SCS & WPAP

Berry Creek Highlands
Phase 6B & 7
Georgetown, Williamson County, Texas

April 2024

Prepared For:

CHESMAR HOMES, LLC
211 NORTH LOOP 1604 EAST
SUITE 179
SAN ANTONIO, TEXAS 78232

Prepared By:

AC Steadman
Kimley-Horn and Associates, Inc.
10814 Jollyville Road
Building IV, Suite 200
Austin, TX 78759
TEXAS REGISTRATION #928

04/01/2024

Kimley»Horn

Organized Sewage Collection System Plan Checklist

- **Edwards Aquifer Application Cover Page (TCEQ-20705)**
- **General Information Form (TCEQ-0587)**

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

- **Geologic Assessment Form (TCEQ-0585)**

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

- **Organized Sewage Collection System Plan (TCEQ-0582)**

  Attachment A - Engineering Design Report
  Attachment B - Justification and Calculations for Deviation in Straight Alignment Without Manholes
  Attachment C - Justification for Variance from Manhole Spacing
  Attachment D - Explanation of Slopes for Flows Greater Than 10.0 Feet Per Second
  Site Plan
  Final Plan and Profile Sheets

- **Lift Station / Force Main System Application (TCEQ-0624) if applicable**

  Attachment A - Engineering Design Report
  Site Plan
  Final Plan and Profile Sheets

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

  Attachment A - Spill Response Actions
  Attachment B - Potential Sources of Contamination
  Attachment C - Sequence of Major Activities
  Attachment D - Temporary Best Management Practices and Measures
  Attachment E - Request to Temporarily Seal a Feature, if sealing a feature
  Attachment F - Structural Practices
  Attachment G - Drainage Area Map
  Attachment H - Temporary Sediment Pond(s) Plans and Calculations
  Attachment I - Inspection and Maintenance for BMPs

Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- **Application Fee Form (TCEQ-0574)**
- **Check Payable to the "Texas Commission on Environmental Quality"**
- **Core Data Form (TCEQ-10400)**

Water Pollution Abatement Plan Checklist

- **Edwards Aquifer Application Cover Page (TCEQ-20705)**
- **General Information Form (TCEQ-0587)**

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

- **Geologic Assessment Form (TCEQ-0585)**

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

- **Water Pollution Abatement Plan Application Form (TCEQ-0584)**

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

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

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

- **Permanent Stormwater Section (TCEQ-0600)**

  Attachment A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site
  Attachment B - BMPs for Upgradient Stormwater

Attachment C - BMPs for On-site Stormwater
Attachment D - BMPs for Surface Streams
Attachment E - Request to Seal Features (if sealing a feature)
Attachment F - Construction Plans
Attachment G - Inspection, Maintenance, Repair and Retrofit Plan
Attachment H - Pilot-Scale Field Testing Plan, if BMPs not based on Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs
Attachment I -Measures for Minimizing Surface Stream Contamination

- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- **Application Fee Form (TCEQ-0574)**
- **Check Payable to the "Texas Commission on Environmental Quality"**
- **Core Data Form (TCEQ-10400)**

`Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

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

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

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

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

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

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

Technical Review

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

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

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

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: **Berry Creek Highlands Phase 6B & 7**						**2. Regulated Entity No.:**			
3. Customer Name: CHESMAR HOMES, LLC						**4. Customer No.: CN605592310**			
5. Project Type: **(Please circle/check one)**	New **X**		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP **X**	CZP	SCS **X**	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential **X**		Non-residential			**8. Site (acres):**		50.17	
9. Application Fee:	$10,235		**10. Permanent BMP(s):**			1 WQ Detention Pond			
11. SCS (Linear Ft.):	7470		**12. AST/UST (No. Tanks):**			N/A			
13. County:	WILLIAMSON		**14. Watershed:**			Berry Creek			

Application Distribution

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

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

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	1
Region (1 req.)	___	___	1
County(ies)	___	___	1
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence _1_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. AC Steadman - Kimley-Horn
Print Name of Customer/Authorized Agent 
Signature of Customer/Authorized Agent Date 04/01/2024

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

General Information Form

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: AC Steadman

Date: 04/01/2024

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Berry Creek Phase 6B & 7
2. County: Williamson
3. Stream Basin: Brazos River
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Carson Trainer
   Entity: Chesmar Homes, LLC
   Mailing Address: 211 North loop 1604 East, Suite 175
   City, State: San Antonio, Texas Zip: 78232
   Telephone: 210-896-8383 FAX: ____
   Email Address: carson.trainer@chesmar.com

8. Agent/Representative (If any):

   Contact Person: AC Steadman
   Entity: Kimley-Horn & Associates, Inc.
   Mailing Address: 10814 Jollyville Road, Building IV, Suite 200
   City, State: Austin, Texas Zip: 78759
   Telephone: 512-418-4508 FAX: _____
   Email Address: AC.Steadman@kimley-horn.com

9. Project Location:

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

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

    The project site is located on the West side of State Highway Cowboy 195 at the intersection with Shell Road.

11. ☒ **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

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

13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: 09/15/2022

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

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

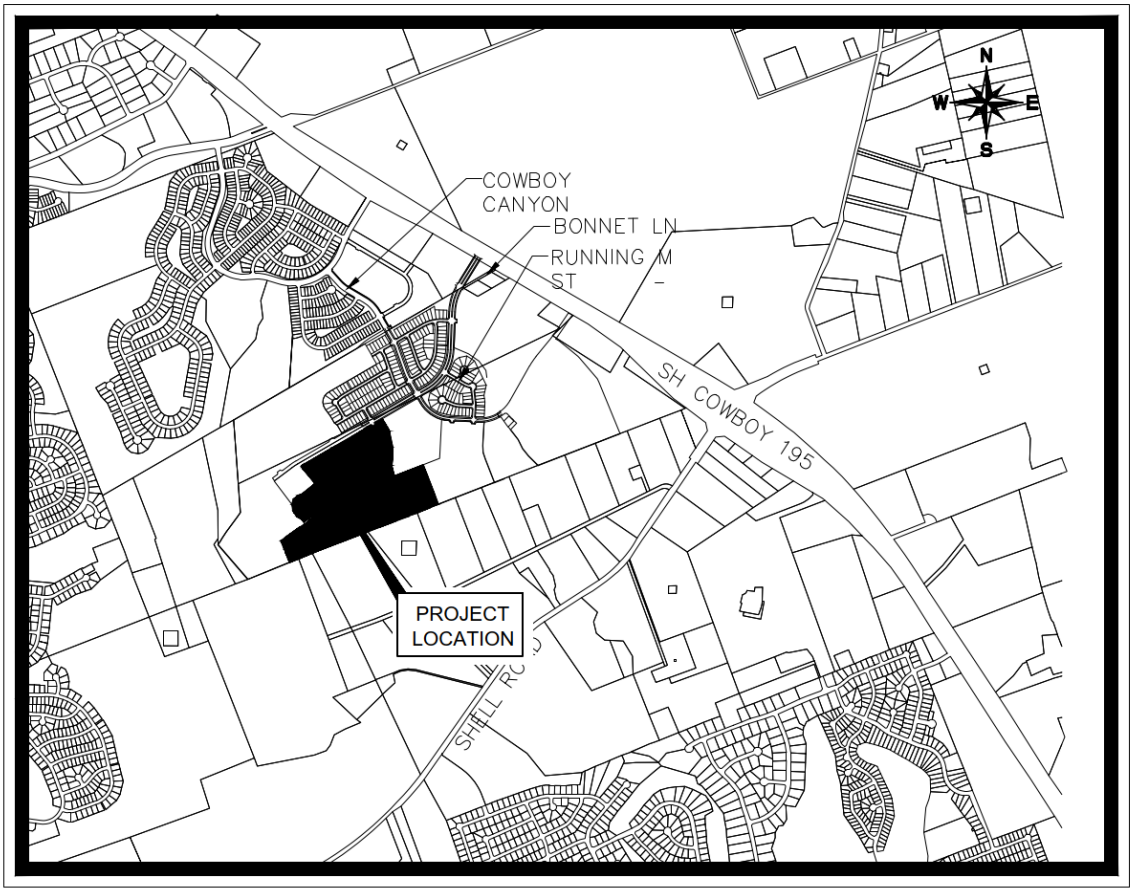
☐ TCEQ cashier
☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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

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

ATTACHMENT A—ROAD MAP

LOCATION MAP

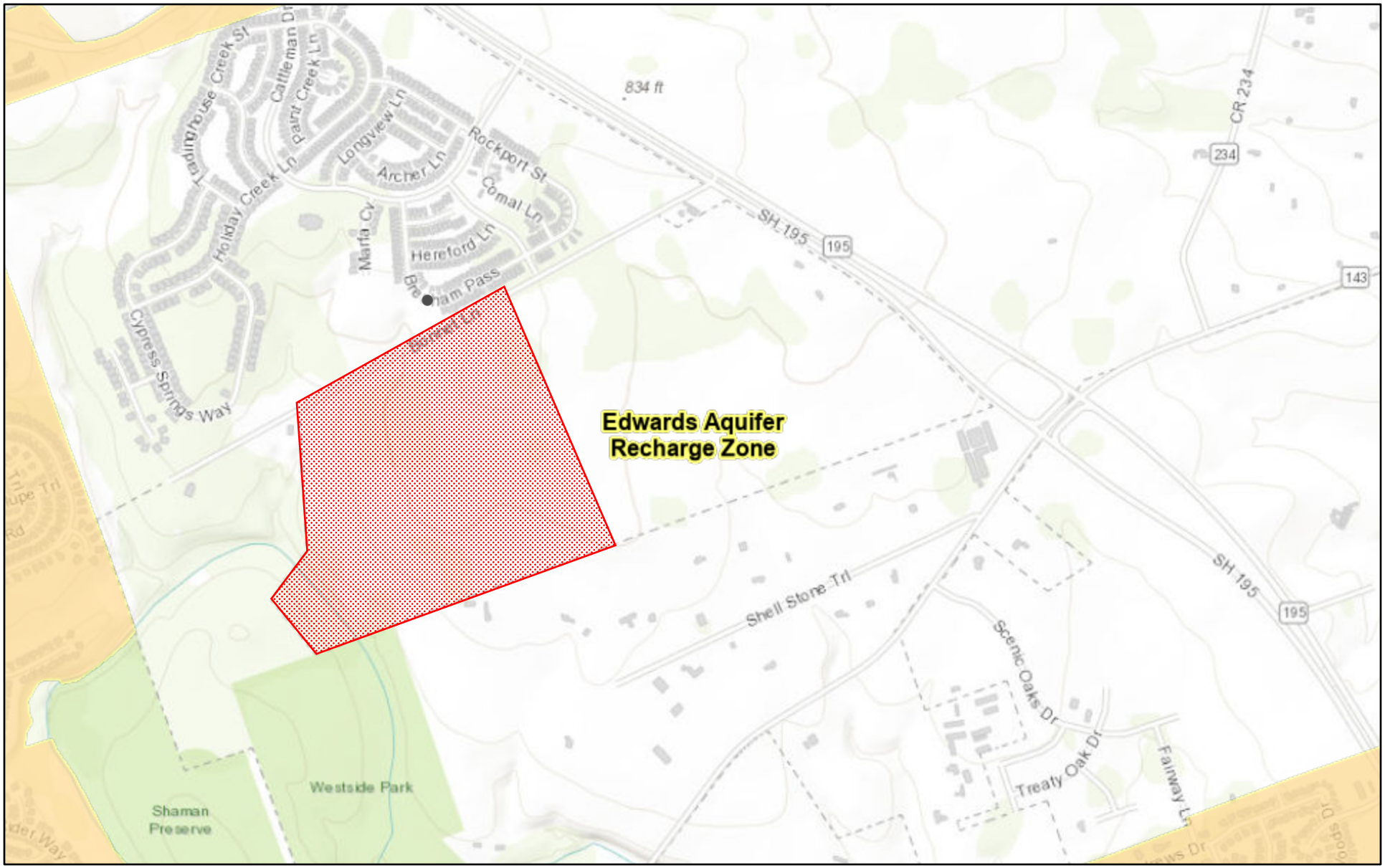


VICINITY MAP

SCALE: 1" = 1,000'

ATTACHMENT B—USGS QUADRANGLE MAP

Edwards Aquifer Viewer Custom Print



11/29/2023, 8:26:55 AM

1:17,473

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Edwards Aquifer Label

City/Place

TX Counties

7.5 Minute Quad Grid

TCEQ_EDWARDS_OFFICIAL_MAPS

County of Williamson, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, TCEQ

Web AppBuilder for ArcGIS

County of Williamson, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA | TCEQ |

ATTACHMENT C—PROJECT DESCRIPTION

The development is located on the west side of State Highway Cowboy 195 at the intersection with Shell Road in Georgetown Texas, Williamson County. This Water Pollution Abatement Plan (WPAP) application and Organized Sewage Collection System (SCS) application covers Berry Creek Phase 6B & 7, a 50.17-acre single family subdivision development section out of the Berry Creek Master Plan.

This section includes the development of 209 single-family lots and is located in the Edwards Aquifer Recharge Zone. The project includes the construction of ±8147 linear feet of public roadway, ±8137 linear feet of 18" to 60" storm sewer, ±8262 linear feet of 8" water line, and ±7470 linear feet of 8" gravity wastewater within the Phase 6B & 7 boundary. The limits of construction for this phase is 50.17 acres. This section is a part of the proposed larger Berry Creek Master Planned Community.

The SCS covers the wastewater for Berry Creek Highlands Phase 6B & 7 that will gravity flow and connect to an existing 8" wastewater stub located in the floodplain on the southwestern portion of the site. The existing 8" wastewater line is located within a wastewater easement, and ultimately is treated at the City of Georgetown San Gabriel Wastewater Treatment Plant.

This WPAP covers the storm water generated by Berry Creek Highlands Phase 6B & 7. The storm water from this Phase will be treated in only one location. The site will be treated by a batch detention water quality pond that is proposed with Berry Creek Highlands Phase 6B & 7. The proposed batch detention water quality pond is designed to accommodate the respective impervious cover and serve as the Permanent Best Management Practice (BMP) for the remainder of the site.

A SWPPP will also be filed with TCEQ per the requirements of the TPDES program for Berry Creek Highlands Phase 6B & 7.

This site may possibly utilize imported fill material. That material shall consist of crushed limestone, select fill, and topsoil. The fill material will be used to facilitate drainage, roadway construction, and re-vegetation of the property and to elevate the building foundations.

All sensitive features and buffers are shown and labeled on the construction plans as per the Geological Assessment.

GEOLOGIC ASSESSMENT

For

314-AC JOHNSON/SCHNEIDER TRACTS
HIGHWAY 195
GEORGETOWN, WILLIAMSON COUNTY,
TEXAS

Prepared for

KIMLEY-HORN
10814 JOLLYVILLE RD, AVALLON IV, STE 300
AUSTIN, TEXAS 78759

Prepared by

Professional Service Industries, Inc.
Three Burwood Lane
San Antonio, Texas 78216
Telephone (210) 342-9377

PSI PROJECT NO.: 0435-2660

March 31, 2016

Information To Build On
Engineering • Consulting • Testing

March 31, 2016 (Revised July 30, 2020)

KIMLEY-HORN
10814 Jollyville Road, Avallon IV, Suite 300
Austin, Texas 78759

Attn: Mr. Brian Parker, P.E., Senior Associate
Via email: brian.parker@kimley-horn.com

Re: Geologic Assessment
314-Acre Johnson/Schneider Tracts
Highway 195 & Bonnet Lane
Georgetown, Texas
PSI Project No.: 435-2660

Dear Mr. Parker:

Professional Service Industries, Inc. (PSI) has completed a geologic recharge assessment for the above referenced project in compliance with the Texas Commission on Environmental Quality (TCEQ) requirements for regulated developments located on the Edwards Aquifer Recharge Zone (EARZ). The purpose of this report is to describe surficial geologic units and identify the locations and extent of significant recharge features present in the development area.

AUTHORIZATION

Authorization to perform this assessment was given by a signed copy of PSI Proposal No. 171837 between Kimley-Horn and PSI dated March 2, 2016.

PROJECT DESCRIPTION

The subject site is an irregular shaped tract of land, approximately 314-acres in size, located on the west side of Highway 195, at the southwest corner of Bonnet Lane and Hwy 195 in Georgetown, Williamson County, Texas. The site is covered with grassy vegetation, and varying thicknesses of soil, with rock outcrops scattered throughout. The online Edwards Aquifer Map provided by the TCEQ was reviewed for this assessment. According to the contour lines on the maps, the elevation of the property ranges from approximately 825 feet above mean sea level (MSL) in the northern portion of the tract, to approximately 735 feet MSL on the southwest corner of the tract, by Berry Creek. The contour lines in the area of the property indicate variable slopes; but generally to the south-southwest towards the Berry Creek drainage; while some middle portions slope to the southeast, towards a tributary drainage of Berry Creek.

REGIONAL GEOLOGY

Physiography

From west to east, the two physiographic provinces in Williamson County are: the Edwards Plateau and the Blackland Prairie. The Edwards Plateau terrain is rugged and hilly, with elevations ranging from 800 feet to 1,400 feet above sea level.

This area is underlain by beds of limestone that dip gently to the southeast. Southeast of the Edwards Plateau is the Balcones Fault Zone, which is also the northernmost limit of the Blackland Prairie. The Balcones Fault Zone extends north-south across Williamson County and is composed of fault blocks of limestone, chalk, shale and marl. The undulating, hilly topography of the Blackland Prairie ranges in elevation from about 400 feet to 800 feet above sea level. The faults are predominantly normal, down thrown-to-the Gulf Coast, with near vertical throws.

The subject property lies on the Edwards Plateau. According to the 1974 Austin Sheet of the Geologic Atlas of Texas, published by the Bureau of Economic Geology in cooperation with the University of Texas at Austin, no faults are mapped in proximity to the subject site.

Stratigraphy and Structure

The site is predominantly clay covered, with few rock outcrops of note. According to the Austin Sheet of the Geologic Atlas of Texas, the underlying rocks at the site are mapped as the Edwards Limestone, undivided, which includes the overlying Georgetown Formation (Ked); is fine to coarse-grained, with abundant chert, medium gray to grayish brown; fossils in the formation are rudistids as reefs and individuals, miliolid (microfossils), and shell fragments; solution zones and collapse breccia common; thickness 300-500 feet.

No features scoring more than 40 points on the F-0585 form were observed on the subject tract. Feature S-1 is a small solution cavity on the western portion of the site, and Features S-2 to S-5 were small closed depressions on hillsides that appeared to have limited subsurface interconnection. Features S-6 and S-12 were water wells, and Feature S-7 was a linear outcrop feature in a drainage on the southeast portion of the site. Features S-8, 10 and 11 were small closed depressions on the western portion of the site, and S-11 may have been excavated as an attempt to make a stock tank/pond. Feature S-9 is a small solution cavity on the northwest portion of the site that had a lateral extent of about 4 feet in the subsurface.

SITE INVESTIGATION

The site investigation was performed by systematically traversing the subject tract, and mapping fractured or vuggy rock outcrops, closed depressions, sinkholes, caves, or indications of fault/fracture zones. The purpose of the site investigation was to delineate features with recharge potential that may warrant special protection or consideration. The results of the site investigation are included in the attached TCEQ report format.

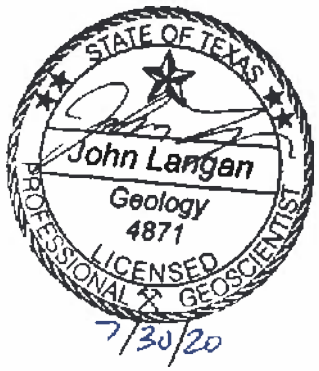
SUMMARY

No sensitive recharge features were noted on the subject site. While not observed, septic systems may have been used in the past on the site. If encountered during development activities, septic systems should be properly removed or decommissioned in accordance with state and local regulations. If future use of the on-site water wells is not planned, they should be properly plugged and abandoned in accordance with state and local regulations. No streams or springs exist on Phase 3, 4 or 5 of the subject tract. It is possible that clearing/construction activities will reveal the presence of features currently hidden by thick vegetation and/or soil cover. If caves, sinkholes, or solution cavities are encountered during future clearing/construction activities, please contact our office for additional assistance.

We appreciate this opportunity to be of service to you. If you have any questions, please do not hesitate to contact our office.

Respectfully submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.

John Langan, P.G.
Environmental Services



WARRANTY

The field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for a general geological recharge assessment of this site. PSI warrants that the findings and conclusions contained herein have been promulgated in accordance with generally accepted geologic methods, only for the site described in this report. These methods have been developed to provide the client with information regarding apparent indications of existing or potential conditions relating to the subject site and are necessarily limited to the conditions observed at the time of the site visit and research. This report is also limited to the information available at the time it was prepared. In the event additional information is provided to PSI following the report, it will be forwarded to the client in the form received for evaluation by the client. There is a possibility that conditions may exist which could not be identified within the scope of the assessment or which were not apparent during the site visit. PSI believes that the information obtained from others during the review of public information is reliable; however, PSI cannot warrant or guarantee that the information provided by others is complete or accurate.

This report has been prepared for the exclusive use of Kimley-Horn for the site discussed herein. Reproductions of this report cannot be made without the expressed approval Kimley-Horn. The general terms and conditions under which this assessment was prepared apply solely to Kimley-Horn. No other warranties are implied or expressed.

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

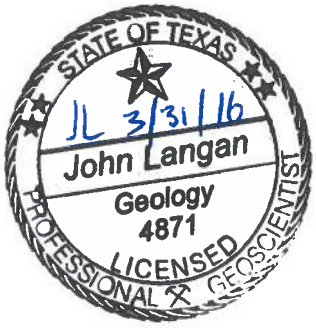
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: John Langan Telephone: 210/342-9377

Date: March 31, 2016 Fax: 210/342-9401

Representing: PSI TBPG No. 50128 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: 314-Ac Johnson/Schneider Tracts

Project Information

1. Date(s) Geologic Assessment was performed: 3/24-28/16
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Eckrant cobbly clay ,1-8% slopes	B	0-2'
Eckrant Extremely stony clay 0-3% slopes	B	0-2'
Eckrant Rock outcrop complex, rolling	B	0-1'
Georgetown stony clay loam 1-3% slopes	B	0-2
Oakalla soils 0-1% slopes, channeled, freq flooded	C	1-3

** Soil Group Definitions (Abbreviated)*

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

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

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

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

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

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

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

   Applicant's Site Plan Scale: 1" = 400'
   Site Geologic Map Scale: 1" = 400'

Site Soils Map Scale (if more than 1 soil type): 1" = 400'

9. Method of collecting positional data:

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

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

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

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

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

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

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

    ☒ There are 2 (#) 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.

STRATIGRAPHIC COLUMN

314-Ac. Johnson/Schneider Tracts
Highway 195
Georgetown, Texas

FORMATION	THICKNESS	LITHOLOGIC DESCRIPTION
Del Rio Clay	40-70	Calcareous and gypsiferous, with pyrite common, with a blocky structure that weathers to light gray or yellowish gray. The characteristic marine mega fossil, *Ilmatogyra arietina* (formerly *exogyra arietina*) is widespread throughout the formation.
Georgetown Formation	2-20'	Light tan limestone identified by proximity to Del Rio clay and diagnostic marker fossil: *waconella wacoensis* brachiopod; low porosity and permeability development.
Edwards Limestone	60-350'	Limestones and dolomites, extensive porosity development in "honeycomb sections, interbedded with massive recrystallized limestones with more limited permeabilities

SOILS NARRATIVE

According to the Soil Survey of Williamson County, published by the United States Department of Agriculture, Soil Conservation Service, in cooperation with the Texas Agricultural Extension Service, issued in 1983, indicated the soils at the subject property include Eckrant cobbly clay, 1 to 8 percent slopes, (EaD), Eckrant extremely stony clay 0-3% slopes (EeB), Eckrant-Rock outcrop complex, rolling (ErE), Georgetown stony clay loam, 1-3% slopes (GsB) and Oakalla soils, channeled (Oc).

Eckrant soils are nearly level to gently sloping soils on broad ridges and shallow valleys in uplands that develop over limestone. Due to the large amount of rock fragments and shallowness, these soils are not suited to crops or pasturelands, but are used as rangeland. The soil is well drained, with moderately slow permeability, very low water capacity and rapid surface runoff. The shallow depth to limestone is suitable for home sites, as the rock offers stable footings for foundations, but considerable cutting and blasting is required for underground utility lines.

Georgetown stony clay loam occurs mostly on higher parts of uplands, and has an approximate 7" thick surface layer of slightly acid, brown stony clay loam which overlies a reddish-brown clay subsoil to a depth of approximately 35". The parent material is an indurated, fractured limestone. The soil is well drained, with slow permeability, medium surface runoff and low available water capacity. The soil is used as rangeland, and is suitable for home sites.

Oakalla soils occur on bottom lands in narrow stream valleys. The surface layer is a dark brown loam approximately 7" thick, which overlies a dark brown clay loam roughly 16" thick, which in turn overlies a dark brown sandy clay loam to a depth of 66". These soils are generally used as rangeland, as the channeled topography is not suited for farm equipment.

SITE GEOLOGIC NARRATIVE

Physiography

From west to east, the two physiographic provinces in Williamson County are: the Edwards Plateau and the Blackland Prairie. The Edwards Plateau terrain is rugged and hilly, with elevations ranging from 800 feet to 1,400 feet above sea level.

This area is underlain by beds of limestone that dip gently to the southeast. Southeast of the Edwards Plateau is the Balcones Fault Zone, which is also the northernmost limit of the Blackland Prairie. The Balcones Fault Zone extends north-south across Williamson County and is composed of fault blocks of limestone, chalk, shale and marl. The undulating, hilly topography of the Blackland Prairie ranges in elevation from about 400 feet to 800 feet above sea level. The faults are predominantly normal, down thrown-to-the Gulf Coast, with near vertical throws.

The subject property lies on the Edwards Plateau. According to the 1974 Austin Sheet of the Geologic Atlas of Texas, published by the Bureau of Economic Geology in cooperation with the University of Texas at Austin, no faults are mapped in proximity to the subject site.

Stratigraphy and Structure

The site is predominantly clay covered, with few rock outcrops of note. According to the Austin Sheet of the Geologic Atlas of Texas, the underlying rocks at the site are mapped as the Edwards Limestone, undivided, which includes the overlying Georgetown Formation (Ked); is fine to coarse-grained, with abundant chert, medium gray to grayish brown; fossils in the formation are rudistids as reefs and individuals, miliolid (microfossils), and shell fragments; solution zones and collapse breccia common; thickness 300-500 feet.

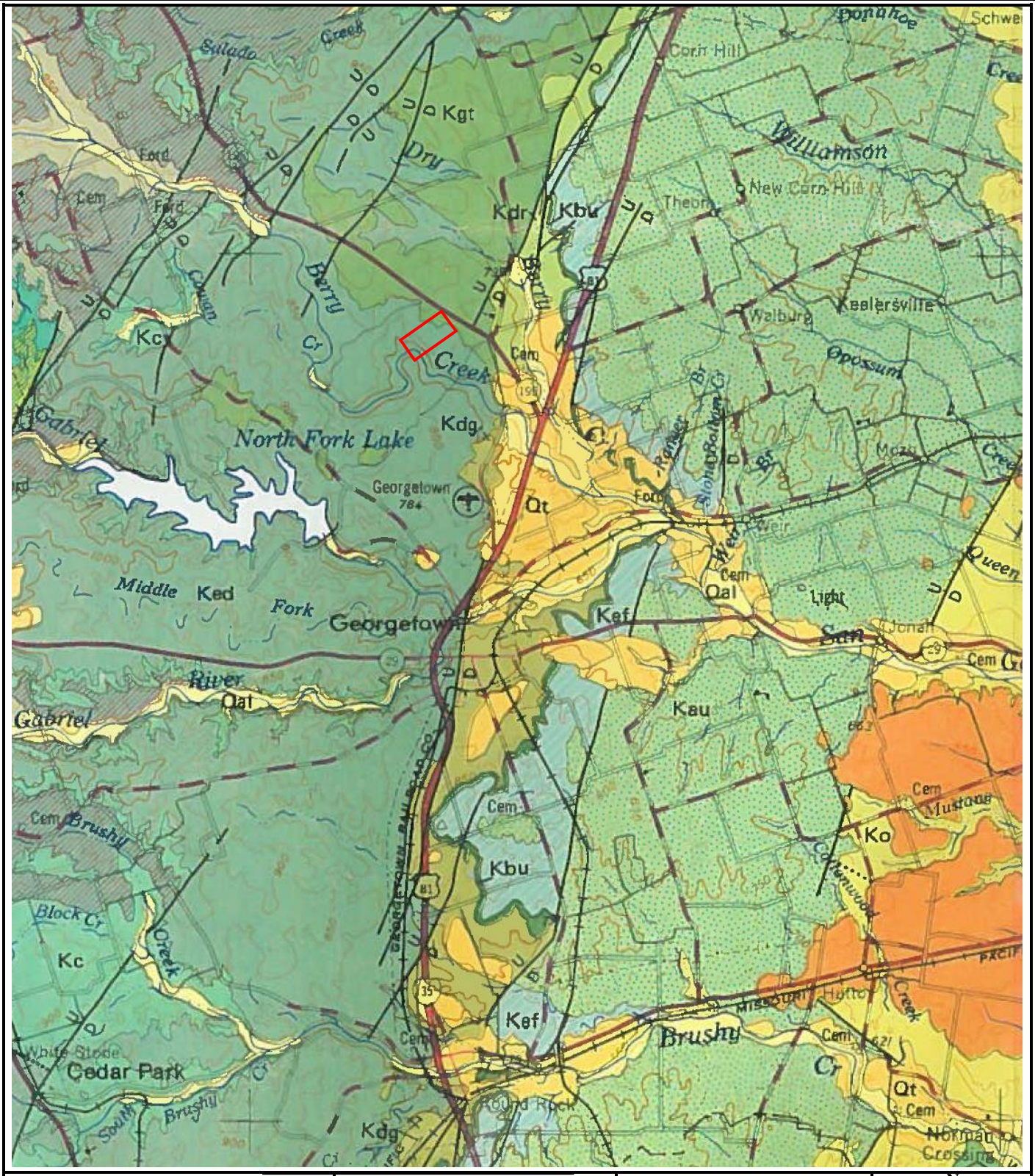
No features scoring more than 40 points on the F-0585 form were observed on the subject tract. Feature S-1 is a small solution cavity on the western portion of the site, and Features S-2 to S-5 were small closed depressions on hillsides that appeared to have limited subsurface interconnection. Features S-6 and S-12 were water wells, and Feature S-7 was a linear outcrop feature in a drainage on the southeast portion of the site. Features S-8, 10 and 11 were small closed depressions on the western portion of the site, and S-11 may have been excavated as an attempt to make a stock tank/pond. Feature S-9 is a small solution cavity on the northwest portion of the site that had a lateral extent of about 4 feet in the subsurface.

SITE INVESTIGATION

The site investigation was performed by systematically traversing the subject tract, and mapping fractured or vuggy rock outcrops, closed depressions, sinkholes, caves, or indications of fault/fracture zones. The purpose of the site investigation was to delineate features with recharge potential that may warrant special protection or consideration. The results of the site investigation are included in the attached TCEQ report format.

SUMMARY

No sensitive recharge features were noted on the subject site. While not observed, septic systems may have been used in the past on the site. If encountered during development activities, septic systems should be properly removed or decommissioned in accordance with state and local regulations. If future use of the on-site water wells is not planned, they should be properly plugged and abandoned in accordance with state and local regulations. It is possible that clearing/construction activities will reveal the presence of features currently hidden by thick vegetation and/or soil cover. If caves, sinkholes, or solution cavities are encountered during future clearing/construction activities, please contact our office for additional assistance.



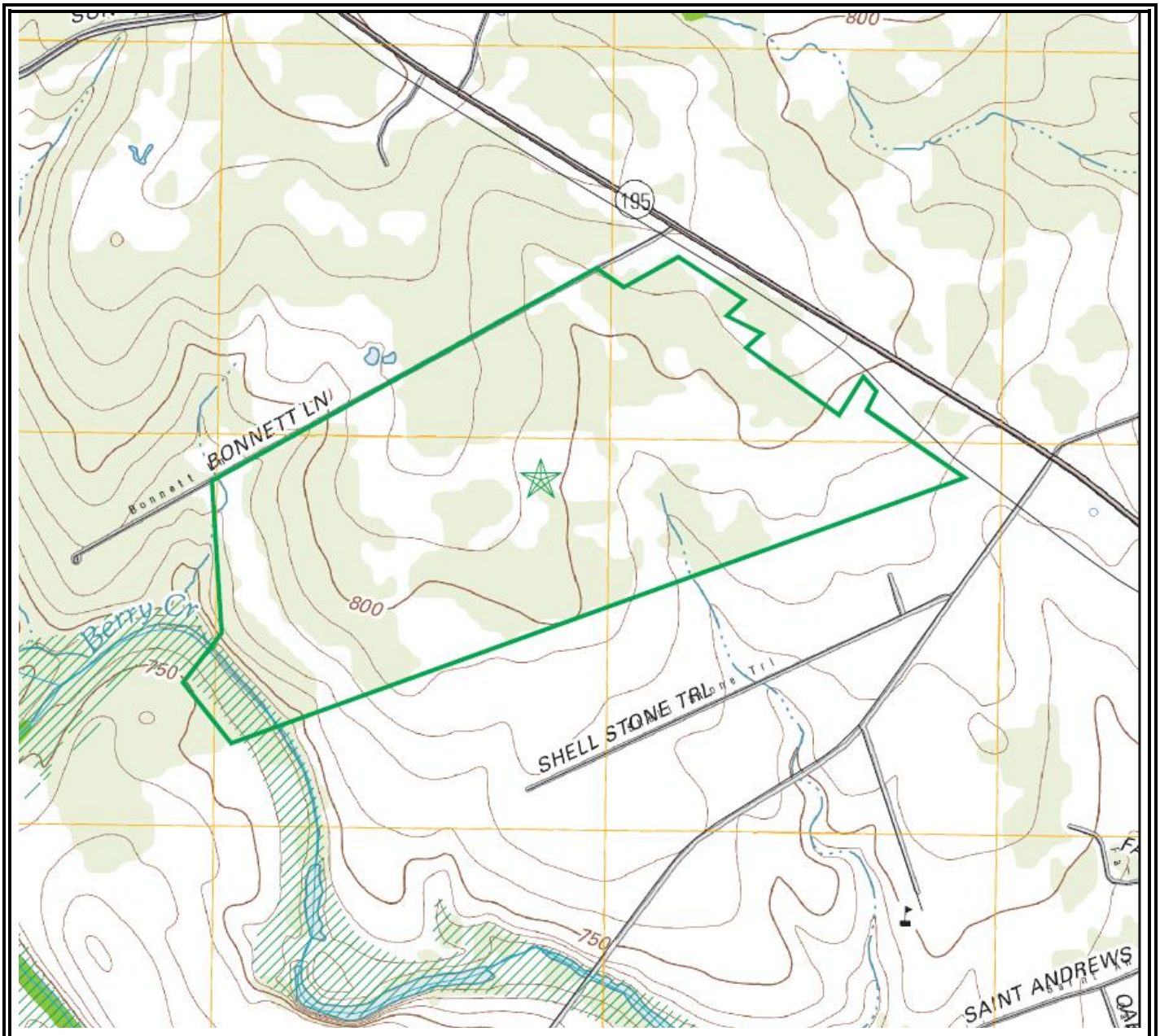
PSI Information To Build On
Engineering • Consulting • Testing
PSI, Inc.
3 Burwood Lane
San Antonio, Texas 78216

PROJECT NAME:
314-Ac Johnson/Schneider Tracts
Highway 195
Georgetown,Texas

PROJECT NO.:435-2660

Geologic Atlas of Texas, Austin Sheet
(Bureau of Economic Geology, UT-Austin1981)

N



PSI, Inc.
3 Burwood Lane
San Antonio, Texas 78216

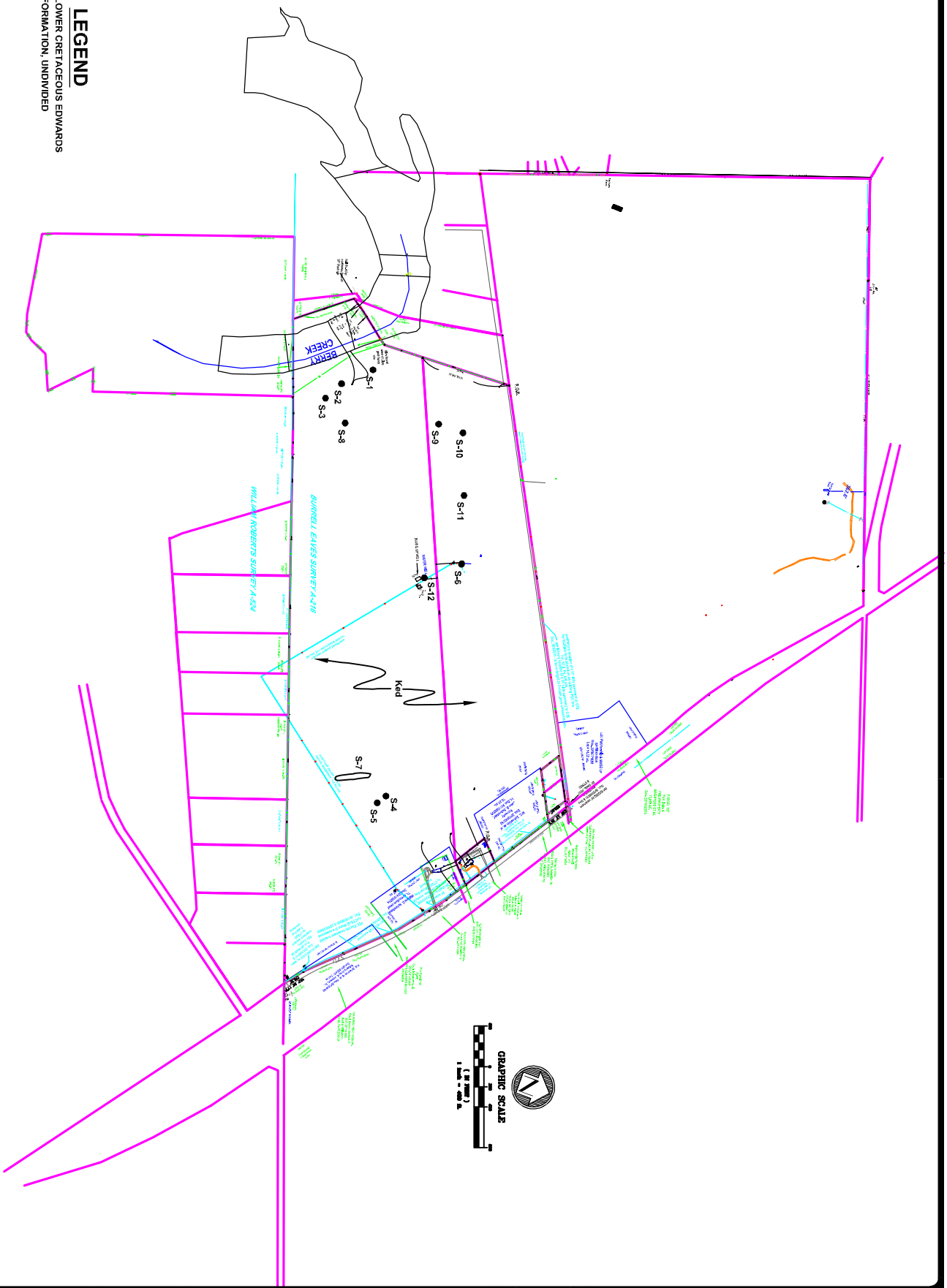
PROJECT NAME:
314-Ac Johnson/Schneider Tracts
Highway 195
Georgetown,Texas

PROJECT NO.:435-2660

Topographic Map
USGS "Georgetown, Texas"

2013

N



REVISIONS:

psi Information To Build On
Engineering • Consulting • Testing
THREE BURWOOD LANE
SAN ANTONIO, TEXAS 78216

GEOLOGIC ASSESSMENT
for
314 ACRE JOHNSON/SCHNEIDER TRACTS
HIGHWAY 195
GEORGETOWN, TEXAS

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: 314-Ac. Johnson/Schneider Tracts

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	
S-1	30-43-17.6	97-41-37.2	SC	20	Ked	0.4	0.4	0.5						10	30	X		X		hillside
S-2	30-43-15.6	97-41-34.9	CD	5	Ked	4	4	0.5						8	13	X		X		hillside
S-3	30-43-15.3	97-41-34.1	CD	5	Ked	4	3	0.05						8	13	X		X		hillside
S-4	30-43-31.9	97-40-54	CD	5	Ked	6	6	0.5						8	13	X		X		hillside
S-5	30-43-31.4	97-40-53.9	CD	5	Ked	7	6	0.5						8	13	X		X		hillside
S-6	30-43-33	97-41-19.2	MB	30	Ked	0.6	0.6	>100						4	34	X		X		hillside
S-7	30-43-28.7	97-40-57.3	O	5	Ked	275	35	7						22	27	X			X	hillside
S-8	30-43-19.9	97-41-27.4	CD	5	Ked	1.5	1.5	1						8	13	X		X		hillside
S-9	30-43-27	97-41-32.8	SC	20	Ked	3	3	4						18	38	X		X		hillside
S-10	30-43-29.1	97-41-33.5	CD	5	Ked	5	5	1						8	13	X		X		hillside
S-11	30-43-27.6	97-41-26.9	CD	5	Ked	25	20	3						8	13	X		X		hillside
S-12	30-43-29.9	97-41-16.2	MB	30	Ked	0.6	0.6	>100						4	34	X		X		hillside

* DATUM:_____

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

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

12 TOPOGRAPHY

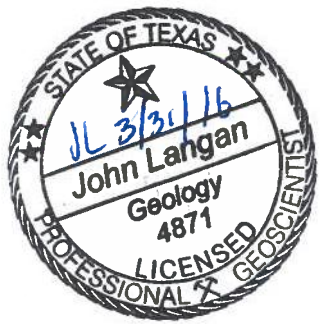
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.

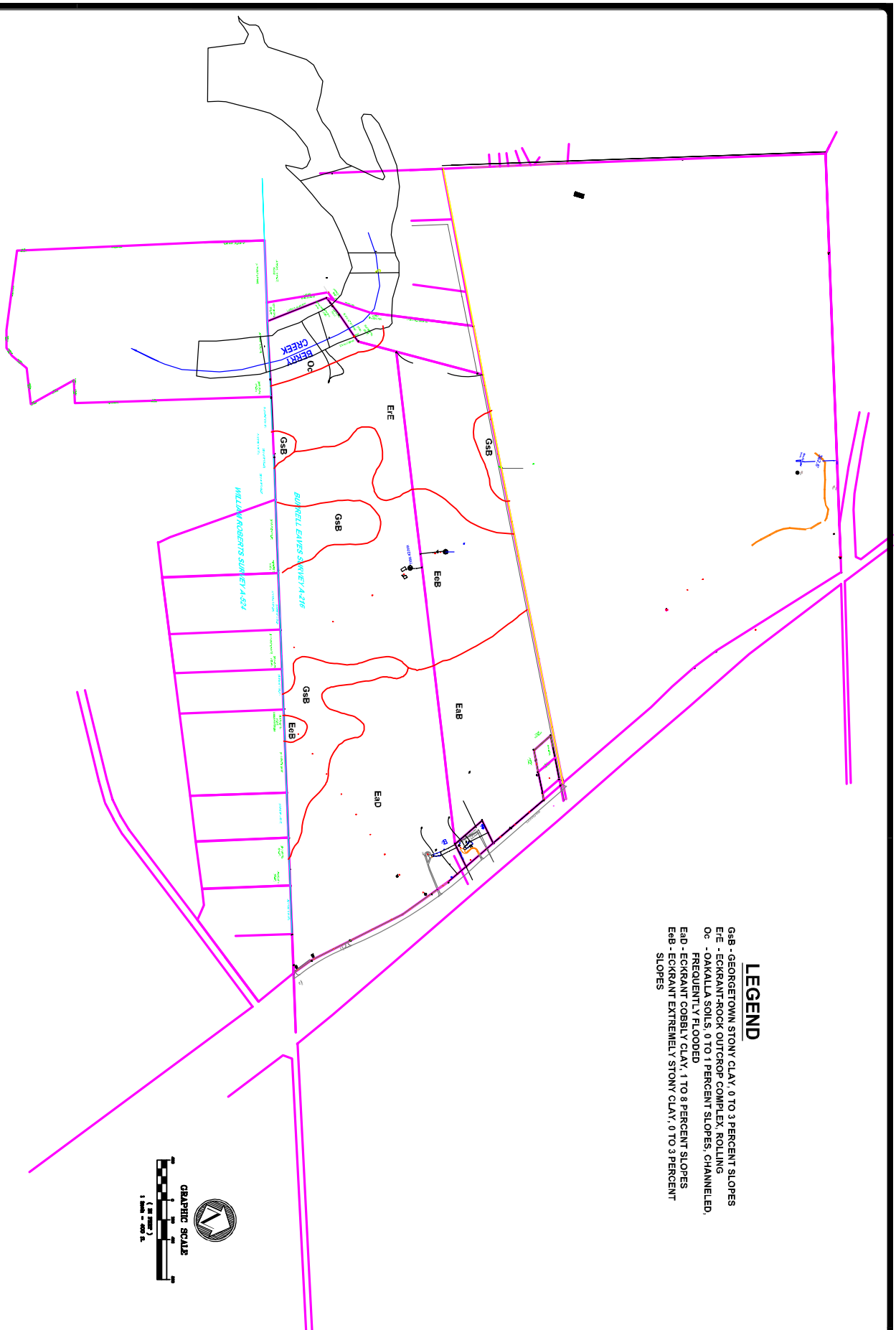
My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date: March 31, 2016

Sheet ___1___ of ___1___



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



LEGEND

GsB - GEORGETOWN STONY CLAY, 0 TO 3 PERCENT SLOPES
EfE - ECKRANT-ROCK OUTCROP COMPLEX, ROLLING
Oc - OAKALLA SOILS, 0 TO 1 PERCENT SLOPES, CHANNELED, FREQUENTLY FLOODED
EaD - ECKRANT COBBLY CLAY, 1 TO 8 PERCENT SLOPES
EeB - ECKRANT EXTREMELY STONY CLAY, 0 TO 3 PERCENT SLOPES

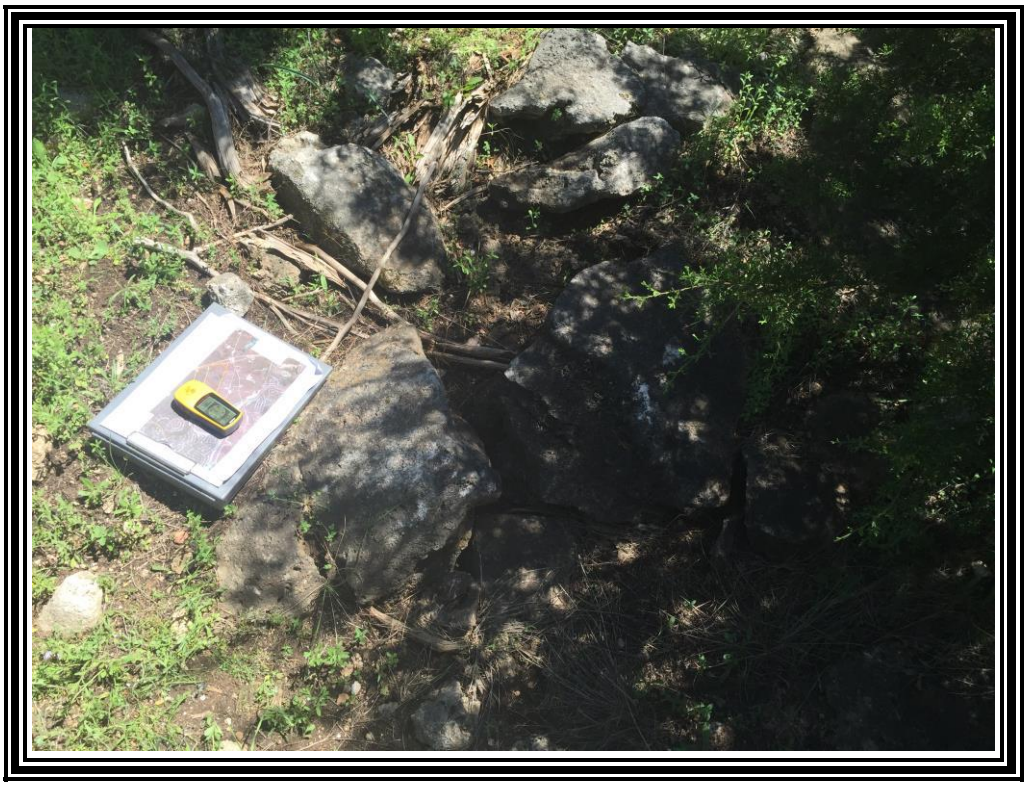
REVISIONS:

psi Information To Build On
Engineering • Consulting • Testing
THREE BURWOOD LANE
SAN ANTONIO, TEXAS 78216

GEOLOGIC ASSESSMENT
for
314 ACRE JOHNSON/SCHNEIDER TRACTS
HIGHWAY 195
GEORGETOWN, TEXAS

1. View northwest of Berry Creek on the western property line of the 314-Ac. Johnson/Schneider Tract on Highway 195 in Georgetown, Texas.

2. View of cut bank cliff outcrop of Edwards limestone along Berry Creek, showing thick vegetation masking visibility significantly.



3. View of closed depression feature S-2 located on the southwest portion of the 314-Ac. Johnson/Schneider Tract on Highway 195 in Georgetown, Texas.

4. View of closed depression feature S-3 located on the southwest portion of the site, southeast of S-2.

5. View of closed depression feature S-4 located on the eastern portion of the 314-Ac. Johnson/Schneider Tract on Highway 195 in Georgetown, Texas.

6. View of closed depression feature S-5, located south of feature S-4.

9. Close-up view of well feature S-6.

10. View of solution cavity feature S-9 located on the western portion of the site, at 30-43-27; 97-41-32.8.

7. View of outcrop feature S-7, located in a drainage on the southeast portion of the site.

8. View of water well feature S-6, on the north-central portion of the site.

11. View of water well feature S-12, in the central portion of the site at 30-43-29.9; 97-41-16.2.

12. View of closed depression feature S-11, which appeared to possibly have been excavated for an attempted stock tank, on the west central portion of the site at 30-43-27.6; 97-41-26.9.

ORGANIZED SEWAGE COLLECTION SYSTEM REPORT

Berry Creek Highlands Phase 6B & 7
Georgetown, Williamson County, Texas

Prepared By:

AC Steadman
Kimley-Horn and Associates, Inc.
10814 Jollyville Road
Building IV, Suite 200
Austin, TX 78759
TEXAS REGISTRATION #928

04/01/2024

April 2024

Kimley»Horn

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: Berry Creek Highlands Phase 6B & 7

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: Carson Trainer
   Entity: Chesmar Homes, LLC
   Mailing Address: 211 North Loop 1604 East, Suite 175
   City, State: San Antonio, Texas Zip: 78232
   Telephone: 210-896-8383 Fax: _____
   Email Address: carson.trainer@chesmar.com
   The appropriate regional office must be informed of any changes in this information within 30 days of the change.

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

   Contact Person: AC Steadman
   Texas Licensed Professional Engineer's Number: 138792
   Entity: Kimley-Horn & Associates, Inc.
   Mailing Address: 10814 Jollyville Road, Building IV, Suite 200
   City, State:Austin, Texas Zip: 78759
   Telephone:512-418-4508 Fax:_____
   Email Address:ac.steadman@kimley-horn.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: 209
   ☐ Multi-family: Number of residential units: _____
   ☐ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other: _____

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

100% Domestic	52,250.00 gallons/day
_____% Industrial	_____ gallons/day
_____% Commingled	_____ gallons/day

   Total gallons/day: 52,250.00

6. Existing and anticipated infiltration/inflow is 11,538 gallons/day. This will be addressed by: including infiltration/in flow with peak wet weather 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 _____. A copy of the approval letter is attached.
   ☒ The WPAP application for this development was submitted to the TCEQ on with SCS application, 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)*
8" (Gravity)	7090	PVC-SDR 26	ASTM D 3034
8" (Water crossings)	380	150 PSI PVC-SDR 26	ASTM D 2241
6" (Laterals)	3590	PVC-SDR 26	ASTM D3034

Total Linear Feet: +/- 11,060

(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 San Gabriel Wastewater Treatment Plant (City of Georgetown) (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

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

   ☒ The City of Georgetown 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?*
SEE ATTACHED WWMH SUMMARY	Of		
	Of		
	Of		
	Of		
	Of		
	Of		

BERRY CREEK PHASE 6B & 7 WW MANHOLE SUMMARY			
LINE	**SHOWN ON SHEET**	**STATION**	**MANHOLE OR CLEANOUT?**
A	64 & 65	20+26.77	4' MANHOLE A1
A	64 & 65	1+20.00	4' MANHOLE A8
B	66	5+01.43	4' MANHOLE B1
C	67	5+74.51	4' MANHOLE C1
D	67	2+47.59	4' MANHOLE D1
E	68	6+11.53	4' MANHOLE E1
F	69	6+45.20	4' MANHOLE F1
G	70 & 71	20+31.40	4' MANHOLE G1
H	72 & 73	11+02.29	4' MANHOLE H1
I	74	1+88.62	4' MANHOLE I1

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" = 100', 60', 50', 40'.

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***
N/A	of	to
	of	to
	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***
N/A	of	to
	of	to
	of	to
	of	to

24. ☒ Legal boundaries of the site are shown.

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

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

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

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

Table 5 - Water Line Crossings

Line	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance*	*Vertical Separation Distance*
SEE ATTACHED WL CROSSING SUMMARY				

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*
N/A			

BERRY CREEK PHASE 6B & 7 WATER LINE CROSSINGS
TABLE 5

LINE	STATION OR CLOSEST POINT	CROSSING OR PARALLEL	HORIZONTAL SEPARATION DISTANCE	VERTICAL SEPARATION DISTANCE
WWL-A	7+72.84	CROSSING	26.5	6.21
WWL-A	15+10.57	CROSSING	26.5	7.00
WWL-B	1+29.02	CROSSING	26.5	7.37
WWL-C	1+29.0	CROSSING	26.5	7.20
WWL-D	1+29.0	CROSSING	26.5	4.44
WWL-E	1+29.0	CROSSING	26.5	6.38
WWL-F	1+29.0	CROSSING	26.5	3.22
WWL-G	5+96.94	CROSSING	26.5	6.40
WWL-G	9+72.67	CROSSING	26.5	6.82
WWL-G	15+33.82	CROSSING	26.5	3.41
WWL-G	19+17.86	CROSSING	26.5	2.07
WWL-J	1+29.02	CROSSING	26.5	7.61

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*
N/A			

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*
N/A					

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]**	82 of 82
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	82 of 82
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	82 of 82
Typical trench cross-sections **[Required]**	82 of 82
Bolted manholes **[Required]**	82 of 82
Sewer Service lateral standard details **[Required]**	82 of 82
Clean-out at end of line **[Required, if used]**	82 of 82
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	N/A of N/A

Standard Details	*Shown on Sheet*
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	82 of 82
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
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: AC Steadman, P.E.

Date: 04/01/2024

Place engineer's seal here:

Signature of Licensed Professional Engineer:

04/01/24

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)

Engineering Design Report

For

Berry Creek Highlands Phase 6B & 7

Organized Sewage Collection System

APRIL 2024

Prepared By:
Kimley-Horn & Assocates, Inc.
10814 Jollyville Road, Building IV, Suite 200
Austin, Texas 78759
TBPE Registration Number F928

TABLE OF CONTENTS

Table of Contents	2
PVC Pipe Standards	3
Proposed Type of Pipe	4
Flow Capacity Analysis	4
Minimum and Maximum Grades for Pipes	5
Minimum and Maximum Velocities for the Proposed System	5
Average Values for Modulus of Soil Reaction, E'	6
Pipe Bedding Class	7
Pipe Bedding Angle	8
Live Load Determination	8
Prism Load Determination	9
Buckling Pressure (Allowable)	10
Buckling Pressure (Installed Condition)	11
Wall Crushing Calculation	12
Deflection Analysis: Leonhardt's Zeta Factor	14
Pipe Stiffness	15
Pipe Stiffness to Soil Stiffness Factor	16
Predicted Pipe Deflection	17
Pipe Strain	18
TCEQ Pipe Bedding and Trenching Requirements	20
Manhole Specifications	22

ATTACHMENTS

Attachment A: Wastewater/Sewage Calculations	29
Attachment B: Wastewater Utility Service Agreement	30
Attachment C: Local Sanitary Sewer Construction Notes	31

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 Polyvinyl Chloride (PVC) pipes, including the dimension ratio and water pressure allowable for use of each pipe, through its D-3034 standard. ASTM D-3034 lists its pipe dimensions and pipe classes using the "SDR" mark up, such as SDR-13.5, SDR-21, SDR-26 and SDR-41. The SDR refers to the standard dimension ratio (SDR) of the outside pipe diameter and the wall thickness. This project specifies the use of SDR-26 PVC pipe, which are to meet the ASTM pressure rating of 160 psi and fall in the size category listed below. ASTM D-3034 standards must be meticulously adhered to by all PVC pipe manufacturers and is recognized as the standard during PVC pressure pipe testing and quality checks. Other in-depth information can be found published in Thermoplastic Pressure Pipe Design and Selection UNI-TR-7, by the Uni-Bell PVC Pipe Association.

SDR 26 Pipe Size Matrix (Per ASTM D-3034)			
Size (in)	**O.D. (in)**	**Avg I.D. (in)**	**Thickness (in)**
4	4.215	3.891	0.162
6	6.275	5.793	0.241
8	8.4	7.754	0.323
10	10.5	9.692	0.404
12	12.5	11.538	0.481
15	15.3	14.124	0.588

PROPOSED TYPE OF PIPE (8")
(8")

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:
Size of Pipe: 8.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	7.754
Average Outer Diameter inch):	8.4
Wall Thickness (inch):	0.323
Approximate Trenching Width (feet):	2.70
Minimum Pipe Depth (Cover) used (feet):	**6.50**
Maximum Pipe Depth (Cover) used (feet):	**19.30**

FLOW/CAPACITY ANALYSIS

For the Proposed Project:

Proposed Waste Water Usage: **202,623 GPD** (max)

Q_{max} (As determined in Attachment A) = 0.314 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

For the Specified Pipe at the Minimum Design Slope, the full flow is

Q_{full} = **0.832 CFS**

0.314 < 0.832
Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))
(8")

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
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 pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second and less than 10.0 feet per second** when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:
(8")

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

So, using 8.00 inch PVC Pipe:

V = velocity (ft/sec)	=	(solve)
n = Manning's coefficient	=	0.013
R_h = hydraulic radius	=	0.165
S = slope (ft/ft)		

Minimum Slope Used (%): **0.50**

Maximum Slope Used (%): **3.66**

V_{min} = 2.44 ft/sec

V_{max} = 6.59 ft/sec

2.44 > 2.00 ft/sec

6.59 < 10.00 ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E'

Soil type-pipe bedding material (Unified Classification System)	E' for Degree of Compaction of Bedding, in pounds per square inch			
	Dumped	Slight <85% Proctor, <40% relative density	Moderate 85%-95% Proctor, 40%-70% relative density	High, >95% Proctor, >70% relative density
(1)	(2)	(3)	(4)	(5)
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			
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	1000
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL,with more than 25% coarse-grained particles	100	400	1000	2000
Coarse-grained Soils with Fines GM, GC, SM, SC[c] contains more than 12% fines				
Coarse-grained Soils with Little or no Fines GW, GP, SW, SP[c] contains less than 12% fines	200	1000	2000	3000
Crushed Rock	1000	3000	3000	3000
Accuracy in Terms of Percentage Deflection	± 2	± 2	± 1	± 0.5

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 = 1000 psi

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.

Pipe Embedment Material						E', psi (kPa) for Degree of Embedment Compaction				
ASTM D 2321*		ASTM D 2487		AASHTO M43 Notation	Min. Std. Proctor Density (%)	Lift Placement Depth	Dumped	Slightly < 85%	Moderate 85% - 95%	High > 95%
Class	Description	Notation	Description							
IA	Open-graded, clean manufactured aggregates	N/A	Angular crushed stone or rock, crushed gravel, crushed slag; large voids with little or no fines	5 56	Dumped	18" (0.45 m)	1000 (6,900)	3000 (20,700)	3000 (20,700)	3000 (20,700)
IB	Dense-graded, clean manufactured, processed aggregates	N/A	Angular crushed stone or other Class IA material and stone/sand mixtures; little or no fines							
II	Clean, coarse-grained soils	GW	Well-graded gravel, gravel/sand mixtures; little or no fines	57 6 67	85%	12" (0.30 m)	N/R	1000 (6,900)	2000 (13,800)	3000 (20,700)
		GP	Poorly graded gravel, gravel/sand mixtures; little or no fines							
		SW	Well-graded sands, gravelly sands; little or no fines							
		SP	Poorly graded sands, gravelly sands; little or no fines							
III	Coarse-grained soils with fines	GM	Silty gravels, gravel/sand/silt mixtures	Gravel and sand with <10% fines	90%	9" (0.20 m)	N/R	N/R	1000 (6,900)	2000 (13,800)
		GC	Clayey gravels, gravel/sand/clay mixtures							
		SM	Silty sands, sand/silt mixtures							
		SC	Clayey sands, sand/clay mixtures							

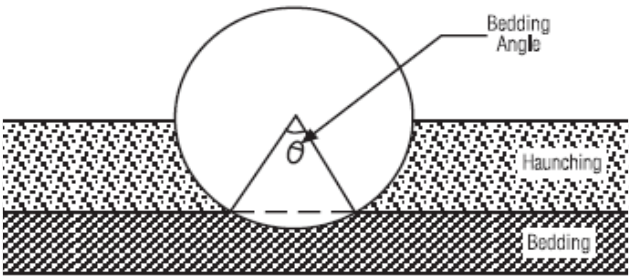
NOTE:

Per TCEQ guidelines, a contractor is allowed to use ASTM D 2321 Bedding Class 1A, 1B, II, or III at no less than 85% percent compaction. To grant the contractor its ability to make the proper judgment of which bedding class to use, the calculations provided in this Engineering Design Report reflect the use of **Bedding Class III, at 85%-95%** compaction, with an E' value of 1000 psi. This provides the "worst case" scenario for the SCS line. All other Bedding Class options will provide an improved value for the zeta factor as well as pipe deflection.

For Bedding Class III, 85%-95% Compaction, E_b = **1000** **psi**

PIPE BEDDING ANGLE

As Published on Figure 8 and Table 5, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pgs 18-19.



Bedding Constant Values

Bedding Angle, degrees	Bedding Constant
0	0.110
30	0.108
45	0.105
60	0.102
90	0.096
120	0.090
180	0.083

LIVE LOAD DETERMINATION

Source: AASHTO H20 and E80 Loads and as Published on Table 4, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 14.

Height of Cover (ft)	Live Load Transferred to Pipe, lb/in²			Height of Cover (ft)	Live Load Transferred to Pipe, lb/in²		
	Highway H20[1]	Railway E80[2]	Airport [3]		Highway H20[1]	Railway E80[2]	Airport [3]
1	12.50			14	*	4.17	3.06
2	5.56	26.39	13.14	16	*	3.47	2.29
3	4.17	23.61	12.28	18	*	2.78	1.91
4	2.78	18.40	11.27	20	*	2.08	1.53
5	1.74	16.67	10.09	22	*	1.91	1.14
6	1.39	15.63	8.79	24	*	1.74	1.05
7	1.22	12.15	7.85	26	*	1.39	*
8	0.69	11.11	6.93	28	*	1.04	*
10	*	7.64	6.09	30	*	0.69	*
12	*	5.56	4.76	35	*	*	*
				40	*	*	*

[1] Simulates 20 ton truck + 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

PRISM LOAD DETERMINATION

Also referred to as the 'dead' load, the prism load is the pressure acting on the pipe by the weight of the soil column above a given section of the pipe. The following prism load columns are industry standards as referenced from Table 3, Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 13.

Table 3
Prism Load Soil Pressure (lbs/in²)

Height of Cover (ft)	Soil Unit Weight (lb/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	30.83	32.12	33.40
38	26.39	29.03	31.67	32.99	34.31
39	27.08	29.79	32.50	33.85	35.21
40	27.78	30.56	33.33	34.72	36.11
41	28.47	31.32	34.17	35.59	37.01
42	29.17	32.08	35.00	36.46	37.92
43	29.86	32.85	35.83	37.33	38.82
44	30.56	33.61	36.67	38.19	39.72
45	31.25	34.38	37.50	39.06	40.63
46	31.94	35.14	38.33	39.93	41.53
47	32.64	35.90	39.17	40.80	42.43
48	33.33	36.67	40.00	41.67	43.33
49	34.03	37.43	40.83	42.53	44.24
50	34.72	38.19	41.67	43.40	45.14

Note that the Prism Loads are calculated based upon the Marston Theory of Loads, developed by Professor Anson Marston, circa 1913, and is calculated using the formula:

$$P = \frac{\gamma_s * H}{144}$$

This formula determines the earth load on a flexible pipe and is regarded as a conservative approach to determining the dead load placed upon a buried flexible pipe.

BUCKLING PRESSURE (ALLOWABLE)

(8")

Where:	q_a	=	Allowable buckling pressure (psi)		
	h	=	Height of soil surface above top of pipe (in)		
	H	=	Depth of burial, feet, from ground surface to top of pipe		
	B'	=	Empirical coefficient of elastic support		
	E_b	=	Modulus of soil reaction for the bedding material (psi)		
	E	=	Modulus of elasticity of the pipe material (psi)		
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in^3)		
	t	=	Pipe wall thickness (in)		
	D	=	Mean pipe diameter, outer (in)	D =	8.4

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$B' = \frac{2138.44}{3313.5} = 0.645$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3} \right)}$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right] \left[1 \right] \left[0.645 \right] \left[1000 \right] \left[400000 \ \frac{0.003}{592.70} \right]}$$

$$q_a = \mathbf{79.13} \ \mathbf{psi}$$

BUCKLING PRESSURE (INSTALLED CONDITION)

(8")

Where: q_P = Pressure applied to pipe under installed conditions (psi)

γ_W = Specific Weight of Water = 0.0361 (pci)

γ_S = Specific Weight of Soil (pcf)

W_c = Vertical Soil Load on the pipe per unit length (lb/in)

L_L = Live load as determined from chart

Standard industry vertical soil load (W_c) calculation (lb/in) developed from empirical data:

$$W_c = \gamma_s * H * \left(\frac{D + t}{144} \right)$$

Where: γ_S = 120 D = 8.4 t = 0.323

$$W_C = \left[120 \right] \left[19.30 \right] \left[\frac{8.4 + 0.323}{144} \right]$$

$$W_C = 140.29 \text{ lb/in}$$

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, hw = 0, therefore Rw = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right)$$

$$q_P = 62.4 \times 0 + 1 \times \left[\frac{156.12}{8.4} \right]$$

$$\boldsymbol{q_P = 35.29 \text{ psi}}$$

Note: The Buckling pressure under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

WALL CRUSHING CALCULATION

(8")

Where:	D_o	=	outside pipe diameter, in.	=	8.4 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.		
	A	=	surface area of the pipe wall, in.^{2}/ft	=	0.323 in.^{2}/ft
	γ_S	=	specific weight of soil, pcf,	=	120 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe		

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \qquad \text{where T, Thrust, is calculated as} \quad T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y:

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2A} \qquad \text{Rearranging this equation, it becomes:} \quad 2AP_c = \frac{\gamma_s * H}{144} D$$

And simplifies to: $288AP_c = \gamma_s HD$

Note that the Surface Area of the Pipe Wall, A, is per unit length in inches^2 per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24\right]\left[4000\right]\left[0.323 \times 12\right]}{120 \times 8.4} = \mathbf{369.14}$$

H = 369.14 feet

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR
(8")

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 = 8.4
B = Trench Width, in, = 2.7' = 32.4
E_b = Modulus of soil reaction for the bedding material (psi)
$E_{'n}$ = Modulus of soil reaction for the in-situ soil (psi)

$$zeta = \frac{1.662 + 0.639\left(\frac{B}{D-1}\right)}{\frac{B}{D-1} + \left[1.662 + 0.361\left(\frac{B}{D}\right) - 1\right]\left[\frac{E_b}{E'_n}\right]}$$

The Leonhardt Zeta factor is then determined as:

$$zeta = \frac{1.662 + 0.639 \times \left[\frac{32.4}{7.4}\right]}{\frac{32.4}{7.4}\left\{1.662 + 0.361 \times \left[\frac{32.4}{8.4}\right] - 1\right\}\left[\frac{1000}{1000}\right]}$$

***Leonhardt's zeta factor* = 0.693**

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

(8")

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D} \right)$$

Where:	PS	=	Pipe Stiffness in pounds per square inch (psi)	
	C	=	Conversion factor =	0.8
	RSC	=	Ring Stiffness Constant	
	D	=	Mean Pipe Diameter, Outer =	8.400 in

The RSC can be supplied by the manufacturer or otherwise calculated using Equation 4 of Resistance to Ring Bending – Pipe Stiffness (PS), Ring Stiffness Constant (RSC) and Flexibility Factor (FF) for Buried Gravity Flow Pipes TN-19/2005, Pg 6 published by the Plastics Pipe Institute:

$$RSC = 6.44 \times \frac{EI}{D^2}$$

And E = 400,000 psi

Solving for the Moment of Inertia:

$$I = \left(\frac{t^3}{12} \right) * \left(\frac{inches^3}{in_{linear}} \right) = 0.003$$

$$\text{RSC} = 6.44 \times \frac{1123.276}{70.560} = 102.521$$

$$\text{PS} = 0.8 \times 102.521 \times \frac{8.337}{8.400}$$

PS = 81.40 psi

PIPE STIFFNESS TO SOIL STIFFNESS FACTOR

(8")

Where:	PS	=	Pipe Stiffness (psi) = 81.40 psi
	E_b	=	Modulus of soil reaction for the bedding material (psi)
	zeta	=	Leonhardt's Zeta factor = 0.693
	SSF	=	Soil stiffness factor ($0.061 \times zeta \times E_b$)

The Soil Stiffness Factor is calculated using Equation 10 referenced by Buczala and Cassady, Buried Plastic Pipe Technology, Pg 198, where:

$$SSF = 0.6 * zeta * E_b$$

Therefore,

$$\frac{PS}{SSF} = \frac{PS}{0.6 * zeta * E_b}$$

$$\frac{\text{PS}}{\text{SSF}} = \frac{81.40}{415.97} = 0.20$$

PREDICTED PIPE DEFLECTION

(8")

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at http://www.uni-bell.org/faq.html, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	%ΔY/D	=	Predicted % vertical deflection under load	
	P	=	Prism Load, psi	
	K	=	Bedding angle constant, Assumed to =	0.110
	W'	=	Live Load, psi, =	0
	DR	=	Dimension Ratio=	26
	E	=	Modulus of tensile elasticity of the pipe material, psi	
	E'	=	Modulus of Soil Reaction, psi	
	D_L	=	Deflection Lag Factor = 1.5	

And using the Modified Iowa Equation:

$$(\%)\frac{\Delta Y}{D} = \frac{(D_L KP + KW')\times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load, $P = \frac{\gamma_s * H}{144}$

and/or from previous chart, prism load = 15.83 psi

The Predicted Deflection is determined as:

$$(\%)\frac{\Delta Y}{D} = \frac{\left[\left[1.5 \times 1.7413\right] + 0\right] \times 100}{\left[\frac{800000}{46875}\right] + \left[0.061 \times 1000\right]} = 3.35\%$$

NOTE: 3.35% < 5%, therefore pipe design is acceptable

PIPE STRAIN

(8")

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	$\in_h$	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in

$$\in_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\in_h = \frac{[\,0.00 + 15.83\,] \times 8.4}{2 \times 0.323 \times 400{,}000} = \textbf{5.146E-04}\ \frac{\text{in}}{\text{in}}$$

(*Continued on following page)*

Where:

$\in_f$	=	Maximum Pipe Strain due to Ring Deflection, in/in
ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
t	=	Pipe Wall thickness, in
D	=	Pipe Diameter, Average Outer, in
DR	=	Dimension Ratio= 26

$$\in_f = \frac{t}{D}\left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D}\right] = \frac{1}{DR}\left[\frac{3\Delta Y}{D - 2\Delta Y}\right]$$

$$\in_f = 0.038 \times \frac{7.836}{8.4 - 5.224} = 0.0949 \frac{\text{in}}{\text{in}}$$

$$\in_{total} = \textbf{9.5404E-02} \frac{\text{in}}{\text{in}}$$

TCEQ PIPE BEDDING AND TRENCHING REQUIREMENTS (30 TAC 217.54)

These notes are provided in the Construction Documents on General Notes Sheet

a. Pipe Embedment
    1. A rigid pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are A, B, or C, as described in American Society for Testing and Materials (ASTM) C 12, American National Standards Institute (ANSI) A 106.2,Water Environment Federation Manual of Practice No. 9 or American Society of Civil Engineers (ASCE) MOP 37.
    2. A flexible pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are IA, IB, II, or III, as described in ASTM D-2321 or ANSI K65.171.
    3. Debris, large clods, or stones that are greater than six inches in diameter, organic matter, or other unstable materials are prohibited as bedding, haunching, or initial backfill.
    4. Backfill must not disturb the alignment of a collection system pipe.
    5. If trenching encounters significant fracture, fault zones, caves, or solutional modification to the rock strata, an owner must halt construction until an engineer prepares a written report detailing how construction will accommodate these site conditions.

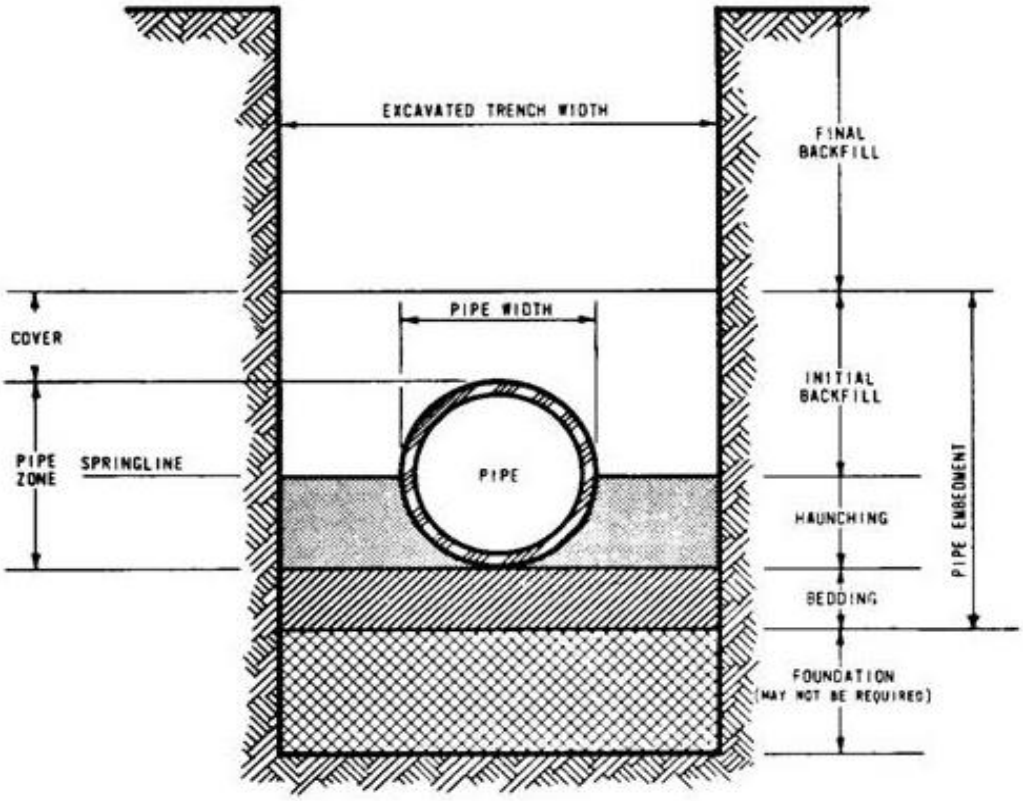
b. Compaction.
    1. Compaction of an embedment envelope must meet the manufacturer's recommendations for the collection system pipe used in a project.
    2. Compaction of an embedment envelope must provide the modulus of soil reaction for the bedding material necessary to ensure a wastewater collection system pipe's structural integrity as required by §217.53 of this title (relating to Pipe Design).
    3. The placement of the backfill above a pipe must not affect the structural integrity of a pipe.

c. Envelope Size.
    1. A minimum clearance of 6.0 inches below and on each side of the bell of all pipes to the trench walls and floor is required.
    2. The embedment material used for haunching and initial backfill must be installed to a minimum depth of 12 inches above the crown of a pipe.

d. Trench Width.

1. The width of a trench must allow a pipe to be laid and jointed properly and must allow the backfill to be placed and compacted as needed.
2. The maximum and minimum trench width needed for safety and a pipe's structural integrity must be included in the report.
3. The width of a trench must be sufficient to properly and safely place and compact haunching materials.
4. The space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone.

TRENCH CROSS-SECTION (30 TAC 217.54)



NOTE:

Trenching Details along with 30 TAC 217.54 are annotated in the Construction Documents/Plan Sheets on Wastewater Details Sheet.

MANHOLE SPECIFICATIONS

30 TAC 217.55 Requirements with design comments:

a. An owner must include manholes in a wastewater collection system at:
    1. All points of change in alignment, grade, or size;
    2. At the intersection of all pipes; and
    3. At the end of all pipes that may be extended at a future date.

b. Manholes placed at the end of a wastewater collection system pipe that may be extended in the future must include pipe stub outs with plugs. (pipe stub-outs with plugs are proposed at the end of each line that will be extended with Phase 2 of Section 19.)

c. A clean-out with watertight plugs may be installed in lieu of a manhole at the end of a wastewater collection system pipe if no extensions are anticipated. **(Self explanatory, clean outs not used in-lieu of manholes)**

d. Cleanout installations must pass all applicable testing requirements outlined for gravity collection pipes in §217.57 of this title (relating to Testing Requirements for Installation of Gravity Collection System Pipes). **(Self explanatory, see Item c above)**

e. A manhole must be made of monolithic, cast-in-place concrete, fiberglass, pre-cast concrete, high-density polyethylene, or equivalent material that provides adequate structural integrity. **See the Pre-Cast Manhole Details following these construction notes)**

f. The use of bricks to adjust a manhole cover to grade or construct a manhole is prohibited. **(Self explanatory, See Details following these notes)**

g. Manholes may be spaced no further apart than the distances specified in the following table for a wastewater collection system with straight alignment and uniform grades, unless a variance based on the availability of cleaning equipment that is capable of servicing greater distances is granted by the executive director. **(Self explanatory and maintained throughout the design of the SCS)**

Table C.2. - Maximum Manhole Spacing

Pipe Diameter	Maximum Manhole
6-15	500
18-30	800
36-48	1000
54 or larger	2000

h. Tunnels are exempt from manhole spacing requirements because of construction constraints. **(Self explanatory and not applicable)**

i. An intersection of three or more collection pipes must have a manhole. **(Self explanatory and maintained throughout the design of the SCS)**
j. A manhole must not be located in the flow path of a watercourse, or in an area where ponding of surface water is probable. **(Self explanatory and maintained throughout the design of the SCS)**
k. The inside diameter of a manhole must be no less than 48 inches. A manhole diameter must be sufficient to allow personnel and equipment to enter, exit, and work in the manhole and to allow proper joining of the collection system pipes in the manhole wall. **(See Manhole Details following these notes)**
l. Manholes must meet the following requirements for covers, inlets, and bases.
    1. Manhole Covers
        A. A manhole where personnel entry is anticipated requires at least a 30 inch diameter clear opening. (**Covers to have 32" Openings see Manhole Details)**
        B. A manhole located within a 100-year flood plain must have a means of preventing inflow. **(Self explanatory and maintained throughout the design of the SCS)**
        C. A manhole cover construction must be constructed of impervious material. **(Self explanatory, See Manhole Details following these construction notes)**
        D. A manhole cover that is located in a roadway must meet or exceed the American Association of State Highways and Transportation Officials standard M-306 for load bearing. **(Self explanatory, See Manhole Details)**
    2. Manhole Inverts
        A. The bottom of a manhole must contain a U-shaped channel that is a smooth continuation of the inlet and outlet pipes. **(Self explanatory, see Manhole Details)**
        B. A manhole connected to a pipe less than 15 inches in diameter must have a channel depth equal to at least half the largest pipe's diameter **(Self explanatory, see Manhole Details)**
        C. A manhole connected to a pipe at least 15 inches in diameter but not more than 24 inches in diameter must have a channel depth equal to at least three-fourths of the largest pipe's diameter **(Self explanatory, but not applicable for this project)**
        D. A manhole connected to a pipe greater than 24 inches in diameter must have a channel depth equal to at least the largest pipe's diameter **(Self explanatory, but not applicable for this project)**.

E. A manhole with pipes of different sizes must have the tops of the pipes at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe. **(Self explanatory and maintained throughout the design of the SCS)**

F. A bench provided above a channel must slope at a minimum of 0.5 inch per foot. **(Self Explanatory)**

G. An invert must be filleted to prevent solids from being deposited if a wastewater collection system pipe enters a manhole higher than 24 inches above a manhole invert. **(Self Explanatory, see manhole details. Not applicable for this site.)**

H. A wastewater collection system pipe entering a manhole more than 24 inches above an invert must have a drop pipe. **(Self Explanatory, see Manhole Details)**

m. The inclusion of steps in a manhole is prohibited. **(Self Explanatory, see Manhole Details)**

n. Connections. A manhole-pipe connection must use watertight, size-on-size resilient connectors that allow for differential settlement and must conform to American Society for Testing and Materials C-923. **(Self Explanatory, see Manhole Details)**

o. Venting. An owner must use an alternate means of venting if manholes are at more than 1,500 foot intervals and gasketed manhole covers are required for more than three manholes in sequence. Vents must meet the following requirements: **(Self Explanatory, but not applicable for this project)**
    1. Vent design must minimize inflow;
    2. Vents must be located above a 100-year flood event elevation; and
    3. Tunnels must be vented in compliance with this subsection.

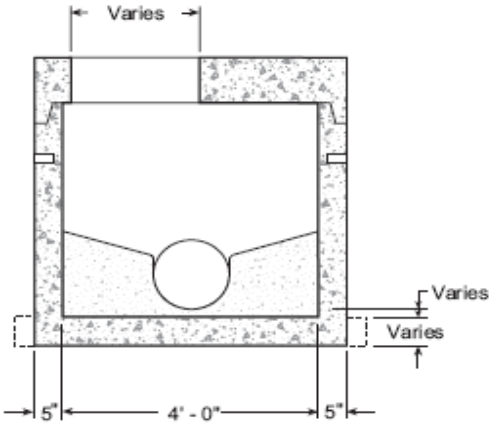
p. Cleanouts. The size of a cleanout must be equal to the size of the wastewater collection system main. **(Self Explanatory)**

Precast Manhole Information:

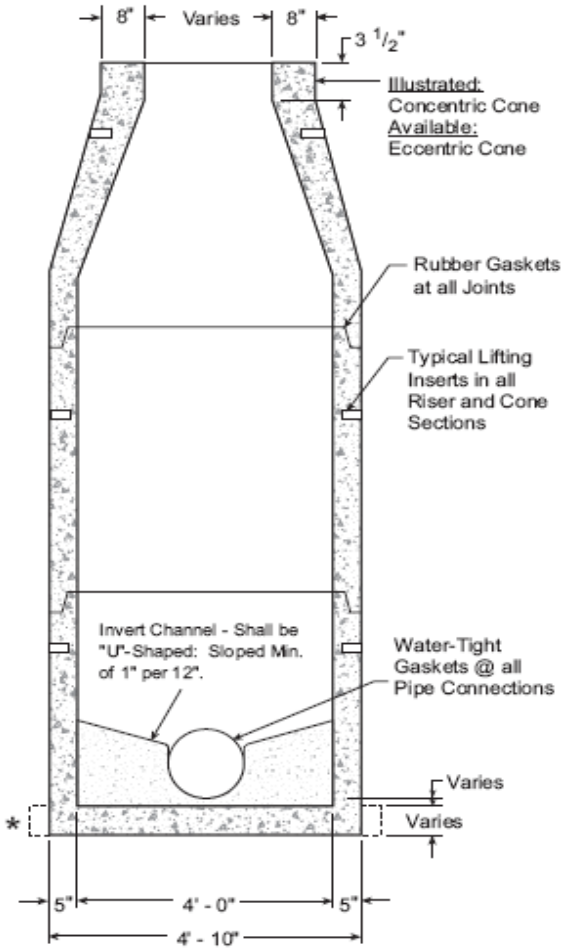
Hanson Pipe and Precast
Hanson Building Products West
300 E John Carpenter Freeway
11th floor
Irving, TX 75062
972.653.5500

San Antonio Metro Area Contact:
210.661.2351
866.426.7661

Precast Manholes



Flattop Illustration
for Shallow Manhole



Section View
4' I.D. Manhole - Regular Base
with Reducing Cone

Materials & Features

HOLES AS SPECIFIED: Max diameter = 32"
CONCRETE: 5,000 PSI, 28 day strength.
REINFORCING: Meets or exceeds ASTM C478 requirements.
Average weight of 24" depth base w/8" invert = 4,500 lbs.
Estimated weight of riser and cone sections = 870 lbs. / vt. ft.

* - Extended base is available to meet local requirements.

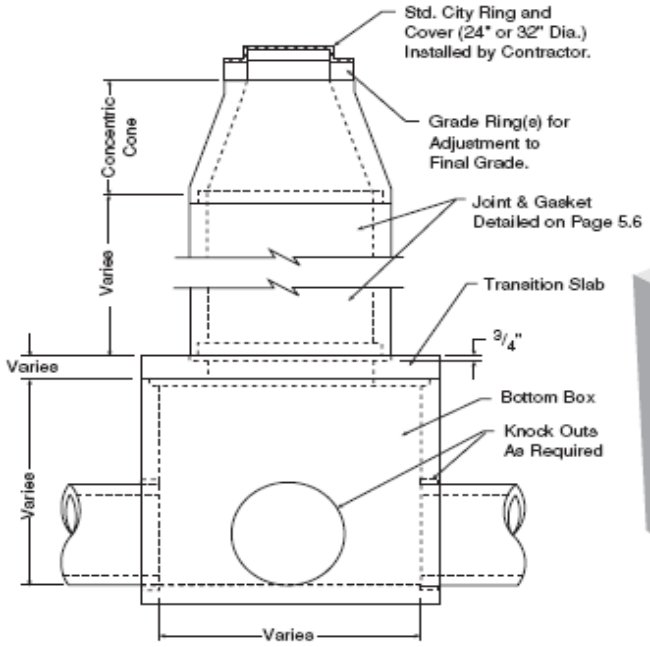
In the event a boot is loose contact your Hanson representative to resolve.

"Manufactured to your specifications."

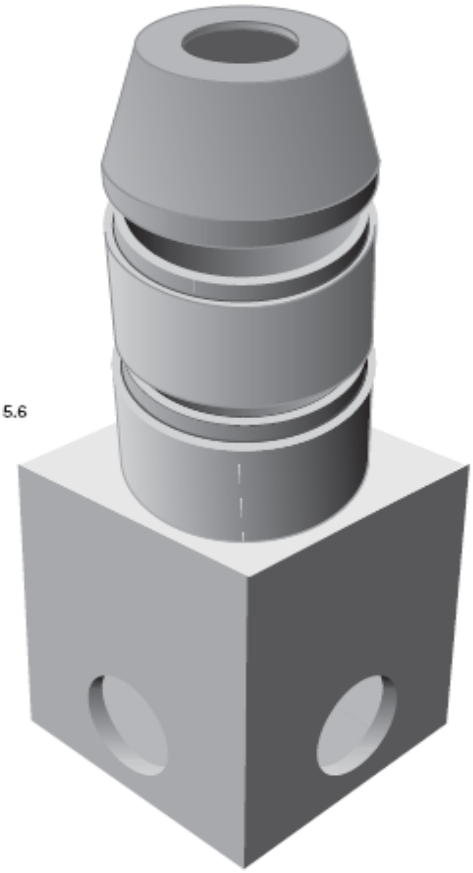
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
4' I.D. Manhole **Regular Base w / Reducing Cone**	All Plants	TX	5.5	07-01-06	Hanson

Precast Manholes



Side View



Isometric View

Materials & Features

CONCRETE: 5,000 PSI in 28 days.

REINFORCING STEEL: per ASTM A-615 / A-185

REINFORCING to meet AASHTO HS 20-44 Loading.

BASE DESIGN EQUAL TO OR EXCEEDS ASTM C-357

RISER DESIGN EQUAL TO OR EXCEEDS ASTM C-478

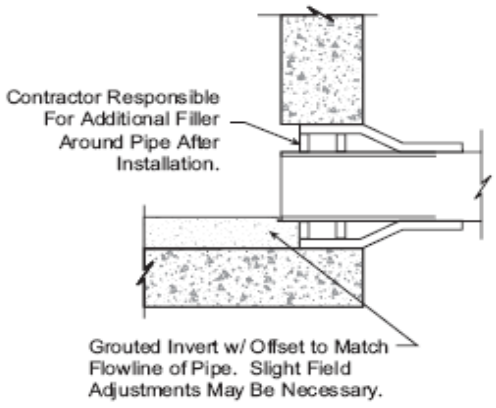
In the event a boot is loose contact your Hanson representative to resolve.

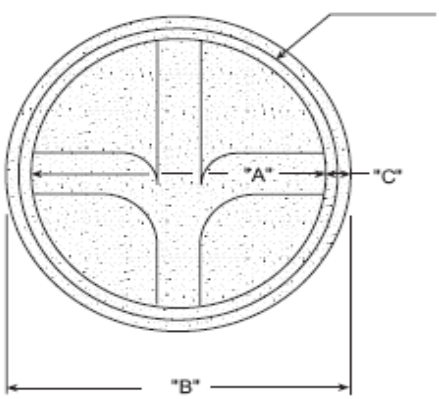
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
Type "C" Manhole	Houston San Antonio	TX	5.11	07-01-06	Hanson

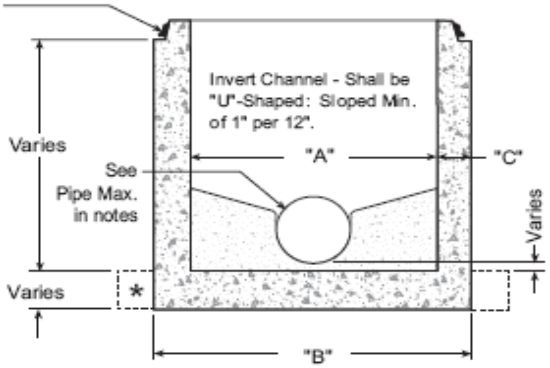
Precast Manholes

For Pipe Entering the Manhole at Excessive Depths Above the Flow Line Out, the Contractor May be Responsible for Grout Work Necessary to Bring Channel up to Flow Line on Inlet Pipe.





Plan View



Section View

Pipe Size	I.D. "A"	O.D. "B"	Wall Thk. "C"
4'	4' - 0"	4' - 10"	5"
5'	5' - 0"	6' - 0"	6"
6'	6' - 0"	7' - 2"	7"

Materials & Features

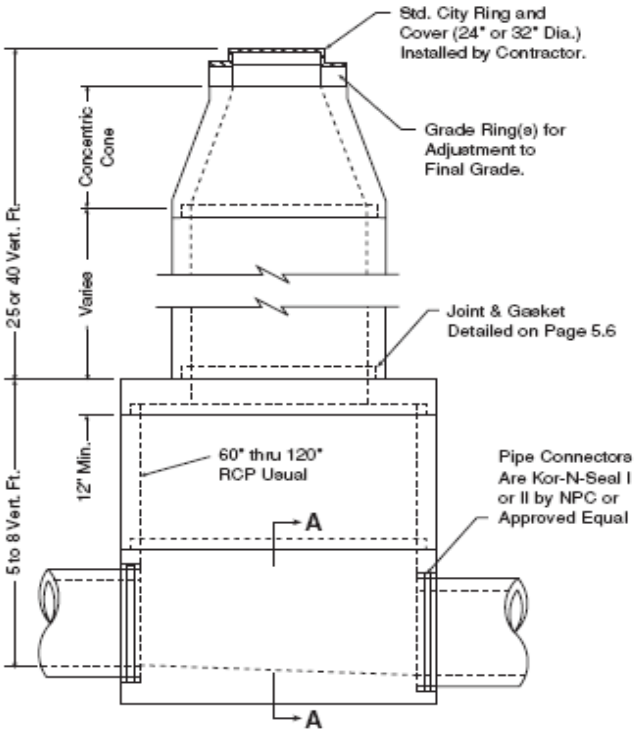
HOLES AS SPECIFIED:
- For 4' I.D. max. diameter = 32"
- For 5' I.D. max. diameter = 40"
- For 6' I.D. max. diameter = 54"

CONCRETE: 5,000 PSI, 28 day strength.
REINFORCING: Meets or exceeds ASTM C478 requirements.
Average weight of 24" depth base w/8" invert = 4,500 lbs.
Water-tight gaskets at all pipe connections.
* - Regular base shown: Extended base also available.
In the event a boot is loose contact your Hanson representative to resolve.

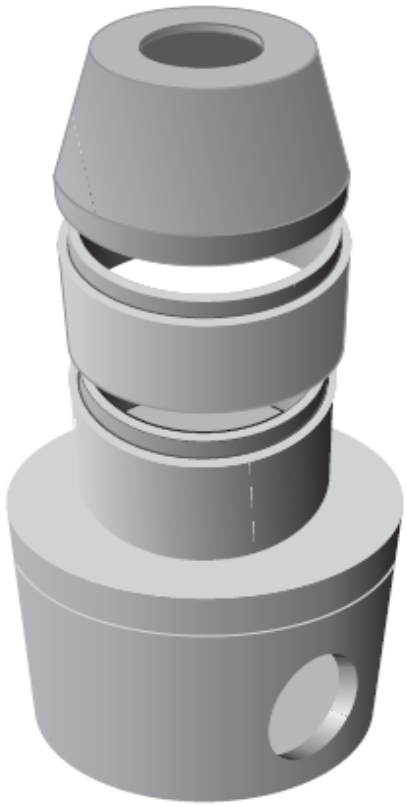
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
Details: 4', 5' & 6' I.D. Precast Regular Manhole Base	All Plants	TX	5.7	07-01-06	Hanson

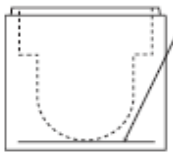
Precast Manholes



w/ Precast Base



Isometric View



Section A-A

Base Slab Reinforcing

30' Deep Structure
60"ø - 6" Thick Slab min. - #5 @ 8" ea.way
72"ø - 8" Thick Slab min. - #5 @ 8" ea.way
84"ø - 8" Thick Slab min. - #5 @ 6" ea.way
96"ø - 10" Thick Slab min. - #5 @ 6" ea.way

45' Deep Structure
60"ø - 8" Thick Slab min. - #5 @ 8" ea.way
72"ø - 8" Thick Slab min. - #5 @ 8" ea.way
84"ø - 10" Thick Slab min. - #5 @ 6" ea.way
96"ø - 12" Thick Slab min. - #5 @ 6" ea.way

All Reinforcing has $1\frac{1}{2}$" cover from top of slab.

Materials & Features

CONCRETE: 5,000 PSI in 28 days.

REINFORCING STEEL: per ASTM A-615, Grade 60.

REINFORCING to meet AASHTO HS 20-44 Loading.

DESIGN EQUAL TO OR EXCEEDS ASTM C-478

In the event a boot is loose contact your Hanson representative to resolve.

Note:

- Inverts shall be specifically sized for connecting pipes; and shall be U-Shaped with the min. depth 3/4 of the largest pipe diameter.

-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
30 & 45 Ft. Depth 60" thru 96"Large Base Manhole	Houston San Antonio	TX	5.10	07-01-06	Hanson

ATTACHMENT A
WASTEWATER / SEWAGE CALCULATIONS

WASTEWATER FLOWS

Project Name: Berry Creek Highlands Phase 6B & 7
Project Number: 2022-9-CON
Date Prepared:03/26/24

Wastewater Line

Line Number	from	to	SF UNITS	CUMULATIVE SF UNITS	Cumulative Population	Cumulative Population (ROUNDED)	Avg. Dry Weather Flow F (gpd)	Avg. Dry Weather Flow F (gpm)	Maximum Flow: Peak Flow Factor PF	Maximum Flow: Max Dry Weather Flow Q_{max} (gpd)	Maximum Flow: Max Dry Weather Flow Q_{max} (gpm)	Minimum Flow: Min Flow Factor MF	Minimum Flow: Min Dry Weather Flow Q_{min} (gpd)	Minimum Flow: Min Dry Weather Flow Q_{min} (gpm)	Area Served A (ac)	Cumul. Area Served A (ac)	Inflow/Infiltration (1000 gal/acre/day) I/I (gpd)	Inflow/Infiltration (1000 gal/acre/day) I/I (gpm)	Peak Wet Weather Flow Qpw (gpd)	Peak Wet Weather Flow Qpw (gpm)	MAX DRY WEATHER (GPM)	MAX DRY WEATHER (CFS)	MAX WET WEATHER (GPM)	MAX WET WEATHER (CFS)	PIPE SIZE (IN)	PIPE SLOPE FT/100	65% CAPACITY (CFS) (n=0.013)	85% CAPACITY (CFS) (n=0.013)	LENGTH (FT)	PEAK DRY Q (CFS)	PEAK DRY Q (GPM)	PEAK DRY VELOCITY (FPS) FROM FLOWMASTER	PEAK DRY DEPTH (IN.) FROM FLOWMASTER	PEAK WET Q (CFS)	PEAK WET Q (GPM)	PEAK WET VELOCITY (FPS) FROM FLOWMASTER	PEAK WET DEPTH (IN.) FROM FLOWMASTER
A1	A1	A2	12	12	30	**30**	3,000.00	2.08	4.33	12,982.97	9.02	0.10	299.65	0.21	2.05	**2.05**	2,046.51	1.42	15,029.49	10.44	9.02	0.0198	10.44	0.0233	8	0.015	0.10	0.13	272.60	0.0198	9.02	2.12	2.90	0.0233	10.44	2.26	3.40
A2	A2	A3	10	22	55	**55**	5,500.00	3.82	4.27	23,488.55	16.31	0.11	619.42	0.43	2.01	**4.06**	4,060.51	2.82	27,549.06	19.13	16.31	0.0357	19.13	0.0426	8	0.02	0.11	0.15	272.60	0.0357	16.31	2.12	2.90	0.0426	19.13	2.26	3.40
A3	A3	A4	12	67	167.5	**168**	16,750.00	11.63	4.12	68,982.90	47.90	0.14	2,353.18	1.63	2.53	**6.59**	6,594.07	4.58	75,576.96	52.48	47.90	0.1050	52.48	0.1169	8	0.005	0.06	0.07	441.73	0.1050	47.90	2.12	2.90	0.1169	52.48	2.26	3.40
A4	A4	A5	4	86	215	**215**	21,500.00	14.93	4.07	87,587.19	60.82	0.15	3,171.69	2.20	1.08	**7.67**	7,672.28	5.33	95,259.47	66.15	60.82	0.1333	66.15	0.1474	8	0.01	0.08	0.10	296.00	0.1333	60.82	2.12	2.90	0.1474	66.15	2.26	3.40
A5	A5	A6	4	103	257.5	**258**	25,750.00	17.88	4.04	104,001.62	72.22	0.15	3,938.29	2.73	1.38	**9.05**	9,054.84	6.29	113,056.46	78.51	72.22	0.1582	78.51	0.1749	8	0.0227	0.12	0.15	275.70	0.1582	72.22	2.12	2.90	0.1749	78.51	2.26	3.40
A6	A6	A7	3	106	265	**265**	26,500.00	18.40	4.03	106,877.69	74.22	0.15	4,074.54	2.83	1.03	**10.09**	10,088.01	7.01	116,965.70	81.23	74.22	0.1626	81.23	0.1810	8	0.015	0.10	0.13	149.80	0.1626	74.22	2.12	2.90	0.1810	81.23	2.26	3.40
A7	A7	A8	7	113	282.5	**283**	28,250.00	19.62	4.02	113,565.88	78.87	0.16	4,400.50	3.06	1.45	**11.54**	11,538.21	8.01	125,104.09	86.88	78.87	0.1728	86.88	0.1936	8	0.0104	0.09	0.10	198.33	0.1728	78.87	2.12	2.90	0.1936	86.88	2.26	3.40
A8	A8	CON.TO EXISTING (WWL-A)	0	209	522.5	**523**	52,250.00	36.28	3.88	202,623.29	140.71	0.18	9,191.36	6.38	0.00	**11.54**	11,538.21	8.01	214,161.50	148.72	140.71	0.3083	148.72	0.3314	8	0.01	0.08	0.10	20.00	0.3083	140.71	2.12	2.90	0.3314	148.72	2.26	3.40
																								0.0000													
E1	E1	E2	6	6	15	**15**	1,500.00	1.04	4.38	6,564.53	4.56	0.09	130.61	0.09	1.29	**1.29**	1,287.75	0.89	7,852.28	5.45	4.56	0.0100	5.45	0.0121	8	0.0275	0.13	0.17	215.53	0.0100	4.56	2.12	2.90	0.0121	5.45	2.26	3.40
E2	E2	A3	5	33	82.5	**83**	8,250.00	5.73	4.22	34,841.20	24.20	0.12	1,008.00	0.70	1.06	**2.34**	2,344.34	1.63	37,185.55	25.82	24.20	0.0530	25.82	0.0575	8	0.0275	0.13	0.17	296.00	0.0530	24.20	2.12	2.90	0.0575	25.82	2.26	3.40
																								0.0000													
F1	F1	F2	14	14	35	**35**	3,500.00	2.43	4.31	15,101.03	10.49	0.10	360.43	0.25	2.38	**2.38**	2,378.33	1.65	17,479.36	12.14	10.49	0.0230	12.14	0.0270	8	0.01	0.08	0.10	272.60	0.0230	10.49	2.12	2.90	0.0270	12.14	2.26	3.40
F2	F2	E2	8	22	55	**55**	5,500.00	3.82	4.27	23,488.55	16.31	0.11	619.42	0.43	1.54	**3.92**	3,915.74	2.72	27,404.30	19.03	16.31	0.0357	19.03	0.0424	8	0.015	0.10	0.13	272.60	0.0357	16.31	2.12	2.90	0.0424	19.03	2.26	3.40
																								0.0000													
D1	D1	C2	6	6	15	**15**	1,500.00	1.04	4.38	6,564.53	4.56	0.09	130.61	0.09	2.74	**2.74**	2,738.26	1.90	9,302.79	6.46	4.56	0.0100	6.46	0.0144	8	0.025	0.12	0.16	147.58	0.0100	4.56	2.12	2.90	0.0144	6.46	2.26	3.40
																								0.0000													
C1	C1	C2	4	4	10	**10**	1,000.00	0.69	4.40	4,398.38	3.05	0.08	80.36	0.06	0.83	**0.83**	831.40	0.58	5,229.79	3.63	3.05	0.0067	3.63	0.0081	8	0.02	0.11	0.15	141.04	0.0067	3.05	2.12	2.90	0.0081	3.63	2.26	3.40
C2	C2	C3	2	12	30	**30**	3,000.00	2.08	4.33	12,982.97	9.02	0.10	299.65	0.21	0.43	**1.26**	1,259.98	0.87	14,242.95	9.89	9.02	0.0198	9.89	0.0220	8	0.02	0.11	0.15	130.88	0.0198	9.02	2.12	2.90	0.0220	9.89	2.26	3.40
C3	C3	A4	3	15	37.5	**38**	3,750.00	2.60	4.31	16,156.61	11.22	0.10	392.52	0.27	0.63	**1.89**	1,888.92	1.31	18,045.52	12.53	11.22	0.0246	12.53	0.0279	8	0.02	0.11	0.15	202.57	0.0246	11.22	2.12	2.90	0.0279	12.53	2.26	3.40
																								0.0000													
B1	B1	B2	10	10	25	**25**	2,500.00	1.74	4.34	10,854.99	7.54	0.10	240.86	0.17	2.28	**2.28**	2,281.68	1.58	13,136.67	9.12	7.54	0.0165	9.12	0.0203	8	0.025	0.12	0.16	223.46	0.0165	7.54	2.12	2.90	0.0203	9.12	2.26	3.40
B2	B2	A5	3	13	32.5	**33**	3,250.00	2.26	4.32	14,043.19	9.75	0.10	330.81	0.23	0.86	**3.14**	3,139.70	2.18	17,182.88	11.93	9.75	0.0214	11.93	0.0266	8	0.025	0.12	0.16	177.96	0.0214	9.75	2.12	2.90	0.0266	11.93	2.26	3.40
																								0.0000													
K1	CON. TO EXISTING (WWL-K)	A5	0	0	0	**0**	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0.0000	8	0.005	0.06	0.07	143.00	0.0000	0.00	2.12	2.90	0.0000	0.00	2.26	3.40
																								0.0000													
L1	CON. TO EXISTING (WWL-L)	A3	0	0	0	**0**	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0.0000	8	0.005	0.06	0.07	144.00	0.0000	0.00	2.12	2.90	0.0000	0.00	2.26	3.40
																								0.0000													
G1	G1	G2	4	4	10	**10**	1,000.00	0.69	4.40	4,398.38	3.05	0.08	80.36	0.06	0.88	**0.88**	880.98	0.61	5,279.36	3.67	3.05	0.0067	3.67	0.0082	8	0.02	0.11	0.15	132.66	0.0067	3.05	2.12	2.90	0.0082	3.67	2.26	3.40
G2	G2	G3	5	9	22.5	**23**	2,250.00	1.56	4.35	9,786.95	6.80	0.09	213.22	0.15	1.02	**1.90**	1,900.08	1.32	11,687.03	8.12	6.80	0.0149	8.12	0.0181	8	0.02	0.11	0.15	156.02	0.0149	6.80	2.12	2.90	0.0181	8.12	2.26	3.40
G3	G3	G4	9	18	45	**45**	4,500.00	3.13	4.29	19,310.56	13.41	0.11	487.06	0.34	1.78	**3.68**	3,683.88	2.56	22,994.44	15.97	13.41	0.0294	15.97	0.0356	8	0.02	0.11	0.15	237.90	0.0294	13.41	2.12	2.90	0.0356	15.97	2.26	3.40
G4	G4	G5	2	20	50	**50**	5,000.00	3.47	4.28	21,403.25	14.86	0.11	552.58	0.38	0.48	**4.17**	4,168.34	2.89	25,571.59	17.76	14.86	0.0326	17.76	0.0396	8	0.015	0.10	0.13	154.42	0.0326	14.86	2.12	2.90	0.0396	17.76	2.26	3.40
G5	G6	G6	3	23	57.5	**58**	5,750.00	3.99	4.27	24,528.56	17.03	0.11	654.42	0.45	0.76	**4.93**	4,931.99	3.42	29,460.55	20.46	17.03	0.0373	20.46	0.0456	8	0.015	0.10	0.13	63.90	0.0373	17.03	2.12	2.90	0.0456	20.46	2.26	3.40
G6	G7	G7	5	28	70	**70**	7,000.00	4.86	4.24	29,703.86	20.63	0.12	826.91	0.57	0.89	**5.82**	5,821.68	4.04	35,525.53	24.67	20.63	0.0452	24.67	0.0550	8	0.015	0.10	0.13	144.10	0.0452	20.63	2.12	2.90	0.0550	24.67	2.26	3.40
G7	G7	G8	14	42	105	**105**	10,500.00	7.29	4.19	44,003.76	30.56	0.13	1,344.05	0.93	2.91	**8.73**	8,727.50	6.06	52,731.26	36.62	30.56	0.0670	36.62	0.0816	8	0.015	0.10	0.13	427.64	0.0670	30.56	2.12	2.90	0.0816	36.62	2.26	3.40
G8	G9	G9	3	45	112.5	**113**	11,250.00	7.81	4.18	47,035.94	32.66	0.13	1,461.14	1.01	0.80	**9.53**	9,530.71	6.62	56,566.65	39.28	32.66	0.0716	39.28	0.0875	8	0.015	0.10	0.13	148.76	0.0716	32.66	2.12	2.90	0.0875	39.28	2.26	3.40
G9	G10	G10	2	87	217.5	**218**	21,750.00	15.10	4.07	88,558.48	61.50	0.15	3,217.39	2.23	0.67	**10.20**	10,200.84	7.08	98,759.32	68.58	61.50	0.1347	68.58	0.1528	8	0.0366	0.15	0.20	156.08	0.1347	61.50	2.12	2.90	0.1528	68.58	2.26	3.40
G10	G11	G11	4	91	227.5	**228**	22,750.00	15.80	4.06	92,436.28	64.19	0.15	3,395.33	2.36	1.05	**11.25**	11,250.23	7.81	103,686.51	72.00	64.19	0.1406	72.00	0.1604	8	0.0366	0.15	0.20	139.01	0.1406	64.19	2.12	2.90	0.1604	72.00	2.26	3.40
G11		A8	5	96	240	**240**	24,000.00	16.67	4.05	97,267.32	67.55	0.15	3,618.45	2.51	1.17	**12.42**	12,422.57	8.63	109,689.88	76.17	67.55	0.1480	76.17	0.1697	8	0.0366	0.15	0.20	172.88	0.1480	67.55	2.12	2.90	0.1697	76.17	2.26	3.40
																								0.0000													
H1	H1	H2	5	5	12.5	**13**	1,250.00	0.87	4.39	5,483.47	3.81	0.08	105.80	0.07	1.34	**1.34**	1,335.30	0.93	6,818.77	4.74	3.81	0.0083	4.74	0.0106	8	0.02	0.11	0.15	147.27	0.0083	3.81	2.12	2.90	0.0106	4.74	2.26	3.40
H2	H2	H3	16	21	52.5	**53**	5,250.00	3.65	4.28	22,446.80	15.59	0.11	586.94	0.41	3.04	**4.38**	4,379.12	3.04	26,825.92	18.63	15.59	0.0342	18.63	0.0415	8	0.02	0.11	0.15	408.97	0.0342	15.59	2.12	2.90	0.0415	18.63	2.26	3.40
H3	H4	H4	16	37	92.5	**93**	9,250.00	6.42	4.21	38,926.20	27.03	0.12	1,155.93	0.80	3.01	**7.39**	7,390.46	5.13	46,316.65	32.16	27.03	0.0592	32.16	0.0717	8	0.02	0.11	0.15	409.17	0.0592	27.03	2.12	2.90	0.0717	32.16	2.26	3.40
H4	H4	CON. TO EXISTING (PARK)	1	38	95	**95**	9,500.00	6.60	4.20	39,944.19	27.74	0.13	1,192.18	0.83	0.29	**7.68**	7,675.77	5.33	47,619.96	33.07	27.74	0.0608	33.07	0.0737	8	0.005	0.06	0.07	36.86	0.0608	27.74	2.12	2.90	0.0737	33.07	2.26	3.40
																								0.0000													
X	CON. TO EXISTING (PARK)	G9	0	38	95	**95**	9,500.00	6.60	4.20	39,944.19	27.74	0.13	1,192.18	0.83	0.00	**0.00**	0.00	0.00	39,944.19	27.74	27.74	0.0608	27.74	0.0618	8	0.005	0.06	0.07	185.39	0.0608	27.74	2.12	2.90	0.0618	27.74	2.26	3.40
																								0.0000													
I1	I1	G9	2	2	5	**5**	500.00	0.35	4.43	2,213.76	1.54	0.07	35.03	0.02	0.53	**0.53**	528.92	0.37	2,742.69	1.90	1.54	0.0034	1.90	0.0042	8	0.0151	0.10	0.13	88.62	0.0034	1.54	2.12	2.90	0.0042	1.90	2.26	3.40

ATTACHMENT B
WASTEWATER UTILITY SERVICE AGREEMENT

December 12, 2023

Re: Water and Wastewater Service Availability at the proposed site located within Berry Creek Highlands Phase 6B, 7, 8, & 9

The property is located within Berry Creek Highlands Phase 6B, 7, 8, & 9. Pursuant to your request, this letter confirms that the aforementioned site is located within the service area for the City of Georgetown (the "City") water and wastewater services and that the City can provide retail service to the development in accordance with the City's standard terms and conditions to provide these services. Note: Any upgrades or new main line connections required to provide adequate service to the property would be at the cost of the developer or owner. Water will be provided per the terms of your utility evaluation, upon approval of engineering plans developed in compliance with the City codes and payment of all fees. Wastewater will be provided per the terms of the existing Settlement Agreement.

Future On-site and Off-site Improvements

Any utility system and public infrastructure improvements or upgrades required by any potential development at this site are not identified or addressed as part of this letter. All future on-site and off-site improvements needed to serve any future development at this site will be determined by a utility evaluation during the site plan review or platting process. In general, the follow provisions apply to secure capacity for future projects:

1) Extension of utilities to the property is the responsibility of the developer.
2) Platting Requirements
3) Required to tie to existing stubs
4) Exclusive Easements
5) Extend along the ROW to all property boundaries.
6) Additional off-site improvements may be necessary based upon the timing of the City's Capital Improvement Plan (CIP) and developer need.
7) Design and Construction of the facility and utilities must be inspected and approved in accordance with the appropriate City codes and ordinances.
8) Any applicable payment of fees

You may contact me or the Systems Engineering Director at (512)-930-3558, if you have any further questions, regarding the information provided in this letter.

Regards,

Tom Pursley
(512) 930-6765
Tom.Pursley@georgetown.org

Cc: David Munk, City of Georgetown
Wesley Wright, City of Georgetown
Ashley Hanson, City of Georgetown

300-1 Industrial Ave. | P. O. Box 409 | Georgetown, Texas 78627-0409 |
(512) 930-3558 | (512) 930-3559 (fax) http://www.georgetown.org | gus@georgetown.org

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

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

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

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

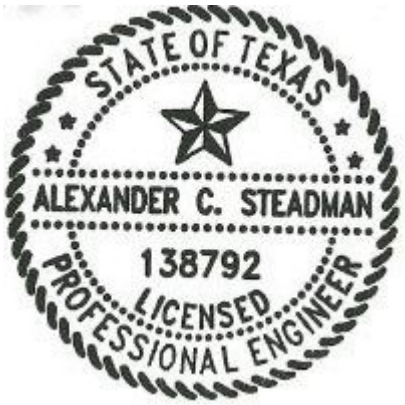
Signature

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

Print Name of Customer/Agent: AC Steadman, P.E. -Kimley-Horn

Date: 04/1/2024

Signature of Customer/Agent:



04/01/2024

Regulated Entity Name: Berry Creek Highlands Phase 6B & 7

Regulated Entity Information

1. The type of project is:

   ☒ Residential: Number of Lots: 209
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☐ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):50.17

3. Estimated projected population:209

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	717,400	÷ 43,560 =	16.46
Parking	0	÷ 43,560 =	0
Other paved surfaces	450,879	÷ 43,560 =	10.350
Total Impervious Cover	1,168,279	÷ 43,560 =	26.82

Total Impervious Cover 26.82 **÷ Total Acreage** 50.62 **X 100 =** 51.8**% Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.

   Width of R.O.W.: _____ feet.
   L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

10. Length of pavement area: _____ feet.

    Width of pavement area: _____ feet.
    L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
    Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

11. ☐ A rest stop will be included in this project.

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100 % Domestic	51,205 Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day

TOTAL gallons/day 51,205

15. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

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

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

☐ The SCS was previously submitted on_____.

☒ The SCS was submitted with this application.

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

☒ The sewage collection system will convey the wastewater to the San Gabriel Wastewater Treatment Plant-City of Georgetown (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 100', 60', 50', and 40'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM 48491C0280E 09/26/2008

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

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

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

☒ There are 0 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☐ The wells are in use and comply with 16 TAC §76.

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

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

☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.

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

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.
23. ☒ Areas of soil disturbance and areas which will not be disturbed.
24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
25. ☒ Locations where soil stabilization practices are expected to occur.
26. ☒ Surface waters (including wetlands).

    ☐ N/A

27. ☒ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☐ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

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

ATTACHMENT A -- FACTORS AFFECTING WATER QUALITY

Possible factors that could affect surface water and ground water quality are:

- Petroleum drippings from vehicle movement
- Integrated Pest Management
- Landscape Maintenance
- Asphalt and/or Concrete Products
- Soil/Stock Pile
- Paint
- Oils
- Sediment and soil from disturbed areas

ATTACHMENT B -- VOLUME AND CHARACTER OF STORMWATER

EXISTING DRAINAGE CONDITIONS

The entire site drains southwest towards Berry Creek, which ultimately discharges into the San Gabriel River.

STORM WATER DETENTION AND WATER QUALITY

Detention and water quality were analyzed for this project.

Water Quality for the site is provided in a batch detention water quality pond located in the southwest corner of Berry Creek. Highlands Phase 6B & 7. Onsite batch detention Water Quality Pond 2 is designed to treat the impervious cover generated onsite.

For water Quality Pond 2, the proposed bottom and top elevations of the detention are 761.0 and 766.0, respectively. The proposed bottom and top elevations of the water quality are 757.0 and 761.0, respectively. The following table is a detention routing summary for conveyance of the 2 through 100-year storms.

WQ POND 2				
ROUTING TABLE				
DESIGN SCENARIO	PEAK INFLOW (FT^3/S)	COMPUTED PEAK OUTFLOW (FT^3/S)	MAXIMUM WATER SURFACE ELEVATION (FT)	MAXIMUM STORAGE (FT^3)
2 YR	160.43	108.46	762.81	132157.00
10 YR	258.56	187.57	763.62	194387.00
25 YR	323.87	240.55	764.11	233357.00
100 YR	432.02	310.60	764.96	302493.00

Table 2 is the Water Quality Pond A water quality volume summary.

Table 2 is the Water Quality Pond A water quality volume summary.

WQ-DETENTION POND 2						
STAGE STORAGE TABLE						
STAGE (FT MSL)	AREA (SF)	STORAGE (CF)	CUMULATIVE STORAGE (CF)	DISCHARGE (CFS)	CONTRIBUTING STRUCTURES	
757.00	40.00	N/A	0.00	0.00	NONE	
758.00	11623.00	5831.50	5831.50	0.00	NONE	
759.00	38025.00	33125.33	38956.83	0.00	NONE	
760.00	64858.00	51441.50	90398.33	0.00	NONE	
761.00	70105.00	67481.50	157879.83	0.00	17' WEIR	WQV
762.00	73269.00	71687.00	229566.83	44.20	17' WEIR	
763.00	76502.00	74885.50	304452.33	125.02	17' WEIR	
764.00	79793.00	78147.50	382599.83	229.66	17' WEIR	
765.00	83144.00	81468.50	464068.33	313.57	17' WEIR	
766.00	86552.00	84848.00	548916.33	363.40	17' WEIR	

Required water quality volume for WQ Pond 2 is 148,638 CF and the provided water quality volume provided is 157,880 CF.

ATTACHMENT C – SUITABILITY LETTER FROM AUTHORIZED AGENT

Attachment C is not applicable for this project. An on-site sewage facility will not be implemented for this development. Proposed private service laterals will be connected to a sewage collection system.

ATTACHMENT D – EXEMPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

Attachment D is not applicable for this project. A geological assessment exemption will not be requested. A copy of the site Geological Assessment performed by Horizon Environmental Services, Inc. has been provided, see Geologic Assessment Form and Attachments.

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: AC Steadman, P.E. -Kimley-Horn

Date: 04/01/24

Signature of Customer/Agent:

04/01/2024

Regulated Entity Name: Berry Creek Highlands Phase 6B & 7

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: San Gabriel River

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☐ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

ATTACHMENT A – SPILL RESPONSE ACTIONS

Good Housekeeping and Material Management Practices shall include, but are not limited to the following:

- Neat and orderly storage of any chemicals, pesticides, fertilizers, fuels, etc., that are being stored on site. All storage tanks will be above ground, have a maximum storage capacity of 250 gallons and be stored on site for less than one (1) year. Aboveground Storage Tanks (ASTs) shall comply with Title 30 Texas Administrative Code, Chapter 334, Subchapter F and will be located within the respective phase's Stockpiling Area as illustrated on the Erosion and Sedimentation Control Plans included with this submittal.
- Regular garbage, rubbish, construction waste and sanitary waste disposal.
- Prompt cleanup of any spills that have occurred of liquid or dry materials.
- Cleanup of sediments that have been tracked by vehicles or have been transported by wind or storm water about the site or onto nearby roadways.

In addition to the Good Housekeeping and Material Management Practices, discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean up.

- Manufacturer's recommended methods of spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and the clean up supplies.
- Materials and equipment necessary for spill cleanup will be kept in the materials storage area onsite. Equipment and materials will include but are not limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate State, or Local Government Agency, regardless of the size.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and how to cleanup the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- The site superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three (3) other

site personnel 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 responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

- Reportable quantities of hydrocarbon or hazardous material spills should be reported to the Texas Commissions on Environmental Quality (TCEQ) at the following 24-hour toll free number 1-800-832-8224. The reportable quantity depends on the substance released and where released. Reference the "Spill Reporting" section on the external TCEQ website for a table to use to determine whether the spill should be reported and under what rule.

The Contractor shall notify the agency as soon as possible whenever necessary to provide information that would trigger a change in the response to the spill or discharge. If the discharge or spill creates an imminent health threat, the Contractor shall immediately notify and cooperate with local emergency authorities.

The Contractor will cooperate with the local emergency authority in providing support to implement appropriate notification and response actions. The local emergency authority, as necessary, will implement its emergency management plan, which may include notifying and evacuating affected personnel. In the absence of a local emergency authority, the Contractor shall take reasonable measure to notify potentially affected persons of the imminent health threat.

As soon as possible, but no later than two (2) weeks after discovery of the spill or discharge, the Contractor shall reasonably attempt to notify the Owner (if identifiable) or Occupant of the property upon which the discharge or spill occurred as well as the occupants of any property that the Contractor believes is adversely affected.

ATTACHMENT B – POTENTIAL SOURCES OF CONTAMINATION

Asphalt products will be used on this project. After placement of asphalt, emulsion, or coatings, the applicant will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt curing time, the applicant should maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur.

Sediment and soil from disturbed areas are another potential source of contamination. During activities causing soil disturbance, temporary best management practices outlined in ***Attachment D***, shall be followed to prevent discharge of sediment to Berry Creek.

Other potential sources of contamination include hydraulic fluid and diesel fuel from mechanical equipment, as well as paints and chemicals used on site. Any spills shall be handled according to the Spill Response Actions in ***Attachment A***.

ATTACHMENT C – SEQUENCE OF MAJOR ACTIVITIES

Berry Creek Highlands Phase 6B & 7 limits of construction includes a total of approximately 50.17 acres of disturbed area in the Recharge Zone. The location of the temporary erosion control measures is shown on the Erosion Control Sheets.

1. Install temporary erosion control measures, stabilized construction entrance, and tree protection according to the plans and specifications prior to any clearing and grubbing, grading, excavating, etc. Notify Construction Inspection Division, when installed. (±49.5 acres)

2. Prior to beginning construction, the Owner or his authorized representative shall convene a Pre-Construction Conference between the Texas Commission on Environmental Quality (TCEQ), City of Georgetown, Williamson County, Consulting Engineer, Contractor, and any other affected parties. Notify the TCEQ at least 48 hours prior to the time of the conference and 48 hours prior to the beginning of construction. On-site Pre-Construction meeting should be held with Contractor, TCEQ, Engineer, and Owner.

3. Set up all erosion control devices and temporary Best Management Practices measures. (±49.5 acres)

4. Clear and Grub for the streets, utilities, and lot grading. (±49.5 acres)

5. Rough Cut Roadway and perform lot grading. (±49.5 acres)

6. Begin construction including water, wastewater, paving, dry utilities, drainage, and other related site improvements. Install all utilities to be located under proposed pavement. (±49.5 acres)

7. Upon completion, restore as much disturbed areas as possible, particularly large open area. (±49.5 acres)

8. Clean site and re-vegetate all disturbed areas according to the plans and specifications. Disturbed areas of the construction site that will not be re-disturbed for 21 days or more must be stabilized by the 14th day after the last disturbance. Stabilization measures should include seeding and/or mulching. (±49.5 acres)

9. Complete permanent erosion control and restoration of site vegetation. (±49.5 acres)

10. Remove and dispose of temporary erosion/sedimentation control measures.

Complete any necessary final dress up of areas. Conduct a final inspection and complete all punch list items.

ATTACHMENT D – TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

Temporary Best Management Practices (BMPs) and measures will be used during construction to prevent pollution of groundwater, surface water and naturally occurring environmental features. Silt fence, inlet protection, stabilized construction entrance, and construction stockpiling areas will be installed prior to beginning construction and prior to commencement of any of the activities defined in the sequence of construction as ***Attachment C***. Inspection and maintenance of the on-site controls shall be performed during the site clearing and rough grading process. The perimeter fence shall be regularly monitored to ensure that the buffers remain no-construction zones until the site work has been completed and authorization has been granted by the Engineer. Please reference attached copy of the Erosion and Sedimentation Control Plans for specific controls and details.

Best Management Practices and measures will prevent pollution of surface water or groundwater that originates on site or flows off-site, including pollution caused by contaminated stormwater run-off from the site, through the use of silt fences placed immediately downstream of disturbed areas. To minimize destruction to any portion of the Recharge Zone, on-site perimeter silt fence will also be implemented for pertinent areas throughout the entirety of construction. The Contractor is expected to inspect the controls weekly and after significant rainfalls to ensure proper function. When silt accumulates six (6) inches in depth the Contractor shall promptly remove the silt from the controls. As noted earlier, the proposed water quality ponds will be used to treat storm water from the construction of the site. The water quality facility shall be properly inspected throughout construction and restored upon completion of the respective phase.

BMPs and measures will prevent pollutants from entering surface streams or the aquifer by intercepting stormwater potentially carrying sediment and other pollutants. BMPs and measures will implement two (2) stabilized construction entrances and a construction stockpiling/staging area to help minimize pollutant run-off and erosion generated during construction. Paved streets and driveways adjacent to these sites will be cleaned regularly to remove excess mud, dirt or rock tracked from the site. Sedimentation will be concentrated only in these areas for efficient maintenance. Water trucks will be on-site as necessary to aid in controlling dust. No setbacks were proposed for the site; however, BMPs will be implemented to limit/prevent contaminated inflow from entering surface streams or the aquifer. These practices are to include the following measures: the use of silt fence, triangular filter dikes and vegetative buffer zones. The fabricated silt fence barricade, triangular filter dikes and natural living filter vegetative buffer will provide help to reduce the likelihood of contaminated runoff from entering the aquifer. If any sensitive features are identified by TCEQ inspections, or during excavation or construction, measures appropriate to the sensitivity of the discovered feature will be enacted. No blasting is proposed.

A concrete washout area will be installed to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

Temporary Erosion and Sedimentation Notes:

1. The Contractor shall maintain, install erosion/sedimentation controls and tree/natural protective fencing prior to any site preparation work (clearing, grubbing or excavation).

2. The placement of erosion/sedimentation controls and tree/natural protective fencing shall be in accordance with Williamson County's current Environmental Protection rules and the approved Erosion and Sedimentation Control Plan. No erosion controls shall be placed beyond the property lines of the site unless written permission has been obtained from adjacent property Owners.

3. A pre-construction conference shall be held on-site with the Contractor, Design Engineer/permit applicant and Environmental Inspector after installation of the erosion/sedimentation and tree/natural area protection measures and prior to beginning any site preparation work. The Contractor shall notify the Environmental Inspector at least three (3) days prior to the meeting date.

4. Any major variation in materials or locations of controls or fences from those shown on the approved plans will require a revision and must be approved by the Reviewing Engineer, Environmental Specialist or City Arborist as appropriate. Minor changes to be made as field revisions to the Erosion and Sedimentation Control Plan may be required by the Environmental Inspector during the course of construction to correct control inadequacies.

5. The Contractor is required to inspect the controls at weekly intervals and after significant rainfall events to ensure that they are functioning properly. The person(s) responsible for maintenance of controls shall immediately make any necessary repairs to damaged areas. Silt accumulation at controls must be removed when the depth reaches six (6) inches.

6. Prior to final acceptance by the City of Georgetown and Williamson County, haul roads and waterway crossing constructed for temporary Contractor access must be removed, accumulated sediment removed from the waterway and the area restored to the original grade and revegetated. All land clearing debris shall be disposed of in approved spoil disposal sites.

7. All work must stop if a void in the rock substrate is discovered, which is one (1) square foot in total area, blows air from within the substrate, and/or consistently received water during any rain event. At this time it is the responsibility of the Project Manager to immediately contact an Environmental Inspector for further investigation.

8. Erosion control measures, site work and restoration work shall be in accordance with the Williamson County Storm Water Management System Requirements.

9. All slopes shall be sodded or seeded with approved grass, grass mixtures or ground cover suitable to the area and season in which they are applied.

10. Silt fences, rock berms, sedimentation basins and similarly recognized techniques and materials shall be employed during construction to prevent point source sedimentation loading of downstream facilities, such installation shall be regularly inspected by Williamson County for effectiveness. Additional measures may be required if, in the opinion of the County Engineer, they are warranted.

11. All temporary erosion control measures shall not be removed until final inspection and approval of the project by the Engineer. It shall be the responsibility of the Contractor to maintain all temporary erosion control structures and to remove each structure as approved by the Engineer.

12. Any dirt, mud, rocks, debris, etc., that is spilled, tracked, or otherwise deposited on any existing paved street shall by cleaned up immediately.

ATTACHMENT E – REQUEST TO SEAL FEATURES

No environmental features are being temporarily sealed. Therefore, this section is not applicable.

ATTACHMENT F – STRUCTURAL PRACTICES

Silt fencing will be placed on the down gradient side of any exposed soils in order to limit the discharge of silt and pollutant form exposed areas of the site. Additionally, triangular filter dikes will be placed down gradient of areas that may require dewatering. Dewatering shall be directed toward the water quality pond and/or filter dikes to limit the discharge of silt and pollutants from exposed areas of the site. Also included are stabilized construction entrances to reduce the amount of mud tracked onto surrounding streets by construction vehicles. Inspection and maintenance of the onsite controls shall be performed during the site clearing and rough grading process.

Additionally, the use of the proposed pond will also protect against contaminated runoff leaving the site. The Contractor will be responsible for proper inlet protection in addition to cleaning out all structures adversely affected by sediment after heavy rainfalls.

ATTACHMENT G – DRAINAGE AREA MAPS

(SEE CONSTRUCTION PLANS)

ATTACHMENT H – TEMPORARY SEDIMENT POND PLANS AND CALCULATIONS

The proposed water quality pond will be used as a sediment basin during construction. Developed Water Quality Area to Water Quality Pond 2 is approximately 50.62-acres with no offsite drainage. A surface skimmer will be utilized for dewatering during construction if warranted. Any excess sediment generated during construction will be spoiled in the location outlined in the construction plans. The entire system shall be protected from erosion and maintained throughout the course of construction until final site restoration is complete. The construction plans and design calculations will identify that adequate storage volume will be provided for construction.

ATTACHMENT I – INSPECTION AND MAINTENANCE FOR BEST MANAGEMENT PRACTICES

The following sections address inspection and maintenance taken from the TNRCC Manual, "Complying with Edward Aquifer Rules: Technical Guidance on Best Management Practices." inspections of the temporary BMPs will be documented in an inspection report. Inspections reports will document maintenance actives, sediment removal and modifications to the sediment and erosion controls.

Silt Fence:

1. Inspection shall be made weekly and after each rainfall event, in accordance with Section 1.4.3 of RG-348.

2. Torn fabric shall be replaced or a second line of fencing parallel to the torn section shall be implemented as needed.

3. Accumulated silt shall be removed when it reaches a depth of six (6) inches. The silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation.

4. Silt fence shall be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

Inlet Protection:

1. Daily inspection shall be made by the Contractor and silt accumulation must be removed when depth reaches 50 millimeters (two (2) inches).

2. Contractor shall monitor the performance of inlet protection during each rainfall event and immediately remove the inlet protections if the storm water begins to overtop the curb.

3. Inlet protections shall be removed as soon as the source of sediment is stabilized.

Stabilized Construction Entrance:

1. The entrance shall be maintained in a condition that will prevent tracking or flowing of sediment onto public roadway. This may require periodic top dressing with additional stone as conditions demand. As well as repair and clean out of any measure device used to trap sediment. All sediments that are spilled, dropped, washed or tracked onto public roadway must be removed immediately.

2. Entrance shall be properly graded to prevent run-off from leaving the construction site.

Concrete Washout Area:

1. Routine inspection in accordance with Section 1.4.18 of RG-348 of the area to insure that sufficient quantity and volume remain to contain all liquid and concrete waste generated by washout operations.

2. Plastic lining material should be a minimum of 10 millimeters in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

3. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Sediment Basins

1. Inspection should be made weekly and after each rainfall in accordance to Section 1.4.13 of RG-348.

2. To prevent clogging of the outlet structure of proposed water quality facilities implemented as temporary sediment basins, trash and other debris shall be removed promptly after each rainfall event.

3. Silt accumulation should be removed as well as basin re-graded to original dimensions once the capability of the facility has been reduced to 75% of original storage capacity.

4. Removed sediment should be redistributed in the respective phases' stockpiling area.

Rock Berm

1. Inspection should be made weekly and after each rainfall in accordance to Section 1.4.5 of RG-348. If placed in streambeds, inspection should occur on a daily basis.

2. Accumulated silt shall be removed when it reaches a depth of six (6) inches. The silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation.

3. Loose wire sheathing shall be repaired immediately when necessary and the berm shall be reshaped as needed during inspection.

4. Berm shall be replaced if the structure ceases to function as initially intended due to factors such as silt accumulation, washout, construction traffic damage, etc.

5. When all upstream areas are stabilized and the accumulated silt has been removed, the rock berm should be removed and disposed of.

ATTACHMENT J – SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

Prior to commencing construction, all temporary erosion and sedimentation control measures must be properly selected, installed, and maintained in accordance with the Manufacturer's Specifications and Good Engineering Practices. Controls specified in the Storm Water Pollution Prevention Plan section of the approved Edwards Aquifer Contributing Zone Plan are required during construction. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. The controls must remain in place until disturbed areas are revegetated and the areas have become permanently stabilized.*

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.*

Temporary Vegetation will be used to stabilize the soil. Please see TCEQ RG-348 Chapter 1, Section 1.3.8 Temporary Vegetation for materials, installation, irrigation and inspection specifications.

(*see General Notes for Edwards Aquifer Recharge Zone Plan)

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: AC Steadman, P.E. -Kimley-Horn

Date: 04/01/2024

Signature of Customer/Agent

04/01/2024

Regulated Entity Name: Berry Creek Highlands Phase 6B & 7

Permanent Best Management Practices (BMPs)

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

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

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

☐ N/A

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

   ☐ N/A

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

   ☒ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☐ The site will not be used for low density single-family residential development.

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

   ☐ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☒ The site will not be used for multi-family residential developments, schools, or small business sites.

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

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

☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

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

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☒ Design calculations (TSS removal calculations)
☒ TCEQ construction notes
☒ All geologic features
☒ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    ☒ A discussion of record keeping procedures

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

13. ☐ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☒ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

ATTACHMENT A -- 20% OR LESS IMPERVIOUS COVER WAIVER

No waiver is being requested because this site will be more than 20% impervious cover. Therefore this section is not applicable to our submittal.

ATTACHMENT B -- BMPs FOR UPGRADIENT STORM WATER

There is no upgradient storm water for Berry Creek Highlands Phase 6B & 7. All the storm water that originates onsite is captured in the proposed storm sewer system and routed to the proposed Batch Detention Pond constructed with Berry Creek Highlands, phase 6B & 7. The storm water in the batch detention pond will be regulated using the smartBATCH automated detention system.

ATTACHMENT C -- BMPs FOR ONSITE STORMWATER

Storm water runoff arising from this development will be conveyed through a combination of sheet flow and storm sewer flow to the Batch Detention Pond constructed with Berry Creek Highlands Phase 6B & 7, Ultimately the ponds will discharge into Berry Creek, then to the San Gabriel River. See attached plans for the proposed expansion to the water quality pond included with the construction plans under ***Attachment F***. See TSS removal calculations under ***Attachment I***.

1. Permanent Erosion and Sedimentation Notes:

   All disturbed areas shall be restored as noted below.

   a. A minimum of four inches of topsoil shall be placed in all drainage channels (except rock) and between the curb and right-of-way line.

   b. The seeding for permanent erosion control shall be applied over areas disturbed by construction as follows:

      Broadcast seeding:

      i. From September 15 to March 1, seeding shall be with a combination of two (2) pounds per 1,000 square feet of unhulled Bermuda and seven (7) pounds per 1,000 square feet of Winter Rye with a purity of 95% with 90% germination.

      ii. From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of two (2) pounds per 1,000 square feet with a purity of 95% with 85% germination.

      iii. Fertilizer shall be a pelleted or granular slow release with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of one (1) pounds per 1,000 square feet.

      iv. Mulch type used shall be hay, straw or mulch applied at a rate of 45 pounds per 1,000 square feet.

      Hydraulic seeding:

      i. From September 15 to March 1, seeding shall be with a combination of one (1) pounds per 1,000 square feet of unhulled Bermuda and seven (7) pounds per 1,000 square feet of Winter Rye with a purity of 95% with 90% germination.

      ii. From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of one (1) pounds per 1,000 square feet with a purity of 95% with 85% germination.

      iii. Fertilizer shall be a water soluble fertilizer with an analysis of 15-15-15 at a rate of 1.5 pounds per 1,000 square feet.

      iv. Mulch type used shall be hay, straw or mulch applied at a rate of 45 pounds per 1,000 square feet, with soil tackifier at a rate of 1.4 pounds per 1,000 square feet.

   c. The planted area shall be irrigated or sprinkled in a manner that will not erode the topsoil, but will sufficiently soak the soil to a depth of six (6) inches. The irrigation shall occur at ten (10)-day intervals during the first two (2) months. Rainfall occurrences of half (½) inch or more shall postpone the watering schedule for one (1) week.

   d. Restoration shall be acceptable when the grass has grown at least one and a half (1½) inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.

   e. When required, native grass seeding shall comply with the requirements of the City of Georgetown.

ATTACHMENT D -- BMPs FOR SURFACE STREAMS

As described in ***Attachments B*** and ***C***, storm water runoff will be treated and contained within the proposed Batch Detention Pond constructed with Berry Creek Highlands phase 6B & 7. The permanent water quality ponds are batch detention ponds with a TSS reduction efficiency of 91%. Please refer to ***Attachment I*** of this section for the TSS removal calculations.

ATTACHMENT E – REQUEST TO SEAL FEATURES

No environmental features are being sealed. Therefore, this section is not applicable.

ATTACHMENT F – CONSTRUCTION PLANS

See attached construction plans.

ATTACHMENT G – INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

(SEE NEXT SHEET)

Inspection, Maintenance, Repair and Retrofit Plan, and Schedule for Batch Detention Water Quality Ponds

PROJECT NAME:	Berry Creek Highlands Phase 6B & 7
ADDRESS:	2451 State Highway 195
CITY, STATE ZIP:	Georgetown, Texas 78633

BATCH DETENTION WATER QUALITY PONDS

Routine Maintenance:

Mowing. The upper stage, side slopes, embankment, and emergency spillway of an extended detention basin must be mowed regularly to discourage woody growth and control weeds. Grass areas in and around basins should be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing of grass is performed, a mulching mower should be used, or grass clippings should be caught and removed.

Inspections. Basins should be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation. When possible, inspections should be conducted during wet weather to determine if the pond is meeting the target detention times. In particular, the extended detention control device should be regularly inspected for evidence of clogging, or conversely, for too rapid a release. If the design drawdown times are exceeded by more than 24 hours, then repairs should be scheduled immediately. The upper stage pilot channel, if any, and its flow path to the lower stage should be checked for erosion problems. During each inspection, erosion areas inside and downstream of the BMP should be identified and repaired or revegetated immediately. All inspection and testing reports should be kept on site and accessible to inspectors.

Debris and Litter Removal. Debris and litter will accumulate near the extended detention control device and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the control device or riser..

Erosion Control. The pond side slopes, emergency spillway, and embankment all may periodically suffer from slumping and erosion, although this should not occur often if the soils are properly compacted during construction. Regrading and revegetation may be required to correct the problems. Similarly, the channel connecting an upper stage with a lower stage may periodically need to be replaced or repaired. g: Grass areas in and around sand filters must be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscape areas. Vegetation on the pond embankments should be mowed as appropriate to prevent the establishment of woody vegetation

Nuisance Control. Standing water (not desired in a extended detention basin) or soggy conditions within the lower stage of the basin can create nuisance conditions for nearby residents. Odors, mosquitoes, weeds, and litter are all occasionally perceived to be problems. Most of these problems are generally a sign that regular inspections and maintenance are not being performed (e.g., mowing, debris removal, clearing the outlet control device).

Non-routine maintenance.

Structural Repairs and Replacement. With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. These repairs should include patching of cracked concrete, sealing of voids, and removal of vegetation from cracks and joints. The various inlet/outlet and riser works in a basin will eventually deteriorate and must be replaced. Public works experts have estimated that corrugated metal pipe (CMP) has a useful life of about 25 yr, whereas reinforced concrete barrels and risers may last from 50 to 75 yr.

Sediment Removal. When properly designed, dry extended detention basins will accumulate quantities of sediment over time. Sediment accumulation is a serious maintenance concern in extended detention dry ponds for several reasons. First, the sediment gradually reduces available stormwater management storage capacity within the basin. Second, unlike wet extended detention basins (which have a permanent pool to conceal deposited sediments), sediment accumulation can make dry extended detention basins very unsightly. Third, and perhaps most importantly, sediment tends to accumulate around the control device. Sediment deposition increases the risk that the orifice will become clogged, and gradually reduces storage capacity reserved for pollutant removal. Sediment can also be resuspended if allowed to accumulate over time and escape through the hydraulic control to downstream channels and streams. For these reasons, accumulated sediment needs to be removed from the lower stage when sediment buildup fills 20% of the volume of the basin or at least every 10 years.

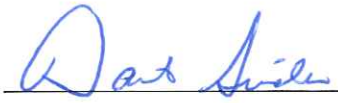
An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

Responsible Party for Maintenance: Chesmar Homes, LLC

Address: 211 N Loop 1604 E, #175

City, State, Zip: San Antonio, TX, 78232

Telephone Number: (210) 957-3395

Signature of Responsible Party: 

ATTACHMENT H – PILOT-SCALE FIELD TESTING PLAN

A pilot-scale field testing plan is not applicable for this project.

ATTACHMENT I – MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

All flows generated onsite due to this development are conveyed through a combination of sheet flow and storm sewer to the proposed Batch Detention Pond constructed Berry Creek Highlands Phase 6B & 7. Ultimately the flows are conveyed to Berry Creek, then onto the San Gabriel River.

The TSS removal calculations for the proposed pond are attached.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: BERRY CREEK - PHASE 6B & PHASE 7

Date Prepared: 3/12/2024

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

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

A_N = Net increase in impervious area for the project

P = Average annual precipitation, inches

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

County =	Williamson	
Total project area included in plan * =	117.89	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	47.37	acres
Total post-development impervious cover fraction * =	0.40	
P =	32	inches

$L_{M\ TOTAL\ PROJECT}$ = 41231 lbs. **80% REDUCTION**

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

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

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

Drainage Basin/Outfall Area No. = WQ Pond 2

Total drainage basin/outfall area =	50.62	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	26.82	acres
Post-development impervious fraction within drainage basin/outfall area =	0.53	
$L_{M\ THIS\ BASIN}$ =	23344	lbs. **80% REDUCTION**

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention

Removal efficiency = 91 percent

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

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

where:

A_C = Total On-Site drainage area in the BMP catchment area

A_I = Impervious area proposed in the BMP catchment area

A_P = Pervious area remaining in the BMP catchment area

L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	50.62	acres
A_I =	26.82	acres
A_P =	23.80	acres
L_R =	27397	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 24900 lbs.

F = 0.91

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.80	inches
Post Development Runoff Coefficient =	0.37	
On-site Water Quality Volume =	123865	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	24773	
Total Capture Volume (required water quality volume(s) x 1.20) =	148638	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.

The values for BMP Types not selected in cell C45 will show NA.

plus a second WQV.

04/01/2024

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: BERRY CREEK - PHASE 6A
Date Prepared: 11/1/2023

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Williamson	
Total project area included in plan * =	111.66	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	47.37	acres
Total post-development impervious cover fraction * =	0.42	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	41231	lbs. 80% REDUCTION

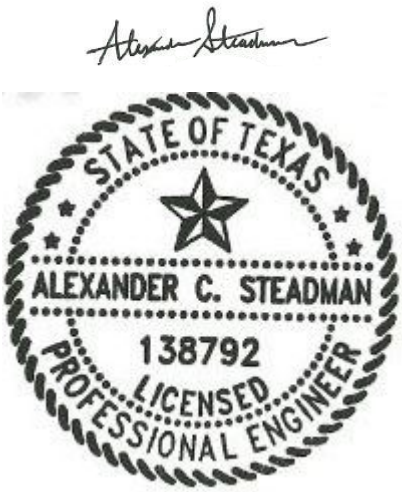
* The values entered in these fields should be for the total project area.

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

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

Drainage Basin/Outfall Area No. = Untreated

Total drainage basin/outfall area =	22.05	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.70	acres
Post-development impervious fraction within drainage basin/outfall area =	0.03	
$L_{M\ THIS\ BASIN}$ =	609	lbs. 80% REDUCTION



04/01/2024

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

I Bart Swider
Print Name

President
Title - Owner/President/Other

of Chesmar Homes, LLC,
Corporation/Partnership/Entity Name

have authorized AC Steadman, P.E.
Print Name of Agent/Engineer

of Kimley-Horn & Associates, Inc.
Print Name of Firm

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

I also understand that:

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

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

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

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

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

SIGNATURE PAGE:

Bart Swider
Applicant's Signature

4/1/2024
Date

THE STATE OF Texas §

County of Bexar §

BEFORE ME, the undersigned authority, on this day personally appeared Bart Swider 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 1st day of April, 2024. AW

ALLYSON WALTERS
Notary ID #129531158
My Commission Expires
April 13, 2026

NOTARY PUBLIC

Allyson Walters
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 4-13-26

ELECTRONICALLY RECORDED 2024016231
Williamson County, Texas Total Pages: 12

Independence Title/GF# 2324121-COM/GMH

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

SPECIAL WARRANTY DEED

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

That, **BERRY CREEK (GEORGETOWN) ASLI IX, LLC**, a Delaware limited liability company (hereinafter called "**Grantor**"), for and in consideration of the sum of Ten and No/100 ($10.00) and other good and valuable consideration paid to Grantor by the Grantee herein named, the receipt and sufficiency of which is hereby acknowledged and confessed, has GRANTED, SOLD and CONVEYED and by these presents does GRANT, SELL and CONVEY unto **CHESMAR HOMES, LLC**, a Texas limited liability company, whose mailing address is 3600 W. Parmer Lane, Suite 160, Austin, Texas 78727 (hereinafter called "**Grantee**"), all of the following described real property, together with all improvements thereon, located in Williamson County, Texas, and being more particularly described on Exhibit "A" attached hereto and made a part hereof for all purposes (all the foregoing hereinafter being collectively referred to as the "**Property**").

This conveyance is made subject to the matters set forth on Exhibit "B" attached hereto and made a part hereof for all purposes to the extent they affect the Property (hereinafter called the "**Permitted Encumbrances**"), without re-imposing any such matters.

Notwithstanding anything to the contrary contained herein, except as expressly assigned by Grantor to Grantee pursuant to a separate agreement, the Property does not include, and Grantor hereby reserves for itself and its successors and assigns forever, all rights, title and interest in and to any and all rights and reimbursements, fees or other amounts due and owing, or which may become due and owing, from the City of Georgetown, Texas, the Berry Creek Highlands Municipal Utility District (the "**MUD**") or any other governmental or quasi-governmental authority in connection with infrastructure improvements performed by or on behalf of Grantor or in any way related to the MUD, whether pursuant to that certain Amended and Restated Consent Agreement, by and among the City of Georgetown, Texas, Seller and the MUD, recorded under Document Number 2019101328 of the Official Public Records of Williamson County, Texas, or otherwise (collectively, the "**MUD Reimbursements**"), and Grantee hereby, on behalf of its successors and assigns, waives any claims to the MUD Reimbursements.

Taxes and assessments for the year have been pro-rated between Grantor and Grantee and Grantee assumes the payment thereof from and after the date hereof except for taxes and assessments related to prior years, including, but not limited to, taxes imposed due to a change in use which shall be the sole responsibility of and shall be paid by Grantor.

TO HAVE AND TO HOLD the Property, together with all and singular the rights and appurtenances thereto in anywise belonging, unto the said Grantee, its successors and assigns forever; and Grantor does hereby bind its successors and assigns to WARRANT AND FOREVER DEFEND all and singular the title to the Property unto the said Grantee, and its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof, by, through or under Grantor, but not otherwise, subject to the Permitted Encumbrances and the foregoing reservations, waivers and releases.

For the same consideration, Grantor hereby GRANTS, SELLS, CONVEYS, ASSIGNS AND DELIVERS to Grantee, without warranty, all right, title and interest, if any, of Grantor, as owner of the Property but not as owner of any other property, in and to: (i) strips or gores, if any, between the Property and abutting properties; (ii) any land lying in or under the bed of any street, alley, road or right-of-way, opened or proposed, abutting or adjacent to the Property; (iii) any easements, rights of way, rights of ingress and egress or other interests in, on, or to, any land, highway, street, road or avenue, open or proposed, in, on, across from, in front of, abutting, adjoining or otherwise appurtenant to the Property, as well as all other rights, privileges and appurtenances to the Property owned by Grantor (if any); and (iv) all oil, gas, hydrocarbons and minerals in, on, under or that may be produced from the Property and owned by Grantor (if any).

[*Remainder of page intentionally left blank; signature page follows.*]

Executed to be effective as of the 1st day of March, 2024.

GRANTOR:

BERRY CREEK (GEORGETOWN) ASLI IX, LLC, a Delaware limited liability company

By: Avanti Strategic Land Investors IX, L.L.L.P., a Delaware limited liability limited partnership, its sole member

By: APG ASLI IX GP, LLC, a Delaware limited liability company, its sole General Partner

By: Avanti Properties Group III, L.L.L.P., a Delaware limited liability limited partnership, its Managing Member

By: APG III GP, LLC, a Florida limited liability company, its sole General Partner

By: Avanti Management Corporation, a Florida corporation, its sole Manager

By:_____
Marvin M. Shapiro, President

THE STATE OF FLORIDA §
§
COUNTY OF ORANGE §

This instrument was acknowledged before me on the 26 day of February 2024, by Marvin M. Shapiro, President of Avanti Management Corporation, a Florida corporation, the sole Manager of APG III GP, LLC, a Florida limited liability company, the sole General Partner of Avanti Properties Group III, L.L.L.P., a Delaware limited liability limited partnership, the Managing Member APG ASLI IX GP, LLC, a Delaware limited liability company, the sole General Partner of Avanti Strategic Land Investors IX, L.L.L.P., a Delaware limited liability limited partnership, the sole member of **BERRY CREEK (GEORGETOWN) ASLI IX, LLC**, a Delaware limited liability company

MARGARET HILL
MY COMMISSION # HH 242771
EXPIRES: March 21, 2026

By: Margaret Hill
Printed Name: Margaret Hill
Notary Public, State of Florida

[ADD NOTARY SEAL]

Address of Grantee:

Chesmar Homes, LLC
Attn: Adam Stockton
3600 W. Parmer Lane, Suite 160
Austin, Texas 78727

EXHIBIT "A"

LEGAL DESCRIPTION OF THE PROPERTY

BEING A 50.17 ACRES TRACT OF LAND SITUATED IN THE B. EAVES SURVEY, ABSTRACT 216 AND THE W. ROBERTS SURVEY, ABSTRACT 524, BOTH IN WILLIAMSON COUNTY, TEXAS; AND BEING A PORTION OF A CALLED 314.54 ACRES TRACT OF LAND DESCRIBED TO BERRY CREEK (GEORGETOWN), ASLI IX, LLC, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2018106295 OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.T.); AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, IN THE SOUTH BOUNDARY LINE OF SAID 314.54 ACRES TRACT, SAME BEING THE NORTH BOUNDARY LINE OF A CALLED 90.084 ACRES TRACT OF LAND DESCRIBED TO CITY OF GEORGETOWN, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2013024601, O.P.R.W.C.T.;

THENCE, DEPARTING SAID SOUTH BOUNDARY LINE OF THE 314.54 ACRES TRACT AND SAID NORTH BOUNDARY LINE OF THE 90.084 ACRES TRACT, OVER AND ACROSS SAID 314.54 ACRES TRACT, THE FOLLOWING ELEVEN (11) COURSES AND DISTANCES:

1. NORTH 22°35'13" WEST, A DISTANCE OF 330.18 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

2. NORTH 54°35'53" EAST, A DISTANCE OF 415.36 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

3. NORTH 50°00'58" EAST, A DISTANCE OF 123.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

4. NORTH 39°59'02" WEST, A DISTANCE OF 20.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

5. SOUTH 50°00'58" WEST, A DISTANCE OF 123.00 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

6. NORTH 39°59'02" WEST, A DISTANCE OF 60.00 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

7. NORTH 60°56'44" WEST, A DISTANCE OF 64.25 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

8. NORTH 39°37'48" WEST, A DISTANCE OF 75.82 FEET TO A COTTON SPINDLE WITH WASHER STAMPED "KHA" SET;

9. NORTH 31°05'45" WEST, A DISTANCE OF 30.27 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

10. NORTH 07°07'23" WEST, A DISTANCE OF 80.44 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

11. NORTH 13°30'43" EAST, A DISTANCE OF 10.92 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR AN ANGLE CORNER IN THE SOUTH BOUNDARY LINE OF LOT 1, BERRY CREEK HIGHLANDS AMENITY CENTER, AS SHOWN ON PLAT RECORDED IN DOCUMENT NO. 2022107951, O.P.R.W.C.T.;

THENCE, WITH SAID SOUTH BOUNDARY LINE OF LOT 1, CONTINUING OVER AND ACROSS SAID 314.54 ACRES TRACT, THE FOLLOWING FIVE (5) COURSES AND DISTANCES:

1. NORTH 13°30'43" EAST, DISTANCE OF 72.72 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

2. NORTH 52°20'03" EAST, A DISTANCE OF 84.45 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

3. NORTH 68°52'13" EAST, A DISTANCE OF 54.51 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

4. NORTH 54°39'09" EAST, A DISTANCE OF 60.20 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

5. NORTH 50°00'58" EAST, AT 130.00 FEET, PASSING THE SOUTHEAST CORNER OF SAID LOT 1, SAME BEING THE TERMINUS OF THE WEST RIGHT-OF-WAY LINE OF LAZY S ROAD, A 50-FOOT WIDE RIGHT-OF-WAY, ACCORDING TO DOCUMENT NO. 2022107951 AND CONTINUING WITH THE SOUTH RIGHT-OF-WAY LINE OF SAID LAZY S ROAD, IN ALL A DISTANCE OF 180.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR THE TERMINUS OF THE EAST RIGHT-OF-WAY LINE OF SAID LAZY S ROAD;

THENCE, WITH SAID EAST RIGHT-OF-WAY LINE OF LAZY S ROAD, CONTINUING OVER AND ACROSS SAID 314.54 ACRES TRACT, THE FOLLOWING THREE (3) COURSES AND DISTANCES:

1. NORTH 39°59'02" WEST, A DISTANCE OF 261.21 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR THE BEGINNING OF A CURVE;

2. WITH SAID CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 05°17'01", A RADIUS OF 275.00 FEET, A CHORD BEARING AND DISTANCE OF NORTH 37°20'32" WEST, 25.35 FEET, AND A TOTAL ARC LENGTH OF 25.36 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, IN THE INTERSECTION OF BCH WAY, VARIABLE WIDTH RIGHT-OF-WAY AND SAID LAZY S ROAD, FOR THE BEGINNING OF A CURVE;

3. WITH SAID CURVE TO THE RIGHT, WITH SAID INTERSECTION OF BCH WAY AND LAZY S ROAD, HAVING A CENTRAL ANGLE OF 94°32'18", A RADIUS OF 25.00 FEET, A CHORD BEARING AND DISTANCE OF NORTH 12°34'08" EAST, 36.73 FEET, AND A TOTAL ARC LENGTH OF 41.25 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET, IN THE SOUTH RIGHT-OF-WAY LINE OF SAID BCH WAY;

THENCE, WITH SAID SOUTH RIGHT-OF-WAY LINE OF BCH WAY, CONTINUING OVER AND ACROSS SAID 314.54 ACRES TRACT, THE FOLLOWING FIVE (5) COURSES AND DISTANCES:

1. NORTH 59°50'17" EAST, A DISTANCE OF 1,090.27 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR THE BEGINNING OF A CURVE;

2. WITH SAID CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 90°00'00", A RADIUS OF 25.00 FEET, A CHORD BEARING AND DISTANCE OF SOUTH 75°09'43" EAST, 35.36 FEET, AND A TOTAL ARC LENGTH OF 39.27 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

3. NORTH 59°50'17" EAST, A DISTANCE OF 50.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR THE BEGINNING OF A CURVE;

4. WITH SAID CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 89°47'38", A RADIUS OF 25.00 FEET, A CHORD BEARING AND DISTANCE OF NORTH 14°44'03" EAST, 35.29 FEET, AND A TOTAL ARC LENGTH OF 39.18 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

5. NORTH 59°50'17" EAST, A DISTANCE OF 98.09 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR THE NORTHWEST CORNER OF A CALLED 13.207 ACRES TRACT OF LAND DESCRIBED TO JARRELL INDEPENDENT SCHOOL DISTRICT, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2023004683, O.P.R.W.C.T.;

THENCE, DEPARTING SAID SOUTH RIGHT-OF-WAY LINE OF BCH WAY, WITH THE WEST BOUNDARY LINE OF SAID 13.207 ACRES TRACT, CONTINUING OVER AND ACROSS SAID 314.54 ACRES TRACT, THE FOLLOWING FOUR (4) COURSES AND DISTANCES:

1. SOUTH 30°09'43" EAST, A DISTANCE OF 201.81 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

2. SOUTH 11°29'03" EAST, A DISTANCE OF 231.66 FEET TO A MAG NAIL WITH WASHER STAMPED "KHA" SET;

3. SOUTH 03°16'50" WEST, A DISTANCE OF 265.09 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

4. SOUTH 15°26'03" EAST, A DISTANCE OF 138.21 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR THE SOUTHWEST CORNER OF SAID 13.207 ACRES TRACT;

THENCE, NORTH 68°50'08" EAST, WITH THE SOUTH BOUNDARY LINE OF SAID 13.207 ACRES TRACT, CONTINUING OVER AND ACROSS SAID 314.54 ACRES TRACT, A DISTANCE OF 429.08 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, FOR A NORTHWEST CORNER OF A CALLED 16.885 ACRES TRACT OF LAND DESCRIBED TO FR BERRY HILLS, LLC, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2022090595, O.P.R.W.C.T.;

THENCE, DEPARTING SAID SOUTH BOUNDARY LINE OF THE 13.207 ACRES TRACT, WITH THE WEST BOUNDARY LINE OF SAID 16.885 ACRES TRACT, CONTINUING OVER AND ACROSS SAID 314.54 ACRES TRACT, THE FOLLOWING FIVE (5) COURSES AND DISTANCES:

1. SOUTH 21°09'52" EAST, A DISTANCE OF 123.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

2. SOUTH 21°44'36" EAST, A DISTANCE OF 50.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

3. SOUTH 21°09'52" EAST, A DISTANCE OF 246.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

4. SOUTH 20°35'09" EAST, A DISTANCE OF 50.00 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET;

5. SOUTH 21°09'52" EAST, A DISTANCE OF 123.98 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "KHA" SET, IN THE SOUTH BOUNDARY LINE OF SAID 314.54 ACRES TRACT, SAME BEING THE NORTH BOUNDARY LINE OF A CALLED 14.99 ACRES TRACT OF LAND DESCRIBED TO CHARLES WITT AND SPOUSE, AMBERLE M. KURKOWSKI, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2012022314, O.P.R.W.C.T.;

THENCE, WITH SAID SOUTH BOUNDARY LINE OF SAID 314.54 ACRES TRACT, SAME BEING THE NORTH BOUNDARY LINE OF SAID 14.99 ACRES TRACT, THE NORTH BOUNDARY LINE OF A CALLED 15.00 ACRES TRACT OF LAND DESCRIBED TO JEFFREY G. KING AND SPOUSE, LAUREL A. KICK, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2003023697, O.P.R.W.C.T., THE NORTH BOUNDARY LINE OF A CALLED 32.601 ACRES TRACT OF LAND AND A CALLED 3.36 ACRES TRACT OF LAND BOTH DESCRIBED TO BRUCE W. BOND AND SHIRLEY MARIE LONG-BOND, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 9756355, O.P.R.W.C.T. AND SAID NORTH BOUNDARY LINE OF THE 90.084 ACRES TRACT, THE FOLLOWING SIX (6) COURSES AND DISTANCES:

1. SOUTH 68°46'14" WEST, A DISTANCE OF 324.63 FEET TO A 1/2-INCH IRON ROD FOUND, FOR THE NORTHWEST CORNER OF SAID 14.99 ACRES TRACT, SAME BEING THE NORTHEAST CORNER OF SAID 15.00 ACRES TRACT;

2. SOUTH 68°54'17" WEST, A DISTANCE OF 738.71 FEET TO A 1/2-INCH IRON FOUND, FOR THE NORTHWEST CORNER OF SAID 15.00 ACRES TRACT, SAME BEING THE NORTHEAST CORNER OF SAID 32.601 ACRES TRACT;

3. SOUTH 68°52'22" WEST, A DISTANCE OF 424.11 FEET TO A 1/2-INCH IRON ROD FOUND;

4. SOUTH 68°54'53" WEST, A DISTANCE OF 267.84 FEET TO A 3/8-INCH IRON ROD FOUND, FOR THE NORTHWEST CORNER OF SAID 32.601 ACRES TRACT, SAME BEING THE NORTHEAST CORNER OF SAID 3.36 ACRES TRACT;

5. SOUTH 67°52'44" WEST, A DISTANCE OF 340.18 FEET TO A 1/2-INCH IRON ROD WITH PLASTIC CAP STAMPED "FOREST RPLS 1847" FOUND, FOR THE NORTHWEST CORNER OF SAID 3.36 ACRES TRACT, SAME BEING THE NORTHEAST CORNER OF SAID 90.084 ACRES TRACT;

6. SOUTH 67°52'43" WEST, A DISTANCE OF 133.84 FEET TO THE POINT OF BEGINNING AND CONTAINING 50.17 ACRES OF LAND, MORE OR LESS, IN WILLIAMSON COUNTY, TEXAS. THIS DOCUMENT WAS PREPARED IN THE OFFICE OF KIMLEY-HORN INC. IN AUSTIN, TEXAS.

EXHIBIT "B"

PERMITTED ENCUMBRANCES

1. The lien for standby fees, taxes and assessments for the year 2024 and subsequent years by any taxing authority not due and payable on or before the date hereof.

2. Zoning ordinances affecting the Property, including, but not limited to, all terms, conditions and requirements of that certain planned unit development zoning ordinance pertaining to the Property, under Ordinance No. 2018-36, an Ordinance of the City Council of the City of Georgetown, Texas, as the same may be amended from time to time.

3. Inclusion within the MUD, the taxing authority of the MUD and the tax rates set thereby.

4. Matters shown on that certain ALTA/NSPS Land Title Survey prepared by Michael A. Montgomery II, R.P.L.S. No. 6890, Kimley Horn Project No. 069427100, dated January 2, 2024.

5. Terms, conditions, restrictive covenants and reservations contained in Document No. 2012080146, Official Public Records, Williamson County, Texas (the "**Official Records**").

6. Terms, conditions, provisions, easements, restrictions, reservations, maintenance charges and/or assessments set forth in Document No. 2022026998, Document No. 2022026699, Document No. 2022027280, Document No. 2022027281, Document No. 2022027282, and Document No. 2022026999, of the Official Records.

7. Terms and conditions of access easement granted to Marvin A. Mueller, Marjorie Mueller, David Rex Thompson and Sheri A. Laughland Thompson recorded under Volume 569, Page 742, Deed Records, Williamson County, Texas (the "**Deed Records**"), as affected by Document Nos. 199970656 and 199980049, of the Official Records.

8. Potable water pipeline easement to Chisholm Trail Water Supply Corporation recorded under Volume 938, Page 542; Volume 964, Page 539; Volume 988, Page 310, all as affected by Volume 2168, Page 44, of the Deed Records.

9. Easement for electric and telephone line(s) to Pedernales Electric Cooperative, Inc. recorded under Volume 1006, Page 661, of the Deed Records.

10. Easement for communication line(s) to General Telephone Company of the Southwest recorded under Volume 1218, Page 658, of the Deed Records.

11. Easement for communication line(s) to GTE Southwest recorded under Document No. 9643570, of the Official Records.

12. Utility Easement to Pedernales Electric Cooperative, Inc. recorded under Document No.

2022057047, of the Official Records.

13. Terms, Conditions, and Stipulations, including any and all special assessments, impact fees, water or sewer recovery fees, tap-in fees, connection fees and any and all other fees related to utilities, utility connections, utility capacity, and the development the Property, including, but not limited to, the payments with respect to the Property pursuant to Section 11.03, in the Consent Agreement recorded as Document No. 2018104277, as amended in Document No. 2018104278 and Document No. 2019040583, as affected by Document No. 2019101328, and as further affected by Document Nos. 2019034428, 2019034429 and 2019101325, of the Official Records.

14. Terms, Conditions, and Stipulations in the Parkland Improvements Agreement, recorded under Document Nos. 201807670 and 2019101326, of the Official Records.

15. Terms, Conditions, and Stipulations in the Easement and Developmental Matters Agreement, recorded under Document No. 2018106301, of the Official Records.

16. Terms, Conditions, and Stipulations in the Waiver of Special Appraisal for the benefit of Berry Creek Highland MUD recorded as Document No. 2020099751, of the Official Records.

17. Terms, Conditions, and Stipulations in the Williamson County Regional Habitat Conservation Plan and Memorandum of Participation Agreement Relative to U.S. Fish and Wildlife Service Permit (Permit No. TE-181840-1), recorded as Document No. 2020140265, of the Official Records.

18. Terms, Conditions, and Stipulations in the Retaining Wall Easement and Maintenance Agreement, recorded under Document No. 2023054610, of the Official Records.

19. Deed Recordation Affidavit re: Edwards Aquifer Protection Plan recorded as Document No. 2020111396 and Document No. 2020111397, of the Official Records.

20. Certificate for Order Establishing Drainage Fees and Regulations by the Berry Creek Highlands Municipal Utility District recorded as Document No. 2021131100, as amended in Document No. 2023066141, of the Official Records.

ELECTRONICALLY RECORDED
OFFICIAL PUBLIC RECORDS

2024016231

Pages: 12 Fee: $65.50
03/01/2024 02:39 PM
MBARRICK

Nancy E. Rister, County Clerk
Williamson County,Texas

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Berry Creek Highlands Phase 6B & 7
Regulated Entity Location: City of Georgetown , Willamson County, TX
Name of Customer: CHESMAR HOMES, LLC
Contact Person: CARSON TRAINER Phone: 210-896-8383
Customer Reference Number (if issued):CN 605592310
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

☒ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	50.17 Acres	$ 6,500
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	7470 L.F.	$ 3735
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 04/01/2024

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ 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 605592310		**RN**

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)	11/15/2018

☒ 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:*
CHESMAR HOMES, LLC	

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0803161138	32035414203	20-2720694	

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:	211 N. Loop 1604 E							
	Suite 175							
	City	San Antonio	**State**	TX	**ZIP**	78232	**ZIP + 4**	4003

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

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(512) 465-2903		( ) -

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.)*

BERRY CREEK HIGHLANDS PHASE 6B & 7

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	2451 State Highway 195							
	City	Georgetown	**State**	TX	**ZIP**	78633	**ZIP + 4**	4411
24. County	Williamson							

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

25. Description to Physical Location:	The project site is located on the west side of State Highway Cowboy 195 at the intersection with Shell Road.				
26. Nearest City			**State**		**Nearest ZIP Code**
Georgetown			TX		78633

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:	30.724137691263		**28. Longitude (W) In Decimal:**	-97.69379372634874	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	43	26.89569	97	41	37.65741

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)
1520	6199	2361	5311

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

Residential, Single Family Subdivison

34. Mailing Address:	**211 N Loop 1604 E.**							
	Suite #175							
	City	**San Antonio**	**State**	**TX**	**ZIP**	**78232**	**ZIP + 4**	**4003**
35. E-Mail Address:	**carson.trainer@chesmar.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(210) 896-8383		( ) -

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
		SCS/WPAP		
☐ 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:	AC STEADMAN, P.E.	**41. Title:**	PROJECT MANAGER

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 418-4508		**( )** -	ac.steadman@kimley-horn.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:	KIMLEY-HORN AND ASSOCIATES INC.	**Job Title:**	PROJECT MANAGER	
Name *(In Print):*	AC STEADMAN, P.E.		**Phone:**	**(** 512 **)** 418- **4508**
Signature:			**Date:**	4/1/2024

PLAN REVISIONS				
NO.	DESCRIPTION	REVISE (R) VOID (V) ADD (A) SHEET NO.'S	TOTAL NO. SHEETS IN PLAN SET	CITY OF GEORGETOWN APPROVAL DATE

CIVIL CONSTRUCTION PLANS
PAVING, GRADING & UTILITIES
FOR
BERRY CREEK HIGHLANDS PHASES 6B & 7
CITY OF GEORGETOWN, WILLIAMSON COUNTY, TEXAS

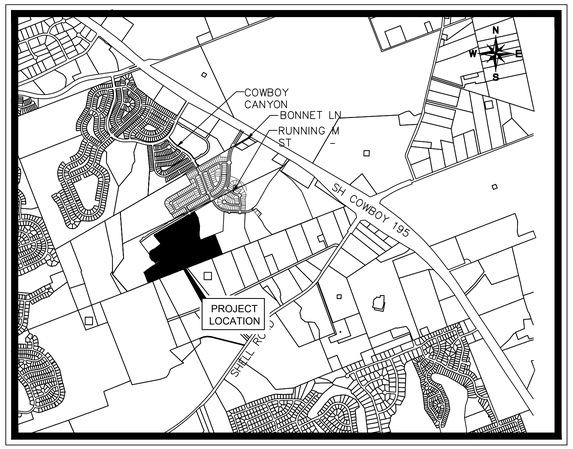
PLAN SUBMITTAL/REVIEW LOG

1ST SUBMITTAL TO CITY 03/18/2024

GENERAL SITE DEVELOPMENT NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER, AND SUCCESSORS TO THE CURRENT PROPERTY OWNER, TO ENSURE THE SUBJECT PROPERTY AND ANY IMPROVEMENTS ARE MAINTAINED IN CONFORMANCE WITH THIS SUBDIVISION CONSTRUCTION PLAN.
2. THIS DEVELOPMENT SHALL COMPLY WITH ALL STANDARDS OF THE UNIFIED DEVELOPMENT CODE (UDC), THE CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL, THE DEVELOPMENT MANUAL AND ALL OTHER APPLICABILITY STANDARDS.
3. THE SUBDIVISION CONSTRUCTION PLAN SHALL MEET THE UDC STORMWATER REQUIREMENTS.
4. ALL SIGNAGE REQUIRES A SEPARATE APPLICATION AND APPROVAL FROM THE INSPECTION SERVICES DEPARTMENT. NO SIGNAGE IS APPROVED WITH THE SITE DEVELOPMENT PLAN.
5. SIDEWALK SHALL BE PROVIDED IN ACCORDANCE WITH THE UDC.
6. DRIVEWAYS WILL REQUIRE APPROVAL BY THE DEVELOPMENT ENGINEER OF THE CITY OF GEORGETOWN.
7. OUTDOOR LIGHTING SHALL COMPLY WITH SECTION 7.05 OF THE UDC.
8. SCREENING OF MECHANICAL EQUIPMENT, DUMPSTER AND PARKING SHALL COMPLY WITH CHAPTER 8 OF THE UDC. THE SCREENING IS SHOWN ON THE LANDSCAPE AND ARCHITECTURAL PLANS, AS APPLICABLE.
9. THE COMPANION LANDSCAPE PLAN HAS BEEN DESIGNED AND PLANT MATERIALS SHALL BE INSTALLED TO MEET ALL REQUIREMENTS IN THE UDC.
10. ALL MAINTENANCE OF REQUIRED LANDSCAPE SHALL COMPLY WITH THE MAINTENANCE STANDARDS OF CHAPTER 8 OF THE UDC.
11. A SEPARATE IRRIGATION PLAN SHALL BE REQUIRED AT THE TIME OF BUILDING PERMIT APPLICATION.
12. FIRE FLOW REQUIREMENT OF 1500 GALLONS PER MINUTE ARE BEING MET BY THIS PLAN.
13. ANY HERITAGE TREE NOTED ON THIS SUBDIVISION CONSTRUCTION PLAN IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE.
14. THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
15. THE PROJECT IS SUBJECT TO ALL CITY STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
16. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE REINSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER (ONLY APPLICABLE FOR NON-RESIDENTIAL AND MULTI-FAMILY DEVELOPMENT).
17. ALL ELECTRIC DISTRIBUTION LINES AND INDIVIDUAL SERVICE LINES SHALL BE INSTALLED UNDERGROUND. IF OVERHEAD LINES EXISTED PRIOR TO UNDERGROUND INSTALLATION, SUCH POLES, GUY WIRES, AND RELATED STRUCTURES SHALL BE REMOVED FOLLOWING CONSTRUCTION OF THE UNDERGROUND INFRASTRUCTURE (ONLY APPLICABLE FOR RESIDENTIAL PROPERTY).
18. THE PROPERTY SUBJECT TO THIS APPLICATION IS WITHIN THE EDWARD'S AQUIFER RECHARGE ZONE, THEREFORE SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN.
19. THE APPROVED PRELIMINARY PLAT FOR THIS PROPERTY IS 2022-24-PP "BERRY CREEK HIGHLANDS PHASE 6A, 6B, 7, 8A, 8B, XX".
20. ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH CITY OF GEORGETOWN UDC SEC. 13.06 GUIDELINES

BERRY CREEK HIGHLANDS
MUNICIPAL UTILITY DISTRICT



VICINITY MAP
SCALE: 1" = 1,000'

COA GRID: F12
MAPSCO: 703D, 703H

MARCH 2024

ENGINEER

Kimley»Horn

10814 JOLLYVILLE ROAD
CAMPUS IV, SUITE 200
AUSTIN, TEXAS 78759
PH. (512) 418-1771
CONTACT: ALEXANDER C. STEADMAN, P.E.
EMAIL: AC.STEADMAN@KIMLEY-HORN.COM

STATE OF TEXAS
REGISTRATION NO. F-928

OWNER/DEVELOPER

CHESMAR HOMES, LLC
211 NORTH LOOP 1604 EAST, SUITE 179
SAN ANTONIO, TEXAS 78232
TEL: (210) 896-8383
EMAIL: CARSON.TRAINER@CHESMAR.COM

SURVEYOR

KIMLEY-HORN AND ASSOCIATES, INC.
601 NW LOOP 410, SUITE 350
SAN ANTONIO, TEXAS 78216
FIRM NO. 10193973
PH: (210) 541-9166
CONTACT: GREG MOSIER

GAS SERVICE

ATMOS ENERGY CORPORATION
3110 N INTERSTATE 35
ROUND ROCK, TEXAS 78681
PH: (512) 310-3855
CONTACT: ALIDA PAINE
WEBSITE: www.atmosenergy.com

ELECTRIC SERVICE

PEDERNALES ELECTRIC COOPERATIVE, INC.
10625 WEST HIGHWAY 29
LIBERTY HILL, TX 78642
TELEPHONE: (800) 868-4791
CONTACT: DAVID PAGOAGA
WEBSITE: HTTPS://WWW.PEC.COOP

WATER SERVICE

CITY OF GEORGETOWN
300 INDUSTRIAL AVE #1
GEORGETOWN, TEXAS 78626
TELEPHONE: (512) 930-3640
CONTACT: DAVID MUNK
WEBSITE: https://gus.georgetown.org/

WASTEWATER SERVICE

CITY OF GEORGETOWN
GEORGETOWN UTILITY SYSTEMS
300-1 INDUSTRIAL AVENUE
GEORGETOWN, TEXAS 78626
TELEPHONE: (512)930-3555
CONTACT: DAVID MUNK
WEBSITE: https://gus.georgetown.org/

CITY OF GEORGETOWN _____ DATE _____

DISTRICT ENGINEER _____ DATE _____

REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO WATER, WASTEWATER AND DRAINAGE AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

LEGAL DESCRIPTION

BEING A 50.17 ACRES TRACT OF LAND SITUATED IN THE B. EAVES SURVEY, ABSTRACT 216 AND THE W. ROBERTS SURVEY, ABSTRACT 524, BOTH IN WILLIAMSON COUNTY, TEXAS; AND BEING A PORTION OF A CALLED 314.54 ACRES TRACT OF LAND DESCRIBED TO BERRY CREEK (GEORGETOWN), ASLI IX, LLC, AS SHOWN ON INSTRUMENT RECORDED IN DOCUMENT NO. 2018106295 OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.T.).

811 Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

SHEET INDEX

Sheet Number	Sheet Title
1	COVER SHEET
2	GENERAL NOTES
3	KIMLEY HORN GENERAL NOTES
4	TCEQ NOTES
5	PRELIMINARY PLAT (1 OF 4)
6	PRELIMINARY PLAT (2 OF 4)
7	PRELIMINARY PLAT (3 OF 4)
8	PRELIMINARY PLAT (4 OF 4)
9	EXISTING CONDITIONS AND DEMOLITION PLAN
10	EROSION CONTROL PLAN
11	TREE PRESERVATION PLAN (1 OF 2)
12	TREE PRESERVATION PLAN (2 OF 2)
13	GRADING PLAN
14	PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (1 OF 4)
15	PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (2 OF 4)
16	PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (3 OF 4)
17	PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (4 OF 4) & ZELDA DRIVE
18	PAVING PLAN & PROFILE - LAZY S ROAD
19	PAVING PLAN & PROFILE - BAR O WAY (1 OF 2)
20	PAVING PLAN & PROFILE - BAR O WAY (2 OF 2)
21	PAVING PLAN & PROFILE - EL PAISANO DRIVE (1 OF 2)
22	PAVING PLAN & PROFILE - EL PAISONO DRIVE (2 OF 2)
23	PAVING PLAN & PROFILE - FLYING L RUN
24	PAVING PLAN & PROFILE - CALLAGHAN COURT
25	STREET LIGHT AND SIGNAGE PLAN
26	EXISTING DRAINAGE AREA MAP
27	PROPOSED DRAINAGE AREA MAP
28	INLET DRAINAGE AREA MAP
29	DRAINAGE CALCULATIONS
30	WQ-DETENTION POND 2 PLAN
31	WATER QUALITY DRAINAGE AREA MAP
32	COG & TCEQ WATER QUALITY CALCULATIONS
33	OVERALL STORM PLAN
34	STORM PLAN AND PROFILE - SD-A (1 OF 2)
35	STORM PLAN AND PROFILE - SD-A (2 OF 2)
36	STORM PLAN AND PROFILE - SD-B
37	STORM PLAN AND PROFILE - SD-C & SD-D
38	STORM PLAN AND PROFILE - SD-E
39	STORM PLAN AND PROFILE - SD-F (1 OF 3)
40	STORM PLAN AND PROFILE - SD-F (2 OF 3)
41	STORM PLAN AND PROFILE - SD-F (3 OF 3)
42	STORM PLAN AND PROFILE - SD-G (1 OF 2)
43	STORM PLAN AND PROFILE - SD-G (2 OF 2)
44	STORM LATERALS (1 OF 7)
45	STORM LATERALS (2 OF 7)
46	STORM LATERALS (3 OF 7)
47	STORM LATERALS (4 OF 7)
48	STORM LATERALS (5 OF 7)
49	STORM LATERALS (6 OF 7)
50	STORM LATERALS (7 OF 7)
51	OVERALL WATER PLAN
52	WATER PLAN & PROFILE - WL-A (1 OF 4)
53	WATER PLAN & PROFILE - WL-A (2 OF 4)
54	WATER PLAN & PROFILE - WL-A (3 OF 4)
55	WATER PLAN & PROFILE - WL-A (4 OF 4)
56	WATER PLAN & PROFILE - WL-B
57	WATER PLAN & PROFILE - WL-C & WL-D
58	WATER PLAN & PROFILE - WL-E (1 OF 2)
59	WATER PLAN & PROFILE - WL-E (2 OF 2)
60	WATER PLAN & PROFILE - WL-F
61	WATER PLAN & PROFILE - WL-G (1 OF 2)
62	WATER PLAN & PROFILE - WL-G (2 OF 2)
63	OVERALL WASTEWATER PLAN
64	WASTEWATER PLAN & PROFILE - WWL-A (1 OF 2)
65	WASTEWATER PLAN & PROFILE - WWL-A (2 OF 2)
66	WASTEWATER PLAN & PROFILE - WWL-B
67	WASTEWATER PLAN & PROFILE - WWL-C & WWL-D
68	WASTEWATER PLAN & PROFILE - WWL-E
69	WASTEWATER PLAN & PROFILE - WWL-F
70	WASTEWATER PLAN & PROFILE - WWL-G (1 OF 2)
71	WASTEWATER PLAN & PROFILE - WWL-G (2 OF 2)
72	WASTEWATER PLAN & PROFILE - WWL-H (1 OF 2)
73	WASTEWATER PLAN & PROFILE - WWL-H (2 OF 2)
74	WASTEWATER PLAN & PROFILE - WWL-I & J
75	WASTEWATER PLAN & PROFILE - WWL-K & L
76	EROSION CONTROL DETAILS
77	PAVING DETAILS (1 OF 2)
78	PAVING DETAILS (2 OF 2)
79	STORM DRAIN DETAILS
80	WATER QUALITY DETAILS
81	WATER DETAILS
82	WASTEWATER DETAIL

No.	REVISIONS	DATE	BY

BERRY CREEK HIGHLANDS - PHASES 6B & 7

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

COVER SHEET

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
1
OF 82

2024-9-CON

GENERAL NOTES

1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THESE PLANS, THE CITY OF GEORGETOWN "UNIFIED DEVELOPMENT CODE" AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS AND REQUIREMENTS.
3. CONTRACTOR SHALL CONTACT ALL FRANCHISE UTILITY COMPANIES TO HAVE THEM LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND DEPTH OF ALL FRANCHISE UTILITY SERVICES AND ANY REQUIRED RELOCATION AND/OR EXTENSIONS. SERVICES SHOWN ON THE PLANS ARE CONCEPTUAL.
4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING RELOCATION AND INSTALLATION OF FRANCHISE UTILITIES NECESSARY FOR ON AND OFF SITE CONSTRUCTION.
5. BRACING OF UTILITY POLES MAY BE REQUIRED BY UTILITY COMPANIES WHEN TRENCHING OR EXCAVATION IS IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR. THERE IS NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE VARIOUS PAY ITEMS FOR INSTALLATION OF PIPE.
6. THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY RECORDS AND PLANS AND ARE CONSIDERED APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ADJACENT AND/OR CONFLICTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE CONTRACTOR SHALL PRESERVE AND PROTECT PUBLIC AND PRIVATE UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT THEIR EXPENSE. THE ENGINEER SHALL BE NOTIFIED WHEN PROPOSED FACILITY GRADES CONFLICT WITH EXISTING UTILITY GRADES.
7. CONTRACTOR SHALL USE ALL NECESSARY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES.
8. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS SHOWN ON THE PLANS AND REVIEW ALL FIELD CONDITIONS, INCLUDING EXISTING GRADES AND UTILITY FLOW LINES, AND SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
9. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, LAWN SPRINKLER AND IRRIGATION SYSTEMS AT NO COST TO THE OWNER. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT (UNLESS OTHERWISE NOTED) AND IS NOT A SEPARATE PAY ITEM.
10. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS PRIOR TO CONSTRUCTION.
11. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF THE APPROVED CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN NEAT AND ACCURATE CONSTRUCTION RECORD PLANS.
13. CONNECTIONS TO EXISTING FACILITIES SHALL BE ACCOMPLISHED IN A NEAT AND PROFESSIONAL MANNER. WHEN FIELD CONDITIONS INDICATE ANY VARIANCE FROM DETAILED METHODS, THE CONTRACTOR SHALL PROVIDE COMPREHENSIVE AND DETAILED DRAWINGS (FOR APPROVAL) OF METHODS PROPOSED.
14. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER AND NOTIFICATION TO THE ENGINEER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE OWNER AND ENGINEER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
15. ALL COPIES OF COMPACTION, CONCRETE AND OTHER REQUIRED TEST RESULTS ARE TO BE SENT TO THE OWNER AND DESIGN ENGINEER OF RECORD DIRECTLY FROM THE TESTING AGENCY.
16. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO THE FINAL CONNECTION OF SERVICES.
17. CONTRACTOR SHALL VERIFY BENCHMARKS AND DATUM PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS.
18. ALL HORIZONTAL DIMENSIONS GIVEN ARE TO FACE OF CURB AND TO PIPE CENTERLINES, UNLESS OTHERWISE NOTED ON PLANS.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING. CONSTRUCTION STAKING SHALL BE PERFORMED BY A REGISTERED PUBLIC SURVEYOR IN THE STATE OF TEXAS.
20. THE CONTRACTOR SHALL TOPSOIL, SEED AND FERTILIZE ALL AREAS DISTURBED BY CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE WHATEVER MEASURES ARE NEEDED INCLUDING TEMPORARY IRRIGATION TO ENSURE FULL COVERAGE OF GRASSING. UNLESS OTHERWISE NOTED, PRIVATE LAWN AREAS AND PARKWAYS IN FRONT OF PRIVATE LAWN AREAS DISTURBED BY CONSTRUCTION SHALL BE REPLACED WITH BLOCK SOD OF A SIMILAR GRASS TO THAT EXISTING. ALL SEEDED OR SODDED AREAS SHALL RECEIVE SIX(6) INCHES OF TOPSOIL. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE JOB SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
21. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH. THE AREAS SHALL THEN BE SEEDED, IRRIGATED, AND STABILIZED AS SPECIFIED IN THE PLANS, AND MAINTAINED UNTIL SOIL IS STABILIZED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE JOB SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. ALL EARTHEN AREAS WILL BE STABILIZED AND MULCHED AS SHOWN ON THE LANDSCAPE, GRADING, AND EROSION CONTROL PLANS.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.
23. SOD MUST BE INSTALLED AND MAINTAINED ON EXPOSED SLOPES WITHIN TO PREVENT EROSION, SEDIMENTATION OR TURBID DISCHARGES.
24. CONTRACTOR IS TO CONSTRUCT A STABILIZED CONSTRUCTION EXIT AT ALL PRIMARY POINTS OF ACCESS. THIS STABILIZED EXIT SHALL BE CONSTRUCTED PER CITY DETAILS.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR MUST REVIEW AND MAINTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN WITH ALL CONDITIONS, ATTACHMENTS, EXHIBITS, AND PERMIT MODIFICATIONS IN GOOD CONDITION AT THE CONSTRUCTION SITE. THE COMPLETE SWPPP MUST BE MADE READILY AVAILABLE AT THE TIME OF AN ON-SITE INSPECTION TO: THE EXECUTIVE DIRECTOR; A FEDERAL, STATE, OR LOCAL AGENCY APPROVING SEDIMENT AND EROSION PLANS, GRADING PLANS, OR STORMWATER MANAGEMENT PLANS; LOCAL GOVERNMENT OFFICIALS; AND THE OPERATOR OF A MUNICIPAL SEPARATE STORM SEWER (MS4) RECEIVING DISCHARGES FROM THE SITE.
26. ANY ENTITY THAT MEETS THE DEFINITION OF A "PRIMARY OPERATOR" FOR A LARGE CONSTRUCTION ACTIVITY (FIVE OR MORE ACRES) SHALL BE RESPONSIBLE FOR COMPLETING AND SUBMITTING A NOTICE OF INTENT (NOI) AND A NOTICE OF TERMINATION (NOT) WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).
27. THE CONTRACTOR MUST CONSTRUCT AND MAINTAIN A PERMANENT STABLE PROTECTIVE COVER (GRASS) FOR EROSION AND SEDIMENT CONTROL ON ALL LAND SURFACES EXPOSED OR DISTURBED BY CONSTRUCTION OF THE PERMITTED PROJECT. THE PROTECTIVE COVER MUST BE INSTALLED WITHIN FOURTEEN DAYS AFTER FINAL GRADING OF THE AFFECTED LAND SURFACE. A PERMANENT STABLE COVER MUST BE ESTABLISHED WITHIN 60 DAYS OF IT'S INSTALLATION.
28. UPON COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL PROVIDE AS-BUILT PLANS IDENTIFYING ALL DEVIATIONS OR VARIATIONS OF ORIGINAL PLANS. AS-BUILT PLANS ARE SUBSIDIARY TO ALL OTHER BID ITEMS AND SHALL NOT BE PAID FOR AS A SEPARATE LINE ITEM.
29. DURING CONSTRUCTION, ALL MATERIAL TESTING SHALL BE COORDINATED WITH THE CITY OF GEORGETOWN CONSTRUCTION INSPECTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE CITY STANDARD SPECIFICATIONS. ALL SOILS TESTING IS THE RESPONSIBILITY OF AND WILL BE PAID FOR BY THE CONTRACTOR. MATERIAL TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
30. ALL EXISTING TRAFFIC AND STREET SIGNS DISTURBED SHALL BE REINSTALLED WHERE APPLICABLE BY THE CONTRACTOR.
31. ALL EXISTING SHRUBS, TREES, PLANTING, AND OTHER VEGETATION, OUTSIDE OF PROPERTY LIMITS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED WITH EQUIVALENT MATERIAL BY THE CONTRACTOR AT NO ADDITIONAL COST.
32. THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. DURING ALL CONSTRUCTION PHASES.
33. CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS OFFSITE FROM THE EXISTING ROADWAYS AND PROJECT SITE THAT ARE A RESULT OF THE PROPOSED CONSTRUCTION AS REQUESTED BY THE CITY OF GEORGETOWN. AT A MINIMUM, THIS TASK SHOULD OCCUR ONCE A WEEK.
34. CONNECTIONS TO EXISTING FACILITIES SHALL BE ACCOMPLISHED IN A NEAT AND PROFESSIONAL MANNER. WHEN FIELD CONDITIONS INDICATE ANY VARIANCE FROM DETAILED METHODS, THE CONTRACTOR SHALL PROVIDE COMPREHENSIVE AND DETAILED DRAWINGS (FOR APPROVAL) OF METHODS PROPOSED.
35. WATER SHALL NOT BE PERMITTED IN OPEN TRENCHES DURING CONSTRUCTION.
36. CONTRACTOR SHALL CONTACT THE DESIGNATED CONSTRUCTION INSPECTOR ASSIGNED TO THIS PROJECT AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION.
37. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A TRENCH SAFETY PLAN TO THE CITY OF GEORGETOWN PUBLIC WORKS DEPARTMENT AT THE TIME OF THE PRECONSTRUCTION MEETING, OR PRIOR TO BEGINNING CONSTRUCTION OF THESE IMPROVEMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY STANDARDS, TEXAS STATE LAW, AND O.S.H.A. STANDARDS FOR ALL EXCAVATION IN EXCESS OF FIVE FEET IN DEPTH. NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT WITHOUT THE PRIOR SPECIFIC WRITTEN APPROVAL OF THE CITY OF GEORGETOWN PUBLIC WORKS DEPARTMENT, OR DESIGNATED REPRESENTATIVE. ONSITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
38. CONTRACTOR TO REVIEW DESIGN INTENT OF THESE PLANS AND SUBMIT REQUESTS-FOR-INFORMATION IN A TIMELY MANNER PRIOR TO COMMENCING THAT WORK.
39. ALL APPURTENANCES INSTALLED IN PAVEMENT AREAS SHALL BE ADJUSTED AS REQUIRED TO BE FLUSH WITH FINISHED PAVEMENT.
40. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR COMPLETING AND IMPLEMENTING TRAFFIC CONTROL PLAN.

PAVING & STRIPING NOTES

1. ALL CONSTRUCTION SHALL BE IN GENERAL ACCORDANCE WITH THESE PLANS, CITY OF GEORGETOWN, TX STANDARD SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS.
2. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PAVING IMPROVEMENTS SHALL BE PERFORMED BY AN APPROVED AGENCY FOR TESTING MATERIALS. THE NOMINATION OF THE TESTING LABORATORY AND THE PAVEMENT OF SUCH TESTING SERVICES SHALL BE MADE BY THE CONTRACTOR. THE OWNER SHALL APPROVE THE LABORATORY NOMINATED TO DO THE TESTING OF MATERIALS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SHOW BY STANDARD TESTING PROCEDURES THAT THE WORK CONSTRUCTED DOES MEET THE REQUIREMENTS OF THE CITY'S SPECIFICATIONS AND THESE PLANS.
3. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAY APPROACHES PER CITY STANDARDS.
4. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
5. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT FOR PAVEMENT MARKINGS SHALL ADHERE TO CITY OF GEORGETOWN STANDARD DETAILS AND SPECIFICATIONS.
6. REFER TO GEOTECHNICAL REPORT FOR PAVING JOINT LAYOUT PLAN.
7. REFER TO GEOTECHNICAL REPORT FOR REINFORCEMENT STEEL.
8. REFER TO GEOTECHNICAL REPORT FOR SOIL COMPACTION SPECIFICATION.
9. FIRE LANES SHALL BE DESIGNATED BY CONTINUOUS PAINTED LINES FOUR (4) INCHES IN WIDTH ON EACH SIDE OF THE FIRE LANE STARTING AT THE ENTRANCE FROM THE STREET AND TO BE CONTINUED TO THE EXIT. SUCH LINES SHALL BE BRIGHT RED IN COLOR.
10. FIRE LANES ADJACENT TO CURBS SHALL BE OUTLINED BY A FOUR (4) INCH WIDE STRIP PAINTED BRIGHT RED IN COLOR ALONG THE CURB'S GUTTER LINE.
11. THE WORDS "FIRE LANE" AND "NO PARKING" SHALL BE STENCILED IN FOUR (4) INCH HIGH WHITE LETTERS ALTERNATELY EVERY FIFTEEN (15) FEET ALONG THE RED FIRE LANE STRIPES.
12. ALL HANDICAP RAMPING, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT THAT IS MOST CURRENT.
13. REFERENCE CITY OF GEORGETOWN, TX STANDARD CONSTRUCTION DETAILS FOR HANDICAP RAMP AND OTHER PAVING DETAILS.
14. CONTRACTOR RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY CITY OF GEORGETOWN, TX OF TRAFFIC CONTROL PLAN PRIOR TO START OF CONSTRUCTION.
15. SIDEWALKS ADJACENT TO CURB SHALL BE CONNECTED TO BACK OF CURB USING LONGITUDINAL BUTT JOINT.
16. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE LOCATED OUT OF THE PEDESTRIAN AND AUTOMOBILE ROUTES AND SHALL BE LOCATED BETWEEN THREE TO FIVE FEET BEHIND THE NEAREST BACK OF CURB. SIGN HEIGHT, LOCATION, AND STRUCTURE SHALL BE SUCH THAT THE SIGNS POSE NO THREAT TO PUBLIC SAFETY.
17. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED, FIELD ADJUSTMENTS OF LOCATION AND ORIENTATION OF THE SIGNS ARE TO BE MADE TO ACCOMPLISH THIS.
18. THE CONTRACTOR FOR THE PROJECT SHALL NOT PLACE ANY PERMANENT PAVEMENT UNTIL ALL SLEEVING FOR ELECTRIC, GAS, TELEPHONE, CABLE TV, SITE IRRIGATION, OR ANY OTHER UNDERGROUND UTILITY HAS BEEN INSTALLED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THAT ALL SLEEVING IS IN PLACE PRIOR TO PLACEMENT OF PERMANENT PAVEMENT.
19. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE HANDICAPPED ROUTES (PER A.D.A. & T.A.S) EXIST TO AND FROM EVERY DOOR. IN NO CASE SHALL HANDICAP RAMP SLOPES EXCEED 1 VERTICAL TO 12 HORIZONTAL. IN NO CASE SHALL SIDEWALK CROSS SLOPES EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPES EXCEED 5.0 PERCENT. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR A.D.A. AND T.A.S. COMPLIANCE ISSUES.
20. STREETS, SIDEWALKS, DRIVEWAYS, AND STORM DRAINAGE FACILITIES IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CITY OF GEORGETOWN INFRASTRUCTURE DESIGN & DEVELOPMENT STANDARDS MANUAL, LATEST EDITION.
21. FIRE LANES SHALL REMAIN OPEN/ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION; FIRE LANE SHALL BE INSTALLED & ACCEPTED BY THE CITY PRIOR TO ANY CONSTRUCTION ABOVE THE FOUNDATION.

GRADING NOTES

1. ALL CONSTRUCTION SHALL BE IN GENERAL ACCORDANCE WITH THESE PLANS, CITY OF GEORGETOWN, TX STANDARD SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS.
2. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREAS REFLECT TOP OF PAVEMENT SURFACE. ADD .50' TO PAVING GRADE FOR TOP OF CURB GRADE. THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF PAVEMENT.
3. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE SILT FENCES (OR OTHER METHODS APPROVED BY THE ENGINEER AND CITY) AS REQUIRED TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL EROSION, CONSERVATION, AND SILTATION REQUIREMENTS. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION. CONTRACTOR IS RESPONSIBLE FOR FILING N.O.I. AND N.O.T. WITH THE TCEQ. CONTRACTOR SOLELY RESPONSIBLE FOR ALL MANDATED SWPPP RECORD KEEPING AND REPORTING.
4. ALL EXCAVATING IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY THE GRADING CONTRACTOR AT HIS EXPENSE.
5. BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF PAVEMENT AND OTHER ITEMS ESTABLISHED BY THE PLANS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
6. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS AND GEOTECHNICAL REPORT FOR STRUCTURAL SCOPE AND PAVING SUBGRADE INFORMATION.
7. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND MOISTURE CONDITION ALL FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
8. GRADING CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS.
9. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PAVING IMPROVEMENTS SHALL BE PERFORMED BY AN APPROVED AGENCY FOR TESTING MATERIALS. THE NOMINATION OF THE TESTING LABORATORY AND THE PAYMENTS FOR SUCH TESTING SERVICES SHALL BE MADE BY THE CONTRACTOR. THE OWNER SHALL APPROVE THE LABORATORY NOMINATED TO DO THE TESTING OF MATERIALS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SHOW BY STANDARD TESTING PROCEDURES THAT THE WORK CONSTRUCTED DOES MEET THE REQUIREMENTS OF THE CITY'S SPECIFICATIONS AND THESE PLANS.
10. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY.
11. REFER TO SITE PLAN AND/OR DIMENSION CONTROL PLAN AND FINAL PLAT FOR HORIZONTAL DIMENSIONS.
12. REFER TO EROSION CONTROL PLAN FOR EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION.
13. NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE. EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE.
14. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL PRIOR TO COMMENCING CONSTRUCTION AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE CONSTRUCTION COMMENCES.
15. AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORM RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER AND ENGINEER IF ANY DISCREPANCIES ARE DISCOVERED.

STORM SEWER NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AND SHALL NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN) WITHIN SCOPE OF CONSTRUCTION. IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT HIS OWN EXPENSE.
2. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER.
3. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.
4. THE INSPECTOR SHALL INSPECT ALL "PUBLIC" CONSTRUCTION. THE CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.
5. ALL PVC TO RCP CONNECTIONS SHALL BE CONSTRUCTED WITH CONCRETE COLLARS.
6. ALL ONSITE STORM SEWER LINES SHALL BE HDPE, ALL PRIVATE STORM SHALL BE NOTED AS ON PLANS. CONTRACTOR TO CONTACT ENGINEER WITH QUESTIONS ABOUT PIPE MATERIAL PRIOR TO ORDERING. CONTRACTOR SHALL SUBMIT TECHNICAL DATA TO PROJECT ENGINEER AND CITY ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIAL.
7. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION FOR NORTH CENTRAL TEXAS, LATEST EDITION, AND ANY SPECIAL PROVISION AS APPROVED BY THE CITY OF GEORGETOWN, TX.
8. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION STAKING FOR ALL STORM SEWER LINES AND OTHER UTILITIES.
9. EMBEDMENT FOR ALL ONSITE SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY OF GEORGETOWN, TX STANDARD DETAILS.
10. REFER TO TCEQ DESIGN GUIDELINES (CHAPTER 290) FOR ALL UTILITY CROSSINGS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AND IMPLEMENTING A TRENCH PROTECTION PLAN FOR ALL OPEN TRENCH EXCAVATION.
12. USE 4 FOOT JOINTS WITH BEVELED ENDS IF RADIUS OF STORM SEWER IS LESS THAN 100 FEET.
13. ALL PRIVATE LANDSCAPE AREA DRAINS SHALL BE OF MATERIAL APPROVED BY BOTH ENGINEER AND LANDSCAPE ARCHITECT.

WATER AND SANITARY SEWER NOTES

1. ALL MATERIALS AND WORKMANSHIP TO CONFORM TO THE REQUIREMENTS SET FORTH IN THE CITY OF GEORGETOWN WATER AND WASTEWATER CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION.
2. WATER PIPE SHALL BE PVC C-900 DR 18, EXCEPT WHEN OTHERWISE NOTED.
3. SEWER PIPE SHALL BE MINIMUM SDR 35 PVC OR ULTRA RIB PVC SDR 26.
4. WATER MAINS SHALL HAVE THE FOLLOWING MINIMUM COVER BELOW STREET GRADES:

SIZE	COVER
6"	3.5'
8"	4.0'
10"	4.0'
12"	5.0'
LARGER	AS SHOWN ON PLANS

5. PLASTIC TAPE FOR UTILITY SERVICES SHALL BE ATTACHED TO THE ENDS OF ALL WATER AND SEWER SERVICE LINES AND EXTEND ABOVE GROUND LEVEL. THE TAPE SHALL MEET THE FOLLOWING SPECIFICATION:
   A. "GEORGETOWN MARKING TAPE" OR APPROVED EQUAL.
   B. ROLL MARKED CONTINUOUSLY, "CAUTION WATER LINE" OR "CAUTION SEWER LINE".
   C. SIX (6) INCHES IN WIDTH.
   D. RED TAPE FOR SEWER SERVICES.
   E. BLUE TAPE FOR WATER SERVICES.
6. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY EXACT LOCATIONS OF EXISTING PUBLIC AND PRIVATE UTILITIES AND SERVICES PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL CALL 811 FOR FIELD LOCATION OF EXISTING UTILITIES. CALL AT LEAST 48 HOURS BEFORE LOCATIONS ARE NEEDED. NOTE THAT THE DIG TESS SERVICE DOES NOT LOCATE ALL UTILITIES, ONLY THOSE REGISTERED WITH THE SERVICE.
7. REFER TO SITE GRADING PLANS, PAVING PLANS, AND LANDSCAPE PLANS FOR FINAL GRADES FOR DETERMINING PROPOSED MANHOLE RIM ELEVATIONS.
8. LOCATIONS AND SIZES OF EXISTING PUBLIC AND PRIVATE UTILITIES SHOWN ON THESE PLANS ARE FROM CITY AND UTILITY COMPANY RECORDS ONLY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR LOCATING ALL UTILITIES AND FOR DAMAGES RESULTING FROM FAILURE TO DO SO.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING "RECORD" PLANS TO THE ENGINEER SHOWING THE LOCATION OF WATER AND SEWER SERVICES AND ANY DEVIATIONS FROM PLANS MADE DURING CONSTRUCTION.
10. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN, COORDINATING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING AND/OR CROSSING OTHER UTILITIES.
11. ALL WATER AND SANITARY SEWER SERVICES SHALL TERMINATE FIVE (5) FEET OUTSIDE THE BUILDING, UNLESS NOTED OTHERWISE.
12. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE UTILITIES. ALL PUBLIC PIPE, STRUCTURES, AND FITTINGS SHALL BE INSPECTED BY THE CITY INSPECTOR PRIOR TO BEING COVERED. THE INSPECTOR MUST ALSO BE PRESENT DURING DISINFECTION AND PRESSURE TESTING OF ALL MAINS. THE CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.
13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A TRENCH EXCAVATION PROTECTION PLAN, SEALED BY A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF TEXAS, FOR ALL TRENCHES DEEPER THAN FIVE (5) FEET.
14. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION STAKING FOR ALL WATER AND SANITARY SEWER LINES AND OTHER UTILITIES.
15. REFER TO TCEQ DESIGN GUIDELINES (CHAPTER 290) FOR ALL UTILITY CROSSINGS.
16. CONTRACTOR TO SEQUENCE CONSTRUCTION AS TO AVOID INTERRUPTION OF WATER OR SANITARY SEWER SERVICE TO SURROUNDING AREAS.
17. EXISTING MANHOLE TOPS, VALVE BOXES, ETC. ARE TO BE ADJUSTED AS REQUIRED TO MATCH PROPOSED GRADES.
18. FIRE HYDRANTS SHALL BE LOCATED A MINIMUM OF TWO (2) FEET AND A MAXIMUM OF SIX (6) FEET BEHIND THE CURB LINE OF FIRE LANE AND STREET.
19. ANY WATER OR SANITARY SEWER SERVICE LOCATED OUTSIDE OF A STREET, ALLEY OR EASEMENT SHALL BE INSTALLED BY A PLUMBER AND BE INSPECTED BY CODE ENFORCEMENT.

CITY OF GEORGETOWN NOTES:

1. THE CONSTRUCTION PORTION OF THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.
4. WASTEWATER MAINS AND SERVICE LINES SHALL BE SDR 26 PVC.
5. WASTEWATER MAINS SHALL BE INSTALLED WITHOUT HORIZONTAL OR VERTICAL BENDS.
6. MAXIMUM DISTANCE BETWEEN WASTEWATER MANHOLES IS 500 FEET.
7. WASTEWATER MAINS SHALL BE LOW PRESSURE AIR TESTED AND MANDREL TESTED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS.
8. WASTEWATER MANHOLES SHALL BE VACUUM TESTED AND COATED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS.
9. WASTEWATER MAINS SHALL BE CAMERA TESTED BY THE CONTRACTOR AND SUBMITTED TO THE CITY ON DVD FORMAT PRIOR TO PAVING THE STREETS.
10. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.
11. PRIVATE WATER SYSTEM FIRE LINES SHALL BE DUCTILE IRON PIPING FROM THE WATER MAIN TO THE BUILDING SPRINKLER SYSTEM, AND 200 PSI C900 PVC FOR ALL OTHERS.
12. PUBLIC WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.
13. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.
14. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
15. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN STANDARDS AND SPECIFICATIONS.
16. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.
17. FLEXIBLE BASE MATERIAL FOR PUBLIC STREETS SHALL BE TXDOT TYPE A GRADE 1.
18. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE D UNLESS OTHERWISE SPECIFIED AND SHALL BE A MINIMUM OF 2 INCHES THICK ON PUBLIC STREETS AND ROADWAYS.
19. ALL SIDEWALK RAMPS AND SIDEWALK ALONG PARKLAND, OPEN SPACE, OR OTHER NON-RESIDENTIAL LOTS ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.
20. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 2 YEARS IN THE AMOUNT OF 10% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.
21. RECORD DRAWINGS OF THE PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANCE OF THE PROJECT. THESE DRAWINGS SHALL BE ON MYLAR OR ON TIFF OR PDF DISK (300DPI). IF A DISK IS SUBMITTED, A BOND SET SHALL BE INCLUDED WITH THE DISK.

DISTRICT ENGINEER NOTES:

THE DISTRICT ENGINEER, JONES-HEROY & ASSOCIATES, INC. (KEN HEROY, PE. 512-989-2200) SHALL BE CONTACTED 48 HOURS PRIOR TO:

I) PRE-CONSTRUCTION MEETINGS

II) BEGINNING EACH PHASE OF CONSTRUCTION

III) TESTING OF WATER AND/OR WASTEWATER LINES; AND,

IV) FINAL WALK-THROUGH OF FACILITIES

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

GENERAL NOTES

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
2
OF 82

2024-9-CON

KH GENERAL NOTES

OVERALL:

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, CITY (OR TOWN) STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION AND DETAIL SHALL BE FOLLOWED.
2. THE CONTRACTOR SHALL COMPLY WITH CITY (OR TOWN) "GENERAL NOTES" FOR CONSTRUCTION, IF EXISTING AND REQUIRED BY THE CITY. FOR INSTANCES WHERE THEY CONFLICT WITH THESE KH GENERAL NOTES, THEN THE MORE RESTRICTIVE SHALL APPLY.
3. THE CONTRACTOR SHALL FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE AUTHORITIES' SPECIFICATIONS AND REQUIREMENTS.
4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXISTING CONDITIONS.
5. THE EXISTING CONDITIONS SHOWN ON THESE PLANS WERE PROVIDED BY THE TOPOGRAPHIC SURVEY PREPARED BY THE PROJECT SURVEYOR, AND ARE BASED ON THE BENCHMARKS SHOWN. THE CONTRACTOR SHALL REFERENCE THE SAME BENCHMARKS.
6. THE CONTRACTOR SHALL REVIEW AND VERIFY THE EXISTING TOPOGRAPHIC SURVEY SHOWN ON THE PLANS REPRESENTS EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES FOUND TO THE OWNER AND ENGINEER IMMEDIATELY.
7. IF THE CONTRACTOR DOES NOT ACCEPT THE EXISTING TOPOGRAPHIC SURVEY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED PROFESSIONAL LAND SURVEYOR TO THE OWNER AND ENGINEER FOR REVIEW.
8. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION SURVEYING AND STAKING.
9. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL, INCLUDING BENCHMARKS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS. PROPERTY LINES AND CORNERS SHALL BE HELD AS THE HORIZONTAL CONTROL.
10. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS, ELEVATIONS, AND FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT, ENGINEER, AND IF APPLICABLE THE CITY AND OWNER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE CITY, ENGINEER, AND OWNER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
11. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. OWNER/ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH CONSTRUCTION.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK TO HAVE THEM LOCATE THEIR EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.
13. CONTRACTOR SHALL CALL TEXAS 811 AN ADEQUATE AMOUNT OF TIME PRIOR TO COMMENCING CONSTRUCTION OR ANY EXCAVATION.
14. CONTRACTOR SHALL USE EXTREME CAUTION AS THE SITE CONTAINS VARIOUS KNOWN AND UNKNOWN PUBLIC AND PRIVATE UTILITIES.
15. THE LOCATIONS, ELEVATIONS, DEPTH, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY MAPS AND PLANS, AND ARE CONSIDERED APPROXIMATE AND INCOMPLETE. IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY THE PRESENCE, LOCATION, ELEVATION, DEPTH, AND DIMENSION OF EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE ENGINEER SHALL BE NOTIFIED WHEN A PROPOSED IMPROVEMENT CONFLICTS WITH AN EXISTING UTILITY.
16. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY ADJUSTMENTS AND RELOCATIONS OF EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO, ADJUSTING EXISTING MANHOLES TO MATCH PROPOSED GRADE, RELOCATING EXISTING POLES AND GUY WIRES THAT ARE LOCATED IN PROPOSED DRIVEWAYS, ADJUSTING THE HORIZONTAL OR VERTICAL ALIGNMENT OF EXISTING UNDERGROUND UTILITIES TO ACCOMMODATE PROPOSED GRADE OR CROSSING WITH A PROPOSED UTILITY, AND ANY OTHERS THAT MAY BE ENCOUNTERED THAT ARE UNKNOWN AT THIS TIME AND NOT SHOWN ON THESE PLANS.
17. CONTRACTOR SHALL ARRANGE FOR OR PROVIDE, AT ITS EXPENSE, ALL GAS, TELECOMMUNICATIONS, CABLE, OVERHEAD AND UNDERGROUND POWER LINE, AND UTILITY POLE ADJUSTMENTS NEEDED.
18. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF FRANCHISE UTILITIES THAT ARE NECESSARY FOR ON-SITE AND OFF-SITE CONSTRUCTION, AND SERVICE TO THE PROPOSED DEVELOPMENT.
19. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTORS' FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED BY THE CONTRACTOR AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK.
20. BRACING OF UTILITY POLES MAY BE REQUIRED BY THE UTILITY COMPANIES WHEN TRENCHING OR EXCAVATING IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR, WITH NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE PAY ITEM.
21. CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND UTILITY OWNER REGULATIONS PERTAINING TO WORK SETBACKS FROM POWER LINES.
22. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS, APPROVALS, AND BONDS PRIOR TO CONSTRUCTION.
23. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, GEOTECHNICAL REPORT AND ADDENDA, PROJECT AND CITY SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.
24. ALL SHOP DRAWINGS AND OTHER DOCUMENTS THAT REQUIRE ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, SO THAT NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE IS AVAILABLE.
25. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES, AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO USE OF THE FACILITY AND THE FINAL CONNECTION OF SERVICES.
26. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
27. CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.
28. ALL SYMBOLS SHOWN ON THESE PLANS (E.G. FIRE HYDRANT, METERS, VALVES, INLETS, ETC....) ARE FOR PRESENTATION PURPOSES ONLY AND ARE NOT TO SCALE. CONTRACTOR SHALL COORDINATE FINAL SIZES AND LOCATIONS WITH APPROPRIATE CITY INSPECTOR.
29. THE SCOPE OF WORK FOR THE CIVIL IMPROVEMENTS SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. REFERENCE THE BUILDING PLANS (E.G. ARCHITECTURAL, STRUCTURAL, MEP) FOR AREAS WITHIN 5-FEET OF THE BUILDING AND WITHIN THE BUILDING FOOTPRINT.
30. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR ALL FINAL BUILDING DIMENSIONS.
31. THE PROPOSED BUILDING FOOTPRINT(S) SHOWN IN THESE PLANS WAS PROVIDED TO KIMLEY-HORN AND ASSOCIATES, INC. (KH) BY THE PROJECT ARCHITECT AT THE TIME THESE PLANS WERE PREPARED. IT MAY NOT BE THE FINAL CORRECT VERSION BECAUSE THE BUILDING DESIGN WAS ONGOING. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING THE FINAL CORRECT VERSION OF THE BUILDING FOOTPRINT WITH THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO LAYOUT. DIMENSIONS AND/OR COORDINATES SHOWN ON THESE PLANS WERE BASED ON THE ABOVE STATED ARCHITECTURAL FOOTPRINT, AND ARE THEREFORE A PRELIMINARY LOCATION OF THE BUILDING. THE CONTRACTOR IS SOLELY RESPONSIBLE TO VERIFY WHAT PART OF THE BUILDING THE ARCHITECT'S FOOTPRINT REPRESENTS (E.G. SLAB, OUTSIDE WALL, MASONRY LEDGE, ETC.....) AND TO CONFIRM ITS FINAL POSITION ON THE SITE BASED ON THE FINAL ARCHITECTURAL FOOTPRINT, CIVIL DIMENSION CONTROL PLAN, SURVEY BOUNDARY AND/OR PLAT. ANY DIFFERENCES FOUND SHALL BE REPORTED TO KH IMMEDIATELY.
32. ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.
33. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL MATERIALS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND COMPLY WITH CITY STANDARD SPECIFICATIONS AND GEOTECHNICAL REPORT. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING MATERIALS. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR MATERIALS TESTING.
34. ALL COPIES OF MATERIALS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.
35. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE MATERIALS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
36. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.
37. ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS OUTSIDE OF THE WORK AREA WILL BE ALLOWED. ANY DAMAGE RESULTING THEREFROM SHALL BE CONTRACTOR'S SOLE RESPONSIBILITY TO REPAIR.
38. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, MANHOLES, POLES, GUY WIRES, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, COMMUNICATION BOXES/PEDESTALS, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES AT NO COST TO THE OWNER.
39. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY OR PUBLIC IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCES, WALLS, SIGNS, PAVEMENT, CURBS, UTILITIES, SIDEWALKS, GRASS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS, ETC.... TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE OWNER.
40. ALL AREAS IN EXISTING RIGHT-OF-WAY DISTURBED BY SITE CONSTRUCTION SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER, INCLUDING AS NECESSARY GRADING, LANDSCAPING, CULVERTS, AND PAVEMENT.
41. THE CONTRACTOR SHALL SALVAGE ALL EXISTING POWER POLES, SIGNS, WATER VALVES, FIRE HYDRANTS, METERS, ETC... THAT ARE TO BE RELOCATED DURING CONSTRUCTION.
42. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
43. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
44. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.
45. SITE SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
46. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE ENGINEER'S SEAL HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL REQUIRED SAFETY PROCEDURES AND PROGRAMS.
47. SIGNS RELATED TO SITE OPERATION OR SAFETY ARE NOT INCLUDED IN THESE PLANS.
48. CONTRACTOR OFFICE AND STAGING AREA SHALL BE AGREED ON BY THE OWNER AND CONTRACTOR PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS FOR THE CONSTRUCTION OFFICE, TRAILER, STORAGE, AND STAGING OPERATIONS AND LOCATIONS.
49. LIGHT POLES, SIGNS, AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN ACCESSIBLE ROUTES.
50. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
51. TOP RIM ELEVATIONS OF ALL EXISTING AND PROPOSED MANHOLES SHALL BE COORDINATED WITH TOP OF PAVEMENT OR FINISHED GRADE AND SHALL BE ADJUSTED TO BE FLUSH WITH THE ACTUAL FINISHED GRADE AT THE TIME OF PAVING.
52. CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED VALVES, FIRE HYDRANTS, AND OTHER UTILITY APPURTENANCES TO MATCH ACTUAL FINISHED GRADES AT THE TIME OF PAVING.
53. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND PHASING, AND SHALL CONTACT THE APPROPRIATE CITY OFFICIALS, INCLUDING BUILDING OFFICIAL, ENGINEERING INSPECTOR, AND FIRE MARSHALL TO LEARN OF ANY REQUIREMENTS.
54. CONTRACTOR IS RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY THE CITY OF A TRAFFIC CONTROL PLAN PRIOR TO THE START OF CONSTRUCTION, AND THEN THE IMPLEMENTATION OF THE PLAN.
55. CONTRACTOR SHALL KEEP A NEAT AND ACCURATE RECORD OF CONSTRUCTION, INCLUDING ANY DEVIATIONS OR VARIANCES FROM THE PLANS.
56. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT PLANS TO THE ENGINEER AND CITY IDENTIFYING ALL DEVIATIONS AND VARIATIONS FROM THESE PLANS MADE DURING CONSTRUCTION.

EROSION CONTROL:

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.
2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000".
3. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBANCE.
4. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT.
5. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE.
6. CONTRACTOR SHALL DOCUMENT THE DATES OF INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL FOR EACH BMP EMPLOYED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE.
7. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS.
8. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED.
9. CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES NEEDED DUE TO PROJECT PHASING.
10. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
11. OFF-SITE SOIL BORROW, SPOIL, AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.
12. ALL STAGING, STOCKPILES, SPOIL, AND STORAGE SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. PROTECTIVE MEASURES SHALL BE PROVIDED IF NEEDED TO ACCOMPLISH THIS REQUIREMENT, SUCH AS COVERING OR ENCIRCLING THE AREA WITH AN APPROPRIATE BARRIER.
13. CONTRACTORS SHALL INSPECT ALL EROSION CONTROL DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN THE SWPPP BOOKLET IF APPLICABLE, TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY.
14. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH CITY SPECIFICATIONS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT ALL TIMES FOR ALL INGRESS/EGRESS.
15. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE REMOVED IMMEDIATELY.
16. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY OWNER AND CITY. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS.
17. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP.
18. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND CITY STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE PLANS, THEN THE CONTRACTOR SHALL ARRANGE FOR AN APPROPRIATE DESIGN TO BE PROVIDED.
19. ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR.
20. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE.
21. TEMPORARY SEEDING OR OTHER APPROVED STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE.
22. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE MATERIAL, AND TRASH AS CONSTRUCTION PROGRESSES.
23. UPON COMPLETION OF FINE GRADING, ALL SURFACES OF DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS ACHIEVED WHEN THE AREA IS EITHER COVERED BY PERMANENT IMPERVIOUS STRUCTURES, SUCH AS BUILDINGS, SIDEWALK, PAVEMENT, OR A UNIFORM PERENNIAL VEGETATIVE COVER.
24. AT THE CONCLUSION OF THE PROJECT, ALL INLETS, DRAIN PIPE, CHANNELS, DRAINAGEWAYS AND BORROW DITCHES AFFECTED BY THE CONSTRUCTION SHALL BE DREDGED, AND THE SEDIMENT GENERATED BY THE PROJECT SHALL BE REMOVED AND DISPOSED IN ACCORDANCE WITH APPLICABLE REGULATIONS.
25. ANY SEQUENCE OF CONSTRUCTION SHOWN HEREON IS A GENERAL OVERVIEW AND IS INTENDED TO CONVEY THE GENERAL CONCEPTS OF THE EROSION CONTROL DESIGN AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION PURPOSES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETAILED PHASING AND CONSTRUCTION SEQUENCING NECESSARY TO CONSTRUCT THE PROPOSED IMPROVEMENTS INCLUDED IN THESE PLANS. THE CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING IMMEDIATELY, PRIOR TO AND/OR DURING CONSTRUCTION IF ANY ADDITIONAL INFORMATION ON THE CONSTRUCTION SEQUENCE IS NECESSARY. CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND ALL OTHER APPLICABLE LAWS.

STORM WATER DISCHARGE AUTHORIZATION:

1. CONTRACTOR SHALL COMPLY WITH ALL TCEQ AND EPA STORM WATER POLLUTION PREVENTION REQUIREMENTS.
2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000.
3. THE CONTRACTOR SHALL ENSURE THAT ALL PRIMARY OPERATORS SUBMIT A NOI TO TCEQ AT LEAST SEVEN DAYS PRIOR TO COMMENCING CONSTRUCTION (IF APPLICABLE), OR IF UTILIZING ELECTRONIC SUBMITTAL, PRIOR TO COMMENCING CONSTRUCTION. ALL PRIMARY OPERATORS SHALL PROVIDE A COPY OF THE SIGNED NOI TO THE OPERATOR OF ANY MS4 (TYPICALLY THE CITY) RECEIVING DISCHARGE FROM THE SITE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE, INCLUDING POSTING SITE NOTICE, INSPECTIONS, DOCUMENTATION, AND SUBMISSION OF ANY INFORMATION REQUIRED BY THE TCEQ AND EPA (E.G. NOI).
5. ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN THE REQUIRED CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP.
6. A COPY OF THE SWPPP, INCLUDING NOI, SITE NOTICE, CONTRACTOR CERTIFICATIONS, AND ANY REVISIONS, SHALL BE SUBMITTED TO THE CITY BY THE CONTRACTOR AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION.
7. A NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO TCEQ BY ANY PRIMARY OPERATOR WITHIN 30 DAYS AFTER ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY STRUCTURES, A TRANSFER OF OPERATIONAL CONTROL HAS OCCURRED, OR THE OPERATOR HAS OBTAINED ALTERNATIVE AUTHORIZATION UNDER A DIFFERENT PERMIT. A COPY OF THE NOT SHALL BE PROVIDED TO THE OPERATOR OF ANY MS4 RECEIVING DISCHARGE FROM THE SITE.

DEMOLITION:

1. KH IS NOT RESPONSIBLE FOR THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THIS DEMOLITION PLAN. THIS PRELIMINARY DEMOLITION PLAN SIMPLY INDICATES THE KNOWN OBJECTS ON THE SUBJECT TRACT THAT ARE TO BE DEMOLISHED AND REMOVED FROM THE SITE.
2. KH DOES NOT WARRANT OR REPRESENT THAT THE PLAN, WHICH WAS PREPARED BASED ON SURVEY AND UTILITY INFORMATION PROVIDED BY OTHERS, SHOWS ALL IMPROVEMENTS AND UTILITIES, THAT THE IMPROVEMENTS AND UTILITIES ARE SHOWN ACCURATELY, OR THAT THE UTILITIES SHOWN CAN BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ITS OWN SITE RECONNAISSANCE TO SCOPE ITS WORK AND TO CONFIRM WITH THE OWNERS OF IMPROVEMENTS AND UTILITIES THE ABILITY AND PROCESS FOR THE REMOVAL OF THEIR FACILITIES.
3. THIS PLAN IS INTENDED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR IS STRONGLY CAUTIONED TO REVIEW THE FOLLOWING REPORTS DESCRIBING SITE CONDITIONS PRIOR TO BIDDING AND IMPLEMENTING THE DEMOLITION PLAN:
   a. ENVIRONMENTAL SITE ASSESSMENT PROVIDED BY THE OWNER,
   b. ASBESTOS BUILDING INSPECTION REPORT(S) PROVIDED BY THE OWNER,
   c. GEOTECHNICAL REPORT PROVIDED BY THE OWNER.
   d. OTHER REPORTS THAT ARE APPLICABLE AND AVAILABLE.
5. CONTRACTOR SHALL CONTACT THE OWNER TO VERIFY WHETHER ADDITIONAL REPORTS OR AMENDMENTS TO THE ABOVE CITED REPORTS HAVE BEEN PREPARED AND TO OBTAIN/REVIEW/AND COMPLY WITH THE RECOMMENDATION OF SUCH STUDIES PRIOR TO STARTING ANY WORK ON THE SITE.
6. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW THE SITE, DETERMINE THE APPLICABLE REGULATIONS, RECEIVE THE REQUIRED PERMITS AND AUTHORIZATIONS, AND COMPLY.
7. KH DOES NOT REPRESENT THAT THE REPORTS AND SURVEYS REFERENCED ABOVE ARE ACCURATE, COMPLETE, OR COMPREHENSIVE SHOWING ALL ITEMS THAT WILL NEED TO BE DEMOLISHED AND REMOVED.
8. SURFACE PAVEMENT INDICATED MAY OVERLAY OTHER HIDDEN STRUCTURES, SUCH AS ADDITIONAL LAYERS OF PAVEMENT, FOUNDATIONS OR WALLS, THAT ARE ALSO TO BE REMOVED.

GRADING:

1. THE CONTRACTOR AND GRADING SUBCONTRACTOR SHALL VERIFY THE SUITABILITY OF EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE CIVIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL OBTAIN ANY REQUIRED GRADING PERMITS FROM THE CITY.
3. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREA REFLECT TOP OF PAVEMENT SURFACE. IN LOCATIONS ALONG A CURB LINE, ADD 6-INCHES (OR THE HEIGHT OF THE CURB) TO THE PAVING GRADE FOR TOP OF CURB ELEVATION.
4. PROPOSED SPOT ELEVATIONS AND CONTOURS OUTSIDE THE PAVEMENT ARE TO TOP OF FINISHED GRADE.
5. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY.
6. ALL FINISHED GRADES SHALL TRANSITION UNIFORMLY BETWEEN THE FINISHED ELEVATIONS SHOWN.
7. CONTOURS AND SPOT GRADES SHOWN ARE ELEVATIONS OF TOP OF THE FINISHED SURFACE. WHEN PERFORMING THE GRADING OPERATIONS, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE ELEVATION HOLD-DOWN ALLOWANCE FOR THE THICKNESS OF PAVEMENT, SIDEWALK, TOPSOIL, MULCH, STONE, LANDSCAPING, RIP-RAP AND ALL OTHER SURFACE MATERIALS THAT WILL CONTRIBUTE TO THE TOP OF FINISHED GRADE. FOR EXAMPLE, THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF THE PAVEMENT SECTION.
8. NO REPRESENTATIONS OF EARTHWORK QUANTITIES OR SITE BALANCE ARE MADE BY THESE PLANS. THE CONTRACTOR SHALL PROVIDE THEIR OWN EARTHWORK CALCULATION TO DETERMINE THEIR CONTRACT QUANTITIES AND COST. ANY SIGNIFICANT VARIANCE FROM A BALANCED SITE SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CIVIL ENGINEER.
9. ALL GRADING AND EARTHWORK SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.
10. ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.
11. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF GRADING. REFERENCE EROSION CONTROL PLAN, DETAILS, GENERAL NOTES, AND SWPPP FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF THE PROJECT'S PROPERTY LINE AND SITE IMPROVEMENTS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
13. CONTRACTOR TO DISPOSE OF ALL EXCESS EXCAVATION MATERIALS IN A MANNER THAT ADHERES TO LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS. THE CONTRACTOR SHALL KEEP A RECORD OF WHERE EXCESS EXCAVATION WAS DISPOSED, ALONG WITH THE RECEIVING LANDOWNER'S APPROVAL TO DO SO.
14. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF TOPSOIL AT THE COMPLETION OF FINE GRADING. CONTRACTOR SHALL REFER TO LANDSCAPE ARCHITECTURE PLANS FOR SPECIFICATIONS AND REQUIREMENTS FOR TOPSOIL.
15. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
16. NO EARTHWORK FILL SHALL BE PLACED IN ANY EXISTING DRAINAGE WAY, SWALE, CHANNEL, DITCH, CREEK, OR FLOODPLAIN FOR ANY REASON OR ANY LENGTH OF TIME, UNLESS THESE PLANS SPECIFICALLY INDICATE THIS IS REQUIRED.
17. TEMPORARY CULVERTS MAY BE REQUIRED IN SOME LOCATIONS TO CONVEY RUN-OFF.
18. REFER TO DIMENSION CONTROL PLAN, AND PLAT FOR HORIZONTAL DIMENSIONS.
19. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND CONDITION FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
20. CONTRACTOR IS RESPONSIBLE FOR ALL SOILS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL SOILS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND SHALL COMPLY WITH CITY STANDARD SPECIFICATIONS AND THE GEOTECHNICAL REPORT. SOILS TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING SOILS. THE OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR SOILS TESTING.
21. ALL COPIES OF SOILS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.
22. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE SOILS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
23. THE SCOPE OF WORK FOR CIVIL IMPROVEMENT SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND STRUCTURAL PLANS AND SPECIFICATIONS FILL, CONDITIONING, AND PREPARATION IN THE BUILDING PAD.
24. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.
25. CONTRACTOR SHALL ENSURE THAT SUFFICIENT POSITIVE SLOPE AWAY FROM THE BUILDING PAD IS ACHIEVED FOR ENTIRE PERIMETER OF THE PROPOSED BUILDING(S) DURING GRADING OPERATIONS AND IN THE FINAL CONDITION. IF THE CONTRACTOR OBSERVES THAT THIS WILL NOT BE ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO REVIEW THE LOCATION.
26. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY, AT NO ADDITIONAL COST TO THE OWNER.
27. CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS NEEDED FOR GRADING OPERATIONS AND TO ACCOMMODATE PROPOSED GRADE, INCLUDING THE UNKNOWN UTILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL REFER TO THE GENERAL NOTES "OVERALL" SECTION THESE PLANS FOR ADDITIONAL INFORMATION.
28. EXISTING TREE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES FOUND IN THE FIELD THAT AFFECT THE GRADING PLAN TO THE CIVIL ENGINEER.
29. CONTRACTOR SHALL FIELD VERIFY ALL PROTECTED TREE LOCATIONS, INDIVIDUAL PROTECTED TREE CRITICAL ROOT ZONES, AND PROPOSED SITE GRADING, AND NOTIFY THE CIVIL ENGINEER AND LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH THE TREE PRESERVATION PLAN BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING THE WORK.
30. TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY STANDARD TREE PROTECTION DETAILS AND THE APPROVED TREE PRESERVATION PLANS BY THE LANDSCAPE ARCHITECT.
31. CONTRACTOR SHALL REFER TO THE LANDSCAPING AND TREE PRESERVATIONS PLANS FOR ALL INFORMATION AND DETAILS REGARDING EXISTING TREES TO BE REMOVED AND PRESERVED.
32. NO TREE SHALL BE REMOVED UNLESS A TREE REMOVAL PERMIT HAS BEEN ISSUED BY THE CITY, OR CITY HAS OTHERWISE CONFIRMED IN WRITING THAT ONE IS NOT NEEDED FOR THE TREE(S).
33. NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE. EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE AND GRADING IMPACT TO THEM HELD TO A MINIMUM.
34. AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING AND INADEQUATE SLOPE FOR DRAINAGE. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORMWATER RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER AND ENGINEER IF ANY AREAS OF POOR DRAINAGE ARE DISCOVERED.
35. CONTRACTOR FIELD ADJUSTMENT OF PROPOSED SPOT GRADES IS ALLOWED, IF THE APPROVAL OF THE CIVIL ENGINEER IS OBTAINED.

RETAINING WALLS:

1. RETAINING WALLS SHOWN ARE FOR SITE GRADING PURPOSES ONLY, AND INCLUDE ONLY LOCATION AND SURFACE SPOT ELEVATIONS AT THE TOP AND BOTTOM OF THE WALL.
2. RETAINING WALL TYPE OR SYSTEM SHALL BE SELECTED BY THE OWNER.
3. RETAINING WALL DESIGN SHALL BE PROVIDED BY OTHERS AND SHALL FIT IN THE WALL ZONE OR LOCATION SHOWN ON THESE PLANS. STRUCTURAL DESIGN AND PERMITTING OF RETAINING WALLS, RAILINGS, AND OTHER WALL SAFETY DEVICES SHALL BE PERFORMED BY A LICENSED ENGINEER AND ARE NOT PART OF THIS PLAN SET.
4. RETAINING WALL DESIGN SHALL MEET THE INTENT OF THE GRADING PLAN AND SHALL ACCOUNT FOR ANY INFLUENCE ON ADJACENT BUILDING FOUNDATIONS, UTILITIES, PROPERTY LINES AND OTHER CONSTRUCTABILITY NOTES.
5. RETAINING WALL ENGINEER SHALL CONSULT THESE PLANS AND THE GEOTECHNICAL REPORT FOR POTENTIAL CONFLICTS.

PAVING:

1. ALL PAVING MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS, THE CITY STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION/DETAIL SHALL BE FOLLOWED.
2. ALL PRIVATE ON-SITE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING ALL ADDENDA.
3. ALL FIRELANE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARDS AND DETAILS. IF THESE ARE DIFFERENT THAN THOSE IN THE GEOTECHNICAL REPORT, THEN THE MORE RESTRICTIVE SHALL BE FOLLOWED.
4. ALL PUBLIC PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS.
5. CONTRACTOR IS RESPONSIBLE FOR ALL PAVING AND PAVING SUBGRADE TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL PAVING AND PAVING SUBGRADE TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING PAVING AND SUBGRADE. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR PAVING AND PAVING SUBGRADE TESTING.
6. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE PAVING AND PAVING SUBGRADE, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
7. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.
8. CURB RAMPS ALONG PUBLIC STREETS AND IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BASED ON THE CITY STANDARD CONSTRUCTION DETAIL AND SPECIFICATIONS.
9. PRIVATE CURB RAMPS ON THE SITE (I.E. OUTSIDE PUBLIC STREET RIGHT-OF-WAY) SHALL CONFORM TO ADA AND TAS STANDARDS AND SHALL HAVE A DETECTABLE WARNING SURFACE THAT IS FULL WIDTH AND FULL DEPTH OF THE CURB RAMP, NOT INCLUDING FLARES.
10. ALL ACCESSIBLE RAMPS, CURB RAMPS, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA AND TAS STANDARDS, LATEST EDITION.
11. ANY COMPONENTS OF THE PROJECT SUBJECT TO RESIDENTIAL USE SHALL ALSO CONFORM TO THE FAIR HOUSING ACT, AND COMPLY WITH THE FAIR HOUSING ACT DESIGN MANUAL BY THE US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
12. CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT TO MATCH EXISTING PAVEMENT WITH A SMOOTH, FLUSH, CONNECTION.
13. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT AND PAVEMENT MARKINGS SHALL ADHERE TO CITY AND OWNER STANDARDS.
14. REFER TO GEOTECHNICAL REPORT FOR PAVING JOINT LAYOUT PLAN REQUIREMENTS FOR PRIVATE PAVEMENT.
15. REFER TO CITY STANDARD DETAILS AND SPECIFICATIONS FOR JOINT LAYOUT PLAN REQUIREMENTS FOR PUBLIC PAVEMENT.
16. ALL REINFORCING STEEL SHALL CONFORM TO THE GEOTECHNICAL REPORT, CITY STANDARDS, AND ASTM A-615, GRADE 60, AND SHALL BE SUPPORTED BY BAR CHAIRS. CONTRACTOR SHALL USE THE MORE STRINGENT OF THE CITY AND GEOTECHNICAL STANDARDS.
17. ALL JOINTS SHALL EXTEND THROUGH THE CURB.
18. THE MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS SHALL BE 2 FEET.
19. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO THE ENGINEER AND OWNER PRIOR TO BEGINNING ANY OF THE PAVING WORK.
20. ALL SAWCUTS SHALL BE FULL DEPTH FOR PAVEMENT REMOVAL AND CONNECTION TO EXISTING PAVEMENT.
21. FIRE LANES SHALL BE MARKED AND LABELED AS A FIRELANE PER CITY STANDARDS.
22. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED.
23. CONTRACTOR IS RESPONSIBLE FOR INSTALLING NECESSARY CONDUIT FOR LIGHTING, IRRIGATION, ETC. PRIOR TO PLACEMENT OF PAVEMENT. ALL CONSTRUCTION DOCUMENTS (CIVIL, MEP, LANDSCAPE, IRRIGATION, AND ARCHITECT) SHALL BE CONSULTED.
24. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE ACCESSIBLE PEDESTRIAN ROUTES (PER ADA, TAS, AND FHA) EXIST TO AND FROM EVERY DOOR AND ALONG SIDEWALKS, ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND ACCESSIBLE ROUTES. IN NO CASE SHALL AN ACCESSIBLE RAMP SLOPE EXCEED 1 VERTICAL TO 12 HORIZONTAL. IN NO CASE SHALL SIDEWALK CROSS SLOPE EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPE EXCEED 5.0 PERCENT. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 2.0 PERCENT SLOPE IN ANY DIRECTION.
25. CONTRACTOR SHALL TAKE FIELD SLOPE MEASUREMENTS ON FINISHED SUBGRADE AND FORM BOARDS PRIOR TO PLACING PAVEMENT TO VERIFY THAT ADA/TAS SLOPE REQUIREMENTS ARE PROVIDED. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR ADA AND TAS SLOPE COMPLIANCE ISSUES.

STORM DRAINAGE:

1. ALL STORM SEWER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS.
2. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.
3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING STORM SEWER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY STORM SEWER, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.
4. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER.
5. FLOW LINE, TOP-OF-CURB, RIM, THROAT, AND GRATE ELEVATIONS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE GRADING PLAN AND FIELD CONDITIONS PRIOR TO THEIR INSTALLATION.
6. ALL PUBLIC STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
7. ALL PRIVATE STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
8. ALL PVC TO RCP CONNECTIONS AND ALL STORM PIPE CONNECTIONS ENTERING STRUCTURES OR OTHER STORM PIPES SHALL HAVE A CONCRETE COLLAR AND BE GROUTED TO ASSURE THE CONNECTION IS WATERTIGHT.
9. ALL PUBLIC STORM SEWER LINES SHALL BE MINIMUM CLASS III RCP. PRIVATE STORM SEWER LINES 18-INCHES AND GREATER SHALL BE CLASS III RCP OR OTHER APPROVED MATERIAL.
10. WHERE COVER EXCEEDS 20-FEET OR IS LESS THAN 2-FEET, CLASS IV RCP SHALL BE USED.
11. IF CONTRACTOR PROPOSES TO USE HDPE OR PVC IN LIEU OF RCP FOR PRIVATE STORM SEWER, CONTRACTOR SHALL SUBMIT TECHNICAL DATA TO THE OWNER, ENGINEER AND CITY ENGINEER/INSPECTOR FOR APPROVAL PRIOR TO ORDERING THE MATERIAL. ANY PROPOSED HDPE AND PVC SHALL BE WATERTIGHT.
12. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL STORM SEWER LINES.
13. EMBEDMENT FOR ALL STORM SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS.
14. ALL WYE CONNECTIONS AND PIPE BENDS ARE TO BE PREFABRICATED AND INSTALLED PER MANUFACTURERS SPECIFICATIONS.
15. USE 4 FOOT JOINTS WITH BEVELED ENDS IF RADIUS OF STORM SEWER IS LESS THAN 100 FEET.
16. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
17. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

POND NOTES:

1. ANY PONDS THAT ARE INTENDED TO HOLD WATER INDEFINITELY SHALL BE CONSTRUCTED WATERTIGHT.
2. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR POND LINER SPECIFICATIONS.
3. A GEOTECHNICAL ENGINEER SHALL REVIEW AND APPROVE ALL POND LINER MATERIAL, PLACEMENT PROCEDURES, AND PROVIDE TESTING TO ENSURE THE POND LINER MATERIAL PLACED IS WATERTIGHT.
4. STORM SEWER PIPES AND HEADWALLS THAT CONNECT TO A POND INTENDED TO HOLD WATER INDEFINITELY SHALL BE INSTALLED WITH WATERTIGHT JOINTS TO AT LEAST 1-FOOT ABOVE THE NORMAL POOL WATER SURFACE ELEVATION.
5. ANY GRAVEL OR OTHER PERVIOUS EMBEDMENT AROUND PIPES OR OUTFALL STRUCTURES NEAR THE POND SHALL BE ELIMINATED FOR AT LEAST 20-FEET FROM THE POND SO NO ROUTE FOR WATER TO LEAK THROUGH THE EMBEDMENT MATERIAL IS PROVIDED. BACKFILL IN THESE AREAS SHALL BE OF IMPERVIOUS MATERIAL.
6. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE WATER LEVEL FOLLOWING COMPLETION AND FILLING OF THE POND SHALL BE MONITORED BY THE CONTRACTOR FOR AT LEAST 60 DAYS TO OBSERVE WATER INFLOW, OUTFLOW, AND CALCULATE EVAPORATION TO VERIFY THAT THE POND IS WATERTIGHT.
7. FOR ANY PONDS INTENDED TO HOLD WATER INDEFINITELY: THE POND WATER LEVEL SHALL ALSO BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION SO THAT IT REMAINS FULL TO ITS DESIGN WATER LEVEL, AND IS NOT LOWERED, AS THIS MAY DRY-OUT THE POND LINER AND RISK ITS WATERTIGHT PROPERTIES.

WATER AND WASTEWATER:

1. ALL WATER AND WASTEWATER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS.
2. CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING WATER AND WASTEWATER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY WATER OR WASTEWATER CONSTRUCTION, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.
3. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING.
4. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATION OF ALL UTILITY CROSSINGS PRIOR TO THE INSTALLATION OF ANY PIPE.
5. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE WATER AND WASTEWATER IMPROVEMENTS.
6. ALL PUBLIC WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
7. ALL PRIVATE WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
8. FIRE SPRINKLER LINES SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE SPRINKLER CONTRACTOR, AND COMPLY TO THE APPLICABLE CODES AND INSPECTIONS REQUIRED. THESE PLANS WERE PREPARED WITHOUT THE BENEFIT OF THE FIRE SPRINKLER DESIGN. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES.
9. EMBEDMENT FOR ALL WATER AND WASTEWATER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS.
10. CONTRACTOR SHALL TAKE REQUIRED SANITARY PRECAUTIONS, FOLLOWING ANY CITY, TCEQ, AND AWWA STANDARDS, TO KEEP WATER PIPE AND FITTINGS CLEAN AND CAPPED AT TIMES WHEN INSTALLATION IS NOT IN PROGRESS.
11. CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL WATER AND WASTEWATER LINES.
12. ALL WATER AND WASTEWATER SERVICES SHALL TERMINATE 5-FEET OUTSIDE THE BUILDING, UNLESS NOTED OTHERWISE.
13. CONTRACTOR SHALL COMPLY WITH CITY REQUIREMENTS FOR WATER AND WASTEWATER SERVICE DISRUPTIONS AND THE AMOUNT OF PRIOR NOTICE THAT IS REQUIRED, AND SHALL COORDINATE DIRECTLY WITH THE APPROPRIATE CITY DEPARTMENT.
14. CONTRACTOR SHALL SEQUENCE WATER AND WASTEWATER CONSTRUCTION TO AVOID INTERRUPTION OF SERVICE TO SURROUNDING PROPERTIES.
15. CONTRACTOR SHALL MAINTAIN WATER SERVICE AND WASTEWATER SERVICE TO ALL CUSTOMERS THROUGHOUT CONSTRUCTION (IF NECESSARY, BY USE OF TEMPORARY METHODS APPROVED BY THE CITY AND OWNER). THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
16. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL WATER AND WASTEWATER LINES CROSSING THE PROJECT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED LINES IMMEDIATELY. ALL REPAIRS OF EXISTING WATER MAINS, WATER SERVICES, SEWER MAINS, AND SANITARY SEWER SERVICES ARE SUBSIDIARY TO THE WORK, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
17. VALVE ADJUSTMENTS SHALL BE CONSTRUCTED SUCH THAT THE COVERS ARE AT FINISHED SURFACE GRADE OF THE PROPOSED PAVEMENT.
18. THE ENDS OF ALL EXISTING WATER MAINS THAT ARE CUT, BUT NOT REMOVED, SHALL BE PLUGGED AND ABANDONED IN PLACE. THIS WORK SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
19. ALL FIRE HYDRANTS, VALVES, TEES, BENDS, WYES, REDUCERS, FITTINGS, AND ENDS SHALL BE MECHANICALLY RESTRAINED AND/OR THRUST BLOCKED TO CITY STANDARDS.
20. CONTRACTOR SHALL INSTALL A FULL SEGMENT OF WATER OR WASTEWATER PIPE CENTERED AT ALL UTILITY CROSSINGS SO THAT THE JOINTS ARE GREATER THAN 9-FEET FROM THE CROSSING.
21. ALL CROSSINGS AND LOCATIONS WHERE WASTEWATER IS LESS THAN 9-FEET FROM WATER, WASTEWATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 217.53.
22. ALL CROSSING AND LOCATIONS WHERE WATER IS LESS THAN 9-FEET FROM WASTEWATER, WATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 290.44.
23. ALL WATER AND WASTEWATER SHALL BE TESTED IN ACCORDANCE WITH THE CITY, AWWA, AND TCEQ STANDARDS AND SPECIFICATIONS. AT A MINIMUM, THIS SHALL CONSIST OF THE FOLLOWING:
   a. ALL WATERLINES SHALL BE HYDROSTATICALLY TESTED AND CHLORINATED BEFORE BEING PLACED INTO SERVICE. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS.
   b. WASTEWATER LINES AND MANHOLES SHALL BE PRESSURE TESTED. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. AFTER COMPLETION OF THESE TESTS, A TELEVISION INSPECTION SHALL BE PERFORMED AND PROVIDED TO THE CITY AND OWNER ON A DVD.
24. CONTRACTOR SHALL INSTALL DETECTABLE WIRING OR MARKING TAPE A MINIMUM OF 12" ABOVE WATER AND WASTEWATER LINES. MARKER DECALS SHALL BE LABELED "CAUTION - WATER LINE", OR "CAUTION - SEWER LINE". DETECTABLE WIRING AND MARKING TAPE SHALL COMPLY WITH CITY STANDARDS, AND SHALL BE INCLUDED IN THE COST OF THE WATER AND WASTEWATER PIPE.
25. DUCTILE IRON PIPE SHALL BE PROTECTED FROM CORROSION BY A LOW-DENSITY POLYETHYLENE LINER WRAP THAT IS AT LEAST A SINGLE LAYER OF 8-MIL. ALL DUCTILE IRON JOINTS SHALL BE BONDED.
26. WATERLINES SHALL BE INSTALLED AT NO LESS THAN THE MINIMUM COVER REQUIRED BY THE CITY.
27. CONTRACTOR SHALL PROVIDE CLEAN-OUTS FOR PRIVATE SANITARY SEWER LINES AT ALL CHANGES IN DIRECTION AND 100-FOOT INTERVALS, OR AS REQUIRED BY THE APPLICABLE PLUMBING CODE. CLEAN-OUTS REQUIRED IN PAVEMENT OR SIDEWALKS SHALL HAVE CAST IRON COVERS FLUSH WITH FINISHED GRADE.
28. CONTRACTOR SHALL PROVIDE BACKWATER VALVES FOR PLUMBING FIXTURES AS REQUIRED BY THE APPLICABLE PLUMBING CODE (E.G. FLOOR ELEVATION OF FIXTURE UNIT IS BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER). CONTRACTOR SHALL REVIEW BOTH MEP AND CIVIL PLANS TO CONFIRM WHERE THESE ARE REQUIRED.
29. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
30. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

ABBREVIATIONS AND DEFINITIONS:

A	AREA
ADA	AMERICANS WITH DISABILITIES ACT
AWWA	AMERICAN WATER WORKS ASSOCIATION
B-B	BACK TO BACK
BC	BEGIN CURVE
BC	BACK OF CURB
BCR	BEGIN CURB RETURN
BMP	BEST MANAGEMENT PRACTICE
BOC	BACK OF CURB
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
BW	BOTTOM OF WALL
CFS	CUBIC FEET PER SECOND
CITY	CITY, TOWN, OR OTHER APPLICABLE LOCAL GOVERNMENT JURISDICTION
C/L	CENTERLINE
CL	CENTERLINE
CONC	CONCRETE
CY	CUBIC YARD
DEMO	DEMOLITION
DG	DECOMPOSED GRANITE
DTL	DETAIL
EA	EACH
EC	END CURVE
ECR	END CURB RETURN
EG	EXISTING GROUND
EL	ELEVATION
ELEC	ELECTRICAL / ELECTRICITY
ELEV	ELEVATION
EPA	UNITES STATES ENVIRONMENTAL PROTECTION AGENCY
ESMT	EASEMENT
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EX.	EXISTING
F-F	FACE TO FACE
FG	FINISHED GROUND
FH	FIRE HYDRANT
FL	FLOW LINE
FOC	FACE OF CURB
FT	FEET
HGL	HYDRAULIC GRADE LINE
KH	KIMLEY-HORN AND ASSOCIATES, INC.
KHA	KIMLEY-HORN AND ASSOCIATES, INC.
LAT	LATERAL
LF	LINEAR FEET
LT	LEFT
MAX	MAXIMUM
ME	MATCH EXISTING ELEVATION
MH	MANHOLE
MIN	MINUTE / MINIMUM
NO	NUMBER
NOI	NOTICE OF INTENT, REF. TCEQ GENERAL PERMIT
NOT	NOTICE OF TERMINATION, REF. TCEQ GENERAL PERMIT
NTS	NOT TO SCALE
OC	ON CENTER
OFF	OFFSET
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE / POINT OF COMPOUND CURVATURE
PGL	PROPOSED GRADE LINE
PI	POINT OF INFLECTION
PROP	PROPOSED
PRC	POINT OF REVERSE CURVATURE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INFLECTION
PVMT	PAVEMENT
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
RT	RIGHT
SF	SQUARE FEET
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
SY	SQUARE YARD
TAS	ARCHITECTURAL BARRIERS TEXAS ACCESSIBILITY STANDARDS
TC	TOP OF CURB
TCEQ	TEXAS COMMISSION OF ENVIRONMENTAL QUALITY
TEMP	TEMPORARY
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TXMUTCD	TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
TW	TOP OF WALL
TYP	TYPICAL
VC	VERTICAL CURVE
WTR	WATER
WW	WASTEWATER

UTILITY CONTACTS:

1. TELECOM COMPANY: SUDDENLINK
2. CABLE COMPANY: SUDDENLNK
3. ELECTRIC COMPANY: DAVID PAGOAGA, (800)-868-4791, DAVID.PAGOAGA@PEC.COOP
4. GAS COMPANY: ALIDA PAINE, (512)-541-9166, ALIDA.PAINE@ATMOSENERGY.COM
5. UTILITY DISTRICT: DAVID MUNK, (512)-930-3555, DAVID.MUNK@GEORGETOWN.ORG
6. CITY WATER/UTILITIES DEPARTMENT: DAVID MUNK, (512)-930-3555, DAVID.MUNK@GEORGETOWN.ORG

THESE PLAN AND GENERAL NOTES REFER TO:
GEOTECHNICAL ENGINEERING REPORT
PROFESSIONAL SERVICE INDUSTRIES, INC.
PSI PROJECT NO. 435-2660
JULY 30, 2020
INCLUDING ALL REVISIONS AND ADDENDA TO THIS REPORT THAT MAY HAVE BEEN RELEASED AFTER THE NOTED DATE.

811
Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

KIMLEY HORN GENERAL NOTES

BERRY CREEK HIGHLANDS PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
3
OF 82

2024-9-CON

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

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

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

1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
   - the name of the approved project;
   - the activity start date; and
   - the contact information of the prime contractor.
2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan (WPAP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.
3. If any sensitive feature(s) (caves, solution cavity, sink hole, etc.) is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. Construction activities may not be resumed until the TCEQ has reviewed and approved the appropriate protective measures in order to protect any sensitive feature and the Edwards Aquifer from potentially adverse impacts to water quality.
4. No temporary or permanent hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.
5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the approved plans and manufacturers specifications. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.
6. Any sediment that escapes the construction site must be collected and properly disposed of before the next rain event to ensure it is not washed into surface streams, sensitive features, etc.
7. Sediment must be removed from the sediment traps or sedimentation basins not later than

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

8. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.
9. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.
10. If portions of the site will have a temporary or permanent cease in construction activity lasting longer than 14 days, soil stabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity will resume prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.
11. The following records shall be maintained and made available to the TCEQ upon request:
    - the dates when major grading activities occur;
    - the dates when construction activities temporarily or permanently cease on a portion of the site; and
    - the dates when stabilization measures are initiated.
12. The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:
    A. any physical or operational modification of any water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
    B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
    C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

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

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

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

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

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

1. This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules and any local government standard specifications.
2. All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the SCS plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.
3. A written notice of construction must be submitted to the presiding TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
   - the name of the approved project;
   - the activity start date; and
   - the contact information of the prime contractor.
4. Any modification to the activities described in the referenced SCS application following the date of approval may require the submittal of an SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.
5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. These controls must remain in place until the disturbed areas have been permanently stabilized.
6. If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the TCEQ of the feature discovered. A geologist's assessment of the location and extent of the feature discovered must be reported to that regional office in writing and the applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the

executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

7. Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete shall have a minimum thickness of 6 inches.
8. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.
9. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

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

   It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.
10. Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).
11. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: _____.

    If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: _____.

    Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.
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 __ of __. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet __ of __ and marked after backfilling as shown in the detail on Plan Sheet __ of __.

13. Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.
14. Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E).
15. All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:
    (a) For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:
    (1) *Low Pressure Air Test.*
    (A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph.
    (B) For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
    (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.
    (ii) Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

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

Where:

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

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

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

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

(D) An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.
(E) If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.
(F) Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.
(G) A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.
(2) *Infiltration/Exfiltration Test.*
(A) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.
(B) An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.
(C) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.
(D) For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.
(E) If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

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

(b) If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:
(1) For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.
(A) *Mandrel Sizing.*
(i) A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.
(ii) If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.
(iii) All dimensions must meet the appropriate standard.
(B) *Mandrel Design.*
(i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
(ii) A mandrel must have nine or more odd number of runners or legs.
(iii) A barrel section length must equal at least 75% of the inside diameter of a pipe.
(iv) Each size mandrel must use a separate proving ring.
(C) *Method Options.*
(i) An adjustable or flexible mandrel is prohibited.
(ii) A test may not use television inspection as a substitute for a deflection test.
(iii) If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
(2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
(3) A deflection test method must be accurate to within plus or minus 0.2% deflection.
(4) An owner shall not conduct a deflection test until at least 30 days after the final backfill.
(5) Gravity collection system pipe deflection must not exceed five percent (5%).
(6) If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

16. All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.
(a) All manholes must pass a leakage test.
(b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.
(1) Hydrostatic Testing.

(A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.
(B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.
(C) A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.
(2) Vacuum Testing.
(A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
(B) No grout must be placed in horizontal joints before testing.
(C) Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
(D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.
(E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
(F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
(G) A test does not begin until after the vacuum pump is off.
(H) A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury.

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

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

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

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

TCEQ NOTES

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
4
OF 82

2024-9-CON

7128, PG.77
OPRWC

DOG IRON COURT
WW (50' R.O.W.)

BARO WAY
(50' R.O.W.)

BCH WAY
(64' R.O.W.)

ZELDA DRIVE
WW (50' R.O.W.)

WILLOW BEAN DRIVE
WW (50' R.O.W.)

LOT 5 ROAD
(50' R.O.W.)

BERRY CREEK AMENITY CENTER
(2021-71-SDP)

BERRY CREEK HIGHLANDS
PHASE 6A (2023-17-CON)

BERRY CREEK
HIGHLANDS PH 3:
(2023-24-CON)

REMOVE BARRACAD

8" WATER STUB

DEMO EXISTING STRUCTURE

8" WATER, 8"
WASTE WATER &
24" STORM PIPE
STUB

12" WATER, 8"
WASTE WATER &
24" STORM PIPE
STUB

REMOVE BARRACAD

8" WASTE WATER
STUB

8" WATER &
8" WASTE WATER
STUB

PROPOSED TEMP TURNAROUND
AND BARRICADES TO BE
REMOVED

8" WATER &
8" WASTE WATER
STUB

3.335 ACRES
CITY OF GEORGETOWN
TRACT 1: 90.084 ACRES
TRACT II UND. 1/0TH OF
DOC.#2013024601
OPRWC

32.601 ACRES
BRUCE BOND ET UX
DOC.#9756355
OPRWC

15.0 ACRES
JEFFERY G. KICK ET UX
DOC#2003023697
OPRWC

14.998 ACRES
CHAS.WITT ET AL
DOC#2012022314
OPRWC

N
W E
S

0 100' 200'
GRAPHIC SCALE 100'

LEGEND

- PROPERTY LINE
- PHASE LINE
- 632 EXISTING CONTOUR
- OHP EXISTING OVERHEAD POWER LINE
- W EXISTING WATER LINE
- SS EXISTING WASTEWATER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTEWATER MANHOLE
- STRUCTURES/ITEMS TO BE REMOVED

LINE TABLE		
LINE	LENGTH	BEARING
L1	1090.27	S59°50'16.63"W
L2	50.00	S59°50'16.63"W
L3	98.09	S59°50'17.00"W
L4	201.81	N30°09'43.37"W
L5	231.66	N11°29'03.30"W
L6	265.09	N3°16'50.02"E
L7	138.21	N15°26'02.91"W
L8	429.08	S68°50'07.60"W
L9	123.00	N21°09'52.40"W
L10	50.00	N21°44'36.03"W
L11	246.00	N21°09'52.40"W
L12	50.00	N20°35'08.77"W
L13	123.98	N21°09'52.40"W
L14	324.63	N68°46'13.89"E
L15	738.71	N68°54'17.00"E
L16	267.84	N68°54'53.34"E
L17	134.54	N67°52'43.08"E
L18	330.02	S22°35'13.15"E
L19	416.08	S54°35'53.24"W
L20	123.00	S50°00'57.82"W

LINE TABLE		
LINE	LENGTH	BEARING
L21	20.00	S39°59'02.18"E
L22	123.00	N50°00'57.82"E
L23	60.00	S39°59'02.18"E
L24	64.25	S60°56'43.72"E
L25	75.82	S39°37'47.86"E
L26	30.27	S31°05'44.71"E
L27	80.44	S7°07'23.00"E
L28	10.92	S13°30'43.32"W
L29	72.72	S13°30'43.32"W
L30	84.45	S52°20'02.57"W
L31	54.51	S68°52'13.34"W
L32	60.20	S54°39'09.21"W
L33	180.00	S50°00'57.82"W
L34	261.21	S39°59'02.18"E

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	25.00'	39.27'	N75°09'43"W	35.36'	90°00'00"	25.00'
C2	25.00'	39.18'	S14°44'03"W	35.29'	89°47'38"	24.91'
C3	275.00'	25.36'	S37°20'32"E	25.35'	5°17'01"	12.69'
C4	25.00'	41.25'	S12°34'08"W	36.73'	94°32'18"	27.06'

Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

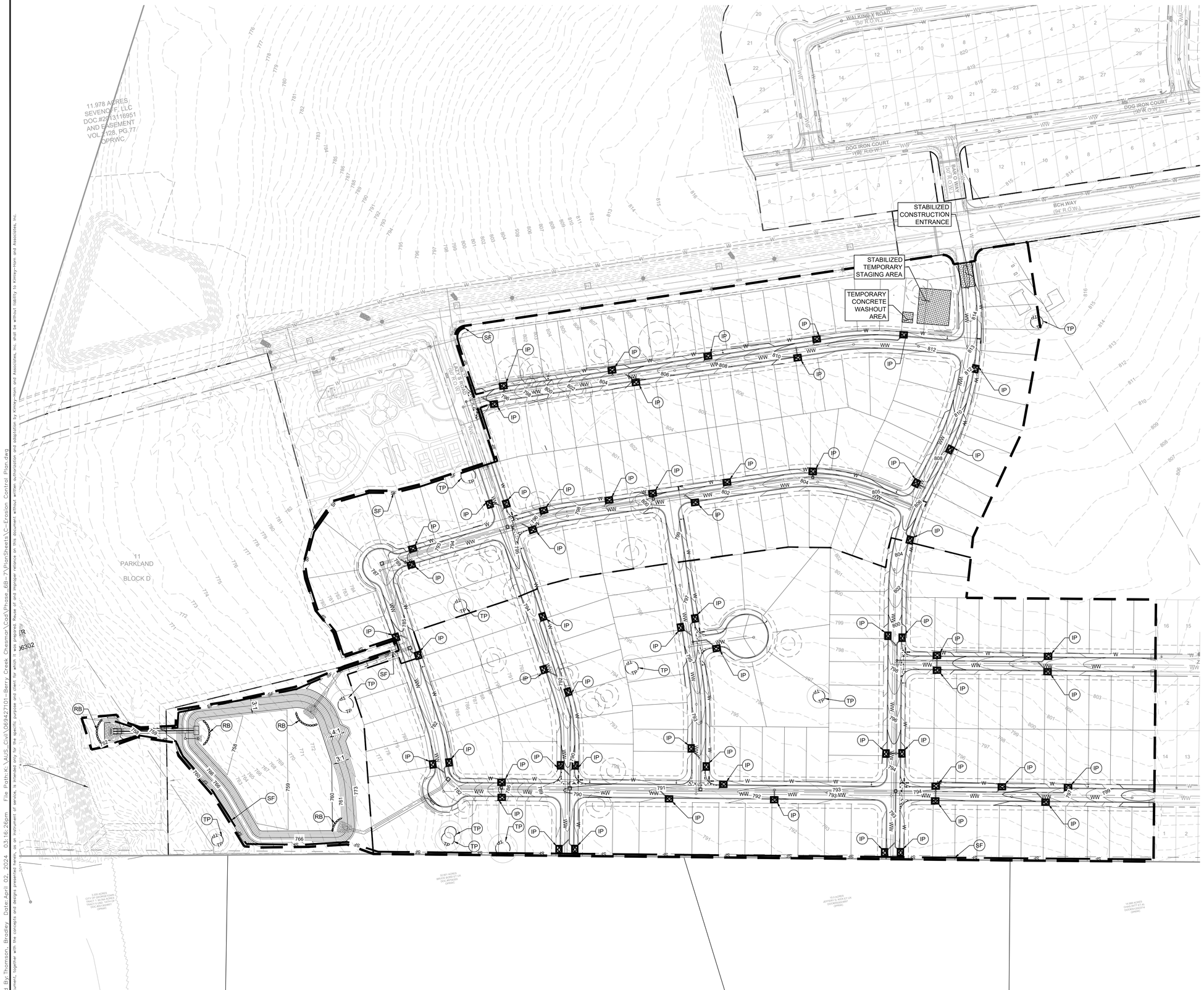
EXISTING CONDITIONS AND DEMOLITION PLAN

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
9
OF 82

2024-9-CON



N
W
E
S

0 100' 200'
GRAPHIC SCALE 100'

LEGEND

SF	SF	SILT FENCE
TP	TP	TREE PROTECTION
	IP	PROPOSED INLET PROTECTION
	CE	CONSTRUCTION ENTRANCE
	RB	ROCK BERM
450		EXISTING CONTOURS
450		PROPOSED CONTOURS
		LIMITS OF CONSTRUCTION AREA
		TREE TO REMAIN

NOTES:

1. FOR TREE PROTECTION SEE SHEETS 11 - 12.
2. CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL SWPPP CONTROLS - CONTROLS SHOWN ON THIS SITE MAP ARE SUGGESTED CONTROLS ONLY.
3. CONTRACTOR SHALL RECORD INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL DATES FOR EACH BMP EMPLOYED (WHETHER CALLED OUT ON ORIGINAL SWPPP OR NOT) DIRECTLY ON THE SITE MAP.
4. THE ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN COMPLIANCE WITH THE CITY OF GEORGETOWN RULES AND REGULATIONS.
5. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION AS PER THE CITY OF GEORGETOWN OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
6. TEMPORARY AND PERMANENT STABILIZATION PRACTICES AND BMP'S SHALL BE INSTALLED AT THE EARLIEST POSSIBLE TIME DURING THE CONSTRUCTION SEQUENCE. AS AN EXAMPLE, PERIMETER SILT FENCE SHALL BE INSTALLED BEFORE COMMENCEMENT OF ANY GRADING ACTIVITIES. OTHER BMP'S SHALL BE INSTALLED AS SOON AS PRACTICABLE AND SHALL BE MAINTAINED UNTIL FINAL SITE STABILIZATION IS ATTAINED. CONTRACTOR SHALL ALSO REFERENCE CIVIL AND LANDSCAPE PLANS SINCE PERMANENT STABILIZATION IS PROVIDED BY LANDSCAPING, THE BUILDING(S), AND SITE PAVING.
7. BMP'S HAVE BEEN LOCATED AS INDICATED ON THIS PLAN IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES IN ORDER TO MINIMIZE SEDIMENT TRANSFER.
8. ADDITIONAL EROSION AND SEDIMENTATION CONTROLS MAY BE REQUIRED BY THE CITY DURING CONSTRUCTION.
9. REFERENCE EROSION CONTROL DETAILS ON SHEET 76.
10. USE J-HOOKS WHERE SILT FENCE CANNOT BE INSTALLED PARALLEL TO THE EXISTING CONTOURS. CONTRACTOR TO MAINTAIN AND UPDATE AS NECESSARY PER TCEQ & CITY REQUIREMENTS.
11. CONTRACTOR SHALL INSTALL, MAINTAIN, AND UPDATE PROPOSED SILT FENCE AS NECESSARY PER TCEQ & CITY REQUIREMENTS.
12. ALL SILT FENCE IS REQUIRED TO BE FABRIC PRODUCT AND NOT WOVEN MATERIAL. OSHA APPROVED IMPALEMENTS CAPS ARE REQUIRED FOR ALL REBAR AND STAKING.
13. PHASE 2 SILT FENCE IS TO BE INSTALLED IMMEDIATELY AFTER LOT GRADING HAS BEEN COMPLETED TO KEEP THE DISTURBANCE FROM RUNNING INTO THE ROW. IT IS THE RESPONSIBILITY OF THE DEVELOPER/SUBDIVISION CONTRACTOR TO INSTALL AS WELL AS MAINTAIN THE PHASE 2 SILT FENCE.

811
Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

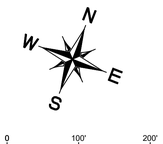
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

EROSION CONTROL PLAN

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

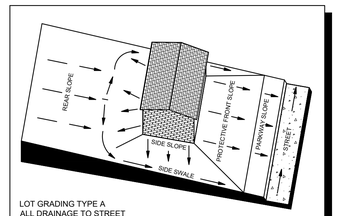
SHEET NUMBER
10
OF 82

2024-9-CON

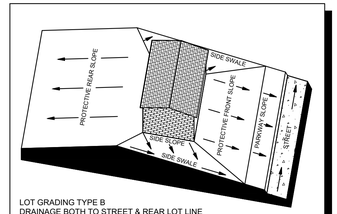


LEGEND

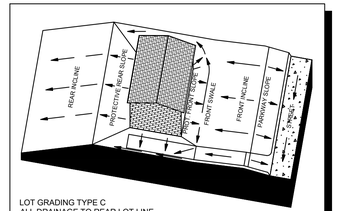
- PROPERTY LINE
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED EASEMENT
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- EXISTING TREE TO REMAIN



LOT GRADING TYPE A
ALL DRAINAGE TO STREET



LOT GRADING TYPE B
DRAINAGE BOTH TO STREET & REAR LOT LINE



LOT GRADING TYPE C
ALL DRAINAGE TO REAR LOT LINE

811
Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101

DATE	FEBRUARY 2024
SCALE	AS SHOWN
DESIGNED BY	ACS
DRAWN BY	RFJ
CHECKED BY	ACS

GRADING PLAN

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

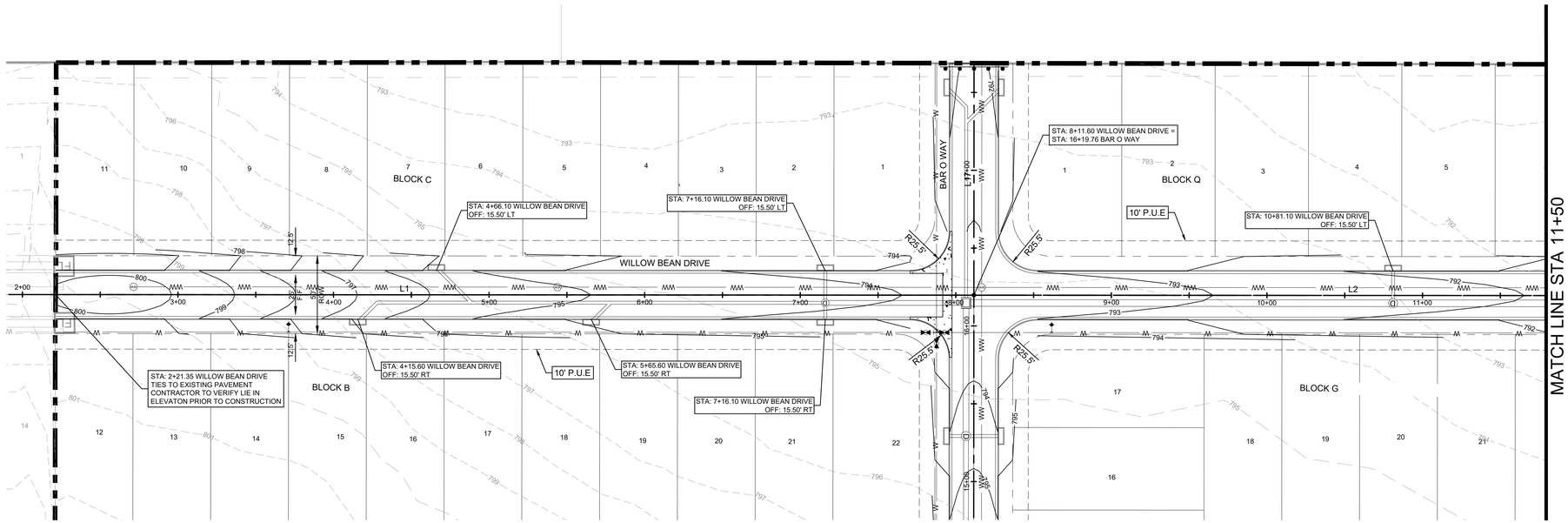
SHEET NUMBER
13
OF 82

2024-9-CON

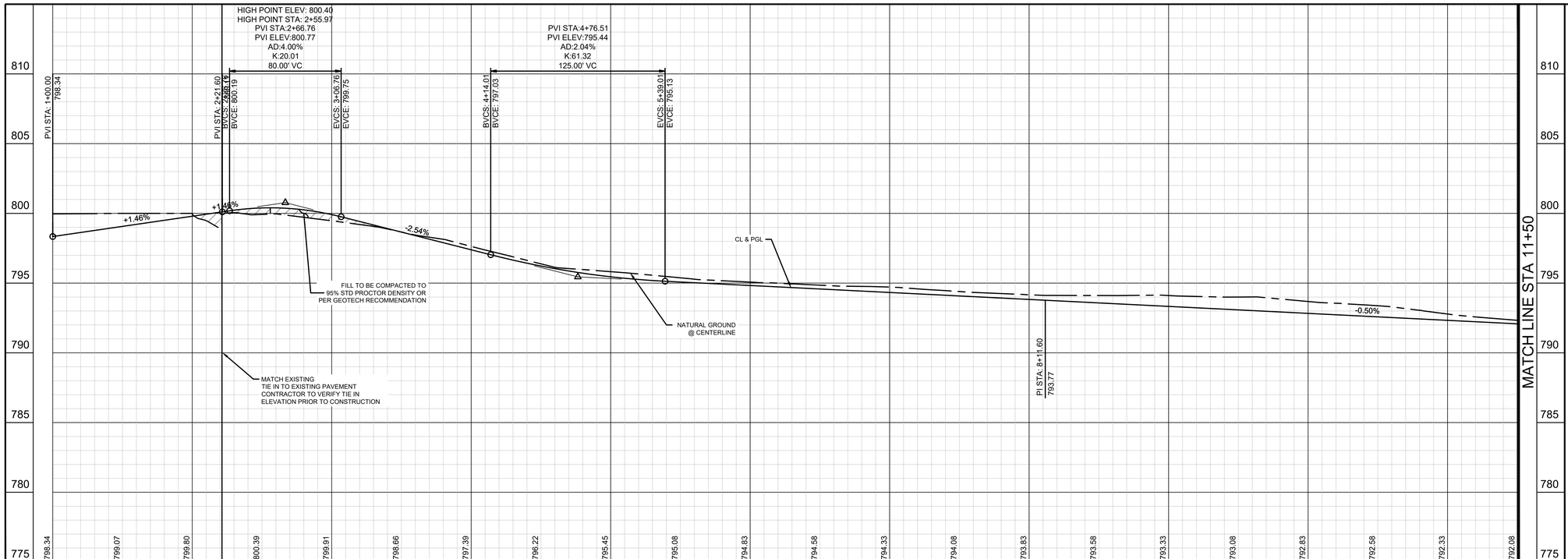
CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	50.00'	69.81'	N71°09'52"W	64.28'	80°00'00"	41.95'
C2	300.00'	46.18'	N35°34'27"W	46.13'	8°49'10"	23.13'
C3	50.00'	80.29'	N6°00'58"E	71.93'	92°00'00"	51.78'
C4	500.00'	68.26'	N55°55'37"E	68.21'	7°49'19"	34.18'
C5	400.00'	218.50'	N75°29'12"E	215.79'	31°17'50"	112.05'

LINE TABLE		
LINE	LENGTH	BEARING
L1	711.60	S68°50'07.60"W
L2	441.73	S68°50'07.60"W
L3	296.00	S68°50'07.60"W
L4	234.55	S68°50'07.60"W
L5	58.38	N31°09'52.40"W
L6	328.34	N39°59'02.18"W
L7	244.40	N52°00'57.82"E
L8	74.50	N52°00'57.82"E
L9	233.93	N59°50'16.63"E
L10	261.57	N59°50'16.63"E
L11	84.43	S88°51'53.42"E

0 40' 80'
GRAPHIC SCALE 40'



WILLOW BEAN DRIVE



LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK

KEYMAP
N.T.S

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

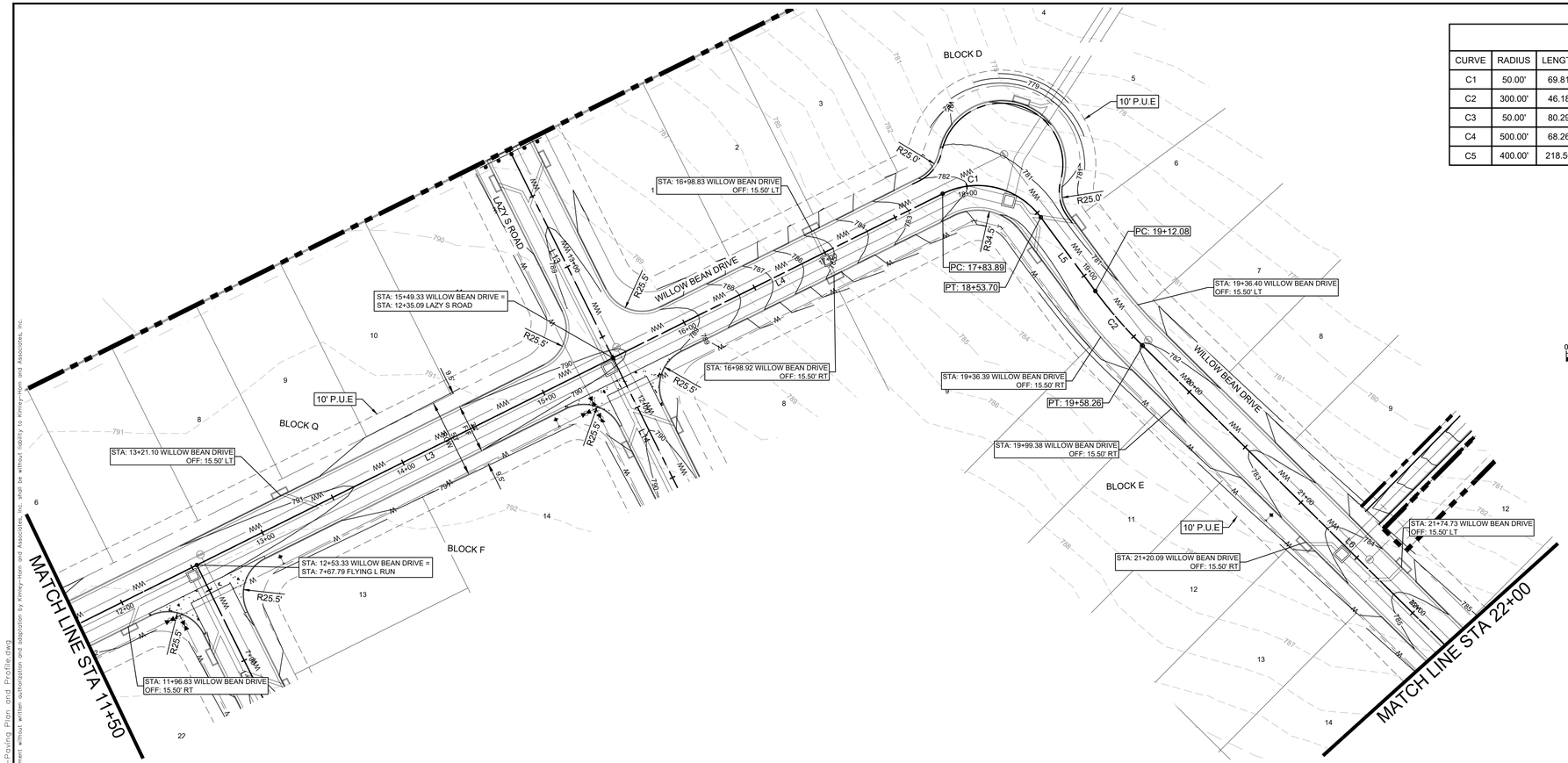
PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (1 OF 4)

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
14
OF 82

2024-9-CON



CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	50.00'	69.81'	N71°09'52"W	64.28'	80°00'00"	41.95'
C2	300.00'	46.18'	N35°34'27"W	46.13'	8°49'10"	23.13'
C3	50.00'	80.29'	N6°00'58"E	71.93'	92°00'00"	51.78'
C4	500.00'	68.26'	N55°55'37"E	68.21'	7°49'19"	34.18'
C5	400.00'	218.50'	N75°29'12"E	215.79'	31°17'50"	112.05'

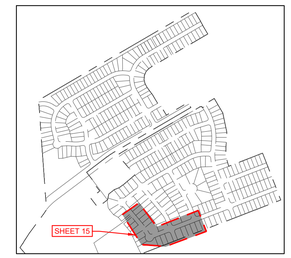
LINE TABLE		
LINE	LENGTH	BEARING
L1	711.60	S68°50'07.60"W
L2	441.73	S68°50'07.60"W
L3	296.00	S68°50'07.60"W
L4	234.55	S68°50'07.60"W
L5	58.38	N31°09'52.40"W
L6	328.34	N39°59'02.18"W
L7	244.40	N52°00'57.82"E
L8	74.50	N52°00'57.82"E
L9	233.93	N59°50'16.63"E
L10	261.57	N59°50'16.63"E
L11	84.43	S88°51'53.42"E

S E M N

0 40' 80'
GRAPHIC SCALE 40'

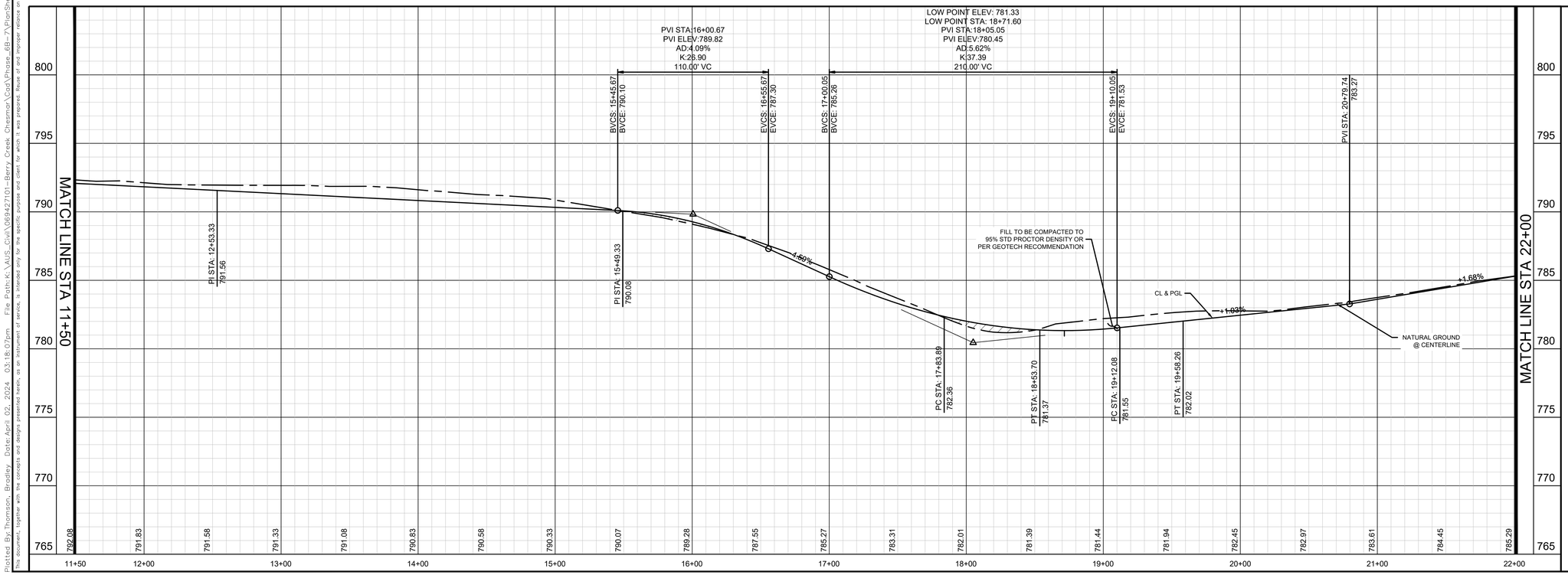
LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK



KEYMAP
N.T.S

WILLOW BEAN DRIVE



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (2 OF 4)

BERRY CREEK HIGHLANDS PHASES 6B & 7

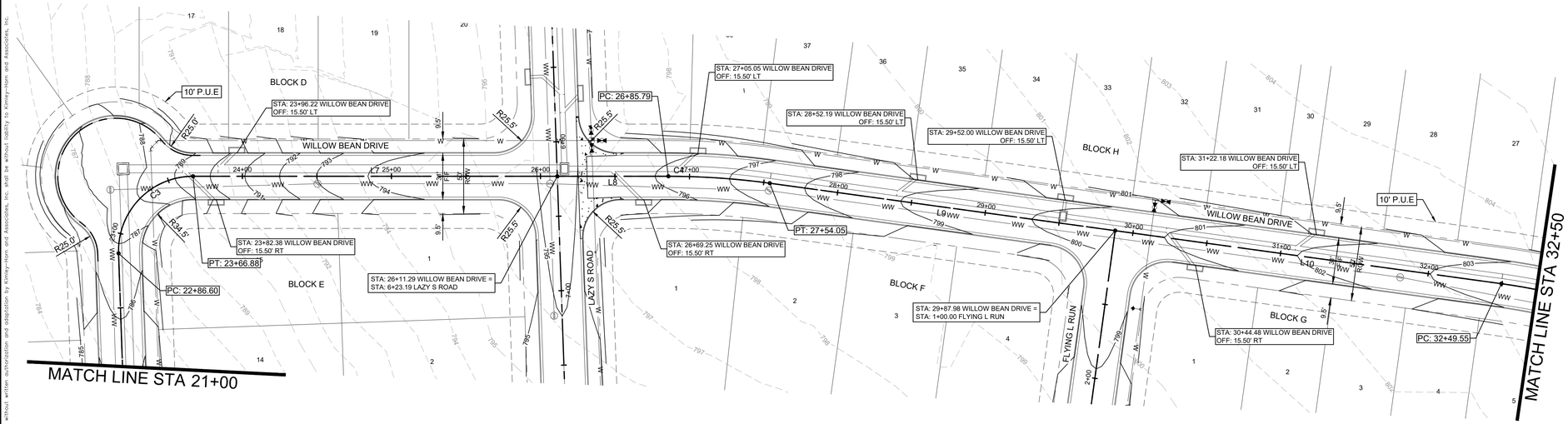
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
15
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	50.00'	69.81'	N71°09'52"W	64.28'	80°00'00"	41.95'
C2	300.00'	46.18'	N35°34'27"W	46.13'	8°49'10"	23.13'
C3	50.00'	80.29'	N6°00'58"E	71.93'	92°00'00"	51.78'
C4	500.00'	68.26'	N55°55'37"E	68.21'	7°49'19"	34.18'
C5	400.00'	218.50'	N75°29'12"E	215.79'	31°17'50"	112.05'

LINE TABLE		
LINE	LENGTH	BEARING
L1	711.60	S68°50'07.60"W
L2	441.73	S68°50'07.60"W
L3	296.00	S68°50'07.60"W
L4	234.55	S68°50'07.60"W
L5	58.38	N31°09'52.40"W
L6	328.34	N39°59'02.18"W
L7	244.40	N52°00'57.82"E
L8	74.50	N52°00'57.82"E
L9	233.93	N59°50'16.63"E
L10	261.57	N59°50'16.63"E
L11	84.43	S88°51'53.42"E



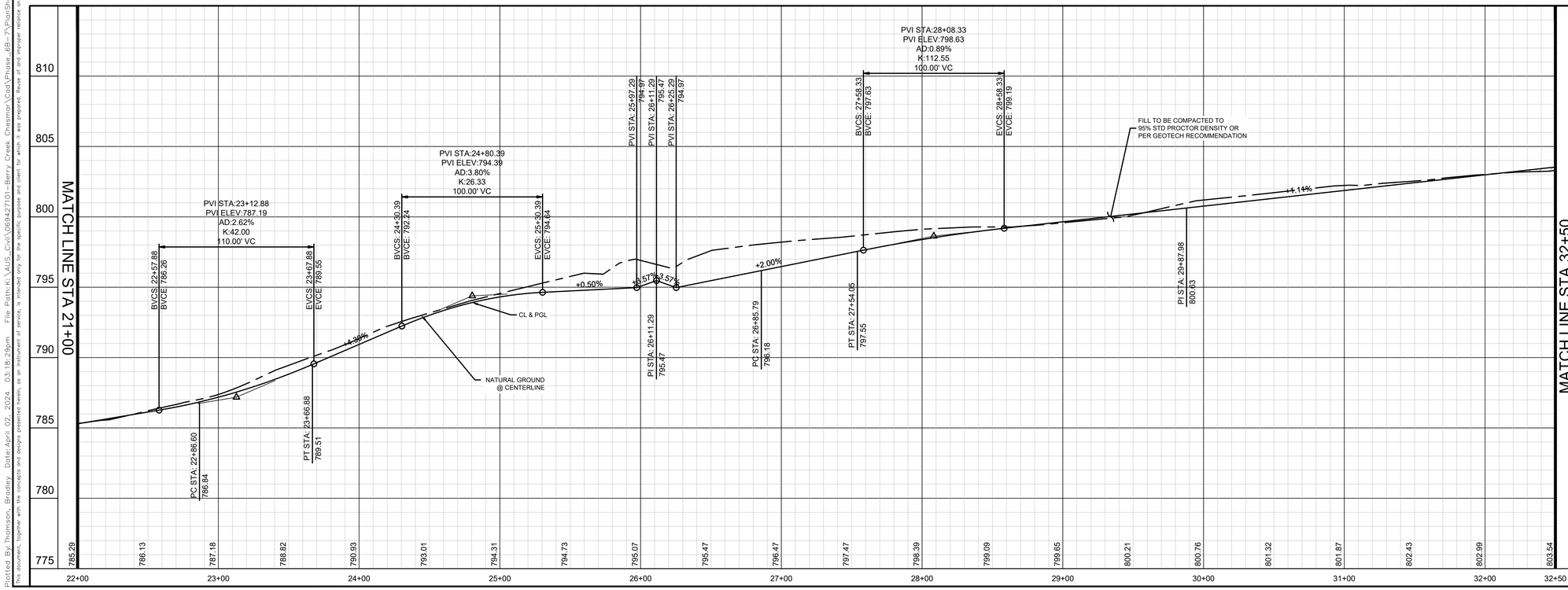
KEYMAP
N.T.S

LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK

0 40' 80'
GRAPHIC SCALE 40'

WILLOW BEAN DRIVE



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (3 OF 4)

BERRY CREEK HIGHLANDS PHASES 6B & 7

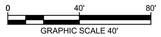
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
16
OF 82

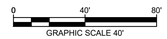
2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	50.00'	69.81'	N71°09'52"W	64.28'	80°00'00"	41.95'
C2	300.00'	46.18'	N35°34'27"W	46.13'	8°49'10"	23.13'
C3	50.00'	80.29'	N6°00'58"E	71.93'	92°00'00"	51.78'
C4	500.00'	68.26'	N55°55'37"E	68.21'	7°49'19"	34.18'
C5	400.00'	218.50'	N75°29'12"E	215.79'	31°17'50"	112.05'

LINE TABLE		
LINE	LENGTH	BEARING
L1	711.60	S68°50'07.60"W
L2	441.73	S68°50'07.60"W
L3	296.00	S68°50'07.60"W
L4	234.55	S68°50'07.60"W
L5	58.38	N31°09'52.40"W
L6	328.34	N39°59'02.18"W
L7	244.40	N52°00'57.82"E
L8	74.50	N52°00'57.82"E
L9	233.93	N59°50'16.63"E
L10	261.57	N59°50'16.63"E
L11	84.43	S88°51'53.42"E

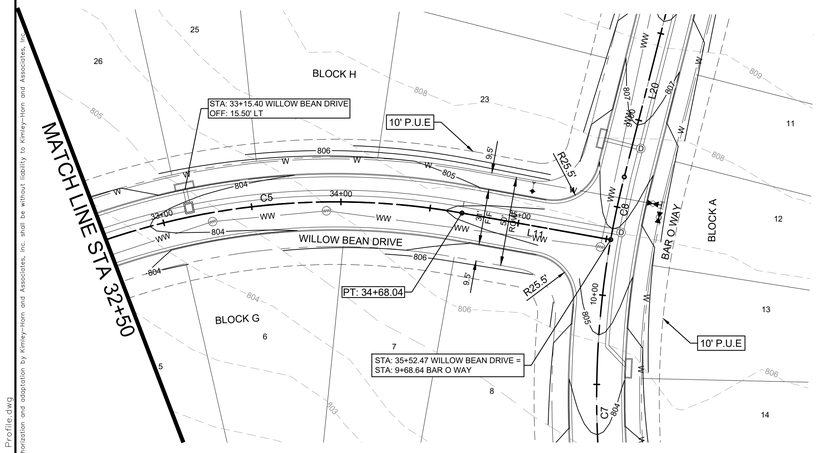


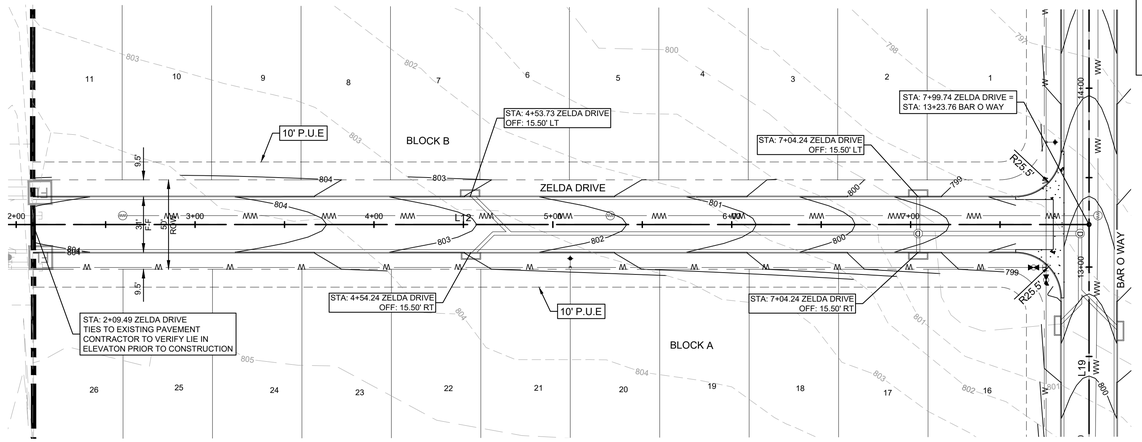
LINE TABLE		
LINE	LENGTH	BEARING
L12	699.74	S68°50'07.60"W



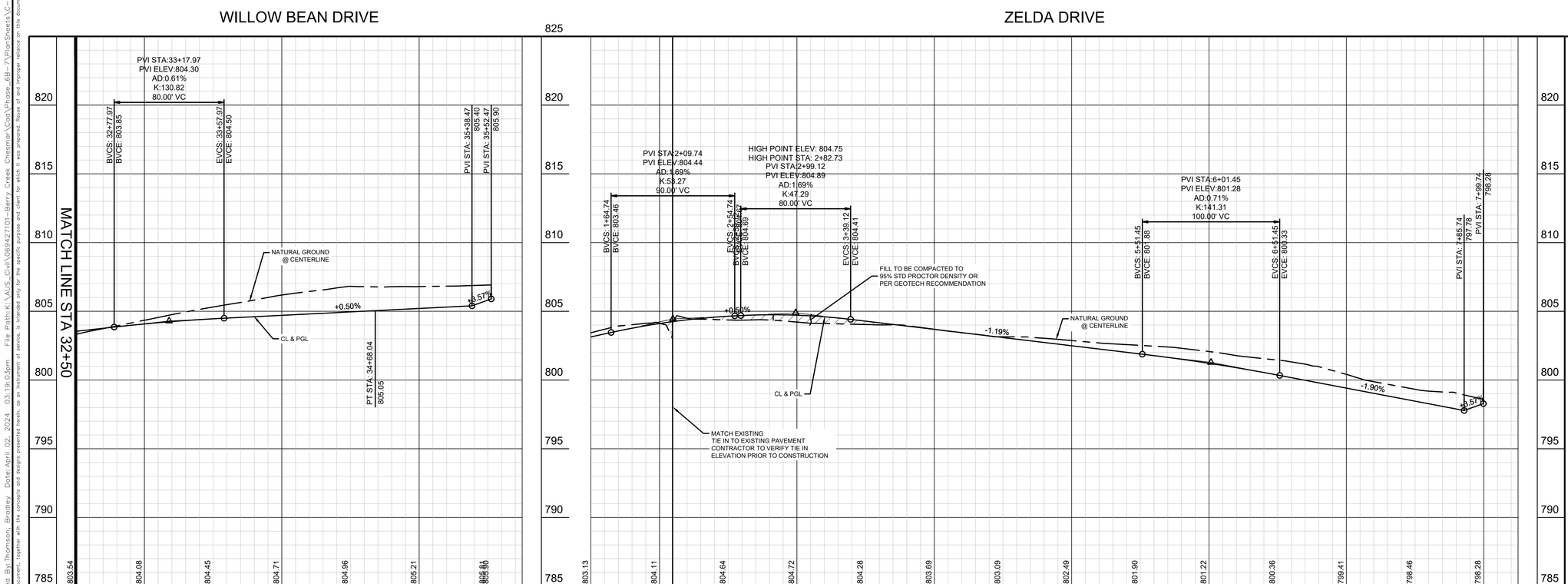
LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK





KEYMAP
N.T.S



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - WILLOW BEAN DRIVE (4 OF 4) & ZELDA DRIVE

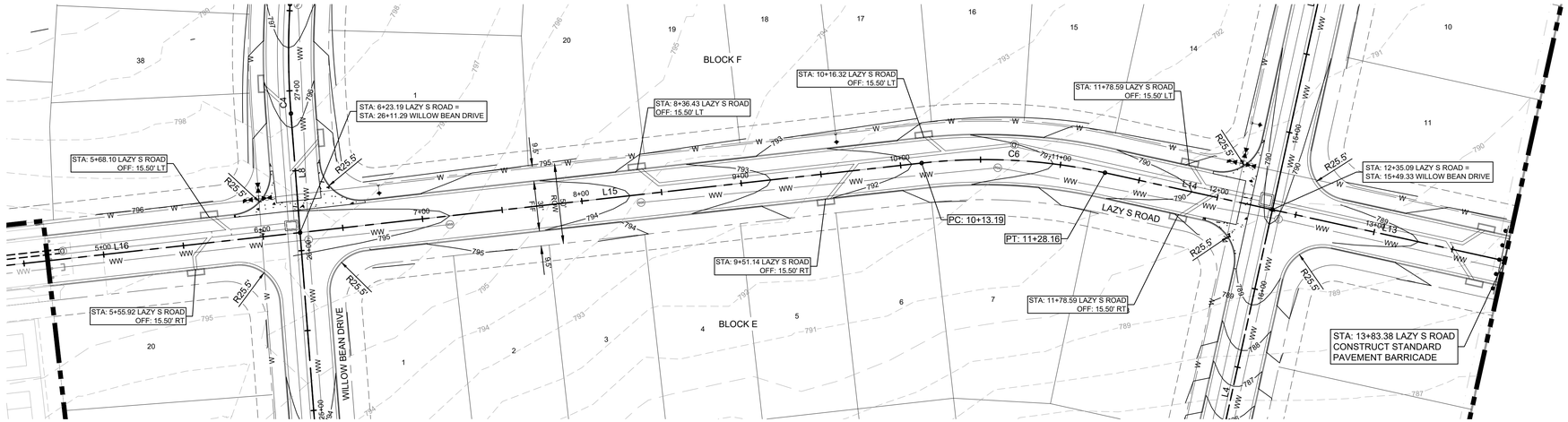
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

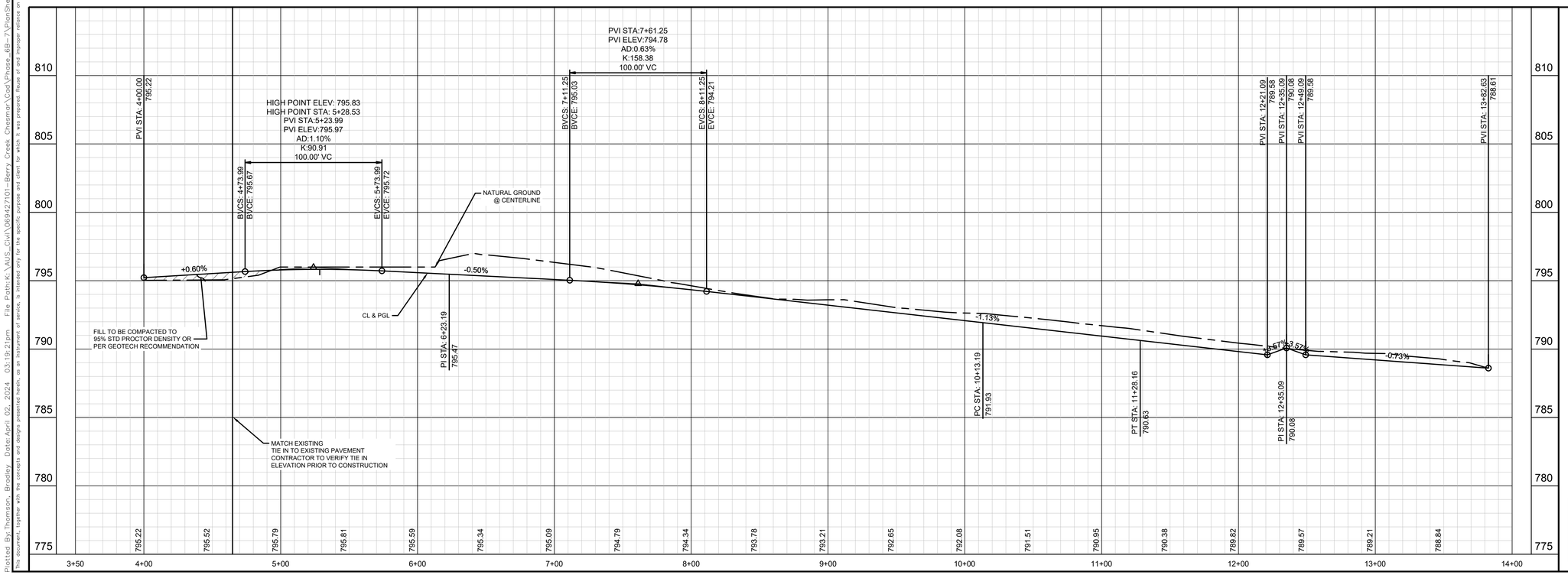
SHEET NUMBER
17
OF 82

2024-9-CON

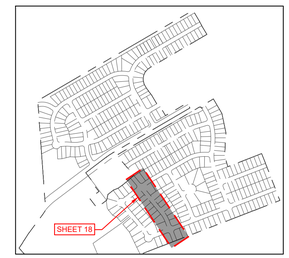
CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C6	350.00'	114.96'	S30°34'27"E	114.44'	18°49'10"	58.00'

LINE TABLE		
LINE	LENGTH	BEARING
L13	148.29	S21°09'52.40"E
L14	106.93	S21°09'52.40"E
L15	390.00	S39°59'02.18"E
L16	223.19	S39°59'02.18"E





LAZY S ROAD



KEYMAP
N.T.S

0 40' 80'
GRAPHIC SCALE 40'

LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - LAZY S ROAD

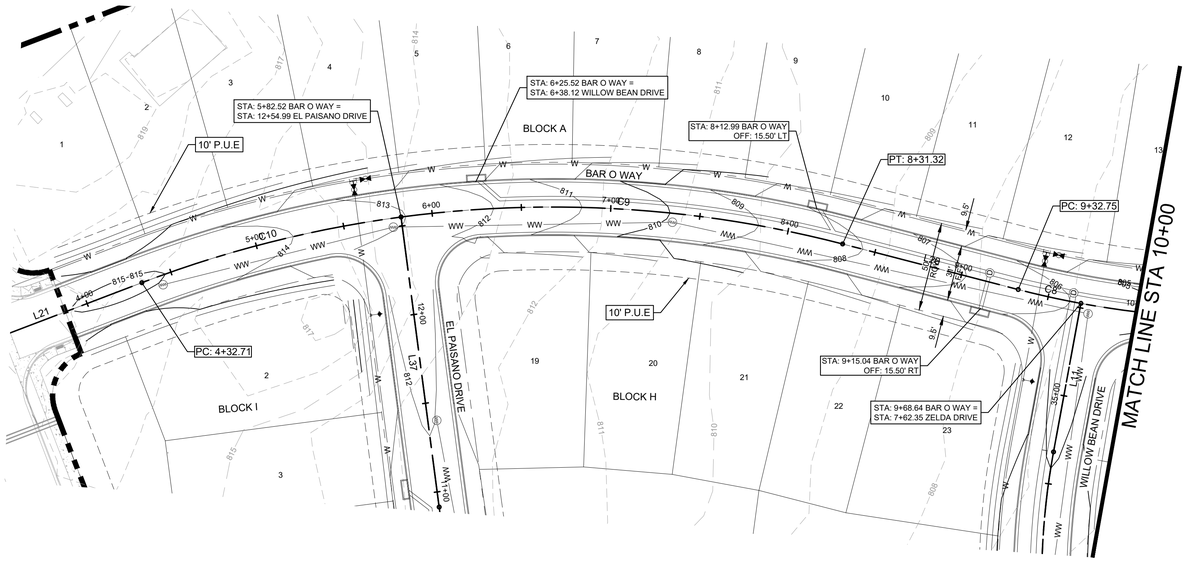
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

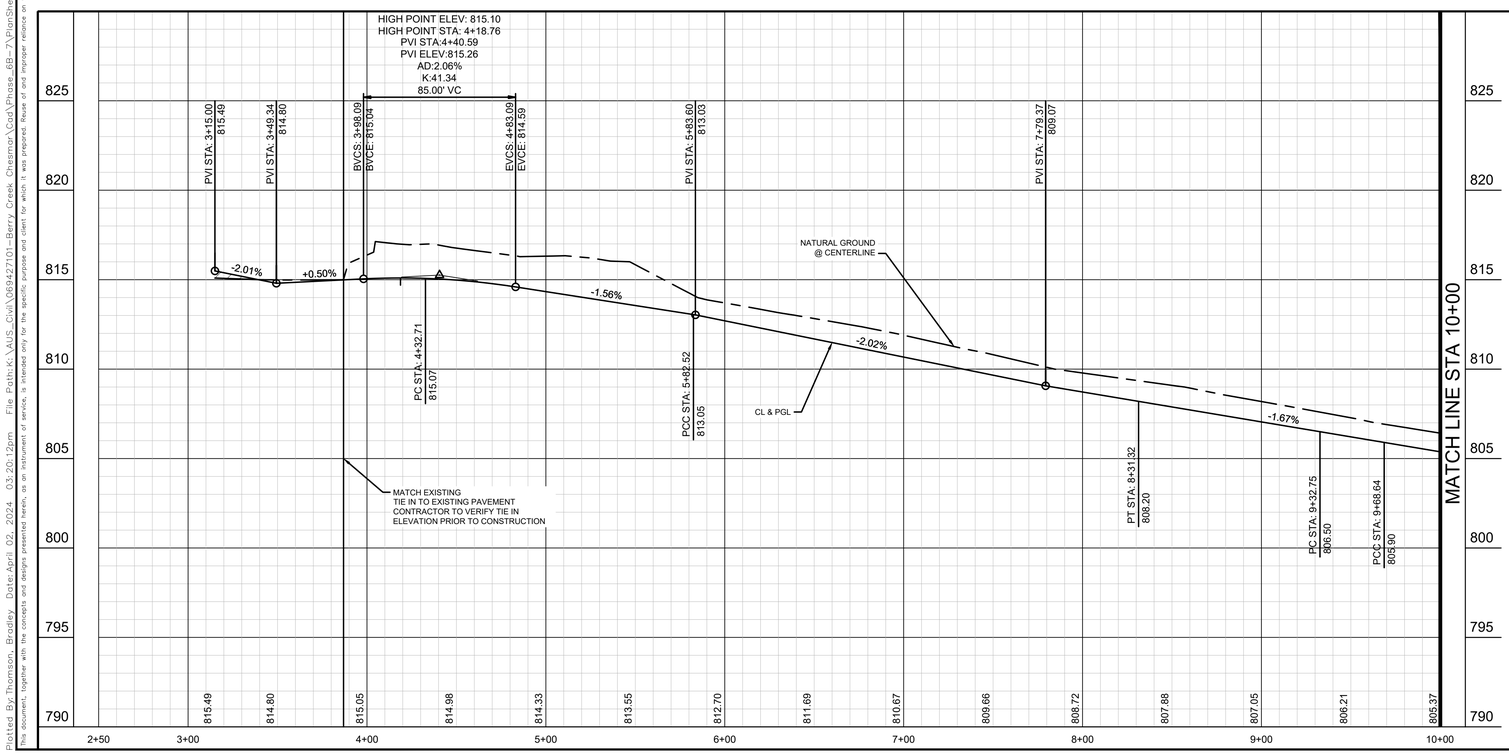
SHEET NUMBER
18
OF 82

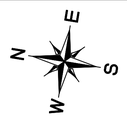
2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C7	500.00'	194.60'	S10°00'53"E	193.38'	22°17'59"	98.55'
C8	500.00'	35.89'	S3°11'29"W	35.88'	4°06'44"	17.95'
C9	645.00'	248.80'	S5°48'12"E	247.26'	22°06'05"	125.97'
C10	645.00'	149.81'	S23°30'29"E	149.48'	13°18'29"	75.25'

LINE TABLE		
LINE	LENGTH	BEARING
L17	148.95	S21°09'52.40"E
L18	296.00	S21°09'52.40"E
L20	101.43	S5°14'50.62"W
L21	117.71	S30°09'37.78"E



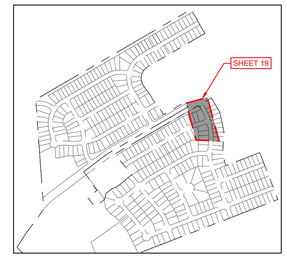




0 40' 80'
GRAPHIC SCALE 40'

LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK



KEYMAP
N.T.S

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

811
Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - BAR O WAY (1 OF 2)

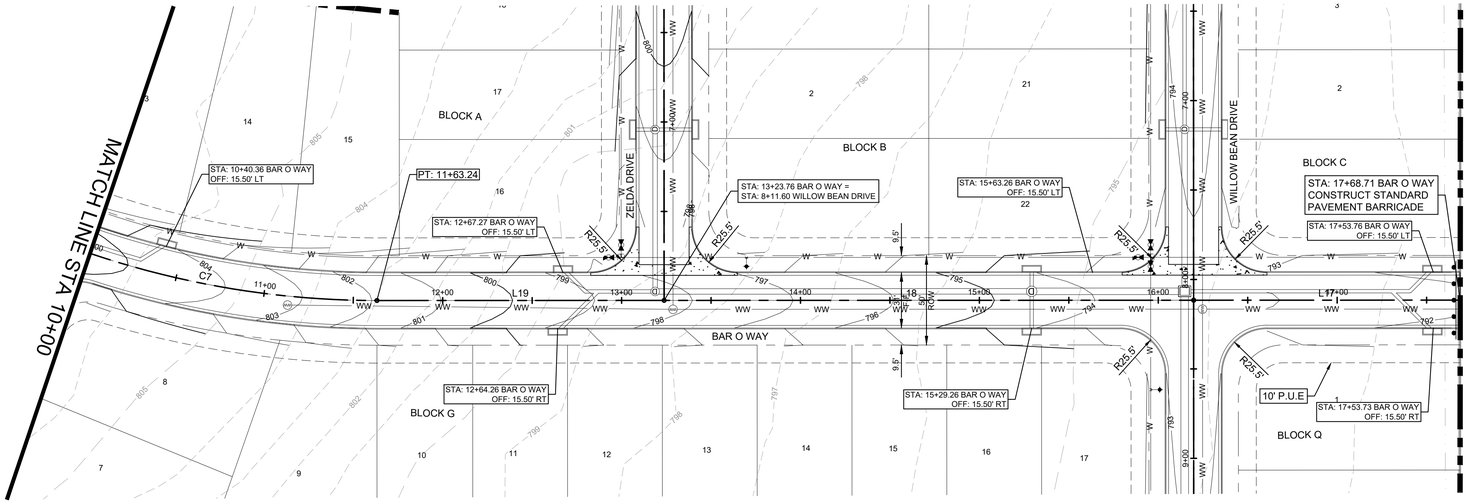
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
19
OF 82

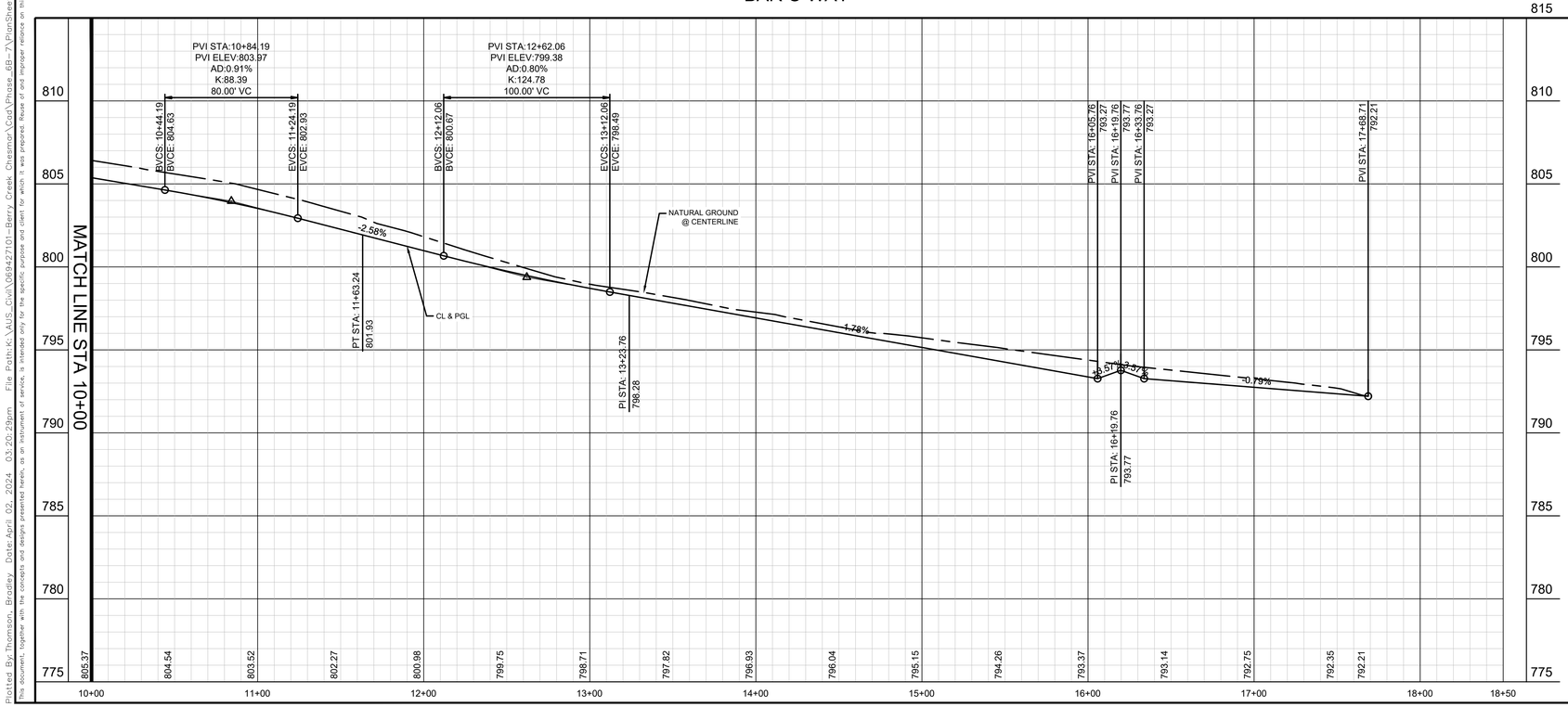
2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C7	500.00'	194.60'	S10°00'53"E	193.38'	22°17'59"	98.55'
C8	500.00'	35.89'	S3°11'29"W	35.88'	4°06'44"	17.95'
C9	645.00'	248.80'	S5°48'12"E	247.26'	22°06'05"	125.97'
C10	645.00'	149.81'	S23°30'29"E	149.48'	13°18'29"	75.25'

LINE TABLE		
LINE	LENGTH	BEARING
L17	148.95	S21°09'52.40"E
L18	296.00	S21°09'52.40"E
L20	101.43	S5°14'50.62"W
L21	117.71	S30°09'37.78"E



BAR O WAY



LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK

KEYMAP
N.T.S

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

PAVING PLAN & PROFILE - BAR O WAY (2 OF 2)

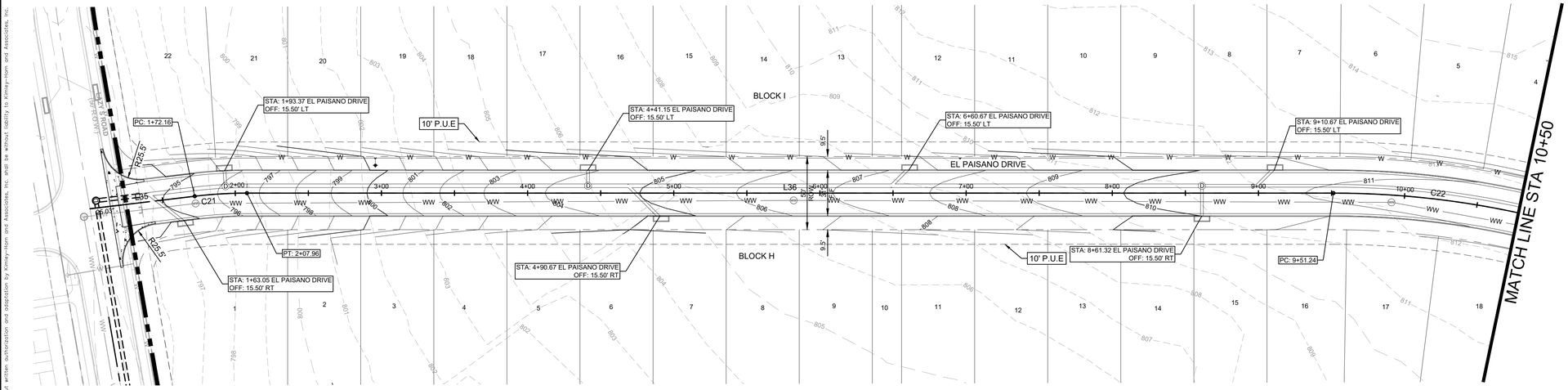
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

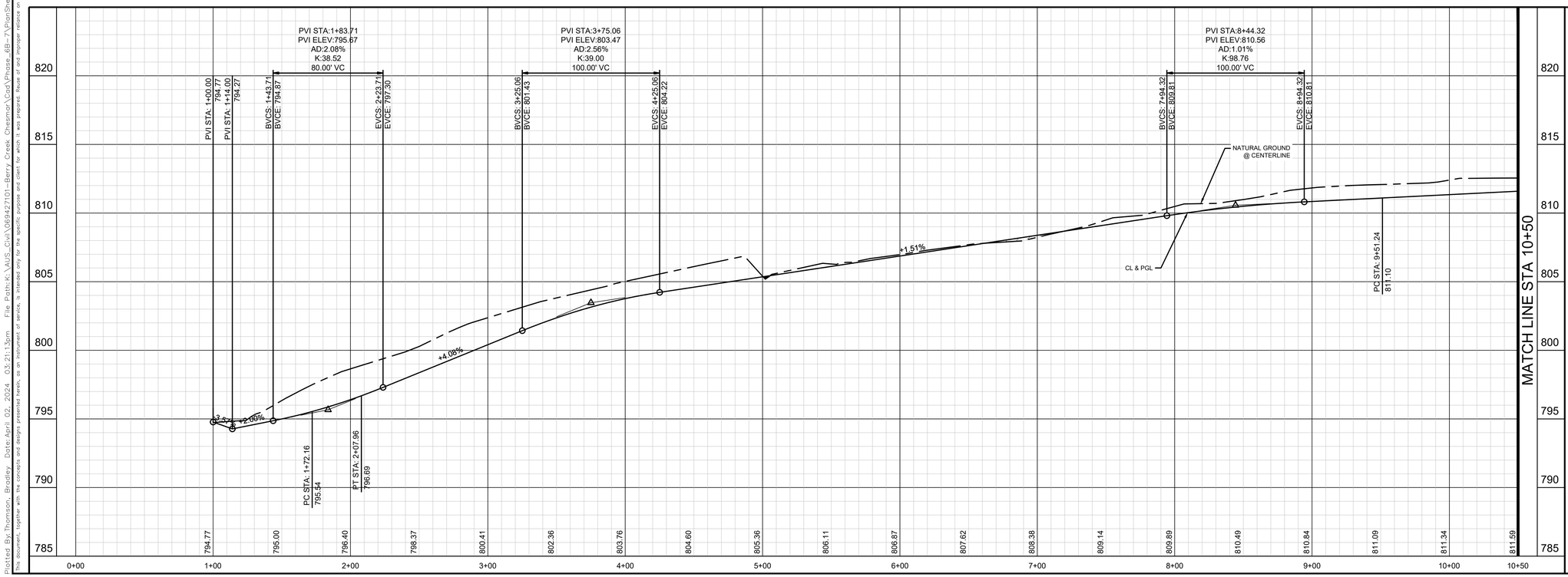
SHEET NUMBER
20
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C21	300.00'	35.80'	N56°25'10"E	35.78'	6°50'13"	17.92'
C22	600.00'	140.21'	N66°31'56"E	139.89'	13°23'19"	70.42'

LINE TABLE		
LINE	LENGTH	BEARING
L35	72.16	N53°00'03.88"E
L36	743.28	N59°50'16.63"E
L37	163.54	N73°13'35.63"E





0 40' 80'
GRAPHIC SCALE 40'

LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK

KEYMAP
N.T.S

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

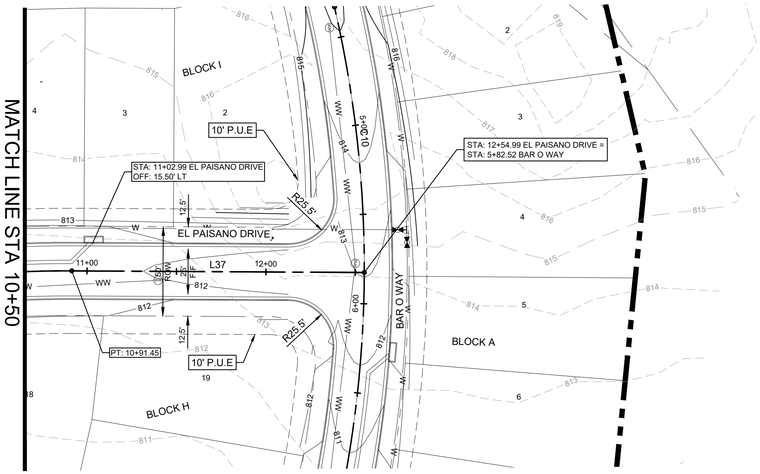
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - EL PAISANO DRIVE (1 OF 2)

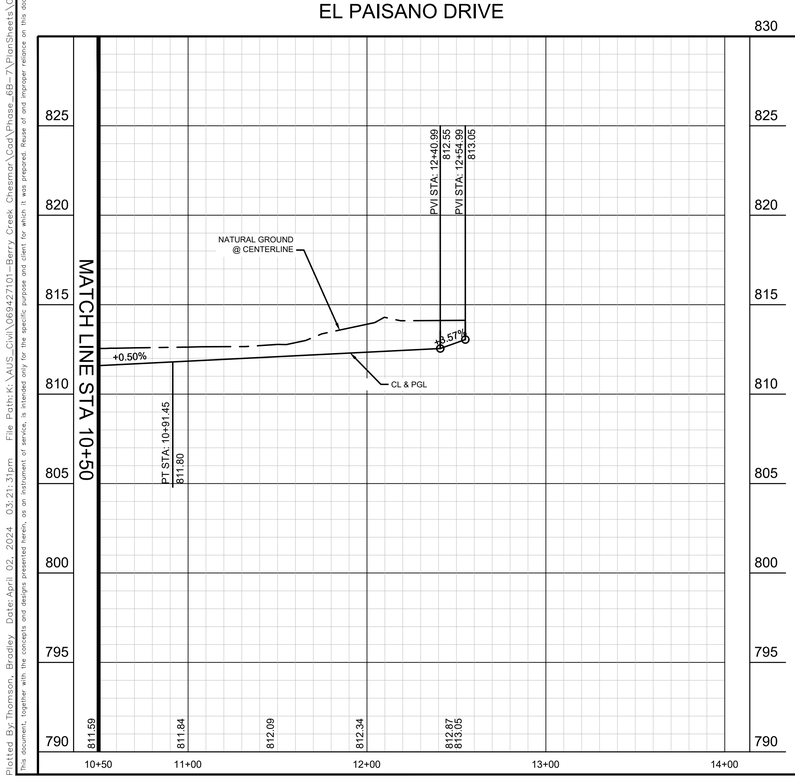
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
21
OF 82

2024-9-CON



EL PAISANO DRIVE

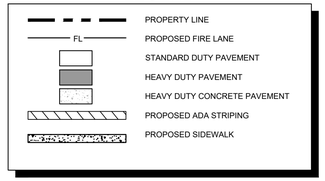


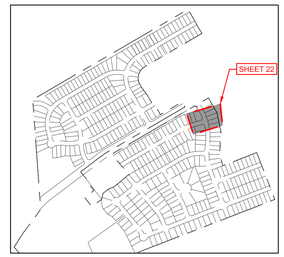
CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C21	300.00'	35.80'	N56°25'10"E	35.78'	6°50'13"	17.92'
C22	600.00'	140.21'	N66°31'56"E	139.89'	13°23'19"	70.42'

LINE TABLE		
LINE	LENGTH	BEARING
L35	72.16	N53°00'03.88"E
L36	743.28	N59°50'16.63"E
L37	163.54	N73°13'35.63"E

0 40' 80'
GRAPHIC SCALE 40'

LEGEND





KEYMAP
N.T.S

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - EL PAISONO DRIVE (2 OF 2)

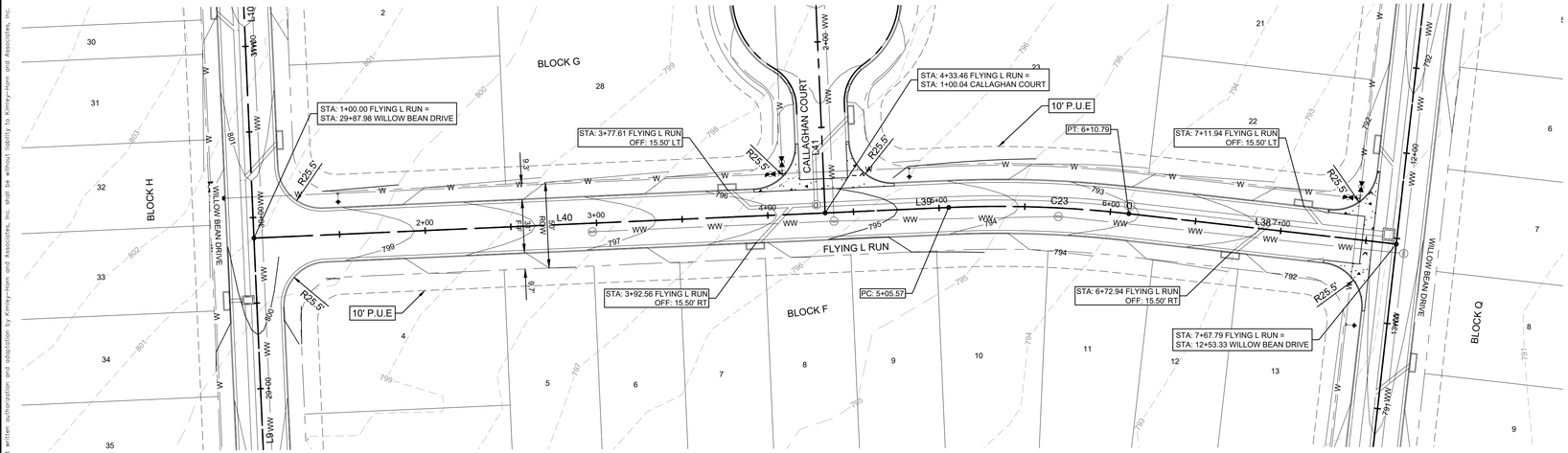
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

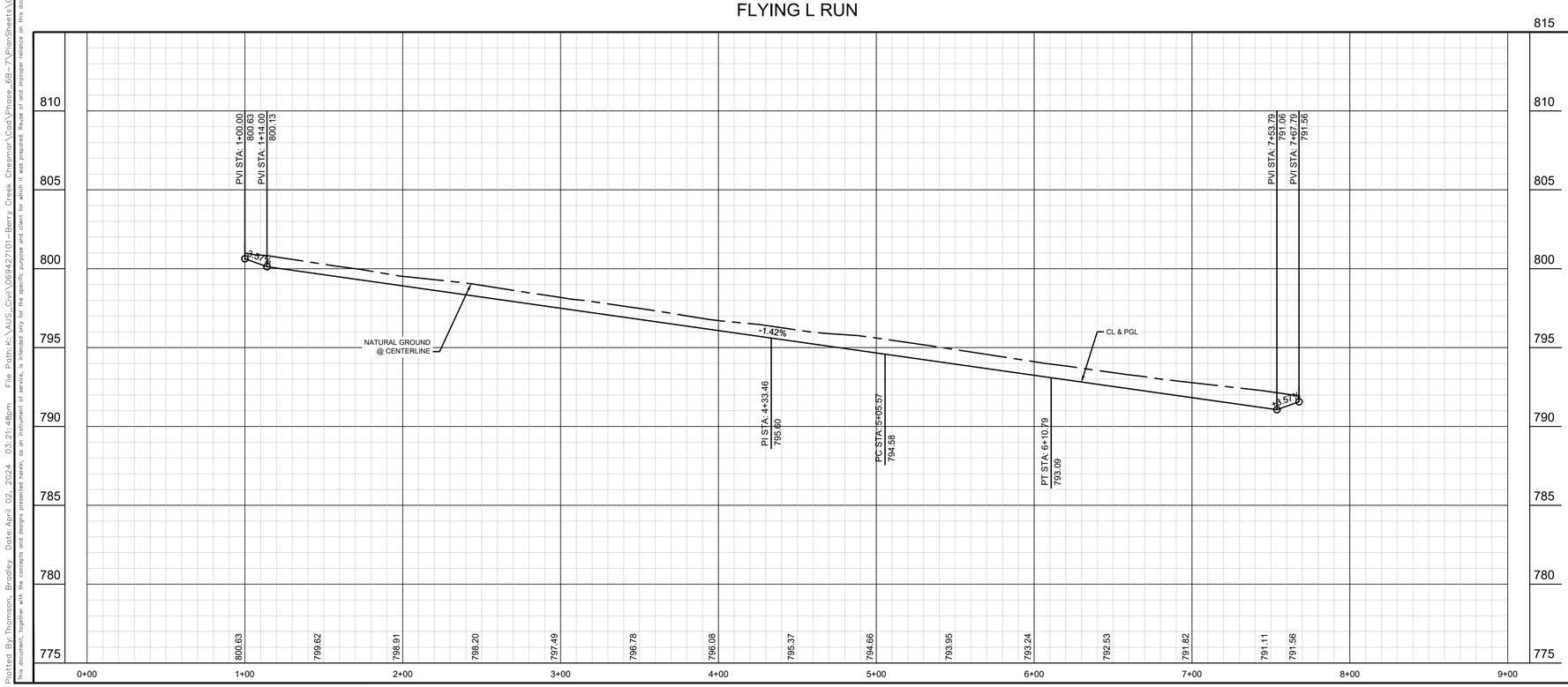
SHEET NUMBER
22
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C23	670.00'	105.21'	S25°39'48"E	105.11'	8°59'51"	52.72'

LINE TABLE		
LINE	LENGTH	BEARING
L38	157.01	S21°09'52.40"E
L39	72.11	S30°09'43.37"E
L40	333.46	S30°09'43.37"E



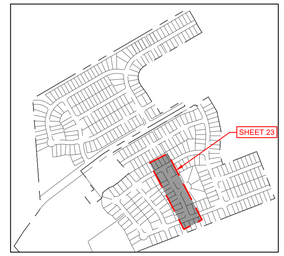


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

0 40' 80'
GRAPHIC SCALE 40'

LEGEND

- PROPERTY LINE
- FL — PROPOSED FIRE LANE
- STANDARD DUTY PAVEMENT
- HEAVY DUTY PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED ADA STRIPING
- PROPOSED SIDEWALK



KEYMAP
N.T.S

811
Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - FLYING L RUN

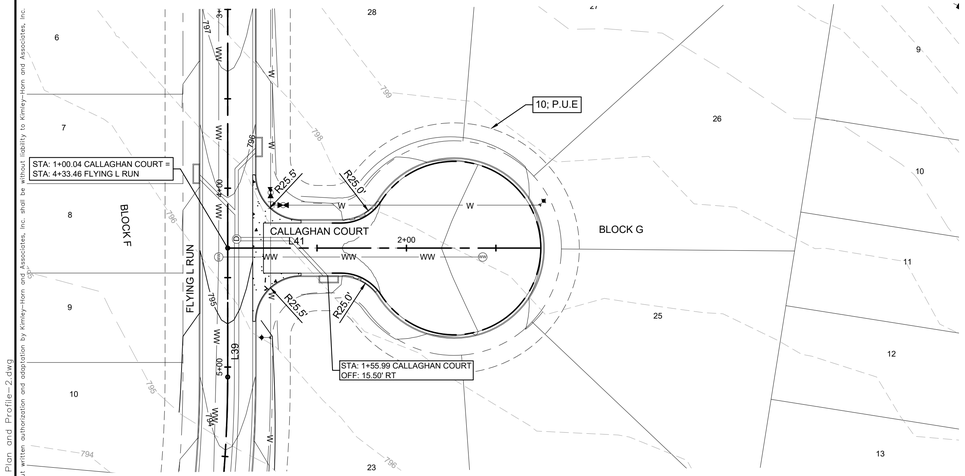
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
23
OF 82

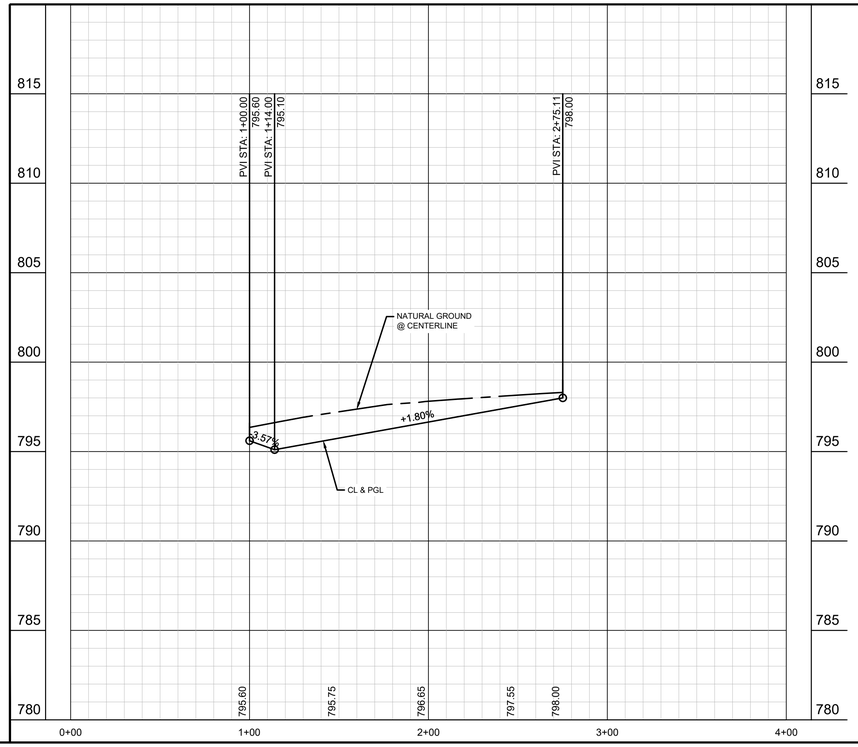
2024-9-CON

LINE TABLE		
LINE	LENGTH	BEARING
L41	175.11	N59°50'16.63"E

0 40' 80'
GRAPHIC SCALE 40'

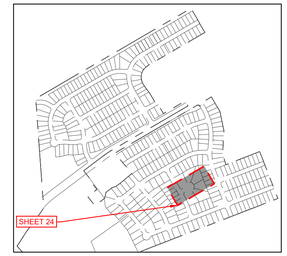


CALLAGHAN COURT



LEGEND

	PROPERTY LINE
FL	PROPOSED FIRE LANE
	STANDARD DUTY PAVEMENT
	HEAVY DUTY PAVEMENT
	HEAVY DUTY CONCRETE PAVEMENT
	PROPOSED ADA STRIPING
	PROPOSED SIDEWALK



KEYMAP
N.T.S

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

811
Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

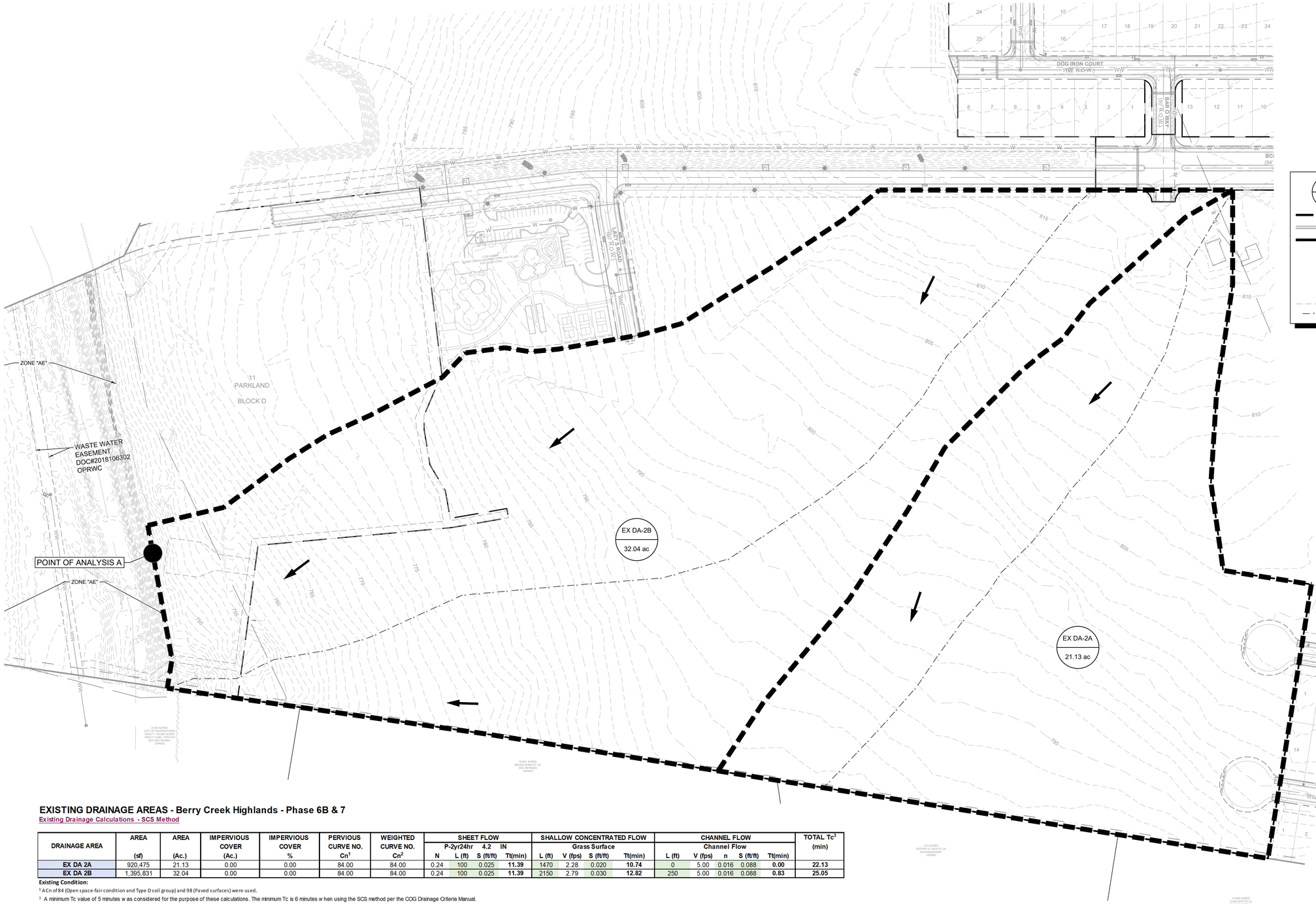
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

PAVING PLAN & PROFILE - CALLAGHAN COURT

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
24
OF 82

2024-9-CON



LEGEND

- X-1 / 9.9 ac — AREA DESIGNATOR / AREA IN ACRES
- PROPERTY LINE
- EXISTING STORM DRAIN LINE
- EXISTING DRAINAGE DIVIDE
- EXISTING STORM DRAIN INLET
- EXISTING STORM DRAIN MANHOLE
- EXISTING STORM DRAIN HEADWALL
- EXISTING FLOW DIRECTION
- EXISTING CONTOUR (555)
- TIME OF CONCENTRATION FLOW PATH

EXISTING DRAINAGE AREAS - Berry Creek Highlands - Phase 6B & 7

Existing Drainage Calculations - SCS Method

DRAINAGE AREA	AREA (sf)	AREA (Ac.)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER %	PERVIOUS CURVE NO. Cn[1]	WEIGHTED CURVE NO. Cn[2]	SHEET FLOW P-2yr24hr 4.2 IN N	L (ft)	S (ft/ft)	Tt(min)	SHALLOW CONCENTRATED FLOW Grass Surface L (ft)	V (fps)	S (ft/ft)	Tt(min)	CHANNEL FLOW Channel Flow L (ft)	V (fps)	n	S (ft/ft)	Tt(min)	TOTAL Tc[3] (min)
EX DA 2A	920,475	21.13	0.00	0.00	84.00	84.00	0.24	100	0.025	**11.39**	1470	2.28	0.020	**10.74**	0	5.00	0.016	0.088	**0.00**	**22.13**
EX DA 2B	1,395,831	32.04	0.00	0.00	84.00	84.00	0.24	100	0.025	**11.39**	2150	2.79	0.030	**12.82**	250	5.00	0.016	0.088	**0.83**	**25.05**

Existing Condition:

[2] ACn of 84 (Open space-fair condition and Type D soil group) and 98 (Paved surfaces) were used.

[3] A minimum Tc value of 5 minutes w as considered for the purpose of these calculations. The minimum Tc is 6 minutes w hen using the SCS method per the COG Drainage Criteria Manual.

Berry Creek Highlands - Phase 6B & 7

EXISTING RUNOFF CONDITIONS

Existing Drainage Areas	Total Drainage Area (Acres)	Total Impervious Cover Area (acres)	Impervious Area (%)	Storm Event	Existing Runoff (cfs)
EX DA 2A	21.13	0.00	0.00%	2 10 25 100	50.19 89.99 116.90 161.43
EX DA 2B	32.04	0.00	0.00%	2 10 25 100	71.57 127.97 166.16 229.39

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.

EX DA 2A + EX DA 2B → POINT OF ANALYSIS 'A'

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101	DATE FEBRUARY 2024	SCALE: AS SHOWN	DESIGNED BY: ACS	DRAWN BY: RRJ	CHECKED BY: ACS

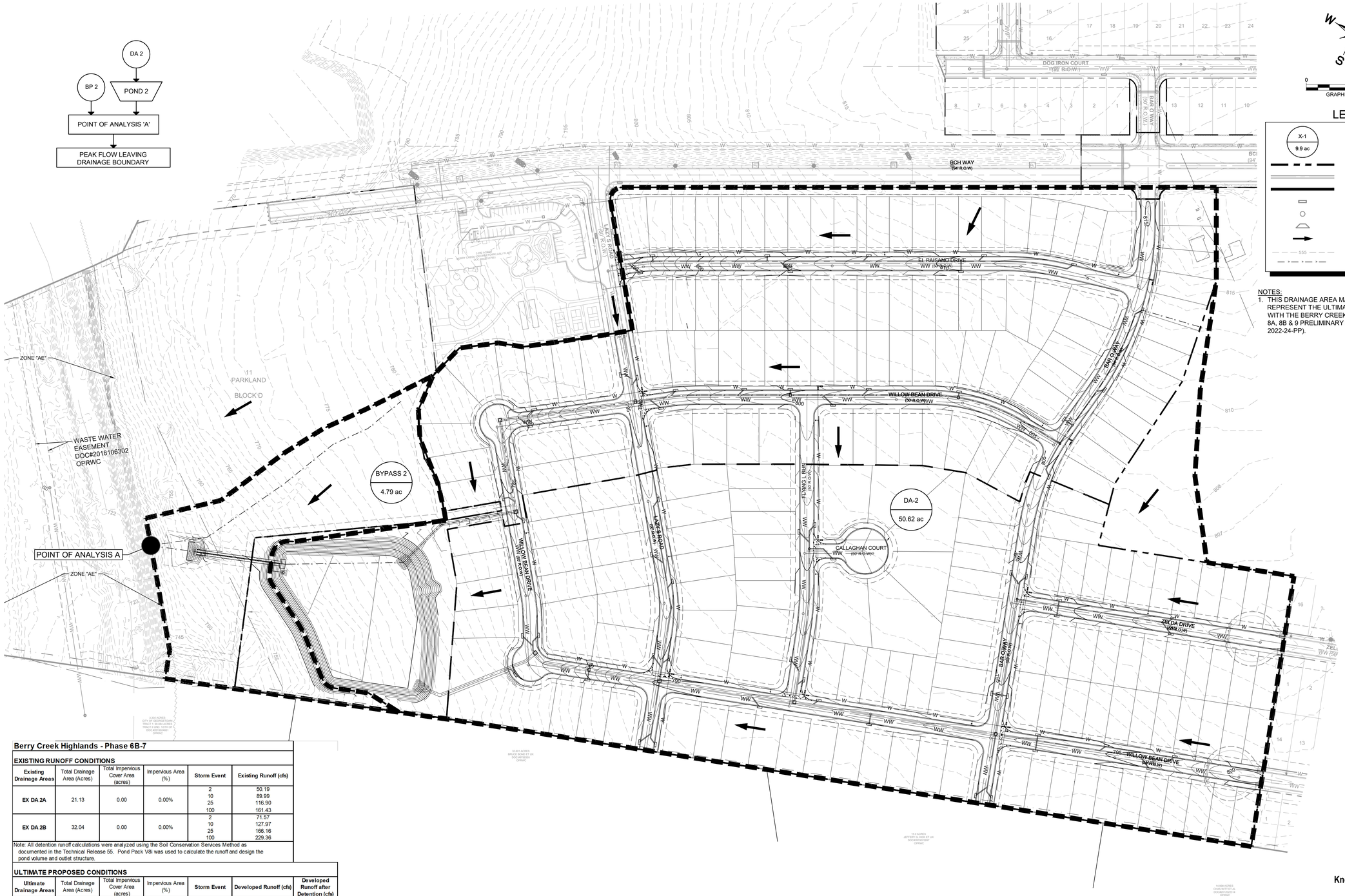
EXISTING DRAINAGE AREA MAP

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
26
OF 82

2024-9-CON



LEGEND

X-1 / 9.9 ac	AREA DESIGNATOR / AREA IN ACRES
	PROPERTY LINE
	EXISTING STORM DRAIN LINE
	EXISTING DRAINAGE DIVIDE
	EXISTING STORM DRAIN INLET
	EXISTING STORM DRAIN MANHOLE
	EXISTING STORM DRAIN HEADWALL
	EXISTING FLOW DIRECTION
555	EXISTING CONTOUR
	TIME OF CONCENTRATION FLOW PATH

NOTES:
1. THIS DRAINAGE AREA MAP AND CALCULATIONS REPRESENT THE ULTIMATE CONDITION ASSOCIATED WITH THE BERRY CREEK HIGHLANDS PHASES 6A, 6B, 7, 8A, 8B & 9 PRELIMINARY PLAN (COG PROJECT #: 2022-24-PP).

Berry Creek Highlands - Phase 6B-7

EXISTING RUNOFF CONDITIONS

Existing Drainage Areas	Total Drainage Area (Acres)	Total Impervious Cover Area (acres)	Impervious Area (%)	Storm Event	Existing Runoff (cfs)
EX DA 2A	21.13	0.00	0.00%	2	50.19
				10	89.99
				25	116.90
				100	161.43
EX DA 2B	32.04	0.00	0.00%	2	71.57
				10	127.97
				25	166.16
				100	229.36

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.

ULTIMATE PROPOSED CONDITIONS

Ultimate Drainage Areas	Total Drainage Area (Acres)	Total Impervious Cover Area (acres)	Impervious Area (%)	Storm Event	Developed Runoff (cfs)	Developed Runoff after Detention (cfs)
DA 2	50.62	26.82	52.99%	2	160.43	102.13
				10	258.56	179.93
				25	323.87	232.75
				100	432.02	314.52
BYPASS 2	4.79	0.26	5.42%	2	14.30	-
				10	25.37	-
				25	32.81	-
				100	45.10	-

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the

ULTIMATE PROPOSED VS. EXISTING COMPARISON

Point of Analysis	Total Drainage Area (Acres)	Storm Event	Existing Runoff (cfs)	Developed Runoff (cfs)	Runoff Difference at Point of Analysis (cfs)	Is Developed ≤ Allowable?
POA-A	55.41	2	120.52	115.31	5.21	YES
		10	216.87	201.80	15.07	YES
		25	282.24	258.77	23.47	YES
		100	390.47	335.40	55.07	YES

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.

PROPOSED DRAINAGE AREAS - Berry Creek Highlands - Phase 6B-7

Proposed Drainage Calculations - SCS Method

DRAINAGE AREA	AREA (sf)	AREA (Ac.)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER %	PERVIOUS CURVE NO. Cn[1]	WEIGHTED CURVE NO. Cn[2]	SHEET FLOW P-2yr24hr 4.2 IN N	SHEET FLOW L (ft)	SHEET FLOW S (ft/ft)	SHEET FLOW Tt(min)	SHALLOW CONCENTRATED FLOW L (ft)	SHALLOW CONCENTRATED FLOW V (fps)	SHALLOW CONCENTRATED FLOW S (ft/ft)	SHALLOW CONCENTRATED FLOW Tt(min)	CHANNEL FLOW Channel Flow L (ft)	CHANNEL FLOW Channel Flow V (fps)	CHANNEL FLOW Channel Flow n	CHANNEL FLOW Channel Flow S (ft/ft)	CHANNEL FLOW Channel Flow Tt(min)	CHANNEL FLOW Pipe Flow L (ft)	CHANNEL FLOW Pipe Flow V (fps)	CHANNEL FLOW Pipe Flow r	CHANNEL FLOW Pipe Flow n	CHANNEL FLOW Pipe Flow Tt(min)	TOTAL Tc[3] (min)
DA 2	2,204,949	50.62	26.82	52.99	84.00	91.42	0.24	50	0.023	6.77	150	1.61	0.010	1.55	0	4.00	0.016	0.024	0.00	2080	3.2	1	0.013	10.83	19.15
BYPASS 2	208,785	4.79	0.26	5.42	84.00	84.76	0.24	100	0.030	10.59	500	2.79	0.030	2.98	150	4.00	0.016	0.080	0.63	0	3.2	1	0.013	0.00	14.20

Proposed Condition:

[2] ACn of 84 (Open space-fair condition and Type D soil group) and 98 (Paved surfaces) were used.

[3] A minimum Tc value of 5 minutes w as considered for the purpose of these calculations. The minimum Tc is 6 minutes w hen using the SCS method per the COG Drainage Criteria Manual.

811 Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

PROPOSED DRAINAGE AREA MAP

BERRY CREEK HIGHLANDS PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
27
OF 82

2024-9-CON

0 100' 200'
GRAPHIC SCALE 100'

LEGEND

X-1 / 9.9 ac	AREA DESIGNATOR / AREA IN ACRES
	PROPERTY LINE
	EXISTING STORM DRAIN LINE
	EXISTING DRAINAGE DIVIDE
	EXISTING STORM DRAIN INLET
	EXISTING STORM DRAIN MANHOLE
	EXISTING STORM DRAIN HEADWALL
	EXISTING FLOW DIRECTION
555	EXISTING CONTOUR
	TIME OF CONCENTRATION FLOW PATH

NOTES:
1. SEE SHEET 29 FOR INLET DRAINAGE CALCULATIONS.

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

INLET DRAINAGE AREA MAP

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
28
OF 82

2024-9-CON

Berry Creek Highlands - Phase 6B & 7 - Inlet Drainage Calculations
Proposed "C" Value Calculations

INLET DRAINAGE AREA	AREA (SF)	AREA (AC)	IMPERVIOUS COVER (SF)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER %	Comp. C_2	Comp. C_{10}	Comp. C_{25}	Comp. C_{100}
A1	29596.84	0.68	18,997	0.44	64%	0.73	0.75	0.76	0.79
A2	31253.16	0.72	21,253	0.49	68%	0.76	0.77	0.78	0.81
A3	21460.00	0.49	13,965	0.32	65%	0.74	0.76	0.77	0.79
A4	22940.00	0.53	14,355	0.33	63%	0.72	0.74	0.75	0.78
A5	25000.00	0.57	17,000	0.39	68%	0.76	0.77	0.78	0.81
A6	31675.44	0.73	23,575	0.54	74%	0.80	0.81	0.82	0.84
A7	61080.24	1.40	37,565	0.86	62%	0.72	0.74	0.75	0.77
A8	30000.00	0.69	23,040	0.53	77%	0.82	0.83	0.84	0.85
A9	16959.90	0.39	11,855	0.27	70%	0.77	0.79	0.80	0.82
A10	24479.14	0.56	14,017	0.32	57%	0.69	0.71	0.72	0.75
A11	44436.18	1.02	23,296	0.53	52%	0.66	0.68	0.69	0.73
A12	46494.61	1.07	26,322	0.60	57%	0.68	0.71	0.72	0.75
A13	28688.29	0.66	20,893	0.48	73%	0.79	0.80	0.81	0.83
A14	3461.52	0.08	2,914	0.07	84%	0.87	0.87	0.88	0.89
A15	18338.54	0.42	12,070	0.28	66%	0.74	0.76	0.77	0.80
A16	3479.96	0.08	2,928	0.07	84%	0.87	0.87	0.88	0.89
A17	50111.29	1.15	20,568	0.47	41%	0.58	0.61	0.63	0.67
B1	35726.42	0.82	18,785	0.43	53%	0.66	0.68	0.69	0.73
B2	46282.13	1.06	29,308	0.67	63%	0.73	0.75	0.76	0.78
B3	29738.94	0.68	17,277	0.40	58%	0.69	0.71	0.73	0.76
B4	30880.61	0.71	15,606	0.36	51%	0.64	0.67	0.68	0.72
B5	33246.15	0.76	18,219	0.42	55%	0.67	0.69	0.71	0.74
C1	71346.79	1.64	36,351	0.83	51%	0.65	0.67	0.69	0.72
C2	46608.27	1.07	26,146	0.60	56%	0.68	0.70	0.72	0.75
C3	61411.64	1.41	19,965	0.46	33%	0.52	0.56	0.58	0.63
C4	41068.41	0.94	24,350	0.56	59%	0.70	0.72	0.73	0.76
C5	27317.54	0.63	11,154	0.26	41%	0.58	0.61	0.63	0.67
D1	20435.05	0.47	12,105	0.28	59%	0.70	0.72	0.73	0.76
D2	28253.23	0.65	15,852	0.36	56%	0.68	0.70	0.72	0.75
D3	39220.00	0.90	24,065	0.55	61%	0.71	0.73	0.75	0.77
D4	26714.44	0.61	16,610	0.38	62%	0.72	0.74	0.75	0.78
E1	37003.16	0.85	23,752	0.55	64%	0.73	0.75	0.76	0.79
E2	36996.84	0.85	23,752	0.55	64%	0.73	0.75	0.76	0.79
E3	36981.31	0.85	23,752	0.55	64%	0.73	0.75	0.76	0.79
E4	37018.69	0.85	23,752	0.55	64%	0.73	0.75	0.76	0.79
F1	43401.05	1.00	23,301	0.53	54%	0.66	0.69	0.70	0.73
F2	31338.00	0.72	18,796	0.43	60%	0.71	0.73	0.74	0.77
F3	50248.53	1.15	30,050	0.69	60%	0.70	0.72	0.74	0.76
F4	32214.15	0.74	19,535	0.45	61%	0.71	0.73	0.74	0.77
F5	55143.70	1.27	24,971	0.57	45%	0.61	0.64	0.65	0.69
F6	53840.13	1.24	29,702	0.68	55%	0.67	0.70	0.71	0.74
F7	45589.01	1.05	26,700	0.61	59%	0.70	0.72	0.73	0.76
F8	45050.00	1.03	25,551	0.59	57%	0.68	0.71	0.72	0.75
F9	26500.00	0.61	16,900	0.39	64%	0.73	0.75	0.76	0.79
F10	40515.11	0.93	25,308	0.58	62%	0.72	0.74	0.75	0.78
F11	7819.39	0.18	6,578	0.15	84%	0.87	0.87	0.88	0.89
F12	54370.13	1.25	28,937	0.66	53%	0.66	0.68	0.70	0.73
F13	5620.11	0.13	4,728	0.11	84%	0.87	0.87	0.88	0.89
F14	64147.51	1.47	35,255	0.81	55%	0.67	0.70	0.71	0.74
F15	29987.94	0.69	18,500	0.42	62%	0.72	0.74	0.75	0.77
G1	23347.94	0.54	10,230	0.23	44%	0.60	0.63	0.64	0.68
G2	37015.74	0.85	18,893	0.43	51%	0.65	0.67	0.69	0.72
G3	8943.46	0.21	7,546	0.17	84%	0.87	0.87	0.88	0.89
G4	41241.42	0.95	23,750	0.55	58%	0.69	0.71	0.72	0.75
G5	9250.00	0.21	7,770	0.18	84%	0.86	0.87	0.88	0.89
G6	36112.26	0.83	19,420	0.45	54%	0.66	0.69	0.70	0.73
G7	54042.31	1.24	28,818	0.66	53%	0.66	0.69	0.70	0.73
G8	9117.23	0.21	7,601	0.17	83%	0.86	0.87	0.87	0.89
G9	2414.00	0.06	2,027	0.05	84%	0.86	0.87	0.88	0.89
G10	2718.58	0.06	2,284	0.05	84%	0.86	0.87	0.88	0.89

Storm Event	Good Condition (Grass cover > 75% 2-7%)	
C'	Pervious	Impervious
C_2	0.31	0.97
C_{10}	0.36	0.97
C_{25}	0.39	0.97
C_{100}	0.46	0.97

BCH Phase 6B & 7
"Tc" Value Calculations

DRAINAGE AREA	TOTAL Tc** (min)
A1	5.00
A2	5.00
A3	5.00
A4	5.00
A5	5.00
A6	5.00
A7	5.00
A8	5.00
A9	5.00
A10	5.00
A11	5.00
A12	5.00
A13	5.00
A14	5.00
A15	5.00
A16	5.00
A17	5.00
B1	5.00
B2	5.00
B3	5.00
B4	5.00
B5	5.00
C1	5.00
C2	5.00
C3	5.00
C4	5.00
C5	5.00
D1	5.00
D2	5.00
D3	5.00
D4	5.00
E1	5.00
E2	5.00
E3	5.00
E4	5.00
F1	5.00
F2	5.00
F3	5.00
F4	5.00
F5	5.00
F6	5.00
F7	5.00
F8	5.00
F9	5.00
F10	5.00
F11	5.00
F12	5.00
F13	5.00
F14	5.00
F15	5.00
G1	5.00
G2	5.00
G3	5.00
G4	5.00
G5	5.00
G6	5.00
G7	5.00
G8	5.00
G9	5.00
G10	5.00

**The minimum Tc is 5 minutes per the City of Georgetown DCM.

Berry Creek Highlands - Phase 6B & 7 - Inlet Drainage Calculations
INLET FLOW CALCULATION TABLE (25-Yr Flows)

Parabolic Crown

Inlet No.	Inlet Type	Drainage Area No.	Street Width (FOC - FOC)	K0	K1	K2	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Slope (%)	a (in.)	yo (ft.)	Ponded Width (ft)	R.F. (%)	Qa/La	La (ft)	Length (ft)	L/La	a/yo	Q/Qa	Q (cfs)	Q Pass (cfs)
A1	Grade	A1	31'	2.85	0.50	3.03	5.10	0.00	5.10	2.00%	5.0	0.374	7.73	10	0.83	6.13	10	1.63	1.11	1.63	8.31	0.00
A2	Grade	A2	31'	2.85	0.50	3.03	5.54	0.00	5.54	2.00%	5.0	0.385	8.06	10	0.84	6.58	10	1.52	1.08	1.52	8.42	0.00
A3	Grade	A3	31'	2.85	0.50	3.03	3.72	0.00	3.72	0.50%	5.0	0.424	9.46	10	0.88	4.20	10	2.38	0.98	2.38	8.85	0.00
A4	Grade	A4	31'	2.85	0.50	3.03	3.90	0.00	3.90	0.50%	5.0	0.431	9.73	10	0.89	4.37	10	2.29	0.97	2.29	8.92	0.00
A5	Grade	A5	31'	2.85	0.50	3.03	4.43	0.00	4.43	0.50%	5.0	0.449	10.56	10	0.91	4.85	10	2.06	0.93	2.06	9.12	0.00
A6	Grade	A6	31'	2.85	0.50	3.03	5.88	0.00	5.88	0.50%	5.0	0.493	13.69	10	0.96	6.11	10	1.64	0.84	1.64	9.62	0.00
A7	Grade	A7	31'	2.85	0.50	3.03	10.30	0.00	10.30	0.50%	5.0	0.593	WITHIN ROW	10	1.08	9.56	10	1.05	0.70	1.05	10.77	0.00
A8	Grade	A8	31'	2.85	0.50	3.03	5.66	0.00	5.66	0.50%	5.0	0.487	13.01	10	0.95	5.93	10	1.69	0.86	1.69	9.55	0.00
A9	Grade	A9	31'	2.85	0.50	3.03	3.05	0.00	3.05	4.60%	5.0	0.275	5.11	10	0.73	4.19	10	2.39	1.51	2.39	7.28	0.00
A10	Grade	A10	31'	2.85	0.50	3.03	3.99	0.00	3.99	4.60%	5.0	0.301	5.72	10	0.75	5.30	10	1.89	1.38	1.89	7.54	0.00
A11	Sump	A11	31'	2.85	0.50	3.03	6.97	0.82	7.79	1.00%	5.0	0.483	12.61	SEE SUMP CALCULATIONS BELOW								
A12	Sump	A12	31'	2.85	0.50	3.03	7.54	0.00	7.54	0.50%	5.0	0.535	WITHIN ROW	SEE SUMP CALCULATIONS BELOW								
A13	Grade	A13	31'	2.85	0.50	3.03	5.26	0.00	5.26	0.50%	5.0	0.476	12.07	10	0.94	5.59	10	1.79	0.88	1.79	9.42	0.00
A14	Grade	A14	31'	2.85	0.50	3.03	0.69	0.00	0.69	0.50%	5.0	0.243	4.38	10	0.70	0.99	10	10.12	1.72	10.12	6.95	0.00
A15	Grade	A15	31'	2.85	0.50	3.03	3.20	0.00	3.20	0.50%	5.0	0.403	8.69	10	0.86	3.71	10	2.70	1.03	2.70	8.62	0.00
A16	Grade	A16	31'	2.85	0.50	3.03	0.69	0.00	0.69	0.50%	5.0	0.243	4.39	10	0.70	0.99	10	10.08	1.71	10.08	6.96	0.00
A17	Sump	A17	31'	2.85	0.50	3.03	7.11	0.00	7.11	0.50%	5.0	0.525	WITHIN ROW	SEE SUMP CALCULATIONS BELOW								
B1	Grade	B1	31'	2.85	0.50	3.03	5.61	0.00	5.61	1.20%	5.0	0.420	9.31	10	0.88	6.37	10	1.57	0.99	1.57	8.81	0.00
B2	Grade	B2	31'	2.85	0.50	3.03	7.92	0.00	7.92	1.20%	5.0	0.471	11.76	10	0.94	8.45	10	1.18	0.88	1.18	9.37	0.00
B3	Grade	B3	31'	2.85	0.50	3.03	4.88	0.00	4.88	1.20%	5.0	0.401	8.62	10	0.86	5.68	10	1.76	1.04	1.76	8.60	0.00
B4	Grade	B4	31'	2.85	0.50	3.03	4.76	0.00	4.76	1.20%	5.0	0.398	8.51	10	0.86	5.56	10	1.80	1.05	1.80	8.57	0.00
B5	Grade	B5	31'	2.85	0.50	3.03	5.32	0.00	5.32	1.20%	5.0	0.413	9.03	10	0.87	6.09	10	1.64	1.01	1.64	8.73	0.00
C1	Grade	C1	31'	2.85	0.50	3.03	11.05	0.00	11.05	1.40%	5.0	0.512	WITHIN ROW	10	0.98	11.23	10	0.89	0.81	0.89	9.84	1.21
C2	Grade	C2	31'	2.85	0.50	3.03	7.53	0.00	7.53	1.40%	5.0	0.452	10.68	10	0.92	8.23	10	1.22	0.92	1.22	9.15	0.00
C3	Grade	C3	31'	2.85	0.50	3.03	8.03	0.00	8.03	1.40%	5.0	0.461	11.18	10	0.93	8.67	10	1.15	0.90	1.15	9.26	0.00
C4	Grade	C4	31'	2.85	0.50	3.03	6.81	0.00	6.81	1.40%	5.0	0.437	9.99	10	0.90	7.57	10	1.32	0.95	1.32	8.99	0.00
C5	Grade	C5	31'	2.85	0.50	3.03	3.87	0.00	3.87	1.40%	5.0	0.362	7.37	10	0.82	4.73	10	2.12	1.15	2.12	8.18	0.00
D1	Grade	D1	31'	2.85	0.50	3.03	3.39	0.00	3.39	1.80%	5.0	0.333	6.54	10	0.79	4.30	10	2.32	1.25	2.32	7.87	0.00
D2	Grade	D2	31'	2.85	0.50	3.03	4.57	0.00	4.57	1.80%	5.0	0.367	7.51	10	0.82	5.54	10	1.80	1.13	1.80	8.23	0.00
D3	Grade	D3	31'	2.85	0.50	3.03	6.61	0.00	6.61	1.80%	5.0	0.415	9.11	10	0.87	7.55	10	1.32	1.00	1.32	8.75	0.00
D4	Grade	D4	31'	2.85	0.50	3.03	4.53	0.00	4.53	1.80%	5.0	0.366	7.48	10	0.82	5.51	10	1.82	1.14	1.82	8.22	0.00
E1	Grade	E1	31'	2.85	0.50	3.03	6.37	0.00	6.37	1.40%	5.0	0.427	9.59	10	0.89	7.17	10	1.39	0.98	1.39	8.88	0.00
E2	Grade	E2	31'	2.85	0.50	3.03	6.37	0.00	6.37	1.40%	5.0	0.427	9.59	10	0.89	7.17	10	1.39	0.98	1.39	8.88	0.00
E3	Grade	E3	31'	2.85	0.50	3.03	6.37	0.00	6.37	1.40%	5.0	0.427	9.59	10	0.89	7.17	10	1.39	0.98	1.39	8.88	0.00
E4	Grade	E4	31'	2.85	0.50	3.03	6.37	0.00	6.37	1.40%	5.0	0.427	9.59	10	0.89	7.17	10	1.39	0.98	1.39	8.88	0.00
F1	Grade	F1	31'	2.85	0.50	3.03	6.88	0.00	6.88	2.00%	5.0	0.413	9.04	10	0.87	7.88	10	1.27	1.01	1.27	8.73	0.00
F2	Grade	F2	31'	2.85	0.50	3.03	5.22	0.00	5.22	2.00%	5.0	0.377	7.82	10	0.83	6.26	10	1.60	1.10	1.60	8.34	0.00
F3	Grade	F3	31'	2.85	0.50	3.03	8.36	0.00	8.36	1.80%	5.0	0.448	10.52	10	0.91	9.17	10	1.09	0.93	1.09	9.12	0.00
F4	Grade	F4	31'	2.85	0.50	3.03	5.40	0.00	5.40	1.80%	5.0	0.388	8.17	10	0.85	6.38	10	1.57	1.07	1.57	8.46	0.00
F5	Grade	F5	31'	2.85	0.50	3.03	8.13	0.00	8.13	1.00%	5.0	0.490	13.26	10	0.96	8.49	10	1.18	0.85	1.18	9.58	0.00
F6	Grade	F6	31'	2.85	0.50	3.03	8.63	0.00	8.63	1.00%	5.0	0.499	14.95	10	0.97	8.91	10	1.12	0.83	1.12	9.69	0.00
F7	Grade	F7	31'	2.85	0.50	3.03	7.51	0.00	7.51	1.00%	5.0	0.477	12.17	10	0.94	7.96	10	1.26	0.87	1.26	9.43	0.00
F8	Grade	F8	31'	2.85	0.50	3.03	7.32	0.00	7.32	1.00%	5.0	0.473	11.88	10	0.94	7.79	10	1.28	0.88	1.28	9.39	0.00
F9	Grade	F9	31'	2.85	0.50	3.03	4.55	0.00	4.55	1.00%	5.0	0.404	8.71	10	0.86	5.27	10	1.90	1.03	1.90	8.63	0.00
F10	Grade	F10	31'	2.85	0.50	3.03	6.88	0.00	6.88	2.00%	5.0	0.413	9.05	10	0.87	7.89	10	1.27	1.01	1.27	8.73	0.00
F11	Grade	F11	31'	2.85	0.50	3.03	1.55	0.00	1.55	2.00%	5.0	0.253	4.60	10	0.71	2.20	10	4.55	1.65	4.55	7.05	0.00
F12	Grade	F12	31'	2.85	0.50	3.03	8.58	0.00	8.58	4.30%	5.0	0.392	8.29	10	0.85	10.10	10	0.99	1.06	0.99	8.50	0.08
F13	Grade	F13	31'	2.85	0.50	3.03	1.11	0.00	1.11	4.30%	5.0	0.200	3.49	10	0.65	1.71	10	5.86	2.09	5.86	6.53	0.00
F14	Grade	F14	31'	2.85	0.50	3.03	10.27	0.08	10.35	1.70%	5.0	0.486	12.88	10	0.95	10.86	10	0.92	0.86	0.92	9.53	0.82
F15	Grade	F15	31'	2.85	0.50	3.03	5.07	0.00	5.07	1.70%	5.0	0.384	8.02	10	0.84	6.02	10	1.66	1.09	1.66	8.41	0.00
G1	Grade	G1	31'	2.85	0.50	3.03	3.40	0.00	3.40	0.50%	5.0	0.412	8.98	10	0.87	3.90	10	2.56	1.01	2.56	8.71	0.00
G2	Grade	G2	31'	2.85	0.50	3.03	5.74	0.00	5.74	0.50%	5.0	0.489	13.22	10	0.96	5.99	10	1.67	0.85	1.67	9.57	0.00
G3	Grade	G3	31'	2.85	0.50	3.03	1.78	0.00	1.78	1.00%	5.0	0.296	5.61	10	0.75	2.37	10	4.22	1.41	4.22	7.49	0.00
G4	Grade	G4	31'	2.85	0.50	3.03	6.74	0.00	6.74	1.50%	5.0	0.430	9.72	10	0.89	7.56	10	1.32	0.97	1.32	8.92	0.00
G5	Grade	G5	31'	2.85	0.50	3.03	1.83	0.00	1.83	1.50%	5.0	0.280	5.22	10	0.73	2.50	10	4.00	1.49	4.00	7.33	0.00
G6	Grade	G6	31'	2.85	0.50	3.03	5.73	0.00	5.73	1.50%	5.0	0.408	8.85	10	0.87	6.60	10	1.51	1.02	1.51	8.67	0.00
G7	Grade	G7	31'	2.85	0.50	3.03	8.54	0.00	8.54	3.30%	5.0	0.409	8.87	10	0.87	9.84	10	1.02	1.02	1.02	8.68	0.00
G8	Grade	G8	31'	2.85	0.50	3.03	1.80	0.00	1.80	3.30%	5.0	0.244	4.42	10	0.70	2.58	10	3.87	1.71	3.87	6.97	0.00
G9	Grade	G9	31'	2.85	0.50	3.03	0.48	0.00	0.48	0.50%	5.0	0.215	3.81	10	0.67	0.72	10	13.97	1.93	13.97	6.68	0.00
G10	Grade	G10	31'	2.85	0.50	3.03	0.54	0.00	0.54	0.50%	5.0	0.224	3.99	10	0.68	0.80	10	12.56	1.86	12.56	6.77	0.00

Sump Inlets

Inlet No.	Inlet Type	Drainage Area No.	Street Width (CL - FOC)	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Cw	L (ft)	W (ft)	d (ft)	Inlet Capacity (cfs)	PASS/FAIL	
A11	Sump	E2	15.5'	6.97	0.82	7.79	2.3	15	1.5	0.50	14.39	PASS	*All Sump Equations Assume Weir flow per City of Austin Drainage Criteria Manual Section 4.3.1
A12	Sump	F13	15.5'	7.54	0.00	7.54	2.3	10	1.5	0.50	10.33	PASS	*All Sump Equations Assume Weir flow per City of Austin Drainage Criteria Manual Section 4.3.1
A17	Sump	F14	15.5'	7.11	0.00	7.11	2.3	10	1.5	0.50	10.33	PASS	*All Sump Equations Assume Weir flow per City of Austin Drainage Criteria Manual Section 4.3.1

Berry Creek Highlands - Phase 6B & 7 - Inlet Drainage Calculations
Proposed Inlet Runoff (Q) Calculations

D.A. Number	Drainage Area (Ac)	TOTAL I.C. (%)	Comp. C_2	Comp. C_{10}	Comp. C_{25}	Comp. C_{100}	TOTAL T_c (Min.)	i_2 (in/hr)	i_{10} (in/hr)	i_{25} (in/hr)	i_{100} (in/hr)	Q_2 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)	Q_{100}-Pass (cfs)
A1	0.68	64%	0.73	0.75	0.76	0.79	5.00	6.48	8.64	9.84	11.88	3.23	4.41	5.10	6.36	0.00
A2	0.72	68%	0.76	0.77	0.78	0.81	5.00	6.48	8.64	9.84	11.88	3.53	4.80	5.54	6.88	0.00
A3	0.49	65%	0.74	0.76	0.77	0.79	5.00	6.48	8.64	9.84	11.88	2.36	3.22	3.72	4.63	0.00
A4	0.53	63%	0.72	0.74	0.75	0.78	5.00	6.48	8.64	9.84	11.88	2.47	3.38	3.90	4.87	0.00
A5	0.57	68%	0.76	0.77	0.78	0.81	5.00	6.48	8.64	9.84	11.88	2.82	3.84	4.43	5.50	0.00
A6	0.73	74%	0.80	0.81	0.82	0.84	5.00	6.48	8.64	9.84	11.88	3.77	5.12	5.88	7.25	1.57
A7	1.40	62%	0.72	0.74	0.75	0.77	5.00	6.48	8.64	9.84	11.88	6.50	8.91	10.30	12.89	1.57
A8	0.69	77%	0.82	0.83	0.84	0.85	5.00	6.48	8.64	9.84	11.88	3.65	4.93	5.66	6.97	0.00
A9	0.39	70%	0.77	0.79	0.80	0.82	5.00	6.48	8.64	9.84	11.88	1.95	2.65	3.05	3.78	0.00
A10	0.56	57%	0.69	0.71	0.72	0.75	5.00	6.48	8.64	9.84	11.88	2.50	3.44	3.99	5.02	0.00
A11	1.02	52%	0.66	0.68	0.69	0.73	5.00	6.48	8.64	9.84	11.88	4.34	5.99	6.97	8.82	0.00
A12	1.07	57%	0.68	0.71	0.72	0.75	5.00	6.48	8.64	9.84	11.88	4.73	6.51	7.54	9.49	0.00
A13	0.66	73%	0.79	0.80	0.81	0.83	5.00	6.48	8.64	9.84	11.88	3.37	4.58	5.26	6.51	0.00
A14	0.08	84%	0.87	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	0.45	0.60	0.69	0.84	0.00
A15	0.42	66%	0.74	0.76	0.77	0.80	5.00	6.48	8.64	9.84	11.88	2.03	2.77	3.20	3.98	0.00
A16	0.08	84%	0.87	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	0.45	0.60	0.69	0.84	0.00
A17	1.15	41%	0.58	0.61	0.63	0.67	5.00	6.48	8.64	9.84	11.88	4.33	6.07	7.11	9.15	0.00
B1	0.82	53%	0.66	0.68	0.69	0.73	5.00	6.48	8.64	9.84	11.88	3.49	4.82	5.61	7.10	0.11
B2	1.06	63%	0.73	0.75	0.76	0.78	5.00	6.48	8.64	9.84	11.88	5.01	6.85	7.92	9.88	0.00
B3	0.68	58%	0.69	0.71	0.73	0.76	5.00	6.48	8.64	9.84	11.88	3.07	4.21	4.88	6.13	0.00
B4	0.71	51%	0.64	0.67	0.68	0.72	5.00	6.48	8.64	9.84	11.88	2.96	4.09	4.76	6.04	0.00
B5	0.76	55%	0.67	0.69	0.71	0.74	5.00	6.48	8.64	9.84	11.88	3.32	4.58	5.32	6.71	1.21
C1	1.64	51%	0.65	0.67	0.69	0.72	5.00	6.48	8.64	9.84	11.88	6.86	9.49	11.05	14.01	0.00
C2	1.07	56%	0.68	0.70	0.72	0.75	5.00	6.48	8.64	9.84	11.88	4.72	6.49	7.53	9.48	0.75
C3	1.41	33%	0.52	0.56	0.58	0.63	5.00	6.48	8.64	9.84	11.88	4.79	6.80	8.03	10.48	0.00
C4	0.94	59%	0.70	0.72	0.73	0.76	5.00	6.48	8.64	9.84	11.88	4.28	5.88	6.81	8.54	0.00
C5	0.63	41%	0.58	0.61	0.63	0.67	5.00	6.48	8.64	9.84	11.88	2.35	3.30	3.87	4.98	0.00
D1	0.47	59%	0.70	0.72	0.73	0.76	5.00	6.48	8.64	9.84	11.88	2.13	2.92	3.39	4.25	0.00
D2	0.65	56%	0.68	0.70	0.72	0.75	5.00	6.48	8.64	9.84	11.88	2.86	3.94	4.57	5.75	0.00
D3	0.90	61%	0.71	0.73	0.75	0.77	5.00	6.48	8.64	9.84	11.88	4.17	5.71	6.61	8.27	0.00
D4	0.61	62%	0.72	0.74	0.75	0.78	5.00	6.48	8.64	9.84	11.88	2.86	3.92	4.53	5.66	0.00
E1	0.85	64%	0.73	0.75	0.76	0.79	5.00	6.48	8.64	9.84	11.88	4.04	5.52	6.37	7.95	0.00
E2	0.85	64%	0.73	0.75	0.76	0.79	5.00	6.48	8.64	9.84	11.88	4.04	5.52	6.37	7.95	0.00
E3	0.85	64%	0.73	0.75	0.76	0.79	5.00	6.48	8.64	9.84	11.88	4.04	5.52	6.37	7.94	0.00
E4	0.85	64%	0.73	0.75	0.76	0.79	5.00	6.48	8.64	9.84	11.88	4.04	5.52	6.37	7.95	0.00
F1	1.00	54%	0.66	0.69	0.70	0.73	5.00	6.48	8.64	9.84	11.88	4.29	5.92	6.88	8.69	0.00
F2	0.72	60%	0.71	0.73	0.74	0.77	5.00	6.48	8.64	9.84	11.88	3.29	4.51	5.22	6.55	0.98
F3	1.15	60%	0.70	0.72	0.74	0.76	5.00	6.48	8.64	9.84	11.88	5.27	7.23	8.36	10.48	0.00
F4	0.74	61%	0.71	0.73	0.74	0.77	5.00	6.48	8.64	9.84	11.88	3.40	4.66	5.40	6.76	0.35
F5	1.27	45%	0.61	0.64	0.65	0.69	5.00	6.48	8.64	9.84	11.88	4.99	6.96	8.13	10.39	0.75
F6	1.24	55%	0.67	0.70	0.71	0.74	5.00	6.48	8.64	9.84	11.88	5.40	7.44	8.63	10.89	0.00
F7	1.05	59%	0.70	0.72	0.73	0.76	5.00	6.48	8.64	9.84	11.88	4.72	6.49	7.51	9.43	0.00
F8	1.03	57%	0.68	0.71	0.72	0.75	5.00	6.48	8.64	9.84	11.88	4.59	6.31	7.32	9.21	0.00
F9	0.61	64%	0.73	0.75	0.76	0.79	5.00	6.48	8.64	9.84	11.88	2.88	3.94	4.55	5.68	0.00
F10	0.93	62%	0.72	0.74	0.75	0.78	5.00	6.48	8.64	9.84	11.88	4.35	5.96	6.88	8.60	0.00
F11	0.18	84%	0.87	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	1.01	1.35	1.55	1.90	2.01
F12	1.25	53%	0.66	0.68	0.70	0.73	5.00	6.48	8.64	9.84	11.88	5.35	7.38	8.58	10.85	0.00
F13	0.13	84%	0.87	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	0.72	0.97	1.11	1.36	4.71
F14	1.47	55%	0.67	0.70	0.71	0.74	5.00	6.48	8.64	9.84	11.88	6.42	8.85	10.27	12.95	4.71
F15	0.69	62%	0.72	0.74	0.75	0.77	5.00	6.48	8.64	9.84	11.88	3.20	4.38	5.07	6.34	0.00
G1	0.54	44%	0.60	0.63	0.64	0.68	5.00	6.48	8.64	9.84	11.88	2.08	2.91	3.40	4.35	0.00
G2	0.85	51%	0.65	0.67	0.69	0.72	5.00	6.48	8.64	9.84	11.88	3.56	4.93	5.74	7.27	0.00
G3	0.21	84%	0.87	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	1.15	1.55	1.78	2.17	0.00
G4	0.95	58%	0.69	0.71	0.72	0.75	5.00	6.48	8.64	9.84	11.88	4.23	5.82	6.74	8.48	0.00
G5	0.21	84%	0.86	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	1.19	1.60	1.83	2.24	0.00
G6	0.83	54%	0.66	0.69	0.70	0.73	5.00	6.48	8.64	9.84	11.88	3.57	4.93	5.73	7.23	0.00
G7	1.24	53%	0.66	0.69	0.70	0.73	5.00	6.48	8.64	9.84	11.88	5.32	7.35	8.54	10.79	0.00
G8	0.21	83%	0.86	0.87	0.87	0.89	5.00	6.48	8.64	9.84	11.88	1.17	1.57	1.80	2.20	0.00
G9	0.06	84%	0.86	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	0.31	0.42	0.48	0.58	0.00
G10	0.06	84%	0.86	0.87	0.88	0.89	5.00	6.48	8.64	9.84	11.88	0.35	0.47	0.54	0.66	0.00

Berry Creek Highlands - Phase 6B & 7 - Inlet Drainage Calculations
INLET FLOW CALCULATION TABLE (100-Yr Flows)

Parabolic Crown

Inlet No.	Inlet Type	Drainage Area No.	Street Width (FOC - FOC)	K0	K1	K2	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Slope (%)	a (in.)	yo (ft.)	Ponded Width (ft)	R.F. (%)	Qa/La	La (ft)	Length (ft)	L/La	a/yo	Q/Qa	Q (cfs)	Q Pass (cfs)
A1	Grade	A1	31'	2.85	0.50	3.03	6.36	0.00	6.36	2.00%	5.0	0.403	8.66	10	0.86	7.38	10	1.36	1.04	1.36	8.61	0.00
A2	Grade	A2	31'	2.85	0.50	3.03	6.88	0.00	6.88	2.00%	5.0	0.413	9.04	10	0.87	7.88	10	1.27	1.01	1.27	8.73	0.00
A3	Grade	A3	31'	2.85	0.50	3.03	4.63	0.00	4.63	0.50%	5.0	0.456	10.90	10	0.92	5.04	10	1.98	0.91	1.98	9.20	0.00
A4	Grade	A4	31'	2.85	0.50	3.03	4.87	0.00	4.87	0.50%	5.0	0.464	11.32	10	0.93	5.25	10	1.90	0.90	1.90	9.29	0.00
A5	Grade	A5	31'	2.85	0.50	3.03	5.50	0.00	5.50	0.50%	5.0	0.482	12.60	10	0.95	5.79	10	1.73	0.86	1.73	9.50	0.00
A6	Grade	A6	31'	2.85	0.50	3.03	7.25	0.00	7.25	0.50%	5.0	0.529	WITHIN ROW	10	1.00	7.24	10	1.38	0.79	1.38	10.02	0.00
A7	Grade	A7	31'	2.85	0.50	3.03	12.89	0.00	12.89	0.50%	5.0	0.639	WITHIN ROW	10	1.13	11.39	10	0.88	0.65	0.88	11.32	1.57
A8	Grade	A8	31'	2.85	0.50	3.03	6.97	0.00	6.97	0.50%	5.0	0.522	WITHIN ROW	10	0.99	7.01	10	1.43	0.80	1.43	9.94	0.00
A9	Grade	A9	31'	2.85	0.50	3.03	3.78	0.00	3.78	4.60%	5.0	0.295	5.59	10	0.75	5.05	10	1.98	1.41	1.98	7.48	0.00
A10	Grade	A10	31'	2.85	0.50	3.03	5.02	0.00	5.02	4.60%	5.0	0.325	6.32	10	0.78	6.45	10	1.55	1.28	1.55	7.79	0.00
A11	Sump	A11	31'	2.85	0.50	3.03	8.82	4.71	13.52	1.00%	5.0	0.579	WITHIN ROW	SEE SUMP CALCULATIONS BELOW								
A12	Sump	A12	31'	2.85	0.50	3.03	9.49	0.00	9.49	0.50%	5.0	0.578	WITHIN ROW	SEE SUMP CALCULATIONS BELOW								
A13	Grade	A13	31'	2.85	0.50	3.03	6.51	0.00	6.51	0.50%	5.0	0.510	WITHIN ROW	10	0.98	6.63	10	1.51	0.82	1.51	9.81	0.00
A14	Grade	A14	31'	2.85	0.50	3.03	0.84	0.00	0.84	0.50%	5.0	0.259	4.75	10	0.71	1.18	10	8.48	1.61	8.48	7.12	0.00
A15	Grade	A15	31'	2.85	0.50	3.03	3.98	0.00	3.98	0.50%	5.0	0.434	9.85	10	0.90	4.45	10	2.25	0.96	2.25	8.95	0.00
A16	Grade	A16	31'	2.85	0.50	3.03	0.84	0.00	0.84	0.50%	5.0	0.260	4.76	10	0.71	1.18	10	8.44	1.60	8.44	7.12	0.00
A17	Sump	A17	31'	2.85	0.50	3.03	9.15	0.00	9.15	0.50%	5.0	0.571	WITHIN ROW	SEE SUMP CALCULATIONS BELOW								
B1	Grade	B1	31'	2.85	0.50	3.03	7.10	0.00	7.10	1.20%	5.0	0.454	10.81	10	0.92	7.73	10	1.29	0.92	1.29	9.18	0.00
B2	Grade	B2	31'	2.85	0.50	3.03	9.88	0.00	9.88	1.20%	5.0	0.507	WITHIN ROW	10	0.98	10.12	10	0.99	0.82	0.99	9.77	0.11
B3	Grade	B3	31'	2.85	0.50	3.03	6.13	0.00	6.13	1.20%	5.0	0.433	9.82	10	0.89	6.86	10	1.46	0.96	1.46	8.94	0.00
B4	Grade	B4	31'	2.85	0.50	3.03	6.04	0.00	6.04	1.20%	5.0	0.431	9.73	10	0.89	6.78	10	1.48	0.97	1.48	8.92	0.00
B5	Grade	B5	31'	2.85	0.50	3.03	6.71	0.00	6.71	1.20%	5.0	0.446	10.40	10	0.91	7.38	10	1.36	0.93	1.36	9.09	0.00
C1	Grade	C1	31'	2.85	0.50	3.03	14.01	0.00	14.01	1.40%	5.0	0.554	WITHIN ROW	10	1.03	13.58	10	0.74	0.75	0.74	10.32	3.69
C2	Grade	C2	31'	2.85	0.50	3.03	9.48	0.00	9.48	1.40%	5.0	0.487	13.03	10	0.96	9.93	10	1.01	0.86	1.01	9.55	0.00
C3	Grade	C3	31'	2.85	0.50	3.03	10.48	0.00	10.48	1.40%	5.0	0.504	WITHIN ROW	10	0.97	10.77	10	0.93	0.83	0.93	9.74	0.75
C4	Grade	C4	31'	2.85	0.50	3.03	8.54	0.00	8.54	1.40%	5.0	0.471	11.75	10	0.94	9.12	10	1.10	0.89	1.10	9.36	0.00
C5	Grade	C5	31'	2.85	0.50	3.03	4.98	0.00	4.98	1.40%	5.0	0.394	8.36	10	0.85	5.84	10	1.71	1.06	1.71	8.52	0.00
D1	Grade	D1	31'	2.85	0.50	3.03	4.25	0.00	4.25	1.80%	5.0	0.359	7.26	10	0.81	5.22	10	1.92	1.16	1.92	8.14	0.00
D2	Grade	D2	31'	2.85	0.50	3.03	5.75	0.00	5.75	1.80%	5.0	0.396	8.44	10	0.85	6.73	10	1.49	1.05	1.49	8.55	0.00
D3	Grade	D3	31'	2.85	0.50	3.03	8.27	0.00	8.27	1.80%	5.0	0.447	10.44	10	0.91	9.09	10	1.10	0.93	1.10	9.10	0.00
D4	Grade	D4	31'	2.85	0.50	3.03	5.66	0.00	5.66	1.80%	5.0	0.394	8.37	10	0.85	6.64	10	1.51	1.06	1.51	8.52	0.00
E1	Grade	E1	31'	2.85	0.50	3.03	7.95	0.00	7.95	1.40%	5.0	0.460	11.10	10	0.92	8.60	10	1.16	0.91	1.16	9.24	0.00
E2	Grade	E2	31'	2.85	0.50	3.03	7.95	0.00	7.95	1.40%	5.0	0.460	11.09	10	0.92	8.60	10	1.16	0.91	1.16	9.24	0.00
E3	Grade	E3	31'	2.85	0.50	3.03	7.94	0.00	7.94	1.40%	5.0	0.460	11.09	10	0.92	8.60	10	1.16	0.91	1.16	9.24	0.00
E4	Grade	E4	31'	2.85	0.50	3.03	7.95	0.00	7.95	1.40%	5.0	0.460	11.10	10	0.92	8.60	10	1.16	0.91	1.16	9.24	0.00
F1	Grade	F1	31'	2.85	0.50	3.03	8.69	0.00	8.69	2.00%	5.0	0.446	10.42	10	0.91	9.55	10	1.05	0.93	1.05	9.09	0.00
F2	Grade	F2	31'	2.85	0.50	3.03	6.55	0.00	6.55	2.00%	5.0	0.407	8.80	10	0.87	7.56	10	1.32	1.03	1.32	8.66	0.00
F3	Grade	F3	31'	2.85	0.50	3.03	10.48	0.00	10.48	1.80%	5.0	0.483	12.66	10	0.95	11.03	10	0.91	0.86	0.91	9.50	0.98
F4	Grade	F4	31'	2.85	0.50	3.03	6.76	0.00	6.76	1.80%	5.0	0.418	9.22	10	0.88	7.70	10	1.30	1.00	1.30	8.78	0.00
F5	Grade	F5	31'	2.85	0.50	3.03	10.39	0.00	10.39	1.00%	5.0	0.531	WITHIN ROW	10	1.00	10.34	10	0.97	0.78	0.97	10.05	0.35
F6	Grade	F6	31'	2.85	0.50	3.03	10.89	0.00	10.89	1.00%	5.0	0.539	WITHIN ROW	10	1.01	10.74	10	0.93	0.77	0.93	10.14	0.75
F7	Grade	F7	31'	2.85	0.50	3.03	9.43	0.00	9.43	1.00%	5.0	0.514	WITHIN ROW	10	0.99	9.57	10	1.04	0.81	1.04	9.86	0.00
F8	Grade	F8	31'	2.85	0.50	3.03	9.21	0.75	9.95	1.00%	5.0	0.523	WITHIN ROW	10	1.00	9.99	10	1.00	0.80	1.00	9.96	0.00
F9	Grade	F9	31'	2.85	0.50	3.03	5.68	0.00	5.68	1.00%	5.0	0.435	9.90	10	0.90	6.33	10	1.58	0.96	1.58	8.97	0.00
F10	Grade	F10	31'	2.85	0.50	3.03	8.60	0.00	8.60	2.00%	5.0	0.445	10.35	10	0.91	9.48	10	1.06	0.94	1.06	9.08	0.00
F11	Grade	F11	31'	2.85	0.50	3.03	1.90	0.00	1.90	2.00%	5.0	0.270	4.99	10	0.72	2.62	10	3.81	1.54	3.81	7.22	0.00
F12	Grade	F12	31'	2.85	0.50	3.03	10.85	0.00	10.85	4.30%	5.0	0.423	9.43	10	0.88	12.27	10	0.81	0.98	0.81	8.84	2.01
F13	Grade	F13	31'	2.85	0.50	3.03	1.36	0.00	1.36	4.30%	5.0	0.213	3.77	10	0.67	2.05	10	4.89	1.95	4.89	6.66	0.00
F14	Grade	F14	31'	2.85	0.50	3.03	12.95	2.01	14.96	1.70%	5.0	0.548	WITHIN ROW	10	1.02	14.59	10	0.69	0.76	0.69	10.25	4.71
F15	Grade	F15	31'	2.85	0.50	3.03	6.34	0.00	6.34	1.70%	5.0	0.413	9.04	10	0.87	7.26	10	1.38	1.01	1.38	8.73	0.00
G1	Grade	G1	31'	2.85	0.50	3.03	4.35	0.00	4.35	0.50%	5.0	0.447	10.43	10	0.91	4.78	10	2.09	0.93	2.09	9.10	0.00
G2	Grade	G2	31'	2.85	0.50	3.03	7.27	0.00	7.27	0.50%	5.0	0.529	WITHIN ROW	10	1.00	7.25	10	1.38	0.79	1.38	10.03	0.00
G3	Grade	G3	31'	2.85	0.50	3.03	2.17	0.00	2.17	1.00%	5.0	0.317	6.11	10	0.77	2.82	10	3.55	1.32	3.55	7.70	0.00
G4	Grade	G4	31'	2.85	0.50	3.03	8.48	0.00	8.48	1.50%	5.0	0.464	11.35	10	0.93	9.12	10	1.10	0.90	1.10	9.29	0.00
G5	Grade	G5	31'	2.85	0.50	3.03	2.24	0.00	2.24	1.50%	5.0	0.299	5.68	10	0.75	2.98	10	3.36	1.39	3.36	7.52	0.00
G6	Grade	G6	31'	2.85	0.50	3.03	7.23	0.00	7.23	1.50%	5.0	0.441	10.15	10	0.90	8.01	10	1.25	0.95	1.25	9.03	0.00
G7	Grade	G7	31'	2.85	0.50	3.03	10.79	0.00	10.79	3.30%	5.0	0.441	10.19	10	0.90	11.94	10	0.84	0.94	0.84	9.04	1.75
G8	Grade	G8	31'	2.85	0.50	3.03	2.20	0.00	2.20	3.30%	5.0	0.261	4.79	10	0.71	3.08	10	3.24	1.60	3.24	7.14	0.00
G9	Grade	G9	31'	2.85	0.50	3.03	0.58	0.00	0.58	0.50%	5.0	0.230	4.12	10	0.68	0.86	10	11.67	1.81	11.67	6.83	0.00
G10	Grade	G10	31'	2.85	0.50	3.03	0.66	0.00	0.66	0.50%	5.0	0.239	4.31	10	0.69	0.95	10	10.50	1.74	10.50	6.92	0.00

Sump Inlets

Inlet No.	Inlet Type	Drainage Area No.	Street Width (CL - FOC)	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Cw	L (ft)	W (ft)	d (ft)	Inlet Capacity (cfs)	PASS/FAIL	
A11	Sump	E2	15.5'	8.82	4.71	13.52	2.3	15	1.5	0.50	14.39	PASS	*All Sump Equations Assume Weir flow per City of Austin Drainage Criteria Manual Section 4.3.1
A12	Sump	F13	15.5'	9.49	0.00	9.49	2.3	10	1.5	0.50	10.33	PASS	*All Sump Equations Assume Weir flow per City of Austin Drainage Criteria Manual Section 4.3.1
A17	Sump	F14	15.5'	9.15	0.00	9.15	2.3	10	1.5	0.50	10.33	PASS	*All Sump Equations Assume Weir flow per City of Austin Drainage Criteria Manual Section 4.3.1

811
Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

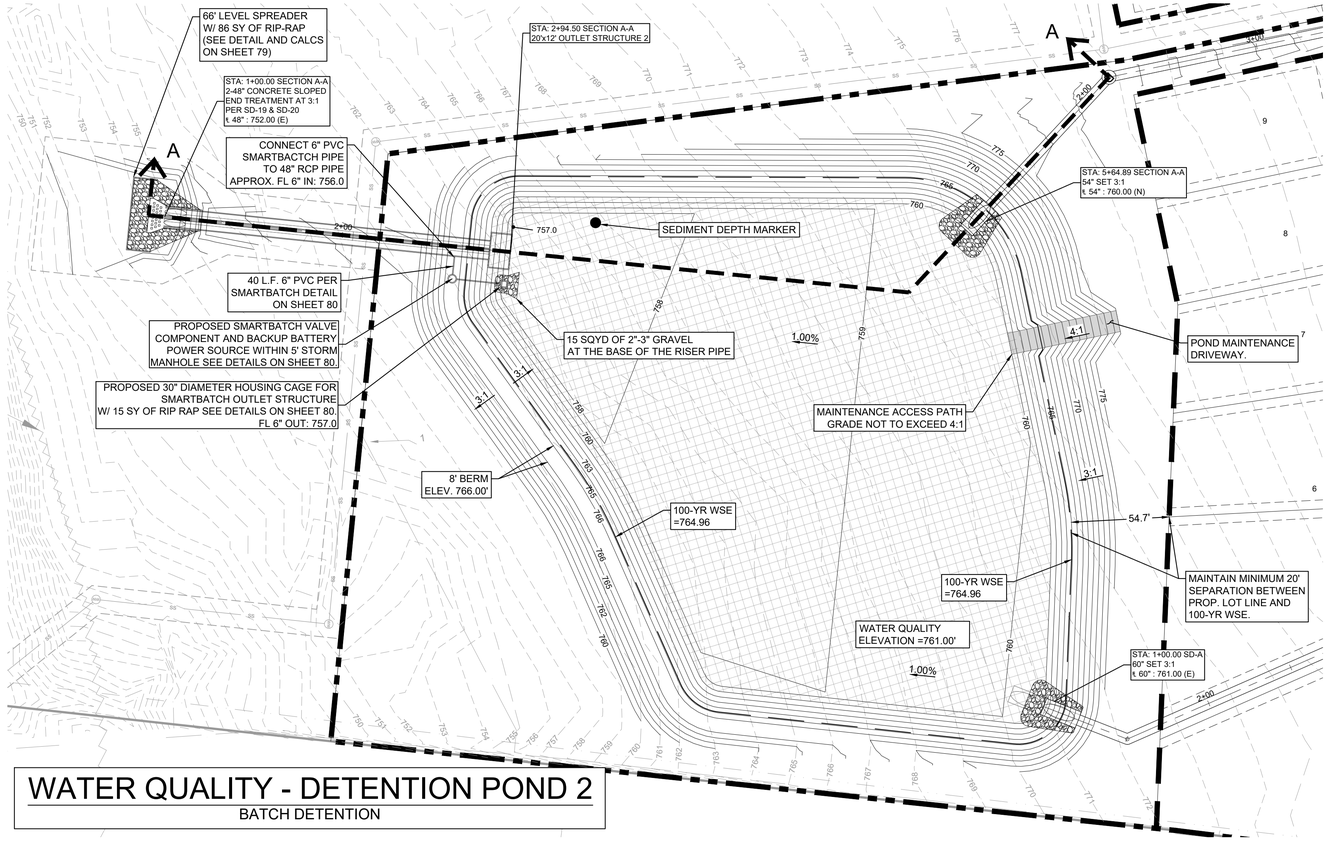
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

DRAINAGE CALCULATIONS

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
29
OF 82

2024-9-CON



WATER QUALITY - DETENTION POND 2

BATCH DETENTION

WQ-DETENTION POND 2					
STAGE STORAGE TABLE					
STAGE (FT MSL)	AREA (SF)	STORAGE (CF)	CUMULATIVE STORAGE (CF)	100-YR DISCHARGE (CFS)	CONTRIBUTING STRUCTURES
757.00	40.00	N/A	0.00	0.00	NONE
758.00	11623.00	5831.50	5831.50	0.00	NONE
759.00	38025.00	33125.33	33125.33	0.00	NONE
760.00	64858.00	51441.50	84566.83	0.00	NONE
761.00	70105.00	67481.50	152048.33	0.00	17' WEIR
762.00	73269.00	71687.00	223735.33	44.20	17' WEIR
763.00	76502.00	74885.50	298620.83	125.02	17' WEIR
764.00	79793.00	78147.50	376768.33	229.66	17' WEIR
765.00	83144.00	81468.50	458236.83	313.57	17' WEIR
766.00	86552.00	84848.00	543084.83	363.40	17' WEIR

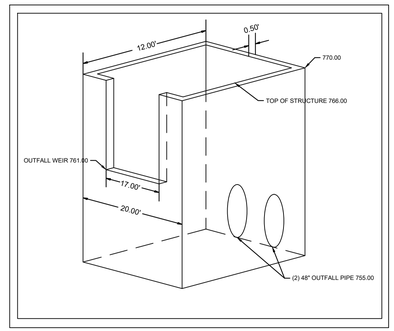
WQ-DETENTION POND 2				
ROUTING TABLE				
DESIGN SCENARIO	PEAK INFLOW (FT^3/S)	COMPUTED PEAK OUTFLOW (FT^3/S)	MAXIMUM WATER SURFACE ELEVATION (FT)	MAXIMUM STORAGE (FT^3)
2 YR	160.43	108.46	762.81	132157.00
10 YR	258.56	187.57	763.62	194387.00
25 YR	323.87	240.55	764.11	233357.00
100 YR	432.02	310.60	764.96	302493.00

Subsection: Outlet Input Data
Label: Composite Outlet Structure - 2
Scenario: PR 100

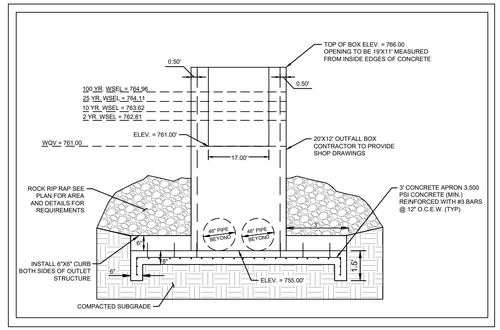
Return Event: 100 years
Storm Event: 100 Year

Structure ID: Weir - 1	
Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	761.00 ft
Weir Length	17.00 ft
Weir Coefficient	2.60 (ft^0.5)/s
Structure ID: Culvert - 1	
Structure Type: Culvert-Circular	
Number of Barrels	2
Diameter	48.0 in
Length	195.00 ft
Length (Computed Barrel)	195.02 ft
Slope (Computed)	0.015 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.005
kr	0.000
Convergence Tolerance	0.00 ft
Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.088
T2 ratio (HW/D)	1.190
Slope Correction Factor	-0.500

WQV

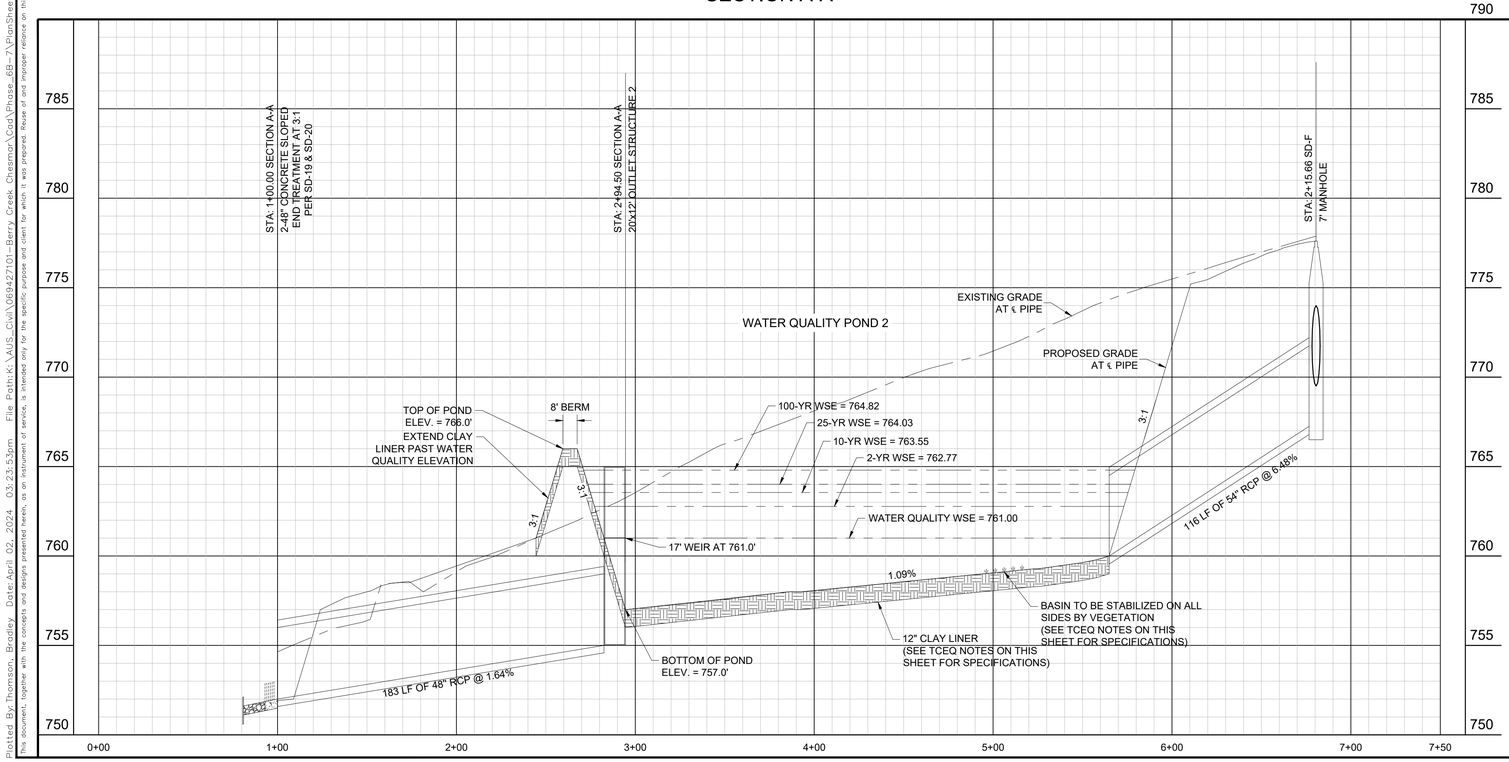


OUTLERT STRCUTURE 2 - ISOMETRIC VIEW
N.T.S.



OUTLET STRUCTURE 2 - WQ-DETETION POND 2
N.T.S.

SECTION A-A



TCEQ NOTES

3.4.2 BASIN LINING REQUIREMENTS

IMPERMEABLE LINERS SHOULD BE USED FOR WATER QUALITY BASINS (RETENTION, EXTENDED DETENTION, SAND FILTERS, WET PONDS AND CONSTRUCTED WETLANDS) LOCATED OVER THE RECHARGE ZONE AND IN AREAS WITH THE POTENTIAL FOR GROUNDWATER CONTAMINATION. IMPERMEABLE LINERS MAY BE CLAY, CONCRETE OR GEOMEMBRANE. IF GEOMEMBRANE IS USED, SUITABLE GEOTEXTILE FABRIC SHOULD BE PLACED ON THE TOP AND BOTTOM OF THE MEMBRANE FOR PUNCTURE PROTECTION AND THE LINERS COVERED WITH A MINIMUM OF 6 INCHES OF COMPACTED TOPSOIL. THE TOPSOIL SHOULD BE STABILIZED WITH APPROPRIATE VEGETATION. CLAY LINERS SHOULD MEET THE SPECIFICATIONS IN TABLE 3-6 AND HAVE A MINIMUM THICKNESS OF 12 INCHES.

IF A GEOMEMBRANE LINER IS USED IT SHOULD HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT. THE GEOTEXTILE FABRIC (FOR PROTECTION OF GEOMEMBRANE) SHOULD BE NONWOVEN GEOTEXTILE FABRIC AND MEET THE SPECIFICATIONS IN TABLE 3-7.

Table 3-6 Clay Liner Specifications (COA, 2004)

Property	Test Method	Unit	Specification
Permeability	ASTM D-2434	cm/sec	1×10^{-6}
Plasticity Index of Clay	ASTM D-423 & D-424	%	Not less than 15
Liquid Limit of Clay	ASTM D-2216	%	Not less than 30
Clay Particles Passing	ASTM D-422	%	Not less than 30
Clay Compaction	ASTM D 2216	%	95% of Standard Proctor Density

Table 3-7 Geotextile Fabric Specifications (COA, 2004)

Property	Test Method	Unit	Specification (min)
Unit Weight		oz/yd^2	8
Filtration Rate		in/sec	0.08
Puncture Strength	ASTM D-751*	lb	125
Mullen Burst Strength	ASTM D-751	psi	400
Tensile Strength	ASTM D-1682	lb	200
Equiv. Opening Size	US Standard Sieve	No.	80

*modified

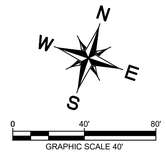
PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)



No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

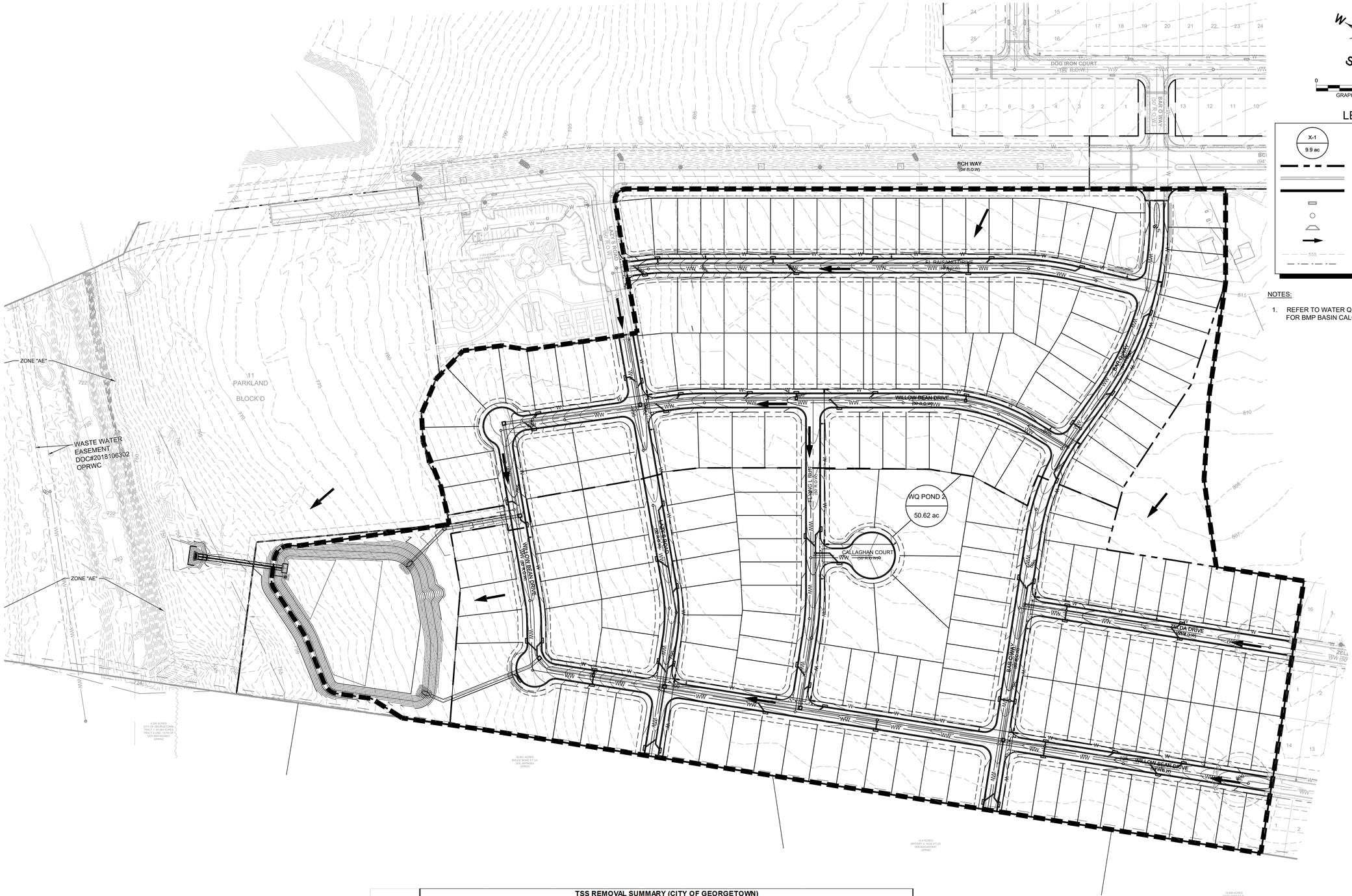
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WQ-DETENTION POND 2 PLAN

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
30
OF 82

2024-9-CON



LEGEND

- X-1 / 9.9 ac — AREA DESIGNATOR / AREA IN ACRES
- PROPERTY LINE
- EXISTING STORM DRAIN LINE
- EXISTING DRAINAGE DIVIDE
- EXISTING STORM DRAIN INLET
- EXISTING STORM DRAIN MANHOLE
- EXISTING STORM DRAIN HEADWALL
- EXISTING FLOW DIRECTION
- EXISTING CONTOUR
- TIME OF CONCENTRATION FLOW PATH

NOTES:

1. REFER TO WATER QUALITY CALCULATIONS SHEET 32 FOR BMP BASIN CALCULATIONS.

TSS REMOVAL SUMMARY (CITY OF GEORGETOWN)

	AREA NAME	BMP TYPE	TSS REMOVAL EFFICIENCY	BASIN AREA (AC.)	IMPERVIOUS (AC.)	IMPERVIOUS (%)	REQUIRED TSS LOAD REMOVAL (LBS.)	PROVIDED TSS LOAD REMOVAL (LBS.)
BERRY CREEK PHASE 6B & 7	*WQ POND 1 (FOR REFERENCE)*	Batch Detention	91	45.08	22.21	49%	20561	21500
	WQ POND 2	Batch Detention	91	50.62	26.82	53%	24829	24900
	UNTREATED (FOR REFERENCE)	NONE	0	22.05	0.40	2%	370	0
TOTALS				**117.89**	**47.37**	**40%**	**43853**	**46400**

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

WATER QUALITY DRAINAGE AREA MAP

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
31
OF 82

2024-9-CON

CITY OF GEORGETOWN
WATER QUALITY CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: BERRY CREEK - PHASE 6B & PHASE 7
Date Prepared: 3/12/2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 — Pages 3-27 to 3-30

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

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Williamson	
Total project area included in plan * =	117.89	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	47.37	acres
Total post-development impervious cover fraction * =	0.40	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	43853	lbs. 85% REDUCTION PER COG

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

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

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

Drainage Basin/Outfall Area No. = WQ Pond 2

Total drainage basin/outfall area =	50.62	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	26.82	acres
Post-development impervious fraction within drainage basin/outfall area =	0.53	
$L_{M\ THIS\ BASIN}$ =	24829	lbs. 85% REDUCTION PER COG

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	50.62	acres
A_I =	26.82	acres
A_P =	23.80	acres
L_R =	27397	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 24900 lbs.

F = 0.91

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 — Pages 3-34 to 3-36

Rainfall Depth =	1.80	inches
Post Development Runoff Coefficient =	0.37	
On-site Water Quality Volume =	123865	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	24773	
Total Capture Volume (required water quality volume(s) x 1.20) =	148638	cubic feet

TSS REMOVAL SUMMARY (CITY OF GEORGETOWN)

	AREA NAME	BMP TYPE	TSS REMOVAL EFFICIENCY	BASIN AREA (AC.)	IMPERVIOUS (AC.)	IMPERVIOUS (%)	REQURED TSS LOAD REMOVAL (LBS.)	PROVIDED TSS LOAD REMOVAL (LBS.)
BERRY CREEK PHASE 6B & 7	WQ POND 2	Batch Detention	91	50.62	26.82	53%	24829	24900
TOTALS				117.89	47.37	40%	43853	46400

TCEQ
WATER QUALITY CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: BERRY CREEK - PHASE 6B & PHASE 7
Date Prepared: 3/12/2024

1. The Required Load Reduction for the total project: Calculations from RG-348 — Pages 3-27 to 3-30

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

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Williamson		
Total project area included in plan * =	117.89	acres	
Predevelopment impervious area within the limits of the plan * =	0.00	acres	
Total post-development impervious area within the limits of the plan* =	47.37	acres	
Total post-development impervious cover fraction * =	0.40		
P =	32	inches	
$L_{M\ TOTAL\ PROJECT}$ =	41231	lbs.	80% REDUCTION

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

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

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

Drainage Basin/Outfall Area No. = WQ Pond 2

Total drainage basin/outfall area =	50.62	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	26.82	acres
Post-development impervious fraction within drainage basin/outfall area =	0.53	
$L_{M\ THIS\ BASIN}$ =	23344	lbs. 80% REDUCTION

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	50.62	acres
A_I =	26.82	acres
A_P =	23.80	acres
L_R =	27397	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 24900 lbs.

F = 0.91

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 — Pages 3-34 to 3-36

Rainfall Depth =	1.80	inches
Post Development Runoff Coefficient =	0.37	
On-site Water Quality Volume =	123865	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	24773	
Total Capture Volume (required water quality volume(s) x 1.20) =	148638	cubic feet

TSS REMOVAL SUMMARY (TCEQ)

	AREA NAME	BMP TYPE	TSS REMOVAL EFFICIENCY	BASIN AREA (AC.)	IMPERVIOUS (AC.)	IMPERVIOUS (%)	REQURED TSS LOAD REMOVAL (LBS.)	PROVIDED TSS LOAD REMOVAL (LBS.)
BERRY CREEK PHASE 6B & 7	WQ POND 2	Batch Detention	91	50.62	26.82	53%	23344	24900
TOTALS				117.89	47.37	40%	41231	46400

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — ALEXANDER C. STEADMAN — 138792 — LICENSED PROFESSIONAL ENGINEER

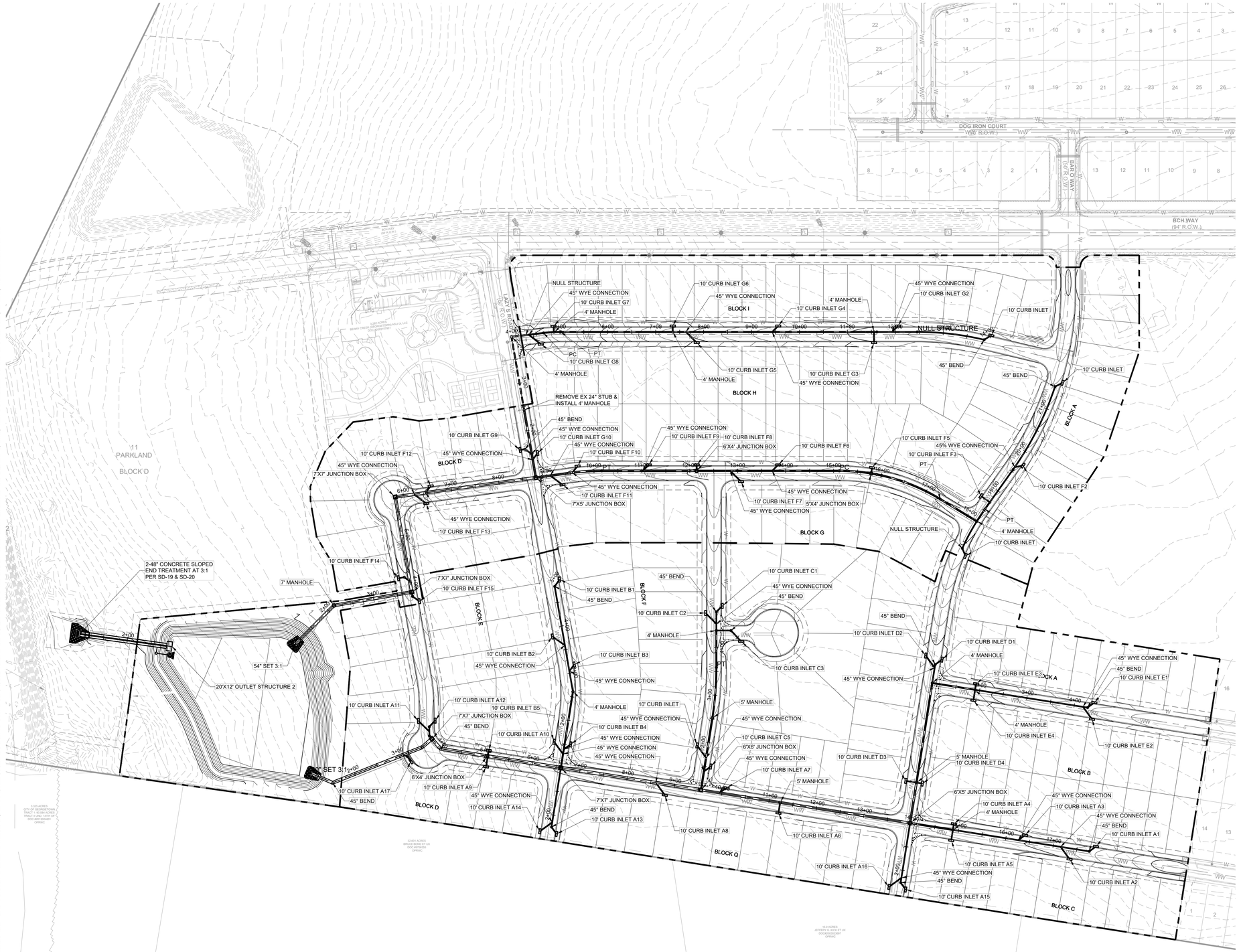
KHA PROJECT 069427101 | DATE FEBRUARY 2024 | SCALE: AS SHOWN | DESIGNED BY: ACS | DRAWN BY: RRJ | CHECKED BY: ACS

COG & TCEQ WATER QUALITY CALCULATIONS

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
32
OF 82

2024-9-CON



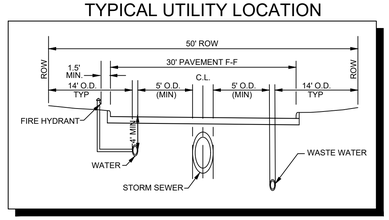
0 100' 200'

GRAPHIC SCALE 100'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

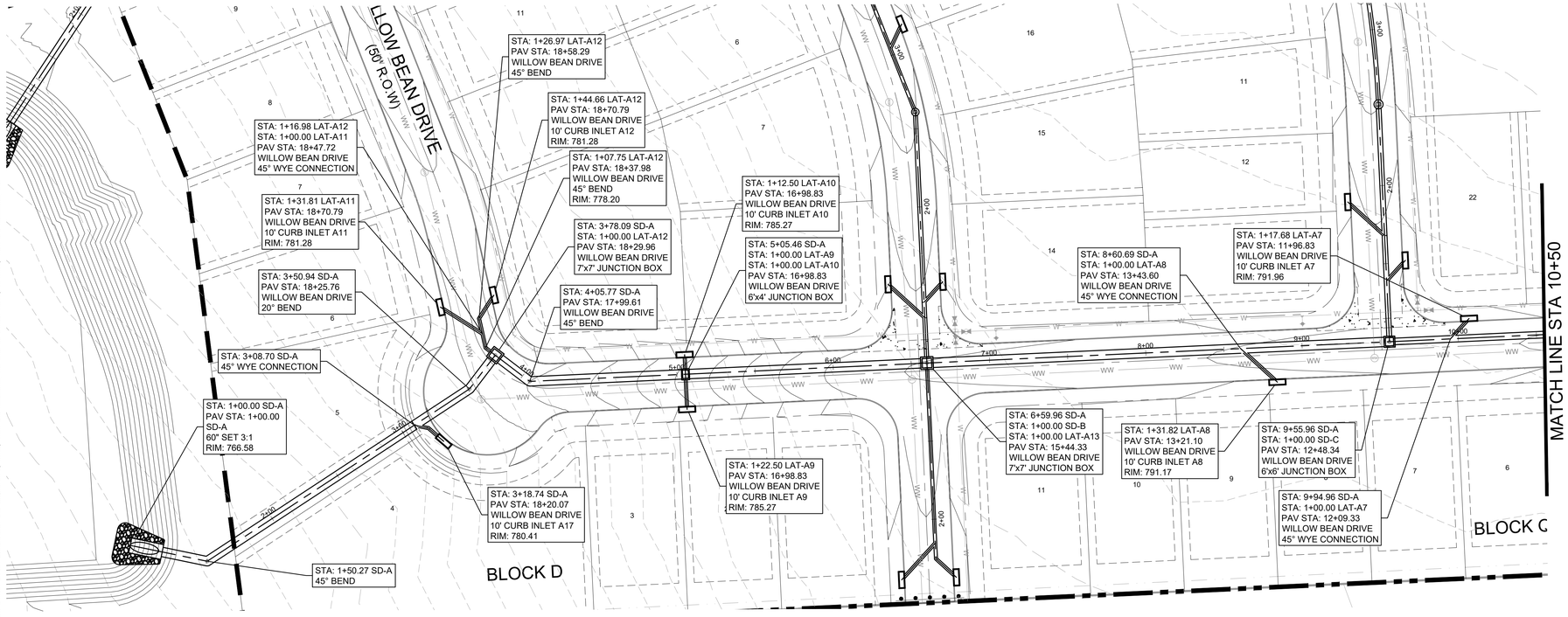
OVERALL STORM PLAN

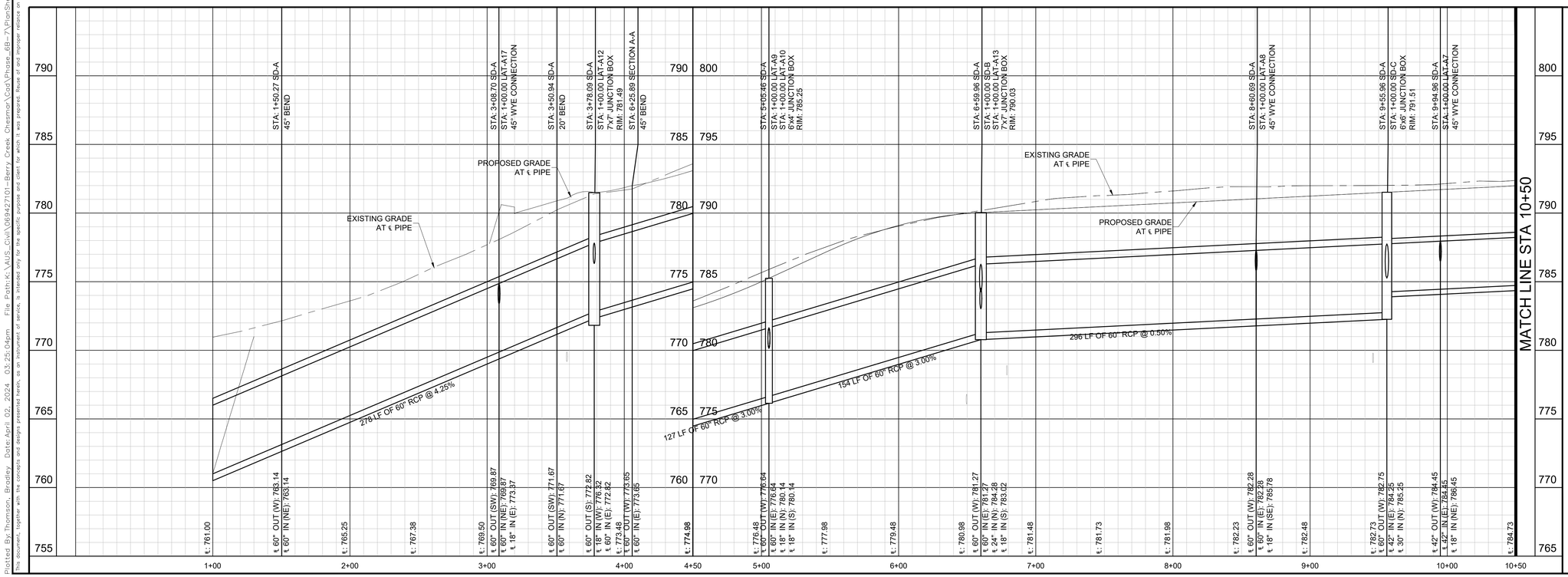
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
33
OF 82

2024-9-CON





PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR / AREA IN ACRES / Q100 FLOW IN CFS
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

STORM PLAN AND PROFILE - SD-A (1 OF 2)

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

811
Know what's below.
Call before you dig.

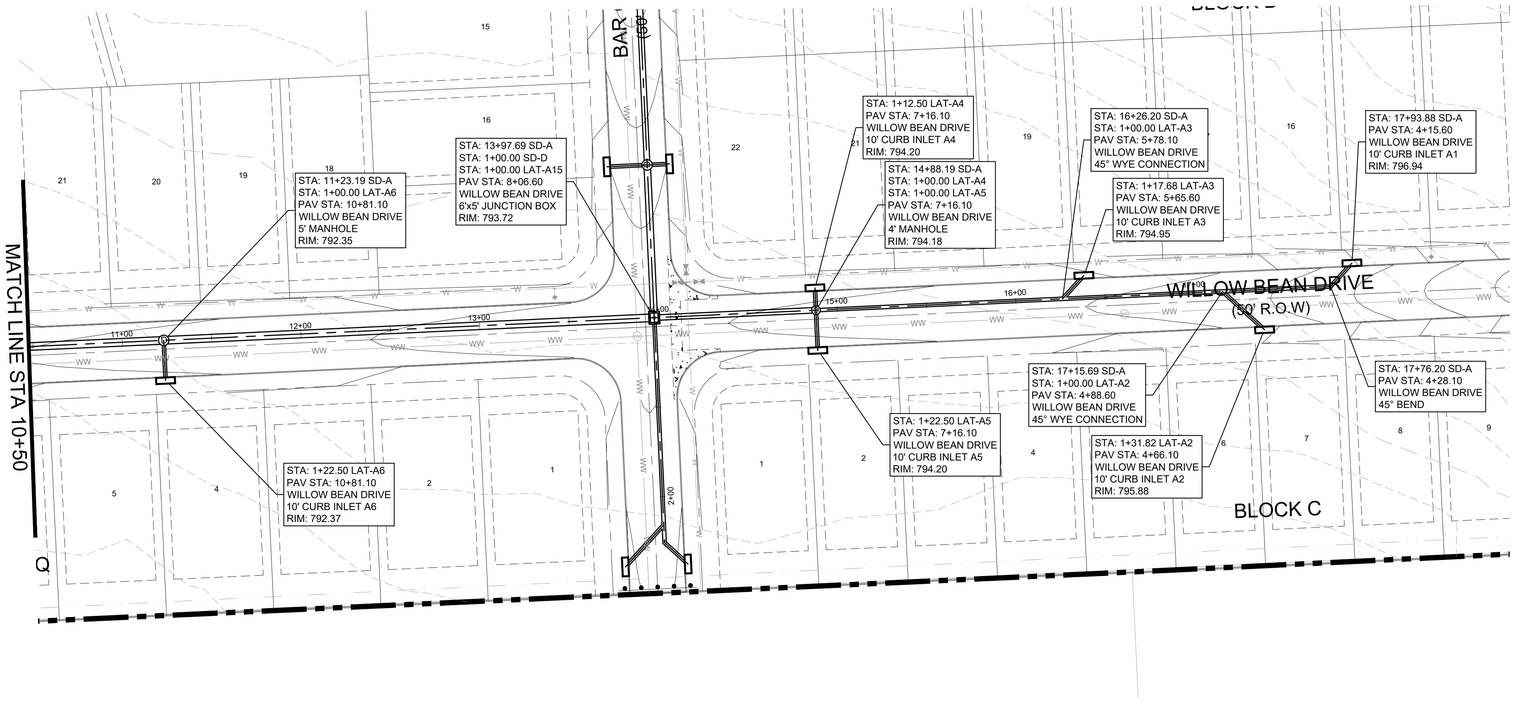
WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

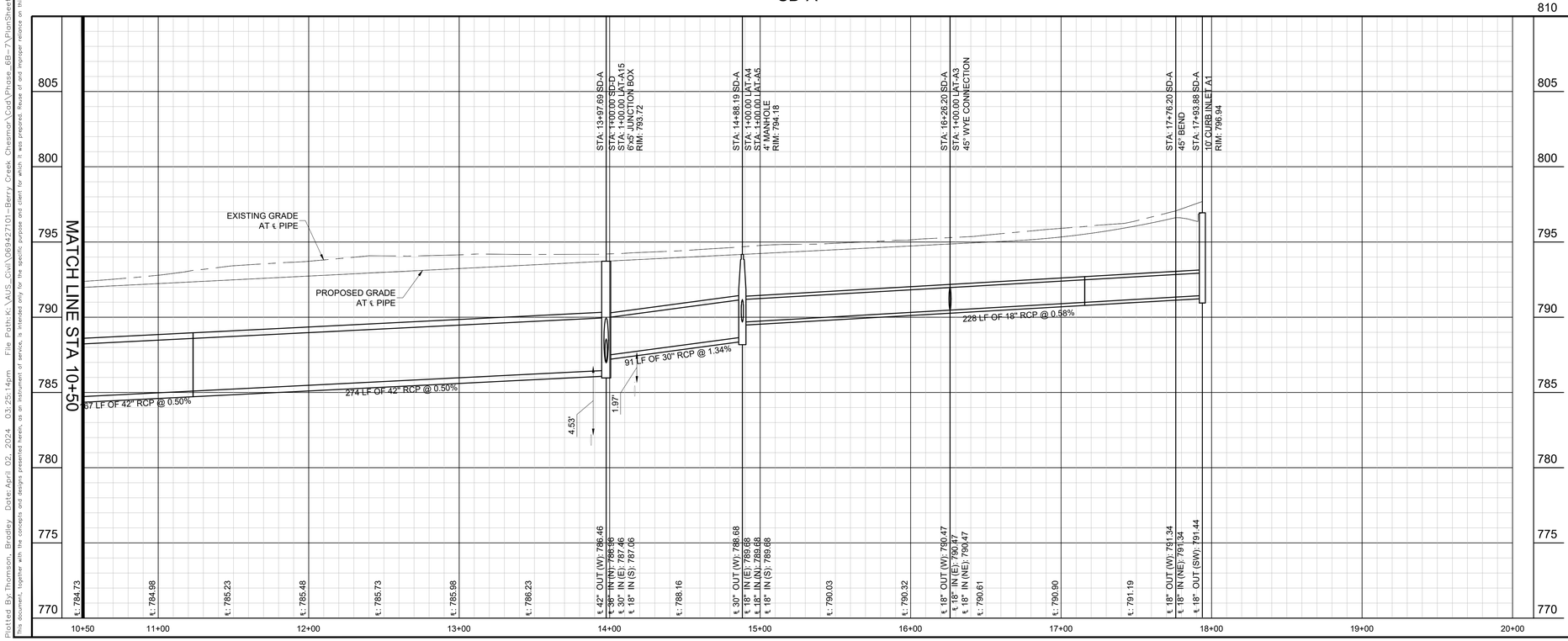
BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

SHEET NUMBER
34
OF 82

2024-9-CON





LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

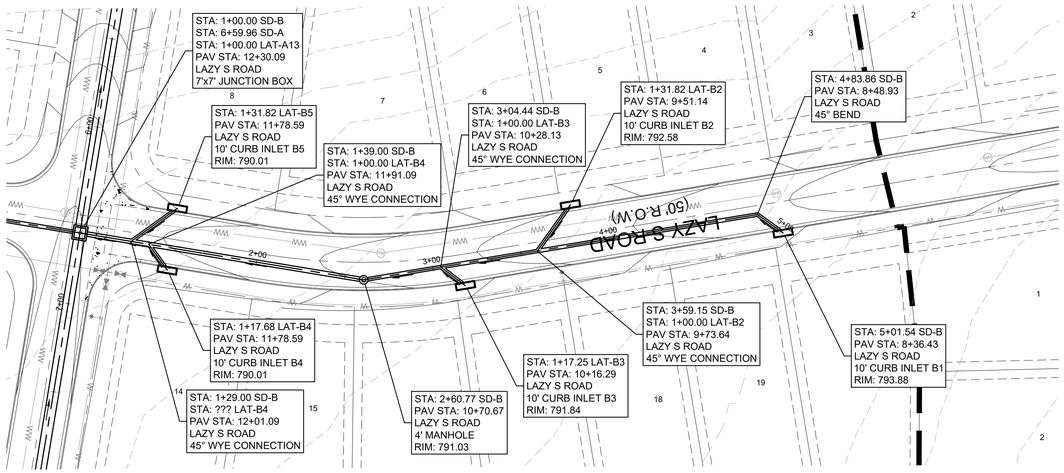
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

STORM PLAN AND PROFILE - SD-A (2 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
35
OF 82

2024-9-CON

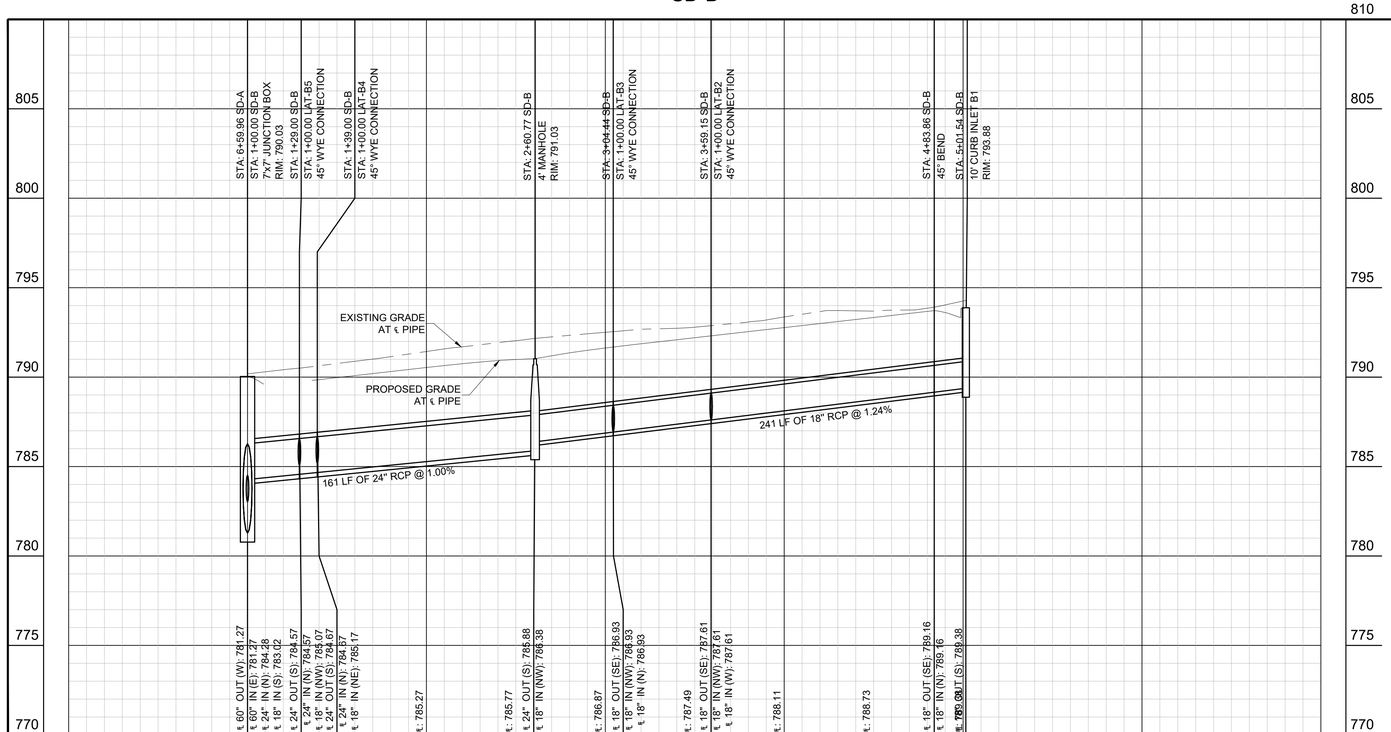


0 40' 80'
GRAPHIC SCALE 40'

LEGEND

X-1 / 9.9 ac / 5.5 cfs	AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
A-1	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR

SD-B



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

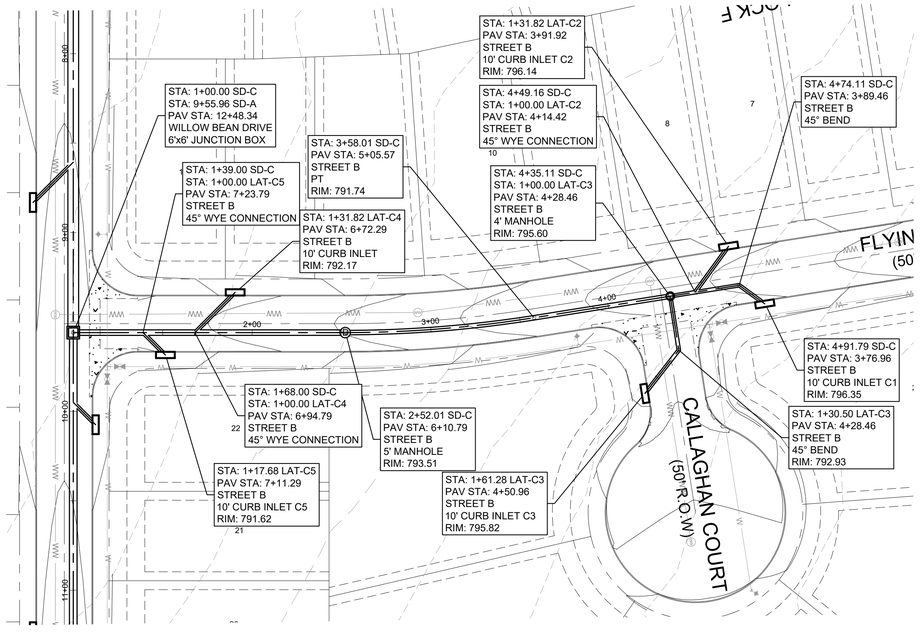
STORM PLAN AND PROFILE - SD-B

BERRY CREEK HIGHLANDS PHASES 6B & 7

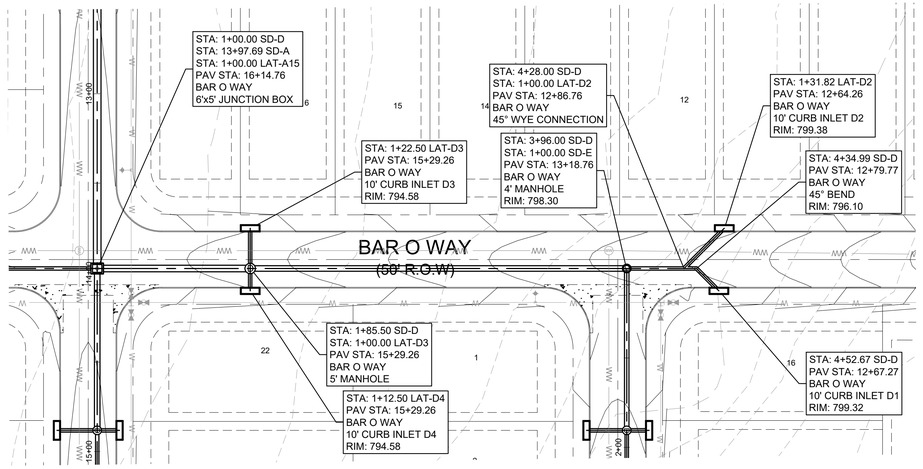
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
36
OF 82

2024-9-CON



0 40' 80'
GRAPHIC SCALE 40'

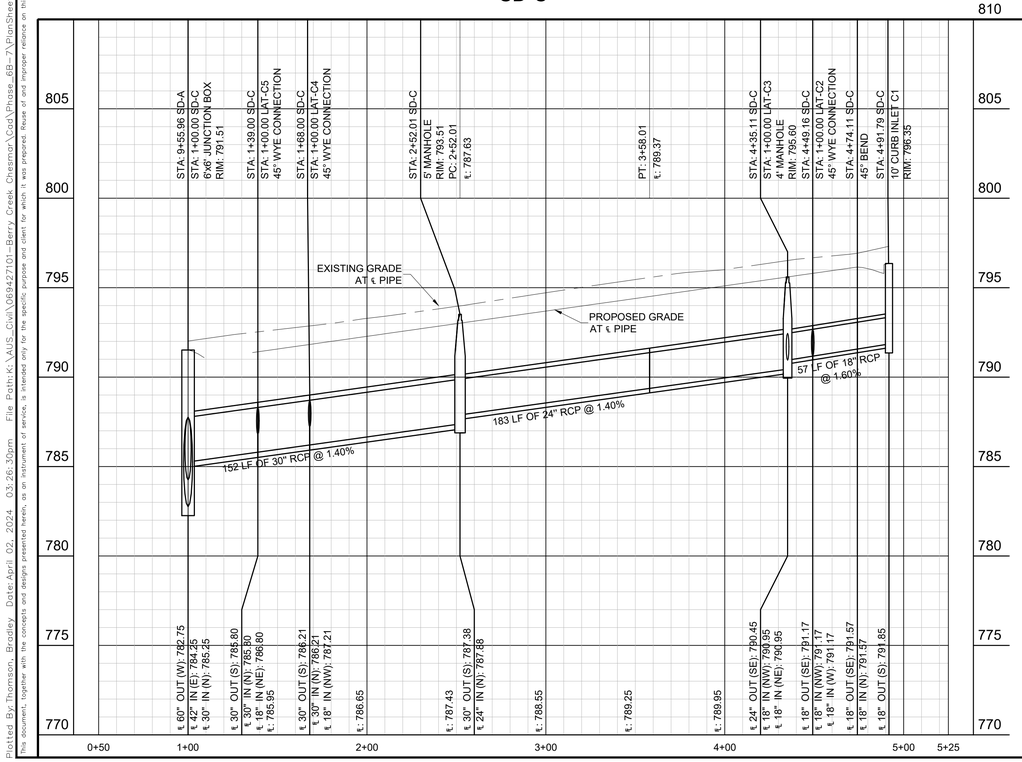


0 40' 80'
GRAPHIC SCALE 40'

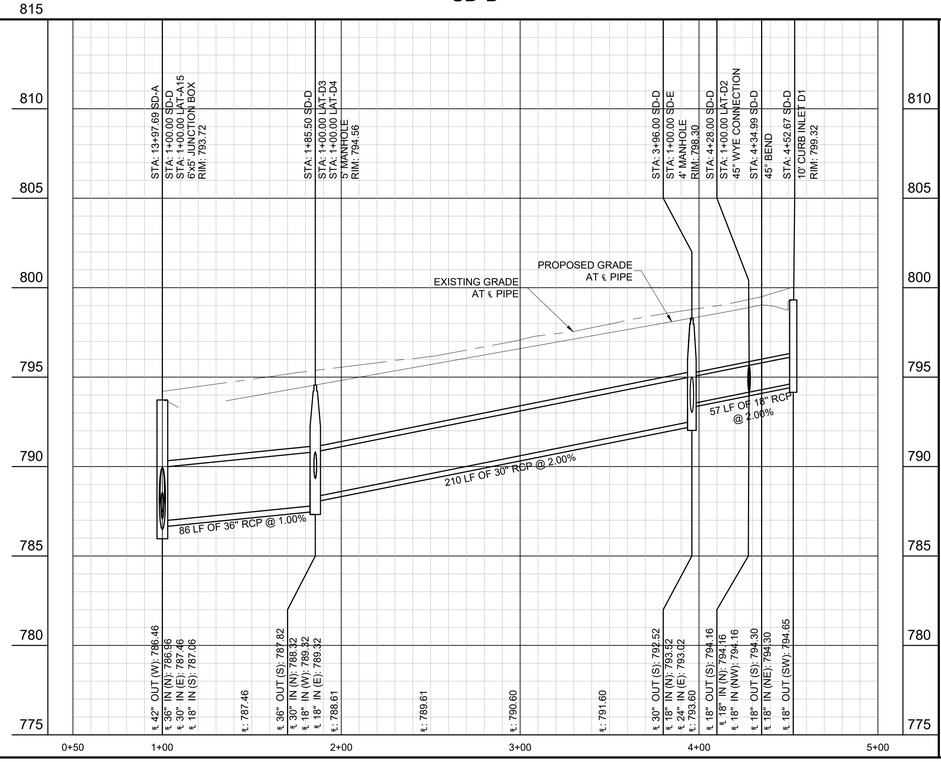
LEGEND

X-1 / 9.9 ac / 5.5 cfs	AREA DESIGNATOR / AREA IN ACRES / Q100 FLOW IN CFS
A-1	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR

SD-C



SD-D



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

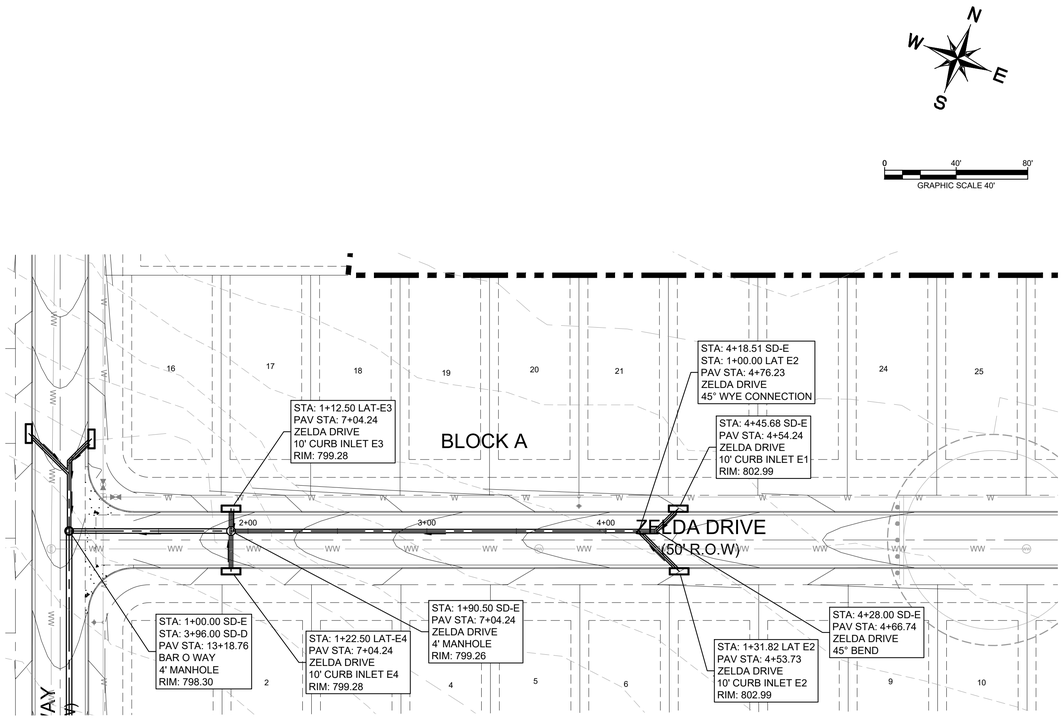
STORM PLAN AND PROFILE - SD-C & SD-D

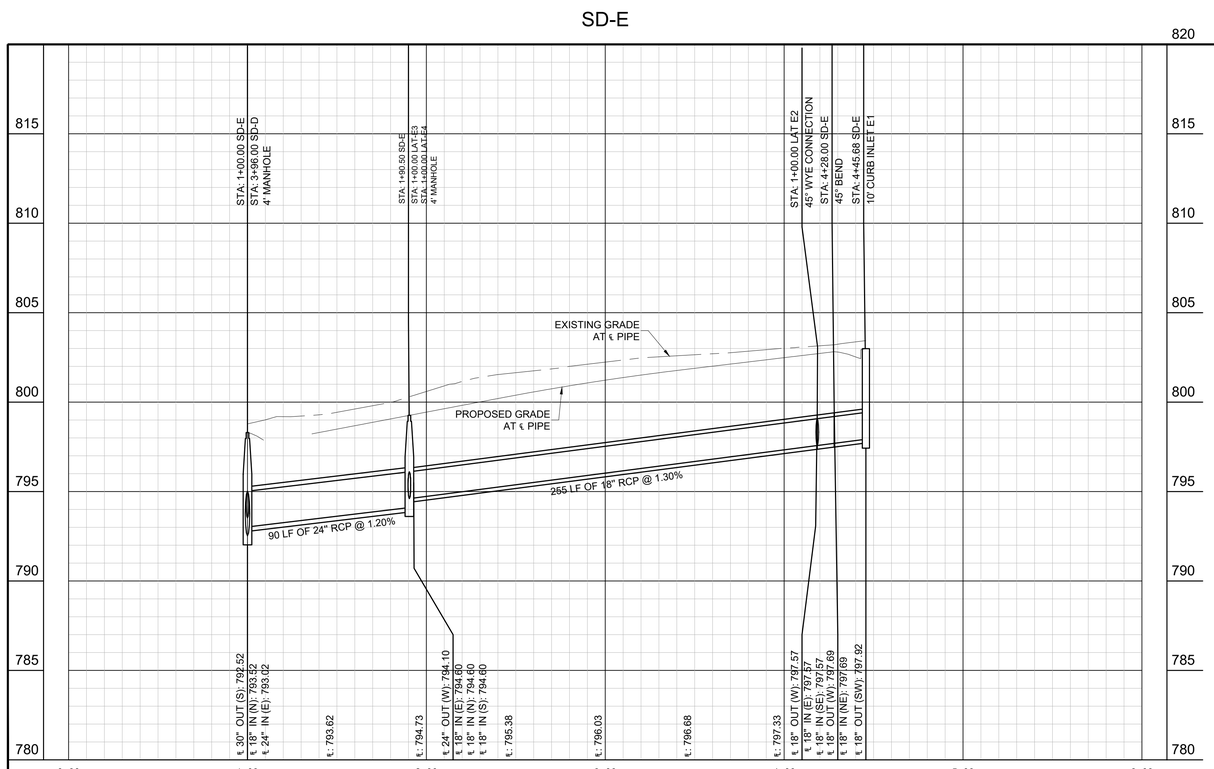
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
37
OF 82

2024-9-CON





LEGEND

- AREA DESIGNATOR / AREA IN ACRES / Q100 FLOW IN CFS (X-1, 9.9 ac, 5.5 cfs)
- INLET NUMBER (A-1)
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- PROPOSED CONTOUR (555)
- EXISTING CONTOUR (555)

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

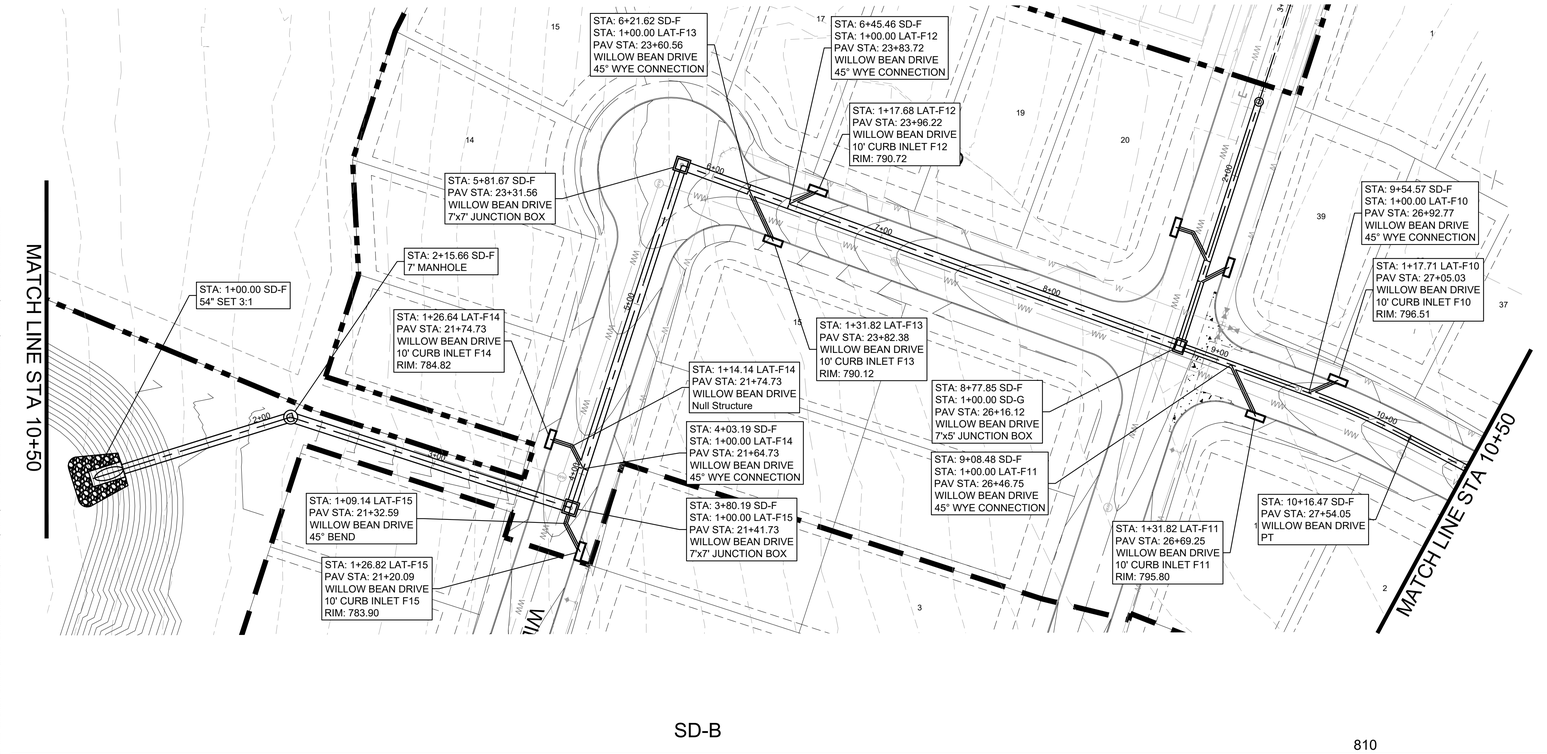
STORM PLAN AND PROFILE - SD-E

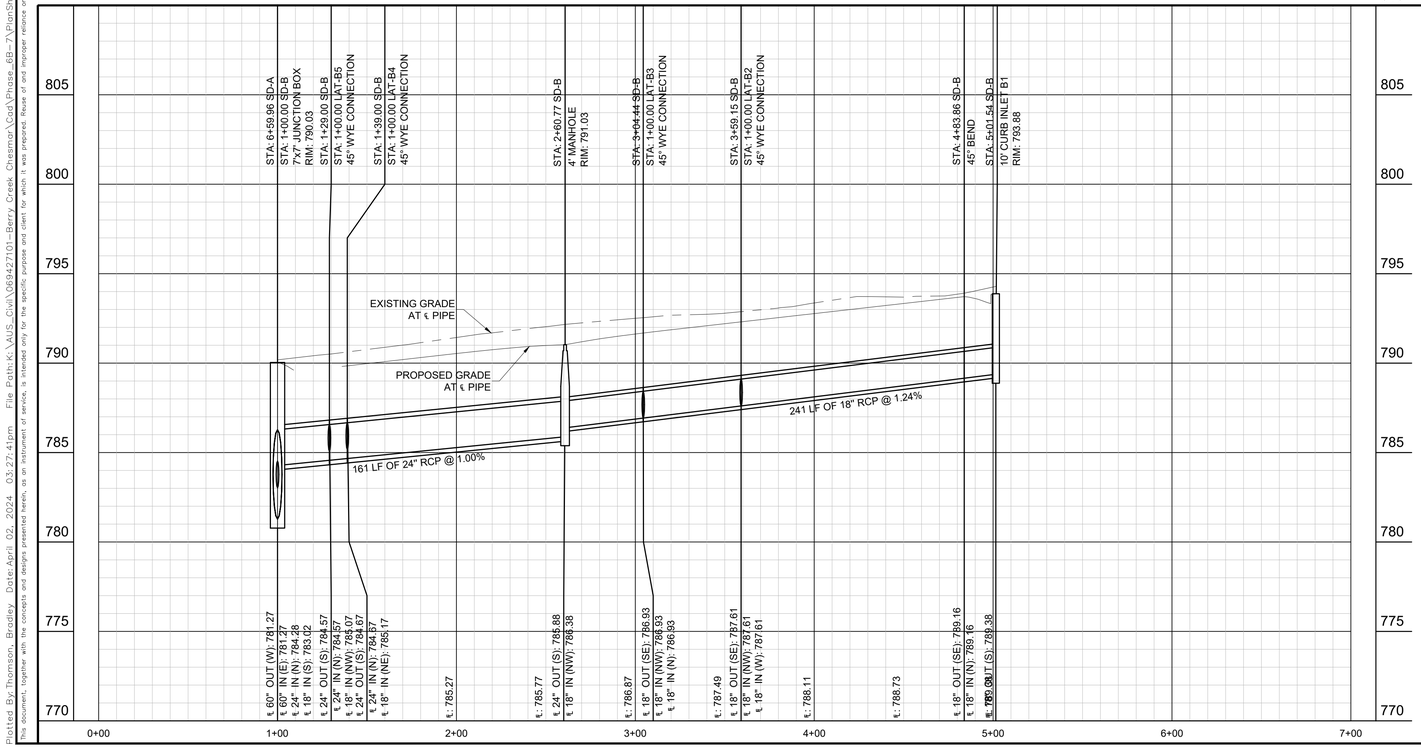
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
38
OF 82

2024-9-CON





PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

0 40' 80'
GRAPHIC SCALE 40'

LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

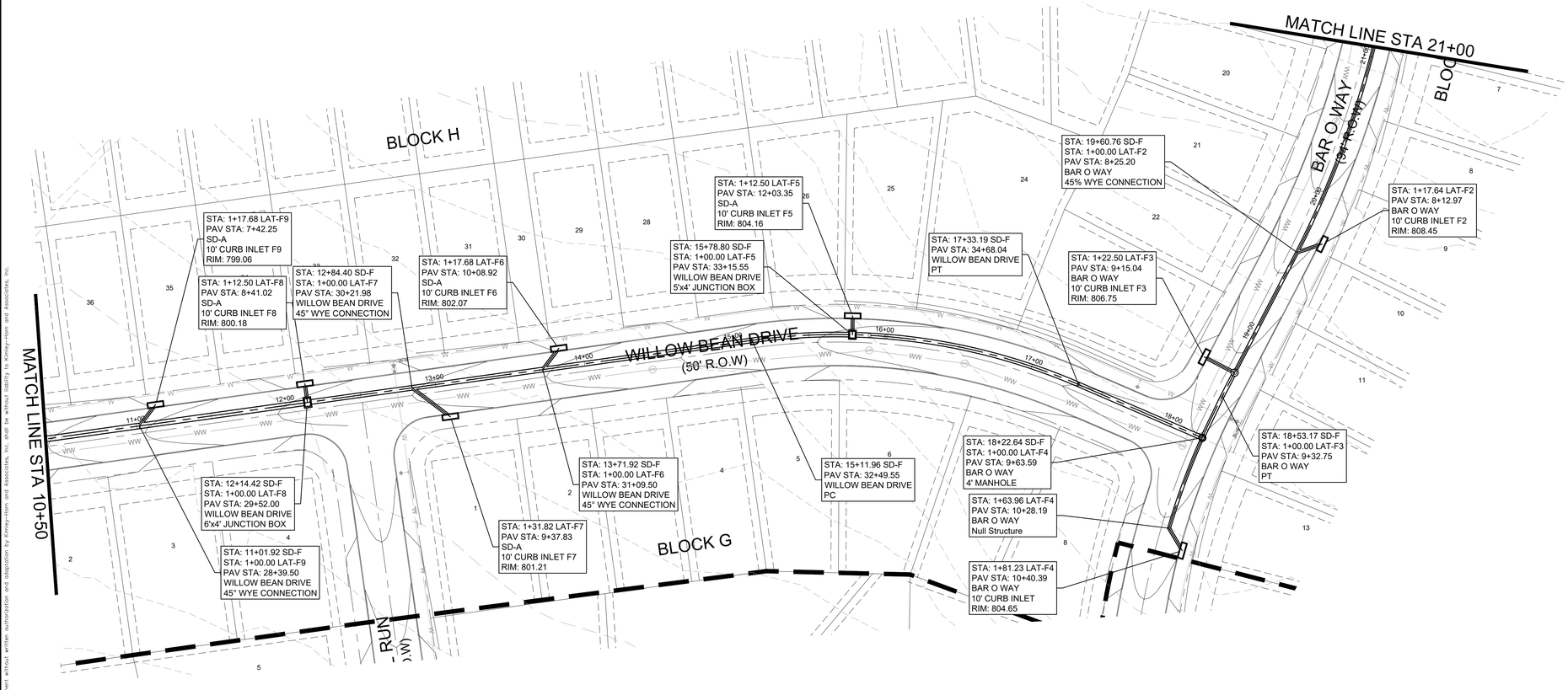
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

STORM PLAN AND PROFILE - SD-F (1 OF 3)

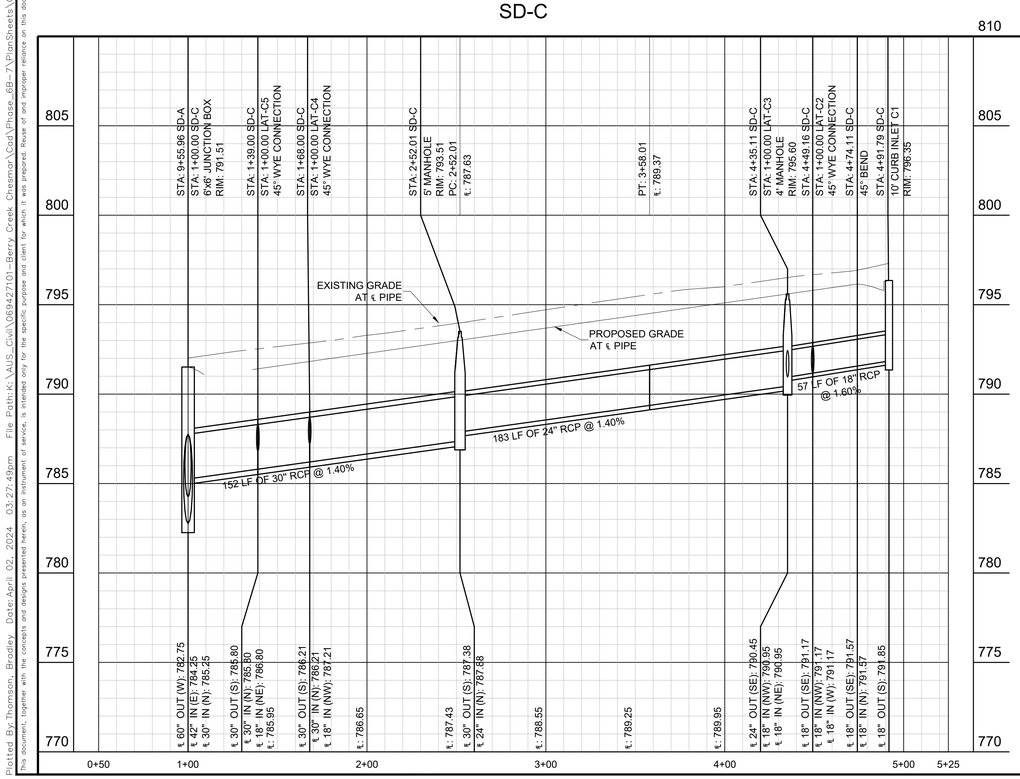
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
39
OF 82

2024-9-CON



SD-C



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

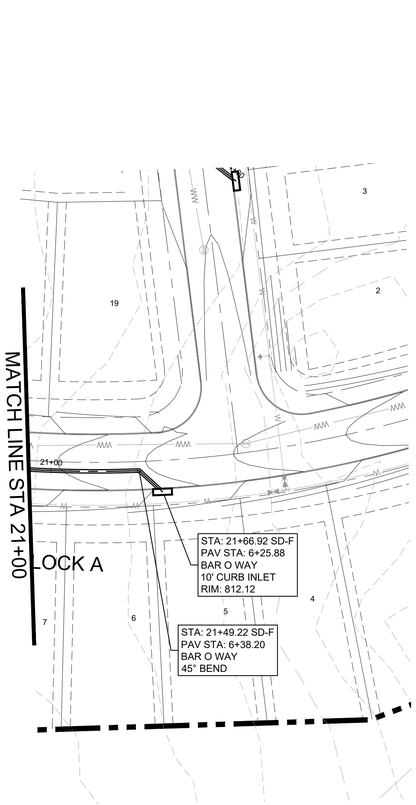
STORM PLAN AND PROFILE - SD-F (2 OF 3)

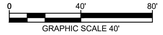
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

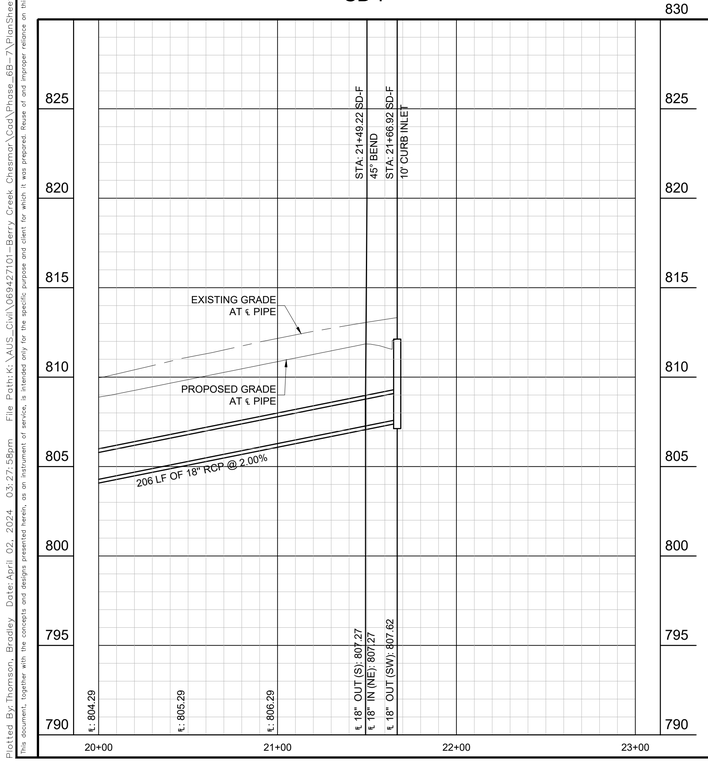
SHEET NUMBER
40
OF 82

2024-9-CON





SD-F



LEGEND

X-1 / 9.9 ac / 5.5 cfs	AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
A-1	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

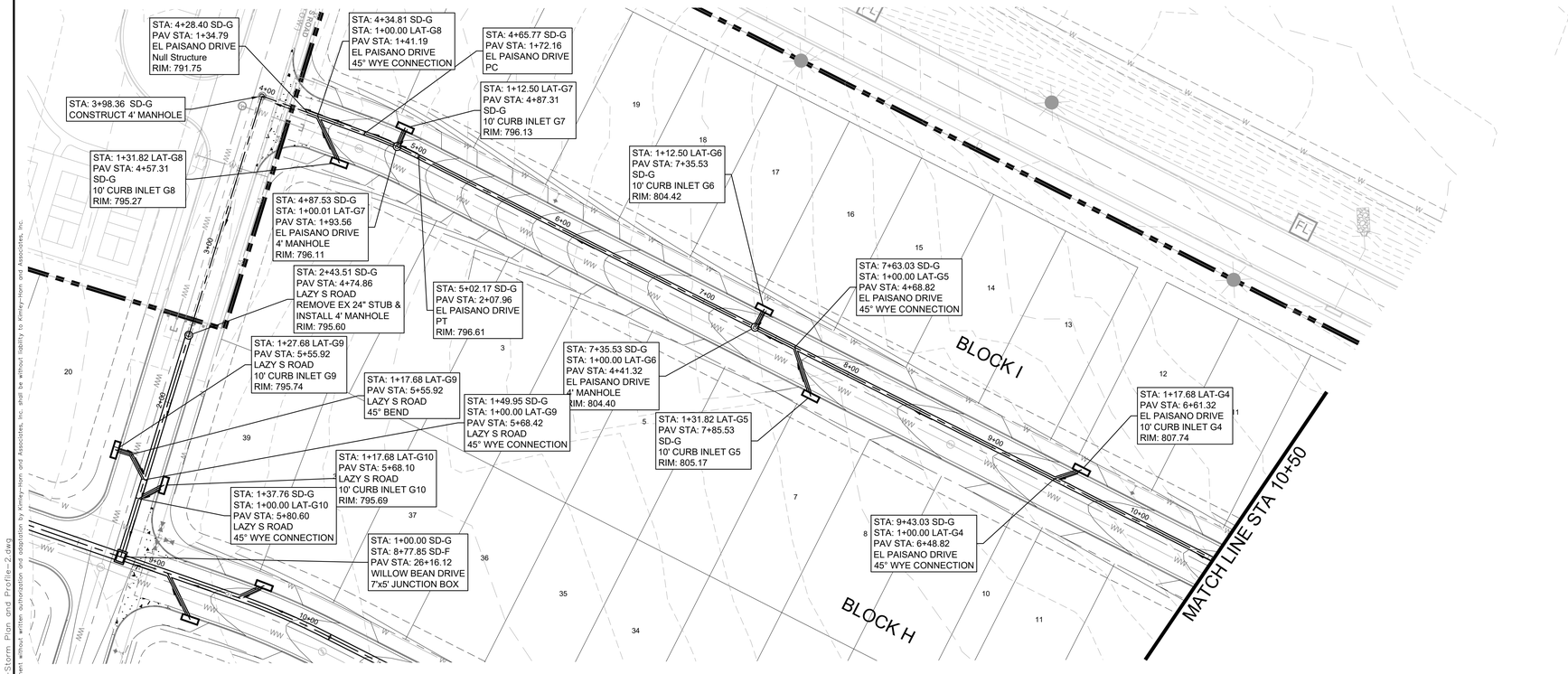
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

STORM PLAN AND PROFILE - SD-F (3 OF 3)

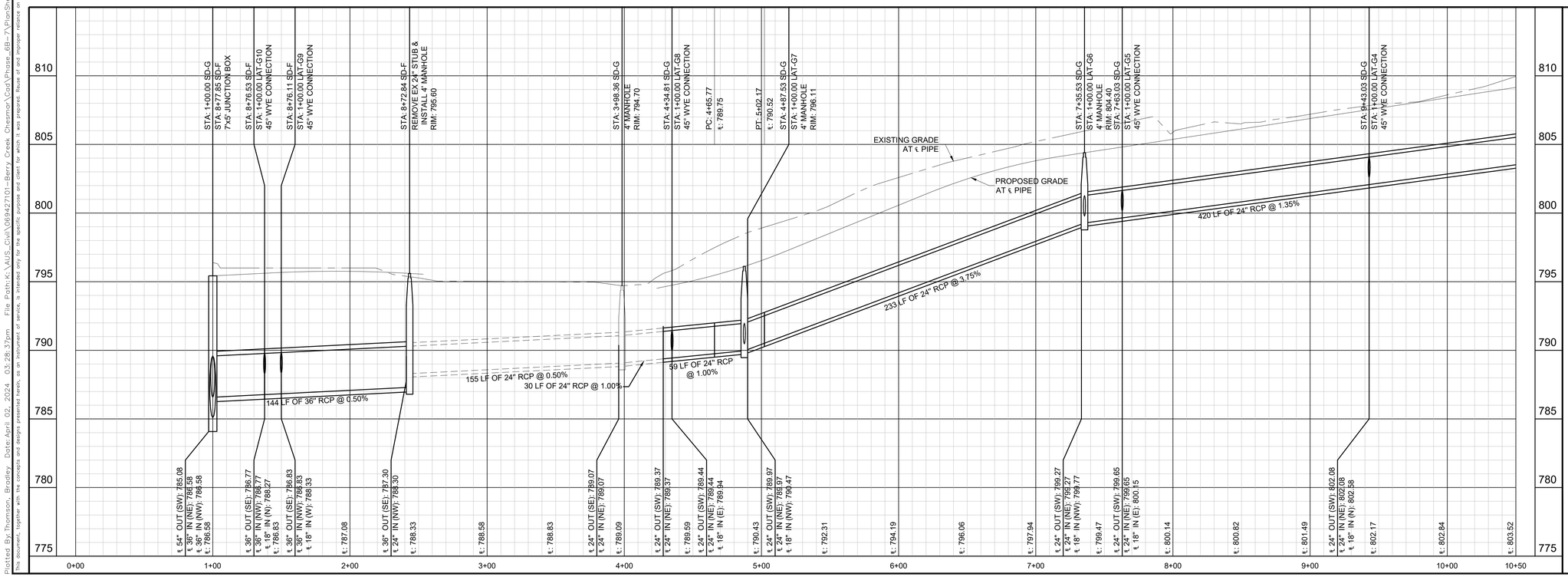
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
41
OF 82

2024-9-CON



SD-G



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

GRAPHIC SCALE 40'
0 40' 80'

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

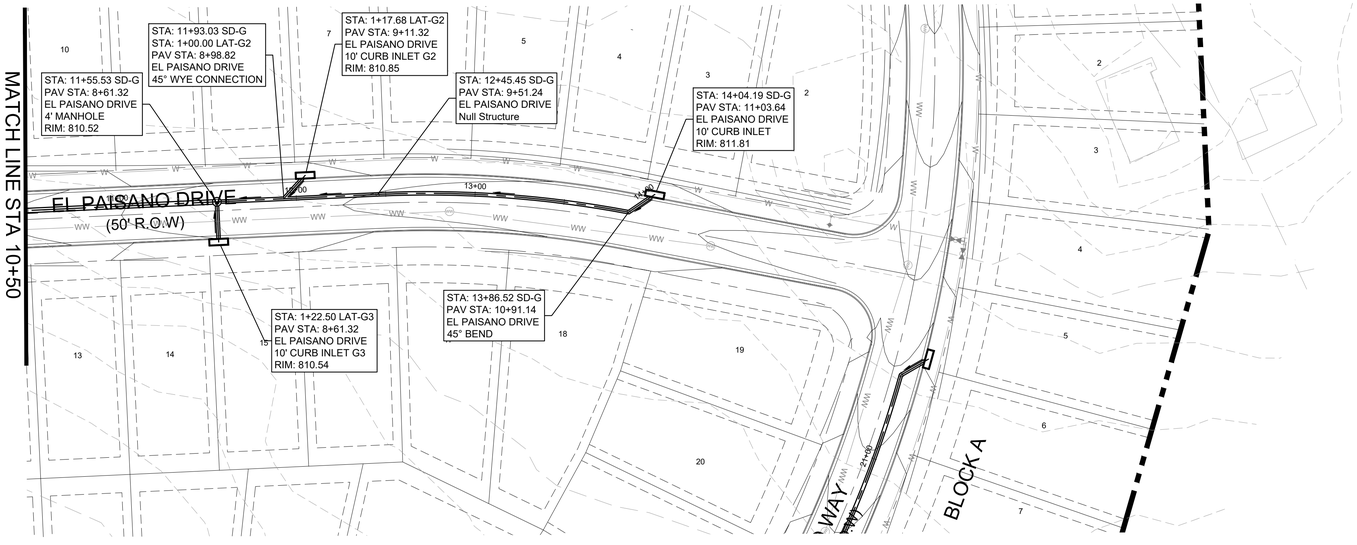
STORM PLAN AND PROFILE - SD-G (1 OF 2)

BERRY CREEK HIGHLANDS PHASES 6B & 7

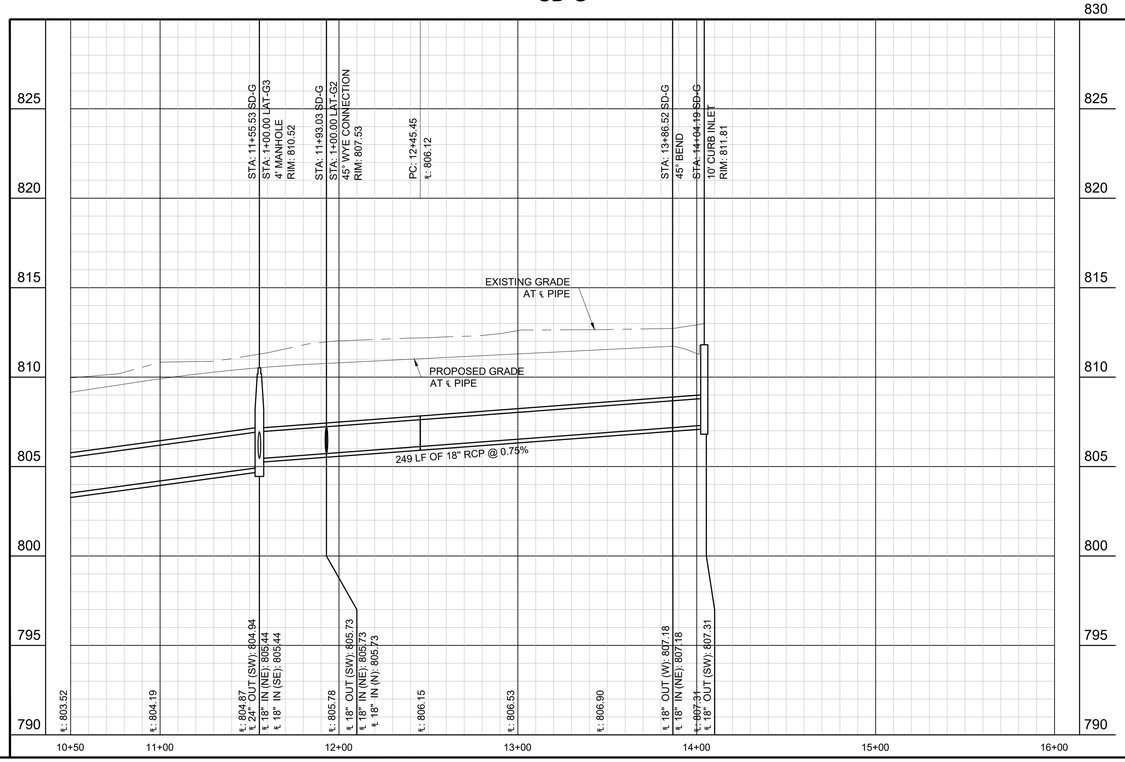
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

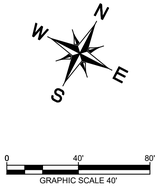
SHEET NUMBER
42
OF 82

2024-9-CON



SD-G





LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

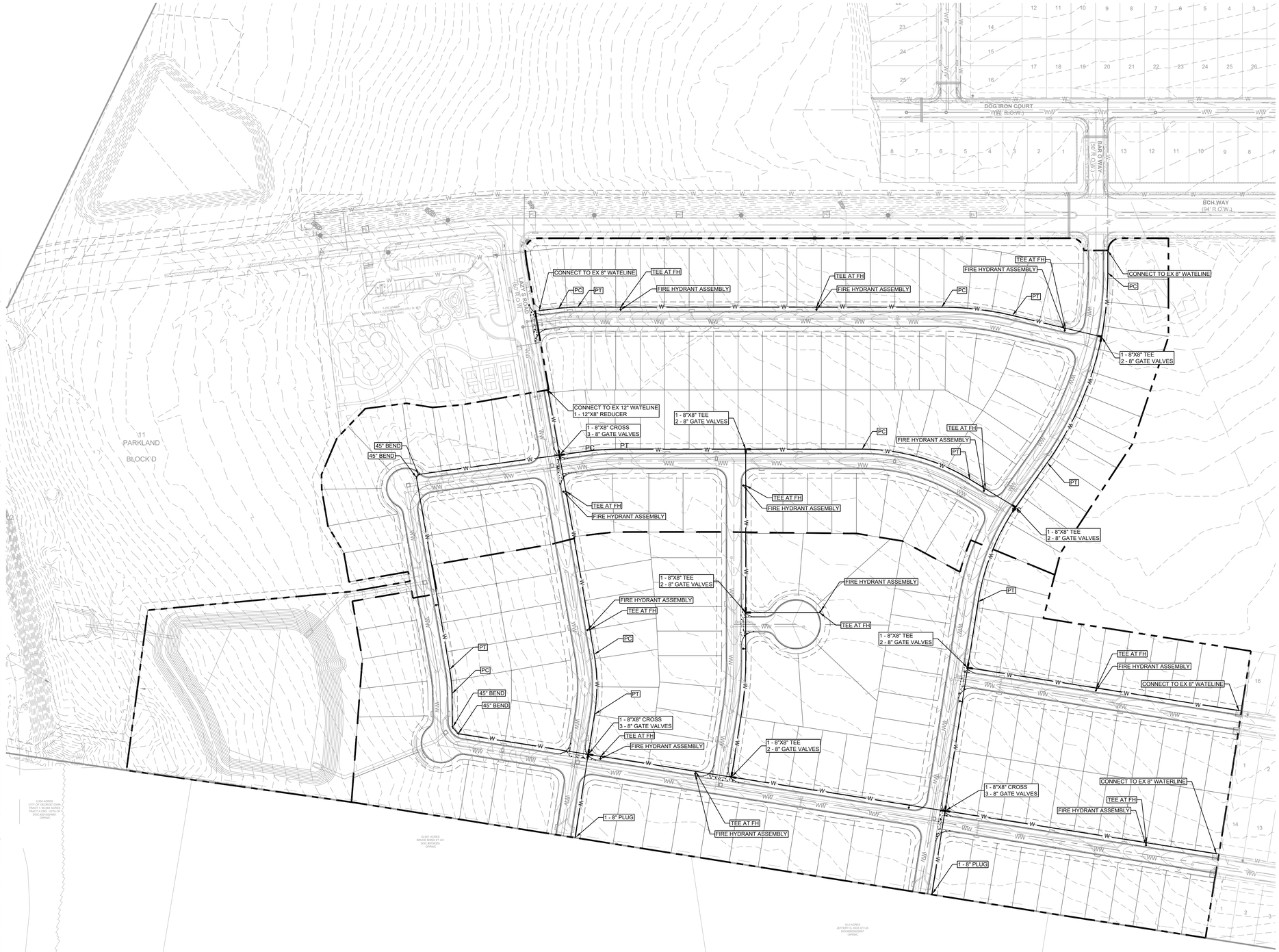
STORM PLAN AND PROFILE - SD-G (2 OF 2)

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
43
OF 82

2024-9-CON



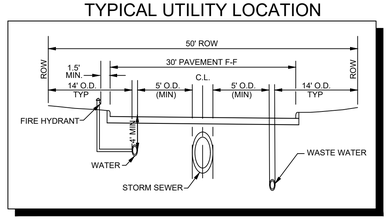
N
W
E
S

0 100' 200'
GRAPHIC SCALE 100'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



811
Know what's below.
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	068427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

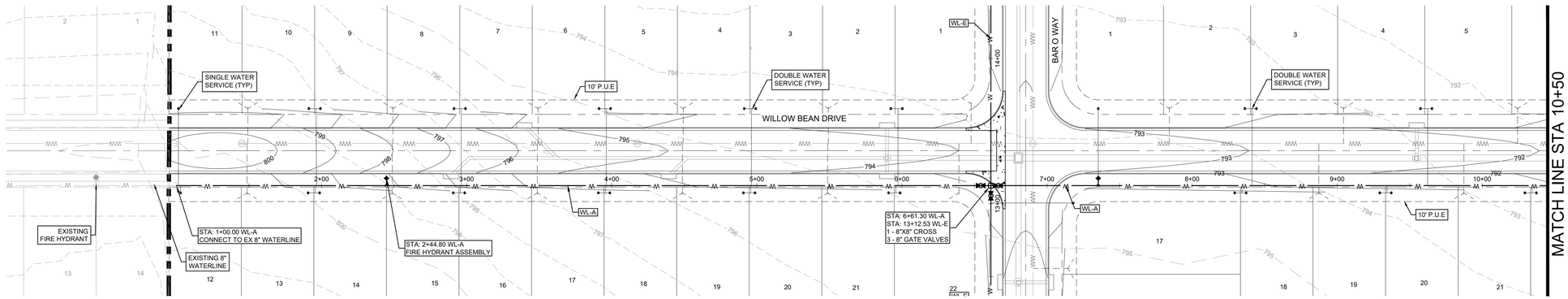
OVERALL WATER PLAN

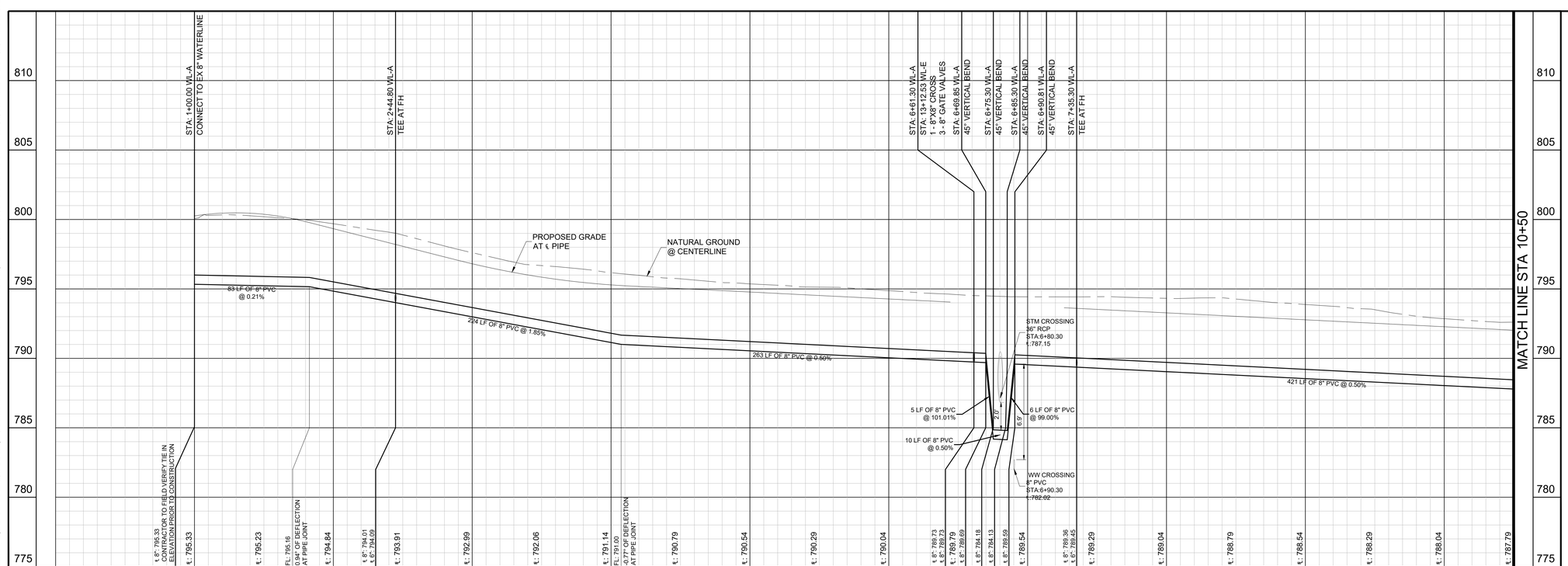
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
51
OF 82

2024-9-CON





PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

0 40' 80'
GRAPHIC SCALE 40'

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN | DESIGNED BY: ACS | DRAWN BY: RRJ | CHECKED BY: ACS

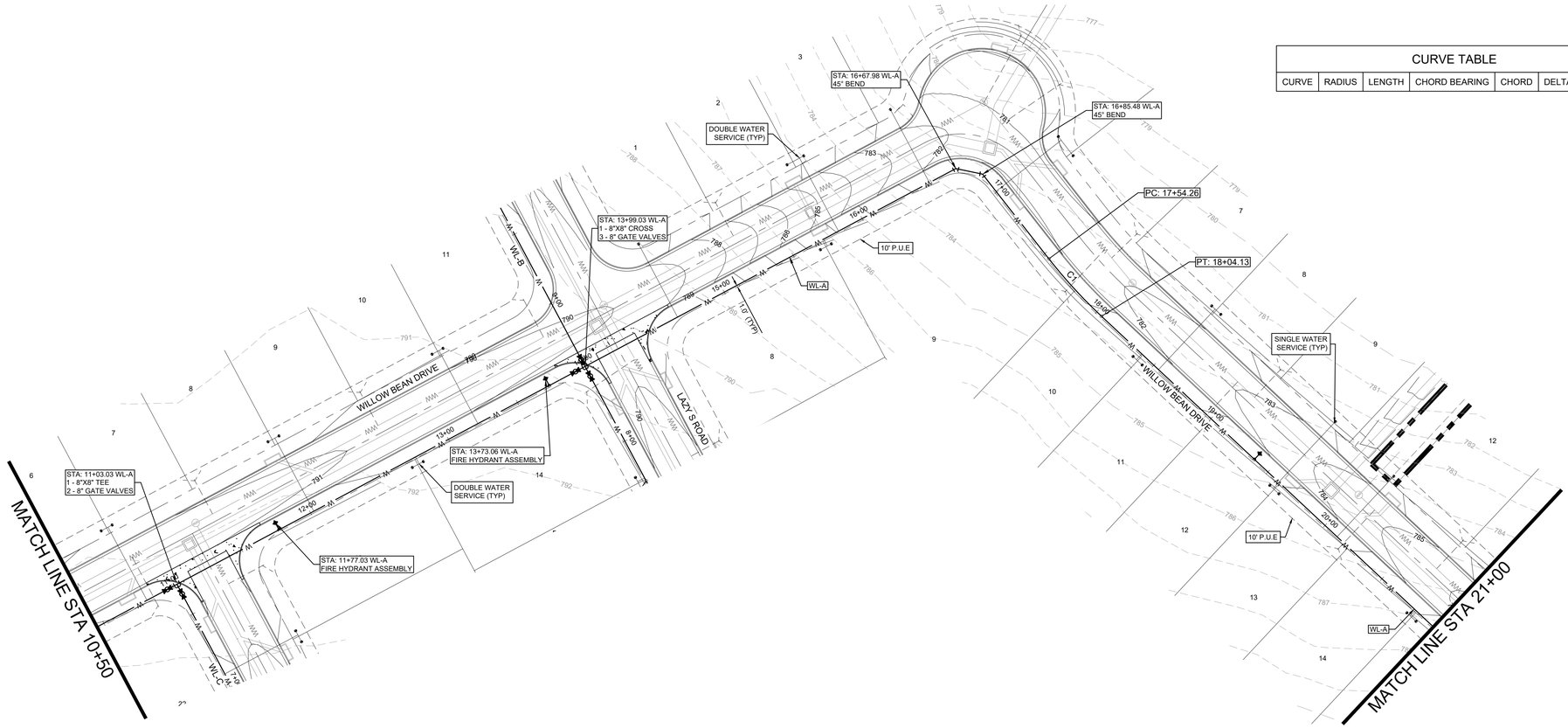
WATER PLAN & PROFILE - WL-A (1 OF 4)

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
52
OF 82

2024-9-CON



WL-A

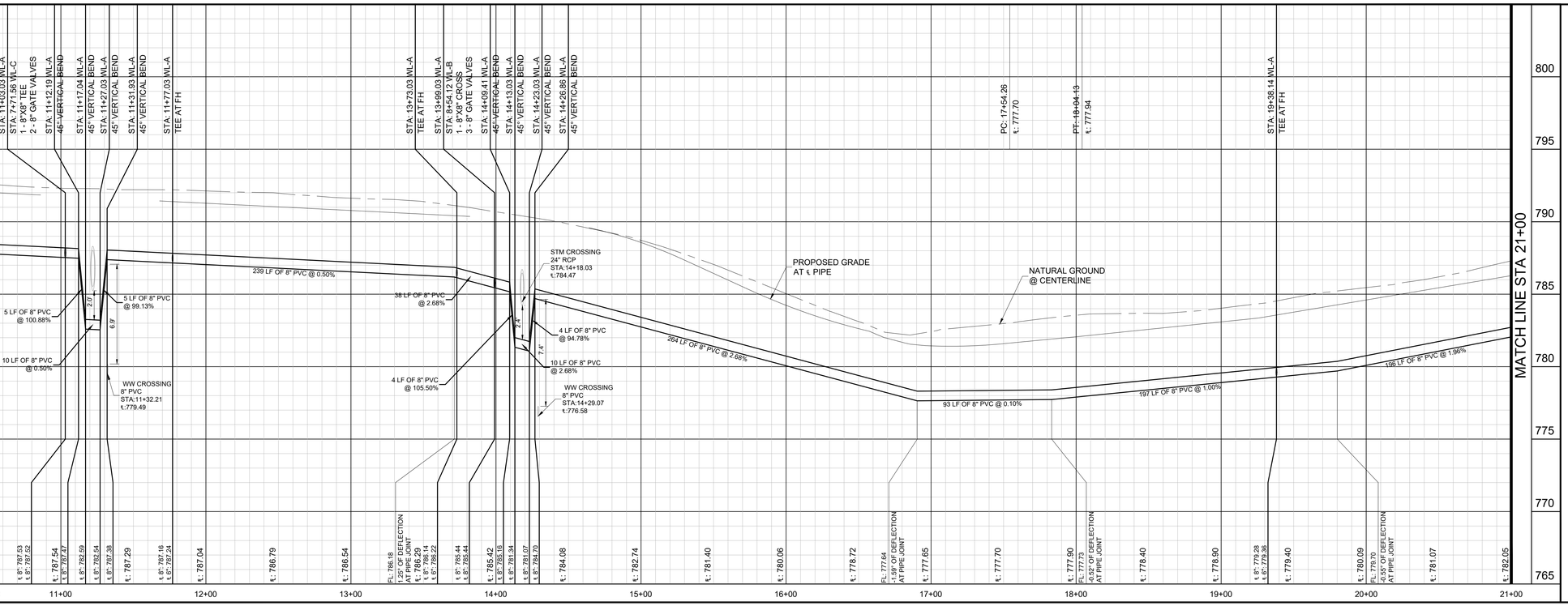
CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT

S
E M
N

0 40' 80'
GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER PLAN & PROFILE - WL-A (2 OF 4)

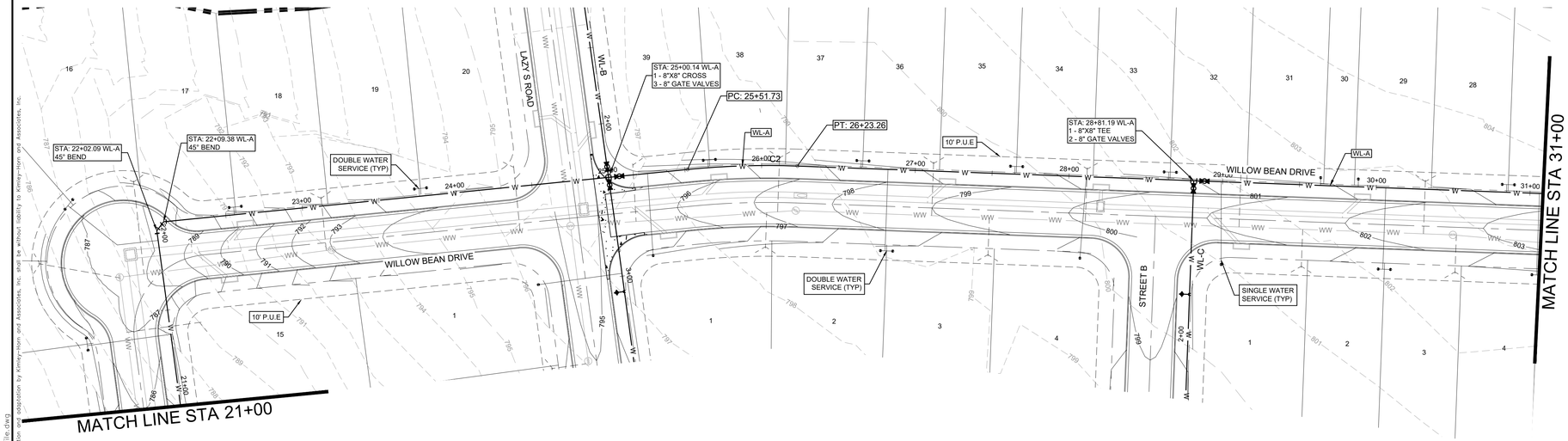
BERRY CREEK HIGHLANDS PHASES 6B & 7

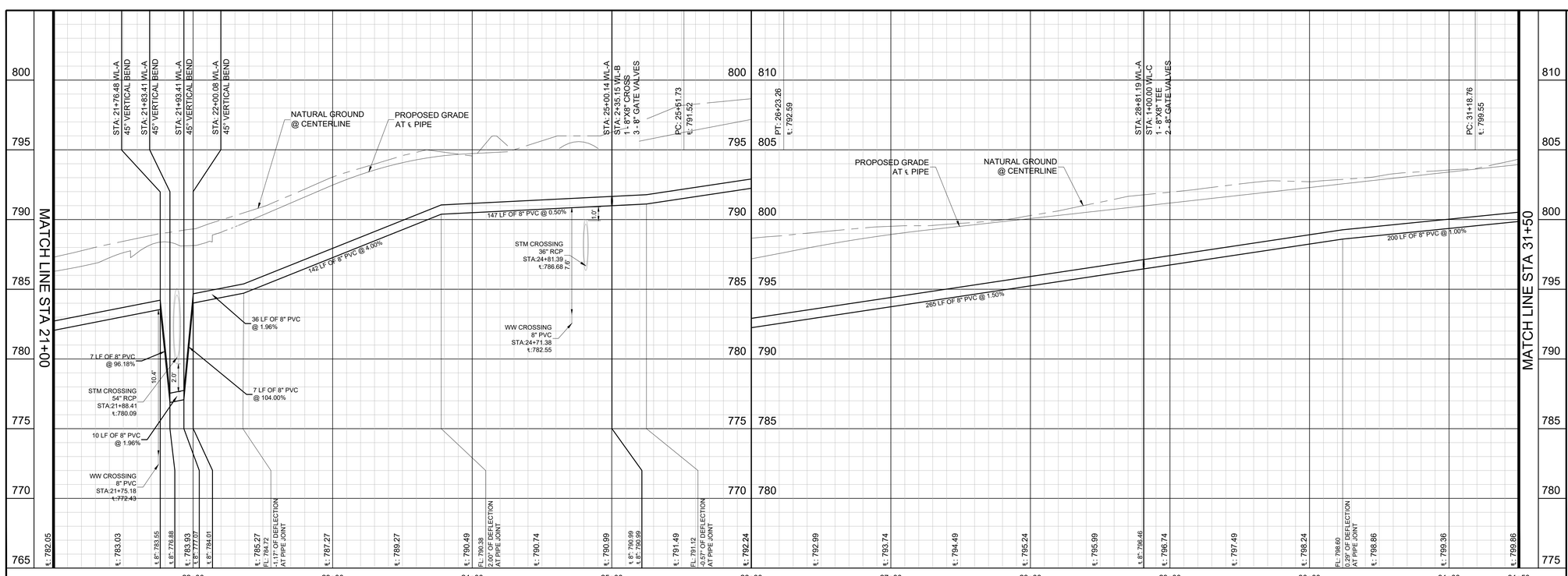
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
53
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT





0 40' 80'

GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

811 Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

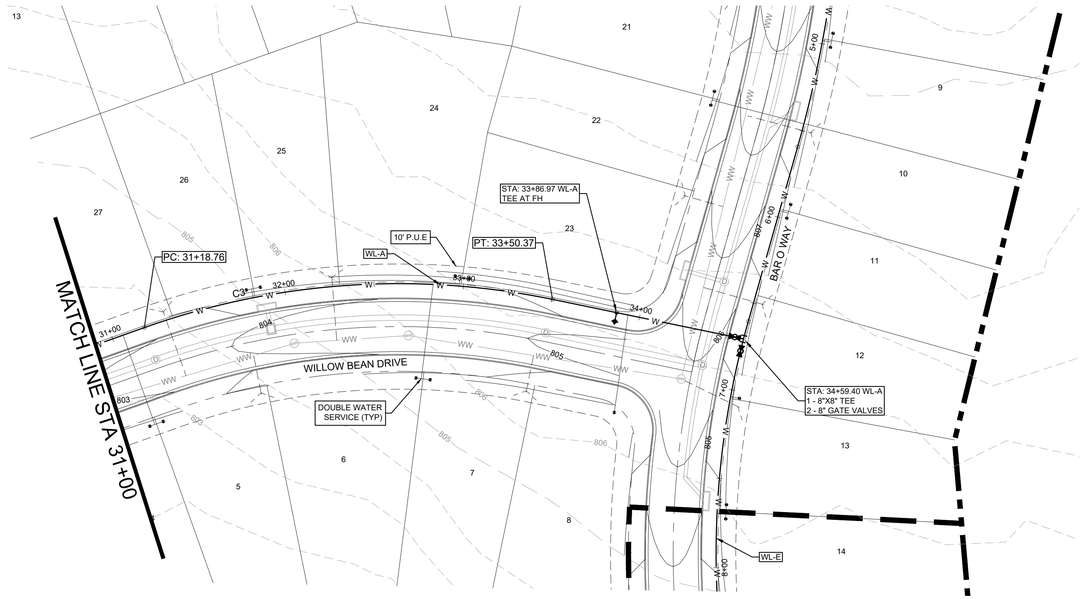
WATER PLAN & PROFILE - WL-A (3 OF 4)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

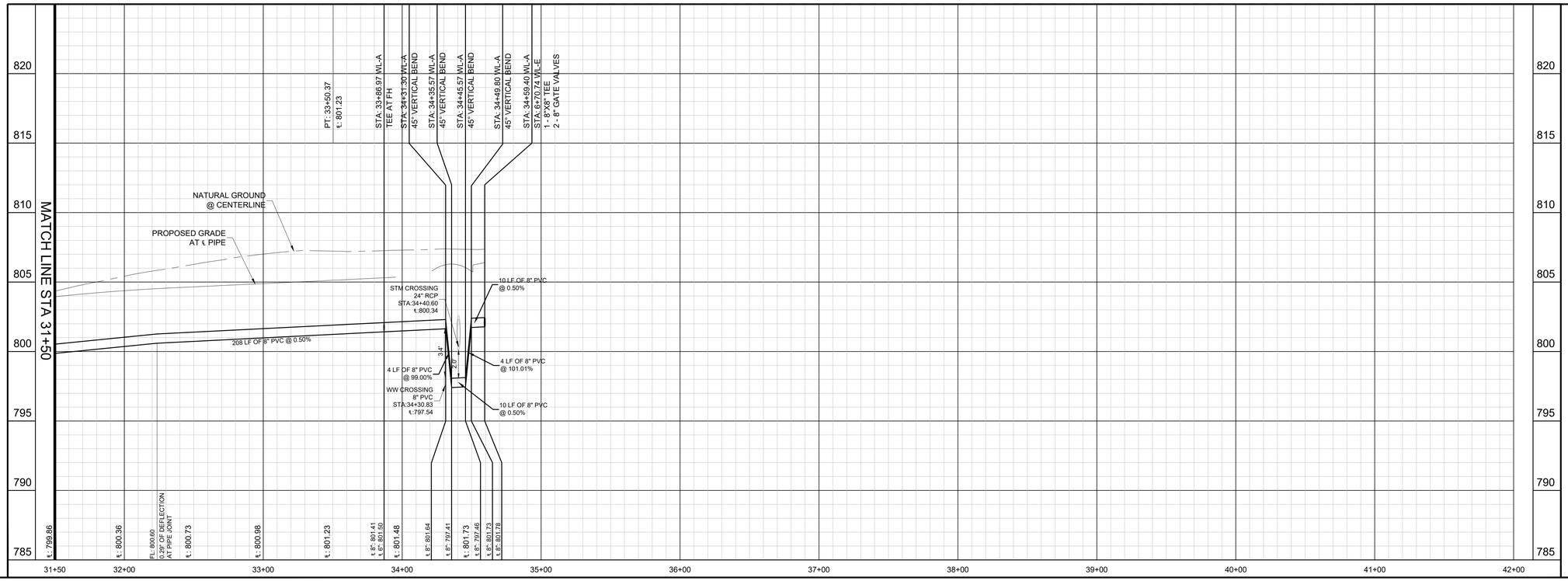
SHEET NUMBER
54
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT



WL-A



0 40' 80'

GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER PLAN & PROFILE - WL-A (4 OF 4)

BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

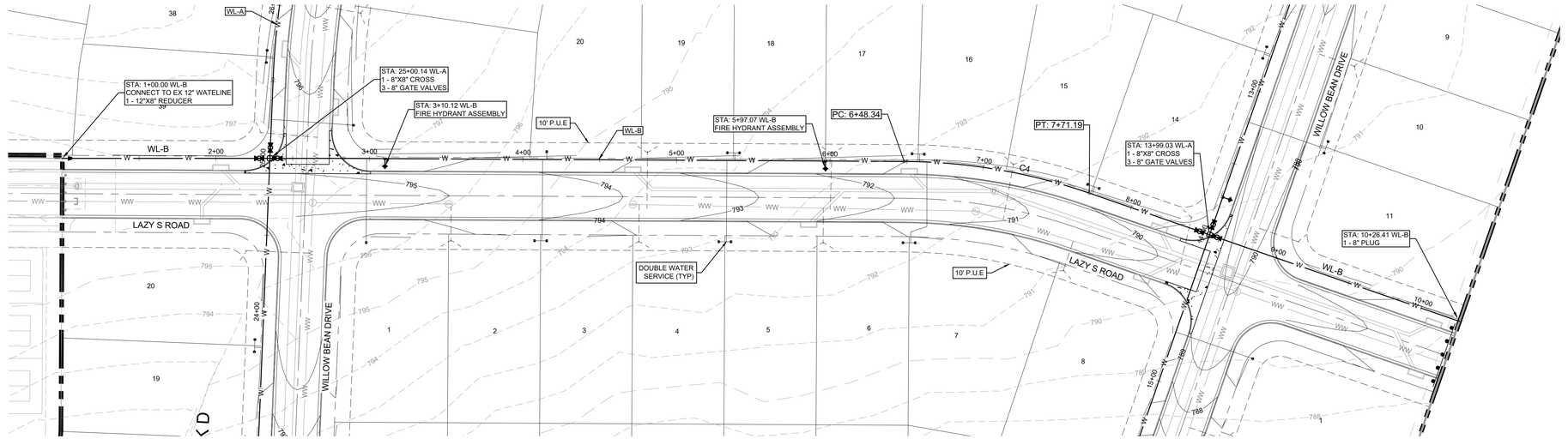
BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

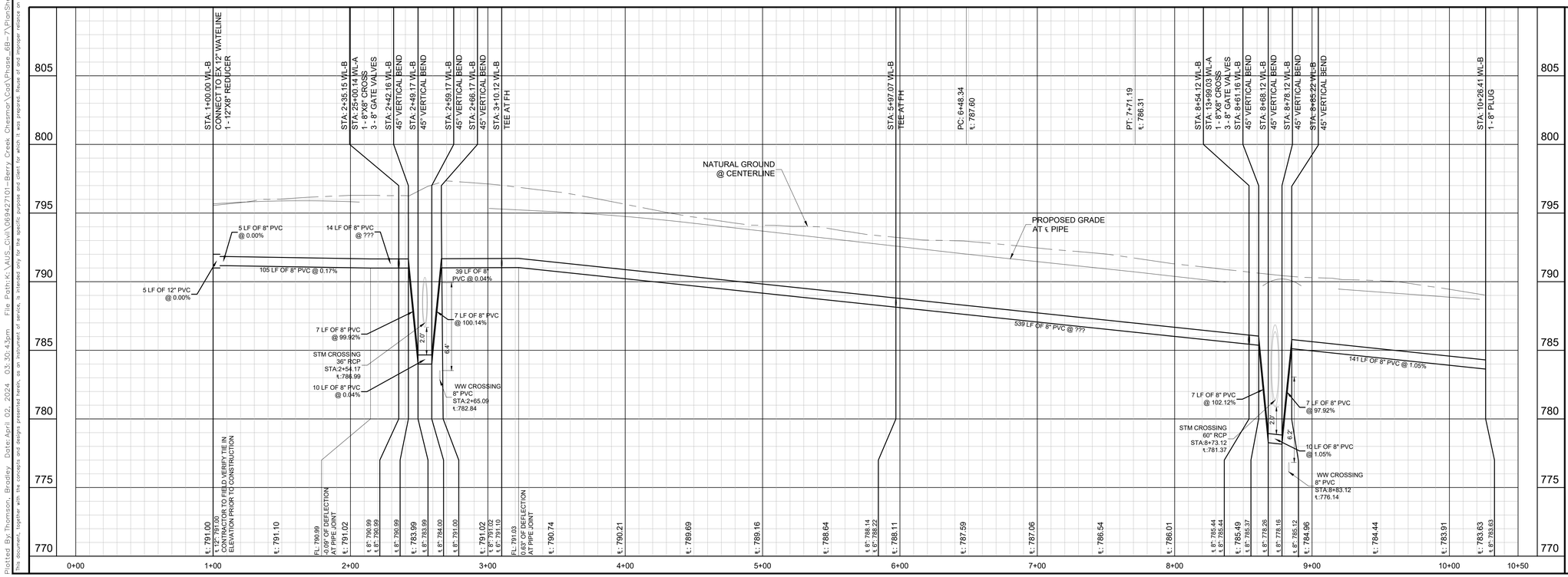
SHEET NUMBER
55
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT



WL-B



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER PLAN & PROFILE - WL-B

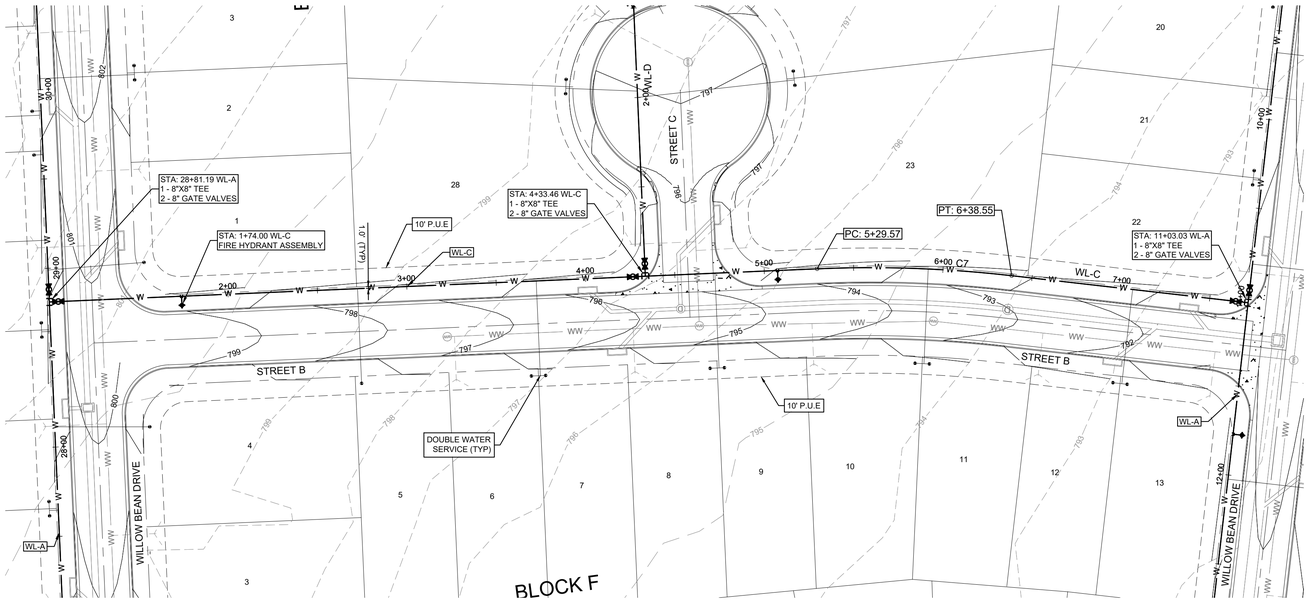
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

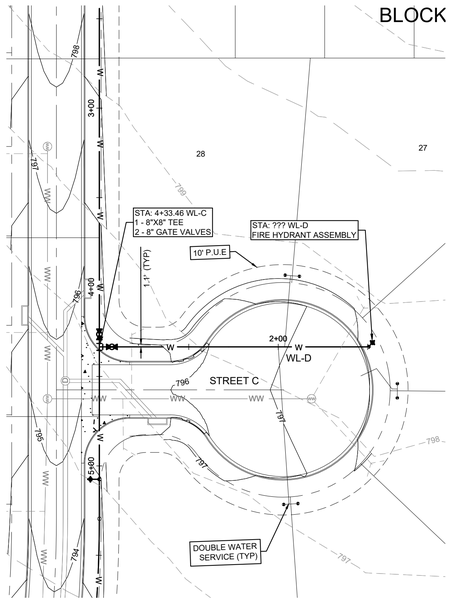
SHEET NUMBER
56
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT



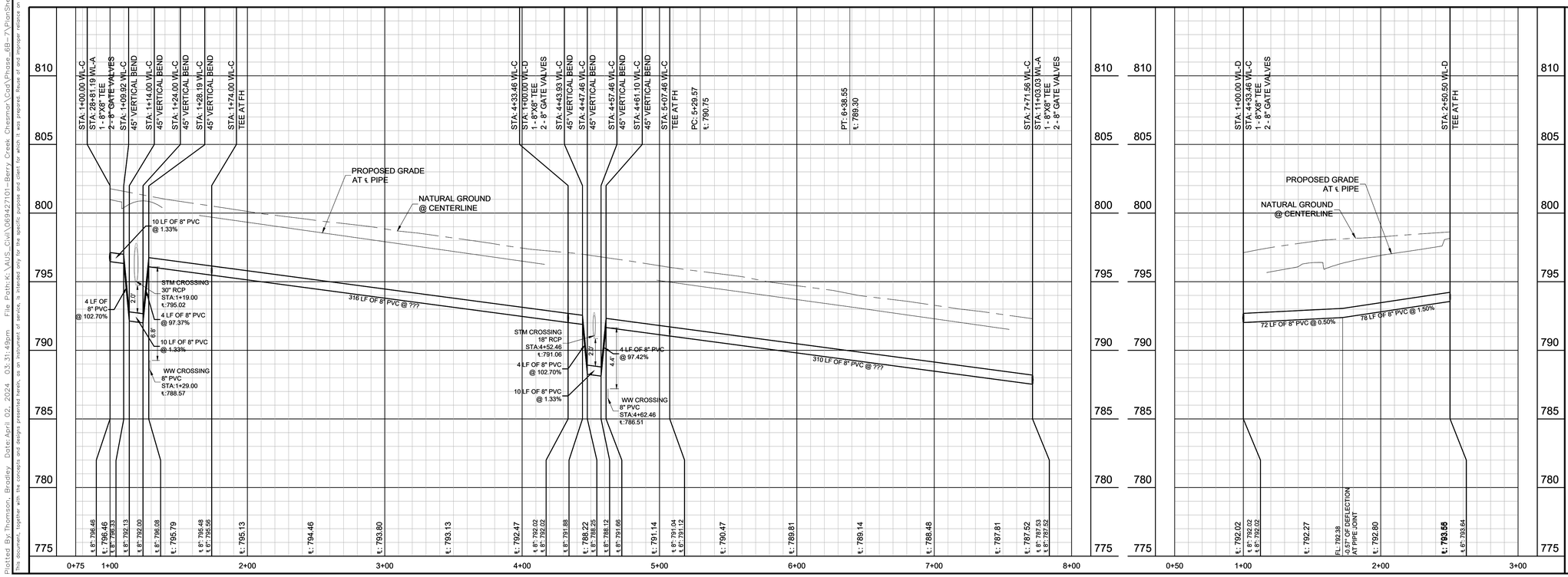
WL-C



WL-D

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER PLAN & PROFILE - WL-C & WL-D

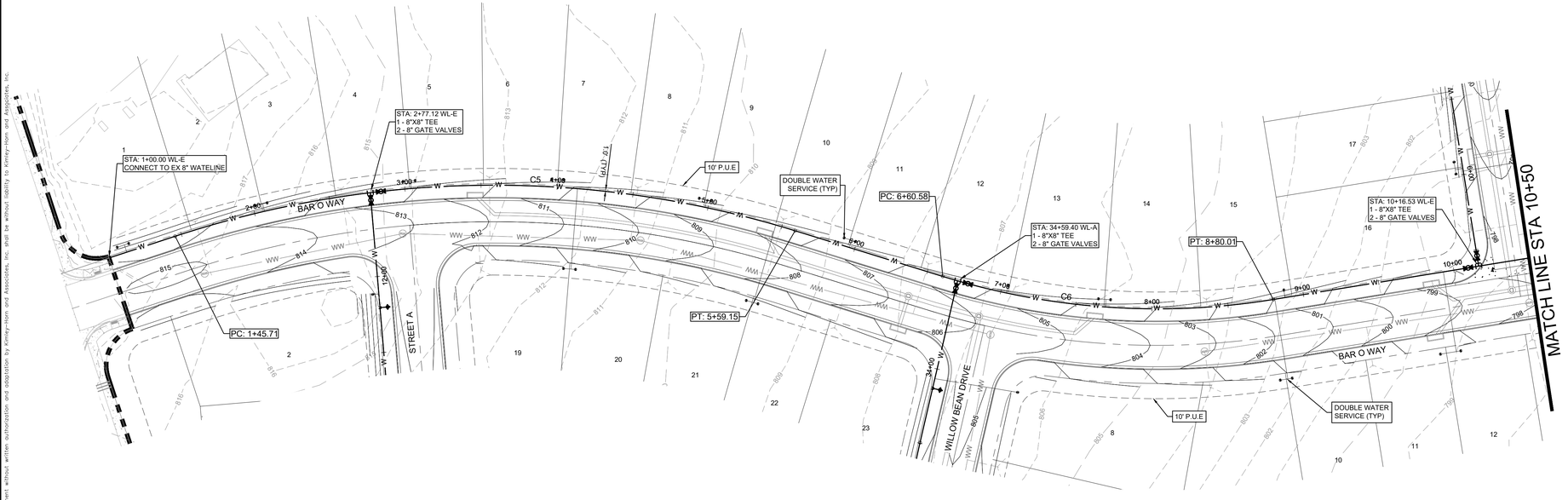
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

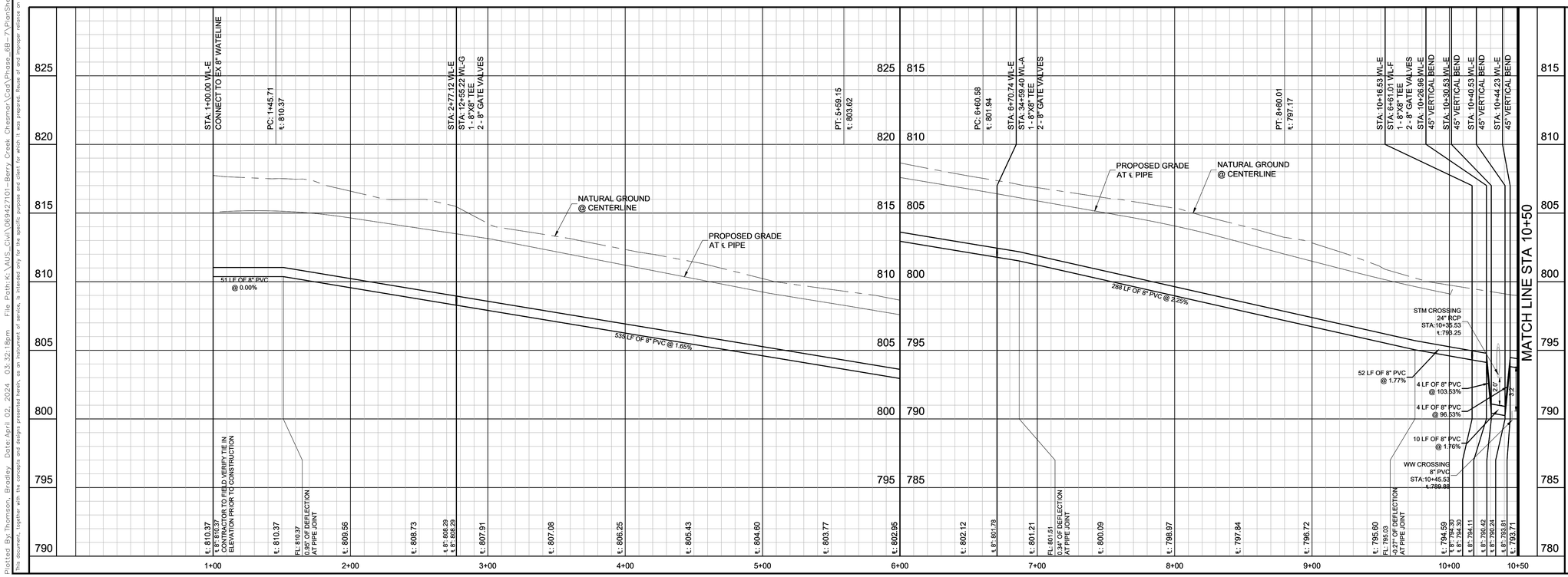
SHEET NUMBER
57
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT



WL-E



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

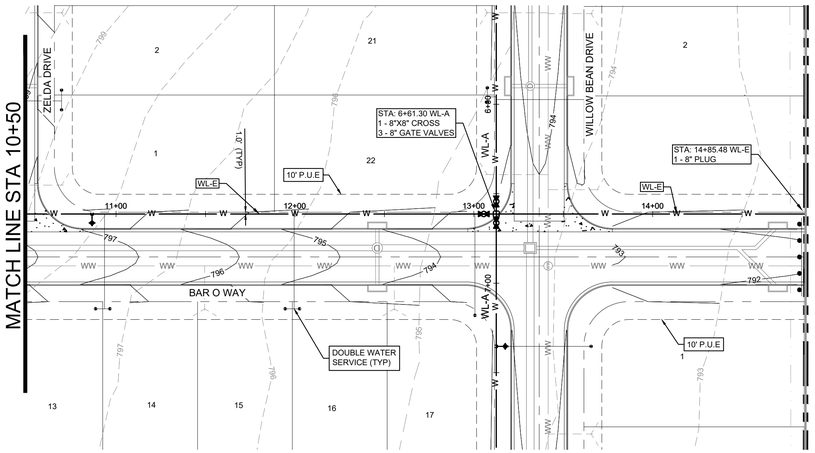
WATER PLAN & PROFILE - WL-E (1 OF 2)

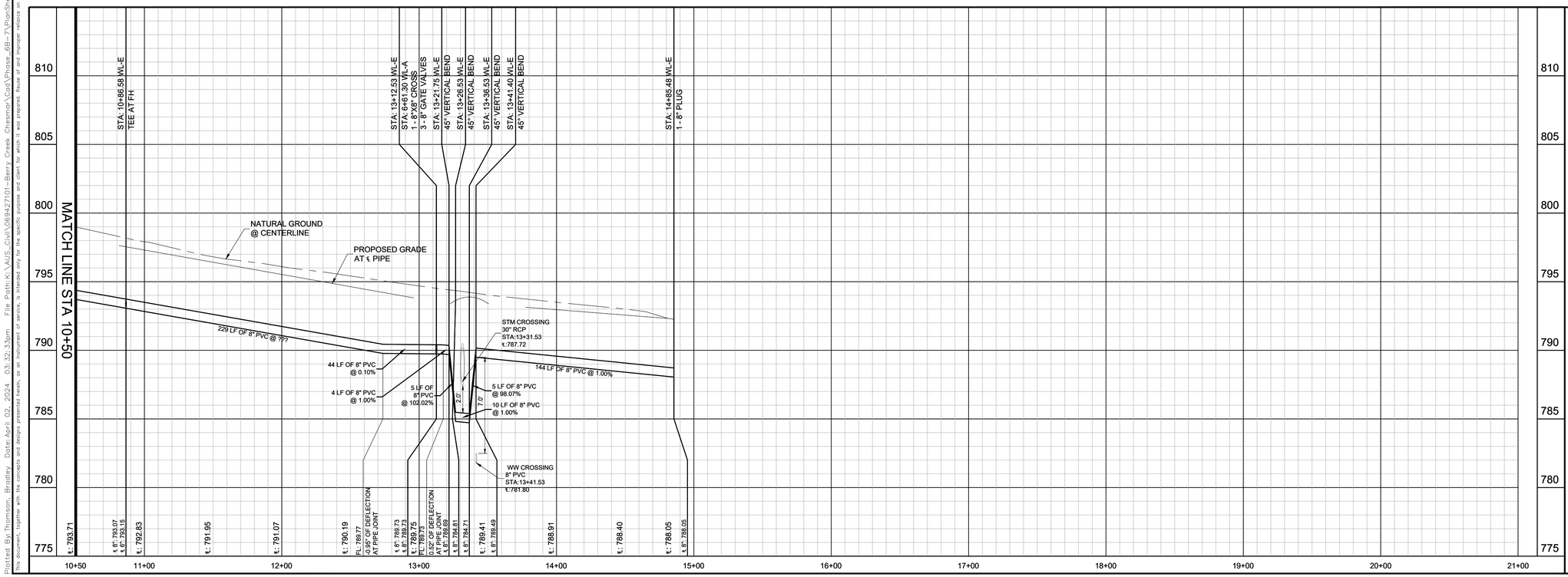
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
58
OF 82

2024-9-CON





0 40' 80'

GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

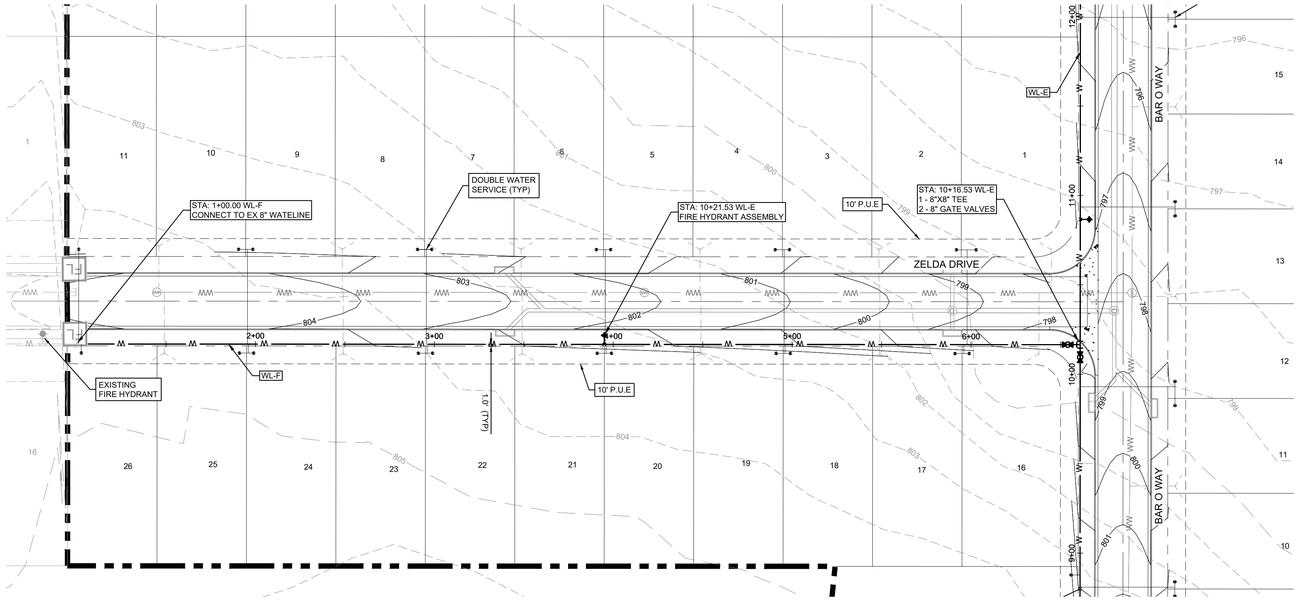
WATER PLAN & PROFILE - WL-E (2 OF 2)

BERRY CREEK HIGHLANDS PHASES 6B & 7

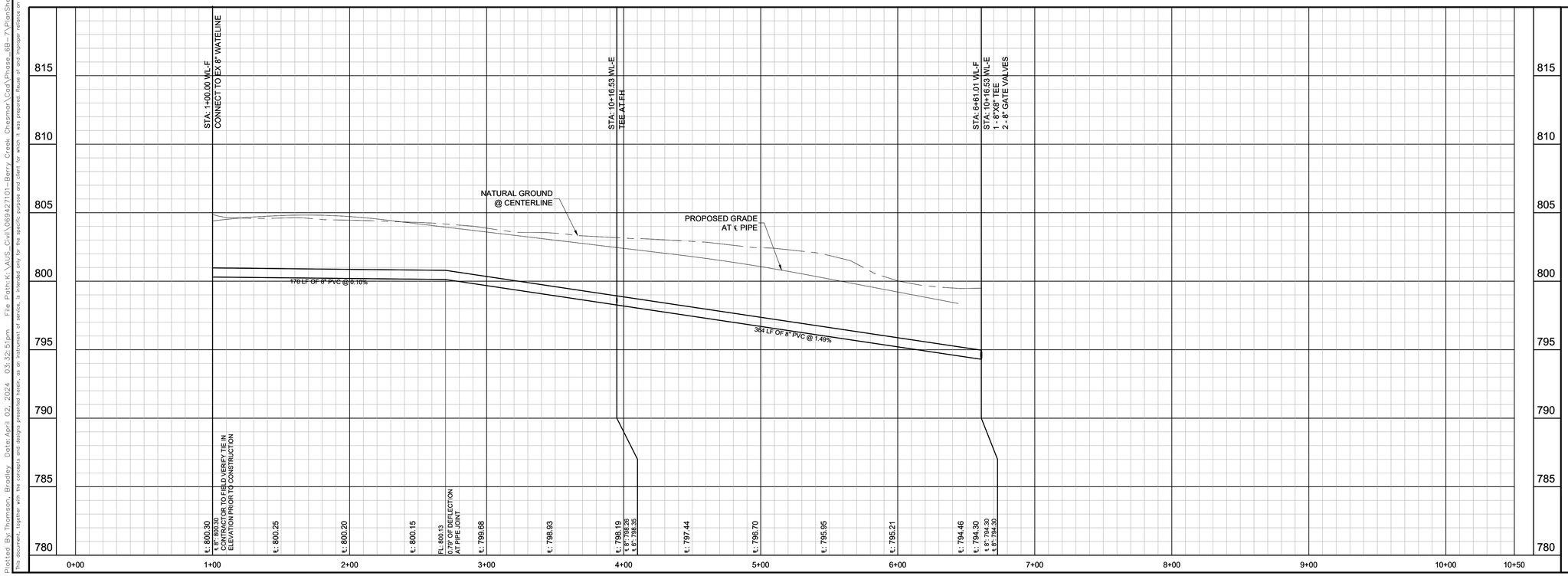
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
59
OF 82

2024-9-CON



WL-F



0 40' 80'

GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER PLAN & PROFILE - WL-F

BERRY CREEK HIGHLANDS PHASES 6B & 7

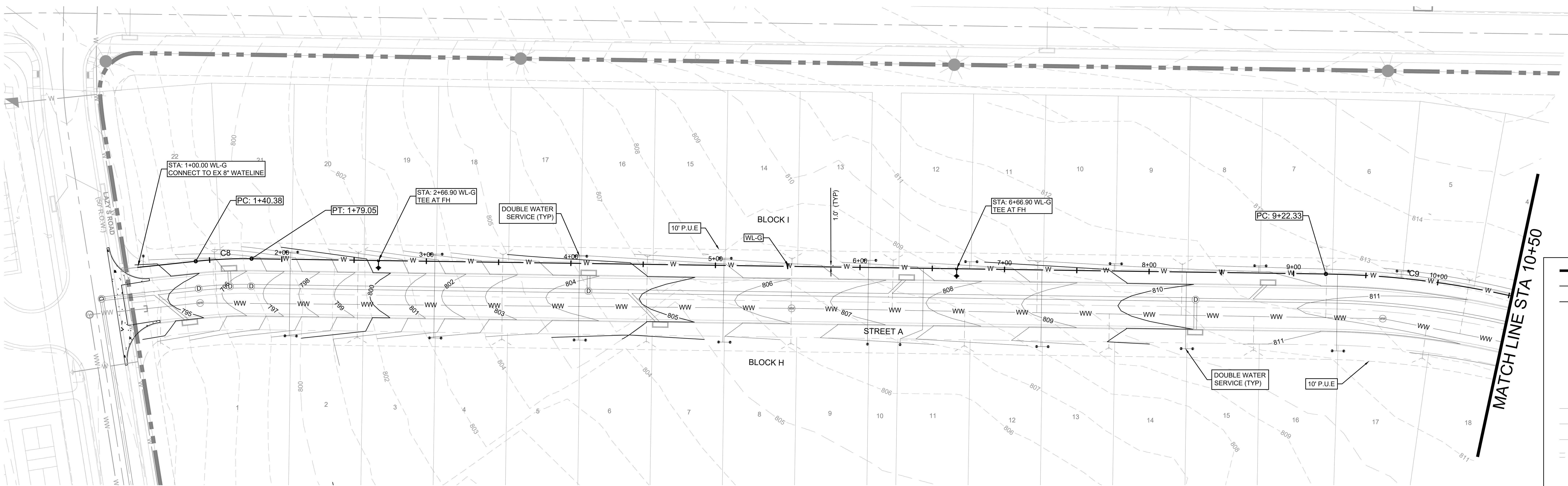
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
60
OF 82

2024-9-CON

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT

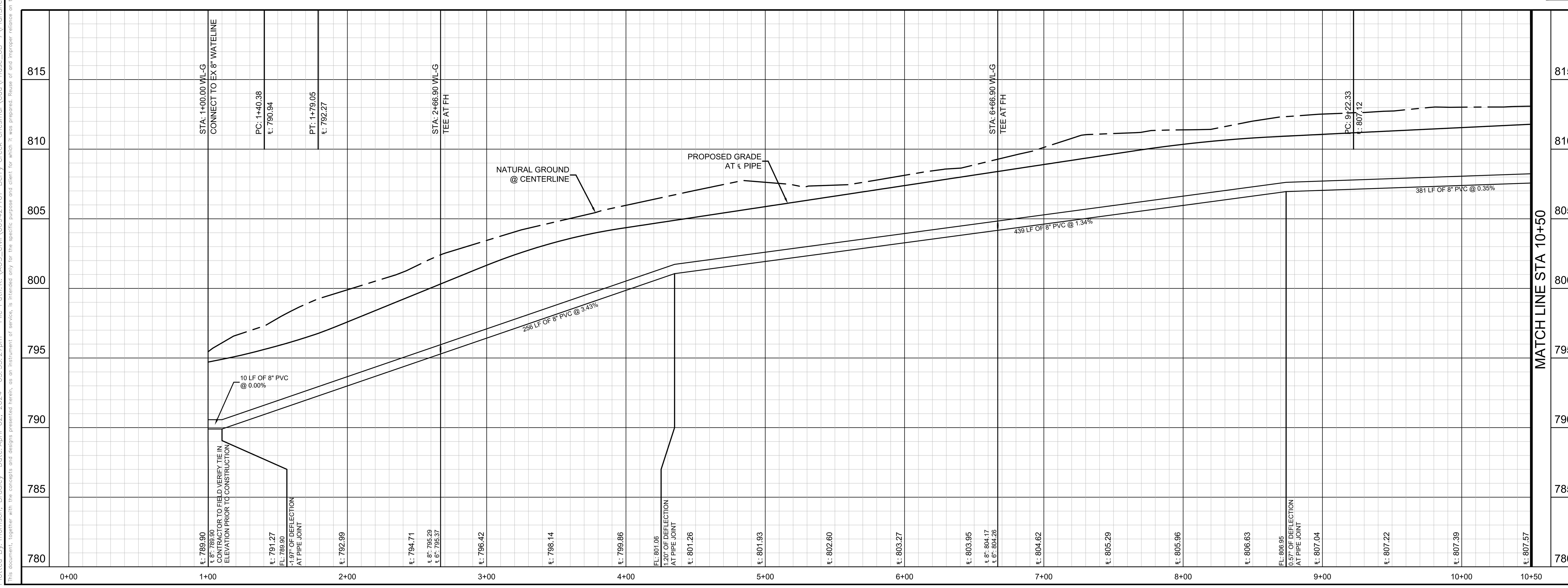
GRAPHIC SCALE 40' (0, 40', 80')



UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

WL-G



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

811 Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley-Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — ALEXANDER C. STEADMAN — 138792 — LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

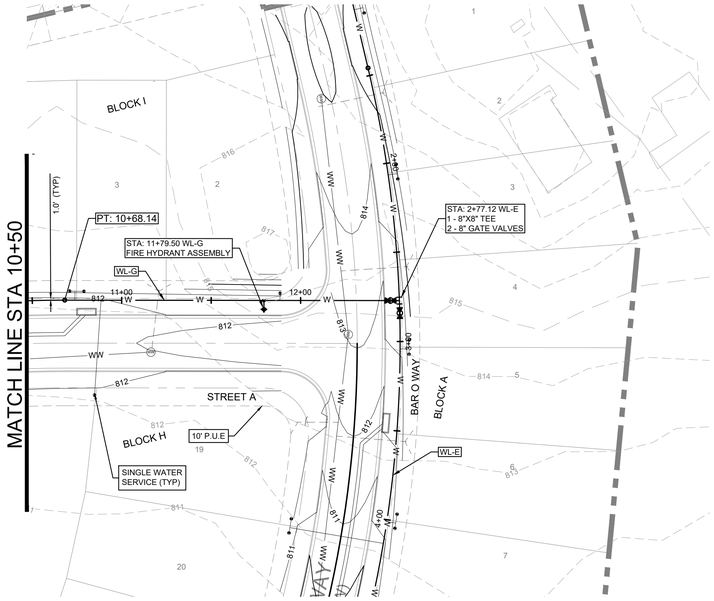
WATER PLAN & PROFILE - WL-G (1 OF 2)

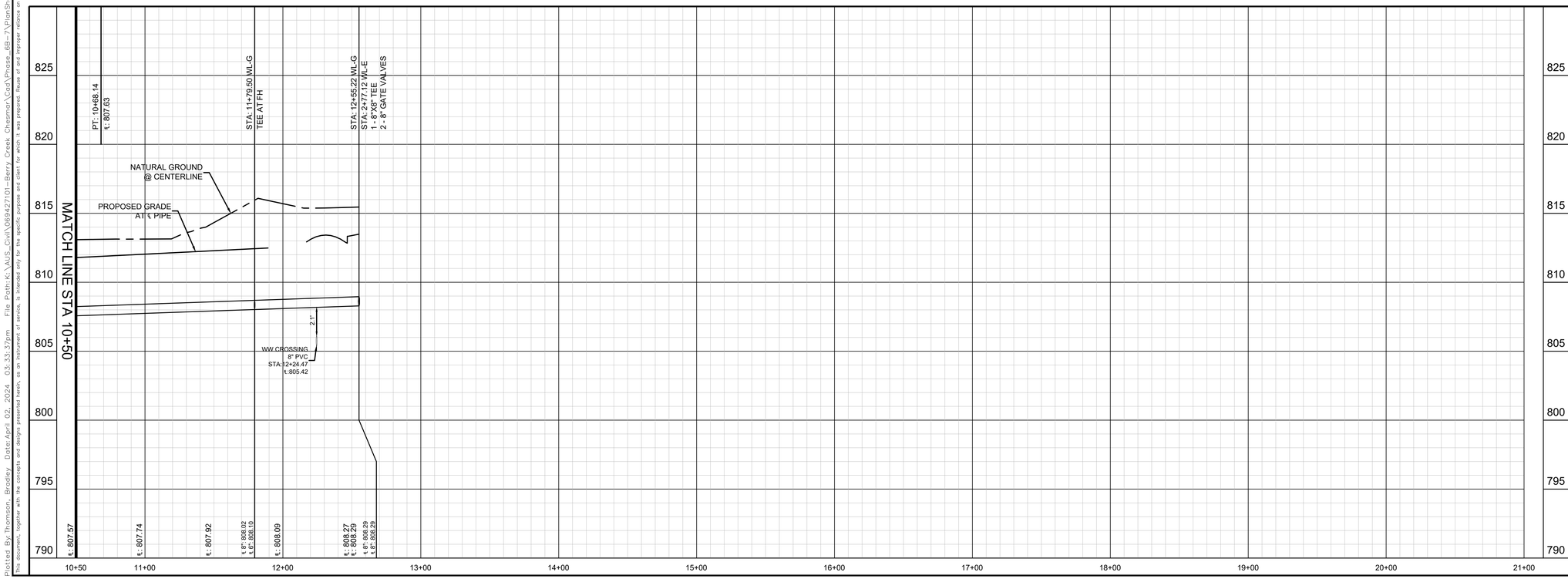
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
61
OF 82

2024-9-CON





0 40' 80'

GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

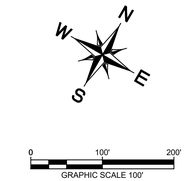
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER PLAN & PROFILE - WL-G (2 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
62
OF 82

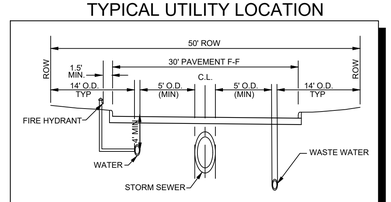
2024-9-CON



UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



811
Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
069427101	FEBRUARY 2024	AS SHOWN	ACS	RRJ	ACS

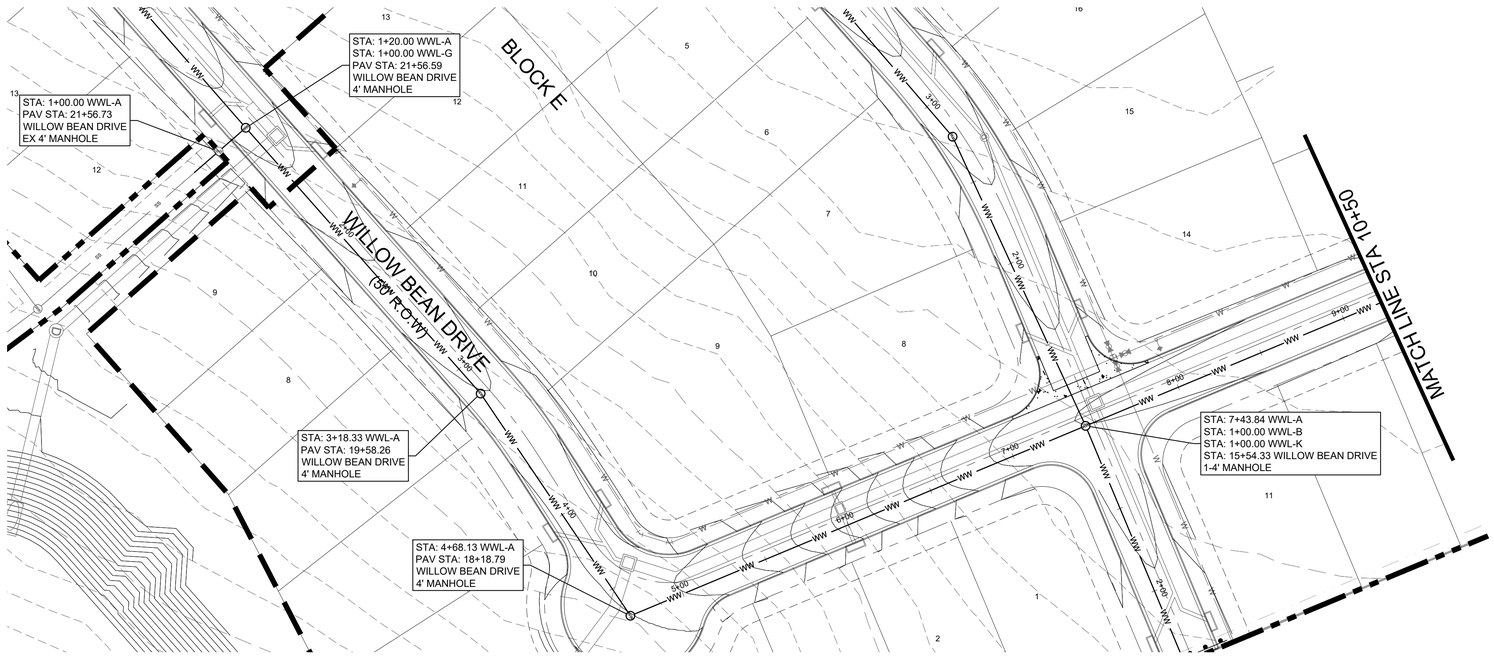
OVERALL WASTEWATER PLAN

BERRY CREEK HIGHLANDS PHASES 6B & 7

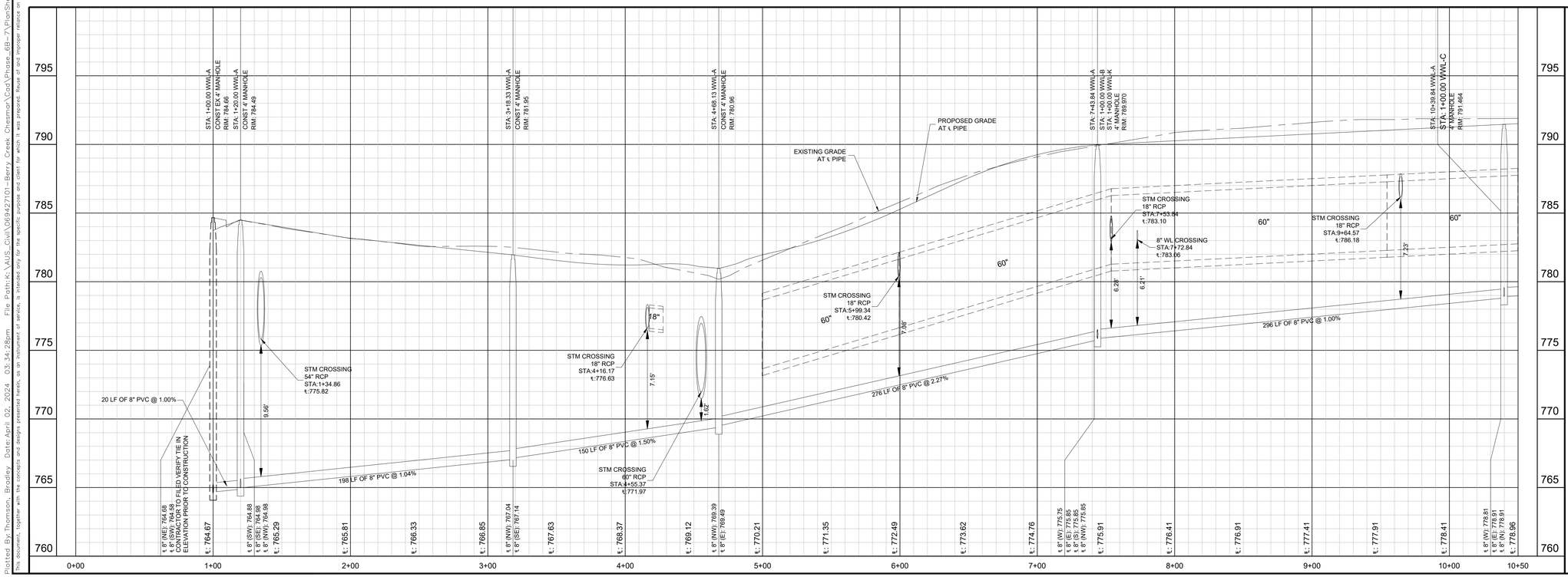
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
63
OF 82

2024-9-CON



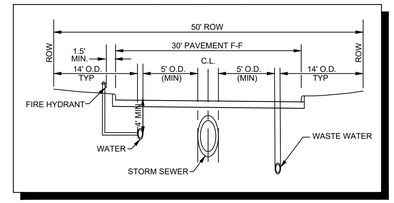
WWL-A



UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WASTEWATER PLAN & PROFILE - WWL-A (1 OF 2)

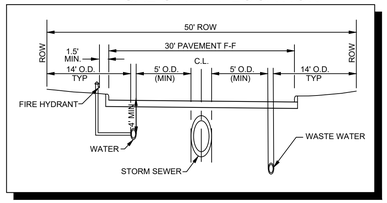
BERRY CREEK HIGHLANDS PHASES 6B & 7

CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
64
OF 82

2024-9-CON

TYPICAL UTILITY LOCATION

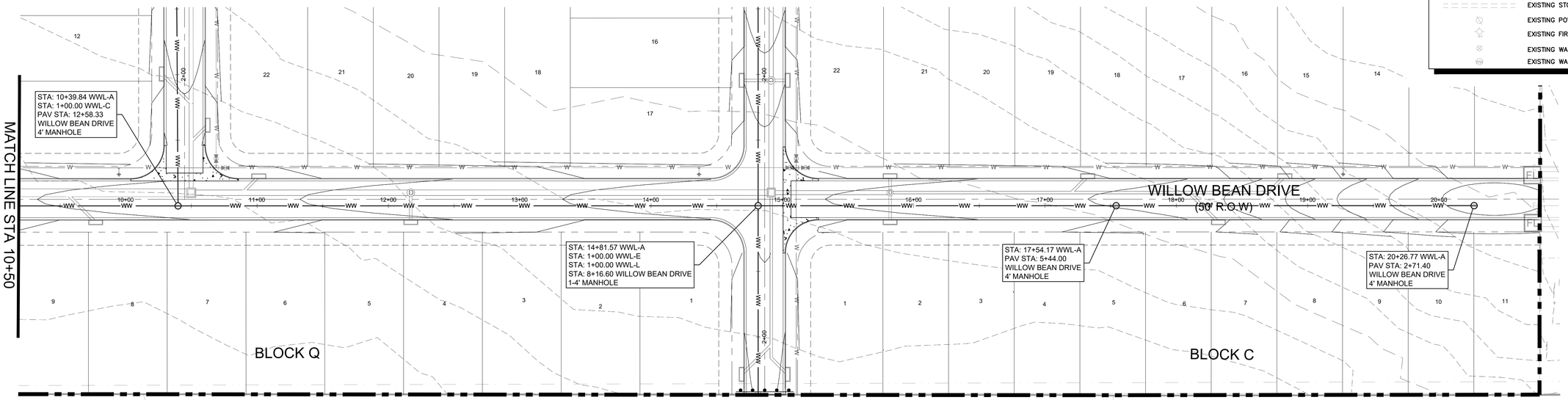


UTILITY LEGEND

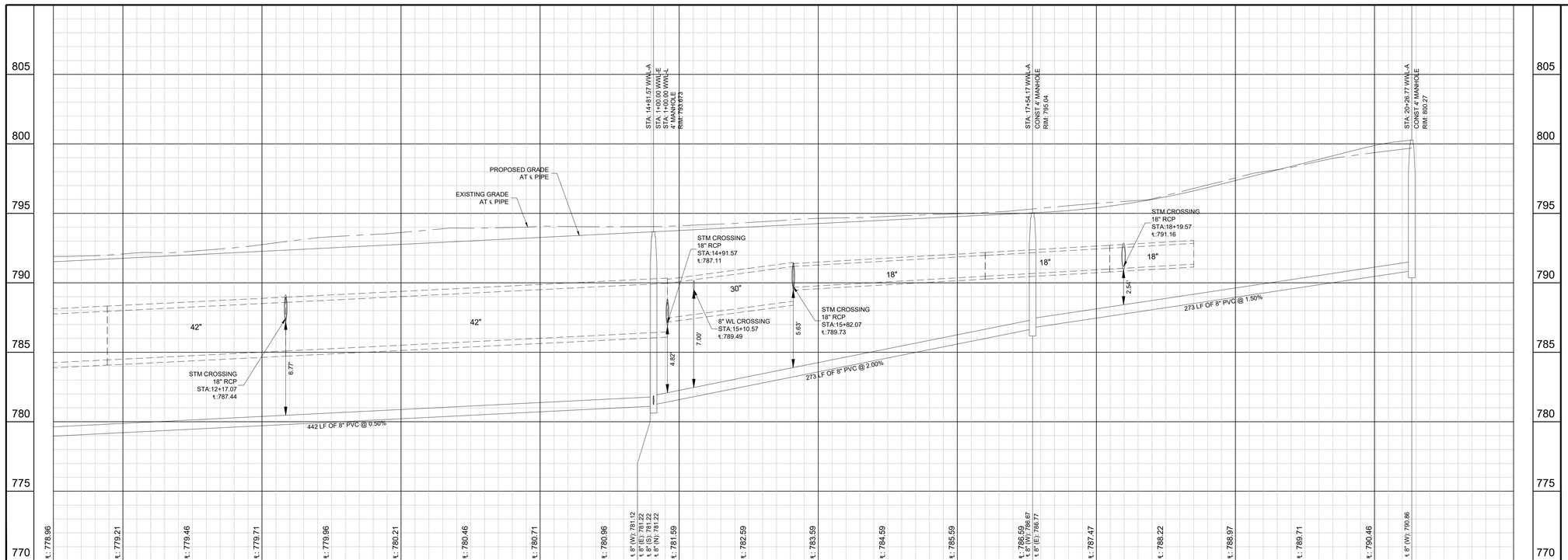
- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

N W E S

0 40' 80'
GRAPHIC SCALE 40'



WWL-A



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

811 Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

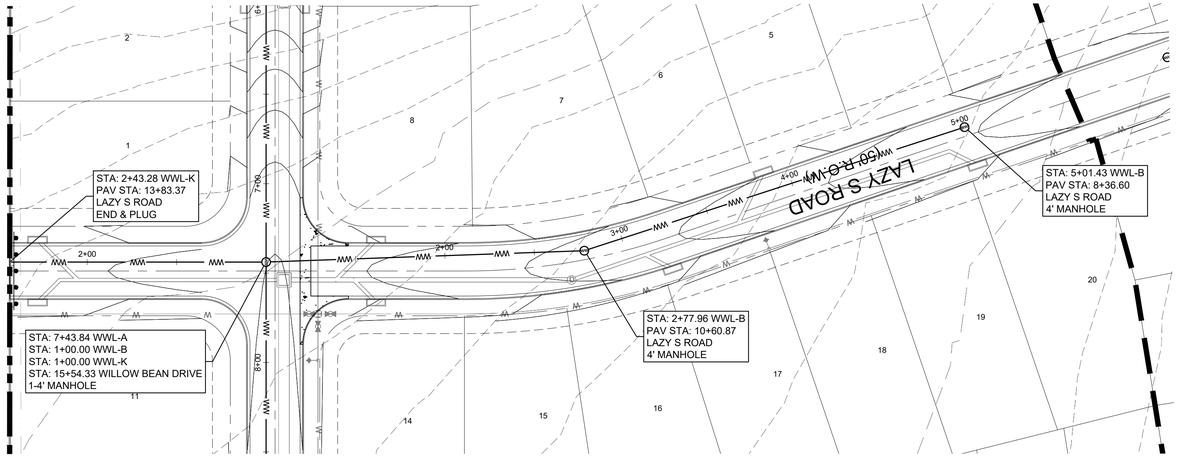
WASTEWATER PLAN & PROFILE - WWL-A (2 OF 2)

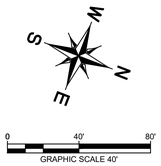
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
65
OF 82

2024-9-CON

MATCH LINE STA 10+50

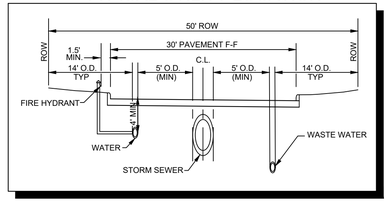




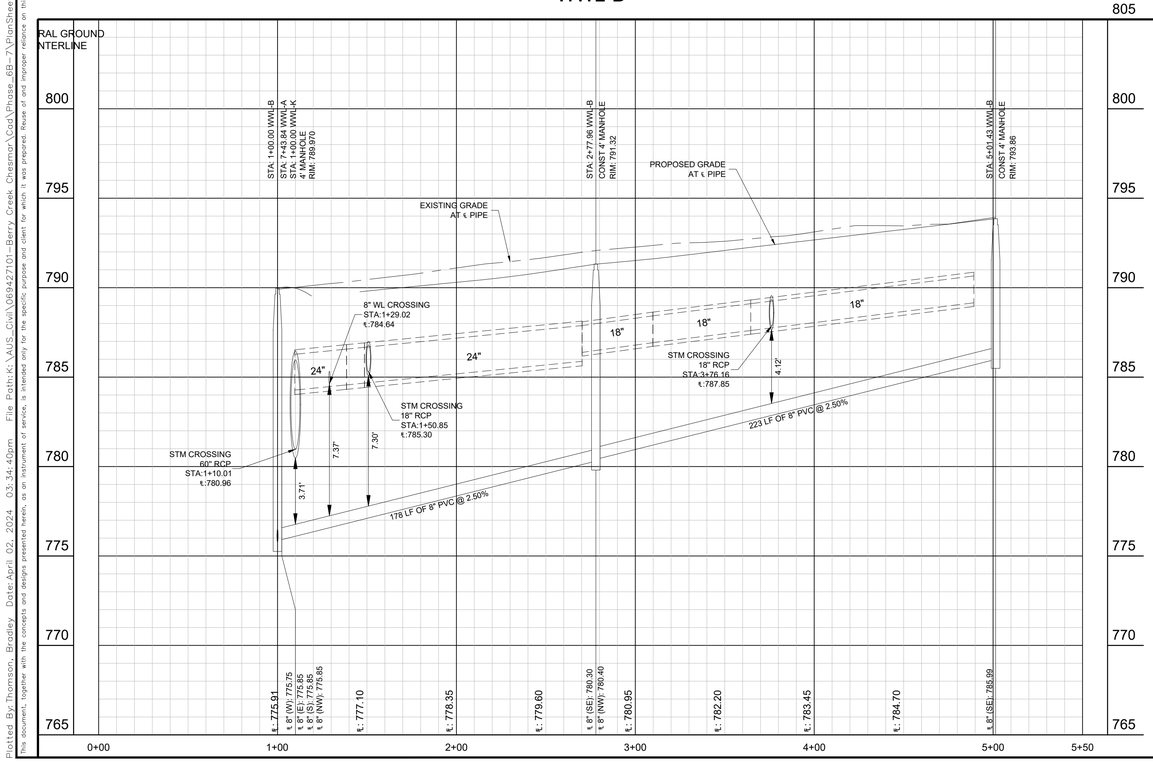
UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



WWL-B



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

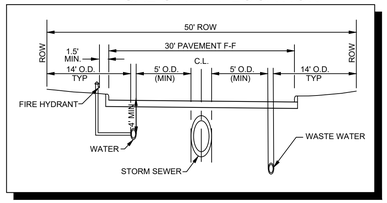
WASTEWATER PLAN & PROFILE - WWL-B

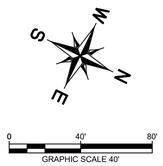
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

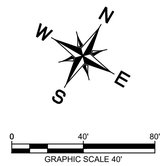
SHEET NUMBER
66
OF 82

2024-9-CON

TYPICAL UTILITY LOCATION

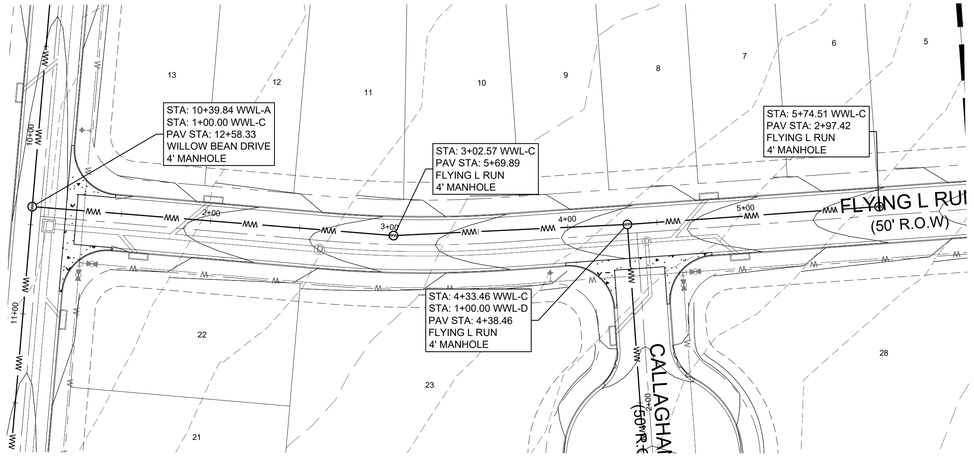




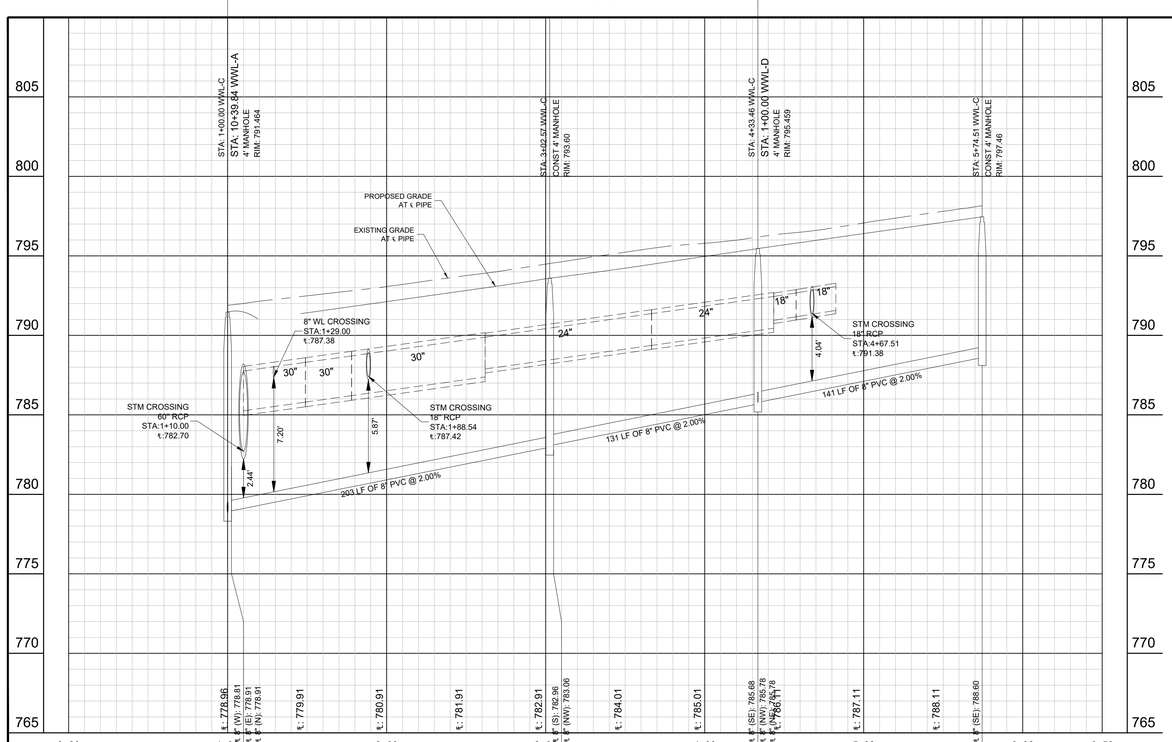


UTILITY LEGEND

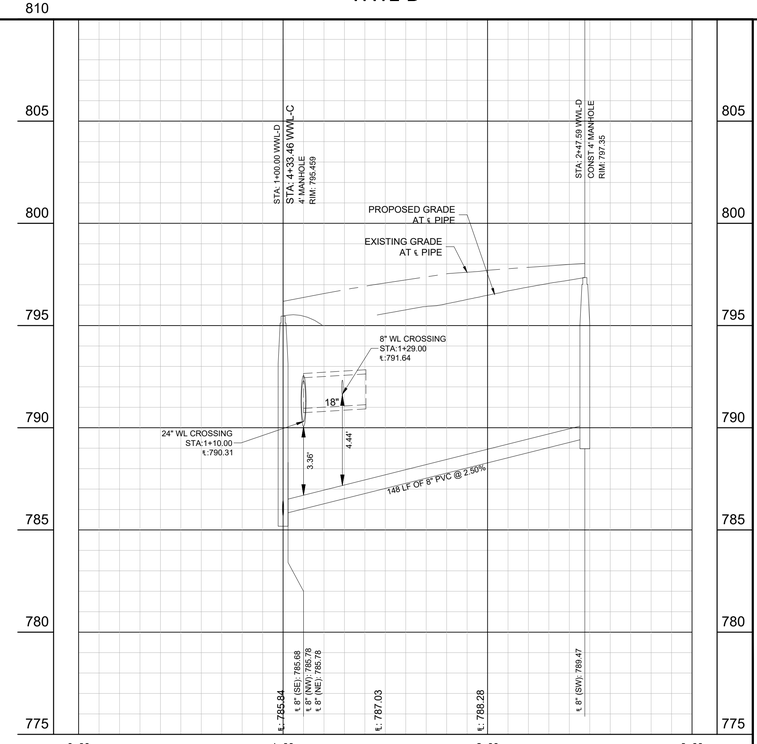
- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE



WWL-C



WWL-D



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

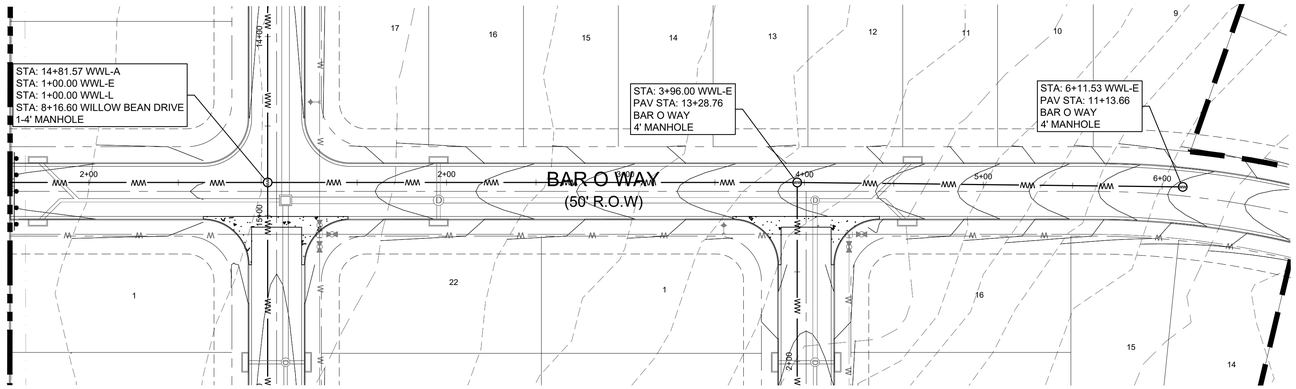
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

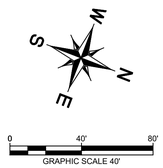
WASTEWATER PLAN & PROFILE - WWL-C & WWL-D

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
67
OF 82

2024-9-CON

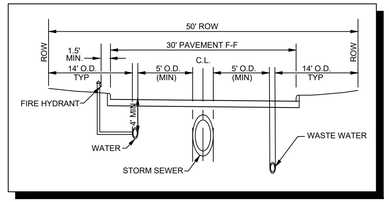




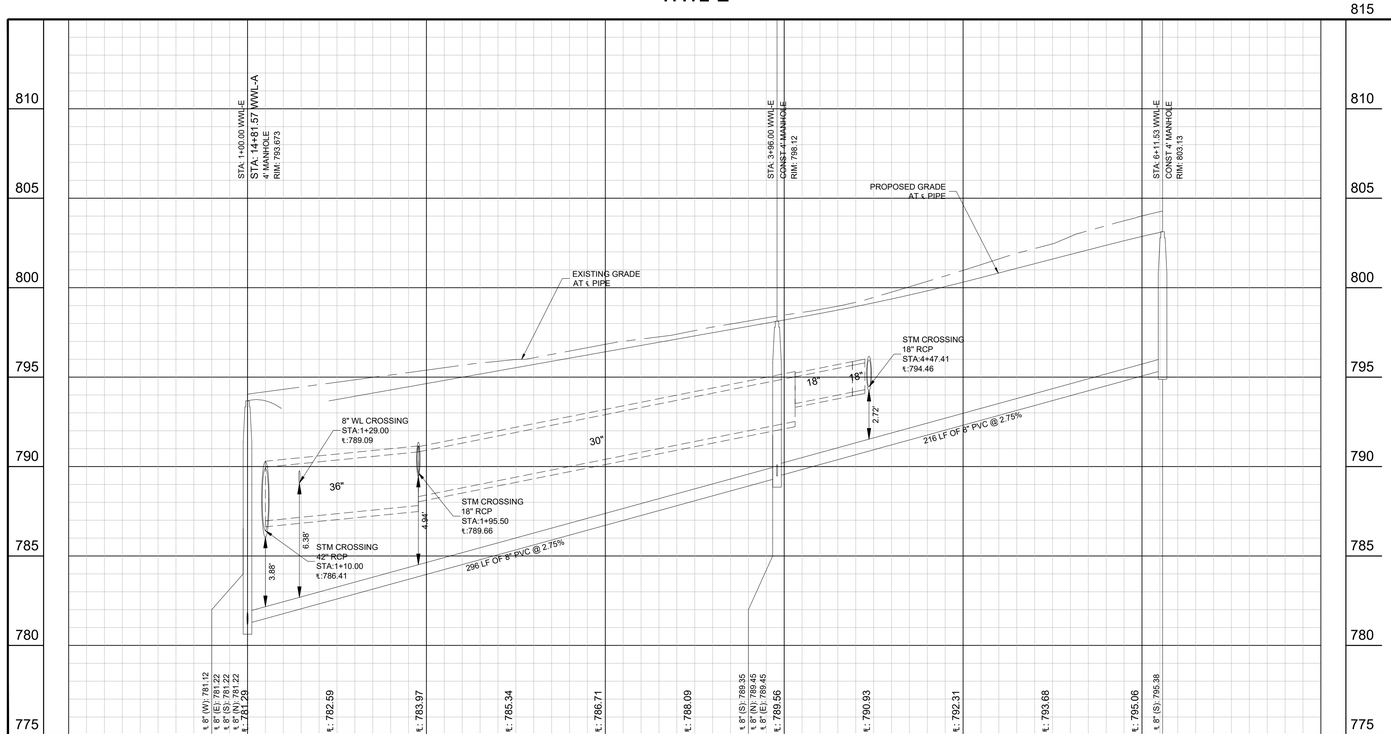
UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



WWL-E



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

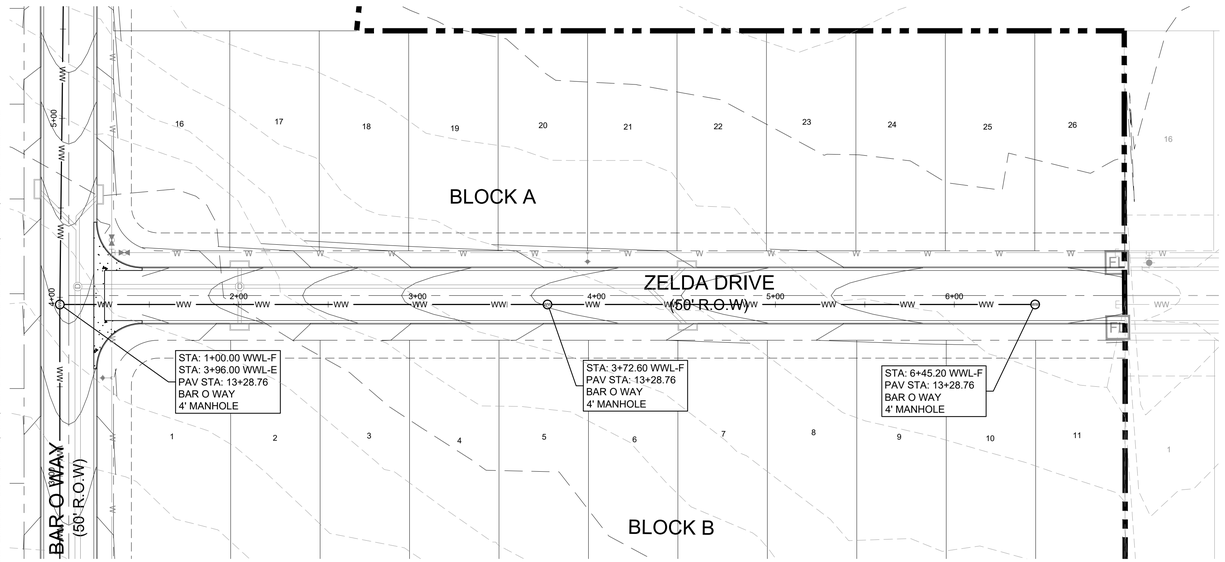
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

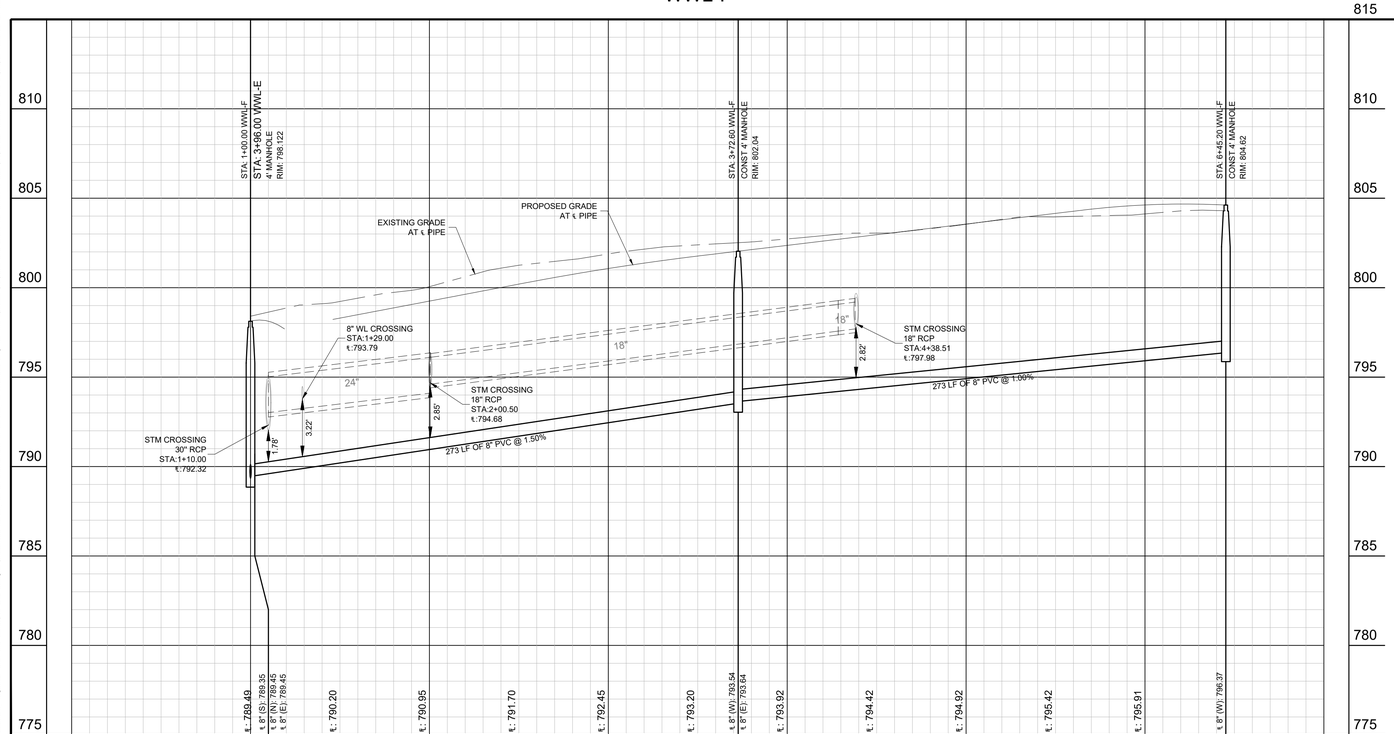
WASTEWATER PLAN & PROFILE - WWL-E

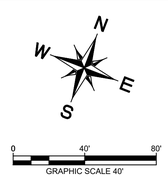
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
68
OF 82

2024-9-CON



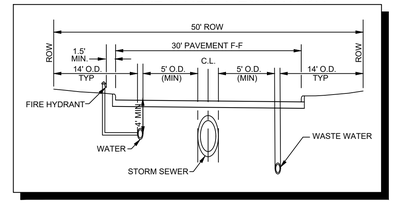




UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

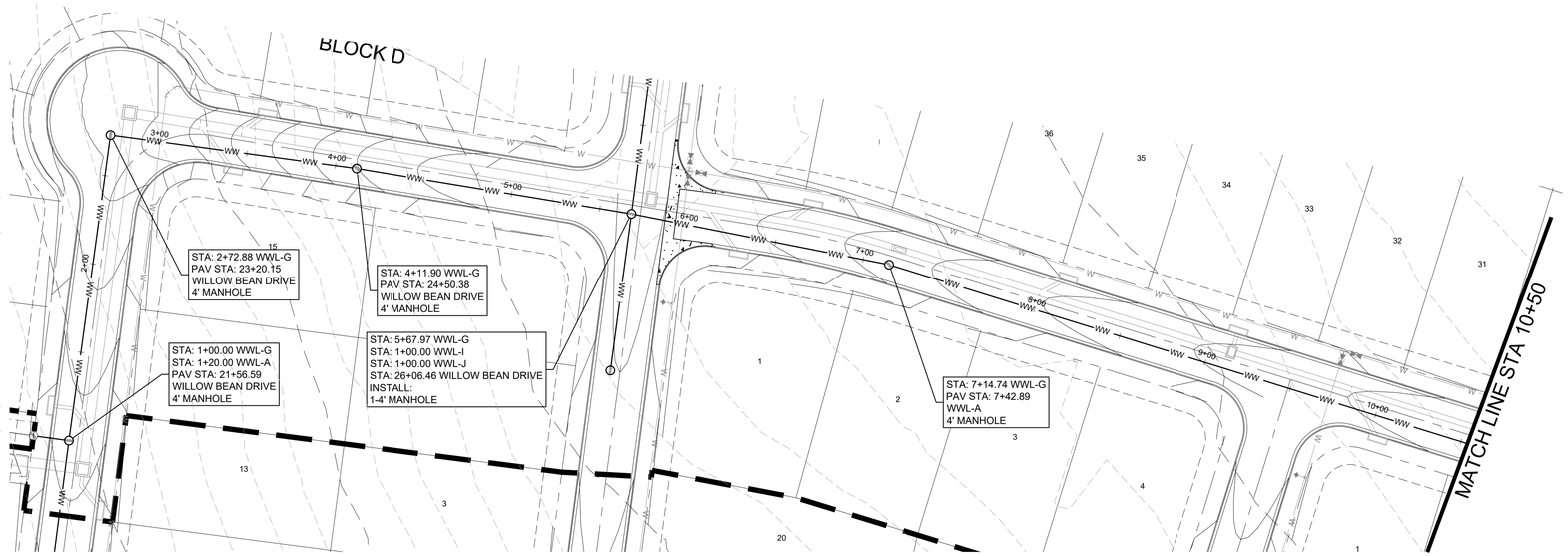
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

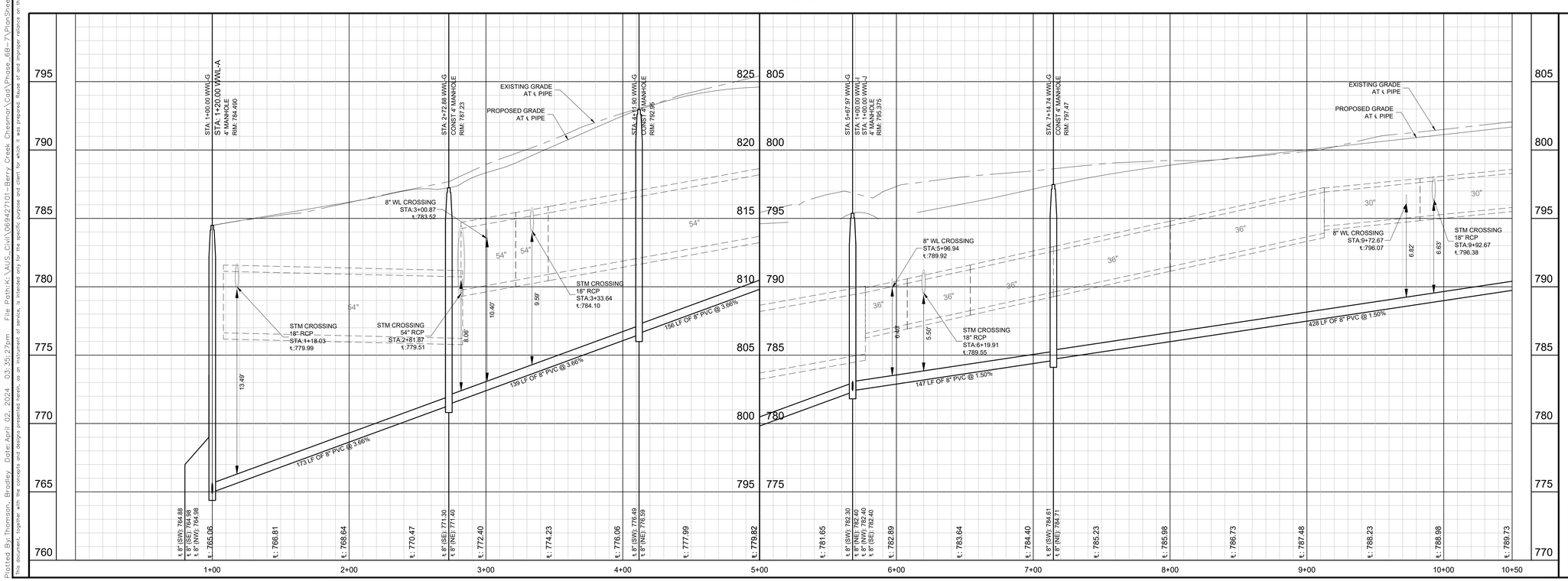
WASTEWATER PLAN & PROFILE - WWL-F

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
69
OF 82

2024-9-CON



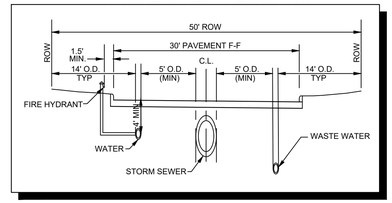


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

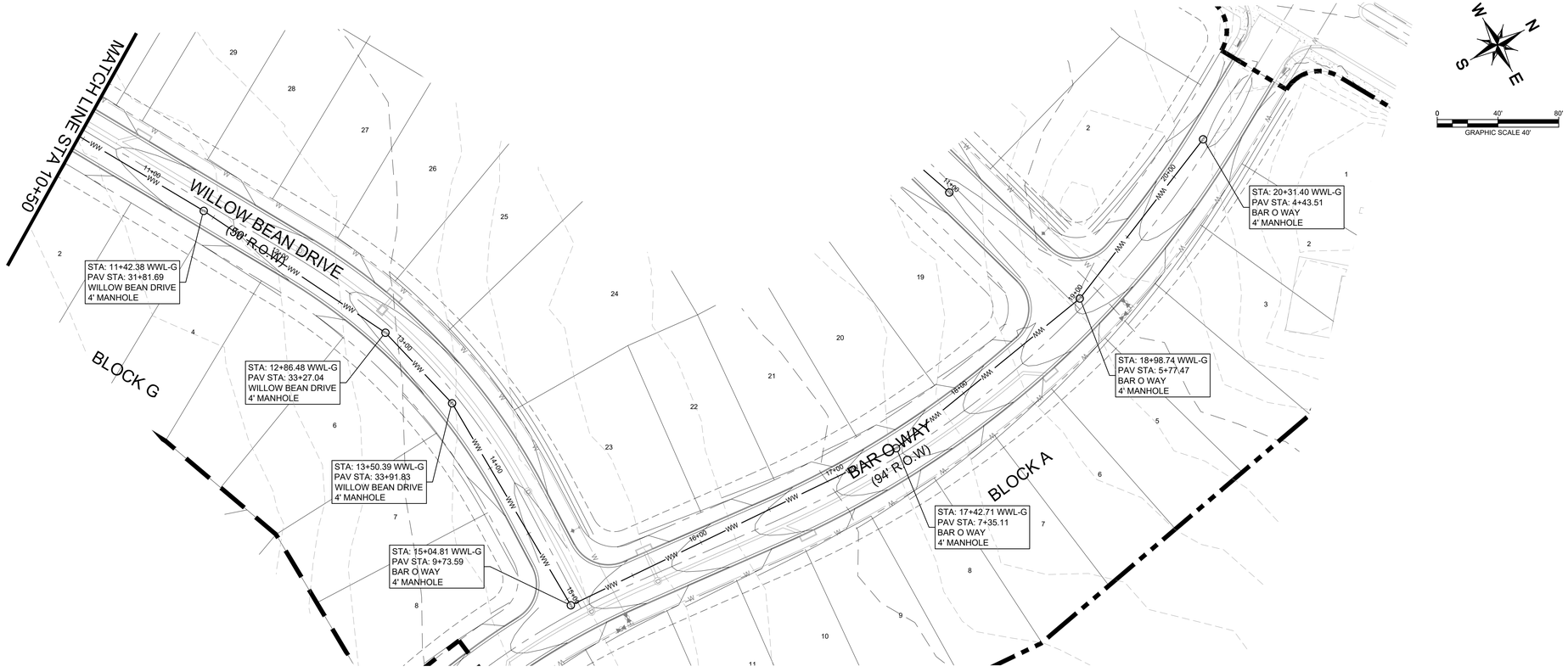
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WASTEWATER PLAN & PROFILE - WWL-G (1 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
70
OF 82

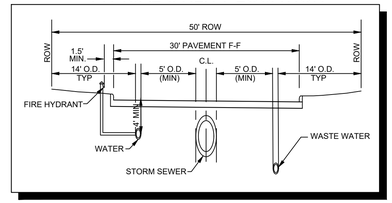
2024-9-CON



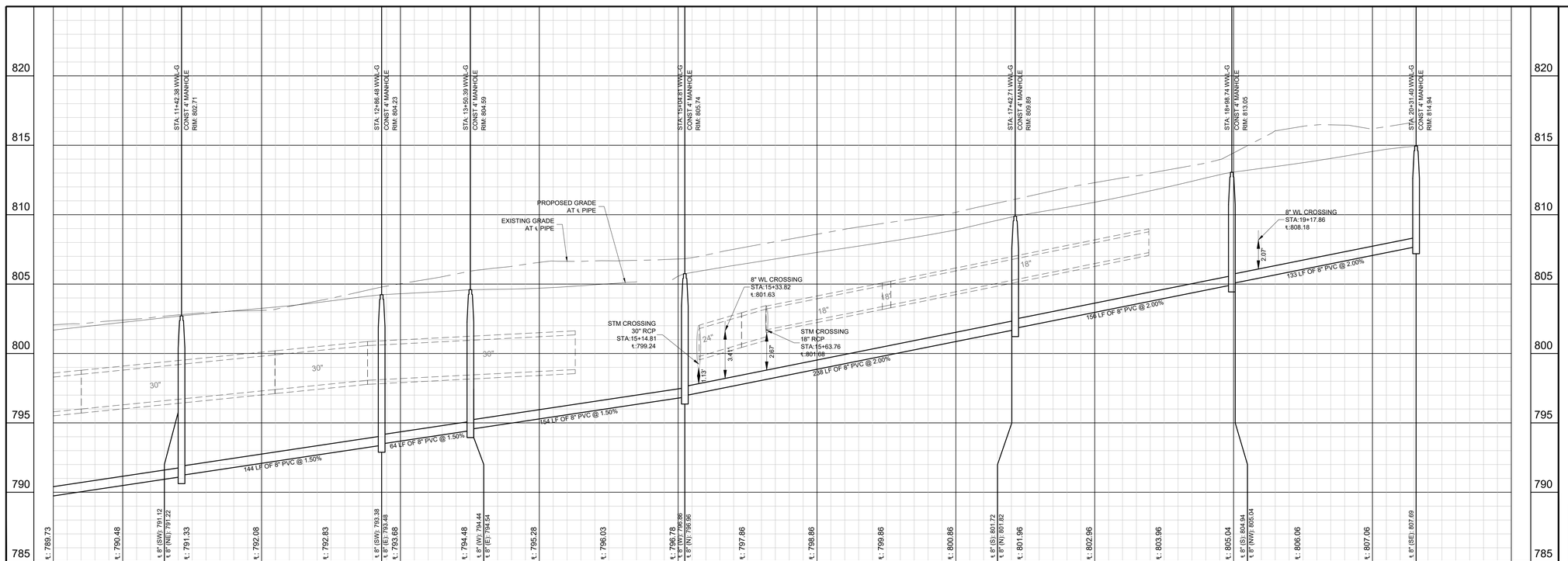
UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



WWL-G



Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

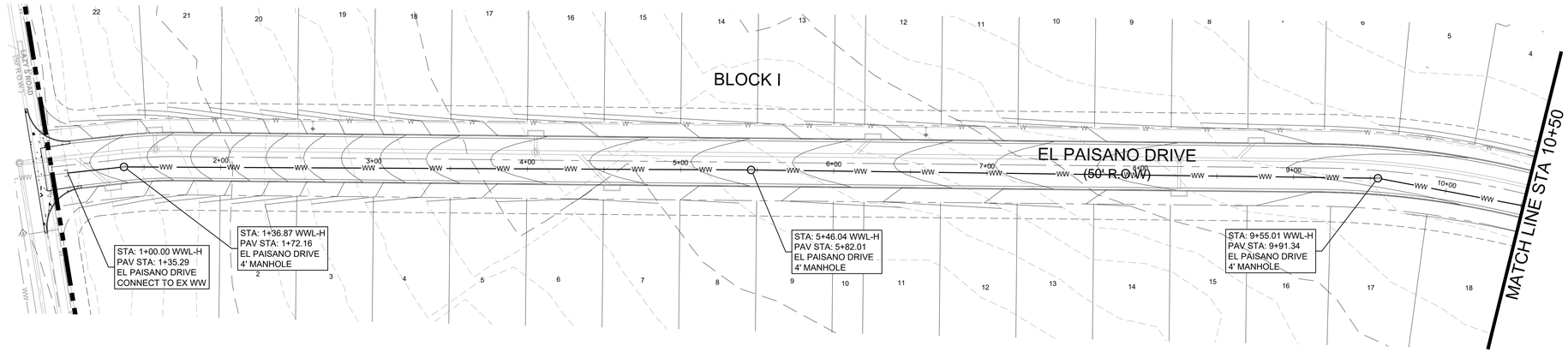
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

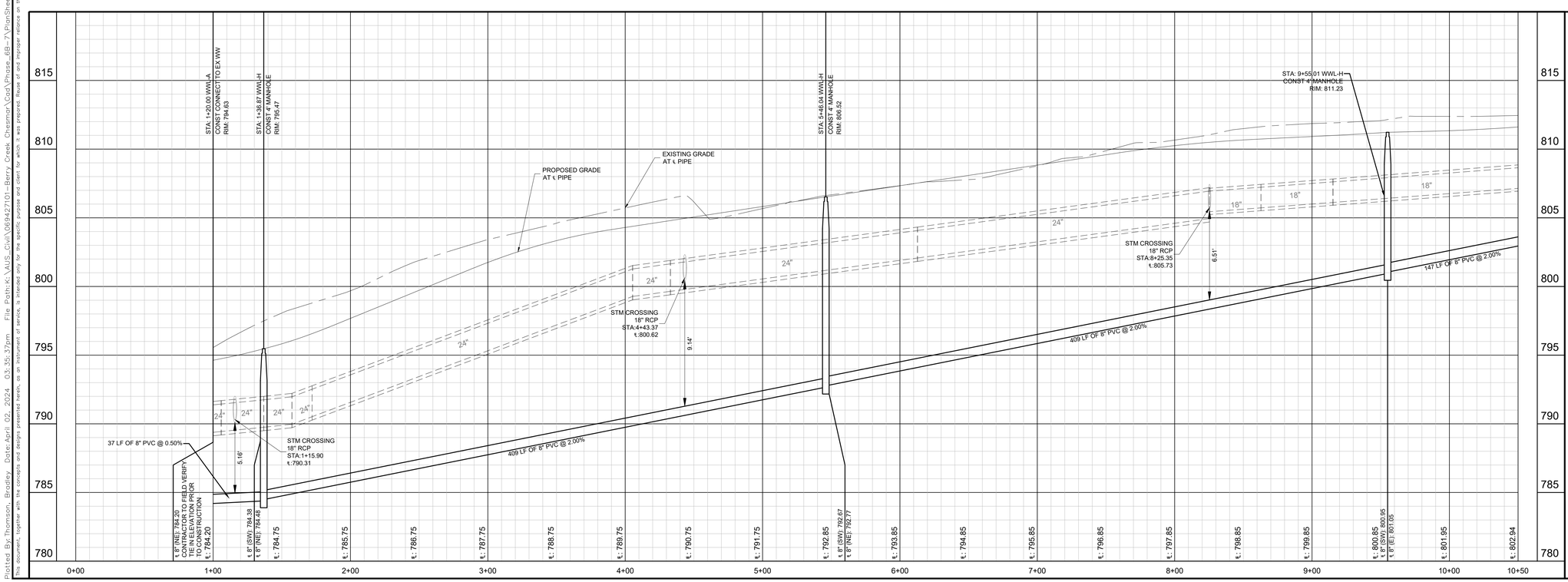
WASTEWATER PLAN & PROFILE - WWL-G (2 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
71
OF 82

2024-9-CON



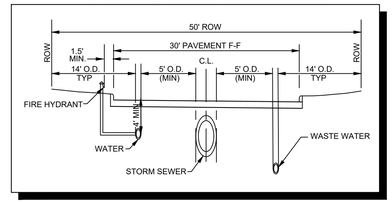


0 40' 80'
GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WASTEWATER PLAN & PROFILE - WWL-H (1 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

811
Know what's below.
Call before you dig.

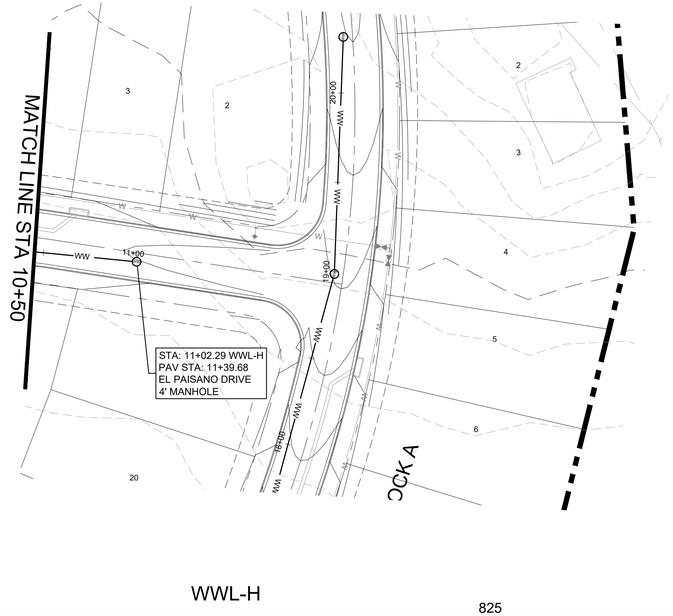
WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

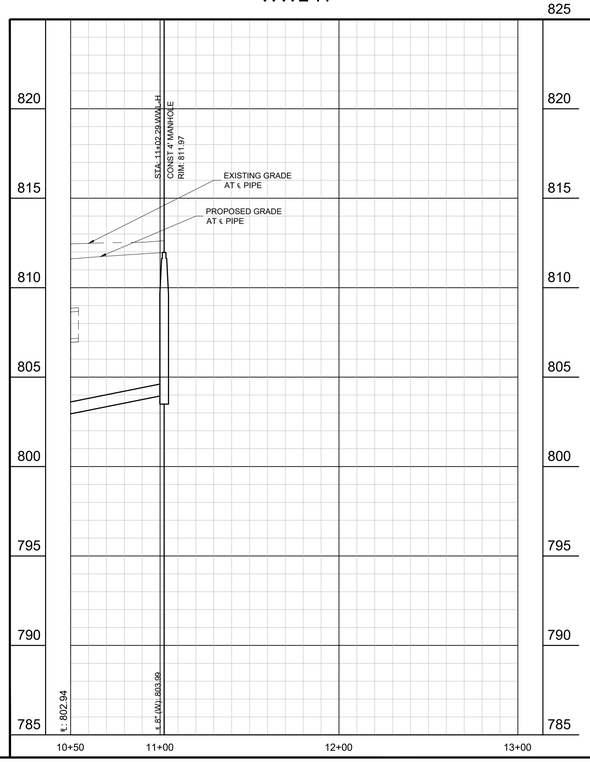
BENCHMARKS

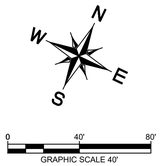
TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

SHEET NUMBER
72
OF 82

2024-9-CON



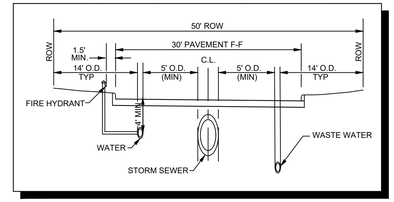




UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

TYPICAL UTILITY LOCATION



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

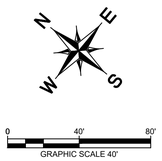
KHA PROJECT	069427101
DATE	FEBRUARY 2024
SCALE:	AS SHOWN
DESIGNED BY:	ACS
DRAWN BY:	RRJ
CHECKED BY:	ACS

WASTEWATER PLAN & PROFILE - WWL-H (2 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

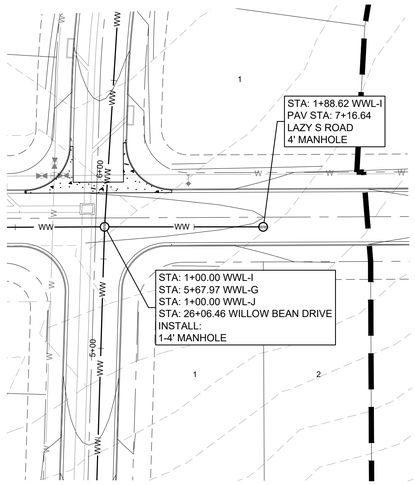
SHEET NUMBER
73
OF 82

2024-9-CON

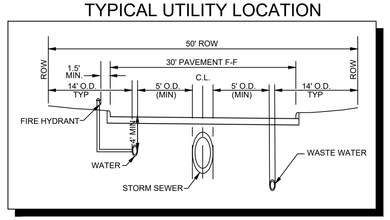


0 40' 80'

GRAPHIC SCALE 40'

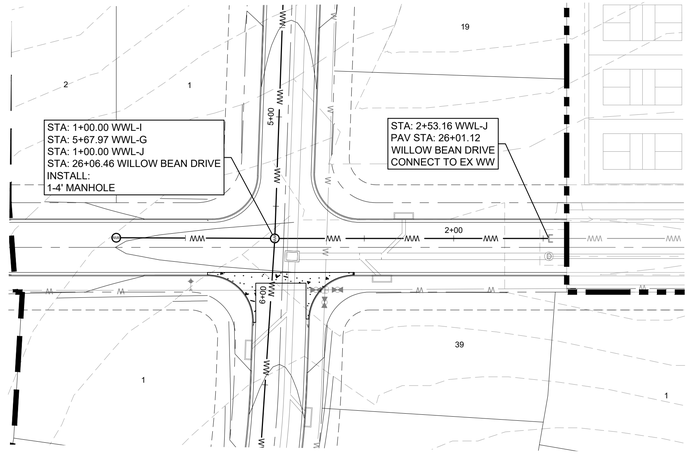


WWL-I



0 40' 80'

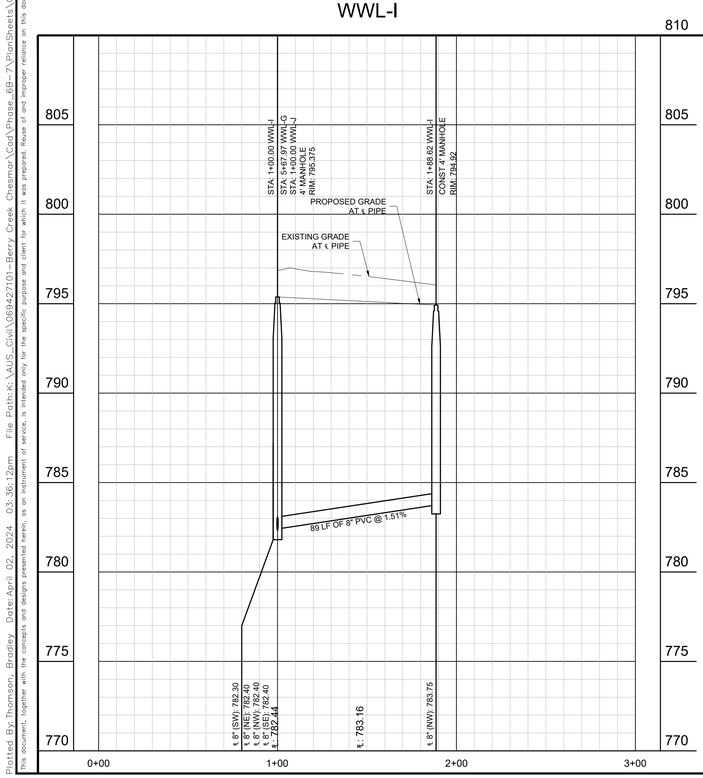
GRAPHIC SCALE 40'



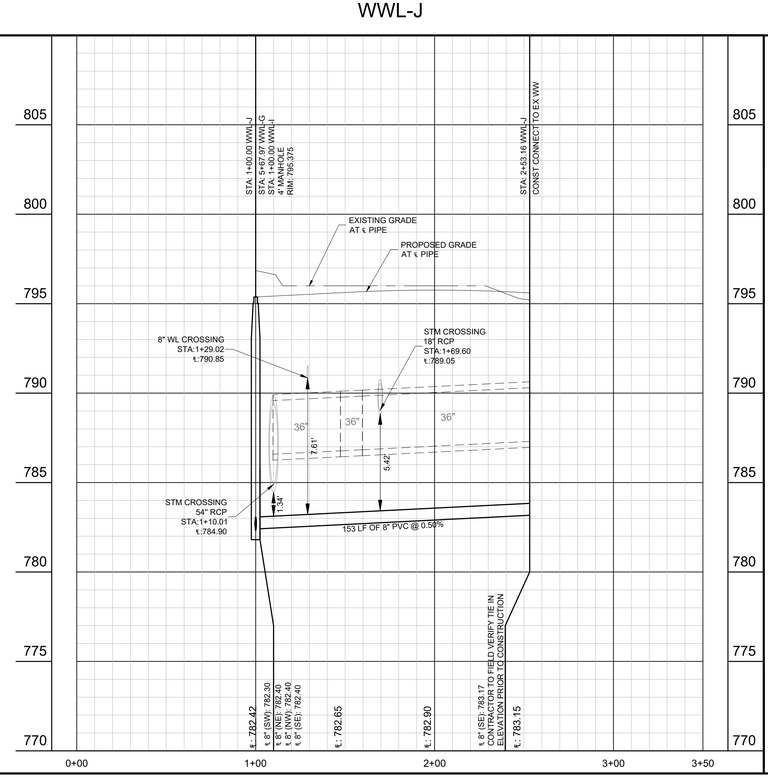
WWL-J

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE



WWL-I



WWL-J

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

811
Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

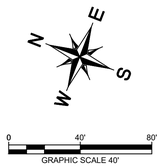
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

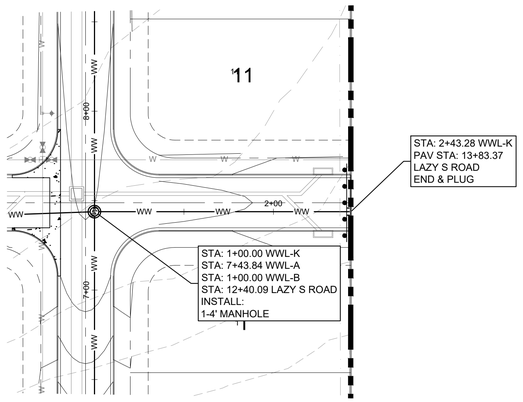
WASTEWATER PLAN & PROFILE - WWL-I & J

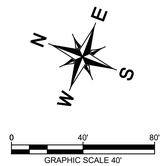
BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

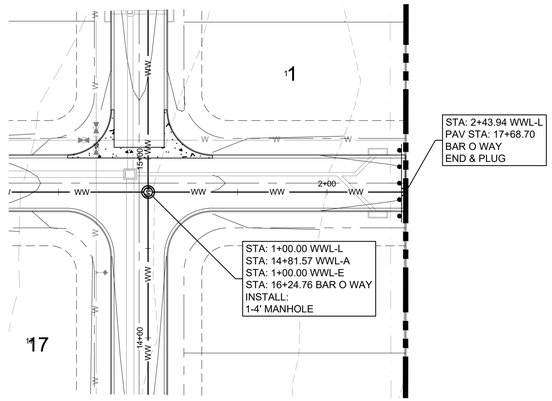
SHEET NUMBER
74
OF 82

2024-9-CON





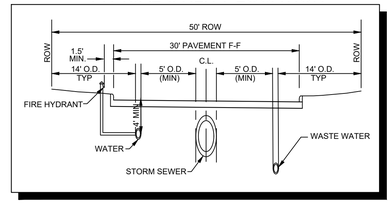




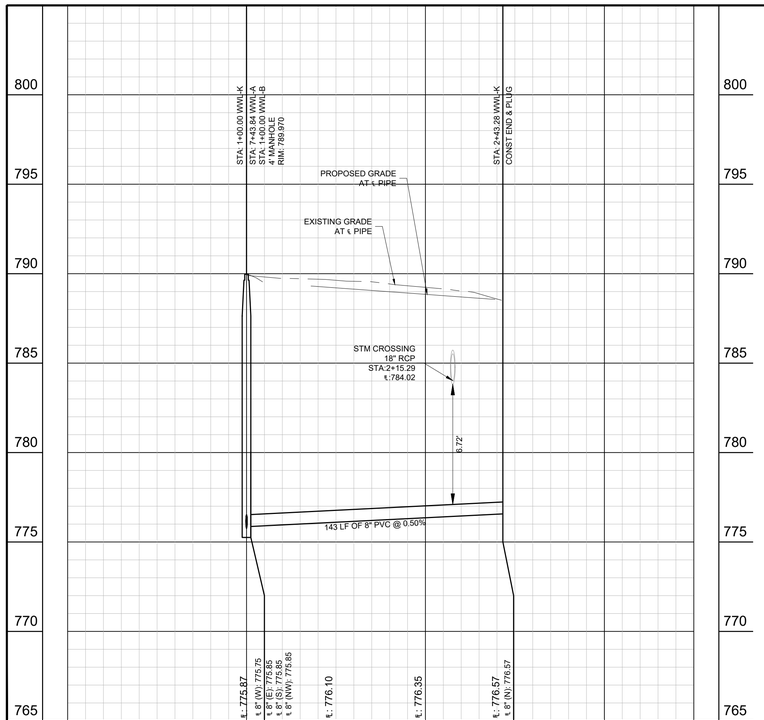
UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTE WATER MANHOLE
- PROPOSED WASTE WATER CLEANOUT
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED REDUCER
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

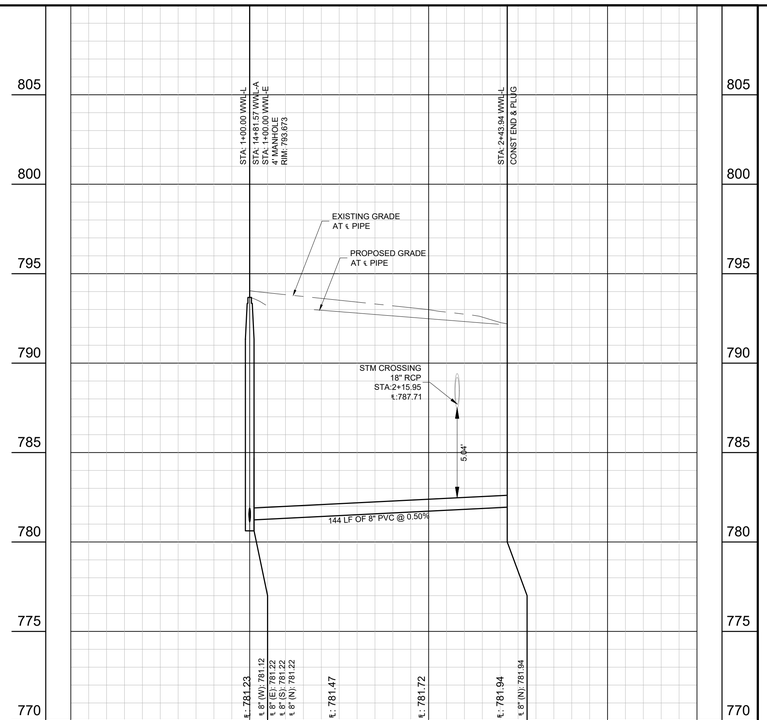
TYPICAL UTILITY LOCATION



WWL-K



WWL-L



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WASTEWATER PLAN & PROFILE - WWL-K & L

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
75
OF 82

2024-9-CON

GUIDELINES FOR DESIGN AND INSTALLATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

TYPE OF STRUCTURE	REACH LENGTH	MAXIMUM DRAINAGE AREA	SLOPE
SILT FENCE	N/A	2 ACRES	0 – 10%
	200 FEET	2 ACRES	10 – 20%
	100 FEET	1 ACRE	20 – 30%
	50 FEET	1/2 ACRE	> 30%
TRIANGLE FILTER DIKE	100 FEET	1/2 ACRE	< 30% SLOPE
	50 FEET	1/4 ACRE	> 30% SLOPE
ROCK BERM *, **	500 FEET	< 5 ACRES	0 – 10%

* FOR ROCK BERM DESIGN WHERE PARAMETERS ARE OTHER THAN STATED, DRAINAGE AREA CALCULATIONS AND ROCK BERM DESIGN MUST BE SUBMITTED FOR REVIEW.

** HIGH SERVICE ROCK BERMS MAY BE REQUIRED IN AREAS OF ENVIRONMENTAL SIGNIFICANCE AS DETERMINED BY THE CITY OF GEORGETOWN.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

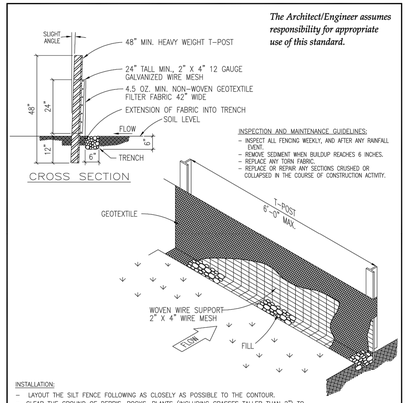
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TEMPORARY EROSION AND SEDIMENTATION CONTROL GUIDELINES
EC01 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

NOTE: THIS SECTION IS INTENDED TO ASSIST THOSE PERSONS PREPARING WATER POLLUTION ABATEMENT PLANS (WPAP) OR STORM WATER POLLUTION PREVENTION PLANS (SWPP) THAT COMPLY WITH FEDERAL, STATE AND/OR LOCAL STORM WATER REGULATIONS.

1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION). CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
2. ALL PROJECTS WITHIN THE RECHARGE ZONE OF THE EDWARD'S AQUIFER SHALL SUBMIT A BEST MANAGEMENT PRACTICES AND WATER POLLUTION AND ABATEMENT PLAN TO THE TNRCC FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
3. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN AND WATER POLLUTION ABATEMENT PLAN. DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNER'S REPRESENTATIVE.
4. ALL PLANTING SHALL BE DONE BETWEEN MAY 1 AND SEPTEMBER 15 EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING. IF PLANTING IS AUTHORIZED TO BE DONE OUTSIDE THE DATES SPECIFIED, THE SEED SHALL BE PLANTED WITH THE ADDITION OF WINTER FESCUE (KENTUCKY 31) AT A RATE OF 100lb/ACRE. GRASS SHALL BE COMMON BERMUDA GRASS, HULLED, MINIMUM 82% PURE LIVE SEED. ALL GRASS SEED SHALL BE FREE FROM NOXIOUS WEED, GRADE "A" RECENT CROP, RECLEANED AND TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. SEED SHALL BE FURNISHED IN SEALED, STANDARD CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
5. ALL DISTURBED AREAS TO BE RESTORED AS NOTED IN THE WATER POLLUTION ABATEMENT PLAN.
6. THE PLANTED AREA TO BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF FOUR (4) INCHES. THE IRRIGATION TO OCCUR AT 10–DAY INTERVALS DURING THE FIRST TWO MONTHS TO INSURE GERMINATION AND ESTABLISHMENT OF THE GRASS. RAINFALL OCCURRENCES OF 1/2 INCH OR GREATER TO POSTPONE THE WATERING SCHEDULE ONE WEEK.
7. RESTORATION TO BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1–1/2 INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 25 SQUARE FEET EXIST.
8. A MINIMUM OF FOUR (4) INCHES OF TOPSOIL TO BE PLACED IN ALL AREAS DISTURBED BY CONSTRUCTION.
9. THE CONTRACTOR TO HYDROMULCH OR SOD (AS SHOWN ON PLANS) ALL EXPOSED CUTS AND FILLS UPON COMPLETION OF CONSTRUCTION.
10. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINE.
11. TO AVOID SOIL COMPACTION, CONTRACTOR SHALL NOT ALLOW VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IN THE TREE DRIPLINE AREAS.
12. WHERE A FENCE IS CLOSER THAN FOUR (4) FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED–ON PLANKING TO A HEIGHT OF EIGHT (8) FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE FENCING.
13. TREES TO BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
14. ANY ROOT EXPOSED BY CONSTRUCTION ACTIVITY TO BE PRUNED FLUSH WITH THE SOIL, BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
15. CONTRACTOR TO PRUNE VEGETATION TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.). ALL FINISHED PRUNING TO BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE "NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES").
16. THE CONTRACTOR IS TO INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/4 INCH TO VERIFY THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY ACCUMULATED SEDIMENT AFTER A SIGNIFICANT RAINFALL TO BE REMOVED AND PLACED IN THE OWNER DESIGNATED SPOIL DISPOSAL SITE. THE CONTRACTOR TO CONDUCT PERIODIC INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROLS AND TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE.
17. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT IMMEDIATELY ADJACENT TO A PROTECTED TREE, ERECT THE FENCE APPROXIMATELY TWO TO FOUR FEET (2'–4') BEHIND THE AREA IN QUESTION.
18. NO ABOVE AND/OR BELOW GROUND TEMPORARY FUEL STORAGE FACILITIES TO BE STORED ON THE PROJECT SITE.
19. IF EROSION AND SEDIMENTATION CONTROL SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER'S REPRESENTATIVE AND THE CONTRACTOR TO EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS FOR DAMAGE PRIOR TO CONSTRUCTION. ANY DAMAGE TO PREEXISTING EROSION AND SEDIMENTATION CONTROLS NOTED TO BE REPAIRED AT OWNERS EXPENSE.
20. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATED SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES
EC01A — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

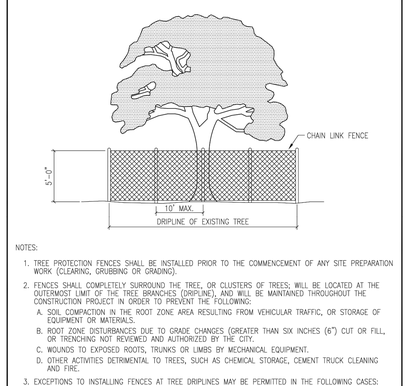


INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL EVENT
- REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
- REPLACE ANY TORN FABRIC.
- REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY.

INSTALLATION:
- LAYOUT THE SILT FENCE FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS, PLANTS (INCLUDING GRASSES TALLER THAN 2") TO PROVIDE A SMOOTH FLOW APPROACH SURFACE. EXCAVATE 6" DEEP X 6" WIDE TRENCH ON UPSTREAM SIDE OF FACE PER PLANS.
- DRIVE THE HEAVY DUTY T–POST AT LEAST 12 INCHES INTO THE GROUND AND AT A SLIGHT ANGLE TOWARDS THE FLOW.
- ATTACH THE 2" X 4" 12 GAUGE WELDED WIRE MESH TO THE T–POST WITH 11 1/2 GAUGE GALVANIZED T–POST CLIPS. THE TOP OF THE WIRE TO BE 24" ABOVE GROUND LEVEL. THE WELDED WIRE MESH TO BE OVERLAPPED 6" AND TIED AT LEAST 6 TIMES WITH HOG RINGS.
- THE SILT FENCE TO BE INSTALLED WITH A SKIRT A MINIMUM OF 6" WIDE PLACED ON THE UPHILL SIDE OF THE FENCE INSIDE EXCAVATED TRENCH. THE FABRIC TO OVERLAP THE TOP OF THE WIRE BY 1".
- ANCHOR THE SILT FENCE BY BACKFILLING WITH EXCAVATED DIRT AND ROCKS (NOT LARGER THAN 2").
- GEOTEXTILE SPLICES SHOULD BE A MINIMUM OF 18" WIDE ATTACHED IN AT LEAST 6 PLACES. SPLICES IN CONCENTRATED FLOW AREAS WILL NOT BE ACCEPTED.
- SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

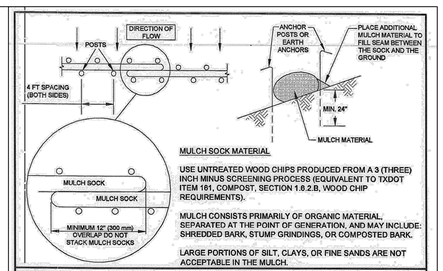
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
SILT FENCE DETAIL
EC02 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



NOTES:
1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; WILL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6") CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'–0") TO BUILDING.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – CHAIN LINK FENCE
EC09 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



MULCH SOCK MATERIAL

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

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

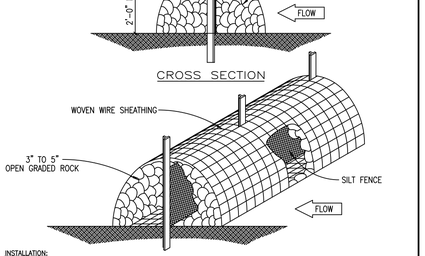
LARGE PORTIONS OF SILT, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MULCH.

NOTES:

1. **STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 600mm (24 inches). IF WOOD POSTS CANNOT ACHIEVE 600mm (24 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.**
2. **THE TOE OF THE MULCH SOCK SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT ENDS OFMULCH SOCKS, LAP THE ENDS OF ADJACENT MULCH SOCKS A MINIMUM OF 300mm (12 inches).**
3. **MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.**
4. **SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTOBIODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.**
5. **MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 2:1 AND SHOULD NOT EXCEED THE MAXIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A GIVEN SLOPE CATEGORY.**
6. **ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.**

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT
MULCH SOCK
08/24/2010 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 648S-1

The Architect/Engineer assumes responsibility for appropriate use of this standard.

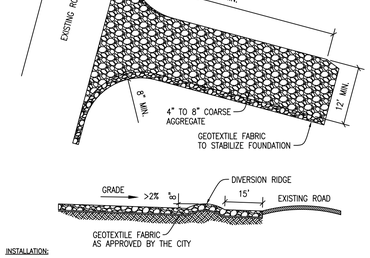


INSTALLATION:
- LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
- INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT. INSTALLATION SHOULD BE AS DESCRIBED IN DRAWING NO. EC–02 "SILT FENCE DETAIL".
- PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND ON BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT.
- WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE RETAINS IT'S SHAPE.
- SECURE WITH TIE WIRE.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE CONTRACTOR. FOR THE INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE ON ROCK BERM.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- 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.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
HIGH SERVICE ROCK BERM DETAIL
EC04 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

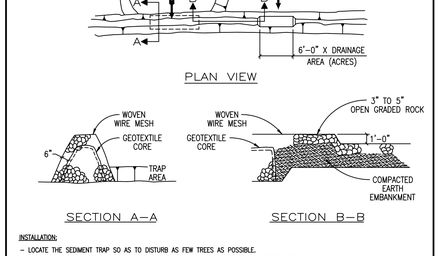


INSTALLATION:
- CLEAR THE AREA OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- GRADE THE AREA FOR THE ENTRANCE TO FLOW BACK ON TO THE CONSTRUCTION SITE. RUNOFF FROM THE STABILIZED CONSTRUCTION
- PLACE GEOTEXTILE FABRIC AS APPROVED BY THE CITY.
- PLACE ROCK AS APPROVED BY THE CITY.

INSPECTIONS AND MAINTENANCE GUIDELINES:
- 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.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
- WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY.
- 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.
- ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STABILIZED CONSTRUCTION ENTRANCE
EC06 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

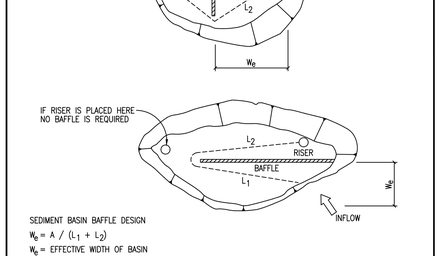


INSTALLATION:
- LOCATE THE SEDIMENT TRAP SO AS TO DISTURB AS FEW TREES AS POSSIBLE.
- CLEAR AND GRUB THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MATS.
- LAYOUT THE WIRE MESH AND THEN THE GEOTEXTILE FABRIC.
- CONSTRUCT THE GEOTEXTILE CORE AND CORRESPONDING ROCK EMBANKMENT TO THE DESIGNATED HEIGHT AND CONFIGURATION.
- WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE RETAINS IT'S SHAPE. SECURE WITH TIE WIRE.
- PLACE THE EMBANKMENT MATERIAL IN 8 TO 12 INCH LIFTS AND MACHINE COMPACT.

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. REPAIR SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
- TRASH AND OTHER DEBRIS SHOULD BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO HALF OF THE DESIGN DEPTH OF THE TRAP.
- SEDIMENT REMOVED FROM THE TRAP SHOULD BE DEPOSITED IN AN APPROVED SPOILS AREA AND IN SUCH A MANNER THAT IT WILL NOT CAUSE ADDITIONAL SILTATION.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
SEDIMENT TRAP DETAIL
EC07 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



SEDIMENT BASIN BAFFLE DESIGN
$W_e = A / (L_1 + L_2)$
W_e = EFFECTIVE WIDTH OF BASIN
A = SURFACE AREA OF BASIN WHEN FILLED TO RISER CREST
L_1, L_2 = SHORTEST TRAVEL DISTANCE AROUND THE BAFFLE FROM INLET TO OUTLET

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. REPAIR SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
- TRASH AND OTHER DEBRIS SHOULD BE REMOVED AFTER EACH RAINFALL TO PREVENT CLOGGING OF THE OUTLET STRUCTURE.
- ACCUMULATED SILT SHOULD BE REMOVED AND THE BASIN SHOULD BE RE–GRADED TO ITS ORIGINAL DIMENSIONS AT SUCH POINT THAT THE CAPACITY OF THE IMPOUNDMENT HAS BEEN REDUCED TO 1/2 OF ITS ORIGINAL STORAGE CAPACITY.
- THE REMOVED SEDIMENT SHOULD BE STOCKPILED OR REDISTRIBUTED IN AREAS THAT ARE PROTECTED FROM EROSION.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
SEDIMENT BASIN BAFFLE DESIGN
EC08 — REVISION NOTE: ADOPTED 6/21/2006 — DRAWING NAME: — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

ALEXANDER C. STEADMAN 138792 LICENSED PROFESSIONAL ENGINEER

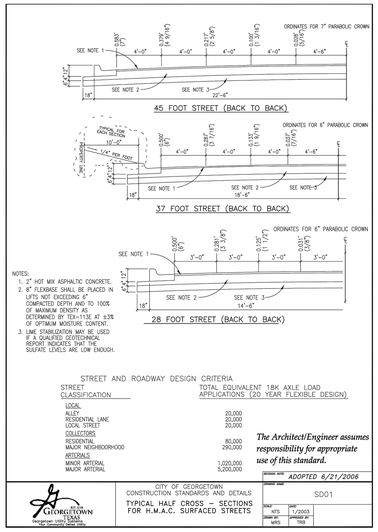
KHA PROJECT 069427101
DATE: FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

EROSION CONTROL DETAILS

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
76
OF 82

2024-9-CON



NOTES:
1. 2" HOT MIX ASPHALTIC CONCRETE.
2. 6" FLEXIBLE SHALL BE PLACED IN LIFTS NOT EXCEEDING 6" COMPACTED DEPTH AND TO 100% OF MAXIMUM DENSITY AS DETERMINED BY TEX-113E AT ±3% OF OPTIMUM MOISTURE CONTENT.
3. LIME STABILIZATION MAY BE USED IF A QUALIFIED GEOTECHNICAL REPORT INDICATES THAT THE SULFATE LEVELS ARE LOW ENOUGH.

STREET AND ROADWAY DESIGN CRITERIA

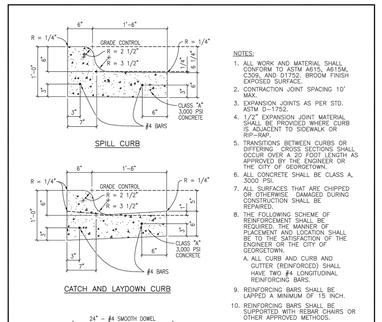
STREET CLASSIFICATION	TOTAL EQUIVALENT 18K AXLE LOAD APPLICATIONS (20 YEAR FLEXIBLE DESIGN)
LOCAL	20,000
ALLEY	20,000
RESIDENTIAL LANE	20,000
LOCAL STREET	20,000
COLLECTORS	
RESIDENTIAL	80,000
MAJOR NEIGHBORHOOD	290,000
ARTERIALS	
MINOR ARTERIAL	1,020,000
MAJOR ARTERIAL	5,200,000

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TYPICAL HALF CROSS – SECTIONS FOR H.M.A.C. SURFACED STREETS — SD01

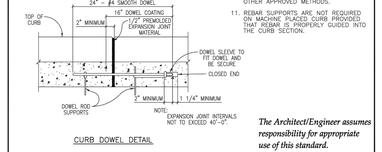
SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB



SPILL CURB

CATCH AND LAYDOWN CURB

NOTES:
1. ALL WORK AND MATERIAL SHALL CONFORM TO ASTM A615, A615M, C309, AND D1752. BROOM FINISH EXPOSED SURFACE.
2. CONTRACTION JOINT SPACING 10' MAX.
3. EXPANSION JOINTS AS PER STD. ASTM D-1752.
4. 1/2" EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB IS ADJACENT TO SIDEWALK OR RIP-RAP.
5. TRANSITIONS BETWEEN CURBS OR DIFFERING CROSS SECTIONS SHALL OCCUR OVER A 20 FOOT LENGTH AS APPROVED BY THE ENGINEER OR THE CITY OF GEORGETOWN.
6. ALL CONCRETE SHALL BE CLASS A, 3000 PSI.
7. ALL SURFACES THAT ARE CHIPPED OR OTHERWISE DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED.
8. THE FOLLOWING SCHEME OF REINFORCEMENT SHALL BE REQUIRED. THE MANNER OF PLACEMENT AND LOCATION SHALL BE TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF GEORGETOWN.
   A. ALL CURB AND CURB AND GUTTER (REINFORCED) SHALL HAVE TWO #4 LONGITUDINAL REINFORCING BARS.
9. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 15 INCH.
10. REINFORCING BARS SHALL BE SUPPORTED WITH REBAR CHAIRS OR OTHER APPROVED METHODS.
11. REBAR SUPPORTS ARE NOT REQUIRED ON MACHINE PLACED CURB PROVIDED THAT REBAR IS PROPERLY GUIDED INTO THE CURB SECTION.



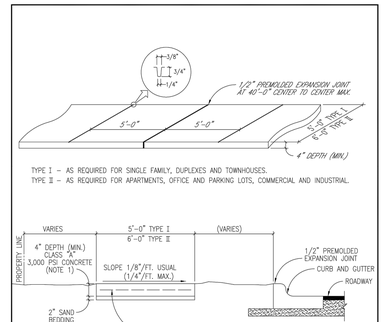
CURB DOWEL DETAIL

The Architect/Engineer assumes responsibility for appropriate use of this standard.

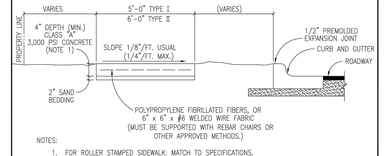
ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
CURB AND GUTTER DETAILS — SD06

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB



TYPE 1 – AS REQUIRED FOR SINGLE FAMILY, DUPLEXES AND TOWNHOUSES.
TYPE 2 – AS REQUIRED FOR APARTMENTS, OFFICE AND PARKING LOTS, COMMERCIAL AND INDUSTRIAL.



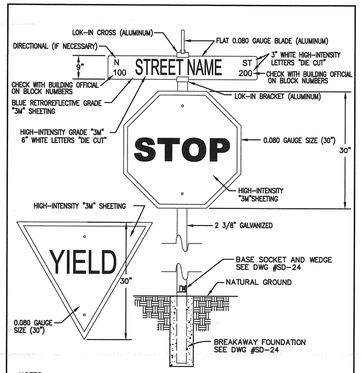
NOTES:
1. FOR ROLLER STAMPED SIDEWALK: MATCH TO SPECIFICATIONS.
2. STANDARD LOCATION OF SIDEWALK IS OFF BACK OF CURB. SPECIAL DESIGNS MAY BE APPROVED BY THE CITY ENGINEER, PRIOR TO FINAL DESIGN.
3. SIDEWALK SHALL CONFORM TO CURRENT AMERICANS WITH DISABILITIES ACT STANDARDS.
4. IF REQUIRED ALL SIDEWALKS SHALL BE SUBMITTED AND APPROVED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION BY THE ENGINEER RECORD.
5. ANY VARIANCE IN TEXTURE, GRADE OR ALIGNMENT MUST BE APPROVED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
SIDEWALK SECTION AND JOINT DETAIL — SD14

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB



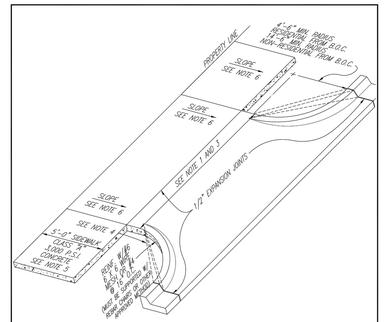
NOTES:
1. 7'-FOOT MIN. HEIGHT FROM GROUND TO BOTTOM OF SIGN.
2. ALL SIGNS TO BE IN CONFORMANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. ALL SIGNAGE SHEETINGS SHALL BE HIGH-INTENSITY "3M" SHEETING.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: REVISED 1/14/2014 WBD
ISSUED WITH: ADOPTED 6/21/2006 TRB

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD STREET SIGN DETAIL — SD25

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS/JW | APPROVED BY: TRB



NOTES:
1. MAXIMUM WIDTH OF APPROACH SHALL BE 24'-0" FOR RESIDENTIAL, 30'-0" FOR NON-RESIDENTIAL UNDIVIDED AND 45'-0" FOR NON-RESIDENTIAL DIVIDED.
2. DRIVEWAY PERMITS TO BE ACQUIRED FROM CITY INSPECTION OFFICE.
3. MINIMUM WIDTH OF APPROACH SHALL BE 10'-0" FOR RESIDENTIAL AND 15'-0" FOR NON-RESIDENTIAL.
4. LINEAR "RADIUS" AT CORNERS, PERMITTED FOR "SINGLE FAMILY" OR "TWO FAMILY" RESIDENTIAL DRIVEWAY APPROACH.
5. SIDEWALK LOCATION TO BE APPROVED BY CITY ENGINEER PRIOR TO FINAL DESIGN.
6. SLOPE 1/8" PER FOOT USUAL, NOT TO EXCEED 1/4" PER FOOT.
7. DRIVEWAY APPROACH THICKNESS TO BE A MIN. OF 6".

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
CONCRETE DRIVEWAY APPROACH TYPICAL — SD15

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB

NOTES:
1. COMMERCIAL SIDEWALKS WIDTHS – 6'
   RESIDENTIAL SIDEWALKS WIDTHS – 5'
2. ALL SLOPES ARE MAXIMUM ALLOWABLE. FLATTER SLOPES THAT WILL STILL DRAIN PROPERLY ARE ENCOURAGED.
3. ALL CONCRETE SURFACES SHALL RECEIVE A LIGHT BROOM FINISH UNLESS NOTED OTHERWISE IN THE PLANS.
4. FOR PURPOSES OF WARNING, THE CURB RAMPS SHALL HAVE A LIGHT REFLECTIVE VALUE AND TEXTURE THAT SIGNIFICANTLY CONTRASTS WITH THAT OF ADJOINING PEDESTRIAN ROUTES.
5. TEXTURES MAY CONSIST OF PAVERS WITH TRUNCATED DOMED SURFACES OR GROOVES. TEXTURES ARE REQUIRED TO BE DETECTABLE UNDERFOOT. SURFACES THAT WOULD ALLOW WATER TO ACCUMULATE ARE PROHIBITED.
6. COLOR CONTRAST, FOR EXAMPLE, CAN BE ACCOMPLISHED WITH COLORED CONCRETE PAVERS THAT HAVE TRUNCATED DOMES OR BY COLORED STAINED CONCRETE WITH GROOVES, EITHER OF WHICH WOULD PROVIDE A CONTRAST WITH TYPICALLY LIGHT COLORED CONCRETE.
7. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, VISIBILITY AND TEXTURE MAY BE FOUND IN THE CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS) PREPARED AND ADMINISTERED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
8. RAISED MEDIANS SEPARATE OPPOSING DIRECTIONS OF TRAFFIC AND PROVIDE A REFUGE AREA FOR PEDESTRIANS IF THEY ARE UNABLE TO CROSS THE ENTIRE ROADWAY IN THE ALLOTTED SIGNAL PHASE. TO SERVE AS A REFUGE AREA, THE MEDIAN SHOULD BE A MINIMUM OF 4 FEET WIDE. MEDIANS SHOULD BE DESIGNED TO PROVIDE ACCESSIBLE PASSAGE OVER OR THROUGH THEM.
9. ALL SIDEWALK PLANS AND DETAILS SHALL BE SUBMITTED AND APPROVED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
10. ANY PART OF THE ACCESSIBLE ROUTE WITH A SLOPE GRATER THAN 1:20 (5%) SHALL BE CONSIDERED A RAMP. IF A RAMP HAS A RISE GREATER THAN 6 INCHES OR A HORIZONTAL PROJECTION GREATER THAN 72 INCHES, THEN IT SHALL HAVE HANDRAILS ON BOTH SIDES. THE ONLY EXCEPTION IS AT CURB RAMPS. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. CURB RAMPS SHALL BE PROVIDED WHERE EVER AN ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB. CURB RAMPS ARE GENERALLY INTERPRETED AS ONLY THE PORTION TYING DIRECTLY INTO THE ROADWAY.
11. TRAFFIC SIGNAL OR ILLUMINATION POLES, GROUND BOXES, CONTROLLER BOXES, SIGNS, DRAINAGE FACILITIES AND OTHER ITEMS SHALL BE PLACED SO NOT TO OBSTRUCT THE ACCESSIBLE ROUTE.
12. ALL SIDEWALKS WILL BE DOWELED INTO EXISTING SIDEWALKS, DRIVEWALKS, DRIVEWAYS, INLET BOXES, RETAINING WALLS, ETC.
13. ALL SIDEWALK CROSS–SLOPES SHALL NOT EXCEED 1:50, UNLESS A VARIANCE IS PROVIDED BY TDLR.

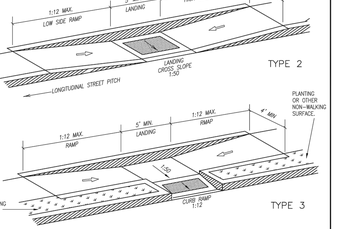
The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
PEDESTRIAN RAMPS GENERAL NOTES — SD28

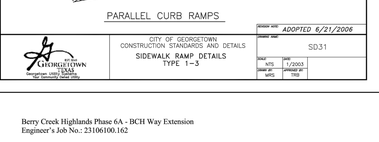
SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB

The Architect/Engineer assumes responsibility for appropriate use of this standard.

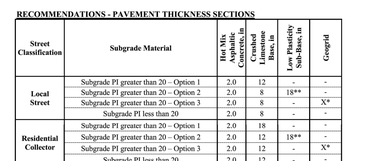


PERPENDICULAR CURB RAMPS

TYPE 1



TYPE 2



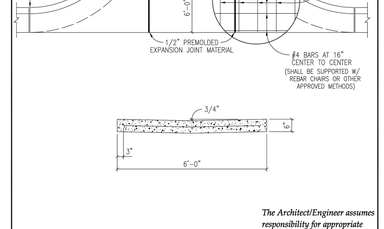
TYPE 3

PARALLEL CURB RAMPS

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
SIDEWALK RAMP DETAILS TYPE 1–3 — SD31

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB

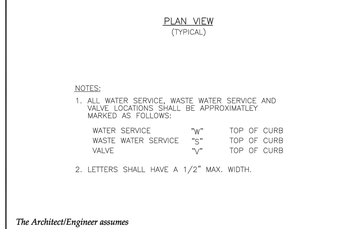


The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
CONCRETE VALLEY GUTTER DETAIL — SD03

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB



PLAN VIEW
(TYPICAL)

NOTES:
1. ALL WATER SERVICE, WASTE WATER SERVICE AND VALVE LOCATIONS SHALL BE APPROXIMATELEY MARKED AS FOLLOWS:

WATER SERVICE	"W"	TOP OF CURB
WASTE WATER SERVICE	"C"	TOP OF CURB
VALVE	"V"	TOP OF CURB

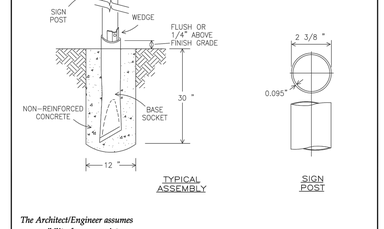
2. LETTERS SHALL HAVE A 1/2" MAX. WIDTH.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
CURB STAMP DETAIL — SD05

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB

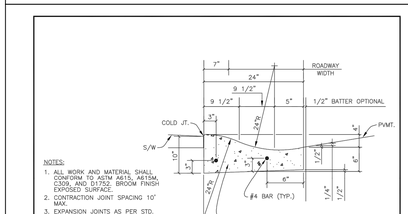


The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

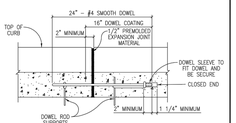
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
POZ-LOC (BREAKAWAY FOUNDATION) — SD24

SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB



NOTES:
1. ALL WORK AND MATERIAL SHALL CONFORM TO ASTM A615, A615M, C309, AND D1752. BROOM FINISH EXPOSED SURFACE.
2. CONTRACTION JOINT SPACING 10' MAX.
3. EXPANSION JOINTS AS PER STD. ASTM D-1752.
4. 1/2" EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB IS ADJACENT TO SIDEWALK OR RIP-RAP.
5. TRANSITIONS BETWEEN CURBS OR DIFFERING CROSS SECTIONS SHALL OCCUR OVER A 20 FOOT LENGTH AS APPROVED BY THE ENGINEER OR TH CITY OF GEORGETOWN.
6. ALL CONCRETE SHALL BE CLASS A, 3000 PSI.
7. ALL SURFACES THAT ARE CHIPPED OR OTHERWISE DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED.
8. ONE OF THE FOLLOWING SCHEMES OF REINFORCEMENT SHALL BE REQUIRED. THE MANNER OF PLACEMENT AND LOCATION SHALL BE TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF GEORGETOWN.
   A. CURB AND GUTTER (REINFORCED) SHALL HAVE LONGITUDINAL REINFORCING BARS AS FOLLOWS: THREE #4.
   B. ALL TYPES OF CURB (REINFORCED) SHALL HAVE #4 BAR FOR LONGITUDINAL REINFORCEMENT.
9. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 15 INCH.
10. REINFORCING BARS SHALL BE SUPPORTED WITH REBAR CHAIRS OR OTHER APPROVED METHODS.
11. REBAR SUPPORTS ARE NOT REQUIRED ON MACHINE PLACED CURB PROVIDED THAT REBAR IS PROPERLY GUIDED INTO THE CURB SECTION.

MOUNTABLE CURB



CURB DOWEL DETAIL

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ISSUED WITH: ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
MOUNTABLE CURB AND GUTTER DETAILS — SD07

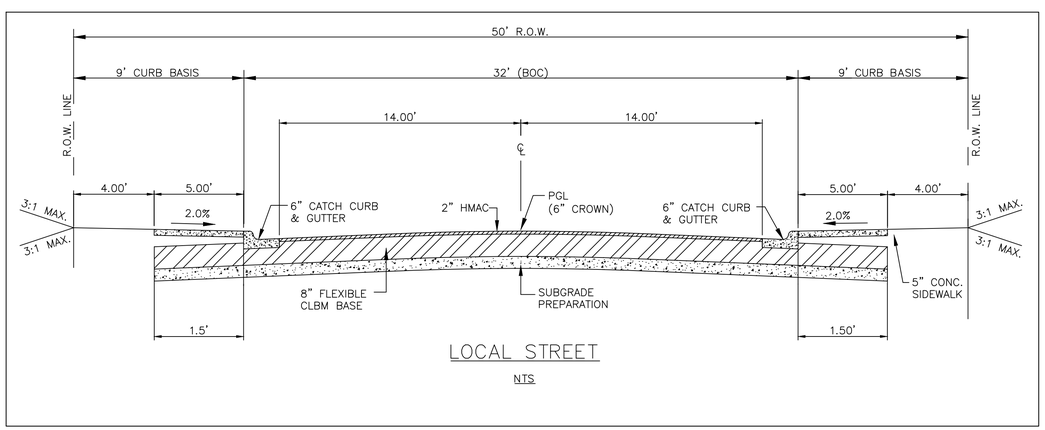
SCALE: NTS | DATE: 1/2003 | DRAWN BY: MRS | APPROVED BY: TRB

Berry Creek Highlands Phase 6A - BCH Way Extension
Engineer's Job No.: 23106100.162

RECOMMENDATIONS - PAVEMENT THICKNESS SECTIONS

Street Classification	Subgrade Material	Hot Mix Asphaltic Concrete, in	Crushed Limestone Base, in	Lew Plasticity Salt-Base, in	Geogrid
Local Street	Subgrade PI greater than 20 – Option 1	2.0	12	-	-
	Subgrade PI greater than 20 – Option 2	2.0	8	18**	-
	Subgrade PI greater than 20 – Option 3	2.0	8	-	X*
	Subgrade PI less than 20	2.0	8	-	-
Residential Collector	Subgrade PI greater than 20 – Option 1	2.0	18	-	-
	Subgrade PI greater than 20 – Option 2	2.0	12	18**	-
	Subgrade PI greater than 20 – Option 3	2.0	12	-	X*
	Subgrade PI less than 20	2.0	12	-	-
Neighborhood Collector	Subgrade PI greater than 20 – Option 1	2.0	24	-	-
	Subgrade PI greater than 20 – Option 2	2.0	16	18**	-
	Subgrade PI greater than 20 – Option 3	2.0	16	-	X*
	Subgrade PI less than 20	2.0	16	-	-

Notes:
1. * - A single layer of Tensar TX Type 3 geogrid should be placed below the crushed limestone base layer.
2. ** - Or the remaining thickness of surface clay. Natural weathered or intact limestone should not be removed to place low plasticity subbase.
3. Any expansive fill (PI > 20) placed in the subgrade after boring completion shall be considered expansive subgrade.
4. An option for lime stabilized subgrade is not included in this pavement design because it is impractical due to near surface limestone in the subgrade and the size of the roadway. Most or all of the thin layer of surface soil is expected to be removed during construction.
5. **Delineation between these different pavement thickness sections should be completed in the field by observation of open utility trenches and the pavement subgrade by the Geotechnical Engineer or his designate.** Given the known variability of surface soils at this site, the Geotechnical Engineer must verify the subgrade before installation of the pavement system can proceed. Multiple site visits may be required depending upon the construction schedule. Finalized distinction between pavement thickness section options can be provided as addendum to this report as these observations are completed. Please contact the Geotechnical Engineer when the utility trenches are open.
6. The base and any subgrade improvement should be extended 1.5 feet beyond the back of the curb line.
7. These pavement thickness designs are intended to transfer the load from the anticipated traffic conditions.
8. The responsibility of assigning street classification to the street in this project is left to the Civil Engineer.
9. If pavement designs other than those listed above are desired, please contact MLA Geotechnical.



LOCAL STREET

NTS

Know what's **below.** **Call** before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

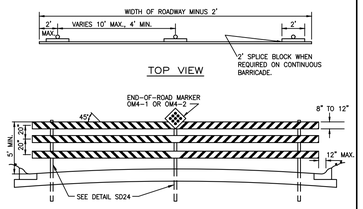
KHA PROJECT 069427101
DATE: FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

PAVING DETAILS (1 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
77
OF 82

2024-9-CON



TOP VIEW

FRONT VIEW

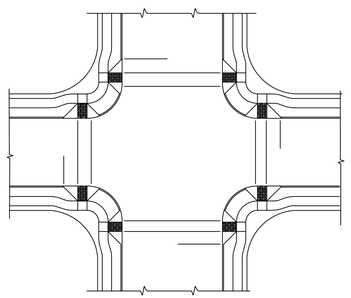
GENERAL NOTES FOR THIN WALL TUBE TYPE SIGN SUPPORT:

1. THE BASE SOCKET IS FORMED FROM 2 7/8 " O.D. X 12 GAUGE GALVANIZED PIPE.
2. THE WEDGE IS FORMED FROM 11 GAUGE STEEL, GALVANIZED PER ASTM A525.
3. THE SIGN POST IS 2.375" O.D. X 0.095" THIN WALL STEEL TUBING.
4. STEEL SUPPORTS SHALL BE MADE FROM NEW MATERIAL AND SHALL BE CORROSION RESISTANT. STEEL SUPPORTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATIONS A123 OR A525 (C-90 OR BETTER).
5. SUPPORTS SHALL BE STRAIGHT WITHIN 1/4 " PER 5 FEET OF LENGTH AND SHALL HAVE A SMOOTH, UNIFORM FINISH FREE FROM DEFECTS AFFECTING STRENGTH OR APPEARANCE. ANY BOLT HOLES AND SHEARED ENDS SHALL BE FREE FROM BURRS. BASES OF MULTISECTION SUPPORTS SHALL NOT EXTEND MORE THAN 5 INCHES ABOVE GROUND WHEN INSTALLED.
6. BOLTS, NUTS, SCREWS, WASHERS AND OTHER MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE TO ASTM DESIGNATION: A153 CLASS C OR D, OR B695 CLASS 50.
7. BARRICADE SUPPORTS SYSTEMS USED ON THIS SHEET MAY BE SUITABLE FOR ONLY CERTAIN SOIL TYPES. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING THE APPROPRIATE SUPPORT SYSTEM FOR SOIL CONDITIONS ON EACH PROJECT.
8. ALL BARRICADES TO BE IN CONFORMANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
9. RAL-HIGH DENSITY POLYETHYLENE OR HOLLOW PROFILE PLASTIC LUMBER AND SHEETING SHALL BE RETROREFLECTIVE, INCLUDING SPLICE BLOCKS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
PERMANENT END-OF-ROAD BARRICADE

ADOPTED 6/21/2006
SD21
SCALE: NTS
DRAWN BY: MRS/NP
CHECKED BY: TRB
DATE: 1/2003



OFFSET SIDEWALKS

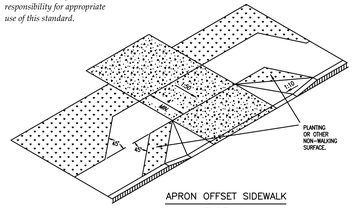
NOTE: CURB RAMPS WITH RETURNED CURBS INSTEAD OF SIDE FLARES ARE PERMITTED WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP

The Architect/Engineer assumes responsibility for appropriate use of this standard.

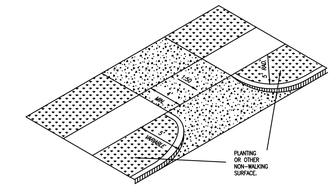
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TYPICAL INTERSECTON LAYOUT

ADOPTED 6/21/2006
SD29
SCALE: NTS
DRAWN BY: MRS
CHECKED BY: TRB
DATE: 1/2003

The Architect/Engineer assumes responsibility for appropriate use of this standard.



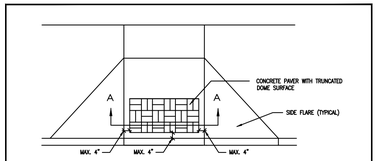
APRON OFFSET SIDEWALK
TYPE 12



SETBACK SIDEWALK
TYPE 13

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
DRIVEWAY APRONS TYPES 12 & 13

ADOPTED 6/21/2006
SD35
SCALE: NTS
DRAWN BY: MRS
CHECKED BY: TRB
DATE: 1/2003



TRUNCATED DOME PATTERN CURB RAMP

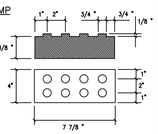
GENERAL NOTES

CONCRETE PAVER UNITS SHALL MEET ALL REQUIREMENTS OF ASTM C-936, C-33, AND SHALL BE LAID IN A TWO BY TWO RUNNING BOND WEAVE PATTERN, UNLESS SHOWN OTHERWISE IN THE PLANS.

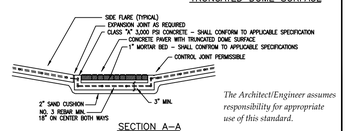
CONCRETE PAVER UNIT SHALL HAVE A TRUNCATED DOME TOP SURFACE FOR DETECTABLE WARNING TO PEDESTRIANS.

CONCRETE PAVER UNIT COLOR FOR THE RAMP SHALL BE A CONTRASTING COLOR TO THE ADJACENT SURFACES. THE COLOR OF THE CONCRETE PAVER UNITS SHALL BE SHOWN ELSEWHERE IN THE PLANS. (ADJACENT SURFACES INCLUDE SIDE FLARES).

CONCRETE PAVER UNITS SHALL BE SAW CUT ONLY AND ANY CUT UNIT SHALL BE NOT LESS THAN 25 PERCENT OF A FULL UNIT.



CONCRETE PAVER WITH TRUNCATED DOME SURFACE



SECTION A-A

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
CURB RAMP TEXTURES TYPE A

REVISED 3/14/2014 WBD
ADOPTED 6/21/2006 TRB
SD37
SCALE: NTS
DRAWN BY: MRS/NP
CHECKED BY: TRB
DATE: 1/2003

Know what's **below.**
Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED
PROFESSIONAL ENGINEER

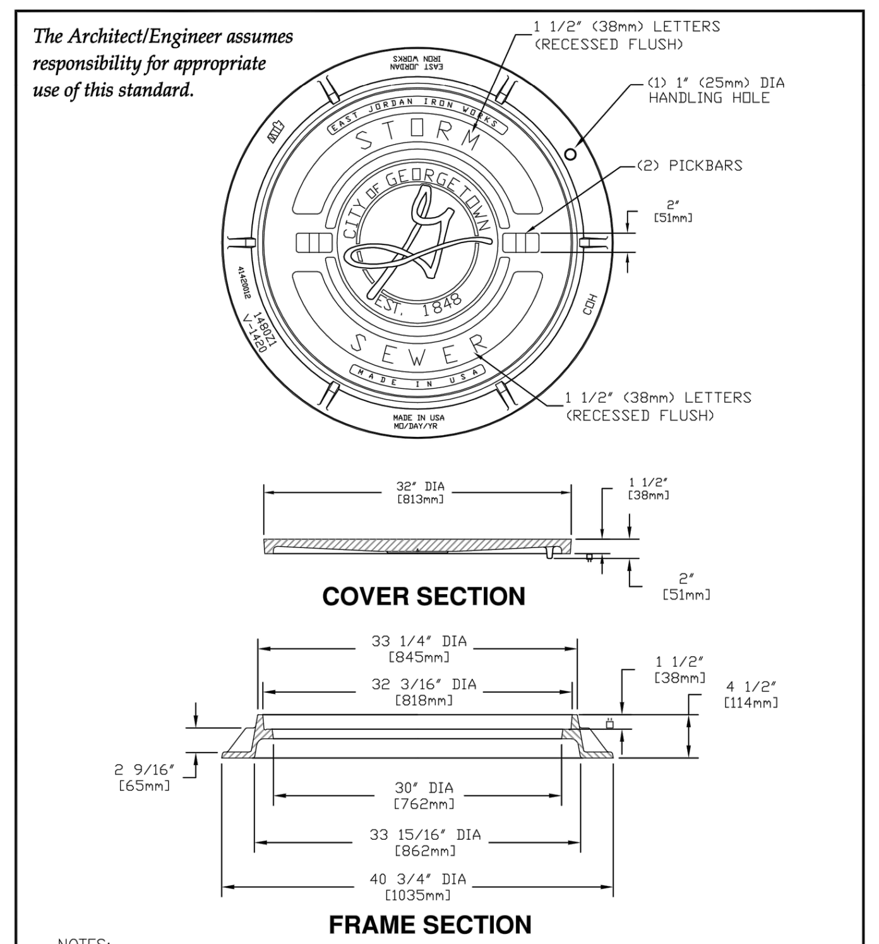
KHA PROJECT
069427101
DATE
FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

PAVING DETAILS (2 OF 2)

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
78
OF 82

2024-9-CON

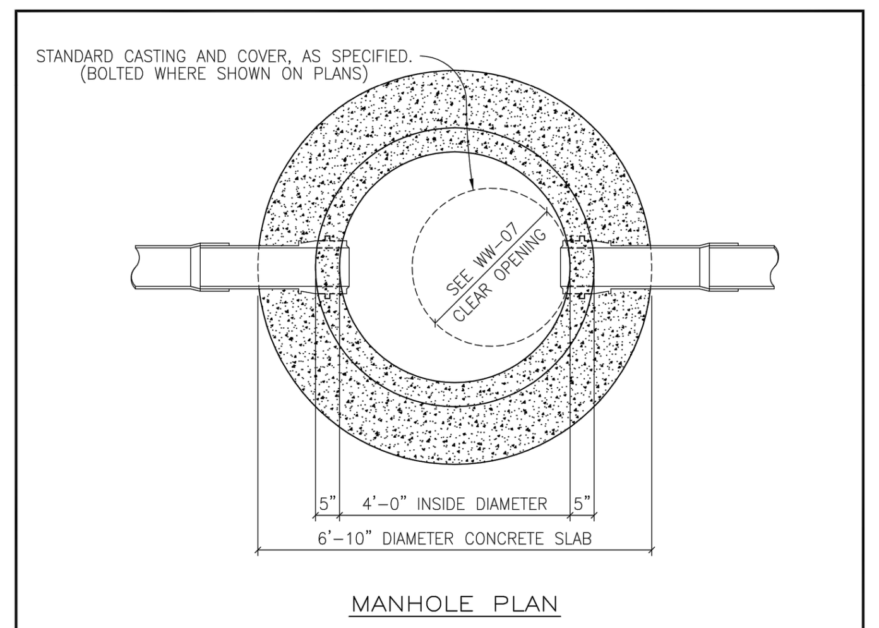


The Architect/Engineer assumes responsibility for appropriate use of this standard.

NOTES:

1. STANDARD STORM SEWER MANHOLE SET TO BE EAST JORDAN IRON WORKS, INC. CATALOG NO. 1480A V-1420\1480Z1, COVER TO BE STAMPED WITH "STORM SEWER".
2. STANDARD STORM SEWER MANHOLE SET TO BE HEAVY DUTY LOAD RATED.
3. FOR MORE DETAILED SPECIFICATIONS REFER TO EAST JORDAN IRON WORKS, INC. REFERENCE PRODUCT DRAWING 41420012 00148391.
4. FOR BOLTED STORM SEWER MANHOLE SET REFER TO DETAIL SD11A.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD STORM SEWER MANHOLE SET
SD11 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



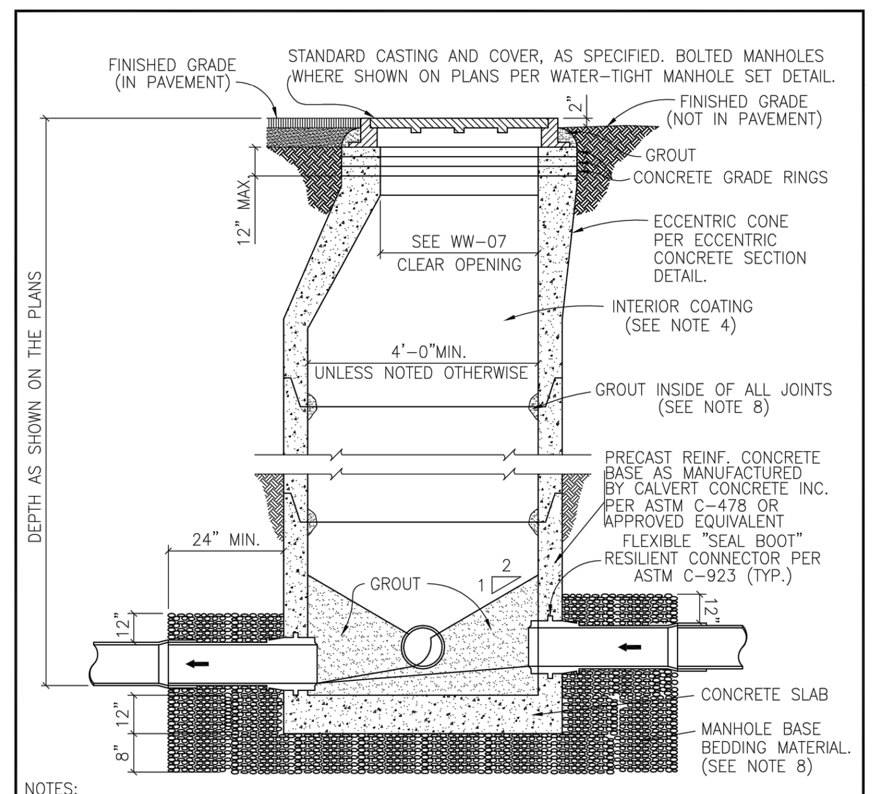
CITY OF GEORGETOWN NOTES:

MANHOLE DETAILS SHALL REFLECT THE CITY'S MINIMUM SPECIFICATIONS, AS STATED BELOW:

A. ALL MANHOLES SHALL BE 48" I.D., R.C.P., CLASS III, WITH RUBBER O-RING GASKET JOINTS CONFORMING TO ASTM C478, C433 AND C76.
B. ALL MANHOLES SHALL HAVE FRAME AND COVER, AS MANUFACTURED BY EAST JORDAN IRON WORKS (AS PER DETAIL # WW-07) OR APPROVED EQUIVALENT.
C. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON FRAME AND COVER.
D. ALL MANHOLES SHALL HAVE AN ECCENTRIC CONE.
E. MANHOLES MAY HAVE A FLAT LID, IF APPROVED BY CITY OF GEORGETOWN, BEING 12" THICK WITH A MINIMUM 30" OPENING, AS MANUFACTURED BY CALVERT CONCRETE OR APPROVED EQUAL M.F.G. CONFORMING TO ASTM C478, 5000 P.S.I. CONCRETE, TRAFFIC BEARING, AND O-RING JOINT CONFORMING TO ASTM C443.
F. INVERTS AND FLEXIBLE SEAL BOOTS, PER ASTM C-923, SHALL BE CAST INTO BASE SECTION.
G. MINIMUM DROP BETWEEN INVERTS SHALL BE ONE-TENTH OF A FOOT (0.1').
H. GRADE RINGS WITH AN I.D. TO MATCH FRAMES CLEAR OPENING WITH A MAXIMUM OF FIVE (5) GRADE RINGS ARE ALLOWED.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD STORM SEWER MANHOLE PLAN
SD12 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



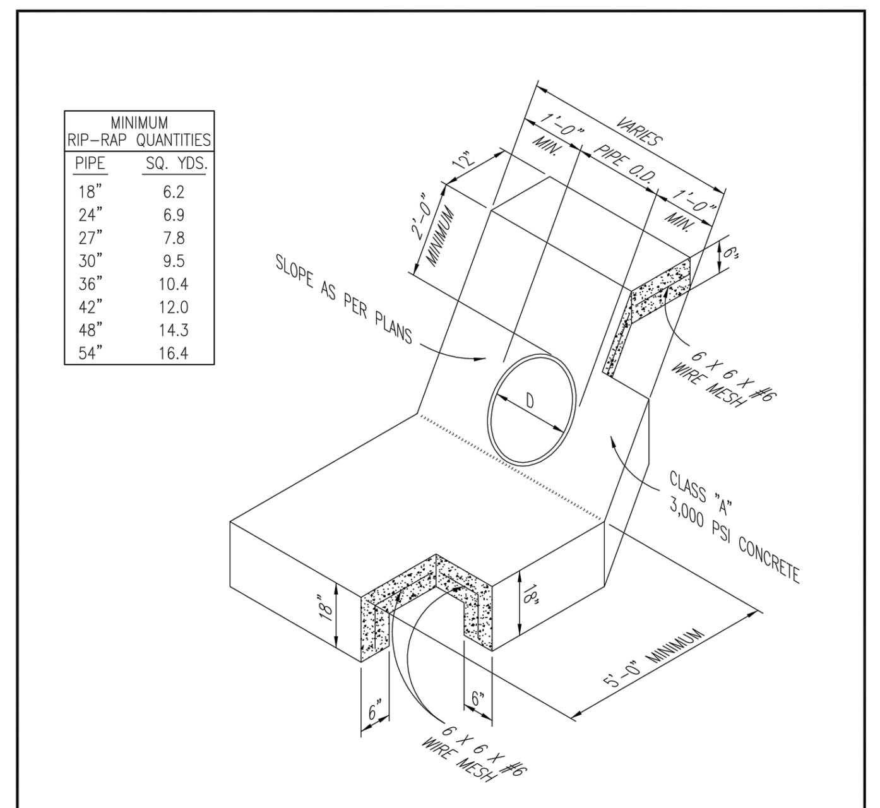
NOTES:

1. MANHOLES SHALL BE PRECAST ASTM C-478 BELL AND SPIGOT WITH PROFILE GASKET - SINGLE OFF-SET JOINTS.
2. SEE PLANS AND MANHOLE SCHEDULE, FOR MANHOLE SIZE, LOCATION, CONFIGURATION, TYPE OF TOP SECTION, VENTING REQUIREMENTS, PIPE SIZE AND TYPES.
3. SEE SPECIFICATIONS ON MATERIALS AND CONSTRUCTION.
4. AN 80 MIL COAT OF RAVEN LINING SYSTEMS, RAVEN 405 ULTRA HIGH BUILD EPOXY COATING, OR SPRAY WALL EPOXY COATING, OR APPROVED EQUAL, TO BE APPLIED TO ENTIRE INTERIOR OF EACH STORM SEWER MANHOLE AND UNDERSIDE OF FLAT TOPS.
5. ALL MANHOLE COVERS SHALL BE BOLTED AND GASKETTED WHEN MANHOLES ARE LOCATED OUT FROM PAVEMENT.
6. MANHOLES TO BE VENTED ARE IDENTIFIED ON MANHOLE SCHEDULE. REFERENCE MANHOLE VENT DETAIL.
7. MANHOLES ARE TO BE DESIGNED TO RESIST LATERAL AND VERTICAL SOIL FORCES RESULTING FROM MANHOLE DEPTH. ADDITIONALLY, MANHOLES LOCATED IN PAVEMENT TO BE DESIGNED FOR HS-20 TRAFFIC LOADS.
8. GROUT SHALL MEET THE REQUIREMENTS AS STATED BY THE COATING MANUFACTURER.
8. MANHOLE BASE BEDDING MATERIAL SPECS. FOR 3/4" WASHED GRAVEL: SIEVE SIZE 2", PERCENT (%) RETAINED 0; SIEVE SIZE 1 1/2", % RETAINED 0-10; SIEVE SIZE 1", % RETAINED 45-80; SIEVE SIZE 3/4", % RETAINED 85-100; SIEVE SIZE 3/8", % RETAINED 95-100

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD STORM SEWER MANHOLE - SECTION
SD13 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

MINIMUM RIP-RAP QUANTITIES	
PIPE	SQ. YDS.
18"	6.2
24"	6.9
27"	7.8
30"	9.5
36"	10.4
42"	12.0
48"	14.3
54"	16.4

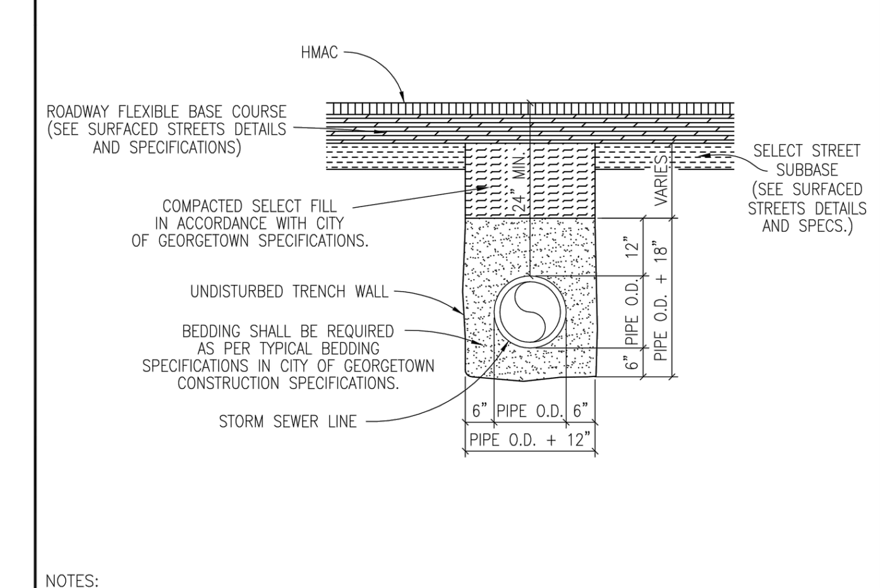


NOTES:

1. WHEN HEADWALLS AND WINGWALLS ARE REQUIRED, THEY SHALL CONFORM TO THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARDS, OR AS DIRECTED BY THE CITY.
2. ENERGY DISSIPATERS SHALL BE REQUIRED IF PIPE VELOCITY IS GREATER THAN 5.0 F.P.S. OR AS DIRECTED BY THE CITY OF GEORGETOWN.
3. SUPPORT REINFORCING WIRE MESH REQUIRED AS SUPPORT FOR APPROACH SLAB AND SHALL BE SUPPORTED BY REBAR CHAIRS OR OTHER APPROVED METHODS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TYPICAL CONCRETE RIP-RAP AT PIPE
SD19 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



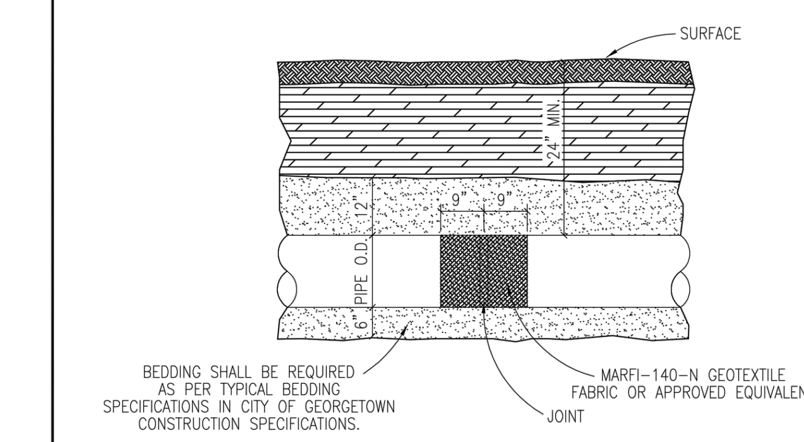
NOTES:

1. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS AND STANDARDS.
2. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER 1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER 2'-0" + PIPE O.D.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TRENCH AND EMBEDMENT DETAIL UNDER PROPOSED ROADWAY FOR STORM SEWER
SD41 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

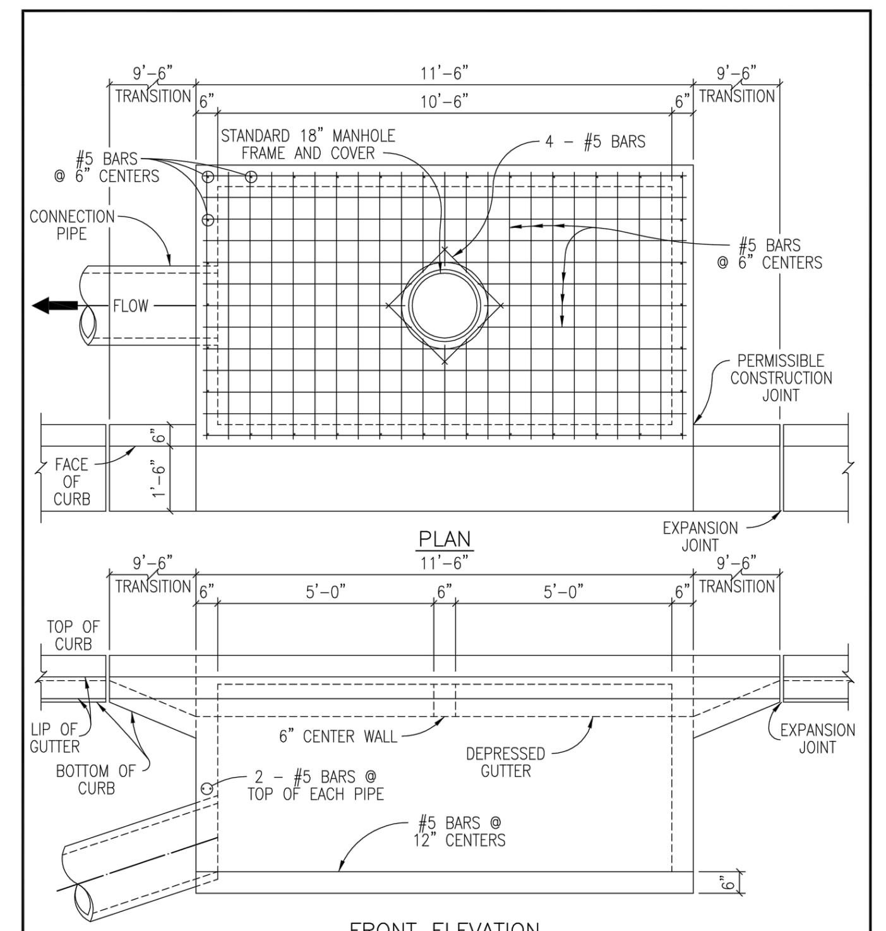


NOTES

1. PIPE SHALL BE REINFORCED CONCRETE PIPE CLASS III UNLESS THE DEPTH OF PIPE REQUIRES A STRONGER CLASS.
2. ALL FITTINGS AND WYES SHALL BE MANUFACTURED AND NOT CONSTRUCTED ON THE PROJECT WITHOUT PRIOR APPROVAL FROM THE CITY.
3. ALL JOINTS SHALL BE WRAPPED WITH MARF1-140-N GEOTEXTILE FABRIC OR APPROVED EQUIVALENT. EACH JOINT SHALL BE WRAPPED WITH 18" WIDE FABRIC CENTERED ON THE JOINT.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TRENCH AND EMBEDMENT DETAIL (PROFILE) FOR STORM SEWER
SD42 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

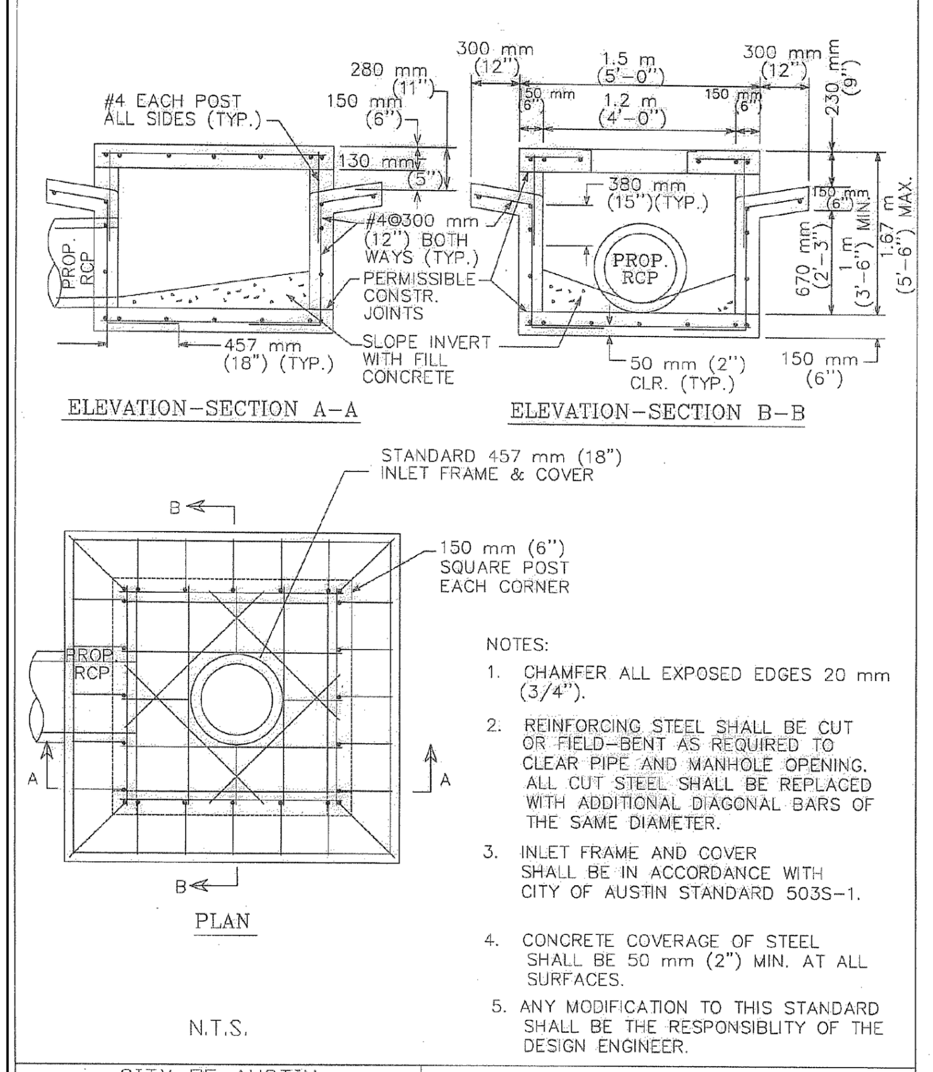


NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI CONCRETE.
2. STORM SEWER PIPE MATERIAL TO BE R.C.P. (CLASS III) UNLESS OTHERWISE APPROVED BY THE CITY OF GEORGETOWN.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

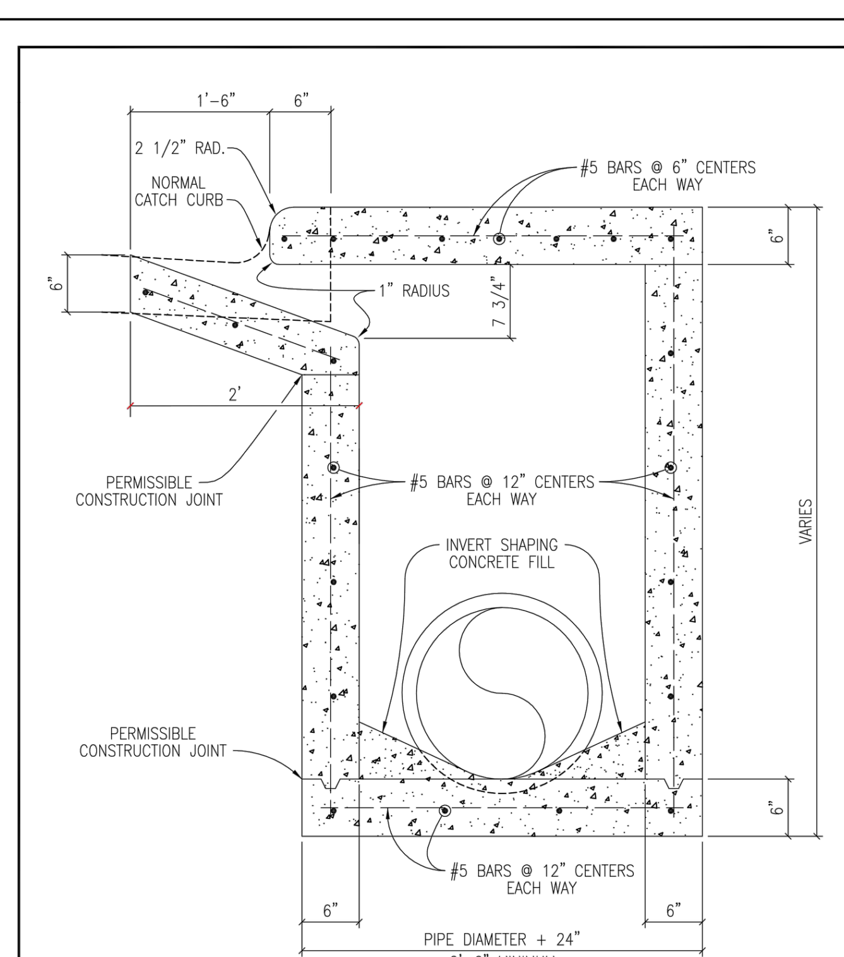
ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
CURB INLET DETAIL
SD09 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



NOTES:

1. CHAMFER ALL EXPOSED EDGES 20 mm (3/4").
2. REINFORCING STEEL SHALL BE CUT OR FIELD-BENT AS REQUIRED TO CLEAR PIPE AND MANHOLE OPENING. ALL CUT STEEL SHALL BE REPLACED WITH ADDITIONAL DIAGONAL BARS OF THE SAME DIAMETER.
3. INLET FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S-1.
4. CONCRETE COVERAGE OF STEEL SHALL BE 50 mm (2") MIN. AT ALL SURFACES.
5. ANY MODIFICATION TO THIS STANDARD SHALL BE THE RESPONSIBLITY OF THE DESIGN ENGINEER.

CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT
Arthur C. Romero, P.E. 3/18/2010 ADOPTED
4-SIDED AREA INLET
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD
STANDARD NO. 508S-9

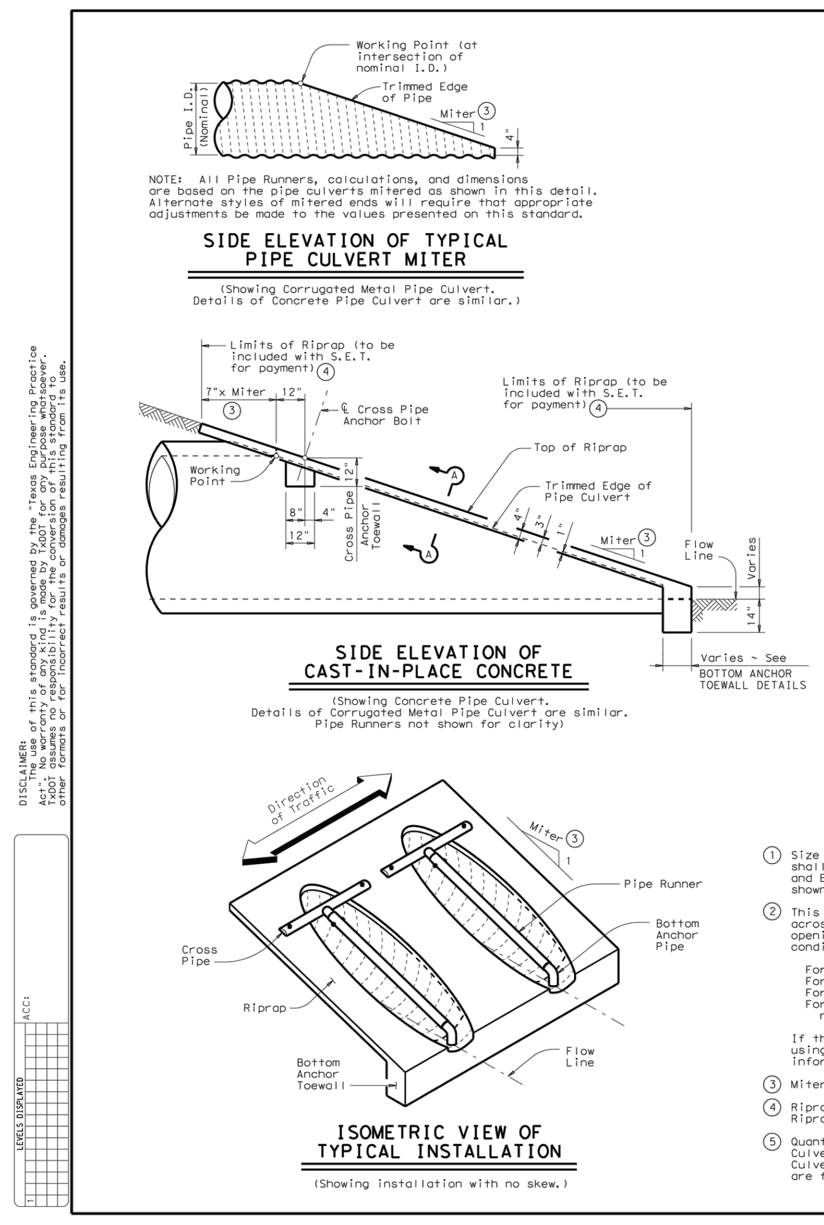


NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI CONCRETE.
2. STORM SEWER PIPE MATERIAL TO BE R.C.P. (CLASS III) UNLESS OTHERWISE APPROVED BY THE CITY OF GEORGETOWN.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
CURB DRAIN INLET TYPICAL SECTION
SD10 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



CROSS PIPE LENGTHS & PIPE RUNNER LENGTHS ①②

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	3:1 Side Slope 0° Skew	3:1 15° Skew	3:1 30° Skew	3:1 45° Skew	4:1 Side Slope 0° Skew	4:1 15° Skew	4:1 30° Skew	4:1 45° Skew	6:1 Side Slope 0° Skew	6:1 15° Skew	6:1 30° Skew	6:1 45° Skew
24"	1'-7"	3'-5"	N/A	N/A	N/A	5'-10"	N/A	N/A	N/A	8'-1"	N/A	N/A	N/A	12'-9"
27"	1'-8"	3'-8"	N/A	N/A	5'-5"	6'-11"	N/A	N/A	7'-7"	9'-7"	N/A	N/A	11'-11"	14'-11"
30"	1'-10"	3'-11"	N/A	N/A	6'-4"	8'-0"	N/A	N/A	8'-9"	11'-0"	N/A	N/A	13'-8"	17'-0"
33"	1'-11"	4'-2"	6'-2"	6'-5"	7'-3"	9'-1"	8'-6"	8'-10"	10'-0"	12'-5"	13'-3"	13'-9"	15'-5"	19'-2"
36"	2'-1"	4'-5"	6'-11"	7'-3"	8'-2"	10'-2"	9'-6"	9'-11"	11'-2"	13'-10"	14'-9"	15'-3"	17'-2"	21'-3"
42"	2'-4"	4'-11"	8'-6"	8'-10"	9'-11"	12'-4"	11'-7"	12'-0"	13'-6"	16'-8"	17'-9"	18'-5"	20'-8"	25'-7"
48"	2'-7"	5'-5"	10'-1"	10'-5"	11'-9"	N/A	13'-7"	14'-2"	15'-10"	N/A	20'-9"	21'-6"	24'-2"	N/A
54"	3'-0"	5'-11"	11'-8"	12'-1"	N/A	N/A	15'-8"	16'-3"	N/A	N/A	23'-10"	24'-8"	N/A	N/A
60"	3'-3"	6'-5"	13'-3"	N/A	N/A	N/A	17'-9"	N/A	N/A	N/A	26'-10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS ③

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED ②

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (No Skew)	Always required
42" to 60"	Always required	Always required

STANDARD PIPE SIZES & MAX PIPE RUNNER LENGTHS ①

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10'-0"
4" STD	4.500"	4.026"	19'-8"
5" STD	5.563"	5.047"	34'-2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) ⑤

Nominal Culvert I.D.	3:1 Side Slope 0° Skew	3:1 15° Skew	3:1 30° Skew	3:1 45° Skew	4:1 Side Slope 0° Skew	4:1 15° Skew	4:1 30° Skew	4:1 45° Skew	6:1 Side Slope 0° Skew	6:1 15° Skew	6:1 30° Skew	6:1 45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

① Size of Pipe Runner shall be as shown in the tables. Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out and Bottom Anchor Pipe shall be the next smaller size pipe as shown in the STANDARD PIPE SIZES table.

② This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

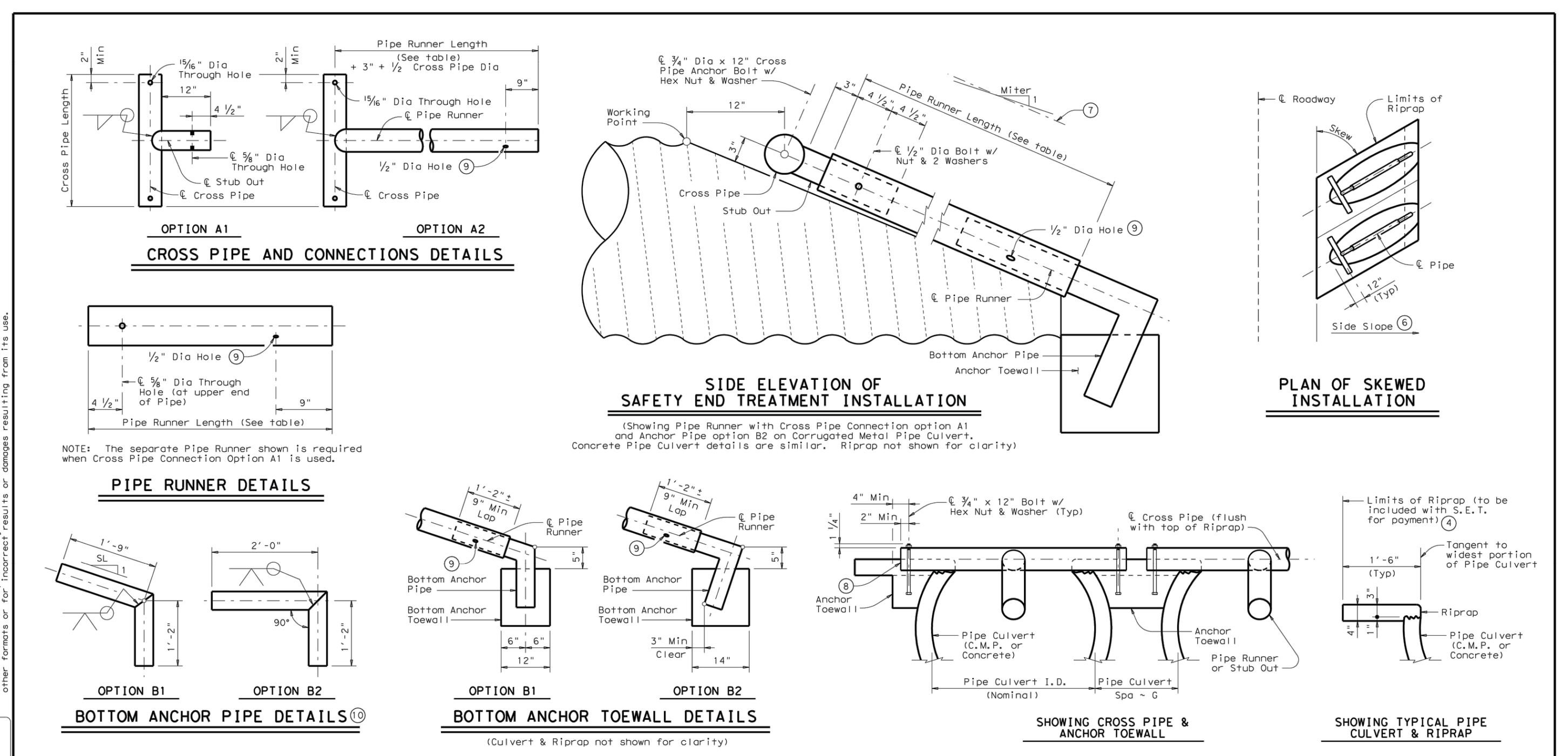
If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT "Roadway Design Manual".

③ Miter = Slope of Mitered Pipe Culvert End

④ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

⑤ Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple Pipe Culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

SHEET 1 OF 2
Texas Department of Transportation — Bridge Division
SAFETY END TREATMENT
FOR 12" DIA TO 60" DIA PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE
SETP-CD
FILE: setpcdse.dgn — © TxDOT February 2010
REVISIONS: 11-10: Add note for synthetic fibers.



④ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

⑥ Recommended values of side slope are 3:1, 4:1, & 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

⑦ Note that actual slope of Pipe Runner may vary slightly from Side Slope of Riprap and trimmed Culvert Pipe edge.

⑧ Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

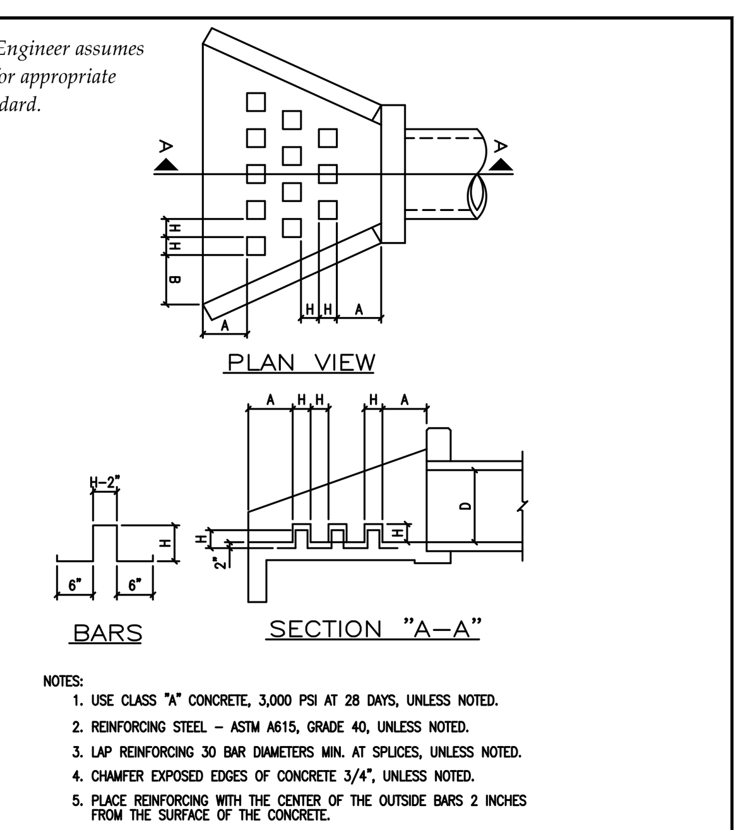
⑨ After installation, the 1/2" hole shall be inspected to ensure that the lap of the Pipe Runner with the Bottom Anchor Pipe is adequate.

⑩ At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the Runner) may be substituted for the mitered and welded joint in the Bottom Anchor Pipe.

GENERAL NOTES:
Pipe Runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.
Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.
Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.
Bolts and nuts shall conform to ASTM A307.
All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

SHEET 2 OF 2
Texas Department of Transportation — Bridge Division
SAFETY END TREATMENT
FOR 12" DIA TO 60" DIA PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE
SETP-CD
FILE: setpcdse.dgn — © TxDOT February 2010
REVISIONS: 11-10: Add note for synthetic fibers.

The Architect/Engineer assumes responsibility for appropriate use of this standard.



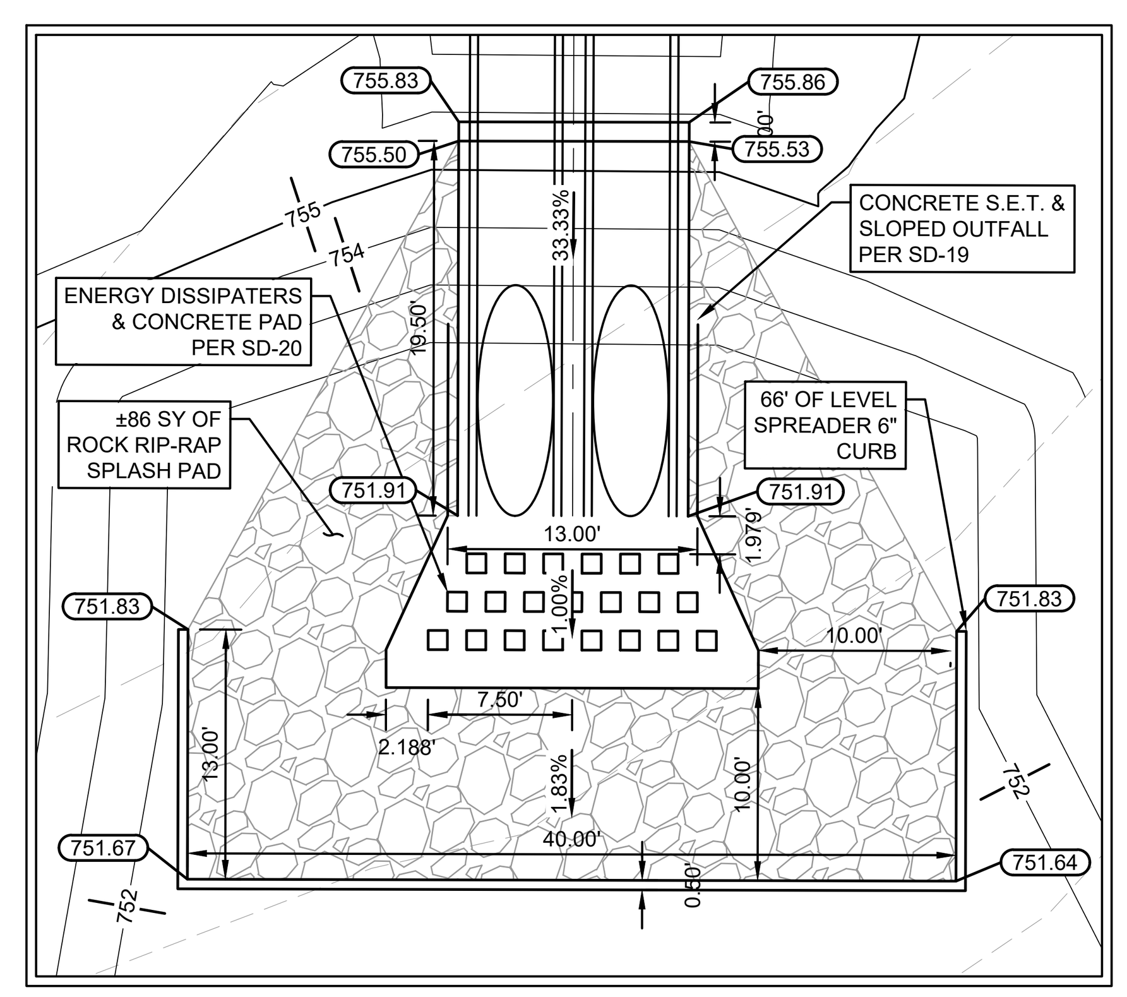
NOTES:

1. USE CLASS "A" CONCRETE, 3,000 PSI AT 28 DAYS, UNLESS NOTED.
2. REINFORCING STEEL - ASTM A615, GRADE 40, UNLESS NOTED.
3. LAP REINFORCING 30 BAR DIAMETERS MIN. AT SPLICES, UNLESS NOTED.
4. CHAMFER EXPOSED EDGES OF CONCRETE 3/4", UNLESS NOTED.
5. PLACE REINFORCING WITH THE CENTER OF THE OUTSIDE BARS 2 INCHES FROM THE SURFACE OF THE CONCRETE.

TABLE OF DIMENSIONS FOR ENERGY DISSIPATOR DETAIL

D PIPE DIAMETER (INCHES)	NUMBER OF ROWS OF DISSIPATORS	NUMBER OF DISSIPATORS IN FRONT ROW	H (INCHES)	A (INCHES)	B (INCHES)
12	1	3	4	4	9.1875
18	2	4	4 1/2	9 1/2	15.5625
24	2	5	6	14 3/4	16 1/2
30	3	6	7 1/2	12 1/2	14 3/8
36	3	6	9	16 1/4	18 5/16
42	3	6	10 1/2	20	22 1/4
48	3	6	12	23 3/4	26 1/4
54	3	6	13 1/2	27 1/2	27 3/4
60	3	6	15	31 1/4	31 5/8

ADOPTED 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
ENERGY DISSIPATER DETAIL
SD20 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



WQ POND 1 OUTFALL
100 YEAR VELOCITY AFTER LEVEL SPREADER

MANNING'S EQUATION: $Q = \left(\frac{1.49}{n}\right) A R^{2/3} \sqrt{S}$

n = MANNING'S ROUGHNESS COEFFICIENT
A= AREA OF CHANNEL (FT²)
R= HYDRAULIC RADIUS (FT)
S = SLOPE (FT/FT)
w = WIDTH (FT)
d = NORMAL DETPH (FT)

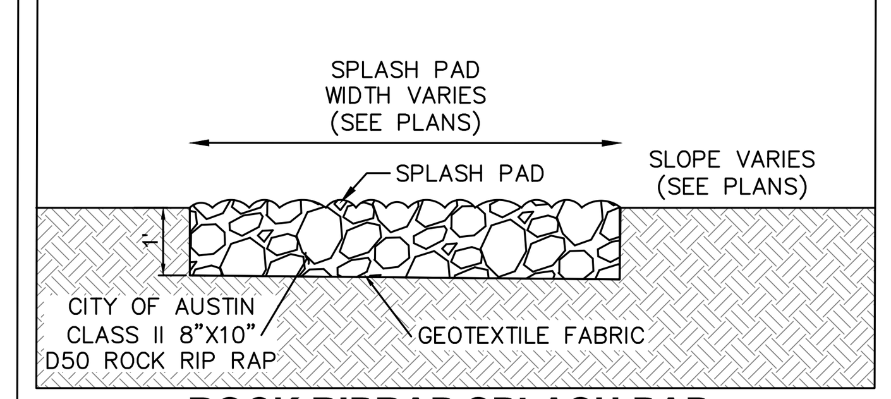
Q =	310.60	CFS
n =	0.069	(6" RIP-RAP)
w =	66	FT
A =	$w \times d$	FT²
R =	$\frac{w \times d}{w + 2d}$	FT
S =	0.02	
CALCULATING FOR d =	1.258	FT
	$V = \left(\frac{Q}{A}\right)$	
V =	3.741	FT/S

WQ POND 1 OUTFALL
25 YEAR VELOCITY AFTER LEVEL SPREADER

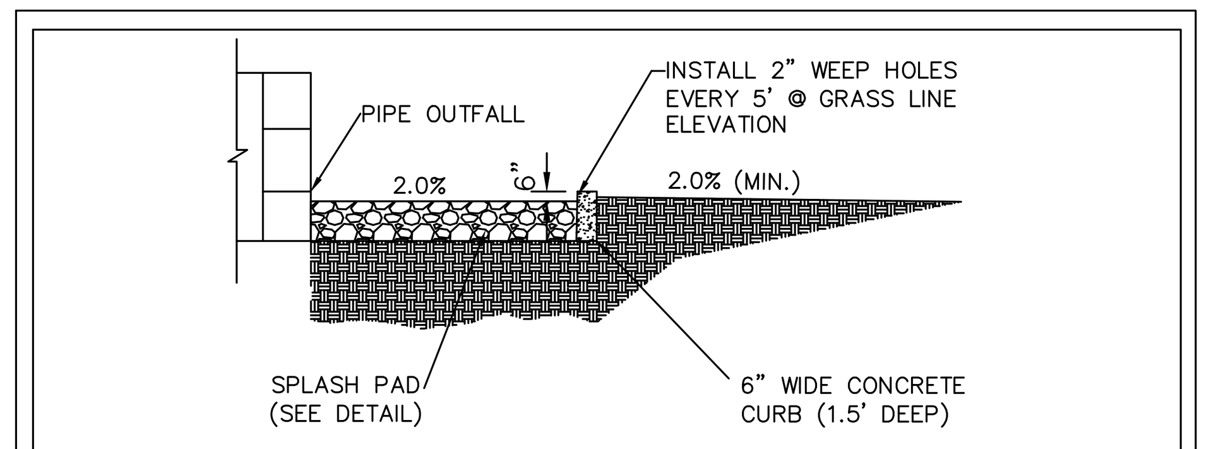
MANNING'S EQUATION: $Q = \left(\frac{1.49}{n}\right) A R^{2/3} \sqrt{S}$

n = MANNING'S ROUGHNESS COEFFICIENT
A= AREA OF CHANNEL (FT²)
R= HYDRAULIC RADIUS (FT)
S = SLOPE (FT/FT)
w = WIDTH (FT)
d = NORMAL DETPH (FT)

Q =	240.55	CFS
n =	0.069	(6" RIP-RAP)
w =	66	FT
A =	$w \times d$	FT²
R =	$\frac{w \times d}{w + 2d}$	FT
S =	0.02	
CALCULATING FOR d =	1.097	FT
	$V = \left(\frac{Q}{A}\right)$	
V =	3.322	FT/S



ROCK RIPRAP SPLASH PAD
N.T.S.



POND OUTFALL LEVEL SPREADER DETAIL
N.T.S.

811 Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — ALEXANDER C. STEADMAN — 138792 — LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

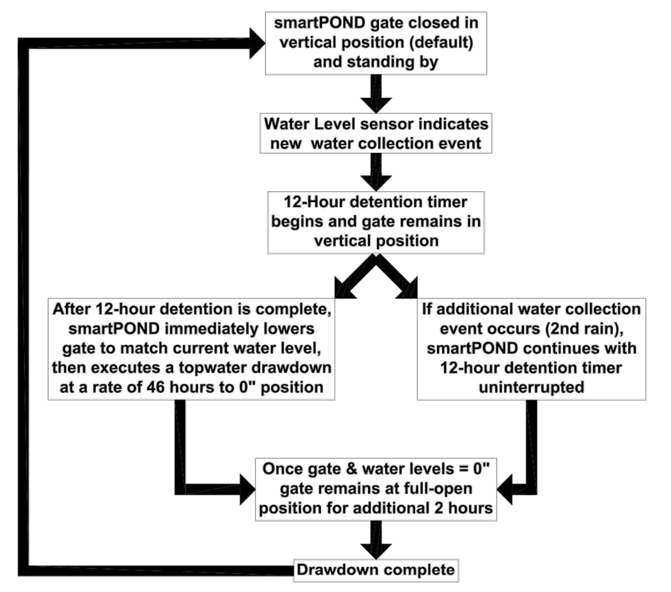
STORM DRAIN DETAILS

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

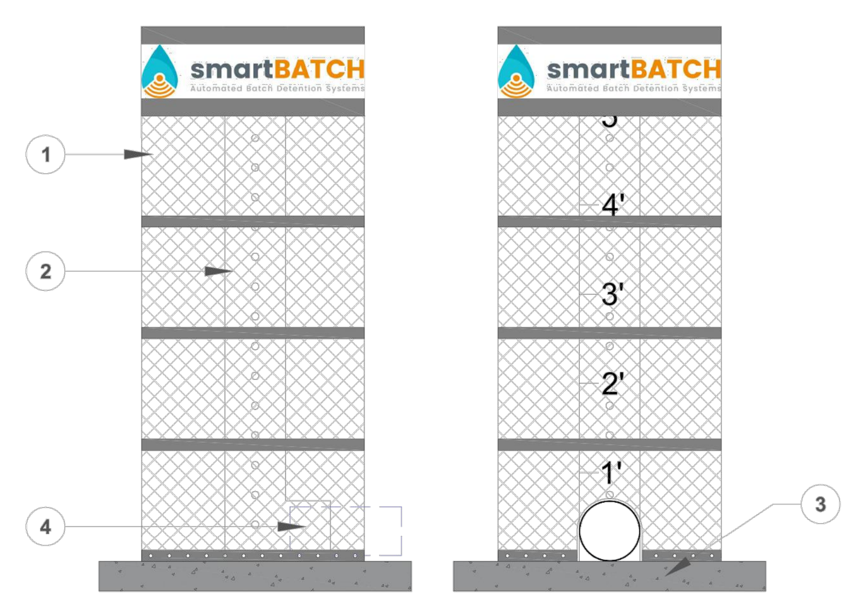
SHEET NUMBER
79
OF 82

2024-9-CON

PROGRAMMABLE LOGIC FLOW CHART

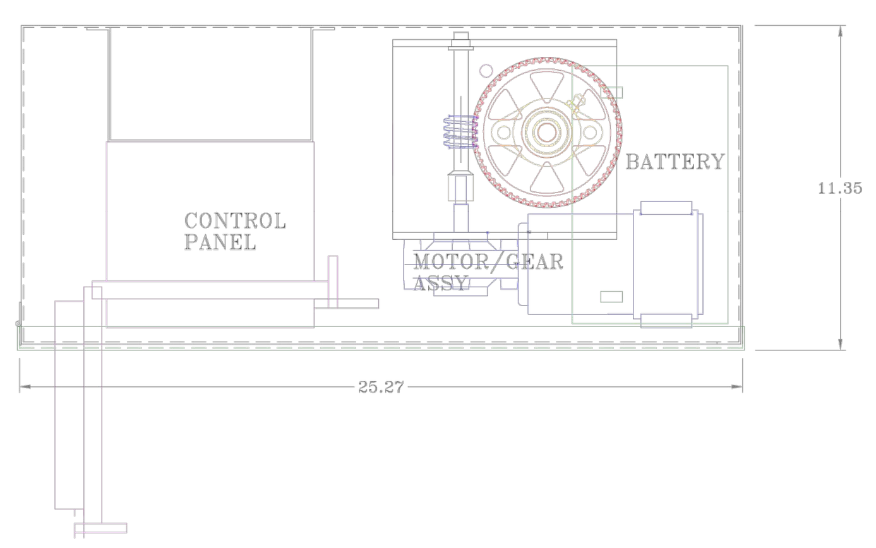


TRASH CAGE WITH PERFORATED RISER PIPE

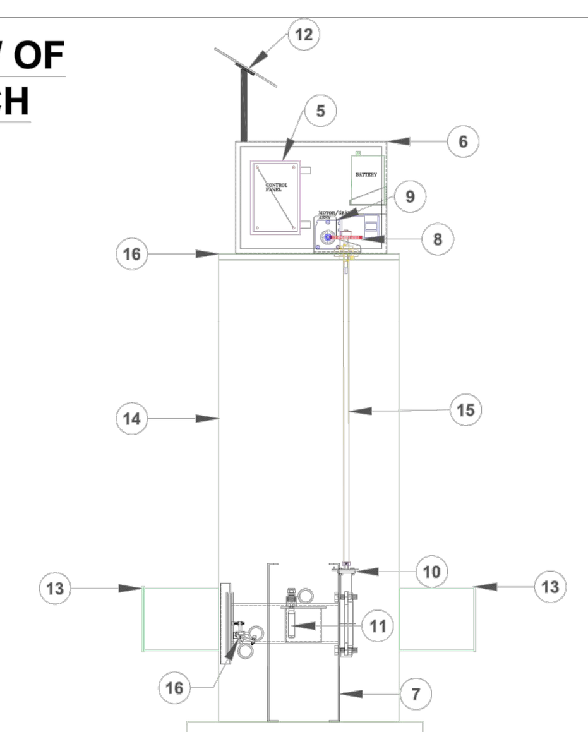


Parts List	
Item	smartPOND Valve Component
1	30" DIAMETER CAGE WITH 1 ½" GALVANIZED MESH SCREEN
2	8" SQUARE PERFORATED TUBING WITH 1" PERFORATION, WITH 4" VERTICAL SPACING ON CENTERS WITH WATER DEPTH MARKER
3	3 ½' X 3 ½' X 4" CONCRETE PAD (BY OTHERS)
4	6" PVC OUTFALL PIPE (BY OTHERS)
5	WEATHERPROOF ELECTRONIC BOX
6	CONTROL BOX
7	PEDESTAL
8	ACTUATOR
9	MOTOR
10	6" VALVE
11	LEVEL TRANSDUCER
12	SOLAR PANEL
13	OUTLET PIPE (BY OTHERS)
14	30" DRAIN BASIN
15	VALVE STEM
16	QUICK DISCONNECT VALVE CONNECTION

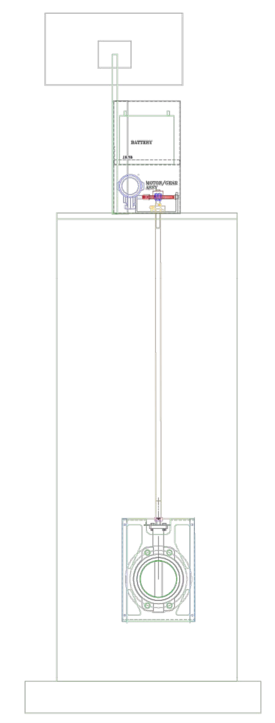
PLAN VIEW OF ENCLOSER



SECTION VIEW OF SMARTBATCH



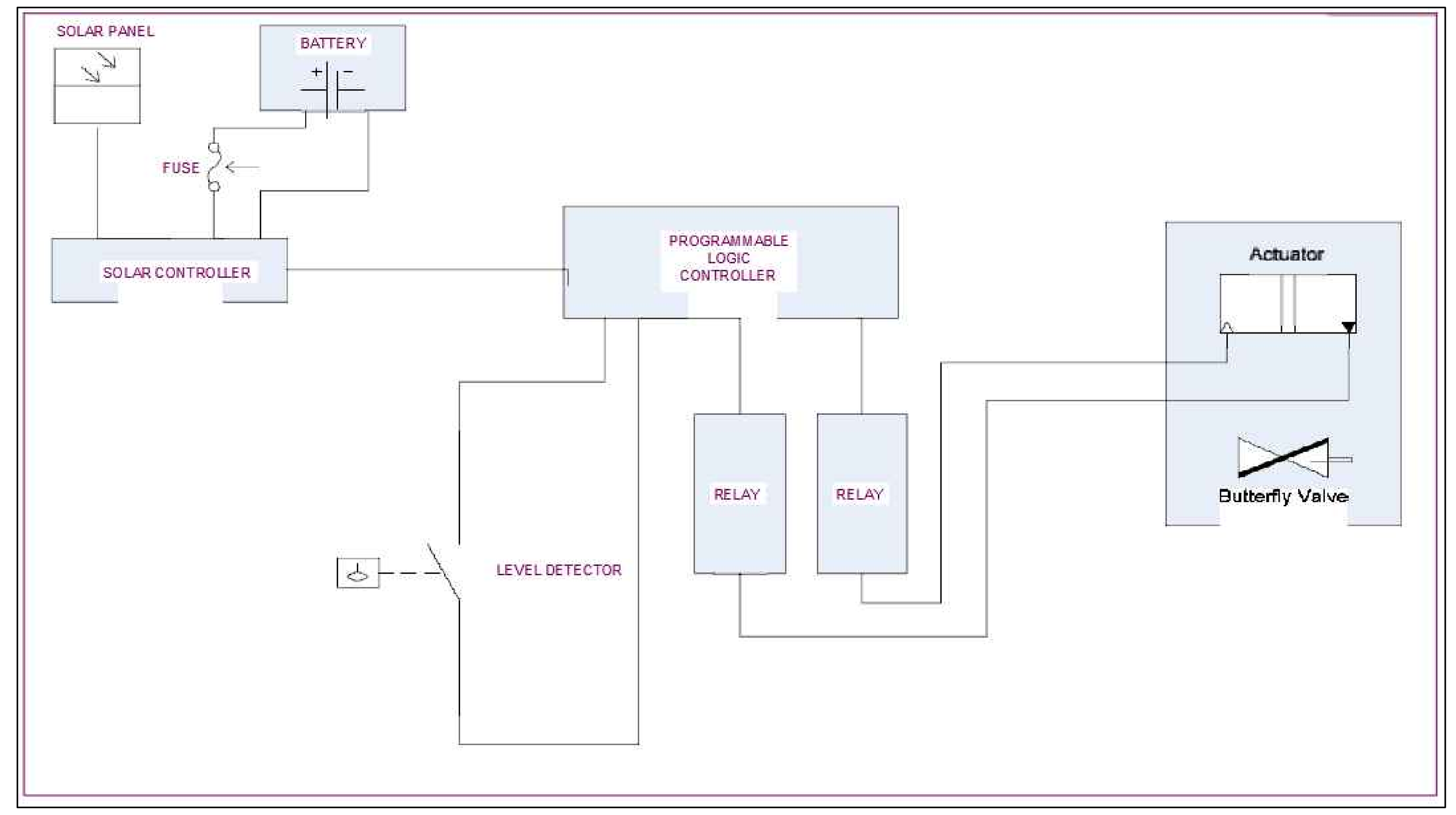
FRONT VIEW OF SMARTBATCH

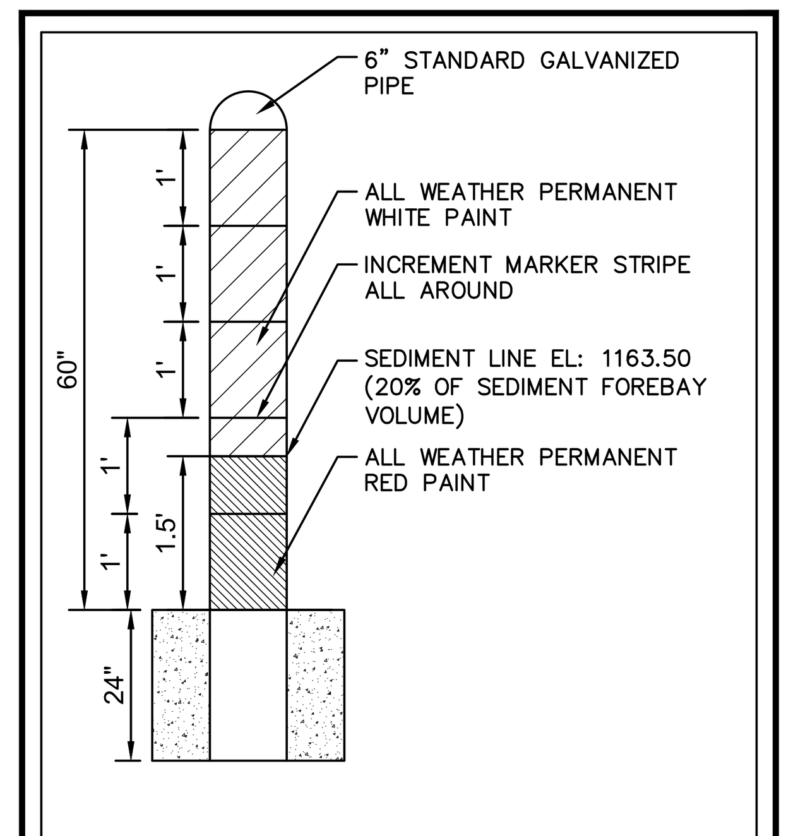


smartBATCH
Automated Batch Detention Systems
FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

CONVERGENT WATER TECHNOLOGIES

CONTROL CIRCUIT BLOCK DIAGRAM

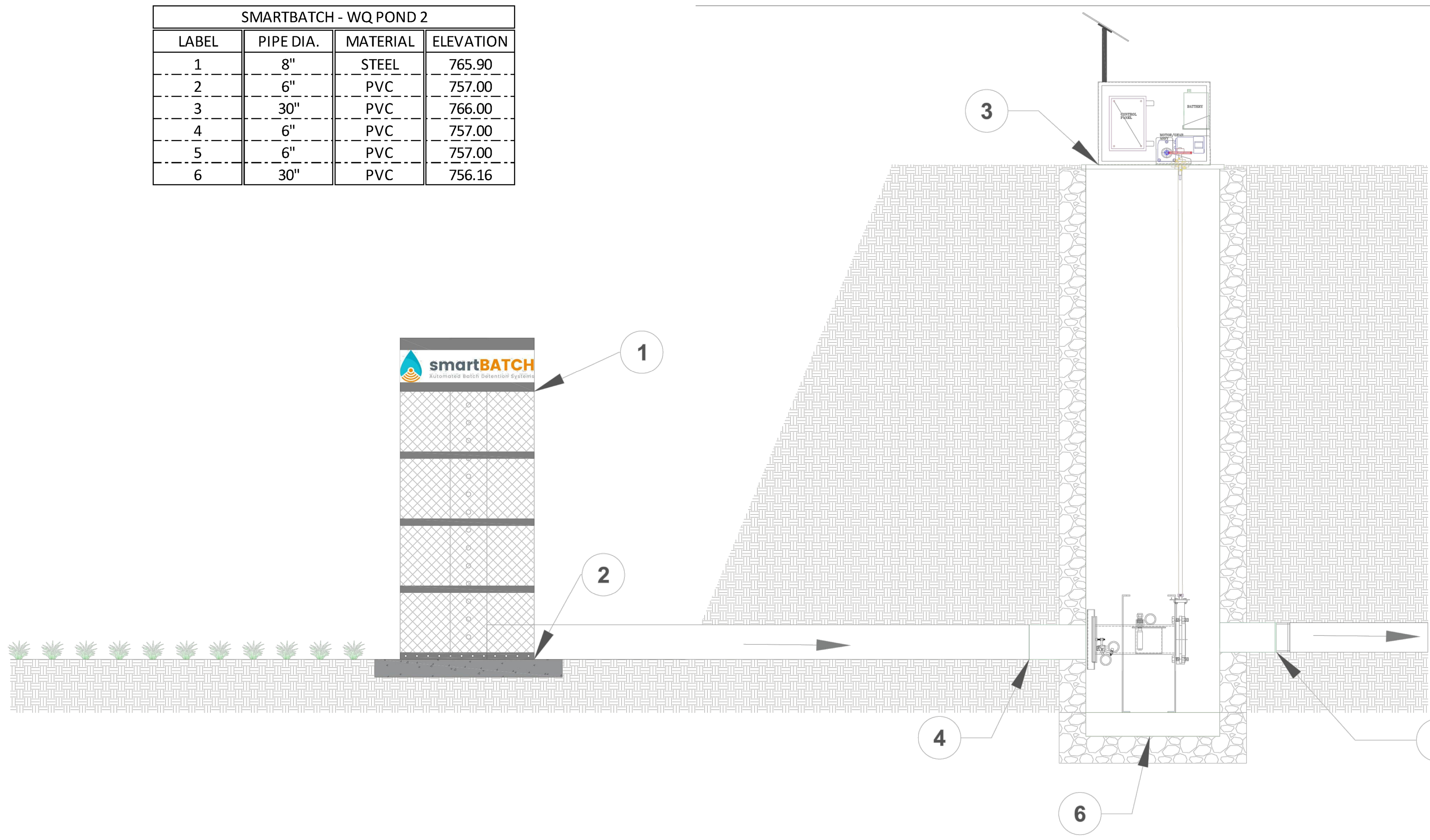




SEDIMENT MARKER

N.T.S.

SMARTBATCH - WQ POND 2			
LABEL	PIPE DIA.	MATERIAL	ELEVATION
1	8"	STEEL	765.90
2	6"	PVC	757.00
3	30"	PVC	766.00
4	6"	PVC	757.00
5	6"	PVC	757.00
6	30"	PVC	756.16



smartBATCH
Automated Batch Detention Systems
FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

CONVERGENT WATER TECHNOLOGIES

smartPOND Valve SPECIFICATION

Continuously Monitored Automated Stormwater System with Valve

1. Introduction
The following specifications describe the components, general functions, and applications of a smartPOND Continuously Monitored Automated Stormwater System (C-MASS) with Valve. The system functions as an electronically controlled, solar powered stormwater management device, providing precision management capabilities and real-time data. Using sensors, solar power, an electronic actuator, and an internet-based control interface, the smartPOND valve connects to a specialized perforated riser inside the stormwater impoundment to enable managers to precisely control water retention and detention automatically or in real time.

2. smartPOND Valve Applications in Stormwater Management
The smartPOND valve is a device for active Stormwater management. As opposed to passive devices such as floating skimmers or stationary weirs, active water management dramatically increases the efficiency and effectiveness of a detention or retention pond. Where a passive stormwater detention system allows water to leave immediately upon collection, the smartPOND valve can detain newly caught Stormwater and allow it to settle for a programmed period before automatically dewatering the impoundment completely. For stormwater retention systems, it is possible to manage the treatment volume while maintaining a specified amount of capacity for flood storage or other use.

2.1 Pre-Programmed Control
Many functions can be pre-programmed without any human interactions, leaving the valve to automatically receive commands based on environmental conditions and respond as programmed.

2.1.1 Batch Detention Function for Stormwater Quality
The smartPOND valve meets TCEQ Batch Detention specifications for a 91% Total Suspended Solid removal rate. The function proceeds as follows. With the valve in the closed position and the impoundment dry, the system will stand by and wait for a water collection event. At the first sign of water collection, the unit will begin a 12-hour detention timer. At the end of the 12-hour detention period, the valve will open and release all of the water that has been collected. After the water level drops to 0", the valve will remain open for an additional 2 hours to facilitate final drainage, then return to the closed position to stand by for the next water collection event.

2.1.2 Predevelopment Hydrograph Function for Flood Control
The smartPOND valve predevelopment hydrograph function takes in site specific variables to determine a maximum release rate based on predevelopment conditions. The valve reads water depth in the pond every 15 minutes to determine the maximum release rate desirable to ensure the impoundment neither overtops, nor exceeds its maximum release based on predevelopment flows.

2.1.3 Hazmat Function for Spill Containment
smartPOND when specified for hazmat spill containment can be equipped with pollutant specific sensors that when triggered automatically close the valve until the command is overridden.

2.2 Real Time Monitoring
smartPOND comes standard with telemetry available on each unit and access to the user app available at no additional cost for 1 year. This option allows for real time monitoring of the unit and the data that comes along with it. From the real time monitoring app, a user can:
- Control the valve, either open or close
- See the water level
- See if trash or debris is surrounding the inlet
- Get maintenance alerts (Low Battery, Valve Failure, Etc.)
- Maintain specified water level

3. Components
The smartPOND valve may be implemented either above or below ground, and is comprised of the following components:

3.1 Hardware and Configuration
The standard smartPOND valve features a cast 6" valve. An extended spool and mounting flange on each side of the valve allows it to be attached to the outfall pipe in various configurations. The valve is actuated with an electric motor connected by an extendable drive shaft for underground applications.

For above ground applications, the entire system including all necessary components for operation assemble into one kit and are housed under a single lockable steel enclosure with the solar panel mounted on top. In this configuration, the unit can be installed on a stable, level pad and be bolted onto the back of the outfall pipe with six ¾" bolts and then switched to the "ON" position.

For underground applications, the valve is installed in a vault or concrete encasement as needed. An extended drive shaft connects between the underground valve and the rest of the components, including the motor and all electronics, which are housed in the lockable steel enclosure directly above ground.

3.2 Electronics and Software Specifications
- **Main board** - The main board of the smartPOND valve's electronics box serves as the main connection terminal for all sensors and additional control boards
- **Motor Controller Board** - The motor controller board of the smartPOND valve regulates the connection between the battery and the motor and receives inputs from the main board to control motor direction. It also powers the main board.
- **Motor** - The smartPOND valve's motor operates on 12-volts and has two wires connecting to the motor controller board. It is mounted on a bracket and connects to the directly to the valve with a driveshaft.
- **Battery** - The smartPOND valve is powered by a 12-volt, 30 amp/hour gel battery. Two terminals at the top connect the power wires to the motor controller board and the solar charge controller to the battery.
- **Solar Panel** - The solar panel of the smartPOND valve is 12-volts with 15 watt charging capability. It connects to a solar charge controller which regulates the voltage and current before connecting with two wires to the positive and negative battery terminals.
- **Sensors**
  - *Pressure Transducer* - The water level sensor is a pressure transducer sensor capable of staying submersed in water indefinitely. It mounts on the side of the smartPOND valve's center spool.
  - *Valve position sensor* - A proximity sensor senses the position of the valve's drive shaft in order to control and determine the position of the valve.
- **(Optional)**
  - *Cell data modem* - A cellular data modem will be required for real time control and alert options as well as predevelopment hydrograph functions.
  - *Hydrocarbon Sensor* - This optional sensor may be fitted to the smartPOND valve to perform specific functions based on the presence of hydrocarbon contamination.

4. Real Time Monitoring Interface (optional)
If the real time monitoring option is selected, the smartPOND valve may be monitored in real time through the Autoflow app. Live and historical data from each unit may be viewed in the app, as well as alerts (detailed in section 5).

4.1 Accessing unit data
To access live and historical data in the Autoflow app, select the unit of interest on the home page by clicking on the unit's name. From there, select the "Data" button, and the data page for that unit will be displayed.

4.2 Sending a command
To send a remote-control command to the SmartPOND valve, click the "Send New Command" button on the unit's home page. The unit's current position will be displayed at the top. To change the unit's position, simply select "OPEN" or "CLOSE". Within 1-3 minutes, the unit will move to the new position and update its status in the app.

5. Alerts
The smartPOND valve will indicate the following alerts by illuminating an exteriorly visible red LED light
- Low battery
- Loss of function
- Valve malfunction
- Hydrocarbon contamination (optional)

If the telemetry option is selected, the unit will upload the above alerts to the Autoflow app and notify the operator via text or email.

6. In Case of Failure
To bypass the smartPOND valve's normal automated functions and control the valve position in case of failure:

6.1 Removal of motor and manual direct control
In case of a total electronic or motor failure, the motor and motor bracket can be uninstalled together by removing the two bolts at the bottom of the motor bracket. With the motor and motor bracket removed, the output shaft on the butterfly valve can be manually controlled with a socket wrench, or any other tool that can grip the output shaft.

7. Additional Components List

7.1 Perforated Riser
The smartPOND valve system includes a stackable perforated steel riser which installs on the inlet side of the outfall pipe within the impoundment area. The perforated riser features an 8-inch steel perforated square tube within a 24" round steel mesh tube. At the bottom of the 8-inch square tube, there is a female threaded fitting for a six inch PVC outfall pipe to connect. The steel tube is perforated with 1-inch holes every 4" on center to the height of the impoundment.

7.2 Trash Cage
The trash cage attaches to the perforated riser with a coupling and calder pin. The trash cage will be comprised of steel banding and a 1.5" x 1.5" mesh to prevent floatable's and other contaminants from entering and clogging the perforated riser. The trash cage will sit 0.5" above the bottom of the impoundment to allow the last 0.5" out of the impoundment.

7.3 Valve Stem Extension
The drive shaft/valve stem of the smartPOND system may be extended to any length necessary for instances where the valve will be in an underground vault or manhole. The valve stem will connect the valve to the above ground controls.

8. Maintenance

8.1 Grease
The smartPOND valve includes a grease fitting on the valve itself which should be greased twice per year. It is also recommended that a thick, mildly heat-resistant grease be used to avoid grease melting out of the groove in warmer temperatures.

8.2 Flange Bolts
There are 6 bolts connecting the smartPOND valve's flange to the outfall pipe or fixture. During routine maintenance intervals, these bolts should be checked for tightness. All bolts should be tightened evenly.

8.3 Perforated Riser
Silt, sediment, and debris can build up around the perforated riser with time. An annual inspection of the unit is necessary to ensure that excess debris or sediment has not limited the drainage capacity of the perforated riser. To access the perforated riser for maintenance, lift the trash cage off of the riser, dig out any accumulated sediment, and clear all perforations.

8.4 Trash Cage
As a part of routine maintenance, it is advisable to remove trash and debris that has accumulated on the trash cage and properly dispose.

8.5 Solar Panel
On all inspection visits, it is necessary to confirm that the solar panel is facing south and is well secured. The solar panel is commonly utilized by birds and insects. It is important to keep the surface clean of bird litter, insect nests and debris in order to maintain optimal performance.

8.6 Battery
Over time, battery terminals may corrode. Check annually for corrosion and clean as needed. The battery should be replaced every 4 to 6 years.

8.7 Storage
The smartPOND valve is shipped in a near-fully assembled configuration and should be stored likewise. The systems are transported and stored on pallets and must remain secured via straps or steel bands to said pallet at all times. The solar panel is not installed at times of transport or storage and should not be installed until the unit is ready to begin operation. The battery may be stored inside the electronics box and if removed, should never be stored on a concrete surface.

9. Installation
The smartPOND valve can be installed in a near-completely assembled configuration. Only the solar panel should be removed during the installation process. There are several ways to install the smartPOND valve with the key being structured support.

9.1 Structural Support
If the smartPOND valve is mounted to a steel pipe in an above ground/fully assembled configuration, the weight of the unit may be supported by the steel pipe. For plastic or concrete pipes, it is recommended that the weight of the unit be supported by either a concrete pad or steel frame. For below ground installations, the upper unit (electronics and actuator) should be fastened to the surface of the concrete vault. For vault installations, see design details for standard vault design.

10. Important Safety Information and Warnings:
- Always keep hands clear of the valve and motor when unit is in operation.
- Turn the power switch off when doing any electrical work.
- Do not enter the water when the device is actively draining water
- Always use proper PPE and confined space protocol when servicing a valve beneath ground.

11. PRODUCTS
Manufacturer/Supplier/Reseller shall be an established stormwater company that has at least 5 installations of automated stormwater management devices that have been in use and functional for the past 3 or more years.

A. Acceptable smartPOND Valve
"smartBATCH" Automated Batch Detention System
"smartPOND" Automated Detention System

B. Acceptable System Supplier
Convergent Water Technologies, Inc.
(800)711-5428
www.convergentwater.com

C. Authorized Value Added Reseller
Construction EcoServices
(800)456-1000
www.ecosvs.com

12. Quality Assurance and Performance Specifications
The quality of all system components and all other appurtenances and their assembly process shall be subject to inspection upon delivery of the system to the work site.Installation is to be performed only by skilled work people with satisfactory record of performance on earthworks, pipe, welding, chamber, or pond/landfill construction projects of comparable size and quality.

NOTE: ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

smartPOND Automated Stormwater Control.
FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES 832-456-1000 www.ecosvs.com

smartPOND Valve
Specifications

REVISION NO. 0
DATE 5/26/2020
SHEET NO.

Know what's below. Call before you dig.

WARNING: CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

TBM# 101 " X " SET IN HEADWALL OF CULVERT LOCATED IN THE MEDIAN OF STATE HIGHWAY AND BUNNET LANE.
ELEVATION =821.82 FEET (AS SHOWN)

No.	REVISIONS	DATE	BY

Kimley-Horn

10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
ALEXANDER C. STEADMAN
138792
LICENSED PROFESSIONAL ENGINEER

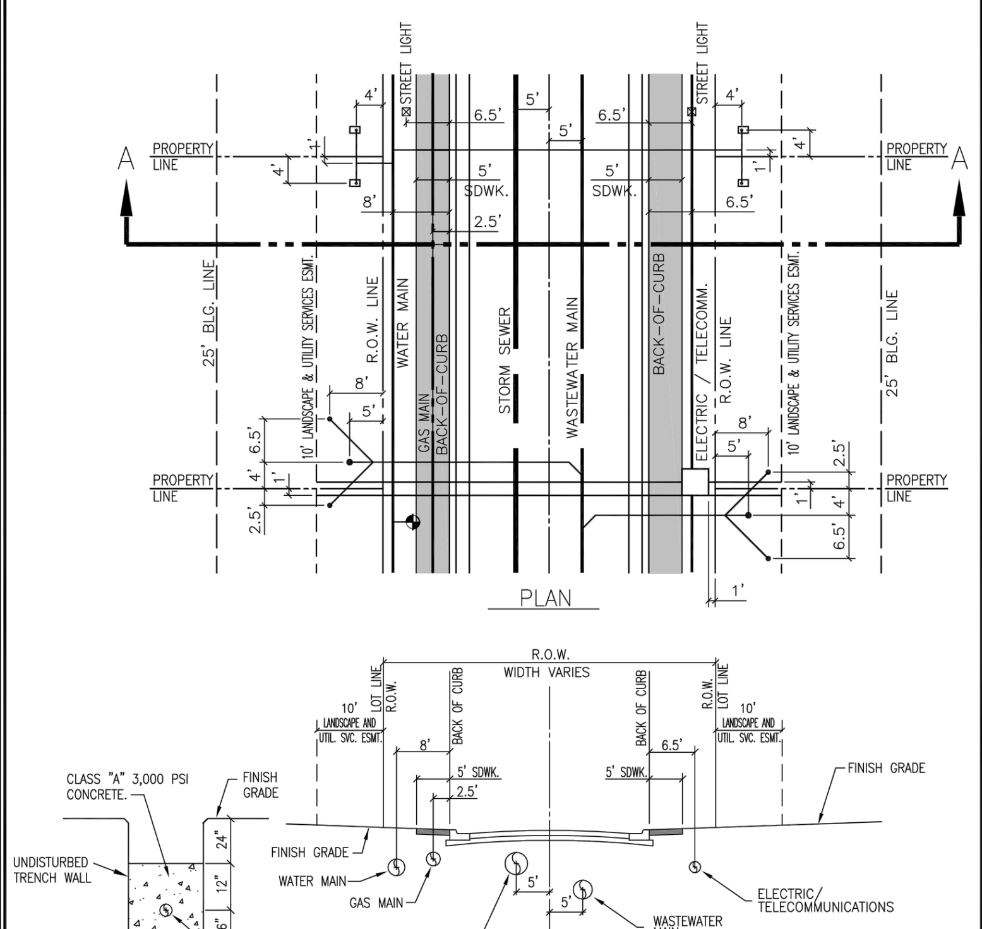
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER QUALITY DETAILS

BERRY CREEK HIGHLANDS PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
80
OF 82

2024-9-CON



NOTE: WHEN CROSSING A WATER MAIN, THE ELECTRIC CONDUIT MUST BE ENCASED WITH 3,000 PSI RED CONCRETE FOR FIVE (5) FEET BOTH SIDES FROM THE CROSSING POINT.

ELECTRIC CONDUIT CONCRETE ENCASEMENT DETAIL

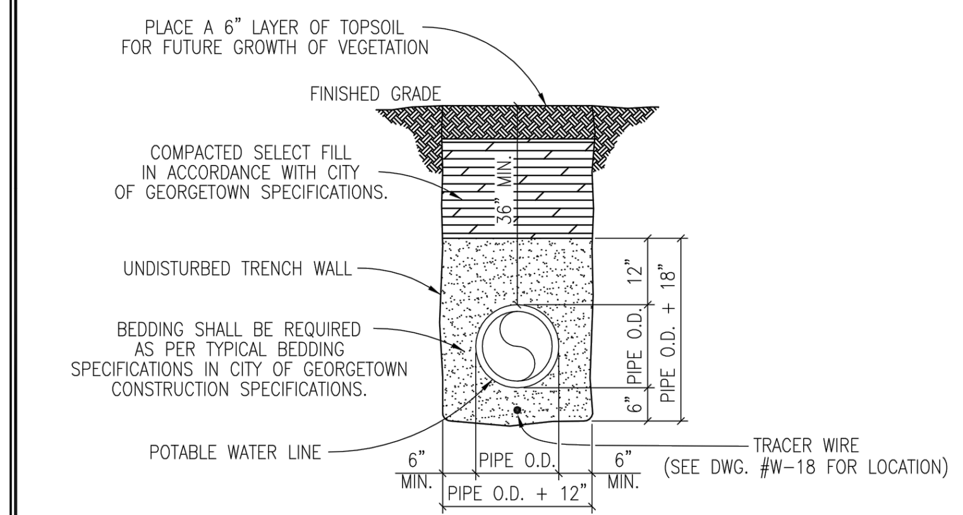
MINIMUM COVER BELOW FINISH-GRADE ALL UTILITIES UNDER ROADWAY - 36"	
ELECTRIC PRIMARY	36"
ELECTRIC SECONDARY	24"
WATER	36"
WASTEWATER	48"
STORM SEWER	36"
GAS	36"
TELECOMMUNICATIONS	36"

CLASSIFICATION	ROW	B-B	PVMT.
LOCAL STREET	50'	28'	24'
RESIDENTIAL STREET	65'	37'	33'
MAJOR COLLECTOR	73'	45'	41'

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
UTILITY ASSIGNMENTS FOR LOCAL STREETS, RESIDENTIAL COLLECTORS AND MAJOR COLLECTORS
W01A — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

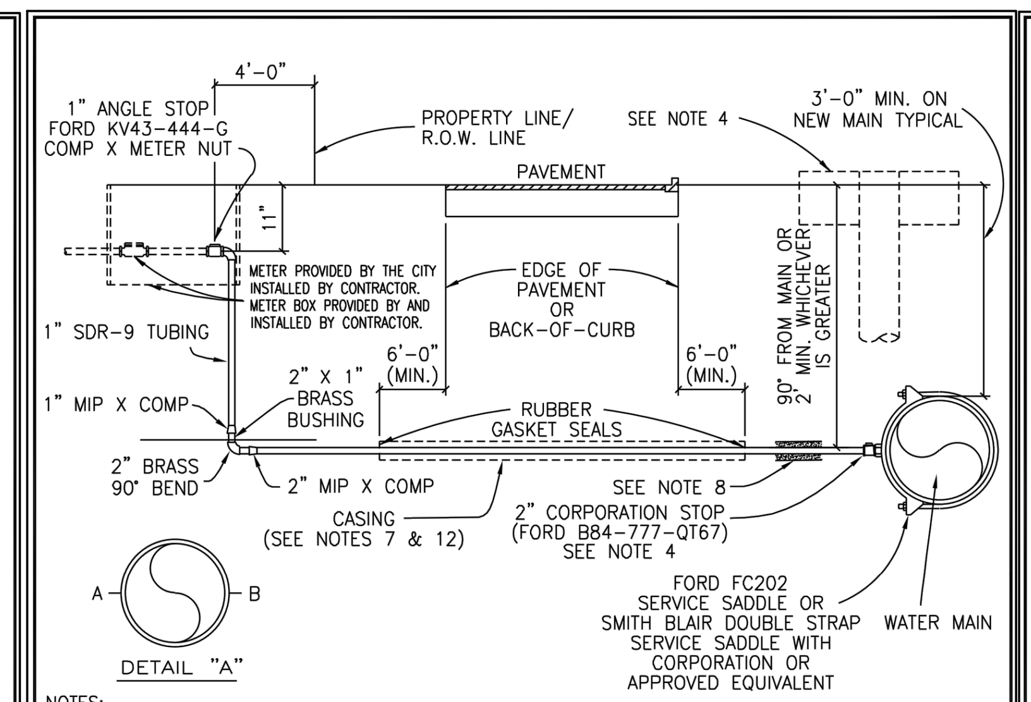


TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER 1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER 2'-0" + PIPE O.D.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TRENCH AND EMBEDMENT DETAIL UNDER NON-PAVED AREAS
W02 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

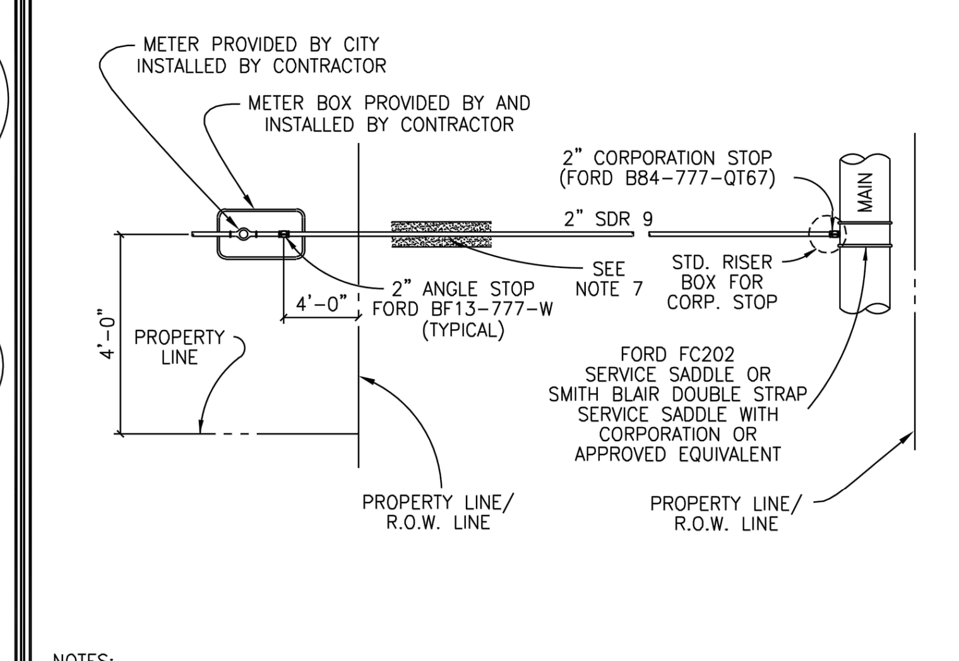


NOTES:
1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" OFFSET AND AT THE CENTERLINE AS SHOWN ON DETAIL "A".
2. WHERE NO SIDEWALK EXISTS, METER BOXES SHALL BE SET TO CONFORM TO FINISHED GRADE.
3. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
4. ROTATE THE CORPORATION STOP SO THAT THE OPERATING NUT IS ACTUATED FROM THE VERTICAL POSITION RATHER THAN THE HORIZONTAL. SEE STD. RISER FOR CORP. STOP DETAIL, (DWG # W08).
5. SERVICE LINES SHALL BE CONTINUOUS FROM CORPORATION STOP TO CORPORATION STOP WITH NO FITTINGS IN BETWEEN.
6. SERVICE CASING SHALL NOT BE INSTALLED BY WATER JETTING UNDER ROADWAY.
7. CASING REQUIRED FOR ALL PAVEMENT CROSSINGS. 4" SDR-26 REQUIRED FOR OPEN-CUT. STEEL CASING PIPE REQUIRED FOR JACK AND BORE. LIMITS OF CASING SHOULD EXTEND SIX FEET BEYOND THE EDGE OF PAVEMENT OR BACK-OF-CURB.
8. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. METER BOX TO BE CAPABLE OF HOUSING ITRON AUTOMATIC METER READING DEVICE. USE DFW-PLASTICS, INC. PART NO. 1200.SBAMR OR APPROVED EQUAL.
11. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY. SEE DETAIL W23.
12. CASING SHALL EXTEND OUT TO WITHIN 4' INSIDE OF THE R.O.W. LINE, ON BOTH SIDES.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 01/23/2013

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TYPICAL WATER SERVICE-ELEVATION
W03 — SCALE: NTS — DATE: 1/2013 — DRAWN BY: - — APPROVED BY: MH

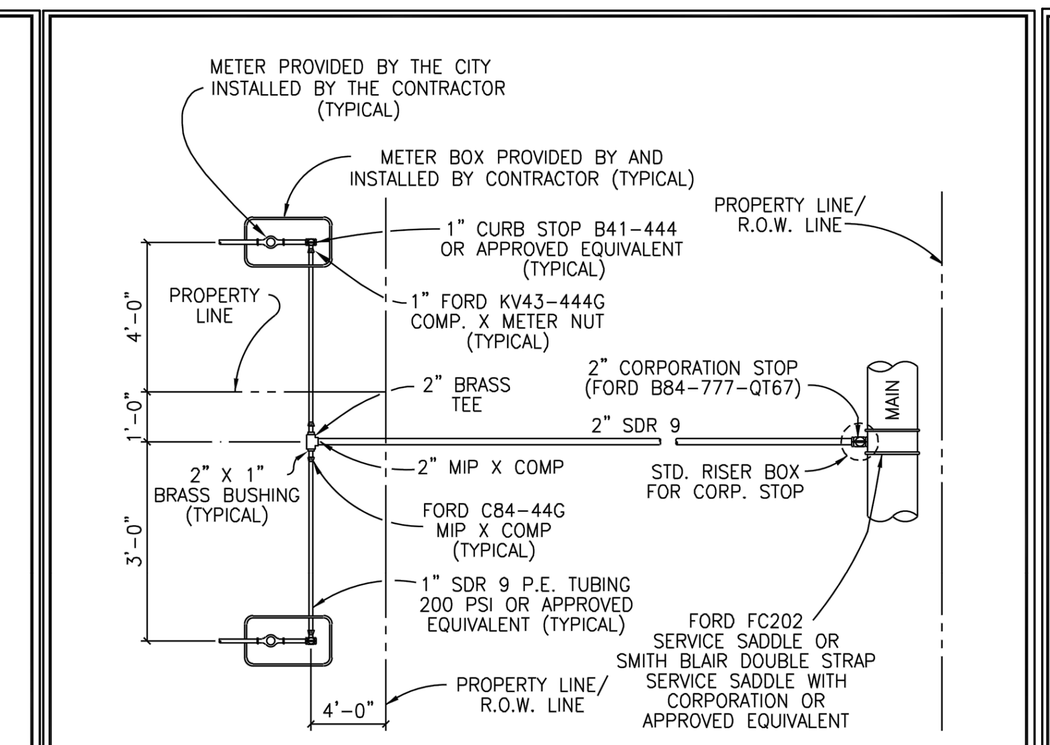


NOTES:
1. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
2. ANGLE STOP SHALL BE 1" MINIMUM.
3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.
4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE.
6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.
7. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 01/23/2013

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
SINGLE WATER SERVICE PLAN
W04 — SCALE: NTS — DATE: 1/2013 — DRAWN BY: - — APPROVED BY: MH

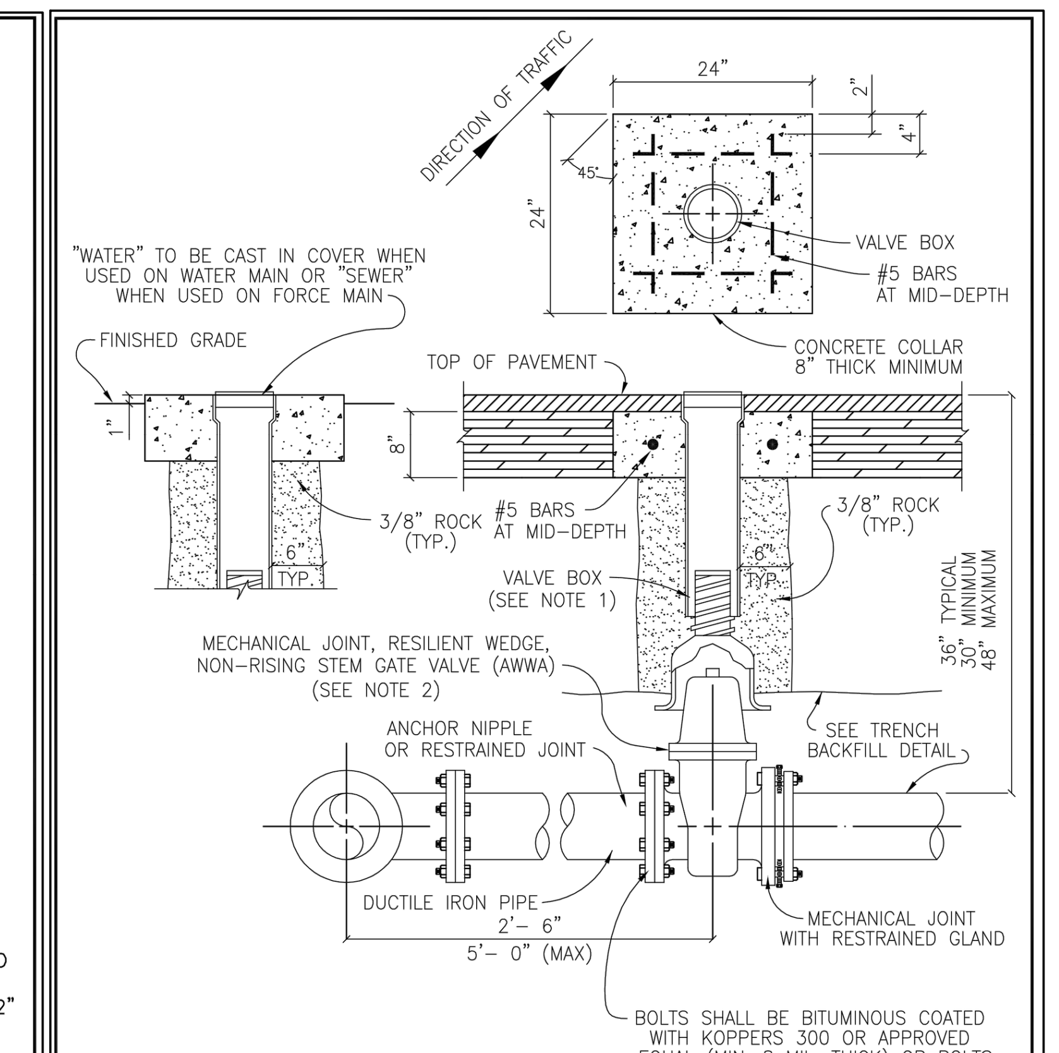


NOTES:
1. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
2. ANGLE STOP SHALL BE 1" MINIMUM.
3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.
4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE.
6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.
7. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 01/23/2013

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
DOUBLE WATER SERVICE PLAN
W05 — SCALE: NTS — DATE: 1/2013 — DRAWN BY: - — APPROVED BY: MH

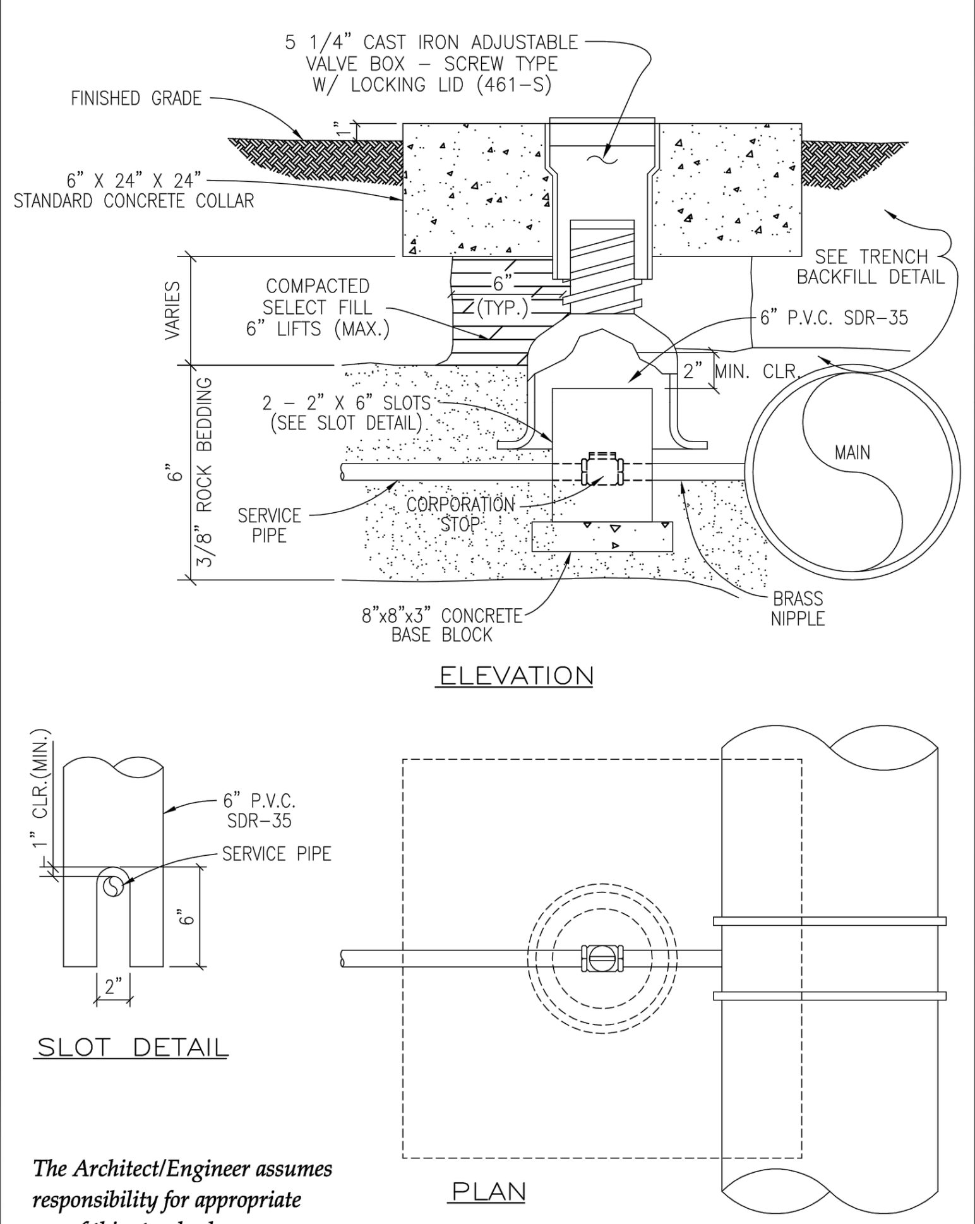


NOTES:
1. VALVE BOX SHALL BE 5 1/4" CAST IRON ADJUSTABLE HAVING AN ADJUSTABLE RANGE OF + OR - 6 INCHES FROM INSTALLED FINISH GRADE.
2. ACCEPTABLE GATE VALVES ARE:
   A. AMERICAN FLOW CONTROL - SERIES 2500
   B. MUELLER - 2360 SERIES
   C. CLOW

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

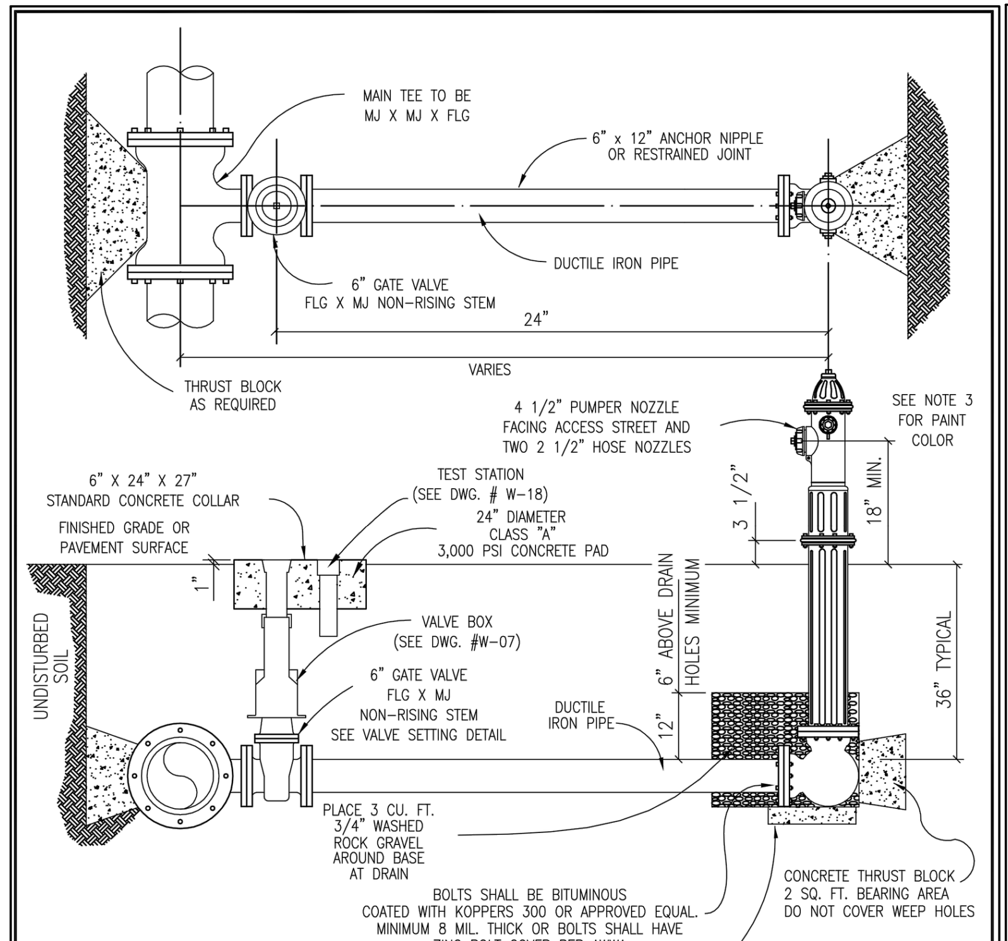
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TYPICAL VALVE SETTING
W07 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD RISER BOX FOR CORPORATION STOP
W08 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

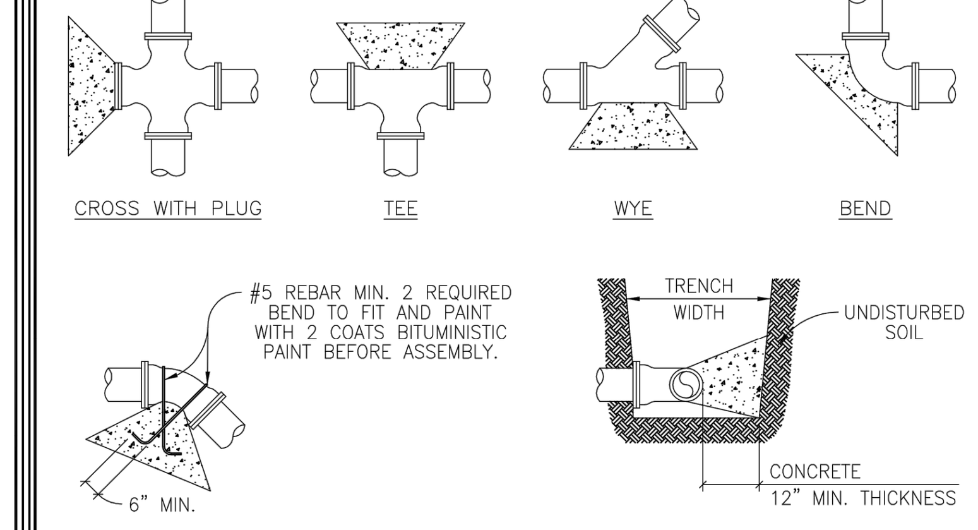


NOTES:
1. FIRE HYDRANT SHALL BE INSTALLED ON SAME SIDE OF ROAD AS WATER MAIN.
2. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE.
3. ALL FIRE HYDRANT EXTERIORS SHALL BE FACTORY PRIMED AND PAINTED SILVER USING A HIGH GRADE ENAMEL.
4. HEEL AND THRUST BLOCKS TO REST IN UNDISTURBED SOIL.
5. THE ONLY FIRE HYDRANTS ACCEPTABLE ARE:
   A. KENNEDY - K81
   B. AMERICAN DARLING - B84B
   C. CLOW MEDALLION
6. DOUBLE BLUE REFLECTOR "HYE-LITES" BRAND, MANUFACTURED BY PAVEMENT MARKERS INC. TO BE INSTALLED AT CENTERLINE OF STREET PERPENDICULAR TO HYDRANT.
7. ALL METALLIC PIPES AND FITTINGS SHALL BE WRAPPED WITH 8 MILL. POLYETHELENE FILM.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TYPICAL FIRE HYDRANT INSTALLATION
W10 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



ALL THRUST BLOCKS SHALL BE FORMED. LAID FORMS SHALL BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO THE POURING OF CONCRETE AND SHALL ALSO BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO COVERING. TYPICAL LOCATIONS WHICH REQUIRE CONCRETE REACTION (THRUST) BLOCKS, FOR PRESSURE MAINS FOUR INCHES (4") AND GREATER. CONCRETE SHALL HAVE 2,500 P.S.I. MINIMUM STRENGTH AT TWENTY EIGHT (28) DAYS AND BEAR AGAINST UNDISTURBED STABLE SOILS, AREA OF CONTACT SHALL BE GOVERNED BY PIPE SIZE, MAXIMUM PRESSURE IN PIPE, AND BEARING CAPACITY OF SOIL. PROTECT FITTINGS, BOLTS, ETC. BY COVERING WITH VISQUEEN OR OTHER ACCEPTABLE MATERIAL. CONCRETE SHALL BE A MINIMUM OF TWELVE INCHES (12") THICK.

PIPE SIZE	THRUST BLOCK AREA REQUIRED	PIPE SIZE	THRUST BLOCK AREA REQUIRED	REMARKS
4"	2.0 SQ. FT.	18"	30.0 SQ. FT.	VALUES ARE FOR 90° BENDS, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. PLUS 33% SAFETY FACTOR FOR OTHER SOILS AND PRESSURES, THE AREA REQUIRED IS IN DIRECT PROPORTION.
6"	4.0 SQ. FT.	20"	37.0 SQ. FT.	
8"	6.6 SQ. FT.	24"	53.0 SQ. FT.	
10"	10.0 SQ. FT.	27"	80.0 SQ. FT.	
12"	14.0 SQ. FT.	30"	98.0 SQ. FT.	
14"	18.0 SQ. FT.	36"	127.0 SQ. FT.	
16"	24.0 SQ. FT.			

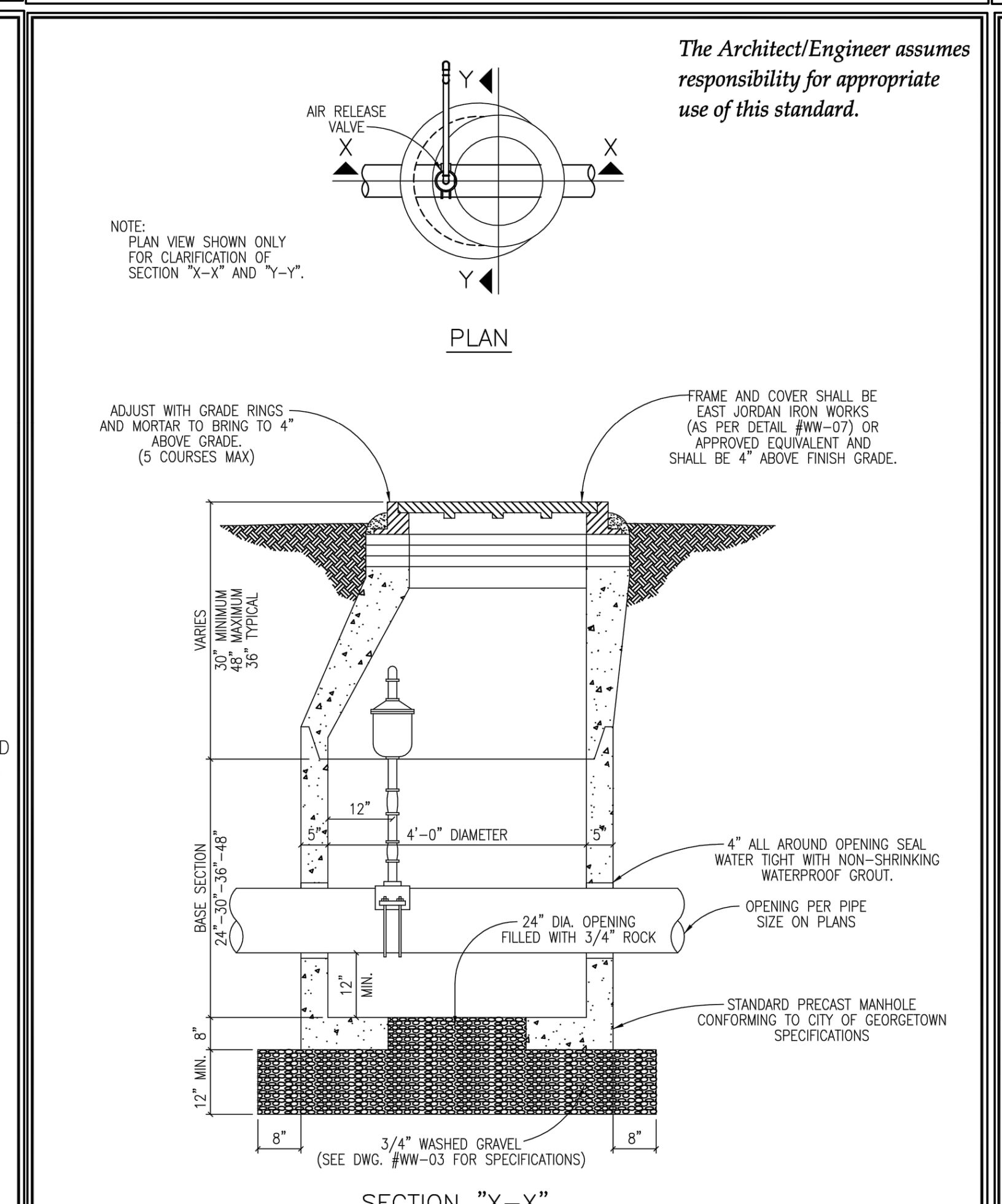
* THE ENGINEER OF RECORD SHALL CALCULATE THE SIZE OF THE DEADMAN REQUIRED AS WELL AS ANY INSTALLATION WHICH IS NOT COVERED BY THE ABOVE.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

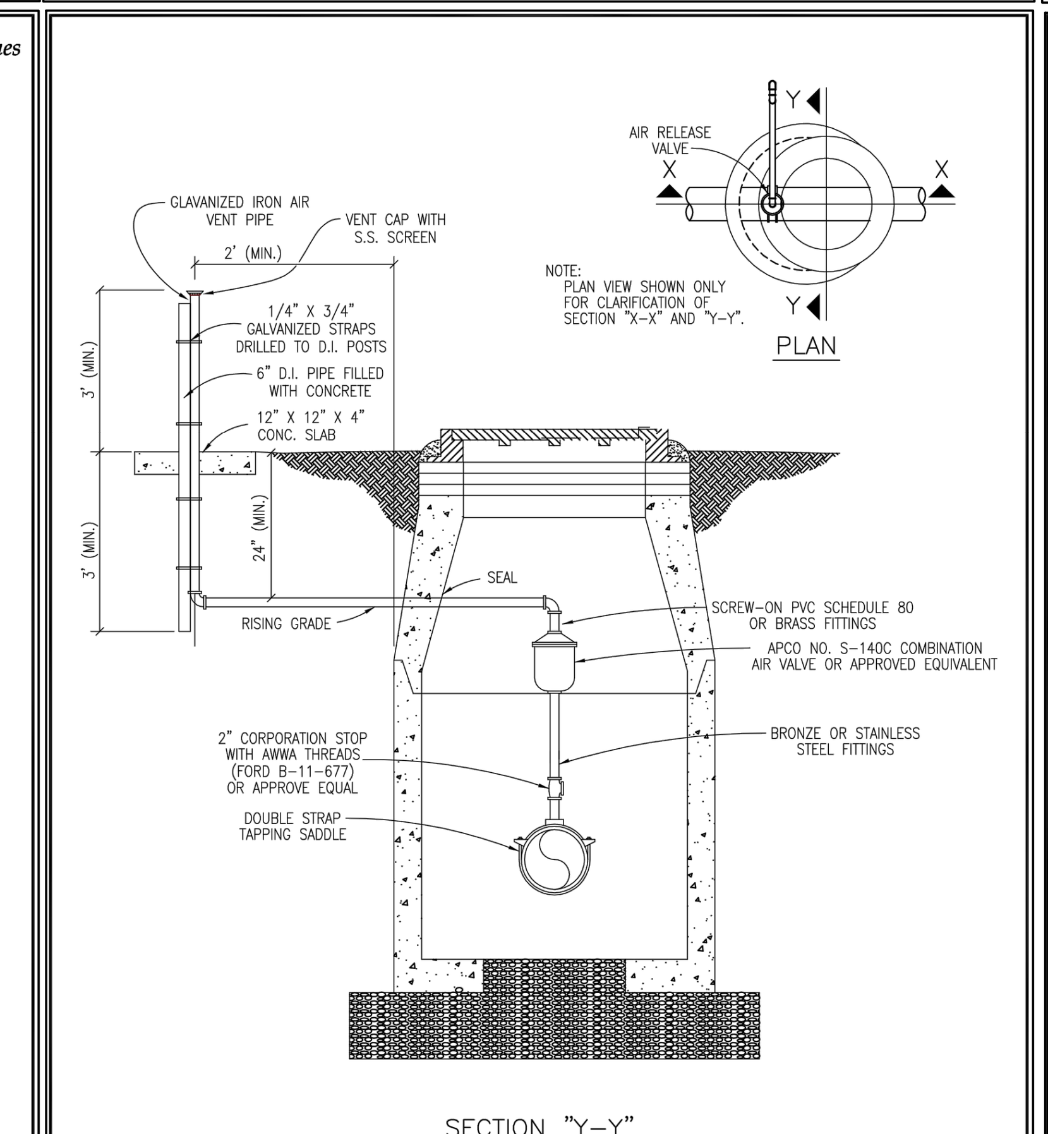
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TYPICAL THRUST BLOCKS FOR WATER AND FORCE MAIN
W11 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

The Architect/Engineer assumes responsibility for appropriate use of this standard.



ADOPTED 6/21/2006

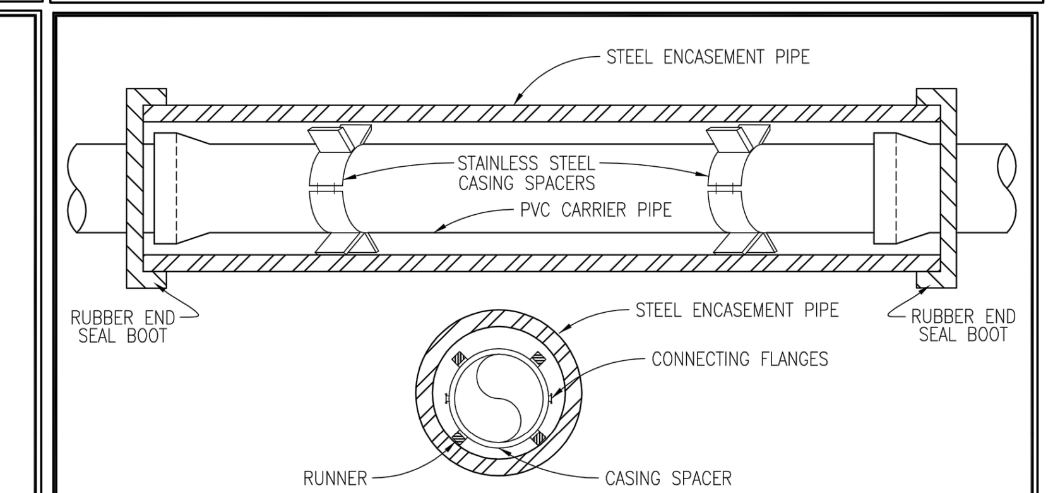
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD AIR RELEASE VALVE FOR WATER MAIN
W12 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
STANDARD AIR RELEASE VALVE FOR WATER MAIN
W13 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



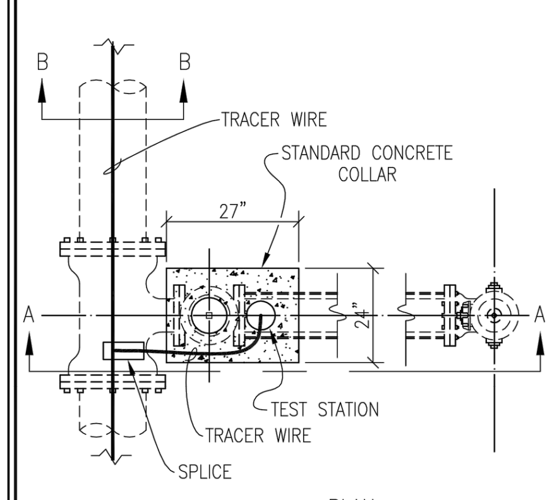
NOTES:
1. CASING SPACERS SHALL BE BOLT ON STYLE WITH A SHELL MADE IN TWO SECTIONS OF HEAVY T-304 STAINLESS STEEL. CONNECTING FLANGES SHALL BE RIBBED FOR EXTRA STRENGTH. CASING SPACERS SHALL BE MADE BY CASCADE WATERWORKS MFG. CO. OR APPROVED EQUAL.
2. CASING SPACERS SHALL HAVE RUNNERS MADE OF ULTRA HIGH MOLECULAR WEIGHT POLYMER, WITH A MINIMUM HEIGHT OF 2 INCHES.
3. DO NOT USE WEDGES BETWEEN TOP OF PVC CARRIER PIPE AND INSIDE OF CASING TO KEEP PVC FROM MOVING.
4. PRIOR TO INSERTING PVC CARRIER PIPE, ANY WATER SHOULD BE PUMPED OUT OF THE CASING PIPE SO THAT NO MORE THAN A FEW INCHES OF WATER REMAINS.
5. SPACERS WILL BE REQUIRED WITHIN AT LEAST 3 FEET FROM BOTH OPENINGS OF THE ENCASEMENT PIPE AND SPACED NO GREATER THAN 6 FEET THROUGHOUT THE ENCASEMENT PIPE.
6. ENCASEMENT PIPE SHALL BE SMOOTH STEEL 35,000 PSI YIELD STRENGTH WITH THICKNESS ACCORDING TO THE FOLLOWING TABLE:
7. WHEN CASING IS REQUIRED UNDER PAVEMENT WITHIN THE R.O.W., THE CASING SHALL EXTEND OUT TO WITHIN 4' INSIDE OF THE R.O.W. LINE, ON BOTH SIDES.
8. ALL JOINTS SHALL BE RESTRAINED ON PVC CARRIER PIPE.

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

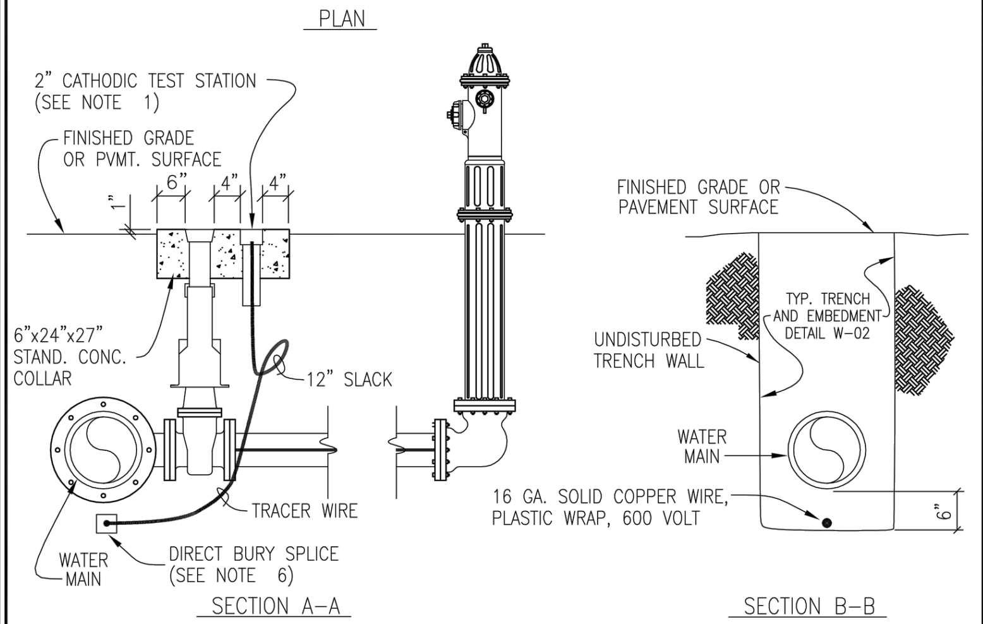
The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
INSTALLATION OF P.V.C. PIPE THROUGH CASING
W14 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



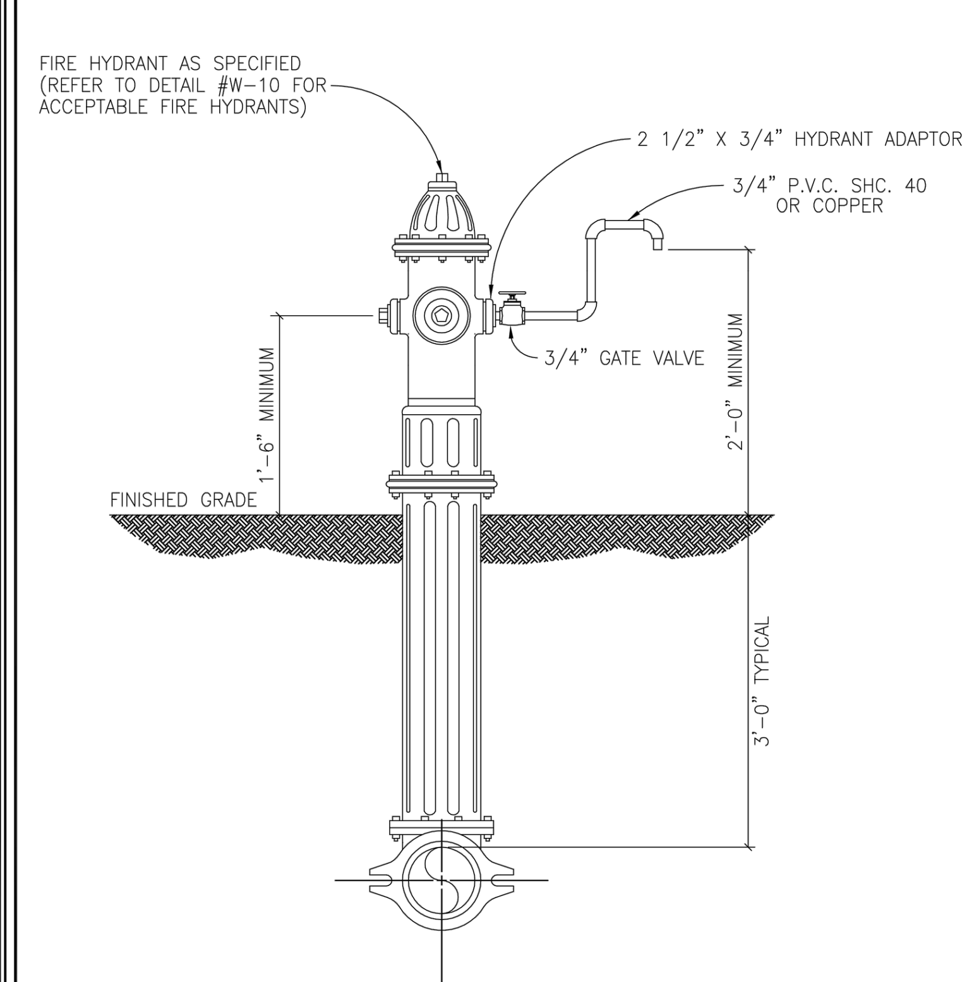
NOTES:
1. TEST STATION SHALL BE HANDLEY INDUSTRIES INC. - 2 INCH CATHODIC TEST STATIONS OR APPROVED EQUAL.
2. THE 15" ABS PLASTIC BOX SHALL BE A FLANGED TOP FOR INSTALLATION AT GROUND LEVEL.
3. ALL TERMINALS ARE TO BE MADE OF SOLID BRASS.
4. PLASTIC LIDS SHALL BE COLOR BLUE AND MARKED "WATER".
5. TEST TERMINALS ARE TO BE INCORPORATED WITH HANDLEY VALVE BOXES.
6. BURY SPLICE SHALL BE 3M DIRECT BURY SPLICE (DBR) OR APPROVED EQUAL.
7. TEST STATIONS SHALL BE INSTALLED AT EACH FIRE HYDRANT LOCATION.



The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

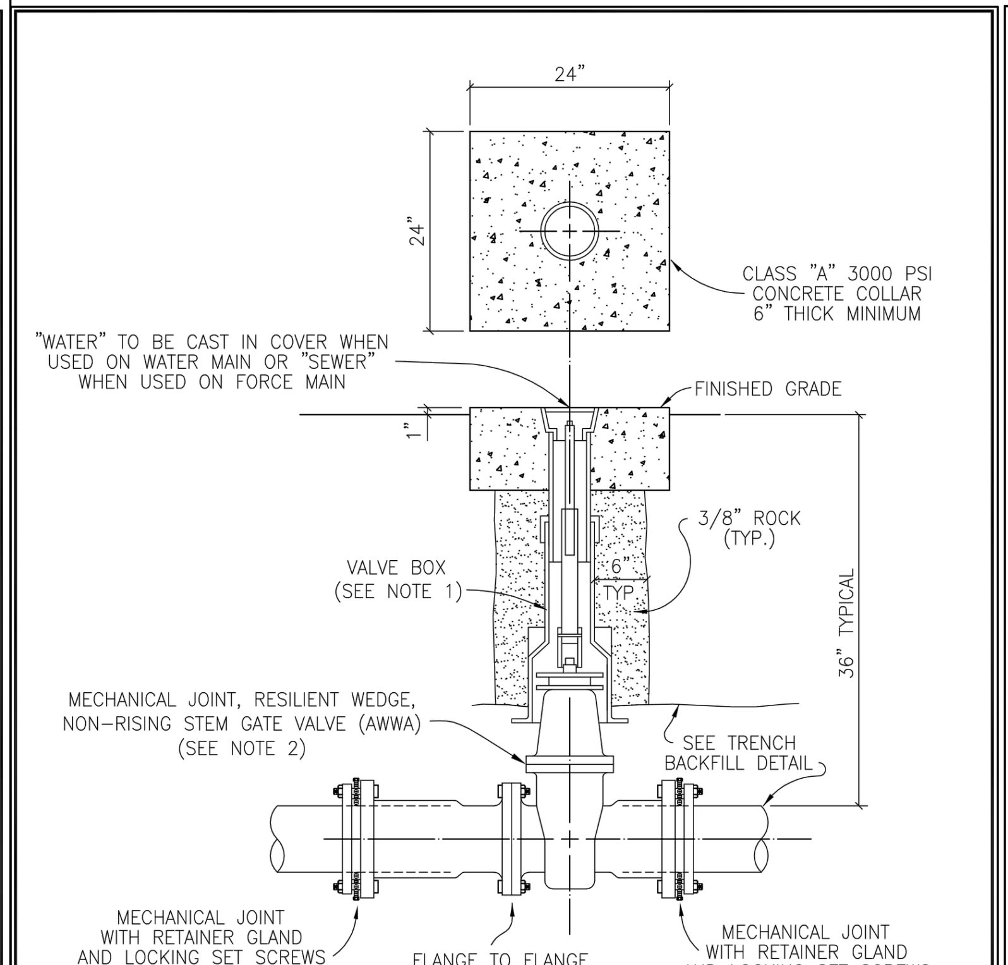
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TRACER WIRE INSTALLATION AND TEST STATION LOCATION
W18 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
FIRE HYDRANT SAMPLING POINT
W19 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

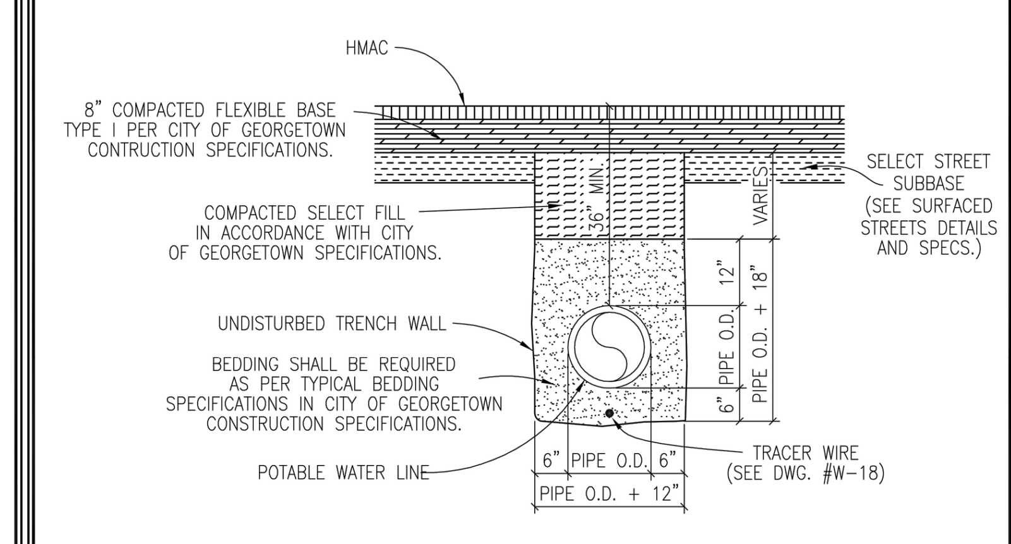


NOTES:
1. SEE VALVE SETTING DETAIL, DWG. #W-07.
2. ACCEPTABLE GATE VALVES ARE:
   A. MUELLER - 2360 SERIES
   B. CLOW

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
INLINE VALVE INSTALLATION
W21 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



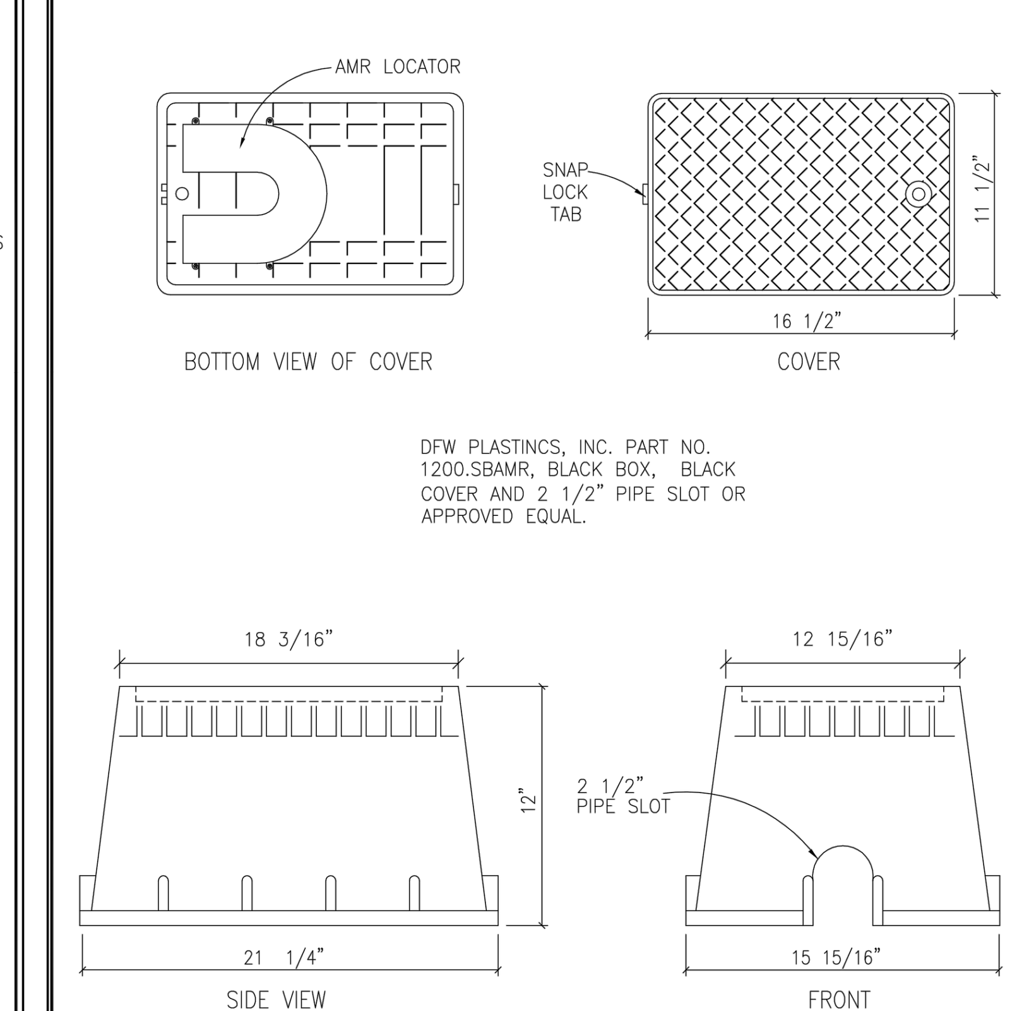
TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER 1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER 2'-0" + PIPE O.D.

NOTES:
1. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS AND STANDARDS.
2. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

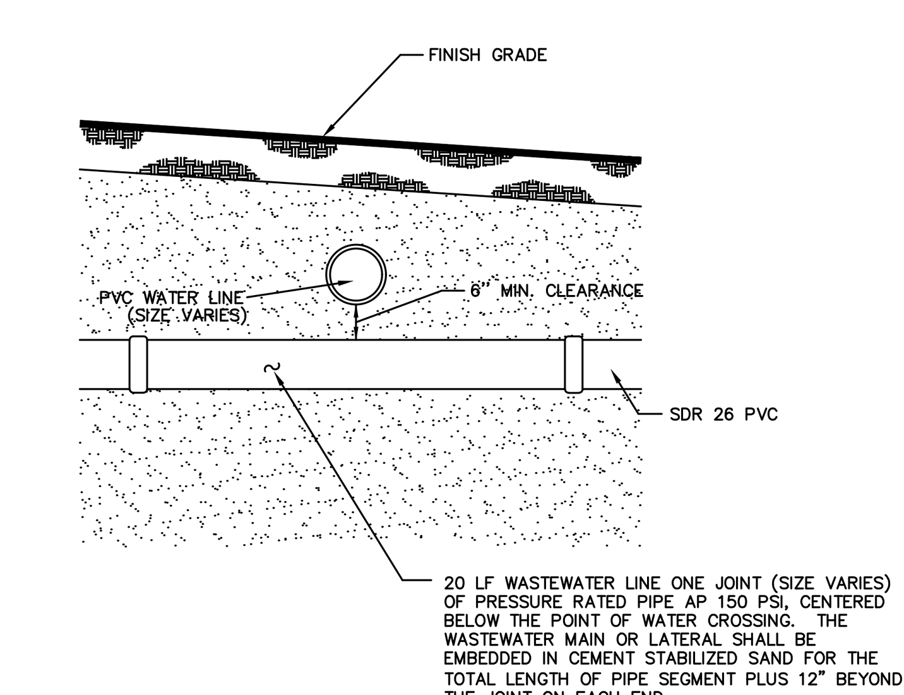
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
TRENCH AND EMBEDMENT DETAIL UNDER PROPOSED ROADWAY
W22 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

ADOPTED 6/21/2006

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS
METER BOX (NON-TRAFFIC AREAS)
W23 — SCALE: NTS — DATE: 1/2003 — DRAWN BY: MRS — APPROVED BY: TRB

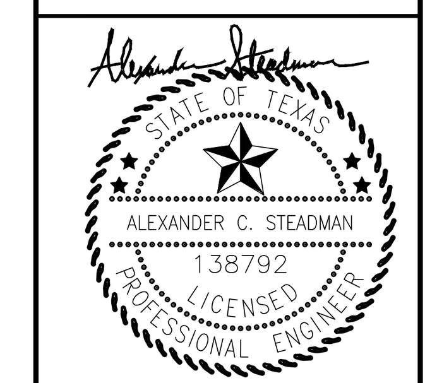


NOTE:
THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF 6" ABOVE AND 4" BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.

TCEQ NEW WATER/WASTEWATER CROSSING DETAIL
N.T.S.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928



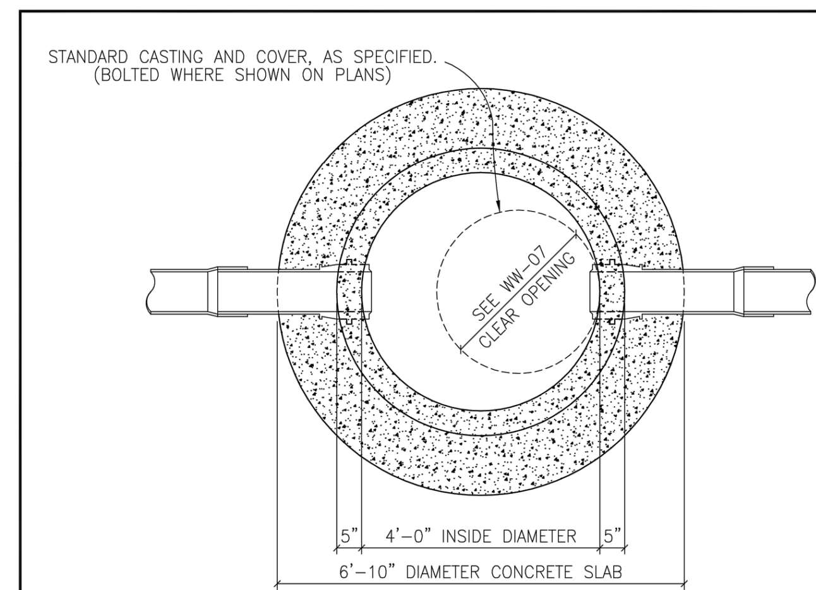
KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WATER DETAILS

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
81
OF 82

2024-9-CON



MANHOLE PLAN

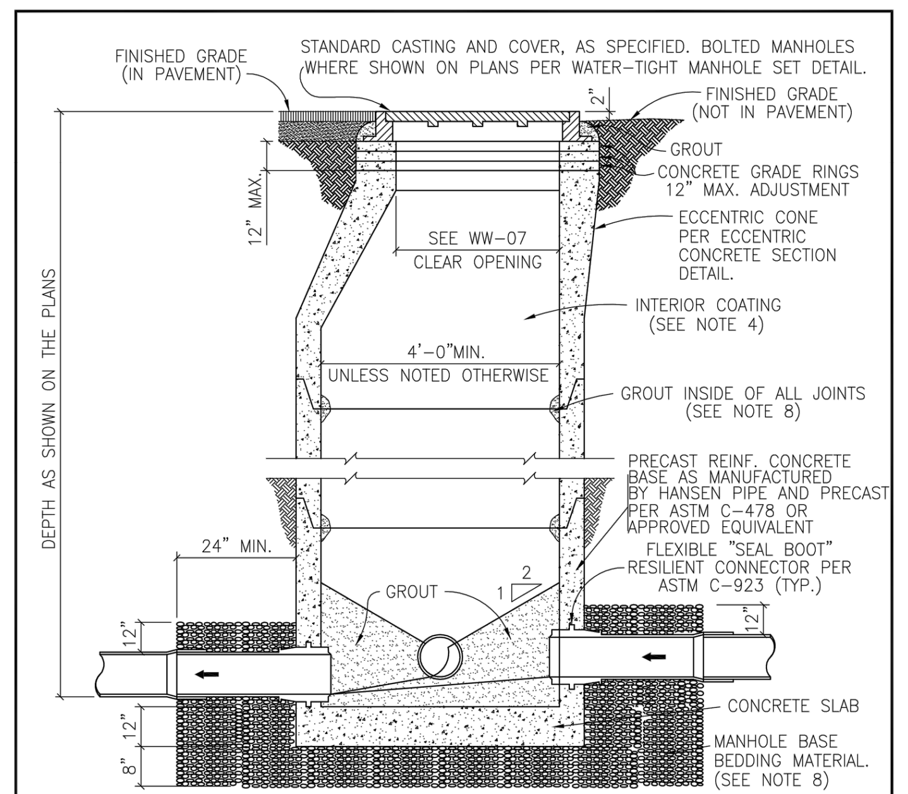
CITY OF GEORGETOWN NOTES:

MANHOLE DETAILS SHALL REFLECT THE CITY'S MINIMUM SPECIFICATIONS, AS STATED BELOW:

A. ALL MANHOLES SHALL BE 48" I.D., R.C.P., CLASS III, WITH RUBBER PROFILE GASKET – SINGLE OFF-SET JOINT CONFORMING TO ASTM C478, C433 AND C76.
B. ALL MANHOLES SHALL HAVE FRAME AND COVER, AS MANUFACTURED BY EAST JORDAN IRON WORKS (AS PER DETAIL # WW-07) OR APPROVED EQUIVALENT.
C. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON FRAME AND COVER.
D. ALL MANHOLES SHALL HAVE AN ECCENTRIC CONE.
E. MANHOLES MAY HAVE A FLAT LID, IF APPROVED BY CITY OF GEORGETOWN, BEING 12" THICK WITH A MINIMUM 30" OPENING, AS MANUFACTURED BY HANSEN PIPE AND PRECAST OR APPROVED EQUAL M.F.G. CONFORMING TO ASTM C478, 5000 P.S.I. CONCRETE, TRAFFIC BEARING AND WITH PROFILE GASKET – SINGLE OFF-SET JOINT CONFORMING TO ASTM C443.
F. INVERTS AND FLEXIBLE SEAL BOOTS, PER ASTM C-923, SHALL BE CAST INTO BASE SECTION.
G. MINIMUM DROP BETWEEN INVERTS SHALL BE ONE-TENTH OF A FOOT (0.1').
H. GRADE RINGS WITH AN I.D. TO MATCH FRAMES CLEAR OPENING WITH A MAXIMUM ADJUSTMENT OF 12" ARE ALLOWED.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

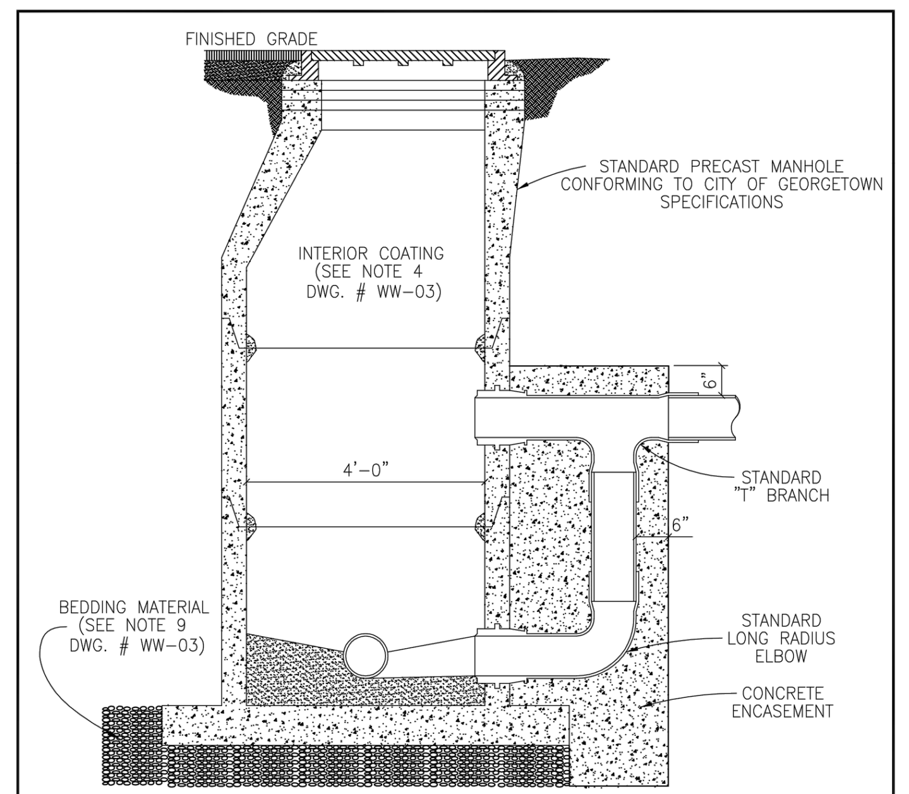
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS STANDARD MANHOLE – PLAN	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW02 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



NOTES:
1. MANHOLES SHALL BE PRECAST ASTM C-478 BELL AND SPIGOT WITH PROFILE GASKET – SINGLE OFF-SET JOINTS.
2. SEE PLANS AND MANHOLE SCHEDULE, FOR MANHOLE SIZE, LOCATION, CONFIGURATION, TYPE OF TOP SECTION, VENTING REQUIREMENTS, PIPE SIZE AND TYPES.
3. SEE SPECIFICATIONS ON MATERIALS AND CONSTRUCTION.
4. AN 80 MIL. COAT OF RAVEN LINING SYSTEMS, RAVEN 405 ULTRA HIGH BUILD EPOXY COATING, OR SPRAY WALL EPOXY COATING, OR APPROVED EQUAL, TO BE APPLIED TO ENTIRE INTERIOR OF EACH WASTEWATER MANHOLE AND UNDERSIDE OF FLAT TOPS.
5. ALL MANHOLE COVERS SHALL BE BOLTED AND GASKETTED WHEN MANHOLES ARE LOCATED OUT FROM PAVEMENT.
6. MANHOLES TO BE VENTED ARE IDENTIFIED ON MANHOLE SCHEDULE. REFERENCE MANHOLE VENT DETAIL.
7. MANHOLES ARE TO BE DESIGNED TO RESIST LATERAL AND VERTICAL SOIL FORCES RESULTING FROM MANHOLE DEPTH. ADDITIONALLY, MANHOLES LOCATED IN PAVEMENT TO BE DESIGNED FOR HS-20 TRAFFIC LOADS.
8. GROUT SHALL MEET THE REQUIREMENTS AS STATED BY THE COATING MANUFACTURER.
9. MANHOLE BASE BEDDING MATERIAL SPECS. FOR 3/4" WASHED GRAVEL:
   SIEVE SIZE 2", PERCENT (%) RETAINED 0
   SIEVE SIZE 1 1/2", % RETAINED 0–10
   SIEVE SIZE 1", % RETAINED 45–80
   SIEVE SIZE 3/4", % RETAINED 85–100
   SIEVE SIZE 3/8", % RETAINED 95–100

The Architect/Engineer assumes responsibility for appropriate use of this standard.

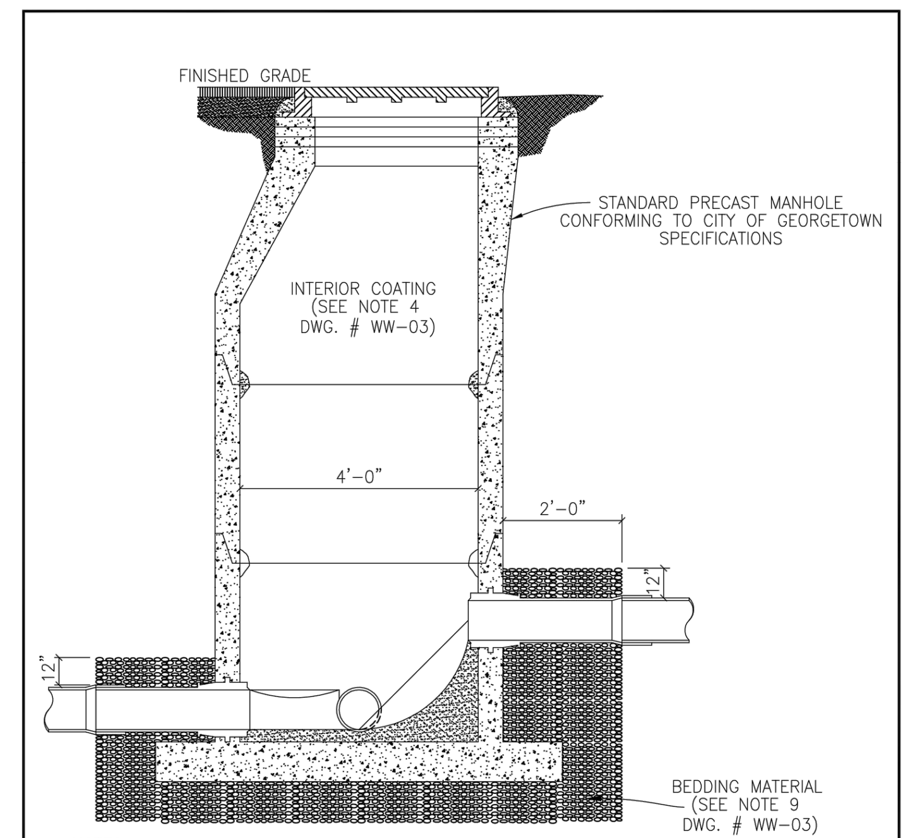
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS STANDARD MANHOLE – SECTION	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW03 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



NOTES:
1. CONCRETE ENCASEMENT FOR DROP CONNECTION TO BE POURED INTEGRALLY WITH BOTH MANHOLE SLAB AND WALL.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT SEWER IS LOCATED TWO FEET (2') OR MORE ABOVE THE MAIN INVERT CHANNEL.
3. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO FLOW STREAM.
4. WHEN P.V.C. IS USED IN SANITARY SEWER LINES, SOLVENT TYPE JOINT P.V.C. FITTINGS MAY BE UTILIZED IN THE DROP ASSEMBLY ONLY.
5. MINIMUM PIPE SIZE FOR DROP IS EIGHT INCHES (8").
6. SEE STANDARD MANHOLE DETAIL (DWG. # WW-03) FOR ADDITIONAL REQUIREMENTS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS DROP CONNECTION-PRECAST MANHOLE TYPE "A"	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW04 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB

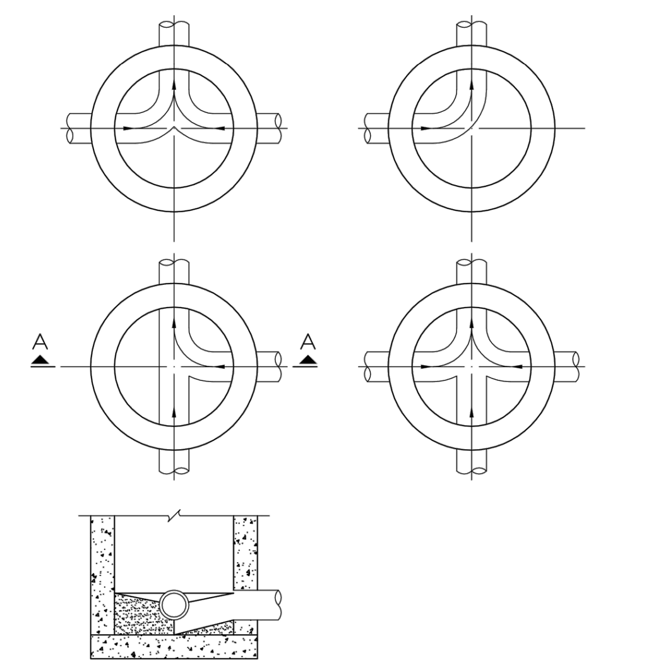


NOTES:
1. TO BE USED WHERE DROP IS SIX INCHES (6") TO TWO FEET (2'-0").
2. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO FLOW STREAM.
3. CONSTRUCTION OF DROP SHALL PROVIDE AN OVERSIZED SLAB TO EXTEND UNDER THE DROP CONNECTION.
4. MINIMUM PIPE SIZE FOR DROP IS EIGHT INCHES (8").
5. SEE STANDARD MANHOLE DETAIL (DWG. # WW-03) FOR ADDITIONAL REQUIREMENTS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS DROP CONNECTION-PRECAST MANHOLE TYPE "B"	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW05 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB

FLOW PATTERNS FOR INVERT CHANNELS



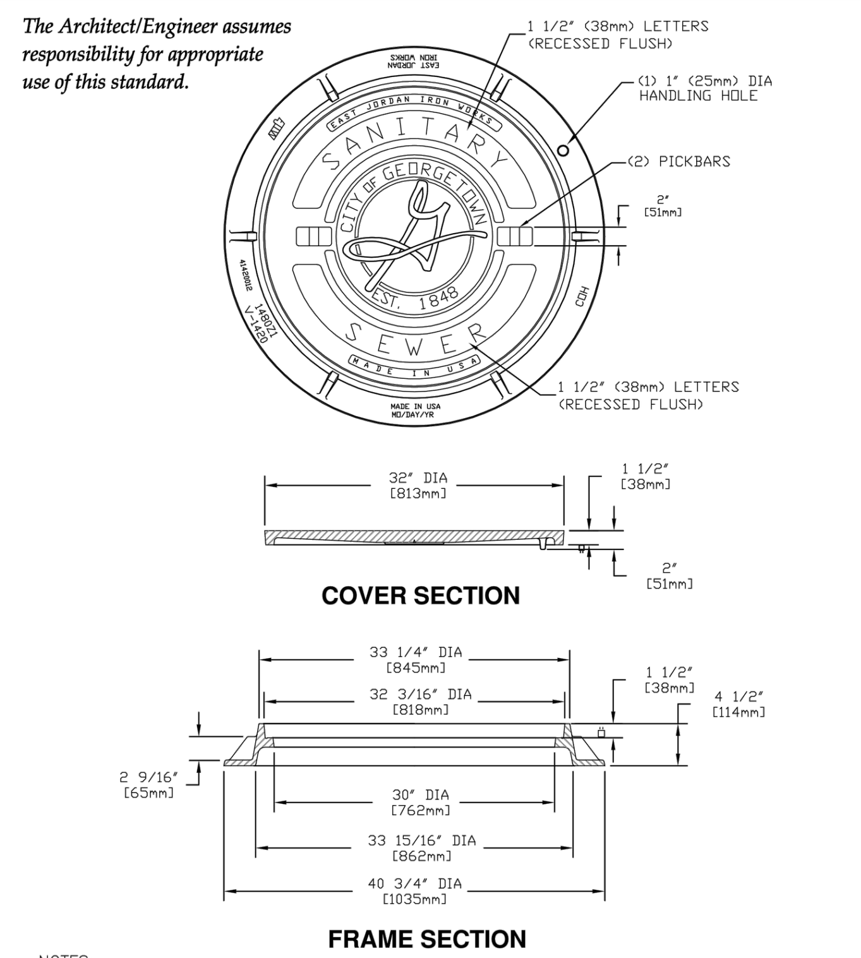
SECTION "A–A"

NOTES:
1. INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
2. SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING FOR SMOOTH FLOW.
3. CHANNELS FOR FUTURE CONSTRUCTIONS (STUBS) SHALL BE CONSTRUCTED, FILLED WITH SAND, AND COVERED WITH 1" OF MORTAR.
4. SLOPE MANHOLE ITSELF WITH A 1:2 SLOPE FROM MANHOLE WALL TO CHANNEL.
5. INVERT SHALL BE A MINIMUM OF 1/2 THE DIAMETER OF THE LARGEST PIPE OR 4" DEEP.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

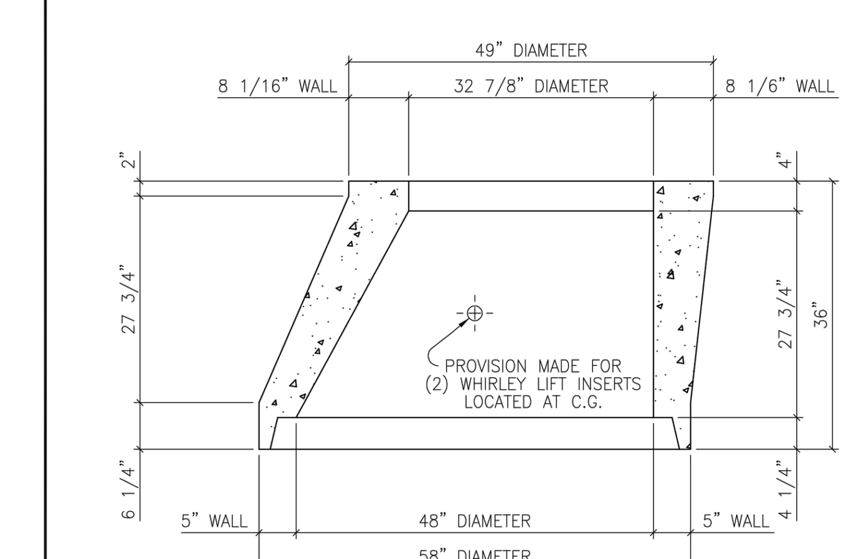
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS FLOW PATTERNS FOR INVERT CHANNELS	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW06 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB

The Architect/Engineer assumes responsibility for appropriate use of this standard.



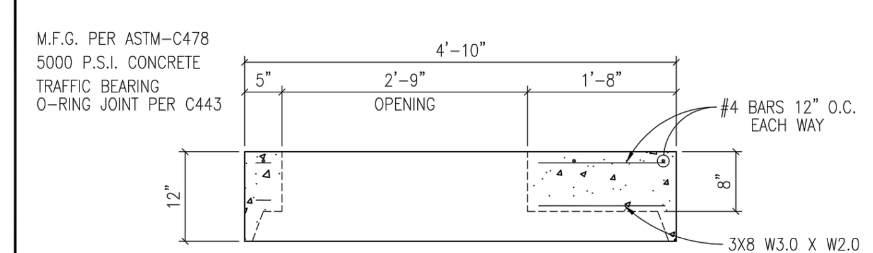
NOTES:
1. STANDARD WASTEWATER MANHOLE SET TO BE EAST JORDAN IRON WORKS, INC. CATALOG NO. 1480A V-1420/1480Z1, COVER TO BE STAMPED WITH "SANITARY SEWER".
2. STANDARD WASTEWATER MANHOLE SET TO BE HEAVY DUTY LOAD RATED.
3. FOR MORE DETAILED SPECIFICATIONS REFER TO EAST JORDAN IRON WORKS, INC. REFERENCE PRODUCT DRAWING 41420012 00148390.
4. FOR BOLTED WASTEWATER MANHOLE SET REFER TO DETAIL WW07A.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS STANDARD WASTEWATER MANHOLE SET	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW07 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

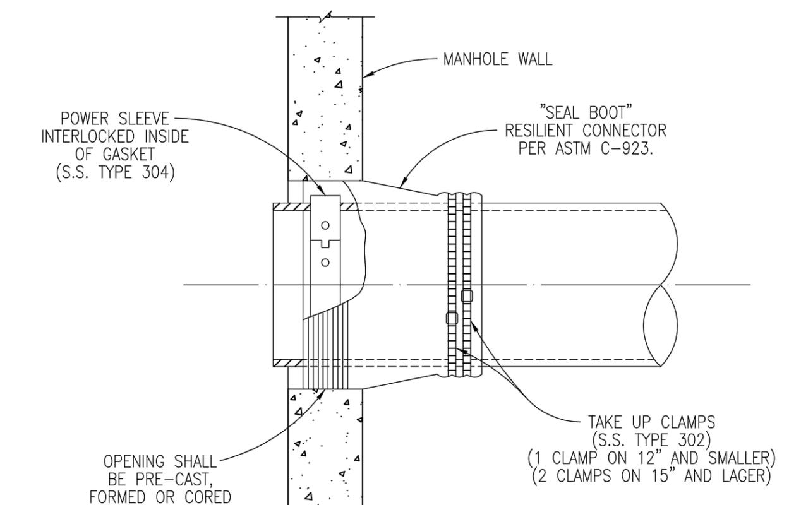
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS 48"X5" TO 33"X8"X36" TALL ECCENTRIC CONCRETE SECTION	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW08 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



NOTES:
1. AVAILABLE WITH CAST IRON RING AND COVER CAST IN PLACE.
2. PERMITTED ONLY WITH WRITTEN APPROVAL FROM GEORGETOWN UTILITY SYSTEMS, CITY OF GEORGETOWN

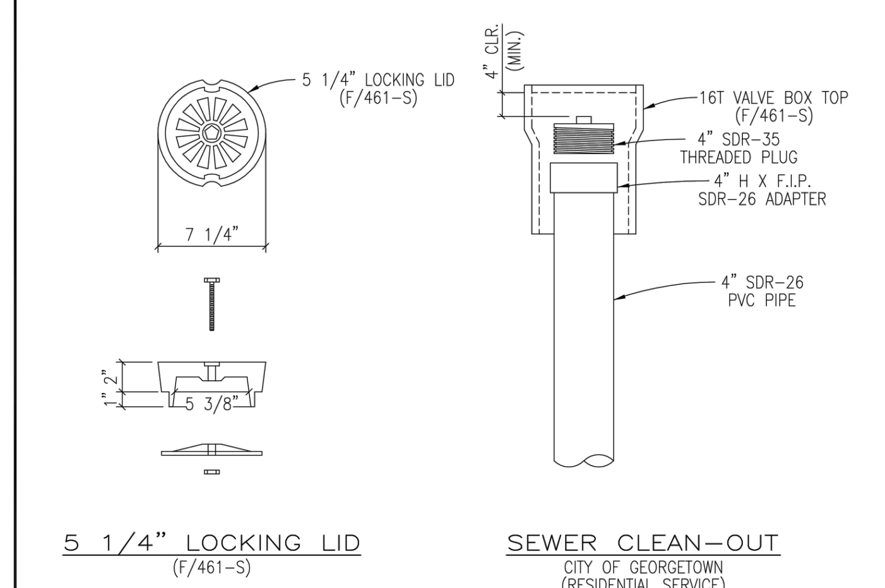
The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS 48" MANHOLE FLAT LID	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW09 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS FLEXIBLE "SEAL BOOT" CONNECTOR	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW10 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



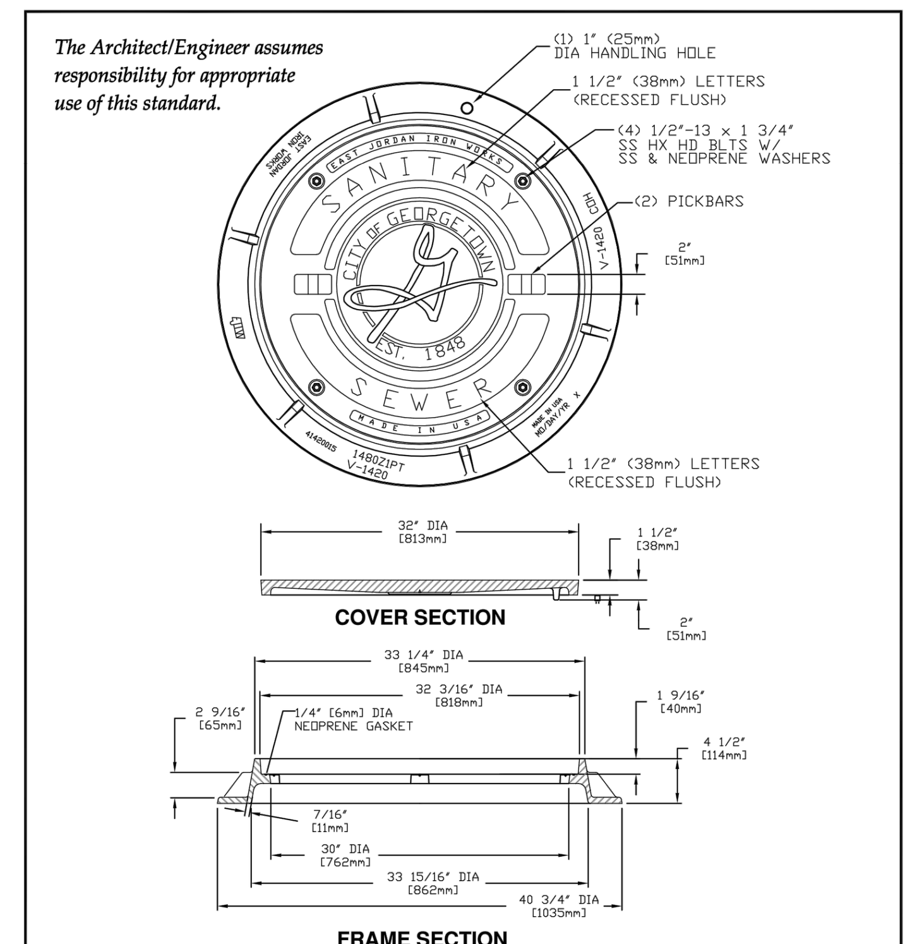
5 1/4" LOCKING LID (F/461-S)

SEWER CLEAN-OUT
CITY OF GEORGETOWN (RESIDENTIAL SERVICE)

The Architect/Engineer assumes responsibility for appropriate use of this standard.

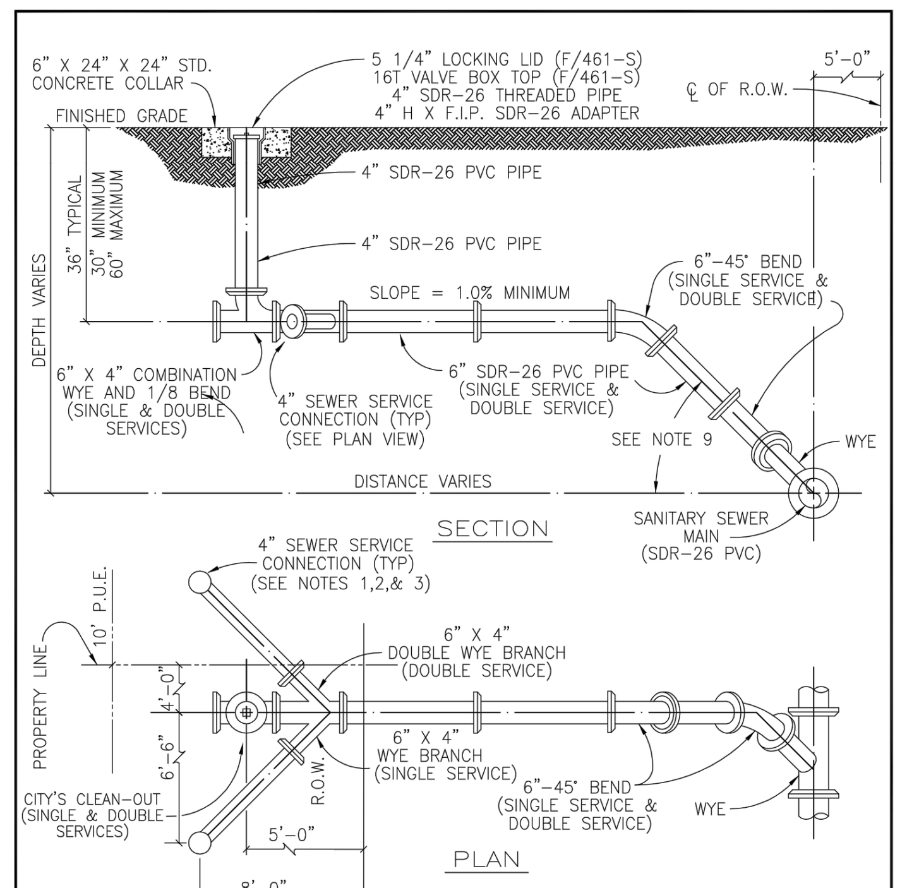
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS SEWER CLEAN-OUT DETAIL	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW12 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB

The Architect/Engineer assumes responsibility for appropriate use of this standard.



NOTES:
1. BOLTED WASTEWATER MANHOLE SET TO BE EAST JORDAN IRON WORKS, INC. CATALOG NO. 1480APT V-1420/1480Z1PT, COVER TO BE STAMPED WITH "SANITARY SEWER".
2. BOLTED WASTEWATER MANHOLE SET TO BE HEAVY DUTY LOAD RATED.
3. FOR MORE DETAILED SPECIFICATIONS REFER TO EAST JORDAN IRON WORKS, INC. REFERENCE PRODUCT DRAWING 00148392 41420015.
4. FOR STANDARD WASTEWATER MANHOLE SET REFER TO DETAIL WW07.

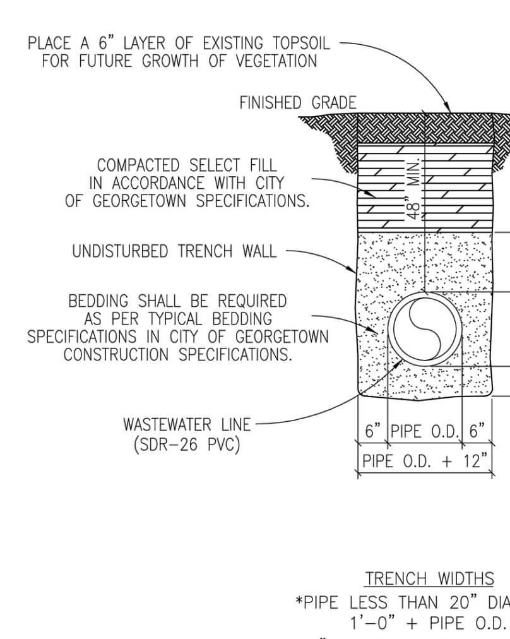
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS BOLTED WASTEWATER MANHOLE SET	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW07A SCALE: NTS DATE: 1/2006 DRAWN BY: MRS APPROVED BY: TRB



NOTES:
1. SERVICE CONNECTION RISERS SHALL TERMINATE 8' INSIDE THE PROPETY LINE.
2. THE END OF EACH SERVICE CONNECTION RISER SHALL BE EXTENDED 12" ABOVE FINISH GRADE.
3. EACH SERVICE CONNECTION SHALL BE PLUGGED WATER-TIGHT WITH AN APPROVED CAP OR PLUG.
4. FOR P.V.C. INSTALLATIONS, CONNECT TO EXISTING "BELL END" AND CONNECT OPPSITE END WITH P.V.C. TO P.V.C. KNOCK ON SLEEVE.
5. SOLIDLY TAMP BACKFILL AT LEAST ONE FOOT (1'-0") ABOVE TOP OF PIPE. SERVICES UNDER PAVED AREAS SHALL BE BACKFILLED TO THE SAME SPECIFICATIONS AS SHOWN ON PAVEMENT REPLACEMENT DETAIL.
6. CONTRACTOR SHALL MARK ON A CLEAN SET OF PLANS THE FINAL STATIONING OR DISTANCE AND DIRECTION FROM MANHOLE TO EACH SERVICE LATERAL AND GIVE TO ENGINEER FOR RECORD DRAWING PURPOSES.
7. ANY DEVIATION FROM THESE METHODS MUST BE APPROVED BY THE CITY OF GEORGETOWN ENGINEERING DEPARTMENT.
8. SERVICE LINE MATERIAL SHALL BE P.V.C., SDR-26.
9. SEWER SERVICE SLOPE TO BE 45° OFF CENTERLINE OF MAIN.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

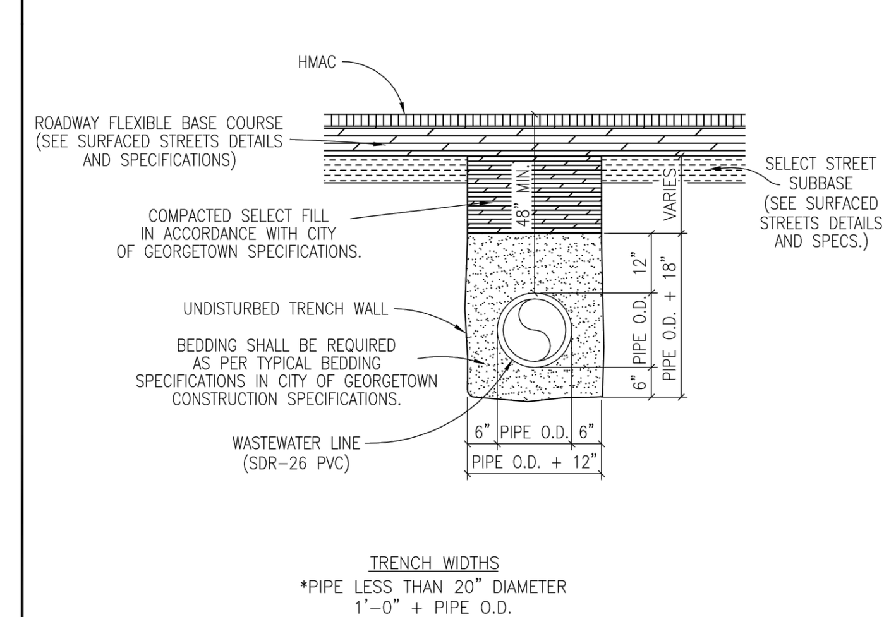
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS SEWER SERVICE CONNECTIONS	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW13 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER 1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER 2'-0" + PIPE O.D.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS TRENCH AND EMBEDMENT DETAIL UNDER NON-PAVED AREAS	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW16 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB

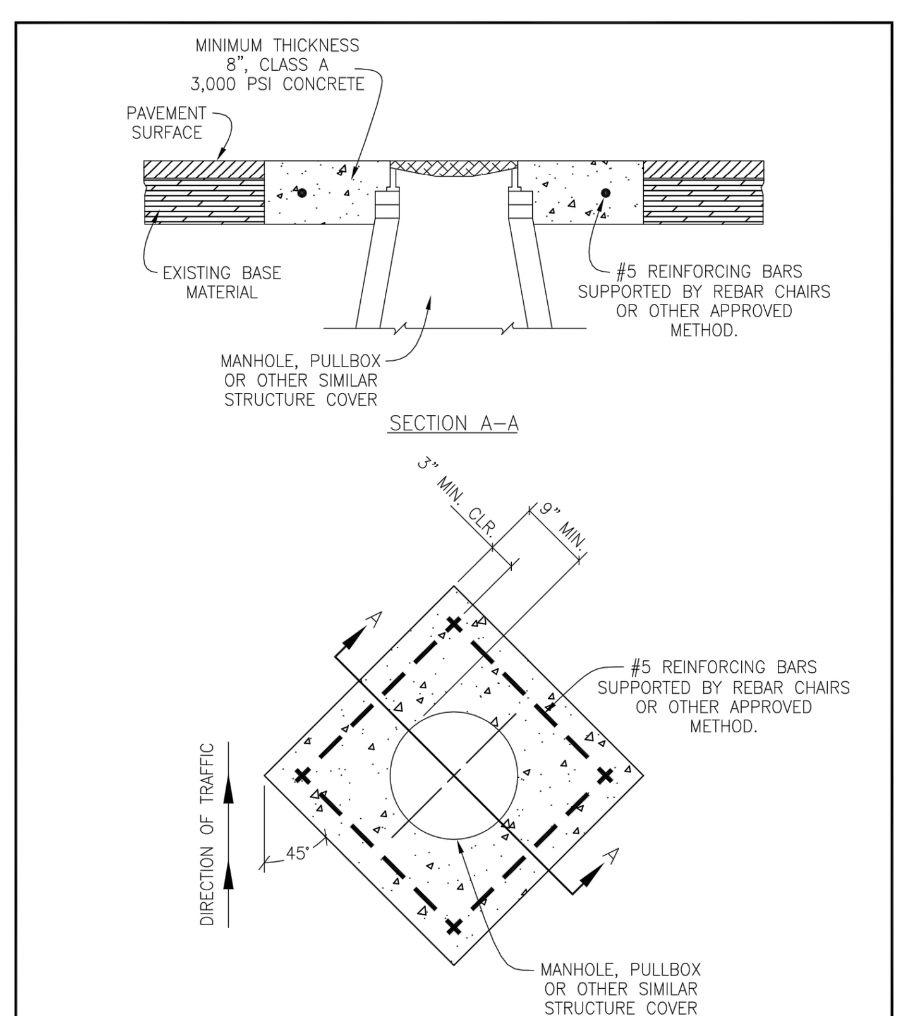


TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER 1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER 2'-0" + PIPE O.D.

NOTES:
1. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS AND STANDARDS.
2. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

The Architect/Engineer assumes responsibility for appropriate use of this standard.

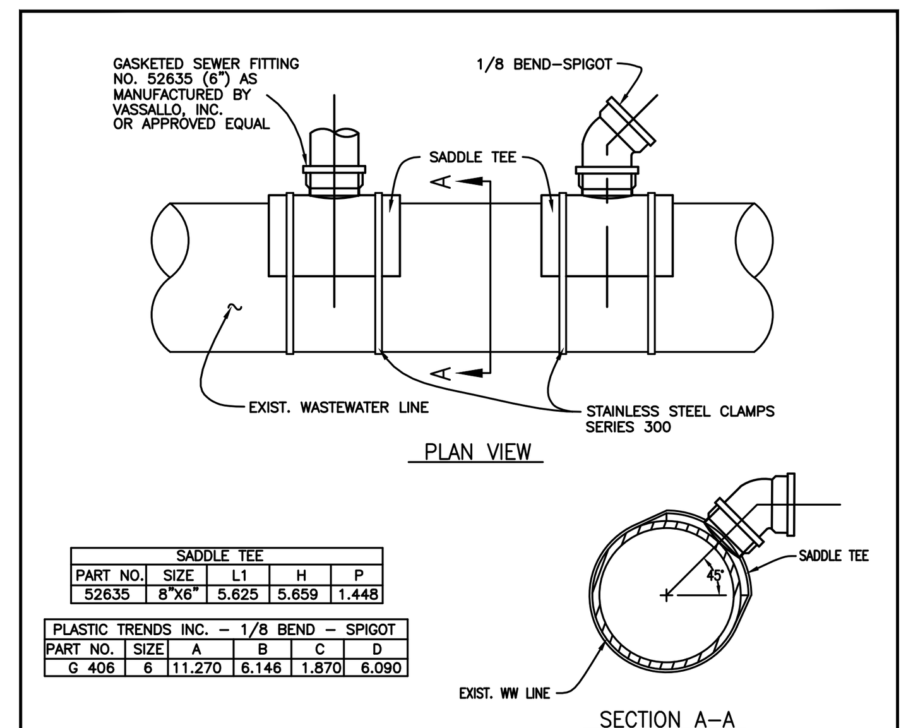
GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS TRENCH AND EMBEDMENT DETAIL UNDER PROPOSED ROADWAY	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW18 SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



NOTE:
INSTALLATION OF THE CONCRETE CASTING IS REQUIRED FOR AND APPLIES TO ALL TYPES OF MANHOLES TO BE LOCATED IN THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS CONCRETE CASTING MANHOLE DETAIL	REVISION NOTE: APPROVED 6/21/2006 DRAWING NAME: WW21 SCALE: NTS DATE: 1/2006 DRAWN BY: MRS APPROVED BY: TRB



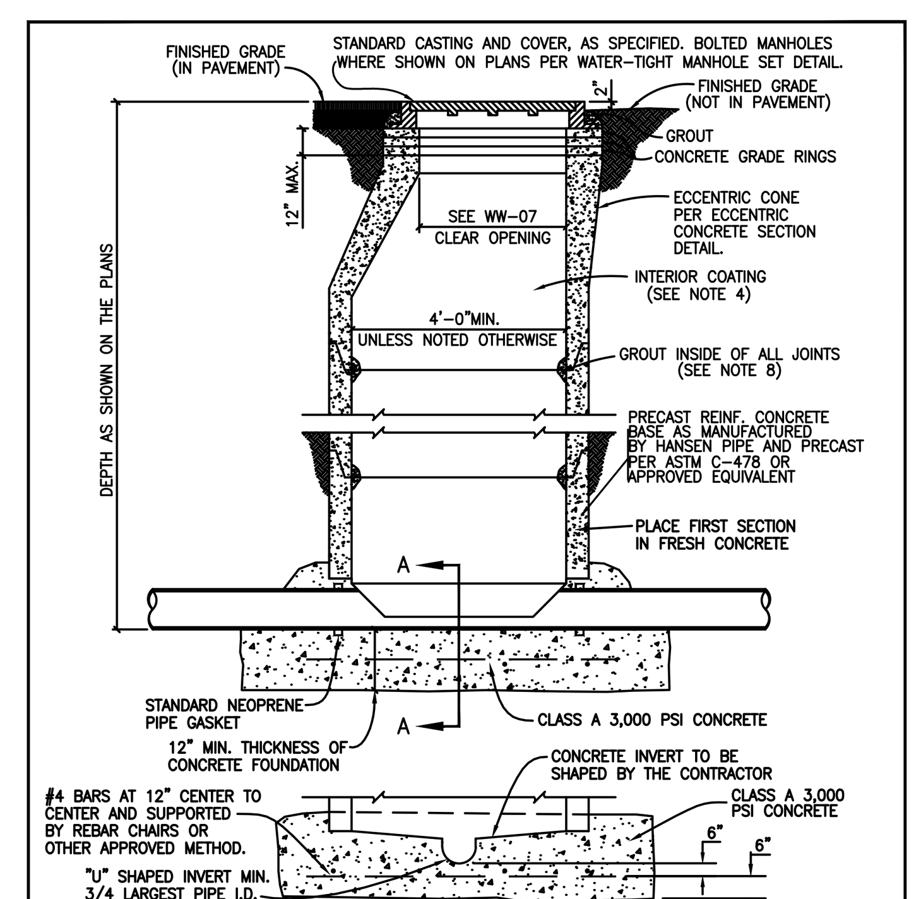
SADDLE TEE				
PART NO.	SIZE	L1	H	P
52635	8"X6"	5.625	5.659	1.448

PLASTIC TRENDS INC. – 1/8 BEND – SPIGOT					
PART NO.	SIZE	A	B	C	D
G 406	6	11.270	6.146	1.870	6.090

NOTES:
1. FLEXIBLE SADDLE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
2. SADDLE TEE SHALL BE ORIENTATED 45° TO MAIN. (SEE SEWER SERVICE CONNECTIONS DETAIL – DWG # WW-13)
3. EXCAVATE AROUND EXISTING 8-INCH PIPE, EXPOSING SUFFICIENT ROOM FOR S.S. CLAMPS.
4. THOROUGHLY CLEAN AND DRY THE MATING SURFACE WITH RAG OR PAPER TOWEL MAKE SURE THEY ARE FREE OF DUST AND MOISTURE.
5. MARK THE SIZE OF THE HOLE TO BE CUT USING THE GASKET SKIRT OR THE SADDLE ITSELF AS THE TEMPLATE.
6. SAW OUT THE SECTION OF THE PIPE WHERE THE SADDLE WILL BE LOCATED, WITH A SABER OR KEY HOLE SAW.
7. TEST TO MAKE SURE SADDLE FITS HOLE PROPERLY.
8. SERVICE PIPE SHALL NOT EXTEND MORE THAN ONE-HALF INCH INTO THE MAIN.
9. PLACE GASKET SKIRT AND SADDLE OVER OPENING AND TIGHTEN BAND CLAMPS EVENLY UNTIL SADDLE IS FIRMLY ATTACHED TO THE PIPE. APPLY PRESSURE ON THE SADDLE AGAINST THE PIPE WHILE TIGHTENING THE CLAMPS AS INDICATED ABOVE. DO NOT OVER TIGHTEN, DO NOT STRIP THREAD.
10. REPLACE THE BEDDING AND BACKFILL IN ACCORDANCE WITH THE TRENCH EMBEDMENT DETAIL.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS GASKETED SEWER FITTING FOR SEWER SERVICE CONNECTIONS TO EXISTING MAINS	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW13A SCALE: NTS DATE: 1/2003 DRAWN BY: MRS APPROVED BY: TRB



NOTES:
1. MANHOLES SHALL BE PRECAST ASTM C-478 BELL AND SPIGOT WITH PROFILE GASKET – SINGLE OFF-SET JOINTS.
2. SEE PLANS AND MANHOLE SCHEDULE, FOR MANHOLE SIZE, LOCATION, CONFIGURATION, TYPE OF TOP SECTION, VENTING REQUIREMENTS, PIPE SIZE AND TYPES.
3. SEE SPECIFICATIONS ON MATERIALS AND CONSTRUCTION.
4. AN 80 MIL. COAT OF RAVEN LINING SYSTEMS, RAVEN 405 ULTRA HIGH BUILD EPOXY COATING, OR SPRAY WALL EPOXY COATING, OR APPROVED EQUAL, TO BE APPLIED TO ENTIRE INTERIOR OF EACH WASTEWATER MANHOLE AND UNDERSIDE OF FLAT TOPS.
5. ALL MANHOLE COVERS SHALL BE BOLTED AND GASKETTED WHEN MANHOLES ARE LOCATED OUT FROM PAVEMENT.
6. MANHOLES TO BE VENTED ARE IDENTIFIED ON MANHOLE SCHEDULE. REFERENCE MANHOLE VENT DETAIL.
7. MANHOLES ARE TO BE DESIGNED TO RESIST LATERAL AND VERTICAL SOIL FORCES RESULTING FROM MANHOLE DEPTH. ADDITIONALLY, MANHOLES LOCATED IN PAVEMENT TO BE DESIGNED FOR HS-20 TRAFFIC LOADS.
8. GROUT SHALL MEET THE REQUIREMENTS AS STATED BY THE COATING MANUFACTURER.
9. MANHOLE BASE BEDDING MATERIAL SPECS. FOR 3/4" WASHED GRAVEL:
   SIEVE SIZE 2", PERCENT (%) RETAINED 0 — SIEVE SIZE 1 1/2", % RETAINED 0–10
   SIEVE SIZE 1", % RETAINED 45–80 — SIEVE SIZE 3/4", % RETAINED 85–100
   SIEVE SIZE 3/8", % RETAINED 95–100
10. ALL PVC PIPE SHALL BE REMOVED FROM INVERT.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS – Georgetown Utility Systems	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS PRECAST MANHOLE ON CAST-IN-PLACE FOUNDATION	REVISION NOTE: ADOPTED 6/21/2006 DRAWING NAME: WW20 SCALE: NTS DATE: 1/2006 DRAWN BY: MRS APPROVED BY: TRB

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759
PHONE: 512-418-1771
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — ALEXANDER C. STEADMAN — 138792 — LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069427101
DATE FEBRUARY 2024
SCALE: AS SHOWN
DESIGNED BY: ACS
DRAWN BY: RRJ
CHECKED BY: ACS

WASTEWATER DETAIL

BERRY CREEK HIGHLANDS
PHASES 6B & 7
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
82
OF 82

2024-9-CON