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: Jarrell Elementary School #4						**2. Regulated Entity No.:**			
3. Customer Name: Jarrell ISD						**4. Customer No.: 600794234**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		13.21	
9. Application Fee:	$7,150.00		**10. Permanent BMP(s):**			Sand filter/Detention pond			
11. SCS (Linear Ft.):	982		**12. AST/UST (No. Tanks):**			n/a			
13. County:	Williamson		**14. Watershed:**			Lower 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.)	___	___	_X_
Region (1 req.)	___	___	_X_
County(ies)	___	___	_X_
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 _X_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. Jack Garner, PE
Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 01.03.24

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.

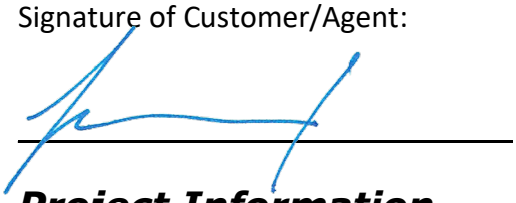
Signature

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: Jack Garner, PE

Date: 01.03.24

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Jarrell Elementary School #4
2. County: Williamson
3. Stream Basin: Lower Berry Creek
4. Groundwater Conservation District (If applicable): _____
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Toni M. Hicks, Ed.D
   Entity: Jarrell ISD
   Mailing Address: 108 E. Avenue F
   City, State: Jarrell, TX Zip: 76537
   Telephone: 512-746-2124 FAX: 512-746-2518
   Email Address: toni.hicks@jarrellisd.org

8. Agent/Representative (If any):

   Contact Person: Jack Garner, PE
   Entity: Langan Engineering
   Mailing Address: 9606 N. Mopac, Suite 110
   City, State: Austin, Texas Zip: 78759
   Telephone: 817-239-7224 FAX: _____
   Email Address: jgarner@langan.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 school site is located about 2,200 LF south of the intersection of State Highway 195 and Berry Creek Highlands (BCH) Way at the southwest quadrant of BCH Way and Cowboy Canyon Drive.

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: _____

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:

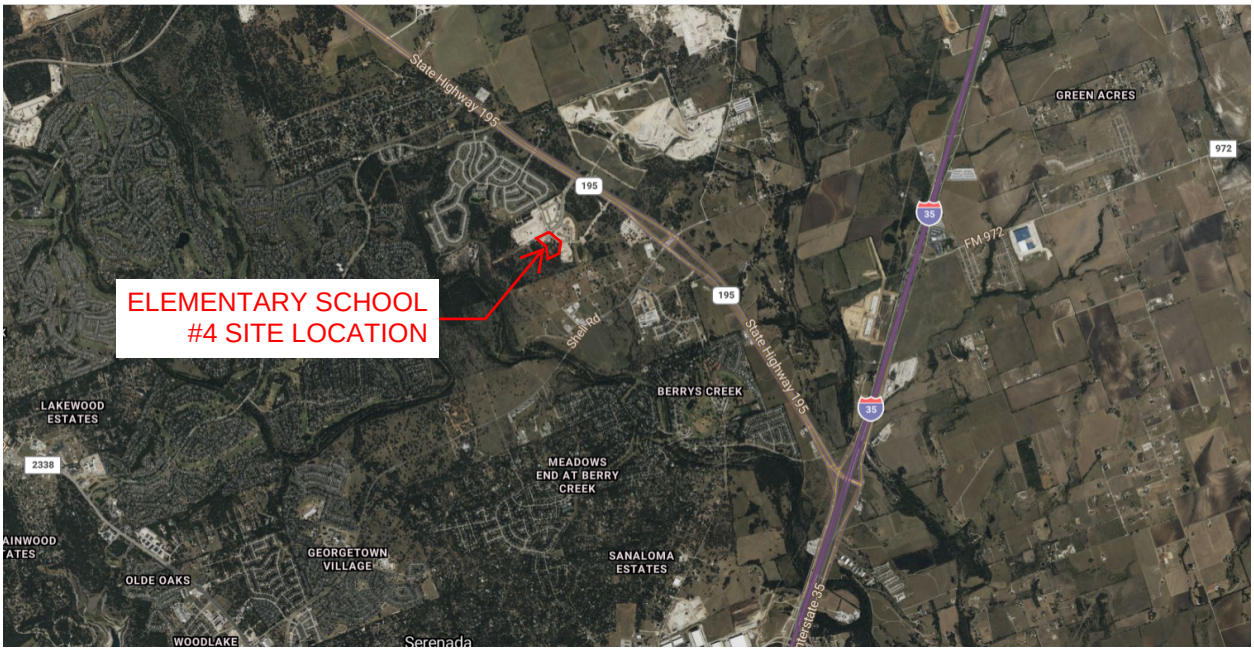
☒ TCEQ cashier
☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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.

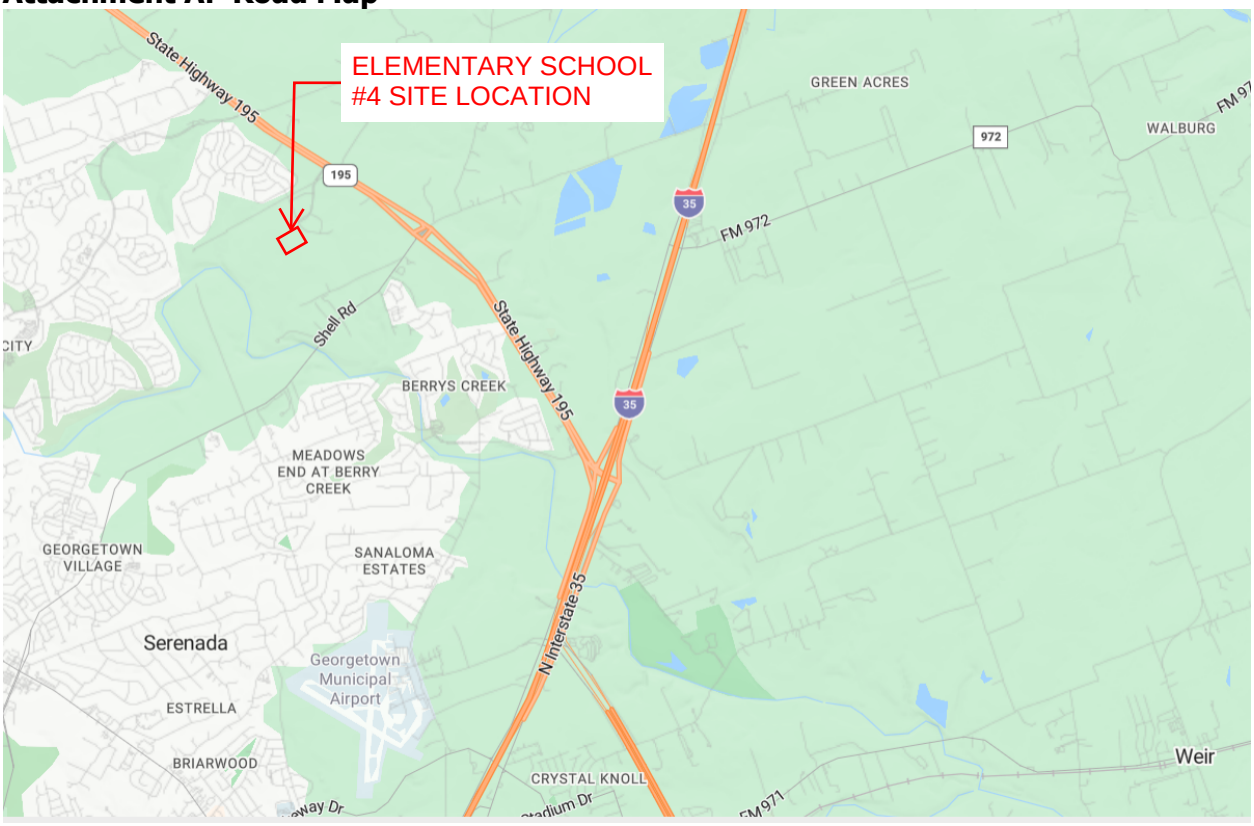
Recharge Zone Application - TCEQ Form 0587

Attachment A: Road Map



Recharge Zone Application - TCEQ Form 0587

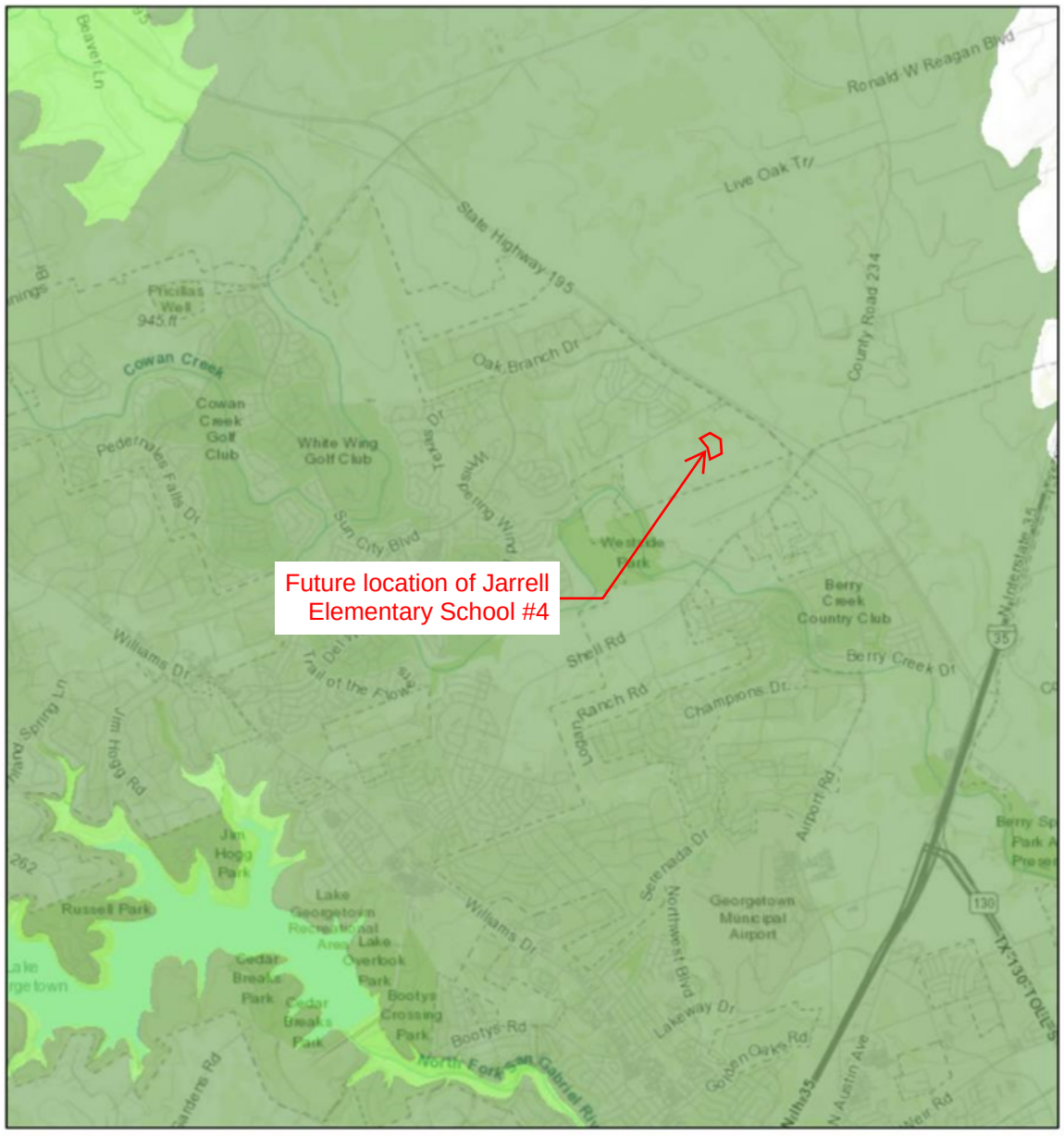
Attachment A: Road Map



Recharge Zone Application - TCEQ Form 0587

Attachment B: Edwards Recharge Zone Map

Georgetown Map



12/4/2023, 1:24:47 PM

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

Edwards Aquifer Recharge Zones

Contributing Zone

Recharge Zone

USGS science for a changing world

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

The National Map OnDemand Topo

Recharge Zone Application - TCEQ Form 0587 Attachment B: USGS Map

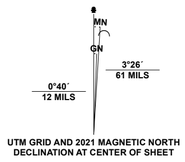
GEORGETOWN QUADRANGLE
TEXAS - WILLIAMSON COUNTY
7.5-MINUTE TOPO

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

Data is provided by The National Map (TNM), is the best available at the time of map generation, and includes data content from supporting themes of Elevation, Hydrography, Geographic Names, Boundaries, Transportation, Structures, Land Cover, and Orthoimagery. Refer to associated Federal Geographic Data Committee (FGDC) Metadata for additional source data information.

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands. Temporal changes may have occurred since these data were collected and some data may no longer represent actual surface conditions.

Learn About The National Map: https://nationalmap.gov



UTM GRID AND 2021 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PV
00
PU
Grid Zone Designation
14R

SCALE 1:24 000

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

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988
CONTOUR SMOOTHNESS = Medium

USER DEFINED CONTENT

QUADRANGLE LOCATION

Florence	Cobbs Cavern	Jarrell
Leander NE	Georgetown	Weir
Leander	Round Rock	Hutto

ADJOINING QUADRANGLES

ROAD CLASSIFICATION

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

GEORGETOWN, TX
2023

General Information TCEQ Form 0587

Attachment C: Project Description:

The proposed Jarrell Independent School District Elementary School (ES) #4 site is located on a 13.21 acre tract within the Berry Creek Highlands (BCH) development. The BCH development is a single-family residential neighborhood. The ES #4 tract is located approximately 2.65 miles northwest of I-35 and TX- 195 within the City of Georgetown in Williamson County. This site is also in the Edwards Aquifer Recharge Zone.

The existing site is located at the southwest quadrant of BCH Way and Cowboy Canyon Drive. The site is bound by BCH Way to the north, Cowboy Canyon Drive to the east, and residential lots to the south and west. The site currently drains from the northwest corner of the site to the southwest and southeast. There is no off-site runoff going through this site. Any offsite storm water from the north and east is routed to existing curb inlets and a regional pond for the Berry Creek Highlands development. (Refer to existing drainage area map shown on sheet C6.00)

In the final constructed condition, the site storm runoff will be collected through use of area inlets, curb inlets, downspouts, and underground storm pipes. The storm water will be routed to a water quality/detention pond. The water quality pond will be a sand filter pond and has been designed for 60% impervious cover while the proposed impervious cover for the site is 50.6%. Once through the water quality and detention ponds storm will discharge from the site via an existing 36‴ RCP line that was constructed as part of the Berry Creek Highlands development. Discharge will then flow into a regional detention pond where it ultimately flows to Berry Creek. The regional detention pond was not designed with the ES #4 site in mind so the on-site ponds were required.

The site is undeveloped land with no prior uses. The impervious cover proposed for initial conditions, which includes rooftop, drives, and parking areas, is 6.69 acres or 50.6% of the site. The water quality/ detention ponds have been sized for a future build out of 7.93 acres or 60.0% impervious cover. Note per the City of Georgetown the max impervious cover for this site is 60.0%.

The construction activities for this site will also include construction of a sewage collection system consisting of approximately 982 linear feet of sanitary sewer gravity lines and four new manholes. The lines will connect to an existing 8-inch stub near Cowboy Canyon Drive that was constructed during Phase 1 of the Berry Creek Highlands development. Flow from the sanitary line will ultimately be routed to the Georgetown Wastewater Treatment Plant.

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: Jeremy Rowden Telephone: (903) 894-6410

Date: 8/16/2023 Fax: _____

Representing: Rowden Consulting, LLC #50394 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

8/16/23

Regulated Entity Name: Jarrell Independent School District

Project Information

1. Date(s) Geologic Assessment was performed: 8/2/2023
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)

Soil Name	Group*	Thickness(feet)
Eckrant stony clay, 0 to 3 percent slopes, stony	D	1'

** 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" = In Design'
   Site Geologic Map Scale: 1" = 167'
   Site Soils Map Scale (if more than 1 soil type): 1" = 161'

9. Method of collecting positional data:

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

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

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

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

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

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

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

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

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

Administrative Information

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

GEOLOGIC ASSESSMENT

Rowden Consulting, LLC
Environmental Services

Project:
Proposed Elementary School #4
BCH Way at Cowboy Canyon Dr.
Jarrell, Williamson Co., TX

Rowden Project No. 23.049

Prepared For:
Jarrell ISD
108 E. Avenue F
Jarrell, TX 76537

© August 16, 2023

Rowden Consulting, LLC
P.O. Box 978 ● Bullard, TX 75757
903.894.6410

TABLE OF CONTENTS

APPENDICES

INTRODUCTION

Rowden Consulting, LLC was retained by Jarrell ISD to conduct this geologic assessment of 13.207 acres of undeveloped land being planned for development as a new elementary school campus. The property is located southwest of the intersection of BCH Way and Cowboy Canyon Drive in Williamson County, Texas. The primary purpose of this assessment was to evaluate the property for sensitive features, which are geologic or man-made features that could serve as pathways for contaminant movement to the Edwards Aquifer.

After conducting a literature and file review, a field evaluation was conducted to identify any potential occurrences of geologic or man-made features. The study area was evaluated for potential features including, but not limited to, closed depressions, sinkholes, caves, faults, fractures, bedding plane surfaces, interconnected vugs, reef deposits, wells, borings, and excavations which may have hydraulic interconnectedness between the surface and the Edwards Aquifer. The evaluation was conducted in accordance with the requirements of the Edwards Aquifer rules provided in 30 TAC Chapter 213. No sensitive features were identified by this assessment.

PROJECT DESCRIPTION

The property is comprised of 13.207 acres of undeveloped land being planned for development as a new elementary school campus. Adjacent properties to the north and east have recently been developed with roads and homes. The proposed development plan for the subject property had not been completed at the time this report was prepared. However, based on the size of the property, complete development of the tract with school buildings, parking lots, and other amenities is anticipated. Since no site plans were available, the Site Geologic Map in Appendix II may not match the scale of the site plan produced in the future by the site designer. If needed, a revised map can be provided in the future that matches the site plan scale.

The current plan for the property is to develop it as a new elementary school campus. The population within the Jarrell ISD school district is growing and they are planning a new elementary school. The campus development is expected to include additional buildings, playgrounds, parking lots, driveways, and other buildings and amenities required to support the future growth of the school system. At this time, there are no permanent stormwater controls in place on the property. Proposed development plans must be completed before an application for a Water Pollution Abatement Plan can be submitted to the Texas Commission on Environmental Quality (TCEQ) for review and approval.

METHODS

This Geologic Assessment was conducted in accordance with the requirements of 30 TAC Chapter 213, including an implementation of the TCEQ-0585-Instructions document titled *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* Rev. 10-01-04). The general procedure for conducting the geologic assessment was to perform the following steps: research information, perform a field survey, evaluate data, make conclusions, and provide a report with feature assessments and recommendations.

A Professional Geoscientist with Rowden Consulting, LLC walked parallel transects spaced approximately fifty feet apart with a plan to map the locations of any sensitive or non-sensitive features using a handheld global positioning system (GPS), topographic maps, LIDAR maps, and

aerial photographs. Closer spacing was used where trees, thick vegetation, or other objects inhibited clear observation, and some areas were inaccessible due to downed trees or similar obstacles. All observed features that could potentially exhibit karst characteristics were carefully examined for evidence of subsurface extent. Methods for exploring potential features included shallow hand excavation and probing with a soil probe and shovel to determine the characteristics of soil or fill material within suspect features. Types of vegetation present were noted and confirmation of animal burrows was made by observing the mounds and excavated soil along with the presence of bedding material, scat, tracks, and other features produced by the activities of small mammals.

Features and transects were mapped in the field using a mapping grade global positioning (GPS) system. A Global Navigation Satellite System (GNSS) GPS receiver was used in the field. Real-time correction was utilized to attempt meter to submeter accuracy. Accuracy was closely monitored during fieldwork and critical data point collection was allowed to average over time until near or sub-meter results were achieved. The GNSS GPS is typically capable of producing one-meter positional accuracy using GPS, Precise Point Positioning (PPP), and Satellite-based Augmentation System (SBAS). PPP technology is made possible by stabilizing measurements of the distance between GNSS satellites and the receiver (pseudo-ranges) using carrier phase tracking. Additional accuracy is achieved from ionospheric correctional data received from satellite-based augmentation systems. Benchmark points were utilized to ensure accuracy at the beginning and end of the field day, and control points were carefully monitored with sufficient time to ensure that accuracy levels were acceptable for critical field shots.

The attached Geologic Assessment Table in Appendix I typically provides a description of features that meet the TCEQ definition of sensitive or nonsensitive features, where identified. However, no such features were identified by this assessment. Features that do not meet the TCEQ definition of potential features such as tree stump holes, surface weathering, karren, or animal burrows, were evaluated in the field and omitted from the table. To a limited degree, the geoscientist removed loose rocks and soil to preliminarily assess each potential feature's subsurface extent. No intensive excavation was conducted or required.

The results of this ground level survey do not preclude the possibility of finding subsurface voids or abandoned test or water wells during the clearing or construction phases of the proposed project. If a subsurface void is encountered during any phase of the project, construction should be halted and the TCEQ should be notified. Void closure plans may be required to resume development in such areas. Rowden Consulting, LLC recommends immediate contact and coordination with a geotechnical engineering consultant upon the discovery of any potential voids during construction.

PREVIOUS STUDIES AND APPROVALS

A prior Geologic Assessment for a large tract of land inclusive of the subject property was identified. PSI published a Geologic Assessment for a 314-acre covering the "Johnson/Schneider Tracts" on March 31, 2016 (Langan 2016). Non-sensitive features were identified in their study area, but no sensitive features were located. No sensitive or non-sensitive features were identified on the subject property. PSI updated their report on July 30, 2020.

Raba-Kistner published a draft Geotechnical Engineering Study for the subject property on July 14, 2023 (Kistler, et al). Raba-Kistner installed fifteen geotechnical soil borings on the property. Three strata were identified throughout the property. Stratum I (surface soil) consists of hard, dark brown lean to fat clay. This stratum extends to depths ranging from 1 to 3.5 ft below the existing ground surface and was not encountered in four of the borings. Stratum II consists of moderately hard, tan to light tan and gray decomposed limestone. This stratum extends to depths of 1 to 7 ft below existing ground surface and was not encountered in two of the borings. Stratum III consists of hard, highly fractured and weathered, light tan limestone of the Edwards Formation. Groundwater seepage was only encountered in one boring at a depth of six feet below ground surface.

In places, Raba-Kistner found the limestone below the surface soil to be fractured and vugular, but none of these characteristics were reported at the ground surface. Their report reported no encounters with voids. Should future construction activities encounter any potential voids or significant solution features, Raba-Kistner or another geotechnical engineering consultant should be contacted to evaluate the feature from a geotechnical standpoint. In some cases, preparation of a void mitigation plan could be required by the TCEQ.

SITE GEOLOGY

According to the *Geological Atlas of Texas, Austin Sheet* (Barnes 1974. Reprinted 1981.), the property is located upon the Edwards Formation. The Edwards Formation is an aquifer sensitive to rapid recharge in the area. The Edwards Formation consists of massive limestone beds with bands of chert nodules and rudistid biostromes (Housh, 2007). The Edwards Formation is susceptible to chemical weathering processes and is typically vuggy where exposed. This porosity varies from the microscopic to the megascopic. Laubach Cave (Inner Space Caverns), which is present in the northern portion of the map area, is an excellent example of the degree to which the Edwards Formation is susceptible to major solution modification. Karst features are typically present wherever the Edwards Formation is present (Housh, 2007).

The Edwards Limestone is composed of 200 to 350 feet of highly fractured and thickly bedded to massive limestone or dolomite, with minor shale, clay, and siliceous limestone. The Edwards Limestone is vuggy in places because of the occurrence of solution-collapse zones (Brune and Duffin, 1983). These zones, parallel to bedding planes, are the result of dissolution of gypsum beds that formerly occurred in this stratigraphic unit. They are cavernous and iron stained and contain brecciated limestone, chert, crystalline calcite, and residual clay. These solution-collapse zones occur mainly 60 to 80 feet above the base of the Edwards Limestone, and are the main water-bearing horizons in the aquifer (Brune and Duffin, 1983). In addition to solution-collapse zones, groundwater in the Edwards aquifer flows through a network of steeply dipping faults and joints (Brune and Duffin, 1983).

Recharge to the Edwards and associated limestones results from infiltration of precipitation that falls on the outcrop of the aquifer or infiltration of runoff derived from watershed areas upstream from the aquifer outcrop. The recharge zone is characterized by the occurrence of numerous scattered karst features, such as dissolution-enhanced fractures, sinkholes, and caves, which are potential recharge sites (Jones 2003). Recharge also takes the form of infiltration along faults and joints that intersect losing segments of perennial and intermittent streams in the region. These fractures are often enlarged by karstification (Brune and Duffin, 1983).

SOILS

According to the U.S. Department of Agriculture *Web Soil Survey*, the study area is mapped within the Eckrant stony clay, 0 to 3 percent slopes, stony soil series. The type of soil mapped on the property would not be expected to conduct significant amounts of surface water to the subsurface where present. Runoff is characterized as medium and the soil is well drained. The following descriptive information was obtained from the *Web Soil Survey* for the mapped soil series:

Description of Eckrant, Stony

Setting
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Parent material: Residuum weathered from limestone

Typical profile
A1 - 0 to 4 inches: stony clay
A2 - 4 to 11 inches: extremely stony clay
R - 11 to 80 inches: bedrock

Properties and qualities
Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 4 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Hydrologic Soil Group: D
Hydric soil rating: No

WATER WELLS

No water wells were identified on the property. A review of database information provided by the Texas Water Development Board (TWDB) revealed no records of wells on the property. One unplugged and unused water well was observed as an open pipe on an adjoining property. The well was labeled on a land survey of the subject property at a distance of 37 feet from the property

line. This well was also observed and documented by PSI in their 2016 Geologic Assessment. Since the water well is not located on the subject property, it was not recorded in the attached Geologic Assessment Table and development of the subject property should not disturb the well. However, the landowner should be notified of the presence of the well with a recommendation for its plugging and abandonment prior to the development of the adjoining property.

TOPOGRAPHY AND DRAINAGE

The land surface is nearly level to gently sloping towards the east throughout the study area. Surface drainage generally occurs in an easterly direction. No drainage features, channels, or streams were observed on the property. The terrain is generally flat without any areas of concentrated stormwater flow. Stormwater from heavy rains generally drains across the property in a sheetflow pattern. Runoff from the clayey surface soils would be medium to high.

SITE ASSESSMENT RESULTS

No sensitive geologic features were identified in this study. Any features observed would be summarized in the following sections, but none were observed. In general, the entire property was found to exhibit well developed, clayey soil with scattered rocks. Where present at the surface, rocks observed on the property appeared to have been largely sidecast alongside trees, fences and areas of prior site clearing. No non-karst closed depressions were observed throughout the property, except for small, scattered depressions associated with wind-thrown and dead trees. Animal burrows were also observed throughout the property.

Non-Karst Closed Depressions

Numerous non-karst closed depressions were identified throughout the property in connection with wind-thrown trees or tree stumps. One potential hog wallow was also observed adjacent to an abandoned livestock watering device that was connected to an off-site well. All of these features were one to four feet in diameter and no more than six to twelve inches deep. None of the features had a diameter greater than four feet. Since none were at least six feet in diameter, they were not recorded in the attached Geologic Assessment Table. The locations of these non-karst closed depressions are visible on the attached LIDAR Elevation Map.

Rocks

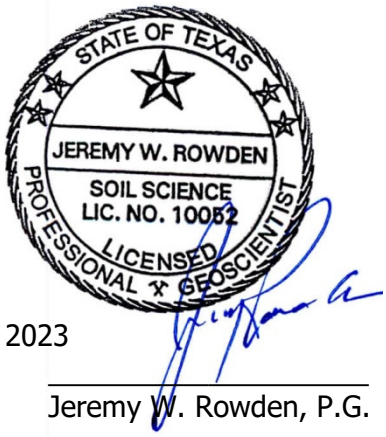
The subject property has been mostly undeveloped land since at least 1925. Evidence of past livestock activities was observed on the property including dilapidated animal pens, waterers, fences, and shelters. Many sidecast rocks were observed along fencelines and treelines. The northern one-third of the property was cleared and possibly used for construction equipment and material staging in recent years. A one-acre area located near the middle of the property was apparently filled with dumped rock prior to 1996, which was spread out over the area. The rocks were observed to be piled and stacked in unnatural patterns. The purpose of this rock dumping was not identified. The location of the dumped rocks is shown in the attached Site Geologic Map and the area is visible in the attached aerial photograph from 1996.

Burrows

Numerous animal burrows were observed on the property. Some were excavated beneath the bases of trees, some were excavated below scattered rocks, and some were excavated in open areas of the property. All such features were carefully examined to ensure the absence of karst characteristics. None of the burrows exhibited karst characteristics and they were clearly created and maintained by small mammals.

SIGNATURE OF PROFESSIONAL GEOSCIENTIST

This Geologic Assessment has been prepared under the direction and supervision of the *Professional Geoscientist* undersigned below. The site reconnaissance, as well as review and interpretation of information upon which the report is based were all portions of the assessment performed by the undersigned.



August 16, 2023

Jeremy W. Rowden, P.G.

REFERENCES

Barnes, V.E. *Geologic Atlas of Texas, Austin Sheet*. Bureau of Economic Geology, The University of Texas at Austin. 1974. Reprinted 1981.

Brune, Gunnar., and Gail L. Duffin. Occurrence, Availability, and Quality of Ground Water in Travis County, Texas. Report 276. Texas Department of Water Resources. June 1983.

Dahl, S.L. Hydrogeology and stream interactions of the Edwards aquifer in the Salado Creek basin, Bell and Williamson Counties, central Texas: Baylor University, Master's thesis. 154 p. 1990.

Housh, T.B. Bedrock Geology of Round Rock and Surrounding Areas, Williamson and Travis Counties, Texas. 2007.

Jones, I.C. Groundwater Availability Modeling: Northern Segment of the Edwards Aquifer, Texas. Report 358. Texas Water Development Board. December 2003.

Kistler, Reed S., and Loren Clifford. Geotechnical Engineering Study. Jarrell Independent School District. Elementary School No. 4. Draft Report. Raba-Kistner. July 14, 2023.

Langan, John. Geologic Assessment for 314-Ac Johnson/Schneider Tracts. Highway 195. Georgetown, Williamson County, Texas. PSI. March 31, 2016.

Railroad Commission of Texas. RRC Public GIS Map Viewer. Webpage: http://gis2.rrc.state.tx.us/public/startit.htm. Accessed February 28, 2022.

Rogers, C.W., Geologic map and structure section of Round Rock quadrangle, Williamson County, Texas. Austin, The University of Texas at Austin, M.A. thesis, 48p. 1963.

Senger, R.K., and C.W. Hydrogeology of the Northern Segment of the Edwards Aquifer, Austin Region, Report of Investigations 192. The University of Texas at Austin, Bureau of Economic Geology. 1990.

Slade, D. L. and L. DeLaGarza. Recharge Zone of the Northern Edwards Aquifer near Austin, Texas. City of Austin Department of Environmental and Conservation Services. 1998.

Texas Commission on Environmental Quality (TCEQ), 1999, Complying with the Edwards Aquifer Rules: Administrative Guidance.

TCEQ. Instructions to Geologists for completing Geologic Assessments within the Edwards Aquifer Recharge Zone. revised October 2004.

TCEQ, Edwards Aquifer Recharge Zone Boundary Maps.
http://www.tceq.state.tx.us/compliance/field_ops/eapp/program.html.

Texas Water Development Board. Water Data Interactive. Webpage:
http://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer#

Texas Water Development Board (TWDB), Water Well Drillers' Records, Online URL: http://www.twdb.state.tx.us/DATA/waterwell/well_info.asp

United States Department of Agriculture. Web Soil Survey.
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

APPENDIX I
GEOLOGIC ASSESSMENT TABLE

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Jarrell ISD Elementary #4

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	
None															0					
															0					
															0					

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

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

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

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

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

Date 8/14/23

Sheet 1 of 1

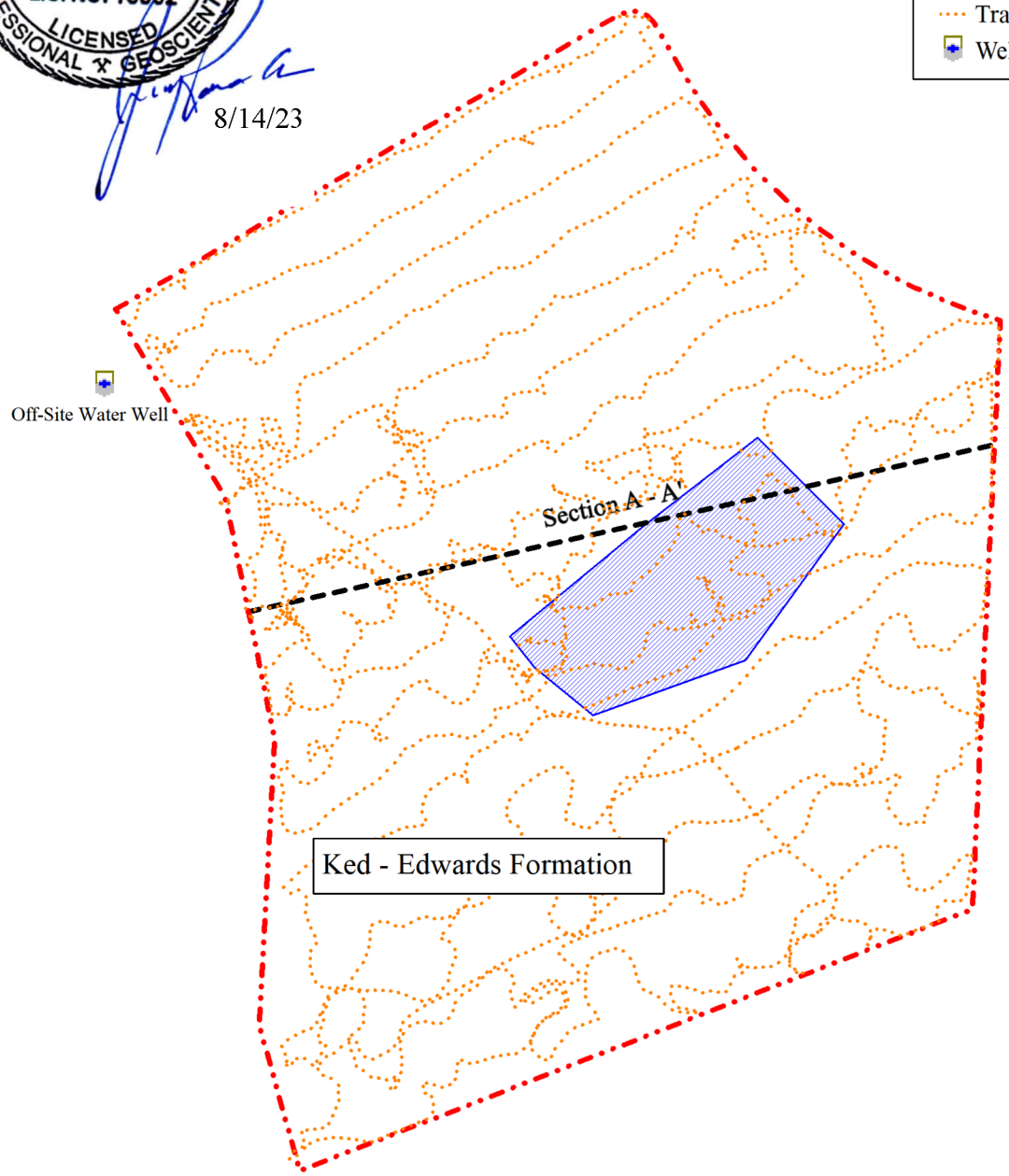
TCEQ-0585-Table (Rev. 10-01-04)

APPENDIX II
MAPS AND EXHIBITS


LEGEND
Study Boundary
Wood Cv
Blvd
County Road
195
Rockport St
Cattleman Dr
Holiday Creek Ln
Paint Creek Ln
Longview Ln
Archer Ln
Cowboy Canyon Dr
Hereford Ln
Brenham Pass
Marla Cv
Bonnet Ln
Trapping House Creek St
Cypress Springs Way
State Highway 15
Shell Stone Trl
Shell Rd
Westside Park
Shaman Preserve
Location Map
500 ft
1500 ft
2500 ft
Rowden Consulting, LLC
Environmental Services

STATE OF TEXAS
JEREMY W. ROWDEN
SOIL SCIENCE
LIC. NO. 10052
LICENSED
PROFESSIONAL GEOSCIENTIST

8/14/23



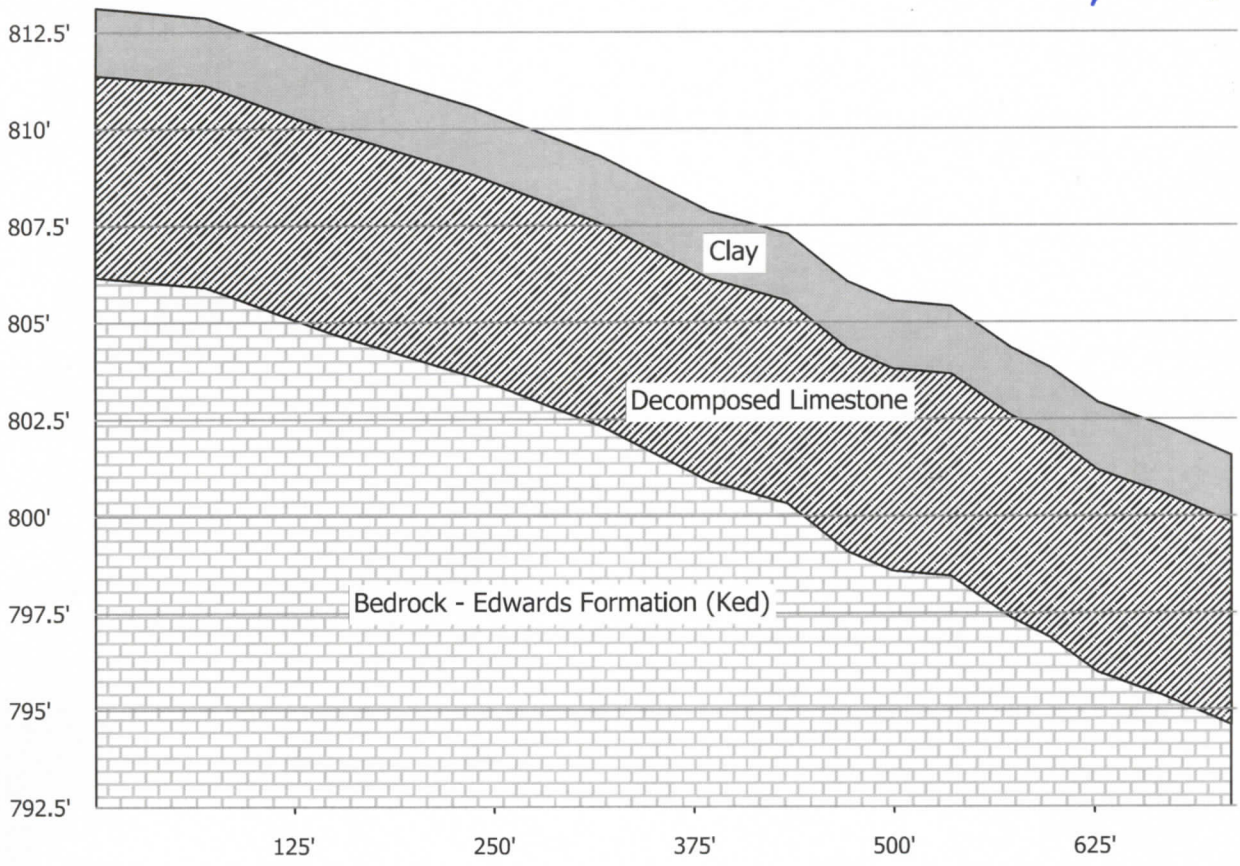
Site Geologic Map

0 ft 100 ft 200 ft 300 ft 400 ft

Rowden Consulting, LLC
Environmental Services

STATE OF TEXAS
JEREMY W. ROWDEN
SOIL SCIENCE
LIC. NO. 10052
LICENSED
PROFESSIONAL GEOSCIENTIST

8-14-23



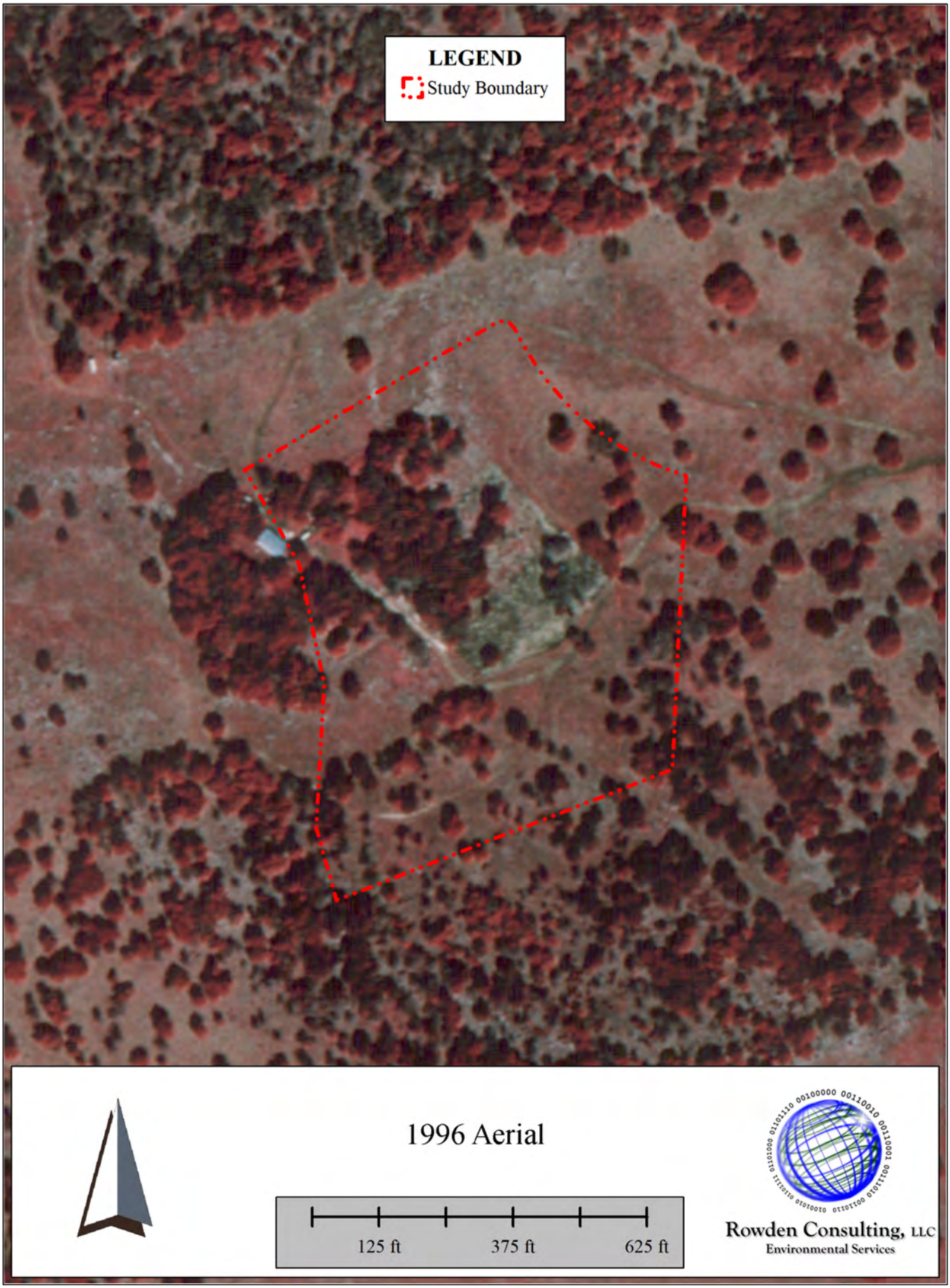
Section A - A'

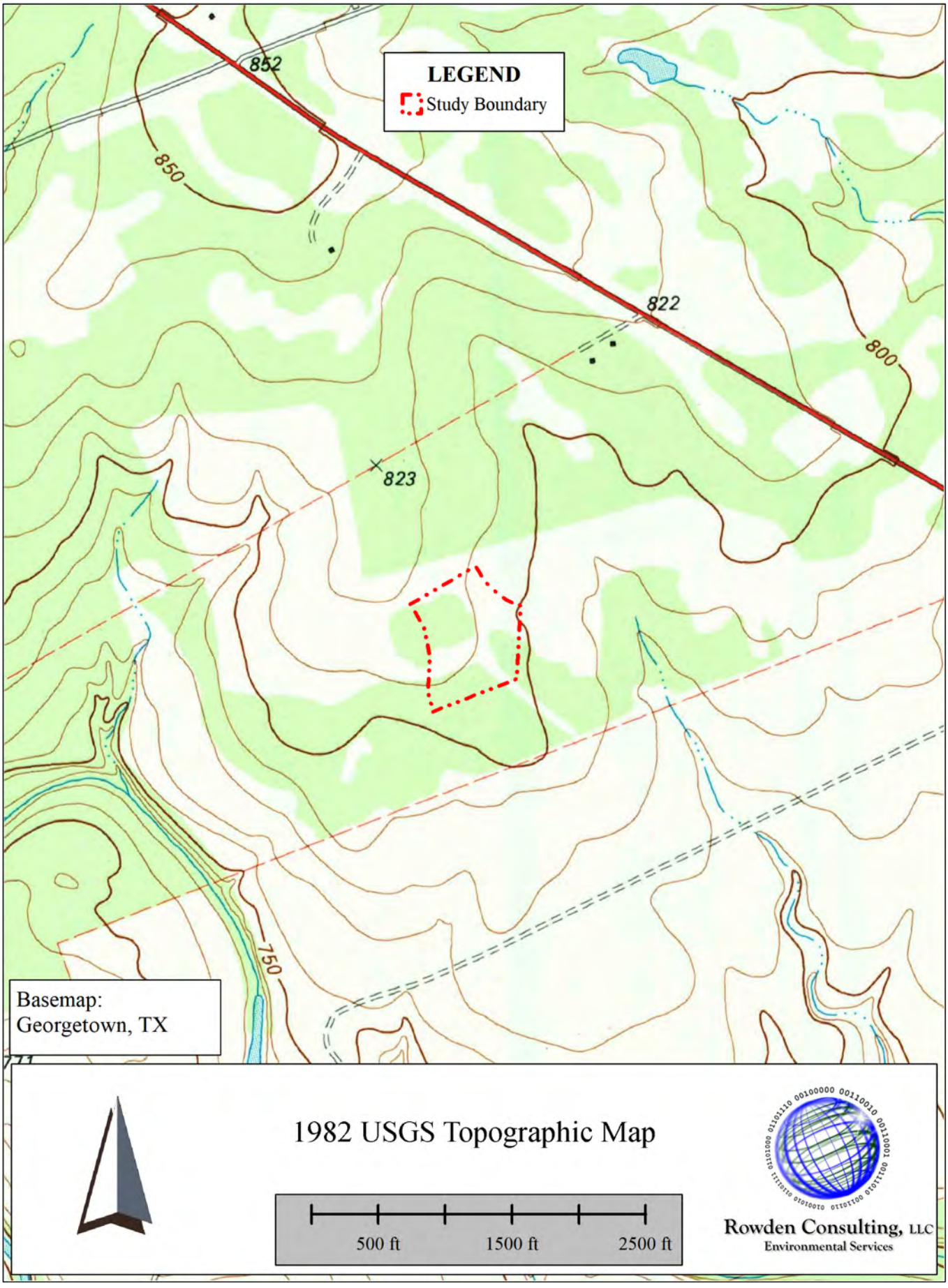
Generalized section based on the Geologic Atlas of Texas, Austin Sheet (BEG 1981), NRCS soil survey soil descriptions, physical observation of soil profile in an excavated telephone pole boring, and a review of soil boring data published for the project site by Kistler, et al.

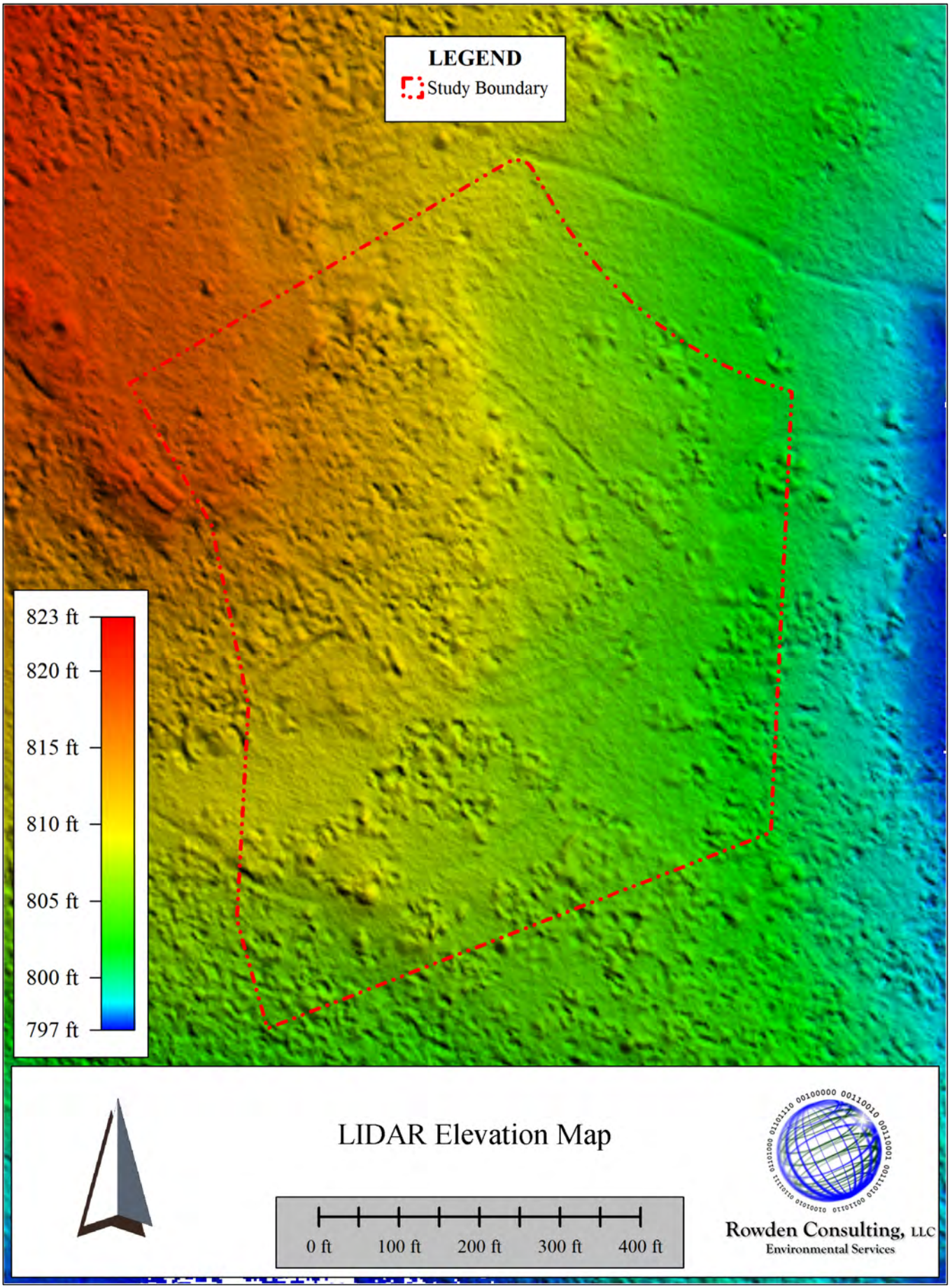
HORIZONTAL SCALE: 1"= 120'	Section A - A'	Rowden Consulting, LLC Environmental Services P.O. Box 978 - Bullard, TX - 75757	PROJECT NO. 23.049
			DATE 8/14/2023
	Jarrell ISD Elementary #4 Cowboy Canyon Dr. Williamson Co., TX		PROJECT MGR. jwr
			PROJECT TECH jwr


LEGEND
Study Boundary
2022 Aerial
125 ft
375 ft
625 ft
Rowden Consulting, LLC
Environmental Services


LEGEND
Study Boundary
2012 Aerial
125 ft
375 ft
625 ft
Rowden Consulting, LLC
Environmental Services

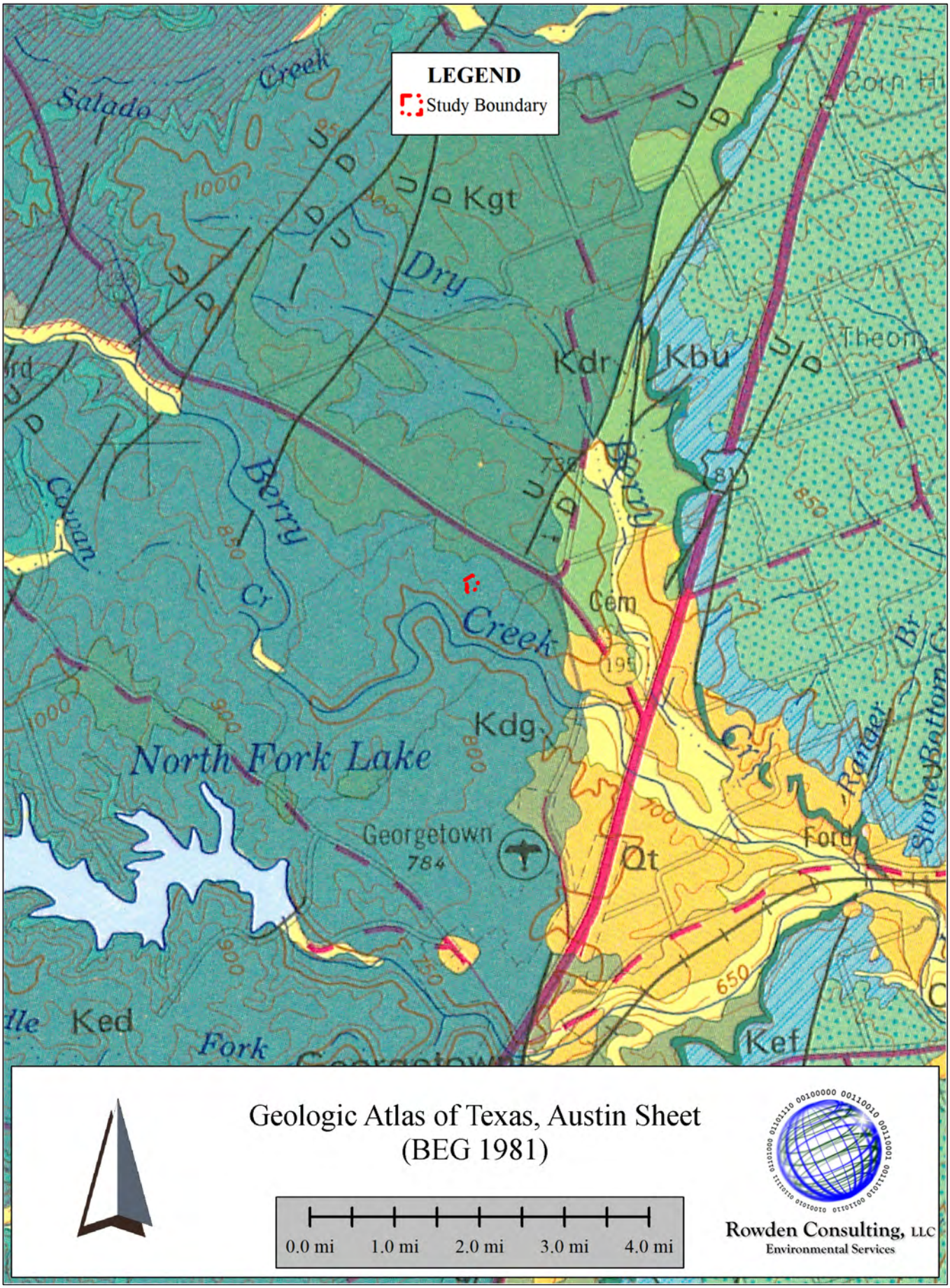

LEGEND
Study Boundary
1996 Aerial
125 ft
375 ft
625 ft
Rowden Consulting, LLC
Environmental Services


LEGEND
Study Boundary
852
850
822
800
823
750
Basemap:
Georgetown, TX
1982 USGS Topographic Map
500 ft
1500 ft
2500 ft
Rowden Consulting, LLC
Environmental Services



LIDAR Elevation Map

Rowden Consulting, LLC
Environmental Services



Geologic Atlas of Texas, Austin Sheet
(BEG 1981)

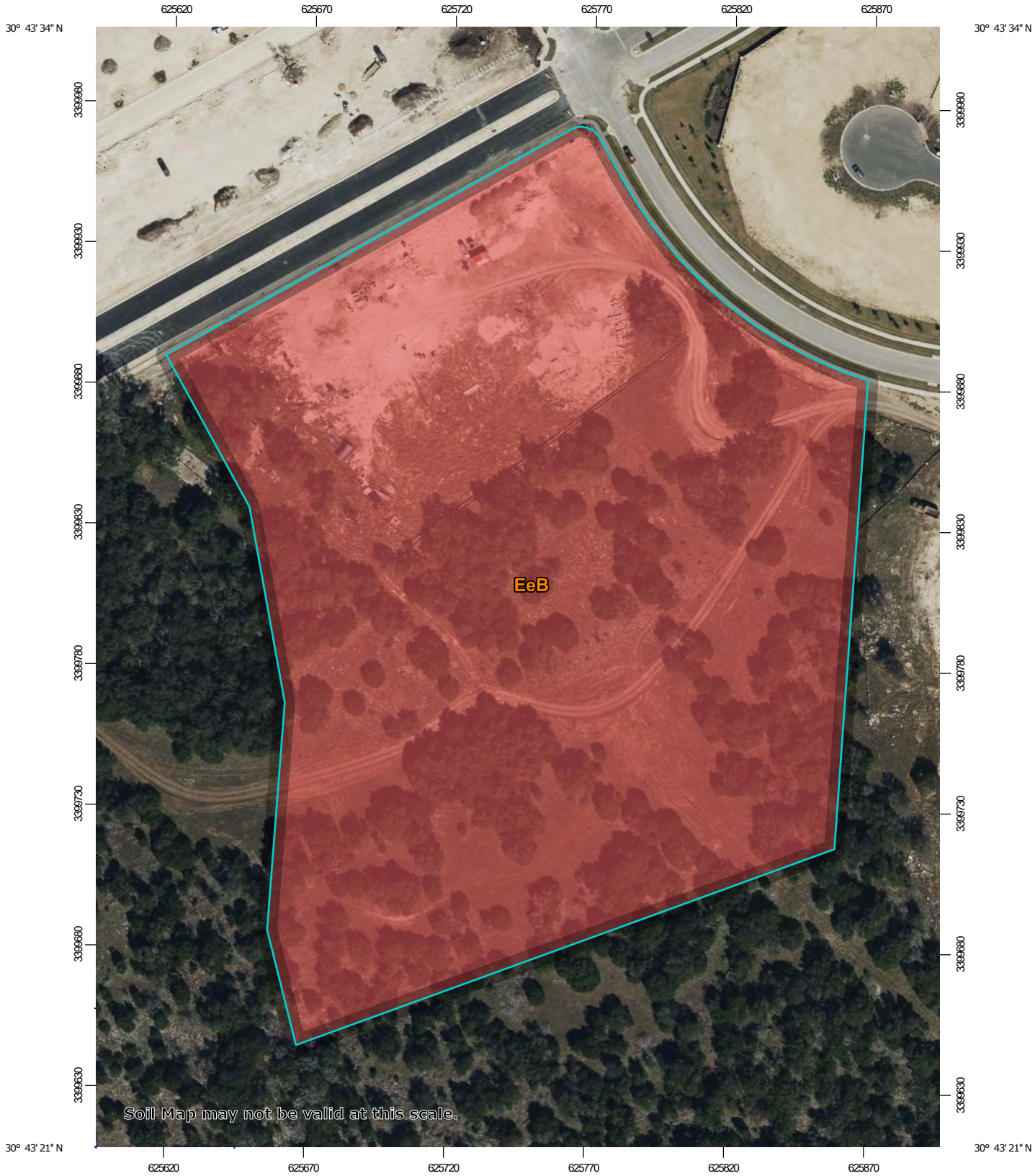
0.0 mi 1.0 mi 2.0 mi 3.0 mi 4.0 mi

Rowden Consulting, LLC
Environmental Services

Series	Group	Stratigraphic Unit			Hydrologic Unit	Maximum Thickness (feet)
Comanche	Fredericksburg	Edwards Limestone			Edwards aquifer	200
		Comanche Peak Limestone				50
		Walnut Formation				150
	Trinity	Paluxy Formation			Upper Trinity	10
		Glen Rose		Upper Member		450
				Lower Member	Middle Trinity	450
		Travis Peak		Hensell Sand Member		100
				Cow Cr. Limestone Member		100
				Hammett Shale Member		50
				Sligo Member	Lower Trinity	150
				Hosston Member		850

Source: Jones 2003

Hydrologic Soil Group—Williamson County, Texas
(GEDC)



Map Scale: 1:1,940 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 23, Aug 24, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EeB	Eckrant stony clay, 0 to 3 percent slopes, stony	D	13.3	100.0%
Totals for Area of Interest			**13.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX III
PHOTOGRAPHS


LEGEND
Study Boundary
Picture
01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
Photo Key
0 ft
100 ft
200 ft
300 ft
400 ft
Rowden Consulting, LLC
Environmental Services

Site Photos

1

View of the study area from near the northwest corner facing east.

2

View of of the study area from near the northwest corner facing south.

Site Photos

3

View of surface soil cracks in clayey soils exhibiting shrink/swell characteristics (not indicative of karst).

4

View of the study area from near the northeast corner facing south.

.

Site Photos

5

View of ths study area from near the northeast corner facing west.

6

View of an off-site water well located 37’ from the property line. This well is not located on the project site, but the owner should be notified of its presence with a recommendation for plugging.

Site Photos

7

View of a wind-thrown tree and rock with an animal burrow beneath.

8

View of another animal burrow beneath a rock.

Site Photos

9

General view of the west side of the study area.

10

General view of the interior of the study area.

Site Photos

11

General view of the interior of the study area with an area exhibiting a stony surface with no karst.

12

View of the study from the easternmost corner facing southwest.

Site Photos

13

General view of the east side of the study area.

14

View of rocks apparently dumped and spread throughout the middle of the property. These rocks were most apparent in the attached 1996 aerial photo.

Site Photos

15

View of a hole excavated for a power pole. Observation inside the hole revealed a ground rod and an earthen bottom approximately four feet in depth. No indicators of water movement were observed.

16

View of rocks apparently dumped and spread throughout the middle of the property. These rocks were most apparent in the attached 1996 aerial photo.

Site Photos

17

General view of the south side of the study area.

18

General view of the south side of the study area.

APPENDIX IV
TCEQ FORM F-0585

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.

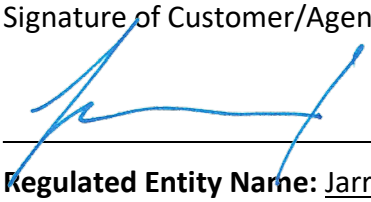
Signature

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: Jack Garner

Date: 01.03.24

Signature of Customer/Agent:



Regulated Entity Name: Jarrell Elementary School #4

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:____
   ☐ Commercial
   ☐ Industrial
   ☒ Other:Elementary School

2. Total site acreage (size of property):13.21

3. Estimated projected population:900

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	82,982	÷ 43,560 =	1.91
Parking	208,473	÷ 43,560 =	4.78
Other paved surfaces	0	÷ 43,560 =	
Total Impervious Cover	291,455	÷ 43,560 =	6.69

Total Impervious Cover 6.69 **÷ Total Acreage** 13.21 **X 100 =** 50.6**% 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	13,500 Gallons/day
_____% Industrial	_____ Gallons/day
_____% Commingled	_____ Gallons/day
TOTAL gallons/day _____	

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 City of Georgetown WWTP (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" = 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 No. 48491C0285F, last revised 20 December 2019

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

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

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

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

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

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

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

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☒ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☐ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

23. ☒ Areas of soil disturbance and areas which will not be disturbed.

24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. ☒ Locations where soil stabilization practices are expected to occur.

26. ☐ Surface waters (including wetlands).

    ☒ N/A

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

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

28. ☒ Legal boundaries of the site are shown.

Administrative Information

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

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

WPAP Application TCEQ Form 0584

Attachment A: Factors affecting surface water quality

The potential factors affecting **construction period surface water quality** from this site are: sediment runoff from disturbed areas, petroleum products runoff from drips from construction equipment, pesticides and fertilizers from landscaping activities, and high pH washwater from concrete and masonry cleanup/ washout facilities. Sediment runoff will be significantly reduced during construction by the use silt fences, inlet protection, and the water quality and detention vault permanent BMP. The high pH washwater potential will be controlled by requiring the use of appropriately sized, plastic-lined containment areas for concrete and masonry cement washout and cleanup activities. The petroleum and pesticide/ fertilizer sources will be minimized by the use of good housekeeping procedures and inspections by trained personnel to ensure that all construction activities follow the procedures given in the Temporary Stormwater Section prepared for the site.

The potential factors affecting **post-construction surface water quality** from this site are: pesticide and fertilizer runoff from vegetated areas, petroleum products runoff from parking areas and drives. Sediment runoff from the site will be significantly reduced by the action of the water quality/detention pond permanent BMP. Pesticide/ fertilizer runoff will be minimized by education of the school employees or outside landscaping firm relative to acceptable landscaping practices after construction activities are completed.

WPAP Application TCEQ Form 0584

Attachment B: Quantity and quality of stormwater runoff expected to occur on the site.

Please refer to Plan Sheets C6.00 (Existing Drainage Area Map) and C6.01 (Proposed Drainage Area Map) of the Construction plans for more details on the information presented below.

Pre-construction conditions: The drainage area is 13.21 acres. No off-site storm water will route through the site. Please see the existing drainage area map shown on plan sheet C6.00. Total calculated discharge rate for the on-site drainage area is as follows (calculations are based on the SCS Method, as required by the City of Georgetown Drainage Criteria Manual, Drainage Specifications; total peak discharge rate is calculated using HEC-HMS modeling.

Post-construction conditions: The peak discharge rates for post-construction are increased leaving the site due to the site improvements/impervious cover. Runoff rates are mitigated by the water quality/detention pond and reduced to below existing conditions.

The direct runoff summary for pre- and post-construction from the site is shown below:

PEAK DISCHARGE AT DESIGN POINT										
Design Point	Existing Conditions					Proposed Conditions				
	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	Comments	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	Comments
1	24.77	48.43	64.68	91.29	X-1	19.86	43.56	56.12	79.47	OS-1,WQ AND DET DISCHARGE
2	3.13	6.12	8.18	11.54	X-2	0.83	1.62	2.17	3.06	OS-2
Total	**27.90**	**54.55**	**72.86**	**102.83**		**20.69**	**45.18**	**58.29**	**82.53**	
The results are generated from HEC-HMS 4.11 by using SCS type II method										

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

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

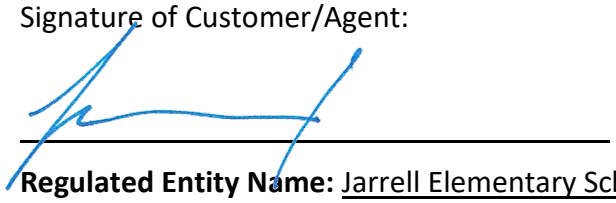
Signature

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: Jack Garner, PE

Date: 01.03.24

Signature of Customer/Agent:



Regulated Entity Name: Jarrell Elementary School #4

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: off-site regional ponds then Lower Berry Creek

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment A Spill Response Actions

SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

1 MATERIALS COVERED

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

Concrete	Cleaning solvents
Detergents	Petroleum based products
Paints	Pesticides
Paint solvents	Acids
Fertilizers	Concrete additives
Soil stabilization additives	

2 MATERIAL MANAGEMENT PRACTICES

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

2.1 Good Housekeeping

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

A. An effort will be made to store only enough product required to do the job.

B. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or other enclosure.

C. Products will be kept in their original containers with the original manufacturer's label in legible condition.

D. Substances will not be mixed with one another unless recommended by the manufacturer.

E. Whenever possible, all of a product will be used up before disposing of the container.

F. Manufacturer's recommendations for proper use and disposal will be followed.

G. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

2.2 Hazardous Products

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

A. Products will be kept in original containers with the original labels in legible condition.

B. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

C. If surplus product must be disposed of, manufacturers or local/state/federal recommended methods for proper disposal will be followed.

D. A spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

E. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with stormwater discharges.

2.3 Product Specific Practices

The following product specific practices will be followed on the job site.

A. Petroleum Products

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

B. Fertilizers

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

C. Paints, Paint Solvents, and Cleaning Solvents

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

D. Concrete Trucks

The CGP authorizes the land disposal of wash out water from concrete trucks at construction sites that are regulated under the CGP, as long as the discharge is in compliance with the restrictions given in Section 3.02.4.B of this SWPPP. This authorization is limited to the land disposal of wash out water from concrete trucks only. Any other direct discharge of concrete production waste water is not authorized by the CGP and must be authorized under a separate TCEQ General Permit or individual permit.

2.4 Spill Prevention Practices

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 cleanup.

A. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

B. Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite in spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.).

C. All spills will be cleaned up immediately after discovery.

D. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

E. Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 302 list and oil) will be immediately reported to the TCEQ National Response Center, telephone **1-800-832-8224**. Reportable Quantities of some substances which may be used at the job site are as follows:

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

F. The SPCC plan will be adjusted to include measures to prevent this type of spill from recurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the

cleanup measures will also be included. If the spill exceeds a Reportable Quantity, all federal regulations regarding reports of the incident will be complied with.

G. The job site superintendent will be the spill prevention and cleanup coordinator. He will designate the individuals who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of these personnel will be posted in the material storage area and in the office trailer onsite.

Spills: Reportable Quantities

The RQ depends on the substance released and where released. Use this table to determine whether you must report and under what rule.

In Texas, upon determining that a reportable discharge or spill has occurred, the responsible person must notify the state. The threshold quantity that triggers the requirement to report a spill is called the **reportable quantity (RQ).** The reportable quantity depends on the type of substance released and where released (e.g. into water vs. on land); different kinds of spills are subject to different provisions of state and federal rules.

Kind of spill	Where discharged	Reportable quantity	Rule, statute, or responsible agency
Hazardous substance	onto land	"Final RQ" in Table 302.4 in **40 CFR 302.4** (PDF)	**30 TAC 327**
	into water	"Final RQ" or 100 lbs, whichever is **less**	
Any oil	coastal waters	as required by the Texas General Land Office	**Texas General Land Office**
Crude oil, oil that is neither a petroleum product nor used oil	onto land	210 gallons (five barrels)	**30 TAC 327**
	directly into water	enough to create a sheen	
Petroleum product, used oil	onto land, from an exempt PST facility	210 gallons (five barrels)	**30 TAC 327**
	onto land, or onto land from a non-	25 gallons	

	exempt PST facility		
	directly into water	enough to create a sheen	
Associated with the exploration, development and production of oil, gas, or geothermal resources	under the jurisdiction of the Railroad Commission of Texas	as required by the Railroad Commission of Texas	**Railroad Commission of Texas**
Industrial solid waste or other substances	into water	100 lbs	**30 TAC 327**
From petroleum storage tanks, underground or aboveground	into water	enough to create a sheen on water	**30 TAC 334** .75-81
From petroleum storage tanks, underground or aboveground	onto land	25 gallons or equal to the RQ under **40 CFR 302**	**30 TAC 327**
Other substances that may be useful or valuable and are not ordinarily considered to be waste, but will cause pollution if discharged into water in the state	into water	100 lbs	**30 TAC 327**

(**PDF Help**)

Emergency Response Home

Spills, Discharges, and Releases

Hurricanes

Drought

Tornados

Wildfires

Floods

Winter Storms

How are we doing? Take our customer satisfaction survey

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment B Potential Sources of Contamination

The following are the potential pollutants and their sources which may occur at this construction site: offsite vehicle tracking of mud from vehicle traffic through inadequate construction exit, petroleum based products from vehicle/ equipment leaks and drips (maintenance and petroleum storage areas will not be allowed on the construction site), pesticides and fertilizers from landscaping activities, and high pH washwater from concrete and masonry cleanup/ washout facilities.

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment C Sequence of Major Activities

The Contractor will be responsible for implementing the following erosion and sediment control and stormwater management control structures. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the general contractor. The order of activities will be as follows (refer to Plan Sheet C2.00 Erosion Control Plan in the Construction Plans for the project for details):

A. Install erosion control barriers around perimeter of property and disturbed areas as shown on the SWPPP plan sheet. (Approx. 0.15 acres)

B. Install inlet protection for all existing grate inlets, curb inlets, and at the end of all exposed storm sewer pipes, if present. (Approx. 0.1 acres)

C. Construct temporary construction exit. (Approx. 0.02 acres)

D. Commence grubbing and removal of vegetation in area to receive cut or fill. (Approx. 13.37 acres)

E. Commence grading operation for building pad preparation. (Approx. 1.7 acres)

F. Install all underground utilities. (Approx. 3.5 acres)

G. Finalize pavement subgrade preparation. (Approx. 1.69 acres)

H. Install all proposed storm sewer pipes and install inlet protection erosion control log at ends of exposed pipes. (Approx. 0.1 acres)

I. Construct all grate inlets and drainage structures. Inlet protection erosion control logs may be removed temporarily for this construction. (Approx. 0.4 acres)

J. Remove erosion control barriers around inlets and manholes no more than 48 hours prior to placing stabilized base course. (Approx. 0.1 acres)

K Install base material as required for pavement, curb and gutter. (Approx. 1.07 acres)

L. Install all paving, curb and gutter. (Approx. 4.98 acres)

M. Complete planting and/or seeding of vegetated areas to accomplish stabilization, in accordance with the landscaping plan. (Approx. 6.52 acres)

N. Remove temporary construction exit, erosion control logs, inlet protection, and all other temporary sediment controls. (Approx. 0.1 acres)

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment D Temporary Best Management Practices

The following temporary best management practices will be used on the construction site

Stabilization Practices

1. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed

2. Frequent watering of excavation and fill areas to minimize wind erosion during construction.

3. Use of stabilization fabric for all slopes having a slope of 1V:3H or greater.

4. Permanent seeding and planting of all unpaved areas.

5. For all disturbed areas where construction activities have temporarily or permanently ceased for more than 14 days, stabilization activities shall commence no later than the 14th day after cessation of construction activities or after final grades have been achieved.

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment F Structural Practices

The following structural best management practices will be used on the construction site

1. Inlet protection using erosion control logs.

2. Perimeter protection using erosion control logs

3. Stabilized construction access point

4. Temporary concrete washout area

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment G Drainage Area Map

Please refer to Plan Sheets C6.00 Existing Drainage Area Map and C6.01 Proposed Drainage Area Map of the Construction Plans for this project.

Temporary Stormwater Management Practices TCEQ Form 0602
Attachment H Temporary Sediment Pond

Project to use proposed water quality and detention ponds as temporary sedimentation basin during construction duration.

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment I Inspection/ Maintenance for BMPs

I. Erosion and Sediment Control Maintenance and Inspection Practices

A. The following is a list of erosion and sediment controls to be used on this site during construction practice.

1. Stabilization practices for this site include:

   A. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed

   B. Frequent watering of excavation and fill areas to minimize wind erosion during construction.

   C. Use of stabilization fabric for all slopes having a slope of 1V:3H or greater.

   D. Permanent seeding and planting of all unpaved areas.

   E. For all disturbed areas where construction activities have temporarily or permanently ceased for more than 14 days, soil stabilization activities shall commence as soon as practicable but no later than the 14th day after cessation of construction activities.

2. Structural practices for this site include:

   A. Inlet protection using block and gravel-filled bags and fabric filter material

   B. Perimeter protection using silt fencing and/or straw roll wattles

   C. Stabilized construction access point

   D. Temporary concrete washout area

Velocity Dissipation: Contractor shall provide sufficient velocity dissipation devices to prevent soil erosion at discharge points where concentrated flow occurs or is expected to occur.

B. The following inspection and maintenance practices will be used to maintain erosion and sediment controls.

   1. All control measures will be inspected weekly and after each rainfall event.

2. All measures will be maintained in good working order; if repairs are found to be necessary, they will be initiated within 24 hours of report and completed prior to the next anticipated rainfall event. If completion of required repairs cannot be accomplished prior to the next anticipated rainfall event, the reason shall be documented in the SWPPP for the site and completion shall be accomplished as soon as practicable.

3. Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.

4. Silt fences will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

5. The sediment basin, if present, will be inspected for depth of sediment, and built up sediment will be removed when it reaches 50 percent of the design capacity. **Contractor shall install a depth gauge in the sediment basin to use in evaluating the depth of accumulated sediment to determine when sediment removal is required.**

6. Temporary and permanent seeding will be inspected for bare spots, washouts, and healthy growth.

7. A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in the SWPPP for the site.

8. The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.

9. Personnel selected for the inspection and maintenance responsibilities will receive training from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of the qualifications of inspection personnel must be kept in the SWPPP for the site.

II. Inspection and Maintenance Report Forms

Once installation of any required or optional erosion control device or measure has been implemented, weekly inspections of each measure shall be performed by the Contractor's inspection personnel. The Inspection and Maintenance Reports found in the SWPPP for the site (or other forms which the Contractor desires to use that have been approved by

the Engineer) shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

Based on the results of the periodic inspections, necessary control modifications shall be initiated within 24 hours and completed prior to the next anticipated rain event. These inspection reports shall be kept on file as part of the Storm Water Pollution Prevention Plan for at least three years from the date of completion and submission of the Notice of Termination.

These report forms shall become an integral part of the SWPPP for the site and shall be made readily accessible to TCEQ inspection officials, the Civil Engineering Consultant, and the Owner for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission.

The following forms shall be utilized by inspectors to report on the incremental status and condition of the control measures used on the site:

III. Summary of Erosion and Sediment Control Maintenance/Inspection Procedures

- ☐ All control measures will be at least weekly and after each rainfall event.
- ☐ All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of report and completed prior to the next anticipated rain event.
- ☐ Built-up sediment will be removed from silt fences when it has reached one-third the height of the fence.
- ☐ Silt fences will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- ☐ Sediment basins, if present, will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 50% of the design capacity or at the end of the job. **Contractor shall install a depth gauge in the sediment basin to use in evaluating the depth of accumulated sediment to determine when sediment removal is required.**
- ☐ Diversion dikes, if present, will be inspected and any breaches promptly repaired.
- ☐ If sediment escapes the site, accumulations will be removed at a frequency to minimize further negative effects, and whenever feasible, prior to the next forecasted rain event.
- ☐ Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.

- ☐ A maintenance inspection report will be made after each inspection. Copies of the report forms to be used are included in the SWPPP for the site.

- ☐ The site job superintendent will select the individuals who will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance reports.

- ☐ Personnel selected for inspection and maintenance responsibilities will receive training from the site job superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order. Records documenting the training and experience qualifications of each and every inspector shall be kept with the Inspection Record Forms in the SWPPP for the site.

IV. Construction/Implementation Checklist

1. Maintain Records of Construction Activities, including:

- ☐ Dates when major grading activities occur

- ☐ Dates when construction activities temporarily cease on a portion of the site

- ☐ Dates when construction activities permanently cease on a portion of the site

- ☐ Dates when stabilization measures are initiated on the site

- ☐ Dates of rainfall events and post-rainfall inspections

2. Prepare Inspection Reports summarizing:

- ☐ Name of inspector

- ☐ Qualifications of Inspector

- ☐ Control measures/areas inspected

- ☐ Observed conditions and areas of non-compliance

- ☐ Location of any discharges of sediments or other pollutants from the site

- ☐ Recommended remedial actions and action on previously recommended remedial actions

- ☐ Statement that the site is or is not in compliance with the Permit/SWPPP

- ☐ Changes necessary to the SWPPP for the site

3. Report Releases of Reportable Quantities of Oil or Hazardous Materials (if they occur):

- ☐ Notify TCEQ Spill Response Center **(1-800-832-8224)** immediately
- ☐ Notify permitting authority in writing within 14 days
- ☐ Modify the pollution prevention plan to include:
    - the date of release
    - circumstances leading to the release
    - steps taken to prevent recurrence of the release

4. Modify Pollution Prevention Plan as necessary to:

- ☐ Comply with the minimum permit requirements when notified by TCEQ that the plan does not comply
- ☐ Address a change in design, construction operation, or maintenance which has an effect on the potential for discharge of pollutants
- ☐ Prevent recurrence of reportable quantity releases of a hazardous material or oil

Temporary Stormwater Management Practices TCEQ Form 0602

Attachment J Interim/ permanent soil stabilization practices

Final Stabilization/Termination Checklist

- ☐ All soil disturbing activities are complete
- ☐ Temporary erosion and sediment control measures have been removed or will be removed at an appropriate time
- ☐ All areas of the construction site not otherwise covered by a permanent pavement or structure have been stabilized with a uniform perennial vegetative cover with a density of 70% or equivalent measures have been employed
- ☐ Bare soils should be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days.

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.

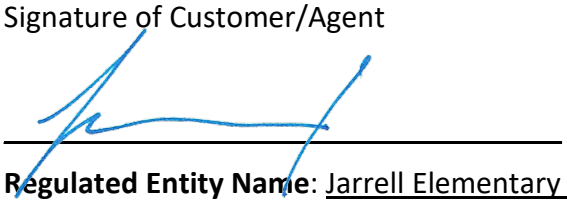
Signature

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: Jack Garner, PE

Date: 01.03.24

Signature of Customer/Agent



Regulated Entity Name: Jarrell Elementary School #4

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

Permanent Stormwater Management Practices TCEQ Form 0600

Attachment B BMPs for upgradient stormwater

There is no offsite stormwater runoff upgradient of the site that flows across the site. The entire site drains to the southeast to the sand filter/detention pond, then the storm infrastructure in Cowboy Canyon Drive, followed by a regional detention pond, and then ultimately into Lower Berry Creek.

Permanent Stormwater Management Practices TCEQ Form 0600

Attachment C BMPs for onsite stormwater

Construction Phase
Please refer to Plan Sheets C2.00 (Erosion Control Plan), C6.02, C6.08 (Drainage Plans), and C8.00 (Erosion Control Details) of the construction plans and the Storm Water Pollution Prevention Plan prepared for this construction site for more information and details about the information presented below.

Stabilization practices for this site include:

1. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed

2. Frequent watering of excavation and fill areas to minimize wind erosion during construction.

3. Permanent seeding and planting of all unpaved areas.

4. Use of stabilization fabric for all slopes having a slope of 1V:3H or greater

5. For all disturbed areas where construction activities have temporarily or permanently ceased for more than 14 days, stabilization activities shall commence no later than the 14th day after cessation of construction activities.

Structural practices for this site include:

1. Inlet protection using block and gravel filled bags and silt barriers

2. Perimeter protection using silt fencing and/or erosion control logs

3. Stabilized construction access point

4. The on-site water quality and detention ponds will be utilized as a temporary sediment pond during construction activities at the site. Discharge from this pond will be to an existing storm main in Cowboy Canyon Drive and ultimately into Lower Berry Creek.

5. Contractor shall provide sufficient velocity dissipation devices in the form of rock check dams and/or rock rip rap for velocity dissipation at areas with existing or potential channelized flow.

Permanent phase: water quality BMP/ detention pond

An on-site sand filtration water quality pond and detention pond, designed in accordance with the TCEQ Edwards Aquifer Compliance Technical Guidance Manual on Best Management Practices, will be constructed for a permanent water quality and water quantity control system. All storm water runoff, both surface runoff and runoff from roof drains, routes into a subsurface storm water collection system and then into the existing storm main in Cowboy Canyon Drive. The storm main is followed by a regional water quality/detention pond and then ultimately discharges to Lower Berry Creek.

Permanent Stormwater Management Practices TCEQ Form 0600

Attachment D: BMPs for surface streams

The stormwater runoff from this site will flow into an on-site water quality/ detention pond with sand filter, built and maintained by the Owner, before passing into a 36-inch storm main in Cowboy Canyon Drive. The storm main is routed to a regional water quality/detention pond and then to Lower Berry Creek. The two ponds are independent and the on-site ponds will provide effective protection to the water quality of this surface stream.

Permanent Stormwater Management Practices TCEQ Form 0600

Attachment F Construction Plans

Please refer to the construction plans which show the locations and details of the water quality/ detention ponds.

Permanent Stormwater Management Practices TCEQ Form 0600

Attachment G Inspection, maintenance, repair, and record keeping

The Owner shall implement the following inspection, maintenance, repair, and record keeping procedures for the sand filter located within the water quality pond designed to serve the site.

1. Inspection: Owner's representative shall visually inspect the sedimentation/filtration basin at least every 3 months, and after each large storm for the first year of operation. For the second and following years, inspections may be limited to every 6 months and at least one time per year after a large storm. Because construction activities can contribute heavy sediment and debris loads, construction activities should be completed, and all areas should be stabilized, prior to exposing the sand filter to stormwater runoff. During each inspection, erosion areas inside and downstream of the sand filter shall be identified and repaired or revegetated immediately. Any damage to structural elements of the system (pipes, concrete drainage structures, retaining walls, etc.) shall be identified and repaired immediately. Cracks, voids, and undermining effects shall be patched/ filled to prevent additional structural damage. Trees and root systems shall be removed to prevent growth in cracks and joints that can lead to structural damage.

2. Sediment Removal: Sediment shall be removed from the inlet structure and sedimentation chamber when sediment buildup reaches a depth of 6" or when the proper functioning of inlet and outlet structure is impaired. Sediment shall be cleared from the inlet structure at least once per year and from the sedimentation basin at least once every 5 years.

3. Media Replacement: Maintenance of the filter media shall be accomplished when the drawdown time exceeds 48 hours. When this maintenance is required, the upper layer of sand shall be removed and replaced with new material meeting the original specifications. Any discolored sand shall also be removed and replaced. IN filters that have been regularly maintained, this media replacement should be limited to the top 2-3".

4. Debris and Litter Removal: Debris and litter that has accumulated near the sedimentation basin outlet device should be removed during regular mowing operations and during all inspections. Particular attention shall be directed towards floating debris that could eventually clog the control device or riser.

5. Filter Underdrain: Clean underdrain piping network to remove any sediment buildup, on an as needed basis, to maintain design drawdown time.

6. Mowing: Grassy areas in and around the sand filter shall be mowed at least two times per year, with more frequent mowing as necessary to maintain aesthetic appeal. Vegetation height should be limited to 18". Vegetation on the pond embankments shall be mowed as often as is necessary to prevent the establishment of woody vegetation.

7. Record Keeping: The Owner's representative shall prepare a signed, written record of each inspection performed and actions performed as a result of the inspection observations, shall maintain those records in the Owner's office for a period of 5 years, and shall, upon request, make those records available to TCEQ personnel and other agencies with jurisdiction over the site.

Certifications:

Design Engineer		Jarrell ISD Owner
Jack Garner, PE Printed Name		Toni M. Hicks Printed Name
01.03.24 Date	PE Seal	01.03.24 Date

Permanent Stormwater Management Practices TCEQ Form 0600

Attachment I Measures for minimizing surface stream contamination

An Owner's representative shall visually inspect all roof drains and drive/ parking area inlets in the onsite collection system at a minimum interval of every 3 months. Specific items to be observed are: the amount of sediment and/or trash buildup at inlets (removal required if > 10% of the inlet opening is blocked), the presence of standing water or soggy conditions, indicative of poor drainage, and damage to structural components (pipes, inlet grates).

The stormwater runoff from this site will flow to a sand filtration system before passing into an existing storm water main in Cowboy Canyon Drive. These combined practices will provide effective measures to minimize surface stream contamination.

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: Jarrell Elementary School #4

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: Toni M. Hicks, Ed.D
   Entity: Jarrell ISD
   Mailing Address: 108 E. Avenue F
   City, State: Jarrell, Texas Zip: 76537
   Telephone: 512.746.2124 Fax: _____
   Email Address: toni.hicks@jarrellisd.org
   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: Jack Garner
   Texas Licensed Professional Engineer's Number: 98447
   Entity: Langan Engineering
   Mailing Address: 9606 N. Mopac Expressway, Suite 110
   City, State:Austin, Texas Zip: 78759
   Telephone:737.289.7810 Fax:_____
   Email Address:jgarner@langan.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: _____
   ☐ Multi-family: Number of residential units: _____
   ☐ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☒ Other: Elementary School (no showers)

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

100% Domestic	13,500 gallons/day
_____% Industrial	_____ gallons/day
_____% Commingled	_____ gallons/day

   Total gallons/day: 13,500

6. Existing and anticipated infiltration/inflow is 225 gallons/day. This will be addressed by: Hydraulic effect should be minimal compared to the average daily sewage flow. Abatement measures will consist of strict adherence to pipe construction techniques, bedding, clay cap sanitary sewer trenches, water tight manholes and lids, etc.

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 this submission, 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''	676	PVC	SDR-26
6''	34	PVC	SDR-26
4''	272	PVC	SDR-26

Total Linear Feet: 982

(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 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?*
SSWR-1	C7.00 Of	0+06.54	MH
SSWR-1	C7.00 Of	2+35.01	MH
SSWR-1	C7.00 Of	4+68.93	MH
SSWR-1	C7.00 Of	6+75.98	MH
	Of		
	Of		

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

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

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

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

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

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

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 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*
	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*
	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*
SSWR	1+59.45	Crossing		3.3'

27. Vented Manholes:

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

Table 6 - Vented Manholes

Line	*Manhole*	*Station*	*Sheet*

Line	*Manhole*	*Station*	*Sheet*

28. Drop manholes:

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

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*

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

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

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

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

31. Minimum flow velocity (From Appendix A)

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

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

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

Table 8 - Flows Greater Than 10 Feet per Second

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

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

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

Administrative Information

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

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

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	N/A of
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	C7.01 of
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	N/A of
Typical trench cross-sections **[Required]**	C8.04 of
Bolted manholes **[Required]**	N/A of
Sewer Service lateral standard details **[Required]**	N/A of
Clean-out at end of line **[Required, if used]**	N/A of
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	N/A of
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	C7.01 of
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	N/A of

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

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

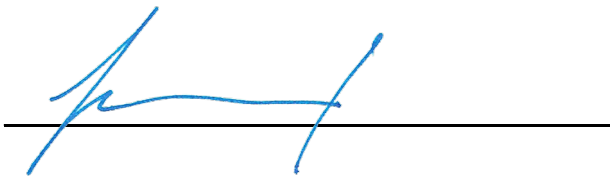
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director 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: Jack Garner, PE

Date: 01.03.24

Place engineer's seal here:

Signature of Licensed Professional Engineer:



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

Jarrell Elementary School #4
Georgetown, Texas

Prepared For:

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program Austin Regional Office
P.O. Box 13087
Austin, TX 78711-3087

Prepared By:

Langan Engineering and Environmental Services, Inc.
9606 N. Mopac Expressway, Suite 110
Austin, TX 78759

Jack Garner, PE
Professional Engineer License No. 98447

December 20, 2023
Langan Project Number: 531023302

LANGAN

INTRODUCTION

This design report is prepared in accordance with accepted engineering practices and the requirements of the Texas Commission on Environmental Quality (30 TAC 217). The specific design parameters for daily wastewater influent loading used in this report are as follow (take from 30 TAC 217.32 Table B.1): School with cafeteria and no showers:15 gal/day/person.

The purpose of this report is to provide engineering design data for the sanitary sewer collection system serving Jarrell ISD ES #4. The tract is 13.21 acres and located on the southwest quadrant of Cowboy Canyon Drive and Berry Creek Highlands Way in the city of Georgetown, Williamson County, Texas. The school will include a two-story building, parking lots, and play grounds.

Sanitary sewer from the school will be collected and flow via gravity through 4-inch and 6-inch sewer lines. Four new manholes will be constructed on the site. There is one waterline crossing of the sanitary sewer system. The on-site collection system will connect to an existing 8-inch gravity main constructed as part of the Berry Creek Highlands development. The existing 8-inch main is part of the city of Georgetown sanitary sewer collection system and will be conveys flow to the city's existing Wastewater Treatment Plant for treatment.

Description of the Proposed System

The plans and specifications which describe the project are in the compliance with all of the requirements of the TCEQ's TAC Chapter 217. The estimated flow in the sanitary sewer main is 13,500 gallons/day and will be transported from the school through 982 linear feet of PCV SD-26 ASTM D3034.

Some of the sanitary sewer will be under internal roads. Therefore, the live and dead loads on the 8" pipe were evaluated to determine if the pipe deflections will be within acceptable range. HS20 vehicle loading was chosen as the live load considering that semi-tractor trailer trucks may access these internal roads. Based on the depth of the pipes the live load on the pipe is 2.42 psi with a total load of 8.25 psi. Deflections of the pipes were calculated to be 1.06%.

The sanitary sewer pipes are designed with a slope that will provide a velocity of at least 2 feet per second, as calculated using a Manning's equation with an "n" value of 0.013 for the pipes. Also, at full flow the collection system is designed not to exceed a velocity of 10 feet per second.

No part of the project will be in the 100-year or 5-year floodplain.

Design Flows

The specific design parameters for daily wastewater influent loading used in this report are estimated as follows: (taken from 30 TAC 217.32 Table B.1): School with cafeteria and no showers: 15 gal/day/ person.

TABLE 1: ESTIMATED WASTEWATER FLOW RATE

Land Use and Acreage	# of Units to be served	Basis for Daily wastewater	Estimated Average daily flow, gal/day
School with cafeteria and no showers	900 Person or (45 LUE)	15 gal/day /person	13,500 gpd

Minimum Peaking Factor = (0.2 * (900/1000) ∧ $^{0.198}$) = 0.195 gpm
Max Peaking Factor = (18 + (900/1000) ∧0.5) / (4 + (900/1000)$^{0.5}$) = 3.83 gpm

Average Dry Weather Flow = 13,500 gpd / 1440 (min/day) = 9.375 gpm
Minimum Dry Weather Flow = 9.375 gpm * 0.195 = 1.83 gpm
Peak Dry Weather Flow = 9.375 gpm * 3.83 = 35.90 gpm

I/I = 1,000 gpd/acre * 0.225 acre = 225 gpd = 0.16 gpm

Peak Dry Weather Flow = 35.90 gpm + 0.16 gpm = 36.06 gpm

Pipe Capacity

36.06 gpm / 448.8 = 0.08 cfs

Full Flow of 8" pipe at 0.5% (n=0.013) = 0.86 cfs

0.08 cfs / 0.86 cfs = 9.4% pipe capacity

Line ID	Downstream Station	Upstream Station	Length	Slope	Diameter	n	Q	V
-	-	-	ft	ft/ft	inches	-	cfs	ft/ sec
SSWR-1	0+00.00	0+06.54	6.54	0.005	8	0.013	0.86	2.45
SSWR-1	0+06.54	2+35.01	228.47	0.05	8	0.013	2.71	7.76
SSWR-1	2+35.01	3+84.63	149.62	0.01	8	0.013	1.21	3.47
SSWR-1	3+84.63	4+68.93	84.30	0.01	8	0.013	1.21	3.47
SSWR-1	4+68.93	6+75.98	207.05	0.01	8	0.013	1.21	3.47
SSWR-1	6+75.98	7+05.33	29.35	0.0648	4	0.013	0.49	5.57

Structural Design

Input

	Depth	Deflection	Dead Load	Live Load	Total Load	Allowable Deflection 2%
8"	7.0 ft	1.06%	5.83 psi	2.42 psi	8.25 psi	OK

Calculation Inputs
E': 1000.0 lbs/in^2
E'b: 1000.0 lbs/in^2
Time Lag Factor: 1.0
Pipe Stiffness: 115 psi
Bedding Constant: 0.1
Earth Load Pressure: 120 lb/cuft
Trench Width: 24.0"

Output

Allowable deflection is 2%. Max calculated deflection is 1.06% **OK**

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

I Toni M. Hicks, Ed.D,
Print Name

Superintendent,
Title - Owner/President/Other

of Jarrell Independent School District,
Corporation/Partnership/Entity Name

have authorized Jack Garner, PE
Print Name of Agent/Engineer

of Langan Engineering
Print Name of Firm

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

I also understand that:

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

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

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

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

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

SIGNATURE PAGE:

Tom Hall

Applicant's Signature

12/12/23

Date

THE STATE OF _____ §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ 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 12 day of December, 2023.

Monica Lopez

NOTARY PUBLIC

MONICA D. LOPEZ
Notary Public, State of Texas
Comm. Expires 05-17-2026
Notary ID 133766138

Monica Lopez

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 05-17-2026

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Jarrell Elementary School #4
Regulated Entity Location: XXX
Name of Customer: Jarrell ISD
Contact Person: Toni M. Hicks, Ed.D Phone: 512.746.2124
Customer Reference Number (if issued):CN 600794234
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	13.21 Acres	$ 6,500
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	982 L.F.	$ 650
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 01.03.24

TCEQ-0574 (Rev. 02-24-15)

Application Fee Schedule

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Core Data Form

TCEQ Use Only

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 600794234		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	12-20-23

☐ 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:*

Jarrell Independent School District

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

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☒ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees

☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?

☐ **Yes** ☒ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator

☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:							
	108 E. Avenue F						
	City	Jarrell	State	TX	ZIP	76537	ZIP + 4

16. Country Mailing Information (*if outside USA*)	17. E-Mail Address (*if applicable*)
	toni.hicks@jarrellisd.org

18. Telephone Number	19. Extension or Code	20. Fax Number (*if applicable*)
(512) 746-2124		(512) 746-2518

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected below this form should be accompanied by a permit application*)

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (*Enter name of the site where the regulated action is taking place.*)

Jarrell Elementary School #4

23. Street Address of the Regulated Entity: *(No PO Boxes)*							
	City	Georgetown	**State**	TX	**ZIP**	78681	**ZIP + 4**
24. County							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	The school site is located about 2,200 LF south of the intersection of State Highway 195 and Berry Creek Highlands (BCH) Way.

26. Nearest City	**State**	**Nearest ZIP Code**
Georgetown	Tx	78628

27. Latitude (N) In Decimal:	30.725361	**28. Longitude (W) In Decimal:**	-97.686583

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	43	31.3	-97	41	11.7

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)
8211		611110	

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

public education

34. Mailing Address:	**108 E. Avenue F**						
	City	**Jarrell**	**State**	**TX**	**ZIP**	**76537**	**ZIP + 4**

35. E-Mail Address:	**toni.hicks@jarrellisd.org**

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 746-2124		**(512) 746-2518**

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

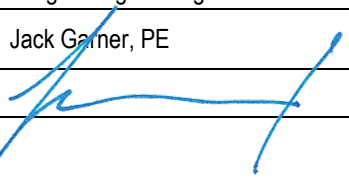
SECTION IV: Preparer Information

40. Name:	Jack Garner, PE	**41. Title:**	Associate

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(817) 239-7224		( ) -	jgarner@langan.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:	Langan Engineering	**Job Title:**	Associate Principal
Name *(In Print):*	Jack Garner, PE	**Phone:**	(817) 239- **7224**
Signature:		**Date:**	01.03.24

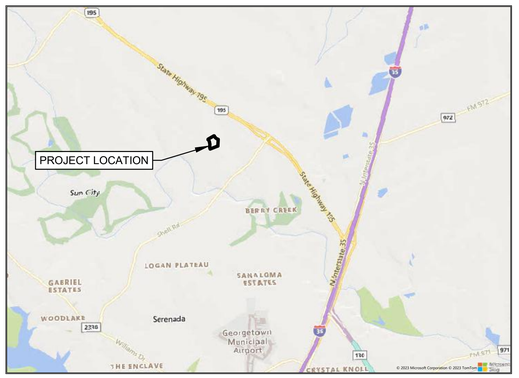
Site Civil Plans for the Construction of

JARRELL ELEMENTARY SCHOOL #4

To Serve

JARRELL ISD

IN THE
CITY OF GEORGETOWN
WILLIAMSON COUNTY, TEXAS



SITE MAP

SCALE: 1" =5000'

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TBPE FIRM REG. #F-13709

LANGAN PROJECT NO. 531023302

JANUARY 2024

SHEET LIST TABLE

•SHEETS NOT INCLUDED IN PLAN SET•

Revision / Date

Project: JARRELL ELEMENTARY SCHOOL #4 FOR JARRELL ISD IN GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK M. GARNER, JR.
98447
LICENSED PROFESSIONAL ENGINEER
01-03-2024
TBPE Registration #: F-13709

Huckabee
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COVER SHEET

Job No. 1949-03-01	Sheet No. C1.00
Drawn By: VM	
Date: 1/3/2024	

GENERAL NOTES

GENERAL NOTES

1. EXISTING TOPOGRAPHIC, BOUNDARY AND UTILITY INFORMATION AS SHOWN ON THESE DESIGN DOCUMENT(S) ARE BASED ON PLAN(S) TOPOGRAPHIC SURVEY 13.208 ACRES OUT OF BURRELL EAVES SURVEY, ABSTRACT NO.216, PREPARED BY QUICK INC. LAND SURVEYING DEVELOPMENT DATED 09/15/2023.

   ACTUAL SITE CONDITIONS MAY VARY FROM THOSE ENCOUNTERED AT THE TIME THE SURVEY DATA SHOWN HEREON WAS OBTAINED.

   PRIOR TO ANY USE OF THIS DATA, INCLUDING BUT NOT LIMITED TO DESIGN OR CONSTRUCTION, THE APPROPRIATE DATA CONFIRMATIONS SHALL BE MADE.

   BASED ON THE REFERENCED INFORMATION, ALL ELEVATIONS AND ESTABLISHED GRADES SHOWN HEREON REFER TO NAVD 88 DATUM.

2. THE CONTRACTOR SHALL BEGIN WORK AS DIRECTED BY THE OWNER/CITY OR THE NOTICE TO PROCEED.

3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, APPROVALS, AND INSPECTIONS PRIOR TO AND THROUGHOUT CONSTRUCTION.

4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN NEAT AND ACCURATE CONSTRUCTION RECORDS FOR THE OWNER/CITY'S USE. THE CONTRACTOR SHALL PROVIDE THE CITY CLEAN AND ACCURATE FULL SIZE REPRODUCIBLE RECORD DRAWINGS WHICH CLEARLY DESCRIBE ALL CONSTRUCTION AND ANY DEVIATIONS FROM THE PLANS.

5. ALL SHOP DRAWINGS AND SUBMITTALS SHALL BE PROOFREAD AND REVIEWED BY THE GENERAL CONTRACTOR FOR APPROVAL PRIOR TO SUBMITTAL TO THE ENGINEER. SUBCONTRACTOR / GENERAL CONTRACTOR SHALL CLEARLY INDICATE, MARK, HIGHLIGHT, AND PROPERLY CLARIFY PRODUCTS TO BE CONSIDERED FOR APPROVAL. SUBMITTALS NOT PROOFREAD OR REVIEWED OR CLARIFIED PROPERLY SHALL BE RETURNED UNREVIEWED. CONTRACTOR SHALL RESUBMIT SHOP DRAWINGS AND ALLOW FOR SUITABLE REVIEW TIME. SUITABLE REVIEW TIME SHALL BE SEVEN (7) WORKING DAYS FOR TYPICAL SUBMITTALS AND LONGER DEPENDING ON THE SIZE AND NATURE OF THE SUBMITTAL.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR QUALITY CONTROL IN THE REQUIRED CONSTRUCTION SURVEYING AND MATERIALS TESTING. DIMENSIONS SHOWN AND DIGITAL FILES PROVIDED SHALL BE USED TO LAYOUT THE SITE.

7. ALL ADJACENT PROPERTY DAMAGED BY THE PROPOSED CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER CONDITION THAN WHICH IT WAS FOUND BEFORE SUCH WORK WAS UNDERTAKEN (NON-PAY ITEM).

8. ALL EFFORTS SHALL BE MADE TO AVOID DAMAGE TO EXISTING TREES THAT ARE TO REMAIN. TREES SHALL BE TRIMMED AND PAINTED ONLY IF NECESSARY FOR THE SAFE MANEUVERING OF CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL RECEIVE PRIOR APPROVAL FROM THE OWNER'S FIELD REPRESENTATIVE FOR REMOVAL OF ANY TREES. WHEN EXCAVATING AROUND A TREE, THE ROOTS SHALL BE CLEAN CUT PRIOR TO ANY EXCAVATION WORK. DO NOT SNAG AND TEAR TREE ROOTS

9. ALL EXISTING FENCES ARE TO REMAIN UNLESS SPECIFIED OTHERWISE BY THE OWNERS REPRESENTATIVE. ANY DAMAGE TO FENCES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE WITH NEW AND LIKE MATERIALS. TEMPORARY CONSTRUCTION SITE SECURITY FENCES ARE REQUIRED.

10. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING EXISTING DRIVEWAYS AND SIDEWALKS FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION AT ALL TIMES.

11. ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED TO INCLUDE BUT NOT BE LIMITED TO ROCK, RUBBLE, DEBRIS, TRASH, ETC. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE SPECIFIED OR AGREED TO BY OWNER.

12. 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 AND ENGINEER.

13. THE CONTRACTOR SHALL NOTIFY THE OWNER/CITY REPRESENTATIVE OF OFF-SITE EXCESS SPOILS SITES THAT ARE TO BE UTILIZED

14. 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 ORDINANCES. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES FOR THE ESTABLISHMENT OF GRASS OR OTHER GROWTH TO PREVENT EROSION.

15. DISTURBED AREAS THAT ARE SEEDED SHALL BE CHECKED PERIODICALLY FOR FULL COVERAGE OF GRASS. ALL DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND SEEDED OR SODDED AS NECESSARY AND BY DEFINITION 'MAINTAINED' UNTIL AN ESTABLISHED STAND OF GRASS CAN BE RELEASED TO THE OWNER. REFERENCE LANDSCAPE/IRRIGATION PLAN (IF PROVIDED) TO COORDINATE PLANTING ENHANCEMENTS AND LIMITS OF IRRIGATION COVERAGE.

16. CONTRACTOR SHALL NOT STORE MATERIALS, EQUIPMENT OR OTHER CONSTRUCTION ITEMS ON ADJACENT PROPERTIES OR ADJACENT RIGHT-OF-WAYS WITHOUT THE PRIOR WRITTEN CONSENT OF THE PROPERTY OWNER AND THE CITY. ALL CONSTRUCTION WASTE MATERIALS TO BE REMOVED SHALL BE DISPOSED OF AT A PERMITTED LOCATION OFF SITE, UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE CITY.

17. THE CONTRACTOR SHALL SET TWO (2) PERMANENT BENCHMARKS IN THE CITY COORDINATE SYSTEM. CONTRACTOR SHALL COORDINATE WITH CITY STAFF FOR RECORDED / APPROVED LOCATIONS.

SEQUENCING / TRAFFIC CONTROL NOTES

1. CONTRACTOR SHALL PREPARE, FURNISH, MAINTAIN, AND REMOVE ALL TRAFFIC CONTROL BARRICADES, WARNING SIGNS, LIGHTS, CONSTRUCTION FENCES, ETC. FOR THE WORK THROUGHOUT CONSTRUCTION. ALL BARRICADES, WARNING SIGNS, LIGHTS, DEVICES, ETC., FOR THE GUIDANCE AND PROTECTION OF TRAFFIC AND PEDESTRIANS MUST CONFORM TO THE INSTALLATION SHOWN IN THE TEXAS MUTCD, LATEST EDITION AS CURRENTLY AMENDED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.

2. CONTRACTOR SHALL PROVIDE ACCESS TO ALL REQUIRED ENTRANCES AND EXITS AT ALL TIMES THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL AND SEQUENCING PLAN TO THE ALL AUTHORITIES HAVING JURISDICTION AND COORDINATE THE PLAN AND SCHEDULE WITH THE OWNER PRIOR TO THE START OF CONSTRUCTION.

UTILITY NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO MOBILIZATION. CONTRACTOR SHALL VISIT THE SITE AND MAKE ALL NECESSARY OBSERVATIONS AND INSPECTIONS TO FAMILIARIZE THEMSELF WITH THE SITE AND THE SITE FACILITIES. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA; AND, THE CONTRACTOR, SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK. THE COST OF ALL WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE.

2. CONTRACTOR SHALL, IN BASE BID PROVIDE ALL NECESSARY FITTINGS AND APPURTENANCES REQUIRED TO COMPLETE ALL CONNECTIONS, RESOLVE UTILITY CONFLICTS AND OTHER INCIDENTAL UTILITY WORK SHOWN ON THE PLANS OR CONTAINED IN THE SPECIFICATIONS OR REQUIRED BY GOVERNING AGENCIES TO INCLUDE, BUT NOT LIMITED TO TEMPORARY SERVICES: VALVES, BOXES, METERS, BACKFLOW PREVENTERS, FIRE DEPARTMENT CONNECTIONS, ETC. INCLUDING THE REPAIR OR REPLACEMENT OF ANY EXISTING IRRIGATION SYSTEM. CONTRACTOR SHALL RAISE/LOWER OR ADJUST ALL EXISTING UTILITY MAINS IN CONFLICT WITH PROPOSED UTILITIES AS PART OF THE BASE BID FOR ALL KNOWN OR UNKNOWN LINES.

3. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED UTILITY COMPANIES OR AGENCIES IN WRITING AT LEAST 1 WEEK PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND MAKE ARRANGEMENTS FOR ANY AND ALL TEMPORARY UTILITIES, PERMITS, AND AGREEMENTS.

4. THE CONTRACTOR SHALL PROTECT ALL UTILITIES DURING THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL GIVE THE CITY, RESIDENTS AND BUSINESSES AFFECTED BY ANY ANTICIPATED WATER OR SEWER SERVICE DISRUPTIONS AT LEAST FORTY-EIGHT (48) HOURS PRIOR NOTICE.

5. CONTRACTOR SHALL EXERCISE CAUTION AND MAINTAIN ADEQUATE CLEAR ZONE BETWEEN THE CONTRACTOR'S EQUIPMENT AND ANY POWER LINES.

6. THE CONTRACTOR SHALL PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONES RISERS, WATER VALVES, UTILITIES, ETC. DURING ALL CONSTRUCTION PHASES. CONTRACTOR WILL BE RESPONSIBLE TO REPLACE ANY DAMAGED ITEMS AND RESTORE ANY SERVICES THAT HAVE BEEN DISTURBED. ALL MANHOLES, CLEAN-OUTS, WATER VALVES, FIRE HYDRANTS AND OTHER APPURTENANCES MUST BE ADJUSTED TO FINAL GRADE BEFORE THE OWNER WILL ACCEPT THE WORK.

7. THE CONTRACTOR SHALL SALVAGE ALL EXISTING CITY UTILITIES (INCLUDING SIGNS, VALVES, FIRE HYDRANTS, ETC.) IN ACCORDANCE WITH CITY REQUIREMENTS AND PROVIDE TO THE CITY.

8. ALL UTILITIES WITHIN 5' OF PROPOSED BUILDING(S) SHALL ADHERE TO THE MEP'S RECOMMENDATIONS AND OR REQUIREMENTS. CONTRACTOR SHALL PROVIDE STORM DRAIN CONNECTIONS FOR ALL ROOF DRAIN LINES. REFER TO MEP'S PLANS AND RELATED TECHNICAL SPECIFICATIONS. CIVIL UTILITIES (WATER, SANITARY SEWER & STORM SEWER) LIMITS BEGIN 5' OUTSIDE THE BUILDING. IN THE EVENT OF OF A CONFLICT WITH THE MEP'S WITHIN THIS AREA, THE MEP'S REQUIREMENTS SHALL GOVERN.

9. TESTING OF UTILITY TRENCH BACKFILL COMPACTION SHALL BE AT 75' INTERVALS AND EACH LIFT'S BACKFILL. BACKFILL SHALL BE PROCESSED SUCH THAT NO DIRT CLODS ARE IN EXCESS OF 4" DIAMETER. ALL SANITARY SEWER LINES AND STORM SEWER LINES SHALL BE TV TESTED AT THE COMPLETION OF THE PROJECT (IN ADDITION TO MINIMUM CODE OR OTHER REQUIREMENTS) TO CHECK FOR DAMAGE CAUSED BY OTHER TRADES, UTILITY CONFLICTS, TRENCH SETTLEMENT, ETC. THE COST OF SUCH SHALL BE INCLUDED IN THE CONTRACTORS BASE PRICE.

DEMOLITION NOTES

1. NO EARTH-DISTURBING ACTIVITIES SHALL COMMENCE UNTIL ALL PERMITS ARE OBTAINED AND PERIMETER EROSION CONTROL MEASURES ARE IN PLACE.

2. ALL DEMOLITION SHALL BE CLOSELY COORDINATED WITH THE OWNER'S REPRESENTATIVE REGARDING ITEMS TO BE SALVAGED, THOSE TO BE REMOVED, ETC. INCLUDING ANY AND ALL TREE PRESERVATION AND TRANSPLANTING ACTIVITIES, AS OUTLINED IN THE PRE-CONSTRUCTION MEETING. REMOVAL, RELOCATION AND/OR DISPOSAL OF ANY PRE-EXISTING ON-SITE TRASH, DEBRIS, OR STOCKPILES SHALL BE INCLUDED IN THE TOTAL COST OF DEMOLITION AND SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE AT ALL TIMES.

3. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH ALL REGULATIONS GOVERNING AGENCIES REGARDING THE DEMOLITION, REMOVAL, TRANSPORTATION AND DISPOSAL OF ALL DEMOLITION DEBRIS.

4. INGRESS AND EGRESS POINTS, PROPOSED DISPOSAL SITES, AND HAUL ROUTES MUST BE APPROVED BY CITY OFFICIALS PRIOR TO REMOVAL OF DEMOLITION DEBRIS OFF-SITE.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING DISCONNECTION OF ALL UTILITIES SERVING THE EXISTING SITE WITH THE APPROPRIATE UTILITY COMPANY, AND SHALL OBTAIN APPROVAL FROM SAME TO COMMENCE DEMOLITION ACTIVITIES.

6. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST OSHA STANDARDS FOR EXCAVATION AND TRENCHING PROCEDURES. CONTRACTOR SHALL USE SUPPORT SYSTEMS, SLOPING, BENCHING, ETC. AS NECESSARY FOR THESE OPERATIONS, AND SHALL COMPLY WITH ALL OSHA PERFORMANCE CRITERIA.

7. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL PROPERTY CORNER MONUMENTS, BENCHMARKS, CONTROL POINTS, ETC, AND SHALL HAVE, AT HIS EXPENSE, ALL CORNER MONUMENTS REPLACED WHICH ARE DISTURBED BY CONSTRUCTION ACTIVITIES.

8. THE CONTRACTOR SHALL INCUR ALL COSTS FOR MAINTENANCE AND REPAIR OF THE EXISTING FENCES TO REMAIN, IRRIGATION SYSTEMS TO REMAIN, UTILITY LINES, ETC, AS OUTLINED IN THE SPECIFICATIONS.

9. THE CONTRACTOR SHALL LOCATE AND REMOVE ALL UNDERGROUND UTILITY CABLES (ELECTRIC, TELEPHONE, ETC.) UP TO A DEPTH OF 24 INCHES BELOW GRADE AS PART OF THE BASE BID.

10. THE CONTRACTOR SHALL LOCATE AND REMOVE ALL UNDERGROUND UTILITY PIPING, CONDUIT, AND CABLES, REGARDLESS OF DEPTH, IN THE AREA OF THE PROPOSED BUILDING(S) FOUNDATIONS.

11. NOTES SHOWN HEREON REGARDING SPECIFIC ITEMS OF DEMOLITION ARE GENERAL IN NATURE, AND ARE NOT INTENDED TO BE WHOLLY INCLUSIVE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE ALL EXISTING IMPROVEMENTS TO THE SATISFACTION OF THE OWNER, AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS, AND TO THE EXTENT AS NOTED IN THE SPECIFICATIONS.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLUGGING, CAPPING, OR OTHERWISE TERMINATING UTILITY SERVICE LINES AT EXISTING METER LOCATIONS, CLEANOUTS, ETC. A MIN. DISTANCE OF 1 FOOT OUTSIDE THE LIMITS OF THE TRACT SHOWN.

13. THE CONTRACTOR SHALL CREATE AMPLE STAGING AND STOCKPILING AREAS FOR THE DELIVERIES OF CONSTRUCTION MATERIALS, CONCRETE DELIVERIES, TOPSOIL, ETC. IN ACCORDANCE WITH THE OWNER'S REPRESENTATIVE AND THE PROJECT SPECIFICATIONS.

PAVING NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF A MAXIMUM NUMBER OF PASSING FIELD DENSITY TESTS ON THE STABILIZED SUBGRADE FOR SITE PAVING EQUAL TO THE RATIO OF 1 PER 5,000 SQUARE FEET OF PAVEMENT (AND ALL FAILING DENSITY TESTS AND REQUIRED MOISTURE DENSITY CURVES). ADDITIONAL FIELD DENSITY TESTS MAY BE REQUIRED FOR FOUNDATIONS. REFER TO STRUCTURAL PLANS AND SPECIFICATIONS FOR SUCH. IN ADDITION, THE CONTRACTOR SHALL PROVIDE THE OWNER TEN (10) PASSING SITE PAVEMENT CORES FOR THE OWNERS USE IN THE OWNER'S TESTING FOR THICKNESS AND COMPRESSIVE STRENGTH. CORE LOCATIONS SHALL BE DESIGNATED BY THE OWNER. CONTRACTOR SHALL PATCH CORE HOLES AND FINISH WITH LIKE AND MATCHING MATERIALS. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL TESTING COSTS SHOULD THE ABOVE TESTS FAIL MINIMUM CRITERIA AS ESTABLISHED BY CTCOG. ANY NON-CONFORMING PAVING SHALL BE REPLACED OR RESOLVED IN ACCORDANCE WITH CTCOG SPECIFICATIONS.

2. ALL EARTHWORK AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION AS PREPARED BY RABA KISTNER, DRAFT II REPORT NO. AAA23-062-00, DATED OCTOBER 6, 2023 AND THOSE RECOMMENDATIONS LISTED WITHIN THE REPORT. REFER TO THIS REPORT FOR ALL EARTHWORK AND RELATED ITEMS. REFER TO STRUCTURAL FOR BUILDING PREP. THE REPORT REFERENCES AGENCY/INDUSTRY STANDARDS. IN THE EVENT THAT THERE IS A QUESTION OR DISPUTE BETWEEN GOVERNING SPECIFICATIONS, THE MOST STRINGENT SHALL APPLY SUCH THAT THE OWNER RECEIVES THE MOST ADVANTAGEOUS FINISHED PRODUCT.

3. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PERFORMING ALL CONSTRUCTION LAYOUTS FROM THE SITE LAYOUT DIGITAL CONTROL POINTS AND FROM THE DIMENSIONS SHOWN. THE CONTRACTOR MUST NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN ADVANCE AND ALLOW FOR THE ENGINEER'S RESPONSE BEFORE PROCEEDING WITH THE WORK.

4. ALL PAVING DIMENSIONS ARE TO BACK OF CURB, AND EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE CITY AND THE ENGINEER WITH A CONCRETE MIX DESIGN AT THE PRE-CONSTRUCTION MEETING FOR REVIEW AND APPROVAL. THE COST OF THIS DESIGN SHALL BE INCLUDED IN THE UNIT PRICE OF PAVEMENT MATERIAL. FLY ASH IS NOT PERMITTED AS A SUBSTITUTE FOR CEMENT.

6. THE CONTRACTOR SHALL PROTECT ANY EXISTING AND/OR PROPOSED UTILITIES, WHICH ARE IN THE PROPOSED SUBGRADE DURING THE SUBGRADE STABILIZATION PROCESS.

7. CONTRACTOR SHALL ADJUST ALL UTILITIES (EXISTING AND PROPOSED) TO FINAL GRADE (NON-PAY ITEM). ALL UTILITIES AND APPURTENANCES SHALL BE EXTENDED UP TO FINAL GRADE. UTILITY CLEAN-OUTS, VALVES, MANHOLES, ETC. LOCATED WITHIN PAVED AREAS SHALL BE PAVED PER DETAIL. IN NON-PAVED AREAS, SAID APPURTENANCES SHALL HAVE A 4" THICK CONCRETE PAD EXTENDING 12" BEYOND SAID APPURTENANCE (BLOCK OUT) POURED AT FINAL GRADE FOR PROTECTION AGAINST DAMAGE FROM MOWING AND MAINTENANCE EQUIPMENT.

8. PRIOR TO PAVING INSTALLATION, CONTRACTOR TO REFERENCE ALL PLAN SHEETS TO IDENTIFY ALL SLEEVES AND CONDUIT NECESSARY TO SUPPORT FRANCHISE UTILITY SERVICES, TECHNOLOGY/SECURITY, SITE LIGHTING, IRRIGATION, ETC. CONTRACTOR SHALL CONFIRM WITH OWNER AND/OR OWNER'S REPRESENTATIVE TO VERIFY SIZE, LOCATION, AND QUANTITY.

9. UNLESS OTHERWISE NOTED, SUBGRADE SHALL BE STABILIZED TO 12" BEYOND THE BACK OF CURB OR EDGE OF PAVEMENT PER GEOTECH RECOMMENDATIONS UNLESS STATED OTHERWISE. ALL CONCRETE STRENGTH AND REINFORCING STEEL SHALL BE PER PROJECT GEOTECHNICAL RECOMMENDATIONS. FIRE LANES, PARKING STALLS, AND ROADWAY STRIPING & MARKINGS SHALL CONFORM TO CITY STANDARDS. SIDEWALKS WITHIN LANDSCAPE AREAS SHALL BE MINIMUM 4" THICK. LARGE EXPANSES OF CONCRETE FLATWORK (SUCH AS MAJOR PEDESTRIAN AREAS, PLAZA AREAS BETWEEN BUILDINGS OR OTHER STRUCTURES) SHALL BE TREATED LIKE VEHICULAR CONCRETE PAVEMENT AND RECEIVE SAME SUBGRADE STABILIZATION AS VEHICULAR PAVEMENT (6" DEEP MINIMUM AND IN ACCORDANCE WITH A LIME SERIES TEST) AND ALL JOINTS (CONTRACTION AND EXPANSION JOINTS) SHALL BE SEALED WITH SELF LEVELING POLYURETHANE SEALANT.

10. ALL PAVEMENT WITHIN 5' OF PROPOSED BUILDING(S) SHALL ADHERE TO THE STRUCTURAL RECOMMENDATIONS AND OR ARCHITECTURAL REQUIREMENTS. REFER TO STRUCTURAL AND ARCHITECTURAL PLANS AND RELATED TECHNICAL SPECIFICATIONS. CIVIL PAVEMENT LIMITS BEGIN 5' OUTSIDE THE BUILDING. IN THE EVENT OF OF A CONFLICT WITH THE STRUCTURAL AND OR ARCHITECTURAL WITHIN THIS AREA, THE STRUCTURAL/ ARCHITECT REQUIREMENTS SHALL GOVERN.

11. FOR "CURB INLETS" SUBTRACT 0.5' (6 INCHES) FOR STANDARD THROAT RECESS AT INLETS PER STANDARD DETAILS. SURROUNDING PAVEMENT AND GUTTER SHALL BE WARPED TO DRAIN FOR INLETS ON GRADE AND SAG INLETS. INLETS ON GRADE SHALL BE SET IN PLACE TO MATCH THE CURB GRADE LINE.

12. ALL REINFORCING STEEL AND DOWEL BARS IN PAVEMENT SHALL BE SUPPORTED AND MAINTAINED AT THE CORRECT CLEARANCES BY THE USE OF BAR CHAIRS OR OTHER APPROVED SUPPORT.

13. CONNECTION OF THE PROPOSED SIDEWALK TO EXISTING PAVING, SIDEWALK, BUILDING, AND WHEELCHAIR RAMPS SHALL BE CONSIDERED SUBSIDIARY TO THE COST OF THE CONSTRUCTION OF THE SIDEWALK. ALL JOINTS (EXPANSION, ISOLATION, CONTRACTION, & CONSTRUCTION) FOR CONCRETE PAVING AND INCIDENTAL CRACKS SHALL BE SEALED AND INSTALLED IN ACCORDANCE WITH THE AMERICAN CONCRETE PAVEMENT ASSOCIATION (ACPA) RECOMMENDATIONS. CONTRACTOR SHALL OBSERVE THE ARCHITECTURAL AND STRUCTURAL JOINTING LAYOUTS. IN THE EVENT OF A DISCREPANCY OR CONFLICT FOR SITE PAVING, THE CONTRACTOR SHALL REFER TO ACPA PUBLICATION IS061.01P AND IS400.01P FOR THE JOINT SPECIFICATIONS AND THE LAYOUT OF PAVEMENT JOINTS (NON-PAY ITEM).

14. JOINT SPACING SHALL BE AS FOLLOWS:
    5 INCH PAVEMENT THICKNESS - 10' JOINT SPACING
    6+ INCH PAVEMENT THICKNESS - 15' JOINT SPACING OR PER PROJECT GEOTECHNICAL RECOMMENDATIONS
    IN AREAS WHERE PAVEMENT THICKNESS VARIES, THE SHORTER JOINT SPACING SHALL GOVERN

15. THE CONTRACTOR SHALL USE CARE DURING SOIL STABILIZATION AND COMPACTION ACTIVITIES SO AS NOT TO ADVERSELY AFFECT LANDSCAPE AREAS OR UTILITY LINES WITH SOIL STABILIZATION TREATMENTS. AFTER COMPACTION AND PRIOR TO PLACING GRASS, THE UPPER 8 INCHES (8") OF ALL LANDSCAPED AREAS SHALL BE AERATED, TILLED, OR OTHERWISE PROCESSED SO AS TO PROMOTE HEALTHY ROOT GROWTH FOR TURF AND OTHER VEGETATION. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY REPAIRS, UNDERCUTTING, REMOVAL, DISPOSAL, AND BACKFILLING OF THESE AREAS IF STABILIZATION IS DISCOVERED (NON-PAY ITEM).

EARTHWORK NOTES

1. PLACEMENT OF TOPSOIL TO WITHIN 0.10' OF FINISH GRADE. SEE TOPSOIL SPECIFICATION SHOULD IMPORTED MATERIAL BE NECESSARY.

2. AS A RESULT OF THE SITE GEOLOGY AND PROPOSED SITE PLAN, THE CONTRACTOR SHALL ESTABLISH A SOIL MANAGEMENT PLAN/OPERATION THROUGHOUT THE CONSTRUCTION PROCESS. ALL TOPSOIL SHALL BE SALVAGED AND STOCKPILED ON-SITE. STOCKPILED TOPSOIL MAY BECOME STERILE AND NON-FERTILE OVER TIME. THE CONTRACTOR SHALL AMEND AND SUPPLEMENT THE STOCKPILED TOPSOIL AS NECESSARY TO YIELD A FERTILE TOPSOIL SUPPLY. THE CONTRACTOR'S BID SHALL INCLUDE ALL NECESSARY TOPSOIL (IMPORT MAY BE REQUIRED) AS REQUIRED TO BACKFILL AND CROWN ALL LANDSCAPE ISLANDS AND LANDSCAPE AREAS. THE LACK OF AVAILABLE ON-SITE TOPSOIL WILL NOT BE GROUNDS FOR A CHANGE ORDER OR ADDITIONAL PAY.

CITY OF GEORGETOWN NOTES

CITY OF GEORGETOWN GENERAL 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 SITE DEVELOPMENT 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 APPLICABLE CITY STANDARDS.

3. THIS SITE DEVELOPMENT 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. SIDEWALKS 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 7.04 OF THE UDC.

8. SCREENING OF MECHANICAL EQUIPMENT, DUMPSTERS 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 OF 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 REQUIREMENTS OF 2000 GALLONS PER MINUTE ARE BEING MET BY THIS PLAN.

13. ANY HERITAGE TREE NOTED ON THIS SITE DEVELOPMENT PLAN IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE.

14. 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.

15. THIS 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 RE-INSTALLED. UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.

17. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.

18. ALTERNATIVE IMPERVIOUS COVER STANDARDS HAVE BEEN APPROVED IN ACCORDANCE WITH SECTION 11.02 OF THE UDC FOR
    - 11.02.020.A.1 LOW IMPACT SITE DESIGN (WET POND) +7%
    - 11.02.020.A.2 PARKING LOT DESIGN +3%
    - 11.02.020.A.5 TREE PRESERVATION +5%

19. THE PROPERTY SUBJECT TO THIS APPLICATION IS SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN (FOR PROPERTIES LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE)

20. A GEOLOGIC ASSESSMENT, IN ACCORDANCE WITH THE CITY OF GEORGETOWN WATER QUALITY REGULATIONS, WAS COMPLETED ON AUGUST 16, 2023 BY ROWDEN CONSULTING, LCC. ANY SPRINGS AND STREAMS AS IDENTIFIED IN THE GEOLOGIC ASSESSMENT ARE SHOWN HEREIN.

CITY OF GEORGETOWN WATER NOTES

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED 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 OF THE CITY.

3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.

4. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.

5. 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.

6. PUBLIC WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.

7. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.

8. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.

9. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.

10. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.

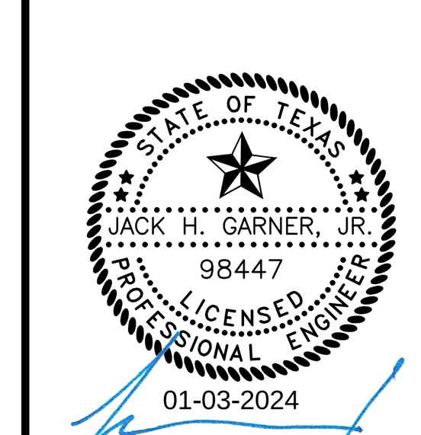
11. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 2 YEARS IN THE AMOUNT OF 10% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.

12. 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 TIFF OR PDF (300P DPI). IF A DISK IS SUBMITTED, A BOND SET SHALL BE INCLUDED WITH THE DISK.

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN



TBPE Registration #: F-13709

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GENERAL & CITY NOTES

Job No. 1949-03-01	Sheet No.
Drawn By: VM	C1.01
Date: 1/3/2024	

CURRENT CAPACITY

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Jarrell Elementary School #4
Date Prepared: 12/20/2023

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 * =	13.21	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	6.69	acres
Total post-development impervious cover fraction * =	0.51	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	5823	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 1

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

Drainage Basin/Outfall Area No. =	1	
Total drainage basin/outfall area =	11.70	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	6.66	acres
Post-development impervious fraction within drainage basin/outfall area =	0.57	
$L_{M\ THIS\ BASIN}$ =	5797	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = sand filter
Removal efficiency = 89 percent

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

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

RG-348 Page 3-33 Equation 3.7: L_R = (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 =	11.70	acres
A_I =	6.66	acres
A_P =	5.04	acres
L_R =	6640	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 5823 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.40	
On-site Water Quality Volume =	25423	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 =	5085	
Total Capture Volume (required water quality volume(s) x 1.20) =	30508	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.

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	30508	cubic feet	
Minimum filter basin area =	2542	square feet	
Maximum sedimentation basin area =	10169	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	636	square feet	For maximum water depth of 8 feet

FUTURE CAPACITY

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Jarrell Elementary School #4
Date Prepared: 12/20/2023

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 * =	13.21	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	7.93	acres
Total post-development impervious cover fraction * =	0.60	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	6899	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 1

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

Drainage Basin/Outfall Area No. =	1	
Total drainage basin/outfall area =	11.70	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.90	acres
Post-development impervious fraction within drainage basin/outfall area =	0.68	
$L_{M\ THIS\ BASIN}$ =	6876	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

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

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

RG-348 Page 3-33 Equation 3.7: L_R = (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 =	13.21	acres
A_I =	7.93	acres
A_P =	5.28	acres
L_R =	7892	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 6899 lbs.

F = 0.87

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 =	1.44	inches
Post Development Runoff Coefficient =	0.42	
On-site Water Quality Volume =	29024	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 =	5805	
Total Capture Volume (required water quality volume(s) x 1.20) =	34829	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.

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	34829	cubic feet	
Minimum filter basin area =	2902	square feet	
Maximum sedimentation basin area =	11610	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	726	square feet	For maximum water depth of 8 feet

TCEQ NOTES

THIS CONSTRUCTION PROJECT IS SUBJECT TO THE CONDITIONS GIVEN IN THE EDWARDS AQUIFER PROTECTION PLAN (EAPP) AND THE SEWAGE COLLECTION SYSTEM (SCS) PLAN APPROVED AND ISSUED FOR THIS SITE BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ). NO CONSTRUCTION ACTIVITIES MAY COMMENCE UNTIL THOSE PLANS HAVE BEEN ISSUED BY THE TCEQ. CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PUBLIC NOTICE POSTINGS RELATED TO THIS TCEQ PERMIT PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

CONTRACTOR AND OWNER SHALL ALSO OBTAIN COVERAGE FOR STORMWATER DISCHARGES RELATED TO CONSTRUCTION ACTIVITIES UNDER THE TEXAS GENERAL PERMIT TXR150000. CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PUBLIC NOTICE POSTINGS RELATED TO THIS TCEQ PERMIT PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER POLLUTION ABATEMENT PLAN
GENERAL CONSTRUCTION NOTES

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:

    D. 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;

    E. 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;

    F. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

AUSTIN REGIONAL OFFICE	SAN ANTONIO REGIONAL OFFICE
12100 PARK 35 CIRCLE, BUILDING A	14250 JUDSON ROAD
AUSTIN, TEXAS 78753-1808	SAN ANTONIO, TEXAS 78233-4480
PHONE (512) 339-2929	PHONE (210) 490-3096
FAX (512) 339-3795	FAX (210) 545-4329

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ORGANIZED SEWAGE COLLECTION SYSTEM
GENERAL CONSTRUCTION NOTES

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 LINES 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 SEWER 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 AN 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 INCHES 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

    WHERE: $$T = \frac{0.085 x D x K}{Q}$$

    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 *(second)*	Maximum Length for Minimum Time *(sec)*	Time for Longer Length *(seconds/foot)*
6	340	398	0.855
8	454	298	1.52
10	567	239	2.375
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	108	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 IDOF 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.

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED
PROFESSIONAL ENGINEER
01-03-2024
TBPE Registration #: F-13709

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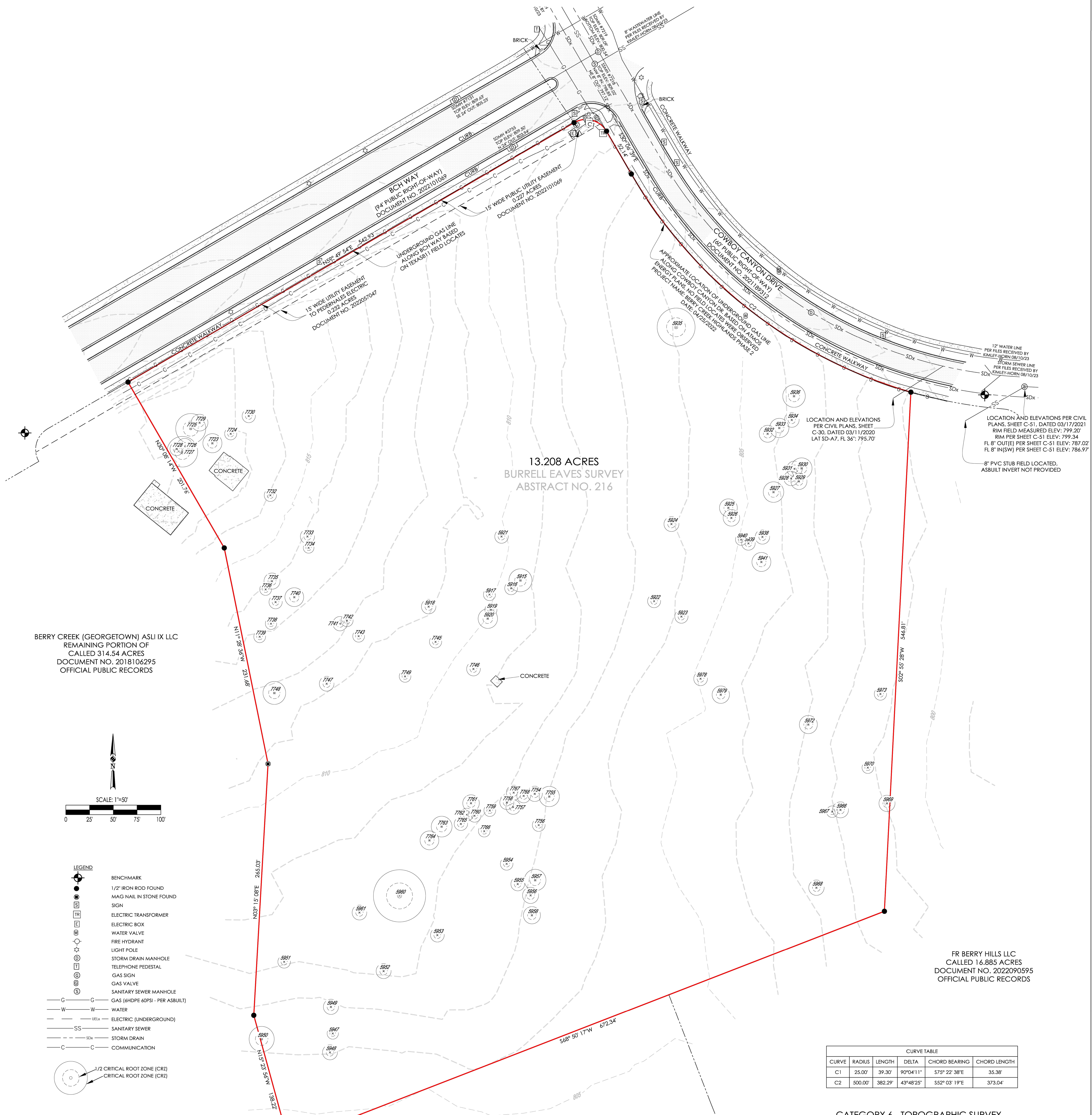
TCEQ NOTES

Job No. 1949-03-01	Sheet No.
Drawn By: VM	C1.02
Date: 1/3/2024	



CURVE TABLE					
CURVE	RADIUS	LENGTH	DELTA	CHORD BEARING	CHORD LENGTH
C1	25.00'	39.30'	90°04'11"	S75° 22' 38"E	35.38'
C2	500.00'	382.29'	43°48'25"	S52° 03' 19"E	373.04'

BENCHMARK TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
5980	10237375.104	3128569.595	800.00	MAG NAIL IN CONCRETE
5982	10237335.020	3127559.360	814.51	MAG NAIL IN CONCRETE

BERRY CREEK (GEORGETOWN) ASLI IX LLC
REMAINING PORTION OF
CALLED 314.54 ACRES
DOCUMENT NO. 2018106295
OFFICIAL PUBLIC RECORDS

CATEGORY 6 - TOPOGRAPHIC SURVEY

SHOWING THE EXISTING CONDITIONS OF A 13.208 ACRE TRACT OF LAND, LOCATED IN THE BURRELL EAVES SURVEY, ABSTRACT NO. 216, WILLIAMSON COUNTY, TEXAS, SAID 13.208 ACRE TRACT, BEING ALL OF THAT CERTAIN 13.207 ACRE TRACT OF LAND RECORDED IN DOCUMENT NO. 2023004683, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.

TREE SUMMARY TABLE				
KEY	TREE #	DBH (diameter at breast height (in))	HALF CRITICAL ROOT ZONE (ft)	SPECIES
P	5915	24.25"	12.13'	LIVE OAK
P	5916	13.50"	6.75'	LIVE OAK
P	5917	12.75"	6.38'	LIVE OAK
P	5918	15.25"	7.63'	ELM
P	5919	12.75"	6.38'	LIVE OAK
P	5920	20.50" (15, 11)	10.25'	LIVE OAK
P	5921	14.25"	7.13'	ELM
P	5922	13.75"	6.88'	ELM
P	5923	14"	7'	ELM
P	5924	15.75" (11, 9.50)	7.88'	ELM
P	5925	18.75"	9.38'	LIVE OAK
P	5926	17.50"	8.75'	LIVE OAK
P	5927	21.63" (15.50, 12.25)	10.82'	LIVE OAK
P	5928	15.25"	7.63'	LIVE OAK
P	5929	17"	8.5'	LIVE OAK
P	5930	22" (15, 14)	11'	LIVE OAK
P	5931	16.25" (12.75, 7)	8.13'	LIVE OAK
P	5932	17.75"	8.88'	LIVE OAK
P	5933	20.25" (14.50, 11.50)	10.13'	LIVE OAK
P	5934	15.50"	7.75'	LIVE OAK
HT	5935	40"	20'	LIVE OAK
P	5936	23.75"	11.88'	LIVE OAK
P	5938	15.25"	7.63'	LIVE OAK
P	5939	14.25"	7.13'	LIVE OAK
P	5940	12"	6'	LIVE OAK
P	5941	19.88" (13.75, 12.25)	9.94'	LIVE OAK
P	5947	12"	6'	ELM
P	5948	15.75"	7.88'	LIVE OAK
P	5949	16"	8'	LIVE OAK
HT	5950	26.50" (19, 15)	13.25'	LIVE OAK
P	5951	13.25"	6.63'	LIVE OAK
P	5952	15.75"	7.88'	LIVE OAK
P	5953	14.50"	7.25'	LIVE OAK
P	5954	13.25"	6.63'	LIVE OAK
P	5955	14.50"	7.25'	LIVE OAK
P	5956	17" (9.25, 9.25, 6.25)	8.5'	LIVE OAK
P	5957	22.75" (16.75, 12)	11.38'	LIVE OAK
P	5958	18"	9'	LIVE OAK
HT	5960	54.88" (31.25, 29, 9.75, 8.50)	27.44'	LIVE OAK
P	5961	15.50"	7.75'	ELM
P	5966	16.75" (9.75, 7.25, 6.75)	8.38'	ELM
P	5967	12"	6'	LIVE OAK
P	5968	16.25" (12.25, 8)	8.13'	LIVE OAK
P	5969	17" (12.25, 9.5)	8.5'	ELM
P	5970	12.25"	6.13'	ELM

TREE SUMMARY TABLE				
KEY	TREE #	DBH (diameter at breast height (in))	HALF CRITICAL ROOT ZONE (ft)	SPECIES
P	5972	19" (13, 12)	9.5'	ELM
P	5973	13"	6.5'	ELM
P	5978	14.50"	7.25'	LIVE OAK
P	5979	18.25" (9.50, 9.25, 8.25)	9.13'	ELM
P	7723	20.13" (13.50, 13.25)	10.06'	LIVE OAK
P	7724	12.75"	6.38'	ELM
HT	7725	31.63" (22.25, 18.75)	15.82'	LIVE OAK
P	7726	16.50" (11, 11)	8.25'	LIVE OAK
HT	7727	32.25" (17.50, 15.50, 8.50, 5.50)	16.13'	LIVE OAK
P	7728	14"	7'	LIVE OAK
P	7729	17.63" (12, 11.25)	8.82'	LIVE OAK
P	7730	14"	7'	ELM
P	7732	13" (9.50, 7)	6.5'	LIVE OAK
P	7733	15" (12.50, 5)	7.5'	LIVE OAK
P	7734	11.25"	5.63'	LIVE OAK
P	7735	17"	8.5'	ELM
P	7736	12.50"	6.25'	ELM
P	7737	14"	7'	ELM
P	7738	12"	6'	LIVE OAK
P	7739	12.5"	6.25'	LIVE OAK
P	7740	19.75" (16, 7.5) DEAD	9.88'	LIVE OAK
P	7741	15"	7.5'	LIVE OAK
P	7742	12.75"	6.38'	LIVE OAK
P	7743	12.50"	6.25'	LIVE OAK
P	7745	13"	6.5'	LIVE OAK
P	7746	14.50"	7.25'	ELM
P	7747	15.50" (10.50, 10)	7.75'	LIVE OAK
P	7748	24"	12'	LIVE OAK
P	7749	12.25"	6.13'	ELM
P	7754	16" (12.75, 6.5)	8'	LIVE OAK
P	7755	21.25"	10.63'	LIVE OAK
P	7756	13.50"	6.75'	ELM
P	7757	15.25"	7.63'	LIVE OAK
P	7758	14.75" (10.25, 9)	7.38'	LIVE OAK
P	7759	12.50"	6.25'	LIVE OAK
P	7760	13.50"	6.75'	LIVE OAK
P	7761	17.50"	8.75'	LIVE OAK
P	7762	13.50"	6.75'	LIVE OAK
P	7763	21.88" (15.75, 12.25)	10.94'	LIVE OAK
P	7764	19.75" (11.75, 8.50, 7.50)	9.88'	LIVE OAK
P	7765	14.13" (9.5, 9.25)	7.07'	LIVE OAK
P	7766	12.25"	6.13'	LIVE OAK
P	7767	15.50"	7.75'	LIVE OAK
P	7768	14.50"	7.25'	LIVE OAK

NOTES:

1) FIELD WORK PERFORMED ON: AUGUST 15, 2023
2) PREPARED FOR: JARRELL ISD
3) ADDRESS: BCH WAY & COWBOY CANYON DRIVE, GEORGETOWN, TEXAS
4) BASIS OF BEARING: TEXAS STATE PLANE, CENTRAL ZONE, NAD83, GRID
5) THIS SURVEY IS BASED ON A TITLE COMMITMENT ISSUED BY CHICAGO TITLE INSURANCE COMPANY G.F. NUMBER 2246245-COM, ISSUED DATE OF OCTOBER 17, 2022, EFFECTIVE DATE OF OCTOBER 07, 2022, AND IS SUBJECT TO ALL TERMS, CONDITIONS, LEASES AND ENCUMBRANCES STIPULATED THEREIN. THERE MAY BE OTHER EASEMENTS, RESTRICTIONS, OR ENCUMBRANCES NOT SHOWN.THE SURVEYOR DID NOT COMPLETE AN ABSTRACT OF TITLE.
6) ACCORDING TO THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NUMBER 48491C0280E & 48491C0285F, EFFECTIVE DATE DECEMBER 20, 2019, THIS PROPERTY LIES IN ZONE "X", WHICH IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE OF THE 100 YEAR FLOOD PLAIN. THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP IS FOR USE IN ADMINISTERING THE NATIONAL FLOOD INSURANCE PROGRAM; IT DOES NOT NECESSARILY IDENTIFY ALL AREAS SUBJECT TO FLOODING, PARTICULARLY FROM LOCAL DRAINAGE SOURCES OF SMALL SIZE, OR ALL PLANIMETRIC FEATURES OUTSIDE SPECIAL FLOOD HAZARD AREAS. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR STRUCTURES LOCATED THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. THE FLOOD HAZARD AREA IS SUBJECT TO CHANGE AS DETAILED STUDIES OCCUR AND/OR WATERSHED OR CHANNEL CONDITIONS CHANGE. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.
7) ANY UNDERGROUND UTILITIES SHOWN HEREON ARE FROM TEXAS811 MARKINGS LOCATED BY SURVEY CREWS, OR RECORD DRAWING OBTAINED FROM UTILITY COMPANIES REPRESENTATIVES. QUICK INC LAND SURVEYING ASSUMES NO LIABILITY FOR POORLY OR IMPROPERLY MARKED UTILITY LOCATIONS.

RESTRICTIONS:

1. THOSE RECORDED IN DOCUMENT NO. 2012080146, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.

SCHEDULE B EXCEPTIONS:

10a. EASEMENT TO CHISHOLM TRAIL WATER SUPPLY CORPORATION - RECORDED IN VOLUME 964, PAGE 539 (BLANKET TYPE, 15' WIDE EASEMENT CENTERED ON INSTALLED LINES), AS AFFECTED BY VOLUME 2168, PAGE 44 (BLANKET TYPE), DEED RECORDS, WILLIAMSON COUNTY, TEXAS.
10b. EASEMENT TO CHISHOLM TRAIL WATER SUPPLY CORPORATION - RECORDED IN VOLUME 988, PAGE 310 (BLANKET TYPE, 15' WIDE EASEMENT CENTERED ON INSTALLED LINES), AS AFFECTED BY VOLUME 2168, PAGE 44 (BLANKET TYPE), DEED RECORDS, WILLIAMSON COUNTY, TEXAS.
10c. EASEMENT TO PEDERNALES ELECTRIC COOPERATIVE, INC. - RECORDED IN VOLUME 1006, PAGE 661, DEED RECORDS, WILLIAMSON COUNTY, TEXAS. (DOES NOT APPLY)
10d. EASEMENT TO GENERAL TELEPHONE COMPANY OF THE SOUTHWEST - RECORDED IN VOLUME 1218, PAGE 658 (BLANKET TYPE, 10' WIDE EASEMENT CENTERED ON INSTALLED LINES), DEED RECORDS, WILLIAMSON COUNTY, TEXAS.
10e. EASEMENT TO GTE SOUTHWEST INC. - RECORDED IN DOCUMENT NO. 9643570 (BLANKET TYPE, 10' WIDE EASEMENT CENTERED ON INSTALLED LINES), OFFICIAL RECORDS, WILLIAMSON COUNTY, TEXAS.
10f. TERMS, CONDITIONS, AND STIPULATIONS IN THE CONSENT AGREEMENT - RECORDED IN DOCUMENT NO. 2019034428, 2019034429, 2019101325, 2019101326, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS. FURTHER AFFECTED BY THAT CERTAIN AMENDED AND RESTATED CONSENT AGREEMENT IN DOCUMENT NO. 2019040583, AS AFFECTED BY DOCUMENT NO. 2019101328, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.
10g. TERMS, CONDITIONS, AND STIPULATIONS IN THE EASEMENT AND DEVELOPMENTAL MATTERS AGREEMENT - RECORDED IN DOCUMENT NO. 2018106301, OFFICIAL PUBLIC RECORD, WILLIAMSON COUNTY, TEXAS.
10h. TERMS, CONDITIONS, AND STIPULATIONS IN THE WAIVER OF SPECIAL APPRAISAL FOR THE BENEFIT OF BERRY CREEK HIGHLAND MUD - RECORDED IN DOCUMENT NO. 2020099751, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.
10i. TERMS, CONDITIONS, AND STIPULATIONS IN THE DEED RECORDATION AFFIDAVIT EDWARDS AQUIFER PROTECTION PLAT - RECORDED IN DOCUMENT NO. 2020111396, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.
10j. UTILITY EASEMENT TO PEDERNALES ELECTRIC COOPERATIVE, INC. - RECORDED IN DOCUMENT NO. 2022057047, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS. (APPLIES, 15' WIDE, 0.232 ACRE UTILITY EASEMENT, SHOWN ON SURVEY)

STATE OF TEXAS REGISTERED TRAVIS L. QUICKSALL 6447 PROFESSIONAL LAND SURVEYOR

I DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND OF THE PROPERTY LEGALLY DESCRIBED HEREON AND IS CORRECT, AND THAT THERE ARE NO SIGNIFICANT DISCREPANCIES, CONFLICTS, SHORTAGES IN AREA, APPARENT BOUNDARY LINE CONFLICTS, VISIBLE ENCROACHMENTS, OVERLAPPING OF VISIBLE IMPROVEMENTS, VISIBLE UTILITY LINES OR ROADS, EXCEPT AS SHOWN, AND THAT SAID PROPERTY HAS ACCESS TO AND FROM A DEDICATED ROADWAY. THIS SURVEY SUBSTANTIALLY COMPLIES WITH THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS MANUAL OF PRACTICE REQUIREMENTS FOR A CATEGORY 6, CONDITION 1, TOPOGRAPHIC SURVEY.

TRAVIS L. QUICKSALL DATE: SEPTEMBER 15, 2023
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 6447
JOB NO. 23-0174

Quick Inc.
Land Surveying. Development.
Firm:10194104 • 512-915-4950
Physical Address: 831 N. Main Street, Salado 76571
Mailing Address: P.O. Box 798, Salado 76571

Project: JARRELL ELEMENTARY SCHOOL #4 FOR JARRELL ISD IN GEORGETOWN, TX

Revision / Date

LANGAN

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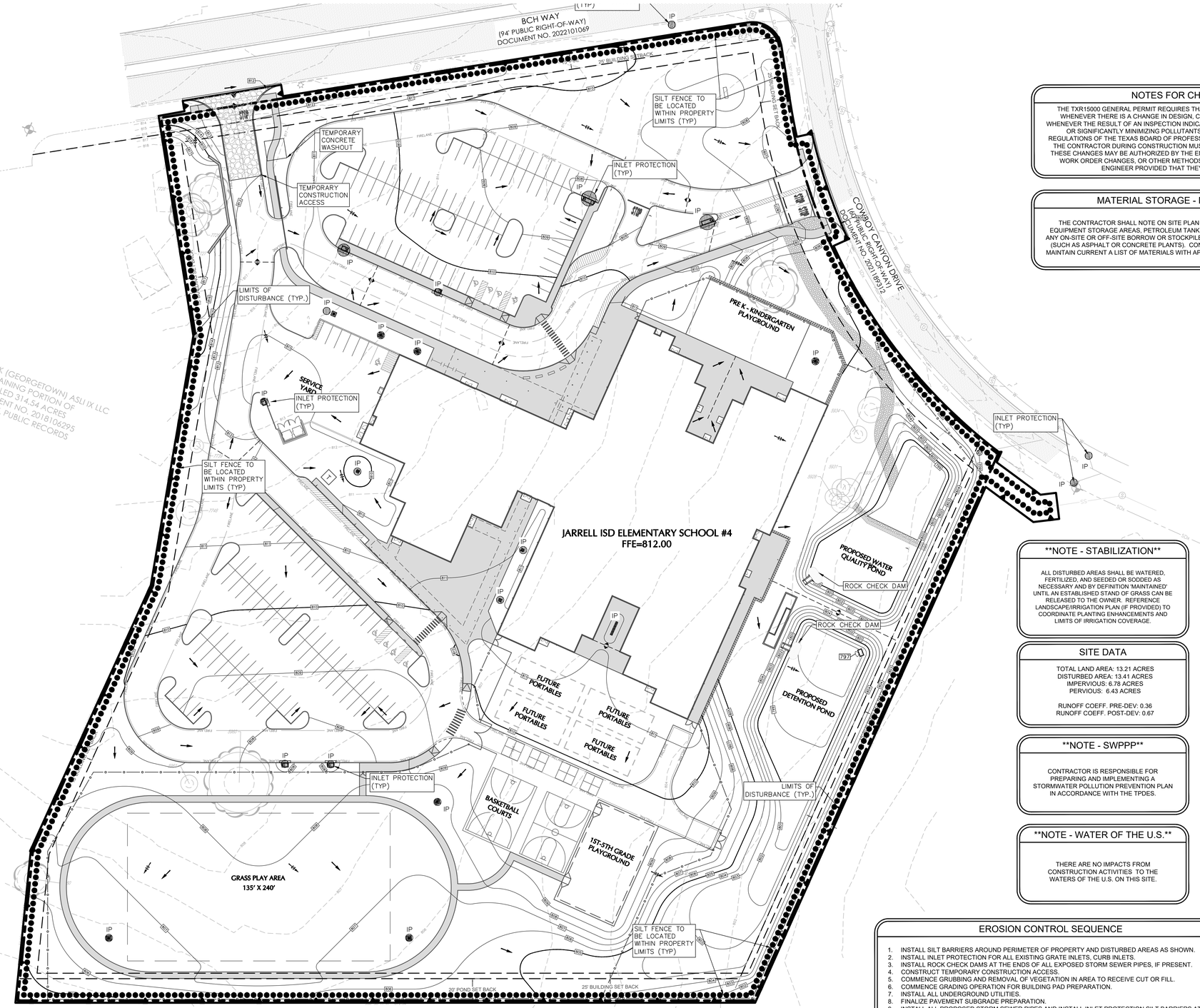
TOPOGRAPHIC SURVEY

Job No. 1949-03-01	Sheet No.
Drawn By: VM	C1.03
Date: 1/3/2024	



NOTES FOR CHANGES TO SWPPP

THE TXR15000 GENERAL PERMIT REQUIRES THAT THE PERMITTEE REVISE OR UPDATE THIS SWPPP WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, OR WHENEVER THE RESULT OF AN INSPECTION INDICATES THAT THIS SWPPP IS INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS IN STORMWATER DISCHARGES. HOWEVER, THE REGULATIONS OF THE TEXAS BOARD OF PROFESSIONAL ENGINEERS REQUIRE THAT CHANGES MADE BY THE CONTRACTOR DURING CONSTRUCTION MUST BE AUTHORIZED BY A LICENSED TEXAS ENGINEER. THESE CHANGES MAY BE AUTHORIZED BY THE ENGINEER OF RECORD THROUGH UPDATED DRAWINGS, WORK ORDER CHANGES, OR OTHER METHODS ACCEPTABLE TO THE ENGINEER; OR BY ANOTHER ENGINEER PROVIDED THAT THEY NOTIFY THE ENGINEER OF RECORD.

MATERIAL STORAGE - NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL NOTE ON SITE PLAN THE LOCATION OF ALL MATERIAL STORAGE AREAS, EQUIPMENT STORAGE AREAS, PETROLEUM TANKS, SOLID WASTE RECEPTACLES, SANITARY FACILITIES, ANY ON-SITE OR OFF-SITE BORROW OR STOCKPILE AREA, ANY ON-SITE OR OFF-SITE SUPPORT ACTIVITIES (SUCH AS ASPHALT OR CONCRETE PLANTS). CONTRACTOR SHALL ALSO PREPARE, KEEP ON SITE, AND MAINTAIN CURRENT A LIST OF MATERIALS WITH APPROXIMATE QUANTITIES, WHICH ARE STORED ON-SITE.

40 0 10 25 40
SCALE: 1 INCH = 40 FEET

LEGEND

- PROPERTY LINE
- LIMITS OF DISTURBANCE
- SILT BARRIER
- CONSTRUCTION EXIT
- EXISTING FLOW ARROW
- PROPOSED FLOW ARROW
- INLET PROTECTION (IP)

EROSION CONTROL NOTES

1. CONTRACTOR MUST COMPLETE A CONSTRUCTION SITE NOTICE, OBTAIN SIGNED COPIES OF NOI FORM FOR BOTH OWNER AND CONTRACTOR (IF APPLICABLE TO THIS SITE), AND POST THEM AT THE CONSTRUCTION SITE. IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES (TXR150000). THE GENERAL CONTRACTOR, (AND ALL SUBCONTRACTORS INVOLVED WITH ANY CONSTRUCTION ACTIVITY RELATED TO EARTHWORK, EROSION CONTROL, ETC., OR WHICH UTILIZE POSSIBLE POLLUTANTS AS DEFINED IN THE TPDES GENERAL PERMIT) MUST BE FAMILIAR WITH THE CONTENTS OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AS WELL AS ALL THE REQUIREMENTS SET FORTH IN THE TPDES GENERAL PERMIT AND ANY APPLICABLE LOCAL PERMIT REQUIREMENTS AND SHALL COMPLY WITH ALL SUCH REQUIREMENTS DURING ALL CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR SHALL ADHERE TO THE SEQUENCE OF OPERATIONS FOR EROSION CONTROL IMPLEMENTATION SHOWN HEREON. ANY DEVIATION FROM THIS SEQUENCE DEEMED NECESSARY BY THE CONTRACTOR MAY REQUIRE THAT THE STORMWATER POLLUTION PREVENTION PLAN BE MODIFIED IN ACCORDANCE WITH THE NPDES GENERAL PERMIT GUIDELINES.
3. THE CONTRACTOR SHALL MODIFY THIS PLAN TO SHOW LOCATIONS OF TEMPORARY WASHDOWN AREAS, PORTABLE TOILETS, EQUIPMENT MAINTENANCE/REPAIR AREAS, STOCKPILE AREAS, FUEL STORAGE AREAS, CONCRETE WASH-OUT PITS, AND POLLUTANT CONTROLS FOR EACH, AS SOON AS POSSIBLE. THE GENERAL PERMIT AUTHORIZES THE LAND DISPOSAL OF WASH OUT WATER FROM CONCRETE TRUCKS THAT ARE ASSOCIATED WITH OFF-SITE PRODUCTION FACILITIES, AS LONG AS THE DISCHARGE IS INTO SPECIFICALLY DESIGNATED DIKED AREAS WHICH HAVE BEEN PREPARED TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASH OUT WATER AND STORMWATER WHICH WILL BE DISCHARGED FROM THE SITE, TO PREVENT DIRECT DISCHARGE TO SURFACE WATERS (SEE CONCRETE WASHOUT DETAIL SHOWN IN PLANS). DIRECT DISCHARGE OF CONCRETE TRUCK WASH OUT WATER TO SURFACE WATERS IN THE STATE, INCLUDING DISCHARGE TO STORM SEWERS, IS PROHIBITED BY THE GENERAL PERMIT. IF A CONCRETE PLANT IS LOCATED AT THE CONSTRUCTION SITE, THE CONTRACTOR SHALL OBTAIN COVERAGE UNDER AND COMPLY WITH GENERAL PERMIT TXG110000 OR INDIVIDUAL PERMIT.
4. THE GENERAL CONTRACTOR SHALL PERFORM ALL REQUIRED INSPECTIONS OF STORMWATER CONTROLS AND PRACTICES AT FREQUENCIES GIVEN IN THE NPDES GENERAL PERMIT, AND SHALL COMPLETE AND SIGN APPROPRIATE INSPECTION FORMS.
5. OIL AND GREASE ABSORBING MATERIALS SHALL BE READILY AVAILABLE ON-SITE AND SHALL BE PROMPTLY USED TO CONTAIN AND/OR CLEAN UP ALL FUEL OR CHEMICAL SPILLS OR LEAKS.
6. DUST CONTROL SHALL BE ACCOMPLISHED BY WATERING DRY, EXPOSED AREAS ON A REGULAR BASIS. SPRAYING OF PETROLEUM BASED OR TOXIC LIQUIDS FOR THIS PURPOSE IS PROHIBITED.
7. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR AT LEAST FOURTEEN DAYS SHALL BE TEMPORARILY STABILIZED WITH VEGETATION AND MULCH.
8. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED SHALL BE PERMANENTLY SEEDED WITHIN FOURTEEN DAYS PER SEEDING OR LANDSCAPING SPECIFICATIONS.
9. ALL VEHICLES SHALL BE CLEANED AT THE CONSTRUCTION EXIT POINTS ACCORDING TO NOTES SHOWN ON THE DETAIL THEREOF. IF THE MAJORITY OF MUD OR DIRT IS NOT REMOVED FROM EXITING TRAFFIC, HOSE BIBS SHALL BE PROVIDED AT CONSTRUCTION TRAFFIC EXIT POINTS, AND VEHICLE TIRES SHALL BE WASHED BEFORE EXITING ONTO PUBLIC ROADS. SILT FROM THIS WASHING OPERATION SHALL BE INTERCEPTED AND TRAPPED BEFORE WASHWATER IS ALLOWED TO BE DISCHARGED OFF-SITE.
10. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED ONTO ADJACENT ROADWAYS BY VEHICLES EXITING THE SITE SHALL BE CLEANED OR REMOVED IMMEDIATELY.
11. CONTRACTOR SHALL PREVENT ANY SILTATION FROM ENTERING THE STORM SEWER SYSTEM. ALL INLETS AND INLET OPENINGS SHALL BE FULLY ENCIRCLED WITH APPROPRIATE INLET PROTECTION DEVICES.
12. THE CONTRACTOR SHALL REMOVE ALL ACCUMULATED SILT IN ANY TEMPORARY OR PERMANENT DETENTION PONDS, STORM SEWER INLETS AND PIPES, AND ALONG SILT BARRIER, WITHIN 48 HOURS AFTER INSPECTION OF DEVICES REVEALS THE PRESENCE OF EXCESSIVE SILTATION.
13. SILT BARRIER SHALL BE PLACED AROUND ANY STOCKPILES USED ON THIS SITE.
14. THE CONTRACTOR IS ADVISED TO CONSTRUCT TEMPORARY OR PERMANENT FENCING AROUND DETENTION PONDS AND SEDIMENT BASINS AT THE EARLIEST POSSIBLE TIME TO PREVENT ACCIDENTAL ACCESS BY PERSONS OR ANIMALS.
15. ANY ADDITIONAL EROSION CONTROL MEASURES REQUIRED TO ENSURE COMPLIANCE WITH THE TPDES GENERAL PERMIT OR LOCAL PERMIT REQUIREMENTS SHALL BE IMPLEMENTED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE TO THE OWNER.
16. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND PROPERLY DISPOSED OF OFF-SITE WITHIN THIRTY DAYS AFTER STABILIZATION OF ALL SURFACES.
17. THE CONTRACTOR SHALL ASSUME LIABILITY FOR DAMAGE TO ADJACENT PROPERTIES AND/OR PUBLIC RIGHT-OF-WAY RESULTING FROM FAILURE TO FULLY IMPLEMENT AND EXECUTE ALL EROSION CONTROL PROCEDURES SHOWN AND NOTED IN THESE PLANS.
18. WHENEVER DIRT, ROCK, OR OTHER MATERIALS ARE IMPORTED OR EXPORTED ON THE PRIMARY CONSTRUCTION SITE, CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR COMPLIANCE WITH ALL TCEQ STORMWATER REQUIREMENTS FOR THE REMOTE SITE. CONTRACTOR SHALL FURNISH THE ENGINEER AND THE OWNER'S CONSTRUCTION MANAGER WITH DOCUMENTATION OF COVERAGE FOR THE BORROW OR FILL SITE UNDER A NPDES PERMIT FOR STORMWATER DISCHARGES AND OF A WRITTEN AGREEMENT WITH THE LANDOWNER OF THE REMOTE SITE INDICATING EROSION CONTROL MEASURES HAVE BEEN IMPLEMENTED THEREON. AT A MINIMUM, EROSION CONTROL MEASURES MUST CONSIST OF PERIMETER CONTROLS (SILT BARRIER) ON ALL DOWN SLOPES AND SIDE SLOPE BOUNDARIES OF ANY DISTURBED AREA, PLUS PROVISIONS FOR RE-VEGETATION AFTER THE FILL MATERIALS ARE IN PLACE.
19. ALL SLOPES ON SITE WHICH ARE 3:1 OR STEEPER SHALL BE STABILIZED BY TRACK WALKING (TRAVERSING UP AND DOWN THE SLOPE WITH A TRACKED VEHICLE) FOLLOWED BY INSTALLATION OF EROSION CONTROL BLANKET INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. EROSION CONTROL BLANKET SHALL BE NORTH AMERICAN GREEN S150 OR APPROVED EQUAL.

NOTE - STABILIZATION

ALL DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND SEEDED OR SODDED AS NECESSARY AND BY DEFINITION 'MAINTAINED' UNTIL AN ESTABLISHED STAND OF GRASS CAN BE RELEASED TO THE OWNER. REFERENCE LANDSCAPE/IRRIGATION PLAN (IF PROVIDED) TO COORDINATE PLANTING ENHANCEMENTS AND LIMITS OF IRRIGATION COVERAGE.

SITE DATA

TOTAL LAND AREA: 13.21 ACRES
DISTURBED AREA: 13.41 ACRES
IMPERVIOUS: 6.78 ACRES
PERVIOUS: 6.43 ACRES

RUNOFF COEFF. PRE-DEV: 0.36
RUNOFF COEFF. POST-DEV: 0.67

NOTE - SWPPP

CONTRACTOR IS RESPONSIBLE FOR PREPARING AND IMPLEMENTING A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE TPDES.

NOTE - WATER OF THE U.S.

THERE ARE NO IMPACTS FROM CONSTRUCTION ACTIVITIES TO THE WATERS OF THE U.S. ON THIS SITE.

EROSION CONTROL SEQUENCE

1. INSTALL SILT BARRIERS AROUND PERIMETER OF PROPERTY AND DISTURBED AREAS AS SHOWN.
2. INSTALL INLET PROTECTION FOR ALL EXISTING GRATE INLETS, CURB INLETS.
3. INSTALL ROCK CHECK DAMS AT THE ENDS OF ALL EXPOSED STORM SEWER PIPES, IF PRESENT.
4. CONSTRUCT TEMPORARY CONSTRUCTION ACCESS.
5. COMMENCE GRUBBING AND REMOVAL OF VEGETATION IN AREA TO RECEIVE CUT OR FILL.
6. COMMENCE GRADING OPERATION FOR BUILDING PAD PREPARATION.
7. INSTALL ALL UNDERGROUND UTILITIES.
8. FINALIZE PAVEMENT SUBGRADE PREPARATION.
9. INSTALL ALL PROPOSED STORM SEWER PIPES AND INSTALL INLET PROTECTION SILT BARRIERS AT ENDS OF EXPOSED PIPES.
10. CONSTRUCT ALL GRATE INLETS AND DRAINAGE STRUCTURES. INLET PROTECTION SILT BARRIERS MAY BE REMOVED TEMPORARILY FOR THIS CONSTRUCTION.
11. REMOVE SILT BARRIERS AROUND INLETS AND MANHOLES NO MORE THAN 48 HOURS PRIOR TO PLACING STABILIZED BASE COURSE.
12. INSTALL BASE MATERIAL AS REQUIRED FOR PAVEMENT, CURB & GUTTER.
13. INSTALL ALL PAVING, CURB & GUTTER.
14. COMPLETE PLANTING AND/OR SEEDING OF VEGETATED AREAS TO ACCOMPLISH STABILIZATION, IN ACCORDANCE WITH THE LANDSCAPING PLAN.
15. REMOVE TEMPORARY CONSTRUCTION ACCESS, SILT BARRIERS & ROCK CHECK DAMS.

EROSION CONTROL MAINTENANCE NOTES

1. ALL MEASURES STATED ON THIS EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON ON A SCHEDULE WHICH COMPLIES WITH THE GENERAL PERMIT REQUIREMENTS AND CLEANED AND REPAIRED WITHIN 48 HOURS OF THE INSPECTION IN ACCORDANCE WITH THE FOLLOWING:
   - 1.A. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING, OR DETERIORATION.
   - 1.B. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED AND RESEEDED AS NEEDED.
   - 1.C. SILT BARRIER SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT BARRIER WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT BARRIER.
   - 1.D. THE TEMPORARY PARKING AND STORAGE AREA (IF PRESENT) SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AS CONDITIONS DEMAND.
   - 1.E. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS OR SEDIMENT TRAPS (IF PRESENT) SHALL BE MAINTAINED IN OPERATIONAL CONDITION AT ALL TIMES. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
   - 1.F. MAINTENANCE PROCEDURES FOR THE EROSION AND SEDIMENTATION CONTROL SYSTEMS SPECIFIED IN THE STORM WATER POLLUTION PREVENTION PLAN.

** NOTICE TO CONTRACTORS - TOPOGRAPHIC SURVEY **

TOPOGRAPHIC INFORMATION TAKEN FROM A TOPOGRAPHIC SURVEY PERFORMED BY QUICK INC.. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY, IN WRITING, OF ANY DISCREPANCIES OR OMISSIONS TO THE TOPOGRAPHIC INFORMATION. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR CONFIRMING THE LOCATION (HORIZONTAL/VERTICAL) OF ANY BURIED CABLES, CONDUITS, PIPES, AND STRUCTURES (STORM SEWER, SANITARY SEWER, WATER, GAS, TELEVISION, TELEPHONE, ETC.) WHICH IMPACT THE CONSTRUCTION SITE. THE CONTRACTOR(S) SHALL NOTIFY THE OWNER AND ENGINEER IF ANY DISCREPANCIES ARE FOUND BETWEEN THE ACTUAL CONDITIONS VERSUS THE DATA CONTAINED IN THE CONSTRUCTION PLANS. ANY COSTS INCURRED AS THE RESULT OF NOT CONFIRMING THE ACTUAL LOCATION (HORIZONTAL/VERTICAL) OF SAID CABLES, CONDUITS, PIPES, AND STRUCTURES SHALL BE BORNE BY THE CONTRACTOR. ADDITIONALLY, THE CONTRACTOR(S) SHALL NOTIFY THE OWNER AND ENGINEER IF ANY ERRORS OR DISCREPANCIES ARE FOUND ON THE CONSTRUCTION DOCUMENTS (PS&E), WHICH NEGATIVELY IMPACT THE PROJECT. THE ENGINEER AND OWNER SHALL BE INDEMNIFIED OF PROBLEMS AND/OR COST WHICH MAY RESULT FROM CONTRACTOR'S FAILURE TO NOTIFY ENGINEER AND OWNER.

NOTICE TO CONTRACTORS - UTILITIES

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF ANY EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, THE GOVERNING MUNICIPALITY, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION PROVIDED IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER POTHOLING TECHNIQUES.

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

THESE PLANS ARE SUBJECT TO REVIEW & APPROVAL BY JURISDICTIONAL ENTITIES.

Date
Revision /

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED
PROFESSIONAL ENGINEER
01-03-2024
TBPE Registration #: F-13709

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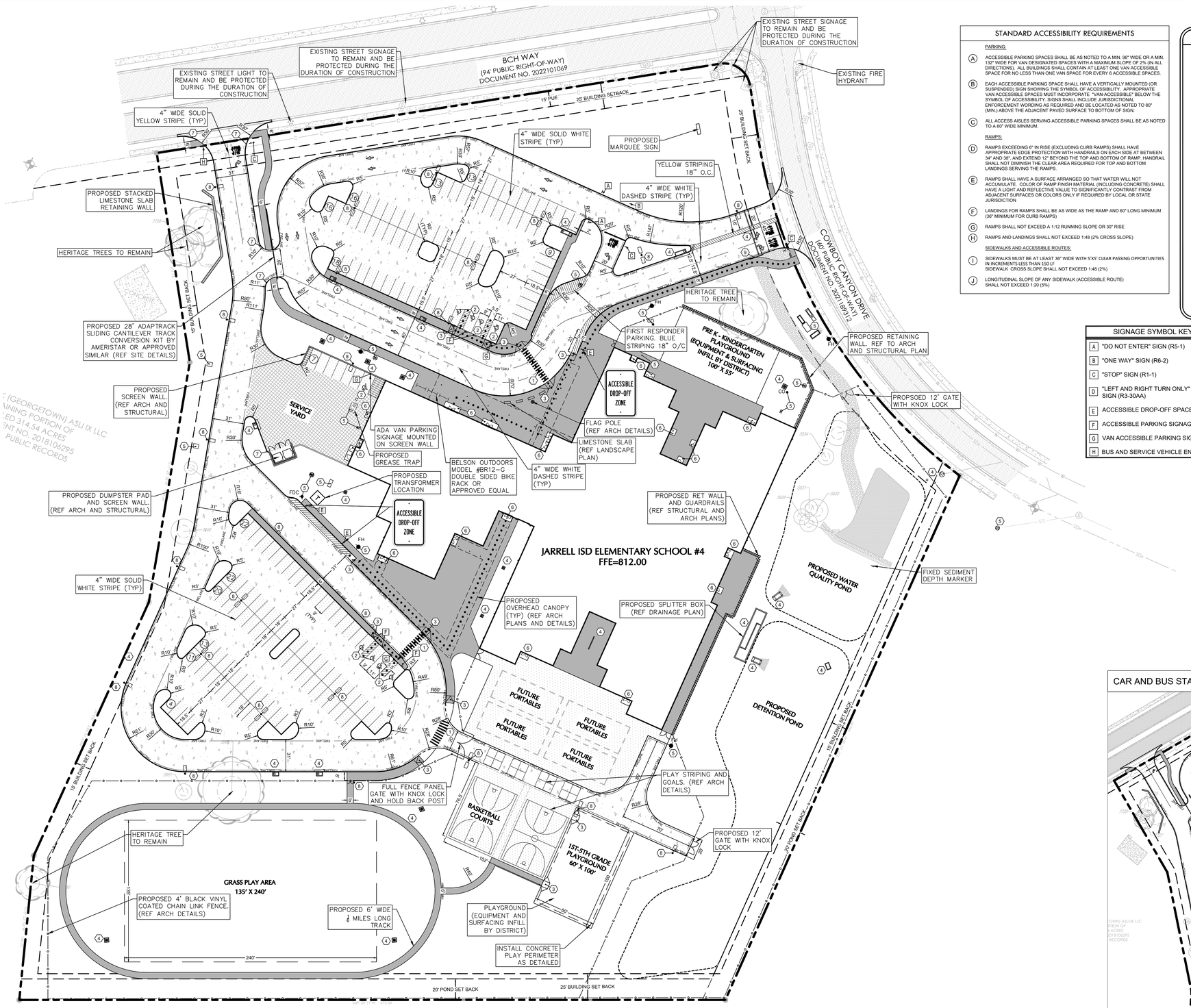
EROSION & SEDIMENT CONTROL PLAN

Job No. 1949-03-01	Sheet No. C2.00
Drawn By: VM	
Date: 1/3/2024	



STANDARD ACCESSIBILITY REQUIREMENTS

PARKING:

(A) ACCESSIBLE PARKING SPACES SHALL BE AS NOTED TO A MIN. 96" WIDE OR A MIN. 132" WIDE FOR VAN DESIGNATED SPACES WITH A MAXIMUM SLOPE OF 2% (IN ALL DIRECTIONS). ALL BUILDINGS SHALL CONTAIN AT LEAST ONE VAN ACCESSIBLE SPACE FOR NO LESS THAN ONE VAN SPACE FOR EVERY 6 ACCESSIBLE SPACES.

(B) EACH ACCESSIBLE PARKING SPACE SHALL HAVE A VERTICALLY MOUNTED (OR SUSPENDED) SIGN SHOWING THE SYMBOL OF ACCESSIBILITY. APPROPRIATE VAN ACCESSIBLE SPACES MUST INCORPORATE "VAN-ACCESSIBLE" BELOW THE SYMBOL OF ACCESSIBILITY. SIGNS SHALL INCLUDE JURISDICTIONAL ENFORCEMENT WORDING AS REQUIRED AND BE LOCATED AS NOTED TO 80" (MIN.) ABOVE THE ADJACENT PAVED SURFACE TO BOTTOM OF SIGN.

(C) ALL ACCESS AISLES SERVING ACCESSIBLE PARKING SPACES SHALL BE AS NOTED TO A 60" WIDE MINIMUM.

RAMPS:

(D) RAMPS EXCEEDING 6" IN RISE (EXCLUDING CURB RAMPS) SHALL HAVE APPROPRIATE EDGE PROTECTION WITH HANDRAILS ON EACH SIDE AT BETWEEN 34" AND 38", AND EXTEND 12" BEYOND THE TOP AND BOTTOM OF RAMP. HANDRAIL SHALL NOT DIMINISH THE CLEAR AREA REQUIRED FOR TOP AND BOTTOM LANDINGS SERVING THE RAMPS.

(E) RAMPS SHALL HAVE A SURFACE ARRANGED SO THAT WATER WILL NOT ACCUMULATE. COLOR OF RAMP FINISH MATERIAL (INCLUDING CONCRETE) SHALL HAVE A LIGHT AND REFLECTIVE VALUE TO SIGNIFICANTLY CONTRAST FROM ADJACENT SURFACES OR COLORS ONLY IF REQUIRED BY LOCAL OR STATE JURISDICTION

(F) LANDINGS FOR RAMPS SHALL BE AS WIDE AS THE RAMP AND 60" LONG MINIMUM (36" MINIMUM FOR CURB RAMPS)

(G) RAMPS SHALL NOT EXCEED A 1:12 RUNNING SLOPE OR 30" RISE

(H) RAMPS AND LANDINGS SHALL NOT EXCEED 1:48 (2% CROSS SLOPE)

SIDEWALKS AND ACCESSIBLE ROUTES:

(I) SIDEWALKS MUST BE AT LEAST 36" WIDE WITH 5'X5' CLEAR PASSING OPPORTUNITIES IN INCREMENTS LESS THAN 150 LF
SIDEWALK CROSS SLOPE SHALL NOT EXCEED 1:48 (2%)

(J) LONGITUDINAL SLOPE OF ANY SIDEWALK (ACCESSIBLE ROUTE) SHALL NOT EXCEED 1:20 (5%)

PARKING COUNT SUMMARY

SERIVCE YARD PARKING	
STANDARD STALLS PROVIDED	6
ADA STALLS PROVIDED	1
ADA STALLS REQUIRED	1
TOTAL STALLS	7
VISITOR PARKING	
STANDARD STALLS PROVIDED	81
ADA STALLS PROVIDED	4
ADA STALLS REQUIRED	4
TOTAL STALLS	85
STAFF AND EVENT PARKING	
STANDARD STALLS PROVIDED	88
ADA STALLS PROVIDED	4
ADA STALLS REQUIRED	4
TOTAL STALLS	92
TOTAL SITE PARKING	
STANDARD STALLS PROVIDED	166
ADA STALLS PROVIDED	9
ADA STALLS REQUIRED	9
TOTAL STALLS	175

CAR STACKING INSET
SINGLE STACKING LANE LENGTH - 1,050'
SINGLE CAR LENGTH AND CLEARANCE - 25'
SINGLE LANE STACKING - 1,050'/25'= 42 VEHICLES.
TOTAL DOUBLE LANE STACKING= 84 VEHICLES

BUS STACKING PROVIDED
TOTAL STACKING LANE LENGTH - 225'
SINGLE BUS LENGTH - 38'
BUS CLEARANCE - 7'
TOTAL STACKING - 225'/45'= 5 BUSES

SIGNAGE SYMBOL KEY

A	"DO NOT ENTER" SIGN (R5-1)
B	"ONE WAY" SIGN (R6-2)
C	"STOP" SIGN (R1-1)
D	"LEFT AND RIGHT TURN ONLY" SIGN (R3-30AA)
E	ACCESSIBLE DROP-OFF SPACE
F	ACCESSIBLE PARKING SIGNAGE
G	VAN ACCESSIBLE PARKING SIGNAGE
H	BUS AND SERVICE VEHICLE ENTRANCE

SYMBOL KEY

1. CROSSWALK / PED. CROSSING TYPICAL SEE PAVING DETAILS
2. TYPICAL / VAN ACCESSIBLE PARKING SPACES SEE PAVING DETAILS (TYP)
3. INSTALL BARRIER FREE RAMP (BFR) REFER TO PAVING DETAILS (TYP)
4. PROPOSED DRAINAGE STRUCTURE. REFER TO DRAINAGE PLAN (TYP)
5. PROPOSED UTILITY STRUCTURES. REFER TO UTILITY PLAN (TYP)
6. PROPOSED STRUCTURAL STOOP REFER TO STRUCTURAL PLANS
7. TRANSITION CURB REFER TO PAVING DETAILS
8. PROPOSED LIGHT POLE REF. MEP PLANS
9. PROPOSED 12" LAYDOWN CURB/ MAINTENANCE CROSSING REFER TO PAVING DETAILS (TYP)

40 0 10 25 40
SCALE: 1 INCH = 40 FEET

LEGEND

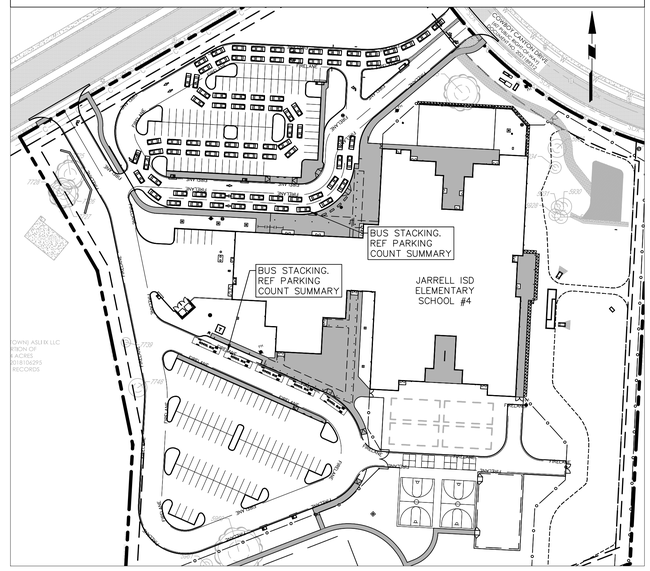
- PROPOSED HEAVY DUTY PAVEMENT 6" REINFORCED CONCRETE, TYPE "A" 4" FLEXIBLE BASE. REFER TO GEOTECH
- PROPOSED MEDIUM DUTY PAVEMENT 6" REINFORCED CONCRETE, TYPE "A" 4" FLEXIBLE BASE. REFER TO GEOTECH
- PROPOSED LIGHT DUTY PAVEMENT 5" REINFORCED CONCRETE, TYPE "A" 4" FLEXIBLE BASE. REFER TO GEOTECH
- PROPOSED REINFORCED CONCRETE SIDEWALK. REF PAVING DETAILS
- PROPERTY LINE
- SETBACK LINE
- PROPOSED SIGN
- PAINTED TRAFFIC ARROW
- FIRE LANE STRIPING (FIRE LANE)
- PROPOSED FENCE
- PROPOSED FIRE HYDRANT (FH)
- PROPOSED SANITARY MANHOLE (SS)
- PROPOSED STORM MANHOLE (ST)
- PROPOSED CURB INLET
- PROPOSED GRATE INLET
- ACCESSIBLE ROUTE
- PARKING COUNT (7)
- PROPOSED FDC MANHOLE
- PROPOSED RETAINING WALL

NOTE-LANDSCAPE ELEMENTS

REFER TO LANDSCAPE PLAN FOR LANDSCAPE ELEMENTS AND MATERIALS.

80 0 40 80
SCALE IN FEET

CAR AND BUS STACKING INSET — SCALE 1" = 80'



WPAP CALCULATIONS

** WPAP CALCULATIONS SUMMARY**

CURRENT SITE AREA:	575,319 SQ FT = 13.21 ACRES
EXISTING IMPERVIOUS COVER (IC):	945 SQ FT = 0.02 ACRES
PROPOSED IMPERVIOUS COVER SUMMARY	
STRUCTURES/ROOFTOPS:	82,982 SQ FT = 1.90 ACRES
PARKING, DRIVES & SIDEWALKS:	212,519 SQ FT = 4.88 ACRES
PROPOSED IMPERVIOUS COVER TOTAL:	295,501 SQ FT = 6.78 ACRES
POST PROJECT IMPROVEMENTS SUMMARY	
TOTAL SITE IMPERVIOUS COVER:	295,501 SQ FT = 6.78 ACRES OR 51.4%

** NOTICE TO CONTRACTORS - TOPOGRAPHIC SURVEY **

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Revision / Date

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JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED
PROFESSIONAL ENGINEER
01-03-2024
TBPE Registration #: F-13709

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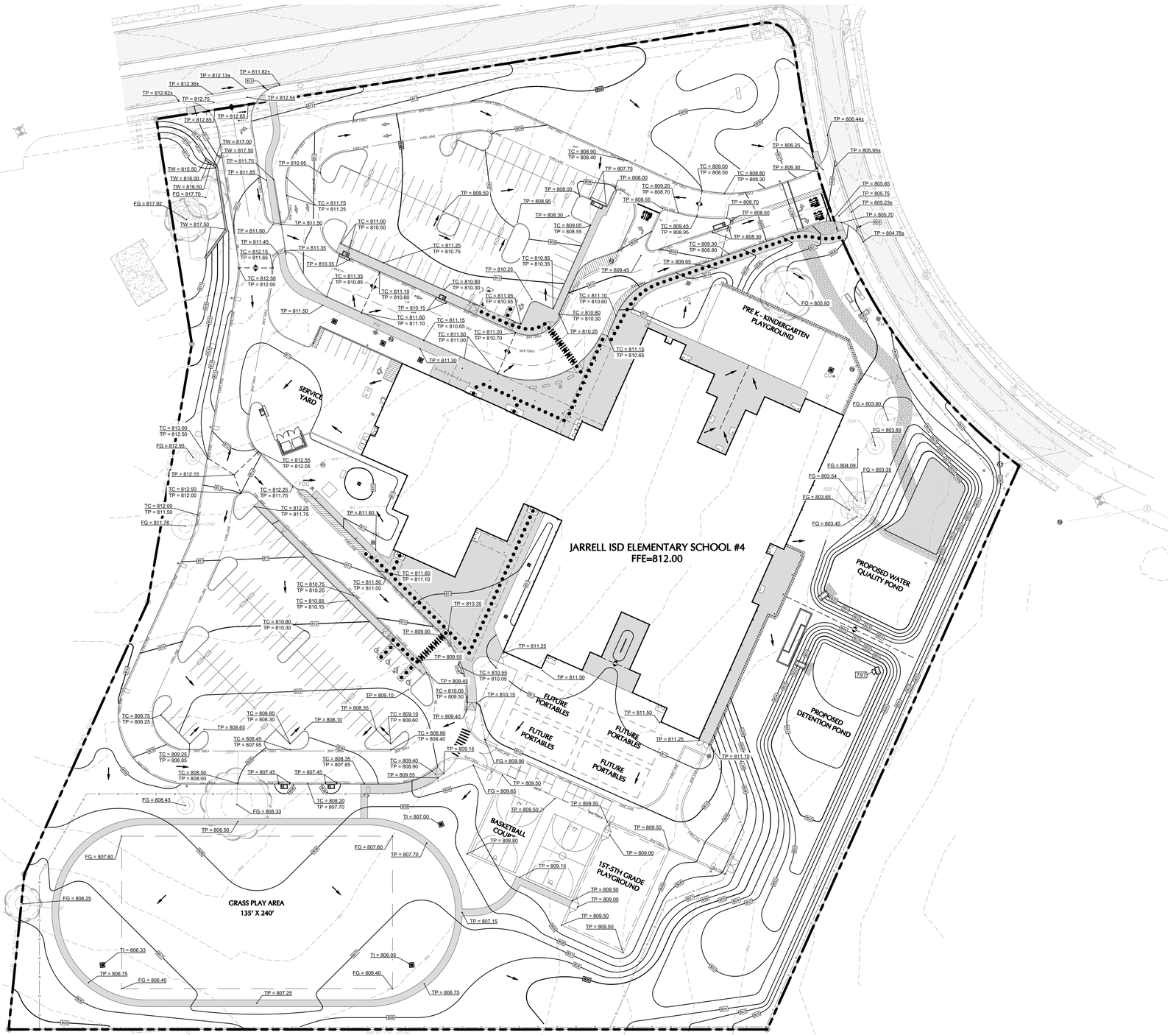
SITE PLAN

Job No. 194543-01	Sheet No. C4.00
Drawn By: VM	
Date: 1/3/2024	



40 0 10 25 40
SCALE: 1 INCH = 40 FEET

LEGEND

PROPERTY LINE	
SET BACK	
PROPOSED CONTOUR	1029
EXISTING CONTOUR	1029
FLOWLINE	
GRADE BREAK	
ACCESSIBLE ROUTE	
SPOT GRADE	FG=100.50
PROPOSED FLOW ARROW	
PROPOSED RETAINING WALL	
FG	FINISHED GRADE
TP	TOP OF PAVEMENT
TC	TOP OF CURB
TW	TOP OF WALL
FL	FLOWLINE
FF	FINISHED FLOOR
TI	TOP OF INLET

SITE GRADING - IBC REQUIREMENT (SEC. 1804)

- THE GROUND IMMEDIATELY ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10-FEET MEASURED PERPENDICULAR TO THE FACE OF THE WALL.
- IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10-FEET OF HORIZONTAL DISTANCE, A 5-PERCENT SLOPE SHALL BE PROVIDED TO AN APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM THE FOUNDATION. SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2 PERCENT WHERE LOCATED WITHIN 10-FEET OF THE BUILDING FOUNDATION.
- IMPERVIOUS SURFACES WITHIN 10-FEET OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2-PERCENT AWAY FROM THE BUILDING.

NOTE TO BUILDING OFFICIAL

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(C) ALL ACCESS AISLES SERVING ACCESSIBLE PARKING SPACES SHALL BE AS NOTED TO A 60" WIDE MINIMUM.

RAMPS:

(D) RAMPS EXCEEDING 6" IN RISE (EXCLUDING CURB RAMPS) SHALL HAVE APPROPRIATE EDGE PROTECTION WITH HANDRAILS ON EACH SIDE AT BETWEEN 34" AND 38", AND EXTEND 12" BEYOND THE TOP AND BOTTOM OF RAMP. HANDRAIL SHALL NOT DIMINISH THE CLEAR AREA REQUIRED FOR TOP AND BOTTOM LANDINGS SERVING THE RAMPS.

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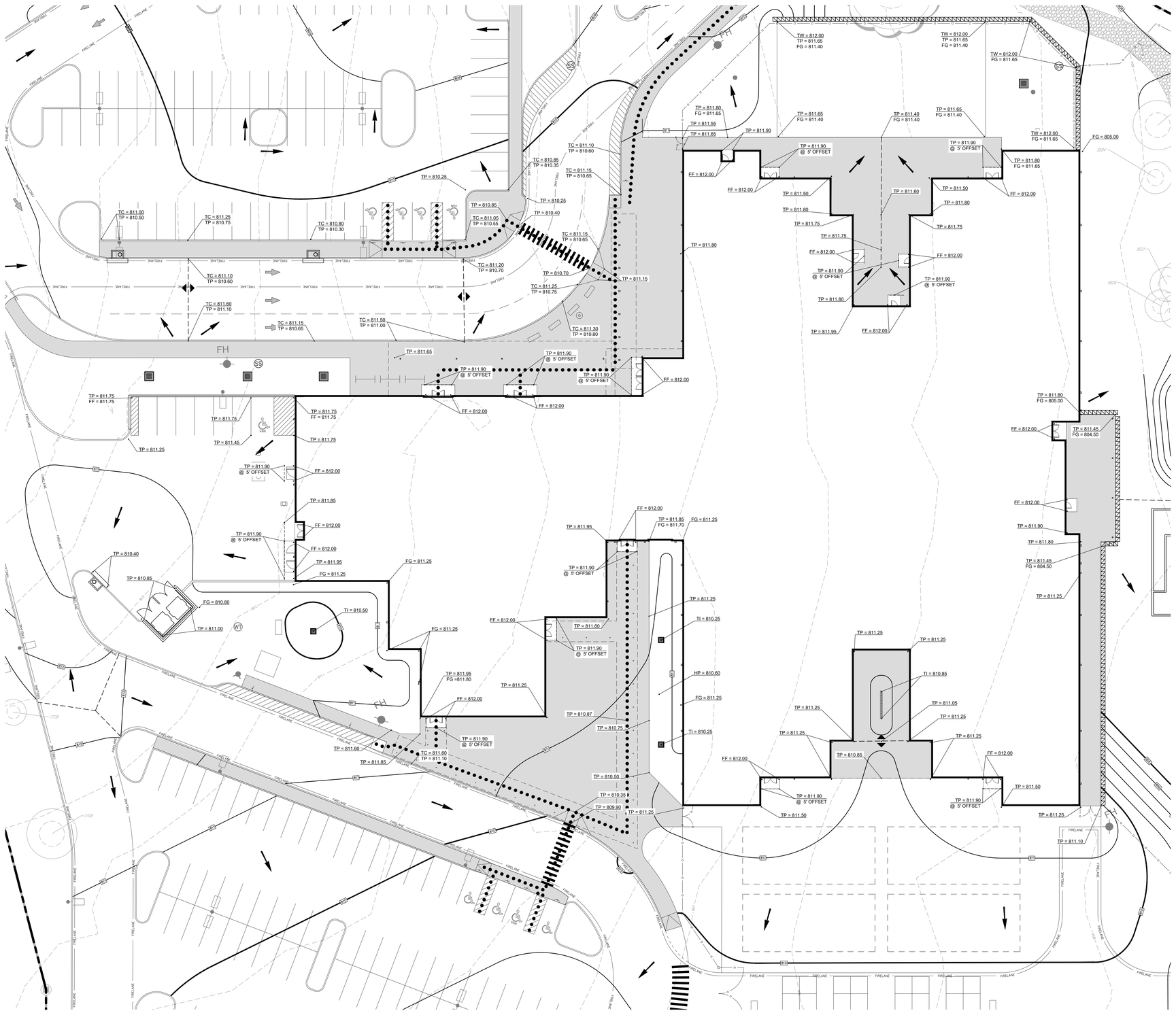
GRADING PLAN

Job No.	19494-03-01
Drawn By:	VM
Date:	1/3/2024
Sheet No.	C5.00



20 0 5 10 20
SCALE: 1 INCH = 20 FEET

LEGEND

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LANDSCAPE EASEMENT	
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EXISTING CONTOUR	1029
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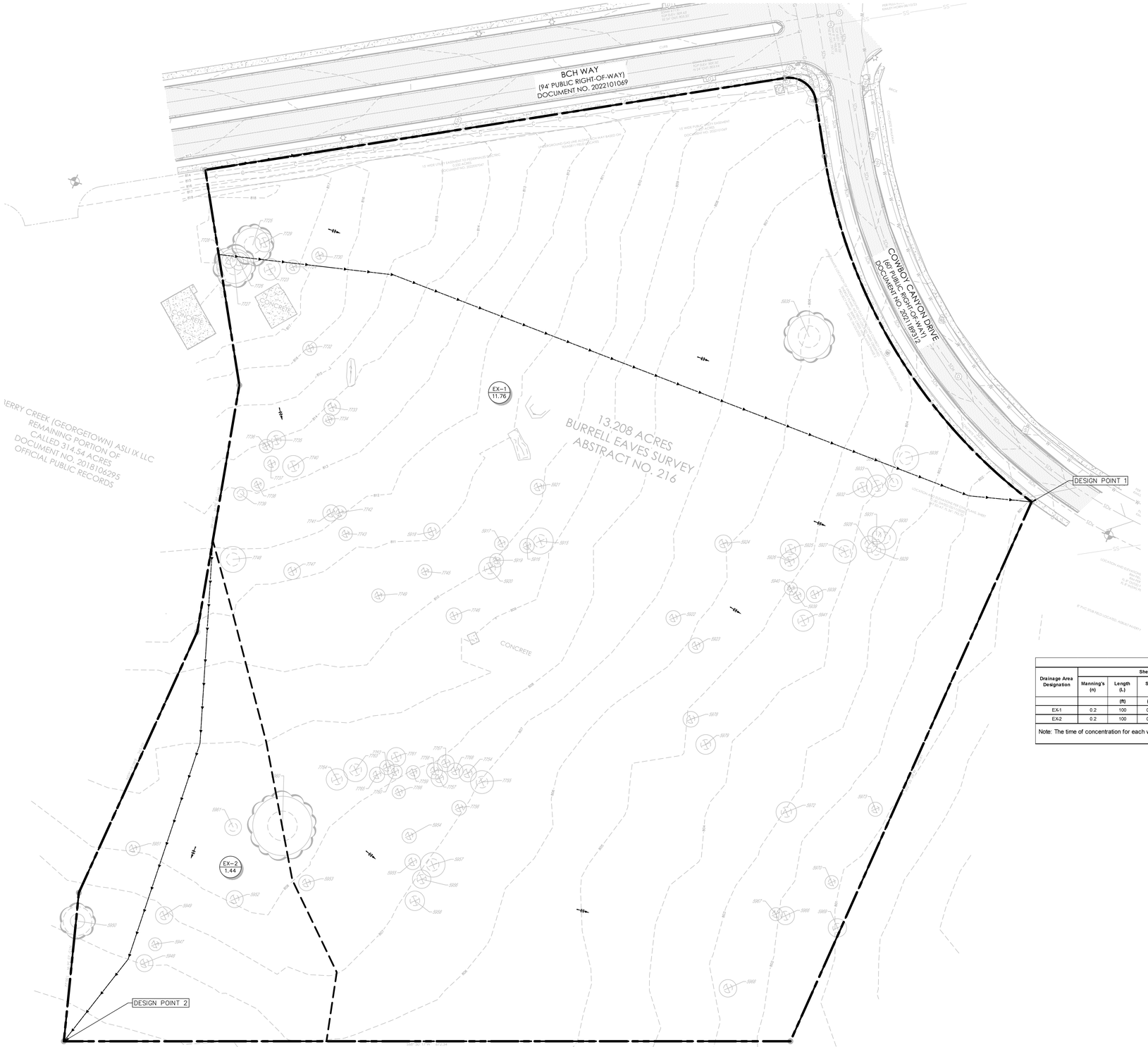
GRADING INSET

Job No. 1949-03-01	Sheet No. C5.01
Drawn By: VM	
Date: 1/3/2024	

Date: 1/3/2024 Time: 16:04 User: kekim Style Table: Langan.stb Layout: C5.01 GRADING INSET Document Code: 531023302-0601-CG101-0101



40 0 10 25 40
SCALE: 1" INCH = 40 FEET

LEGEND

- PROPERTY LINE
- DRAINAGE BASIN (BASIN NAME: DA-00, ACRES: 1.00)
- DRAINAGE AREA
- EXISTING FLOW ARROW
- TIME OF CONCENTRATION PATH

TIME OF CONCENTRATION CALCULATIONS

Drainage Area Designation	Sheet Flow					Shallow Concentrated Flow					Channel Flow			Total
	Manning's (n)	Length (L_s)	Slope (s)	2-Yr, 24-hr rainfall	Time (T_s)	Length (L_s)	Slope (s)	Cover Type	Velocity	Time (T_s)	Length (L_s)	Velocity	Time (T_s)	Time (T_c)
		(ft)	(ft/ft)	(in)	(min)	(ft)	(ft/ft)	-	(ft/sec)	(min)	(ft)	(ft/sec)	(min)	(min)
EX-1	0.2	100	0.015	4.20	12.1	688	0.023	Unpaved	2.42	4.7	0	0.10	0.0	17
EX-2	0.2	100	0.018	4.20	11.4	395	0.009	Unpaved	1.52	4.3	0	0.10	0.0	16

Note: The time of concentration for each watershed was calculated using equations given in Chapter 3.5.7 SCS Method Time of Concentration. Values for each overland "n" are taken from table 3-2 of the previous reference manual.

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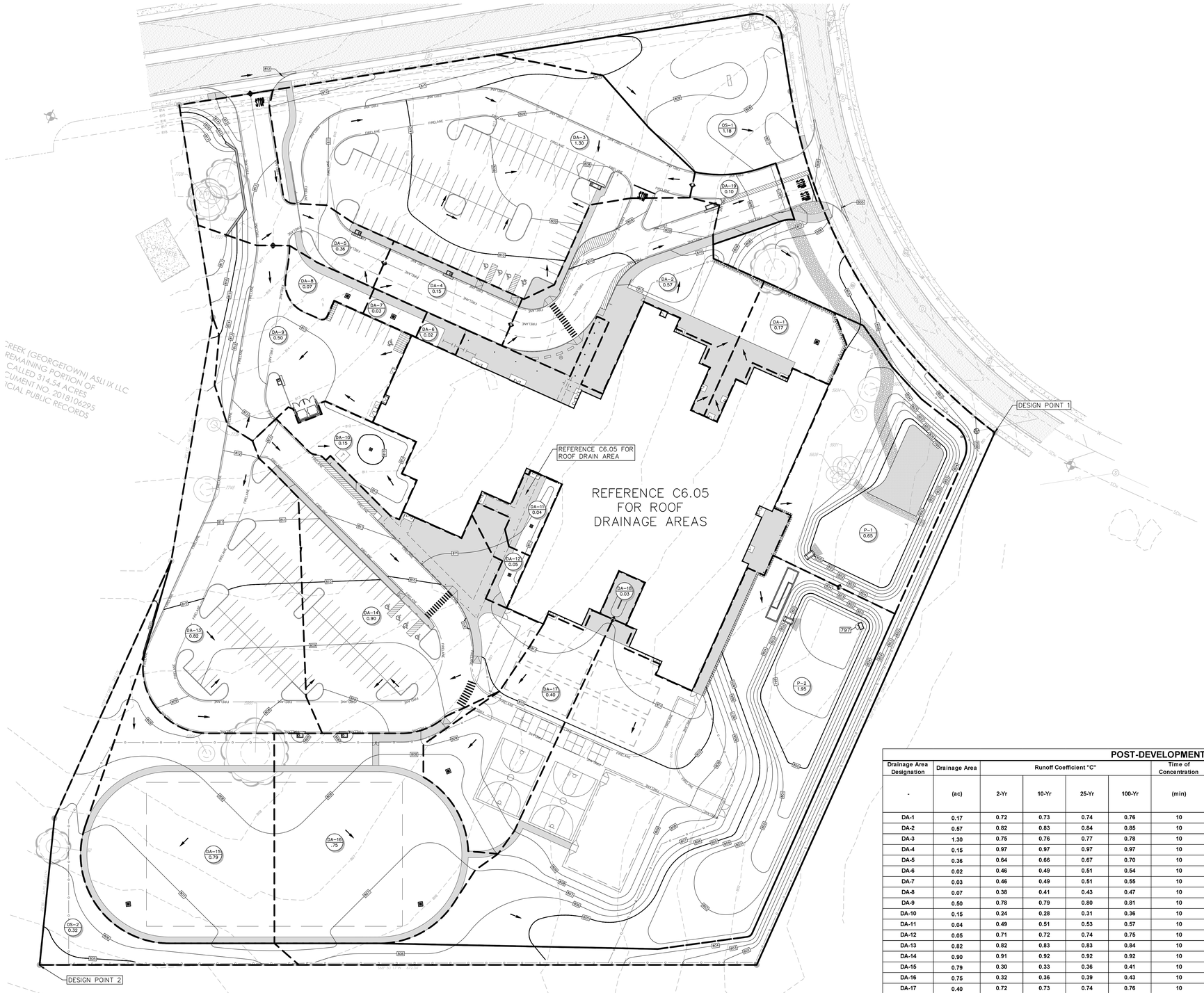
EXISTING DRAINAGE AREA MAP

Job No. 194903-01	Sheet No. C6.00
Drawn By: VM	
Date: 1/3/2024	



40 0 10 25 40
SCALE: 1 INCH = 40 FEET

LEGEND

PROPERTY LINE

DRAINAGE BASIN — BASIN NAME DA-00, ACRES 1.00

DRAINAGE AREA

PROPOSED FLOW ARROW

POST-DEVELOPMENT DRAINAGE AREA CALCULATIONS

Drainage Area Designation	Drainage Area	Runoff Coefficient "C"				Time of Concentration	2-Year Rainfall	2-Year Peak Discharge	10-Year Rainfall	10-Year Peak Discharge	25-Year Rainfall	25-Year Peak Discharge	100-Year Rainfall	100-Year Peak	
-	(ac)	2-Yr	10-Yr	25-Yr	100-Yr	(min)	(in/hr)	(cfs)	(in/hr)	(cfs)	(in/hr)	(cfs)	(in/hr)	(cfs)	Comments
DA-1	0.17	0.72	0.73	0.74	0.76	10	5.02	0.6	7.51	0.9	9.22	1.2	12.14	1.6	
DA-2	0.57	0.82	0.83	0.84	0.85	10	5.02	2.3	7.51	3.5	9.22	4.4	12.14	5.8	
DA-3	1.30	0.75	0.76	0.77	0.78	10	5.02	4.9	7.51	7.4	9.22	9.2	12.14	12.4	
DA-4	0.15	0.97	0.97	0.97	0.97	10	5.02	0.7	7.51	1.1	9.22	1.3	12.14	1.7	
DA-5	0.36	0.64	0.66	0.67	0.70	10	5.02	1.2	7.51	1.8	9.22	2.3	12.14	3.1	
DA-6	0.02	0.46	0.49	0.51	0.54	10	5.02	0.1	7.51	0.1	9.22	0.1	12.14	0.2	
DA-7	0.03	0.46	0.49	0.51	0.55	10	5.02	0.1	7.51	0.1	9.22	0.2	12.14	0.2	
DA-8	0.07	0.38	0.41	0.43	0.47	10	5.02	0.1	7.51	0.2	9.22	0.3	12.14	0.4	
DA-9	0.50	0.78	0.79	0.80	0.81	10	5.02	2.0	7.51	3.0	9.22	3.7	12.14	4.9	
DA-10	0.15	0.24	0.28	0.31	0.36	10	5.02	0.2	7.51	0.3	9.22	0.4	12.14	0.6	
DA-11	0.04	0.49	0.51	0.53	0.57	10	5.02	0.1	7.51	0.2	9.22	0.2	12.14	0.3	
DA-12	0.05	0.71	0.72	0.74	0.75	10	5.02	0.2	7.51	0.3	9.22	0.3	12.14	0.4	
DA-13	0.82	0.82	0.83	0.83	0.84	10	5.02	3.4	7.51	5.1	9.22	6.3	12.14	8.4	
DA-14	0.90	0.91	0.92	0.92	0.92	10	5.02	4.1	7.51	6.2	9.22	7.6	12.14	10.1	
DA-15	0.79	0.30	0.33	0.36	0.41	10	5.02	1.2	7.51	2.0	9.22	2.6	12.14	3.9	
DA-16	0.75	0.32	0.36	0.39	0.43	10	5.02	1.2	7.51	2.0	9.22	2.7	12.14	3.9	
DA-17	0.40	0.72	0.73	0.74	0.76	10	5.02	1.4	7.51	2.2	9.22	2.7	12.14	3.7	
DA-18	0.03	0.97	0.97	0.97	0.97	10	5.02	0.1	7.51	0.2	9.22	0.2	12.14	0.3	
DA-19	0.10	0.96	0.96	0.96	0.96	10	5.02	0.5	7.51	0.7	9.22	0.9	12.14	1.2	
P-1	0.65	0.24	0.28	0.31	0.36	10	5.02	0.8	7.51	1.4	9.22	1.9	12.14	2.8	
P-2	1.95	0.45	0.48	0.50	0.54	10	5.02	4.4	7.51	7.1	9.22	9.1	12.14	12.7	
OS-1	1.18	0.26	0.30	0.33	0.38	10	5.02	1.6	7.51	2.7	9.22	3.6	12.14	5.4	
OS-2	0.32	0.24	0.28	0.31	0.36	10	5.02	0.4	7.51	0.7	9.22	0.9	12.14	1.4	
TOTAL	11.30							31.5		49.0		62.0		85.5	

Note: Calculations based on the Rational Method: Q = C*I*A

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Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK M. GARNER, JR.
98447
LICENSED PROFESSIONAL ENGINEER
01-03-2024
TBPE Registration #: F-13709

Huckabee
AUSTIN • DALLAS • FORT WORTH
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PROPOSED DRAINAGE AREA MAP

Job No.	Sheet No.
1949-03-01	C6.01
Drawn By: VM	
Date: 1/3/2024	

Date: 1/3/2024 Time: 16:04 User: kekim Style Table: Langan.stb Layout: C6.01 PROPOSED DRAINAGE AREA MAP Document Code: 531023302-0601-CG104-0101

40 0 10 25 40
SCALE: 1" INCH = 40 FEET

LEGEND

- PROPERTY LINE
- PROPOSED STORM LINE
- PROPOSED CURB INLET
- PROPOSED GRATE INLET
- EXISTING CONTOURS — 1030 —
- PROPOSED CONTOURS 1030
- PROPOSED FLOW ARROW
- GRADE BREAK

SYMBOL KEY

1. UTILITY CROSSING
2. ROOF STORM DRAINAGE PIPES. (REF TO ROOF DRAINAGE SHEET)

CIVIL DRAIN NOTE

1. ALL CIVIL STORM DRAIN LINES 15" AND SMALLER CONNECTING TO ROOF DRAIN OR DOWNSPOUT SHOWN BY ARCH/MEP SHALL BE SCH-40 PVC OR BETTER .
2. CIVIL DRAINAGE CONTRACTOR SHALL INSTALL CONNECTING DOWNSPOUT DRAIN LINES PER CIVIL AND ARCHITECTURAL DETAILS TO THE FACE OF THE BUILDING AND TERMINATING ABOVE GROUND SURFACE UNLESS COORDINATED OTHERWISE.
3. WHERE CIVIL LINE SIZE AND ROOF DRAIN / DOWNSPOUT SIZE DO NOT MATCH, CONTRACTOR TO SUPPLY AND INSTALL REDUCER AS REQUIRED FOR THE CONNECTION.
4. CONTRACTOR TO SUPPLY AND INSTALL A PREMANUFACTURED FITTING AT ALL PVC CONNECTIONS TO HDPE TRUNK LINE.

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DRAINAGE PLAN

Job No. 1949-03-01	Sheet No. C6.02
Drawn By: VM	
Date: 1/3/2024	

100-YEAR RATIONAL METHOD STORM SEWER CALCULATIONS

Line ID	Upstream Station	Downstream Station	Pipe Length	Pipe Slope	Drainage Area Designation	Incremental Drainage Area	Cumulative Drainage Area	Runoff Coefficient	Incremental	Cumulative	Time at Inlet	Time in Pipe	Cumulative Time	Rainfall Intensity	Peak Flow	Pipe Material	Pipe Capacity	Pipe Diameter	Friction Slope	Hydraulic Gradient Upstream	Hydraulic Gradient Downstream	Velocity In	Velocity Out	V1^2/2g	V2^2/2g	Upstream Junction Type	Loss Coefficient	Velocity Head Loss	Upstream Invert Elev.	Downstream Invert Elev.	Comments
-	-	-	(ft)	(ft/ft)	-	(ac)	(ac)	"C"	"CA"	"CA"	(min)	(min)	(min)	(in/hr)	(cfs)	-	(cfs)	(in)	(ft/ft)	-	-	(ft/sec)	(ft/sec)	(ft)	(ft)	-	"Kj"	(ft)	(ft)	(ft)	
STRM-A	9+07.27	8+83.18	24.1	0.0085	DA-4	0.15	0.15	0.97	0.14	0.14	10.00	0.08	10.08	12.14	1.7	HDPE	3.9	12	0.0017	812.47	812.43	0.00	4.74	0.00	0.35	Begin Line	1.25	0.44	808.49	808.29	
	8+83.18	8+23.26	59.9	0.0085	NONE	0.00	0.15	0.00	0.00	0.14	10.08	0.21	10.30	12.10	1.7	HDPE	3.9	12	0.0017	812.31	812.21	4.74	4.73	0.35	0.35	45 Bend	0.35	0.12	808.29	807.78	
	8+23.26	8+18.26	5.0	0.0085	NONE	0.00	0.15	0.00	0.00	0.14	10.30	0.02	10.31	12.00	1.7	HDPE	11.4	18	0.0002	812.11	812.11	4.73	4.42	0.35	0.30	Collar - 12 to 18	0.10	0.10	807.28	807.24	
	8+18.26	8+00.17	18.1	0.0085	R-31:R-35	0.25	0.40	0.97	0.24	0.38	10.31	0.05	10.37	11.99	4.6	HDPE	11.4	18	0.0014	811.78	811.76	4.42	5.96	0.30	0.55	45 Wye	0.75	0.32	807.24	807.08	
	8+00.17	7+88.81	11.4	0.0085	DA-6:DA-8	0.42	0.82	0.68	0.28	0.67	10.37	0.03	10.39	11.97	8.0	HDPE	11.4	18	0.0041	811.43	811.38	5.96	6.94	0.55	0.75	45 Wye	0.75	0.33	807.08	806.99	
	7+88.81	6+92.13	96.7	0.0085	DA-5	0.36	1.18	0.70	0.25	0.92	10.39	0.22	10.61	11.95	11.0	HDPE	11.4	18	0.0079	811.10	810.34	6.94	7.35	0.75	0.84	45 Wye	0.75	0.28	806.99	806.16	
	6+92.13	6+87.13	5.0	0.0085	NONE	0.00	1.18	0.00	0.00	0.92	10.61	0.01	10.62	11.85	10.9	HDPE	24.6	24	0.0017	810.14	810.13	7.35	7.52	0.84	0.88	Collar - 18 to 24	0.23	0.20	805.66	805.62	
	6+87.13	5+25.21	161.9	0.0085	DA-9	0.50	1.68	0.81	0.41	1.33	10.62	0.33	10.95	11.85	15.7	HDPE	24.6	24	0.0035	809.76	809.20	7.52	8.14	0.88	1.03	45 Wye	0.75	0.37	805.62	804.25	
	5+25.21	5+05.98	19.2	0.0085	DA-10, R-26:R-30,	0.37	2.05	0.73	0.27	1.59	10.95	0.04	10.99	11.70	18.6	HDPE	24.6	24	0.0049	808.86	808.76	8.14	8.48	1.03	1.12	45 Wye	0.75	0.34	804.25	804.08	
	5+05.98	3+71.72	134.3	0.0085	NONE	0.00	2.05	0.00	0.00	1.59	10.99	0.26	11.25	11.69	18.6	HDPE	24.6	24	0.0049	808.36	807.71	8.48	8.61	1.12	1.15	45 Bend	0.35	0.40	804.08	802.94	
	3+71.72	3+66.95	4.8	0.0085	DA-4	0.15	2.19	0.97	0.14	1.74	11.25	0.01	11.26	11.58	20.1	HDPE	24.6	24	0.0056	807.59	807.57	8.61	8.69	1.15	1.17	Collar - 24 to 30	0.10	0.12	802.94	802.90	
	3+66.95	3+58.27	8.7	0.0085	DA-11:DA-12, R-15:R-25	0.54	2.73	0.92	0.50	2.23	11.26	0.02	11.28	11.57	25.9	HDPE	44.7	30	0.0028	807.09	807.06	8.69	9.35	1.17	1.36	45 Wye	0.75	0.48	802.40	802.33	
	3+58.27	3+49.58	8.7	0.0085	NONE	0.00	2.73	0.00	0.00	2.23	11.28	0.02	11.29	11.57	25.8	HDPE	44.7	30	0.0028	806.93	806.90	9.35	9.34	1.36	1.35	Collar - 30 to 36	0.10	0.14	802.33	802.25	
	3+49.58	2+19.49	130.1	0.0055	DA-13:DA-17	3.66	6.39	0.68	2.47	4.71	11.29	0.23	11.52	11.56	54.4	HDPE	58.5	36	0.0048	806.57	805.95	9.34	9.31	1.35	1.35	45 Wye	0.75	0.33	801.75	801.04	
	2+19.49	1+60.58	58.9	0.0055	DA-18, R-13:R-14	0.06	6.45	0.97	0.06	4.76	11.52	0.11	11.63	11.46	54.6	HDPE	58.5	36	0.0048	805.61	805.32	9.31	9.35	1.35	1.36	45 Wye	0.75	0.35	801.04	800.71	
	1+60.58	1+54.27	6.3	0.0055	R-7:R-12	0.27	6.72	0.97	0.26	5.02	11.63	0.01	11.64	11.42	57.4	HDPE	58.5	36	0.0053	804.98	804.95	9.35	9.35	1.36	1.36	45 Wye	0.75	0.34	800.71	800.68	
	1+54.27	1+44.77	9.5	0.0055	NONE	0.00	6.72	0.00	0.00	5.02	11.64	0.02	11.66	11.42	57.3	HDPE	58.5	36	0.0053	804.47	804.42	9.35	9.35	1.36	1.36	45 Bend	0.35	0.47	800.68	800.63	
	1+44.77	0+12.51	132.3	0.0055	NONE	0.00	6.72	0.00	0.00	5.02	11.66	0.24	11.89	11.41	57.3	HDPE	58.5	36	0.0053	803.95	803.25	9.35	9.34	1.36	1.36	45 Bend	0.35	0.47	800.63	799.90	
	0+12.51	0+04.51	8.0	0.0055	NONE	0.00	6.72	0.00	0.00	5.02	11.89	0.01	11.91	11.31	56.8	HDPE	58.5	36	0.0052	802.77	802.73	9.34	9.37	1.36	1.36	45 Bend	0.35	0.48	799.90	799.85	
	0+04.51	0+00.00	4.5	0.0055	NONE	0.00	6.72	0.00	0.00	5.02	11.91	0.01	11.92	11.31	56.8	HDPE	58.5	36	0.0052	802.25	0.00	9.37	9.37	1.36	1.36	45 Bend	0.35	0.48	799.85	799.83	
STRM-A.1	0+93.66	0+68.39	25.3	0.0500	DA-18	0.03	0.03	0.97	0.03	0.03	10.00	0.07	10.07	12.14	0.3	HDPE	1.5	6	0.0022	807.13	806.76	0.00	5.73	0.00	0.51	Begin Line	1.25	0.64	806.97	805.71	
	0+68.39	0+53.83	14.6	0.0500	R-14	0.02	0.04	0.97	0.02	0.04	10.07	0.04	10.11	12.10	0.5	HDPE	1.5	6	0.0059	806.52	806.43	5.73	6.72	0.51	0.70	45 Bend	0.35	0.25	805.71	804.98	
	0+53.83	0+09.50	44.3	0.0500	R-13	0.02	0.06	0.97	0.02	0.06	10.11	0.10	10.21	12.09	0.7	HDPE	1.5	6	0.0114	806.11	805.61	6.72	7.40	0.70	0.85	45 Wye	0.75	0.32	804.98	802.77	
	0+09.50	0+00.00	9.5	0.0500	NONE	0.00	0.06	0.00	0.00	0.06	10.21	0.02	10.23	12.04	0.7	HDPE	1.5	6	0.0113	805.09	804.98	7.40	7.37	0.85	0.84	45 Wye	0.75	0.21	802.77	802.29	
STRM-A.2	4+94.90	2+54.99	239.9	0.0045	DA-15	0.79	0.79	0.41	0.32	0.32	10.00	0.88	10.88	12.14	3.9	HDPE	5.1	15	0.0026	809.53	808.90	0.00	4.53	0.00	0.32	Begin Line	1.25	0.40	805.48	804.40	
	2+54.99	2+43.89	11.1	0.0045	NONE	0.00	0.79	0.00	0.00	0.32	10.88	0.04	10.92	11.73	3.8	HDPE	5.1	15	0.0024	808.80	808.78	4.53	4.54	0.32	0.32	Collar - 15 to 18	0.10	0.10	804.40	804.35	
	2+43.89	2+38.52	5.4	0.0045	NONE	0.00	0.79	0.00	0.00	0.32	10.92	0.02	10.94	11.72	3.8	HDPE	8.3	18	0.0009	808.64	808.64	4.54	4.48	0.32	0.31	60 Bend	0.43	0.13	804.10	804.07	
	2+38.52	1+37.69	100.8	0.0045	DA-16	0.75	1.54	0.43	0.32	0.64	10.94	0.32	11.26	11.71	7.5	HDPE	8.3	18	0.0037	808.43	808.06	4.48	5.29	0.31	0.44	45 Wye	0.75	0.20	804.07	803.62	
	1+37.69	1+27.38	10.3	0.0045	NONE	0.00	1.54	0.00	0.00	0.64	11.26	0.03	11.29	11.57	7.4	HDPE	8.3	18	0.0036	807.96	807.93	5.29	5.31	0.44	0.44	Collar - 18 to 24	0.23	0.10	803.62	803.57	
	1+27.38	1+10.73	16.7	0.0045	DA-17	0.40	1.94	0.76	0.30	0.95	11.29	0.05	11.34	11.56	10.9	HDPE	17.9	24	0.0017	807.71	807.68	5.31	5.92	0.44	0.54	45 Wye	0.75	0.22	803.07	803.00	
	1+10.73	1+05.73	5.0	0.0045	NONE	0.00	1.94	0.00	0.00	0.95	11.34	0.01	11.35	11.54	10.9	HDPE	32.5	30	0.0005	807.58	807.58	5.92	5.96	0.54	0.55	Collar - 24 to 30	0.10	0.10	802.50	802.48	
	1+05.73	0+09.50	96.2	0.0045	DA-13:DA-14	1.72	3.66	0.89	1.52	2.47	11.35	0.22	11.57	11.53	28.5	HDPE	32.5	30	0.0035	807.14	806.81	5.96	7.42	0.55	0.86	45 Wye	0.75	0.44	802.48	802.04	
	0+09.50	0+00.00	9.5	0.0045	NONE	0.00	3.66	0.00	0.00	2.47	11.57	0.02	11.59	11.44	28.3	HDPE	32.5	30	0.0034	806.60	806.57	7.42	7.37	0.86	0.84	45 Wye	0.75	0.20	802.04	802.00	
STRM-A.2.1	1+54.84	1+32.75	22.1	0.0100	DA-13	0.82	0.82	0.84	0.69	0.69	10.00	0.05	10.05	12.14	8.4	HDPE	12.4	18	0.0046	809.53	809.42	0.00	7.45	0.00	0.86	Begin Line	1.25	1.08	804.78	804.56	
	1+32.75	0+98.10	34.7	0.0100	NONE	0.00	0.82	0.00	0.00	0.69	10.05	0.08	10.13	12.11	8.4	HDPE	12.4	18	0.0046	809.05	808.90	7.45	7.43	0.86	0.86	60 Bend	0.43	0.37	804.56	804.21	
	0+98.10	0+93.82	4.3	0.0100	NONE	0.00	0.82	0.00	0.00	0.69	10.13	0.01	10.14	12.08	8.4	HDPE	26.7	24	0.0010	808.70	808.70	1.00	7.38	0.02	0.85	Collar - 18 to 24	0.23	0.19	803.71	803.67	
	0+93.82	0+00.00	93.8	0.0100	DA-14	0.90	1.72	0.92	0.83	1.52	10.14	0.17	10.31	12.07	18.4	HDPE	26.7	24	0.0047	808.03	807.58	7.38	9.17	0.85	1.30	45 Wye	0.75	0.67	803.67	802.73	
STRM-A.2.2	0+16.88	0+00.00	16.9	0.0200	DA-14	0.90	0.90	0.92	0.83	0.83	10.00	0.03	10.03	12.14	10.1	HDPE	17.6	18	0.0066	808.14	808.03	0.00	10.13	0.00	1.59	Begin Line	1.25	1.99	804.25	803.92	
STRM-A.2.3	0+06.00	0+00.00	6.0	0.1000	DA-17	0.40	0.40	0.76	0.30	0.30	10.00	0.01	10.01	12.14	3.7	HDPE	13.3	12	0.0077	808.18	808.14	0.00	13.98	0.00	3.03	Begin Line	1.25	3.79	803.67	803.07	
STRM-A.2.4	0+36.28	0+00.00	36.3	0.0100	DA-16	0.75	0.75	0.43	0.32	0.32	10.00	0.10	10.10	12.14	3.9	HDPE	7.6	15	0.0026	808.28	808.18	0.00	6.22	0.00	0.60	Begin Line	1.25	0.75	803.56	803.20	
STRM-A.3	1+13.97	1+07.62	6.3	0.0400	DA-11,R-18:R21	0.27	0.27	0.91	0.25	0.25	10.00	0.01	10.01	12.14	3.0	HDPE	8.4	12	0.0050	813.00	812.97	0.00	9.56	0.00	1.42	Begin Line	1.25	1.77	807.31	807.05	
	1+07.62	0+92.14	15.5	0.0400	R-22:R25	0.05	0.32	0.97	0.05	0.29	10.01	0.03	10.04	12.13	3.6	HDPE	8.4	12	0.0071	812.45	812.34	9.56	10.09	1.42	1.58	45 Wye	0.75	0.52	807.05	806.44	R-25 (7 OUT OF 32 DOWNSPOUTS)
	0+92.14	0+63.85	28.3	0.0400	R-17	0.05	0.37	0.97	0.05	0.35	10.04	0.04	10.08	12.12	4.2	HDPE	8.4	12	0.0099	811.76	811.47	10.09	10.68	1.58	1.77	45 Wye	0.75	0.58	806.44	805.30	
	0+63.85	0+60.48	3.4	0.0400	DA-12	0.05	0.42	0.75	0.04	0.38	10.08	0.01	10.09	12.10	4.6	HDPE	8.4	12	0.0120	810.51	810.47	10.68	10.91	1.77	1.85	Inlet	0.50	0.96	805.20	805.07	
	0+60.48	0+35.14	25.3	0.0400	R-16	0.05	0.47	0.97	0.04	0.43	10.09	0.04	10.12	12.10	5.1	HDPE	8.4	12	0.0150	809.93	809.55	10.91	11.13	1.85	1.92	45 Wye	0.75	0.54	805.07	804.06	
	0+35.14	0+13.74	21.4	0.0400	R-15	0.02	0.49	0.97	0.02	0.45	10.12	0.03	10.16	12.08	5.4	HDPE	8.4	12	0.0163	809.06	808.72	11.13	11.16	1.92	1.93	45 Wye	0.75	0.49	804.06	803.20	
	0+13.74	0+09.34	4.4	0.0400	DA-25	0.06	0.54	0.97	0.05	0.50	10.16	0.01	10.16	12.06	6.0	HDPE	8.4	12	0.0204	808.09	808.00	11.16	11.55	1.93	2.07	45 Wye	0.75	0.62	803.20	803.02	R-25 (25 OUT OF 32 DOWNSPOUTS)
	0+09.34	0+00.00	9.3	0.0400	NONE	0.00	0.54	0.00	0.00	0.50	10.16	0.01	10.18	12.06	6.0	HDPE	8.4	12	0.0204	807.28	807.09	11.55	11.55	2.07	2.07	45 Bend	0.35	0.72	803.02	802.65	
STRM-A.4	1+15.13	1+07.16	8.0	0.0200	DA-10	0.15	0.15	0.36	0.05	0.05	10.00	0.03	10.03	12.14	0.6	HDPE	6.0	12	0.0002	810.68	810.68	0.00	4.72	0.00	0.35	Begin Line	1.25	0.43	806.05	805.89	
	1+07.16	0+89.32	17.8	0.0200	R-28:R-30	0.13	0.28	0.97	0.13	0.18	10.03	0.04	10.07	12.12	2.2	HDPE	6.0	12	0.0028	810.20	810.15	4.72	6.89	0.35	0.74	45 Wye	0.75	0.48	805.89	805.53	
	0+89.32	0+76.78	12.5	0.0200	NONE	0.00	0.28	0.00	0.00	0.18	10.07	0.03	10.10	12.10	2.2	HDPE	6.0	12	0.0028	809.90	809.86	6.89	6.88	0.74	0.73	45 Bend	0.35	0.26	805.53	805.28	
	0+76.78	0+67.37	9.4	0.0200	R-27	0.04	0.33	0.97	0.04	0.23	10.10	0.02	10.12	12.09	2.7	HDPE	6.0	12	0.0042	809.57	809.53	6.88	7.36	0.73	0.84	45 Wye	0.75	0.29	805.28	805.09	
	0+67.37	0+00.00	67.4	0.0200	R-26	0.04	0.37	0.97	0.04	0.27	10.12	0.15	10.27	12.08	3.2	HDPE	6.0	12	0.0059	809.25	808.86	7.36	7.65	0.84	0.91	45 Wye	0.75	0.28	805.09	803.75	
STRM-A.5	0+11.60	0+00.00	11.6	0.0500	DA-9	0.50	0.50	0.81	0.41	0.41	10.00	0.02	10.02	12.14	4.9	HDPE	59.8	24	0.0003	809.76	809.76	0.00	10.99	0.00	1.88	Begin Line	1.25	2.35	805.20	804.62	
STRM-A.6	0+64.93	0+00.00	64.9	0.0100	DA-5	0.36	0.36	0.70	0.25	0.25	10.00	0.19	10.19	12.14	3.1	HDPE	7.6	15	0.0016	811.21	811.10	0.00	5.74	0.00	0.51	Begin Line	1.25	0.64	806.14	805.49	
STRM-A.7	0+88.70	0+54.33	34.4	0.0200	DA-6	0.02	0.02	0.54	0.01	0.01	10.00	0.16	10.16	12.14	0.2	HDPE	0.9	6	0.0006	812.18	812.16	0.00	3.51	0.00	0.19	Begin Line	1.25	0.24	807.87	807.19	
	0+54.33	0+07.17	47.2	0.0200	DA-7	0.03	0.06	0.55	0.02	0.03	10.16	0.18	10.34	12.06	0.4	HDPE	0.9	6	0.0031	811.95	811.80	3.51	4.44	0.19	0.31	Inlet	0.50	0.21	807.09	806.14	
	0+07.17	0+00.00	7.2	0.0200	DA-8	0.07	0.13	0.47	0.03	0.06	10.34	0.02	10.36	11.98	0.8	HDPE	0.9	6	0.0136	811.52	811.43	4.44	5.27	0.31	0.43	Inlet	0.50	0.28	806.14	806.00	
STRM-B	5+62.84	5+52.34	10.5	0.0050	DA-3	1.30	1.30	0.78	1.02	1.02	10.00	0.03	10.03	12.14	12.4	RCP	16.0	24	0.0030	807.48	807.45	0.00	5.54	0.00	0.48	Begin Line	1.25	0.59	803.14	803.09	
	5+52.34	4+97.57	54.8	0.0050	NONE	0.00	1.30	0.00	0.00	1.02	10.03	0.17	10.20	12.12	12.4	RCP	16.0	24	0.0030	807.28	807.12	5.54	5.53	0.48	0.47	45 Bend	0.35	0.17	803.09	802.82	
	4+97.57	4+38.79	58.8	0.0050	NONE	0.00	1.30	0.00	0.00	1.02	10.20	0.18	10.37	12.04	12.3	RCP	16.0	24	0.0030	806.95	806.77	5.53	5.59	0.47	0.48	45 Bend	0.35	0.17	802.82	802.52	
	4+38.79	4+33.79	5.0	0.0050	NONE	0.00	1.30	0.00	0.00	1.02	10.37	0.02	10.39	11.96	12.2	RCP	16.0	24	0.0029	806.67	806.66	5.59	5.55	0.48	0.48	Collar - 24 to 30	0.10	0.10	802.52	802.50	
	4+33.79	4+21.17	12.6	0.0050	DA-2	0.57	1.87	0.85	0.48	1.50	10.39	0.03	10.42	11.96	17.9	RCP	29.0	30	0.0019	806.42	806.40	5.55	6.20	0.48	0.60	45 Wye	0.75	0.24	802.00	801.94	
	4+21.17	3+90.78	30.4	0.0050	DA-19	0.10	1.97	0.96	0.10	1.60	10.42	0.08	10.50	11.94	19.0	RCP	29.0	30	0.0022	806.25	806.18	6.20	6.19	0.60	0.60	45 Wye	0.75	0.15	801.94	801.78	
	3+90.78	3+81.28	9.5	0.0050	DA-1, R-36:R-43	0.50	2.47	0.90	0.45	2.04	10.50	0.02	10.53	11.90	24.3	RCP	29.0	30	0.0035	805.97	805.93	6.19	6.53	0.60	0.66	45 Wye	0.75	0.21	801.78	801.74	
	3+81.28	2+46.06	135.2	0.0050	NONE	0.00	2.47	0.00	0.00	2.04	10.53	0.35	10.87	11.89	24.3	RCP	29.0	30	0.0035	805.70	805.23	6.53	6.52	0.66	0.66	45 Bend	0.35	0.23	801.74	801.06	
	2+46.06	1+71.81	74.3	0.0050	NONE	0.00	2.47	0.00	0.00	2.04	10.87	0.19	11.06	11.74	24.0	RCP	29.0	30	0.0034	805.00	804.74	6.52	6.54	0.66	0.66	45 Bend	0.35	0.23	801.06	800.69	
	1+71.81	1+46.46	25.4	0.0050	R-1	0.02	2.49	0.97	0.02	2.06	11.06	0.06	11.13	11.66	24.1	RCP	29.0	30	0.0034	804.57	804.49	6.54	6.55	0.66	0.67	45 Wye	0.75	0.17	800.69	800.56	
	1+46.46	1+31.93	14.5	0.0050	R-2	0.05	2.54	0.97	0.04	2.11	11.13	0.04	11.16	11.63	24.5	RCP	29.0	30	0.0036	804.31	804.26	6.55	6.58	0.67	0.67	45 Wye	0.75	0.17	800.56	800.49	
	1+31.93	1+12.36	19.6	0.0050	NONE	0.00	2.54	0.00	0.00	2.11	11.16	0.05	11.21	11.61	24.5	RCP	29.0	30	0.0036	804.03	803.96	6.58	6.57	0.67	0.67	45 Bend	0.35	0.23	800.49	800.39	
	1+12.36	0+71.42	40.9	0.0050	NONE	0.00	2.54	0.00	0.00	2.11	11.21	0.10	11.32	11.59	24.4	RCP	29.0	30	0.0035	803.73	803.58	6.57	6.56	0.67	0.67	45 Bend	0.35	0.23	800.39	800.19	
	0+71.42	0+65.42	6.0	0.0050	R-3:R-4	0.11	2.64	0.97	0.10	2.21	11.32	0.02	11.33	11.55	25.5	RCP	29.0	30	0.0039	803.39	803.37	6.56	6.65	0.67	0.69	45 Wye	0.75	0.19	800.19	800.16	
	0+65.42	0+11.74	53.7	0.0050	R-5:R-6	0.15	2.80	0.97	0.15	2.36	11.33	0.13	11.47	11.54	27.2	RCP	29.0	30	0.0044	803.20	802.97	6.65	6.63	0.69	0.68	45 Wye	0.75	0.17	800.16	799.89	
	0+11.74	0+03.80	7.9	0.0050	NONE	0.00	2.80	0.00	0.00	2.36	11.47	0.02	11.49	11.49	27.1	RCP	29.0	30	0.0044	802.72	802.69	6.63	6.68	0.68	0.69	45 Bend	0.35	0.24	799.89	799.85	
	0+03.80	0+00.00	3.8	0.0050	NONE	0.00	2.80	0.00	0.00	2.36	11.49	0.01	11.50	11.48	27.1	RCP	29.0	30	0.0044	802.45	802.43	6.68	6.68	0.69	0.69	45 Bend	0.35	0.24	799.85	799.83	
STRM-B1	3+39.63	3+07.31	32.3	0.0180	DA-1	0.17	0.17	0.76	0.13	0.13	10.00	0.09	10.09	12.14	1.6	HDPE	5.6	12	0.0014	810.19	810.15	0.00	5.93	0.00	0.55	Begin Line	1.25	0.68	808.65	808.07	
	3+07.31	2+73.75	33.6	0.0180	NONE	0.00	0.17	0.00	0.00	0.13	10.09	0.09	10.18	12.09	1.6	HDPE	5.6	12	0.0014	809.94	809.90	5.93	6.13	0.55	0.58	45 Bend	0.35	0.20	808.07	807.46	
	2+73.75	2+06.65	67.1	0.0180	R-43	0.02	0.19	0.97	0.02	0.15	10.18	0.18	10.36	12.05	1.8	HDPE	5.6	12	0.0017	809.74	809.62	6.13	6.19	0.58	0.59	45 Wye	0.75	0.16	807.46	806.25	
	2+06.65	1+53.68	53.0	0.0180	R-42	0.02	0.20	0.97	0.02	0.16	10.36	0.14	10.50	11.97	1.9	HDPE	5.6	12	0.0021	809.43	809.32	6.19	6.40	0.59	0.64	45 Wye	0.75	0.19	806.25	805.30	
	1+53.68	1+44.18	9.5	0.0180	NONE	0.00	0.20	0.00	0.00	0.16	10.50	0.02	10.53	11.90	1.9	HDPE	5.6	12	0.0021	809.10	809.08	6.40	6.36	0.64	0.63	45 Bend	0.35	0.22	805.30	805.13	
	1+44.18	1+34.76	9.4	0.0180	R-36:R-41	0.30	0.50	0.97	0.29	0.45	10.53	0.02	10.55	11.89	5.3	HDPE	5.6	12	0.0160	808.53	808.38	6.36	8.11	0.63	1.02	45 Wye	0.75	0.55	805.13	804.96	
	1+34.76	0+00.00	134.8	0.0180	NONE	0.00	0.50	0.00	0.00	0.45	10.55	0.28	10.82	11.88	5.3	HDPE	5.6	12	0.0160	808.13	805.97	8.11	8.11	1.02	1.02	45 Wye	0.75	0.25	804.96	802.53	
STRM-B2	0+11.13	0+00.00	11.1	0.0500	DA-2	0.57	0.57	0.85	0.48	0.48	10.00	0.02	10.02	12.14	5.8	RCP	50.6	24	0.0007	806.43	806.42	0.00	10.65	0.00	1.76	Begin Line	1.25	2.20	803.31	802.75	

Intensity Duration Frequency $i = a/(t + b)^c$

t = Time of Concentration.
a, b and c are jurisdictional vaules found in governing drainage manuals.

INTENSITY-DURATION-FREQUENCY DATA

Variables	2	10	25	100
a	106.29	96.84	111.07	129.03
b	16.81	15.88	17.23	17.83
c	0.9076	0.7952	0.7815	0.7625

IDF Variables taken from table 3-3 in the City of Georgetown Drainage Criteria Manual.

GRATE INLET SUMMARY (100-YR DESIGN)

Inlet ID	Inlet Type	Drainage Area	Contributing Flow	Upstream Carryover	Design Flow	Grate Open Area	Ponding Depth	Max. Ponding Depth	Inlet Capacity	Captured Flow	Overflow
-	-	-	(cfs)	(cfs)	(cfs)	(sf)	(ft)	(ft)	(cfs)	(cfs)	(cfs)
GRATE INLET -1	CB-27	DA-15	3.89	0.00	3.89	1.21	0.45	0.50	4.12	3.89	0.00
GRATE INLET -2	CB-27	DA-17	3.69	0.00	3.69	1.21	0.40	0.50	4.12	3.69	0.00
GRATE INLET -3	CB-27	DA-16	3.91	0.00	3.91	1.21	0.45	0.50	4.12	3.91	0.00
GRATE INLET -4	CB-18	DA-11	0.28	0.00	0.28	0.58	0.01	0.50	1.97	0.28	0.00
GRATE INLET -5	CB-18	DA-12	0.43	0.00	0.43	0.58	0.02	0.50	1.97	0.43	0.00
GRATE INLET -6	CB-18	DA-10	0.64	0.00	0.64	0.58	0.05	0.50	1.97	0.64	0.00
GRATE INLET -7	CB-18	DA-6	0.16	0.00	0.16	0.58	0.00	0.50	1.97	0.16	0.00
GRATE INLET -8	CB-18	DA-7	0.21	0.00	0.21	0.58	0.01	0.50	1.97	0.21	0.00
GRATE INLET -9	CB-18	DA-8	0.41	0.00	0.41	0.58	0.02	0.50	1.97	0.41	0.00
GRATE INLET -10	CB-24	DA-1	1.57	0.00	1.57	0.93	0.12	0.50	3.17	1.57	0.00

Calculations assume a 50% clogging factor applied to the grate open area.

Note: Spreadsheet does basic calcs for grate inlet in sags. Inlet capacity is based on 6" ponding depth.

CURB INLET SUMMARY (100-YR DESIGN)

Inlet ID	Drainage Area	Contributing Flow	Upstream Carryover	Design Flow	Inlet Length	Depth of Opening	Ponding Depth	Inlet Capacity	Captured Flow	Overflow
-	-	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)
STRM A	DA-4	1.72	0.00	1.72	5.00	0.92	0.23	13.68	1.72	0.00
STRM A.2.1	DA-13	8.41	0.00	8.41	5.00	0.92	0.67	13.68	8.41	0.00
STRM A.2.2	DA-14	10.09	0.00	10.09	5.00	0.92	0.75	13.68	10.09	0.00
STRM A.5	DA-9	4.92	0.00	4.92	5.00	0.92	0.47	13.68	4.92	0.00
STRM A.6	DA-5	3.07	0.00	3.07	5.00	0.92	0.34	13.68	3.07	0.00
STRM B	DA-3	12.39	0.00	12.39	10.00	0.92	0.54	27.36	12.39	0.00
STRM B.2	DA-2	5.82	0.00	5.82	10.00	0.92	0.33	27.36	5.82	0.00

PEAK DISCHARGE AT DESIGN POINT

Design Point	Existing Conditions 2-Year (cfs)	Existing 10-Year (cfs)	Existing 25-Year (cfs)	Existing 100-Year (cfs)	Comments	Proposed Conditions 2-Year (cfs)	Proposed 10-Year (cfs)	Proposed 25-Year (cfs)	Proposed 100-Year (cfs)	Comments
1	24.77	48.43	64.68	91.29	X-1	19.86	43.56	56.12	79.47	OS-1,WQ AND DET DISCHARGE
2	3.13	6.12	8.18	11.54	X-2	0.83	1.62	2.17	3.06	OS-2
Total	**27.90**	**54.55**	**72.86**	**102.83**		**20.69**	**45.18**	**58.29**	**82.53**	

The results are generated from HEC-HMS 4.11 by using SCS type II method

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED
PROFESSIONAL ENGINEER
01-03-2024
TBPE Registration #: F-13709

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DRAINAGE CALCULATIONS

Job No. 1949-03-01
Drawn By: VM
Date: 1/3/2024
Sheet No. C6.07

WQ-Pond STAGE-STORAGE VOLUME

Elevation	Area (sq. ft.)	Avg. Area (sq. ft.)	Inc. Depth (ft.)	Inc. Volume (cu. Ft.)	Total Volume (cu. ft.)
799	2,989				-
		6,266	1	6,266	
800	9,542				6,266
		10,381	1	10,381	
801	11,220				16,647
		12,118	1	12,118	
802	13,016				28,765
		14,023	1	14,023	
803	15,031				42,788
		17,598	1	17,598	
804	20,165				60,386
Proposed Required Water Quality (BMP) Volume =					30,508
Future Required Water Quality (BMP) Volume =					34,829
Provided Volume =					60,386

DET-Pond STAGE-STORAGE VOLUME

Elevation	Area (sq. ft.)	Avg. Area (sq. ft.)	Inc. Depth (ft.)	Inc. Volume (cu. Ft.)	Total Volume (cu. ft.)
798	2,462				-
		4,278	1	4,278	
799	6,095				4,278
		7,760	1	7,760	
800	9,425				12,038
		10,516	1	10,516	
801	11,607				22,554
		12,977	1	12,977	
802	14,347				35,531
		17,012	1	17,012	
803	19,677				52,544
		22,844	1	22,844	
804	26,011				75,388
Proposed Detention volume =					54,245
Provided Volume =					75,388

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!!!CAUTION!!!

EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER POTHOLING TECHNIQUES.

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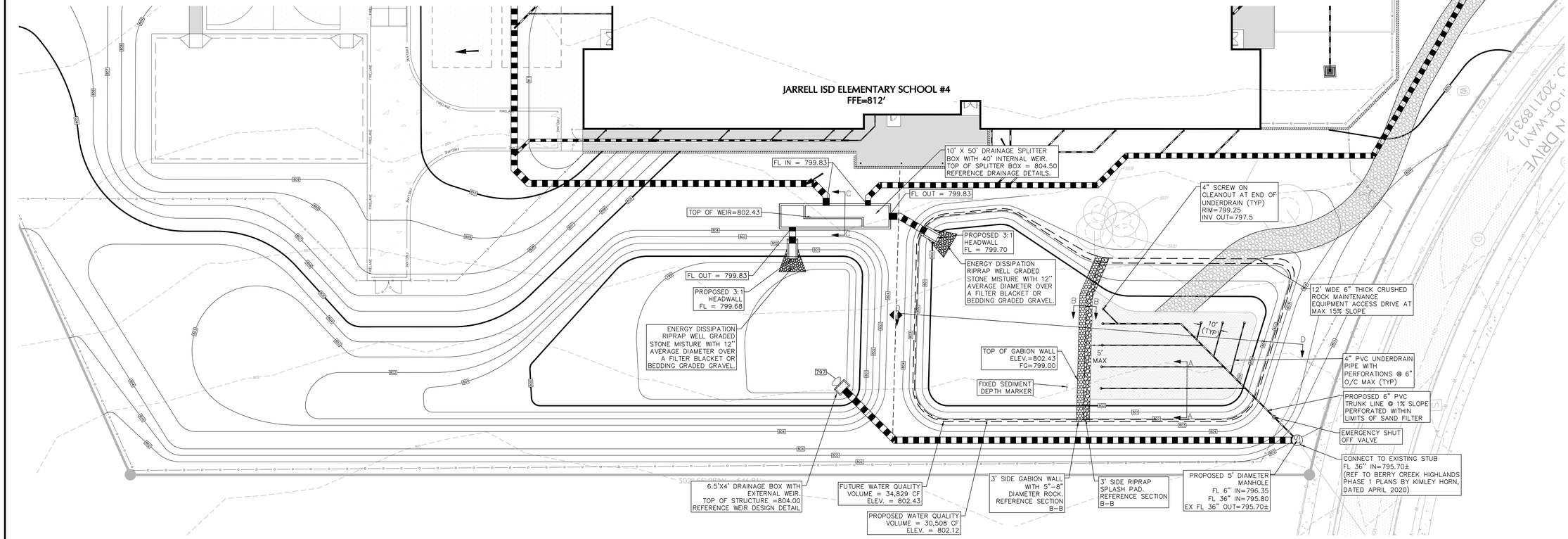
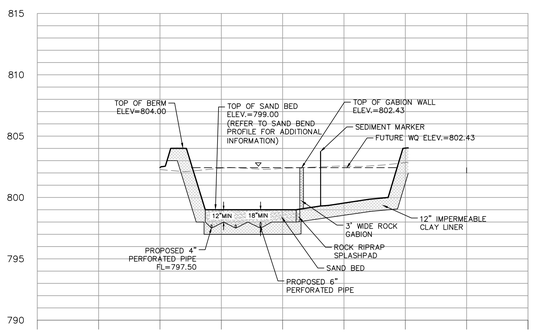
20 0 5 10 20
SCALE: 1 INCH = 20 FEET

LEGEND

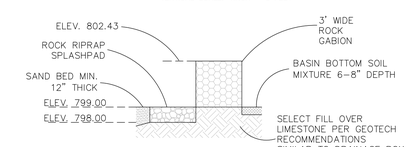
EXISTING CONTOUR 1000.00
PROPOSED CONTOUR 1000
PROPOSED STORM PIPE
PROPOSED HEADWALL



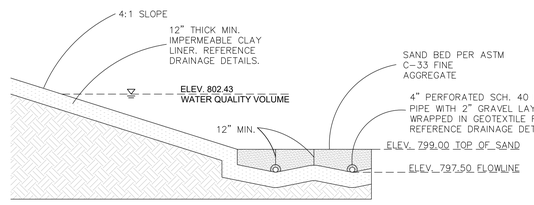


SECTION DD - SAND FILTER POND PROFILE

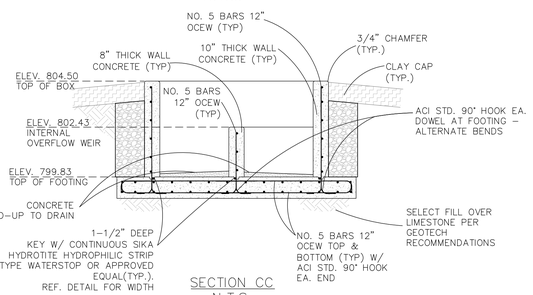
HORIZONTAL SCALE: 1INCH = 50 FEET
VERTICAL SCALE: 1INCH = 5 FEET



SECTION BB
N.T.S.



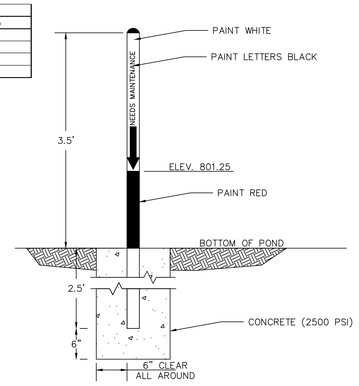
SECTION AA
N.T.S.



SECTION CC
N.T.S.

REFERENCED "DRAINAGE BOX NOTES & MATERIALS" - THIS SHEET

WATER SURFACE ELEVATION (FEET)		
Storm Event (yr)	WQP	Detention
2	802.8	799.6
10	803.0	801.4
25	803.1	802.2
100	803.2	803.1



SEDIMENT DEPTH MARKER DETAIL
SCALE: 1"=1'

DRAINAGE BOX NOTES & MATERIALS:

REFERENCE SHEET C8.05 FOR DRAINAGE BOX TYPICAL DETAILS.

CONCRETE~
- CONCRETE WORK SHALL CONFORM TO ACI 301 AND ACI 350, LATEST EDITIONS.
- f'c = 4,000 PSI COMPRESSIVE STRENGTH @ 28 DAYS
- WATER CEMENT RATIO (w/c) OF 0.45
- FLY ASH, IF USED, SHALL BE TYPE F CONFORMING TO ASTM C 618 AND SHALL NOT EXCEED 20% OF CEMENTITIOUS MATERIAL BY WEIGHT.
- ENTRAINED AIR SHALL BE 6% ± 1.5%

REBAR & ACCESSORIES ~
- ASTM 615, GRADE 60
- REBAR WORK SHALL CONFORM TO ACI 315, LATEST EDITION. ACCESSORIES TO BE EXPOSED TO EARTH, WEATHER, WATER, OR HIGH HUMIDITY SHALL BE FABRICATED OF STAINLESS STEEL OR PLASTIC. PROVIDE BOLSTERS AT WALLS, AND PROVIDE STANDEES AT SLABS WITH TWO LAYERS OF REINFORCING. FOR SLAB-ON-GRADE REINFORCING, PROVIDE CHAIRS MANUFACTURED FROM STAINLESS STEEL, PLASTIC OR PRECAST CONCRETE BLOCKS OF EQUAL OR GREATER COMPRESSIVE STRENGTH AS THE CONCRETE BEING PLACED.
- ALL BARS SHALL BE CONTINUOUS UNLESS NOTED OR SHOWN OTHERWISE. LAP SPLICES OF CONTINUOUS BARS SHALL BE 48 BAR DIAMETERS, UNLESS OTHERWISE NOTED.

DRAINAGE ~
- 2'-0" WIDE GRAVEL DRAIN TO 18" ± BELOW FINISHED SURFACE WITH 6" DIAMETER PERFORATED PVC PIPE. CONNECT PVC TO DRAIN TO STRM-3. FOR GRAVEL DRAIN, USE WASHED-AGGREGATE GRAVEL WRAPPED IN GEOTEXTILE FABRIC (NON-WOVEN POLYESTER - OVERLAP FABRIC MIN. 12"). MAXIMUM AGGREGATE SIZE 1-1/2" (NOMINAL 1").
- MINIMUM 1'-0" CLAY CAP OVER GRAVEL DRAIN.

PEAK DISCHARGE AT DESIGN POINT

Design Point	Existing Conditions 2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	Comments	Proposed Conditions 2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	Comments
1	24.77	48.43	64.68	91.29	X-1	19.86	43.56	56.12	79.47	OS-1,WQ AND DET DISCHARGE
2	3.13	6.12	8.18	11.54	X-2	0.83	1.62	2.17	3.06	OS-2
Total	**27.90**	**54.55**	**72.86**	**102.83**		**20.69**	**45.18**	**58.29**	**82.53**	
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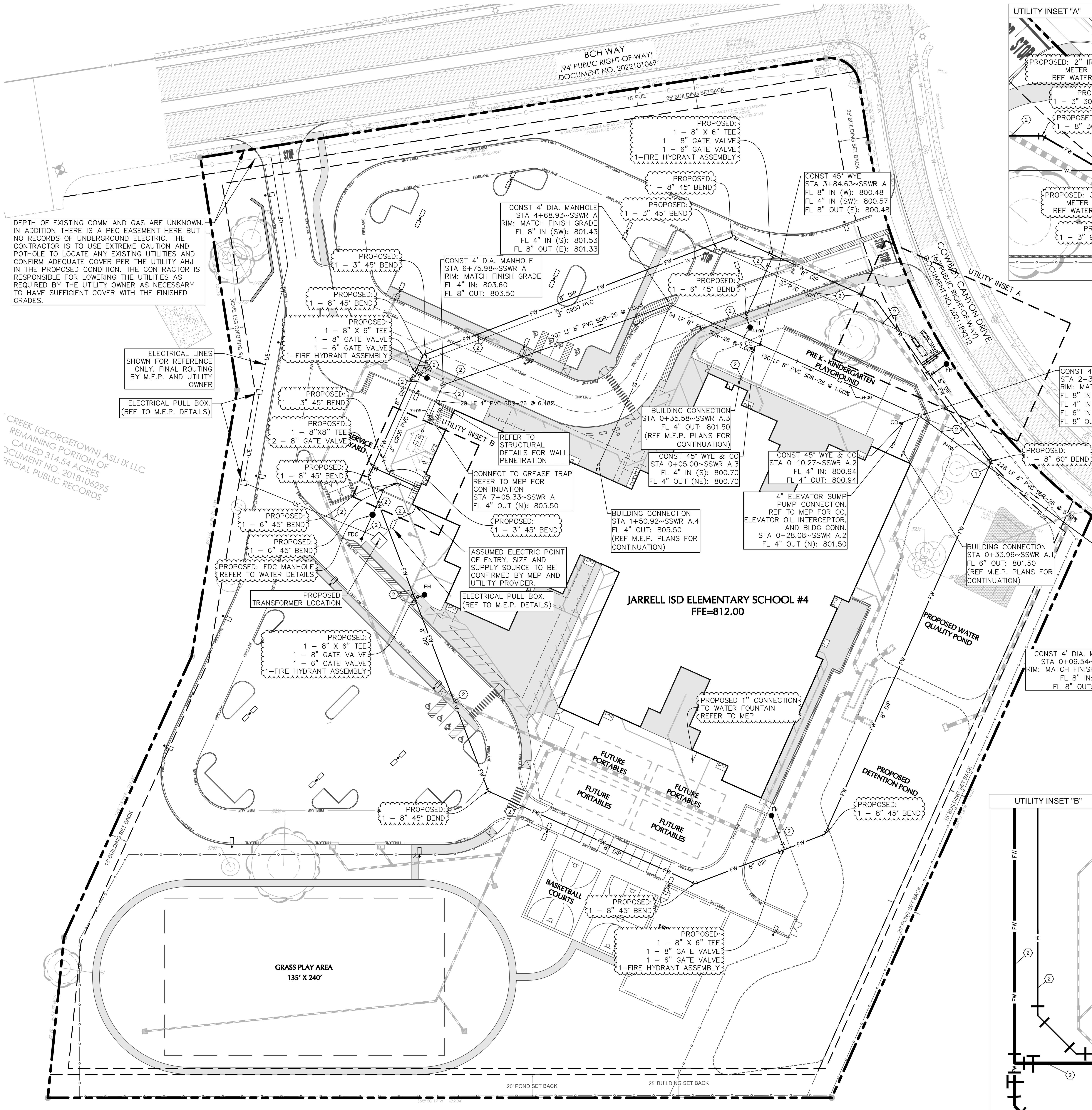
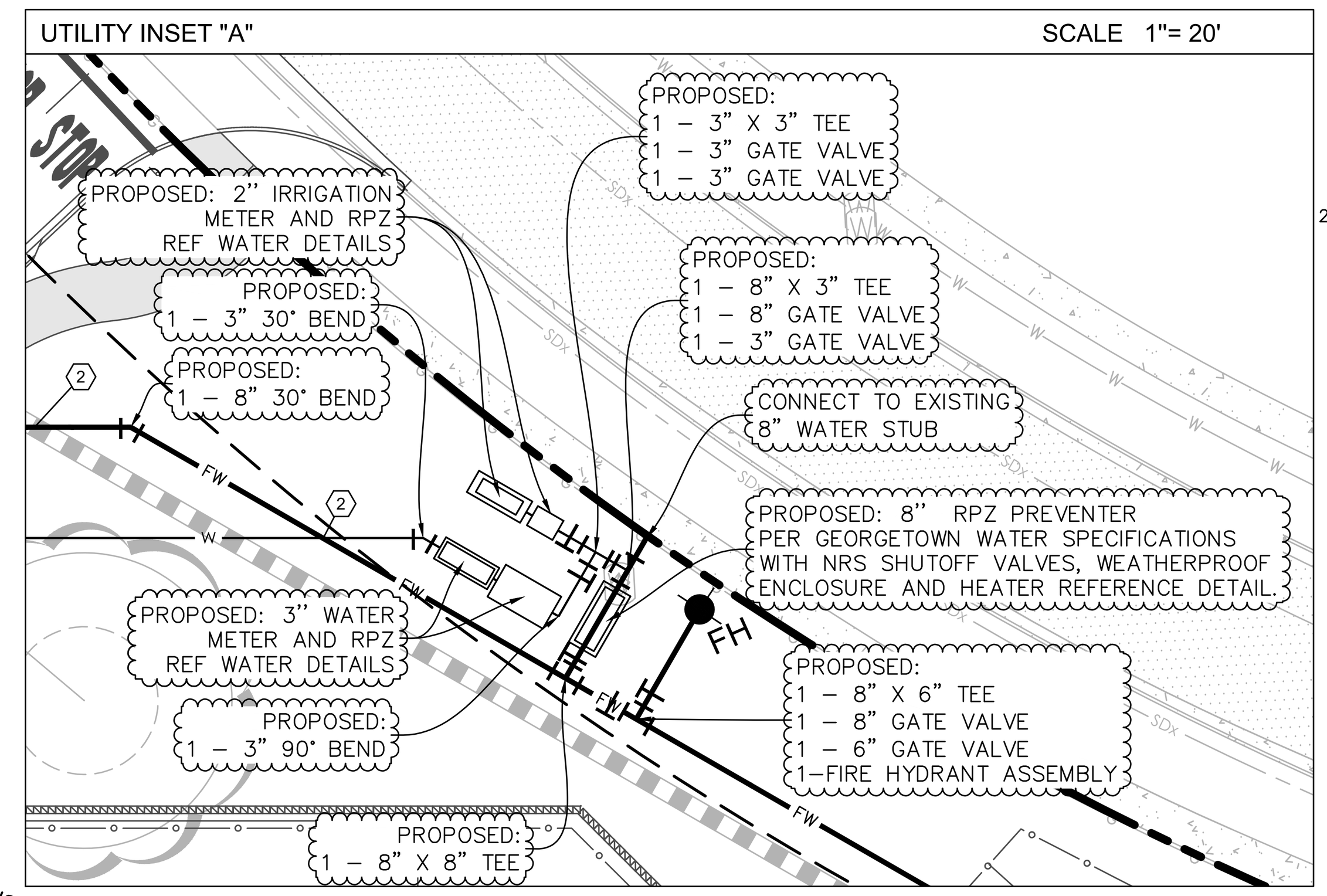
WATER QUALITY PLAN

Job No.	Sheet No.
19454-03-01	C6.08
Drawn By: VM	
Date: 1/3/2024	





SCALE: 1 INCH = 20 FEET

SCALE: 1 INCH = 40 FEET

LEGEND

PROPOSED SANITARY SEWER	—SS—SS—
PROPOSED SANITARY SEWER BY MEP	
PROPOSED WATER	—W—
PROPOSED FIRE WATER	—FW—
PROPOSED UNDERGROUND ELECTRICAL	—UE—
PROPOSED FIRE HYDRANT	FH
PROPOSED GATE VALVE	
PROPOSED SANITARY SEWER MANHOLE	SS
PROPOSED WATER MANHOLE	WT
PROPERTY LINE	
RETAINING WALL	

SYMBOL KEY

1. WATER-SANITARY SEWER CROSSING PER CITY AND TCEQ STANDARDS
2. UTILITY CROSSINGS

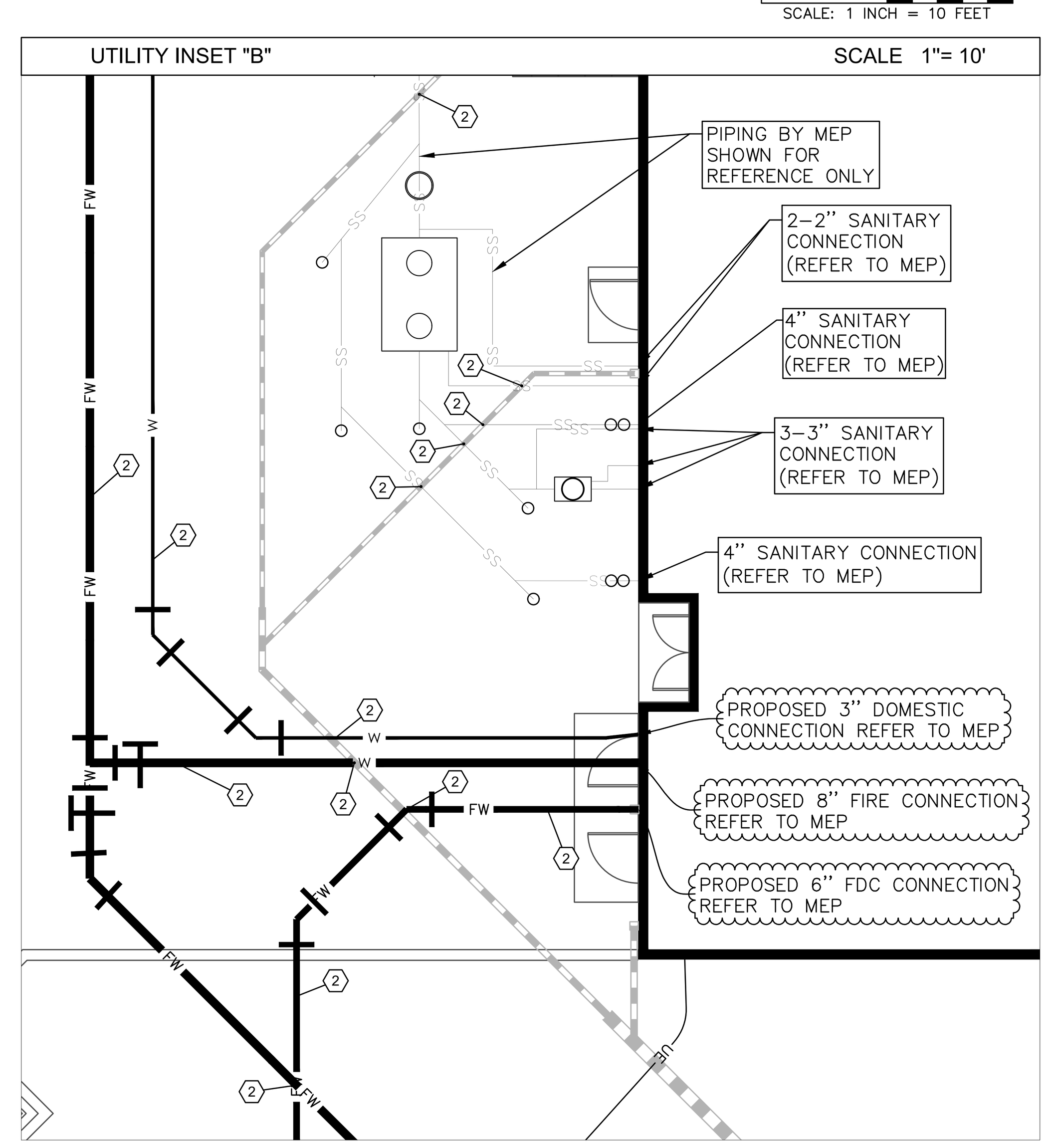
CITY OF GEORGETOWN WATER NOTES

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED 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 OF THE CITY.
3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.
4. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.
5. 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.
6. PUBLIC WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.
7. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.
8. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
9. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.
10. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.
11. 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.
12. 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 TIFF OR PDF (300P DPI). IF A DISK IS SUBMITTED, A BOND SET SHALL BE INCLUDED WITH THE DISK.
13. UTILITY CONNECT PERMIT MUST OBTAINED FROM CITY OF GEORGETOWN.
14. 2'' IRRIGATION METER TO BE PROVIDED FROM THE CITY OF GEORGETOWN.
15. ALL WATER MAINS UNLESS OTHERWISE NOTED SHALL HAVE A MINIMUM COVER OF 36" AND MAXIMUM COVER OF 48" BELOW FINISHED GRADE.

SCALE: 1 INCH = 10 FEET

TCEQ WATER AND SEWER SEPARATION REQUIREMENTS

1. PROVIDE VALVE EXTENSIONS TO ALL VALVES ON LINES DEEPER THAN 48".
2. WHEN WATER MAINS AND SANITARY SEWERS ARE INSTALLED, THEY SHALL BE INSTALLED NO CLOSER TO EACH OTHER THAN NINE FEET IN ALL DIRECTIONS, AND PARALLEL LINES MUST BE INSTALLED IN SEPARATE TRENCHES. WHERE THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING GUIDELINES SHALL APPLY:
   A. WHERE A SANITARY SEWER PARALLELS A WATERLINE, THE SEWER SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC MEETING ASTM SPECIFICATIONS WITH A PRESSURE RATING FOR BOTH THE PIPE AND JOINTS OF 150 PSI. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF TWO FEET BETWEEN OUTSIDE DIAMETERS, AND THE HORIZONTAL SEPARATION SHALL BE A MINIMUM OF FOUR FEET BETWEEN OUTSIDE DIAMETERS. THE SEWER SHALL BE LOCATED BELOW THE WATERLINE.
   B. WHERE A SANITARY SEWER CROSSES A WATERLINE AND THE SEWER IS CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI, AN ABSOLUTE MINIMUM DISTANCE OF SIX INCHES BETWEEN OUTSIDE DIAMETERS SHALL BE MAINTAINED. IN ADDITION, THE SEWER SHALL BE LOCATED BELOW THE WATERLINE WHERE POSSIBLE AND ONE LENGTH OF THE SEWER PIPE MUST BE CENTERED ON THE WATERLINE.
   C. WHERE A SEWER CROSSES UNDER A WATERLINE AND THE SEWER IS CONSTRUCTED OF ABS TRUSS PIPE, SIMILAR SEMI-RIGID PLASTIC COMPOSITE PIPE, CLAY PIPE OR CONCRETE PIPE WITH GASKETED JOINTS, A MINIMUM TWO FOOT SEPARATION DISTANCE SHALL BE MAINTAINED. IN ADDITION, THE SEWER SHALL BE LOCATED BELOW THE WATERLINE WHERE POSSIBLE AND ONE LENGTH OF THE SEWER PIPE MUST BE CENTERED ON THE WATERLINE.
   D. WHERE A SEWER CROSSES OVER A WATERLINE, ALL PORTIONS OF THE SEWER WITHIN NINE FEET OF THE WATERLINE SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC PIPE WITH A PROCEDURE, THE NEW CONVEYANCE MAY BE ENCASED IN A JOINT OF 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE FEET INTERVALS WITH SPACERS OR BE FILLED TO THE SPRING LINE WITH WASHED SAND. THE ENCASEMENT PIPE SHOULD BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEAL.
   E. THE SEWER NEED NOT BE DISTURBED WHERE A NEW WATERLINE IS TO BE INSTALLED PARALLEL TO AN EXISTING SEWER THAT SHOWS NO EVIDENCE OF LEAKAGE AND THE WATERLINE IS INSTALLED ABOVE THE SEWER A MINIMUM OF TWO FEET VERTICALLY AND FOUR FEET HORIZONTALLY. SHOULD EXCAVATION FOR THE WATERLINE PRODUCE EVIDENCE THAT THE SEWER IS LEAKING, THE SEWER MUST BE REPAIRED OR REPLACED AS DESCRIBED IN SUBPARAGRAPHS (A) OR (D) OF THIS PARAGRAPH.
   F. THE SEWER NEED NOT BE DISTURBED WHERE A NEW WATERLINE IS TO CROSS OVER (BY TWO FEET OR MORE) EXISTING SEWER SHOWING NO EVIDENCE OF LEAKAGE. SHOULD EXCAVATION FOR THE WATERLINE PRODUCE EVIDENCE THAT THE SEWER IS LEAKING, THEN THE SEWER MUST BE REPAIRED OR REPLACED AS DESCRIBED IN SUBSECTIONS (C) OR (D).
3. CONTRACTOR TO VERIFY ALL EXISTING SEWER FLOW LINES BEFORE BEGINNING CONSTRUCTION.
4. ALL SANITARY SEWER LINES SHALL BE TESTED IN ACCORDANCE WITH THE STANDARD CITY SPECIFICATIONS.
5. THE UTILITY CONTRACTOR SHALL INSTALL THE WATER SERVICES TO A POINT AS SHOWN ON THE PLANS. THE METER BOX SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AFTER THE PAVING CONTRACTOR HAS COMPLETED THE FINE GRADING BEHIND THE BACK OF THE CURB. EACH SERVICE LOCATION WILL BE MARKED ON THE CURB, WITH A BLUE LETTER "W" BY THE UTILITY CONTRACTOR AND TIED TO PROPERTY CORNERS ON THE "RECORD DRAWINGS".
6. ALL METER BOXES SHALL BE LOCATED IN NON-TRAFFIC AREAS.
7. VALVE BOXES SHALL BE FURNISHED AND SET ON EACH GATE VALVE. AFTER THE FINAL CLEANUP AND ALIGNMENT HAS BEEN COMPLETED, THE CONTRACTOR (UTILITY) SHALL POUR A CONCRETE BLOCK 24"X24"X6" AROUND ALL VALVE BOX TOPS SO THAT THE TOP OF BOX IS LEVEL WITH THE FINISHED GRADE. MARK WITH F OR O OR S IN CONCRETE.
8. CONTRACTOR SHALL RAISE/LOWER OR ADJUST ALL EXISTING UTILITY MAINS IN CONFLICT WITH PROPOSED UTILITIES AS PART OF THE BASE BIDS FOR ALL KNOWN OR UNKNOWN LINES.



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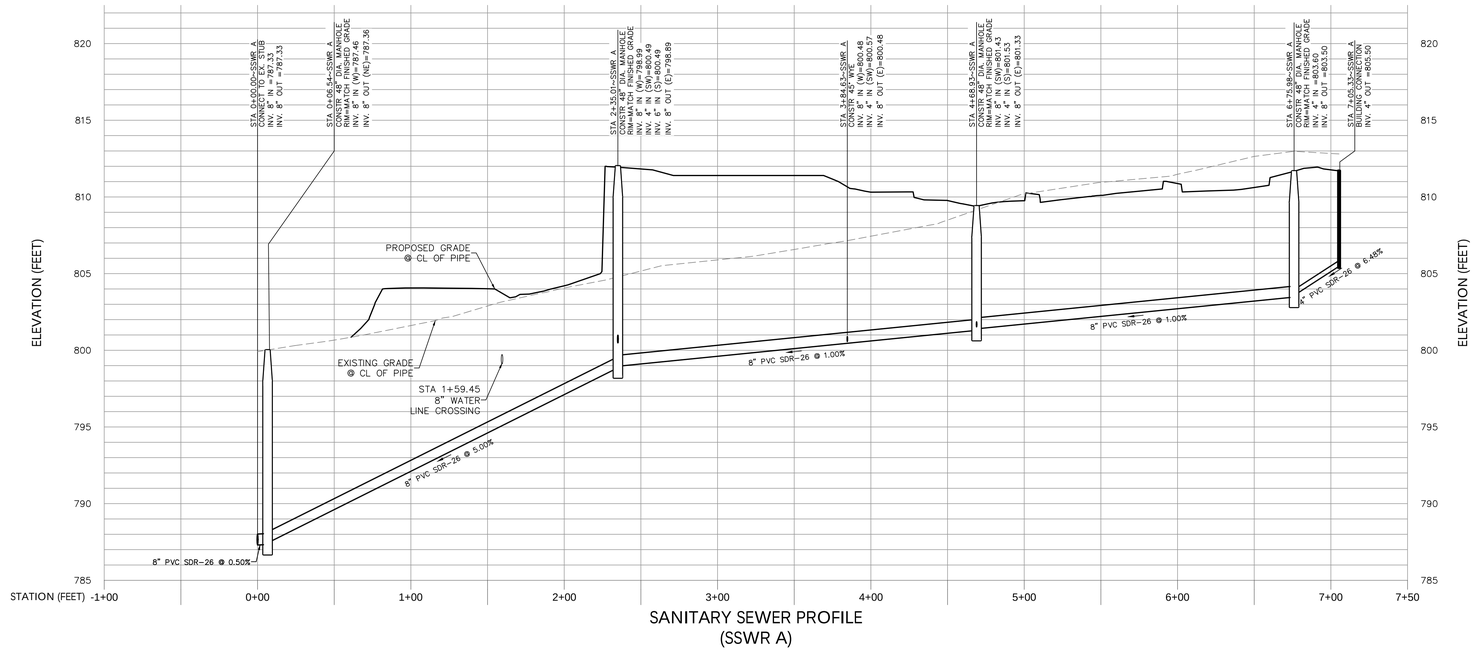
UTILITY PLAN

Job No.: 1949-03-01	Sheet No.
Drawn By: VM	C7.00
Date: 1/3/2024	



SANITARY SEWER PROFILE
(SSWR A)

HORIZONTAL SCALE: 1 INCH = 40 FEET

VERTICAL SCALE: 1 INCH = 4 FEET

Revision / Date

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SANITARY SEWER PROFILE

Job No.	Sheet No.
1949-03-01	C7.01
Drawn By: VM	
Date: 1/3/2024	

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.

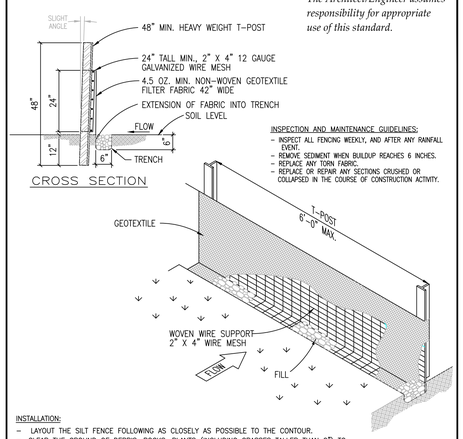
APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TEMPORARY EROSION AND SEDIMENTATION CONTROL GUIDELINES
EC01
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB

NOTE: THIS SECTION IS INTENDED TO ASSIST THOSE PERSONS PREPARING WATER POLLUTION ABATEMENT PLANS (WPAP) OR STORM WATER POLLUTION PREVENTION PLANS (SW3P) 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 80% 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). PRUNING 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.

APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES
EC01A
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB

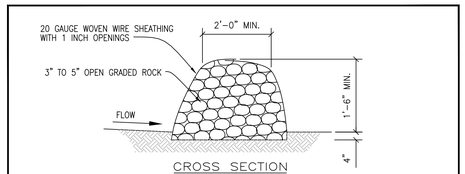


The Architect/Engineer assumes responsibility for appropriate use of this standard.

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.

APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
SILT FENCE DETAIL
EC02
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB

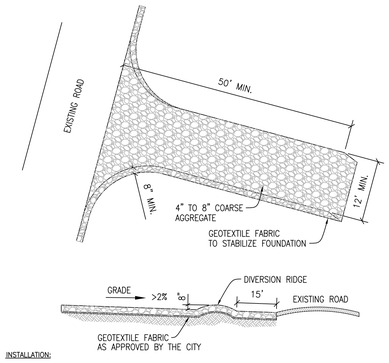


INSTALLATION:
- LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
- PLACE THE ROCK ALONG THE CENTER OF THE WIRE 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 ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROX. 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.
- 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 RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER.
- 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.

APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
ROCK BERM DETAIL
EC03
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB

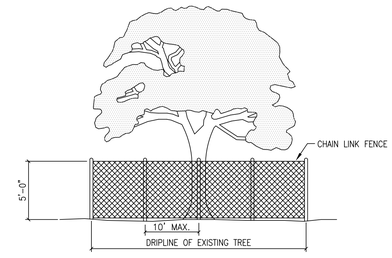


INSTALLATION:
- CLEAR THE AREA OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- GRADE THE AREA FOR THE ENTRANCE TO FLOW BACK ON TO THE CONSTRUCTION SITE. RUNOFF FROM THE STABILIZED CONSTRUCTION
- PLACE GEOTEXTILE FABRIC AS APPROVED BY THE CITY.
- PLACE ROCK AS APPROVED BY THE CITY.

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.

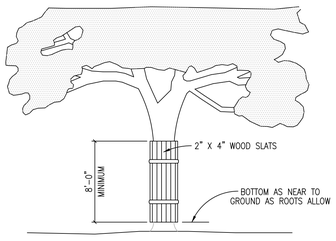
APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
STABILIZED CONSTRUCTION ENTRANCE
EC06
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB



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.

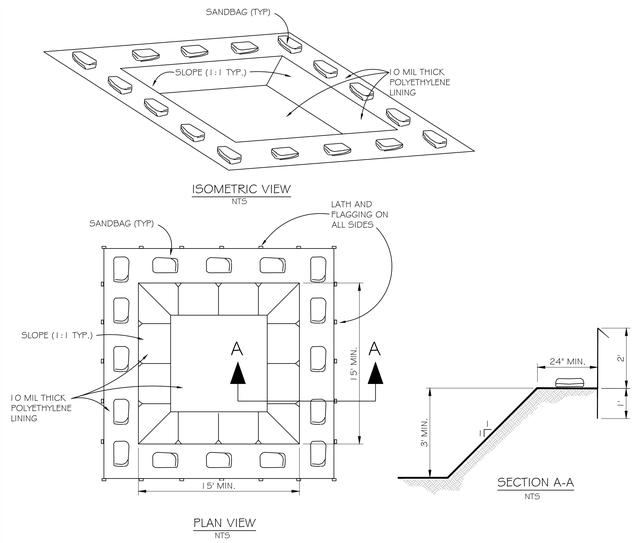
APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – CHAIN LINK FENCE
EC09
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB



NOTES:
1. WHERE ANY EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN FOUR FEET (4'-0") TO A TREE TRUNK; PROTECT THE TRUNK WITH STRAPPED-ON-PLANKING TO A HEIGHT OF EIGHT FEET (8'-0"), OR TO THE LIMITS OF LOWER BRANCHING IN ADDITION TO THE REDUCED FENCING PROVIDED.
2. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO (2) DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE, AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
3. PRIOR EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINE, MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
4. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.
5. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
6. NO LANDSCAPE TOPSOIL DRESSING GREATER THE FOUR INCHES (4") SHALL BE PERMITTED WITHIN THE DRIPLINE OF A TREE. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
7. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

APPROVED WORK: ADOPTED 6/21/2006
SALIENT TASK:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – WOOD SLATS
EC10
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB



NOTES
1. Actual layout, size and location to be determined by Contractor.
2. The concrete washout sign shall be installed within 30 ft. of the temporary concrete washout facility.
3. Once concrete wastes are allowed to harden, the concrete should be broken up, removed and disposed of properly. dispose of hardened concrete on a regular basis.

TEMPORARY CONCRETE WASHOUT AREA

N.T.S.

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK M. GARNER, JR.
98447
LICENSED PROFESSIONAL ENGINEER
01-03-2024

TBPE Registration #: F-13709

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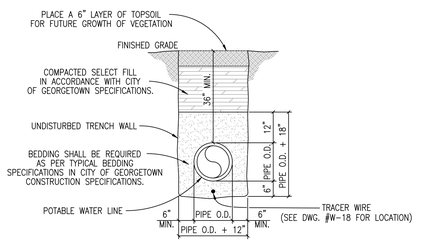
EROSION & SEDIMENT CONTROL DETAILS

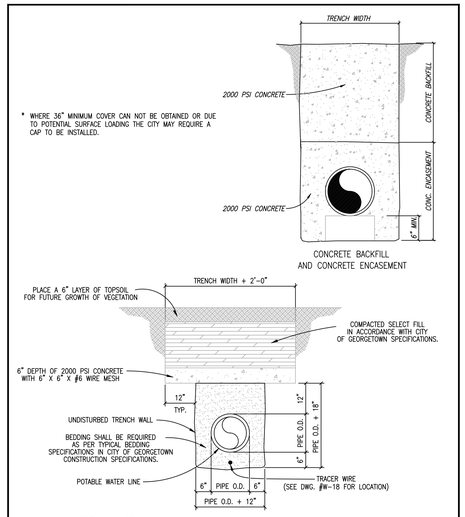
Job No. 1949-03-01	Sheet No. C8.00
Drawn By: VM	
Date: 1/3/2024	



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.

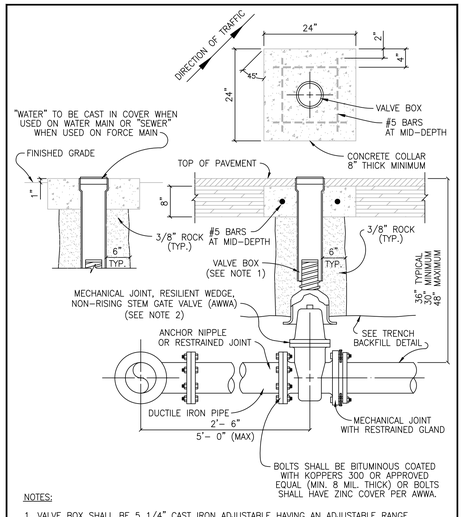
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
TRENCH AND EMBEDMENT DETAIL UNDER NON-PAVED AREAS	DRAWING NAME: W02
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB



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.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
CONCRETE TRENCH CAP DETAIL	DRAWING NAME: W02A
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB

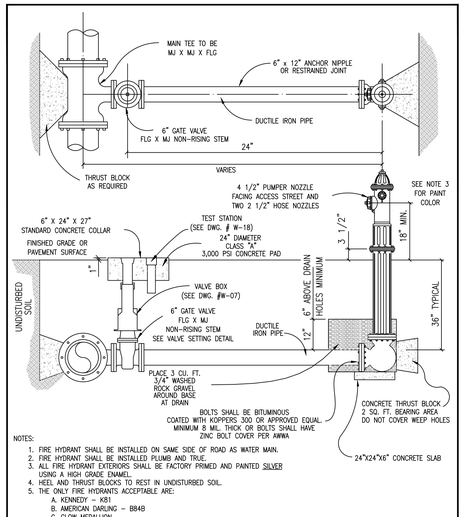


NOTES:

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.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
TYPICAL VALVE SETTING	DRAWING NAME: W07
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB

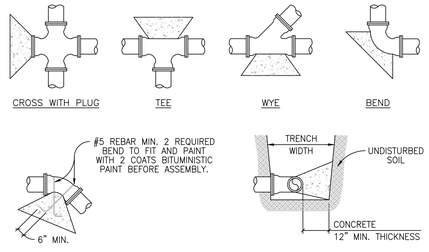


NOTES:

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.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
TYPICAL FIRE HYDRANT INSTALLATION	DRAWING NAME: W10
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB



*DEADMAN

TYPICAL SECTION

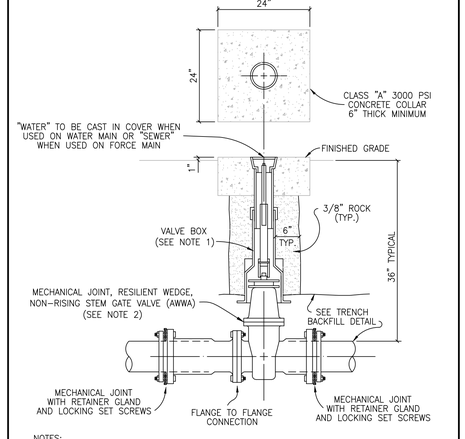
ALL THRUST BLOCKS SHALL BE FORMED. LAID FORMS SHALL BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO THE POURING OF CONCRETE AND SHALL ALSO BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO COVERING. TYPICAL LOCATIONS WHICH REQUIRE CONCRETE REACTION (THRUST) BLOCKS, FOR PRESSURE MAINS FOUR INCHES (4") AND 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.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
TYPICAL THRUST BLOCKS FOR WATER AND FORCE MAIN	DRAWING NAME: W11
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB

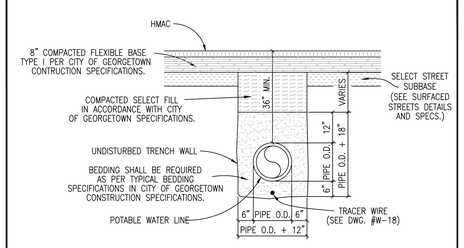


NOTES:

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.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
INLINE VALVE INSTALLATION	DRAWING NAME: W21
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB



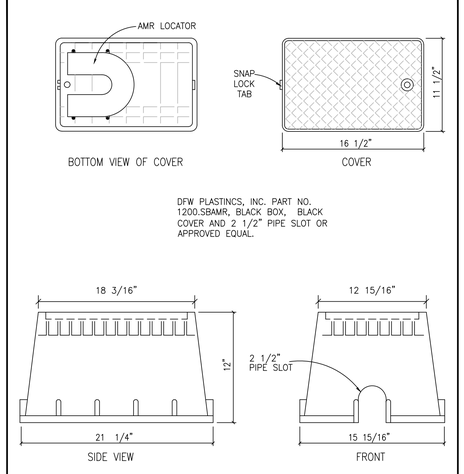
TRENCH WIDTHS
*PIPE LESS THAN 20" DIAMETER
1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER
2'-0" + PIPE O.D.

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.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
TRENCH AND EMBEDMENT DETAIL UNDER PROPOSED ROADWAY	DRAWING NAME: W22
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB



The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
METER BOX (NON-TRAFFIC AREAS)	DRAWING NAME: W23
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED PROFESSIONAL ENGINEER
01-03-2024

TBPE Registration #: F-13709

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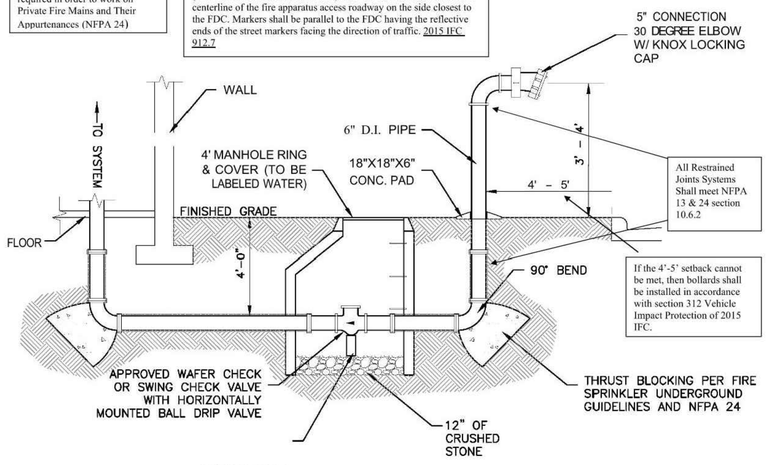
WATER DETAILS (1 OF 2)

Job No. 1949-03-01	Sheet No. C8.01
Drawn By: VM	
Date: 1/3/2024	

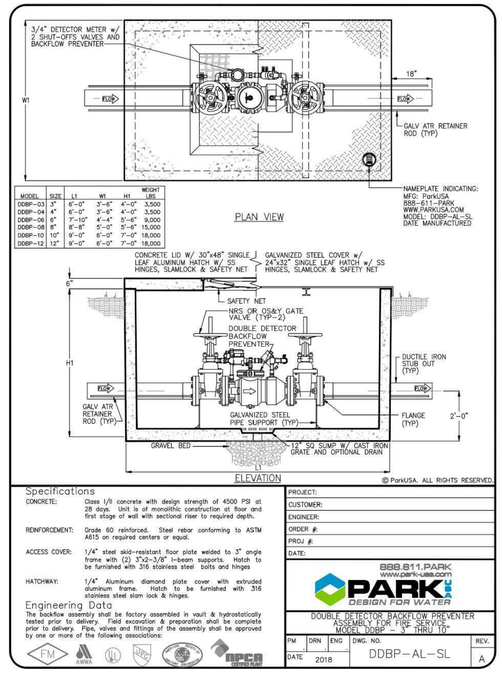
Per State Fire Marshall's Office an RME-G or U License is required in order to work on Private Fire Mains and Their Appurtenances (NFPA 24)

All Fire Department Connections (FDCs) shall be marked as approved by the Fire Code Official. Two red street lane reflectors (stimsonite model 88AB or similar) shall be installed six inches from centerline of the fire apparatus access roadway on the side closest to the FDC. Markers shall be parallel to the FDC having the reflective ends of the street markers facing the direction of traffic. 2015 IFC 912.7



FIRE DEPARTMENT CONNECTION

NOT TO SCALE



MODEL	SIZE	L1	W1	H1	WEIGHT LBS
DDBP-03	3"	6'-0"	3'-6"	4'-0"	3,500
DDBP-04	4"	6'-0"	3'-6"	4'-0"	3,500
DDBP-06	8"	7'-10"	4'-4"	5'-6"	9,000
DDBP-08	8"	8'-8"	5'-0"	5'-6"	15,000
DDBP-10	10"	9'-0"	6'-0"	7'-0"	18,000
DDBP-12	12"	9'-0"	6'-0"	7'-0"	18,000

Specifications

CONCRETE: Class I/II concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

ACCESS COVER: 1/4" steel skid-resistant floor plate welded to 3" angle frame with (2) 3"x2-3/8" I-beam supports. Hatch to be furnished with 316 stainless steel bolts and hinges

HATCHWAY: 1/4" Aluminum diamond plate cover with extruded aluminum frame. Hatch to be furnished with 316 stainless steel slam lock & hinges.

Engineering Data

The backflow assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

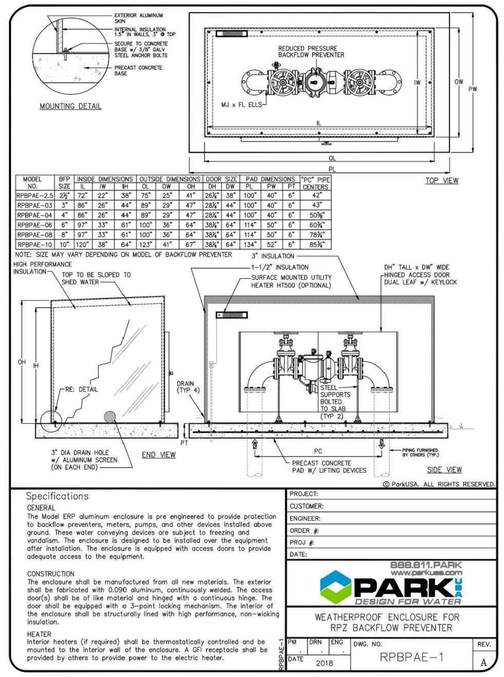
FM AWWA UL NSF IAPMO IPCA

PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	
PROJ #:	
DATE:	

888.611.PARK
www.park-usa.com
PARK DESIGN FOR WATER

DOUBLE DETECTOR BACKFLOW PREVENTER ASSEMBLY FOR FIRE SERVICE
MODEL DDBP – 3" THRU 10"

PM	DRN	ENG	DWG. NO.	REV.
DATE 2018			DDBP-AL-SL	A



MODEL NO.	RPP SIZE	INSIDE DIMENSIONS IL	IW	IH	OUTSIDE DIMENSIONS OL	OW	OH	DOOR SIZE DH	DW	PAD DIMENSIONS PL	PW	"PC" PIPE CENTERS PT	CENTERS
RPBPAE-2.5	2½"	72"	22"	38"	75"	25"	41"	26¾"	38"	100"	40"	6"	42"
RPBPAE-03	3"	86"	26"	44"	89"	29"	47"	28¾"	44"	100"	40"	6"	43"
RPBPAE-04	4"	86"	26"	44"	89"	29"	47"	28¾"	44"	100"	40"	6"	50⅝"
RPBPAE-06	6"	97"	33"	61"	100"	36"	64"	36¾"	64"	114"	50"	6"	60⅞"
RPBPAE-08	8"	97"	33"	61"	100"	36"	64"	36¾"	64"	114"	50"	6"	78⅝"
RPBPAE-10	10"	120"	38"	64"	123"	41"	67"	38¾"	64"	134"	52"	6"	85⅞"

NOTE: SIZE MAY VARY DEPENDING ON MODEL OF BACKFLOW PREVENTER

Specifications

GENERAL
The Model ERP aluminum enclosure is pre engineered to provide protection to backflow preventers, meters, pumps, and other devices installed above ground. These water conveying devices are subject to freezing and vandalism. The enclosure is designed to be installed over the equipment after installation. The enclosure is equipped with access doors to provide adequate access to the equipment.

CONSTRUCTION
The enclosure shall be manufactured from all new materials. The exterior shall be fabricated with 0.090 aluminum, continuously welded. The access door(s) shall be of like material and hinged with a continuous hinge. The door shall be equipped with a 3-point locking mechanism. The interior of the enclosure shall be structurally lined with high performance, non-wicking insulation.

HEATER
Interior heaters (if required) shall be thermostatically controlled and be mounted to the interior wall of the enclosure. A GFI receptacle shall be provided by others to provide power to the electric heater.

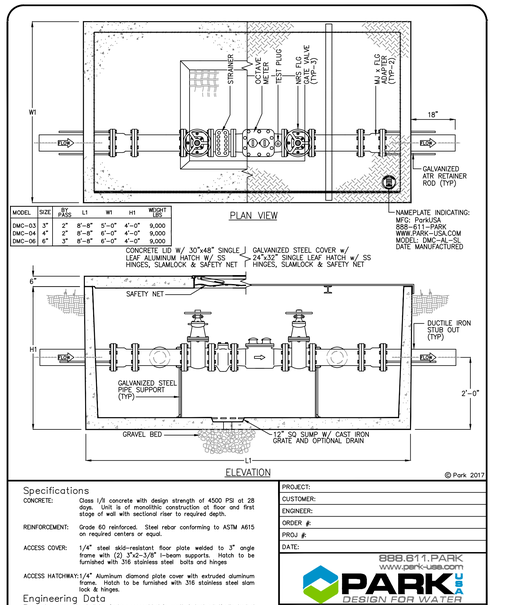
PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	
PROJ #:	
DATE:	

888.611.PARK
www.park-usa.com
PARK DESIGN FOR WATER

WEATHERPROOF ENCLOSURE FOR
RPZ BACKFLOW PREVENTER

PM	DRN	ENG	DWG. NO.	REV.
DATE 2018			RPBPAE-1	A

RPBPAE-1



MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-03	3"	2"	8'-8"	5'-0"	4'-0"	9,000
DMC-04	4"	2"	8'-8"	6'-0"	4'-0"	9,000
DMC-06	6"	3"	8'-8"	6'-0"	4'-0"	9,000

Specifications

CONCRETE: Class I/II concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

ACCESS COVER: 1/4" steel skid-resistant floor plate welded to 3" angle frame with (2) 3"x2-3/8" I-beam supports. Hatch to be furnished with 316 stainless steel bolts and hinges

ACCESS HATCHWAY: 1/4" Aluminum diamond plate cover with extruded aluminum frame. Hatch to be furnished with 316 stainless steel slam lock & hinges.

Engineering Data

The meter assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

FM AWWA UL NSF IAPMO IPCA

PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	
PROJ #:	
DATE:	

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PARK DESIGN FOR WATER

DOMESTIC COMPOUND WATER METER ASSEMBLY
MODEL DMC – 3" THRU 6"

PM	DRN	ENG	DWG. NO.	REV.
DATE 08/2017			DMC-AL-SL	A

DMC-AL-SL

OCTAVE® ULTRASONIC METER

MASTER METER

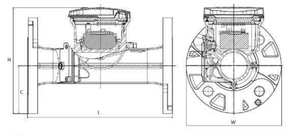
Performance Data & Dimensions

Octave Operating Characteristics and Dimensions	1.5"x13" (40 mm)	2"x09" (50 mm)	2"x13.69" (50 mm)	2"x17" (50 mm)
Safe Maximum Operating Capacity	250 GPM (57 m³/h)	250 GPM (57 m³/h)	250 GPM (57 m³/h)	250 GPM (57 m³/h)
Normal Operating Range (98.5% - 101.5% Accuracy)*	0.50 – 250 GPM (0.11 – 57 m³/h)	0.50 – 250 GPM (0.11 – 57 m³/h)	0.50 – 250 GPM (0.11 – 57 m³/h)	0.50 – 250 GPM (0.11 – 57 m³/h)
Extended Low Flow (95% - 105% Accuracy)	0.25 GPM (0.06 m³/h)	0.25 GPM (0.06 m³/h)	0.25 GPM (0.06 m³/h)	0.25 GPM (0.06 m³/h)
Length	13" (330 mm)	13" (330 mm)	15.25" (390 mm)	17" (433 mm)
Width	5-3/4" (146 mm)	5-3/4" (146 mm)	5-3/4" (146 mm)	5-3/4" (146 mm)
Height	6-3/4" (172 mm)	6-3/4" (172 mm)	6-3/4" (172 mm)	6-3/4" (172 mm)
Height from Center Pipe	2-1/8" (54 mm)	2-1/8" (54 mm)	2-1/8" (54 mm)	2-1/8" (54 mm)
Weight	20 lbs (9 kg)	15 lbs (7 kg)	22 lbs (10 kg)	24 lbs (11 kg)

* In the water temperature of 45° to 85° F (7° to 30° C), meter consumption is accurately measured at:
- +/- 1.5% in the Normal Operating Range
- +/- 5% in the Extended Low Flow

Octave Operating Characteristics and Dimensions	3" (80 mm)	4" (100 mm)	6" (150 mm)	8" (200 mm)	10" (250 mm)	12" (300 mm)
Safe Maximum Operating Capacity	500 GPM (114 m³/h)	1,000 GPM (227 m³/h)	1,600 GPM (363 m³/h)	2,800 GPM (636 m³/h)	5,500 GPM (1,250 m³/h)	5,500 GPM (1,250 m³/h)
Normal Operating Range (98.5% - 101.5% Accuracy)*	1 – 500 GPM (0.23 – 114 m3/h)	1.5 – 1,000 GPM (0.34 – 227 m³/h)	3 – 1,600 GPM (0.68 – 363 m³/h)	5 – 2,800 GPM (1.5 – 636 m³/h)	14 – 5,500 GPM (3.2 – 1,250 m³/h)	14 – 5,500 GPM (3.2 – 1,250 m³/h)
Extended Low Flow (95% - 105% Accuracy)	0.5 GPM (0.11 m³/h)	0.75 GPM (0.17 m³/h)	2 GPM (0.45 m³/h)	4 GPM (0.9 m3/h)	8 GPM (1.8 m3/h)	8 GPM (1.8 m3/h)
Length	12" (305 mm)	14" (356 mm)	18" (457 mm)	20" (508 mm)	17-3/4" (451 mm)	19-3/4" (502 mm)
Width	7-1/2" (190 mm)	9" (229 mm)	11" (280 mm)	13-1/2" (343 mm)	16" (406 mm)	19-3/4" (502 mm)
Height	8-1/2" (216 mm)	9-7/8" (250 mm)	10-7/8" (276 mm)	12-7/8" (327 mm)	16-1/2" (419 mm)	19-3/4" (502 mm)
Height from Center Pipe	3-1/2" (90 mm)	4-1/2" (115 mm)	5-1/8" (130 mm)	6-3/8" (162 mm)	8" (203 mm)	9-7/8" (251 mm)
Weight	23 lbs (10.5 kg)	35 lbs (16 kg)	51 lbs (23 kg)	76 lbs (35 kg)	150 lbs (68 kg)	210 lbs (96 kg)

* In the water temperature of 45° to 85° F (7° to 30° C), meter consumption is accurately measured at:
- +/- 1.5% in the Normal Operating Range
- +/- 5% in the Extended Low Flow



NOTE – For Performance charts please see **Engineering Document – Octave | Version 10.17**

v1001.20F

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED
PROFESSIONAL
ENGINEER
01-03-2024

TBPE Registration #: F-13709

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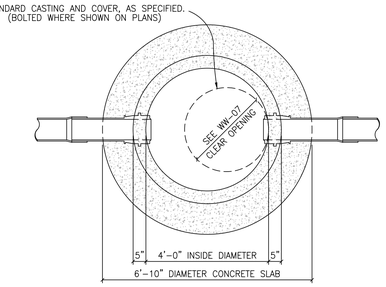
WATER DETAILS
(2 OF 2)

Job No. 1949-03-01	Sheet No. C8.02
Drawn By: VM	
Date: 1/3/2024	



MANHOLE PLAN

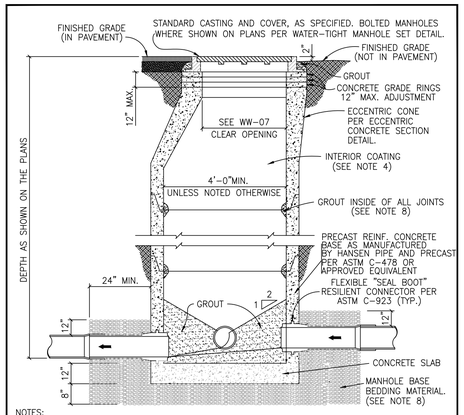
CITY OF GEORGETOWN NOTES:

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	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **STANDARD MANHOLE – PLAN**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW02 SCALE: NTS; DATE: 1/2003 DRAWN BY: MRS; APPROVED BY: TRB

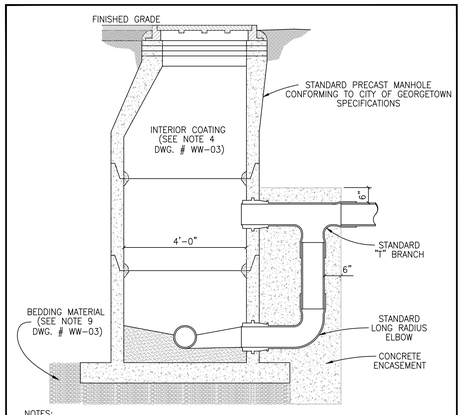


NOTES:

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	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **STANDARD MANHOLE – SECTION**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW03 SCALE: NTS; DATE: 1/2003 DRAWN BY: MRS; APPROVED BY: TRB

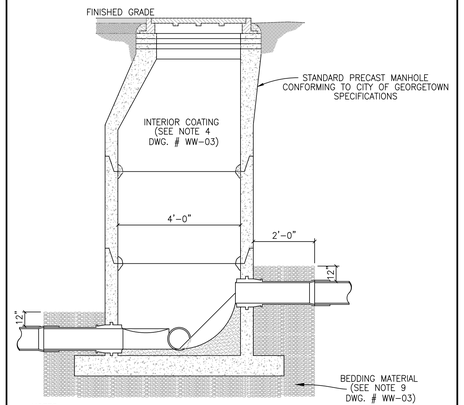


NOTES:

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	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **DROP CONNECTION–PRECAST MANHOLE TYPE "A"**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW04 SCALE: NTS; DATE: 1/2003 DRAWN BY: MRS; APPROVED BY: TRB



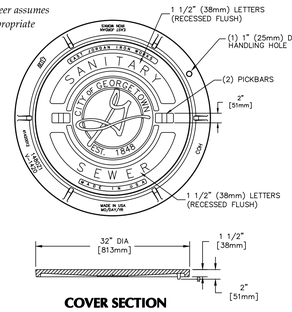
NOTES:

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.

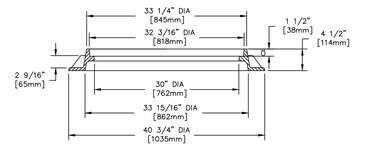
The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **DROP CONNECTION–PRECAST MANHOLE TYPE "B"**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW05 SCALE: NTS; DATE: 1/2003 DRAWN BY: MRS; APPROVED BY: TRB

The Architect/Engineer assumes responsibility for appropriate use of this standard.



COVER SECTION



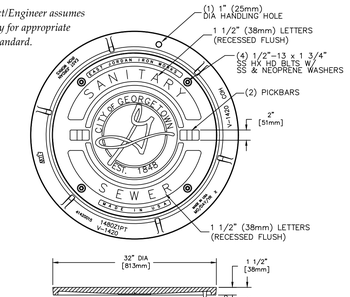
FRAME SECTION

NOTES:

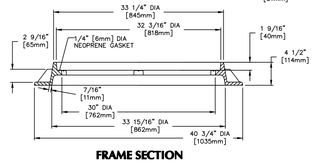
1. STANDARD WASTEWATER MANHOLE SET TO BE EAST JORDAN IRON WORKS, INC. CATALOG NO. 1480A V-1420/1480Z1, COVER TO BE STAMPED WITH "SANITARY SEWER".
2. STANDARD WASTEWATER MANHOLE SET TO BE HEAVY DUTY LOAD RATED.
3. FOR MORE DETAILED SPECIFICATIONS REFER TO EAST JORDAN IRON WORKS, INC. REFERENCE PRODUCT DRAWING 41420012 00148390.
4. FOR BOLTED WASTEWATER MANHOLE SET REFER TO DETAIL WW07A.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **STANDARD WASTEWATER MANHOLE SET**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW07 SCALE: NTS; DATE: 1/2003 DRAWN BY: MRS; APPROVED BY: TRB



COVER SECTION

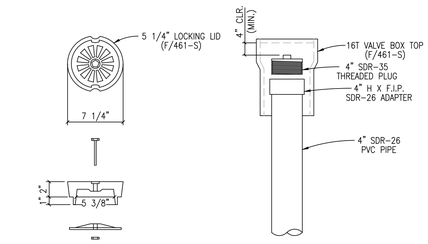


FRAME SECTION

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	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **BOLTED WASTEWATER MANHOLE SET**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW07A SCALE: NTS; DATE: 1/2006 DRAWN BY: MRS; APPROVED BY: TRB

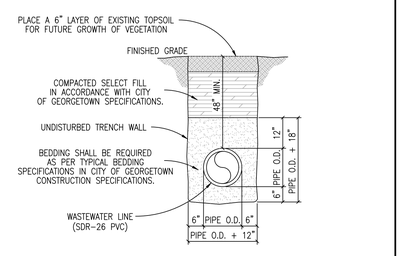


5 1/4" LOCKING LID
(F/461-S)

SEWER CLEAN-OUT
CITY OF GEORGETOWN
(RESIDENTIAL SERVICE)

The Architect/Engineer assumes responsibility for appropriate use of this standard.

GEORGETOWN TEXAS	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **SEWER CLEAN-OUT DETAIL**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW12 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	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS **TRENCH AND EMBEDMENT DETAIL UNDER NON-PAVED AREAS**	APPROVED DATE: ADOPTED 6/21/2006 DRAWING NAME: WW16 SCALE: NTS; DATE: 1/2003 DRAWN BY: MRS; APPROVED BY: TRB

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED
PROFESSIONAL ENGINEER
01-03-2024

TBPE Registration #: F-13709

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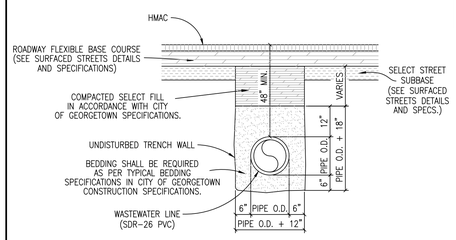
SANITARY SEWER DETAILS (1 OF 2)

Job No. 1949-03-01	Sheet No. C8.03
Drawn By: VM	
Date: 1/3/2024	



TRENCH WIDTHS

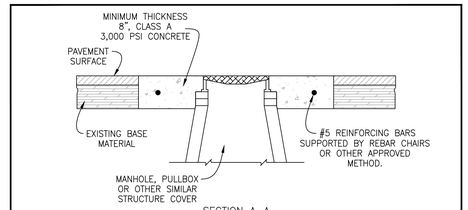
*PIPE LESS THAN 20" DIAMETER
1'-0" + PIPE O.D.
*20" DIAMETER PIPE AND LARGER
2'-0" + PIPE O.D.

NOTES:

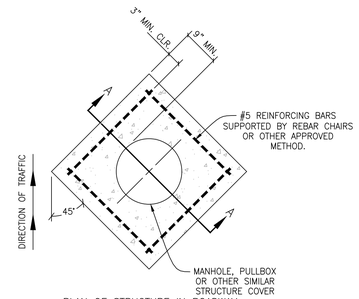
1. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS AND STANDARDS.
2. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL (SEE C9 FLOWABLE BACKFILL FOR THE SPECIFICATION).

The Architect/Engineer assumes responsibility for appropriate use of this standard.

	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006
GEORGETOWN TEXAS	TRENCH AND EMBEDMENT DETAIL UNDER PROPOSED ROADWAY	DRAWING NAME: WW18
		SCALE: NTS DATE: 1/2003
		DRAWN BY: MRS APPROVED BY: TRB



SECTION A-A



PLAN OF STRUCTURE IN ROADWAY

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.

	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: APPROVED 6/21/2006
GEORGETOWN TEXAS	CONCRETE CASTING MANHOLE DETAIL	DRAWING NAME: WW21
		SCALE: NTS DATE: 1/2006
		DRAWN BY: MRS APPROVED BY: TRB

Revision / Date

Project:
JARRELL ELEMENTARY SCHOOL #4
FOR
JARRELL ISD IN
GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
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LICENSED
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01-03-2024

TBPE Registration #: F-13709

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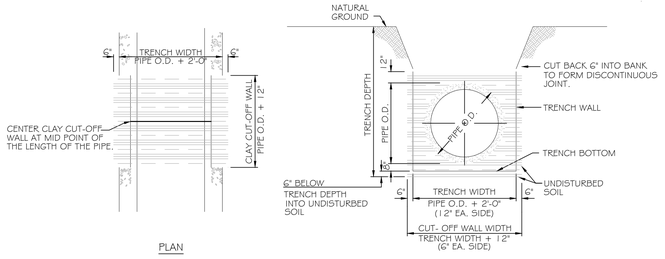
SANITARY SEWER DETAILS (2 OF 2)

Job No. 1949-03-01	Sheet No. C8.04
Drawn By: VM	
Date: 1/3/2024	



PLAN

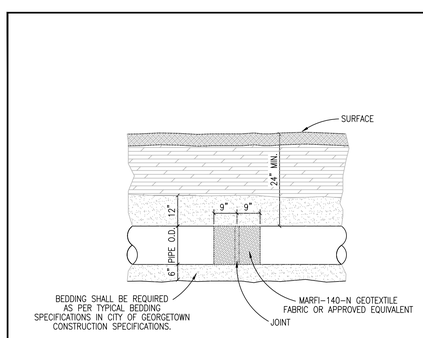
TYP. SECTION

CLAY CUT-OFF WALL NOTES:

1. CLAY CUT-OFF WALLS SHALL BE CONSTRUCTED AT APPROXIMATELY 250 FOOT INTERVALS ALONG ALL STORM DRAIN CONDUITS HAVING CRUSHED STONE EMBEDMENT.
2. THE CLAY CUT-OFF WALL SHALL BE PLACED AT THE MID POINT OF THE LENGTH OF THE PIPE BEING PLACED, BUT NOT AT A LOCATION WHERE A LATERAL CONNECTS TO THE MAIN. THE MINIMUM CLEARANCE IS 10 FEET.
3. MATERIAL FOR CLAY CUT-OFF WALL TO BE CLEAN MATERIAL WITH NO LUMPS LARGER THAN 3". CLAY TO HAVE P.I. OF 30 TO 40. MATERIAL TO BE PLACED IN 6" LIFTS, MOISTENED TO OPTIMUM MOISTURE CONTENT AND COMPACTED WITH HAND HELD MECHANICAL TAMPERS, WITHOUT DAMAGING THE PIPE.

STORM DRAIN CLAY CUT-OFF WALL

N.T.S.

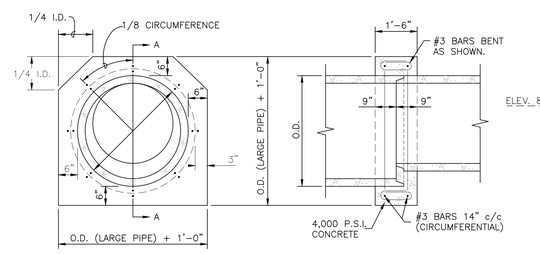


NOTES

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 MARFI-140-N GEOTEXTILE FABRIC OR APPROVED EQUIVALENT. EACH JOINT SHALL BE WRAPPED WITH 18" WIDE FABRIC CENTERED ON THE JOINT.

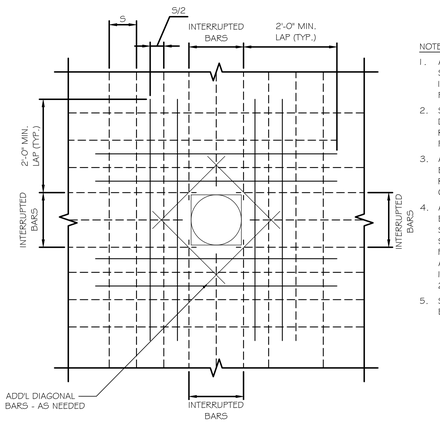
The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN TEXAS Georgetown Utility Systems Water Conservation Recognized	CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	APPROVED DATE: ADOPTED 6/21/2006	
	TRENCH AND EMBEDMENT DETAIL (PROFILE) FOR STORM SEWER	REVISION NUM: SD42	
		ISSUE DATE: NTS 1/2003	
		DESIGN BY: MRS APPROVED BY: TRB	



CONCRETE COLLAR DETAIL (PIPE)

N.T.S.

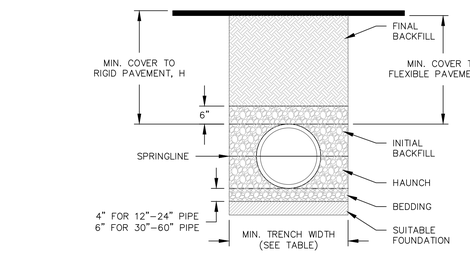


NOTES:

1. ADDITIONAL REINF. ON EACH SIDE SHALL BE 1/2 OF THE AREA OF INTERRUPTED BARS RUNNING PARALLEL TO THE ADDITIONAL BARS.
2. SPACE ADDITIONAL REINF. AT A DISTANCE OF "S/2" FROM WALL REINFORCING BARS WHICH ARE PLACED AT SPACING "S".
3. ADD ADD'L 2-#4 x 2'-6" DIAGONAL BARS AT CORNERS OF RECTANGULAR AND SQUARE OPENINGS.
4. ADDITIONAL BARS TO EXTEND 2'-0" BEYOND BLOCKOUT EA. SIDE - AS SHOWN. EXCEPT PROVIDE ACI STD. 90° HOOKS INTO FOOTING (MATCH FOOTING DOWELS), AND PROVIDE ACI STD. 90° HOOKS WITH MINIMUM 13" EMBEDMENT WHERE STRAIGHT 2'-0" EMBEDMENT DOES NOT FIT.
5. SEE DETAIL - THIS SHEET - FOR BLOCKOUT DETAIL.

TYPICAL ADDITIONAL REINFORCING AT CONCRETE WALL - PIPE PENETRATIONS

N.T.S.



RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4" (100mm)	21" (533mm)
6" (150mm)	23" (584mm)
8" (200mm)	26" (660mm)
10" (250mm)	28" (711mm)
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I CRUSHED LIMESTONE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-1500mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I CRUSHED LIMESTONE IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION: H-25	SURFACE LIVE LOADING CONDITION: HEAVY CONSTRUCTION (75T AXLE LAOD) *
12" - 48" (300mm - 1200mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	24" (610mm)	60" (1524mm)

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

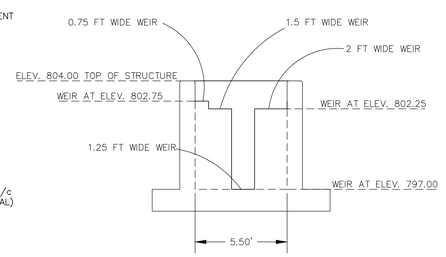
REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
4	REV. DRAWING NAME OR NUMBER	TJR	01/28/16	

STANDARD TRENCH INSTALLATION DETAIL

DRAWING NUMBER: STD-101

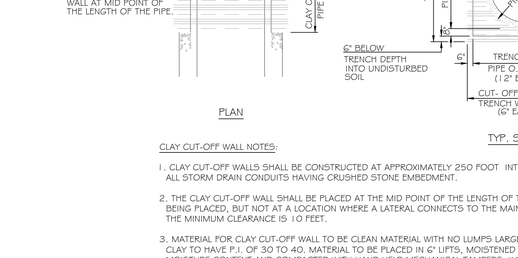
ADS ADVANCED DRAINAGE SYSTEMS, INC. 4640 TRUEMAN BLVD. HILLIARD, OHIO 43026

DRAWN BY: CKS
DATE: 10/18/06
SIZE: NTS
SHEET: 1 OF 1



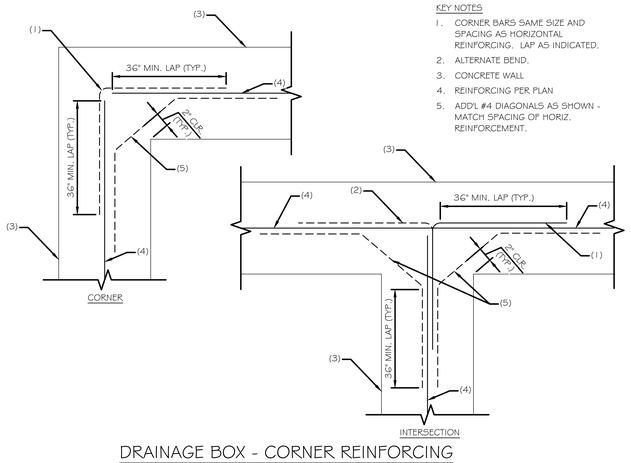
WEIR DESIGN

N.T.S.



TRENCH DRAIN DETAIL

N.T.S.

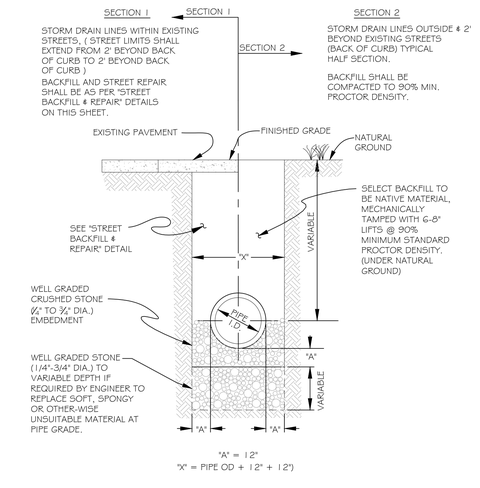


KEY NOTES

1. CORNER BARS SAME SIZE AND SPACING AS HORIZONTAL REINFORCING. LAP AS INDICATED.
2. ALTERNATE BEND.
3. CONCRETE WALL
4. REINFORCING PER PLAN
5. ADD'L #4 DIAGONALS AS SHOWN - MATCH SPACING OF HORIZ. REINFORCEMENT.

DRAINAGE BOX - CORNER REINFORCING

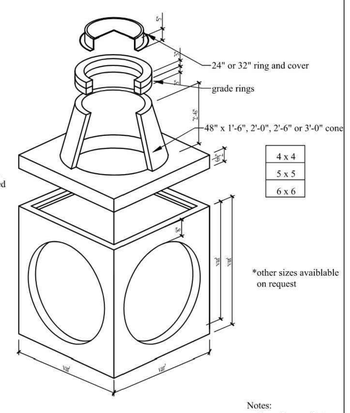
N.T.S.



RCP EMBEDMENT DETAIL

N.T.S.

Junction Box / Manhole



Capital Precast	CAPITAL PRECAST, INC. 6905 SOUTH OLD BASTROP HWY SAN MARCOS, TEXAS 78666 PH. (830) 606-6200	FOR: Junction Box / Manhole	
		JOB:	
		DRAWN: RW	DATE: 12/1/2015
		FILE: catalog/junction boxes/JB with cone	Rev. No.
			SHEET: 1 OF 1

Revision / Date

Project: JARRELL ELEMENTARY SCHOOL #4 FOR JARRELL ISD IN GEORGETOWN, TX

LANGAN

STATE OF TEXAS — JACK M. GARNER, JR. — 98447 — LICENSED PROFESSIONAL ENGINEER — 01-03-2024

TBPE Registration #: F-13709

Huckabee

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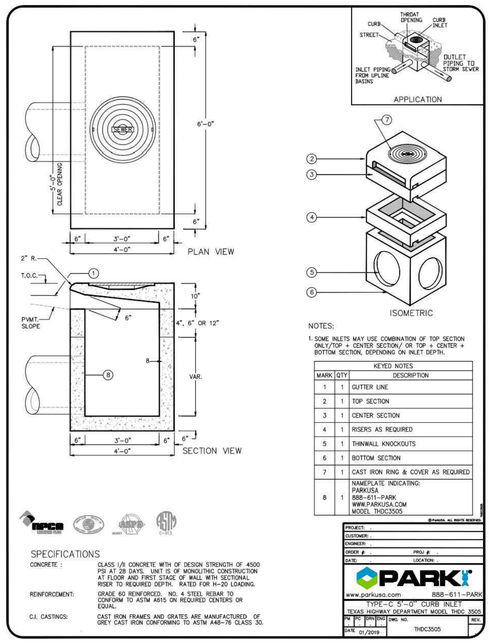
DRAINAGE DETAILS (1 OF 2)

Job No. 1949-03-01	Sheet No. C8.05
Drawn By: VM	
Date: 1/3/2024	



NOTES:

1. SOME INLETS MAY USE COMBINATION OF TOP SECTION ONLY/TOP + CENTER SECTION/ OR TOP + CENTER + BOTTOM SECTION, DEPENDING ON INLET DEPTH.

MARK	QTY	KEYED NOTES DESCRIPTION
1	1	GUTTER LINE
2	1	TOP SECTION
3	1	CENTER SECTION
4	1	RISERS AS REQUIRED
5	1	THINWALL KNOCKOUTS
6	1	BOTTOM SECTION
7	1	CAST IRON RING & COVER AS REQUIRED
8	1	NAMEPLATE INDICATING: PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL THDC3505

SPECIFICATIONS

CONCRETE : CLASS I/II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. RATED FOR H-20 LOADING.

REINFORCEMENT: GRADE 60 REINFORCED. NO. 4 STEEL REBAR TO CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

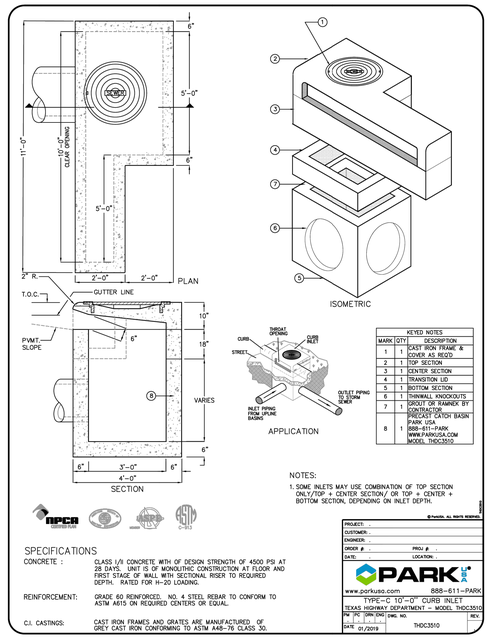
C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	PROJ #:
DATE:	LOCATION:

PARK USA
www.parkusa.com 888-611-PARK

TYPE-C 5'-0" CURB INLET
TEXAS HIGHWAY DEPARTMENT MODEL THDC 3505

PM	PC	DRN	ENG	DWG. NO.	REV.
DATE 01/2019				THDC3505	



MARK	QTY	KEYED NOTES DESCRIPTION
1	1	CAST IRON FRAME & COVER AS REQ'D
2	1	TOP SECTION
3	1	CENTER SECTION
4	1	TRANSITION LID
5	1	BOTTOM SECTION
6	1	THINWALL KNOCKOUTS
7	1	GROUT OR RAMNECK BY CONTRACTOR
8	1	PRECAST CATCH BASIN PARK USA 888-611-PARK WWW.PARKUSA.COM MODEL THDC3510

NOTES:

1. SOME INLETS MAY USE COMBINATION OF TOP SECTION ONLY/TOP + CENTER SECTION/ OR TOP + CENTER + BOTTOM SECTION, DEPENDING ON INLET DEPTH.

SPECIFICATIONS

CONCRETE : CLASS I/II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. RATED FOR H-20 LOADING.

REINFORCEMENT: GRADE 60 REINFORCED. NO. 4 STEEL REBAR TO CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

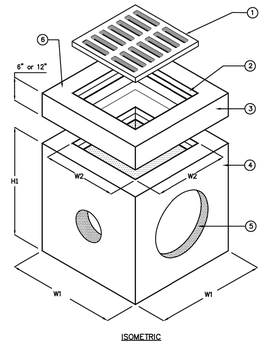
C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

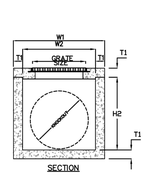
PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	PROJ #:
DATE:	LOCATION:

PARK USA
www.parkusa.com 888-611-PARK

TYPE-C 10'-0" CURB INLET
TEXAS HIGHWAY DEPARTMENT - MODEL THDC3510

PM	PC	DRN	ENG	DWG. NO.	REV.
DATE 01/2019				THDC3510	



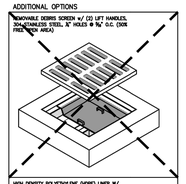


MARK	QTY	KEYED NOTES DESCRIPTION
1	1	GRATE OR COVER AS REQUESTED, SEE OPTIONS
2	1	CAST-IN STEEL FRAME
3	1	OPTIONAL TOP/EXTENSION 6" TO 18"
4	1	PRECAST CONCRETE BASIN SECTION
5	4	KNOCKOUTS (STD) AND PENETRATIONS (OPT) AS REQUIRED, SEE KO DIMENSION FOR MAXIMUM PIPE O.D.*
6	1	NAMEPLATE INDICATING: MFG: PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL: CB-01 DATE MANUFACTURED

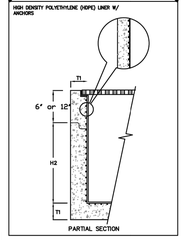
NOTE: KNOCKOUTS-STD, PENETRATIONS-OPTIONAL

ADDITIONAL OPTIONS

REMOVABLE DEBRIS SCREEN w/ (2) LIFT HANDLES, 304 STAINLESS STEEL, 3/16" HOLES @ 3/4" O.C. (50% FREE OPEN AREA)

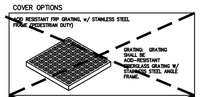


HIGH DENSITY POLYETHYLENE (HDPE) LINER W/ ANCHORS



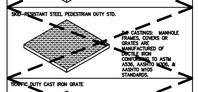
COVER OPTIONS

NON-CORROSIVE FRP GRATING, w/ STAINLESS STEEL FRAME (PEDESTRIAN DUTY)



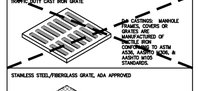
GRATING: GRATING SHALL BE NON-CORROSIVE FIBERGLASS GRATING W/ STAINLESS STEEL ANGLE FRAME.

NON-CORROSIVE STEEL PEDESTRIAN DUTY STD.



CB CASTINGS: MANHOLE FRAMES, COVERS OR GRATES ARE MANUFACTURED OF DUCTILE IRON CONFORMING TO ASTM A536, GRADE 70-50-05 UNLESS NOTED, & AASHTO M105 STANDARDS.

HEAVY DUTY CAST IRON GRATE

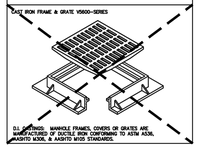


CB CASTINGS: MANHOLE FRAMES, COVERS OR GRATES ARE MANUFACTURED OF DUCTILE IRON CONFORMING TO ASTM A536, GRADE 70-50-05 UNLESS NOTED, & AASHTO M105 STANDARDS.

STAINLESS STEEL/FIBERGLASS GRATE, ADA APPROVED

ACCESS COVER: GRATE TO BE FURNISHED WITH 304 STAINLESS STEEL BOLTS AND HINGES.

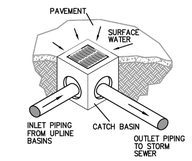
CAST IRON FRAME & GRATE V0600-SERIES



CI. CASTINGS: MANHOLE FRAMES, COVERS OR GRATES ARE MANUFACTURED OF DUCTILE IRON CONFORMING TO ASTM A536, AASHTO M306 & AASHTO M105 STANDARDS.

MODEL	W1	W2	H1	H2	T1	T2	KO	GRATE SIZE	OPEN AREA	WEIGHT LBS
CB-12	15"	10"	21"	18"	3"	2"	10"	12"x12"x1"	90	180
CB-14	20"	12"	28"	24"	4"	4"	12"	14"x14"x1⅜"	120	800
CB-18	24"	16"	34"	30"	4"	4"	15"	18"x18"x1⅜"	168	1,000
CB-20	28"	18"	34"	30"	4"	4"	17"	20"x20"x1⅜"	170	1,335
CB-24	32"	22"	41"	36"	5"	5"	22"	24"x24"x2"	268	2,245
CB-27	37"	25"	42"	36"	6"	6"	24"	27"x27"x2"	350	2,875
CB-30	42"	30"	42"	36"	6"	6"	30"	32"x32"x2"	490	3,675
CB-36	48"	36"	42"	36"	6"	6"	32"	38"x38"x2"	693	4,585
CB-48	60"	48"	54"	48"	6"	6"	48"	38"x38"x2"	693	7,250
*CB-60	72"	60"	66"	60"	6"	6"	60"	38"x38"x2"	693	10,500
*CB-72	84"	72"	78"	72"	6"	6"	72"	38"x38"x2"	693	15,350
*CB-84	96"	84"	78"	72"	6"	6"	72"	38"x38"x2"	693	19,500

*KNOCKOUTS NOT AVAILABLE



SPECIFICATIONS

CONCRETE : CLASS I/I CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

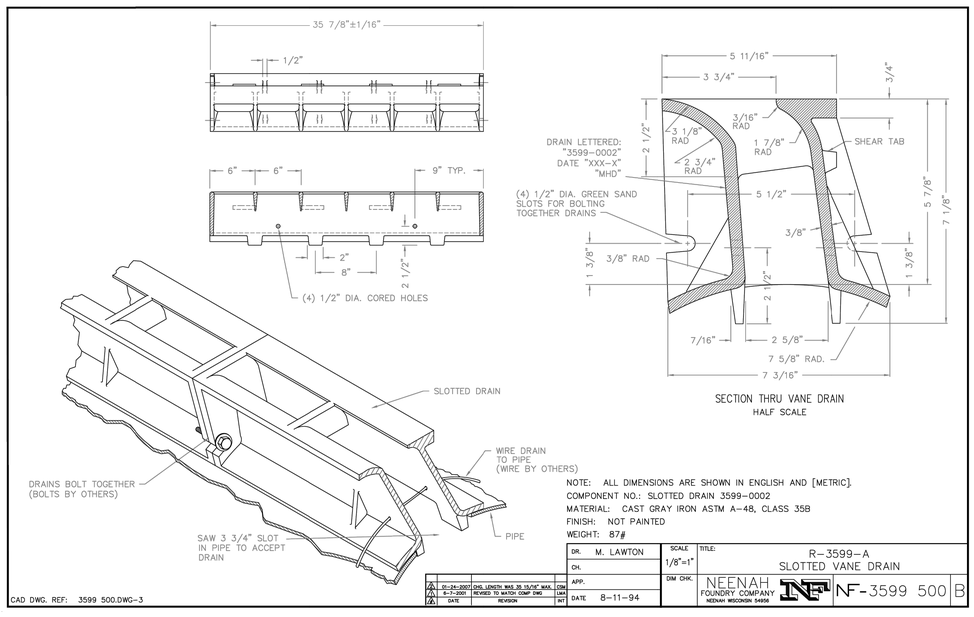
C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	PROJ #:
DATE:	LOCATION:

PARK USA
www.parkusa.com 888-611-PARK

CATCH BASIN
MODEL CB – 12" THRU 84"

PM	PC	DRN	ENG	DWG. NO.	REV.
				CB-1	
DATE 01/2019					



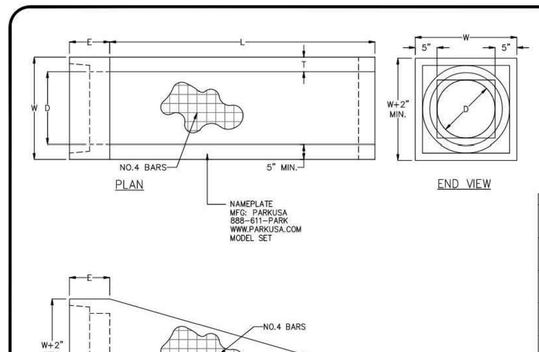
SECTION THRU VANE DRAIN
HALF SCALE

NOTE: ALL DIMENSIONS ARE SHOWN IN ENGLISH AND [METRIC].
COMPONENT NO.: SLOTTED DRAIN 3599-0002
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NOT PAINTED
WEIGHT: 87#

DR. M. LAWTON	SCALE 1/8"=1"	TITLE: R-3599-A SLOTTED VANE DRAIN	
CH.			
APP.	DIM CHK.	NEENAH FOUNDRY COMPANY NEENAH WISCONSIN 54956	NF-3599 500 B
DATE 8-11-94			

	DATE	REVISION	INT
3	01-24-2007	CHG. LENGTH WAS 35 13/16" MAX.	CDH
2	6-7-2001	REVISED TO MATCH COMP DWG	LMH
1			

CAD DWG. REF: 3599 500.DWG-3



NOTES:

1. CLASS "C" CONCRETE
2. 12" ARE MADE WITH 12" KNOCK OUT FOR SMALLER PIPE IN 15" SET MOLD
3. 6" WALL IN 36" AS PER CHART
4. REINFORCEMENT: 12"-24" #4 BARS @ 9" ℄ GRADE 60 24"-36" #4 BARS @ 6" ℄ GRADE 60
5. REINFORCEMENT: 1" MINIMUM COVER ON ALL REINFORCEMENT

MODEL	D	SLOPE	W	L	T	E	WEIGHT
SET123	12"	3:1	1'-10"	3'-3"	5"	12"	1680
SET124	12"	4:1	1'-10"	4'-4"	5"	12"	2040
SET126	12"	6:1	1'-10"	8'-0"	5"	12"	2760
SET153	15"	3:1	2'-1⅛"	4'-0"	5"	12"	1680
SET154	15"	4:1	2'-1⅛"	5'-4"	5"	12"	2040
SET156	15"	6:1	2'-1⅛"	8'-0"	5"	12"	2760
SET183	18"	3:1	2'-5¼"	4'-9"	5"	12"	2120
SET184	18"	4:1	2'-5¼"	6'-4"	5"	12"	2600
SET186	18"	6:1	2'-5¼"	9'-6"	5"	12"	3560
SET243	24"	3:1	2'-11½"	6'-3"	5"	12"	3120
SET244	24"	4:1	2'-11½"	8'-4"	5"	12"	3880
SET246	24"	6:1	2'-11½"	12'-6"	5"	12"	5400
SET303	30"	3:1	3'-5¾"	7'-9"	5"	12"	4280
SET304	30"	4:1	3'-5¾"	10'-4"	5"	12"	5400
SET306	30"	6:1	3'-5¾"	15'-6"	5"	12"	7600
SET363	36"	3:1	4'-3"	10'-0"	6"	12"	6200
SET364	36"	4:1	4'-3"	12'-0"	6"	12"	9040
SET366	36"	6:1	4'-3"	18'-3"	6"	12"	13,000

SPECIFICATIONS

CONCRETE: CLASS I/II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION INCLUDING WALLS AND FLOOR.

REINFORCEMENT: GRADE 60 REINFORCED. NO. 4 STEEL REBAR TO CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

PROJECT:	
CUSTOMER:	
ENGINEER:	
ORDER #:	PROJ #:
DATE:	LOCATION:

PARK USA
www.parkusa.com 888-611-PARK

SAFETY END TREATMENT
MODEL SET – 12" THRU 36"

PM	PC	DRN	ENG	DWG. NO.	REV.
				SET-1	
DATE 01/2019					

Revision / Date

Project: JARRELL ELEMENTARY SCHOOL #4 FOR JARRELL ISD IN GEORGETOWN, TX

LANGAN

STATE OF TEXAS
JACK H. GARNER, JR.
98447
LICENSED PROFESSIONAL ENGINEER
01-03-2024

TBPE Registration #: F-13709

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www.huckabee-inc.com
800.687.1229

DRAINAGE DETAILS (2 OF 2)

Job No. 1949-03-01	Sheet No. C8.06
Drawn By: VM	
Date: 1/3/2024	