CFR §302.4; or

(2) for spills or discharges into waters in the state--the quantity designated as the Final RQ in Table 302.4 in 40 CFR §302.4, except where the Final RQ is greater than 100 pounds in which case the RQ shall be 100 pounds.

The RQ for crude oil and oil other than that defined as petroleum product or used oil shall be:

(A) for spills or discharges onto land--210 gallons (five barrels); or

(B) for spills or discharges directly into water in the state--quantity sufficient to create a sheen.

The RQ for petroleum product and used oil shall be:

(A) except as noted in subparagraph (B) of this paragraph, for spills or discharges onto land--25 gallons;

(B) for spills or discharges to land from PST exempted facilities--210 gallons (five barrels); or

(C) for spills or discharges directly into water in the state--quantity sufficient to create a sheen.

Industrial solid waste or other substances. The RQ for spills or discharges into water in the state shall be 100 pounds.

Upon the determination that a reportable discharge or spill has occurred, the responsible person shall notify the agency as soon as possible but not later than 24 hours after the discovery of the spill or discharge. The responsible person shall notify the agency in any reasonable manner including by telephone, in person, or by any other method approved by the agency. In all cases, the initial notification shall provide, to the extent known, the following information:

(1) the name, address and telephone number of the person making the telephone report;

(2) the date, time, and location of the spill or discharge;

(3) a specific description or identification of the oil, petroleum product, hazardous substances or other substances discharged or spilled;

(4) an estimate of the quantity discharged or spilled;

(5) the duration of the incident;

(6) the name of the surface water or a description of the waters in the state affected or threatened by the discharge or spill;

(7) the source of the discharge or spill;

(8) a description of the extent of actual or potential water pollution or harmful impacts to the environment and an identification of any environmentally sensitive areas or natural resources at risk;

(9) if different from paragraph (1) of this subsection, the names, addresses, and telephone numbers of the responsible person and the contact person at the location of the discharge or spill;

(10) a description of any actions that have been taken, are being taken, and will be taken to contain and respond to the discharge or spill;

(11) any known or anticipated health risks;

(12) the identity of any governmental representatives, including local authorities or third parties, responding to the discharge or spill; and

(13) any other information that may be significant to the response action.

In order to satisfy the federal requirement to notify the State Emergency Response Commission in the State of Texas, the responsible person shall notify one of the following:

(1) the State of Texas Spill-Reporting Hotline at 1-800-832-8224;

(2) during normal business hours only, the regional office for the agency region in which the discharge or spill occurred; or

(3) the National Response Center at 1-800-424-8802.

The responsible person shall notify the agency as soon as possible whenever necessary to provide information that would trigger a change in the response to the spill or discharge. If the discharge or spill creates an imminent health threat, the responsible person shall immediately notify and cooperate with local emergency authorities (fire department, fire marshal, law enforcement authority, health authority, or Local Emergency Planning Committee (LEPC), as appropriate). The responsible party will cooperate with the local emergency authority in providing support to implement appropriate notification and response actions. The local emergency authority, as necessary, will implement its emergency management plan, which may include notifying and evacuating affected persons. In the absence of a local emergency authority, the responsible person shall take reasonable measures to notify potentially affected persons of the imminent health threat.

The responsible person shall immediately abate and contain the spill or discharge and cooperate fully with the executive director and the local incident command system. The responsible person shall also begin reasonable response actions which may include, but are not limited to, the following actions:

(1) arrival of the responsible person or response personnel hired by the responsible person at the site of the discharge or spill;

(2) initiating efforts to stop the discharge or spill;

(3) minimizing the impact to the public health and the environment;

(4) neutralizing the effects of the incident;

(5) removing the discharged or spilled substances; and

(6) managing the wastes.

Texas Commission on Environmental Quality (TCEQ). 2016. 30 TAC § 327.1-5. Chapter 327: Spill Prevention and Control. https://www.tceq.texas.gov/assets/public/legal/rules/rules/pdflib/327.pdf

Attachment B

Potential Sources of Contamination

During the proposed project, the sources of potential contamination include diesel fuel, gasoline, and hydraulic fluid in the equipment that will be used for the excavation and construction of the wastewater line and pavement. Fuel for construction vehicles and work trucks will be used and be stored on site in sealed containers. No contamination is expected to occur.

ATTACHMENT C

SEQUENCE OF MAJOR ACTIVITIES

Activity	Description	Area of Disturbance	BMPs
Install temporary BMPs	Install temporary BMPs such as silt fencing	<0.01 ac	Silt fencing
Excavation	Excavate	<0.5 ac	Silt fencing
Construction	Placement of wastewater line	0.6 ac	Silt fencing
Restore disturbed areas	Regrade project area	<0.5 ac	Erosion control blanket, vegetated soil-rock riprap

Attachment D

Temporary Best Management Practices and Measures

BMP	Sequence of Construction	Control Measures
Debris and trash management	Pre-construction	Trash and litter control
Sanitary facilities	Pre-construction	Sanitary waste control
Silt fence	Pre-construction	Sediment control
Erosion control blanket	Post-construction	Sediment control
Vegetated soil- rock riprap	Post-construction	Slope protection; channel protection; temporary stabilization

The BMPs that will be in place during and after construction have been selected to help prevent pollution of surface water, groundwater, stormwater, the aquifer, or any other sensitive features that may be on or near the proposed project site. The measures to help prevent this pollution and maintain flow to naturally-occurring sensitive features are described below. There is no surface water on the project site.

Sanitary facilities and debris and trash management will help reduce sanitary waste and trash from littering the project site and surrounding areas.

A silt fence will be installed downslope of the disturbed area to filter sediment from water flowing over the disturbed area. The silt fence will help detain soil and sediment from leaving the construction site. By filtering water runoff, the possibility of pollution to any surface water, sensitive features, or aquifers that may be near the site is reduced.

Erosion control blankets will be used for soil stabilization throughout the disturbed project area. The blankets provides protection from erosion and filtering from overland runoff. The filtered and reduced runoff will prevent the pollution of surface water, groundwater, or sensitive features that may be on or near the project site during and after construction activities.

Vegetated soil-rock riprap will be placed downgradient of the slopes to filter and slow down stormwater and runoff. Vegetation will stabilize the soil under the rock layer. The vegetation would provide habitat for wildlife and filter pollutants.

Resources:

North Central Texas Council of Governments (NCTCOG). 2003. Integrated Storm Water Management Design Manual for Construction. http://www.iswm.nctcog.org/Documents/Construction/Final/pdf/Ch4_E_BMPs.pdf

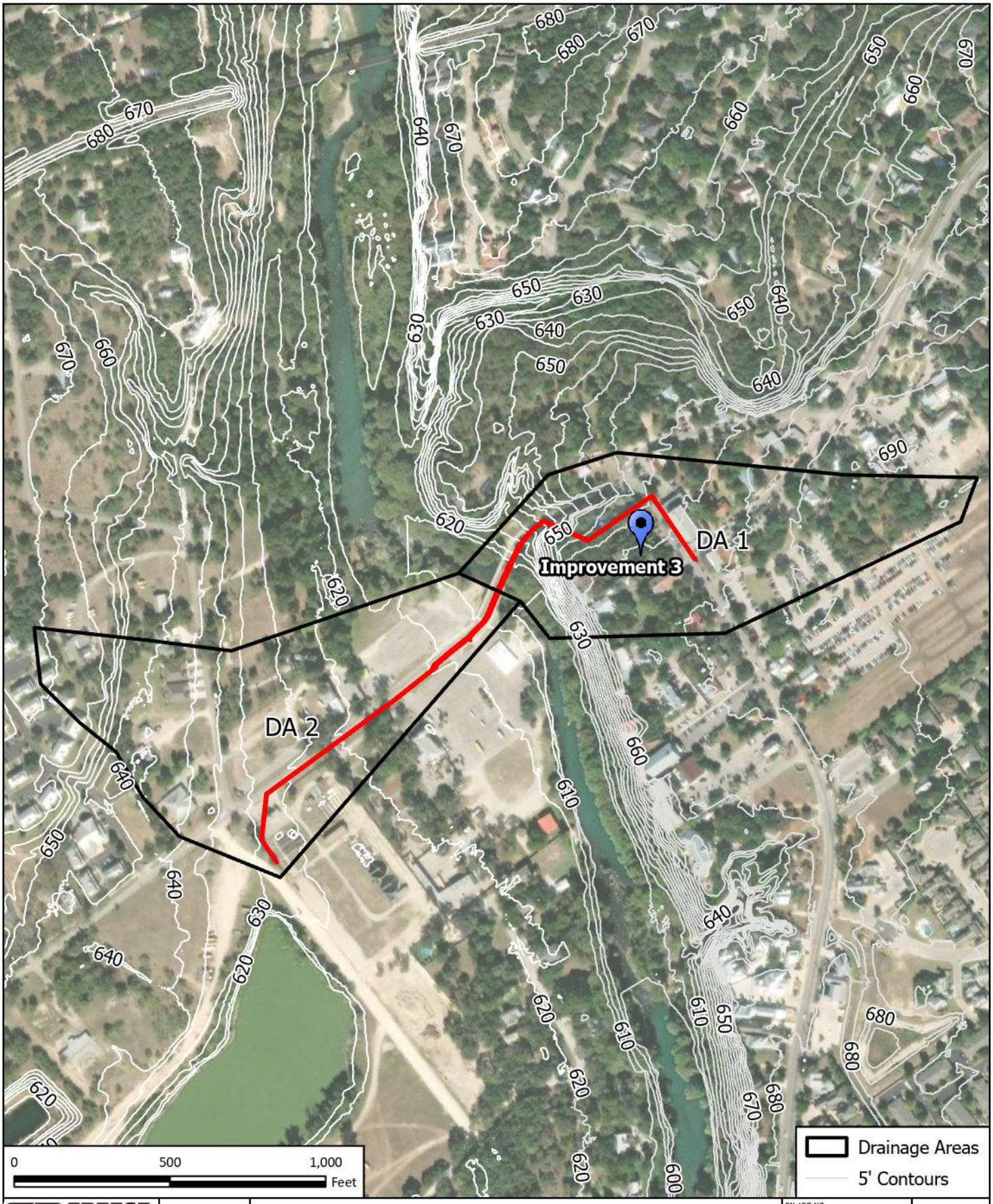
Barrett, Michael. 2005. TCEQ Complying with the Edwards Aquifer Rules: Technical Guidance of Best Management Practices (RG-348).

Attachment F

Structural Practices

Use of a silt fence will filter sediment from on-site runoff, containing sediment in the disturbed area and preventing potential pollution to off-site areas. Vegetated soil-rock riprap would filter and stabilize the soil under the rock after construction is completed.

Attachment G. Drainage Area Maps



FREESE AND NICHOLS, INC
10431 Morado Circle, Suite 300
Austin, TX 78759
512-617-3188

City of New Braunfels

Gruene Siphon Improvements Project

Drainage Area Map

FN JOB NO	NBU20253
FILE NAME	NBU20253.mxd
DATE	5/16/2025
SCALE	1:5,000
DRAFTED	KB

1

FIGURE

Path: \\pzsrv.freese.com\gis_root\n\NBU20253\ENVIRONMENTAL\Working\CS_Working\NBU20253\NBU20253.aprx

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

Attachment I

Inspection and Maintenance for BMPs

The proposed project of trenching and pump station construction is anticipated to disturb less than five acres. Being less than five acres of disturbance, a Stormwater Pollution Prevention Plan (SW3P) without Notice of Intent (NOI) to TCEQ will be in place prior to and during construction. An Inspector's Qualifications and Inspection Form is part of the SW3P. The roles and responsibilities for implementation and maintenance of the elements of the SW3P and BMPs are also specified in the SW3P and will be agreed to by all parties involved with the construction activity who meet the definition of a primary operator. The following are inspection and maintenance guidelines for the selected temporary BMPs as stated in TCEQ RG-348:

Silt Fence:

1) Inspect all fencing weekly, and after any rainfall.
2) Remove sediment when buildup reaches 6 inches.
3) Replace any torn fabric or install a second line of fencing parallel to the torn section.
4) Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
5) When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be re-vegetated. The fence itself should be disposed of in an approved landfill.

Erosion Control Blanket and Vegetated Soil-Rock Riprap:

1) Erosion control blanket and vegetated soil- rock riprap should be inspected weekly and after each rain event to locate and repair any damage.
2) Erosion from storms or other damage should be repaired as soon as practical by re-grading the area and applying new seed.
3) If the vegetated cover is less than 70%, the area should be reseeded.

Completed inspection reports will include the following information:

- scope of the inspection,
- name(s) of personnel making the inspection,
- reference to qualifications of inspection personnel,
- date of the inspection,
- observed major construction activities, and
- actions taken as a result of the inspection.

The inspection report should state whether the site was in compliance or identify any incidents of non-compliance. The report will be signed by the inspector in accordance with Part III.F.7 of the TPDES general permit and filed in the SWP3. Inspection reports will be kept in the Contractor's file, along with the SWP3, for at least three years from the date that the project is completed.

Final stabilization of the construction site has been achieved when all soil disturbing activities at the site have been completed, and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures. If a vegetative cover cannot be established, equivalent permanent stabilization measures (such as riprap, gabions, or geotextiles) can be employed. When these conditions have been met, BMPs can be removed from the construction area.

Attachment J

Schedule of Interim and Permanent Soil Stabilization Practices

Interim and Permanent Soil Stabilization Practices	Schedule
Silt fences	Pre-construction
Erosion control blanket	Post-construction
Vegetated soil- rock riprap	Post-construction

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

I Adam Willard, P.E.,
Print Name

Chief Engineer of Water Systems,
Title - Owner/President/Other

of New Braunfels Utilities,
Corporation/Partnership/Entity Name

have authorized Tam Tran
Print Name of Agent/Engineer

of Freese and Nichols, 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

5/9/25
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Adam Willard 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 5th day of May, 2025.

DAVID GORDON WINKLER
Notary Public, State of Texas
Comm. Expires 07-31-2025
Notary ID 129507568

NOTARY PUBLIC

David Gordon Winkler
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 7/31/2025

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN 600522957		**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:*

New Braunfels Utilities

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

11. Type of Customer:

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

12. Number of Employees

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

13. Independently Owned and Operated?

☒ **Yes** ☐ **No**

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

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

15. Mailing Address:	305 FM 306						
	City	New Braunfels	**State**	TX	**ZIP**	78130	**ZIP + 4**

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(830) 629-8400		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Gruene Wastewater Siphon

23. Street Address of the Regulated Entity: ***(No PO Boxes)***								
	City	New Braunfels	**State**	TX	**ZIP**	78130	**ZIP + 4**	
24. County								

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

25. Description to Physical Location:	The project is located along Gruene Road from Hunter Road to Ervendberg Avenue in New Braunfels, Texas.				
26. Nearest City			**State**	**Nearest ZIP Code**	
New Braunfels			TX	78130	

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

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	44	19	98	6	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)
4941			

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

Water supply

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

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

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

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

SECTION IV: Preparer Information

40. Name:	Tam Tran	**41. Title:**	Environmental Scientist

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 381-1830		**( )** -	Tam.Tran@freese.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:	Freese and Nichols, Inc.	**Job Title:**	Environmental Scientist
Name *(In Print):*	Tam Tran	**Phone:**	**(** 512 **)** 381- **1830**
Signature:		**Date:**	05-14-2025