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CITY OF AUSTIN - BARTON CREEK OAK ACRES SDI

Edwards Aquifer Application Organized Sewage Collection System

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Version 2
July 30, 2025

rpsgroup.com

CITY OF AUSTIN - BARTON CREEK OAK ACRES SDI

Edwards Aquifer Application Organized Sewage Collection System

Peer Review		
Stephanie Blew, PE	Stephanie D Blew	7/30/2025

Approval for issue		
Tyler Murski, PE	Tyler Meserole Murski	7/30/2025

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Prepared by:

RPS

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Prepared for:

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1 EDWARDS AQUIFER APPLICATION COVER PAGE

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: Barton Creek - Oak Acres SDI (5754.046)						**2. Regulated Entity No.:** RN111617767			
3. Customer Name: City of Austin						**4. Customer No.:** 600135198			
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):**		1.5 Acres	
9. Application Fee:	$650		**10. Permanent BMP(s):**			Roadside ditches and grassy swales			
11. SCS (Linear Ft.):	223 LF		**12. AST/UST (No. Tanks):**			None			
13. County:	TRAVIS		**14. Watershed:**			Barton Creek Watershed			

Application Distribution

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

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

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	__	X	__
Region (1 req.)	__	X	__
County(ies)	__	X	__
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	X Austin __Bee Cave __Pflugerville __Rollingwood __Round Rock __Sunset Valley __West Lake Hills	__Austin __Cedar Park __Florence __Georgetown __Jerrell __Leander __Liberty Hill __Pflugerville __Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	__	__	__	__	__
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.

Tyler Murski, P.E. / RPS Infrastructure, Inc.

Print Name of Customer/Authorized Agent

Tyler Mescole Murski 07/30/2025

Signature of Customer/Authorized Agent Date

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

2 GENERAL INFORMATION FORM (TCEQ-0587)

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: Tyler Murski, P.E. / RPS Infrastructure, Inc.

Date: 07/30/2025

Signature of Customer/Agent:

Tyler Mescole Murski

Project Information

1. Regulated Entity Name: Barton Creek - Oak Acres SDI (5754.046)
2. County: Travis
3. Stream Basin: Barton Creek Watershed
4. Groundwater Conservation District (If applicable): Barton Springs Edwards Aquifer Conservation District
5. Edwards Aquifer Zone:

   [X] Recharge Zone
   [ ] Transition Zone

6. Plan Type:

   [ ] WPAP
   [X] SCS
   [ ] Modification
   [ ] AST
   [ ] UST
   [ ] Exception Request

7. Customer (Applicant):

Contact Person: Judy Anderson, P.E.
Entity: City of Austin, Watershed Protection Division
Mailing Address: 505 Barton Springs Rd | Suite #11
City, State: Austin, TX Zip: 78704
Telephone: 737-368-3920 FAX: _____
Email Address: Judy.anderson@austintexas.gov

8. Agent/Representative (If any):

Contact Person: Tyler Murski, P.E.
Entity: RPS Infrastructure, Inc
Mailing Address: 4801 SW Pkwy, suite #185
City, State: Austin, TX Zip: 78735
Telephone: 512.328.5771 FAX: _____
Email Address: Tyler.Murski@tetratech.com

9. Project Location:

[X] The project site is located inside the city limits of Austin.
[ ] 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. [X] 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.
Located at Oak Blvd and 290 Highway Intersection. Wastewater line is located at Oak Blvd crossing with Gaines Tributary to Barton Creek.

11. [X] **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. [X] **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:

[X] Project site boundaries.
[X] USGS Quadrangle Name(s).
[X] Boundaries of the Recharge Zone (and Transition Zone, if applicable).
[X] Drainage path from the project site to the boundary of the Recharge Zone.

13. [X] **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: _____

14. [X] **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:

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

16. [X] 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. [X] 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.
- [x] 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. [x] 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
- [x] 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. [x] 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. [x] No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

Attachment A: Road Map

Legend

- Project Limits
- Gaines Tributary
- City of Austin Parcels

N
W E
S

0 175 350
Feet

Source: 2016 Texas NAIP Aerial Imagery, 2012 City of Austin Contours

Exhibit A.1
Project Location Map

Barton Creek Oak Acres

4801 Southwest Parkway,
Parkway 2, Suite 150
Austin, Texas 78735
(512) 326-5659
TBFE #F-293

Date: July 2019 | Proj# 007681

Attachment B: USGS/ Edwards Recharge Zone Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

USGS science for a changing world

The National Map US Topo

OAK HILL QUADRANGLE
TEXAS
7.5-MINUTE SERIES

PROJECT DRAINAGE PATH

BARTON CREEK OAK ACRES PROJECT AREA

EDWARDS AQUIFER RECHARGE ZONE

EDWARDS AQUIFER TRANSITION ZONE

AUSTIN

Oak Hill
Williamson
Sunset Valley
Vinson
Pleasant Hill
Davis Hill
Tanglewood Forest
Ford Oaks
SHADY HOLLOW
Manchaca
San Leanna
Onion Creek
Bluff Springs

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 14R
10 000-foot ticks: Texas Coordinate System of 1983 (central and south central zones)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, August 2014
Roads..... U.S. Census Bureau, 2014 - 2015
Names.....GNIS, 2015
Hydrography.....National Hydrography Dataset, 2014
Contours.....National Elevation Dataset, 2002
Boundaries.....Multiple sources; see metadata file 1972 - 2015

Wetlands.....FWS National Wetlands Inventory 1977 - 2014

UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
PU
Grid Zone Designation
14R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.19

QUADRANGLE LOCATION

ADJOINING QUADRANGLES
1 Bee Cave
2 Austin West
3 Austin East
4 Signal Hill
5 Montopolis
6 Mountain City
7 Buda
8 Creedmoor

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

OAK HILL, TX
2016

NSN 7643016397497
NGA REF NO. USGSX24K32740

Attachment C: Project Description

The Barton Creek Oak Acres Drainage Improvements Project aims to alleviate localized flooding by proposing improvements to roadside ditches and the existing storm drain system in the Oak Acres Neighborhood, as well as upgrading the existing low water crossing of Gaines Tributary with Oak Blvd. Utility adjustments will be required as part of the proposed improvements, including the replacement of a portion of an existing wastewater line generally located at 5677 Oak Blvd, Austin, TX 78735. The line is located at the Oak Blvd crossing with Gaines Tributary which is being upgraded by replacing an existing low water crossing with an elevated bridge culvert structure. The existing line was constructed in 1995 as part of the City of Austin's Oak Park/ Oak Acres Water & Wastewater Improvements project (permit no. SP-94- 0082D). The portion of the wastewater line proposed to be adjusted with this project is in the Oak Blvd right-of-way and along a 15' wastewater utility easement within a larger 100' drainage easement.

The project is located entirely within the full purpose city limits of the City of Austin in Travis County, Texas. The existing 12" DI gravity wastewater line will be relocated to accommodate the upsizing of the low water crossing to a precast CrownSpan bridge unit. The wastewater line relocation will involve the removal of an existing manhole and approximately 66 LF of 12" PVC gravity line, 157 LF of 8" PVC line, and the installation of 5 new wastewater manholes. The existing 12" gravity DI wastewater line currently receives flow from approximately 35 acres of primarily residential development with approximately 65% impervious cover. The proposed improvements in this project will not affect the capacity of the existing system. The 12" diameter line and cleanouts are being adjusted will be replaced with a 12" diameter pipe, 8" diameter line, and 6" service which tie into existing 12" diameter pipe.

The Oak Acres Drainage Improvement Project is located within the Edwards Aquifer Recharge Zone (EARZ) as defined by the Texas Commission on Environmental Quality (TCEQ). The site is located in the Barton Creek Watershed. The wastewater line adjustments are located within the City of Austin Fully Developed 25-year and 100-year Floodplains. The Oak Acres Subdivision was constructed in the 1940s prior to the creation of the Edwards Aquifer Program and its water quality requirements. The 1995 Oak Park/ Oak Acres Water & Wastewater Improvements Project included a Texas Water Commission Application for Approval of Organized Sewage Collection, which was approved in 1993.

Wastewater treatment will be provided by the City of Austin (CoA). Treatment of wastewater will occur at the South Austin Regional Wastewater Treatment Plant operated by the City of Austin.

Attachment D: Previous SCS Approvals (February 19, 1993 and July 12, 2023)

The project currently has a previously approved SCS Application, granted on July 12, 2023. The Edwards Aquifer Protection Program (EAPP) ID for this project is 11003560, and the regulated entity number is RN111617767. Although the original application was not extended before it expired, the project details have since been updated. During the City of Austin permitting process, a second wastewater line relocation was identified as necessary. This application now includes the additional 8-inch wastewater line relocation.

John Hall, Chairman
Pam Reed, Commissioner
Peggy Garner, Commissioner

TEXAS WATER COMMISSION

PROTECTING TEXANS' HEALTH AND SAFETY BY PREVENTING AND REDUCING POLLUTION

February 19, 1993

Mr. Charles H. Sampson III
Project Management Division
City of Austin
P.O. Box 1088
Austin, Texas 78767

Re: Edwards Aquifer, Travis County
NAME OF PROJECT: Oak Park/Oak Acres Wastewater Improvements; Northwest of the U.S. 290-MoPac Intersection; City of Austin 2-Mile ETJ, Texas.
TYPE OF PLAN: Application for Approval of Organized Sewage Collection System (SCS); 31 Texas Administrative Code (TAC) §313.5; The Edwards Aquifer Protection Program.

Dear Mr. Sampson:

The Texas Water Commission (TWC) has completed its review of the sewage collection system plans and specifications for Oak Park/Oak Acres Wastewater Improvements that were submitted by Abbe/Garrett Engineering on behalf of the City of Austin to the District 14 Office on October 6, 1992. Final review of the WPAP submittal was completed after requested additional material was received on February 18, 1993.

A site inspection was conducted by a District 14 Field Investigator on December 29, 1992.

PROJECT DESCRIPTION

The portion of this proposed sewage collection system which is within the Edwards Aquifer Recharge Zone (EARZ) consists of 12,623 linear feet of SDR 35 PVC pipe (8-, 10-, 12-, 15-, and 18-inch 40 psi), 1,961 linear feet of SDR 26 PVC pipe (10-, 12-, and 15-inch 160 psi), 5,774 linear feet of ductile iron pipe (8-, 10-, 12-, and 14-inch 150 psi Class 50), manholes, and associated appurtenances.

Other construction activities consist of:

- a lift station with three submersible pumps having a capacity of 90 GPM at 44 feet of TDH (each). The lift station will have a total capacity of 180 GPM at 44 feet TDH with one pump out of service.

- 2,273 linear feet of 4-inch diameter ductile iron force main (250 psi Class 53).

- miscellaneous pump controls, pump supports, and discharge piping.

- various valves, fittings, and appurtenances.

The proposed sewage collection system will be connected to City of Austin wastewater lines for conveyance to the South Austin Regional WWTP for treatment and disposal.

APPROVAL

The plans and specifications for this project have been reviewed for compliance with 31 TAC §317, Design Criteria for Sewerage Systems, which indicates the minimum design requirements compatible with existing state statutes pertaining to effluent quality, and 31 TAC §313.5, which sets forth the specific requirements relating to the construction of sanitary sewage collection systems which are located within the recharge zone of the Edwards Aquifer.

These plans and specifications generally comply with the minimum requirements of the Texas Water Commission's Edwards Aquifer Protection Program. Approval of this application for construction of the referenced project is hereby granted, subject to the specific conditions listed below and with the understanding that such construction shall be in accordance with the aforementioned design criteria.

Failure to comply with any of the following conditions, the deed recordation requirement, or any other specific conditions of this approval is a violation of these rules. Pursuant to §26.136 of the Texas Water Code, any violations of the Edwards Aquifer Rules may result in administrative **penalties of up to $10,000 for each act of violation and for each day of violation.**

STANDARD CONDITIONS

1. In all cases, **the appropriate bedding class shall be used to support all anticipated loads (31 TAC §317.2 (a)(5)). Bedding classes shall be equivalent to that described in ASTM D-2321 for semi-rigid and flexible pipe or ASTM C-12 for rigid pipe.**

2. Where PVC sewer lines cross water mains, and the separation distance is 9 feet or less, the following requirements shall apply:

    a. the separation distance shall not be less than 6 inches;

b. pipe and joints shall be pressure rated to a minimum of 150 psi;
c. sewer lines shall be located beneath the water mains unless otherwise approved by the Texas Water Commission and/or the Texas Department of Health.

3. **All ductile iron pipe used in this system shall be corrosion protected on both the interior and exterior surfaces.** All corrosion protection materials shall be applied and installed in such a manner as to maintain a continuously protected surface after final pipe installation.

4. For gravity collection systems, all PVC pipe must have a Standard Dimension Ratio (SDR) of 35 or less. For all pressurized sewer systems, all PVC pipe must have a SDR of 26 or less. All sewer pipes must have compression or mechanical joints, with the exception of private service laterals, in which case solvent weld joints may be used if the pipe diameter is less than six inches.

5. Private service laterals connecting to this system shall be inspected prior to being backfilled to certify that they have been constructed in conformance with the applicable provisions of 31 TAC §313.5. Upon request, copies of this certification shall be forwarded to the District 14 Office in accordance with 31 TAC §313.5(c)(9).

6. Sewer lines that bridge caverns, sinkholes, or solution features shall be constructed in a manner that will maintain the structural integrity of the pipe. 31 TAC§313.4(d)(2) requires that when such geologic features are encountered, all regulated activities near the significant recharge feature must be immediately suspended and the owner/developer shall immediately notify the District 14 Office. No construction in the area of the feature may resume until the Executive Director has reviewed and approved the methods proposed to protect the aquifer from any potential adverse impacts.

7. To be in compliance with 31 TAC §313.5(c)(1), all manholes must be watertight with watertight rings and covers. Wherever the manholes are located within the 100 year floodplain, the manhole covers shall have gaskets and be bolted. If more than three gasketed manholes are in sequence and below the 100 year floodplain elevation, an alternative means of venting shall be provided as specified in 31 TAC §317.2(c)(5)(F).

8. 31 TAC §317.2(c)(5)(B) specifies that the maximum manhole spacing shall conform to State Design Criteria. Please note that for 6-inch to 15-inch inside diameter gravity sewer lines, the maximum spacing is 500 feet. Any exceptions to

these specifications require the applicant to provide documentation to District 14 indicating that the applicant has the capability of maintaining the lines in proper operating condition.

9. A drop manhole shall be used where the elevation of the inflow sewer line is more than 24 inches above the manhole invert.

10. A deflection test shall be conducted on all flexible and semi-rigid sewer lines after the final backfill has been in place for at least 30 days in accordance with 31 TAC §317.2(a)(5)(B). The test shall be performed without mechanical pulling devices, and pipe deflection shall not exceed 5%.

11. The District 14 Office shall be notified 24 to 48 hours in advance of any pre-construction conference.

12. This approval shall not be construed as approval for new connections, increased flow, or significant changes in influent quality that will result in violations of the permit requirements for the treatment facility to which this system connects. **Please note, following this approval of the regulated activities described in the referenced submittal, any amendment to these activities that is required by some other regulating authority or is desired by the applicant will require the submittal of a new SCS application to amend this approval. And, as indicated in 31 TAC §313.5 and 31 TAC §313.27, an application to amend any approved regulated activity shall include the payment of appropriate fees and the submittal of all information necessary for its review and Executive Director approval.**

13. Blasting for sewer line excavation shall be accomplished in accordance with appropriate criteria established by the National Fire Protection Association. Should such blasting damage any already in-place sewer lines or any of its appurtenances, the owner of the sewer system and appurtenances must repair and retest such sewer and its appurtenances immediately. Sand shall not be used for pipe embedment and/or backfill in blasted rock.

14. Certification by a Texas Registered Professional Engineer that the sewage collection system meets or exceeds the requirements of 31 TAC §317.2(a)(4)(B) shall be provided to the Executive Director through the District 14 Office in accordance with 31 TAC §313.5(c)(4). **The certification should be in the form of a letter indicating that the new collection system has passed all appropriate test requirements. Test result documentation should be retained by the engineer/owner and shall be made available for TWC review upon request.**

15. Every five years after the certification required in Item 14 above, the sewage collection system shall be inspected to determine if excessive leakage exists. The method of testing must receive approval from the Executive Director prior to test initiation. The results of such testing shall be certified by a Texas Registered Professional Engineer as having been correctly performed and shall be reported to the District 14 Office along with plans for any corrective action (31 TAC §313.5(c)(5)).

16. All temporary erosion and sedimentation (E&S) controls required at the project shall be installed prior to initiating all other construction on this project.

    The appropriate E&S control(s) that shall be used during the construction of the project are as follows: (1) **Stabilized construction entrances** (if new project) shall be installed at **all sites of ingress and egress** prior to initiation of any other regulated activity. (2) **Silt fences** should be used when the drainage areas are less than 2 acres or when the slopes are less than 10%. (3) **Rock berms with filtration** should be used when the drainage areas are greater than two acres or when the slopes are in excess of 10%. The bottom edge of the filter fabric must be buried a minimum of 6 inches below grade.

    Silt fencing shall be placed on the downgradient side of the sewage collection system trench line.

17. The Texas Water Commission may monitor stormwater discharges from the site to evaluate the adequacy of the temporary E&S control measures. Additional protection may be required if excessive solids are being discharged from the site.

18. During the course of any construction related to the referenced regulated development, the owner/developer shall comply with all applicable provisions of 31 TAC §313.4. Construction which is initiated and abandoned or will not be completed, shall be returned to a permanent condition such that groundwater in the Edwards Aquifer is protected from future contamination. Additionally, City of Austin, applicant, shall remain responsible for the provisions and special conditions of this approval until such responsibility is legally transferred to another person or entity. Upon transferal, the new owner shall assume responsibility for all provisions and specific conditions of this approval.

19. Any sewer lines which are proposed within the 5 year floodplain shall be encased in concrete or shall have the trench capped in concrete, as stated in 31 TAC §313.5.

20. An auto-dial telemetry system shall be installed to automatically notify several responsible parties of a malfunction of the lift station.

21. An audio-visual alarm system (red flashing light and horn) shall be provided for all lift stations.

22. Please note that 31 TAC §313.5(h) states that this approval expires two years from this date unless, prior to the expiration date, construction has commenced on the regulated development.

23. The engineer shall certify that the project was completed in accordance with the approved Organized Sewage Collection System Plan.

If you have any questions or require additional information, please contact a representative of the Edwards Aquifer Protection Program at the District 14 Office (512) 463-7803.

Sincerely,

Jesús Garza
Executive Director

JEB:jeb

cc: Jack T. Garrett, Jr., P.E., Abbe/Garrett Engineers, Inc., Austin, Texas
Bill Couch, Barton Springs/Edwards Aquifer Conservation Dist.
Austan Librach, Environmental & Conservation Services Dept., City of Austin
The Honorable Bill Aleshire, County Judge, Travis County
Steve Musick, Ground Water, TWC
Christine Ellington, Field Support, TWC

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Kelly Keel, *Interim Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 12, 2023

Mr. John Middleton, P.E.
City of Austin
505 Barton Springs Road, 12th Floor
Austin, Texas 78704

Re: Approval of an Organized Sewage Collection System (SCS) Plan
Barton Creek Oak Acres SDI; N. of US Hwy. 290 at Oak Blvd.; Austin, Travis County
Edwards Aquifer Protection Program ID: 11003560, Regulated Entity No. RN111617767

Dear Mr. Middleton:

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by RPS Infrastructure, Inc. on behalf of the applicant, City of Austin on April 18, 2023. Final review of the application was completed after additional material was received on July 5, 2023.

As presented to the TCEQ, the application was prepared in general compliance with the requirements of 30 Texas Administrative Codes (TAC) Chapter §213 and Chapter §217. The engineering design report, technical specifications and final design plans were prepared by a Texas licensed professional engineer (PE). All construction plans and design information were sealed, signed, and dated by a Texas licensed PE. Therefore, the application for the construction of the proposed project and methods to protect the Edwards Aquifer are hereby **approved,** subject to applicable state rules and the conditions in this letter.

This approval expires two years from the date of this letter, unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been officially requested. This approval or extension will expire, and no extension will be granted if more than 50 percent of the project has not been completed within ten years from the date of this letter.

The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed in accordance with 30 TAC §50.139.

BACKGROUND

This system will connect to an existing SCS, EAPP ID 11-92100601, and is part of an associated WPAP-Exception, EAPP ID 11003403.

PROJECT DESCRIPTION

The proposed sewage collection system will provide disposal service for a residential development. The system includes gravity lines and other appurtenance necessary for conveying wastewater to a treatment plant. The proposed SCS will consist of 118 linear feet of 12-inch and 8-inch, SDR 21, ASTM D2241 piping and replacement manholes.

TREATMENT FACILITY

The system will be connected to an existing City of Austin wastewater line for conveyance to the South Austin Regional WWTP for treatment and disposal. **The proposed system shall be connected for conveyance prior to use of the development.** The project will conform to all applicable codes, ordinances, and requirements of the City of Austin.

GEOLOGY

According to the Geologic Assessment (GA) included with the application, the surficial units of the site are the Kainer (K_k) Formation. No sensitive geologic features were identified in the GA. The site assessment conducted on June 7, 2023 by TCEQ staff determined the site to be generally as described by the GA.

STANDARD CONDITIONS

1. The plan holder (applicant) must comply with all provisions of 30 TAC Chapter §213 and all technical specifications in the approved plan. The plan holder should also acquire and comply with additional and separate approvals, permits, registrations or authorizations from other TCEQ Programs (i.e., Water Quality) as required based on the specifics of the plan.

2. In addition to the rules of the Commission, the plan holder must also comply with state and local ordinances and regulations providing for the protection of water quality as applicable.

Prior to Commencement of Construction:

3. The plan holder of any approved Edwards Aquifer protection plan must notify the EAPP and obtain approval from the executive director prior to initiating any modification to the activities described in the referenced application following the date of the approval.

4. The plan holder must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the EAPP no later than 48 hours prior to commencement of the regulated activity. Notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.

5. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

6. If any sensitive feature is encountered during construction, replacement, or rehabilitation on this project, all regulated activities must be **immediately** suspended near it and notification must be made to TCEQ EAPP staff. Temporary BMPs must be installed and maintained to protect the feature from pollution and contamination. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality.

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

removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

8. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge must be filtered through appropriately selected BMPs.

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

10. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

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

11. No part of the organized sewage collection system may be used as a sewage holding tank, as defined in 30 TAC §213.3 (excluding lift stations), over the Edwards Aquifer recharge zone.

12. A Texas licensed PE **must certify** in writing that the new sewage collection system (including force mains) has passed all required testing. The certification shall be submitted to the EAPP within 30 days of test completion and prior to the new sewage collection system being put into service.

13. A Texas licensed PE **must certify** subsequent testing required every five years of the existing sewage collection system after being put into use to determine types and locations of structural damage and defects such as offsets, open joints, or cracked or crushed lines that would allow exfiltration to occur. The test results must be retained by the plan holder for five years and made available to the executive director upon request.

The holder of the approved Edwards Aquifer protection plan is responsible for compliance with Chapter §213 and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved Edwards Aquifer protection plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Kevin Lee Smith, P.E. of the Edwards Aquifer Protection Program of the Austin Regional Office at 512-339-2929.

Sincerely,

Lillian Butler

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

LIB/kls

cc: Ms. Tyler Murski, P.E., RPS Infrastructure

3 GEOLOGIC ASSESSMENT TABLE (TCEQ-0585)

City of Austin
Barton Creek Oak Acres Flood Risk Reduction Project
Geological Assessment

Travis County, Texas

January 2021

HICKS & COMPANY

ENVIRONMENTAL
ARCHEOLOGICAL
AND PLANNING
CONSULTANTS

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: Patricia Frost Telephone: (512) 478-0858

Date: January 18, 2021 Fax: (512) 474-1849

Representing: Hicks & Company Environmental/Archeological Consultants, TBPG No. 50498
(Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Regulated Entity Name: City of Austin Barton Creek Oak Acres Flood Risk Reduction Project

Project Information

1. Date(s) Geologic Assessment was performed: October 30, 2020
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone

☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)

Soil Name	Group*	Thickness(feet)
Crawford clay (CrB)	D	2.25
Speck clay loam (SsC)	D	1.5
Eckrant and Speck soils (TcA)	D	0.67

** Soil Group Definitions (Abbreviated)*

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

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

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

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

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

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

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

   Applicant's Site Plan Scale: 1" = 60'
   Site Geologic Map Scale: 1" = 60'
   Site Soils Map Scale (if more than 1 soil type): 1" = 60'

9. Method of collecting positional data:

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

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
12. ☐ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☒ Geologic or manmade features were not discovered on the project site during the field investigation.
13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☐ The wells are not in use and will be properly abandoned.
    - ☐ The wells are in use and comply with 16 TAC Chapter 76.

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

Administrative Information

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

ATTACHMENTS

Attachment A Geologic Assessment Table

Attachment B Stratigraphic Column

Attachment C Narrative of Site Specific Geology

Attachment D Figures

- Attachment D1 – Project Location Aerial Photograph
- Attachment D2 – Project Location Topographic Map
- Attachment D3 – Project Area Geology Overview
- Attachment D4-1 through D4-5 – Project Site Geology Detail (includes soils)

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: City of Austin Barton Creek Oak Acres Drainage Improvements

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	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	
NO FEATURES OBSERVED																				

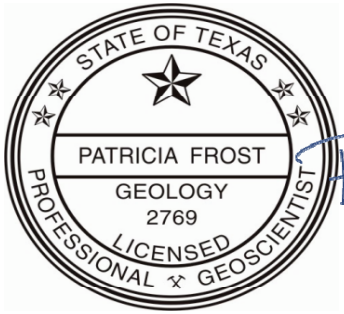
* DATUM:_____

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

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

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

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



Pat Frost

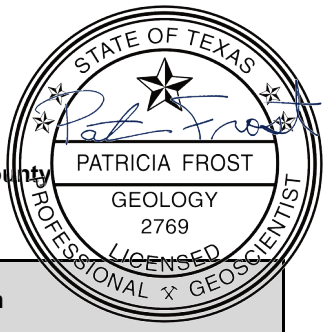
Signature

1/4/2021

Date

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

Attachment B
Stratigraphic Column and Hydrogeologic Summary South-Southwest Travis County
Austin, Travis County, Texas



System	Hydrogeologic Unit		Group, Formation, or Member			Map Symbol	Thickness (feet)	Description
Quaternary	--		Alluvium			Qal	Variable	Floodplain and terrace deposits; clay, silt, sand, and gravel.
	--		Tributary terrace deposits			Qtt	Variable	
	--		High terrace deposits			Qht	Variable	
Upper Cretaceous	Upper Confining Units		Taylor Group			Kta	600	Gray-brown clay and marly limestone.
			Austin Group			Kau	130-150	White to light-tan to gray chalky limestone.
			Eagle Ford Group			Kef	30-50	Brown, flaggy sandy shale and argillaceous limestone.
			Washita Group	Buda Limestone		Kbu	40-50	Buff, light-gray dense mudstone.
				Del Rio Clay Formation		Kdr	50-60	Blue-green to yellow-brown clay.
	I	Edwards Aquifer		Georgetown Formation		Kgt	40-60	Gray to light-tan, marly limestone.
Lower Cretaceous	II		Edwards Group (Ked)	Person Formation	Cyclic and Marine Members	Ked	50-180	Light tan mudstone to packstone; chert; massive
	III				Leached and Collapsed Member			Light-gray, bioturbated iron stained limestone; mudstone to wackestone to grainstone;chert; collapsed breccia.
	IV				Regional Dense Member			Light-tan, dense argillaceous mudstone.
	V			Kainer Formation	Grainstone Member		220-285	Light-gray crossbedded grainstone; mudstone to wackestone; chert.
	VI				Kirschberg Evaporite Member			Light-gray, crystalline limestone; chalky mudstone; chert. Boxwork voids, with neospar and travertine frame.
	VII				Dolomitic Member			Massively bedded, light gray mudstone to grainstone; crystalline imestone; chert.
	VIII			Walnut Formation	Basal Nodular Member	Kwa	45-60	Gray to tan, soft to hard, thick and thin bedded limestone, marl and marly limestone.
	Lower Confining Unit		Glen Rose Formation	Upper Member		Kgr	350-00	Yellowish-tan, thinly bedded limestone and marl; forms stair-step topography.

Modified from: Small, T.A., J.A. Hanson, and N. M. Hauwert. 1996, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop (Barton Springs Segment), Northeastern Hays and Southwestern Travis Counties, Texas, U.S. Geological Survey Water-Resources Investigations Report 96-4306.

Shaded areas represent units that outcrop in the project area.

ATTACHMENT C
NARRATIVE OF SITE SPECIFIC GEOLOGY

CITY OF AUSTIN BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT
Oak Acres Subdivision, Austin, Travis County, Texas

Project Description

The proposed project, known as the Barton Creek Oak Acres Flood Risk Reduction Project (Project) is located in the City of Austin, Travis County, Texas. The project limits are within the vicinity of Oak Drive in the Oak Acres Subdivision of southwest Austin, Travis County (**Attachments D1** and **D2**). The proposed project entails the construction of drainage swales to convey stormwater runoff; excavation and channel modification to Gaines Creek; culvert upgrades; repairing and relocating wastewater lines as needed; repairing water lines as needed; installation of erosion and sedimentation controls; vegetation reestablishment to include tree mitigation as needed or required and development of an integrated pest management plan to control invasive plant species. The total construction footprint for the proposed Project will encompass 3.15 acres. Portions of the project area are illustrated by **Photographs 1** and **2**.

The proposed Project is located on the Edwards Aquifer Recharge Zone (EARZ) (**Attachment D1**) and is subject to the Edwards Aquifer Rules, which requires a site-specific Edwards Aquifer Protection Plan (EAPP) for the project (TCEQ 2020). To satisfy this requirement, a Water Pollution Abatement Plan (WPAP) is being prepared for the Project.

The purpose of this document is to complete a Geologic Assessment compliant with the requirements of Title 30, Texas Administrative Code (TAC) Chapter 213, related to the protection of the EARZ. The Geologic Assessment was prepared in accordance with the revised *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* (TCEQ-0585) (TCEQ 2004). The Geologic Assessment is a component of a WPAP, which will be completed based on the final design of the project. The WPAP identifies measures that will be implemented to protect the water quality of the aquifer.

The survey area for this assessment is defined as the limits of construction, an approximate 3.15 acre area as shown in **Attachment D1**. This report documents conditions observed by Hicks & Company's Professional Geoscientist within the property boundaries and a 50-foot buffer on October 30, 2020. General and site-specific geology, as well as a description of field activities within the project area, are discussed below.

Physiography

The City of Austin is situated within the general area of two ecoregions: the Edwards Plateau and the Blackland Prairie (Griffith et al. 2007). The Edwards Plateau ecoregion is subdivided into four sub-ecoregions: Edwards Plateau Woodland, Llano Uplift, Balcones Canyonlands, and Semiarid Edwards Plateau. The Balcones Canyonlands forms the eastern edge of the Edwards Plateau. These regions are delineated, for the most part, on the basis of topographic expression. Each region contains characteristic vegetation and soils due primarily to specific geologic formations that outcrop in each physiographic region. The Project is located within the Balcones Canyonlands sub-ecoregion of the Edwards Plateau

ecoregion. Topographic relief within the project area ranges from approximately 782 feet above sea level (asl) at the northern end of the project area to approximately 760 feet asl where Oak Boulevard crosses Gaines Creek (**Attachment D2**) (USGS 1988). The project area is within the Barton Creek drainage basin.

Structure

The Balcones fault zone consists of an area of extensive faulting that stretches throughout Central Texas. The majority of the faults in this system strike north 25 to 70 degrees east and are high angle, dip-slip normal faults generally downthrown to the southeast. Joints and fractures are associated with the fault system and contribute to an increase in the permeability and solutioning of the underlying limestone strata. The Balcones fault zone is inactive and shows little tectonic or seismic activity.

No faults were identified within the project area. The nearest major fault, the Mount Bonnell Fault of the Balcones Fault Zone is mapped approximately 1,800 feet northwest of the Project and is illustrated on **Attachment D3**. The fault is downthrown to the east roughly 450 feet and trends N 40^{o} E (BEG 1970).

Soils

According to the United States Department of Agriculture's (USDA) Web Soil Survey for Travis County (USDA 2020), three soil series are mapped within the project area and are illustrated on **Attachment D4** and are characteristic of the Edwards Plateau. **Table 1** provides a summary of the soils. The soils within the project area are upland soils that developed in place from the underlying limestone formations.

Table 1. Soils within the Project Area

Soil	Symbol	Landform	Thickness	Soil Group*
Crawford clay, 1 to 3 percent slopes	CrB	Plains	27 inches	D
Speck stony clay loam, moist, 1 to 5 percent slopes, stony	SsC	Ridges	18 inches	D
Tarrant and Speck soils, 0 to 2 percent slopes	TcA	Ridges	8 inches	D

** 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.

Stratigraphy

Bedrock underlying the study area is composed of limestone rocks of the lower Cretaceous age Edwards Formation as illustrated in **Attachment D3 – Project Area Geology Overview** and **Attachment D4 Project Site Geology Detail**. The Edwards Formation is characterized by limestone, dolomite, nodular chert, and solution-collapse features. Stratigraphic units underlying the southwest Austin area are composed primarily of Cretaceous age limestone, chalk, and clay and are illustrated in the stratigraphic column included as **Attachment B**. These Cretaceous-age units generally strike northeast and dip gently southeastward (BEG 1992).

Water Wells

No water wells were observed within the project area.

Survey Activities

The following discussion is a site-specific assessment of existing geological conditions and potential aquifer recharge features within the project boundaries. This geologic survey was conducted in accordance with the TCEQ guidance (TCEQ 2004) to identify all geologic and manmade features which could potentially be affected by project activities. Features may include caves, solution cavities, faults, solution-enlarged fractures, sinkholes, swallow holes, non-karst closed depressions, and manmade features in bedrock, such as water wells, sanitary sewer lines, storm sewer lines, trenches, quarries, or any other features which can potentially increase the rate of recharge to the subsurface. Additionally, the survey included a review of available, existing information on previously documented regional caves, topography and geology of the subject site and vicinity. The field survey was conducted on October 30, 2020, by Patricia Frost, P.G., (State of Texas Board of Professional Geoscientist [Geology] License Number 2769) with assistance by geologist Jordan Aldridge. The ground survey was performed by walking parallel transects spaced approximately 50 feet apart within the project area and evaluating any surface expression that might be a potential recharge feature.

No Edwards Aquifer recharge features were identified within the project area or the 50-foot GA buffer during the field survey conducted October 30, 2020.

Recommendations

No sensitive features were documented within the project area, however, since the construction site is located on the Edwards Aquifer Recharge Zone, temporary structural runoff protection measures should be installed during construction activities.

Clearing, grading, trenching, or excavation increases the likelihood of subsurface impacts. During construction activities such as clearing vegetation or utility trenching, geologic features may be discovered in or adjacent to the project area. Any recharge features identified during construction activities are regulated by the TCEQ Edwards Aquifer rules [Title 30 TAC Chapter 213]. These features should be protected from stormwater runoff and evaluated by a qualified geologist.

References

Bureau of Economic Geology (BEG). 1970. *Geologic Quadrangle Map No. 38: Austin West, Travis County, Texas*, 1:24,000. P. U. Rodda, L.E. Garner, and G.L. Dawe. The University of Texas at Austin.

———. 1992. *Geologic Map of the Austin Area, Texas*, 1:62,500. L.E. Garner, K.P. Young, P.U. Rodda, G.L. Dawe, and Margaret Ann Rogers. The University of Texas at Austin. 1976; reprinted 1992.

Griffith, G., Bryce, S., Omernik, J., Rogers A. 2007. *Ecoregions of Texas*. Texas Commission on Environmental Quality (TCEQ). 125 pp.

Texas Commission on Environmental Quality (TCEQ). 2004. *Instructions to Geologist for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones, TCEQ-0585, revised 2004.*

———. 2008. Rules Protecting the Edwards Aquifer Recharge, Contributing, and Transition Zones. TCEQ Publication RG-011. https://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-011.pdf

———. 2020. TCEQ Edwards Aquifer Viewer Web Map. Available at https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=2e5afa3ba8144c30a49d3dc1ab49edcd

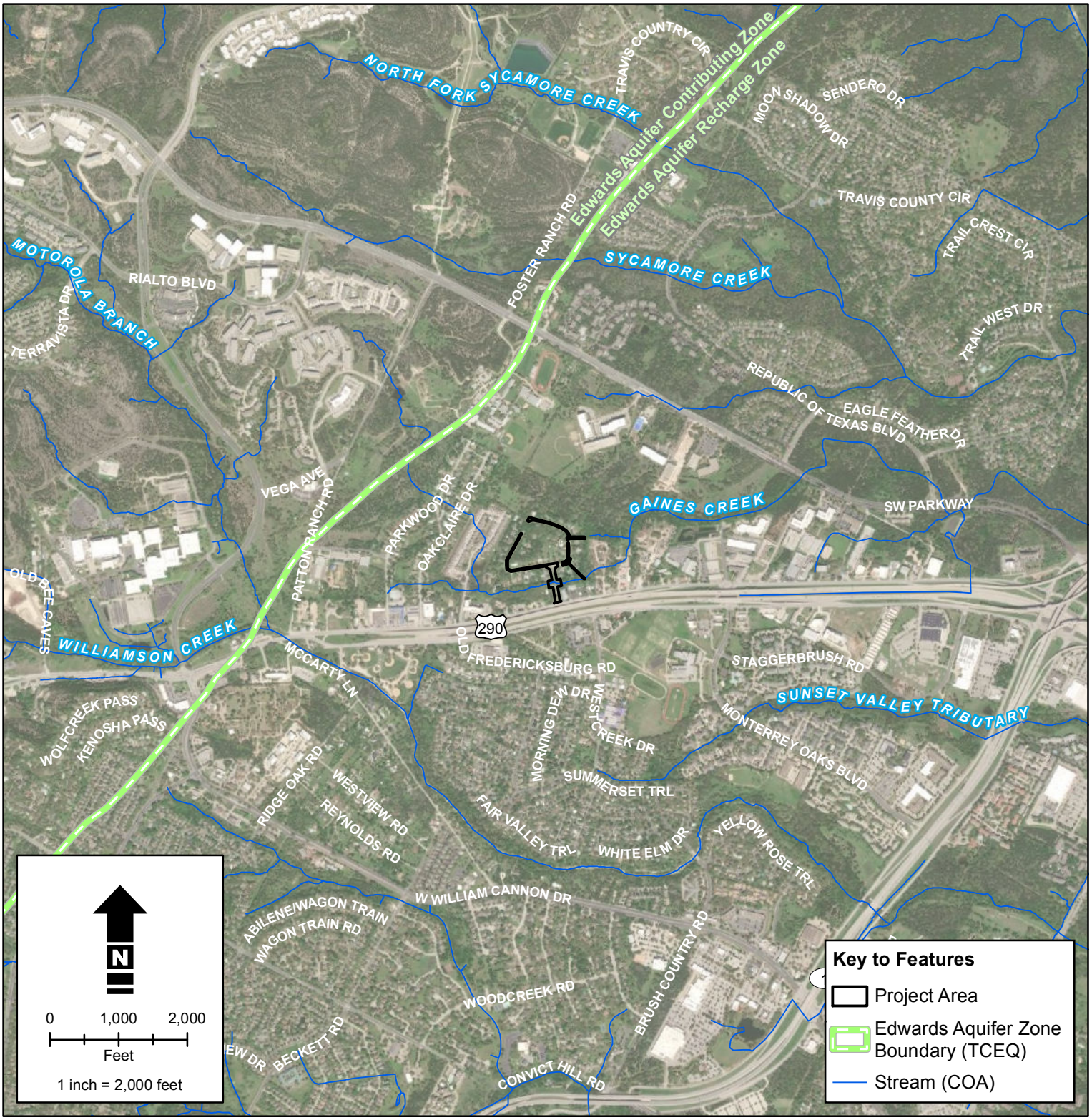
Texas Water Development Board (TWDB). *2020 Well Reports Search by Map or Tracking Number*, https://www3.twdb.texas.gov/apps/WaterDataInteractive/GroundwaterDataViewer/?map=sdr . Accessed December 8, 2020.

U.S. Department of Agriculture (USDA) Natural Resource Soil Conservation Service (NRCS). Soil Conservation Service Web Soil Survey, https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed December 8, 2020.

U.S. Geological Survey (USGS). 1988. 7.5-Minutes Topographic Quadrangle (1:24,000), Oak Hill, Texas.

Photograph 1 – View along Oak Boulevard at Gaines Creek crossing and sole entrance to Oak Acres neighborhood; facing north-northwest.

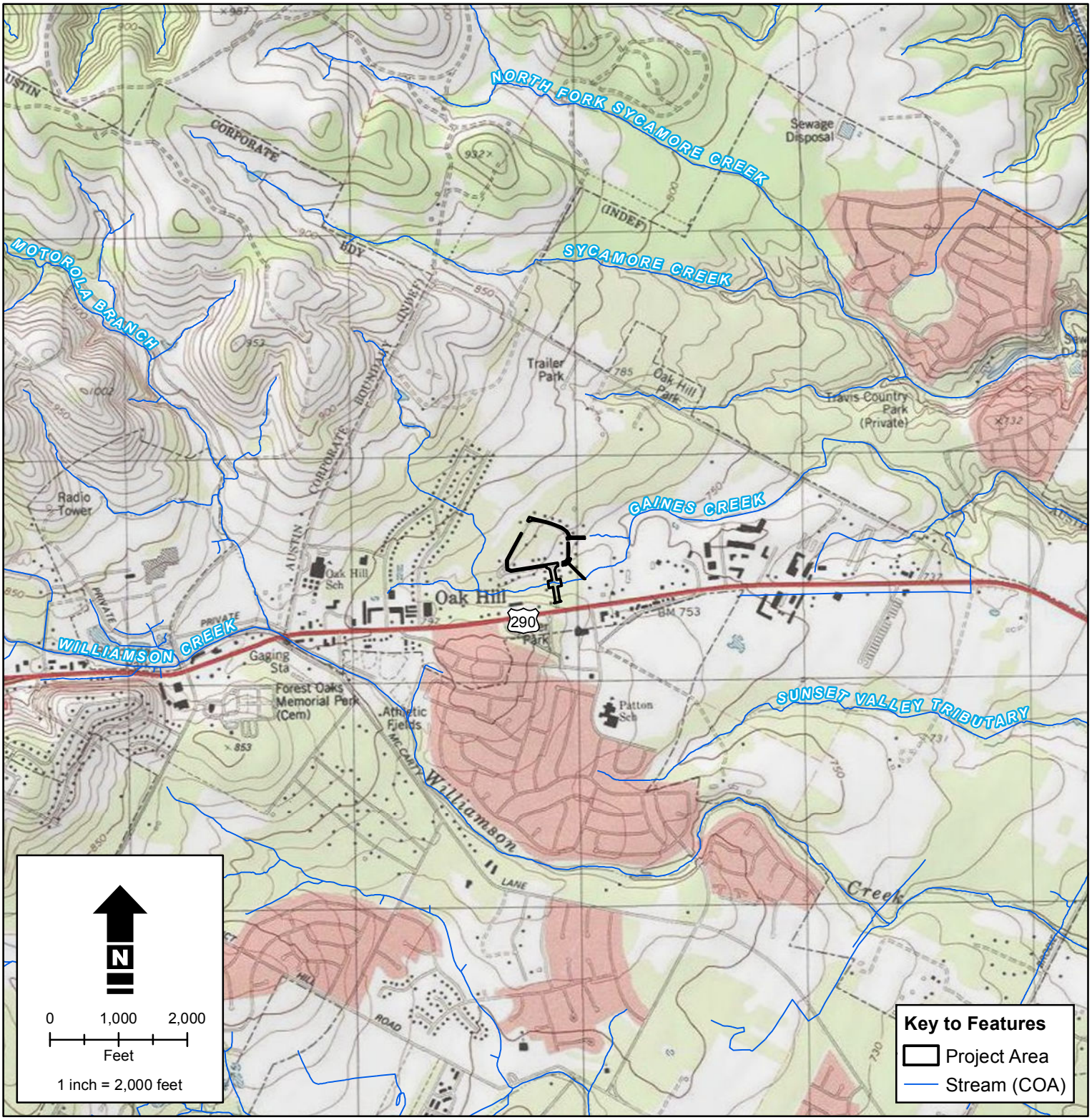
Photograph 2 – View along construction area and drainage swale to be reconstructed; facing northwest.



Attachment D1

Project Location (Aerial)

City of Austin
Barton Creek Oak Acres
Travis County, TX

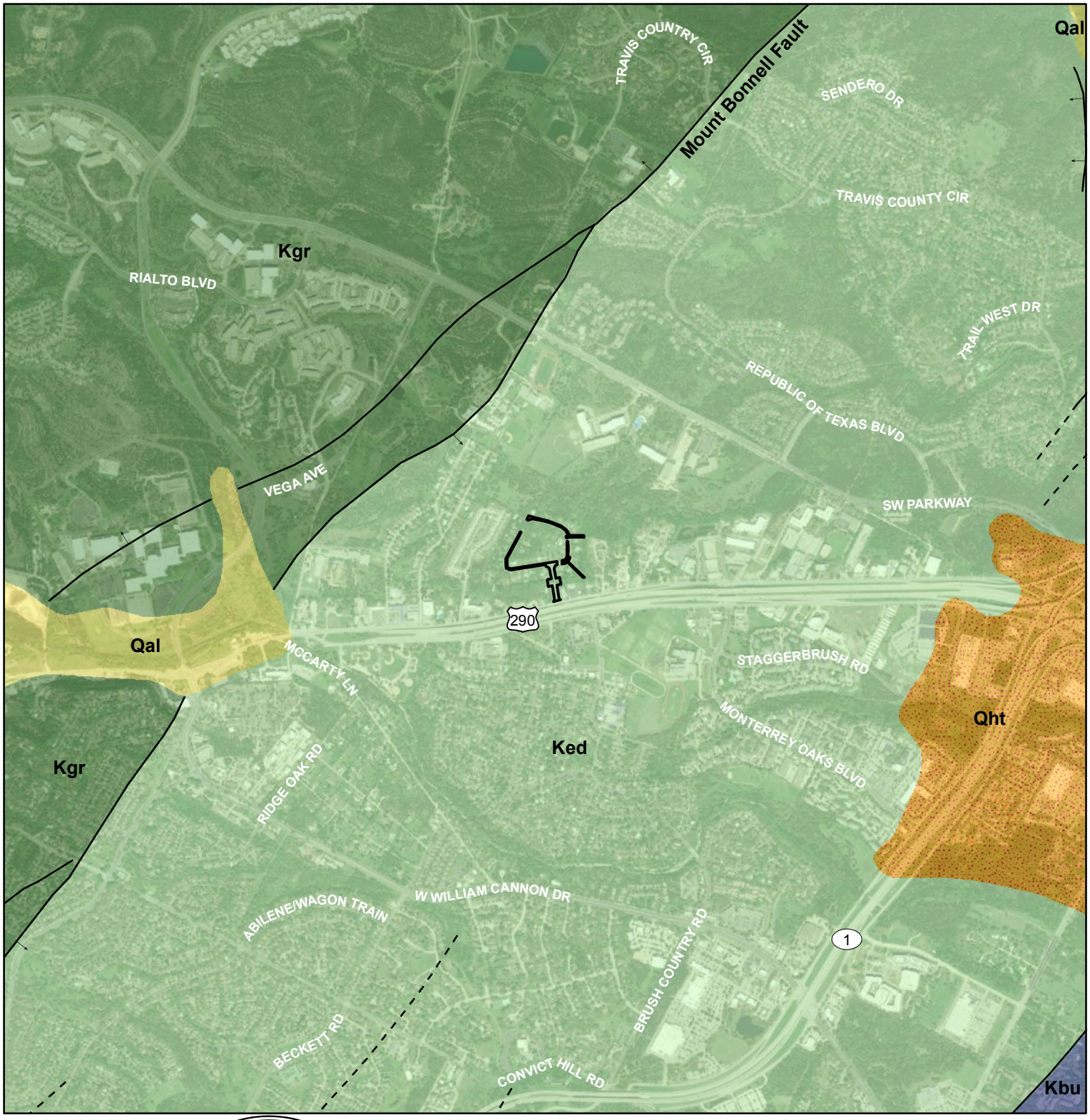


Attachment D2

Project Location (Topo)

City of Austin
Barton Creek Oak Acres
Travis County, TX

USGS 7.5-minute Topographic Quadrangles:
Oak Hill (30097-B7), TX



STATE OF TEXAS
PATRICIA FROST
GEOLOGY
2769
LICENSED
PROFESSIONAL GEOSCIENTIST

N

0 1,000 2,000
Feet

1 inch = 2,000 feet

Attachment D3

Project Area Geology Overview

City of Austin
Barton Creek Oak Acres
Travis County, TX

Key to Features

Project Area

Fault Type

Inferred Normal Fault

Normal Fault

Geologic Formation (1:62,500)

Kbu - Buda Formation

Ked - Edwards Formation

Kgr - Glen Rose Formation

Qal - Aluvium

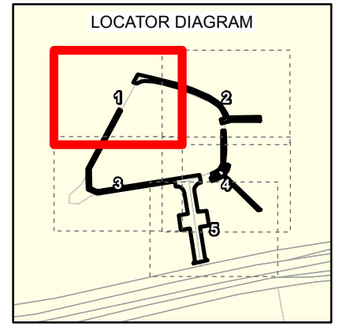
Qht - High terrace

Attachment D4-1

Project Site Geology Detail

City of Austin
Barton Creek Oak Acres
Travis County, TX

LOCATOR DIAGRAM



Key to Features

- Project Area
- Soil Type Boundary
- 50ft Buffer of Project Area
- Stream (COA)

Entire Project Area is mapped within the Edwards Formation.

STATE OF TEXAS
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N

0 30 60
Feet

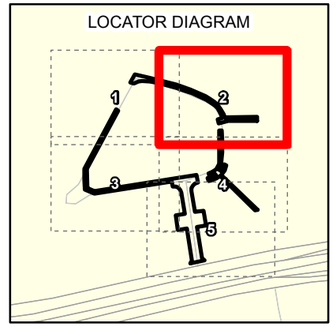
1 inch = 60 feet

Attachment D4-2

Project Site Geology Detail

City of Austin
Barton Creek Oak Acres
Travis County, TX

LOCATOR DIAGRAM



SsC - Speck stony clay loam, 1 to 5 percent slopes

SsC - Speck stony clay loam, 1 to 5 percent slopes

N OAK BLVD

TcA - Tarrant and Speck soils, 0 to 2 percent slopes

E OAK BLVD

CrB - Crawford clay, 1 to 2 percent slopes

Key to Features

- Project Area
- Soil Type Boundary
- 50ft Buffer of Project Area
- Stream (COA)

Entire Project Area is mapped within the Edwards Formation.

STATE OF TEXAS
PATRICIA FROST
GEOLOGY
2769
LICENSED
PROFESSIONAL GEOSCIENTIST

N

0 30 60
Feet

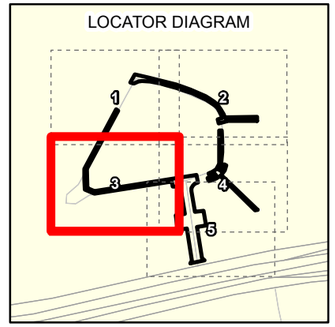
1 inch = 60 feet

Attachment D4-3

Project Site Geology Detail

City of Austin
Barton Creek Oak Acres
Travis County, TX

LOCATOR DIAGRAM



Key to Features

- Project Area
- Soil Type Boundary
- 50ft Buffer of Project Area
- Stream (COA)

Entire Project Area is mapped within the Edwards Formation.

STATE OF TEXAS
PATRICIA FROST
GEOLOGY
2769
LICENSED
PROFESSIONAL GEOSCIENTIST

N

0 30 60
Feet

1 inch = 60 feet

CrB - Crawford clay, 1 to 2 percent slopes

TcA - Tarrant and Speck soils, 0 to 2 percent slopes

CrB - Crawford clay, 1 to 2 percent slopes

SsC - Speck stony clay loam, 1 to 5 percent slopes

W OAK BLVD

S OAK BLVD

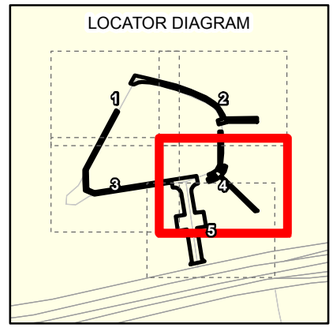
GAINES CREEK

Attachment D4-4

Project Site Geology Detail

City of Austin
Barton Creek Oak Acres
Travis County, TX

LOCATOR DIAGRAM



TcA - Tarrant and Speck soils, 0 to 2 percent slopes

CrB - Crawford clay, 1 to 2 percent slopes

SsC - Speck stony clay loam, 1 to 5 percent slopes

E OAK BLVD

S OAK BLVD

OAK BLVD

GAINES CREEK

Key to Features

- Project Area
- Soil Type Boundary
- 50ft Buffer of Project Area
- Stream (COA)

Entire Project Area is mapped within the Edwards Formation.

STATE OF TEXAS
PATRICIA FROST
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PROFESSIONAL GEOSCIENTIST

N

0 30 60
Feet

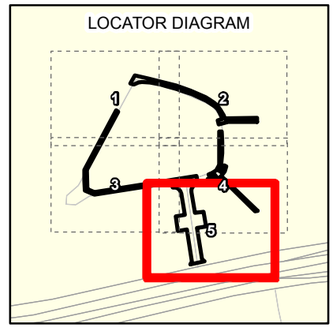
1 inch = 60 feet

Attachment D4-5

Project Site Geology Detail

City of Austin
Barton Creek Oak Acres
Travis County, TX

LOCATOR DIAGRAM



Key to Features

- Project Area
- Soil Type Boundary
- 50ft Buffer of Project Area
- Stream (COA)

Entire Project Area is mapped within the Edwards Formation.

STATE OF TEXAS
PATRICIA FROST
GEOLOGY
2769
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PROFESSIONAL GEOSCIENTIST

N

0 30 60
Feet

1 inch = 60 feet

4 ORGANIZED SEWAGE COLLECTION SYSTEM APPLICATION (TCEQ-0582)

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

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

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

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

Regulated Entity Name: Barton Creek - Oak Acres SDI (5754.046)

1. ☒ **Attachment A – SCS Engineering Design Report**. This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

Customer Information

2. The entity and contact person responsible for providing the required engineering certification of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

   Contact Person: MaryAnn Cramer
   Entity: City of Austin, Utility Development Services
   Mailing Address: 6310 Wilhelmina Delco Drive
   City, State: Austin, TX Zip: 78752
   Telephone: 512-972-2118 Fax: _____
   Email Address: Maryann.cramer@austintexas.gov
   The appropriate regional office must be informed of any changes in this information within 30 days of the change.

3. The engineer responsible for the design of this sewage collection system is:

   Contact Person: Stephanie Blew, PE
   Texas Licensed Professional Engineer's Number: 92682
   Entity: CAS Conslting and Services, Inc.
   Mailing Address: 7908 Cameron Road
   City, State:Austin, Texas Zip: 78754
   Telephone:210-264-2300 Fax:
   Email Address:Stephanie.Blew@casengineers.com

Project Information

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

   ☒ Residential: Number of single-family lots: 54
   ☒ Multi-family: Number of residential units: 76
   ☒ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other: _____

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

100% Domestic	1129 gallons/day
_____% Industrial	_____ gallons/day
_____% Commingled	_____ gallons/day

   Total gallons/day: 1129*

6. Existing and anticipated infiltration/inflow is 750 gallons/day. This will be addressed by: sizing lines to convey flow.

7. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

   ☒ The WPAP application for this development was approved by letter dated 01/27/2023. A copy of the approval letter is attached.
   ☒ The WPAP application for this development was submitted to the TCEQ on 7/25/2025, but has not been approved.
   ☐ A WPAP application is required for an associated project, but it has not been submitted.
   ☐ There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

Pipe Diameter(Inches)	*Linear Feet (1)*	*Pipe Material (2)*	*Specifications (3)*
12"	66	PVC SDR 26	ASTM D3034
8"	157	PVC SDR 26	ASTM D3034

Total Linear Feet: 223

(1) Linear feet - Include stub-outs and double service connections. Do not include private service laterals.
(2) Pipe Material - If PVC, state SDR value.

(3) Specifications - ASTM / ANSI / AWWA specification and class numbers should be included.

9. The sewage collection system will convey the wastewater to the South Austin Regional Wastewater (name) Treatment Plant. The treatment facility is:

☒ Existing
☐ Proposed

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

☒ The City of Austin standard specifications.
☐ Other. Specifications are attached.

11. ☒ No force main(s) and/or lift station(s) are associated with this sewage collection system.

☐ A force main(s) and/or lift station(s) is associated with this sewage collection system and the **Lift Station/Force Main System Application** form (TCEQ-0624) is included with this application.

Alignment

12. ☒ There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.

13. ☒ There are no deviations from straight alignment in this sewage collection system without manholes.

☐ **Attachment B - Justification and Calculations for Deviation in Straight Alignment without Manholes**. A justification for deviations from straight alignment in this sewage collection system without manholes with documentation from pipe manufacturer allowing pipe curvature is attached.

☐ For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

Manholes and Cleanouts

14. ☒ Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below: (Please attach additional sheet if necessary)

Table 2 - Manholes and Cleanouts

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
Wastewater Line	76 Of 116	STA 1+00	4' Dia. Manhole S1
Wastewater Line	76 Of 116	STA 1+65.57	4' Dia. Manhole S2
Wastewater Line	76 Of 116	STA 2+17.37	4' Dia. Manhole S3
Wastewater Line	80 Of 116	STA 19+48.46	4' Dia. Manhole A1
Wastewater Line	81 Of 116	STA 20+45.40	4' Dia. Manhole A2
	Of		

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
	Of		
	Of		
	Of		
	Of		

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

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

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

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

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

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 60'.

19. ☒ The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stub outs (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.

20. Lateral stub-outs:

☐ The location of all lateral stub-outs are shown and labeled.

☒ No lateral stub-outs will be installed during the construction of this sewer collection system.

21. Location of existing and proposed water lines:

☒ The entire water distribution system for this project is shown and labeled.
☐ If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
☐ There will be no water lines associated with this project.

22. 100-year floodplain:

☐ After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
☒ After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 3 - 100-Year Floodplain

Line	***Sheet***	***Station***
Wastewater Line	76 of 116	1+00.00 to 3+08.04
Wastewater Line	80 of 116	19+48.46 to 20+45.40
	of	to
	of	to

23. 5-year floodplain:

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

Table 4 - 5-Year Floodplain

Line	***Sheet***	***Station***
Wastewater Line	76 of 116	1+00.00 to 1+65.57
	of	to
	of	to
	of	to

24. ☒ Legal boundaries of the site are shown.

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

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

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

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

Table 5 - Water Line Crossings

Line	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance*	*Vertical Separation Distance*
WL "J"	1+78.04	Crossing		4.5'
WL "K"	20+00.00	Parallel	4.8'	2.0'

27. Vented Manholes:

☐ **No part** of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.
☐ **A portion** of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.
☐ **A portion** of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.
☒ **A portion** of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located within. No vented manholes will be used.

Table 6 - Vented Manholes

Line	*Manhole*	*Station*	*Sheet*

Line	*Manhole*	*Station*	*Sheet*

28. Drop manholes:

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

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*

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

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

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

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

31. Minimum flow velocity (From Appendix A)

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

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

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

Table 8 - Flows Greater Than 10 Feet per Second

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

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

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

Administrative Information

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

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

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	n/a of n/a
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	76 of 116
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	n/a of n/a
Typical trench cross-sections **[Required]**	85 of 116
Bolted manholes **[Required]**	84 of 116
Sewer Service lateral standard details **[Required]**	85 of 116
Clean-out at end of line **[Required, if used]**	86 of 116
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	87 of 116
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	86 of 116
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	n/a of n/a

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

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

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

    ☐ Survey staking was completed on this date: _____

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

39. ☒ Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Signature

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

Print Name of Licensed Professional Engineer: Stephanie D. Blew, P.E.

Date: 7/30/2025

Place engineer's seal here:

Signature of Licensed Professional Engineer:

Stephanie D Blew

Stephanie D Blew

CAS Consulting and Services, Inc.
TBPE Registration Number F-3572

Appendix A-Flow Velocity Table

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

Table 10 - Slope Velocity

Pipe Diameter(Inches)	*% Slope required for minimum flow velocity of 2.0 fps*	*% Slope which produces flow velocity of 10.0 fps*
6	0.50	12.35
8	0.33	8.40
10	0.25	6.23
12	0.20	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.30
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*

**For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.*

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

Figure 1 - Manning's Formula

Where:

v = velocity (ft/sec)
n = Manning's roughness coefficient (0.013)
Rh = hydraulic radius (ft)
S = slope (ft/ft)

Attachment A - Engineering Design Report

BARTON CREEK - OAK ACRES SDI (5754.046)

City of Austin

SCS Engineering Design Report

008008
Barton Creek Oak Acres
SCS Engineering Design
Report Version 2
July 29, 2025

rpsgroup.com

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CAS Consulting and Services, Inc.
TBPE Registration Number F-3572

INTRODUCTION

This report is intended to accompany the Organized Sewage Collection System Plan (SCS) application to the Texas Commission on Environmental Quality (TCEQ) for the proposed Barton Creek - Oak Acres (BCOA) SDI project. The goal of the BCOA project is to alleviate localized flooding in the Austin Oak Acres neighborhood and to replace the existing low water crossing generally located at the Oak Boulevard crossing of Gaines Tributary at Barton Creek with a bridge unit structure able to convey the 100-year design storm. The existing 12-inch DI wastewater line was constructed in 1995. The existing line will be adjusted to accommodate the proposed bridge unit structure and will disturb approximately 2,100 SF. The 223 LF of wastewater line to be adjusted lies within the Barton Springs Zone of the Edwards Aquifer Recharge Zone (EARZ) as defined by the Texas Commission (TAC) on Environmental Quality and within the City of Austin Fully Developed 100-year Floodplain.

1 CURRENT, PROPOSED AND FUTURE SERVICE AREAS

The wastewater line on plan sheet 76 of 116 receives flows from approximately 47 low-density residential land use, 76 condominiums from Harper Park built in 2017, and 9 commercial properties as shown in the attached service area map (Appendix A). The wastewater line on plan sheets 80 and 81 of 116 receives flows from approximately 17 low-density residential land use as shown in the attached service area map (Appendix A). The City of Austin provided the existing and ultimate flows based on the current and planned development in the area along with land use categories in the project area. The service area is primarily residential, with a small area planned for mixed-use/commercial development, all of which were considered in this application.

2 TOPOGRAPHIC FEATURES OF THE SERVICE AREAS

The entire BCOA project area is located within the Barton Springs Zone of the Edwards Aquifer Recharge Zone. The topography generally falls towards the southeast within the project limits and into Gaines Tributary. See the Wastewater Plan and Profile sheets for the proposed improvement area topography. Minor grading adjustments are proposed with the project, none of these impact the overall drainage patterns.

3 DESIGN FLOW CALCULATION

The estimated wastewater design flows for the existing 12” diameter gravity mains were provided by Austin Water’s systems planning group which maintains the hydraulic models of the wastewater system for the City of Austin. The flows in the 8” main and 6” service lines were developed using the City of Austin Utility Criteria Manual (UCM) Section 2.9.4 to estimate the wastewater generated within the service area. The UCM states wastewater flows be determined as follows:

- Residential single-family units shall be assumed to produce an average wastewater flow of 245 gallons/day.
- Inflow/Infiltration shall be accounted for by including 750 gallons per day per area served.
- The Peak Dry Weather Flow (PDWF) is derived from the formula:

$$Qpd = [\frac{18 + (0.0206 \times F)^{0.5}}{4 + (0.0206 \times F)^{0.5}}] \times F$$

where:

$F = 70\ gal/person/day \times population/1440 =$ average dry weather flow in gpm

- Peak Wet Weather Flow (PWWF) is obtained by adding Inflow/Infiltration to the Peak Dry Weather Flow.

Appendix B shows the calculations used to estimate the Peak Dry Weather Flow (PDWF) and the Rainfall Dependent Inflow and Infiltration (RDII) for the 8" and 6" diameter lines.

Table 1: Flow Summary Table

Pipe	PDWF (gpm)	PDWF Velocity, (fps)	PWWF (gpm)	PWWF, Velocity (fps)
6" PVC SDR-26	0.76	0.64	1.20	0.83
8" PVC SDR-26	0.76	0.64	1.20	0.83
12" PVC SDR-26	367.36	2.90	480.39	3.10
8" PVC SDR-26	11.72	1.32	17.03	1.48

4 MINIMUM AND MAXIMUM GRADES

The proposed wastewater line consists of 12" diameter PVC SDR 26 pipe at a 3.68% slope and 6" diameter and 8" diameter PVC SDR 26 pipe at 1.00%. These pipes have been laid above the minimum slope and below the maximum slope criteria from TCEQ.

5 CALCULATIONS OF EXPECTED MINIMUM VELOCITIES

The pipes being replaced within this system will be 12" PVC SDR 26 ASTM D3034. Calculations were performed on the segments proposed for replacement to estimate the full flow velocities in each line using a manning's coefficient of 0.013. See Appendix B for the Pipe Wastewater Flow table showing flows for each segment of pipe. The manhole locations can be referenced in the construction plan sheets included with the SCS submittal and with the grid maps included with this report. The minimum velocity calculated is 2.86 and 8.91 feet per second for the 8" and 12" pipes respectively.

Table 2: Full Flow Summary Table

Pipe	From Node	To Node	Full Capacity (gpm)	Velocity, (fps)
6" PVC SDR-26	Cleanout	MH S3 @ Sta 2+17.37	251.83	2.86
8" PVC SDR-26	MH S3 @ Sta 2+17.37	MH S2 @ Sta 1+65.57	542.34	3.46
12" PVC SDR-26	MH S2 @ Sta 1+65.57	MH S1 @ Sta 1+00.00	3,141.56	8.91
8" PVC SDR-26	MH A2 @ STA 20+45.40	MH A1 @ Sta 19+48.46	381.51	2.45

6 EFFECT ON EXISTING SYSTEM'S CAPACITY

The proposed improvements in this project will not affect the capacity of the existing system. The 12" diameter line and cleanouts are being adjusted will be replaced with a 12" diameter pipe, 8" diameter line, and 6" service which tie into existing 12" diameter pipe.

7 INFLOW AND INFILTRATION MONITORING AND ABATEMENT

Sanitary sewer gravity pipes are proposed to be 12" PVC, SDR 26, ASTM D3034; therefore inflow and infiltration rates should be reduced along this segment of the line. Testing of the portion of wastewater system proposed to

be replaced with this project will be performed upon completion to ensure proper installation, and at not less than a 5-year interval thereafter.

Testing measures for the wastewater lines will include:

- Pressure Test in accordance with 30 TAC 217.57(a)(1)
- Deflection Test in accordance with 30 TAC 217.57(b)

Testing measures for the wastewater manholes will include:

- Leakage Test in accordance with 30 TAC 217.58(a)
- Vacuum Test in accordance with 30 TAC 217.58(b)

8 EXISTING AND PROPOSED TRUNK AND INTERCEPTOR

As discussed in Section 6, above, the proposed 12” diameter line and cleanouts are being adjusted will be replaced with a 12” diameter pipe, 8” diameter line, and 6” service which tie into the existing 12” diameter pipe with adequate design capacity to serve the contributing area.

9 RECEIVING TREATMENT FACILITY CAPACITY

The proposed wastewater collection system will drain to the existing City of Austin South Austin Regional Wastewater Treatment Plant. The South Austin Regional Wastewater Treatment Plant has a 75 MGD capacity. The treatment plant has adequate capacity to handle the existing flows from the Oak Acres/Oak Park neighborhood wastewater system.

10 ENGINEERING ANALYSIS OF STRUCTURAL DESIGN AND ODOR MINIMIZATION

Based on the design slopes, the proposed design velocity should minimize the development of odors within the system. Austin Water is committed to maintaining the system in a manner to control the odor and routine inspections of the system are performed to keep solid deposits from causing issues

Below please find calculations for the structural design of the pipe. Appendix C contains additional information related to the structural design of the pipe in accordance with 30 TAC Chapter 217 subchapter C.

Table 2 - Pipe Properties

Properties of PVC, SDR 26		
Size[2]	8 in.	12 in.
Pipe Compliance[1]	ASTM D3034	ASTM D3034
Cell Class[1]	12454	12454
Average Outer Diameter[1]	8.625 in.	12.75 in.
Average Inner Diameter[1]	7.98 in.	11.79 in.
Wall Thickness[1]	0.323	0.481 in.
Minimum Pipe Stiffness[1]	115 psi	115 psi
Minimum Tensile Strength[3]	7000 psi	7000 psi
Minimum Modulus of Elasticity[3]	440,000 psi	440,000 psi
Minimum Pipe Cover[2]	7 ft.	3.2 ft.
Maximum Pipe Cover[2]	10.2 ft.	10.5 ft.
Trench Width[2]	3 ft.	3 ft.

Sources: *1 – ASTM D3034*
2 – BCOA Wastewater Improvements Plan & Profile sheets
3 – PVC Pipe Association
4 – SPL No. WW-227

A. Modulus of Soil Reaction for the In-Situ Soil of 200 PSI or Greater

The in-situ soil identified in the provided Geotechnical Engineering report corresponds to an E' of 2000 psi as recommended in Table 3.

Table 3 - Average Values of Modulus of Soil Reaction, E'

Soil Type bedding material (Unified Classification System)	E' for degree of compaction of bedding, lb/in^2			
	Dumped	Slight, <85% proctor, <40% relative density	Moderate, 85-95% proctor, 40%-70% relative density	High, >95% proctor, >70% relative density
Fine-grained soils (LL>50) Soils with medium to high plasticity CH,MH, CH-MH	No data available, consult a competent soil engineer, otherwise use E' = 0			
Fine-grained soils (LL<50) Soils with medium to no plasticity CL, ML, ML-CL, with less than 25% course-grained particles	50	200	400	1000
Fine-grained soils (LL<50) Soils with medium to no plasticity CL, ML, ML-CL, with more than 25% course-grained particles, coarse-grained soils with fines GM, GC, SM, SC, contains more than 12% fines	100	400	1000	2000
Coarse-grained soils with little or no fines GW, GP, SW, SP, contains less than 12% fines	200	1000	2000	3000
Crushed Rock	100	3000	3000	3000
Accuracy in terms of percentage deflections	+/- 2	+/- 2	+/- 1	+/- 0.50

Source: Modulus of Soil Reaction Values for Buried Flexible Pipe by Amster K. Howard

The Modulus of Soil Reaction for the Bedding material – E_b used was 2000 psi and corresponds to Bedding Class II, 85%-95% Compaction. E_b was determined using Table 7, from Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 24.

B. Predicted Pipe Deflection

Using the Modified Iowa Equation from the JM Eagle Technical Bulletin Depth of Burial for PVC Pipe (January 2009):

$$\Delta_Y/D = \frac{(P + W_L) * K_X}{0.149PS + 0.061E_b}$$

where,

Δ_Y/D =*Predicted % vertical deflection under load*

W_L = *Live Load*

P =*Prism load (psi)*

K_X = *Bedding coefficient, dimensionless (0.1 assumed)*

P_S = *Pipe stiffness (psi) = 115 psi*

Eb = *Modulus of soil reaction for the bedding material*

Table 4: Deflection Summary

	P	W_L	Kx	PS	Eb	Δ_Y/D
6" PVC @ 3' cover	2.5	4.17	0.1	224	2000	0.43%
8" PVC @ 8' cover	6.67	0.69	0.1	224	2000	0.47%
12" PVC @ 10' cover	8.33	0	0.1	224	2000	0.54%
12" PVC @3' cover	2.5	4.17	0.1	224	2000	0.43%

11 FUTURE SYSTEM EXPANSION

The flows provided by the City of Austin for design consider the potential for future development of currently undeveloped land in the project area's sewer shed.

12 LIFT STATION OPERATION CHARACTERISTICS

No lift station is proposed as part of these wastewater improvements.

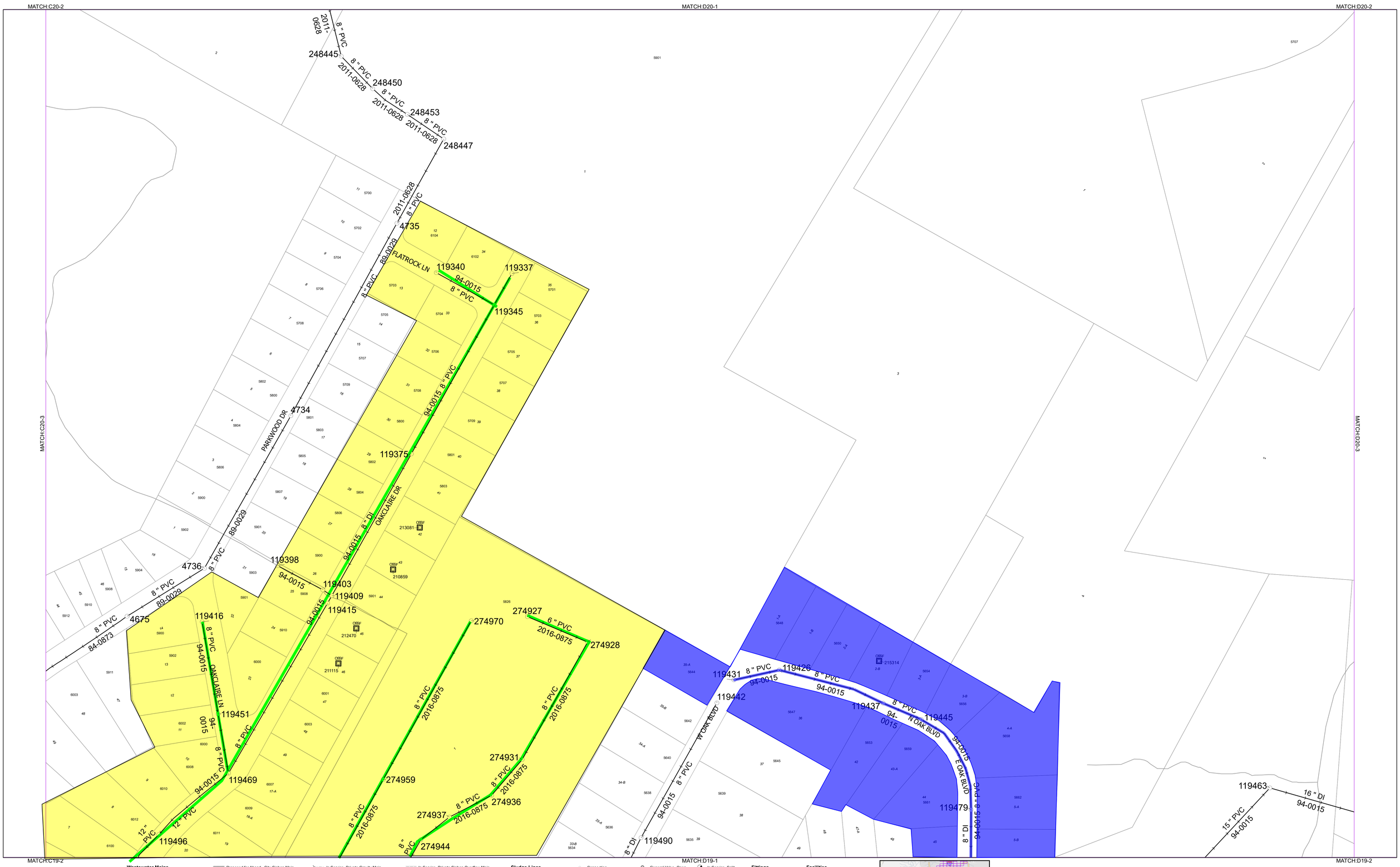
13 SAFETY CONSIDERATIONS

The general contractor will be responsible for the safety of personnel during construction, and compliance with OSHA regulations. The project has been designed to maintain minimum pipe flow velocities reducing the potential for the development of gasses in the system. Manholes proposed are required to have 32-inch diameter manhole covers and 48-inch diameter manholes. The proposed system also maintains the minimum separation distances required by TCEQ rules. A Bypass Pumping Plan is included with the Final Plan and Profile Sheets and identifies phasing for construction of the project and how existing wastewater flows are to be maintained during construction activities. The plan does not allow for pump and haul operations and identifies the locations of temporary fuel storage tanks for by-pass pumping operation.

Appendix A

Pipe Wastewater Grid Maps

MATCH:C20-2
MATCH:D20-1
MATCH:D20-2
MATCH:C20-3
MATCH:D20-3
MATCH:C19-2
MATCH:D19-1
MATCH:D19-2



Wastewater Mains

- In Service, City Gravity Main
- Proposed for Aband., City Gravity Main
- In Service, City Force Main
- Proposed for Aband., City Force Main
- In Service, City Overflow Main
- Proposed for Aband., City Overflow Main
- In Service, City Siphon Main
- Proposed for Aband., City Siphon Main
- In Service, City Siphon Overflow Main
- Proposed for Aband., City Siphon Overflow Main
- Proposed, City Gravity Main
- Proposed, City Force Main
- Proposed, City Overflow Main
- Proposed, City Siphon Main
- Proposed, City Siphon Overflow Main
- Abandoned, City Main
- In Service, Private Gravity Main
- Proposed for Aband., Private Gravity Main
- In Service, Private Force Main
- Proposed for Aband., Private Force Main
- In Service, Private Overflow Main
- Proposed for Aband., Private Overflow Main
- In Service, Private Siphon Main
- Proposed for Aband., Private Siphon Main
- In Service, Private Siphon Overflow Main
- Proposed for Aband., Private Siphon Overflow Main
- Proposed, Private Gravity Main
- Proposed, Private Force Main
- Proposed, Private Overflow Main
- Proposed, Private Siphon Main
- Proposed, Private Siphon Overflow Main
- Abandoned, Private Main

Sludge Lines

- Abandoned
- In Service
- Proposed
- Proposed for Abandonment
- Disposal Pond
- Levee
- Weir
- Grade Break
- Project Separator

- Connection
- Backflow Preventer
- Flow Meter
- Onsite Sewage Facility
- Alternative WW Collection
- Diversion Chamber
- Junction Box
- Mixing Chamber

Manholes

- General Valve, Open
- General Valve, Closed
- Auto Air Release Valve
- Abandoned/Removed
- In Service, Standard
- Proposed, Standard
- In Service, Odor Control
- Proposed, Odor Control
- In Service, Split
- Proposed, Split
- In Service, Metered
- Proposed, Metered
- In Service, Tunnel Shaft
- Proposed, Tunnel Shaft
- In Service, Mini
- Proposed, Mini
- In Service, Cleanout
- Proposed, Cleanout

Fittings

- Connector
- End of Line
- Reducer
- Discharge Point
- Preproposed Manhole

Separators

- Attribute Change
- Maintained By Change
- Material Change

Facilities

- Alternative Pump
- Discharge Outfall
- Grinder Pump
- RecycleTank
- Sump Pump
- WastewaterTreatment Plant
- Lift Station

N
1:1200
0 100 200
Feet

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Grid Maps
= Current Sheet

City of Austin
Wastewater Collection System

Last Update:
4/1/2022

Austin Water

Map Sheet
D20-4

Produced by GIS Services

MATCH:C20-3

MATCH:D20-4

MATCH:D20-3

MATCH:C19-2

MATCH:D19-2

MATCH:C19-3

MATCH:D19-4

MATCH:D19-3

City of Austin Wastewater Collection System

Last Update: 9/2/2022

Map Sheet

D19-1

Produced by GIS Services

N

1:1200

0 100 200

Feet

Wastewater Mains

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- Proposed for Abandonment, City Gravity Main
- In Service, City Force Main
- Proposed for Abandonment, City Force Main
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- Proposed for Abandonment, City Siphon Main
- In Service, City Siphon Overflow Main
- Proposed for Abandonment, City Siphon Overflow Main
- Proposed, City Gravity Main
- Proposed, City Force Main
- Proposed, City Overflow Main
- Proposed, City Siphon Main
- Proposed, City Siphon Overflow Main
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- Proposed for Abandonment, Private Gravity Main
- In Service, Private Force Main
- Proposed for Abandonment, Private Force Main
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- Proposed, Private Force Main
- Proposed, Private Overflow Main
- Proposed, Private Siphon Main
- Proposed, Private Siphon Overflow Main
- Abandoned, Private Main

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- In Service
- Proposed
- Proposed for Abandonment
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- Levee
- Weir
- Grade Break
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- Connection
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- General Valve, Open
- General Valve, Closed
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- Proposed, Odor Control
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- Proposed, Split
- In Service, Metered
- Proposed, Metered
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- In Service, Mini
- Proposed, Mini
- In Service, Cleanout
- Proposed, Cleanout

Fittings

- Connector
- End of Line
- Reducer
- Discharge Point
- Preproposed Manhole

Separators

- Attribute Change
- Maintained By Change
- Material Change

Facilities

- Alternative Pump
- Discharge Outfall
- Grinder Pump
- RecycleTank
- Sump Pump
- TP WastewaterTreatment Plant
- L Lift Station

Grid Maps
= Current Sheet

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Appendix B

Pipe Reports

PVC PIPE STANDARDS

The American Society for Testing and Materials (ASTM) also known as ASTM International (Reference: www.astm.org) governs the manufacturing specifications for PVC Gravity Sewer Pipes through its ASTM F679 standard. ASTM F679 standards must be meticulously adhered to by all PVC pipe manufacturers and is recognized as the standard during PVC pipe testing and quality checks.

PVC SDR-26 Pipe Dimensions			
Size (in)	**O.D. (in)**	**Avg I.D.[1] (in)**	**Thickness (in)**
8	8.625	7.98	0.323
12	12.75	11.79	0.481

The pipe stiffness is 115 psi. Ps= 115 psi

PVC Pipe Specifications:
Size of Pipe: 8.00 in.

SDR-26 Properties

Pipe Compliance:	ASTM D3034
Joint Compliance:	
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	440,000
Average Inner Diameter (inch):	7.98
Average Outer Diameter (inch):	8.625
Wall Thickness (inch):	0.323
Approximate Trenching Width (feet):	3.00
Minimum Pipe Depth (Cover) used (feet):	**7.00**
Maximum Pipe Depth (Cover) used (feet):	**10.20**

PVC Pipe Specifications:
Size of Pipe: 12.00 in.

SDR-26 Properties

Pipe Compliance:	ASTM D304
Joint Compliance:	
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	440,000
Average Inner Diameter (inch):	11.79
Average Outer Diameter (inch):	12.75
Wall Thickness (inch):	0.481
Approximate Trenching Width (feet):	3.00
Minimum Pipe Depth (Cover) used (feet):	**3.20**
Maximum Pipe Depth (Cover) used (feet):	**10.50**

FLOW/CAPACITY ANALYSIS

Q and V calculations from full capacity						Full Capacity	
http://www.eng.auburn.edu/~xzf0001/Handbook/Channels.html							
Size (in)	Radius (ft)	Material	Slope	Slope used	n value	Depth	Qfull (cfs)
12.00	0.50	DI	3.68%	0.50%	0.013	0.9999	6.83

Peak Dry Weather Flow (PDWF)				Peak Wet Weather Flow (PWWF)			
65% Capacity				85% Capacity			
Q_dry (cfs)	Q_dry (GPM)	Depth (ft)	Velocity (fps)	Q_dry (cfs)	Q_dry (GPM)	Depth (ft)	Velocity (fps)
4.44	1992.58	0.59	9.26	5.81	2605.68	0.81	9.77

Q and V calculations from Lot counting								
http://www.eng.auburn.edu/~xzf0001/Handbook/Channels.html								
Size (in)	Radius (ft)	Material	Slope	Slope used	n value	No. of Lots	Total Flow (GPD)	Total Flow (GPM)
8.00	0.33	DI	1.00%	1.00%	0.013	1	245	0.17
6.00	0.25	PVC	1.00%	1.000	0.013	1	245	0.17
8.00	0.33	PVC	0.50%	0.50%	0.013	16	3920	2.72

Peak Dry Weather Flow (PDWF)			
Q_dry (GPM)	Q_dry (CFS)	Depth from Q (ft)	V from Depth (FPS)
0.76	0.0017	0.02	0.64
0.76	0.0017	0.02	0.64
11.72	0.0261	0.07	1.32

Peak Wet Weather Flow (PWWF)								
Infiltration Rate (GPD/ac)	Estimated infiltration area (SF)	Estimated infiltration area (ac)	Infiltration (GPD)	Infiltration (GPM)	Q_wet (GPM)	Q_wet (CFS)	Depth from Q (ft)	V from Depth (FPS)
750.00	36698	0.84	631.85	0.44	1.20	0.0027	0.03	0.83
750.00	36698	0.84	631.85	0.44	1.20	0.0027	0.03	0.83
750.00	444312	10.20	7650.00	5.31	17.03	0.0379	12.12	1.48

Appendix C

External Load Calculations for Buried Pipe

PREDICTED PIPE DEFLECTION

Using the Modified Iowa Equation from the JM Eagle Technical Bulletin Depth of Burial for PVC Pipe (January 2009):

$$\Delta_Y/D = \frac{(P+W_L)*K_x}{0.149PS+0.061*Eb}$$

where:

Δ_Y/D= Predicted % vertical deflection under load

D_L= deflection lag factor to compensate for the time consolidation rate of the soil, dimensionless (2.0 assumed)

P= prism load (psi)

W_L= Live Load on pipe (psi)

K_x= bedding coefficient, dimensionless (0.1 assumed)

PS= Pipe stiffness (psi) =115 psi

E_b= Modulus of soil reaction for the bedding material

	P	W_L	Kx	PS	Eb	Δ_Y/D
6" PVC @ 3' cover	2.5	4.17	0.1	115	2000	0.48%
8" PVC @ 8' cover	6.67	0.69	0.1	115	2000	0.53%
12" PVC @ 10' cover	8.33	0	0.1	115	2000	0.60%
12" PVC @3' cover	2.5	4.17	0.1	115	2000	0.48%

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E'

Soil type-pipe bedding material (Unified Classification System)[1]	E' for degree of compaction of bedding (lb/in²)			
	Dumped	Slight	Moderate	High
		<85% Proctor	85-95% Proctor	>95% Proctor
		<40% relative density	40-70% relative density	>70% relative density
Fine grained soils (LL>50)[2] Soils with medium to high plasticity CH, MH, CH-MH	No data available; consult a competent soils engineer; otherwise use E' = 0			
Fine-grained soils (LL<50) Soils with medium to no plasticity CL, ML, ML-CL, with less than 25 percent coarse-grained particles	50	200	400	1000
Fine-grained soils (LL<50) Soils with medium to no plasticity CL, ML, ML-CL, with more than 25 Percent coarse-grained particles Coarse-grained soils with fines GM, GC, SM, SC[3] contains more than 12 percent fines	100	400	1000	2000
Coarse-grained soils with little or no fines GW, GP, SW, SP[3] contains less than 12 percent fines	200	1000	2000	3000
Crushed rock	1000	3000		
Accuracy in terms of percent deflection[4]	±2%	±2%	±1%	±0.5%

[1] ASTM Designation D 2487, USBR Designation E-3.

[2] LL = liquid limit.

[3] Or any borderline soil beginning with one of these symbols (i.e., GM-GC-SC).

[4] For ± 1 percent accuracy and predicted deflection of 3 percent, actual deflection would be between 2 % and 4 %.

Taken from: Howard, Amster K. "Soil Reaction for Buried Flexible Pipe"
U.S. Bureau of Reclamation, Denver, CO and the American Society of Civil Engineers.

Modulus of Soil Reaction for the in-situ soil is determined to be = 2000 psi

The specifications call for coarse grained bedding with moderate compaction, the existing soils range from SC-CL with LL<50, per geotechnical boring log

PIPE BEDDING CLASS

Taken from the American Society for Testing and Material (ASTM) D 2321 and American Association of State Highway and Transportation Officials (AASHTO) M43, and as published on Table 7, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 24.

TABLE 7 - DESCRIPTION OF MATERIAL CLASSIFICATION

Class	Type	Soil Group Symbol	Description ASTM D 2487	Percentage Passing Sieve Sizes 1.5 in (40 mm)	No. 4 (4.75 mm)	No. 200 (0.075 mm)	Atterberg Limits LL	PI	Coefficients Uniformity C_u	Curvature C_c
IA	Manufactured Aggregates: open-graded, clean.	None	Angular, crushed stone or rock, crushed gravel broken coral, crushed slag, cinders or shells; large void content, contain little or no fines	100%	≤10%	<5%	Non Plastic			
IB	Manufactured, Processed Aggregates; dense-graded, clean.	None	Angular, crushed stone (or other Class IA materials) and stone/sand mixtures with gradations selected to minimize migration of adjacent soils; contain little or no fines	100%	≤50%	<5%	Non Plastic			
II	Coarse-Grained Soils, clean	GW	Well-graded gravels and gravel-sand mixtures; little or no fines	100%	<50% of Coarse Fraction	<5%	Non Plastic		>4	1 to 3
		GP	Poorly-graded gravels and gravel-sand mixtures; little or no fines						<4	<1 or >3
		SW	Well-graded sands and gravelly sands; little or no fines		>50% of Coarse Fraction				>6	1 to 3
		SP	Poorly-graded sands and gravelly sands; little or no fines						<6	<1 or >3
	Coarse-Grained Soils, borderline clean to w/fines	e.g. GW-GC, SP-SM.	Sands and gravels which are border-line between clean and with fines	100%	Vanes	5% to 12%	Non Plastic		Same as for GW, GP, SW and SP	
III	Coarse-Grained Soils With Fines	GM	Silty gravels, gravel-sand-silt mixtures	100%	<50% of Coarse Fraction	>12% to <50%		<4 or <"A" Line		
		GC	Clayey gravels, gravel-sand-clay mixtures					<7 and >"A" Line		
		SM	Silty sands, sand-silt mixtures		>50% of Coarse Fraction			>4 or <"A" Line		
		SC	Clayey sands, sand-clay mixtures					>7 and >"A" Line		
IVA[A]	Fine-Grained Soils (inorganic)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, silts with slight plasticity	100%	100%	>50%	<50	<4 or <"A" Line		
		CL	Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays					>7 and >"A" Line		
IVB	Fine-Grained Soils (inorganic)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	100%	100%	>50%	>50	<"A" Line		
		CH	Inorganic clays of high plasticity, fat clays					>"A" Line		
V	Organic Soils	OL	Organic silts and organic silty clays of low plasticity	100%	100%	>50%	<50	<4 or <"A" Line		
		OH	Organic clays of medium to high plasticity, organic silts				>50	<"A" Line		
	Highly Organic	PT	Peat and other high organic soils							

[A]Includes Test Method ASTM D 2487 borderline classifications and dual symbols depending on plasticity index and liquid limits.
NOTE: "Coarse Fraction" as used in this table is defined as material retained on a No. 200 sieve.

BUCKLING PRESSURE (ALLOWABLE)

$$P_{cr} = \frac{E}{4(1-\nu^2)}\left(\frac{t}{r}\right)^3$$

Where: P_{cr}= Allowable buckling pressure (psi)

v= Poisson's ratio, dimensionless = 0.38 for PVC pipe

t= pipe wall thickness, in

E= ring flexural modulus of elasticity (psi)

r= mean pipe radius (in)

	6" PVC	8" PVC	12" PVC
P_{cr}	150.25	138.45	132.46
v	0.38	0.38	0.38
t	0.316	0.41	0.606
E	440000	440000	440000
r	3	4	6

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

The Leonhardt's Zeta Factor Equation can be calculated using Equation 9 of Buczala and Cassady in Buried Plastic Pipe Technology, Pgs 196-197

Where: D= Pipe Outer Diameter, in =
B= Trench Width, in, =
E_b= Modulus of soil reaction for the bedding material (psi)
E_n= Modulus of soil reaction for the in-situ soil (psi)

	D	B	E_b	E_n	zeta
6" PVC	6.306	24	3000	2000	0.205426
8" PVC	8.625	24	3000	2000	0.262152
12" PVC	12.75	36	3000	2000	0.258662

$$zeta = \frac{1.662 + 0.639 \times \frac{B}{D-1}}{\frac{B}{D-1}\left(1.662 + 0.361 \times \frac{B}{D}\right) - 1 \frac{E_b}{E_n}}$$

BENDING STRAIN

corresponding to max allowable deflection

$$e_b = D_f(D)(T_t/D_m)$$

where:

D_f= pipe shape factor

T_t= pipe wall thickness (in)

D_m= Mean Diameter (in)

D= Maximum allowable pipe deflection (%)

	D_f	T_t	D_m	D	e_b	
6" PVC @ 3' cover	2.5	0.316	6	0.075	0.009875	**< .44**
8" PVC @ 8' cover	6.67	0.41	8	0.075	0.025638	**< .44**
12" PVC @ 10' cover	8.33	0.606	12	0.075	0.03155	**< .44**
12" PVC @3' cover	2.5	0.606	12	0.075	0.009469	**< .44**

therefore pipe design is acceptable

JM Eagle
Building essentials for a better tomorrow™

TECHNICAL BULLETIN

JANUARY 2009

DEPTH OF BURIAL FOR PVC PIPE

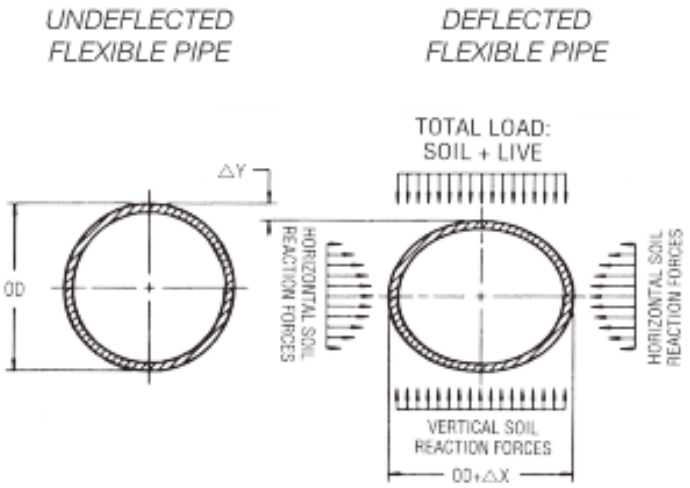
FLEXIBLE PIPE THEORY

PVC pipes are classified as flexible pipes. They flex without breaking when loaded externally from soil weight and vehicular traffic. Rigid pipes, such as those made of concrete or clay, do not perceptibly flex when loaded and experience wall crushing when their load limit is reached. This mode of failure for rigid pipes has given rise to the terms "crush strength" and "D-Load", but these terms do not apply to PVC pipes.

When a PVC pipe encounters external loading, its diameter will begin to deflect, meaning its sides will move outward and slightly downward. If the pipe is buried in supportive soil, the stiffness of the soil will resist the deflection (see Figure 1). This action and reaction is the key to how a PVC pipe carries external loads.

Figure 1

FLEXIBLE PIPE DEFLECTION



The combination of the embedment soil stiffness and the pipe stiffness form a system that acts to support external loads. By itself, the pipe may not support much weight, but the soil/pipe system can have tremendous load capacity.

A PVC pipe's resistance to deflection in an unburied state is measured by its "pipe stiffness". Pipe stiffness is usually less significant than soil stiffness in PVC pipe installations, but in general, a higher pipe stiffness results in a higher load capacity.

Soil stiffness is most affected by the level of compaction achieved, and to a lesser extent by the soil type. Soil stiffness values for various conditions and soil types have been derived through extensive testing.

CALCULATING ALLOWABLE BURIAL DEPTH

Because a PVC pipe flexes rather than breaks when loaded, the failure criterion is not fracture strength. Instead, a limit is placed on pipe diametric deflection. This limit is expressed in terms of percentage reduction in diameter due to external loading. Industry recommendations for maximum deflection are shown in Table 1.

Table 1

MAXIMUM RECOMMENDED DIAMETRIC DEFLECTION

PVC Pressure Pipes	5%
PVC Sewer / Drain Pipes	7½%
PVC Electrical Conduits	5%

A "failure" of a flexible pipe system from external loading is defined by the point at which the top of the pipe begins to experience inverse curvature. Research has shown this point occurs at a minimum of 30% deflection; recommendations for maximum deflection therefore incorporate safety factors of 4:1 or 6:1.

In order to determine the suitability of a particular burial depth, a system designer estimates the pipe deflection through the use of an empirical equation called the "Modified Iowa Equation". A simplified, conservative version of the equation is presented below:

MODIFIED IOWA EQUATION

$$\% \text{ DEFLECTION} = \frac{0.1\ (W' + P)\ 100}{0.149\ (PS) + 0.061E'}$$

Where:

% DEFLECTION = predicted percentage of diametric deflection.

W' = Live Load (lbs/in^2): pressure transmitted to the pipe from traffic on the ground surface. Live Load values are found in Table 2.

P = Prism Load (lbs/in^2): pressure acting on the pipe from the weight of the soil column above the pipe (also called "Dead Load"). Prism Load values are found in Table 3.

PS = Pipe Stiffness (lbs/in^2): a flexible pipe's resistance to deflection in an unburied state. Pipe Stiffness values for JM Eagle products are found in Table 4.

E' = Modulus of Soil Reaction (lbs/in^2): stiffness of the embedment soil. Values for Modulus of Soil Reaction are found in Table 5.

Table 2

LIVE LOADS ON PVC PIPE			
HEIGHT OF COVER (FT)	LIVE LOAD TRANSFERRED TO PIPE, (LBS/IN^2)		
	HIGHWAY H2O[1]	RAILWAY E80[2]	AIRPORT[3]
1	12.50		
2	5.56	26.39	13.14
3	4.17	23.61	12.28
4	2.78	18.40	11.27
5	1.74	16.67	10.09
6	1.39	15.63	8.79
7	1.22	12.15	7.85
8	0.69	11.11	6.93
10	*	7.64	6.09
12	*	5.56	4.76
14	*	4.17	3.06
16	*	3.47	2.29
18	*	2.78	1.91
20	*	2.08	1.53
22	*	1.91	1.14
24	*	1.74	1.05
26	*	1.39	*
28	*	1.04	*
30	*	0.69	*
35	*	*	*
40	*	*	*

[1] Simulates 20 ton truck traffic + impact.
[2] Simulates 80,000 lb/ft railway load + impact.
[3] 180,000 lbs. dual tandem gear assembly; 26-inch spacing between tires and 66-inch center-to-center spacing between fore and aft tires under a rigid pavement 12 inches thick + impact.
* Negligible live load influence.

Table 3

PRISM LOAD SOIL PRESSURE (LBS/IN2)					
HEIGHT OF COVER (FT)	SOIL UNIT WEIGHT (LBS/FT3)				
	100	110	120	125	130
1	0.69	0.76	0.83	0.87	0.90
2	1.39	1.53	1.67	1.74	1.81
3	2.08	2.29	2.50	2.60	2.71
4	2.78	3.06	3.33	3.47	3.61
5	3.47	3.82	4.17	4.34	4.51
6	4.17	4.58	5.00	5.21	5.42
7	4.86	5.35	5.83	6.08	6.32
8	5.56	6.11	6.67	6.94	7.22
9	6.25	6.88	7.50	7.81	8.13
10	6.94	7.64	8.33	8.68	9.03
11	7.64	8.40	9.17	9.55	9.93
12	8.33	9.17	10.00	10.42	10.83
13	9.03	9.93	10.83	11.28	11.74
14	9.72	10.69	11.67	12.15	12.64
15	10.42	11.46	12.50	13.02	13.54
16	11.11	12.22	13.33	13.89	14.44
17	11.81	12.99	14.17	14.76	15.35
18	12.50	13.75	15.00	15.63	16.25
19	13.19	14.51	15.83	16.49	17.15
20	13.89	15.28	16.67	17.36	18.06
21	14.58	16.04	17.50	18.23	18.96
22	15.28	16.81	18.33	19.10	19.86
23	15.97	17.57	19.17	19.97	20.76
24	16.67	18.33	20.00	20.83	21.67
25	17.36	19.10	20.83	21.70	22.57
26	18.06	19.86	21.67	22.57	23.47
27	18.75	20.63	22.50	23.44	24.38
28	19.44	21.39	23.33	24.31	25.28
29	20.14	22.15	24.17	25.17	26.18
30	20.83	22.92	25.00	26.04	27.08
31	21.53	23.68	25.83	26.91	27.99
32	22.22	24.44	26.67	27.78	28.89
33	22.92	25.21	27.50	28.65	29.79
34	23.61	25.97	28.33	29.51	30.69
35	24.31	26.74	29.17	30.38	31.60
36	25.00	27.50	30.00	31.25	32.50
37	25.69	28.26	31.67	32.12	33.40
38	26.39	29.03	32.50	32.99	34.31
39	27.08	29.79	33.33	33.85	35.21
40	27.78	30.56	34.17	34.72	36.11
41	28.47	31.32	35.00	35.59	37.01
42	29.17	32.08	35.83	36.46	37.92
43	29.86	32.85	36.67	37.33	38.82
44	30.56	33.61	37.50	38.19	39.72
45	31.25	34.38	38.33	39.06	40.63
46	31.94	35.14	39.17	39.93	41.53
47	32.64	35.90	40.00	40.80	42.43
48	33.33	36.67	41.67	41.67	43.33
49	34.03	37.43	42.53	42.53	44.24
50	34.72	38.19	43.40	43.40	45.14

Table 5

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E' (FOR INITIAL FLEXIBLE PIPE DEFLECTION)					
	PIPE BEDDING MATERIALS	E' FOR DEGREE OF COMPACTION OF PIPE ZONE BACKFILL (PSI)			
SOIL CLASS	SOIL TYPE (Unified Classification System[a])	Loose	Slight < 85% Proctor, < 40% relative density	Moderate 85% - 95% Proctor, 40% - 70% relative density	High > 95% Proctor, > 70% relative density
Class V	Fine-grained Soils (LL>50)[b] Soils with medium to high plasticity CH, MH, CH-MH	No data available; consult a competent soils engineer; Otherwise use E' = 0			
Class IV	Fine-grained Soils (LL < 50)Soils with medium to no plasticity CL, ML,ML-CL, with less than 25% coarse-grained particles	50	200	400	1,000
Class III	Fine-grained Soils (LL < 50)Soils with medium to no plasticity CL, ML,ML-CL, with more than 25% coarse-grained particles 1004001,0002,000 Coarse-grained Soils with Fines GM, GC, SM, SCC contains more than 12% fines	100	400	1,000	2,000
Class II	Coarse-grained Soils with Little or No Fines GW, GP, SW, SPC contains less than 12% fines	200	1,000	2,000	3,000
Class I	Crushed Rock	1,000	3,000	3,000	3,000
	Accuracy in Terms of Percentage Deflection	±2	±2	±1	±0.5

[a] ASTM Designation D 2487, USBR Designation E-3
[b] LL = Liquid limit
[c] Or any borderline soil beginning with one of these symbols (i.e. GM-GC, GC-SC)
[d] For ± 1% accuracy and predicted deflection of 3%, actual deflection would be between 2% and 4%.

Note: Values applicable only for fills less than 50ft (15m). Table does not include any safety factor. For use in predicting initial deflections only: appropriate Deflection Lag Factor must be applied for long-term deflections. If bedding falls on the borderline between two compaction categories, select lower E' value or average the two values. Percentage Proctor based on laboratory maximum dry density from test standards using about 12,500 ft-lb/cu ft (598,000 J/m^3) (ASTM D 698, AASHTO T-99, USBR Designation E-11). 1psi = $6.8kN/m^2$.

Source: "Soil Reaction for Buried Flexible Pipe" by Amster K. Howard, U.S. Bureau of Reclamation, Denver Colorado. Reprinted with permission from American Society of Civil Engineers Journal of Geotechnical Engineering Division, January 1977, pp. 33-43.

A pipe system designer uses this equation to predict PVC pipe deflection given type of PVC pipe, burial depth, soil density, type of traffic, type of embedments oil, and compaction density of embedment soil. The designer then compares the predicted deflection to there commended maximum deflection in Table 1 to check if the burial depth is appropriate.

Example 1: Shallow Burial

A pipe system designer is interested in using ASTM D3034 SDR 35 PVC sewer pipe in a shallow-burial installation with the following characteristics: -1 foot burial depth:

- 120 pounds per cubic foot soil density
- H20 highway traffic
- sand embedment material
- 90% Proctor density embedment soil compaction

$$\% \text{ DEFLECTION} = \frac{0.1\ (P+W^1)\ 100}{0.149\ (PS) + 0.061E^1}$$

$$\% \text{ DEFLECTION} = \frac{0.1\ (0.83 + 12.5)\ 100}{0.149\ (46) + 0.061(2{,}000)}$$

$$\% \text{ DEFLECTION} = 1.0 \pm 1\%$$

The maximum predicted deflection is 2.0%, well below the maximum recommended for PVC sewer pipe in Table 1 of 7½%.

Minimum Burial Depth: The minimum recommended burial depth for PVC pipes beneath a highway is one foot. This recommendation assumes proper specification of embedment materials and compaction, and proper installation.

Example 2: Deep Burial

A pipe system designer is interested in using ASTM D3034 SDR 35 PVC sewer pipe in a deep-burial installation with the following characteristics:

- 45 foot burial depth
- 120 pounds per cubic foot soil density
- H20 highway traffic (Note: Live loads are negligible for deep burials)
- sand embedment material
- 90% Proctor density embedment soil compaction

$$\% \text{ DEFLECTION} = \frac{0.1\ (P+W')\ 100}{0.149\ (PS) + 0.061E'}$$

$$\% \text{ DEFLECTION} = \frac{0.1\ (37.5 + 0)\ 100}{0.149\ (46) + 0.061(2{,}000)}$$

$$\% \text{ DEFLECTION} = 1.0 \pm 1\%$$

The maximum predicted deflection is 3.9%, well below the maximum recommended for PVC sewer pipe in Table 1 of 7½%.

For more information, see the following JM Eagle Technical Bulletins:

- PVC Pipe Trench Construction
- Deflection Testing of PVC Sewer Pipe
- PVC Sewer and Drain Pipe Burial Depth Charts
- PVC Water Pipe Burial Depth Charts

Table 4

PVC PIPE STIFFNESS' (PS)		
PIP, WELL CASING, AND IPSSDR WATER PIPES		
PRESSURE RATING (PSI)	**SDR**	**PIPE STIFFNESS (PSI)**
63	64	7
80	51	14
100	41	28
125	32.5	57
160	26	115
200	21	224
315	13.5	916
PVC SEWER / DRAIN PIPES		
SDR 35, PWRIB		
All have a minimum pipe stiffness of 46 psi.SDR 26 has a minimum pipe stiffness of 115 psi.		
ASTM D2729 - DRAIN LINE		
SIZE (INCHES)	**PIPE STIFFNESS (PSI)**	
3	19	
4	11	
6	3	
AWWA C900 WATER PIPES		
PRESSURE CLASS (PSI)	**DR**	**PIPE STIFFNESS (PSI)**
100	25	129
150	18	364
200	14	815
AWWA C905 WATER PIPES		
PRESSURE RATING (PSI)	**DR**	**PIPE STIFFNESS (PSI)**
165	25	129
235	18	364
SCHEDULE 40 COEXCEL DWV PIPE		
SIZE (INCHES)	**PIPE STIFFNESS (PSI)**	
1½	600	
2	300	
3	300	
4	200	
6	120	

PVC PIPE STIFFNESS' (PS)	
PVC ELECTRICAL UTILITY DUCTS	
TYPE	**PIPE STIFFNESS (PSI)**
EB-20	20
EB-35	35
DB-60	60
DB-100	100
DB-120	120
WATER PIPE, WELL CASING, AND ELECTRICAL CONDUITS	
SCHEDULE 40	
SIZE (INCHES)	**PIPE STIFFNESS (PSI)**
½	5,928
¾	3,136
1	2,547
1 ¼	1,397
1 ½	1,008
2	596
2 ½	784
3	509
4	307
6	154
8	104
10	78
12	64
SCHEDULE 80	
SIZE (INCHES)	**PIPE STIFFNESS (PSI)**
½	17,066
¾	9,078
1	6,995
1 ¼	3,930
1 ½	2,911
2	1,846
2 ½	2,141
3	1,473
4	949
6	607
8	417
10	356
12	330

Attachment B - Justification and Calculations for Deviation in Straight Alignment Without Manholes

There are no deviations from straight alignment in this sewage collection system without manholes.

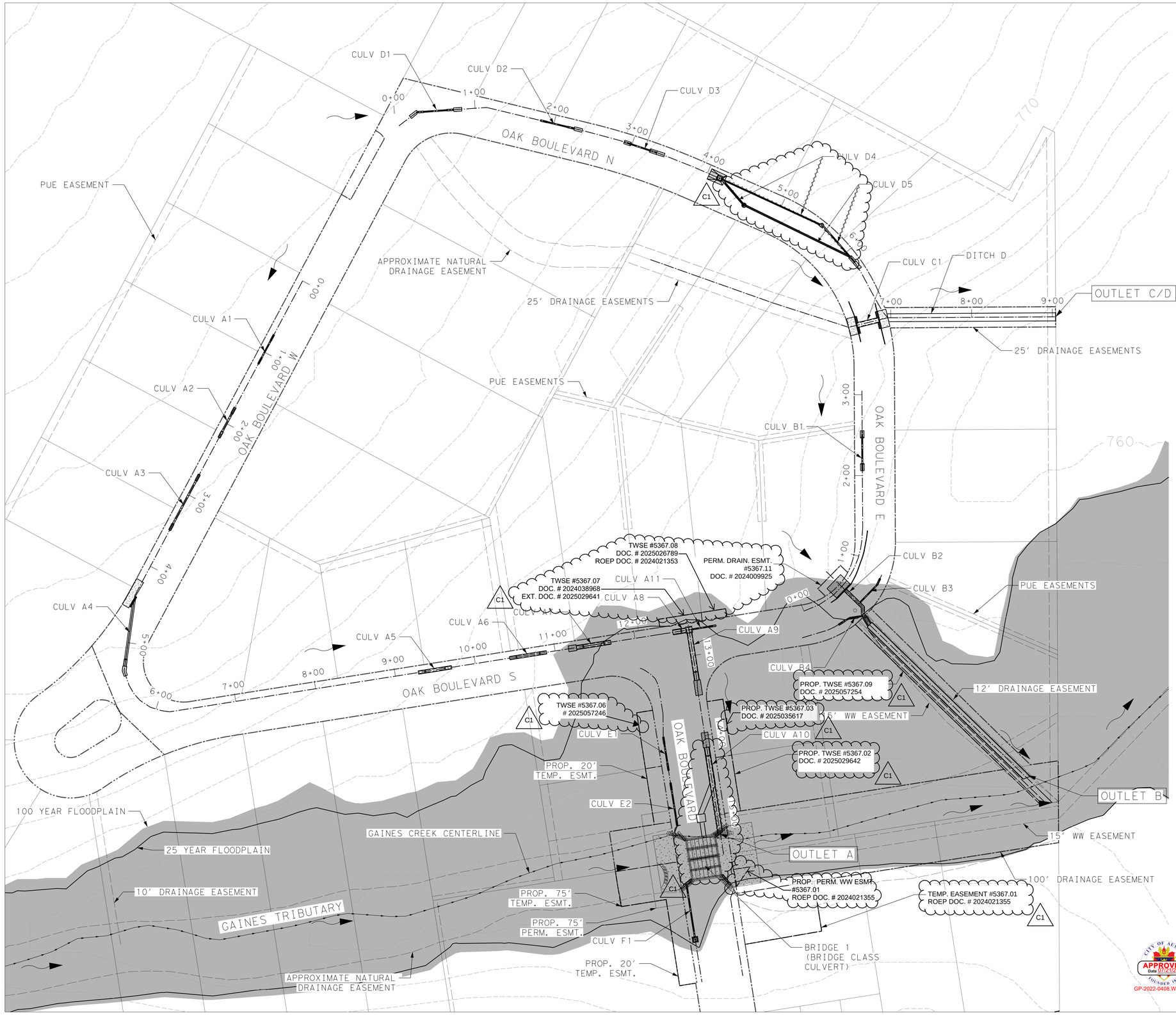
Attachment C - Justification for Variance from Manhole Spacing

Maximum spacing between manholes on this project is no greater than 500-feet.

Attachment D - Explanation of Slopes for Flows Greater Than 10.0 Feet Per Second

Assuming pipes are flowing gull, all slopes are designed to produce maximum flows of less than or rqual to 10 feet per second for this system.

Site Plan



LEGEND

- CONTOURS
- DRAINAGE BOUNDARY
- EXIST 25 YEAR FLOODPLAIN
- EXIST 100 YEAR FLOODPLAIN
- FLOW PATH

NOTES

1. THE CONTRACTOR SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMP) AS DESCRIBED IN THE TEXAS COMMISION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABUTEMENT PLAN (WPAP).
2. PROJECT IS LOCATED WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING SURROUNDING PROPERTY FEATURES TO ITS ORIGINAL OR BETTER CONDITION AS A RESULT OF DAMAGES DONE BY THE PROJECT'S CONSTRUCTION.

0 60' 120'

SCALE: 1" = 60' (H)

City of Austin WATERSHED PROTECTION

STATE OF TEXAS
JOHN G. FRIEDMAN
88486
REGISTERED PROFESSIONAL ENGINEER
11-03-23

CITY OF AUSTIN
BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
DRAINAGE OVERALL PLAN

NO.	BY	DATE	REMARKS
C1	JF	7/10/25	CULV D4, D5, A10 REVISED. BRIDGE STRUC. REVISED. ESMT DOC # ADDED

CITY OF AUSTIN APPROVED Date 07/21/25 FOUNDED 1839
GP-2022-0408.WDP.C1

CITY OF AUSTIN APPROVED Date 11/21/23 FOUNDED 1839
GP-2022-0408.WPD

rps
Texas PE Firm Reg. #F-293
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

SHEET INFORMATION

DATE 7/31/2023

SHEET 34 OF ~~115~~ 116

C1

GP-2022-0408.WPD

7/31/2023 2:35:38 PM
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Final Plan and Profile Sheets

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\OVERALL UTILITY PLAN.dwg Layout: OVERALL UTILITY PLAN Plotted: 8/22/2023 4:31:59 PM by Brandon Montoya

SHEET 83

SHEET 82

SHEET 81

SHEET 78

SHEET 79

SHEET 80

SHEET 76

SHEET 86

SHEET 77

OAK BLVD N

OAK BLVD W

OAK BLVD S

OAK BLVD E

RESUBDIVISION OF A PORTION OF OAK ACRES BK. 9, PG. 91 P.R.T.C.

OAK ACRES BK. 5, PG. 24 P.R.T.C.

THE KRIEGER ADDITION BK. 76, PG. 222 P.R.T.C.

REVIEWED
March 26, 2024
Austin Water
Larry Williams

PROP. 8" WL-K

PROP. 8" WL-J

PROP. WW-S

N: 10059124.03
E: 3081585.99
TOP: 75.34

N: 10059082.83
E: 3081429.56
TOP: 760.14

N: 10058905.18
E: 3081383.62
TOP: 760.63

N: 10058503
E: 30
TOP: 762.47

E: 3080850.78
FL: 769.01

AREA SUBJECT TO NATURAL DRAINAGE PER BK. 5, PG. 24 P.R.T.C. (APPROXIMATE DELINEATED LINES) SEE NOTE 1.

AREA SUBJECT TO NATURAL DRAINAGE PER BK. 5, PG. 24 P.R.T.C. (APPROXIMATE DELINEATED LINES) SEE NOTE 1.

C1

0 60 120

LEGEND

- LOC — LIMITS OF CONSTRUCTION
- 760' — MAJOR CONTOURS – 5FT
- 762' — MINOR CONTOURS – 1 FT
- GAS — EXISTING GAS LINE
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE
- PROPOSED STORM LINE
- PROPERTY/ROW LINES
- EXISTING EASEMENT LINES
- PROPOSED PERMANENT EASEMENT LINE
- PROPOSED TEMPORARY EASEMENT LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE

City of Austin
WATERSHED PROTECTION

08-23-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT
OVERALL UTILITY PLAN

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	SEQUENCE AND TOTAL NUMBER OF SHEET UPDATES. OVERALL DRAINAGE, WATER AND WASTEWATER PLAN VIEW UPDATES

CITY OF AUSTIN
APPROVED
Date 07/24/26
FOUNDED 1839
GP-2022-0408.WDP.C1

CAS CONSULTING & SERVICES, INC.
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SHEET INFORMATION

DATE August, 2023

SHEET ~~71~~ 72 OF ~~115~~ 116

C1

GP-2022-0408.WPD

GENERAL NOTES

ALL RESPONSIBILITY FOR THE ADEQUECY OF THESE PLANS REMAINS WITH THE ENGINEER. APPROVAL OF THESE PLANS BY THE CITY OF AUSTIN DOES NOT REMOVE THESE RESPONSIBILITIES.

"REVIEWED BY AUSTIN WATER" APPLIES ONLY TO AW PUBLIC INFRASTRUCTURE, ALL OTHER WATER AND WASTEWATER INFRASTRUCTURE INSIDE PRIVATE PROPERTY ARE UNDER THE JURISDICATION OF BUILDING INSPECTIONS.

USE OF ELECTRONIC FILES GENERAL DISCLAIMER: USE OF THE ATTACHED FILES IN ANY MANNER INDICATES YOUR ACCEPTANCE OF TERMS AND CONDITIONS AS SET FORTH BELOW. IF YOU DO NOT AGREE TO ALL OF THE TERMS AND CONDITIONS, PLEASE CONTACT AUSTIN WATER PIPELINE ENGINEERING, PROJECT COORDINATOR PRIOR TO USE OF THE REFERENCED INFORMATION. PLEASE BE ADVISED THAT THE ATTACHED FILES ARE IN A FORMAT THAT CAN BE ALTERED BY THE USER. DUE TO THIS FACT, ANY REUSE OF THE DATA WILL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE CITY OF AUSTIN AND USER SHALL INDEMNIFY AND HOLD HARMLESS THE CITY OF AUSTIN FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES INCLUDING ATTORNEY'S FEES ARISING OUT OF OR RESULTING FROM USING THE DIGITAL FILE. IN ADDITION, IT IS THE RESPONSIBILITY OF THE USER TO COMPARE ALL DATA WITH THE PDF VERSION OF THIS DRAWING. IN THE EVENT THERE IS A CONFLICT BETWEEN THE PDF VERSION DRAWING AND THE ELECTRONIC FILE, THE PDF VERSION DRAWING SHALL PREVAIL.

AW INFRASTRUCTURE INFORMATION

PROPOSED PRODUCT TYPE (TO BE INSTALLED)	LENGTH OF PIPE (L.F.)	SIZE OF PIPE (INCH)	NO. OF METERED SERVICES
WATER MAIN	1771	8	
WASTEWATER MAIN	157	8	
WASTEWATER MAIN	66	12	
RECLAIMED WATER MAIN	NA	NA	NA
WATER SERVICE	NA	NA	29
WASTEWATER SERVICE	NA	NA	21
RECLAIMED WATER SERVICE	NA	NA	NA

THE INFORMATION INCLUDED IN THIS TABLE ARE APPROXIMATE VALUES ESTIMATED BASED ON GENERAL ENGINEERING GUIDELINES

AUTOMATED METERING INFRASTRUCTURE: EFFECTIVE MARCH 2022, NEW WATER METERS INSTALLED SHALL BE IN CONFORMANCE WITH AW'S AUTOMATED METERING INFRASTRUCTURE TECHNOLOGY, AND WITH THE APPLICABLE STANDARD PRODUCT LIST. APPLICANTS FILING A SITE PLAN OR SUBDIVISION PLAN WILL BE REQUIRED TO COORDINATE WITH THE AUSTIN WATER PLAN REVIEWER FOR DETAILS ON APPROVAL AND INSTALLATION.

PRIOR TO THE HANDLING AND DISPOSAL OF ASBESTOS PIPE, THE CONTRACTOR'S WORK PLAN WILL BE REVIEWED AND COORDINATED THROUGH COA BUILDING SERVICES DEPARTMENT - ASBESTOS, LEAD AND MOLD MANAGEMENT GROUP MANAGER WHO CAN BE REACHED AT 512-974-7137. IT IS THE CONTRACTOR'S RESPONSIBILITY TO USE A TRAINED, CERTIFIED AND LICENSED ASBESTOS ABATEMENT CONTRACTOR IN ACCORDANCE WITH THE FEDERAL, STATE AND LOCAL REGULATIONS.

MODIFICATIONS TO AUSTIN WATER SIGNED AND STAMPED SHEETS ARE NOT PERMITTED. ALL DESIGN MODIFICATIONS SHALL BE SUBMITTED VIA THE ABC PORTAL FOR A PLAN CORRECTION OR REVISION. ALL UNETHICAL ENGINEERING PRACTICES, INCLUDING MODIFYING CITY STAMPED PLAN SHEETS, SHALL BE REPORTED TO THE TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS (TBPELS).
REFERENCE: TEXAS ENGINEERING PRACTICE ACT AND RULES, SUBCHAPTER C: PROFESSIONAL CONDUCT AND ETHICS

UTILITY CRITERIA MANUAL WAIVER SUMMARY NOTES AND EXCEPTION GUIDELINES

WAIVER #	LINE	SHEET #	STATION(S)	WAIVER FOR	UCM #	JUSTIFICATION	AW SIGNATURE	DATE APPROVED
W-2025-0043.AW-01	WATER	81	23+78	DEPTH OF COVER	2.9.2.B.4	THE ESTIMATED DEPTH OF COVER AT THE TIE-IN CONNECTION IS APPROXIMATELY 3.8 FEET. A WAIVER IS REQUESTED DUE TO SHALLOW PIPE.	SEE SIGNTURE ON SHEET 81	

STANDARD CONSTRUCTION NOTES REVISED FEBRUARY 7, 2025

1. THE CITY STANDARD CONSTRUCTION SPECIFICATIONS CURRENT AT THE TIME OF BIDDING SHALL COVER MATERIALS AND METHODS USED TO DO THIS WORK.
2. CONTRACTOR MUST OBTAIN A ROW PERMIT FROM AUSTIN TRANSPORTATION AND PUBLIC WORKS DEPARTMENT, RIGHT OF WAY MANAGEMENT DIVISION BEFORE BEGINNING CONSTRUCTION WITHIN THE RIGHT-OF-WAY OF A PUBLIC STREET OR ALLEY. ACTIVITY WITHIN RIGHT-OF-WAY SHALL COMPLY WITH APPROVED TRAFFIC CONTROL PLAN (TCP).
3. AT LEAST 48 HOURS PRIOR TO BEGINNING ANY UTILITY CONSTRUCTION ACTIVITY IN PUBLIC ROW OR PUBLIC EASEMENT, THE CONTRACTOR SHALL NOTIFY THE APPLICABLE CITY OF AUSTIN INSPECTION GROUP (AUSTIN TRANSPORTATION AND PUBLIC WORKS DEPARTMENT (TPW), OR DEVELOPMENT SERVICES). SEE CURRENT NOTIFICATION REQUIREMENTS AT WWW.AUSTINTEXAS.GOV.
4. 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.O.W./EASEMENT LINES.
5. 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.
6. MINIMUM TRENCH SAFETY MEASURES SHALL BE PROVIDED, AS REQUIRED BY OSHA, CITY SPECIFICATION 509S, AND CITY/COUNTY CONSTRUCTION INSPECTORS.
7. PRESSURE TAPS WILL ONLY 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.
8. WATER LINE TESTING AND STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEMS 510.3 (27)-(29). FORCE MAIN PRESSURE TESTING SHALL BE CONDUCTED AND FALL UNDER THE SPECIFICATIONS AS WATER LINES (PRESSURE PIPE) OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
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 POLYETHYLENE (PE), THE LINE SHALL BE REPAIRED ONLY BY HEAT FUSION WELD, AT BRASS FITTINGS, OR THE FULL LENGTH SHALL BE REPLACED PER CURRENT STANDARD DETAIL(S). WHEN POLYBUTYLENE (PB) TUBING IS DAMAGED OR TAMPERED WITH IN ANY WAY, THE FULL LENGTH OF SERVICE LINE SHALL BE REPLACED. (NOTE: FULL LENGTH IS FROM THE CORPORATION STOP TO THE METER.) REPAIR COUPLINGS ARE NOT ALLOWED FOR ANY WATER OR WASTEWATER SERVICE LINE REPAIR, RECONNECT, OR REPLACEMENT.
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 FORTY-EIGHT (48) HOURS IN ADVANCE.
12. THE INSPECTOR SHALL NOTIFY AUSTIN WATER AT 972-1000 AT A MINIMUM OF 72 HOURS PRIOR TO RELOCATING ANY DOMESTIC OR FIRE DEMAND WATER METERS.
13. PROJECT-SPECIFIC SHOP DRAWINGS SHALL BE SUBMITTED FOR AW APPROVAL FOR PRE-CAST CIRCULAR VERTICAL MANHOLE SECTIONS LARGER THAN 48" DIAMETER. THE SHOP DRAWINGS SHALL INCLUDE THE FLOWLINE ELEVATION OF ALL CONNECTING PIPES; ELEVATIONS OF TRANSITIONS FROM LARGE DIAMETER SECTIONS TO 48" DIAMETER SECTIONS; TOP OF MANHOLE AND SURROUNDING GROUND ELEVATIONS; AND DETAILS OF SPECIAL CONSTRUCTION CONSIDERATIONS SPECIFIED IN THE CONTRACT DOCUMENTS.
14. WHEN CONCRETE MANHOLES LARGER THAN 48 INCH DIAMETER ARE USED, DRAWINGS THAT ARE SEALED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED FOR BASE SLABS, FLAT TOP LIDS (IF USED), AND FLAT TYPE CONCRETE PIECES USED TO TRANSITION FROM LARGER TO SMALLER DIAMETER MANHOLE SECTIONS.
15. ALL FIRE HYDRANTS AND VALVES THAT ARE TO BE ABANDONED SHALL BE REMOVED, SALVAGED AND RETURNED TO AUSTIN WATER. NOTICE SHOULD BE GIVEN 48 HOURS PRIOR, TO PIPELINE OPERATIONS DISTRIBUTION SYSTEM -VALVES AND HYDRANT SERVICES SUPERVISOR AT AWDSM-ASSET-RECOVERY@CITYOFAUSTIN.ONMICROSOFT.COM.
16. 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 OF AUSTIN INSPECTOR.
17. THE ENGINEER SHALL CALL OUT THE SIZE, TYPE AND USE (DOMESTIC, IRRIGATION OR RECLAIM) OF ALL EXISTING WATER METERS TO BE RELOCATED OR REPURPOSED. WATER METER NUMBERS WILL NOT BE REQUIRED TO BE PLACED ON THE PLAN SHEET. A SEPARATE UTILITY PERMITTING OFFICE FORM CAN BE USED TO PROVIDE RELEVANT DATA FOR THE EXISTING INFORMATION ON EXISTING METERS TO RECEIVE APPROPRIATE CREDITS. THIS FORM SHALL BE DIRECTLY SUBMITTED TO UTILITY PERMITTING OFFICE FOR REVIEW AND PROCESSING.
18. NO CONNECTION MAY BE MADE BETWEEN THE PRIVATE PLUMBING AND AUSTIN WATER INFRASTRUCTURE UNTIL A CITY APPROVED WATER METER HAS BEEN INSTALLED.
19. METER BOXES AND CLEAN OUTS SHALL NOT BE LOCATED WITHIN PAVED AREAS SUCH AS DRIVEWAYS AND SIDEWALKS.
20. NO SOIL COMPACTION EQUIPMENT SHALL COME WITHIN 24-INCHES FROM THE TOP OF THE WATER OR WASTEWATER PIPE. BETWEEN 24-36 INCHES FROM TOP OF THE PIPE, ONLY LIGHT SOIL COMPACTION EQUIPMENT (E.G., RAMMERS OR "WHACKER PACKERS", VIBRATING PLATE COMPACTORS, WALK-BEHIND HAND-GUIDED ROLLERS) OR SMOOTH ROLLER COMPACTION EQUIPMENT WEIGHING LESS THAN 5,000 LBS. WILL BE ALLOWED. WHERE SOIL COMPACTION EQUIPMENT WILL BE 36-INCHES OR GREATER FROM THE TOP OF THE PIPE, HS20 LOADS SHALL NOT BE EXCEEDED. PIPE DEPTHS SHALL BE VERIFIED THROUGH POTHOLING, LEVEL A SUE OR BY MH INVERT DATA.
21. THE DESIGN AND CONSTRUCTION OF RETAINING WALLS, BRIDGES, CULVERTS, HEADWALLS, JUNCTION STRUCTURES, SCREENING WALLS, AND STORMWATER DRAINAGE PIPE WITHIN THE VICINITY OF AW UTILITIES SHALL BE IN COMPLIANCE WITH SECTION 13 OF THE COA'S TRANSPORTATION CRITERIA MANUAL.
22. THRUST RESTRAINT SHALL BE IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEM 510.3(22) AND SPL WW-27A, WW-27A-01, WW-27A-02 AND WW-27F.
23. ALL WATERLINE BRANCH CONNECTIONS SHALL HAVE AN MJ GATE VALVE POSITIVELY RESTRAINED TO THE MJ TEE BY USING A SWIVEL TEE, FOSTER ADAPTOR, OR SWIVEL X SOLID HYDRANT ADAPTOR (WITH SWIVEL GLAND).

* ON CITY SPONSORED PROJECTS, WHERE CONFLICTS ARE IDENTIFIED BETWEEN THESE CONSTRUCTION NOTES AND THE PROJECT CONTRACT DOCUMENTS, THE CONTRACT DOCUMENTS WILL TAKE PRECEDENCE.

DOES THIS PROJECT NEED AULCC REVIEW?

☒YES

☐ NO

IF YES, PLEASE PROVIDE UCC # **180712-07-03**

NOTE: IF THE PROJECT IS LOCATED WITHIN FULL PURPOSE JURISDICTION, A RIGHT-OF-WAY REVIEW, THROUGH THE AULCC PERMIT WILL BE REQUIRED.

AUSTIN WATER EXPIRATION DATE
July 18, 2028

REVIEWED
July 18, 2025
AW
Austin Water
Mary Ann C. Cramer
C1

C1

CITY OF AUSTIN APPROVED Date 07/21/25 CONDITIONS
GP-2022-0408.WDP.C1

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CITY OF AUSTIN
AUSTIN WATER
FEBRUARY 7, 2025

VERSION 2.0
STANDARD NO.
1 OF 1

City of Austin WATERSHED PROTECTION

07-18-2025
STEPHANIE D. BLEU
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Bleu
CAS Consulting and Services, Inc.
TBPE Registration Number F-3572

AUSTIN WATER GENERAL INFORMATION AND CONSTRUCTION NOTES FOR CAPITAL IMPROVEMENT PROJECTS

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
UTILITY GENERAL NOTES (1 OF 3)

REVISIONS

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	AUSTIN WATER GENERAL NOTES UPDATED TO FEBRUARY 7, 2025 VERSION, AUSTIN WATER INFRASTRUCTURE INFORMATION AND UCM SUMMARY NOTES AND EXCEPTION GUIDELINES TABLE ADDED, NOTE 18 ADDED, NOTE 22 REVISED, NOTE 23 ADDED, SHEET 2 TO REPLACEMENT BETWEEN STATIONS 14+50 AND 15+14 ABLE TO ACHIEVE MINIMUM DEPTH OF COVER.

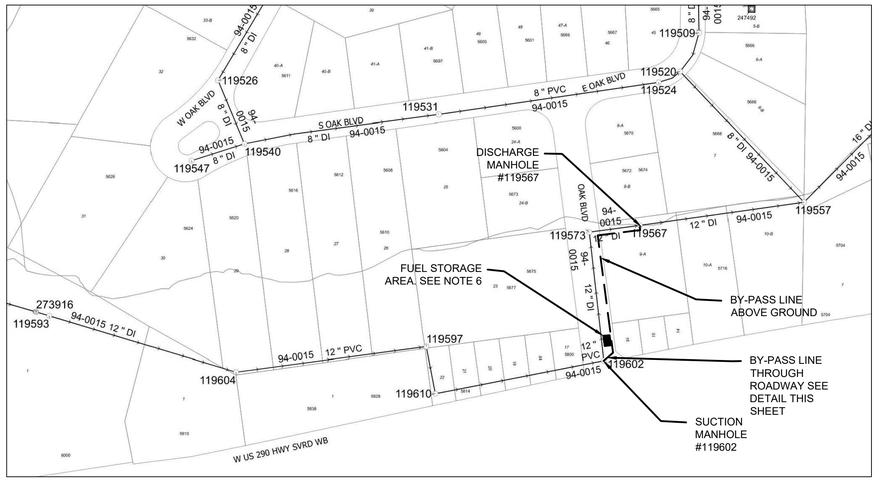
SHEET INFORMATION
DATE November, 2020
SHEET 73 (~~72~~) OF 116 (~~115~~)
C1

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\UTILITY GENERAL NOTES (1 OF 3).dwg Layout: UTILITY GENERAL NOTES (1 OF 3) Plotted: 8/22/2023 4:32:27 PM by Brandon Montoya

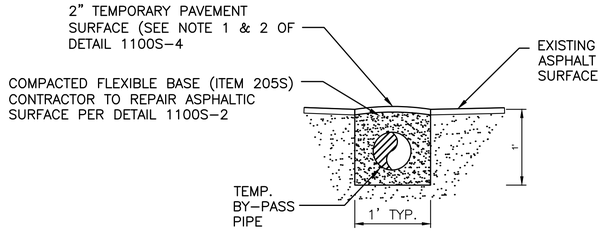
GP-2022-0408.WPD

BY–PASS PUMPING NOTES:

1. CONTRACTOR TO PROVIDE BY–PASS PUMPING TO PROVIDE CONTINUOUS WASTEWATER SERVICE TO THE USERS WHILE CONSTRUCTION OPERATIONS ARE IN PROGRESS BY DIVERTING FLOW WHEN NECESSARY AROUND THE CONSTRUCTION LOCATION AND PUMPING IT TO A DOWNSTREAM MANHOLE.
2. ALL BY–PASS PUMPING SHALL BE IN ACCORDANCE WITH SPECIAL SPECIFICATION 1540 BY–PASS PUMPING.
3. 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 ON UNIFORM TRAFFIC CONTROL DEVICES, OR AS DIRECTED BY THE ENGINEER FOR ALL BY–PASS PUMPING OPERATIONS WITHIN ROADWAY RIGHTS OF WAY.
4. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE DUST–FREE LANE FOR TRAFFIC WITH FLAGMEN DURING CONSTRUCTION ACTIVITIES AND TWO LANES AT ALL OTHER TIMES. ACCESS TO CONTIGUOUS PRIVATE PROPERTIES SHALL BE MAINTAINED AT ALL TIMES. THIS WORK SHALL BE SUBSIDIARY TO ITEM 803S BARRICADES, SIGNS, AND TRAFFIC HANDLING.
5. ALL SITE WORK MUST COMPLY WITH THE TCEQ AND COA ENVIRONMENTAL REQUIREMENTS.
6. TCEQ CONSIDERS PETROLEUM FUELED GENERATORS TO BE TEMPORARY ABOVE GROUND STORAGE TANKS. ALL PETROLEUM FUELED GENERATORS REQUIRED FOR CONSTRUCTION AND/OR BYPASS PUMPING OPERATIONS SHALL BE LOCATED OVER A COLLAPSIBLE BERM, MANUFACTURED FOR THE INTENDED PURPOSE OF SECONDARY CONTAINMENT FOR FUEL SPILLS SUCH AS ULTRA TECH COLLAPSIBLE WALL CONTAINMENT BERM, WITH LINER OR APPROVED EQUAL.
7. CONTRACTOR SHALL REFER THE THE TCEQ ORGANIZED SEWAGE COLLECTION SYSTEM APPLICATION FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH THIS PROJECT.
8. FLOW ESTIMATES FOR THE CONSTRUCTION TIME FRAME ARE:
   AVERAGE DAILY FLOW 367.36 GPM
   PEAK WET WEATHER FLOW 480.39 GPM



BY–PASS PUMPING PLAN



TYPICAL TRENCH DETAIL FOR TEMPORARY BY–PASS THROUGH ROADWAY/PAVEMENT

TEXAS 811 NOTE:

CONTRACTOR SHALL CONTACT TEXAS 811 (1–800–334–8377) FOR UTILITY LOCATIONS PRIOR TO COMMENCING DEMOLITION/CONSTRUCTION ACTIVITY.

NOTES:

1. ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE IN APPROXIMATE LOCATIONS. EVERY EFFORT HAS BEEN MADE TO ESTABLISH THE CORRECT HORIZONTAL AND VERTICAL ALIGNMENTS BASED ON FIELD SURVEYS AND ON INFORMATION AVAILABLE FROM THE CITY OF AUSTIN AND OTHER UTILITIES THAT MAY HAVE FACILITIES LOCATED WITHIN THE LIMITS OF CONSTRUCTION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO POTHOLE ALL LABELED UTILITIES AT LEAST 300 FEET AHEAD OF ACTUAL CONSTRUCTION. NEITHER THE ENGINEER NOR THE OWNER ARE RESPONSIBLE FOR EXISTING UTILITIES NOT SHOWN ON THESE PLANS.
2. THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY UPON DISCOVERING ANY DISCREPANCIES BETWEEN THE LOCATIONS OF EXISTING UTILITIES ON THE PLANS AND ACTUAL FIELD LOCATIONS.

REVIEWED
March 26, 2024
Austin Water
Larry Williams

REVIEWED
July 18, 2025
C1
Austin Water
Mary Ann C. Cramer

CITY OF AUSTIN APPROVED Date 07/21/25
GP-2022-0408.WDP.C1

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City of Austin WATERSHED PROTECTION

08.23.2023 STATE OF TEXAS STEPHANIE D. BLEW 92682 LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
UTILITY GENERAL NOTES (2 OF 3)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	SEQUENCE AND TOTAL NUMBER OF SHEETS UPDATED

REVISIONS

SHEET INFORMATION
DATE November, 2020
SHEET ~~73~~ 74 OF ~~115~~ 116
C1

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GP-2022-0408.WPD

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ORGANIZED SEWAGE COLLECTION SYSTEM
GENERAL CONSTRUCTION NOTES
(JULY 15, 2015)

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

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

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

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

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

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

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

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

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

   THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSION'S RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEET 83 OF 96.

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

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

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

    IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: N/A.

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

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

    IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET N/A OF N/A. (FOR POTENTIAL FUTURE LATERALS).

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

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

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

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

    (a) FOR A COLLECTION SYSTEM PIPE THAT WILL TRANSPORT WASTEWATER BY GRAVITY FLOW, THE DESIGN MUST SPECIFY AN INFILTRATION AND EXFILTRATION TEST OR A LOW-PRESSURE AIR TEST. A TEST MUST CONFORM TO THE FOLLOWING REQUIREMENTS:
    (1) LOW PRESSURE AIR TEST.
    (A) A LOW PRESSURE AIR TEST MUST FOLLOW THE PROCEDURES DESCRIBED IN AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) C-828, ASTM C-924, OR ASTM F-1417 OR OTHER PROCEDURE APPROVED BY THE EXECUTIVE DIRECTOR, EXCEPT AS TO TESTING TIMES AS REQUIRED IN TABLE C.3 IN SUBPARAGRAPH (C) OF THIS PARAGRAPH OR EQUATION C.3 IN SUBPARAGRAPH (B)(II)OF THIS PARAGRAPH.
    (B) FOR SECTIONS OF COLLECTION SYSTEM PIPE LESS THAN 36 INCH AVERAGE INSIDE DIAMETER, THE FOLLOWING PROCEDURE MUST APPLY, UNLESS A PIPE IS TO BE TESTED AS REQUIRED BY PARAGRAPH (2) OF THIS SUBSECTION.
    (i) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.
    (ii) ONCE THE PRESSURE IS STABILIZED, THE MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 PSI GAUGE TO 2.5 PSI GAUGE IS COMPUTED FROM THE FOLLOWING EQUATION:

    EQUATION C.3

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

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

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

Pipe Diameter *(inches)*	Minimum Time *(seconds)*	Maximum Length for Minimum Time *(feet)*	Time for Longer Length *(seconds/foot)*
6	340	398	0.855
8	454	298	1.52
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

    (D) AN OWNER MAY STOP A TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME.
    (E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
    (F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
    (G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.
    (2) INFILTRATION/EXFILTRATION TEST.
    (A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.
    (B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.
    (C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE, OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.
    (D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARAGRAPH (C) OF THIS PARAGRAPH.
    (E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.
    (b) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:
    (1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.
    (A) MANDREL SIZING.
    (i) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE ASTMS, AMERICAN WATER WORKS ASSOCIATION, UNI-BELL, OR AMERICAN NATIONAL STANDARDS INSTITUTE, OR ANY RELATED APPENDIX.
    (ii) IF A MANDREL SIZING DIAMETER IS NOT SPECIFIED IN THE APPROPRIATE STANDARD, THE MANDREL MUST HAVE AN OD EQUAL TO 95% OF THE ID OF A PIPE. IN THIS CASE, THE ID OF THE PIPE, FOR THE PURPOSE OF DETERMINING THE OD OF THE MANDREL, MUST EQUAL BE THE AVERAGE OUTSIDE DIAMETER MINUS TWO MINIMUM WALL THICKNESSES FOR OD CONTROLLED PIPE AND THE AVERAGE INSIDE DIAMETER FOR ID CONTROLLED PIPE.
    (iii) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.
    (B) MANDREL DESIGN.
    (i) A RIGID MANDREL MUST BE CONSTRUCTED OF A METAL OR A RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
    (ii) A MANDREL MUST HAVE NINE OR MORE ODD NUMBER OF RUNNERS OR LEGS.
    (iii) A BARREL SECTION LENGTH MUST EQUAL AT LEAST 75% OF THE INSIDE DIAMETER OF A PIPE.
    (iv) EACH SIZE MANDREL MUST USE A SEPARATE PROVING RING.
    (C) METHOD OPTIONS.
    (i) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.
    (ii) A TEST MAY NOT USE TELEVISION INSPECTION AS A SUBSTITUTE FOR A DEFLECTION TEST.
    (iii) IF REQUESTED, THE EXECUTIVE DIRECTOR MAY APPROVE THE USE OF A DEFLECTOMETER OR A MANDREL WITH REMOVABLE LEGS OR RUNNERS ON A CASE-BY-CASE BASIS.
    (2) FOR A GRAVITY COLLECTION SYSTEM PIPE WITH AN INSIDE DIAMETER 27 INCHES AND GREATER, OTHER TEST METHODS MAY BE USED TO DETERMINE VERTICAL DEFLECTION.
    (3) A DEFLECTION TEST METHOD MUST BE ACCURATE TO WITHIN PLUS OR MINUS 0.2% DEFLECTION.
    (4) AN OWNER SHALL NOT CONDUCT A DEFLECTION TEST UNTIL AT LEAST 30 DAYS AFTER THE FINAL BACKFILL.
    (5) GRAVITY COLLECTION SYSTEM PIPE DEFLECTION MUST NOT EXCEED FIVE PERCENT (5%).
    (6) IF A PIPE SECTION FAILS A DEFLECTION TEST, AN OWNER SHALL CORRECT THE PROBLEM AND CONDUCT A SECOND TEST AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.

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

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

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

CITY OF AUSTIN APPROVED Date 07/2/2025 FOUNDED 1839
GP-2022-0408.WDP.C1

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City of Austin WATERSHED PROTECTION

08-23-2023 STATE OF TEXAS STEPHANE D. BLEW 92682 LICENSED PROFESSIONAL ENGINEER
Stephane D Blew

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
UTILITY GENERAL NOTES (3 OF 3)

NO.	BY	DATE	REVISIONS REMARKS
C1	SDB	07/08/2025	SEQUENCE AND TOTAL NUMBER OF SHEETS UPDATED

SHEET INFORMATION
DATE August, 2023
SHEET 75 ~~74~~ OF 116 ~~115~~
C1

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-1A\RPS Oak Acres\3.0 Work Products\3.6 CAD\UTILITY GENERAL NOTES (3 OF 3).dwg Layout: UTILITY GENERAL NOTES (3 OF 3) Plotted: 8/22/2023 4:32:55 PM by Brandon Montoya

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WASTEWATER LINE 'S' PLAN AND PROFILE.dwg Layout: WASTEWATER LINE 'S' PLAN AND PROFILE Plotted: 8/22/2023 12:02:23 PM by Brandon Montoya

EXISTING WW MANHOLE GIS#119567
RIM ELEV=760.02
12" DUCTILE FL OUT(W)=752.46
12" DUCTILE FL IN(E)=752.42

STA 1+00, 4' DIA. WATERTIGHT WW MANHOLE 'S1' GIS #323041 WITH CIP BASE & BOLTED LID OVER EXISTING 12" DI WWL PER COA DETAILS 506S-6 & 506S-9
RIM ELEV=759.35
N:10,058,791.79
E: 3,081,473.19
(FIELD VERIFY)

TEMP. EASEMENT #5367.01
REOP DOC #2024021355

STA 1+65.57, 4' DIA. WATERTIGHT WW MANHOLE 'S2' GIS #323043 WITH CIP BASE OVER EXISTING 12" DI WWL PER COA DETAILS 506S-6 & 506S-9
RIM ELEV=766.20
N:10,058,738.70
E: 3,081,434.70
(FIELD VERIFY)

36.48 LF OF 24" STEEL CASING

REMOVE ±47 LF EXISTING 12" DUCTILE IRON WWL

PERMANENT WASTEWATER EASEMENT #5367.01
ROEP DOC #2024021355

EXISTING OVERHEAD ELECTRIC GUYWIRE

REMOVE ±46 LF EXISTING 12" DUCTILE IRON WW

PROPOSED CULVERTS AND HEADWALLS

REMOVE EX WWMH #119573 & ±32 LF EXISTING 6" WW SERVICE LINE

TEMP. EASEMENT #5367.02
DOC #2025029642

TEMP. EASEMENT #5367.03
DOC #2025035617

STA. 3+08.04
PROP SINGLE WW SERVICE
SEE NOTES 7 & 8
N:10,058,838.40
E: 3,081,369.82

TEMP. EASEMENT #5367.05

OAK BLVD (R.O.W. VARIES)

PROP 8" WATER LINE 'J'

EXIST 6" CI WL TO BE REMOVED

STA. 2+17.37, 4' DIA. WATERTIGHT WW MANHOLE 'S3' GIS #323045 WITH CIP BASE PER COA DETAILS 506S-6 & 506S-9
RIM ELEV=764.65
N:10,058,748.79
E: 3,081,383.96

PROP 12" SDR-26 PVC WWL-S

PROP 8" PVC SDR-26 WWL-S

N: 10058705.95
E: 3081416.83
TOP: 762.47

PROP. 24' OF SINGLE WW SERVICE TO LOT 23. SEE NOTES 7 & 8

PERMANENT PUBLIC UTILITY EASEMENT #5367.04

PERMANENT PUBLIC UTILITY EASEMENT #5367.05

TEMP. EASEMENT #5367.04

GAINES CREEK TRIBUTARY

LOT 23 AUSTIN MONTESSORI MIDDLE SCHOOL INC 5677 OAK BLVD

50' DRAINAGE EASEMENT PER PLAT 9/91

LOT 8-A VONIOUS WARREN 5672 OAK BLVD

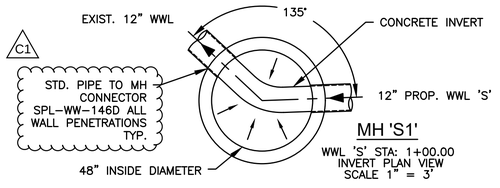
LOT 8-A DYD & KIM E THOLE 4K BLVD

0 20' 40'

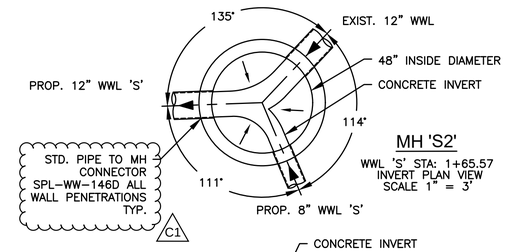
LEGEND

- LOC — LIMITS OF CONSTRUCTION
- 100YF — 100 YEAR FLOOD PLAIN
- CWQZ — CRITICAL WATER QUALITY ZONE
- WQTZ — WATER QUALITY TRANSITION ZONE
- CREEK CENTERLINE
- GAS — EXISTING GAS LINE
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE
- PROPOSED PLUGS ON EXISTING WASTEWATER LINE
- WWS — EXISTING WASTEWATER SERVICE LINE
- ST — EXISTING STORM LINE
- WALLER CREEK CENTER LINE
- PROPERTY/ROW LINES
- EXISTING EASEMENT LINES
- PROPOSED PERMANENT EASEMENT LINE
- PROPOSED TEMPORARY EASEMENT LINE
- PROPOSED WASTEWATER LINE
- PROPOSED CONC ENCASEMENT
- XXXXXXXXX — UTILITY TO BE REMOVED
- XXXXXXXXX — UTILITY TO BE ABANDONED IN PLACE
- WWMH — PROPOSED WASTEWATER MANHOLE
- CO — PROPOSED CLEANOUT

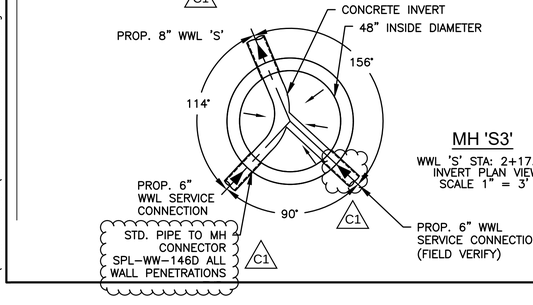
MANHOLE INVERT PLAN



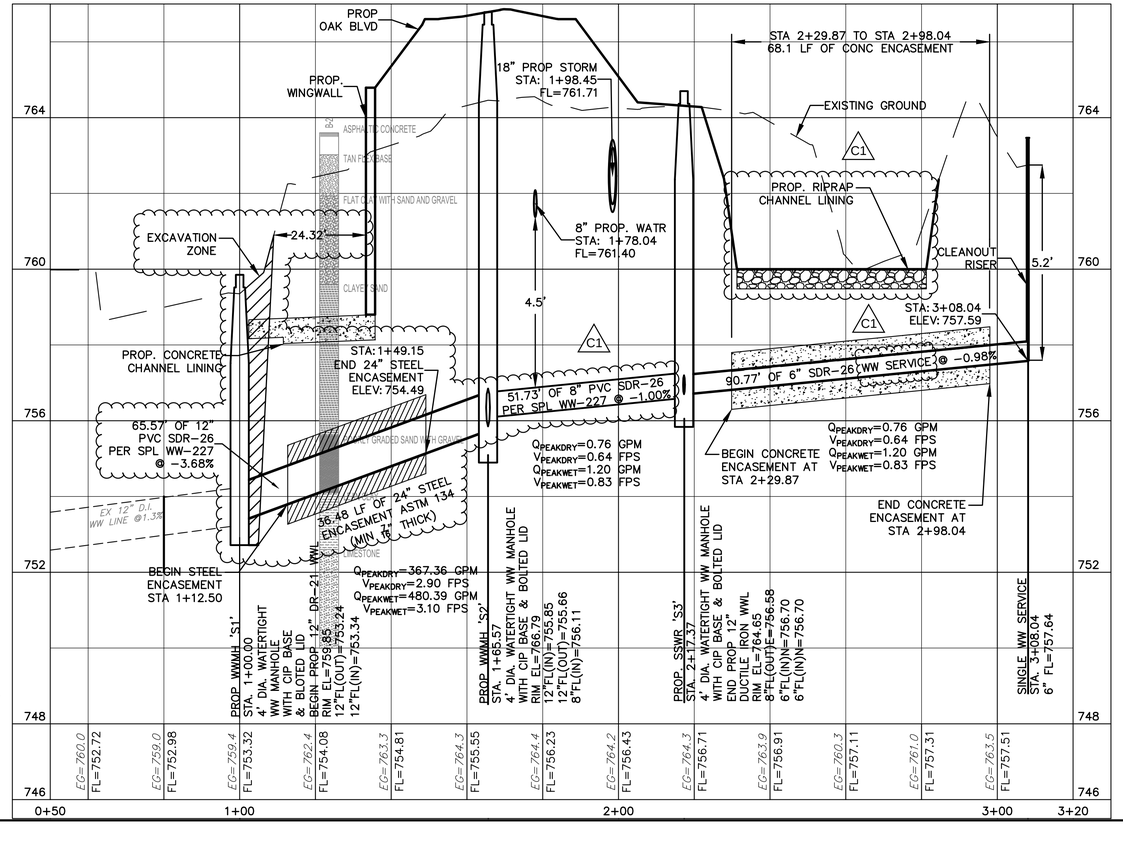
MH 'S1'
WWL 'S' STA: 1+00.00
INVERT PLAN VIEW
SCALE 1" = 3'



MH 'S2'
WWL 'S' STA: 1+65.57
INVERT PLAN VIEW
SCALE 1" = 3'



MH 'S3'
WWL 'S' STA: 2+17.37
INVERT PLAN VIEW
SCALE 1" = 3'



NOTES:

C1
1. ALL WASTEWATER MAINS SHALL BE ASTM D3034 PVC SDR 26 PIPE PER SPL WW-227.
2. ALL WASTEWATER SERVICE LINES SHALL BE 6" PVC ASTM D 3034 SDR 26, WITH GASKETED HEAVY WALL FITTINGS MEETING ASTM D3212 PER COA SPL WW-227B1.
3. ALL WASTEWATER SERVICE LINES SHALL HAVE A SLOPE NOT LESS THAN 1%.
4. ALL WASTEWATER MANHOLES SHALL HAVE BOLTED WATERTIGHT COVERS.
5. ALL WASTEWATER MANHOLES SHALL HAVE A CAST-IN-PLACE BASE AND BE WATERTIGHT.
6. THE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING WATER SERVICE RELAYS, WASTEWATER LATERALS, AND OTHER EXISTING UTILITIES DURING CONSTRUCTION. ANY REPAIRS OR TEMPORARY CONNECTIONS REQUIRED TO MAINTAIN SERVICE SHALL BE SUBSIDIARY TO PAY ITEM 510 PIPE.
7. PRIVATE WASTEWATER SERVICE RECONNECTION INSIDE PRIVATE PROPERTY SHALL BE INSTALLED BY A LICENSED PLUMBER FOLLOWING SPECIAL SPEC SS3501. WORK SHALL BE PERFORMED OUTSIDE THE 1/2 CRZ OF PRESERVED TREES.
8. WASTEWATER CLEANOUT LOCATIONS WERE TAKEN FROM RECORD DRAWING INFORMATION, AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE A REDLINE OF THE ACTUAL LOCATION TO ENGINEER FOR REVIEW AND CONFIRMATION PRIOR TO THE START OF CONSTRUCTION. WWCOs SHALL BE PLACED AT PROPERTY LINE PER STANDARD DETAIL 520-AW-01B. NOTIFY ENGINEER IF THERE IS A CONFLICT WITH OTHER UTILITIES.

C1 BID ALTERNATE NOTE: TCEQ HAS REQUIRED THE USE OF "150 PSI PRESSURE-RATED PIPE" (E.G. ASTM D2241) UNDER 30 TAC § 290.44(E)(4). AW HAS CONCLUDED THAT THIS IS NOT APPROPRIATE FOR GRAVITY FLOW SISTEMS AND INSTEAD SPECIFIES THE USE OF "150 PSI PRESSURE-TESTED" ASTM D3034, SDR26, HEAVY-WALL PVC GRAVITY PIPE AND FITTINGS FROM APPROVED MANUFACTURERS LISTED ON AW'S SPL WW-227. PROJECT IS IN PROCESS OF TCEQ EXCEPTION REQUEST AND IS PROVIDING ASTM D3034 PIPE AS A BID ALTERNATE.

REVIEWED
March 26, 2024
Austin Water
Larry Williams

City of Austin WATERSHED PROTECTION

08-23-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WASTEWATER LINE 'S' PLAN AND PROFILE

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO CIS AND EASEMENT DOCUMENT NUMBERS. UPDATES TO PROPOSED STORM DRAIN AND CULVERT CLARIFICATIONS ON PLAN AND PROFILE SHEETS. ADDED NOTE TO PLAN AND PROFILE SHEETS REGARDING REMOVAL AND ABANDONMENT EXTENT DUE NEW UTILITIES ADDED TO THE LEGEND. PROPOSED STEEL CASING IN WW PIPE EXTENDED. ADDED EXCAVATION ZONE, RIPRAP PATTERN UPDATED. SPL WW-227 REFERENCED ADDED TO NOTES. ADDED NOTE REGARDING CONCRETE ENCASEMENT OF PROPOSED 8" WATER LINE 'J' AND MISCELLANEOUS PROFILE UPDATES.

SHEET INFORMATION

DATE May 2022

SHEET 76 OF 116
~~75~~ OF ~~115~~

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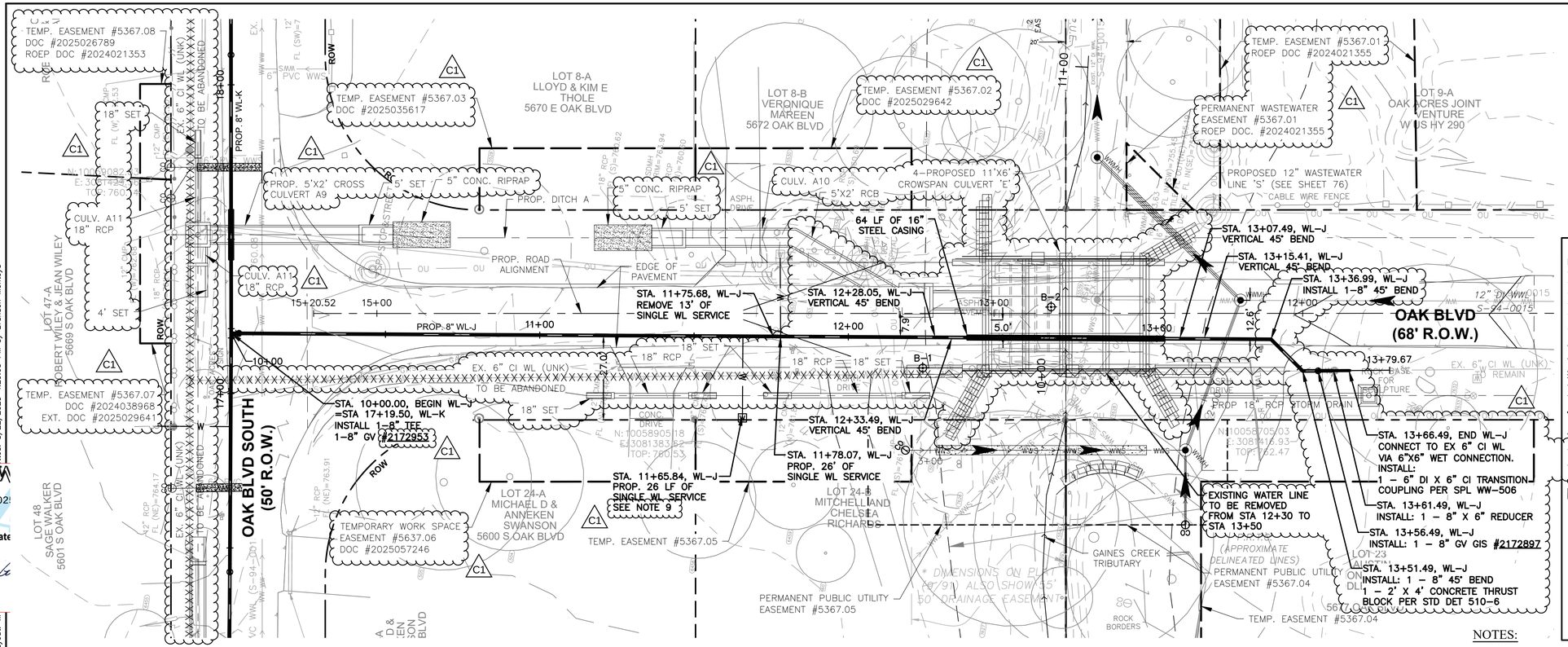
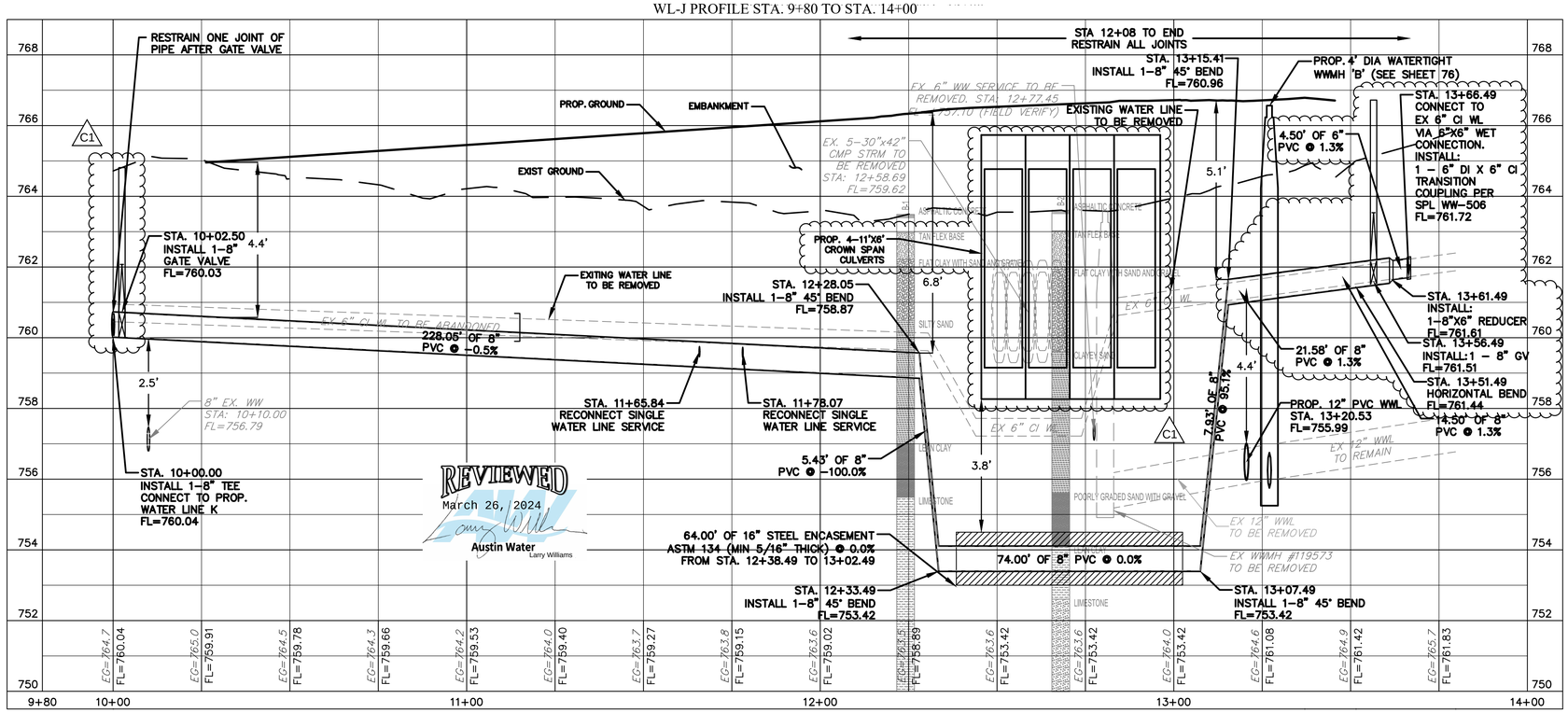
GP-2022-0408.WPD



WL-J PROFILE STA. 9+80 TO STA. 14+00



REVIEWED
July 18, 2023
Austin Water
Mary Gonzalez

REVIEWED
March 26, 2024
Austin Water
Larry Williams

NOTES:

1. ALL WATER LINES PIPE SHALL BE PVC C900 DR–14.
2. ALL FIRE HYDRANT LEAD LINES SHALL BE 6" DUCTILE IRON CLASS 350.
3. DEFLECTION OF PIPE AT FITTINGS IS NOT ALLOWED. MINIMUM ALLOWABLE RADIUS OF CURVATURE FOR 8" PVC C900 IS 200'.
4. THE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING WATER SERVICE RELAYS, WASTEWATER LATERALS, AND OTHER EXISTING UTILITIES DURING CONSTRUCTION. ANY REPAIRS OR TEMPORARY CONNECTIONS REQUIRED TO MAINTAIN SERVICE SHALL BE SUBSIDIARY TO PAY ITEM 510 PIPE.
6. ALL FIRE HYDRANTS AND VALVES THAT ARE TO BE ABANDONED SHALL BE REMOVED, SALVAGED, AND RETURNED TO AUSTIN WATER. NOTICE MUST BE GIVEN 48 HOURS PRIOR, TO PIPELINE OPERATIONS DISTRIBUTION SYSTEM – VALVE AND HYDRANT SERVICES SUPERVISOR AT 512–972–1280
7. PER TCEQ RULE §290.44(e)(4)(B)(iv–v): WHEN THE NEW WATERLINE CROSSES ABOVE A NEW WASTEWATER MAIN OR LATERAL, AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF 6" SHALL BE MAINTAINED AND THE WASTEWATER MAIN OR LATERAL SHALL HAVE A MINIMUM PRESSURE RATING OF 150 PSI. ONE SEGMENT OF THE WATERLINE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER SERVICE. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER LATERAL. THE WASTEWATER SERVICE SHALL BE EMBEDDED IN CEMENT STABILIZED SAND FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12" BEYOND THE JOINT ON EACH END. THE BEDDING SHALL BE A MINIMUM OF 6" ABOVE AND 4" BELOW THE WASTEWATER LATERAL WITH A MINIMUM OF 10% CEMENT PER CUBIC YARD. (SEE DETAIL ON SHEET 86)
8. WASTEWATER CLEANOUT LOCATIONS WERE TAKEN FROM RECORD DRAWING INFORMATION, AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE A REDLINE OF THE ACTUAL LOCATION TO ENGINEER FOR REVIEW AND CONFIRMATION PRIOR TO THE START OF CONSTRUCTION. WWCOs SHALL BE PLACED AT PROPERTY LINE PER STANDARD DETAIL 520–AW–01B. NOTIFY ENGINEER IF THERE IS A CONFLICT WITH OTHER UTILITIES.
9. PRIVATE WATER SERVICE RECONNECTION INSIDE PRIVATE PROPERTY SHALL BE INSTALLED BY A LICENSED PLUMBER FOLLOWING SPECIAL SPEC SS3501. WORK SHALL BE PERFORMED OUTSIDE THE 1/2 CRZ OF PRESERVED TREES.

City of Austin
WATERSHED PROTECTION

08-23-2023
STATE OF TEXAS
STEPHANE D. BLEIN
92682
LICENSED
PROFESSIONAL ENGINEER
Stephane D Blein

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WATER LINE 'J' PLAN AND PROFILE

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO DSI AND EASEMENT DOCUMENT NUMBERS. UPDATES TO PROPOSED STORM DRAIN AND CULVERT STRUCTURES AND ASSOCIATED GRADING. ADDED PROPOSED 12" WASTEWATER LINE 'S' TO PLAN AND PROFILE. ADDED LEGEND, PLAN AND PROFILE UPDATES AT SOUTH TIE-IN CONNECTION, WATER VALVE CASTINGS ADDED TO PROFILE VIEW.

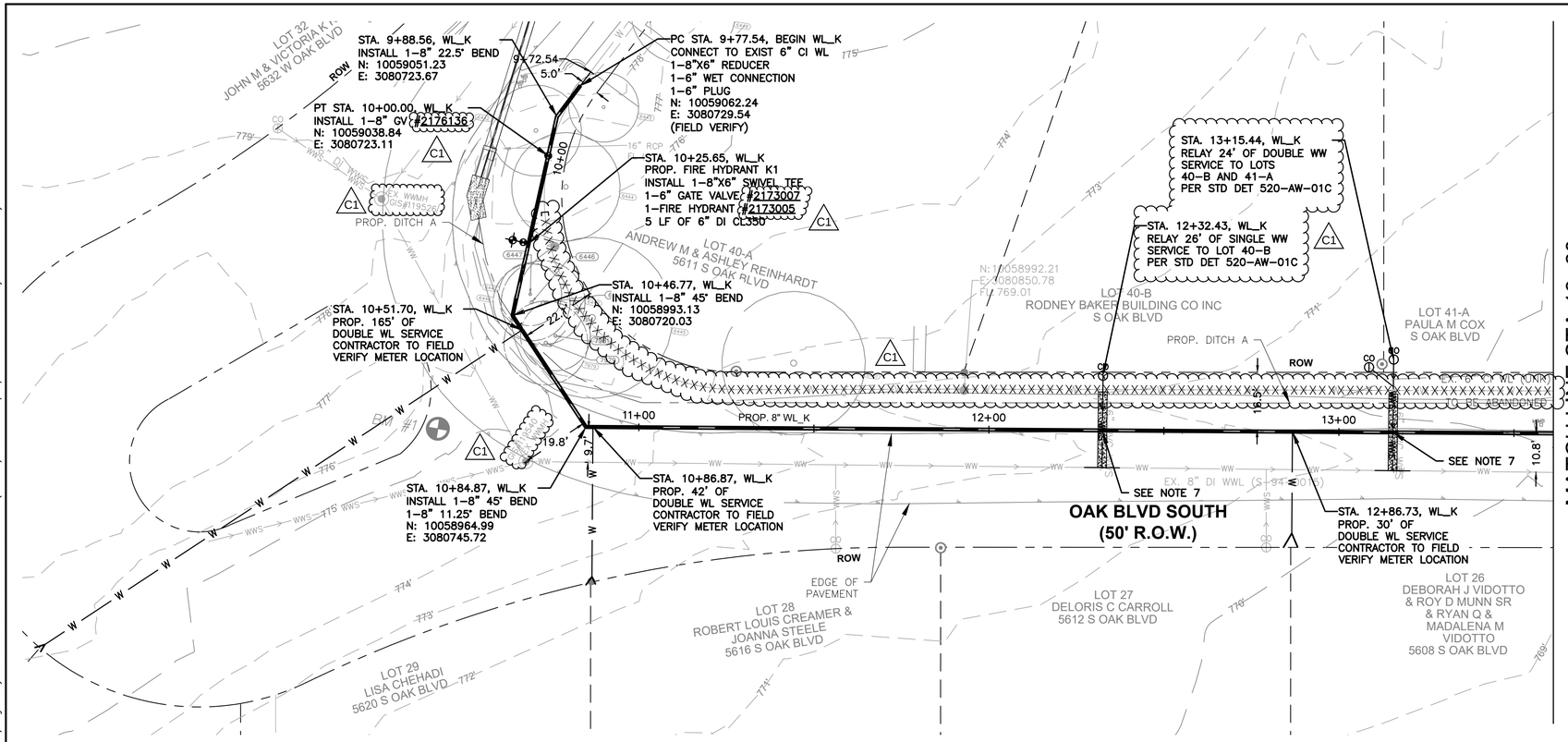
SHEET INFORMATION
DATE August, 2023
SHEET ~~76~~ 77 OF ~~115~~ 116

CAS CONSULTING & SERVICES, INC.
7908 Cameron Road | Austin, TX 78754 | REG. NO. F-03572
Main: 512.836.2388 | Fax: 512.836.4515

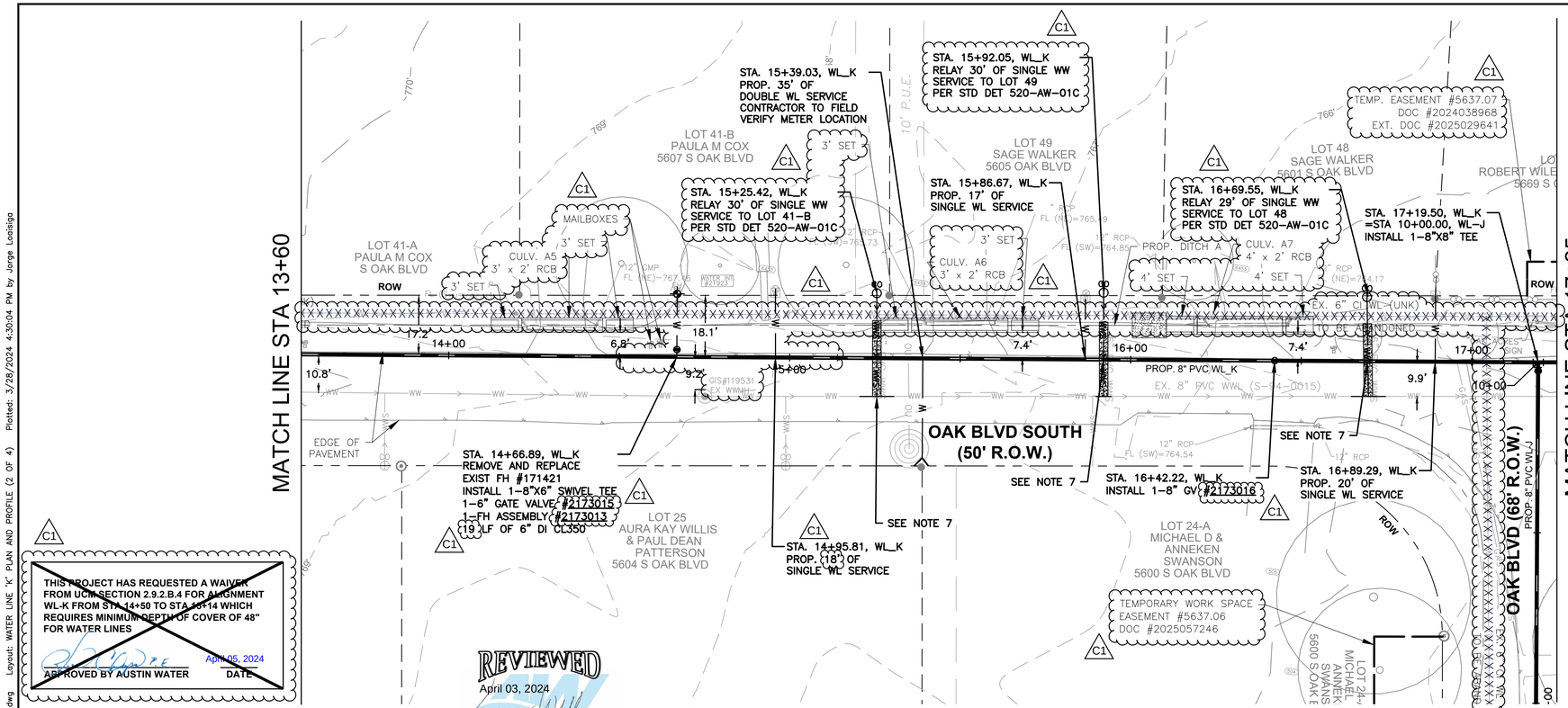
rps Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

Submitted: 8/22/2023 4:29:05 PM by Brandon Montoya
Layout: WL-J PLAN AND PROFILE.dwg
L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WATER LINE 'J' PLAN AND PROFILE.dwg

GP-2022-0408.WPD


STA. 9+88.56, WL_K
INSTALL 1–8" 22.5° BEND
N: 10059051.23
E: 3080723.67
PT STA. 10+00.00, WL_K
INSTALL 1–8" GV (#2176136)
N: 10059038.84
E: 3080723.11
PC STA. 9+77.54, BEGIN WL_K
CONNECT TO EXIST 6" CI WL
1–8"X6" REDUCER
1–6" WET CONNECTION
1–6" PLUG
N: 10059062.24
E: 3080729.54
(FIELD VERIFY)
9+72.54
5.0'
STA. 10+25.65, WL_K
PROP. FIRE HYDRANT K1
INSTALL 1–8"X6" SWIVEL TEE
1–6" GATE VALVE (#2173007)
1–FIRE HYDRANT (#2173005)
5 LF OF 6" DI CL350
STA. 10+46.77, WL_K
INSTALL 1–8" 45° BEND
N: 10058993.13
E: 3080720.03
STA. 10+51.70, WL_K
PROP. 165' OF
DOUBLE WL SERVICE
CONTRACTOR TO FIELD
VERIFY METER LOCATION
STA. 10+84.87, WL_K
INSTALL 1–8" 45° BEND
1–8" 11.25° BEND
N: 10058964.99
E: 3080745.72
STA. 10+86.87, WL_K
PROP. 42' OF
DOUBLE WL SERVICE
CONTRACTOR TO FIELD
VERIFY METER LOCATION
STA. 13+15.44, WL_K
RELAY 24' OF DOUBLE WW
SERVICE TO LOTS
40–B AND 41–A
PER STD DET 520–AW–01C
STA. 12+32.43, WL_K
RELAY 26' OF SINGLE WW
SERVICE TO LOT 40–B
PER STD DET 520–AW–01C
STA. 12+86.73, WL_K
PROP. 30' OF
DOUBLE WL SERVICE
CONTRACTOR TO FIELD
VERIFY METER LOCATION
SEE NOTE 7
SEE NOTE 7
MATCH LINE STA 13+60
OAK BLVD SOUTH
(50' R.O.W.)
PROP. 8" WL_K
PROP. DITCH A
PROP. DITCH A
EX. 8" DI WWL (S 94.40°E)
EDGE OF PAVEMENT
EDGE OF PAVEMENT
ROW
ROW
ROW
LOT 32
JOHN M & VICTORIA K
5632 W OAK BLVD
LOT 40-A
ANDREW M & ASHLEY REINHARDT
5611 S OAK BLVD
LOT 40-B
RODNEY BAKER BUILDING CO INC
S OAK BLVD
LOT 41-A
PAULA M COX
S OAK BLVD
LOT 28
ROBERT LOUIS CREAMER &
JOANNA STEELE
5616 S OAK BLVD
LOT 29
LISA CHEHADI
5620 S OAK BLVD
LOT 27
DELORIS C CARROLL
5612 S OAK BLVD
LOT 26
DEBORAH J VIDOTTO
& ROY D MUNN SR
& RYAN Q &
MADALENA M
VIDOTTO
5608 S OAK BLVD
N: 10058992.21
E: 3080850.78
EL 769.01
EX. 6" WW
TO REMAIN
EX. 6" WW
TO REMAIN
EX. 6" WW
TO REMAIN

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WATER LINE 'K' PLAN AND PROFILE (2 OF 4).dwg Layout: WATER LINE 'K' PLAN AND PROFILE (2 OF 4) Plotted: 3/28/2024 4:30:04 PM by Jorge Lodiso

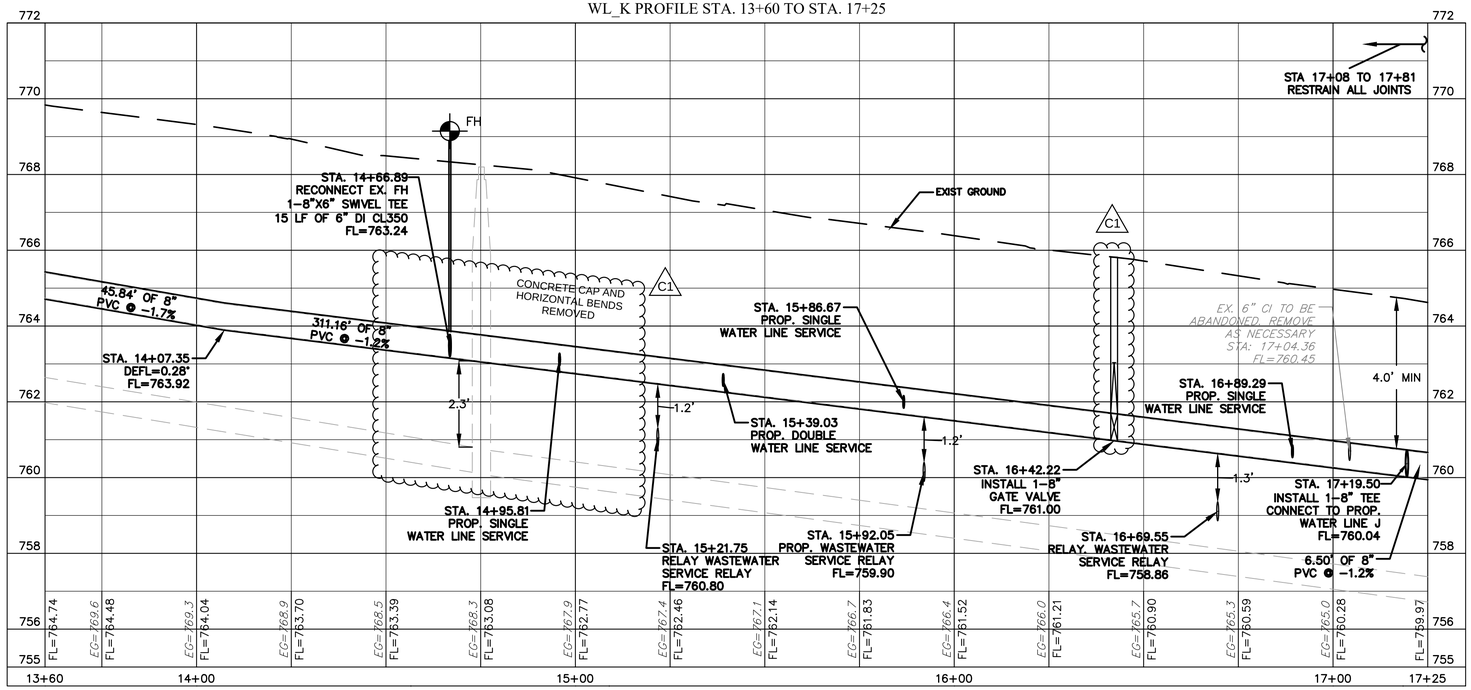


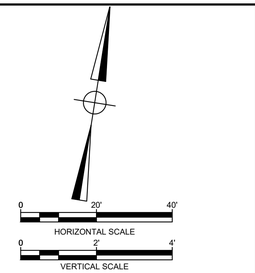
THIS PROJECT HAS REQUESTED A WAIVER FROM UCM SECTION 2.9.2.B.4 FOR ALIGNMENT WL-K FROM STA 14+50 TO STA 15+14 WHICH REQUIRES MINIMUM DEPTH OF COVER OF 48" FOR WATER LINES

APPROVED BY AUSTIN WATER — DATE April 05, 2024

REVIEWED
April 03, 2024
Austin W
Larry Williams

WL_K PROFILE STA. 13+60 TO STA. 17+25





LEGEND

- LOC — LIMITS OF CONSTRUCTION
- 760' — MAJOR CONTOURS – 5FT
- 762' — MINOR CONTOURS – 1 FT
- GAS — EXISTING GAS LINE
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE
- WWS — EXISTING WASTEWATER SERVICE LINE
- CWQZ — CRITICAL WATR QUALITY ZONE
- WQTZ — WATER QUALITY TRANSITION ZONE
- PROPOSED STORM LINE
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- PROPOSED PERMANENT EASEMENT LINE
- UTILITY TO BE REMOVED
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- PROPOSED WATER LINE
- PROPOSED BRICK DITCH
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- EXISTING WATER METER
- EXISTING WW CLEANOUT
- SUE LEVEL A POTHOLES
- TREE TO REMAIN
- TREE TO BE REMOVED

NOTES:

1. ALL WATER LINES PIPE SHALL BE PVC C900 DR-14.
2. ALL FIRE HYDRANT LEAD LINES SHALL BE 6" DUCTILE IRON CLASS 350.
3. DEFLECTION OF PIPE AT FITTINGS IS NOT ALLOWED. MINIMUM ALLOWABLE RADIUS OF CURVATURE FOR 8" PVC C900 IS 200'.
4. THE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING WATER SERVICE RELAYS, WASTEWATER LATERALS, AND OTHER EXISTING UTILITIES DURING CONSTRUCTION. ANY REPAIRS OR TEMPORARY CONNECTIONS REQUIRED TO MAINTAIN SERVICE SHALL BE SUBSIDIARY TO PAY ITEM 510 PIPE.
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7. PER TCEQ RULE §290.44(e)(4)(B)(iv-v): WHEN THE NEW WATERLINE CROSSES ABOVE A NEW WASTEWATER MAIN OR LATERAL, AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF 6" SHALL BE MAINTAINED AND THE WASTEWATER MAIN OR LATERAL SHALL HAVE A MINIMUM PRESSURE RATING OF 150 PSI. ONE SEGMENT OF THE WATERLINE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER SERVICE. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER LATERAL. THE WASTEWATER SERVICE SHALL BE EMBEDDED IN CEMENT STABILIZED SAND FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12" BEYOND THE JOINT ON EACH END. THE BEDDING SHALL BE A MINIMUM OF 6" ABOVE AND 4" BELOW THE WASTEWATER LATERAL WITH A MINIMUM OF 10% CEMENT PER CUBIC YARD. (SEE DETAIL ON SHEET 86)
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City of Austin WATERSHED PROTECTION

03-28-2024 STATE OF TEXAS STEPHANIE D. BLEW 92682 LICENSED PROFESSIONAL ENGINEER Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WATER LINE 'K' PLAN AND PROFILE (2 OF 4)

NO.	BY	DATE	REVISIONS REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO GIS AND EASEMENT DOCUMENT NUMBERS. ADDED PROPOSED STORM DRAIN LABELS. CLARIFICATIONS ON CLEANOUTS. REMOVED TEMPORARY WORK SPACE EASEMENT #5637.06 DOC #2025057246 FROM PLAN VIEW. REMOVED CONCRETE CAP AND HORIZONTAL BENDS BETWEEN STA 14+66 AND 15+25 WHERE REMOVED DUE TO REALIGNMENT ACHIEVED MINIMUM DEPTH OF COVER. MISCELLANEOUS QTY UPDATES AND WATER VALVE CASTINGS ADDED TO PROFILE VIEW.

CAS CONSULTING & SERVICES, INC.
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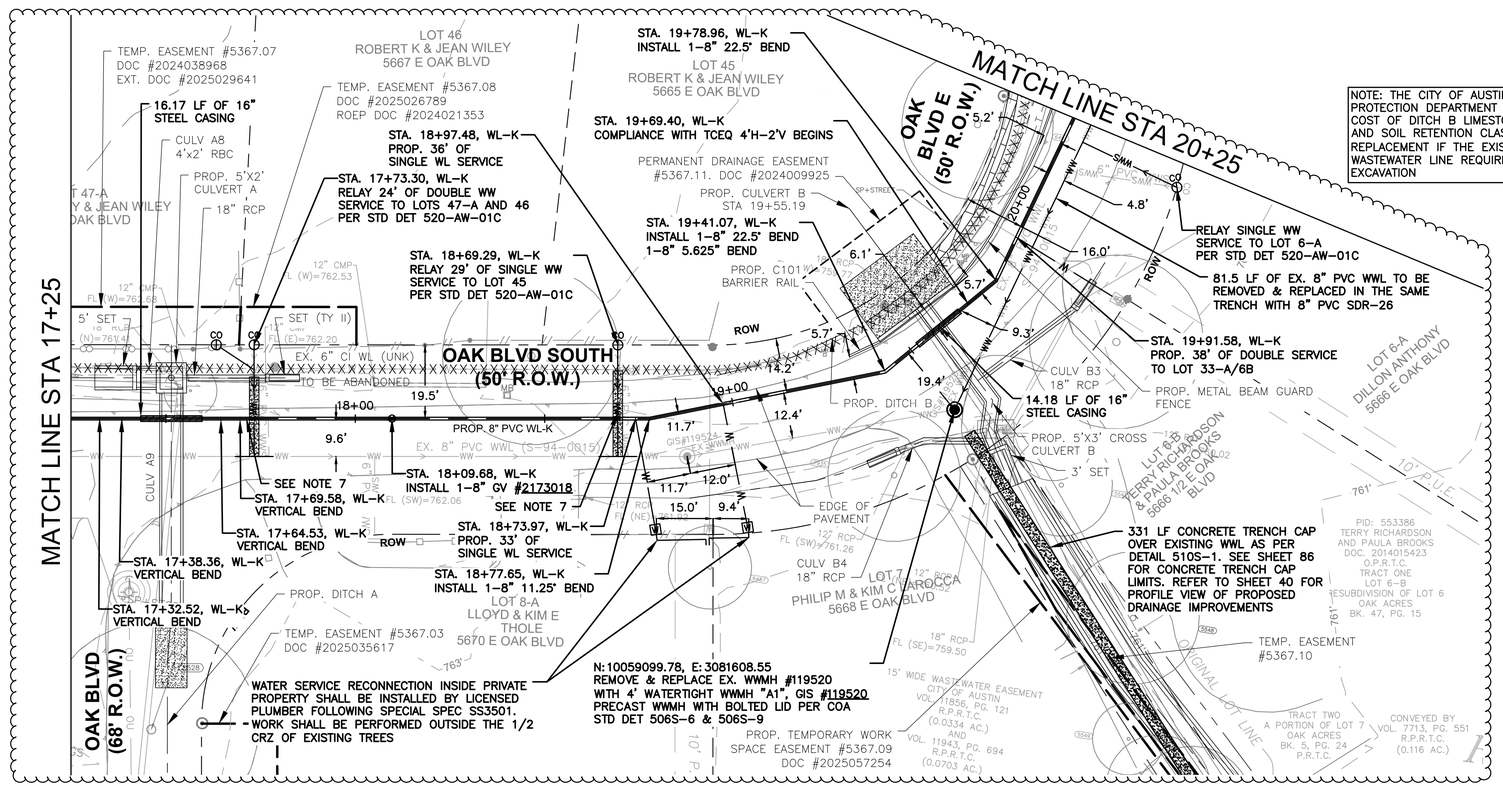
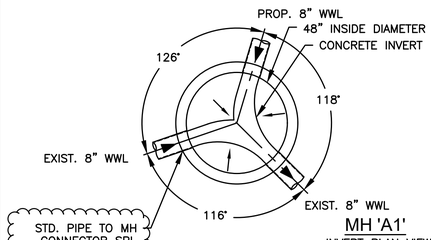
rps — Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

SHEET INFORMATION
DATE March, 2024
SHEET 79 OF 116 (~~78~~ OF ~~115~~) C1

GP-2022-0408.WPD



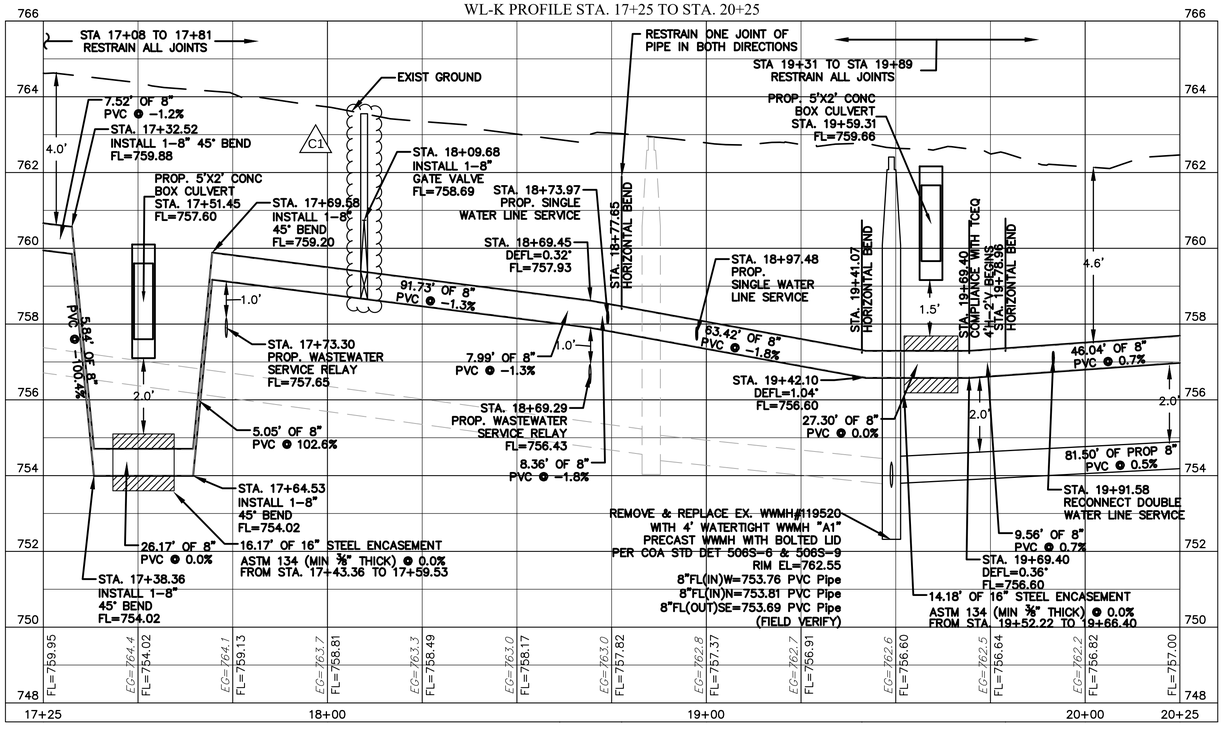
MANHOLE INVERT PLAN



BID ALTERNATE NOTE: TCEQ HAS REQUIRED THE USE OF "150 PSI PRESSURE-RATED PIPE" (E.G. ASTM D2241) UNDER 30 TAC § 290.44(E)(4). AW HAS CONCLUDED THAT THIS IS NOT APPROPRIATE FOR GRAVITY FLOW SISTEMS AND INSTEAD SPECIFIES THE USE OF "150 PSI PRESSURE-TESTED" ASTM D3034, SDR26, HEAVY-WALL PVC GRAVITY PIPE AND FITTINGS FROM APPROVED MANUFACTURERS LISTED ON AW'S SPL WW-227. PROJECT IS IN PROCESS OF TCEQ EXCEPTION REQUEST AND IS PROVIDING ASTM D3034 PIPE AS A BID ALTERNATE.

REVIEWED
March 26, 2024
Austin Water
Larry Williams

WL-K PROFILE STA. 17+25 TO STA. 20+25



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9. ALL WASTEWATER MAINS SHALL BE ASTM D3034 PVC SDR 26 PIPE PER SPL WW-227.
10. ALL WASTEWATER SERVICE LINES SHALL BE 6" PVC ASTM D 3034 SDR-26 WITH GASKETED HEAVY WALL FITTINGS MEETING ASTM D 3212 PER COA SPL WW-227B1,

CAS CONSULTING & SERVICES, INC.
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T +1 512 328 5771 E usinfrastructure@rpsgroup.com

City of Austin WATERSHED PROTECTION

03-05-2024 STATE OF TEXAS STEPHANIE D. BLEW 92682 LICENSED PROFESSIONAL ENGINEER Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WATER LINE 'K' PLAN AND PROFILE (3 OF 4)

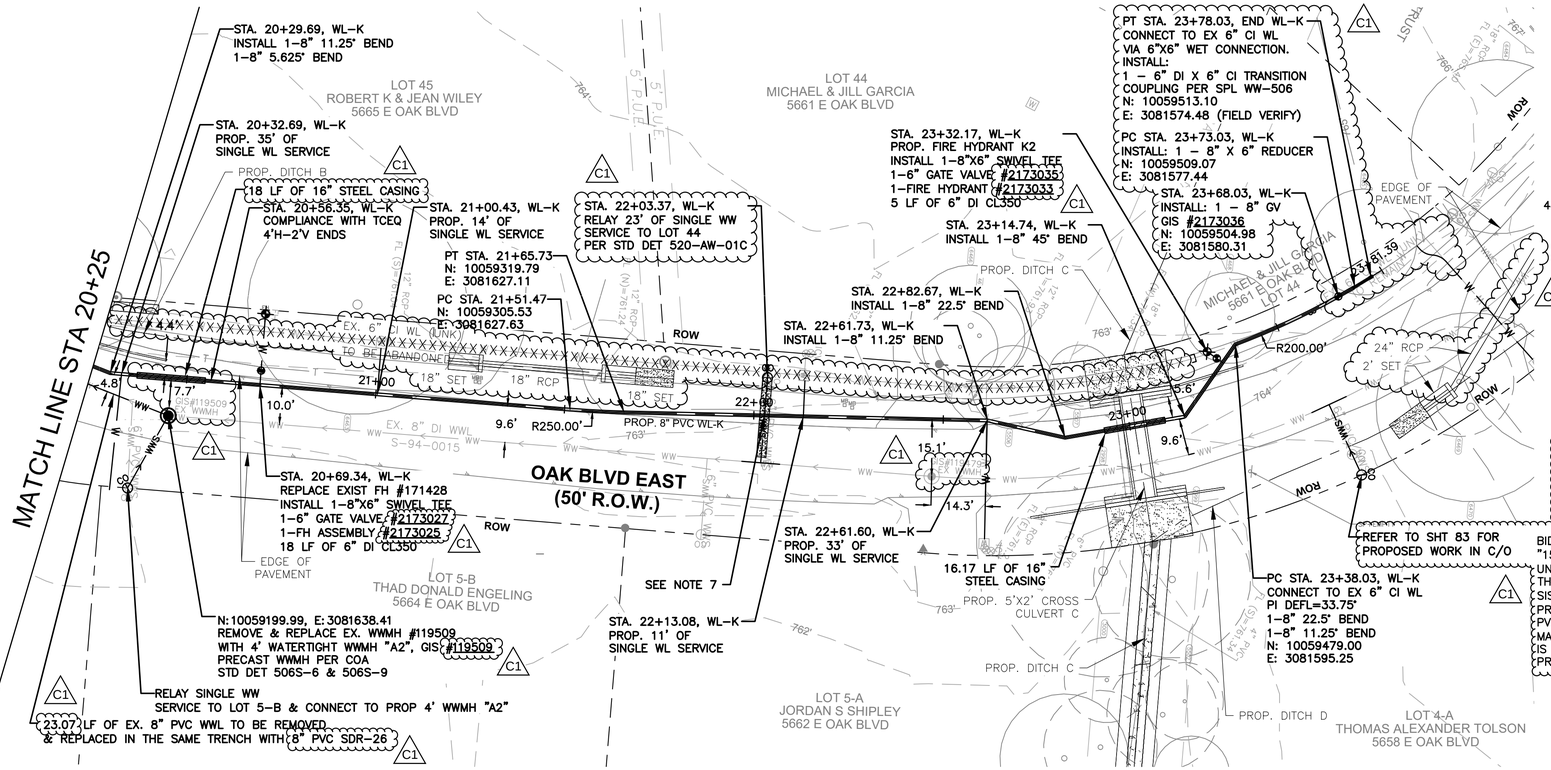
NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCING AND TOTAL NUMBER OF SHEETS. UPDATES TO CDS AND EASEMENT DOCUMENT NUMBERS. ADDED PROPOSED STORM DRAINS AND STRUCTURES LABELS. ADDED PROPOSED STORM DRAINS AND STRUCTURES TO LEGEND. ADDED PROPOSED STORM LINETYPES ADDED TO THE LEGEND AND UPDATES TO WATER ABANDONMENT EXTENTS. WATER VALVE CASTINGS ADDED TO PROFILE VIEW. SPL CORRECTIONS ON WW INVERT PLAN. UPDATED ON CONCRETE TRENCH CAP CALLOUTS.

SHEET INFORMATION
DATE October, 2023
SHEET 80 OF 116 (~~79~~ OF ~~115~~)

GP-2022-0408.WPD

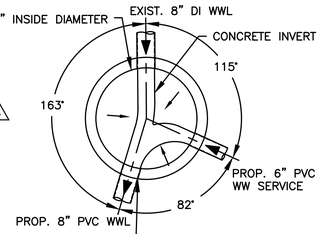
L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WATER LINE 'K' PLAN AND PROFILE (3 OF 4).dwg Layout: WATER LINE 'K' PLAN AND PROFILE (3 OF 4) Plotted: 3/5/2024 1:34:35 PM by: Brandon Montoya

REVIEWED
July 18, 2025
Austin Water
Mary Gorecki



WL 'K' CURVE TABLE				
STATION RANGE	DELTA	RADIUS	TANGENT	LENGTH
21+51.47 - 21+65.73	3.27	250'	7.13'	14.27'
23+38.03 - 23+78.03	12.42	200'	21.76'	43.36'

MANHOLE INVERT PLAN



MH 'A2'
INVERT PLAN VIEW
SCALE 1" = 3'

HORIZONTAL SCALE 0 20' 40'
VERTICAL SCALE 0 2' 4'

LEGEND

- LOC — LIMITS OF CONSTRUCTION
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- PROPOSED FIRE HYDRANT
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- SUE LEVEL A POTHOLES
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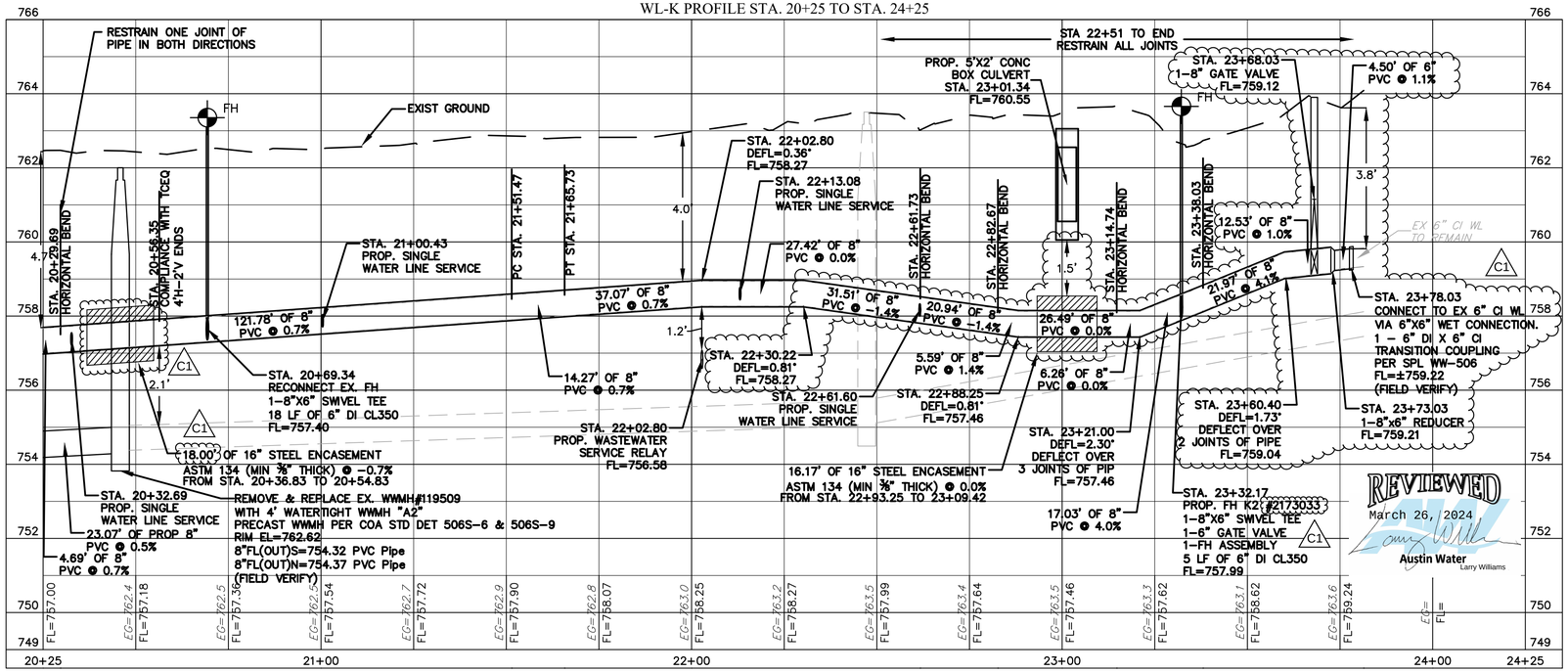
WL-K PROFILE STA. 20+25 TO STA. 24+25



REVIEWED
March 26, 2024
Austin Water
Larry Williams

NOTES:

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7. PER TCEQ RULE §290.44(e)(4)(B)(iv-v): WHEN THE NEW WATERLINE CROSSES ABOVE A NEW WASTEWATER MAIN OR LATERAL, AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF 6" SHALL BE MAINTAINED AND THE WASTEWATER MAIN OR LATERAL SHALL HAVE A MINIMUM PRESSURE RATING OF 150 PSI. ONE SEGMENT OF THE WATERLINE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER SERVICE. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER LATERAL. THE WASTEWATER SERVICE SHALL BE EMBEDDED IN CEMENT STABILIZED SAND FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12" BEYOND THE JOINT ON EACH END. THE BEDDING SHALL BE A MINIMUM OF 6" ABOVE AND 4" BELOW THE WASTEWATER LATERAL WITH A MINIMUM OF 10% CEMENT PER CUBIC YARD. (SEE DETAIL ON SHEET 86)
8. WASTEWATER CLEANOUT LOCATIONS WERE TAKEN FROM RECORD DRAWING INFORMATION, AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE A REDLINE OF THE ACTUAL LOCATION TO ENGINEER FOR REVIEW AND CONFIRMATION PRIOR TO THE START OF CONSTRUCTION. C1 WWCOs SHALL BE PLACED AT PROPERTY LINE PER STANDARD DETAIL 520-AW-01B. NOTIFY ENGINEER IF THERE IS A CONFLICT WITH OTHER UTILITIES.
9. ALL WASTEWATER MAINS SHALL BE PIPE ASTM D3034 PVC SDR-26 PIPE PER SPL WW-227
10. ALL WASTEWATER SERVICE LINES SHALL BE 6" PVC ASTM D 3034 SDR-26 WITH GASKETED HEAVY WALL FITTINGS MEETING ASTM D 3212 PER COA SPL WW-227B1

CAS CONSULTING & SERVICES, INC.
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T +1 512 328 5771 E usinfrastructure@rpsgroup.com

City of Austin WATERSHED PROTECTION

05-05-2024
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

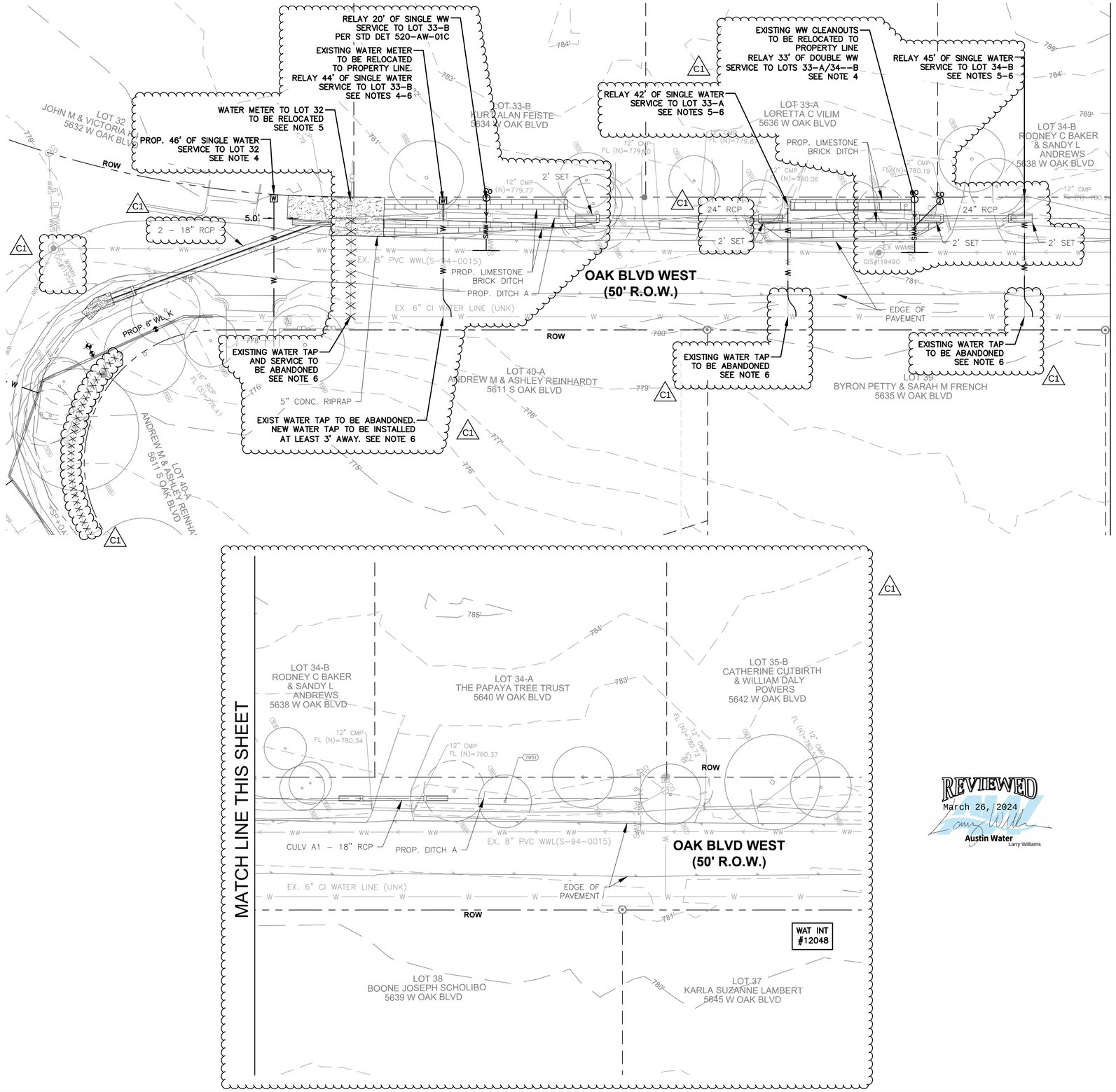
BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WATER LINE 'K' PLAN AND PROFILE (4 OF 4)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO GIS AND EASEMENT DOCUMENT NUMBERS, LABELS AND UPDATES TO PROPOSED STORM DRAINS AND STRUCTURES. ADDED NOTE 10 TO SHEET 82 AND ADDED NOTE 11 TO SHEET 83 PER REVIEW COMMENTS. CORRECTIONS ON WW INVERT PLAN, NEW LINETYPES ADDED TO THE LEGEND AND UPDATES TO WATER ABANDONMENT EXTENTS. STEEL CASING EXTENDED, MISCELLANEOUS QTY UPDATES, AND ADDED NOTE 11 TO SHEET 84 PER REVIEW COMMENTS. CASTINGS ADDED TO PROFILE, VIEW AND PROFILE UPDATES AT EXISTING TIE-IN CONNECTION.

SHEET INFORMATION
DATE October, 2023
SHEET 81 OF 116
~~80~~ OF ~~115~~

GP-2022-0408.WPD

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-141\RPS Odx Acres\3.0 Work Products\3.6 CAD\WATER LINE "K" PLAN AND PROFILE (4 OF 4).dwg Layout: WATER LINE 'K' PLAN AND PROFILE (4 OF 4) Plotted: 3/5/2024 1:33:24 PM by: Brandon Montoya



0 20' 40'
HORIZONTAL SCALE

LEGEND

- LOC — LIMITS OF CONSTRUCTION
- 760' — MAJOR CONTOURS – 5FT
- 762' — MINOR CONTOURS – 1 FT
- GAS — EXISTING GAS LINE
- W — EXISTING WATER LINE
- WW — EXISTING WASTEWATER LINE
- WWS — EXISTING WASTEWATER SERVICE LINE
- CWQZ — CRITICAL WATR QUALITY ZONE
- WQTZ — WATER QUALITY TRANSITION ZONE
- PROPOSED STORM LINE
- PROPERTY/ROW LINES
- EXISTING EASEMENT LINES
- PROPOSED TEMPORARY EASEMENT LINE
- PROPOSED PERMANENT EASEMENT LINE
- UTILITY TO BE REMOVED
- UTILITY TO BE ABANDONED IN PLACE
- PROPOSED WATER LINE
- PROPOSED BRICK DITCH
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- EXISTING WATER METER
- EXISTING WW CLEANOUT
- SUE LEVEL A POTHOLES
- TREE TO REMAIN
- TREE TO BE REMOVED

NOTES:

1. ALL WASTEWATER SERVICE LINES SHALL BE 6" PVC ASTM D 3034 SDR 26, WITH GASKETED HEAVY WALL JOINTS MEETING ASTM D3212 PER COA SPL WW-227B1.
2. ALL WASTEWATER SERVICE LINES SHALL HAVE A SLOPE NOT LESS THAN 1%.
3. WASTEWATER CLEANOUT LOCATIONS WERE TAKEN FROM RECORD DRAWING INFORMATION, AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE A REDLINE OF THE ACTUAL LOCATION TO ENGINEER FOR REVIEW AND CONFIRMATION PRIOR TO THE START OF CONSTRUCTION. WWCOs SHALL BE PLACED AT PROPERTY LINE PER STANDARD DETAIL 520-AW-01B. NOTIFY ENGINEER IF THERE IS A CONFLICT WITH OTHER UTILITIES.
4. PRIVATE WATER AND WASTEWATER SERVICE RECONNECTIONS INSIDE PRIVATE PROPERTY SHALL BE INSTALLED BY A LICENSED PLUMBER FOLLOWING SPECIAL SPEC SS3501. WORK SHALL BE PERFORMED OUTSIDE THE 1/2 CRZ OF PRESERVED TREES.
5. DURING WATER SERVICE RELOCATIONS AND/OR RECONNECTIONS, EXISTING AMI WATER METERS SHALL BE REUSED. NON-AMI WATER METERS SHALL BE REPLACED. WATER METER BOXES TO BE REPLACED WITH NEW PER SPL WW-145A.
6. REFER TO SHEET 88 FOR WATER SERVICE REPLACEMENT AT EXISTING WATER MAIN DETAIL.

C1

REVIEWED
March 26, 2024
Austin Water
Larry Williams

City of Austin WATERSHED PROTECTION

11-01-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
WL SERVICE ADJUSTMENTS (1 OF 2)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO GIS NUMBERS, LABELS AND LIFEPOINTS. UPDATES TO PROPOSED STORM DRAINS AND STRUCTURES. NEW NOTES 5 AND 6. VARIOUS REVISIONS TO NOTES AND LEGEND. ADDED EXISTING WATER TAP TO BE ABANDONED AT REPLACEMENTS. REFERENCES TO NEW WATER SERVICE REPLACEMENT DETAIL. NEW LINETYPE ADDED TO THE LEGEND. MISCELLANEOUS QTY UPDATES.

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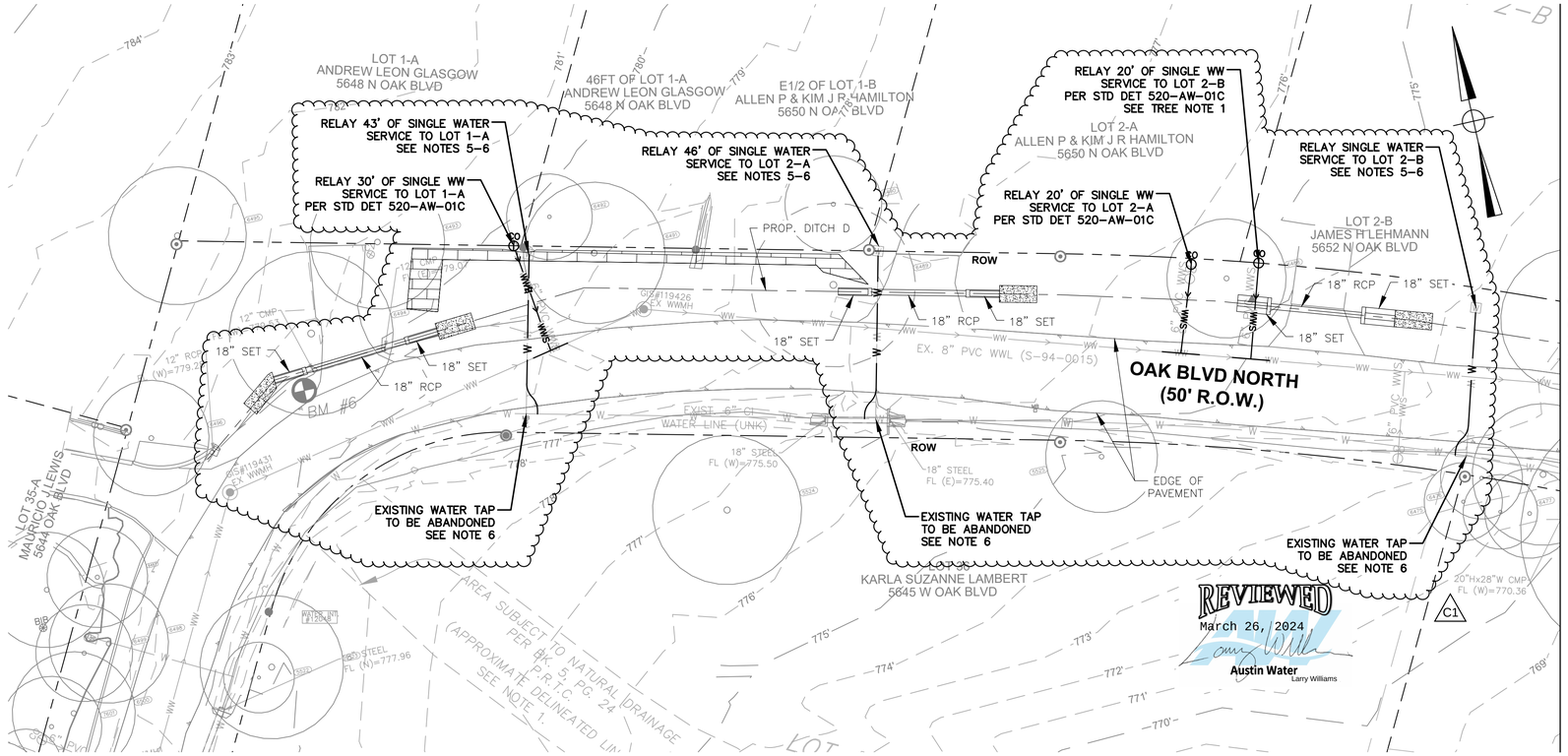
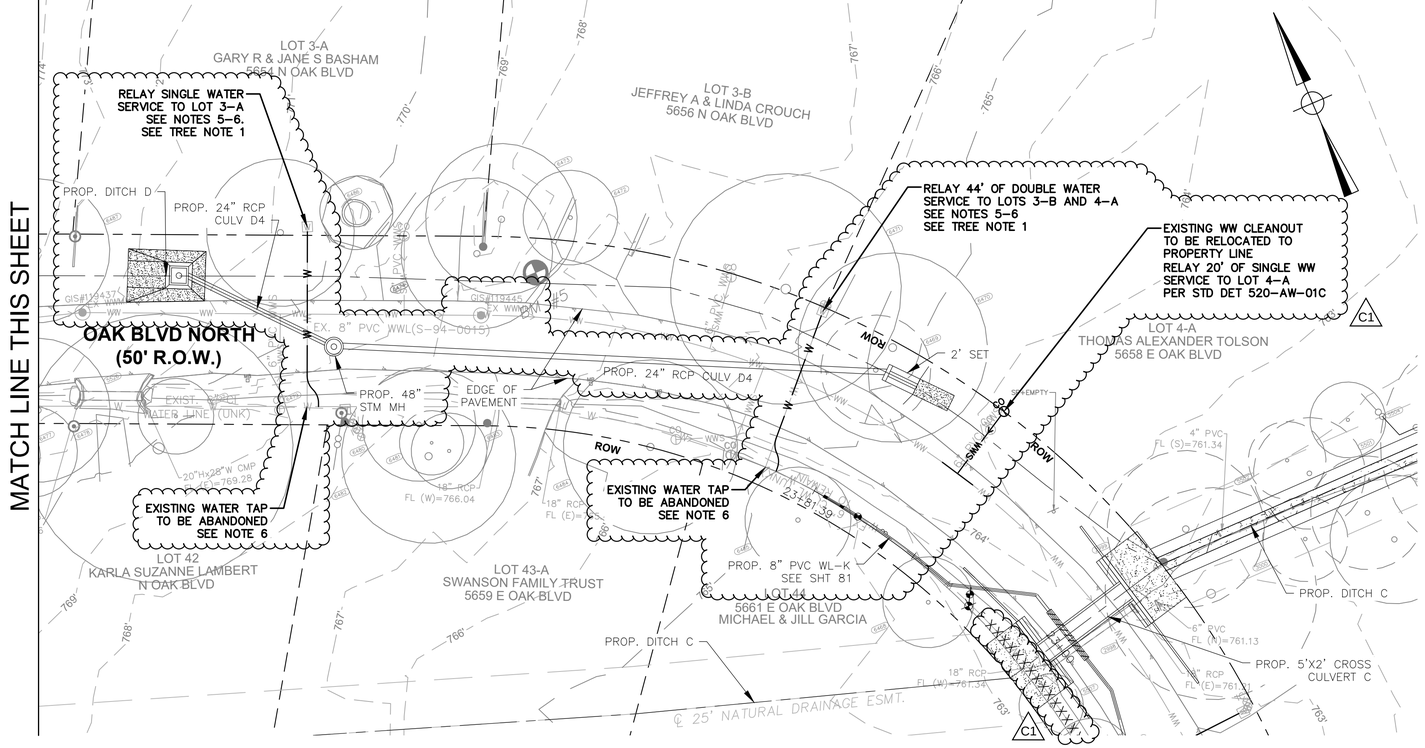
SHEET INFORMATION
DATE October, 2023
SHEET ~~81~~ 82 OF ~~115~~ 116

C1

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-1A\RPS Oak Acres\3.0 Work Products\3.6 CAD\WL SERVICE ADJUSTMENTS (1 OF 2).dwg Layout: WL SERVICE ADJUSTMENTS (1 OF 2) Plotted: 11/1/2023 5:31:14 PM by Frank De Luna





LEGEND

- LOC — LIMITS OF CONSTRUCTION
- 760' — MAJOR CONTOURS – 5FT
- 762' — MINOR CONTOURS – 1 FT
- GAS — EXISTING GAS LINE
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- PROPERTY/ROW LINES
- EXISTING EASEMENT LINES
- PROPOSED TEMPORARY EASEMENT LINE
- PROPOSED PERMANENT EASEMENT LINE
- C1 — UTILITY TO BE REMOVED
- UTILITY TO BE ABANDONED IN PLACE
- PROPOSED WATER LINE
- PROPOSED BRICK DITCH
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- EXISTING WATER METER
- EXISTING WW CLEANOUT
- SUE LEVEL A POTHOLES
- TREE TO REMAIN
- TREE TO BE REMOVED

NOTES:

1. ALL WASTEWATER SERVICE LINES SHALL BE 6" PVC ASTM D 3034 SDR 26, WITH GASKETED HEAVY WALL JOINTS MEETING ASTM D3212 PER COA SPL WW-227B1.
2. ALL WASTEWATER SERVICE LINES SHALL HAVE A SLOPE NOT LESS THAN 1%.
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4. PRIVATE WATER AND WASTEWATER SERVICE RECONNECTIONS INSIDE PRIVATE PROPERTY SHALL BE INSTALLED BY A LICENSED PLUMBER FOLLOWING SPECIAL SPEC SS3501. WORK SHALL BE PERFORMED OUTSIDE THE 1/2 CRZ OF PRESERVED TREES.
5. DURING WATER SERVICE RELOCATIONS AND/OR RECONNECTIONS, EXISTING AMI WATER METERS SHALL BE REUSED. NON-AMI WATER METERS SHALL BE REPLACED. WATER METER BOXES TO BE REPLACED WITH NEW PER SPL WW-145A.
6. REFER TO SHEET 88 FOR WATER SERVICE REPLACEMENT AT EXISTING WATER MAIN DETAIL.

TREE NOTES:

1. SERVICE TO BE INSTALLED USING LOW-IMPACT EXCAVATION METHODS, SUCH AS HAND DIGGING AND/OR COMPRESSED AIR TO ALLOW EXCAVATION WITHOUT DAMAGING SIGNIFICANT ROOTS THAT ARE 1.5" IN DIAMETER OR GREATER. REMOVAL OR ANY SIGNIFICANT ROOTS REQUIRES AUTHORIZOATION FROM THE CITY ARBORIST.

City of Austin
WATERSHED PROTECTION

11-01-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WL SERVICE ADJUSTMENTS (2 OF 2)

NO.	BY	DATE	REVISIONS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO GIS NUMBERS, LABELS AND UPDATES TO PROPOSED STORM DRAINS AND STRUCTURES. NEW NOTES 5 AND 6. VARIOUS REFACAMENTS. REFERENCES TO NEW WATER SERVICE REPLACEMENT DETAIL. NEW LINETYPES ADDED TO THE LEGEND AND UPDATES TO WATER ABANDONMENT EXTENTS. MISCELLANEOUS QTY UPDATES. NEW TREE NOTES. UPDATES TO SHOW WATER LINE "K" BEING CONNECTION.

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SHEET INFORMATION

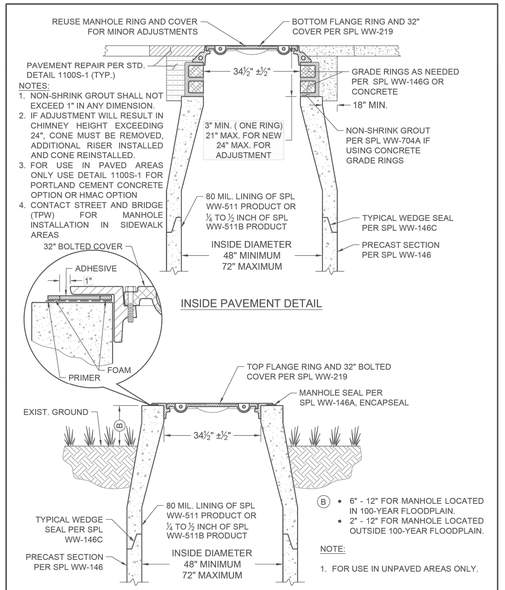
DATE October, 2023

SHEET 83 OF 116
~~82~~ ~~115~~

C1

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WL SERVICE ADJUSTMENTS (2 OF 2).dwg Layout: WL SERVICE ADJUSTMENTS (2 OF 2) Plotted: 11/1/2023 5:42:19 PM by Frank De Luna

GP-2022-0408.WPD

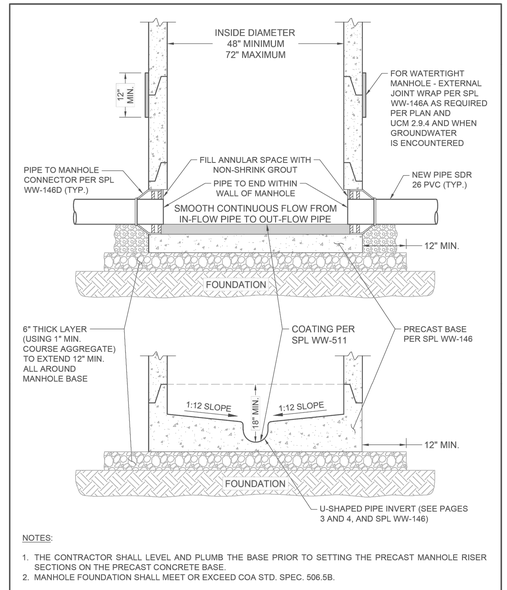


AUSTIN WATER SPECIAL DETAIL (03/07/25)
PRECAST CONCRETE WASTEWATER MANHOLE

1 OF 5

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.



NOTES:

1. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MANHOLE FOUNDATION SHALL MEET OR EXCEED COA STD. SPEC. 506.5B.

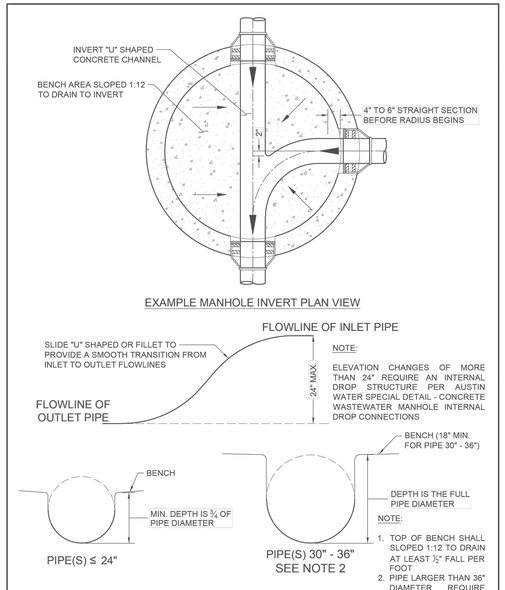
TYPICAL PRECAST BASE

AUSTIN WATER SPECIAL DETAIL (03/07/25)
PRECAST CONCRETE WASTEWATER MANHOLE

2 OF 5

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.

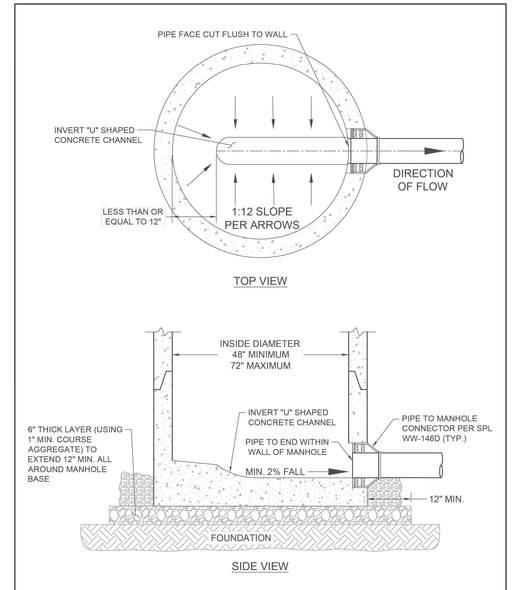


AUSTIN WATER SPECIAL DETAIL (03/07/25)
PRECAST CONCRETE WASTEWATER MANHOLE

3 OF 5

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.

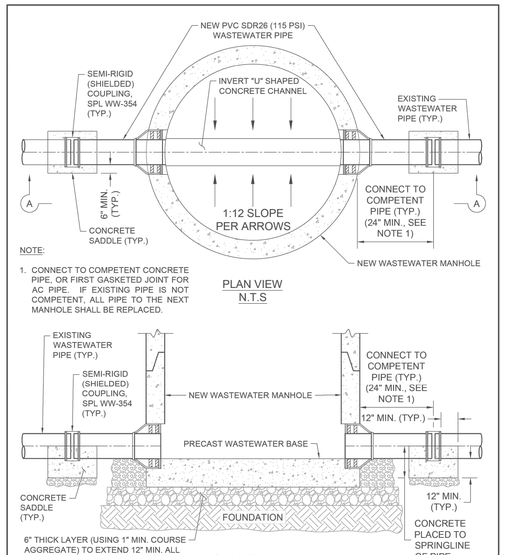


AUSTIN WATER SPECIAL DETAIL (03/07/25)
PRECAST CONCRETE WASTEWATER MANHOLE

4 OF 5

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.

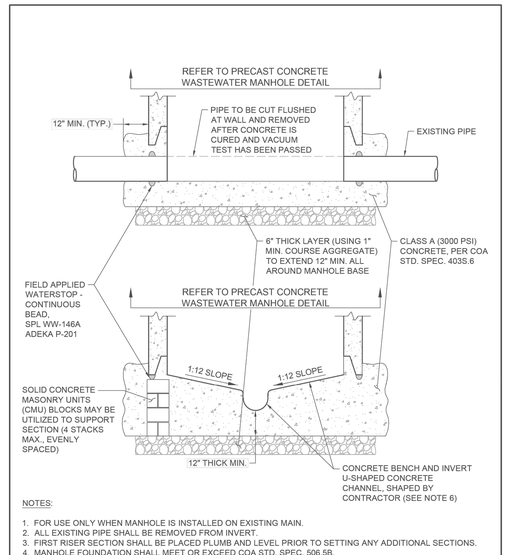


AUSTIN WATER SPECIAL DETAIL (03/07/25)
PRECAST CONCRETE WASTEWATER MANHOLE

5 OF 5

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.



NOTES:

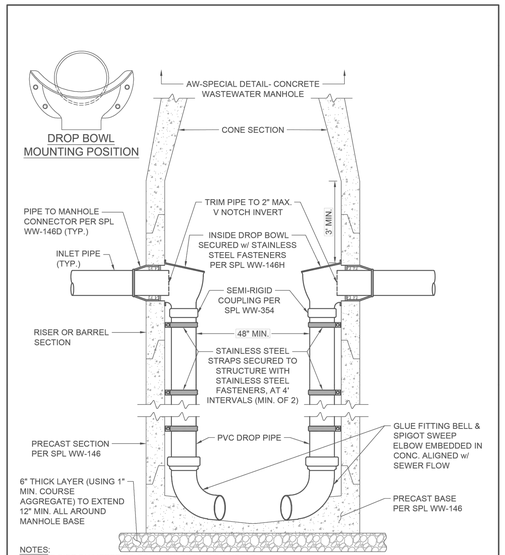
1. FOR USE ONLY WHEN MANHOLE IS INSTALLED ON EXISTING MAIN.
2. ALL EXISTING PIPE SHALL BE REMOVED FROM INVERT.
3. FIRST RISER SECTION SHALL BE PLACED PLUMB AND LEVEL PRIOR TO SETTING ANY ADDITIONAL SECTIONS.
4. MANHOLE FOUNDATION SHALL MEET OR EXCEED COA STD. SPEC. 506.5B.
5. DOGHOUSE MANHOLES ARE PROHIBITED.
6. REFER TO PRECAST CONCRETE WASTEWATER MANHOLE DETAIL FOR CONCRETE BENCH AND INVERT REQUIREMENTS.

AUSTIN WATER SPECIAL DETAIL (03/07/25)
CAST-IN-PLACE BASE FOR CONCRETE WASTEWATER MANHOLE

1 OF 1

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.

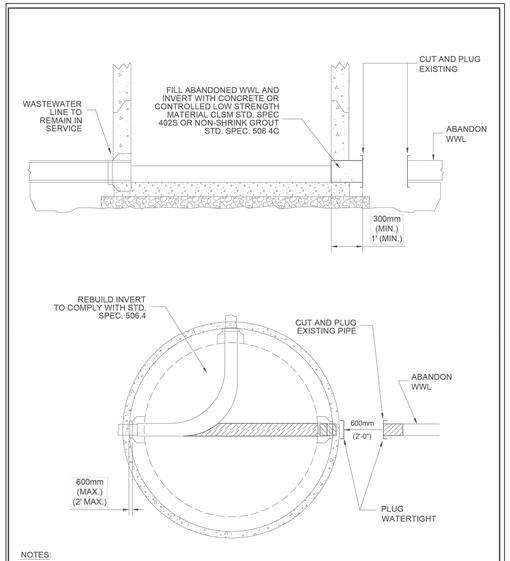


AUSTIN WATER SPECIAL DETAIL (10/11/24)
CONCRETE WASTEWATER MANHOLE INTERNAL DROP CONNECTIONS

1 OF 1

USE OF THIS SPECIAL DETAIL

1. THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS SPECIAL DETAIL. MODIFICATIONS TO THIS SPECIAL DETAIL ARE PROHIBITED.
2. THIS SPECIAL DETAIL IS TEMPORARY AND IS TO BE USED UNTIL A NEW STANDARD DETAIL IS ADOPTED TO REPLACE IT.



CITY OF AUSTIN AUSTIN WATER UTILITY	ABANDON LINE AT ACTIVE MANHOLE
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.
	STANDARD NO. 506S-15A 1 OF 1

C1

REVIEWED
July 18, 2025
Austin Water
Mary Ann C. Cramer

C1

REVIEWED
March 26, 2024
Austin Water
Larry Williams

APPROVED
Date 07/21/25
For Director, Austin Water
GP-2022-0408.WPD

CAS CONSULTING & SERVICES, INC.
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REVISIONS

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. OVERALL DETAILS UPDATE

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
WASTEWATER DETAILS (1 OF 3)

SHEET INFORMATION

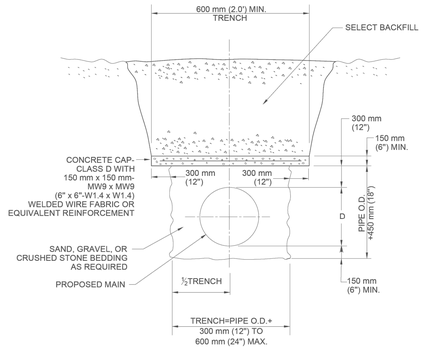
DATE August, 2023

SHEET 84 ~~83~~ OF 116 ~~115~~

C1

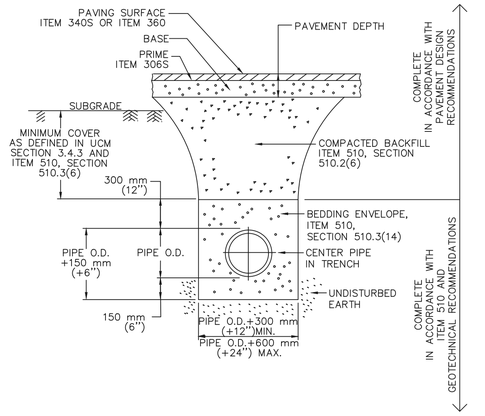
GP-2022-0408.WPD

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WASTEWATER DETAILS (1 OF 3).dwg Layout: WASTEWATER DETAILS (1 OF 3) Plotted: 8/22/2023 2:54:23 PM by Brandon Montoya



CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE TRENCH CAP	
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. 510S-1 1 OF 1

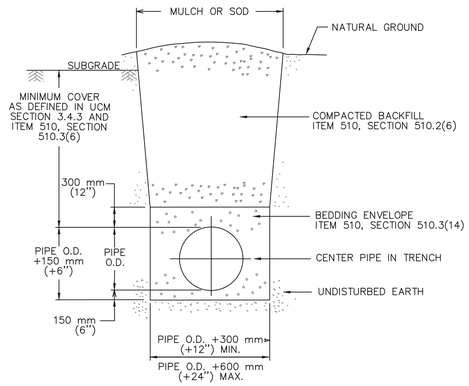
THIS DETAIL FOR USE ONLY ON CITY OF AUSTIN C.I.P. PROJECTS.



REFERENCES:

1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510,
   SECTION 510.2(6), "SELECT BACKFILL OR BORROW";
   SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER";
   SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

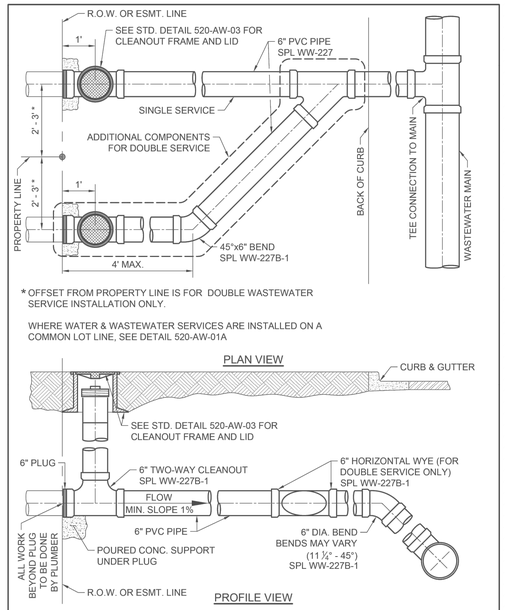
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAIL FOR PROPOSED STREET	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S-4



REFERENCES:

1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510,
   SECTION 510.2(6), "SELECT BACKFILL OR BORROW";
   SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER";
   SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL TRENCH DETAIL WITH UNFINISHED SURFACE	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S-5



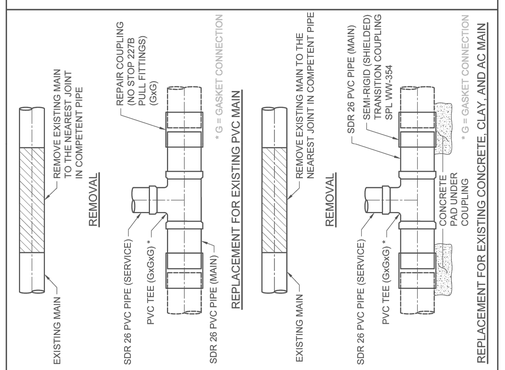
* OFFSET FROM PROPERTY LINE IS FOR DOUBLE WASTEWATER SERVICE INSTALLATION ONLY.

WHERE WATER & WASTEWATER SERVICES ARE INSTALLED ON A COMMON LOT LINE, SEE DETAIL 520-AW-01A

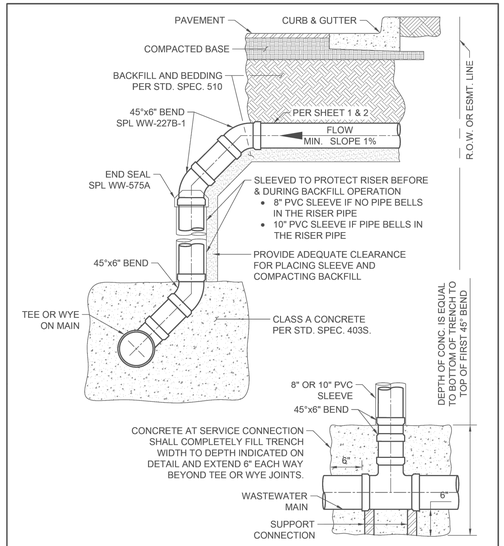
CITY OF AUSTIN AUSTIN WATER		SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION	
RECORD COPY SIGNED *JEFF A. KYLE*	11/07/2018 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01C 1 OF 4

NOTES:

1. DURING SUBDIVISION CONSTRUCTION, UTILITY CONTRACTOR INSTALLS WASTEWATER TEE CONNECTION TO MAIN, 6" STUB, HORIZONTAL WYE FOR DOUBLE SERVICES, 6" SERVICE BRANCH WITH TWO-WAY CLEANOUT(S) AND RISER, FRAME, AND COVER. CLEANOUT(S) TO BE PLUGGED AT PROPERTY LINE OR EASEMENT LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SLOPE DOWNWARD TO MAIN 1% MIN. TO 45° MAX. DEPTH OF SERVICE AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 4', OTHERWISE THE INSTALLED DEPTH WILL BE 4' MIN. AND 6' MAX. AT PROPERTY LINE. IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, SEE SHEET 3 OF 4.
2. PIPING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION 510.3 (14); MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESE AREAS SHALL HAVE A MIN. COVER BELOW FINAL STREET GRADE OF 42".
3. PLUMBER SHALL REMOVE PLUG AND CONNECT TO TWO-WAY CLEANOUT. NO CONNECTION TO CLEANOUT STACK IS ALLOWED.



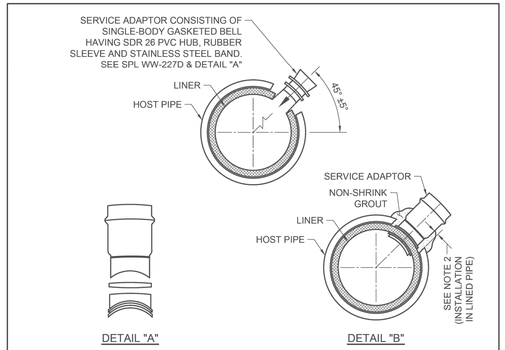
CITY OF AUSTIN AUSTIN WATER		SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION	
RECORD COPY SIGNED *JEFF A. KYLE*	11/07/2018 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01C 2 OF 4



CONCRETE ENCASEMENT
FOR SERVICE CONNECTION

DEEP SERVICE CONNECTION

CITY OF AUSTIN AUSTIN WATER		SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION	
RECORD COPY SIGNED *JEFF A. KYLE*	11/07/2018 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01C 3 OF 4



INSTALLATION IN LINED PIPE:

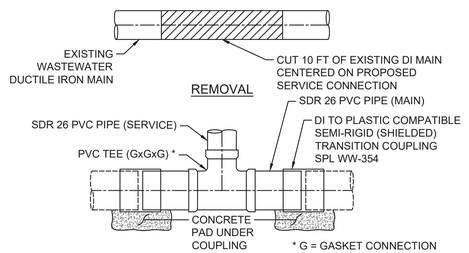
1. MARK LOCATION OF TAP.
2. BREAK & REMOVE HOST PIPE SO THAT OPENING IS AT LEAST 2" BUT NO MORE THAN 3" WIDER THAN DIAMETER OF THE SERVICE ADAPTOR.
3. DO NOT DAMAGE LINER.
4. CORE HOLE THROUGH LINER USING ADAPTOR MANUFACTURER RECOMMENDED BIT.
5. INSTALL SERVICE ADAPTOR.
6. HOLES CUT IN HOST PIPE SHALL BE PACKED WITH NON-SHRINK GROUT (ASTM C1107 GRADE). SEE DETAIL "B"

NOTES:

1. USE ONLY TO TAP EXISTING LINED PIPE.
2. SEE APPROPRIATE STD. FOR SERVICE LINE INFORMATION.
3. THE EDGE OF THE CORE HOLE MUST BE AT LEAST 3' FROM THE ENDS OF THE PIPE, ANY OTHER CORE SERVICE CONNECTIONS, AND ANY FITTINGS.
4. FOR DEEP SERVICE APPLICATIONS SEE SHEET 3 OF 4, EXCEPT SUBSTITUTE A CORED HOLE, AND SERVICE ADAPTOR FOR THE TEE OR WYE.
5. SERVICE CONNECTIONS TO MANHOLES MUST BE MADE USING A PIPE-TO-MANHOLE CONNECTOR WHICH LIMITS THE PIPE SLOPE INTO THE MANHOLE TO 12% MAX.

6" WASTEWATER CONNECTION TO EXISTING LINED MAIN

CITY OF AUSTIN AUSTIN WATER		SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION	
RECORD COPY SIGNED *JEFF A. KYLE*	11/07/2018 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01C 4 OF 4



WASTEWATER SERVICE REPLACEMENT FOR EXISTING DUCTILE IRON MAIN

REVIEWED
March 26, 2024
Austin Water
Terry Williams

CITY OF AUSTIN
APPROVED
Date 07/21/25
FOR PERMIT
GP-2022-0408.WPD

CAS CONSULTING & SERVICES, INC.
7908 Cameron Road | Austin, TX 78754 |REG. NO. F-03572
Main: 512.836.2388 | Fax: 512.836.4515

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T +1 512 328 5771 E usinfrastructure@rpsgroup.com

City of Austin
WATERSHED PROTECTION

08-23-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED
PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
WASTEWATER DETAILS (2 OF 3)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. OVERALL DETAILS UPDATE. NEW WASTEWATER SERVICE REPLACEMENT FOR EXISTING DUCTILE IRON DETAIL

REVISIONS

SHEET INFORMATION

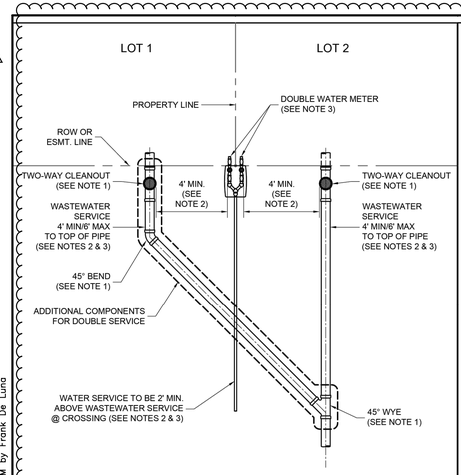
DATE August, 2023

SHEET 85 OF 116
~~84~~ ~~115~~

C1

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WASTEWATER DETAILS (2 OF 3).dwg Layout: WASTEWATER DETAILS (2 OF 3) Plotted: 8/22/2023 2:54:36 PM by Brandon Montoya

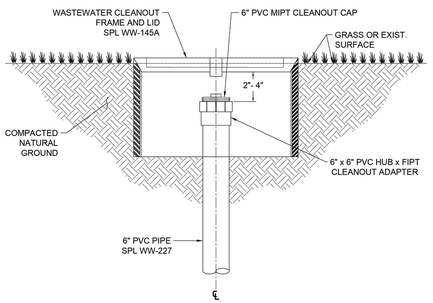
GP-2022-0408.WPD



NOTES:

1. WASTEWATER SERVICE FITTINGS SHALL BE APPROVED FOR USE WITH THIS DETAIL AS LISTED ON SPL WW-227B-1.
2. UTILIZE EXISTING ALIGNMENT FOR REPAIR OR REPLACEMENT OF EXISTING WATER AND WASTEWATER SERVICES. WATER SERVICE SHALL BE INSTALLED AT A SHALLOWER GRADE THAN WASTEWATER SERVICE.
3. SEE STANDARD DETAIL 520-AW-01B FOR WATER SERVICE INSTALLATION AND 520-AW-01C FOR WASTEWATER SERVICE INSTALLATION.

CITY OF AUSTIN AUSTIN WATER	WATER / WASTEWATER SERVICE ON COMMON LOT LINE		STANDARD NO.
RECORD COPY SIGNED JEFF A. KYLE 11/07/2018 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.		520-AW-01A 1 OF 1

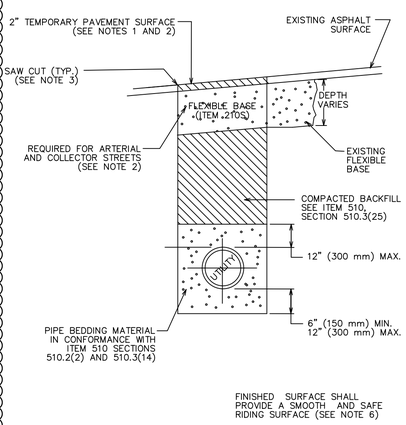


NOTE:

1. WASTEWATER CLEANOUT FRAME AND LID SHALL NOT BE PLACED IN PAVED AREAS, INCLUDING SIDEWALKS, DRIVEWAYS, OR PARKING LOTS, AND MUST BE LOCATED A MINIMUM OF 6" FROM ALL PAVED AREAS.

CITY OF AUSTIN AUSTIN WATER	WASTEWATER CLEANOUT FRAME AND LID		STANDARD NO.
JEFF A. KYLE 08/16/2019 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.		520-AW-03 1 OF 1

TEMPORARY TRENCH REPAIR IN ASPHALTIC SURFACE
ITEM 510 SECTION 510.3 (25)(h)

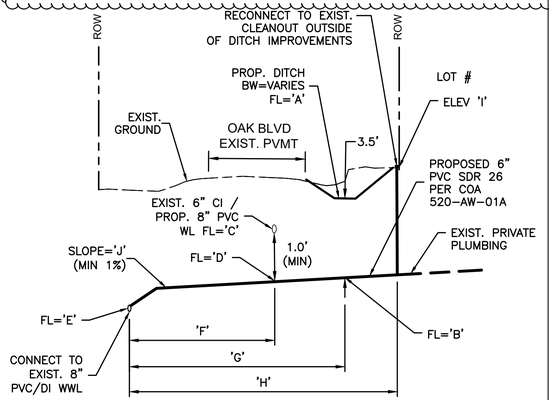


FINISHED SURFACE SHALL PROVIDE A SMOOTH AND SAFE RIDING SURFACE (SEE NOTE 6)

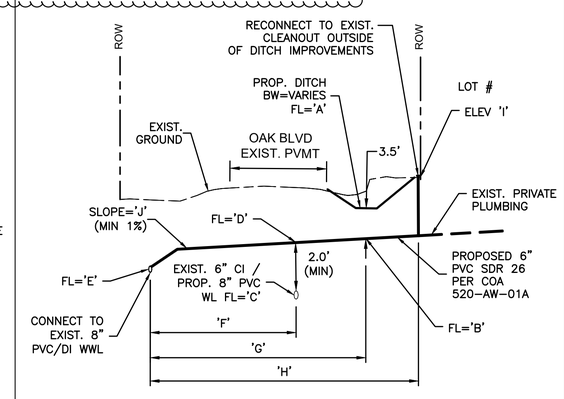
1. TEMPORARY PAVEMENT REPAIRS SHALL BE ALLOWED NO LONGER THAN 90 DAYS AFTER PASSING THE WATER PRESSURE AND/OR WASTEWATER MANDREL TESTS. IF TEMPORARY PAVEMENT REPAIRS ARE TO REMAIN IN PLACE FOR A PERIOD EXCEEDING 90 DAYS, ON ANY SINGLE TRENCH LINE OR INDIVIDUAL STREET, SUCH TEMPORARY PAVEMENT SHALL BE HMAC, PLACED AND COMPACTED SUFFICIENTLY TO WITHSTAND THE ANTICIPATED TRAFFIC LOADS OVER THE DURATION OF THE TEMPORARY REPAIR.
2. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE USING COLD MIX AC IN ACCORDANCE WITH TxDOT "DMS-9203, RAPID CURING ASPHALT CONCRETE PATCHING MATERIAL" OR TEMPORARY HMAC PER COA ITEM "340S HOT MIX ASPHALTIC CONCRETE PAVEMENT". A MINIMUM OF TWO INCHES (2") OF TEMPORARY COLD MIX OR HMAC SHALL BE PLACED OVER COMPACTED BACKFILL. FLEXIBLE BASE SHALL ALSO BE REQUIRED, FOR ALL COLLECTOR OR ARTERIAL STREETS.
3. THE EXISTING CONCRETE OR ASPHALT PAVING SURFACE SHALL BE SAW CUT. SAW CUTS SHALL BE IN A STRAIGHT LINE, ALONG THE SIDES OF THE TRENCH (OR MANHOLE EXCAVATION) AND SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION. ANY DAMAGED EDGES SHALL BE RE-SAW CUT IF REQUIRED BY THE OWNER.
4. HMAC OR COLD MIX SHALL BE FREE OF CONTAMINATION, AS DETERMINED BY A VISUAL INSPECTION BY THE OWNER'S REPRESENTATIVE, REFERENCE ITEM 340S SECTION 340S.10 A.
5. TEMPORARY PAVING MATERIAL MUST BE COMPACTED WITH A SMOOTH DRUM VIBRATORY ROLLER.
6. THE FINISHED SURFACE SHALL BE MAINTAINED DUST FREE AND PROVIDE A SMOOTH AND SAFE RIDING SURFACE FOR ALL VEHICLES ALONG THE ROUTE, INCLUDING, BUT NOT LIMITED TO SMALL CARS, MOTORCYCLES, MOPEDS AND BICYCLES. THE TEMPORARY SURFACE SHALL BE MAINTAINED BY THE CONTRACTOR THE ENTIRE TIME THE TEMPORARY SURFACE IS IN PLACE. DAILY MAINTENANCE SHALL BE PERFORMED BASED ON FIELD CONDITIONS AND AT THE DIRECTION OF THE OWNER'S REPRESENTATIVE, UNTIL THE FINAL PAVEMENT SURFACE IS PLACED.
7. THE TEMPORARY PAVEMENT SURFACE SHALL HAVE A MAXIMUM ALLOWABLE DEVIATION OF ¼" ABOVE OR BELOW THE EXISTING PAVEMENT SURFACE DIRECTLY ADJACENT TO THE PATCH.
8. ANY PORTIONS OF THE TEMPORARY PAVEMENT SURFACE THAT HAVE SETTLED, BECOME DAMAGED, OR DETERIORATED MUST BE REPAIRED BY REMOVING THE EXISTING TEMPORARY SURFACE MATERIAL TO A MINIMUM DEPTH OF 2" BELOW THE SURFACE ELEVATION PRIOR TO REPLACING AND RECOMPACTING NEW COLD MIX/HOT MIX IN THE EXCAVATION AREA.
9. IF IT IS DETERMINED DURING CORRECTIVE ACTION THAT SOFT, SATURATED AND/OR UNSTABLE SUBSURFACE SOILS ARE CONTRIBUTING TO THE FAILURE OF THE TEMPORARY PAVEMENT SECTION, THE UNSUITABLE MATERIALS MUST BE REMOVED AND REPLACED WITH BACKFILL SOILS FREE OF ORGANICS, STONES OR ROCKS OVER 8 INCHES, AND HAVING A PLASTICITY INDEX OF 20 OR LESS, AND SHALL HAVE A MC WITHIN 2% OF OPTIMUM, PRIOR TO REPLACING THE TEMPORARY PAVEMENT SURFACE.
10. 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.
11. ALL EXISTING ROADWAY STRIPING AND PAVEMENT MARKINGS REMOVED OR DAMAGED BY THE CONTRACTOR'S WORK SHALL BE RESTORED PRIOR TO OPENING THE STREET TO TRAFFIC.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TEMPORARY TRENCH REPAIR– ASPHALT SURFACE		STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER 12/09/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		1100S–4 1 OF 2

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TEMPORARY TRENCH REPAIR– ASPHALT SURFACE		STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER 12/09/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		1100S–4 2 OF 2

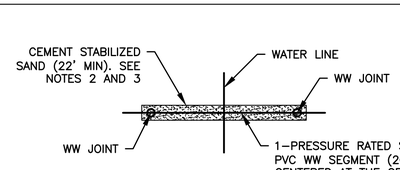


TYPICAL CROSS SECTION LONG WASTEWATER SERVICE (WASTEWATER UNDER WATER LINE)
NOT TO SCALE



TYPICAL CROSS SECTION LONG WASTEWATER SERVICE (WASTEWATER ABOVE WATER LINE)
NOT TO SCALE

Lot	Ditch Name	Alignment Station	A	B	C	D	E	F	G	H	I	J
34-B	A	1+09	779.1	774.44	N/A	N/A	772.64	N/A	12.67	20.72	781.91	4.00%
33-B	A	3+83	777.7	774.63	N/A	N/A	771.18	N/A	12.11	19.86	781.10	4.00%
40-B	A	7+50	770.7	766.70	766.95	765.45	764.05	10.74	18.41	25.22	771.55	1.00%
40-B / 41-A	A	8+33	768.6	765.27	765.51	764.01	762.61	10.90	19.35	31.75	770.22	1.00%
41-B	A	10+42	764.6	761.57	762.40	760.80	759.40	11.00	20.91	30.28	766.78	1.00%
49	A	11+08	763.7	760.67	761.60	759.90	758.50	10.70	20.93	30.42	766.32	1.00%
48	A	11+86	762.6	758.97	760.66	758.86	757.47	10.15	20.87	29.27	764.99	1.00%
47-A / 46	A1	0+21	761.5	757.97	759.15	757.65	756.06	10.02	20.75	29.48	763.85	3.00%
45	Does not cross ditch		N/A	757.66	756.16	754.75	11.59	N/A	29.44	762.80	1.00%	
44	B	2+90	762.1	759.10	757.81	756.31	754.89	12.53	20.19	22.55	762.64	1.00%
1-A	D	1+01	777.1	772.79	N/A	N/A	770.96	N/A	13.52	27.03	779.73	4.00%
2-A	D	2+77	773.0	768.84	N/A	N/A	767.40	N/A	14.43	20.09	775.63	1.00%
2-B	D	2+94	772.6	768.37	N/A	N/A	766.93	N/A	14.47	25.80	775.46	1.00%
3-A	D	4+76	765.2	762.13	N/A	N/A	760.74	N/A	9.60	20.76	769.05	1.00%
3-B	D	5+61	764.0	760.98	N/A	N/A	758.17	N/A	14.73	19.71	766.35	1.00%
4-A	D	6+31	763.4	758.26	N/A	N/A	756.84	N/A	12.34	14.47	763.89	1.00%

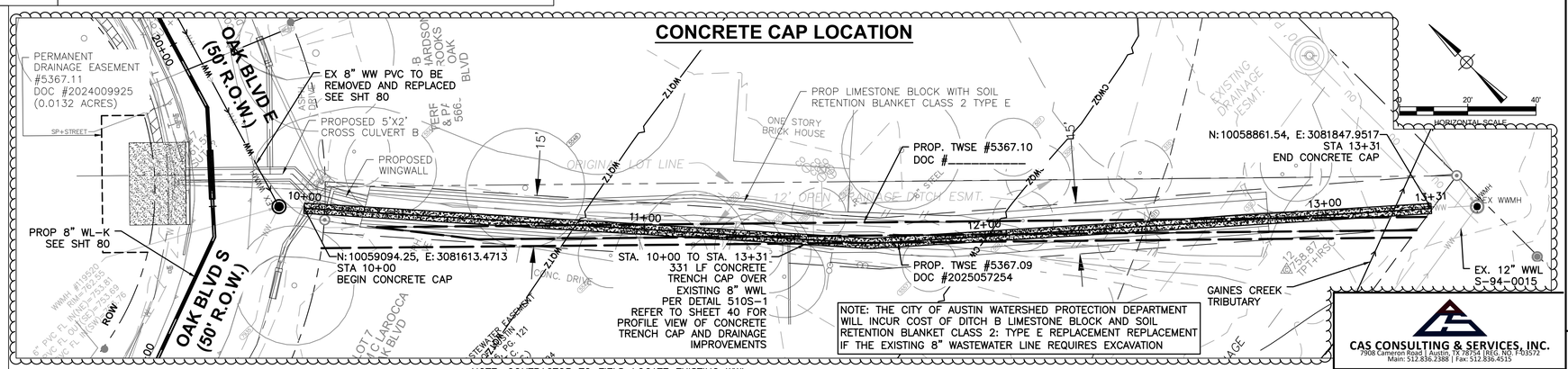


NOTES:

1. WASTEWATER SERVICES MAY CROSS POTABLE WATER AND HAVE AN ABSOLUTE MINIMUM VERTICAL CLEARANCE OF SIX (6) INCHES IF THE FOLLOWING APPLIES [PER TCEQ RULE §290.44(e)(4)(B)]:
   a. WATER LINE CROSSES ABOVE WASTEWATER
   b. WASTEWATER PIPE IS AT LEAST 150 PSI PRESSURE RATED
   c. CEMENT STABILIZED SAND (CSS) IS PROVIDED AT THE CROSSING
2. IF POTABLE WATER CROSSES ABOVE WASTEWATER AND THE VERTICAL CLEARANCE IS GREATER THAN TWO (2) FEET, CSS IS NOT REQUIRED.
3. WHERE CSS BEDDING IS REQUIRED:
   a. CSS SHALL HAVE A MINIMUM OF 10% CEMENT PER CY OF CEMENT STABILIZED SAND MIXTURE BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE).
   b. CSS SHALL HAVE A MINIMUM OF SIX (6) INCHES ABOVE AND FOUR (4) INCHES BELOW THE WASTEWATER MAIN OR LATERAL.

CEMENT STABILIZED SAND BEDDING DETAIL
NOT TO SCALE

CONCRETE CAP LOCATION



NOTE: CONTRACTOR TO FIELD LOCATE EXISTING WWL AND INSTALL CONCRETE TRENCH CAP WITHIN THE LIMITS OF HTE PROPOSED DITCH B IMPROVEMENTS.

NOTE: THE CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT WILL INCUR COST OF DITCH B LIMESTONE BLOCK AND SOIL RETENTION BLANKET CLASS 2: TYPE E REPLACEMENT REPLACEMENT IF THE EXISTING 8" WASTEWATER LINE REQUIRES EXCAVATION

REVIEWED
March 26, 2024
Austin Water
Larry Williams

City of Austin WATERSHED PROTECTION

11-02-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WASTEWATER DETAILS (3 OF 3)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. UPDATES TO EASEMENT DOCUMENT NUMBERS. UPDATES TO DETAILS. CONCRETE CAP REFERENCES TO NEW ALIGNMENT. UPDATES TO PROPOSED WATER AND WASTEWATER LINES.

REVISIONS

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SHEET INFORMATION
DATE October, 2023
SHEET ~~85~~ 86 OF ~~115~~ 116

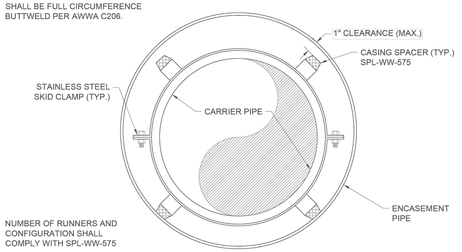
C1

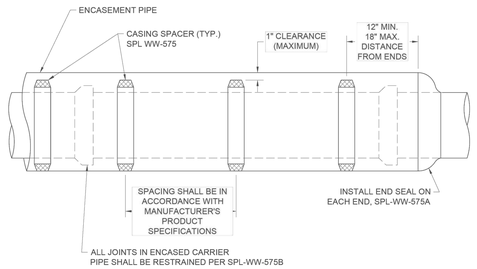
GP-2022-0408.WPD

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-141\RPS Oak Acres\3.0 Work Products\3.6 CAD\WASTEWATER DETAILS (3 OF 3).dwg Layout: WASTEWATER DETAILS (3 OF 3) Plotted: 11/2/2023 12:23:43 PM by Frank De Luna

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011--14\RPS Oak Acres\3.0 Work Products\3.6 CAD\WATER DETAILS (1 OF 2).dwg Layout: WATER DETAILS (1 OF 2) Plotted: 8/22/2023 2:59:17 PM by Brandon Montoya

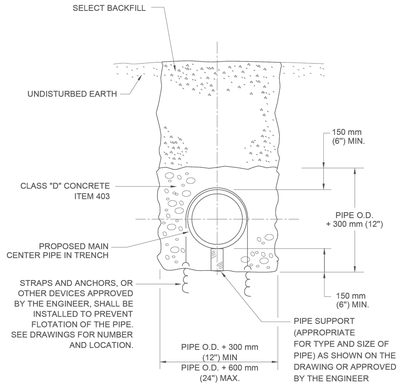
FIELD WELDS IN ENCASEMENT PIPE SHALL BE FULL CIRCUMFERENCE BUTTWELD PER AWWA C206.



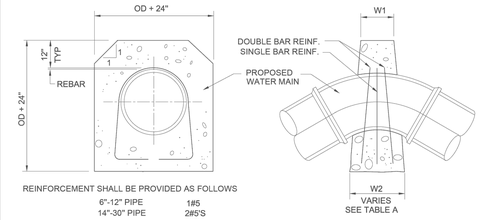


APPLICABLE REFERENCES:
STANDARD SPECIFICATION: ITEM 505.4 & 510.3 (19)

CITY OF AUSTIN AUSTIN WATER		ENCASEMENT PIPE DETAIL WITH CASING SPACERS	
JEFF A. KYLE	02/22/2021 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 501-AW-01 1 OF 1



CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE ENCASEMENT	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/18/00 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 505S-1 1 OF 1



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS

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

VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

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

NOTES:

1- FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINED JOINTS SHALL BE INSTALLED

2- FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

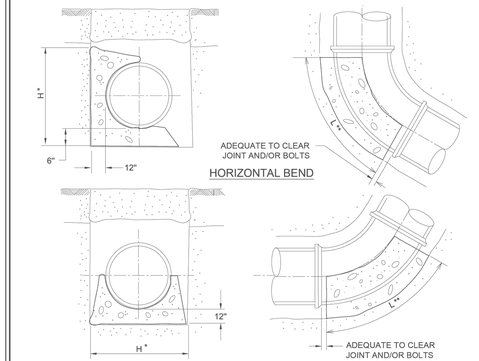
THRUST BLOCK DESIGN AS FOLLOWS

A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE

B. MAXIMM SOIL BEARING SEE TABLE BELOW

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

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE THRUST BLOCKING	
RECORD COPY SIGNED BY JAMES E. THOMPSON	2/11/86 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 510-6 1 OF 2



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

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE THRUST BLOCKING	
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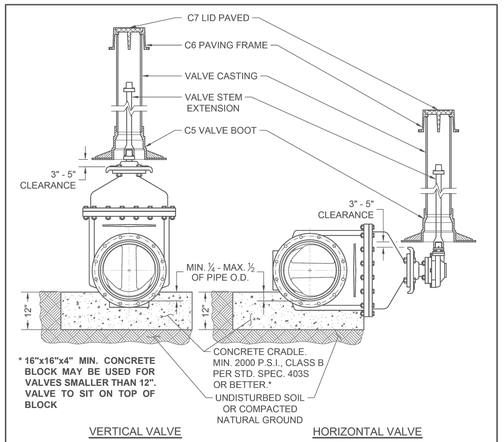


*** 16"x16"x4" MIN. CONCRETE BLOCK MAY BE USED FOR VALVES SMALLER THAN 12". VALVE TO SIT ON TOP OF BLOCK**

VERTICAL VALVE

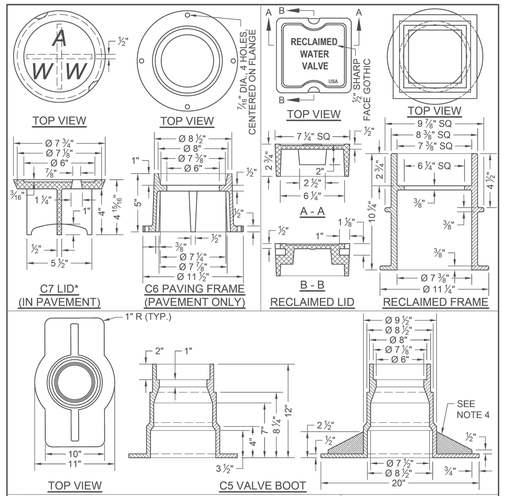
HORIZONTAL VALVE
ONLY TO BE USED WHEN CALLED OUT ON THE DRAWINGS.

NOTES:

1. WELD SOCKET 2½" x 2" DEEP TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. [SCH. 80 FOR LENGTHS OVER 10'.]
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS	*05/18/2016* ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-01 1 OF 4



NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID, FRAME, COLLAR AND BASE.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. CASTING FINISH BY MANUFACTURER SHALL INCLUDE REMOVAL OF FINS AND FLASHING, AND PAINT WITH BLACK ASPHALT COATING.

WEIGHTS:

C7 LID: 13 LBS
RECLAIMED LID: 15 LBS
C6 FRAME: 23 LBS
RECLAIMED FRAME: 33 LBS
C5 BASE: 78 LBS

* LETTERING SHALL BE 1 ½" 2 PICK BAR SLOTS REQUIRED

CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
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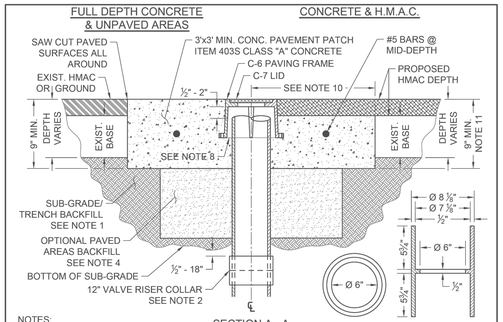
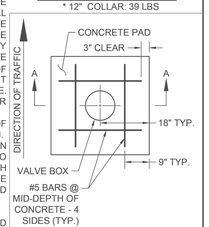
FULL DEPTH CONCRETE & UNPAVED AREAS

CONCRETE & H.M.A.C.



NOTES:

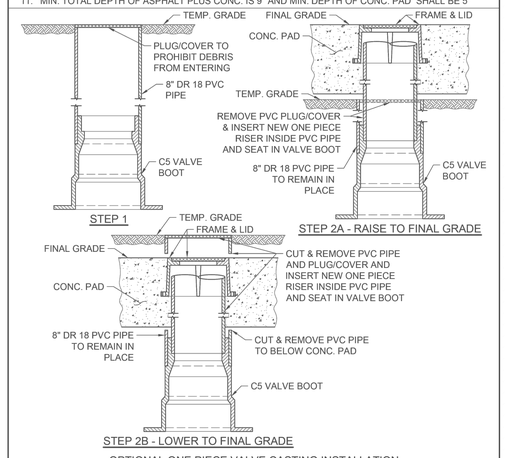
1. SUB-GRADE/TRENCH BACKFILL SHALL BE COMPACTED AS PER ITEM 201S, SUB-GRADE PREPARATION.
2. TO ADJUST VALVE CASTINGS TO FINAL GRADE, REMOVE RISER PIPE BELOW SUB-GRADE AND INSTALL APPROPRIATE LENGTH OF NEW RISER PIPE TO ACHIEVE FINAL GRADE. CONNECT THE TWO PIECES OF RISER PIPE WITH A 6" COLLAR MIN. 12" LENGTH APPROXIMATELY CENTERED ON THE JOINT WITH THE TOP OF SLEEVE LOCATED ½" - 18" BELOW SUB-GRADE. THE INSIDE "LIP" OF COLLAR TO BE PAINTED WITH FLUORESCENT WHITE PAINT OR COVERED WITH FLUORESCENT WHITE TAPE. ALTERNATE: FOR OPTIONAL SINGLE PIECE RISER INSTALLATION SEE SHEET 4 OF 4.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE NUT OF THE VALVE; NUT SHALL OPERATE WITH NO OBSTRUCTION.
4. WHERE CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL (SPEC. ITEM 402S) TO THE UNDERSIDE OF THE CONCRETE. PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
5. REINFORCING STEEL SHALL MEET SPEC. ITEM 406S.7.
6. NO MORE THAN 2 SECTIONS OF PIPE SHALL BE USED FROM VALVE TO FINAL GRADE.
7. BELL AND SPIGOT IS ACCEPTABLE FOR DEPTH OVER 18'.



CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS	*05/18/2016* ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-01 3 OF 4

NOTES (CON'T):

8. PAVING FRAME SHALL BE FLUSH WITH THE CONC. PAD AND PLACED ½" - 2" ABOVE RISER PIPE (FRAME SHALL NOT REST ON RISER.)
9. IN UNPAVED AREAS, INSTALL ONE DELINEATOR STAKE IMMEDIATELY ADJACENT TO THE EDGE OF THE CONCRETE PAD. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES.
10. VALVE SHALL TYPICALLY BE CENTERED IN CONCRETE DIAMOND BUT MAY BE OFFSET WITH A MIN. OF 12" FROM CENTER OF VALVE LID TO EDGE OF CONCRETE IN ALL DIRECTIONS.
11. MIN. TOTAL DEPTH OF ASPHALT PLUS CONC. IS 9" AND MIN. DEPTH OF CONC. PAD SHALL BE 5"



OPTIONAL ONE PIECE VALVE CASTING INSTALLATION

CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
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C1

July 18, 2025
Austin Water
Mary Ann C. Cramer
C1

REVIEWED
March 26, 2024
Austin Water
Larry Williams

CITY OF AUSTIN APPROVED Date 07/21/25 For Director GP-2022-0408.WPD

CAS CONSULTING & SERVICES, INC.
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Main: 512.836.2388 | Fax: 512.836.4515

rps
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

City of Austin WATERSHED PROTECTION

08-23-2023
STATE OF TEXAS
STEPHANIE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephanie D Blew

BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT WATER DETAILS (1 OF 2)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS. OVERALL DETAILS UPDATE.

REVISIONS

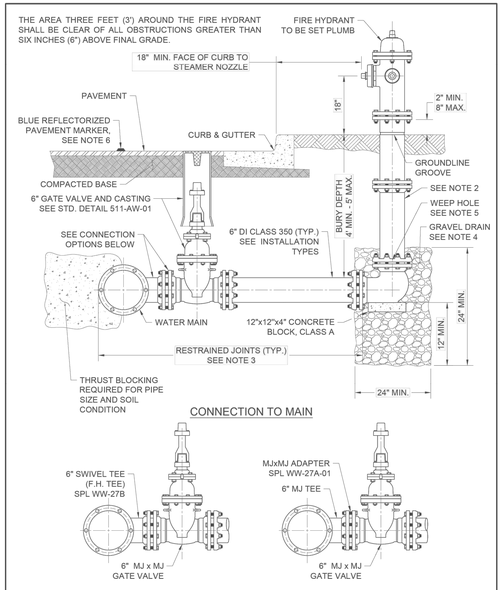
SHEET INFORMATION

DATE November, 2020

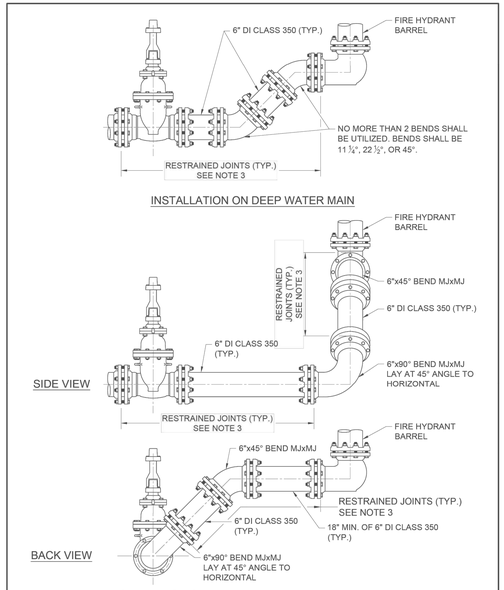
SHEET ~~86~~ 87 OF ~~115~~ 116

C1

GP-2022-0408.WPD



CITY OF AUSTIN AUSTIN WATER		FIRE HYDRANT ASSEMBLY	
JEFF A. KYLE	11/06/2023 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-02 1 OF 3

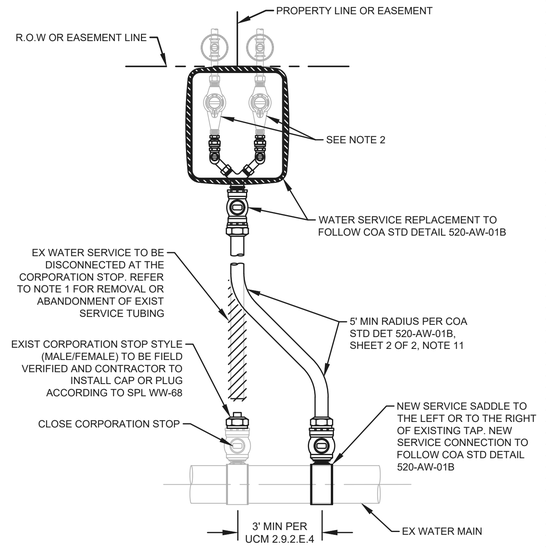


CITY OF AUSTIN AUSTIN WATER		FIRE HYDRANT ASSEMBLY	
JEFF A. KYLE	11/06/2023 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-02 2 OF 3

NOTES: APPLICABLE TO ALL INSTALLATION TYPES.

1. NO PART OF A HYDRANT OR ITS NOZZLE CAPS SHALL BE WITHIN 6" OF ANY SIDEWALK OR PEDESTRIAN RAMP. ANY FIRE HYDRANT PLACED NEAR A STREET CORNER SHALL BE LOCATED OUTSIDE THE CURVE RADIUS AND A MINIMUM OF 4' FROM RAMPS.
2. ONE BARREL EXTENSION NOT EXCEEDING 2' LENGTH MAY BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT IN ORDER TO MEET THE REQUIRED BURY DEPTH OF 4' - 5'. BREAK AWAY BOLTS (SHOE TYPES) SHALL BE PROPERLY SPACED AND PLACED.
3. FIRE LINE SHALL HAVE ALL JOINTS RESTRAINED FROM MAIN TO FIRE HYDRANT INCLUDING MJ RESTRAINT OF TEE AT THE MAIN. JOINTS SHOWN MAY VARY. SEE SPL WW-27A, WW-27A-01, AND WW-27B FOR RESTRAINT OPTIONS.
4. BELOW EACH HYDRANT, A DRAINAGE PIT 24" IN DIAMETER AND 12" DEEP SHALL BE EXCAVATED AND FILLED WITH COMPACTED COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND UNDER AND AROUND THE BOWL OF THE HYDRANT, AND TO A LEVEL 12" ABOVE THE HYDRANT DRAIN OPENING (SEE STD. SPEC. 510). THE HYDRANT DRAINAGE PIT SHALL NOT BE CONNECTED TO A SANITARY SEWER. THE DRAIN GRAVEL SHALL BE COVERED WITH FILTER FABRIC PER STD. SPEC. 620.
5. WRAP 8 MIL. POLY-FILM WRAP ON ALL BURIED PIPE AND FITTINGS. CUT SLITS IN POLY-FILM WRAP AT BOOT TO ALLOW WATER TO ESCAPE FROM WEEP HOLES AND POLY-WRAP.
6. A BLUE TYPE II-B-B REFLECTORIZED PAVEMENT MARKER, CONFORMING TO STANDARD SPECIFICATION ITEM NO. 863S, SHALL BE PLACED 2 TO 3 FEET OFFSET FROM THE CENTERLINE OF PAVED STREETS, ON THE SIDE OF AND IN LINE WITH ALL NEWLY INSTALLED FIRE HYDRANTS.

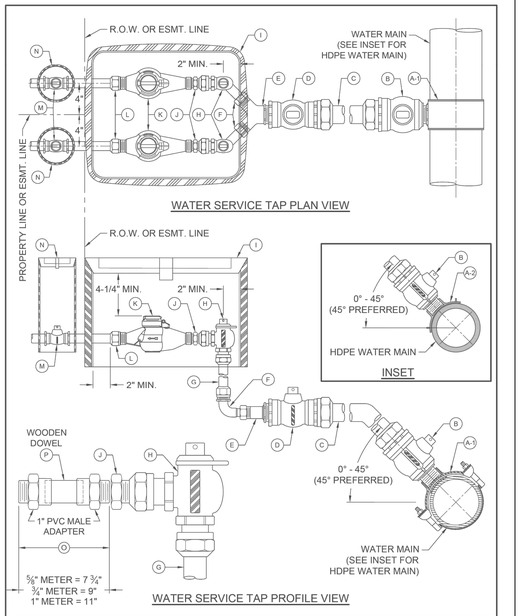
CITY OF AUSTIN AUSTIN WATER		FIRE HYDRANT ASSEMBLY	
JEFF A. KYLE	11/06/2023 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 511-AW-02 3 OF 3



NOTES:

1. IF THE NEW SERVICE IS TO BE INSTALLED IN THE SAME TRENCH, ALL EXISTING COMPONENTS BETWEEN CORPORATION STOP AND WATER METER SHALL BE REMOVED. IF THE NEW SERVICE IS TO BE INSTALLED IN A SEPARATE TRENCH, THE EXISTING COMPONENTS BETWEEN THE CORPORATION STOP AND WATER METER CAN BE ABANDONED IN PLACE.
2. DURING WATER SERVICE RELOCATIONS AND/OR RECONNECTIONS, EXISTING AMI WATER METERS SHALL BE REUSED. NON-AMI WATER METERS SHALL BE REPLACED WITH NEW AMI WATER METER PURCHASED FROM AUSTIN WATER.

WATER SERVICE REPLACEMENT AT EXISTING WATER MAIN DETAIL
NOT TO SCALE



CITY OF AUSTIN AUSTIN WATER		WATER SERVICE & METER INSTALLATION - 1" & SMALLER METERS	
JEFF A. KYLE	*06/02/2025* ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01B 1 OF 2

MATERIALS LIST:

A-1. FOR PVC OR DI MAIN: 2" SERVICE SADDLE, SPL WW-264
A-2. FOR HDPE MAIN: 2" SERVICE SADDLE (APPROVED FOR USE ON HDPE PIPE), SPL WW-264, OR 2" ELECTROFUSION THREADED SERVICE SADDLE, SPL WW-708C
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

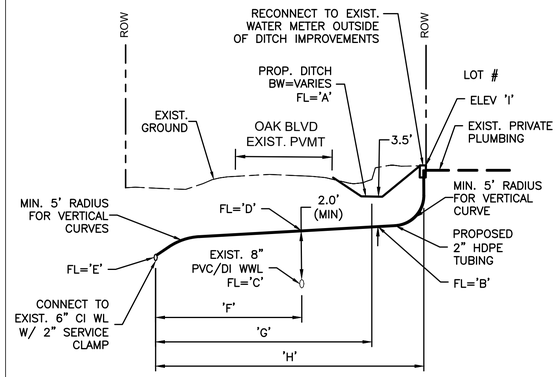
MATERIALS TO BE INSTALLED BY PLUMBER:

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. (NO BUSHING ALLOWED BETWEEN K & L) 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 SADDLE 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. CUTTING A METER BOX WITHOUT AW APPROVAL IS PROHIBITED.
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	
JEFF A. KYLE	*06/02/2025* ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 520-AW-01B 2 OF 2



TYPICAL CROSS SECTION
LONG WATER SERVICE
(NOT TO SCALE)

SEE TABLE FOR VALUES

Lot	Ditch Name	Alignment Station	A	B	C	D	E	F	G	H	I
34-B	A	1+80.5	778.8	775.3	772.28	775.08	775.77	24.22	37.05	44.60	781.70
33-A	A	2+69.5	778.5	775.0	771.74	774.54	775.63	24.33	37.05	42.11	781.95
33-B	A	3+99	777.3	773.8	771.09	773.89	774.79	25.02	37.05	38.38	780.50
32	A	4+34	776.7	773.2	770.92	773.72	774.43	25.20	37.05	43.60	780.22
31 / 30	A	5+65	772.0	768.5	768.38	771.18	769.68	17.38	0.00	165.00	775.89
29 /28	Does not cross ditch			N/A	765.97	768.77	768.25	10.00	N/A	42.76	772.05
27 / 26	Does not cross ditch			N/A	761.57	764.37	768.00	11.20	N/A	33.06	769.13
41-B	A	10+12	765.2	761.7	N/A	N/A	762.81	N/A	6.05	16.65	767.53
25 / 24-A	Does not cross ditch			N/A	757.46	760.26	762.25	11.14	N/A	31.53	766.45
49	A	11+03	763.9	760.4	N/A	N/A	761.68	N/A	10.00	17.60	766.32
48	A	12+06	762.3	758.8	N/A	N/A	760.42	N/A	10.60	19.39	764.84
8-B	Does not cross ditch			N/A	N/A	N/A	759.14	N/A	N/A	26.32	762.93
8-A	Does not cross ditch			N/A	N/A	N/A	757.83	N/A	N/A	33.54	762.54
7	Does not cross ditch			756.5	754.30	757.10	757.22	15.24	26.04	34.61	762.23
6-B / 6-A	B	0+83	756.0	752.5	753.99	756.79	756.10	11.71	31.21	37.69	762.14
5-B	Does not cross ditch			N/A	754.27	757.07	756.42	14.85	N/A	38.79	762.00
45	B	1+88	756.3	752.8	N/A	N/A	757.03	N/A	10.34	13.49	762.10
44	B	3+00	758.8	755.3	N/A	N/A	758.08	N/A	7.04	10.83	762.85
5-A	Does not cross ditch			N/A	754.93	757.73	757.52	15.41	N/A	32.49	763.15
1-A	D	0+98	776.6	773.1	771.38	774.18	774.02	14.15	29.36	42.77	779.56
1-B	D	1+38	775.4	771.9	770.70	773.50	771.59	27.78	27.86	45.05	778.72
2-A	D	1+94	776.9	773.4	769.42	772.22	772.90	24.29	34.00	45.11	777.12
2-B	D	3+54	771.1	767.6	765.49	768.29	767.57	21.18	33.86	39.79	773.87
3-A	D	4+50	765.2	761.7	761.59	764.39	763.41	24.39	34.38	47.45	770.45
3-B / 4-A	D	5+86	761.0	757.5	757.74	760.54	760.67	24.31	36.50	43.84	765.76

REVIEWED
March 26, 2024
Austin Water
Larry Williams

C1

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City of Austin WATERSHED PROTECTION

08-23-2023
STATE OF TEXAS
STEPHANE D. BLEW
92682
LICENSED PROFESSIONAL ENGINEER
Stephane D Blew

BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT
WATER DETAILS (2 OF 2)

NO.	BY	DATE	REMARKS
C1	SDB	07/08/2025	UPDATES TO SEQUENCE AND TOTAL NUMBER OF SHEETS; OVERALL DETAILS UPDATE; NEW WATER SERVICE REPLACEMENT EXISTING WATER MAIN DETAIL

REVISIONS

SHEET INFORMATION
DATE November, 2020
SHEET 88 (87) OF 116 (115)

C1

L:\ACTIVE PROJECTS\COA Watershed Flood Hazard Mitigation RL 2011-1A\RPS Oak Acres\3.0 Work Products\3.6 CAD\WATER DETAILS (2 OF 2).dwg Layout: WATER DETAILS (2 OF 2) Plotted: 8/22/2023 2:59:48 PM by Brandon Montoya

GP-2022-0408.WPD

5 TEMPORARY STORMWATER SECTION (TCEQ-0602)

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: Tyler Murski, PE

Date: _____

Signature of Customer/Agent:

_____

Regulated Entity Name: Barton Creek - Oak Acres SDI (5754.046)

Project Information

Potential Sources of Contamination

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

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

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

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

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

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

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

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

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

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

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

Sequence of Construction

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

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

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

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Gaines Tributary to Barton Creek

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

Attachment A - Spill Response Actions

All hazardous waste materials will be disposed of in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. The job site superintendent, who will also be responsible for seeing that these practices are followed, will instruct site personnel in these practices. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file on the job site. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

No spilled hazardous materials or hazardous wastes will be allowed to come in contact with stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater.

Whenever a spill or discharge involves an imminent threat to human health, notify local emergency authorities *immediately* and cooperate with them in responding to the spill. “Local emergency authorities” usually means the local fire department and law enforcement agency, but could also mean the local fire marshal, health department, or emergency planning committee.

Any spills of hazardous materials which are in quantities in excess of Reportable Quantities as defined by the TCEQ Spill Rule 30 TAC §§327.1–327.5, and included as Table 1 below, shall be reported to TCEQ.

If the amount of material spilled or discharged within any 24-hour period is equal to or greater than the amount indicated in Table 1, the rule calls for the party responsible for the spill to notify the TCEQ within 24 hours. There are three ways to satisfy this reporting requirement by phone:

- Call **1-800-832-8224** (the Environmental Response Hot Line). This line is answered 24 hours a day.
- Call the TCEQ Spill Reporting Hot Line, which is answered 24 hours a day, at 512/463-7727.
- During regular business hours, call the TCEQ regional office that serves the county in which the spill occurred.

Table 1: Reportable Quantities (RQs) According to the Spill Rule

	Site of Spill	
Type of Spill	**On Land**	**In Water**
Hazardous substance • If CERCLA RQ = 1–100 lb. • If CERCLA RQ > 100 lb.	 CERCLA RQ CERCLA RQ	 CERCLA RQ 100 lb.
Crude Oil	210 gal	Enough to form a sheen
Used oil or petroleum product • At a PST exempt facility* • All others	 210 gal 25 gal	 Enough to form a sheen Enough to form a sheen
Oil other than crude oil, used oil, or petroleum product	210 gal	Enough to form a sheen
Other substances	No RQ	100 lb
Industrial solid waste	No RQ	100 lb

NOTE: This table applies only to the reporting of spills and discharges according to the Spill Rule, 30 TAC §§327.1–327.5. To find values of CERCLA RQs for hazardous substances, please refer to 40 CFR Table 302.4.

*The term “PST exempt facility” refers to facilities that are exempt from the Aboveground Storage Tank Program. Petrochemical plants, petroleum refineries, and electricity generation, transmission, and distribution facilities are some examples of PST exempt facilities.

Contaminated Soils

Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with applicable state and federal regulations. The job site superintendent will be responsible for seeing that these procedures are followed.

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

1. An effort will be made to store only enough product required to do the job.
2. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or other enclosure.
3. Products will be kept in their original containers with the original manufacturer's label in legible condition.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials.

1. Products will be kept in original containers with the original labels in legible condition.
2. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.
3. If surplus product must be disposed of, manufactures or local/state/federal recommended methods for proper disposal will be followed.
4. A spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic, and metal trash containers, etc.) will be provided at the storage site.
5. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with stormwater discharges.

Spill Prevention and Cleanup

In addition to the material management practices, the following practices will be followed for spill prevention and cleanup:

1. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.
2. Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite in spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic, and metal trash containers, etc.).
3. All spills will be cleaned up immediately after discovery.
4. The Spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
5. Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Reportable Quantities of some substances which may be used at the job site are as follows:

a. oil - appearance of a film or sheen on water
b. pesticides - usually 1 lb.
c. acids - 5000 lb.
d. solvents, flammable - 100 lb.

6. A description of the spill, what caused it, how it could be prevented, and the cleanup measures will be posted in the material storage area. If the spill exceeds a Reportable Quantity, all federal and state regulations regarding reports of the incident will be complied with.
7. The job site superintendent will be the spill prevention and cleanup coordinator. He will designate the individuals who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of these personnel will be posted in the material storage area and in the office trailer onsite.

Attachment B - Potential Sources of Contamination

The following materials or substances with known hazardous properties are expected to be present onsite during construction:

- Sanitary Waste
- Concrete
- Petroleum Products
- Fertilizers and Pesticides
- Paints
- Paint Solvents
- Cleaning solvents
- Detergents

The following practices shall be followed to prevent contamination:

Waste Disposal

All waste materials will be collected and stored in a dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in the State of Texas and Williamson County. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied as required, and the trash will be hauled to a landfill approved by the State of Texas and Williamson County. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal. Notices stating these practices will be posted in the job site construction office trailer, and the job site superintendent will be responsible for seeing that these procedures are followed.

Sanitary Waste

All sanitary waste will be collected from the portable units by a licensed portable facility provider in complete compliance with local and state regulations.

Off-Site Vehicle Tracking

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

Concrete Waste from Concrete Trucks

Emptying of excess concrete and/or washout from concrete delivery trucks will be allowed on the job site, but only in either specifically designated diked areas which have been prepared to prevent contact between the concrete and/or washout and stormwater which will be discharged from the site or in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete washout diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site as deemed appropriate by the Contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

Petroleum Products

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks used onsite will have a dike or berm containment structure constructed around it to contain any spills which may occur. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

Fertilizers and Pesticides

Fertilizers and pesticides will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer and pesticides will be transferred to a sealable plastic bin to avoid spills.

Paints, Paint Solvents, Cleaning Solvents and Detergents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

Certain types of discharges are allowable under the NPDES General Permit for Construction Activity. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The following allowable non-stormwater discharges which may occur from the job site include:

- Discharges from firefighting activities
- Fire hydrant flushings
- Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking
- Portable water sources such as waterline flushings, irrigation drainage from watering vegetation, routine exterior building wash down (without detergents present)
- Pavement wash waters where spills or leaks of hazardous materials have not occurred or detergents have not been used
- Springs and other uncontaminated groundwater, including dewatering ground water infiltration
- Foundation or footing drains where no contamination with process materials such as solvents is present

Attachment C - Sequence of Major Activities

Phase 1: Traffic controls for phase 1 associated with the building of temporary pavement to shift traffic onto existing southbound lane of Oak Boulevard, proposed bridge structure, roadway construction, utility adjustments, and proposed drainage elements.

1. Provide advance warning signs prior to shifting vehicular traffic around work area. Provide temporary striping along traffic lanes. Contractor to cover existing pavement striping before installing temporary striping.
2. Temporary erosion and sedimentation controls are to be installed as indicated on the approved site plan or subdivision construction plan and in accordance with the Erosion Sedimentation Control Plan (ESC) and Stormwater Pollution Prevention Plan (SWPPP) that is required to be posted on the site. Install tree protection, initiate tree mitigation measures and conduct "Pre - Construction" tree fertilization (if applicable).
3. The Environmental Project Manager or Site Supervisor must contact the Development Services Department, Environmental Inspection, at 512-974-2278, 72 hours prior to the scheduled date of the required on-site preconstruction meeting.
4. The Environmental Project Manager, and/or Site Supervisor, and/or Designated Responsible Party, and the General Contractor will follow the Erosion Sedimentation Control Plan (ESC) and Storm Water Pollution Prevention Plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with City Inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.
5. Install temporary pavements along Oak Boulevard designated on the TCP Phase 1 plan in the plans.
6. Delineate and install barriers or channelizing devises along Oak Boulevard as designated on the TCP Phase 1 plan.
7. Shift traffic from existing two-way to one-lane, two-way traffic with flagger operation in accordance with City of Austin Standard 804S-1 (Sheet 5 of 9).
8. Install temporary shoring wall designated on TCP Plan Temporary Shoring Sheet in the plan set.
9. In the Barton Springs Zone, the Environmental Project Manager or Site Supervisor will schedule a mid-construction conference to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site. Participants shall include the City Inspector, Project Engineer, General Contractor and Environmental Project Manager or Site Supervisor. The anticipated completion date and final construction sequence and inspection schedule will be coordinated with the appropriate City Inspector.
10. Install proposed downstream construction and grading of bridge structure.
11. Install proposed roadway in designated work zone area.
12. Driveway #8B construction will begin at the end of Phase 1.
13. Advance warning signs shall remain in place until the completion of all work (All Phases).

Phase 2: Traffic controls for Phase 2 associated with the building of temporary pavement to shift traffic onto constructed northbound lane of Oak Boulevard, building the upstream portion of the proposed bridge structure, roadway construction, utility adjustments, and proposed drainage elements.

1. Provide advance warning signs prior to shifting vehicular traffic around work area. Provide temporary striping along traffic lanes. Contractor to cover existing pavement striping before installing temporary striping.
2. Adjust temporary pavement along Oak Boulevard designated on the TCP Phase 2 Plan.

3. Delineate and remove and relocate barriers/channelizing devices along Oak Boulevard as designated on the TCP Phase 2 Plan.
4. Shift traffic from one-lane, two-way traffic (Phase 1) onto newly constructed northbound lane with flagger operation in accordance with City of Austin Standard 804S-1 (Sheet 5 of 9).
5. The Environmental Project Manager, and/or Site Supervisor, and/or Designated Responsible Party, and the General Contractor will follow the Erosion Sedimentation Control Plan (ESC) and Storm Water Pollution Prevention Plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with City Inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.
6. In the Barton Springs Zone, the Environmental Project Manager or Site Supervisor will schedule a mid-construction conference to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site. Participants shall include the City Inspector, Project Engineer, General Contractor and Environmental Project Manager or Site Supervisor. The anticipated completion date and final construction sequence and inspection schedule will be coordinated with the appropriate City Inspector.
7. Install proposed upstream construction and grading of bridge structure.
8. Install proposed roadway in designated work zone area.
9. Advanced warning signs shall remain in place until completion of work (All Phases).

Phase 2: Traffic controls for Phase 3 associated with the removal of temporary pavement, ditch grading, and construct final pavement surface.

1. Provide advance warning signs prior to shifting vehicular traffic around work area. Provide temporary striping along traffic lanes. Contractor to cover existing pavement striping before installing temporary striping.
2. Remove temporary pavement along northbound lane.
3. Perform final surface grading along Oak Boulevard.
4. Grade ditches,
5. Install permanent signage.
6. Remove temporary erosion controls.
7. Install permanent erosion controls.
8. Complete construction and start revegetation of the site and installation of landscaping.
9. Remove temporary traffic controls and advance warning signage.
10. Perform final clean up and open traffic to completed roadway Oak Boulevard.

Attachment D - Temporary Best Management Practices and Measures

Temporary Best Management Practices proposed for use during construction are shown on the Erosion Sedimentation Control and Tree Protection Plans provided in the sleeve following this attachment and include the following:

Table 2: Temporary Best Management Practices

	Surface Water, Ground Water, and Storm Water		Surface Streams, Sensitive Features, and Aquifer	
	Upgradient	On-Site	Prevent Pollutants	Maintain Flow
Tree Protection Fencing		X	X	
Sprinkling for Dust Control		X	X	
Stabilized Construction Entrance/Exit		X	X	
Silt Fence	X	X	X	X
Outlet Stabilization	X	X	X	X
Rock Berm	X	X	X	X
Mulch Sock (Fiber Roll)		X	X	X
Soil Retention Blanket	X	X	X	
Mulching		X	X	X
Sodding		X	X	X

The proposed BMPs in Table 2 will prevent pollution of surface water, groundwater, and stormwater by the following methods:

- Minimize the number of disturbed areas, thereby reducing the amount of sediment loads downstream.
- Reducing erosion by keeping runoff velocities low and by providing stabilized outlets at points of concentrated flow.
- Capturing sediment loads by placing sediment traps such as silt fence, rock berm, and inlet protection.

To prevent pollutants from entering surface streams, sensitive features, and the aquifer, sediment traps such as silt fence and rock berms are proposed upgradient of all surface streams, sensitive features, and the aquifer. Proposed BMPs have been designed to maintain, to the maximum extent practical, flow to the naturally occurring sensitive features. BMPs which are proposed around these features are designed to trap sediment but still allow runoff to these features.

Tree protection fencing is to be installed between construction areas and trees to be saved to ensure the soil around the root system is not disturbed. This fencing is to be installed prior to any construction. Within the tree critical root zone mulch socks (fiber rolls) are proposed for sediment controls.

Dust control shall be provided as necessary to reduce the movement of excess dust exposed soil surfaces. Irrigation shall be used as the temporary method of dust control and shall be repeated as necessary. Care shall be taken to avoid excess runoff and erosion.

Mulching will be used to protect slopes and stabilize soil when the slope is less than 3:1 and construction has halted for 5 or more days. A Soil Retention Blanket will be used when the slopes exceed 3:1 and construction has halted for 5 or more days.

Stabilized construction entrances will be installed before construction to prevent sediment from entering roadways.

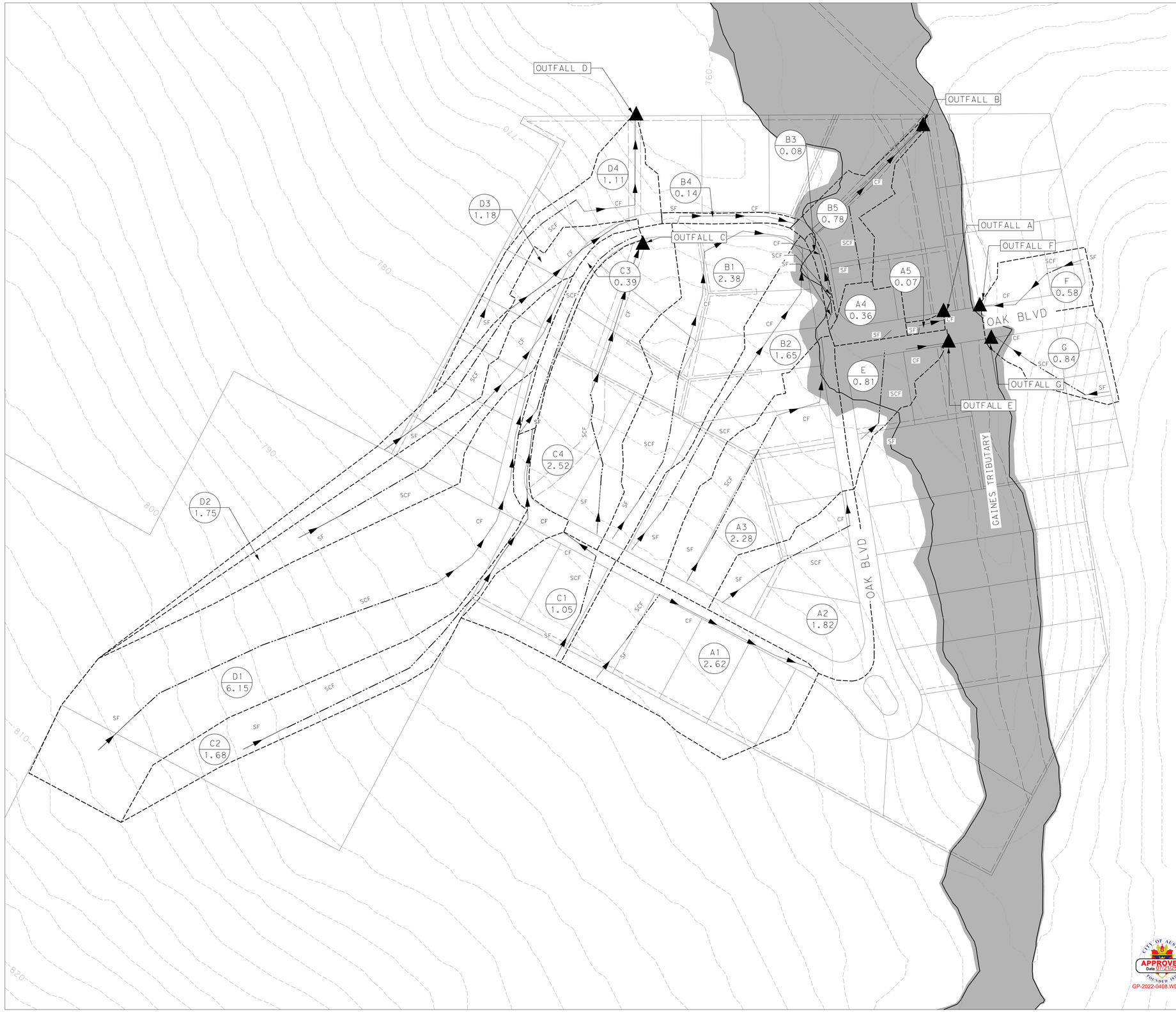
Attachment E - Request to Temporarily Seal a Feature

There will be no temporary sealing of naturally occurring sensitive features on this site.

Attachment F - Structural Practices

No structural practices 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. Placement of structural practices in floodplains has been avoided.

Attachment G - Drainage Area Map



LEGEND

- CONTOURS
- DRAINAGE BOUNDARY
- FLOW PATH
- PROP 25 YEAR FLOODPLAIN
- PROP 100 YEAR FLOODPLAIN
- TRIBUTARY FLOW PATH
- SHEET FLOW — SF
- SHALLOW CONCENTRATED FLOW — SCF
- CHANNEL FLOW — CF
- DRAINAGE AREA ACRES — B3 / 0.08
- OUTFALL

NOTES

1. DRAINAGE AREAS ADJACENT TO THE HARPER PARK DEVELOPEMENT REFLECT THE CHANNEL AND DETENTION SYSTEM CONSTRUCTED WITHIN HARPER PARK FOR ACCURACY.
2. THE DRAINAGE AREAS FOR THE GAINES TRIBUTARY ANALYSIS DO NOT MATCH THE DRAINAGE AREAS USED FOR THE OAK ACRES DITCH ANALYSIS BECAUSE PRIVATE DETENTION CANNOT BE INCLUDED IN STUDIES OF WATERWAYS
3. A PORTION OF THE SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN PER CITY OF AUSITN AND FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP COMMUNITY PANEL 48453C0580H, SEPTEMBER 26, 2008
4. PROJECT IS LOCATED WITHIN THE EDWARDS AQUIFER RECHARGE ZONE
5. THE CONTRACTOR SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMP) AS DESCRIBED IN THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABUTEMENT PLAN (WPAP)

SCALE: 1" = 100' (H)
0 100' 200'

City of Austin WATERSHED PROTECTION

STATE OF TEXAS
BART C. STANDLEY
54581
LICENSED PROFESSIONAL ENGINEER
8-24-2023

CITY OF AUSTIN
BARTON CREEK OAK ACRES FLOOD RISK REDUCTION PROJECT
PROPOSED DRAINAGE AREA MAP

NO.	BY	DATE	REMARKS
C1	BS	7/10/25	TOTAL PAGES UPDATED.

SHEET INFORMATION

DATE 7/31/2023

SHEET 27 OF ~~115~~ 116

C1

GP-2022-0408.WPD

APPROVED Date 07/24/25 GP-2022-0408.WDP.C1

APPROVED Date 7/24/2025 GP-2022-0408.WPD

rps
Texas PE Firm Reg. #F-293
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Attachment H - Temporary Sediment Pond Plans and Calculations

No temporary sediment pond has been designed for this site.

Attachment I - Inspection and Maintenance for BMPs

Dust Control:

The purpose of dust control is to prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards and improve traffic safety. This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Construction activities inevitably result in the exposure and disturbance of soil. Fugitive dust is emitted both during the activities (i.e., excavation demolition, vehicle traffic, human activity) and as a result of wind erosion over the exposed earth surfaces. Large quantities of dust are typically generated in 'heavy' construction activities, such as road and street construction and subdivision, commercial or industrial development, which involve disturbance of significant areas of the soil surface. Research on construction sites has established an average dust emission rate of 1.2 tons/acre/month for active construction (VA Dept of Conservation, 1992). Earth moving activities comprise the major source of construction dust emissions, but traffic and general disturbance of the soil also generate significant dust emissions.

Inspection and Maintenance Guidelines:

1. When dust is evident during dry weather, reapply dust control BMPs.

Temporary Construction Entrance/Exit

The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice should be used at all points of construction ingress and egress.

Excessive amounts of mud can also present a safety hazard to roadway users. To minimize the amount of sediment loss to nearby roads, access to the construction site should be limited to as few points as possible and vegetation around the perimeter should be protected where access is not necessary. A rock stabilized construction entrance should be used at all designated access points.

Common trouble points

1. Inadequate runoff control – sediment washes onto public road.
2. Stone too small or geotextile fabric absent, results in muddy condition as stone is pressed into soil.
3. Pad too short for heavy construction traffic – extend pad beyond the minimum 50 foot length as necessary.
4. Pad not flared sufficiently at road surface, results in mud being tracked on to road and possible damage to road edge.
5. Unstable foundation – use geotextile fabric under pad and/or improve foundation drainage.

Inspection and Maintenance Guidelines:

1. The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.
2. All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.
3. When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.
4. When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.

5. All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

Silt Fence

A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. If not properly installed, silt fences are not likely to be effective.

The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow. Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

Common Trouble Points:

1. Fence not installed along the contour causing water to concentrate and flow over the fence.
2. Fabric not seated securely to ground (runoff passing under fence)
3. Fence not installed perpendicular to flow line (runoff escaping around sides)
4. Fence treating too large an area, or excessive channel flow (runoff overtops or collapses fence)

Inspection and Maintenance Guidelines:

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

Outlet Stabilization

The goal of outlet stabilization is to prevent erosion at the outlet of a channel or conduit by reducing the velocity of flow and dissipating the energy. This practice applies where the discharge velocity of a pipe, box culvert, diversion, open channel, or other water conveyance structure exceeds the permissible velocity of the receiving channel or disposal area.

The outlets of channels, conduits, and other structures are points of high erosion potential, because they frequently carry flows at velocities that exceed the allowable limit for the area downstream. To prevent scour and undermining, an outlet stabilization structure is needed to absorb the impact of the flow and reduce the velocity to nonerosive levels. A riprap-lined apron is the most commonly used practice for this purpose because of its relatively low cost and ease of installation. The riprap apron should be

extended downstream until stable conditions are reached even though this may exceed the length calculated for design velocity control.

Riprap-stilling basins or plunge pools reduce flow velocity rapidly. They should be considered in lieu of aprons where overfalls exit at the ends of pipes or where high flows would require excessive apron

length. Consider other energy dissipaters such as concrete impact basins or paved outlet structures (see Figure 1-10) where site conditions warrant.

Inspection and Maintenance Guidelines:

1. Inspect riprap outlet structures after heavy rains to see if any erosion around or below the riprap has taken place or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

Rock Berms

The purpose of a rock berm is to serve as a check dam in areas of concentrated flow, to intercept sediment-laden runoff, detain the sediment and release the water in sheet flow. The rock berm should be used when the contributing drainage area is less than 5 acres. Rock berms are used in areas where the volume of runoff is too great for a silt fence to contain. They are less effective for sediment removal than silt fences, particularly for fine particles, but are able to withstand higher flows than a silt fence. As such, rock berms are often used in areas of channel flows (ditches, gullies, etc.). Rock berms are most effective at reducing bed load in channels and should not be substituted for other erosion and sediment control measures farther up the watershed.

Common Trouble Points:

1. Insufficient berm height or length (runoff quickly escapes over the top or around the sides of berm)
2. Berm not installed perpendicular to flow line (runoff escaping around one side)

Inspection and Maintenance Guidelines:

1. Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.
2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
3. Repair any loose wire sheathing.
4. The berm should be reshaped as needed during inspection.
5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

Mulch Sock (Fiber Rolls)

A fiber roll consists of straw, coconut fibers, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

Fiber rolls may be suitable:

1. Along the toe, topo, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
2. At the end of a downward slope where it transitions to a steeper slope
3. Along the perimeter of a project
4. As check dams in unlined ditches
5. Down-slope of exposed soil areas
6. Around temporary stockpiles

Limitations:

1. Fiber rolls are not effective unless trenched
2. Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection (i.e. stacked smaller diameter fiber rolls, etc.)
3. Difficult to move once saturated
4. If not properly staked and trenched in, fiber rolls could be transported by high flows
5. Fiber rolls have a very limited sediment capture zone
6. Fiber rolls should not be used on slopes subject to creep, slumping, or landslide

Material:

1. Core material: Core material should be biodegradable or recyclable. Material may be compost, mulch, aspen wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or similar materials.
2. Containment Mesh: Containment mesh should be 100% biodegradable, photodegradable or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or similar material. When the fiber role will remain in place as part of a vegetative system use biodegradable or photodegradable mesh. For temporary installation recyclable mesh is recommended.

Implementation:

1. Locate fiber rolls on level contours spaced as follows:
    - Slope inclination of 4:1 (H:V) or flatter. Fiber rolls should be placed at a maximum interval of 20 ft.
    - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
    - Slope inclination 2:1 (H:V) or greater. Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
2. Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
3. Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
4. Drive stakes at the end of each fiber roll and spaced 4 ft. maximum on center.
5. Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
6. If more than one fiber rolls is placed in a row, the rolls should be overlapped, not abutted.

Inspection and Maintenance Guidance:

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

Sod

Sod is appropriate for disturbed areas which require immediate vegetative covers, or where sodding is preferred to other means of grass establishment. Locations particularly suited to stabilization with sod are waterways carrying intermittent flow, areas around drop inlets or in grassed swales, and residential or commercial lawns where quick use or aesthetics are factors.

The advantages of properly installed sod include:

- Immediate erosion control.
- An instant green surface with no dust or mud.
- Nearly year-round establishment capability.
- Less chance of failure than seed.
- Freedom from weeds.
- Quick use of the sodded surface.
- The option of buying a quality-controlled product with predictable results.

It is initially more costly to install sod than to seed. However, this cost is justified in places where sod can perform better than seed in controlling erosion. In swales and waterways where concentrated flow will occur, properly pegged sod is preferable to seed because there is no lag time between installation and the time when the channel is protected by vegetation. Drop inlets, which will be placed in grassed areas, can be kept free of sediment, and the grade immediately around the inlet can be maintained, by framing the inlet with sod strips.

Sod can be laid during times of the year when seeded grass may fail, so long as there is adequate water available for irrigation in the early weeks. Ground preparation and proper maintenance are as important with sod as with seed. Sod is composed of living plants and those plants must receive adequate care in order to provide vegetative stabilization on a disturbed area.

Inspection and Maintenance Guidelines:

1. Sod should be inspected weekly and after each rain event to locate and repair any damage.
2. Damage from storms or normal construction activities such as tire ruts or disturbance of swale stabilization should be repaired as soon as practical.

Blankets and Matting

Blankets and matting material can be used as an aid to control erosion on critical sites during establishment period of protective vegetation. The most common uses are:

- in channels where designed flow exceeds 3.5 feet per second
- on interceptor swales and diversion dikes when design flow exceeds 6 feet per second
- on short, steep slopes where erosion hazard is high and planting is likely to be slow to establish adequate protective cover
- on stream banks where moving water is likely to wash out new vegetative plantings.

Blankets and matting can also be used to create erosion stops on steep, highly erodible watercourses. Erosion stops should be placed approximately 3 feet down channel from point of entry of a concentrated flow such as from culverts, tributary channels or diversions or at points where a change in gradient or course of channel occurs. Spacing of erosion stops on long slopes will vary, depending on the erodibility of the soil and velocity and volume of flow. Erosion stops are placed beneath blankets and matting.

Biodegradable rolled erosion control products (RECPs) are typically composed of jute fibers, curled wood fibers, straw, coconut fiber, or a combination of these materials. In order for an RECP to be considered 100% biodegradable, the netting, sewing or adhesive system that holds the biodegradable mulch fibers together must also be biodegradable.

Jute is a natural fiber that is made into a yarn that is loosely woven into a biodegradable mesh. It is designed to be used in conjunction with vegetation and has longevity of approximately one year. The material is supplied in rolled strips, which should be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Excelsior (curled wood fiber) blanket material should consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 6 in. or longer. The excelsior blanket should be of consistent thickness. The wood fiber must be evenly distributed over the entire area of the blanket. The top surface of the blanket should be covered with a photodegradable extruded plastic mesh. The blanket should be smolder resistant without the use of chemical additives and should be non-toxic and non-injurious to plant and animal life.

Straw blanket should be machine produced mats of straw with a lightweight biodegradable netting top layer. The straw should be attached to the netting with biodegradable thread or glue strips. The straw blanket should be of consistent thickness. The straw should be evenly distributed over the entire area of the blanket.

Wood fiber blanket is composed of biodegradable fiber mulch with extruded plastic netting held together with adhesives. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured to the ground with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Coconut fiber blanket should be a machine produced mat of 100 percent coconut fiber with biodegradable netting on the top and bottom. The coconut fiber should be attached to the netting with biodegradable thread or glue strips. The coconut fiber blanket should be of consistent thickness. The coconut fiber should be evenly distributed over the entire area of the blanket.

Coconut fiber mesh is a thin permeable membrane made from coconut or corn fiber that is spun into a yarn and woven into a biodegradable mat. It is designed to be used in conjunction with vegetation and typically has longevity of several years. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Straw coconut fiber blanket should be machine produced mats of 70 percent straw and 30 percent coconut fiber with a biodegradable netting top layer and a biodegradable bottom net. The straw and coconut fiber should be attached to the netting with biodegradable thread or glue strips. The straw coconut fiber blanket should be of consistent thickness. The straw and coconut fiber should be evenly distributed over the entire area of the blanket. Straw coconut fiber blanket should be furnished in rolled strips a minimum of 6.5 ft wide, a minimum of 80 ft long and a minimum of 0.5 lb/yd2. Straw coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

Non-biodegradable RECPs are typically composed of polypropylene, polyethylene, nylon or other synthetic fibers. In some cases, a combination of biodegradable and synthetic fibers is used to construct the RECP. Netting used to hold these fibers together is typically non-biodegradable as well.

Plastic netting is a lightweight biaxially oriented netting designed for securing loose mulches like straw or paper to soil surfaces to establish vegetation. The netting is photodegradable. The netting is supplied in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Plastic mesh is an open weave geotextile that is composed of an extruded synthetic fiber woven into a mesh with an opening size of less than ¼ in. It is used with re-vegetation or may be used to secure loose fiber such as straw to the ground. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Synthetic fiber with netting is a mat that is composed of durable synthetic fibers treated to resist chemicals and ultraviolet light. The mat is a dense, three-dimensional mesh of synthetic (typically polyolefin) fibers stitched between two polypropylene nets. The mats are designed to be re-vegetated and provide a permanent composite system of soil, roots, and geomatrix. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Bonded synthetic fibers consist of a three-dimensional geomatrix nylon (or other synthetic) matting. Typically, it has more than 90 percent open area, which facilitates root growth. It's tough root reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high volume discharges. It can be installed over prepared soil, followed by seeding into the mat. Once vegetated, it becomes an invisible composite system of soil, roots, and geomatrix. The material is furnished in rolled strips that must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Combination synthetic and biodegradable RECPs consist of biodegradable fibers, such as wood fiber or coconut fiber, with a heavy polypropylene net stitched to the top and a high strength continuous filament geomatrix or net stitched to the bottom. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Inspection and Maintenance Guidelines:

1. Blankets and matting should be inspected weekly and after each rain event to locate and repair any damage. Apply new material if necessary to restore function.

Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

Stabilization practices for this site include:

- Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.
- Watering for dust control on stockpile areas, excavated areas, and along roads.
- Mulching will be used when slopes are flatter than 3:1 and construction has been halted 5 or more days.
- Soil Retention Blankets will be installed when the slope is steeper than 3:1 and construction has halted for 5 or more days.
- Bare soils should be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days. Seeding will be used after construction is completed.
- Permanent seeding and planting of all unpaved areas using the planting of grass seed, grass sod, or shrubs.
- Existing tree protection and preservation of existing vegetation.

Weekly inspections of seeding and planting for bare spots, washouts, and healthy growth shall be made. A maintenance inspection report will be prepared after each inspection. The following items must be satisfied prior to final stabilization/ termination:

- All soil disturbing activities are complete.
- Temporary erosion and sediment control measures have been removed or will be removed at an appropriate time.
- All areas of the construction site not otherwise covered by a permanent pavement or structure have been stabilized with a uniform perennial vegetative cover.

From City of Austin Environmental Criteria Manual Appendix P-1:

Temporary and Permanent Erosion Control: All disturbed areas shall be restored as noted below:

A. All disturbed areas to be revegetated are required to place a minimum of six (6) inches of topsoil [see Standard Specification Item No. 601S.3(A)]. Do not add topsoil within the critical root zone of existing trees.

   - Topsoil salvaged from the existing site is encouraged for use, but it should meet the standards set forth in 601S.

   An owner/engineer may propose use of onsite salvaged topsoil which does not meet the criteria of Standard Specification 601S by providing a soil analysis and a written statement from a qualified professional in soils, landscape architecture, or agronomy indicating the onsite topsoil will provide an equivalent growth media and specifying what, if any, soil amendments are required.

   - Soil amendments shall be worked into the existing onsite topsoil with a disc or tiller to create a well-blended material.

6 AGENT AUTHORIZATION FORM (TCEQ-0599)

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

I Judy Anderson, P.E.,
Print Name

Project Sponsor,
Title - Owner/President/Other

of City of Austin Watershed Protection Department,
Corporation/Partnership/Entity Name

have authorized Tyler Murski, PE
Print Name of Agent/Engineer

of RPS/Tetra Tech
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:

Judy Anderson on behalf of Watershed Protection Department
Applicant's Signature

7/22/25
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Judy Anderson 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 22 day of July 2025

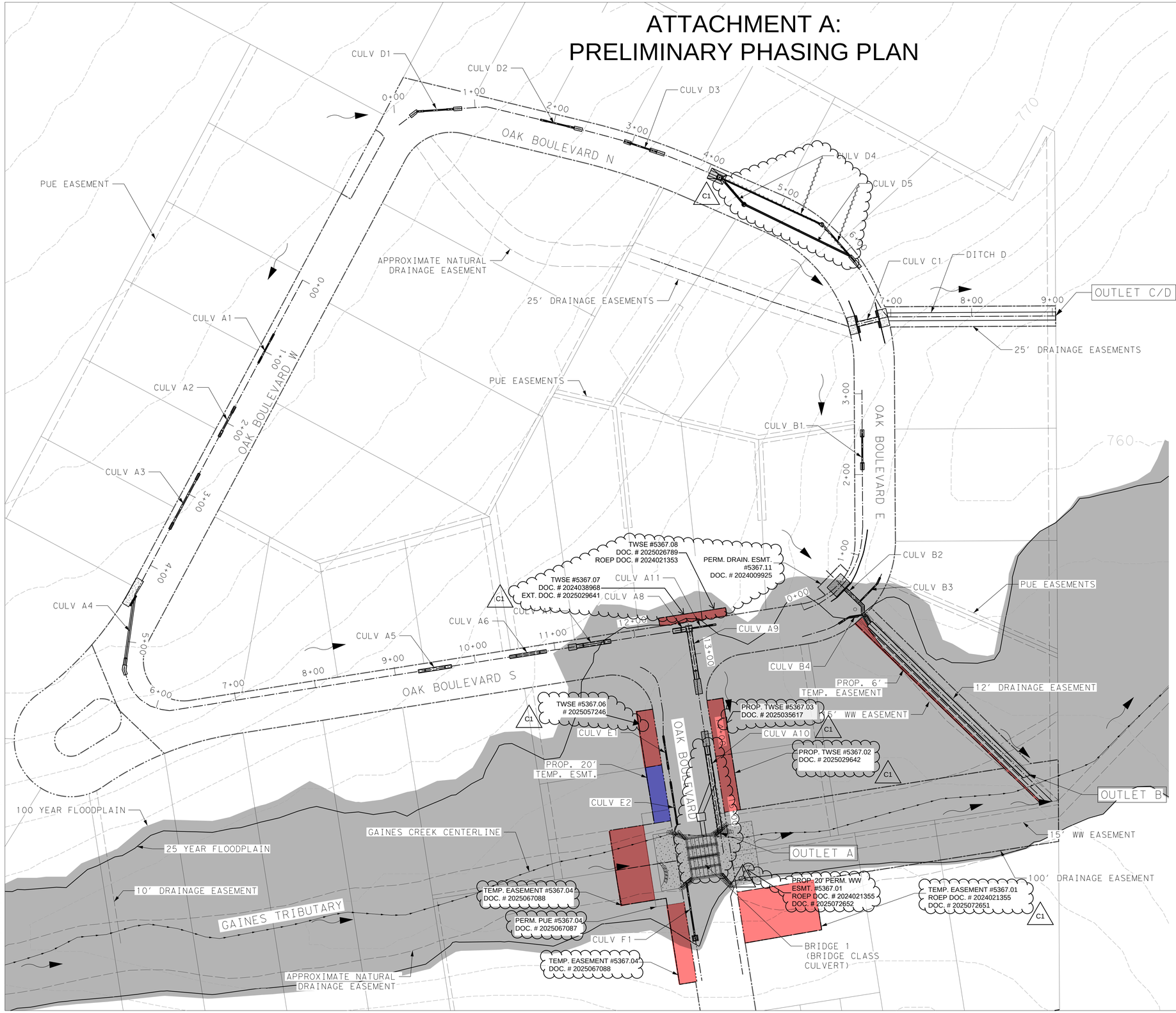
JASMINE MONIQUE FABIAN
My Notary ID # 130633901
Expires May 30, 2028

NOTARY PUBLIC

Jasmine Fabian
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 30, 2028

ATTACHMENT A:
PRELIMINARY PHASING PLAN



LEGEND

- CONTOURS
- DRAINAGE BOUNDARY
- EXIST 25 YEAR FLOODPLAIN
- EXIST 100 YEAR FLOODPLAIN
- FLOW PATH

NOTES

1. THE CONTRACTOR SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMP) AS DESCRIBED IN THE TEXAS COMMISION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABUTEMENT PLAN (WPAP).
2. PROJECT IS LOCATED WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING SURROUNDING PROPERTY FEATURES TO ITS ORIGINAL OR BETTER CONDITION AS A RESULT OF DAMAGES DONE BY THE PROJECT'S CONSTRUCTION.

PHASING PLAN: ALL WORK IN THE TEMPORARY WORK EASEMENTS IDENTIFIED IN RED MUST BE COMPLETED BY *SEPTEMBER 30, 2026* WHEN THE TEMPORARY WORK EASEMENTS EXPIRE. CONTRACTOR SHALL PHASE WORK TO PRIORITIZE THESE AREAS PRIOR TO THE DEADLINE.

ALL WORK IN THE TEMPORARY WORK EASEMENTS IDENTIFIED IN BLUE MUST BE COMPLETED BY *DECEMBER 31, 2027* WHEN THE TEMPORARY WORK EASEMENTS EXPIRE. CONTRACTOR SHALL PHASE WORK TO PRIORITIZE THESE AREAS PRIOR TO THE DEADLINE.

0 60' 120'

SCALE: 1" = 60' (H)

City of Austin WATERSHED PROTECTION

STATE OF TEXAS
JOHN G. FRIEDMAN
88486
REGISTERED PROFESSIONAL ENGINEER
11-03-23

CITY OF AUSTIN
BARTON CREEK OAK ACRES
FLOOD RISK REDUCTION PROJECT

PRELIMINARY PHASING PLAN

NO.	BY	DATE	REMARKS
C1	JF	6/25/25	CULV D4, D5, A10 REVISED, BRIDGE STRUC. REVISED, ESMT DOC.# ADDED

REVISIONS

SHEET INFORMATION

DATE 7/31/2023

SHEET 34 OF ~~115~~ 116 C1

CITY OF AUSTIN APPROVED Date 11/4/25 FOUNDED 1839
GP-2022-0408.WPD

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GP-2022-0408.WPD

7 APPLICATION FEE FORM (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Barton Creek - Oak Acres SDI (5754.046)
Regulated Entity Location: Generally at Oak Acres and 290 Highway Crossing
Name of Customer: City of Austin
Contact Person: Judy Anderson, P.E. Phone: 737-368-3920
Customer Reference Number (if issued):CN 600135198
Regulated Entity Reference Number (if issued):RN 111617767

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	223 L.F.	$ 650
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: Tyler Mesenbrink Muski Date: 07/30/2025

Application Fee Schedule

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

8 CORE DATA FORM (TCEQ-10400)

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN 600135198		**RN**

SECTION II: Customer Information

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

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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

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

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

11. Type of Customer:	☐ Corporation	☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship	☐ Other:

12. Number of Employees	**13. Independently Owned and Operated?**
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher	☐ **Yes** ☐ **No**

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

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

15. Mailing Address:							
	City		**State**		**ZIP**		**ZIP + 4**	

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

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

( ) -		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Barton Creek - Oak Acres SDI (5754.046)

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

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

25. Description to Physical Location:	GENERALLY LOCATED AT OAK ACRES AND 290 HIGHWAY CROSSING				
26. Nearest City			**State**	**Nearest ZIP Code**	
Austin			TX	78735	

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	30.239		**28. Longitude (W) In Decimal:**	-97.838	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	14	20.4	97	50	16.7994

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)
1623		23711	

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

Conveyance of wastewater

34. Mailing Address:								
	City		**State**		**ZIP**		**ZIP + 4**	
35. E-Mail Address:								

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

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Tyler Murski, P.E.	**41. Title:**	Project Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 328-5771		**( ) -**	tyler.murski@rpsgroup.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:	RPS	**Job Title:**	Project Engineer		
Name *(In Print):*	Tyler Murski, PE			**Phone:**	**(** 512 **)** 328- **5771**
Signature:	Tyler Mesnole Murski			**Date:**	07/30/2025