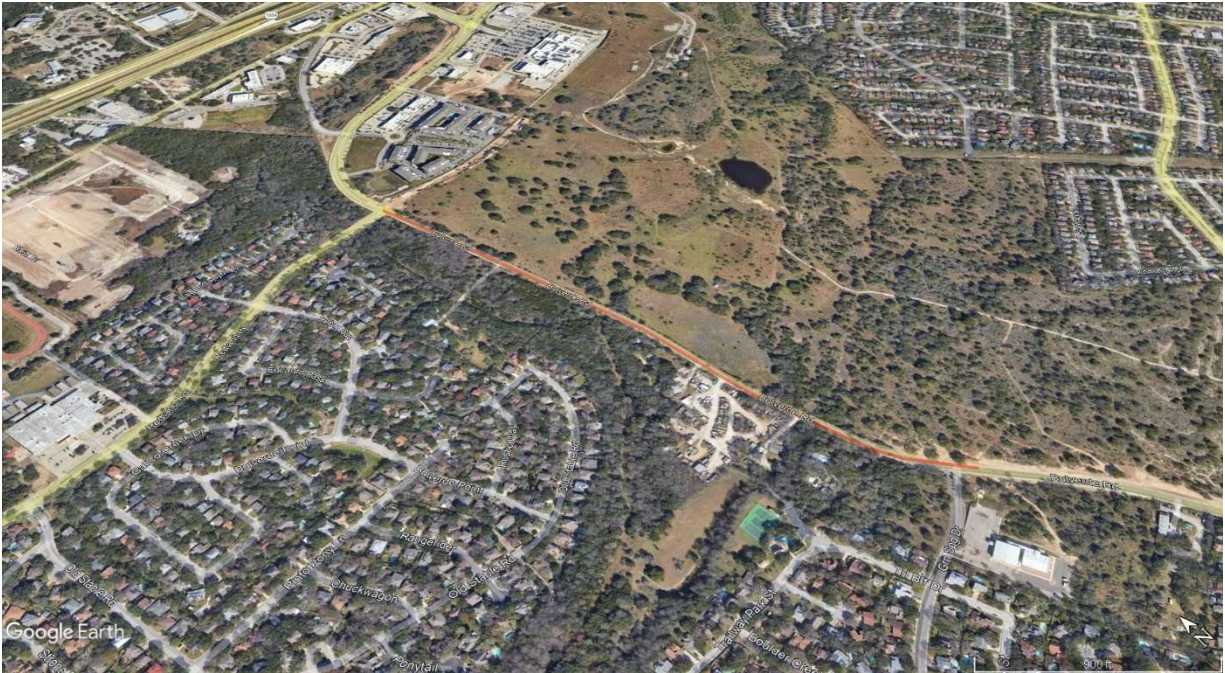


Water Pollution Abatement Plan

Bulverde Road from Redland Road to
Green Spring Drive, Bexar County, Texas



October 2025

Prepared For:



City of San Antonio Public Works Department
100 W. Houston St., 15th Floor
San Antonio, TX 78205

Water Pollution Abatement Plan Checklist

Edwards Aquifer Application Cover Page (TCEQ-20705)

General Information Form (TCEQ-0587)

- Attachment A – Road Map
- Attachment B – USGS / Edwards Recharge Zone Map
- Attachment C – Project Description

Geologic Assessment Form (TCEQ-0585)

- Attachment A – Geologic Assessment Table (TCEQ-0585-Table)
- Attachment B – Stratigraphic Column
- Attachment C – Site Geology
- Attachment D – Site Geologic Maps

Water Pollution Abatement Plan Application Form (TCEQ-0584)

- Attachment A – Factors Affecting Water Quality
- Attachment B – Volume and Character of Stormwater
- Attachment C – Suitability Letter from Authorized Agent (if OSSF is proposed)
- Attachment D – Exception to the Required Geologic Assessment (if requested)

Temporary Stormwater Section (TCEQ-0602)

- Attachment A – Spill Response Actions
- Attachment B – Potential Sources of Contamination
- Attachment C – Sequence of Major Activities
- Attachment D – Temporary Best Management Practices and Measures
- Attachment E – Request to Temporarily Seal a Feature (if requested)
- Attachment F – Structural Practices
- Attachment G – Drainage Area Maps
- Attachment H – Temporary Sediment Pond(s) Plans and Calculations
- Attachment I – Inspection and Maintenance for BMPs
- Attachment J – Schedule of Interim and Permanent Soil Stabilization Practices

Permanent Stormwater Section (TCEQ-0600)

Attachment A – 20% or Less Impervious Cover Waiver (if requested for multi-family, school, or small business site)

Attachment B – BMPs for Upgradient Stormwater

Attachment C – BMPs for On-site Stormwater

Attachment D – BMPs for Surface Streams

Attachment E – Request to Seal Features (if sealing a feature)

Attachment F – Construction Plans

Attachment G – Inspection, Maintenance, Repair and Retrofit Plan

Attachment H – Pilot-Scale Field Testing Plan (if proposed)

Attachment I -Measures for Minimizing Surface Stream Contamination

Agent Authorization Form (TCEQ-0599) if application submitted by agent.

Application Fee Form (TCEQ-0574)

Check Payable to the “Texas Commission on Environmental Quality”

Core Data Form (TCEQ-10400)

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: Bulverde Road (Green Spring Drive to Redland Road) Project					2. Regulated Entity No.:				
3. Customer Name: City of San Antonio					4. Customer No.: 600130652				
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):		7.68	
9. Application Fee:	\$5,000		10. Permanent BMP(s):			Batch detention			
11. SCS (Linear Ft.):	N/A		12. AST/UST (No. Tanks):			N/A			
13. County:	Bexar		14. Watershed:			Salado Creek Watershed			

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.)	<u>1</u>	--	--	--	--
Region (1 req.)	<u>1</u>	--	--	--	--
County(ies)	<u>1</u>	--	--	--	--
Groundwater Conservation District(s)	X Edwards Aquifer Authority __ Trinity-Glen Rose	__ Edwards Aquifer Authority	__ Kinney	__ EAA __ Medina	__ EAA __ Uvalde
City(ies) Jurisdiction	__ Castle Hills __ Fair Oaks Ranch __ Helotes __ Hill Country Village __ Hollywood Park X San Antonio (SAWS) __ Shavano Park	__ Bulverde __ Fair Oaks Ranch __ Garden Ridge __ New Braunfels __ Schertz	NA	__ San Antonio ETJ (SAWS)	NA

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

Scot Laun, PE, CFM

Print Name of Customer/Authorized Agent

Scot Laun

10/14/2025

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):

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: Scot Laun, PE, CFM

Date: 10/14/2025

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Bulverde Road (Green Spring to Redland Road) Project

2. County: Bexar

3. Stream Basin: Elm Waterhole Creek

4. Groundwater Conservation District (If applicable): 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: Sean Strong, PE

Entity: City of San Antonio Public Works Department

Mailing Address: P.O. Box 839966

City, State: San Antonio, TX

Zip: 78283-3966

Telephone: 210-207-8037

FAX: 210-207-4406

Email Address: Sean.Strong@sanantonio.gov

8. Agent/Representative (If any):

Contact Person: Scot Laun, PE, CFM

Entity: Halff Associates, Inc.

Mailing Address: 100 NE Loop 410, Suite 701

City, State: San Antonio, TX

Zip: 78216

Telephone: 210-704-1367

FAX:

Email Address: SLaun@halff.com

9. Project Location:

- ☒ The project site is located inside the city limits of San Antonio, Texas.
- ☐ 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 Bulverde Road between Redland Road and Green Springs Drive on the north side of San Antonio in Bexar County.

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: Survey staking to be completed by fall of 2026.

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.

FORM TCEQ-0587 ATTACHMENTS

ATTACHMENT A – ROAD MAP

Attached following this page.

ATTACHMENT B – USGS/EDWARDS AQUIFER RECHARGE ZONE MAP

Attached following this page.

ATTACHMENT C – PROJECT DESCRIPTION

The City of San Antonio (COSA) is proposing improvements to Bulverde Road between Redland Road and Green Spring Drive in Bexar County. This will include widening the road to five (5) lanes with curbs, sidewalks, driveway approaches, and traffic signals. This project is subject to 30 TAC 213 and is located on the Recharge Zone and Transition Zone. Redland Road is mapped as a Recharge Zone while Green Spring Drive is mapped as a Transition Zone.

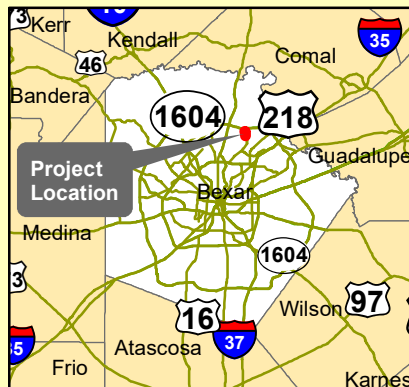
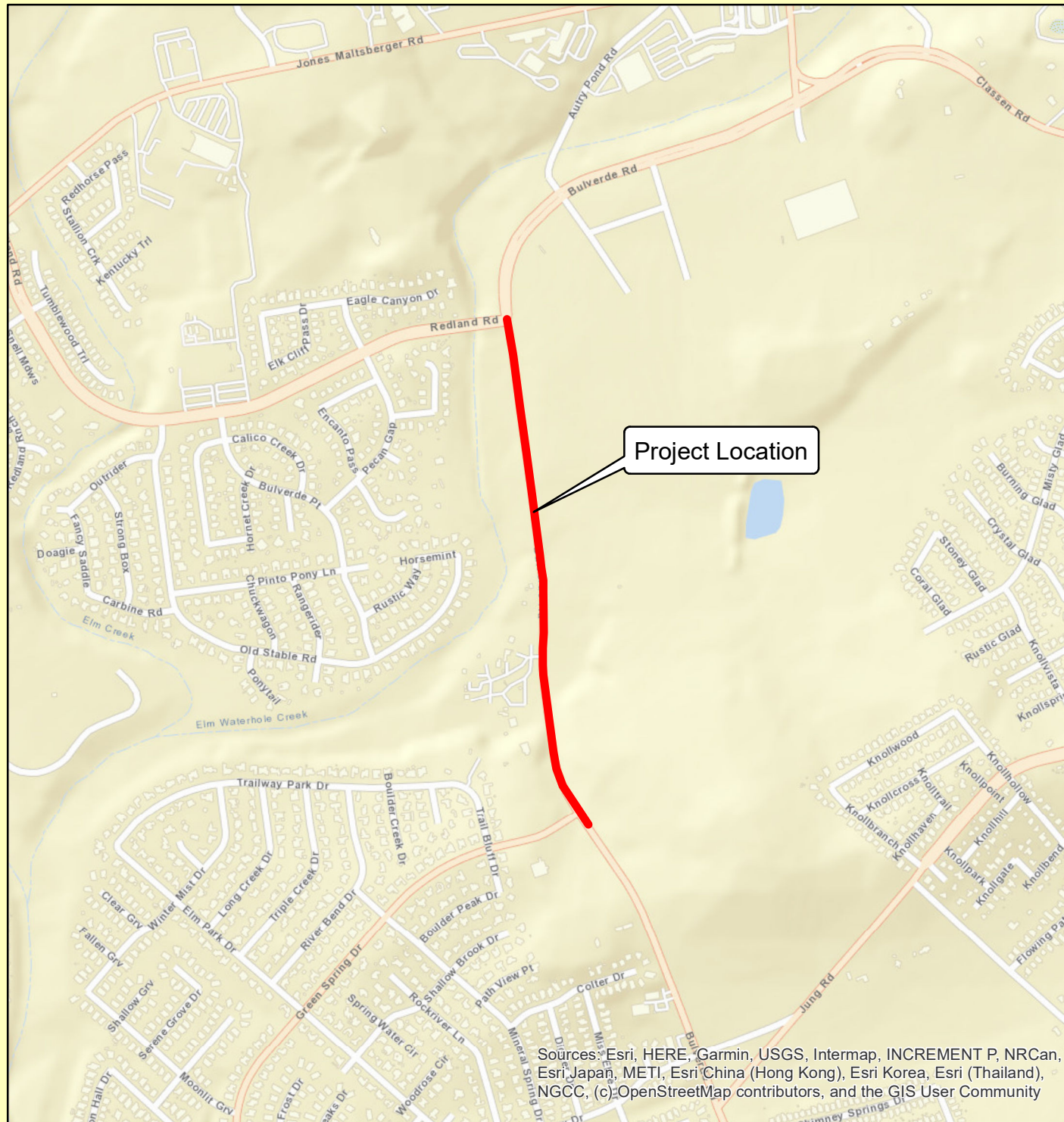
The project would provide unflooded access on the roadway through improvements in the existing roadway to convey 100-year Ultimate Development. This includes designing drainage structures at the low water crossing to shift the 100-year Ultimate Development Storm without disturbing the proposed roadway and up to 155 linear feet of channel improvements. Additionally, the project would have a proposed area of about 4.85 acres of paved surfaces, and therefore an impervious cover of 61.78%. Design criteria follows Unified Development Code (UDC) and Design Guidance Manual provided by COSA for the project. Hydrologic and hydraulic modeling follows San Antonio River Basin Regional Modeling Standards formed by the San Antonio River Authority (SARA, 2013). Redland Road is mapped as a Recharge Zone while Green Spring Drive is mapped as a Transition Zone. Both zones have a similar subsurface soil condition in which they mainly consist of clay and sand with marl and limestone beyond that point.

The project would consist of the re-construction of approximately 3,000 linear feet of flexible pavement over the Recharge and Transition Zones. The project would construct two sections of storm drain systems along the roadway (one north of the proposed culvert crossing and the other south of the proposed culvert crossing). These would allow for the proposed floodplain to essentially have no impact on the roadway when constructed. All storm sewers would be constructed within the existing ROW which varies from 60 to 85 feet. To keep the project from overflowing due to runoff, a batch detention pond would also be constructed to store large amounts excess rainfall and discharge it safely away from the site.

Throughout the past 30 years, the project's site as gone through relatively few changes. Although the roadway has stayed the same, vegetation along the area has decreased due to the addition of new utility lines along the site. Traffic flow along the site was smaller which made the 3-lane road adequate for daily use until the increase development and construction of buildings northeast of the project's site.

Previous developments include the installation of a San Antonio Water Systems (SAWS) sewer system near the western portion of the project's site in 2004 and in the northeastern portion in 2021. Also, a City Public Service (CPS) gas line was installed along the northeastern portion of the site in 2021.

ROW along Bulverde Road in the project's site will need to be used to extend the roadway into 5-lanes. The 1 - 24" CMP between Redland Road and Green Spring Drive that connects Unnamed Tributary A to Elm Waterhole Creek (Bulverde Road Crossing) will be taken out and replaced with six (6) 10'x5' concrete box culverts. Because part of the project site will be lifted to allow Redland Road intersection to be outside of the 100-yr floodplain, part of the roadway will have to be cut of asphalt and repaved once the fill is completed.

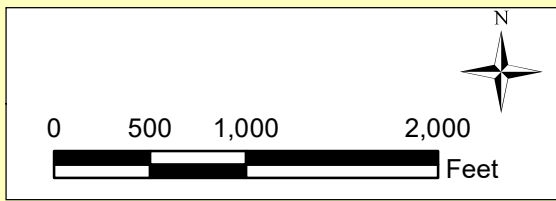
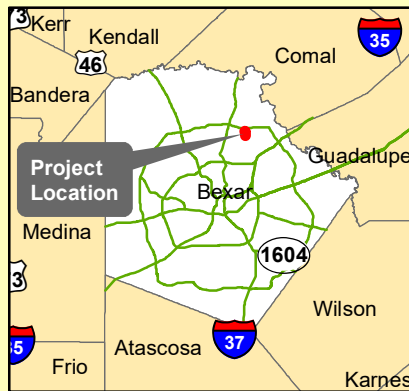
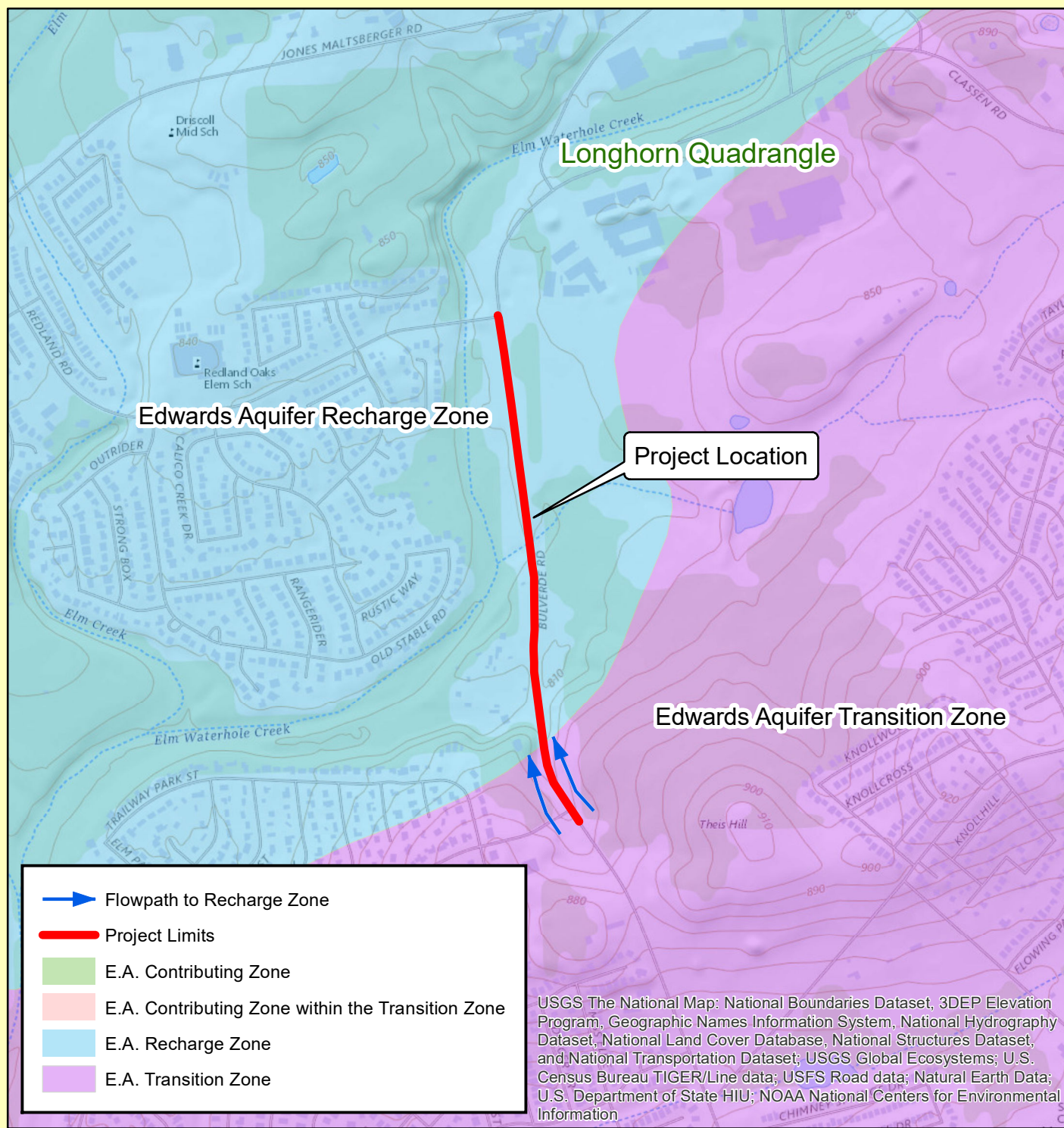


Project Limits

0 500 1,000 2,000 Feet

Bulverde Road Phase 2

Attachment A - Road Map



Bulverde Road Phase 2

Attachment B - USGS / Edwards Recharge Zone Map

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: Kevin K. Bryant

Telephone: 210-641-2112

Date: March 18, 2024

Fax: 210-641-2124

Representing: Terracon Consultants, Inc. (TBPG No. 50058) (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Bulverde Road (Green Spring Drive to Redland Road

Project No. 23-03867)

Project Information

1. Date(s) Geologic Assessment was performed: March 4, 2024

2. Type of Project:

☒ WPAP

☐ AST

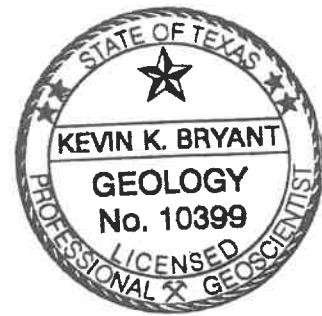
☐ SCS

☐ UST

3. Location of Project:

☒ Recharge Zone

☒ Transition Zone



☐ Contributing Zone within the Transition Zone

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
TaB	D	~1
TaC	D	~1
PaB	B	~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" = 50'
- Site Geologic Map Scale: 1" = 50'
- Site Soils Map Scale (if more than 1 soil type): 1" = 200'
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:

Bulverde Road (Green Springs to Redland Road Project No. 23-03867) (Terracon Project No. 90237580)

LOCATION			FEATURE CHARACTERISTICS											EVALUATION		PHYSICAL SETTING			
1A	1B *	1C*	2A	2B	3	4			5	6A	6	7	8A	8B	9	10	11	12	
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DENSITY (NO/FT)	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY	CATCHMENT AREA (ACRES)	TOPOGRAPHY	
						X	Y	Z								<40	≥40	<1.6	≥1.6
S-2	29° 35' 18.144"	-98° 25' 25.65"	CD	5	Qal	4	4	0.5					C, F, V	5	10	X		X	Hilltop
S-3	29° 35' 34.158"	-98° 25' 27.75"	MB	30	Qt/Qal/Kdr/Kef/Kau	?	~5,536	?					X	8	38	X		X	Hilltop, Floodplain
S-5	29° 35' 11.844"	-98° 25' 24.438"	CD	5	Qt	6	5	2					F, V	5	10	X		X	Hilltop
S-6	29° 35' 2.274"	-98° 25' 22.698"	MB	30	Kef/Kau	?	~65	?					X	6	36	X		X	Hilltop
S-7	29° 35' 34.284"	-98° 25' 25.812"	MB	30	Qal/Kdr/Kef/Kau	?	~591	?					X	8	38	X		X	Hilltop
S-8	29° 35' 34.302"	-98° 25' 27.744"	MB	30	Qt/Qal/Kau	?	?	?					X	6	36	X		X	Hilltop, Floodplain
S-9	29° 35' 34.386"	-98° 25' 28.038"	MB	30	Qal	?	?	?					X	6	36	X		X	Hilltop
S-11	29° 31' 39.576"	-98° 25' 27.696"	MB	30	Qal	?	?	?					X	6	36	X		X	Hilltop, Floodplain
S-12	29° 35' 33.828"	-98° 25' 27.744"	MB	30	Qal	?	?	?					X	6	36	X		X	Hilltop, Floodplain
S-13	29° 35' 30.438"	-98° 25' 27.09"	F	20	Qt/Qal/Kpcm	~186	?	?	N44°E				C, F, V	7	27	X		X	Hilltop, Floodplain
S-14	29° 35' 7.254"	-98° 25' 24.018"	F	20	Kdr/Kef	~120	?	?	N81°E	10			C, F, V	9	39	X		X	Hilltop

* DATUM: NAD 83

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: March 18, 2024

Sheet 1 of 1

Kevin K. Bryant, P.G.

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



3/18/24

STRATIGRAPHIC COLUMN

Bulverde Road (Green Spring Drive to Redland Road Project No. 23-03867) San Antonio, Bexar County, Texas

Hydrogeologic subdivision		Group, formation, or member	Hydro-logic function	Thickness (feet)	Lithology	Field identification	Cavern development	Porosity/ permeability type			
Upper Cretaceous	Upper confining units	Eagle Ford Group	CU	30 – 50	Brown, flaggy shale and argillaceous limestone	Thin flagstones; petroliferous	None	Primary porosity lost/ low permeability			
		Buda Limestone	CU	40 – 50	Buff, light gray, dense mudstone	Porcelaneous limestone with calcite-filled veins	Minor surface karst	Low porosity/low permeability			
		Del Rio Clay	CU	40 – 50	Blue-green to yellow-brown clay	Fossiliferous; <i>Ilymatogyra arietina</i>	None	None/primary upper confining unit			
I	Lower Cretaceous	Edwards aquifer	Georgetown Formation	Karst AQ; not karst CU	2 – 20	Reddish-brown, gray to light tan marly limestone	Marker fossil; <i>Waconella wacoensis</i>	None	Low porosity/low permeability		
II				Person Formation	Cyclic and marine members, undivided	AQ	80 – 90	Mudstone to packstone; <i>miliolid</i> grainstone; chert	Thin graded cycles; massive beds to relatively thin beds; crossbeds	Many subsurface; might be associated with earlier karst development	Laterally extensive; both fabric and not fabric/water-yielding
III					Leached and collapsed members, undivided	AQ	70 – 90	Crystalline limestone; mudstone to grainstone; chert; collapsed breccia	Bioturbated iron-stained beds separated by massive limestone beds; stromatolitic limestone	Extensive lateral development; large rooms	Majority not fabric/one of the most permeable
IV				Kainer Formation	Regional dense member	CU	20 – 24	Dense, argillaceous mudstone	Wispy iron-oxide stains	Very few; only vertical fracture enlargement	Not fabric/low permeability; vertical barrier
V					Grainstone member	AQ	50 – 60	<i>Miliolid</i> grainstone; mudstone to wackestone; chert	White crossbedded grainstone	Few	Not fabric/ recrystallization reduces permeability
VI					Kirschberg evaporite member	AQ	50 – 60	Highly altered crystalline limestone; chalky mudstone; chert	Boxwork voids, with neospar and travertine frame	Probably extensive cave development	Majority fabric/one of the most permeable
VII					Dolomitic member	AQ	110 – 130	Mudstone to grainstone; crystalline limestone; chert	Massively bedded light gray, <i>Toucasia</i> abundant	Caves related to structure or bedding planes	Mostly not fabric; some bedding plane-fabric/water-yielding
VIII				Basal nodular member	Karst AQ; not karst CU	50 – 60	Shaly, nodular limestone; mudstone and <i>miliolid</i> grainstone	Massive, nodular and mottled, <i>Exogyra texana</i>	Large lateral caves at surface; a few caves near Cibolo Creek	Fabric; stratigraphically controlled/large conduit flow at surface; no permeability in subsurface	
Lower confining unit	Upper member of the Glen Rose Limestone	CU; evaporite beds AQ	350 – 500	Yellowish tan, thinly bedded limestone and marl	Stair-step topography; alternating limestone and marl	Some surface cave development	Some water production at evaporite beds/relatively impermeable				

Based on information provided in the *Geologic Framework and Hydrogeologic Characteristics of the Outcrops of the Edwards Aquifer Recharge Zone, Bexar County, Texas* (USGS, 1995).

Note, the Kau formation is not depicted on the above stratigraphic column.

GEOLOGIC ASSESSMENT

**Bulverde Road (Green Spring Drive to Redland Road
Project No. 23-03867)**

San Antonio, Bexar County, Texas

Halff Project No. 23-03867

March 18, 2024 | Terracon Project No. 90237580



Prepared for:

Halff Associates, Inc.

100 Northeast Loop 410, Suite 200

San Antonio, Texas

Prepared by:

Terracon Consultants, Inc.

6000 Northwest Parkway, Suite 100

San Antonio, Texas



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March 18, 2024

Halff Associates, Inc.
100 Northeast Loop 410, Suite 200
San Antonio, Texas 78216

Attn: Mr. Luis Cardona
P: (210) 704-1379
E: LCardona@Halff.com

Re: Geologic Assessment
Bulverde Road (Green Spring Drive to Redland Road Project No. 23-03867)
Bulverde Road between Green Spring Drive and Redland Road
San Antonio, Bexar County, Texas
Terracon Project No. 90237580

Dear Mr. Cardona:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Geologic Assessment (GA) report for the above-referenced site. This assessment was performed in accordance with the Halff Associates, Inc. Standard Subcontract for Services dated February 9, 2024.

We appreciate the opportunity to be of service to you on this project. In addition to the GA services, our professionals provide other environmental, geotechnical, construction materials testing, and facilities services on a wide variety of projects locally, regionally, and nationally. For more detailed information on Terracon's services, please visit our website at www.terracon.com. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

Ramiro Aguinaga Jr.
Field Geologist

Kevin Bryant, P.G.
Senior Project Manager



Attachments: Geologic Assessment Form
 Geologic Assessment Narrative Text
 Geologic Assessment Table
 Stratigraphic Column
 Site Photographs
 Exhibit 1: Soils Map
 Exhibit 2: Geologic Map

cc: Halff Associates, Inc. (1 digital [PDF])

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Bulverde Road (Green Spring Drive to Redland Road Project No. 23-03867)
Bulverde Road between Green Spring Drive and Redland Road
San Antonio, Bexar County, Texas
Terracon Project No. 90237580
Halff Project No. 23-03867

INTRODUCTION

Halff Associates, Inc. (Client) retained Terracon Consultants, Inc. (Terracon) to conduct a Geologic Assessment (GA) along Bulverde Road between Green Spring Drive and Redland Road in San Antonio, Bexar County, Texas (site). The site includes the existing right-of-way (ROW) along Bulverde Road, the proposed new ROW, the proposed temporary construction easement, and 200 feet along the centerline of Elm Waterhole Creek west of Bulverde Road as well as up to 140 feet north and south of the centerline of Elm Waterhole Creek west of Bulverde Road. The site is mostly undeveloped land with the exception of Bulverde Road crossing the central portion of the site. According to the Edwards Aquifer Map Viewer, accessible from the Texas Commission on Environmental Quality (TCEQ) website, the majority of the site is located within the Edwards Aquifer Recharge Zone (EARZ) while the southernmost portion of the site is located within the Edwards Aquifer Transition Zone (EATZ).

EXPLANATION OF ASSESSMENT

This assessment follows general guidelines contained in the TCEQ *“Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones”* (TCEQ Guidance 0585, dated October 4, 2004). The EARZ/EATZ are known to contain karst features formed by selective dissolving of carbonate minerals by water. Karst features may be formed and be visible at the ground surface but more commonly tend to be smaller at the surface and develop with depth. Because of the site’s location, future development of the site must comply with the TCEQ Edwards Aquifer Protection Program Rules specified in Title 30 of the Texas Administrative Code, Section 213 (30 TAC§ 213).

The assessment consisted of a pedestrian survey of the subject property and non-intrusive visual observations of readily accessible and visible surface conditions to identify the presence of geologic and manmade features. Geologic or manmade features, for the purposes of this assessment, are those features that are visible at the ground surface or have been mapped within the EARZ which have a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer. In accordance with the GA guidelines, intrusive subsurface testing such as excavation, cave mapping, infiltrometer testing, geophysical studies, or tracer studies was not required or conducted for the GA of any feature identified at the site.

It should be noted that portions of the site are located on private property where site access was not provided to Terracon. Therefore, observations of those private property areas were made from the public ROW from fence lines located along the boundaries of those private properties. The private properties where site access was not provided are indicated on the applicable Exhibits of this report.

The GA was supervised by Mr. Kevin Bryant, a Professional Geoscientist (P.G.). The field assessment was performed by Mr. Ramiro Aguinaga Jr. and Kevin Denson P.G. on March 4, 2024.

GENERAL SITE DESCRIPTION

The site is along Bulverde Road between Green Spring Drive and Redland Road and is mostly undeveloped land with the exception of Bulverde Road which crosses the central portion of the site generally in a north/south orientation. A tributary of Elm Waterhole Creek crosses the site from the eastern boundary and flows west underneath Bulverde Road, through an existing culvert, before exiting the western portion of the site. The tributary of Elm Waterhole Creek was dry during the field activities of this GA. The site is located on the designated EARZ/EATZ.

According to light detection and ranging (LIDAR) elevation data obtained from the Texas Natural Resources Information System (TNRIS), the topography of the site ranges from approximately 802 feet above mean sea level (amsl) in the western portion of the site along Elm Waterhole Creek to approximately 839 feet amsl in the southern portion of the site.

Historical aerial photographs available through Google Earth Pro software were reviewed during this assessment. According to the aerial photographs, the site is relatively unchanged between the 1995 and 2024 aerial photographs except for the clearing of vegetation in the 2004 and 2021 aerial photographs. The vegetation clearing that was depicted in the 2004 aerial photograph appears to be associated with the installation of a San Antonio Water Systems (SAWS) sewer line in the western portion of the site. The vegetation clearing that was depicted in the 2021 aerial photograph appears to be associated with the installation of a City Public Service (CPS) gas line in the southeastern portion of the site. Vegetation clearing also occurred on the northeastern portion of the sight. This vegetation clearing appears to be associated with the installation of a SAWS sewer line the 2021 aerial photograph.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 48029C0260G (dated September 29, 2010), the central portion of the site, located in the vicinity of Elm Waterhole Creek, is mapped within the 100-year flood plain.

According to the Texas Water Development Board's (TWDB) website, there are no registered water wells mapped within the boundary of the project site. During the field assessment, water wells were not observed within the boundaries of the project site.

SOIL DESCRIPTION

Based on a review of the United States Department of Agriculture (USDA) *Web Soil Survey*, the soil types mapped at the site are Eckrant Cobbly Clay, 1-8 percent slopes (TaB), Eckrant Very Cobbly Clay, 5 to 15 percent slopes (TaC), and Patrick Soils, 1-3 percent slopes (PaB). The mapped soil types at the site are presented on Exhibit 1.

The TaB soils are mapped throughout the northern, central, and some southern portions of the site. The typical profile for TaB soils is cobbly clay to bedrock. The TaB soils are well drained, runoff is medium, and capacity of the most limiting layer to transmit water is moderately low to moderately high (Saturated Hydraulic Conductivity (Ksat) 0.06 to 0.57 inches per hour). Accordingly, these soils are classified as Soil Group D, having a very slow infiltration rate when thoroughly wetted.

The PaB soils in a small area along the northwestern portion of the site. The typical profile for PaB soils includes clay loam to very gravelly sand. The PaB soils are well drained, runoff is low, and capacity of the most limiting layer to transmit water is moderately high to high (Ksat 0.57 to 1.98 inches per hour). Accordingly, these soils are classified as Soil Group B, having a moderate infiltration rate when thoroughly wetted.

The TaC soils are mapped throughout the southernmost portion of the site. The typical profile for TaC soils includes is very cobbly clay to bedrock. The TaC soils are well drained, runoff is high and capacity of the most limiting layer to transmit water is moderately low to moderately high (Saturated Hydraulic Conductivity (Ksat) 0.06 to 0.57 inches per hour). Accordingly these soils are classified as Soil Group D, having a very slow infiltration rate when thoroughly wetted.

NARRATIVE DESCRIPTION OF SITE GEOLOGY

Several published sources were reviewed to assist in identifying the underlying geology of the site, including maps from the U.S. Geological Survey (USGS) and the Bureau of Economic Geology (BEG). The following documents were reviewed as part of this GA.

- *Geologic Atlas of Texas, San Antonio Sheet (Barnes, 1983);*
- *Geologic Map of the Edwards Aquifer Recharge Zone, South-Central Texas (Blome and others, 2005);*
- *Miscellaneous Map No. 39, Geologic Map of the New Braunfels, Texas, 30 x 60 Minute Quadrangle (Collins, 2000);*
- *Geologic Map of the Longhorn Quadrangle, Texas (Collins, 1994); and*
- *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas (Small and Hanson, 1995).*

The *Geologic Map of the Edwards Aquifer Recharge Zone* shows the site located on the Cyclic and Marine members, undivided, of the Edwards Limestone, Person Formation (Kpcm). The *New Braunfels* geologic map shows Quaternary Alluvium Deposits (Qal) and Fluvial Terrace Deposits (Qt) at the site. The *Geologic map of the Longhorn Quadrangle* shows Qt at the site. Based on a review of the above-referenced documents and observations made in the field, the northern and central portions of the site consist of the Cyclic and Marine member of the Cretaceous-aged Edwards Limestone Person Formation (Kpcm) which is overlain by Quaternary-aged Alluvium (Qal) and Terrace Deposits (Qt). In the southernmost portion of the site, a fault is mapped with upper confining units mapped including the Cretaceous-aged Del Rio Clay, Eagle Ford Shale (Kef), and Austin Chalk (Kau).

The Kpcm consists of chert, mudstone to packstone, and miliolid grainstone. The Kpcm is characterized by thin-graded cycles, massive beds to relatively thin beds, and/or crossbeds. The Kpcm may be associated with early karst development. The Kpcm is fabric and not fabric/water-yielding. In Bexar County, the average thickness of this member in ranges from 80 feet to 90 feet.

The Qt is predominately gravel composed of chert, limestone, and dolomite with increasing amounts of sand, silt, and clay with distance from hard bedrock outcrops. The Qt formation varies in thickness but can be several feet in places. Permeability of Qt deposits varies based on factors such as particle size and cementation.

The Qal is unconsolidated gravel, sand, silt, and clay. The maximum thickness is approximately 20 feet to 35 feet.

Review of *The Caves and Karst of Texas* (Veni and Elliott, 1994) and *The Caves of Bexar County* (Veni, 1988) indicates that caves have not been mapped on the project site.

SITE-SPECIFIC GEOLOGIC FEATURE DESCRIPTIONS

The following is a description of the features identified during literature research and observations made during the field reconnaissance at the site. Field observations were made to identify features such as caves, solution cavities, solution-enlarged fractures, faults, other natural bedrock features, manmade features in bedrock, swallow holes, sinkholes, non-karst closed depressions, and zone/clustered/aligned features, using the survey guidance from the TCEQ *Instructions to Geologists for Geologic Assessments* as revised October 1, 2004. Features identified at the site are listed in the following subsections. If geologic features were identified, the sidewalls and floors of the features were probed (if possible) by hand using a 4-foot long, 3/8-inch diameter metal soil probe.

Initially, a number of potential recharge features were identified during the site reconnaissance. However, upon further evaluation, some of these identified areas were either beyond the boundaries of the project site or did not meet the criteria for potential recharge features and have, therefore, been removed from this report. The numbering system of the individual features discussed below has been maintained to be consistent with field markings such as stakes and flagging that were used to mark potential recharge features at the site.

For the purposes of completing the GA forms and associated table included in this report, each feature has been assigned a point value where higher values indicate an increased probability for rapid infiltration into the subsurface. As required by the TCEQ survey guidance documents, some features not readily identifiable in the field, such as mapped faults, have also been included in this section, if applicable. Exhibit 2, attached at the end of this report, depicts the locations of the geologic and manmade features discussed below.

Feature Assessment

- S-2 **Non-karst closed depression:** This non-karst closed depression, suspected to be a tree pluck. The closed depression is approximately 4 feet long, 4 feet wide, and 0.5 feet in depth. The closed depression is located on the Qal formation, which overlies the Kpcm formation. The catchment area is believed to be less than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the immediate vicinity of the closed depression. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the immediate vicinity of the closed depression. Infill observed at the feature included coarse-grained gravel, fine-grained material, and vegetation consisting of tree roots. The floor of the closed depression was probed using the T-probe and resistance was encountered at approximately 0.5 feet below ground surface (bgs). The closed depression is mapped in a hilltop topography. Given the lack of evidence regarding concentrated flow in the closed depression, the potential recharge through the feature to the Edwards Aquifer is believed to be low – scoring 10 points on the Geologic Assessment Table. Therefore, this feature would not be considered sensitive.
- S-3 **Manmade Boring in Bedrock:** This feature is a sanitary sewer line crossing throughout the site. The sanitary sewer line is mapped crossing the Kef, Kdr, and Kau along with the Qal and Qt, both of which overlay the Kpcm. The sanitary sewer line is owned by the SAWS. According to SAWS Sewer Block Maps #182636 (dated December 1, 2023), #182638 (dated January 4, 2024), and #182640 (dated January 4, 2024), the sanitary sewer line consists of 8-inch to 42-inch diameter sewer lines with depths ranging from of approximately 5.89 feet to 17.57 feet bgs. The length of the sewer line crossing the site is approximately 5,536 feet. Given the length of the sanitary sewer line depicted on the SAWS maps, the catchment area of this feature is believed to be greater than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the immediate vicinity of the mapped sanitary sewer lines. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the immediate vicinity of the mapped sanitary sewer lines. The sanitary sewer lines mapped at the site are located in hilltop terrain with the central portions in the vicinity of Elm Waterhole Creek mapped within the 100-year floodplain. Typically, sanitary sewer lines are installed in trenches excavated into near surface soils and shallow bedrock. Once the sanitary sewer lines have been installed, select fill materials, such as sand or pea-gravel, are typically used to backfill the trench. Reusing the excavated material as backfill is also common practice. Given the lack of evidence regarding concentrated flow in the subsurface along the length of the sanitary sewer lines, the lack of subsided soil or other depressions in the vicinity of the sanitary sewer lines, and the majority of the sewer lines being located underneath paved areas of Bulverde Road, the potential recharge through the feature to the Edwards Aquifer is believed to be low – scoring 38 points on the Geologic Assessment Table. Therefore, this feature would not be considered sensitive.

- S-5 Non-karst closed depression: The non-karst closed depression is approximately 6 feet long, 5 feet wide, and 2 feet in depth. The closed depression is located on the Qt formation, which overlies the Kpcm formation. The catchment area is believed to be less than 1.6. Detectable voids, conduits, or depressions were noted in the immediate vicinity of the closed depression. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were noted in the immediate vicinity of the closed depression. Infill observed at the feature included fine-grained material and vegetation consisting of grasses, tree foliage, and roots. The floor of the closed depression was probed using the T-probe and resistance was not encountered at approximately 4 feet bgs. The closed depression is mapped in a hilltop topography. Given the lack of evidence regarding concentrated flow in the closed depression, the potential recharge through the feature to the Edwards Aquifer is believed to be low – scoring 10 points on the Geologic Assessment Table. Therefore, this feature would not be considered sensitive.
- S-6 Man-Made Boring in Bedrock: This feature is a gas line which is owned and operated by CPS and had been marked in the field by utility locators with yellow paint. The length of the gas line crossing the site is believed to be approximately 65 feet and traverses the site in a north-to-south orientation. The gas line is located on the Kef and Kau formations. The depth and diameter of the gas line are unknown. The catchment area of this feature is believed to be greater than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the vicinity of the utility markings. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the vicinity of the utility markings. The gas line is located on a hilltop topography. Typically, gas lines are installed into trenches excavated into near surface soils and shallow bedrock. Once the gas lines have been installed, select fill materials, such as sand or pea-gravel, are typically used to backfill around the utility lines although backfilling using excavated materials removed during the trench excavation is also common. Given the lack of evidence regarding concentrated flow in the subsurface along the length of the gas line, the lack of subsided soil or other depressions in the vicinity of the gas line, and the location of the gas line beneath concrete, the potential recharge into the feature to the Edwards Aquifer is believed to be low – scoring 36 points on the Geological Assessment Table. Therefore, this feature would not be considered sensitive.
- S-7 Man-Made Boring in Bedrock: This feature is a pair of mapped water lines owned and operated by the SAWS. The water line is mapped crossing the Kef, Kdr, and Kau along with the Qal, which overlays the Kpcm. In the field, items associated with the mapped water line included a water meter box, several fire hydrants, and several 6-inch diameter manways. According to the SAWS Water Block Maps #182636 (dated March 2, 2024) and #182640 (dated March 2, 2024), the water lines are 12-inch diameter pipes. The mapped water lines cross the northern portion of the site for approximately western portion of the site for approximately 171 feet and the southern portion of the site for approximately 420 feet (591 feet total). The depths of the water lines are

unknown. The catchment area of the water line feature is believed to be greater than 1.6 acres. Detectable voids, depressions, and conduits were not noted in the vicinity of the mapped water lines. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the vicinity of the mapped water lines. The mapped water lines at the site are located on a hilltop topography. Typically, water lines are installed into trenches excavated into near surface soils and shallow bedrock. Once the water lines have been installed, select fill materials, such as sand or pea-gravel, are typically used to backfill around the utility lines although backfilling using excavated materials removed during the trench excavation is also common. Given the lack of evidence regarding concentrated flow in the subsurface along the mapped water lines, the lack of subsided soil or other depressions in the vicinity of the mapped water lines, and the location of the majority of lines beneath paved areas of Bulverde Road, the potential recharge into the feature to the Edwards Aquifer is believed to be low – scoring 38 points on the Geological Assessment Table. Therefore, this feature would not be considered sensitive.

S-8, S-9 Man-Made Boring in Bedrock: These features are several boxes and manways observed in the field associated with communication lines. Feature S-8 is a series of unmarked communication manways and are approximately 3-feet wide by 4-feet long in size and are located in the Kau as well as the Qal and Qt, which overlay the Kpcm. Feature S-9 is an unmarked telecommunication box and is approximately 1.5-feet wide by 2-feet long in size and is located in the Qal. The depth, diameter, and distance of the communication lines traveling across the site are unknown. However, the catchment area of the communication lines is believed to be greater than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the vicinity of the communication line boxes and manways. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the vicinity of the communication line boxes and manways. The communication lines at the site are located on a hilltop topography with the northern portions of the S-8 feature also located within the 100-year floodplain. Typically, communication lines are installed into trenches excavated into near surface soils and shallow bedrock. Once the communication lines have been installed, select fill materials, such as sand or pea-gravel, are typically used to backfill around the utility lines although backfilling using excavated materials removed during the trench excavation is also common. Given the lack of evidence regarding concentrated flow in the subsurface in the vicinity of the communication line boxes and manways, and the lack of subsided soil or other depressions in the vicinity of the communication line boxes and manways, the potential recharge into the features to the Edwards Aquifer is believed to be low – scoring 36 points on the Geological Assessment Table. Therefore, these features would not be considered sensitive.

S-11 Man-Made Boring in Bedrock: This feature, mapped in the Qal, is several traffic control utility manways and one utility meter observed in the field, approximately 2.5-feet wide by 1.5-feet long in size. The depth, diameter, and distance of the traffic control

utility line traveling across the site are unknown. However, the catchment area of the feature is believed to be greater than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the vicinity of the traffic control utility boxes. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the vicinity of the traffic control utility manways and meter. The feature is located on a hilltop topography as well as the 100-year floodplain. Typically, traffic control utility lines are installed into trenches excavated into near surface soils and shallow bedrock. Once the communication lines have been installed, select fill materials, such as sand or pea-gravel, are typically used to backfill around the traffic control lines although backfilling using excavated materials removed during the trench excavation is also common. Given the lack of evidence regarding concentrated flow in the subsurface in the vicinity of the traffic control manways and the lack of subsided soil or other depressions in the vicinity of the traffic control manways, the potential recharge into the feature to the Edwards Aquifer is believed to be low – scoring 36 points on the Geological Assessment Table. Therefore, this feature would not be considered sensitive.

S-12 Man-Made Boring in Bedrock: This feature, mapped in the Qal, is an electric line located at the east end of the site. The feature was identified in the field by an electrical meter and red paint markings placed by utility locators. The electrical meter indicates the electrical line is owned and operated by CPS. The depth, diameter, and distance of the electric line is unknown. The catchment area of this feature is believed to be greater than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the vicinity of the electrical meter and associated paint markings. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the vicinity of the electrical meter and associated paint markings. The electric line is located on a hilltop terrain as well as the 100-year floodplain. Typically, electric lines are installed into trenches excavated into near surface soils and shallow bedrock. Once the electric lines have been installed, select fill materials, such as sand or pea-gravel, are typically used to backfill around the utility lines although backfilling using excavated materials removed during the trench excavation is also common. Given the lack of evidence regarding concentrated flow in the subsurface along the length of the electric line and the lack of subsided soil or other depressions in the vicinity of the electric line, the potential recharge into the feature to the Edwards Aquifer is believed to be low – scoring 36 points on the Geological Assessment Table. Therefore, this feature would not be considered sensitive.

S-13 Fault: This fault was not observed in the field but was noted during literature research for the project. The mapped fault crosses the north-central portion of the site for approximately 186 linear feet with a trend of approximately N44°E which is not in line with the dominant structural trend in the vicinity of the site (see Feature S-14 below). The depth of the fault is unknown. However, the fault is believed to have Kpcm located on both sides of the fault as it crosses the site. The catchment area for the fault is believed to be greater than 1.6 acres. This fault is located in a hilltop terrain and also

mapped within the 100-year floodplain. Detectable voids, conduits, or depressions were not noted in the immediate vicinity of the mapped fault. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the immediate vicinity of the mapped fault. Infill observed at the feature included coarse-grained gravel, fine-grained material, and vegetation consisting of woody shrubs, grasses/weeds, and various trees. The fault is mapped in a hilltop topography and is located in the 100-year floodplain. Given the lack of evidence regarding concentrated flow along the fault, the potential recharge through the feature to the Edwards Aquifer is believed to be low – scoring 27 points on the Geologic Assessment Table. Therefore, this feature would not be considered sensitive.

- S-14 Fault: This fault was not observed in the field but was noted during literature research for the project. The mapped fault crosses the south-central portion of the site for approximately 120 linear feet with a trend of approximately N81°E, which would be considered the dominant structural trend in the vicinity of the site. The depth is unknown. However, the fault is mapped with the Kdr to the north of the fault and the Kef to the south of the fault. The catchment area for each fault is believed to be greater than 1.6 acres. Detectable voids, conduits, or depressions were not noted in the immediate vicinity of the mapped fault. Sunken soil, differential vegetation patterns, or other visual indicators of concentrated subsurface drainage were not noted in the immediate vicinity of the mapped fault. Infill observed at the feature included coarse-grained gravel, fine-grained material, and vegetation consisting of vegetation consisting of woody shrubs, grasses/weeds, and various trees. The fault is mapped in a hilltop topography. Given the lack of evidence regarding concentrated flow along the fault, the potential recharge through the feature to the Edwards Aquifer is believed to be low – scoring 39 points on the Geologic Assessment Table. Therefore, this feature would not be considered sensitive.

COMMENTS AND OBSERVATIONS

Slight modification of the site topography or surface-water flow during construction is anticipated. Within the Edwards Aquifer Recharge/Transition Zone, potential recharge features lacking visible surface expression (such as subsurface solution enlarged fractures, caves, cavities, and other karst features) are often present which would not be identifiable during the site inspection. Accordingly, this assessment does not address the possible presence of subsurface conditions that may be exposed during excavation or other construction activities. Should solution features or conditions be exposed during construction, construction should be halted and the TCEQ Edwards Aquifer Protection Program should be contacted and notified of the site conditions immediately in accordance with 30 TAC §213.5(f)(2).

REFERENCES

- Barnes, V.E., 1983, *Geologic Atlas of Texas, San Antonio Sheet: Bureau of Economic Geology, Scale 1:250,000.*
- 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 Scientific Investigations Map 2873, Version 1.1, 1 pl., scale 1:200,000.*
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- San Antonio Water System, *Sewer Block Map 182638, January 4, 2024.*
- San Antonio Water System, *Sewer Block Map 182640, January 4, 2024.*
- San Antonio Water System, *Water Block Map 182636, March 2, 2024.*
- San Antonio Water System, *Water Block Map 182640, March 2, 2024.*
- Small, Ted A. and John A. Hanson., 1995, *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, U.S. Geological Survey, Water Resources Investigations 95-4030.*
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- Veni and Elliot, 1994 *The Caves and Karst of Texas, 1994 NSS Convention Guidebook.*
- Veni, 1988, *The Caves of Bexar County, Second Edition, Texas Memorial Museum Speleological Monographs, 2.*



Photo #1: View of the northern portion of the site on the west side of Bulverde Road, looking east.



Photo #2: View of the northern portion of the site on the east side of Bulverde Road, looking west.



Photo #3: View of eastern portion of site east of Bulverde Road, looking west.



Photo #4: View of southern portion of site north of Green Spring Drive, looking south.



Photo #5: View of non-karst closed depression at the location of feature S-2.



Photo #6: View of sewer manway at the location of feature S-3.



Photo #8: Typical view of animal burrows identified throughout the site.



Photo #10: View of non-karst closed depression at the location of feature S-5.



Photo #11: View of marked gas line (yellow paint marks) at the location of feature S-6.



Photo #12: View of unidentified utility within vicinity of feature S-6.



Photo #13: View of water meter box at the location of feature S-7.



Photo #14: View of marked water manway and fire hydrant at the location of feature S-7.



Photo #15: View of communication manway box at the location of feature S-8.



Photo #16: View of telecommunication box at the location of feature S-9.



Photo #17: View of traffic signal utility boxes and marked electric line at the location of feature S-11.



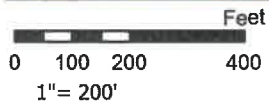
Photo #18: View of electrical meter box and marked electric line at the location of feature S-12.



Photo #17: View of Quaternary alluvium within Elm waterhole creek in western portion of site.



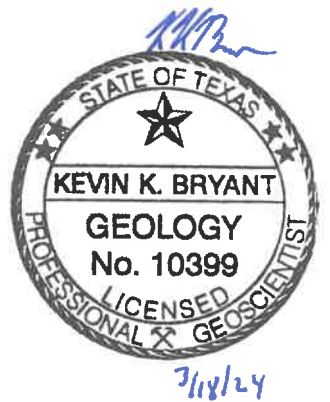
Photo #18: View of Austin Chalk bedrock outcrop and vegetation within southeast portion of site.



DATA SOURCES:
ESRI - Basemaps
Web Soil Survey, United States Department of Agriculture



- Site Boundary (Approximate)
- Cb - Crawford, Stony and Bexar Soils, 0 to 5 percent slopes
- LvB - Lewisville Silty Clay, 1 to 3 percent slopes
- PaB - Patrick Soils, 1 to 3 percent slopes
- TaB - Eckrant Cobbly Clay, 1 to 8 percent slopes
- TaC - Eckrant Very Cobbly Clay, 5 to 15 percent slopes
- W - Water



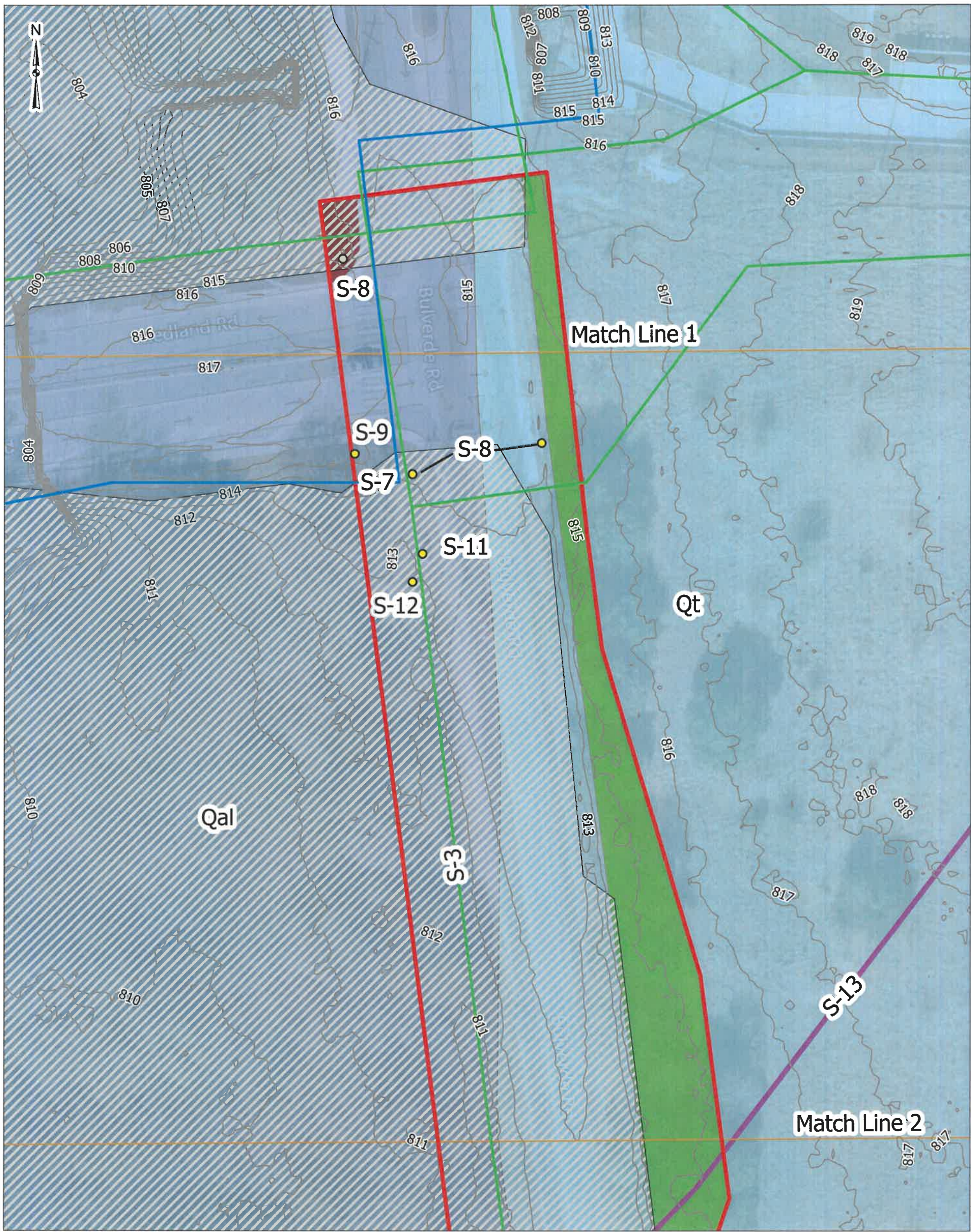
Project No.:	90237580
Date:	Mar 2024
Drawn By:	AES
Reviewed By:	KKB

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San Antonio, TX

PH. 210-641-2112 terracon.com

Soils Map
Bulverde Road (Green Spring to Redland Road Project No. 23-03867) San Antonio, Bexar County, Texas

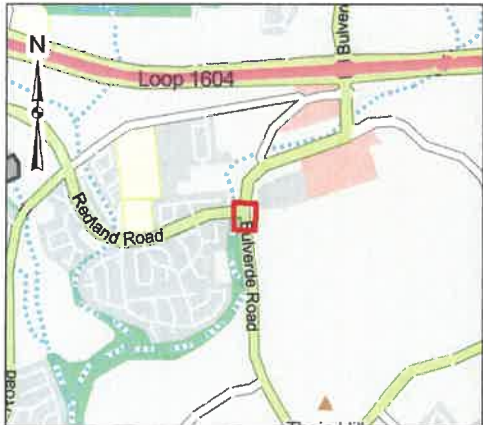
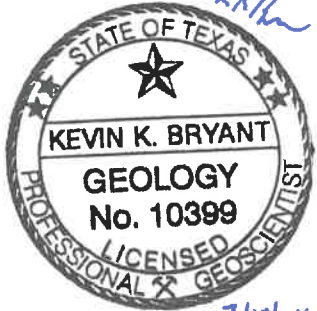
Exhibit
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DATA SOURCES:
ESRI - Basemaps
Geologic Map of the New Braunfels, Texas 30X60 Minute Quadrangle
TNRIS Bexar County Lidar, Longhorn NE Quadrangle
TNRIS Bexar County Land Parcels, January 2022
FEMA Flood Map: 48029C0260G, September 29, 2010
HALFF Test Hole Exhibit October 6, 2020
SAWS Water Block Map 182636, March 2, 2024
SAWS Sewer Block Map 182640, January 4, 2024

- Site Boundary (Approximate)
- Potential Recharge Feature
- SAWS Water Line (S-7)
- SAWS Sewer Line (S-3)
- Contour (1-foot interval)
- Fault
- Match Line
- Qal - Quaternary Alluvium
- Qt - Quaternary Terrace Deposits
- 100-Year Floodplain
- Private Property, No Right of Entry Granted
- Private Property, Right of Entry Granted

1" = 50'
0 25 50 100 Feet



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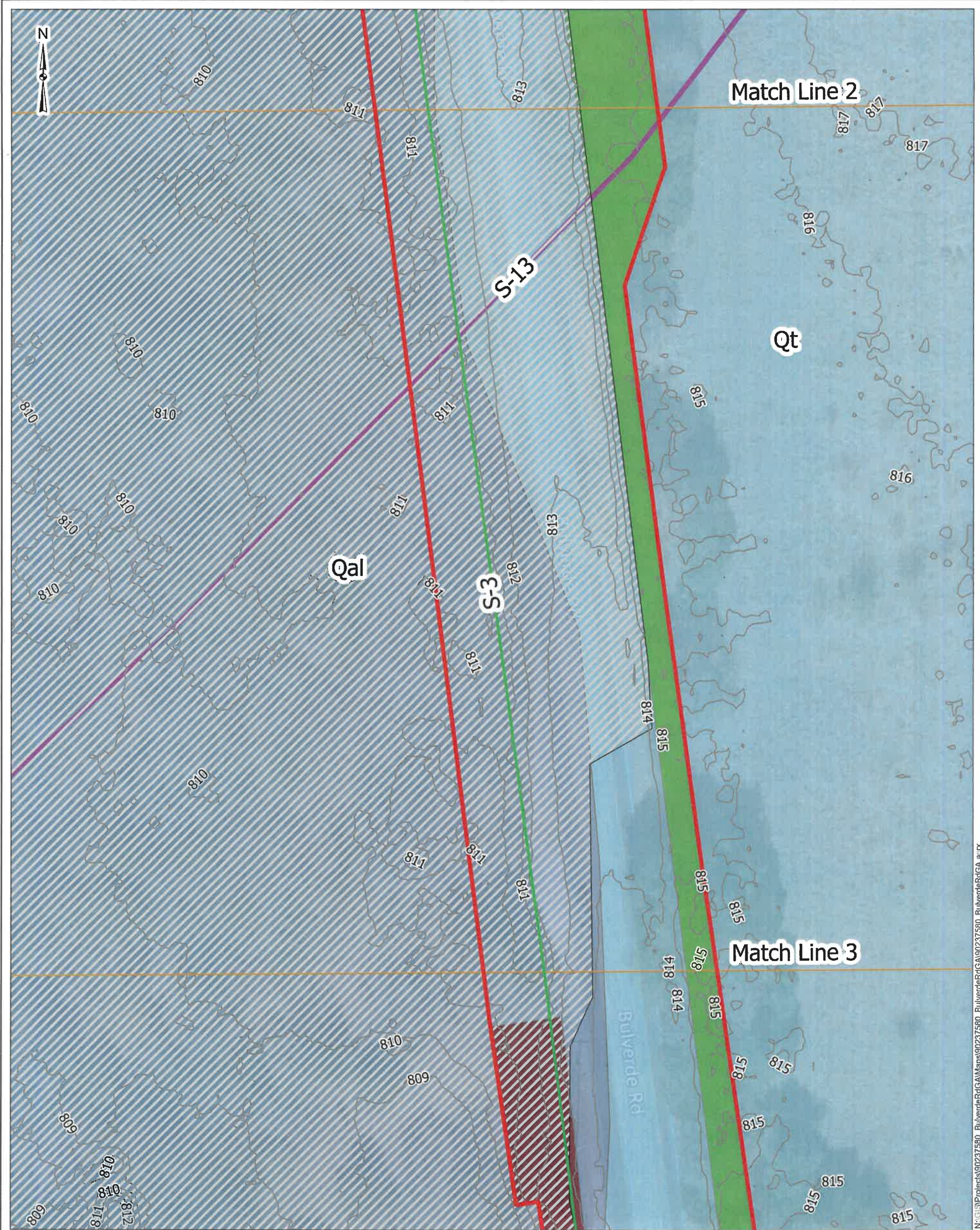
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Geologic Map

Bulverde Road (Green Spring to Redland
Road Project No. 23-03867)
San Antonio, Bexar County, Texas

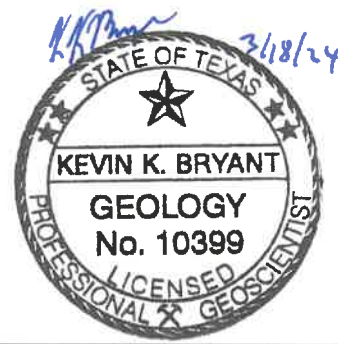
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2A



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- Fault
- Match Line
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- Qt- Quaternary Terrace Deposits
- 100-Year Floodplain
- Private Property, No Right of Entry Granted
- Private Property, Right of Entry Granted



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Mar 2024
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AES
Reviewed By:
KKB



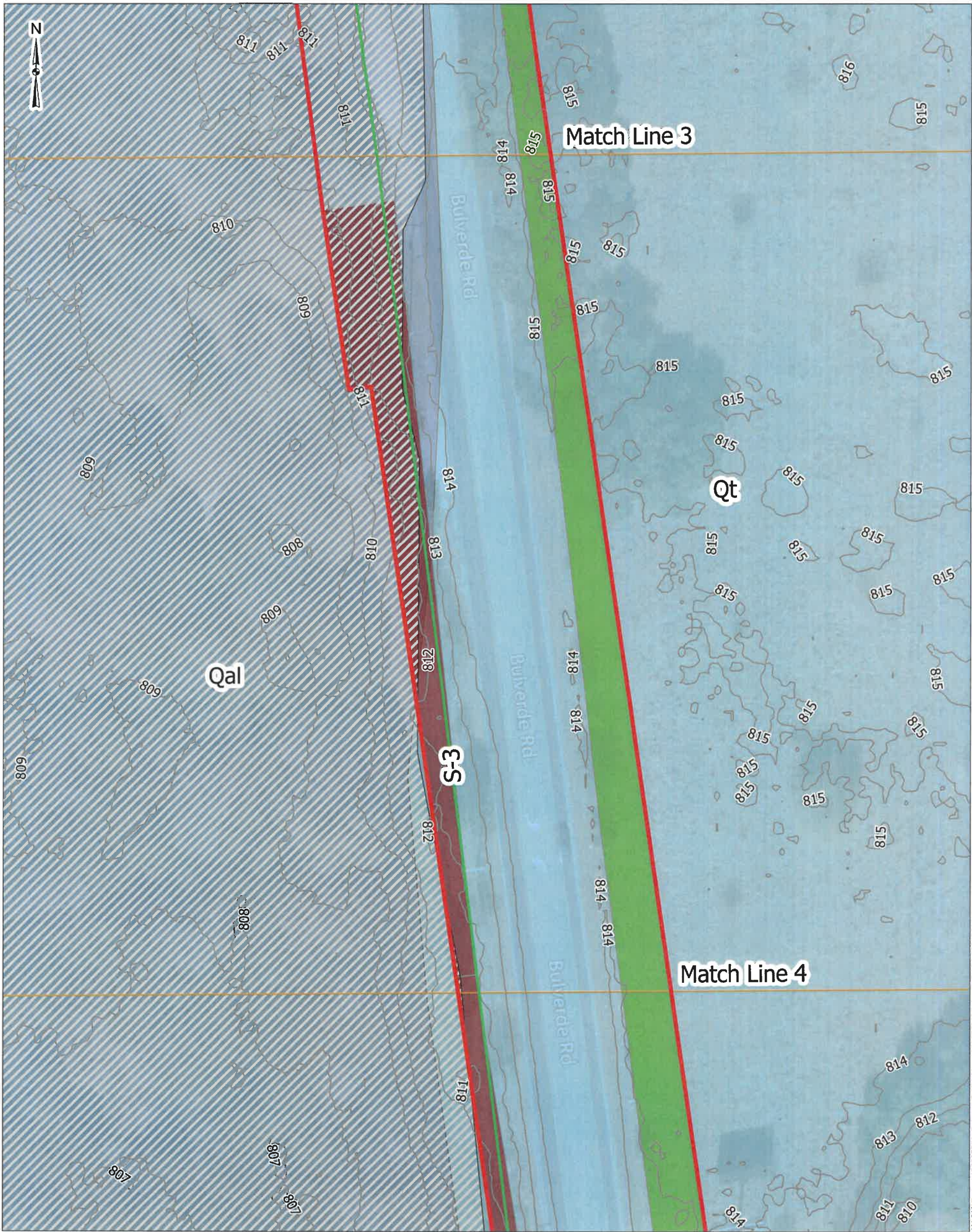
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Geologic Map

Bulverde Road (Green Spring to Redland
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San Antonio, Bexar County, Texas

Exhibit

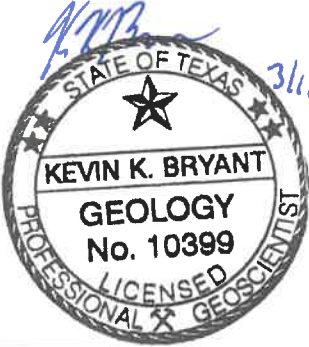
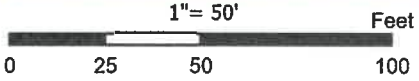
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- SAWS Sewer Line (S-3)
- Contour (1-foot interval)
- Match Line
- Qal - Quaternary Alluvium
- Qt- Quaternary Terrace Deposits
- 100-Year Floodplain
- Private Property, No Right of Entry Granted
- Private Property, Right of Entry Granted



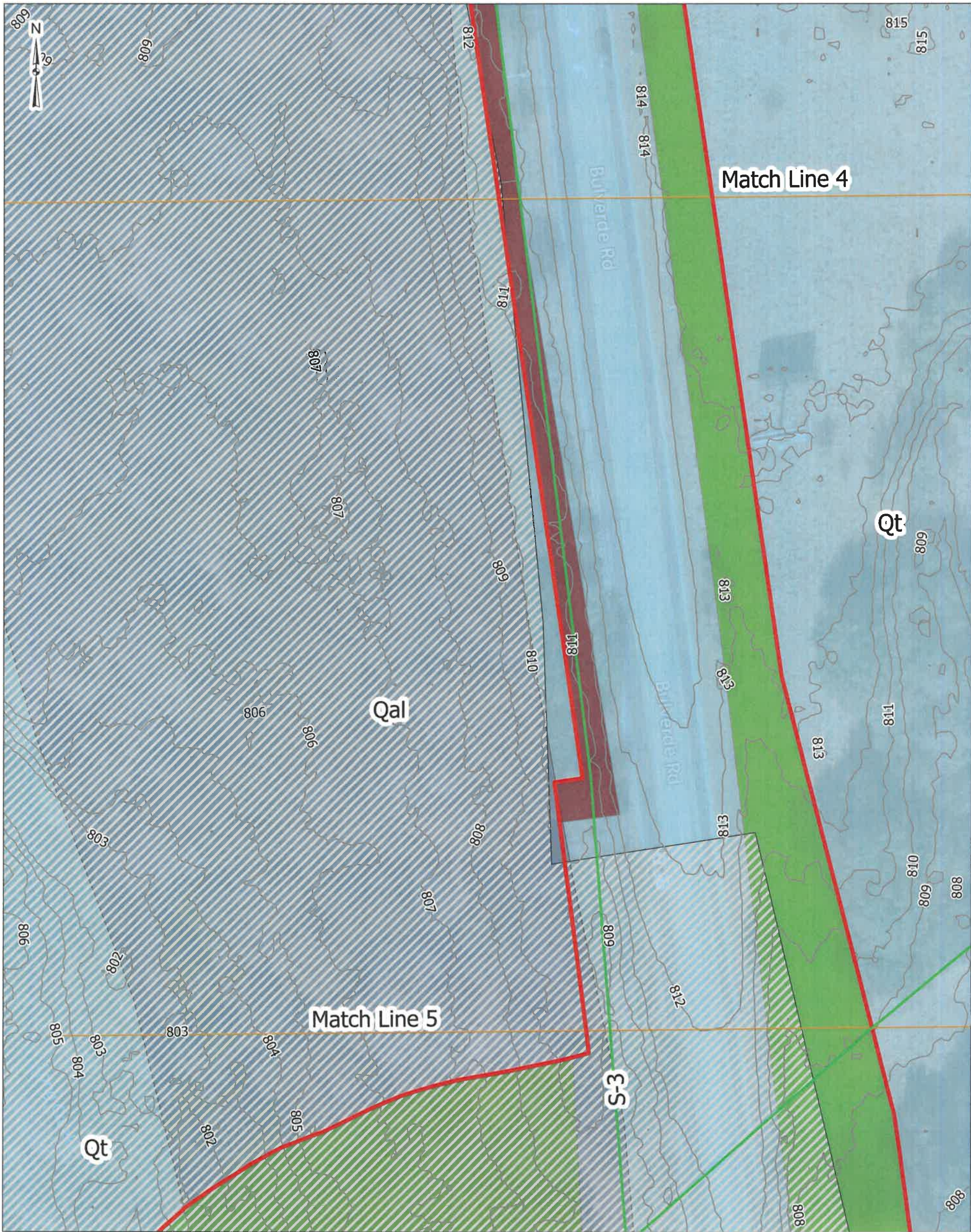
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Geologic Map
Bulverde Road (Green Spring to Redland
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Exhibit

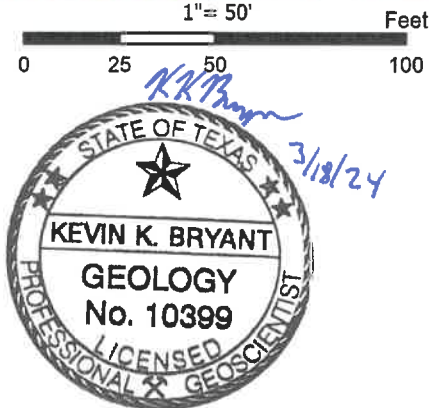
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DATA SOURCES:
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- ▬ Site Boundary (Approximate)
- ▬ SAWS Sewer Line (S-3)
- ▬ Contour (1-foot interval)
- ▬ Match Line
- ▬ Qal - Quaternary Alluvium
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- ▬ 100-Year Floodplain
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- ▬ Private Property, Right of Entry Granted



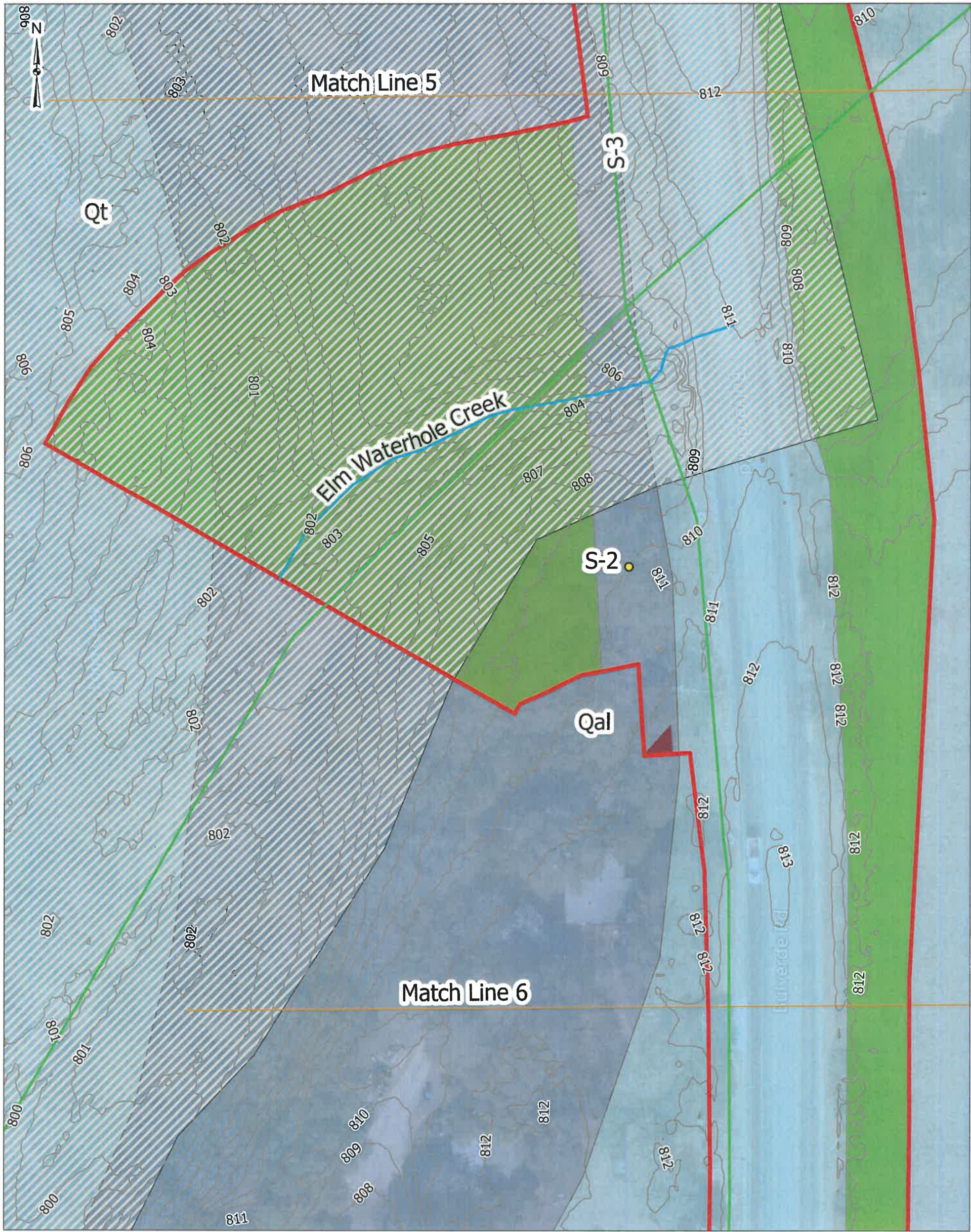
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Exhibit

2D



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- Site Boundary (Approximate)
- Potential Recharge Feature
- Centerline of Elm Waterhole Creek (Approximate)
- SAWS Sewer Line (S-3)
- Contour (1-foot interval)
- Match Line
- Qal - Quaternary Alluvium
- Qt- Quaternary Terrace Deposits
- 100-Year Floodplain
- Private Property, No Right of Entry Granted
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1"= 50' Feet
0 25 50 100



Project No.:
90237580
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Reviewed By:
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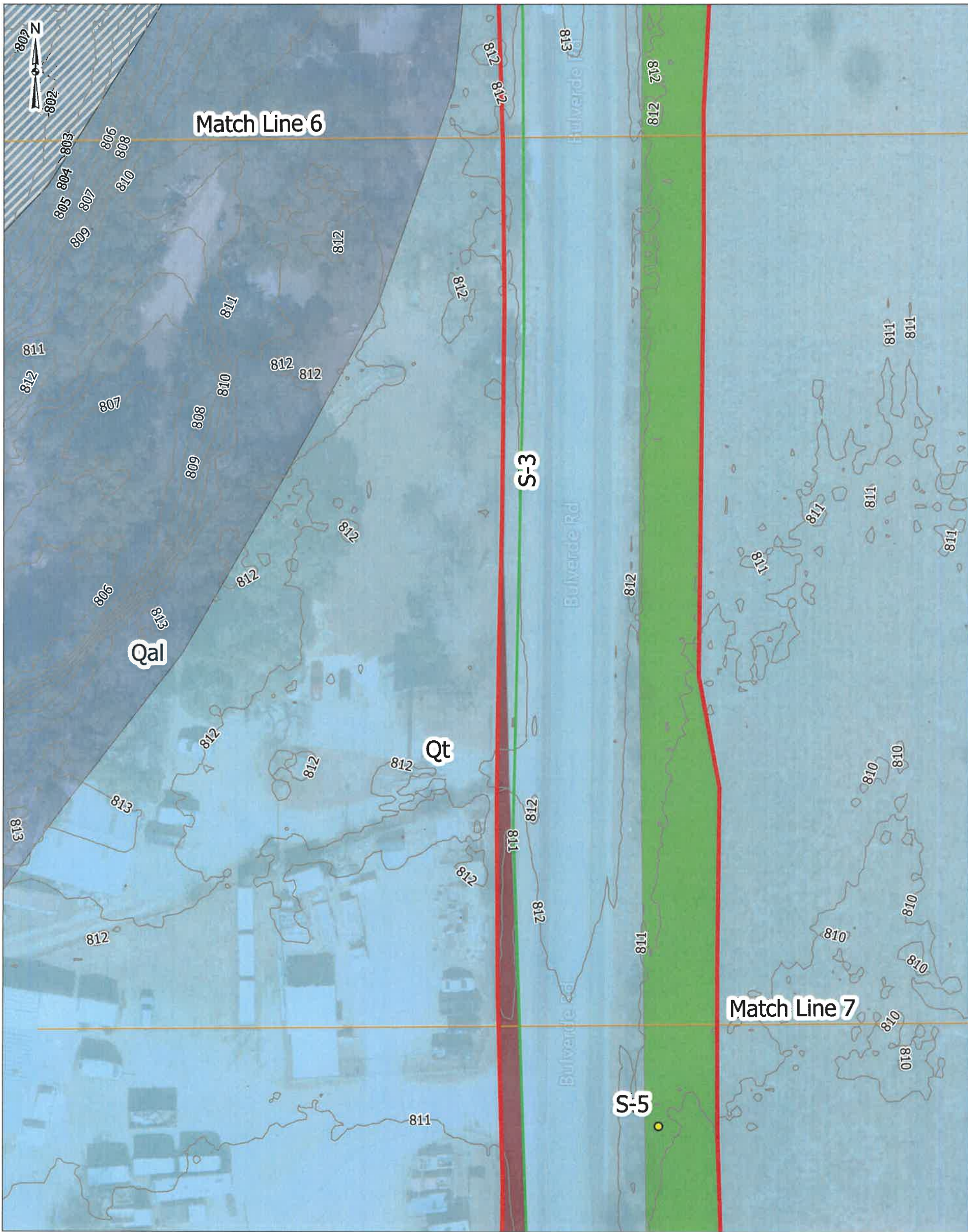
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Bulverde Road (Green Spring to Redland
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San Antonio, Bexar County, Texas

Exhibit

2E



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- Match Line
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- Private Property, No Right of Entry Granted
- Private Property, Right of Entry Granted

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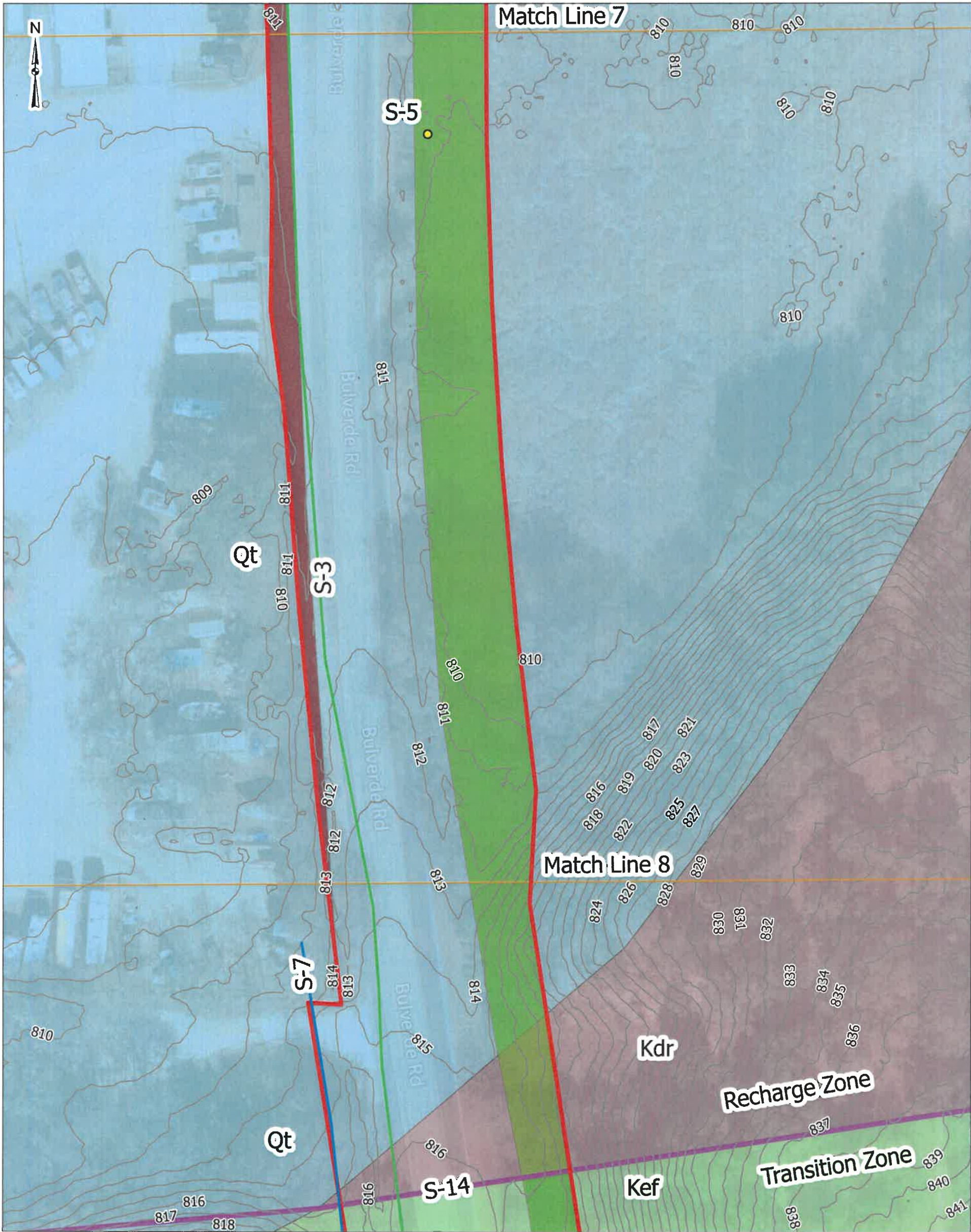


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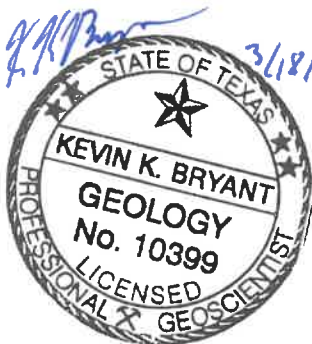
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1"= 50'
0 25 50 100 Feet



Project No.: 90237580
Date: Mar 2024
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Reviewed By: KKB

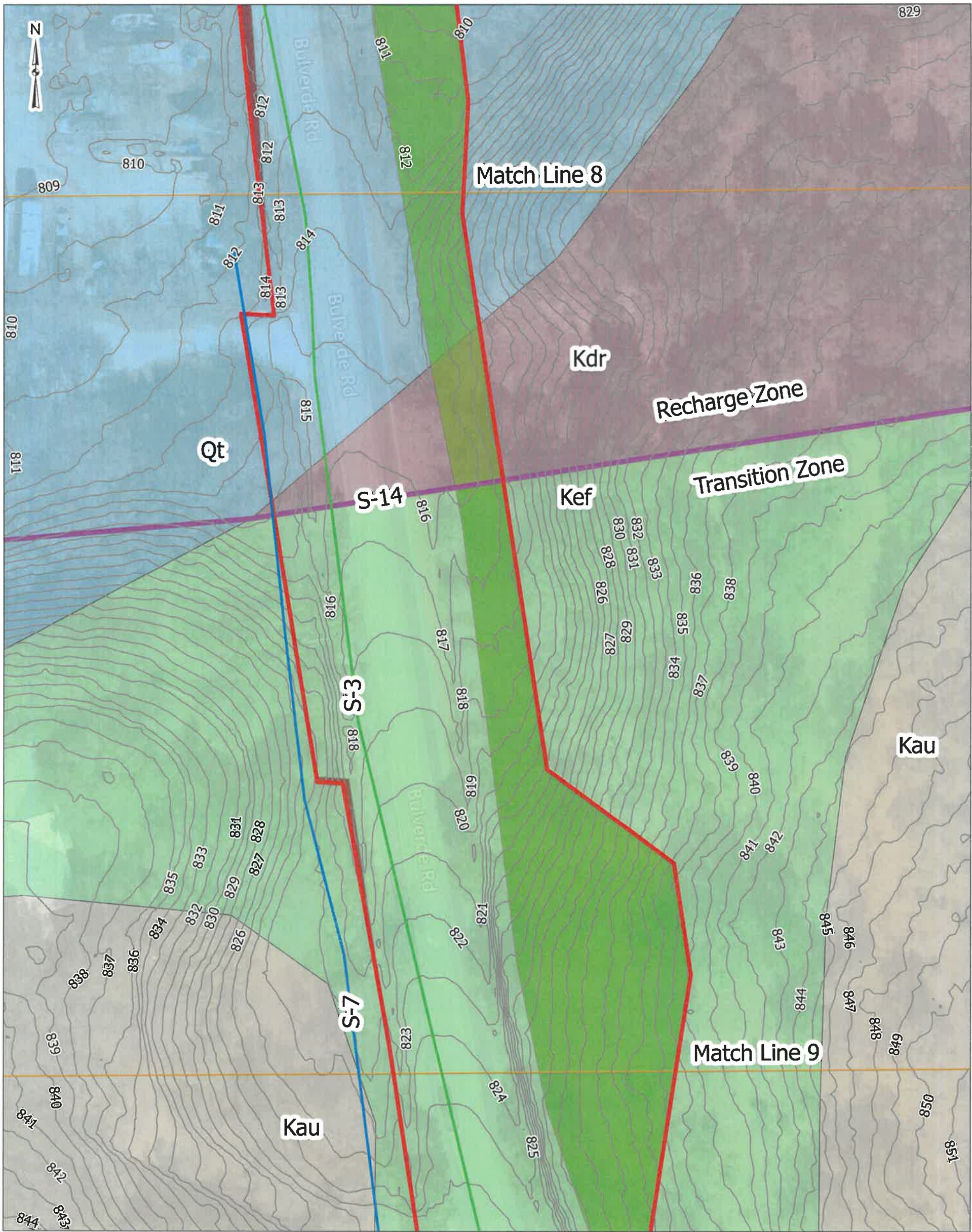
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Exhibit

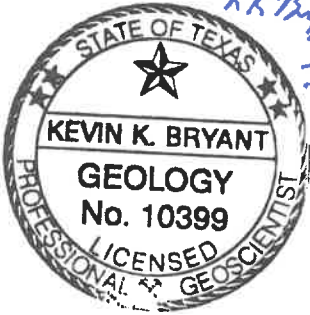
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- Kef - Eagle Ford Shale
- Qt- Quaternary Terrace Deposits
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1"= 50'
0 25 50 100 Feet



Project No.:
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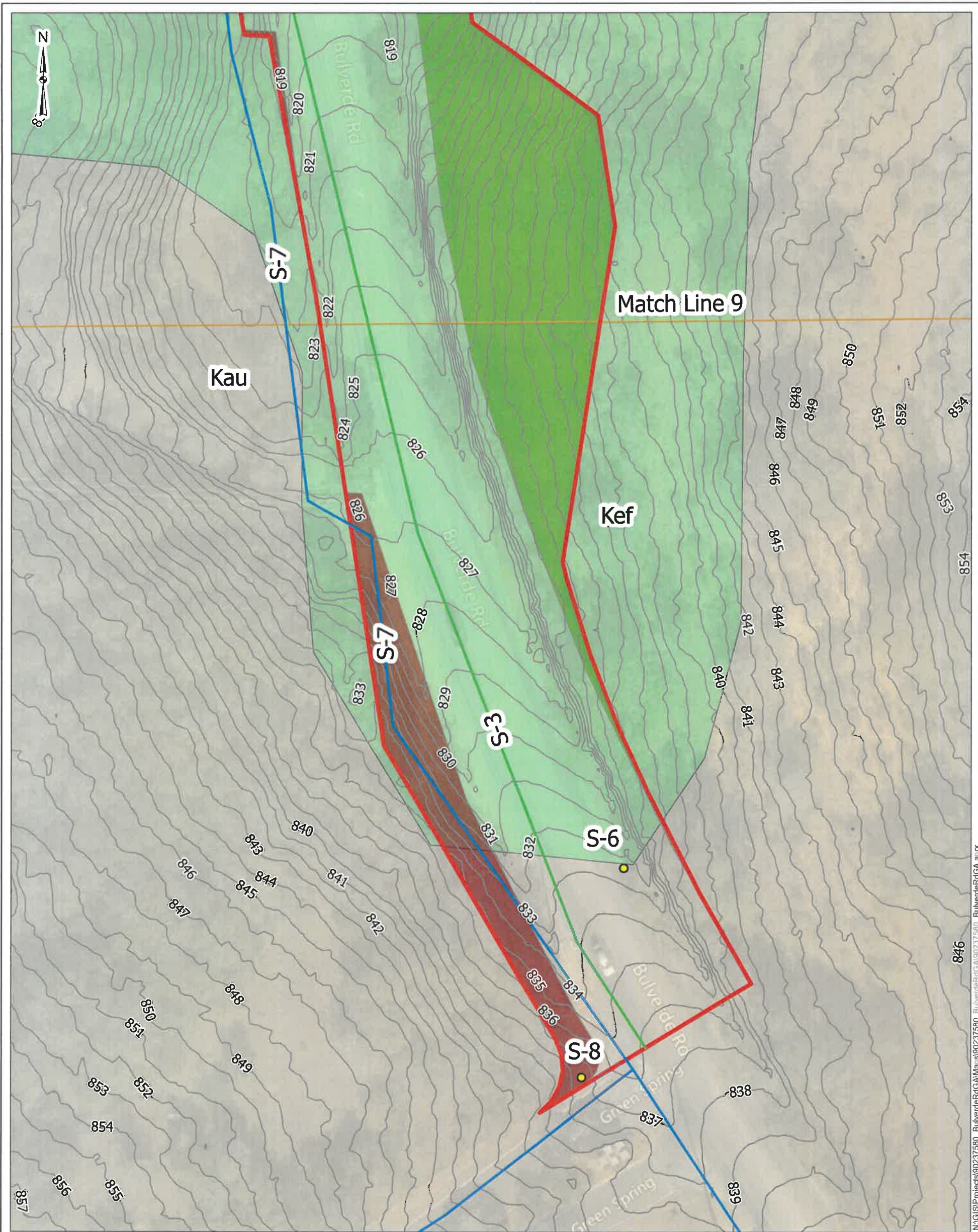
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Geologic Map

Bulverde Road (Green Spring to Redland Road Project No. 23-03867)
San Antonio, Bexar County, Texas

Exhibit

2H

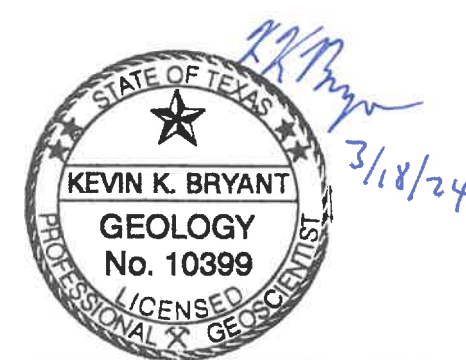


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0 25 50 100



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Geologic Map
Bulverde Road (Green Spring to Redland Road Project No. 23-03867)
San Antonio, Bexar County, Texas

Exhibit

21

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Scot Laun, PE, CFM.

Date: 10/14/2025

Signature of Customer/Agent:



Regulated Entity Name: Bulverde Road (Green Spring to Redland Road) Project

Regulated Entity Information

1. The type of project is:

- ☐ Residential: Number of Lots: _____
- ☐ Residential: Number of Living Unit Equivalents: _____
- ☐ Commercial
- ☐ Industrial
- ☒ Other: Roadway Improvements

2. Total site acreage (size of property): 7.68

3. Estimated projected population: N/A

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	0	$\div 43,560 =$	0
Parking	0	$\div 43,560 =$	0
Other paved surfaces	271,024.39	$\div 43,560 =$	6.22
Total Impervious Cover	271,024.39	$\div 43,560 =$	6.22

Total Impervious Cover 6.22 $\div$ Total Acreage 7.68 X 100 = 81.01% Impervious Cover

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

For Road Projects Only

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

7. Type of project:

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

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

- ☐ Concrete
☒ Asphaltic concrete pavement
☐ Other: _____

9. Length of Right of Way (R.O.W.): 3,523 feet.

Width of R.O.W.: 95 feet.

$L \times W = 334,685 \text{ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = 7.68 \text{ acres.}$

10. Length of pavement area: 3,523 feet.

Width of pavement area: 76.93 feet.

$L \times W = 271,024.39 \text{ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = 6.22 \text{ acres.}$

Pavement area 6.22 acres $\div$ R.O.W. area 7.68 acres x 100 = 81.01% impervious cover.

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

<u>N/A</u> % Domestic	<u> </u> Gallons/day
<u>N/A</u> % Industrial	<u> </u> Gallons/day
<u>N/A</u> % Commingled	<u> </u> Gallons/day
TOTAL gallons/day <u>N/A</u>	

15. Wastewater will be disposed of by:

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

☐ **Attachment C - Suitability Letter from Authorized Agent.** An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☐ Sewage Collection System (Sewer Lines):

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

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

☐ The SCS was previously submitted on .

☐ The SCS was submitted with this application.

☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☐ The sewage collection system will convey the wastewater to the _____ (name) Treatment Plant. The treatment facility is:

☐ Existing.

☐ Proposed.

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 1000'.

18. 100-year floodplain boundaries:

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

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

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM Panel 48029C0085F-Revised Sept. 29, 2010

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

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

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

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

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

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

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

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

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

☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.

☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.

☐ **Attachment D - Exception to the Required Geologic Assessment.** A request and justification for an exception to a portion of the Geologic Assessment is attached.

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

Administrative Information

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

FORM TCEQ-0584 ATTACHMENTS

ATTACHMENT A — FACTORS AFFECTING WATER QUALITY

Pre-Construction

Before construction commences, major factors that can greatly affect the water quality flowing through Bulverde Road are harmful pollutants such as oil from vehicles and excess carbon from tires. Additionally, the release of hydrocarbons and soluble substances have the potential of harming the water quality from traffic and/or vehicular accidents involving commercial or industrial carriers.

During Construction

During construction, the main potential risk is the release of hydrocarbons and diesel fuel leaks due to the major presence of heavy equipment such as excavators and dozers. While excavation is occurring, sediments that were once intact have a higher chance of depositing into local surface water bodies and aquifer zones that can bring in new soil properties for the subsurface. Also, the use of paving material has a chance of contaminating surface water during periods of precipitation along the project's vicinity.

Post Construction

Due to the increase in impervious cover along the roadway (2 lane roads to 5 lane roads), more runoff and vehicular flow will be generated resulting in increased contaminants such as hydrocarbon and petroleum entering local surface water or aquifer zones.

ATTACHMENT B — VOLUME AND CHARACTER OF STORMWATER

Based on the amount of new impervious cover created by the roadway project (1.70 acres) and an annual rainfall of 30 inches, approximately 5.0 acre-feet of additional runoff will be generated per year. The stormwater would mainly consist of oil exiting vehicles on the road and sediments due to the runoff eroding the existing land.

ATTACHMENT C — SUITABILITY LETTER FROM AUTHORIZED AGENT

Not Applicable.

ATTACHMENT D — EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

Not Applicable

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10/14/2025
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LEGEND	
DA-XX	DA ID
XX.XX	ACREAGE (ACRES)
	DIRECTION OF FLOW
	LONGEST FLOWPATH
	CALCULATION POINT

HEC-RAS FLOW CHANGE LOCATIONS				
River Station	10-Year (cfs)	25-year (cfs)	100-year (cfs)	100-year ULT
7104	455	551	693	700
2989	1689	2045	2572	2598
929	1960.6	2034.2	2631.3	2692.2

HEC-HMS HYDROLOGIC PARAMETERS									
Basin ID	Area		Lag	Peaking	Loss (Green & Ampt)				
	sq mi	acre	hr	Coeff	Initial content	Saturated content	Suction	Conductivity	Impervious
EWC-026	0.73	467.2	0.468	0.8	0.273	0.474	12.213	0.089	47.2

- NOTES:
1. SEE CULVERT A PLAN AND PROFILE LAYOUT SHEET FOR HYDRAULIC DATA
 2. HYDROLOGY WAS MODELED WITHIN HEC-HMS VERSION 4.3 COMPTUER SOFTWARE USING THE GREEN & AMPT LOSS AND SNYDER UNIT HYDROGRAPH TRANSFORM METHODS
 3. SUBBASINS WERE DEVELOPED USING 2021 LIDAR DEVELOPED BY TNRS.
 4. GREEN & AMPT PARAMETERS WERE DEVELOPED FROM SSURGO SOIL INFORMATION AND SAN ANTONIO RIVER AUTHORITY PARAMETER DEVELOPMENT GUIDANCE.
 5. RAINFALL DATA WERE DERIVED FROM NOAA ATLAS-14 RAINFALL DATA PROVIDED BY SAN ANTONIO RIVER AUTHORITY (PA-2).
 6. DESIGN CONSIDERS 100-YR ULTIMATE DESIGN FLOWS PER BEXAR COUNTY PUBLIC WORKS/COSA CRITERIA.



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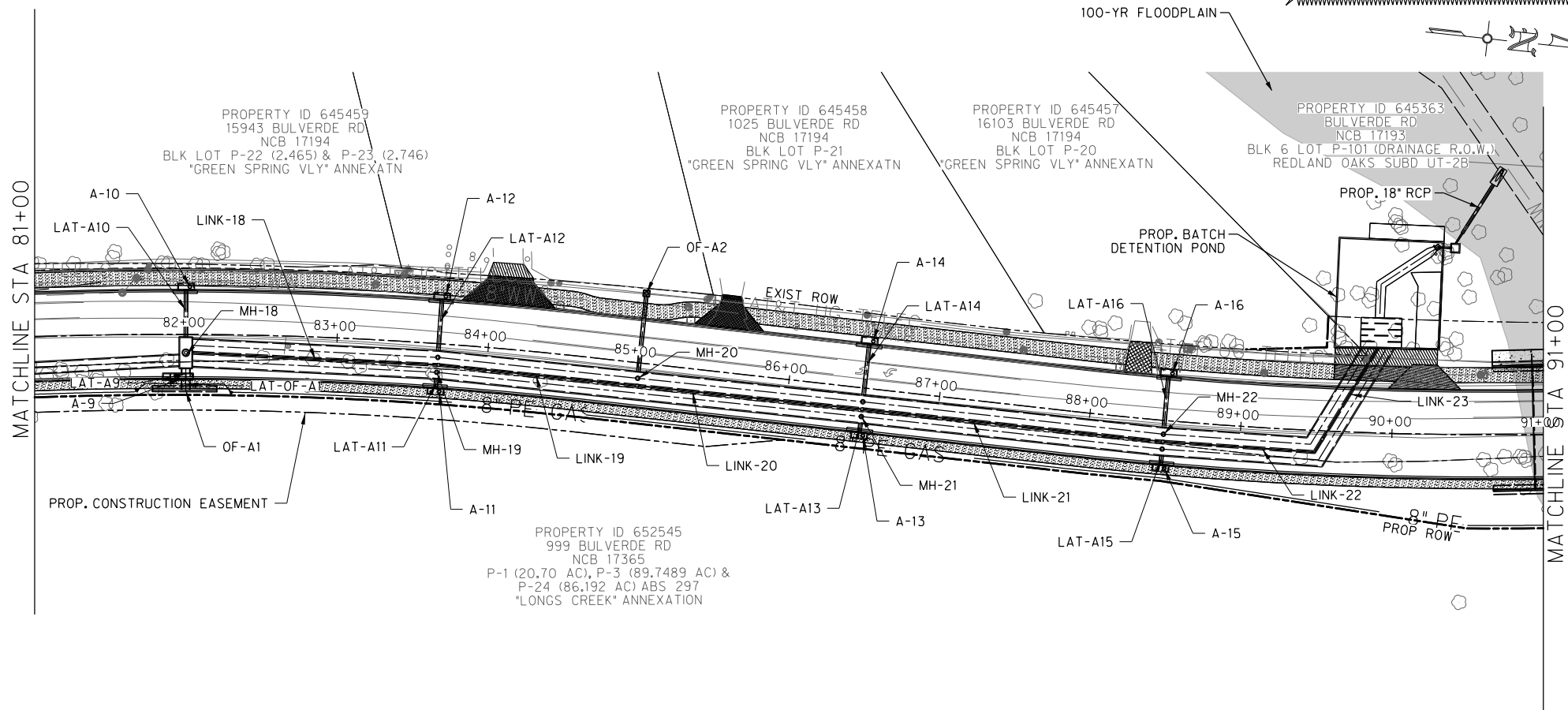
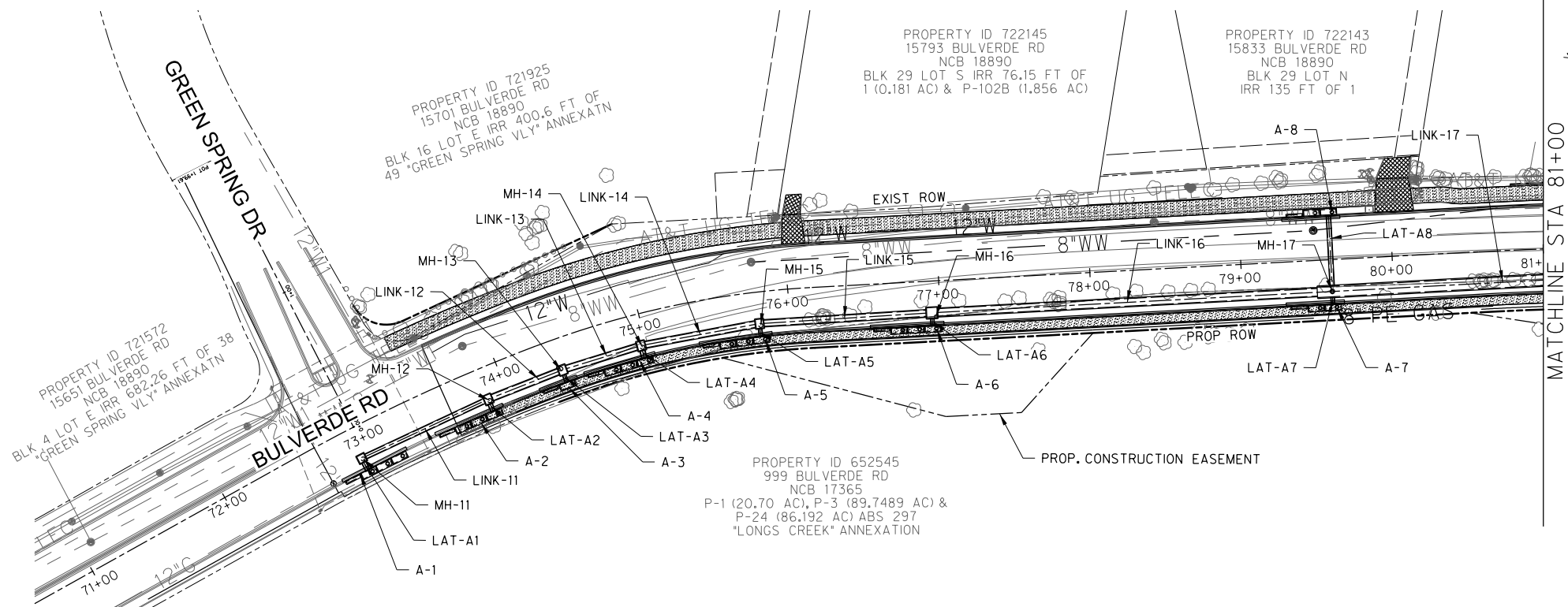
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT
BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)
EXISTING PROJECT
DRAINAGE AREA MAP

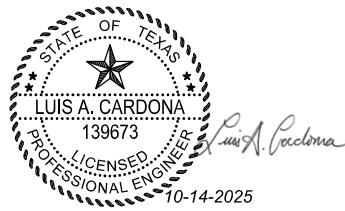
HORIZ. SCALE: 1"=1000'
0 1000 2000
SCALE IN FEET

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 10/14/2025
DRWN. BY: _JB_	DSGN. BY: _PR_	CHKD. BY: _CV_ SHEET NO.:

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10/14/2025
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CONTRACTOR SHALL BE RESPONSIBLE FOR
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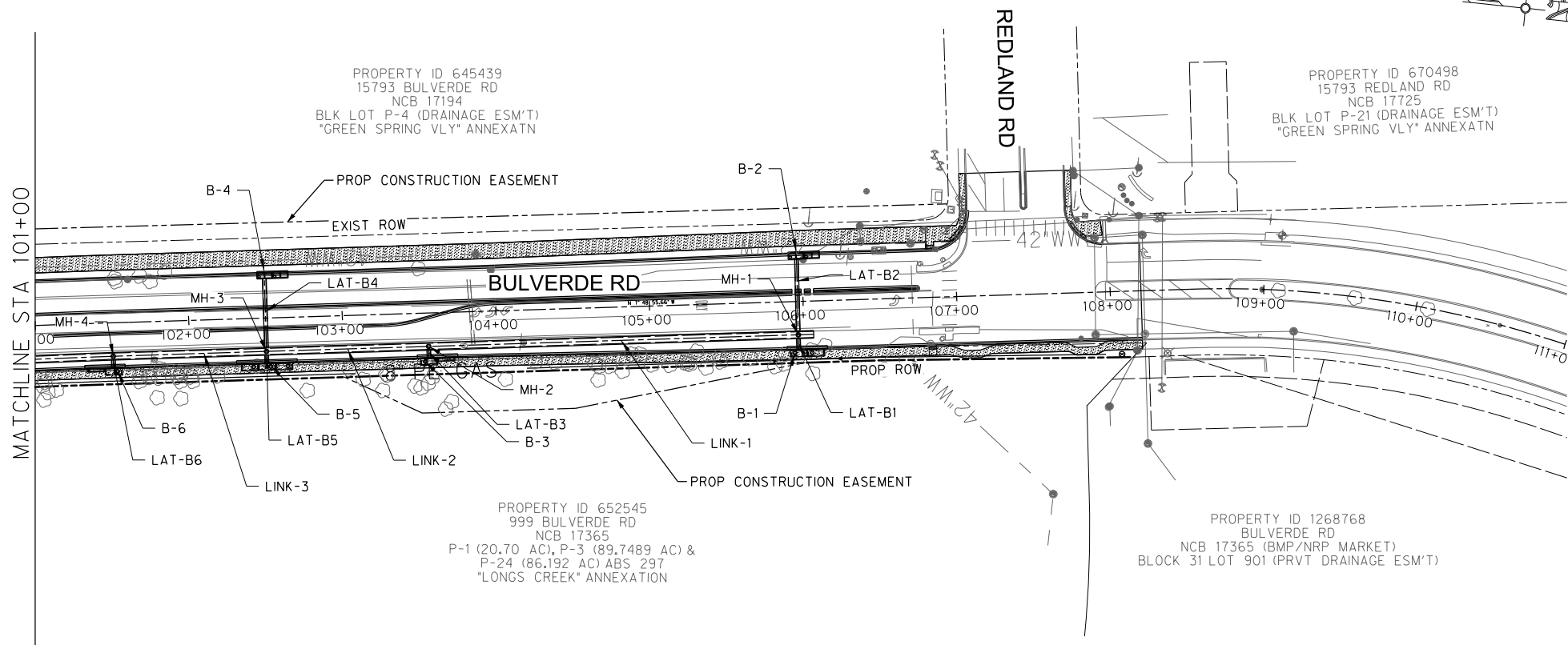
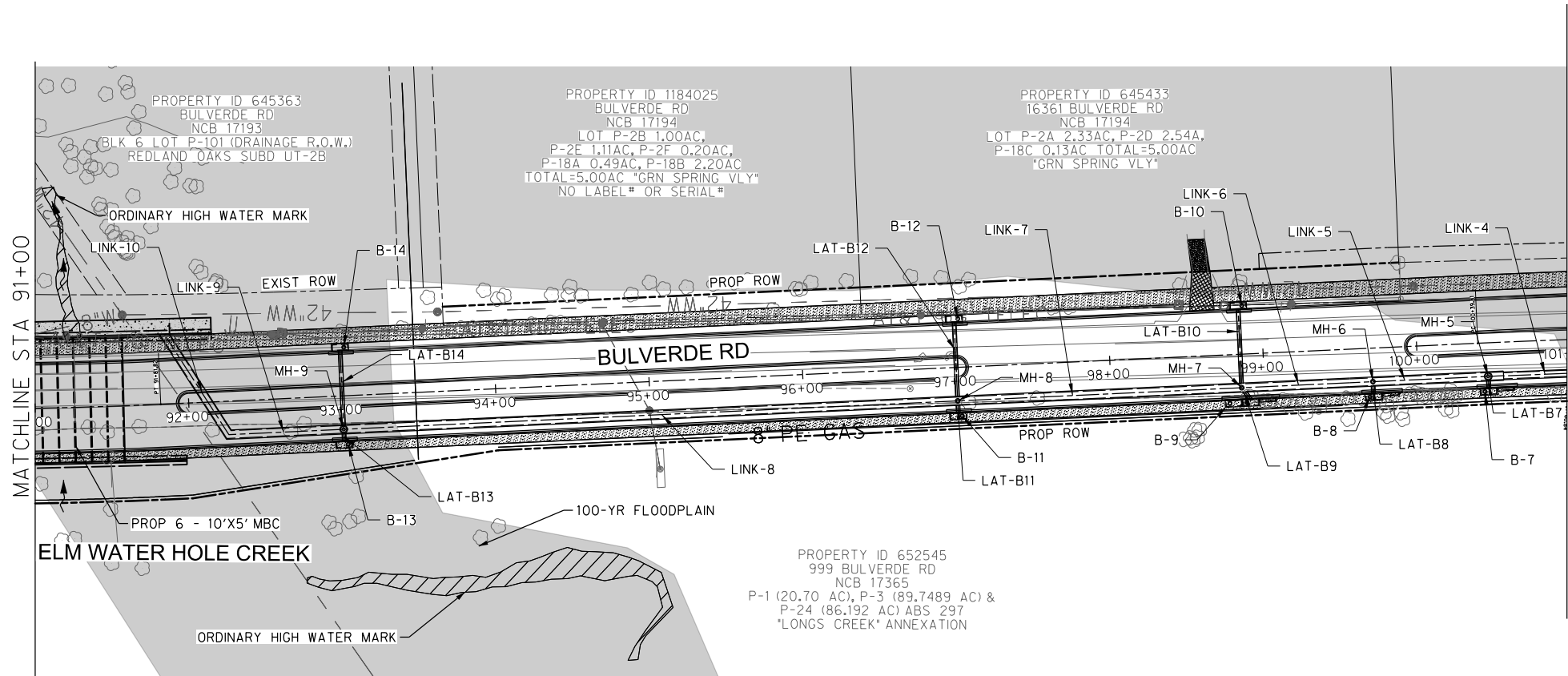
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- NOTES:
1. LOCATION OF UTILITIES SHOWN IS APPROXIMATE. CONTRACTOR SHALL VERIFY DEPTH AND HORIZONTAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
 2. SEE STORM SEWER LATERAL PROFILE SHEETS FOR LATERAL PROFILE DETAILS.
 3. LENGTH OF PIPE SHOWN IS CENTERLINE TO CENTERLINE OF DRAINAGE STRUCTURES AND PIPE LENGTH OF SUMMARY SHEET IS INSIDE FACE TO INSIDE FACE OF DRAINAGE STRUCTURES.
 4. HORIZONTAL CONTROL FOR CURB INLETS IS AT THE FACE OF CURB. HORIZONTAL CONTROL FOR ALL OTHER DRAINAGE STRUCTURES IS AT THE CENTER OF STRUCTURE.
 5. CONCRETE COLLAR TO BE CONSTRUCTED AT ALL PIPE CONNECTIONS WITH INLET BOXES, JUNCTION BOXES, AND BOX CULVERTS. SEE MISCELLANEOUS DRAINAGE DETAIL SHEET FOR ADDITIONAL INFORMATION.
 6. MUD SLAB IS SUBSIDIARY TO TxDOT BID ITEM 4657383. REFER TO MISCELLANEOUS DRAINAGE DETAIL SHEETS FOR ADDITIONAL INFORMATION.
 7. REFER TO ROADWAY HORIZONTAL ALIGNMENT DATA SHEET FOR ADDITIONAL CURVE DATA.
 8. CONTRACTOR SHALL PROVIDE A CONCRETE MUD SLAB BENEATH TWO OR MORE ADJACENT FULL SIZE INLETS. REFER TO PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAIL SHEET FOR ADDITIONAL INFORMATION.
 9. CONTRACTOR TO PROVIDE A 3'X3' SQUARE KNOCK OUT BETWEEN TWO OR MORE ADJACENT FULL SIZE INLETS.

LEGEND	
---	EXIST ROW LINE
-8 WW-	WASTE WATER
-8 W-	WATER
-8 G-	BURIED GAS
-OC-	OH TEL
-UGC-	BURIED TEL
-OHE-	OH ELEC
-OE/OT-	OH ELEC/OH TEL
○	CLEAN OUT
⊙	FIRE HYDRANT
⊗	WATER METER
⊕	WATER VALVE
⊙	TELE PEDESTAL
⊙	LIGHT POLE
●	POWER POLE
+	GUY WIRE
⊙	SIGN
⊙	MAIL BOX
⊙	EXIST MANHOLE
⊙	EXIST SHRUB
⊙	EXIST TREE
---	PROP ROW LINE
→	DIRECTION OF FLOW
⊙	PROPOSED JUNCTION BOX
⊙	PROPOSED INLET EXTENSION
⊙	PROPOSED CURB INLET
.....	PROPOSED HGL
---	PROPOSED EGL
-8" PE GAS-	PROPOSED GAS

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 8918 Tesoro Dr., Suite 401 San Antonio, Texas 78217 Phone: (210) 822-2232 www.Ardurra.com Engineering License #F-10053 Ardurra Group, Inc. (dba LNV, LLC) Surveying Firm 10126502		
 BULVERDE ROAD (GREEN SPRING TO REDLAND RD) BULVERDE RD STORM LAYOUT BEGIN TO STA 91+00 SHEET 1 OF 2 HORIZ. SCALE: 1"=100' 0 50 100 SCALE IN FEET		
100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 10/14/2025
DRWN. BY: JB	DSGN. BY: PR	CHKD. BY: CV
SHEET NO.:		

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10/14/2025
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LEGEND

- EXIST ROW LINE
- 8 WW- WASTE WATER
- 8 W- WATER
- 8 G- BURIED GAS
- OC- OH TEL
- UGC- BURIED TEL
- OHE- OH ELEC
- OE/OT- OH ELEC/OH TEL
- CLEAN OUT
- ⊙ FIRE HYDRANT
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ TELE PEDESTAL
- ⊙ LIGHT POLE
- POWER POLE
- ↓ GUY WIRE
- ⊙ SIGN
- ⊙ MAIL BOX
- ⊙ EXIST MANHOLE
- ⊙ EXIST SHRUB
- ⊙ EXIST TREE
- PROP ROW LINE
- DIRECTION OF FLOW
- ⊙ PROPOSED JUNCTION BOX
- ⊙ PROPOSED INLET EXTENSION
- ⊙ PROPOSED CURB INLET
- PROPOSED HGL
- PROPOSED EGL
- 8" PE GAS PROPOSED GAS



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BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

BULVERDE RD
STORM LAYOUT
STA 91+00 TO END
SHEET 2 OF 2

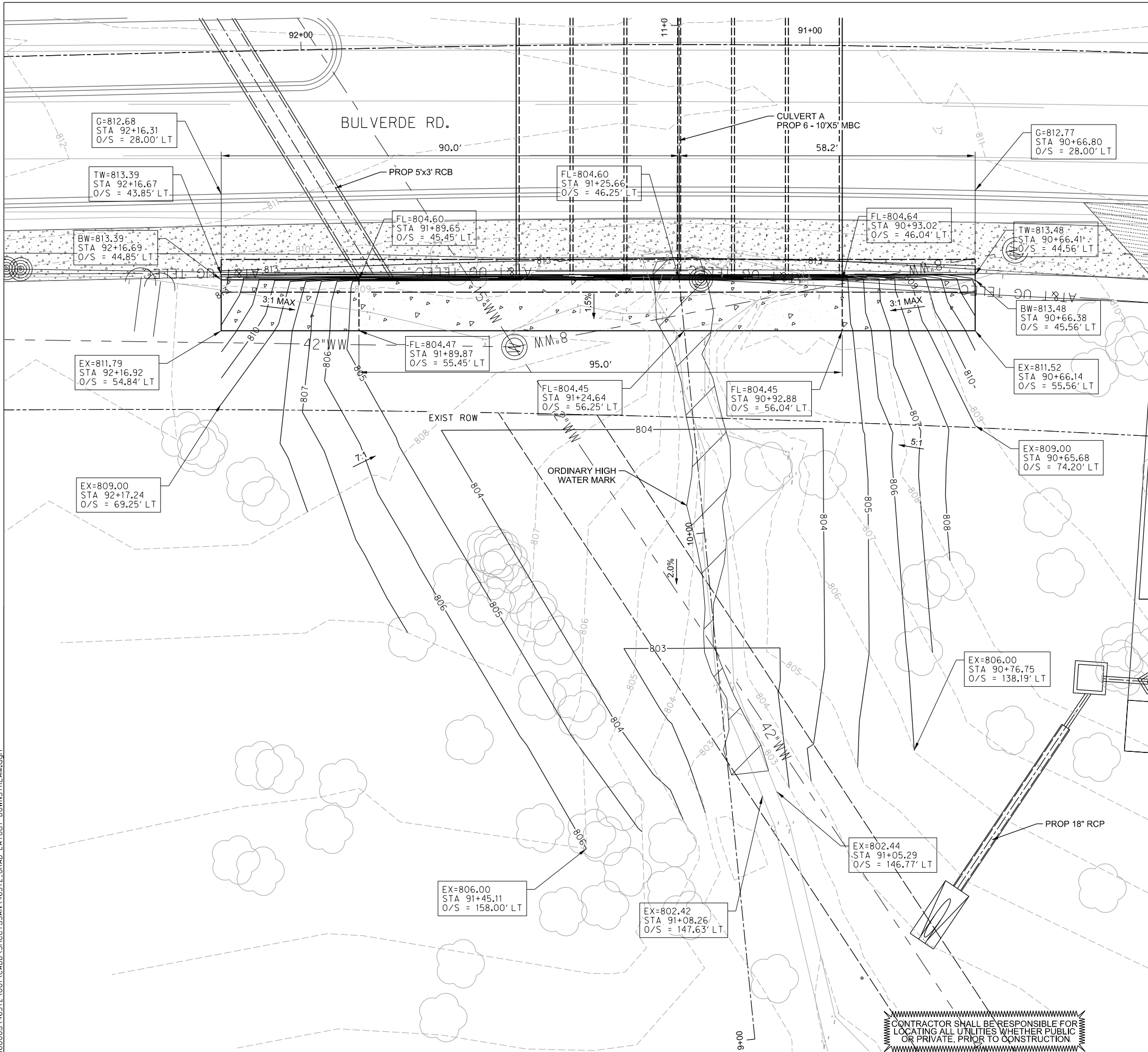
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SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 10/14/2025
DRWN. BY: JJB DSGN. BY: PR CHKD. BY: CV SHEET NO.:

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- NOTES:
- SEE CULVERT A PLAN AND PROFILE SHEET FOR CULVERT A DETAILS.

LEGEND

EXIST ROW LINE

— WW —

WASTE WATER

— W —

WATER

— G —

BURIED GAS

— OT —

OH TEL

— UT —

BURIED TEL

— OE —

OH ELEC

— OE/OT —

OH ELEC/OH TEL

---100---

EXIST CONTOURS

—100—

PROP MAJOR CONTOURS

—100—

PROP MINOR CONTOURS

PROP ROW LINE

➔

DIRECTION OF FLOW

PROPOSED JUNCTION BOX

PROPOSED INLET EXTENSION

PROPOSED CURB INLET

.....

PROPOSED HGL/EGL

FL=100.00

FLOWLINE

TS=100.00

TOP OF SIDEWALK

TW=100.00

TOP OF WALL

BW=100.00

BOTTOM OF WALL

G=100.00

GUTTER



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PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

GRADING PLAN
CULVERT A
DOWNSTREAM

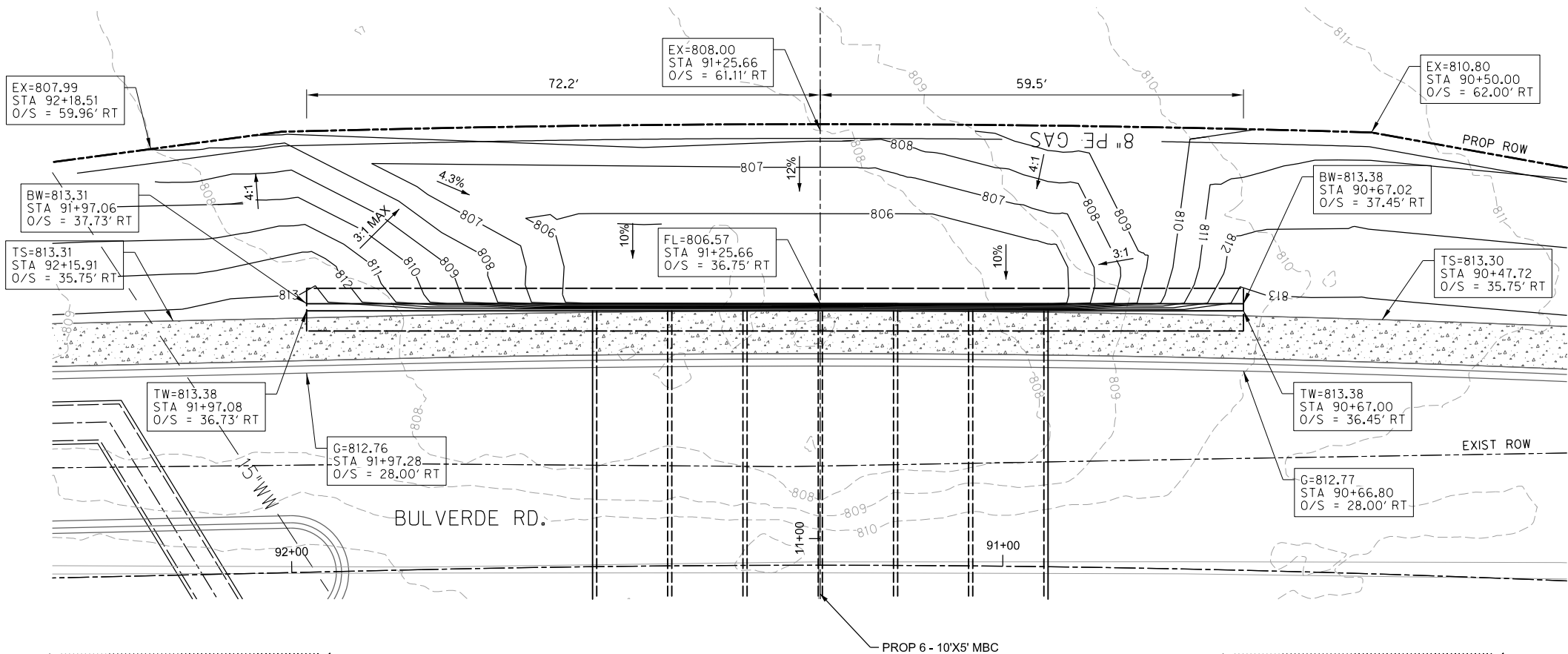
HORIZ. SCALE: 1"=20'



SCALE IN FEET

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 10/14/2025
DRWN. BY: _JB_	DSGN. BY: _PR_	CHKD. BY: _CV_ SHEET NO.:

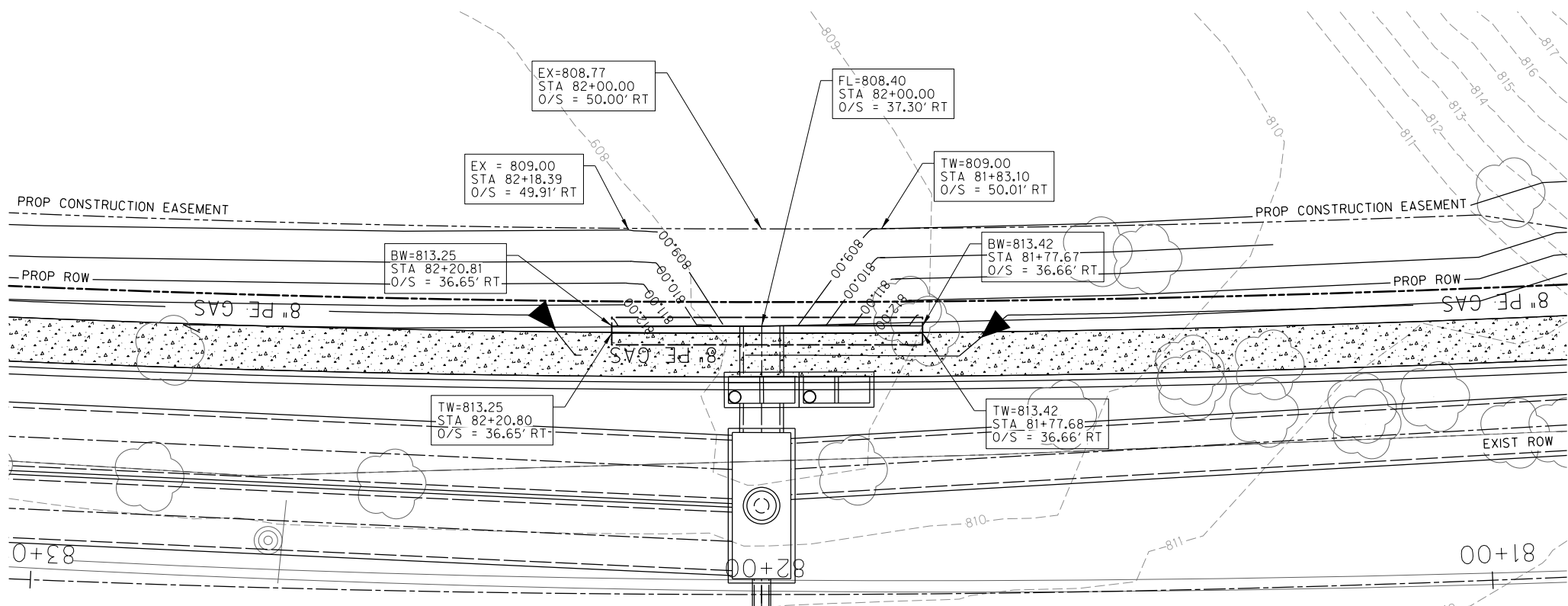
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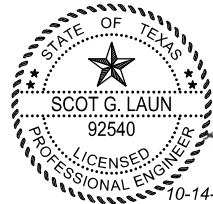
CULVERT A -UPSTREAM

CONTRACTOR SHALL BE RESPONSIBLE FOR
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OFFSITE HEADWALL (OF-A1)

LEGEND	
---	EXIST ROW LINE
— WW —	WASTE WATER
— W —	WATER
— G —	BURIED GAS
— OT —	OH TEL
— UT —	BURIED TEL
— OE —	OH ELEC
— OE/OT —	OH ELEC/OH TEL
— 100 —	EXIST CONTOURS
— 100 —	PROP MAJOR CONTOURS
— 100 —	PROP MINOR CONTOURS
---	PROP ROW LINE
→	DIRECTION OF FLOW
	PROPOSED JUNCTION BOX
	PROPOSED INLET EXTENSION
	PROPOSED CURB INLET
.....	PROPOSED HGL/EGL
FL=100.00	FLOWLINE
TS=100.00	TOP OF SIDEWALK
TW=100.00	TOP OF WALL
BW=100.00	BOTTOM OF WALL
G=100.00	GUTTER



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PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

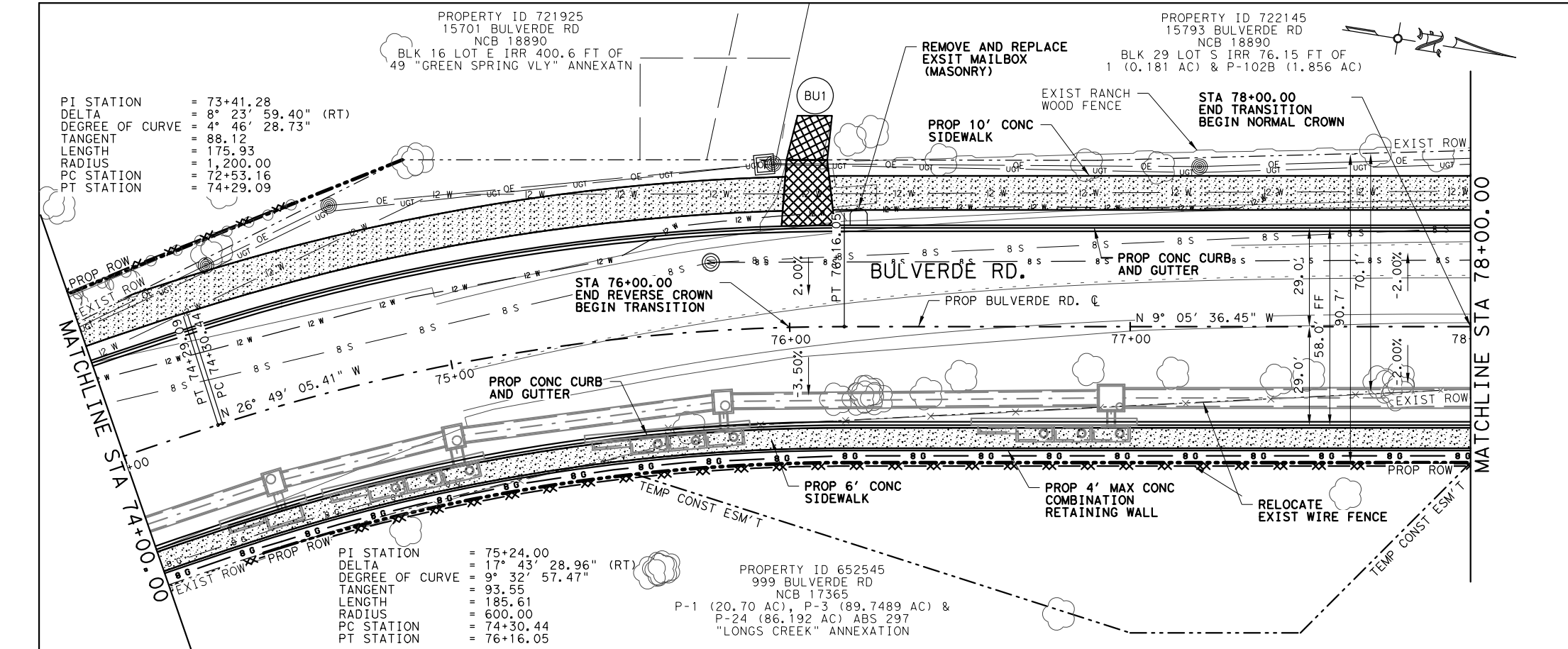
GRADING PLAN CULVERT A
UPSTREAM & OFFSITE
HEADWALL (OF-A1)

HORIZ. SCALE: 1"=20'

0 10 20

SCALE IN FEET

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 10/14/2025
DRWN. BY: JJB	DSGN. BY: PR	CHKD. BY: CV
		SHEET NO.:



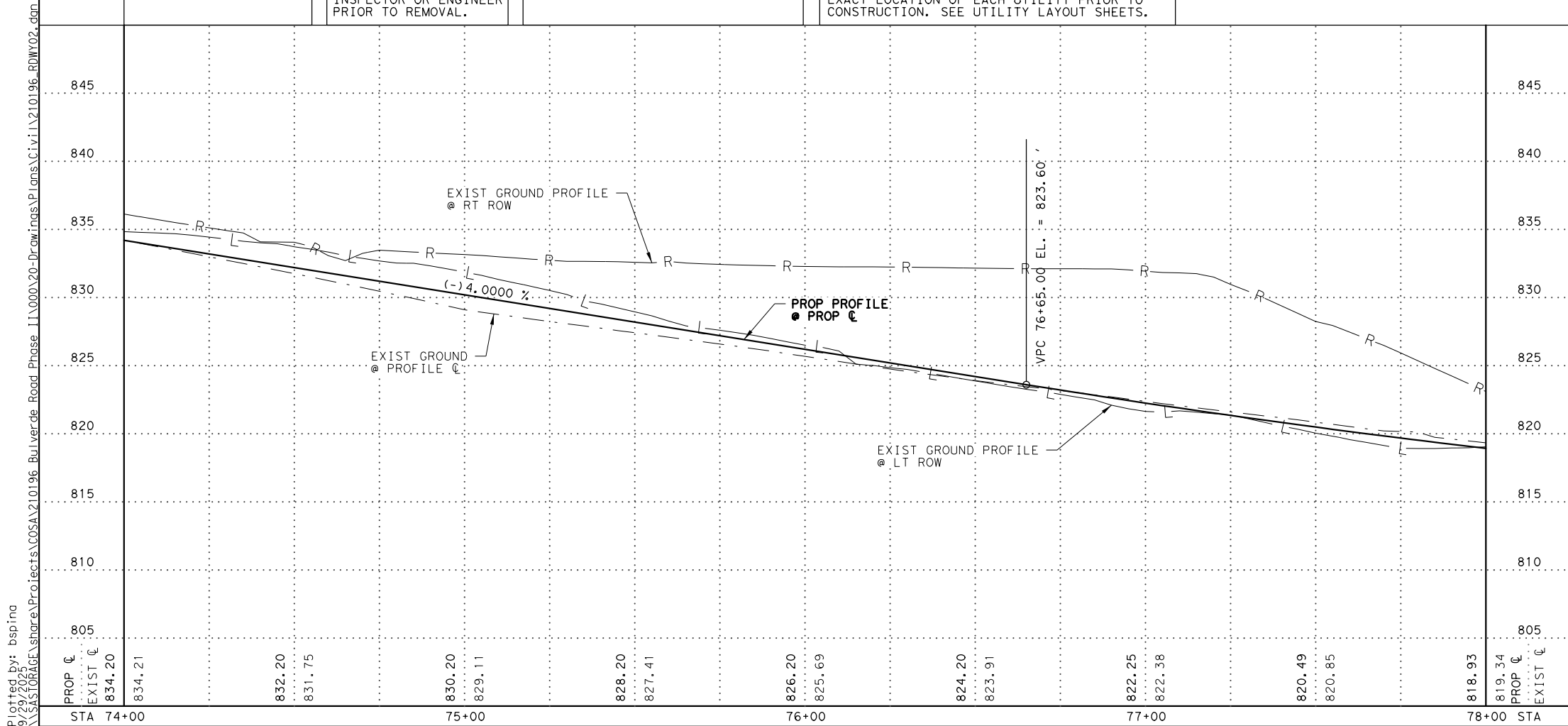
ITEM NO.	DESCRIPTION	UNIT	QUANT
103.3	REMOVE SIDEWALKS & DRIVEWAYS	SF	545
104.1	STREET EXCAVATION	CY	2,500
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	350
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,733
108.2	LIME	TON	34
203.1	TACK COAT	GAL	273
240.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	2,489
240.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,733
240.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	2,489
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	435
502.1	CONCRETE SIDEWALKS (6" THICK)	SY	270
503.1	PORTLAND CEMENT CONCRETE DRIVEWAY	SY	50
506.1	CONCRETE RETAINING WALLS- COMB. TYPE	CY	30
508.1	RELOCATE WIRE FENCE	LF	465
513.1	REMOVING AND RELOCATING MAIL BOXES (MASONRY)	EA	1
515.1	TOPSOIL (4")	CY	175
516.1	BUFFALO SODDING	SY	760
520.1	HYDROMULCH (RES/COMM) (NATIVE SEED)	SY	820

TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.

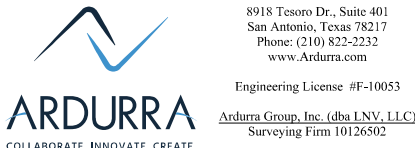
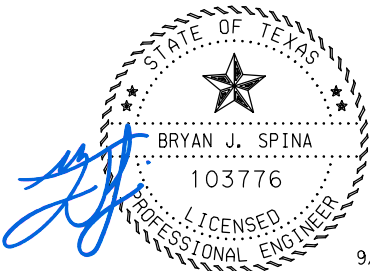
ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.

SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



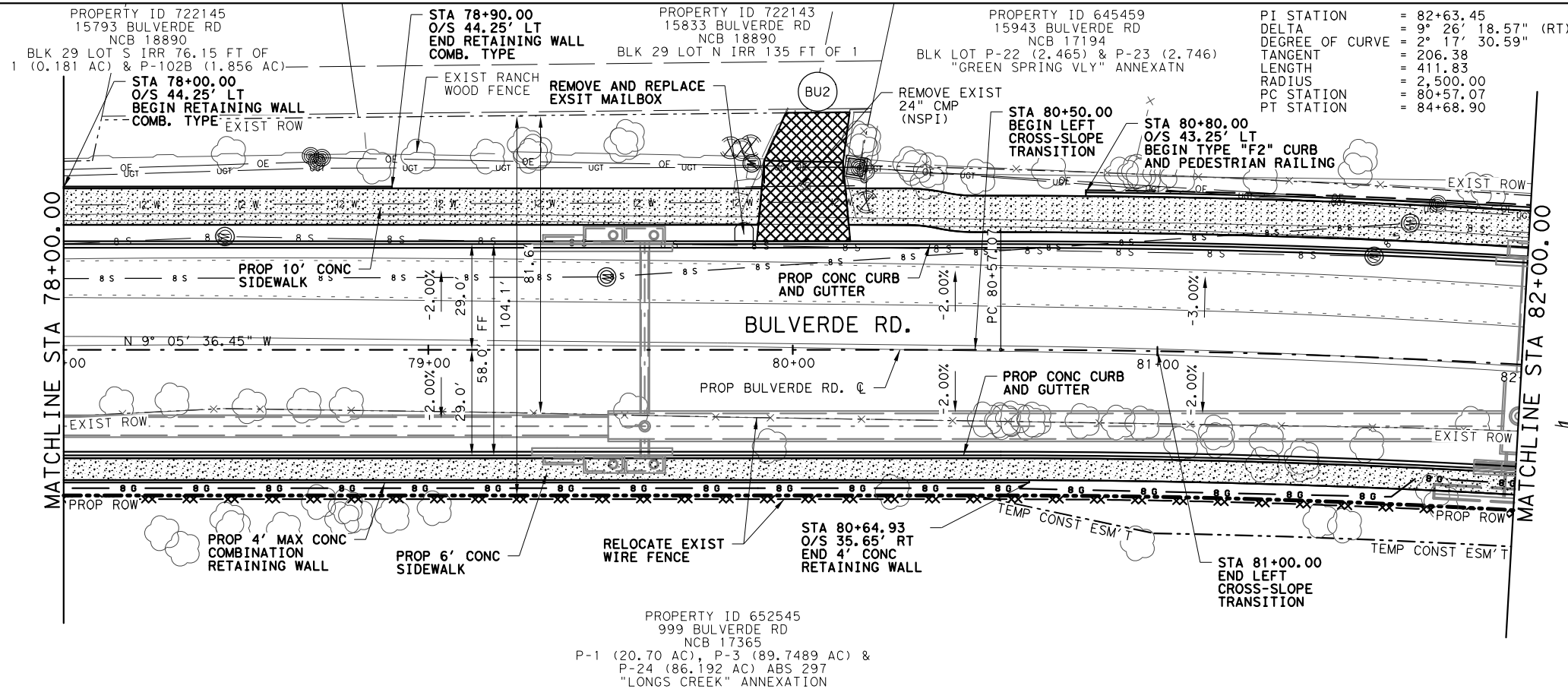
LEGEND	
---	EXIST ROW LINE
WW	WASTE WATER
W	WATER
G	BURIED GAS
OT	OH TEL
UT	BURIED TEL
OE	OH ELEC
OE/OT	OH ELEC/OH TEL
O	CLEAN OUT
⊕	FIRE HYDRANT
⊗	WATER METER
⊗	WATER VALVE
⊗	TELE PEDESTAL
⊗	LIGHT POLE
⊗	POWER POLE
⊗	GUY WIRE
⊗	SIGN
⊗	MAIL BOX
⊗	EXIST MANHOLE
⊗	EXIST SHRUB
⊗	EXIST TREE
---	PROP ROW LINE
▨	RES CONC DRIVEWAY
▨	COMM CONC DRIVEWAY
▨	GRAVEL DRIVEWAY
▨	ASPHALT DRIVEWAY
▨	CONC SIDEWALK
▨	MATCH EXIST PAVEMENT
▨	WASHOUT CROWN
(X)	DRIVEWAY NO.
⊗	PROP MAILBOX
→	DIRECTION OF FLOW
-x-x-	REMOVE & RELOCATE FENCE



BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD
BASE BID PLAN AND PROFILE
STA 74+00 TO STA 78+00
SHEET 2 OF 7

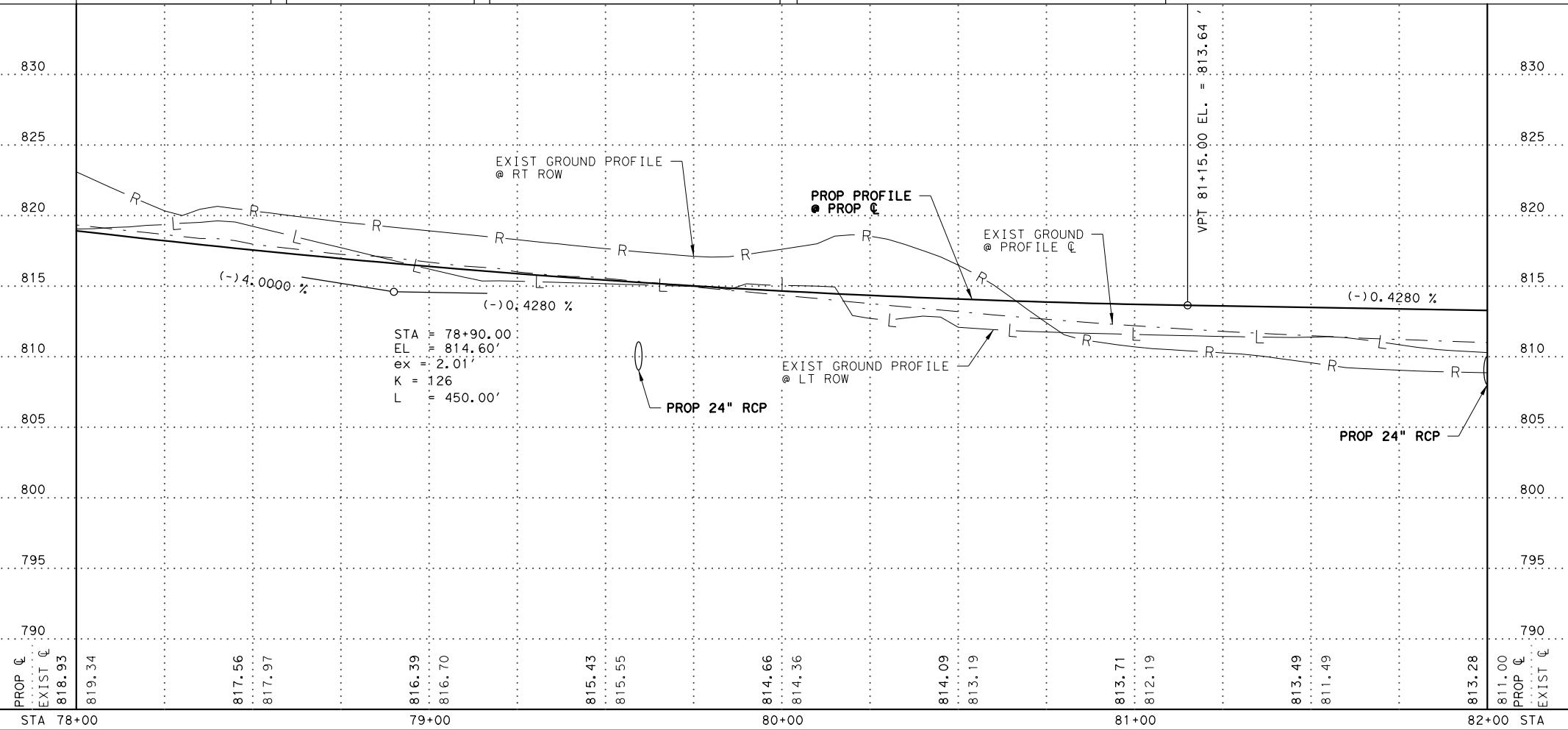
HORIZ. SCALE: 1"=40'		VERT. SCALE: 1"=10'	
0 20 40		0 5 10	
SCALE IN FEET		SCALE IN FEET	
100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 9/29/2025	
DRWN. BY: AWJ	DSGN. BY: BJS	CHKD. BY: BJS	SHEET NO.: 121

Plotted by: bspina
9/29/2025
\\SAS\Storage\Share\Projects\CO5A\210196-Bulverde Road Phase II\000\20-Drawings\Plans\Civil\210196-RDWY03.dgn



ITEM NO.	DESCRIPTION	UNIT	QUANT
103.3	REMOVE SIDEWALKS & DRIVEWAYS	SF	675
104.1	STREET EXCAVATION	CY	1,260
107.1	EMBANKMENT (FINAL) (DES. CONT) (TY B)	CY	700
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,733
108.2	LIME	TON	34
203.1	TACK COAT	GAL	273
240.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	2,489
240.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,733
240.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	2,489
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	515
502.1	CONCRETE SIDEWALKS (6" THICK)	SY	175
503.1	PORTLAND CEMENT CONCRETE DRIVEWAY	SY	90
506.1	CONCRETE RETAINING WALLS- COMB. TYPE	CY	35
508.1	RELOCATE WIRE FENCE	LF	400
513.1	REMOVING AND RELOCATING MAIL BOXES	EA	1
515.1	TOPSOIL (4")	CY	100
516.1	BUFFALO SODDING	SY	885
520.1	HYDROMULCH (RES/COMM) (NATIVE SEED)	SY	240
522.1	SIDEWALK PIPE RAILING (GALVANIZED)	LF	60
540.7	TEMPORARY CONSTRUCTION FENCE	LF	85
529-6017	CONCRETE CURB (TY F2)	LF	60

- TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.
- ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.
- SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW
- ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

--- EXIST ROW LINE

--- WW --- WASTE WATER

--- W --- WATER

--- G --- BURIED GAS

--- OT --- OH TEL

--- UT --- BURIED TEL

--- OE --- OH ELEC

--- OE/OT --- OH ELEC/OH TEL

○ CLEAN OUT

⊙ FIRE HYDRANT

⊙ WATER METER

⊙ WATER VALVE

⊙ TELE PEDESTAL

⊙ LIGHT POLE

● POWER POLE

⊙ GUY WIRE

⊙ SIGN

⊙ MAIL BOX

⊙ EXIST MANHOLE

⊙ EXIST SHRUB

⊙ EXIST TREE

--- PROP ROW LINE

▨ RES CONC DRIVEWAY

▨ COMM CONC DRIVEWAY

▨ GRAVEL DRIVEWAY

▨ ASPHALT DRIVEWAY

▨ CONC SIDEWALK

▨ MATCH EXIST PAVEMENT

▨ WASHOUT CROWN

⊙ DRIVEWAY NO.

⊙ PROP MAILBOX

→ DIRECTION OF FLOW

-x-x- REMOVE & RELOCATE FENCE

STATE OF TEXAS

BRYAN J. SPINA

103776

PROFESSIONAL ENGINEER

9/23/2025

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Phone: (210) 822-2232
www.Ardurra.com

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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD
BASE BID PLAN AND PROFILE
STA 78+00 TO STA 82+00
SHEET 3 OF 7

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

VERT. SCALE: 1"=10'

0 5 10

SCALE IN FEET

100% SUBMITTAL

PROJECT NO.: 23-03867

DATE: 9/29/2025

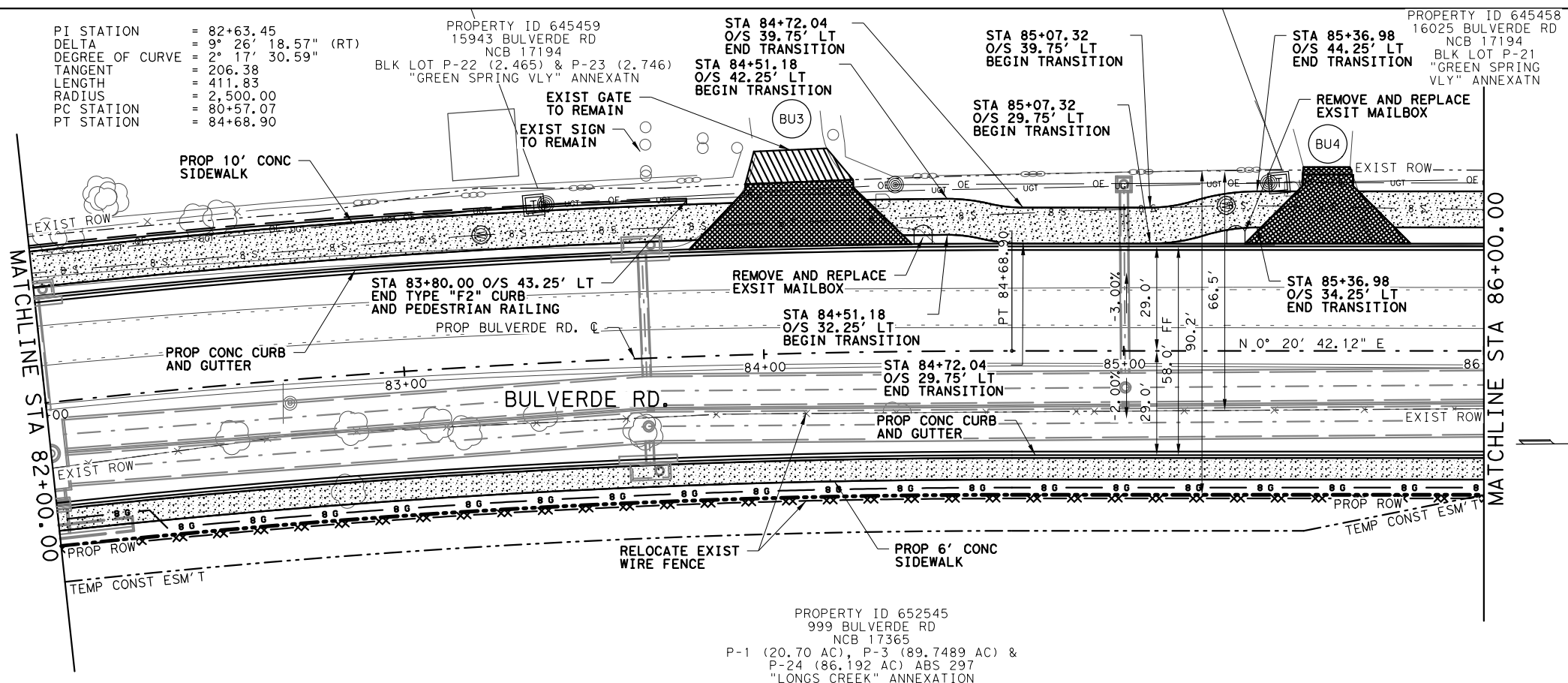
DRWN. BY: AWJ

DSGN. BY: BJS

CHKD. BY: BJS

SHEET NO.: 122

Plotted by: bspina
9/29/2025
\\SAS\ORACLE\share\Projects\CO5A\210196-Bulverde Road Phase II\000\20-Drawing\Plans\Civil\210196-RDWY04.dgn



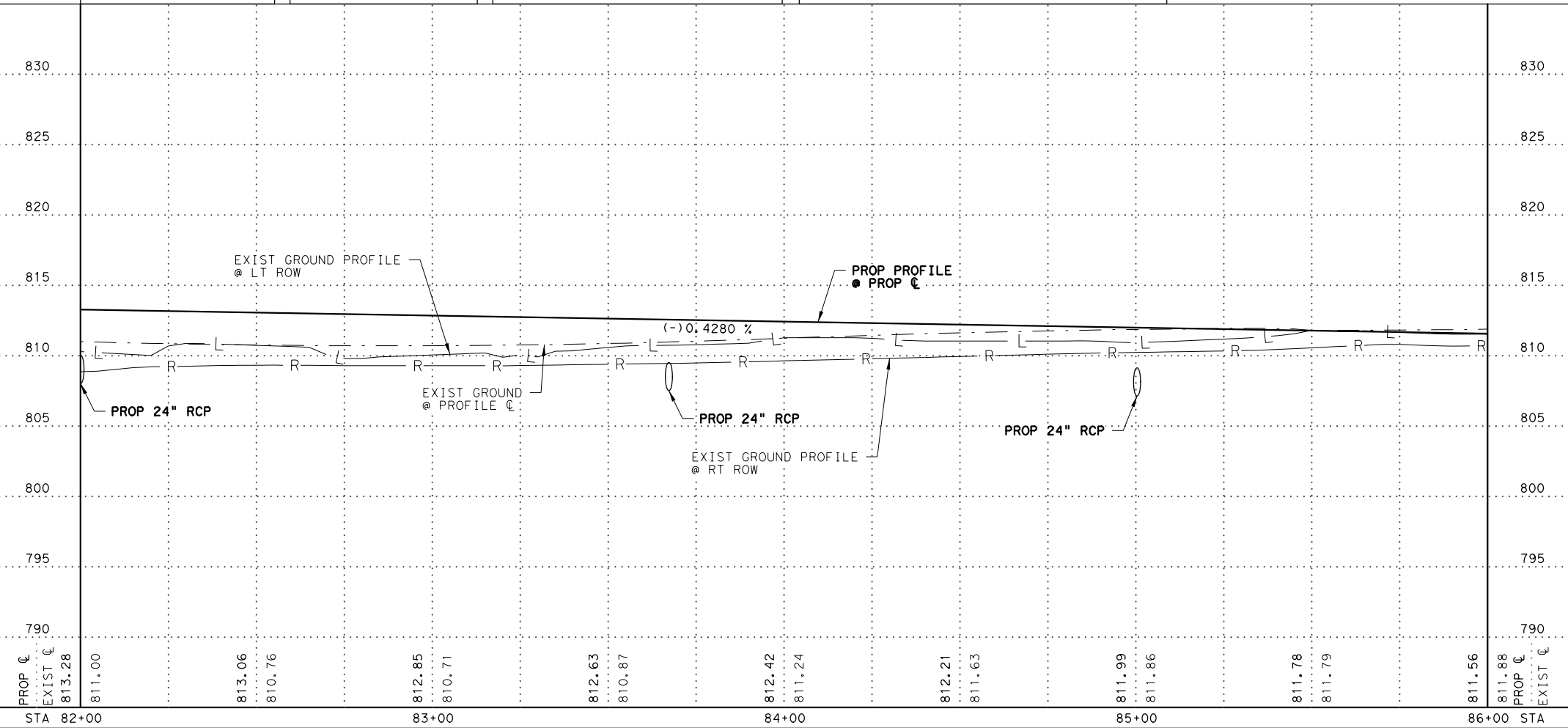
ITEM NO.	DESCRIPTION	UNIT	QUANT
103.3	REMOVE SIDEWALKS & DRIVEWAYS	SF	1,250
104.1	STREET EXCAVATION	CY	460
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	1,220
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,733
108.2	LIME	TON	34
203.1	TACK COAT	GAL	273
240.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	2,489
240.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,733
240.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	2,489
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	650
503.2	PORTLAND CEMENT CONC DRIVEWAY COMMERCIAL	SY	155
503.4	ASPHALTIC CONCRETE DRIVEWAY	SY	25
508.1	RELOCATE WIRE FENCE	LF	400
513.1	REMOVING AND RELOCATING MAIL BOXES	EA	2
515.1	TOPSOIL (4")	CY	65
516.1	BUFFALO SODDING	SY	550
520.1	HYDROMULCH (RES/COMM) (NATIVE SEED)	SY	370
522.1	SIDEWALK PIPE RAILING (GALVANIZED)	LF	180
540.7	TEMPORARY CONSTRUCTION FENCE	LF	400
529-6017	CONCRETE CURB (TY F2)	LF	200

TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.

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SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

- EXIST ROW LINE
- WW --- WASTE WATER
- W --- WATER
- G --- BURIED GAS
- OT --- OH TEL
- UT --- BURIED TEL
- OE --- OH ELEC
- OE/OT --- OH ELEC/OH TEL
- CLEAN OUT
- ⊙ FIRE HYDRANT
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ TELE PEDESTAL
- ⊙ LIGHT POLE
- POWER POLE
- ⊙ GUY WIRE
- ⊙ SIGN
- ⊙ MAIL BOX
- ⊙ EXIST MANHOLE
- ⊙ EXIST SHRUB
- ⊙ EXIST TREE
- PROP ROW LINE
- ▨ RES CONC DRIVEWAY
- ▨ COMM CONC DRIVEWAY
- ▨ GRAVEL DRIVEWAY
- ▨ ASPHALT DRIVEWAY
- ▨ CONC SIDEWALK
- ▨ MATCH EXIST PAVEMENT
- ▨ WASHOUT CROWN
- ⊙ DRIVEWAY NO.
- ⊙ PROP MAILBOX
- DIRECTION OF FLOW
- x-x- REMOVE & RELOCATE FENCE

STATE OF TEXAS

BRYAN J. SPINA

103776

PROFESSIONAL ENGINEER

9/23/2025

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Surveying Firm 10126502

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)

BULVERDE RD

BASE BID PLAN AND PROFILE

STA 82+00 TO STA 86+00

SHEET 4 OF 7

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

VERT. SCALE: 1"=10'

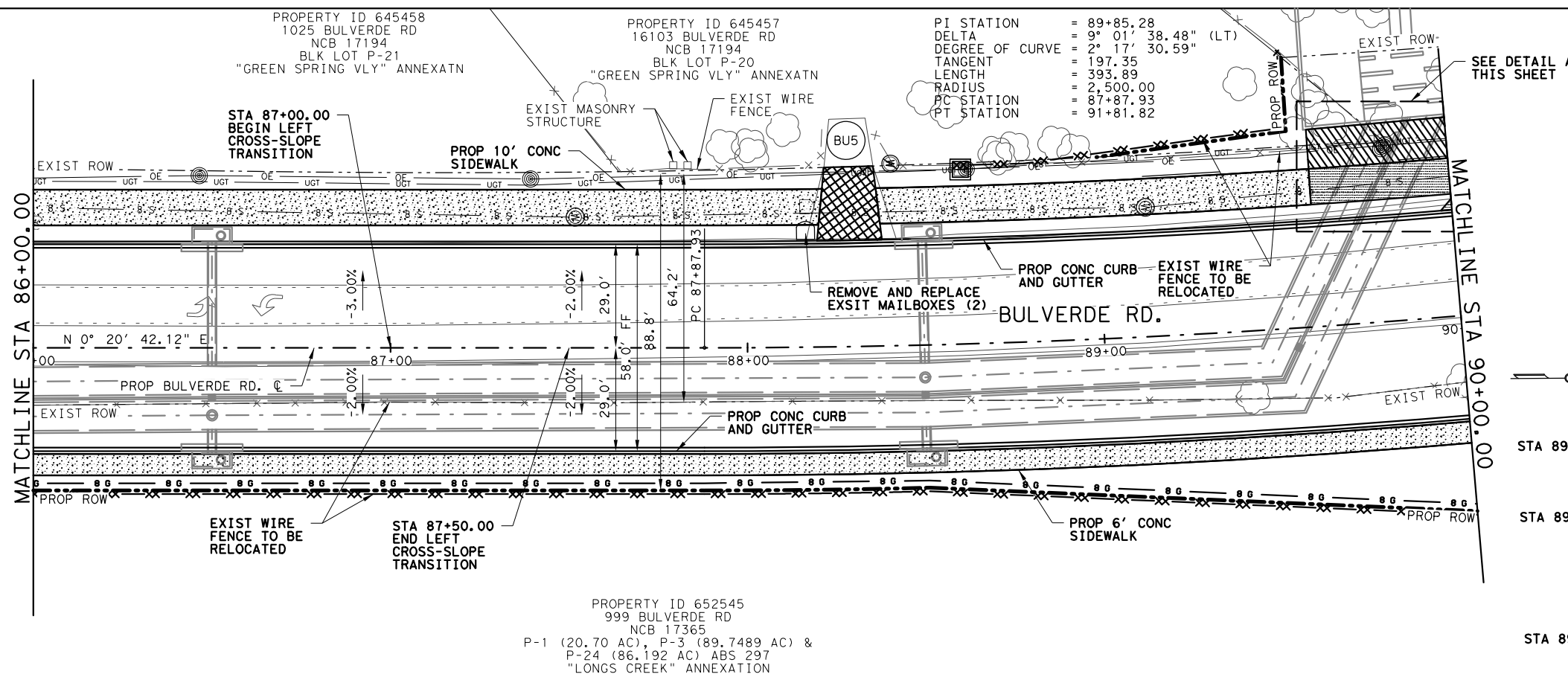
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SCALE IN FEET

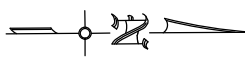
100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025

DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 123

Plotted by: bspina
9/29/2025
\\SASTORAGELshare\Projects\COSA\210196-Bulverde Road Phase II\000A\20-Drawing\Plans\Civil\210196-RDW05.dgn



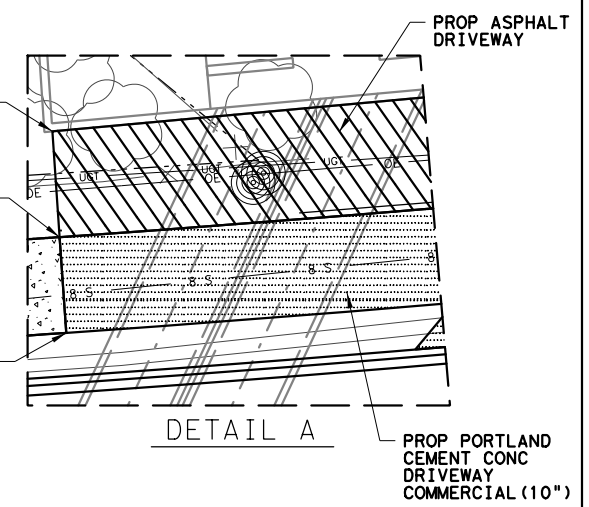
ITEM NO.	DESCRIPTION	UNIT	QUANT
103.3	REMOVE SIDEWALKS & DRIVEWAYS	SF	400
104.1	STREET EXCAVATION	CY	1,270
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	300
108.1	LIME TREATED SUBGRADE (6\" COMPACTED DEPTH)	SY	2,733
108.2	LIME	TON	34
203.1	TACK COAT	GAL	273
240.2	WMA PAVEMENT TYPE B (3.5\" COMP. DEPTH)	SY	2,489
240.2	WMA PAVEMENT TYPE B (7.0\" COMP. DEPTH)	SY	2,733
240.3	WMA PAVEMENT TYPE C (2.0\" COMP. DEPTH)	SY	2,489
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	695
503.1	PORTLAND CEMENT CONCRETE DRIVEWAY	SY	40
503.2	PORTLAND CEMENT CONC DRIVEWAY COMMERCIAL	SY	
503.2	PORTLAND CEMENT CONC DRIVEWAY COMMERCIAL (10\")	SY	
503.4	ASPHALTIC CONCRETE DRIVEWAY	SY	
506.1	CONCRETE RETAINING WALLS- COMB. TYPE	CY	
508.1	RELOCATE WIRE FENCE	LF	560
513.1	REMOVING AND RELOCATING MAIL BOXES	EA	2
515.1	TOPSOIL (4\")	CY	100
516.1	BUFFALO SODDING	SY	875



STA 89+60.25, O/S 55.29' LT

STA 89+60.25, O/S 44.25' LT

STA 89+60.25, O/S 34.25' LT

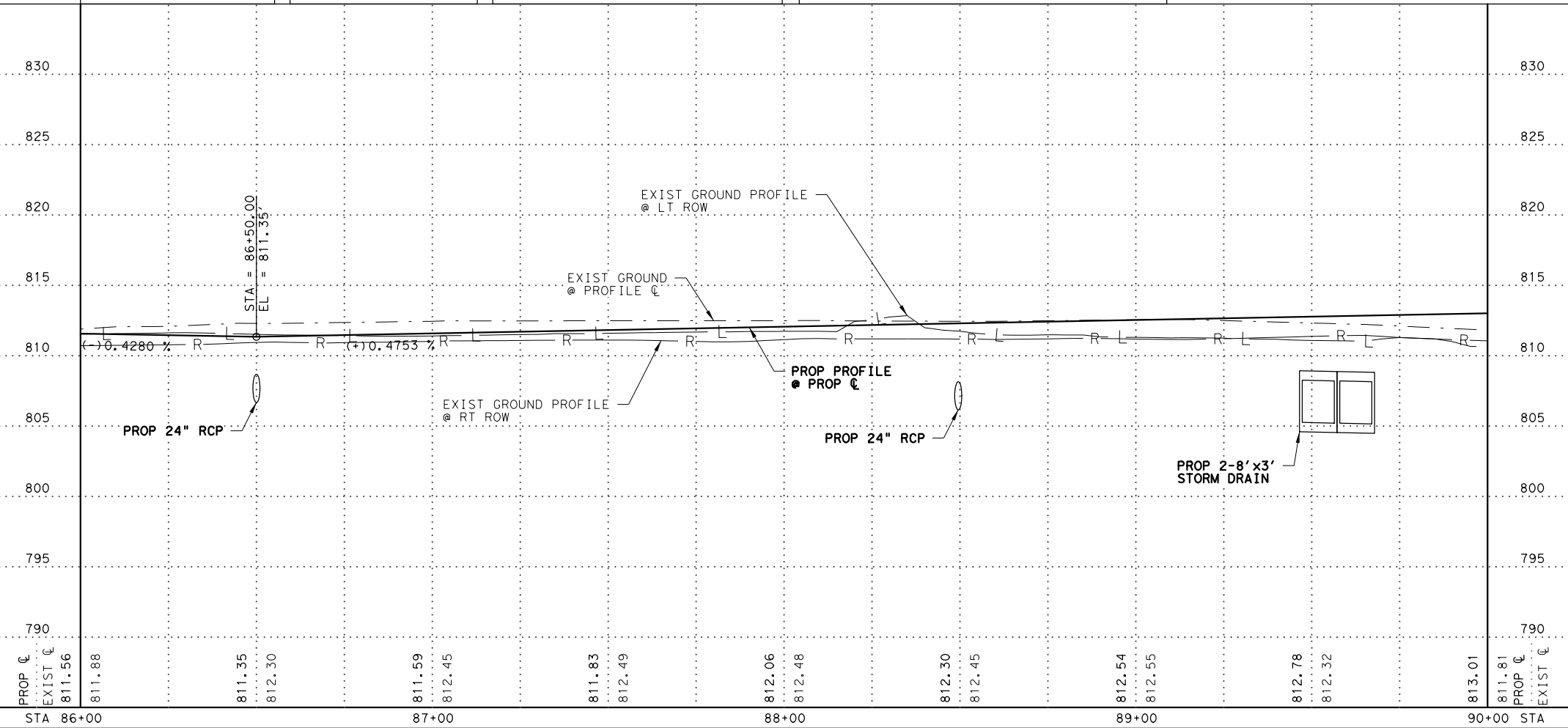


TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.

ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.

SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW

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LEGEND	
---	EXIST ROW LINE
WW	WASTE WATER
W	WATER
G	BURIED GAS
OT	OH TEL
UT	BURIED TEL
OE	OH ELEC
OE/OT	OH ELEC/OH TEL
O	CLEAN OUT
⊙	FIRE HYDRANT
⊙	WATER METER
⊙	WATER VALVE
⊙	TELE PEDESTAL
⊙	LIGHT POLE
⊙	POWER POLE
⊙	GUY WIRE
⊙	SIGN
⊙	MAIL BOX
⊙	EXIST MANHOLE
⊙	EXIST SHRUB
⊙	EXIST TREE
---	PROP ROW LINE
▨	RES CONC DRIVEWAY
▨	COMM CONC DRIVEWAY
▨	GRAVEL DRIVEWAY
▨	ASPHALT DRIVEWAY
▨	CONC SIDEWALK
▨	MATCH EXIST PAVEMENT
▨	WASHOUT CROWN
⊙	DRIVEWAY NO.
⊙	PROP MAILBOX
→	DIRECTION OF FLOW
-x-x-	REMOVE & RELOCATE FENCE

STATE OF TEXAS
BRYAN J. SPINA
103776
LICENSED PROFESSIONAL ENGINEER
9/23/2025

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Surveying Firm 10126502

PUBLIC WORKS DEPARTMENT

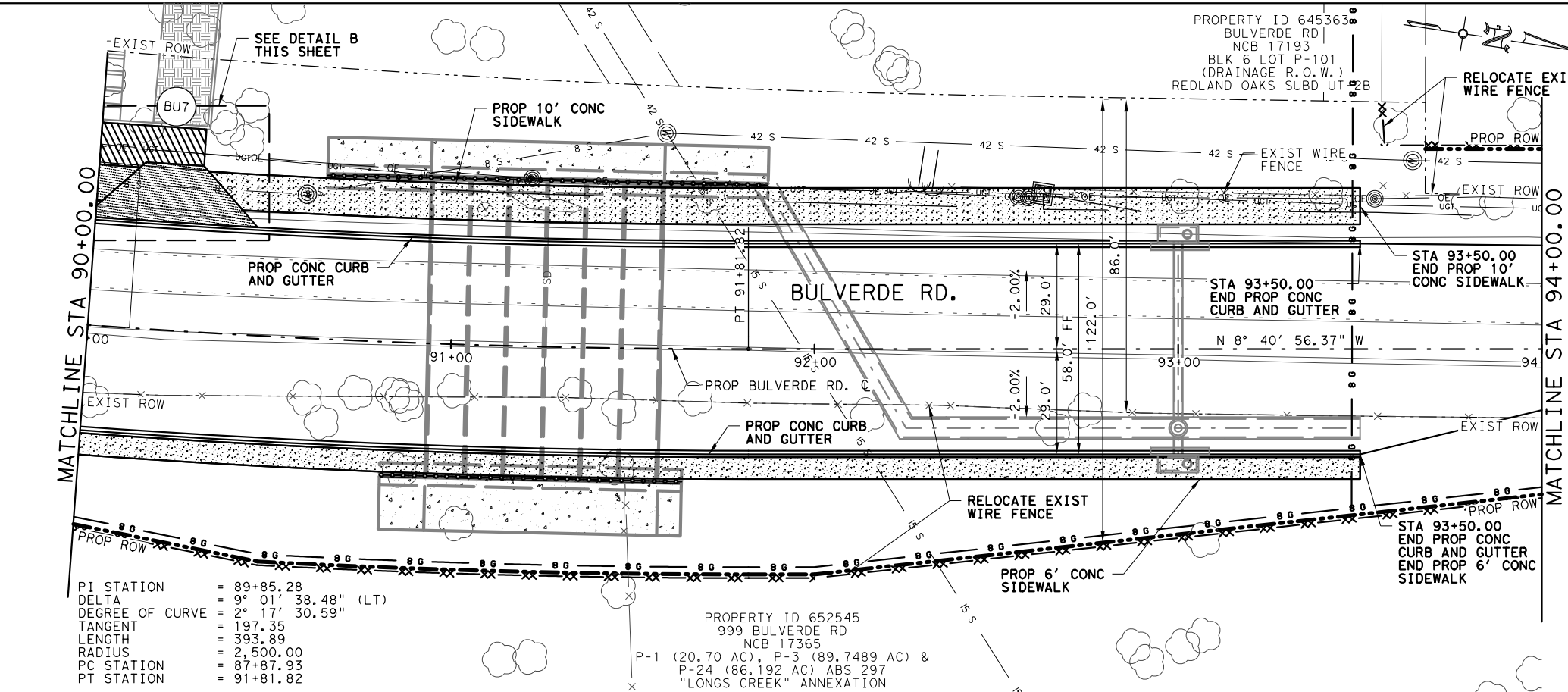
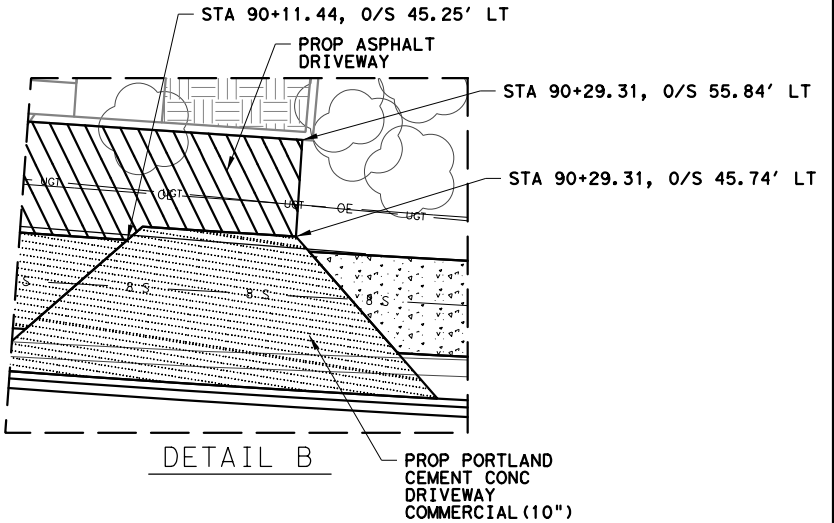
BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD
BASE BID PLAN AND PROFILE
STA 86+00 TO STA 90+00
SHEET 5 OF 7

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025
DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 124

ITEM NO.	DESCRIPTION	UNIT	QUANT
104.1	STREET EXCAVATION	CY	370
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	3,250
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,392
108.2	LIME	TON	30
203.1	TACK COAT	GAL	239
240.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	2,467
240.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,703
240.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	2,467
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	595
503.2	PORTLAND CEMENT CONC DRIVEWAY COMMERCIAL (10")	SY	125
503.4	ASPHALTIC CONCRETE DRIVEWAY	SY	100
508.1	RELOCATE WIRE FENCE	LF	465
515.1	TOPSOIL (4")	CY	230
516.1	BUFFALO SODDING	SY	2,090



PI STATION = 89+85.28
DELTA = 9° 01' 38.48" (LT)
DEGREE OF CURVE = 2° 17' 30.59"
TANGENT = 197.35
LENGTH = 393.89
RADIUS = 2,500.00
PC STATION = 87+87.93
PT STATION = 91+81.82

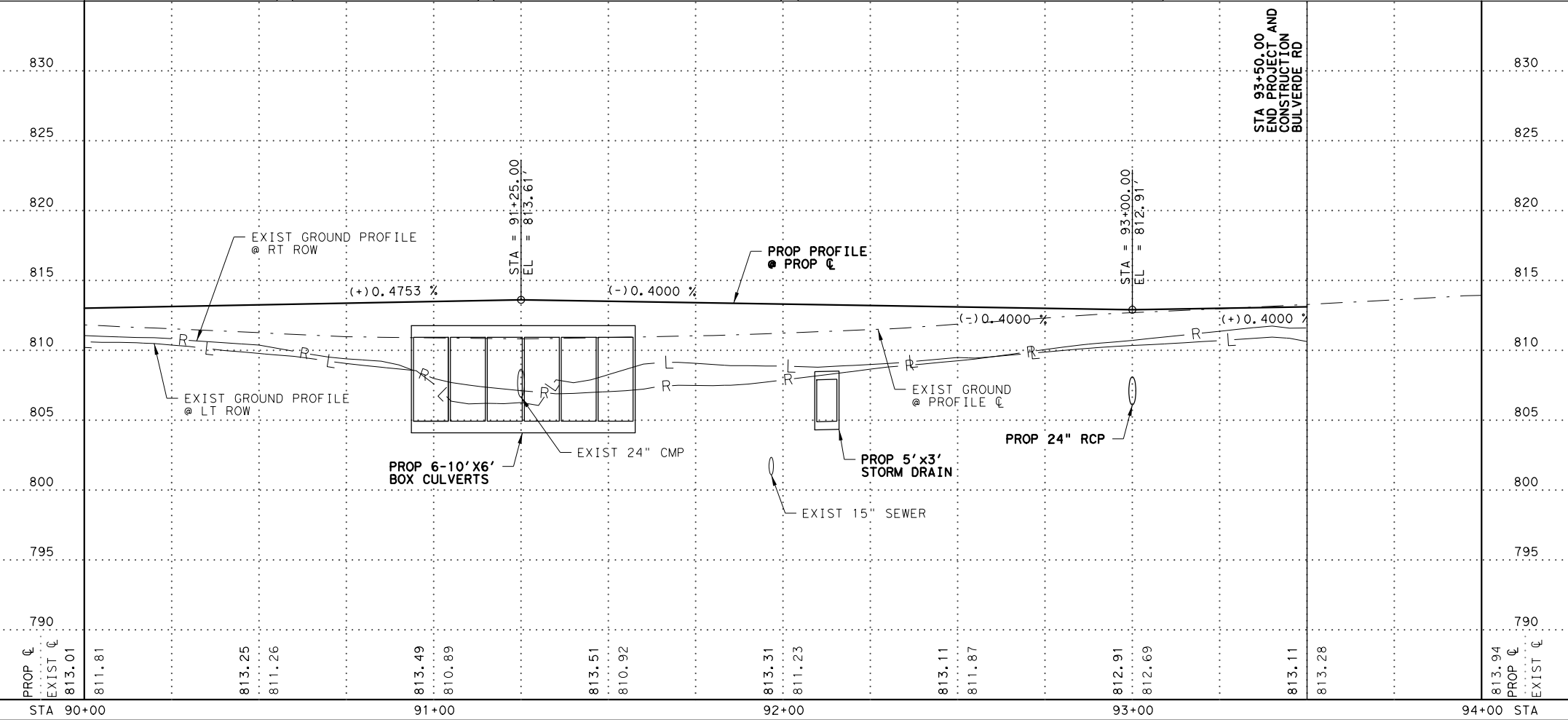
PROPERTY ID 652545
999 BULVERDE RD
NCB 17365
P-1 (20.70 AC), P-3 (89.7489 AC) &
P-24 (86.192 AC) ABS 297
"LONGS CREEK" ANNEXATION

TREE AND SHRUB REMOVAL
SHALL BE SUBSIDIARY TO
ITEM 810: TREE REMOVAL.

ANY TREE/VEGETATION
REMOVAL MUST BE FIELD
VERIFIED BY THE
INSPECTOR OR ENGINEER
PRIOR TO REMOVAL.

SEE SHEET 163 FOR DRIVEWAY
SUMMARY SHEET FOR REQUIRED
PENETRATION BEYOND THE ROW

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BASED ON THE BEST AVAILABLE DATA. HOWEVER
THE CONTRACTOR SHALL FIELD VERIFY THE
EXACT LOCATION OF EACH UTILITY PRIOR TO
CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

- EXIST ROW LINE
- WW --- WASTE WATER
- W --- WATER
- G --- BURIED GAS
- OT --- OH TEL
- UT --- BURIED TEL
- OE --- OH ELEC
- OE/OT --- OH ELEC/OH TEL
- CLEAN OUT
- ⊙ FIRE HYDRANT
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ TELE PEDESTAL
- ⊙ LIGHT POLE
- POWER POLE
- ⊙ GUY WIRE
- ⊙ SIGN
- ⊙ MAIL BOX
- ⊙ EXIST MANHOLE
- ⊙ EXIST SHRUB
- ⊙ EXIST TREE
- PROP ROW LINE
- ▨ RES CONC DRIVEWAY
- ▨ COMM CONC DRIVEWAY
- ▨ GRAVEL DRIVEWAY
- ▨ ASPHALT DRIVEWAY
- ▨ CONC SIDEWALK
- ▨ MATCH EXIST PAVEMENT
- ▨ WASHOUT CROWN
- ⊙ DRIVEWAY NO.
- ⊙ PROP MAILBOX
- DIRECTION OF FLOW
- x-x- REMOVE & RELOCATE FENCE

9/23/2025

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Surveying Firm 10126502

**PUBLIC WORKS
DEPARTMENT**

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD
BASE BID PLAN AND PROFILE
STA 90+00 TO STA 94+00
SHEET 6 OF 7

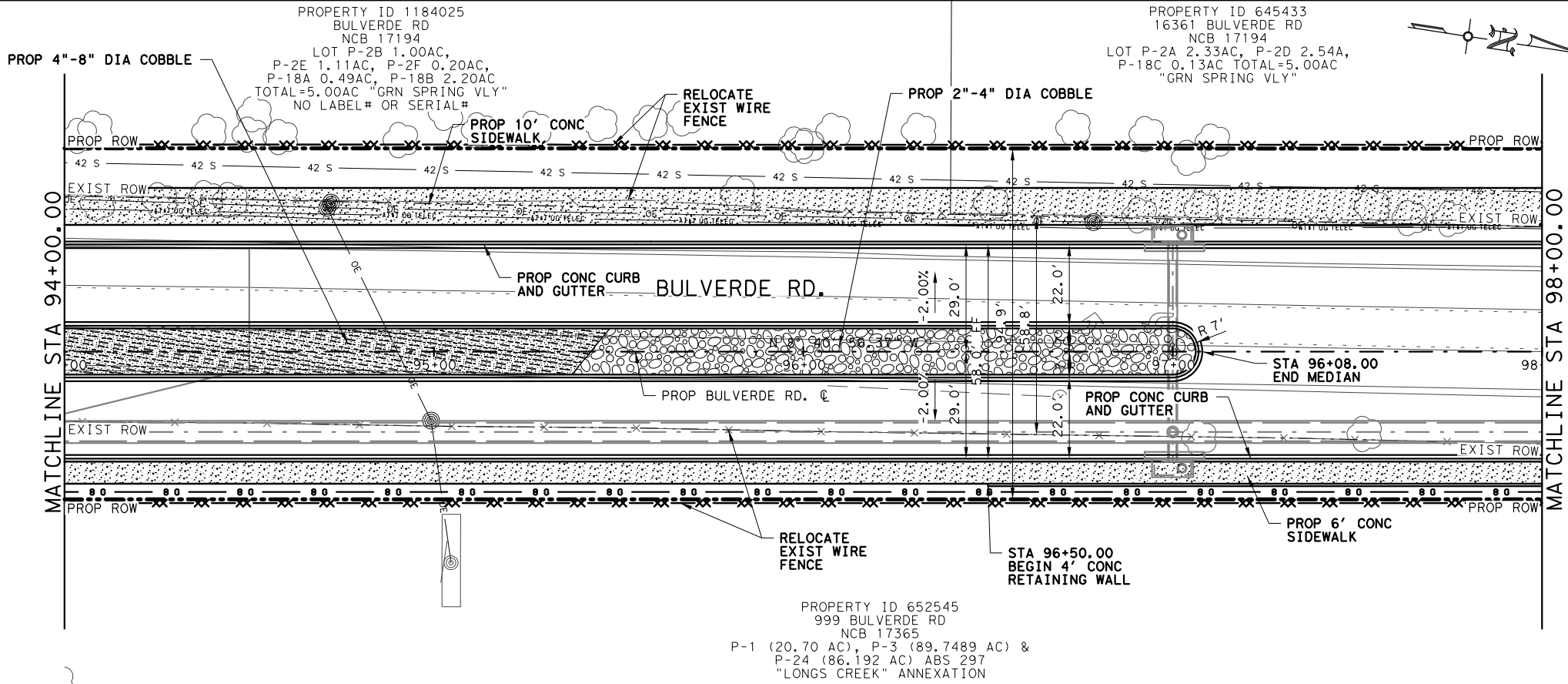
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

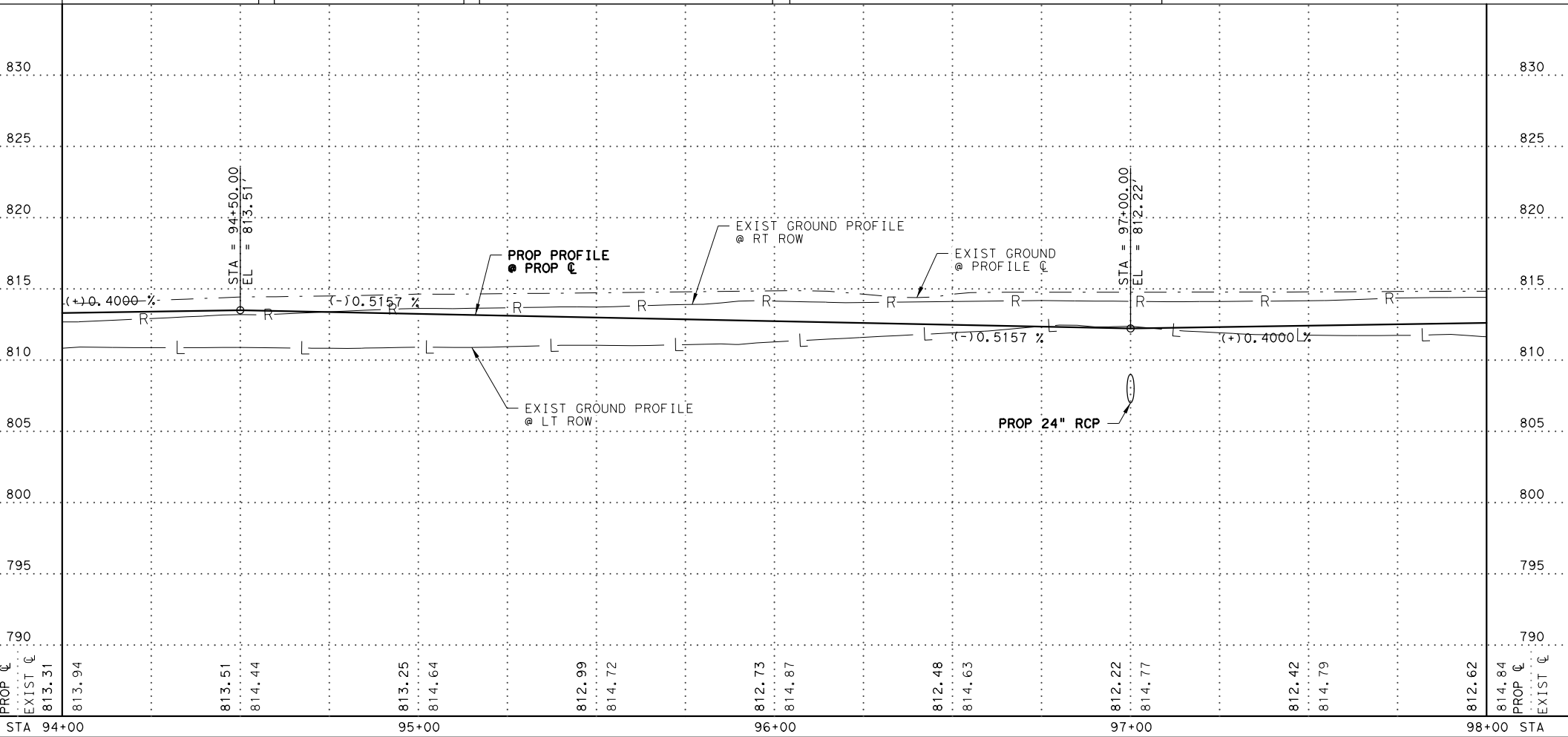
100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025
DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 125

Plotted by: bspina
9/29/2025
\\SASTORAGELshare\Projects\COS\210196-Bulverde Road Phase II\000A\20-Drawings\Plans\Civil\210196-RDWY06.dgn

Plotted by: bspina
9/29/2025
S:\Projects\055A\210196 Bulverde Road Phase II\000\20-Drawings\Plans\Civil\210196-RDWY07-A1.dwg



- TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.
- ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.
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LEGEND

--- EXIST ROW LINE

--- WW --- WASTE WATER

--- W --- WATER

--- G --- BURIED GAS

--- OT --- OH TEL

--- UT --- BURIED TEL

--- OE --- OH ELEC

--- OE/OT --- OH ELEC/OH TEL

○ CLEAN OUT

⊙ FIRE HYDRANT

⊙ WATER METER

⊙ WATER VALVE

⊙ TELE PEDESTAL

⊙ LIGHT POLE

● POWER POLE

⊙ GUY WIRE

⊙ SIGN

⊙ MAIL BOX

⊙ EXIST MANHOLE

⊙ EXIST SHRUB

⊙ EXIST TREE

--- PROP ROW LINE

▨ RES CONC DRIVEWAY

▨ COMM CONC DRIVEWAY

▨ GRAVEL DRIVEWAY

▨ ASPHALT DRIVEWAY

▨ CONC SIDEWALK

▨ MATCH EXIST PAVEMENT

▨ WASHOUT CROWN

⊙ DRIVEWAY NO.

⊙ PROP MAILBOX

→ DIRECTION OF FLOW

-x-x- REMOVE & RELOCATE FENCE

ITEM NO.	DESCRIPTION	UNIT	QUANT
104.1	STREET EXCAVATION	CY	1,960
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	260
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,733
108.2	LIME	TON	34
203.1	TACK COAT	GAL	273
240.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	2,489
240.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,733
240.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	2,489
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	615
502.1	CONCRETE SIDEWALKS (6" THICK)	SY	100
506.1	CONCRETE RETAINING WALLS- COMB. TYPE	CY	25
508.1	RELOCATING WIRE FENCE	LF	800
515.1	TOPSOIL (4")	CY	101
516.1	BUFFALO SODDING	SY	920
520.1	HYDROMULCH (RES/COMM) (NATIVE SEED)	SY	60
9004	2"-4" DIA COBBLE "HIGH PLAINS" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	40
9004	4"-8" DIA COBBLE "TAHOE" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	35

STATE OF TEXAS

BRYAN J. SPINA

103776

PROFESSIONAL ENGINEER

9/23/2025

ARDURRA

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www.Ardurra.com

Engineering License #F-10053

Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD
ADD ALT #1 PLAN AND PROFILE
STA 94+00 TO STA 98+00
SHEET 2 OF 3

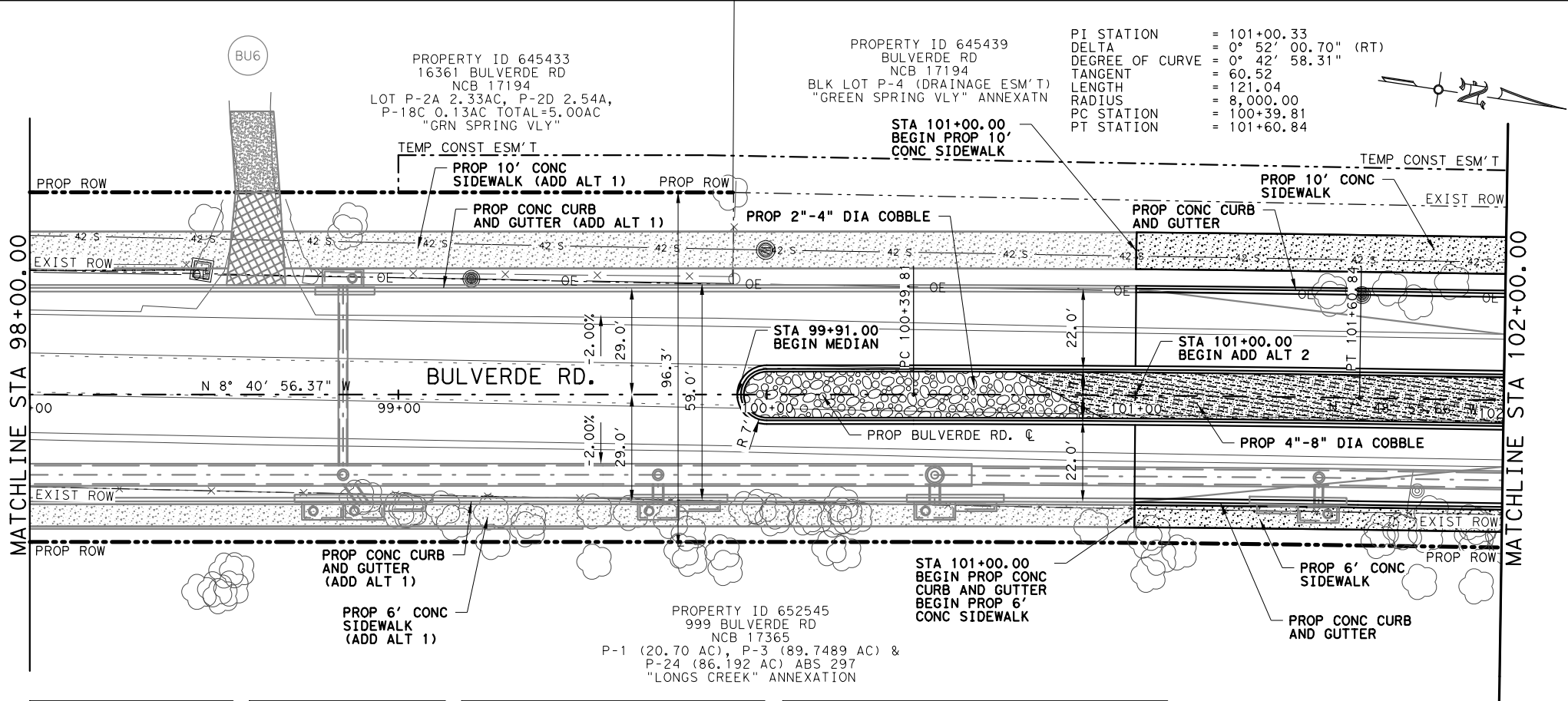
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025

DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 128

Plotted by: bspina
9/29/2025
S:\Projects\0505A\210196 Bulverde Road Phase 1\000\20-Drawings\Plans\Civil\210196_RDWY08_A2.dwg



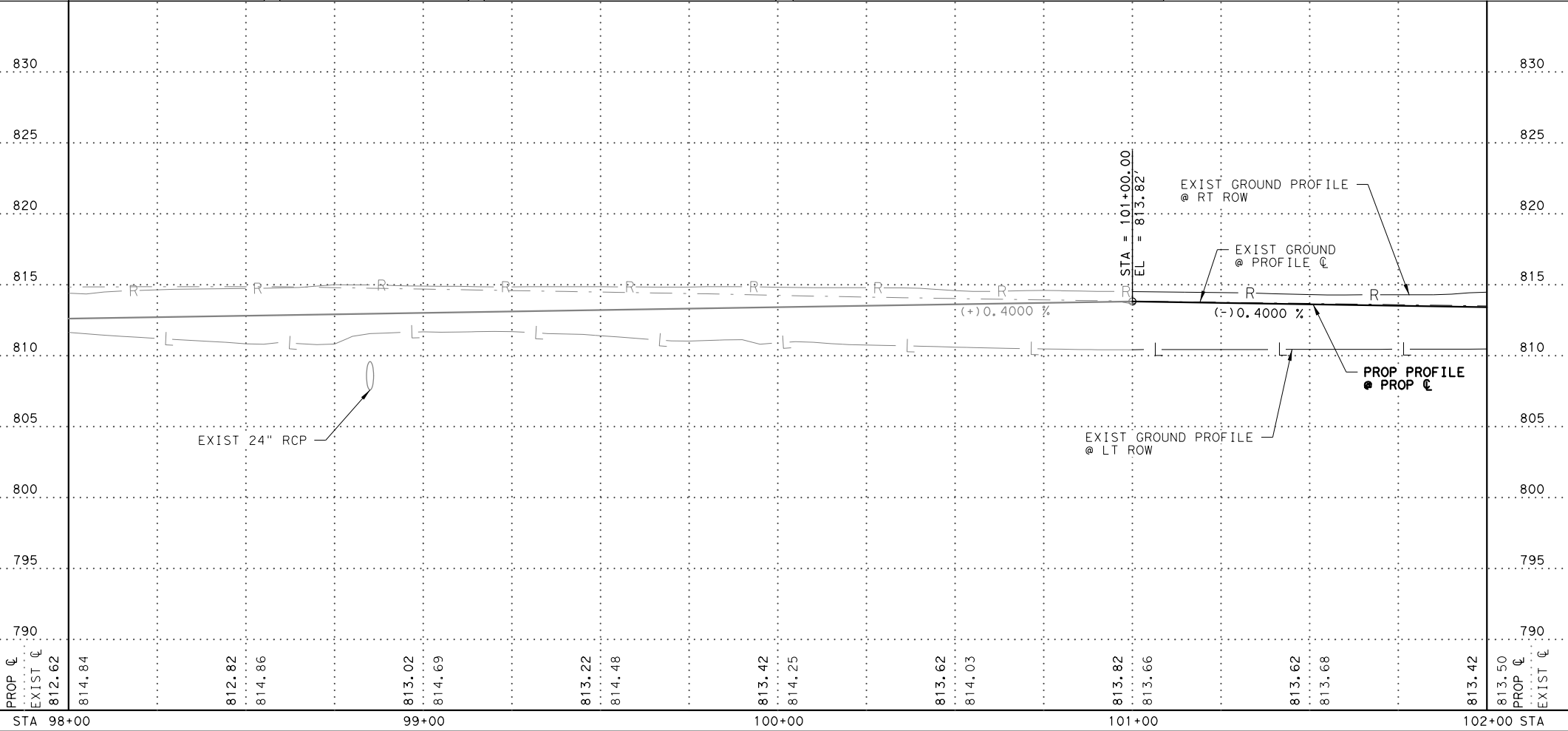
ITEM NO.	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION	CY	190
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	260
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	683
108.2	LIME	TON	9
203.1	TACK COAT	GAL	62
205.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	622
205.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	683
205.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	622
500.4	CONCRETE CURB & GUTTER	LF	200
502.1	CONCRETE SIDEWALKS	SY	180
508.1	RELOCATING WIRE FENCE	LF	100
515.1	TOPSOIL (4")	CY	21
516.1	BUFFALO SODDING	SY	192
540.7	TEMPORARY CONSTRUCTION FENCE	LF	100
9004	2"-4" DIA COBBLE "HIGH PLAINS" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	20
9004	4"-8" DIA COBBLE "TAHOE" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	30

TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.

ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.

SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

- EXIST ROW LINE
- WW --- WASTE WATER
- W --- WATER
- G --- BURIED GAS
- OT --- OH TEL
- UT --- BURIED TEL
- OE --- OH ELEC
- OE/OT --- OH ELEC/OH TEL
- CLEAN OUT
- ⊙ FIRE HYDRANT
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ TELE PEDESTAL
- ⊙ LIGHT POLE
- POWER POLE
- ⊙ GUY WIRE
- ⊙ SIGN
- ⊙ MAIL BOX
- ⊙ EXIST MANHOLE
- ⊙ EXIST SHRUB
- ⊙ EXIST TREE
- PROP ROW LINE
- ▨ RES CONC DRIVEWAY
- ▨ COMM CONC DRIVEWAY
- ▨ GRAVEL DRIVEWAY
- ▨ ASPHALT DRIVEWAY
- ▨ CONC SIDEWALK
- ▨ MATCH EXIST PAVEMENT
- ▨ WASHOUT CROWN
- ⊙ DRIVEWAY NO.
- ⊙ PROP MAILBOX
- DIRECTION OF FLOW
- x-x- REMOVE & RELOCATE FENCE

STATE OF TEXAS

BRYAN J. SPINA

103776

PROFESSIONAL ENGINEER

9/23/2025

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Surveying Firm 10126502

PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)

BULVERDE RD

ADD ALT #2 PLAN AND PROFILE

STA 98+00 TO STA 102+00

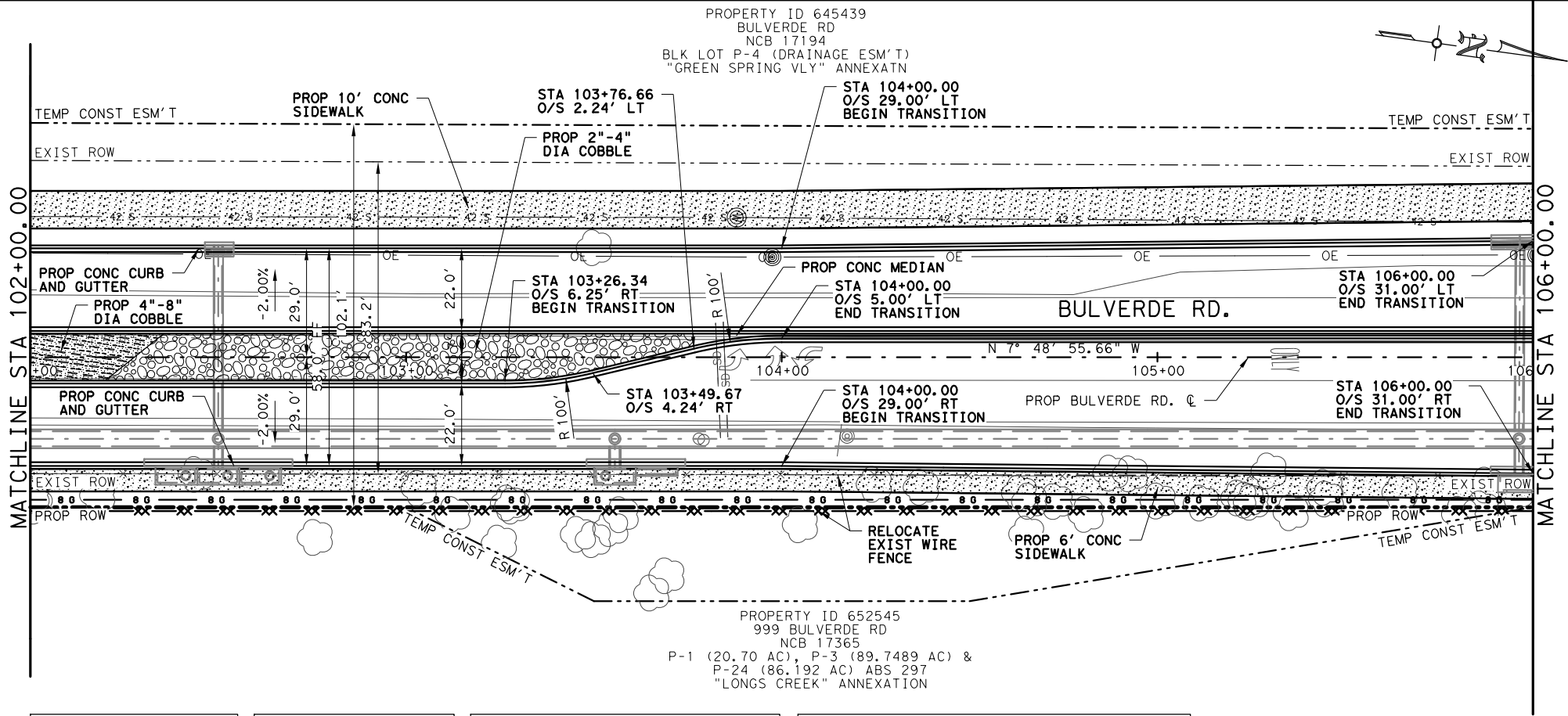
SHEET 1 OF 3

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025
DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 130

Plotted by: bspina
9/29/2025
S:\Projects\1005A\210196 Bulverde Road Phase II\000-20-Drawings\Plans\Civil\210196_RDWY09_A2.dwg



TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.

ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.

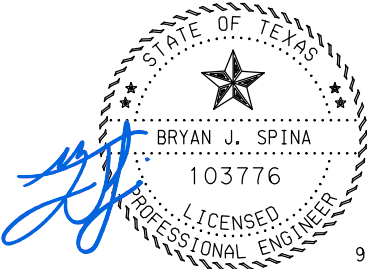
SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.

ITEM NO.	DESCRIPTION	UNIT	QUANT
104.1	STREET EXCAVATION	CY	280
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	1,060
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,733
108.2	LIME	TON	34
203.1	TACK COAT	GAL	249
205.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	2,489
205.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,733
205.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	2,489
500.4	CONCRETE CURB & GUTTER	LF	800
502.1	CONCRETE SIDEWALKS	SY	715
504.1	CONCRETE MEDIAN	SY	15
508.1	RELOCATING WIRE FENCE	LF	400
515.1	TOPSOIL (4")	CY	80
516.1	BUFFALO SODDING	SY	724
540.7	TEMPORARY CONSTRUCTION FENCE	LF	710
9004	2"-4" DIA COBBLE "HIGH PLAINS" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	30
9004	4"-8" DIA COBBLE "TAHOE" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	10

LEGEND

- EXIST ROW LINE
- WW --- WASTE WATER
- W --- WATER
- G --- BURIED GAS
- OT --- OH TEL
- UT --- BURIED TEL
- OE --- OH ELEC
- OE/OT --- OH ELEC/OH TEL
- CLEAN OUT
- ⊙ FIRE HYDRANT
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- ⊙ GUY WIRE
- ⊙ SIGN
- ⊙ MAIL BOX
- ⊙ EXIST MANHOLE
- ⊙ EXIST SHRUB
- ⊙ EXIST TREE
- PROP ROW LINE
- ▨ RES CONC DRIVEWAY
- ▨ COMM CONC DRIVEWAY
- ▨ GRAVEL DRIVEWAY
- ▨ ASPHALT DRIVEWAY
- ▨ CONC SIDEWALK
- ▨ MATCH EXIST PAVEMENT
- ▨ WASHOUT CROWN
- DRIVEWAY NO.
- ⊙ PROP MAILBOX
- DIRECTION OF FLOW
- x-x- REMOVE & RELOCATE FENCE



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Surveying Firm 10126502

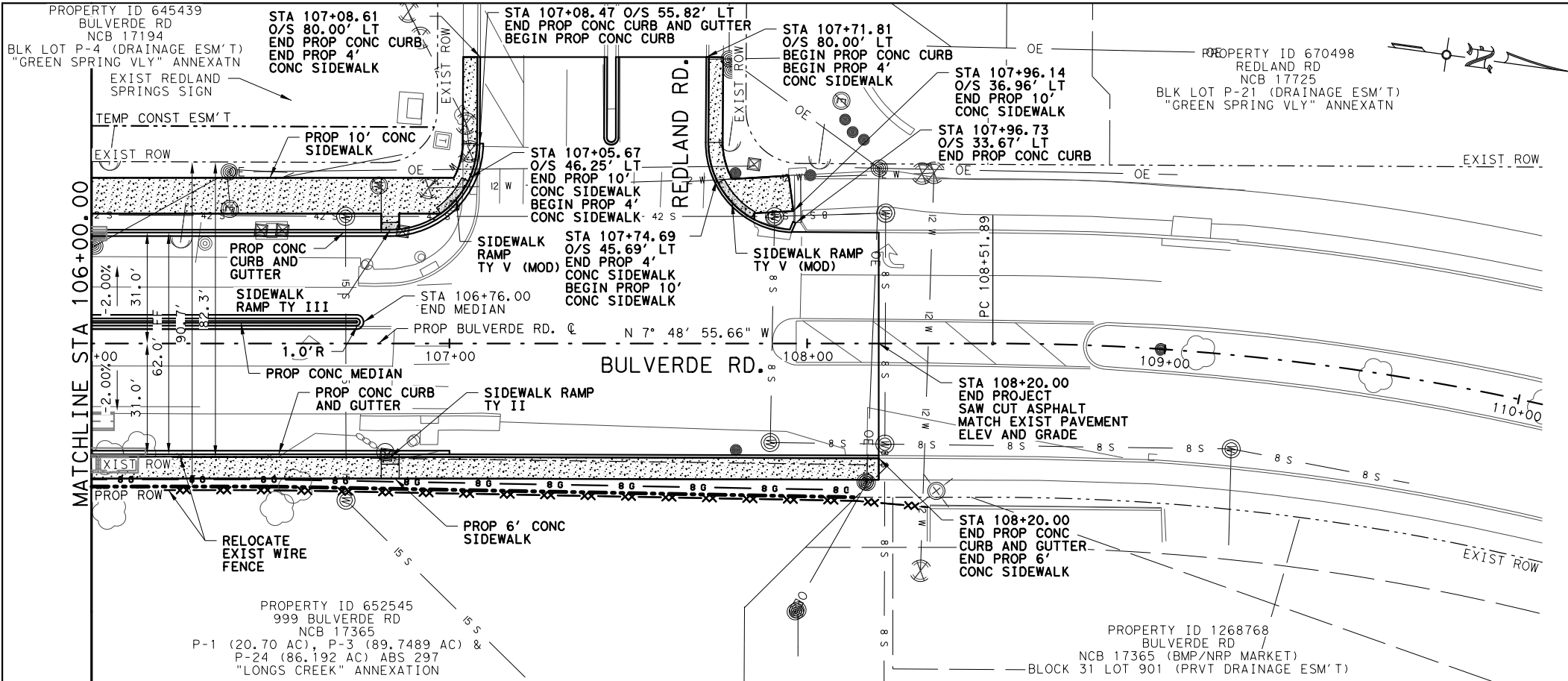
**PUBLIC WORKS
DEPARTMENT**

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD
ADD ALT #2 PLAN AND PROFILE
STA 102+00 TO STA 106+00
SHEET 2 OF 3

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025
DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 131



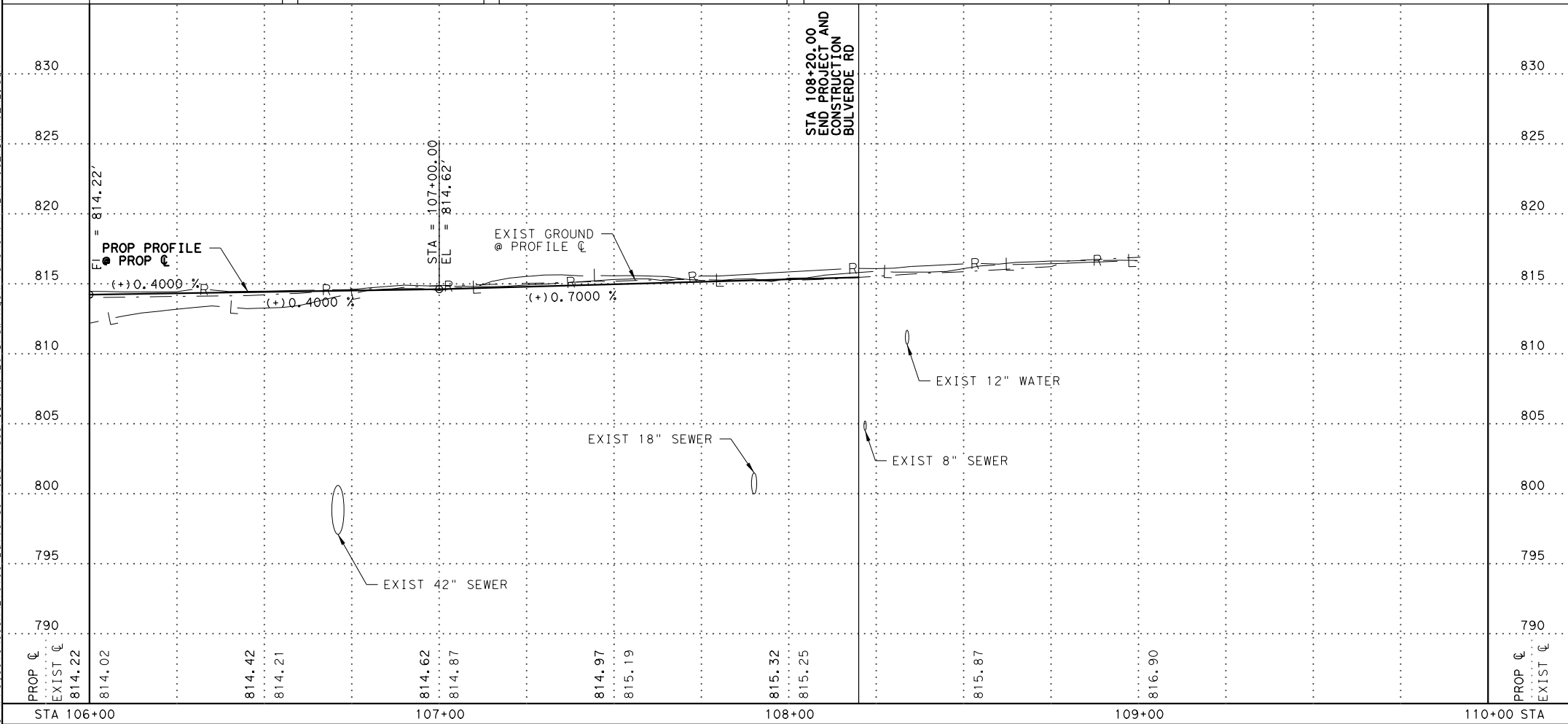
ITEM NO.	DESCRIPTION	UNIT	QUANT
103.1	REMOVE CONCRETE CURB	LF	102
103.3	REMOVE CONCRETE SIDEWALKS & DRIVEWAYS	SF	400
103.4	REMOVE MISCELLANEOUS CONCRETE	SF	80
104.1	STREET EXCAVATION	CY	930
107.1	EMBANKMENT (FINAL) (DES CONT) (TY B)	CY	170
108.1	LIME TREATED SUBGRADE (6" COMPACTED DEPTH)	SY	2,044
108.2	LIME	TON	26
203.1	TACK COAT	GAL	186
205.2	WMA PAVEMENT TYPE B (3.5" COMP. DEPTH)	SY	1,861
205.2	WMA PAVEMENT TYPE B (7.0" COMP. DEPTH)	SY	2,044
205.3	WMA PAVEMENT TYPE C (2.0" COMP. DEPTH)	SY	1,861
500.1	CONCRETE CURB	LF	210
500.4	CONCRETE CURB & GUTTER	LF	445
502.1	CONCRETE SIDEWALKS	SY	315
504.1	CONCRETE MEDIAN	SY	4
508.1	RELOCATING WIRE FENCE	LF	235
515.1	TOPSOIL (4")	CY	48
516.1	BUFFALO SODDING	SY	439
540.7	TEMPORARY CONSTRUCTION FENCE	LF	100

TREE AND SHRUB REMOVAL SHALL BE SUBSIDIARY TO ITEM 810: TREE REMOVAL.

ANY TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.

SEE SHEET 163 FOR DRIVEWAY SUMMARY SHEET FOR REQUIRED PENETRATION BEYOND THE ROW

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

- EXIST ROW LINE
- WW WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT BURIED TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- CLEAN OUT
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- EXIST MANHOLE
- EXIST SHRUB
- EXIST TREE
- PROP ROW LINE
- RES CONC DRIVEWAY
- COMM CONC DRIVEWAY
- GRAVEL DRIVEWAY
- ASPHALT DRIVEWAY
- CONC SIDEWALK
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- (X) DRIVEWAY NO.
- PROP MAILBOX
- DIRECTION OF FLOW
- x-x- REMOVE & RELOCATE FENCE

STATE OF TEXAS

BRYAN J. SPINA

103776

PROFESSIONAL ENGINEER

9/23/2025

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BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)

BULVERDE RD

ADD ALT #2 PLAN AND PROFILE

STA 106+00 TO END

SHEET 3 OF 3

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

VERT. SCALE: 1"=10'

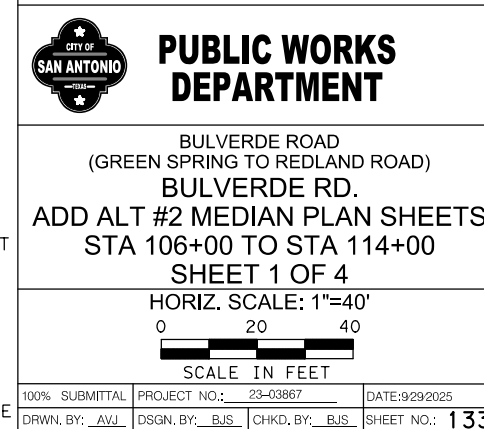
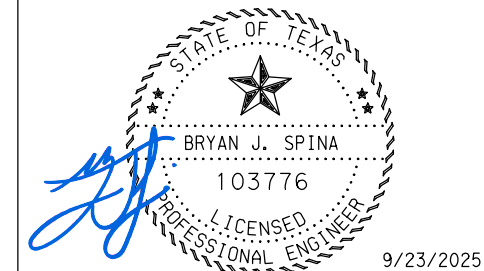
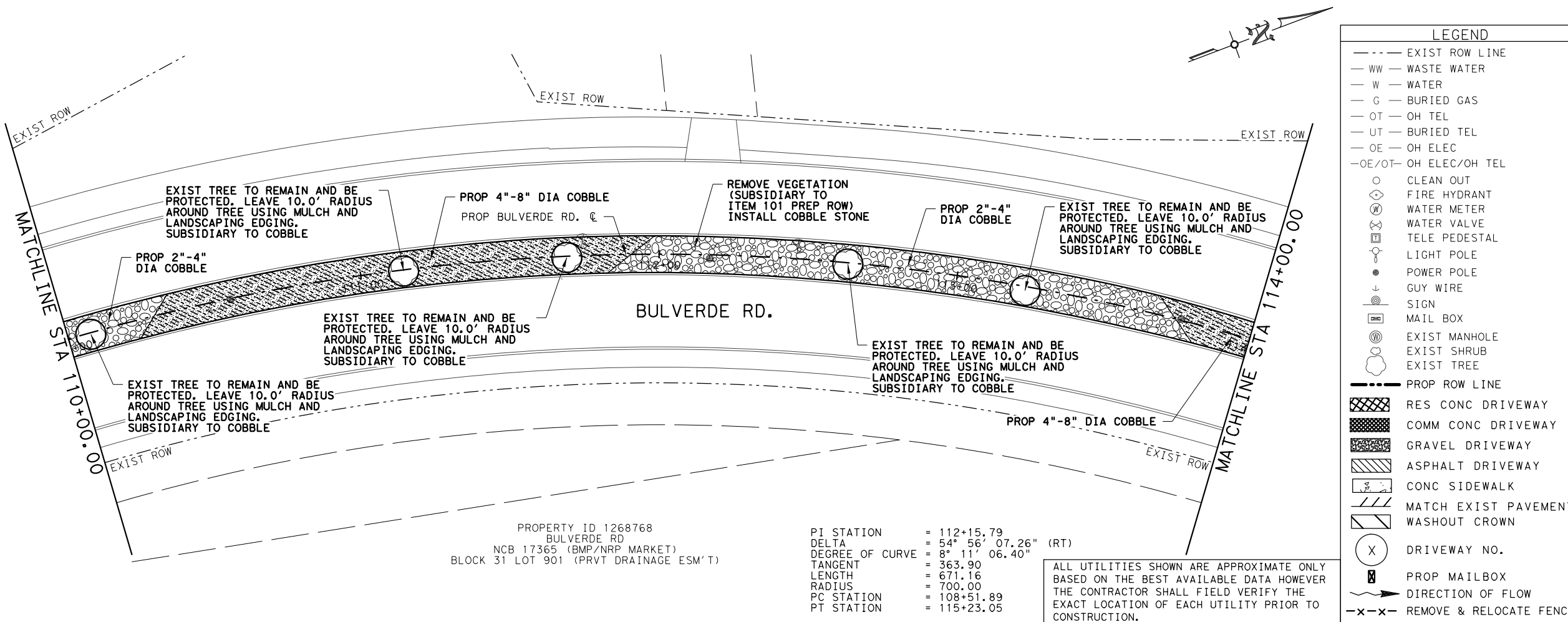
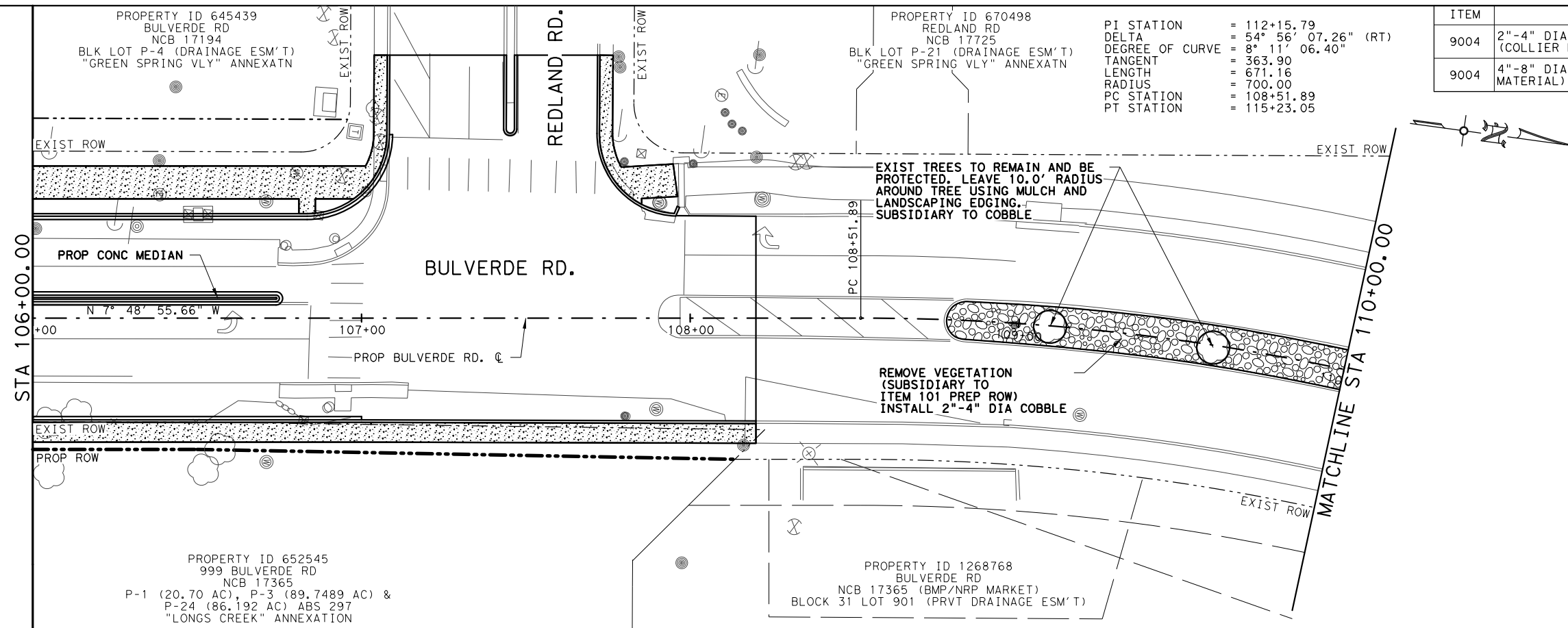
0 5 10

SCALE IN FEET

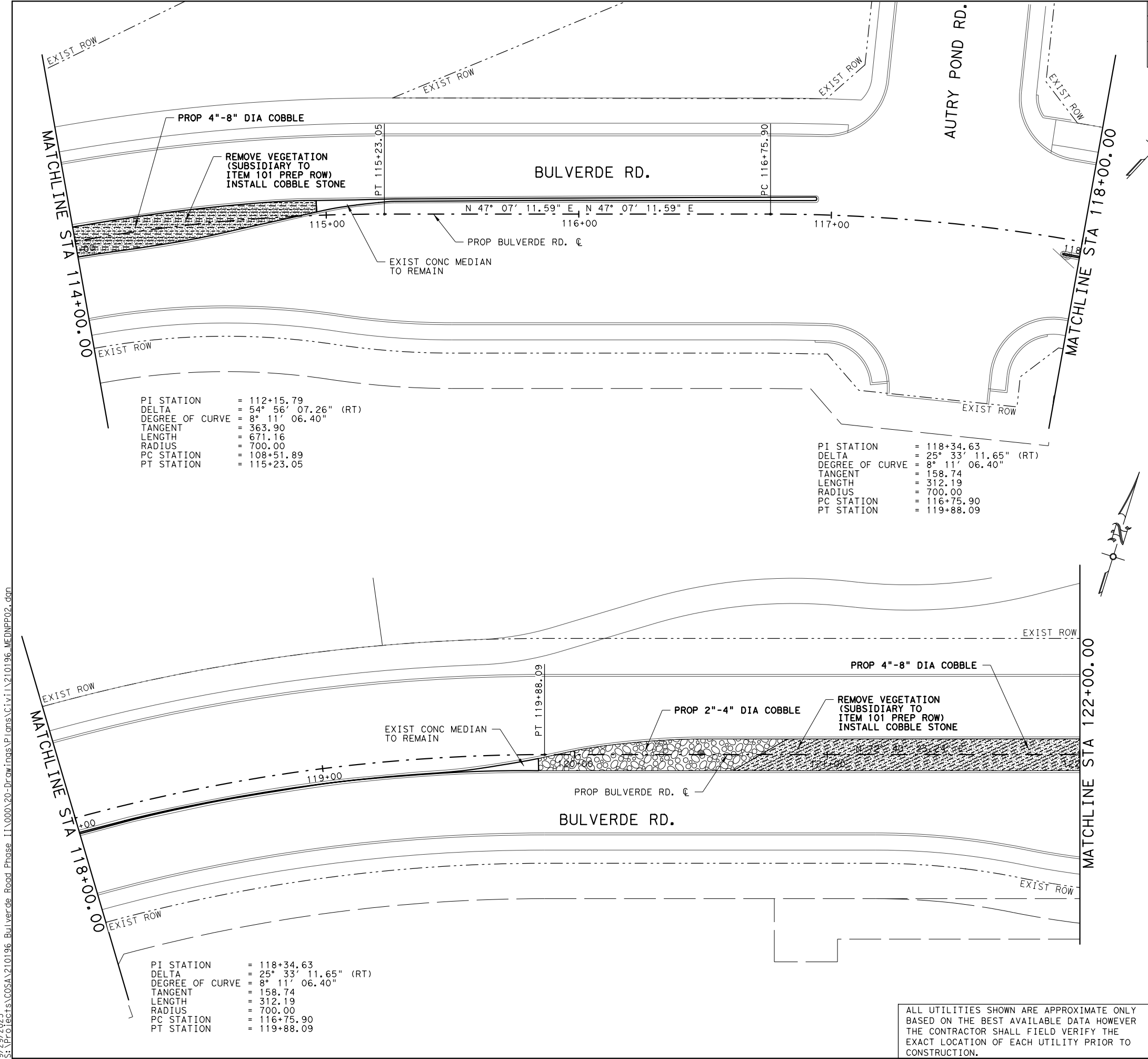
100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025

DRWN. BY: AWJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 132

Plotted by: bspina
9/29/2025
S:\Projects\055A\210196 Bulverde Road Phase 1\000\20-Drawings\Plans\Civil\210196_PDWY10_A2.dwg



ITEM	DESCRIPTION	UNIT	QUANT
9004	2"-4" DIA COBBLE "HIGH PLAINS" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	20
9004	4"-8" DIA COBBLE "TAHOE" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	50



PI STATION = 112+15.79
DELTA = 54° 56' 07.26" (RT)
DEGREE OF CURVE = 8° 11' 06.40"
TANGENT = 363.90
LENGTH = 671.16
RADIUS = 700.00
PC STATION = 108+51.89
PT STATION = 115+23.05

PI STATION = 118+34.63
DELTA = 25° 33' 11.65" (RT)
DEGREE OF CURVE = 8° 11' 06.40"
TANGENT = 158.74
LENGTH = 312.19
RADIUS = 700.00
PC STATION = 116+75.90
PT STATION = 119+88.09

PI STATION = 118+34.63
DELTA = 25° 33' 11.65" (RT)
DEGREE OF CURVE = 8° 11' 06.40"
TANGENT = 158.74
LENGTH = 312.19
RADIUS = 700.00
PC STATION = 116+75.90
PT STATION = 119+88.09

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY
BASED ON THE BEST AVAILABLE DATA HOWEVER
THE CONTRACTOR SHALL FIELD VERIFY THE
EXACT LOCATION OF EACH UTILITY PRIOR TO
CONSTRUCTION.

LEGEND

EXIST ROW LINE

WASTE WATER

WATER

BURIED GAS

OH TEL

BURIED TEL

OH ELEC

OH ELEC/OH TEL

○

CLEAN OUT

⊗

FIRE HYDRANT

⊗

WATER METER

⊗

WATER VALVE

⊗

TELE PEDESTAL

⊗

LIGHT POLE

⊗

POWER POLE

⊗

GUY WIRE

⊗

SIGN

⊗

MAIL BOX

⊗

EXIST MANHOLE

⊗

EXIST SHRUB

⊗

EXIST TREE

PROP ROW LINE

▨

RES CONC DRIVEWAY

▨

COMM CONC DRIVEWAY

▨

GRAVEL DRIVEWAY

▨

ASPHALT DRIVEWAY

▨

CONC SIDEWALK

▨

MATCH EXIST PAVEMENT

▨

WASHOUT CROWN

⊗

DRIVEWAY NO.

⊗

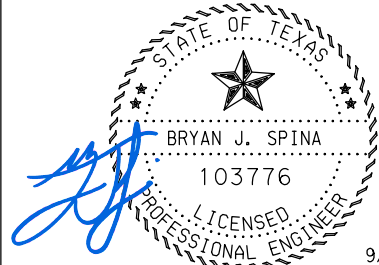
PROP MAILBOX

→

DIRECTION OF FLOW

---x---

REMOVE & RELOCATE FENCE



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Surveying Firm 10126502



BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD.
ADD ALT #2 MEDIAN PLAN SHEETS
STA 114+00 TO STA 122+00
SHEET 2 OF 4

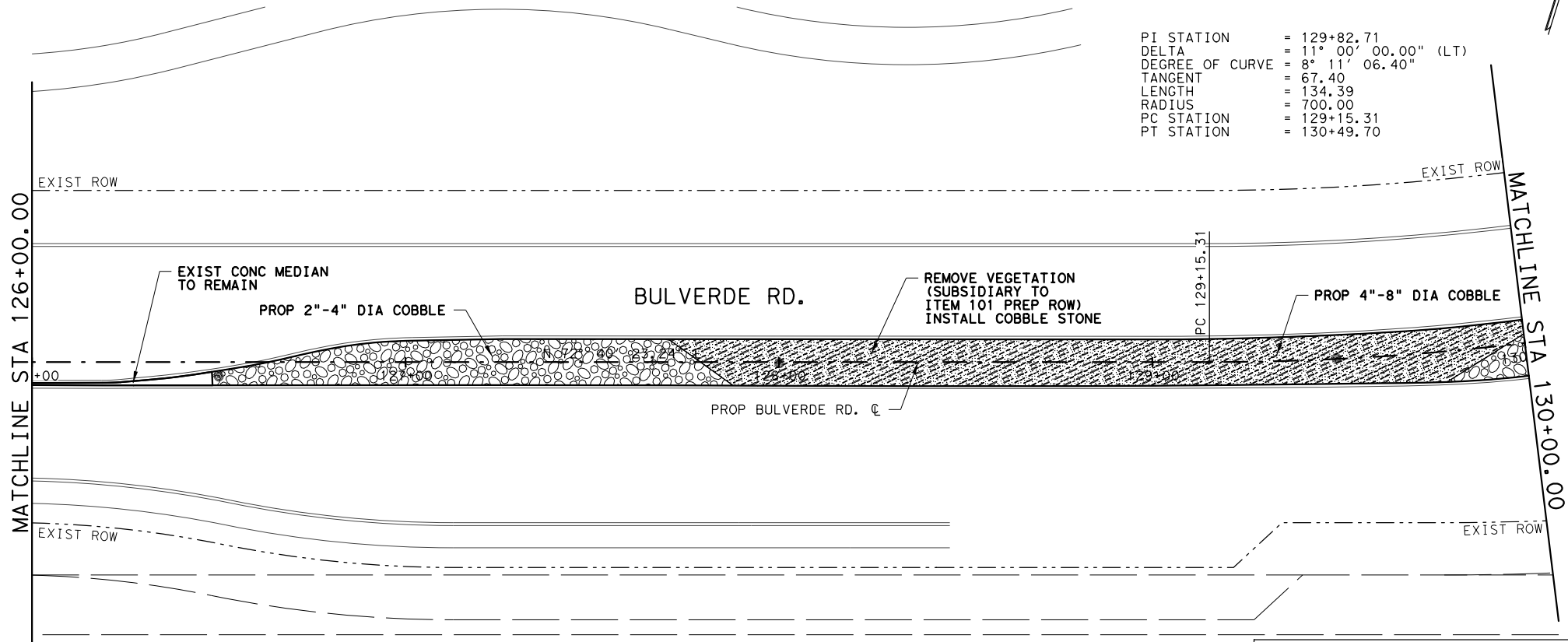
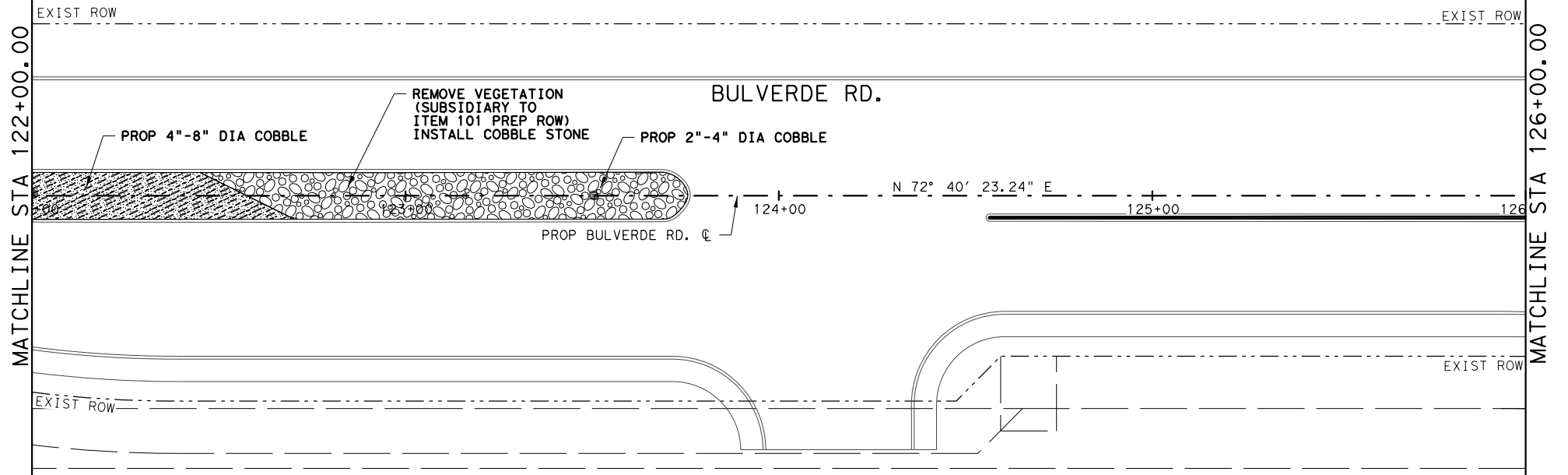
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 9/29/2025
DRWN. BY: AVJ	DSGN. BY: BJS	CHKD. BY: BJS
SHEET NO.: 134		

Plotted by: bspina
9/29/2025
S:\Projects\2025\210196 Bulverde Road Phase II\000\20-Drawings\Plans\Civil\210196_MEDIANP02.dgn

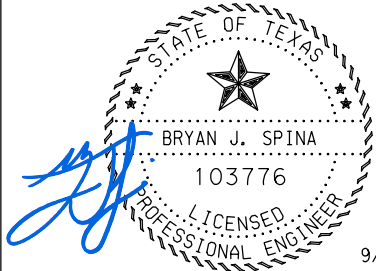
Plotted by: bspina
9/29/2025
S:\Projects\0505A\210196 Bulverde Road Phase 1\000\20-Drawings\Plans\Civil\210196_MEDNPP03.dgn

ITEM	DESCRIPTION	UNIT	QUANT
9004	2"-4" DIA COBBLE "HIGH PLAINS" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	60
9004	4"-8" DIA COBBLE "TAHOE" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	64



ALL UTILITIES SHOWN ARE APPROXIMATE ONLY
BASED ON THE BEST AVAILABLE DATA HOWEVER
THE CONTRACTOR SHALL FIELD VERIFY THE
EXACT LOCATION OF EACH UTILITY PRIOR TO
CONSTRUCTION.

LEGEND	
---	EXIST ROW LINE
WW	WASTE WATER
W	WATER
G	BURIED GAS
OT	OH TEL
UT	BURIED TEL
OE	OH ELEC
OE/OT	OH ELEC/OH TEL
○	CLEAN OUT
⊕	FIRE HYDRANT
⊕	WATER METER
⊕	WATER VALVE
⊕	TELE PEDESTAL
⊕	LIGHT POLE
⊕	POWER POLE
⊕	GUY WIRE
⊕	SIGN
⊕	MAIL BOX
⊕	EXIST MANHOLE
⊕	EXIST SHRUB
⊕	EXIST TREE
---	PROP ROW LINE
▨	RES CONC DRIVEWAY
▨	COMM CONC DRIVEWAY
▨	GRAVEL DRIVEWAY
▨	ASPHALT DRIVEWAY
▨	CONC SIDEWALK
▨	MATCH EXIST PAVEMENT
▨	WASHOUT CROWN
⊕	DRIVEWAY NO.
⊕	PROP MAILBOX
→	DIRECTION OF FLOW
-x-x-	REMOVE & RELOCATE FENCE

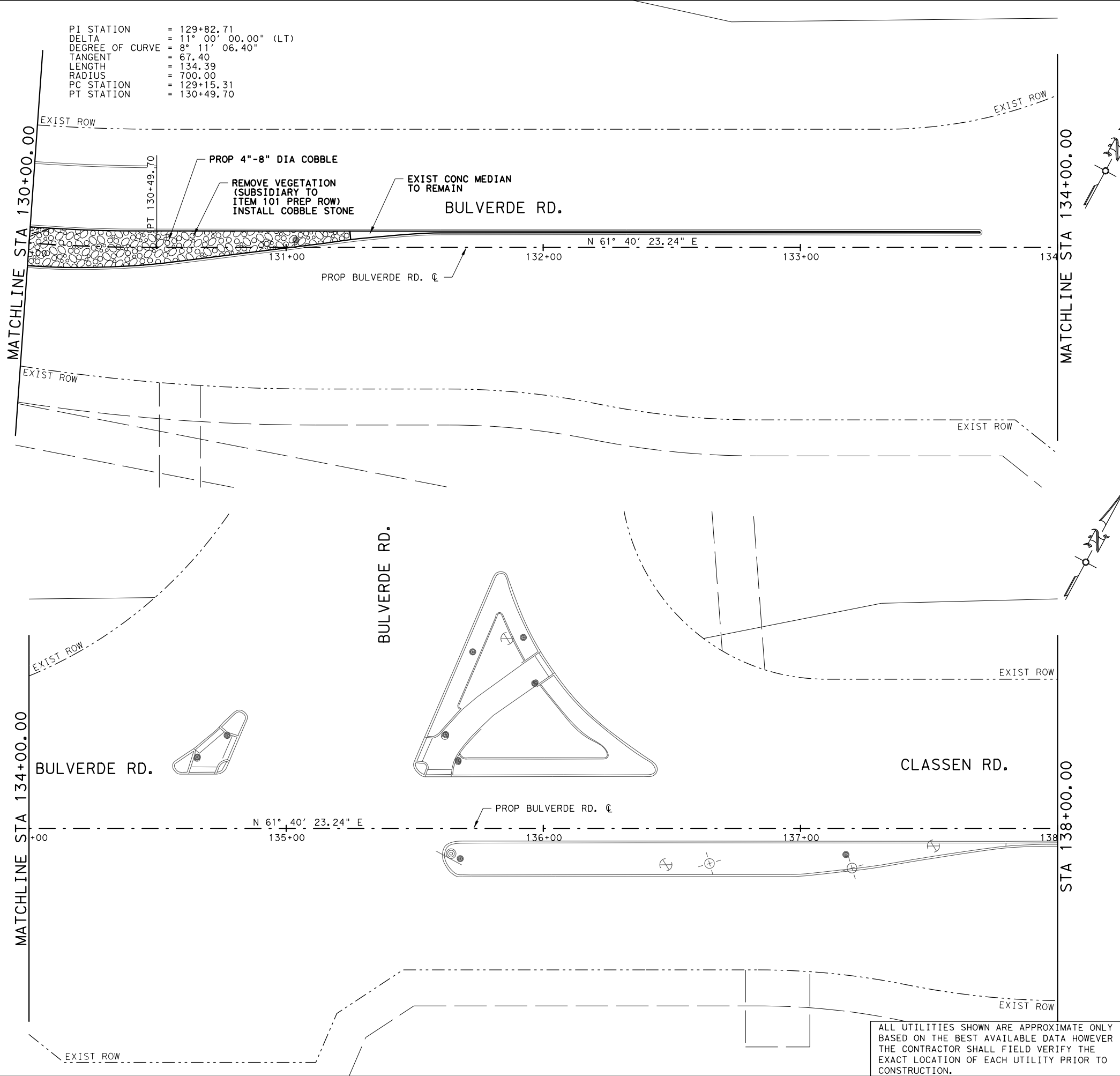


BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD.
ADD ALT #2 MEDIAN PLAN SHEETS
STA 122+00 TO STA 130+00
SHEET 3 OF 4

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

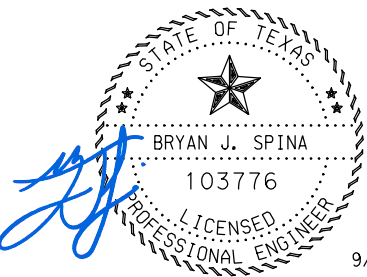
100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 9/29/2025
DRWN. BY: AVJ	DSGN. BY: BJS	CHKD. BY: BJS
		SHEET NO.: 135

Plotted by: bspina
9/29/2025
S:\Projects\COSEA\210196 Bulverde Road Phase II\000\20-Drawings\Plans\Civil\210196_MEDNPP04.dgn



ITEM	DESCRIPTION	UNIT	QUANT
9004	2"-4" DIA COBBLE "HIGH PLAINS" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	25
9004	4"-8" DIA COBBLE "TAHOE" OR APPROVED EQUAL (COLLIER MATERIAL)	CY	1

LEGEND	
---	EXIST ROW LINE
---	WW --- WASTE WATER
---	W --- WATER
---	G --- BURIED GAS
---	OT --- OH TEL
---	UT --- BURIED TEL
---	OE --- OH ELEC
---OE/OT---	OH ELEC/OH TEL
○	CLEAN OUT
⊗	FIRE HYDRANT
⊕	WATER METER
⊕	WATER VALVE
⊕	TELE PEDESTAL
⊕	LIGHT POLE
⊕	POWER POLE
⊕	GUY WIRE
⊕	SIGN
⊕	MAIL BOX
⊕	EXIST MANHOLE
⊕	EXIST SHRUB
⊕	EXIST TREE
---	PROP ROW LINE
▨	RES CONC DRIVEWAY
▨	COMM CONC DRIVEWAY
▨	GRAVEL DRIVEWAY
▨	ASPHALT DRIVEWAY
▨	CONC SIDEWALK
▨	MATCH EXIST PAVEMENT
▨	WASHOUT CROWN
⊕	DRIVEWAY NO.
⊕	PROP MAILBOX
→	DIRECTION OF FLOW
-x-x-	REMOVE & RELOCATE FENCE





8918 Tesoro Dr., Suite 401
San Antonio, Texas 78217
Phone: (210) 822-2232
www.Ardurra.com
Engineering License #F-10053
Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502



**PUBLIC WORKS
DEPARTMENT**

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BULVERDE RD.
ADD ALT #2 MEDIAN PLAN SHEETS
STA 130+00 TO STA 138+00
SHEET 4 OF 4

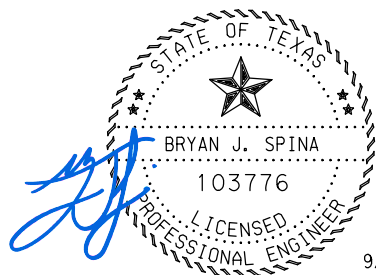
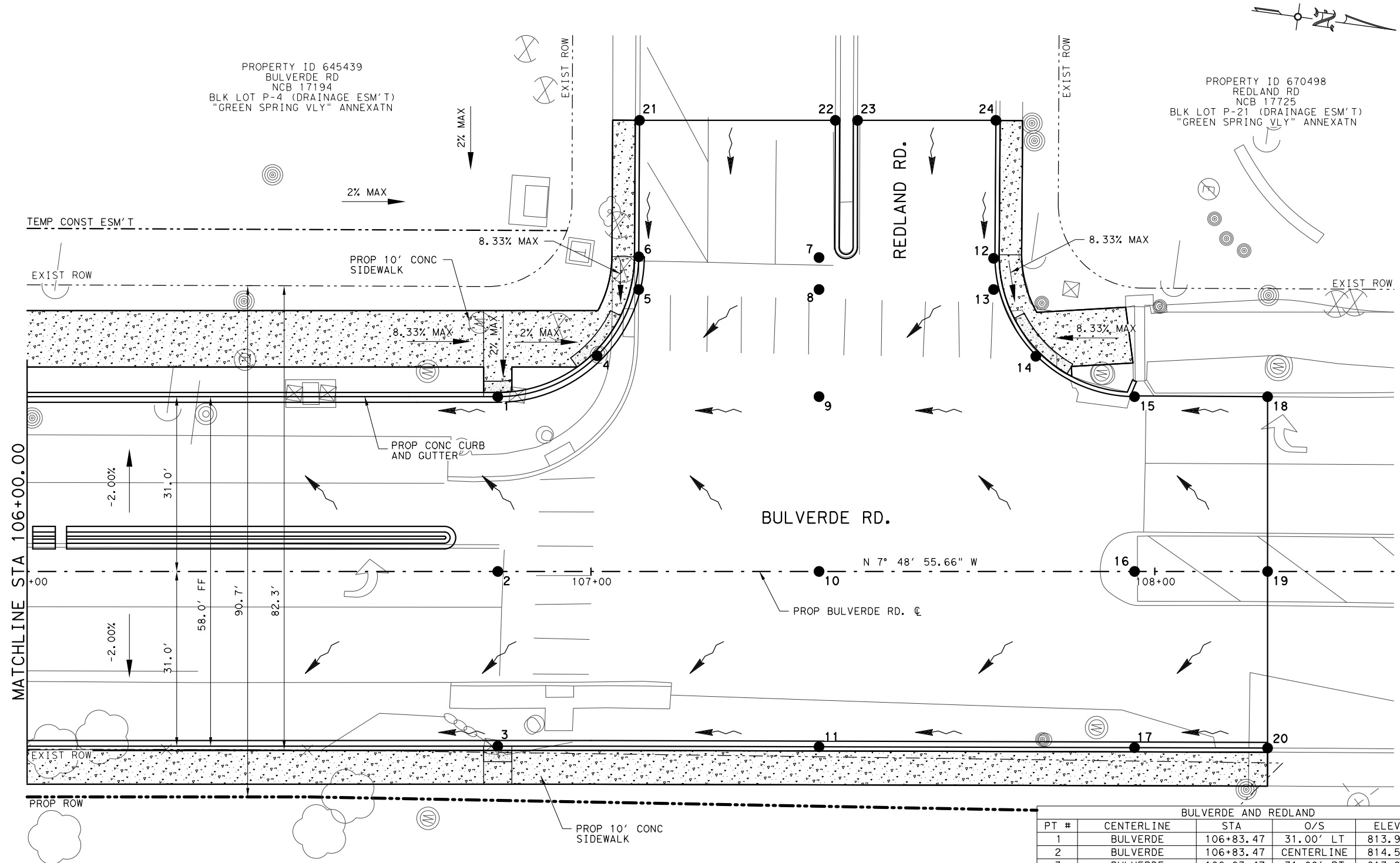
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 9/29/2025

DRWN. BY: AVJ DSGN. BY: BJS CHKD. BY: BJS SHEET NO.: 136

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY
BASED ON THE BEST AVAILABLE DATA HOWEVER
THE CONTRACTOR SHALL FIELD VERIFY THE
EXACT LOCATION OF EACH UTILITY PRIOR TO
CONSTRUCTION.

Plotted by: bspina
9/29/2025
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9/23/2025

BULVERDE AND REDLAND					
PT #	CENTERLINE	STA	O/S	ELEV	DESC
1	BULVERDE	106+83.47	31.00' LT	813.93	℄
2	BULVERDE	106+83.47	CENTERLINE	814.55	℄
3	BULVERDE	106+83.47	31.00' RT	813.93	℄
4	BULVERDE	107+01.08	38.26' LT	814.28	℄
5	BULVERDE	107+08.47	50.00 LT	814.44	℄
6	BULVERDE	107+08.47	55.82' LT	814.62	℄
7	BULVERDE	107+40.44	55.67' LT	814.97	ELEV
8	BULVERDE	107.40.44	50.00 LT	814.64	ELEV
9	BULVERDE	107+40.44	31.00' LT	814.27	ELEV
10	BULVERDE	107+40.44	CENTERLINE	814.90	℄
11	BULVERDE	107+40.44	31.11' RT	814.28	℄
12	BULVERDE	107+71.41	55.53' LT	814.97	℄
13	BULVERDE	107+71.41	50.00 LT	814.85	℄
14	BULVERDE	107+78.89	38.15' LT	814.73	℄
15	BULVERDE	107+96.40	30.99' LT	814.43	℄
16	BULVERDE	107+96.40	CENTERLINE	815.29	℄
17	BULVERDE	107+96.40	31.26' RT	814.67	℄
18	BULVERDE	108+20.00	30.98' LT	814.97	℄
19	BULVERDE	108+20.00	CENTERLINE	815.46	℄
20	BULVERDE	108+20.00	31.32' RT	814.83	℄
21	BULVERDE	107+08.61	80.00 LT	815.37	℄
22	BULVERDE	107+43.35	80.00 LT	816.11	℄
23	BULVERDE	107+47.28	80.00 LT	815.97	℄
24	BULVERDE	107+71.70	80.00 LT	815.52	℄



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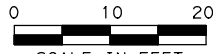


**PUBLIC WORKS
DEPARTMENT**

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)

**BULVERDE RD AT
REDLAND RD.
INTERSECTION LAYOUT**

HORIZ. SCALE: 1"=20'



SCALE IN FEET

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 9/29/2025
DRWN. BY: AVJ	DSGN. BY: BJS	CHKD. BY: BJS
		SHEET NO.: 137

PROPERTY ID 645439
BULVERDE RD
NCB 17194
BLK LOT P-4 (DRAINAGE ESM'T)
"GREEN SPRING VLY" ANNEXATN

PROPERTY ID 670498
REDLAND RD
NCB 17725
BLK LOT P-21 (DRAINAGE ESM'T)
"GREEN SPRING VLY" ANNEXATN

PROPERTY ID 652545
999 BULVERDE RD
NCB 17365
P-1 (20.70 AC), P-3 (89.7489 AC) &
P-24 (86.192 AC) ABS 297
"LONGS CREEK" ANNEXATION

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: Scot Laun, PE, CFM

Date: 10/14/2025

Signature of Customer/Agent:



Regulated Entity Name: Bulverde Road (Green Spring to Redland Road) Project

Project Information

Potential Sources of Contamination

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

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

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

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

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

- ☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
- ☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
- ☒ Fuels and hazardous substances will not be stored on the site.
- 2. ☒ **Attachment A - Spill Response Actions.** A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.
- 3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
- 4. ☒ **Attachment B - Potential Sources of Contamination.** A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

- 5. ☒ **Attachment C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.
 - ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.
 - ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.
- 6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Elm Waterhole Creek

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.

FORM TCEQ-0602 ATTACHMENTS

ATTACHMENT A — SPILL RESPONSE ACTIONS

Should an accidental release occur, it will be immediately contained by earthen dikes, berms, or other appropriate measures. Free liquids will be stabilized promptly using bulking agents, absorbent pads, booms, soil, or other appropriate material. Once no free liquids are present in the containment area, the released material will be picked up mechanically or by personnel wearing proper protective equipment and stored in 55-gallon steel drums or on plastic sheeting. Released material will be covered to prevent contact with stormwater. Stormwater runoff will be diverted around the stored material if necessary. Traffic will be routed around and away from any spill to avoid spreading the spilled material to other areas.

The Contractor is required to remediate any spills, and to immediately report spills (including sanitary sewer discharge) of reportable quantities to the following:

- National Response Center at (800) 424-8802
- Edwards Aquifer Authority at (210) 222-2204
- To the San Antonio Water Systems at (210) 704-7297 and one of the following:
 - State Emergency Response Center (800) 832-8224 (if after hours)
 - TCEQ Regional Office **(210) 490-3096** (if during business hours)

Spills shall be reported within 24 hours unless other regulations require more expedient notification.

ATTACHMENT B — POTENTIAL SOURCES OF CONTAMINATION

Potential sources of contamination include the hydrocarbons and fuels required to service and operate the construction equipment, the materials and liquids used to conduct paving operations, various paints and solvents, and soil disturbed and mobilized during excavation.

ATTACHMENT C — SEQUENCE OF MAJOR ACTIVITIES

Attached – Traffic Control Plan Narrative design sheets.

ATTACHMENT D – TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on the plan sheets are considered “proposed” unless/until install date is shown.

At the beginning of the construction phase, silt fences and rock filter dams will be installed at surface water discharge points to reduce flow velocities, reduce suspended solid loads, and reduce the potential for erosion. All temporary BMPs will remain until the end of construction.

Offsite water flows into the project and through these temporary BMPs, preventing pollution of surface water, groundwater, or stormwater.

By slowing down the on-site water, pollutants will have time to settle to the bottom of the temporary BMPs allowing proper removal before entering surface streams, sensitive features, or the aquifer.

The locations of temporary BMPs are shown on the SW3P layout sheets. Standard details show information relevant to BMP installation and maintenance.

ATTACHMENT E – REQUEST TO TEMPORARILY SEAL A FEATURE

Not applicable.

ATTACHMENT F – STRUCTURAL PRACTICES

Sediment derived from excavation and grading will be controlled through the use of silt fences and rock filter dams.

ATTACHMENT G – DRAINAGE AREA MAP

Attached – Drainage Area Map & Site Plan sheet.

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

Sediment ponds are not planned for this project.

ATTACHMENT I – INSPECTION AND MAINTENANCE FOR BMPs

The key to maintaining the performance of and efficiency of the temporary BMPs is inspection and repair when needed. The project will use an established schedule of inspection to identify the weak or failing sections of the sediment controls and institute repairs immediately to ensure the continued performance of the installed BMPs. BMPs will be inspected at least weekly. Damaged BMPs will either be repaired or replaced as needed. Staging of the project activities will also be used to reduce the amount of ground damage to minimize the potential for sediment to enter the waterways. The areas adjacent to the creeks and drainage ways shall have priority. If storms damage the BMPs, efforts will be made to immediately restore them to original performance levels.

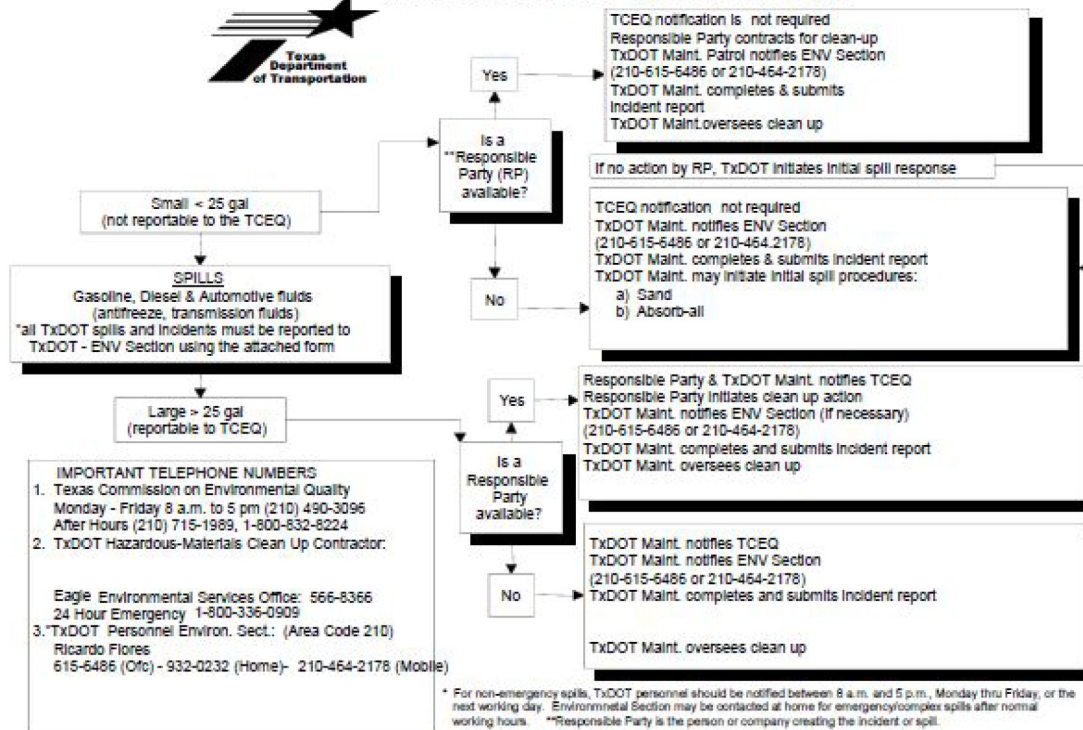
ATTACHMENT J – SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within fourteen (14) calendar days unless they are scheduled to and do resume within 21 calendar days. The schedule for major soil disturbing activities includes the following:

1. Install controls down-slope of work area and initiate inspection and maintenance activities.
2. Begin construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.
3. Major soil disturbing activities may include, but are not limited to: right-of-way preparation, final grading and placement of topsoil, placement of road base, extensive ditch grading, upgrading, or replacing culverts or ditches, and channel grading.



SAN ANTONIO DISTRICT SPILL RESPONSE PROCEDURES



Plotted by: avicuna
9/23/2025
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TRAFFIC CONTROL NOTES

1.

IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO SEE THAT ALL TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED AT THE JOB SITE IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND RELATED INDUSTRY STANDARDS AND REGULATIONS. THESE NOTES, DO NOT, IN OF THEMSELVES, CONSTITUTE A TRAFFIC CONTROL PLAN. IN THE EVENT THAT THESE PLANS DO NOT INCLUDE TRAFFIC CONTROL, OR THAT THE CONTRACTOR WISHES TO VARY FROM TRAFFIC CONTROL INCLUDED WITH THESE PLANS, THEY SHALL SUBMIT FOR REVIEW A TRAFFIC CONTROL PLAN SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS, INCLUDING A SIGN AND BARRICADE PLAN CONFORMING TO THE REQUIREMENTS OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CITY'S CONSTRUCTION OBSERVER /INSPECTOR (COI) AND THE TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT THE TRAFFIC CONTROL DEVICES BEING DEPLOYED. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE COI, THE TRAFFIC CONTROL DEVICES DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE COI SHALL HAVE THE OPTION TO STOP CONSTRUCTION OPERATIONS AT NO EXPENSE TO THE CITY UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED BY THE CONTRACTOR.
2.

PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF SAN ANTONIO TRAFFIC OPERATIONS SECTION AT 207-7765 FOR A TRAFFIC SIGN AND TRAFFIC SIGNAL INVENTORY. PRIOR TO COMPLETION OF THE CONTRACT AND REMOVAL OF THE BARRICADES, THE CONTRACTOR SHALL AGAIN CONTACT THE TRAFFIC OPERATIONS SECTION. THE BARRICADES SHALL NOT BE REMOVED UNTIL ALL APPLICABLE PERMANENT TRAFFIC SIGNS AND SIGNALS ARE IN PLACE.
3.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND MAINTAIN TEMPORARY STOP SIGNS AND ALL OTHER TRAFFIC CONTROL DEVICES REQUIRED TO PROTECT THE GENERAL PUBLIC. IF THE CITY OF SAN ANTONIO HAS REMOVED PERMANENT STOP SIGNS, THE CONTRACTOR SHALL REQUEST THAT THE SIGNS BE RETURNED TO THE CONSTRUCTION SITE TO BE REINSTALLED BY THE CONTRACTOR. ALL PERMANENT SIGNS OR TRAFFIC CONTROL DEVICES MISSING OR DAMAGED UPON COMPLETION OF CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4.

THE CONTRACTOR MUST CONTACT THE CITY'S COI 48 HOURS IN ADVANCE (INCLUDING WEEKENDS) OF ANY MINOR STREET CLOSURE. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ADVISE THE COI 10 DAYS IN ADVANCE OF ANY ARTERIAL TOTAL STREET CLOSURE. THIS MUCH TIME IS NECESSARY TO INSTALL ADVISORY SIGNS AND GIVE THE MOTORIST A MINIMUM OF 7 DAYS NOTICE OF THE STREET CLOSURE. THE COI AFTER BEING NOTIFIED WILL CONTACT THE TRAFFIC ENGINEER OFFICE TO MAKE THE NECESSARY ARRANGEMENTS.
5.

AS WORK PROGRESSES, LOCATION OF TEMPORARY TRAFFIC CONTROL DEVICES WILL BE ADJUSTED AND MODIFIED, AS NECESSARY BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
6.

IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES, SPECIAL DIRECTIONAL DEVICES, AND/OR BUSINESS NAME SIGNS MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
7.

TEMPORARY TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CITY'S "TYPICAL SIGN AND BARRICADE STANDARDS" SHEETS AND TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
8.

THE CONTRACTOR MUST MAINTAIN ALL STREETS WITHIN PROJECT LIMITS OPEN TO THROUGH TRAFFIC BY REPAIRING TRENCHES, POTHOLES, LEVELING UP WITH ASPHALT, ETC. AT NO DIRECT PAYMENT, WITH THE COST TO BE INCLUDED IN OTHER ITEMS.
9.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SUITABLE ACCESS ACCOMMODATIONS FOR SCHOOL CHILDREN AND PEDESTRIANS.
10.

THE CONTRACTOR SHALL PROVIDE ACCESS FOR DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.
11.

THE CONTRACTOR SHALL PROVIDE FOR ACCESS TO RESIDENCES AND ALL BUSINESSES AT ALL TIMES WITHIN ALL THE PHASES OF THE WORK.
12.

WHEN CONSTRUCTION WORK NECESSITATES THE UTILIZATION OF VEHICLE PATHS OTHER THAN THE LANES NORMALLY USED, TRAFFIC CONTROL MARKINGS NO LONGER APPLICABLE SHALL BE REMOVED AND APPROVED TEMPORARY PAVEMENT MARKINGS AND SIGNS INSTALLED IN ACCORDANCE WITH PART VI-D OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. AFTER CONSTRUCTION IS COMPLETED AND TRAFFIC IS REROUTED BACK TO THE ORIGINAL LANES, THE TRAFFIC CONTROL MARKINGS AND/OR RAISED BUTTONS THAT WERE ORIGINALLY REMOVED FROM THE EXISTING PAVEMENT MUST BE REPLACED. IN ADDITION, TEMPORARY MARKINGS MUST BE REMOVED. ALL OF THIS IS TO BE DONE AT NO DIRECT PAYMENT; COST SHOULD BE INCLUDED IN OTHER ITEMS.
13.

PERMANENT PAVEMENT MARKINGS SHALL BE APPLIED PRIOR TO THE OPENING OF THE COMPLETED STREET TO TRAFFIC. TEMPORARY ADDITIONAL SHORT-TERM EXPENDABLE PAVEMENT MARKINGS MAY BE PROVIDED PRIOR TO THE APPLICATION OF PERMANENT MARKINGS IN MINIMUM LENGTHS OF 36", OR RAISED PAVEMENT MARKINGS TO DELINEATE CONTINUITY UNTIL SUCH TIME AS STANDARD PAVEMENT MARKINGS IN NORMAL LENGTHS CAN BE PLACED AT NO DIRECT PAYMENT.
14.

ALL TEMPORARY TRAFFIC CONTROL DEVICES, ETC. SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT DIRECT PAYMENT, UNLESS OTHERWISE NOTED OR STATED.
15.

THE COI WILL MONITOR THE CONTRACTOR'S TRAFFIC CONTROL DEVICES AND WILL BE RESPONSIBLE TO FURNISH ALL RESIDENTS AND BUSINESSES WITH AN INFORMATION FLYER ON ALL JOBS DURING CONSTRUCTION.
16.

ANY DAMAGE TO PERMANENT TRAFFIC SIGNALS, THE CONTROLLER BOX, LOOPS OR CONDUITS DURING OR UPON COMPLETION OF THE PROJECT SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE. THE DECISION TO REPAIR, AS OPPOSED TO REPLACE, THE DAMAGED EQUIPMENT SHALL BE MADE BY THE CITY'S TRAFFIC ENGINEER.
17.

THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL STREETS OUTSIDE OF THE PROJECT LIMITS WHICH ARE DAMAGED DUE TO CONSTRUCTION ACTIVITIES. THE REPLACED SECTION MUST BE APPROVED BY THE CITY'S STREET ENGINEER. THERE WILL BE NO DIRECT PAYMENT FOR THIS WORK. THE COST IS TO BE INCLUDED IN OTHER ITEMS.
18.

OFF-DUTY POLICE OFFICERS WILL BE REQUIRED AS DIRECTED BY THE TRAFFIC ENGINEER AT NO DIRECT PAYMENT, COST TO BE INCLUDED IN OTHER BID ITEMS. THIS WILL BE A REQUIREMENT WHERE TWO-WAY TRAFFIC IS TO BE MAINTAINED.
19.

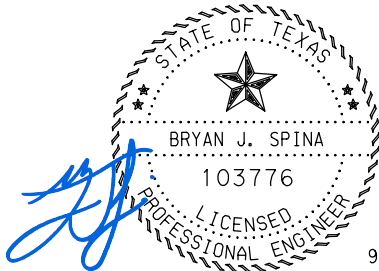
THE CONTRACTOR SHALL PROVIDE THE CITY AN EMERGENCY TELEPHONE NUMBER FOR EVENINGS, WEEKENDS, AND HOLIDAYS BY THE FIRST WORKING DAY OF THE PROJECT. THIS TELEPHONE NUMBER MUST BE A COMMERCIAL ANSWERING SERVICE. THE ANSWERING SERVICE MUST BE ABLE TO CONTACT THE CONTRACTOR AND HAVE THE CONTRACTOR RESPOND TO THE CITY STAFF WITHIN TWO HOURS OF THE INITIAL CONTACT.
20.

THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS TO ALL INTERSECTING STREETS UNLESS OTHERWISE SHOWN ON THESE PLANS. WHEN CONTINUOUS ACCESS IS SCHEDULED TO BE BLOCKED, THE CONTRACTOR SHALL CONTACT THE DISPATCHERS FOR THE FIRE DEPARTMENT AND EMS AT (210) 227-8341 AND THE POLICE DEPARTMENT AT (210) 207-2257, TO APPRISE THEM OF THE PENDING STREET CLOSURE AT LEAST FORTY-EIGHT HOURS IN ADVANCE. IF THE CLOSURE FALLS ALONG A BUS ROUTE, THE CONTRACTOR SHALL ALSO CONTACT VIA AT (210) 362-5220.
21.

THE CONTRACTOR SHALL MAINTAIN EITHER THE EXISTING OR TEMPORARY STREET NAME SIGNS AT EACH INTERSECTION ONSITE THROUGHOUT CONSTRUCTION. IF THE EXISTING STREET NAME SIGNS ARE USED, THEY MUST BE MAINTAINED IN THE CONDITION ENCOUNTERED PRIOR TO THE BEGINNING OF CONSTRUCTION, AND THEN BE TURNED IN TO THE CITY INSPECTOR AT THE END OF THE PROJECT. IF TEMPORARY SIGNS ARE USED DURING CONSTRUCTION, THEY SHALL HAVE A MINIMUM OF 4-INCH LETTERS, AND MAY BE FABRICATED WITH CONSTRUCTION ZONE MATERIAL (BLACK LEGEND ON ORANGE BACKGROUND, USING PLYWOOD SUBSTRATE, ETC.)
22.

NO MORE THAN 300 FEET OF UNBACKFILLED TRENCH CAN BE OPEN WITHOUT REPLACEMENT OF PAVEMENT OR BACKFILLED AND PLATED.
23.

ALL OPEN TRENCHES AND PITS SHALL BE BACKFILLED AND PLATED BEFORE THE CONTRACTOR CAN LEAVE AN AREA. NO TRENCHES AND/OR PITS SHALL BE LEFT UNBACKFILLED AND PLATED OVERNIGHT AND/OR DURING NON-WORK HOURS.



9/23/2025

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**PUBLIC WORKS
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BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)

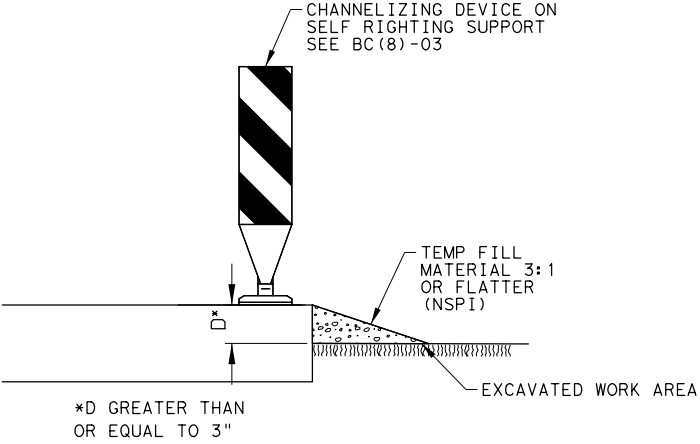
TRAFFIC CONTROL NOTES

SCALE: N.T.S.

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE:9/23/2025
DRWN. BY: <u>AVJ</u>	DSGN. BY: <u>BJS</u>	CHKD. BY: <u>BJS</u>
SHEET NO.: 38		

SCHEDULE OF TRAFFIC CONTROL DEVICES

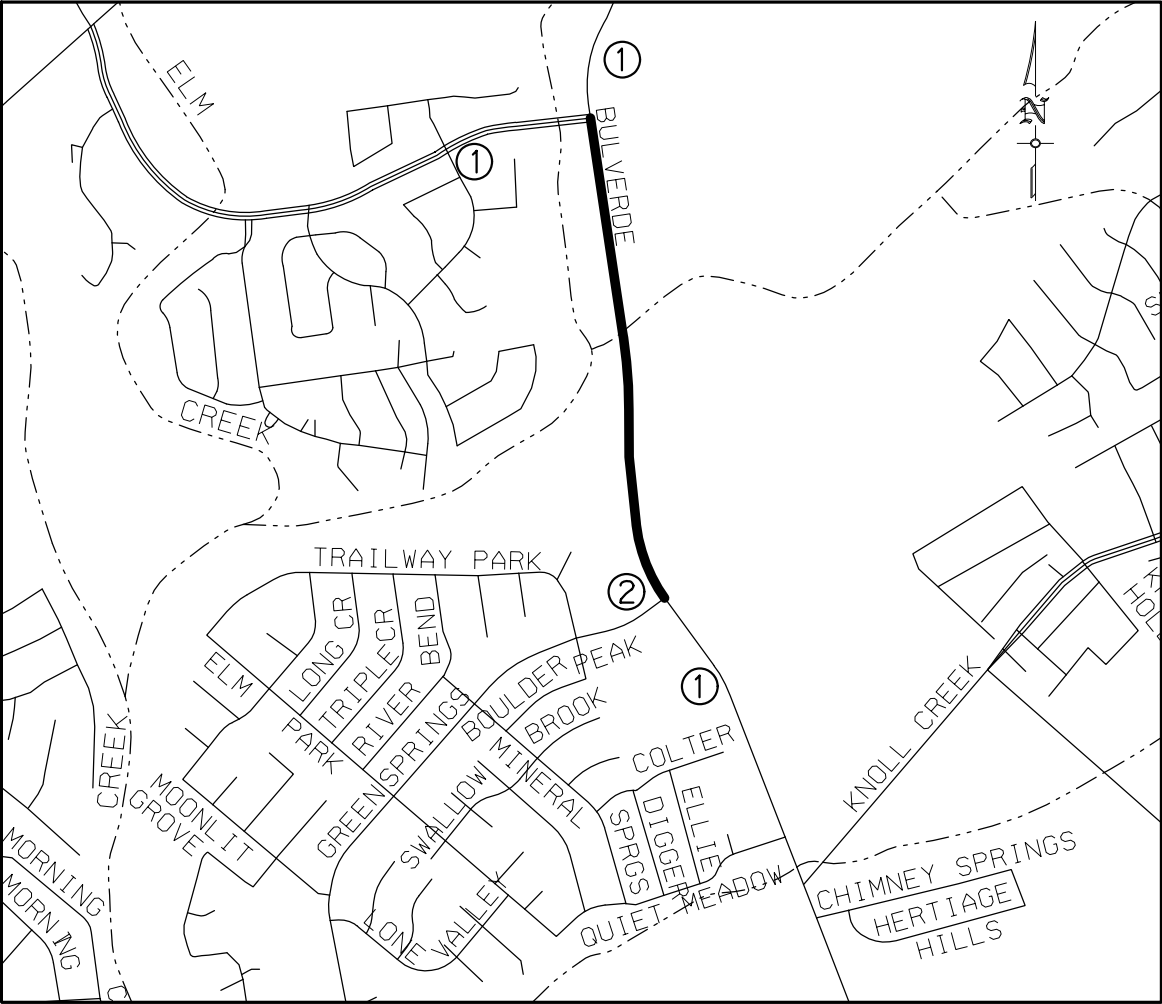
LOCATION	SIGN/TYPE	PROJECT SIGN	ROAD WORK AHEAD	END ROAD WORK	UTILITY WORK AHEAD	NO CENTER STRIPE	FORM ONE LINE RIGHT/LEFT	ROAD CLOSED AHEAD	ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	RIGHT/LEFT LANE CLOSED	RIGHT/LEFT LANE CLOSED XXX FT	BE PREPARED TO STOP	LOOSE GRAVEL	DETOUR AHEAD	SHOULDER DROP-OFF	UNEVEN LANES	LANE ENDS MERGE RIGHT/LEFT	ONE LANE ROAD AHEAD	SIDEWALK CLOSED	END DETOUR	DO NOT PASS	SIGNAL WORK AHEAD					PORTABLE CHANGE ABLE MESSAGE SIGN		
	USAGE		CW20-1D	G20-2a	CW20-1D	CW8-12	R20-2R, -2L	CW20-3D	R11-2	R11-4	CW20-5R, -5L	CW20-5R, -5L PLAQUE	CW20-7b	CW8-7	CW20-2D	CW8-9a	W8-11	CW9-2R, -2L	CW20-4D	R9-9	M4-8A	R4-1	CW20SG-1D	SCW-4R	SCW-4L	CW20-7	SCW1-8	SCW1-9	CHANNELIZING DEVICES	
1	APPROACHES TO PROJECT	X	X	X																								X		
2	SIDE STREET APPROACHES		X	X																										
*	AS DIRECTED		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X



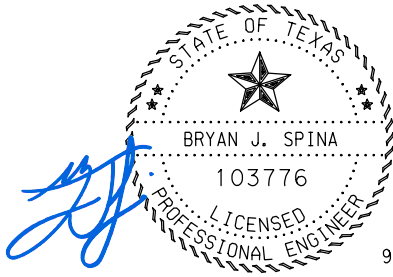
EDGE DROP OFF DETAIL
N. T. S.

NOTE:
TEMP FILL 3:1 MAY BE REMOVED WHEN WORKING ON ROADWAY IN IMMEDIATE AREA. OTHERWISE EDGE SHALL BE SHOULDERED UP 3:1 AT END OF EACH WORKING DAY.

- NOTES:
- 1) CERTAIN SIGNS MUST BE USED IN CONJUNCTION WITH OTHER SIGNS. EXAMPLE: "FLAGGER AHEAD" MUST HAVE A "BE PREPARED TO STOP".
 - 2) BARRICADES AND WARNING SIGNS ON THIS SHEET ARE MINIMAL CONSTRUCTION ZONE SIGNING. ADDITIONAL BARRICADES, WARNING SIGNS, ARROW PANELS, CONES, ETC. IN ACCORDANCE WITH BC(1) THROUGH (12) AND THE TEXAS MUTCD MAY BE REQUIRED IN AREAS OF ACTUAL CONSTRUCTION.
 - 3) SEE TxDOT TCP STANDARDS FOR ADDITIONAL SIGNING REQUIREMENTS. APPLICABLE TxDOT TCP STANDARDS FOR THIS PROJECT AREA ARE: TCP(1-2)-18, TCP(2-2)-18, TCP(2-4)-18, TCP(2-5)-18, TCP(3-1)-13, TCP(3-3)-14, TCP(7-1)-13, WZ(BTS-1)-13, WZ(BTS-2)-13.



SCALE : NTS





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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502



**PUBLIC WORKS
DEPARTMENT**

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)

SCHEDULE OF TRAFFIC CONTROL
AND ADVANCE WARNING DEVICES

SCALE: N.T.S.

coonzalez
9/24/2025
SW3P Summary Sheet 1 - with Border.dgn

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

1.2 PROJECT LIMITS:

From: Intersection at Green Springs Dr.

To: Intersection with Redland Dr.

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 98°25'22.5" W ,(Long) 29°35'01.6" N

END: (Lat) 98°25'27.6" W ,(Long) 29°35'35.6" N

1.4 TOTAL PROJECT AREA (Acres): 8.65

1.5 TOTAL AREA TO BE DISTURBED (Acres): 8.65

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Intersection at Green Springs Dr.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Cb	Crawford, stony and Bexar soils, 0 to 5 percent slopes
TaB	Eckrant cobbly clay, 1 to 8 percent slopes
TaC	Eckrant very cobbly clay, 5 to 15 percent slopes

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☐ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- ☐ Mobilization
- ☐ Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☐ Remove existing pavement
- ☐ Grading operations, excavation, and embankment
- ☐ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☐ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☐ Place flex base
- ☐ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☐ Revegetation of unpaved areas
- ☐ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other:
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☒ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☐ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☐ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ☐ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- ☐ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐ Other:
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
Unnamed Tributary A to Elm Waterhole Creek	

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



Sheet 1 of 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
STATE	STATE DIST.	COUNTY	
CONT.	SECT.	JOB	HIGHWAY NO.

SANCHEZ-SALAZAR & ASSOCIATES, LLC 4630 N Loop 1604 W, Suite 115
San Antonio, TX 78249
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TBPELS Registration No. 15685



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Engineering License #F-10053

ARDURRA Ardurra Group, Inc. (dba LNV, LLC)
COLLABORATE. INNOVATE. CREATE. Surveying Firm 10126502



PUBLIC WORKS DEPARTMENT

coonzoalez
9/24/2025
SW3P Summary Sheet 2 with Border.dgn

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding

- ☒ ☐ Biodegradable Erosion Control Logs
- ☒ ☐ Rock Filter Dams/ Rock Check Dams

- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike

- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____

- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☒ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection

- ☒ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms

- ☐ ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones

- ☐ ☐ Vegetated Filter Strips

- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap

☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area

☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin

☐ Not required (<10 acres disturbed)

☐ Required (>10 acres) and implemented.

☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area

☐ 3,600 cubic feet of storage per acre drained
- ☐ Required (>10 acres), but not feasible due to:

☐ Available area/Site geometry

☐ Site slope/Drainage patterns

☐ Site soils/Geotechnical factors

☐ Public safety

☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Other: _____

- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- ☐ Debris and Trash Management
- ☐ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____

- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



Sheet 2 of 2

FED. RD. DIST. NO.	PROJECT NO.		SHEET NO.
	23-01565-06		
STATE	STATE DIST.	COUNTY	
CONT.	SECT.	JOB	HIGHWAY NO.

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Surveying Firm 10126502



PUBLIC WORKS DEPARTMENT

95%SUBMITTAL PROJECT NO. : 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO. :

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 540.

List M4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1. San Antonio Water System
2. ☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the Storm Water Pollution Prevention Plan (SW3P) and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspector's.
4. SW3P inspections shall be conducted by a P.E. or a certified stormwater inspector [see COSA Ordinance No. 019-02-14-0123, Sec 34-805(q)].
5. When Contractor specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the COSA Inspector.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

The Contractor shall adhere to all of the terms and conditions associated with the following permit(s):

- ☒ No Permit Required
- ☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required
- ☐ Nationwide Permit 14 - PCN Required
- ☐ Individual 404 Permit Required
- ☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1. Contractor to disturb only those areas shown within the project limits. If additional area is to be disturbed, the Contractor is to notify the City Project Engineer prior to commencing work. Absolutely no work shall be performed within the limits of the jurisdictional waters of the United States, except in the areas shown in this plan set. Absolutely no material shall be stockpiled or allowed to accumulate in or near the jurisdictional waters of the U.S. The Contractor is responsible for reimbursing the City for obtaining permits and payments of fines for work performed not in accordance with this plan set.

401 Best Management Practices: (Not applicable if no USACE permit)

Erosion

- ☐ Temporary Vegetation
- ☐ Blankets/Matting
- ☐ Mulch
- ☐ Sodding
- ☐ Interceptor Swale
- ☐ Diversion Dike
- ☒ Erosion Control Compost
- ☐ Mulch Filter Berm and Socks
- ☐ Compost Filter Berm and Socks

Sedimentation

- ☐ Silt Fence
- ☐ Rock Berm
- ☐ Triangular Filter Dike
- ☐ Sand Bag Berm
- ☐ Straw Bale Dike
- ☐ Brush Berms
- ☐ Erosion Control Compost
- ☐ Mulch Filter Berm and Socks
- ☐ Compost Filter Berm and Socks
- ☐ Stone Outlet Sediment Traps
- ☐ Sediment Basins

Post-Construction TSS

- ☐ Vegetative Filter Strips
- ☐ Retention/Irrigation Systems
- ☐ Extended Detention Basin
- ☐ Constructed Wetlands
- ☐ Wet Basin
- ☐ Erosion Control Compost
- ☐ Mulch Filter Berm and Socks
- ☐ Compost Filter Berm and Socks
- ☐ Vegetation Lined Ditches
- ☐ Sand Filter Systems
- ☐ Sedimentation Chambers
- ☐ Grassy Swales

III. CULTURAL RESOURCES

Cultural resources fall under the Antiquities Code of Texas and/or the National Historic Preservation Act, as amended in 1966. If a previously unidentified archeological site is encountered during construction work, activities in the vicinity shall be stopped immediately and the City Archeologist (210-207-5421 or 210-207-7306) and/or the SHPO notified.

- ☐ No Action Required ☒ Required Action

Action No.

1. If a historic resource (concrete stamp, carriage block, metal fixture, tile, masonry, etc.) is found that is not in the plans or has not been previously assessed, contact PWD EMD immediately at (210) 207-0035.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162,164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

- ☐ No Action Required ☒ Required Action

Action No.

1. Ensure that a tree permit is in place for this project, if required.
2. Follow the tree preservation/mitigation plan provided in the design plan set. If there are any questions or concerns, please contact the City Arborist at (210) 207-0278, before any work begins.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

- ☐ No Action Required ☒ Required Action

Action No.

- 1.MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the the following requirements:
- A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of the year. If there are any active nests, they shall not be removed until the nests become inactive.
- B. On/In structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.
- 2.Deterrent material should be placed (and maintained) after October 1st or before February 15th.
- 3.The preferred nesting season for migratory birds is from February 15th through October 1st. When practicable, schedule construction operations outside of the preferred nesting season.
- 4.If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the COSA Inspector immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the COSA Inspector immediately.
- 5.If any sensitive feature (caves, subsurface voids, etc.) is discovered during construction, all construction activities near the sensitive feature must be suspended immediately. The Construction Inspector shall be immediately notified of any sensitive features encountered during construction. The construction activities near the sensitive feature may not proceed until a US Fish and Wildlife Service (USFWS) permitted biologist has assessed the site for evidence of habitat or listed endangered species. If it is determined that endangered species or their habitat is present within the void space, consultations with the USFWS will commence and work within the immediate vicinity of the sensitive feature will not be allowed to proceed until USFWS approval has been recieved.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the follwing are detected:

- * Dead or distressed vegetation (not identified as normal)
- * Trash piles, drums, canister, barrels, etc.
- * Undesirable smells or odors
- * Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

- ☐ Yes ☒ No

If "No", then no further action is needed.

If "Yes", then COSA is responsible for completing abestos assessment/inspection.

Are the results of the abestos inspection positive (is abestos present)?

- ☐ Yes ☒ No

If "Yes", then COSA must retain a DSHS licensed abestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 days prior to scheduled demolition.

If "No", then COSA is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and abestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

- ☒ No Action Required ☐ Required Action

Action No.

- 1.
- 2.
- 3.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

- ☒ No Action Required ☐ Required Action

Action No.

- 1.
- 2.
- 3.

**BULVERDE RD
(GREEN SPRING DR - REDLAND RD)
ENVIRONMENTAL PERMITS,
ISSUES AND COMMITMENTS
EPIC**

FILE: epic_2015-10-09_SAT.dgn	DN: TxDOT	CK: TxDOT	DW: BW	CK: GAG
© TxDOT OCTOBER 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS			23-01565-06	
	DIST	COUNTY		SHEET NO.
		BEXAR		

EPA & TCEQ Construction General Permit - Checklist of Record Keeping Responsibilities
City of San Antonio (COSA) - January-2015

ENGINEER

Pre Construction

- Design of structural controls
- Development of SWP3
- Development of SWP3 site diagram(s) including grading plans/contours anticipated at initial, interim and final grade
- Development of project phasing schedule
- Water Pollution Abatement Plan (WPAP) (Edwards Aquifer)
- AST Plan (Edwards Aquifer)
- Environmental Preconstruction Meeting

During Construction

- Evaluation of BMP effectiveness
- Review of SWP3 Modifications

Post Construction

- Close Out Inspection
 - o Ensure removal of temporary BMPs,
 - o Verify correct installation of permanent BMPs,
 - o Assess final stabilization

COSA CONSTRUCTION PROJECT MANAGER

Pre Construction

- Review SWP3 Plans
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)

Construction

- Ensure inspection are performed and document every 7 days
- Ensure a designated SWP3 inspector certifies all inspection reports.
- Ensure maintenance of up to date copies of SWP3 and associated records
 - o Corrective Action Documentation- within 7 days of time of discovery (EPA)
 - o Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Follow Up on incidents and spill reports to ensure proper corrective actions
 - o Construction Manager would be responsible for notifying COSA Environmental of a Reportable Quantity Release (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
 - o Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to COSA Environmental.
- Ensure completing of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
 - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Contractor, COSA, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
 - o Ensure removal of temporary BMPs,
 - o Verify correct installation of permanent BMPs,
 - o Assess final stabilization achieved to allow Notice of Termination

COSA ENVIRONMENTAL GROUP

Pre Construction

- Review SWP3 Plans
- File Construction Site Notice with SAWS
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)
- Post Construction Site Notice

Construction

- Ensure a designated SWP3 inspector certifies all inspection reports.
- Ensure inspection are performed and document every 7 days
- Ensure maintenance of up to date copies of SWP3 and associated records
 - o Corrective Action Documentation- within 7 days of time of discovery
 - o Maintenance- document if unable to fix/install item within 7 days.
- Follow Up on incidents and spill reports to ensure proper corrective actions
 - o Conduct TCEQ notification as required for spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
- Ensure completion of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
 - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Construction Project Manager, Contractor, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
 - o Ensure removal of temporary BMPs,
 - o Verify correct installation of permanent BMPs,
 - o Ensure removal of posted SWP3 documents
 - o Assess final stabilization achieved to allow Notice of Termination
- Obtain and file all records associated with the TPDES/NPDES Permit activities at the project for 3 years
- Terminate Construction Site Notice with SAWS

CONTRACTOR

Pre Construction

- Review SWP3 Plans
- File Construction Site with SAWS
- Provide the name, company, and certification of the stormwater inspector [see COSA Ordinance No. 2014-06-19-0472, Sec. 34-805(q)]
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)
- Post Construction Site Notice

Construction

- Conduct inspections every 7 days and maintain records of inspections and corrective actions
- Ensure a designated SWP3 inspector certifies all inspection reports
- Maintain up to date copies of SWP3 and associated records
 - o Corrective Action Documentation- within 7 days of time of discovery (EPA)
 - o Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Follow Up on incidents and spill reports to ensure proper corrective actions
 - o Notify Construction Site Project Manager immediately of spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
 - o Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to the Project Manager, as necessary.
- Complete the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
 - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Maintain an on-site Material Inventory
- Update SWP3 to depict actual locations and types of BMPs, potential pollutant sources, etc., as the project proceeds.
- Coordinate between Construction Project Manager, COSA Environmental, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure SWP3 is being noted accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

CONTRACTOR (Cont'd)

Post Construction

Close Out Inspection

- Ensure removal of temporary BMPs,
- Verify correct installation of permanent BMPs,
- Assess final stabilization achieved to allow Notice of Termination
- Ensure removal of posted SWP3 documents
- Obtain and file all records associated with the TPDES/NPDES Permit activities at the project for 3 years
- Terminate Construction Site Notice with SAWS

JANUARY 2015

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

STORM WATER POLLUTION
GENERAL NOTES

100% SUBMITTAL	PROJECT NO. :	23-01632	DATE: 6/1/2021
DRWN. BY: -----	DSGN. BY: -----	CHKD. BY: -----	SHEET NO. 111

PROPERTY ID 721572
15651 BULVERDE RD
NCB 18890
BLK 4 LOT E IRR 682.26 FT OF 38
"GREEN SPRING VLY" ANNEXATN

PROPERTY ID 721925
15701 BULVERDE RD
NCB 18890
BLK 16 LOT E IRR 400.6 FT OF
49 "GREEN SPRING VLY" ANNEXATN

PROPERTY ID 652545
999 BULVERDE RD
NCB 17365
P-1 (20.70 AC), P-3 (89.7489 AC) &
P-24 (86.192 AC) ABS 297
"LONGS CREEK" ANNEXATION

PROPERTY ID 722145
15793 BULVERDE RD
NCB 18890
BLK 29 LOT S IRR 76.15 FT OF
1 (0.181 AC) & P-102B (1.856 AC)

PROPERTY ID 721925
15701 BULVERDE RD
NCB 18890
BLK 16 LOT E IRR 400.6 FT OF
49 "GREEN SPRING VLY" ANNEXATN

CONSTRUCTION EXIT TYPE 1
PHASE 2

BULVERDE RD.

PROP BULVERDE RD. CL

PROPERTY ID 652545
999 BULVERDE RD
NCB 17365

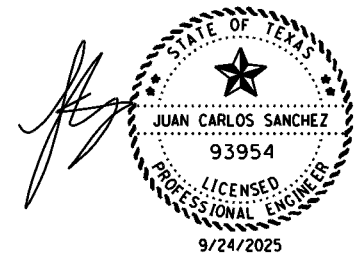
P-1 (20.70 AC), P-3 (89.7489 AC) &
P-24 (86.192 AC) ABS 297
"LONGS CREEK" ANNEXATION

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY
BASED ON THE BEST AVAILABLE DATA HOWEVER
THE CONTRACTOR SHALL FIELD VERIFY THE
EXACT LOCATION OF EACH UTILITY PRIOR TO
CONSTRUCTION.

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	164
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	164
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	78

NOTE:

1. REFER TO ROADWAY SHEETS FOR MORE INFORMATION
2. REFER TO DRAINAGE SHEETS FOR MORE INFORMATION.



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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BASE BID - STORMWATER
POLLUTION PREVENTION PLAN
BEGIN TO STA 78+00
SHEET 1 OF 4

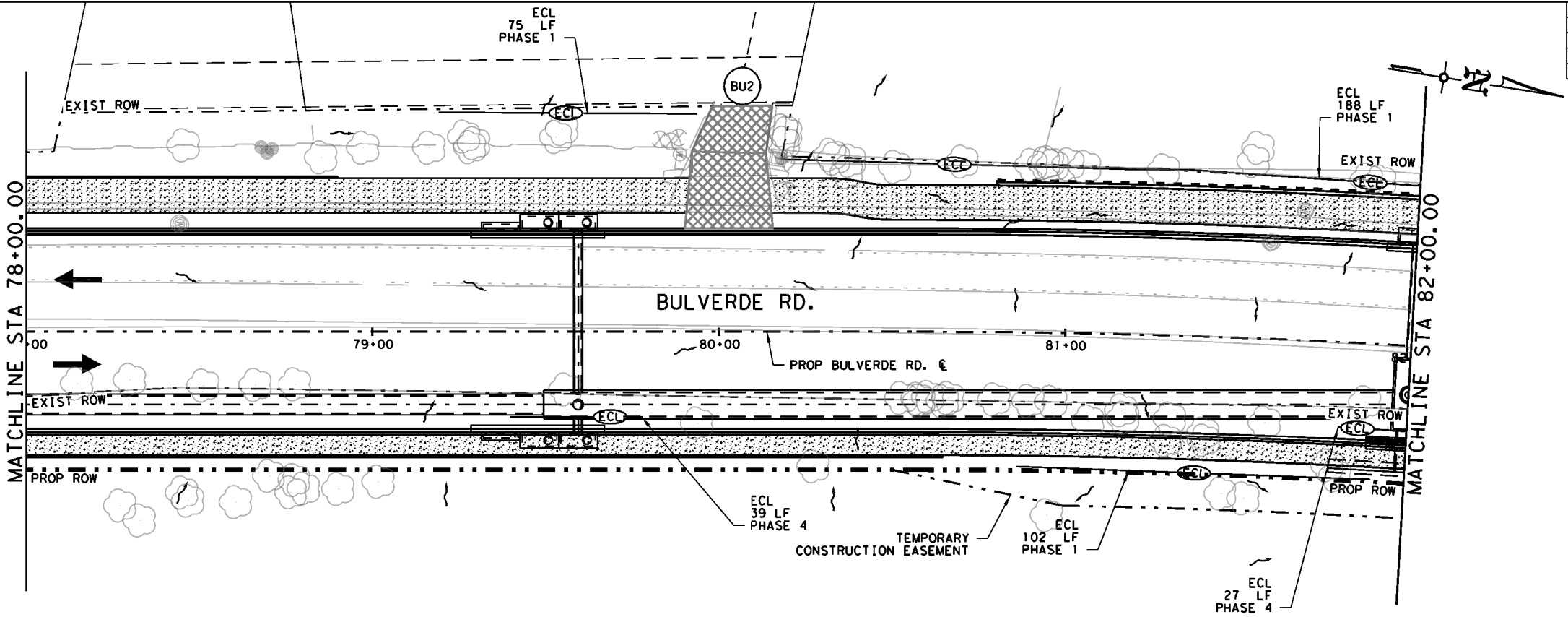
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

95% SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.:

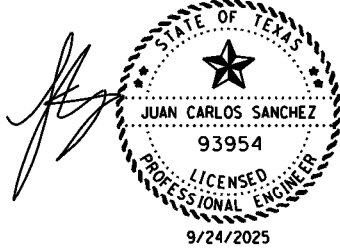
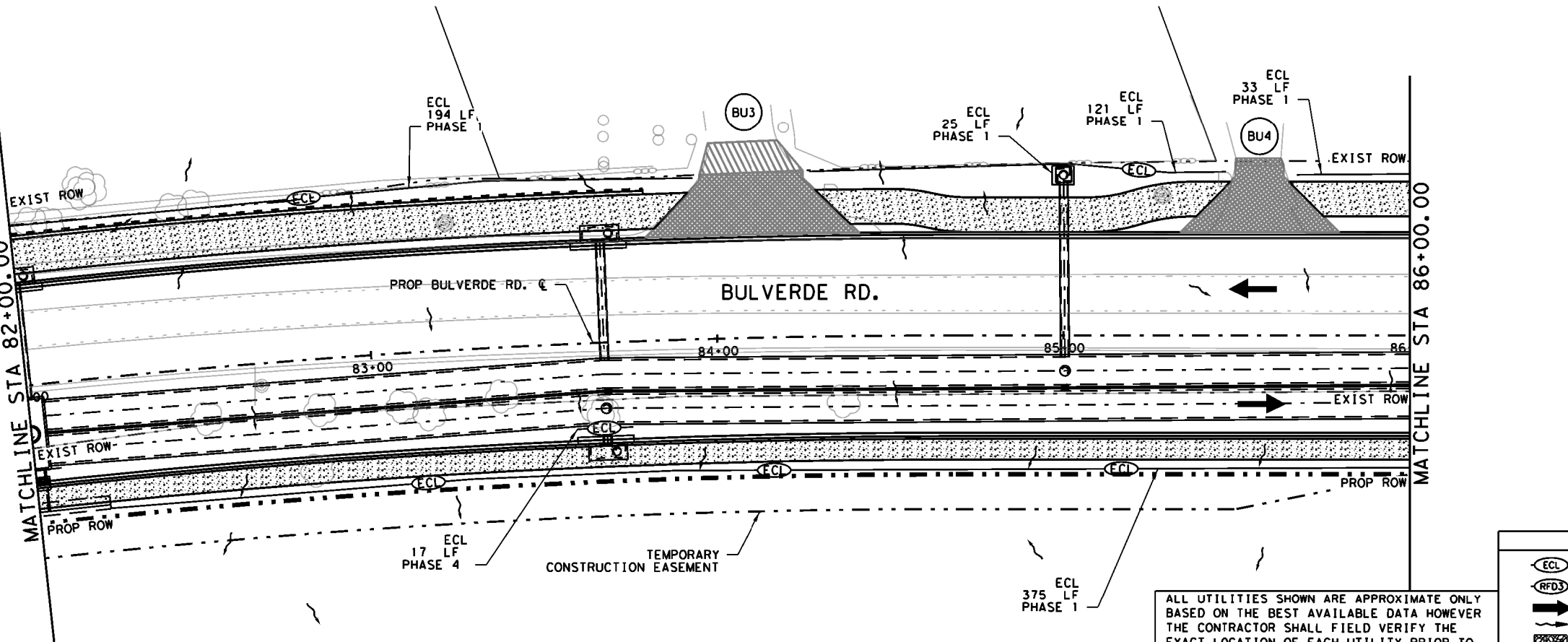
LEGEND

- (ECL) EROSION CONTROL LOGS (BIN)
- (RFD3) ROCK FILTER DAM TYPE 3
- TRAFFIC FLOW ARROW
- DRAINAGE FLOW
- CONSTRUCTION EXIT TYPE 1 OTHERWISE NOTED

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	1196
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	1196
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BASE BID - STORMWATER
POLLUTION PREVENTION PLAN
STA 78+00 TO STA 86+00
SHEET 2 OF 4

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

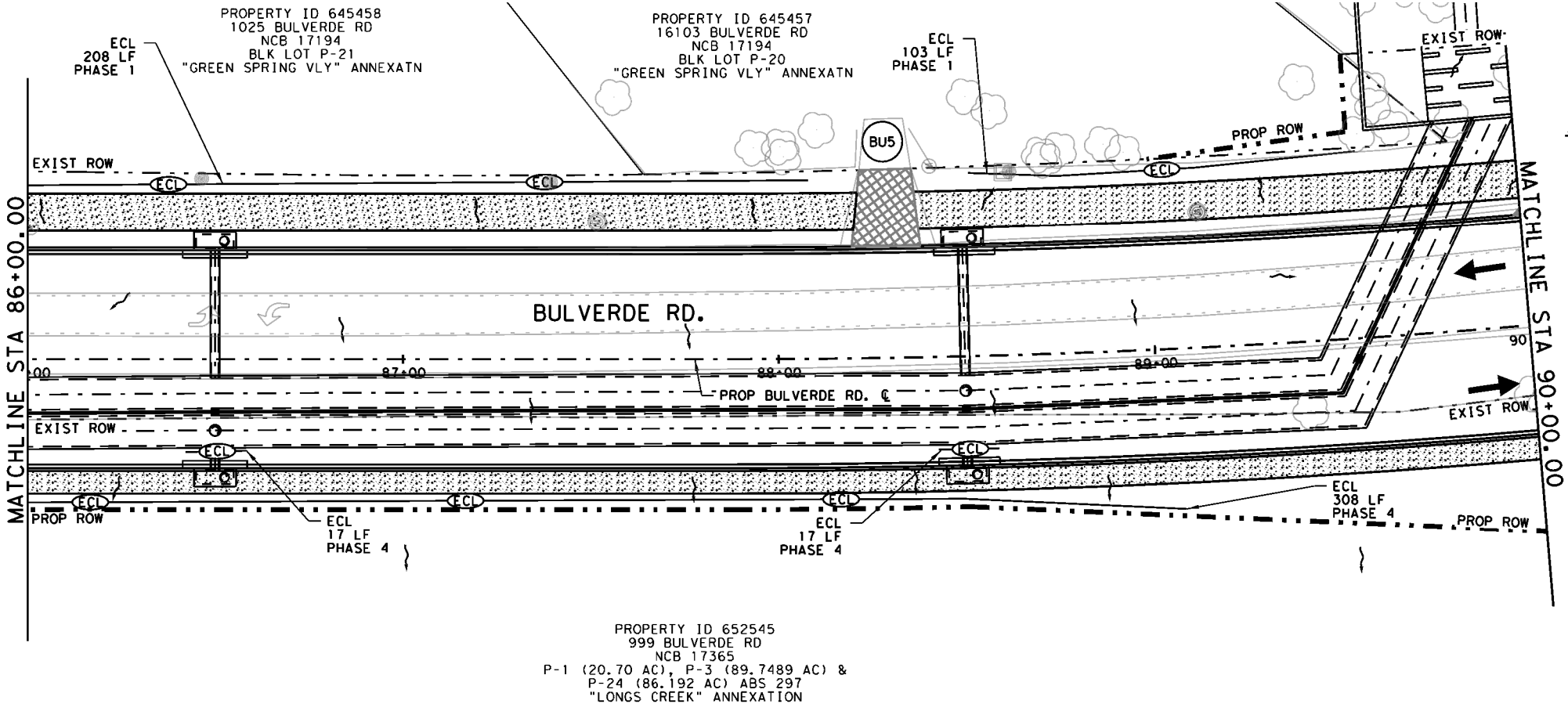
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DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.:

LEGEND	
	EROSION CONTROL LOGS (BIN)
	ROCK FILTER DAM TYPE 3
	TRAFFIC FLOW ARROW
	DRAINAGE FLOW
	CONSTRUCTION EXIT TYPE 1
	EST. 78 SY UNLESS OTHERWISE NOTED

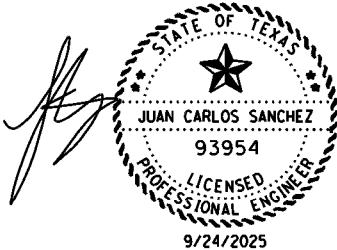
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THE CONTRACTOR SHALL FIELD VERIFY THE
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CONSTRUCTION.

9/24/2025
210196 SW JP02.dgn

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	653
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	653
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	



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BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BASE BID - STORMWATER
POLLUTION PREVENTION PLAN
STA 86+00 TO 90+00
SHEET 3 OF 4

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

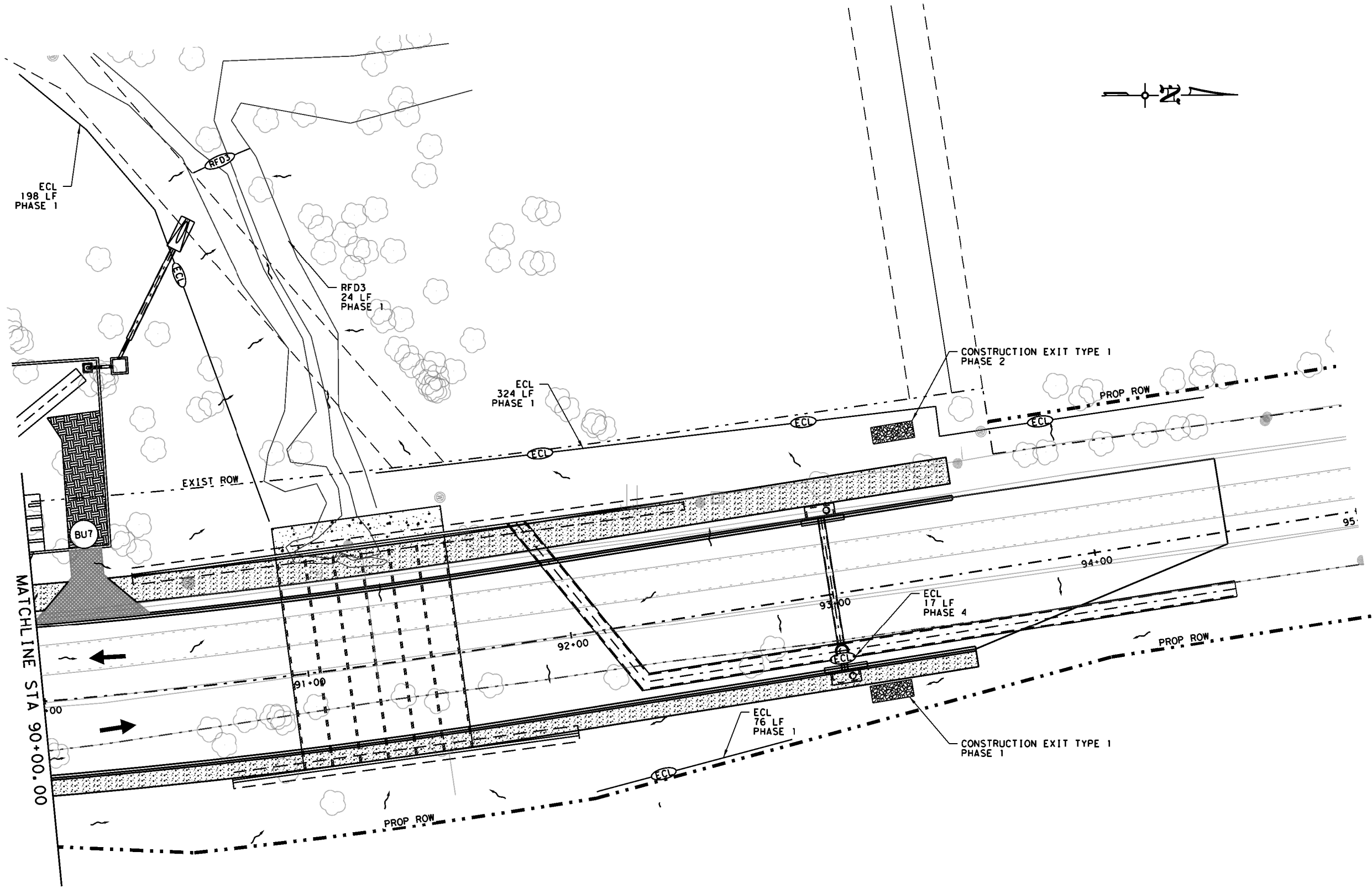
95% SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.:

LEGEND	
	EROSION CONTROL LOGS (BIN)
	ROCK FILTER DAM TYPE 3
	TRAFFIC FLOW ARROW
	DRAINAGE FLOW
	CONSTRUCTION EXIT TYPE 1 EST. 78 SY UNLESS OTHERWISE NOTED

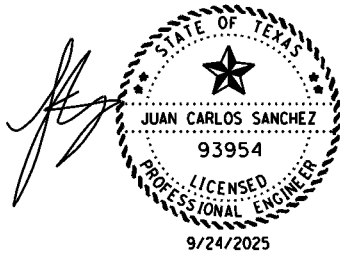
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THE CONTRACTOR SHALL FIELD VERIFY THE
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CONSTRUCTION.

sgn0201ez
9/24/2025
210196 SW JP03.dgn

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	598
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	598
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	24
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	78



- NOTE:
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PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
BASE BID- STORMWATER
POLLUTION PREVENTION PLAN
STA 90+00 TO END
SHEET 4 OF 4
HORIZ. SCALE: 1"=40'

0 20 40
SCALE IN FEET

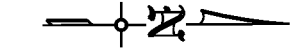
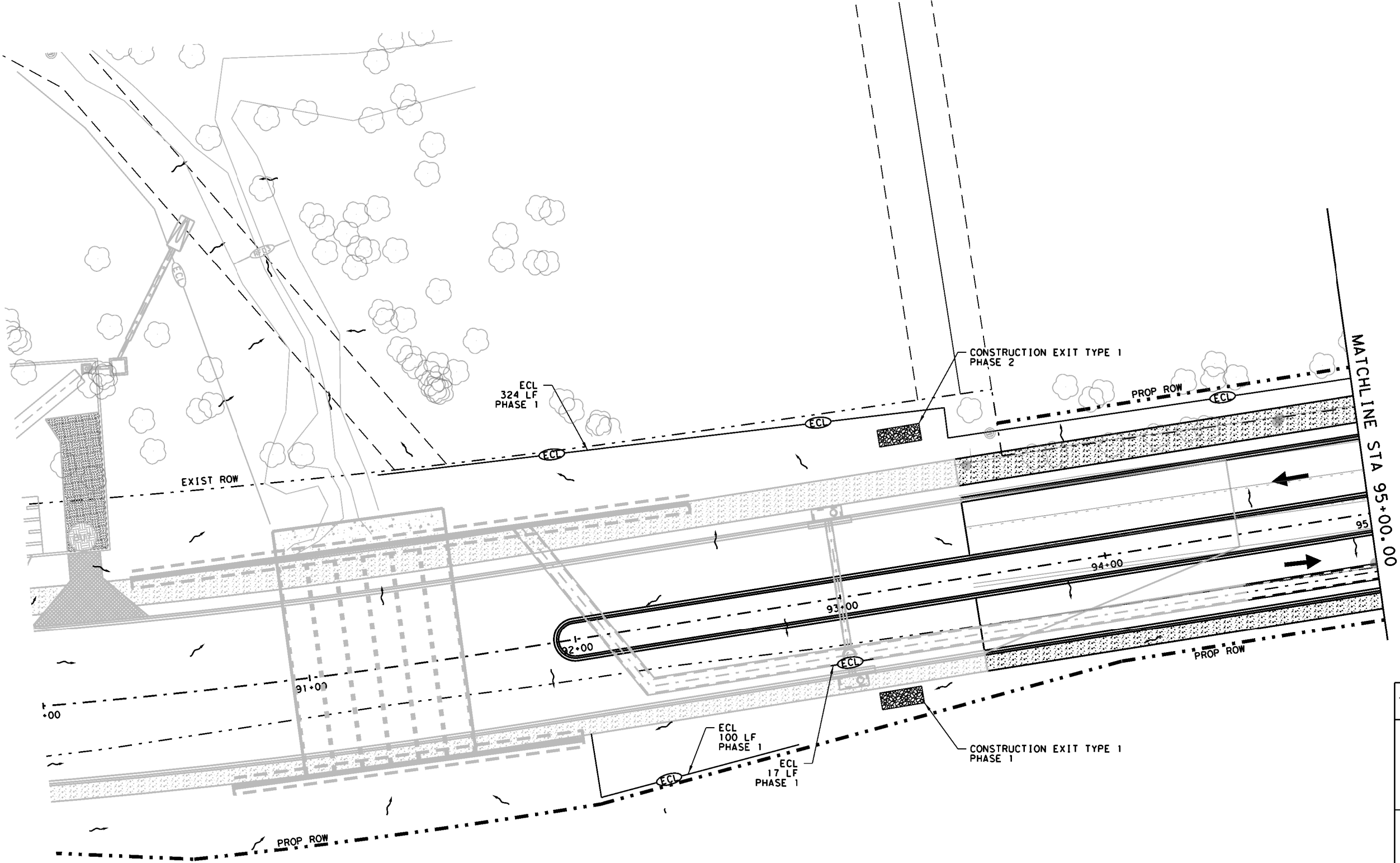
95%SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO. :

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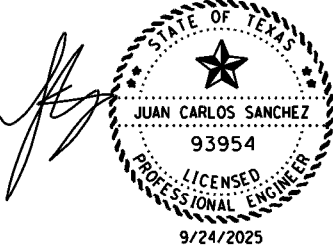
LEGEND	
	EROSION CONTROL LOGS (BIN)
	ROCK FILTER DAM TYPE 3
	TRAFFIC FLOW ARROW
	DRAINAGE FLOW
	CONSTRUCTION EXIT TYPE 1 EST. 78 SY UNLESS OTHERWISE NOTED

9/24/2025
210196 SWP04.dgn

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	441
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	441
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	78



- NOTE:
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
ADD ALT 1 - STORMWATER
POLLUTION PREVENTION PLAN
BEGIN TO 95+00
SHEET 1 OF 2

HORIZ. SCALE: 1"=40'



95% SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.:

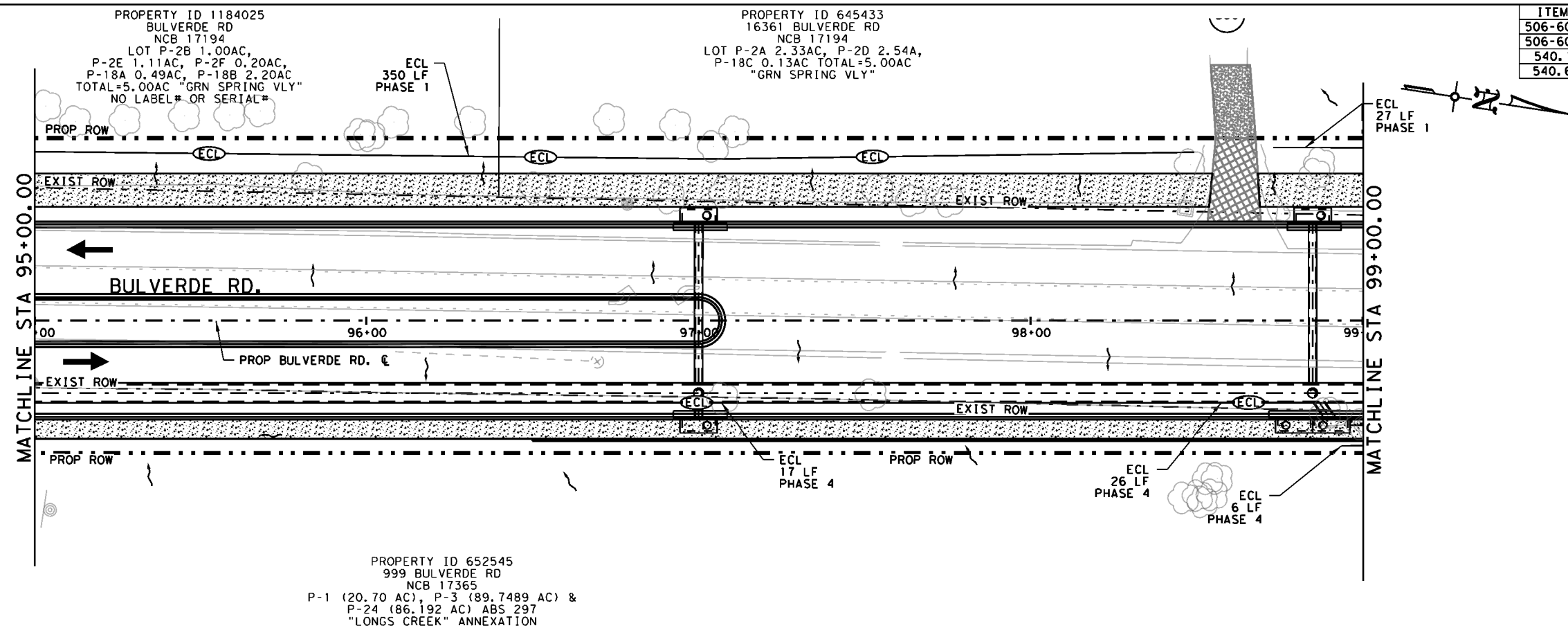
LEGEND

- EROSION CONTROL LOGS (BIN)
- ROCK FILTER DAM TYPE 3
- TRAFFIC FLOW ARROW
- DRAINAGE FLOW
- CONSTRUCTION EXIT TYPE 1
EST. @ 78 SY UNLESS OTHERWISE NOTED

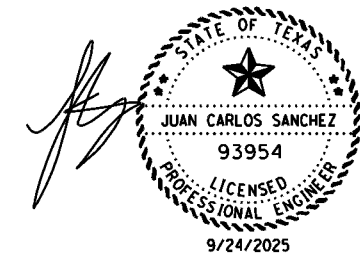
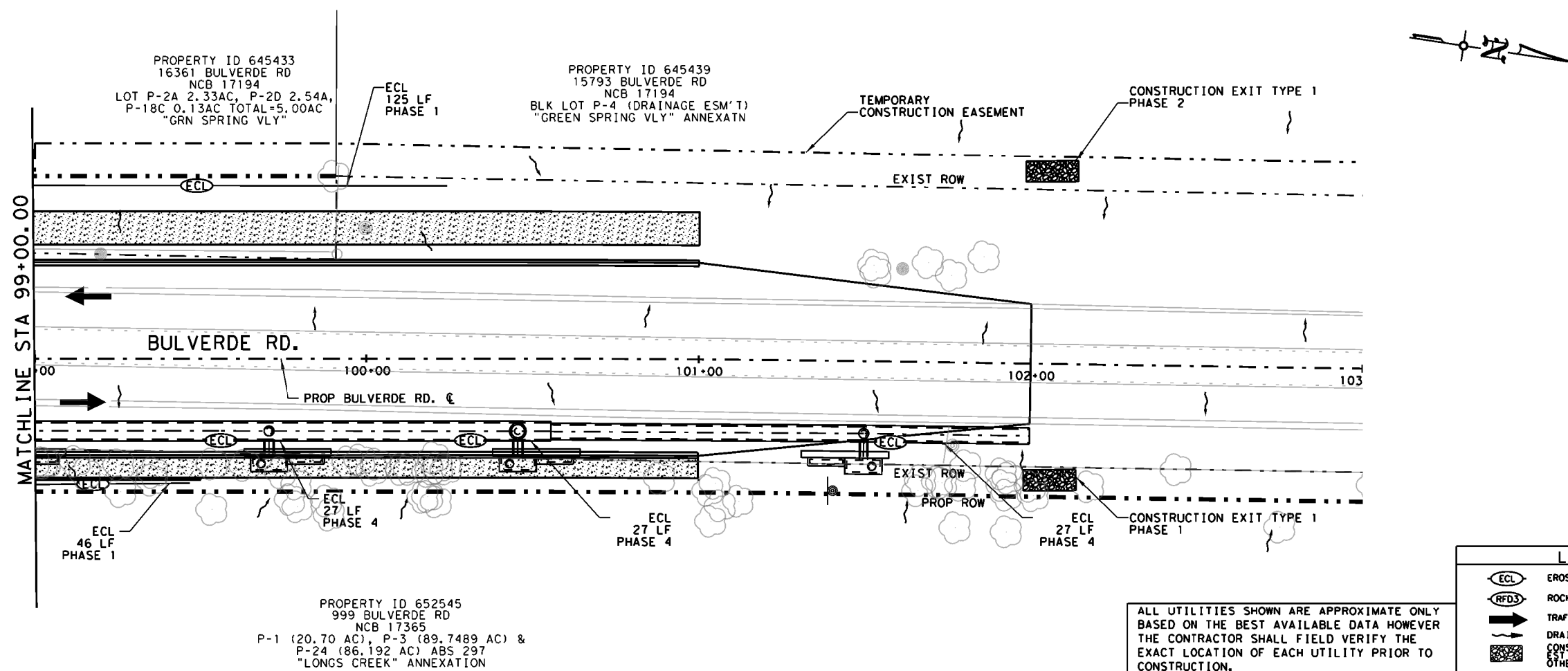
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THE CONTRACTOR SHALL FIELD VERIFY THE
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9/24/2025
210196-SW-PADDAL T101.dgn

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	678
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	678
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	78



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
ADD ALT 1 - STORMWATER
POLLUTION PREVENTION PLAN
STA 95+00 TO END
SHEET 2 OF 2

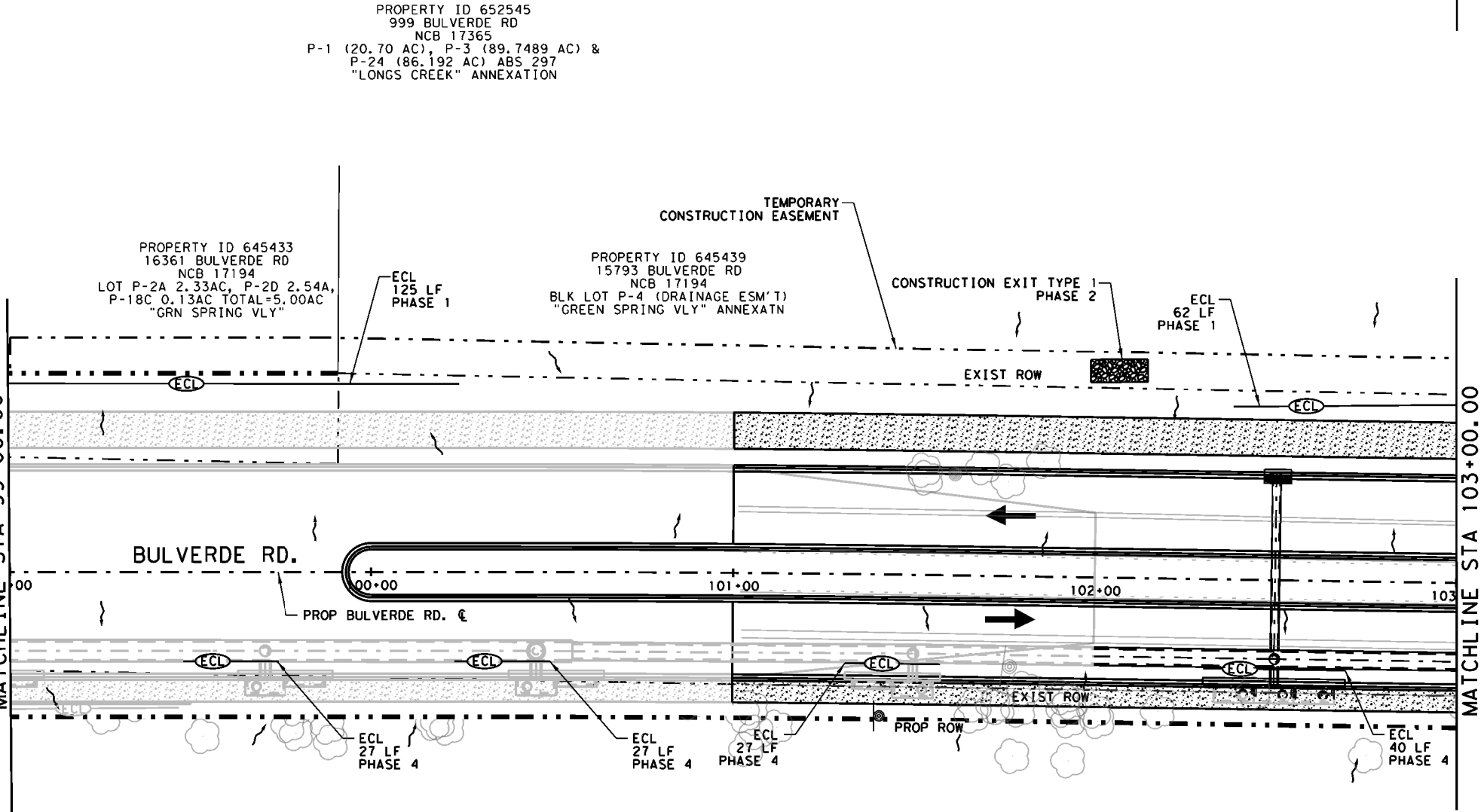
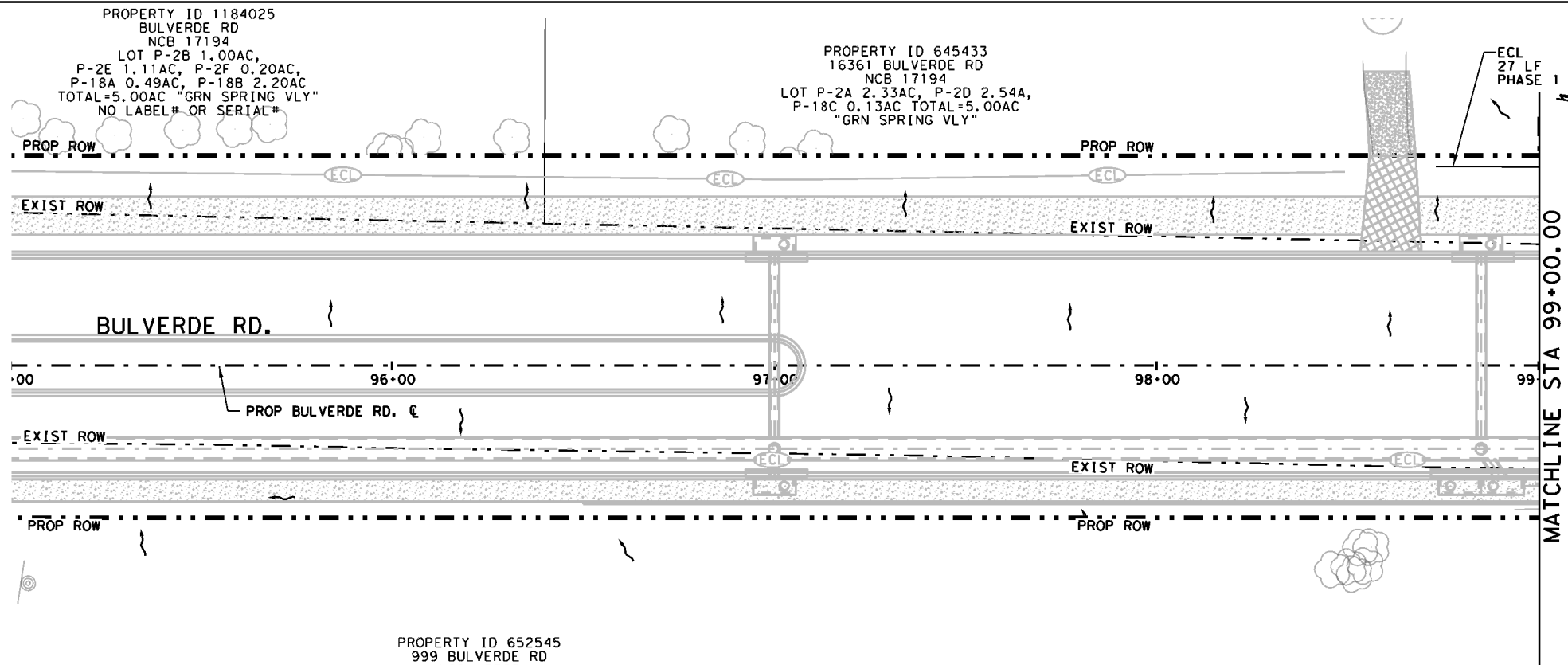
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET
95% SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.:

LEGEND	
	EROSION CONTROL LOGS (BIN)
	ROCK FILTER DAM TYPE 3
	TRAFFIC FLOW ARROW
	DRAINAGE FLOW
	CONSTRUCTION EXIT TYPE 1 EST. 78 SY UNLESS OTHERWISE NOTED

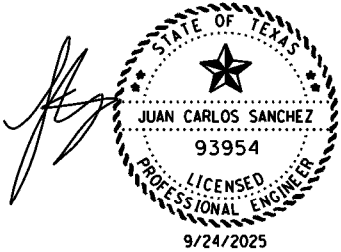
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THE CONTRACTOR SHALL FIELD VERIFY THE
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CONSTRUCTION.

9/24/2025
972472025
210196 SWPADDAL T102.dgn

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	335
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	335
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	78



- NOTE:
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Surveying Firm 10126502



BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
ADD ALT 2 - STORMWATER
POLLUTION PREVENTION PLAN
BEGIN TO STA 103+00
SHEET 1 OF 2

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

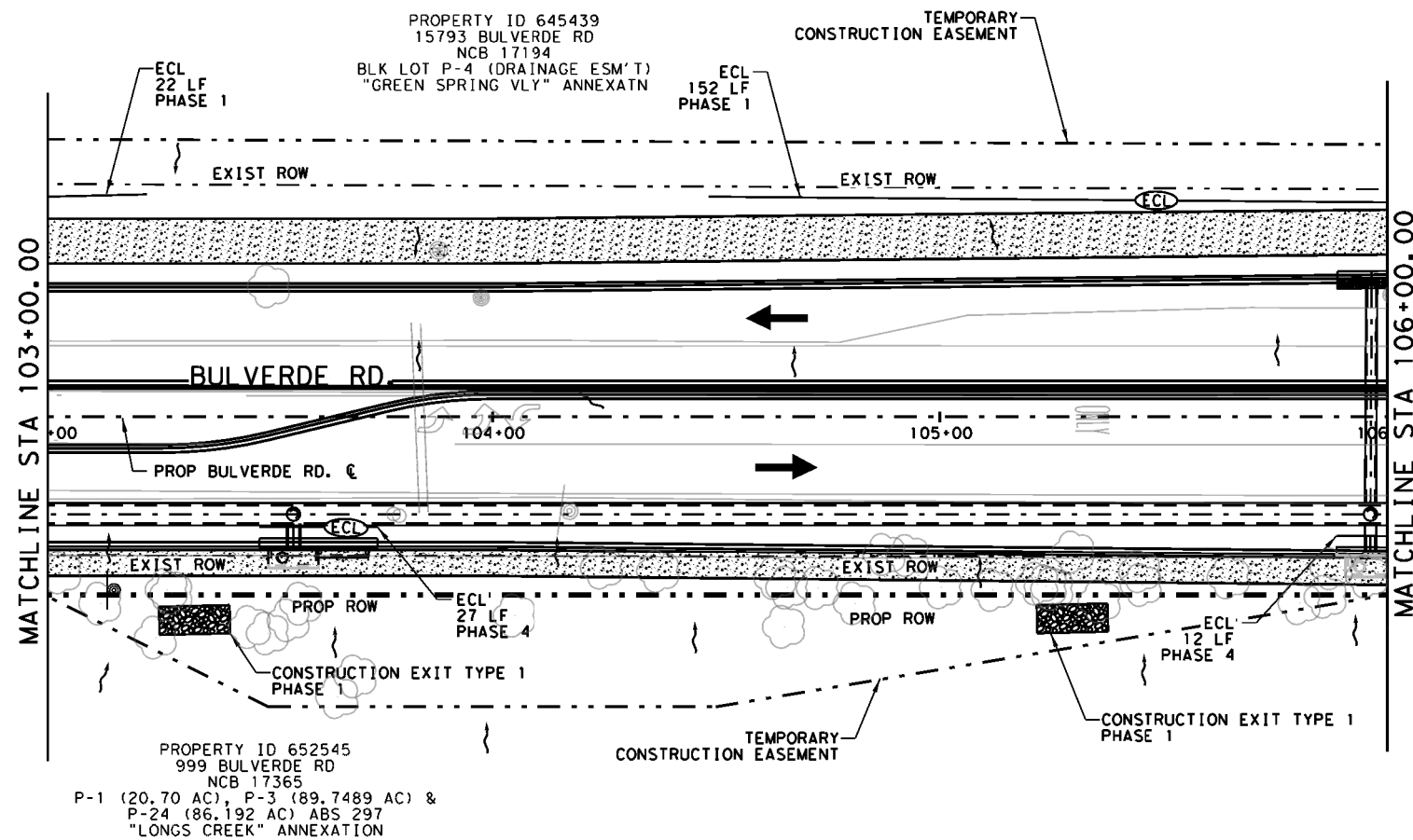
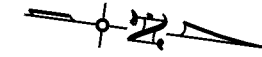
95% SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.: 1

LEGEND	
	EROSION CONTROL LOGS (BIN)
	ROCK FILTER DAM TYPE 3
	TRAFFIC FLOW ARROW
	DRAINAGE FLOW
	CONSTRUCTION EXIT TYPE 1 EST. 78 SY UNLESS OTHERWISE NOTED

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY
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CONSTRUCTION.

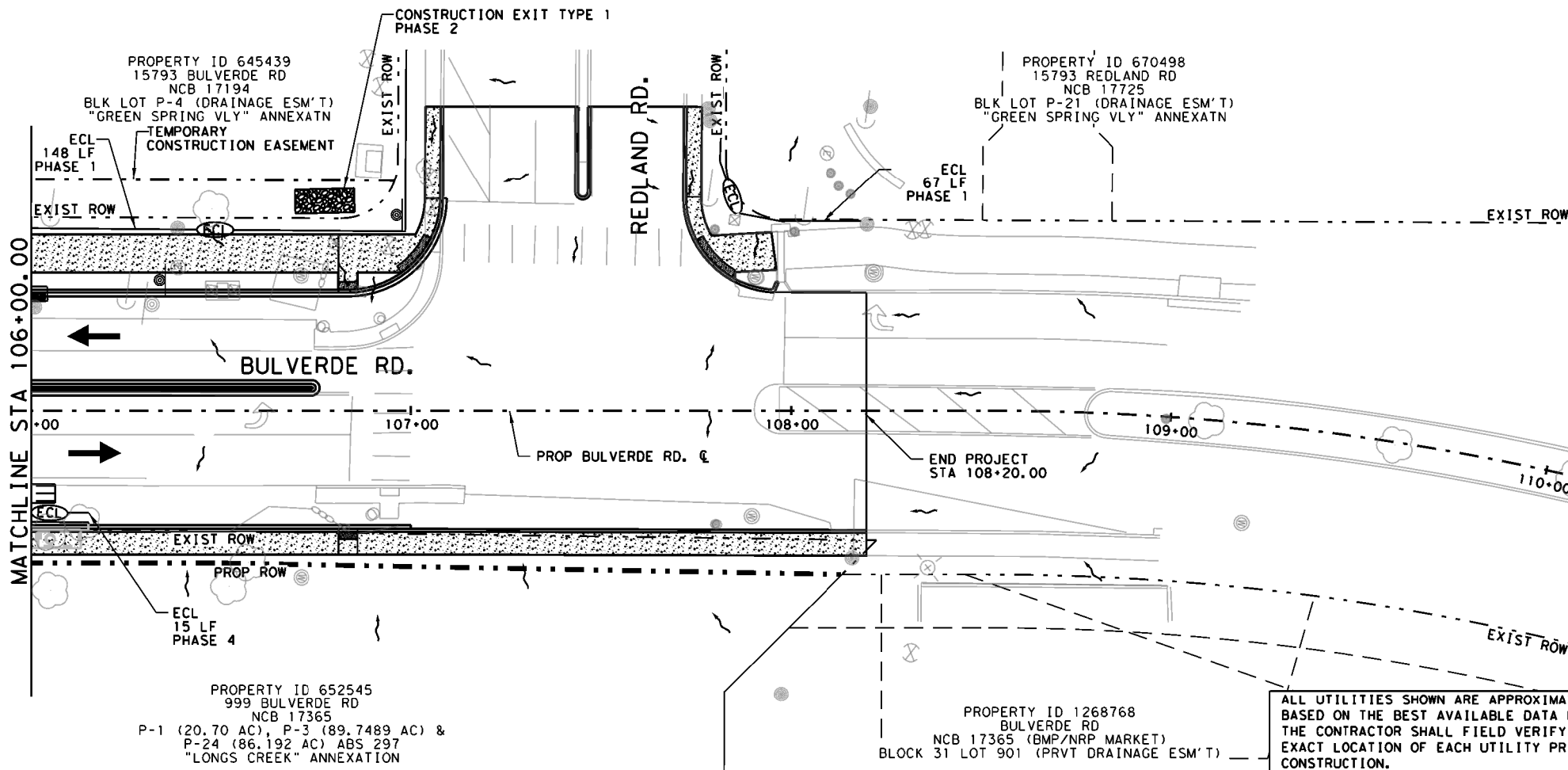
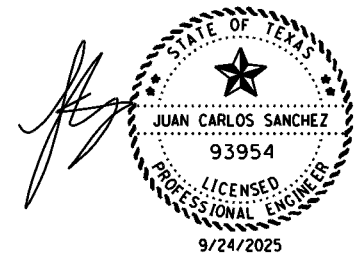
9/24/2025
210196 SWPADDAL T201.dgn

ITEM	DESCRIPTION	UNIT	QTY
506-604	BIODEGRADABLE EROSION CONTROL LOGS (INSTALL)	LF	443
506-604	BIODEGRADABLE EROSION CONTROL LOGS (REMOVE)	LF	443
540.1	ROCK FILTER DAMS (INSTALL/REMOVE) TYPE 3	LF	
540.6	CONSTRUCTION EXITS (INSTALL/REMOVE)	SY	78



NOTE:

1. REFER TO ROADWAY SHEETS FOR MORE INFORMATION
2. REFER TO DRAINAGE SHEETS FOR MORE INFORMATION.



LEGEND	
	EROSION CONTROL LOGS (BIN)
	ROCK FILTER DAM TYPE 3
	TRAFFIC FLOW ARROW
	DRAINAGE FLOW
	CONSTRUCTION EXIT TYPE 1
	EROSION CONTROL LOGS (BIN)

ALL UTILITIES SHOWN ARE APPROXIMATE ONLY
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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

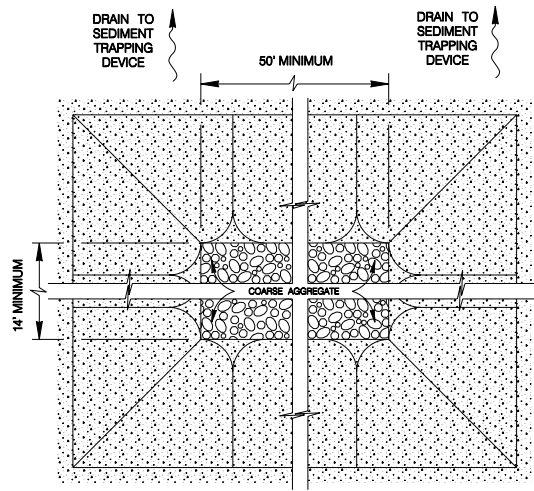
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND ROAD)
ADD ALT 2 - STORMWATER
POLLUTION PREVENTION PLAN
STA 103+00 TO END
SHEET 2 OF 2

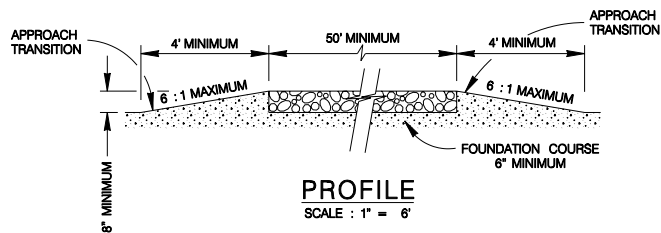
HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

95% SUBMITTAL PROJECT NO.: 23-01565-06 DATE: 9/24/2025
DRWN. BY: JB DSGN. BY: JB CHKD. BY: JCS SHEET NO.:

9/24/2025
210196-SW-FADDAL T202.dgn



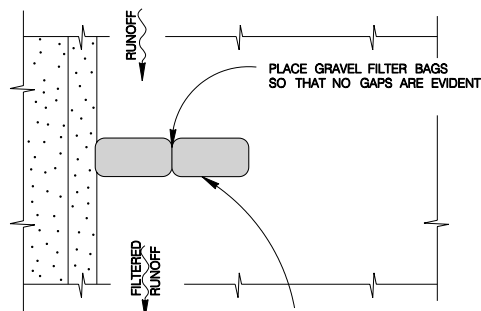
PLAN
SCALE : 1" = 6'



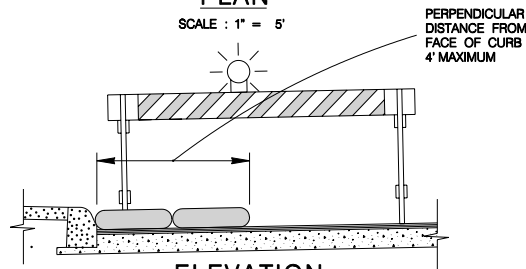
PROFILE
SCALE : 1" = 6'

- GENERAL NOTES**
1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
 2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
 3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
 4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
 5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
 6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT - TYPE 1



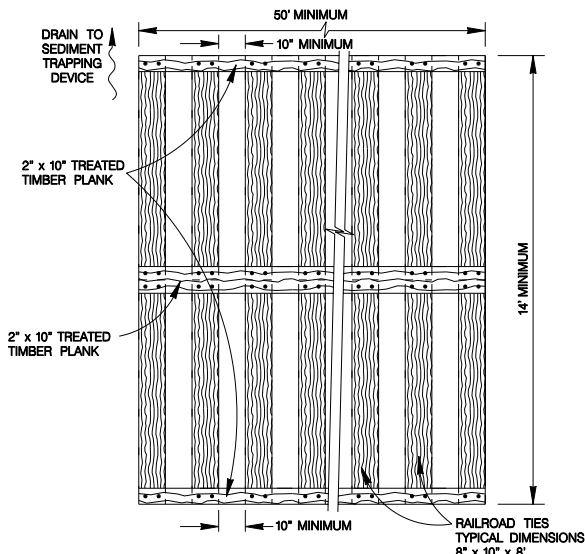
PLAN
SCALE : 1" = 5'



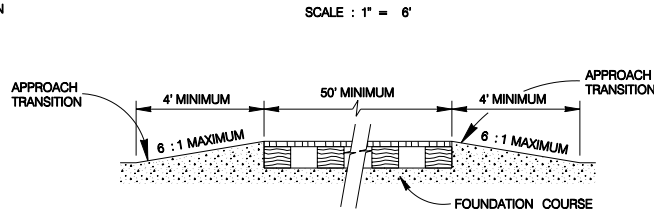
ELEVATION
SCALE : 1" = 5'

NOTE: STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



PLAN
SCALE : 1" = 6'

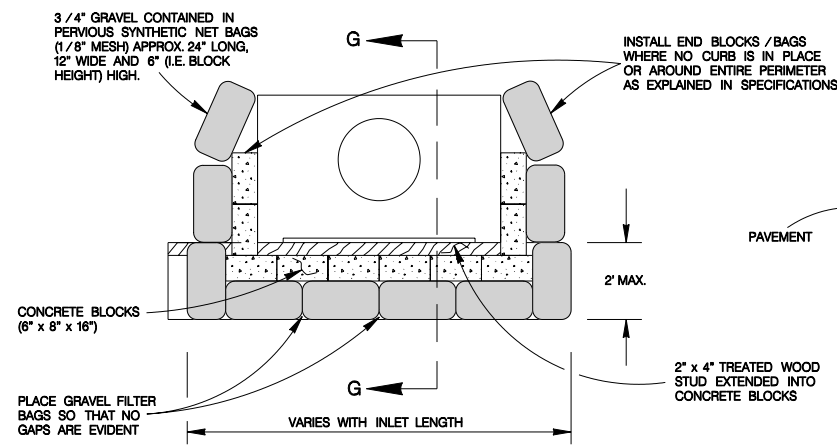


PROFILE
SCALE : 1" = 6'

GENERAL NOTES

1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1/2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN. AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

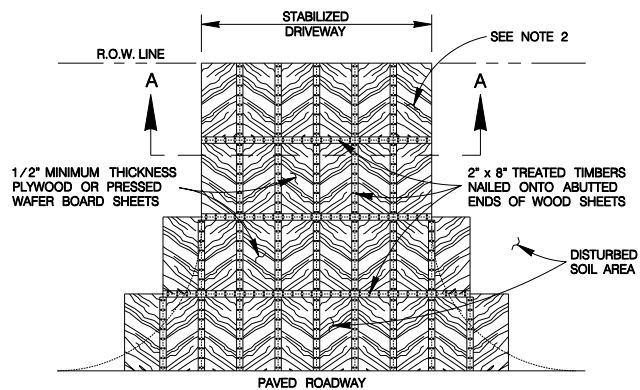
CONSTRUCTION EXIT - TYPE 2



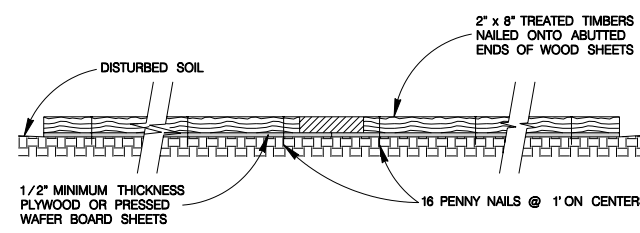
PLAN
SCALE : 1" = 5'

NOTE: GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.

CURB INLET GRAVEL FILTER



PLAN
SCALE : 1" = 20'

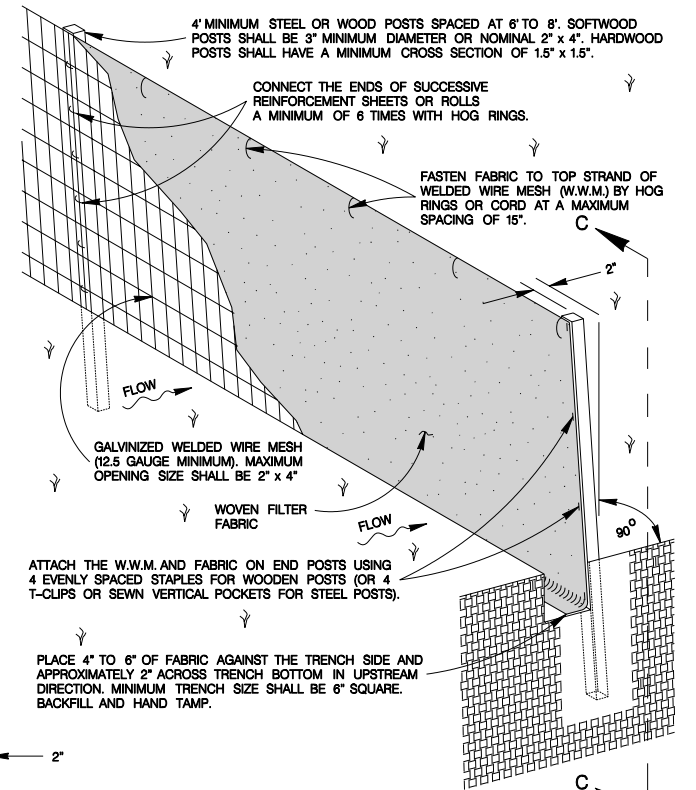


SECTION A-A
SCALE : 1" = 2'

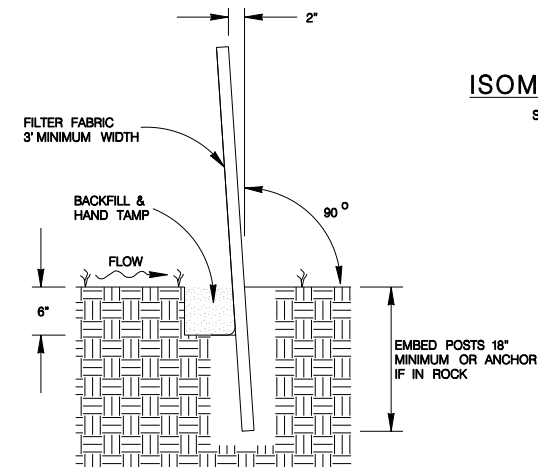
GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN. AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT - TYPE 3



ISOMETRIC VIEW
SCALE : 1" = 2'



SECTION C-C
SCALE : 1" = 2'

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM /FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

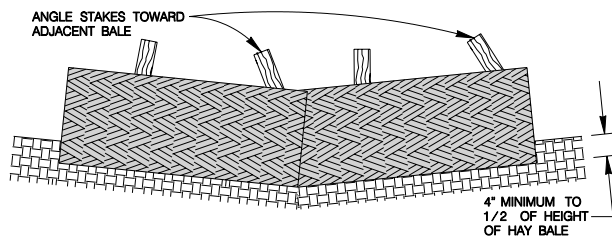
TEMPORARY SEDIMENT CONTROL FENCE

JANUARY 2005

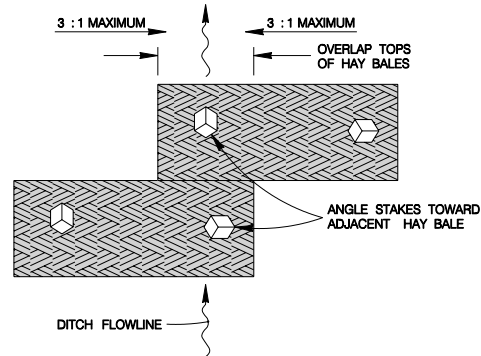
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

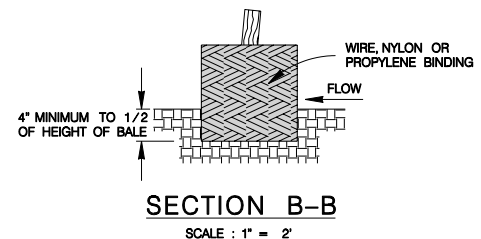
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DRWN. BY: V. VASQUEZ DSGN. BY: _____ CHKD. BY: _____ SHEET NO.: _____ OF _____



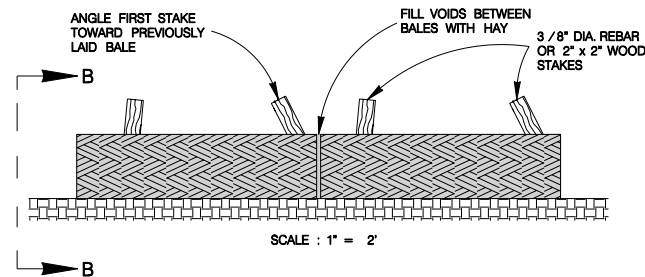
PROFILE VIEW
SCALE : 1" = 2'



PLAN VIEW
SCALE : 1" = 2'



SECTION B-B
SCALE : 1" = 2'



SCALE : 1" = 2'

BALED HAY USAGE GUIDELINES

A BALED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. THE INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 GPM /FT SQUARED OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF SLOPE UPSTREAM OF THE BALED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDI-
TIONAL CONSIDERATIONS APPLY:

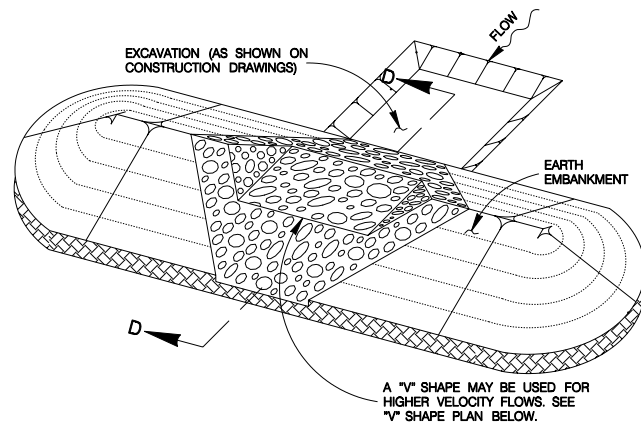
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BALED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTEGRITY IS ACCELERATED.

GENERAL NOTES

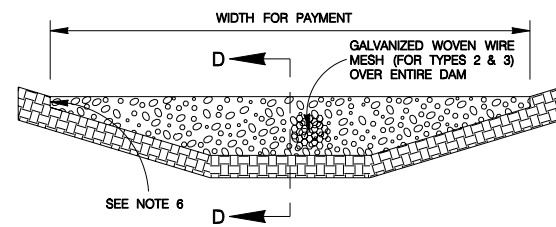
1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3/8" DIA. REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TO-
WARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL



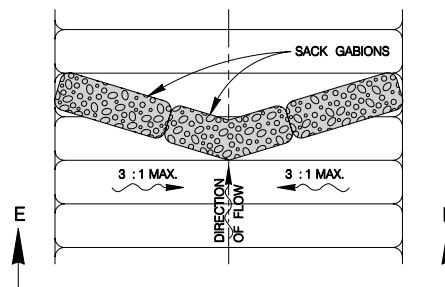
TYPE 1 & 2 FILTER DAM AT
SEDIMENT TRAP

SCALE : 1" = 10'



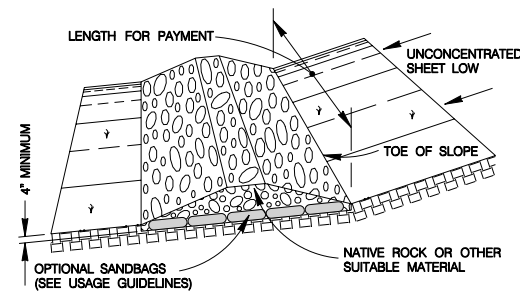
TYPE 1, 2 & 3 FILTER DAM
AT CHANNEL SECTIONS

SCALE : 1" = 6'



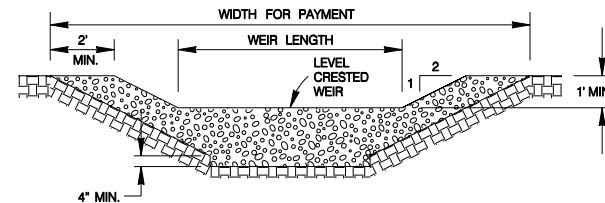
PLAN VIEW

SCALE : 1" = 10'



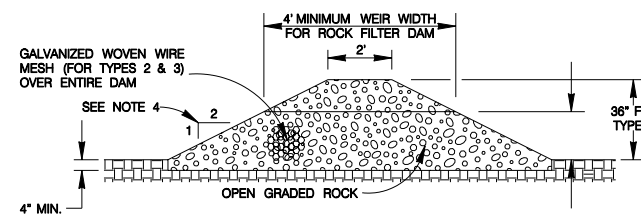
TYPE 1 FILTER DAM AT
TOE OF SLOPE

SCALE : 1" = 10'



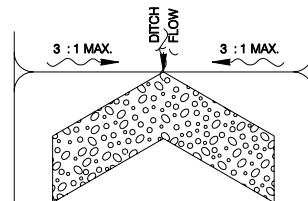
PROFILE OF TYPE 1 & 2 FILTER
DAM AT SEDIMENT TRAP

SCALE : 1" = 6'



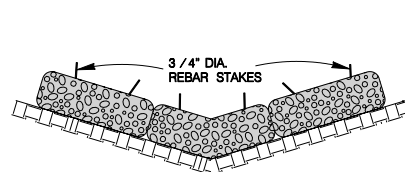
SECTION D-D

SCALE : 1" = 6'



"V" SHAPE
PLAN VIEW

NOT TO SCALE



SECTION E-E

SCALE : 1" = 10'

TYPE 4 SACK GABION DETAIL

SCALE : 1" = 6'

TYPE 4 FILTER DAM AT DITCHES
& SMALLER CHANNELS PLAN VIEW



SECTION F-F

SCALE : 1" = 6'

ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 60 GPM /FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (18" HIGH WITH NO WIRE MESH) :

TYPE 1 MAY BE USED AT THE TOE OF SLOPES, AROUND INLETS, IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 8 FT./SEC. OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TYPE 2 (18" HIGH WITH WIRE MESH) :

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (36" HIGH WITH WIRE MESH) :

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS) :

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND /OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 : 1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3/4" DIA. REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

JANUARY 2005

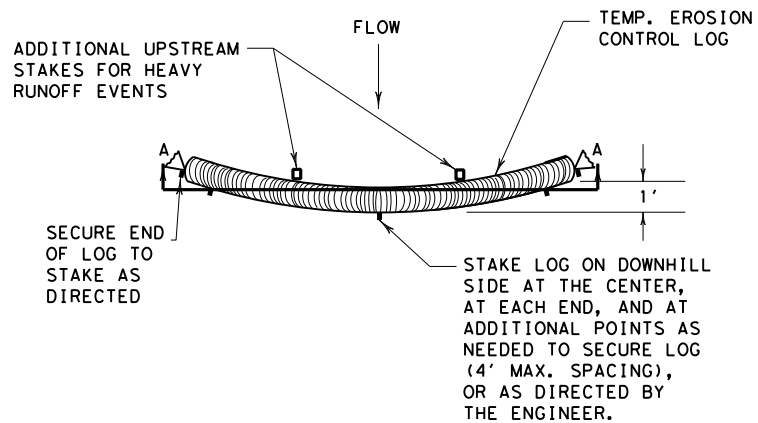
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

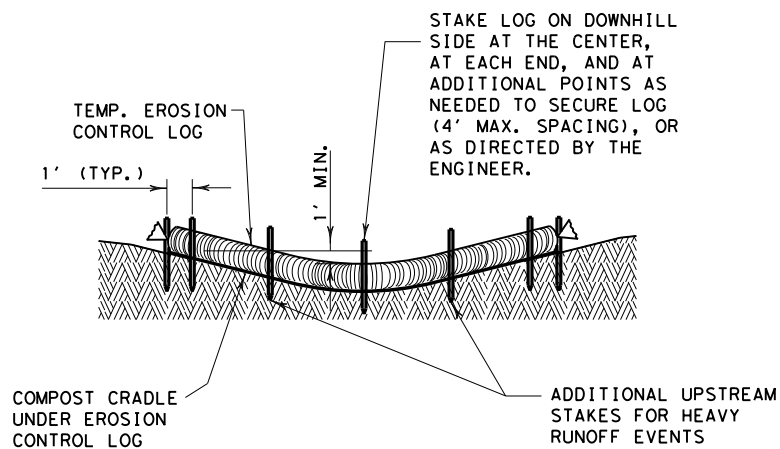
% SUBMITTAL PROJECT NO.: _____ DATE: _____
DRWN. BY: V. VASQUEZ DSGN. BY: _____ CHKD. BY: _____ SHEET NO.: _____ OF _____

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DATE:
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PLAN VIEW



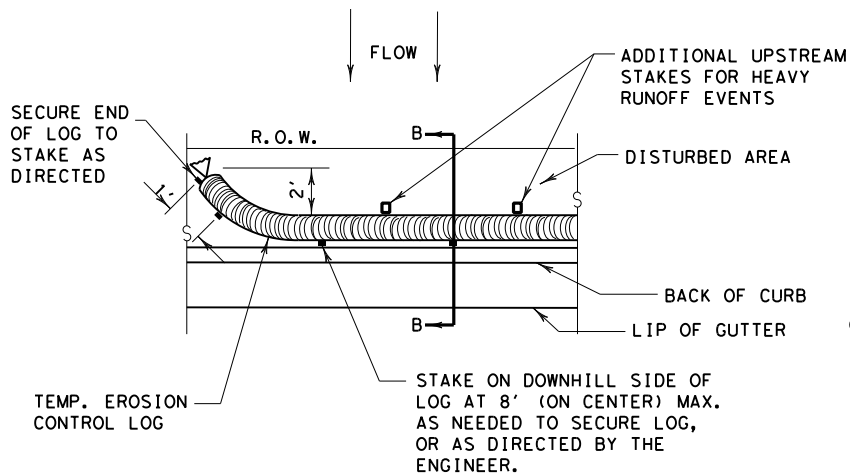
SECTION A-A

EROSION CONTROL LOG DAM

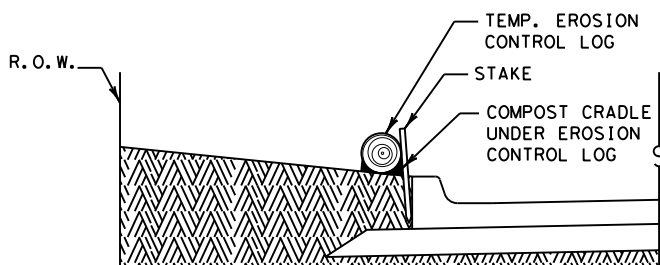
CL-D

LEGEND

- CL-D EROSION CONTROL LOG DAM
- CL-BOC EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI EROSION CONTROL LOG AT DROP INLET
- CL-CI EROSION CONTROL LOG AT CURB INLET
- CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET



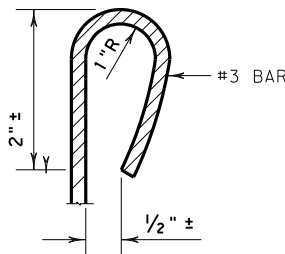
PLAN VIEW



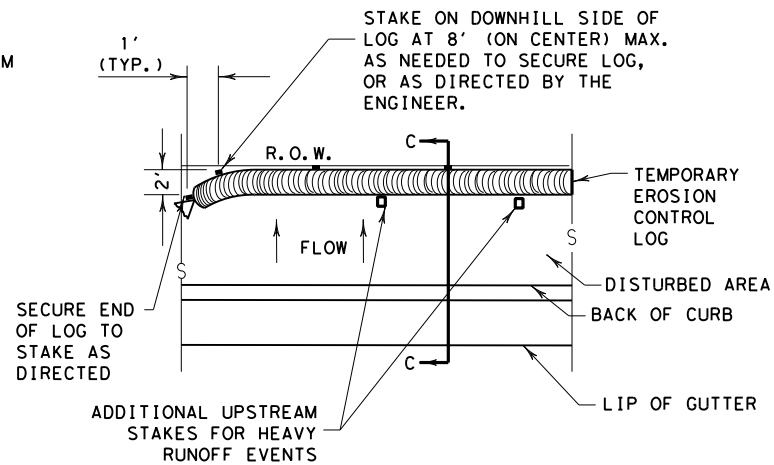
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

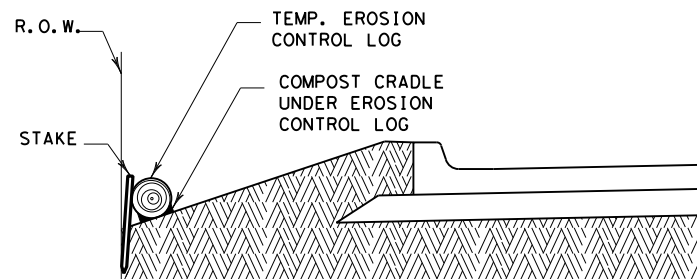
CL-BOC



REBAR STAKE DETAIL



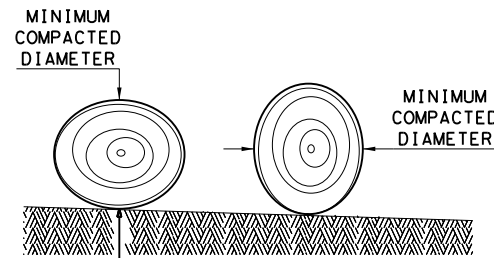
PLAN VIEW



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

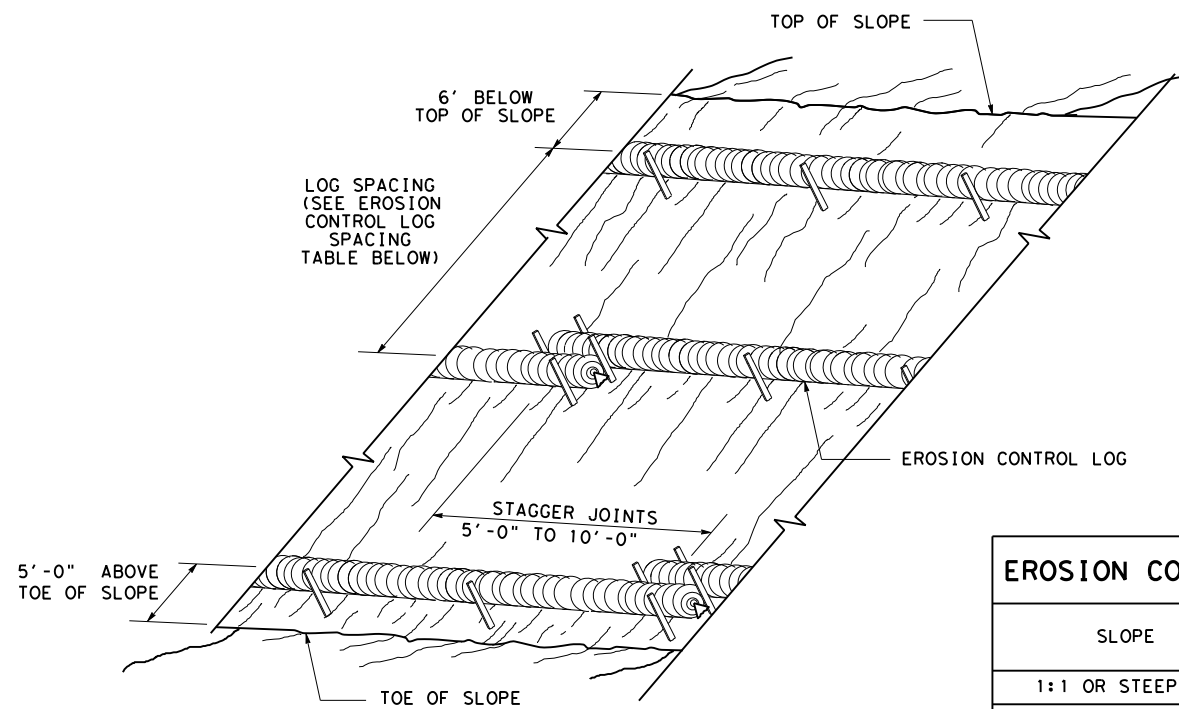
Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

SHEET 1 OF 3

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES			
EROSION CONTROL LOG			
EC(9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS		HIGHWAY	
DIST		COUNTY	
		SHEET NO.	

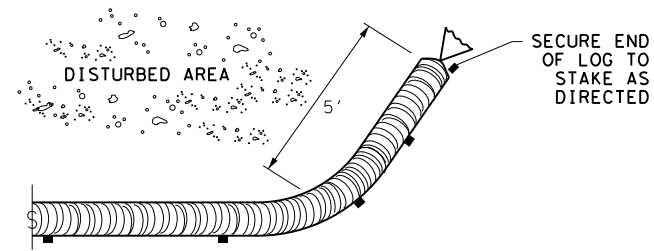
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EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

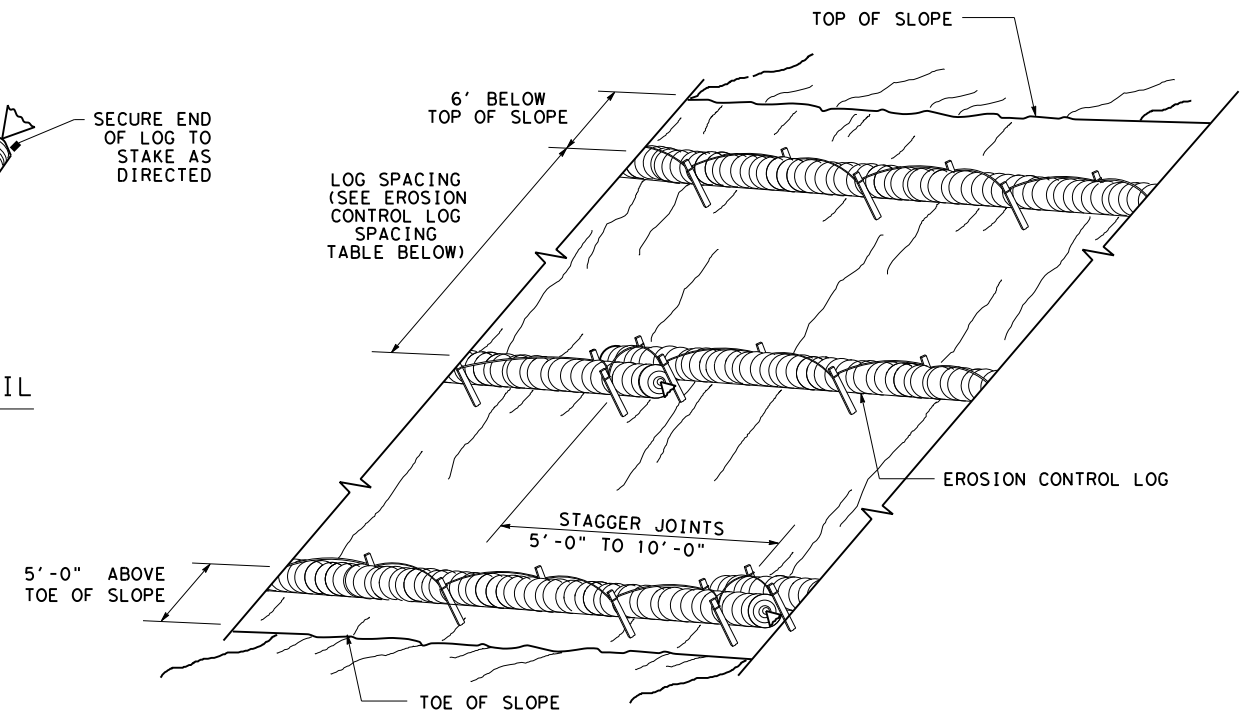
CL-SST



END SECTION RAP DETAIL

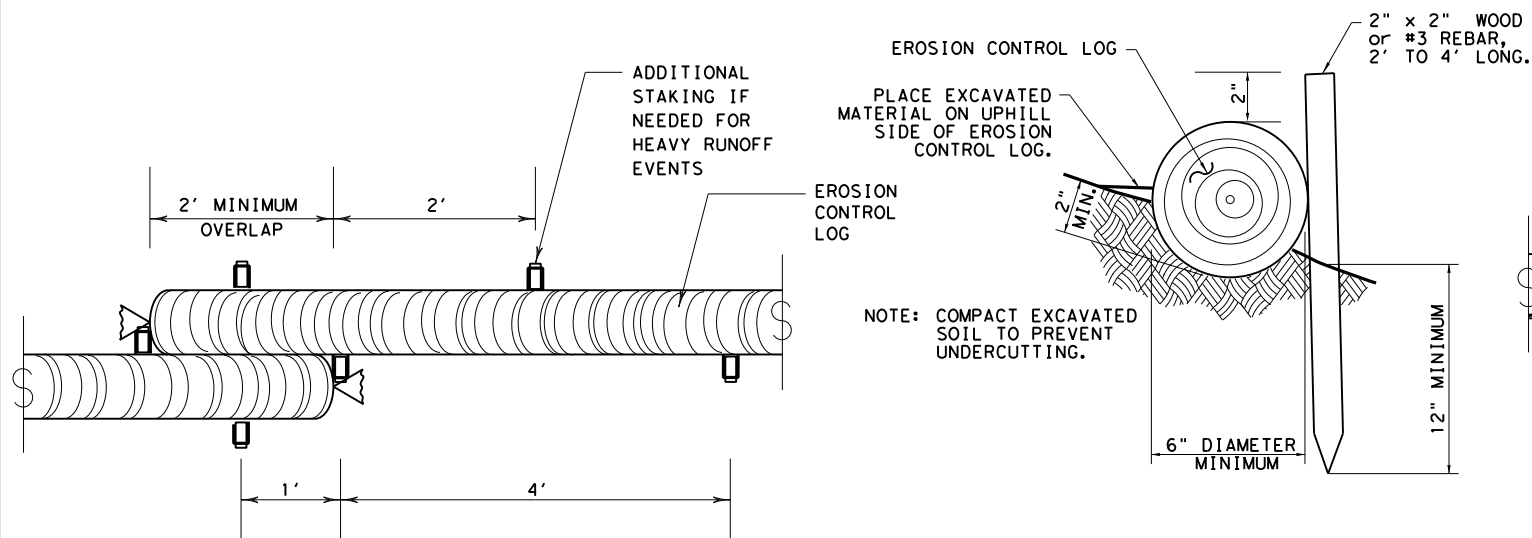
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

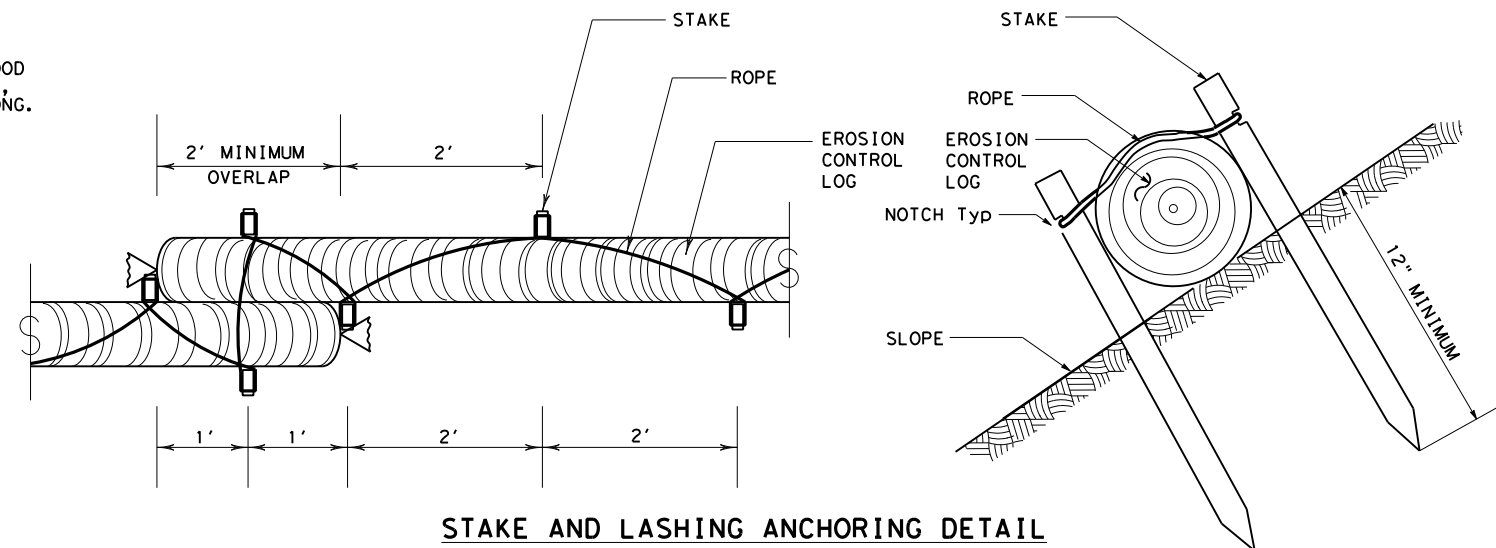
CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

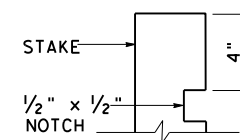
CL-SST

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"



STAKE AND LASHING ANCHORING DETAIL

CL-SSL



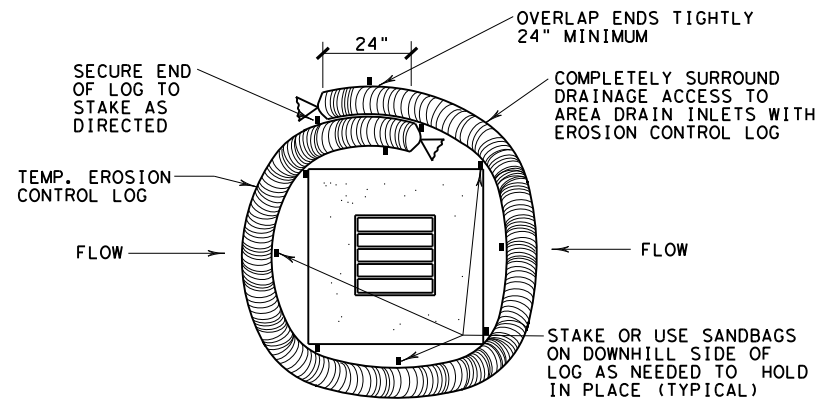
STAKE NOTCH DETAIL

SHEET 2 OF 3

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES			
EROSION CONTROL LOG			
EC(9) - 16			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	DIST	COUNTY	SHEET NO.

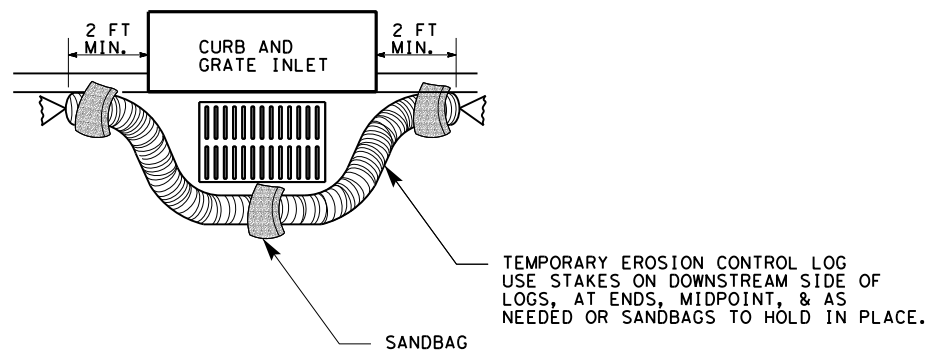
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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FILE:



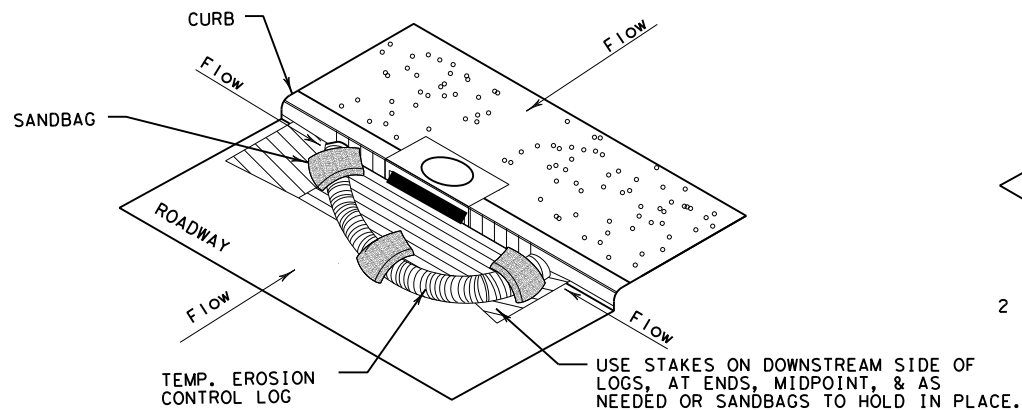
EROSION CONTROL LOG AT DROP INLET

CL-DI



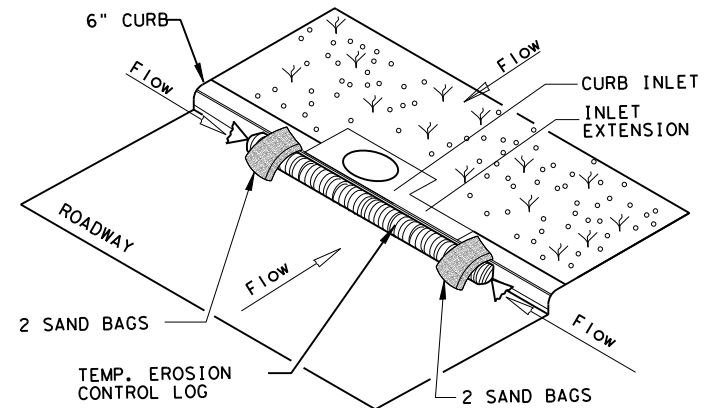
EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



EROSION CONTROL LOG AT CURB INLET

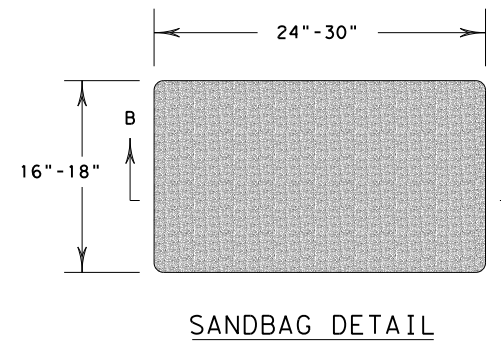
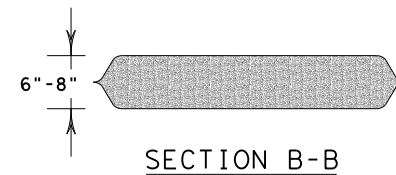
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS
SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE
TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE
STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



SHEET 3 OF 3

 <i>Texas Department of Transportation</i>				<i>Design Division Standard</i>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16					
FILE: ec916		DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

qh4038
10/14/2025
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LEGEND	
	DA ID ACREAGE (ACRES)
	DIRECTION OF FLOW
	LONGEST FLOWPATH
	CALCULATION POINT

HEC-RAS FLOW CHANGE LOCATIONS				
River Station	10-Year (cfs)	25-year (cfs)	100-year (cfs)	100-year ULT
7104	455	551	693	700
2989	1689	2045	2572	2598
929	1960.6	2034.2	2631.3	2692.2

HEC-HMS HYDROLOGIC PARAMETERS									
Basin ID	Area		Lag	Peaking	Loss (Green & Ampt)				
	sq mi	acre	hr	Coeff	Initial content	Saturated content	Suction	Conductivity	Impervious
EWC-026	0.73	467.2	0.468	0.8	0.273	0.474	12.213	0.089	47.2

- NOTES:
1. SEE CULVERT A PLAN AND PROFILE LAYOUT SHEET FOR HYDRAULIC DATA
 2. HYDROLOGY WAS MODELED WITHIN HEC-HMS VERSION 4.3 COMPTUER SOFTWARE USING THE GREEN & AMPT LOSS AND SNYDER UNIT HYDROGRAPH TRANSFORM METHODS
 3. SUBBASINS WERE DEVELOPED USING 2021 LIDAR DEVELOPED BY TNRS.
 4. GREEN & AMPT PARAMETERS WERE DEVELOPED FROM SSURGO SOIL INFORMATION AND SAN ANTONIO RIVER AUTHORITY PARAMETER DEVELOPMENT GUIDANCE.
 5. RAINFALL DATA WERE DERIVED FROM NOAA ATLAS-14 RAINFALL DATA PROVIDED BY SAN ANTONIO RIVER AUTHORITY (PA-2).
 6. DESIGN CONSIDERS 100-YR ULTIMATE DESIGN FLOWS PER BEXAR COUNTY PUBLIC WORKS/COSA CRITERIA.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY SCOT G. LAUN, PE# 92540 ON 10-14-2025. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT. THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF HALFF ASSOCIATES, INC., 100 NE INTERSTATE 410 LOOP, SUITE 701, SAN ANTONIO, TEXAS 78216. TBPE FIRM #F-312.

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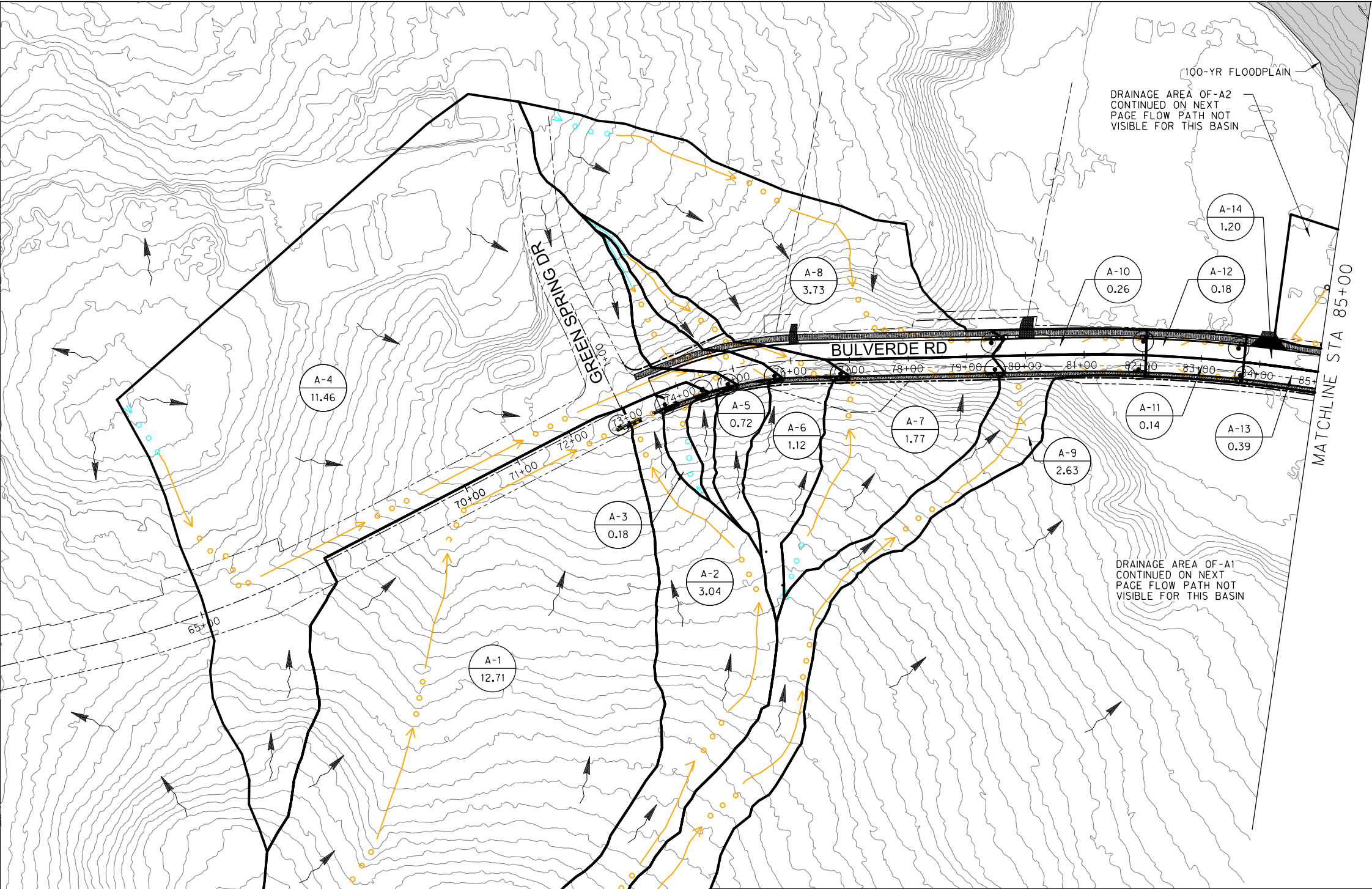
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Surveying Firm 10126502

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT
BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)
EXISTING PROJECT
DRAINAGE AREA MAP

HORIZ. SCALE: 1"=1000'
0 1000 2000
SCALE IN FEET

100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 10/14/2025
DRWN. BY: _JB_	DSGN. BY: _PR_	CHKD. BY: _CV_ SHEET NO.:

qh4038
10/14/2025
A:\46000\05\46572\001\CADD\Sheet\SAN\46572_DRNG-PROP-DA-01.dgn



- LEGEND
- DA-XX → DA ID
 - XX.XX → ACREAGE (ACRES)
 - → DIRECTION OF FLOW
 - → CALCULATION POINT
 - ● ● ● SHEET FLOW
 - ● ● ● SHALLOW CONC. FLOW

- NOTES:
- COSA STORM WATER DESIGN MANUAL TABLE 5.5.3.A WAS USED FOR C-VALUE DETERMINATION (ALL C-VALUES WERE CALCULATED USING ULTIMATE CONDITIONS)
 - ATLAS-14 PA-2 RAINFALL DATA WAS USED TO COMPUTE INTENSITY VALUES SHOWN IN RUNOFF COMPUTATIONS TABLE.
 - TOPOGRAPHY SHOWN REFERENCES 2021 LIDAR DATA.
 - 25-YR ULTIMATE FLOWS WERE USED FOR DESIGN OF STORM SEWER SYSTEM PER COSA STORM WATER DESIGN CRITERIA.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS A. CARDONA, PE# 139673 ON 10-14-2025. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT. THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF HALFF ASSOCIATES, INC. 100 NE. INTERSTATE 410 LOOP, SUITE 701 SAN ANTONIO, TEXAS 78216. TBPE FIRM #F-312.

RUNOFF COMPUTATIONS																	
STORM SYSTEM DRAINAGE AREA ID	TOTAL AREA	COMPOSITE C VALUE	OVERLAND SHEET FLOW		CONCENTRATED SHALLOW FLOW (UNPAVED)		CONCENTRATED SHALLOW FLOW (PAVED)		CHANNEL FLOW		TIME OF CONCENTRATION	INTENSITY			FLOW		
			FLOW LENGTH	TRAVEL TIME	FLOW LENGTH	TRAVEL TIME	FLOW LENGTH	TRAVEL TIME	FLOW LENGTH	TRAVEL TIME		i	is	ioo	Qs	Qts	Qoo
	ACRES		FEET	MINUTES	FEET	MINUTES	FEET	MINUTES	FEET	MINUTES	FEET	MINUTES	MINUTES	IN/HR	IN/HR	IN/HR	CFS
A-1	12.71	0.73	100	11.6	1071	4.7	300	1.2	-	-	17.5	4.897	6.810	8.501	45.54	63.33	79.05
A-2	3.03	0.73	100	9.2	1168	5.0	52	0.2	-	-	14.4	5.439	7.562	9.495	11.98	16.65	20.91
A-3	0.18	0.79	100	6.9	1168	0.2	16	0.0	-	-	7.1	7.145	9.988	12.649	1.04	1.45	1.84
A-4	11.46	0.92	100	12.1	277	1.2	933	3.7	-	-	17.0	4.976	6.910	8.644	52.72	73.22	91.58
A-5	0.72	0.84	100	7.7	146	0.5	173	0.7	-	-	8.8	6.657	9.306	11.779	4.06	5.68	7.18
A-6	1.12	0.80	100	7.9	229	0.8	191	0.7	-	-	9.4	6.500	9.090	11.491	5.79	8.10	10.24
A-7	1.77	0.74	100	9.6	299	0.9	234	0.9	-	-	11.5	6.031	8.405	10.622	7.90	11.00	13.91
A-8	3.73	0.95	100	7.3	667	2.7	144	0.9	-	-	10.9	6.163	8.592	10.870	21.88	30.50	38.59
A-9	2.63	0.74	100	7.8	1330	5.5	205	1.1	-	-	14.3	5.445	7.589	9.507	10.59	14.76	18.49
A-10	0.26	0.97	16	5.0	-	-	229	2.1	-	-	7.1	7.142	9.988	12.645	1.78	2.49	3.15
A-11	0.14	0.97	7	5.0	-	-	154	1.9	-	-	6.9	7.200	10.080	12.746	0.95	1.33	1.69
A-12	0.18	0.97	15	5.0	-	-	153	1.9	-	-	6.9	7.201	10.080	12.747	1.24	1.73	2.19
A-13	0.39	0.96	7	5.0	-	-	267	3.4	-	-	8.4	6.756	9.458	11.958	2.51	3.52	4.45
A-14	1.20	0.92	100	20.0	45	0.4	68	0.5	-	-	21.0	4.463	6.190	7.725	4.89	6.78	8.46



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

INTERNAL DRAINAGE
AREA MAP

SHEET 1 OF 2

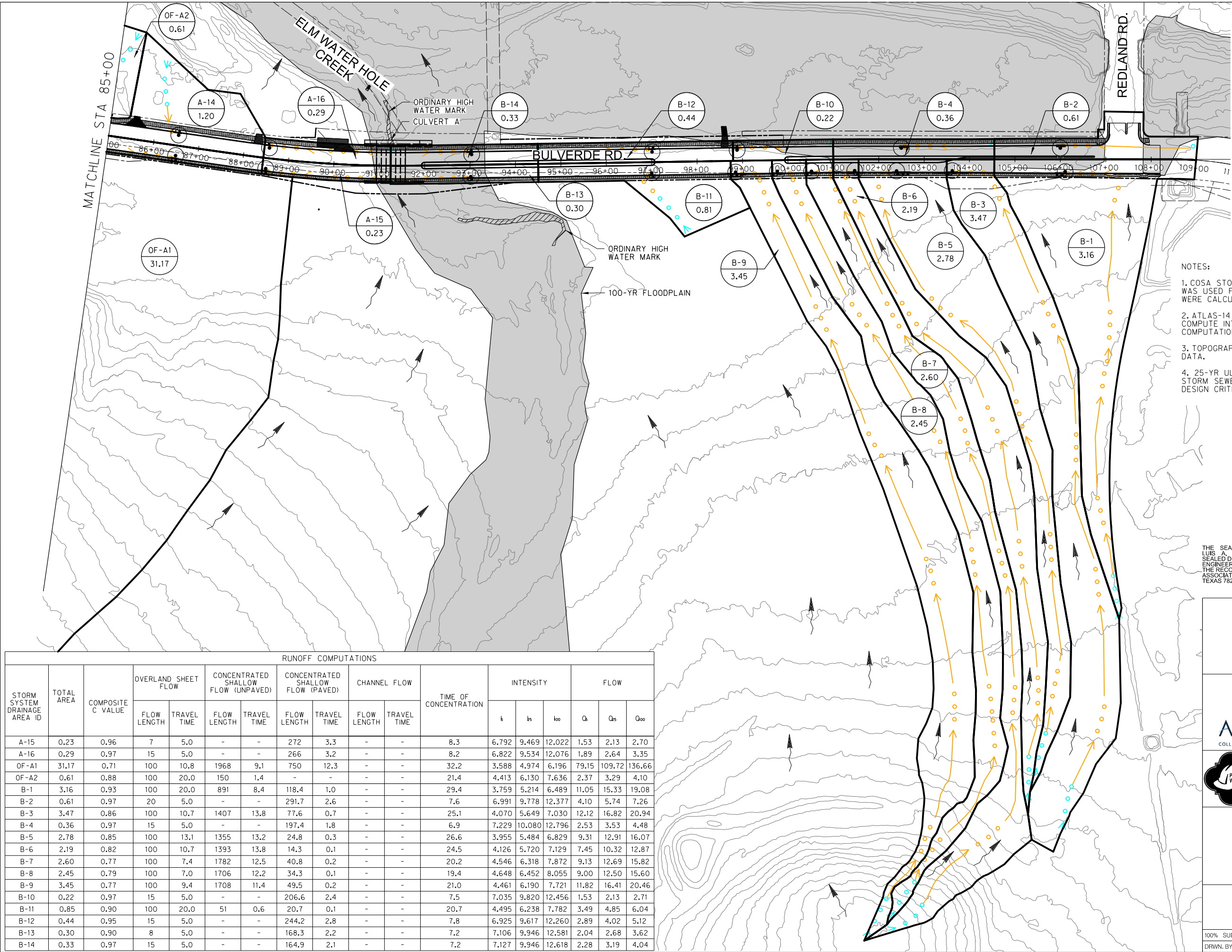
HORIZ. SCALE: 1"=200'

0 100 200

SCALE IN FEET

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 10/14/2025
DRWN. BY: JJB DSGN. BY: JPR CHKD. BY: JCV SHEET NO.:

qh4038
10/14/2025
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LEGEND

DA-XX

XX.XX

DIRECTION OF FLOW

CALCULATION POINT

SHEET FLOW

SHALLOW CONC. FLOW

DA ID

ACREAGE (ACRES)

- NOTES:
1. COSA STORM WATER DESIGN MANUAL TABLE 5.5.3.A WAS USED FOR C-VALUE DETERMINATION (ALL C-VALUES WERE CALCULATED USING ULTIMATE CONDITIONS)
 2. ATLAS-14 PA-2 RAINFALL DATA WAS USED TO COMPUTE INTENSITY VALUES SHOWN IN RUNOFF COMPUTATIONS TABLE.
 3. TOPOGRAPHY SHOWN REFERENCES 2021 LIDAR DATA.
 4. 25-YR ULTIMATE FLOWS WERE USED FOR DESIGN OF STORM SEWER SYSTEM PER COSA STORM WATER DESIGN CRITERIA.

STATE OF TEXAS

LUIS A. CARDONA

139673

PROFESSIONAL ENGINEER

10-14-2025

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS A. CARDONA, PE# 139673 ON 10-14-2025. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT. THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF HALFF ASSOCIATES, INC. 100 NE. INTERSTATE 410 LOOP, SUITE 701 SAN ANTONIO, TEXAS 78216. TBPE FIRM #F-312.

RUNOFF COMPUTATIONS																	
STORM SYSTEM DRAINAGE AREA ID	TOTAL AREA	COMPOSITE C VALUE	OVERLAND SHEET FLOW		CONCENTRATED SHALLOW FLOW (UNPAVED)		CONCENTRATED SHALLOW FLOW (PAVED)		CHANNEL FLOW		TIME OF CONCENTRATION	INTENSITY			FLOW		
			FLOW LENGTH	TRAVEL TIME	FLOW LENGTH	TRAVEL TIME	FLOW LENGTH	TRAVEL TIME	FLOW LENGTH	TRAVEL TIME		i	is	ioo	Qs	Qes	Qoo
A-15	0.23	0.96	7	5.0	-	-	272	3.3	-	-	8.3	6.792	9.469	12.022	1.53	2.13	2.70
A-16	0.29	0.97	15	5.0	-	-	266	3.2	-	-	8.2	6.822	9.534	12.076	1.89	2.64	3.35
OF-A1	31.17	0.71	100	10.8	1968	9.1	750	12.3	-	-	32.2	3.588	4.974	6.196	79.15	109.72	136.66
OF-A2	0.61	0.88	100	20.0	150	1.4	-	-	-	-	21.4	4.413	6.130	7.636	2.37	3.29	4.10
B-1	3.16	0.93	100	20.0	891	8.4	118.4	1.0	-	-	29.4	3.759	5.214	6.489	11.05	15.33	19.08
B-2	0.61	0.97	20	5.0	-	-	291.7	2.6	-	-	7.6	6.991	9.778	12.377	4.10	5.74	7.26
B-3	3.47	0.86	100	10.7	1407	13.8	77.6	0.7	-	-	25.1	4.070	5.649	7.030	12.12	16.82	20.94
B-4	0.36	0.97	15	5.0	-	-	197.4	1.8	-	-	6.9	7.229	10.080	12.796	2.53	3.53	4.48
B-5	2.78	0.85	100	13.1	1355	13.2	24.8	0.3	-	-	26.6	3.955	5.484	6.829	9.31	12.91	16.07
B-6	2.19	0.82	100	10.7	1393	13.8	14.3	0.1	-	-	24.5	4.126	5.720	7.129	7.45	10.32	12.87
B-7	2.60	0.77	100	7.4	1782	12.5	40.8	0.2	-	-	20.2	4.546	6.318	7.872	9.13	12.69	15.82
B-8	2.45	0.79	100	7.0	1706	12.2	34.3	0.1	-	-	19.4	4.648	6.452	8.055	9.00	12.50	15.60
B-9	3.45	0.77	100	9.4	1708	11.4	49.5	0.2	-	-	21.0	4.461	6.190	7.721	11.82	16.41	20.46
B-10	0.22	0.97	15	5.0	-	-	206.6	2.4	-	-	7.5	7.035	9.820	12.456	1.53	2.13	2.71
B-11	0.85	0.90	100	20.0	51	0.6	20.7	0.1	-	-	20.7	4.495	6.238	7.782	3.49	4.85	6.04
B-12	0.44	0.95	15	5.0	-	-	244.2	2.8	-	-	7.8	6.925	9.617	12.260	2.89	4.02	5.12
B-13	0.30	0.90	8	5.0	-	-	168.3	2.2	-	-	7.2	7.106	9.946	12.581	2.04	2.68	3.62
B-14	0.33	0.97	15	5.0	-	-	164.9	2.1	-	-	7.2	7.127	9.946	12.618	2.28	3.19	4.04

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

INTERNAL DRAINAGE
AREA MAP

SHEET 2 OF 2
HORIZ. SCALE: 1"=200'
0 100 200
SCALE IN FEET

100% SUBMITTAL

PROJECT NO.: 23-03867

DATE: 10/14/2025

DRWN. BY: JJB

DSGN. BY: PR

CHKD. BY: CV

SHEET NO.:

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Scot Laun, PE, CFM

Date: 10/14/2025

Signature of Customer/Agent



Regulated Entity Name: Bulverde Road (Green Spring to Redland Road) Project

Permanent Best Management Practices (BMPs)

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

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.
☐ N/A
2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.
☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

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

☐ N/A

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

☐ N/A

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

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.

☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.

☒ The site will not be used for low density single-family residential development.

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

☐ **Attachment A - 20% or Less Impervious Cover Waiver.** The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.

☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

☒ The site will not be used for multi-family residential developments, schools, or small business sites.

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

- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
- ☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
- ☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.
7. ☒ **Attachment C - BMPs for On-site Stormwater.**
- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
- ☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.
8. ☒ **Attachment D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.
- ☐ N/A
9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.
- ☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.
- ☐ **Attachment E - Request to Seal Features.** A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.
10. ☒ **Attachment F - Construction Plans.** All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:
- ☒ Design calculations (TSS removal calculations)
- ☒ TCEQ construction notes
- ☒ All geologic features
- ☒ All proposed structural BMP(s) plans and specifications
- ☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:
- ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
 - ☒ Signed by the owner or responsible party
 - ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
 - ☒ A discussion of record keeping procedures
- ☐ N/A
12. ☐ **Attachment H - Pilot-Scale Field Testing Plan.** Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.
- ☒ N/A
13. ☒ **Attachment I - Measures for Minimizing Surface Stream Contamination.** A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.
- ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.
- ☐ N/A
15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.
- ☐ N/A

FORM TCEQ-0600 ATTACHMENTS

ATTACHMENT A — 20% OR LESS IMPERVIOUS COVER WAIVER

Not Applicable

ATTACHMENT B — BMPS FOR UPGRADIENT STORMWATER

Surface water that originates upgradient of the site will be diverted through roadside ditches along the ROW to the nearest cross drainage structure.

ATTACHMENT C — BMPS FOR ON-SITE STORMWATER

A batch detention pond will be used to collect any excess stormwater and discharge it safely away from the project site. Design calculations are attached.

ATTACHMENT D –BMPS FOR SURFACE STREAMS

Runoff from the site will be collected and treated in a batch detention pond using stormwater treatment units prior to being discharged into surface waters.

ATTACHMENT E – REQUEST TO SEAL FEATURES

Not applicable.

ATTACHMENT F – CONSTRUCTION PLANS

Attached.

ATTACHMENT G – INSPECTION, MAINTENANCE, REPAIR & RETROFIT PLAN

Attached.

ATTACHMENT H – PILOT-SCALE TESTING PLAN

Not applicable

ATTACHMENT I – MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Surface stream contamination will be minimized using a batch detention pond designed to capture stormwater along the entire length of the roadway contributing drainage area before the runoff enters the stream. Once captured, the contaminated water will get filtered and discharge away from the site. Energy dissipation and soil stabilization measures such as turf reinforcement matting are proposed where cross drainage structures and ditches discharge into receiving waters and where channels were regraded. These measures are expected to minimize erosion and stream scour.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Bulverde Rd**

Date Prepared: **10/27/2022**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.

Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.

Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project:

Calculations from RG-348

Pages 3-27 to 3-30

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = Required TSS removal resulting from the proposed development = 80% of increased load

A_N = Net increase in impervious area for the project

P = Average annual precipitation, inches

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

County = **Bexar**

Total project area included in plan * = **7.64** acres

Predevelopment impervious area within the limits of the plan * = **2.94** acres

Total post-development impervious area within the limits of the plan * = **5.88** acres

Total post-development impervious cover fraction * = **0.77**

P = **30** inches

$L_{M \text{ TOTAL PROJECT}}$ = **4798** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **2**

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

Drainage Basin/Outfall Area No. = **South Basin**

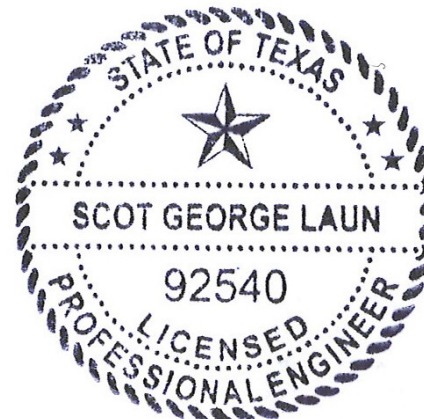
Total drainage basin/outfall area = **3.82** acres

Predevelopment impervious area within drainage basin/outfall area = **1.47** acres

Post-development impervious area within drainage basin/outfall area = **2.94** acres

Post-development impervious fraction within drainage basin/outfall area = **0.77**

$L_{M \text{ THIS BASIN (80\%)}}$ = **1200** lbs.



Scot George Laun

6/28/2024

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Batch Detention**
Removal efficiency = **91** percent

*** Changed Aqua Logic** Filter to Batch Detention in "bmps" tab of spreadsheet

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

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

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

where:

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

A_C = **3.82** acres
 A_i = **2.94** acres
 A_p = **0.88** acres
 L_R = **2790** lbs

POND 1

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

Desired L_M THIS BASIN = **1200** lbs.

F = **0.43**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Calculations from RG-348

Pages 3-34 to 3-36

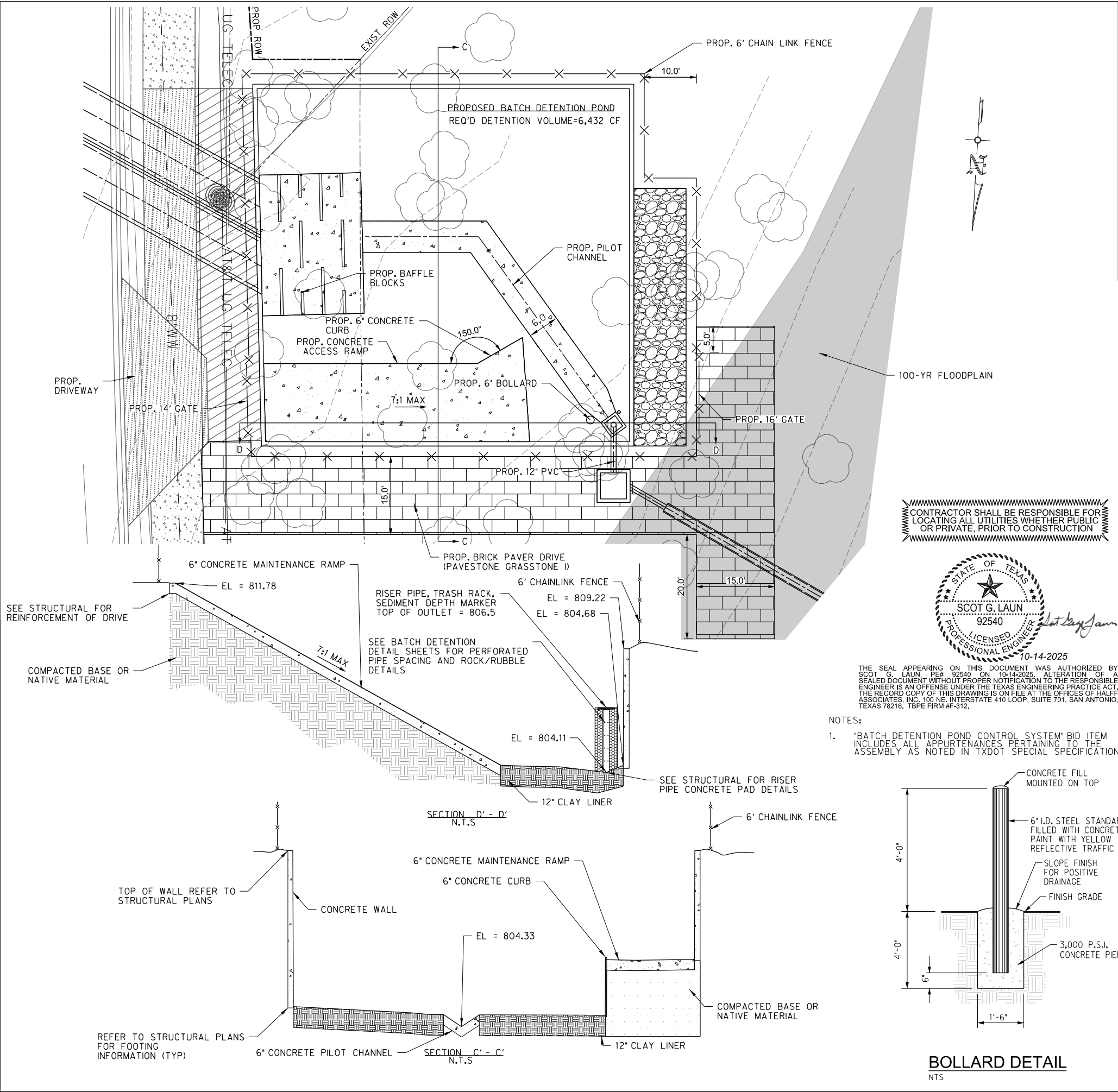
Rainfall Depth = **0.33** inches
Post Development Runoff Coefficient = **0.58**
On-site Water Quality Volume = **2680** cubic feet

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

Off-site area draining to BMP = **0.00** acres
Off-site Impervious cover draining to BMP = **0.00** acres
Impervious fraction of off-site area = **0**
Off-site Runoff Coefficient = **0.00**
Off-site Water Quality Volume = **0** cubic feet

Storage for Sediment = **536**
Total Capture Volume (required water quality volume(s) x 1.20) = **3216** cubic feet

q:\4038
10/14/2025
A:\460005\46572\001\CADD\Sheet SAN 46572.DWG-BATCH-DETENTION.dgn



ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QTY
105.1	CHANNEL EXCAVATION	C.Y.	800
209.1	REINFORCED CONCRETE PAVEMENT (6" THICK)	S.Y.	87
401.1	REINFORCED CONCRETE PIPE (CLASS III)(18" DIA)	L.F.	39
403.3	JUNCTION BOX 6'X6'X6'	EA	1
407.4	CONCRETE COLLARS	C.Y.	1
505.1	CONCRETE RIPRAP (5" THICK)(PILOT CHANNEL)	S.Y.	43
507.2	CHAIN LINK WIRE FENCE (6' HIGH)	L.F.	310
507.4	GATES-PEDESTRIAN	EA.	1
507.5	GATES- VEHICULAR	EA	2
1326038	EMB(FNL)(ORD)(COM)(TYCSPL) CLAY LINER	CY	19
4237015	RETAINING WALL (SPREAD FOOTING)	SF	3735
4327005	RIPRAP (CONC)(CL B)	CY	1
4327029	RIPRAP (STONE COMMON)(DRY)(6 IN)	CY	55
4677306	SET (TY II)(18 IN)(RCP)(4: 1)(C)	EA	1
4817013	PIPE (PVC)(SCH 40)(6 IN)	LF	20
5287001	LANDSCAPE PAVERS	SY	257
20047001	FILTER FABRIC	SY	55
XXX SS7130	BATCH DETENTION POND CONTROL SYSTEM	EA	1

Contour Elevation	Contour Area	Depth	Incremental Volume Avg. End	Cumulative Volume Avg. End	Incremental Volume Conic	Cumulative Volume Conic
	(sq. ft)	(ft)	(cu. ft)	(cu. ft)	(cu. ft)	(cu. ft)
804.5	212.96	N/A	N/A	0	N/A	0
805	3,276.48	0.5	872.36	872.36	720.79	720.79
805.5	4,086.96	0.5	1840.86	2713.22	1837.13	2557.92
806	4,142.89	0.5	2057.46	4770.68	2057.45	4615.37
806.5	4,198.78	0.5	2085.42	6856.1	2085.4	6700.77
807	4,254.62	0.5	2113.35	8969.45	2113.34	8814.1
807.5	4,310.42	0.5	2141.26	11110.71	2141.25	10955.35
808	4,366.17	0.5	2169.15	13279.85	2169.13	13124.48
808.5	4,421.88	0.5	2197.01	15476.87	2197	15321.48
809	4,477.53	0.5	2224.85	17701.72	2224.84	17546.32

LEGEND	
---	EXIST ROW LINE
WW	WASTE WATER
W	WATER
G	BURIED GAS
OT	OH TEL
UT	BURIED TEL
OE	OH ELEC
OE/OT	OH ELEC/OH TEL
100	EXIST CONTOURS
100	PROP MAJOR CONTOURS
100	PROP MINOR CONTOURS
---	PROP ROW LINE
→	DIRECTION OF FLOW
	PROPOSED JUNCTION BOX
	PROPOSED INLET EXTENSION
	PROPOSED CURB INLET
.....	PROPOSED HGL/EGL
FL=100.00	FLOWLINE
TS=100.00	TOP OF SIDEWALK
TW=100.00	TOP OF WALL
BW=100.00	BOTTOM OF WALL
G=100.00	GUTTER

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT
BORDER ROAD
CREATING THE ROAD TO TOMORROW

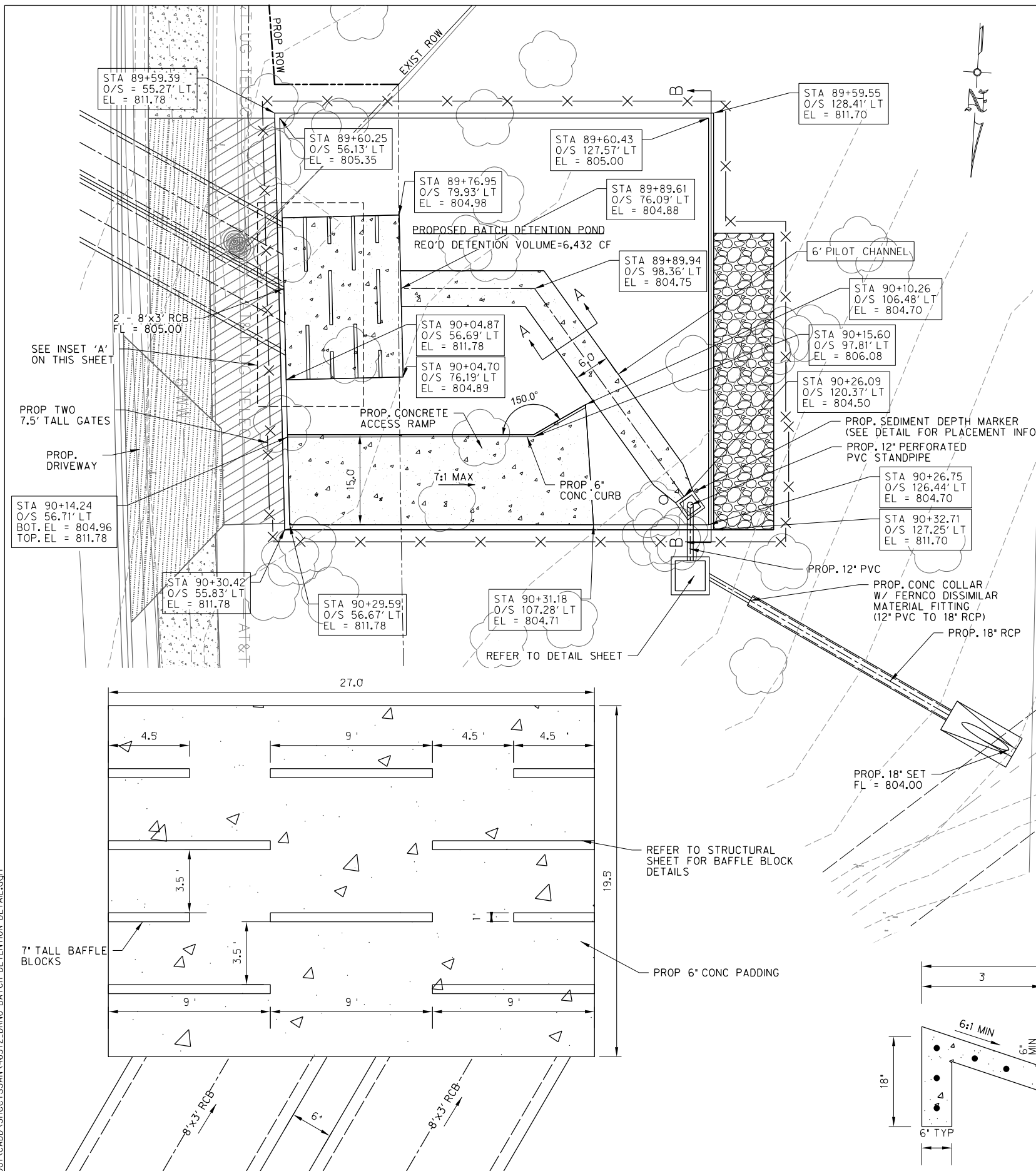
BATCH DETENTION
PLAN & PROFILE

HORIZ. SCALE: 1"=10'
0 10 20
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

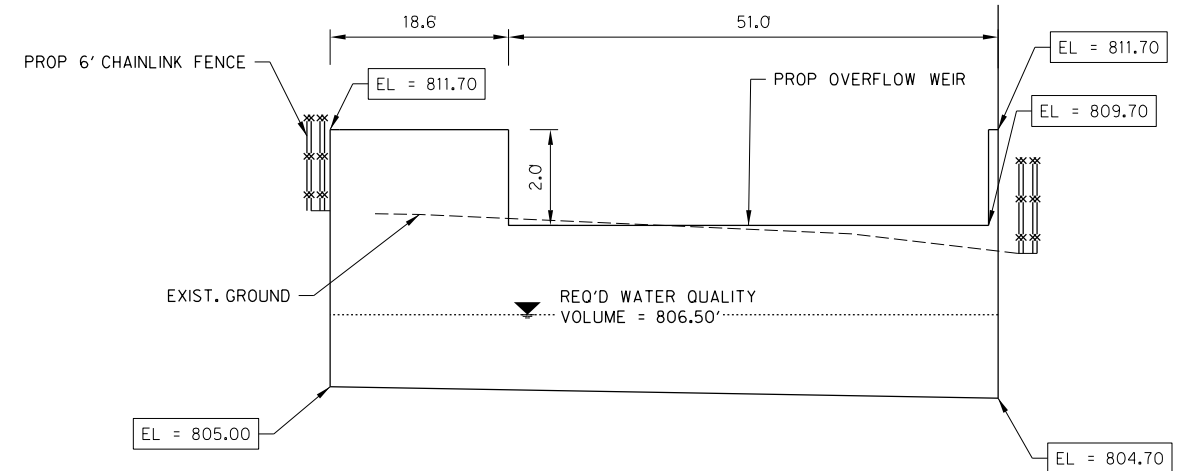
100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 10/14/2025
DRWN. BY: _JB_ DSGN. BY: _PR_ CHKD. BY: _CV_ SHEET NO.:

qh4038
10/14/2025
A:\460005\46572\001\CADD\Sheet\SAN\46572_DRNG-BATCH-DETENTION-DETAIL.dgn



INSET 'A'
N.T.S

6' PILOT CHANNEL
N.T.S



SECTION 'B-B'
N.T.S

CONTRACTOR SHALL BE RESPONSIBLE FOR
LOCATING ALL UTILITIES WHETHER PUBLIC
OR PRIVATE, PRIOR TO CONSTRUCTION

LEGEND

- EXIST ROW LINE
- WW --- WASTE WATER
- W --- WATER
- G --- BURIED GAS
- OT --- OH TEL
- UT --- BURIED TEL
- OE --- OH ELEC
- OE/OT--- OH ELEC/OH TEL
- 100--- EXIST CONTOURS
- 100--- PROP MAJOR CONTOURS
- 100--- PROP MINOR CONTOURS
- PROP ROW LINE
- > DIRECTION OF FLOW
- PROPOSED JUNCTION BOX
- PROPOSED INLET EXTENSION
- PROPOSED CURB INLET
- PROPOSED HGL/EGL
- FL=100.00 FLOWLINE
- TS=100.00 TOP OF SIDEWALK
- TW=100.00 TOP OF WALL
- BW=100.00 BOTTOM OF WALL
- G=100.00 GUTTER



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

BATCH DETENTION
DETAIL & GRADING
SHEET

HORIZ. SCALE: 1"=20'

0 10 20

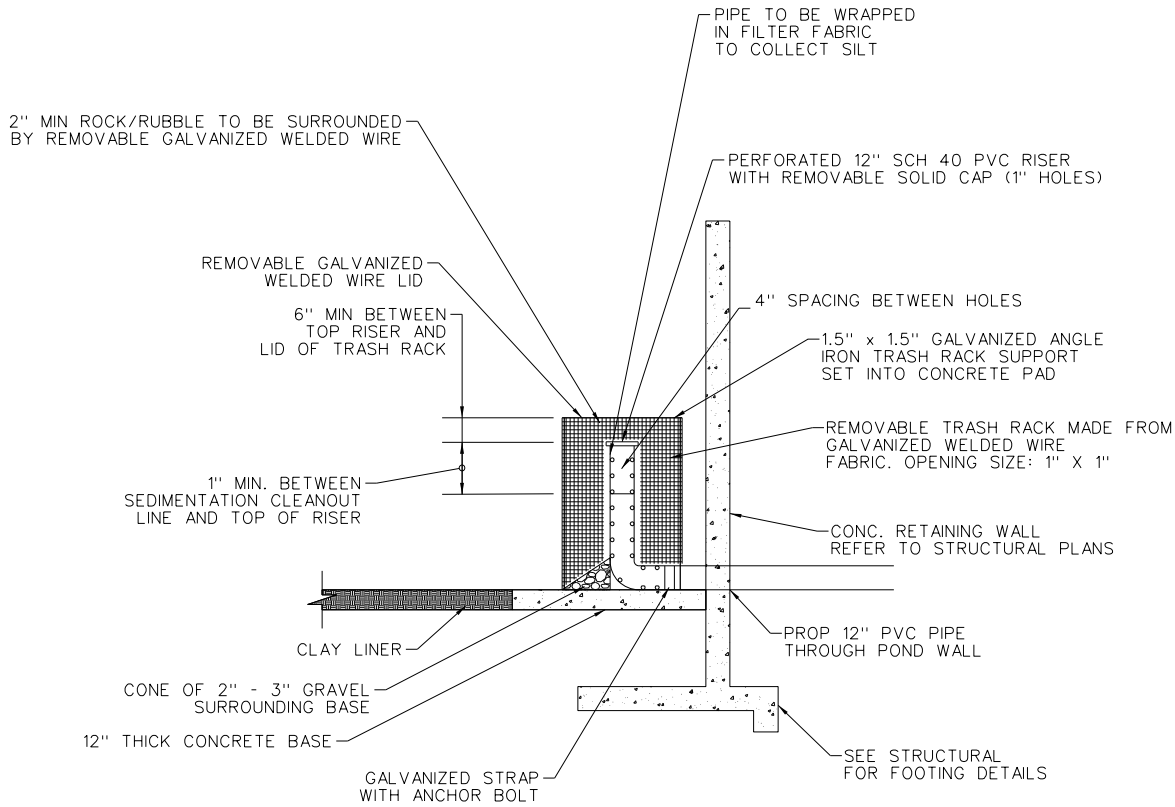
SCALE IN FEET

VERT. SCALE: 1"=10'

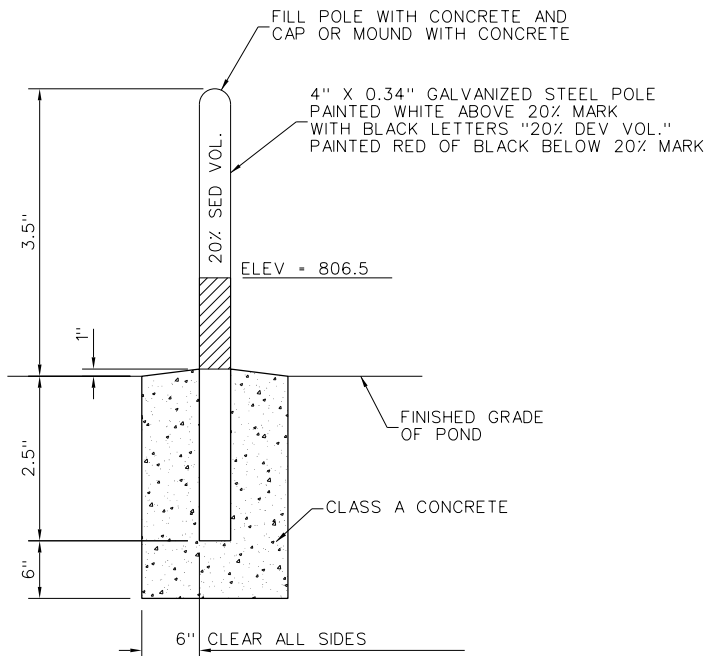
0 5 10

SCALE IN FEET

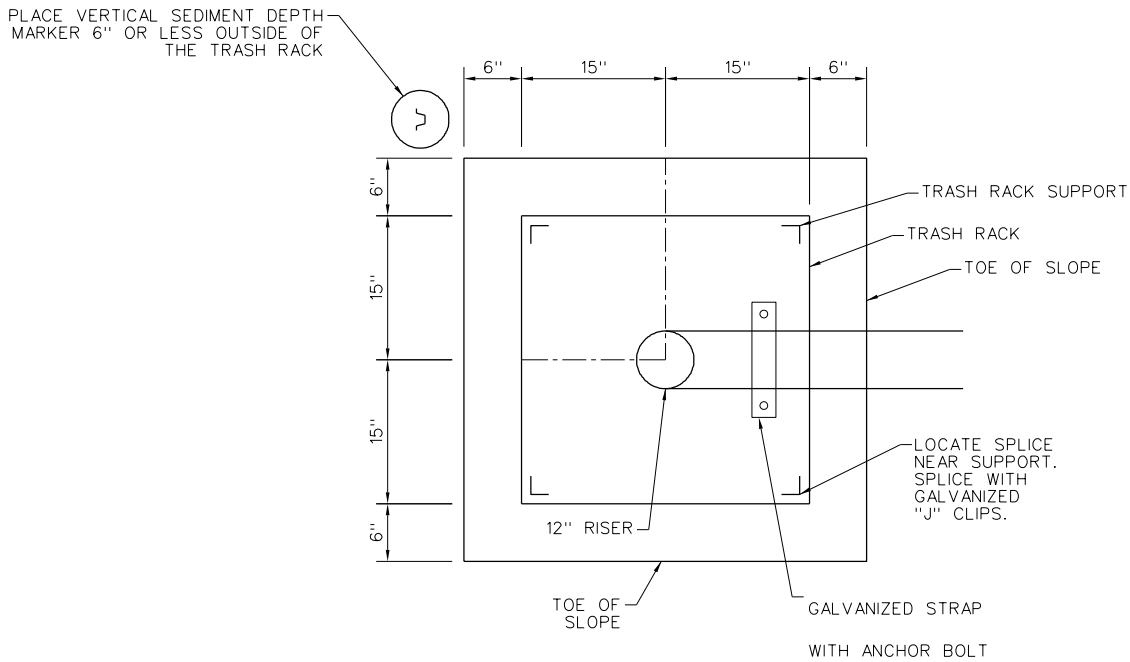
100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 10/14/2025
DRWN. BY: JJB DSGN. BY: PR CHKD. BY: CV SHEET NO.:



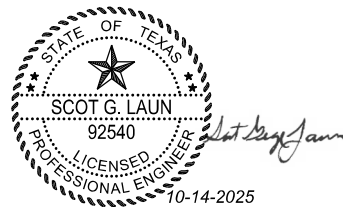
RISER PIPE ELEVATION
N.T.S.



SEDIMENT DEPTH MARKER
N.T.S.



RISER PIPE PLAN VIEW
N.T.S.



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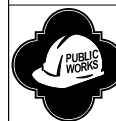


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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

BATCH DETENTION
DETAILS

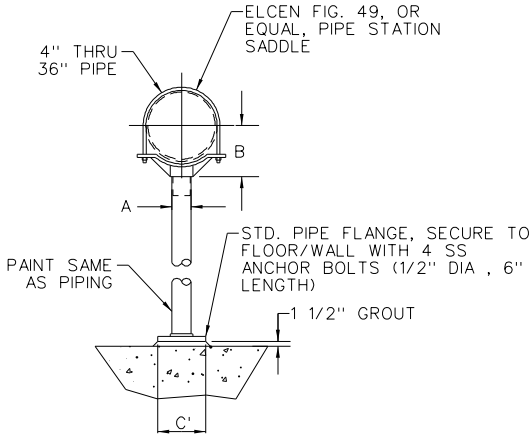
SHEET 1 OF 2

SCALE: N.T.S.

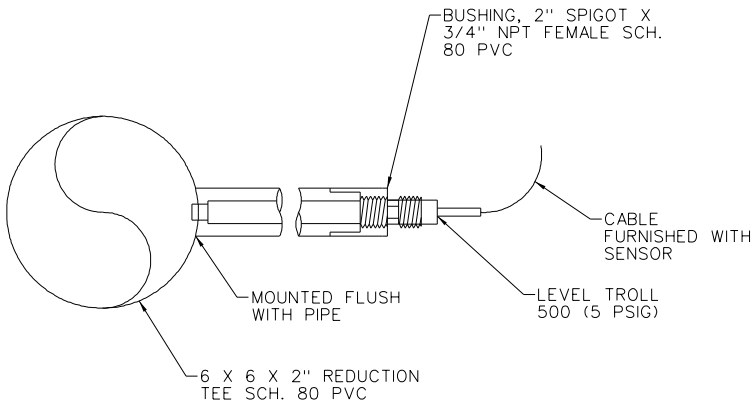
100% SUBMITTAL	PROJECT NO.: 23-03867	DATE: 10/14/2025
DRWN. BY: JJB	DSGN. BY: PR	CHKD. BY: CV
SHEET NO.:		

PIPE SIZE	DIMENSIONS (IN.)		
	A	B	C
4"	3	4	3/16
5"	3	4	13/16
6"	3	5	7/16
8"	3	6	15/16
10"	3	8	7/16
12"	3	9	15/16
14"	4	8	1/8
16"	4	9	1/8
18"	4	10	3/8
20"	6	11	3/8
24"	6	13	3/4
30"	6	16	3/4
36"	8	24	1/2

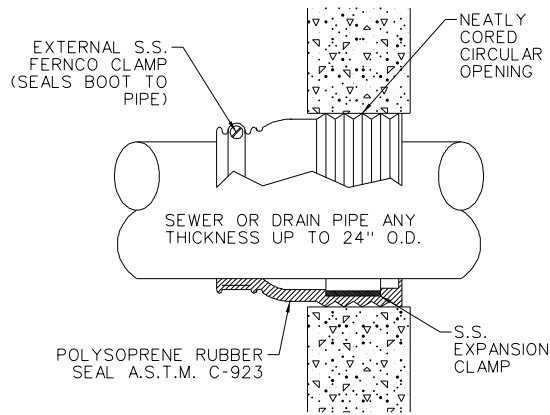
NOTE:
SAME DETAIL APPLIES FOR
HORIZONTAL BRACING. SUPPORT
PIPE SHALL BE DUCTILE IRON
CLASS 250.



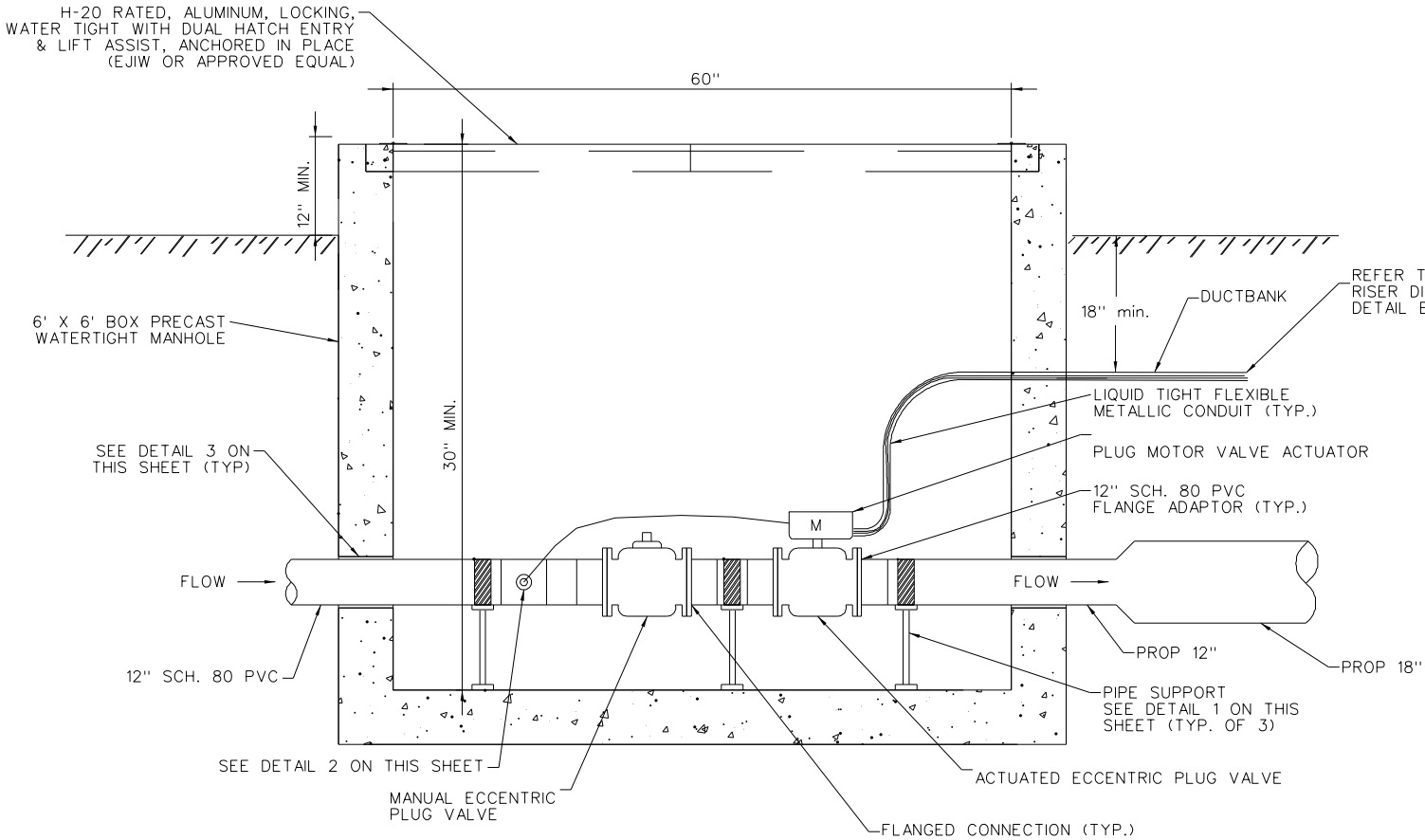
1 PIPE SUPPORT DETAIL
SCALE: NOT TO SCALE



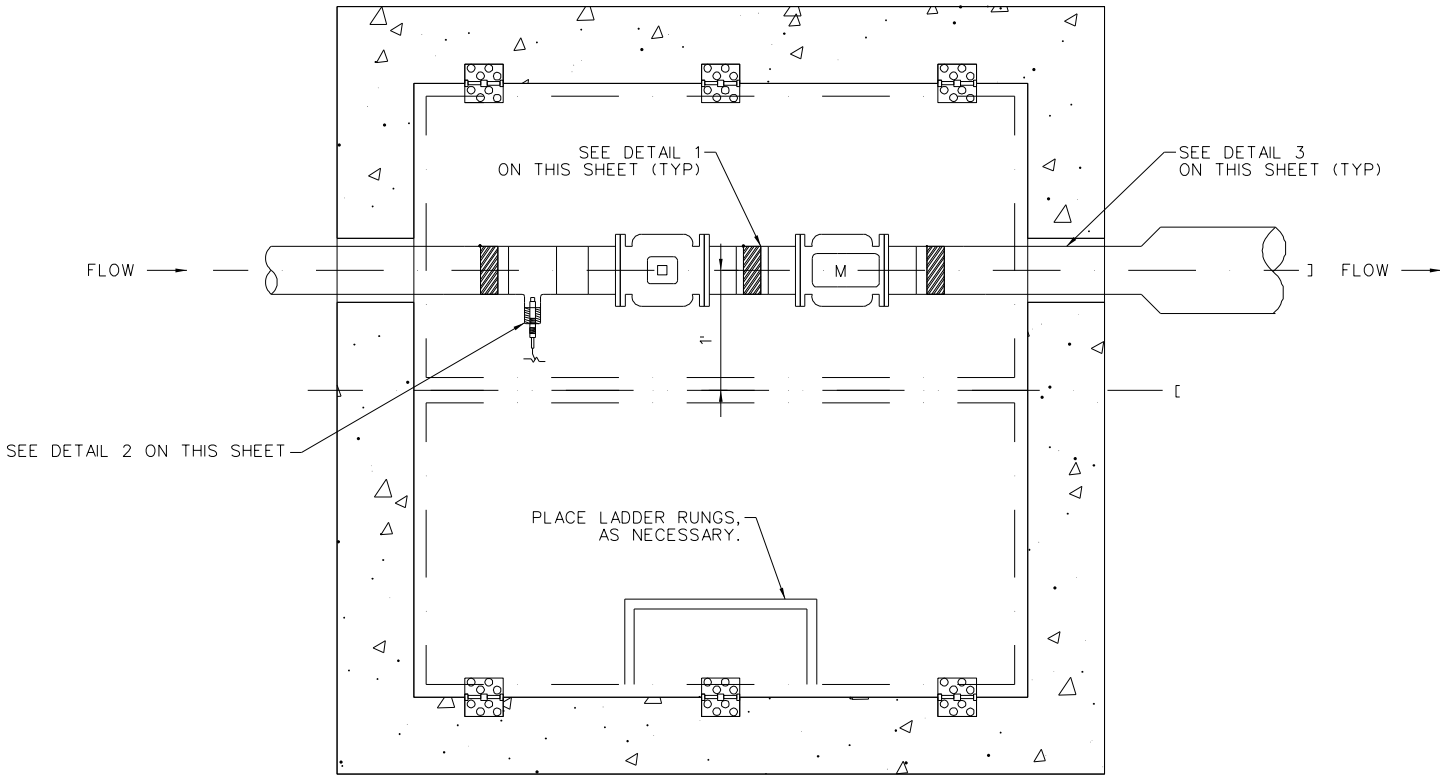
2 WET SWITCH DETAIL
SCALE: NOT TO SCALE



3 MANHOLE CONNECTION DETAIL
SCALE: NOT TO SCALE



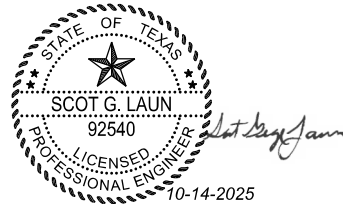
CROSS SECTION VIEW
SCALE: NOT TO SCALE



PLAN VIEW
SCALE: NOT TO SCALE

REFER TO POND CONTROL
RISER DIAGRAM (TXDOT
DETAIL BDP-20 (AUS))

NOTE:
REFER TO POND CONTROL LOGIC
DIAGRAMS FOR CONTROL LOGIC.
(TXDOT DETAIL BDP-20 (AUS))



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

BULVERDE ROAD
(GREEN SPRING TO REDLAND RD)

BATCH DETENTION
DETAILS

SHEET 2 OF 2

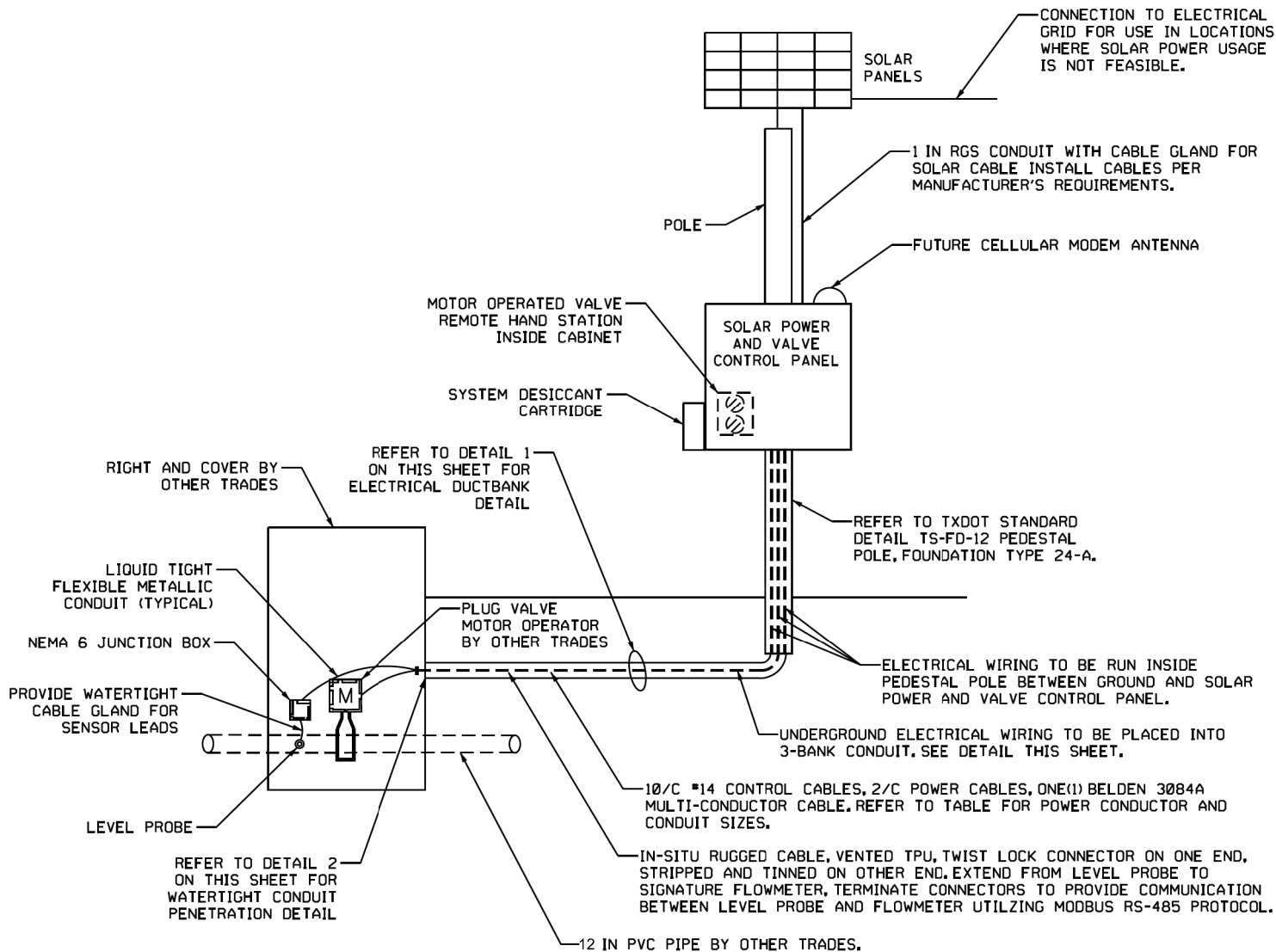
SCALE: N.T.S.

100% SUBMITTAL PROJECT NO.: 23-03867 DATE: 10/14/2025
DRWN. BY: JLB DSGN. BY: JPR CHKD. BY: JCV SHEET NO.:

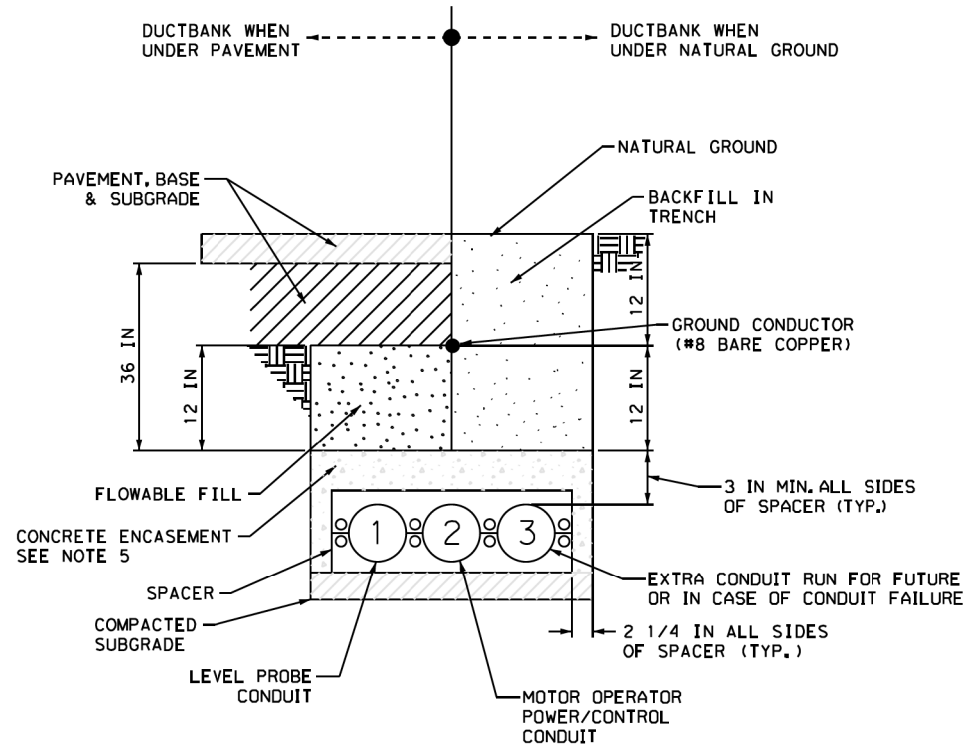
DISTANCE FROM CONTROL PANEL TO VALVE	MINIMUM REQUIRED WIRE SIZE (AWG)	MINIMUM REQUIRED CONDUIT SIZE
0 - 100	2/C #3	1-1/2 IN C
101 - 200	2/C #1	1-1/2 IN C
201 - 330	2/C #1/0	1-1/2 IN C

NOTE:
PROVIDE WIRE SPLICE ADAPTER TO ALLOW CONNECTION TO VALVE MOTOR OPERATOR TERMINALS.

- NOTES:
1. INSTALL COMPONENTS FOR SOLAR PHOTOVOLTAIC SYSTEM IN ACCORDANCE WITH NEC.
 2. PROVIDE NEMA 3R CABINETS FOR ALL EQUIPMENT UNLESS NOTED OTHERWISE.
 3. INSTALL ALL ABOVE GRADE CABLING IN RIGID CONDUIT UNLESS OTHERWISE SPECIFICALLY IDENTIFIED BY THE MANUFACTURER AS DETRIMENTAL TO SIGNAL STRENGTH.
 4. REFER TO SPECIAL SPECIFICATION BATCH DETENTION POND FOR SOLAR CONTROL PANEL EQUIPMENT REQUIREMENTS.
 5. REFER TO TxDOT STANDARD DETAILS BDS(1) AND TS-FD-12 FOR POLE MOUNTED SOLAR POWER SYSTEM.

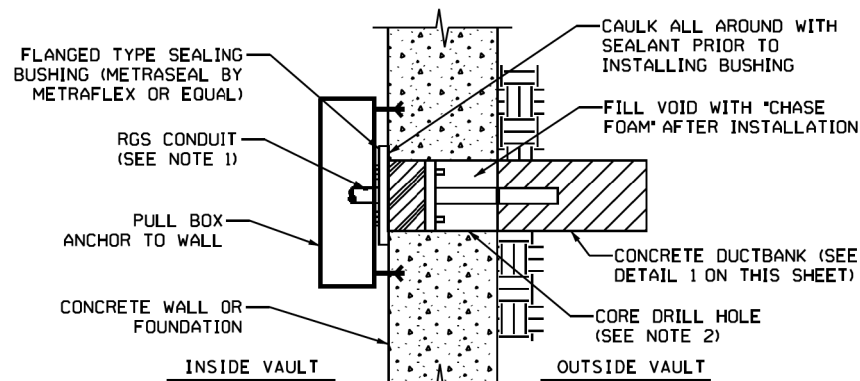


CONDUIT AND WIRING RISER DIAGRAM
NOT TO SCALE



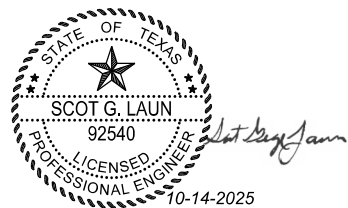
- NOTES:
1. CONDUIT TO BE PVC CONDUIT TYPE DB FOR CONCRETE ENCASUREMENT, SIZE AND NUMBER AS INDICATED ON DRAWING.
 2. CONCRETE ENCASUREMENT: ALL CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. NO AGGREGATE LARGER THAN 3/4 IN.
 3. INSTALL SPACERS EVERY 5 FT. ALL SPACERS TO PROVIDE 3 IN VERTICAL AND HORIZONTAL SEPARATION BETWEEN CONDUITS.
 4. NATURAL GROUND INCLUDES BOTTOM OF DITCH INVERTS.
 5. BATCH MIXED RED-DYE CONCRETE.
 6. ROUTE DUCTBANK ABOVE OR BELOW EXISTING UTILITIES MAINTAINING A MINIMUM OF 12 IN SEPARATION. MAINTAIN MINIMUM COVER INDICATED IN DETAIL.
 7. PROVIDE 45 DEGREE BENDS AT DUCTBANK TRANSITIONS AT VAULT AND HANDHOLE CONNECTIONS, AND WHEN CROSSING OVER, UNDER AND AROUND EXISTING UTILITIES AND OTHER STRUCTURES, UNLESS OTHERWISE APPROVED.

① ELECTRICAL DUCTBANK DETAIL
NOT TO SCALE



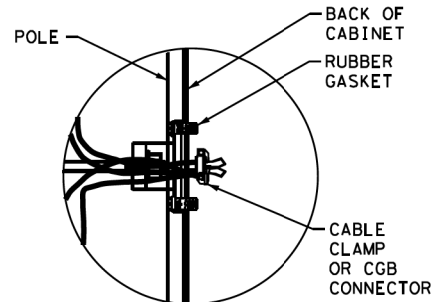
- NOTES:
1. PROVIDE WATERTIGHT PULL BOXES AND ELBOWS FOR CONDUITS PASSING THROUGH VAULT AND MOUNT TO WALL.
 2. COORDINATE WALL PENETRATIONS WITH VAULT MANUFACTURER TO AVOID CUTTING REINFORCEMENT.

② WATERTIGHT CONDUIT PENETRATION DETAIL
NOT TO SCALE

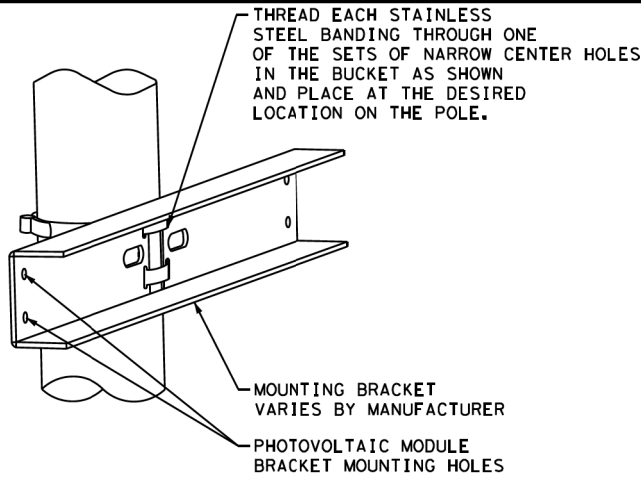


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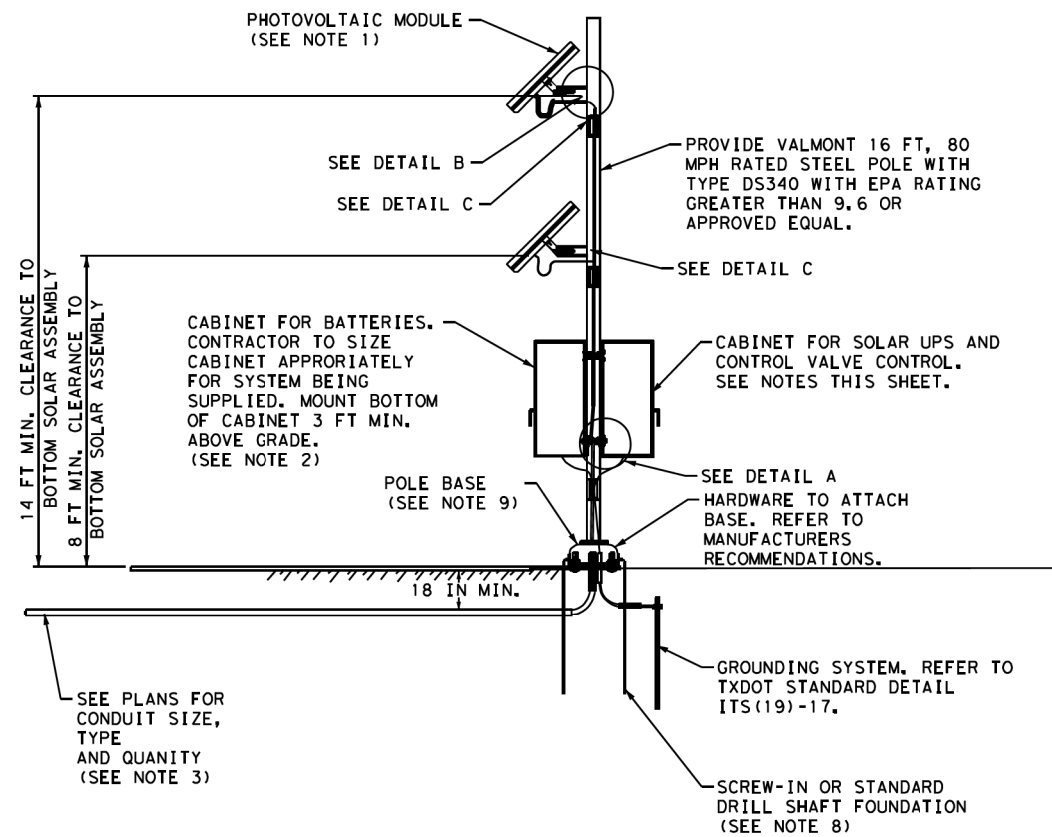
Texas Department of Transportation				Austin District Standard
BEST MANAGEMENT PRACTICES (BMP)				
BATCH DETENTION POND (SHEET 1 OF 2)				
CONTROL RISER DIAGRAM				
BDP-20 (AUS)				1 OF 2
CON	SECT	JOB	HIGHWAY	
\$C\$	\$S\$	\$J\$	\$HWY\$	
DIST	COUNTY		SHEET NO.	
\$D\$	\$CTY\$			



DETAIL A
NOT TO SCALE

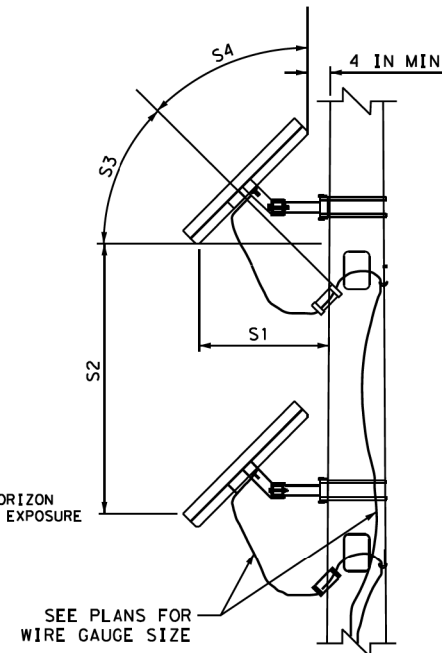


DETAIL B
NOT TO SCALE



SOLAR PANEL MOUNTING TABLE	
DIMENSION	DISTANCE / ANGLE
S1	= D X (SIN (S3)) + 4 (IN.)
S2	= D X (SIN (S3)) X (TAN(S3)) (IN.)
S3	= 90 DEG. - S4 (ZENITH ANGLE)
S4	VARIABLE

S1 = PANEL OFFSET
S2 = OPTIMUM VERTICAL CLEARANCE BETWEEN PANELS (IN.)
S3 = TILT ANGLE (DEGREES), ALSO SUN ELEVATION FROM HORIZON
S4 = SUN ZENITH ANGLE (DEGREES) ORIENTED FOR MAXIMUM EXPOSURE PER NATIONAL RENEWABLE ENERGY LABORATORY (NREL)
D = DEPTH OF PANEL (IN.)



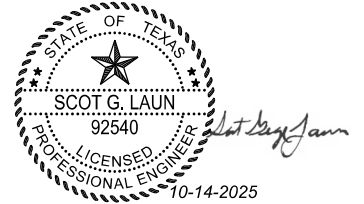
DETAIL C
NOT TO SCALE

GENERAL NOTES:

1. ORIENT PHOTOVOLTAIC MODULE FOR OPTIMUM EXPOSURE TO SUNLIGHT (FACE TO THE SOUTH) PER NATIONAL RENEWABLE ENERGY LABORATORY (NREL) GUIDELINES. PRIOR TO INSTALLATION, CHECK THE LOCATION TO ENSURE THERE IS NO OVERHEAD OBSTRUCTION THAT WOULD BLOCK THE PHOTOVOLTAIC MODULE FROM RECEIVING FULL SUNLIGHT. UNLESS SPECIFIED ELSEWHERE, MOUNT A MINIMUM OF 14" ABOVE GRADE.
2. WHEN REQUIRED FOR BATTERIES TO BE INSTALLED IN A POLE MOUNTED CABINET, WIRE BATTERIES ACCORDING TO MANUFACTURERS RECOMMENDATIONS. PROVIDE THE NUMBER OF BATTERIES AS REQUIRED BY THE MANUFACTURER. STACK THE BATTERIES IN THE CABINET ON SHELVES WITH 1 1/2" VERTICAL SEPARATION.
3. SEE ELECTRICAL DETAILS (ED) STANDARD SHEETS FOR ADDITIONAL REQUIREMENTS REGARDING THE INSTALLATION OF GROUND BOXES/BATTERY BOXES AND CONDUIT.
4. USE MATERIALS SPECIFICALLY DESIGNED FOR ATTACHING CABINETS, PHOTOVOLTAIC MODULES, ETC., TO POLES

5. SEE SPECIAL SPECIFICATION BATCH DETENTION POND FOR FURTHER REQUIREMENTS.
6. SEE PLANS FOR ELECTRICAL CONDUCTOR CIRCUIT SIZE FROM VALVE MANHOLE TO POLE MOUNTED CABINET. CIRCUIT TO BE DESIGNED BASED OFF OF ITS EQUIPMENT DESIGN LOAD AND ALLOWABLE 5% VOLTAGE DROP OVER DISTANCE FROM THE SOLAR ASSEMBLY TO ITS CABINET.
7. PROVIDE PEDESTAL POLE ASSEMBLY IN ACCORDANCE WITH ITEM 687. UNLESS OTHERWISE SHOWN ON THE PLANS, POLE SHAFT SHOULD BE ONE PIECE. SCHEDULE 40 ALUMINUM PIPE, ASTM B429 OF B221 (ALLOY 6061-T6 ONLY). ALUMINUM CONDUIT WILL NOT PROVIDE THE NECESSARY STRENGTH AND WILL NOT BE ALLOWED.
8. USE EITHER A SCREW-IN TYPE ANCHOR FOUNDATION OR A DRILLED SHAFT FOUNDATION AS IDENTIFIED IN THE PLANS. WHEN PLANS REQUIRE A DRILLED SHAFT FOUNDATION, CONSTRUCT IN ACCORDANCE WITH ITEM 416 AND STANDARD SHEET TS-FD-12. INSTALL THE SCREW-IN TYPE ANCHOR FOUNDATION AS PER THE MANUFACTURER'S RECOMMENDATIONS. ON A SLOPE, INSTALL ONE EDGE AT GROUND LEVEL. SCREW-IN SHAFT FOUNDATION WILL BE SUBSIDIARY TO SPECIAL SPECIFICATION "BATCH DETENTION POND."

9. PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE IN HIGH WINDS. USE A POLE AND BASE COLLAR ASSEMBLY TO ADD STRENGTH AND PREVENT LOOSENING AT CONNECTION.
10. USE HARDWARE SPECIFICALLY DESIGNED FOR ATTACHING EQUIPMENT (I.E., CABINET, PHOTOVOLTAIC MODULE, ETC.) TO POLE AS RECOMMENDED BY EQUIPMENT MANUFACTURER. PROVIDE MOUNTING DETAILS FOR APPROVAL.
11. USE GALVANIZED STEEL HARDWARE.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY SCOTT G. LAUN, PE# 92540, ON 10-14-2025. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT. THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF HALFF ASSOCIATES, INC. 100 NE INTERSTATE 410 LOOP, SUITE 701, SAN ANTONIO, TEXAS 78216. TBPE FIRM #F-312.

SOLAR UPS AND BLOCK VALVE CONTROL PANEL

CONTAIN THE SOLAR CONTROLLER EQUIPMENT, BATTERIES, INVERTER, AND BLOCK VALVE CONTROLS WITHIN THE SAME ENCLOSURE. THE ENCLOSURE SHOULD BE POLE-MOUNTED AND A NEMA 3R POWDER COATED ALUMINUM ENCLOSURE. A SIGN SHOULD BE SECURED ON THE OUTSIDE OF THE DOOR, SEE SIGN DETAIL THIS SHEET. THE SOLAR UPS CONTROLLER SHOULD PROVIDE A CONTINUOUS POWER TO THE BLOCK VALVE CONTROLS. THE CONTROLLER SHOULD INCLUDE, BUT NOT NECESSARILY BE LIMITED TO, SOLAR PANELS, BATTERIES, SURGE ARRESTOR, SOLAR CONTROLLER, 24 VDC TO 120 VAC INVERTER, OVERCURRENT PROTECTION, ETC. THE CONTROLLER SHOULD BE CAPABLE OF PROVIDING 14.71 WATTS OF CONTINUOUS VDC POWER FOR THE WORST ANTICIPATED AVAILABLE DAYLIGHT. THE CONTROLLER BATTERIES SHALL BE RATED AT A MINIMUM OF 110 AMP-HOURS BASED ON 12 VDC BATTERIES. THE CONTROLLER SHOULD ALSO BE CAPABLE OF PROVIDING AN ADDITIONAL 4.5 AMPS OF 120 VAC POWER FOR A 10 SECOND INTERVAL TWICE ON A DAILY BASIS. THE CONTROLLER SHOULD BE CAPABLE OF OPERATING IN TEMPERATURES RANGING FROM -20°C TO 65°C AND A HUMIDITY OF 5% TO 95% NON-CONDENSING. THE CONTROLLER SHOULD BE A COMPLETE TURN-KEY PACKAGED SYSTEM INTEGRATED BY A SINGLE PROVIDER. THE CONTROLLER SUPPLIER SHALL BE REGULARLY ENGAGED IN FABRICATING CONTROLLERS OF THIS TYPE FOR A MINIMUM OF 5 YEARS. THE CONTRACTOR SHOULD PROVIDE A LIST OF CONTROLLER SUPPLIERS FOR APPROVAL. THE SUPPLIER SHOULD BE SIMILAR TO SOLARCRAFT OR AN APPROVED EQUAL. FOR CALCULATING THE DAYLIGHT AVAILABILITY, THE SYSTEM DESIGN SHOULD BE BASED ON THE CENTRAL TEXAS AREA. THE BLOCK VALVE CONTROLS SHOULD INCLUDE THE CONTROLS FOR THE BLOCK VALVE AND THE CAPACITANCE PROXIMITY SENSOR TO DETECT WATER IN THE PIPE. THESE CONTROLS SHOULD CONTAIN BUT NOT NECESSARILY BE LIMITED TO, THE PLC, THE CELLULAR MODEM, THE CELLULAR MODEM ANTENNA, INTERPOSING RELAYS, TERMINAL BLOCKS, LED INDICATING LIGHTS, AND VOLTAGE MONITOR RELAY. THE INTERNAL WIRING OF THIS CONTROL PANEL SHOULD BE AS INDICATED. EQUIP THE CONTROL PANEL WITH A 120 VAC SINGLE-PHASE SURGE SUPPRESSOR FOR THE INCOMING SERVICE AS INDICATED.

DATE:
FILE:

				Austin District Standard	
BEST MANAGEMENT PRACTICES (BMP)					
BATCH DETENTION POND (SHEET 2 OF 2)					
BDS SOLAR POWER SYSTEM POLE MOUNTING DETAILS					
BDP-20 (AUS) 2 OF 2					
CONT	SECT	JOB	HIGHWAY		
\$CS\$	\$SS\$	\$JS\$	\$HWY\$		
DIST	COUNTY		SHEET NO.		
\$DSS\$	\$CTYS\$				

ATTACHMENT G

Permanent Best Management Practices Inspection and Maintenance Plan

The attached inspection and maintenance plan outlines the procedures necessary to maintain the performance of the Permanent Best Management Practices for this project.

It is the responsibility of the owner to contract with a representative to provide the inspections and maintenance as outlined in the plan for the duration of the project. The owner will maintain this responsibility until it is assumed or transferred to another entity in writing. If the property is leased or sold, the responsibility for the maintenance will be required to be transferred through the lease agreement, binding covenants, closing documents, or other binding legal instrument.

I, the owner, have read and understand the requirements of the attached Inspection and Maintenance Plan for the proposed Permanent Best Management Practices for my project. I acknowledge that I will maintain responsibility for the implementation and execution of the plan until the responsibility is transferred to or assumed by another party in writing through a binding legal instrument.

Owner

By:

Jessica M. Shirley-Saenz

Date

09/09/2024

Maintenance Guidelines for Batch Detention Basins

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

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

1. **Mowing.** The floor of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas.
2. **Litter and Debris Removal.** Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed.
3. **Erosion control.** The basin's walls and outfalls may periodically suffer from slumping and erosion. To correct these problems, corrective action, such as regrading, may be necessary. Correction of erosion control should take place whenever required based on the periodic inspections.
4. **Level Sensor.** The level sensor in the basin should be inspected and any debris or sediment in the area should be removed. Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin.
5. **Nuisance Control.** Standing water or soggy conditions may occur in the basin. Some standing water may occur after a storm event since the valve may close with 2 to 3 inches of water in the basin. Some flow into the basin may also occur between storms due to spring flow and residential water use that

enters the storm sewer system. Twice a year, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.).

6. **Structural Repairs and Replacement**. With each inspection, any damage to structural elements of the basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a basin will eventually deteriorate and must be replaced. A written record should be kept of inspection results and corrective measures taken.
7. **Discharge Pipe**. The basin discharge pipe shall be checked for accumulation of silt, debris or other obstructions which could block flow. Soil accumulations, vegetative overgrowth and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. A written record should be kept of inspection results and corrective measures taken.
8. **Detention and Drawdown Time**. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. This characteristic can be a sign of the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the actuator valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicate blockage of the discharge pipe. Corrective actions should be performed and completed within 15 working days. A written record of the inspection findings and corrective actions performed should be made.
9. **Sediment Removal**. A properly designed batch detention basin will accumulate quantities of sediment over time. The accumulated sediment can detract from the appearance of the facility and reduce the pollutant removal performance of the facility. The sediment also tends to accumulate near the outlet structure and can interfere with the level sensor operation. Sediment shall be removed from the basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours. Care should be taken not to compromise the basin lining during maintenance.
10. **Logic Controller**. The Logic Controller should be inspected as part of the twice-yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be

inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.

11. Visually Inspect Security Fencing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. A written record should be kept of inspection results and maintenance performed.
12. **Recordkeeping Procedures for Inspections, Maintenance, Repairs, and Retrofits.**
 - Written records shall be kept by the party responsible for maintenance or a designated representative.
 - Written records shall be retained for a minimum of five years.

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

I Sean D. Strong, PE,
Print Name
Senior Engineer,
Title - Owner/President/Other
of City of San Antonio,
Corporation/Partnership/Entity Name
have authorized Scot Laun, PE, CFM,
Print Name of Agent/Engineer
of Halff Associates, Inc,
Print Name of Firm

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

I also understand that:

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

SIGNATURE PAGE:

Sean D. Strong, PE
Applicant's Signature

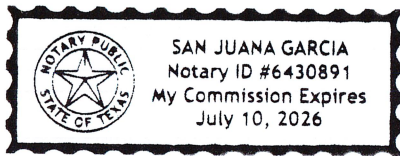
07/25/24
Date

THE STATE OF Texas §

County of Bexar §

BEFORE ME, the undersigned authority, on this day personally appeared Sean Scott 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 25th day of July, 2024.



San Juana Garcia
NOTARY PUBLIC

San Juana Garcia
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: July 10, 2026

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Bulverde Road (Green Spring to Redland Road) Project

Regulated Entity Location: San Antonio

Name of Customer: City of San Antonio Public Works Department

Contact Person: Sean Strong, PE

Phone: (210) 207-8037

Customer Reference Number (if issued): CN 600130652

Regulated Entity Reference Number (if issued): RN _____

Austin Regional Office (3373)

☐ Hays

☐ Travis

☐ Williamson

San Antonio Regional Office (3362)

☒ Bexar

☐ Medina

☐ Uvalde

☐ Comal

☐ Kinney

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

☐ Austin Regional Office

☒ San Antonio Regional Office

☐ Mailed to: TCEQ - Cashier

☐ Overnight Delivery to: TCEQ - Cashier

Revenues Section

Mail Code 214

P.O. Box 13088

Austin, TX 78711-3088

12100 Park 35 Circle

Building A, 3rd Floor

Austin, TX 78753

(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone

☐ Contributing Zone

☒ Transition Zone

<i>Type of Plan</i>	<i>Size</i>	<i>Fee Due</i>
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	7.68 Acres	\$ 5,000
Sewage Collection System	L.F.	\$
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$

Signature: 

Date: 10/14/2025

Application Fee Schedule

Texas Commission on Environmental Quality

Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

<i>Project</i>	<i>Fee</i>
Exception Request	\$500

Extension of Time Requests

<i>Project</i>	<i>Fee</i>
Extension of Time Request	\$150



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 600130652		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)					
<i>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).</i>					
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
City of San Antonio					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits) 746002070	10. DUNS Number (if applicable)
11. Type of Customer:		☐ Corporation		☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☒ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship		☐ Other:	
12. Number of Employees				13. Independently Owned and Operated?	
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher				☐ 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 ☐ Other: ☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant					
15. Mailing Address:	P.O. Box 839966				
	City	San Antonio	State	TX	ZIP 78283 ZIP + 4 3966
16. Country Mailing Information (if outside USA)				17. E-Mail Address (if applicable)	
				Sean.Strong@sanantonio.gov	

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(210) 207-8037		(210) 207-4406

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								
<i>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).</i>								
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)								
Bulverde Road (Green Spring to Redland Road) Project								
23. Street Address of the Regulated Entity: (No PO Boxes)								
	City	San Antonio	State	TX	ZIP		ZIP + 4	
24. County	Bexar							

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

25. Description to Physical Location:	Along Bulverde Road from Redland Road to Green Spring Drive.							
26. Nearest City					State	Nearest ZIP Code		
San Antonio					TX		78247	
<i>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).</i>								
27. Latitude (N) In Decimal:		29.592969°			28. Longitude (W) In Decimal:		-98.424313°	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
29	35	34	-98	25	27			
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)			
4111			485111					
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)								
Infrastructure improvements.								
34. Mailing Address:	P.O. BOX 839966							
	City	San Antonio	State	TX	ZIP	78283	ZIP + 4	3966
35. E-Mail Address:	Sean.Strong@sanantonio.gov							
36. Telephone Number	37. Extension or Code		38. Fax Number (if applicable)					
(210) 207-8037			(210) 207-4406					

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:	Noe Flores		41. Title:	Graduate Civil Engineer
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address	
(830) 455-6203		() -	noe.flores@halff.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:	Halff Associates, Inc.		Job Title:	Water Resources Team Leader	
Name (In Print):	Scot Laun, PE, CFM			Phone:	(210) 704- 1367
Signature:				Date:	10/14/2025