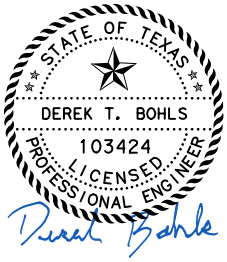
LJA Engineering, Inc.

ROUND ROCK WEST AREA 5 WATER, WASTEWATER AND STORM DRAIN IMPROVEMENTS

CITY OF ROUND ROCK, TEXAS

WILLIAMSON COUNTY

WATER POLLUTION ABATEMENT PLAN EXCEPTION APPLICATION



2/20/2024

PREPARED FOR:
CITY OF ROUND ROCK
3400 SUNRISE ROAD
ROUND ROCK, TEXAS 78665

PREPARED BY:
LJA ENGINEERING, INC.
2700 LA FRONTERA SUITE 150
ROUND ROCK, TEXAS 78230

Recharge and Transition Zone Exception Request Form 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), if necessary**

  Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
  Comments to the Geologic Assessment Table
  Attachment B - Soil Profile and Narrative of Soil Units
  Attachment C - Stratigraphic Column
  Attachment D - Narrative of Site Specific Geology
  Site Geologic Map(s)
  Table or list for the position of features' latitude/longitude (if mapped using GPS)

- **Recharge and Transition Zone Exception Request Form (TCEQ-0628)**

  Attachment A - Nature of Exception
  Attachment B - Documentation of Equivalent Water Quality Protection

- **Temporary Stormwater Section (TCEQ-0602), if necessary**

  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 sealing a feature)
  Attachment F - Structural Practices
  Attachment G - Drainage Area Map
  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), if necessary**

  Attachment A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the 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 BMPs not based on Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs
Attachment I -Measures for Minimizing Surface Stream Contamination

- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- **Fee Application 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 if not withdrawn the application will be denied and 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 to you:

- You can withdraw your application, and your fees will be refunded or credited for a resubmittal.
- 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 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 effected 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: Round Rock West Area 5						**2. Regulated Entity No.:**				
3. Customer Name: City of Round Rock						**4. Customer No.: CN600413181**				
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):**		Site 1 – 1.39 ac; Site 2 – 1.98 ac; Site 3 – 0.65 ac		
9. Application Fee:	$500		**10. Permanent BMP(s):**			N/A				
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A				
13. County:	Williamson		**14. Watershed:**			Lake 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.)	___	___	_1_
Region (1 req.)	___	___	_1_
County(ies)	___	___	_1_
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 _1_Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	___	___	___	___
Region (1 req.)	___	___	___	___	___
County(ies)	___	___	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	___Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	___Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Derek Bohls
Print Name of Customer/Authorized Agent Derek Bohls 02/20/2024
Signature of Customer/Authorized Agent Date

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

General Information Form

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Derek Bohls, PE

Date: 02/20/2024

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Round Rock West Area 5
2. County: Williamson
3. Stream Basin: Lake 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: Federico Sanchez
   Entity: City of Round Rock
   Mailing Address: 3400 Sunrise Road
   City, State: Round Rock, TX Zip: 78665
   Telephone: (512) 218-6609 FAX: _____
   Email Address: fsanchez@roundrocktexas.gov

8. Agent/Representative (If any):

   Contact Person: Derek Bohls
   Entity: LJA Engineering
   Mailing Address: 2700 La Frontera Suite 150
   City, State: Round Rock, TX Zip: 78681
   Telephone: (512) 439-4744 FAX: _____
   Email Address: dbohls@lja.com

9. Project Location:

   ☒ The project site is located inside the city limits of City of Round Rock.
   ☐ 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.

    Site 1: Located West of IH-35 on Creekview Dr and Wood Rock Dr.
    Site 2: Located West of IH-35 on Limerock Dr, Aqualine Cove and St Williams Ave.
    Site 3: Located north of Site 1 on Scenic Loop and Oakridge Dr.

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: Please notify Roberto Erazo at (210) 503-2725 when TCEQ plans to have their site visit.

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

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

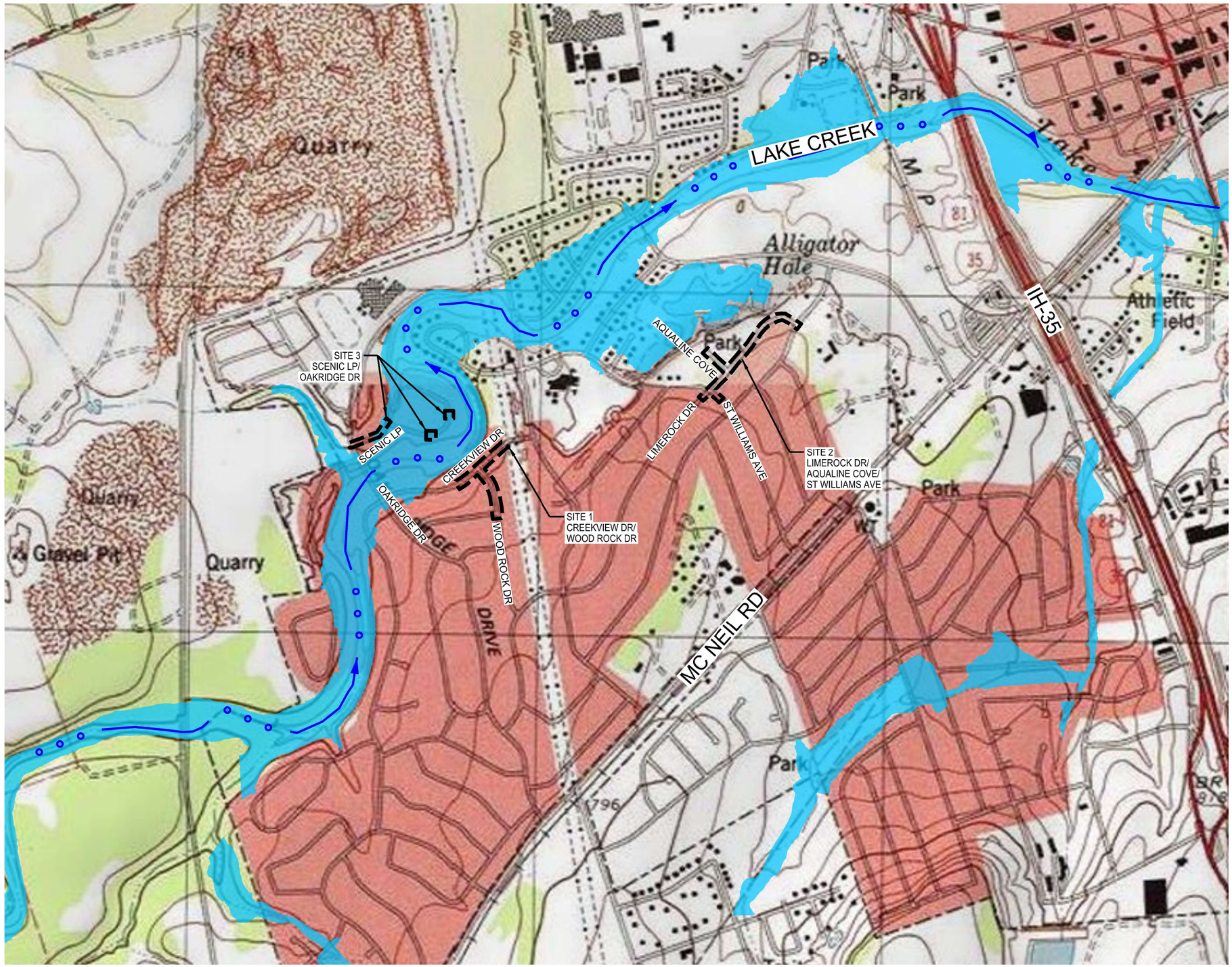
- ☐ TCEQ cashier
- ☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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

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

Attachment A – Road Map

Water Pollution Abatement Plan Exception Application



LEGEND

- SITE LIMITS
- FLOW DIRECTION
- 100-YR FLOODPLAIN

N

0' 250' 500' 1000'

SCALE: 1"=1000'

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SCS PLAN
ROAD MAP

SHEET 1 OF 1

PROJECT NO:	SHEET NO.
DESIGNED: AM	
DRAWN: AM	
CHECKED: RE	

1/16/2024
9:35:16 PM
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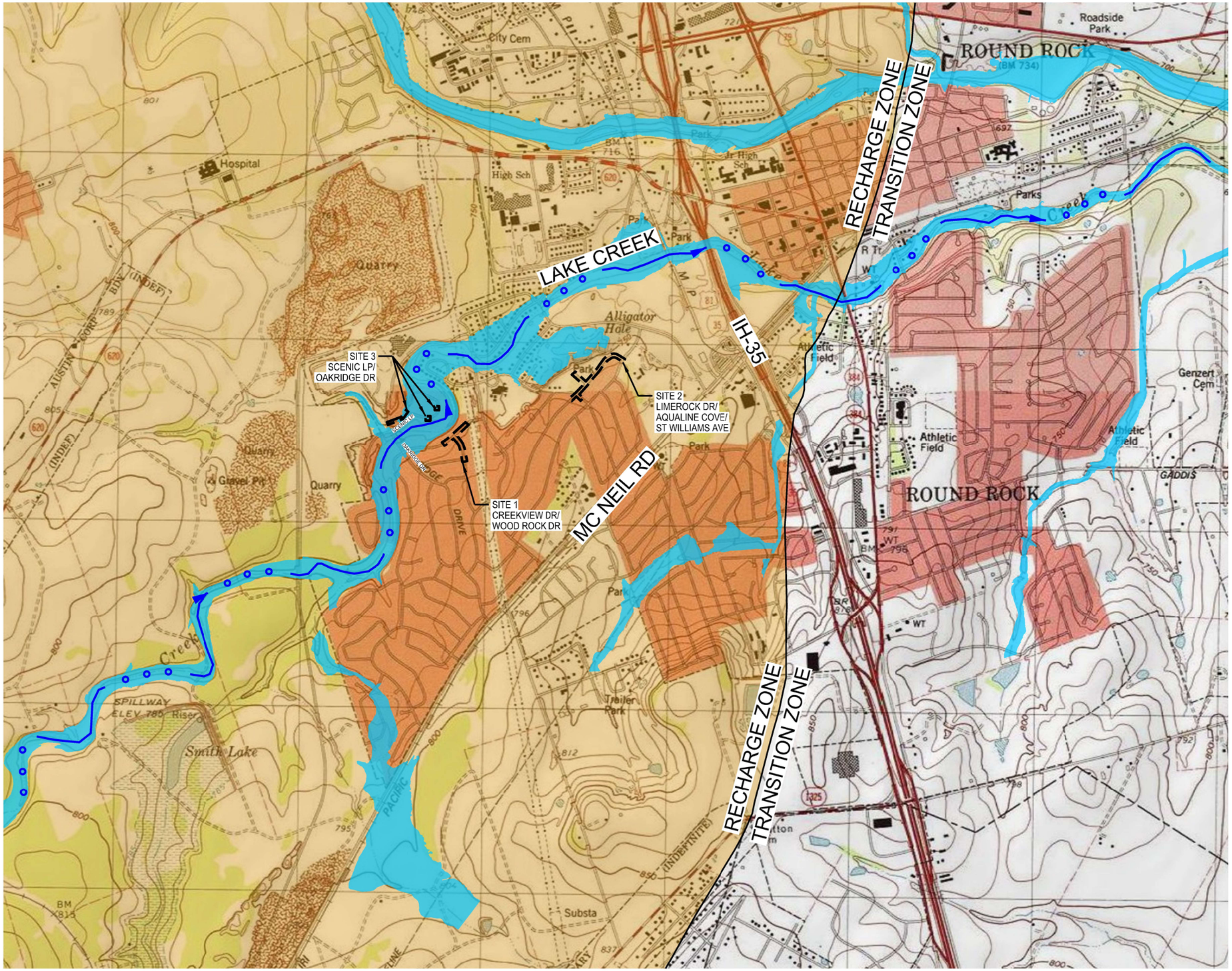
Attachment B - USGS Map

Water Pollution Abatement Plan Exception Application



LEGEND

- SITE LIMITS
- FLOW DIRECTION
- 100-YR FLOODPLAIN
- RECHARGE ZONE

NOTES:

1. USGS MAP OF ROUND ROCK SW(30097-E6) AND PFLUGERVILLE WEST NW (30097-D6)QUADRANGLES.

0' 500' 1000' 2000'

SCALE: 1"=2000'

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SCS PLAN
USGS MAP

SHEET 1 OF 1

PROJECT NO:	SHEET NO.
DESIGNED: AM	
DRAWN: AM	
CHECKED: RE	

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WATER POLLUTION ABATEMENT PLAN EXCEPTION APPLICATION

ATTACHMENT C

PROJECT DESCRIPTION

The storm sewer, water, and wastewater collection system relocations/improvements are associated with a drainage improvement project located in what is denominated as Area 5 which contains Site 1, Site 2, and Site 3. All sites lie within Williamson County and are inside the city limits of Round Rock, Texas. The improvements associated with this project will not increase the impervious cover.

Site 1 – Creekview Dr and Wood Rock Dr
Comprehends approximately 625 ft of Creekview Dr and 570 ft of Wood Rock Dr, and contains proposed storm sewer, and relocation of two water lines (Line C and Line D) and two wastewater lines (Line A and Line B). The project site area is 1.39 acres. The storm sewer alignment is within the existing pavement and begins at Wood Rock Dr and Blanchard, comes down Creekview outfalling into the City of Round Rock greenbelt channel that connects downstream to Lake Creek. The storm sewer system will entail several curbside inlets. The 8-inch water lines C and D will also be relocated within the existing pavement and run to similar limits as the storm sewer.

Within the existing pavement, wastewater lines A and B run similar limits as the storm sewer and water lines and will be upsized from 6-inch to 8-inch. On Creekview, line A ties to an existing wastewater manhole located at STA 13+65.98 and runs parallel to the existing 6-inch WWL at an offset of approximately 6 ft ending at STA 18+56.09. On Wood Rock, line B ties to a proposed manhole from line A located at STA 9+88.93 and runs parallel to the existing 6-inch WWL at an approximate offset of 9 ft ending at STA 15+50.19. The two existing WWL will be grout filled and abandoned in place apart from stormwater and water crossings where these conflict.

Site 2 – Lime Rock Dr and Aqualine Cove
Comprehends approximately 1280 ft of Limerock Dr and 300 ft of Aqualine Cove, and contains proposed storm sewer, and relocation of two water lines (Line G and Line H) and two wastewater lines (Line E and Line F). The project site area is 1.98 acres. There are two storm sewer systems, the first outfalls on Aqualine and the second outfalls on Lime Rock. The Aqualine storm sewer begins at Lime Rock Dr and St Williams, comes down Lime Rock into Aqualine before outfalling into the Round Rock West Lake. The Lime Rock storm sewer system collects from both Lime Rock and Bluff Dr, connects to an existing storm sewer, and outfalls into Round Rock West Lake. Both alignments are within the existing pavement with the exception on the Aqualine system which outfalls through a grassy drainage easement. The easement will be restored to existing grass conditions. The storm sewer systems will entail several curbside inlets. The 8-inch water lines G and H will also be relocated within the existing pavement and run to similar limits as the storm sewer.

Within the existing pavement, wastewater lines E and F run similar limits as the storm sewer and water lines and will be upsized from 6-inch to 12-inch from STA 22+07.97 to STA 20+04.40 and to 8-inch from STA 20+04.40 to STA 10+07.19. On Lime Rock, line E ties into a proposed wastewater manhole located at STA 22+07.97 and runs parallel to the existing 6-inch WWL at an offset of approximately 5-7 ft ending at STA 10+07.19. On Aqualine, line F ties to a proposed manhole from line E located at STA 10+11.00 and runs parallel to the existing 6-inch WWL at an approximate offset of 13 ft ending at STA 12+95.11. The two existing WWL will be grout filled and abandoned in place apart from stormwater and water crossings where these conflict.

Site 3 – Scenic Lp and Oakridge Dr

Site 3 comprehends approximately 432 ft of proposed 8-inch water line (Line I) from Oakridge Dr to Scenic Lp, adding an additional water feed to the system. The existing 8-inch Lake Creek water line crossing will be cut, cap, and grout filled from Scenic Loop (Location A) to Creekview (Location B) as shown on the plans. Other improvements include adding a gate valve midpoint of the Scenic Loop system (Location C) to provide additional shut off location for future maintenance. The project site area is 0.65 acres.

As noted in this description, the improvements associated with this project will occur within the existing pavement and will not increase the impervious cover. The plans propose temporary erosion controls shown in the traffic and erosion control layouts to serve as a temporary measure to treat runoff from the construction site.

Geologic Assessment Form (TCEQ-0585)

Horizon™
Environmental Services, Inc.

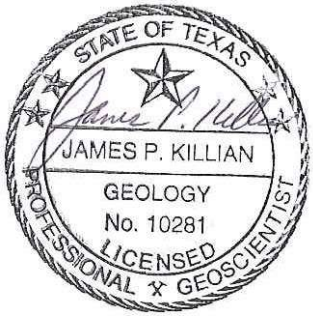
GEOLOGIC ASSESSMENT
RRW AREA 5 WW AND STORM DRAIN IMPROVEMENTS
CREEKVIEW DRIVE, WOOD ROCK DRIVE, LIME ROCK DRIVE, ST. WILLIAMS AVENUE, AND AQUALINE COVE
ROUND ROCK, WILLIAMSON COUNTY, TEXAS
HJN 22104.001GA

PREPARED FOR:

CITY OF ROUND ROCK
ROUND ROCK, TEXAS

PREPARED BY:

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



APRIL 2022

CORPORATE HEADQUARTERS
1507 S Interstate 35 • Austin, Texas 78741-2502 • 512.328.2430 • www.horizon-esi.com
TBPG Firm No. 50488 • An LJA Company

Horizon
Environmental Services, Inc.

TABLE OF CONTENTS

I. GEOLOGIC ASSESSMENT FORM (TCEQ-0585)

II. ATTACHMENTS:

A GEOLOGIC ASSESSMENT TABLE
B STRATIGRAPHIC COLUMN
C DESCRIPTION OF SITE GEOLOGY
D SITE GEOLOGIC MAP
E SUPPORTING INFORMATION
F ADDITIONAL SITE MAPS
G SITE PHOTOGRAPHS

Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

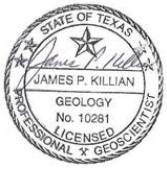
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

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

Date: 19 April 2022 Fax: 512-328-1804

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

Signature of Geologist:



Regulated Entity Name: RRW Area 5 WW and Storm Drain Improvements; Creekview Drive, Wood Rock Drive, Lime Rock Drive, St. Williams Avenue, and Aqualine Cove, Round Rock, Williamson County, Texas

Project Information

1. Date(s) Geologic Assessment was performed: 5 April 2022
2. Type of Project:
   - ☒ WPAP
   - ☒ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone

☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Eckrant stony clay, 0-3% slopes (EeB)	D	6.5
Eckrant-Rock outcrop complex, 1-10% slopes (ErE)	D	6.5
Georgetown stony clay loam, 1-3% slopes (GsB)	D	5

Soil Name	Group*	Thickness(feet)

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

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

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

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

Applicant's Site Plan Scale: 1" = 400'
Site Geologic Map Scale: 1" = 400'
Site Soils Map Scale (if more than 1 soil type): 1" = 500'

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 0 (#) 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.

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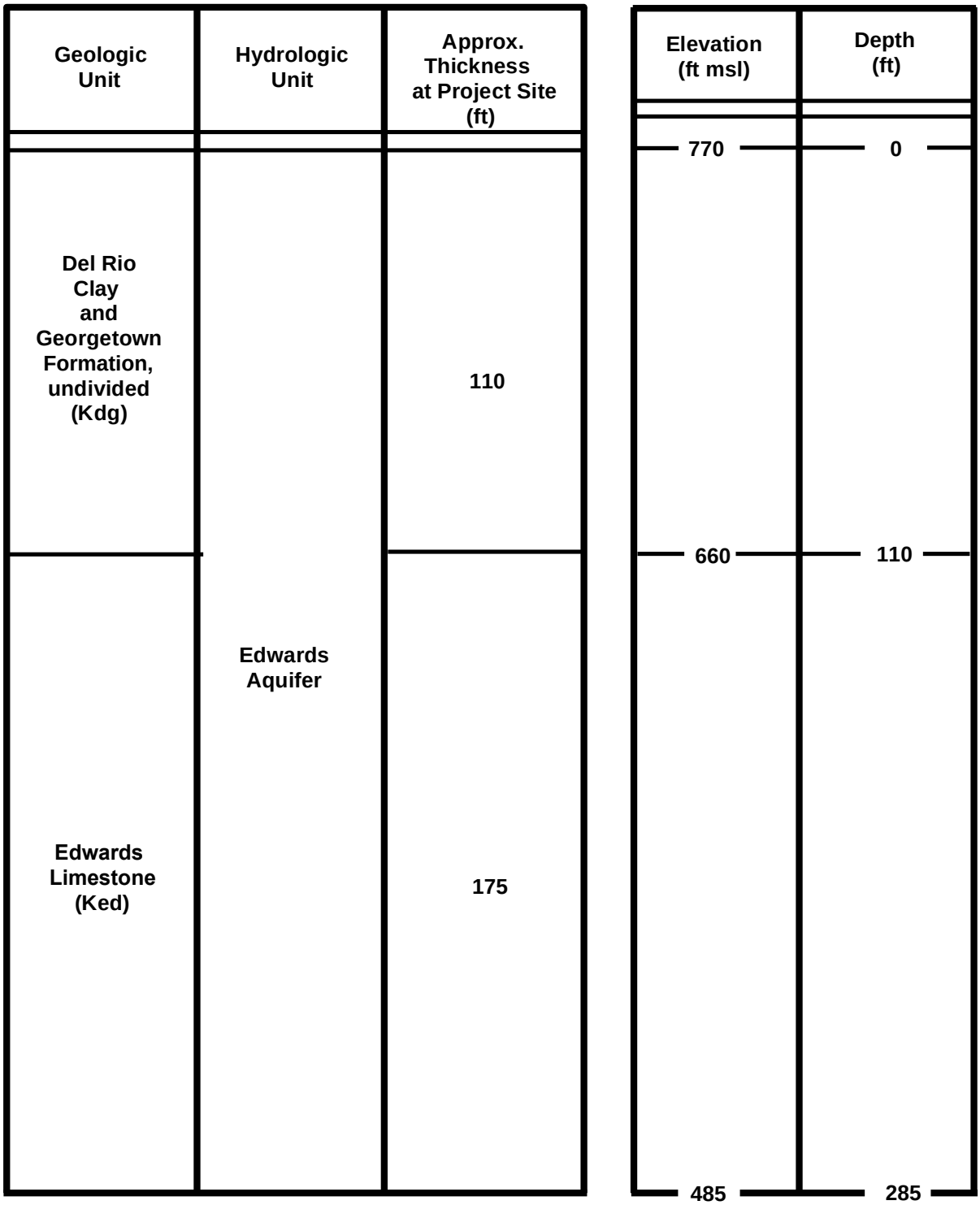
ATTACHMENT A

GEOLOGIC ASSESSMENT TABLE

Horizon observed no features on the subject site that meet the TCEQ definition of a potential recharge feature; as such, the TCEQ Geologic Assessment Table was not completed.

Horizon
Environmental Services, Inc.

ATTACHMENT B
STRATIGRAPHIC COLUMN



Note: Unit elevation and thickness given with respect to a ground surface elevation of 770 feet near the southwest edge of the subject site.

Horizon™ Environmental Services, Inc.	Date: 04/06/2022 Drawn: KRS HJN NO: 22104 GA	**Attachment B** Stratigraphic Column RRW Area 5 WW & Storm Drain Improvements Round Rock, Williamson County, Texas	STATE OF TEXAS JAMES P. KILLIAN GEOLOGY No. 10281 LICENSED PROFESSIONAL GEOSCIENTIST

22104--RRW_Area_5_WW_&_Storm_Drain_Improvements\Graphics\22104-005GA_05A_Strat

Horizon
Environmental Services, Inc.

ATTACHMENT C
DESCRIPTION OF SITE GEOLOGY

Geologic information for the subject site obtained via literature review is provided in Attachment E, Supporting Information.

A geologic assessment located around Creekview Drive, Wood Rock Drive, Lime Rock Drive, St. Williams Avenue, and Aqualine Cove in Round Rock, Williamson County, Texas, was conducted pursuant to Texas rules for regulated activities in the Edwards Aquifer Recharge Zone (EARZ) (30 TAC 213). The subject site consists of streets along developed suburbs. Assessment findings were used to develop recommendations for site construction measures intended to be protective of water resources at the subject site and adjacent areas.

The entire subject site is located within the Edwards Aquifer Recharge Zone (EARZ), as defined by the Texas Commission on Environmental Quality (TCEQ). The EARZ occurs where surface water enters the subsurface through exposed limestone bedrock containing faults, fractures, sinkholes, and caves.

The subject site is completely underlain by Edwards Limestone (Ked), which has an estimated maximum thickness of 175 feet, and Del Rio Clay and Georgetown Formation, undivided (Kdg) (UT-BEG, 1995), which has an estimated maximum thickness of about 110 feet.

No naturally occurring geologic features or man-made features were identified at this site. Further information is presented in the following Attachments D, E, and F. Photographs of the subject site are presented in Attachment G.

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ATTACHMENT D
SITE GEOLOGIC MAP

Legend

- 2-Foot Contour
- Subject Site
- Del Rio Clay and Georgetown Formation, undivided (Kdg)
- Edwards Limestone (Ked)

Horizon Environmental Services, Inc.

Date:	04/06/2022
Drawn:	KRS
HJN NO:	22104 GA
Source:	COA, 2019; Nearmap, 2022; TWSC, 2014

Attachment D

Site Geologic Map
RRW Area 5 WW &
Storm Drain Improvements
Round Rock, Williamson County, Texas

STATE OF TEXAS — JAMES P. KILLIAN — GEOLOGY — No. 10291 — LICENSED PROFESSIONAL GEOSCIENTIST

0 200 400
Feet

22104--RRW_Area_5_WW_&_Storm_Drain_Improvements\Graphics\22104-005GA_06A_SGM

Horizon
Environmental Services, Inc.

ATTACHMENT E
SUPPORTING INFORMATION

1.0 INTRODUCTION AND METHODOLOGY

This report and any proposed abatement measures are intended to fulfill Texas Commission on Environmental Quality (TCEQ) reporting requirements (TCEQ, 2005). This geologic assessment includes a review of the subject site for potential aquifer recharge and documentation of general geologic characteristics for the subject site. Horizon Environmental Services, Inc. (Horizon) conducted the necessary field and literature studies according to TCEQ *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* (TCEQ, 2004).

Horizon walked transects spaced 50 feet apart, mapped the locations of features using a sub-foot accurate Trimble Geo HX handheld GPS, and posted processed data utilizing GPS Pathfinder Office software, topographic maps, and aerial photographs. Horizon also searched the area around any potential recharge features encountered to look for additional features. When necessary, Horizon removed loose rocks and soil (by hand) to preliminarily assess each feature's subsurface extent while walking transects. However, labor-intensive excavation was not conducted during this assessment. Features that did not meet the TCEQ definition of a potential recharge feature (per TCEQ, 2004), such as surface weathering, karren, or animal burrows, were evaluated in the field and omitted from this report.

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

2.0 ENVIRONMENTAL SETTING

2.1 LOCATION AND GENERAL DESCRIPTION

The subject site consists of approximately 4.1 acres generally located along portions of Creekview Drive, Wood Rock Drive, Lime Rock Drive, St. Williams Avenue, and Aqualine Cove in Round Rock, Williamson County, Texas (Appendix F, Figure 1).

2.2 LAND USE

The subject site consists of roads which provide access to a single-family residential neighborhood.

2.3 TOPOGRAPHY AND SURFACE WATER

The subject site is situated on level to gently sloping terrain within the Lake Creek – Brushy Creek watershed (Appendix F, Figures 2 and 3). Surface elevations on the subject site vary from a minimum of approximately 737 feet above mean sea level (amsl) adjacent to Lake Creek Spring Hollow along Creekview Drive to a maximum of approximately 770 feet amsl along

St. Williams Avenue (USGS, 1987). Drainage on the site occurs primarily by sheet flow toward the northwest (Area 5 System 3) into Lake Creek and toward the north-northeast (Area 5 System 9) into a (former) quarried pond located south of Round Rock West Drive.

2.4 EDWARDS AQUIFER ZONE

The subject site is found within the Edwards Aquifer Recharge Zone (TCEQ, 2022) (Attachment F, Figure 2).

2.5 SURFACE SOILS

Three soil units are mapped within the subject site (NRCS, 2022) (Appendix F, Figure 4). Generally, the soil series are similar in their physical, chemical, and engineering properties, with the principal exception being rock fragment content and thickness. The soil units are described in further detail below.

Eckrant stony clay, 0 to 3% slopes (EeB) is gently sloping and located on broad ridges and in shallow valleys on uplands. The soil is very stony, calcareous, and moderately alkaline. Indurated limestone underlies the Eckrant stony clay. It is known to be well-drained with a moderately slow permeability. Due to the shallowness of the soil and underlying strata, the available water capacity is very low. Eckrant stony clay is mostly used for rangeland. The shallow limestone provides a stable foundation for housing, but makes construction of underground utility lines, foundations, roads, and streets difficult (Werchan and Coker, 1983).

Eckrant-Rock outcrop complex, 1 to 10% slopes (ErE) is typically found on uplands along hills and ridges. This soil is calcareous and moderately alkaline, and 35% of the surface is covered by limestone fragments. Fractured, indurated limestone underlays this soil. Permeability is moderately slow, runoff is rapid, and available water capacity is very low. This soil complex is mainly used as rangeland, but is also aesthetically appealing for use as homesites (Werchan and Coker, 1983).

Georgetown stony clay loam, 1 to 3% slopes (GsB) is typically found on higher parts of uplands. Underlying this soil is indurated, fractured limestone that has clay loam in crevices and fractures. The soil is well-drained with slow permeability and a low available water capacity. Georgetown stony clay loam is used as rangeland. The soil is suitable for urban uses, but corrosion to buried pipelines is a hazard due to the clayey subsoil. Septic systems do not function well in the clayey subsoil (Werchan and Coker, 1983).

2.6 WATER WELLS

A review of TCEQ and Texas Water Development Board (TWDB) records revealed no water wells on the subject site and 8 wells within 0.5 miles of the subject site (TWDB, 2022). According to the TWDB records, all the off-site wells are reportedly completed within the Edwards Aquifer at total depths ranging from 23 to 400 feet below surface. Horizon observed no wells on the subject site.

The results of this assessment do not preclude the existence of undocumented/abandoned wells on the site. If a water well or casing is encountered during construction, work should be halted near the feature until the TCEQ is contacted.

2.7 GEOLOGY

Literature Review

The subject site is underlain by Edwards Limestone (Ked) and Del Rio Clay and Georgetown Formation, undivided (Kdg) (UT-BEG, 1995).

Edwards Limestone (Ked) consists of limestone, dolomite, and chert. The limestone is aphanitic to fine grained, massive to thin bedded, hard, brittle, contains in part rudistid biostromes and much miliolid biosparite. The dolomite is fine to very fine grained, porous, medium gray to grayish brown. In the chert, nodules and plates are common and vary in amount from bed to bed; some intervals are free of chert, and mostly white to light gray. In zone of weathering, this formation is considerably recrystallized, "honeycombed," and cavernous, forming an aquifer; it forms flat areas and plateaus bordered by scarps. The thickness can be 60 to 350 feet, thinning northward.

Del Rio Clay ("Grayson Marl") (Kdg) is calcareous and gypsiferous, becoming less calcareous and more gypsiferous upward. Pyrite is common, and is blocky, medium gray, and weathers light gray to yellowish gray. The formation contains some thin lenticular beds of highly calcareous siltstone. Marine megafossils include abundant *Exogyra arietina* and other pelecypods. The thickness ranges from 40 to 70 feet.

Georgetown Formation (Kgt) comprises limestone and marl; it is mostly limestone which is fine grained, argillaceous, nodular, moderately indurated, and light gray. Some limestone is hard, brittle, thick bedded, and white. It also contains some which marly, soft, light gray to yellowish gray shale. Marine megafossils include *Kingena wacoensis* and *Gryphaea washitaensis*. The thickness is 30 to 80 feet, thinning southward.

The site Stratigraphic Column is provided as Attachment B, and the Site Geologic Map is Attachment D.

The subject site is located within the Balcones Fault Zone. The nearest mapped fault is located approximately 0.5 miles to the southeast, trending from southwest to northeast.

Field Assessment

Horizon observed no features on the subject site that meet the TCEQ definition of a potential recharge feature.

3.0 CONCLUSIONS AND RECOMMENDATIONS

No geologic or man-made features were identified at the subject site that would require protection or mitigation pursuant to TCEQ rules for protection of the Edwards Aquifer (30 TAC 213). The site generally appears well-suited to development prospectuses. It should be noted that soil and drainage erosion would increase with ground disturbance. Native grasses and the cobbly content of the soil aid to prevent erosion. Soil and sedimentation fencing should be placed in all appropriate areas prior to any site disturbing activities.

Because the subject site is located over the Edwards Aquifer Recharge Zone, it is possible that subsurface voids underlie the site. If any subsurface voids are encountered during site development, work should halt immediately so that a geologist may assess the potential for the void(s) to provide meaningful contribution to the Edwards Aquifer.

4.0 REFERENCES

(COA) City of Austin. Geographic Information Systems/Maps. *2017 2-foot Contours,* <http://austintexas.gov/department/gis-and-maps/gis-data>. Updated 2019.

(Nearmap) Nearmap US, Inc. Nearmap Vertical™ digital orthographic photograph, <https://go.nearmap.com>. Imagery date 14 January 2022.

(NRCS) US Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey, <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Soil map data layer updated 12 September 2019. Accessed 5 April 2022.

(OSM) OpenStreetMap contributors. OpenStreetMap, <http://www.openstreetmap .org>. Available under the Open Database License (www.opendatacommons.org/ licenses/odbl). Accessed 6 April 2022.

(TCEQ) Texas Commission on Environmental Quality. Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones. Revised October 2004.

_____. RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices. Revised July 2005.

_____. Edwards Aquifer Protection Program. Edwards Aquifer Viewer, <http://www.tceq. state. tx.us/field/eapp/viewer.html>. Accessed 5 April 2022.

(TWDB) Texas Water Development Board. Water Information Integration and Dissemination System. TWDB Groundwater Database, <https://www3.twdb.texas.gov/apps/water datainteractive/groundwaterdataviewer>. Accessed 5 April 2022.

(TWSC) United States Geological Survey, Texas Water Science Center. Geologic Database of Texas, <https://txpub.usgs.gov/txgeology/>. Updated 1 February 2014; Accessed 5 April 2022.

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

(USGS) US Gological Survey. 1987a. 7.5-minute series topographic maps, Pflugerville West, Texas, quadrangle. 1987.

_____. 1987a. 7.5-minute series topographic maps, Round Rock, Texas, quadrangle. 1987.

Werchan, Leroy E., and John L. Coker. *Soil Survey of Williamson County, Texas*. US Department of Agriculture, Natural Resources Conservation Service (formerly Soil Conservation Service), in cooperation with the Texas Agricultural Experiment Station. 1983.

ATTACHMENT F

ADDITIONAL SITE MAPS

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

Horizon™
Environmental Services, Inc.

Date:	04/06/2022
Drawn:	KRS
HJN NO:	22104 GA
Source:	OSM, 2022

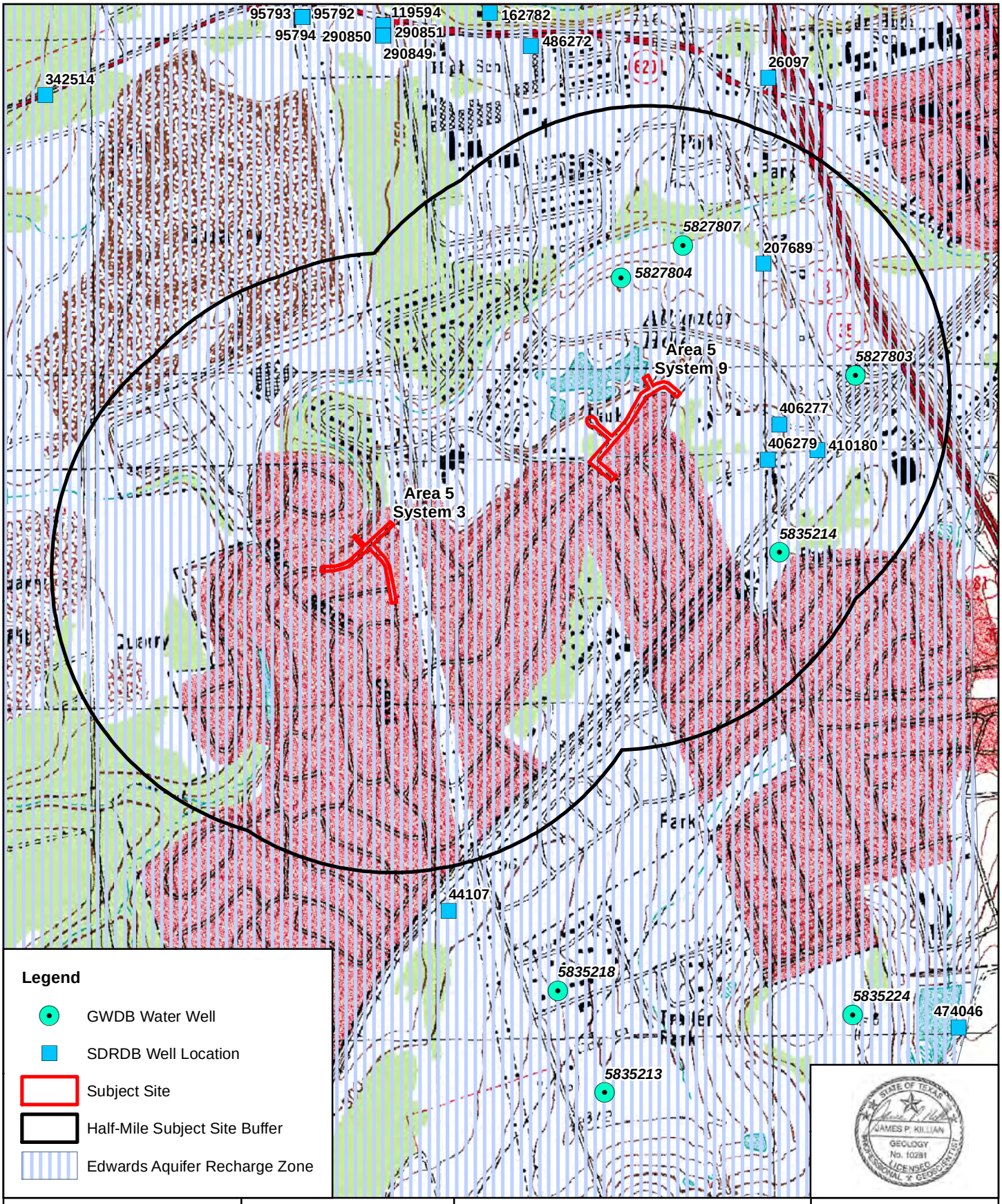
Attachment F, Figure 1

Vicinity Map
RRW Area 5 WW &
Storm Drain Improvements
Round Rock, Williamson County, Texas

N

0 1,000 2,000
Feet

22104--RRW_Area_5_WW_&_Storm_Drain_Improvements\Graphics\22104-001GA_01A_Vicinity



Horizon™
Environmental Services, Inc.

Date:	04/06/2022
Drawn:	KRS
HJN NO:	22104 GA
Source:	TCEQ, 2022; TWDB, 2022; USGS, 1987a, 1987b

Attachment F, Figure 2

Topography and Hydrogeology Map
RRW Area 5 WW &
Storm Drain Improvements
Round Rock, Williamson County, Texas

N

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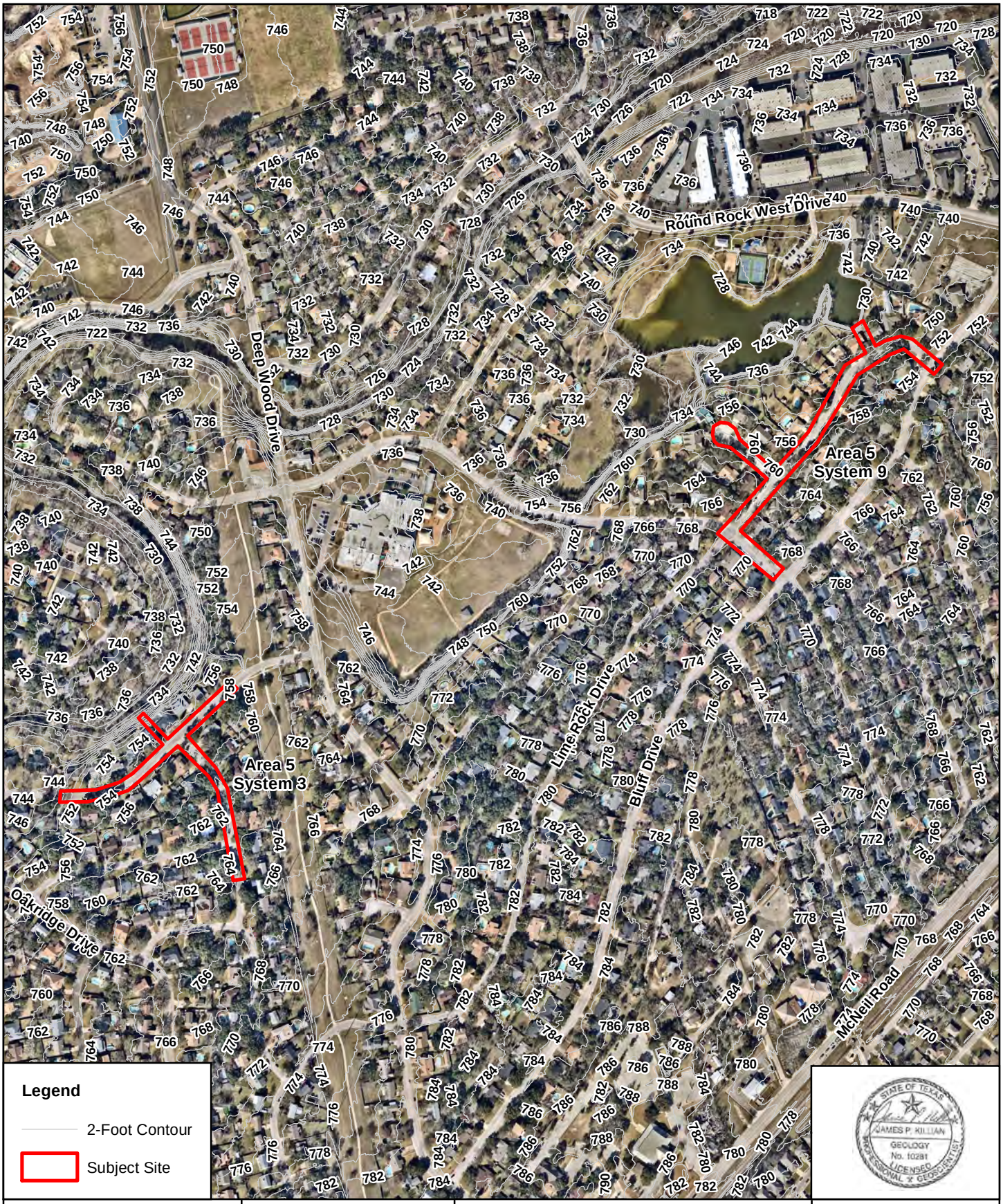
Feet

22104--RRW_Area_5_WW_&_Storm_Drain_Improvements\Graphics\22104-001GA_02A_TopoHydro



Legend

2-Foot Contour

Subject Site

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

Horizon™
Environmental Services, Inc.

Date:	04/06/2022
Drawn:	KRS
HJN NO:	22104 GA
Source:	COA, 2019; Nearmap, 2022

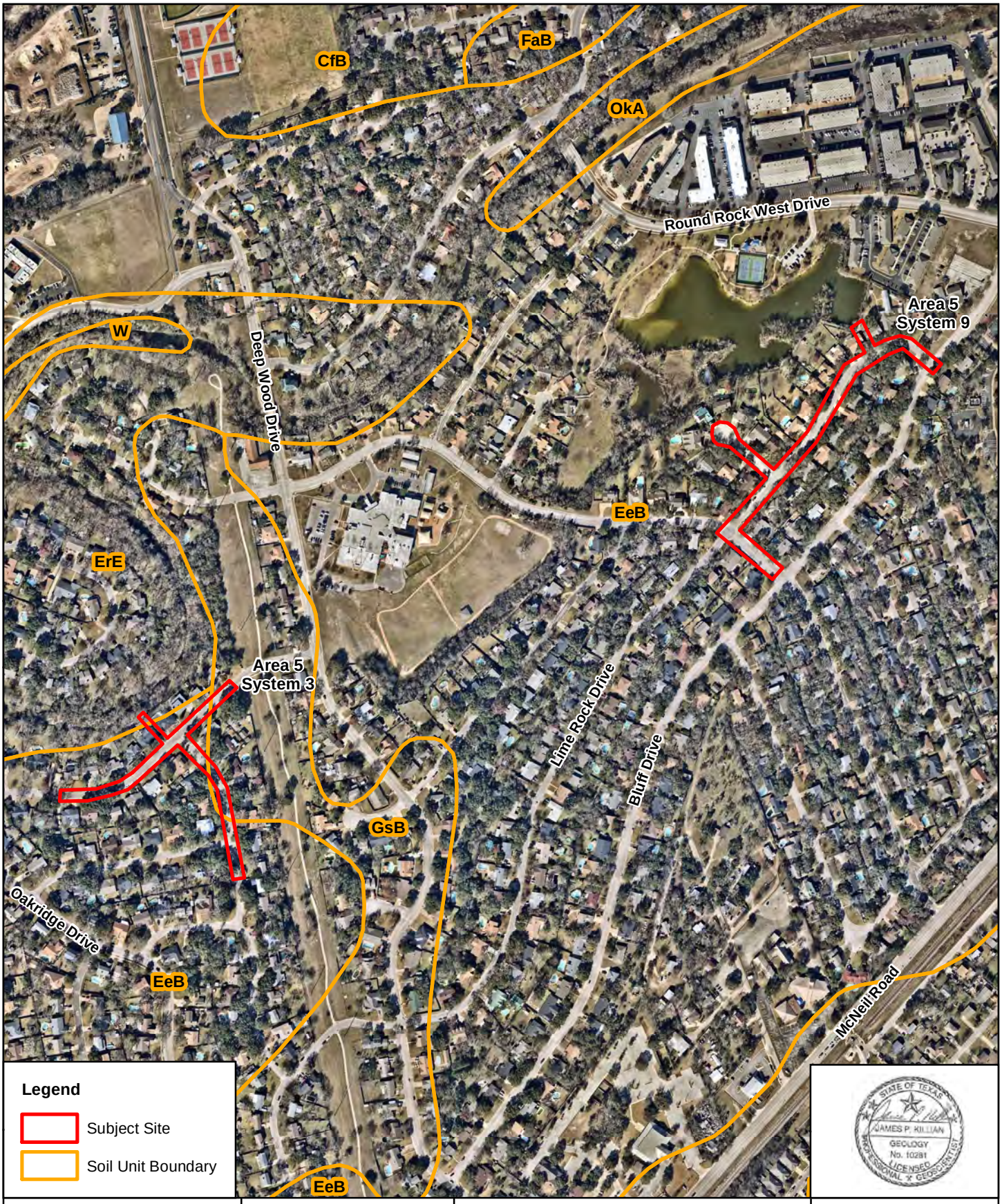
Attachment F, Figure 3

Site Topography Map
RRW Area 5 WW &
Storm Drain Improvements
Round Rock, Williamson County, Texas

N

0 250 500
Feet

22104--RRW_Area_5_WW_&_Storm_Drain_Improvements\Graphics\22104-005GA_03A_Topo



Legend

- Subject Site
- Soil Unit Boundary

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

Horizon™
Environmental Services, Inc.

Date:	04/06/2022
Drawn:	KRS
HJN NO:	22104 GA
Source:	Nearmap, 2022; NRCS, 2019

Attachment F, Figure 4

Site Soil Map
RRW Area 5 WW &
Storm Drain Improvements
Round Rock, Williamson County, Texas

N

0 250 500
Feet

22104--RRW_Area_5_WW_&_Storm_Drain_Improvements\Graphics\22104-005GA_04A_Soil

Horizon
Environmental Services, Inc.

ATTACHMENT G

SITE PHOTOGRAPHS

Horizon
Environmental Services, Inc.

PHOTO 1
Creekview Drive, southwest view

PHOTO 2
Creekview Drive and Wood Rock Drive, southeast view

PHOTO 3
Wood Rock Drive, southeast view

PHOTO 4
Lime Rock Drive, southwest view

Horizon
Environmental Services, Inc.

PHOTO 5
St. Williams Avenue, southeast view

PHOTO 6
Lime Rock Drive at Aqualine Cove, southwest view

Recharge and Transition Zone Exception Request Form

Texas Commission on Environmental Quality
30 TAC §213.9 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 **Recharge and Transition Zone Exception Request Form** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Derek Bohls, PE
Date: 02/20/2024
Signature of Customer/Agent:

Derek Bohls

Regulated Entity Name: Round Rock West Area 5

Exception Request

1. ☒ **Attachment A - Nature of Exception**. A narrative description of the nature of each exception requested is attached. All provisions of 30 TAC §213 Subchapter A for which an exception is being requested have been identified in the description.
2. ☐ **Attachment B - Documentation of Equivalent Water Quality Protection**. Documentation demonstrating equivalent water quality protection for the Edwards Aquifer is attached.

Administrative Information

3. ☒ 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.
4. ☒ The applicant understands that no exception will be granted for a prohibited activity in Chapter 213.
5. ☒ The applicant understands that prior approval under this section must be obtained from the executive director for the exception to be authorized.

WATER POLLUTION ABATEMENT PLAN EXCEPTION APPLICATION

TCEQ-0628

ATTACHMENT A – NATURE OF EXCEPTION

The City of Round Rock has commissioned LJA Engineering, Inc. to perform storm sewer, water, and wastewater improvements in what is denominated as Round Rock West Area 5. Area 5 is in an established single family residential neighborhood and made up of 3 Sites. Site 1 is 1.39 ac, Site 2 is 1.98 ac, and Site 3 is 0.65ac. Sites 1 and 2 are in the Edwards Aquifer Recharge Zone and outside the 100-yr floodplain. Site 3 is within the Edwards Aquifer Recharge Zone and the 100-yr floodplain.

The project consists of expanding a storm sewer system to eliminate the current ponding issues experienced along Site 1 and Site 2. Existing water and wastewater lines will be relocated where in conflict with the proposed storm sewer system and upsized from 6-inch to 8-inch and 12-inch per City of Round Rock direction. The streets for both Sites will be reconstructed to the base material per Trench Details provided in the plans. Project Approaches will be milled and overlayed. Site 3 will only include trench pavement repair for the proposed water line.

There is no increase in impervious cover within the project limits therefore additional Best Management Practices (BMPs) are not necessary. Water quality protection during construction is covered with the proposed temporary BMPs.

TCEQ-0602 Temporary Stormwater Section

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Derek Bohls

Date: 02/20/2024

Signature of Customer/Agent:

Derek Bohls

Regulated Entity Name: City of Round Rock West Area 5

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: N/A

   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: Lake 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.

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Spill Response Actions

In the event of an accidental spill:

1. Contractor shall take action to contain spill. Contractor may use sand or other absorbent material stockpiled on site to absorb spill. Absorbent material should be spread over the spill area to absorb the spilled product.

2. In the event of an uncontained discharge the contractor shall utilize onsite equipment to construct berms downgradient of the spill with sand or other absorbent material to contain and absorb the spilled product.

3. Sand or material used to contain the spill should be collected and stored in such a way so as not to continue to affect additional ground. Once the spill has been contained, collected material should be placed on poly or plastic sheeting until removed from the site. In the event of potential rainfall, the material should be covered with poly or plastic sheeting.

4. The contractor will be required to notify the owner, who will in turn contact TCEQ to notify them in the event of a spill. Additional notifications as required by the type and amount of spill will be conducted by owner or owner's representative.

5. The contractor will be required to report significant or hazardous spills in reportable quantities to:
   - The National Response Center at (800) 424-8802
   - The Edwards Aquifer Authority at (210) 222-2204 or 1-800-292-1047
   - The TCEQ Regional Office (512)-339-2929 (if during business hours: 8 AM to 5 PM), or
   - The State Emergency Response Center (800) 832-8224 (if after hours)

6. Contaminated soils will be sampled for waste characterization. When the analysis results are known the contaminated soils will be removed from the site and disposed in a permitted landfill in accordance with applicable regulations.

Additional guidance can be obtained from TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) Section 1.4.16. Contractor shall review this section.

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Potential Sources of Contamination

Potential sources of contamination include:

- Oil, grease, fuel and hydraulic fluid from construction equipment and vehicle drippings;
- Dirt and dust which may fall off construction vehicles;
- Miscellaneous trash and litter from construction workers and material wrappings.
- Concrete truck washout;
- Discharge from sewer lines, manholes and cleans during utility replacements.

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Sequence of Major Activities

Construction would generally include the following:

1. Placement of traffic control and temporary erosion control devices. It is anticipated that this may disturb a negligible amount of the site area.
2. Excavation of the wastewater, water, and storm sewer lines and placement of pipe bedding, base material, asphalt, and concrete. It is estimated to disturb approximately 0.84 acres for Site 1, 1.16 acres for Site 2, and 0.05 acres for Site 3.
3. Installation of sodding is estimated to disturb approximately 0.20 acres.
4. Site cleanup, top dressing, and revegetation (where applicable). It is estimated to disturb the whole project area, approximately 1.39 acres for Site 1, 1.98 acres for Site 2, and 0.65 acres for Site 3.

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Temporary Best Management Practices (TBMPs)

Silt fences, erosion control logs, and sodding will be used during and/or after construction and will be installed prior to site preparation, as applicable. Prior to the initiation of construction activities, all previously installed control measures will be repaired or re-established for their designed or intended purpose.

Engineered temporary sediment control fences will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site. This will occur throughout the proposed construction area, where stormwater will flow to Lake Creek.

Site preparation and excavation, which is the initiation of all activity on the project, will disturb the largest amount of soil. Therefore, before any work can begin, the contractor shall be responsible for the installation of all on-site control measures. The methodology for pollution prevention of on-site stormwater will include:

- Placement of erosion control logs around existing inlets
- Erection of erosion control logs along the proposed inlets for temporary erosion and sediment controls during construction activities.

Prior to the initiation of construction activities, all previously installed control measures will be repaired or reestablished for their designed or intended purpose. This work, which is the remainder of all activity on the project, may also disturb additional soil.

Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.

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Structural Practices

Structural practices to be used include temporary sediment control fence. Refer to Attachment D for additional details.

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Drainage Area Map

Please see site plan sheets attached. Sheet 64 and 65 from the PS&E for the project's drainage area maps.

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INDEX OF SHEETS

GENERAL

1			TITLE SHEET AND INDEX
2	-	4	PROJECT LAYOUTS
5	-	7	TYPICAL SECTIONS
8	-	14	SUMMARY OF QUANTITIES
15			GENERAL NOTES
16	-	20	TCEQ NOTES
21	-	22	SURVEY CONTROL
23	-	27	HORIZONTAL ALIGNMENT DATA
28			VERTICAL ALIGNMENT DATA

TRAFFIC & EROSION CONTROL

29			TRAFFIC CONTROL NARRATIVE
30	-	31	TRAFFIC CONTROL DETOURS
32	-	34	TRAFFIC CONTROL TYPICALS
35	-	47	TRAFFIC & EROSION CONTROL LAYOUTS

TRAFFIC STANDARDS

48			BC(1)-21
49			BC(4)-21
50			BC(5)-21
51			BC(7)-21
52			BC(8)-21
53			BC(9)-21
54			BC(10)-21
55			TCP(1-2)-18
56			TCP(2-2)-18
57			TCP(2-4)-18

EROSION STANDARDS

58	-	59	EROSION CONTROL STANDARDS

ROADWAY

60	-	61	ROADWAY LAYOUTS

ROADWAY STANDARDS

62	-	63	ROADWAY STANDARDS

DRAINAGE

64	-	65	INTERNAL DRAINAGE AREA LAYOUTS
66	-	67	HYDROLOGY CALCULATIONS
68	-	77	HYDRAULIC CALCULATIONS
78	-	84	STORM SEWER PLAN & PROFILE
85	-	87	STORM SEWER LATERALS
88	-	89	TRENCH DETAILS
90	-	91	MISC. DRAINAGE DETAILS

DRAINAGE STANDARDS

92			DRAINAGE STANDARDS
93			SCP-MD
94			PB
95	-	96	PCO (MOD)
97	-	98	PSL
99			PJB
100			PDD
101			CGT-PCO (MOD)
102	-	103	PCU (MOD)
104			CGT-PCU

WATER

105	-	112	WATER PLAN & PROFILE
113			WATER MISC DETAILS

WATER STANDARDS

114	-	115	WATER STANDARDS

WASTEWATER

116	-	123	WASTEWATER PLAN & PROFILE

WASTEWATER STANDARDS

124	-	125	WASTEWATER STANDARDS

CITY OF ROUND ROCK, TEXAS

UTILITIES AND ENVIRONMENTAL SERVICES DEPARTMENT

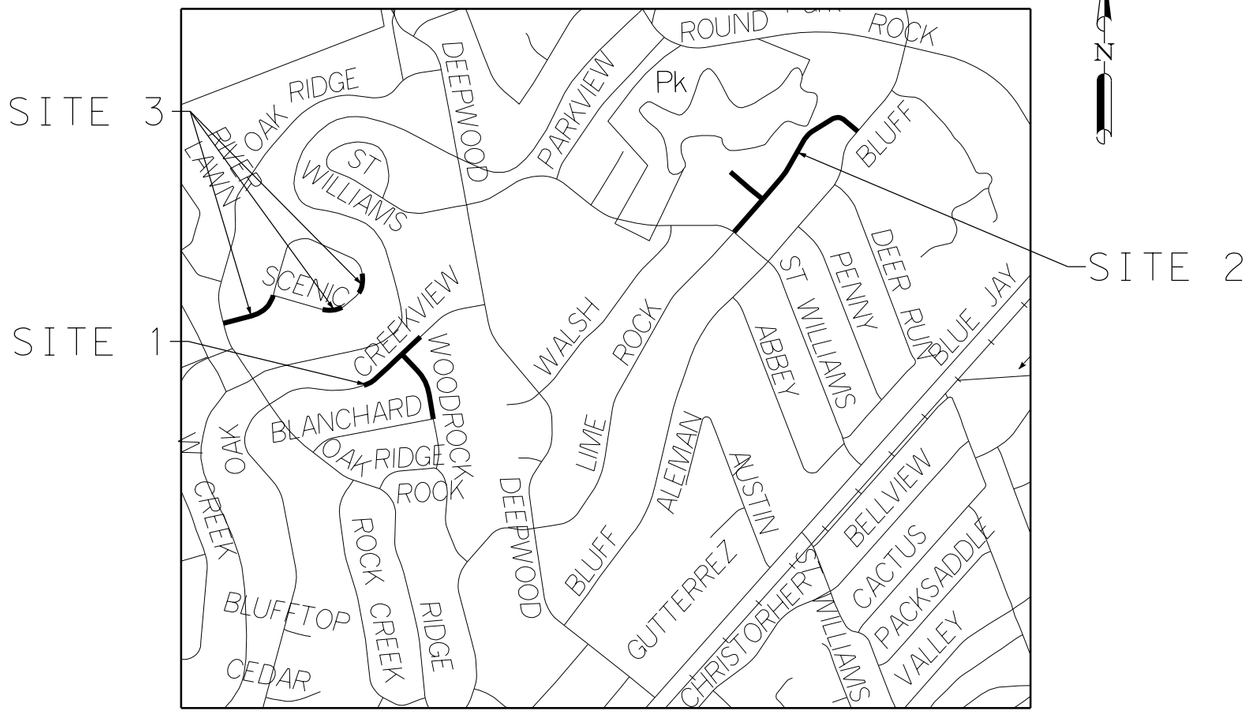
ROUND ROCK WEST AREA 5
WATER, WASTEWATER, AND
STORM DRAIN IMPROVEMENTS

SITE 1 LIMITS: CREEKVIEW DR FROM EAST OF OAKRIDGE TO RRW GREENBELT TRAIL.
WOOD ROCK DR FROM CREEKVIEW TO BLANCHARD DR.

SITE 2 LIMITS: LIME ROCK DR FROM ST WILLIAMS AVE TO BLUFF DR.
AQUALINE FROM LIME ROCK TO END OF CUL-DE-SAC.

SITE 3 LIMITS: SCENIC LOOP FROM OAK RIDGE TO SCENIC LOOP.

FOR CONSTRUCTION OF WATER, WASTEWATER AND STORM DRAIN IMPROVEMENTS.



VICINITY MAPS
NOT TO SCALE

Revisions			
No.	**Date**	**By**	**Description**

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

LJA Engineering, Inc.
FRN - F-1386

I, ROBERTO ERAZO JR, DO HEREBY CERTIFY THAT THE PUBLIC WORKS AND DRAINAGE IMPROVEMENTS DESCRIBED HEREIN HAVE BEEN DESIGNED IN COMPLIANCE WITH THE SUBDIVISION AND BUILDING REGULATION ORDINANCES AND STORMWATER DRAINAGE POLICY ADOPTED BY THE CITY OF ROUND ROCK, TEXAS.

LJA
PROJECT MANAGER

DATE

ACCEPTED FOR CONSTRUCTION

CITY OF ROUND ROCK, TEXAS
UTILITIES AND ENVIRONMENTAL
SERVICES DEPARTMENT
FEDERICO SANCHEZ, P.E.

DATE

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

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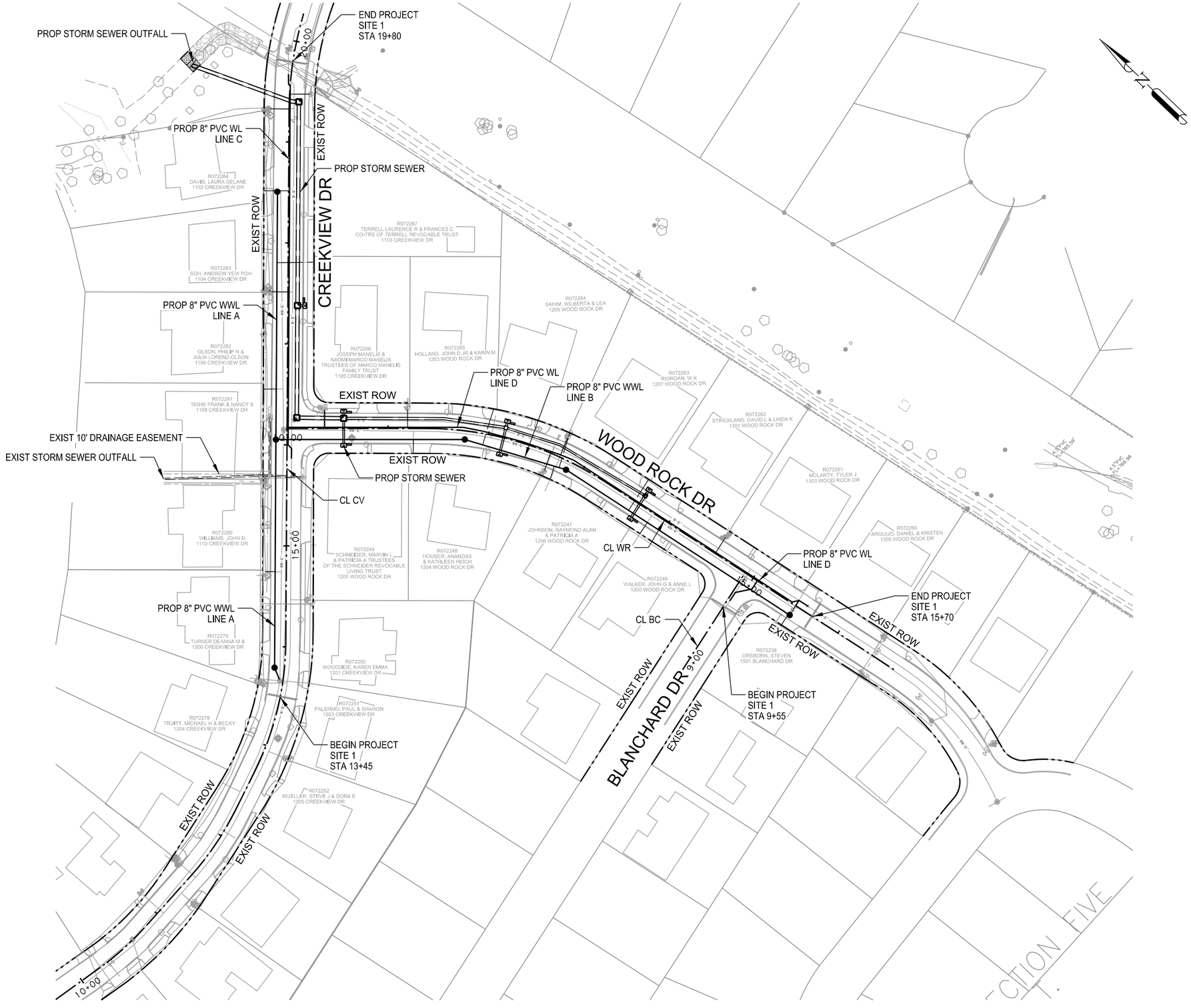

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ROUND ROCK, TEXAS
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RRW AREA 5
PROJECT LAYOUTS
CREEKVIEW & WOOD ROCK
SITE 1

SHEET 1 OF 3

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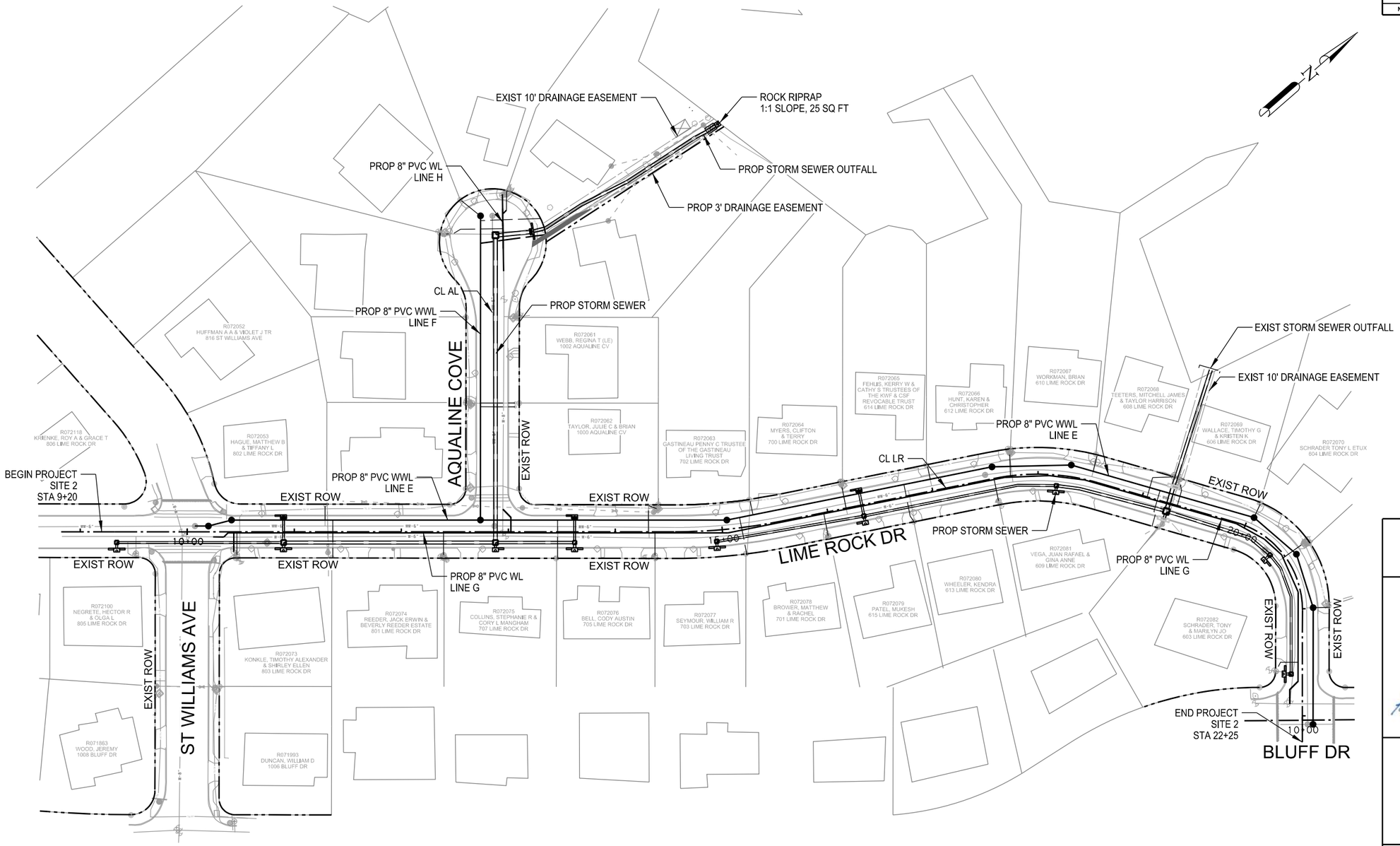

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RRW AREA 5
PROJECT LAYOUTS
LIME ROCK & AQUALINE
SITE 2

SHEET 2 OF 3

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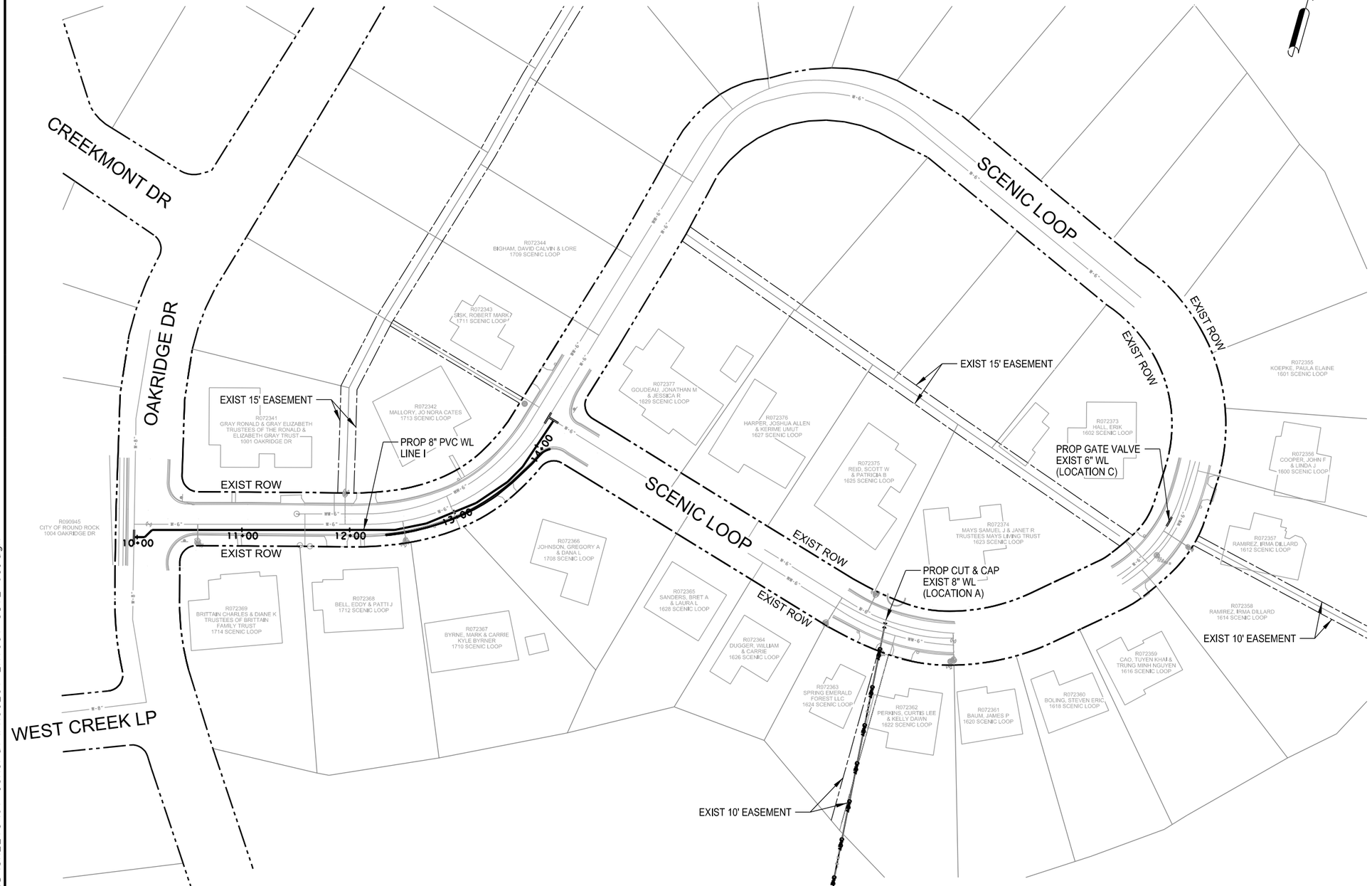

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RRW AREA 5
PROJECT LAYOUTS
SCENIC LOOP
SITE 3

SHEET 3 OF 3

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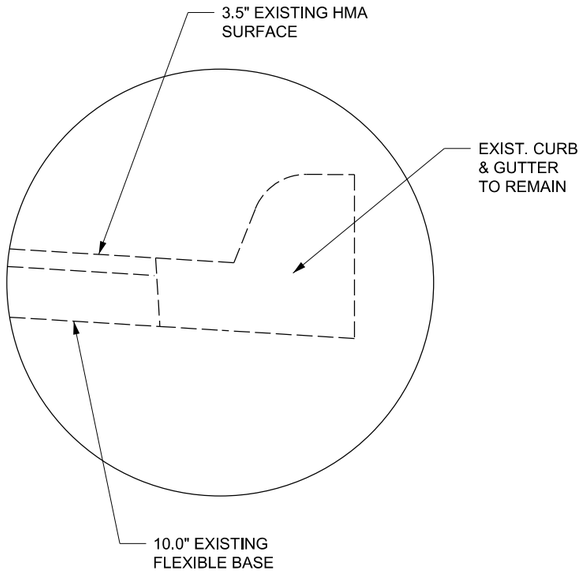

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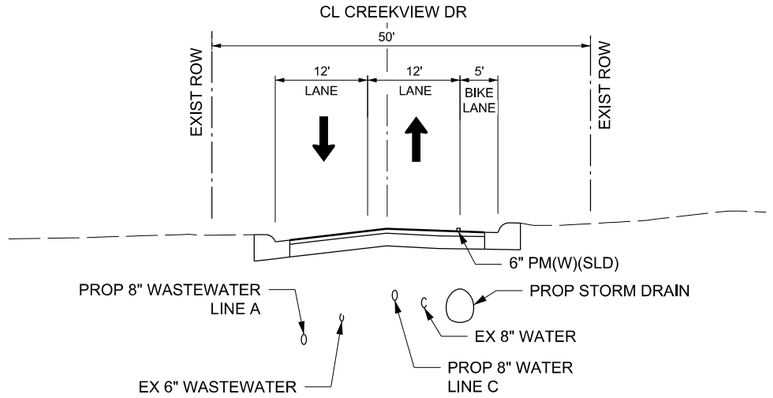

CREEKVIEW DR
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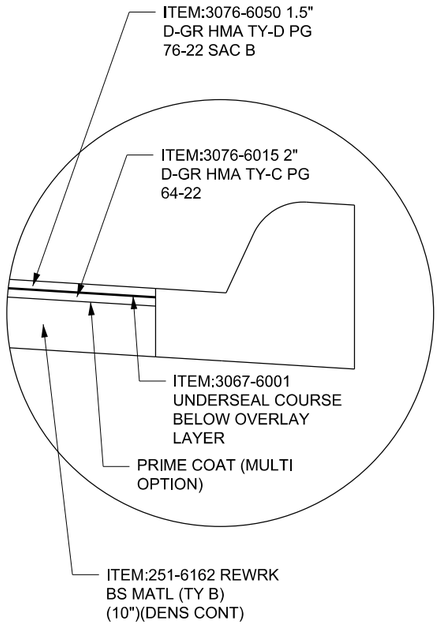

PROPOSED PAVEMENT DETAIL

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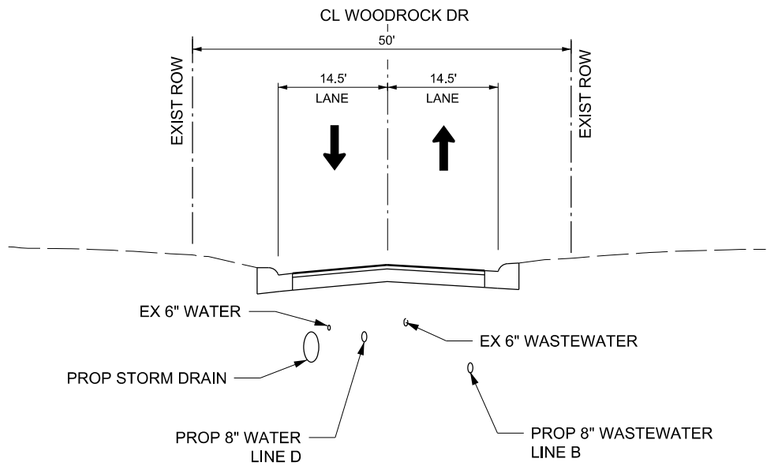
WOOD ROCK: STA 10+00.00 TO STA 15+70.00



WOOD ROCK DR
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RRW AREA 5
TYPICAL SECTIONS
CREEKVIEW & WOOD ROCK

SHEET 1 OF 3

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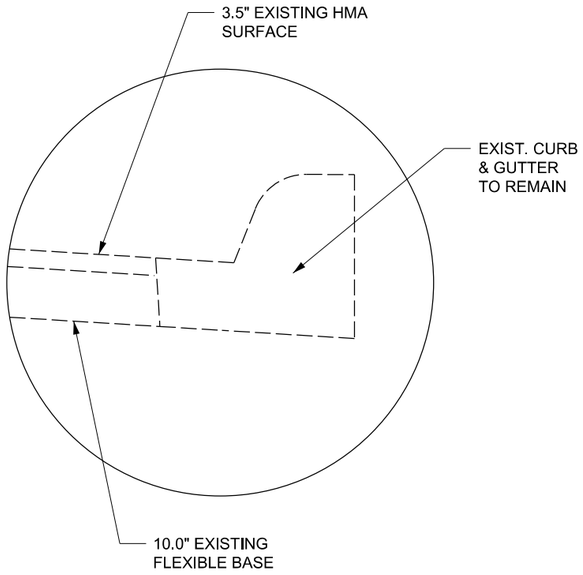

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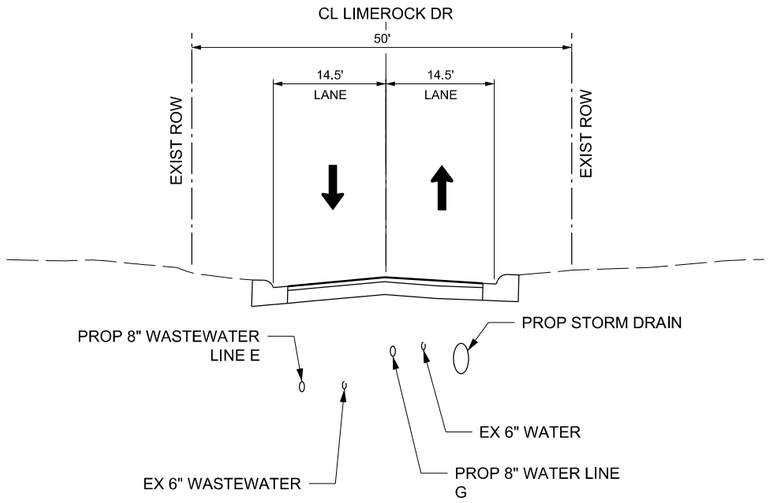

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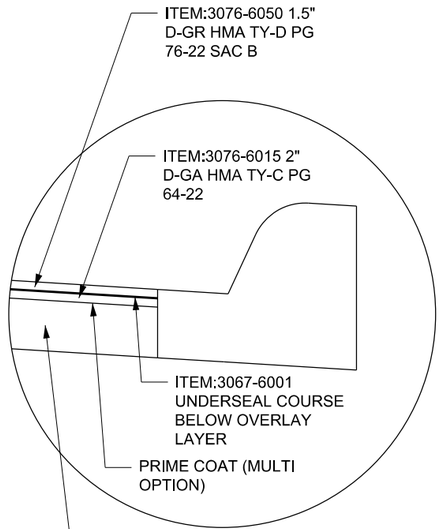

PROPOSED PAVEMENT DETAIL

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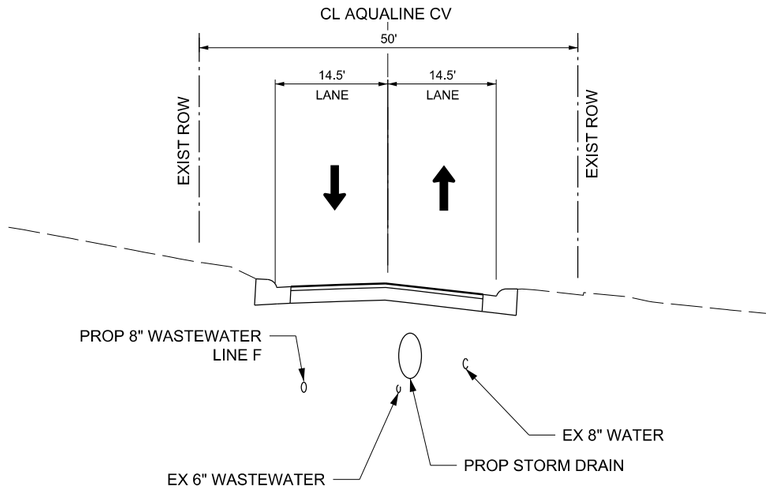
AQUALINE: STA 10+00.00 TO STA 13+00.00



AQUALINE COVE
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RRW AREA 5
TYPICAL SECTIONS
LIMEROCK & AQUALINE

SHEET 2 OF 3

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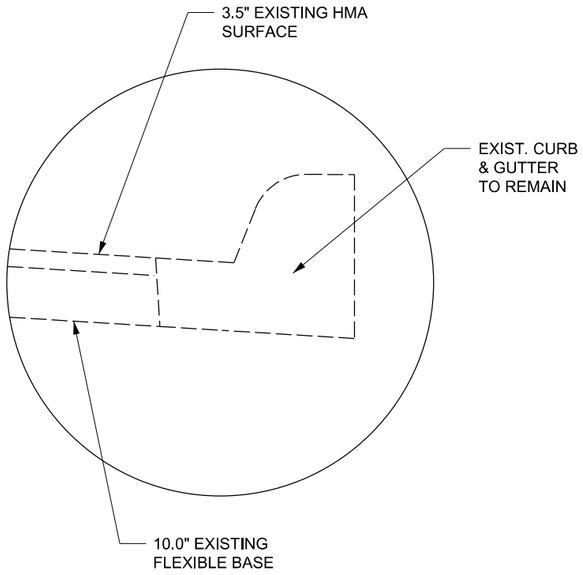

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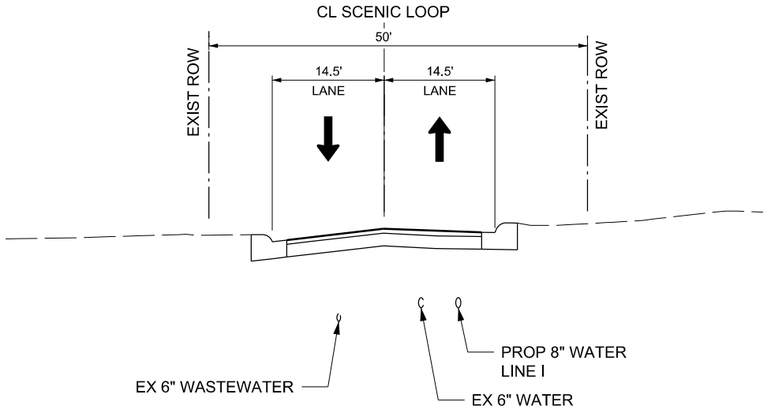

SCENIC LOOP
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NUMBER	DATE	REVISION	APPROVED

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RRW AREA 5
TYPICAL SECTIONS
SCENIC LOOP

SHEET 3 OF 3

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NUMBER	DATE	REVISION	APPROVED

LOCATION	TRAFFIC AND EROSION ITEMS								
	170-6001	502-6001	602	610	639	641	701	802	SS642
	EC-01	TC-01	EC-02	EC-03	EC-04	TC-02	TC-03	TC-04	EC-05
	TEMPORARY IRRIGATION SYSTEM	BARRICADES, SIGNS AND TRAFFIC HANDLING	BROADCAST SEED (PERM)(RURAL)(CLAY)	TREE PROTECTION	ROCK BERM	STABILIZED CONSTRUCTION ENTRANCE	TEMPORARY FENCE, 6 FOOT HIGH, CHAIN LINK (INCLUDES INSTALL AND REMOVAL)	PROJECT SIGNS (TYPE 2)	BIODEG EROSN CONT LOGS (INSTALLATION AND REMOVAL)
	LS	MO	SY	EA	LF	EA	LF	EA	LF
SITE 1									
TCP/EROSION CONTROL	0.5	7	964	2	40	1	300	3	368

LOCATION	DRAINAGE ITEMS									
	104	104	432	506	506	508	508	509	510	510
	D-01	D-02	D-03	D-04	D-05	D-06	D-07	D-08	D-10	D-11
	REMOVE CONC (CURB & GUTTER)	REMOVE CONC (SIDEWALKS)	OUTFALL CONCRETE RIPRAP (6")	SW PRECAST JUNCTION BOX (PSL)(RC) (3FTX3FT)	SW PRECAST JUNCTION BOX (PSL)(RC) (5FTX5FT)	INLET (COMPL)(PCO) (3FT)(LEFT)	INLET (COMPL)(PCO) (3FT)(RIGHT)	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	RC PIPE (CL III)(18 IN) INCLUDES EXCAV AND BACKFILL	RC PIPE (CL III)(24 IN) INCLUDES EXCAV AND BACKFILL
	LF	SY	CY	EA	EA	EA	EA	LF	LF	LF
SITE 1										
SHEET 1 OF 7	30	11	5		3	1		436	6	
SHEET 2 OF 7	120	11		2	1	3	3	566	233	158
TOTAL	150	22	5	2	4	4	3	1002	239	158

LOCATION	DRAINAGE ITEMS		
	510	529	531
	D-12	D-13	D-14
	RC PIPE (ARCH)(CL III)(DES 4) INCLUDES EXCAV AND BACKFILL	CONC CURB & GUTTER	CONC SIDEWALK (4")
	LF	LF	SY
SITE 1			
SHEET 1 OF 7	409	20	7
SHEET 2 OF 7	42	60	7
TOTAL	451	80	14

STATE OF TEXAS
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01/16/2024

ROUND ROCK, TEXAS
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RRW AREA 5
SITE 1
SUMMARY OF QUANTITIES

SHEET 1 OF 7

PROJECT NO:	SHEET NO.
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NUMBER	DATE	REVISION	APPROVED

LOCATION	ROADWAY ITEMS								
	251	310	340	340	354	354	436	666	666
	RD-01	RD-02	RD-03	RD-04	RD-05	RD-06	RD-07	RD-08	RD-09
	REWRK BS MATL (TY B) (10") (DENS CONT)	PRIME COAT (MULTI OPTION)	D-GR HMA 2" TY-C 64-22	D-GR HMA 1.5" TY-D 76-22	PLANE ASPH CONC PAV (1.5")	PLANE ASPH CONC PAV (3.5")	REMOVE AND REPLACE CONCRETE VALLEY GUTTER	REFLECTORIZED PAVEMENT MARKINGS 6" (W)	REFLECTORIZED PAVEMENT MARKINGS 24" (W)
	SY	GAL	TON	TON	SY	SY	SY	LF	LF
SITE 1									
TOTAL	3260	776	375	337	810	3260	32	566	179

LOCATION	ROADWAY ITEMS		
	672	672	3041
	RD-10	RD-11	RD-10
	RELECTORIZED PAVEMENT MARKERS (TYPE II-B-B)	RELECTORIZED PAVEMENT MARKERS (TYPE I-C)	UNDERSEAL COURSE
	EA	EA	GAL
SITE 1			
TOTAL	1	8	776

LOCATION	WATER ITEMS										
	104	104	401	505	509	510	510	510	510	510	510
	W-01	W-02	W-03	W-04	W-05	W-06	W-07	W-08	W-09	W-10	W-11
	REMOVE CONC (CURB & GUTTER)	REMOVING CONC (SIDEWALKS)	FLOWABLE BACKFILL	18" STEEL ENCASEMENT	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	6" WL, AWWA C900 DR18, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	6" DI WL, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	8" WL, AWWA C900 DR18, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	8" DI WL, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	6" TEMPORARY WATER LINE	6-IN WET CONNECTION
	LF	SY	CY	LF	LF	LF	LF	LF	LF	LF	EA
SITE 1											
1 OF 8	6	1	4	14	443			323	60	390	
2 OF 8	8	1			419		15	194	145		
3 OF 8	2		2		282	20		185	58		2
TOTAL	16	2	6	14	1144	20	15	702	263	390	2

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
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PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SITE 1
SUMMARY OF QUANTITIES

SHEET 2 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: JT	9
DRAWN: JT	
CHECKED: RE	

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NUMBER	DATE	REVISION	APPROVED

LOCATION	WATER ITEMS								
	510	510	510	510	511	511	511	529	531
	W-12	W-13	W-14	W-15	W-16	W-17	W-18	W-19	W-20
	8-IN WET CONNECTION	DI FITTINGS	INSTALL/ RECONNECT LATERAL SERVICE	TEMPORARY BLOW-OFF (COMPLETE)	FIRE HYDRANT ASSEMBLY	6-IN RS GATE VALVE AND INSTALLATION	8-IN RS GATE VALVE AND INSTALLATION	CONC CURB & GUTTER	CONC. SIDEWALK (4")
	EA	TON	EA	EA	EA	EA	EA	SY	SY
SITE 1									
1 OF 8	2	0.75	3	1			3	6	1
2 OF 8		0.86	3		1	1	1	8	1
3 OF 8		0.81	1	1			3	2	
TOTAL	2	2.42	7	2	1	1	7	16	2

LOCATION	WASTEWATER ITEMS										
	104	104	104	401	505	506	506	509	510	510	529
	WW-01	WW-02	WW-03	WW-04	WW-05	WW-06	WW-08	WW-09	WW-10	WW-12	WW-14
	REMOVE CONC (CURB & GUTTER)	REMOVE CONC (SIDEWALKS)	REMOVE CONC (DRIVEWAYS)	FLOWABLE BACKFILL	STEEL ENCASEMENT FOR 8" DIA. PIPE	NEW MANHOLE CONSTRUCTION, 48" DIA.	ABANDONMENT OF EXISTING MANHOLES	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	8" WWL, SDR-26 PVC, OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	INSTALL/ RECONNECT LATERAL SERVICE	CONC CURB & GUTTER
	LF	SY	SY	CY	LF	EA	EA	LF	LF	EA	LF
SITE 1											
1 OF 8	2			2		1		206	232	1	2
2 OF 8	6	1		2		2	1	357	241	3	6
3 OF 8	70		3	2	15	2		393	284	2	70
4 OF 8	4		5	2		1		307	261	4	4
TOTAL	82	1	8	8	15	6	1	1263	1018	10	82

LOCATION	WASTEWATER ITEMS	
	530	531
	WW-15	WW-16
	CONC DRIVEWAYS	CONC SIDEWALK (4")
	SY	SY
SITE 1		
1 OF 8		
2 OF 8		1
3 OF 8	3	
4 OF 8	5	
TOTAL	8	1

STATE OF TEXAS
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SITE 1
SUMMARY OF QUANTITIES

SHEET 3 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: JT	10
DRAWN: JT	
CHECKED: RE	

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NUMBER	DATE	REVISION	APPROVED

LOCATION	TRAFFIC AND EROSION ITEMS						
	170-6001	502-6001	602	610	701	802	SS642
	EC-01	TC-01	EC-02	EC-03	TC-02	TC-03	EC-04
	TEMPORARY IRRIGATION SYSTEM	BARRICADES, SIGNS AND TRAFFIC HANDLING	BROADCAST SEED (PERM)(RURAL)(CLAY)	TREE PROTECTION	TEMPORARY FENCE, 6 FOOT HIGH, CHAIN LINK (INCLUDES INSTALL AND REMOVAL)	PROJECT SIGNS (TYPE 2)	BIODEG EROSN CONT LOGS (INSTALLATION AND REMOVAL)
	LS	MO	SY	EA	LF	EA	LF
SITE 2							
TCP/EROSION CONTROL	0.5	10	318	6	270	2	898

LOCATION	DRAINAGE ITEMS										
	104	104	432	506	506	506	508	508	508	508	508
	D-01	D-03	D-04	D-07	D-08	D-09	D-10	D-11	D-12	D-13	D-14
	REMOVE CONC (CURB & GUTTER)	REMOVE CONC (DRIVEWAYS)	OUTFALL CONCRETE RIPRAP (6")	SW PRECAST JUNCTION BOX (PSL)(RC) (3FTX3FT)	SW PRECAST JUNCTION BOX (PSL)(RC) (4FTX4FT)	SWPRECAST JUNCTION BOX (PSL)(RC) (5FTX5FT)	INLET (COMPL)(PCO) (3FT)(LEFT)	INLET (COMPL)(PCO) (3FT)(RIGHT)	INLET (COMPL)(PCO) (3FT)(BOTH)	INLET (COMPL)(PCU) (3FT)(LEFT)	INLET (COMPL)(PCU) (3FT)(BOTH)
	LF	SY	SY	EA	EA	EA	EA	EA	EA	EA	EA
SITE 2											
SHEET 3 OF 7	135			2	2		1		3	2	
SHEET 4 OF 7	90			3				1	2	1	
SHEET 5 OF 7	47			2		1	1		1		
SHEET 6 OF 7		25				1					
SHEET 7 OF 7	25		2								1
TOTAL	297	25	2	7	2	2	2	1	6	3	1

LOCATION	DRAINAGE ITEMS										
	509	510	510	510	510	510	529	529	530	702	702
	D-15	D-17	D-18	D-19	D-20	D-21	D-22	D-23	D-24	D-27	D-28
	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	RC PIPE (CL III)(18 IN) INCLUDES EXCAV AND BACKFILL	RC PIPE (CL III)(24 IN) INCLUDES EXCAV AND BACKFILL	RC PIPE (CL III)(30 IN) INCLUDES EXCAV AND BACKFILL	RC PIPE (CL III)(36 IN) INCLUDES EXCAV AND BACKFILL	RC PIPE (ARCH)(CL III)(DES 4) INCLUDES EXCAV AND BACKFILL	CONC BOX CULV (2 FT X 4 FT)	CONC CURB & GUTTER	CONC DRIVEWAYS	REMOVE AND RELOCATE EXISTING 6 FT WOODEN FENCE	REMOVE AND REPLACE EXISTING METAL GATE
	LF	LF	LF	LF	LF	LF	LF	LF	SY	LF	EA
SITE 2											
SHEET 3 OF 7	504	206	79	196				60			
SHEET 4 OF 7	452	349	102					40			
SHEET 5 OF 7	306	122	107			23		20			
SHEET 6 OF 7	288				283				25		
SHEET 7 OF 7	231				30		193	10		110	1
TOTAL	1781	677	288	196	313	23	193	130	25	110	1

STATE OF TEXAS
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SITE 2
SUMMARY OF QUANTITIES

SHEET 4 OF 7

PROJECT NO:	SHEET NO. 11
DESIGNED: JT	
DRAWN: JT	
CHECKED: RE	

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NUMBER	DATE	REVISION	APPROVED

LOCATION	ROADWAY ITEMS										
	251	310	340	340	354	354	436	666	672	672	3041
	RD-01	RD-02	RD-03	RD-04	RD-05	RD-06	RD-07	RD-08	RD-10	RD-11	RD-09
	REWRK BS MATL (TY B) (10") (DENS CONT)	PRIME COAT (MULTI OPTION)	D-GR HMA 2" TY-C 64-22	D-GR HMA 1.5" TY-D 76-22	PLANE ASPH CONC PAV (1.5")	PLANE ASPH CONC PAV (3.5")	REMOVE AND REPLACE CONCRETE VALLEY GUTTER	REFLECTORIZED PAVEMENT MARKINGS 24" (W)	RELECTORIZED PAVEMENT MARKERS (TYPE II-B-B)	RELECTORIZED PAVEMENT MARKERS (TYPE I-C)	UNDERSEAL COURSE
	SY	GAL	TON	TON	SY	SY	SY	LF	EA	EA	GAL
SITE 2											
TOTAL	5192	1039	581	476	562	5192	78	203	2	12	1039

LOCATION	WATER ITEMS										
	104	104	401	505	509	510	510 W	510	510 W	510 W	510
	W-01	W-02	W-03	W-04	W-05	W-06	W-07	W-08	W-09	W-10	W-11
	REMOVE CONC (CURB & GUTTER)	REMOVING CONC (DRIVEWAYS)	FLOWABLE BACKFILL	18" STEEL ENCASEMENT	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	6" WL, AWWA C900 DR18, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	6" DI WL, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	8" WL, AWWA C900 DR18, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	8" DI WL, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	6" TEMPORARY WATER LINE	6-IN WET CONNECTION
	LF	SY	CY	LF	LF	LF	LF	LF	LF	LF	EA
SITE 2											
4 OF 8	8	1	2	13	523			466	60	207	
5 OF 8	10		2		540		18	211	150	531	
6 OF 8	6		2	13	338	10	18	158	114		1
7 OF 8	6			13	164			46	59		
TOTAL	30	1	6	39	1565	10	36	881	383	738	1

LOCATION	WATER ITEMS									
	510	510	510	510	510	511	511	511	529	530
	W-12	W-13	W-14	W-15	W-16	W-17	W-18	W-19	W-20	W-21
	8-IN WET CONNECTION	DI FITTINGS	INSTALL/ RECONNECT LATERAL SERVICE	TEMPORARY BLOW-OFF (COMPLETE)	PERMANENT BLOW-OFF (COMPLETE)	FIRE HYDRANT ASSEMBLY	6-IN RS GATE VALVE AND INSTALLATION	8-IN RS GATE VALVE AND INSTALLATION	CONC CURB & GUTTER	CONC DRIVEWAYS
	EA	TON	EA	EA	EA	EA	EA	EA	SY	SY
SITE 2										
4 OF 8	1	0.85	5	1				1	8	1
5 OF 8		0.82	5			1	1		10	
6 OF 8		1.08	2	1		1		2	6	
7 OF 8	2	0.48	2		1			1	6	
TOTAL	3	3.23	14	2	1	2	1	4	30	1

STATE OF TEXAS
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SITE 2
SUMMARY OF QUANTITIES

SHEET 5 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: JT	12
DRAWN: JT	
CHECKED: RE	

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LOCATION	WASTEWATER ITEMS									
	104	401	505	506	506	506	510	509	510	510
	WW-01	WW-04	WW-05	WW-06	WW-07	WW-08	WW-13	WW-09	WW-10	WW-11
	REMOVE CONC (CURB & GUTTER)	FLOWABLE BACKFILL	STEEL ENCASEMENT FOR 8" DIA. PIPE	NEW MANHOLE CONSTRUCTION, 48" DIA.	DROP MANHOLE, 48" DIA., PRE-CAST	ABANDONMENT OF EXISTING MANHOLES	REMOVE EXISTING MANHOLES	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	8" WWL, SDR-26 PVC, OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	12" WWL, SDR-26 PVC, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL
	LF	CY	LF	EA	EA	EA	EA	LF	LF	LF
SITE 2										
5 OF 8	8	4	15	5			1	560	244	243
6 OF 8	10	3		2		1		575	476	
7 OF 8	4	3	15	2	1		1	386	256	
8 OF 8	10			1				403	280	
TOTAL	32	10	30	10	1	1	2	1924	1256	243

LOCATION	WASTEWATER ITEMS	
	510	529
	WW-12	WW-14
	INSTALL/ RECONNECT LATERAL SERVICE	CONC CURB & GUTTER
	EA	LF
SITE 2		
5 OF 8	4	8
6 OF 8	5	10
7 OF 8	2	4
8 OF 8	6	10
TOTAL	17	32

NUMBER	DATE	REVISION	APPROVED

STATE OF TEXAS
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
SITE 2
SUMMARY OF QUANTITIES

SHEET 6 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: JT	13
DRAWN: JT	
CHECKED: RE	

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NUMBER	DATE	REVISION	APPROVED

LOCATION	TRAFFIC AND EROSION ITEMS	
	502-6001	802
	TC-01	TC-02
	BARRICADES, SIGNS AND TRAFFIC HANDLING	PROJECT SIGNS (TYPE 2)
	MO	EA
SITE 3		
TCP/EROSION CONTROL	1	2

LOCATION	ROADWAY ITEMS			
	310	340	340	672
	RD-01	RD-02	RD-03	RD-10
	PRIME COAT (MULTI OPTION)	D-GR HMA 2" TY-C 64-22	D-GR HMA 1.5" TY-D 76-22	RELECTORIZED PAVEMENT MARKERS (TYPE II-B-B)
	GAL	TON	TON	EA
SITE 3				
TOTAL	80	30	22	1

LOCATION	WATER ITEMS									
	104	401	509	510	510	510 W	510	510	510	510
	W-01	W-04	W-06	W-07	W-07	W-08	W-12	W-13	W-14	W-19
	REMOVE CONC (CURB & GUTTER)	FLOWABLE BACKFILL	TRENCH SAFETY SYSTEMS (ALL DEPTHS)	6" WL, AWWA C900 DR18, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	8" WL, AWWA C900 DR18, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	8" DI WL, BY OPEN CUT (ALL DEPTHS) INCLUDES EXCAV AND BACKFILL	6-IN WET CONNECTION	8-IN WET CONNECTION	DI FITTINGS	TEMPORARY BLOW-OFF (COMPLETE)
	LF	CY	LF	LF	LF	LF	EA	EA	TON	EA
SITE 3										
8 OF 8	177		492	11	260	162	1	1	1.71	1
1 OF 1		7	40	20					0.15	
TOTAL	177	7	532	31	260	162	1	1	1.86	1

LOCATION	WATER ITEMS		
	511	511	529
	W-20	W-21	W-22
	6-IN RS GATE VALVE AND INSTALLATION	8-IN RS GATE VALVE AND INSTALLATION	CONC CURB & GUTTER
	EA	EA	SY
SITE 3			
8 OF 8	3	3	177
1 OF 1	1		
TOTAL	4	3	177

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01/16/2024

ROUND ROCK, TEXAS
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LJA Engineering, Inc.
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RRW AREA 5
SITE 3
SUMMARY OF QUANTITIES

SHEET 7 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: JT	14
DRAWN: JT	
CHECKED: RE	

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GENERAL NOTES

GENERAL NOTES:
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF ROUND ROCK STANDARD SPECIFICATIONS MANUAL.
2. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., NOT PLANNED FOR DESTRUCTION OR REMOVAL THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH THE CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER WHO SHALL BE RESPONSIBLE FOR REVISING THE PLANS WHEN APPROPRIATE.
4. MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, ETC. SHALL BE RAISED TO FINISHED GRADE PRIOR TO FINAL PAVING CONSTRUCTION.
5. THE CONTRACTOR SHALL GIVE THE CITY OF ROUND ROCK 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
6. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. REVEGETATION OF ALL DISTURBED OR EXPOSED AREAS SHALL CONSIST OF SODDING OR SEEDING, AT THE CONTRACTOR'S OPTION. HOWEVER, THE TYPE OF REVEGETATION MUST EQUAL OR EXCEED THE TYPE OF VEGETATION PRESENT BEFORE CONSTRUCTION.
7. PRIOR TO ANY CONSTRUCTION, THE ENGINEER SHALL CONVENE A PRECONSTRUCTION CONFERENCE BETWEEN THE CITY OF ROUND ROCK, HIMSELF, THE CONTRACTOR, OTHER UTILITY COMPANIES, ANY AFFECTED PARTIES AND ANY OTHER ENTITY THE CITY OR ENGINEER MAY REQUIRE.
8. THE CONTRACTOR AND THE ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF ROUND ROCK ACCURATE "AS-BUILT" DRAWINGS FOLLOWING COMPLETION OF ALL CONSTRUCTION. THESE "ASBUILT" DRAWINGS SHALL MEET WITH THE SATISFACTION OF THE ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT PRIOR TO FINAL ACCEPTANCE.
9. THE ROUND ROCK CITY COUNCIL SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
10. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND ANY TEMPORARY EASEMENTS. PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. CLEAN-UP SHALL BE TO THE SATISFACTION OF THE CITY ENGINEER.
11. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL APPLY FOR AND SECURE ALL PROPER PERMITS FROM THE APPROPRIATE AUTHORITIES.
12. AVAILABLE BENCHMARKS (CITY OF ROUND ROCK DATUM) THAT MAY BE UTILIZED FOR THE CONSTRUCTION OF THIS PROJECT ARE DESCRIBED AS FOLLOWS: SEE H & V CONTROL SHEETS FOR MORE INFORMATION.

TRENCH SAFETY NOTES:
1. IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U. S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES OVER 5 FEET IN DEPTH IN EITHER HARD AND COMPACT OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT WILL BE PROVIDED BY THE CONTRACTOR.
2. IN ACCORDANCE WITH THE U. S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, WHEN PERSONS ARE IN TRENCHES 4-FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.

STREET AND DRAINAGE NOTES:
1. ALL TESTING SHALL BE DONE BY AN INDEPENDENT LABORATORY AT THE OWNER'S EXPENSE. ANY RETESTING SHALL BE PAID FOR BY THE CONTRACTOR. A CITY INSPECTOR SHALL BE PRESENT DURING ALL TESTS. TESTING SHALL BE COORDINATED WITH THE CITY INSPECTOR WITH A MINIMUM OF 48 HOURS NOTICE PRIOR TO ANY TESTING.
2. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 3" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 3" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE.
3. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT INCLUDING GAS, ELECTRIC, TELEPHONE, CABLE TV, WATER SERVICES, ETC., SHALL BE A MINIMUM OF 30" BELOW SUBGRADE.
4. STREET RIGHTS-OF-WAY SHALL BE GRADED AT A SLOPE OF 1/4" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT 1/4" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY OF ROUND ROCK ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT.
5. BARRICADES BUILT TO CITY OF ROUND ROCK STANDARDS SHALL BE CONSTRUCTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
6. ALL R.C.P. SHALL BE MINIMUM CLASS III, UNLESS OTHERWISE NOTED.

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

GENERAL NOTES (CONT.)

WATER AND WASTEWATER NOTES:
1. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 200), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200 PSI, DR 9).
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE CITY ENGINEER, DEPTH OF COVER FOR ALL LINES OUT OF THE PAVEMENT SHALL BE 42" MIN., AND DEPTH OF COVER FOR ALL LINES UNDER PAVEMENT SHALL BE A MIN. OF 30" BELOW SUBGRADE.
4. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C-100, MIN. CLASS 200).
5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL POLYETHYLENE AND SEALED WITH DUCT TAPE OR EQUAL ACCEPTED BY THE CITY ENGINEER.
6. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR TO COORDINATE UTILITY TIE-INS WITH AT LEAST 48 HOURS PRIOR TO CONNECTING TO EXISTING LINES.
7. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
8. THE CONTRACTOR MUST OBTAIN A BULK WATER PERMIT OR PURCHASE AND INSTALL A WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
9. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE SCHEDULED WITH THE WATER & WASTEWATER SUPERINTENDENT.
10. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM STERILIZATION OF ALL POTABLE WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING TEST GAUGES), SUPPLIES (INCLUDING CONCENTRATED CHLORINE DISINFECTING MATERIAL), AND NECESSARY LABOR REQUIRED FOR THE STERILIZATION PROCEDURE. THE STERILIZATION PROCEDURE SHALL BE MONITORED BY CITY OF ROUND ROCK PERSONNEL. WATER SAMPLES WILL BE COLLECTED BY THE CITY OF ROUND ROCK TO VERIFY EACH TREATED LINE HAS ATTAINED AN INITIAL CHLORINE CONCENTRATION OF 50 PPM. WHERE MEANS OF FLUSHING IS NECESSARY, THE CONTRACTOR, AT HIS EXPENSE, SHALL PROVIDE FLUSHING DEVICES AND REMOVE SAID DEVICES PRIOR TO FINAL ACCEPTANCE BY THE CITY OF ROUND ROCK.
11. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL. AT THE CONTRACTOR'S REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY OF ROUND ROCK NOT LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY. THE CONTRACTOR SHALL SUPPLY A CHECK OR MONEY ORDER, PAYABLE TO THE CITY OF ROUND ROCK, TO COVER THE FEE CHARGED FOR TESTING EACH WATER SAMPLE. CITY OF ROUND ROCK FEE AMOUNTS MAY BE OBTAINED BY CALLING THE ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT.
12. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY CITY OF ROUND ROCK PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY OF INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING OR PRESSURE TESTING.
14. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE CITY OF ROUND ROCK.
15. ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
16. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS: WATER SERVICE "W" ON TOP OF CURB; WASTEWATER SERVICE "S" ON TOP OF CURB; VALVE "V" ON FACE OF CURB. TOOLS FOR MARKING THE CURB SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF MARKING SERVICE AND VALVE LOCATIONS SHALL BE PROVIDED IN AREAS WITHOUT CURBS. SUCH MEANS OF MARKING SHALL BE AS SPECIFIED BY THE ENGINEER AND ACCEPTED BY THE CITY OF ROUND ROCK.
17. CONTACT CITY OF ROUND ROCK ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT FOR ASSISTANCE IN OBTAINING EXISTING WATER AND WASTEWATER LOCATIONS.
18. THE CITY OF ROUND ROCK FIRE DEPARTMENT SHALL BE NOTIFIED 48 HOURS PRIOR TO TESTING OF ANY BUILDING SPRINKLER PIPING IN ORDER THAT THE FIRE DEPARTMENT MAY MONITOR SUCH TESTING.
19. SAND, AS DESCRIBED IN SPECIFICATION ITEM 510 PIPE, SHALL NOT BE USED AS BEDDING FOR WATER AND WASTEWATER LINES. ACCEPTABLE BEDDING MATERIALS ARE PIPE BEDDING STONE, PEA GRAVEL AND IN LIEU OF SAND, A NATURALLY OCCURRING OR MANUFACTURED STONE MATERIAL CONFORMING TO ASTM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION: SIEVE SIZE PERCENT RETAINED BY WEIGHT 1/2" 0; 3/8" 0-2; #4 40-85; #10 95-100
20. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY OUTSIDE NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12 A.M. AND 6 A.M.. SHUTDOWNS SHALL BE COORDINATED WITH CITY MINIMUM 10 DAYS IN ADVANCE.
21. ALL WASTEWATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, 30 TAC CHAPTER 213 AND 317, AS APPLICABLE. WHENEVER TCEQ AND CITY OF ROUND ROCK SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.
22. EXISTING WATER LINES MAY BE ASBESTOS CEMENT PIPE. CONTRACTOR TO FOLLOW ALL FEDERAL AND STATE REQUIREMENTS FOR HANDLING, REMOVAL, AND DISPOSAL OF PIPE. ALL LABOR, EQUIPMENT, AND MATTERIALS NECESSARY TO PROPERLY DISPOSE OF ASBESTOS CEMENT PIPE SHALL BE CONSIDERED SUBSIDIARY TO THE LINE ITEM BID FOR WATER LINE INSTALLATION.

EROSION AND SEDIMENTATION CONTROL NOTES:
1. EROSION CONTROL MEASURES, SITE WORK AND RESTORATION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF ROUND ROCK EROSION AND SEDIMENTATION CONTROL ORDINANCE.
2. ALL SLOPES SHALL BE SODDED OR SEEDED WITH APPROVED GRASS, GRASS MIXTURES OR GROUND COVER SUITABLE TO THE AREA AND SEASON IN WHICH THEY ARE APPLIED.
3. SILT FENCES, ROCK BERMS, SEDIMENTATION BASINS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED BY THE CITY OF ROUND ROCK FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED IF, IN THE OPINION OF THE CITY ENGINEER, THEY ARE WARRANTED.
4. ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.
5. ALL MUD, DIRT, ROCKS, DEBRIS, ETC., SPILLED, TRACKED OR OTHERWISE DEPOSITED ON EXISTING PAVED STREETS, DRIVES AND AREAS USED BY THE PUBLIC SHALL BE CLEANED UP IMMEDIATELY.
6. WASH OUT CONCRETE TRUCKS ONLY AS DESCRIBED IN THE TPDES GENERAL PERMIT TXR150000. CONTRACTOR TO PROVIDE TYPE AND LOCATION OF CONCRETE WASHOUT TO OWNER FOR APPROVAL. THIS IS CONSIDERED SUBSIDIARY TO STORM WATER POLLUTION PREVENTION PLAN.

NUMBER	DATE	REVISION	APPROVED

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01/13/2024

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RRW AREA 5
GENERAL NOTES

SHEET 1 OF 1

PROJECT NO:	SHEET NO.
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TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

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

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

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

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

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

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

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

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

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

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

11. Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.

    - The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

      $$Q = \frac{LD\sqrt{P}}{148{,}000}$$

      Where:

      - Q = the quantity of makeup water in gallons per hour,
      - L = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

    - The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

      $$L = \frac{SD\sqrt{P}}{148{,}000}$$

      Where:

      - L = the quantity of makeup water in gallons per hour,
      - S = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

12. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet §290.44(e)(1)-(4).

13. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant [§290.44(e)(5)].

14. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction [§290.44(e)(6)].

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RRW AREA 5
TCEQ NOTES

SHEET 1 OF 5

PROJECT NO:	SHEET NO. 16
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15. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line [§290.44(e)(7)].

16. Waterlines shall not be installed closer than ten feet to septic tank drainfields [§290.44(e)(8)].

17. The contractor shall disinfect the new waterlines in accordance with AWWA Standard C-651-14 or most recent, then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer [§290.44(f)(3)].

18. Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent.

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RRW AREA 5
TCEQ NOTES

SHEET 2 OF 5

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Texas Commission on Environmental Quality
Organized Sewage Collection System
General Construction Notes

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following/listed "construction notes" are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director, nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code, Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following/listed "construction notes" restricts the powers of the Executive Director, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing "construction notes" is still responsible for compliance with Title 30, Texas Administrative Code, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the Executive Director's approval, whether or not in contradiction of any "construction notes," is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, Texas Administrative Code § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following/listed "construction notes" in no way represent an approved exception by the Executive Director to any part of Title 30 Texas Administrative Code, Chapters 213 and 217, or any other TCEQ applicable regulation.

1. This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules and any local government standard specifications.

2. All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the SCS plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.

3. A written notice of construction must be submitted to the presiding TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
   - the name of the approved project;
   - the activity start date; and
   - the contact information of the prime contractor.

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

5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. These controls must remain in place until the disturbed areas have been permanently stabilized.

6. If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the TCEQ of the feature discovered. A geologist's assessment of the location and extent of the feature discovered must be reported to that regional office in writing and the applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

7. Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete shall have a minimum thickness of 6 inches.

8. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.

9. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

   The diameter of the manholes must be a minimum of four feet and the manhole for entry must have a minimum clear opening diameter of 30 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on Plan Sheet __ of __.

   It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.

10. Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).

11. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: Not Applicable.

    If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: Not Applicable.

    Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.

12. New sewage collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the extensions. Such stub outs must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new stub-outs must be constructed sufficiently to extend beyond the end of the street pavement. All stub-outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.

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RRW AREA 5
TCEQ NOTES

SHEET 3 OF 5

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If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet __ of __. (For potential future laterals). Not Applicable.

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet __ of __ and marked after backfilling as shown in the detail on Plan Sheet __ of __. Not Applicable.

13. Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.

14. Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E).

15. All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:

(a) For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:

(1) *Low Pressure Air Test.*

(A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph.

(B) For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.

(i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.

(ii) Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

Equation C.3 $$T = \frac{0.085 \times D \times K}{Q}$$

Where:

T = time for pressure to drop 1.0 pound per square inch gauge in seconds
K = 0.000419 X D X L, but not less than 1.0
D = average inside pipe diameter in inches

L = length of line of same size being tested, in feet
Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface

(C) Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table C.3:

Pipe Diameter *(inches)*	**Minimum Time** *(seconds)*	**Maximum Length for Minimum Time** *(feet)*	**Time for Longer Length** *(seconds/foot)*
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

(D) An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.

(E) If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.

(F) Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.

(G) A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.

(2) *Infiltration/Exfiltration Test.*

(A) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.

(B) An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.

(C) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.

(D) For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.

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

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RRW AREA 5
TCEQ NOTES

SHEET 4 OF 5

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the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.

(b) If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:

(1) For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.

(A) *Mandrel Sizing.*

(i) A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.

(ii) If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.

(iii) All dimensions must meet the appropriate standard.

(B) *Mandrel Design.*

(i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.

(ii) A mandrel must have nine or more odd number of runners or legs.

(iii) A barrel section length must equal at least 75% of the inside diameter of a pipe.

(iv) Each size mandrel must use a separate proving ring.

(C) *Method Options.*

(i) An adjustable or flexible mandrel is prohibited.

(ii) A test may not use television inspection as a substitute for a deflection test.

(iii) If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.

(2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.

(3) A deflection test method must be accurate to within plus or minus 0.2% deflection.

(4) An owner shall not conduct a deflection test until at least 30 days after the final backfill.

(5) Gravity collection system pipe deflection must not exceed five percent (5%).

(6) If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

16. All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.

(a) All manholes must pass a leakage test.

(b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.

(1) Hydrostatic Testing.

(A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.

(B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.

(C) A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.

(2) Vacuum Testing.

(A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.

(B) No grout must be placed in horizontal joints before testing.

(C) Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.

(D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.

(E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.

(F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.

(G) A test does not begin until after the vacuum pump is off.

(H) A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury.

17. All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city inspector must visually inspect the private service lateral and the connection to the sewage collection system, and certify that it is constructed in conformity with the applicable provisions of this section. The owner of the collection system must maintain such certifications for five years and forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

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

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
TCEQ NOTES

SHEET 5 OF 5

PROJECT NO:	SHEET NO. 20
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

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100% SUBMITTAL

NUMBER	DATE	REVISION	APPROVED

LEGEND

- XX — DRAINAGE AREA ID
- PARCEL BOUNDARY LINES
- BUILDING FOOTPRINTS
- EXISTING ROW
- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION ARROW
- PROPOSED STORM SEWER SYSTEM

NOTES:
1. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREA CALCULATIONS.

0' 25' 50' 100'
SCALE: 1"=100'

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
INTERNAL DRAINAGE AREA LAYOUTS
SITE 1

SHEET 1 OF 2

PROJECT NO:	SHEET NO. 64
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

1/13/2024
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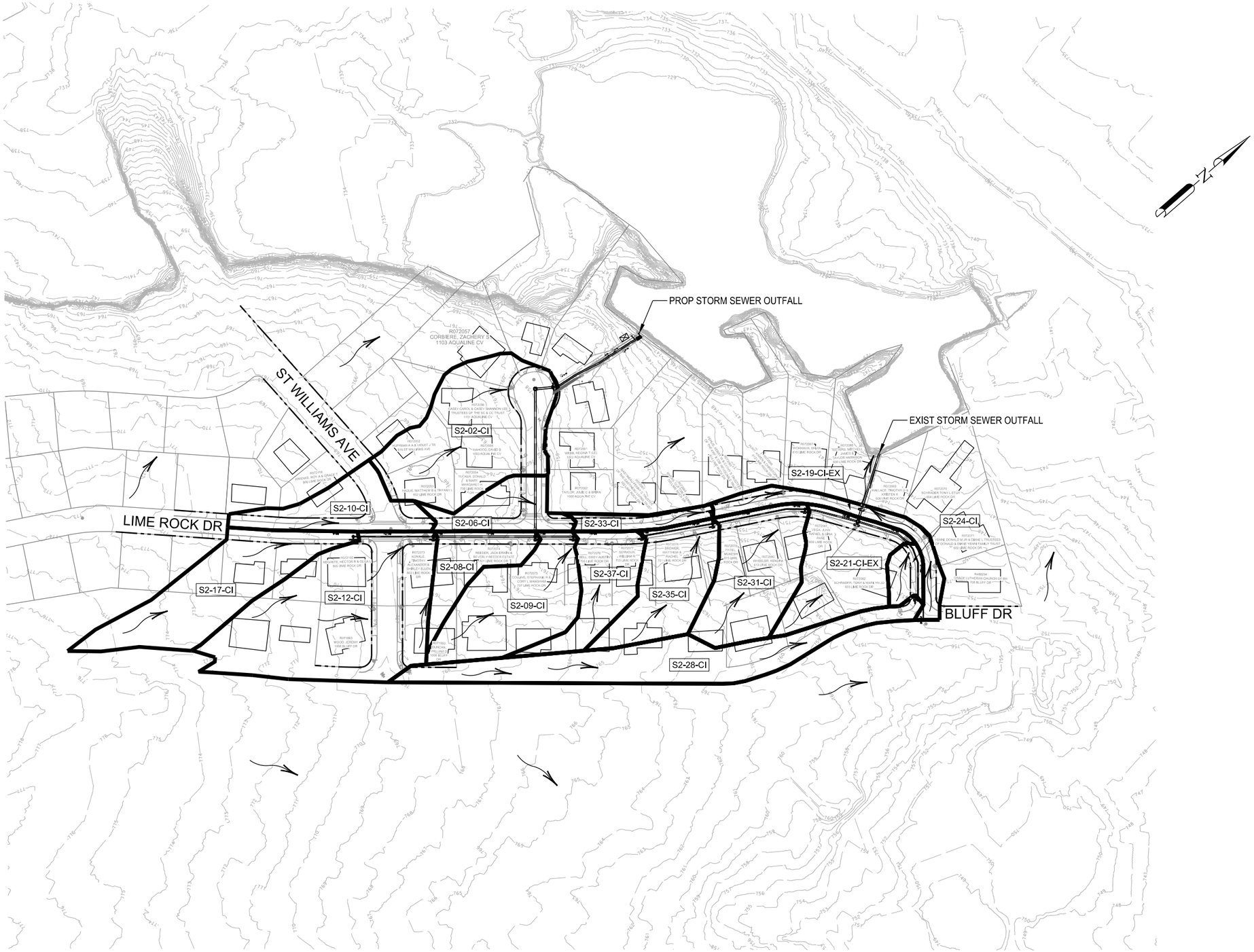
100% SUBMITTAL

NUMBER	DATE	REVISION	APPROVED



LEGEND

- XX — DRAINAGE AREA ID
- PARCEL BOUNDARY LINES
- BUILDING FOOTPRINTS
- EXISTING ROW
- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION ARROW
- PROPOSED STORM SEWER SYSTEM

NOTES:
1. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREA CALCULATIONS.

0' 50' 100' 200'
SCALE: 1"=200'

STATE OF TEXAS
ROBERTO ERAZO, JR
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
INTERNAL DRAINAGE AREA LAYOUTS
SITE 2

SHEET 2 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: AM	65
DRAWN: AM	
CHECKED: HV	

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100% SUBMITTAL

PROPOSED DRAINAGE AREA AND RUNOFF COMPUTATIONS

AREA ID	AREA (ac)	AREA TIME OF CONC (min)	AREA TIME OF CONC USED (min)	AREA C-VALUE	AREA 25 YR INTENSITY (in/hr)	AREA 25 YR DISCHARGE (cfs)	AREA 100 YR INTENSITY (in/hr)	AREA 100 YR DISCHARGE (cfs)
S1-02-CI-EX	0.04	3.09	5.00	0.77	11.40	0.35	15.10	0.46
S1-03-CI-EX	0.47	5.16	5.16	0.60	11.30	3.22	14.99	4.26
S1-04-CI-EX	0.20	3.81	5.00	0.76	11.40	1.77	15.10	2.34
S1-08-CI	0.60	4.44	5.00	0.57	11.40	3.87	15.10	5.13
S1-10-CI	0.55	5.07	5.07	0.55	11.36	3.45	15.05	4.57
S1-12-CI	0.38	4.48	5.00	0.56	11.40	2.41	15.10	3.20
S1-14-CI	0.47	4.86	5.00	0.55	11.40	2.97	15.10	3.93
S1-16-CI	0.17	2.93	5.00	0.62	11.40	1.23	15.10	1.63
S1-18-CI	1.28	5.08	5.08	0.54	11.35	7.89	15.04	10.45
S1-20-CI	0.16	1.27	5.00	0.68	11.40	1.26	15.10	1.66

NUMBER	DATE	REVISION	APPROVED

NOTES:
1. AREA HYDROLOGY WAS CALCULATED IN GEOPAK DRAINAGE USING THE RATIONAL METHOD.
2. ROUND ROCK RAIn USED LAKE CREEK WATERSHED AS SOURCE FOR INTENSITIES.

STATE OF TEXAS
ROBERTO ERAZO, JR
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PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDROLOGY CALCULATIONS
AREAS

SHEET 1 OF 2

PROJECT NO:	SHEET NO. 66
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

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100% SUBMITTAL

PROPOSED DRAINAGE AREA AND RUNOFF COMPUTATIONS

AREA ID	AREA (ac)	AREA TIME OF CONC (min)	AREA TIME OF CONC USED (min)	AREA C-VALUE	AREA 25 YR INTENSITY (in/hr)	AREA 25 YR DISCHARGE (cfs)	AREA 100 YR INTENSITY (in/hr)	AREA 100 YR DISCHARGE (cfs)
S2-02-CI	1.61	4.75	5.00	0.56	11.40	10.20	15.10	13.51
S2-06-CI	0.44	3.54	5.00	0.67	11.40	3.31	15.10	4.38
S2-08-CI	0.47	4.82	5.00	0.56	11.40	2.99	15.10	3.96
S2-09-CI	1.06	4.41	5.00	0.51	11.40	6.18	15.10	8.18
S2-10-CI	0.42	1.92	5.00	0.68	11.40	3.29	15.10	4.36
S2-12-CI	2.16	8.07	8.07	0.59	9.88	12.66	13.16	16.86
S2-17-CI	1.19	7.70	7.70	0.53	10.03	6.32	13.35	8.42
S2-19-CI-EX	0.41	1.06	5.00	0.72	11.40	3.36	15.10	4.46
S2-21-CI-EX	0.86	3.71	5.00	0.54	11.40	5.30	15.10	7.03
S2-24-CI	0.16	0.49	5.00	0.61	11.40	1.14	15.10	1.50
S2-28-CI	1.30	4.60	5.00	0.67	11.40	9.87	15.10	13.07
S2-31-CI	1.00	4.58	5.00	0.53	11.40	6.00	15.10	7.94
S2-33-CI	0.19	3.52	5.00	0.72	11.40	1.59	15.10	2.10
S2-35-CI	0.80	4.49	5.00	0.53	11.40	4.82	15.10	6.38
S2-37-CI	0.59	4.84	5.00	0.53	11.40	3.60	15.10	4.77

NUMBER	DATE	REVISION	APPROVED

NOTES:
1. AREA HYDROLOGY WAS CALCULATED IN GEOPAK DRAINAGE USING THE RATIONAL METHOD.
2. ROUND ROCK RAIn USED LAKE CREEK WATERSHED AS SOURCE FOR INTENSITIES.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDROLOGY CALCULATIONS
AREAS

SHEET 2 OF 2

PROJECT NO:	SHEET NO. 67
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

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100% SUBMITTAL

25-YEAR ON GRADE INLET AND SAG CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET (+RT/-LT)	TOP ELEVATION	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	INLET DISCHARGE (cfs)	INLET CAPACITY (cfs)	INLET BYPASS NODE	INLET BYPASS FLOW (cfs)	INLET LONGITUDINAL SLOPE (%)
S1-08-CI	CREEKVIEW	17+38.00	15.27	757.06	PCO10L-3x5	Curb	On Grade	3.87	3.17	S1-03-CI-EX	0.70	0.55
S1-10-CI	WOODROCK	10+56.00	-15.58	757.24	PCO10R-3x5	Curb	On Grade	3.72	2.74	S1-03-CI-EX	0.98	1.85
S1-12-CI	WOODROCK	10+56.00	15.35	757.38	PCO10L-3x5	Curb	On Grade	2.41	2.16	S1-03-CI-EX	0.25	1.85
S1-14-CI	WOODROCK	12+15.00	-15.29	759.47	PCO10R-3x5	Curb	On Grade	5.08	4.81	S1-10-CI	0.26	0.79
S1-16-CI	WOODROCK	12+15.00	15.45	759.51	PCO10L-3x5	Curb	On Grade	1.23	1.23	S1-12-CI	0.00	0.79
S1-18-CI	WOODROCK	13+66.00	-15.45	761.44	PCO10R-3x5	Curb	On Grade	7.89	5.78	S1-14-CI	2.11	1.11
S1-20-CI	WOODROCK	13+66.00	15.50	761.30	PCO10L-3x5	Curb	On Grade	1.26	1.26	S1-16-CI	0.00	1.11
S1-02-CI-EX	CREEKVIEW	15+66.00	-17.20	755.92	TYPBCI10	Curb	Sag	0.35	10.33	0.00	0.00	N/A
S1-03-CI-EX	CREEKVIEW	15+71.00	15.50	756.65	TYPBCI10	Curb	Sag	5.15	10.33	0.00	0.00	N/A
S1-04-CI-EX	CREEKVIEW	16+32.10	-17.20	756.03	TYPBCI10	Curb	On Grade	1.77	1.77	S1-02-CI-EX	0.00	0.48

INLET ID	CROSS SLOPE (%)	SPREAD MANNING'S N	REQUIRED LENGTH: (ft)	COMPUTED INLET POND DEPTH (ft)	INLET MAX POND DEPTH (ft)	COMPUTED INLET POND WIDTH (ft)	INLET MAX POND WIDTH (ft)	REMARKS
S1-08-CI	0.02	0.015	15.49	0.24	0.50	15.04	15.00	
S1-10-CI	0.02	0.015	18.16	0.21	0.50	10.28	15.00	
S1-12-CI	0.02	0.015	13.26	0.19	0.50	7.80	15.00	
S1-14-CI	0.05	0.015	11.78	0.39	0.50	7.37	15.00	
S1-16-CI	0.04	0.015	5.98	0.21	0.50	4.87	15.00	
S1-18-CI	0.04	0.015	18.28	0.39	0.50	9.73	15.00	
S1-20-CI	0.05	0.015	6.28	0.21	0.50	4.25	15.00	
S1-02-CI-EX	0.05	0.015	20.04	0.05	0.50	2.24	15.00	1
S1-03-CI-EX	0.05	0.015	6.11	0.31	0.50	6.78	15.00	1
S1-04-CI-EX	0.05	0.015	6.11	0.28	0.50	5.66	15.00	1

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING INLET TO REMAIN.

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. REPORTED CALCULATED PONDED WIDTH FOR SAG INLETS IS THE GREATEST VALUE OF LEFT, RIGHT, AND TOTAL PONDED WIDTH.
3. ALL DRAINAGE FACILITIES ARE CHECKED FOR THE 1% AEP TO ENSURE FLOW DOES NOT EXCEED ROW LIMITS.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
HYDRAULIC DATA INLETS
25-YR

SHEET 1 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	68
DRAWN: AM	
CHECKED: HV	

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100% SUBMITTAL

25-YEAR ON GRADE INLET AND SAG CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET (+RT/-LT)	TOP ELEVATION	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	INLET DISCHARGE (cfs)	INLET CAPACITY (cfs)	INLET BYPASS NODE	INLET BYPASS FLOW (cfs)
S2-02-CI	AQUALINE	12+80.70	38.37	756.12	PCU15-3x5 - SAG	Curb	Sag	10.20	13.58	0.00	0.00
S2-06-CI	LIMEROCK	13+62.00	-15.53	757.83	PCU10L-3x5	Curb and Grate	On Grade	3.68	3.37	S2-33-CI	0.31
S2-08-CI	LIMEROCK	12+88.00	15.32	760.01	PCO10L-3x5	Curb	On Grade	6.44	4.32	S2-09-CI	2.11
S2-09-CI	LIMEROCK	13+62.00	15.31	758.17	PCO15-3x5	Curb	On Grade	8.29	5.94	S2-37-CI	2.35
S2-10-CI	LIMEROCK	10+89.85	-15.53	765.58	PCU10L-3x5	Curb and Grate	On Grade	3.29	2.91	S2-06-CI	0.37
S2-12-CI	LIMEROCK	10+89.83	15.27	765.47	PCO15-3x5	Curb	On Grade	13.51	10.06	S2-08-CI	3.44
S2-17-CI	LIMEROCK	9+34.00	15.60	768.23	PCO15-3x5	Curb	On Grade	6.32	5.48	S2-12-CI	0.85
S2-24-CI	LIMEROCK	20+37.00	15.65	748.62	PCO10L-3x5	Curb	On Grade	5.47	4.77	S2-21-CI-EX	0.71
S2-28-CI	LIMEROCK	21+61.00	15.57	752.20	PCO15-3x5	Curb	On Grade	9.87	5.53	S2-24-CI	4.34
S2-31-CI	LIMEROCK	18+18.00	14.80	749.07	PCO15-3x5	Curb	On Grade	7.61	7.01	S2-21-CI-EX	0.60
S2-33-CI	LIMEROCK	16+32.50	-15.58	751.81	PCU10L-3x5	Curb and Grate	On Grade	1.89	1.87	S2-19-CI-EX	0.02
S2-35-CI	LIMEROCK	16+32.50	15.58	752.20	PCO10R-3x5	Curb	On Grade	5.57	3.96	S2-31-CI	1.61
S2-37-CI	LIMEROCK	14+94.00	15.50	755.20	PCO15-3x5	Curb	On Grade	5.95	5.20	S2-35-CI	0.76
S2-19-CI-EX	LIMEROCK	19+25.34	-16.00	747.77	TYPBCI10	Curb	Sag	3.38	10.33	0.00	0.00
S2-21-CI-EX	LIMEROCK	19+25.30	15.50	748.00	TYPBCI10	Curb	Sag	6.61	10.33	0.00	0.00

INLET ID	INLET LONGITUDINAL SLOPE (%)	CROSS SLOPE (%)	SPREAD MANNING'S N	REQUIRED LENGTH: (ft)	COMPUTED INLET POND DEPTH (ft)	INLET MAX POND DEPTH (ft)	COMPUTED INLET POND WIDTH (ft)	INLET MAX POND WIDTH (ft)	REMARKS
S2-02-CI	N/A	0.04	0.010	6.27	0.41	0.50	9.39	15.00	
S2-06-CI	3.01	0.05	0.010	N/A	0.27	0.50	5.21	15.00	
S2-08-CI	3.10	0.04	0.010	20.59	0.30	0.50	7.21	15.00	
S2-09-CI	3.01	0.03	0.010	27.79	0.29	0.50	10.28	15.00	
S2-10-CI	1.69	0.03	0.010	N/A	0.24	0.50	7.56	15.00	
S2-12-CI	1.69	0.04	0.010	26.32	0.45	0.50	10.57	15.00	
S2-17-CI	1.89	0.03	0.010	20.81	0.29	0.50	9.70	15.00	
S2-24-CI	1.22	0.05	0.010	13.99	0.36	0.50	7.25	15.00	
S2-28-CI	4.31	0.02	0.020	38.19	0.25	0.50	12.65	15.00	
S2-31-CI	1.35	0.04	0.010	18.50	0.38	0.50	9.01	15.00	
S2-33-CI	2.28	0.06	0.010	N/A	0.23	0.50	4.03	15.00	
S2-35-CI	2.28	0.04	0.010	19.06	0.28	0.50	8.11	15.00	
S2-37-CI	1.87	0.03	0.010	20.52	0.28	0.50	9.80	15.00	
S2-19-CI-EX	N/A	0.04	0.010	6.27	0.24	0.50	5.49	15.00	1
S2-21-CI-EX	N/A	0.05	0.010	6.27	0.37	0.50	7.43	15.00	1

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING INLET TO REMAIN.

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. REPORTED CALCULATED PONDED WIDTH FOR SAG INLETS IS THE GREATEST VALUE OF LEFT, RIGHT, AND TOTAL PONDED WIDTH.
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STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDRAULIC DATA INLETS
25-YR

SHEET 2 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	69
DRAWN: AM	
CHECKED: HV	

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100% SUBMITTAL

100-YEAR ON GRADE INLET AND SAG CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET (+RT/-LT)	TOP ELEVATION	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	INLET DISCHARGE (cfs)	INLET CAPACITY (cfs)	INLET BYPASS NODE	INLET BYPASS FLOW (cfs)	INLET LONGITUDINAL SLOPE (%)
S1-08-CI	CREEKVIEW	17+38.00	15.27	757.06	PCO10L-3x5	Curb	On Grade	5.13	3.78	S1-03-CI-EX	1.35	0.55
S1-10-CI	WOODROCK	10+56.00	-15.58	757.24	PCO10R-3x5	Curb	On Grade	5.68	3.50	S1-03-CI-EX	2.19	1.85
S1-12-CI	WOODROCK	10+56.00	15.35	757.38	PCO10L-3x5	Curb	On Grade	3.20	2.62	S1-03-CI-EX	0.58	1.85
S1-14-CI	WOODROCK	12+15.00	-15.29	759.47	PCO10R-3x5	Curb	On Grade	7.53	6.42	S1-10-CI	1.11	0.79
S1-16-CI	WOODROCK	12+15.00	15.45	759.51	PCO10L-3x5	Curb	On Grade	1.63	1.63	S1-12-CI	0.00	0.79
S1-18-CI	WOODROCK	13+66.00	-15.45	761.44	PCO10R-3x5	Curb	On Grade	10.45	6.85	S1-14-CI	3.60	1.11
S1-20-CI	WOODROCK	13+66.00	15.50	761.30	PCO10L-3x5	Curb	On Grade	1.67	1.67	S1-16-CI	0.00	1.11
S1-02-CI-EX	CREEKVIEW	15+66.00	-17.20	755.92	TYPBCI10	Curb	Sag	0.46	10.33	0.00	0.00	N/A
S1-03-CI-EX	CREEKVIEW	15+71.00	15.50	756.65	TYPBCI10	Curb	Sag	8.39	10.33	0.00	0.00	N/A
S1-04-CI-EX	CREEKVIEW	16+32.10	-17.20	756.03	TYPBCI10	Curb	On Grade	2.34	2.34	S1-02-CI-EX	0.00	0.48

INLET ID	CROSS SLOPE (%)	SPREAD MANNING'S N	REQUIRED LENGTH: (ft)	COMPUTED INLET POND DEPTH (ft)	INLET MAX POND DEPTH (ft)	COMPUTED INLET POND WIDTH (ft)	INLET MAX POND WIDTH (ft)	REMARKS
S1-08-CI	0.02	0.015	18.16	0.27	0.50	16.72	15.00	
S1-10-CI	0.02	0.015	23.07	0.24	0.50	12.05	15.00	
S1-12-CI	0.02	0.015	15.52	0.21	0.50	8.67	15.00	
S1-14-CI	0.05	0.015	14.50	0.45	0.50	8.55	15.00	
S1-16-CI	0.04	0.015	6.95	0.24	0.50	5.42	15.00	
S1-18-CI	0.04	0.015	21.26	0.43	0.50	10.81	15.00	
S1-20-CI	0.05	0.015	7.27	0.24	0.50	4.72	15.00	
S1-02-CI-EX	0.05	0.015	20.04	0.06	0.50	2.49	15.00	1
S1-03-CI-EX	0.05	0.015	6.11	0.44	0.50	8.70	15.00	1
S1-04-CI-EX	0.05	0.015	7.09	0.31	0.50	6.29	15.00	1

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING INLET TO REMAIN.

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. REPORTED CALCULATED PONDED WIDTH FOR SAG INLETS IS THE GREATEST VALUE OF LEFT, RIGHT, AND TOTAL PONDED WIDTH.
3. ALL DRAINAGE FACILITIES ARE CHECKED FOR THE 1% AEP TO ENSURE FLOW DOES NOT EXCEED ROW LIMITS.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
HYDRAULIC DATA INLETS
100-YR

SHEET 3 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	70
DRAWN: AM	
CHECKED: HV	

1/13/2024
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100% SUBMITTAL

100-YEAR ON GRADE INLET AND SAG CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET (+RT/-LT)	TOP ELEVATION	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	INLET DISCHARGE (cfs)	INLET CAPACITY (cfs)	INLET BYPASS NODE	INLET BYPASS FLOW (cfs)
S2-02-CI	AQUALINE	12+80.70	38.37	756.12	PCU15-3x5 - SAG	Curb	Sag	13.51	13.58	0.00	0.00
S2-06-CI	LIMEROCK	13+62.00	-15.53	757.83	PCU10L-3x5	Curb and Grate	On Grade	5.07	4.42	S2-33-CI	0.65
S2-08-CI	LIMEROCK	12+88.00	15.32	760.01	PCO10L-3x5	Curb	On Grade	10.36	5.69	S2-09-CI	4.68
S2-09-CI	LIMEROCK	13+62.00	15.31	758.17	PCO15-3x5	Curb	On Grade	12.86	7.67	S2-37-CI	5.19
S2-10-CI	LIMEROCK	10+89.85	-15.53	765.58	PCU10L-3x5	Curb and Grate	On Grade	4.36	3.67	S2-06-CI	0.69
S2-12-CI	LIMEROCK	10+89.83	15.27	765.47	PCO15-3x5	Curb	On Grade	18.66	12.26	S2-08-CI	6.40
S2-17-CI	LIMEROCK	9+34.00	15.60	768.23	PCO15-3x5	Curb	On Grade	8.42	6.62	S2-12-CI	1.80
S2-24-CI	LIMEROCK	20+37.00	15.65	748.62	PCO10L-3x5	Curb	On Grade	8.15	6.21	S2-21-CI-EX	1.94
S2-28-CI	LIMEROCK	21+61.00	15.57	752.20	PCO15-3x5	Curb	On Grade	13.07	6.42	S2-24-CI	6.65
S2-31-CI	LIMEROCK	18+18.00	14.80	749.07	PCO15-3x5	Curb	On Grade	11.77	9.50	S2-21-CI-EX	2.27
S2-33-CI	LIMEROCK	16+32.50	-15.58	751.81	PCU10L-3x5	Curb and Grate	On Grade	2.75	2.66	S2-19-CI-EX	0.09
S2-35-CI	LIMEROCK	16+32.50	15.58	752.20	PCO10R-3x5	Curb	On Grade	9.10	5.27	S2-31-CI	3.83
S2-37-CI	LIMEROCK	14+94.00	15.50	755.20	PCO15-3x5	Curb	On Grade	9.97	7.25	S2-35-CI	2.72
S2-19-CI-EX	LIMEROCK	19+25.34	-16.00	747.77	TYPBCI10	Curb	Sag	4.55	10.33	0.00	0.00
S2-21-CI-EX	LIMEROCK	19+25.30	15.50	748.00	TYPBCI10	Curb	Sag	11.23	10.33	0.00	0.00

INLET ID	INLET LONGITUDINAL SLOPE (%)	CROSS SLOPE (%)	SPREAD MANNING'S N	REQUIRED LENGTH: (ft)	COMPUTED INLET POND DEPTH (ft)	INLET MAX POND DEPTH (ft)	COMPUTED INLET POND WIDTH (ft)	INLET MAX POND WIDTH (ft)	REMARKS
S2-02-CI	N/A	0.04	0.020	6.27	0.50	0.50	11.33	15.00	
S2-06-CI	3.01	0.05	0.020	N/A	0.30	0.50	5.88	15.00	
S2-08-CI	3.10	0.04	0.010	26.59	0.36	0.50	8.61	15.00	
S2-09-CI	3.01	0.03	0.010	35.38	0.34	0.50	12.12	15.00	
S2-10-CI	1.69	0.03	0.020	N/A	0.26	0.50	8.40	15.00	
S2-12-CI	1.69	0.04	0.010	31.24	0.51	0.50	11.93	15.00	
S2-17-CI	1.89	0.03	0.010	24.35	0.32	0.50	10.80	15.00	
S2-24-CI	1.22	0.05	0.010	17.28	0.42	0.50	8.41	15.00	
S2-28-CI	4.31	0.02	0.010	44.71	0.28	0.50	14.05	15.00	
S2-31-CI	1.35	0.04	0.010	23.37	0.44	0.50	10.61	15.00	
S2-33-CI	2.28	0.06	0.010	N/A	0.26	0.50	4.64	15.00	
S2-35-CI	2.28	0.04	0.010	24.88	0.34	0.50	9.74	15.00	
S2-37-CI	1.87	0.03	0.010	27.24	0.34	0.50	11.89	15.00	
S2-19-CI-EX	N/A	0.04	0.010	6.27	0.29	0.50	6.58	15.00	1
S2-21-CI-EX	N/A	0.05	0.010	6.27	0.53	0.50	10.58	15.00	1

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING INLET TO REMAIN.

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. REPORTED CALCULATED PONDED WIDTH FOR SAG INLETS IS THE GREATEST VALUE OF LEFT, RIGHT, AND TOTAL PONDED WIDTH.
3. ALL DRAINAGE FACILITIES ARE CHECKED FOR THE 1% AEP TO ENSURE FLOW DOES NOT EXCEED ROW LIMITS.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDRAULIC DATA INLETS
100-YR

SHEET 4 OF 10

PROJECT NO:	SHEET NO. 71
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

1/13/2024
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100% SUBMITTAL

25-YEAR CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	DS FL ELEV (FT)	US HGL (FT)	DS HGL (FT)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMUL TC (MIN)
S1-07-L	S1-07-JB	S1-07-JCT	751.91	751.90	754.13	753.85	RCP ARCH DES 4	1	4.00	6.50	0.20	0.012	7.06
S1-08-L	S1-08-CI	S1-08-JB	753.14	752.70	754.99	754.91	18" RCP	1	5.39	10.39	4.17	0.012	4.44
S1-09-L	S1-09-JB	S1-08-JB	752.54	752.32	755.36	754.91	RCP ARCH DES 4	1	106.00	111.00	0.20	0.012	5.92
S1-10-L	S1-10-CI	S1-11-JB	753.28	753.13	755.61	755.54	18" RCP	1	3.08	7.08	2.09	0.012	5.07
S1-11-L	S1-11-JB	S1-09-JB	752.63	752.54	755.54	755.36	RCP ARCH DES 4	1	41.44	46.44	0.20	0.012	5.73
S1-12-L	S1-12-CI	S1-11-JB	753.42	753.13	755.58	755.54	18" RCP	1	22.85	26.85	1.10	0.012	4.48
S1-13-L	S1-13-JCT	S1-11-JB	754.01	752.63	755.82	755.54	24" RCP	1	98.06	100.56	1.37	0.012	5.54
S1-14-L	S1-14-CI	S1-15-JB	755.51	755.34	756.49	756.40	18" RCP	1	3.79	6.79	2.49	0.012	4.86
S1-15-L	S1-15-JB	S1-13-JCT	754.84	754.01	756.40	754.99	24" RCP	1	59.25	60.75	1.37	0.012	5.43
S1-16-L	S1-16-CI	S1-15-JB	755.55	755.34	756.42	756.40	18" RCP	1	23.95	26.95	0.79	0.012	2.93
S1-17-L	S1-17-JCT	S1-15-JB	755.98	755.34	757.25	756.32	18" RCP	1	54.20	55.70	1.15	0.012	5.31
S1-18-L	S1-18-CI	S1-19-JB	757.48	757.12	759.28	758.76	18" RCP	1	3.95	6.95	5.17	0.012	5.08
S1-19-L	S1-19-JB	S1-17-JCT	757.12	755.98	758.76	756.95	18" RCP	1	97.17	98.67	1.15	0.012	5.09
S1-20-L	S1-20-CI	S1-19-JB	757.34	757.12	758.77	758.76	18" RCP	1	24.00	27.00	0.81	0.012	1.27
S1-07J-L	S1-07-JCT	S1-05-OUT	751.90	751.69	753.85	753.05	RCP ARCH DES 4	1	105.58	105.58	0.20	0.012	7.08
S1-08A-L	S1-08-JB	S1-07-JB	752.32	751.93	754.91	754.13	RCP ARCH DES 4	1	196.74	201.74	0.20	0.012	6.36
S1-02-L-EX	S1-02-CI-EX	S1-01-OUT-EX	752.47	747.82	753.64	748.30	18" RCP	1	103.61	103.62	4.49	0.012	5.34
S1-03-L-EX	S1-03-CI-EX	S1-02-CI-EX	752.54	752.47	753.75	753.64	18" RCP	1	30.61	33.11	0.21	0.012	5.16
S1-04-L-EX	S1-04-CI-EX	S1-02-CI-EX	753.03	752.47	753.72	753.64	18" RCP	1	56.10	66.10	0.85	0.012	3.81

LINK ID	TC USED (MIN)	CUMUL C VALUE	CUMUL I (IN/HR)	CUMUL A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)	UNIFORM VELOCITY (FPS)	REMARKS
S1-07-L	6.36	0.56	10.62	3.61	21.54	16.96	4.82	
S1-08-L	5.00	0.57	11.40	0.60	3.87	24.99	9.74	
S1-09-L	5.73	0.56	10.96	3.01	18.52	16.96	4.14	
S1-10-L	5.07	0.55	11.36	0.55	3.45	17.70	7.37	
S1-11-L	5.73	0.56	10.96	3.01	18.52	16.96	4.14	
S1-12-L	5.00	0.56	11.40	0.38	2.41	12.81	5.28	
S1-13-L	5.43	0.56	11.14	2.08	13.08	30.86	8.94	
S1-14-L	5.00	0.55	11.40	0.47	2.97	19.32	7.51	
S1-15-L	5.43	0.56	11.14	2.08	13.08	30.86	8.94	
S1-16-L	5.00	0.63	11.40	0.17	1.23	10.91	3.88	
S1-17-L	5.09	0.56	11.35	1.44	9.14	13.13	7.58	
S1-18-L	5.08	0.55	11.35	1.28	7.89	27.83	12.86	
S1-19-L	5.09	0.56	11.35	1.44	9.14	13.13	7.58	
S1-20-L	5.00	0.68	11.40	0.16	1.26	11.03	3.94	
S1-07J-L	6.36	0.56	10.62	3.61	21.54	16.96	4.82	
S1-08A-L	6.36	0.56	10.62	3.61	21.54	16.96	4.82	
S1-02-L-EX	5.34	0.66	11.20	0.72	5.26	25.93	10.92	1
S1-03-L-EX	5.16	0.60	11.30	0.48	3.22	5.63	3.08	1
S1-04-L-EX	5.00	0.76	11.40	0.20	1.77	11.27	4.40	1

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING PIPE TO REMAIN, NO BLOW OUT.

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. LINKS WITH SUFFIX "-EX" ARE EXISTING LINKS TO REMAIN.
3. ELEVATION DATA FOR EXISTING LINKS WERE OBTAINED FROM SURVEY DATA.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
HYDRAULIC DATA LINKS
25-YR

SHEET 5 OF 10

PROJECT NO:	SHEET NO. 72
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

1/13/2024
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100% SUBMITTAL

25-YEAR CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	DS FL ELEV (FT)	US HGL (FT)	DS HGL (FT)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMUL TC (MIN)
S2-02-L	S2-02-CI	S2-01E-JCT	746.99	746.93	750.13	749.90	2' x 4' SBC	1	11.65	13.15	0.50	0.010	9.39
S2-03-L	S2-03-JB	S2-11-JB	758.42	757.59	759.69	758.73	18" RCP	1	156.00	159.50	0.52	0.010	7.71
S2-04-L	S2-04-JB	S2-02-CI	750.61	750.50	753.03	752.34	36" RCP	1	30.08	34.08	0.31	0.010	9.30
S2-05-L	S2-05-JB	S2-07-JB	752.71	752.34	754.30	754.02	24" RCP	1	70.50	74.00	0.50	0.010	4.42
S2-06-L	S2-06-CI	S2-05-JB	753.33	753.21	754.42	754.30	18" RCP	1	21.03	24.03	0.50	0.010	3.54
S2-07-L	S2-07-JB	S2-04-JB	751.39	750.61	754.02	753.03	36" RCP	1	282.50	287.00	0.27	0.010	8.50
S2-08-L	S2-08-CI	S2-07-JB	756.01	755.87	756.96	756.39	18" RCP	1	3.32	6.82	2.00	0.010	4.82
S2-09-L	S2-09-CI	S2-05-JB	753.67	752.71	754.94	753.21	24" RCP	1	3.81	6.81	14.13	0.010	4.41
S2-10-L	S2-10-CI	S2-11-JB	761.08	760.87	762.09	761.47	18" RCP	1	22.63	26.13	0.80	0.010	1.92
S2-11-L	S2-11-JB	S2-07-JB	756.59	751.84	758.73	752.81	30" RCP	1	196.01	200.01	2.38	0.010	8.23
S2-12-L	S2-12-CI	S2-11-JB	760.97	760.39	762.96	761.26	24" RCP	1	5.58	9.08	6.40	0.010	8.07
S2-17-L	S2-17-CI	S2-03-JB	764.17	763.96	765.69	764.71	18" RCP	1	4.10	7.10	3.00	0.010	7.70
S2-20-L	S2-20-JB	S2-19-CI-EX	743.98	743.62	746.54	745.00	RCP ARCH DES 4	1	20.25	24.00	1.51	0.010	5.80
S2-21-L	S2-21-CI-EX	S2-20-JB	744.00	743.98	746.58	746.54	24" RCP	1	3.76	7.51	0.24	0.010	3.71
S2-22-L	S2-22-JCT	S2-20-JB	744.15	743.98	746.75	746.54	24" RCP	1	79.17	81.67	0.20	0.010	4.94
S2-23-L	S2-23-JB	S2-22-JCT	744.19	744.15	746.80	746.75	24" RCP	1	23.39	24.89	0.20	0.010	4.84
S2-24-L	S2-24-CI	S2-23-JB	744.66	744.20	746.81	746.80	18" RCP	1	4.15	7.15	6.56	0.010	0.49
S2-25-L	S2-25-JCT	S2-23-JB	744.93	744.70	747.03	746.80	18" RCP	1	14.42	15.92	1.50	0.010	4.80
S2-26-L	S2-26-JCT	S2-25-JCT	745.36	744.93	747.36	747.03	18" RCP	1	28.26	28.26	1.50	0.010	4.75
S2-27-L	S2-27-JB	S2-26-JCT	746.44	745.36	748.24	747.36	18" RCP	1	70.84	72.34	1.50	0.010	4.61

LINK ID	TC USED (MIN)	CUMUL C VALUE	CUMUL I (IN/HR)	CUMUL A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)	UNIFORM VELOCITY (FPS)	REMARKS
S2-02-L	9.39	0.57	9.36	7.34	39.23	59.68	7.12	
S2-03-L	7.70	0.53	10.03	1.19	6.32	8.82	5.11	
S2-04-L	8.50	0.57	9.71	5.73	31.99	43.55	6.31	
S2-05-L	5.00	0.56	11.40	1.50	9.49	18.64	5.64	
S2-06-L	5.00	0.67	11.40	0.44	3.31	8.66	4.32	
S2-07-L	8.50	0.57	9.71	5.73	31.99	40.52	6.02	
S2-08-L	5.00	0.56	11.40	0.47	2.99	17.31	6.95	
S2-09-L	5.00	0.51	11.40	1.06	6.18	99.10	16.67	
S2-10-L	5.00	0.68	11.40	0.42	3.29	10.95	5.15	
S2-11-L	8.23	0.58	9.82	3.77	21.60	73.68	12.36	
S2-12-L	8.07	0.59	9.88	2.16	12.66	66.67	15.50	
S2-17-L	7.70	0.53	10.03	1.19	6.32	21.20	9.92	
S2-20-L	5.80	0.58	10.92	4.91	30.96	46.56	10.69	
S2-21-L	5.00	0.54	11.40	0.86	5.30	12.91	3.66	
S2-22-L	5.00	0.66	11.40	1.46	11.00	11.79	3.98	
S2-23-L	5.00	0.66	11.40	1.46	11.00	11.79	3.98	
S2-24-L	5.00	0.61	11.40	0.16	1.14	31.36	7.98	
S2-25-L	5.00	0.67	11.40	1.30	9.87	14.99	8.55	
S2-26-L	5.00	0.67	11.40	1.30	9.87	14.99	8.55	
S2-27-L	5.00	0.67	11.40	1.30	9.87	14.99	8.55	

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING PIPE TO REMAIN, NO BLOW OUT.

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. LINKS WITH SUFFIX "-EX" ARE EXISTING LINKS TO REMAIN.
3. ELEVATION DATA FOR EXISTING LINKS WERE OBTAINED FROM SURVEY DATA.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDRAULIC DATA LINKS
25-YR

SHEET 6 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	73
DRAWN: AM	
CHECKED: HV	

1/13/2024
4:36:56 PM
I:\2601\2201\CADD\SHEETS\05-Drainage Details\DRN*9*HYD*LINKS01.dgn

100% SUBMITTAL

25-YEAR CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	DS FL ELEV (FT)	US HGL (FT)	DS HGL (FT)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMUL TC (MIN)
S2-28-L	S2-28-CI	S2-27-JB	746.77	746.44	749.01	748.24	18" RCP	1	3.57	6.57	5.00	0.010	4.60
S2-29-L	S2-29-JCT	S2-20-JB	744.40	743.98	746.91	746.54	24" RCP	1	81.28	83.78	0.50	0.010	5.57
S2-30-L	S2-30-JB	S2-29-JCT	744.51	744.40	747.07	746.91	24" RCP	1	20.40	21.90	0.50	0.010	5.51
S2-31-L	S2-31-CI	S2-30-JB	745.11	745.01	747.27	747.07	18" RCP	1	3.30	6.30	1.59	0.010	4.58
S2-32-L	S2-32-JCT	S2-30-JB	745.55	745.01	747.42	747.07	18" RCP	1	34.65	36.15	1.50	0.010	5.44
S2-33-L	S2-33-CI	S2-34-JB	747.85	747.75	749.58	749.56	18" RCP	1	21.58	24.58	0.39	0.010	3.52
S2-34-L	S2-34-JB	S2-32-JCT	747.75	745.55	749.56	746.49	18" RCP	1	144.98	146.48	1.50	0.010	5.16
S2-35-L	S2-35-CI	S2-34-JB	748.24	747.75	749.69	749.56	18" RCP	1	3.58	6.58	7.49	0.010	4.49
S2-36-L	S2-36-JB	S2-34-JB	751.21	747.75	752.13	748.21	18" RCP	1	136.68	139.68	2.47	0.010	4.86
S2-37-L	S2-37-CI	S2-36-JB	751.24	751.21	752.30	752.13	18" RCP	1	3.50	6.50	0.50	0.010	4.84
S2-01A-L	S2-01A-JCT	S2-01-OUT	746.05	746.03	748.52	748.31	2' x 4' SBC	1	4.61	4.61	0.50	0.010	9.83
S2-01B-L	S2-01B-JCT	S2-01A-JCT	746.11	746.05	748.70	748.52	2' x 4' SBC	1	11.39	11.39	0.50	0.010	9.80
S2-01C-L	S2-01C-JCT	S2-01B-JCT	746.49	746.11	749.24	748.70	2' x 4' SBC	1	76.19	76.19	0.50	0.010	9.62
S2-01D-L	S2-01D-JCT	S2-01C-JCT	746.73	746.49	749.54	749.24	2' x 4' SBC	1	47.81	47.81	0.50	0.010	9.51
S2-01E-L	S2-01E-JCT	S2-01D-JCT	746.93	746.73	749.90	749.54	2' x 4' SBC	1	39.96	39.96	0.50	0.010	9.42
S2-19-L-EX	S2-19-CI-EX	S2-18-OUT	742.97	742.35	745.14	744.34	30" RCP	1	113.06	114.31	0.54	0.010	5.83

LINK ID	TC USED (MIN)	CUMUL C VALUE	CUMUL I (IN/HR)	CUMUL A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)	UNIFORM VELOCITY (FPS)	REMARKS
S2-28-L	5.00	0.67	11.40	1.30	9.87	27.37	13.49	
S2-29-L	5.51	0.54	11.09	2.58	15.57	18.64	6.24	
S2-30-L	5.51	0.54	11.09	2.58	15.57	18.64	6.24	
S2-31-L	5.00	0.53	11.40	1.00	6.00	15.42	7.75	
S2-32-L	5.16	0.55	11.30	1.59	9.92	14.99	8.57	
S2-33-L	5.00	0.72	11.40	0.19	1.59	7.69	3.27	
S2-34-L	5.16	0.55	11.30	1.59	9.92	14.99	8.57	
S2-35-L	5.00	0.53	11.40	0.80	4.82	33.51	12.79	
S2-36-L	5.00	0.53	11.40	0.59	3.60	19.26	7.92	
S2-37-L	5.00	0.53	11.40	0.59	3.60	8.66	4.42	
S2-01A-L	9.39	0.57	9.36	7.34	39.23	59.68	7.12	
S2-01B-L	9.39	0.57	9.36	7.34	39.23	59.68	7.12	
S2-01C-L	9.39	0.57	9.36	7.34	39.23	59.68	7.12	
S2-01D-L	9.39	0.57	9.36	7.34	39.23	59.68	7.12	
S2-01E-L	9.39	0.57	9.36	7.34	39.23	59.68	7.12	
S2-19-L-EX	5.83	0.59	10.90	5.32	34.11	35.20	7.56	1

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING PIPE TO REMAIN, NO BLOW OUT.

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. LINKS WITH SUFFIX "-EX" ARE EXISTING LINKS TO REMAIN.
3. ELEVATION DATA FOR EXISTING LINKS WERE OBTAINED FROM SURVEY DATA.

STATE OF TEXAS
ROBERTO ERAZO, JR
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LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDRAULIC DATA LINKS
25-YR

SHEET 7 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	74
DRAWN: AM	
CHECKED: HV	

1/13/2024
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100% SUBMITTAL

100-YEAR CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	DS FL ELEV (FT)	US HGL (FT)	DS HGL (FT)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMUL TC (MIN)
S1-07-L	S1-07-JB	S1-07-JCT	751.91	751.90	754.77	754.28	RCP ARCH DES 4	1	4.00	6.50	0.20	0.012	6.69
S1-08-L	S1-08-CI	S1-08-JB	753.14	752.70	756.35	756.19	18" RCP	1	5.39	10.39	4.17	0.012	4.44
S1-09-L	S1-09-JB	S1-08-JB	752.54	752.32	756.99	756.19	RCP ARCH DES 4	1	106.00	111.00	0.20	0.012	5.84
S1-10-L	S1-10-CI	S1-11-JB	753.28	753.13	757.44	757.32	18" RCP	1	3.08	7.08	2.09	0.012	5.07
S1-11-L	S1-11-JB	S1-09-JB	752.63	752.54	757.32	756.99	RCP ARCH DES 4	1	41.44	46.44	0.20	0.012	5.70
S1-12-L	S1-12-CI	S1-11-JB	753.42	753.13	757.40	757.32	18" RCP	1	22.85	26.85	1.10	0.012	4.48
S1-13-L	S1-13-JCT	S1-11-JB	754.01	752.63	757.88	757.32	24" RCP	1	98.06	100.56	1.37	0.012	5.52
S1-14-L	S1-14-CI	S1-15-JB	755.51	755.34	758.29	758.21	18" RCP	1	3.79	6.79	2.49	0.012	4.86
S1-15-L	S1-15-JB	S1-13-JCT	754.84	754.01	758.21	757.88	24" RCP	1	59.25	60.75	1.37	0.012	5.42
S1-16-L	S1-16-CI	S1-15-JB	755.55	755.34	758.23	758.21	18" RCP	1	23.95	26.95	0.79	0.012	2.93
S1-17-L	S1-17-JCT	S1-15-JB	755.98	755.34	758.96	758.21	18" RCP	1	54.20	55.70	1.15	0.012	5.30
S1-18-L	S1-18-CI	S1-19-JB	757.48	757.12	761.26	760.66	18" RCP	1	3.95	6.95	5.17	0.012	5.08
S1-19-L	S1-19-JB	S1-17-JCT	757.12	755.98	760.66	758.96	18" RCP	1	97.17	98.67	1.15	0.012	5.09
S1-20-L	S1-20-CI	S1-19-JB	757.34	757.12	760.68	760.66	18" RCP	1	24.00	27.00	0.81	0.012	1.27
S1-07J-L	S1-07-JCT	S1-05-OUT	751.90	751.69	754.28	753.25	RCP ARCH DES 4	1	105.58	105.58	0.20	0.012	6.71
S1-08A-L	S1-08-JB	S1-07-JB	752.32	751.93	756.19	754.77	RCP ARCH DES 4	1	196.74	201.74	0.20	0.012	6.17
S1-02-L-EX	S1-02-CI-EX	S1-01-OUT-EX	752.47	747.82	753.64	748.30	18" RCP	1	103.61	103.62	4.49	0.012	5.34
S1-03-L-EX	S1-03-CI-EX	S1-02-CI-EX	752.54	752.47	753.75	753.64	18" RCP	1	30.61	33.11	0.21	0.012	5.16
S1-04-L-EX	S1-04-CI-EX	S1-02-CI-EX	753.03	752.47	753.72	753.64	18" RCP	1	56.10	66.10	0.85	0.012	3.81

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING PIPE TO REMAIN, NO BLOW OUT.

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. LINKS WITH SUFFIX "-EX" ARE EXISTING LINKS TO REMAIN.
3. ELEVATION DATA FOR EXISTING LINKS WERE OBTAINED FROM SURVEY DATA.

LINK ID	TC USED (MIN)	CUMUL C VALUE	CUMUL I (IN/HR)	CUMUL A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)	UNIFORM VELOCITY (FPS)	REMARKS
S1-07-L	6.17	0.56	14.28	3.61	28.97	16.96	6.48	
S1-08-L	5.00	0.57	15.10	0.60	5.13	24.99	10.55	
S1-09-L	5.70	0.56	14.61	3.01	24.68	16.96	5.52	
S1-10-L	5.07	0.55	15.05	0.55	4.57	17.70	7.98	
S1-11-L	5.70	0.56	14.61	3.01	24.68	16.96	5.52	
S1-12-L	5.00	0.56	15.10	0.38	3.20	12.81	5.71	
S1-13-L	5.42	0.56	14.81	2.08	17.38	30.86	9.58	
S1-14-L	5.00	0.55	15.10	0.47	3.93	19.32	8.13	
S1-15-L	5.42	0.56	14.81	2.08	17.38	30.86	9.58	
S1-16-L	5.00	0.63	15.10	0.17	1.63	10.91	4.21	
S1-17-L	5.09	0.56	15.04	1.44	12.11	13.13	7.86	
S1-18-L	5.08	0.55	15.04	1.28	10.45	27.83	13.86	
S1-19-L	5.09	0.56	15.04	1.44	12.11	13.13	7.86	
S1-20-L	5.00	0.68	15.10	0.16	1.67	11.03	4.26	
S1-07J-L	6.17	0.56	14.28	3.61	28.97	16.96	6.48	
S1-08A-L	6.17	0.56	14.28	3.61	28.97	16.96	6.48	
S1-02-L-EX	5.34	0.66	11.20	0.72	5.26	25.93	10.92	1
S1-03-L-EX	5.16	0.60	11.30	0.48	3.22	5.63	3.08	1
S1-04-L-EX	5.00	0.76	11.40	0.20	1.77	11.27	4.40	1

STATE OF TEXAS
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
HYDRAULIC DATA LINKS
100-YR

SHEET 8 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	75
DRAWN: AM	
CHECKED: HV	

1/13/2024
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100% SUBMITTAL

100-YEAR CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	DS FL ELEV (FT)	US HGL (FT)	DS HGL (FT)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMUL TC (MIN)
S2-02-L	S2-02-CI	S2-01E-JCT	746.99	746.93	750.81	750.67	2' x 4' SBC	1	11.65	13.15	0.50	0.010	9.33
S2-03-L	S2-03-JB	S2-11-JB	758.42	757.59	760.21	759.09	18" RCP	1	156.00	159.50	0.52	0.010	7.71
S2-04-L	S2-04-JB	S2-02-CI	750.61	750.50	753.50	752.63	36" RCP	1	30.08	34.08	0.31	0.010	9.24
S2-05-L	S2-05-JB	S2-07-JB	752.71	752.34	755.28	754.87	24" RCP	1	70.50	74.00	0.50	0.010	4.42
S2-06-L	S2-06-CI	S2-05-JB	753.33	753.21	755.41	755.28	18" RCP	1	21.03	24.03	0.50	0.010	3.54
S2-07-L	S2-07-JB	S2-04-JB	751.39	750.61	754.87	753.50	36" RCP	1	282.50	287.00	0.27	0.010	8.47
S2-08-L	S2-08-CI	S2-07-JB	756.01	755.87	757.14	756.48	18" RCP	1	3.32	6.82	2.00	0.010	4.82
S2-09-L	S2-09-CI	S2-05-JB	753.67	752.71	755.40	755.28	24" RCP	1	3.81	6.81	14.13	0.010	4.41
S2-10-L	S2-10-CI	S2-11-JB	761.08	760.87	762.27	761.57	18" RCP	1	22.63	26.13	0.80	0.010	1.92
S2-11-L	S2-11-JB	S2-07-JB	756.59	751.84	759.09	752.98	30" RCP	1	196.01	200.01	2.38	0.010	8.22
S2-12-L	S2-12-CI	S2-11-JB	760.97	760.39	763.46	761.43	24" RCP	1	5.58	9.08	6.40	0.010	8.07
S2-17-L	S2-17-CI	S2-03-JB	764.17	763.96	766.08	764.85	18" RCP	1	4.10	7.10	3.00	0.010	7.70
S2-20-L	S2-20-JB	S2-19-CI-EX	743.98	743.62	747.43	745.96	RCP ARCH DES 4	1	20.25	24.00	1.51	0.010	5.73
S2-21-L	S2-21-CI-EX	S2-20-JB	744.00	743.98	747.51	747.43	24" RCP	1	3.76	7.51	0.24	0.010	3.71
S2-22-L	S2-22-JCT	S2-20-JB	744.15	743.98	747.81	747.43	24" RCP	1	79.17	81.67	0.20	0.010	4.91
S2-23-L	S2-23-JB	S2-22-JCT	744.19	744.15	747.90	747.81	24" RCP	1	23.39	24.89	0.20	0.010	4.82
S2-24-L	S2-24-CI	S2-23-JB	744.66	744.20	747.91	747.90	18" RCP	1	4.15	7.15	6.56	0.010	0.49
S2-25-L	S2-25-JCT	S2-23-JB	744.93	744.70	748.30	747.90	18" RCP	1	14.42	15.92	1.50	0.010	4.79
S2-26-L	S2-26-JCT	S2-25-JCT	745.36	744.93	748.88	748.30	18" RCP	1	28.26	28.26	1.50	0.010	4.74
S2-27-L	S2-27-JB	S2-26-JCT	746.44	745.36	750.43	748.88	18" RCP	1	70.84	72.34	1.50	0.010	4.61

LINK ID	TC USED (MIN)	CUMUL C VALUE	CUMUL I (IN/HR)	CUMUL A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)	UNIFORM VELOCITY (FPS)	REMARKS
S2-02-L	9.33	0.57	12.60	7.34	52.79	59.68	7.48	
S2-03-L	7.70	0.53	13.35	1.19	8.42	8.82	5.26	
S2-04-L	8.47	0.57	12.92	5.73	42.57	43.55	6.46	
S2-05-L	5.00	0.56	15.10	1.50	12.56	18.64	6.02	
S2-06-L	5.00	0.67	15.10	0.44	4.38	8.66	4.63	
S2-07-L	8.47	0.57	12.92	5.73	42.57	40.52	6.18	
S2-08-L	5.00	0.56	15.10	0.47	3.96	17.31	7.53	
S2-09-L	5.00	0.51	15.10	1.06	8.18	99.10	18.11	
S2-10-L	5.00	0.68	15.10	0.42	4.36	10.95	5.51	
S2-11-L	8.22	0.58	13.07	3.77	28.76	73.68	13.35	
S2-12-L	8.07	0.59	13.16	2.16	16.86	66.67	16.79	
S2-17-L	7.70	0.53	13.35	1.19	8.42	21.20	10.71	
S2-20-L	5.73	0.58	14.59	4.91	41.34	46.56	11.10	
S2-21-L	5.00	0.54	15.10	0.86	7.03	12.91	3.97	
S2-22-L	5.00	0.66	15.10	1.46	14.57	11.79	4.76	
S2-23-L	5.00	0.66	15.10	1.46	14.57	11.79	4.76	
S2-24-L	5.00	0.61	15.10	0.16	1.50	31.36	8.68	
S2-25-L	5.00	0.67	15.10	1.30	13.07	14.99	8.95	
S2-26-L	5.00	0.67	15.10	1.30	13.07	14.99	8.95	
S2-27-L	5.00	0.67	15.10	1.30	13.07	14.99	8.95	

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING PIPE TO REMAIN, NO BLOW OUT.

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. LINKS WITH SUFFIX "-EX" ARE EXISTING LINKS TO REMAIN.
3. ELEVATION DATA FOR EXISTING LINKS WERE OBTAINED FROM SURVEY DATA.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDRAULIC DATA LINKS
100-YR

SHEET 9 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	76
DRAWN: AM	
CHECKED: HV	

1/13/2024
4:38:01 PM
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100% SUBMITTAL

100-YEAR CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	DS FL ELEV (FT)	US HGL (FT)	DS HGL (FT)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMUL TC (MIN)
S2-28-L	S2-28-CI	S2-27-JB	746.77	746.44	751.37	750.43	18" RCP	1	3.57	6.57	5.00	0.010	4.60
S2-29-L	S2-29-JCT	S2-20-JB	744.40	743.98	748.09	747.43	24" RCP	1	81.28	83.78	0.50	0.010	5.53
S2-30-L	S2-30-JB	S2-29-JCT	744.51	744.40	748.39	748.09	24" RCP	1	20.40	21.90	0.50	0.010	5.47
S2-31-L	S2-31-CI	S2-30-JB	745.11	745.01	748.73	748.39	18" RCP	1	3.30	6.30	1.59	0.010	4.58
S2-32-L	S2-32-JCT	S2-30-JB	745.55	745.01	749.00	748.39	18" RCP	1	34.65	36.15	1.50	0.010	5.41
S2-33-L	S2-33-CI	S2-34-JB	747.85	747.75	751.79	751.76	18" RCP	1	21.58	24.58	0.39	0.010	3.52
S2-34-L	S2-34-JB	S2-32-JCT	747.75	745.55	751.76	749.00	18" RCP	1	144.98	146.48	1.50	0.010	5.13
S2-35-L	S2-35-CI	S2-34-JB	748.24	747.75	751.98	751.76	18" RCP	1	3.58	6.58	7.49	0.010	4.49
S2-36-L	S2-36-JB	S2-34-JB	751.21	747.75	752.29	748.28	18" RCP	1	136.68	139.68	2.47	0.010	4.86
S2-37-L	S2-37-CI	S2-36-JB	751.24	751.21	752.50	752.29	18" RCP	1	3.50	6.50	0.50	0.010	4.84
S2-01A-L	S2-01A-JCT	S2-01-OUT	746.05	746.03	749.08	748.81	2' x 4' SBC	1	4.61	4.61	0.50	0.010	9.75
S2-01B-L	S2-01B-JCT	S2-01A-JCT	746.11	746.05	749.29	749.08	2' x 4' SBC	1	11.39	11.39	0.50	0.010	9.72
S2-01C-L	S2-01C-JCT	S2-01B-JCT	746.49	746.11	749.94	749.29	2' x 4' SBC	1	76.19	76.19	0.50	0.010	9.55
S2-01D-L	S2-01D-JCT	S2-01C-JCT	746.73	746.49	750.28	749.94	2' x 4' SBC	1	47.81	47.81	0.50	0.010	9.45
S2-01E-L	S2-01E-JCT	S2-01D-JCT	746.93	746.73	750.67	750.28	2' x 4' SBC	1	39.96	39.96	0.50	0.010	9.36
S2-19-L-EX	S2-19-CI-EX	S2-18-OUT	742.97	742.35	745.96	744.59	30" RCP	1	113.06	114.31	0.54	0.010	5.77

LINK ID	TC USED (MIN)	CUMUL C VALUE	CUMUL I (IN/HR)	CUMUL A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)	UNIFORM VELOCITY (FPS)	REMARKS
S2-28-L	5.00	0.67	15.10	1.30	13.07	27.37	14.50	
S2-29-L	5.47	0.54	14.77	2.58	20.73	18.64	6.77	
S2-30-L	5.47	0.54	14.77	2.58	20.73	18.64	6.77	
S2-31-L	5.00	0.53	15.10	1.00	7.94	15.42	8.32	
S2-32-L	5.13	0.55	15.01	1.59	13.17	14.99	8.98	
S2-33-L	5.00	0.72	15.10	0.19	2.10	7.69	3.53	
S2-34-L	5.13	0.55	15.01	1.59	13.17	14.99	8.98	
S2-35-L	5.00	0.53	15.10	0.80	6.38	33.51	13.85	
S2-36-L	5.00	0.53	15.10	0.59	4.77	19.26	8.56	
S2-37-L	5.00	0.53	15.10	0.59	4.77	8.66	4.71	
S2-01A-L	9.75	0.57	12.60	7.34	52.79	59.68	7.48	
S2-01B-L	9.72	0.57	12.60	7.34	52.79	59.68	7.48	
S2-01C-L	9.55	0.57	12.60	7.34	52.79	59.68	7.48	
S2-01D-L	9.45	0.57	12.60	7.34	52.79	59.68	7.48	
S2-01E-L	9.36	0.57	12.60	7.34	52.79	59.68	7.48	
S2-19-L-EX	5.77	0.59	14.56	5.32	45.57	35.20	9.52	1.00

NUMBER	DATE	REVISION	APPROVED

REMARKS:
1. EXISTING PIPE TO REMAIN, NO BLOW OUT.

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. STORM SEWER ANALYSIS PERFORMED USING GEOPAK DRAINAGE WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22) GUIDELINES.
2. LINKS WITH SUFFIX "-EX" ARE EXISTING LINKS TO REMAIN.
3. ELEVATION DATA FOR EXISTING LINKS WERE OBTAINED FROM SURVEY DATA.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
HYDRAULIC DATA LINKS
100-YR

SHEET 10 OF 10

PROJECT NO:	SHEET NO.
DESIGNED: AM	77
DRAWN: AM	
CHECKED: HV	

1/13/2024
4:38:22 PM
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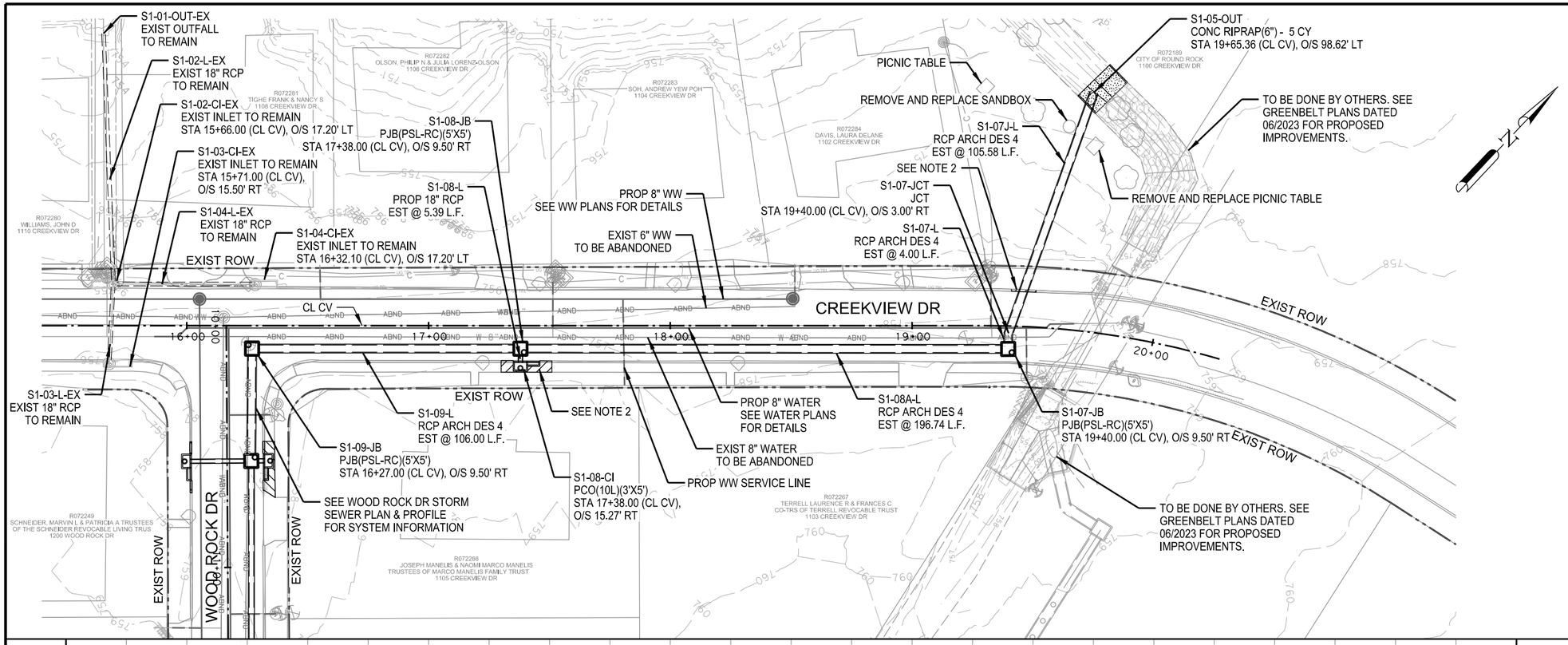
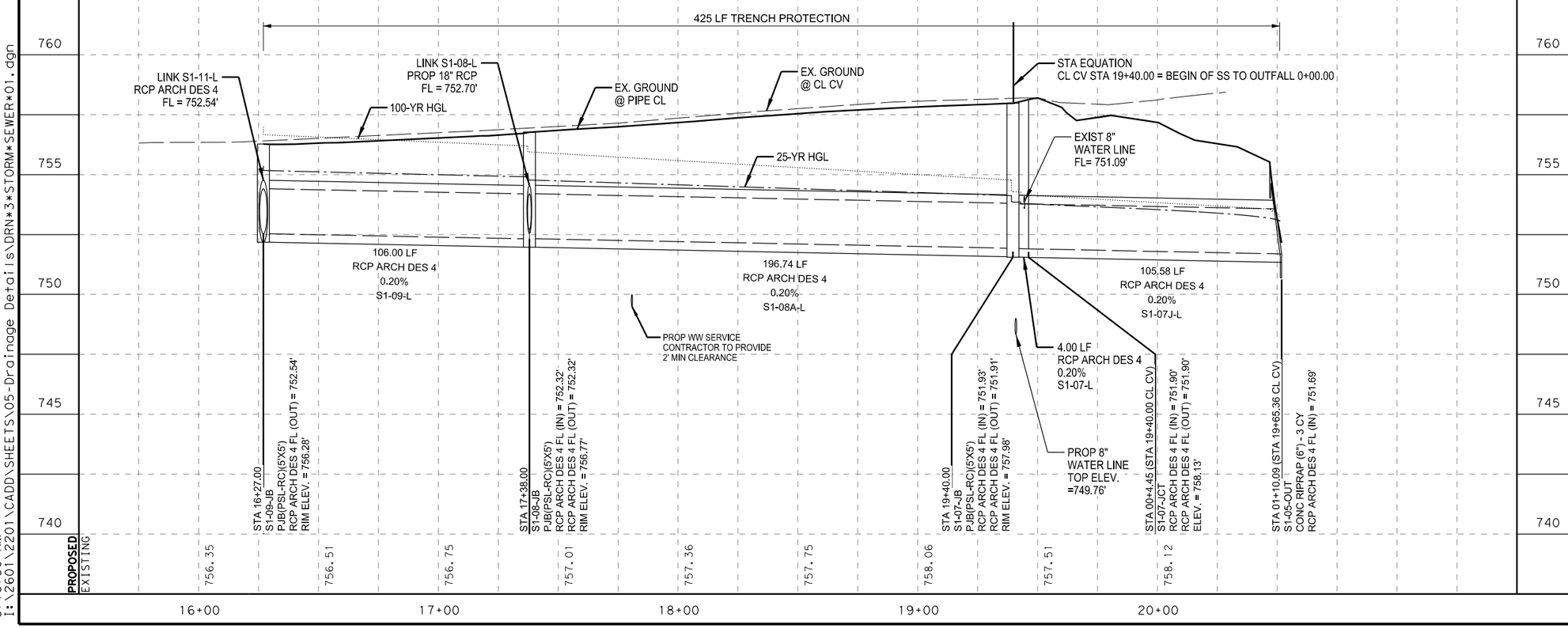
100% SUBMITTAL





NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- OHE — EXISTING OHE
- C — EXISTING COMMUNICATION
- W-6" — EXISTING WATER
- WW-6" — EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
- EXISTING INLET TO REMAIN
- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. REFER TO STORM SEWER LATERAL SHEETS FOR ADDITIONAL INFORMATION.
2. REMOVE AND REPLACE SIDEWALK, DRIVEWAYS, CURB AND GUTTER AS APPLICABLE. SEE STANDARD CGT-PCO (MOD)FOR DETAILS.
3. ALL RCP ARE TO BE CLASS III UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO VERIFY ALL EXISTING UTILITIES.
5. CONTRACTOR TO REMOVE AND REPLACE OR ADJUST EXISTING IRRIGATION SYSTEMS AND LANDSCAPE LIGHTING AS NEEDED. SUBSIDIARY TO PIPE INSTALLATION.
6. EXISTING ATT CABLE CROSSING. CONTRACTOR TO LOCATE PRIOR TO STORM SEWER PIPE INSTALLATION.

0′ 25′ 50′
SCALE: 1"=50′- HORZ
1"=5′- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER PLAN & PROFILE
SITE 1
BEGIN TO END

SHEET 1 OF 7

PROJECT NO:	SHEET NO. 78
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

1/16/2024
8:15:50 AM
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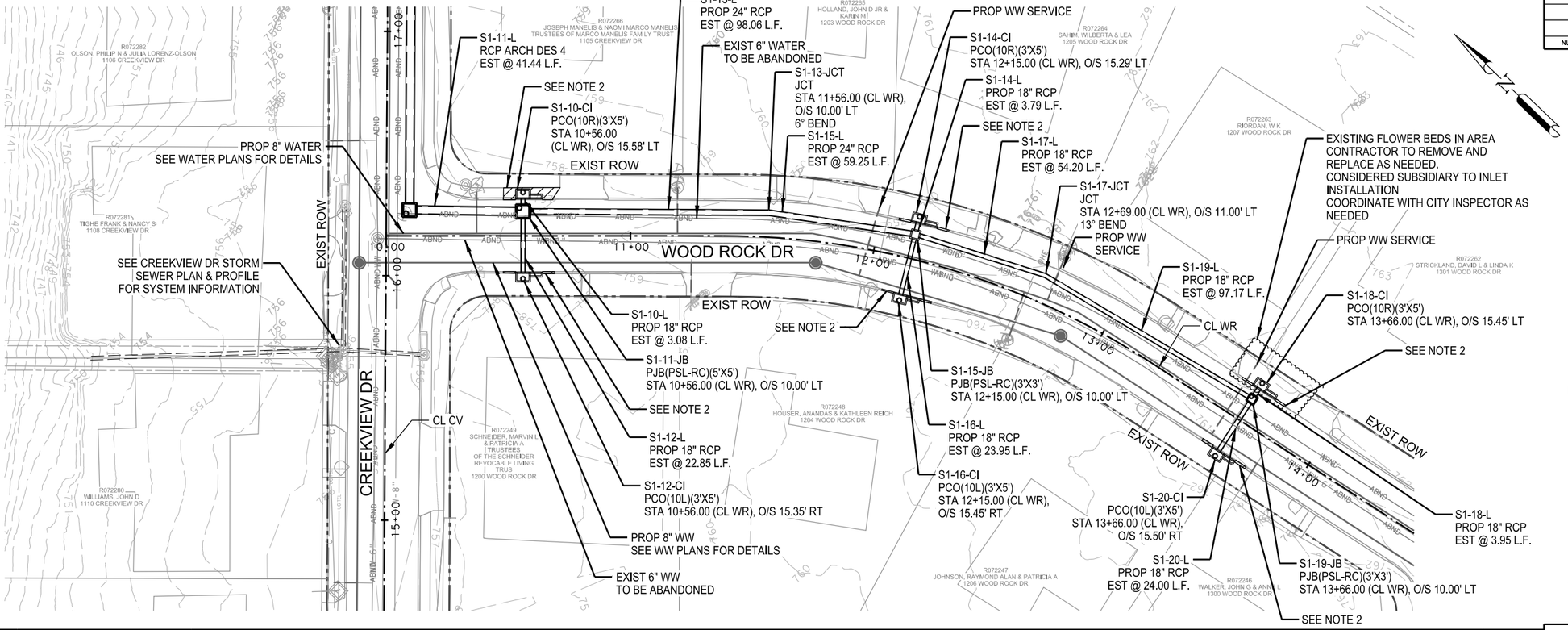
100% SUBMITTAL



NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- OHE — EXISTING OHE
- C — EXISTING COMMUNICATION
- W-6" — EXISTING WATER
- WW-6" — EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
- EXISTING INLET TO REMAIN
- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. REFER TO STORM SEWER LATERAL SHEETS FOR ADDITIONAL INFORMATION.
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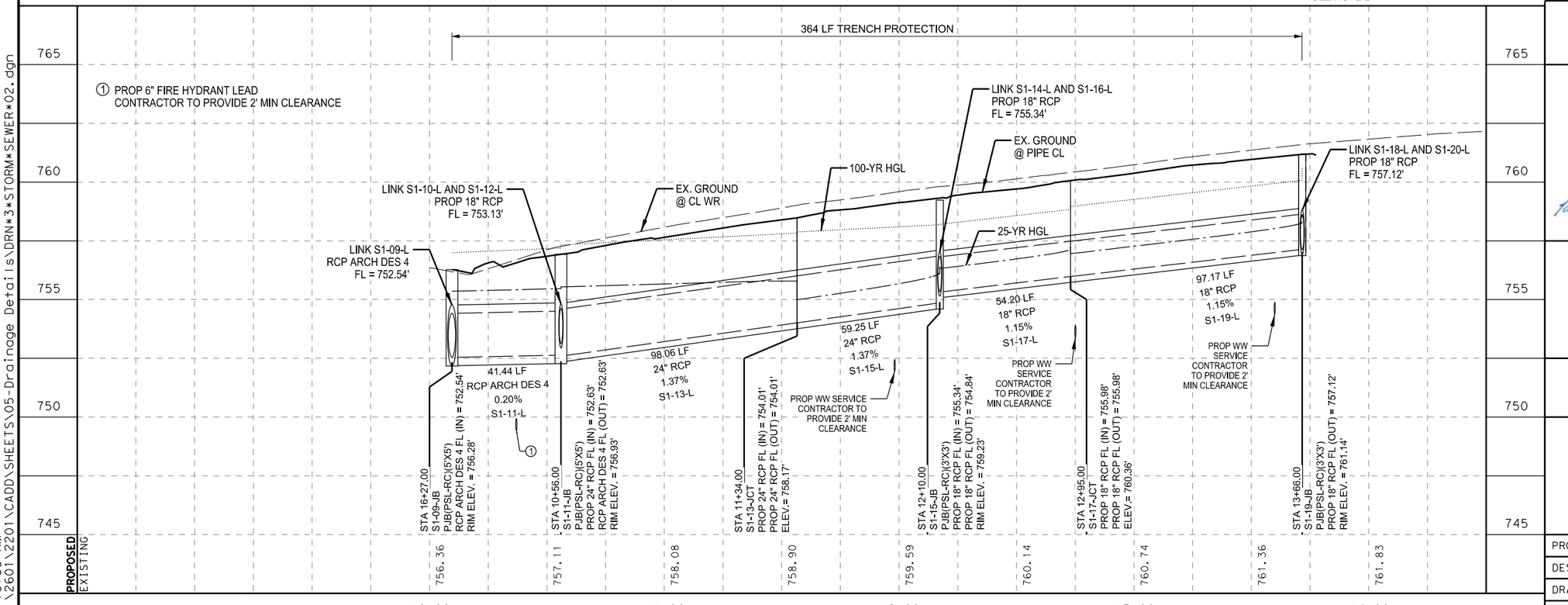
6. EXISTING ATT CABLE CROSSING. CONTRACTOR TO LOCATE PRIOR TO STORM SEWER PIPE INSTALLATION.



0′ 25′ 50′
SCALE: 1"=50′ - HORZ
1"=5′ - VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
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PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER PLAN & PROFILE
SITE 1
BEGIN TO END

SHEET 2 OF 7

PROJECT NO:	SHEET NO. 79
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

1/16/2024
8:15:53 AM
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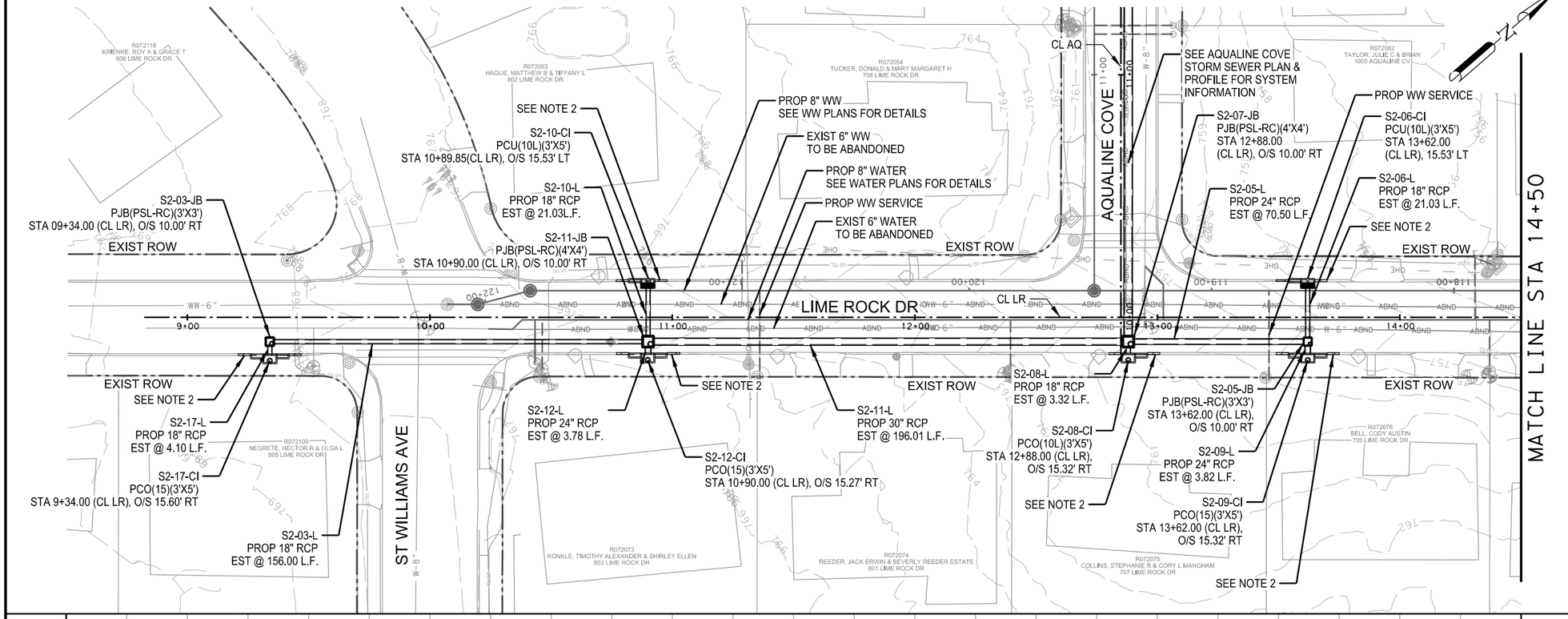
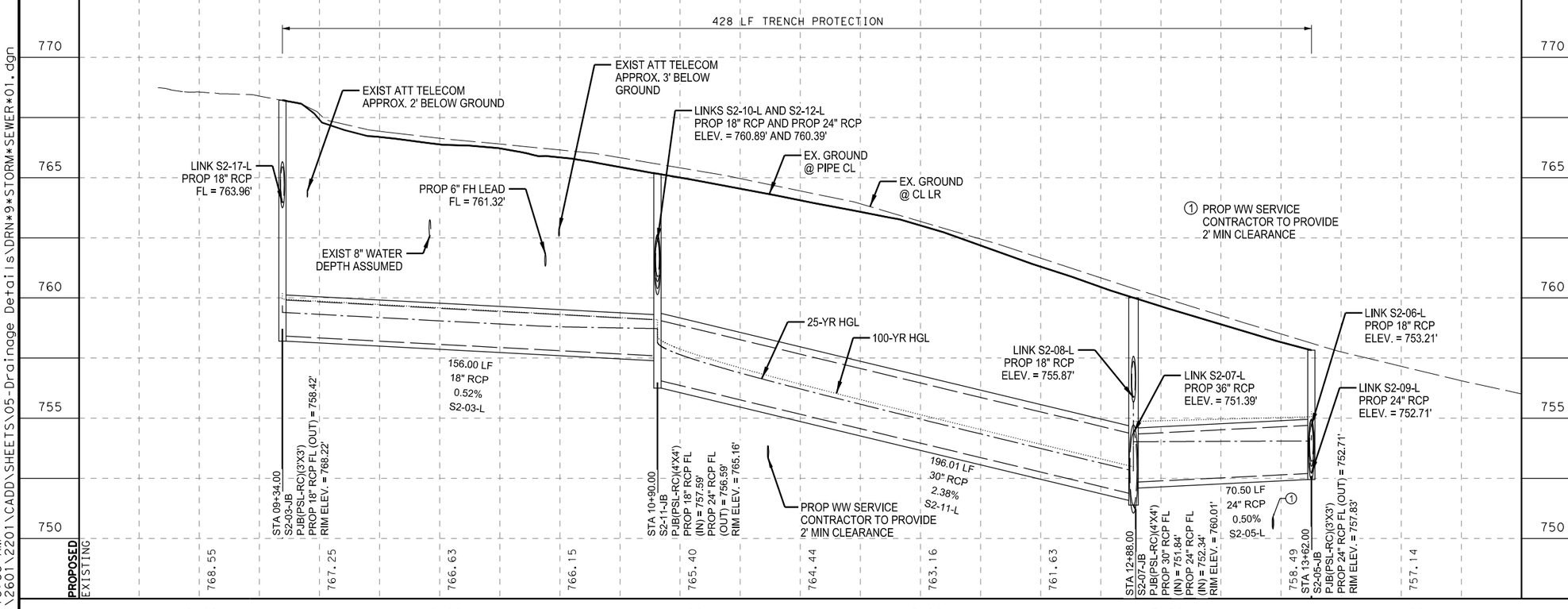
100% SUBMITTAL





NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- EXISTING OHE
- EXISTING COMMUNICATION
- EXISTING WATER
- EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
- EXISTING INLET TO REMAIN
- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. REFER TO STORM SEWER LATERAL SHEETS FOR ADDITIONAL INFORMATION.
2. REMOVE AND REPLACE SIDEWALK, DRIVEWAYS, CURB AND GUTTER AS APPLICABLE. SEE STANDARD CGT-PCO (MOD) FOR DETAILS.
3. ALL RCP ARE TO BE CLASS III UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO VERIFY ALL EXISTING UTILITIES.
5. CONTRACTOR TO REMOVE AND REPLACE OR ADJUST EXISTING IRRIGATION SYSTEMS AND LANDSCAPE LIGHTING AS NEEDED. SUBSIDIARY TO PIPE INSTALLATION.
6. EXISTING ATT CABLE CROSSING. CONTRACTOR TO LOCATE PRIOR TO STORM SEWER PIPE INSTALLATION.

0′ 25′ 50′
SCALE: 1"=50′- HORZ
1"=5′- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
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PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER
PLAN & PROFILE
SITE 2
BEGIN TO STA 14+50
SHEET 3 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: AM	80
DRAWN: AM	
CHECKED: HV	

1/16/2024
8:15:55 AM
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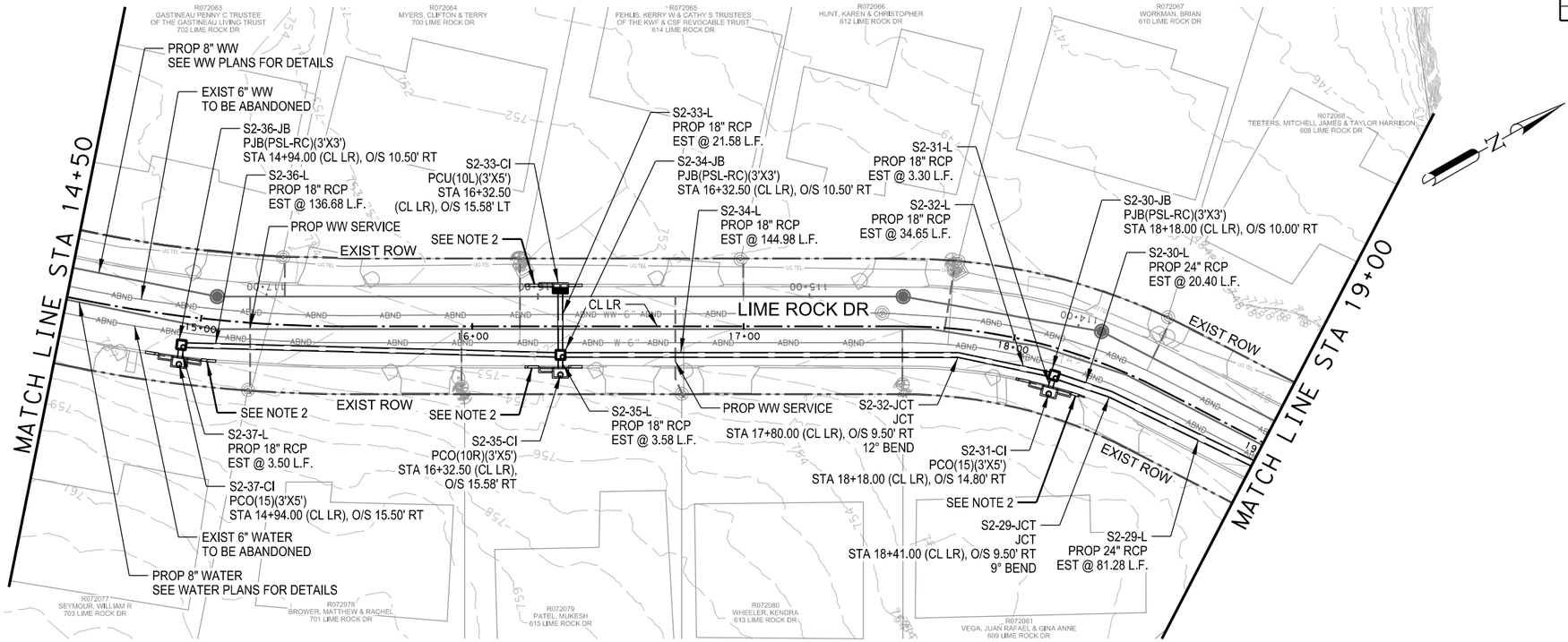
100% SUBMITTAL



NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- OHE — EXISTING OHE
- C — EXISTING COMMUNICATION
- W-6" — EXISTING WATER
- WW-6" — EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
- EXISTING INLET TO REMAIN
- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
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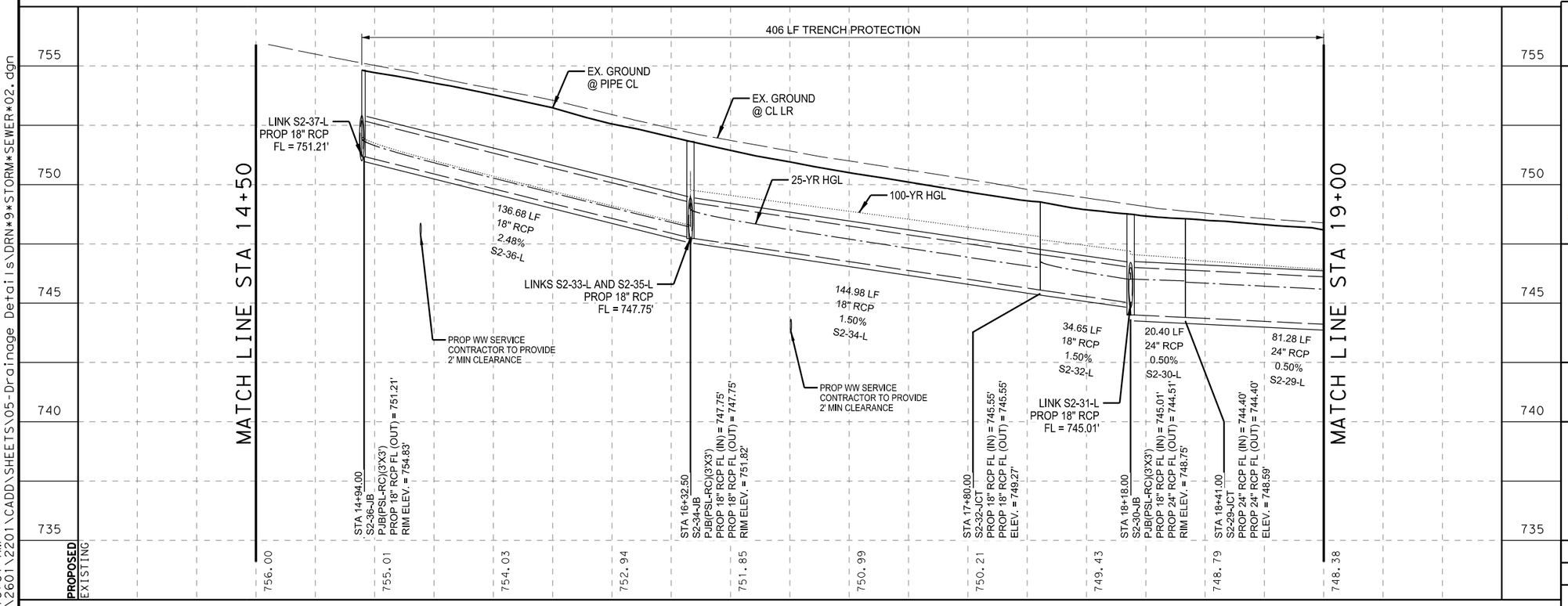
6. EXISTING ATT CABLE CROSSING. CONTRACTOR TO LOCATE PRIOR TO STORM SEWER PIPE INSTALLATION.



0′ 25′ 50′
SCALE: 1"=50′- HORZ
1"=5′- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER
PLAN & PROFILE
SITE 2
STA 14+50 TO STA 19+00
SHEET 4 OF 7

PROJECT NO:	SHEET NO. 81
DESIGNED: AM	
DRAWN: AM	
CHECKED: HV	

1/16/2024
8:15:57 AM
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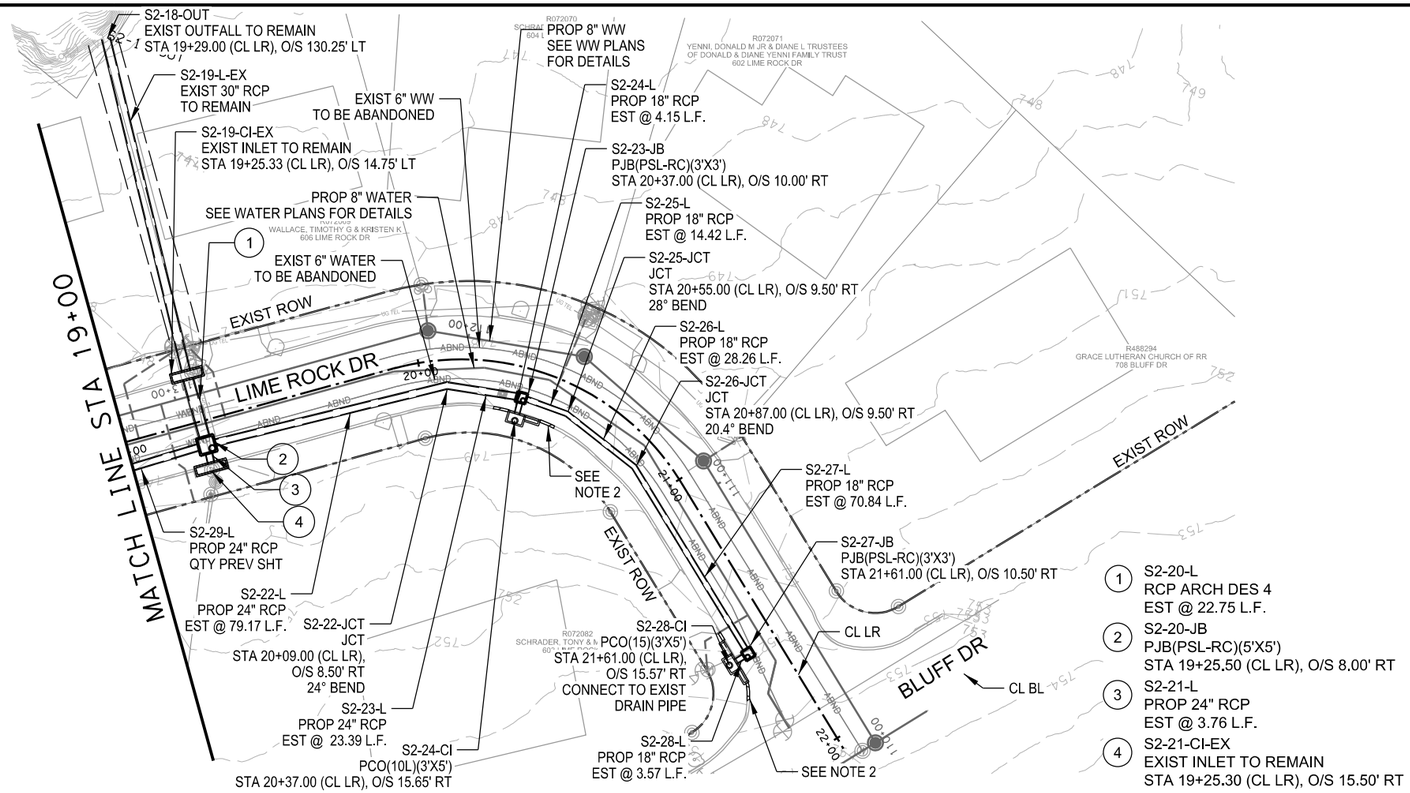
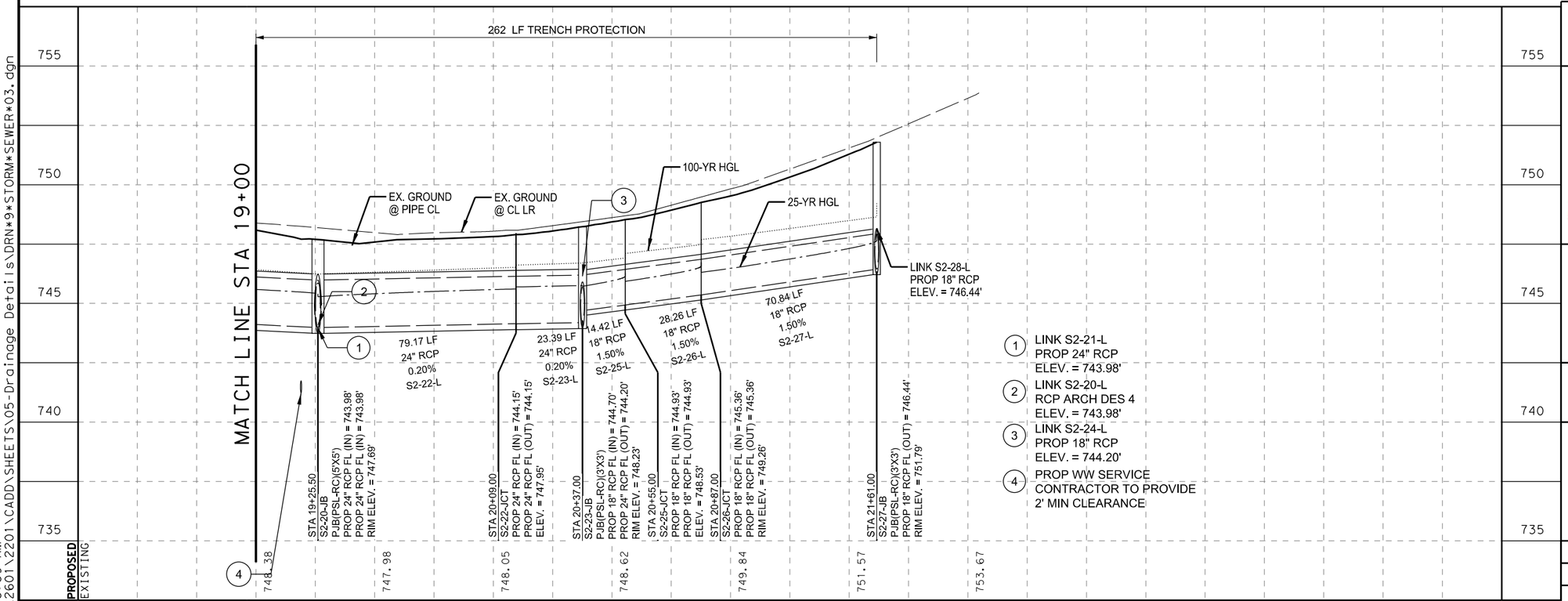
100% SUBMITTAL





NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- OHE — EXISTING OHE
- C — EXISTING COMMUNICATION
- W-6" — EXISTING WATER
- WW-6" — EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
- EXISTING INLET TO REMAIN
- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
1. REFER TO STORM SEWER LATERAL SHEETS FOR ADDITIONAL INFORMATION.
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6. EXISTING ATT CABLE CROSSING. CONTRACTOR TO LOCATE PRIOR TO STORM SEWER PIPE INSTALLATION.

0′ 25′ 50′
SCALE: 1"=50′- HORZ
1"=5′- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

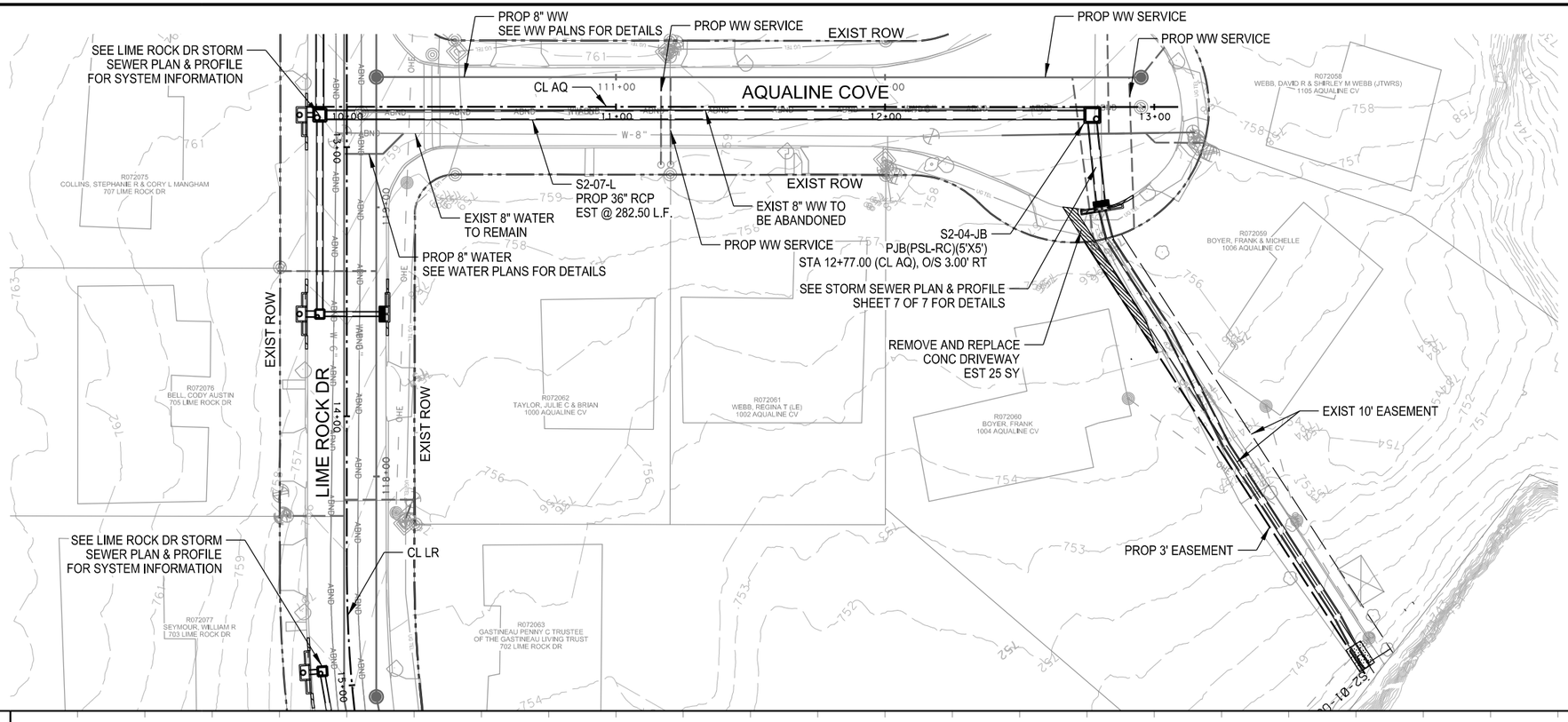
LJA Engineering, Inc.
FRN - F-1386

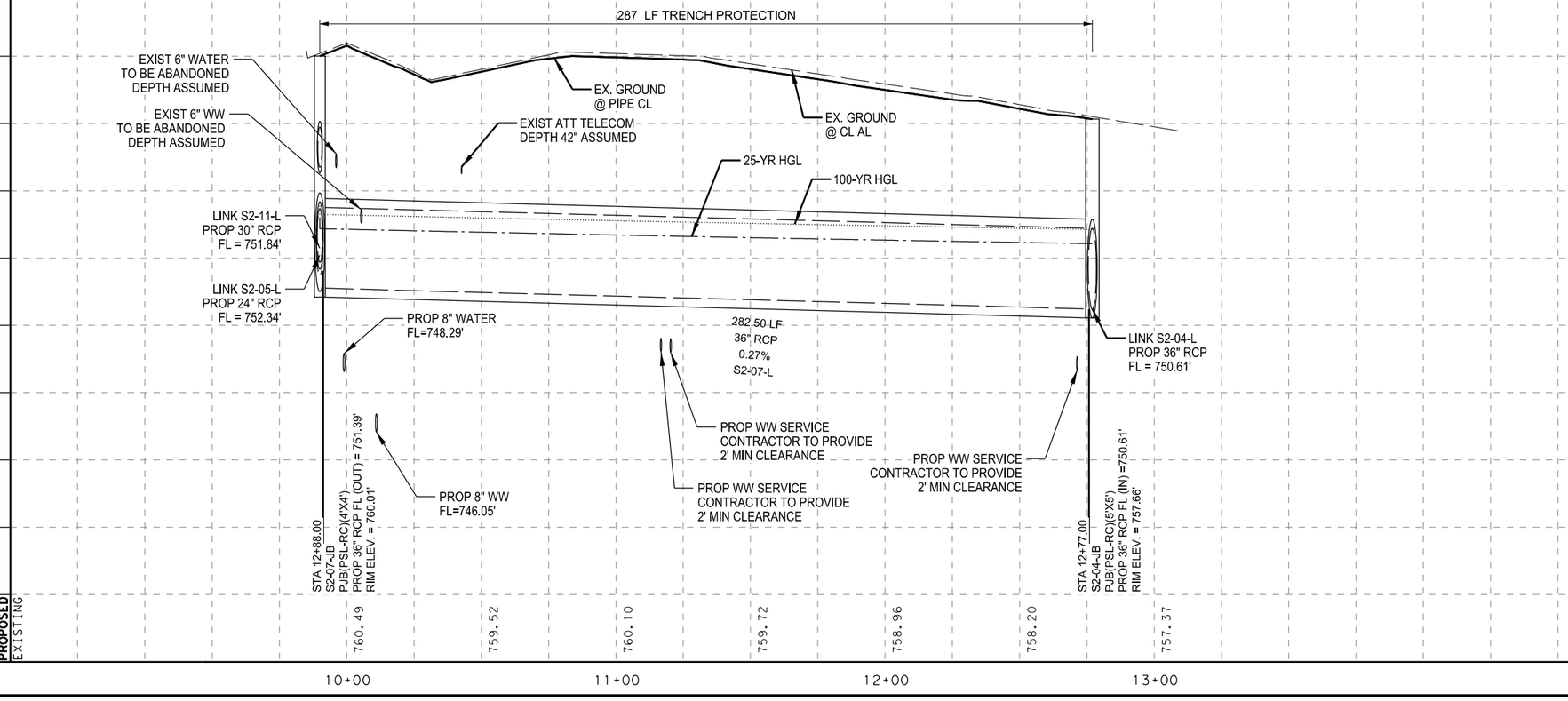
RRW AREA 5
STORM SEWER
PLAN & PROFILE
SITE 2
STA 19+00 TO END
SHEET 5 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: RE	82
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:15:59 AM
I:\2601\2201\CADD\SHEETS\05-Drainage Details\DRN*9*STORM*SEWER*03.dgn

100% SUBMITTAL





NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- EXISTING OHE
- EXISTING COMMUNICATION
- EXISTING WATER
- EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
- EXISTING INLET TO REMAIN
- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
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6. EXISTING ATT CABLE CROSSING. CONTRACTOR TO LOCATE PRIOR TO STORM SEWER PIPE INSTALLATION.

0′ 25′ 50′
SCALE: 1"=50′- HORZ
1"=5′- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER
PLAN & PROFILE
SITE 2
BEGIN TO END
SHEET 6 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: RE	83
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:16:01 AM
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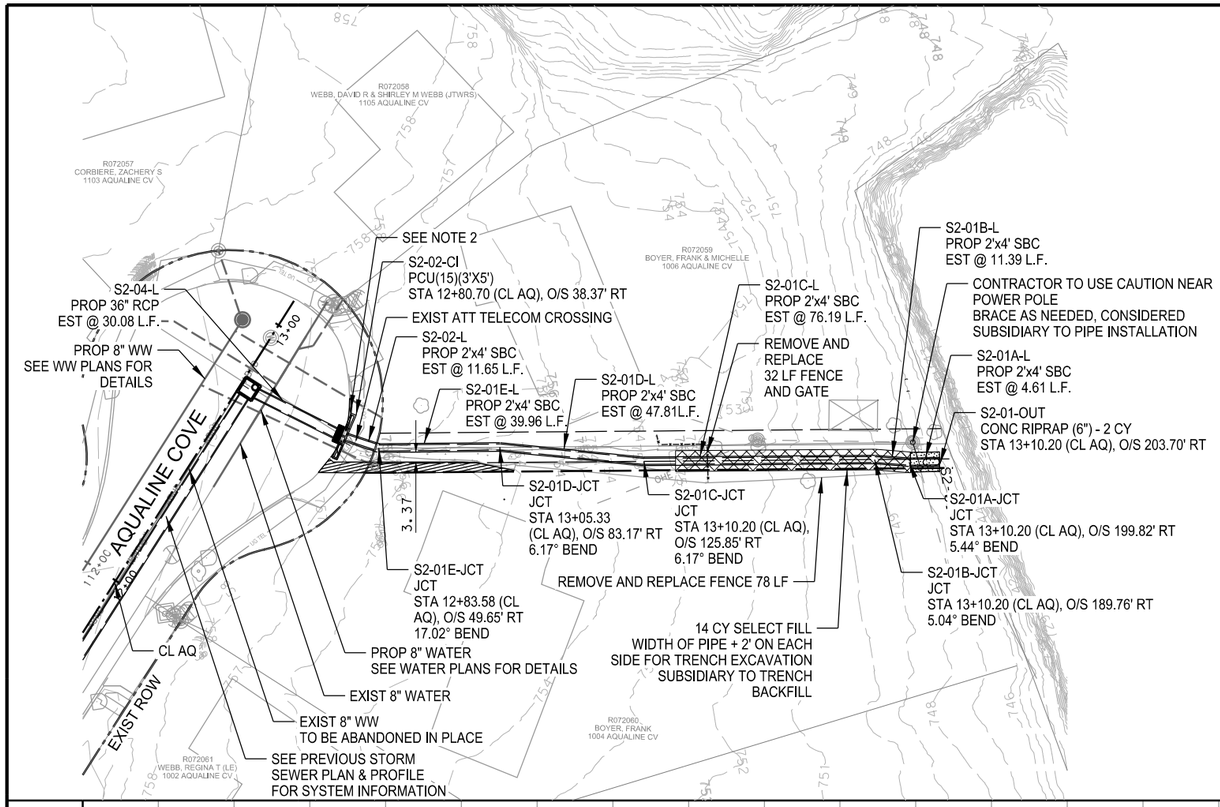
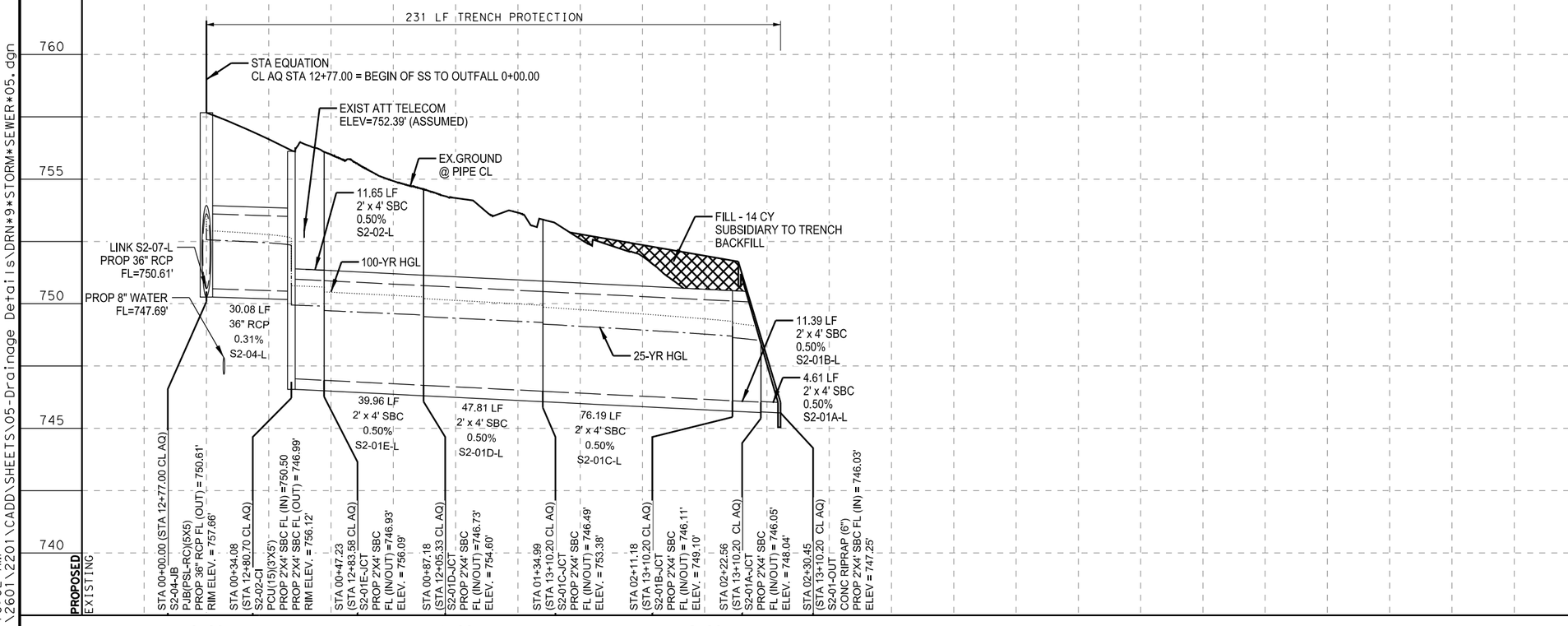
100% SUBMITTAL





NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING DRAINAGE EASEMENT
- OHE — EXISTING OHE
- C — EXISTING COMMUNICATION
- W-6" — EXISTING WATER
- WW-6" — EXISTING WASTEWATER
- EXISTING PLANIMETRICS
- PROPOSED DRAINAGE
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- PROPOSED INLET
- PROPOSED JUNCTION BOX W/ ACCESS

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

NOTES:
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0′ 25′ 50′
SCALE: 1"=50′- HORZ
1"=5′- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER
PLAN & PROFILE
SITE 2
BEGIN TO END & BEGIN TO END
SHEET 7 OF 7

PROJECT NO:	SHEET NO.
DESIGNED: AM	84
DRAWN: AM	
CHECKED: HV	

1/16/2024
8:16:02 AM
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100% SUBMITTAL

765 760 755 750 745

34 LF TRENCH PROTECTION

S1-20-CI 761.29 | S1-19-JB 761.14 | S1-18-CI 761.44

LINK S1-19-L
PROP 18" RCP
FL=757.12

757.34 | 757.12 | 757.12 | 757.48

24.00 LF
18" RCP
0.81%
S1-20-L

3.95 LF
18" RCP
5.17%
S1-18-L

EXIST 6"
WW
FL=756.92'

EXIST 6"
WATER LINE
FL= 756.96' (ASSUMED)

PROP 8"
WATER LINE
FL=753.42'

PROP 8"
WW
FL=751.11'

S1-20-CI TO S1-18-CI

34 LF TRENCH PROTECTION

S1-16-CI 759.51 | S1-15-JB 759.23 | S1-14-CI 759.47

LINK S1-17-L
PROP 18" RCP
FL= 755.34'

LINK S1-15-L
PROP 24" RCP
FL= 754.84'

755.55 | 755.34 | 755.34 | 755.51

23.95 LF
18" RCP
0.79%
S1-16-L

3.79 LF
18" RCP
2.49%
S1-14-L

EXIST 6" WW
FL=755.08'

EXIST 6"
WATER LINE
FL= 754.90' (ASSUMED)

PROP 8"
WW
FL=750.27'

PROP 8"
WATER LINE
FL=751.59'

S1-16-CI TO S1-14-CI

34 LF TRENCH PROTECTION

S1-12-CI 757.38 | S1-11-JB 756.92 | S1-10-CI 757.24

LINK S1-13-L
PROP 24" RCP
FL=752.63'

LINK S1-11-L
RCP ARCH DES 4
FL=752.63'

753.42 | 753.13 | 753.13 | 753.28

22.85 LF
18" RCP
1.10%
S1-12-L

3.08 LF
18" RCP
2.09%
S1-10-L

PROP 8"
WW
FL=749.55'

EXIST 6"
WATER LINE
FL= 752.48' (ASSUMED)

EXIST 6"
WW
FL=752.72'

PROP 8"
WATER LINE
FL=749.41'

S1-12-CI TO S1-10-CI

S1-02-CI-EX 755.92 | S1-04-CI-EX 756.03

752.47 | 753.03

56.10 LF
18" RCP
0.85%
S1-04-L-EX

S1-02-CI-EX TO S1-04-CI-EX

EXISTING SYSTEM - NO WORK PROPOSED

760 755 750 745

11 LF TRENCH PROTECTION

S1-08-CI 757.06 | S1-08-JB 756.77

LINK S1-09-L
RCP ARCH DES 4
FL=752.32'

LINK S1-08A-L
RCP ARCH DES 4
FL=752.33'

753.14 | 752.70

5.39 LF
18" RCP
4.17%
S1-08-L

S1-08-CI TO S1-08-JB

S1-03-CI-EX 756.65 | S1-02-CI-EX 755.92 | S1-01-OUT-EX 747.82

LINK S1-04-L-EX
PROP 18" RCP TO REMAIN
FL=752.47'

752.54 | 752.47 | 752.47 | 747.82

EXIST 8"
WATER LINE
FL= 751.52' (ASSUMED)

30.61 LF
18" RCP
0.21%
S1-03-L-EX

103.61 LF
18" RCP
4.49%
S1-02-L-EX

EXIST 6"
WW
FL=751.63'

PROP 8"
WW
FL=749.06'

S1-03-CI-EX TO S1-01-OUT-EX

EXISTING SYSTEM - NO WORK PROPOSED

NUMBER	DATE	REVISION	APPROVED

LEGEND

EX. GROUND @ PIPE CL
25 YR HGL
100 YR HGL

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

0′ 25′ 50′
SCALE: 1"=50′ - HORZ
1"=5′ - VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
STORM SEWER LATERALS
SITE 1

SHEET 1 OF 3

PROJECT NO:	SHEET NO.
DESIGNED: AM	85
DRAWN: AM	
CHECKED: HV	

1/13/2024
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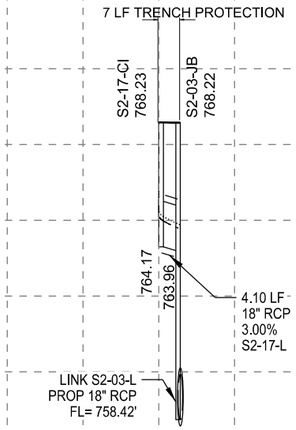
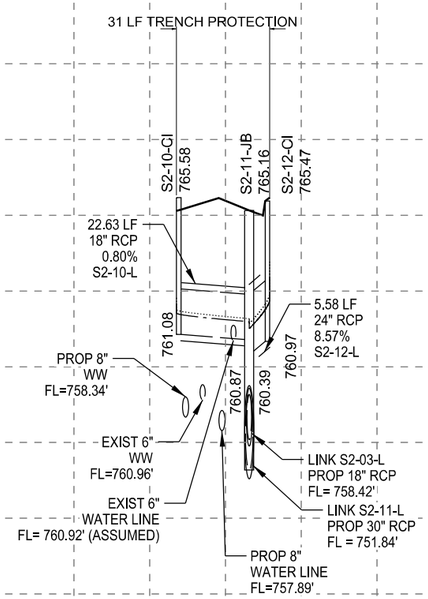
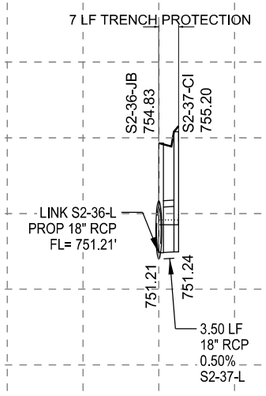
100% SUBMITTAL



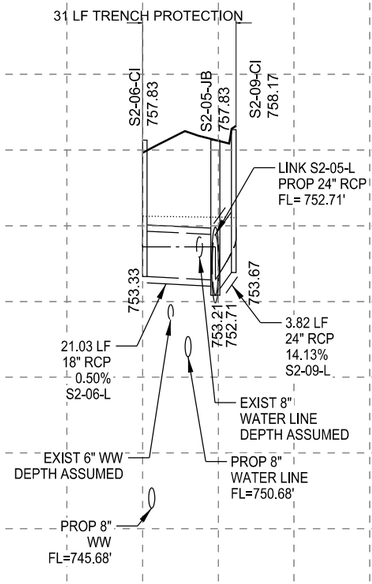
S2-17-CI TO S2-03-JB



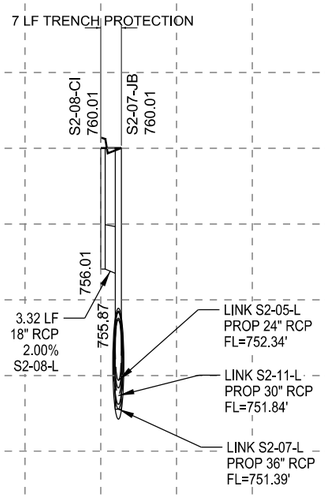
S2-10-CI TO S2-12-CI



S2-36-JB TO S2-37-CI



S2-06-CI TO S2-09-CI



S2-08-CI TO S2-07-JB

NUMBER	DATE	REVISION	APPROVED

LEGEND

EX. GROUND @ PIPE CL
25 YR HGL
100 YR HGL

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

0′ 25′ 50′
SCALE: 1"=50′ - HORZ
1"=5′ - VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
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RRW AREA 5
STORM SEWER LATERALS
SITE 2

SHEET 2 OF 3

PROJECT NO:	SHEET NO.
DESIGNED: RE	86
DRAWN: MH	
CHECKED: RE	

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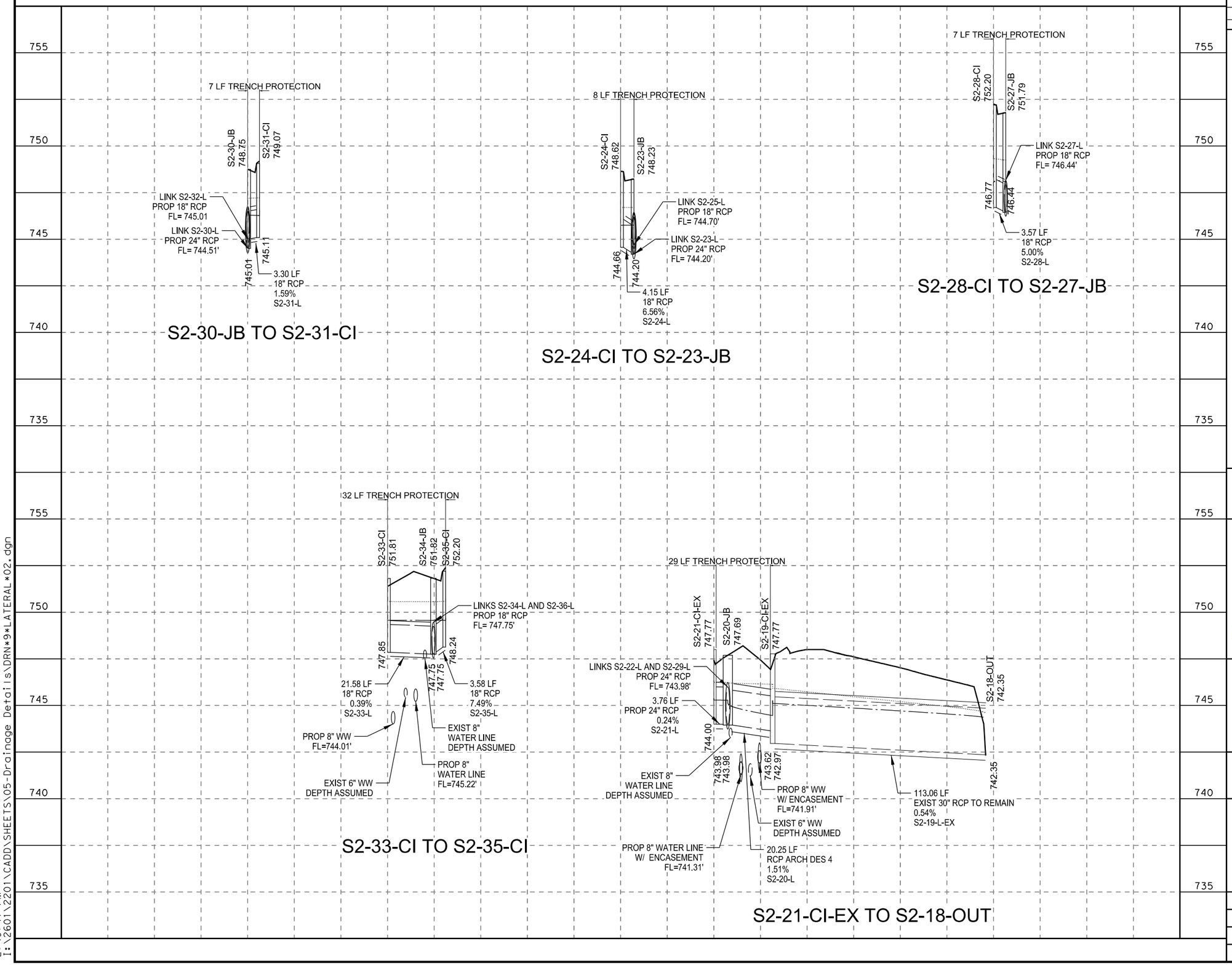

NUMBER	DATE	REVISION	APPROVED

LEGEND

EX. GROUND @ PIPE CL
25 YR HGL
100 YR HGL

ARCH DESIGN SIZE	EQUIVALENT DIAMETER (IN.)	RISE (IN.)	SPAN (IN.)
DES 4	30	22.5	36.25

0′ 25′ 50′
SCALE: 1"=50′ - HORZ
1"=5′ - VERT

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RRW AREA 5
STORM SEWER LATERALS
SITE 2

SHEET 3 OF 3

PROJECT NO:	SHEET NO. 87
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

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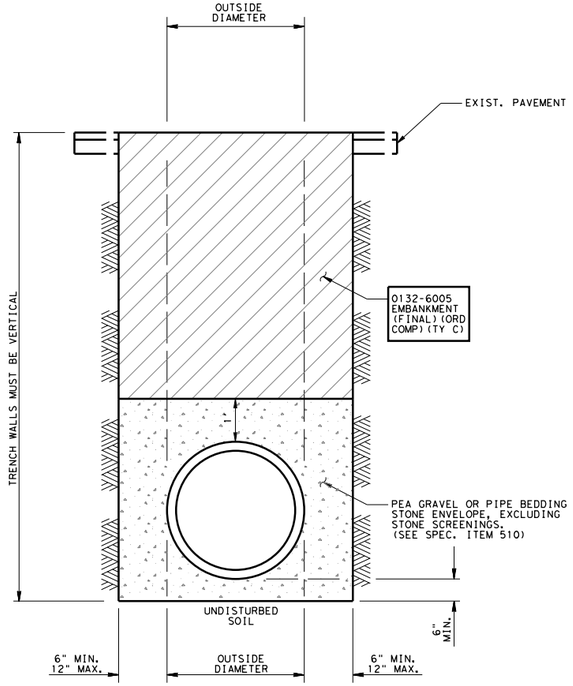
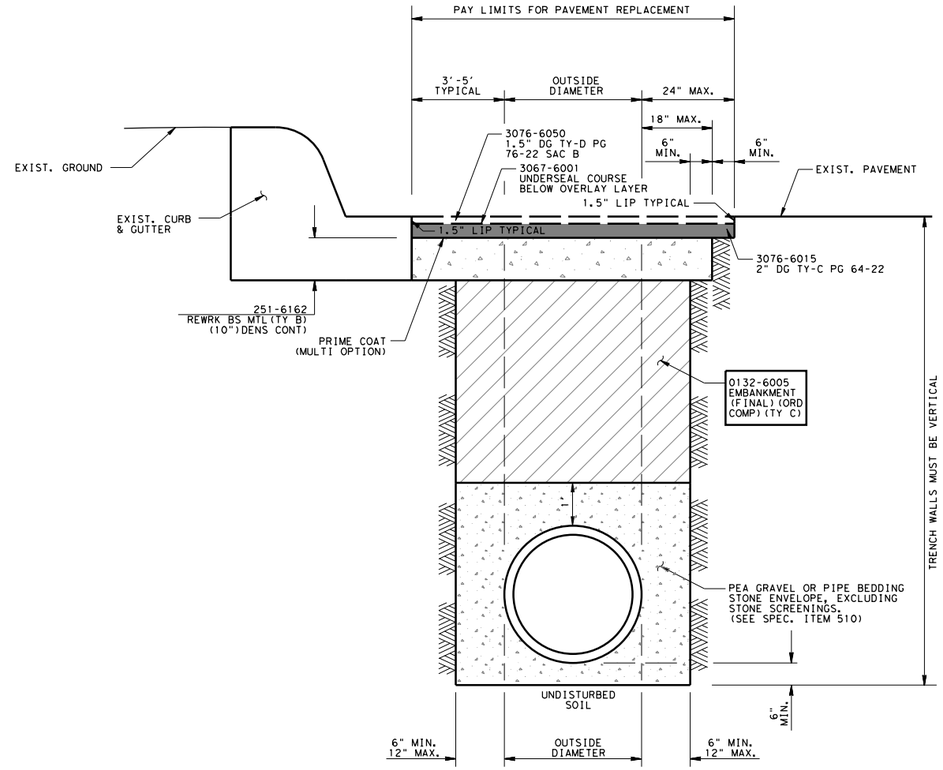
NUMBER	DATE	REVISION	APPROVED



TYPICAL TEMPORARY TRENCH DETAIL STEP 1

NOT TO SCALE



TYPICAL UTILITY TRENCH DETAIL

NOT TO SCALE

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RRW AREA 5
TRENCH DETAILS

SHEET 1 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: RE	88
DRAWN: MH	
CHECKED: RE	

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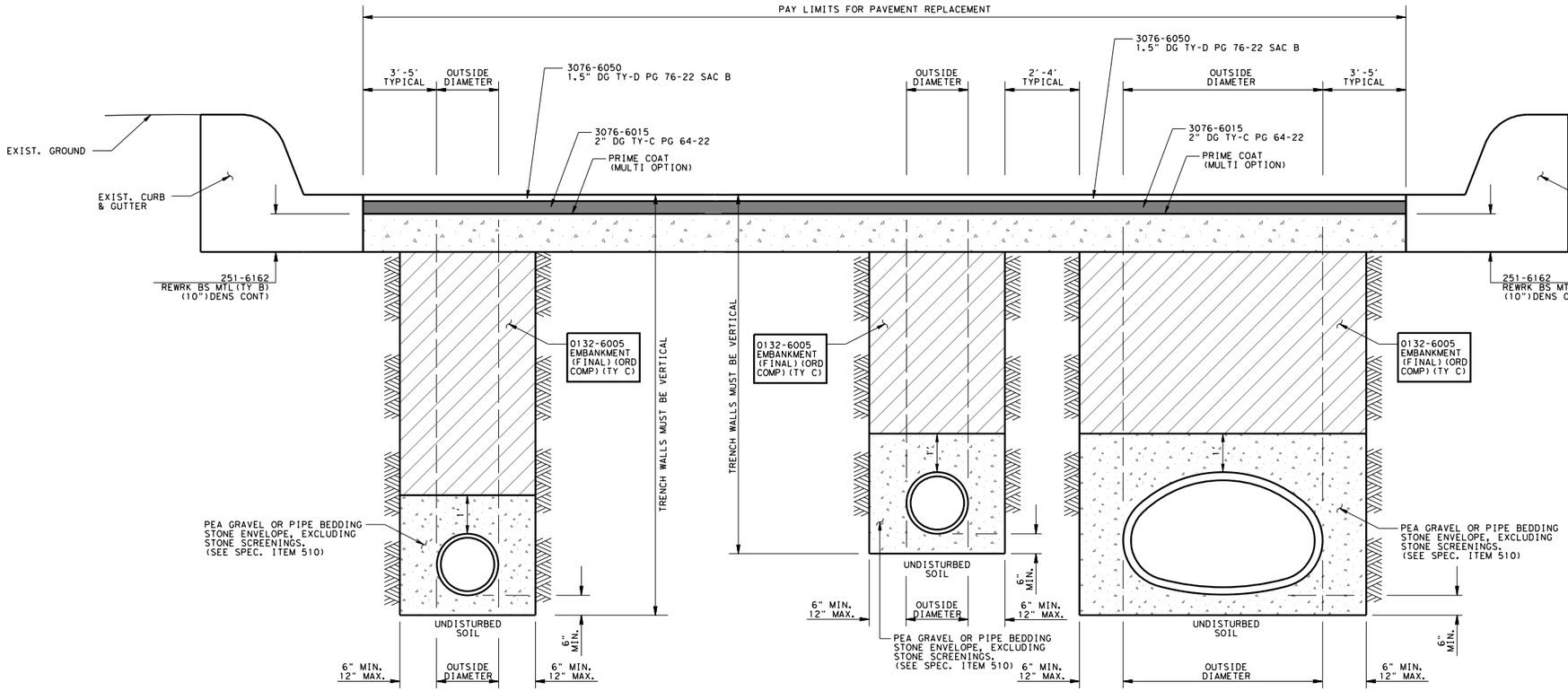
100% SUBMITTAL

NUMBER	DATE	REVISION	APPROVED



TYPICAL UTILITY
JOINT TRENCH DETAIL
STEP 2
NOT TO SCALE

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01/13/2024

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RRW AREA 5
TRENCH DETAILS

SHEET 2 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: RE	89
DRAWN: MH	
CHECKED: RE	

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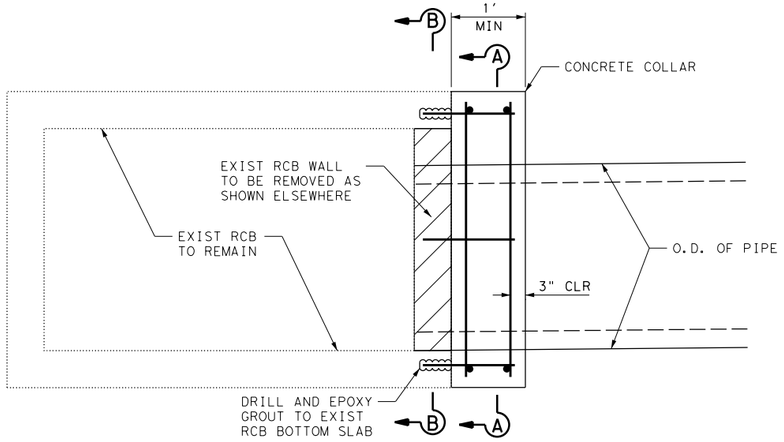
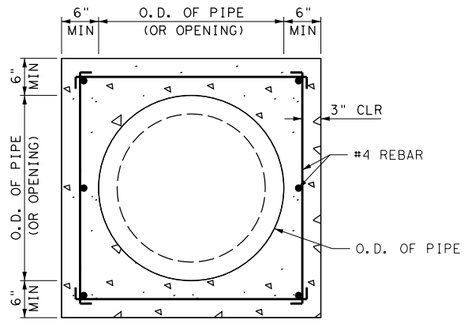
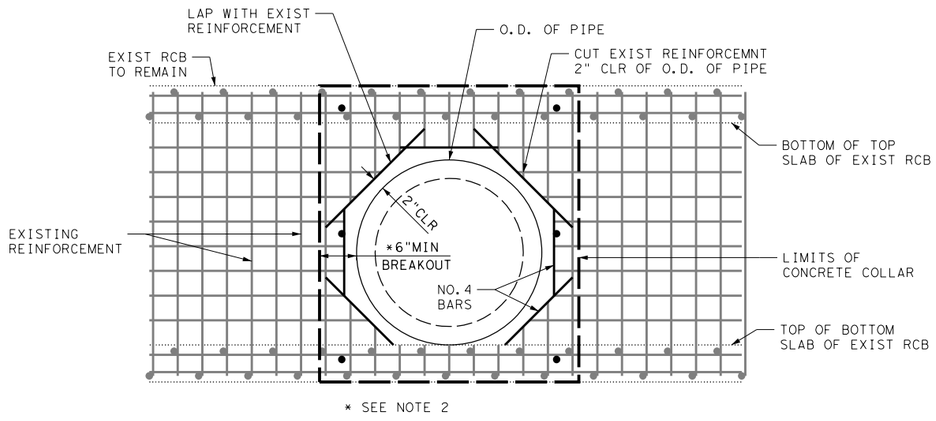
100% SUBMITTAL



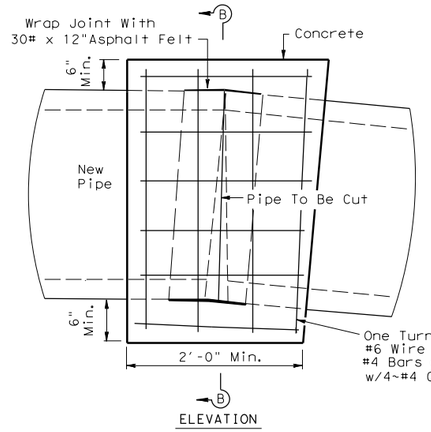
TIE-IN-DETAIL FOR PROP RCP TO EXISTING BOXES

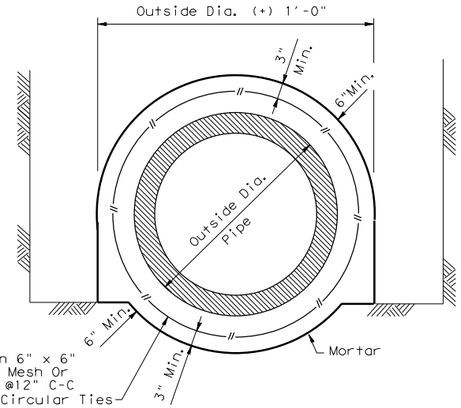


CONCRETE COLLAR DETAIL
SECTION A-A



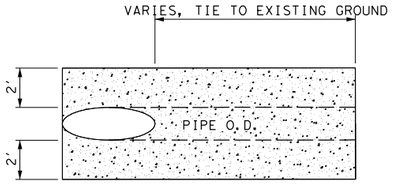
SECTION B-B



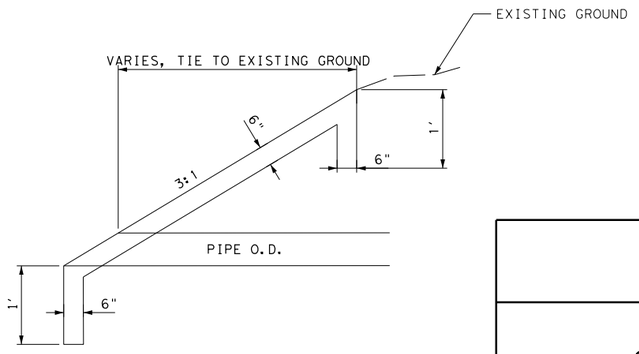


PIPE COLLAR DETAIL
FOR HORIZONTAL OR VERTICAL PLACEMENT

NOTE:
1. CONCRETE COLLARS ARE NOT PAID FOR DIRECTLY, BUT CONSIDERED SUBSIDIARY TO STORM SEWER ITEMS.
2. MINIMUM 6" BREAKOUT BEYOND THE O.D. OF PIPE. LEAVE MINIMUM 4" OF EXISTING REINFORCEMENT EXPOSED. CONCRETE REPAIR SHALL UTILITZE CLASS C CONCRETE AND MINIMUM COMPRESSIVE STRENGTH OF 3600 PSI.

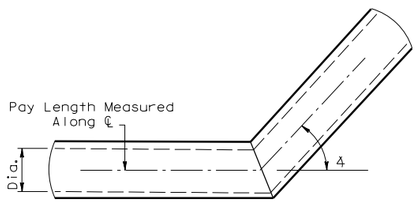


PLAN VIEW



PROFILE VIEW

OUTFALL RIPRAP DETAIL



PLAN VIEW

BENDING DETAIL

NOTE:
1. BENDING OF PROPOSED RCP IN A VERTICAL & /OR HORIZONTAL PLANE SHALL BE ACCOMPLISHED BY THE USE OF A "PIPE COLLAR" OR A "PRECASTELBOW', AS APPROVED BY THE ENGINEER.
2. PRICE OF "PIPE COLLAR" OR, "PRECAST ELBOW" SHALL BE SUBSIDIARY TO THE UNIT PRICES BID FOR ITEM REINFORCED CONCRETE PIPE.
3. PAY LENGTH MEASUREMENT TO BE ALONG HORIZONTAL ℄ & HORIZONTAL PLANE OF PIPES.

NUMBER	DATE	REVISION	APPROVED

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/13/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
MISC. DRAINAGE
DETAILS

SHEET 1 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: HV	90
DRAWN: HV	
CHECKED: RE	

1/13/2024
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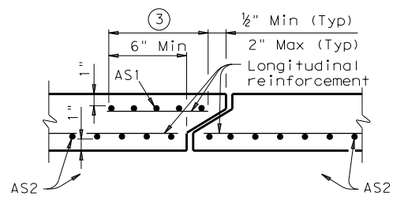
BOX DATA

SECTION DIMENSIONS					Fill Height	REINFORCING ② (sq. in. / ft.)		① Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	AS1	AS2	(tons)
2	4	6	6	5	1 - 5	0.15	0.15	4.0

① For box length = 8'-0"

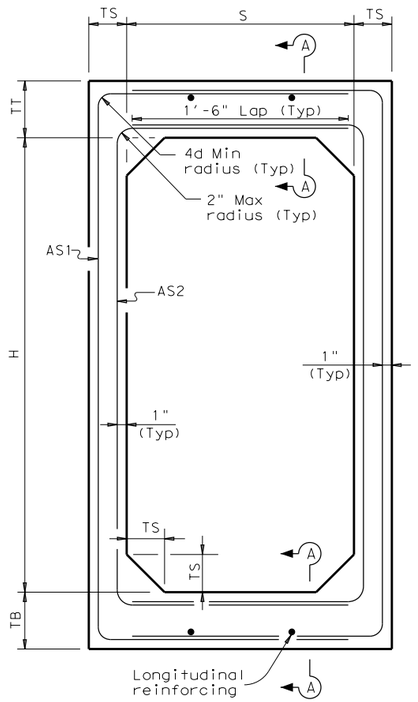
② AS1 and AS2 are minimum required areas of reinforcement per linear foot of box length.

③ Outer cage circumferential reinforcement at groove end.



SECTION A-A

(Showing top and bottom slab joint reinforcement.)



TYPICAL SECTION

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications, 9th Edition (2020).

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f'c = 5,000 psi).

H5 LOADING Not to Scale

STATE OF TEXAS
LORI NEUWIRTH-HIRSCH
115919
LICENSED
PROFESSIONAL ENGINEER
Lori Neuwirth-Hirsch
1.10.2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
MISC. DRAINAGE DETAILS
2'X4' PRECAST SBC

SHEET 2 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: BN	91
DRAWN: BN	
CHECKED: LNH	

1/9/2024
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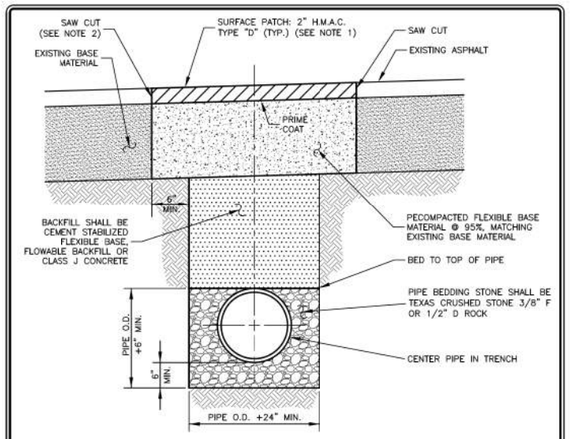
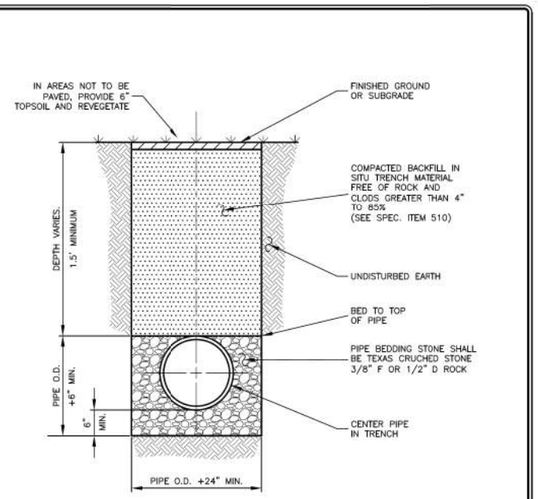


NOTES:

1. H.M.A.C. SHOWN IN THIS DETAIL IS SEPARATE FROM ANY ADDITIONAL THICKNESS CREATED BY ANY OVERLAY ITEM IN CONTRACT.
2. THE CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING PAVEMENT AND FLEXIBLE BASE A MINIMUM OF 6" BEYOND EITHER THE EDGE OF THE STORM SEWER TRENCH OR THE POINT WHERE EXISTING PAVEMENT IS DAMAGED DUE TO TRENCHING OPERATIONS, WHICHEVER IS GREATER.
3. INSTALLATION OF BACKFILL, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND SURFACE PATCH, SHALL NOT BE PAID FOR SEPARATELY. COSTS FOR THESE ITEMS SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE.
4. THE CONTRACTOR SHALL PROVIDE STEEL PLATES TO SPAN THE TRENCH AS NECESSARY OR TO ALLOW BACKFILL TO CURE. SUCH PLATES SHALL BE SUITABLE FOR VEHICLE PASSAGE OVER THE TRENCH AND SHALL BE SATISFACTORILY ANCHORED IN PLACE. COSTS FOR THIS ITEM SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE.
5. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

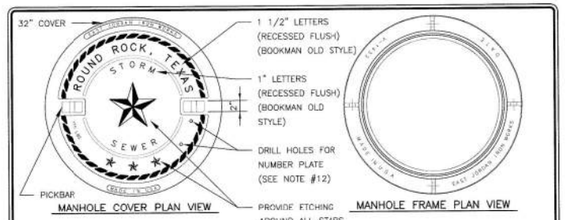
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT APPROVED 04-01-10 DATE	CITY OF ROUND ROCK	DRAWING NO: DR-01
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)	STORM SEWER LINE BEDDING DETAIL (EXISTING PAVED SURFACE)	



NOTE:

ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

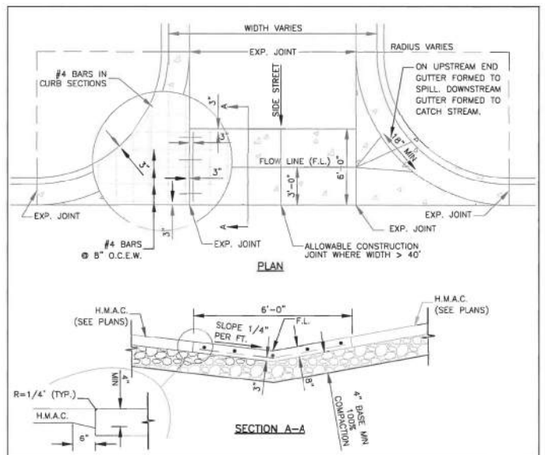
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT APPROVED 04-01-10 DATE	CITY OF ROUND ROCK	DRAWING NO: DR-02
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)	STORM SEWER LINE BEDDING DETAIL (NON-PAVED SURFACE)	



NOTES:

1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. MANHOLE COVER SHALL BE MODEL NUMBER: V-1432-3 (PRODUCT NUMBER: 41432058), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
3. MANHOLE FRAME SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432010), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
4. MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432080), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
5. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.
6. MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS.
7. MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
8. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING.
9. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
10. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
11. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.
12. MANUFACTURER SHALL DRILL 2-3/16"X1/2" DEEP HOLES FOR A MANHOLE NUMBER PLATE TO BE PROVIDED BY THE CITY OF ROUND ROCK. THE TOP HOLE SHALL BE DRILLED 1" O.C. FROM THE BOTTOM OF THE PICKBAR AND THE BOTTOM HOLE SHALL BE DRILLED 4" O.C. FROM THE TOP HOLE.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS APPROVED 08-09-05 DATE	CITY OF ROUND ROCK	DRAWING NO: DR-06
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	NON-BOLTED STORMSEWER MANHOLE COVER AND FRAME DETAIL	



NOTES:

1. CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF ROUND ROCK STANDARD SPECIFICATION ITEM NO. R.R. 436 CONCRETE VALLEY GUTTERS.
2. CONCRETE SHALL BE CLASS "A", IN ACCORDANCE WITH ITEM NO. 421 HYDRAULIC CEMENT CONCRETE WITH MEDIUM BROOM FINISH.
3. MONOLITHIC CURB & GUTTER SHALL BE MEASURED BY PLAN SQUARE YARD AND PAID AS VALLEY GUTTER.
4. THE UPSTREAM CURB MID POINT MUST BE AT OR LOWER THAN THE BEGINNING P.C. AND 0.5% (MIN.) HIGHER THAN THE OPPOSING MID POINT.
5. ALLOWABLE CONSTRUCTION JOINT AT ℄ WHEN TRAFFIC FLOW MUST BE MAINTAINED, CONSTRUCTED AS A CONTROL JOINT. PROVIDE EXPANSION JOINT AT ℄ FOR WIDTHS GREATER THAN 40 FEET.
6. ALL EXPANSION JOINTS SHALL BE CONSTRUCTED WITH 1/2" PREMOLDED EXPANSION JOINT MATERIAL AND DOWELS AND CAPS (SEE STANDARD CURB DOWEL DETAIL). DOWELS SHALL BE 24"-#4 SMOOTH DOWELS SPACED AT 12" O.C. AT MID-DEPTH.

SCALE: NTS

RECORD SIGNED COPY ON FILE APPROVED 01-26-21 DATE	CITY OF ROUND ROCK	DRAWING NO: ST-07 SHEET 1 of 1
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	CONCRETE VALLEY GUTTER DETAIL	

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
DRAINAGE STANDARDS

SHEET 1 OF 1

PROJECT NO:	SHEET NO. 92
DESIGNED: HV	
DRAWN: HV	
CHECKED: RE	

1/11/2024
2:48:51 PM
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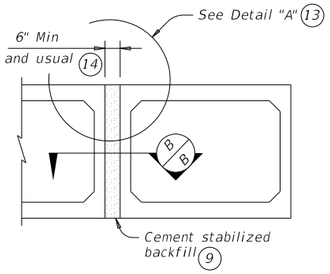
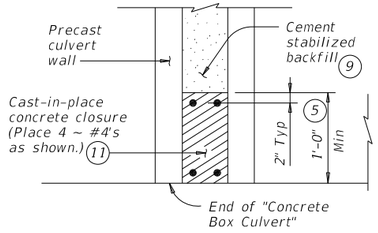
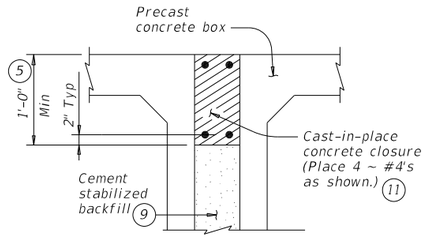


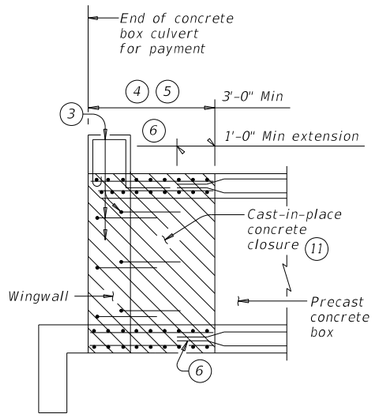
MULTIPLE UNIT PLACEMENT



SECTION B-B

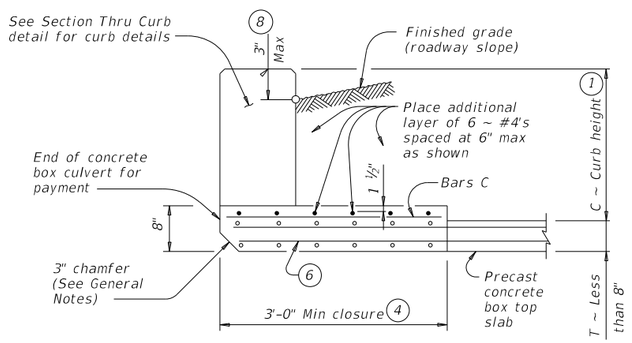


DETAIL "A" (13)

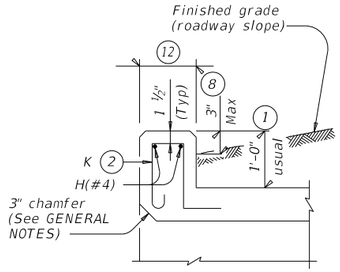


WINGWALL CONNECTION

(Also applies to safety end treatment.)

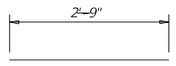


SECTION THRU TOP SLABS LESS THAN 8"



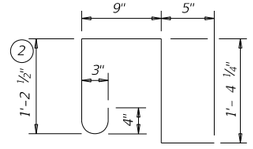
SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



BARS C (#4)

(Spa = 1'–0" Max)

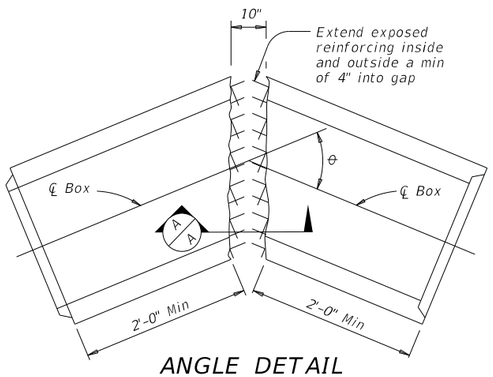


BARS K (#4)

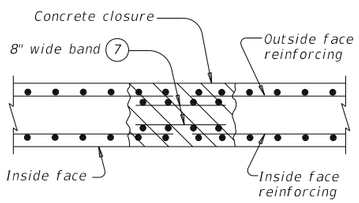
(Spa = 1'–0" Max)
(Length = 4'–2")

1. 0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'–0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631–CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'–0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'–0" Min cast–in–place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast–in–place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'–0" Min cast–in–place closure in the top slab, bottom slab, and exterior wall. See Section B–B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'–0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

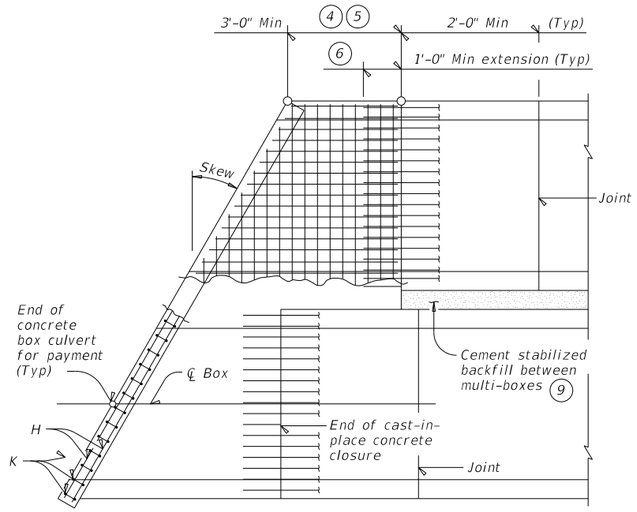
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'–0" typical. 2'–3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box." No payment will be made for any additional material in the gap between adjacent boxes.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi–box placement.)

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out–to–out of bars.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

FILE:	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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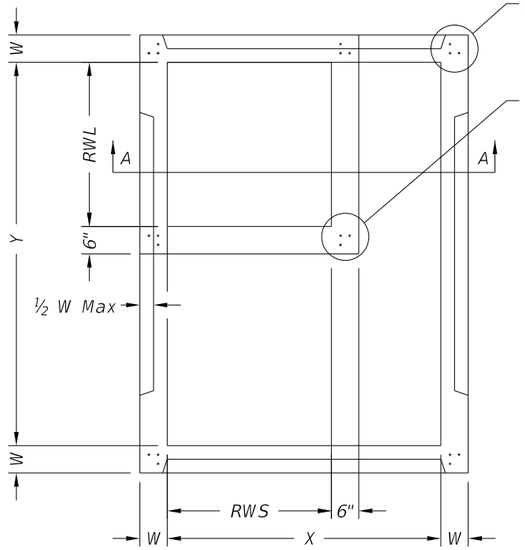
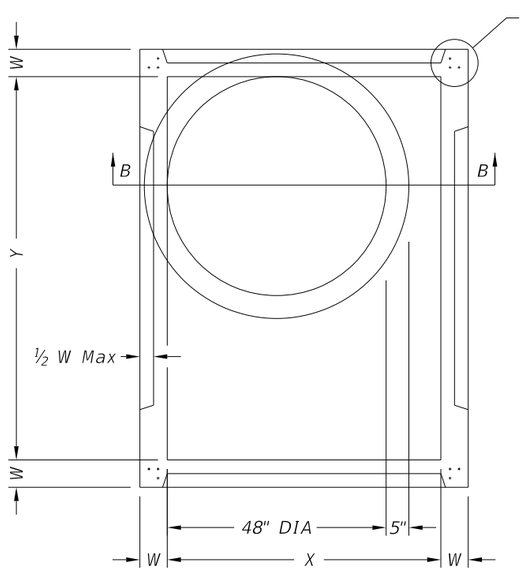
REVISIONS				
	DIST	COUNTY		SHEET NO.
				93

DATE:
FILE:



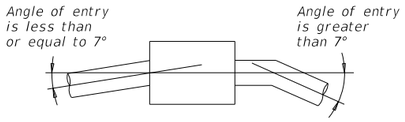
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



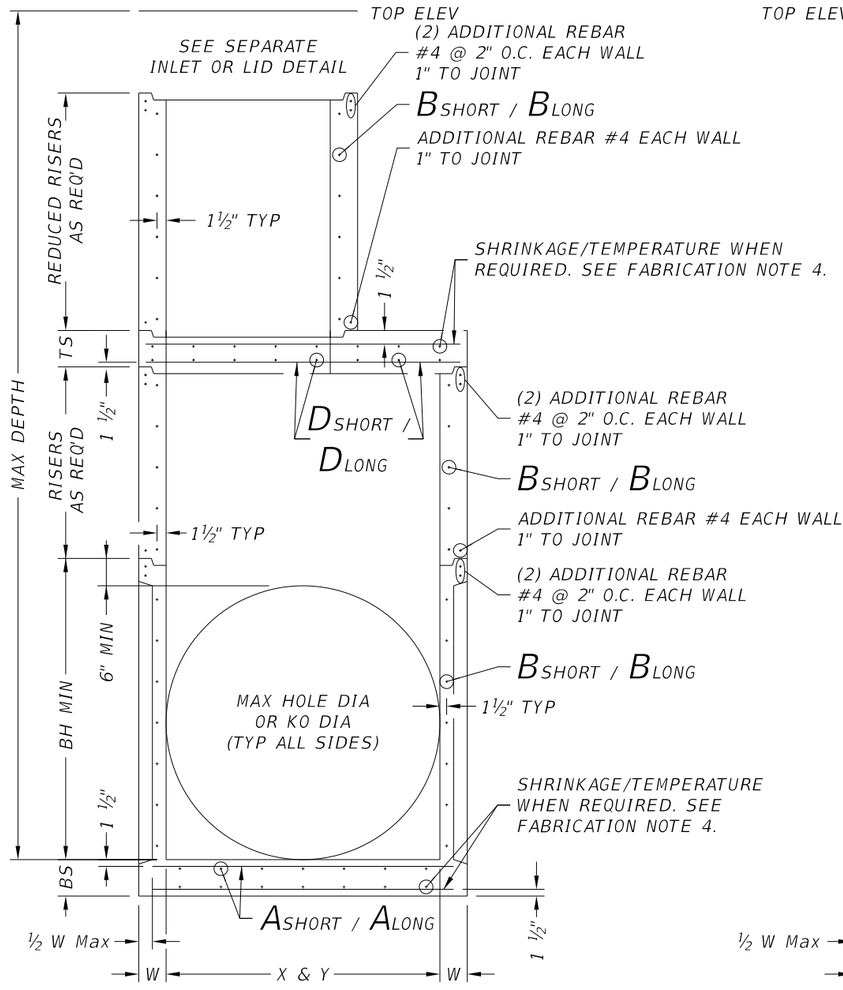
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



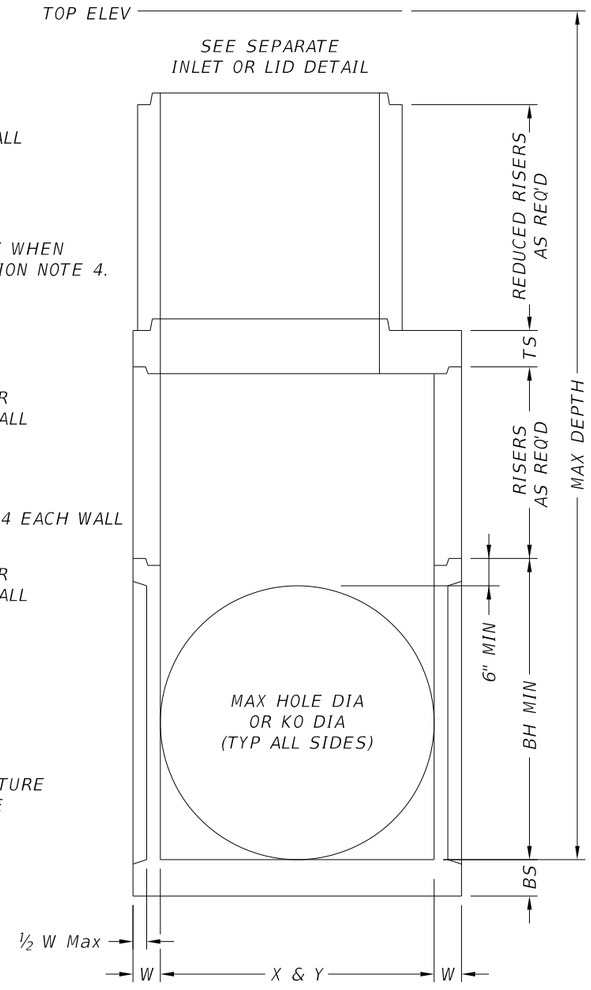
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in^2/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

FILE: prestd01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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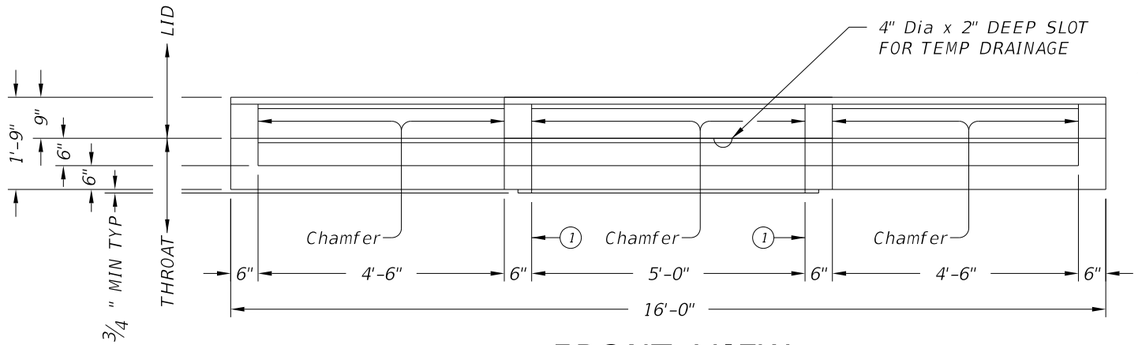
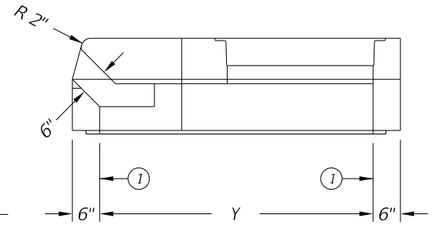
REVISIONS				
	DIST	COUNTY		SHEET NO.
				94

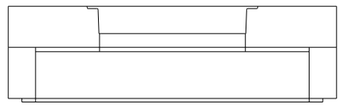


FRONT VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)

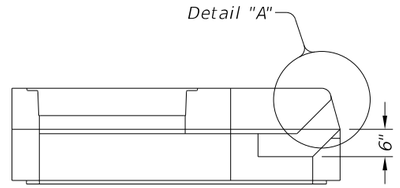


RIGHT VIEW



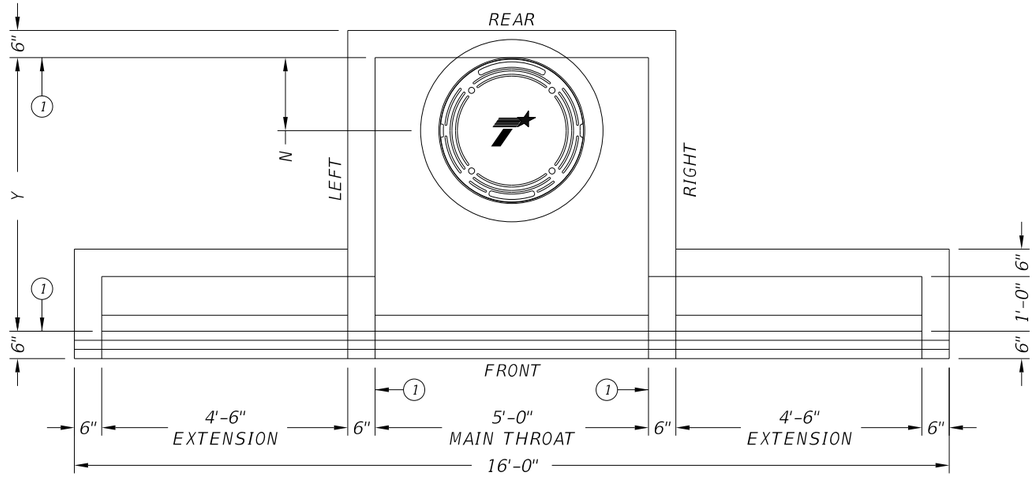
REAR VIEW

(EXTENSIONS NOT SHOWN)



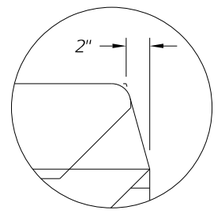
LEFT VIEW

(1) Matches inside face of wall of precast base or riser below inlet.



PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



DETAIL "A"

NOTES:
1. Use City of Round Rock Manhole Cover detail for the Inlets.
2. Inlet inverts shall be concrete and poured to promote continuous positive flow and prevent ponding. Subsidiary to inlet installation.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

HS20 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO(MOD)

FILE: prestd03-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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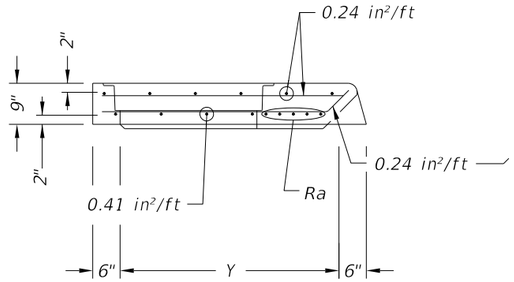
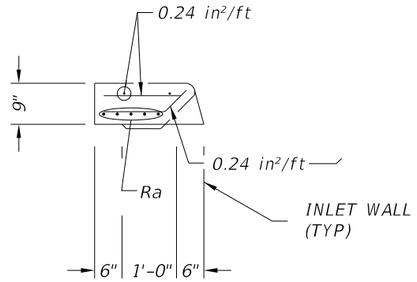
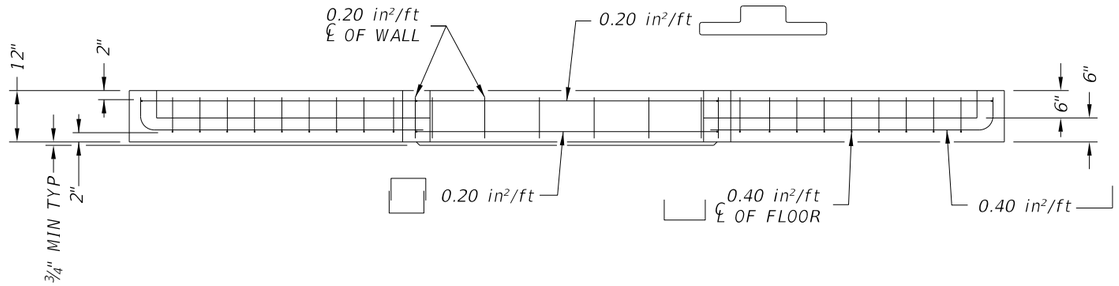
REVISIONS				
	DIST	COUNTY		SHEET NO.
				95



LID SECTION A-A

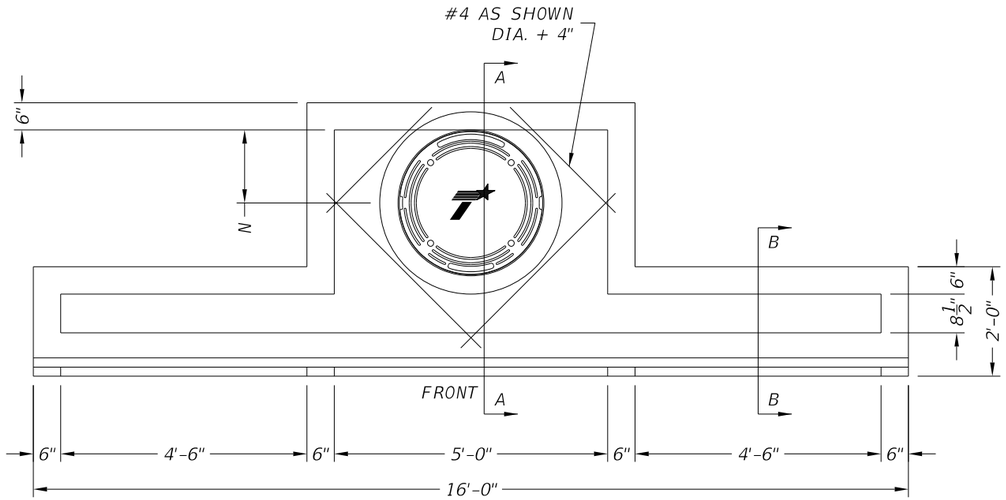


LID SECTION B-B



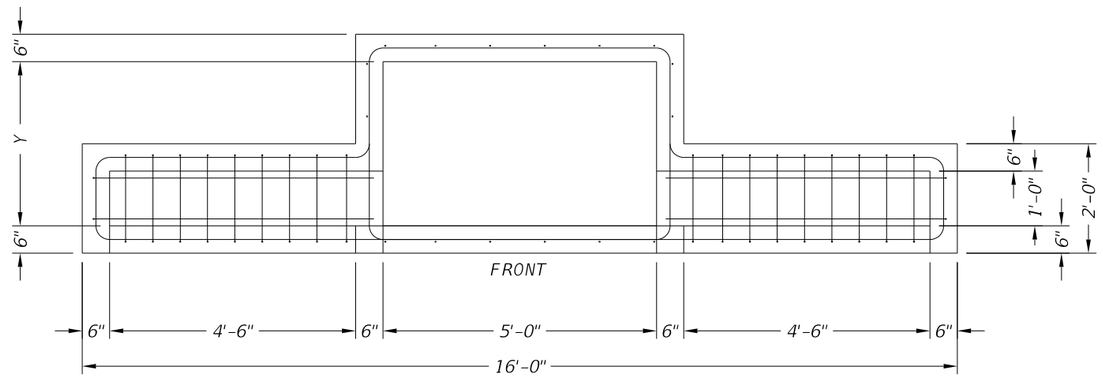
THROAT ELEVATION VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



LID PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



THROAT PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)

SIZE(Y)	N	MH DIA*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

* Nominal ring and cover size.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

NOTES:
1. Use City of Round Rock Manhole Cover detail for the Inlets.
2. Inlet inverts shall be concrete and poured to promote continuous positive flow and prevent ponding. Subsidiary to inlet installation.

HS20 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO(MOD)

FILE: prestd03-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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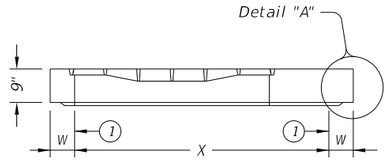
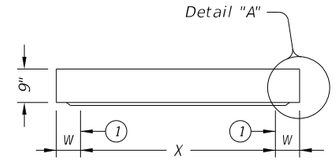
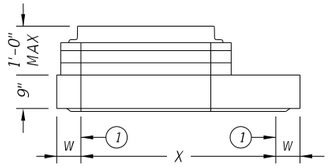
REVISIONS				
	DIST	COUNTY		SHEET NO.
				96



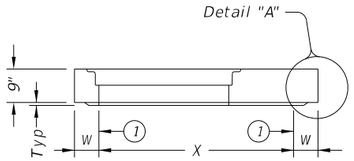
STYLE 'FG'



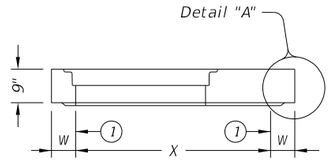
ELEVATION VIEW



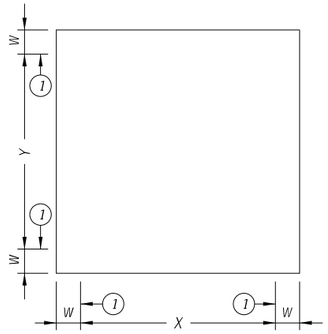
ELEVATION VIEW



ELEVATION VIEW



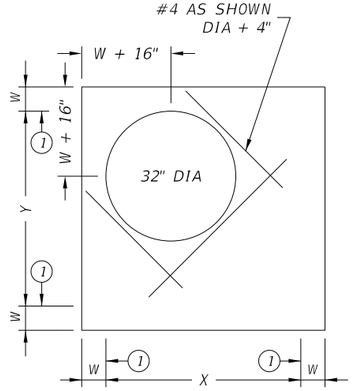
ELEVATION VIEW



PLAN VIEW

NO OPENINGS

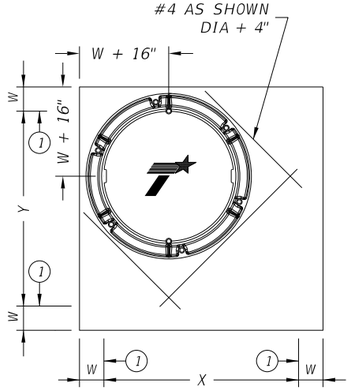
STYLE 'SL'



PLAN VIEW

SHIP LOOSE RING & COVER

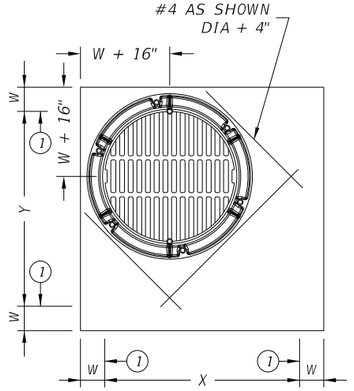
STYLE 'RH'



PLAN VIEW

32" DIA CAST-IN RING & COVER

STYLE 'RC'

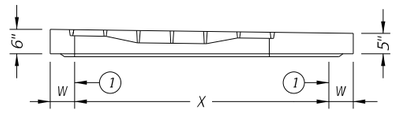


PLAN VIEW

32" DIA CAST-IN RING & GRATE

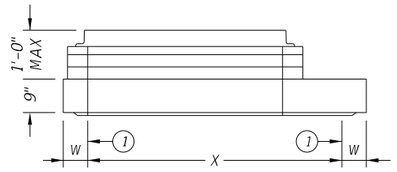
STYLE 'RG'

ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.

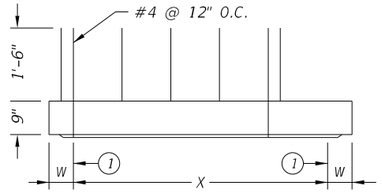


STYLE 'SFG'

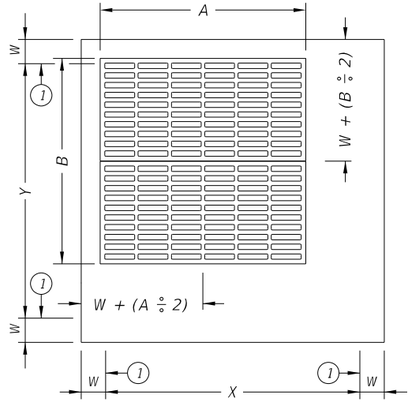
ELEVATION VIEW



ELEVATION VIEW



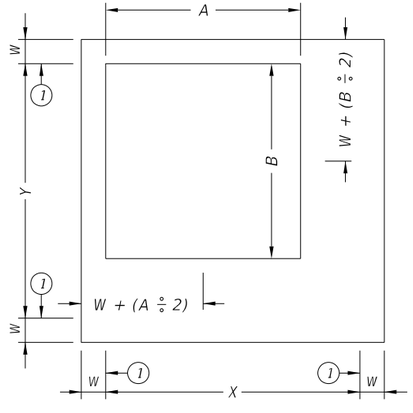
ELEVATION VIEW



PLAN VIEW

CAST-IN FRAME & GRATE

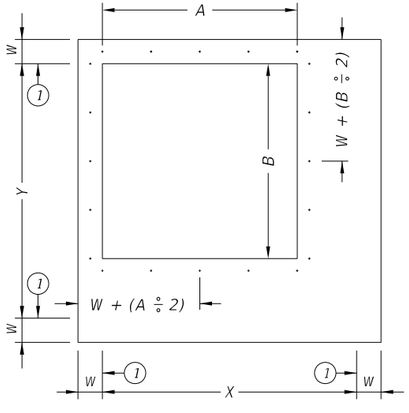
STYLES 'FG' & 'SFG'



PLAN VIEW

SHIP LOOSE FRAME & GRATE

STYLE 'SH'



PLAN VIEW

EXPOSED REBAR

STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

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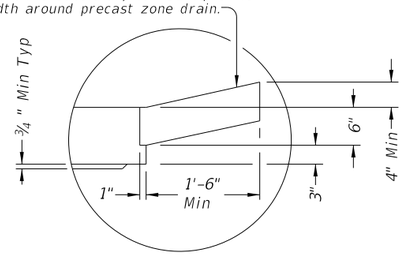
				97

Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in²/ft	0.37 in²/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in²/ft	0.37 in²/ft
SFG	3'x3'	6"	3'x3'	0.32 in²/ft	0.32 in²/ft
SL	4'x4'	6"	n/a	0.34 in²/ft	0.34 in²/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in²/ft	0.41 in²/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in²/ft	0.41 in²/ft
SFG	4'x4'	6"	4'x4'	0.32 in²/ft	0.32 in²/ft
SL	3'x5'	6"	n/a	0.39 in²/ft	0.39 in²/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in²/ft	0.48 in²/ft
SFG	3'x5'	6"	3'x5'	0.32 in²/ft	0.32 in²/ft
SL	4'x5'	6"	n/a	0.42 in²/ft	0.42 in²/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in²/ft	0.42 in²/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in²/ft	0.66 in²/ft
SL	5'x5'	6"	n/a	0.36 in²/ft	0.36 in²/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in²/ft	0.43 in²/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in²/ft	0.63 in²/ft
SL	5'x6'	6"/8"	n/a	0.48 in²/ft	0.48 in²/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in²/ft	0.60 in²/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in²/ft	0.60 in²/ft
SL	6'x6'	6"/8"	n/a	0.43 in²/ft	0.43 in²/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in²/ft	0.59 in²/ft
SL	8'x8'	8"/10"	n/a	0.45 in²/ft	0.45 in²/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in²/ft	0.45 in²/ft

(2) See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of 3/4" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

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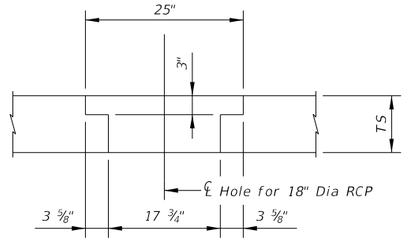
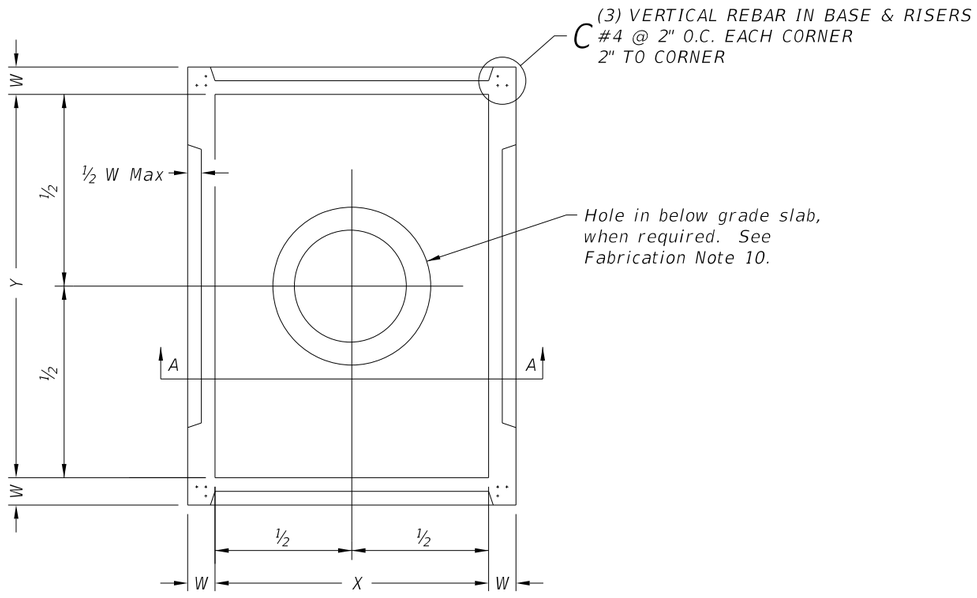
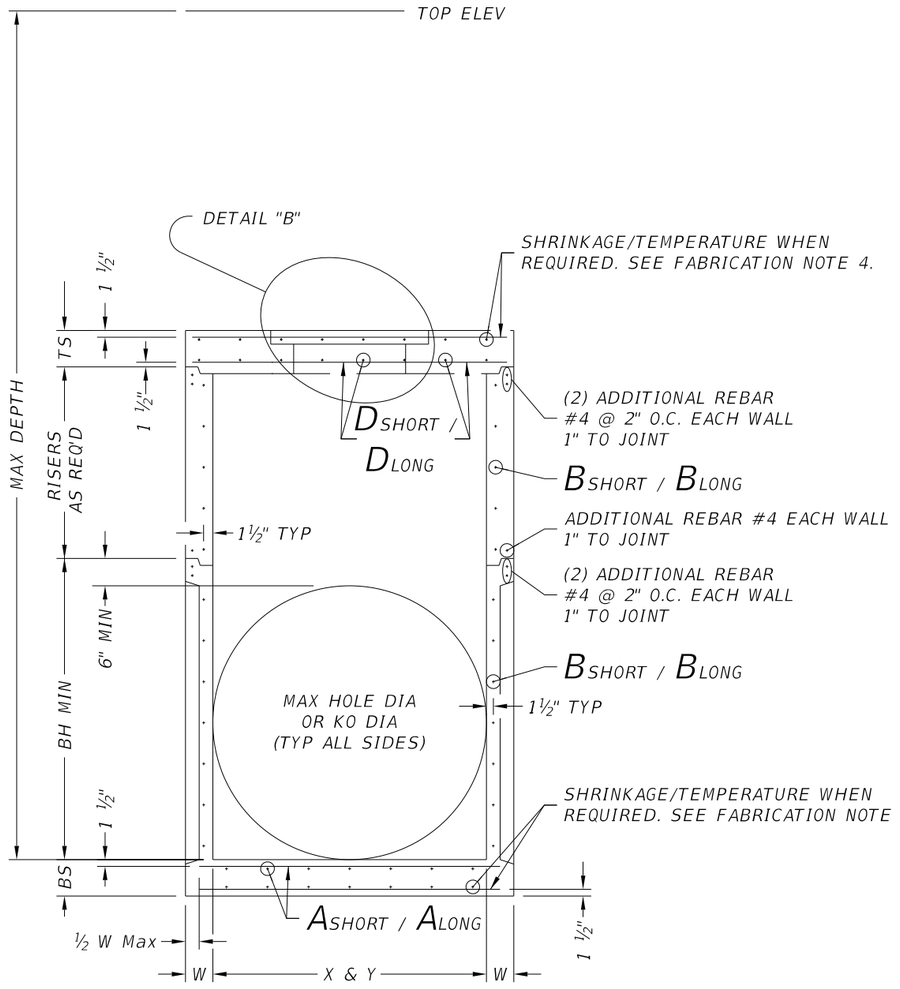
				98



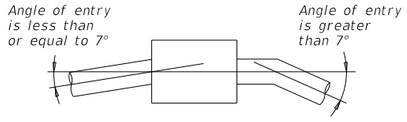
DETAIL "B"



PLAN VIEW



SECTION A-A



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

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Texas Department of Transportation

Bridge Division Standard

PRECAST JUNCTION BOX

PJB

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				99

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

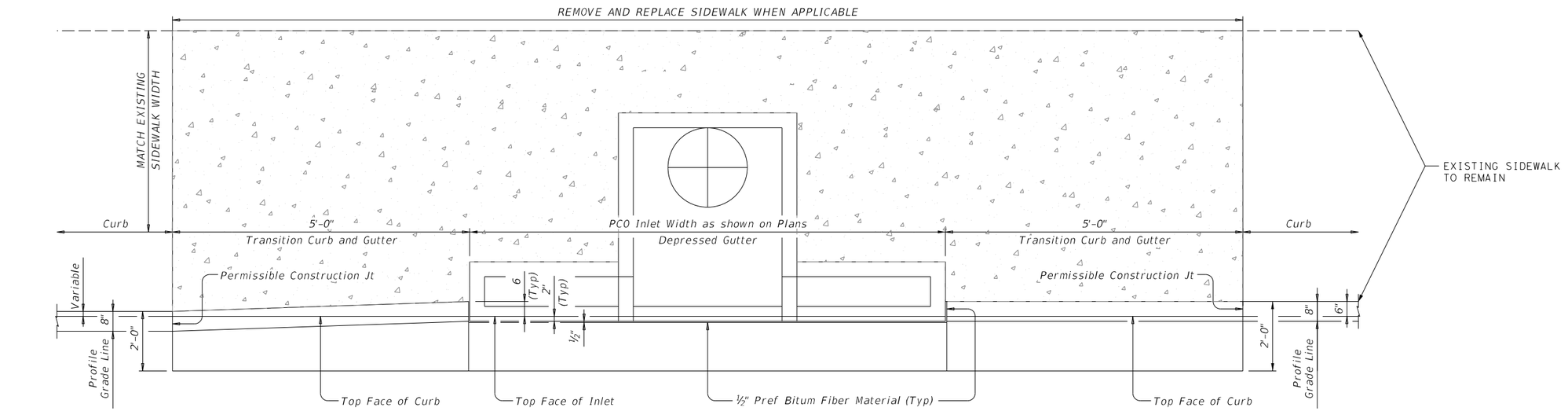
Texas Department of Transportation

Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

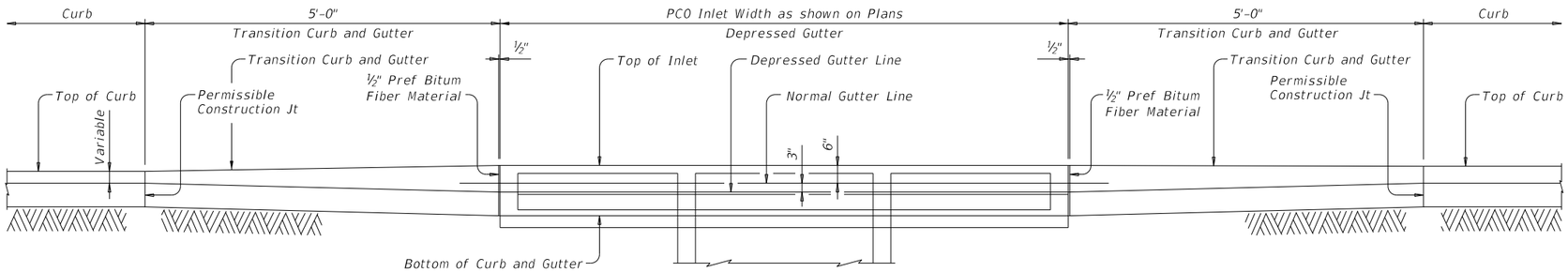
FILE: prestd10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				100



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

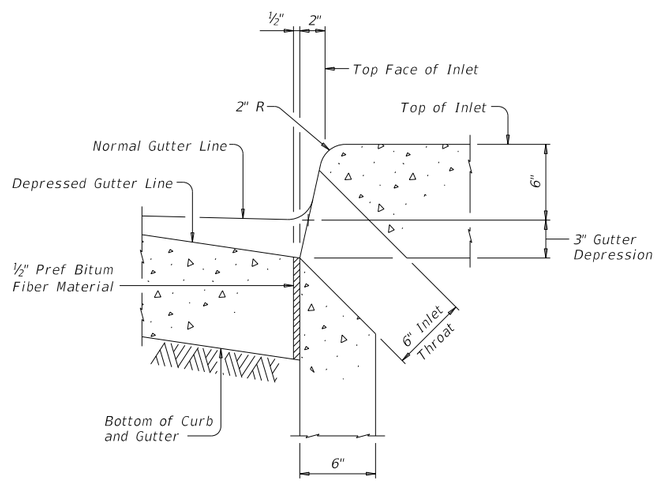
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

Reinforcing steel not shown for clarity.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

CONSTRUCTION NOTES:
Align top face of curb with PCO Inlet as shown.

MATERIAL NOTES:
Provide ½" Preformed Bituminous Fiber Material.

GENERAL NOTES:
See Precast Curb Inlet Outside Roadway (PCO) standard for details and notes not shown.
See Concrete Curb and Curb and Gutter (CCCG-12) standard for details and notes not shown.
Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
Preformed Bituminous Fiber Material is subsidiary to PCO Inlet.

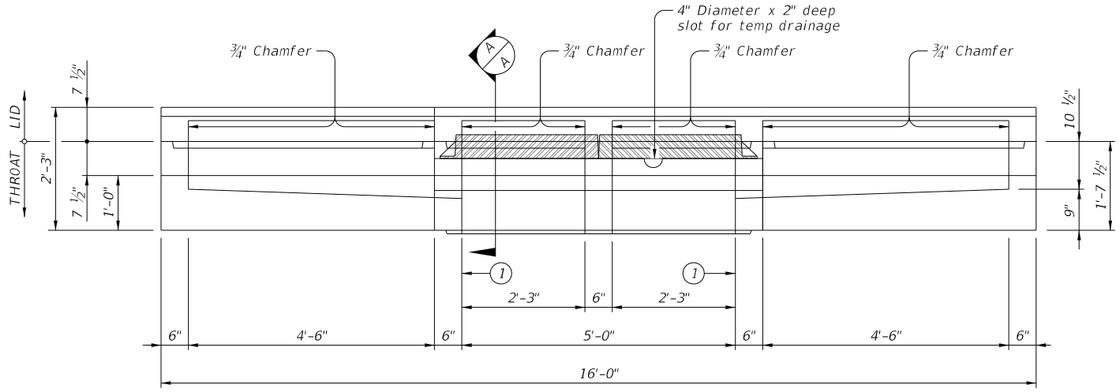
Texas Department of Transportation

Bridge Division Standard

CURB AND GUTTER TRANSITION DETAILS FOR PCO INLET

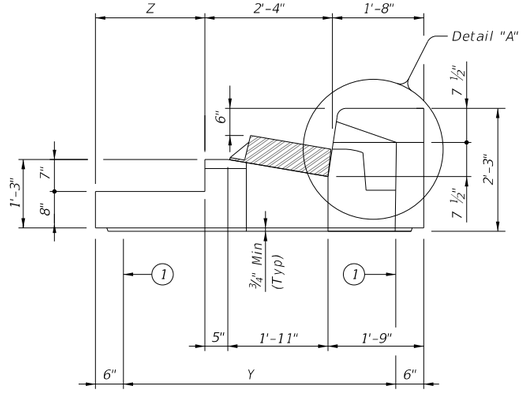
CGT-PCO (MOD)

FILE: prestd13-20.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				101

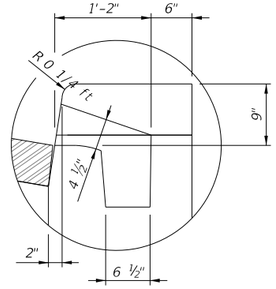


FRONT VIEW

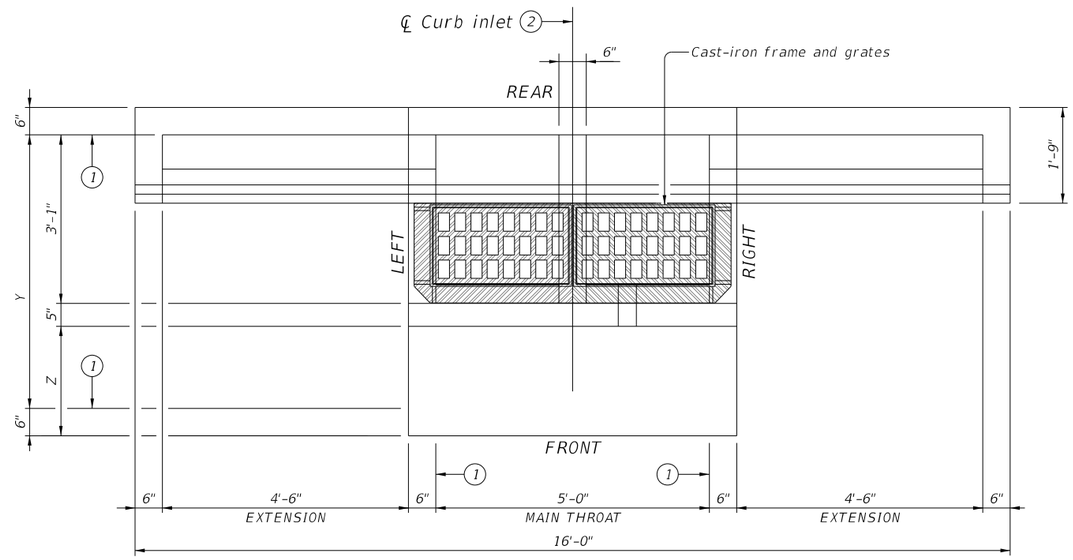
(Showing left and right extensions)



SECTION A-A



DETAIL "A"



PLAN VIEW

(Showing left and right extensions)

TABLE OF VARIABLE DIMENSIONS	
Size (Y)	Z
3'	0'
4'	1'
5'	2'
6'	3'

(1) Matches inside face of wall of precast base or riser below inlet.

(2) Reference point is located where the ℄ of the main throat intersects the normal gutter line. See Curb and Gutter Transition Details for PCO Inlet (CGT-PCO) standard for more information.

NOTES:
1. Use City of Round Rock Manhole Cover detail for the Inlets.
2. Inlet inverts shall be concrete and poured to promote continuous positive flow and prevent ponding. Subsidiary to inlet installation.

HS20 LOADING

Texas Department of Transportation

Bridge Division Standard

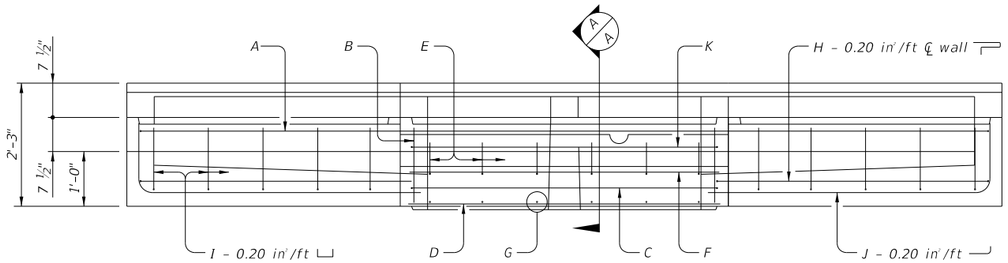
PRECAST CURB INLET UNDER ROADWAY

PCU (MOD)

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
				102

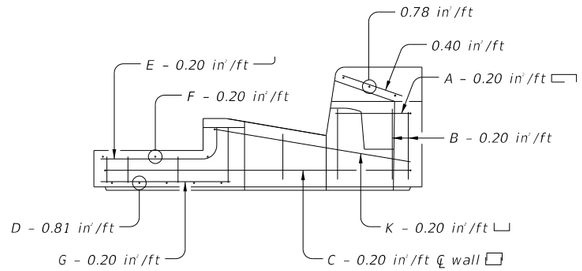
DATE:
FILE:

DATE:
FILE:

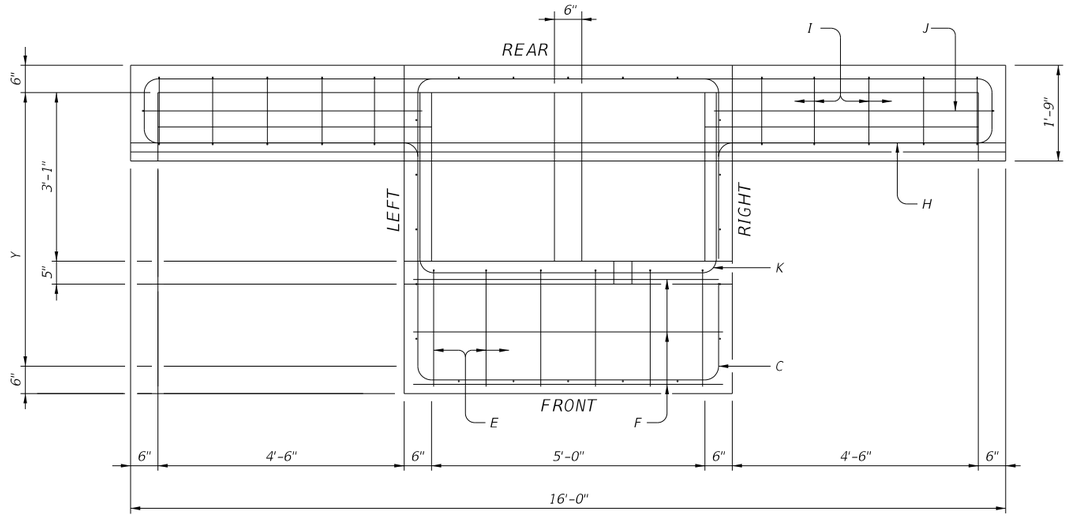


FRONT VIEW

(Showing left and right extensions)



SECTION A-A



PLAN VIEW

(Showing left and right extensions)

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel from surface of concrete or lower outside shoulder.
4. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in plans.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Top slab may employ a butt joint with dowels at the Contractor's option.
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Chamfer vertical edges on inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat is placed under roadway and intended for direct traffic. Inlet lid is not for direct traffic. Do not place Inlet lid in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 324 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes and Inlets" by type, size and extension placement. Extensions are subsidiary to inlet.

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

NOTES:
1. Use City of Round Rock Manhole Cover detail for the Inlets.
2. Inlet inverts shall be concrete and poured to promote continuous positive flow and prevent ponding. Subsidiary to inlet installation.

HS20 LOADING

Texas Department of Transportation

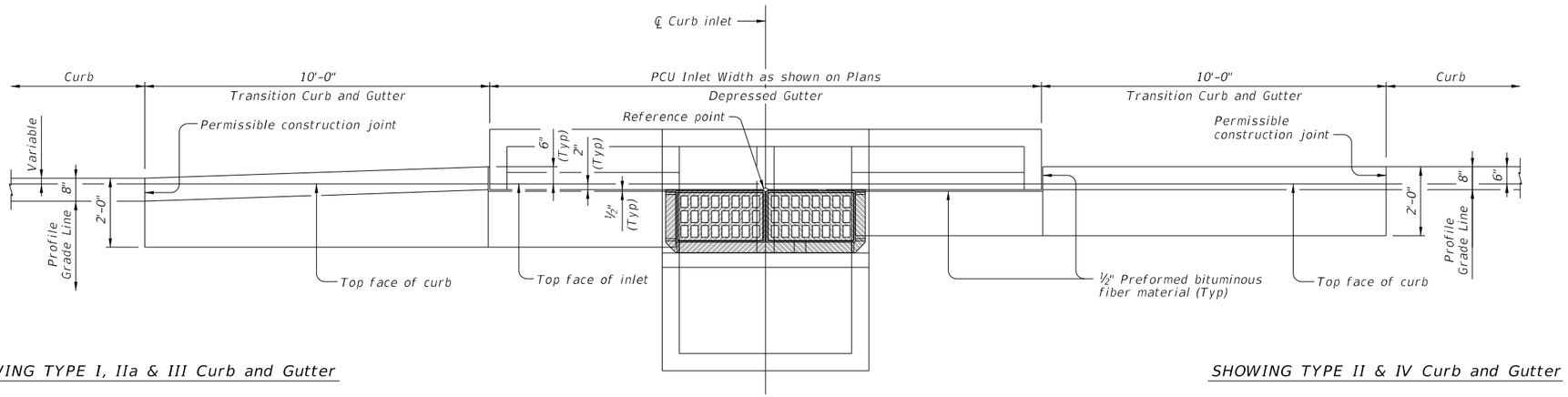
Bridge Division Standard

PRECAST CURB INLET UNDER ROADWAY

PCU (MOD)

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
				103

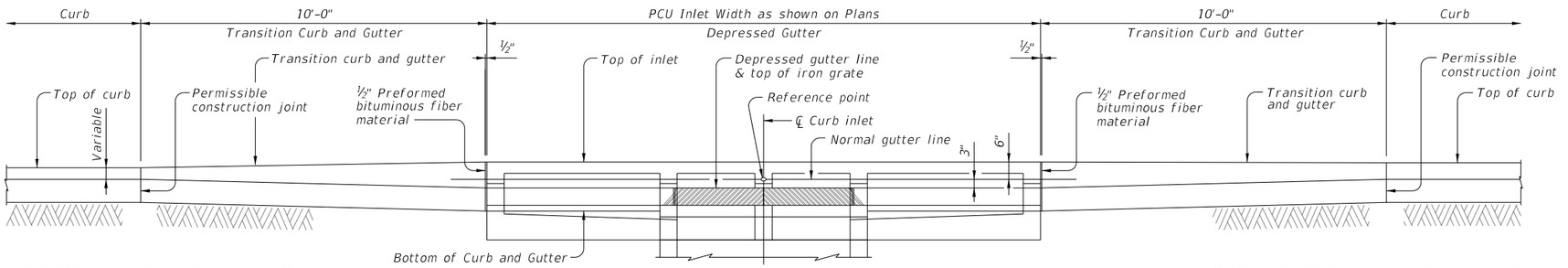
DATE:
FILE:



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

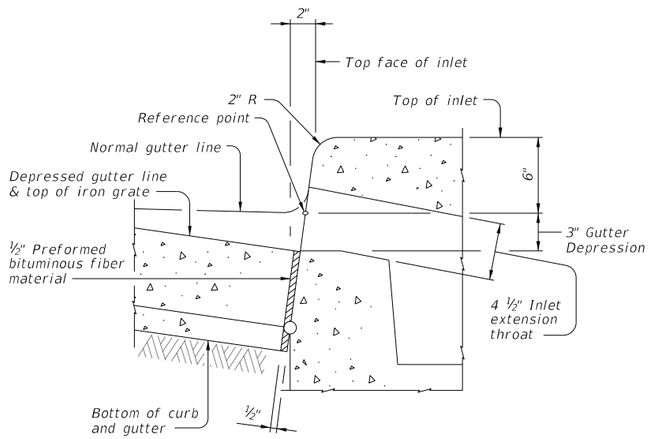
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

(Reinforcing steel not shown for clarity.)

CONSTRUCTION NOTES:
Align top face of curb with PCU Inlet as shown.

MATERIAL NOTES:
Provide ½" Preformed Bituminous Fiber Material.

GENERAL NOTES:
Reference point is located where the ℄ of the main throat intersects the normal gutter line.

See Precast Curb Inlet Under Roadway standard PCU for details and notes not shown.

See Concrete Curb and Curb and Gutter standard CCCG-22 for details and notes not shown.

Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."

Preformed Bituminous Fiber Material is subsidiary to PCU Inlet.

Texas Department of Transportation

Bridge Division Standard

CURB AND GUTTER TRANSITION DETAILS FOR PCU INLET

CGT-PCU

FILE:	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
				104

100% SUBMITTAL

STA 215+96.50 (CL WL C)
STA 15+96.50, O/S 4.50' RT (CL CV)
INSTALL:
(1) 8" 45° BEND, M.J.

STA 216+01.45 (CL WL C)
STA 16+00.00, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8" 45° BEND, M.J.

STA 216+14.79 (CL WL C)
STA 16+13.34, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8" GATE VALVE, M.J.
(1) 6" VALVE BOX, COMPLETE

STA 216+18.79 (CL WL C)
STA 16+17.34, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8"X8" TEE, M.J.

EXIST DRAINAGE ESMT

EXIST DRAINAGE ESMT

EXIST ROW

CL WWL A

CL WL C

CL WL D

CL CV

W SERVICE LINE
DUAL METER
SEE NOTE 6 & 7

EXIST 8" WWL TO
BE ABANDONED

PROP 8" WWL A
SEE WWL A PLANS
FOR DETAILS

PROP ARCH DES 4
STORM SEWER
CROSSING

W SERVICE LINE
SINGLE METER
SEE NOTE 6 & 7

STA 219+27.00 (CL WL C)
STA 19+25.55, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8" GATE VALVE, M.J.
(1) 6" VALVE BOX, COMPLETE

STA 219+51.22 (CL WL C)
STA 19+49.81, O/S 0.47' RT (CL CV)
INSTALL:
(1) 8" 45° BEND VERT, M.J.

STA 219+55.39 (CL WL C)
STA 19+53.97, O/S 0.21' RT (CL CV)
INSTALL:
(1) 8" 45° BEND VERT, M.J.

STA 219+59.17 (CL WL C)
STA 19+56.94, O/S 1.63' LT (CL CV)
INSTALL:
(1) 8" 45° BEND, M.J.

RPL=15'

RPL=10'

RPL=17'

RPL=52'

RPL=26'

WOOD ROCK DR

CREEKVIEW DR

BEGIN PROP 8" WATER (PVC)
STA 215+86.50 (CL WL C)
STA 15+86.50, O/S 4.50' RT (CL CV)
INSTALL:
(1) 8" RESTRAINED COUPLING
HYMAX LONG BODY
(1) - TEMP CAP (TESTING)
(1) WET CONNECTION
CUT AND PLUG EXIST WL
AFTER RELEASE FOR
SERVICE TIE IN NEW 8" MAIN TO
EXISTING 8" MAIN

STA 216+22.79 (CL WL C)
STA 16+21.34, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8" GATE VALVE, M.J.
(1) 6" VALVE BOX, COMPLETE

PROP 8" WL D
SEE WL D PLANS
FOR DETAILS

TEMP 6" WATER
EST @ 390 LF

EXIST 8" WATER
TO BE ABANDONED

STA 219+29.27 (CL WL C)
STA 19+27.82, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8" 45° BEND VERT, M.J.

STA 219+33.22 (CL WL C)
STA 19+31.77, O/S 1.00' RT (CL CV)
INSTALL:
(1) 8" 45° BEND VERT, M.J.

W SERVICE LINE
SINGLE METER
SEE NOTE 6 & 7

REMOVE AND REPLACE SIDEWALK
EST @ 1 SY

STA 219+56.91 (CL WL C)
STA 19+55.49, O/S 0.10' RT (CL CV)
INSTALL:
(1) 8" 45° BEND, M.J.

END PROP 8" WATER (DI)
STA 219+69.17 (CL WL C)
STA 19+66.82, O/S 2.68' LT (CL CV)
INSTALL:
(1) 8" RESTRAINED COUPLING
HYMAX LONG BODY
(1) - 2" TEMP BLOW OFF
(1) WET CONNECTION
CUT AND PLUG EXIST WL
8"X2" ECCENTRICALLLY TAPPED
FLANGE
AFTER RELEASE FOR SERVICE TIE IN
NEW 8" MAIN TO EXISTING 8" MAIN

R072281 TIGHE FRANK & N 1108 CREEKVIEW DR
R072282 OLSON, PHILIP N & JULIA LORENZ-OLSON 1106 CREEKVIEW DR
R072283 SOH, ANDREW YEW POH 1104 CREEKVIEW DR
R072284 DAVIS, LAURA DELANE 1102 CREEKVIEW DR
R072189 CITY OF ROUND ROCK 1100 CREEKVIEW DR
R072286 JOSEPH MANELIS & NAOMI MARCO MANELIS TRUSTEES OF MARCO MANELIS FAMILY TRUST 1105 CREEKVIEW DR
R072287 TERRELL LAURENCE R & FRANCES C CO-TRS OF TERRELL REVOCABLE TRUST 1103 CREEKVIEW DR

NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED TEE
- PROPOSED AIR RELEASE
- PROPOSED BEND
- EXISTING WATER METER
- RESTRAINED PIPE LENGTH
- ABANDONED LINE
- TEMPORARY WATER LINE

NOTES:
1. ALL WATER LINE FITTINGS, BENDS, AND VALVES TO BE RESTRAINED AND THRUST BLOCKED.
2. THE DEPTHS AND LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE.
3. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES PRIOR TO STARTING ANY WORK.
4. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AS REQUIRED FOR INSTALLATION OF PROPOSED IMPROVEMENTS. NO SEPARATE PAY ITEM FOR WORK REQUIRED TO PROTECT EXSITING UTILITIES.
5. ABANDONED WATER MAINS ARE TO BE FLOWABLE FILLED.
6. SEE TCP NARRATIVE FOR WATER MAIN REMOVAL LIMITS. CONCRETE PLUG AND PIPE REMOVAL SUBSIDIARY TO PIPE INSTALLATION.
7. REMOVE AND REPLACE SIDEWALK, DRIVEWAY, CURB AND GUTTER AS APPLICABLE.
8. REPLACE WATER SERVICE LINE FROM NEW MAIN TO EXISTING WATER METER.
9. INSTALL TEMP WATER MAIN WHERE SHOWN TO MAINTAIN SERVICE DURING CONSTRUCTION. ALL WORK, PIPE, FITTINGS, AND APPURTENANCES ARE SUBSIDIARY TO THE TEMP WATER MAIN INSTALLATION.
10. MAINTAIN DRIVEWAY ACCESS DURING CONSTRUCTION.

383 LF TRENCH PROTECTION

765 / 760 / 755 / 750 / 745 / 740 / 735 / 730 / 725

EXIST 8" WWL
TO BE ABANDONED
FL=750.31

PROP 8" WWL B
FL=749.33'

EXIST 8" WATER

STA 216+14.79 (CL WL C)
INSTALL:
(1) 8" GATE VALVE, M.J.

STA 216+22.79 (CL WL C)
INSTALL:
(1) 8" GATE VALVE, M.J.

4.04'

EX. GROUND

STA 219+27.00 (CL WL C)
INSTALL:
(1) 8" GATE VALVE, M.J.

PROP ARCH DES 4
STORM SEWER
CROSSING
FL= 751.89'

322.77 L.F. ~ 8" PVC WATER @ 0.44%

1.64'

0.85'

2.00'

1.53'

EXIST 8" WATER

PROP 6" WW SERVICE
CROSSING
CONTRACTOR TO
PROVIDE MIN
2' CLEARANCE

① PROP. 20.00 L.F. ~ 8" DI WATER @ 0.44%
② PROP. 3.95 L.F. ~ 8" DI WATER @ -99.90%
③ PROP. 18.00 L.F. ~ 8" DI WATER @ 0.00%
④ PROP. 14 L.F. 18" ~ STEEL ENCASEMENT
⑤ PROP. 4.17 L.F. ~ 8" DI WATER @ 100.01%
⑥ PROP. 13.78 L.F. ~ 8" DI WATER @ 0.00%

	STA 215+86.50 BEGIN PROP 8" WATER LINE C (PVC) INSTALL: (1) 8" RESTRAINED COUPLING HYMAX LONG BODY (1) - TEMP CAP (TESTING) ELEV= 751.53'	STA 216+18.79 CONNECT TO WL D INSTALL: (1) 8" X 8" TEE, M.J. ELEV=751.67'	STA 219+09.27 CONNECT DI TO PVC, PER CORR WT-09 INSTALL: (1) 8" TRANSITION COUPLING, M.J. ELEV=752.95'	STA 219+29.27 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=753.03'	STA 219+33.22 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=749.09'	STA 219+51.22 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=749.09'	STA 219+55.39 INSTALL: (1) 8" 45° BEND, M.J. ELEV=753.26'	STA 219+69.17 END PROP 8" WATER (DI) CONNECT DI TO PVC, PER CORR WT-09 INSTALL: (1) 8" RESTRAINED COUPLING, M.J. HYMAX LONG BODY (1) - 2" TEMP BLOW OFF ELEV=753.26'
TOP OF PIPE PROPOSED	752.26	752.52	753.40	753.49	753.57	753.66	753.93	749.76
EXISTING	756.31	756.54	757.79	757.93	758.04	758.11	757.91	758.18

216+00 / 217+00 / 218+00 / 219+00

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

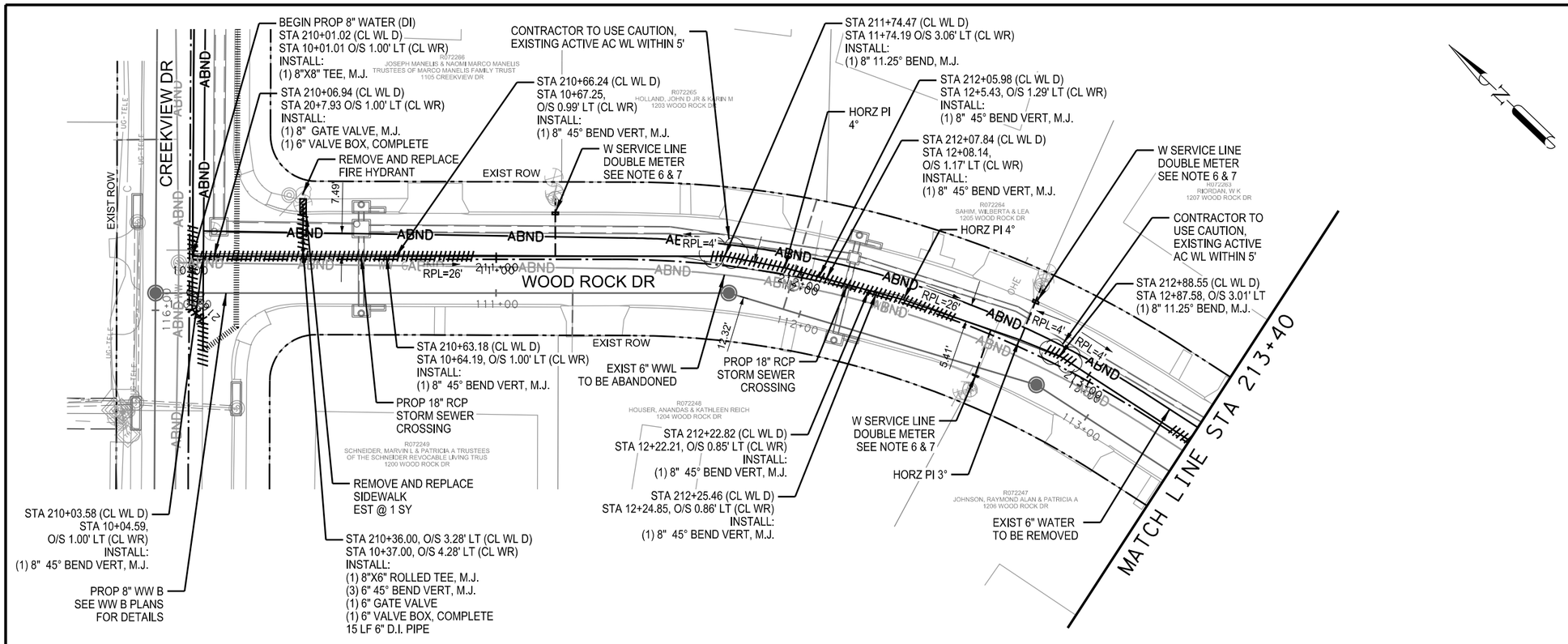
RRW AREA 5
WATER - LINE C
PLAN & PROFILE
SITE 1
BEGIN TO END

SHEET 1 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	105
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:17:35 AM
I:\2601\2201\CADD\SHEETS\06-Utilities\WL*3*02.dgn

100% SUBMITTAL

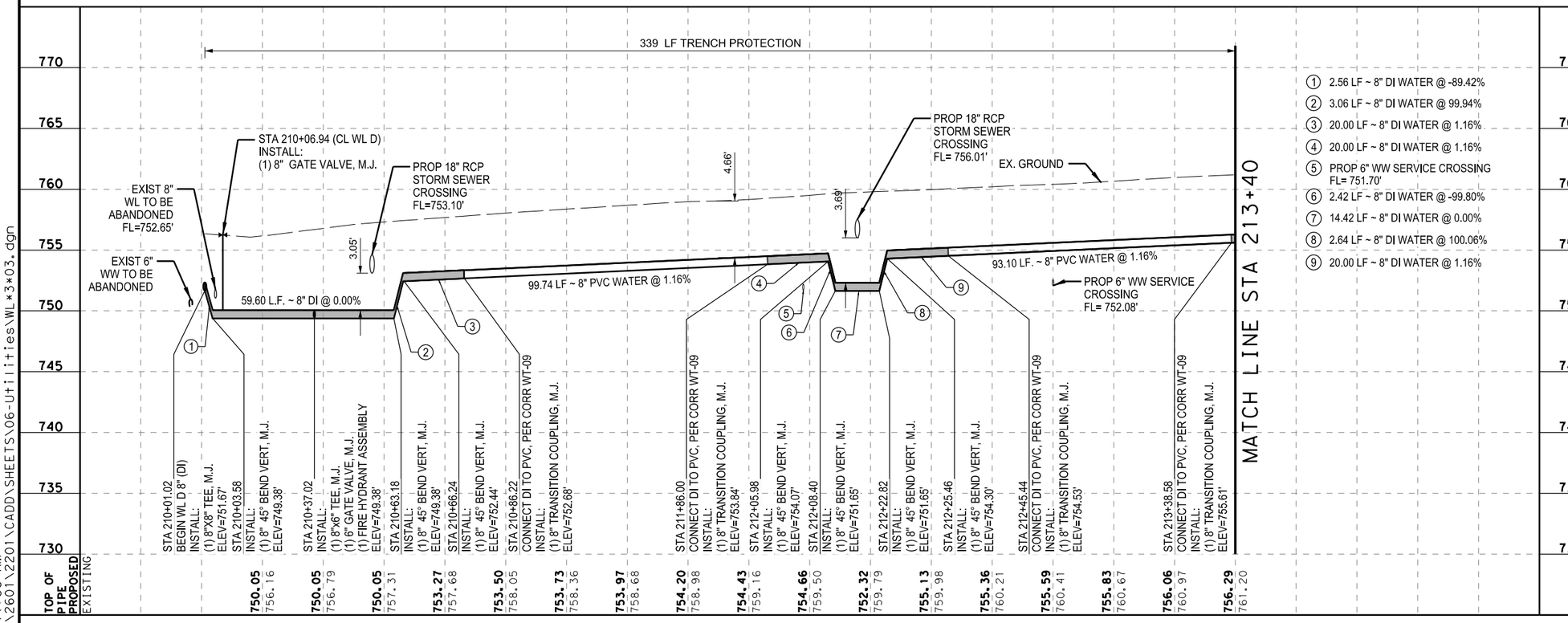


NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED TEE
- PROPOSED AIR RELEASE
- PROPOSED BEND
- EXISTING WATER METER
- RESTRAINED PIPE LENGTH
- —ABND— ABANDONED LINE
- TEMPORARY WATER LINE

NOTES:
1. ALL WATER LINE FITTINGS, BENDS, AND VALVES TO BE RESTRAINED AND THRUST BLOCKED.
2. THE DEPTHS AND LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE.
3. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES PRIOR TO STARTING ANY WORK.
4. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AS REQUIRED FOR INSTALLATION OF PROPOSED IMPROVEMENTS. NO SEPARATE PAY ITEM FOR WORK REQUIRED TO PROTECT EXSITING UTILITIES.
5. ABANDONED WATER MAINS ARE TO BE FLOWABLE FILLED.
6. SEE TCP NARRATIVE FOR WATER MAIN REMOVAL LIMITS. CONCRETE PLUG AND PIPE REMOVAL SUBSIDIARY TO PIPE INSTALLATION.
7. REMOVE AND REPLACE SIDEWALK, DRIVEWAY, CURB AND GUTTER AS APPLICABLE.
8. REPLACE WATER SERVICE LINE FROM NEW MAIN TO EXISTING WATER METER.
9. INSTALL TEMP WATER MAIN WHERE SHOWN TO MAINTAIN SERVICE DURING CONSTRUCTION. ALL WORK, PIPE, FITTINGS, AND APPURTENANCES ARE SUBSIDIARY TO THE TEMP WATER MAIN INSTALLATION.
10. MAINTAIN DRIVEWAY ACCESS DURING CONSTRUCTION.



0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE D
PLAN & PROFILE
SITE 1
BEGIN TO STA 213+40
SHEET 2 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	106
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:17:38 AM
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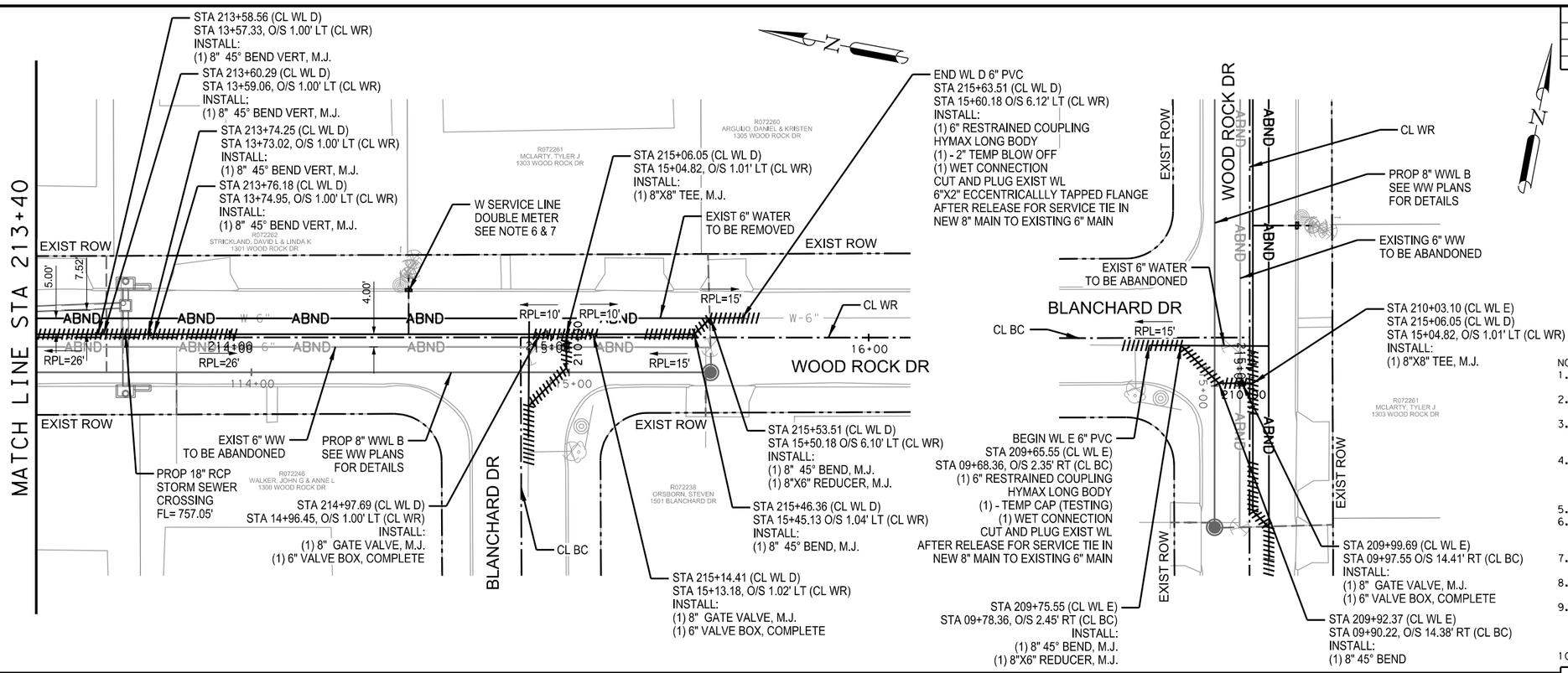
100% SUBMITTAL



NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED TEE
- PROPOSED AIR RELEASE
- PROPOSED BEND
- EXISTING WATER METER
- RESTRAINED PIPE LENGTH
- —ABND— ABANDONED LINE
- TEMPORARY WATER LINE

NOTES:
1. ALL WATER LINE FITTINGS, BENDS, AND VALVES TO BE RESTRAINED AND THRUST BLOCKED.
2. THE DEPTHS AND LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE.
3. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES PRIOR TO STARTING ANY WORK.
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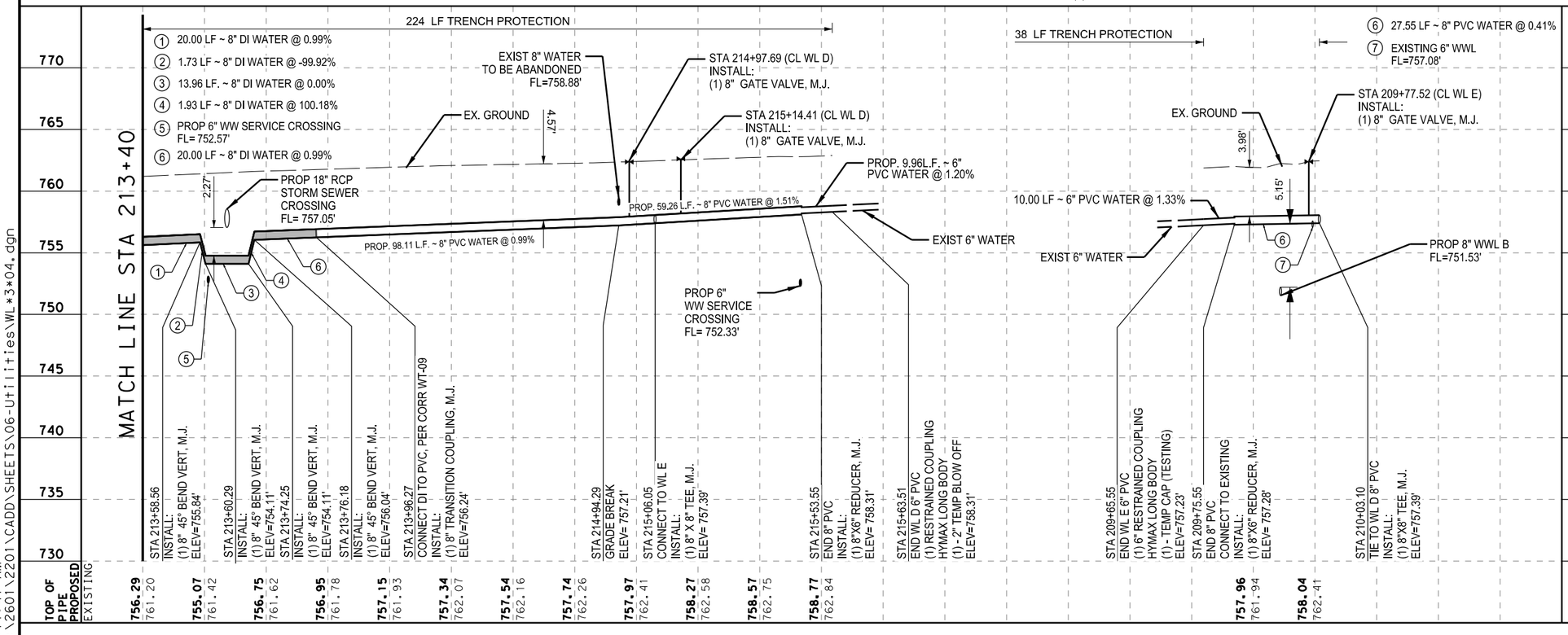
5. ABANDONED WATER MAINS ARE TO BE FLOWABLE FILLED.
6. SEE TCP NARRATIVE FOR WATER MAIN REMOVAL LIMITS. CONCRETE PLUG AND PIPE REMOVAL SUBSIDIARY TO PIPE INSTALLATION.
7. REMOVE AND REPLACE SIDEWALK, DRIVEWAY, CURB AND GUTTER AS APPLICABLE.
8. REPLACE WATER SERVICE LINE FROM NEW MAIN TO EXISTING WATER METER.
9. INSTALL TEMP WATER MAIN WHERE SHOWN TO MAINTAIN SERVICE DURING CONSTRUCTION. ALL WORK, PIPE, FITTINGS, AND APPURTENANCES ARE SUBSIDIARY TO THE TEMP WATER MAIN INSTALLATION.
10. MAINTAIN DRIVEWAY ACCESS DURING CONSTRUCTION.



0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE D & E
PLAN & PROFILE
SITE 1
STA 213+40 TO END & BEGIN TO END

SHEET 3 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	107
DRAWN: MH	
CHECKED: RE	

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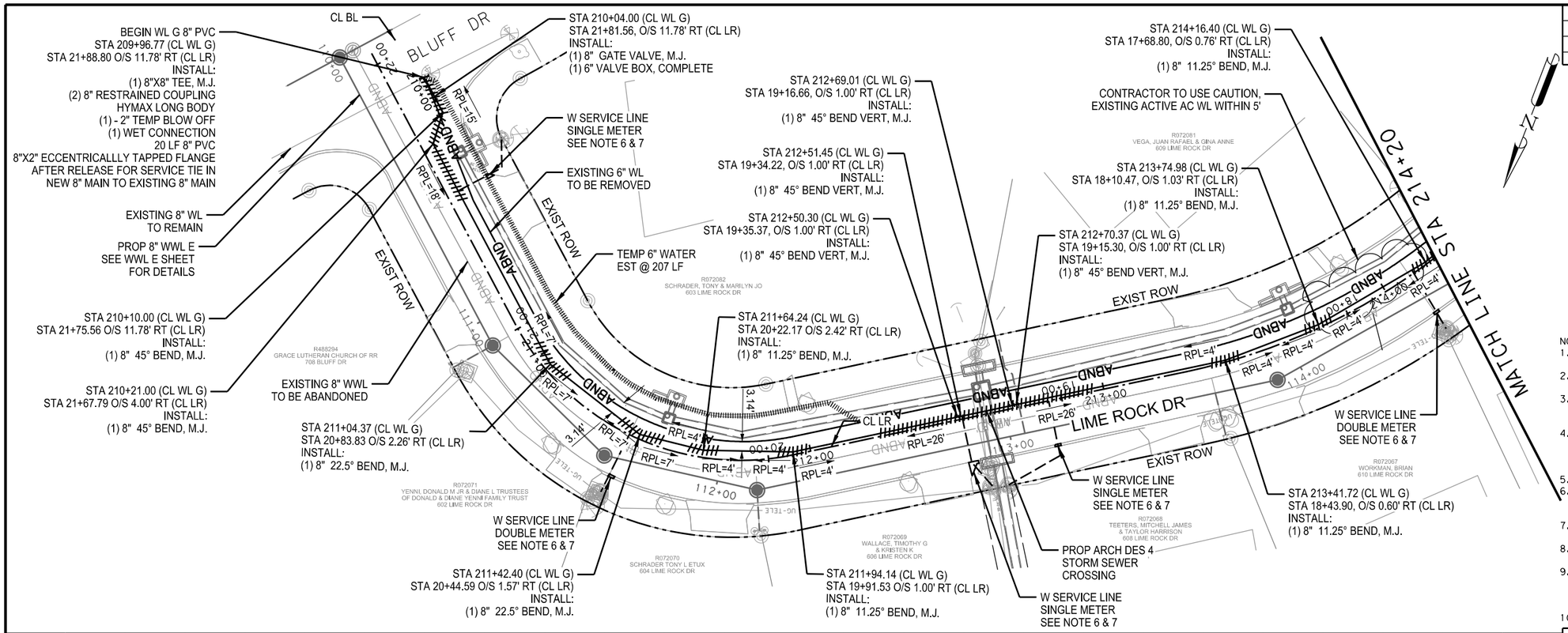
100% SUBMITTAL



NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED TEE
- PROPOSED AIR RELEASE
- PROPOSED BEND
- EXISTING WATER METER
- RESTRAINED PIPE LENGTH
- —ABND— ABANDONED LINE
- TEMPORARY WATER LINE

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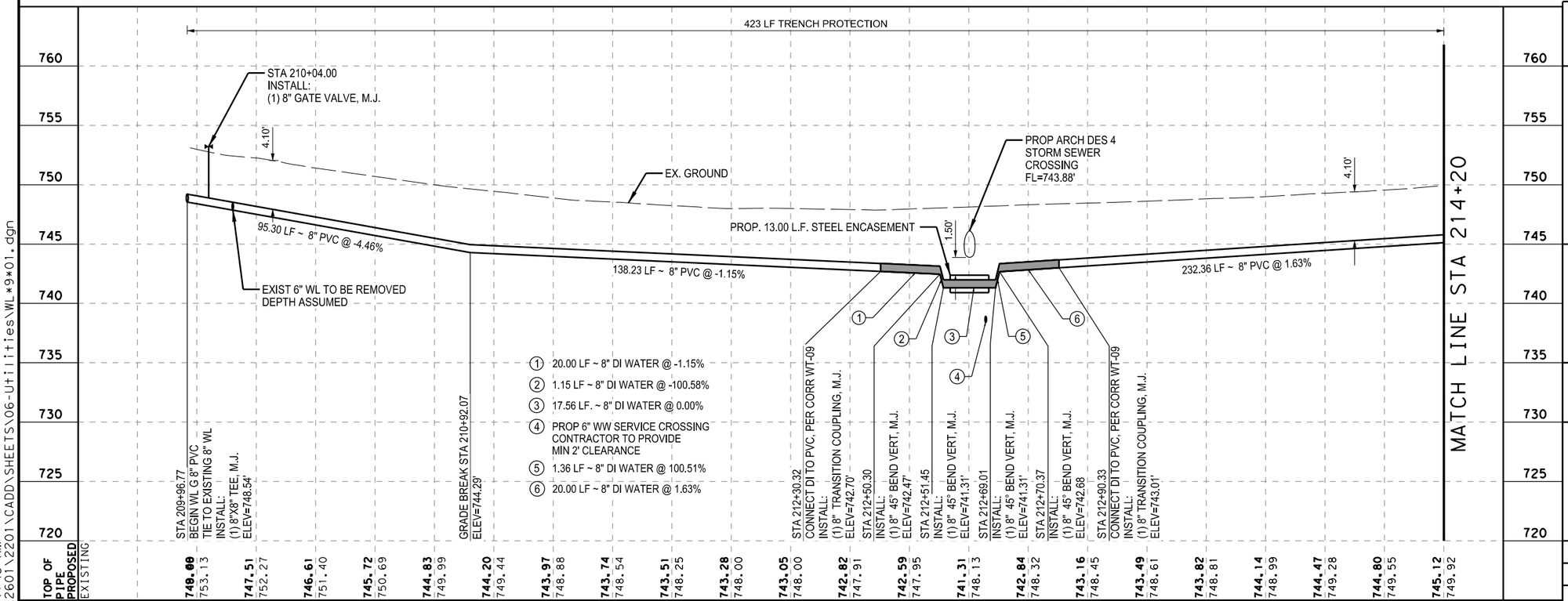

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE G
PLAN & PROFILE
SITE 2
BEGIN TO STA 214+20
SHEET 4 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	108
DRAWN: MH	
CHECKED: RE	

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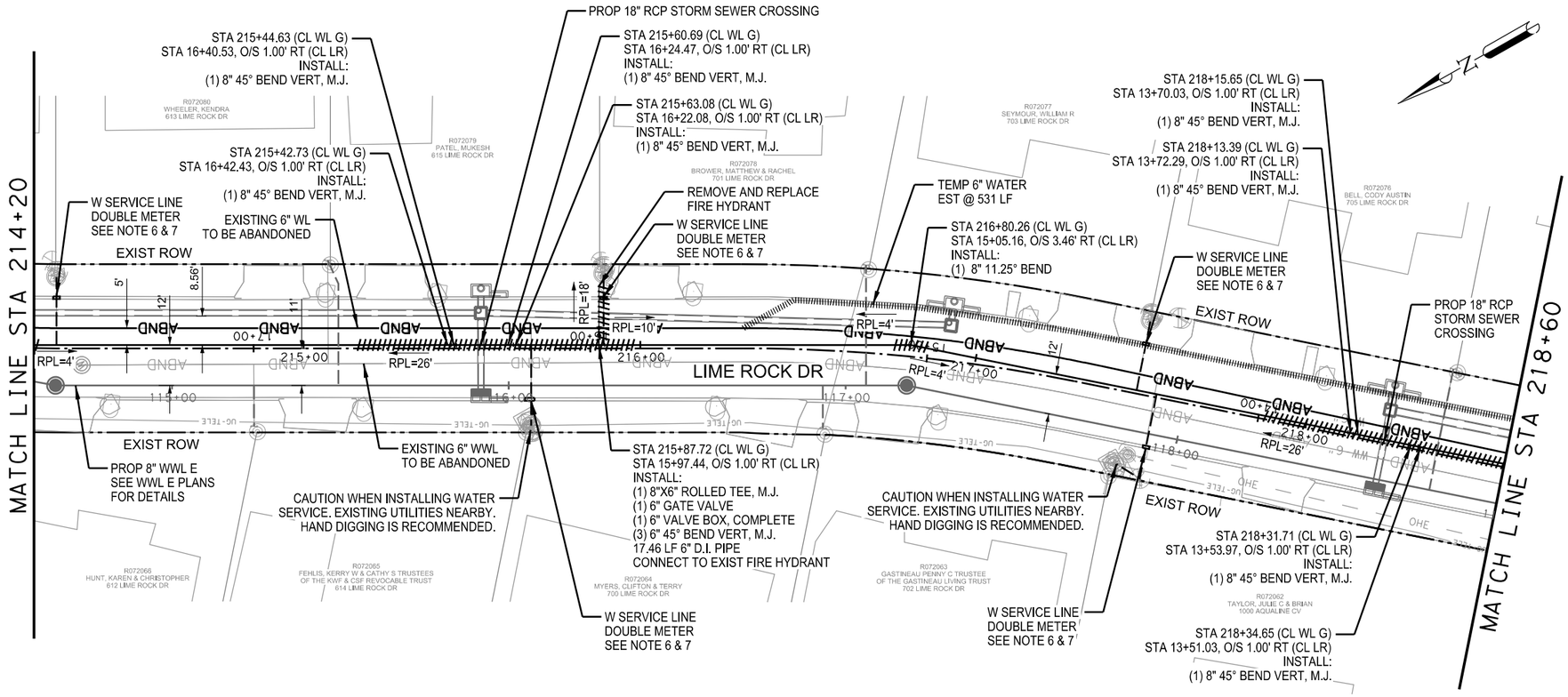

NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED TEE
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- EXISTING WATER METER
- RESTRAINED PIPE LENGTH
- —ABND— ABANDONED LINE
- TEMPORARY WATER LINE

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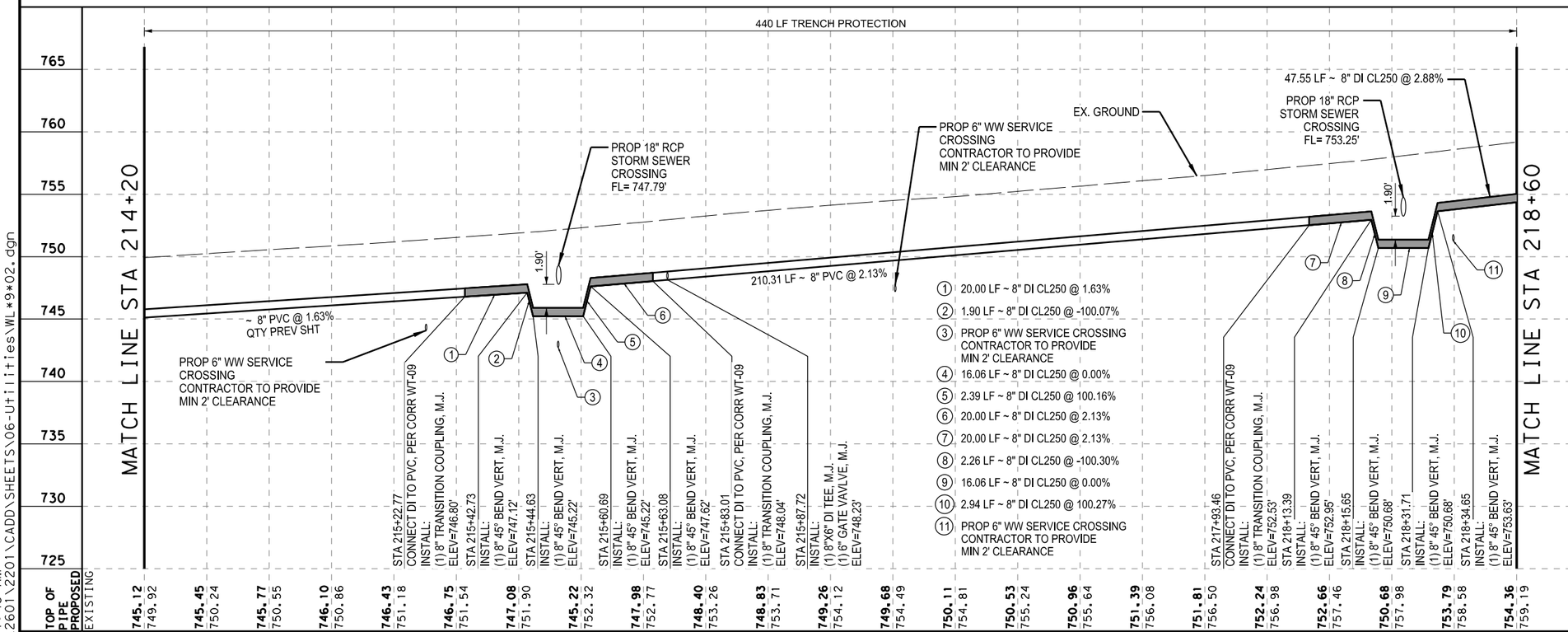
10. MAINTAIN DRIVEWAY ACCESS DURING CONSTRUCTION.



TOP OF PIPE		STA 215+22.77 CONNECT DI TO PVC, PER CORR WT-09 INSTALL: (1) 8" TRANSITION COUPLING, M.J. ELEV=746.80'		STA 215+42.73 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=747.12'		STA 215+44.63 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=745.22'		STA 215+60.69 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=745.22'		STA 215+63.08 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=747.62'		STA 215+83.01 CONNECT DI TO PVC, PER CORR WT-09 INSTALL: (1) 8" TRANSITION COUPLING, M.J. ELEV=748.04'		STA 215+87.72 INSTALL: (1) 8"X6" DI TEE, M.J. (1) 6" GATE VAVLVE, M.J. ELEV=748.23'		STA 217+93.46 CONNECT DI TO PVC, PER CORR WT-09 INSTALL: (1) 8" TRANSITION COUPLING, M.J. ELEV=752.53'		STA 218+13.39 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=752.95'		STA 218+15.65 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=750.68'		STA 218+31.71 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=750.68'		STA 218+34.65 INSTALL: (1) 8" 45° BEND VERT, M.J. ELEV=753.63'	
PROPOSED	745.12		745.45		745.77		746.10		746.43		746.75		747.08		745.22		747.98		748.40		748.83		749.26		749.68	
EXISTING	749.92		750.24		750.55		750.86		751.18		751.54		751.90		752.32		752.77		753.26		753.71		754.12		754.49	

750.11		750.53		750.96		751.39		751.81		752.24		752.66		750.68		753.79		754.36							
754.81		755.24		755.64		756.08		756.50		756.98		757.46		757.98		758.58		759.19							

0' 10' 20' 40'
SCALE: 1"=40' - HORZ
1"=10' - VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE G
PLAN & PROFILE
SITE 2
STA 214+20 TO STA 218+60
SHEET 5 OF 8

PROJECT NO:	SHEET NO. 109
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

1/16/2024
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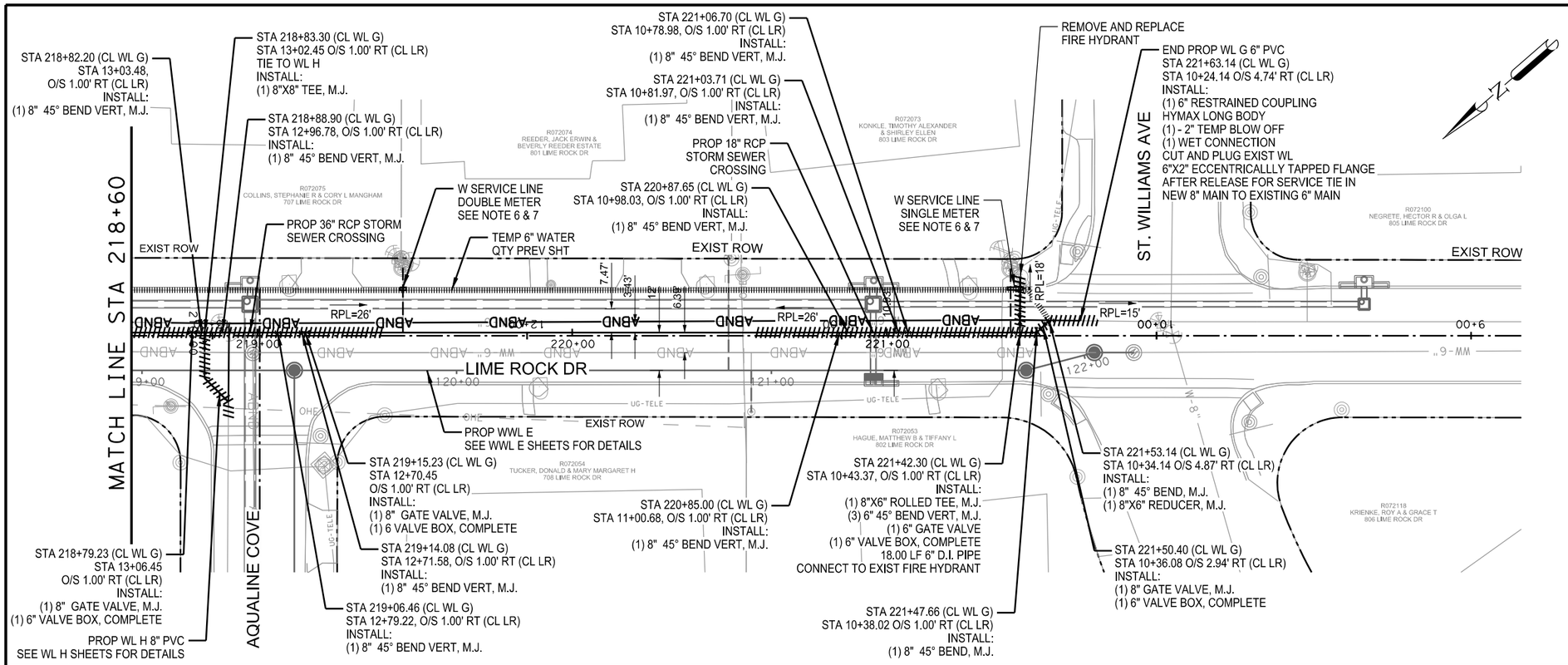

NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
- EXISTING FIRE HYDRANT
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- PROPOSED GATE VALVE
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- PROPOSED AIR RELEASE
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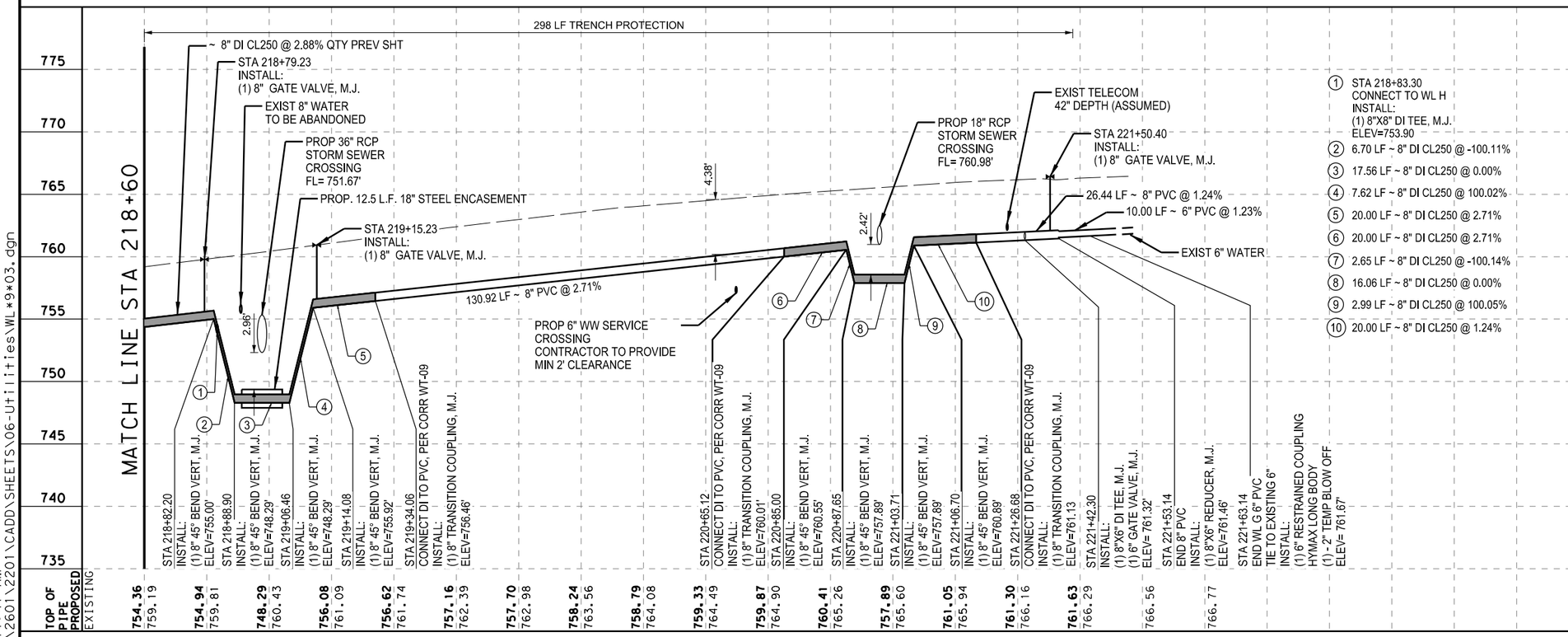

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE G
PLAN & PROFILE
SITE 2
STA 218+60 TO END

SHEET 6 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	110
DRAWN: MH	
CHECKED: RE	

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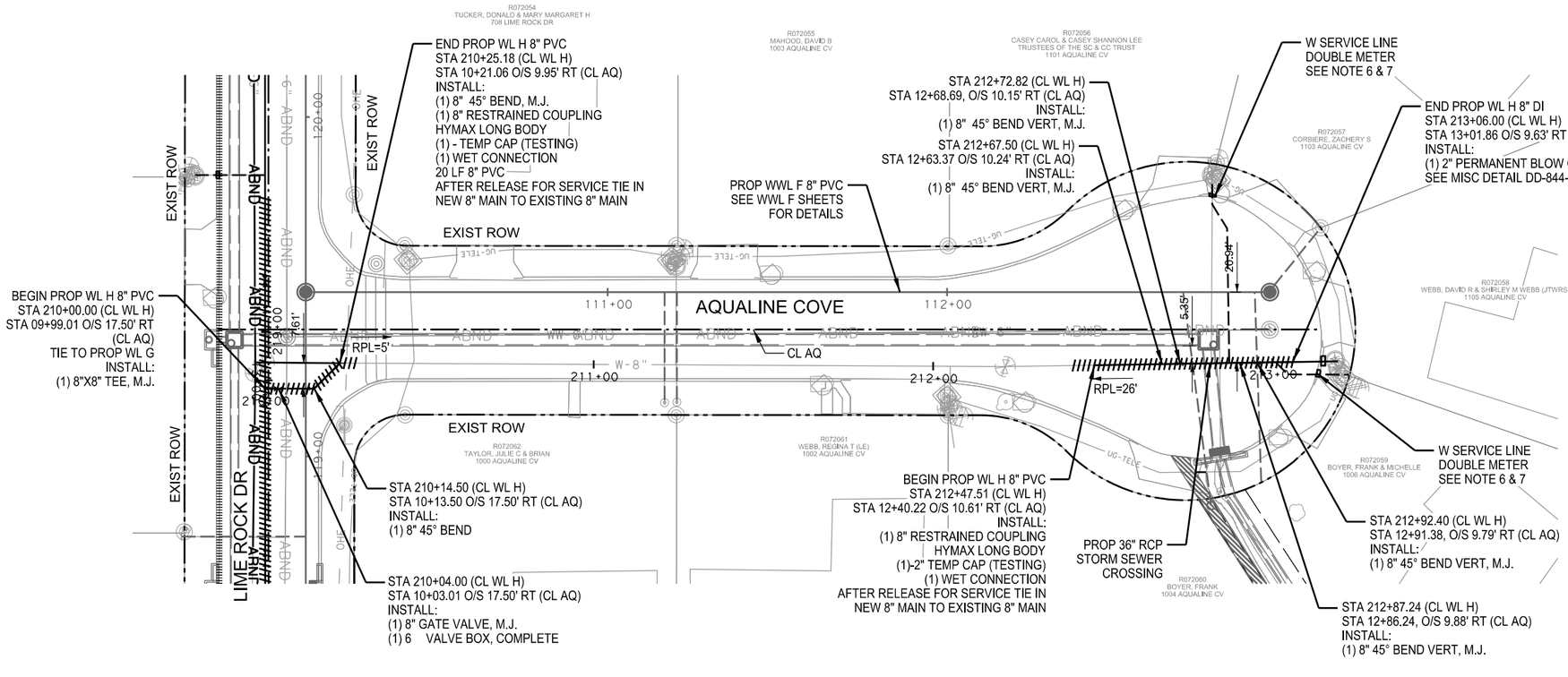

NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WATERLINE
- PROPOSED SERVICE LINE
- PROPOSED FLUSH VALVE
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- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
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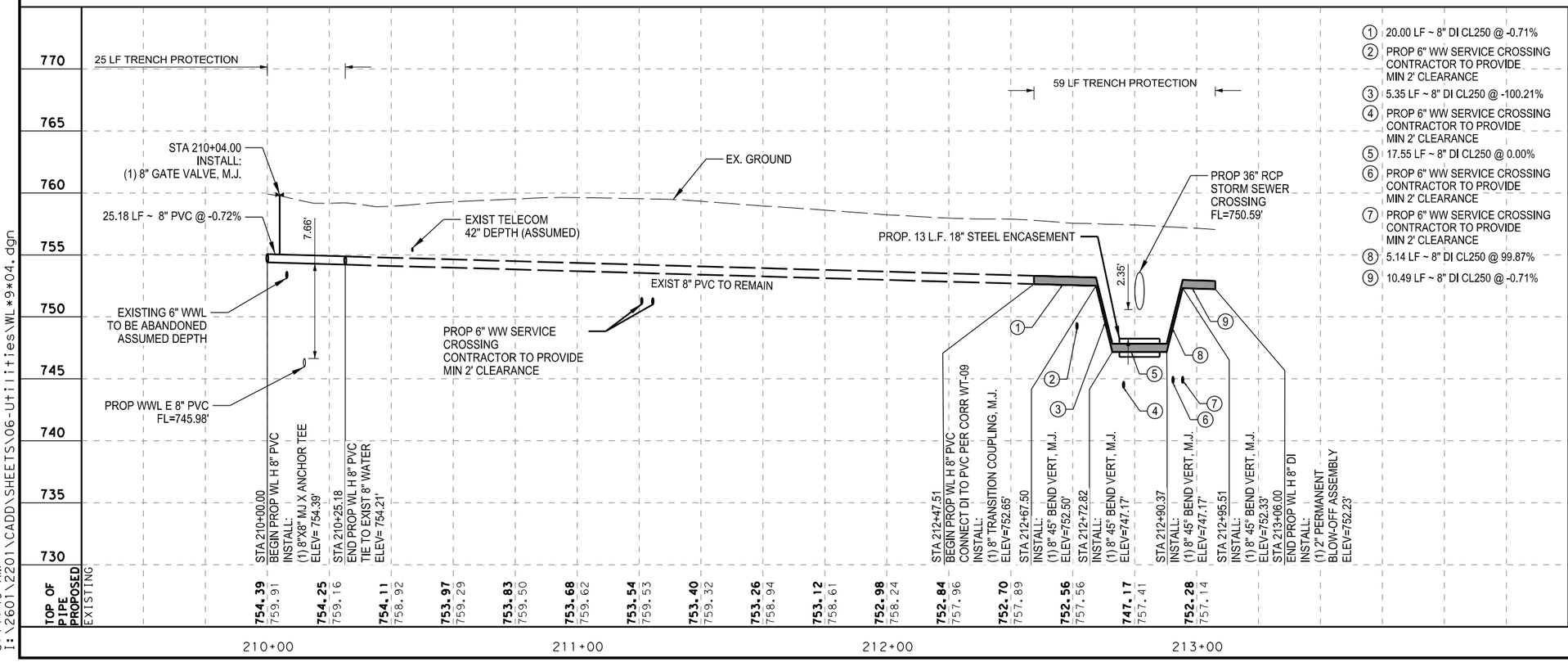

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE H
PLAN & PROFILE
SITE 2
BEGIN TO END
SHEET 7 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	111
DRAWN: MH	
CHECKED: RE	

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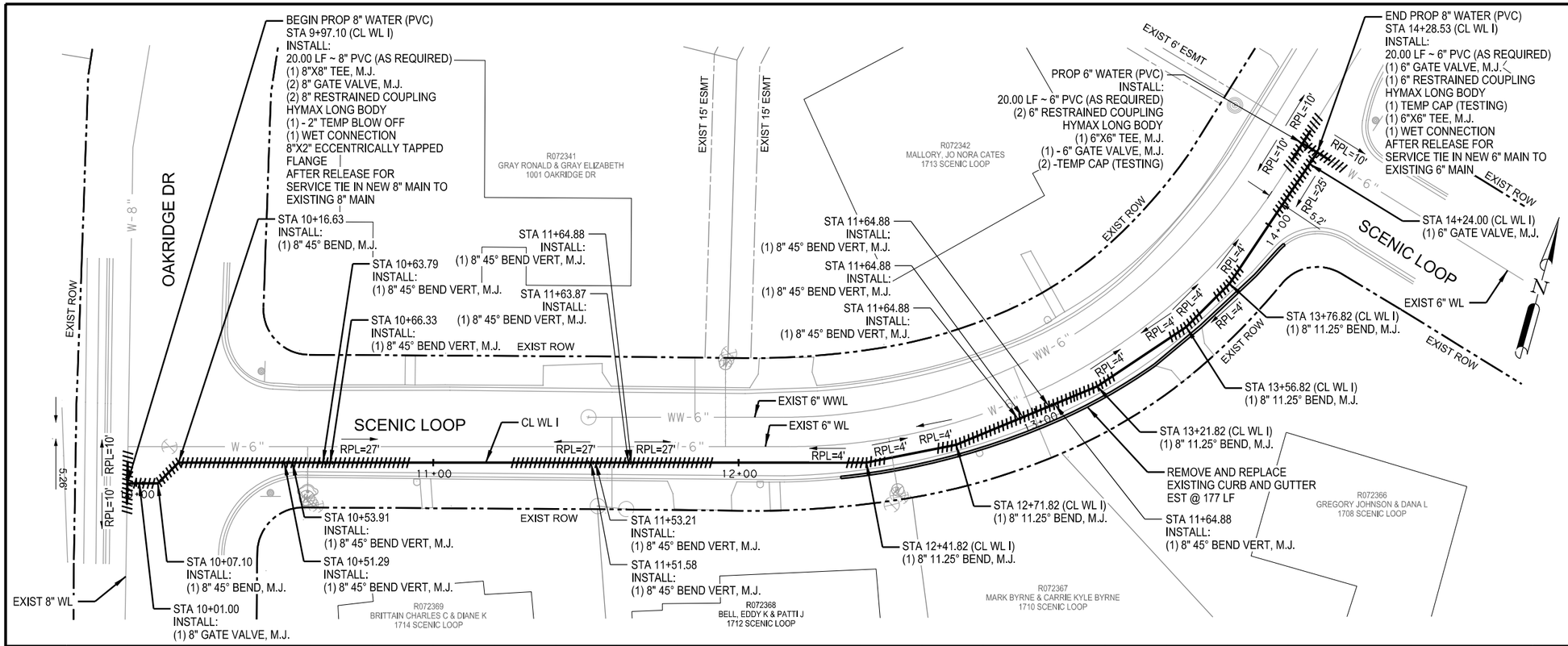

NUMBER	DATE	REVISION	APPROVED

LEGEND

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- PROPOSED WATERLINE
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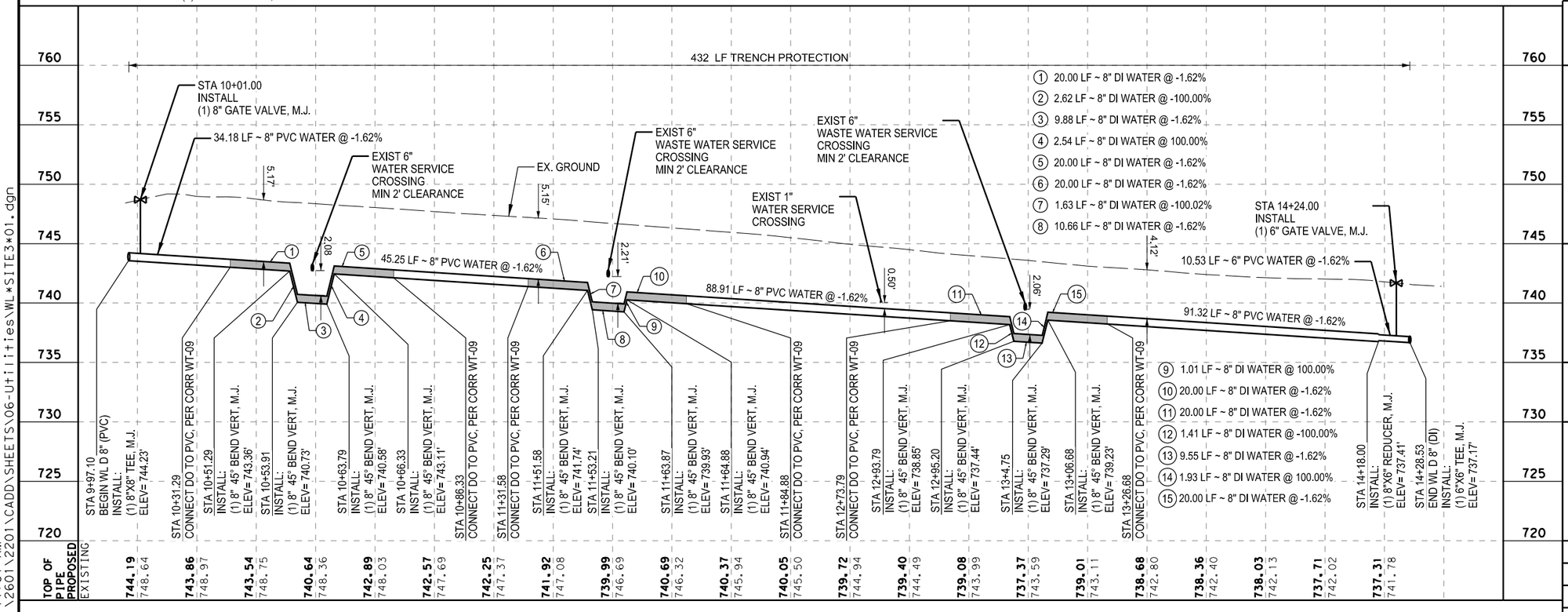

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
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STATE OF TEXAS
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ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER - LINE I
PLAN & PROFILE
SITE 3
BEGIN TO END

SHEET 8 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	112
DRAWN: MH	
CHECKED: RE	

1/16/2024
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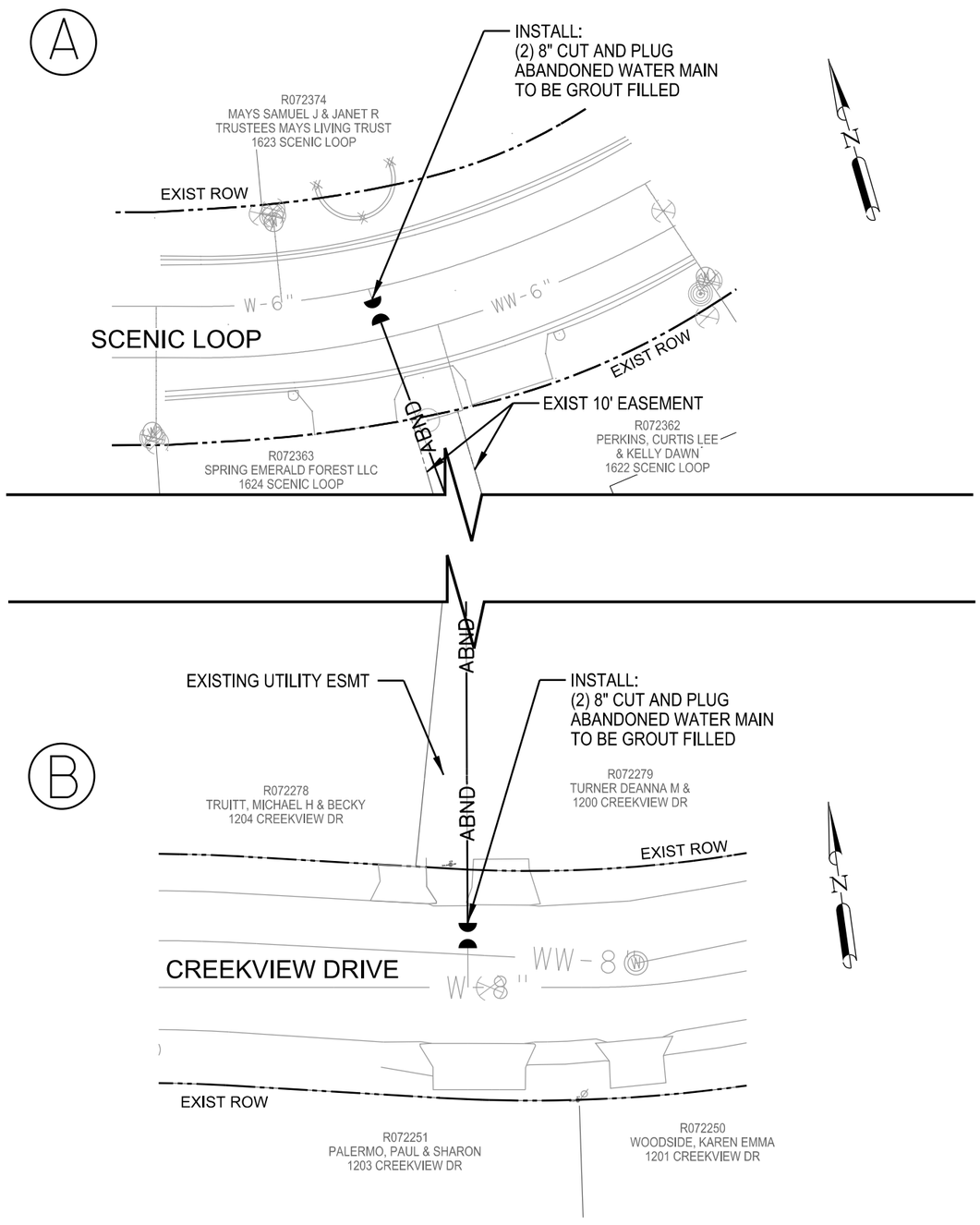
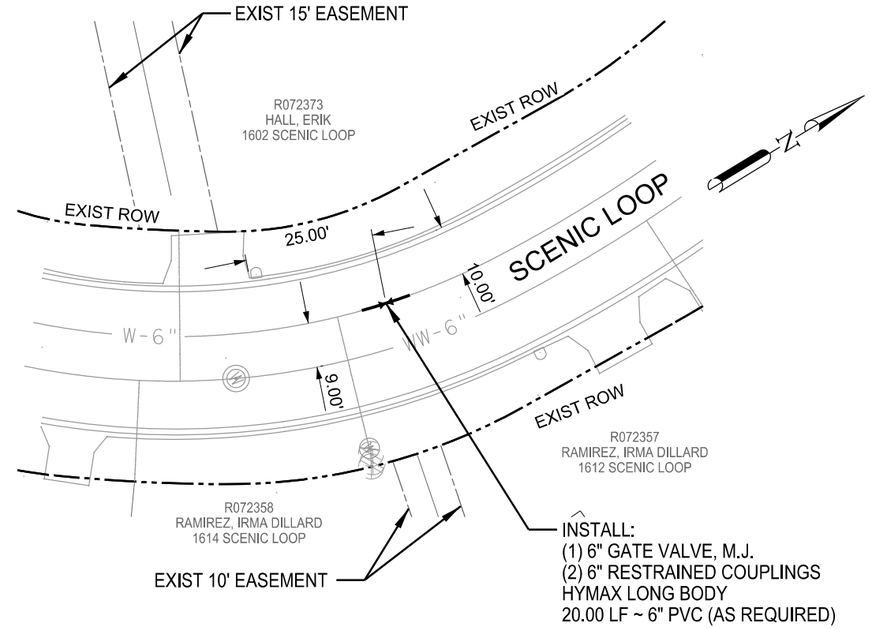
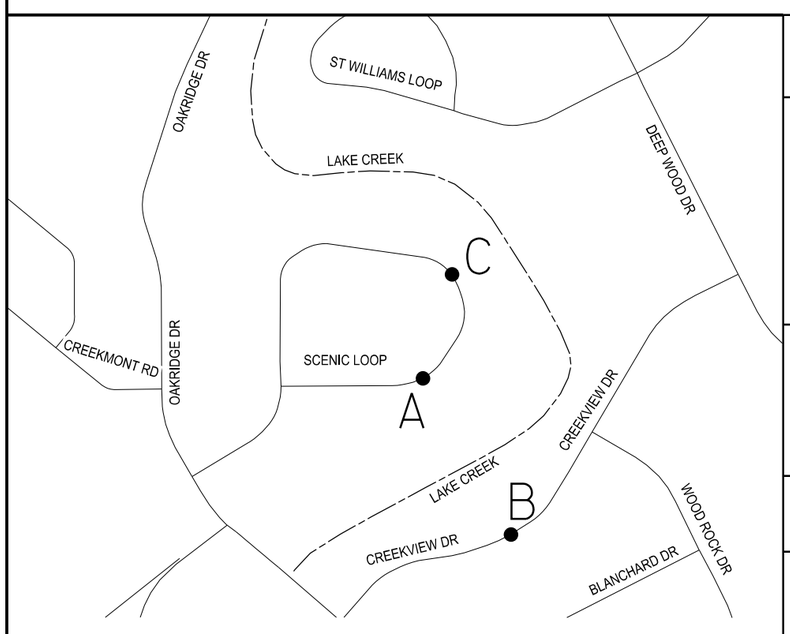


LAKE CREEK CROSSING



SCENIC LOOP VALVE DETAIL



VICINITY MAP

0' 7.5' 15' 30'
SCALE: 1"=30'

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
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PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WATER MISC DETAILS
SITE 3

SHEET 1 OF 1

PROJECT NO:	SHEET NO.
DESIGNED: RE	113
DRAWN: MH	
CHECKED: RE	

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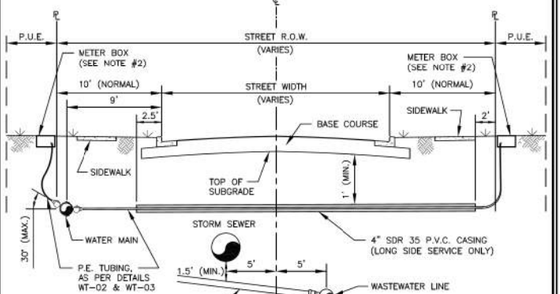


NOTES:

1. REFER TO "STANDARD INSTALLATION DETAIL FOR ONE OR TWO METERS" FOR SERVICE SPECIFICS.
2. METER BOXES SHALL BE SET AS CLOSE TO R.O.W. (℄) AS POSSIBLE, WITH NO PART OF BOX WITHIN R.O.W. METER BOXES SHALL BE LEVEL FROM SIDE TO SIDE AND NO MORE THAN 1/4"/FT. SLOPE FROM FRONT TO BACK (OR BACK TO FRONT). GRADING IN P.U.E. AROUND METER BOX SHALL BE 3:1 MAXIMUM AND SHALL BLEND TO OTHER UTILITY APPURTENANCES WITHOUT ABRUPT ELEVATION CHANGES.

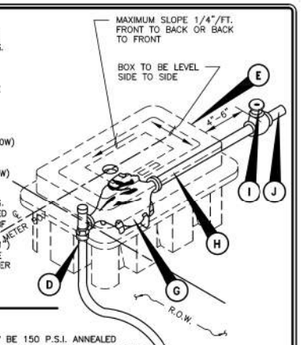
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT-01
APPROVED 03-01-18 DATE	WATER SERVICE CASING DETAIL	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

MATERIAL LIST:

A. SERVICE SADDLE REQUIRED. SERVICE SADDLE TO BE EPOXY COASTED WITH DUAL STAINLESS STEEL BANDS.
B. 1" CORPORATION STOP – SERVICE PIPE OUTLET. (SEE NOTE #2)
C. 1" SERVICE PIPE.
D. LOCKING ANGLE METER STOP; SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET:
- FOR 5/8" AND 3/4" METERS: 1" X 3/4"
- FOR 1" METERS: 1" X 1"
- SEE NOTE #2

E. PLASTIC RECTANGULAR METER BOX. (SEE TABLE BELOW)
F. PIPE CASING WHERE APPLICABLE. (AS PER DETAIL WT-01)
G. WATER METER, CENTERED IN BOX. (SEE TABLE BELOW)
H. WATER METER COUPLING; MALE I.P.T. X SWIVEL COUPLING NUT:
- FOR 5/8" AND 3/4" METERS: 3/4" X 8 1/2" LONG.
- FOR 1" METERS: LENGTH OF PIPE TO BE DETERMINED BY CONTRACTOR. EXTEND PIPE TO 4"–6" OUTSIDE OF METER BOX.

I. BRONZE GATE VALVE: NON–RISING STEM (3/4" OR 1") FEMALE I.P.T. (PROPERTY OWNERS CUT–OFF OUTSIDE METER BOX IN SEPARATE VALVE CAN WITH LID AS PER CITY OF ROUND ROCK STANDARDS).
J. 3/4" OR 1" PIPE MEETING CITY OF ROUND ROCK PLUMBING CODE REQUIREMENTS.

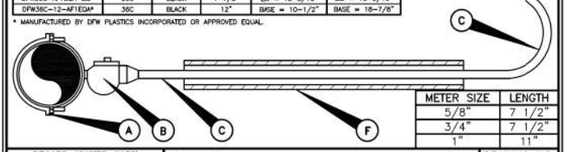


NOTES:

1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT MAY BE 150 P.S.I. ANNEALED SEAMLESS TYPE "K" COPPER TUBING OR 200 P.S.I. BLACK COLORED POLYETHYLENE HAVING A DIMENSION RATIO OF 9 (DR9).
2. ALL STAINLESS STEEL INSERTS THAT COME WITH COMPRESSION FITTINGS SHALL NOT BE USED ON ANY CONNECTIONS.
3. SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
4. TOP OF BOXES SHALL BE 1" ABOVE FINISHED GRADE.
5. PIPING AND TUBING SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 510.3 OF THE STANDARD SPECIFICATIONS. SPECIAL ATTENTION IS CALLED TO "PIPE BEDDING ENVELOPE" AND "BACKFILLING", SECTIONS 510.3 (14) AND 510.3 (25), RESPECTIVELY.
6. AXIS OF METER ASSEMBLY (LINE THROUGH METER STOP, METER, PIPING AND OWNERS CUTOFF) SHALL BE 10" BELOW TOP OF BOX.
7. SLOTS PROVIDED IN METER BOX TO ACCOMMODATE PIPING INTO AND OUT OF BOX, SHALL NOT BE MODIFIED.
8. LOCATION OF METER BOXES SHALL BE SUBJECT TO THE APPROVAL OF THE C.O.R.R.

PART NUMBER	SERIES	COLOR	HEIGHT	WIDTH	LENGTH
DFW36C–12–BODY*	36C	BLACK	12"	TOP = 13–3/4"	TOP = 18–7/8"
DFW36C–AF1EDA–LID*	36C	BLACK	1–7/8"	LID = 10–3/16"	LID = 15–9/16"
DFW36C–12–AF1EDA*	36C	BLACK	12"	BASE = 10–1/2"	BASE = 18–7/8"

* MANUFACTURED BY DFW PLASTICS INCORPORATED OR APPROVED EQUAL.



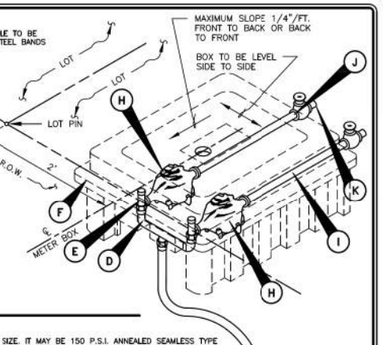
METER SIZE	LENGTH
5/8"	7 1/2"
3/4"	7 1/2"
1"	11"

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT-02
APPROVED 03-01-18 DATE	SINGLE 5/8", 3/4" OR 1" WATER METER DETAIL	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

MATERIAL LIST:

A. SERVICE SADDLE REQUIRED. SERVICE SADDLE TO BE EPOXY COATED WITH DUAL STAINLESS STEEL BANDS
B. 1 1/2" CORPORATION STOP (TYPICAL) – SERVICE PIPE OUTLET. (SEE NOTE #2)
C. 1 1/2" SERVICE PIPE (TYPICAL).
D. BRANCH CONNECTION: 1 1/2" OR 2" SERVICE PIPE INLET AND 2 3/4" MALE I.P.T. OUTLETS 7 1/2" O.C. (SEE NOTE #2)
E. 3/4" LOCKING ANGLE METER STOP; FEMALE I.P.T. INLET AND SWIVEL COUPLING NUT OUTLET.
F. PLASTIC RECTANGULAR METER BOX. (SEE TABLE BELOW)
G. PIPE CASING WHERE APPLICABLE. (AS PER DETAIL WT–01)
H. WATER METERS, CENTERED IN BOX. (SEE TABLE BELOW)
I. WATER METER COUPLING; MALE I.P.T. X SWIVEL COUPLING NUT.
- LENGTH OF PIPE TO BE DETERMINED BY CONTRACTOR.
- EXTEND PIPE TO 4"–6" OUTSIDE OF METER BOX.

J. BRONZE GATE VALVE: NON–RISING STEM (3/4" OR 1") FEMALE I.P.T. (PROPERTY OWNERS CUT–OFF OUTSIDE METER BOX IN SEPARATE VALVE CAN WITH LID AS PER CITY OF ROUND ROCK STANDARDS).
K. 3/4" OR 1" PIPE MEETING CITY OF ROUND ROCK PLUMBING CODE REQUIREMENTS.

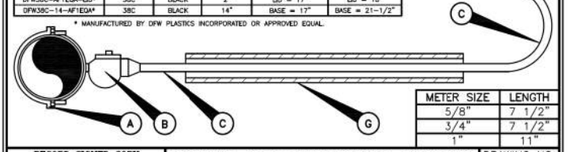


NOTES:

1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT MAY BE 150 P.S.I. ANNEALED SEAMLESS TYPE "K" COPPER TUBING OR 200 P.S.I. BLACK COLORED POLYETHYLENE HAVING A DIMENSION RATIO OF 9 (DR9).
2. ALL STAINLESS STEEL INSERTS THAT COME WITH COMPRESSION FITTINGS SHALL NOT BE USED ON ANY CONNECTIONS.
3. SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
4. TOP OF BOXES SHALL BE 1" ABOVE FINISHED GRADE.
5. PIPING AND TUBING SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 510.3 OF THE STANDARD SPECIFICATIONS. SPECIAL ATTENTION IS CALLED TO "PIPE BEDDING ENVELOPE" AND "BACKFILLING", SECTIONS 510.3 (14) AND 510.3 (25), RESPECTIVELY.
6. AXIS OF METER ASSEMBLY (LINE THROUGH METER STOP, METER, PIPING AND OWNERS CUTOFF) SHALL BE 10" BELOW TOP OF BOX.
7. SLOTS PROVIDED IN METER BOX TO ACCOMMODATE PIPING INTO AND OUT OF BOX, SHALL NOT BE MODIFIED.
8. BRANCH CONNECTION AND BOTH ANGLE METER STOPS MUST BE INSTALLED PRIOR TO FIRST METER INSTALLATION EVEN THOUGH THE SECOND PROPERTY MAY NOT BE READY FOR SERVICE.
9. LOCATION OF METER BOXES SHALL BE SUBJECT TO THE APPROVAL OF THE C.O.R.R.

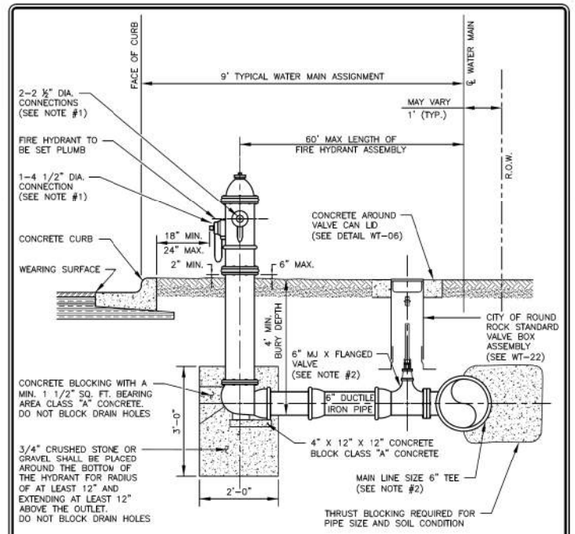
PART NUMBER	SERIES	COLOR	HEIGHT	WIDTH	LENGTH
DFW38C–14–BODY*	38C	BLACK	14"	TOP = 20–1/2"	TOP = 21–1/2"
DFW38C–AF1EDA–LID*	38C	BLACK	2"	LID = 17"	LID = 18"
DFW38C–14–AF1EDA*	38C	BLACK	14"	BASE = 17"	BASE = 21–1/2"

* MANUFACTURED BY DFW PLASTICS INCORPORATED OR APPROVED EQUAL.



METER SIZE	LENGTH
5/8"	7 1/2"
3/4"	7 1/2"
1"	11"

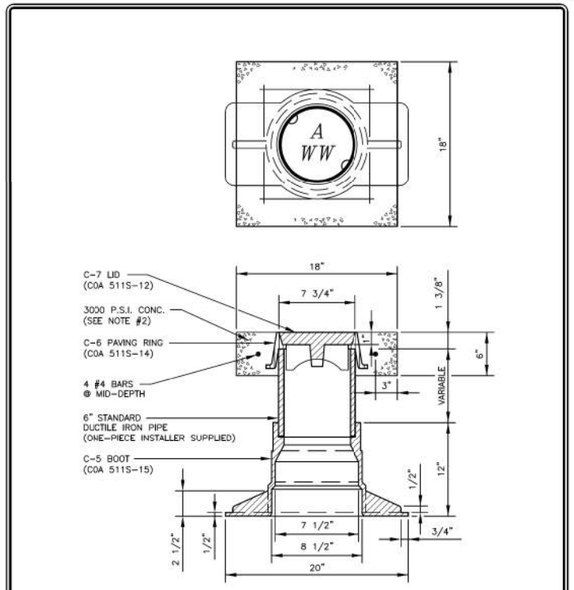
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT-04
APPROVED 03-01-18 DATE	DUAL 5/8", 3/4" OR 1" WATER METERS DETAIL	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. THREADS ON OUTLET NOZZLES SHALL BE NATIONAL STANDARD THREAD.
2. TEE MAY HAVE FLANGED OUTLET FOR MJ X FLANGED GATE VALVE OR, ANCHOR (SWIVEL) TEE MAY BE USED WITH MJ X MJ GATE VALVE.
3. A BLUE REFLECTIVE DELINEATOR OF TYPE APPROVED BY THE ENGINEER SHALL BE PLACED 2 TO 3 FEET OFFSET FROM THE CENTERLINE OF PAVED STREETS OR PAVED ACCESS WAYS, ON THE SIDE OF AND IN LINE WITH ALL NEWLY INSTALLED FIRE HYDRANTS.
4. PIPE, VALVE, TEE AND HYDRANT BARREL SHALL BE WRAPPED IN 8 MM POLY.
5. FIRE HYDRANT LEADS SHALL NOT CONTAIN ANY HORIZONTAL OR VERTICAL BENDS EXCEPT FOR WHAT IS SHOWN IN THE DETAIL.
6. FIRE HYDRANT LEAD AND ASSEMBLY SHALL BE RESTRAINED AND THRUST BLOCKED.

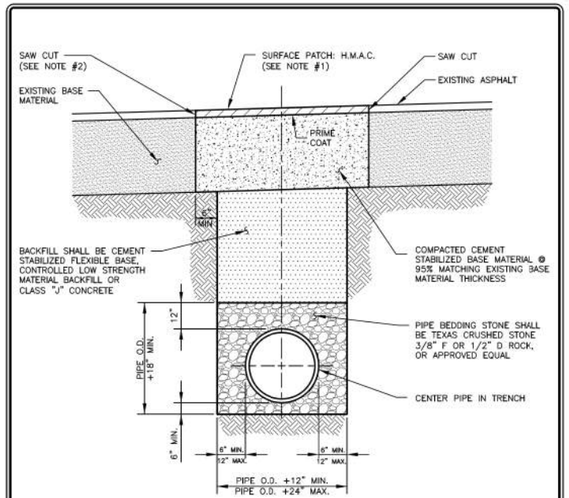
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT-05
APPROVED 03-01-18 DATE	FIRE HYDRANT ASSEMBLY DETAIL	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. NUMBERED CASTINGS STANDARDS SHOWN IN PARENTHESES ARE REFERENCES TO THE CITY OF AUSTIN STANDARDS CRITERIA MANUAL.
2. DELETE CONCRETE AND REBAR WHEN VALVE IS WITHIN PAVED STREET.

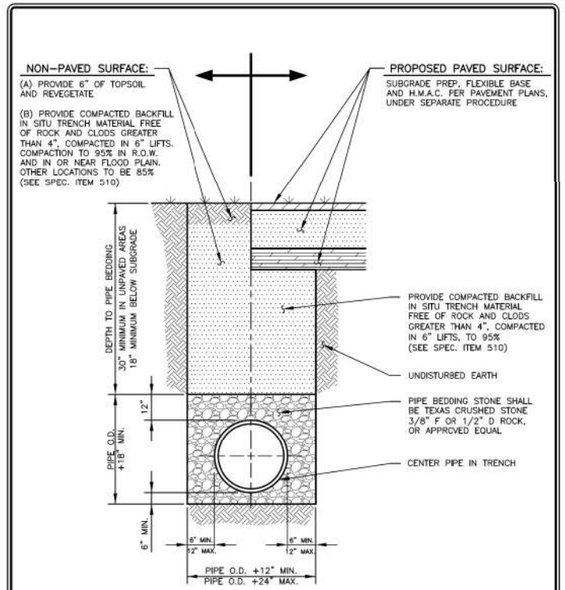
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT–06
APPROVED 03–01–18 DATE	VALVE BOX ASSEMBLY DETAIL	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. H.M.A.C. THICKNESS SHALL MATCH EXISTING ASPHALT THICKNESS AND NOT LESS THAN 2".
2. THE CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING PAVEMENT AND FLEXIBLE BASE A MINIMUM OF 6" BEYOND EITHER THE EDGE OF THE WATERLINE TRENCH OR THE POINT WHERE EXISTING PAVEMENT IS DAMAGED DUE TO TRENCHING OPERATIONS, WHICHEVER IS GREATER. FINISHED PATCH SHALL BE NEAT AND UNIFORM.
3. INSTALLATION OF BACKFILL, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND SURFACE PATCH SHALL NOT BE PAID FOR SEPARATELY. COSTS FOR THESE ITEMS SHALL BE INCLUDED IN UNIT PRICE BID FOR WATERLINE PIPE.
4. THE CONTRACTOR SHALL PROVIDE STEEL PLATES TO SPAN THE TRENCH AS NECESSARY OR TO ALLOW BACKFILL TO CURE. SUCH PLATES SHALL BE SUITABLE FOR VEHICLE PASSAGE OVER THE TRENCH AND SHALL BE SATISFACTORILY ANCHORED IN PLACE. COSTS FOR THIS ITEM SHALL BE INCLUDED IN UNIT PRICE BID FOR WATERLINE PIPE.
5. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT–07
APPROVED 03–01–18 DATE	WATERLINE BEDDING AND SURFACE REPAIR DETAIL (EXISTING PAVED SURFACE)	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTE:

1. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WT–08
APPROVED 03–01–18 DATE	WATERLINE BEDDING AND SURFACE REPAIR DETAIL (NON–PAVED & PROPOSED PAVED SURFACE)	ROUND ROCK TEXAS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
WATER
STANDARDS

SHEET 1 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: HV	114
DRAWN: HV	
CHECKED: RE	

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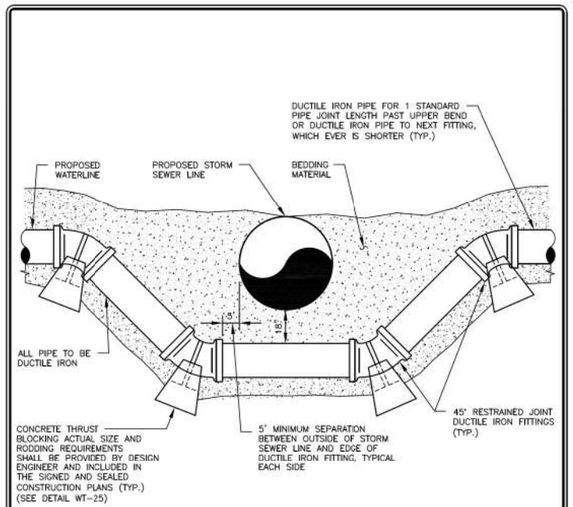
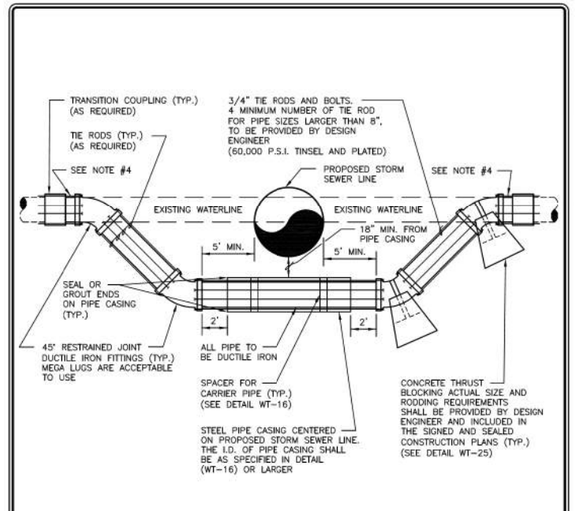


NOTES:

1. THIS DETAIL IS TO BE USED FOR THE LOWERING OF PROPOSED WATERLINES ONLY.
2. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8 MIL POLYETHYLENE (BLACK POLY) AND OPEN ENDS/SEAMS SEALED WITH DUCT TAPE.
3. ALL FITTINGS SHALL HAVE RESTRAINED JOINTS AND BLOCKED WITH CONCRETE BLOCKING.
4. CASING PIPE SHALL BE PROVIDED FOR ALL PROPOSED WATERLINES INSTALLED UNDER STORM SEWER LINES 36" DIAMETER AND LARGER.

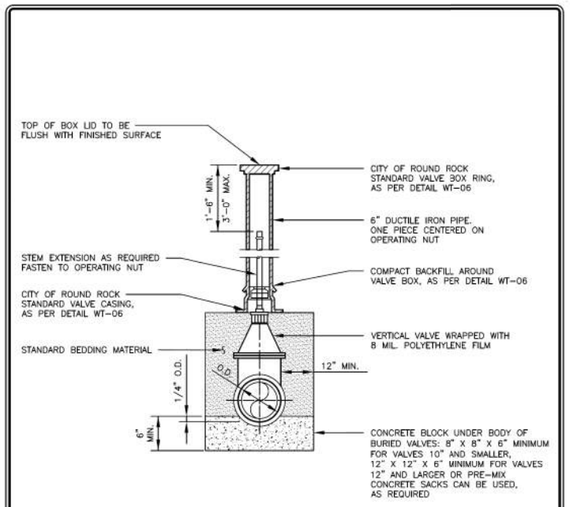
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	WATERLINE AND STORM SEWER LINE CROSSING DETAIL (TYPE 1)	WT-09
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS



NOTES:

1. THIS DETAIL IS TO BE USED FOR THE LOWERING OF EXISTING WATERLINES ONLY.
2. DESIGN ENGINEER MAY SPEC. A COMBINATION RESTRAINT SYSTEM OF RESTRAINED JOINTS AND CONCRETE BLOCKING OR TIE RODS AND CONCRETE BLOCKING.
3. TRANSITION COUPLING TO BE A LONG BODY COUPLING.
4. DUCTILE IRON PIPE FOR 1 STANDARD PIPE JOINT LENGTH PAST UPPER BEND.
5. CASING PIPE SHALL BE PROVIDED FOR ALL PROPOSED WATERLINES INSTALLED UNDER STORM SEWER LINES 36" DIAMETER AND LARGER.
6. ALL PIPE, BENDS AND TIE RODS SHALL BE WRAPPED IN 8 MIL. POLYETHYLENE FILM.

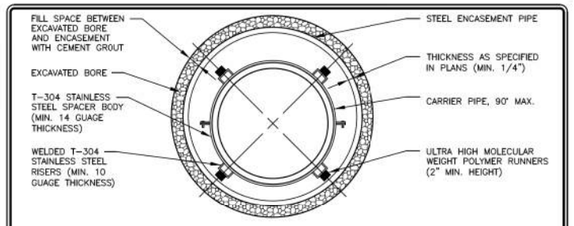
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	WATERLINE AND STORM SEWER LINE CROSSING DETAIL (TYPE 2)	WT-10
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS



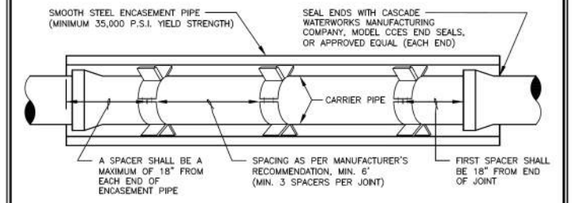
NOTES:

1. ALL VALVES AND VALVE CANS SHALL BE ACCESSIBLE FOR OPERATION ONCE THE NEW WATERLINE IS PUT INTO SERVICE. BURYING LINE VALVES IS PROHIBITED.
2. ALL VALVE LOCATIONS SHALL BE APPROPRIATELY MARKED "V" ON FACE OF CURB.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	VERTICAL VALVE INSTALLATION DETAIL	WT-11
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS



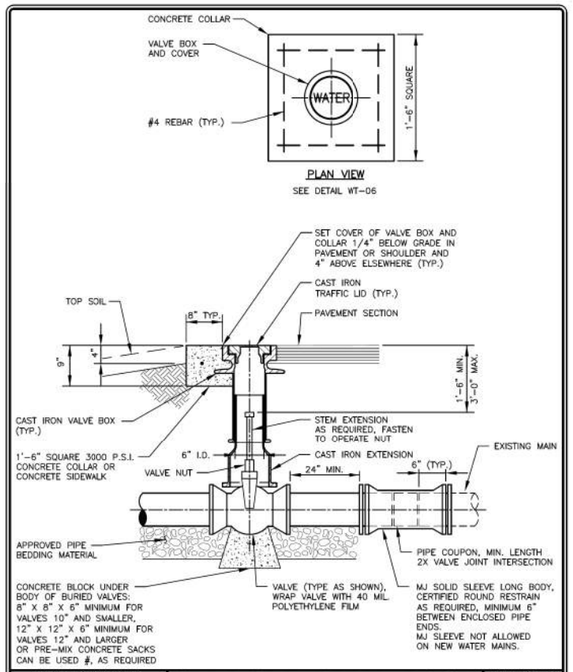
PIPE SIZE–CARRIER (DIAMETER)	PIPE SIZE–CASING (DIAMETER) (MIN.)	MINIMUM PIPE THICKNESS (INCHES)	
6"	16"	1/4	0.2500
8"	18"	1/4	0.2500
10"	20"	5/16	0.3125
12" ~ 14"	24"	3/8	0.3750
16" ~ 18"	30"	7/16	0.4375
20"	36"	1/2	0.5000
24"	42"	1/2	0.5000
30"	48"	1/2	0.5000



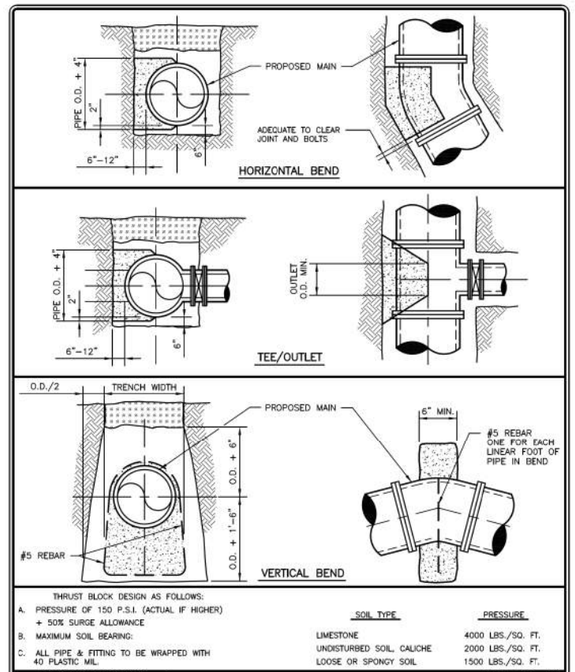
NOTES:

1. CASING SPACER CONFIGURATION AND SPACING SHALL BE AS SHOWN ON MANUFACTURER'S DRAWINGS FOR SPECIFIC WORK; THESE MUST BE ACCEPTABLE TO THE CITY OF ROUND ROCK.
2. CASING SPACER SHALL BE AS MANUFACTURED BY CASCADE WATERWORKS MANUFACTURING COMPANY, MODEL CCS, OR APPROVED EQUAL.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	PIPE ENCASEMENT DETAIL	WT-16
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS



RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	GATE VALVE DETAIL	WT-22
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS

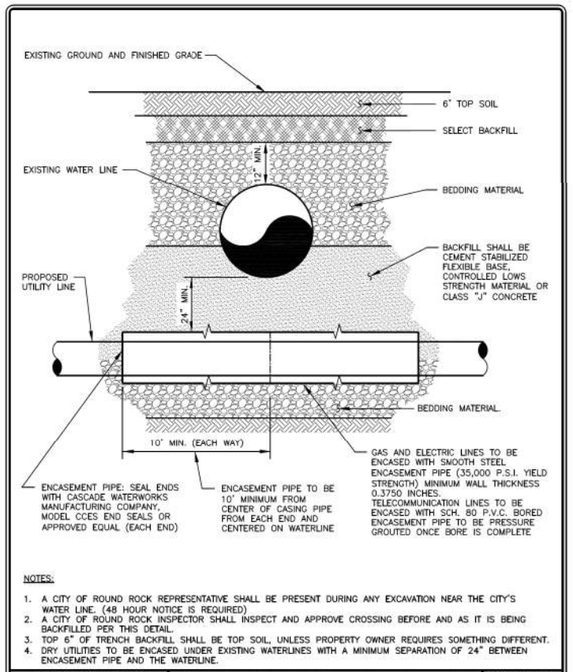


THRUST BLOCK DESIGN AS FOLLOWS:

A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50% SURGE ALLOWANCE
B. MAXIMUM SOIL BEARING:
C. ALL PIPE & FITTING TO BE WRAPPED WITH 40 PLASTIC MIL.

SOIL TYPE	PRESSURE
LIMESTONE	4000 LBS./SQ. FT.
UNDISTURBED SOIL, CALICHE	2000 LBS./SQ. FT.
LOOSE OR SPONGY SOIL	1500 LBS./SQ. FT.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	THRUST BLOCK DETAIL	WT-25
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS



NOTES:

1. A CITY OF ROUND ROCK REPRESENTATIVE SHALL BE PRESENT DURING ANY EXCAVATION NEAR THE CITY'S WATER LINE. (48 HOUR NOTICE IS REQUIRED)
2. A CITY OF ROUND ROCK INSPECTOR SHALL INSPECT AND APPROVE CROSSING BEFORE AND AS IT IS BEING BACKFILLED PER THIS DETAIL.
3. TOP 6" OF TRENCH BACKFILL SHALL BE TOP SOIL, UNLESS PROPERTY OWNER REQUIRES SOMETHING DIFFERENT.
4. DRY UTILITIES TO BE ENCASED UNDER EXISTING WATERLINES WITH A MINIMUM SEPARATION OF 24" BETWEEN ENCASEMENT PIPE AND THE WATERLINE.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 03-01-18 DATE	WATERLINE AND DRY UTILITY LINE CROSSING DETAIL	WT-26
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL (NOT TO SCALE)		ROUND ROCK TEXAS

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN-F-1386

RRW AREA 5
WATER
STANDARDS

SHEET 2 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: HV	115
DRAWN: HV	
CHECKED: RE	

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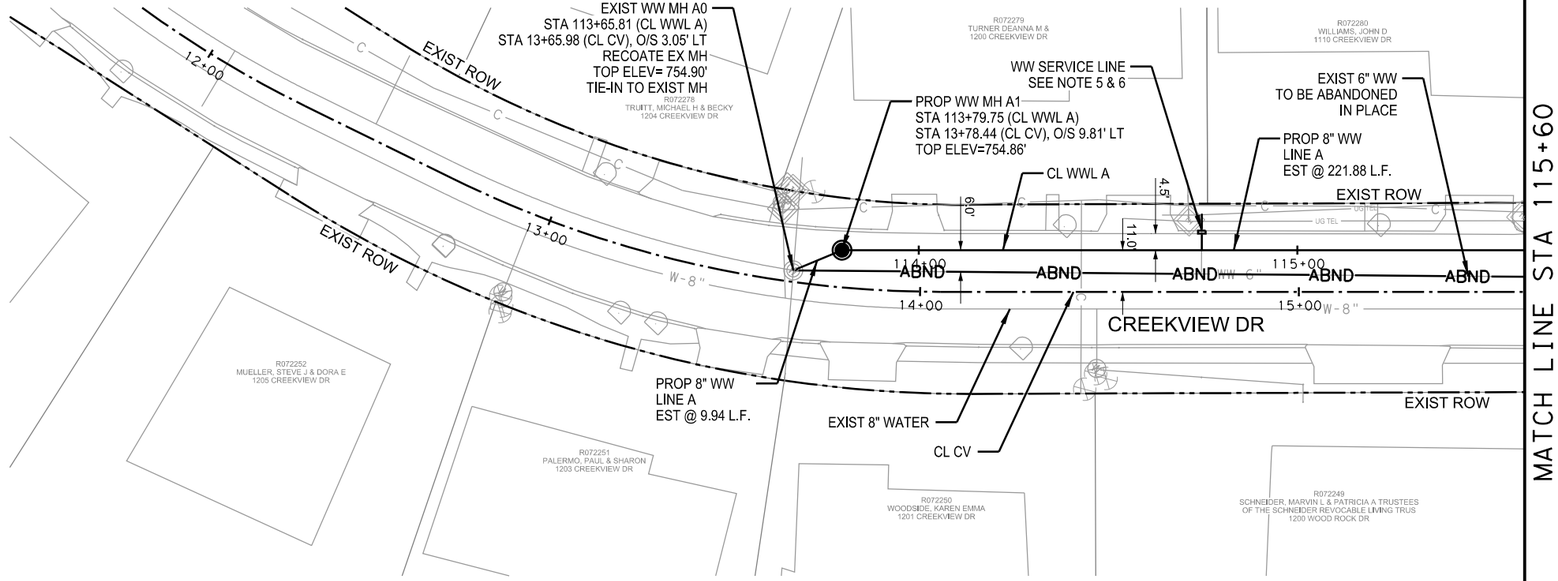
100% SUBMITTAL

NUMBER	DATE	REVISION	APPROVED



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- —ABND— ABANDONED LINE

NOTES:

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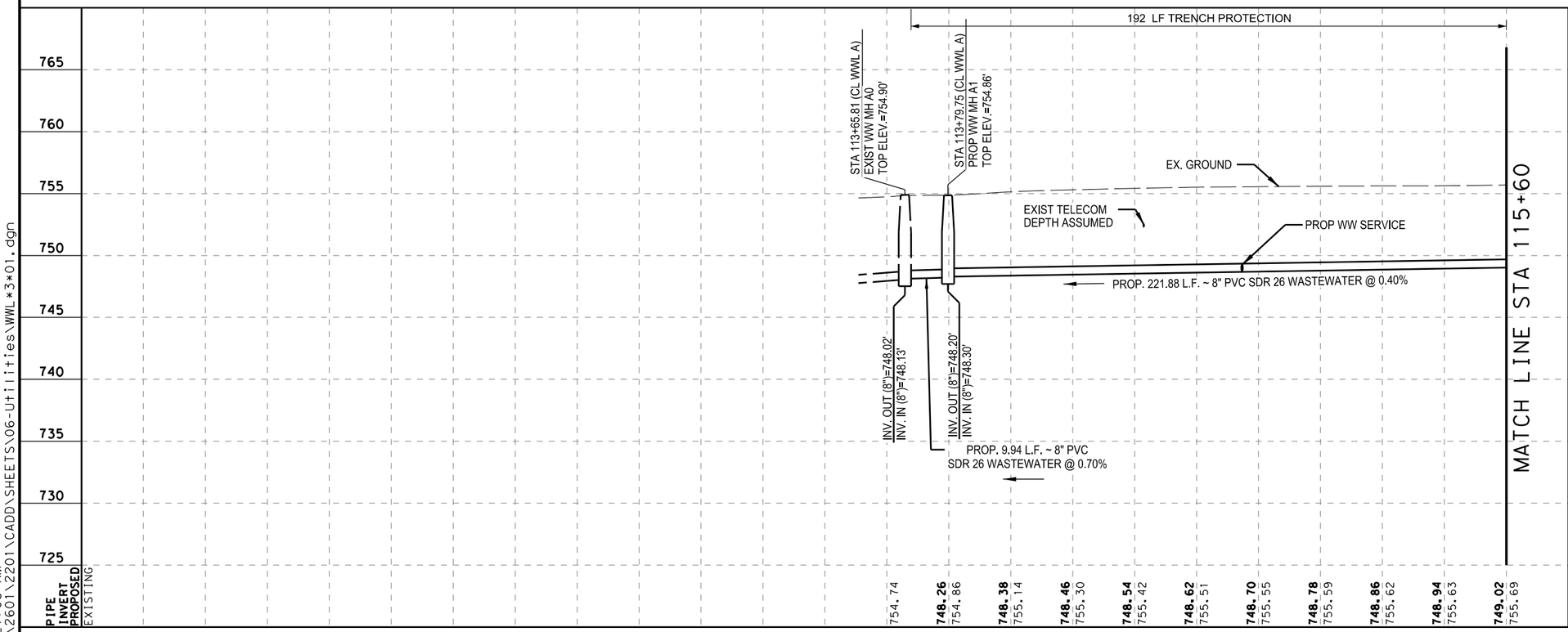
3. ABANDONED WW MAINS ARE TO BE FLOWABLE FILLED.
4. SEE TCP NARRATIVE FOR WW MAIN REMOVAL LIMITS. CONCRETE PLUG AND PIPE REMOVAL SUBSIDIARY TO PIPE INSTALLATION PER CORR ITEM 510.
5. ABANDONED WW MH ARE TO BE REMOVE A MINIMUM 4' BELOW GRADE AND GROUT FILLED.
6. REMOVE AND REPLACE SIDEWALK, CURB AND GUTTER AS APPLICABLE.
7. REPLACE WASTEWATER SERVICE LINE FROM NEW MAIN TO R.O.W. INSTALL NEW CLEANOUTS AT EXIST R.O.W.
8. ALL MANHOLES TO BE COATED AND VACUUM TESTED.
9. ALL MANHOLES TO BE STANDARD PRECAST CONCRETE, 4FT INSIDE DIAMETER, UNLESS OTHERWISE NOTED.



0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE A PLAN & PROFILE
SITE 1
BEGIN TO STA 115+60
SHEET 1 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	116
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:21:08 AM
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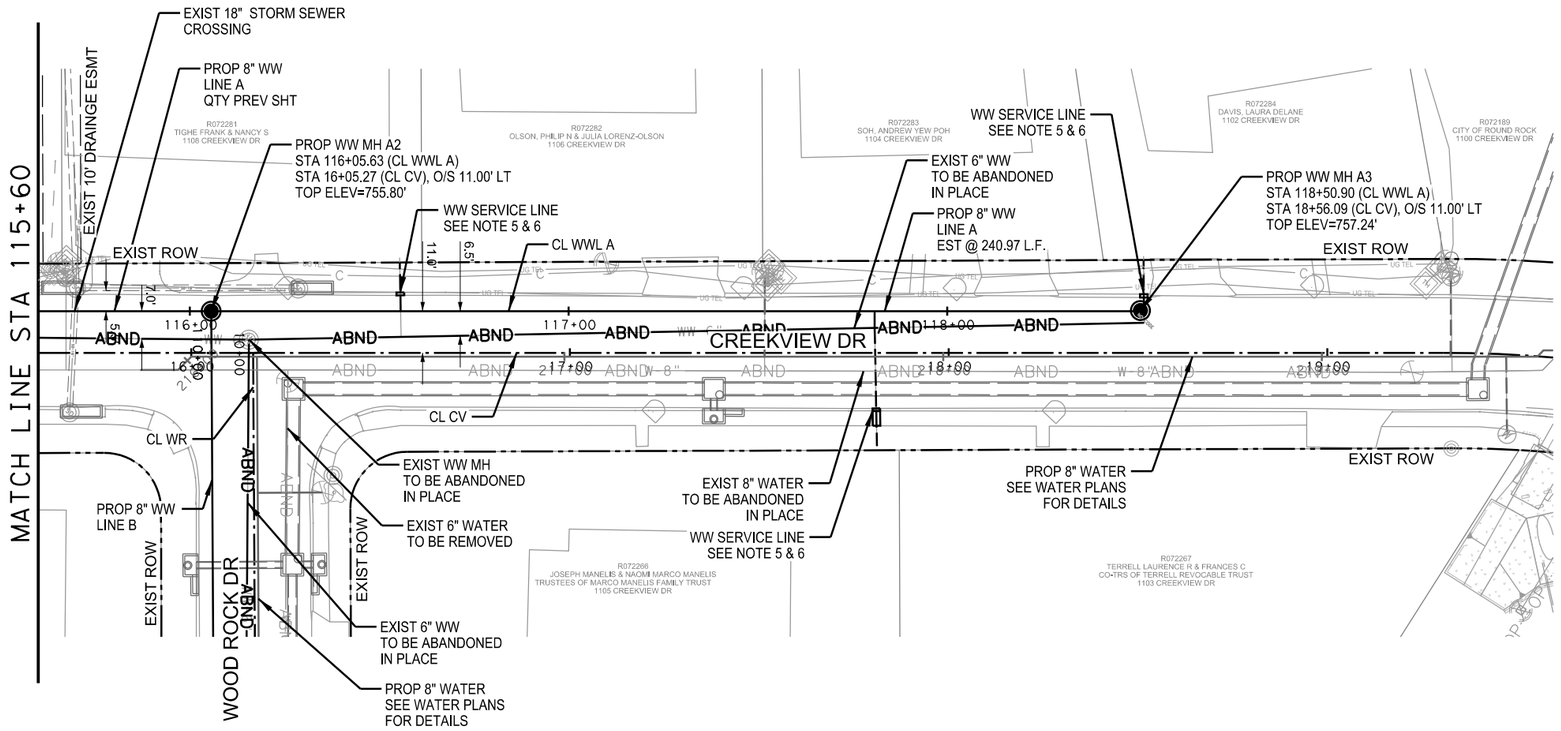
NUMBER	DATE	REVISION	APPROVED



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- ABANDONED LINE

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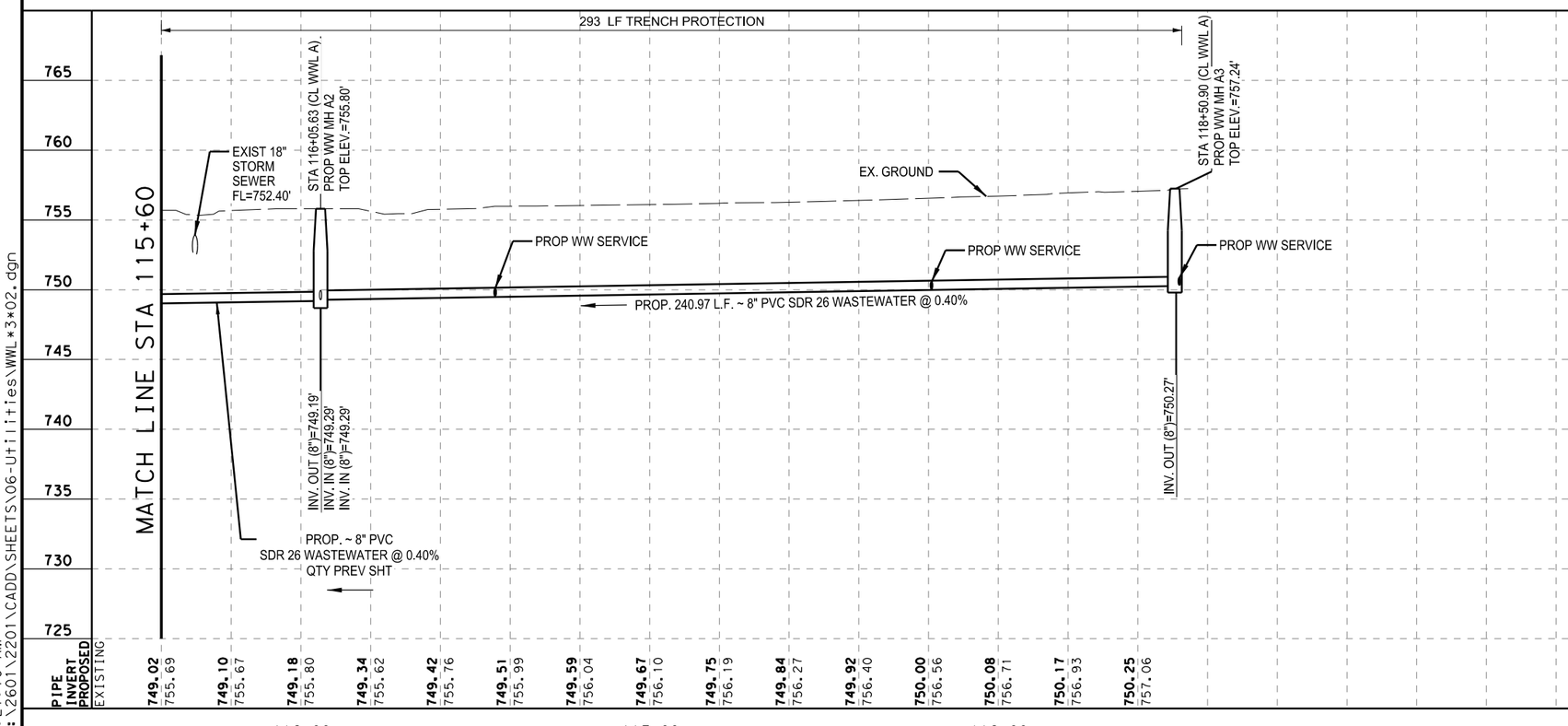

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE A PLAN & PROFILE
SITE 1
STA 115+60 TO END

SHEET 2 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	117
DRAWN: MH	
CHECKED: RE	

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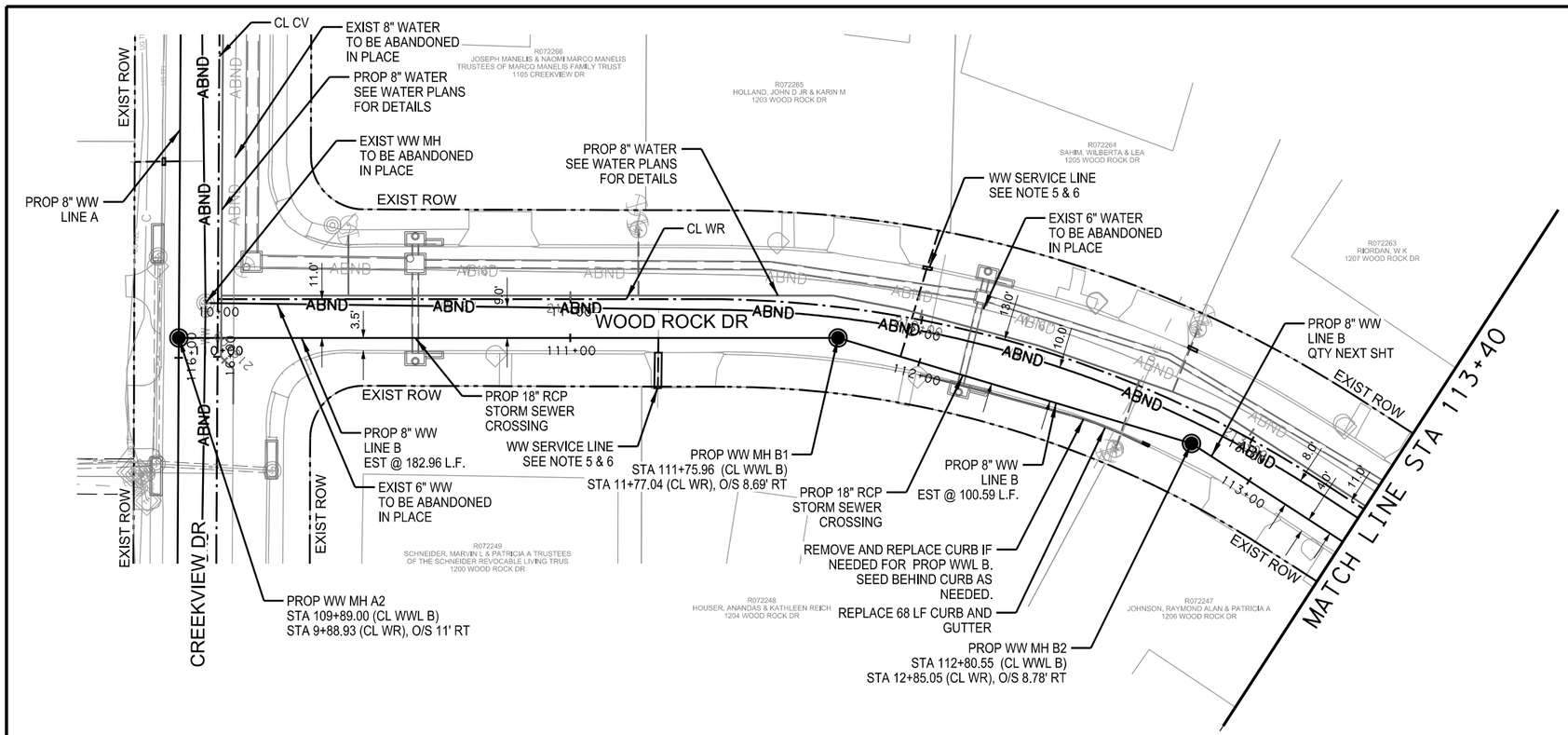

NUMBER	DATE	REVISION	APPROVED

LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- —ABND— ABANDONED LINE

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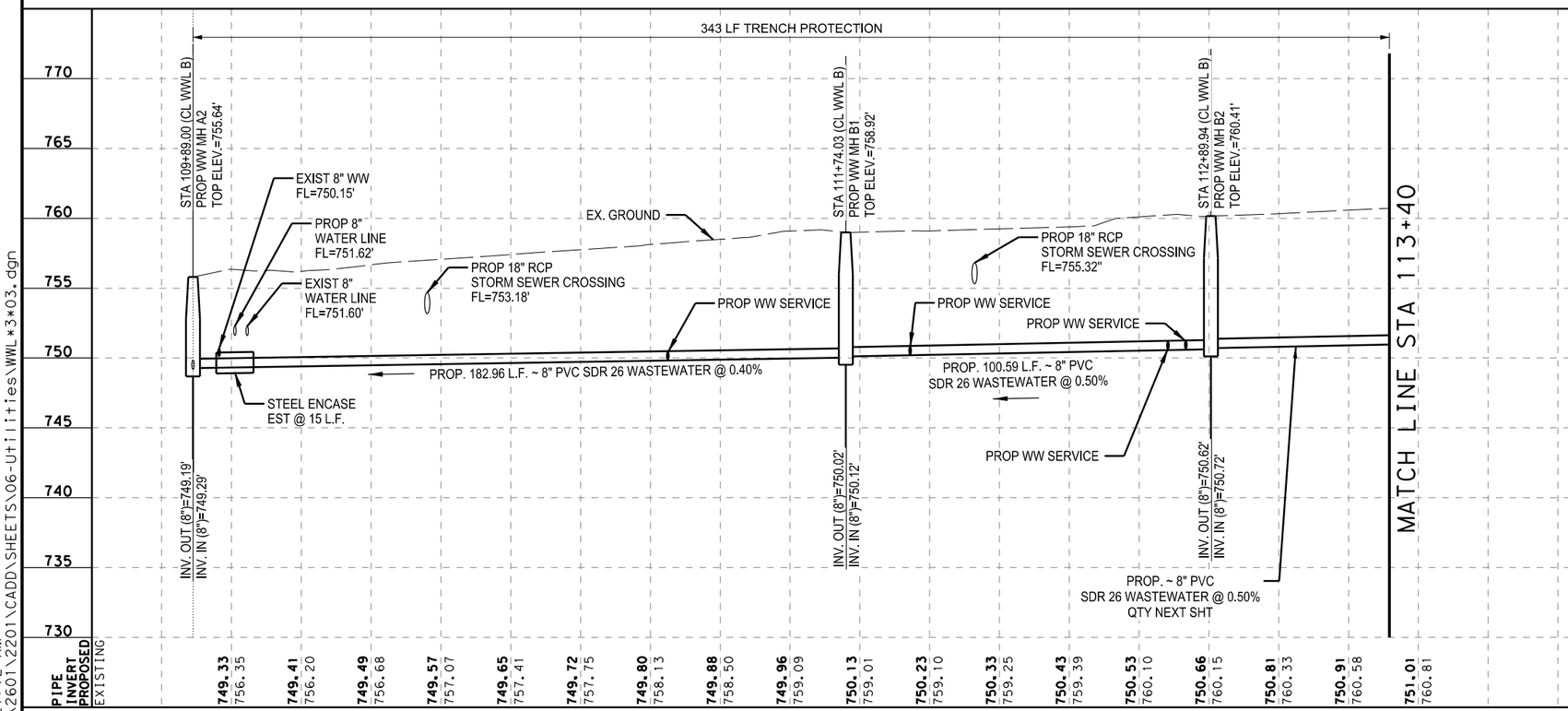

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE B
PLAN & PROFILE

SITE 1
BEGIN TO STA 113+40

SHEET 3 OF 8

PROJECT NO:	SHEET NO. 118
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

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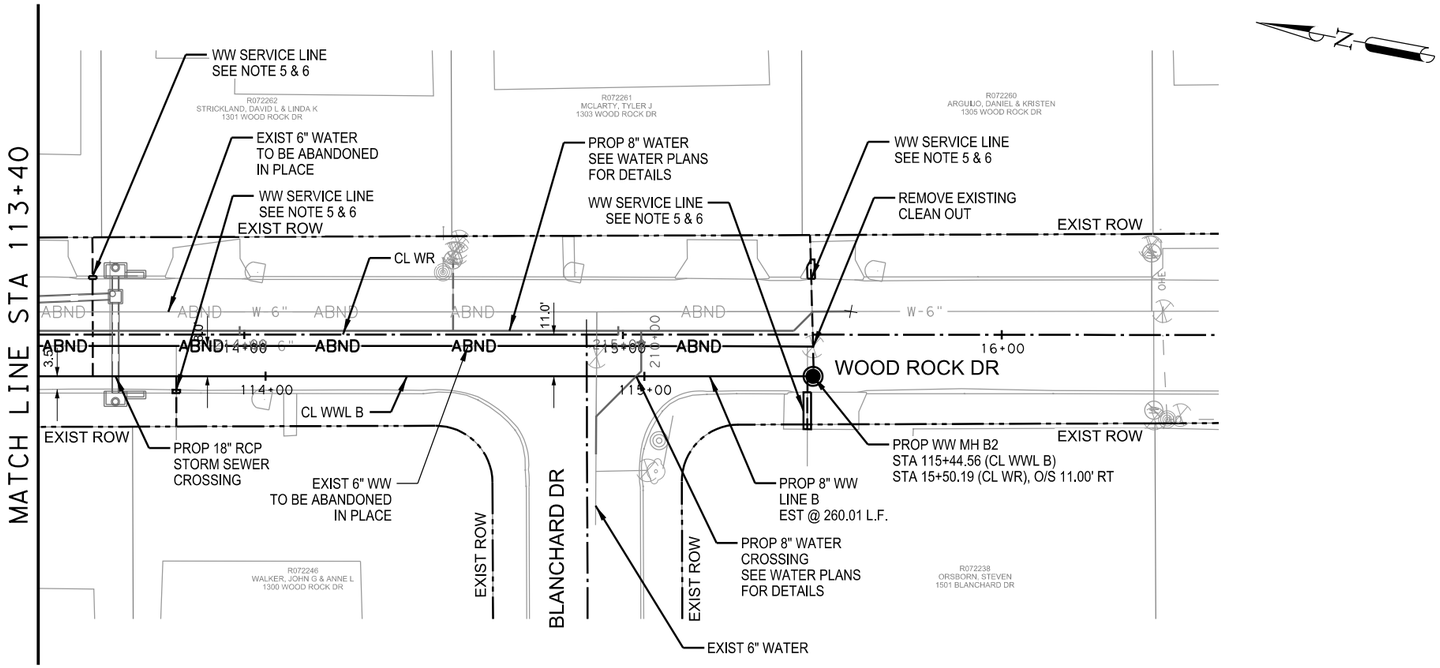
NUMBER	DATE	REVISION	APPROVED



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- —ABND— ABANDONED LINE

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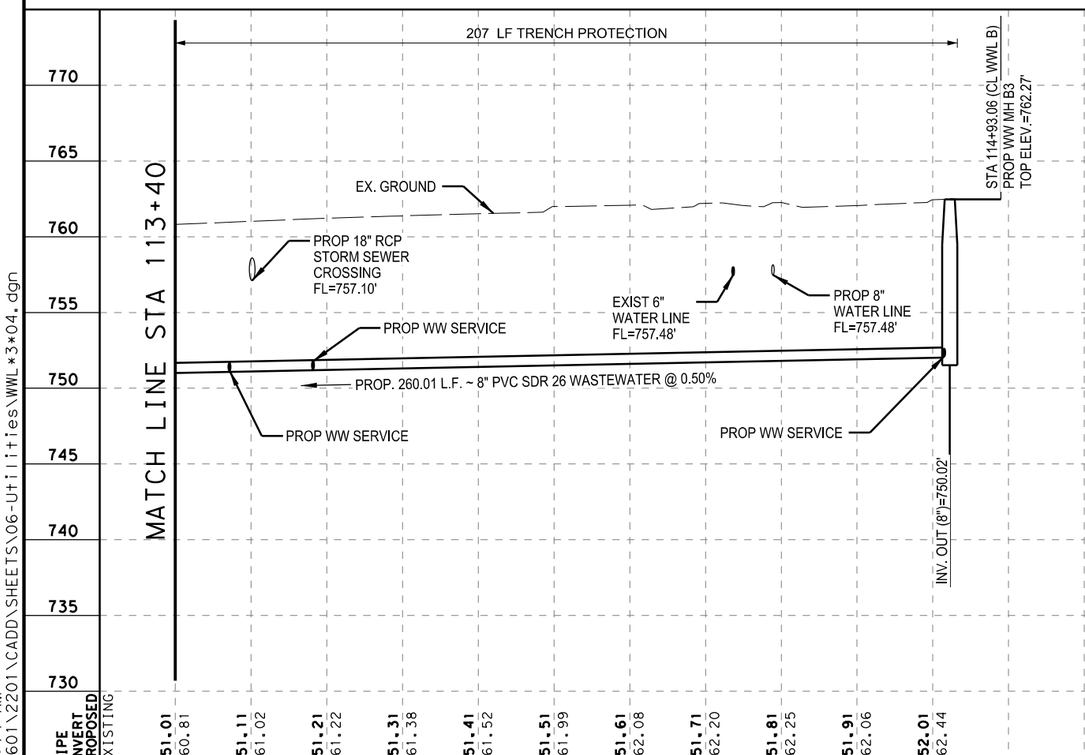

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE B PLAN & PROFILE
SITE 1
STA 113+40 TO END

SHEET 4 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	119
DRAWN: MH	
CHECKED: RE	

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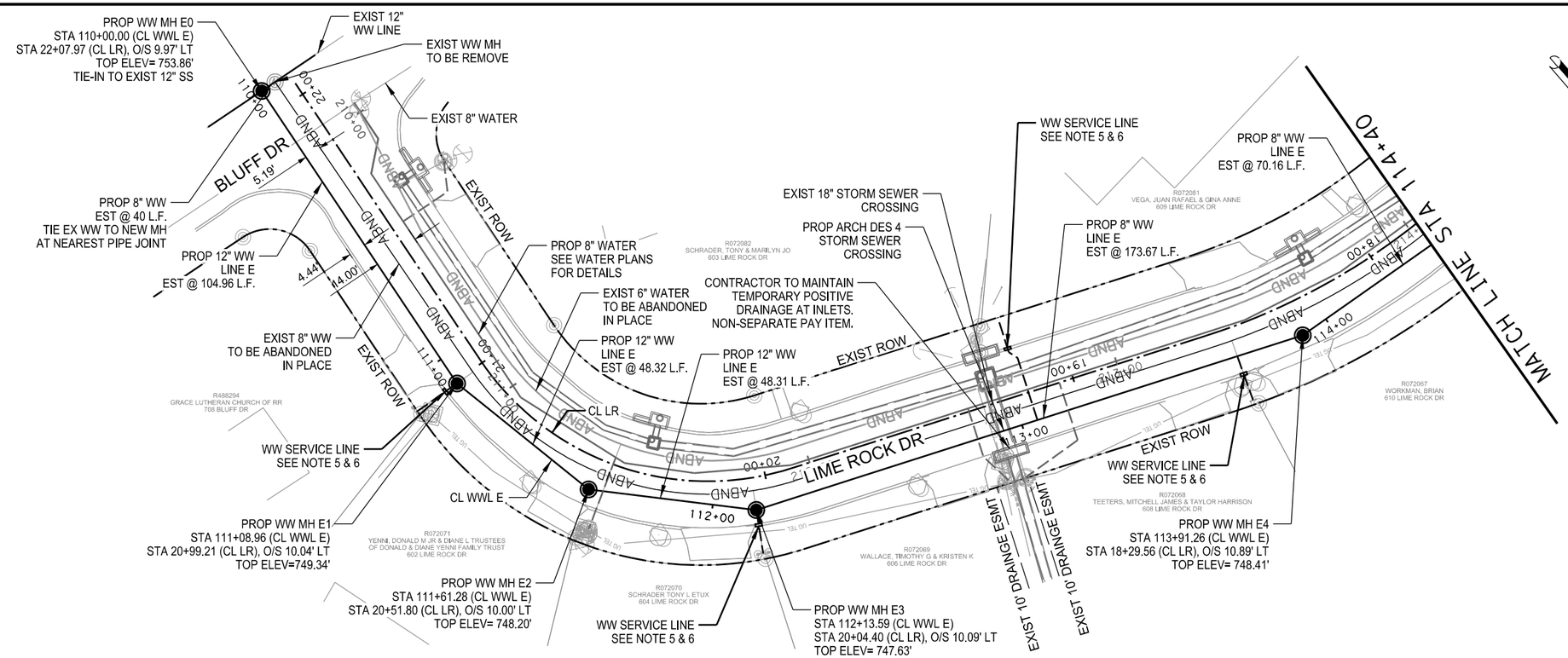

LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
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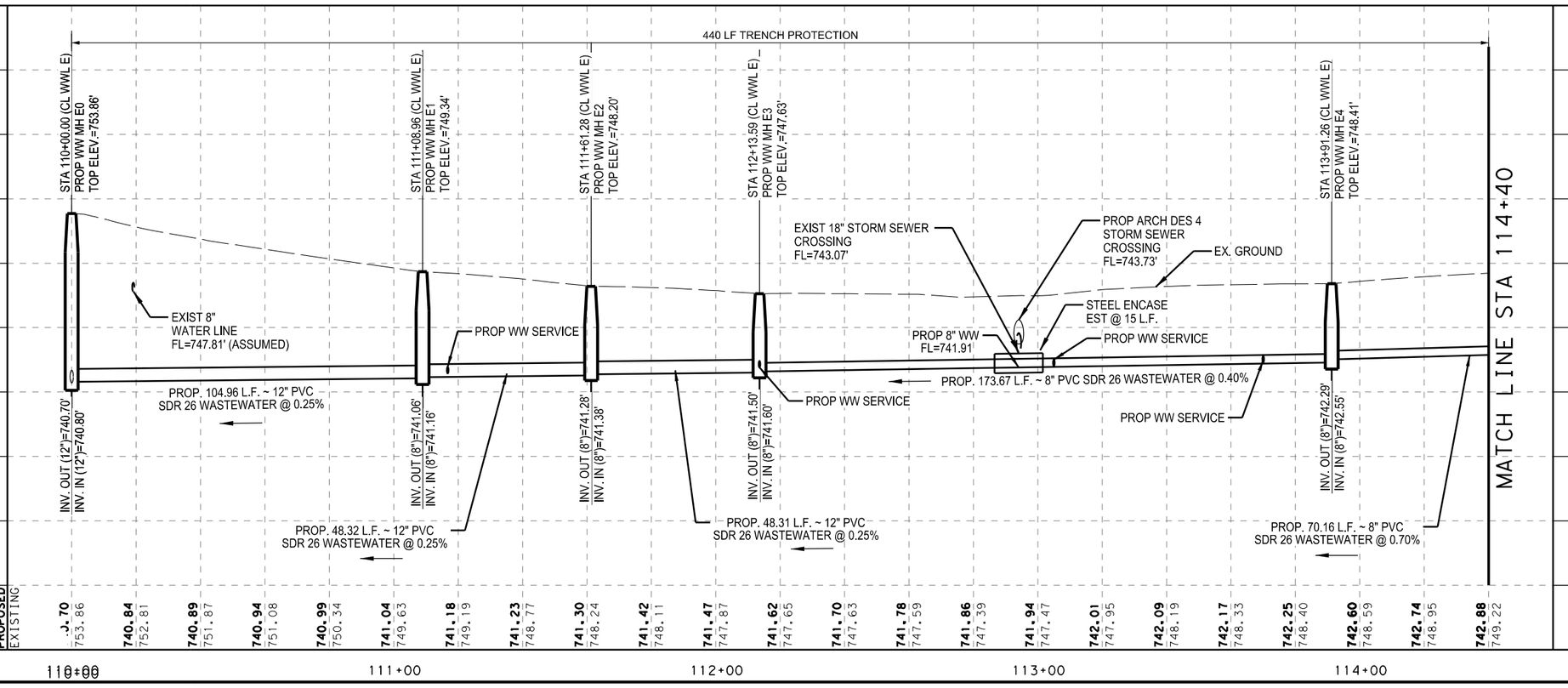

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
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PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE E
PLAN & PROFILE
SITE 2
BEGIN TO STA 114+40

SHEET 5 OF 8

PROJECT NO:	SHEET NO. 120
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

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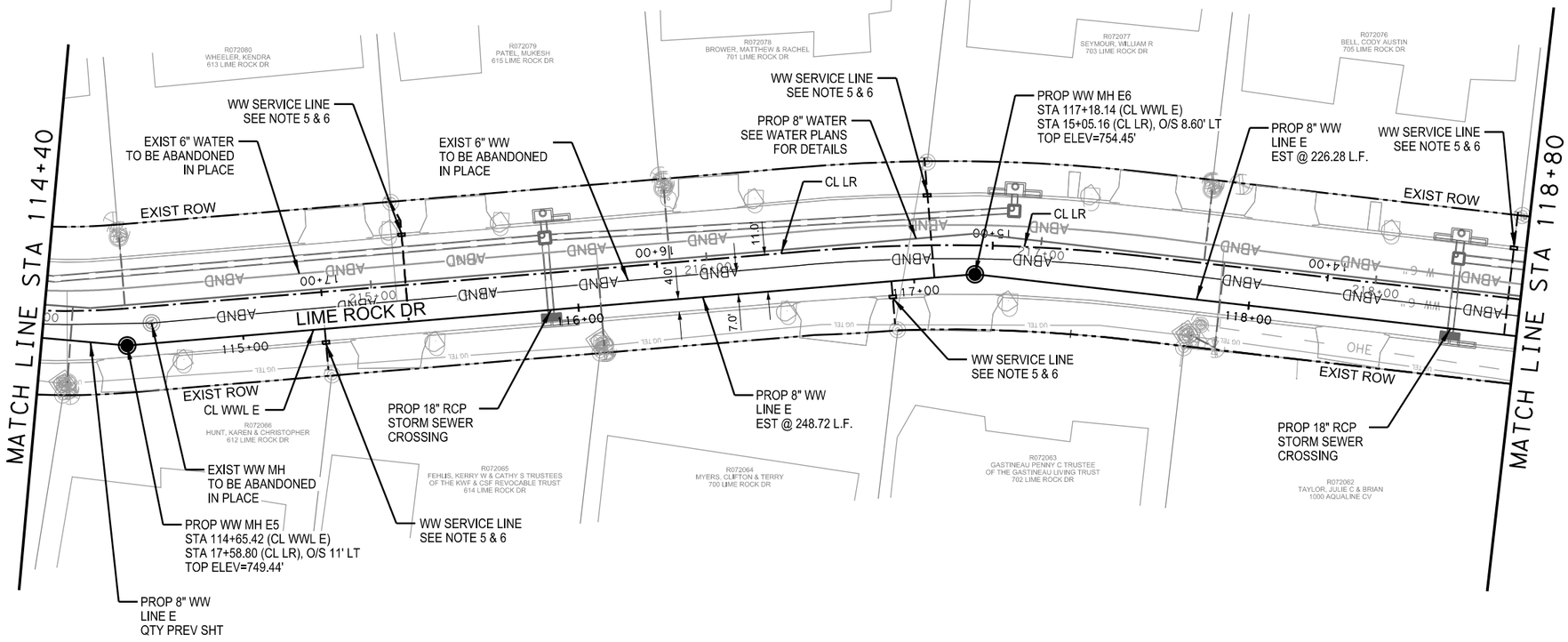

LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
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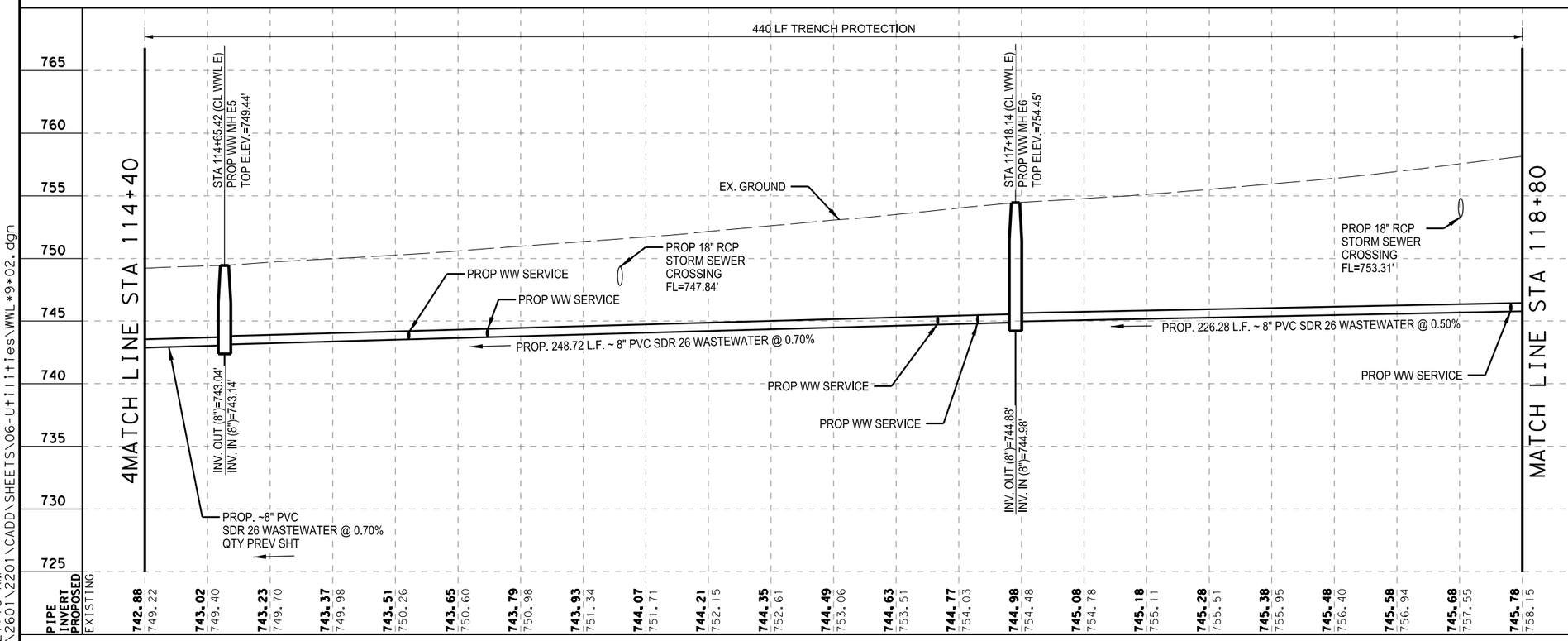

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SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE E
PLAN & PROFILE
SITE 2
STA 114+40 TO STA 118+80
SHEET 6 OF 8

PROJECT NO:	SHEET NO. 121
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

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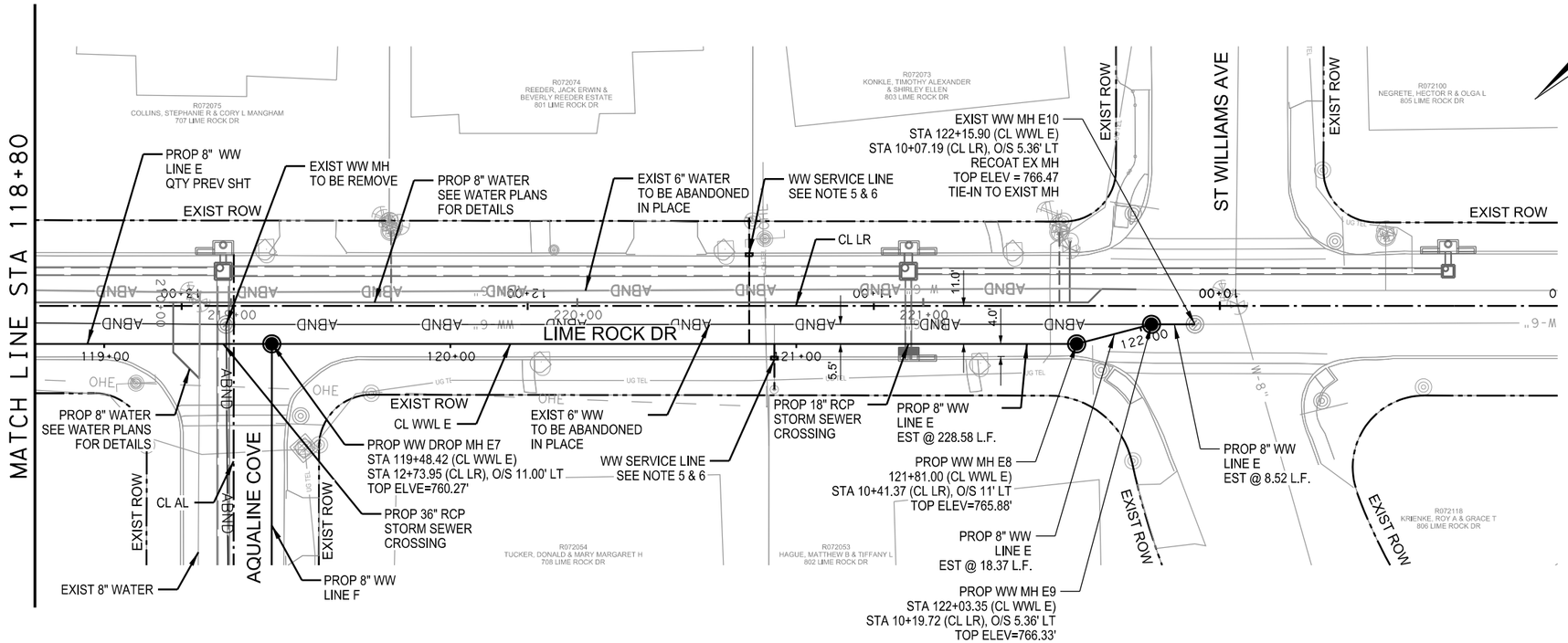
NUMBER	DATE	REVISION	APPROVED



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- ABANDONED LINE

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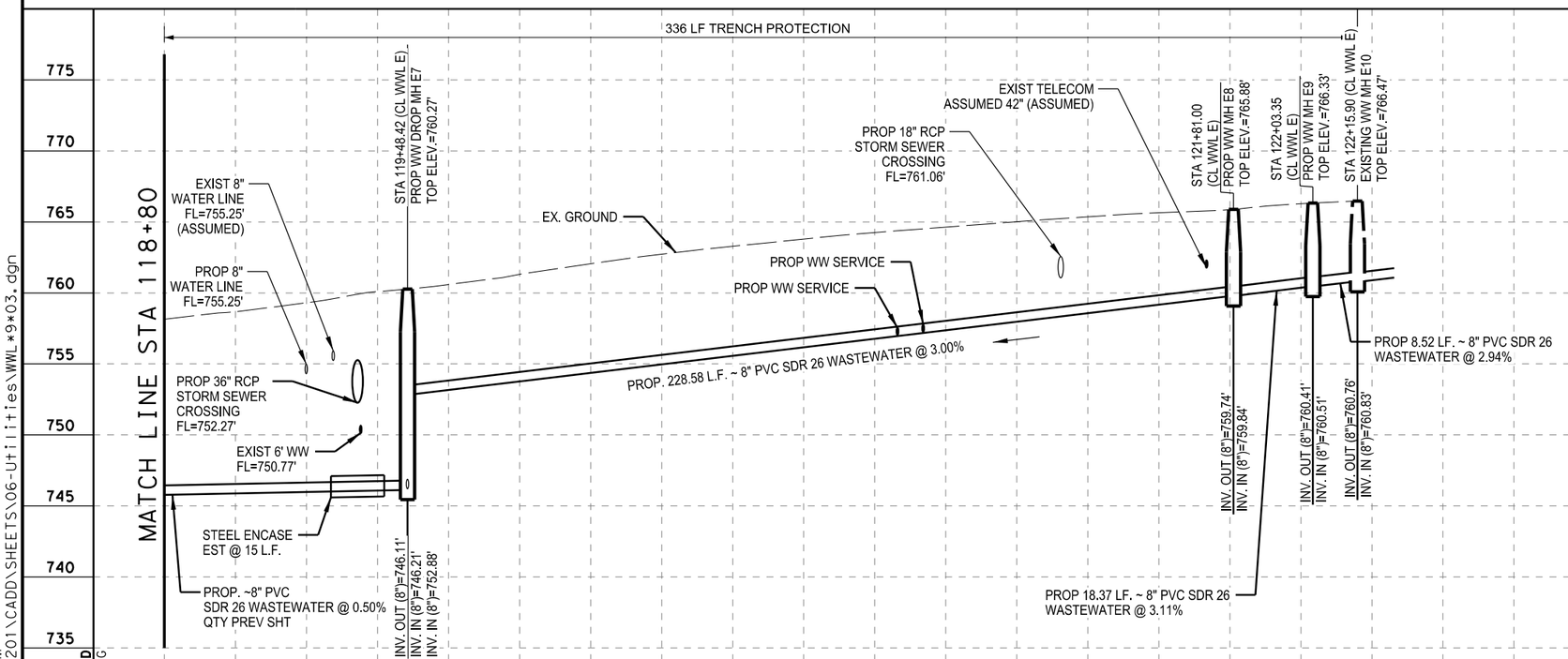

PIPE																							
INVERT																							
PROPOSED																							
EXISTING																							
	745.78	758.15	**745.88**	758.68	**745.98**	759.31	**746.08**	760.09	**753.17**	760.59	**753.77**	761.31	**754.37**	762.05	**754.97**	762.73	**755.57**	763.29	**756.17**	763.79	**756.77**	764.25	**757.37**	764.64	**757.97**	765.02	**758.57**	765.36	**759.17**	765.65	**759.76**	765.86	**760.37**	766.28

0' 10' 20' 40'
SCALE: 1"=40' - HORZ
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STATE OF TEXAS
ROBERTO ERAZO, JR
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PROFESSIONAL ENGINEER
01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE E
PLAN & PROFILE
SITE 2
STA 118+80 TO END
SHEET 7 OF 8

PROJECT NO:	SHEET NO.
DESIGNED: RE	122
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:21:20 AM
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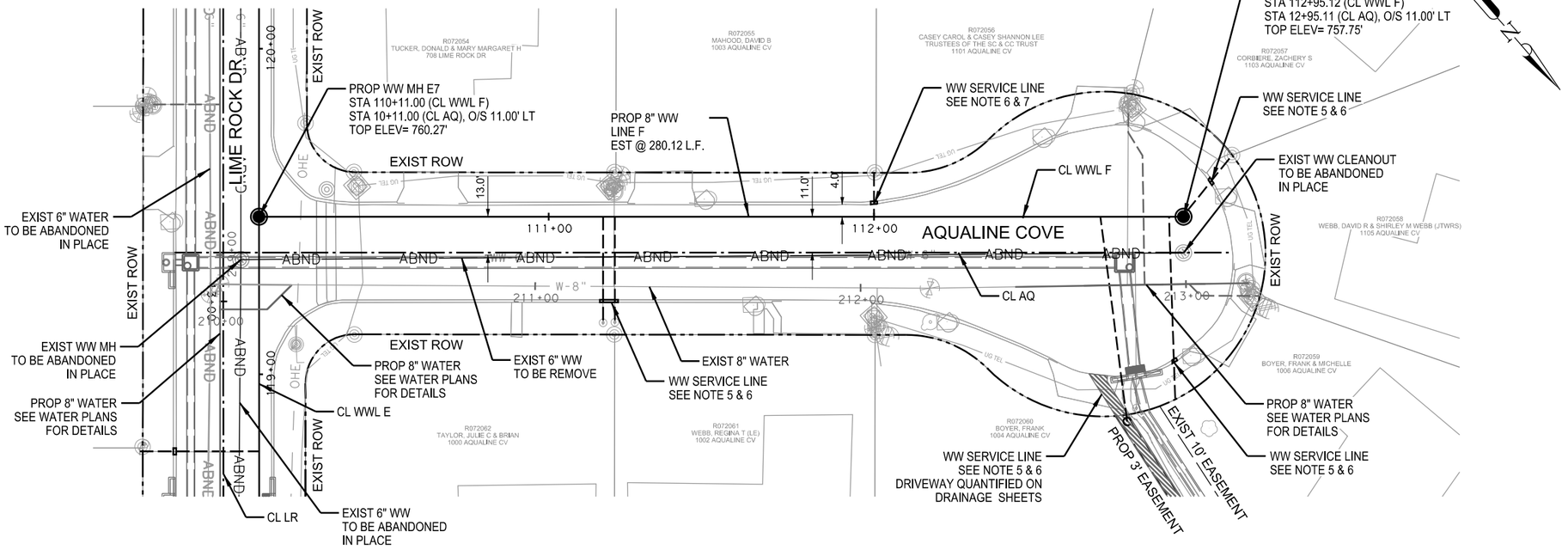
NUMBER	DATE	REVISION	APPROVED



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- EXISTING PLANIMETRICS
- PROPOSED WASTEWATER LINE
- PROPOSED SERVICE LINE
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- —ABND— ABANDONED LINE

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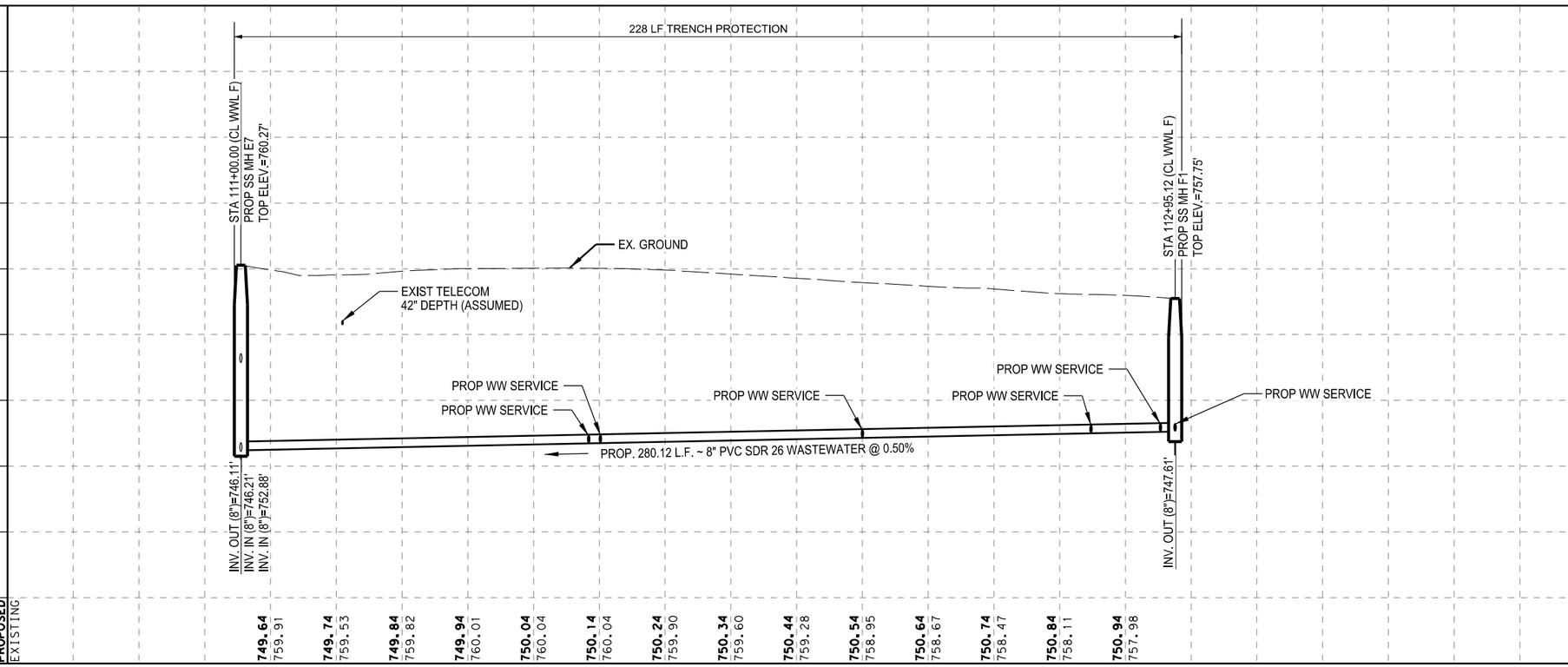

0' 10' 20' 40'
SCALE: 1"=40'- HORZ
1"=10'- VERT

STATE OF TEXAS
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01/16/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER - LINE F
PLAN & PROFILE
SITE 2
BEGIN TO END

SHEET 8 OF 8

PROJECT NO:	SHEET NO. 123
DESIGNED: RE	
DRAWN: MH	
CHECKED: RE	

1/16/2024
8:21:21 AM
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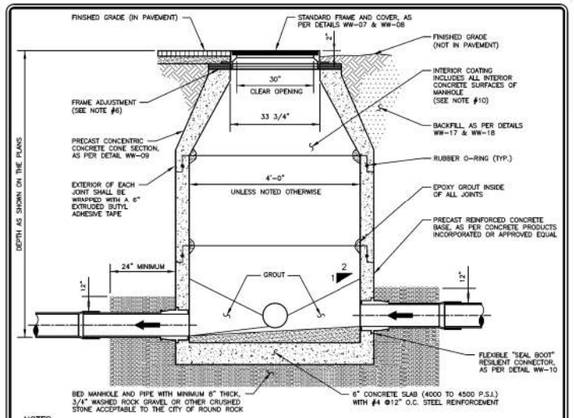
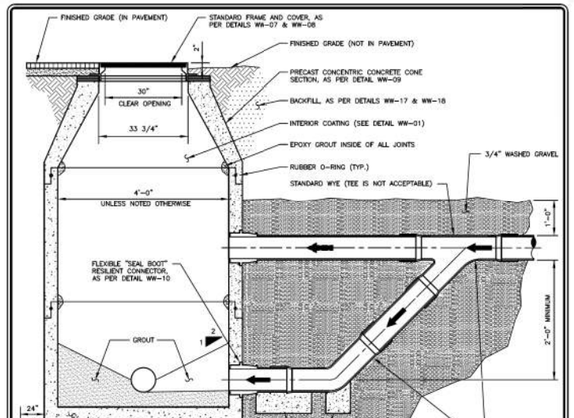


NOTES:

1. IF DROP IS SIX INCHES (6") TO TWO FEET (2'-0"), CONSTRUCTION OF DROP SHALL PROVIDE AN OVERSIZED INVERT TO EXTEND UNDER THE DROP CONNECTION.
2. SEE CONSTRUCTION PLANS FOR MANHOLE SIZE, LOCATION, CONFIGURATION, TYPE OF TOP SECTION, VENTING REQUIREMENTS, PIPE SIZES AND TYPES.
3. MANHOLES SHALL BE PRECAST A.S.T.M. C478 BELL AND SPIGOT WITH "O" RING JOINTS.
4. MANHOLES TO BE DESIGNED TO RESIST LATERAL AND VERTICAL SOIL FORCES RESULTING FROM MANHOLE DEPTH. ADDITIONALLY, MANHOLES LOCATED IN PAVEMENT TO BE DESIGNED FOR H20 TRAFFIC LOADING.
5. ALL MANHOLE COVERS SHALL BE BOLTED AND GASKETED, WHEN MANHOLES ARE LOCATED OUTSIDE OF PAVEMENT.
6. FRAME ADJUSTMENT HEIGHT SHALL CONSIST OF FIVE INCHES (5") MINIMUM TO EIGHTEEN INCHES (18") MAXIMUM. GRADE RINGS SHALL BE GROUTED WITH A NON-SHRINK GROUT INSIDE AND OUTSIDE. HDPE GRADE RINGS, MAY NOT BE USED.
7. FOR MANHOLES TO BE VENTED, SEE DETAILS WW-05 AND WW-06.
8. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO THE FLOW STREAM. ALL P.V.C. PIPE SHALL BE REMOVED FROM INVERT.
9. BASE SECTION SHALL BE DESIGNED FOR H20 LOADING, PLUS EARTH LOAD AT 130 PCF.
10. ENTIRE INTERIOR CONCRETE SURFACES OF WASTEWATER MANHOLES TO BE COATED WITH RAVEN 405, SPRAYWALL, OR APPROVED EQUAL, (WITH A UNIFORM THICKNESS OF 124 MILS AND A MINIMUM THICKNESS OF 100 MILS, APPLIED AFTER MANHOLE HAS PASSED THE VACUUM TEST). FOR REHABILITATING MANHOLES 1/2" MINIMUM THICKNESS CALCIUM ALUMINATE CEMENTITIOUS COATING AND OTHER INTERIOR SURFACES MAY BE COATED IF RECOMMENDED BY COATING MANUFACTURER. (IN LIEU OF INTERIOR COATINGS NEW PRECAST MANHOLES CONTAINING CONSHIELD WILL BE ACCEPTED PROVIDING THE MANUFACTURER STENCILS "CONSHIELD" ON THE INSIDE AND OUTSIDE OF ALL MANHOLE SECTIONS.)

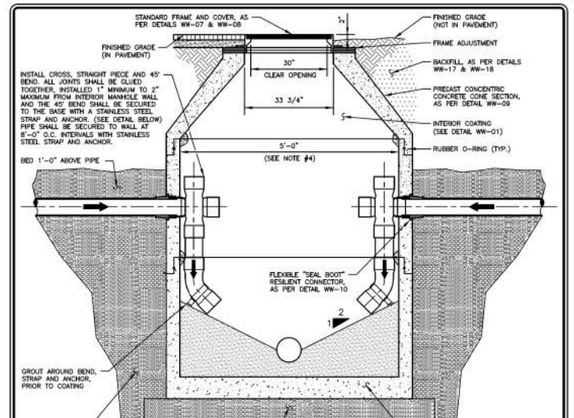
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-01
APPROVED 03-01-18 DATE	PRECAST CONCRETE WASTEWATER MANHOLE DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. SEE NOTES #2 THROUGH #10 ON DETAIL WW-01.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT SEWER IS LOCATED MORE THAN TWO FEET (2'-0") ABOVE THE MAIN INVERT CHANNEL.
3. WHEN P.V.C. PIPE IS USED IN SANITARY SEWER LINES, SOLVENT TYPE JOINT P.V.C. FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY. FITTINGS TO BE P.V.C. SDR-35 WITH TWO PART WATER RESISTANT GLUE AT ALL JOINTS.

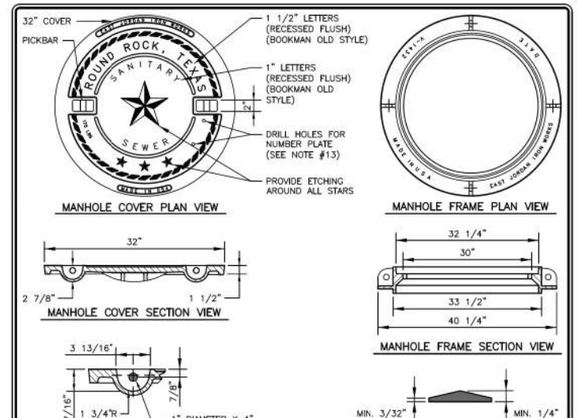
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-02
APPROVED 03-01-18 DATE	PRECAST CONCRETE WASTEWATER MANHOLE WITH DROP CONNECTION DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. SEE NOTES #2 THROUGH #10 ON DETAIL WW-01.
2. DROP SERVICES SHALL BE REQUIRED WHENEVER AN INFLUENT SEWER SERVICE IS LOCATED MORE THAN TWO FEET (2'-0") ABOVE THE MAIN INVERT CHANNEL.
3. WHEN P.V.C. PIPE IS USED IN SANITARY SEWER LINES, SOLVENT TYPE JOINT P.V.C. FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY. FITTINGS TO BE PVC SDR-35 WITH A TWO PART WATER RESISTANT GLUE AT ALL JOINTS.
4. A 5'-0" MANHOLE IS REQUIRED FOR 1 OR 2 DROP SERVICES. IF THERE ARE MORE THAN 2 DROP SERVICES, A 6'-0" DIAMETER MANHOLE IS REQUIRED.

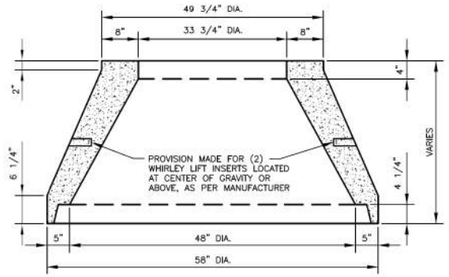
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-03
APPROVED 03-01-18 DATE	PRECAST CONCRETE WASTEWATER MANHOLE WITH DROP SERVICE DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. MANHOLE COVER SHALL BE MODEL NUMBER: V-1432-3 (PRODUCT NUMBER: 41432059), AS MANUFACTURED BY EAST JORDAN IRON WORKS INCORPORATED, OR APPROVED EQUAL.
3. MANHOLE FRAME SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432010), AS MANUFACTURED BY EAST JORDAN IRON WORKS INCORPORATED, OR APPROVED EQUAL.
4. MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432089), AS MANUFACTURED BY EAST JORDAN IRON WORKS INCORPORATED, OR APPROVED EQUAL.
5. ALL COVERS AND FRAMES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.
6. MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS.
7. MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
8. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING.
9. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
10. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
11. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.
12. MANUFACTURER SHALL DRILL 2-3/16" X 1/2" DEEP HOLES FOR A MANHOLE NUMBER PLATE TO BE PROVIDED BY THE CITY OF ROUND ROCK. THE TOP HOLE SHALL BE DRILLED 1" O.C. FROM THE BOTTOM OF THE PICKBAR AND THE BOTTOM HOLE SHALL BE DRILLED 4" O.C. FROM THE TOP HOLE.

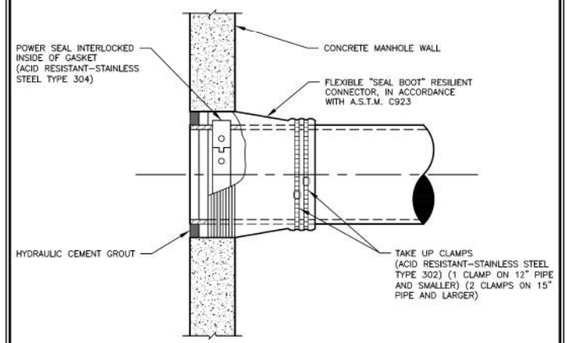
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-08
APPROVED 03-01-18 DATE	NON-BOLTED WASTEWATER MANHOLE COVER AND FRAME DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTE:

CONCENTRIC CONCRETE CONE SECTION SHALL BE MANUFACTURED USING 4000 TO 4500 P.S.I. CONCRETE, 28 DAY STRENGTH AND IN ACCORDANCE WITH A.S.T.M. C478, AS MANUFACTURED BY CONCRETE PRODUCTS INCORPORATED, OR APPROVED EQUAL.

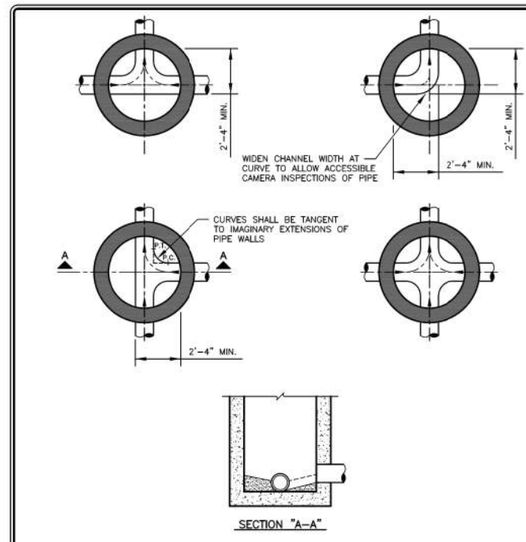
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-09
APPROVED 03-01-18 DATE	PRECAST 48" CONCENTRIC CONCRETE CONE SECTION DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTE:

1. FLEXIBLE "SEAL BOOT" RESILIENT CONNECTOR TO BE A MINIMUM OF 12 INCHES (12") FROM A MANHOLE JOINT.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-10
APPROVED 03-01-18 DATE	FLEXIBLE "SEAL BOOT" RESILIENT CONNECTOR DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. MINIMUM DROP FROM INLET TO OUTLET OF MANHOLE IS 0.1 FEET AND MAXIMUM DROP IS 2 FEET, UNLESS SPECIAL APPROVAL IS OBTAINED FROM THE CITY OF ROUND ROCK.
2. INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
3. SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING FOR SMOOTH FLOW.
4. CHANNELS FOR FUTURE CONSTRUCTIONS, SHALL BE CONSTRUCTED WITH PIPE EXTENDING 3' BEYOND EXTERIOR OF MANHOLE WALL, WITH GLUED PLUG.
5. SLOPE MANHOLE BENCH AT 2:1 SLOPE FROM MANHOLE WALL TO CHANNEL.
6. INVERT CHANNEL SHALL BE A MINIMUM OF 1/2 THE DIAMETER OF THE LARGEST PIPE OR FOUR INCHES (4") DEEP.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-11
APPROVED 03-01-18 DATE	WASTEWATER FLOW PATTERNS FOR INVERT CHANNELS DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER
STANDARDS

SHEET 1 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: HV	124
DRAWN: HV	
CHECKED: RE	

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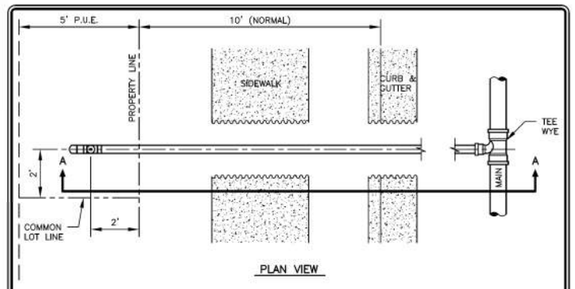
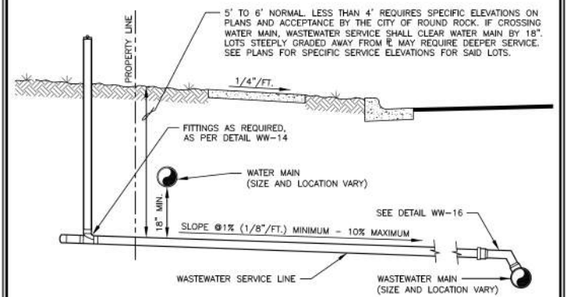
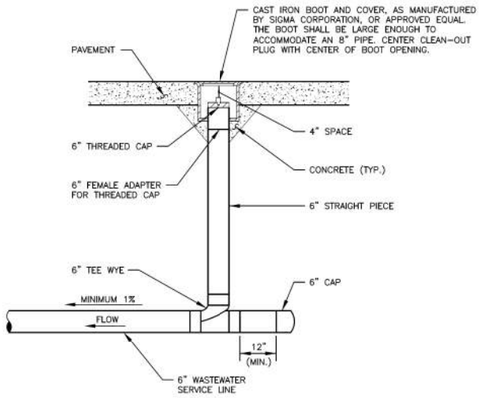


PLAN VIEW



SECTION "A-A"

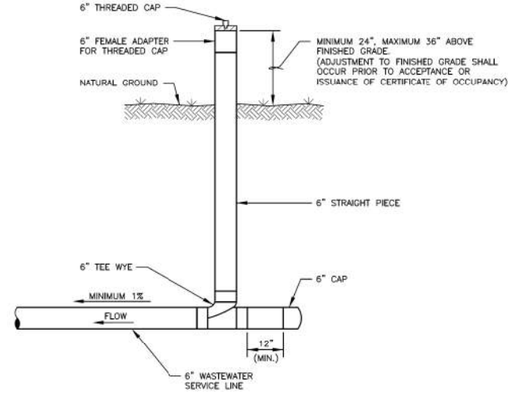
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-12
APPROVED 03-01-18 DATE	WASTEWATER SERVICE DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. ALL PIPE TO BE SDR 26.
2. ALL FITTINGS TO BE SDR 35 SOLVENT WELD FITTINGS.

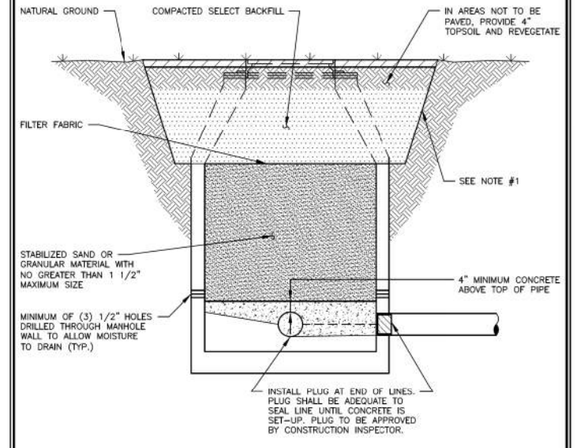
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-13
APPROVED 03-01-18 DATE	WASTEWATER SERVICE CLEAN-OUT DETAIL (PAVED SURFACE)	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. ALL PIPE TO BE SDR 26.
2. ALL FITTINGS TO BE SDR 35 SOLVENT WELD FITTINGS.

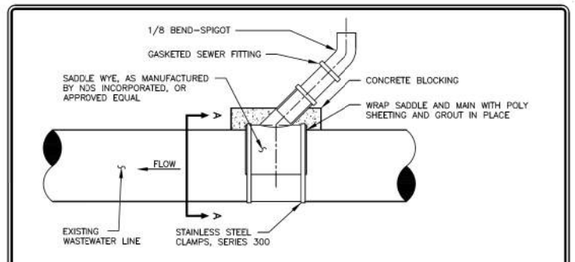
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-14
APPROVED 03-01-18 DATE	WASTEWATER SERVICE CLEAN-OUT DETAIL (NON-PAVED SURFACE)	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



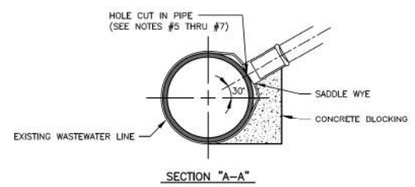
NOTES:

1. REMOVE ENTIRE CONE SECTION AND DEMOLISH STRUCTURE TWO FEET (2') MINIMUM BELOW GROUND LEVEL.
2. IF LINE WHICH IS TO ABANDONED IN PLACE, EXTENDS UNDER EXISTING OR PROPOSED STRUCTURE, THEN THE ENTIRE LINE TO THE NEXT MANHOLE SHALL BE GROUTED OR SLURRY FILLED.
3. IF LINE IS NOT LOCATED UNDER A STRUCTURE, ABANDON EXISTING LINE IN PLACE BY PLUGGING BOTH ENDS OF LINE AND GROUTING AROUND PLUGS.
4. THE CONTRACTOR IS TO RECORD AND CERTIFY QUANTITIES OF GROUT OR SLURRY PUMPED. QUANTITIES MUST BE A MINIMUM OF 90% OF CALCULATED EXISTING VOID CAPACITY.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-15
APPROVED 03-01-18 DATE	WASTEWATER MANHOLE ABANDONMENT DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



PLAN VIEW

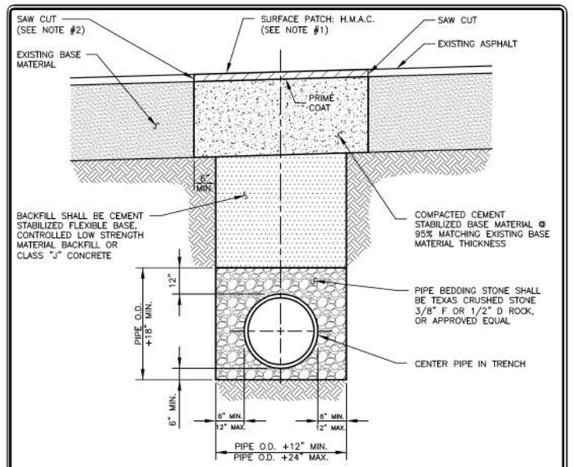


SECTION "A-A"

NOTES:

1. FLEXIBLE SADDLE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
2. EXCAVATE AROUND EXISTING WASTEWATER PIPE, EXPOSING SUFFICIENT ROOM FOR STAINLESS STEEL CLAMPS.
3. THOROUGHLY CLEAN AND DRY THE MATING SURFACE.
4. MARK THE SIZE OF THE HOLE TO BE CUT USING THE SADDLE ITSELF AS A TEMPLATE.
5. SAW OUT THE SECTION OF THE PIPE WHERE THE SADDLE WILL BE LOCATED, WITH A SABER OR KEY HOLE SAW. PIPE COUPONS SHALL BE REMOVED FROM EXISTING MAIN AND DISCARDED. PIPE CUTTINGS IN EXCESS OF 1" IN DIAMETER SHALL NOT BE LEFT IN EXISTING MAIN.
6. ENSURE SADDLE FITS HOLE PROPERLY.
7. PLACE GASKET SKIRT AND SADDLE OVER OPENING AND TIGHTEN BAND CLAMPS EVENLY UNTIL SADDLE IS FIRMLY ATTACHED TO THE PIPE. APPLY PRESSURE ON THE SADDLE AGAINST THE PIPE WHILE TIGHTENING THE CLAMPS AS INDICATED ABOVE. DO NOT OVER TIGHTEN AND DO NOT STRIP THREAD.
8. SERVICE PIPE SHALL BE INSERTED FULLY TO CONTACT SEAT FORMED IN FITTING.
9. REPLACE THE BEDDING AND BACKFILL IN ACCORDANCE WITH THE TRENCH EMBEDMENT DETAIL.

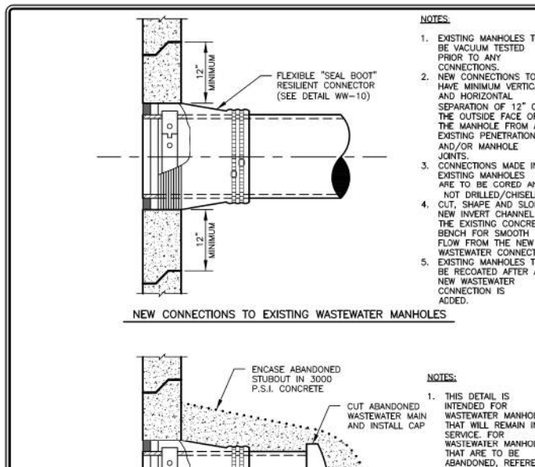
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-16
APPROVED 03-01-18 DATE	WASTEWATER LATERAL CONNECTION TO EXISTING WASTEWATER MAIN DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NOTES:

1. H.M.A.C. THICKNESS SHALL MATCH EXISTING ASPHALT THICKNESS AND NO LESS THAN 2".
2. THE CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING PAVEMENT AND FLEXIBLE BASE A MINIMUM OF 6" BEYOND EITHER THE EDGE OF THE WASTEWATER LINE TRENCH OR THE POINT WHERE EXISTING PAVEMENT IS DAMAGED DUE TO TRENCHING OPERATIONS, WHICHEVER IS GREATER. FINISHED PATCH SHALL BE NEAT AND UNIFORM.
3. INSTALLATION OF BACKFILL, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT AND SURFACE PATCH SHALL NOT BE PAID FOR SEPARATELY. COSTS FOR THESE ITEMS SHALL BE INCLUDED IN UNIT PRICE BID FOR WASTEWATER PIPE.
4. THE CONTRACTOR SHALL PROVIDE STEEL PLATES TO SPAN THE TRENCH AS NECESSARY OR TO ALLOW BACKFILL TO CURE. SUCH PLATES SHALL BE SUITABLE FOR VEHICLE PASSAGE OVER THE TRENCH AND SHALL BE SATISFACTORILY ANCHORED IN PLACE. COSTS FOR THIS ITEM SHALL BE INCLUDED IN UNIT PRICE BID FOR WASTEWATER PIPE.
5. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

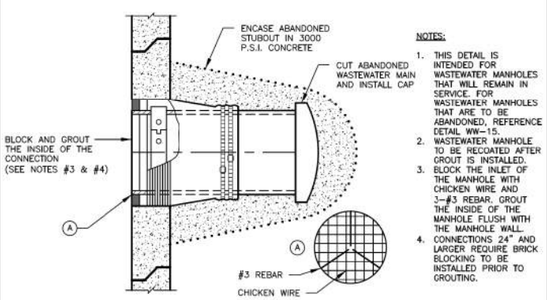
RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-17
APPROVED 03-01-18 DATE	WASTEWATER LINE BEDDING AND SURFACE REPAIR DETAIL (EXISTING PAVED SURFACE)	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



NEW CONNECTIONS TO EXISTING WASTEWATER MANHOLES

NOTES:

1. EXISTING MANHOLES TO BE VACUUM TESTED PRIOR TO ANY CONNECTIONS.
2. NEW CONNECTIONS TO HAVE MINIMUM VERTICAL AND HORIZONTAL SEPARATION OF 12" ON THE OUTSIDE FACE OF THE MANHOLE FROM ANY EXISTING PENETRATIONS AND/OR MANHOLE JOINTS.
3. CONNECTIONS MADE INTO EXISTING MANHOLES ARE TO BE CORED AND NOT DRILLED/CHISELED.
4. CUT, SHAPE AND SLOPE NEW INVERT CHANNEL IN THE EXISTING CONCRETE BENCH FOR SMOOTH FLOW FROM THE NEW WASTEWATER CONNECTION.
5. EXISTING MANHOLES TO BE RECOATED AFTER ANY NEW WASTEWATER CONNECTION IS ADDED.



ABANDONMENT OF CONNECTIONS TO EXISTING WASTEWATER MANHOLES

NOTES:

1. THIS DETAIL IS INTENDED FOR WASTEWATER MANHOLES THAT WILL REMAIN IN SERVICE. FOR WASTEWATER MANHOLES THAT ARE TO BE ABANDONED, REFERENCE DETAIL WW-15.
2. WASTEWATER MANHOLE TO BE RECOATED AFTER GROUT IS INSTALLED.
3. BLOCK THE INLET OF THE MANHOLE WITH CHICKEN WIRE AND 3-#3 REBAR. GROUT THE INSIDE OF THE MANHOLE FLUSH WITH THE MANHOLE WALL.
4. CONNECTIONS 24" AND LARGER REQUIRE BRICK BLOCKING TO BE INSTALLED PRIOR TO GROUTING.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT	CITY OF ROUND ROCK	DRAWING NO: WW-21
APPROVED 03-01-18 DATE	EXISTING WASTEWATER MANHOLE CONNECTION DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

STATE OF TEXAS
ROBERTO ERAZO, JR
123437
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

ROUND ROCK, TEXAS
PURPOSE. PASSION. PROSPERITY.

LJA Engineering, Inc.
FRN - F-1386

RRW AREA 5
WASTEWATER STANDARDS

SHEET 2 OF 2

PROJECT NO:	SHEET NO.
DESIGNED: HV	125
DRAWN: HV	
CHECKED: RE	

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LJA ENGINEERING
2700 La Frontera, Suite 150, Round Rock, Texas 78681
t 512.767.7300 LJA.com

Inspection and Maintenance for BMP's

Inspections and maintenance will be in accordance with TCEQ construction General Permit No. TXR150000.

LJA ENGINEERING
2700 La Frontera, Suite 150, Round Rock, Texas 78681
t 512.767.7300 LJA.com

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

OTHER CONTROLS
STABILIZATION MEASURES:

INSPECTOR:_____ DATE _____

DAYS SINCE LAST RAINFALL: _____ AMOUNT OF LAST RAINFALL:_____ INCHES

AREA	DATE SINCE LAST DISTURBED	DATE OF NEXT DISTURBANCE	STABILIZED?	STABILIZED WITH	CONDITION

STABILIZATION REQUIRED:

_____

_____

_____

_____

_____

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

LJA ENGINEERING
2700 La Frontera, Suite 150, Round Rock, Texas 78681
t 512.767.7300 LJA.com

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

OTHER CONTROLS
FILTER FABRIC FENCE:

LOCATION	BOTTOM OF FABRIC STILL BURIED	FABRIC TORN OR SAGGING	POST TIPPING OVER?	HOW DEEP IS THE SEDIMENT?

MAINTENANCE REQUIRED FOR SILT FENCE:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

Inspector: _____ Date: _____

LJA ENGINEERING
2700 La Frontera, Suite 150, Round Rock, Texas 78681
t 512.767.7300 LJA.com

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

STRUCTURAL CONTROLS
ROCK BERM:

DATE: _____

ROCK BERM LOCATION	IS ROCK BERM STABILIZED?	IS THERE EVIDENCE OF WASHOUT OR OVER-TOPPING?

MAINTENANCE REQUIRED FOR SILT FENCE:

_____

_____

_____

_____

_____

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

Inspector: _____ Date: _____

LJA ENGINEERING
2700 La Frontera, Suite 150, Round Rock, Texas 78681
t 512.767.7300 LJA.com

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

INSPECTOR'S SIGNATURE: _____ DATE: _____

LJA ENGINEERING
2700 La Frontera, Suite 150, Round Rock, Texas 78681
t 512.767.7300 LJA.com

Schedule of Interim and Permanent Soil Stabilization Practices

Interim stabilization would be performed pursuant to TCEQ Construction General Permit TXR150000. All areas not planned for impervious cover (i.e. asphalt, concrete) will be permanently stabilized with sodding prior to completion of this project.

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

I Federico Sanchez, P.E.,
Print Name

of Stormwater Engineer,
Title - Owner/President/Other

of City of Round Rock, Utilities and Environmental Services,
Corporation/Partnership/Entity Name

have authorized Derek Bohls, P.E.
Print Name of Agent/Engineer

of LJA Engineering
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:

Federico Sanchez
Applicant's Signature

Date 10/12/22

THE STATE OF Texas §

County of Williamson §

BEFORE ME, the undersigned authority, on this day personally appeared Federico Sanchez 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 12th day of October, 2022

AMANDA TAYLOR
Notary Public, State of Texas
Comm. Expires 01-07-2025
Notary ID 132856239

A. Taylor
NOTARY PUBLIC

Amanda Taylor
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 1/7/2025

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: City of Round Rock West Area 5
Regulated Entity Location: Round Rock, TX
Name of Customer: City of Round Rock
Contact Person: Federico Sanchez Phone: (512) 218-6609
Customer Reference Number (if issued):CN 600413181
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	1 Each	$ 500
Extension of Time	Each	$

Signature: Derek Bohle Date: 02/20/2024

Application Fee Schedule

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 600413181		RN

SECTION II: Customer Information

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

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

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

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

City of Round Rock

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

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☒ Limited
Government: ☒ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☒ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☐ No

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

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

City of Round Rock
3400 Sunrise Road

City	Round Rock	State	TX	ZIP	78665	ZIP + 4	

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 218-6609		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

City of Round Rock West Area 5

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

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	All Sites located West of IH-35. Site 1:Creekview Dr and Wood Rock Dr. Site 2: Limerock Dr and Aqualine Cove. Site 3: Scenic Loop and Oakridge Dr.

26. Nearest City	**State**	**Nearest ZIP Code**
Round Rock	TX	78665

27. Latitude (N) In Decimal:	30.497978		**28. Longitude (W) In Decimal:**	-97.699683	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	29	52.7	-97	41	58.9

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)
9199		921190	

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

City of Round Rock

34. Mailing Address:	**3400 Sunrise Road**							
	City	**Round Rock**	**State**	**TX**	**ZIP**	**78665**	**ZIP + 4**	

35. E-Mail Address:	

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

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

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

SECTION IV: Preparer Information

40. Name:	Derek Bohls	**41. Title:**	Project Manager

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 439-4744		( ) -	dbohls@lja.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:	LJA Engineering	**Job Title:**	Project Manager
Name*(In Print)* **:**	Derek Bohls	**Phone:**	(512) 439-4744
Signature:	Derek Bohls	**Date:**	2/20/2024

Roberto Erazo

From: Scott Flesher
Sent: Tuesday, January 11, 2022 10:25 AM
To: Roberto Erazo
Cc: Derek Bohls
Subject: RE: Channel Grading
Attachments: Horizon_LJA CTX_Round Rock_RRW Area 5 _GA proposal.docx

Roberto,

Attached is the proposal in a word doc, so you can cut and paste what you need. Let me know if you want a formal proposal addressed to someone or anything else.

Thank you,

Scott Flesher
Vice President I Ecological Program Manager
Horizon Environmental Services, Inc.
C: 512.695.4060 | TBPG Firm No. 50488

From: Roberto Erazo <rerazo@lja.com>
Sent: Monday, January 10, 2022 11:09 AM
To: Scott Flesher <sflesher@horizon-esi.com>
Cc: Derek Bohls <dbohls@lja.com>
Subject: FW: Channel Grading

Scott,

Can you provide GA scope and fee for SCS plan? Im including the word doc (See Task 5) fee schedule (ENV tab) to that you can just add the info. KMZ for reference.

This if for the Round Rock. Im trying to get this info back ASAP to submit to City. They are trying to get this on the January Council agenda.

Roberto Erazo, P.E.
Project Manager

LJA Engineering | We seek Solutions.
San Antonio
P: 210.503.2700
D: 210.503.2725
C: 832-660-8117
LJA.com
Facebook • Twitter • LinkedIn

From: Derek Bohls <dbohls@lja.com>
Sent: Friday, January 7, 2022 1:44 PM

To: Roberto Erazo <rerazo@lja.com>
Subject: FW: Channel Grading

See below. We will need to add an SCS plan and reach out to Horizon to add a GA to the scope and fee.

Derek Bohls PE, CFM
Vice President – Central Texas Infrastructure

LJA Engineering
2700 La Frontera
Suite 150
Round Rock, TX 78681
P: 512.439.4700
D: 512.439.4744
C: 512.619.3274
dbohls@ljaengineering.com
www.ljaengineering.com
Facebook • Twitter • LinkedIn

From: Betsy Yockey <Betsy.Yockey@Tceq.Texas.Gov>
Sent: Friday, January 7, 2022 11:23 AM
To: Derek Bohls <dbohls@lja.com>
Subject: RE: Channel Grading

[EXTERNAL EMAIL]

Hi Derek,

Thank you for speaking with me earlier. As discussed, based on the information provided, a Request for an Exception to Water Pollution Abatement Plan Requirements (WPAP-EXP) would be appropriate for the storm sewer updates based on the pre-Rule IC of the neighborhood and no increase in impervious cover. For the sewer line improvements however, an Organized Sewage Collection System (SCS) would be required. Please note projects over the Recharge Zone (e.g., WPAP and SCS) require a Geologic Assessment (GA).

If you have any questions regarding the above information, please let me know.

Betsy Yockey
Environmental Investigator
Edwards Aquifer Protection Program
TCEQ Region 11 – Austin
512-339-2929 – Main
512-239-7014 – Direct

From: Derek Bohls <dbohls@lja.com>
Sent: Thursday, January 6, 2022 11:44 AM
To: Kevin Smith <kevin.smith@tceq.texas.gov>; Betsy Yockey <Betsy.Yockey@Tceq.Texas.Gov>
Cc: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Subject: RE: Channel Grading

Kevin, thanks for the info and congrats to Leah. I will direct my questions to the below email in the future.

Derek Bohls PE, CFM
Vice President – Central Texas Infrastructure

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From: Kevin Smith <kevin.smith@tceq.texas.gov>
Sent: Thursday, January 6, 2022 11:43 AM
To: Derek Bohls <dbohls@lja.com>; Betsy Yockey <Betsy.Yockey@Tceq.Texas.Gov>
Cc: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Subject: RE: Channel Grading

[EXTERNAL EMAIL]

Derek, Leah was promoted. I have forwarded the question to the attendant of the day for Edwards. You can ask questions at EAAdmin@tceq.texas.gov in the future.

"The beauty of a stream is best measured by the cleanliness of its water"

Kevin Smith, P.E.
Edwards Aquifer Protection Program
Austin
(512) 239-7044

From: Derek Bohls <dbohls@lja.com>
Sent: Thursday, January 6, 2022 11:41 AM
To: Kevin Smith <kevin.smith@tceq.texas.gov>
Cc: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>; Roberto Erazo <rerazo@lja.com>
Subject: RE: Channel Grading

Kevin,
I have another project in the City of Round Rock that I am currently scoping that consists of storm sewer, water, and wastewater improvements in a residential area with undersized infrastructure. All improvements are upsizing existing. There is no anticipated additional impervious cover. Would these regulated activities trigger a WPAP/GA or SCS plan and a need for a GA? Or would this be an exception request similar to our other project discussed below.

Thanks for your help!

Derek Bohls PE, CFM
Vice President – Central Texas Infrastructure

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From: Kevin Smith <kevin.smith@tceq.texas.gov>
Sent: Monday, September 21, 2020 2:51 PM
To: Derek Bohls <dbohls@lja.com>
Cc: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Subject: Re: Channel Grading

[EXTERNAL EMAIL]

Sure, include the water line plans with the EXP.

Kevin Smith
EAPP Sr. Engineer
Region 11 - Austin TCEQ
512-239-7044

From: Derek Bohls <dbohls@lja.com>
Sent: Monday, September 21, 2020 13:54
To: Kevin Smith <kevin.smith@tceq.texas.gov>
Cc: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Subject: RE: Channel Grading

Kevin,
Regarding the same project described below, the City also wants to replace a water line that is directly under the channel. Would this still qualify as an exception with no GA? Still no proposed impervious cover will be added.

Derek Bohls PE, CFM
Vice President – Central Texas Public Infrastructure

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From: Kevin Smith <kevin.smith@tceq.texas.gov>
Sent: Tuesday, September 8, 2020 10:28 AM
To: Derek Bohls <dbohls@lja.com>

Cc: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Subject: Re: Channel Grading

[EXTERNAL EMAIL]

Derek, the project is an Exception Plan, with no GA Section or Permanent Section requirements.

Kevin Smith
EAPP Sr. Engineer
Region 11 - Austin TCEQ
512-239-7044

From: Derek Bohls <dbohls@lja.com>
Sent: Wednesday, September 2, 2020 14:13
To: Kevin Smith <kevin.smith@tceq.texas.gov>
Subject: Channel Grading

Kevin,
I have an upcoming project with the City of Round Rock over the Recharge Zone. The project will consist of regrading a shallow earthen channel to add capacity and reduce flooding in nearby homes. There will be no proposed impervious cover. This looks like it falls under regulated activity, however I was wondering if a full WPAP and geologic assessment would be required? It seems like a pretty minimal project as far as disturbance. I wanted your opinion so I could scope it. I have attached a KMZ for location. Also, below is a picture of what the actual channel looks like. We would just be making it wider and/or deeper.
Thanks for any help you may have.

Derek Bohls PE, CFM
Vice President – Central Texas Public Infrastructure

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From: Kevin Smith <kevin.smith@tceq.texas.gov>
Sent: Friday, July 24, 2020 9:06 AM
To: Mark Cissell <mcissell@hntb.com>; Derek Bohls <dbohls@lja.com>; Charlotte Gilpin <cgilpin@kfriese.com>; Erin Gonzales <EGonzales@bgeinc.com>; Anthony J. Serda <aserda@cpyi.com>; mark.borenstein@hdrinc.com; mark.mcneal@atkinsglobal.com; Dan Rogers <DRogers@wsbeng.com>; Bryan Moore <bmoore@stegerbizzell.com>
Subject: TCEQ EAPP application for Roadway projects

TCEQ-20872	Edwards Aquifer Protection Program Roadway Application

Hello all, hope you are doing well during this stay-home mode.
If you are still in the roadway design business over the Edwards Aquifer…

I happy to announce and we have published and are allowing your submittals for all major roadways. It is designed to save hours in preparations and TCEQ roadway reviews!! Both CZ and RZ are on the same application.
TxDOT approves it use also.

https://www.tceq.texas.gov/permitting/eapp/material.html

Should you have questions, do not hesitate to write or call.

--Kevin Smith, P.E. ((Roadway reviewer))
TCEQ liaison to TxDOT
512-239-7044