

Global Kids Preschool
Water Pollution Abatement Plan (WPAP)
and
Organized Sewage Collection System Plan (SCS)

April 2024

Prepared For:

Four Chisholm, LLC.
15720 Stone Oak Estates
Cypress, Texas 77429

Prepared By:

2P Consultants, LLC
203 E. Main Street, Suite 204
Round Rock, Texas 78664



Michael Easton Mundine, P.E.
Project Manager

TBPE FIRM #F-19351



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Section i
TCEQ Edwards Aquifer Application Cover Page

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.
3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.
4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

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

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.
6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.
2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

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

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: Global Kids Preschool				2. Regulated Entity No.:			
3. Customer Name: Four Chisholm LLC				4. Customer No.:			
5. Project Type: (Please circle/check one)	<input checked="" type="radio"/> New	<input type="radio"/> Modification		<input type="radio"/> Extension		<input type="radio"/> Exception	
6. Plan Type: (Please circle/check one)	<input checked="" type="radio"/> WPAP	<input type="radio"/> CZP	<input checked="" type="radio"/> SCS	<input type="radio"/> UST	<input type="radio"/> AST	<input type="radio"/> EXP	<input type="radio"/> EXT
7. Land Use: (Please circle/check one)	<input type="radio"/> Residential		<input checked="" type="radio"/> Non-residential		8. Site (acres):		0.791 Acres
9. Application Fee:	\$ 3,650		10. Permanent BMP(s):		Vegetative Filter Strips, Grassy Swale & Rainwater Harvesting		
11. SCS (Linear Ft.):	10.4		12. AST/UST (No. Tanks):		N/A		
13. County:	Williamson		14. Watershed:		Brushy 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.)	—	—	<u> X </u>
Region (1 req.)	—	—	<u> X </u>
County(ies)	—	—	—
Groundwater Conservation District(s)	<u> </u> Edwards Aquifer Authority <u> </u> Barton Springs/ Edwards Aquifer <u> </u> Hays Trinity <u> </u> Plum Creek	<u> </u> Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	<u> </u> Austin <u> </u> Buda <u> </u> Dripping Springs <u> </u> Kyle <u> </u> Mountain City <u> </u> San Marcos <u> </u> Wimberley <u> </u> Woodcreek	<u> </u> Austin <u> </u> Bee Cave <u> </u> Pflugerville <u> </u> Rollingwood <u> </u> Round Rock <u> </u> Sunset Valley <u> </u> West Lake Hills	<u> </u> Austin <u> </u> Cedar Park <u> </u> Florence <u> </u> Georgetown <u> </u> Jerrell <u> </u> Leander <u> </u> Liberty Hill <u> </u> Pflugerville <u> X </u> Round Rock

San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde
Original (1 req.)	—	—	—	—	—
Region (1 req.)	—	—	—	—	—
County(ies)	—	—	—	—	—
Groundwater Conservation District(s)	<u> </u> Edwards Aquifer Authority <u> </u> Trinity-Glen Rose	<u> </u> Edwards Aquifer Authority	<u> </u> Kinney	<u> </u> EAA <u> </u> Medina	<u> </u> EAA <u> </u> Uvalde
City(ies) Jurisdiction	<u> </u> Castle Hills <u> </u> Fair Oaks Ranch <u> </u> Helotes <u> </u> Hill Country Village <u> </u> Hollywood Park <u> </u> San Antonio (SAWS) <u> </u> Shavano Park	<u> </u> Bulverde <u> </u> Fair Oaks Ranch <u> </u> Garden Ridge <u> </u> New Braunfels <u> </u> Schertz	NA	<u> </u> 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.

Michael Easton Mundine, P.E.

Print Name of Customer/Authorized Agent



05/22/2024

Signature of Customer/Authorized Agent

Date

****FOR TCEQ INTERNAL USE ONLY****

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

Section I
General Information Form
(TCEQ-0585)

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: Michael Easton Mundine, P.E.

Date: 05/22/2024

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Global Kids Preschool
2. County: Williamson
3. Stream Basin: Brushy Creek
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:
☒ Recharge Zone
☐ Transition Zone
6. Plan Type:
☒ WPAP
☒ SCS
☐ Modification

- ☐ AST
☐ UST
☐ Exception Request

7. Customer (Applicant):

Contact Person: Curtis Churchill

Entity: CedarBrook Construction

Mailing Address: 1000 N IH 35 STE A

City, State: Round Rock, TX

Zip: 78681

Telephone: 512-924-3140

FAX: _____

Email Address: Curtis@cedarbrooktx.com

8. Agent/Representative (If any):

Contact Person: Michael Easton Mundine

Entity: 2P Consultants, LLC.

Mailing Address: 203 E. Main Street, Suite 204

City, State: Round Rock, Texas

Zip: 78664

Telephone: (512) 344-9664

FAX: _____

Email Address: emundine@2PConsultants.com

9. Project Location:

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

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

4 Chisholm Trail Road, Round Rock, TX 78681

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: 06/01/2024

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

- (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
- (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
- (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;
- (4) The use of sewage holding tanks as parts of organized collection systems; and
- (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).
- (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

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

- (1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
- (2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

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

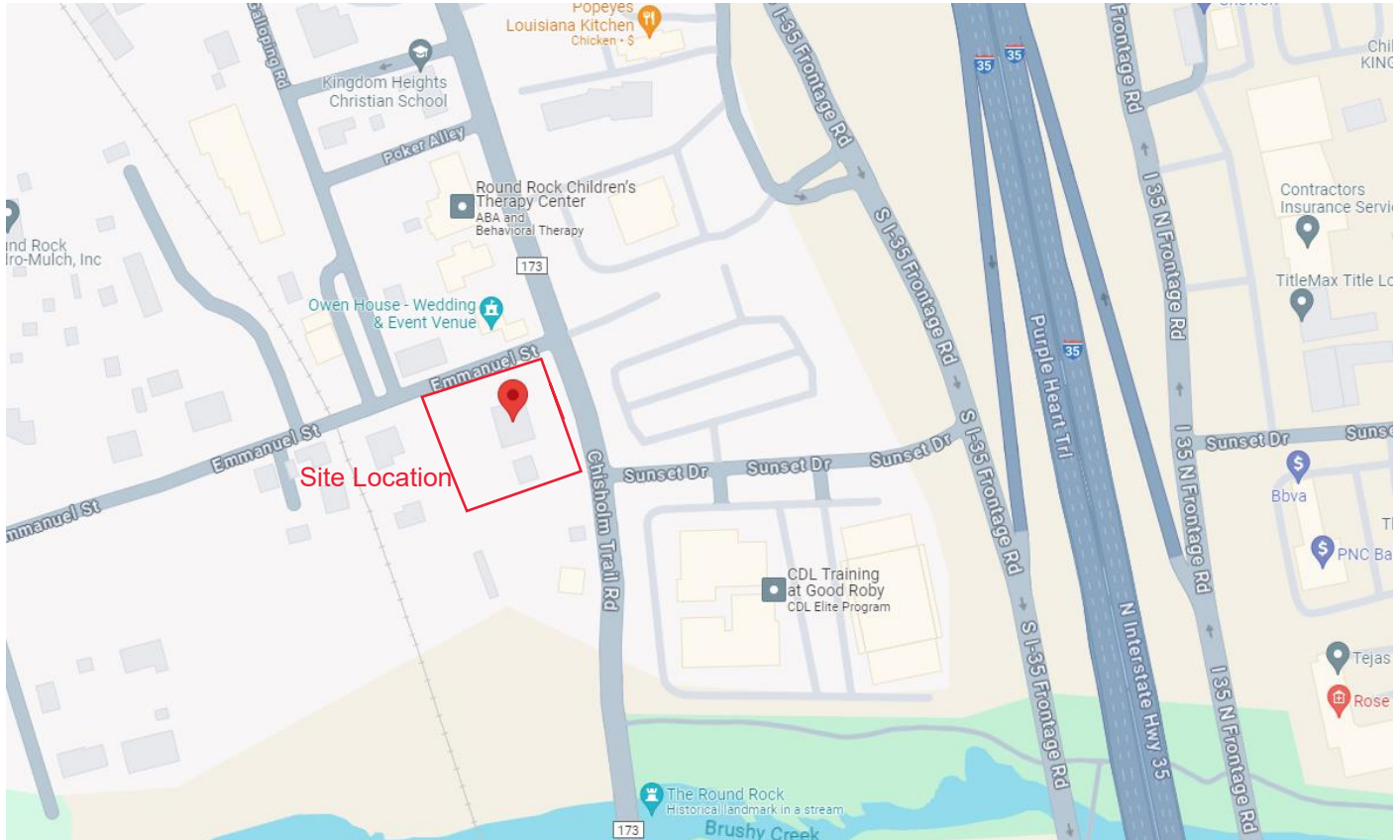
Administrative Information

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

- ☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
 - ☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
 - ☐ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
 - ☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
 - ☐ A request for an extension to a previously approved plan.
19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:
- ☐ TCEQ cashier
 - ☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
 - ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)
20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.



Attachment 1A – Road Map

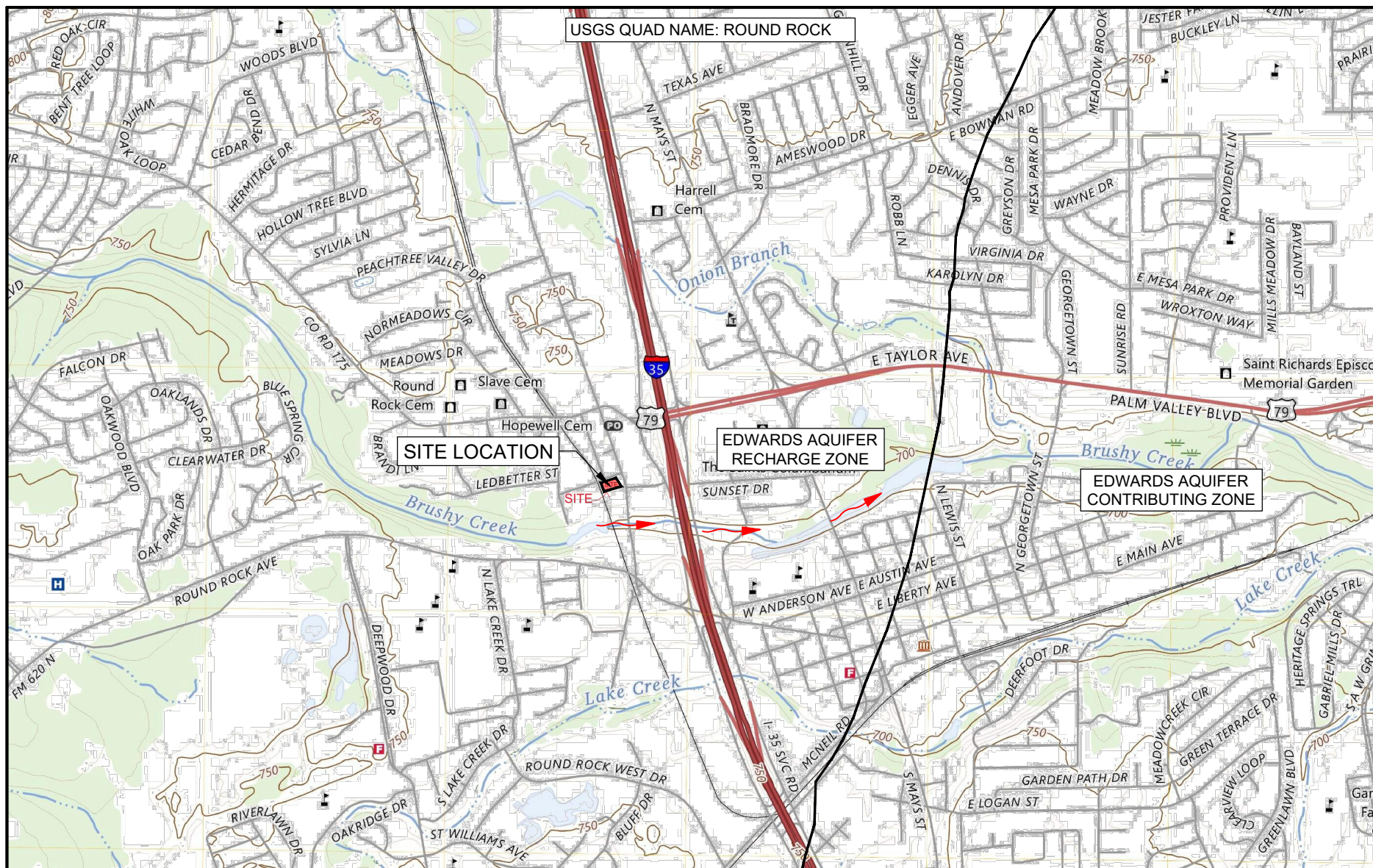


Not To Scale

Site Address: 4 Chisholm Trail Rd, Round Rock, Texas 78681

Directions from 2P Consultants:

- Head West on E Main St toward N Lampasas
- Turn right at the 3rd cross street onto S Blair St
- At the traffic circle, take the 2nd exit onto Round Rock Ave
- Slight right onto Ranch-to-Market 620
- At the traffic circle, take the 1st exit onto Chisholm Trail Rd
- Destination will be on the left



203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TBPE FIRM #F-19351

ATTACHMENT 1B - USGS MAP

GLOBAL KIDS PRESCHOOL
CHISHOLM TRAIL ROAD



Attachment 1C – Project Description

The 4 Chisholm Trail project proposes a Daycare/Office building addition to an existing Daycare facility along with the corresponding paved parking spaces. The 0.791-acre lot is located at 4 Chisholm Trail Road, Round Rock, Texas 78681 inside Williamson County, and within the city limits of the City of Round Rock. The proposed site is located on the southwest corner of the intersection of Chisholm Trail and Emmanuel Street. The site is located in the Edwards Aquifer Recharge Zone, thus water quality treatment features will be required to treat the additional impervious cover. The current legal description for the property is “S9771-RUTLAND-CHISHOLM TRAIL SUB, BLOCK A, Lot 1, ACRES 0.791.”

The existing site consists of a Pre-School/Daycare building, two concrete driveways off Chisholm Trail Road, and a concrete sidewalk along Chisholm Trail. These existing items give the site a total of 9,468.75 square feet of impervious cover, or 27.48% of the 0.791-acre lot. The remaining area of the site consists of grass in good condition over clay. The soils report per the United States Department of Agriculture (USDA) shows that the existing onsite soils are Crawford clay (CfB) with a hydrologic Soil Group of “D”. Crawford soil consists of moderately deep, well drained, very high runoff class, soils that are formed in clayey sediments and are underlain by indurated limestone bedrock. The topography and existing improvements shown in the plan is based on a survey provided by JPH Land Surveying Consultants dated January 2023. Based on this survey, the site slopes towards the south direction of the property with the highest contour of approximately 722’ on the north side and a low point of approximately 720’ on the south side of the property boundary. The proposed improvements will also provide water and wastewater to the new building. A 1” water service line will tie into the existing 1” water service at the north side and a 6” wastewater service line to the building will tie into the existing 8” wastewater main line at the south end of the site.

The proposed improvements consist of adding an daycare/office building with an area of approximately 3,005.00 square feet towards the west of the existing building. In addition to the office building, thirteen total parking spaces with a square footage of 1,340.00 SF are proposed. Seven of these parking spaces are alongside an existing private pond access road and the remaining six are alongside Emmanuel Street and will tie into the existing parking spaces off Emmanuel Street. These improvements give the site a total of 15,541.56 square feet of impervious cover, or 44.36% of the 0.791-acre lot.

Since this site is located in Edwards Aquifer Recharge Zone, water quality requirements will be met prior to releasing flows to the downstream existing grate inlet. We are proposing a vegetated filter strip (VFS) and grassy swale for treating runoff generated from the proposed parking spaces as well as rainwater harvesting for treating runoff from the building. The details of these BMPs will be outlined and explained in detail with the TCEQ Water Pollution and Abatement Plan (WPAP).

The existing building has a wastewater service line that connects to the existing 8” main and a new wastewater service line is proposed for the new building. Since a second wastewater service is being proposed, an Organized Sewage Collection System Plan is being provided alongside the WPAP. The proposed SCS consists of approximately 10.35 linear feet of 6” PVC SDR-26 gravity wastewater lateral service connection to the existing 8” wastewater main via a proposed 48” wastewater manhole.

Section II
Geologic Assessment Form
(TCEQ-0585)

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: M. Kevin Denson

Telephone: 512 442-1122

Date: April 24, 2024

Fax: 512-442-1181

Representing: Terracon Consultants, Inc. (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Global Kids Preschool Expansion, 4 Chisholm Trail Road, Round Rock, Williamson County, TX

Project Information

1. Date(s) Geologic Assessment was performed: April 12, 2024

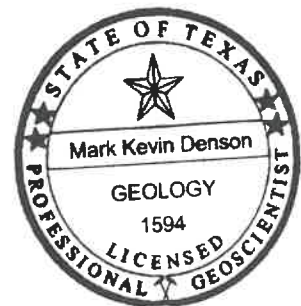
2. Type of Project:

- ☒ 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)
CfB	D	2-3

** Soil Group Definitions (Abbreviated)*

- A. Soils having a high infiltration rate when thoroughly wetted.
- B. Soils having a moderate infiltration rate when thoroughly wetted.
- C. Soils having a slow infiltration rate when thoroughly wetted.
- D. Soils having a very slow infiltration rate when thoroughly wetted.

6. ☒ **Attachment B – Stratigraphic Column.** A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.
7. ☒ **Attachment C – Site Geology.** A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.
8. ☒ **Attachment D – Site Geologic Map(s).** The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'
 Applicant's Site Plan Scale: 1" = _'
 Site Geologic Map Scale: 1" = 125'
 Site Soils Map Scale (if more than 1 soil type): 1" = 125'
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.

NO FEATURES OBSERVED

GEOLOGIC ASSESSMENT TABLE										PROJECT NAME: Global Kids Preschool Expansion, 4 Chisholm Trail Road, Round Rock, Williamson County, Texas									
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)	TEND (DEGREES)	DOM (NOFT)	DENSITY (NOFT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL SENSITIVITY	CATCHMENT AREA (ACRES)	TOPOGRAPHY				
						X	Y	Z					<40	>40	<1.6	>1.6			

* DATUM NAD27

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 Natural Resource Conservation Commission's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.

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

Mark Kevin Denson

Date

4/26/2024

TNRCC-0585-Table (Rev. 5-1-02)

Sheet 1 of 1



ATTACHMENT B

Stratigraphic Column
Global Kids Preschool Expansion
4 Chisholm Trail Road
Round Rock, Williamson County, Texas

HYDROGEOLOGIC SUBDIVISION	FORMATION	THICKNESS (feet)	LITHOLOGY
Edwards Aquifer	Edwards Formation	150	Mudstone to packstone, crystalline limestone, wackestone, chert

Source: Senger, Collins and Kreitler, 1990





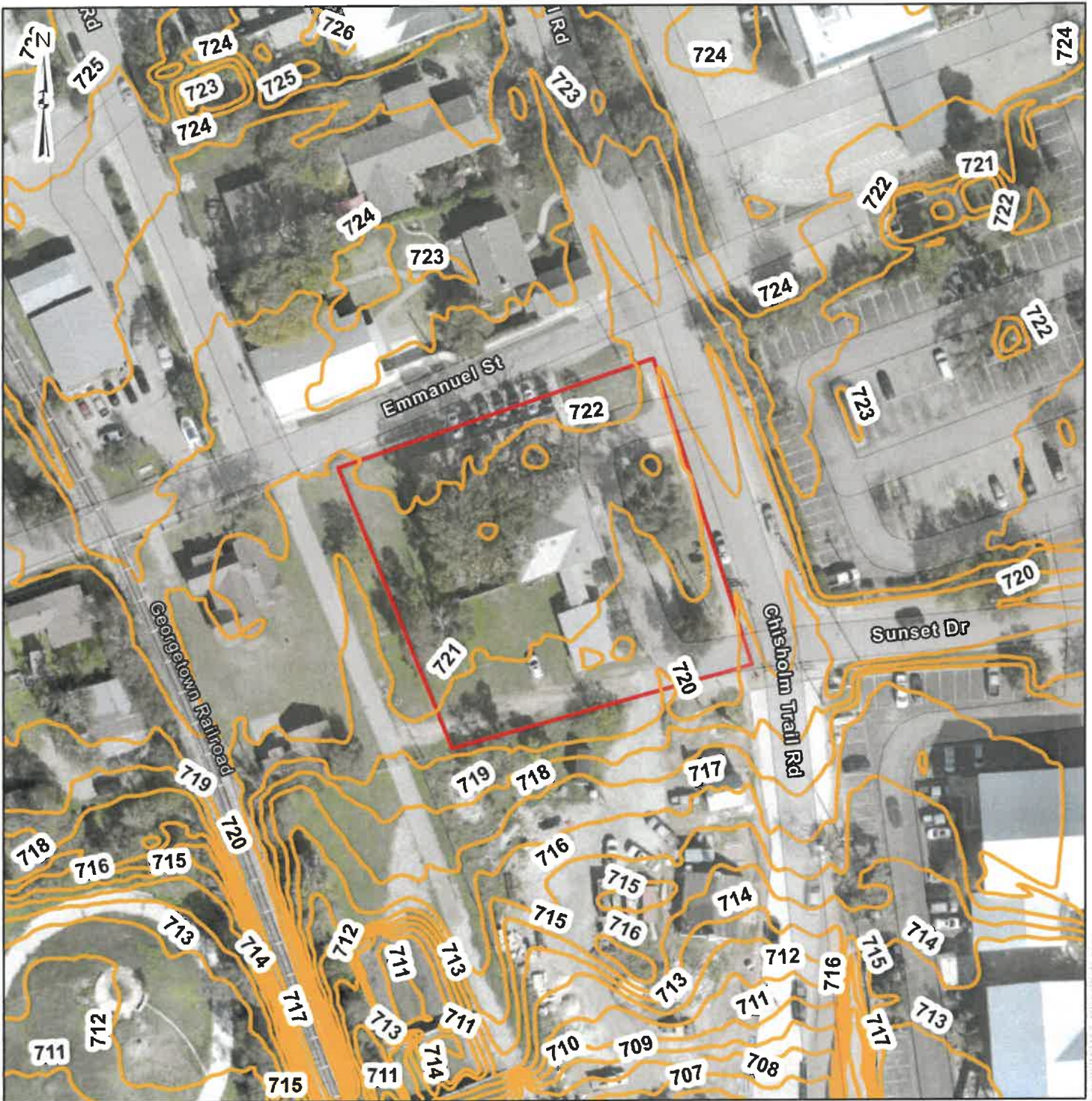
ATTACHMENT C SITE-SPECIFIC GEOLOGY

The Geologic Assessment (GA) of the Global Kids Preschool Expansion site was performed by Kevin Denson, P.G. of Terracon on April 12, 2024. The site is an approximate 0.79-acre tract located at 4 Chisholm Trail Road in Round Rock, Williamson County, Texas.

Exhibit 1 (attached) is a site location map depicting the site in relation to the surrounding area. The areas immediately surrounding the site are a mix of residential and commercial properties. The site is characterized as slightly to moderately sloping to the southwest and site elevation ranges from about 722 to 720 feet above mean sea level (msl).

The surficial geologic unit present at the site has been identified as alluvium (Qal) underlain by limestones associated with the Edwards Formation. Exhibit 3 (attached) is a geologic map of the site. The Edwards consists of massive to thin bedded limestones and dolostones. The Edwards Formation is characterized by honeycomb textures, collapse breccias and cavern systems, which account for most of the significant porosity within the strata that compose most of the aquifer. The site is located entirely within the recharge zone of the Edwards aquifer, and the recharge zone boundary is located approximately 5,000 feet southeast of the site. Attachment B (attached) is a stratigraphic column prepared for the site. Exposure of this unit is generally obscured by the soil, vegetation, and existing buildings present at the site. No evidence of faulting was observed on the site, and a review of aerial photographs did not reveal lineations which may indicate the presence of faulting. Based on a review of published geologic maps, the closest mapped fault is located about 4,900 feet east of the site. The fault trends to the northeast and is associated with the Balcones fault zone, which is comprised of normal, high-angle faults, that are generally down-thrown to the southeast. The Balcones fault zone represents the dominant structural trend of the area.

No geologic features were observed on the site. The completed Geologic Assessment form is attached as Attachment A. Due to the lack of significant sensitive recharge features observed on the site and the presence of a relatively impermeable soil cover, the potential for fluid movement to the Edwards aquifer beneath the site is considered low. It should be noted that an onsite water well was properly plugged on March 29, 2024 and there are no other known water wells at the site.



Approximate Project Boundary

Williamson County 1-Ft Topography - 2017



DATA SOURCES:

Esri Community Maps Contributors, Austin Community College, Baylor University, City of Austin, County of Williamson, Texas Parks & Wildlife, © OpenStreetMap, Microsoft, CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Williamson County TX, Maxar, Microsoft, USGS Pocket of Texas Geology

Project No.:	96247157
Date:	Apr 2024
Drawn By:	RC
Reviewed By:	KD



5307 Industrial Oaks Blvd. - #160 Austin, TX 78735
PH. (512) 442-1122 terracon.com

Site Specific Topography

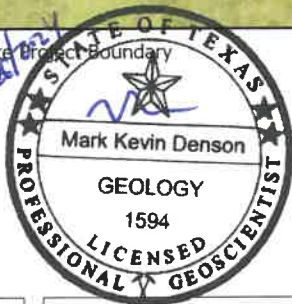
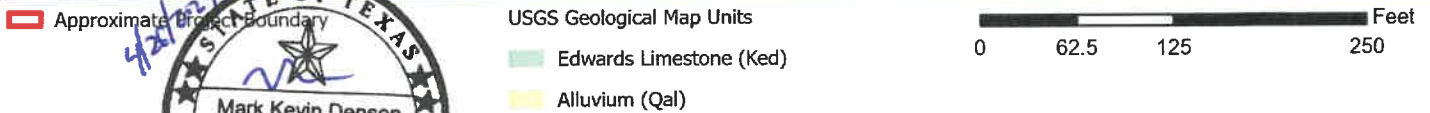
Global Kids Preschool Expansion

4 Chisholm Trail Road
Round Rock, Williamson County, Texas

Exhibit

1.0

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DATA SOURCES:
 Williamson County TX, Maxar, USGS Pocket of Texas
 Geology

Project No.:	96247157
Date:	Apr 2024
Drawn By:	RC
Reviewed By:	KD



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Site Specific Bedrock Geology
Global Kids Preschool Expansion
 4 Chisholm Trail Road
 Round Rock, Williamson County, Texas

Exhibit
3.0



 Approximate Project Boundary

TCEQ Edwards Aquifer Zone Data

 Edwards Aquifer Recharge Zone

 Edwards Aquifer Transition Zone

0 0.13 0.25 0.5 Miles

DATA SOURCES:
Williamson County TX, Earthstar Geographics, TCEQ

Project No.:
96247157
Date:
Apr 2024
Drawn By:
RC
Reviewed By:
KD



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Edwards Aquifer Zones

Global Kids Preschool Expansion

4 Chisholm Trail Road
Round Rock, Williamson County, Texas

Exhibit

4.0

Section III
Water Pollution Abatement Plan
(TCEQ-0584)

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: Michael Easton Mundine, P.E.

Date: 05/22/20o24

Signature of Customer/Agent:



Regulated Entity Name: Global Kids Preschool

Regulated Entity Information

1. The type of project is:

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

2. Total site acreage (size of property): 0.791

3. Estimated projected population: _____

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	6,224.75	÷ 43,560 =	0.1429
Parking	2,895.55	÷ 43,560 =	0.0665
Other paved surfaces	6,165.41	÷ 43,560 =	0.1415
Total Impervious Cover	15,285.71	÷ 43,560 =	0.3509

Total Impervious Cover 0.3509 ÷ **Total Acreage** 0.791 X 100 = 44.36% **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 = _____ Ft² ÷ 43,560 Ft²/Acre = _____ acres.

10. Length of pavement area: _____ feet.

Width of pavement area: _____ feet.

L x W = _____ Ft² ÷ 43,560 Ft²/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:

<u>100%</u> Domestic	<u>4,295</u> Gallons/day
<u> </u> % Industrial	<u> </u> Gallons/day
<u> </u> % Commingled	<u> </u> Gallons/day
TOTAL gallons/day <u>4,295</u>	

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 Brushy Creek East Regional 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" = 10'.

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 FIRMetete Map # 48491C0489F effective date 12/20/2019

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.



Attachment 3A – Factors Affecting Surface Water Quality

The factors affecting water quality as a result of proposed site improvements are as follows:

The proposed improvements consist of adding an office building with an area of approximately 3,005.00 square feet towards the west of the existing on-site building. In addition to the office building, thirteen total parking spaces with a square footage of 1,340.00 SF are proposed. Seven of these parking spaces are alongside an existing private pond access road and the remaining six are alongside Emmanuel Street and will tie into the existing parking spaces off Emmanuel Street. These improvements give the site a total of 15,285.48 square feet of impervious cover, or 44.36% of the 0.791-acre lot. The total impervious cover includes impervious cover from the existing improvements on site as well. The existing site consists of a Pre-School/Daycare, two concrete driveways to Chisholm Trail Road, and a concrete sidewalk along Chisholm Trail.

The proposed improvements will facilitate vehicular traffic and will cause an increase in Total Suspended Solids (TSS). The vehicular traffic which will be visiting the site will naturally cause an increase in TSS due to unforeseen leaks in vehicles which can include, but are not limited to: brake fluid, hydraulic fluid, antifreeze, oil, gasoline, and diesel fuel. The stormwater runoff water quality will be affected negatively by this increase in TSS, however proposed water quality treatment facilities will abide by TCEQ (80% TSS Removal) requirements in order to increase the quality of the stormwater runoff. We are proposing a vegetated filter strip (VFS) and grassy swale for treating runoff generated from the proposed parking spaces as well as rainwater harvesting for treating runoff from the building. The details of these BMPs will be outlined and explained in detail in the Permanent Stormwater Section.



Attachment 3B – Volume and Character of Stormwater

The volume and character of stormwater at the project site for both existing and post-development conditions are as follows:

The existing site consists of a Pre-School/Daycare, two concrete driveways to Chisholm Trail Road, and a concrete sidewalk along Chisholm Trail. These existing items give the site a total of 9,468.75 square feet of impervious cover, or 27.48% of the 0.791-acre lot. The remaining area of the site consists of grass in good condition over clay. The soils report per the United States Department of Agriculture (USDA) shows that the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is "D". Crawford soil consists of moderately deep, well drained, very high runoff class, soils that are formed in clayey sediments and are underlain by indurated limestone bedrock. JPH Land Surveying Inc. performed a survey of the site and surrounding area in January of 2023. Based on the surveyed topography, there is a ridge running north to south near the middle of the property that divides the property into two separate drainage basins. This ridge and the drainage basins it makes can be found on the existing conditions drainage area plan provided with the plans.

Existing Drainage Basin 1 (EX-1) will follow a drainage pattern where flow is diverted to existing 3'x3' grate inlet adjacent to the pond access road. The time of concentration for EX-1 was determined by calculating the time it would take for surface runoff to flow from the most remote point in the basin to the existing grate inlet. The initial sheet flow over grass extends to 100 feet at a slope of 1.22% before concentrating into approximately 78 feet of shallow concentrated flow at a slope of 1.66% which is a swale, and this swale carries the water to an existing 3'x3' grate inlet. The pervious areas in EX-1 consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is "D". The basin has an impervious cover area of 3,680 square feet or 21% of the total 0.402-acre basin.

Existing Drainage Basin 2 (EX-2) drains to the south of the property towards Brushy Creek. The time of concentration for EX-2 was determined by calculating the time it would take for surface runoff to flow from the most remote point in the basin to the existing stabilized rock entrance which is the lowest point in basin Ex-2. The initial sheet flow is 48 feet at a slope of 2.20% over natural grass in good condition before concentrating into approximately 166 feet of shallow concentrated flow at a slope of 0.86% and along the curb and gutter on paved driveway before finally reaching the property boundary to the rocks. The pervious areas in EX-2 consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is "D". The basin has an impervious cover area of 11,420 square feet or 42.3% of the total 0.620-acre basin. A summary of EX-1 and EX-2 can be found in the table below and a copy of the Existing Conditions Drainage Area Map is provided with the plans.

Existing Conditions Drainage Calculations					
Drainage Basin	Basin Area (acres)	Impervious (sf)	Impervious (acres)	IC%	Time of Conc. (min)
EX-1	0.402	3,680.00	0.08	21.02	11.23
EX-2	0.620	11,420.00	0.26	42.29	6.13

The proposed improvements to the site consist of adding an approximately 3,005.00 square foot office building, sidewalk, thirteen parking spaces, and corresponding utility infrastructure. Since these proposed improvements do

not change the natural flow of the stormwater runoff leaving the site, the overall size and acreage of proposed basins is the same as the existing basins.

The Proposed Drainage Basin 1 (PR-1) consists of the proposed 3,005 square foot office building, sidewalk and thirteen parking spaces. The time of concentration for basin PR-1 starts as a sheet flow at the junction between the existing & proposed parking lots situated on Emmanuel Street the initial sheet flow length is 66 feet at a slope of 1.98% over natural grass and then it flows parallel to the proposed parking spaces on Emmanuel Street, before concentrating downstream into approximately 104 feet of shallow concentrated flow at a slope of 1.11% to a proposed grassy swale and eventually to the existing 3'x3' grate inlet. The pervious areas in the drainage basin consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is "D". PR-1 has an impervious cover of 10,413 square feet or 52.3% of the entire 0.457-acre basin.

The Proposed Drainage Basin 2 (PR-2) consists of an existing building, driveway, parking and will follow the drainage patterns as under existing drainage basin EX-2. The time of concentration for PR-2 was determined by calculating the time it would take for surface runoff to flow from the most remote point in the basin to the existing stabilized rock entrance which is the lowest point in basin #2. Since the proposed changes to the site do not modify the impervious cover or topography in PR-2, the time of concentration in this basin will match the time of concentration for EX-2. The pervious areas in the existing drainage basin consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is "D". The basin has an impervious cover area of 11,420 square feet or 41.9% of the total 0.626-acre basin. A summary of PR-1 and PR-2 can be found in the table below and a copy of the Proposed Conditions Drainage Area Map is provided with the plans.

Developed Conditions Drainage Calculations					
Drainage Basin	Basin Area (acres)	Impervious (sf)	Impervious (acres)	IC%	Time of Conc. (min)
PR-1	0.457	10,412.73	0.24	53.45	7.27
PR-2	0.564	11,420.00	0.26	46.48	6.13

Water quality requirements will be met prior to releasing flows to the downstream existing grate inlet. We are proposing a vegetated filter strip (VFS) and grassy swale for treating runoff generated from the proposed parking spaces as well as rainwater harvesting for treating runoff from the building. The details of these BMPs will be outlined and explained in detail with the TCEQ Water Pollution and Abatement Plan (WPAP).



203 E. Main Street, Suite 204
Round Rock, Texas 78664
512-344-9664
TBPE FIRM #F-19351

Attachment 3C – Suitability Letter from Authorized Agent

No On-Site Sewage Facilities are proposed with this development. Thus, a Suitability Letter from Authorized Agent is not required.

This section is not applicable to this project.



203 E. Main Street, Suite 204
Round Rock, Texas 78664
512-344-9664
TBPE FIRM #F-19351

Attachment 3D – Exception to the Required Geologic Assessment

An exception to the required Geologic Assessment is not being requested for this project.

This section is not applicable to this project.

Section IV
Organized Sewage Collection System
(TCEQ-0582)

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

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

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

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

Regulated Entity Name: Global Kids Preschool

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: Curtis Churchill

Entity: CedarBrook Construction

Mailing Address: 1000 N IH 35 STE A

City, State: Round Rock, TX

Zip: 78681

Telephone: 512-924-3140

Fax: _____

Email Address: Curtis@cedarbrooktx.com

The appropriate regional office must be informed of any changes in this information within 30 days of the change.

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

Contact Person: Michael Easton Mundine, P.E.

Texas Licensed Professional Engineer's Number: 143266

Entity: 2P Consultants, LLC.

Mailing Address: 203 E. Main Street, Suite 204

City, State: Round Rock, Texas

Zip: 78664

Telephone: (512) 344-9664

Fax: _____

Email Address: emundine@2PConsultants.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: _____

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

100% Domestic 4,295 gallons/day
_____% Industrial _____ gallons/day
_____% Commingled _____ gallons/day
Total gallons/day: 4,295

6. Existing and anticipated infiltration/inflow is 594 gallons/day. This will be addressed by: Brushy Creek East Regional Wastewater Treatment Plant.

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 05/22/2024, 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

<i>Pipe Diameter(Inches)</i>	<i>Linear Feet (1)</i>	<i>Pipe Material (2)</i>	<i>Specifications (3)</i>
6	10.4	PVC	ASTM D3034, SDR-26

Total Linear Feet: 10.4

(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 Brushy Creek East Regional WWTP (name) Treatment Plant. The treatment facility is:

- ☒ Existing
☐ Proposed

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

- ☒ The City of Round Rock 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

<i>Line</i>	<i>Shown on Sheet</i>	<i>Station</i>	<i>Manhole or Clean-out?</i>
WW LN A	17 Of 20	0+10.00	Manhole
	Of		
	Of		
	Of		
	Of		
	Of		
	Of		

<i>Line</i>	<i>Shown on Sheet</i>	<i>Station</i>	<i>Manhole or Clean-out?</i>
	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" = 10'.
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

<i>Line</i>	<i>Sheet</i>	<i>Station</i>
	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

<i>Line</i>	<i>Sheet</i>	<i>Station</i>
	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

<i>Line</i>	<i>Station or Closest Point</i>	<i>Crossing or Parallel</i>	<i>Horizontal Separation Distance</i>	<i>Vertical Separation Distance</i>

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

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>

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(I)(2)(H).

Table 7 - Drop Manholes

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>

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

<i>Line</i>	<i>Profile Sheet</i>	<i>Station to Station</i>	<i>FPS</i>	<i>% Slope</i>	<i>Erosion/Shock Protection</i>

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

<i>Standard Details</i>	<i>Shown on Sheet</i>
Lateral stub-out marking [Required]	17 of 20
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) [Required]	17 of 20
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	N/A of N/A
Typical trench cross-sections [Required]	19 of 20
Bolted manholes [Required]	N/A of N/A
Sewer Service lateral standard details [Required]	19 of 20
Clean-out at end of line [Required, if used]	19 of 20
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	N/A of N/A
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	N/A of N/A
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	N/A of N/A

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

36. ☒ All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.
37. ☒ All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.
- ☒ Survey staking was completed on this date: 5/31/2024
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: Michael Easton Mundine, P.E.

Date: 05/22/2024

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

<i>Pipe Diameter(Inches)</i>	<i>% Slope required for minimum flow velocity of 2.0 fps</i>	<i>% Slope which produces flow velocity of 10.0 fps</i>
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)

R_h = hydraulic radius (ft)

S = slope (ft/ft)



Attachment 4A – SCS Engineering Design Report

This SCS Engineering Design Report has been prepared to comply with the Texas Commission on Environmental Quality's requirements of Title 30 Texas Administrative Code Chapter 217: Design Criteria for Domestic Wastewater Systems. This includes Subchapter A, Subchapter C, and Subchapter D of 30 TAC Chapter 217 when applicable. Whenever multiple regulations apply, the more stringent regulation shall be used.

Project Information

Project Description

The 4 Chisholm Trail Road project proposes a Daycare Office building addition to an existing Daycare facility along with the corresponding paved parking spaces. The 0.791-acre lot is located at 4 Chisholm Trail Road, Round Rock, Texas 78681 inside Williamson County, and within the city limits of the City of Round Rock. The proposed site is located on the southwest corner of the intersection of Chisholm Trail Road and Emmanuel Street. The site is located in the Edwards Aquifer Recharge Zone, thus water quality treatment features will be required to treat the additional impervious cover. The current legal description for the property is "S9771-RUTLAND-CHISHOLM TRAIL SUB, BLOCK A, Lot 1, ACRES 0.791."

The existing site consists of a Pre-School/Daycare, two concrete driveways to Chisholm Trail Road, and a concrete sidewalk along Chisholm Trail. These existing items give the site a total of 9,468.75 square feet of impervious cover, or 27.48% of the 0.791-acre lot. The remaining area of the site consists of grass in good condition over clay. The soils report per the United States Department of Agriculture (USDA) shows that the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is "D". Crawford soil consists of moderately deep, well drained, very high runoff class, soils that are formed in clayey sediments and are underlain by indurated limestone bedrock. The topography and existing improvements shown in the plan is based on a survey provided by JPH Land Surveying Consultants dated January 2023. Based on this survey, the site slopes towards the south direction of the property with the highest contour of approximately 722' on the north side and a low point of approximately 720' on the south side of the property boundary.

The proposed improvements consist of adding an daycare/office building with an area of approximately 3,005.00 square feet towards the west of the existing on-site building. In addition to the office building, thirteen total parking spaces with a square footage of 1,340.00 SF are proposed. Seven of these parking spaces are alongside an existing private pond access road and the remaining six are alongside Emmanuel Street and will tie into the existing parking spaces off Emmanuel Street. These improvements give the site a total of 15,541.56 square feet of impervious cover, or 44.36% of the 0.791-acre lot. The proposed improvements will also provide water and wastewater to the new building. A 1" water service line will tie into the existing 1" water service at the north side and a 6" wastewater service line to the building will be added off an existing 8" wastewater main line at the south end of the site.

Since this site is located in Edwards Aquifer Recharge Zone, water quality requirements will be met prior to releasing flows to the downstream existing grate inlet. We are proposing a vegetated filter strip (VFS) and grassy swale for treating runoff generated from the proposed parking spaces as well as rainwater harvesting for treating runoff from the building. The details of these BMPs will be outlined and explained in detail with the TCEQ Water Pollution and Abatement Plan (WPAP). A Water Pollution Abatement Plan was submitted alongside the Organized Sewage Collection System Plan.

The existing building has a wastewater service line that connects to the existing 8" main and a new wastewater service line is proposed for the new building. Since a second wastewater service is being proposed, an Organized Sewage Collection System Plan is being provided alongside the WPAP. The proposed SCS consists of approximately 10.35 linear feet of 6" PVC SDR-26 gravity wastewater lateral service connection to the existing 8" wastewater main via a proposed 48" wastewater manhole.

The proposed daycare building has a total of 3 LUEs, based on the approximate conversion factor of 15 students per LUE. Using the number of LUEs shown above, a peak wet weather flow of 4,294 gallons per day has been calculated. See the next section titled "Flow Calculations" for a breakdown on how the peak wet weather flow was calculated. The wastewater will be conveyed through the existing wastewater infrastructure to the Brushy Creek East Regional WWTP.

This SCS proposes approximately 10.35 linear feet of 6" PVC gravity wastewater service line. The wastewater system shall be constructed using 6" PVC SDR-26, pressure rated pipe that meets ASTM D2241 standards. Regulated activities proposed include excavation, construction of sewer mains, manhole installation, backfill, and compaction. Approximately 0.471 acres of the site may be disturbed during construction activities.

Flow Calculations

The proposed improvements consist of adding a daycare/office building with an area of approximately 3,005.00 square feet. The City of Austin Living Unit Equivalent Guidance Document gives an LUE Conversion of 1 LUE per 15 Elementary School students. It was assumed that, at its peak, the building would have 45 kids in it, so a total of 3 LUEs were calculated. The Peak Dry Weather Flow, Inflow/Infiltration, and Peak Wet Weather flow were calculated for this development using the formulas below:

$$\text{Peak Dry Weather Flow (Qpd)(gpm)} = \left[\frac{(18 + (0.018 * F)^{0.5})}{(4 + (0.018 * F)^{0.5})} \right] * F \quad \text{Equation 1}$$

$$\text{Inflow \& Infiltration} = 750 \text{gpd per acre} * A \quad \text{Equation 2}$$

$$\text{Peak Wet Weather Flow} = \text{Peak Dry Weather Flow} + \text{Inflow \& Infiltration} \quad \text{Equation 3}$$

Where:

F = 80 gal./person/day x population/1440

A = Site Area (acres)

The following table of information was calculated using the above equations:

Wastewater Usage	
Site Area (AC)	0.791
Total Number of LUEs:	3.00
Population:	10.50
F (GPM):	0.583
Peak Dry Weather Flow (GPM):	2.57
Inflow/Infiltration (GPM):	0.412
Peak Wet Weather Flow (GPM):	2.982

Converting the Peak Wet Weather Flow to gallons per day gives the proposed site a total of 4,294 Peak Wet Weather Flow gallons per day.

Capacity Calculations

The characteristics of a 6" ASTM D2241, SDR 26, PVC Sewer Pipe is as follows:

Nominal Size	6"
Outer Diameter (D _o)	6.625"
Minimum Wall Thickness (t)	0.255"
Inner Diameter (D _i)	6.084"

Using Manning's Equation, one can determine the maximum flow of a pipe at a certain slope. The necessary equations are as follows:

$$V = \frac{k}{n} * Rh^{\frac{2}{3}} * S^{\frac{1}{2}}$$

Equation 4

$$Q = V * A$$

Equation 5

Where:

V = Velocity of flow (ft/s)

k = Conversion factor between SI and English Units = 1.4859 ft^{1/3}/sec

n = Manning's Coefficient (0.013 for PVC Pipe)

Rh = Hydraulic Radius (ft) = Area / Wetted Perimeter

S = Slope of the pipe (ft/ft) = 0.12

Q = Discharge (Flow Rate) (ft³/sec)

A = Area of the pipe

Using the above equations for the proposed site gives us the following information:

Capacity Calculations:	
Area of the Pipe:	0.196 sf
Wetted Perimeter:	1.57 ft
Hydraulic Radius:	0.125 ft
Minimum Slope:	0.12 ft/ft
Velocity of Flow:	9.89 ft/s
Flow Rate (cfs):	1.94 cfs
Flow Rate (gpm)	872.345 gpm

Section 1.6.3 Wastewater Systems of the City of Round Rock's Utility Criteria Manual states that the sewer main shall be designed such that the Peak Dry Weather Flow shall not exceed 65% of the capacity of the pipe flowing full and the Peak Wet Weather Flow shall not exceed 85% of the capacity of the pipe flowing full. Looking at the Peak Dry Weather Flow and Peak Wet Weather Flow previously calculated, 2.57 gpm and 2.98 gpm respectively, they are significantly less than the minimum capacity of the pipe flowing full. See the flow rate summary below for more information.

Flow Rate Summary	
Peak Dry Weather Flow (gpm):	2.57
65% of 6" PVC Pipe Flowing Full (gpm):	567.02
Peak Wet Weather Flow (gpm):	2.98
85% of 6" PVC Pipe Flowing Full (gpm):	741.49

The proposed 6" PVC pipes with a slope of 12% have sufficient capacity to convey the projected peak flows for the sewage collection system.

Flow Velocity Calculations

The SCS consists of 10.35 linear feet of 6" PVC with a slope of 12%. Manning's Formula, as found in Equation 4 above, can be used to determine the minimum flow velocity in the SCS.

$$V = \frac{k}{n} * Rh^{\frac{2}{3}} * S^{\frac{1}{2}}$$

Where:

V = Minimum flow velocity in the SCS (ft/s)

k = Conversion factor between SI and English Units = 1.4859 ft^{1/3}/sec

n = Manning's Coefficient = 0.012 for PVC Pipe

Rh = Hydraulic Radius (ft) = Area / Wetted Perimeter = 0.12 ft

S = Slope of the pipe (ft/ft) = 0.12

Using the above equation and values for the site provides a flow velocity in the SCS of 9.89 ft/s at a slope of 12%.

The proposed development is for restaurant, office, and senior living facility use. At the end of its 50 year life, we don't expect a change in use or change in generated flow, but as demonstrated above, there is additional capacity if there is any increase in flows.

Odor Control

Odor control is not necessary on this project as the proposed sewage collection system is comprised solely of gravity lines, and such there will be no conditions where sewage is standing and will become septic.

Structural Components

Pipes and Joints

A summary of the proposed pipe lengths, materials, and regulations can be found in the table below.

Nominal Pipe Diameter (in)	Linear Feet	Pipe Material	National Standard Specification for Pipe Material	National Standard for Pipe Joints
6	10.35	PVC SDR 26	ASTM D2241	ASTM D3212

Section 217.53(j)(4) of Title 30 of the Texas Administrative Code states that "an owner must ensure that a gravity pipe is at least 6.0 inches in diameter." All proposed gravity main pipes are 6" in diameter.

Watertight, size on size resilient connectors conforming to ASTM C-923 have been specified for connecting pipe to manholes.

Where a collection system parallels a water supply pipe and a nine-foot separation distance cannot be achieved, Section 217.53(d)(3)(A)(i) requires a collection system pipe be constructed of cast iron, ductile iron, or PVC meeting ASTM specifications with at least a 150-psi rating for both the pipe and joints. Where a collection system pipe crosses a water supply line and a nine-foot separation distance cannot be achieved, Section 217.53(d)(3)(B)(i) requires the collection system pipe be constructed of cast iron, ductile iron, or PVC with a minimum pressure rating of 150 psi. The proposed project will comply with these requirements as well as that of 30 TAC 217.53(d)(3).

Project Materials – Bedding

The specified bedding will comply with ASTM D2321-11 Class I, II, or III for materials and densification. A minimum of 6 inches of bedding is required for all pipe.

Pipe Diameter	Pipe Material	Bedding Class
6"	PVC SDR-26	Class I & Class III

Initial backfill for the pipe sizes shown above will be Class I and secondary backfill will be Class III. See Table 2 of ASTM D2321-11 "Soil Classes" in Appendix A of this subsection.

Project Materials – Manholes

Section 217.55(f) prohibits the use of bricks to adjust a manhole cover to grade or construct a manhole. The proposed project will comply with this requirement.

The inside diameter of a manhole must be no less than 48 inches.

Section 217.55(m) requires watertight, size-on-size resilient connectors that allow for differential settlement and must conform to American Society for Testing and Materials C-923. The proposed project complies with this requirement.

Under 30 TAC 213.5(C)(3)(A), all manholes over the Recharge Zone must be watertight, with watertight rings and covers. The proposed project complies with this requirement.

The materials specified for manhole construction is precast concrete.

Project Materials – Manhole Covers

Manhole covers must be constructed of impervious materials. If personnel entry is required, a minimum of 30-inch diameter clear opening must be provided. Inclusion of steps in a manhole is prohibited. If a manhole must be located within a 100-year floodplain then a means of preventing inflow is required. A manhole cover that is located in a roadway must meet or exceed the American Association of State Highways and Transportation Officials Standard M-306 for load bearing.

Under 30 TAC 213.5(c)(3)(A), all manholes over the Edwards Aquifer Recharge Zone must be watertight, with watertight rings and covers. This proposed project complies with this requirement.

Minimum and Maximum Slopes

All pipes are designed with a slope that will provide a velocity of at least 2 ft/sec and less than 10 ft/sec flowing full as calculated using Manning's equation with a Manning's roughness coefficient of 0.012.

The following is a table showing the slope for the proposed gravity sewer main as well as the corresponding velocity in the pipe at this slope according to Manning's formula, which can be found as Equation 4 above.

	Slope (ft/ft)	Velocity (ft/sec)
6" PVC Lateral Service Line	0.12	9.89

Backfill

The backfill will be free of stones greater than 6 inches in diameter and free of organic or any other unstable material.

Trenching

Note: The trench width will be minimized while still allowing adequate width for proper compaction of backfill, and while still ensuring that at least 6 inches of backfill exists below and on each side of the pipe. The trench walls will be vertical to at least one foot above the pipe.

Minimum and Maximum Trench Width

According to 30 TAC 217.54(d), the width of a trench must allow a pipe to be laid and jointed properly, allow the backfill to be placed and compacted as needed, allow proper and safe placement and compaction of haunching materials in accordance with the standards of 30 TAC 217.54(a), and the space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone. The minimum and maximum trench widths for the proposed sewage collection system can be found in the table below.

Pipe Diameter	Minimum Trench Width	Maximum Trench Width
6"	20"	46"

Corrosion Prevention

Proposed collection system components (pipes, manholes, etc) will not be susceptible to deterioration through the corrosive effects of sewage. Manholes shall be constructed of or lined with a corrosion resistant material. Where new construction ties into an existing manhole, the existing manholes must be lined, coated, or replaced with a corrosion resistant material.

Manholes

Manholes are provided at all change in grade or alignment of pipe, at the intersection of all pipes, and at the end of all lines. A clean-out with watertight plugs may be installed instead of a manhole if no extensions are anticipated. Clean-outs must pass all testing requirements outlined for gravity collection pipes. All manholes for the proposed sewage collection system are spaced at less than 500 feet apart, which complies with the maximum manhole spacing allowed by TCEQ for a 6-inch diameter pipe. There are no manholes within the 100-year floodplain in the proposed development.

The bottom of a manhole must contain a U-shaped channel which is a smooth continuation of the inlet and outlet pipes. The bench above the channel must be sloped a minimum of 0.5 inches per foot. See the City of Round Rock Detail No. WW-01 and WW-11, found on sheet 19 of the corresponding construction plans, which complies with these requirements. A manhole connected to a pipe less than 15 inches in diameter must have a channel depth equal to at least half the largest pipe's diameter.

Reduction of Inflow

According to 30 TAC 217.55(j)(6), connection of storm water or roof drains to the sewage collection system is prohibited.

Flexible Pipe Computations

All flexible pipe computations are based on engineering principles and practices for the design of buried PVC pipe systems. Equations used can be found in "The Uni-Bell PVC Pipe Association Handbook of PVC Pipe: Design and Construction" and Buried Pipe Design, 3rd Edition by Mosier and Folkman. The equations used may be in a different format than found in the above sources.

Live Load Calculations

No influence of live loads on the performance of the sewage collection system is anticipated. The average burial depth for this line is such that the influence of live loads is negligible.

Tensile Strength

The information in the table below is from Table 2.1 in "The Uni-Bell Handbook of PVC Pipe: Design and Construction".

Pipe Material	Tensile Strength	Cell Class (PVC Only)
PVC SDR-26	7,000	12454

Installation Temperature Effects

Flexible pipe will be installed under favorable ambient conditions, per pipe manufacturer's specifications.

Wall Crushing

No portion of the proposed sewage collection system is located within the 5-year floodplain. No concrete encased flexible pipe is proposed for this project.

Pipe Stiffness

Pipe stiffness is based on manufacturer's data. Information on the pipe stiffness for 6" PVC SDR-26 can be found in the table below.

Pipe Material	Pipe Stiffness	Modulus of Elasticity
6" PVC SDR-26	115 psi	400,000 psi

Modulus of Soil Reaction

To determine the Modulus of Soil Reaction for the bedding material, the lowest Modulus of Soil Reaction of the various bedding materials was chosen. As previously discussed, the bedding materials were made up of Class I and Class III materials found in Table 2 of ASTM D2321-11 "Soil Classes." Class III soils is made up of course grained soils with fines. As seen on Table 7.3 from the "Uni-Bell Handbook of PVC Pipe," this material has a Modulus of Soil Reaction of 400 psi.

The Modulus of Soil Reaction for the in-situ soil was found using Table 7.3 from the “Uni-Bell Handbook of PVC Pipe” to look up the value for Class I Soils, or Crushed Rock, as seen in Table 2 of ASTM D2321-11 “Soil Classes.” This material has a Modulus of Soil Reaction of 3,000 psi. The bedding to in-situ soil modulus of soil reaction ratio is equal to 400psi/3000psi, or 0.13.

Buckling Pressure Calculations

The following formulas are used to find the allowable buckling pressure in the proposed sewage collection system.

$$Qa = 0.4 * \sqrt{32 * Rw * B' * Eb * (E * \frac{I}{D^3})} \quad \text{Equation 6}$$

$$Rw = 1 - 0.33 * (\frac{Hw}{h}) \quad \text{Equation 7}$$

$$B' = \frac{1}{1 + 4 * e^{-0.065H}} \quad \text{Equation 8}$$

$$I = (\frac{t^3}{12}) * (\frac{\text{inches}^4}{\text{linear inch}}) \quad \text{Equation 9}$$

Where:

Qa = Allowable buckling pressure (psi)

Rw = Water buoyancy factor. If Hw = 0, Rw = 1.

B' = Empirical coefficient of elastic support

Eb = Modulus of soil reaction for bedding material (psi)

E = Modulus of elasticity of the pipe material (psi)

I = Moment of inertia of the pipe wall cross section per linear inch of pipe (inch⁴/linear inch)

D = Mean pipe diameter (in)

Hw = Height of water surface above top of pipe (in)

h = Height of soil surface about the top of pipe (in)

H = Depth of burial from ground surface to crown of pipe (ft)

t = Pipe structural wall thickness (in)

This area of the Edwards Aquifer is unsaturated, and no anticipated areas where sewer pipes will be placed are below the water table. Hw = 0 because no pipe in the sewage collection system is below the water table line in this area. The value used for H in these calculations is 15 feet as it exceeds the maximum burial depth for this line.

Using these values and values previously discussed in this report, the allowable buckling pressure can be found using Equations 6-9.

$$I = \left(\frac{0.255^3}{12}\right) * \left(\frac{\text{inches}^4}{\text{linear inch}}\right) = 0.001382 \frac{\text{inches}^4}{\text{linear inch}}$$

$$B' = \frac{1}{1 + 4 * e^{-0.065 * 15}} = 0.40$$

$$Rw = 1 - 0.33 * \left(\frac{0}{180}\right) = 1$$

$$Qa = 0.4 * \sqrt{32 * 1 * 0.40 * 400 * \left(400,000 * \frac{0.001382}{6^3}\right)} = 45.79 \text{ psi}$$

As shown, the calculated allowable buckling pressure for the 6" PVC SDR-26 pipes in this sewage collection system is 45.79 psi.

Pressure Under Installed Conditions

The following formulas are used to find the pressure applied to the pipe under installed conditions.

$$Qp = (\gamma_w * H_w) + (R_w * \left(\frac{W_c}{D}\right)) + L1 \quad \text{Equation 10}$$

$$W_c = \gamma_s * H * \frac{D+1}{144} \quad \text{Equation 11}$$

Where:

Qp = Pressure applied to pipe under installed conditions (psi)

γ_w = Specific weight of water = 0.0361 lb/cubic inch

Hw = Height of water surface above top of pipe (in)

Rw = Water buoyancy factor. If Hw = 0, Rw = 1.

Wc = Vertical soil load on the pipe per unit length (lb/in)

D = Mean pipe diameter (in)

L1 = Live load (lbs)

γ_s = Specific weight of soil (lb/cubic foot)

H = Depth of burial from ground surface to crown of pipe (ft)

A value of 143 lbs/cubic foot is assumed for the specific weight of soil for this development. 143 lbs/cubic foot is a conservative value based on a dry unit weight of 135 lbs/cubic foot and a moisture content of 6%. This value is conservative as it corresponds to saturated unit weights of commonly used backfill materials.

Using this value, and the values found in the previous section, the pressure applied to the pipe under installed conditions can be found using Equations 10-11.

$$W_c = 143 * 15 * \frac{6+1}{144} = 104.27 \text{ lb/in}$$

$$Qp = (0.0361 * 0) + \left(1 * \left(\frac{104.27}{6}\right)\right) + 0 = 17.37 \text{ psi}$$

As shown, the calculated pressure applied to the pipes in the sewage collection system under installed conditions is 17.37 psi.

Zeta Calculation

Where native soil is significantly weaker than bedding material, or where predicted deflection approaches 5%, the effect of native soil must be quantified using Leonhardt's Zeta factor. If the ratio of bedding modulus to soil modulus is not equal to 1.0, a zeta factor must be calculated by using the equations below, where zeta is a factor, which corrects for the effect of in-situ soil on pipe stability. The zeta factor will be useful in solving for the maximum allowable deflection in the installed pipes. The following formulas are used to calculate zeta in the proposed sewage collection system:

$$zeta = \frac{1.44}{f + (1.44 - f) * \left(\frac{Eb}{E'n} \right)} \quad \text{Equation 12}$$

$$f = \frac{\frac{b}{Do} - 1}{1.154 + 0.444 * \left(\frac{b}{Do} - 1 \right)} \quad \text{Equation 13}$$

Where:

zeta = Leonhardt's Zeta factor

f = Pipe/trench width coefficient

Eb = Modulus of soil reaction for the bedding material (psi)

E'n = Modulus of soil reaction for the in-situ soil (psi)

b = Trench width (in)

Do = Outside pipe diameter (in)

All of the necessary values to solve for Leonhardt's Zeta factor can be found above. Using these values, Leonhardt's zeta factor can be found using Equations 12-13.

$$f = \frac{\frac{46}{6.625} - 1}{1.154 + 0.444 * \left(\frac{46}{6.625} - 1 \right)} = 1.57$$

$$zeta = \frac{1.44}{1.57 + (1.44 - 1.57) * \left(\frac{400}{3,000} \right)} = 0.927$$

The Leonhardt's Zeta factor for a 6" PVC SDR-26 pipe in a 46" trench is 0.927.

Deflection

ASTM D3034 recommends that a 7.5% deflection limit provides a conservative factor of safety against structural failure. However, according to 30 TAC 217.57(b)(5), the deflection of a sewage collection system pipe must not exceed 5% as determined by the deflection analysis and verified by a mandrel test. The following formulas are used to calculate the predicted vertical deflection under load.

$$\frac{\Delta Y}{D} (\%) = \frac{K * (Lp + L1) * 100}{(0.149 * P1) + (0.061 * zeta * Eb)} \quad \text{Equation 14}$$

$$Lp = \frac{\gamma_s * H}{144} \quad \text{Equation 15}$$

Where:

$\frac{\Delta Y}{D}$ = Predicted % vertical deflection under load

ΔY = Change in vertical pipe diameter under load (in)

D = Undeformed mean pipe diameter (in)

K = Bedding angle constant

Lp = Prism load (psi)

L1 = Live load (lbs)

P1 = Pipe stiffness (psi)

zeta = Leonhardt's Zeta factor

Eb = Modulus of soil reaction for the bedding material (psi)

γ_s = Specific weight of soil (lb/cubic foot)

H = Depth of burial from ground surface to crown of pipe (ft)

Per Table 7.2 from the "Uni-Bell Handbook of PVC Pipe," the Bedding Constant is 0.096 when the bedding angle is 90 degrees. The predicted vertical deflection under load can be found using this value, the values found in the previous sections, and equations 14-15.

$$Lp = \frac{143 * 15}{144} = 14.9$$

$$\frac{\Delta Y}{D} (\%) = \frac{0.096 * (14.9 + 0) * 100}{(0.149 * 115) + (0.061 * 0.927 * 400)} = 3.56\%$$

The predicted deflection in PVC pipes in the proposed sewage collection system is 3.42%, which is less than the maximum 5% per 30 TAC 217.57(b)(5).

Pipe Material	Pipe Stiffness (Ps)	Leonhardt's Zeta Factor	% Deflection
6" PVC SDR-26	115 PSI	0.927	3.56%

Strain

The conditions of the proposed sewage collection system are such that strain-related failure will not be a problem. Strain is generally not a performance-limiting factor for buried PVC pipe or a design-limiting criterion for PVC pipes according to Chapter VII of "The Uni-Bell Handbook of PVC Pipe." As pipe deflection will be below 5%, strain-related failure is not anticipated.

Appendix A

SOIL CLASSIFICATION CHART

From ASTM D2321-11: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

TABLE 1 Soil Classification Chart (see Classification D2487)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification	
				Group Symbol	Group Name ^B
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean gravels	$C_u \geq 4$ and $1 \leq C_c \leq 3^C$	GW	Well-graded gravel ^D
		Less than 5% of fines ^E	$C_u < 4$ and/or $1 > C_c > 3^C$	GP	Poorly graded gravel ^D
	Sands 50% or more of coarse fraction passes on No. 4 sieve	Gravels with more than 12% fines ^E	Fines classify as ML or MH	GM	Silty gravel ^{DFG}
			Fines classify as CL or CH	GC	Clayey gravel ^{DFG}
		Clean sands	$C_u \geq 6$ and $1 \leq C_c \leq 3^C$	SW	Well-graded sand ^H
			$C_u < 6$ and/or $1 > C_c > 3^C$	SP	Poorly graded sand ^H
		Sand with fines	Fines classify as ML or MH	SM	Silty sand ^{FGH}
			Fines classify as CL or CH	SC	Clayey sand ^{FGH}
		Inorganic	PI > 7 and plots on or above "A" line ^J	CL	Lean clay ^{KLM}
			PI < 4 and plots below "A" line ^J	ML	silt ^{KLM}
Fine-Grained Soils 50% or more passes the No. 200 Sieve	Silt and clays Liquid limit less than 50	Organic	Liquid Limit-Oven dried	< 0.75	Organic clay ^{KLMN}
			Liquid Limit-Not dried		Organic silt ^{KLMO}
	Silt and clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line	CH	Fat clay ^{KLM}
			Plots below "A" line	MH	Elastic silt ^{KLM}
		Organic	Liquid Limit-Oven Dried	< 0.75	Organic clay ^{KLMP}
			Liquid Limit-Not Dried		Organic silt ^{KLMO}
	Highly organic soils	Primarily organic matter, dark in color, and organic odor		PT	peat

^A Based on the material passing the 3-in. (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C $C_u = D_{60} / D_{10}$

$$C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^D If soil contains ≥ 15 % sand, add "with sand" to group name.

^E Gravels with 5 to 12 % fines require dual symbols:

GW-GM well-graded gravel with silt:
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

^F If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^G If fines are organic, add "with organic fines" to group name.

^H If soil contains ≥ 15 % gravel, add "with gravel" to group name.

^I Sands with 5 to 12 % fines require dual symbols:

SW-SM well graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

^J If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay (see Test Method D4318).

^K If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel", whichever is predominant.

^L If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.

^M If soil contains ≥ 30 % plus No. 200, predominantly gravel, add "gravelly" to group name.

^N PI ≥ 4 and plots on or above "A" line.

^O PI < 4 or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.

SOIL CLASSIFICATION CHART

From ASTM D2321-11: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

TABLE 2 Soil Classes

Soil Group ^{A,B}	Soil Class	American Association of State Highway and Transportation Officials (AASHTO) Soil Groups ^C
Crushed rock, angular ^D , 100% passing 1-1/2 in. sieve, \leq 15 % passing #4 sieve, \leq 25 % passing 3/8 in. sieve and \leq 12 % passing #200 sieve	Class I	--
Clean, coarse grained soils: SW, SP, GW, GP or any soil beginning with one of these symbols with \leq 12 % passing #200 sieve ^{E,F}	Class II	A1, A3
Coarse grained soils with fines: GM, GC, SM, SC or any soil beginning with one of these symbols, containing > 12 % passing #200 sieve; Sandy or gravelly fine-grained soils: CL, ML, or any soil beginning with one of these symbols, with \geq 30 % retained on #200 sieve	Class III	A-2-4, A-2-5, A-2-6, or A-4 or A-6 soils with more than 30% retained on #200 sieve
Fine-grained soils: CL, ML, or any soil beginning with one of these symbols, with <30 % retained on #200 sieve	Class IV	A-2-7, or A-4, or A-6 soils with 30% or less retained on #200 sieve
MH, CH, OL, OH, PT	Class V Not for use as embedment	A5, A7

^A See Classification D2487, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

^B Limits may be imposed on the soil group to meet project or local requirements if the specified soil remains within the group. For example, some project applications require a Class I material with minimal fines to address specific structural or hydraulic conditions and the specification may read "Use Class I soil with a maximum of 5% passing the #200 sieve."

^C AASHTO M145, Classification of Soils and Soil Aggregate Mixtures.

^D All particle face shall be fractured.

^E Materials such as broken coral, shells, and recycled concrete, with \leq 12% passing a No. 200 sieve, are considered to be Class II materials. These materials should only be used when evaluated and approved by the Engineer.

^F Uniform fine sands (SP) with more than 50% passing a No. 100 sieve (0.006 in., 0.15 mm) are very sensitive to moisture and should not be used as backfill unless specifically allowed in the contract documents. If use of these materials is allowed, compaction and handling procedures should follow the guidelines for Class III materials.

SOIL CLASSIFICATION CHART

From ASTM D2321-11: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

TABLE 3 Recommendations for Installation and Use of Soils and Aggregates for Foundation and Pipe-Zone Embedment

Soil Class ^A	Class I ^B	Class II	Class III	Class IV
General Recommendations and Restrictions	Acceptable and common where no migration is probable or when combined with a geotextile filter media. Suitable for use as a drainage blanket and under drain where adjacent material is suitably graded or when used with a geotextile filter fabric (see X1.8).	Where hydraulic gradient exists check gradation to minimize migration. Clean groups are suitable for use as a drainage blanket and underdrain (see Table 2). Uniform fine sands (SP) with more than 50 % passing a #100 sieve (0.006 in., 0.15 mm) behave like silts and should be treated as Class IV soils.	Do not use where water conditions in trench prevent proper placement and compaction. Not recommended for use with pipes with stiffness of 9 psi or less.	Difficult to achieve high-soil stiffness. Do not use where water conditions in trench prevent proper placement and compaction. Not recommended for use with pipes with stiffness of 9 psi or less.
Foundation	Suitable as foundation and for replacing over-excavated and unstable trench bottom as restricted above.	Suitable as foundation and for replacing over-excavated and unstable trench bottom as restricted above. Install and compact in 12 in. (300 mm) maximum layers.	Suitable for replacing over-excavated trench bottom as restricted above. Install and compact in 6 in. (150 mm) maximum layers.	Suitable for replacing over-excavated trench bottom as restricted above. Install and compact in 6-in (150 mm) maximum layers.
Pipe Embedment	Suitable as restricted above. Work material under pipe to provide uniform haunch support.	Suitable as restricted above. Work material under pipe to provide uniform haunch support.	Suitable as restricted above. Difficult to place and compact in the haunch zone.	Suitable as restricted above. Difficult to place and compact in the haunch zone.
Embedment Compaction: Min Recommended Percent Compaction, SPD ^D	See Note ^C	85 % (SW and SP soils) For GW and GP soils See Note ^E	90 %	95 %
Relative Compactive Effort Required to Achieve Minimum Percent Compaction	Low	Moderate	High	Very high
Compaction Methods	Vibration or impact	Vibration or impact	Impact	Impact
Required Moisture Control	None	None	Maintain near optimum to minimize compactive effort	Maintain near optimum to minimize compactive effort

^A Class V materials are unsuitable as embedment. They may be used as final backfill as permitted by the engineer.

^B Class I materials have higher stiffness than Class II materials, but data on specific soil stiffness of placed, uncompacted Class I materials can be taken equivalent to Class II materials compacted to 95% of maximum standard Proctor density (SPD95), and the soil stiffness of compacted Class I materials can be taken equivalent to Class II materials compacted to 100% of maximum standard Proctor density (SPD100). Even if placed uncompacted (that is, dumped), Class I materials should always be worked into the haunch zone to assure completed placement.

^C Suitable compaction typically achieved by dumped placement (that is, uncompacted but worked into haunch zone to ensure complete placement).

^D SPD is standard Proctor density as determined by Test Method D698.

^E Place and compact GW and GP soils with at least two passes of compaction equipment.

TABLE 6.6
LIVE LOADS ON PVC PIPE
From Uni-Bell Handbook of PVC Pipe: Design and Construction, Fourth Edition (2001)

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

¹ Simulates 20 ton truck traffic + impact (Source: ASTM A 796)

² Simulates 80,000 lb/ft railway load + impact (Source: ASTM A 796)

³ 180,000 lbs. dual tandem gear assembly. 26 inch spacing between tires and 66 inch center-to-center spacing between fore and aft tires under a rigid pavement 12 inches thick + impact.

* Negligible live load influence.

FIGURE 7.4
BEDDING ANGLE
 From Uni-Bell Handbook of PVC Pipe: Design and Construction, Fourth Edition (2001)

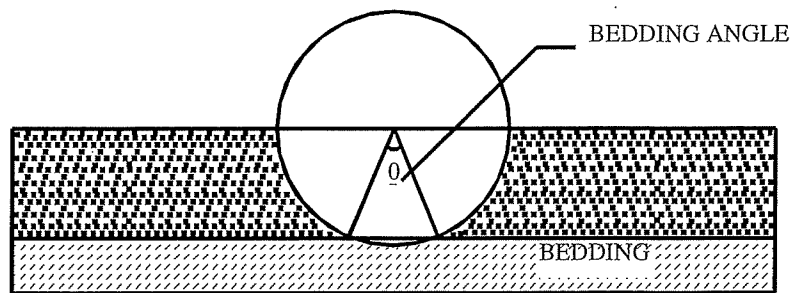


TABLE 7.2
VALUES OF BEDDING CONSTANT, K

<u>BEDDING ANGLE (DEGREES)</u>	<u>K</u>
0	0.110
30	0.108
45	0.105
60	0.102
90	0.096
120	0.090
180	0.083

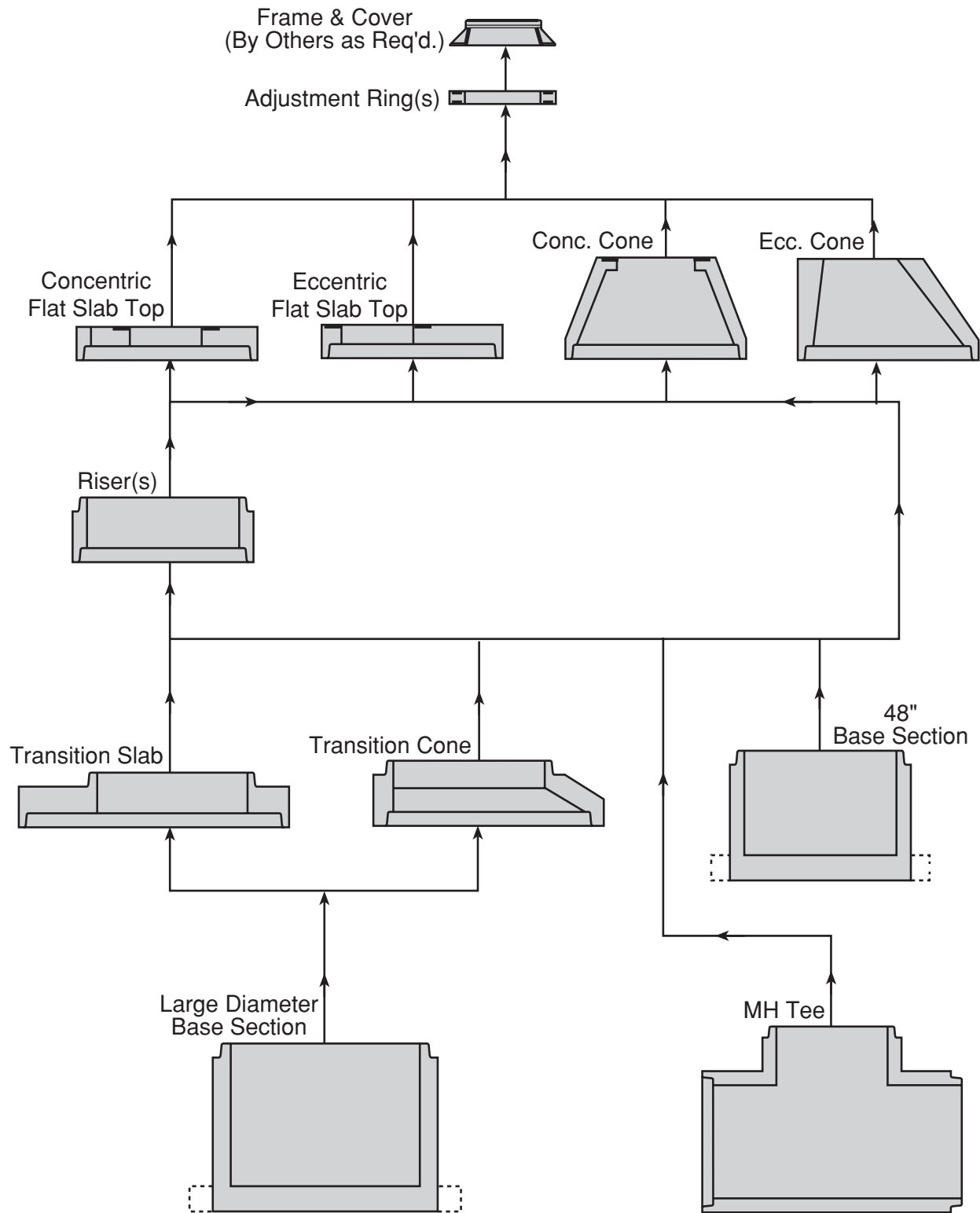
TABLE 7.3
AVERAGE VALUES OF MODULUS OF SOIL REACTION, E'
(For Initial Flexible Pipe Deflection)
From Uni-Bell Handbook of PVC Pipe: Design and Construction, Fourth Edition (2001)

Soil type-pipe bedding material (Unified Classification System ^a) (1)	E' for Degree of Compaction of Bedding, in pounds per square inch			
	Dumped (2)	Slight, < 85% Proctor, <40% relative density (3)	Moderate, 85%-95% Proctor, 40%-70% relative density (4)	High, >95% Proctor, >70% relative density (5)
Fine-grained Soils (LL>50) ^b Soils with medium to high plasticity, CH, MH, CH-MH	No data available; consult a competent soils engineer; Otherwise use E' = 0			
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with less than 25% coarse- grained particles	50	200	400	1,000
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with more than 25% coarse-grained particles Coarse-grained Soils with Fines GM, GC, SM, SC ^c contains more than 12% fines	100	400	1,000	2,000
Coarse-grained Soils with Little or no Fines GW, GP, SW, SP ^c contains less than 12% fines	200	1,000	2,000	3,000
Crushed Rock	1,000	3,000	3,000	3,000
Accuracy in Terms of Percentage Deflection ^d	± 2	± 2	± 1	± 0.5
^a ASTM Designation D 2487, USBR Designation E-3. ^b LL = Liquid limit. ^c Or any borderline soil beginning with one of these symbols (i.e. GM-GC, GC-SC). ^d For ± 1% accuracy and predicted deflection of 3%, actual deflection would be between 2% and 4% Note: Values applicable only for fills less than 50 ft (15 m). Table does not include any safety factor. For use in predicting initial deflections only, appropriate Deflection Lag Factor must be applied for long-term deflections. If bedding falls on the borderline between two compaction categories, select lower E' value or average the two values. Percentage Proctor based on laboratory maximum dry density from test standards using about 12,500 ft-lb/cu ft (598,000 J/m ³) (ASTM D 698, AASHTO T-99, USBR Designation E-11). 1 psi = 6.9 kPa.				

SOURCE: "Soil Reaction for Buried Flexible Pipe" by Amster K. Howard, U.S. Bureau of Reclamation, Denver, Colorado. Reprinted with permission from American Society of Civil Engineers.

Manhole Specifications


Precast Manholes



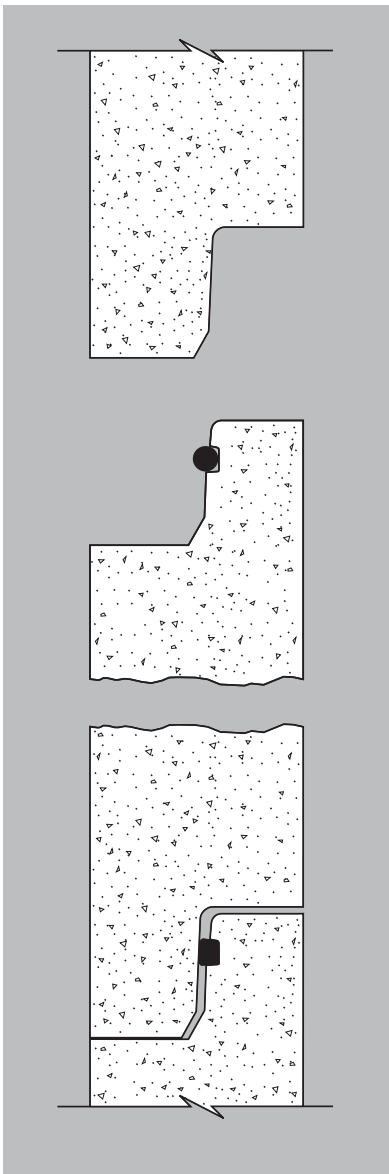
Note:

- Manhole steps are available as required.
- Inverts and resilient connectors furnished as required.
- Conforms to current ASTM C-478 specification for reinforced concrete manhole sections.
- Maximum burial depth for manholes = 30 feet.

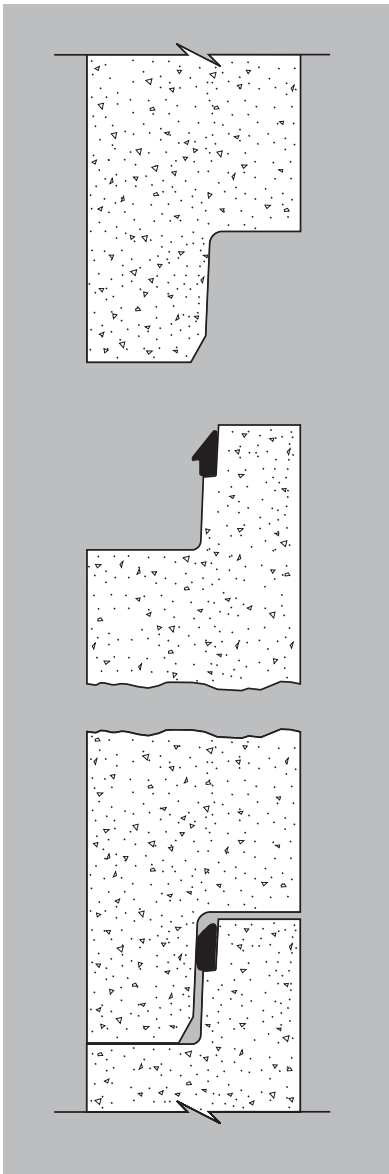
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
Precast Manhole Assembly Diagram	All Plants	TX	5.1	01-25-10	

Precast Manholes



Confined Groove Joint




Single Offset Joint
Profile or Self-Lubricated Gasket

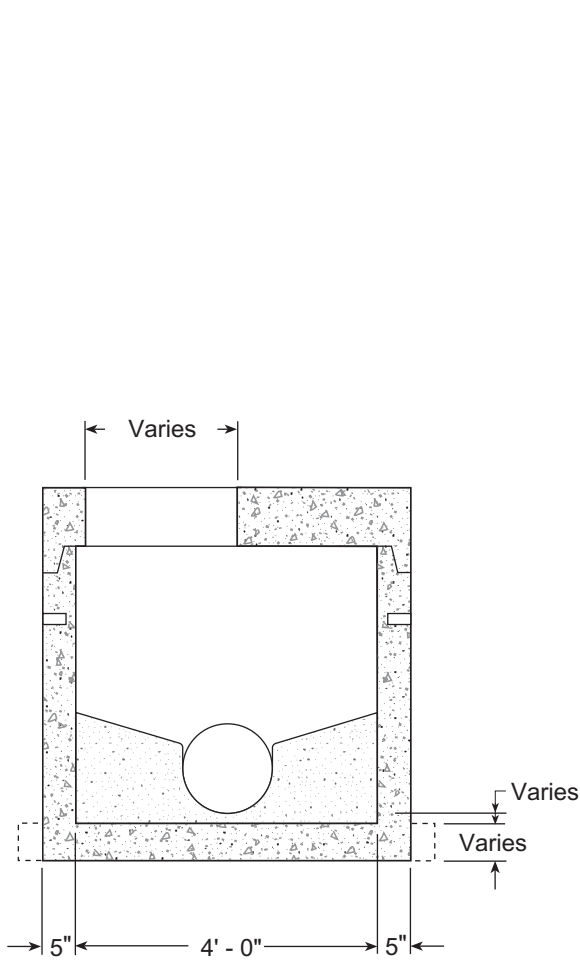
Note:

- Contact plant for availability of joint styles.
- Conforms to current ASTM C-478 specification for reinforced concrete manhole sections.

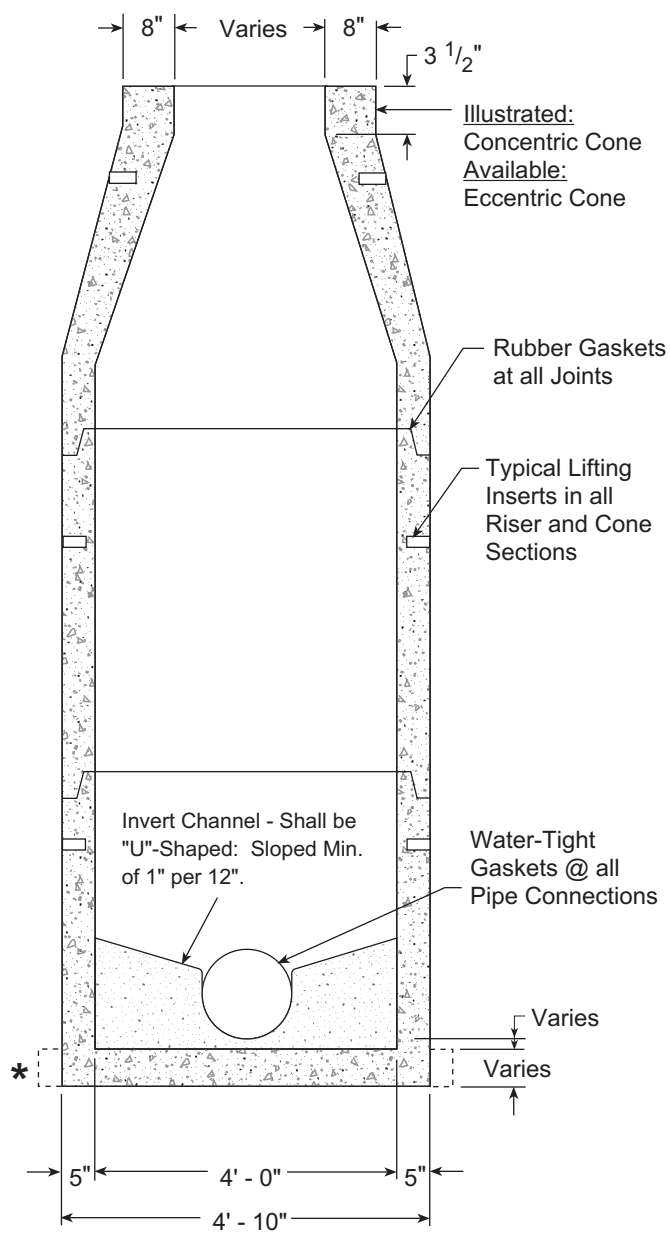
-No Scale-
All dimensions subject to allowable
specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	 Hanson HEIDELBERGCEMENT Group
Precast Manhole Joints	Grand Prairie Houston Waco	TX	5.2	01-25-10	

Precast Manholes



Flattop Illustration
for Shallow Manhole



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

Materials & Features


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

* - Extended base is available to meet local requirements.

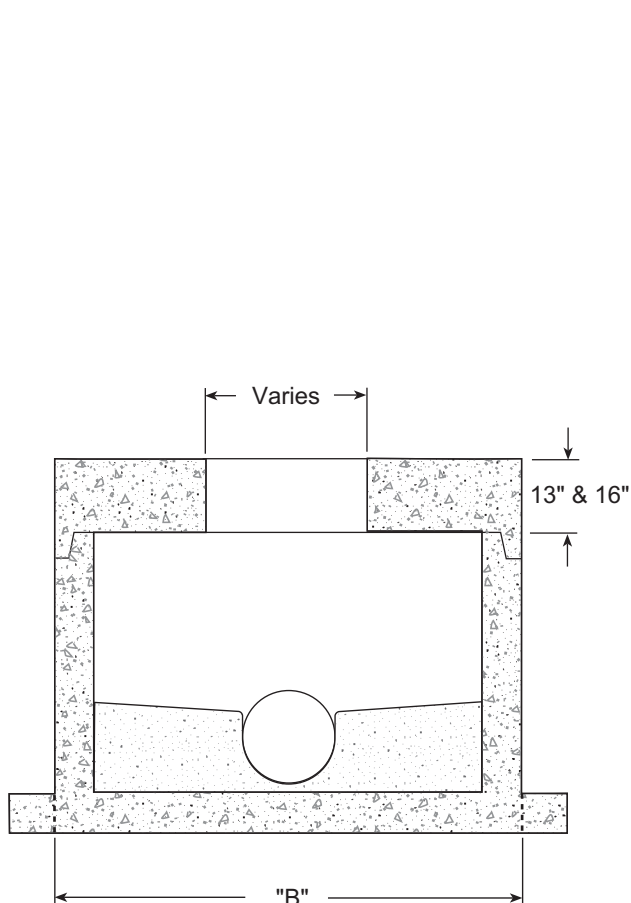
In the event a boot is loose contact your Hanson representative to resolve.

"Manufactured to your specifications."

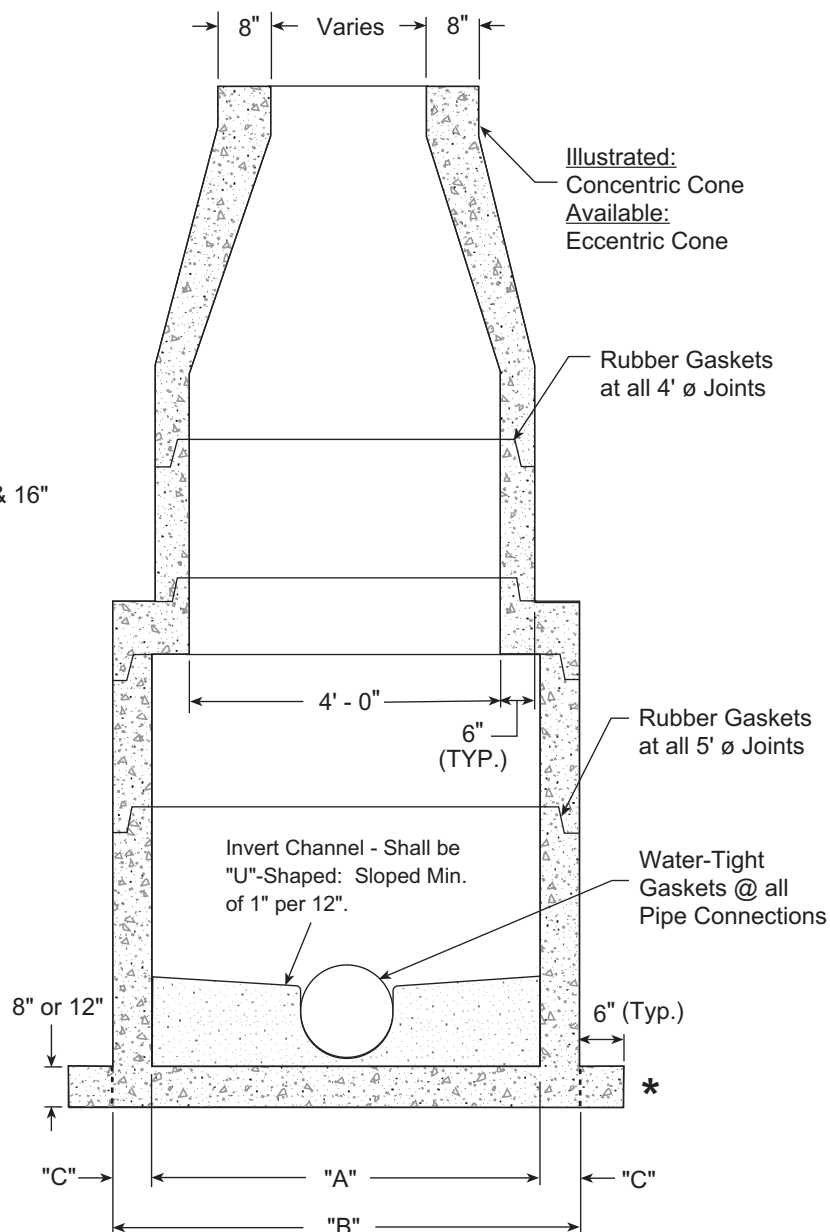
-No Scale-
All dimensions subject to allowable
specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
4' I.D. Manhole Regular Base w/ Reducing Cone	All Plants	TX	5.5	01-25-10	

Precast Manholes



Flattop Illustration
for Shallow Manhole



Section View

5' / 4' & 6' / 4' I.D. Manhole
Extended Base with Reducing Cone

Materials & Features

HOLES AS SPECIFIED: for 5' I.D. max diameter = 40"
for 6' I.D. max diameter = 54"

CONCRETE: 5,000 PSI, 28 day strength.

REINFORCING: Meets or exceeds ASTM C478 requirements.

Average weight of 24" depth base w/8" invert:

for 5' I.D. = 7,500 lbs.

for 6' I.D. = 10,600 lbs.

Estimated weight of riser and sections:

for 5' I.D. = 1,325 lbs. / vt. ft.

for 6' I.D. = 1,800 lbs. / vt. ft.

For pipe sizes 15" and larger, invert shall be equal to the larger pipe diameter.

* - Extended base shown: Regular base also available."

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

"Manufactured to your specifications."

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

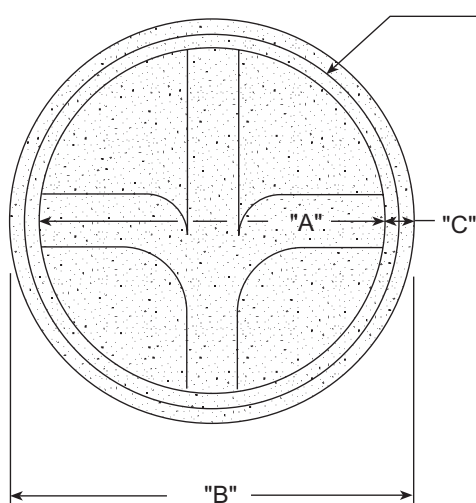
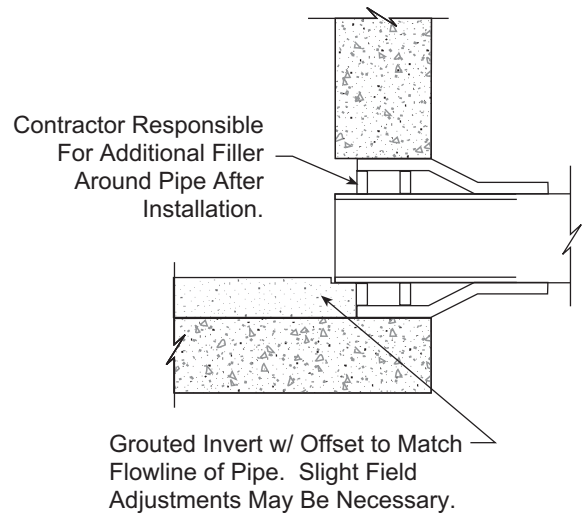
-No Scale-

All dimensions subject to allowable specification tolerances.

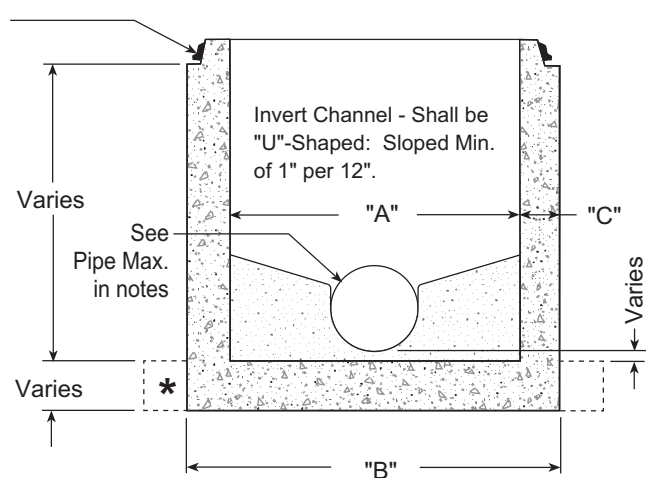
TITLE	PLANT	STATE	SECTION.PAGE	DATE	
5' / 4' & 6' / 4' I.D. Manhole Extended Base w/ Reducing Cone	All Plants	TX	5.6	01-25-10	<div> <div></div> <div></div> <div></div> <div></div> </div> Hanson HEIDELBERGCEMENT Group

Precast Manholes

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



Plan View



Section View

Materials & Features

HOLES AS SPECIFIED:

For 4' I.D. max. diameter = 32"

For 5' I.D. max. diameter = 40"

For 6' I.D. max. diameter = 54"

CONCRETE: 5,000 PSI, 28 day strength.

REINFORCING: Meets or exceeds ASTM C478 requirements.

Average weight of 24" depth base w/8" invert = 4,500 lbs.

Water-tight gaskets at all pipe connections.


* - Regular base shown: Extended base also available.

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

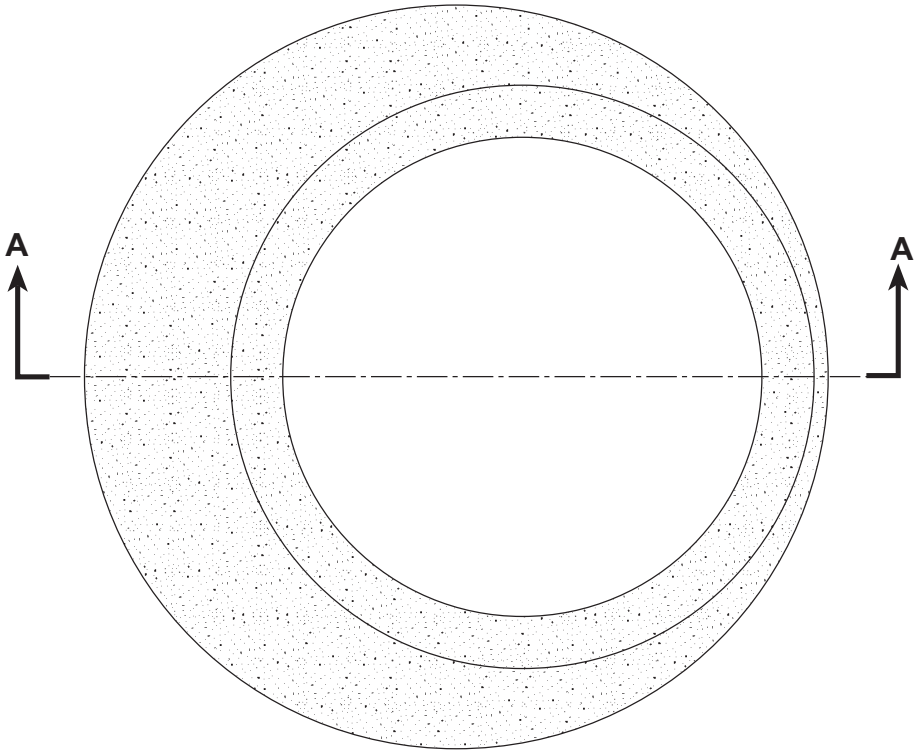
Pipe Size	I.D. "A"	O.D. "B"	Wall Thk. "C"
4'	4' - 0"	4' - 10"	5"
5'	5' - 0"	6' - 0"	6"
6'	6' - 0"	7' - 2"	7"

-No Scale-

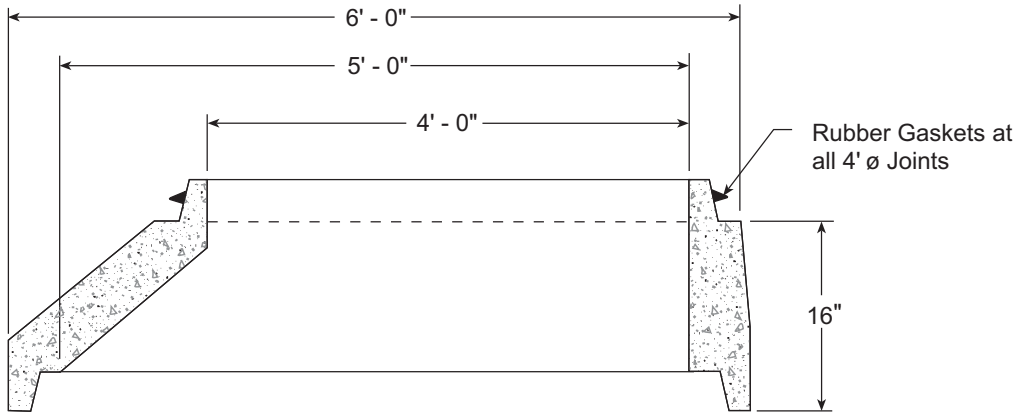
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
Details: 4', 5' & 6' I.D. Precast Regular Manhole Base	All Plants	TX	5.7	01-25-10	

Precast Manholes



Plan View




Section View

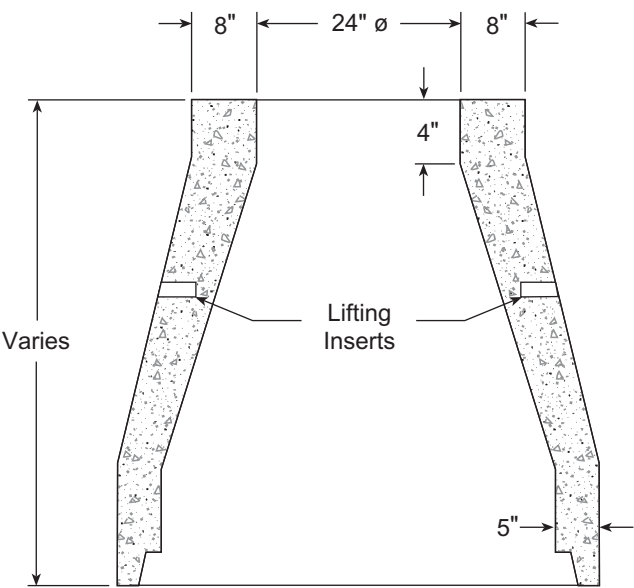
Materials & Features

CONCRETE: 5,000 PSI, 28 day strength.
REINFORCING: Meets or exceeds ASTM C478 requirements.
CONSTRUCTION OF PRECAST is in accordance with ASTM C478.
Concrete is poured according to ACI-500.

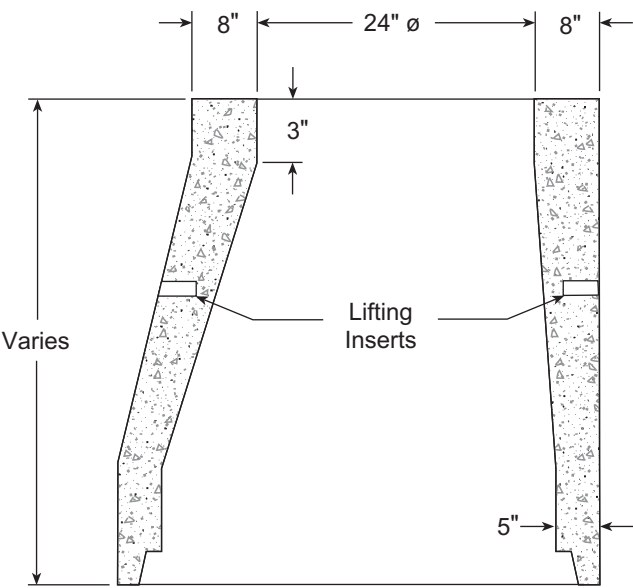
-No Scale-
All dimensions subject to allowable
specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	 Hanson HEIDELBERGCEMENT Group
5' x 4' Conical Adaptor	Waco	TX	5.8	01-25-10	

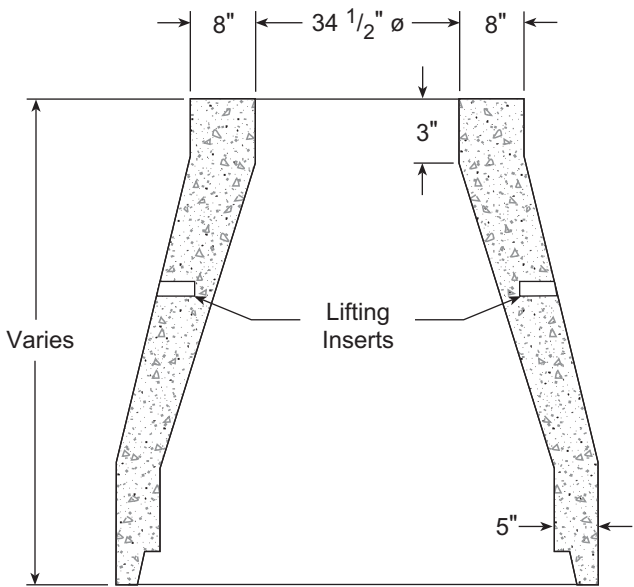
Precast Manholes



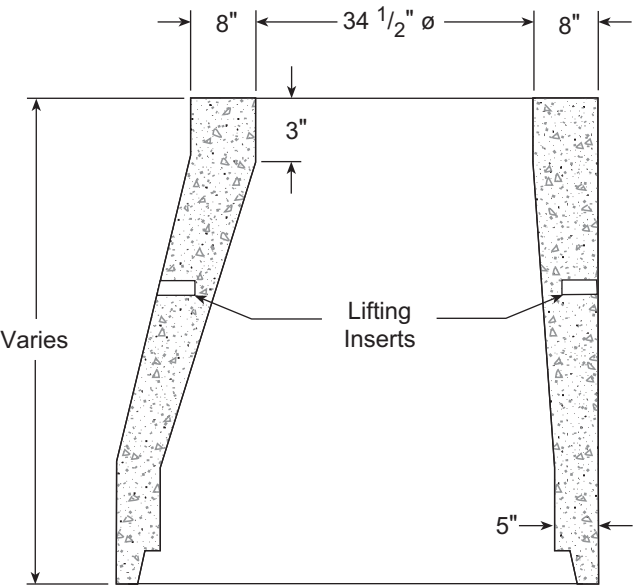
Concentric Cone
24" \varnothing Opening



Eccentric Cone
24" \varnothing Opening



Concentric Cone
34 1/2" \varnothing Opening




Eccentric Cone
34 1/2" \varnothing Opening

Materials & Features

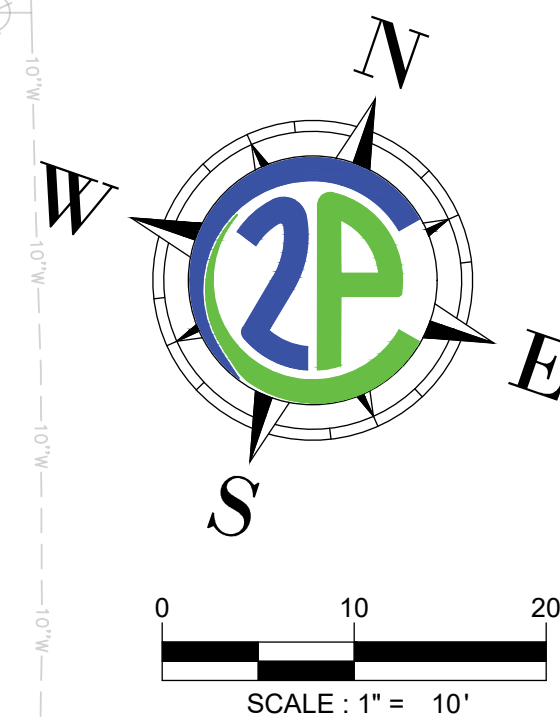
CONCRETE: 5,000 PSI, 28 day strength.
REINFORCING: Meets or exceeds ASTM C478 requirements.
30" \varnothing also available in North Texas.

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

TITLE	PLANT	STATE	SECTION.PAGE	DATE	 Hanson HEIDELBERGCEMENT Group
Hanson 48" Manhole Reducing Cone Detail	Waco Houston	TX	5.9	01-25-10	




















Site Plan

EMMANUEL STREET
VARIABLE WIDTH R.O.W. AS SHOWN UNDER
INST.# 2008076964, O.P.R.W.C.T.



GENERAL LEGEND

SYMBOLS

	WATER METER		WW SERVICE
	WATER VALVE		WATER SERVICE
	FIRE HYDRANT		STORMSEWER MANHOLE
	BACKFLOW PREVENTER		SIGN
	UTILITY POLE		CURB INLET
	LIGHT POLE		GRATE INLET
	WASTEWATER MANHOLE		TABLE TOP AREA INLET
	CLEAN OUT		
	KEYNOTES		TREE TO BE SAVED
	PARKING COUNT		TREE TO BE REMOVED

LINETYPES

—	PROPERTY BOUNDARY
—	LIMITS OF CONSTRUCTION
—	FENCES (CHAINLINK)
—	(IRON)
—	(WOOD)
—	(BARB WIRE)
—	DITCH (CREEK) LINE
—	EXISTING CONTOURS
—	PROPOSED CONTOURS
—	CURB & GUTTER
—	UNDERGROUND ELEC.
—	OVERHEAD UTILITY
—	UNDERGROUND TELE.
—	UNDERGROUND GAS LINE
—	WATER LINE
—	WASTEWATER LINE
—	ACCESSIBLE ROUTE

DETAIL NUMBER	DESCRIPTION	DATE	BY	CHECKED	APPROVED
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90		


SHEET NUMBER
WHERE DETAIL IS
LOCATED



DETAIL NAME

DETAIL REFERENCE CALLOUT

NOTES:

- | SITE PLAN NOTES: |  SHEET NUMBER
WHERE DETAIL IS
LOCATED | DETAIL NAME |
|---|---|-------------|
| 1. FOR PRECISE DIMENSIONS AND LOCATION OF SITE IMPROVEMENTS, ELECTRONIC FILES OF THE SITE LAYOUT WILL BE MADE AVAILABLE TO THE CONTRACTOR AND HIS SURVEYOR UPON REQUEST. FOR BUILDING DIMENSIONS, CONTRACTOR SHALL USE ARCHITECTURAL AND STRUCTURAL PLANS.

2. EXISTING UTILITIES ARE SHOWN PER RECORD DRAWINGS.

3. SLOPES ON ACCESSIBLE ROUTES MAY NOT EXCEED 1:20 UNLESS DESIGNED AS A RAMP. THE MAXIMUM SLOPE OF A RAMP IN NEW CONSTRUCTION IS 1:12. THE MAXIMUM RISE FOR ANY RAMP RUN IS 30 INCHES. REFER TO GRADING SHEET(S). | <div data-bbox="2581 631 2755 641" style="border: 1px solid black; padding: 2px; text-align: center;"> <u>DETAIL REFERENCE CALLOUT</u> </div> NOTES:
1. THIS PROJECT IS NOT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE.

2. NO PORTION OF THE SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN PER FEMA FIRM MAP #48491C0489F EFFECTIVE AS OF DECEMBER 20 th , 2019.

3. ALL RADII ARE 3' UNLESS NOTED OR OTHERWISE.

4. THERE SHALL BE A MINIMUM OF 136" OF VERTICAL CLEARANCE FOR THE FIRE LANE.

5. NO GRADES IN THE FIRE LANE SHALL EXCEED 7% WITH NO GRADE BREAKS GREATER THAN 3%.

6. THE DEVELOPMENT PARTICIPATES IN THE CITY OF ROUND ROCK'S REGIONAL STORMWATER MANAGEMENT PROGRAM (RSMSP). | |

DIMENSIONAL CONTROL PLAN NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES INCLUDING EXISTING IRRIGATION ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE ASSOCIATED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. ALL DIMENSIONS SHOWN ARE TO FACE OF CURB, UNLESS OTHERWISE NOTED.
3. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL PROPERTY CORNERS.
4. CONTRACTOR SHALL MATCH EXISTING CURB AND GUTTER IN SIZE, GRADE, TYPE, AND ALIGNMENT AT ADJACENT ROADWAYS.
5. ALL WORK ON THIS PLAN SHOULD BE DONE IN STRICT COMPLIANCE WITH SITEMARK SPECIFICATIONS AND CITY OF ROUND ROCK SUBDIVISION REGULATIONS.
6. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS, EXACT BUILDING UTILITY ENTRY LOCATIONS, DOWNSPOUT LOCATIONS AND TOTAL NUMBER OF DOWNSPOUTS REQUIRED.
7. ALL CURB RADII ARE 3' UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION, ADJUSTMENT, OR RELOCATION OF EXISTING UTILITIES.

Site Area Calculations			
Description	Area (SF)	Area (AC)	Area IC%
Site Area	34,455.64	0.791	100.00
Existing Impervious Cover	9,468.75	0.217	27.48
Post-Development Impervious Cover	15,285.48	0.351	44.36



Know what's **below**.
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CONTRACTOR NOTES:

EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN VICINITY. CONTRACTOR TO CONTACT UTILITY COMPANIES PRIOR TO CONSTRUCTION. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY LOCATIONS & DEPTHS PRIOR TO BEGINNING CONSTRUCTION.

CONTRACTOR SHALL CONSIDER PROPOSED UTILITY IMPROVEMENTS AND PROVIDE ADEQUATE HORIZONTAL AND VERTICAL CLEARANCE DURING INSTALLATION OF ALL UTILITY INFRASTRUCTURE.

PARKING CALCULATIONS				
BUILDING USE	BUILDING AREA	PARKING RATIO	REQUIRED	PROVIDED
PROPOSED DAYCARE	2,760 SF	3.5:1000	10	12
EXISTING DAYCARE	3,220 SF	3.5:1000	12	11
PROPOSED OFFICE	197 SF	1:250	1	1
ADA			1	1
TOTAL			23	24

PER PLAT
INST.# 2008076964
O.P.R.W.C.T.

CHISHOLM TRAIL ROAD
VARIABLE WIDTH R.O.W. AS SHOWN UNDER
INST # 2008076964, O.P.R.W.C.T.

LOT 1
BLOCK A
FINAL PLAT RUTLAND - CHISHOLM
TRAIL SUBDIVISION
INST.# 2008076964
O.P.R.W.C.T.

**EXISTING
DAYCARE BUILDING**
3,219.75 SF
NON-SPRINKLED
FFE: 722.2'

DAYCARE BUILDING
3,005.00 SF
NON-SPRINKLED
FFE: 721.50'

15' WASTEWATER ES
PER PLAT
INST.# 2008076964
O.P.R.W.C.T.

CITY OF ROUND ROCK, TEXAS
CALLED 0.787 OF AN ACRE
INST # 2004099284
O.P.R.W.C.T.

6 TYPICAL PARKING
8 SPACE LAYOUT

5	PARKING LOT
8	BUMPER CURB

GRASSY SWALE
REFER TO PAGE 15 FOR
MORE INFORMATION

IMAGES: * signature TP.png
XREFS: * 24x36 2PC TitleBlock.dwg * P-BASE.dwg * E-BASE.dwg * MEM SEAL.dwg
DRAWING: N:\Projects\CedarBrook Construction-4 Chisholm Trail\CAD\Sheets\SITE
OT DATE: Tuesday, January 23, 2024

21 CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TBPE FIRM #F-19351



THIS DOCUMENT IS
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REVIEW UNDER THE
AUTHORITY OF
MICHAEL EASTON MUNDINE,
E. #143266 ON 1/23/2024.
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CONSTRUCTION
PURPOSES.

[illegible]

CEDARBROOK CONSTRUCTION

GLOBAL KIDS PRESCHOOL
DEVELOPMENT IMPROVEMENT

SITE DEVELOPMENT IMPROVEMENTS
CHISHOLM TRAIL ROAD ROUND ROCK, TEXAS 78681

SITE AND DIMENSIONAL CONTROL PLAN

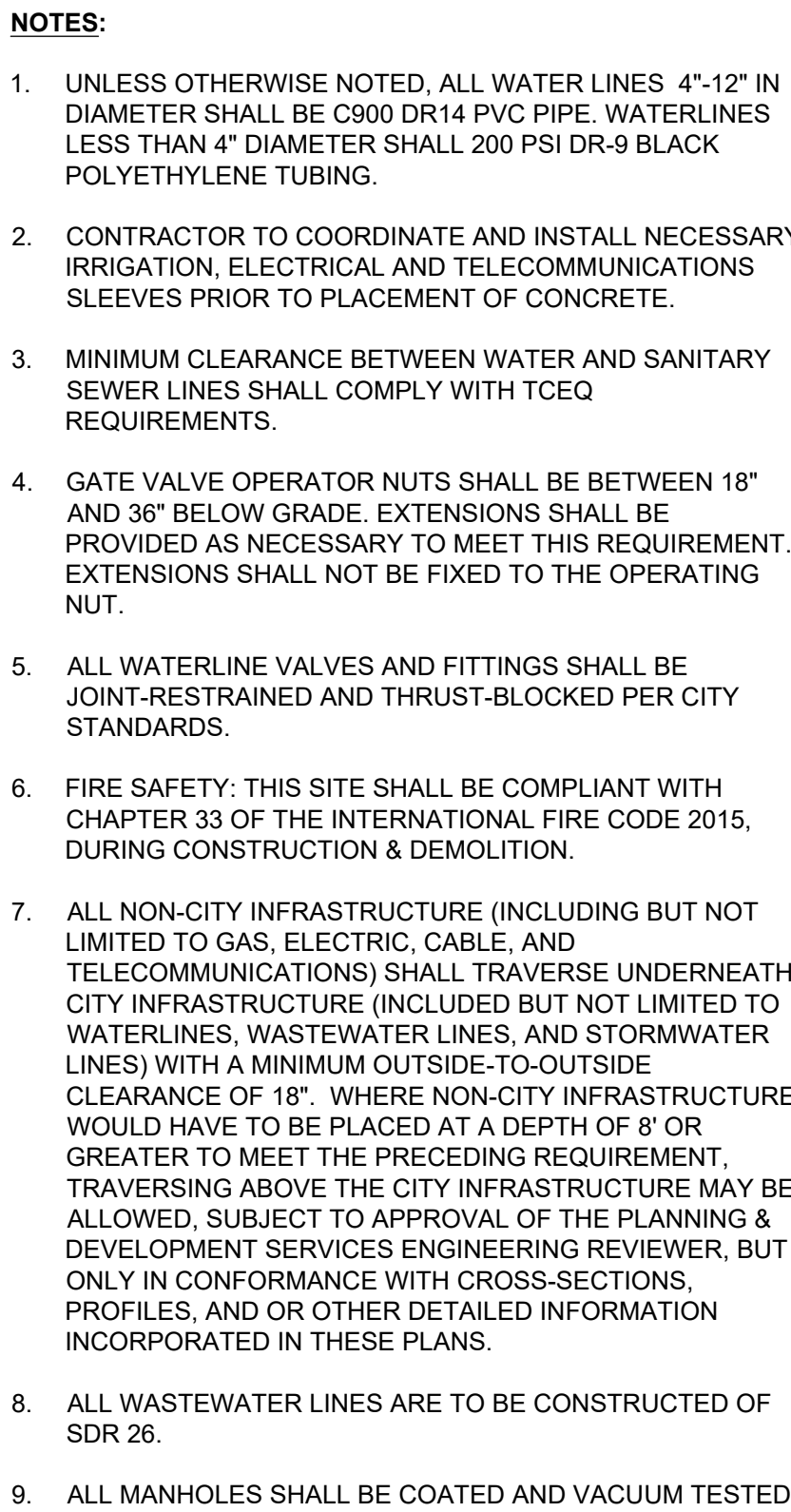
PERMIT No.
SDP23-00051

SHEET No.

$$\frac{7}{20}$$

שם המועמד	מס' תעודת זהות	מס' תעודת זהות
ד"ר יעקב גולדברג	3520700	3520700

Wastewater Plan



1. UNLESS OTHERWISE NOTED, ALL WATER LINES 4"-12" IN DIAMETER SHALL BE C900 DR14 PVC PIPE. WATERLINES LESS THAN 4" DIAMETER SHALL 200 PSI DR-9 BLACK POLYETHYLENE TUBING.
2. CONTRACTOR TO COORDINATE AND INSTALL NECESSARY IRRIGATION, ELECTRICAL AND TELECOMMUNICATIONS SLEEVES PRIOR TO PLACEMENT OF CONCRETE.
3. MINIMUM CLEARANCE BETWEEN WATER AND SANITARY SEWER LINES SHALL COMPLY WITH TCEQ REQUIREMENTS.
4. GATE VALVE OPERATOR NUTS SHALL BE BETWEEN 18" AND 36" BELOW GRADE. EXTENSIONS SHALL BE PROVIDED AS NECESSARY TO MEET THIS REQUIREMENT. EXTENSIONS SHALL NOT BE FIXED TO THE OPERATING NUT.
5. ALL WATERLINE VALVES AND FITTINGS SHALL BE JOINT-RESTRAINED AND THRUST-BLOCKED PER CITY STANDARDS.
6. FIRE SAFETY: THIS SITE SHALL BE COMPLIANT WITH CHAPTER 33 OF THE INTERNATIONAL FIRE CODE 2015, DURING CONSTRUCTION & DEMOLITION.
7. ALL NON-CITY INFRASTRUCTURE (INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, CABLE, AND TELECOMMUNICATIONS) SHALL TRAVERSE UNDERNEATH CITY INFRASTRUCTURE (INCLUDED BUT NOT LIMITED TO WATERLINES, WASTEWATER LINES, AND STORMWATER LINES) WITH A MINIMUM OUTSIDE-TO-OUTSIDE CLEARANCE OF 18". WHERE NON-CITY INFRASTRUCTURE WOULD HAVE TO BE PLACED AT A DEPTH OF 8' OR GREATER TO MEET THE PRECEDING REQUIREMENT, TRAVERSING ABOVE THE CITY INFRASTRUCTURE MAY BE ALLOWED, SUBJECT TO APPROVAL OF THE PLANNING & DEVELOPMENT SERVICES ENGINEERING REVIEWER, BUT ONLY IN CONFORMANCE WITH CROSS-SECTIONS, PROFILES, AND OR OTHER DETAILED INFORMATION INCORPORATED IN THESE PLANS.
8. ALL WASTEWATER LINES ARE TO BE CONSTRUCTED OF SDR 26.
9. ALL MANHOLES SHALL BE COATED AND VACUUM TESTED

2P CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TBPE FIRM #F-19351



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CONSTRUCTION
PURPOSES.

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CEDARBROOK CONSTRUCTION

**GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS**

4 CHISHOLM TRAIL ROAD ROUND ROCK, TEXAS 78664

UTILITY PLAN

PERMIT No.
SDP23-00051

SHEET No.

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REVIEWED: VALUE

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AS 78681

IND ROCK



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

CONTRACTOR NOTES:

EXISTING UNDERGROUND AND OVERHEAD UTILITIES
IN VICINITY. CONTRACTOR TO CONTACT UTILITY
COMPANIES PRIOR TO CONSTRUCTION.
CONTRACTOR TO FIELD VERIFY EXISTING UTILITY
LOCATIONS & DEPTHS PRIOR TO BEGINNING
CONSTRUCTION.

CONTRACTOR SHALL CONSIDER PROPOSED UTILITY IMPROVEMENTS AND PROVIDE ADEQUATE HORIZONTAL AND VERTICAL CLEARANCE DURING INSTALLATION OF ALL UTILITY INFRASTRUCTURE.

IMAGES: * signature TP.png
XREFS: * 24x36 2PC TitleBlock.dwg * P-BASE.dwg * E-BASE.dwg * MEM SEAL.dwg
DRAWING: N:\Projects\CedarBrook Construction-4 Chisholm Trail\CAD\Sheets\UTILITY PLAN.dwg
PLOT DATE: Tuesday, January 23, 2024



203 E. Main Street, Suite 204
Round Rock, Texas 78664
512-344-9664
TBPE FIRM #F-19351

Attachment 4B – Justification and Calculations for Deviation in Straight Alignment without Manholes

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

This section is not applicable to this project.



Attachment 4C – Justification for Variance from Maximum Manhole Spacing

Every wastewater pipe for this project has a diameter of 6" and the maximum spacing between manholes is less than 500 feet.

This section is not applicable to this project.



203 E. Main Street, Suite 204
Round Rock, Texas 78664
512-344-9664
TBPE FIRM #F-19351

Attachment 4D – Calculations for Slopes for Flows Greater than 10.0 Feet Per Second

All pipe slopes are designed to produce maximum flows of less than or equal to 10 feet per second in this system.

This section is not applicable to this project.

Section V
Lift Station – Force Main System Application
(TCEQ-0624)



203 E. Main Street, Suite 204
Round Rock, Texas 78664
512-344-9664
TBPE FIRM #F-19351

Attachment 5 – Lift Station/Force Main System Application

There are no lift stations and force mains proposed for this project.

This section is not applicable to this project.

Section VI
Temporary Stormwater Section
(TCEQ-0602)

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Michael Easton Mundine, P.E.

Date: 05/22/2024

Signature of Customer/Agent:



Regulated Entity Name: Global Kids Preschool

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: Brushy Creek

Temporary Best Management Practices (TBMPs)

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

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

- ☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.
 - ☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.
 - ☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
 - ☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.
8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.
- ☐ **Attachment E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.
- ☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.
9. ☒ **Attachment F - Structural Practices.** A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.
10. ☒ **Attachment G - Drainage Area Map.** A drainage area map supporting the following requirements is attached:
- ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.
 - ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.
 - ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.
 - ☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

- ☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.
11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.
- ☒ N/A
12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.
13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

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

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

- 18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
- 19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

- 20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.
- 21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
- 22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.



Attachment 6A – Spill Response Actions

No spills of hydrocarbons or hazardous substances are expected. However, in the event such an incidence does occur, the contractor should carefully follow the following TCEQ guidelines:

Cleanup:

1. Clean up leaks and spills immediately.
2. Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
3. Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly.

Minor Spills:

1. Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
2. Use absorbent materials on small spills rather than hosing down or burying the spill.
3. Absorbent materials should be promptly removed and disposed of properly.
4. Follow the practice below for a minor spill:
 - a. Contain the spread of the spill.
 - b. Recover spilled materials.
 - c. Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills:

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities. Spills should be cleaned up immediately:

1. Contain spread of the spill.
2. Notify the project foreman immediately.
3. If the spill occurs on paved or impermeable surfaces, clean up using “dry” methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
4. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills:

From any event, the Reportable Quantity (RQ) = for high toxic materials the RQ>25 gallons. For petroleum/hydrocarbon liquids, spills the RQ>250 gallons (on land) or that which creates “a sheen” on water. Only certified Hazmat teams will be responsible for handling the material at the site.

For significant or hazardous spills that are in reportable quantities:

1. Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor’s responsibility to have all emergency phone numbers at the construction site. Additionally, in the event of a hazardous material spill, local Williamson county and/or city of Round Rock police, fire and potentially EMS should be contacted in order to initiate the hazardous material response team.
2. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110, 119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
3. Notifications should first be made by telephone and followed up with a written report of which one copy is to be kept onsite in the report binder and one copy provided to the TCEQ.
4. The services of a spill contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
5. Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at:

<http://www.tceq.state.tx.us/response/spills.html>



Attachment 6B – Potential Sources of Contamination

No particular activity or process during construction is anticipated to present a significant risk of being a potential source of contamination. However, during regular construction operations, several common and minor risks of contamination are anticipated. Should the unforeseeable mishap occur during construction or regular operation of the facility, the contractor shall follow the guidelines set forth in “Attachment 4A – Spill Response Actions.”

Potential sources of sediment to stormwater runoff:

- Clearing and grubbing
- Grading and excavation
- Vehicle tracking
- Topsoil stripping and stockpiling
- Landscaping

Potential pollutants and sources, other than sediment, to stormwater runoff:

- Combined Staging Area – small fueling, minor equipment maintenance, sanitary facilities.
- Materials Storage Area – solvents, adhesives, paving materials, aggregates, trash, etc.
- Construction Activities – paving, concrete pouring
- Concrete Washout Area

Potential Onsite Pollutants:

- Fertilizer
- Concrete
- Glue, adhesives
- Gasoline, diesel fuel, hydraulic fluids, antifreeze
- Sanitary toilets



Attachment 6C – Sequence of Major Activities

1. Temporary erosion and sedimentation controls are to be installed as indicated on the approved site plan and in accordance with the stormwater pollution prevention plan (SWPPP) that is required to be posted on the site. Approximately 0.471 acres will be disturbed during this activity.
2. The environmental project manager, and/or site supervisor, and/or designated responsible party, and the general contractor will follow the storm water pollution prevention plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with city inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion and sedimentation control plan.
3. Temporary erosion and sedimentation controls will be inspected and maintained in accordance with the stormwater pollution plan (SWPPP) posted on the site.
4. Begin site clearing and demolition activities. Approximately 0.471 acres will be disturbed during this activity.
5. Complete construction and begin re-vegetation of the site.
6. Upon completion of the site construction and re-vegetation of a project site, the design engineer shall submit an engineer's letter of concurrence to the City of Round Rock indicating that construction, including re-vegetation, is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate city inspector.
7. After construction is complete and all disturbed areas have been re-vegetated per plan to at least 90% established, remove the temporary erosion and sedimentation controls, and complete any necessary final re-vegetation resulting from removal of the controls. Conduct any maintenance and rehabilitation that is needed.



Attachment 6D – Temporary Best Management Practices and Measures

Prior to the commencement of any construction activity whatsoever, the contractor shall install the silt fencing and inlet protection per the Erosion and Sedimentation Control Plan. The silt fencing shall be installed per TCEQ and local requirements. The proposed temporary BMP are intended to control increased TSS from construction activities in the following manner:

- A.) The proposed development receives stormwater runoff from adjacent pond access road situated along the east of the proposed site and from a portion of Emmanuel Street located on the north side of the proposed site.
- B.) The temporary BMPs proposed during construction activities will prevent sediment-laden runoff from pollutant sources listed in 'Attachment 4B – Potential Sources of Contamination' from leaving the proposed site. The primary method of controlling sediment-laden stormwater runoff is through silt fencing. The silt fencing will be placed per plan along the downslope edges of the project area.
- C.) With the temporary silt fences in place, no unfiltered stormwater runoff will enter any surface streams or sensitive features.
- D.) The proposed project seeks to honor the natural drainage patterns that currently exist in the proposed project area. There are no known geologic or manmade features that were discovered on the site. As per geological assessment report, an on-site water well was properly plugged and there are no known water wells at the site. Details are provided in the Geological Assessment report within the Geologic Assessment section of this WPAP application. After construction is completed, the site will maintain its current drainage patterns with the stormwater runoff draining towards the northwest.



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Attachment 6E – Request to Temporarily Seal a Feature

No temporary sealing of naturally occurring sensitive features on the site are proposed.

This section is not applicable to this project.



Attachment 6F – Structural Practices

The following temporary BMP structural practices will be employed on the site:

1. Silt Fence – used as barrier protection around the downslope perimeter of the project. The fence retains sediment primarily by retarding flow and promoting deposition on the uphill side of the slope. Runoff is filtered as it passes through the geotextile fabric.
2. Concrete Washout Area – used to prevent or reduce the discharge of pollutants to stormwater from concrete waste. The concrete washout area is a designated area to wash out wastes into the temporary pit where the concrete can set, be broken up, and be disposed of properly.
3. Stabilized Construction Entrance – used to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. The stabilized construction entrance is a stabilized pad of crushed stone and should be located at any point traffic will be entering or leaving the construction site from a public right-of-way.
4. Contractor Staging Area – used as an area for the contractor to store and prepare equipment and materials before using them during the construction phase.

The placement of structural practices in the floodplain has been avoided.



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Attachment 6G – Drainage Area Map

See attached Construction Plans for the Existing and Proposed Drainage Area Maps.



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Attachment 6H – Temporary Sediment Pond(s) Plan and Calculations

There are no temporary sediment ponds or basins proposed as a temporary BMP for stormwater management on this project.

This section is not applicable to this project.



Attachment 6I – Inspection and Maintenance for BMPs

The inspection and maintenance of temporary BMP's will be made according to TCEQ RG-348, Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices.

Inspection Personnel:

Inspections shall be conducted by qualified representatives of the contractor acting on behalf of the owner or a designated party if hired separately by the owner. Each operator must delegate authority to the specifically described position or person performing inspections, as provided by 30 TAC 305.128, as an authorized person for signing reports and performing certain activities requested by the director or required by the TPDES general permit. This delegation of authority must be provided to the director of TCEQ in writing and a copy shall be kept along with the signed effective copy of the SWP3.

Inspection Schedule and Procedures - Inspections must comply with the following:

- A.) An inspection shall occur weekly and after any rain event. This inspection should include an inspection of the temporary concrete washout area.
- B.) The authorized party shall inspect all disturbed areas of the site, areas used for storage of materials that are exposed to precipitation, structural control measures, and locations where vehicles enter or exit the site.
- C.) Disturbed areas and areas used for storage of materials that are exposed to precipitation or within limits of the 1% annual chance (100 year) floodplain must be inspected for evidence of, or the potential for, pollutants entering the runoff from the site. Erosion and sediment control measures identified in the plan must be observed to ensure that they are operating correctly. Observations can be made during wet or dry weather conditions. Where discharge locations or points are accessible, they must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. This can be done by inspecting receiving waters to see whether any signs or erosion or sediment are associated with the discharge location. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.
- D.) Based on the results of the inspection, the site description and the pollution prevention measures identified in the plan must be revised as soon as possible after an inspection that reveals inadequacies. The inspection and plan review process must provide for timely implementation of any changes to the plan with 7 calendar days following the inspection.
- E.) An inspection report that summarizes the scope of the inspection, name(s) and qualifications of personnel conducting the inspection, the dates of the inspection, major observations relating to the implementation of the SWP3. Major observations shall include as a minimum location of discharges of sediment or other pollutants from the site, location of BMPs that need to be maintained, location of BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where BMPs are needed. Actions taken as a result of the inspections must be described within, and retained as a part of, the SWP3. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the facility or site is in compliance with the SWP3 and the TPDES general permit. The report must be signed by the authorized representative delegated by the operators in accordance with TAC 305.128.

Maintenance and Corrective Actions - Maintenance of erosion control facilities shall consist of the minimum requirements as follows:

- A.) In ongoing construction areas inspect erosion control improvements to confirm facilities are in place and operable. Where facilities have been temporarily set aside or damaged due to construction activity, place facilities in service before leaving job site.
- B.) If weather forecast predicts possibility of rain, check entire facilities throughout site to assure facilities are in place and operable. If job site weather conditions indicate high probability of rain, make special inspection of erosion control facilities.
- C.) After rainfall events review erosion control facilities as soon as site is accessible. Clean berm/swales and other structural facilities. Determine where additional facilities or alternative techniques are needed to control sediment leaving site.
- D.) After portions of site have been seeded, review these areas on regular basis in accordance with project specifications to assure proper watering until grass is established. Reseed areas where grass is not well established.
- E.) Spills are to be handled as specified by the manufacturer of the product in a timely safe manner by personnel. The site superintendent will be responsible for coordinating spill prevention and cleanup operations.
- F.) Concrete trucks will discharge extra concrete or wash out drum only at an approved location on site. Residual product shall be properly disposed of.
- G.) Inspect vehicle entrance and exits for evidence of off-site tracking and correct as needed.
- H.) If sediment escapes the site, the contractor where feasible and where access is available shall collect and remove sedimentation material by appropriate non-damaging methods. Additionally, the contractor shall correct the condition causing discharges.
- I.) If inspections or other information sources reveal a control has been used incorrectly, or that a control is performing inadequately, the contractor must replace, correct or modify the control as soon as practical after discovery of the deficiency.

Silt Fence – Inspection and maintenance guidelines for silt fences are as follows:

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

Stabilized Construction Entrance – Inspection and maintenance guidelines for the stabilized construction entrance are as follows:

- A.) 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.
- B.) All sediments spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.
- C.) When necessary, wheels should be cleaned to remove sediment prior to entrance onto public rights-of-way.
- D.) 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.

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

Concrete Washout Area – Inspection and maintenance guidelines for the concrete washout area are as follows:

- A.) Concrete washout areas should be located at least 50 feet from sensitive features, storm drains, open ditches, or water bodies.
- B.) Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- C.) Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
- D.) When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions, or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.



Attachment 6J – Schedule of Interim and Permanent Soil Stabilization Practices

Prior to Disturbance – Install all temporary erosion and sedimentation control features.

During Construction – Inspect and maintain all temporary erosion and sedimentation control structures per TCEQ regulations.

After Completion of Permanent Erosion and Sediment Controls – Stabilize and restore all areas disturbed during construction. Permanent seeding will be applied immediately after the final design grades are achieved on portions of the site but no later than 14 days after construction activities have permanently ceased. After the entire site is stabilized, any sediment that has accumulated will be removed and hauled off-site for disposal. Construction debris, trash and temporary BMPs including silt fences, material storage areas, sanitary toilets, etc. will also be removed and any areas disturbed during removal will be seeded immediately.

Section VII
Permanent Stormwater Section
(TCEQ-0600)

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)(li), (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: Michael Easton Mundine, P.E.

Date: 05/22/2024

Signature of Customer/Agent



Regulated Entity Name: Global Kids Preschool

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



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Attachment 7A – 20% or Less Impervious Cover Waiver

The site will be used for a small business site, but the project will also have more than 20% impervious cover.

This section is not applicable to this project.



Attachment 7B – BMPs for Upgradient Stormwater

The proposed development receives stormwater runoff from adjacent properties situated to the north and west.

Existing basin #1 receives flows from approximately 6,720.38 square feet of offsite area to the north and west of the proposed site. Of this, approximately 4,592.71 square feet is impervious cover from Emmanuel Street and the private pond access drive to the west of the site. Similarly, for basin 2 under existing conditions, the stormwater from the northern side has an offsite area with an impervious cover of 2,474.74 square feet which is a combination of a portion of Emmanuel Street, another portion of existing parking spaces and some landscaped island which will sheet flow onto the site area and then drain towards south direction to the offsite area. Additionally, Basin 2 will receive offsite flows from the pond access road on the west side with a square footage of approximately 855.96 square feet of which about 273.35 square feet is impervious and remaining is grassy area.

For Proposed Drainage Basin 1 the upgradient stormwater flow pattern is similar to Existing basin 1 where a combined 6,720.38 square feet of offsite area flows from the east side pond access road & grassy area and northern portion of Emmanuel Street and grassy area receives sheet flow of which 4,592.71 square feet is impervious cover. For Basin 2, under proposed conditions, 273.35 sf of impervious cover is within offsite area of 855.96 square feet (along pond access road) in basin 2. This runoff will drain towards in the south direction and into the existing grate inlet which is situated outside the plat boundary but in close proximity. Additional offsite area with an impervious cover of 1,970.58 square feet in Basin 2 is due to a combination of existing parking spaces along Emmanuel Street, some landscaped island which will sheet flow onto the site area and then drain towards in the south direction to the offsite area.



Attachment 7C – BMPs for On-Site Stormwater

In general accordance with the TCEQ Technical Guidance Manual, onsite stormwater BMP's must be designed to remove at least 80% of the increased total suspended solids (TSS) from the proposed project. Three water quality features are proposed to meet the above TSS removal requirements. A vegetative filter strip will treat runoff from the 6 parking spaces proposed along Emmanuel Street, a retention/irrigation system will be used to treat the 3,005 square foot proposed building, and a grassy swale will be used to treat 7 parking space access drive, the concrete ramps to the building, and some sidewalk. Two separate post-developed drainage basins were defined based on the proposed site grading. These drainage basins can be seen on the Developed Conditions Drainage Area Map and descriptions of them can be found in "Attachment 3B – Volume and Character of Stormwater." The total area of the site is 0.791 acres with 0.217 acres of pre-development impervious cover and 0.351 acres of impervious cover after development. This information was plugged into TCEQ's TSS Removal Calculations spreadsheet to find that the development has a total of 116 lbs of TSS that needs to be removed to meet the total 80% TSS removal requirements. The three separate water quality features will combine to remove 116 lbs of TSS.

The vegetative filter strip is proposed to treat 1,049.48 square feet or 0.024 acres of impervious cover. According to Table 3-1 of TCEQ's Technical Guidance Manual, vegetative filter strips provide 85% TSS removal efficiency. The proposed impervious cover of 0.024 acres gives basin a maximum load of 20 lbs of TSS that can be removed from this basin using this treatment technique, and the vegetative filter strip is proposed to remove 20 lbs. The retention/irrigation system is proposed to treat the impervious cover of the 3,005 square foot or 0.0689 acre of building. According to Table 3-1, a retention/irrigation system provides 100% TSS removal efficiency. The proposed impervious cover of 0.0689 acres gives basin a maximum load of 60 lbs of TSS that can be removed from this basin using this technique, and the rainwater harvesting is proposed to remove 51 lbs. The grassy swale is proposed to treat the 8,557.66 square feet or 0.196 acres of area. According to Table 3-1, grassy swales have a TSS removal efficiency of 70%. The 0.196 acres gives the basin a maximum load of 45 lbs that can be removed from this basin using this water quality feature, and 45 lbs is needed to be removed from the basin to meet the overall requirements of TSS removal for the site.

The vegetative filter strip is proposed to remove 20 lbs of TSS. The retention/irrigation system is proposed to remove 51 lbs of TSS. The grassy swale is proposed to remove 45 lbs of TSS. Combined, these three water quality features will remove a total of 116 lbs of TSS. The calculations performed using TCEQ's spreadsheet can be found in the following pages.

Overall Water Quality Calculations		
Total TSS Required to be Removed		116 lbs
Water Quality Feature #	Water Quality Feature Description	TSS Removed lbs
1	Vegetative Filter Strip	20
2	Rainwater Harvesting	51
3	Grassy Swale	45
Total TSS to be removed		116

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009



Additional information is provided for cells with a red triangle in the upper right corner

Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG

Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will

1. The Required Load Reduction for the total project:

Calculations from RG-348

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = Required TSS removal result

A_N = Net increase in impervious area

P = Average annual precipitation

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

County = **Williamson**

Total project area included in plan * = **0.79** acres

Predevelopment impervious area within the limits of the plan * = **0.22** acres

Total post-development impervious area within the limits of the plan * = **0.35** acres

Total post-development impervious cover fraction * = **0.44**

P = **32** inches

$L_{M \text{ TOTAL PROJECT}}$ = **116** lbs.

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

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

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

Drainage Basin/Outfall Area No. = **1**

Total drainage basin/outfall area = **0.02** acres

Predevelopment impervious area within drainage basin/outfall area = **0.00** acres

Post-development impervious area within drainage basin/outfall area = **0.02** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

$L_{M \text{ THIS BASIN}}$ = **20** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**

Removal efficiency = **85** percent

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

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

where:

A_C = Total On-Site drainage area

A_I = Impervious area proposed in

A_P = Pervious area remaining in th

L_R = TSS Load removed from this

A_C = **0.02** acres

A_I = **0.02** acres

A_P = **0.00** acres

L_R = **23** lbs

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

Desired $L_{M \text{ THIS BASIN}}$ = **20** lbs.

F = **0.88**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Rainfall Depth = **1.50** inches

Post Development Runoff Coefficient = **0.82**

On-site Water Quality Volume = **107** cubic feet

Calculations from RG-348

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

$$y^{1.67} S^{0.5}$$

$$Q = CiA = 4.71 \text{ cfs}$$

To calculate the flow velocity in the swale:

$$V \text{ (Velocity of Flow in the swale)} = Q/A_{CS} = 0.36 \text{ ft/sec}$$

To calculate the resulting swale length:

$$L = \text{Minimum Swale Length} = V \text{ (ft/sec)} * 300 \text{ (sec)} = 107.24 \text{ feet}$$

If any of the resulting values do not meet the design requirement set forth in RG-348, the des

15B. Alternative Method using Excel Solver

$$\text{Design } Q = CiA = 4.71 \text{ cfs}$$

$$\begin{aligned} \text{Manning's Equation } Q &= 0.76 \text{ cfs} \\ \text{Swale Width} &= 6.00 \text{ ft} \end{aligned}$$

Instructions are provided to the right (green comments).

$$\begin{aligned} \text{Flow Velocity} &= 0.36 \text{ ft/s} \\ \text{Minimum Length} &= 107.24 \text{ ft} \end{aligned}$$

Instructions are provided to the right (blue comments).

$$\begin{aligned} \text{Design Width} &= 6 \text{ ft} \\ \text{Design Discharge} &= 0.76 \text{ cfs} \\ \text{Design Depth} &= 0.33 \text{ ft} \\ \text{Flow Velocity} &= 0.32 \text{ cfs} \\ \text{Minimum Length} &= 97.48 \text{ ft} \end{aligned}$$

If any of the resulting values do not meet the design requirement set forth in RG-348, the design paran

If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the

16. Vegetated Filter Strips

Designed as Required in RG

There are no calculations required for determining the load or size of vegetative filter strips.

The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction c the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with n across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as k

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described c

17. Wet Vaults

Designed as Required in RG

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Additional information is provided for cells with a red triangle in the upper right corner
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG
Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will

1. The Required Load Reduction for the total project:

Calculations from RG-348

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = Required TSS removal result

A_N = Net increase in impervious area

P = Average annual precipitation

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

County =	Williamson	
Total project area included in plan *	0.79	acres
Predevelopment impervious area within the limits of the plan *	0.22	acres
Total post-development impervious area within the limits of the plan *	0.35	acres
Total post-development impervious cover fraction *	0.44	
P =	32	inches

$L_{M \text{ TOTAL PROJECT}}$ = 116 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. =	3	
Total drainage basin/outfall area =	0.20	acres
Predevelopment impervious area within drainage basin/outfall area =	0.07	acres
Post-development impervious area within drainage basin/outfall area =	0.12	acres
Post-development impervious fraction within drainage basin/outfall area =	0.63	
$L_{M \text{ THIS BASIN}}$ =	45	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Grassy Swale
Removal efficiency = 70 percent

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

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

where:

A_C = Total On-Site drainage area

A_I = Impervious area proposed in

A_P = Pervious area remaining in th

L_R = TSS Load removed from this

A_C = **0.20** acres

A_I = **0.12** acres

A_P = **0.07** acres

L_R = **97** lbs

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

Desired $L_{M \text{ THIS BASIN}}$ = **45** lbs.

F = **0.47**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Rainfall Depth = **0.38** inches

Post Development Runoff Coefficient = **0.44**

On-site Water Quality Volume = **121** cubic feet

Calculations from RG-348

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

15. Grassy Swales

Designed as Required in RG

Design parameters for the swale:

Drainage Area to be Treated by the Swale = A =	0.20 acres
Impervious Cover in Drainage Area =	0.12 acres
Rainfall intensity = i =	1.1 in/hr
Swale Slope =	0.01 ft/ft
Side Slope (z) =	3
Design Water Depth = y =	0.33 ft
Weighted Runoff Coefficient = C =	0.59

A_{CS} = cross-sectional area of flow in Swale =	1.00 sf
P_W = Wetted Perimeter =	4.11 feet
R_H = hydraulic radius of flow cross-section = A_{CS}/P_W =	0.24 feet
n = Manning's roughness coefficient =	0.2

15A. Using the Method Described in the RG-348

Manning's Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$

$$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy = 2.00 \text{ feet}$$

$$Q = CiA = 0.13 \text{ cfs}$$

To calculate the flow velocity in the swale:

$$V \text{ (Velocity of Flow in the swale)} = Q/A_{CS} = 0.13 \text{ ft/sec}$$

To calculate the resulting swale length:

$$L = \text{Minimum Swale Length} = V \text{ (ft/sec)} * 300 \text{ (sec)} = 54.24 \text{ feet}$$

If any of the resulting values do not meet the design requirement set forth in RG-348, the des

15B. Alternative Method using Excel Solver

Design Q = CiA =	0.13 cfs
Manning's Equation Q =	0.76 cfs
Swale Width=	6.00 ft

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Additional information is provided for cells with a red triangle in the upper right corner
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-
Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will r

1. The Required Load Reduction for the total project:

Calculations from RG-348

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = Required TSS removal result

A_N = Net increase in impervious area

P = Average annual precipitation

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

County =	Williamson	
Total project area included in plan *	0.79	acres
Predevelopment impervious area within the limits of the plan *	0.22	acres
Total post-development impervious area within the limits of the plan *	0.35	acres
Total post-development impervious cover fraction *	0.44	
P =	32	inches

$L_{M \text{ TOTAL PROJECT}}$ = 116 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. =	2	
Total drainage basin/outfall area =	0.07	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.07	acres
Post-development impervious fraction within drainage basin/outfall area =	1.00	
$L_{M \text{ THIS BASIN}}$ =	60	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Retention / Irrigation
Removal efficiency = 100 percent

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

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

where:

A_C = Total On-Site drainage area
 A_I = Impervious area proposed in
 A_P = Pervious area remaining in tl
 L_R = TSS Load removed from this

A_C = **0.07** acres
 A_I = **0.07** acres
 A_P = **0.00** acres
 L_R = **76** lbs

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

Desired $L_{M \text{ THIS BASIN}}$ = **51** lbs.

F = **0.67**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Rainfall Depth = **0.71** inches
Post Development Runoff Coefficient = **0.82**
On-site Water Quality Volume = **145** cubic feet

Calculations from RG-348

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 = 29
Total Capture Volume (required water quality volume(s) x 1.20) = 174 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.

7. Retention/Irrigation System Designed as Required in RG

Required Water Quality Volume for retention basin = 174 cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = 0.1 in/hr
Irrigation area = 698 square feet
0.02 acres

8. Extended Detention Basin System Designed as Required in RG

Required Water Quality Volume for extended detention basin = NA cubic feet

9. Filter area for Sand Filters Designed as Required in RG

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet
Minimum filter basin area = NA square feet
Maximum sedimentation basin area = NA square feet
Minimum sedimentation basin area = NA square feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet
Minimum filter basin area = NA square feet
Maximum sedimentation basin area = NA square feet
Minimum sedimentation basin area = NA square feet

10. Bioretention System Designed as Required in RG

Required Water Quality Volume for Bioretention Basin = NA cubic feet

11. Wet Basins Designed as Required in RG

Required capacity of Permanent Pool = NA cubic feet
Required capacity at WQV Elevation = NA cubic feet



Attachment 7D – BMPs for Surface Streams

No BMPs are proposed to specifically affect surface streams.

The function of the proposed BMP is to remove TSS from stormwater runoff while retaining natural flow patterns downstream of the site. Therefore, the BMP used for reducing pollutant loads in surface stream is described in the previous section: “Attachment 7C – BMPs for On-site Stormwater”.



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TBPE FIRM #F-19351

Attachment 7E – Request to Seal Features

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 for any features on this site.

This section is not applicable to this project.



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Attachment 7F – Construction Plans

An electronic copy of the design plans is included with this submittal. Full-sized copies of the construction plans are submitted separately.



Attachment 7G – Inspection, Maintenance, Repair, and Retrofit Plan

The following are recommended maintenance procedures for Vegetative Filter Strip, Grassy Swales and Retention/irrigation, as outlined in TCEQ's "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,"

Vegetative Filter Strips

Once a vegetated area is well established, little additional maintenance is generally necessary. The key to establishing a viable vegetated feature is the care and maintenance it receives in the first few months after it is planted. Once established, all vegetated BMPs require some basic maintenance to insure the health of the plants including:

Pest Management: An Integrated Pest Management (IPM) Plan should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.

Seasonal Mowing and Lawn Care: If the filter strip is made up of turf grass, it should be mowed as needed to limit vegetation height to 18 inches, using a mulching mower (or removal of clippings). If native grasses are used, the filter may require less frequent mowing, but a minimum of twice annually. Grass clippings and brush debris should not be deposited on vegetated filter strip areas. Regular mowing should also include weed control practices, however herbicide use should be kept to a minimum (Urbonas et al., 1992). Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients. Irrigation of the site can help assure a dense and healthy vegetative cover.

Inspection: Inspect filter strips at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The strip should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.

Debris and Litter Removal: Trash tends to accumulate in vegetated areas, particularly along highways. Any filter strip structures (i.e. level spreaders) should be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection, but should be performed no less than 4 times per year.

Sediment Removal: Sediment removal is not normally required in filter strips, since the vegetation normally grows through it and binds it to the soil. However, sediment may accumulate along the upstream boundary of the strip preventing uniform overland flow. Excess sediment should be removed by hand or with flat-bottomed shovels.

Grass Reseeding and Mulching: A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during filter strip establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established. Bare spots and areas

of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Corrective maintenance, such as weeding or replanting should be done more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation may require irrigation immediately after planting, and during particularly dry periods, particularly as the vegetation is initially established.

Grassy Swales

Maintenance for grassy swales is minimal and is largely aimed at keeping the grass cover dense and vigorous. Maintenance practices and schedules should be developed and included as part of the original plans to alleviate maintenance problems in the future. Recommended practices include (modified from Young et al., 1996):

Pest Management: An Integrated Pest Management (IPM) Plan should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.

Seasonal Mowing and Lawn Care: Lawn mowing should be performed routinely, as needed, throughout the growing season. Grass height should not exceed 18 inches. Grass cuttings should be collected and disposed of offsite, or a mulching mower can be used. Regular mowing should also include weed control practices; however, herbicide use should be kept to a minimum (Urbonas et al., 1992). Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients.

Inspection: Inspect swales at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The swale should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections should be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.

Debris and Litter Removal: Trash tends to accumulate in swale areas, particularly along highways. Any swale structures (i.e. check dams) should be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection, but should be performed no less than two times per year (Urbonas et al., 1992).

Sediment Removal: Sediment accumulating near culverts and in channels needs to be removed when they build up to 3 inches at any spot, or cover vegetation. Excess sediment should be removed by hand or with flat-bottomed shovels. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level with the bottom of the swale. Sediment removal should be performed periodically, as determined through inspection.

Grass Reseeding and Mulching: A healthy dense grass should be maintained in the channel and side slopes. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during swale establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established.

Public Education: Private homeowners are often responsible for roadside swale maintenance. Unfortunately, overzealous lawn care on the part of homeowners can present some problems. For example, mowing the swale too close to the ground, or excessive application of fertilizer and pesticides will all be detrimental to the performance of the swale. Pet waste can also be a problem in swales, and should be removed to avoid contamination from fecal coliform and other waste-associated bacteria. The delegation of maintenance responsibilities to individual

landowners is a cost benefit to the locality. However, localities should provide an active educational program to encourage the recommended practices.

Retention/Irrigation

The following guidelines should be used to develop the maintenance plan for the retention/irrigation BMP.

Inspections: The irrigation system, including pumps, should be inspected and tested (or observed while in operation) to assure proper operation at least 6 times annually. Two of these inspections should occur during or immediately following wet weather. Any leaks, broken spray heads, or other malfunctions with the irrigation system should be repaired immediately. In particular, sprinkler heads must be checked to determine if any are broken, clogged, or not spraying properly. All inspection and testing reports should be kept on site and accessible to inspectors.

Sediment Removal: Remove sediment from splitter box, basin, and wet wells at least two times per year or when the depth reaches 3 inches.

Irrigation Areas: To the greatest extent practicable, irrigation areas are to remain in their natural state. However, vegetation must be maintained in the irrigation area such that it does not impede the spray of water from the irrigation heads. Tree and shrub trimmings and other large debris should be removed from the irrigation area.

Debris and Litter Removal: Debris and litter will accumulate near the basin pump and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the irrigation system.

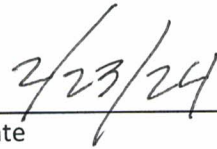
Nuisance Control: Standing water or soggy conditions in the retention basin can create nuisance conditions for nearby residents. Odors, mosquitoes, weeds, and litter are all occasionally perceived to be problems. Most of these problems are generally a sign that regular inspections and maintenance are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

Record Keeping

Records of all inspections and maintenance for the facility shall be recorded and maintained for the water quality facility beginning at startup of the facility. Record keeping shall be detailed to provide type of maintenance or repair made, date of the service, and detail of the extent of the maintenance or repair. The owner or responsible party of the facility is responsible for maintaining the facility as outlined in this plan until such time as another entity assumes responsibility in writing or ownership of the property is transferred. A copy of the transfer of ownership or responsibility must be filed with the Executive Director of TCEQ within 30-days of the transfer.



Owner's Signature



Date



Engineer's Signature



05/22/2024

Date



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Attachment 7H – Pilot-Scale Field Testing Plan

The TCEQ's RG-348 Design Manual Chapter 3 Permanent Structural Best Management (BMP) was used to design permanent BMPs and measures for this site.

This section is not applicable to this project.



Attachment 7I—Measures for Minimizing Surface Stream Contamination

Three permanent BMP are proposed for this development and are being utilized to treat the stormwater runoff from the proposed improvements. These BMOs are discussed in Attachment 7C: “BMPs for Onsite Stormwater.” Peak runoff rates for the existing and developed conditions were calculated using Rational Method. Atlas 14 rainfall precipitation data obtained from City of Austin Zone 2 was input into Rational Excel spreadsheet and used in conjunction with the drainage basin information found in the previous section to determine the existing and post-developed runoff rates in the 2-year, 10-year, 25-year, and 100-year storm events.

The pre-developed site consists of an existing Daycare facility along with the corresponding paved parking spaces. The 0.791-acre lot is located at 4 Chisholm Trail Road, Round Rock, Texas 78681 inside Williamson County, and within the city limits of the City of Round Rock. The proposed site is located on the southwest corner of the intersection of Chisholm Trail Road and Emmanuel Street. The topography and existing improvements shown in the plans are based on a survey provided by JPH Land Surveying Consultants dated January of 2023. Based on the surveyed topography, there is a ridge running north to south near the middle of the property that divides the property into two separate drainage basins. This ridge and the drainage basins it makes can be found on the existing conditions drainage area plan

Existing Drainage Basin 1 (EX-1) will follow a drainage pattern where flow is diverted to existing 3’x3’ grate inlet adjacent to the pond access road. The pervious areas in EX-1 consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is “D”. The basin has an impervious cover area of 3,680 square feet or 21% of the total 0.402-acre basin. Existing Drainage Basin 2 (EX-2) drains to the south of the property towards Brushy Creek. The pervious areas in EX-2 consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is “D”. The basin has an impervious cover area of 11,420 square feet or 42.3% of the total 0.620-acre basin. A summary of EX-1 and EX-2 can be found in the table below.

Existing Conditions Drainage Calculations					
Drainage Basin	Basin Area (acres)	Impervious (sf)	Impervious (acres)	IC%	Time of Conc. (min)
EX-1	0.402	3,680.00	0.08	21.02	11.23
EX-2	0.620	11,420.00	0.26	42.29	6.13

Developed Conditions Hydrologic Analysis

The proposed improvements to the site consist of adding an approximately 3,005.00 square foot office building, sidewalk, thirteen parking spaces, and corresponding utility infrastructure. Since these proposed improvements do not change the natural flow of the stormwater runoff leaving the site, the overall size and acreage of proposed basins is the same as the existing basins.

The Proposed Drainage Basin 1 (PR-1) consists of the proposed 3,005 square foot office building, sidewalk and thirteen parking spaces. The pervious areas in the drainage basin consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is “D”. PR-1 has an impervious cover of 10,413 square feet or 52.3% of the entire 0.457-acre basin. The Proposed Drainage Basin 2 (PR-2) consists of an existing building, driveway, parking and will follow the drainage patterns as under existing drainage basin EX-2. The pervious areas in the existing drainage basin consists of grass in good condition over clay, the existing onsite soils are Crawford clay (CfB) with 1 to 3 percent slopes and the hydrologic Soil Group is “D”. The

basin has an impervious cover area of 11,420 square feet or 41.9% of the total 0.626-acre basin. A summary of PR-1 and PR-2 can be found in the table below.

Developed Conditions Drainage Calculations					
Drainage Basin	Basin Area (acres)	Impervious (sf)	Impervious (acres)	IC%	Time of Conc. (min)
PR-1	0.457	10,412.73	0.24	53.45	7.27
PR-2	0.564	11,420.00	0.26	46.48	6.13

Drainage Analysis

Drainage analysis was performed utilizing the Rational Method to analyze the stormwater runoff from the 2, 10, 25, and 100-year rainfall events. The Rational Method is based on a direct relationship between rainfall and is expressed by the following equation:

$$Q_p = CiA$$

Where:

Q_p is defined as the peak runoff in cubic feet per second (cfs).

C is the coefficient of runoff representing the ratio of peak runoff rate " Q_p " to average rainfall intensity rate for a specified area.

i is the average intensity of rainfall in inches per hour for a period of time equal to the time of concentration (t_c) for the drainage area under consideration.

A is the area in acres contributing runoff to the point of design.

The time of concentration (t_c) was calculated for each existing and proposed drainage basin. The calculated times of concentration and methods of calculating these times can be found for the existing and proposed drainage basins in the sections above.

Intensity (i) was obtained using City of Austin Zone 2 IDF curve table. Intensity can be calculated using the following equation:

$$i = \frac{a}{(t + b)^c}$$

Where:

t is the storm duration in minutes, equal to the time of concentration for the drainage basin.

a , b , and c are coefficients for different storm frequencies. These coefficients vary based on the design frequency of the storm event and can be found in the table below.

Storm Frequency	a	b	c
2	46.99	9.575	0.7517
5	56.57	9.176	0.7402
10	60.75	8.361	0.7185
25	64.56	7.382	0.6814
100	76.9	6.726	0.6554

The coefficient of runoff (C) was calculated based on the weighted average composite c value of pervious and impervious ground cover. These c values can be found in Table 2-3 in section 2.4.1 of the City of Austin Drainage Criteria Manual and vary based on the design frequency of the storm event. The c values for various surfaces found on the proposed site can be seen in the table below.

Character of Surface	2-year	10-year	25-year	100-year
Concrete	0.75	0.83	0.88	0.97
Asphalt	0.73	0.81	0.86	0.95
Good Grass with 2-7% Average Slope	0.29	0.35	0.39	0.46

The area, time of concentration, rainfall intensity, coefficient of runoffs was calculated for the 2, 10, 25, and 100-year storm events for the existing drainage basins. A summary of this information for the 25 and 100-year storm events can be found in the table below.

Area	Acres	T _c (min)	I ₂₅ (in/hr)	I ₁₀₀ (in/hr)	C ₂₅	C ₁₀₀	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)
EX-1	0.402	11.23	8.80	11.59	0.49	0.57	1.70	2.70
EX-2	0.620	6.13	10.95	14.42	0.60	0.68	4.10	6.10

The flow rates for the 2, 10, 25, and 100-year storm events under existing conditions can be found in the table below.

Existing Conditions Drainage Calculations				
Event	2-YR (CFS)	10-YR (CFS)	25-YR (CFS)	100-YR (CFS)
EX-1	0.80	1.30	1.70	2.70
EX-2	1.80	3.00	4.10	6.10

Using the equation and information above, the area, time of concentration, rainfall intensity, coefficient of runoffs were calculated for the 2, 10, 25, and 100-year storm events for the proposed drainage basins were calculated as well. A summary of this information for the 25 and 100-year storm events can be found in the table below.

Area	Acres	T _c (min)	I ₂₅ (in/hr)	I ₁₀₀ (in/hr)	C ₂₅	C ₁₀₀	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)
PR-1	0.457	7.27	10.36	13.64	0.65	0.73	3.10	4.60
PR-2	0.564	6.13	10.95	14.42	0.62	0.70	3.80	5.70

The flow rates for the 2, 10, 25, and 100-year storm events can be found in the table below.

Developed Conditions Drainage Calculations				
Event	2-YR (CFS)	10-YR (CFS)	25-YR (CFS)	100-YR (CFS)
PR-1	1.40	2.40	3.10	4.60
PR-2	1.70	2.90	3.80	5.70

A comparison of the existing and developed conditions drainage calculations can be found in the table below.

Existing vs. Developed Conditions Drainage Calculations				
Event	2-YR (CFS)	10-YR (CFS)	25-YR (CFS)	100-YR (CFS)
1	0.6	1.1	1.4	1.9
2	-0.1	-0.1	-0.3	-0.4

Water Quality

Since this site is located in Edwards Aquifer Recharge Zone, water quality requirements will be met prior to releasing flows to the downstream existing grate inlet. We are proposing a vegetated filter strip (VFS) and grassy swale for treating runoff generated from the proposed parking spaces as well as rainwater harvesting for treating runoff from the building. The details of these BMPs are outlined and explained in detail with this TCEQ Water Pollution and Abatement Plan (WPAP).

Section VIII
Agent Authorization Form
(TCEQ-0599)

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

I _____ Anthony Bahr _____,
Print Name
Owner

Title - Owner/President/Other
of _____ Four Chisholm, LLC _____,
Corporation/Partnership/Entity Name
have authorized _____ Michael Easton Mundine, P.E. _____
Print Name of Agent/Engineer
of _____ 2P Consultants, LLC. _____
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:

[Signature]
Applicant's Signature

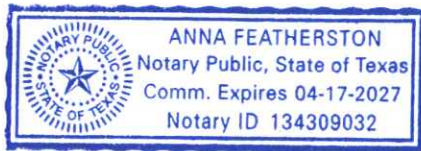
2/23/24
Date

THE STATE OF Texas §

County of Harris §

BEFORE ME, the undersigned authority, on this day personally appeared Anthony Bahr 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 23rd day of February, 2024.



[Signature]
NOTARY PUBLIC

Anna Featherston
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 4/17/2027

Section IX
Application Fee Form
(TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Global Kids Preschool

Regulated Entity Location: 4 Chisholm Trail Road, Round Rock, TX 78681

Name of Customer: Four Chisholm, LLC

Contact Person: Curtis Churchill

Phone: 512-924-3140

Customer Reference Number (if issued):CN _____

Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays

☐ Travis

☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar

☐ Medina

☐ Uvalde

☐ Comal

☐ Kinney

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

☒ Austin Regional Office

☐ San Antonio Regional Office

☐ Mailed to: TCEQ - Cashier

☐ Overnight Delivery to: TCEQ - Cashier

Revenues Section

Mail Code 214

P.O. Box 13088

Austin, TX 78711-3088

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

<i>Type of Plan</i>	<i>Size</i>	<i>Fee Due</i>
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	0.791 Acres	\$ 3,000.00
Sewage Collection System	10.4 L.F.	\$ 650.00
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: 05/22/2024

Application Fee Schedule

Texas Commission on Environmental Quality

Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

<i>Project</i>	<i>Cost per Linear Foot</i>	<i>Minimum Fee- Maximum Fee</i>
Sewage Collection Systems	\$0.50	\$650 - \$6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

<i>Project</i>	<i>Cost per Tank or Piping System</i>	<i>Minimum Fee- Maximum Fee</i>
Underground and Aboveground Storage Tank Facility	\$650	\$650 - \$6,500

Exception Requests

<i>Project</i>	<i>Fee</i>
Exception Request	\$500

Extension of Time Requests

<i>Project</i>	<i>Fee</i>
Extension of Time Request	\$150

Section X
Core Data Form
(TCEQ-10400)



TCEQ Core Data Form

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

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
<input checked="" type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
<input type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)		<input type="checkbox"/> 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		RN

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)			
<input checked="" type="checkbox"/> New Customer <input type="checkbox"/> Update to Customer Information <input type="checkbox"/> Change in Regulated Entity Ownership					
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)					
<i>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).</i>					
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
Four Chisholm, LLC					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
802697251		32063434248		30-0987956	
11. Type of Customer:		<input type="checkbox"/> Corporation		<input type="checkbox"/> Individual	Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship		<input type="checkbox"/> Other:	
12. Number of Employees				13. Independently Owned and Operated?	
<input checked="" type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher				<input type="checkbox"/> Yes <input type="checkbox"/> No	
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following					
<input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Owner & Operator <input type="checkbox"/> Other:					
<input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> VCP/BSA Applicant					
15. Mailing Address:	15720 Stone Oak Estates				
	City	Cypress	State	TX	ZIP 77429
16. Country Mailing Information (if outside USA)			17. E-Mail Address (if applicable)		
			Curtis@cedarbrooktx.com		
18. Telephone Number		19. Extension or Code		20. Fax Number (if applicable)	

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If 'New Regulated Entity' is selected, a new permit application is also required.)							
<input checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information							
<i>The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>							
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)							
Global Kids Preschool							
23. Street Address of the Regulated Entity: (No PO Boxes)	4 Chisholm Trail Road						
	City	Round Rock	State	TX	ZIP	78681	ZIP + 4
24. County	Williamson						

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

25. Description to Physical Location:							
26. Nearest City					State	Nearest ZIP Code	
<i>Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).</i>							
27. Latitude (N) In Decimal:		30.514667			28. Longitude (W) In Decimal:		97.689947
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
30	30	52.80	97	41	23.81		
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)	
8351				624410			
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)							
Commercial/Child Day Care Services							
34. Mailing Address:	15720 Stone Oak Estates						
	City	Cypress	State	TX	ZIP	77429	ZIP + 4
35. E-Mail Address:		curtis@cedarbrooktx.com					
36. Telephone Number			37. Extension or Code			38. Fax Number (if applicable)	
(512) 924-3140						() -	

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.


<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input checked="" type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Wastewater	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

SECTION IV: Preparer Information

40. Name:	Michael Easton Mundine, P.E.			41. Title:	Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address		
(512) 344-9664		() -	emundine@2PConsultants.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:	2P Consultants, LLC.		Job Title:	Project Manager	
Name (In Print):	Michael Easton Mundine, P.E.			Phone:	(512) 344- 9664
Signature:				Date:	05/22/2024

PROJECT TITLE : GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS

PROJECT LEGAL DESCRIPTION: S8771 - RUTLAND-CHISHOLM TRAIL SUB,
BLOCK A, Lot 1, ACRES 0.791

PROJECT STREET ADDRESS: 4 CHISHOLM TRAIL ROAD
ROUND ROCK, TEXAS 78681

PROPERTY OWNER: FOUR CHISHOLM LLC.
15720 STONE OAK ESTATES CT.
CYPRESS, TEXAS 77429

DEVELOPER: CEDARBROOK CONSTRUCTION
1000 N. IH 35 SUITE A
ROUND ROCK, TEXAS 78681
CURTIS CHURCHILL
(512) 924-3140

ARCHITECT: LINK ARCHITECTURE
8729 SHOAL CREEK BLVD. SUITE 200
AUSTIN, TEXAS 78757
TONY KELLER
(512) 821-3555

ENGINEER: 2P CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TX 78664
MICHAEL EASTON MUNDINE, P.E
(512) 344-9664

SITE CALCULATIONS:
EXISTING SITE IMPERVIOUS COVER
BOUNDARY = 0.791 AC
BUILDINGS, SW, PAVEMENT = 0.217 AC
EXISTING IMPERVIOUS COVER = 27.48%

PROPOSED SITE IMPERVIOUS COVER
PROPOSED BUILDINGS, SW, PVMT = 0.357 AC
PROPOSED IMPERVIOUS COVER = 45.10%

TOTAL AREA OF DISTURBANCE = 16,585.08 SF = 0.381 AC

FLOODPLAIN NOTE: NO PORTION OF THIS PROJECT IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM MAP 48491C0489F, EFFECTIVE AS OF DECEMBER 20TH, 2019.

AQUIFER NOTE: THIS PROJECT IS LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE.

WATERSHED NOTE: THIS SITE IS LOCATED IN THE BRUSHY CREEK WATERSHED, THERE ARE NO KNOWN CRITICAL ENVIRONMENTAL FEATURES EVIDENT ON THIS SITE.

WATER QUALITY: THIS PROJECT IS LOCATED WITHIN THE EDWARD'S AQUIFER RECHARGE ZONE AND HAS AN APPROVED WPAP UNDER THE EDWARD'S AQUIFER PROTECTION PROGRAM.

DETENTION NOTE: THIS SITE PARTICIPATES IN A REGIONAL STORMWATER MANAGEMENT PROGRAM.

BENCHMARKS:
BENCHMARK #1 IS A MAG NAIL WITH A WASHER STAMPED "JPH BENCHMARK" SET IN ASPHALT IN THE NORTH MARGIN OF EMMANUEL STREET, AND LOCATED APPROXIMATELY 35 FEET NORTH OF THE NORTHWEST CORNER OF SUBJECT PROPERTY, AND APPROXIMATELY 25 FEET NORTHEASTERLY OF THE INTERSECTION OF GALLOPING ROAD AND EMMANUEL STREET. BENCHMARK ELEVATION = 722.36' (NAVD88). SEE VICINITY MAP FOR GENERAL LOCATION.
BENCHMARK #2 IS S A MAG NAIL WITH A WASHER STAMPED "JPH BENCHMARK" SET IN A CONCRETE SIDEWALK, AND LOCATED APPROXIMATELY 53 FEET NORTHWESTERLY OF THE NORTHEAST CORNER OF SUBJECT PROPERTY, AND APPROXIMATELY 48 FEET NORTHWESTERLY OF THE INTERSECTION OF EMMANUEL STREET AND CHISHOLM TRAIL. BENCHMARK ELEVATION = 722.73' (NAVD88). SEE VICINITY MAP FOR GENERAL LOCATION.

UTILITY CONTACTS:
WATER: CITY OF ROUND ROCK 512-218-5460
WASTEWATER: CITY OF ROUND ROCK 512-218-5460
ELECTRIC: ONCOR 1-800-460-3030
CABLE/TELEPHONE: XXXXX
NATURAL GAS: ATMOS 1-866-797-4839

IMPORTANT NOTES TO CONTRACTOR

- THE LOCATIONS OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER, DESIGN ENGINEER OR THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, AND SHALL REPAIR OR REPLACE TO NEW QUALITY.
- CAUTION: DO NOT USE THESE DRAWINGS FOR STAKING BUILDINGS ON THIS PROJECT. THE SIZE AND CONFIGURATION OF THESE BUILDINGS SHOWN HEREON ARE BASED ON THE LATEST ARCHITECTURAL INFORMATION AVAILABLE TO 2P CONSULTANTS, LLC. AT THE TIME OF COMPLETION OF THESE PLANS. THE FUTURE SIZE AND CONFIGURATION OF EACH BUILDING IS SUBJECT TO CHANGE. THE LATEST APPROVED, SIGNED AND SEALED ARCHITECTURAL PLANS SHOULD BE CONSULTED FOR THE ACTUAL SIZE, CONFIGURATION AND LOCATION OF EACH BUILDING.
- CONTRACTOR SHALL REFER TO CITY OF ROUND ROCK CONSTRUCTION STANDARDS MANUAL AND SPECIFICATIONS, OR ANY REQUIRED LOCAL CODE WHICHEVER IS MOST STRINGENT.
- THIS SITE IS SUBJECT TO TPDES REGULATIONS. TXR15000

RECORDED FINAL PLAT DOC.NO _____

WPAP CASE # _____

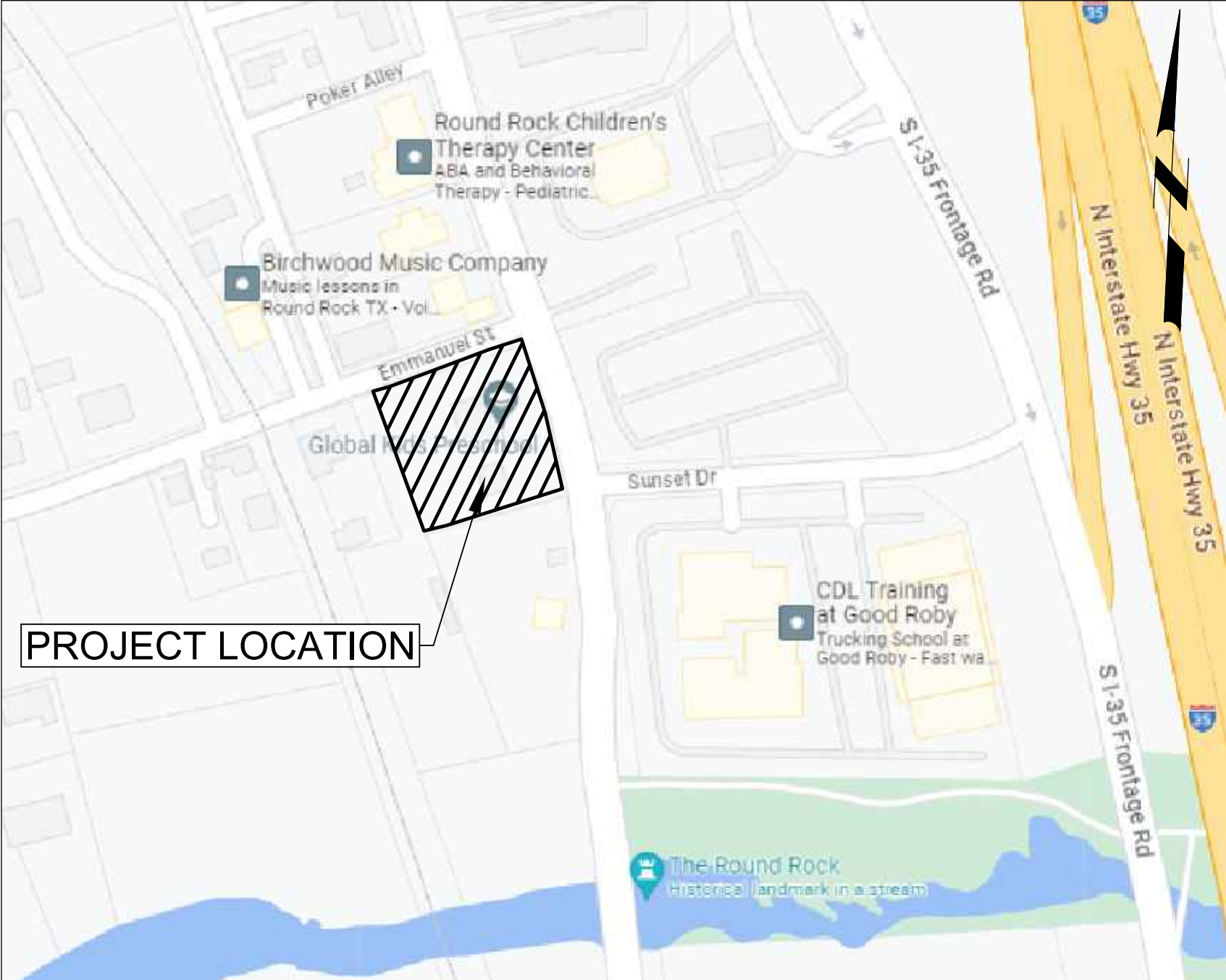
SWPPP _____

METER SERIAL.NO _____

UTILITY BILLING ACCT. NO. _____

GLOBAL KIDS PRESCHOOL SITE DEVELOPMENT IMPROVEMENTS

4 CHISHOLM TRAIL ROAD
ROUND ROCK, TEXAS 78681
NOVEMBER 2023
SDP23-00051



VICINITY MAP : SCALE-1" = 30'

REVISIONS / CORRECTIONS

NO.	DESCRIPTION	Revise (R) Add (A) Void (V) Sheet No.'s	APPROVAL / DATE

NOTES:

- THESE PLANS ARE NOT TO BE CONSIDERED FINAL FOR CONSTRUCTION UNTIL ACCEPTED BY THE CITY / AND, OR THE COUNTY. CHANGES MAY BE REQUIRED PRIOR TO APPROVAL.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY, AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER, OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	GENERAL AND TCEQ NOTES
3	PLAT
4	EXISTING CONDITIONS AND DEMO PLAN
5	EROSION CONTROL PLAN
6	EROSION CONTROL DETAILS
7	SITE AND DIMENSIONAL CONTROL PLAN
8	SITE PLAN DETAILS
9	GRADING PLAN
10	EXISTING CONDITIONS DRAINAGE AREA PLAN
11	PROPOSED CONDITIONS DRAINAGE AREA PLAN
12	OVERALL WATER QUALITY PLAN
13	WATER QUALITY PLAN - VEGETATIVE FILTER STRIP
14	WATER QUALITY PLAN - RAINWATER HARVESTING
15	WATER QUALITY PLAN - GRASSY SWALE
16	FIRE PROTECTION PLAN
17	UTILITY PLAN
18	WATER DETAILS
19	WASTEWATER DETAILS
20	FLOOR & ROOF PLANS & EXTERIOR ELEVATIONS

PLANNING AND DEVELOPMENT SERVICES DEPARTMENT, DATE

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

I, xxxxxxxxxxxx P.E., do hereby confirm that any new Public Works and Drainage Improvements described herein, have been designed in compliance with the stormwater drainage policy adopted by the City of xxxxx, Texas.

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
MICHAEL EASTON MUNDINE, P.E. #143266 ON 1/23/2024.
IT IS NOT TO BE USED FOR PERMITTING, BIDDING, OR CONSTRUCTION PURPOSES.

1/23/24
DATE

xxxxxxxxxxxxx, P.E.
ALL PLAN SHEETS EXCEPT LANDSCAPE SHEETS
2P CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TBPE FIRM #F-19351



SDP23-00051

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF ROUND ROCK STANDARD SPECIFICATIONS MANUAL.
2. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., NOT PLANNED FOR DESTRUCTION OR REMOVAL THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH THE CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER WHO SHALL BE RESPONSIBLE FOR REVISING THE PLANS AS APPROPRIATE.
4. MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, ETC. SHALL BE RAISED TO FINISHED GRADE PRIOR TO FINAL PAVING CONSTRUCTION.
5. THE CONTRACTOR SHALL GIVE THE CITY OF ROUND ROCK 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. CALL 512-218-5428 (PLANNING AND DEVELOPMENT SERVICES).
6. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. REVEGETATION OF ALL DISTURBED OR EXPOSED AREAS SHALL CONSIST OF SODDING OR SEEDING, AT THE CONTRACTOR'S OPTION. HOWEVER, THE TYPE OF REVEGETATION MUST EQUAL OR EXCEED THE TYPE OF VEGETATION PRESENT BEFORE CONSTRUCTION.
7. PRIOR TO ANY CONSTRUCTION, THE ENGINEER SHALL CONVENE A PRECONSTRUCTION CONFERENCE BETWEEN THE CITY OF ROUND ROCK, HIMSELF, THE CONTRACTOR, OTHER UTILITY COMPANIES, ANY AFFECTED PARTIES, AND ANY OTHER ENTITY THE CITY OR ENGINEER MAY REQUIRE.
8. THE CONTRACTOR AND THE ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF ROUND ROCK ACCURATE "AS-BUILT" DRAWINGS FOLLOWING COMPLETION OF ALL CONSTRUCTION. THESE "AS-BUILT" DRAWINGS SHALL MEET WITH THE SATISFACTION OF THE ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT PRIOR TO A FINAL ACCEPTANCE.
9. THE ROUND ROCK CITY COUNCIL SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
10. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND ANY TEMPORARY EASEMENTS. CLEAN-UP SHALL BE TO THE SATISFACTION OF THE CITY ENGINEER.
11. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL APPLY FOR AND SECURE ALL PROPER PERMITS FROM THE APPROPRIATE AUTHORITIES.
12. A MAG NAIL WITH METAL WASHER STAMPED "1/4\" BENCHMARK" SET IN CONCRETE ON THE NORTH MARGIN OF E. OLD SETTLERS BOULEVARD, LOCATED APPROXIMATELY 3 FEET SOUTH FROM THE NORTH RIGHT-OF-WAY LINE OF E. OLD SETTLERS BOULEVARD, AND APPROXIMATELY 92 FEET SOUTHWESTERLY FROM THE SOUTHEAST CORNER OF THE SUBJECT TRACT.
N= 10172883.6690
E= 3149210.3430
ELEV = 717.28' (NAVD 88, GEOID 18)

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

1. ALL TESTING SHALL BE DONE BY AN INDEPENDENT LABORATORY AT THE OWNER'S EXPENSE. ANY RETESTING SHALL BE PAID FOR BY THE CONTRACTOR. A CITY INSPECTOR SHALL BE PRESENT DURING ALL TESTS. TESTING SHALL BE COORDINATED WITH THE CITY INSPECTOR AND HE SHALL BE GIVEN A MINIMUM OF 24 HOURS NOTICE PRIOR TO ANY TESTING. TELEPHONE CIVIL INSPECTOR.
2. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 3" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 3" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE.
3. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT INCLUDING GAS, ELECTRIC, TELEPHONE, CABLE TV, WATER SERVICES, ETC., SHALL BE A MINIMUM OF 30" BELOW SUBGRADE.
4. STREET RIGHTS-OF-WAY SHALL BE GRADED AT A SLOPE OF 1/4" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT 1/4" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY OF ROUND ROCK ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENT.
5. BARRICADES BUILT TO CITY OF ROUND ROCK STANDARDS SHALL BE CONSTRUCTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
6. ALL R.C.P. SHALL BE MINIMUM CLASS III.
7. THE SUBGRADE MATERIAL FOR THE STREETS SHOWN HEREIN WAS TESTED BY PROFESSIONAL SERVICE INDUSTRIES, INC. ON APRIL 16, 2020 AND THE PAVING SECTIONS WERE DESIGNED IN ACCORDANCE WITH THE CURRENT CITY OF ROUND ROCK DESIGN CRITERIA. THE GEOTECHNICAL ENGINEER SHALL INSPECT THE SUBGRADE FOR COMPLIANCE WITH THE DESIGN. ASSUMPTIONS MADE DURING PREPARATION OF THE SOILS REPORT, ANY ADJUSTMENTS THAT ARE REQUIRED SHALL BE MADE THROUGH REVISION OF THE CONSTRUCTION PLANS.
8. WHERE PIS ARE OVER 20, SUBGRADES MUST BE STABILIZED UTILIZING A METHOD ACCEPTABLE TO THE CITY ENGINEER. THE GEOTECHNICAL ENGINEER SHALL RECOMMEND AN APPROPRIATE SUBGRADE STABILIZATION IF SULFATES ARE DETERMINED TO BE PRESENT.

- * CATEGORY A: CAR PARKING AREAS AND ACCESS LANES, UP TO 1 TRUCK PER DAY
- * CATEGORY B: ENTRANCE AND TRUCK SERVICE LANES, UP TO 10 TRUCKS PER DAY
- * CATEGORY E: GARBAGE OR FIRE TRUCK LANES

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

1. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 200), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200 PSI, DR 9).
2. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900, MIN. CLASS 150), SDR 26 HIGHER PRESSURE RATED (150+ PSI), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 200). PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241 OR D3034, MAX. DR-26), DUCTILE IRON (AWWA C-100, MIN. CLASS 200).
3. UNLESS OTHERWISE ACCEPTED BY THE CITY ENGINEER, DEPTH OF COVER FOR ALL LINES OUT OF THE PAVEMENT SHALL BE 42" MIN., AND DEPTH OF COVER FOR ALL LINES UNDER PAVEMENT SHALL BE A MIN. OF 30" BELOW SUBGRADE.
4. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C-100, MIN. CLASS 200).
5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL. POLYETHYLENE AND SEALED WITH DUCT TAPE OR EQUAL ACCEPTED BY THE CITY ENGINEER.
6. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR TO COORDINATE UTILITY TIE-INS AND NOTIFY HIM AT LEAST 48 HOURS PRIOR TO CONNECTING TO EXISTING LINES.
7. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. ALL MANHOLES LOCATED OUTSIDE OF THE PAVEMENT SHALL HAVE BOLTED COVERS. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
8. THE CONTRACTOR MUST OBTAIN A BULK WATER PERMIT OR PURCHASE AND INSTALL A WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
9. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE SCHEDULED WITH THE CIVIL INSPECTOR.
10. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM STERILIZATION OF ALL POTABLE WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING TEST GAUGES), SUPPLIES (INCLUDING CONCENTRATED CHLORINE DISINFECTING MATERIAL), AND NECESSARY LABOR REQUIRED FOR THE STERILIZATION PROCEDURE. THE STERILIZATION PROCEDURE SHALL BE MONITORED BY CITY OF ROUND ROCK PERSONNEL. WATER SAMPLES WILL BE COLLECTED BY THE CITY OF ROUND ROCK TO VERIFY EACH TREATED LINE HAS ATTAINED AN INITIAL CHLORINE CONCENTRATION OF 50 PPM. WHERE MEANS OF FLUSHING IS NECESSARY, THE CONTRACTOR, AT HIS EXPENSE, SHALL PROVIDE FLUSHING DEVICES AND REMOVE SAID DEVICES PRIOR TO FINAL ACCEPTANCE BY THE CITY OF ROUND ROCK.
11. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL. AT THE CONTRACTOR'S REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY OF ROUND ROCK NOT LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY. THE CONTRACTOR SHALL SUPPLY A CHECK OR MONEY ORDER, PAYABLE TO THE CITY OF ROUND ROCK, TO COVER THE FEE CHARGED FOR TESTING EACH WATER SAMPLE. CITY OF ROUND ROCK FEE AMOUNTS MAY BE OBTAINED BY CALLING THE PLANNING AND DEVELOPMENT SERVICES OFFICE (512-218-5428).
12. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY CITY OF ROUND ROCK PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY INSPECTOR AND PROVIDE NO LESS THAN 24 HOURS NOTICE PRIOR TO PERFORMING STERILIZATION, QUALITY TESTING OR PRESSURE TESTING.
14. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE CITY OF ROUND ROCK.
15. ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
16. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY MARKED AS FOLLOWS:

20. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY OUTSIDE NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12 A.M. AND 6 A.M.
21. ALL WASTEWATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, 30 TAC CHAPTER 213 AND 217, AS APPLICABLE, WHENEVER TCEQ AND CITY OF ROUND ROCK SPECIFICATIONS CONFLICT, THE MORE STRINGENT SHALL APPLY.
22. PROVIDE 3" CLEAR PIPE DIMENSION FROM ALL BELLS, FITTINGS, SADDLES, ETC.

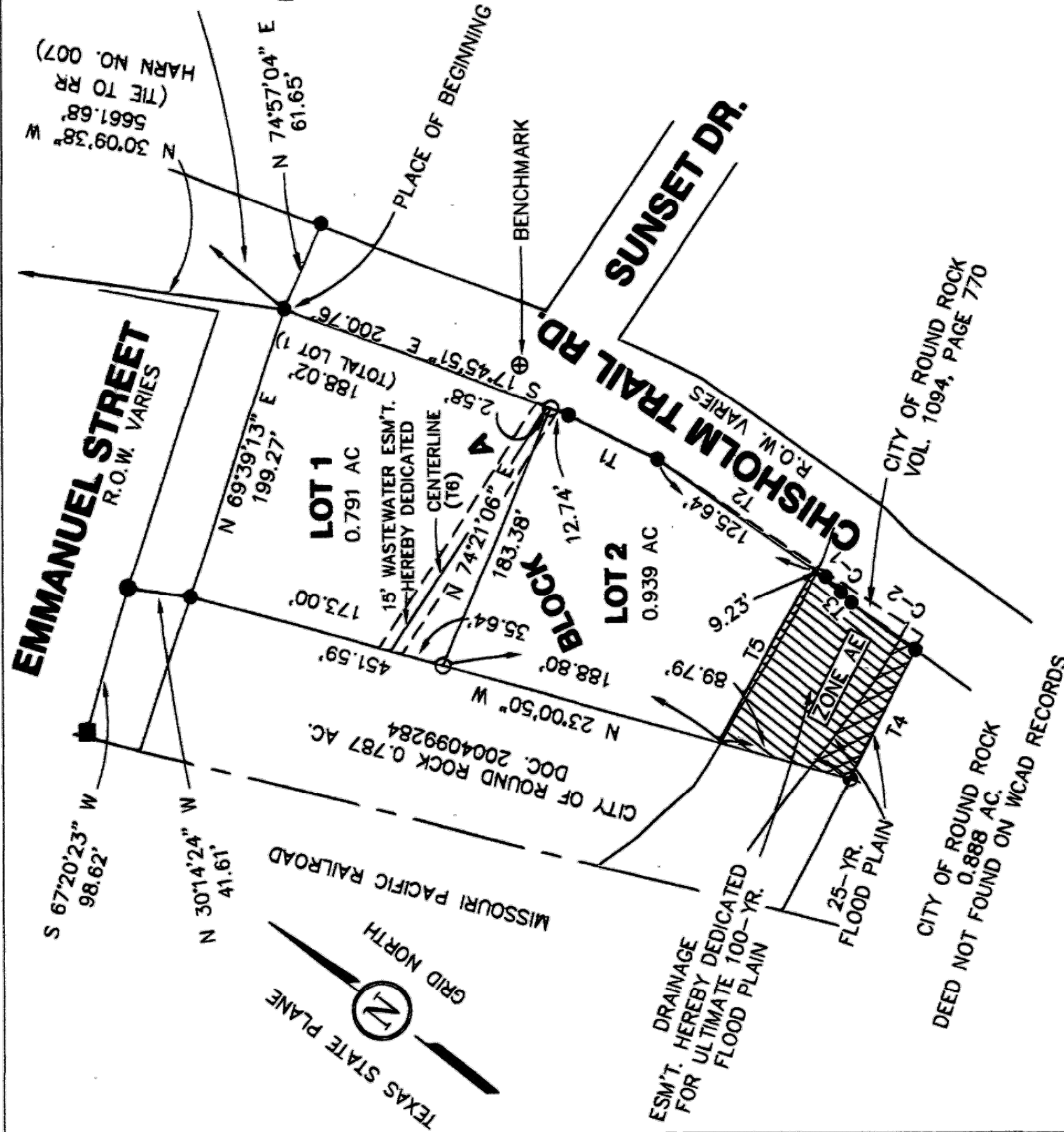
- A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:

 - 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:

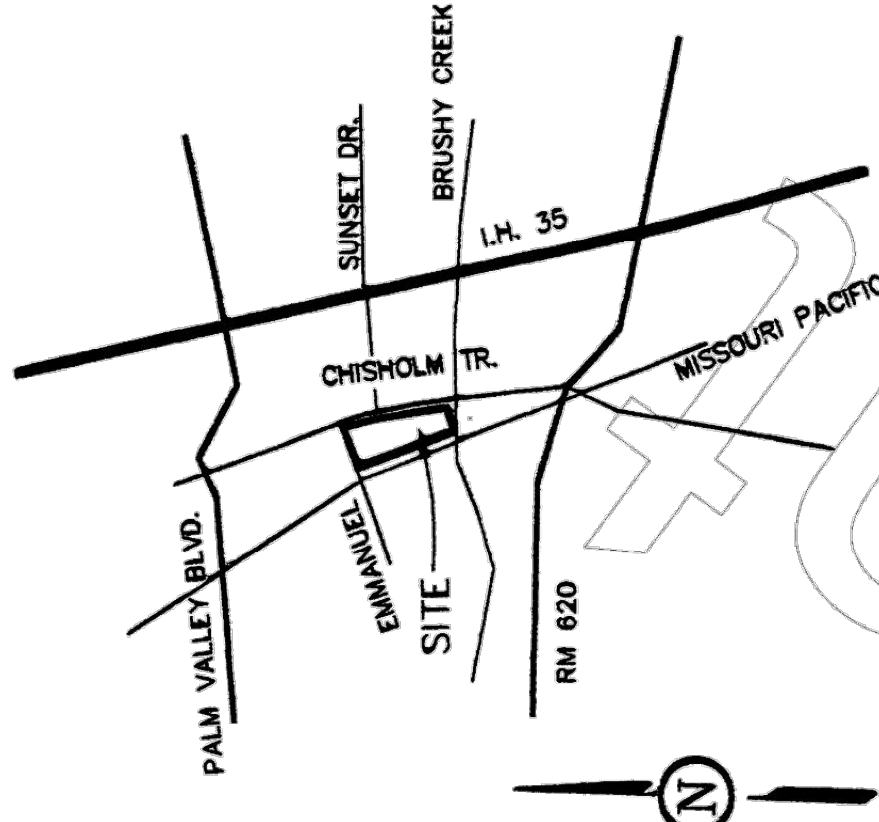
 - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
 - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
 - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED
12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

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PHOTOGRAPHIC MYLAR



CABINET FF



LINE	BEARING	LENGTH
T1	S 12°45'10" E	65.11'
T2	S 03°37'07" E	134.87'
T3	S 07°45'23" W	10.00'
T4	S 78°29'39" W	95.04'
T5	N 80°13'20" E	130.84'
T6	N 84°14'48" E	190.68'

MAP SYMBOLS:
1/2" REBAR FOUND
CAPPED "HARRIS GRANT"
RIGHT-OF-WAY
COTTON GIN SPINDLE FOUND
CONCRETE MONUMENT FOUND

PERIMETER DESCRIPTION

BEING PART OF THE JACOB M. HARRELL SURVEY, ABSTRACT NO. 284, IN WILLIAMSON COUNTY, TEXAS, AND BEING PART OF THAT CERTAIN 1.50 ACRES DESCRIBED IN VOLUME 482, PAGE 255 AND VOLUME 486, PAGE 577 OF THE WILLIAMSON COUNTY OFFICIAL RECORDS (WCOR), AND PART OF THAT CERTAIN 0.24 ACRES DESCRIBED IN VOLUME 1280, PAGE 428 OF THE WCOR, AND PART OF THAT CERTAIN 1.269 ACRES DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING at a 5/8" rebar found at the intersection of the south line of Emmanuel Street with the west line of Chisholm Trail, for the northeast corner and PLACE OF BEGINNING hereof, from which point the northeast corner of the Jacob M. Harrell Survey bears N 02°52' E 2914 feet;

THENCE with the west line of Chisholm Trail, the following six courses:

- 1) S 17°45'51" E 200.76 feet to a rebar found;
- 2) S 12°45'10" E 65.11 feet to a rebar found;
- 3) S 03°37'07" E 134.87 feet to a rebar found at a point of curve to the right;
- 4) With said curve to the right having a radius of 388.69 feet and a length of 14.23 feet with a chord bearing of S 08°34'39" W 14.23 feet to a rebar found;
- 5) S 07°45'23" W 10.00 feet to a rebar found at a point of curve to the left;
- 6) With said curve to the left having a radius of 223.99 feet and a length of 52.78 feet with a chord bearing of S 01°50'06" E 52.68 feet to a rebar set at the southwest corner of a right-of-way easement granted to the City of Round Rock and recorded in Volume 1094, Page 770 of the WCOR, on the south line of said 1.269 acres, for the southeast corner hereof;

THENCE with the south line of said 1.269 acres, S 78°29'39" W 95.04 feet to a cotton gin spindle found at the southeast corner of that certain 0.787 acres conveyed to the City of Round Rock and recorded in Document No. 2004099284 of the WCOR, for the southwest corner hereof;

THENCE with the east line of said 0.787 acres, N 23°00'50" W 451.59 feet to a rebar found on the south line of Emmanuel Street, at the northeast corner of said 0.787 acres, for the northwest corner hereof;

THENCE with the south line of Emmanuel Street, N 69°39'13" E 199.27 feet to the PLACE OF BEGINNING and containing 1.73 acres of land, more or less.

NOTE: All rebars, unless noted otherwise, are 1/2" in diameter and all rebars set are capped "Harris Grant".

STATE OF TEXAS
COUNTY OF WILLIAMSON

THAT I, NANCY RISTER, CLERK OF THE COUNTY COURT OF SAID COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT (IN WRITING) WITH ITS CERTIFICATION OF AUTHENTICATION, WAS FILED FOR RECORD IN MY OFFICE ON THE 15TH DAY OF AUGUST, 2007, AT 3:32 O'CLOCK P.M. IN THE PLAT RECORDS OF SAID COUNTY IN CABINET FF, SLIDE 107.

WITNESS MY HAND AND SEAL OF THE COUNTY CLERK OF SAID COUNTY, AT OFFICE IN GEORGETOWN, TEXAS, THE DATE LAST ABOVE WRITTEN.

NANCY RISTER, CLERK, COUNTY COURT
WILLIAMSON COUNTY, TEXAS
BY: *Deputy William Wehling*
DEPUTY WILLIAM WEHLING

OWNER: SCOTT RABODE, SHADE & MARTINO VENTURES, LLC
3846 LAUREL RIDGE DR.
ROUND ROCK, TX 78664

ACREAGE: 1.73 ACRES

SURVEY: J.M. HARRELL SURVEY, ABSTRACT NO. 284

NUMBER OF BLOCKS: ONE

NUMBER OF LOTS: TWO
LOT SUMMARY: LOT # 2
ACREAGE: 0.821 AC. 712.50'
0.911 AC. 712.50'

BENCHMARK: COTTON GIN SPINDLE SET IN POWER POLE ON WEST SIDE OF CHISHOLM TRAIL RD. ± 32 FEET NORTH OF COMMON LINE BETWEEN LOTS 1 AND 2; ELEVATION - 721.96'

LINEAR FEET OF NEW STREETS: NONE
APPLICATION DATE: JULY 18, 2007
P&Z COMMISSION REVIEW DATE: AUGUST 15, 2007

SURVEYOR: HARRIS-GRANT SURVEYING, INC. (ATTN: JAMES GRANT)
1700 SOUTH LAMAR, STE. 332, AUSTIN, TEXAS 78704
(512) 444-1781 FAX (512) 444-6123
Email: james.grant@harrisgrantsurveying.com

ENGINEER: BOYER & ASSOCIATES, DEVELOPMENT & ENGINEERING SERVICES, LP
106 S. HARRIS STREET, SUITE 231
ROUND ROCK, TEXAS 78664
ATTN: KENNETH BOYER, P.E. NO. 86201
(512) 255-2300, FAX: (512) 532-6247
Email: kboyer@boyerengineering.com

NOTES:
1) BUILDING SETBACKS SHALL BE IN ACCORDANCE WITH CHAPTER 11, ZONING, CITY OF ROUND ROCK CODE OF ORDINANCES (1995 EDITION), AS AMENDED.
2) SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 8, SUBDIVISIONS, CITY OF ROUND ROCK CODE OF ORDINANCES (1995 EDITION), AS AMENDED, AND WITH THE DESIGN AND CONSTRUCTION STANDARDS.
3) NO OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FENCES, STRUCTURES, STORAGE, OR FILL SHALL BE PLACED WITHIN THE LIMITS OF ANY DRAINAGE EASEMENT SHOWN HEREON.
4) A TEN FOOT (10') P.U.E. AND SIDEWALK EASEMENT ABUTTING AND ALONG THE STREET SIDE PROPERTY LINE SHALL BE DEDICATED FOR ALL STREET SIDE PROPERTY LOTS SHOWN HEREON.
5) NO FENCES, STRUCTURES, STORAGE, OR FILL SHALL BE PLACED WITHIN THE LIMITS OF THE ULTIMATE 100-YEAR FLOOD PLAIN, UNLESS APPROVED BY THE CITY ENGINEER. FILL MAY ONLY BE PERMITTED BY THE CITY ENGINEER AFTER APPROVAL OF THE PROPER ANALYSIS.
6) DIRECT ACCESS TO CHISHOLM TRAIL RD. IS NOT PERMITTED BY LOT 2. DRIVEWAY ACCESS TO CHISHOLM TRAIL RD. FOR LOT 2 MUST BE TAKEN THROUGH LOT 1. A JOINT USE ACCESS EASEMENT MUST BE DEDICATED ON LOT 1 PRIOR TO, OR CONCURRENTLY WITH, THE SITE PERMITTING PROCESS FOR LOT 1 AND/OR LOT 2, WHICHEVER COMES FIRST.
7) A PORTION OF THIS TRACT IS ENCLOSED BY SPECIAL FLOOD HAZARD AREAS INUNDATED BY THE 100 YEAR FLOOD AS IDENTIFIED BY THE U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY BOUNDARY MAP (FLOOD INSURANCE RATE MAP) COMMUNITY PANEL NO. 48491C0330-0, EFFECTIVE DATE JANUARY 3, 1997, FOR WILLIAMSON COUNTY, TEXAS.

APPROVED THIS 15TH DAY OF AUGUST, 2007, BY THE CITY PLANNING AND ZONING COMMISSION OF THE CITY OF ROUND ROCK, TEXAS, AND AUTHORIZED TO BE FILED FOR RECORD BY THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.

AL KOSIK, CHAIRMAN
PETER DRAPES, VICE CHAIR

PASSED AND APPROVED, ON THE 15TH DAY OF AUGUST, 2007.

ATTEST: *Christine R. Martinez*
CHRISTINE R. MARTINEZ, CITY SECRETARY
CITY OF ROUND ROCK, TEXAS

FINAL PLAT
RUTLAND-CHISHOLM TRAIL
SUBDIVISION

SLIDE 107

DOC.# 2008076964

PLAT

CEDARBROOK CONSTRUCTION
GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS
4 CHISHOLM TRAIL ROAD ROUND ROCK, TEXAS 78661

NO.	DATE	REVISIONS	RECORD

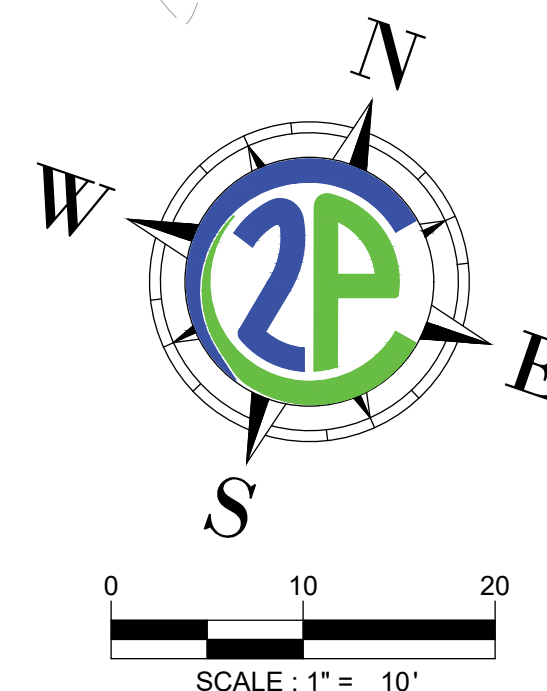
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INFORMATIONAL
PURPOSES ONLY

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
















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DWG: N:\Projects\CedarBrook Construction-4 Chisholm Traffic\CAD\Sheets\EXISTING CONDITIONS AND DEMO PLAN.dwg
PLOT DATE: Tuesday, January 23, 2024

EMMANUEL STREET
VARIABLE WIDTH R.O.W. AS SHOWN UNDER
INST.# 2008076964, O.P.R.W.C.T.
























GENERAL LEGEND












SYMBOLS

 WATER METER  WATER VALVE  FIRE HYDRANT  BACKFLOW PREVENTER  UTILITY POLE  LIGHT POLE  WASTEWATER MANHOLE  CLEAN OUT  KEYNOTES  PARKING COUNT	 VW SERVICE  WATER SERVICE  STORMSEWER MANHOLE  SIGN  CURB INLET  GRATE INLET  TABLE TOP AREA INLET  TREE TO BE SAVED  TREE TO BE REMOVED
--	--

LINETYPES

 PROPERTY BOUNDARY  LOC  FENCES (CHAINLINK)  (IRON)  (WOOD)  DITCH (CREEK)  EXISTING CONTOURS  PROPOSED CONTOURS  CURB & GUTTER  UNDERGROUND ELEC.  OVERHEAD UTILITY  UNDERGROUND TEL.  UNDERGROUND GAS LINE  WATER LINE  WASTEWATER LINE  ACCESSIBLE ROUTE	 STABILIZED CONSTRUCTION ENTRANCE  TEMPORARY SPOILS SITE  CONSTRUCTION STAGING AREA  EROSION CONTROL BLANKET  REVEGETATION AREA
--	--

EROSION & SEDIMENT CONTROL, TREE PROTECTION LEGEND

 LOC  TP  SF  ORANGE MESH SAFETY FENCE  IP	 LIMITS OF CONSTRUCTION  TREE PROTECTION FENCING  CURB BERM  SILT FENCE  ORANGE MESH SAFETY FENCE  INLET PROTECTION
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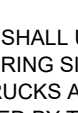
LP LOW POINT
HP HIGH POINT

NOTES:

- CONTRACTOR MUST UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER CITY CODE, OR AS DIRECTED BY THE OWNERS REPRESENTATIVE.
- SILT FENCE TYPE AND INSTALLATION SHALL COMPLY WITH DETAIL.
- ALL DISTURBED AREAS SHALL BE REVEGETATED WITH NATIVE GRASSES (REFER TO NOTE SHEET FOR SPECS). ALL DISTURBED AREAS WITH SLOPES 5:1 OR STEEPER, WHICH ARE NOT ARMORED OTHERWISE, SHALL HAVE A SOIL RETENTION BLANKET (EXCELISOR I OR APPROVED EQUAL) INSTALLED TO ASSIST WITH REVEGETATION.

DETAIL NUMBER

SHEET NUMBER WHERE DETAIL IS LOCATED



DETAIL NAME

DETAIL REFERENCE CALLOUT

LIMITS OF CONSTRUCTION = 0.47 ACRES

EROSION AND SEDIMENTATION CONTROL NOTES:

1. EROSION CONTROL MEASURES, SITE WORK AND RESTORATION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF ROUND ROCK EROSION AND SEDIMENTATION CONTROL ORDINANCE.
2. ALL SLOPES SHALL BE SODDED OR SEEDED WITH APPROVED GRASS, GRASS MIXTURES OR GROUND COVER SUITABLE TO THE AREA AND SEASON IN WHICH THEY ARE APPLIED.
3. SILT FENCES, ROCK BERMS, SEDIMENTATION BASINS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED BY THE CITY OF ROUND ROCK FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED IF, IN THE OPINION OF THE CITY ENGINEER, THEY ARE WARRANTED.
4. ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.
5. ALL MUD, DIRT, ROCKS, DEBRIS, ETC., SPILLED, TRACKED OR OTHERWISE DEPOSITED ON EXISTING PAVED STREETS, DRIVES AND AREAS USED BY THE PUBLIC SHALL BE CLEANED UP IMMEDIATELY.
6. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE REVEGETATED. THIS APPLIES TO ON-SITE AREAS, OFF-SITE AREAS, AND AREAS IN THE RIGHT-OF-WAY.



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

CONTRACTOR NOTES:

EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN VICINITY. CONTRACTOR TO CONTACT UTILITY COMPANIES PRIOR TO CONSTRUCTION. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY LOCATIONS & DEPTHS PRIOR TO BEGINNING CONSTRUCTION.

CONTRACTOR SHALL CONSIDER PROPOSED UTILITY IMPROVEMENTS AND PROVIDE ADEQUATE HORIZONTAL AND VERTICAL CLEARANCE DURING INSTALLATION OF ALL UTILITY INFRASTRUCTURE.

2P CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TTYPE FIRM #F-19351



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CEDARBROOK CONSTRUCTION

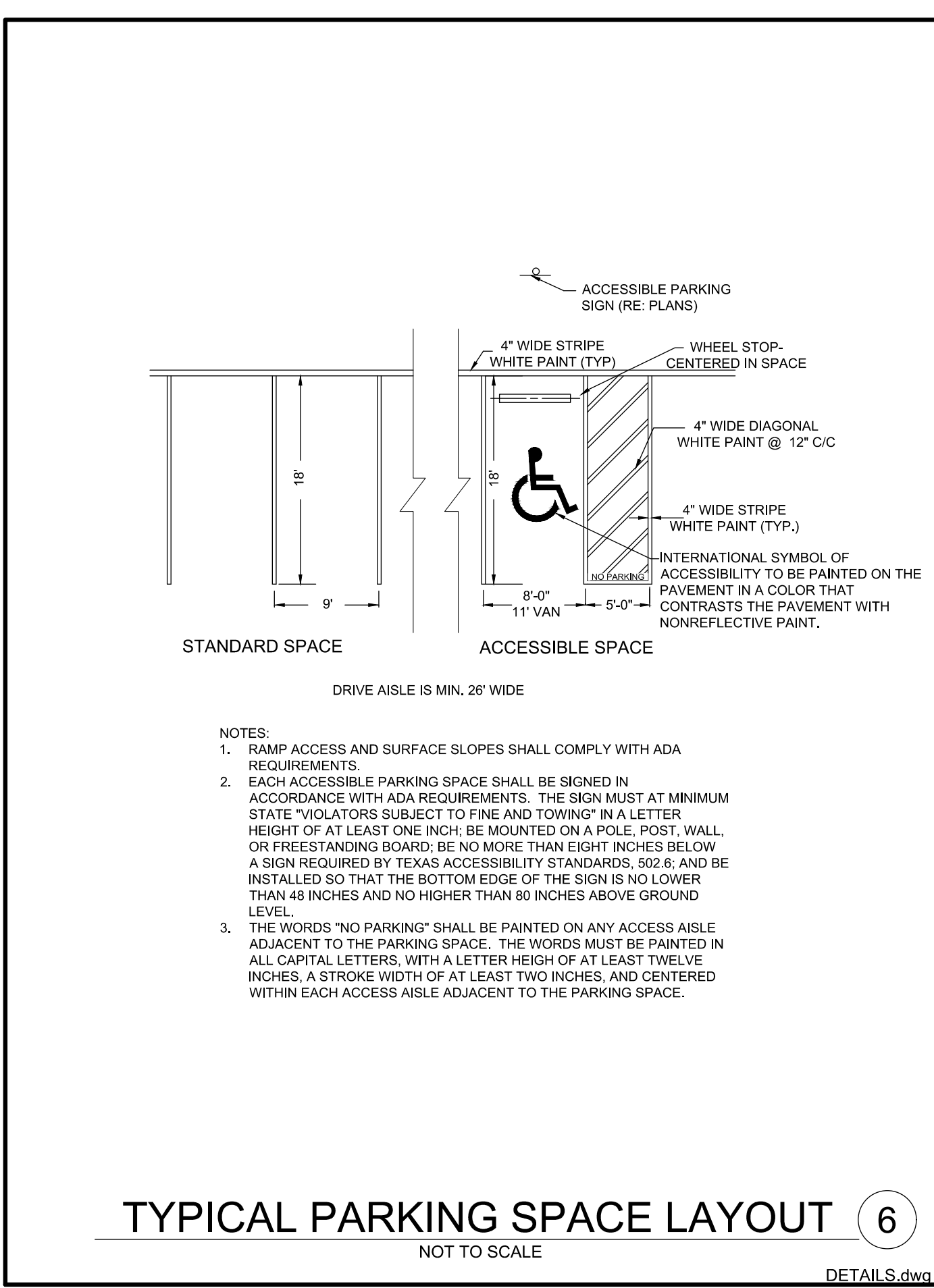
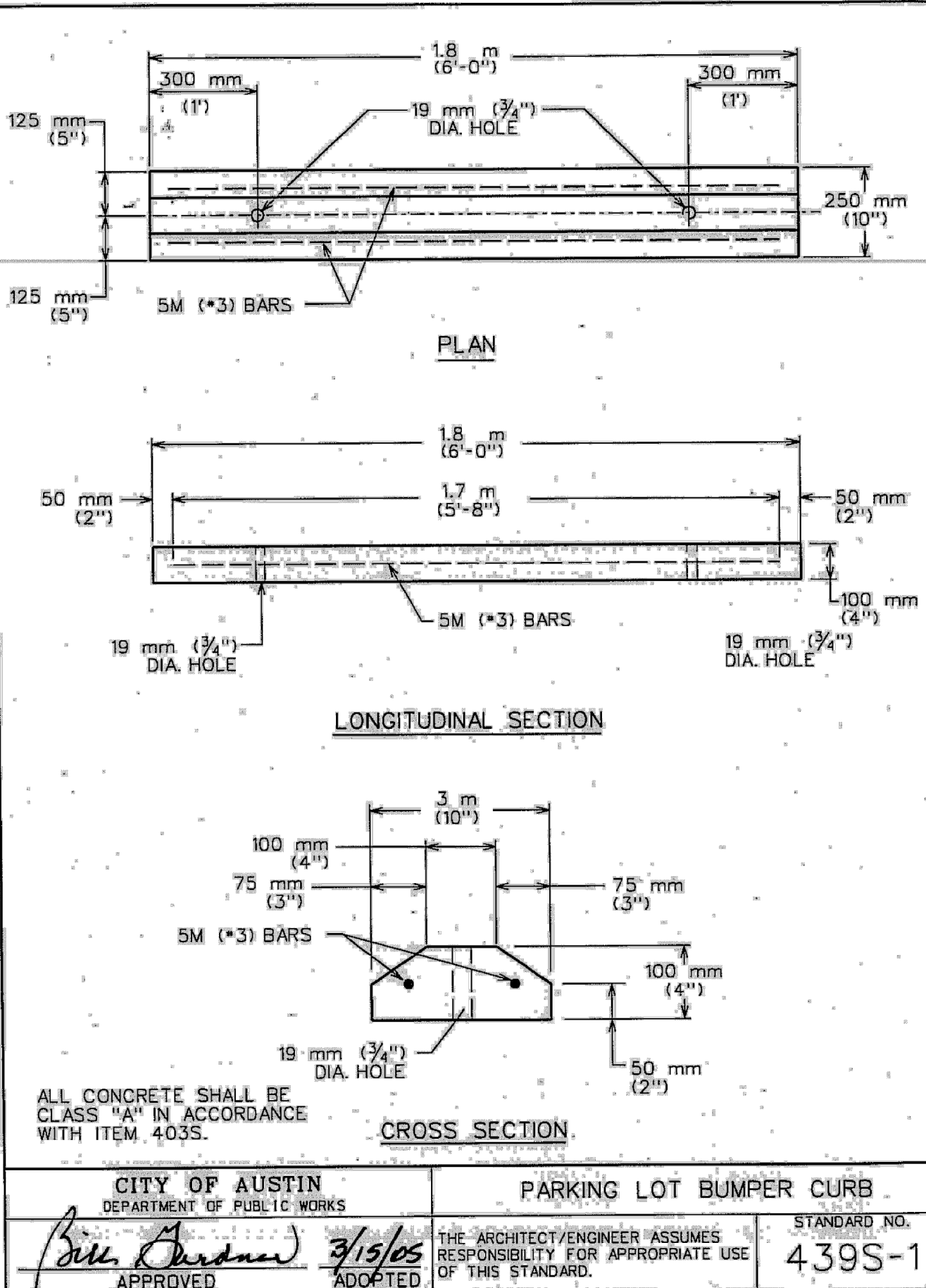
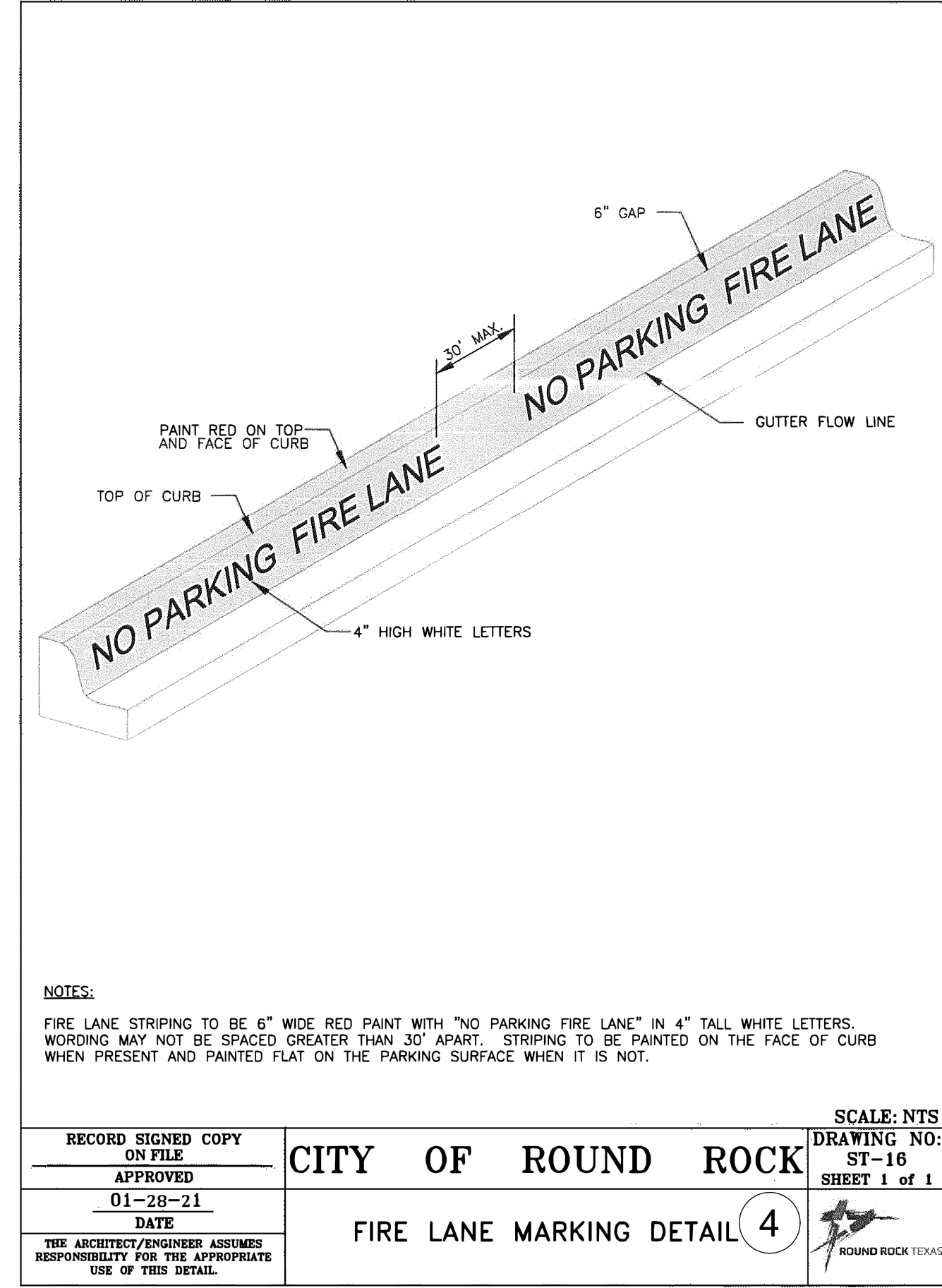
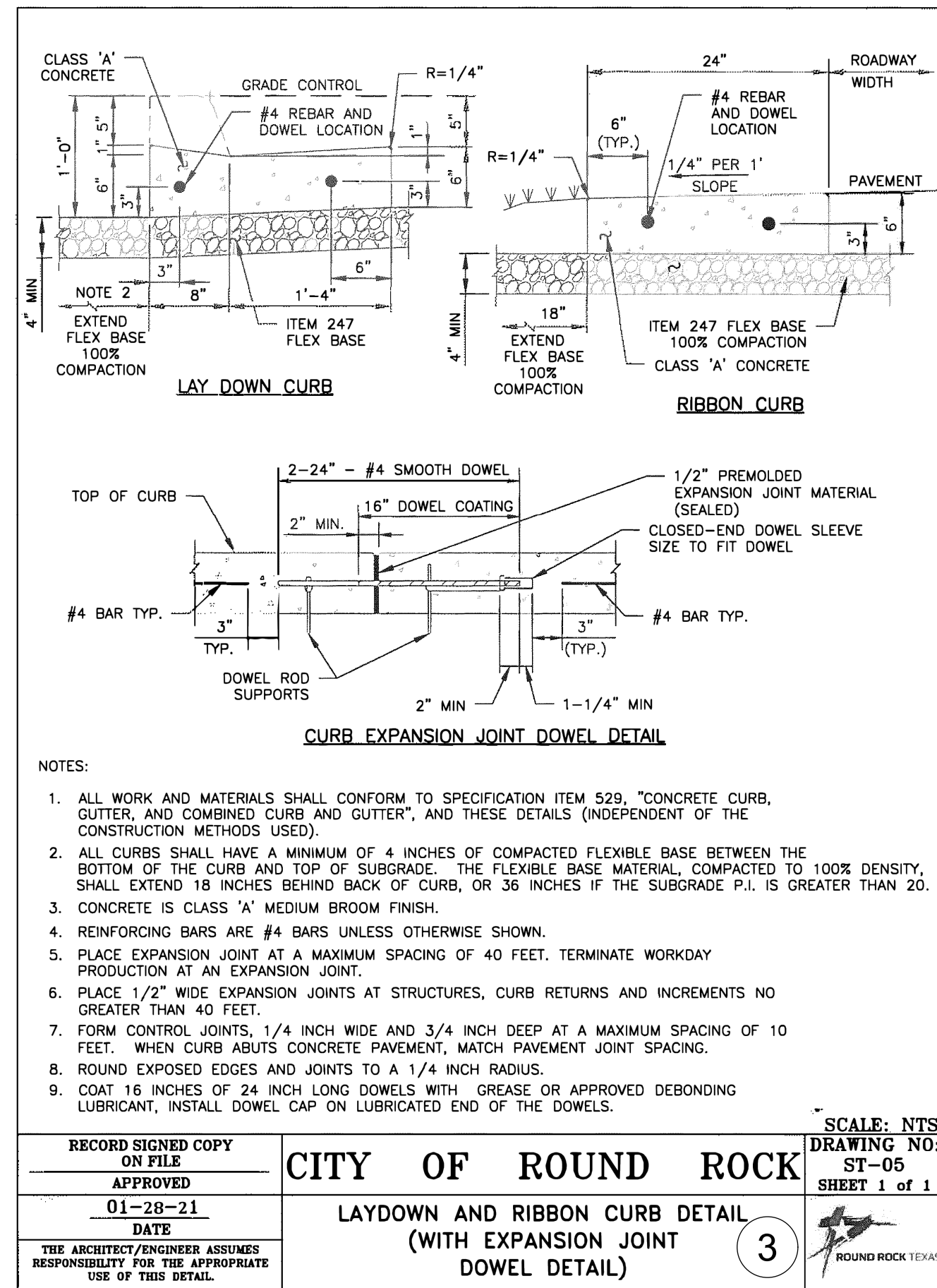
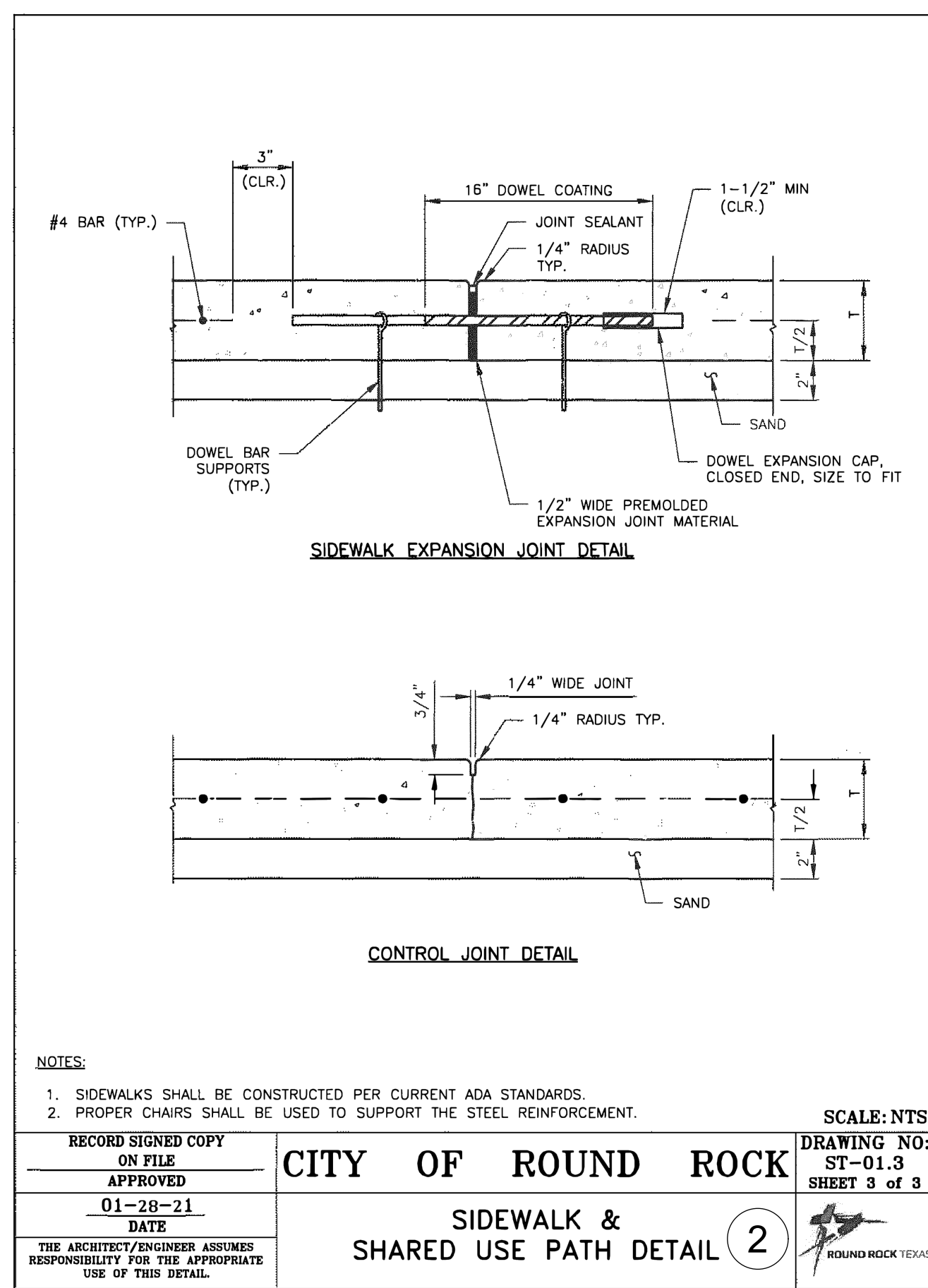
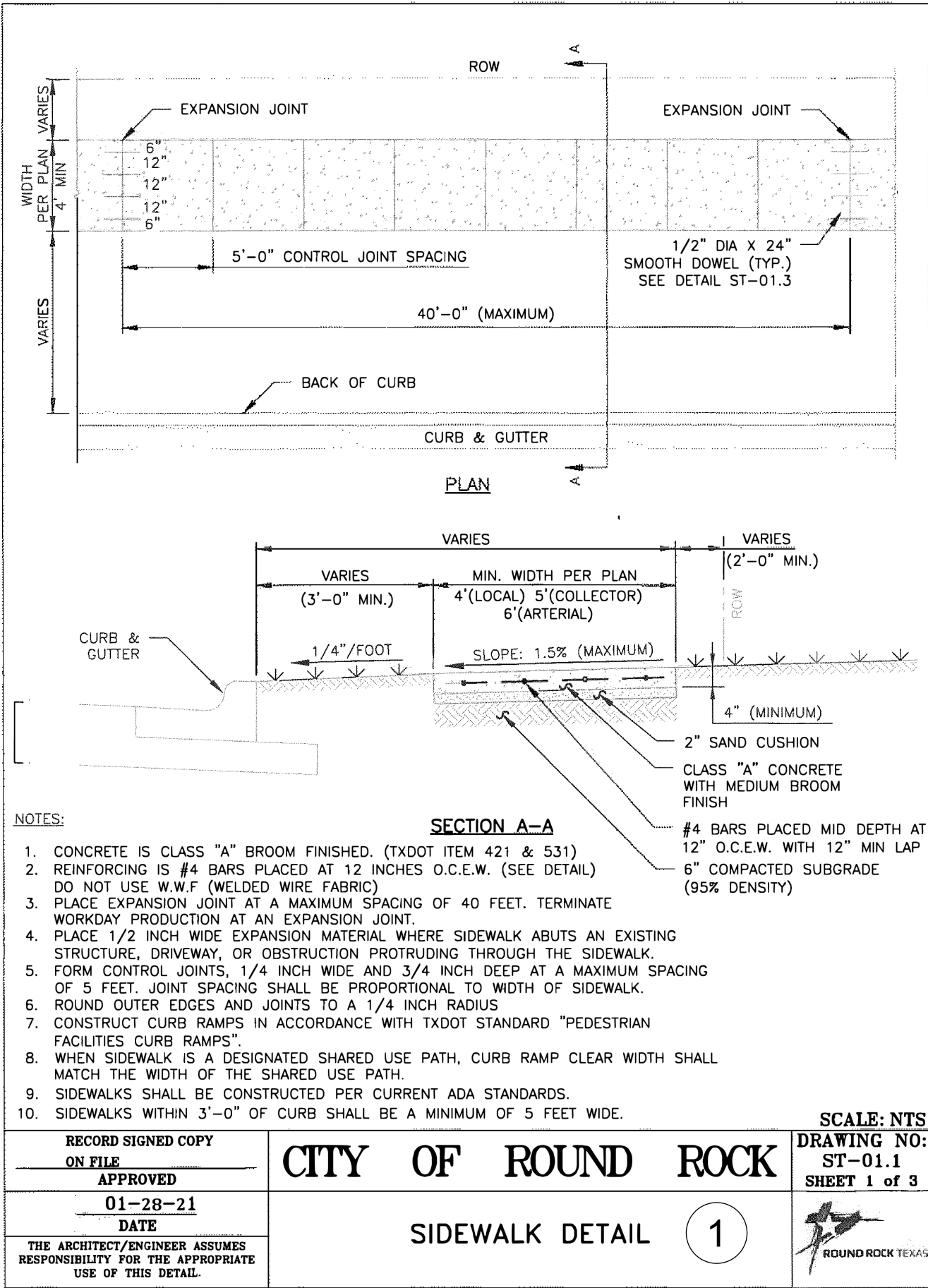
**GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS**
CHISHOLM TRAIL ROAD ROLLING ROCK, TEXAS 78681

EROSION CONTROL PLAN

PERMIT No.
SDP23-00051

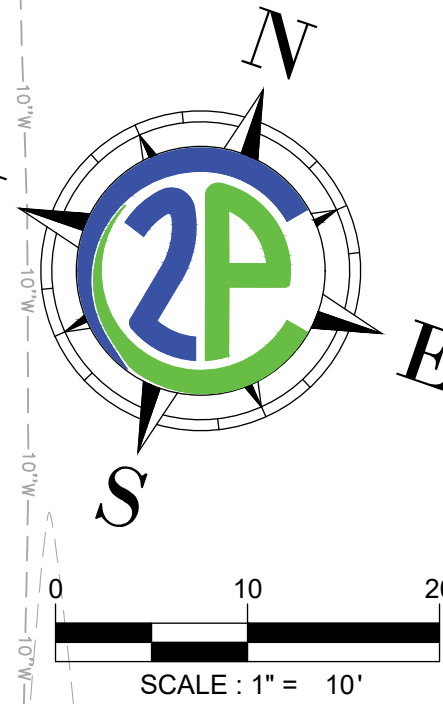
SHEET No.
5
OF 20

IMAGES: * signature TP.png
 KREFS: * 24x36 2PC TimeBlock.dwg * P-BASE.dwg * E-BASE.dwg * MEM SEAL.dwg
 DWG: N:\Projects\CedarBrook Construction-4 Chisholm Trail\CAD\Sheets\EROSION CONTROL PLAN.dwg



NOTES:
1. ALL DIMENSIONS ARE IN FEET AND INCHES.
2. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
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9. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
10. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

VARIABLE WIDTH R.O.W. AS SHOWN UNDER
INST.# 2008076964, O.P.R.W.C.T.



GENERAL LEGEND	
SYMBOLS	
	WATER METER
	WATER VALVE
	FIRE HYDRANT
	BACKFLOW PREVENTER
	UTILITY POLE
	LIGHT POLE
	WASTEWATER MANHOLE
	CLEAN OUT
	KEYNOTES
	PARKING COUNT
	WW SERVICE
	WATER SERVICE
	STORMSEWER MANHOLE
	SIGN
	CURB INLET
	GRATE INLET
	TABLE TOP AREA INLET
	TREE TO BE SAVED
	TREE TO BE REMOVED
LINETYPES	
	PROPERTY BOUNDARY
	LIMITS OF CONSTRUCTION
	FENCES (CHAINLINK)
	FENCES (IRON)
	FENCES (WOOD)
	FENCES (BARB WIRE)
	DITCH (CREEK) LINE
	EXISTING CONTOURS
	PROPOSED CONTOURS
	CURB & GUTTER
	UNDERGROUND ELEC.
	OVERHEAD UTILITY
	UNDERGROUND TELE.
	UNDERGROUND GAS LINE
	WATER LINE
	WASTEWATER LINE
	ACCESSIBLE ROUTE
GRADING LEGEND	
EXISTING	
	NATURAL GROUND
	PAVEMENT
	GUTTER
	SIDEWALK
PROPOSED	
	TOP OF WALL
	TOE OF SLOPE
	TOP OF SLOPE
	TOP OF CONCRETE INLET
	FLOWLINE
	FINISHED FLOOR
	PROPOSED GRADE BREAK ON SURFACE (CONC, PVMT, GRASS, ETC.)
	LOW POINT
	HIGH POINT

GRADING NOTES:

1. THE CONTRACTOR IS FULLY RESPONSIBLE FOR CONSTRUCTION OF SIDEWALKS, LANDINGS, PORCHES, RAMPS & PARKING SPACES THAT MEET ADA/TAS REQUIREMENTS. THE CONTRACTOR SHALL HAVE FULL KNOWLEDGE OF THE DETAILS ON THESE PLANS AND OF ADA/TAS REGULATIONS. SHOULD THE CONTRACTOR FIND AN ELEVATION OR CONDITION THAT IS DIFFERENT THAN SHOWN ON THE PLANS, IT IS THE CONTRACTOR'S FINAL RESPONSIBILITY TO CONTACT THE ENGINEER TO WORK OUT A DESIGN THAT MEETS ADA & TAS. PRIOR TO CONSTRUCTION, NOT AFTER THE WORK IS COMPLETED.
2. GRADE FOR THE FIRE LANE SHALL NOT EXCEED 7% AND GRADE BREAKS IN THE FIRE LANE SHALL NOT EXCEED 3%.



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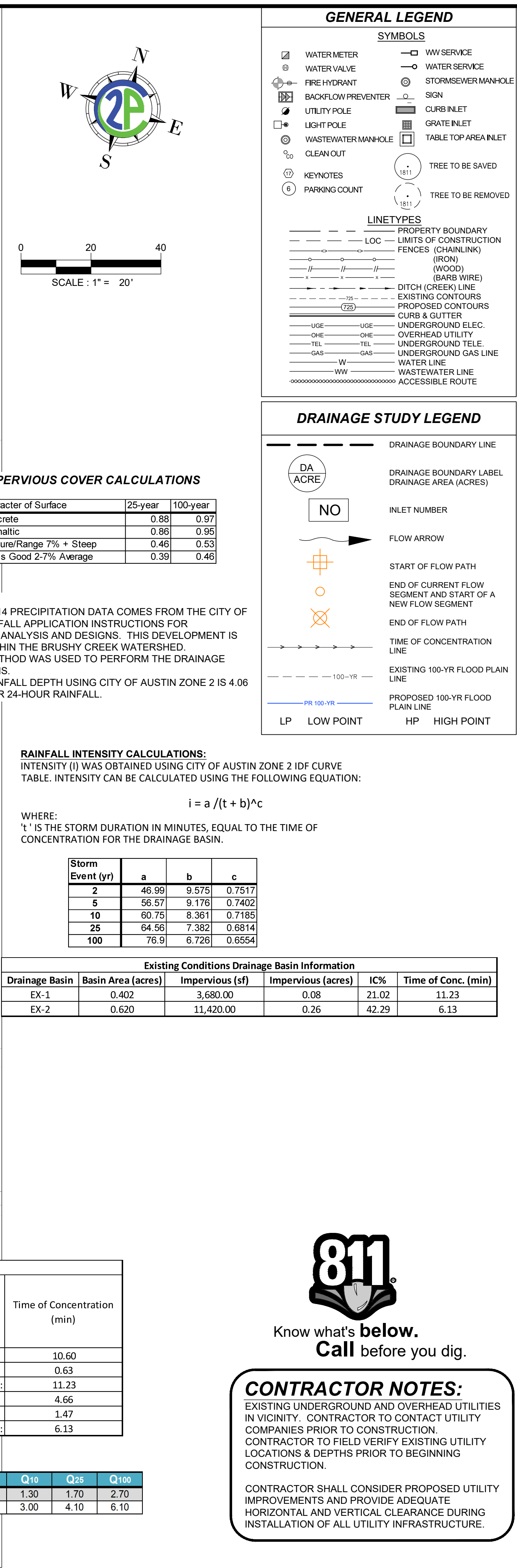
NO.	DATE	REVISIONS	RECORD

CEDARBROOK CONSTRUCTION
GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS
4 CHISHOLM TRAIL ROAD ROUND ROCK, TEXAS 78681

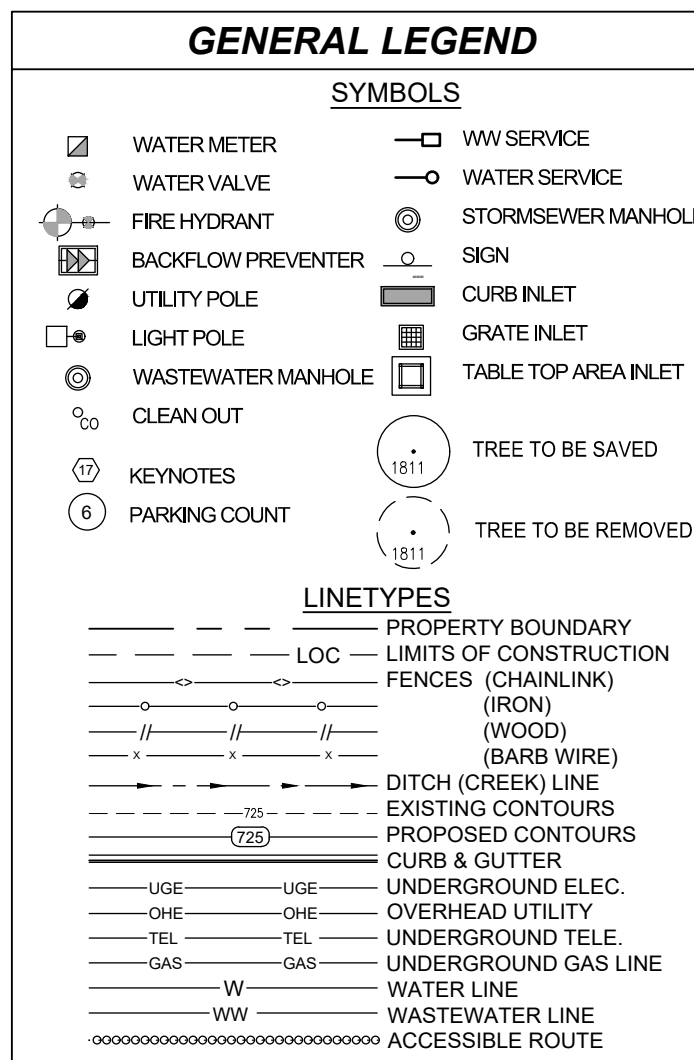
GRADING PLAN

PERMIT No.
SDP23-00051

SHEET No.
9
OF 20



IMAGES: * signature TP.png
REFERENCES: 74268 N Project/Track.dwg * EASE.dwg * MEN SEAL.dwg
DRAWING: 2/PC/CedarCreek Construction-4 Chisholm Trail/CAD/Sheet/EXISTING CONDITIONS DRAINAGE AREA PLAN.dwg
PLOT DATE: Tuesday, January 23, 2024
PLOTTED BY: EM/JND/NE



Character of Surface	25-year	100-year
Concrete	0.88	0.97
Asphaltic	0.86	0.95
Pasture/Range 7% + Steep	0.46	0.53
Grass Good 2-7% Average	0.39	0.46

- NOTES:**
- 1) NOAA ATLAS 14 PRECIPITATION DATA COMES FROM THE CITY OF AUSTIN RAINFALL APPLICATION INSTRUCTIONS FOR HYDROLOGIC ANALYSIS AND DESIGNS. THIS DEVELOPMENT IS LOCATED WITHIN THE BRUSHY CREEK WATERSHED.
 - 2) THE RAINFALL METHOD WAS USED TO PERFORM THE DRAINAGE CALCULATIONS.
 - 3) ATLAS 14 RAINFALL DEPTH USING CITY OF AUSTIN ZONE 2 IS 4.06 INCH FOR 24-HR 24-HOUR RAINFALL.
 - 4) THE DEVELOPMENT PARTICIPATES IN THE CITY OF ROUND ROCK'S STORMWATER MANAGEMENT PROGRAM (RSM).

RAINFALL INTENSITY CALCULATIONS:
 INTENSITY (I) WAS OBTAINED USING CITY OF AUSTIN ZONE 2 IDF CURVE TABLE.
 INTENSITY CAN BE CALCULATED USING THE FOLLOWING EQUATION:

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

WHERE:
't' IS THE STORM DURATION IN MINUTES, EQUAL TO THE TIME OF
CONCENTRATION FOR THE DRAINAGE BASIN.

Storm Event (yr)	a	b	c
2	46.99	9.575	0.7517
5	56.57	9.176	0.7402
10	60.75	8.361	0.7185
25	64.56	7.382	0.6814
100	76.9	6.726	0.6554

Developed Conditions Drainage Basin Information					
Drainage Basin	Basin Area (acres)	Impervious (sf)	Impervious (acres)	IC%	Time of Conc. (min)
PR-1	0.457	10,410.00	0.24	52.29	7.27
PR-2	0.564	11,420.00	0.26	46.48	6.13

Existing vs Proposed Peak flow					
Event	2-YR (CFS)	5-YR (CFS)	10-YR (CFS)	25-YR (CFS)	100-YR (CFS)
1	0.60	0.90	1.10	1.40	1.90
2	-0.10	-0.10	-0.10	-0.30	-0.40

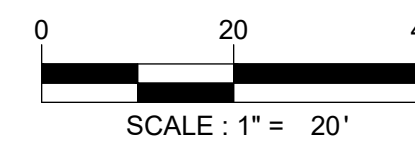


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

















Developed Conditions Time of Concentration Calculations											
Basin	Segment	Flow Type	Length	Slope	2-YR 24-HR Rainfall	Surface Type	Manning's Roughness Coefficient	Cross-Sectional Area	Wetted Perimeter	Velocity	Time of Concentration
PR-1	1	SCS Sheet Flow	66	1.98%	4.06"	Short Grass Prairie	0.150	---	---	---	6.25
	2	SCS Shallow Concentrated Flow	104	1.11%	---	Unpaved	---	---	---	---	1.02
										Total:	7.27
PR-2	1	SCS Sheet Flow	48	2.20%	4.06"	Short Grass Prairie	0.150	---	---	---	4.66
	2	SCS Shallow Concentrated Flow	166	0.86%	---	Paved	0.016	---	---	---	1.47
										Total:	6.13

PEAK FLOW USING RATIONAL METHOD																	
Area	Acres	T _c	I ₂	I ₅	I ₁₀	I ₂₅	I ₁₀₀	C ₂	C ₅	C ₁₀	C ₂₅	C ₁₀₀	Q ₂	Q ₅	Q ₁₀	Q ₂₅	Q ₁₀₀
1	0.46	7.27	5.62	7.12	8.43	10.36	13.64	0.53	0.57	0.60	0.65	0.73	1.40	1.90	2.30	3.10	4.60
2	0.56	6.13	5.93	7.51	8.90	10.95	14.42	0.50	0.54	0.57	0.62	0.70	1.70	2.30	2.90	3.80	5.70

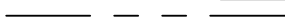

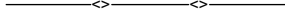

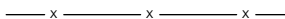

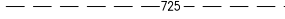
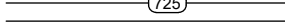

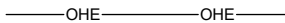



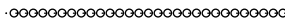



GENERAL LEGEND

SYMBOLS

	WATER METER		WW SERVICE
	WATER VALVE		WATER SERVICE
	FIRE HYDRANT		STORM/SEWER MANHOLE
	BACKFLOW PREVENTER		SIGN
	UTILITY POLE		CURB INLET
	LIGHT POLE		GRATELET
	WASTEWATER MANHOLE		TABLE TOP AREA INLET
	CLEAN OUT		
	KEYNOTES		TREE TO BE SAVED
	PARKING COUNT		TREE TO BE REMOVED

LINETYPES

	PROPERTY BOUNDARY
	LOC
	LIMITS OF CONSTRUCTION
	FENCES (CHAIN LINK)
	(IRON)
	(WOOD)
	(BARB WIRE)
	DITCH (CREEK)
	EXISTING CONTOURS
	PROPOSED CONTOURS
	CURB & GUTTER
	UNDERGROUND ELEC.
	OVERHEAD UTILITY
	UNDERGROUND TEL.
	UNDERGROUND GAS LINE
	WATER LINE
	WASTEWATER LINE
	ACCESSIBLE ROUTE

GRADING LEGEND

EXISTING

X—(493.00 NG) NATURAL GROUND	X—(493.00 GU GUT) GUTTER
X—(493.00 EW PAV) PAVMT	X—(493.00 EW SW) SIDEWALK

PROPOSED

X—(493.00 PAV) PAVEMENT	X—(493.00 TOW) TOP OF WALL
X—(493.00 CT) TOP OF CURB	X—(493.00 TOE) TOE OF SLOPE
X—(493.00 SW) SIDEWALK	X—(493.00 TOP) TOP OF SLOPE
X—(493.00 TG) TOP OF GRATE INLET	X—(493.00 CONC) CONCRETE FINISHED FLOOR
X—(493.00 FL) FLOWLINE	
X—(493.00 FG) FINISHED GROUND	

PROPOSED GRADE BREAK ON SURFACE (CONC, PAVT, GRASS, ETC.)

LP LOW POINT	HP HIGH POINT
-------------------	--------------------

Overall Water Quality Calculations		
Total TSS Required to be Removed		116lbs
Water Quality Feature #	Water Quality Feature Description	SS Removed lb
1	Vegetative Filter Strip	20
2	Rainwater Harvesting	51
3	Grassy Swale	45
Total TSS to be removed		116

[illegible]

CEDARBROOK CONSTRUCTION

**GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS**

4 CHISHOLM TRAIL ROAD ROUND ROCK, TEXAS 78664

OVERALL WATER QUALITY PLAN

PERMIT No.
SDP23-00051

SHEET No.
12
OF 20

2P CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TBPE FIRM #F-19351

DRAWN: VALUE	REVIEWED: VALUE
--------------	-----------------



DESIGNED: XX

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DESIGNED: XXXXX
DRAWN: VALUE
REVIEWED: VALUE

REVISIONS

DATE _____

no.

681

XAS

ck

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470

HC

1

- 1

1

Additional information is provided for cells with a red triangle in the upper right corner
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will

1. The Required Load Reduction for the total project:

Calculations from RG-348

Page 3-29 Equation 3.3: $L_M = 27.2(A_{VI} \times P)$

where: L_M TOTAL PROJECT = Required TSS removal result
 A_{VI} = Net increase in impervious area
 P = Average annual precipitation

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

County = **Williamson**
Total project area included in plan = **0.79** acres
Predevelopment impervious area within the limits of the plan = **0.22** acres
Total post-development impervious area within the limits of the plan = **0.35** acres
Total post-development impervious cover fraction = **0.44**
 P = **32** inches

L_M TOTAL PROJECT = **116** lbs.

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

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

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

Drainage Basin/Outfall Area No. = **1**

Total drainage basin/outfall area = **0.02** acres
Predevelopment impervious area within drainage basin/outfall area = **0.00** acres
Post-development impervious area within drainage basin/outfall area = **0.02** acres
Post-development impervious fraction within drainage basin/outfall area = **1.00**
 L_M THIS BASIN = **20** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**
Removal efficiency = **85** percent

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

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_{VI} \times \dots)$

where: A_C = Total On-Site drainage area
 A_{VI} = Impervious area proposed in
 A_P = Pervious area remaining in the
 L_R = TSS Load removed from this

A_C = **0.02** acres
 A_{VI} = **0.02** acres
 A_P = **0.00** acres
 L_R = **23** lbs

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

Desired L_M THIS BASIN = **20** lbs.

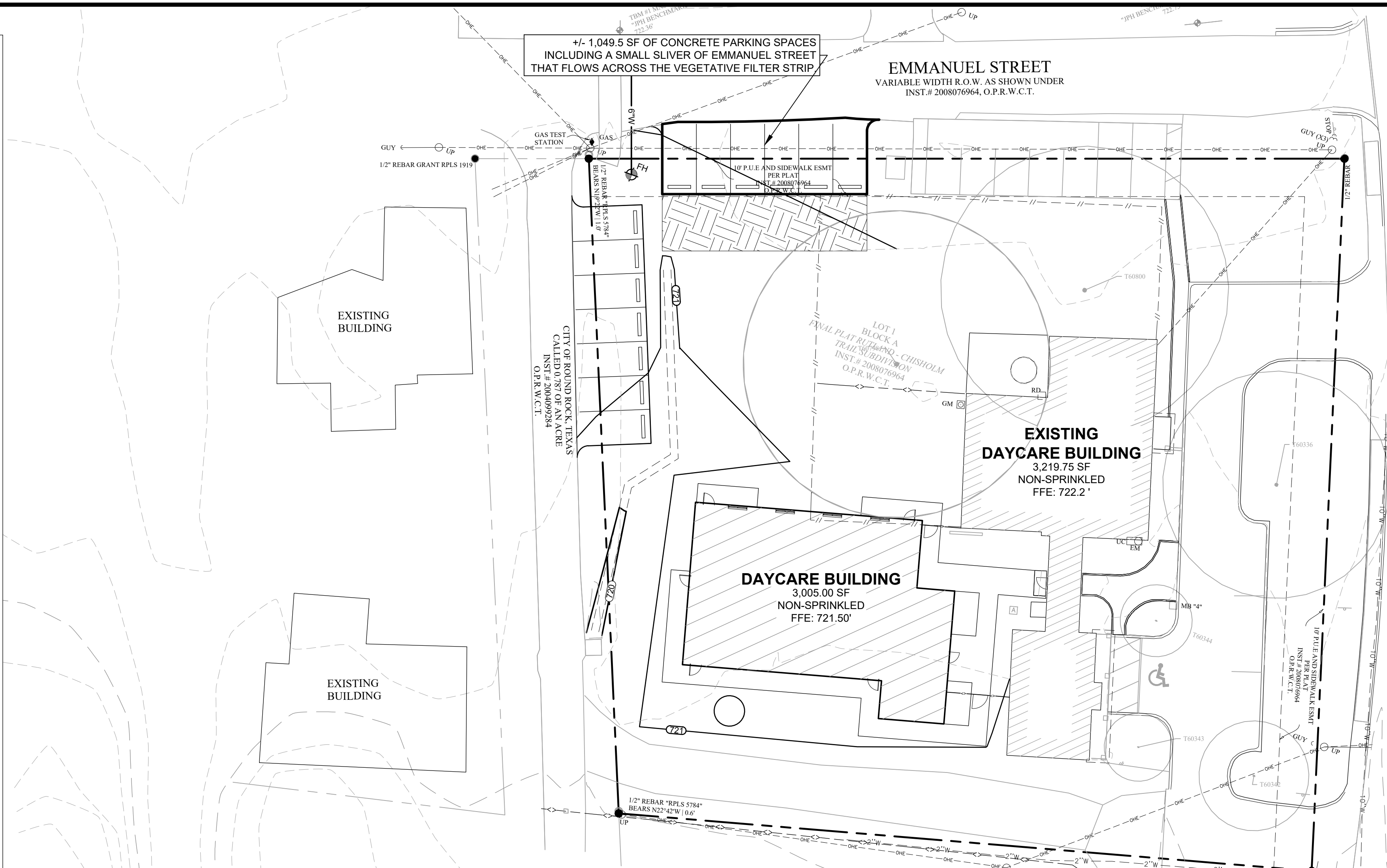
F = **0.88**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Rainfall Depth = **1.50** inches
Post Development Runoff Coefficient = **0.82**
On-site Water Quality Volume = **107** cubic feet

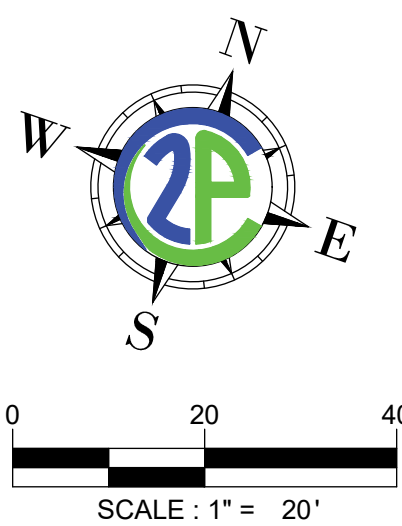
Calculations from RG-348

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



GENERAL LEGEND	
SYMBOLS	
	WATER METER
	WATER VALVE
	FIRE HYDRANT
	BACKFLOW PREVENTER
	UTILITY POLE
	LIGHT POLE
	WASTEWATER MANHOLE
	CLEAN OUT
	KEYNOTES
	PARKING COUNT
	WW SERVICE
	WATER SERVICE
	STORM SEWER MANHOLE
	SIGN
	CURB INLET
	GRATE INLET
	TABLE TOP AREA INLET
	TREE TO BE SAVED
	TREE TO BE REMOVED
LINETYPES	
	PROPERTY BOUNDARY
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	UNDERGROUND GAS LINE
	WATER LINE
	WASTEWATER LINE
	ACCESSIBLE ROUTE

GRADING LEGEND	
EXISTING	
	NATURAL GROUND
	GUTTER
	PAVEMENT
	TOP OF WALL
	TOE OF SLOPE
	TOP OF SLOPE
	TOP OF GRATE
	CONCRETE INLET
	FLOWLINE
	FINISHED FLOOR
	FINISHED GROUND
	PROPOSED GRADE BREAK ON SURFACE (CONC. P.V.M.T. GRASS, ETC.)
	LOW POINT
	HIGH POINT



$$y^{1.67} S^{0.5}$$

$$Q = C i A = 4.71 \text{ cfs}$$

To calculate the flow velocity in the swale:

$$V \text{ (Velocity of Flow in the swale)} = Q / A_{CS} = 0.36 \text{ ft/sec}$$

To calculate the resulting swale length:

$$L = \text{Minimum Swale Length} = V \text{ (ft/sec)} \times 300 \text{ (sec)} = 107.24 \text{ feet}$$

If any of the resulting values do not meet the design requirement set forth in RG-348, the des

15B. Alternative Method using Excel Solver

$$\text{Design } Q = C i A = 4.71 \text{ cfs}$$

$$\text{Manning's Equation } Q = 0.76 \text{ cfs}$$
$$\text{Swale Width} = 6.00 \text{ ft}$$

Instructions are provided to the right (green comments).

$$\text{Flow Velocity} = 0.36 \text{ ft/s}$$
$$\text{Minimum Length} = 107.24 \text{ ft}$$

Instructions are provided to the right (blue comments).

$$\text{Design Width} = 6 \text{ ft}$$
$$\text{Design Discharge} = 0.76 \text{ cfs}$$
$$\text{Design Depth} = 0.33 \text{ ft}$$
$$\text{Flow Velocity} = 0.32 \text{ cfs}$$
$$\text{Minimum Length} = 97.48 \text{ ft}$$

If any of the resulting values do not meet the design requirement set forth in RG-348, the design paran
If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the

16. Vegetated Filter Strips Designed as Required in RG

There are no calculations required for determining the load or size of vegetative filter strips.
The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction c
the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with n
across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as l

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described i

17. Wet Vaults Designed as Required in RG



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2P CONSULTANTS, LLC
203 E. MAIN STREET, SUITE 204
ROUND ROCK, TEXAS 78664
512-344-9664
TBPE FIRM #F-19351



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CEDARBROOK CONSTRUCTION
GLOBAL KIDS PRESCHOOL
SITE DEVELOPMENT IMPROVEMENTS
4 CHISHOLM TRAIL ROAD ROUND ROCK, TEXAS 78681

WATER QUALITY PLAN -
VEGETATIVE FILTER STRIP

PERMIT No.
SDP23-00051
SHEET No.
13
OF 20

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Additional information is provided for cells with a red triangle in the upper right corner
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will i

1. The Required Load Reduction for the total project:

Calculations from RG-348

Page 3-29 Equation 3.3: $L_M = 27.2(A_{N_i} \times P)$

where: L_M TOTAL PROJECT = Required TSS removal result
 A_{N_i} = Net increase in impervious a
P = Average annual precipitation

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

County = **Williamson**
Total project area included in plan = **0.79** acres
Predevelopment impervious area within the limits of the plan = **0.22** acres
Total post-development impervious area within the limits of the plan = **0.35** acres
Total post-development impervious cover fraction = **0.44**
P = **32** inches

L_M TOTAL PROJECT = **116** 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. = **3**

Total drainage basin/outfall area = **0.20** acres
Predevelopment impervious area within drainage basin/outfall area = **0.07** acres
Post-development impervious area within drainage basin/outfall area = **0.12** acres
Post-development impervious fraction within drainage basin/outfall area = **0.63**
 L_M THIS BASIN = **45** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Grassy Swale**
Removal efficiency = **70** percent

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

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_i \times \dots)$

where: A_C = Total On-Site drainage area
 A_i = Impervious area proposed in
 A_P = Pervious area remaining in tl
 L_R = TSS Load removed from this

A_C = **0.20** acres
 A_i = **0.12** acres
 A_P = **0.07** acres
 L_R = **97** lbs

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

Desired L_M THIS BASIN = **45** lbs.

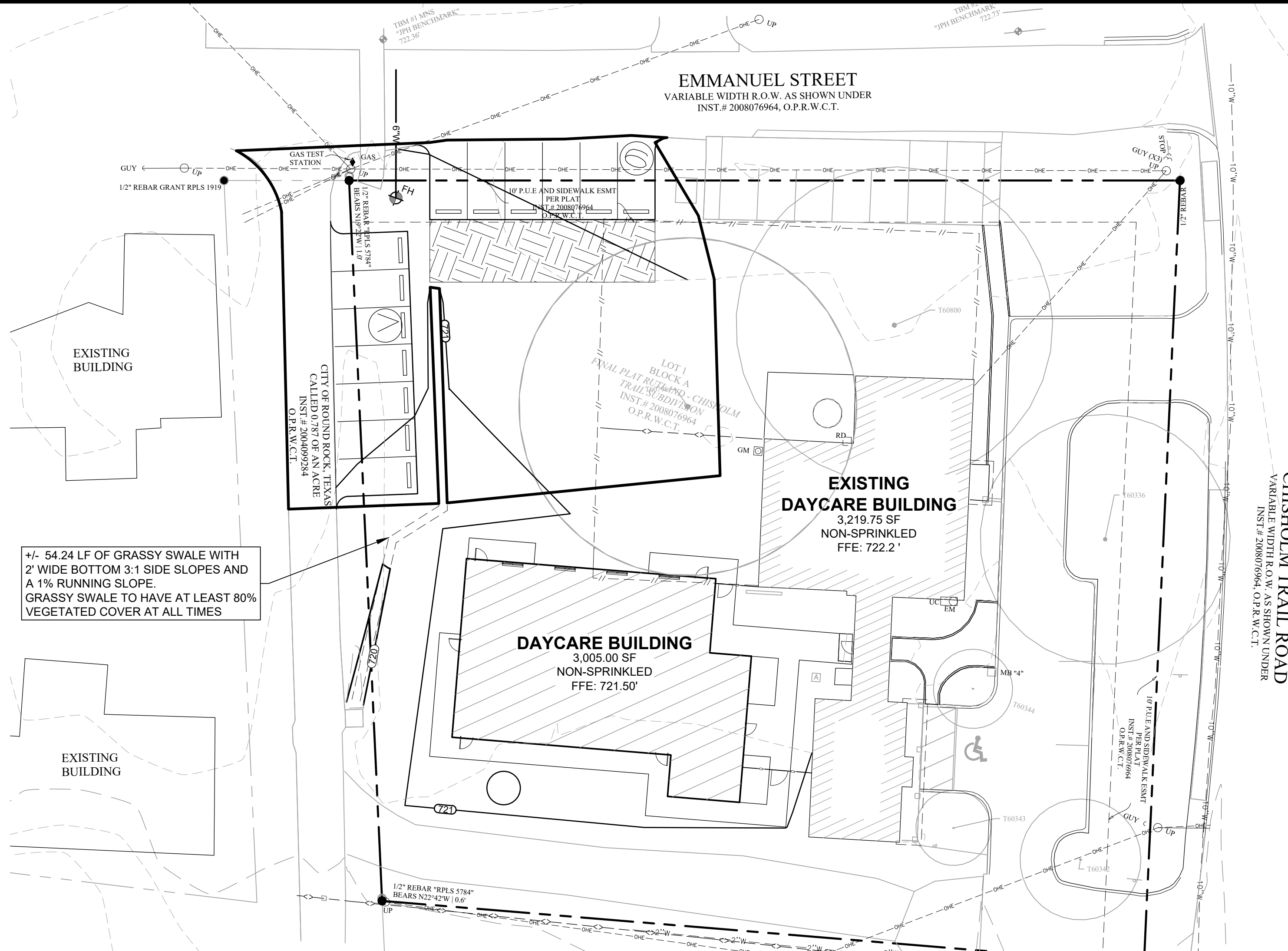
F = **0.47**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Rainfall Depth = **0.38** inches
Post Development Runoff Coefficient = **0.44**
On-site Water Quality Volume = **121** cubic feet

Calculations from RG-348

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



GENERAL LEGEND

SYMBOLS

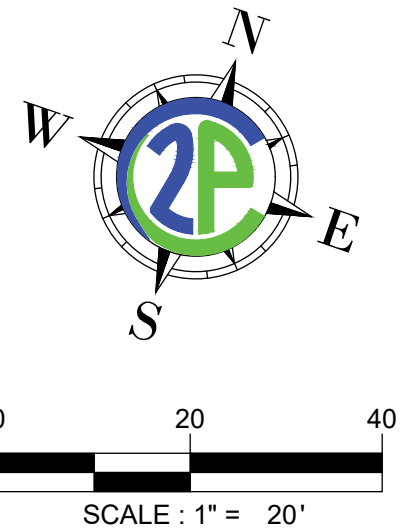
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- BACKFLOW PREVENTER
- UTILITY POLE
- LIGHT POLE
- WASTEWATER MANHOLE
- CLEAN OUT
- KEYNOTES
- PARKING COUNT
- WW SERVICE
- WATER SERVICE
- STORMSEWER MANHOLE
- SIGN
- CURB INLET
- GRATE INLET
- TABLE TOP AREA INLET
- TREE TO BE SAVED
- TREE TO BE REMOVED

LINETYPES

- PROPERTY BOUNDARY
- LOC LIMITS OF CONSTRUCTION (CHAINLINK)
- FENCES (WOOD)
- (BARB WIRE)
- DITCH (CREEK) LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- CURB & GUTTER
- UNDERGROUND ELEC.
- OVERHEAD UTILITY
- UNDERGROUND TELE.
- UNDERGROUND GAS LINE
- WATER LINE
- WASTEWATER LINE
- ACCESSIBLE ROUTE

GRADING LEGEND

- EXISTING: (493.00 NG) NATURAL GROUND, (493.00 EX GUT) GUTTER, (493.00 EX PAV) PVMT, (493.00 EX SW) SIDEWALK
- PROPOSED: (493.00 PAV) PAVEMENT, (493.00 TOP) TOP OF WALL, (493.00 TC) TOP OF CURB, (493.00 TOE) TOE OF SLOPE, (493.00 SW) SIDEWALK, (493.00 TOP) TOP OF SLOPE, (493.00 TG) TOP OF GRATE, (493.00 CONC) CONCRETE INLET, (493.00 FL) FLOWLINE, (493.00 FF) FINISHED FLOOR, (493.00 FG) FINISHED GROUND
- PROPOSED GRADE BREAK ON SURFACE (CONC, PVMT, GRASS, ETC.)
- LP LOW POINT, HP HIGH POINT



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15. Grassy Swales

Designed as Required in RG

Design parameters for the swale:

Drainage Area to be Treated by the Swale = **0.20** acres
Impervious Cover in Drainage Area = **0.12** acres
Rainfall Intensity = **1.1** in/hr
Swale Slope = **0.01** ft/ft
Side Slope (z) = **3**
Design Water Depth = **0.33** ft
Weighted Runoff Coefficient = **0.59**

A_{CS} = cross-sectional area of flow in Swale = **1.00** sf
 P_w = Wetted Perimeter = **4.11** feet
 R_H = hydraulic radius of flow cross-section = A_{CS}/P_w = **0.24** feet
 n = Manning's roughness coefficient = **0.2**

15A. Using the Method Described in the RG-348

Manning's Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$

$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}}$ - zy = **2.00** feet

$Q = CIA$ = **0.13** cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = Q/A_{CS} = **0.13** ft/sec

To calculate the resulting swale length:

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = **54.24** feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the des

15B. Alternative Method using Excel Solver

Design $Q = CIA$ = **0.13** cfs

Manning's Equation $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$
Swale Width = **6.00** ft

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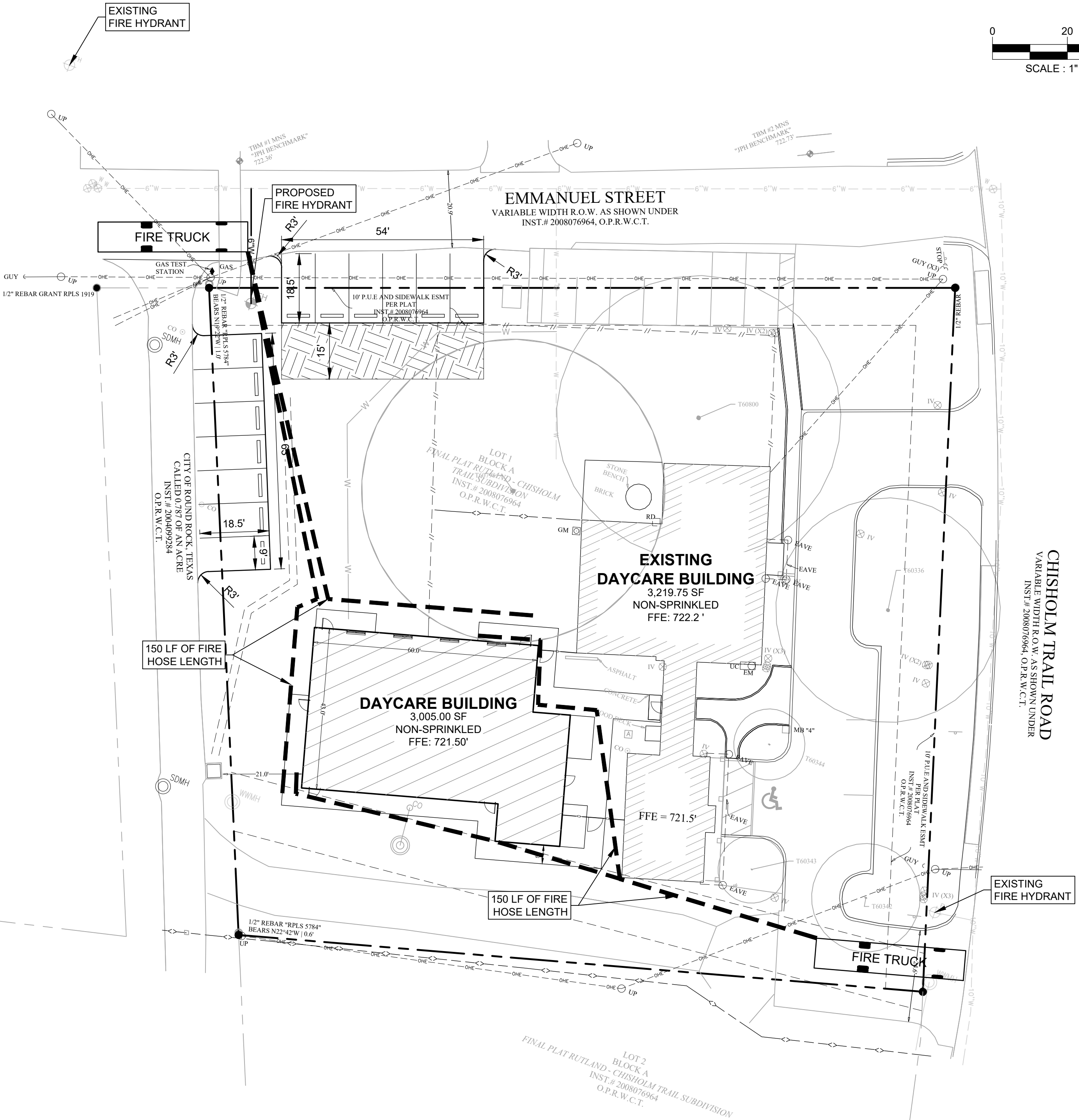
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WATER QUALITY PLAN - GRASSY
SWALE




















PERMIT No.
SDP23-00051

SHEET No.
15
OF 20



SYMBOLS

— W

	WATER METER		WW SERVICE
	WATER VALVE		WATER SERVICE
	FIRE HYDRANT		STORMSEWER MANHOLE
	BACKFLOW PREVENTER		SIGN
	UTILITY POLE		CURB INLET
	LIGHT POLE		GRATE INLET
	WASTEWATER MANHOLE		TABLE TOP AREA INLET
	CLEAN OUT		
	KEYNOTES		TREE TO BE SAVED
	PARKING COUNT		TREE TO BE REMOVED

LINETYPES

=====	PROPERTY BOUNDARY
=====	LIMITS OF CONSTRUCTION
=====	FENCES
-----○-----	(CHAINLINK)
-----○-----	(IRON)
-----○-----	(WOOD)
-----x-----	(BARB WIRE)
-----x-----	DITCH (CREEK) LINE
-----x-----	EXISTING CONTOURS
-----x-----	PROPOSED CONTOURS
-----x-----	CURB & GUTTER
-----x-----	UNDERGROUND ELEC.
-----x-----	OVERHEAD UTILITY
-----x-----	UNDERGROUND TEL.
-----x-----	UNDERGROUND GAS LINE
-----x-----	WATER LINE
-----x-----	WASTEWATER LINE
-----x-----	ACCESSIBLE ROUTE

DETAIL NUMBER

SHEET NUMBER
WHERE DETAIL IS
LOCATED



DETAIL NAME

DETAIL REFERENCE CALLOUT

NOTES:

1. THIS PROJECT IS LOCATED IN THE EDWARDS AQUIFER RECHARGE, ZONE.
2. NO PORTION OF THE SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN PER FEMA FIRM MAP #48491C0489F EFFECTIVE AS OF DECEMBER 20th, 2019.
3. ALL RADII ARE 3' UNLESS NOTED OR OTHERWISE.
4. THE DEVELOPMENT PARTICIPATES IN THE CITY OF ROUND ROCK'S REGIONAL STORMWATER MANAGEMENT PROGRAM (RSM[®]).

FIRE PROTECTION PLAN NOTES:

1. GRADING: FIRE LANE SHALL NOT BE GREATER THAN 7% OR GRADE BREAKS > 3%.
2. ALL WEATHER SURFACE: ALL WEATHER SURFACE ROADS OF CONCRETE OR ASPHALT ABLE TO SUPPORT 80,000 LBS. AND SITE HYDRANTS IN-SERVICE BEFORE ANY COMBUSTIBLE MATERIAL ON SITE. 2015 IFC D102.
3. VERTICAL CLEARANCE: THE VERTICAL CLEARANCE OVER A DESIGNATED FIRE LANE SHALL NOT BE LESS THAN 13'-6". 2015 IFC INTERNATIONAL FIRE CODE SECTION 503.2.1 :



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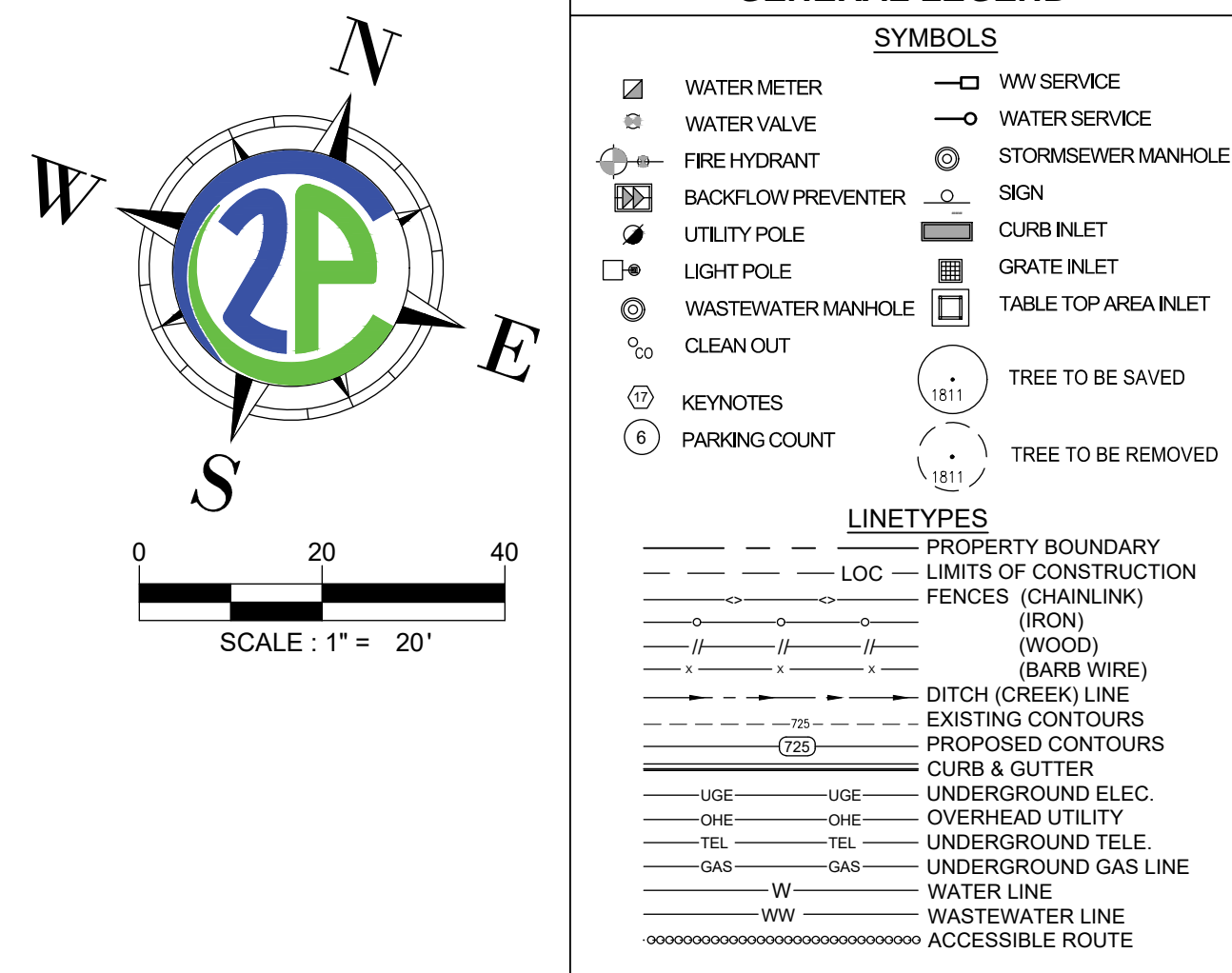
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FIRE PROTECTION PLAN

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