TCEQ EDWARDS AQUIFER
RECHARGE ZONE EXCEPTION REQUEST

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS
FOR HUBBARD CIRCLE, HATLEY DRIVE AND PICKWICK LANE

PREPARED FOR:
CITY OF ROLLINGWOOD

PREPARED BY

K FRIESE + ASSOCIATES
A LOCHNER COMPANY

1120 S. Capital of Texas Highway
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TBPE Firm No. 6535

FIRM NO. 6535

FEBRUARY 2024

Recharge and Transition Zone Exception Request Form Checklist

X **Edwards Aquifer Application Cover Page (TCEQ-20705)**

X **General Information Form (TCEQ-0587)**

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

X **Geologic Assessment Form (TCEQ-0585), if necessary**

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

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

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

X **Temporary Stormwater Section (TCEQ-0602)**

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

X **Agent Authorization Form (TCEQ-0599)**

X **Fee Application Form (TCEQ-0574)**

X **Check Payable to the "Texas Commission on Environmental Quality"**

X **Core Data Form (TCEQ-10400)**

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

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

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

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

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

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

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

Technical Review

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

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

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

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: City of Rollingwood Water CIP and Drainage Improvements						**2. Regulated Entity No.:111870267**			
3. Customer Name: City of Rollingwood						**4. Customer No.: CN600674691**			
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):**		0.34	
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:	Travis		**14. Watershed:**			Lady Bird Lake			

Application Distribution

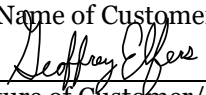
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which 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	_**x**_Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville X_Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Geoffrey Elfers
Print Name of Customer/Authorized Agent  2/22/2024
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: Geoffrey Elfers, PE

Date: 2/22/2024

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Rollingwood
2. County: Travis
3. Stream Basin: Lady Bird Lake / Colorado River
4. Groundwater Conservation District (If applicable): _____
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Ashley Wayman
   Entity: City of Rollingwood
   Mailing Address: 403 Nixon Dr
   City, State: Rollingwood, Texas Zip: 78746
   Telephone: (512) 327-1838 FAX: _____
   Email Address: awayman@rollingwoodtx.gov

8. Agent/Representative (If any):

   Contact Person: Geoffrey Elfers, PE
   Entity: K Friese + Associates
   Mailing Address: 1120 S Capital of Texas Highway, Bldg 1, Ste 100
   City, State: Austin, TX Zip: 78746
   Telephone: (512) 338-1704 FAX: (512) 338-1784
   Email Address: gelfers@kfriese.com

9. Project Location:

   ☒ The project site is located inside the city limits of Rollingwood.
   ☐ 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.

    This Project is a storm sewer improvement project intended to reduce flooding in an existing residential area. The storm sewer begins at the intersection of Pickwick Lane and Hubbard Circle, proceeds downstream along Hubbard Circle, passes within easement between lots to Hatley Drive (running alongside 2801 Hubbard Circle and 2802 Hatley Drive), crosses 2805 Hatley Drive within an easement to Almarion Way, crosses Almarion Way, and then discharges to an existing drainage easement between 2803 Hatley Drive and 205 Almarion Way. The runoff contained within the drainage easement ultimately discharges to Lady Bird Lake / Colorado River.

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: N/A

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:

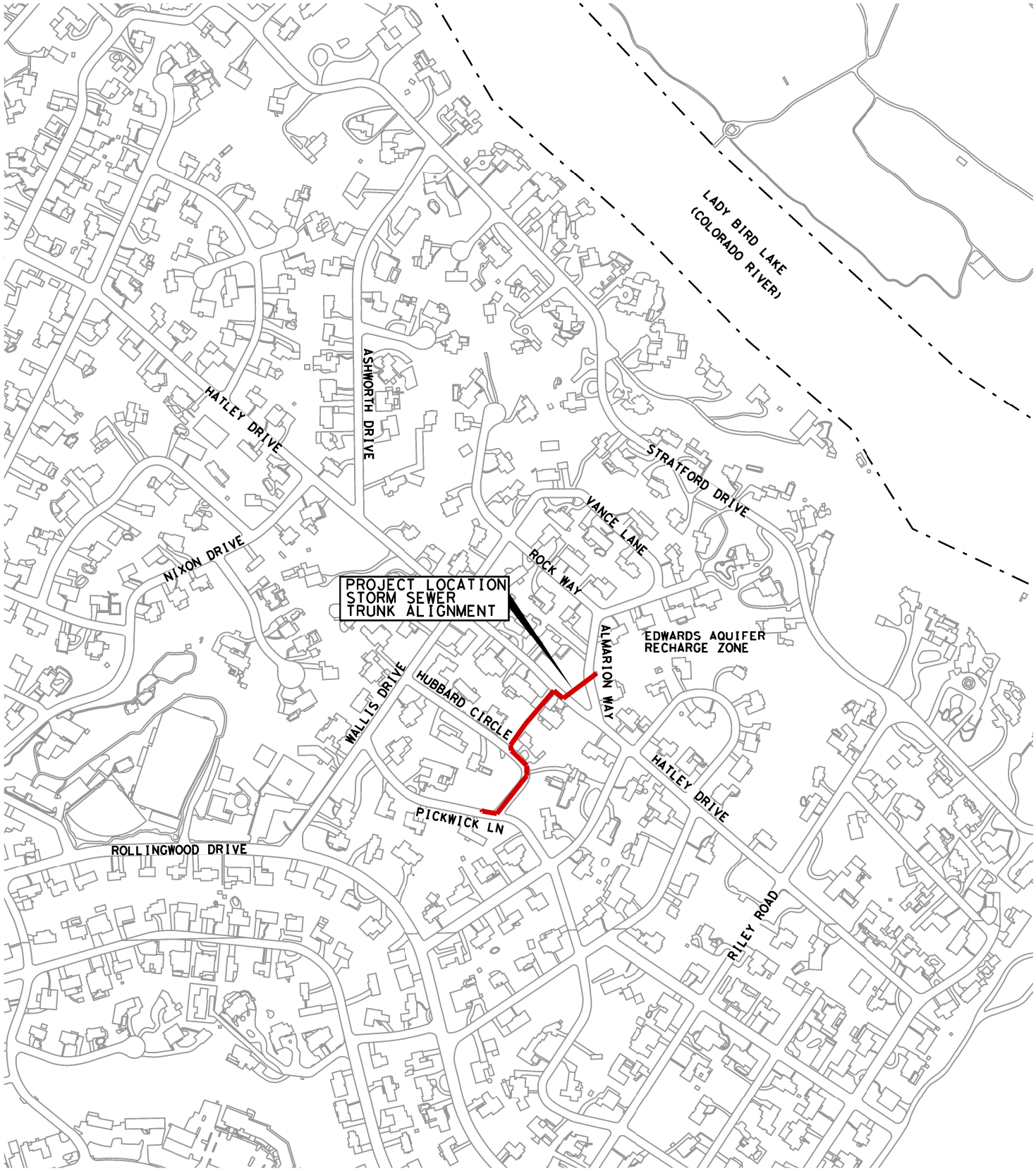
☐ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
☐ For a UST Facility Plan or Modification or an AST Facility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



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ROLLINGWOOD
TEXAS

ROLLWINGWOOD
STORM SEWER IMPROVEMENT

ATTACHMENT A
ROAD MAP

K·FRIESE + ASSOCIATES
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P 512.338.1704 F 512.338.1784
TBPE Firm No. 6535
www.kfriese.com

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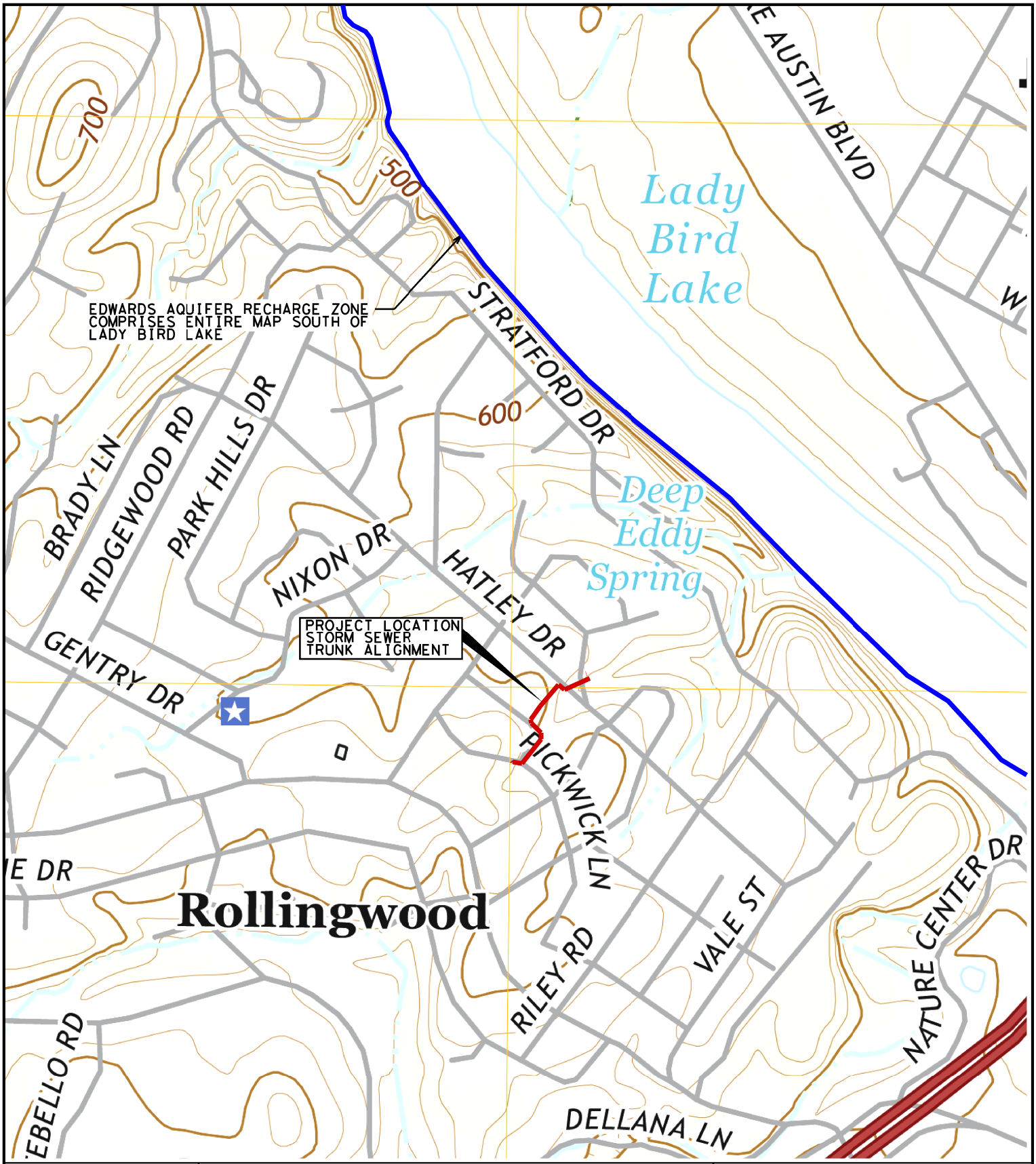

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ROLLINGWOOD
TEXAS

ROLLWINGWOOD
STORM SEWER IMPROVEMENT

ATTACHMENT B
USGS QUADRANGLE

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www.kfriese.com

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ATTACHMENT C
PROJECT DESCRIPTION

The City of Rollingwood proposes storm sewer improvements through a residential area to reduce localized flooding. The improvements consist of constructing curb inlets along 2807 Pickwick Lane, 2800 Hubbard Circle, 2801 Hubbard Circle, and 2805 Hatley Drive. Storm sewer will be constructed from 2807 Pickwick Lane, proceed down Hubbard Circle, cross through residential lots within drainage easement at 2801 Hubbard Circle to Hatley Drive, cross Hatley Drive, cross 2805 Hatley Drive within drainage easement, and cross Almarion Way before discharging within an existing earthen channel located within drainage easement tributary to Lady Bird Lake. In addition, the project includes an interceptor pipe and retaining wall to capture detention pond overflows at 2800 Hubbard Circle. The improvement project is within the Edwards Aquifer Recharge Zone.

The site area for the Project is contained within existing and proposed right-of-way and permanent and temporary easements and totals approximately 0.34 acres of disturbed area. Under pre-project conditions there is approximately 0.11 acres of impervious cover (32% of the total project area) within the project's disturbed area consisting of asphalt pavement. The project's existing ground and pavement will be restored after storm sewer installation and the project is anticipated to result in a negligible increase to impervious cover (<0.01 acres) due to the installation of additional curb inlets.

The right-of-way for the Project is predominantly owned by the City of Rollingwood consisting of the residential roads Hubbard Circle, Hatley Drive, Pickwick Lane, and Almarion Way. Portions of the project will be constructed within drainage easements on 2807 Pickwick Lane, 2800 Hubbard Circle, 2801 Hubbard Circle, 2802 Hatley Drive, 2805 Hatley Drive, 2803 Hatley Drive, and 205 Almarion Way. There are no existing EAPP permits to be modified.

There are no permanent water quality BMPs proposed as part of this project as the overall project scope is the installation of underground storm sewers and installation of 4 new curb inlets. The existing residential roads and lots will be restored to existing conditions at project completion.

TCEQ EDWARDS AQUIFER PROTECTION PROGRAM
RECHARGE ZONE EXCEPTION REQUEST

CITY OF ROLLINGWOOD PROPOSED DRAINAGE IMPROVEMENTS
FOR HUBBARD CIRCLE, HATLEY DRIVE AND PICKWICK LANE

ATTACHMENT C.1:
CONSTRUCTION PLANS

PREPARED FOR:
CITY OF ROLLINGWOOD

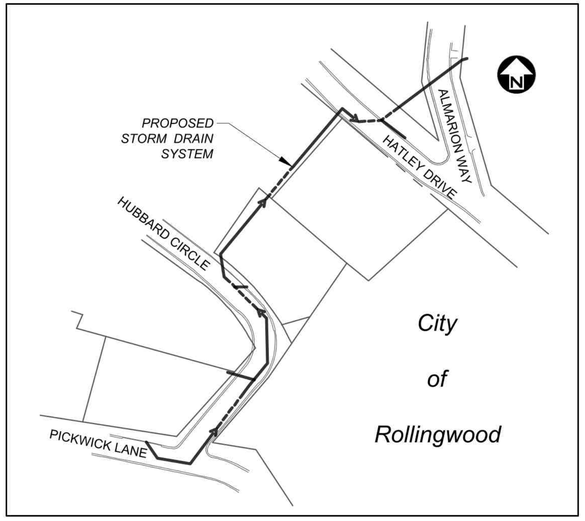
PREPARED:
FEBRUARY 2024

CITY OF ROLLINGWOOD, TEXAS

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS
FOR HUBBARD CIRCLE, HATLEY DRIVE AND PICKWICK LANE

SHEET INDEX

#	ID	DESCRIPTION	
1	G001	COVER SHEET	
2	G002	GENERAL NOTES	
3	G003	CONSTRUCTION NOTES	
4	G004	SUMMARY OF QUANTITIES	⚠
5	G005	HORIZONTAL CONTROL LAYOUT SHEET	
6	DP101	DEMOLITION AND PROTECTION PLAN	⚠
7	DP102	DEMOLITION AND PROTECTION PLAN	
8	DA101	DRAINAGE AREA MAP	
9	CA01	STORM SEWER HYDRAULIC CALCULATIONS	
10	PLPR01	STORM SEWER PLAN & PROFILE STA. 10+00.00-13+50.00	⚠
11	PLPR02	STORM SEWER PLAN & PROFILE STA. 13+50.00-16+20.00	
12	PLPR03	STORM SEWER PLAN & PROFILE STA. 16+20.00-19+00.42	
13	PLPR04	SDL-B, SDL-C & SDL-D LATERAL PLAN & PROFILES	⚠
14	SDPL1	SDL-B AND DETENTION POND OUTFALL	
15	DET01	DRAINAGE & PAVEMENT DETAILS	
16	DET02	DRAINAGE & PAVEMENT DETAILS	
17	DET03	DRAINAGE & PAVEMENT DETAILS	
18	DET04	DRAINAGE & PAVEMENT DETAILS	
19	DET05	DRAINAGE & PAVEMENT DETAILS	
20	DET06	DRAINAGE & PAVEMENT DETAILS	
21	DET07	DRAINAGE & PAVEMENT DETAILS	
22	DET08	DRAINAGE & PAVEMENT DETAILS	
23	DET09	DRAINAGE & PAVEMENT DETAILS	
24	DET10	DRAINAGE & PAVEMENT DETAILS	⚠
25	DET11	DRAINAGE & PAVEMENT DETAILS	
26	DET12	DRAINAGE & PAVEMENT DETAILS	
27	DET13 (2)	DRAINAGE & PAVEMENT DETAILS	
28	DET14	DRAINAGE & PAVEMENT DETAILS	
29	SDPL1	WATER AND SANITARY SEWER LOCATIONS	
30	GD101	GRADING PLAN	
31	EC101	EROSION CONTROL PLAN	
32	EC102	EROSION CONTROL PLAN	
33	EC501	EROSION CONTROL DETAILS	
34	CT101	TRAFFIC CONTROL PLAN	
35	CT501	TRAFFIC CONTROL DETAILS	
36	CV101	WATER SERVICE RELOCATION PLAN	
37	CV102	WATER ABANDONMENT PLAN	
38	CV501	WATER DETAILS	



LOCATION MAP
N.T.S.

MAYOR
GAVIN MASSINGILL

COUNCIL MEMBERS
SARA HUTSON
ALEC ROBINSON
KEVIN GLASHEEN
BROOK BROWN
PHIL McDUFFEE

CITY ADMINISTRATOR
ASHLEY WAYMAN

PREPARED & SUBMITTED FOR APPROVAL BY:

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED
PROFESSIONAL ENGINEER

Geoffrey Elfers — 11/15/2023
GEOFF ELFERS, P.E. — DATE

RECOMMENDED FOR APPROVAL BY:

12/14/2023
MAYOR GAVIN MASSINGILL - CITY OF ROLLINGWOOD — DATE

12/14/2023
ASHLEY WAYMAN - CITY ADMINISTRATOR — DATE

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
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www.kfriese.com

CONFORMED DOCUMENTS 11/15/2023

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

DYLAN BROBERG

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GENERAL NOTES:

1. THE CONTRACTOR WILL NOTIFY THE OWNER'S REPRESENTATIVE FORTY-EIGHT (48) HOURS IN ADVANCE OF BEGINNING ANY CONSTRUCTION IN THE RIGHT OF WAY OR EASEMENTS.

2. THE INFORMATION SHOWN ON THESE DRAWINGS INDICATING TYPE AND LOCATION OF SURFACE, SUBSURFACE, AND AERIAL UTILITIES IS NOT GUARANTEED TO BE EXACT OR COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT TYPE AND LOCATION OF ALL UTILITIES AFFECTED BY THE CONSTRUCTION IN ORDER TO AVOID DAMAGING THOSE UTILITIES.

3. THE CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THIS PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO, GAS, WATER, WASTEWATER, ELECTRIC, TELEPHONE, CABLE TELEVISION, PETROLEUM PIPELINES, FIBER OPTIC, STREET, DRAINAGE, AND ANY OTHER WORK OCCURRING IN OR NEAR THE PROJECT SITE. ONCE THE CONTRACTOR BECOMES AWARE OF A POSSIBLE CONFLICT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY, BUT NO LATER THAN TWENTY-FOUR (24) HOURS AFTER DISCOVERY.

4. SHOULD THE CONTRACTOR DAMAGE A UTILITY DURING THE COURSE OF THE WORK, THE CONTRACTOR SHALL IMMEDIATELY ARRANGE FOR REPAIR AND RESTORATION OF THE DAMAGED UTILITY. THE EXPENSE FOR THESE REPAIRS WILL BE AT THE CONTRACTOR'S SOLE EXPENSE.

5. ALL EXISTING STRUCTURES, FACILITIES, AND UTILITIES DAMAGED BY CONSTRUCTION SHALL BE REMOVED AND RESTORED WITH MATERIALS EQUAL TO OR BETTER THAN THE ORIGINAL AND TO CONDITIONS EQUAL TO OR BETTER THAN THE ORIGINAL. UNLESS OTHERWISE NOTED IN THE PLANS, THIS WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT SHALL BE AT THE CONTRACTOR'S SOLE EXPENSE.

6. SLOPES OF ROADWAY CUTS AND EMBANKMENTS DAMAGED BY ANY OPERATION OF THE CONTRACTOR DURING THE EXECUTION OF THIS PROJECT SHALL BE REPAIRED AND RESTORED TO THE ORIGINAL PRE-CONSTRUCTION CONDITION. BACKFILL AND FILL PLACED DURING REMEDIAL GRADING SHALL BE COMPACTED TO AT LEAST 95% COMPACTION AND TO THE SATISFACTION OF THE ENGINEER AND GOVERNING AUTHORITIES.

7. THE SITE IS LOCATED IN THE EDWARD'S AQUIFER RECHARGE ZONE.

8. THE CONTRACTOR SHALL NOTIFY ALL RESIDENTS WITHIN THE CONSTRUCTION AREAS 48 HOURS PRIOR TO BEGINNING CONSTRUCTION OF THE PROJECT VIA DOOR FLYERS. THE FLYER IS TO CONSIST OF, BUT IS NOT LIMITED TO:
   A. CONSTRUCTION START DATE AND ESTIMATED COMPLETION DATE.
   B. DESCRIPTION OF CONSTRUCTION.
   C. TIME FRAME THE RESIDENT WILL BE WITHOUT WATER IF TEMPORARY SHUTDOWNS ARE REQUIRED, PROVIDED 48 HOURS IN ADVANCE OF WORK.
   D. CONTRACT0R'S CONTACT INFORMATION.
   E. CITY'S CONTACT INFORMATION.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ANY NECESSARY OFF--SITE LOCATIONS FOR STORAGE OF ALL EQUIPMENT AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS DURING CONSTRUCTION AND UPON COMPLETION. THIS WORK WILL BE DONE IN A TIMELY MANNER AS APPROVED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

12. BLASTING WITHIN THE PROJECT AREA WILL NOT BE ALLOWED.

13. THE CONTRACTOR SHALL BE PREPARED WITH ROCK EXCAVATION EQUIPMENT CAPABLE OF RIPPING THROUGH VERY HARD LIMESTONE SHOULD IT BE ENCOUNTERED FOR THE CONSTRUCTION SITE. BORING LOGS ARE PROVIDED IN THE GEOTECHNICAL REPORT FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR RESPONSIBLE FOR PERFORMING THEIR OWN TESTING IN THE FORM OF TEST PITS TO DETERMINE THE QUANTITIES OF THE DIFFERENT MATERIALS TO BE EXCAVATED, AS WELL AS THE PREFERRED METHODS AND EQUIPMENT FOR THIS SITE.

14. CONTRACTOR WILL MINIMIZE USE OF STREET PARKING BY THEIR EMPLOYEES AND SUBCONTRACTORS IN THE VICINITY OF THE CONSTRUCTION AREA.

15. ALL LOCATIONS USED FOR STORING CONSTRUCTION EQUIPMENT, MATERIALS, AND STOCKPILES OF ANY TYPE WITHIN THE CONSTRUCTION LIMITS SHALL BE APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE. USE OF THE AREA WITHIN THE CONSTRUCTION LIMITS FOR THESE PURPOSES WILL BE RESTRICTED TO THOSE LOCATIONS WHERE DRIVER SIGHT DISTANCE TO BUSINESSES AND SIDE STREET INTERSECTIONS IS NOT OBSTRUCTED AND AT OTHER LOCATIONS WHERE AN UNSIGHTLY APPEARANCE AS DETERMINED BY THE OWNER'S REPRESENTATIVE WILL NOT EXIST.

16. ALL SITE WORK MUST COMPLY WITH ENVIRONMENTAL REQUIREMENTS INCLUDING TCEQ, TPDES STANDARDS, CLEANWATER ACT, TPDES GENERAL PERMIT TXR150O00 (MS4), AND CITY OF ROLLINGWOOD REQUIREMENTS.

17. IF CULTURAL RESOURCES ARE ENCOUNTERED DURING CONSTRUCTION (ARCHAEOLOGICAL FINDS UNEARTHED) CONTRACTOR SHALL STOP WORK IN THAT AREA AND IMMEDIATELY CONTACT THE TEXAS HISTORICAL COMMISSION AT (512)463--6100.

18. THE CONTRACTOR SHALL UNCOVER AND VERIFY THE DEPTHS AND HORIZONTAL LOCATION OF ALL EXISTING WATER, WASTEWATER, AND GAS MAINS TO BE ALTERED OR SUBJECT TO DAMAGE OR INCONVENIENCE BY THIS PROJECT PRIOR TO COMMENCING CONSTRUCTION. NO SEPARATE PAY ITEM.

19. FENCES, GATES, GROUND SURFACES, CURBS, DRIVEWAYS, MAILBOXES, ETC. SHALL BE LEFT IN A CONDITION EQUAL TO OR BETTER THAN THAT FOUND.

20. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN BARRICADES, WARNING SIGNS, FLASHERS AND OTHER DEVICES OF THE TYPE AND SIZE AS INDICATED IN THE LATEST EDITION OF THE 'TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" OR AS DIRECTED BY THE ENGINEER.

21. LANDSCAPED AREAS SHALL BE LEFT UNDISTURBED AS MUCH AS POSSIBLE DURING CONSTRUCTION. ALL AREAS THAT HAVE BEEN DISTURBED DURING CONSTRUCTION SHALL BE RE--SODDED, RE--VEGETATED AND RESTORED TO ORIGINAL OR BETTER CONDITIONS. ALL NEW VEGETATION MUST BE OF THE SAME SPECIES AS ORIGINAL CONDITIONS.

22. THE CONTRACTOR SHALL ENSURE THAT ADEQUATE SAFETY PRECAUTIONS ARE MAINTAINED AT ALL TIMES REGARDING AREAS OF OPEN PIPE TRENCH. ALL PIPE TRENCHES SHALL BE COVERED AT ALL TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS. THE TRENCH COVERING SHALL BE CAPABLE OF SUPPORTING TRAFFIC LOADS.

23. ALL TRENCH SAFETY CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH OSHA SPECIFICATIONS, STATE OF TEXAS REQUIREMENTS, AND CONTRACT DOCUMENTS WHICH INCLUDE A TRENCH SAFETY PLAN AND A PAY ITEM FOR TRENCH SAFETY MEASURES.

24. THE CONTRACTOR SHALL ARRANGE THE OPERATION IN SUCH A MANNER AS TO AVOID UNNECESSARY INCONVENIENCE TO THE PUBLIC IN CONSTRUCTION AREAS.

25. ACCESS TO ALL SIDE STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES AT THE SOLE EXPENSES OF THE CONTRACTOR UNLESS OTHERWISE DIRECTED BY THE OWNER'S REPRESENTATIVE.

26. CONTRACTOR SHALL NOTIFY THE CITY OF ROLLINGWOOD POLICE DEPARTMENT (512-328-1900) AND THE WESTLAKE FIRE DEPARTMENT (512-539-3400) OF THE CONSTRUCTION SCHEDULES AT LEAST TWO WEEKS IN ADVANCE OF PROPOSED CONSTRUCTION OPERATIONS. CONTRACTOR SHALL PROVIDE PERTINENT INFORMATION ABOUT LANE CLOSURES AND DETOURS AND ANY OTHER CONSTRUCTION RELATED ACTIVITY WHICH MAY INTERFERE WITH NORMAL SERVICES.

27. CONTRACTOR SHALL MAINTAIN THE JOB SITE IN A SAFE, NEAT AND WORKMAN-LIKE MANNER AT ALL TIMES. JOB SITE SAFETY SHALL NOT BE COMPROMISED ANY UNATTRACTIVE NUISANCE SHALL BE REMOVED OR CAMOUFLAGED BY CONTRACTOR WHEN DIRECTED BY THE OWNER OR ENGINEER. CONTRACTOR SHALL REMOVE OR CAMOUFLAGE ANY CHILD ATTRACTIVE NUISANCE.

28. ALL CONSTRUCTION EQUIPMENT INVOLVED IN ROADWAY WORK SHALL BE EQUIPPED WITH A PERMANENTLY-- MOUNTED 360-DEGREE REVOLVING OR STROBE WARNING LIGHT AMBER LENS IN WORKING ORDER. THIS LIGHT SHALL HAVE A MINIMUM LENS HEIGHT OF 5" AND A DIAMETER OF 5". THIS LIGHT SHALL HAVE A MOUNTING HEIGHT OF NOT LESS THAN 6 FEET ABOVE ROADWAY SURFACE AND SHALL BE VISIBLE FROM ALL SIDES. THIS EQUIPMENT SHALL ALSO HAVE ATTACHED AT EACH SIDE OF THE REAR END OF THE VEHICLE AN APPROVED ORANGE WARNING FLAT MOUNTED, NOT LESS THAN 6 FEET ABOVE THE ROADWAY SURFACE.

29. ALL DAMAGE CAUSED DIRECTLY OR INDIRECTLY TO THE STREET SURFACE OR SUBSURFACE OUTSIDE OF THE PAVEMENT CUT AREA SHALL BE REGRADED AS A PART OF THE STREET CUT REPAIR. THIS INCLUDES ANY SCRAPES, MOUSES, CUTS, CRACKING, DEPRESSIONS, AND/OR ANY OTHER DAMAGE CAUSED BY THE CONTRACTOR DURING THE EXECUTION OF THE WORK. THESE AREAS WILL BE INCLUDED IN THE TOTAL AREA OF REPAIR. THE AREAS OF REPAIR NEAR UTILITY TRENCHES SHALL BE SAW-- CUT IN STRAIGHT, NEAT LINES PARALLEL TO THE UTILITY TRENCH. ALL REPAIRS SHALL BE AT THE CONTRACTOR'S EXPENSE AND SHALL MEET ALL CITY TESTING REQUIREMENTS.

30. ANY EXCAVATION EXCEEDING THE STANDARD PLATING DETAIL SHALL HAVE MATERIAL ONSITE TO BACKFILL OR CONTRACTOR TO PROVIDE STRUCTURAL ENGINEERED PLATING PLANS TO THE CITY OF ROLLINGWOOD PUBLIC WORKS DEPARTMENT FOR APPROVAL PRIOR TO STARTING WORK.

31. FOR OVERNIGHT PROTECTION OF WORK ZONE IN CITY OF ROLLINGWOOD R.O.W., REFER TO CITY OF AUSTIN STANDARD DETAIL 804S--4, 1 THRU 4 OF 9. IF PLATING IS NEEDED, REFER TO STANDARD DETAIL 804S--4, 7 OF 9.

32. CONTRACTOR SHALL PERFORM WORK ONLY DURING HOURS ALLOWED PER THE CURRENT ORDINANCES.

STREET CONSTRUCTION SPECIAL NOTE:

ALL DAMAGE CAUSED DIRECTLY OR INDIRECTLY TO THE STREET SURFACE, SIDEWALK, DRIVEWAY, CURB & GUTTER, OR SUBSURFACE OUTSIDE OF THE PAVEMENT CUT AREA SHALL BE REGARDED AS A PART OF THE STREET CUT REPAIR. THIS INCLUDES ANY SCRAPES, GOUGES, CUTS, CRACKING, DEPRESSIONS, AND/OR ANY OTHER DAMAGE CAUSED BY THE CONTRACTOR DURING THE EXECUTION OF THE WORK. THESE REPAIR AREAS WILL BE INCLUDED IN THE TOTAL AREA OF RESTORATION. THESE AREAS SHALL BE SAW CUT IN STRAIGHT, NEAT LINES PARALLEL TO THE EXCAVATION OR UTILITY TRENCH AND TO THE NEXT EXISTING JOINT FOR SIDEWALKS AND CURB & GUTTER. ALL SUCH REPAIRS SHALL BE AT THE CONTRACTOR'S EXPENSE AND SHALL MEET ALL STANDARDS, AND SPECIFICATIONS.

PLAN NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND INSPECTING, ON A REGULAR BASIS, ALL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES, INCLUDING SILT FENCES, CONSTRUCTION ENTRANCES, ROCK FILTER DAMS, ETC., DURING CONSTRUCTION/DEMOLITION AND INCLUDING THE REMOVAL AND PROPER DISPOSAL OF ANY ACCUMULATED SILT AND DEBRIS.

2. THE CONTRACTOR SHALL NOT BEGIN ANY WORK UNTIL TREE PROTECTION AND THE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES SUCH AS SILT FENCE, CONSTRUCTION ENTRANCES, ROCK FILTER DAMS, ETC., HAVE BEEN INSTALLED.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREETS FREE OF MUD, DIRT, DEBRIS AND MATERIAL AT ALL TIMES AND SHALL CLEAN/SWEEP THE STREETS ON A REGULAR BASIS AND AT THE DIRECTION OF THE CITY.

4. INCREASED STORMWATER PEAK FLOWS DURING CONSTRUCTION MUST BE MITIGATED WITH TEMPORARY BEST MANAGEMENT PRACTICES TO PREVENT HARM TO NEIGHBORING PROPERTIES.

CONSTRUCTION ACCESS AND SEQUENCING NOTES:

1. EROSION AND CONTROL MEASURES MUST BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

2. CARE OF WATER SHALL BE PROVIDED AT ALL TIMES SO AS NOT TO IMPEDE THE FLOW OF STORMWATER.

3. CONTRACTOR SHALL MAINTAIN DRAINAGE BETWEEN THE EXISTING CULVERT AND PROPOSED CULVERT AT 300 PLEASANT DURING ALL PHASES.

4. SUGGESTED POINTS OF ACCESS / STABILIZED CONSTRUCTION ENTRANCES ARE SHOWN TO ASSIST THE CONTRACTOR WITH DEMOLITION AND MATERIAL ENTRY. LETTERS OF PERMISSION FOR THESE LOCATIONS ARE NOT INCLUDED WITH THE BID CONTRACT DOCUMENTS AND WILL BE COORDINATED WITH THE CITY.

5. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION RELATED ACTIVITIES ON THEIR PROPERTY.

6. UPON COMPLETION OF WORK ALL STAGING AREAS SHALL BE RESTORED TO THE ORIGINAL LINES, GRADES, CLEARED OF ALL BRUSH AND DEBRIS, AND REVEGETATED PER SPECIFICATION 609S UNLESS OTHERWISE SPECIFIED IN THE PLANS.

7. ALL TREES, SIGNS, WALKWAYS, UTILITIES AND OTHER PHYSICAL FEATURES (WHETHER SHOWN OR NOT SHOWN ON THE PLANS) SHALL BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE CITY OR IN THESE PLANS.

8. CONTRACTOR IS RESPONSIBLE FOR PROTECTING PRIVATE PROPERTY FROM DAMAGES, ALL PRIVATE PROPERTY DAMAGED BY CONSTRUCTION ACTIVITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

9. CONTRACTOR MAY NEGOTIATE ADDITIONAL ACCESS AND/OR STORAGE WITH INDIVIDUAL PROPERTY OWNERS AT THEIR EXPENSE.

10. CONTRACTOR IS RESPONSIBLE FOR EXPENSES DUE TO NEGLIGENCE.

11. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE CITY TO REMOVE TREES NOT IDENTIFIED FOR REMOVAL ON THE DEMOLITION PLAN.

SCHEDULING

1. CONTRACTOR TO PROVIDE ENGINEER WITH AN UPDATED SCHEDULE WEEKLY. IF NO CHANGES ARE MADE TO THE SCHEDULE FROM THE LAST SUBMITTAL, THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF NO CHANGES.

2. THE CONTRACTOR SHALL SUBMIT A DETAILED SCHEDULE OF CONSTRUCTION WHICH COMPLIES WITH THE FOLLOWING SEQUENCE:
   A. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS IMMEDIATELY PRIOR TO CONSTRUCTION.
   B. SET UP TEMPORARY TRAFFIC CONTROL AREAS.
   C. INSTALL UTILITIES, STRUCTURES, AND PERFORM GRADING AS INDICATED ON CONSTRUCTION PLANS.
   D. PERFORM STREET RECONSTRUCTION IN AREAS AS NOTED. CONTRACTOR SHALL EXCAVATE AND INSTALL SECTIONS OF FLEXIBLE BASE MATERIAL AND HMAC UP TO THE TOP OF PROPOSED GRADE IN ONE DAY.
   E. REPAIR CURB AND GUTTER, SIDEWALK CURB RAMP AND OTHER FEATURES AS NOTED.
   F. COMMENCE RESTORATION AND REVEGETATION IMMEDIATELY UPON COMPLETION OF EACH PHASE OF THE PROJECT.

UTILITIES

1. AT LEAST 48 HOURS BEFORE BEGINNING ANY CONSTRUCTION IN PUBLIC R.O.W. OR PUBLIC EASEMENT, THE CONTRACTOR SHALL NOTIFY PUBLIC WORKS.

2. THE CONTRACTOR SHALL CONTACT THE ROLLINGWOOD AREA "ONE" CALL SYSTEM AT 1--800--344--8377 FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION IN ADVANCE OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, OR ALTERED OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS. THE CITY OF ROLLINGWOOD WATER AND WASTEWATER MAINTENANCE RESPONSIBILITY ENDS AT R.O.W./EASEMENT LINES.

3. ALL MATERIAL USED ON THIS PROJECT MUST BE LISTED ON THE CITY OF AUSTIN STANDARD PRODUCTS LISTING.

4. SEWER SERVICES BROKEN BY CONTRACTOR DURING CONSTRUCTION SHALL BE REPLACED BY CONTRACTOR. REPLACEMENT LENGTH IS DEPENDENT ON EXTENT OF DAMAGE. REPLACEMENT PIPE SHALL BE 4" PVC (OR LARGER) SDR 26 AND ATTACHED TO EXISTING SERVICE WITH FLEXIBLE FERNCO CONNECTORS WITH STAINLESS STEEL CLAMPS OR APPROVED EQUAL, WITH NO SEPARATE PAY.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION BETWEEN THEMSELF AND OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THIS PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO GAS, WATER, WASTEWATER, ELECTRICAL, TELEPHONE, COMMUNICATIONS NETWORKS, CABLE TELEVISION, PETROLEUM PIPELINES, AND STREET AND POSSIBLE CONFLICT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE CONSTRUCTION INSPECTOR WITHIN TWENTY-- FOUR (24) HOURS.

6. CONTRACTOR TO ACQUIRE ALL REQUIRED PERMITS.

CONSTRUCTION NOTES:

1. WHERE REMOVAL OF BASE AND PAVEMENT IS NECESSARY FOR THE PROJECT, ALL BASE AND PAVEMENT SHALL BE REPLACED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, CITY OF AUSTIN, STANDARD SPECIFICATIONS AND STANDARD DETAILS FOR CUT IN PUBLIC RIGHT-OF-WAY. ALL PAVEMENT CUTS SHALL BE SAW-CUT PRIOR TO PLACEMENT OF HMAC.

2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE, PRESERVE AND RESET STREET MARKERS AND TRAFFIC CONTROL SIGNS THAT ARE WITHIN THE CONSTRUCTION LIMITS, AS NECESSARY, TO THE LINE AND HEIGHT AS DESCRIBED IN THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES BEFORE AND DURING ALL CONSTRUCTION PHASES AND UPON THE COMPLETION OF CONSTRUCTION. SIGNS SHALL NOT BE LAID ON THE GROUND. NO PAYMENT WILL BE MADE FOR THIS WORK, BUT IT WILL BE CONSIDERED SUBSIDIARY TO OTHER BID ITEMS.

3. THE CONTRACTOR SHALL SCHEDULE HIS WORK TO MINIMIZE EXPOSURE OF SUBGRADE TO RAIN. IF SUBGRADE IS EXPOSED, CONTRACTOR SHALL UNDERTAKE EXTRA MEASURES TO ACCELERATE DRYING OF THE SUBGRADE INCLUDING PUMPING OF EXCESS WATER AND REWORKING OF THE SUBGRADE AT HIS OWN EXPENSE TO ALLOW THE WORK TO CONTINUE.

4. ALL RECONSTRUCTION PREPARATION WORK AND PAVING SHALL BE COMPLETED IN A MANNER SO AS TO PROVIDE A SMOOTH RIDING SURFACE FREE OF BUMPS, DIPS, AND RIPPLES AND A SMOOTH UNIFORM APPEARANCE. THE FINISHED SURFACE SHALL APPROXIMATE THE EXISTING PROFILE.

5. CONCRETE SHALL BE REPLACED NO LATER THAN FOUR (4) WORKING DAYS AFTER EXCAVATION OF THE SITE.

6. EXPANSION JOINTS SHALL BE PROVIDED AT THE TIE-IN OF NEW CURB AND GUTTER TO EXISTING CURB AND GUTTER AND AT OTHER LOCATIONS AS SHOWN ON THE PLANS OR AS INSTRUCTED BY THE ENGINEER.

7. CONTRACTOR SHALL TRIM SHRUBS AND TREES TO PROVIDE CONSTRUCTION CLEARANCE. ALL PRUNING PROPOSED TO BE APPROVED IN ADVANCE BY CITY OF ROLLINGWOOD.

8. SODDING FOR EROSION CONTROL SHALL BE APPLIED AS SPECIFIED IN THE PERMANENT EROSION CONTROL NOTES OVER AREAS DISTURBED BY CONSTRUCTION ACTIVITIES AS DESIGNATED BY THE ENGINEER. SODDING SHALL BE WATERED UNTIL A UNIFORM 1 /2" GROWTH IS ESTABLISHED. AT WHICH TIME THE PAYMENT WILL BE MADE, SUBJECT TO APPROVAL BY GENERAL PERMIT PROGRAM OFFICE. WATERING IS INCLUDED IN PAYMENT FOR SODDING.

9. CONTRACTOR'S EQUIPMENT SHALL NOT BE LEFT RUNNING WHEN LEFT UNATTENDED.

CONSTRUCTION PHASING NOTES

1. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE TO THE CITY PRIOR TO BEGINNING CONSTRUCTION.

2. CONTRACTOR TO COORDINATE RELOCATIONS OF WATER MAIN AND FORCE MAIN WITH THE CITY AND/OR PROPERTY OWNERS TO MINIMIZE ANY IMPACTS TO THE PUBLIC

3. INSTALL EROSION CONTROL MEASURES PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES.

4. STORM SEWER CONSTRUCTION SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM.

5. CONSTRUCT ALL STORM SEWERS AND ROADWAY IMPROVEMENTS WITHIN THE WORK ZONE PER THE PLANS. CONSTRUCT THE STORM SEWERS IN PHASES TO MAINTAIN ACCESS TO ALL RESIDENTIAL PROPERTIES WITHIN THE WORK ZONE. COORDINATE ANY REQUIRED DRIVEWAY CLOSURES WITH THE RESIDENTS OF THE PROPERTY AT LEAST 48 HOURS IN ADVANCE.

6. MAINTAIN 3:1 MAX SIDE SLOPES AT THE END OF EACH WORK DAY FOR PAVEMENT DROP-OFFS GREATER THAN 4".

7. CONSTRUCT FINAL 2" LIFT OF THE TYPE D HOT MIX ASPHALTIC PAVEMENT SURFACE LAYER USING TXDOT TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS STANDARD (7-1) AND TXDOT TCP MOBILE OPERATIONS STANDARD (3-1).

8. PLACEMENT OF TOP SOIL AND SEEDING SHALL BE PERFORMED AFTER STORM SEWER IMPROVEMENTS AND EARTHWORK HAS BEEN COMPLETED.

9. REMOVE ALL TEMPORARY SW3P DEVICES AND TREE PROTECTION, AS DIRECTED.

10. PERFORM FINAL CLEANUP.

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

GENERAL NOTES

ROLLINGWOOD TEXAS

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NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

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Texas Commission on Environmental Quality
Water Pollution Abatement Plan
General Construction Notes

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

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

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

2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan (WPAP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.

3. If any sensitive feature(s) (caves, solution cavity, sink hole, etc.) is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. Construction activities may not be resumed until the TCEQ has reviewed and approved the appropriate protective measures in order to protect any sensitive feature and the Edwards Aquifer from potentially adverse impacts to water quality.

4. No temporary or permanent hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.

5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the approved plans and manufacturers specifications. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.

6. Any sediment that escapes the construction site must be collected and properly disposed of before the next rain event to ensure it is not washed into surface streams, sensitive features, etc.

7. Sediment must be removed from the sediment traps or sedimentation basins not later than

when it occupies 50% of the basin's design capacity.

8. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.

9. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.

10. If portions of the site will have a temporary or permanent cease in construction activity lasting longer than 14 days, soil stabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity will resume prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.

11. The following records shall be maintained and made available to the TCEQ upon request:
   - the dates when major grading activities occur;
   - the dates when construction activities temporarily or permanently cease on a portion of the site; and
   - the dates when stabilization measures are initiated.

12. The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

   A. any physical or operational modification of any water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;

   B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;

   C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

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

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

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

CONSTRUCTION NOTES

ROLLINGWOOD TEXAS

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NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

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X:\PROJECTS\9803_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\DS\CONSHEETS\9803-G-GN-NOTES-TX.DWG, --- COA_ESD.STB
11/15/2023 10:41 AM
DYLAN BROBERG

SUMMARY OF ITEMS

STORM SEWER PLAN AND PROFILE SHEET	LOCATION	104S-A	104S-B	104S-D	132S-A	315S-A	340S-B	340S-B	401S-A	402-A	414S	430S-D	506 M4	506 M5	506 B7	508S-I5S	508S-I10S		509S-1	510ASD18Dia.	510ASD24Dia.
		REMOVE P.C. CONCRETE CURB	REMOVE P.C. CONCRETE SLAB	REMOVE P.C. CONCRETE WALL	EMBANKMENT	SURFACE MILLLING	HOT MIX ASPHALTIC CONCRETE PAVEMENT, 2 INCHES, TYPE D	HOT MIX ASPHALTIC CONCRETE PAVEMENT, 10 INCHES, TYPE B	BOX CULVERT STRUCTURAL EXCAVATION AND BACKFILL	CONTROLLED LOW STRENGTH MATERIAL	P.C. CONCRETE CONCRETE RETAINING WALL, INCLUDING REINFORCEMENT	P.C. CONCRETE CURB AND GUTTER (FINE GRADING)	STANDARD PRE-CAST MANHOLE W/ PRE-CAST BASE, 4' DIA.	STANDARD PRE-CAST MANHOLE W/ PRE-CAST BASE, 5' DIA.	BOX MANHOLE 7 FT. X 7 FT.	INLET, STANDARD (5 FEET)	INLET, STANDARD (10 FEET)	INLET, TXDOT PCU (5 FEET)	TRENCH EXCAVATION SAFETY PROTECTIVE SYSTEMS (ALL DEPTHS)	PIPE, 18" DIA., CLASS III RCP, (ALL DEPTHS) INCLUDING EXCAVATION AND BACKFILL	PIPE, 24" DIA., CLASS III RCP, (ALL DEPTHS) INCLUDING EXCAVATION AND BACKFILL
		LF	SF	LF	CY	SY	SY	SY	CY	CY	CY	LF	EA	EA	EA	EA	EA	EA	LF	LF	LF
SHEET 1 OF 3	STA 10+00 TO STA 13+50	108		54		375	375	332	13	29.0	10	108	2	1	1	1	2	2	374	5	198
SHEET 2 OF 3	STA 13+50 TO STA 16+20	40			175	40	40	35 ⚠1		16.4		40		1			⚠1		⚠1 284		
SHEET 3 OF 3	STA 16+20 TO STA 19+00	119	197			110	110	85	130	14.9		119			2		2		218		36
	PROJECT TOTALS:	**267**	**197**	**54**	**175**	**525**	**525**	**452** ⚠1	**143**	**60.3**	**10**	**267**	**2**	**2**	**3**	**1**	**4**	**2** ⚠1	**876** ⚠1	**5** ⚠1	**234**

SUMMARY OF ITEMS

STORM SEWER PLAN AND PROFILE SHEET	LOCATION	510ASD36Dia.	591S-G	609S-A	609S-C	610S	641S	642S	648S-1	423 / 6013	801S-0	802S-BCIP	462 / 6001	462 / 6003	465 / 6153	466 / 6179	496 / 6007	SP 510	SP 510A	SP 510B
		PIPE, 36" DIA., CLASS III RCP, (ALL DEPTHS) INCLUDING EXCAVATION AND BACKFILL	CONCRETE RIPRAP	TOPSOIL AND SEEDBED PREPARATION	GRASS, ZOYSIA GRASS OR MATCH EXISTING PRIVATE GRASS	TREE PROTECTION FENCE LOCATIONS	STABILIZED CONSTRUCTION ENTRANCE	SILT FENCE EROSION CONTROL	MULCH SOCK	STONE VENEER (LIMESTONE)	BARRICADES, SIGNS, AND TRAFFIC HANDLING	C.I.P. PROJECT SIGNS	CONC BOX CULV (3 FT X 2 FT)	CONC BOX CULV (4 FT X 2 FT)	INLET(COMPL)(PAZD)(RC)(4FTX4FT)	WINGWALL (PW-1)(HW=4 FT)	REMOV STR (PIPE)	WATER METER RELOCATIONS	4" WATER LINE AND 2" WASTE WATER FORCE MAIN RELOCATE	LANDSCAPE DRAINS AND DRAIN PIPE
		LF	CY	SY	SY	EA	EA	LF	LF	SY	MO	EA	LF	LF	EA	EA	LF	LS	LS	LS
SHEET 1 OF 3	STA 10+00 TO STA 13+50	158	2			3		76	45	46			13			1				
SHEET 2 OF 3	STA 13+50 TO STA 16+20	284		480	480	5	1	474	50						2		20			
SHEET 3 OF 3	STA 16+20 TO STA 19+00	52	10	60	60	4	1	153	66					130						
	PROJECT TOTALS:	**494**	**12**	**540**	**540**	**12**	**2**	**703**	**161**	**46**	**3**	**1**	**13**	**130**	**2**	**1**	**20**	**1**	**1**	**1**

REV NO.	BY	DATE	REVISION DESCRIPTION
1	DB	10/05/2023	AMMENDMENT #2

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

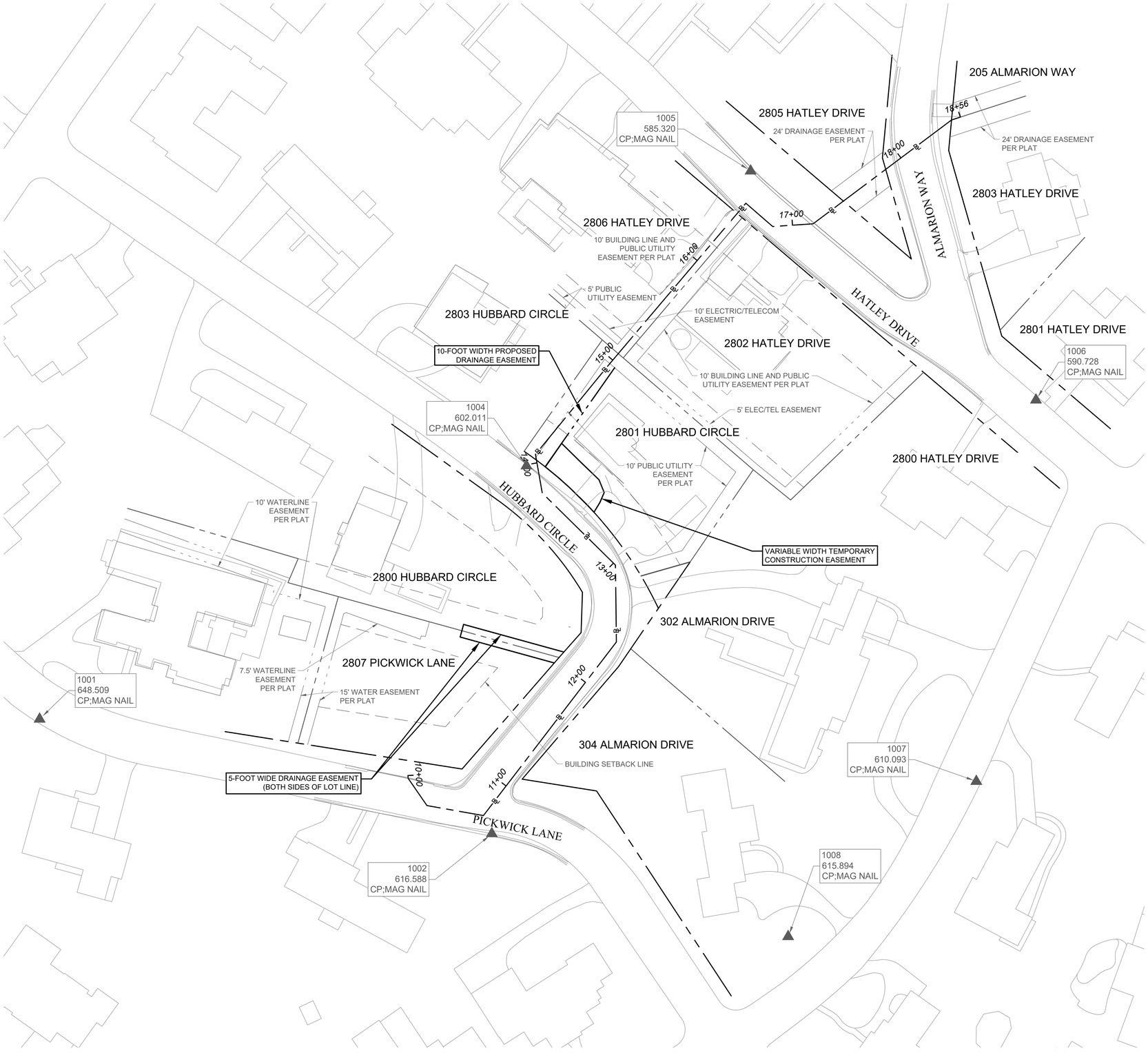
CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

SUMMARY OF QUANTITIES

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P – 512.338.1704 F – 512.338.1784
TBPE Firm #6535
www.kfriese.com

NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		



LEGEND	
ALIGNMENT	
EXISTING ROW	
PROPERTY LINE	
EXISTING EASEMENT	
PROPOSED EASEMENT	
BUILDING SETBACK	
SURVEY CONTROL POINT	

POINT TABLE				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1001	10073990.00	3101415.73	648.51	CP;MAG NAIL
1002	10073902.18	3101762.36	616.59	CP;MAG NAIL
1004	10074184.00	3101788.92	602.01	CP;MAG NAIL
1005	10074409.85	3101960.64	585.32	CP;MAG NAIL
1006	10074234.42	3102179.19	590.73	CP;MAG NAIL
1007	10073942.31	3102133.56	610.09	CP;MAG NAIL
1008	10073823.39	3101989.39	615.89	CP;MAG NAIL

SDL-A				
NO.	LENGTH	DIRECTION	START PT.	END PT.
L1	2.09	S03° 35' 54"E	STA. 10+00.00 N. 10073946.74 E. 3101697.91	STA. 10+02.09 N. 10073944.66 E. 3101698.04
L2	25.42	S34° 40' 03"E	STA. 10+02.09 N. 10073944.66 E. 3101698.04	STA. 10+27.51 N. 10073923.75 E. 3101712.50
L3	43.92	S79° 55' 49"E	STA. 10+27.51 N. 10073923.75 E. 3101712.50	STA. 10+71.43 N. 10073916.08 E. 3101755.74
L4	167.52	N37° 27' 20"E	STA. 10+71.43 N. 10073916.08 E. 3101755.74	STA. 12+38.95 N. 10074049.06 E. 3101857.62
L5	58.93	N00° 42' 48"W	STA. 12+38.95 N. 10074049.06 E. 3101857.62	STA. 12+97.88 N. 10074107.98 E. 3101856.88
L6	78.68	N45° 27' 46"W	STA. 12+97.88 N. 10074107.98 E. 3101856.88	STA. 13+76.55 N. 10074163.16 E. 3101800.80
L7	30.06	N09° 56' 18"W	STA. 13+76.55 N. 10074163.16 E. 3101800.80	STA. 14+06.61 N. 10074192.77 E. 3101795.62
L8	89.12	N39° 17' 57"E	STA. 14+06.61 N. 10074192.77 E. 3101795.62	STA. 14+95.73 N. 10074261.73 E. 3101852.06
L9	161.89	N40° 19' 02"E	STA. 14+95.73 N. 10074261.73 E. 3101852.06	STA. 16+57.62 N. 10074385.17 E. 3101956.81
L10	27.21	S49° 01' 49"E	STA. 16+57.62 N. 10074385.17 E. 3101956.81	STA. 16+84.83 N. 10074367.33 E. 3101977.36
L11	31.02	N86° 12' 21"E	STA. 16+84.83 N. 10074367.33 E. 3101977.36	STA. 17+15.85 N. 10074369.38 E. 3102008.31
L12	132.58	N53° 07' 56"E	STA. 17+15.85 N. 10074369.38 E. 3102008.31	STA. 18+48.43 N. 10074448.93 E. 3102114.37
L13	7.11	N72° 04' 46"E	STA. 18+48.43 N. 10074448.93 E. 3102114.37	STA. 18+55.54 N. 10074451.11 E. 3102121.14

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

HORIZONTAL CONTROL LAYOUT SHEET

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
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TBPE Firm #6535
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NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

0 40 80
HORIZONTAL SCALE IN FEET

DYLAN BRODBERG
11/16/2023 10:43 AM
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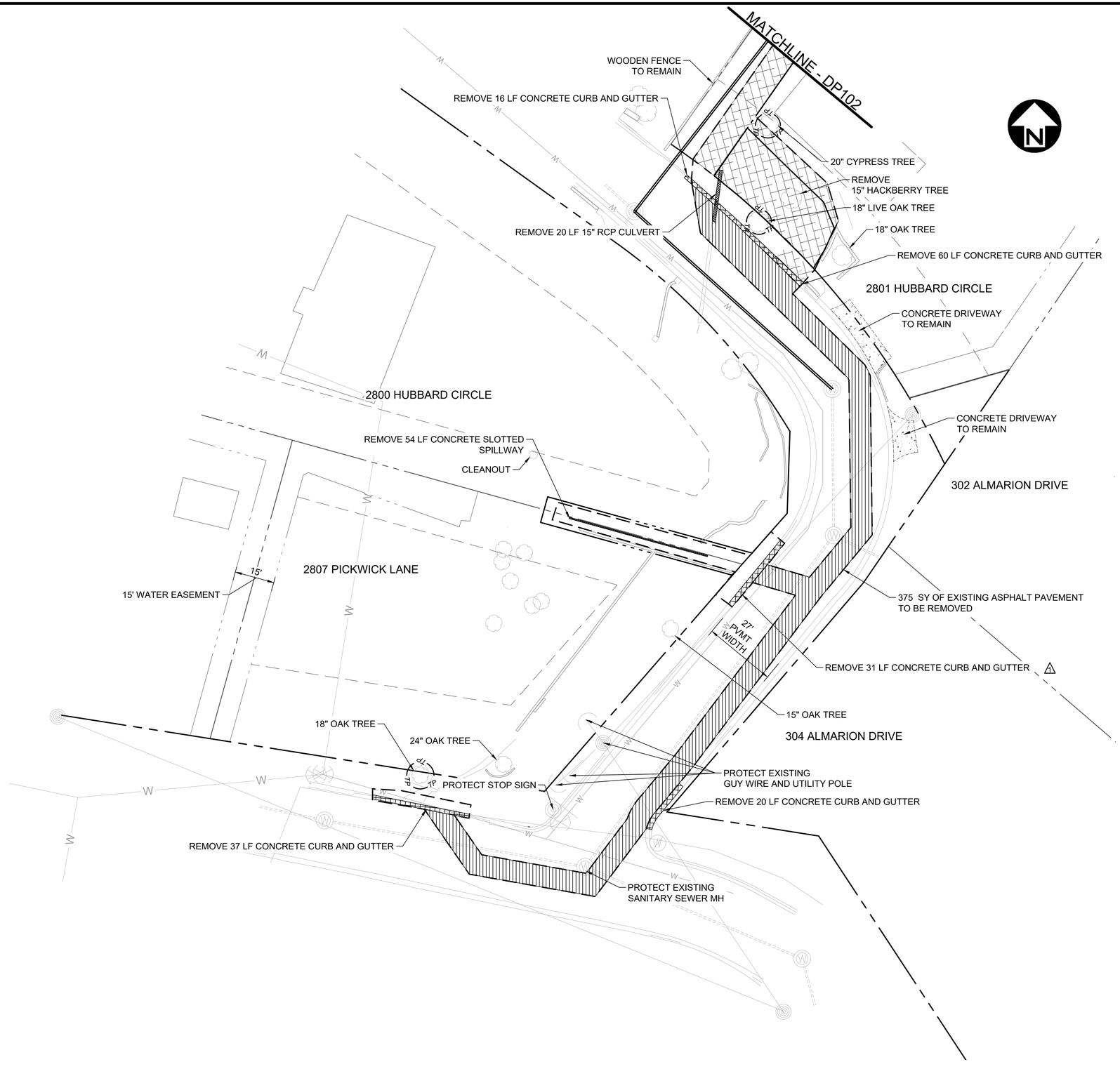

NOTES:

1. CONTRACTOR TO PROVIDE TREE PROTECTION FOR ANY TREE WITHIN 10' OF LIMITS OF CONSTRUCTION.
2. ALL PERVIOUS AREAS DISTURBED SHALL BE RESTORED AND REVEGETATED AS REQUIRED AND TO THE SATISFACTION OF THE CITY FOLLOWING CONSTRUCTION.
3. CONTRACTOR SHALL ONLY CLEAR BRUSH AND SMALL TREES NECESSARY TO PERFORM THE WORK SHOWN.
4. CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF EXISTING WATERLINE, GAS LINE AND SEWER LINE. UTILITY CROSSINGS SHALL PROVIDE A MINIMUM OF 12 INCHES OF ALLOWABLE CLEARANCE BETWEEN ANY PROPOSED STRUCTURES. NOTIFY THE ENGINEER IMMEDIATELY IF THIS REQUIREMENT IS NOT MET FOR AUTHORIZATION PRIOR TO PROCEEDING.

EXISTING FEATURES

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK LINE
- BACK OF CURB
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- GUTTER
- CONCRETE PAVEMENT
- DRAINAGE FLOW LINE
- DITCH EDGE
- WOOD FENCE
- MAJOR CONTOURS (600)
- MINOR CONTOURS (599)
- GRADE BREAK
- PAVED PARKING / DRIVEWAY
- SLOPE TOP
- SLOPE BOTTOM
- WASTEWATER LINE
- WATER LINE (W)
- ROCK WALL
- EXISTING RCP PIPE
- NATURAL GAS LINE (G)
- ELECTRIC OVERHEAD (E OH)
- ELECTRIC UNDERGROUND (E UG)
- GUY WIRE
- WATER METER
- WATER VALVE
- SPRINKLER VALVE
- WASTEWATER MANHOLE
- CLEANOUT
- FIRE HYDRANT
- POWER POLE
- ELECTRIC JUNCTION BOX
- STOP SIGN
- MAILBOX
- TREE
- TREE WELL

LEGEND

- LIMITS OF CONSTRUCTION
- ASPHALT/CONCRETE REMOVAL
- DEMOLISH CURB & GUTTER
- CLEAR & GRUB VEGETATION
- TP — TP — TREE PROTECTION

REV NO.	BY	DATE	REVISION DESCRIPTION
1	DB	10/05/2023	AMMENDMENT #2

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

DEMOLITION AND PROTECTION PLAN

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
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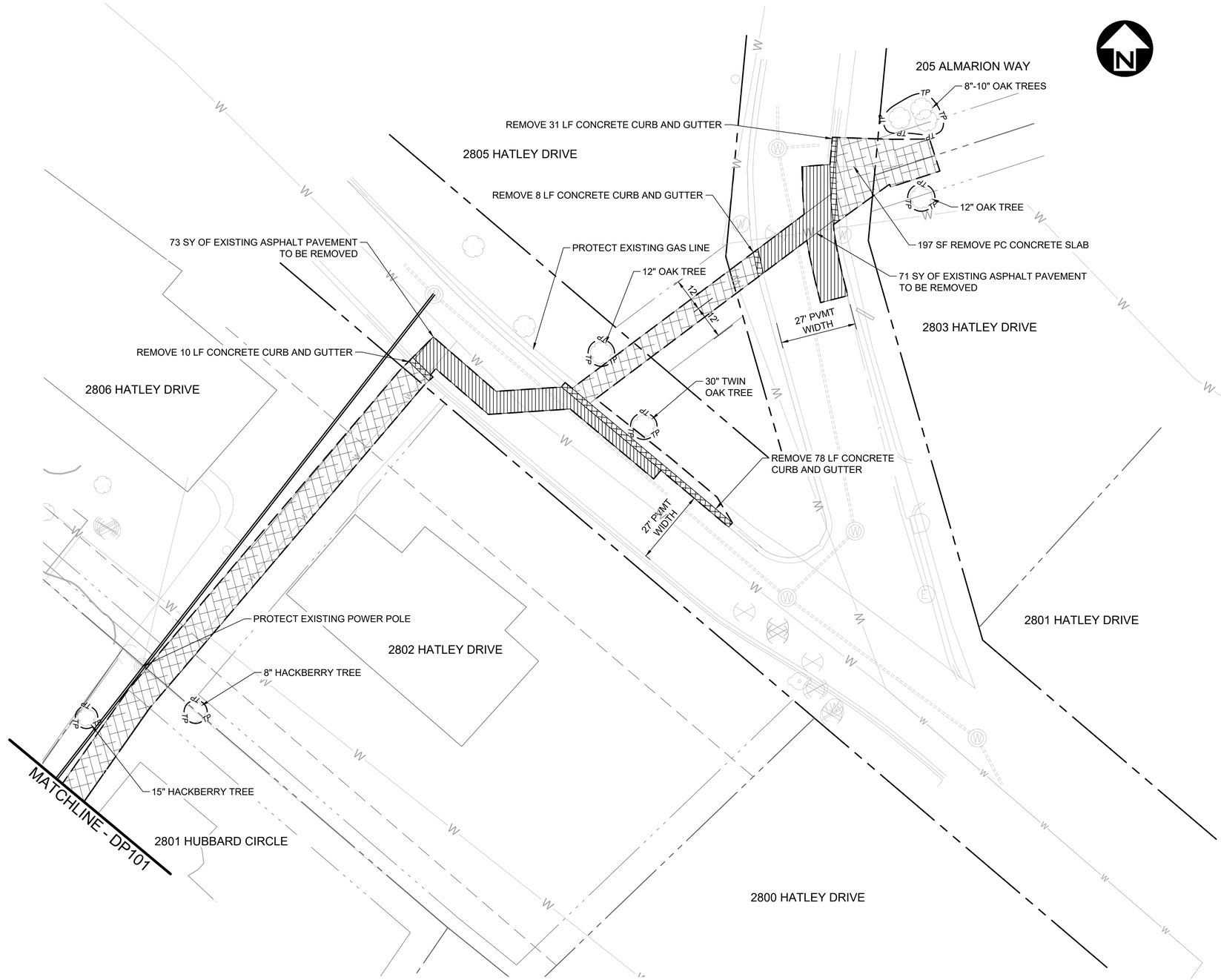
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

0 20 40
HORIZONTAL SCALE IN FEET

DP101 | 6 OF 38

X:\PROJECTS\0800_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\DOCS\SHEETS\0803-C-DP-PLAN.DWG — COA_ESD.STB
11/15/2023 10:44 AM
BRYAN BROSBERG



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EXISTING FEATURES

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
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- BUILDING SETBACK LINE
- BACK OF CURB
- EDGE OF ASPHALT
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- CLEANOUT
- FIRE HYDRANT
- POWER POLE
- ELECTRIC JUNCTION BOX
- STOP SIGN
- MAILBOX
- TREE
- TREE WELL

LEGEND

- LIMITS OF CONSTRUCTION
- ASPHALT/CONCRETE REMOVAL
- DEMOLISH CURB & GUTTER
- CLEAR & GRUB VEGETATION
- TP — TP — TREE PROTECTION

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

DEMOLITION AND PROTECTION PLAN

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
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SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

0 20 40
HORIZONTAL SCALE IN FEET

DP102 | 7 OF 38

X:\PROJECTS\99803_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\DS\CONSHEETS\99803-C-DP-PLAN.DWG — COA_ESD.STB
11/15/2023 10:44 AM
DYLAN BROBERG

RATIONAL METHOD FLOW CALCULATION								
AREA ID	AREA (AC)	C_{25}	C_{100}	T_C	i_{25}	i_{100}	Q_{25} (cfs)	Q_{100} (cfs)
DA 1	1.81	0.58	0.65	10	9.48	12.36	9.9	14.6
DA 2	0.90	0.56	0.64	5	11.80	15.43	6.0	8.9
DA 3	0.45	0.51	0.59	5	11.80	15.43	2.7	4.1
DA 4	0.41	0.65	0.73	5	11.80	15.43	3.2	4.6
DA 5	0.99	0.59	0.67	5	11.80	15.43	7.0	10.3
DA 6	0.37	0.50	0.57	5	11.80	15.43	2.2	3.3
DA 7	0.98	0.54	0.61	5	11.80	15.43	6.3	9.3
DA 8	1.89	0.61	0.69	5	11.80	15.43	13.7	20.2
DA 9	2.50	0.61	0.69	5	11.80	15.43	18.1	26.7

NOTES:

1. THE PEAK FLOWS WERE COMPUTED USING THE RATIONAL METHOD AS DESCRIBED IN SECTION 2.4.0 OF THE DRAINAGE CRITERIA MANUAL (DCM) OF AUSTIN, TX.
2. THE RUNOFF COEFFICIENT WAS DEVELOPED BASED FROM TABLE 2-3 OF THE DCM. PERVIOUS LAND COVER WAS ASSUMED TO BE UNDEVELOPED LAND OVER STEEP TERRAIN.
2. RAINFALL INTENSITIES WERE DETERMINED FROM THE IDF COEFFICIENTS SHOWN IN TABLE 2-2A OF THE DCM.

LEGEND

FLOW ARROW

FLOWPATH

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

DRAINAGE
AREA MAP

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
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DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

0 60 120
HORIZONTAL SCALE IN FEET

DA101 | 8 OF 38

11/15/2023 10:48 AM DYLAN BROBERG
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25-Year Inlet Analysis							
Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Length (ft)	Flow (Captured)	Spread / Top Width (ft)	Inlet Location	Depth (Gutter) (in)
SDL-A 10+00	616.51	611.12	15	10.02	9.7	In Sag	10.3
SDL-A 14+92.76	589.91	580.74	PAZD-5x5	2.19	N/A	In Sag	(N/A)
SDL-A 15+52.96	588.48	577.94	PAZD-5x5	6.29	N/A	In Sag	(N/A)
SDL-B 10+24.17	608.74	601.93	10	3.07	3.9	On Grade	2.7
SDL-C 10+15.68	600.66	595.79	10	7.02	7.9	In Sag	10.3
SDL-D 10+44.10	585.04	578.47	20	13.7	18.7	In Sag	10.2

100-Year Inlet Analysis						
Label	Elevation (Ground) (ft)	Length (ft)	Flow (Captured) (cfs)	Spread / Top Width (ft)	Inlet Location	Depth (Gutter) (in)
SDL-A 10+00	616.51	15	14.65	12.5	In Sag	11.5
SDL-A 14+92.76	589.91	PAZD-5x5	3.27	N/A	In Sag	(N/A)
SDL-A 15+52.96	588.48	PAZD-5x5	9.29	N/A	In Sag	(N/A)
SDL-B 10+24.17	608.74	10	5.98	5.6	On Grade	3.8
SDL-C 10+15.68	600.66	10	12.58	11.6	In Sag	12.5
SDL-D 10+44.10	585.04	20	20.27	24.3	In Sag	11.5

25-YEAR STORM SEWER CALCULATIONS									
Label	Start Node	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Rise (ft)	Span (ft)	Hydraulic Grade Line (Begin) (ft)	Hydraulic Grade Line (End) (ft)
SDL-A 1	SDL-A 10+00	24	0.013	10.02	4.8	13.85			612.64	612.6
SDL-A 2	SDL-A 10+27.51	24	0.013	9.99	5.89	18.05			612.47	612.44
SDL-A 3	SDL-A 10+71.43	24	0.013	9.94	13.31	55.17			611.88	605.21
SDL-A 4	SDL-A 12+10.97	36	0.013	35.28	13.52	106.41			603.71	603.76
SDL-A 5	SDL-A 12+38.95	36	0.013	35.26	19.56	177.34			603.15	599.6
SDL-A 6	SDL-A 12+97.88	36	0.013	35.23	19.17	172.57			599.12	596.45
SDL-A 7	SDL-A 13+57.11	36	0.013	40.75	20.6	180.13			595.32	593.36
SDL-A 8	SDL-A 13+76.56	36	0.013	42.88	18.04	146.99			588.29	587.47
SDL-A 9	SDL-A 13+97.30	36	0.013	42.86	17.78	144.08			586.93	584.06
SDL-A 10	SDL-A 14+92.76	36	0.013	44.51	18.42	149.13			582.91	581.5
SDL-A 10	SDL-A 15+52.96	36	0.013	49.39	18.84	148.04			580.23	577.34
SDL-A 11	SDL-A 16+54.65	36	0.013	49.29	14.2	100.96			575.5	575.52
SDL-A 12	SDL-A 16+81.86	36	0.013	49.26	14.35	102.4			574.95	574.81
SDL-A 13	SDL-A 17+12.89		0.013	59.89	16.41	136.86	2	4	570.91	566.01
SDL-A 14	SDL-A 18+45.46		0.013	59.69	16.2	134.49	2	4	565.91	565.22
EX. 15" RCP	H-1	18	0.013	2.72	8.4	21.74			598.53	596.83
SDL-B 1	SDL-B 10+24.17	36	0.013	26.84	3.8	59.26			605.2	605.17
SDL-B 2	SDL-B 10+36.85		0.013	23.78	3.96	75.08	2	3	605.36	605.33
SDL-C	SDL-C 10+15.68	18	0.013	7.02	12.13	24.95			596.82	596.54
SDL-D	SDL-D 10+44.10	24	0.013	13.7	14.32	53.85			581.37	578.77

100-YEAR STORM SEWER CALCULATIONS									
Label	Start Node	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Rise (ft)	Span (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
SDL-A 1	SDL-A 10+00	24	0.013	14.65	4.66	13.85			613.21	613.11
SDL-A 2	SDL-A 10+27.51	24	0.013	14.6	6.39	18.95			612.99	612.81
SDL-A 3	SDL-A 10+71.43	24	0.013	14.53	14.81	55.15			612.12	605.71
SDL-A 4	SDL-A 12+10.97	36	0.013	44.11	14.35	106.41			603.94	604.07
SDL-A 5	SDL-A 12+38.95	36	0.013	44.09	20.82	175.83			603.38	599.90
SDL-A 6	SDL-A 12+97.88	36	0.013	44.04	20.41	175.8			599.35	597.08
SDL-A 7	SDL-A 13+57.11	36	0.013	53.91	22.27	176.23			595.63	593.61
SDL-A 8	SDL-A 13+76.56	36	0.013	57.14	19.49	146.25			588.61	587.83
SDL-A 9	SDL-A 13+97.30	36	0.013	57.11	19.2	147.04			587.25	584.58
SDL-A 10	SDL-A 14+92.76	36	0.013	59.57	19.92	148.86			583.23	582.07
SDL-A 10	SDL-A 15+52.96	36	0.013	66.76	20.4	147.51			580.55	578.19
SDL-A 11	SDL-A 16+54.65	36	0.013	66.62	9.43	101.11			576.40	576.16
SDL-A 12	SDL-A 16+81.86	36	0.013	66.55	9.41	101.01			575.89	575.61
SDL-A 13	SDL-A 17+12.89		0.013	82.21	18.09	136.79	2	4	571.00	566.02
SDL-A 14	SDL-A 18+45.46		0.013	81.93	17.85	137.61	2	4	566.00	565.53
SDL-B 1	SDL-B 10+24.17	36	0.013	32.23	32.23	4.56			605.76	605.72
SDL-B 2	SDL-B 10+36.85		0.013	26.27	26.27	4.38	2	3	606.02	605.98
SDL-C	SDL-C 10+15.68	18	0.013	12.58	12.58	14.15			597.13	596.97
SDL-D	SDL-D 10+44.10	24	0.013	20.27	20.27	15.93			581.66	578.98
EX. 15" RCP	H-1	18	0.013	4.12	4.12	9.46			598.68	596.92

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

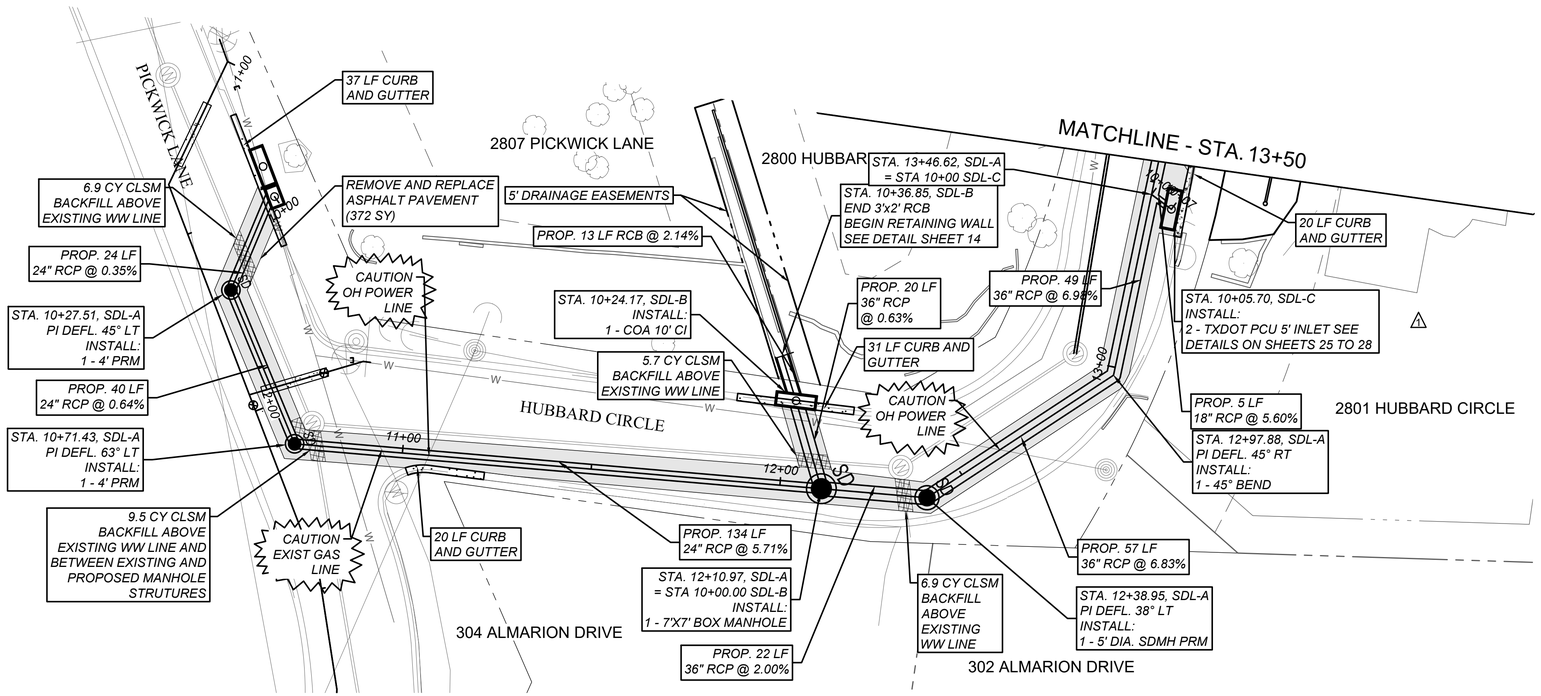
CITY OF ROLLINGWOOD
ROLLINGWOOD DRAINAGE IMPROVEMENTS

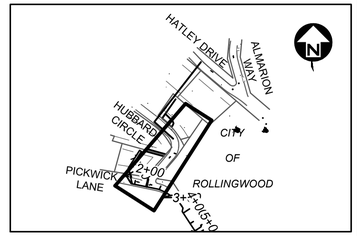
STORM SEWER
HYDRAULIC CALCULATIONS

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P – 512.338.1704 F – 512.338.1784
TBPE Firm #6535
www.kfriese.com

NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		





ABBREVIATIONS	
PRM - PRECAST ROUND MANHOLE	TY - TYPE
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PSL - PRECAST SLAB LID	PROP - PROPOSED

LEGEND

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- WOOD FENCE
- PAVED PARKING / DRIVEWAY
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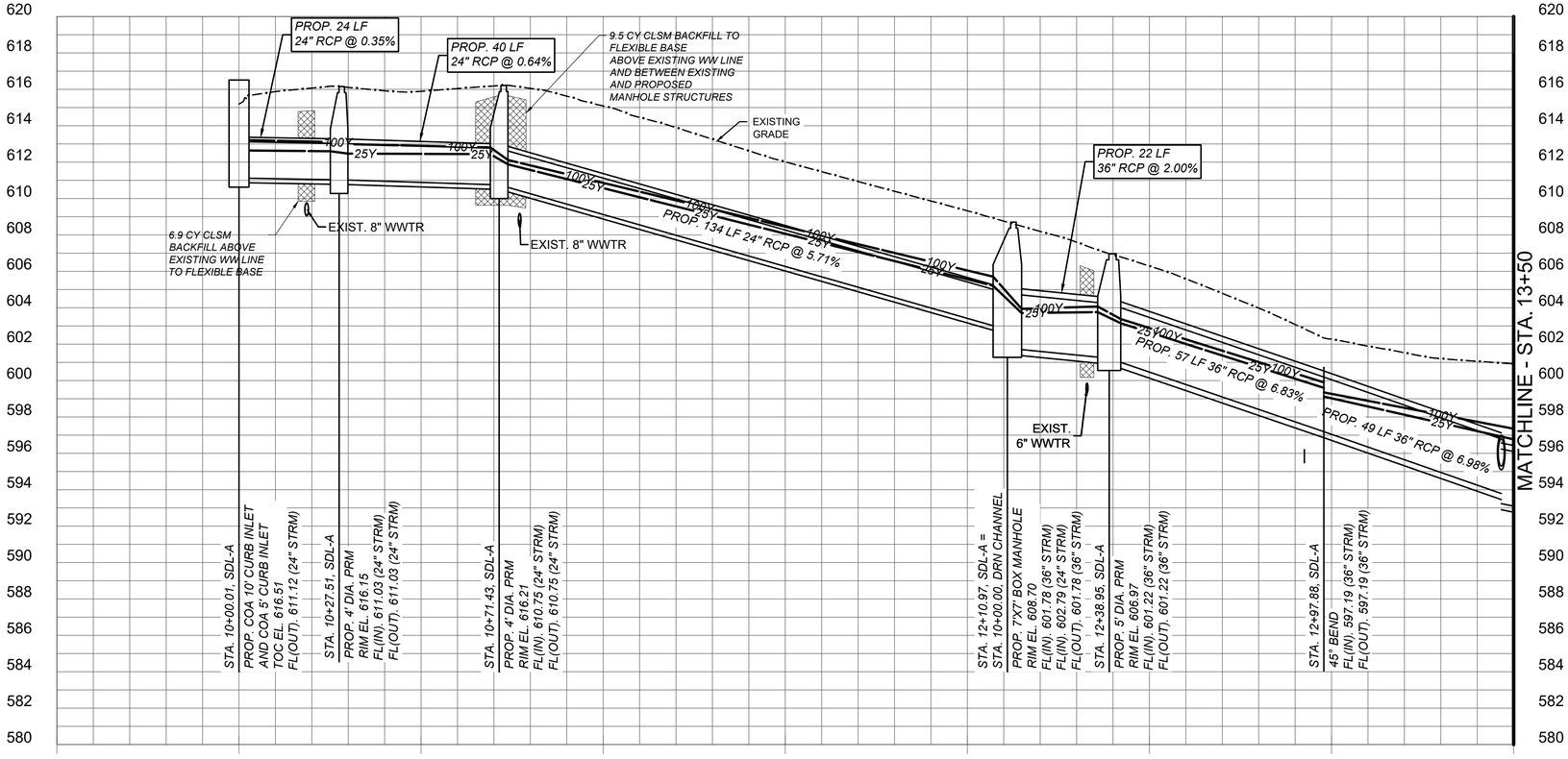

REV NO.	BY	DATE	REVISION DESCRIPTION
1	DB	10/05/2023	AMMENDMENT #2

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

STORM SEWER PLAN & PROFILE STA. 10+00.00-13+50.00

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NOTES	NAME	DATE
SURVEY BY		
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DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

0 20 40
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

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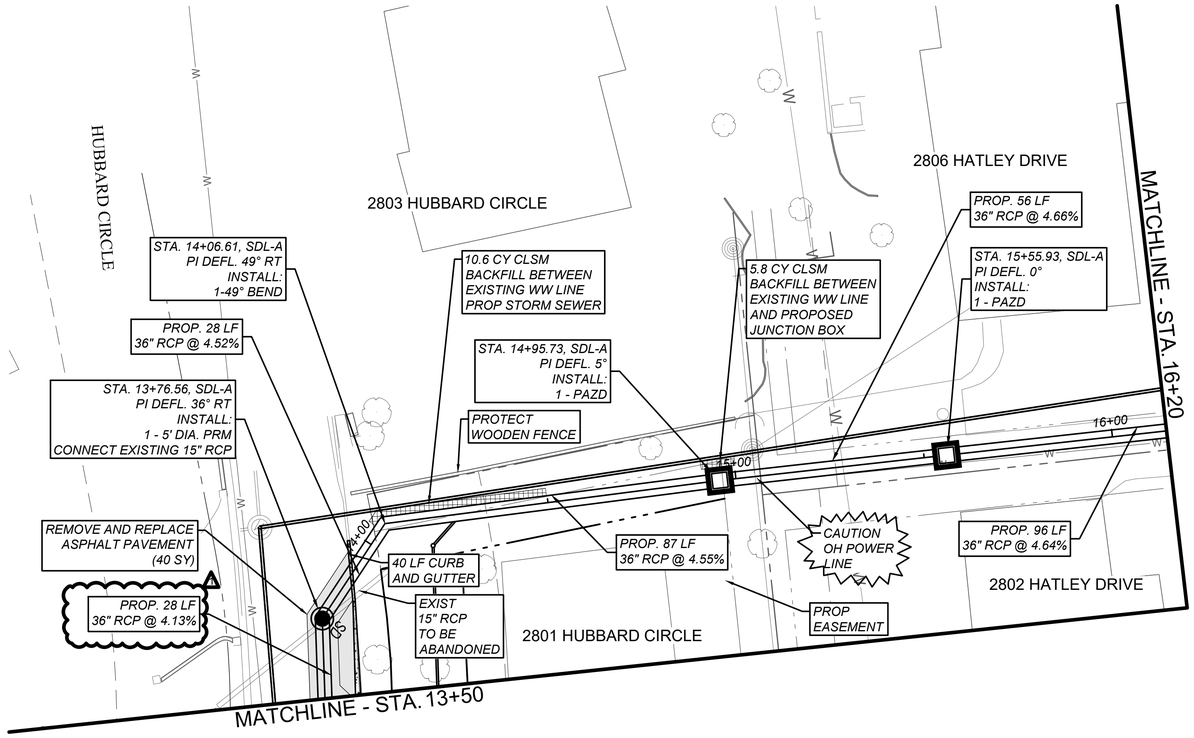
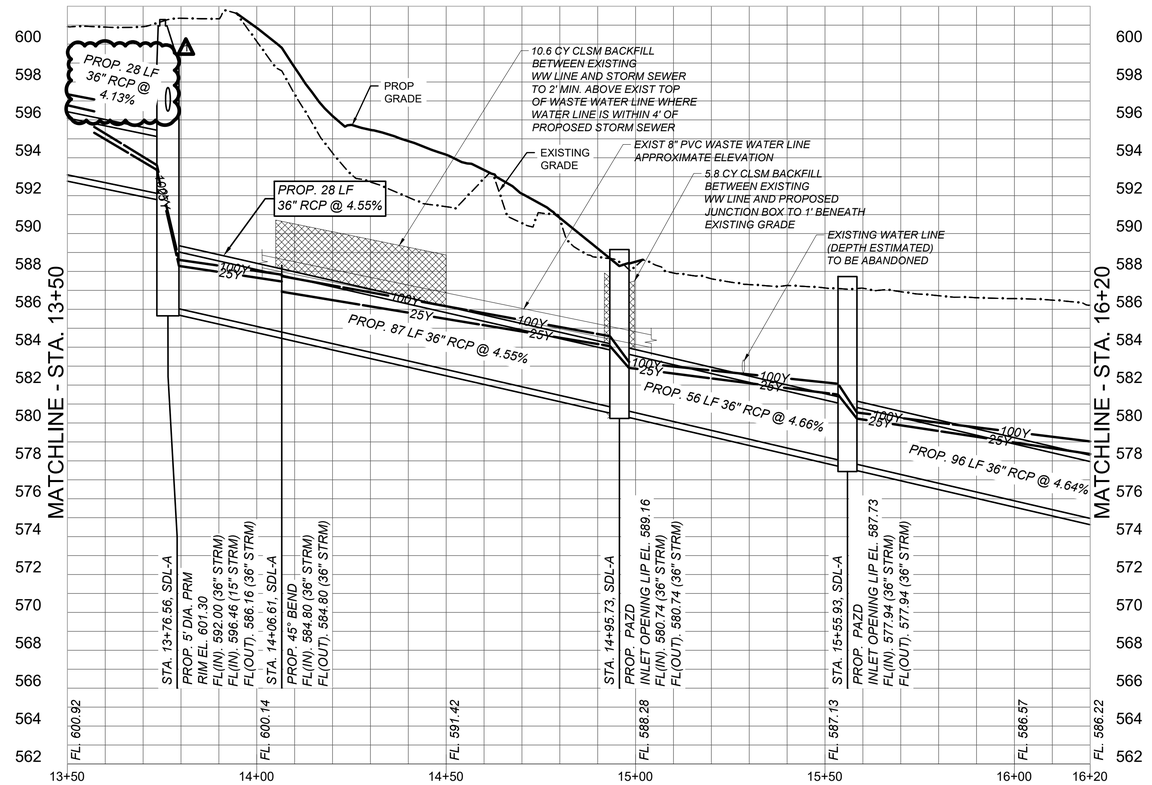
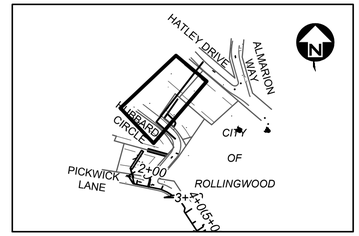
DYLAN BROBERG

PLPR01 | 10 OF 38







NOTES:

EXISTING 15" RCP IS TO REMAIN CLEAR UNTIL THE END OF CONSTRUCTION.

ABBREVIATIONS	
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STATE OF TEXAS
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11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

STORM SEWER PLAN & PROFILE STA.
13+50.00-16+20.00

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0 20 40
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

PLPR02 | 11 OF 38

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DYLAN BROBERG
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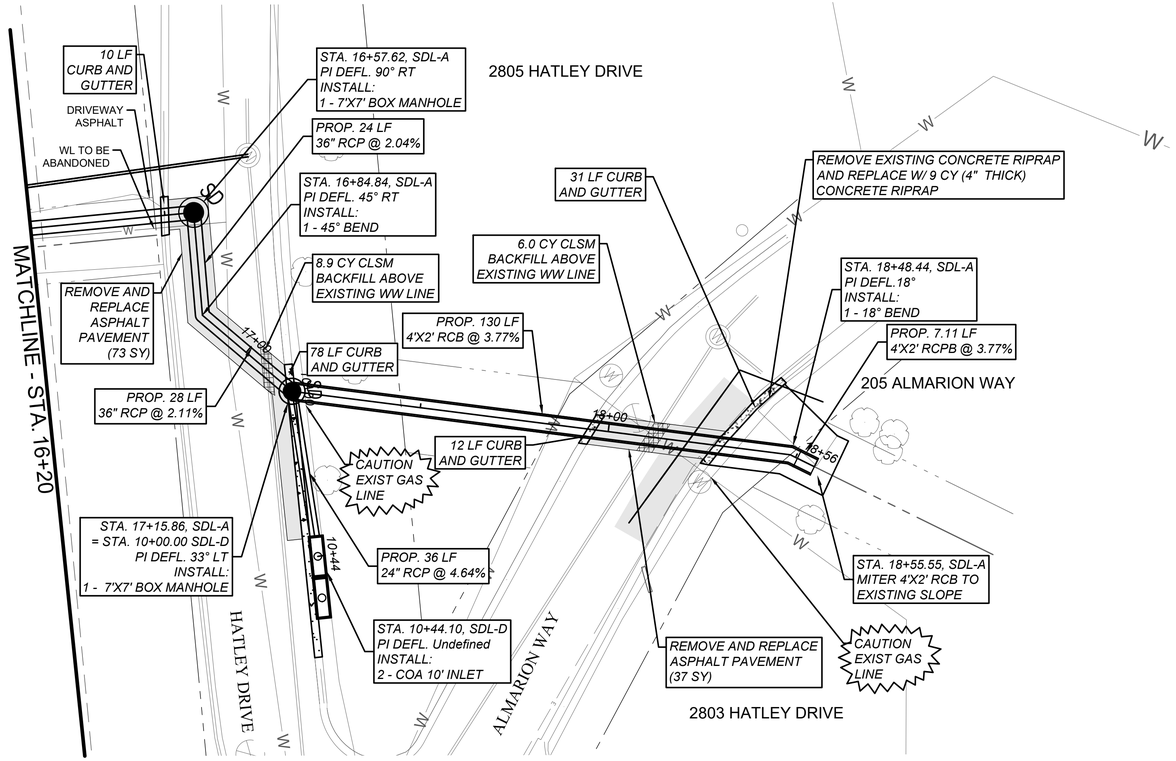
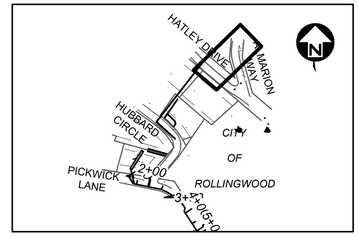


FORCE MAIN RELOCATION NOTES:

1. FORCE MAIN AND LIFT STATION OWNED AND OPERATED BY [OWNER, TELEPHONE NUMBER]. CONTRACTOR TO COORDINATE ALL WORK ON AND IN PROXIMITY OF FORCE MAIN WITH OWNER/OPERATOR NO LESS THAN 48 HOURS IN ADVANCE OF WORK.
2. LIFT STATION SHALL BE TURNED OFF AND WET WELL SHALL BE PUMPED AND HAULED FOR DURATION OF FORCE MAIN RELOCATION WORK. CONTRACTOR SHALL PREVENT WASTEWATER LEVEL IN WET WELL FROM SURCHARGING EXISTING GRAVITY INFLUENT LINE.
3. FORCE MAIN CONTENTS SHALL BE DRAINED AND HANDLED IN ACCORDANCE WITH TCEQ AND OWNERS REQUIREMENTS.
4. PROPOSED FORCE MAIN RELOCATION SHALL BE INSPECTED AND HYDROTESTED IN PRESENCE OF OWNER AND ENGINEER PRIOR TO LIFT STATION BEING TURNED BACK ON.



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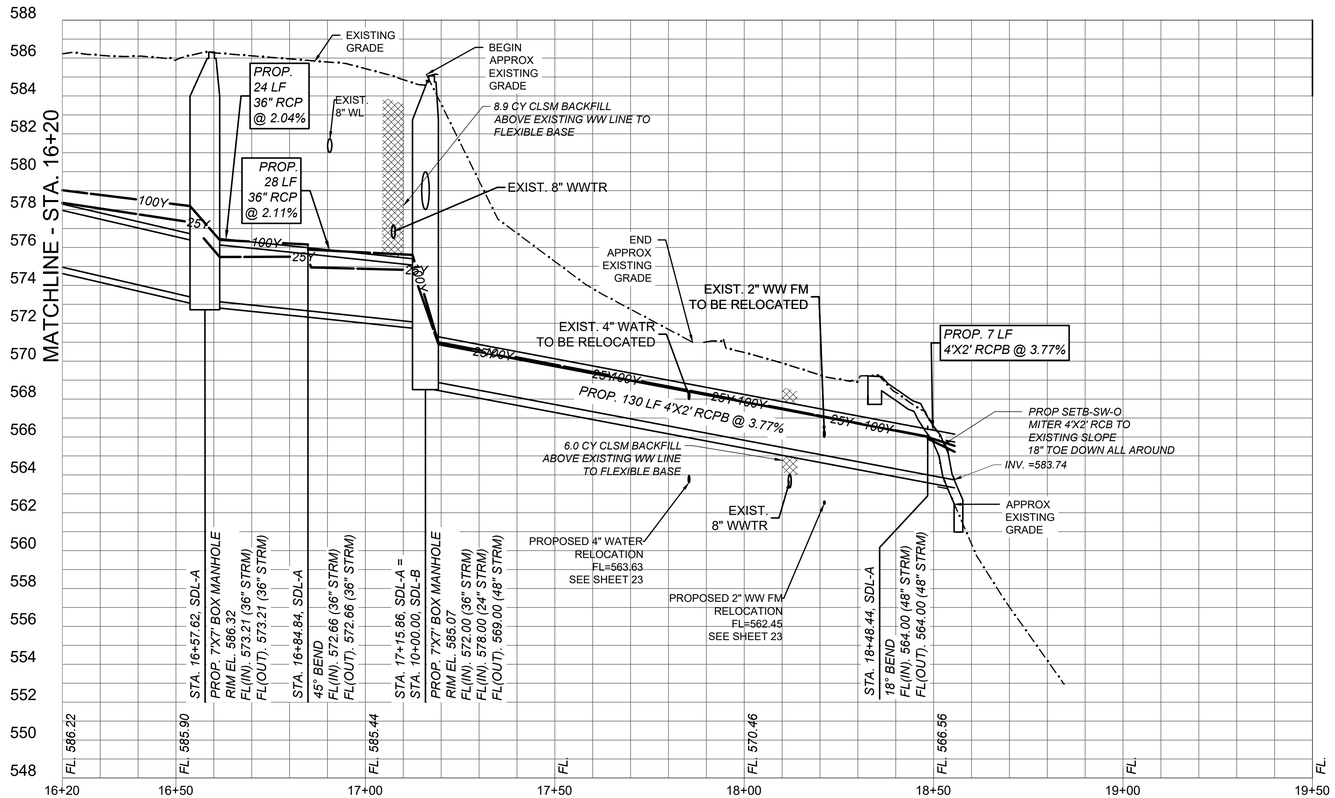

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REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

STORM SEWER PLAN & PROFILE
STA. 16+20.00-19+00.42

ROLLINGWOOD TEXAS

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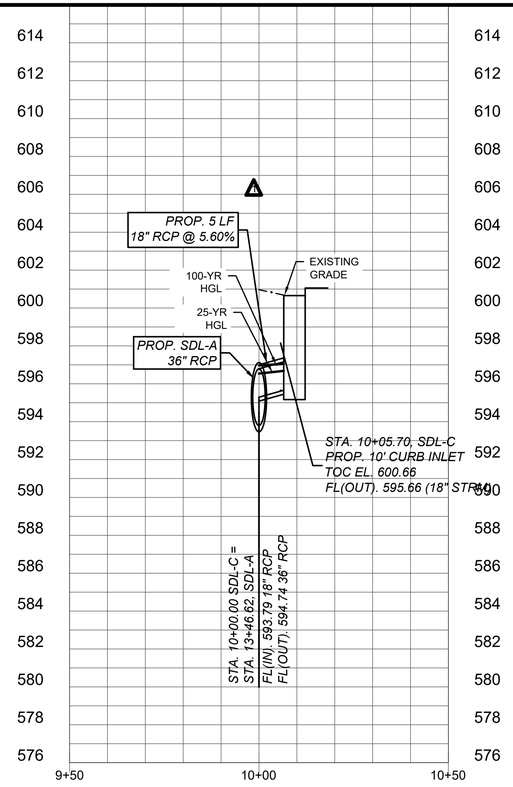
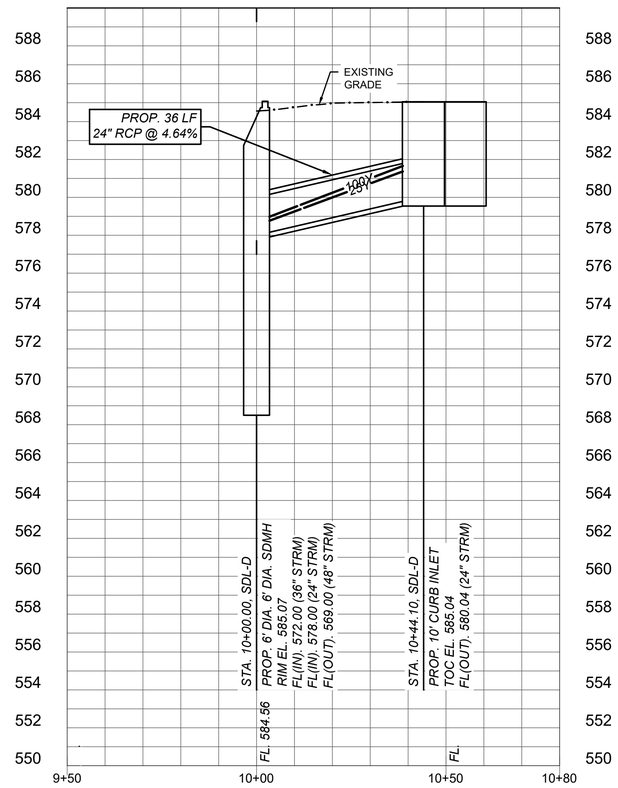
0 20 40
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

PLPR03 | 12 OF 38





ABBREVIATIONS
PRM - PRECAST ROUND MANHOLE
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LEGEND	
25 YEAR HGL	25Y
100 YEAR HGL	100Y

REV NO.	BY	DATE	REVISION DESCRIPTION
1	DB	10/05/2023	AMMENDMENT #2

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED
PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

SDL-B, SDL-C & SDL-D LATERAL PLAN & PROFILES

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1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
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0 20 40
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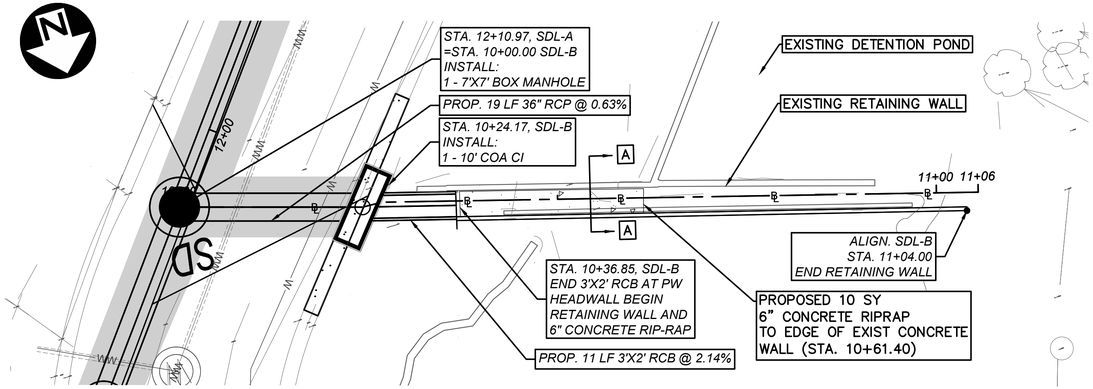
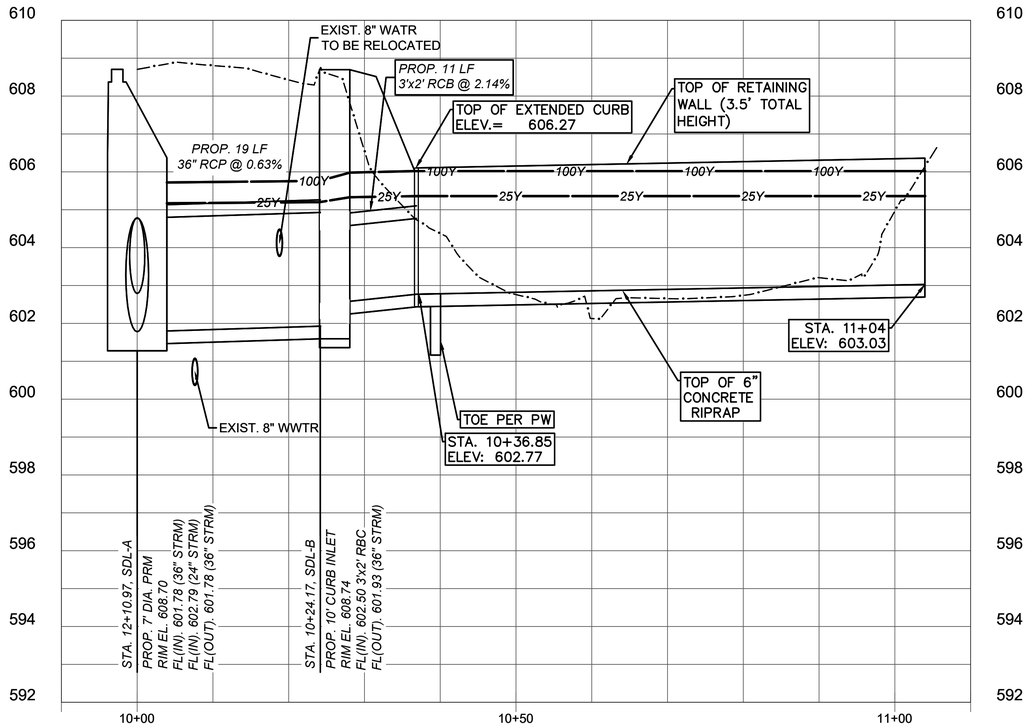
VERTICAL SCALE IN FEET





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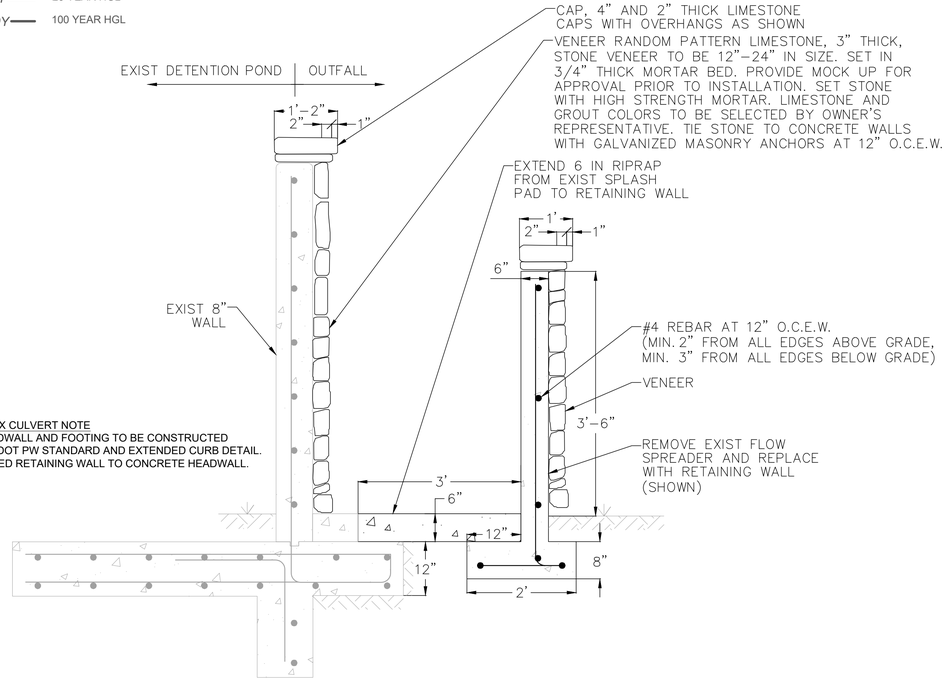

HEADWALL AND BOX CULVERT NOTE
BOX CULVERT HEADWALL AND FOOTING TO BE CONSTRUCTED ACCORDING TO TXDOT PW STANDARD AND EXTENDED CURB DETAIL. CONNECT PROPOSED RETAINING WALL TO CONCRETE HEADWALL.

POND OUTFALL SECTION A–A

N.T.S.

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

SDL-B AND DETENTION POND OUTFALL

ROLLINGWOOD TEXAS

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0 5 10
HORIZONTAL SCALE IN FEET
0 2 4
VERTICAL SCALE IN FEET

PLPR05 | 14 OF 38

X:\PROJECTS\50803_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\DGN\SHEETS\50803-C-SD-PLPR02.DWG — COA_ESD.STB
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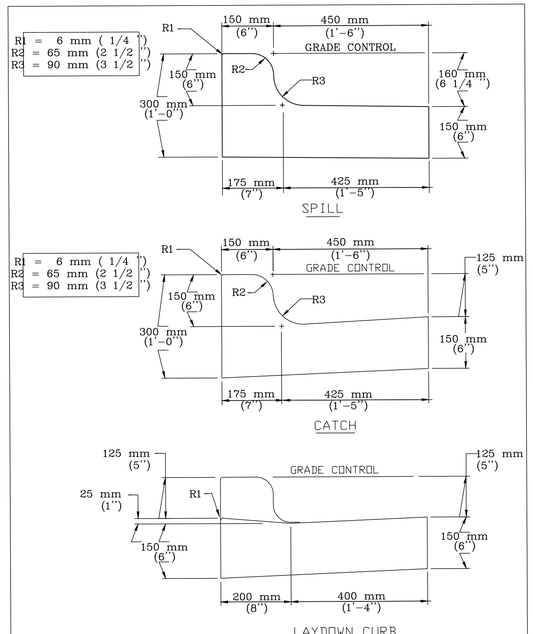
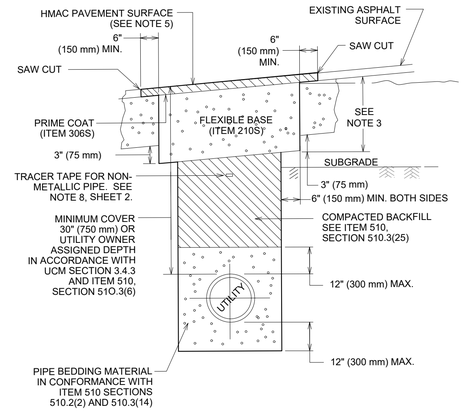
DYLAN BROBERG



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		CURB AND GUTTER SECTION	
RECORD COPY SIGNED BY LINO RIVERA	9/29/99	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 430S-1
ADOPTED			

TRENCH REPAIR IN ASPHALTIC SURFACE OVER FLEXIBLE BASE (UCM SECTION 5.8.0)

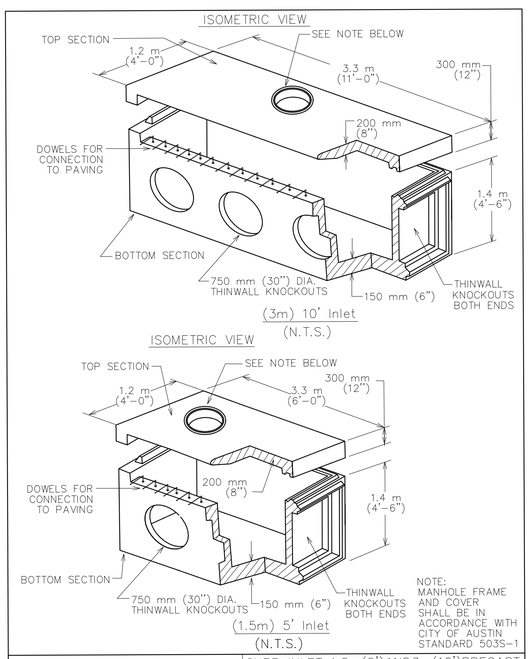


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		FLEXIBLE BASE WITH ASPHALT SURFACE TRENCH REPAIR-EXISTING PAVEMENT	
RECORD COPY SIGNED BY KERI JUAREZ	01/04/11	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-2 1 OF 2
ADOPTED			

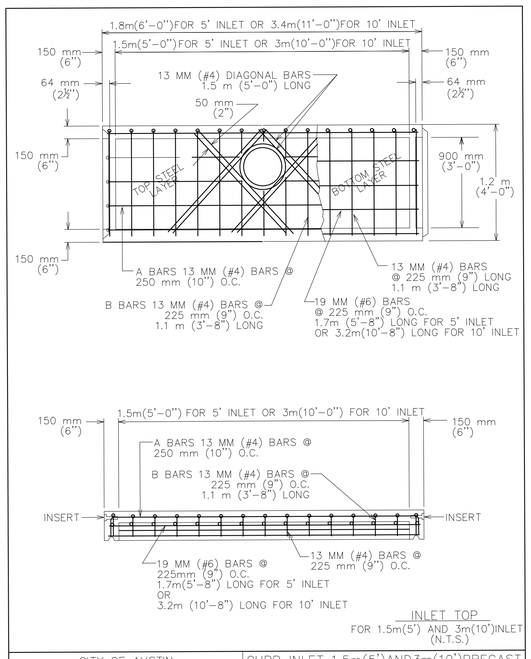
NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12" (300 mm) WIDER THAN UNDISTURBED SIDES OF THE TRENCH AND SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX AC OR TEMPORARY HMAC. TEMPORARY MIX SHALL BE PLACED OVER FLEXIBLE BASE.
3. ROAD BASE SHALL BE REPLACED IN KIND WITH BASE THICKNESS EQUAL TO EXISTING BASE THICKNESS PLUS 3" (75 mm), BUT IN NO CASE LESS THAN 12" (300 mm).
4. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH A BASE THICKNESS OF 10" (250 mm) OR A THICKNESS MATCHING EXISTING, WHICHEVER IS GREATER.
5. REPLACEMENT AC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   a) MIN. 2" (50 mm) HMAC TYPE "D" FOR TRENCH REPAIR IN LOCAL/RESIDENTIAL STREETS.
   b) MIN. 3" (75 mm) HMAC TYPE "C" FOR TRENCH REPAIR IN COLLECTOR/ARTERIAL STREETS.
   SEE ITEM 340S, SECTION 340S.4.
6. CLASS "J" PC CONCRETE (ITEM 403S) OR CONTROLLED LOW STRENGTH MATERIAL (CLSM) MAY BE SUBSTITUTED IN THESE REPAIRS FOR THE FLEXIBLE BASE AND COMPACTED BACKFILL. PC CONCRETE GREATER THAN A 2 SACK MIX WILL NOT BE ALLOWED.
7. TACK COAT ALL EXPOSED EDGES AND SURFACES (SPEC ITEM 307S).
8. AS PER CITY OF AUSTIN STANDARD SPECIFICATION 510, SECTION 510.2(8)(K)5, FOR ALL NON-METALLIC PIPE, DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND A MINIMUM OF 12" (300 mm) BELOW THE SUBGRADE, OR A MINIMUM OF 18" (450 mm) BELOW FINISHED GRADE ON AREAS OUTSIDE THE LIMITS OF PAVEMENT, SHALL BE PLACED INDUCTIVE TRACER TAPE IN ACCORDANCE WITH THE MANUFACTURER'S RE-QUIREMENTS. THE TAPE SHALL BE ENCASED IN A PROTECTIVE, INERT, PLASTIC JACKET AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		FLEXIBLE BASE WITH ASPHALT SURFACE TRENCH REPAIR-EXISTING PAVEMENT	
RECORD COPY SIGNED BY KERI JUAREZ	01/04/11	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-2 2 OF 2
ADOPTED			



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		CURB INLET 1.5m(5')AND3m(10')PRECAST TYPE 1 OR TYPE 1-R	
		THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-4 1 OF 7
ADOPTED			



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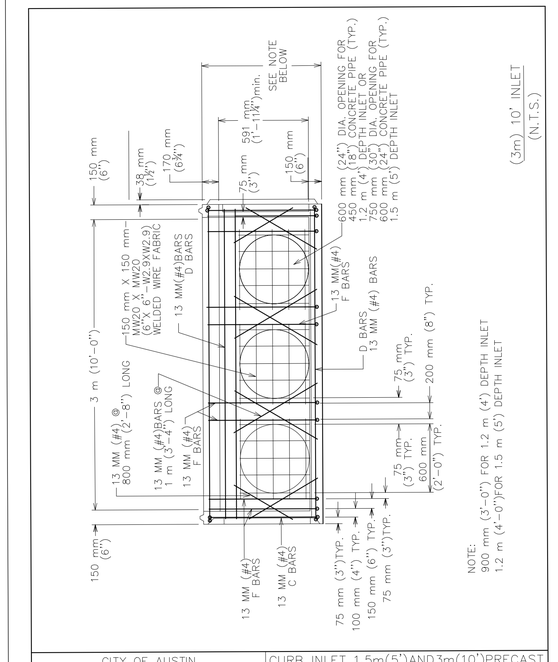

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		CURB INLET 1.5m(5')AND3m(10')PRECAST TYPE 1 OR TYPE 1-R	
		THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-4 3 OF 7
ADOPTED			

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
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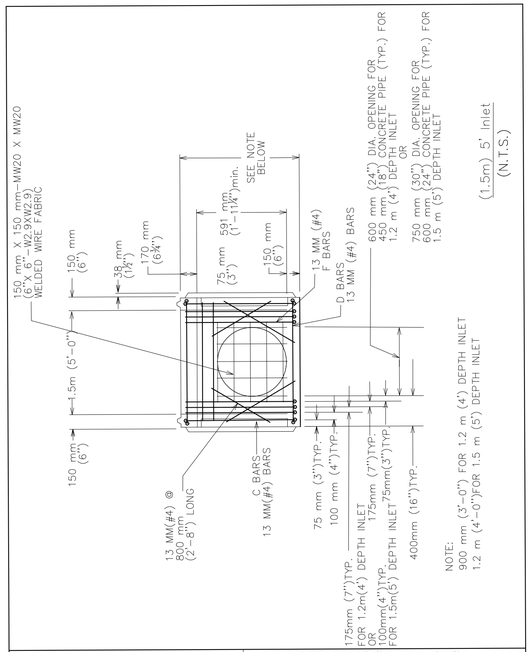
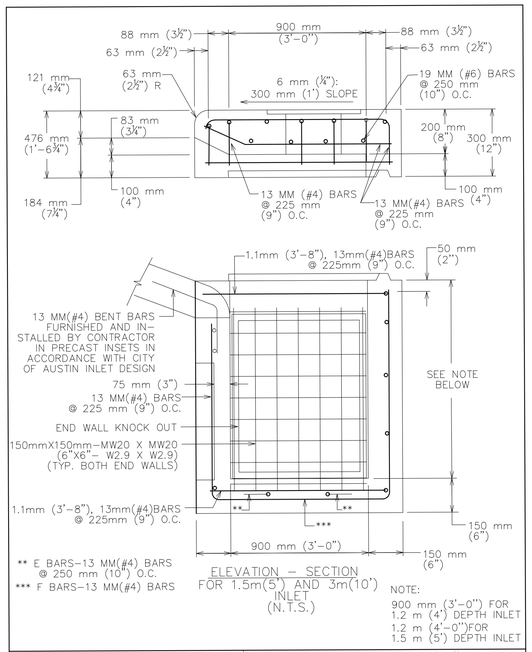
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

DET01 | 15 OF 38

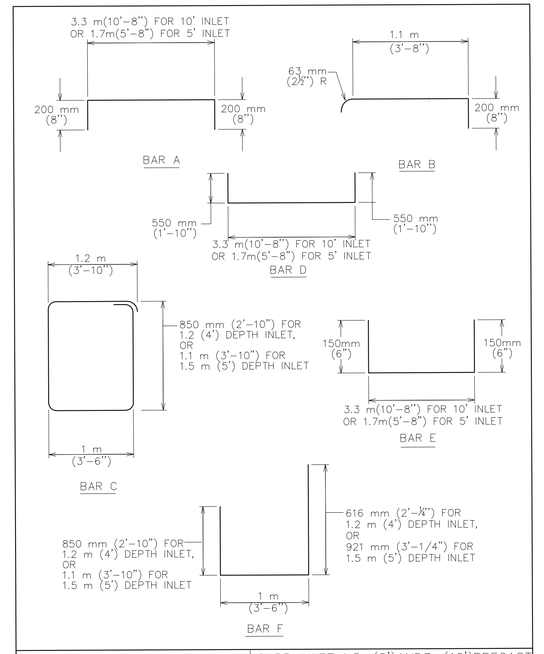
11/16/2023 10:50 AM DYLAN BRODBERG X:\PROJECTS\9983_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\SDGN\SHEETS\9800-C-CSD_DET01.DWG — COA_ESD.STB



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	CURB INLET 1.5m(5')AND3m(10')PRECAST TYPE 1 OR TYPE 1-R	
ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-4 4 OF 7



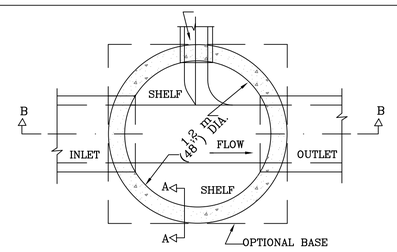
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	CURB INLET 1.5m(5')AND3m(10')PRECAST TYPE 1 OR TYPE 1-R	
ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-4 5 OF 7

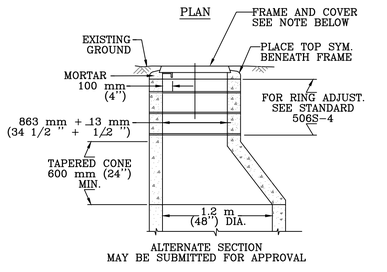


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	CURB INLET 1.5m(5')AND3m(10')PRECAST TYPE 1 OR TYPE 1-R	
ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-4 6 OF 7

NOTES:
1. ALL CONCRETE SHALL BE CLASS "A" AS PER ITEM 403S.
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
5. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB, IN ACCORDANCE WITH CITY OF AUSTIN STANDARD INLET DESIGN.
6. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE BY CONTRACTOR, SHAPED AS "V" SECTION.
7. THIS STANDARD COMPLIES WITH THE CITY OF AUSTIN STANDARD SPECIFICATIONS ITEM NO. 508S.
8. WHEN PLACING PRECAST INLETS IN SERIES TO CREATE A 15'-0" OR 20'-0" CURB INLET, THE CONNECTION BETWEEN INLET BOXES SHALL BE SOIL TIGHT AND FULLY CONVEY THE PEAK DESIGN FLOW FROM THE UPSTREAM INLET(S). THE 1:20 INVERT SLOPE DESCRIBED IN NOTE 6 OF THIS DETAIL SHALL EXTEND FROM THE MOST DOWNSTREAM POINT TO THE MOST UPSTREAM OF THE CONNECTED INLET BOXES. AT NO TIME CAN MORE THAN 20-LF OF CURB OPENING BE CONNECTED TO A MAIN STORM DRAIN LINE WITH ONE LATERAL STORM DRAIN CONNECTION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	CURB INLET 1.5m(5')AND3m(10')PRECAST TYPE 1 OR TYPE 1-R	
ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-4 7 OF 7



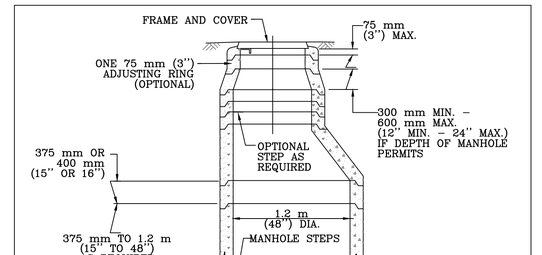


NOTE:
USE 800 mm (32") FRAME AND COVER.

MINIMUM MANHOLE DIA.	MINIMUM PIPE SIZE
1.2 m (4')	450 TO 600 mm (18 TO 24")
1.5 m (5')	750 mm TO 1.1 m (30 TO 42")
1.8 m (6')	1.2 TO 1.4 m (48 TO 54")
2.1 m (7')	1.5 TO 1.7 m (60 TO 66")

SIZE TO BE USED IS DEPENDENT ON DRAIN ANGLES.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	PRE-CAST CONCRETE STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY GEORGE E. OSWALD 2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3 1 OF 2



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	PRE-CAST CONCRETE STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY GEORGE E. OSWALD 2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3 2 OF 2

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
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133555
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11/15/2023

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NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

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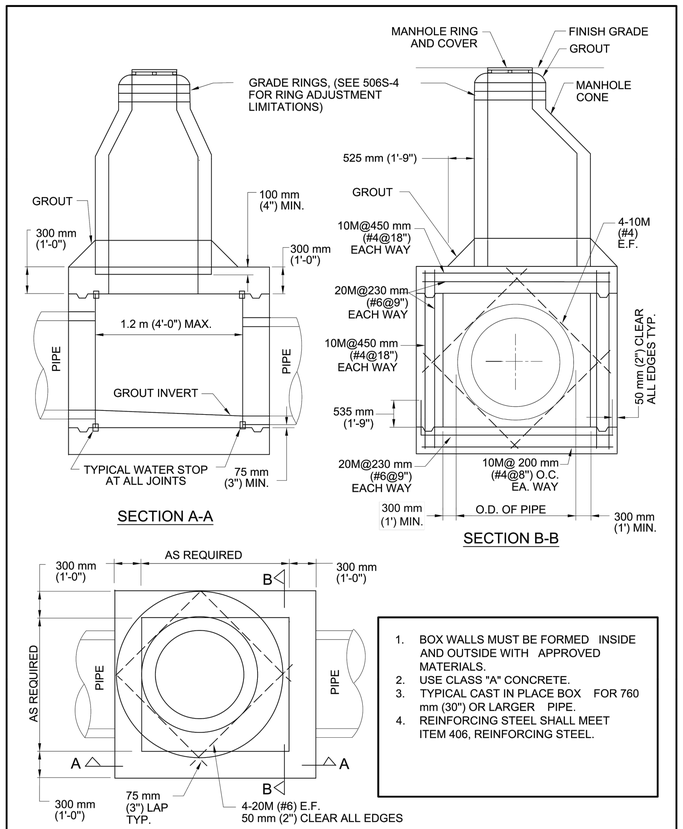
DYLAN BROBERG



1. BOX WALLS MUST BE FORMED INSIDE AND OUTSIDE WITH APPROVED MATERIALS.
2. USE CLASS "A" CONCRETE.
3. TYPICAL CAST IN PLACE BOX FOR 760 mm (30") OR LARGER PIPE.
4. REINFORCING STEEL SHALL MEET ITEM 406, REINFORCING STEEL.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		TYPICAL BOX MANHOLE 760 mm (30") & LARGER PIPE	
RECORD COPY SIGNED BY KATHI F. PAYNE	2/17/00 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 506S-5 1 OF 1

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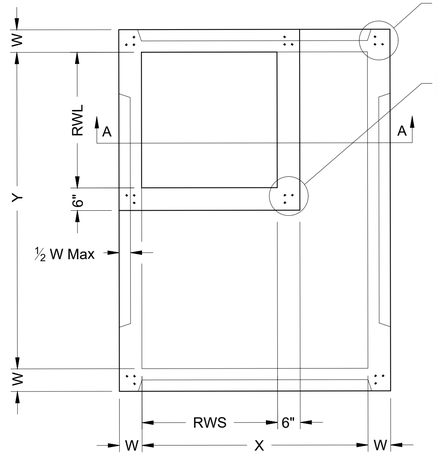
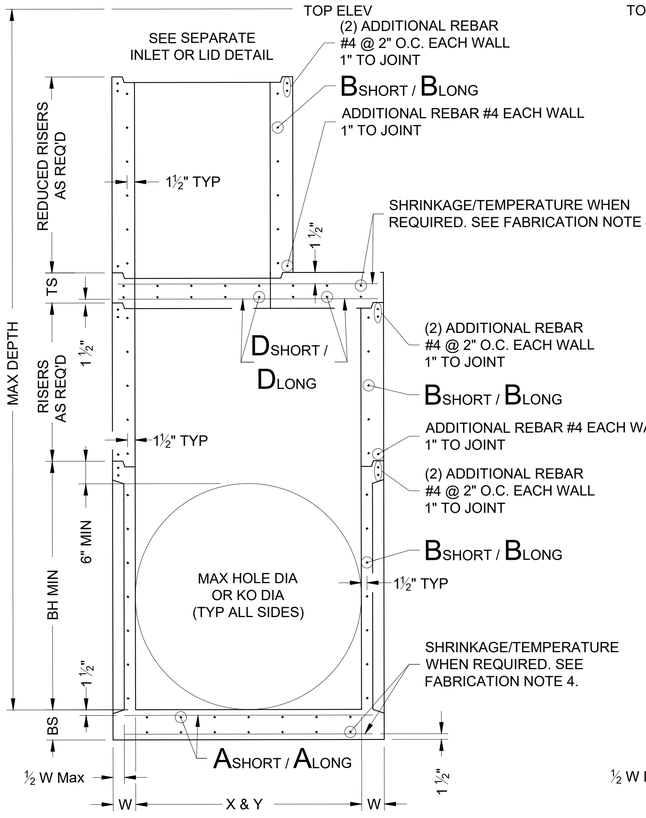
SURVEY BY		
DRAWN BY	KT	06/22
DESIGNED BY	AF	06/22
CHECKED BY	GE	09/23
REVIEWED BY		

DET03 | 17 OF 38



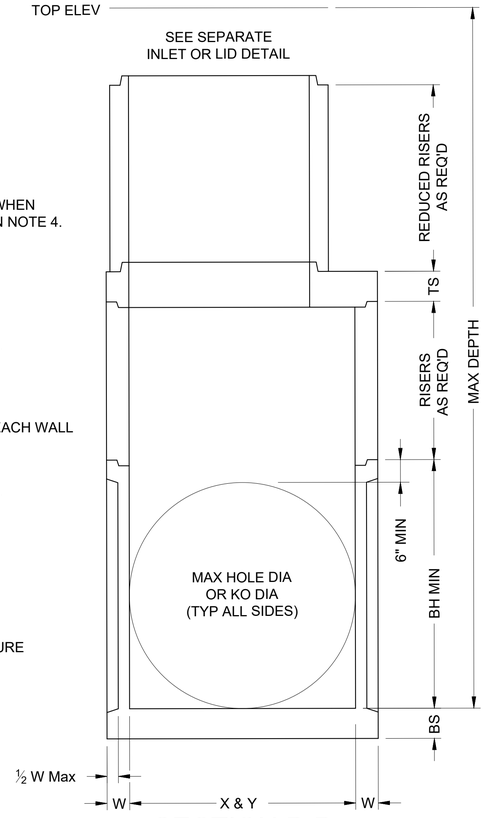
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



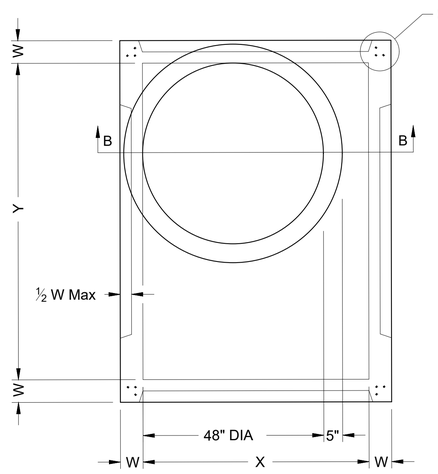
SECTION A-A

SQUARE REDUCED RISER OPTION



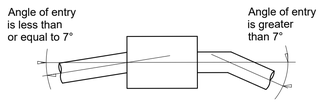
SECTION B-B

ROUND 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.

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.

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.

DATE:
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STATE OF TEXAS
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CITY OF ROLLINGWOOD, TEXAS
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DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

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DATE:
FILE:

	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 orRiser Walls			Below Grade Slab (w/PJB)Reducing Slab (w/PB)				Base Slab			Base Unit orRiser Walls			Below Grade Slab (w/PJB)Reducing Slab (w/PB)						
		Short SpanReinf SteelArea	Long SpanReinf SteelArea	Thickness	Short SpanReinf SteelArea	Long SpanReinf SteelArea	Thickness	Reduced Riser Size	Short SpanReinf SteelArea	Long SpanReinf SteelArea	Thickness	Short SpanReinf SteelArea	Long SpanReinf SteelArea	Thickness	Short SpanReinf SteelArea	Long SpanReinf SteelArea	Thickness	Reduced Riser Size	Short SpanReinf SteelArea	Long SpanReinf SteelArea	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWLor ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWLor ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in²/ft	in²/ft	in.	in²/ft	in²/ft	in.	ft. **	in²/ft	in²/ft	in.	in²/ft	in²/ft	in.	in²/ft	in²/ft	in.	ft. **	in²/ft	in²/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

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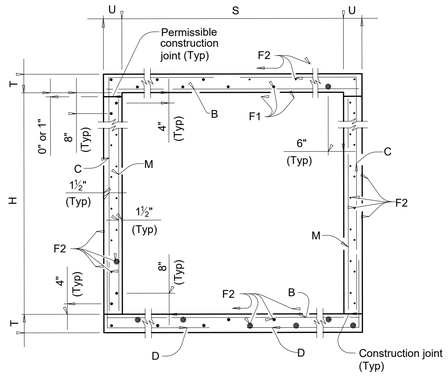
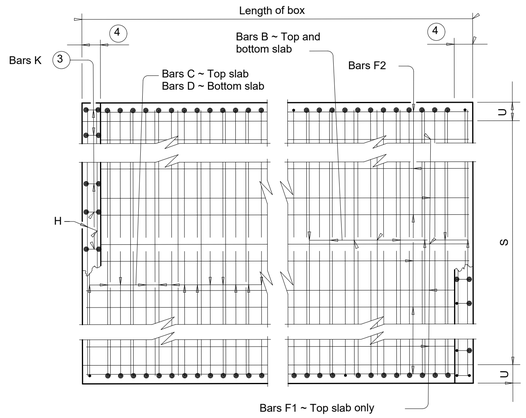
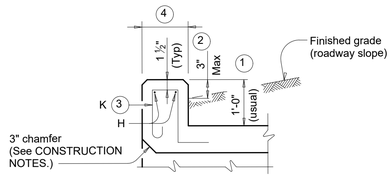


TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian 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 Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

2. 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.

3. 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.

4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

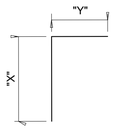
Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86"
Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

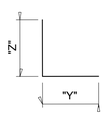
MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
· culverts with overlay,
· culverts with 1-to-2 course surface treatment, or
· culverts with the top slab as the final riding surface.
Provide bar laps, where required, as follows:
· Uncoated or galvanized ~ #4 = 1'-8" Min
· Uncoated or galvanized ~ #5 = 2'-1" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

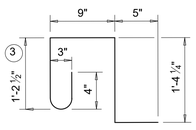
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-3 & 4

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SECTION DIMENSIONS				⑤ FILL HEIGHT	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																												QUANTITIES					
					Bars B					Bars C							Bars D							Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
3' - 0"	2' - 0"	8"	7"	30'	108	#5	9"	3' - 11"	441	108	#4	9"	5' - 4"	385	2' - 6"	2' - 10"	108	#4	9"	5' - 1"	367	2' - 10"	2' - 3"	108	9"	2' - 0"	144	3	39' - 9"	80	19	39' - 9"	505	3' - 11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3' - 0"	3' - 0"	8"	7"	30'	108	#5	9"	3' - 11"	441	108	#4	9"	6' - 4"	457	3' - 6"	2' - 10"	108	#4	9"	5' - 1"	367	2' - 10"	2' - 3"	108	9"	3' - 0"	216	3	39' - 9"	80	23	39' - 9"	611	3' - 11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4' - 0"	2' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	5' - 8"	613	2' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	2' - 0"	144	3	39' - 9"	80	21	39' - 9"	558	4' - 11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4' - 0"	3' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	6' - 8"	721	3' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	3' - 0"	216	3	39' - 9"	80	25	39' - 9"	664	4' - 11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4' - 0"	4' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	7' - 8"	830	4' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	4' - 0"	289	3	39' - 9"	80	25	39' - 9"	664	4' - 11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-3 & 4

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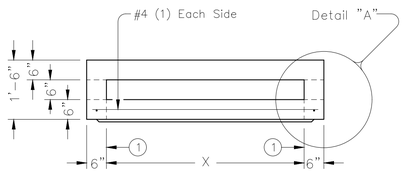
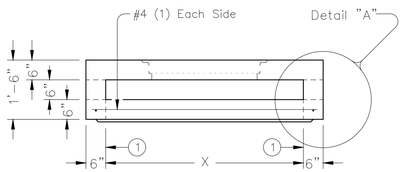


ELEVATION VIEW



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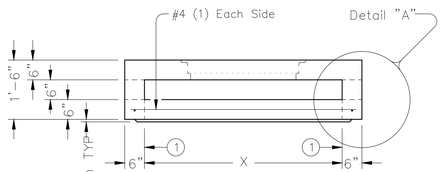

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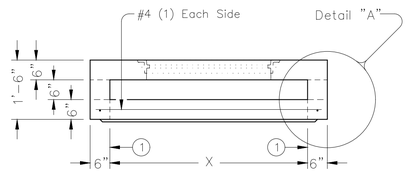

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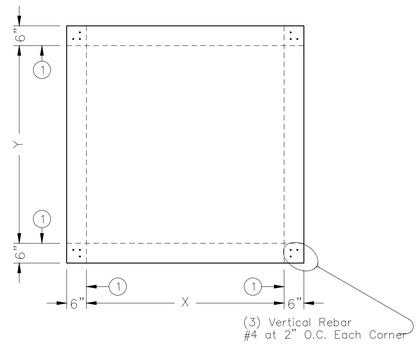
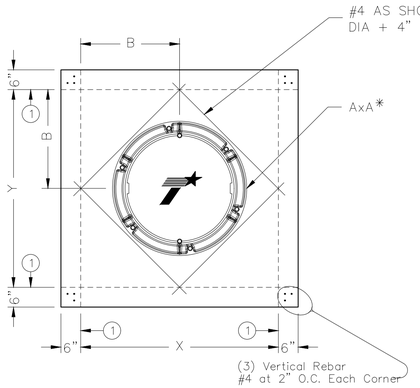


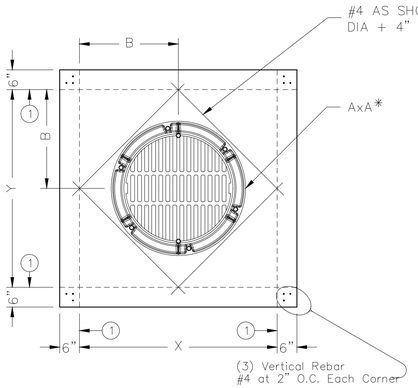
PLAN VIEW
NO OPENINGS

STYLE 'SL'



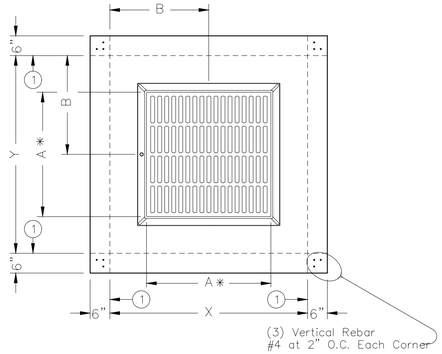
PLAN VIEW
32" DIA CAST-IN RING & COVER

STYLE 'RC'



PLAN VIEW
32" DIA CAST-IN RING & GRATE

STYLE 'RG'



PLAN VIEW
CAST-IN FRAME & GRATE

STYLE 'FG'

Style	Size (X x Y)	A x A*	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in²/ft	0.37 in²/ft
RC,RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
SL	4'x4'	n/a	n/a	0.34 in²/ft	0.34 in²/ft
RC,RG	4'x4'	32" Dia	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	3'x3'	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	4'x4'	2'x2'	0.34 in²/ft	0.34 in²/ft
SL	5'x5'	n/a	n/a	0.43 in²/ft	0.43 in²/ft
RC,RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in²/ft	0.68 in²/ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft

*Nominal frame/grate or ring/cover size.

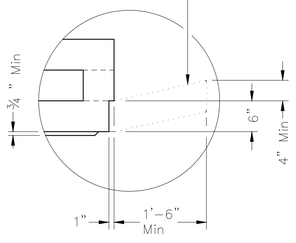
① Matches inside face of wall of precast base or riser below inlet.

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 clear cover of ¾" to reinforcing from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:
1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not 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 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. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. 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 PAZD, use detail above to create an apron ledge on all 4 sides.

Texas Department of Transportation — Bridge Division Standard

PRECAST AREA ZONE DRAIN

PAZD

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

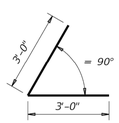
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2–wings) (4)		Estimated Quantities per ft of Toewall (1–toewall)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2		Reinf Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
					Size	Spa	Size	Spa				
2'–6"	2'–10"	10"	1'–0"	7"	#4	1'–0"	#4	1'–0"	48.64	0.406	6.85	0.071
2'–9"	2'–10"	10"	1'–0"	7"	#4	1'–0"	#4	1'–0"	49.31	0.424	6.85	0.071
3'–0"	2'–10"	10"	1'–0"	7"	#4	1'–0"	#4	1'–0"	49.98	0.444	6.85	0.071
3'–3"	2'–10"	10"	1'–0"	7"	#4	1'–0"	#4	1'–0"	53.32	0.462	6.85	0.071
3'–6"	2'–10"	10"	1'–0"	7"	#4	1'–0"	#4	1'–0"	53.98	0.480	6.85	0.071
4'–0"	3'–2"	1'–2"	1'–0"	7"	#4	1'–0"	#4	1'–0"	55.77	0.532	6.85	0.071
4'–6"	3'–2"	1'–2"	1'–0"	7"	#4	1'–0"	#4	1'–0"	59.77	0.568	6.85	0.071
5'–0"	3'–9"	1'–7"	1'–2"	7"	#4	1'–0"	#4	1'–0"	63.45	0.632	6.96	0.075
5'–6"	3'–9"	1'–7"	1'–2"	7"	#4	1'–0"	#4	1'–0"	67.46	0.668	6.96	0.075
6'–0"	4'–4"	2'–0"	1'–4"	7"	#5	1'–0"	#5	1'–0"	80.67	0.730	7.07	0.078
6'–6"	4'–4"	2'–0"	1'–4"	7"	#5	1'–0"	#5	1'–0"	85.05	0.768	7.07	0.078
7'–0"	5'–0"	2'–3"	1'–9"	8"	#5	1'–0"	#5	1'–0"	92.15	0.864	8.07	0.093
7'–6"	5'–0"	2'–3"	1'–9"	8"	#5	1'–0"	#5	1'–0"	96.54	0.902	8.07	0.093
8'–0"	5'–6"	2'–8"	1'–10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'–6"	5'–6"	2'–8"	1'–10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'–6"	6'–0"	2'–10"	2'–2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'–6"	6'–5"	3'–0"	2'–5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'–6"	7'–2"	3'–6"	2'–8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'–6"	7'–8"	3'–9"	2'–11"	1'–0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'–6"	8'–2"	4'–0"	3'–2"	1'–2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'–6"	8'–10"	4'–5"	3'–5"	1'–4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'–6"	9'–6"	4'–10"	3'–8"	1'–6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'–0"	9'–11"	5'–0"	3'–11"	1'–7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2–wings)

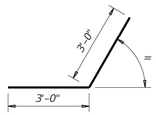
Bar	Size	No.	Spa
D1	#6	~	1'–0"
D2	#6	~	1'–0"
E1	#4	~	1'–0"
F	#4	~	1'–0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'–0"
V	#4	~	1'–0"

TABLE OF TOEWALL REINFORCING

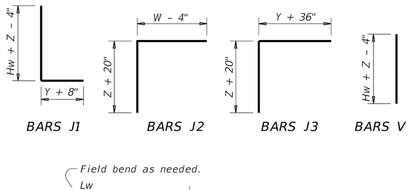
Bar	Size	No.	Spa
J3	#4	~	1'–0"
M2	#4	2	~
E2	#4	~	1'–0"



BARS D1



BARS D2



BARS J1 BARS J2 BARS J3 BARS V

WING DIMENSION FORMULAS:

(All values are in feet.)

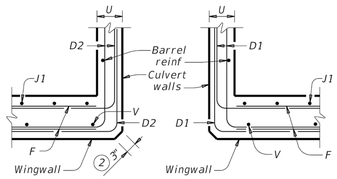
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW–1
= (Hw – 1') (SL) ÷ cosine (θ) for Type PW–2 and Hw ≥ 4'
= (Hw – 0.5') (SL) ÷ cosine (θ) for Type PW–2 and Hw < 4'

For cast–in–place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

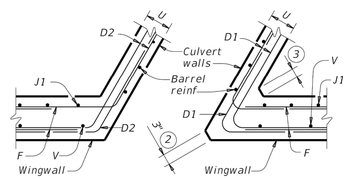
For precast culverts:
Ltw = [(N) (2 U + S) + (N – 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW–1
= (2)(Hw)(Lw) – 6 SF for Type PW–2 and Hw ≥ 4'
= (2)(Hw)(Lw) – 1.5 SF for Type PW–2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio, (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.



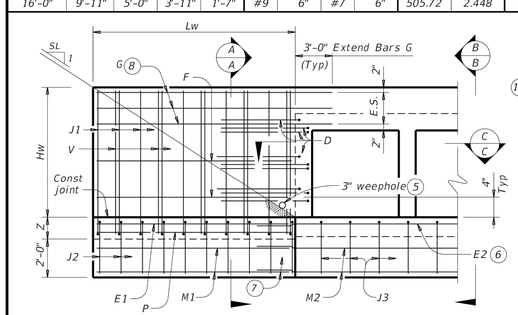
SECTION C-C - PW-1



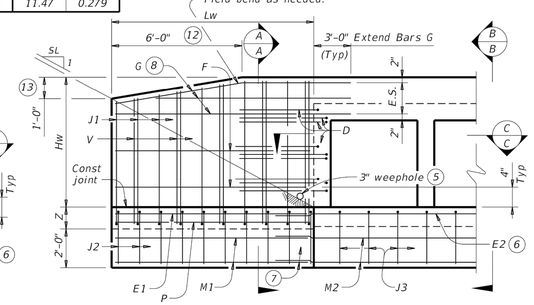
SECTION C-C - PW-2

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW–1 wings. Adjust concrete volume for Type PW–2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'–0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'–6" minimum into the wingwall footing.
7. Lap Bars M1 1'–6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian 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.
10. 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.

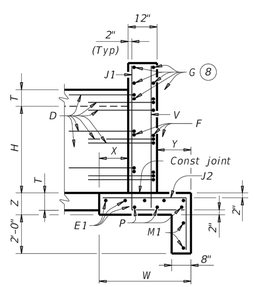
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'–0" typical. 2'–3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'–0" for Hw < 4'.
13. 6" for Hw < 4'.



PARTIAL ELEVATION - PW-1



PARTIAL ELEVATION - PW-2



SECTION A-A
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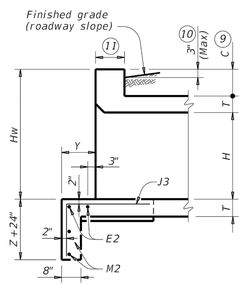
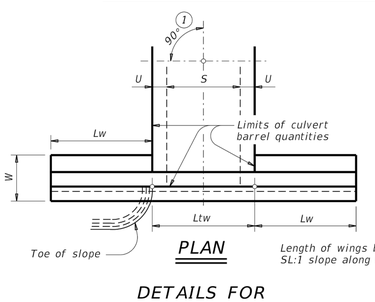


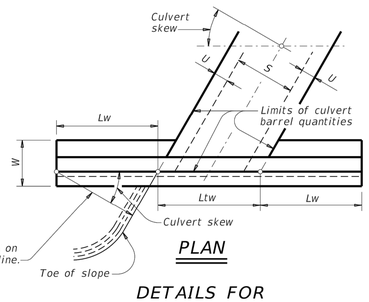
SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS

Length of wings based on SL:1 slope along this line.



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

DESIGNER NOTES:

Type PW–1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW–2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS
TYPES PW-1 AND PW-2

PW

FILE: CD-PW-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
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DRAWN BY	KT	06/22
DESIGNED BY	AF	06/22
CHECKED BY	GE	09/23
REVIEWED BY		

DET09 | 23 OF 38

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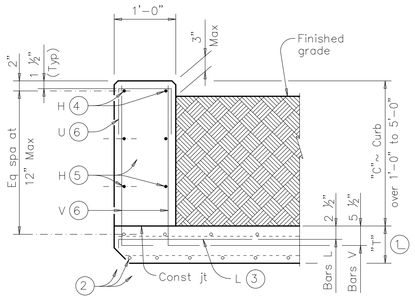
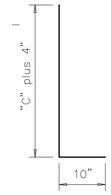
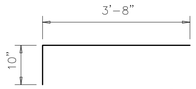


TYPICAL SECTION

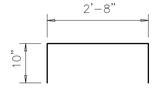
Used for curbs over 1'–0" to 5'–0"



BARS V (#5) (6)
Spaced at 12" Max



BARS L (#5) (3)
Spaced at 12" Max



OPTIONAL BARS L (#5) (3) (7)
Spaced at 12" Max

BARS U (#4) (6)
Spaced at 12" Max

(1) "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP–MD standard for additional details.

(2) Adjust normal culvert slab bars as necessary to clear obstructions.

(3) Place bars L as shown. Tilt hook as necessary to maintain cover.

(4) Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

(5) Additional bars H(#4) as required to maintain 12" Max spacing.

(6) Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

(7) Optional bars L are to be used only for precast box culverts with 3'–0" closure pour.

(8) Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'–0"	0.037	10.4
1'–6"	0.056	14.5
2'–0"	0.074	15.6
2'–6"	0.093	18.0
3'–0"	0.111	19.0
3'–6"	0.130	21.3
4'–0"	0.148	22.4
4'–6"	0.167	24.8
5'–0"	0.185	25.9

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 ½" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs
Provide bar laps, where required, as follows:
·Uncoated or galvanized ~ #4 = 1'–8" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631–CM standard.
This Curb is considered as part of the Box Culvert for payment.

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

Texas Department of Transportation | Bridge Division Standard

EXTENDED CURB DETAILS

FOR BOX CULVERTS WITH CURBS OVER 1'–0" TO 5'–0" TALL

ECD

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SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

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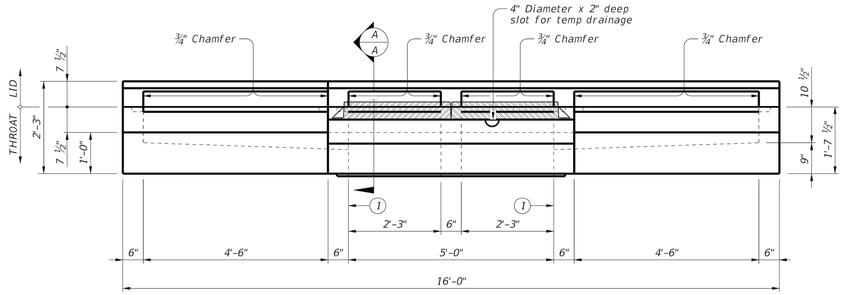
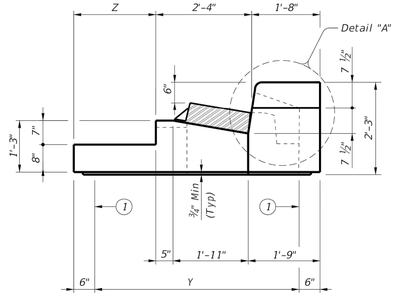
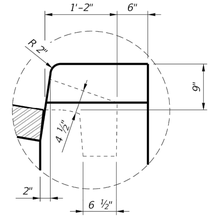


FRONT VIEW

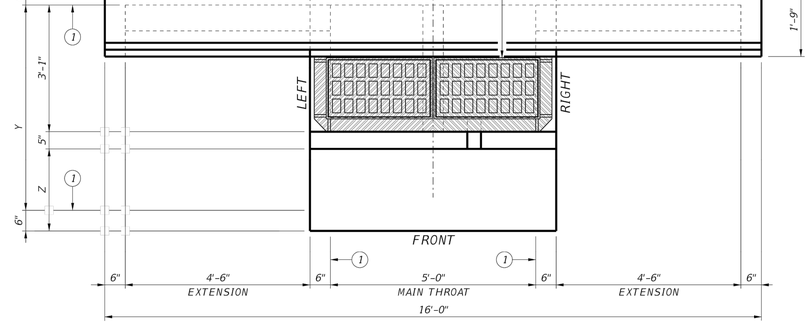
(Showing left and right extensions)



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.

HS20 LOADING

SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

PRECAST CURB INLET UNDER ROADWAY

PCU

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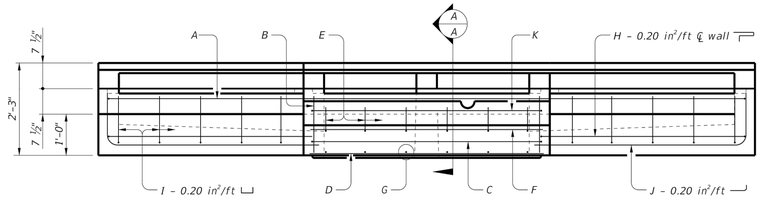
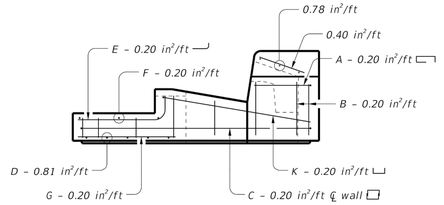
DESIGNED BY	AF	06/22
CHECKED BY	GE	09/23
REVIEWED BY		

DATE:
FILE:

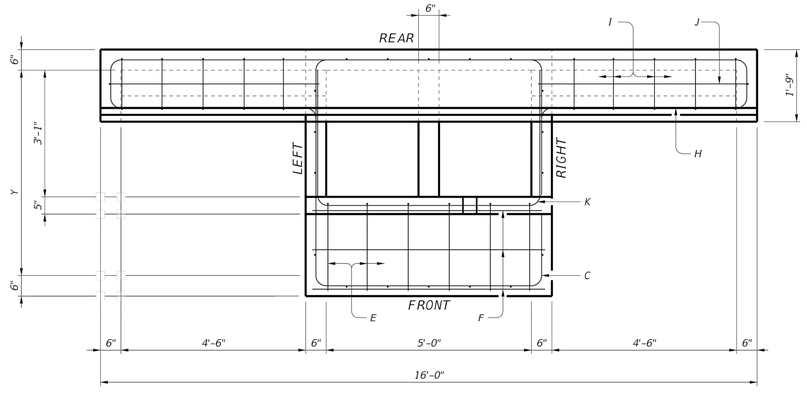


FRONT VIEW

(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.

HS20 LOADING

Texas Department of Transportation | Bridge Division Standard

PRECAST CURB INLET UNDER ROADWAY

PCU

FILE: CD-PCU-23.dgn	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.

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
ROLLINGWOOD DRAINAGE IMPROVEMENTS

DRAINAGE & PAVEMENT DETAILS

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P – 512.338.1704 F – 512.338.1784
TBPE Firm #6535
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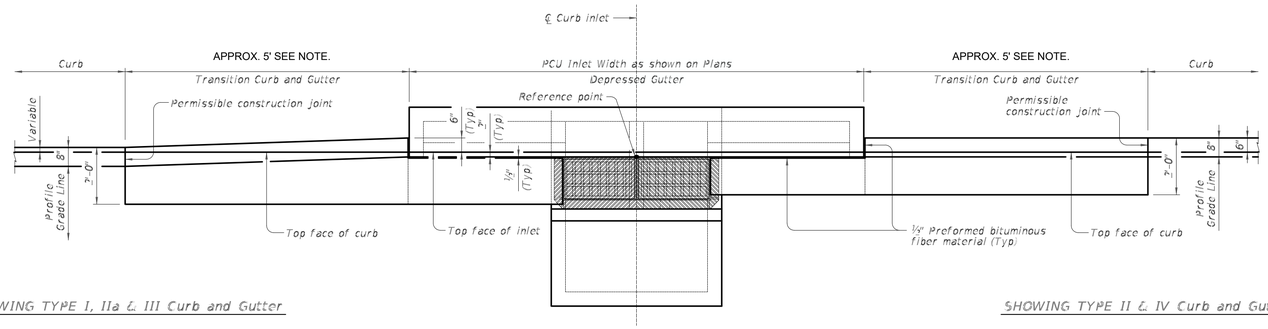
NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	06/22
DESIGNED BY	AF	06/22
CHECKED BY	GE	09/23
REVIEWED BY		

X:\PROJECTS\0803_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\05SNSHEETS\0800-C-CSD_DETL02.DWG — CDA_ESD.STB
11/16/2023 10:52 AM
DYLAN BRODBERG

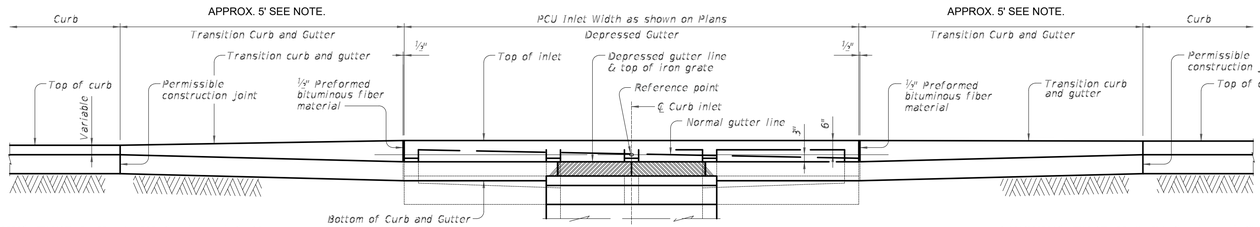
DATE:
FILE:



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

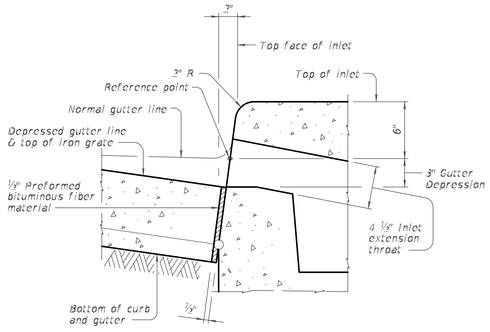
PLAN



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 1/8" 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: CD-CGT-PCU-13.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
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REVISIONS				
06-10: Added reference point.	DIST	COUNTY		SHEET NO.

NOTE:
COMPLETE CURB AND GUTTER TRANSITION BETWEEN PROPOSED PCU INLET AND FUTURE ENTRANCE WAY. COORDINATE TRANSITION AND FUTURE ENTRANCE WAY LOCATION WITH PROPERTY OWNER/HOME BUILDER AS NEEDED.

REV NO.	BY	DATE	REVISION DESCRIPTION
1	DB	10/05/2023	AMENDMENT #2

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
ROLLINGWOOD DRAINAGE IMPROVEMENTS

DRAINAGE & PAVEMENT DETAILS

ROLLINGWOOD TEXAS

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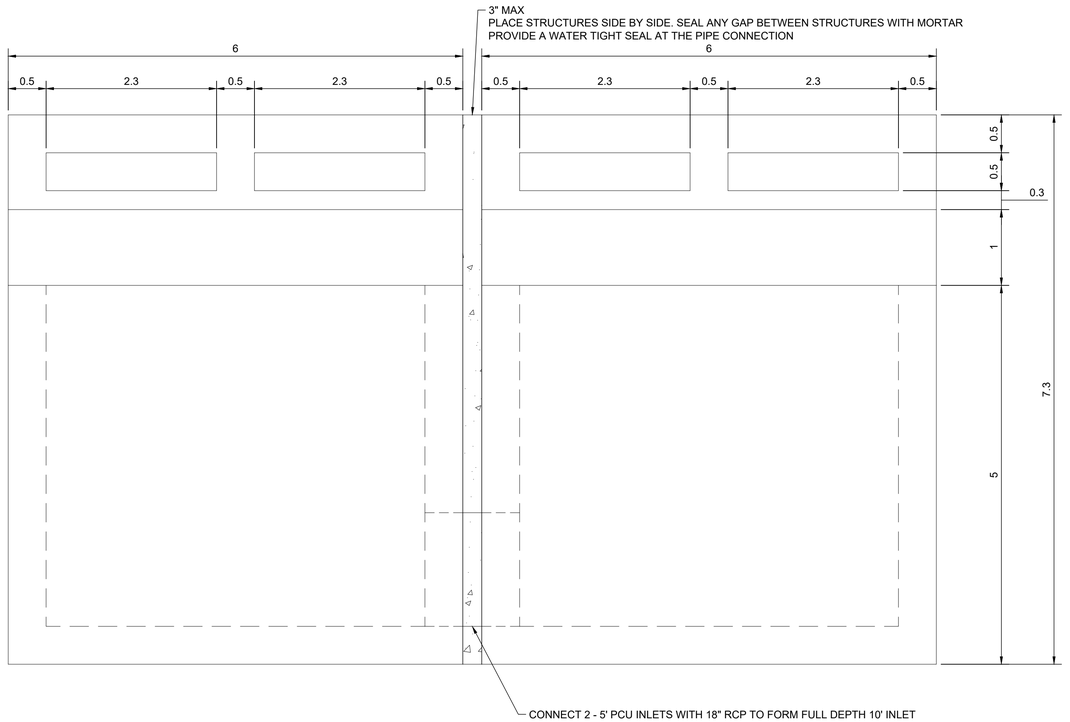

COMBINATION OF (2) 5' PCU CURB INLETS
FRONT VIEW
SCALE: 1" = 1'

REV NO.	BY	DATE	REVISION DESCRIPTION
1	DB	10/05/2023	AMMENDMENT #2

STATE OF TEXAS
GEOFFREY ELFERS
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DET14 | 28 OF 38

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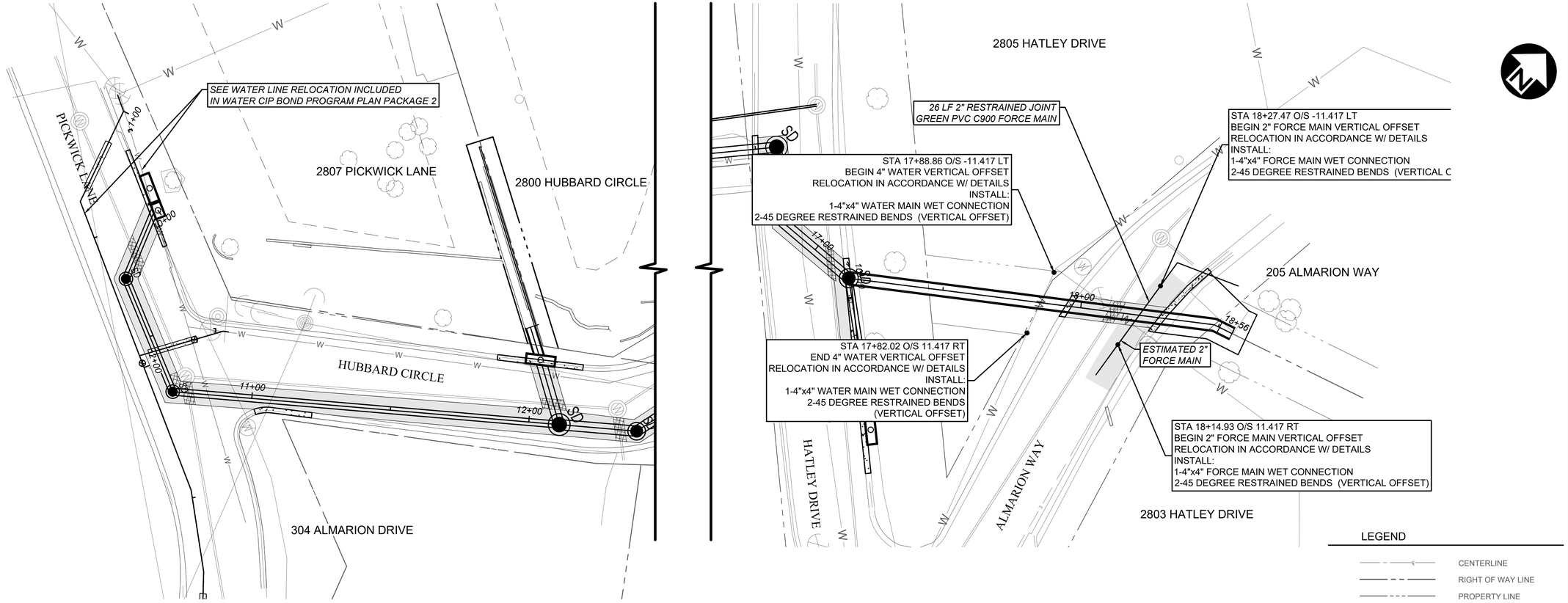

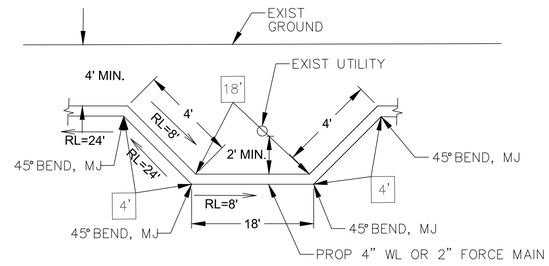

UTILITY CROSSING DETAIL (4" WATER LINE & 2" FORCE MAIN)
SCALE: NTS

LEGEND

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK LINE
- BACK OF CURB
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- GUTTER
- CONCRETE PAVEMENT
- DRAINAGE FLOW LINE
- WOOD FENCE
- PAVED PARKING / DRIVEWAY
- WASTEWATER LINE
- WATER LINE
- ROCK WALL
- EXISTING RCP PIPE
- NATURAL GAS LINE
- ELECTRIC OVERHEAD
- ELECTRIC UNDERGROUND
- GUY WIRE
- WATER METER
- WATER VALVE
- SPRINKLER VALVE
- WASTEWATER MANHOLE
- CLEANOUT
- FIRE HYDRANT
- POWER POLE
- ELECTRIC JUNCTION BOX
- SIGN
- MAILBOX
- TREE
- TREE WELL
- 25Y — 25 YEAR HGL

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED
PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

WATER AND SANITARY SEWER
LOCATIONS

ROLLINGWOOD TEXAS

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CityView 2, Suite 100
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DRAWN BY	KT	06/22
DESIGNED BY	AF	06/22
CHECKED BY	GE	07/21
REVIEWED BY		

0 20 40
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

SDPL1 | 29 OF 38

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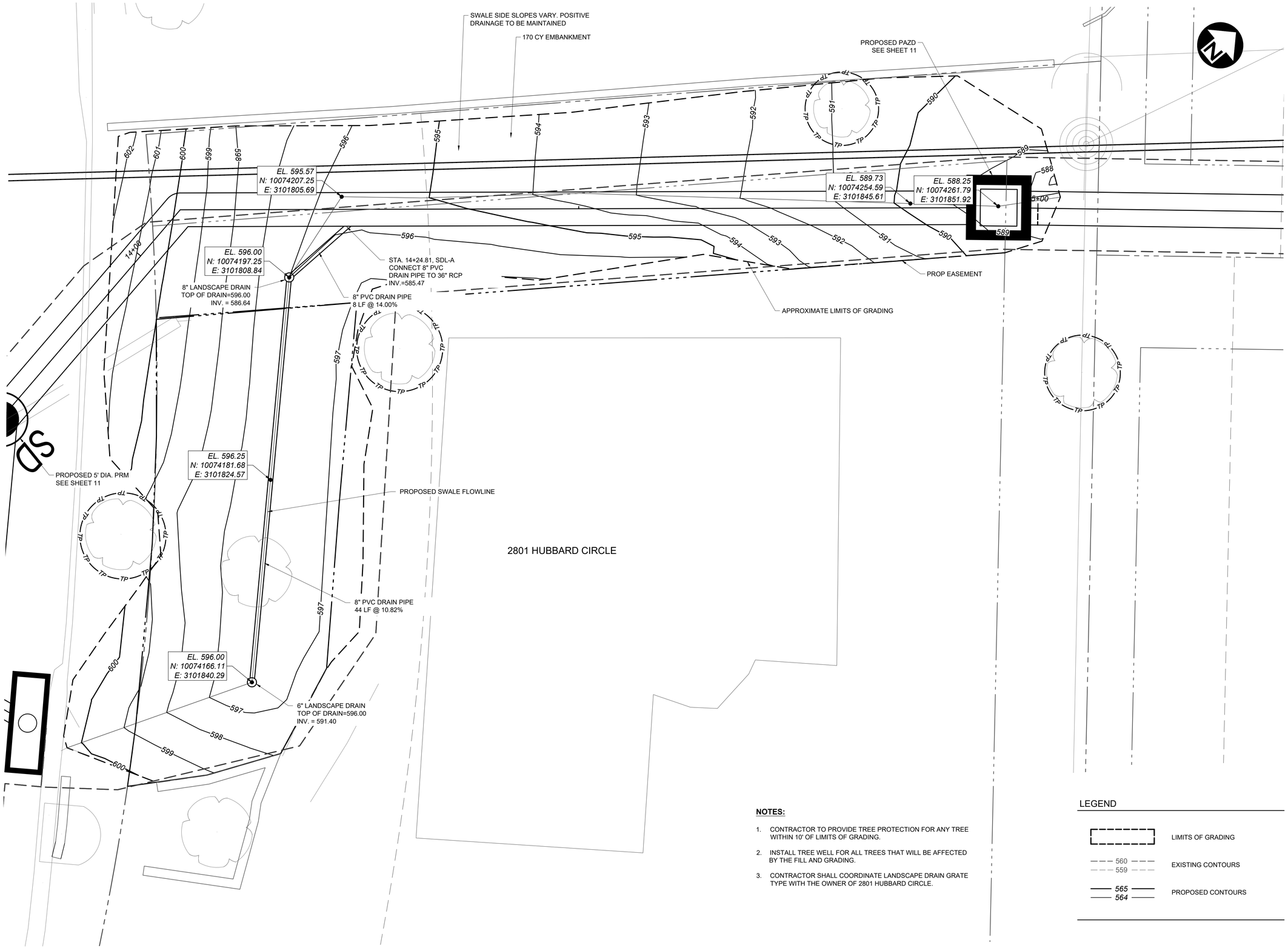

NOTES:

1. CONTRACTOR TO PROVIDE TREE PROTECTION FOR ANY TREE WITHIN 10' OF LIMITS OF GRADING.
2. INSTALL TREE WELL FOR ALL TREES THAT WILL BE AFFECTED BY THE FILL AND GRADING.
3. CONTRACTOR SHALL COORDINATE LANDSCAPE DRAIN GRATE TYPE WITH THE OWNER OF 2801 HUBBARD CIRCLE.

LEGEND

- LIMITS OF GRADING
- 560 / 559 — EXISTING CONTOURS
- *565* / *564* — PROPOSED CONTOURS

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

GRADING PLAN

ROLLINGWOOD TEXAS

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DRAWN BY	KT	07/21
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CHECKED BY	GE	07/21
REVIEWED BY		

0 5 10
HORIZONTAL SCALE IN FEET

GD101 | 30 OF 38

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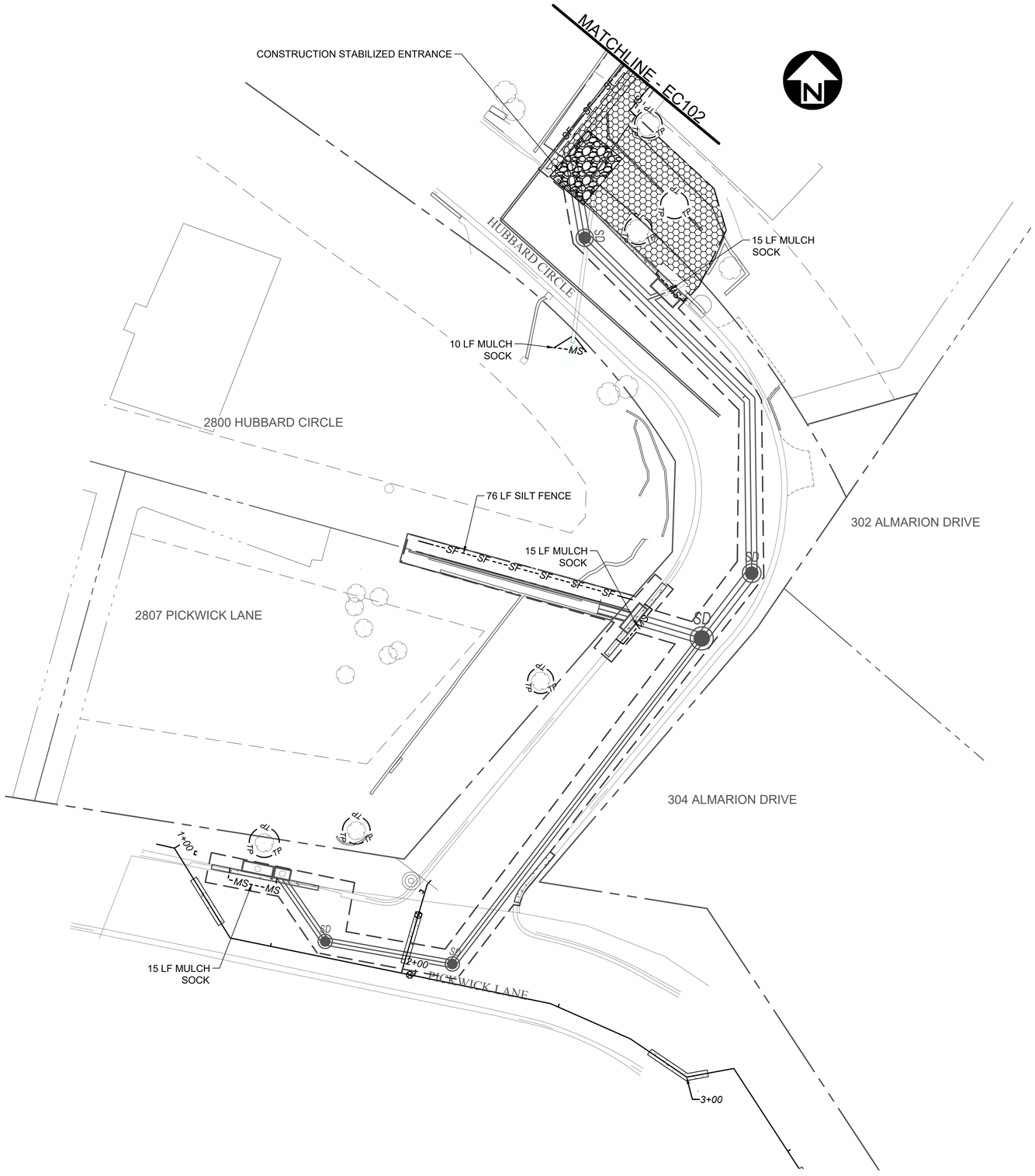

NOTES:

1. CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES.
2. CONSTRUCTION ACTIVITIES SHALL PROGRESS FROM DOWNSTREAM TO UPSTREAM.
3. CONSTRUCTION WILL BE SEQUENCED IN A MANNER THAT WILL NOT DISTURB OR DAMAGE PREVIOUSLY CONSTRUCTED WORK.

EXISTING FEATURES

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK LINE
- BACK OF CURB
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- GUTTER
- CONCRETE PAVEMENT
- DRAINAGE FLOW LINE
- DITCH EDGE
- WOOD FENCE
- 600 MAJOR CONTOURS
- 599 MINOR CONTOURS
- GRADE BREAK
- PAVED PARKING / DRIVEWAY
- SLOPE TOP
- SLOPE BOTTOM
- WASTEWATER LINE
- W WATER LINE
- ROCK WALL
- EXISTING RCP PIPE
- G NATURAL GAS LINE
- E OH ELECTRIC OVERHEAD
- E UG ELECTRIC UNDERGROUND
- GUY WIRE
- WATER METER
- WATER VALVE
- SPRINKLER VALVE
- WASTEWATER MANHOLE
- CLEANOUT
- FIRE HYDRANT
- POWER POLE
- ELECTRIC JUNCTION BOX
- STOP SIGN
- MAILBOX
- TREE
- TREE WELL

LEGEND

- LIMITS OF CONSTRUCTION
- MULCH SOCK
- SILT FENCE
- TREE PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- REVEGETATE

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

EROSION CONTROL PLAN

ROLLINGWOOD TEXAS

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DESIGNED BY	AF	07/21
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REVIEWED BY		

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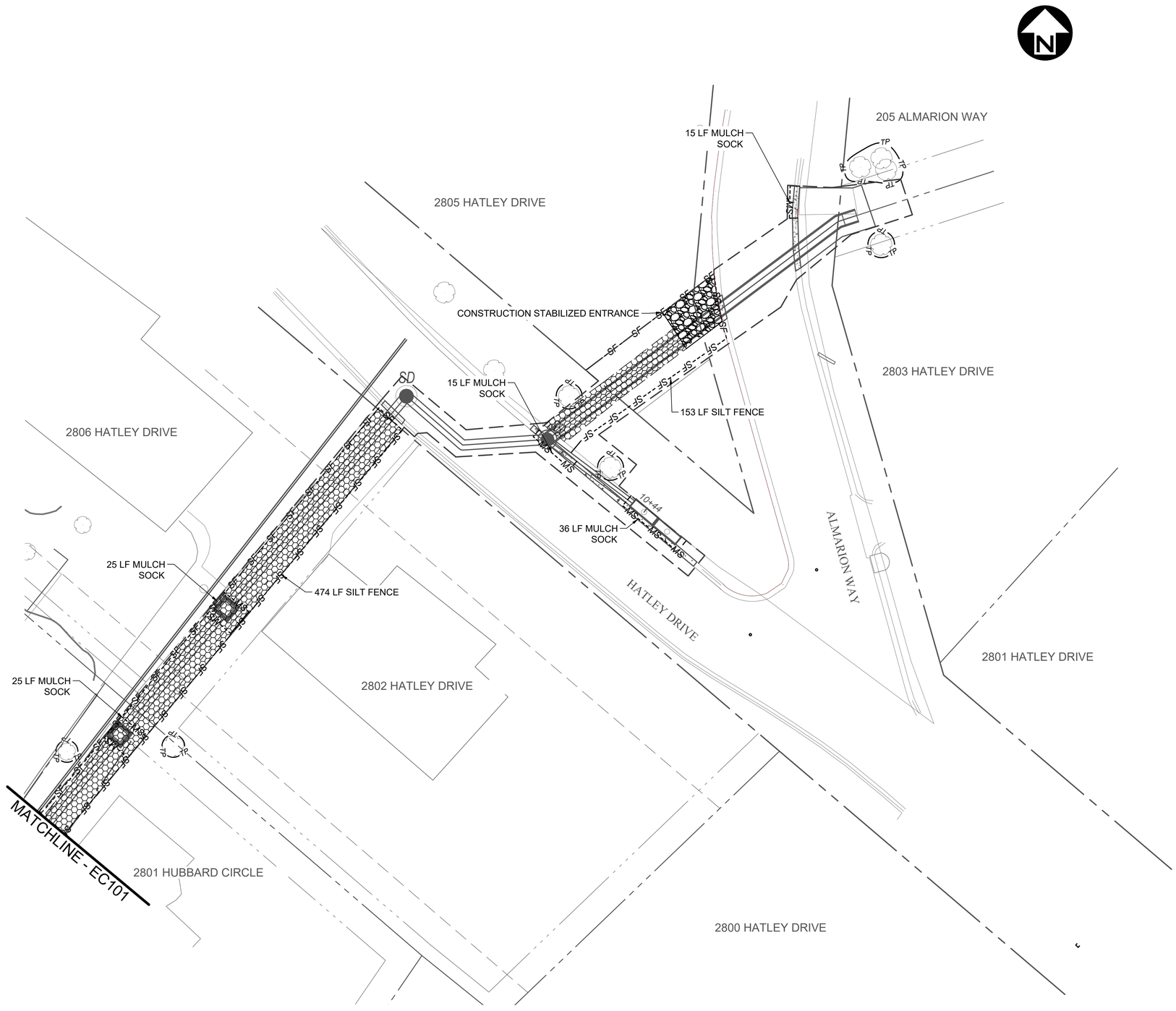
HORIZONTAL SCALE IN FEET

EC101 | 31 OF 38



NOTES:

1. CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES.
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3. CONSTRUCTION WILL BE SEQUENCED IN A MANNER THAT WILL NOT DISTURB OR DAMAGE PREVIOUSLY CONSTRUCTED WORK.

EXISTING FEATURES

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- POWER POLE
- ELECTRIC JUNCTION BOX
- STOP SIGN
- MAILBOX
- TREE
- TREE WELL

LEGEND

- LIMITS OF CONSTRUCTION
- MULCH SOCK
- SILT FENCE
- TREE PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- REVEGETATE

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
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11/15/2023

CITY OF ROLLINGWOOD, TEXAS
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CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

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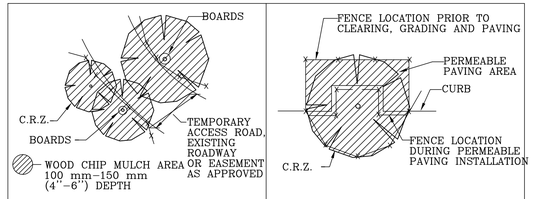
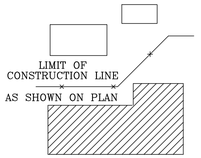
HORIZONTAL SCALE IN FEET

EC102 | 32 OF 38

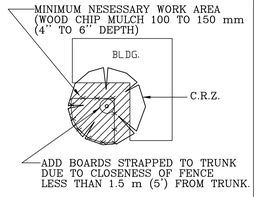


LINEAR CONSTRUCTION THROUGH TREES

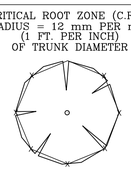
TREES IN PAVING AREA



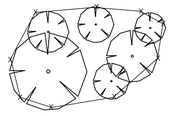
NATURAL AREAS



TREES NEAR CONSTRUCTION ACTIVITY

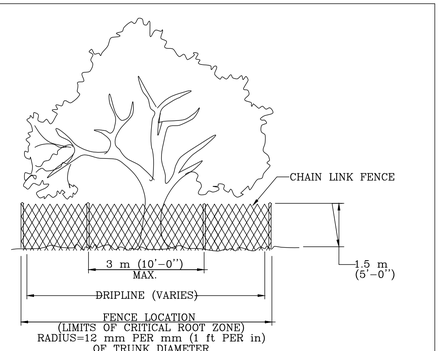


INDIVIDUAL TREE



GROUP OF TREES

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE LOCATIONS	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S–1



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROPTECTION FENCE TYPE A – CHAIN LINK	
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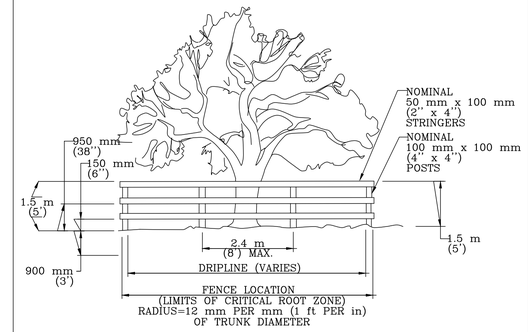

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE TYPE B – WOOD	
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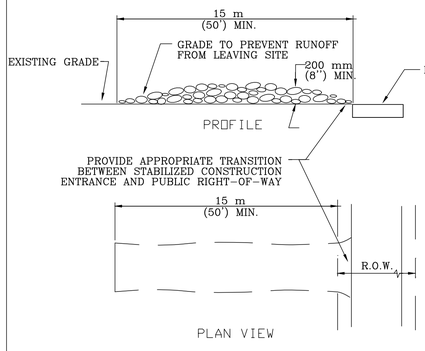

NOTES:

1. STONE SIZE: 75–125 mm (3–5'') OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8'').
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	
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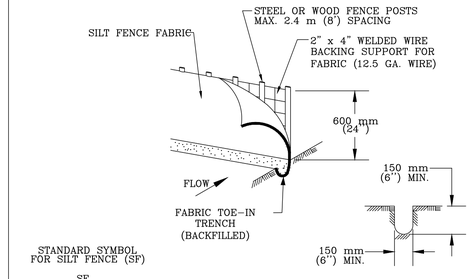


1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

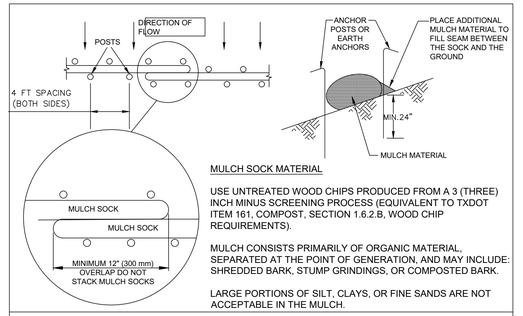
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S–1



MULCH SOCK MATERIAL

USE UNTREATED WOOD CHIPS PRODUCED FROM A 3 (THREE) INCH MINUS SCREENING PROCESS (EQUIVALENT TO TXDOT ITEM 161, COMPOST, SECTION 1.6.2.B, WOOD CHIP REQUIREMENTS).

MULCH CONSISTS PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, OR COMPOSTED BARK.

LARGE PORTIONS OF SILT, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MULCH.

NOTES:

1.STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 600mm (24 inches). IF WOOD POSTS CANNOT ACHIEVE 600mm (24 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.

2.THE TOE OF THE MULCH SOCK SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT ENDS OFMULCH SOCKS, LAP THE ENDS OF ADJACENT MULCH SOCKS A MINIMUM OF 300mm (12 inches).

3.MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.

4.SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTOBIODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.

5.MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 2:1 AND SHOULD NOT EXCEED THE MAXIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A GIVEN SLOPE CATEGORY.

6.ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	MULCH SOCK	
RECORD COPY SIGNED BY MORGAN BYARS 08/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 648S–1

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
ROLLINGWOOD DRAINAGE IMPROVEMENTS

EROSION CONTROL DETAILS

ROLLINGWOOD TEXAS

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DRAWN BY	KT	07/21
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CHECKED BY	GE	07/21
REVIEWED BY		

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DYLAN BRODBERG

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NOTES:

1. ALL PROPERTY OWNERS ADJACENT TO CONSTRUCTION MUST HAVE ACCESS TO THEIR PROPERTY AT ALL TIMES.
2. SEE COA TRAFFIC CONTROL STANDARDS FOR PLACEMENT OF FLAGGERS AND DETOUR STANDARDS.
3. CONTRACTOR MAY USE AN ALTERNATE TRAFFIC CONTROL PLAN PROVIDED THAT PLAN IS SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL.

LEGEND

CONSTRUCTION AREA (APPROXIMATE)

TYPE III BARRICADE

SIGN

SEE COA STANDARD DETAIL 804S-1 SERIES FOR MORE DETAILS

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS
DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

TRAFFIC CONTROL PLAN

ROLLINGWOOD TEXAS

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HORIZONTAL SCALE IN FEET

CT101 | 34 OF 38

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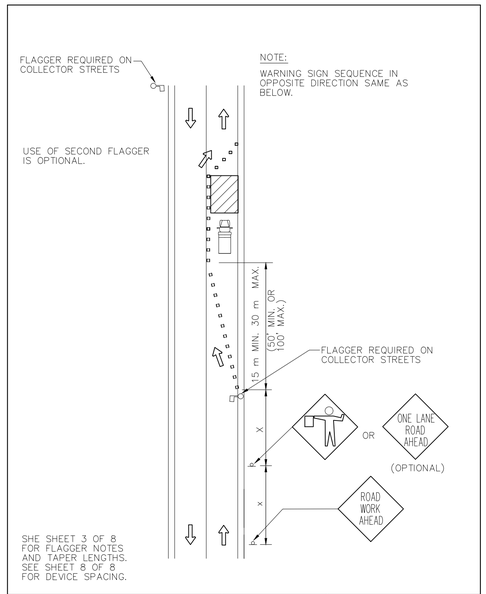
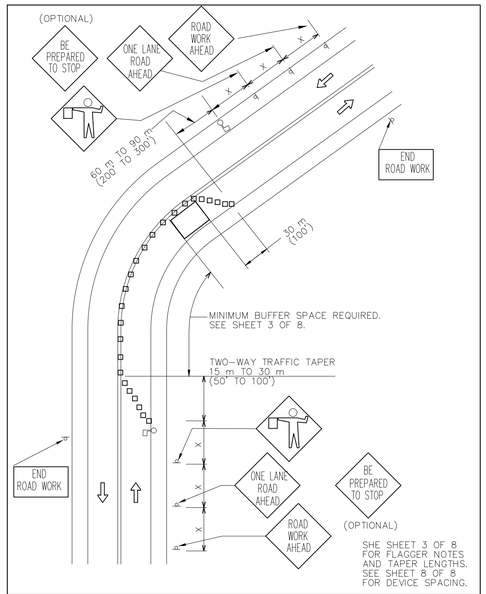


DEPARTMENT OF PUBLIC WORKS		COLLECTOR / RESIDENTIAL STREET FLAGGING OPERATIONS	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 1 OF 8



DEPARTMENT OF PUBLIC WORKS		FLAGGER SETUP FOR 2 LANE ROADWAY	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 2 OF 8

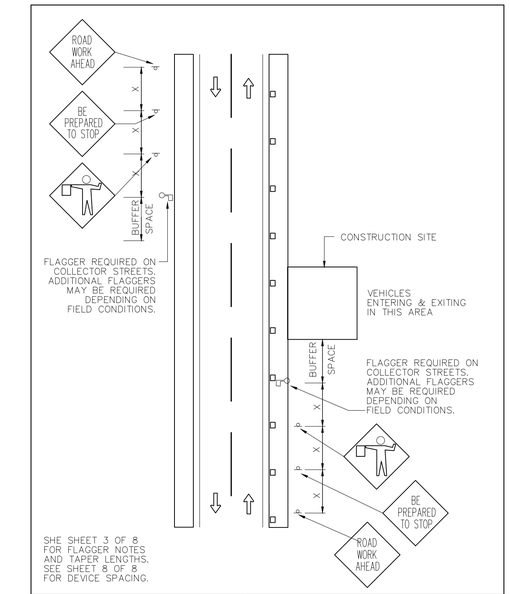
1. FOR DAYTIME WORK, THE FLAGGER SHALL WEAR AN APPROVED BRIGHTLY COLORED VEST. FOR NIGHTTIME WORK, THE VEST SHALL BE RETROFLECTIVE. THE RETRO-REFLECTIVE MATERIAL SHALL BE ORANGE, YELLOW, WHITE, SILVER, STRONG YELLOW-GREEN OR A FLOURESCENT VERSION OF THESE COLORS AND SHALL BE VISIBLE AT A MINIMUM DISTANCE OF 305 m (1,000').
2. FOR LOW-VOLUME APPLICATIONS, A SINGLE FLAGGER MAY BE ADEQUATE. WHERE ONE FLAGGER CAN BE USED, SUCH AS FOR SHORT WORK AREAS ON STRAIGHT ROADWAYS, THE FLAGGER MUST BE VISIBLE TO APPROACHING TRAFFIC FROM BOTH DIRECTIONS.
3. FLAGGERS SHALL USE ONLY STOP/SLOW PADDLE TO DIRECT TRAFFIC UNLESS WORKING IN A SIGNALIZED INTERSECTION WHERE DRIVERS MAY BE CONFUSED BY THE SIGN PADDLE. HAND SIGNAL MAY BE USED IN THESE SITUATIONS.
4. FLAGGERS SHALL ENSURE THAT ALL REQUIRED SIGNING IS IN PLACE PRIOR TO BEGINNING FLAGGING OPERATIONS.
5. FLAGGERS SHALL NOT PERFORM WORK THAT IS NOT RELATED TO FLAGGING WHILE ON DUTY.
6. FLAGGERS MAY CARRY AIR HORNS OR WHISTLES TO WARN WORKERS OF AN EMERGENCY CONDITION.
7. FLAGGERS SHALL BE REQUIRED TO USE TWO-WAY RADIOS WHEN OUT OF CLEAR VIEW OF EACH OTHER.
8. FLOODLIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.

TAPER LENGTHS

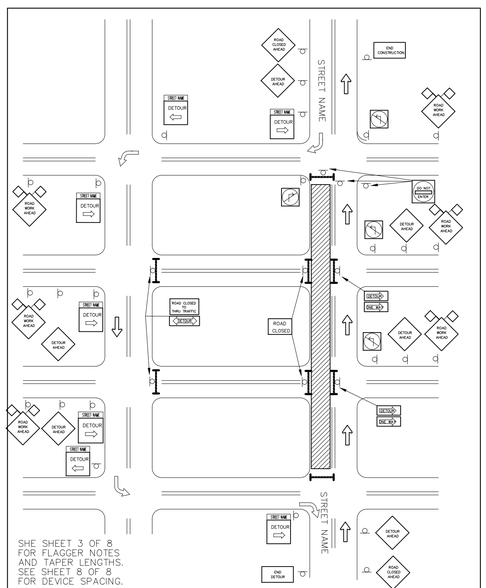
SPEED (kmph)	SPEED* (mph)	LENGTH (meters)	LENGTH (feet)
30	20	11	35
40	25	17	55
50	30	26	85
55	35	36	120
65	40	51	170
70	45	66	220
80	50	84	280
90	55	101	335
95	60	125	415
105	65	146	485

*POSTED SPEED

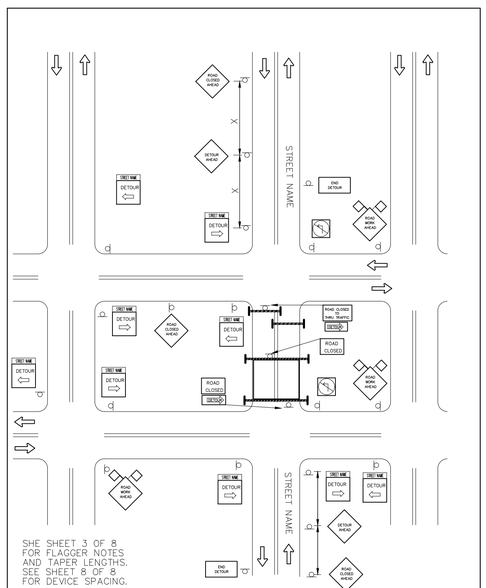
DEPARTMENT OF PUBLIC WORKS		FLAGGER SETUP FOR 2 LANE ROADWAY	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 3 OF 8



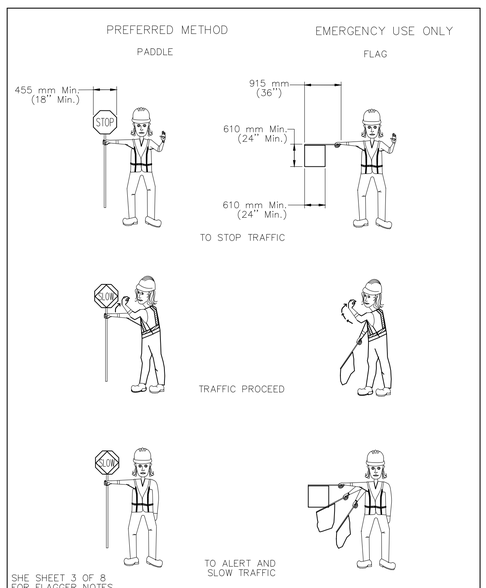
DEPARTMENT OF PUBLIC WORKS		FLAGGER SETUP FOR VEHICLES ENTERING AND EXITING WORK SITE	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 4 OF 8



DEPARTMENT OF PUBLIC WORKS		STREET DETOUR SINGLE DIRECTION	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 5 OF 8



DEPARTMENT OF PUBLIC WORKS		STREET DETOUR BOTH DIRECTIONS	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 6 OF 8



DEPARTMENT OF PUBLIC WORKS		USE OF HAND SIGNALING DEVICES	
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Typical Transition Lengths and Suggested Maximum Spacing of Devices

Speed KMPH	Posted Speed MPH	Formula	Minimum Desirable Taper Lengths (L) Meters (Feet) 3.0(10) Offset Meters (feet)	3.3(11) Offset Meters (feet)	3.6(12) Offset Meters (feet)	Suggested Max. Device Spacing On a taper Meters (feet)	On a tangent Meters (feet)	Suggested Sign Spacing Meters (Feet) "X" Dimension
50	30	L=WS²/60	45 (150)	50 (165)	55 (180)	9 (30)	15–20 (60–75)	40 (120)
55	35		65 (205)	70 (225)	75 (245)	10 (35)	25–25 (70–90)	50 (160)
65	40		80 (265)	90 (295)	100 (320)	12 (40)	25–30 (80–100)	75 (240)
70	45	L=WS	135 (450)	150 (495)	165 (540)	13 (45)	25–30 (90–110)	100 (320)
80	50		150 (500)	165 (550)	180 (600)	15 (50)	30–35 (100–125)	120 (400)
90	55		165 (550)	185 (605)	200 (660)	16 (55)	35–40 (110–140)	150 (500)
95	60		180 (600)	200 (660)	220 (720)	18 (60)	40–45 (120–150)	180 (600)
105	65		195 (650)	215 (715)	235 (780)	19 (65)	40–50 (130–165)	210 (700)
115	70		215 (700)	235 (770)	255 (840)	21 (70)	45–55 (140–175)	240 (800)

LEGEND
- Channelizing devices
- Trailer mounted flashing arrow board
- Flagger

TRAFFIC DETOUR NOTES:
1. "STREET CLOSED" AND "STREET CLOSED TO THRU TRAFFIC" MAY BE USED IN PLACE OF "ROAD CLOSED" AND "ROAD CLOSED TO THRU TRAFFIC".
2. THE USE OF A STREET SIGN NAME NAME MOUNTED WITH THE M4-9 DETOUR SIGN** IS REQUIRED. THE STREET NAME PLATE SHOULD BE PLACED ABOVE THE DETOUR SIGN. THE PLATE MAY HAVE EITHER A WHITE-ON-GREEN OR A BLACK-ON-ORANGE LEGEND.
3. ADDITIONAL "DO NOT ENTER SIGNS" MAY BE DESIRABLE AT INTERSECTIONS WITH INTERVENING STREETS.
4. A M4-9 DETOUR SIGN** WITH AN ADVANCE TURN ARROW MAY BE USED IN ADVANCE OF A TURN. ON MULTI-LANE STREETS, SUCH SIGNS SHOULD BE USED.
5. M4-9 DETOUR SIGNS** MAY BE LOCATED ON THE FAR SIDE OF INTERSECTIONS.

** TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

DEPARTMENT OF PUBLIC WORKS		TYPICAL LENGTHS & SPACING OF DEVICES, LEGEND and GENERAL NOTES	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-2 8 OF 8

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
ROLLINGWOOD DRAINAGE IMPROVEMENTS

TRAFFIC CONTROL DETAILS

ROLLINGWOOD TEXAS

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1120 S. Capital of Texas Highway
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TBPE Firm #6535
www.kfriese.com

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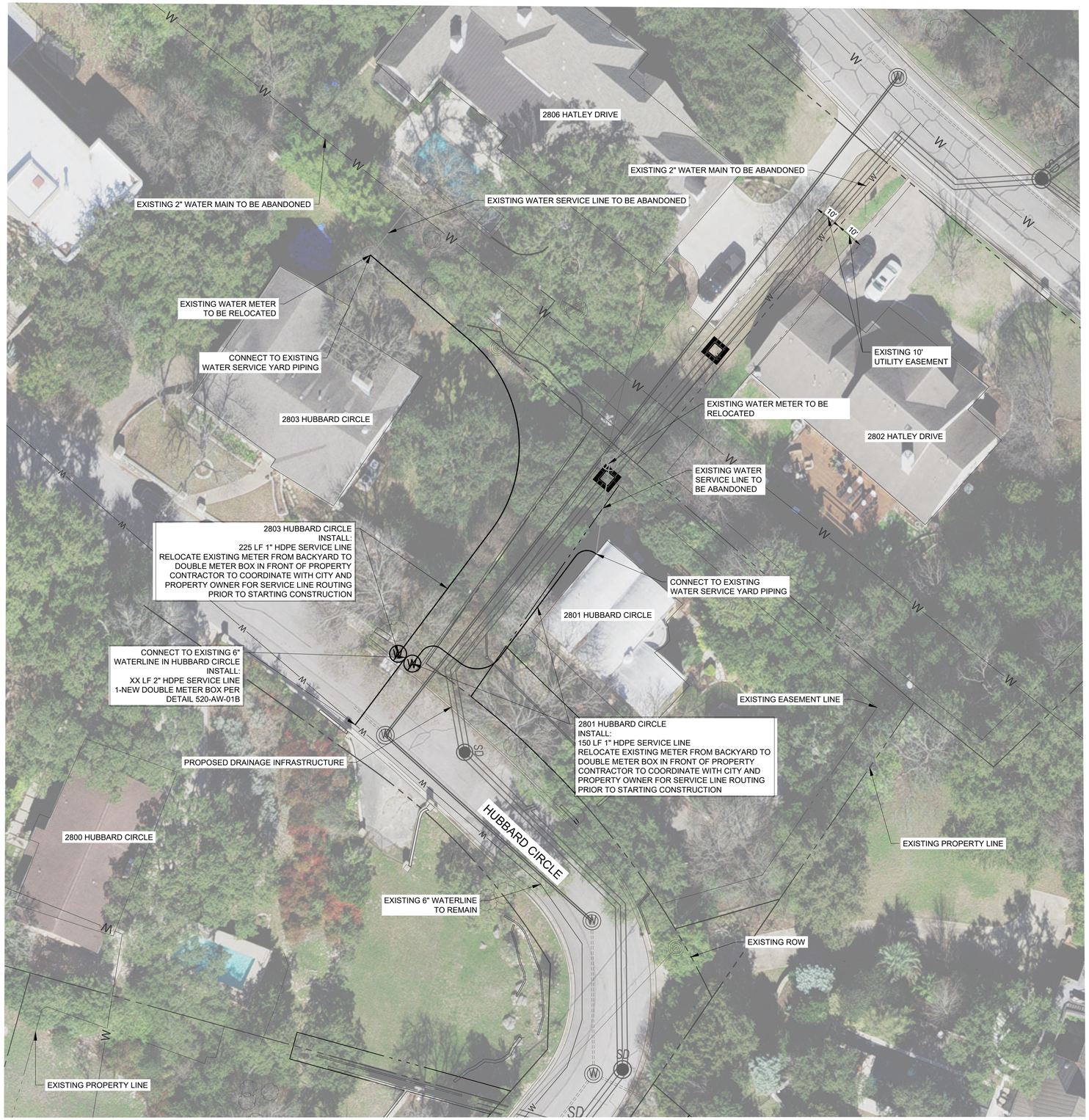

EXISTING FEATURES

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK LINE
- BACK OF CURB
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- GUTTER
- CONCRETE PAVEMENT
- DRAINAGE FLOW LINE
- DITCH EDGE
- WOOD FENCE
- MAJOR CONTOURS
- MINOR CONTOURS
- GRADE BREAK
- PAVED PARKING / DRIVEWAY
- SLOPE TOP
- SLOPE BOTTOM
- WASTEWATER LINE
- WATER LINE
- ROCK WALL
- EXISTING RCP PIPE
- NATURAL GAS LINE
- ELECTRIC OVERHEAD
- ELECTRIC UNDERGROUND
- GUY WIRE
- WATER METER
- WATER VALVE
- SPRINKLER VALVE
- WASTEWATER MANHOLE
- CLEANOUT
- FIRE HYDRANT
- POWER POLE
- ELECTRIC JUNCTION BOX
- STOP SIGN
- MAILBOX
- TREE
- TREE WELL

REV. NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
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11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

WATER SERVICE RELOCATION PLAN

ROLLINGWOOD TEXAS

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CV101 | 36 OF 38

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EXISTING FEATURES

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK LINE
- BACK OF CURB
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- GUTTER
- CONCRETE PAVEMENT
- DRAINAGE FLOW LINE
- DITCH EDGE
- WOOD FENCE
- 600 MAJOR CONTOURS
- 599 MINOR CONTOURS
- GRADE BREAK
- PAVED PARKING / DRIVEWAY
- SLOPE TOP
- SLOPE BOTTOM
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- W WATER LINE
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- EXISTING RCP PIPE
- G NATURAL GAS LINE
- E OH ELECTRIC OVERHEAD
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LICENSED PROFESSIONAL ENGINEER
11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
PROPOSED DRAINAGE IMPROVEMENTS

WATER ABANDONMENT PLAN

ROLLINGWOOD TEXAS

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HORIZONTAL SCALE IN FEET

CV102 | 37 OF 38

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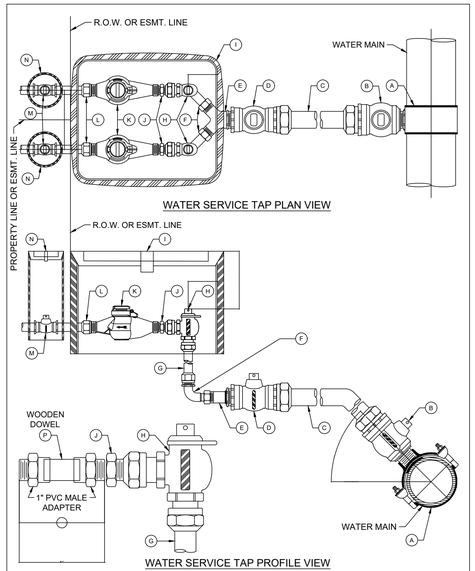


WATER SERVICE TAP PLAN VIEW

WATER SERVICE TAP PROFILE VIEW

MATERIALS LIST:

A. 2" SERVICE CLAMP, SPL WW-264
B. 2" CORPORATION STOP, SPL WW-68
C. 2" HDPE WATER SERVICE TUBING, SPL WW-65
D. 2" BALL VALVE, SPL WW-68
E. SINGLE SERVICE: 2" MIP X 1" COPPER FLARE FITTING, SPL WW-68 OR DOUBLE SERVICE: 2" MIP X 1" COPPER FLARE WYE, SPL WW-68
F. 1" SWIVEL NUT x 1" COMPRESSION 90° BEND, SPL WW-68
G. 1" HDPE WATER SERVICE TUBING, SPL WW-65
H. 1" ANGLE METER STOP, SPL WW-68
I. METER BOX AND LID, SPL WW-145A; FOR DUAL 1" METERS: USE TWO SINGLE METER BOXES

MATERIALS TO BE INSTALLED BY PLUMBER:

J. BRASS METER BUSHING - SIZE AS NEEDED TO CONNECT ANGLE METER STOP TO METER
K. WATER METER PURCHASED FROM AUSTIN WATER
L. BRASS WATER METER COUPLING MALE IPT x SWIVEL COUPLING NUT:
⅝" AND ¾" METERS: 8 ½" LONG x ¾" DIA.
1" METERS: 8 ½" LONG x 1" DIA.
M. PROPERTY OWNER'S CUT OFF VALVE, SPL WW-276
N. PROPERTY OWNER'S CUT OFF VALVE BOX AND LID
O. TEMPORARY METER SPACER (REQUIRED TO ASSURE METER WILL FIT APPROPRIATELY)
P. 1" WOODEN DOWEL (SHOW ADDRESS ON DOWEL USING WATERPROOF MARKER)

NOTES:

1. SERVICE CLAMP SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM, SPL WW-27D.
2. BRANCH CONNECTIONS AND ALL ANGLE METER STOPS MUST BE INSTALLED PRIOR TO ANY METER INSTALLATION.
3. TOP OF METER BOXES SHOULD BE 4" ABOVE GROUND.
4. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY SECTION 510.3 (14) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS; BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SECTION 510.3 (25).
5. METER BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE OR EASEMENT AND OUT OF VEHICULAR TRAFFIC AREA AND SIDEWALK.
6. BALL VALVE "D" SHALL NOT BE LOCATED UNDER SIDEWALK, CURB, OR PAVEMENT, AND NOT BE LOCATED MORE THAN 36" BELOW FINAL GRADE.
7. METER SIZES TO BE SHOWN ON PLANS.
8. METER BOX CUT OUTS SHALL NOT EXCEED TWO TIMES THE PIPE DIAMETER.
9. INSTALL METALLIC TRACER TAPE, SPL WW-597, MINIMUM 1' ABOVE TUBING FROM SERVICE CLAMP "A" TO BALL VALVE "D".
10. TUBING SHALL BE PLACED IN A STRAIGHT ALIGNMENT AND ALLOWED TO RELAX AND "SNAKE" LOOSELY IN THE TRENCH. TUBING BEHIND CURB AND GUTTER SHALL BE INSTALLED WITH A MINIMUM 2' DEPTH OF COVER.
11. 1" TUBING, WHEN BENT, SHALL HAVE A RADIUS NO SMALLER THAN 3'. 2" TUBING, WHEN BENT, SHALL HAVE A RADIUS NO SMALLER THAN 5'. BRASS FITTINGS SHALL NOT BE CONNECTED TO A BENT SECTION OF TUBING.
12. SOLID, TUBULAR STAINLESS STEEL INSERT STIFFENERS FOR HDPE TUBING SHALL BE USED AT ALL COMPRESSION FITTINGS. INSERT STIFFENERS SHALL BE FROM THE SAME MANUFACTURER AS THE COMPRESSION FITTING USED.
13. FOR RECLAIMED WATER SERVICES AND METERS, ALL RECLAIMED TUBING SHALL BE MANUFACTURED SOLID PURPLE, SPL WW-65A. ALL APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL METER BOX LIDS SHALL BE PURPLE AND HAVE **"RECLAIMED WATER"** CAST INTO THEM, SPL WW-145A.

CITY OF AUSTIN AUSTIN WATER		WATER SERVICE & METER INSTALLATION - 1" & SMALLER METERS	
DRAFT - NOTICE OF RULE ADOPTION ONLY *JEFF A. KYLE* *08/16/2019* ADOPTED		THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520-AW-01B 1 OF 2

CITY OF AUSTIN AUSTIN WATER		WATER SERVICE & METER INSTALLATION - 1" & SMALLER METERS	
DRAFT - NOTICE OF RULE ADOPTION ONLY *JEFF A. KYLE* *08/16/2019* ADOPTED		THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520-AW-01B 2 OF 2

STANDARD CONSTRUCTION NOTES

1. THE CITY STANDARD CONSTRUCTION SPECIFICATIONS CURRENT AT THE TIME OF BIDDING SHALL COVER MATERIALS AND METHODS USED TO DO THIS WORK.
2. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION IN ADVANCE OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, OR ALTERED, OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS. THE CITY OF AUSTIN WATER AND WASTEWATER MAINTENANCE RESPONSIBILITY ENDS AT R.0.W./EASEMENT LINES.
3. NO OTHER UTILITY SERVICE/APPURTENANCES SHALL BE PLACED NEAR THE PROPERTY LINE, OR OTHER ASSIGNED LOCATION DESIGNATED FOR WATER AND WASTEWATER UTILITY SERVICE THAT WOULD INTERFERE WITH THE WATER AND WASTEWATER SERVICES.
4. THE CITY SPECIFICATION ITEM 509S WILL BE REQUIRED AS A MINIMUM TRENCH SAFETY MEASURE.
5. ALL MATERIALS TESTS ORDERED BY THE OWNER FOR QUALITY ASSURANCE PURPOSES, SHALL BE CONDUCTED BY AN INDEPENDENT LABORATORY AND FUNDED BY THE OWNER IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEM 1804S.04.
6. PRESSURE TAPS SHALL BE ALLOWED ON A CASE BY CASE BASIS, AS DETERMINED BY THE DIRECTOR'S DESIGNEE. NORMALLY PRESSURE TAPS 4 INCHES AND LARGER SHALL BE ALLOWED IN THE FOLLOWING CASES: A) A TEST SHUT OUT INDICATES AN ADEQUATE SHUT OUT TO PERFORM THE WORK IS NOT FEASIBLE B) MORE THAN 30 CUSTOMERS OR A SINGLE CRITICAL CUSTOMER (AS DEFINED BY AUSTIN WATER) WOULD BE IMPACTED BY THE SHUT OUT OR C) THE EXISTING WATER LINE WARRANTS IT.
7. THRUST RESTRAINT SHALL BE IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEM 510.3(22) AND SPL WW 27-A and WW 27-F.
8. WATER LINE TESTING AND STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEMS 510.3 (27)-(29).
9. ALL MATERIAL USED ON THIS PROJECT MUST BE LISTED ON THE STANDARD PRODUCTS LISTING. ANY MATERIAL. NOT LISTED HAS TO GO THROUGH THE REVIEW OF THE STANDARDS COMMITTEE FOR REVIEW AND APPROVAL PRIOR TO START OF PROJECT. TESTING AND EVALUATION OF PRODUCTS ARE REQUIRED BEFORE APPROVAL WILL BE GIVEN ANY CONSIDERATION.
10. WHEN WATER SERVICES ARE DAMAGED AND THE SERVICE MATERIAL IS PE, THE LINE SHALL BE REPAIRED ONLY BY HEAT FUSION WELD OR REPLACED THE FULL LENGTH WITH TYPE K COPPER MATERIAL. ANY TIME PB IS DAMAGED OR TAMPERED WITH IN ANY WAY, THE SERVICE LINE SHALL BE REPLACED FULL LENGTH WITH TYPE K COPPER MATERIAL. NOTE: FULL LENGTH IS FROM CORPORATION STOP TO METER.
11. WHEN AN EXISTING WATERLINE SHUT OUT IS NECESSARY AND POSSIBLE, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTOR WHO WILL THEN NOTIFY AUSTIN WATER DISPATCH AND THE AFFECTED CUSTOMERS A MINIMUM OF SEVENTY-TWO (72) HOURS INI ADVANCE.
12. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTOR SO THAT HE CAN NOTIFY THE AUSTIN WATER AT972-0000 AT A MINIMUM OF 72 HOURS PRIOR TO RELOCATING ANY DOMESTIC OR FIRE DEMAND WATER METERS. THE CONTRACTOR SHALL CAREFULLY REMOVE ALL METERS AND METERS BOXES THAT ARE INDICATED TO BE RELOCATED OR SALVAGED. THE CONTRACTOR SHALL INSTALL THE REMOVED METER OR CITY PROVIDED METER AT THE NEW LOCATION INDICATED ON THE CONSTRUCTION PLANS.
13. WATER AND WASTEWATER SERVICES WILL NEED TO BE REPLACED UP TO THE MAIN. REPAIR COUPLINGS ARE NOT ALLOWED ON NEW INSTALLATIONS.
14. THE CONTRACTOR SHALL VERIFY ALL VERTICAL AND HORIZONTAL LOCATIONS OF EXISTING UTILITIES, BELOW GROUND AND OVERHEAD, PRIOR TO STARTING ONSITE UTILITY WORK.
15. ALL WATER AND WASTEWATER MAINS SHALL BE INSTALLED IN ACCORDANCE WITH THE SEPARATION DISTANCES INDICATED IN CHAPTER 290 - DRINKING WATER STANDARDS, CHAPTER 217 - DESIGN CRITERIA FOR SEWERAGE SYSTEMS AMD CHAPTER 210 - DESIGN CRITERIA FOR RECLAIMED SYSTEMS OF TCEQ RULES.
16. CONTRACTOR'S PERSONNEL THAT PERFORM BUTT FUSION AND ELECTROFUSION ON OR TO HDPE PIPE AND FITTINGS MUST HAVE CURRENT QUALIFICATION TRAINING CERTIFICATE ISSUED BY MCELROY OR COMPARABLE TRAINING PROGRAM.
17. VALVE STEM EXTENSIONS SHALL CONSIST OF A SINGLE PIECE OF IRON ROD OF THE REQUIRED LENGTH WITH A SOCKET ON ONE END AND NUT ON THE OTHER.
18. ALL POTABLE WATER SYSTEM COMPONENTS INSTALLED AFTER JANUARY 4, 2014, SHALL BE ESSENTIALLY "LEAD FREE" ACCORDING TO THE US SAFE DRINKING WATER ACT. EXAMPLES ARE VALVES (CORPORATION STOP, CURB STOP, AND PRESSURE REDUCING), NIPPLES, BUSHINGS, PIPE, FITTINGS, BACKFLOW PREVENTERS AND FIRE HYDRANTS. TAPPING SADDLES AND 2 INCH AND LARGER GATE VALVES ARE THE ONLY COMPONENTS EXEMPT FROM THIS REQUIREMENT. COMPONENTS THAT ARE NOT CLEARLY IDENTIFIED BY THE MANUFACTURER AS MEETING THIS REQUIREMENT EITHER BY MARKINGS ON THE COMPONENT ORON THE PACKAGING SHALL NOT BE INSTALLED.
19. ALL EXISTING WATER METERS IDENTIFIED TO BE RELOCATED OR ABANDONED AT THE DEVELOPMENT, SHALL BE REMOVED FROM THE METER BOX PRIOR TO CONSTRUCTION AND GIVEN IMMEDIATELY TO THE CITY.
20. THE ENGINEER SHALL CALL OUT THE SIZE, TYPE AND USE (DOMESTIC OR IRRIGATION) OF ALL EXISTING WATER METERS TO BE RELOCATED OR REPURPOSED. WATER METER NUMBERS WILL NOT BE REQUIRED TO BE PLACED ON THE PLAN SHEET.
21. NO CONNECTION MAY BE MADE BETWEEN THE PRIVATE PLUMBING AND CITY WATER INFRASTRUCTURE UNTIL A CITY APPROVED WATER METER HAS BEEN INSTALLED.
22. METER BOXES AND CLEAN OUTS SHALL NOT BE LOCATED WITHIN PAVED AREAS SUCH AS DRIVEWAYS AND SIDEWALKS.

PROJECT SPECIFIC NOTES:

1. CONTRACTOR TO PROVIDE TREE PROTECTION FOR ANY TREE WITHIN 10' OF LIMITS OF WATER RELOCATION WORK.
2. LOCATION OF THE EXISTING WATER MAINS AND SERVICES ARE APPROXIMATE. CONTRACTOR OF FILED VERIFY THE LOCATIONS OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION AND SHALL NOTIFY ENGINEER IMMEDIATELY IF DISCREPANCIES ARE FOUND.
3. CONTRACTOR SHALL COORDINATE WITH ENGINEER, CITY, AND PROPERTY OWNERS ON WATER METER LOCATIONS AND SERVICE ROUTING FROM METER TO THE CONNECTIONS TO THE EXISTING SERVICE LINES. PRIVATE CUSTOMER YARD PIPING SHALL NOT BE LOCATED OUTSIDE OF THE PROPERTY LIMITS THAT IT IS SERVING.
4. CONTRACTOR SHALL REMOVE AND REPLACE ALL LANDSCAPING, IRRIGATION LINE, FENCES, GATES, AND OTHER SURFACE FEATURES IMPACTED BY CONSTRUCTION, AND RETURN ALL FEATURES TO EQUAL OR BETTER CONDITIONS THAN EXISTING.
5. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND CITY PRIOR TO ABANDONING EXISTING WATER LINES. SUFFICIENT NOTICE MUST BE PROVIDED TO PROPERTY OWNERS BEFORE DISRUPTING SERVICE.
6. WATER SERVICE YARD PIPING ON PRIVATE CUSTOMER SIDE OF THE METER MUST BE PERFORMED BY A PLUMBER LICENSED IN THE STATE OF TEXAS. BENDS AND CURVES IN YARD PIPING SHALL CODES AND PIPE MANUFACTURERS RECOMMENDATIONS.
7. ASPHALT PAVING, CONCRETE CURB, AND CONCRETE SIDEWALK SHALL BE REPLACED TO MATCH EXISTING CONDITIONS. ASPHALT PAVING SHALL BE SAW-CUT AND REPLACED AT A WIDTH OF 10-FEET. CURB AND SIDEWALK SHALL BE REPLACED TO THE NEAREST JOINT. REMOVAL AND REPLACEMENT OF THESE SURFACE FEATURES ARE SUBSIDIARY TO THE WATER METER RELOCATION BID ITEMS.

2803 HUBBARD CIRCLE FRONT YARD

2803 HUBBARD CIRCLE FRONT YARD

2803 HUBBARD CIRCLE BACK YARD

2803 HUBBARD CIRCLE BACK YARD

REV NO.	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
GEOFFREY ELFERS
133555
LICENSED PROFESSIONAL ENGINEER

11/15/2023

CITY OF ROLLINGWOOD, TEXAS
PUBLIC WORKS DEPARTMENT

CITY OF ROLLINGWOOD
ROLLINGWOOD DRAINAGE IMPROVEMENTS

WATER DETAILS

ROLLINGWOOD TEXAS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P – 512.338.1704 F – 512.338.1784
TBPE Firm #6535
www.kfriese.com

NOTES	NAME	DATE
SURVEY BY		
DRAWN BY	KT	07/21
DESIGNED BY	AF	07/21
CHECKED BY	GE	07/21
REVIEWED BY		

CV501 | 38 OF 38

X:\PROJECTS\30803_ROLLINGWOOD_HUBBARD-HATLEY_DRAINAGE_IMPROVEMENTS\DOS\SHEETS\30803-C-PIPE RELOCATION_DET101.DWG, ---, COA_ESD.STB
11/15/2023 11:15 AM
DYLAN BROBERG

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: Richard V. Klar, P.G. Telephone: 210-699-9090

Date: February 19, 2024 Fax: 210-699-6426

Representing: **Raba Kistner, Inc.**, TBPG Firm #50220 / TBPE Firm #3257 for K Friese + Associates (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

2/21/24

Regulated Entity Name: City of Rollingwood Proposed Drainage Improvements for Hubbard Circle, Hatley Drive, and Pickwick Lane

Project Information

1. Date(s) of Geologic Assessment was performed: February 8, 2024
2. Type of Project:

☒ WPAP ☐ AST
☐ SCS ☐ UST

3. Location of Project:

☒ Recharge Zone
☐ Transition Zone
☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness (feet)
Tarrant soils and Urban Land, 5-18% slopes (TeE)	C	~0-1.0 foot
Urban Land and Brackett soils, 1-12% slopes (UuE)	C	~0-1.5 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 thickness 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" = 20'
Site Geologic Map Scale: 1" = 20'
Site Soils Map Scale (if more than 1 soil type): 1" = 70'

9. Method of collecting positional data:

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

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

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

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

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

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

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

☐ There are _____(#) wells present on the project site and the locations are shown and 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

☒ 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.

ATTACHMENTS

ATTACHMENT A

GEOLOGIC ASSESSMENT TABLE (TCEQ-0585-TABLE)

COMMENTS TO GEOLOGIC ASSESSMENT TABLE

SOIL PROFILE

SITE SOILS MAP

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: City of Rollingwood Proposed Drainage Improvements for Hubbard Circle, Hatley Drive, and Pickwick Lane Rollingwood, Travis County, Texas (RKI Project No. ASF24-017-00)

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
HH-1	30°16'34.63"N	97°46'56.45"W	MB (WW)	30	Ked	44	2.0	~5.5-8.5					F / X	8	38	✓		✓		Hilltop
HH-2	30°16'29.40"N	97°47'0.29"W	MB (WW)	30	Kgt	20	2.0	~5.5-8.5					F / X	8	38	✓		✓		Hilltop
HH-3	30°16'33.57"N	97°46'56.98"W	MB (G)	30	Ked	113	2.0	~2-4					F / X	6	36	✓		✓		Hilltop
HH-4	30°16'30.58"N	97°46'59.40"W	MB (G)	30	Kgt	31	2.0	~2-4					F / X	6	36	✓		✓		Hilltop
HH-5	30°16'29.50"N	97°47'0.01"W	MB (G)	30	Kgt	12	2.0	~2-4					F / X	6	36	✓		✓		Hilltop
HH-6	30°16'33.87"N	97°46'57.88"W	MB (W)	30	Kgt, Ked	227	2.0	~2.5-5					F / X	6	36	✓		✓		Hilltop
HH-7	30°16'30.35"N	97°46'59.61"W	MB (W)	30	Kgt	33	2.0	~2.5-5					F / X	6	36	✓		✓		Hilltop
HH-8	30°16'34.31"N	97°46'56.22"W	MB (UGE)	30	Ked	24	2.0	~2-4					F / X	6	36	✓		✓		Hilltop
HH-9	30°16'33.25"N	97°46'58.57"W	NKCD	5	Kgt, Ked	70	2.5	~1.5					F	6	11	✓		✓		Hilltop
HH-10	30°16'30.69"N	97°47'0.37"W	NKCD	5	Kgt	15.0	8.0	1.5					F	6	11	✓		✓		Hilltop

* DATUM: NAD 83

Features: WW = wastewater; G = natural gas; W = potable water; UGE - underground electric

Formations: Kgt = Georgetown Formation; Ked = Edwards Limestone

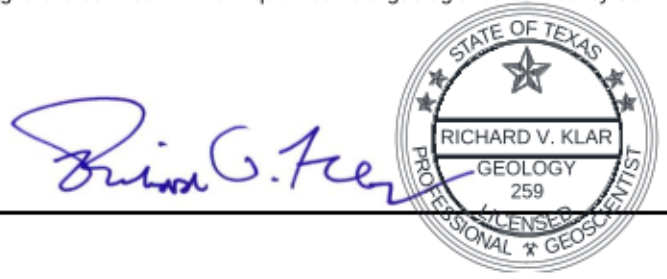
2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials: Granular bedding materials for utility lines (Features HH-1 through HH-8).

12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Natural Resource Conservation Commission's Instructions to Geologists.
The information presented here complies with that document and is a true representation of the conditions observed in the field.
My signature certifies that I am qualified as a geologist as defined by 30 TAC 213.



Date: February 21, 2024

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

Sheet 1 of 1

COMMENTS TO GEOLOGIC ASSESSMENT TABLE
City of Rollingwood Proposed Drainage Improvements for
Hubbard Circle, Hatley Drive, and Pickwick Lane
Rollingwood, Travis County, Texas

The locations of the following features are indicated on the ***Site Geologic Map (Sheets 1 and 2)*** provided as ***Attachment D*** of this report. The existing underground utility line locations (i.e., wastewater, natural gas, and potable water) were plotted based on plans provided by the project engineer (K Friese + Associates (K Friese), 2023).

Manmade Features in Bedrock (MB)

Features HH-1 and HH-2 (Wastewater Utility Trenches)

The following features consist of trenches for a 6- to 8-in wastewater utility lines owned by the City of Rollingwood. The locations of the trenches are based on review of existing existing storm sewer plan and profile sheets (K Friese, 2023), field reconnaissance, and observed manholes.

- The trench designated as ***Feature HH-1*** hosting the utility line is installed 5.5-8.5 feet or more into the Edwards Limestone (Ked). This trench extends through the center of Hatley Drive and connecting at the intersection with Almarion and running north through the center of Almarion Way. The length of the utility trench within the assessment area is estimated on the order of 4 linear feet.

- The trench designated as ***Feature HH-2*** hosting the utility line is installed 5.5-8.5 feet or more into the Georgetown Formation (Kgt). A portion of the trench extends through the assessment area along Hubbard Circle between the homesteads located at 2800 Hubbard Circle and 2807 Pickwick Lane and along Pickwick Lane, south of 2807 Pickwick Lane. The length of the utility trench within the assessment area is estimated on the order of 31 linear feet.

Features HH-3 through HH-5 (Natural Gas Utility Trenches)

The following features consist of trenches for natural gas utility lines owned by Austin Energy. The locations of these trenches were based on review of existing demolition and protection plan sheets (K Friese, 2023), field reconnaissance, and observed paint markings and flaggings.

- The trench designated as ***Feature HH-3*** hosting the utility line is installed 2-4 feet or more into the Ked. This trench extends on the north side of Hatley Drive, connecting at the intersection with Almarion and running north along the along the east side of Almarion Way. The length of the utility trench within the assessment area is estimated on the order of 113 linear feet.

- The trench for ***Feature HH-4*** hosting the utility line is installed 2-4 feet or more into the Kgt. This trench extends through an easement along the west side of Hubbard Circle between the homesteads located at 2800 Hubbard Circle and 2807 Pickwick Lane The length of the utility trench within the assessment area is estimated on the order of 33 linear feet.

- The trench for ***Feature HH-5*** hosting the utility line is installed 2-4 feet or more into the Kgt. This trench extends from west to east on Hubbard Circle between 2807 Pickwick Lane and 304 Almarion Drive The length of the utility trench within the assessment area is estimated on the order of 12 linear feet.

Features HH-6 and HH-7 (Potable Water Utility Trenches)

The following features consist of trenches for potable water utility lines owned by the City of Rollingwood. The locations of these trenches were based on review of existing demolition and protection plan sheets (K Friese, 2023), field reconnaissance, and observed hydrants, flagging, and valves.

- The trench designated as ***Feature HH-6*** hosting the 4- to 8-inch utility line is installed 2.5-5 feet or more into the Ked and Kgt. This trench extends on the west side of Almarion Way, connecting at the intersection with Hatley Drive and extending northwest along Hatley Drive. The trench also connects at an easement between 2802 and 2806 Hatley Drive, extending southwest to a

connector that runs northwest to the southeast. The length of the utility trench within the assessment area is estimated on the order of 227 linear feet.

- The trench designated as ***Feature HH-7*** hosting the 4- to 8-inch utility line is installed 2.5-5 feet or more into the Kgt. This trench extends on the northwest side of Hubbard Circle and follows beyond the assessment area to the southwest connecting to the water utility line running northwest to the southeast along Pickwick Lane. The length of the utility trench within the assessment area is estimated on the order of 33 linear feet.

Feature HH-8 (Underground Electric Utility Trench)

Feature HH-8 consists of a trench for an existing underground electric line owned by the City of Rollingwood. The location of this line is based on observed paint markings. On the basis our observations, it is inferred that the trench hosting the utility line is installed 2-4 feet or more into the Edwards Limestone (Ked). The trench extends along the east side of between 205 Almarion Way and 2803 Hatley Drive. The length of the utility trench within the assessment area is estimated on the order of 28 linear feet.

Non-Karst Closed Depressions (CD)

Features HH-9 and HH-10

Feature HH-9 (Non Karst Closed Depression)

Feature HH-9 consists of an open trench for a planned underground electric utility. The trench is mapped within the project limit easement and extending onto the property at 2806 Hatley Drive. Dimensions observed were approximately 70 x 2.5 x 2.5, in length, width and depth, respectively. Soils identified are brown clay, with gravel. No karst features were mapped within the trench. Although soils mapped within the assessment area extend to 1.5 feet; this trench consisted of disturbed soils and does not extend in bedrock

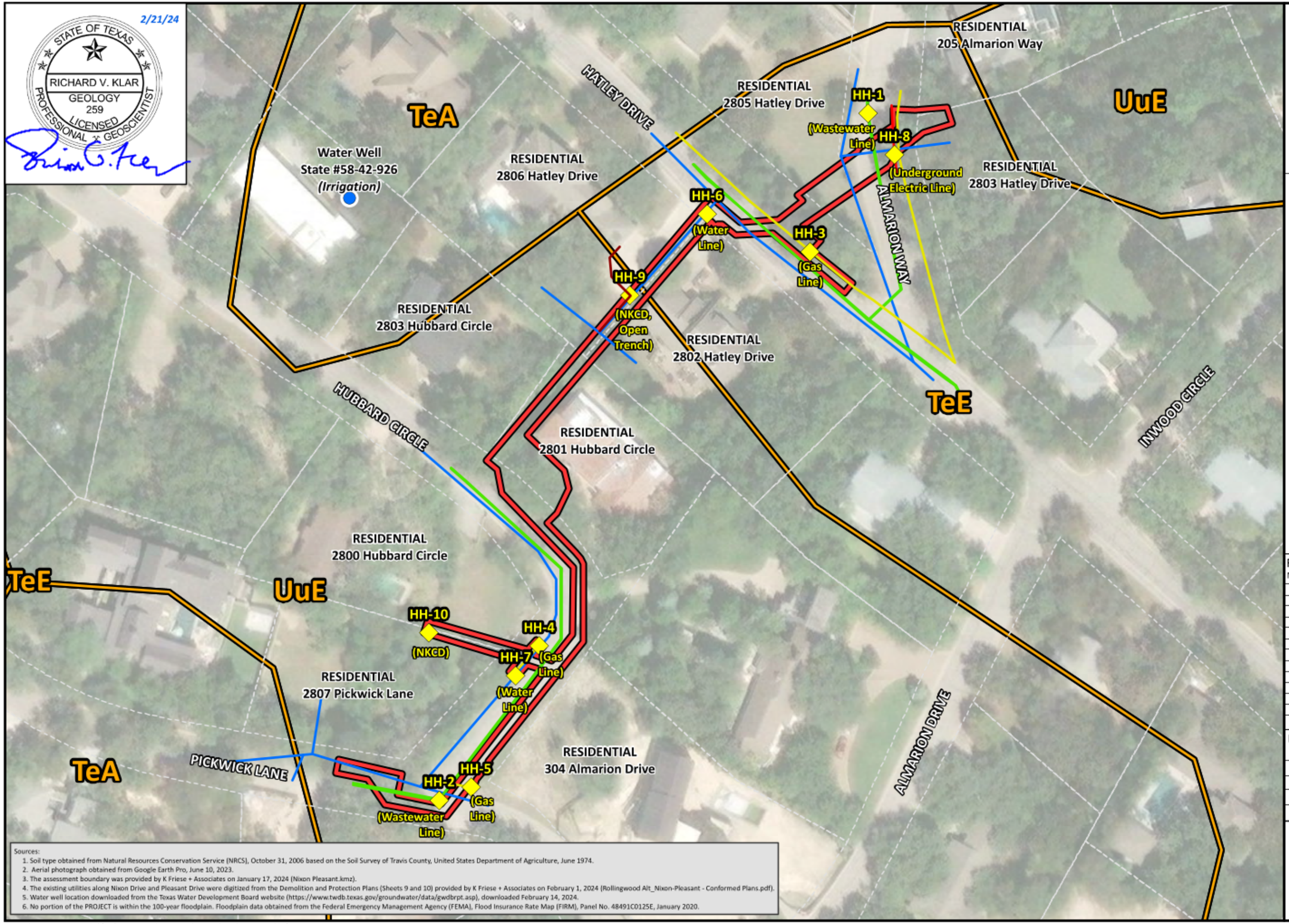
Feature HH-10 (Non Karst Closed Depression)

Feature HH-10 consists of a non-karst closed depression formed by the placement of fill soils and boulders surrounding a group of trees located within an easement on the northwest side of Hubbard Circle located between the residential lots at 2800 Hubbard Circle and 2807 Pickwick Lane. The feature dimensions are 15 x 8 x 1.5 feet in length, width, and depth, respectively. The feature is completely contained within dark gray soil infill, with no connection to underlying limestone bedrock. There was no channeling or preferential flow directed to this feature

SOIL PROFILE
City of Rollingwood Proposed Drainage Improvements for
Hubbard Circle, Hatley Drive, and Pickwick Lane
Rollingwood, Travis County, Texas

SOIL SERIES	THICKNESS ON SITE	DESCRIPTION
Tarrant	**~0-1.0 foot**	***Tarrant soils and Urban land, 5 to 18 percent slopes (TeE):*** This soil type occupies ridges overlying limestone and consists of shallow to very shallow, well-drained, stony, clayey soils. Large limestone rocks cover 25 to 85 percent of the surface. Tarrant soils have a surface layer of very stony to extremely flaggy grayish-brown clay or clay loam, about 8 inches thick, that overlies limestone. Stones are on the surface and in the soil. Trenching for utility lines is slow and difficult, and blasting is often necessary. Soil characteristics that affect urban development are shrink-swell potential as it affects foundations and paving; corrosivity as it affects uncoated steel; and percolation rate as it affects septic systems.
Urban	**0-1.5 feet**	***Urban land and Brackett soils, 1 to 12 percent slopes (UuE):*** This soil occurs on narrow ridges and side slopes consisting of approximately 40% Urban land, 35% Brackett soil, and 25% other soils. Brackett soils have a surface layer of light brownish-gray gravelly clay loam approximately 6 inches thick. The subsurface layer is light yellowish-brown clay loam approximately 12 inches thick. The underlying material is soft limestone. Typically Urban Land is mostly occupied by dwellings, driveways, sidewalks, adjoining streets, swimming pools and parking areas. Approximately 75% of soils not covered by structures have been leveled for construction, with 2 to 3 feet of deep of cuts spread over adjoining surfaces and 2 to 4 inches of other soil materials added to the surface layer

The preceding table was prepared on the basis of information provided in the Soils Survey of Travis County, Texas (January 1974) in addition to field observations. As presented on the attached ***Site Soils Map***, native soils mapped within the northeast portion of the project area consist of Tarrant soils and Urban land, 5 to 18 percent slopes (TeE) corresponding to the Edwards Limestone (Ked). The southwest portion is mapped as Urban land and Brackett soils, 1 to 12% slopes (UuE) corresponding to the Georgetown Formation (Kgt). All soils mapped are classified as Group C soils, which are described as having low capacity to transmit infiltrating precipitation. Native soils were not well exposed within the assessment area owing to impervious cover and the presence of landscaping improvements.



Sources:
1. Soil type obtained from Natural Resources Conservation Service (NRCS), October 31, 2006 based on the Soil Survey of Travis County, United States Department of Agriculture, June 1974.
2. Aerial photograph obtained from Google Earth Pro, June 10, 2023.
3. The assessment boundary was provided by K Friese + Associates on January 17, 2024 (Nixon Pleasant.kmz).
4. The existing utilities along Nixon Drive and Pleasant Drive were digitized from the Demolition and Protection Plans (Sheets 9 and 10) provided by K Friese + Associates on February 1, 2024 (Rollingwood Alt_Nixon-Pleasant - Conformed Plans.pdf).
5. Water well location downloaded from the Texas Water Development Board website (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp), downloaded February 14, 2024.
6. No portion of the PROJECT is within the 100-year floodplain. Floodplain data obtained from the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), Panel No. 48491C0125E, January 2020.

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes

2/21/24

STATE OF TEXAS
RICHARD V. KLAR
GEOLOGY
259
LICENSED
PROFESSIONAL GEOSCIENTIST

RABA KISTNER
12821 West Golden Lane
San Antonio, Texas 78249

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TBPE Firm F-3257 / TBPG #50220

SITE SOILS MAP

CITY OF ROLLINGWOOD DRAINAGE IMPROVEMENTS FOR
HUBBARD CIRCLE, HATLEY DRIVE, AND PICKWICK LANE
ROLLINGWOOD, TRAVIS COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASF24-017-00
ISSUE DATE:	2/21/2024
DRAWN BY:	LAW
CHECKED BY:	RAS/AJK
REVIEWED BY:	RVK

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FEET
1 INCH = 70 FEET

ATTACHMENT B

STRATIGRAPHIC COLUMN

STRATIGRAPHIC COLUMN
City of Rollingwood Proposed Drainage Improvements for
Hubbard Circle, Hatley Drive, and Pickwick Lane
Rollingwood, Travis County, Texas

STRATIGRAPHIC FORMATION	THICKNESS	DESCRIPTION
Georgetown Formation (Kgt)	40-60 feet	Gray to tan, interbedded, nodular-weathering, hard, fine-grained limestone, marly limestone, and marl containing abundant fossil shells. ***Inferred to directly underly the southwest portion of the PROJECT. Rock exposures were observed within a roadcut near the driveway entrance at 2800 Hubbard Circle. Float rock was observed within excavated construction material near the southwest corner of 2801 Hubbard Circle.***
Edwards Limestone (Ked)	10-295 feet	***None of the following members were exposed at the PROJECT owing to extensive urban development.***
Member 4	*40 feet*	Gray to tan, hard, dense, thick-to thinly-bedded, fine-grained limestone with a soft dolomitic limestone zone near the middle. ***Inferred to directly underly the northeast portion of the PROJECT.***
Member 3	*10-15 feet*	Gray to tan, soft, nodular-weathering marly limestone.
Member 2	*40 feet*	Light gray to tan, fine- to medium-grained, hard, thin- to thick-bedded limestone; chert nodules in lower third.
Member 1	*200 feet*	Gray-brown, thin- to medium-bedded, porous, dolomite, dolomitic limestone, and limestone; chert is common with solution collapsed zone at the top.

Note: Stratigraphic Column adapted from the Environmental Geology of the Austin Area: an aid to urban planning, Garner and Young, 1976.

ATTACHMENT C

NARRATIVE OF SITE SPECIFIC GEOLOGY

SITE GEOLOGY NARRATIVE
City of Rollingwood Proposed Drainage Improvements for
Hubbard Circle, Hatley Drive, and Pickwick Lane
Rollingwood, Travis County, Texas

Introduction

The following is a project-specific discussion of existing geological conditions and potential recharge features identified for the City of Rollingwood storm sewer improvements project. The subject improvements will include the installation of a 24- to 36-inch reinforced concrete pipe (RCP) from Hubbard Circle to Hatley Drive, a 4 x 2 foot RCP box from Hatley Drive to the east of Almarion Way, and three 7 foot x 7 foot box manholes. In addition, the installation of curbs, gutters, inlets, and the relocation of a 4-inch water line and 2-inch wastewater line are also proposed.

This geologic assessment was performed by **Raba Kistner, Inc. (RKI)** for K Friese + Associates pursuant to applicable Edwards Aquifer Protection Program Rules as specified in *Title 30 of the Texas Administrative Code, Section 213 (30 TAC §213, effective April 24, 2008).* This report is in the format required by the Texas Commission on Environmental Quality (TCEQ) for the Geologic Assessment portion of the referenced Water Pollution Abatement Plan (WPAP) submittal and was prepared in accordance with the revised *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (TCEQ-0585)*, which are applicable to submittals received by the TCEQ after October 1, 2004.

This geologic assessment report documents conditions observed by **RKI** within the Project boundaries on February 8, 2024.

Site Description

Site Location. The assessment area comprises approximately 0.35 acres and is located in Rollingwood, Travis County, Texas (hereinafter referred to as PROJECT). The PROJECT is fully developed as a residential neighborhood with residential lots, driveways, and paved roadways. Based on review of official maps published by the TCEQ, the PROJECT is fully located within the Edwards Aquifer Recharge Zone (EARZ). As such, the performance of a geologic assessment is required to facilitate planned construction activities in accordance with applicable provisions set forth in the Edwards Aquifer Protection Program (EAPP) rules.

Topography and Drainage. Topographic contours on the U.S. Geological Survey (USGS, 2013) 7.5-minute topographic map (i.e. Austin West Quadrangle) were reviewed to evaluate the general surface conditions and drainage patterns are depicted on the ***Site Geologic Map***. The PROJECT consists of gently sloping hilltop topography, exhibiting a maximum elevation of approximately 612 feet relative to mean sea level (msl) near the southwest end of the assessment boundary along Pickwick Lane. Topography slopes within the assessment area to a minimum elevation of 540 feet msl at the northwest portion along Hatley Drive. The primary surface drainage pattern for the PROJECT is to the northeast toward an existing drainage easement, which is located between 2803 Hatley Drive and 205 Almarion Way. The runoff contained within the drainage easement ultimately discharges approximately 0.28 miles to the east/northeast to Lady Bird Lake

/ Colorado River. A review of the Flood Insurance Rate Map (FIRM 48453C0445K, FEMA, January 22, 2020) indicates that no portion of the PROJECT is within the designated 100-year floodplain.

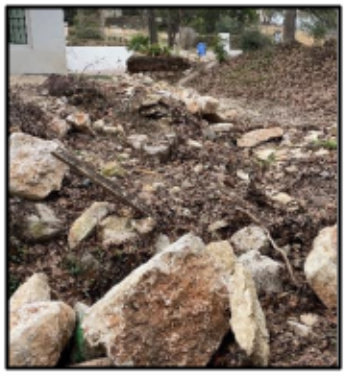
Historical Property Use. Although research pertaining to past operations and historical land use activities within the project area was beyond the scope of this assessment, historical aerial imagery was reviewed to evaluate historical land use and the presence of lineations that could indicate the presence of faulting. The following aerial photographs were reviewed using Google Earth™: 1995, 2002, 2003, 2006-2009, and 2011-2023. These photographs depict the PROJECT generally as it is today, with residential structures and paved roadways.

Classification of Recharge Features: As further described herein, no naturally-occurring recharge features attributed to karstification of limestone terrain and/or surface erosional processes were identified within PROJECT boundaries. Features identified and discussed below include eight manmade features (i.e., wastewater, natural gas, potable water, and underground electric utility lines) and two non-karst closed depressions. The significance of these features was assessed using definitions and guidance provided in *Instructions to Geologists (TCEQ-0585-Instructions, revised October 1, 2004)*. All features within the PROJECT that met the criteria presented in this reference were mapped. The characteristics of all mapped features and the assessments of these features, as defined by the TCEQ, are presented in the attached ***Geologic Assessment Table (TCEQ-0585-Table)***.

Stratigraphy

As presented in the attached ***Stratigraphic Column***, information pertaining to the lithologies and thickness of geologic units underlying the PROJECT was primarily taken from the *Environmental Geology of the Austin Area: an aid to urban planning (Garner and Young, 1976)* published by the Bureau of Economic Geology at the University of Texas. The geologic formations underlying the PROJECT are the Georgetown Formation (Kgt) and the Edwards Limestone (Ked). The Kgt is mapped within the southwest portion of the PROJECT (i.e., downhill side). The Ked comprises the uppermost part of the Fredericksburg Group and is mapped on the uphill side of the PROJECT (i.e., northeast portion). As identified in the pictures below, the

Observed Kgt in a roadcut near the driveway entrance at 2801 Hubbard Circle.



Float rock (Kgt) observed within excavated construction material near the southwest corner of 2801 Hubbard Circle.

Kgt was observed within a roadcut near the driveway at 2800 Hubbard Circle. In addition, Kgt float rock identified within excavated construction soils near the southwest corner of 2801 Hubbard Circle. No bedrock exposures of the Ked were identified within the surrounding neighborhood owing to soil cover, impervious cover, and landscaping improvements.

Structure

This project area is located within the northern portion of Balcones Fault Zone and, as such, possesses a distinct structural trend. In the PROJECT vicinity, this zone is characterized by primarily northeast–southwest trending normal faults. Locally, large scale normal faulting is expressed with the upthrown sides of the normal fault blocks to the northwest and the downthrown sides to the southeast. As a result of this larger-scale, regional faulting, minor internal fault sequences and fractures exist throughout this zone, which follow the same structural trend and accommodate localized displacement.

No faults are mapped within the PROJECT, and no evidence of faulting (e.g., lineations, changes in soil type and vegetation, fractured rock outcrops, etc.) was observed during site reconnaissance activities within or surrounding the assessment area. The nearest mapped normal fault (Garner and Young, 1976) is located approximately 250 feet to the northwest from the PROJECT boundary along Hatley Drive.

Karst Features

The results of field mapping activities did not reveal the presence of any features within PROJECT boundaries that could be attributed to karstification of the underlying limestone terrain.

Non-Karst Closed Depressions

A non-karst closed depression consisting of an open trench (***Feature HH-9***) for a planned underground electric utility was identified to extend from the project limits to a residential structure addressed at 2806 Hatley Drive. This appears to have been dug with a small excavator, with piles of soil and rock currently staged adjacent to the trench. No karst features were identified within the trench. Dimensions observed were approximately 70 x 2.5 x 2.5 feet, in length, width and depth, respectively. Due to the nature and depth of the trench, soils observed with disturbed brown clay and did not extend into bedrock.

Feature HH-10 is a non-karst closed depression formed by the placement of fill soils and boulders surrounding a group of trees was identified within an easement between the residential lots at 2800 Hubbard Circle and 2807 Pickwick Lane. The feature dimensions are 15 x 8 x 1.5 feet in length, width, and depth, respectively. The feature is completely contained within dark gray soil infill, with no connection to underlying limestone bedrock. There was no channeling or preferential flow directed to this feature.

Manmade Features

As presented on the ***Site Geologic Map***, a total of eight manmade features were identified that may potentially serve to enhance the transmission of surface runoff to the subsurface. The features consist of wastewater, natural gas, potable water, and underground electric utility trenches which meet the criteria

for assessment as manmade features in bedrock. Information regarding the locations of the existing utility trenches was gleaned from a base map provided by K Friese on January 30, 2024, field observations of hydrants, manway access points or valves. The specific utility trench features identified are listed below:

Features HH-1 and HH-2 consists of wastewater utility lines owned by the City of Rollingwood.
Features HH-3 through HH-5 consist of natural gas utility lines owned by Austin Energy.
Feature HH-6 and HH-7 consist of potable water utility lines owned by the City of Rollingwood.
Feature HH-8 consists of an underground electric utility line owned by Austin Energy.

Although not directly observable, it is inferred that the trenches for these subgrade installations are backfilled in accordance with standard construction practices that include the use of structural fill soils (e.g., base course materials, limestone gravel, compacted clay soils, etc.) overlain by native or fill soils, depending upon location and surface improvements. The trenches were not observed in conjunction with any naturally-occurring recharge features. Although the backfilled trenches may exhibit somewhat greater relative infiltration rate than the surrounding soil/rock strata underlying the project boundaries, these manmade features are collectively classified as not sensitive, having a low potential of preferentially transmitting fluids into the Edwards Aquifer. This classification is based upon the point assignment criteria presented in the ***Geologic Assessment Table (TCEQ-0585)*** and professional judgment.

Potential for Fluid Migration to the Edwards Aquifer

Based on our review of PROJECT geology, topography and drainage conditions, in addition to the results of our detailed mapping efforts, the overall potential for fluid movement (i.e. surface-derived flow) to the Edwards Aquifer via infiltration is considered to be low. The following assessment findings support this conclusion.

- The majority of the PROJECT contains soil cover defined as Group C, which are described as having low capacity to transmit infiltrating precipitation.

- There were no naturally-occurring recharge features attributed to karstification of limestone bedrock or erosional processes identified as a result of field reconnaissance mapping efforts throughout the PROJECT including the drainage channel.
- Manmade features present at the PROJECT, are collectively classified as not sensitive based on consideration of construction/plugging details and application of point assignment criteria and professional judgment.

References

Barnes, V. L., 1974, Revised 1983, Geologic Atlas of Texas Austin Sheet; Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas.

Google Earth™, January 1995, April 2002, March 2003, April 2006, February 2007, February 2008, November 2009, March 2011, August 2012, October 2013, October 2014, July 2015, February 2016,

February 2017, January 2018, November 2019, April 2020, June 2021, March 2022, and June 2023.

Garner, L. E., and Young, K. P., 1976, *Environmental Geology of the Austin Area: an aid to urban planning,* The University of Texas at Austin, Bureau of Economic Geology, Report of Investigations RI 86.

K Friese + Associates, 2023, *Nixon Pleasant TCEQ Exception Request.pdf* provided to **RKI** via email correspondence on January 30, 2024.

National Flood Insurance Program, 2020, Flood Insurance Rate Map, Travis County, Texas and Incorporated Areas; Federal Emergency Management Agency, Map 48453C0445K.

TCEQ Edwards Aquifer Protection Program, 1998, Edwards Aquifer Recharge Zone Map, Austin West Quadrangle; TNRCC, September 1998.

Texas Water Development Board, Water Data Interactive (WDI) Groundwater Data Viewer, https://www2.twdb.texas.gov/apps/WaterDataInteractive/GroundwaterDataViewer/?map=sdr, accessed February 13, 2024.

Travis County TNR Web Map
https://geo.traviscountytx.gov/Html5Viewer/index.html?viewer=TNR_Map_Viewer.TNR_Web_Map, accessed February 13, 2024.

United States Geological Survey (USGS), 2013, Austin West Quadrangle; USGS, Denver, Colorado.
United States Department of Agriculture (USDA), 1974, Soil Survey of Travis County, Texas; USDA / Soil Conservation Service / Texas Agricultural Experiment Station.

United States Department of Agriculture (USDA), 1986, Urban Hydrology for Small Watersheds; USDA / Natural Resource Conservation Service, Technical Release (TR-) 55, June 1986.

ATTACHMENT D

FEATURE POSITION TABLE (GPS COORDINATES)

SITE GEOLOGIC MAP

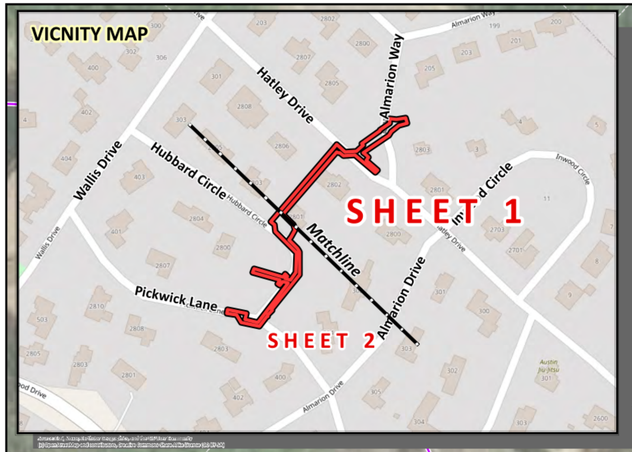
FEATURE POSITION TABLE

City of Rollingwood Proposed Drainage Improvements for
Hubbard Circle, Hatley Drive, and Pickwick Lane
Rollingwood, Travis County, Texas
RKI Project No. ASF24-017-00

Feature Designation	Feature Type	Date Collected	North Latitude	West Longitude	UTM Northing (meters)	UTM Easting (meters)
HH-1	Manmade feature in bedrock (Wastewater Line)	2/8/2024	30°16'34.63"N	97°46'56.45"W	3350028	617117
HH-2	Manmade feature in bedrock (Wastewater Line)	2/8/2024	30°16'29.40"N	97°47'0.29"W	3349866	617017
HH-3	Manmade feature in bedrock (Natural Gas Line)	2/8/2024	30°16'33.57"N	97°46'56.98"W	3349996	617104
HH-4	Manmade feature in bedrock (Natural Gas Line)	2/8/2024	30°16'30.58"N	97°46'59.40"W	3349903	617040
HH-5	Manmade feature in bedrock (Natural Gas Line)	2/8/2024	30°16'29.50"N	97°47'0.01"W	3349869	617024
HH-6	Manmade feature in bedrock (Potable Water Line)	2/8/2024	30°16'33.87"N	97°46'57.88"W	3350004	617080
HH-7	Manmade feature in bedrock (Potable Water Line)	2/8/2024	30°16'30.35"N	97°46'59.61"W	3349896	617035
HH-8	Manmade feature in bedrock (Underground Electric Line)	2/8/2024	30°16'34.31"N	97°46'56.22"W	3350018	617124
HH-9	Non karst closed depression	2/8/2024	30°16'33.25"N	97°46'58.57"W	3349985	617061
HH-10	Non karst closed depression	2/8/2024	30°16'30.69"N	97°47'0.37"W	3349906	617014

Notes:

1. Geographic coordinates are presented Degrees, Minutes, Decimal Seconds
2. Reference Datum is NAD 83.
3. Data were collected utilizing a ***Garmin GPS 60cx Global Positioning System*** .
4. Horizontal Accuracy: RMS Value < 3 meter ground resolution.
5. GPS data were collected by Richard Sample (**RKI** Project Professional).
6. GPS coordinates correlate to the points on the map for each feature.



VICINITY MAP

HATLEY DRIVE

RESIDENTIAL
205 Almarion Way

RESIDENTIAL
2805 Hatley Drive

RESIDENTIAL
2806 Hatley Drive

RESIDENTIAL
2803 Hatley Drive

RESIDENTIAL
2803 Hubbard Circle

RESIDENTIAL
2802 Hatley Drive

RESIDENTIAL
2801 Hubbard Circle

580

560

560

600

HH-1
(Wastewater Line)

HH-8
(Underground Electric Line)

HH-6
(Water Line)

HH-3
(Gas Line)

HH-9
(NKcD, Open Trench)

EDWARDS AQUIFER RECHARGE ZONE

Ked [Kfr]

Open Trench

Kgt

Kgt Float Rock

Kgt Rock Exposure (Roadcut)

MATCHLINE

HUBBARD CIRCLE

ALMARION WAY

INWOOD CIRCLE

Legend

- PROJECT: Assessment Boundary (K Friese, 2023)
- Parcel Boundary
- 10-Foot Contour (TNRIS, 2005)
- Water Well (TWDB, 2024)
- GA Feature

Existing Utility

- Gas
- UG Electric
- Wastewater
- Water
- NKCD (Open Trench)
- Rock Exposure (Georgetown Formation)
- Geology (Garner and Young, 1976)
  - Kgt - Georgetown Formation
  - Ked - Edwards Limestone

Sources:
1. Geology taken from the Environmental Geology of the Austin Area: an aid to urban planning, The University of Texas at Austin, Bureau of Economic Geology, Report of Investigations RI 86.
2. The entire project area is located on the Edwards Aquifer Recharge Zone (EARZ), TNRCC Edwards Aquifer Protection Program, 1998, Edwards Aquifer Recharge Zone Map, Austin West, September 1998.
3. Topographic contour shapefiles obtained the Texas Natural Resources Information System (TNRIS), April 11, 2005. Contours are based on the 7.5 minute Austin West topographic map.
4. Aerial obtained from Environmental Systems Research Institute (ESRI), 2022.
5. The existing utilities along Nixon Drive and Pleasant Drive were digitized from the Demolition and Protection Plans (Sheets 9 and 10) provided by K Friese + Associates on February 1, 2024 (Rollingwood Alt_Nixon-Pleasant - Conformed Plans.pdf).
6. Water well location downloaded from the Texas Water Development Board website (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp), downloaded February 14, 2024.
7. No portion of the PROJECT is within the 100-year floodplain. Floodplain data obtained from the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), Panel No. 48491C0125E, January 2020.

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes

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STATE OF TEXAS
RICHARD V. KLAR
GEOLOGY
259
LICENSED
PROFESSIONAL GEOSCIENTIST
2/21/24

SITE GEOLOGIC MAP (SHEET 1)

CITY OF ROLLINGWOOD DRAINAGE IMPROVEMENTS FOR
HUBBARD CIRCLE, HATLEY DRIVE, AND PICKWICK LANE
ROLLINGWOOD, TRAVIS COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.: ASF24-017-00

ISSUE DATE:	2/21/2024
DRAWN BY:	LAW
CHECKED BY:	RAS/AJK
REVIEWED BY:	RVK

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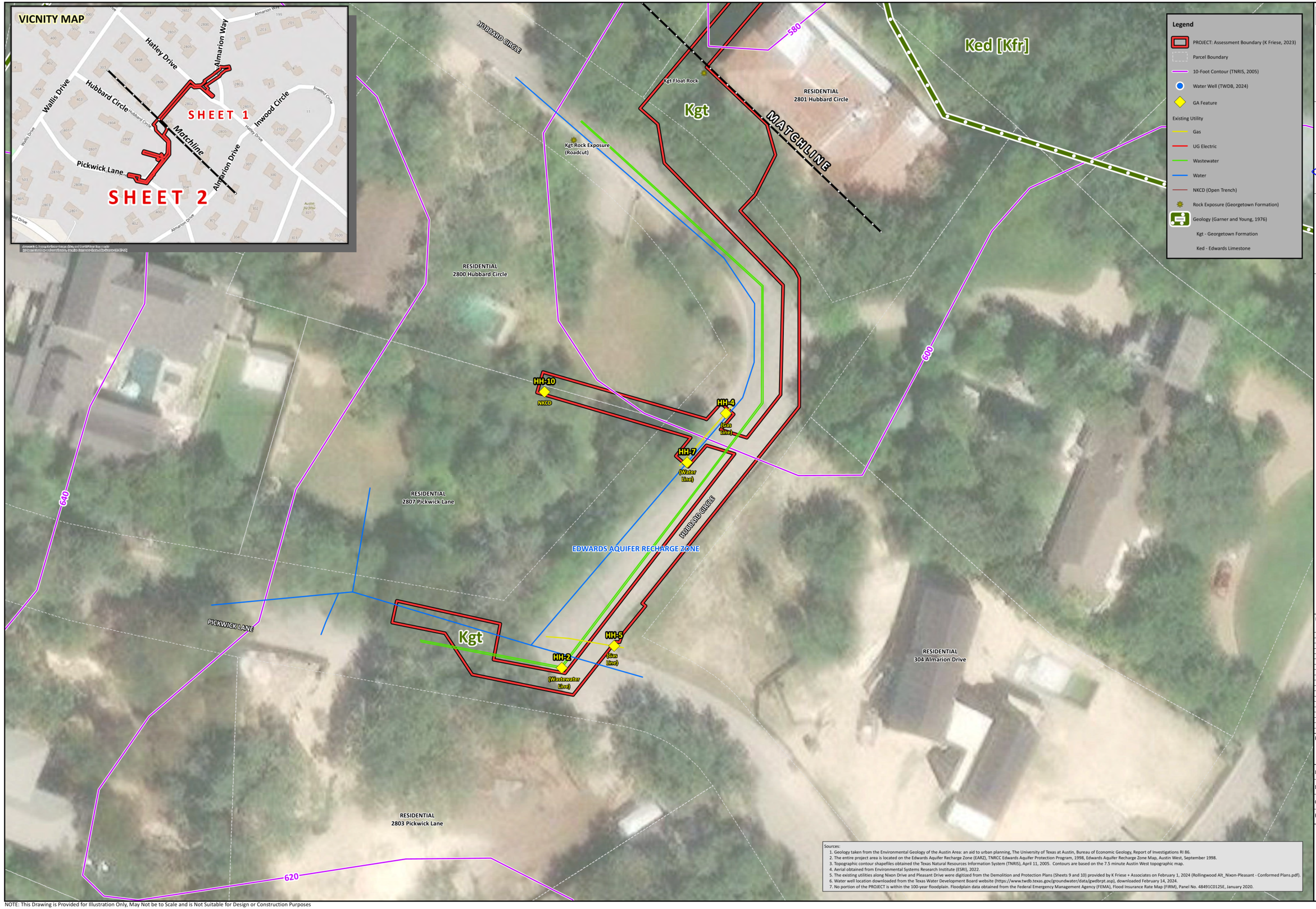
1 INCH = 20 FEET

SHEET 1 of 2



Sources:
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STATE OF TEXAS
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LICENSED
PROFESSIONAL GEOSCIENTIST
2/21/24

SITE GEOLOGIC MAP (SHEET 2)

CITY OF ROLLINGWOOD DRAINAGE IMPROVEMENTS FOR
HUBBARD CIRCLE, HATLEY DRIVE, AND PICKWICK LANE
ROLLINGWOOD, TRAVIS COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.: ASF24-017-00

ISSUE DATE:	2/21/2024
DRAWN BY:	LAW
CHECKED BY:	RAS/AJK
REVIEWED BY:	RVK

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1 INCH = 20 FEET

SHEET
2 of 2

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: Geoffrey Elfers, PE
Date: 2/22/2024
Signature of Customer/Agent:

Geoffrey Elfers

Regulated Entity Name: City of Rollingwood

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.

ATTACHMENT A
NATURE OF EXCEPTION

The Project is an exception for the requirement for a Water Pollution Abatement Plan for the following reasons:

1. The project involves the installation of underground utilities consisting of proposed storm sewer with minimal surface level improvements.
2. The project site has been previously developed as single family residential.
3. The minor surface level improvements, consisting of the installation of 4 new curb inlets, the replacement of concrete riprap at the storm sewer's downstream discharge point, and replacement of an existing weir wall will result in a negligible (<0.01 ac) increases to impervious cover.

ATTACHMENT B
EQUIVALENT WATER QUALITY PROTECTION

Development of the Project will enhance water quality protection to the Edwards Aquifer over the existing condition for the following reasons:

- After completion of the project, vegetation will be reestablished over any pervious areas disturbed by construction.
- The improved drainage conveyance will remove surface runoff which currently traverses roadways and residential lots. Associated erosion, sedimentation, and the carriage of debris will be reduced.
- Drainage patterns will be unaltered, and detention will be maintained. Waters that previously ran along street curb and gutter will now be conveyed by storm sewers to the same channel outfall and no adverse impact to water quality will result from the project.

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: Geoffrey Elfers, PE

Date: 2/22/2024

Signature of Customer/Agent:

Geoffrey Elfers

Regulated Entity Name: City of Rollingwood

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: asphalt products, chemical additives, gasoline

   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: Lady Bird Lake (Segment NO.1403)

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

ATTACHMENT A
SPILL RESPONSE ACTIONS

Spill prevention, control, clean-up, and reporting shall comply with TCEQ regulations 30 TAC, Chapter 327 – Spill Prevention and Control, which is attached, as well as any local regulations. The contractor will implement proper spill prevention measures and maintain appropriate spill response equipment on site. In the event of a hazardous materials spill, the safety of on-site personnel is the most important consideration. Once the safety of personnel is secured, the second priority becomes stopping the source of the spill. If it is safe to do so, the source of the spill will be stopped and the spill will be contained using items such as sandbags, berms or absorbent rolls.

If during the construction of the project (Temporary Stormwater Management) a hazardous substance or hydrocarbon spill of greater than 250 gallons occurs within the project limits, the contractor is to try to stop the spill from continuing, contact the local fire department, and the Engineer. If the spill is caused by the roadway contactor, the roadway contactor will be responsible for the proper clean-up of the spill as well as notifying the TCEQ Spill Reporting Hotline (1-800-832-8224). If a spill occurs within the project limits but is caused by a third party (someone from the traveling public driving through the project), the contractor and/or the Engineer shall immediately contact local law enforcement, the fire department, and the TCEQ Spill Reporting Hotline. The local fire department will immediately respond to the spill and secure the scene (stop the spill and prevent it from spreading). The City of Rollingwood will work with the responsible party to facilitate the clean-up of the spill on the City of Rollingwood property.

ATTACHMENT B
POTENTIAL SOURCES OF CONTAMINATION

The potential sources of storm water pollution from the proposed project are displaced soil from the construction site from activities such as clearing/grubbing, grading, excavation, filling, and placement of asphalt and roadway base. Other potential sources of contamination include wastewater from portable bathrooms, litter generated during the construction process, de-watering from excavations, construction vehicles tracking onto roads, and construction products and waste. There are also hazardous construction materials including fuel and use of asphaltic products and petroleum products from the operation of construction equipment on site, all of which are potential sources of contamination.

The primary storm water contaminant expected to be generated during the construction project is the entrained solids (soil particles) which will affect the turbidity of the runoff. During this project, disturbed soils will result from:

1. Site preparation
2. Roadway excavation and fill grading
3. Trenching for storm sewer construction and associated minor utility relocations.
4. Placement of roadway base and pavement
5. Imported soil for fill and top-soil

Increased sediment loading in the storm water can be attributed to: a) direct impingement of rain onto disturbed soil areas, sand, gravel and rock areas where rains dislodge or entrain particles; b) erosion of disturbed soil areas; c) the transfer of soils and particulate matter via equipment or vehicle tires onto non-disturbed areas where they are washed downstream into the Project's storm sewers or outfall channel.

There is a potential for hydrocarbon contamination in the form of oil and grease from equipment, construction vehicles, and fuel spillage on the site. Oil and grease are typically released into the environment because of equipment failure or maintenance operations. Release of fuel can result from on-site fueling operations or from leakage of temporary fuel storage tanks. Most construction equipment operates hydraulically; there is a potential that the release of hydraulic fluids may occur due to equipment malfunction or damage. The clean-up and containment of any fuels, hydraulic fluids, hydrocarbons, or other hazardous substances released on site will be the responsibility of the contractor.

Entrained solids in runoff during the construction phase will be largely contained by temporary BMPs such as mulch socks, sediment control fence, and stabilized construction exits, as shown in the Erosion Control Layouts included in *0587-Attachment C.1 Construction Plans (Sht 31-33).*

ATTACHMENT C
SEQUENCE OF MAJOR ACTIVITIES

The general order of construction activities is included within the construction plans in the General Notes and Construction Notes, found in *0587-Attachment C.1 Construction Plans (Sht 2 & 3).* Temporary control measures include sediment control fence, mulch socks, and stabilized construction exits. Temporary control measures will be installed first in the sequence of construction and removed after all site work is complete and vegetation has been established.

For construction activity, an estimate of the total area to be disturbed is shown below:

1. Installation of temporary erosion and sedimentation controls: 0.34 ac (total site)
2. Clearing, grubbing and excavation: 0.34 ac
3. Reconstruction of roadway base and driveways: 0.11 ac
4. Construction of force main, storm sewers, and channel regrading and maintenance: 0.34 ac
5. Site restoration: 0.34 ac
6. Seeding, re-vegetation: 0.23 ac
7. Removal of temporary erosion and sedimentation controls: 0.34 ac (total site)

ATTACHMENT D
TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

Temporary BMPs will be installed before any construction activities begin and shall be removed after all construction work and re-vegetation is complete. Refer to *0602-Attachment C: Sequence of Construction* for more information on construction activities and sequence. Refer to *0587-Attachment C.1 Construction Plans (Sht 27-29)* for the proposed erosion and sedimentation control construction plan sheets showing the location and types of temporary BMPs proposed for the project.

BMPs for onsite flows will prevent pollution of surface streams by filtering pollutant ridden water. These BMPs include silt fence, mulch socks, and stabilized construction exits. Immediately following the placement of topsoil, seeding will be implemented to stabilize areas disturbed during construction.

ATTACHMENT F
STRUCTURAL PRACTICES

Temporary structural practices used to limit runoff discharge pollutants include silt fence, mulch socks, and stabilized construction exits.

The TCEQ general guidelines included in Section 1.2 to Section 1.4 of RG-348 must be followed for installation and maintenance of temporary structural erosion and sediment control BMPs. Additional guidelines can also be found on the Erosion Control Layouts included in *0587-Attachment C.1 Construction Plans (Sht 31-33).*

ATTACHMENT G
DRAINAGE AREA MAP

The project drainage area map is included in *0587-Attachment C.1 Construction Plans (Sht 8)*.

ATTACHMENT I
INSPECTION AND MAINTENANCE FOR BMPS

All erosion and sediment control measures will be maintained in effective operating condition by following the Project maintenance procedures. The general maintenance and inspection requirements are included on the Erosion Control Layouts included in *0587-Attachment C.1 Construction Plans (Sht 31-33, see notes w/ associated temporary BMP details)*. The maintenance plan for temporary BMPs meets the maintenance guidance provided in RG-348.

The Contractor shall install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until soil disturbing activities are completed and permanent erosion control features are in place or the disturbed area has been adequately stabilized as approved in accordance with contract documents including Part II, Section F.6 of TPDES General Permit No. TXR150000.

Maintenance, repairs, or retrofits will adhere to the project standards and details for the BMP. Damaged portions of BMPs shall be removed and replaced as needed to adhere to the contract documents. BMPs that cannot be adequately repaired or retrofitted to meet project requirements shall be removed and replaced in entirety in accordance with the contract documents.

ATTACHMENT J
SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

The general order of construction activities is shown below. The project phasing of construction activities, including time frame information and interim and permanent stabilization measures are included in the General Notes – Construction Phasing Notes included in *0587-Attachment C.1 Construction Plans (Sht 2).* Erosion control plans detailing temporary storm water BMPs are provided in *0587-Attachment C.1 Construction Plans (Sht 31-33)*. Temporary control measures include silt fence, mulch socks, and construction exits and will be installed first in the sequence of construction and removed after all site work is complete and vegetation has been established.

Installation of temporary erosion controls

1. Notice of Intent/SWPPP Controls
    a. Install erosion and sediment control measures in accordance with the Erosion Control Plans / SW3P
2. Construct stabilized construction exits

Site Clearing and Grading

3. Clearing, grubbing, and grading in the locations of proposed improvements.

Construction of proposed storm sewers and pavement resurfacing.

4. Construct proposed storm sewer and new inlets from upstream to downstream.
5. Backfill trenches and restore pavement structures.

Site Restoration, Seeding and Re-vegetation

6. Installation of concrete riprap at downstream storm sewer discharge point.
7. Seeding and revegetation of disturbed soils outside of the paving limits.

Removal of SWPPP Controls

8. Remove erosion and sediment control measures and stabilized construction exits upon revegetation/ restoration of all disturbed areas.
9. Notice of Termination.

Records will be kept at the project site to document dates when:

- major grading activities occur;
- construction activities temporarily cease;
- construction activities permanently cease; and
- soil stabilization measures are initiated.

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

I Ashley Wayman,
Print Name

City Administrator,
Title - Owner/President/Other

of City of Rollingwood,
Corporation/Partnership/Entity Name

have authorized Geoffrey Elfers, PE
Print Name of Agent/Engineer

of K Friese + Associates, Inc
Print Name of Firm

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

I also understand that:

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

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

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

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

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

SIGNATURE PAGE:

Ashley Wayman
Applicant's Signature

02/20/2024
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Ashley Wayman 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 20 day of February 2024

Nikki Dykes
NOTARY PUBLIC

NIKKI DYKES
Notary Public, State of Texas
Comm. Expires 07-29-2026
Notary ID 125208693

Nikki Dykes
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 7/29/2026

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: City of Rollingwood CIP and Drainage Improvements
Regulated Entity Location: City of Rollingwood
Name of Customer: City of Rollingwood
Contact Person: Geoffrey Elfers Phone: 512.967.4482
Customer Reference Number (if issued):CN _____
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: Geoffrey Elfers Date: 2/22/2024

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 600674691		RN 111870267

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 Rollingwood

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 Rollingwood
403 Nixon Drive

City	Rollingwood	State	TX	ZIP	78746	ZIP + 4	

16. Country Mailing Information (if outside USA)	17. E-Mail Address (if applicable)
	gelfers@kfriese.com

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(512) 338-1704		( ) -

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.*)

Rollingwood Water CIP and Drainage Improvements

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:	Storm sewer constructed from 2807 Pickwick Lane, down Hubbard Circle across Hatley Drive and Almarion Way to 2803 Hatley Drive.

26. Nearest City	**State**	**Nearest ZIP Code**
Rollingwood	TX	78746

27. Latitude (N) In Decimal:	30.2762	**28. Longitude (W) In Decimal:**	97.7823

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	16	34.31	97	46	56.23

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)
1611		237310	

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

City Roadway

34. Mailing Address:	**City of West Lake Hills**							
	911 Westlake Drive							
	City	**Rollingwood**	**State**	**TX**	**ZIP**	**78746**	**ZIP + 4**	

35. E-Mail Address:	**gelfers@kfriese.com**

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 967-4482		**( ) -**

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:

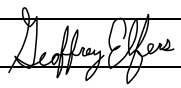
SECTION IV: Preparer Information

40. Name:	Geoffrey Elfers, PE	**41. Title:**	Senior Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 338-1704		( ) -	gelfers@kfriese.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:	K Friese + Associates	**Job Title:**	Senior Engineer
Name *(In Print):*	Geoff Elfers	**Phone:**	(512) 338- **1704**
Signature:		**Date:**	2/22/2024