Baumsquad Brothers Development

Water Polution Abatement Plan

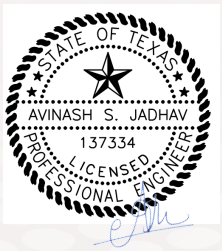
KCI Job #7622E0677801

Prepared for:

Baumsquad Brothers Development
Ryan Baum
3550 N Loop 1604 E.
San Antonio, Texas, 78247

Prepared by:

KCI Technologies Inc.
Avinash Jadhav, P.E
2806 W. Bitters Rd.,
San Antonio, TX 78230
(210) 641-9999



July 2023

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

WATER POLUTION ABATEMENT PLAN (WPAP)

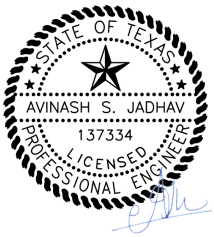
BAUMSQUAD BROTHERS DEVELOPMENT
4235 E. Loop 1604
San Antonio, Texas

KCI Job No.: 7622E0677801
JULY 2023

Prepared by:

Avinash Jadhav, P.E.
Design Engineer

KCI Technologies Inc.
2806 W. BITTERS RD.,
SAN ANTONIO, TEXAS 78230
(210) 641-9999
REGISTRATION # F-2214



Prepared for:

BAUMSQUAD BROTHERS, LLC

Water Pollution Abatement Plan Checklist

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

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

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

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

Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
Attachment B - Stratigraphic Column
Attachment C - Site Geology
Attachment D - Site Geologic Map(s)

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

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

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

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

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

Attachment A - 20% or Less Impervious Cover Waiver (if requested for multi-family, school, or small business site)
Attachment B - BMPs for Upgradient Stormwater
Attachment C - BMPs for On-site Stormwater
Attachment D - BMPs for Surface Streams
Attachment E - Request to Seal Features (if sealing a feature)
Attachment F - Construction Plans
Attachment G - Inspection, Maintenance, Repair and Retrofit Plan
Attachment H - Pilot-Scale Field Testing Plan (if proposed)
Attachment I -Measures for Minimizing Surface Stream Contamination

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

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

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

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

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

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

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

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

Technical Review

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

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

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

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: Baumsquad Brothers, LLC						**2. Regulated Entity No.:**			
3. Customer Name: Ryan Baum						**4. Customer No.:**			
5. Project Type: (Please circle/check one)	**New**		Modification			Extension		Exception	
6. Plan Type: (Please circle/check one)	**WPAP**	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	Residential		Non-residential			**8. Site (acres):**		12.63	
9. Application Fee:	$6500.00		**10. Permanent BMP(s):**			Engineered Vegetative Filter Strips and Water Quality Basin			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Bexar		**14. Watershed:**			Salado 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.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.
Thomas Ryan Baum Print Name of Customer/Authorized Agent
RLB 07/20/2023 Signature of Customer/Authorized Agent Date

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

General Information Form

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Ryan Baum

Date: 3/8/23

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Baumsquad Brothers, LLC
2. County: Bexar
3. Stream Basin: Waterhole Creek
4. Groundwater Conservation District (If applicable): _____
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

Contact Person: Ryan Baum
Entity: Baumsquad Brothers, LLC/Thomas Stone and Materials
Mailing Address: 490 Rodeo Dr.
City, State: Spring Branch, Texas Zip: 78070
Telephone: 210-445-8855 FAX: _____
Email Address: tryanbaum@gmail.com

8. Agent/Representative (If any):

Contact Person: Avinash S. Jadhav, P.E.
Entity: Engineer
Mailing Address: 2806 W. Bitters Rd. Ste. 218
City, State: San Antonio, Texas Zip: 78248
Telephone: 210-641-9999 FAX: _____
Email Address: Avinash.Jadhav@kci.com

9. Project Location:

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

4235 E. Loop 1604, San Antonio, Texas 78247

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" = 1000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

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

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

☐ Survey staking will be completed by this date: _____

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

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

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

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

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

Attachment A

Road Map and Site
Baumsquad Brothers Development

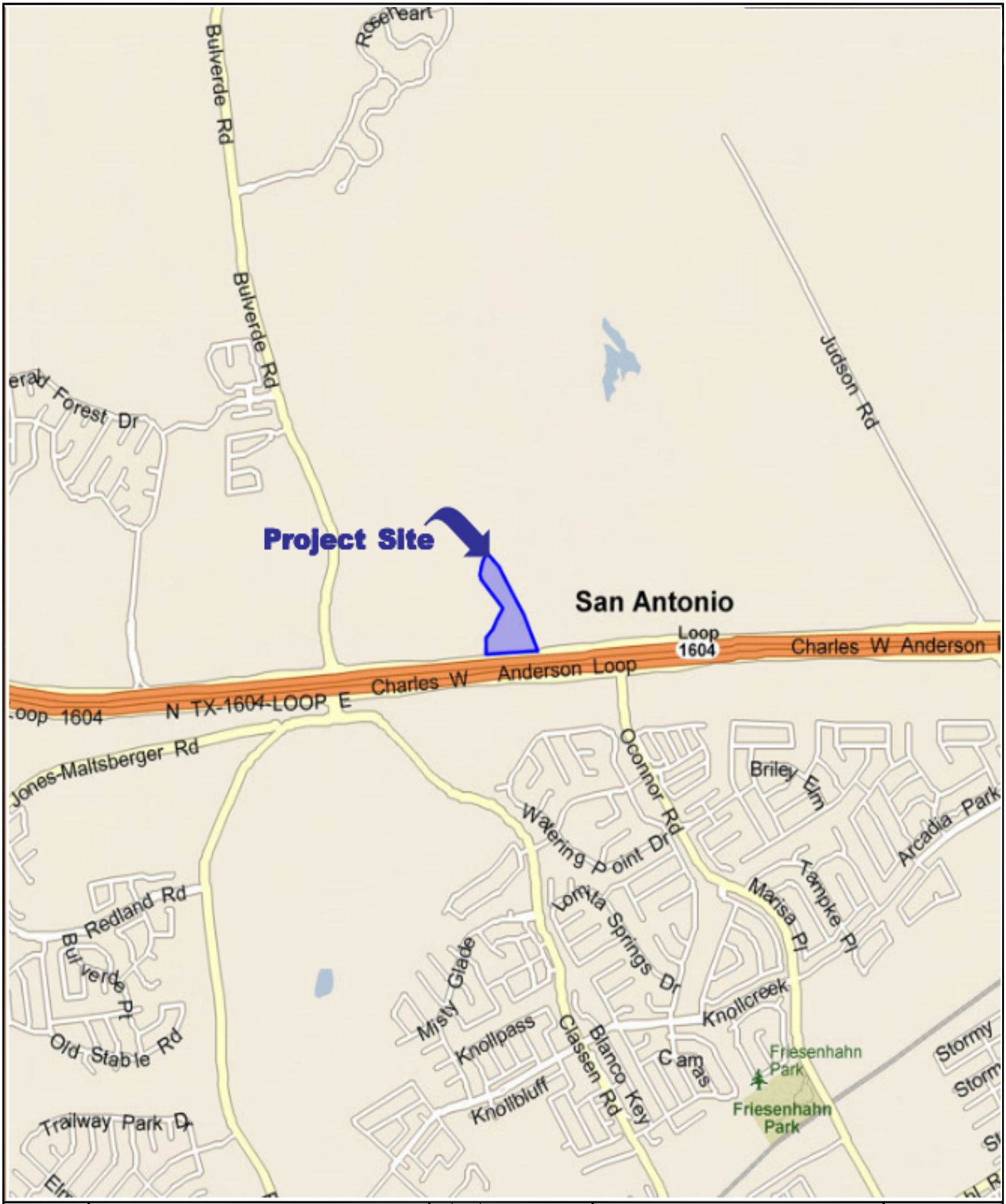


FIGURE A

BAUMSQUAD BROTHERS DEVELOPMENT

ROAD MAP BEXAR COUNTY, TX

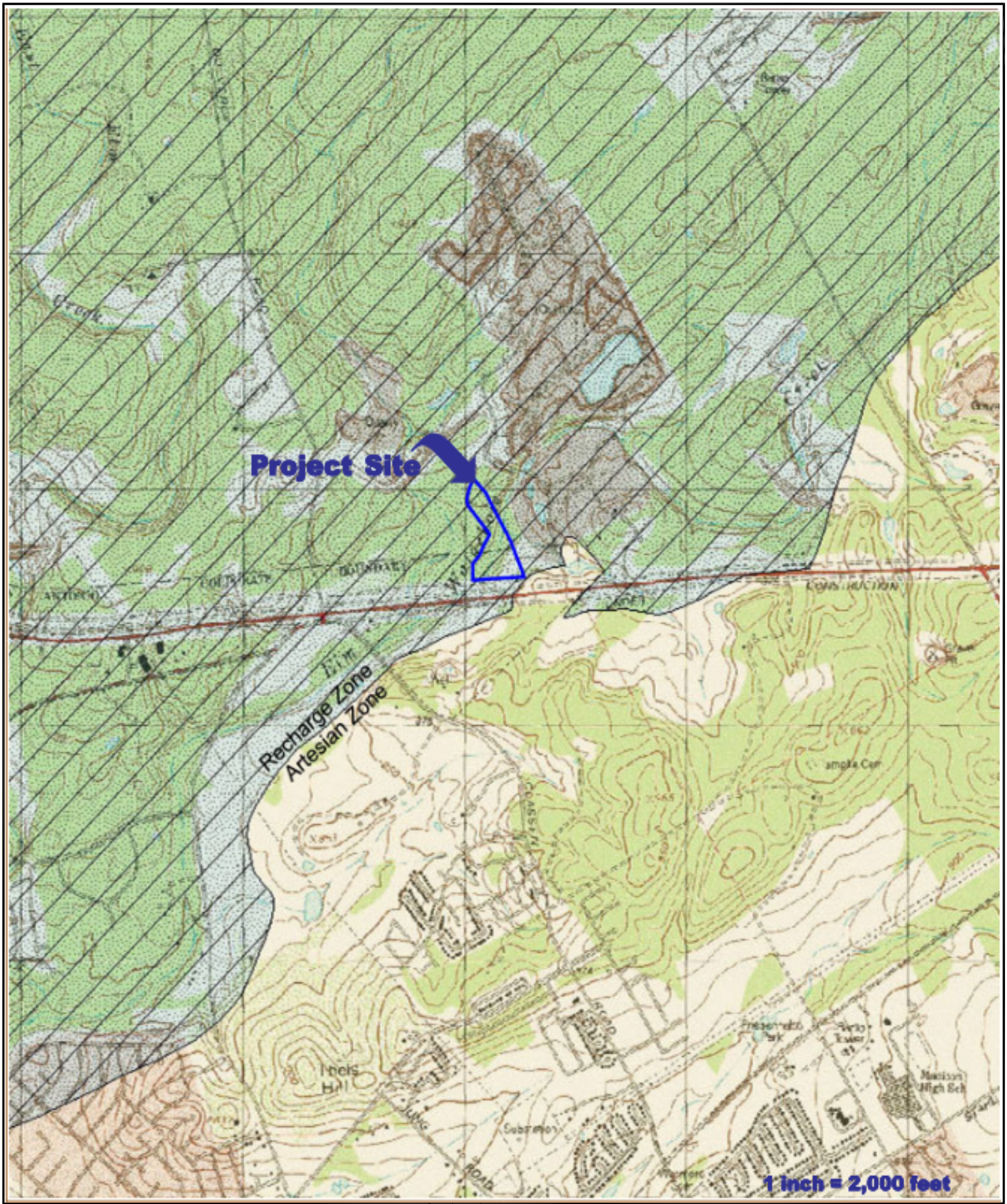
REV	DATE	DESCRIPTION

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #101943-65

DESIGNED BY:	AE
DRAWN BY:	AE
APPROVED:	AJ
JOB NO.:	E0677801

Attachment B

USGS / Edwards Recharge Zone Map
Baumsquad Brothers Development



FIGURE

B

BAUMSQUAD BROTHERS DEVELOPMENT

USGS / EDWARDS RECHARGE ZONE MAP

REV	DATE	DESCRIPTION

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #101943-65

DESIGNED BY:	AE
DRAWN BY:	AE
APPROVED:	AJ
JOB NO.:	E0677801

Attachment C

Project Description
Baumsquad
Brothers
Development

This project is approximately 12.63 acres of commercial development known as Baumsquad Brothers Development. The site located inside the city limits of San Antonio, Bexar County, Texas. The Baumsquad Brothers Development site is located over the Edwards Aquifer Recharge Zone. The proposed water pollution abatement plan (WPAP) includes the area over the Recharge Zone which includes the proposed parking lots, portable building, driveways, water quality basin, and landscaping material storage lot.

The proposed impervious cover for the 12.63 acres site will be 2.41 acres (19.1%). Although the overall site or platted unit will be less than 20% impervious cover, the impervious cover will make up 65.7% of the land that will be disturbed. The proposed permanent BMPs include two Engineered Vegetative Filter Strips for treatment of the runoff that drain away from water quality basin, and one Sand Filtration Basin. Refer to the permanent storm water section for additional details.

Project wastewater will be disposed of by the on-site septic system.

The project will have no off-site drainage areas, all drainage will be on site. Majority of the site currently drains from southeast to northwest. The site will maintain the existing drainage patterns and will drain to the existing low on the site towards the water quality basin.

GEOLOGIC ASSESSMENT (WPAP)

BAUMSQUAD BROTHERS DEVELOPMENT
+/- 12 ACRES
SAN ANTONIO, TEXAS

FROST GEOSCIENCES, INC. PROJECT NO.: FGS-E22228
DECEMBER 1, 2022

Prepared exclusively for

Thomas Stone and Materials
20540 Highway 46 West, Suite 115-622
Spring Branch, Texas 78070

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental

Frost Geosciences, Inc.
13406 Western Oak
Helotes, Texas 78023
Office (210)-372-1315
Fax (210)-372-1318
www.frostgeosciences.com
TBPE Firm Registration # F-9227
TBPG Firm Registration # 50040

December 1, 2022

Thomas Stone and Materials
20540 Highway 46 West, Suite 115-622
Spring Branch, Texas 78070

Attn: Mr. Ryan Baum

SUBJECT:
Geologic Assessment (WPAP)
for the Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
+/- 12 Acres
San Antonio, Texas
FGS Project Nº FGS-E22228

Dear Mr. Ryan Baum:

Frost GeoSciences, Inc., (FGS) is pleased to submit the enclosed Geologic Assessment completed for the above referenced project site as it relates to 30 TAC §213.5(b)(3), effective June 1, 1999. Our investigation was conducted, and this report was prepared in general accordance with the Texas Commission on Environmental Quality (TCEQ) "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04).

If you have any questions regarding this report, or if Frost GeoSciences, Inc. may be of additional assistance to you on this project, please feel free to call our office. It has been a pleasure to work with you and we wish to thank you for the opportunity to be of service to you on this project. We look forward to being of continued service.

We appreciate the opportunity to perform these services for Thomas Stone and Materials. Please contact the undersigned if you have questions regarding this report.

Respectfully submitted,
Frost GeoSciences, Inc.

Ethan Levine
Staff Geologist

Chris Wickman, P.G.
Senior Geologist

Copies Submitted:
(1) Mr. Ryan Baum; Thomas Stone and Materials
(1) KCI Technologies, Inc.
(1) Electronic (pdf) Copy

TABLE OF CONTENTS

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

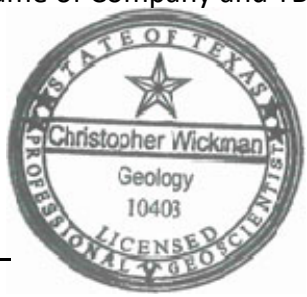
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Chris Wickman, P.G. Telephone: (210) 372-1315

Date: December 1, 2022 Fax: (210) 372-1318

Representing: Frost GeoSciences, Inc. #50040 (Name of Company and TBPG or TBPE registration number)

Signature of the Geologist:



Regulated Entity Name: Baumsquad Brothers Development

Project Information

1. Date(s) Geologic Assessment was performed: November 30, 2022
2. Type of Project:

   ☒ WPAP ☐ AST
   ☐ SCS ☐ UST
3. Location of Project:

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

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Bexar	D	0 to 1
Crawford	D	0 to 1

**Soil Group Definitions (Abbreviated)*

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

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

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

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

   Applicant's Site Plan Scale: 1" = 70'
   Site Geologic Map Scale: 1" = 70'
   Site Soils Map Scale (if more than 1 soil type): 1" = 500'

9. Method of collecting positional data:

   ☒ Global Positioning System (GPS) technology.
   ☒ Other method(s). Please describe method of data collection: 2022 Aerial Photography

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.

STRATIGRAPHIC COLUMN

EXPLANATION OF HYDROSTRATIGRAPHIC UNITS

Group or Formation	Formal and informal member		Hydrologic unit or Informal hydrostratigraphic unit
Taylor Group (Pecan Gap)		Kpg	Upper Confining Unit (UCU)
Austin Group		Ka	
Eagle Ford Group		Kef	
Buda Limestone		Kb	
Del Rio Clay		Kdr	
Georgetown Formation		Kg	I
Person Formation	Cyclic and marine, undivided	Kpcm	II
	Leached and collapsed	Kplc	III
	Regional dense member	Kprd	IV
Kainer Formation	Grainstone	Kkg	V
	Kirschberg evaporite	Kkke	VI
	Dolomitic	Kkd	VII
	Basal nodular	Kkbn	VIII
Glen Rose Limestone	Upper Glen Rose Limestone	Kgrc	Cavernous
		Kgrcb	Camp Bullis
		Kgrue	Upper evaporite
		Kgruf (Kgrf)	Fossiliferous Upper
		Kgrlf (Kgrf)	Lower
		Kgrle	Lower evaporite
	Lower Glen Rose Limestone	Kgrb	Bulverde
		Kgrlb	Little Blanco
		Kgrts	Twin Sisters
		Kgrd	Doeppenschmidt
		Kgrr	Rust
		Kgrhc	Honey Creek
Pearsall Formation	Hensell Sand	Kheh	Hensell
	Cow Creek Limestone	Kcccc	Cow Creek
	Hammett Shale	Khah	Hammett

Frost GeoSciences

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Baumsquad Brothers Development | **PROJECT NUMBER:** FGS-E22228

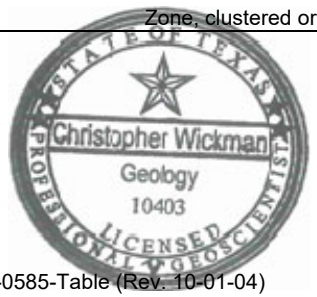
LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29° 36' 9.08"	-98° 24' 34.34"	F	20	Kpcm	-	-	-	-	-	-	-	OFC	15	35	35		YES		HILLSIDE
S-2	29° 36' 14.99"	-98° 24' 36.53"	SC	20	Kpcm	1	1	0.75	-	-	-	-	CF	10	30	30		YES		HILLSIDE

Datum: NAD 83

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, Floodplain, Streambed



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

Chris Wickman, P.G.

Date: 12/1/2022

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

LOCATION

The project site is located along the northside of Loop 1604, approximately 0.40 miles east of Bulverde Road at 4235 E. Loop 1604 in San Antonio, Texas. The project site is depicted as undeveloped land. Loop 1604 is located on the adjoining property south of the project site. The project site is located in a developed area of north Bexar County. Quarries are located east and northwest of the project site. The property west of the project site is depicted as vacant wooded land. An overall view of the area is shown on copies of the site plan, a street map, the U.S.G.S. Topographic Map, the EAA-Edwards Aquifer Recharge Zone and Contributing Zone Map, the FIRM Map, the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, and a 2022 aerial photograph at a scale of 1"=500' and 1"=200', as well as a NRCS Web Soil Survey aerial photograph at a scale of 1"=500'. These maps are included as Figures 1 through 10 in Appendix A.

METHODOLOGY

The Geologic Assessment was performed by Chris Wickman, P.G., Senior Geologist and Ethan Levine with Frost GeoSciences, Inc. Mr. Wickman is a Licensed Professional Geoscientist in the State of Texas (License # 10403).

Frost GeoSciences, Inc. researched the geology of the area east and northeast of the intersection of Bulverde Road and Loop 1604. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FEMA maps, Edwards Aquifer Recharge Zone Maps, U.S.G.S. 7.5 Minute Quadrangle Maps, the Bureau of Economic Geology-Geologic Atlas of Texas, the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the U.S.G.S. Water-Resources Investigations Report 95-4030, and the U.S.D.A. Soil Survey of Bexar County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made Potential Recharge Features (PRFs). A transect spacing of approximately 50 feet, or less depending on vegetation thickness, was used to inspect the project area. A 2022 aerial photograph, in conjunction with a hand-held Garmin GPS 72H Global Positioning System with an Estimated Potential Error ranging from 10 to 14 feet, was used to navigate around the property and identify the locations of PRFs, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any PRFs noted in the field were marked with blue and white flagging. The flagging is numbered with the same potential recharge feature I.D. # that is used on the Site Geologic Map. The Site Geologic Map, indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included in the Attachments at the end of this report. A copy of a 2022 Aerial Photograph at an approximate scale of 1" =200' indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included on Figure 10 in Appendix A. The Geologic Assessment Form TCEQ-0585, (Rev. 2-11-15), Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included on pages 1 through 5.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the U.S.G.S. 7.5 Minute Quadrangle Map, Longhorn, Texas Sheet (1992), the elevation across the project site ranges from 830 and 850 feet above mean sea level. The project site has a total relief of approximately 20 feet. The project site is located between two topographic highs to the north and south of the project site with Elm Waterhole Creek crossing through the southwestern and central portions of the project site. The general direction of area runoff drainage appears to be to the southeast and northwest towards Elm Waterhole Creek. The project site is depicted as undeveloped land. A copy of the U.S.G.S. 7.5 Minute Quadrangle Map indicating the location of the project site is included on Figure 3 in Appendix A.

Bexar County Watersheds Map

According to the Bexar County Watersheds Map (2003), the project site is located within the Upper Salado Creek Watershed Area. A copy of the Bexar County Watersheds Map indicating the location of the project site is included on Figure 4 in Appendix A.

Recharge/Transition Zone

According to the E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map, Longhorn, Texas (2014), the Official Edwards Aquifer Recharge Zone Map, Longhorn, Texas Sheet (1992), and the TCEQ website: Edwards Aquifer Viewer – https://tceq.maps.arcgis.com/apps/webappviewer/index.html, the project site is located within the Recharge Zone of the Edwards Aquifer. A copy of the E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map indicating the location of the project site is included on Figure 5 in Appendix A.

100-Year Floodplain

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Bexar County, Texas, Community Panel Number 48029CO260G, dated September 29, 2010, was reviewed to determine if the project site is located in areas prone to flooding. A review of the above-mentioned panel number indicated that the northern and southeastern portion of the project site were located in Zone X. According to the map panel legend, Zone X (unshaded) indicates areas determined to be outside the 0.2% annual chance floodplain.

Additionally, the above map indicated that floodplain associated with Elm Waterhole Creek crossing through the southern and central portions of the project site. The flood areas are indicated as “Zone AE and Zone X (Future Base Flood)”. According to the map panel legend, Zone AE represents areas determined to be within the 100-year floodplain where base flood elevations have been determined. Zone X (Future Base Flood) are areas determined to be within the 500-year flood, areas within the 100-year flood with depths of less than 1 foot, or with drainage areas of less than one square mile, or as areas protected by levees from the 100-year flood. A copy of the above referenced FIRM panel indicating the location of the project site is included on Figure 6 in Appendix A.

Soils

According to the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Bexar County (1966) and the USDA NRCS Web Soil Survey (WSS) website: https://websoilsurvey.nrcs.usda.gov, the project site is located on the Crawford and Bexar Stony Soils (Cb).

Crawford and Bexar Stony Soils (Cb) are very dark grayish brown to reddish brown clay. They are stony clay in texture and are shallow to moderately deep over hard limestone. These soils are extensive in the northern part of the county. The surface layer is noncalcareous, about 8 inches thick, and very dark grayish brown or very dark brown. It has fine, subangular blocky and granular structure. When moist, this layer is very firm but breaks easily to a mass of fine clods. When dry, is very hard and contains many large cracks. Angular fragments of chert and limestone are common. These fragments may range in size from a quarter of an inch to 24 inches in diameter. The subsurface layer is dense, angular blocky clay. This layer is neutral or slightly acidic, but it may be limy in the lower parts. It is about 26 inches thick and either overlies a thin layer of yellowish red to pale brown, limy clay or, if the limy layer is lacking, rests on hard, fractured limestone. Crawford soils are naturally well drained. Internal drainage and permeability vary according to moisture content. Water moves rapidly when the soil is dry and cracked, but very slowly when the soil is wet. This soil has a USDA Texture Classification of Cherty Clay Loam to Loam. The Unified Classification is CG or CL. The AASHO Classification is A-2, A-4, or A-6. This soil has an average permeability from 1.0 to 1.5 inches/hour.

A copy of the an aerial photo (approximate scale: 1"=200') obtained from the Web Soil Survey (WSS) website: https://websoilsurvey.nrcs.usda.gov has been included on Figure 7 in Appendix A.

Narrative Description of the Site Geology

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. The locations of the PRFs are identified on the 2022 aerial photograph on Figure 10 in Appendix A, and on the Site Geologic Map provided in Appendix C. Color photos of the project site and some of the PRFs are included in Appendix B.

According to the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, a fault is indicated crossing the southeastern corner of the project site. This fault is designated PRF #S-1. However, no obvious visual indications of this fault were observed at the project site during the site reconnaissance. The fault scores a 35 on the sensitivity scale, column 10 in the Geologic Assessment Table on page 5 of this report. Frost GeoSciences, Inc. does not consider the identified fault to be a sensitive feature.

PRF #S-2 is a solution cavity located between two limestone boulders. The small cavity is approximately 1 foot in diameter and appears to extend horizontally into the low hillside approximately 10 inches. The cavity is filled with fine soil and leaves and appeared to have been excavated by a burrowing animal. Frost GeoSciences rates the feature as low on figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). The feature scores 30 points on the sensitivity scale, column 10 of the Geologic Assessment Table included on page 5 of this report. Frost GeoSciences, Inc. does not consider the solution cavity to be a sensitive feature.

The project site consists of an approximately 12.7-acre tract of land located along and north of Loop 1604, east of the intersection of Loop 1604 and Bulverde Road in San Antonio, Texas. At the time of the FGS Site visit, vegetation on-site consisted primarily of mature Ashe Juniper *(Juniperus ashei)* and Live Oak *(Quercus fusiformis)* woodland, with Bluewood condalia *(Condalia hookeri)*, Texas Persimmon *(Diospyros texana)*, and Cedar Elm *(Ulmus crassifolia)* noted throughout the Site. Eastern Cottonwood *(Populus deltoides)*, Black Willow *(Salix nigra)*, and Japanese Privet *(Ligustrum japonicum)* were noted along Elm Waterhole Creek, which runs northeast to

southwest throughout the Site. The variations in the vegetative cover on the property are visible in the 2022 aerial photo on Figures 9 and 10 in Appendix A. A copy of the site layout indicating the boundary of the project site and the elevations is included on the Site Geologic Map in Appendix C of this report.

According to the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, the project site is located on the cyclic and marine member of the Edwards limestone (Kpcm) with a small area of the Georgetown formation occurring in the southeastern corner of the project site. Additionally, the geologic map indicated a fault crossing the southeastern corner of the project site. This fault is designated PRF #S-1. A copy of the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366 is included on Figure 8 in Appendix A. A copy of the Stratigraphic Column highlighting the outcropping formations is included on Page 3 of this report.

Georgetown Formation (Kg) consists of reddish brown, gray to light tan shaley mudstone and wackestone with black dendrites, iron nodules and iron staining. Fossils of *Plesioturrilites brazoensis* and *Waconell wacoensis* are common. Karst features within this member are typically related to structure or bedding planes. Overall thickness ranges from 30 to 80 feet.

Cyclic and Marine member of the Edwards Person limestone (Kpcm) consists of limestone, dolomitic limestone, dolomite, and lesser argillaceous limestone, approximately equivalent to Segovia Formation of eastern Edwards Plateau.

According to the site plan provided by KCI Technologies, Inc., the surveyed elevations on the project site range from 826 to 862 feet. According to this survey, the total relief on the project site is approximately 36 feet. A copy of the site plan indicating the boundary of the project site and the elevations is included on the Site Plan on Figure 1 in Appendix A and the Site Geologic Map in Appendix C of this report.

BEST MANAGEMENT PRACTICES

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to range from low to moderate. The potential always exists to encounter solution cavities within the subsurface during excavating activities. Frost GeoSciences, Inc. is of the opinion that it is very important for construction personnel to be informed of the potential to encounter cavities in the subsurface that lack a surface expression. Construction personnel should also be informed of the proper protocol to follow in the event a karst feature is encountered during the development of the project site.

DISCLAIMER

This report has been prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04) by a Licensed Texas Professional Geoscientist. All areas of the project site were carefully inspected for features that could contribute to the recharge of the Edwards Aquifer; however, this survey cannot preclude the presence of subsurface karst features that lack surface expression. This report is not intended to be a definitive investigation of all possible geologic or karst features at this site. All conclusions, opinions, and recommendations for Best Management Practices (BMP's) in this report are based on information obtained while researching the project and on the site conditions at the time of our field investigation.

This report has been prepared for the exclusive use of Thomas Stone and Materials. This report is based on available known records, a visual inspection of the project site, and the work generally accepted for a Geologic Assessment for Regulated Activities / Developments on the Edwards Aquifer Recharge / Transition Zone, relating to 30 TAC §213.5(b)(3), effective June 1, 1999.

REFERENCES

1. USGS - 7.5 Minute Topographic Quadrangle of Longhorn, Texas, 1992

2. E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map, Longhorn, Texas (2014).

3. Official Edwards Aquifer Recharge Zone Map, Longhorn, Texas, 1992

4. The Texas Commission on Environmental Quality (TCEQ) website: Edwards Aquifer Viewer – https://tceq.maps.arcgis.com/apps/webappviewer/index.html.

5. Clark, A.K., Golab, J.A. and Morris, R.R., 2016, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, United States Geological Survey.

6. Clark, A.K., Golab, J.A. and Morris, R.R., 2016, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, United States Geological Survey.

7. Collins, Edward, W., 2000, Geologic Map of the New Braunfels 30 X 60 Minute Quadrangle, Bureau of Economic Geology, The University of Texas at Austin, Texas.

8. Stein, W.G. and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, U.S. Geological Survey Water Resources Investigations 95-4030.

9. Barnes, V.L., 1982, Geologic Atlas of Texas San Antonio Sheet, Bureau of Economic Geology and University of Texas at Austin, Geologic Atlas of Texas.

10. Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Panel Number 48029C0260G, dated September 29, 2010

11. United States Department of Agriculture Soil Conservation Service Soil Survey of Bexar County 1966.

12. USDA NRCS Web Soil Survey (WSS) website: https://websoilsurvey.nrcs.usda.gov (2014)

13. TCEQ-0585-Instructions (Rev. 10-1-04), “Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone”.

14. San Antonio Water Systems, Bexar County Watersheds Map, 2004.

APPENDIX A

SITE LOCATION FIGURES

Frost GeoSciences

1 inch = 200 feet

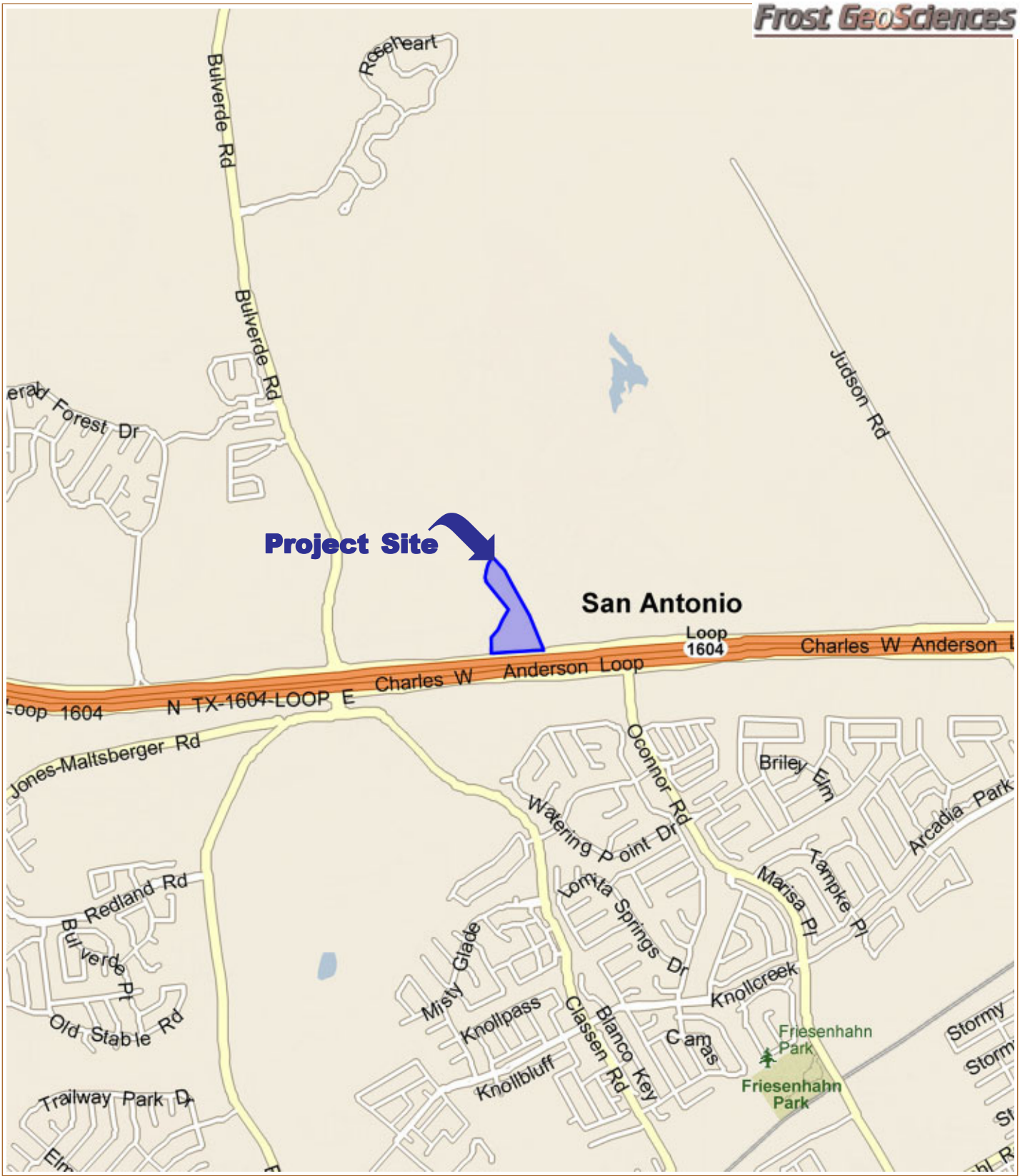
PROJECT NAME:

Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
San Antonio, Texas

Site Map

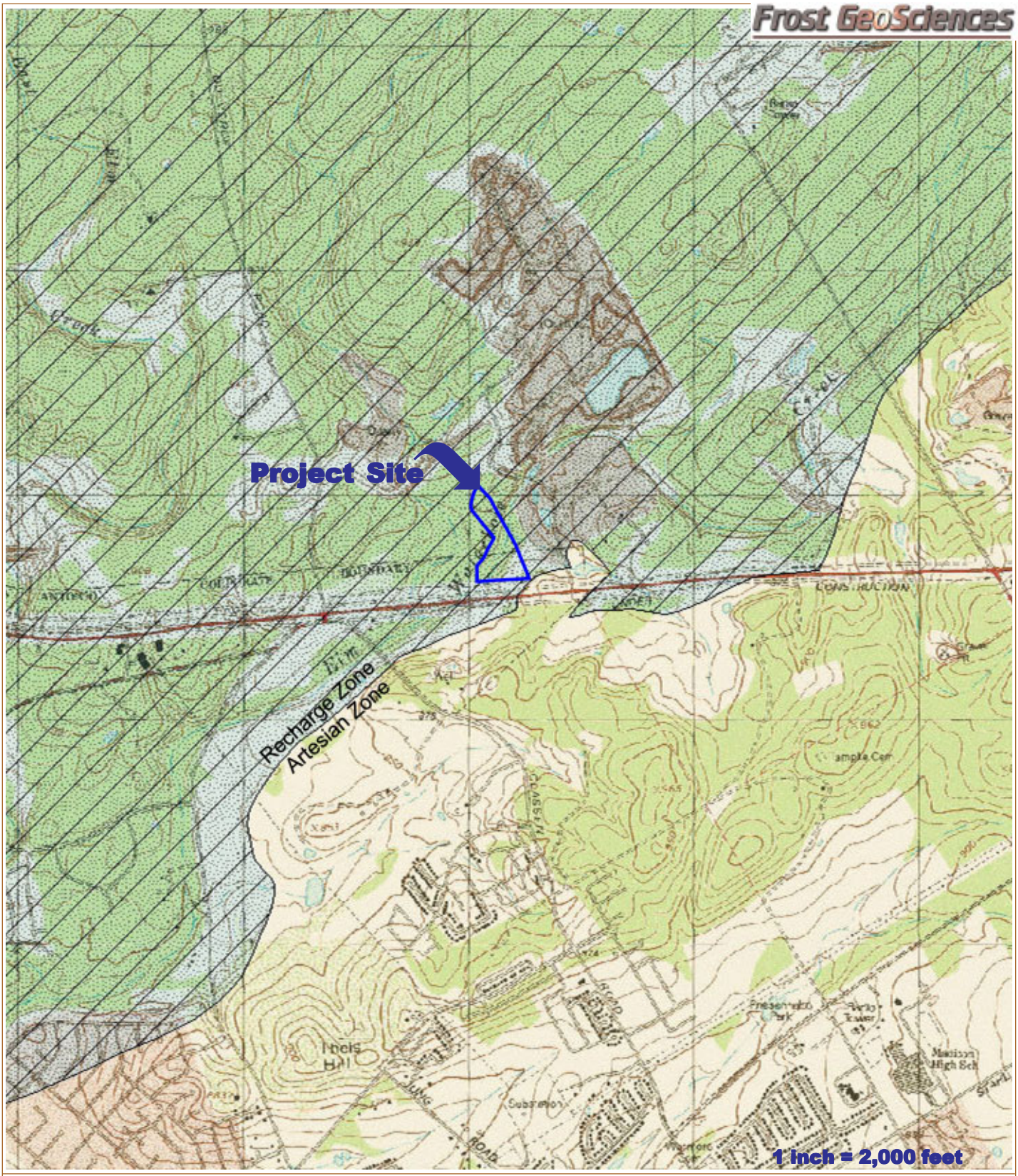
PROJECT NO.: FGS-E22228

DATE: December 1, 2022



PROJECT NAME:	Street Map
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Baumsquad Brothers Development San Antonio, Texas	
	PROJECT NO.: FGS-E22228 / DATE: December 1, 2022

Frost GeoSciences

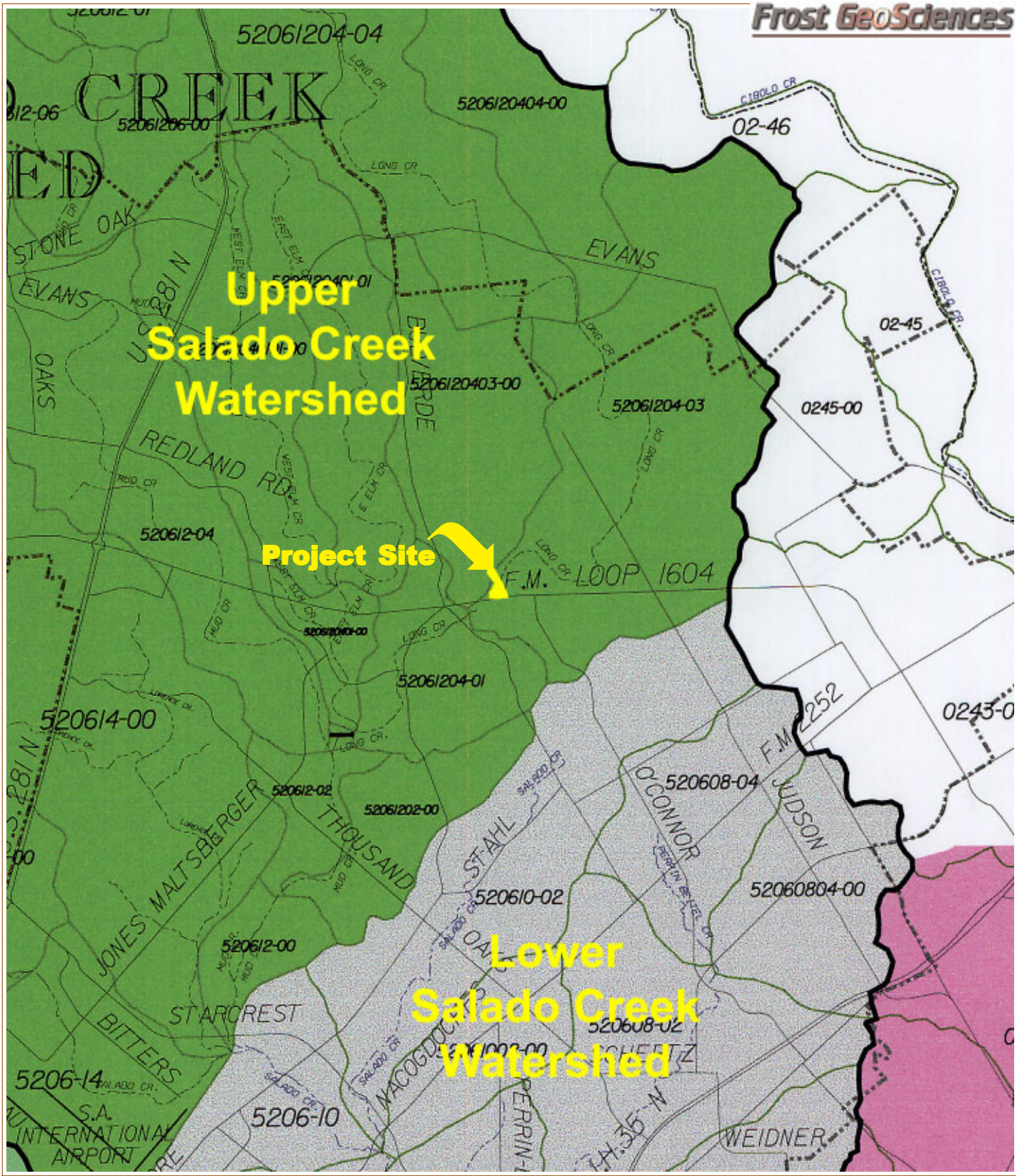


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
San Antonio, Texas

U.S.G.S. 7.5 Minute Quadrangle Map
Longhorn, Texas (1992)

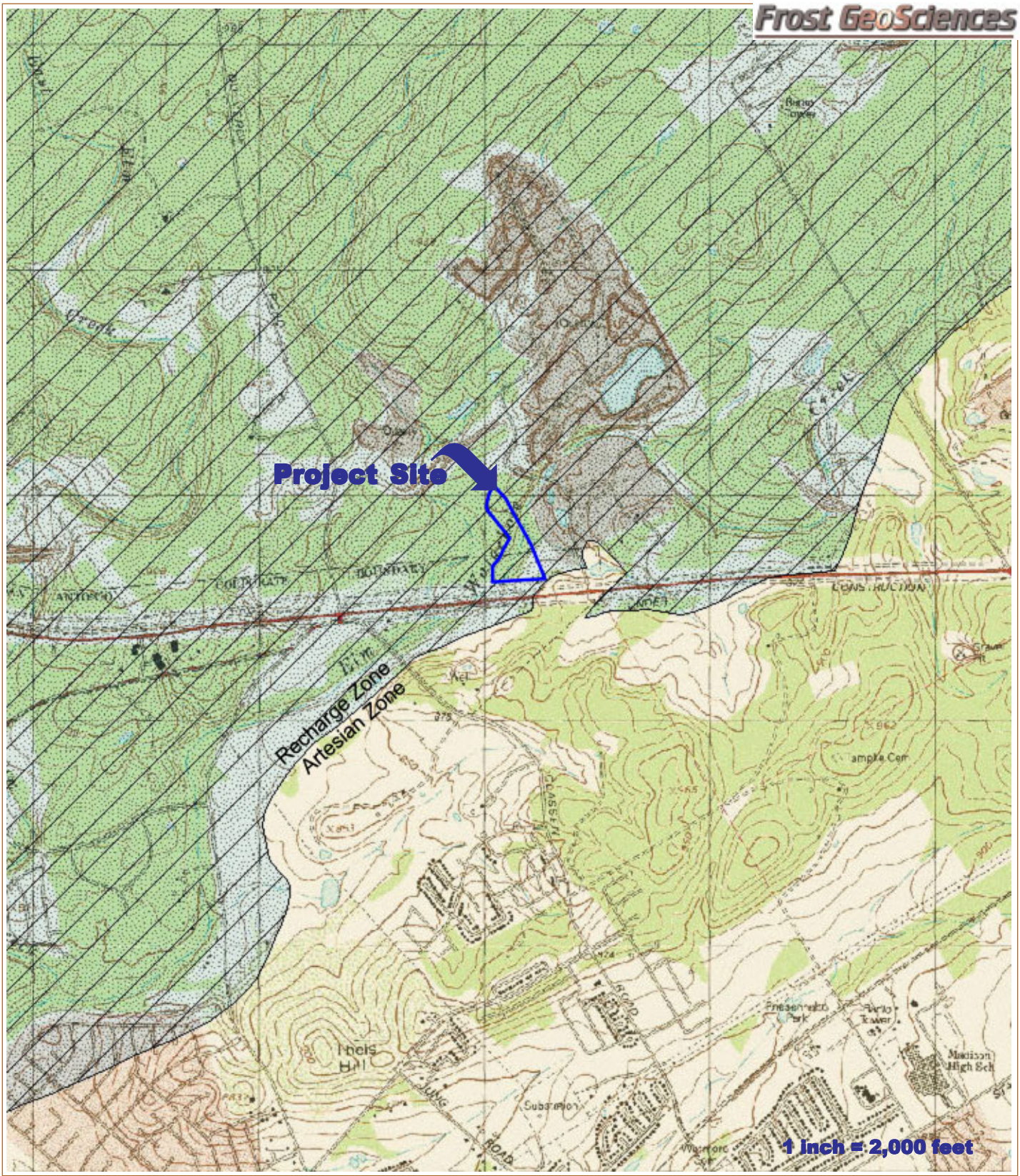
PROJECT NO.: FGS-E22228

DATE: December 1, 2022



PROJECT NAME: Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Baumsquad Brothers Development San Antonio, Texas	Bexar County Watersheds Map San Antonio Water Systems (2004)
PROJECT NO.: FGS-E22228	**DATE:** December 1, 2022

Frost GeoSciences

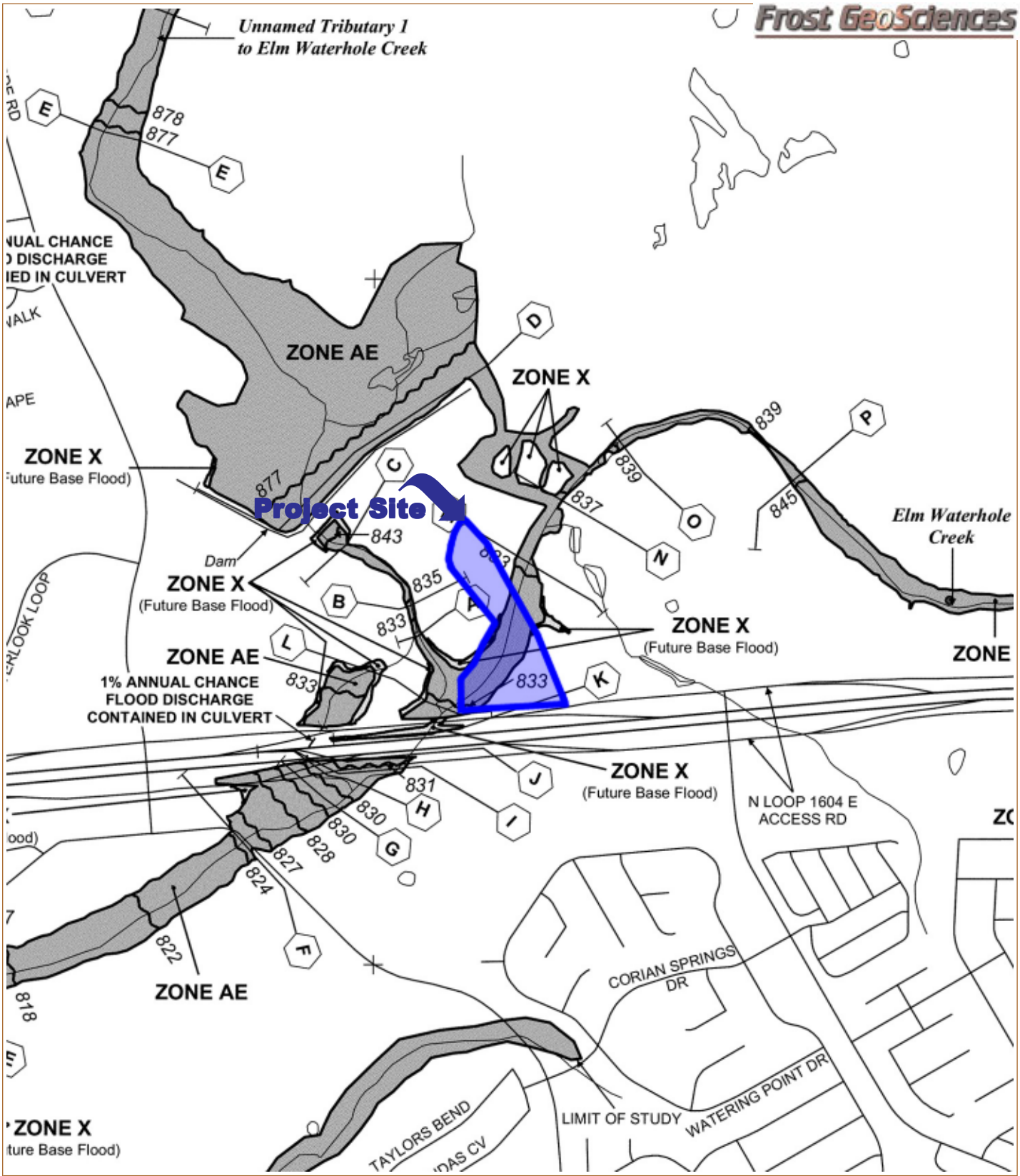


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
San Antonio, Texas

EAA Recharge & Contributing Zone Map
Longhorn, Texas (2014)

PROJECT NO.: FGS-E22228

DATE: December 1, 2022



PROJECT NAME: Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Baumsquad Brothers Development San Antonio, Texas	Flood Insurance Rate Map (FIRM) Community Panel # 48029C0260G (9/29/2010)
PROJECT NO.: FGS-E22228	**DATE:** December 1, 2022

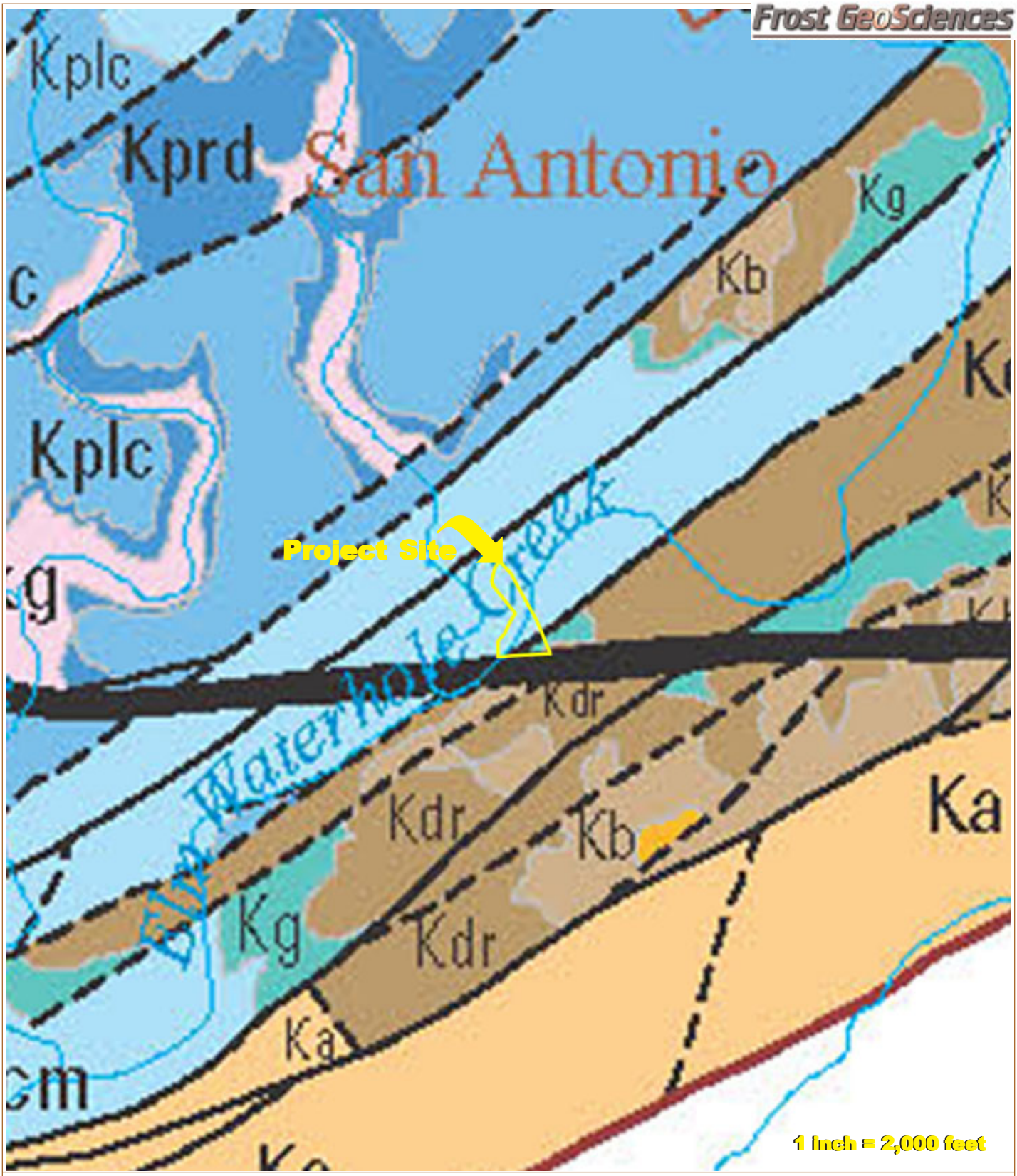
PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
San Antonio, Texas

Soils Map
Bexar County Soil Survey
NRCS website: websoilsurvey.nrcs.usda.gov

PROJECT NO.: FGS-E22228

DATE: December 1, 2022

FIGURE 7



PROJECT NAME:	U.S.Geological Survey Scientific Investigations Map 3366 Clarke (2016)	
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Baumsquad Brothers Development San Antonio, Texas	PROJECT NO.: FGS-E22228	DATE: December 1, 2022

Frost GeoSciences

PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
San Antonio, Texas

2022 Aerial Photograph
Google Earth Aerial

PROJECT NO.: FGS-E22228

DATE: December 1, 2022

PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone
Baumsquad Brothers Development
San Antonio, Texas

2022 Aerial Photographwith PRFs
Google Earth Aerial

PROJECT NO.: FGS-E22228

DATE: December 1, 2022

APPENDIX B

SITE PHOTOGRAPHS

Photo #1 – View of PRF #S-2.

Photo #2 – View of the vegetative cover observed in the vicinity of PRF #S-2.

Photo #3 – View of the vegetative cover observed in the southeastern portion of the project site.

Photo #4 – Additional view of the vegetative cover observed in the southeastern portion of the project site.

Photo #5 – View of the vegetative cover observed in the southwestern portion of the project site.

Photo #6 – Additional view of the vegetative cover observed in the southwestern portion of the project site.

Photo #7 – View to the northeast along Elm Waterhole Creek as it crosses through the central portion of the Site.

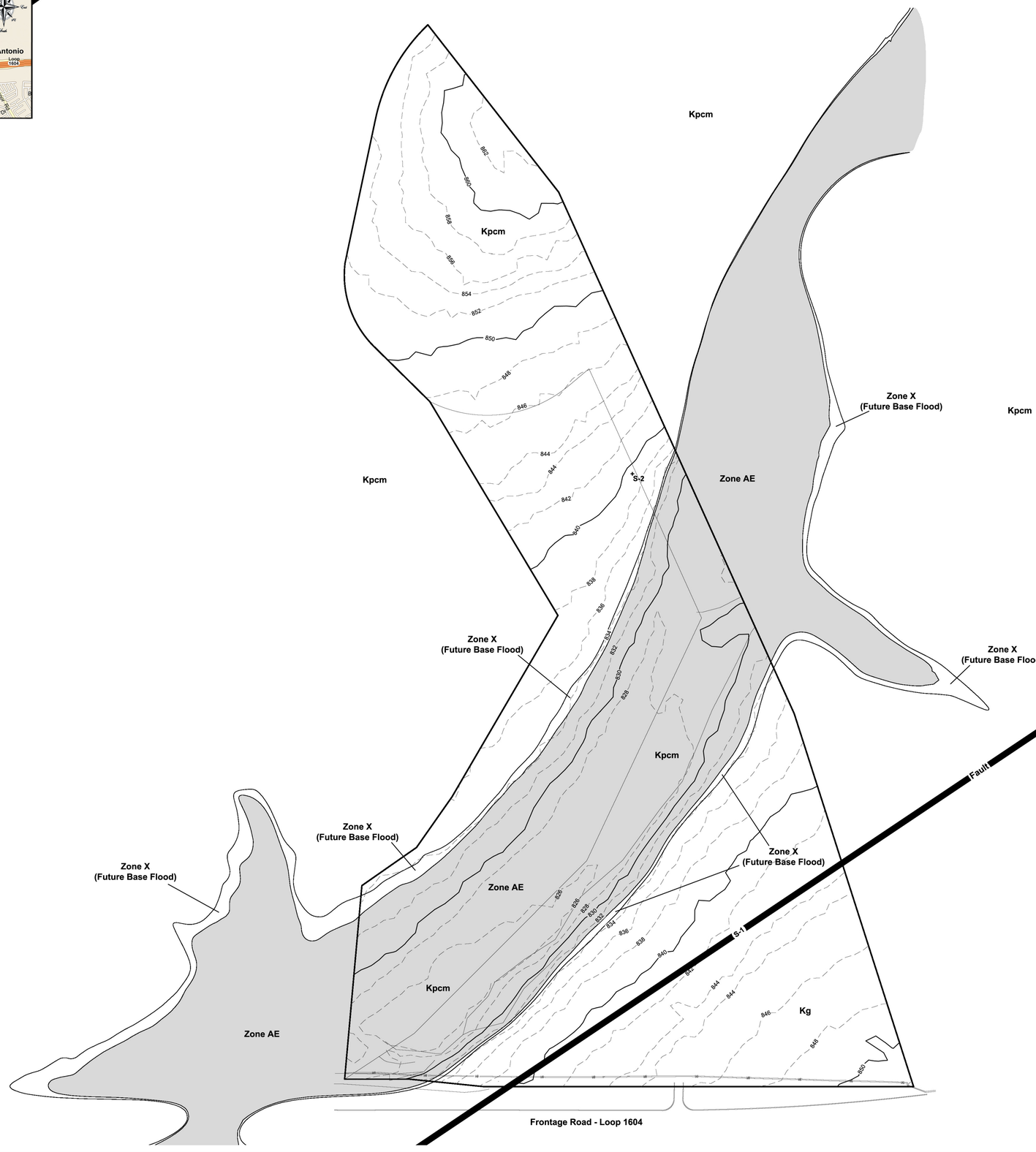
Photo #8 – View to the southwest along Elm Waterhole Creek as it crosses through the central portion of the Site.

	
Photo #9 – View of the vegetative cover observed in the central portion of the project site.	Photo #10 – Additional view of the vegetative cover observed in the central portion of the project site.
	
Photo #11 – View of the vegetative cover observed in the northern portion of the project site.	Photo #12 – Additional view of the vegetative cover observed in the northern portion of the project site.

APPENDIX C

GEOLOGIC MAP

Location Map



Signature of Texas Licensed Geoscientist
Chris Wickman License No. 10403

CW 12/1/2022

Christopher Wickman
Geology
10403
LICENSED
PROFESSIONAL GEOSCIENTIST

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental
13406 Western Oak ▪ Helotes, Texas 78023
Phone: (210) 372-1315 ▪ Fax: (210) 372-1318

Site Geologic Map

Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
for the

Baumsquad Brothers Development
San Antonio, Texas

Frost GeoSciences, Inc. Control # FGS-E22228

Legend

Kg - Georgetown formation

Kpcm - Cyclic & Marine member Edwards Person limestone

S-# - Potential Recharge Feature (PRF)

- Fault

Floodplain Information Obtained From FIRM: Flood Insurance Rate Map
Bexar County, Texas: Panel # 48029C0260G, Revised 9/29/2010

Fault Information Obtained From:
Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet (1983)
U.S. Geological Survey, Water Resources Investigations Report 95-4030 (1995)
Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000)
U.S. Geological Survey Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas (2016)

North
NW NE West East SW SE South

Graphic Scale

70 0 35 70 140

(In Feet)

1 inch = 70 feet
Representative Fraction 1:840

Contour Interval - 2 foot

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: Ryan Baum

Date: 5/16/23

Signature of Customer/Agent:

Regulated Entity Name: Baumsquad Brothers, LLC

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):12.63

3. Estimated projected population:3

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	1283	÷ 43,560 =	0.029
Parking		÷ 43,560 =	
Other paved surfaces	103697	÷ 43,560 =	2.38
Total Impervious Cover	104978	÷ 43,560 =	2.41

Total Impervious Cover 2.41 **÷ Total Acreage** 12.63 **X 100 =** 19.08**% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100% Domestic	_____Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day
TOTAL gallons/day _____	

15. Wastewater will be disposed of by:

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

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

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

☐ Sewage Collection System (Sewer Lines):

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

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

☐ The SCS was previously submitted on_____.

☐ The SCS was submitted with this application.

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

☐ The sewage collection system will convey the wastewater to the _____ (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" = 30'.

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): _____

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 A

Factors Affecting Water Quality
Baumsquad Brothers
Development

During construction activity factors that could affect surface water quality are as follows:

1) Onsite fueling operations by portable fuel trucks providing fuel to construction equipment. Fuels will not be stored onsite.
2) Automotive and Fuel Powered Equipment (including backhoes and generators) may be used during construction.
3) Sediment erosion from grading operations and/or topsoil placement prior to completion of vegetative restoration.
4) Ready Mix concrete truck washout activities.
5) Hydrocarbons from asphalt paving operations.
6) Excavation and trenching activities for the installation of utilities, drainage structures, lighting, and building construction.
7) Trash/refuse from general construction activities.
8) Sewage spills from portable toilets.

After construction activity factors that could affect surface water quality are as follows:

1) General trash from littering by personnel using the facility.
2) Runoff from vehicular traffic will have small amounts of total suspended solids (TSS) and oil and grease (O&G).

Attachment B

Volume and Character of Stormwater
Baumsquad Brothers Development

This project is within the Salado Creek watershed. Being that the site is less than 200 Acres, Rational Method (Q=CIA) was used to determine Q; City of San Antonio Rainfall Intensities and Runoff Coefficients are used. The following areas and volumes were calculated:

Existing
Project Area = 3.67 Acres
Runoff Coefficient = 0.37
Slopes = 2-9%
Impervious Cover = 0 Acre
Percent Impervious = 0%
Q_5 = 6.3 cfs
Q_{25} = 8.8 cfs
Q_{100} = 10.9 cfs

Proposed
Project Area = 3.67 Acres
Runoff Coefficient = 0.76
Slopes = 1-8%
Impervious Cover = 2.41 Acre
Percent Impervious = 65.7%
Q_5 = 17.8 cfs
Q_{25} = 24.9 cfs
Q_{100} = 31.3 cfs

Refer to Sheet "Exhibit XH-H – Existing & Proposed Hydrology" within the SWMP depicting the breakdown of the impervious areas and the Runoff Calculations Spreadsheet as noted above.

Character

The current site is undeveloped with no impervious cover. The proposed improvements will increase the amount of impervious cover to 65.7%. The runoff from construction and post construction could include sediment, oils, and organics that should be captured by the temporary BMP's. By the implementation of temporary BMP's the quality of water downstream of the project site is not expected to be impacted during and following construction of the project. The project site downstream will include temporary BMP's that can be found on the Stormwater Pollution Prevention Plan (SWPPP) sheets C9.0-10.0.

Character of post-construction storm water runoff will include small amounts of Total Suspended Solids (TSS) and Oil & Grease (O&G) from vehicular traffic. Water Quality should be typical for a commercial development.

Refer to the WPAP Plan for locations of proposed impervious cover as a function of this project.

XH H - EXISTING AND PROPOSED HYDROLOGY

Baumsquad Brothers development
Existing and Proposed Hydrology - Bexar County / San Antonio, TX PA-3
Job: 7622E0677801

15-Jun-23
3:51 PM

Existing Hydrology - Rational Method

CP	Pattern	A (AC)	C	CA	L (LF)	S_o (%)	L_o (LF)	Type o	T_o (MIN)	L_{ch} (LF)	T_{ch} (MIN)	L_{pipe} (LF)	T_{pipe} (MIN)	S_{sc} (%)	L_{SC} (LF)	Type sc	V (FPS)	T_{sc} (MIN)	T_c (MIN)	T_c Used (MIN)	I5 (IN/HR)	Q5 (CFS)	I25 (IN/HR)	Q25 (CFS)	I100 (IN/HR)	Q100 (CFS)
EX DA-A	A	3.670	0.37	1.358	475	3.6%	300	AGS	17.8	0	0.0	0	0.0	4.0%	175	U	3.2	0.9	18.7	19	4.66	6.3	6.45	8.8	8.00	10.9
		3.670																								
*** Rainfall Intensities from ATLAS 14 - NOAA Point Precipitation Frequency Estimates for the Project Location																				TOTAL		6.3		8.8		10.9
																				DELTA		11.5		16.1		20.4

Proposed Hydrology - Rational Method

CP	Pattern	A (AC)	C	CA	L (LF)	S_o (%)	L_o (LF)	Type o	T_o (MIN)	L_{ch} (LF)	T_{ch} (MIN)	L_{pipe} (LF)	T_{pipe} (MIN)	S_{sc} (%)	L_{SC} (LF)	Type sc	V (FPS)	T_{sc} (MIN)	T_c (MIN)	T_c Used (MIN)	I5 (IN/HR)	Q5 (CFS)	I25 (IN/HR)	Q25 (CFS)	I100 (IN/HR)	Q100 (CFS)
PR DA-A	1	3.380	0.80	2.704	925	1.0%	300	PVD	6.7	452	1.3	0	0.0	1.0%	173	U	1.6	1.8	9.8	10	6.30	17.0	8.82	23.8	11.05	29.9
PR DA-B	2	0.290	0.41	0.119	155	5.0%	155	AGS	8.2	0	0.0	0	0.0	1.0%	0	U	1.6	0.0	8.2	8	6.81	0.8	9.54	1.1	11.97	1.4
		3.670																								
*** Rainfall Intensities from ATLAS 14 - NOAA Point Precipitation Frequency Estimates for the Project Location								DIST												TOTAL		17.8		24.9		31.3

A - Area	L_{ch} - Channel Flow Path Length	$T_c = T_o + T_{ch} + T_{pipe} + T_{sc}$ =
C - Runoff Coefficient	T_{ch} - Time Channel Flow (V = 6 fps) (Conservative)	Time of Concentration
L - Total Flow Path Length	L_{pipe} - Pipe Flow Path Length	
	T_{pipe} - Time Pipe Flow (V = 10 fps) (Conservative)	
S_o - Overland Slope (0.5% Increment, Up to 5%),(1% Increment 5% to 10%, 15%, 20%)	S_{sc} - Shallow Concentrated Slope	
L_o - Overland Flow Path Length (50' Increment, 300' Max)	L_{sc} - L - L_o - L_{ch} - L_{pipe}	
Type $_O$:	Type $_{SC}$:	
PVD - Paved Surface	U - Unpaved	
PGS - Poor Grass Surface	P - Paved	
AGS - Average Grass Surface	V - Velocity	
T_o - Time Overland Flow (Seelye Chart)	T_{sc} - Time Shallow Concentrate (TR-55 Figure 3-1)	

Weighted Coefficients at CP:

EX DA-A	0.000	Acres @	0.95	and	3.670	Acres @	0.37 =	3.670	Acres =	0.37	A
PR DA-A	2.410	Acres @	0.95	and	0.970	Acres @	0.41 =	3.380	Acres =	0.80	1
PR DA-B	0.000	Acres @	0.95	and	0.290	Acres @	0.41 =	0.290	Acres =	0.41	2

PLAT NO-22-11800217

SCALE: 1" = 40'

LEGEND:

PERVIOUS SURFACE

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION PATH

EX DA-A	159865.2 S.F.	3.67 A.C

PERVIOUS TOTAL 3.67 A.C

TOTAL AREA 3.67 A.C

REV	DATE	DESCRIPTION

STATE OF TEXAS
JESSE F. CANTU II
93639
LICENSED
PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #101943-65

BAUMSQUAD BROTHERS DEVELOPMENT

EXISTING ON SITE DRAINAGE

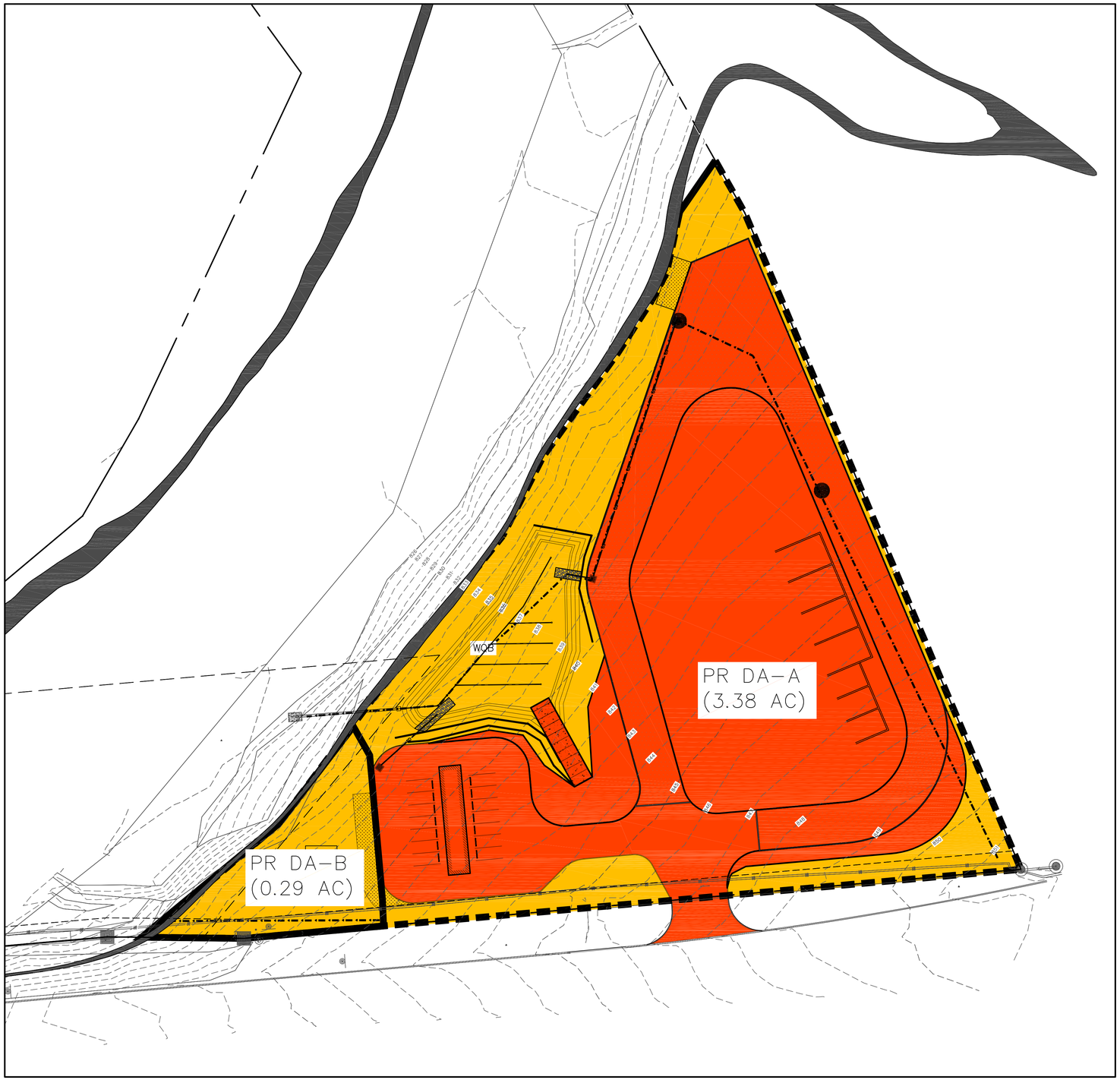
DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:		7/6/2023	
KCI JOB #:		7622E0677801	
SHEET:			

XH F

Date: Jul 11, 2023, 12:40pm User ID: angel.elizondo File: L:\Develop\Proj_2022_KCI\7622E0677801_Thomas_Stone_and_Materials\CAD\EX_HTD Exhibit.dwg

PLAT NO-22-11800217

SCALE: 1" = 40'



LEGEND

- PERVIOUS SURFACE
- IMPERVIOUS SURFACE
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION PATH

IMPERVIOUS SURFACE

PR DA-A	104979.6 S.F.	2.41 A.C
PR DA-B	0.00 S.F.	0.00 A.C

IMPERVIOUS TOTAL 2.41 A.C

PERVIOUS SURFACE

PR DA-A	42253.2 S.F.	0.97 A.C
PR DA-B	12632.4 S.F.	0.29 A.C

PERVIOUS TOTAL 1.26 A.C

TOTAL AREA 3.67 A.C

REV	DATE	DESCRIPTION

STATE OF TEXAS
JESSE T. CONTRERAS
93639
PROFESSIONAL ENGINEER
7/6/2023

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #101943-65

KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

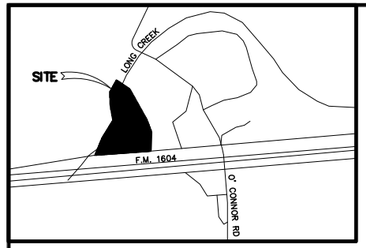
PROPOSED ON SITE DRAINAGE

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:		7/6/2023	
KCI JOB #:		7622E0677801	

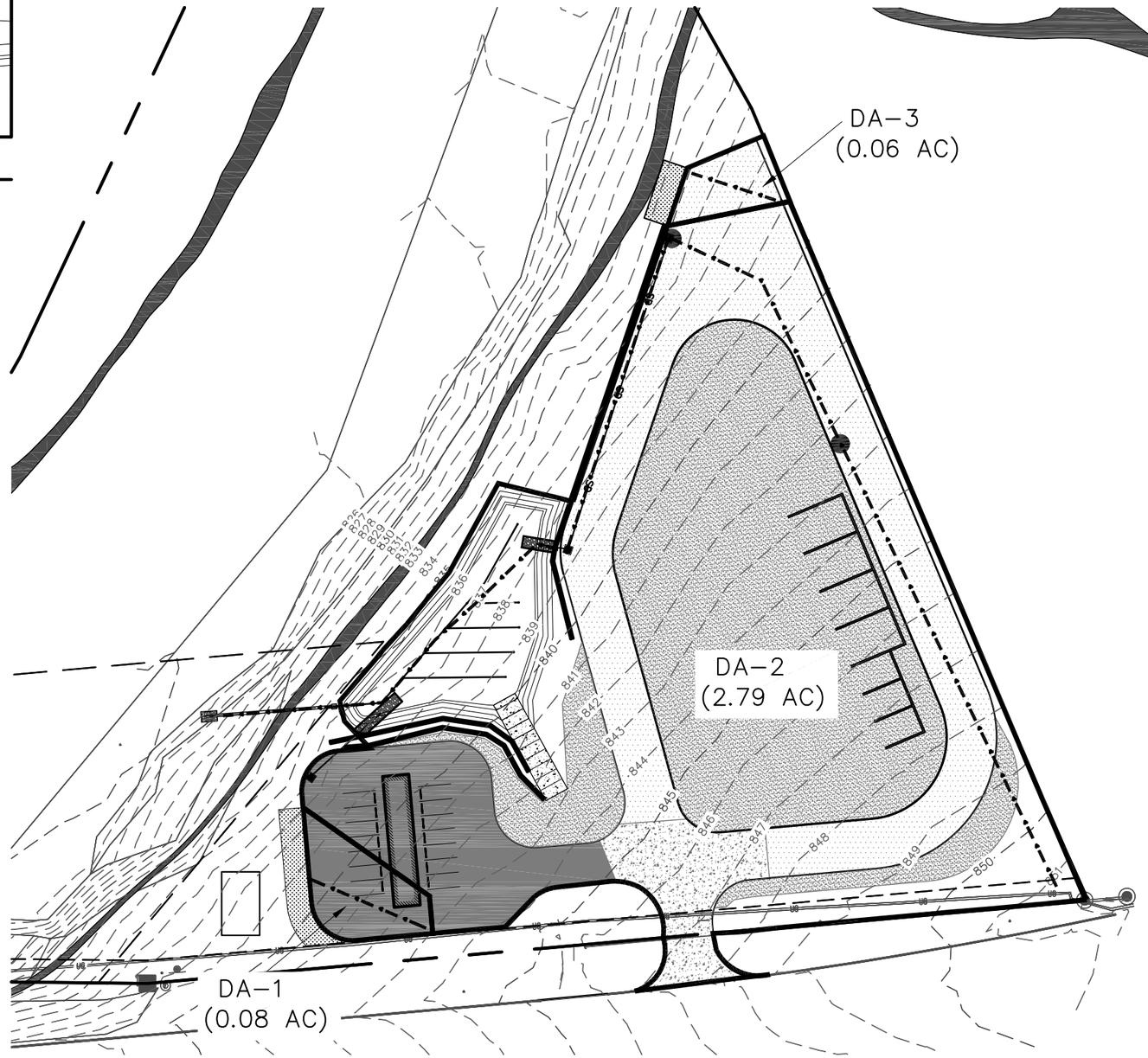
SHEET:

XH G

Date: Jul 11, 2023, 10:43am User ID: angel.alzondo File: L:\Develop\Proj_2022_AO\7622E0677801-Thomas_Stone_and_Materials\CAD\PR HTD Exhibit.dwg



LOCATION MAP
N.T.S.



SCALE: 1" = 80'

Proposed Hydrology - Rational Method

CP	Pattern	A (AC)	C	CA	L (LF)	S_o (%)	L_o (LF)	Type o	T_o (MIN)	L_{ch} (LF)	T_{ch} (MIN)	L_{pipe} (LF)	T_{pipe} (MIN)	S_{sc} (%)	L_{SC} (LF)	Type sc	V (FPS)	T_{sc} (MIN)	T_c (MIN)	T_c Used (MIN)	I5 (IN/HR)	Q5 (CFS)	I25 (IN/HR)	Q25 (CFS)	I100 (IN/HR)	Q100 (CFS)
DA-1	1	0.080	0.95	0.076	78	2.0%	78	PVD	6.0	0	0.0	0	0.0	0.0%	0	U	1.2	0.0	6.0	6	7.45	0.6	10.43	0.8	13.08	1.0
DA-2	2	2.790	0.85	2.372	925	1.0%	300	PVD	6.7	452	1.3	0	0.0	1.0%	173	U	1.6	1.8	9.8	10	6.30	14.9	8.82	20.9	11.05	26.2
DA-3	2	0.060	0.86	0.052	54	2.0%	54	PVD	6.0	0	0.0	0	0.0	1.0%	0	U	1.6	0.0	6.0	6	7.45	0.4	10.43	0.5	13.08	0.7
		2.930																								
*** Rainfall Intensities from ATLAS 14 - NOAA Point Precipitation Frequency Estimates for the Project Location DIST																				TOTAL		15.9		22.2		27.9

REV	DATE	DESCRIPTION

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #10194-65

STATE OF TEXAS
JESSE F. CANTU II
93539
LICENSED PROFESSIONAL ENGINEER

BAUMSQUAD BROTHERS DEVELOPMENT

WPAP EXHIBIT

DRAFTING:	AJ
DESIGN:	AJ
DATE:	07/2023
KCI JOB #7622E0677801	
SHEET:	C3.0

Date: Aug 29, 2023, 8:50pm User ID: angel.elizondo File: L:\Develop\Proj_2022_KCI\7622E0677801_Thomas_Stone_and_Jimenez\CAD\7622E0677801 WPAP Exhibit.dwg

Attachment C

Suitability Letter from Authorized Agent
Baumsquad Brothers Development

COUNTY OF BEXAR

PUBLIC WORKS DEPARTMENT

1948 Probandt St
San Antonio, Texas 78214
Main 210-335-6700 Fax 210-335-6713

August 8, 2023

Mr. Robert Sadlier
Texas Commission on Environmental Quality
14250 Judson Rd
San Antonio, TX 78233-4480

RE: 22-11800217

Dear Mr. Garcia:

Based on the information submitted by KCI TECHNOLOGIES INC, the above referenced subdivision has been reviewed by the Environmental Services Division and is found to meet the minimum requirements of the Regulations for On-Site Sewage Facilities, Bexar County, Texas (2006), for a proposed site not served by sanitary sewer.

Prior to installation, each individual lot owner will be required to obtain approval of a site specific design (which meets Bexar County construction requirements) for conditions unique to that lot. This letter does not guarantee approval of any and all lots within the proposed subdivision or the use of specific types of on-site systems.

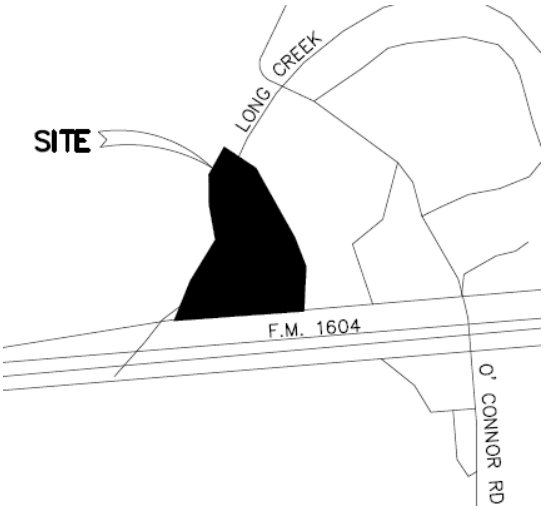
Sincerely,

Erin M. Lowe

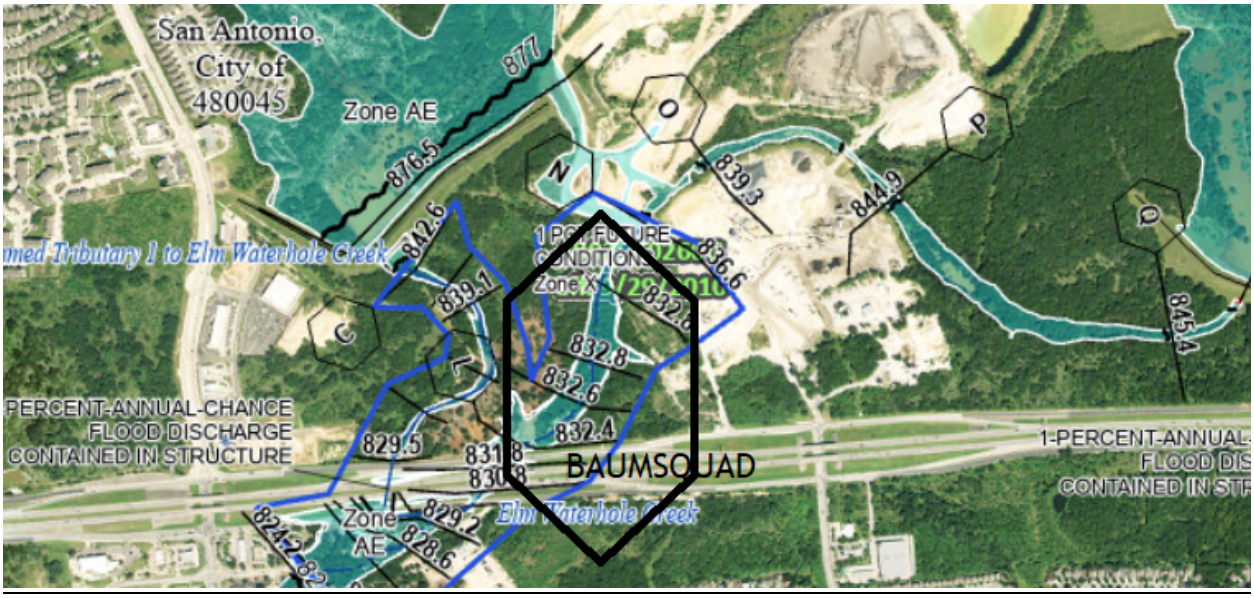
OS0030790

Erin M. Lowe
Bexar County Public Works
Civil Engineer

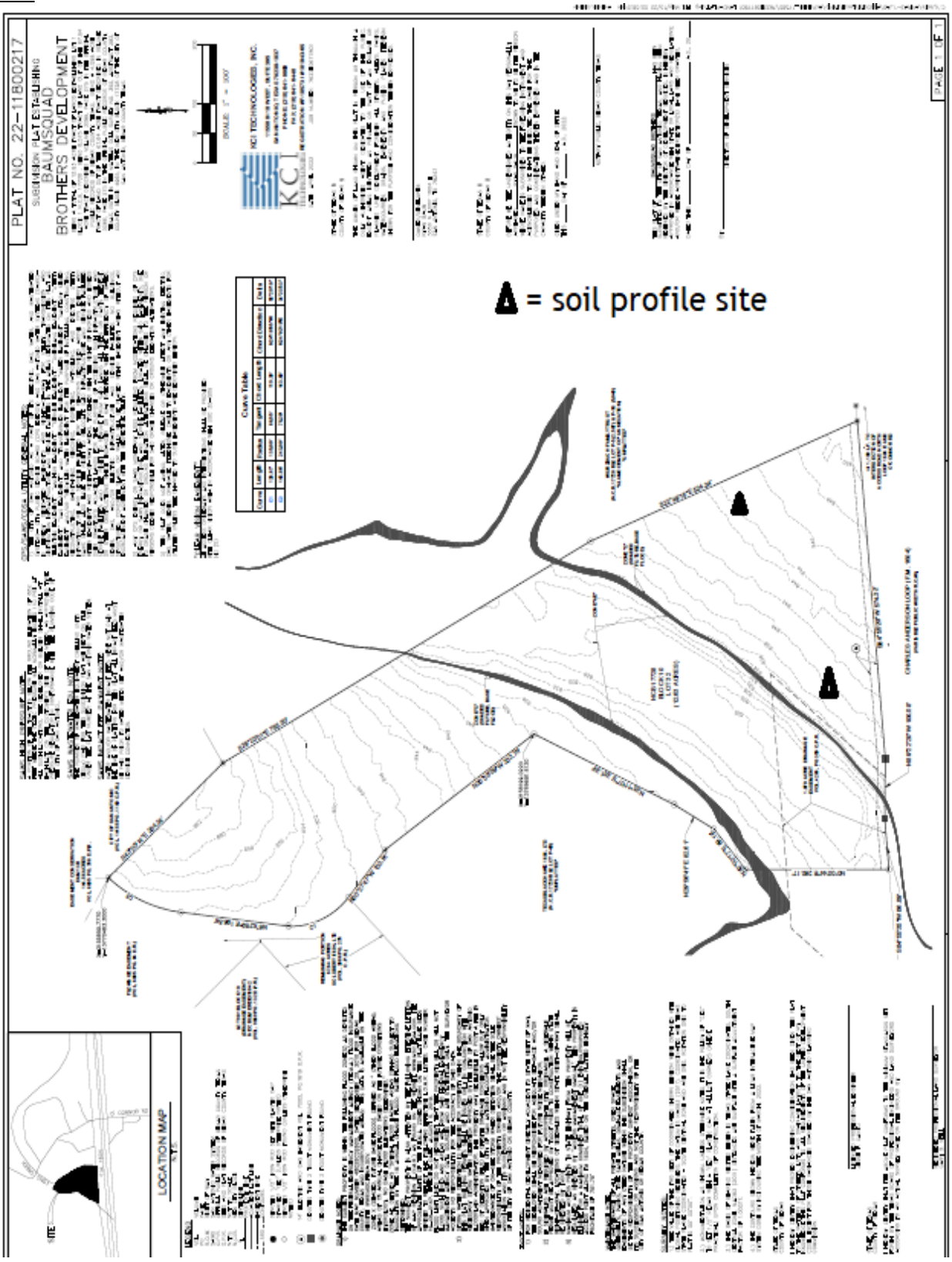
Map:



Flood zone (DFIRM/FEMA) map:



Plat:


PLAT NO. 22-11800217
BAUMSQUAD
BROTHERS DEVELOPMENT
KCI TECHNOLOGIES, INC.
= soil profile site
LOCATION MAP

TCEQ site evaluation:
Name: Baunsquad Brothers Development, Location: FM 1604, Date: 11 May 2023
Site Evaluator: Frank Aguirre, 16159 Old Stable Rd., San Antonio, Texas 78247; Lic # 30400, 2/24

BEXAR COUNTY OSSF SITE EVALUATION FORM

BROTHERS DEVELOPMENT

Applicant/ Site Information		Site Evaluator Information	
Name	BAUMSQUAD	Name	FRANK AGUIRRE
Address		Address	16159 OLD STABLE RD
City/State/Zip		City/State/Zip	SAT 78247
Site Location	FM 1604	TCEQ PE License #	108077994
		License Expiration Date	SEP '21 Feb '26

Soil Boring/ Backhoe Pit Number 1 Surface Elevation _____ Proposed Depth Elevation _____

Depth (Feet)	Soil Texture	Texture Class (Ia, Ib, II, III, IV)	% Gravel (Required when Texture Class is II or III)	Observation Notes (Restrictive Horizon, Size of Gravel, Groundwater, Mottling, Fractured Rock, Recent Weather, etc.)
0	4' Black Brown Loamy Clay	III		III
1				II
2				
3				
4				
5				
6				

Soil Boring/ Backhoe Pit Number 2 Surface Elevation _____ Proposed Depth Elevation _____

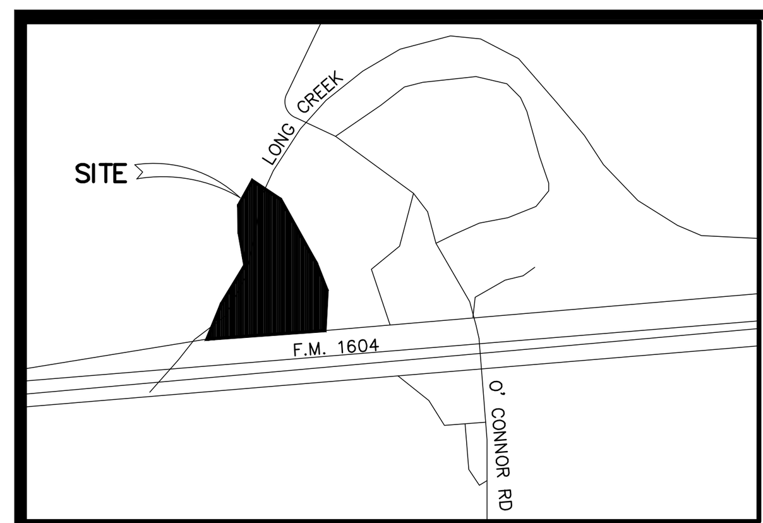
Depth (Feet)	Soil Texture	Texture Class (Ia, Ib, II, III, IV)	% Gravel (Required when Texture Class is II or III)	Observation Notes (Restrictive Horizon, Size of Gravel, Groundwater, Mottling, Fractured Rock, Recent Weather, etc.)
0	Same			
1				
2				
3				
4				
5				
6				

By my signature, I hereby certify that the information provided in this report is based on my site observations and are accurate to the best of my ability. I understand that any misrepresentation of the information contained in this report may be grounds to revoke or suspend my license.
The site evaluation determined the site is suitable for a STANDARD disposal system with TREATMENT treatment. According to Table XIII, the site is suitable / not suitable for this proposed system. A copy of Tables IX and XIII have been given to the property owner to inform them of other alternatives based upon the results of this site evaluation.

Signature: _____ TCEQ/PE License # 108077994 Date: 11 MAY 23

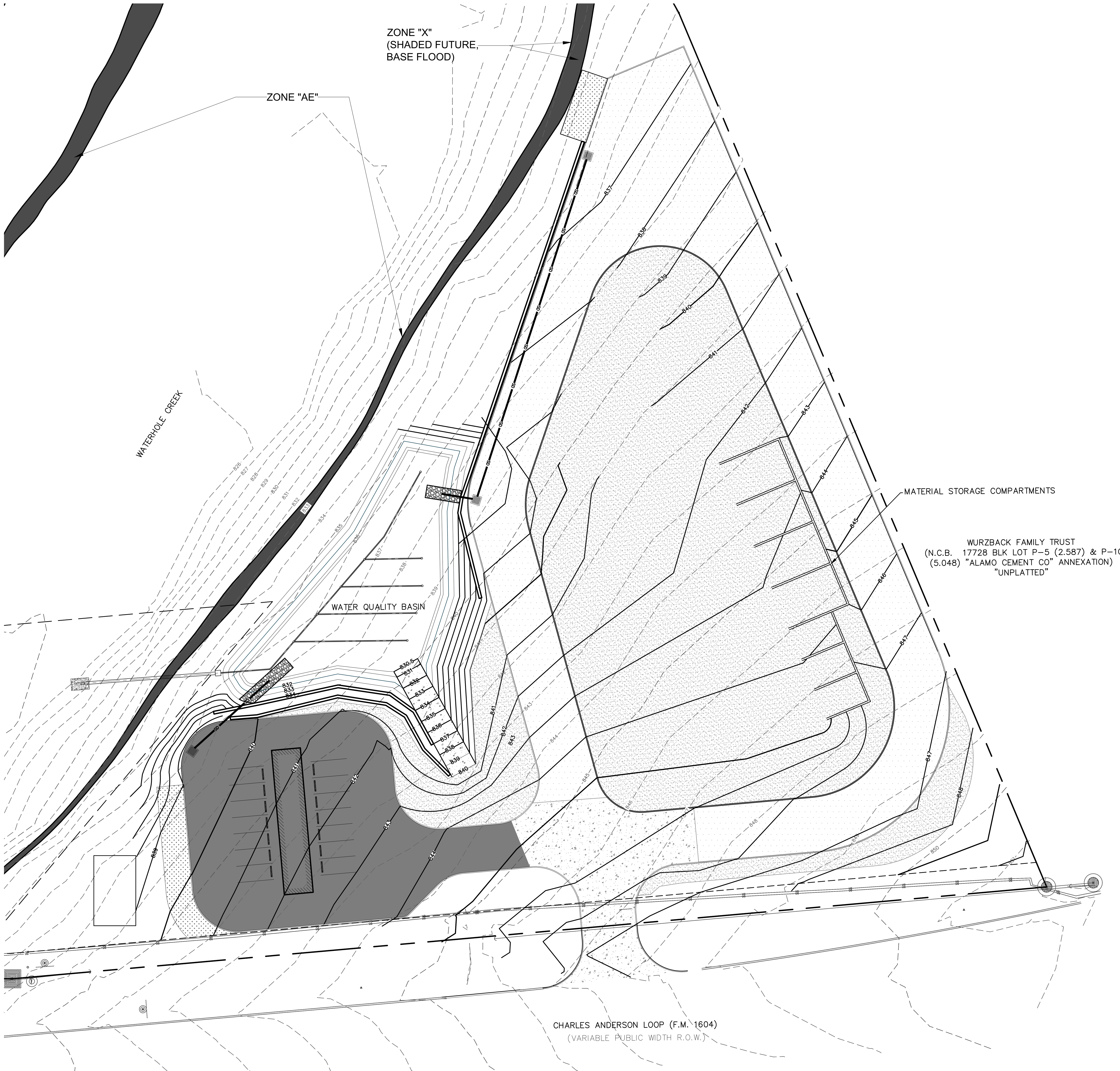
Note: This report is focused on the issue of septic systems ONLY. An addendum to the report of the platting engineer, addressing the other platting submittals, e.g. water purveyor letter, site drainage plan, etc. that are required, will be added to this report.

PLAT NO-22-11800217



LOCATION MAP
N.T.S.

SCALE: 1" = 30'



LEGEND

- LIGHT DUTY ASPHALT
- HEAVY DUTY CONCRETE
- GRAVEL YARD BASE
- DRIVE AREA BASE
- VEGETATIVE FILTER STRIPS
- EXISTING HERITAGE TREES TO REMAIN
- SD — PROPOSED STORM DRAIN
- PROPOSED GRATE INLET
- SANITARY SEPTIC AREA

REV	DATE	DESCRIPTION

STATE OF TEXAS — JESSE F. CANTU II — 93639 — LICENSED PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
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REGISTRATION #F-10573 / #101943-65

KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

PROPOSED SITE PLAN

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET:
C3.0

Attachment D

Exception to the Required Geologic Assessment
Baumsquad Brothers Development

N/A

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: Ryan Baum

Date: 5/8/23

Signature of Customer/Agent:

Regulated Entity Name: Baumsquad Brothers, LLC

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: _____

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

Attachment A

Spill Response Actions
Baumsquad Brothers
Development

Spill Prevention and Control

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.

(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

(3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

(4) Establish a continuing education program to indoctrinate new employees.

(5) Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

(1) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

(2) Store hazardous materials and wastes in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

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. See the waste management BMPs in this section for specific information.

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:

(5) Contain the spread of the spill.

(6) Recover spilled materials.

(7) 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.

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

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.

(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) Notification should first be made by telephone and followed up with a written report.

(4) The services of a spills 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.tnrcc.state.tx.us/enforcement/emergency_response.html 1-120

Vehicle and Equipment Maintenance

(1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

(2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately

(3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.

(4) Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.

(5) Place drip pans or absorbent materials under paving equipment when not in use.

(6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove promptly and dispose of properly.

(7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.

(8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal.

(9) Store cracked batteries in a non-leaking secondary container.

Vehicle and Equipment Fueling

(1) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

(2) Discourage "topping off" of fuel tanks.

(3) Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Product Specific Practices

(1) Petroleum Products: All on site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. If petroleum products will be present at the site, they will be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used on site will be applied according to the manufacturer's recommendations.

(2) Concrete trucks: Ready/Transit Mix Trucks will be allowed to wash out or discharge surplus concrete or drum wash water except in the designated location on site as shown on the SW3P site plan.

(3) Paints: All containers will be tightly sealed and stored when not required for use. Excess paint will not be poured into the storm sewer system or drainage channels but will be properly disposed of according to manufacturers' instructions or state/local regulations.

(4) Fertilizers: Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. The fertilizer will be stored in a covered area, and any partially used bags will be transferred to a sealable plastic bin to avoid spills.

Attachment B

Potential Sources of Contamination
Baumsquad Brothers Development

Potential Source:	Stock piled top soil, and fill material.
Preventive Measure:	Stock piles shall be placed away from any steep slopes, sensitive features, surface or groundwater. The down gradient side shall be protected with silt fencing.
Potential Source:	Miscellaneous litter and debris from construction workers and construction materials.
Preventive Measure:	Trash receptacles will be placed on site for proper disposal. Receptacles will be emptied or replaced by a registered trash hauler as necessary.
Potential Source:	Petroleum Products (diesel, oil, hydraulic fluid, gun grease).
Preventive Measure:	All on site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. No petroleum products will be stored onsite. Service vehicles will come on site to fuel all equipment. All oil, and hydraulic fluid will be stored on work or service vehicles in original sealed containers.
Potential Source:	Concrete.
Preventive Measure:	Concrete trucks: Ready/Transit Mix Trucks will not be allowed to wash out or discharge surplus concrete or drum wash water except in the designated concrete washout area as shown on the SW3P site plan.
Potential Source:	Paint.
Preventive Measure:	All containers will be tightly sealed and stored when not required for use. Excess paint will not be poured into the storm sewer system or drainage channels, but will be properly disposed of according to manufacturers' instructions or state/local regulations.
Potential Source:	Asphalt & Asphaltic Products.
Preventive Measure:	All asphalt paving, roofing, and sealers may be brought onsite only as it is being applied. Application will be in accordance to the manufacturer's recommendations and City of San Antonio specifications.
Potential Source:	Fertilizer.
Preventive Measure:	Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Revegetated areas that are seeded and fertilized will be protected by a hydraulic mulch, hay and tackifier or binder, or erosion control mat. Fertilizer will not be stored onsite.
Potential Source:	Sewage from Portable Toilets.
Preventive Measure:	Sewage from the units will be properly removed on a regular basis, will be inspected on a regular basis, and will be disposed of by a licensed waste collection service. Note that any spills should be contained within the respective BMP installed and any spill outside the containment area will be cleaned up in accordance with current state / local regulations as well as reported to TCEQ.

Attachment C

Sequence of Major Activities
Baumsquad Brothers
Development

Construction Sequencing:

A. Installation of Temporary BMPs as shown on the "Storm Water Pollution Prevention Plan" Details (Sheet C9.0-10.0)".
B. Site clearing including the removal of select landscaping trees and rough grading of the proposed development. (Approximately 3.67 Acre)
C. Grading and drainage work associated with this project. (Approximately 3.67 Acre)
D. Reestablishment of vegetation in areas beyond the grading/construction envelope.
E. Construction of Pavement and Finish Grading as indicated on plans. (Approximately 3.67 Acre)
F. Landscaping / Sodding to reestablish vegetation on all remaining disturbed areas.
G. Removal of temporary BMPs once area is established or when the particular temporary BMP measure is no longer required (i.e. Slit Fence and filter bags.)

Attachment D

Temporary Best Management Practices and Measures
Baumsquad Brothers Development

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Slit Fence
B. Gravel Filter Bags
C. Stabilized Construction Access

1.02 REGULATORY REQUIREMENTS

A. Conform to applicable City, State, and Federal codes for environmental requirements of erosion and sediment control.

B. Contractor will be required to keep a log on site with recordings of rainfall, SWPPP maintenance procedures, and other events affecting the erosion and pollution control facilities. Sample forms will be provided by the Engineer. As part of record keeping the Contractor shall maintain a rain gauge at the site and log all rainfall events.

C. No work shall begin until both the Owner and Contractor have submitted NOI's (form furnished by Engineer) to the TCEQ and the San Antonio Water System. Contractor shall submit annual renewals as required.

D. SWPPP shall be posted on site adjacent to a public right-of-way and the supporting documentation shall be maintained on site.

1.03 SUBMITTALS

A. Provide Engineer with copy of complete NOI and NOT.
B. Provide copies of manufacturer's data on filter fabric for approval
C. Provide Engineer with any revisions to SWPPP Plan for informational purposes only.

1.04 RELATED SECTIONS

A. Section 02230 – Site Clearing

PART 2 - PRODUCTS

2.01 FILTER FABRIC

A. Woven Polypropylene Fabric conforming to the following specifications:

1.	Grab Tensile Strength	120 lbs.
2.	Grab Tensile Elongation	30% (Max)
3.	Burst Strength	280 PSI
4.	Trapezoid Tear Strength	65 lbs.
5.	Water Flow Rate	35 GPM/ft2
6.	Thickness	17 Mils
7.	Weight	3.0 oz/sy

B. The fabric shall conform to the following test methods:

1. ASTM D-4632
2. ASTM D-4533
3. ASTM D-3786
4. ASTM D-4833
5. ASTM D-3776
6. ASTM D-4491

7. ASTM D-4751
8. ASTM D-4355

2.02 STABILIZED CONSTRUCTION ACCESS

A. Rock:
Open graded rock four inches (4”) to eight inches (8”) in diameter.

PART 3 - EXECUTION

3.01 IMPLEMENTATION

This item shall govern the implementation of the erosion and sedimentation control plan and schedule.

A. Phasing:
Construction phasing within specified work areas shall be the responsibility of the Contractor. Contractor shall prepare a Phasing Plan that will be acceptable to the Architect and Owner. Should the Contractor realize a need to deviate from this plan, it will be his/her responsibility to provide a revised plan complete with any required revisions to the erosion and sediment control plan. It will be his/her sole responsibility to insure that all revisions comply with the Storm Water Pollution Prevention Plan and “Part II Environmental Protection Agency Final NPDES General Permits for Storm Water Discharge from Construction Sites”. The revised plan shall be reviewed by the Engineer. Any costs associated with the revisions shall be borne by the Contractor. The Contractor shall maintain a log of all installations and revisions.

B. Hazardous and Excess Material Storage:
Prior to the start of construction, the Contractor shall submit a plan showing the method for hazardous and excess material storage. The plan shall comply with the provisions shown on the drawings and as a minimum, show the site location, size, topography, drainage channels, adjacent streets, and other pertinent features required to properly evaluate the plan. No work shall commence until this plan has been approved by the Owner.

C. Maintenance:
On a weekly basis, and after every measurable rainfall, the Contractor shall inspect and identify all erosion and sediment controls which require cleaning, repair, or other maintenance. Items identified as requiring maintenance shall immediately be repaired or cleaned as needed. This provision applies to all site controls as well as controls installed for the material storage site. Contractor shall keep a log of the inspections, noting any repairs and cleaning of controls.

D. Filter Fabric Fence (Silt Fence):
Provide filter fabric fence systems in such a manner that surface runoff will percolate through the system in sheet flow fashion and allow sediment to be retained and accumulated. Attach the filter fabric to one inch (1”) x two inch (2”) wooden stakes or metal stakes spaced a maximum of 3 feet apart and embedded a minimum of twelve inches (12”). The wooden stakes shall be installed at a slight angle toward the source of anticipated runoff. Trench in the toe of the filter fabric fence with a spade or mechanical trencher so that the downward face of the trench is flat and perpendicular to the direction of flow or the V-trench configuration. Lay filter fabric along edges of the trench. Backfill and compact trench. The filter fabric should be spliced together only at a support post with a minimum six inch (6”) overlap and sealed securely. Inspect sediment filter fabric barrier systems after each rainfall, daily during periods of prolonged rainfall, and at minimum once a week. Repair or replace damaged section immediately to restore the requirements of this item. Remove sediment deposits when silt has reached one-third the height of the fence in depth.

E. Gravel Filter Bags
   1. The gravel filter bags shall be installed in accordance with the SWPPP details and shall be used at inlet locations and other locations as determined by the contractor.
   2. Inspect systems after each rainfall, daily during periods of prolonged rainfall, and at minimum once a week. Repair or replace damaged section immediately to restore the requirements of this item. Remove sediment deposits when silt has reached one-third the height of the bag in depth.

F. Stabilized Construction Access:
   The Stabilized Construction Access shall be at least eight inches (8”) thick and of full width for all points of ingress and egress. Length shall be a minimum of 30 feet.
   1. When mud-tracking conditions exist, traffic shall not be allowed to cross or leave the construction site and move directly onto a public roadway, alley, sidewalk, parking area, other right-of-way in areas other than at locations of construction exits. Stabilized construction access must be properly graded to incorporate a drainage swale to prevent runoff from leaving the construction site.
   2. The stabilized construction access shall 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 clean out of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto public streets outside of the project limits must be removed immediately by the Contractor. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved sediment trap or sediment basin. All sediment shall be prevented from entering any storm drain, ditch, or watercourse using approved methods.

3.02 FINAL CLEANUP

A. Upon completion and acceptance of the project and prior to final payment, the Contractor shall remove and legally dispose of all components of the erosion/sedimentation control system, together with any and all dirt, material, and debris accumulated along the system during construction.

3.03 NOI, NOT

A. The Engineer will furnish NOI and NOT forms with the project information on them to the Contractor. It shall be the Contractor’s responsibility to complete and submit the NOI prior to commencing work and to submit the NOT upon completion and acceptance of the work covered by that contract. The Owner will submit a separate NOI and NOT as necessary.

Attachment E

Request to Temporarily Seal a Feature
Baumsquad Brothers Development

N/A

Attachment F

Structural Practices
Baumsquad
Brothers
Development

On-site structural practices, which are continuous (on-going) until the site is permanently stabilized, may include the following (SWPPP):

i) Erection of silt fences, inlet protection, and construction entrance/exit.

These storm water pollution control features will slow the velocity of runoff thereby enhancing sedimentation and capture of contaminants that may accumulate in the storm water runoff exiting this construction site. There are no structures to divert storm water and no structures to store storm water on this project.

It is to be understood that modifications to the Storm Water Pollution Prevention Plan may have to be made in the field to adjust for field conditions and to provide the intended effect. All changes to the plan must be shown on the SWPPP sheets, dated and signed by the responsible party or described and included in the Plan Modifications section of this Storm Water Pollution Prevention Plan.

Attachment H

Temporary Sediment Pond(s) Plans and Calculations
Baumsquad Brothers Development

N/A

Attachment I

Inspections and Maintenance
Baumsquad Brothers
Development

There will be several types of Temporary BMPs used for this project: Silt Fencing and inlet protection. Items listed below must be inspected every 7 days and within 24 hours of a rainfall event of 0.5 inches or more. These inspections and if any maintenance is performed on such BMPs, it must be documented within the inspection and maintenance report form and kept on site. The forms can be found at the end of this section.

Silt Fencing, Rock Berm, Inlet Protection, and Temporary Construction Entrance/Exit

Refer to TCEQ "Edwards Aquifer Technical Guidance Manual" Rev. Jul05, pages 1-66 to 1-68 (Silt Fencing), pages 1-72 to 1-74 (Rock Berms), pages 1-89 to 1-92 (Area Inlet Protection), for standards, and also refer to "Storm Water Pollution Prevention Plan" (Sheet C9.0-10.0) of the construction plans for locations/details/guidance.

Contractor shall maintain log and document following items for all BMP's on site:

1) Inspection of all fencing/bags weekly, and after any rainfall event.
2) Removal of sediment when buildup reaches 6" on any temporary BMP, or the installation of a second line of fencing parallel to the old fence. Dispose of the accumulated silt of in an approved manner.
3) Replacement of any torn fabric or installation of a second line of fencing parallel to the old fence.
4) Replacement/repair of any sections crushed, torn, or collapsed temporary BMPs in the course of construction activity. If a section of fence/berm is obstructing vehicular access, document the relocation to a spot where it will provide equal protection, but will not obstruct vehicles.
5) Any gravel filter bags torn allowing gravel to come out of the constraints of the bag shall be replaced immediately.

These temporary BMPs as shown on the "Storm Water Pollution Prevention Plan (SWPPP) Details Sheets C9.0-10.0" will intercept any storm water borne pollutants originating onsite, including upstream offsite runoff, therefore preventing them from entering roadways, Geological Features, and drainage structures that ultimately enter Waterhole Creek.

Temporary Construction Entrance/Exit

Contractor shall establish and maintain a Temporary Construction Entrance/Exit throughout the construction period to protect the site from pollutants brought onto the site from other sources or leaving the site. Contractor to ensure rocks are maintained free of trash and sediment.

Attachment J

Schedule of Interim and Permanent Soil Stabilization Practices
Baumsquad Brothers Development

Interim Practices

All temporary BMPs as described in Attachment I.

Permanent Practices

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

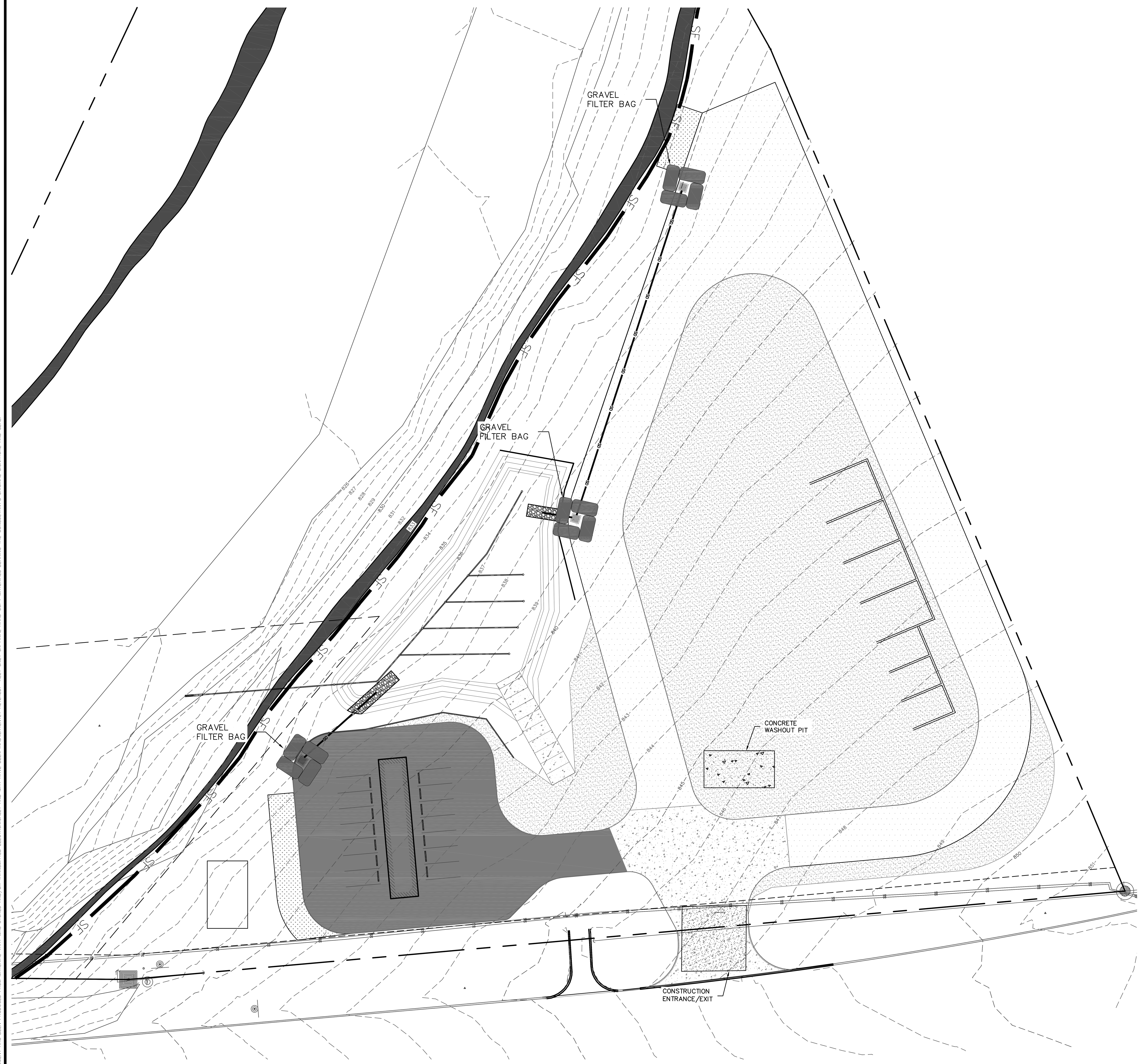
Refer to "Water Pollution Abatement Plan (WPAP)" (Section 0584 – Attachment B) for all areas to be sodded within the project limits which includes all disturbed areas associated with this project beyond the driveways, pavement sections, and utility trenching.

PLAT NO-22-11800217

SCALE: 1" = 50'

LEGEND

- SF — SILT FENCE
- CONSTRUCTION ENTRANCE/EXIT
- CONCRETE WASHOUT PIT



SITE DESCRIPTION

PROJECT LOCATION:
4235 E. Loop 1604 San Antonio, Texas

PROJECT DESCRIPTION:
Construction of asphalt parking, gravel yard base, landscpae storage material compartments, storm drain and water quality basin.

MAJOR SOIL DISTURBING ACTIVITIES:
Excavation work and for the construction of parking lots and water quality basin.

TOTAL PROJECT AREA: 12.63 Acres

TOTAL AREA TO BE DISTURBED: 3.0 Acres

WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): 0.95

EXISTING CONDITION OF SOIL AND VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:
Existing site is approximately 95% grassed area in average condition. Remainder is soil.

NAME OF RECEIVING WATERS:
Water Hole Creek

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- ___ TEMPORARY SEEDING
- X PERMANENT PLANTING, SODDING, OR SEEDING
- ___ MULCHING
- ___ SOIL RETENTION BLANKET
- ___ BUFFER ZONES
- X PRESERVATION OF NATURAL RESOURCES

OTHER:

STRUCTURAL PRACTICES:

- X SILT FENCES
- ___ HAY BALES
- ___ ROCK BERMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- ___ ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- X CURBS AND GUTTERS
- ___ STORM SEWERS
- ___ VELOCITY CONTROL DEVICES
- X GRAVEL FILTER BAGS

OTHER:

NARRATIVE – SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

PHASE I:
1. Install silt fence

PHASE II:
1. Construct proposed parking lots, WQB, and gravel yard.

PHASE III:

PHASE IV:

PHASE V:

STORM WATER MANAGEMENT:
WQB has been designed to treat the onsite water before it releases to waterhole creek.

OTHER EROSION & SEDIMENT CONTROLS:

MAINTENANCE:
All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to drainageways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION:
An inspection will be performed by the owner or contractor's representative every week as well as after every half inch or more of rain (as recorded on a non–freezing rain gauge to be located at the Project Site). An inspection and Maintenance Report will be made per each Inspection. Based on the inspection results, the controls shall be revised per the inspection report.

WASTE MATERIALS:
All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will meet all state and local city solid waste management regulations. All trash and construction debris form the site will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulations and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):
At a minimum, any products in the following categories are considered to be hazardous: paints, acids for cleaning, masonry surfaces, cleaning solvents, asphalt products, chemical additives for soil stabilization or concrete curing compounds & additives. In the event of a hazardous material spill, the spill coordinator shall be contacted immediately.

SANITARY WASTE:
All sanitary waste will be collected from portable units as necessary, or as required by local regulations by a Licensed Sanitary Waste Management Contractor.

OFFSITE VEHICLE TRACKING:

- ___ HAUL ROADS DAMPENED FOR DUST CONTROL
- X EXCESS DIRT ON ROAD REMOVED ON A REGULAR BASIS.
- X STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS:
Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are are not a part of the finished work.

REV	DATE	DESCRIPTION

STATE OF TEXAS — JESSE F. CANTU II — 93639 — LICENSED PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #101943-65

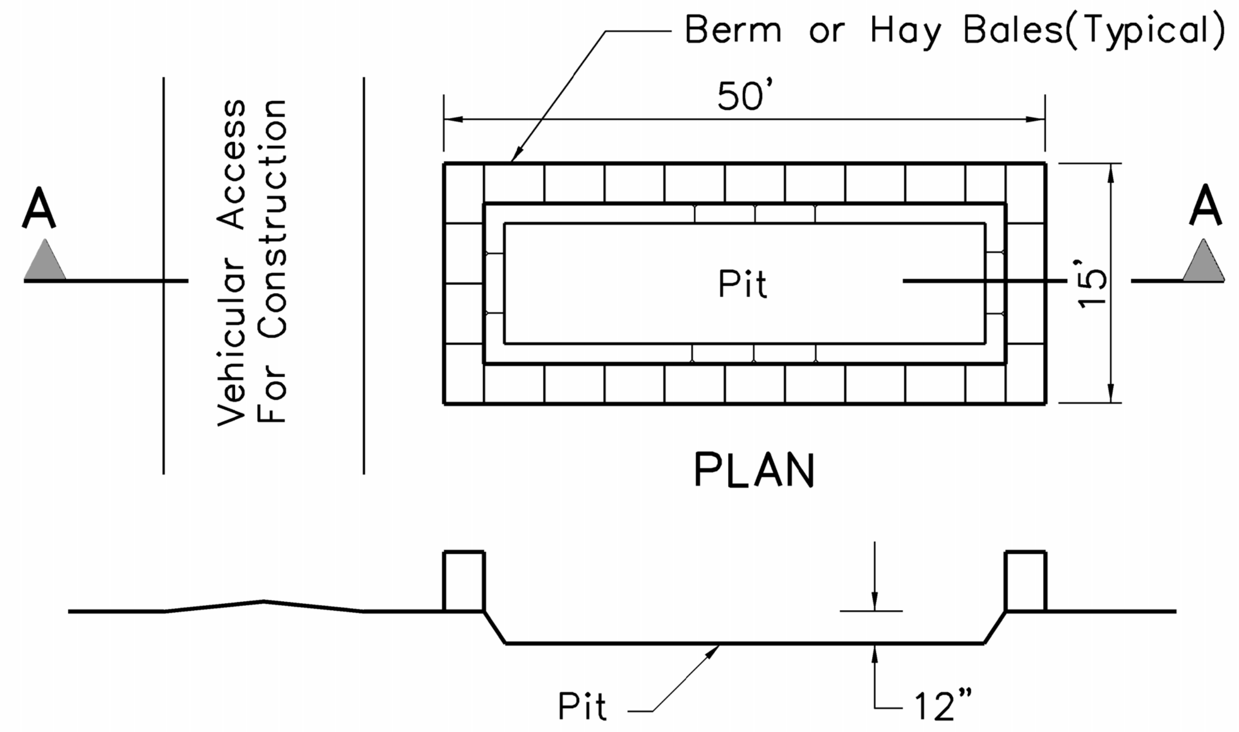
BAUMSQUAD BROTHERS

STORM WATER POLLUTION PREVENTION PLAN

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	10/31/2022		
KCI JOB #:	7622E0677801		

SHEET: C9.0

PLAT NO-22-11800217



NOTES:

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. IF HAY BALES ARE USED, THEY SHALL BE PLACED IN ACCORDANCE WITH DETAILS SHOWN ON EXHIBIT FOR HAY BALES.

3. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

4. WASHOUT PIT SHALL NOT BE LOCATED IN AREA SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

CONCRETE TRUCK WASHOUT PIT

NOTES:

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS. BUT NOT LESS THAN 50'.

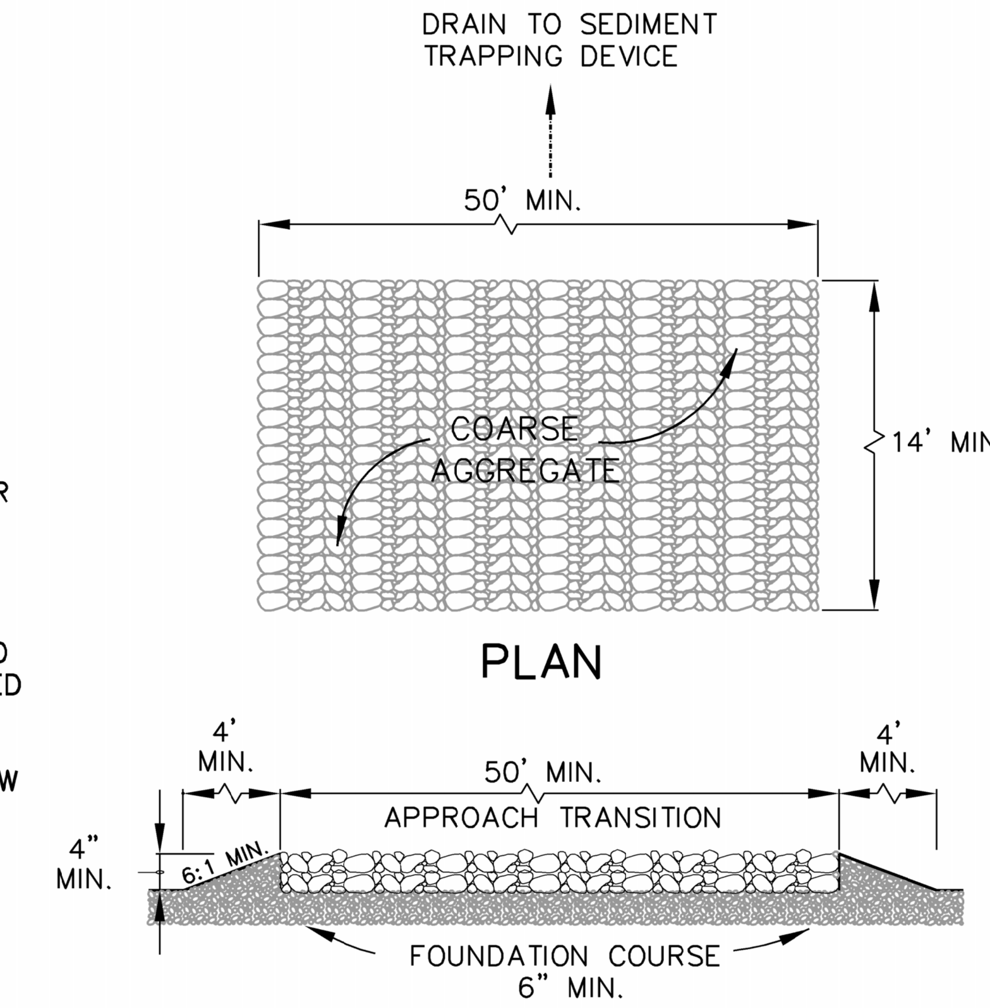
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".

3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.

4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE. BITUMINOUS CONCRETE. PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.

5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.

6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.



CONSTRUCTION ENTRANCE/EXIT (TYPE 1)

N.T.S.

CONTRACTOR MAY RELOCATE CONSTRUCTION ENTRANCE UPON APPROVAL BY ENGINEER

CONTRACTOR MAY RELOCATE
CONSTRUCTION ENTRANCE UPON
APPROVAL BY ENGINEER

ROCK BERM GENERAL NOTES:

1. USE ONLY OPEN GRADED ROCK 4–8 INCH DIAMETER FOR STREAMFLOW CONDITION; USE OPEN GRADED ROCK 3–5 INCHES DIAMETER FOR OTHER CONDITIONS.

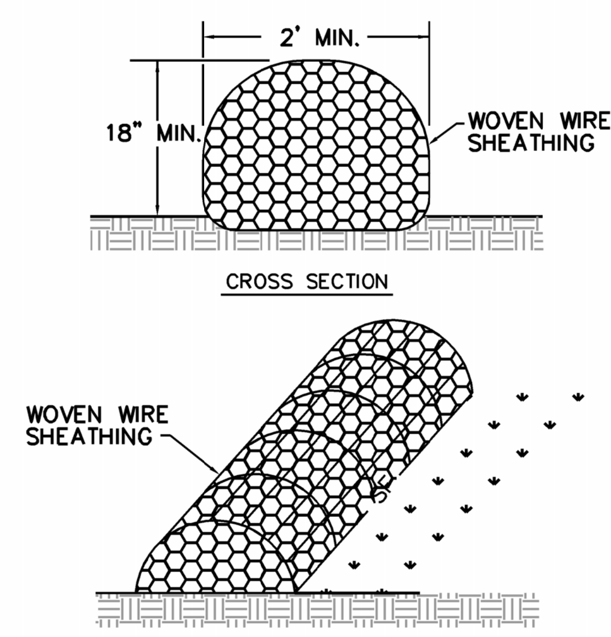
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE– WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

4. WHEN SILT REACHES A DEPTH EQUAL TO ONE–THIRD THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE AND IN A MANNER AS TO NOT TO CREATE ASILTATION PROBLEM.

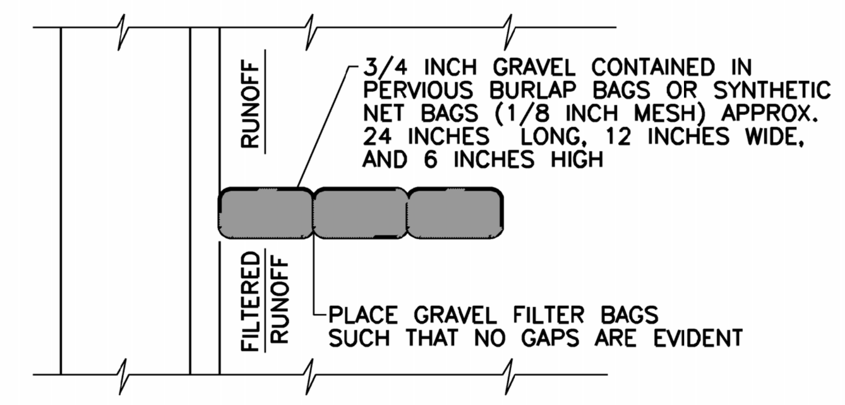
5. DAILY INSPECTION SHALL BE MADE ON SEVERE SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.

6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

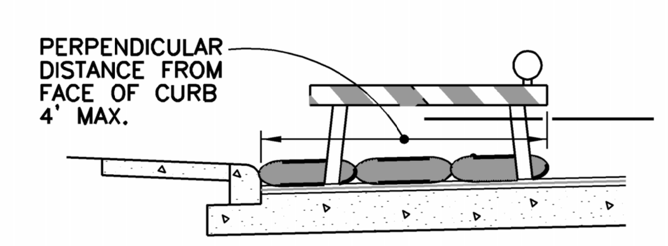


ROCK BERM

N.T.S.



PLAN

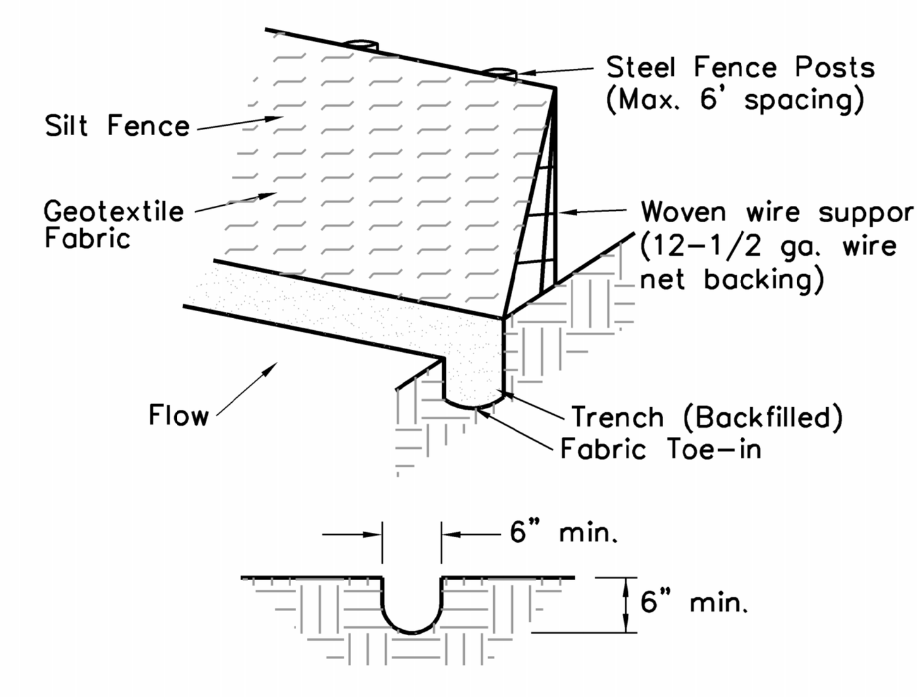


ELEVATION

NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS

N.T.S.



TRENCH CROSS–SECTION

GENERAL NOTES:

1. Steelposts which support the silt fence shall be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of one foot.

2. The toe of the silt fence shall be trenched in with a spade or a mechanical trencher, so that the downslope face of the trench is flat and perpendicular to the line of flow. Where fence can not be trenched in (e.g. pavement) weight fabric flap with washed gravel on uphill side to prevent flow under fence.

3. The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be held in the ground and backfilled with compacted material.

4. Silt fence should be securely fastened to each steel support posts or to woven wire, which is in turn attached to the steel fence post.

5. Inspection shall be made weekly or after each rainfall event and repair or replacement shall be made promptly as needed.

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

7. Accumulated silt shall be removed when it reaches a depth of 6 inches. The silt shall be disposed of in an approved site and in such a manner as to not contribute to additional siltation.

SILT FENCE

N.T.S.

REV	DATE	DESCRIPTION

STATE OF TEXAS
JESSE F. CANTU II
93639
LICENSED PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #101943-65

BAUMSQUAD BROTHERS DEVELOPMENT

SWPPP DETAILS

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET:
C10

Date: Jul 06, 2023, 4:19pm User ID: angel.elizondo File: L:\develop\Proj_2022_KCI\7622E0677801_Thomas_Stone_and_Materials\CAD\7622E0677801-C10.0 SWPPP Details.dwg

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Ryan Baum

Date: 08/03/2023

Signature of Customer/Agent

Regulated Entity Name: Baumsgaud Brothers Development

Permanent Best Management Practices (BMPs)

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

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

   ☐ N/A

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

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

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

☐ N/A

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

   ☐ N/A

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

☐ N/A

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

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

    ☐ N/A

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

    ☒ N/A

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

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

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

    ☐ N/A

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

    ☒ N/A

Attachment A

20% or Less Impervious Cover Waiver
Baumsquad Brothers Development

N/A

Attachment B

BMPs for Upgradient Stormwater
Baumsquad Brothers Development

N/A

Attachment C

BMPs for On-Site Stormwater
Baumsquad Brothers
Development

The majority of the unit that will be developed is near or at the top of the existing local high point. Please refer to the Impervious Cover and Drainage Area Exhibit for the following narrative of Permanent BMPs.

1. Drainage Area 1 has runoff from the lots discharging towards the rear of the lots where it will flow across a 15' engineered vegetated filter strip VFS 1. Note that the impervious cover for this lots is primarily composed of asphaltic pavement.

2. Drainage Area 2 includes most of the impervious cover of the proposed site, and it is composed of a portion of the asphaltic pavement, heavy duty concrete pavement, the water quality basin, gravel yard base section, drive area base section. The runoff is conveyed northeast towards the grate inlets which will then lead the runoff into the water quality basin and the runoff also runs northeast directly towards the water quality basin. Once the runoff enters the water quality basin it then is transported through a 6" PVC line that connects to an 18" HDPE that ultimately directs it away from the site.

3. Drainage Area 3 has runoff discharging east towards where it will flow across a 15' engineered vegetated filter strip VFS 2.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Baumsquad Brothers
Date Prepared: 11/182022

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

where:

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

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

County =		Bexar	
Total project area included in plan * =		12.63	acres
Predevelopment impervious area within the limits of the plan * =		0.00	acres
Total post-development impervious area within the limits of the plan * =		2.41	acres
Total post-development impervious cover fraction * =		0.19	
P =		30	inches
$L_{M\ TOTAL\ PROJECT}$ =	**1967**	lbs.	

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =		0.13	acres
Predevelopment impervious area within drainage basin/outfall area =		0.00	acres
Post-development impervious area within drainage basin/outfall area =		0.08	acres
Post-development impervious fraction within drainage basin/outfall area =		0.62	
$L_{M\ THIS\ BASIN}$ =	**65**	lbs.	

3. Indicate the proposed BMP Code for this basin.

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

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

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

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

where:

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

A_C =		0.13	acres
A_I =		0.08	acres
A_P =		**0.05**	acres
L_R =	**71**	lbs	

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

Desired $L_{M\ THIS\ BASIN}$ = 71 lbs.

F = **1.00**

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

Rainfall Depth =	**4.00**	inches
Post Development Runoff Coefficient =	**0.43**	
On-site Water Quality Volume =	**815**	cubic feet

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

Off-site area draining to BMP =	0.00	acres	
Off-site Impervious cover draining to BMP =	0.00	acres	
Impervious fraction of off-site area =	0		
Off-site Runoff Coefficient =	0.00		
Off-site Water Quality Volume =	0	cubic feet	
Storage for Sediment =	163		
Total Capture Volume (required water quality volume(s) x 1.20) =	978	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-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin =	NA	cubic feet	
Irrigation Area Calculations:			
Soil infiltration/permeability rate =	0.1	in/hr	**Enter determined permeability rate or assumed value of 0.1**
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

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

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

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	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	NA	square feet	**For maximum water depth of 8 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	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	NA	square feet	**For maximum water depth of 8 feet**

10. Bioretention System Designed as Required in RG-348 Pages 3-63 to 3-65

Required Water Quality Volume for Bioretention Basin =	NA	cubic feet	

11. Wet Basins Designed as Required in RG-348 Pages 3-66 to 3-71

Required capacity of Permanent Pool =	NA	cubic feet	**Permanent Pool Capacity is 1.20 times the WQV**
Required capacity at WQV Elevation =	NA	cubic feet	**Total Capacity should be the Permanent Pool Capacity plus a second WQV.**

12. Constructed Wetlands Designed as Required in RG-348 Pages 3-71 to 3-73

Required Water Quality Volume for Constructed Wetlands =	NA	cubic feet	

13. AquaLogic™ Cartridge System Designed as Required in RG-348 Pages 3-74 to 3-78

**** 2005 Technical Guidance Manual (RG-348) does not exempt the required 20% increase with maintenance contract with AquaLogic™.**

Required Sedimentation chamber capacity =	NA	cubic feet	
Filter canisters (FCs) to treat WQV =	NA	cartridges	
Filter basin area (RIA_F) =	NA	square feet	

14. Stormwater Management StormFilter® by CONTECH

Required Water Quality Volume for Contech StormFilter System =	NA	cubic feet	

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

15. Grassy Swales Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

Drainage Area to be Treated by the Swale = A =	0.00	acres
Impervious Cover in Drainage Area =	0.00	acres
Rainfall intensity = i =	1.1	in/hr

Swale Slope =	0	ft/ft
Side Slope (z) =	0	
Design Water Depth = y =	0.00	ft
Weighted Runoff Coefficient = C =	#DIV/0!	

A_{CS} = cross-sectional area of flow in Swale =	#DIV/0!	sf
P_W = Wetted Perimeter =	#DIV/0!	feet
R_H = hydraulic radius of flow cross-section = A_{CS}/P_W =	#DIV/0!	feet
n = Manning's roughness coefficient =	0.2	

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

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

$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$ = #DIV/0! feet

Q = CiA = #DIV/0! cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = Q/A_{CS} = #DIV/0! ft/sec

To calculate the resulting swale length:

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = #DIV/0! feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

15B. Alternative Method using Excel Solver

To solve for bottom w
Excel can simultaneo
The required "Swale V

First, highlight Cell F2
Then click on "Tools"
The value in the "Set
The value in the "By C
Click on solve.

The resulting "Swale
If the resulting "Swale

If there is not the opti
Click on "Tools" and
Then proceed as instr

If you would like to in
Excel can simultaneo
The required "Design

First set the desired b
Highlight Cell F232. T

Click on "Tools" and
The value in the "Set
The value in the "By C
Click on solve.

The resulting "Design
If the resulting "Desig
First set the desired b
Highlight Cell F232. T
Click on "Tools" and
The value in the "Set
The value in the "By C
Click on solve.

The resulting "Design
If the resulting "Desig

Design Q = CiA =	#DIV/0!	cfs		
Manning's Equation Q =	0.00	cfs	Error 1 =	#DIV/0!
Swale Width=	6.00	ft		

Instructions are provided to the right (green comments).

Flow Velocity	#DIV/0!	ft/s
Minimum Length =	#DIV/0!	ft

Instructions are provided to the right (blue comments).

Design Width =	0	ft		
Design Discharge =	0.00	cfs	Error 2 =	#DIV/0!
Design Depth =	0.33	ft		
Flow Velocity =	#DIV/0!	cfs		
Minimum Length =	#DIV/0!	ft		

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters may be modified and the solver rerun.
If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the swale bottom value may not be possible.

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

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 of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

17. Wet Vaults Designed as Required in RG-348 Pages 3-30 to 3-32 & 3-79

Required Load Removal Based upon Equation 3.3 = **NA** lbs

First calculate the load removal at 1.1 in/hour

RG-348 Page 3-30 Equation 3.4: Q = CiA

C = runoff coefficient for the drainage area =	0.44		**C = Runoff Coefficient = 0.546 (IC)^2 + 0.328 (IC) + 0.03**
i = design rainfall intensity =	1.1	in/hour	
A = drainage area in acres =	0	acres	
Q = flow rate in cubic feet per second =	0.00	cubic feet/sec	

RG-348 Page 3-31 Equation 3.5: $V_{OR} = Q/A$

Q = Runoff rate calculated above =	0.00	cubic feet/sec
A = Water surface area in the wet vault =	0	square feet
V_{OR} = Overflow Rate =	#DIV/0!	feet/sec

Percent TSS Removal from Figure 3-1 (RG-348 Page 3-31) =	0	percent
Load removed by Wet Vault =	#VALUE!	lbs

If a bypass occurs at a rainfall intensity of less than 1.1 in/hours
Calculate the efficiency reduction for the actual rainfall intensity rate

Actual Rainfall Intensity at which Wet Vault bypass Occurs =	0	in/hour
Fraction of rainfall treated from Figure 3-2 RG-348 Page 3-32 =	0	percent
Efficiency Reduction for Actual Rainfall Intensity =	0.00	percent
Resultant TSS Load removed by Wet Vault =	#VALUE!	lbs

18. Permeable Concrete Designed as Required in RG-348 Pages 3-79 to 3-83

PERMEABLE CONCRETE MAY ONLY BE USED ON THE CONTRIBUTING ZONE

19. BMPs Installed in a Series Designed as Required in RG-348 Pages 3-32

Michael E. Barrett, Ph.D.. P.E. recommended that the coefficient for E_2 be changed from 0.5 to 0.65 on May 3, 2006

$E_{TOT} = [1 - ((1 - E_1) X (1 - 0.65E_2) x (1 - 0.25E_3))] X 100 =$	0.00	percent	NET EFFICIENCY OF THE BMPs IN THE SERIES
EFFICIENCY OF FIRST BMP IN THE SERIES = E_1 =	0.00	percent	
EFFICIENCY OF THE SECOND BMP IN THE SERIES = E_2 =	0.00	percent	
EFFICIENCY OF THE THIRD BMP IN THE SERIES = E_3 =	0.00	percent	

THEREFORE, THE NET LOAD REMOVAL WOULD BE:
(A_I AND A_P VALUES ARE FROM SECTION 3 ABOVE)

$L_R = E_{TOT} X P X (A_I X 34.6 X A_P X0.54) =$	0.00	lbs

20. Stormceptor

Required TSS Removal in BMP Drainage Area=	**NA**	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs
BMP Sizing		
Effective Area =	NA	EA
Calculated Model Size(s) =	#N/A	
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) =	0	Model Size
Surface Area =	#N/A	ft^2
Overflow Rate =	#VALUE!	V_{or}
Rounded Overflow Rate =	#VALUE!	V_{or}
BMP Efficiency % =	#VALUE!	%
L_R Value =	#VALUE!	lbs
TSS Load Credit =	#VALUE!	lbs
Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.)	#VALUE!	
TSS Treatment by BMP (LM + TSS Uncapt.) =	#VALUE!	

21. Vortech

Required TSS Removal in BMP Drainage Area=	**NA**	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs
BMP Sizing		
Effective Area =	NA	EA
Calculated Model Size(s) =	#N/A	
Actual Model Size (if choosing larger model size) =	Vx1000	Pick Model Size
Surface Area =	7.10	ft^2
Overflow Rate =	#VALUE!	V_{or}
Rounded Overflow Rate =	#VALUE!	V_{or}
BMP Efficiency % =	#VALUE!	%
L_R Value =	#VALUE!	lbs
TSS Load Credit =	#VALUE!	lbs
Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.)	#VALUE!	
TSS Treatment by BMP (LM + TSS Uncapt.) =	#VALUE!	

/idth of the trapezoidal swale (b) using the Excel solver:
usly solve the “Design Q” (C217) vs “Manning's Q” (C219) by varying the “Swale Width” (C220).
Width” occurs when the “Design Q” = “Manning's Q”

219 (Error 1 value). The equation showing in the fx screen for Cell F219 should be “= C217-C219"
’ and “Solver”. The “Solver Parameters” screen pops up.
Target cell” should be F219 “Error 1 ="
Changing Cells” should be C220 “Swale Width”

Width” must be less than 10 feet to meet the requirements of the TGM.
e Width” exceeds 10 feet then the design parameters must be revised and the solver run again.

on for “Solver” under “Tools”
“Add Ins” and then check “Solver Add-in”
ructed above.

crease the bottom width of the trapezoidal swale (b):
usly solve the “Design Q” (C217) vs “Design Discharge” (C232) by varying the “Design Depth” (C233).
Depth” for a 10-foot bottom width occurs when the “Design Q” (C217) = the “Design Discharge” (C232).

ottom width in Cell C231.
The equation showing in the fx screen for Cell F232 should be “= C217-C232"

“Solver”. The “Solver Parameters” screen pops up.
Target cell” should be F232 “Error 2"
Changing Cells” should be C233 “Design Depth”

n Depth” must be equal to or less than 0.33 feet to meet the requirements of the TGM.
gn Depth” exceeds 0.33 feet then the design parameters must be revised and the solver run again.
ottom width in Cell C231.
The equation showing in the fx screen for Cell F232 should be “= C217-C232"
“Solver”. The “Solver Parameters” screen pops up.
Target cell” should be F232 “Error 2"
Changing Cells” should be C233 “Design Depth”

n Depth” must be equal to or less than 0.33 feet to meet the requirements of the TGM.
gn Depth” exceeds 0.33 feet then the design parameters must be revised and the solver run again.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Baumsquad Brothers
Date Prepared: 11/18/2022

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

where:

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

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

County =	Bexar	
Total project area included in plan * =	12.63	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	2.41	acres
Total post-development impervious cover fraction * =	0.19	
P =	30	inches
$L_{M\ TOTAL\ PROJECT}$ =	1967	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

Drainage Basin/Outfall Area No. = 2

Total drainage basin/outfall area =	2.79	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	2.28	acres
Post-development impervious fraction within drainage basin/outfall area =	0.82	
$L_{M\ THIS\ BASIN}$ =	1860	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

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

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

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

where:

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

A_C =	2.79	acres
A_I =	2.28	acres
A_P =	0.51	acres
L_R =	2114	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 2114 lbs.

F = 1.00

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

Rainfall Depth =	4.00	inches
Post Development Runoff Coefficient =	0.65	
On-site Water Quality Volume =	26261	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	5252	
Total Capture Volume (required water quality volume(s) x 1.20) =	31513	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-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	**Enter determined permeability rate or assumed value of 0.1**
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

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

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	31513	cubic feet	
Minimum filter basin area =	1459	square feet	
Maximum sedimentation basin area =	13130	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	3283	square feet	**For maximum water depth of 8 feet**

10. Bioretention System Designed as Required in RG-348 Pages 3-63 to 3-65

Required Water Quality Volume for Bioretention Basin = **NA** cubic feet

11. Wet Basins Designed as Required in RG-348 Pages 3-66 to 3-71

Required capacity of Permanent Pool =	NA	cubic feet	**Permanent Pool Capacity is 1.20 times the WQV**
Required capacity at WQV Elevation =	NA	cubic feet	**Total Capacity should be the Permanent Pool Capacity plus a second WQV.**

12. Constructed Wetlands Designed as Required in RG-348 Pages 3-71 to 3-73

Required Water Quality Volume for Constructed Wetlands = **NA** cubic feet

13. AquaLogic™ Cartridge System Designed as Required in RG-348 Pages 3-74 to 3-78

**** 2005 Technical Guidance Manual (RG-348) does not exempt the required 20% increase with maintenance contract with AquaLogic™.**

Required Sedimentation chamber capacity =	NA	cubic feet
Filter canisters (FCs) to treat WQV =	NA	cartridges
Filter basin area (RIA_F) =	NA	square feet

14. Stormwater Management StormFilter® by CONTECH

Required Water Quality Volume for Contech StormFilter System = **NA** cubic feet

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

15. Grassy Swales Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

Drainage Area to be Treated by the Swale = A =	0.00	acres
Impervious Cover in Drainage Area =	0.00	acres
Rainfall intensity = i =	1.1	in/hr
Swale Slope =	0	ft/ft
Side Slope (z) =	0	

Design Water Depth = y = 0.00 ft
Weighted Runoff Coefficient = C = #DIV/0!

A_{CS} = cross-sectional area of flow in Swale = #DIV/0! sf
P_W = Wetted Perimeter = #DIV/0! feet
R_H = hydraulic radius of flow cross-section = A_{CS}/P_W = #DIV/0! feet
n = Manning's roughness coefficient = 0.2

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

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

$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$ = #DIV/0! feet

Q = CiA = #DIV/0! cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = Q/A_{CS} = #DIV/0! ft/sec

To calculate the resulting swale length:

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = #DIV/0! feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

15B. Alternative Method using Excel Solver

To solve for bottom v
Excel can simultanec
The required "Swale

First, highlight Cell F
Then click on "Tools
The value in the "Set
The value in the "By
Click on solve.

The resulting "Swale
If the resulting "Swal

If there is not the opt
Click on "Tools" and
Then proceed as inst

If you would like to in
Excel can simultanec
The required "Desigr

First set the desired
Highlight Cell F232.

Click on "Tools" and
The value in the "Set
The value in the "By
Click on solve.

The resulting "Desig
If the resulting "Desi
First set the desired
Highlight Cell F232.
Click on "Tools" and
The value in the "Set
The value in the "By
Click on solve.

The resulting "Desig
If the resulting "Desi

Design Q = CiA = #DIV/0! cfs

Manning's Equation Q = 0.00 cfs Error 1 = #DIV/0!
Swale Width= 6.00 ft

Instructions are provided to the right (green comments).

Flow Velocity #DIV/0! ft/s
Minimum Length = #DIV/0! ft

Instructions are provided to the right (blue comments).

Design Width = 0 ft
Design Discharge = 0.00 cfs Error 2 = #DIV/0!
Design Depth = 0.33 ft
Flow Velocity = #DIV/0! cfs
Minimum Length = #DIV/0! ft

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters may be modified and the solver rerun.
If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the swale bottom value may not be possible.

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

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 of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

17. Wet Vaults Designed as Required in RG-348 Pages 3-30 to 3-32 & 3-79

Required Load Removal Based upon Equation 3.3 = **NA** lbs

First calculate the load removal at 1.1 in/hour

RG-348 Page 3-30 Equation 3.4: Q = CiA

C = runoff coefficient for the drainage area = 0.66 **C = Runoff Coefficient = 0.546 (IC)^2 + 0.328 (IC) + 0.03**
i = design rainfall intensity = 1.1 in/hour
A = drainage area in acres = 0 acres

Q = flow rate in cubic feet per second = 0.00 cubic feet/sec

RG-348 Page 3-31 Equation 3.5: $V_{OR} = Q/A$

Q = Runoff rate calculated above = 0.00 cubic feet/sec
A = Water surface area in the wet vault = 0 square feet

V_{OR} = Overflow Rate = #DIV/0! feet/sec

Percent TSS Removal from Figure 3-1 (RG-348 Page 3-31) = 0 percent

Load removed by Wet Vault = #VALUE! lbs

If a bypass occurs at a rainfall intensity of less than 1.1 in/hours
Calculate the efficiency reduction for the actual rainfall intensity rate

Actual Rainfall Intensity at which Wet Vault bypass Occurs =	0	in/hour
Fraction of rainfall treated from Figure 3-2 RG-348 Page 3-32 =	0	percent
Efficiency Reduction for Actual Rainfall Intensity =	0.00	percent
Resultant TSS Load removed by Wet Vault =	#VALUE!	lbs

18. Permeable Concrete Designed as Required in RG-348 Pages 3-79 to 3-83

PERMEABLE CONCRETE MAY ONLY BE USED ON THE CONTRIBUTING ZONE

19. BMPs Installed in a Series Designed as Required in RG-348 Pages 3-32

Michael E. Barrett, Ph.D.. P.E. recommended that the coefficient for E_2 be changed from 0.5 to 0.65 on May 3, 2006

$E_{TOT} = [1 - ((1 - E_1) X (1 - 0.65E_2) x (1 - 0.25E_3))] X 100 =$	0.00	percent	NET EFFICIENCY OF THE BMPs IN THE SERIES
EFFICIENCY OF FIRST BMP IN THE SERIES = E_1 =	0.00	percent	
EFFICIENCY OF THE SECOND BMP IN THE SERIES = E_2 =	0.00	percent	
EFFICIENCY OF THE THIRD BMP IN THE SERIES = E_3 =	0.00	percent	

THEREFORE, THE NET LOAD REMOVAL WOULD BE:
(A_I AND A_P VALUES ARE FROM SECTION 3 ABOVE)

$L_R = E_{TOT} X P X (A_I X 34.6 X A_P X0.54) =$	0.00	lbs

20. Stormceptor

Required TSS Removal in BMP Drainage Area=	**NA**	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs

BMP Sizing

Effective Area =	NA	EA
Calculated Model Size(s) =	#N/A	
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) =	0	Model Size
Surface Area =	#N/A	ft^2
Overflow Rate =	#VALUE!	V_{or}
Rounded Overflow Rate =	#VALUE!	V_{or}
BMP Efficiency % =	#VALUE!	%
L_R Value =	#VALUE!	lbs
TSS Load Credit =	#VALUE!	lbs
Is Sufficient Treatment Available? (TSS Credit $\geq$ TSS Uncapt.)	#VALUE!	
TSS Treatment by BMP (LM + TSS Uncapt.) =	#VALUE!	

21. Vortech

Required TSS Removal in BMP Drainage Area=	**NA**	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs

BMP Sizing

Effective Area =	NA	EA
Calculated Model Size(s) =	#N/A	
Actual Model Size (if choosing larger model size) =	Vx1000	Pick Model Size
Surface Area =	7.10	ft^2
Overflow Rate =	#VALUE!	V_{or}
Rounded Overflow Rate =	#VALUE!	V_{or}
BMP Efficiency % =	#VALUE!	%
L_R Value =	#VALUE!	lbs
TSS Load Credit =	#VALUE!	lbs
Is Sufficient Treatment Available? (TSS Credit $\geq$ TSS Uncapt.)	#VALUE!	
TSS Treatment by BMP (LM + TSS Uncapt.) =	#VALUE!	

ously solve the “Design Q” (C217) vs “Manning's Q” (C219) by varying the “Swale Width” (C220).

219 (Error 1 value). The equation showing in the fx screen for Cell F219 should be “= C217-C219"

e Width” exceeds 10 feet then the design parameters must be revised and the solver run again.

ously solve the “Design Q” (C217) vs “Design Discharge” (C232) by varying the “Design Depth” (C233).
n Depth” for a 10-foot bottom width occurs when the “Design Q” (C217) = the “Design Discharge” (C232).

gn Depth” exceeds 0.33 feet then the design parameters must be revised and the solver run again.

gn Depth” exceeds 0.33 feet then the design parameters must be revised and the solver run again.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Baumsquad Brothers
Date Prepared: 11/182022

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

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

County =		Bexar	
Total project area included in plan * =		12.63	acres
Predevelopment impervious area within the limits of the plan * =		0.00	acres
Total post-development impervious area within the limits of the plan * =		2.41	acres
Total post-development impervious cover fraction * =		0.19	
P =		30	inches
$L_{M\ TOTAL\ PROJECT}$ =	**1967**		lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

Drainage Basin/Outfall Area No. = 3

Total drainage basin/outfall area =		0.06	acres
Predevelopment impervious area within drainage basin/outfall area =		0.00	acres
Post-development impervious area within drainage basin/outfall area =		0.05	acres
Post-development impervious fraction within drainage basin/outfall area =		0.91	
$L_{M\ THIS\ BASIN}$ =	**41**		lbs.

3. Indicate the proposed BMP Code for this basin.

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

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

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

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

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =		0.06	acres
A_I =		0.05	acres
A_P =	**0.01**		acres
L_R =	**44**		lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 44 lbs.

F = **1.00**

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

Rainfall Depth =	**4.00**	inches
Post Development Runoff Coefficient =	**0.74**	
On-site Water Quality Volume =	**593**	cubic feet

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

Off-site area draining to BMP =	0.00	acres	
Off-site Impervious cover draining to BMP =	0.00	acres	
Impervious fraction of off-site area =	0		
Off-site Runoff Coefficient =	0.00		
Off-site Water Quality Volume =	0	cubic feet	
Storage for Sediment =	119		
Total Capture Volume (required water quality volume(s) x 1.20) =	711	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-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin =	NA	cubic feet	
Irrigation Area Calculations:			
Soil infiltration/permeability rate =	0.1	in/hr	**Enter determined permeability rate or assumed value of 0.1**
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

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

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

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	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	NA	square feet	**For maximum water depth of 8 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	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	NA	square feet	**For maximum water depth of 8 feet**

10. Bioretention System Designed as Required in RG-348 Pages 3-63 to 3-65

Required Water Quality Volume for Bioretention Basin =	NA	cubic feet	

11. Wet Basins Designed as Required in RG-348 Pages 3-66 to 3-71

Required capacity of Permanent Pool =	NA	cubic feet	**Permanent Pool Capacity is 1.20 times the WQV**
Required capacity at WQV Elevation =	NA	cubic feet	**Total Capacity should be the Permanent Pool Capacity plus a second WQV.**

12. Constructed Wetlands Designed as Required in RG-348 Pages 3-71 to 3-73

Required Water Quality Volume for Constructed Wetlands =	NA	cubic feet	

13. AquaLogic™ Cartridge System Designed as Required in RG-348 Pages 3-74 to 3-78

**** 2005 Technical Guidance Manual (RG-348) does not exempt the required 20% increase with maintenance contract with AquaLogic™.**

Required Sedimentation chamber capacity =	NA	cubic feet	
Filter canisters (FCs) to treat WQV =	NA	cartridges	
Filter basin area (RIA_F) =	NA	square feet	

14. Stormwater Management StormFilter® by CONTECH

Required Water Quality Volume for Contech StormFilter System =	NA	cubic feet	

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

15. Grassy Swales Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

Drainage Area to be Treated by the Swale = A =	0.00	acres
Impervious Cover in Drainage Area =	0.00	acres
Rainfall intensity = i =	1.1	in/hr

Swale Slope = 0 ft/ft
Side Slope (z) = 0
Design Water Depth = y = 0.00 ft
Weighted Runoff Coefficient = C = #DIV/0!

A_{CS} = cross-sectional area of flow in Swale = #DIV/0! sf
P_W = Wetted Perimeter = #DIV/0! feet
R_H = hydraulic radius of flow cross-section = A_{CS}/P_W = #DIV/0! feet
n = Manning's roughness coefficient = 0.2

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

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

$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$ = #DIV/0! feet

Q = CiA = #DIV/0! cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = Q/A_{CS} = #DIV/0! ft/sec

To calculate the resulting swale length:

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = #DIV/0! feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

15B. Alternative Method using Excel Solver

Design Q = CiA = #DIV/0! cfs

Manning's Equation Q = 0.00 cfs Error 1 = #DIV/0!
Swale Width= 6.00 ft

Instructions are provided to the right (green comments).

Flow Velocity #DIV/0! ft/s
Minimum Length = #DIV/0! ft

Instructions are provided to the right (blue comments).

Design Width = 0 ft
Design Discharge = 0.00 cfs Error 2 = #DIV/0!
Design Depth = 0.33 ft
Flow Velocity = #DIV/0! cfs
Minimum Length = #DIV/0! ft

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters may be modified and the solver rerun.
If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the swale bottom value may not be possible.

To solve for bottom w
Excel can simultaneo
The required "Swale V

First, highlight Cell F2
Then click on "Tools"
The value in the "Set
The value in the "By C
Click on solve.

The resulting "Swale
If the resulting "Swale

If there is not the opti
Click on "Tools" and
Then proceed as instr

If you would like to in
Excel can simultaneo
The required "Design

First set the desired b
Highlight Cell F232. T

Click on "Tools" and
The value in the "Set
The value in the "By C
Click on solve.

The resulting "Design
If the resulting "Desig
First set the desired b
Highlight Cell F232. T
Click on "Tools" and
The value in the "Set
The value in the "By C
Click on solve.

The resulting "Design
If the resulting "Desig

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

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 of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

17. Wet Vaults Designed as Required in RG-348 Pages 3-30 to 3-32 & 3-79

Required Load Removal Based upon Equation 3.3 = **NA** lbs

First calculate the load removal at 1.1 in/hour

RG-348 Page 3-30 Equation 3.4: Q = CiA

C = runoff coefficient for the drainage area = 0.78 **C = Runoff Coefficient = 0.546 (IC)^2 + 0.328 (IC) + 0.03**
i = design rainfall intensity = 1.1 in/hour
A = drainage area in acres = 0 acres

Q = flow rate in cubic feet per second = 0.00 cubic feet/sec

RG-348 Page 3-31 Equation 3.5: $V_{OR} = Q/A$

Q = Runoff rate calculated above = 0.00 cubic feet/sec
A = Water surface area in the wet vault = 0 square feet

V_{OR} = Overflow Rate = #DIV/0! feet/sec

Percent TSS Removal from Figure 3-1 (RG-348 Page 3-31) =	0	percent
Load removed by Wet Vault =	#VALUE!	lbs

If a bypass occurs at a rainfall intensity of less than 1.1 in/hours
Calculate the efficiency reduction for the actual rainfall intensity rate

Actual Rainfall Intensity at which Wet Vault bypass Occurs =	0	in/hour
Fraction of rainfall treated from Figure 3-2 RG-348 Page 3-32 =	0	percent
Efficiency Reduction for Actual Rainfall Intensity =	0.00	percent
Resultant TSS Load removed by Wet Vault =	#VALUE!	lbs

18. Permeable Concrete Designed as Required in RG-348 Pages 3-79 to 3-83

PERMEABLE CONCRETE MAY ONLY BE USED ON THE CONTRIBUTING ZONE

19. BMPs Installed in a Series Designed as Required in RG-348 Pages 3-32

Michael E. Barrett, Ph.D.. P.E. recommended that the coefficient for E_2 be changed from 0.5 to 0.65 on May 3, 2006

$E_{TOT} = [1 - ((1 - E_1) X (1 - 0.65E_2) x (1 - 0.25E_3))] X 100 =$	0.00	percent	NET EFFICIENCY OF THE BMPs IN THE SERIES
EFFICIENCY OF FIRST BMP IN THE SERIES = E_1 =	0.00	percent	
EFFICIENCY OF THE SECOND BMP IN THE SERIES = E_2 =	0.00	percent	
EFFICIENCY OF THE THIRD BMP IN THE SERIES = E_3 =	0.00	percent	

THEREFORE, THE NET LOAD REMOVAL WOULD BE:
(A_I AND A_P VALUES ARE FROM SECTION 3 ABOVE)

$L_R = E_{TOT} X P X (A_I X 34.6 X A_P X0.54) =$	0.00	lbs

20. Stormceptor

Required TSS Removal in BMP Drainage Area=	**NA**	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs
BMP Sizing		
Effective Area =	NA	EA
Calculated Model Size(s) =	#N/A	
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) =	0	Model Size
Surface Area =	#N/A	ft^2
Overflow Rate =	#VALUE!	V_{or}
Rounded Overflow Rate =	#VALUE!	V_{or}
BMP Efficiency % =	#VALUE!	%
L_R Value =	#VALUE!	lbs
TSS Load Credit =	#VALUE!	lbs
Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.)	#VALUE!	
TSS Treatment by BMP (LM + TSS Uncapt.) =	#VALUE!	

21. Vortech

Required TSS Removal in BMP Drainage Area=	**NA**	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs
BMP Sizing		
Effective Area =	NA	EA
Calculated Model Size(s) =	#N/A	
Actual Model Size (if choosing larger model size) =	Vx1000	Pick Model Size
Surface Area =	7.10	ft^2
Overflow Rate =	#VALUE!	V_{or}
Rounded Overflow Rate =	#VALUE!	V_{or}
BMP Efficiency % =	#VALUE!	%
L_R Value =	#VALUE!	lbs
TSS Load Credit =	#VALUE!	lbs
Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.)	#VALUE!	
TSS Treatment by BMP (LM + TSS Uncapt.) =	#VALUE!	

/idth of the trapezoidal swale (b) using the Excel solver:
usly solve the “Design Q” (C217) vs “Manning's Q” (C219) by varying the “Swale Width” (C220).
Width” occurs when the “Design Q” = “Manning's Q”

219 (Error 1 value). The equation showing in the fx screen for Cell F219 should be “= C217-C219"
’ and “Solver”. The “Solver Parameters” screen pops up.
Target cell” should be F219 “Error 1 ="
Changing Cells” should be C220 “Swale Width”

Width” must be less than 10 feet to meet the requirements of the TGM.
e Width” exceeds 10 feet then the design parameters must be revised and the solver run again.

on for “Solver” under “Tools”
“Add Ins” and then check “Solver Add-in”
ructed above.

crease the bottom width of the trapezoidal swale (b):
usly solve the “Design Q” (C217) vs “Design Discharge” (C232) by varying the “Design Depth” (C233).
Depth” for a 10-foot bottom width occurs when the “Design Q” (C217) = the “Design Discharge” (C232).

ottom width in Cell C231.
The equation showing in the fx screen for Cell F232 should be “= C217-C232"

“Solver”. The “Solver Parameters” screen pops up.
Target cell” should be F232 “Error 2"
Changing Cells” should be C233 “Design Depth”

n Depth” must be equal to or less than 0.33 feet to meet the requirements of the TGM.
gn Depth” exceeds 0.33 feet then the design parameters must be revised and the solver run again.
ottom width in Cell C231.
The equation showing in the fx screen for Cell F232 should be “= C217-C232"
“Solver”. The “Solver Parameters” screen pops up.
Target cell” should be F232 “Error 2"
Changing Cells” should be C233 “Design Depth”

n Depth” must be equal to or less than 0.33 feet to meet the requirements of the TGM.
gn Depth” exceeds 0.33 feet then the design parameters must be revised and the solver run again.

SUBAREA CALCULATION DETAILS

SUBAREA	TOTAL AC	PERVIOUS	IMPERVIOUS	TREATMENT %	BMP TYPE	TREATMENT METHOD	LBS OF TSS REQUIRED TO BE REMOVED	LBS OF TSS BMP CAPACITY (Including Series)	LBS OF TSS DESIGNED TO BE REMOVED	LBS OF TSS REMOVED (2nd BMP Only)	Capacity - Design Removal	Fraction, F Required Only	Fraction, F Design	Rainfall Depth (in)	Rv	WQV (ft3)
#	A	A_P	A_N or A_I	E_n	#	Type	L_M = 27.2 (A_N X P), where P=30 inches	L_R = (E_n) X P x (A_I x 36.4 + A_P x 0.54)	L_M (Design)	Amount needed to achieve 80% removal for overall project area.	L_R - L_M	F = L_M / L_R	F (Design)	From Table 3-5, based on F. Called R_D	RV = 1.72 (A_X)3 - 1.97 (A_X)2 +1.23 (A_X) + 0.02, where A_X = A_I / A	WQV = R_D x R_V x A
1	0.13	0.05	0.08	85	1	VFS	65	71	71	0	0	0.92	1.00			
2	2.79	0.51	2.28	89	2	SAND FILTER	1860	2114	2114	0	0	0.88	1.00	4.00	0.65	26,261
3	0.06	0.01	0.05	85	3	VFS	41	44	44	0	0	0.93	1.00			
Overall	2.98	0.57	2.41	Various	Various	Various	1966	2229		0						
								TOTAL LBS Removed	2229							

TSS (lbs) Delta	263		
Amount Treated Without BMPs in Series	1966	2229	BMP Capacity
		263	Remaining Capacity

Attachment D

BMPs for Surface Streams
Baumsquad Brothers Development

No surface streams will be impacted by pollutants carried by surface runoff from this project site.

Attachment E

Request to Seal Features
Baumsquad Brothers Development

N/A

Attachment F

Construction Plans
Baumsquad Brothers Development

PLAT NO-22-11800217

GENERAL NOTES

G1. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THESE NOTES AND OTHER PLANS, SPECIFICATIONS, OR GOVERNMENTAL REQUIREMENTS PRIOR TO PROCEEDING WITH WORK.

G2. VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD BEFORE COMMENCING ANY WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPORT ANY DISCREPANCIES TO THE ARCHITECT IN A TIMELY MANNER. CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT REQUIRE APPROVAL BY THE ENGINEER.

G3. CONTRACTOR SHALL CONTACT THE CITY AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION ON THE SITE.

G4. ANY WORK IN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED TO THE STANDARDS OF THE GOVERNING AUTHORITY.

G5. THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES (2014) SHALL BE CONSIDERED PART OF THESE PLANS AND USED AS THE SPECIFICATIONS FOR ITEMS EXCEPT AS OTHERWISE SHOWN ON THE PLANS OR IN THE PROJECT SPECIFICATIONS.

G6. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AT NO ADDITIONAL COST TO THE OWNER.

G7. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION SCHEDULE WITH THE OWNER PRIOR TO BEGINNING WORK. CONTRACTOR SHALL COORDINATE HIS WORK AROUND THE OWNER, INCLUDING MAINTAINING UTILITIES TO THIS BUILDING DURING CONSTRUCTION.

G8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL WASTE MATERIAL GENERATED DURING CONSTRUCTION. WASTE MATERIAL MUST BE REMOVED FROM THE WORK SITE AND DISPOSED OF IN SUCH A MANNER TO MEET ALL APPLICABLE REGULATIONS. (NO SEPARATE PAY ITEM.)

G9. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY UPON COMPLETION OF JOB SHALL BE AS GOOD OR BETTER CONDITIONS PRIOR TO STARTING WORK.

G10. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT, AND WORK IN PROCESS.

G11. TREES NOT NOTED FOR REMOVAL SHALL BE PROTECTED BY CONTRACTOR. CONTRACTOR SHALL REFERENCE LANDSCAPE PLANS AND TREE PRESERVATION PLANS

G12. CONTRACTOR SHALL PROVIDE AND INSTALL PVC CONDUITS UNDER PAVEMENT/SIDEWALK AREAS FOR SITE IRRIGATION SYSTEM AND SITE LIGHTING PLANS. AS SHOWN ON SITE UTILITY PLAN.

G13. THE GRADING PLAN INDICATES FINISHED GRADES. FINISHED GRADING SHALL BE HAND SMOOTHED, READY FOR SOD AND THE INSTALLATION OF OTHER LANDSCAPING FOR THE ENTIRE SITE, WITHIN THE "LIMITS OF WORK".

G14. THE TOP SOIL FINISH GRADE SHALL BE 2 INCHES BELOW THE TOP OF THE SIDEWALK. SOD, ONCE INSTALLED, SHALL BE FLUSH WITH THE TOP OF THE SIDEWALK.

G15. DRAWINGS SHOW AS MUCH INFORMATION AS CAN BE REASONABLY OBTAINED FROM AN ON THE GROUND OBSERVATION, SURVEY AND EXISTING CONSTRUCTION DRAWINGS REGARDING THE TOPOGRAPHIC FEATURES AND ELEVATIONS, AS WELL AS THE LOCATION AND NATURE OF PIPELINES, NATURAL GAS LINES, UNDERGROUND CABLES, UTILITIES, ETC., HOWEVER, THE ACCURACY OF OR COMPLETENESS OF SUCH INFORMATION IS NOT GUARANTEED.

G16. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR MAINTAINING A SAFE PROJECT SITE 24 HOURS A DAY. AS A MINIMUM, THE GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE OBSERVED.

G17. THE CONTRACTOR AND HIS RETAINED SUBCONTRACTORS ARE CONSIDERED PROFESSIONAL MEMBERS OF THE PROJECT TEAM. THE CONTRACTOR AND/OR HIS RETAINED SUBCONTRACTORS SHALL BRING TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION ANY ITEM/INSTRUCTION FOUND IN THESE PLANS THAT, IN THE JUDGMENT OF THE CONTRACTOR AND/OR HIS RETAINED SUBCONTRACTORS, APPEARS TO BE IN ERROR. THE ENGINEER SHALL CONFIRM SAID ERROR AND, IF APPLICABLE, RE-ISSUE PLAN(S) AND/OR ISSUE WRITTEN GUIDANCE TO CORRECT THE ERROR AND, IF APPLICABLE, ADDRESS ADDITIONAL COSTS.

TRAFFIC NOTES

T1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING TRAFFIC IN THE IMMEDIATE VICINITY OF CONSTRUCTION. ALL WORK SHALL BE PERFORMED IN SUCH A MANNER AND SEQUENCE AS TO PROVIDE MAXIMUM PROTECTION TO TRAFFIC AND PEDESTRIANS. CONTROLS SHALL BE CONSISTENT WITH THE TYPE OF WORK BEING PERFORMED.

T2. CONSTRUCTION WHICH BLOCKS TRAFFIC OF ANY STREET, ALLEY, OR DRIVEWAY IS SUBJECT TO APPROVAL OF AND RESTRICTION IMPOSED BY BEXAR COUNTY.

T3. DURING THE ENTIRE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL MAINTAIN CONSTRUCTION WARNING SIGNS AT EACH END OF THE PROJECT TO WARN MOTORING AND PEDESTRIAN TRAFFIC THAT CONSTRUCTION IS IN PROGRESS AND OF POSSIBLE HAZARDOUS CONDITION GENERATED BY THE CONSTRUCTION.

T4. DELINEATORS SHALL BE INSTALLED ALONG THE PAVEMENT EDGE TO WARN TRAFFIC OF ANY ROADSIDE OBJECTS OR HAZARDS AND TO DELINEATE THE ROADWAY EDGE DURING HOURS OF DARKNESS.

UTILITY NOTES

U1. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA AT A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK IN ANY RIGHT-OF-WAY OR EXISTING EASEMENT.

TELEPHONE (AT&T)	1-800-545-6005
GAS AND ELECTRIC (CITY PUBLIC SERVICE)	1-800-545-6005
TIME WARNER CABLE	1-800-545-6005
SEWER (SAN ANTONIO WATER SYSTEM)	(210) 233-2010
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
WATER (SAN ANTONIO WATER SYSTEM)	(210) 233-2010

U2. OVERHEAD POWER LINES EXIST IN THE AREA OF THE PROJECT. CONTRACTOR SHALL MAINTAIN RECOMMENDED CLEARANCE REQUIREMENTS OF PROVIDER. TEXAS LAW ARTICLE 1436C, PROHIBITS ALL ACTIVITIES IN WHICH PERSONS OR EQUIPMENT MAY COME WITHIN SIX (6) FEET OF ENERGIZED OVERHEAD POWER LINES. FEDERAL REGULATIONS, TITLE 29, PART 1910.180(I) AND PART (1926.550(A)(15) REQUIRE A MINIMUM OF TEN (10) FEET FROM THESE FACILITIES WHERE CONTRACTOR MUST WORK NEAR OVERHEAD POWER LINES. WHERE CONTRACTOR MUST WORK NEAR OVERHEAD POWER LINES, CALL 978-3500 FOR THE LINES TO BE DE-ENERGIZED AND/OR MOVED AT CONTRACTOR'S EXPENSE.

U3. IN THE EVENT OF DAMAGE TO UNDERGROUND UTILITIES OR FACILITIES, WHETHER SHOWN OR NOT ON THE DRAWINGS, THE CONTRACTOR SHALL MAKE THE NECESSARY REPAIRS TO REPLACE THE UTILITY OR FACILITY BACK IN SERVICE AT THE CONTRACTOR'S EXPENSE.

U4. THE CONTRACTOR SHALL UNCOVER ALL EXISTING UTILITIES AND VERIFY EXISTING ELEVATION OF SAME AT ALL UTILITY CROSSINGS BEFORE COMMENCING ANY OTHER WORK. CONFLICTS SHALL BE REPORTED TO THE MANAGING ARCHITECT OR ENGINEER IMMEDIATELY.

U5. WATER SERVICE SHALL BE C900 WATER LINE AND SHALL BE INSTALLED IN ACCORDANCE WITH SAN ANTONIO WATER SYSTEM REQUIREMENTS.

U6. CONTRACTOR SHALL FOLLOW REQUIREMENTS OF THE INTERNATIONAL PLUMBING CODE SECTIONS 306.2.2, 306.2.3 AND 306.3.

U7. ALL SANITARY SEWER LINES PROPOSED ON THE SITE SHALL BE SDR 26 PVC. BEDDING AND INITIAL BACKFILL (12" ABOVE THE PIPE) SHALL BE GRAVEL (3/4" MAX TO DUST).

U8. MISCELLANEOUS PVC FITTINGS REQUIRED TO ROUTE SANITARY SEWER OUTSIDE OF BUILDING ARE NOT CALLED FOR ON PLANS BUT SHALL BE FURNISHED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

U9. TIE-INS TO EXISTING MANHOLES SHALL BE MADE SUCH THAT THE FINAL CONDITION UPON COMPLETION OF THE JOB SHALL COMPLY WITH THE REQUIREMENTS OF THE GOVERNING CODE.

U10. CONNECTIONS TO EXISTING SEWERS SHALL BE MADE IN ACCORDANCE WITH CITY OF SAN ANTONIO REQUIREMENTS, AND SAN ANTONIO WATER SYSTEM (S.A.W.S.).

U11. ON-SITE WATER AND SEWER SERVICES SHALL BE INSPECTED AS REQUIRED BY THE BEXAR COUNTY PLUMBING INSPECTOR.

EARTHWORK

E1. THE CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS, LOCAL BUILDING CODE REQUIREMENTS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING AND SHORING.

E2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING AND RESTORING THE DRAINAGE SYSTEM TO ITS ORIGINAL CONDITION. THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION.

E3. THE CONTRACTOR MUST CLEAN MUD, DIRT OR DEBRIS TRACKED ONTO EXISTING STREETS BY ANY VEHICLE THAT EXITS OR ENTERS THE SITE.

E4. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE STRUCTURES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY.

E5. ON-SITE SOILS MAY BE PLACED UNDER PROPOSED PAVEMENT AREAS IN ACCORDANCE WITH GEOTECHNICAL ENGINEERING STUDY BY inTEC, L.P. PROJECT #S121657, SEPTEMBER 10, 2012.

E6. PLACE BACKFILL AS PROMPTLY AND AS PRACTICAL AFTER COMPLETION OF EACH STRUCTURE OR PORTION OF A STRUCTURE. DO NOT PLACE BACKFILL AGAINST CONCRETE WALLS OR SIMILAR STRUCTURES UNTIL CONCRETE HAS CURED AT LEAST SEVEN (7) DAYS.

E7. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING FINAL GRADES TO ASSURE POSITIVE DRAINAGE.

E8. GRAVEL SUBGRADE FILLER SHALL CONSIST OF A WELL GRADED, CRUSHED STONE OR GRAVEL, APPROVED BY THE ENGINEER, ONE HUNDRED PERCENT (100%) PASSING A 1 3/4" SIEVE, AT LEAST NINETY-FIVE PERCENT (95%) PASSING A 1 1/2" SIEVE AND AT LEAST NINETY PERCENT (90%) RETAINED ON A ONE QUARTER INCH (1/4") SIEVE. THE CRUSHED STONE OR GRAVEL SHALL HAVE AN ABRASION OF NOT MORE THAN FORTY (40) WHEN SUBJECTED TO THE LOS ANGELES ABRASION TEST.

E9. INITIAL BACKFILL: INITIAL BACKFILL IS DEFINED AS BACKFILL HAVING A THICKNESS IN ITS COMPACTED STATE FROM THE SURFACE OF THE BEDDING TO A POINT ONE FOOT (1') ABOVE THE TOP OF THE PIPE. SELECT INITIAL BACKFILL MATERIAL SHALL CONFORM TO THE GRAVEL REQUIREMENTS OF BEDDING. FOR PIPES LESS THAN 24" IN DIAMETER, SELECT INITIAL BACKFILL SHALL BE PLACED IN TWO LIFTS. THE FIRST LIFT SHALL BE SPREAD UNIFORMLY AND SIMULTANEOUSLY ON EACH SIDE OF AND UNDER THE SHOULDERS OF THE PIPE TO ITS SPRING LINE. THE SECOND LIFT OF INITIAL BACKFILL SHALL EXTEND FROM THE SPRING LINE OF THE PIPE TO A DEPTH SUFFICIENT TO PRODUCE A COMPACTED DEPTH OF MATERIAL A MINIMUM OF ONE FOOT ABOVE THE TOP OF THE PIPE.

E10. FOR PIPES 24" IN DIAMETER AND LARGER, SELECT INITIAL BACKFILL MATERIAL SHALL BE EVENLY AND SIMULTANEOUSLY SPREAD ALONGSIDE, UNDER THE SHOULDERS OR HAUNCHES OF THE PIPE AND OVER THE PIPE IN SIX INCH (6") LIFTS TO A POINT SUFFICIENT TO PRODUCE A COMPACTED DEPTH OF MATERIAL A MINIMUM OF ONE FOOT ABOVE THE TOP OF THE PIPE. NO MECHANICAL OR HAND COMPACTION WILL BE REQUIRED ON AN APPROVED SUBGRADE FILLER MATERIAL.

E11. SECONDARY BACKFILL: SECONDARY BACKFILL IS DEFINED AS BACKFILL FROM ONE FOOT (1') ABOVE THE TOP OF THE PIPE TO THE TOP OF THE TRENCH. SECONDARY BACKFILL SHALL GENERALLY CONSIST OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE OF BRUSH, DEBRIS AND JUNK. NO ROCK OR STONES HAVING ANY DIMENSION LARGER THAN 6 INCHES AT THE LARGEST DIMENSION SHALL BE USED IN THE SECONDARY BACKFILLING ZONE AND SHALL BE AT LEAST 1 FOOT BELOW FINISHED GRADE. SECONDARY BACKFILL MATERIAL SHALL BE COMPOSED OF PRIMARILY COMPACTIBLE SOIL MATERIALS.

E12. WATER JETTING OR WATER FLOODING WILL NOT BE PERMITTED AS A METHOD OF COMPACTION. SECONDARY BACKFILL SHALL BE COMPACTED TO THE REQUIRED DENSITY OF NINETY-THREE PERCENT (93%) USING ANY SIZE AND TYPE OF EQUIPMENT WHICH WILL GIVE THE REQUIRED COMPACTION WITHOUT DAMAGING THE PIPE, BEDDING OR STRUCTURES. THE DEPTH OF LAYER, PRIOR TO COMPACTION, SHALL DEPEND UPON THE TYPE OF SPRINKLING AND COMPACTING EQUIPMENT USED TO ACHIEVE THE REQUIRED DENSITY AND THE TEST RESULTS THEREBY OBTAINED AND SHALL BE A MAXIMUM OF TWENTY FOUR INCHES (24"). PRIOR TO AND IN CONJUNCTION WITH THE COMPACTION OPERATION, EACH LAYER SHALL BE BROUGHT TO THE MOISTURE CONTENT NECESSARY TO OBTAIN THE REQUIRED DENSITY AND SHALL BE KEPT LEVEL TO INSURE UNIFORM COMPACTION OVER THE ENTIRE LAYER. ESTABLISHMENT OF THE OPTIMUM MOISTURE AND DENSITY WILL BE IN ACCORDANCE WITH TXDOT TEST METHOD TEX-113-E. DENSITY SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENT OF ASTM D 2922. EACH LAYER OF BACKFILL MUST PROVIDE THE DENSITY AS REQUIRED HEREIN. IF THE MATERIAL FAILS TO MEET THE DENSITY INDICATED, THE COURSE SHALL BE REWORKED AS NECESSARY TO OBTAIN THE INDICATED COMPACTION.

E13. ALL WORK WITHIN THE COUNTY STREET OR STATE HIGHWAY RIGHT OF WAY MUST MEET THE INDICATED REQUIREMENTS IN THIS SECTION AS A MINIMUM AND SHALL MEET THE REQUIREMENTS INDICATED IN THE PLANS OR THE PERMIT ISSUED BY THE COUNTY, CITY, OR STATE WHEN THEIR REQUIREMENTS ARE MORE STRINGENT. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR WILL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE TXDOT, CITY, OR COUNTY OFFICE AND FOR COORDINATING HIS ACTIVITIES WITH THE OPERATING PROCEDURE IN EFFECT FOR UTILITY CUT PERMITS AND PAVEMENT REPAIR UNDER THEIR JURISDICTION. APPROVAL FOR ALL COMPLETED WORK IN THE CITY, STATE OR COUNTY RIGHT OF WAY MUST BE OBTAINED FROM THE APPROPRIATE OFFICIAL PRIOR TO FINAL ACCEPTANCE.

RIGHT-OF-WAY MANAGEMENT

ROW1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL TRAFFIC CONTROL DEVICES REQUIRED FOR THIS PROJECT. ALL TRAFFIC CONTROL PLANS SHALL BE PREPARED IN ACCORDANCE WITH THE TEXAS MUTCD AND CITY REQUIREMENTS.

SWPPP

S1. THE CONTRACTOR SHALL POST THE SWPPP NOTICE AT THE SITE. A COPY OF THE SWPPP SHALL BE MAINTAINED ON SITE.

S2. THE GENERAL CONTRACTOR SHALL PREPARE A SWPPP BINDER AND BE RESPONSIBLE FOR FILING OF THE "NOI" AND "NOT" AND ANY RENEWALS.

PAVING NOTES

P1. FLEXIBLE BASE COURSE SHALL BE CRUSHED LIMESTONE CONFORMING TO TXDOT ITEM 247, TYPE A, GRADES 1 OR 2. BASE COURSE SHALL BE PLACED IN LIFTS WITH A MAXIMUM THICKNESS OF 8 IN. AND COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AT A MOISTURE CONTENT WITHIN THE RANGE OF 2 PERCENTAGE POINTS BELOW TO 2 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY TEX-113-E.

P2. THE SLOPE OF THE PAVEMENT IN THE HANDICAP PARKING SPACES SHALL NOT EXCEED 2% IN ANY DIRECTION.

P3. ASPHALTIC CONCRETE SURFACE COURSE SHALL CONFORM TO TXDOT ITEM 340, TYPE D (SAC-B, PG. 64-22). ASPHALTIC CONCRETE SHALL BE COMPACTED TO A MINIMUM OF 92 PERCENT OF THE MAXIMUM THEORETICAL SPECIFIC GRAVITY OF THE MIXTURE DETERMINED ACCORDING TO TEST METHOD TEX-227-F. THE NUCLEAR DENSITY GAUGE MAY BE USED TO MEASURE DENSITY. MINIMUM THICKNESS SHALL BE 1-1/2".

P4. REFERENCE GEOTECHNICAL ENGINEERING STUDY PREPARED BY TERRACON PROJECT #90225365, JANUARY 27, 2023 FOR ADDITIONAL RECOMMENDATIONS

SITE LAYOUT

SL1. PLANS CONTAIN LOCATIONS AND ELEVATIONS FOR BENCHMARKS. IN ESTABLISHING PROJECT CONTROL THE CONTRACTOR SHALL UTILIZE A MINIMUM OF TWO BENCHMARKS. IF ANY DISCREPANCY IS FOUND BETWEEN THE BENCHMARKS, THE CONTRACTOR SHALL CONTACT THE ENGINEER BEFORE STARTING ANY WORK.

SL2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PROPERTY CORNERS, OR CONTROL POINTS DAMAGED BY HIS ACTIVITIES AND SHALL BE RESET AT HIS EXPENSE.

INDEX OF CIVIL DRAWINGS

REV	DATE	DESCRIPTION

STATE OF TEXAS
JESSE F. CANTU II
93639
LICENSED
PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #10194365

KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

COVER SHEET W/GENERAL NOTES

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET:
C1.0

NOTE: CONTRACTOR TO OBTAIN TXDOT ROW PERMIT FOR REMOVAL OF DRIVEWAY AND CURB

PLAT NO-22-11800217

GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE ACCESS TO SITE WITH DRIVEWAY CONTRACTOR.

2. CONTRACTOR TO COORDINATE WITH LANDSCAPING PLAN PRIOR TO TREE REMOVAL.

3. CONTRACTOR SHALL COORDINATE WITH CITY INSPECTOR PRIOR TO COMMENCING WORK.

LEGEND

- UG — EXISTING GAS LINE
- OE OE OE — EXISTING OVERHEAD ELECTRIC
- PROPERTY LINE
- EASEMENT LINE
- EXISTING TREES

DEMOLITION KEYED NOTES:

1. REMOVE EXISTING DRIVEWAY
2. REMOVE EXISTING 112 LF OF CURB AND GUTTER

NOTE: CONTRACTOR TO OBTAIN TXDOT ROW PERMIT FOR REMOVAL OF DRIVEWAY AND CURB

SCALE: 1" = 80'

REV	DATE	DESCRIPTION

STATE OF TEXAS — JESSE F. CANTU III — 93539 — LICENSED PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
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REGISTRATION #F-10573 / #101943-65

KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

EXISTING SITE & DEMOLITION PLAN

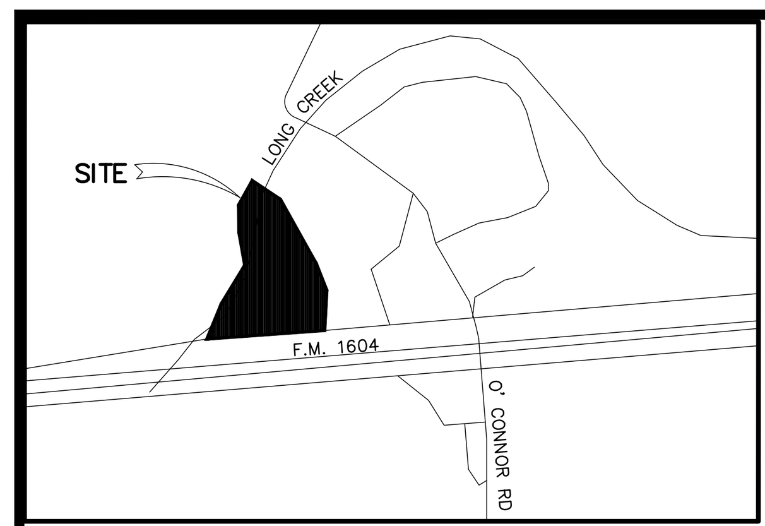
DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:			7/6/2023
KCI JOB #:			7622E0677801

SHEET: C2.0

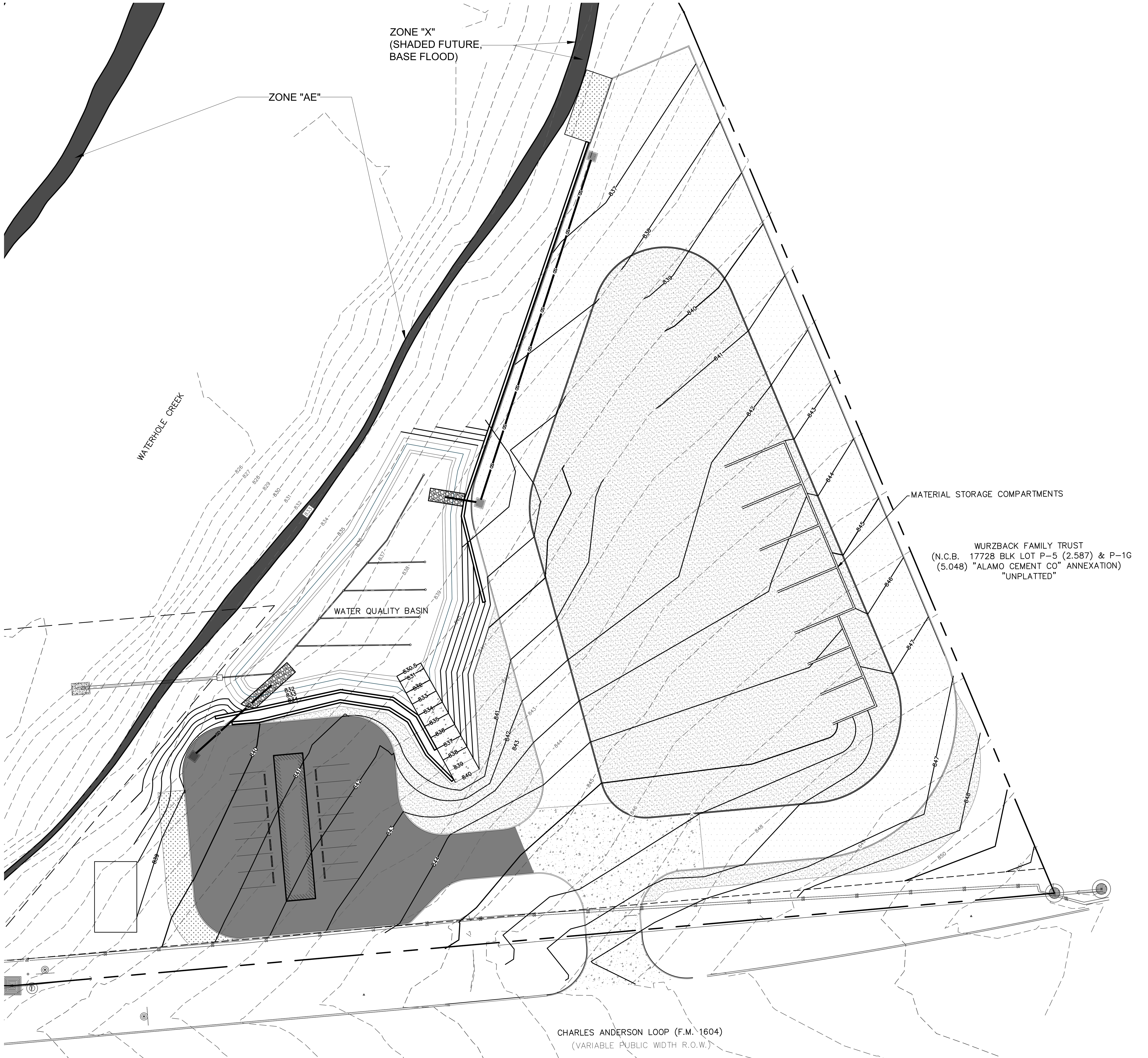
Date: Aug 25, 2023, 9:40am User ID: angel.alvarado File: L:\Develop\Proj_2022_2Q\7622E0677801_Thomas_Stone_and_Alvarado\CAD\7622E0677801-C2.0 Existing Conditions & Demolition Plan.dwg

PLAT NO-22-11800217

SCALE: 1" = 30'



LOCATION MAP
N.T.S.



LEGEND

- LIGHT DUTY ASPHALT
- HEAVY DUTY CONCRETE
- GRAVEL YARD BASE
- DRIVE AREA BASE
- VEGETATIVE FILTER STRIPS
- EXISTING HERITAGE TREES TO REMAIN
- PROPOSED STORM DRAIN
- PROPOSED GRATE INLET
- SANITARY SEPTIC AREA

REV	DATE	DESCRIPTION

STATE OF TEXAS
JESSE F. CANTU II
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KCI TECHNOLOGIES, INC.
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REGISTRATION #F-10573 / #101943-65

BAUMSQUAD BROTHERS DEVELOPMENT

PROPOSED SITE PLAN

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		
SHEET:	C3.0		

Date: Aug 25, 2023, 9:31am User ID: angel.elizondo File: L:\develop\Proj_2022_KCI\7622E0677801_Thomas_Stone_and_Materials\CAD\7622E0677801-C3.0 Proposed Site Plan.dwg

PLAT NO-22-11800217

LEGEND

UG	EXISTING GAS LINE
OE	EXISTING OVERHEAD ELECTRIC
	PROPERTY LINE
	LIGHT DUTY ASPHALT
	HEAVY DUTY CONCRETE
	GRAVEL YARD BASE
	DRIVE AREA BASE
	VEGETATIVE FILTER STRIPS
#	REFER TO SHEET C12 FOR CORRESPONDING DETAIL NUMBER

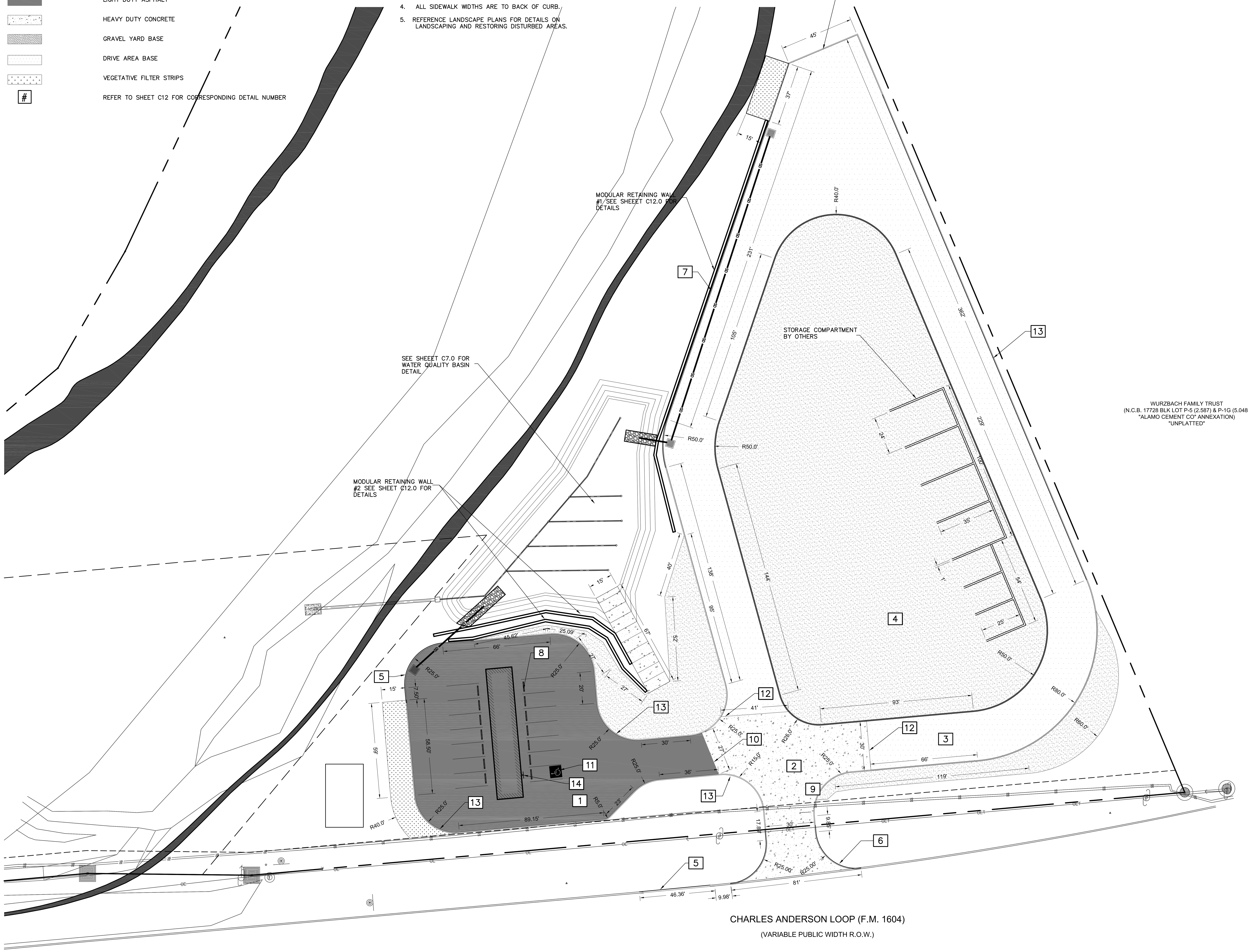
GENERAL NOTES

1. ALL RADII ARE TO FACE OF CURB.
2. ALL DIMENSIONS ARE TO FACE OF CURB.
3. ALL CURBS ARE 6" (WIDTH) UNLESS NOTED OTHERWISE.
4. ALL SIDEWALK WIDTHS ARE TO BACK OF CURB.
5. REFERENCE LANDSCAPE PLANS FOR DETAILS ON LANDSCAPING AND RESTORING DISTURBED AREAS.

TOTAL PARKING

STALLS	TOTAL
REGULAR	13
HANDICAP	1

SCALE: 1" = 30'



REV	DATE	DESCRIPTION

STATE OF TEXAS
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KCI TECHNOLOGIES, INC.
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REGISTRATION #F-10573 / #101943-65

KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

DIMENSION CONTROL PLAN

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET:
C4.0

PLAT NO-22-11800217

SCALE: 1" = 30'

LEGEND

Symbol	Description
—UG—	EXISTING GAS LINE
—OE—OE—OE—	EXISTING OVERHEAD ELECTRIC
— — —	PROPERTY LINE
	LIGHT DUTY ASPHALT
	HEAVY DUTY CONCRETE
	GRAVEL YARD BASE
	DRIVE AREA BASE
	VEGETATIVE FILTER STRIPS
839	EXISTING CONTOURS
839	PROPOSED CONTOURS
PAV	PAVEMENT
TW	TOP OF WALL
TC	TOP OF CURB
EX NG	EXISTING NATURAL GROUND
TG	TOP OF GRATE
BW	BACK OF WALL

TOTAL PARKING

STALLS	TOTAL
REGULAR	13
HANDICAP	1

NOTE: SEE SHEET TP1.1-TP1.7 FOR TREE AND LANDSCAPE SHEETS

DRAINAGE IMPACT STATEMENT:
THE INCREASED RUNOFF RESULTING FROM PORPOSED DEVELOPMENT WILL NOT PRODUCE A SIGNIFICANT ADVERSE IMPACT TO OTHER PROPERTIES, HABITABLE STRUCTURES OR DRAINAGE INFRASTRUCTURE SYSTEMS TO A POINT 2,000 FEET DOWNSTREAM. DOWNSTREAM CONDITIONS (INCLUDING ACTUAL CURB DEPTH) IN THIS REACH HAVE BEEN FIELD VERIFIED BY MYSELF OR MEMBERS OF MY STAFF. THEREFORE, THE OWNER REQUEST TO PARTICIPATE IN THE REGIONAL STORM WATER MANAGEMENT PROGRAM BY PAYING A FEE-IN-LIEU-OF ONSITE DETENTION.

REV	DATE	DESCRIPTION

STATE OF TEXAS
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KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

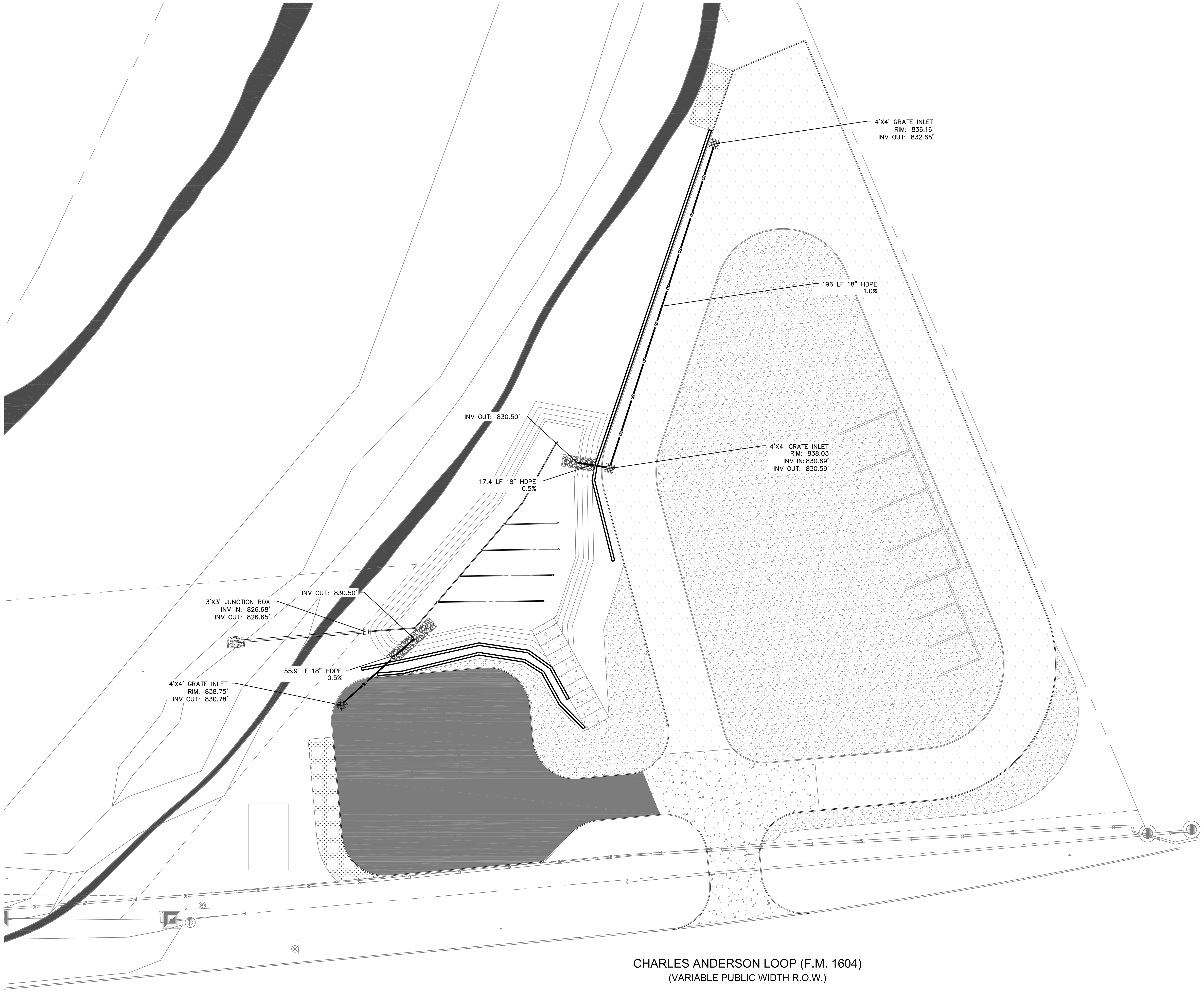
SITE GRADING PLAN

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET:
C5.0

PLAT NO-22-11800217

SCALE: 1" = 30'



CHARLES ANDERSON LOOP (F.M. 1604)
(VARIABLE PUBLIC WIDTH R.O.W.)

REV	DATE	DESCRIPTION

STATE OF TEXAS
JESSE F. CANTU II
93639
LICENSED
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REGISTRATION #F-10573 / #101943-65

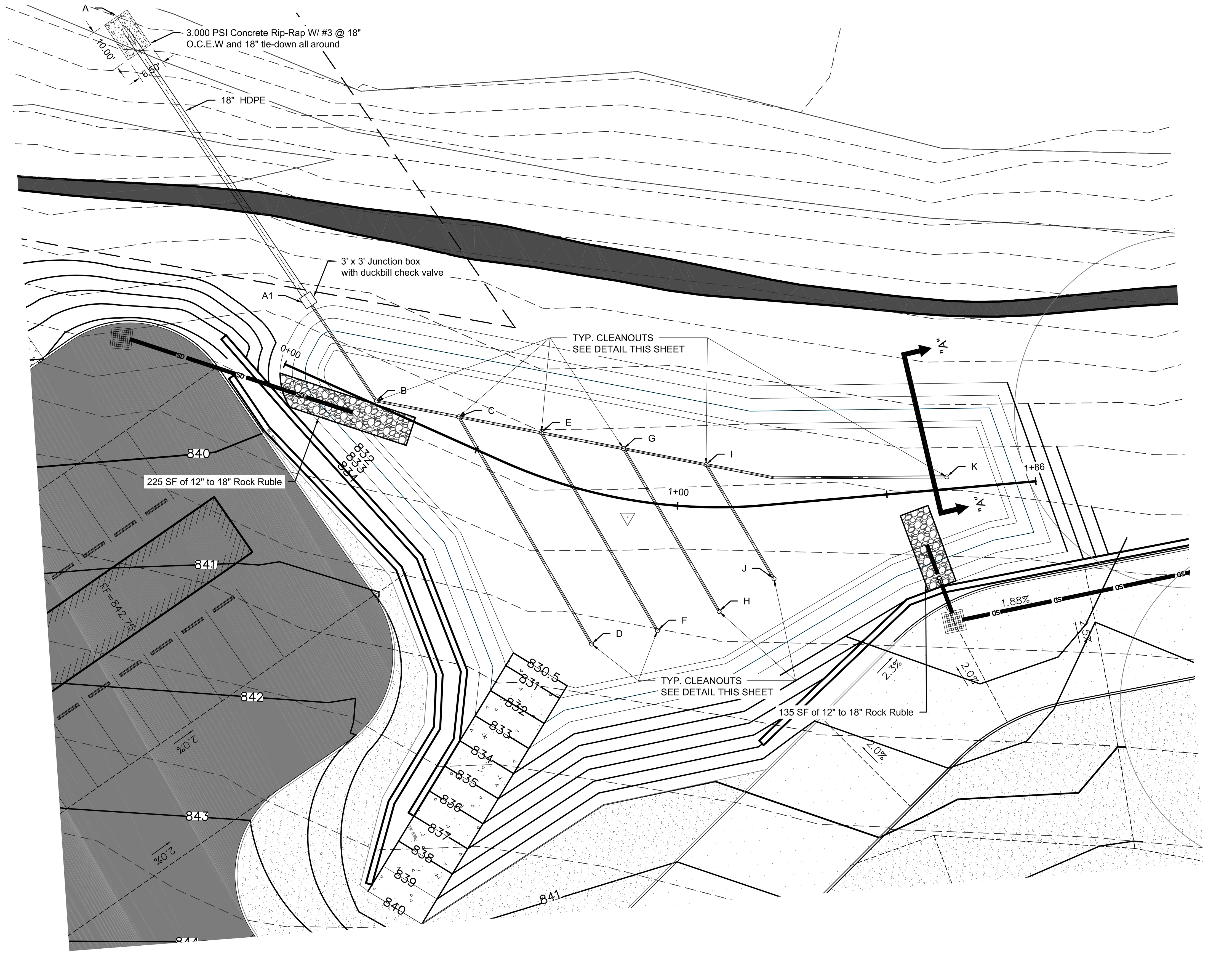
BAUMSQUAD BROTHERS DEVELOPMENT

UTILITY AND GRADING PLAN

DRAFTING: A.J.	CHECK: J.C.
DESIGN: A.J.	CHECK: J.C.
SUBMITTAL PHASE:	
DATE:	7/6/2023
KCI JOB #:	7622E0677801
SHEET:	C6.0

PLAT NO-22-11800217

SCALE: 1" = 20'



SAND FILTRATION BASIN

STA. 0+00 TO STA. 1+86

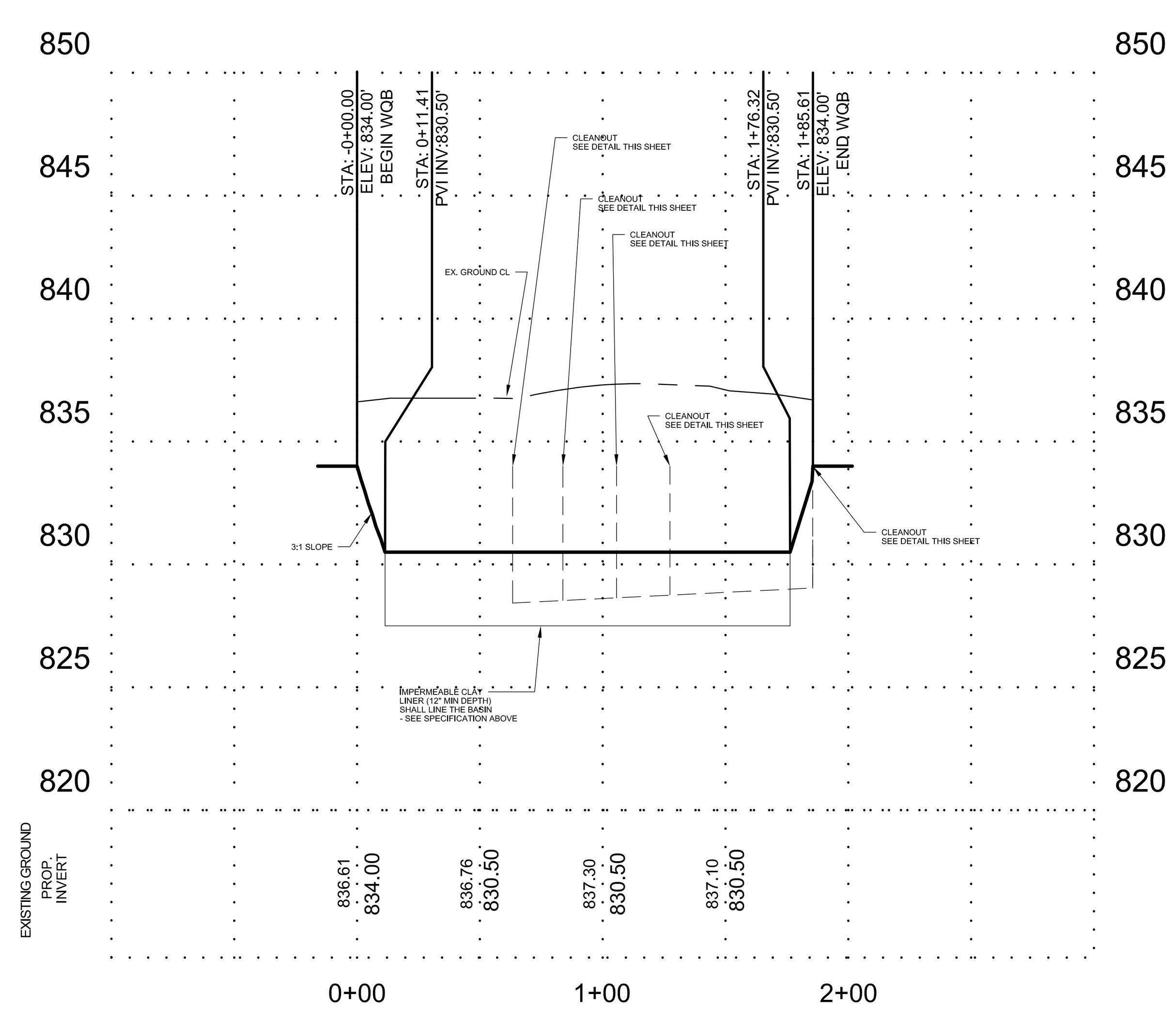
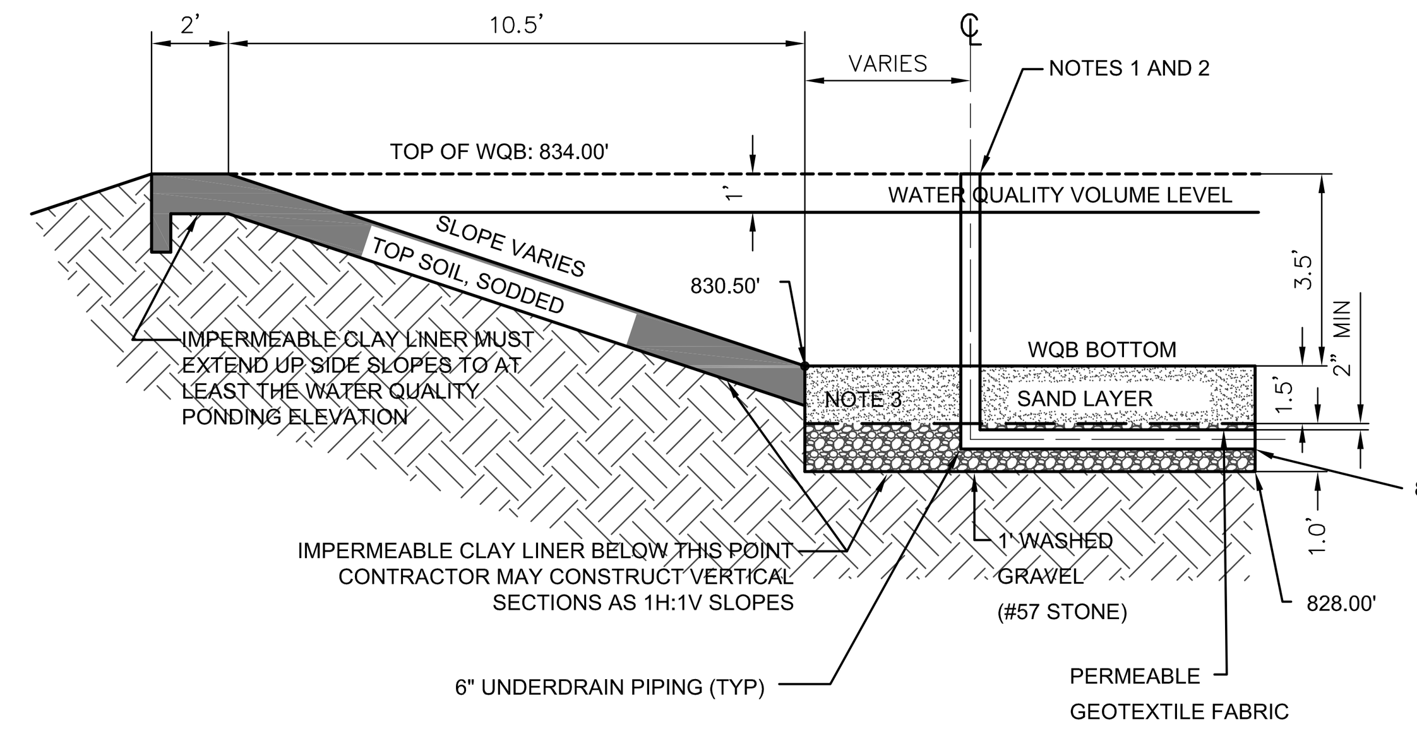


TABLE 3-7 GEOTEXTILE FABRIC SPECIFICATIONS - CITY OF AUSTIN 2004			
PROPERTY	TEST METHOD	UNIT	SPECIFICATION MIN
UNIT WEIGHT		OZ/SY	8
FILTRATION RATE		IN/SEC	0.08
PUNCTURE STRENGTH	ASTM D-751*	LBS	125
MULLEN BURST STRENGTH	ASTM D-751*	PSI	400
TENSILE STRENGTH	ASTM D-1682	LBS	200
EQUIVALENT OPENING SIZE	US STANDARD SIEVE	NO	80

PERMEABLE GEOTEXTILE FABRIC SHALL BE NONWOVEN GEOTEXTILE FABRIC AND MEET SPECIFICATIONS IN TABLE 3-7. GEOTEXTILE FABRIC SHALL BE INSTALLED BETWEEN THE SAND LAYER AND THE 1' WASHED GRAVEL LAYER AS SHOWN IN DETAIL 1 SECTION R-R BELOW.



SECTION A-A

N.T.S

NOTE 1:
6" PVC CLEANOUT WITH SCREW-CAP, TOP @ 6" ABOVE SAND ELEVATION.

NOTE 2:
UNDERDRAIN PIPING SHALL CONFORM TO REF 1 3.4.7 (5) PAGE 3-59: 'THE UNDERDRAIN PIPE SHOULD CONSIST OF A MAIN COLLECTOR PIPE AND TWO OR MORE LATERAL BRANCH PIPES, EACH WITH A DIAMETER OF 6 INCHES. THE PIPES SHOULD BE SPACED AT INTERVALS OF NO MORE THAN 10 FEET. THERE SHOULD BE NO FEWER THAN TWO LATERAL BRANCH PIPES. EACH INDIVIDUAL UNDERDRAIN PIPE SHOULD HAVE A SCREW-ON CLEANOUT ACCESS LOCATION NO MORE THAN 95 FEET APART. ALL PIPING IS TO BE SCHEDULE 40 PVC WITH A 1% SLOPE. THE MAXIMUM SPACING BETWEEN ROWS OF PERFORATIONS SHOULD NOT EXCEED 6 INCHES. A SINGLE GATE VALVE SHALL BE PLACED AT THE DOWNSTREAM DISCHARGE POINT.

NOTE 3:
18" WASHED CONCRETE SAND, ASTM C-33 FINE AGGREGATE

NOTE 4:
MONITORING WELL SHALL BE CLEANOUT AT THE TOP OF THE BERM ON THE UNDERDRAIN LINE, UPSTREAM OF THE VALVE.

IMPERMEABLE LINERS SHALL BE CONSTRUCTED AS PER THE TABLE 3-6 UNDER SECTION 3.4.2 BASIN LINING REQUIREMENTS FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RG-348 COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES MANUAL. CLAY LINERS SHOULD MEET THE SPECIFICATION NOTED BELOW AND HAVE A MINIMUM THICKNESS OF 12 INCHES.

TABLE 3-6 CLAY LINER SPECIFICATIONS (CITY OF AUSTIN, 2004)

PROPERTY	TEST METHOD	UNIT	SPECIFICATION
Permeability	ASTM D-2434	cm/sec	1×10^{-6}
Plasticity Index of Clay	ASTM D-423 & D-424	%	Not less than 15
Liquid Limit of Clay	ASTM D-2216	%	Not less than 30
Clay Particles Passing	ASTM D-422	%	Not less than 30
Clay Compaction	ASTM D-2216	%	95% of Standard Proctor Density

NTS

CLAY LINER SPECIFICATIONS

LEGEND

- SD — PROPOSED STORM DRAIN
- 839 — PROPOSED CONTOURS
- LIGHT DUTY ASPHALT
- GRAVEL YARD BASE
- DRIVE AREA BASE

UNDERDRAIN PIPING:
POINT A:
INVERT ELEVATION: 825.84'
80 LF 18" HDPE @ 1.0% SLOPE
POINT A1:
INVERT IN ELEVATION: 826.68'
INVERT OUT ELEVATION: 826.65'
27.42 LF 6" PVC @ 1.0% SLOPE
POINT B:
CLEANOUT
INVERT ELEVATION: 826.95'
20.00 LF 6" PVC @ 1.0% SLOPE
POINT C:
CLEANOUT
INVERT ELEVATION: 827.15'
20.00 LF 6" PVC @ 1.0% SLOPE
POINT D:
CLEANOUT
INVERT ELEVATION:828.33 '
62.71 LF 6" PVC @ 1.8% SLOPE
POINT E:
CLEANOUT
INVERT ELEVATION: 827.35'
20.00 LF 6" PVC @1.0% SLOPE
POINT F:
CLEANOUT
INVERT ELEVATION: 828.33'
54.67 LF 6" PVC @ 1.7% SLOPE
POINT G:
CLEANOUT
INVERT ELEVATION: 827.55'
20 LF 6" PVC @ 1.0% SLOPE
POINT H:
CLEANOUT
INVERT ELEVATION: 828.33'
44.96 LF 6" PVC @ 1.7% SLOPE
POINT I:
CLEANOUT
INVERT ELEVATION: 827.75'
57.51 LF 6" PVC @ 1.0% SLOPE
POINT J:
CLEANOUT
INVERT ELEVATION: 828.33'
31.65 LF 6" PVC @ 1.8% SLOPE
POINT K:
CLEANOUT
INVERT ELEVATION: 828.33'

WQB LATERAL PROFILE DATA

Series DBCP

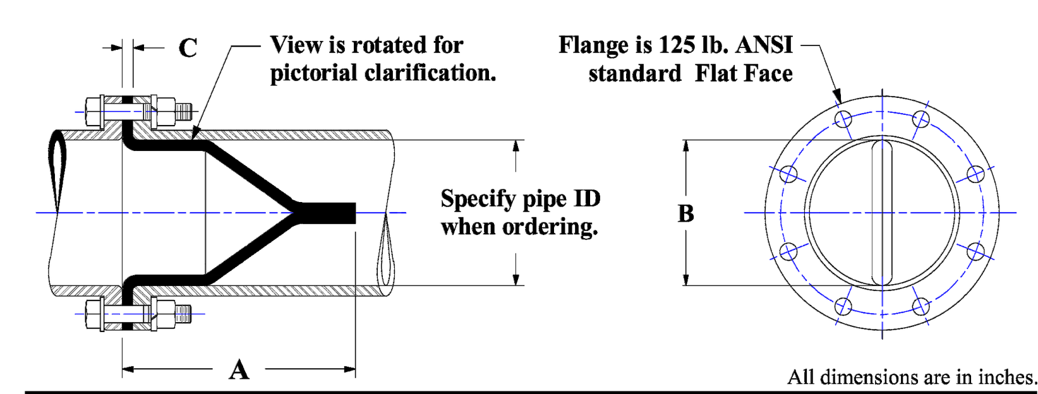
In - Line Check Valve

The series DBCP in-line check valve is a simple, reliable, cost effective method of backflow prevention. The series DBCP check valve is designed to be installed between two mating flanges.

The simple maintenance-free elastomer with a flanged connection eliminates the mechanical parts which can wear and jam in conventional check valves. For installation at the end of pipe line, the valve can be ordered with optional back up flanges.

Performance Features:
- Low pressure drop
- Frost proof
- Silent operation
- Corrosion resistant

Options:
- Sleeve Elastomer
- Back up Flange available for service at the end of pipe line



All dimensions are in inches.

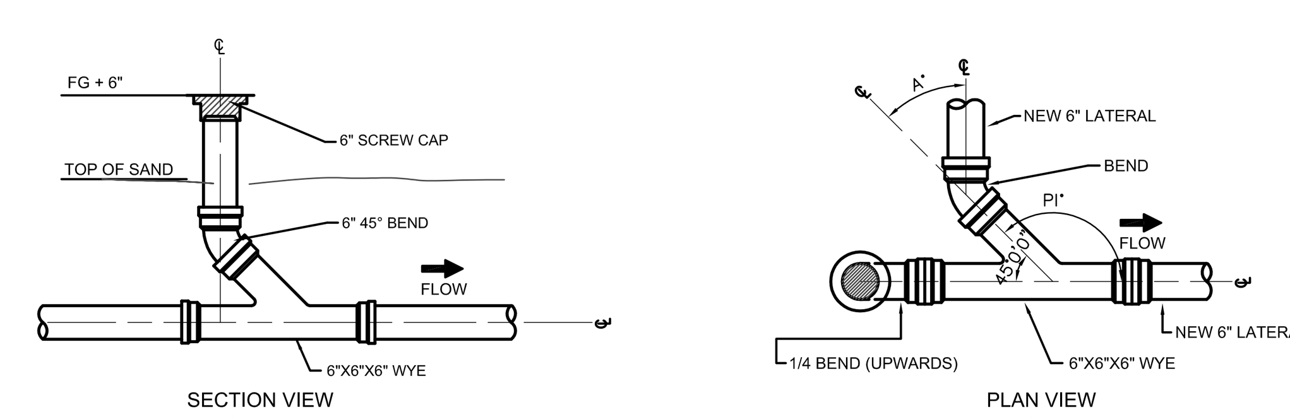
SIZE	1	1.5	2	2.5	3	4	5	6	8	10
A	3.00	5.00	6.00	8.00	8.50	13.00	15.00	18.00	17.00	20.00
B	0.87	1.37	1.75	2.25	2.75	3.75	4.50	5.50	7.50	9.50
C	0.37								0.50	
Wt, lb	3	4	5	8	10	15	17	20	25	35

SIZE	12	14	16	18	20	24
A	21.00	21.00	27.00	28.00	32.00	40.00
B	11.25	12.50	14.00	16.00	18.00	22.00
C	0.50	0.62	0.75			
Wt, lb	60	75	120	200	300	400

ONYX VALVE CO

835 Industrial Hwy
Ph: 856-829-2888
www.onyxvalve.com
Cinnaminson NJ 08077
Fax: 856-829-3080

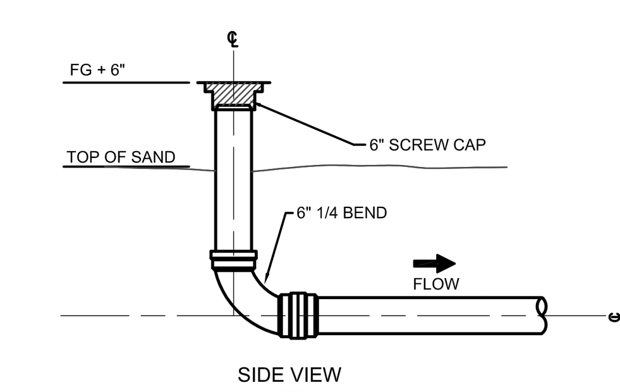
3



CLEANOUT A DETAIL

AT 180° DEFLECTION (STRAIGHT)

NTS



CLEANOUT B DETAIL

CLEANOUT AT END OF UNDERDRAIN

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

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REGISTRATION #F-10573 / #101943-65

BAUMSQUAD BROTHERS DEVELOPMENT

TCEQ WATER QUALITY BASIN PLAN

REV	DATE	DESCRIPTION

DRAFTING: A.J.	CHECK: J.C.
DESIGN: A.J.	CHECK: J.C.
SUBMITTAL PHASE:	
DATE:	7/6/2023
KCI JOB #:	7622E0677801
SHEET:	C7.0

NOT USED

PLAT NO-22-11800217

SHEET: C8.0

KCI JOB #: 7622E067801

DATE: 7/6/2023

SUBMITTAL PHASE:

DESIGN: A.J.J. CHECK: J.C.F.

DRAFTING: A.J.J. CHECK: J.C.F.

BAUMSQUAD BROTHERS DEVELOPMENT

DO NOT USE

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STATE OF TEXAS
JESSE F. CANTU II
93639
LICENSED
PROFESSIONAL ENGINEER

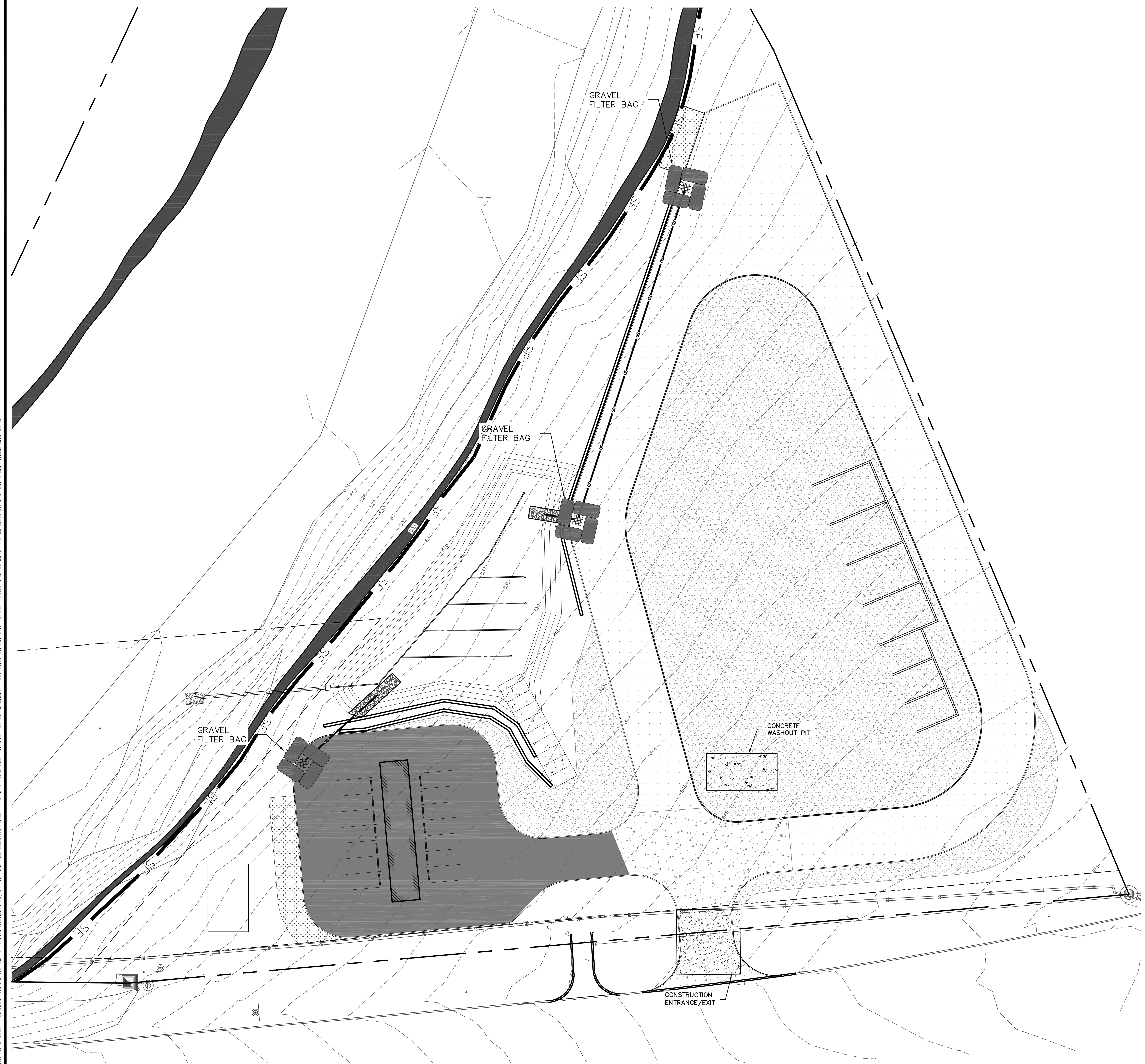
REV	DATE	DESCRIPTION

PLAT NO-22-11800217

SCALE: 1" = 50'

LEGEND

- SF — SILT FENCE
- CONSTRUCTION ENTRANCE/EXIT
- CONCRETE WASHOUT PIT



SITE DESCRIPTION

PROJECT LOCATION:
4235 E. Loop 1604 San Antonio, Texas

PROJECT DESCRIPTION:
Construction of asphalt parking, gravel yard base, landscpae storage material compartments, storm drain and water quality basin.

MAJOR SOIL DISTURBING ACTIVITIES:
Excavation work and for the construction of parking lots and water quality basin.

TOTAL PROJECT AREA: 12.63 Acres

TOTAL AREA TO BE DISTURBED: 3.67 Acres

WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): 0.95

EXISTING CONDITION OF SOIL AND VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:
Existing site is approximately 95% grassed area in average condition. Remainder is soil.

NAME OF RECEIVING WATERS:
Water Hole Creek

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- ___ TEMPORARY SEEDING
- X PERMANENT PLANTING, SODDING, OR SEEDING
- ___ MULCHING
- ___ SOIL RETENTION BLANKET
- ___ BUFFER ZONES
- X PRESERVATION OF NATURAL RESOURCES

OTHER:

STRUCTURAL PRACTICES:

- X SILT FENCES
- ___ HAY BALES
- ___ ROCK BERMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- ___ ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- X CURBS AND GUTTERS
- ___ STORM SEWERS
- ___ VELOCITY CONTROL DEVICES
- X GRAVEL FILTER BAGS

OTHER:

NARRATIVE – SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

PHASE I:
1. Install silt fence

PHASE II:
1. Construct proposed parking lots, WQB, and gravel yard.

PHASE III:

PHASE IV:

PHASE V:

STORM WATER MANAGEMENT:
WQB has been designed to treat the onsite water before it releases to waterhole creek.

OTHER EROSION & SEDIMENT CONTROLS:

MAINTENANCE:
All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to drainageways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION:
An inspection will be performed by the owner or contractor's representative every week as well as after every half inch or more of rain (as recorded on a non–freezing rain gauge to be located at the Project Site). An inspection and Maintenance Report will be made per each Inspection. Based on the inspection results, the controls shall be revised per the inspection report.

WASTE MATERIALS:
All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will meet all state and local city solid waste management regulations. All trash and construction debris form the site will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulations and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):
At a minimum, any products in the following categories are considered to be hazardous: paints, acids for cleaning, masonry surfaces, cleaning solvents, asphalt products, chemical additives for soil stabilization or concrete curing compounds & additives. In the event of a hazardous material spill, the spill coordinator shall be contacted immediately.

SANITARY WASTE:
All sanitary waste will be collected from portable units as necessary, or as required by local regulations by a Licensed Sanitary Waste Management Contractor.

OFFSITE VEHICLE TRACKING:

- ___ HAUL ROADS DAMPENED FOR DUST CONTROL
- X EXCESS DIRT ON ROAD REMOVED ON A REGULAR BASIS.
- X STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS:
Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are are not a part of the finished work.

REV	DATE	DESCRIPTION

STATE OF TEXAS — JESSE F. CANTU II — 93639 — LICENSED PROFESSIONAL ENGINEER

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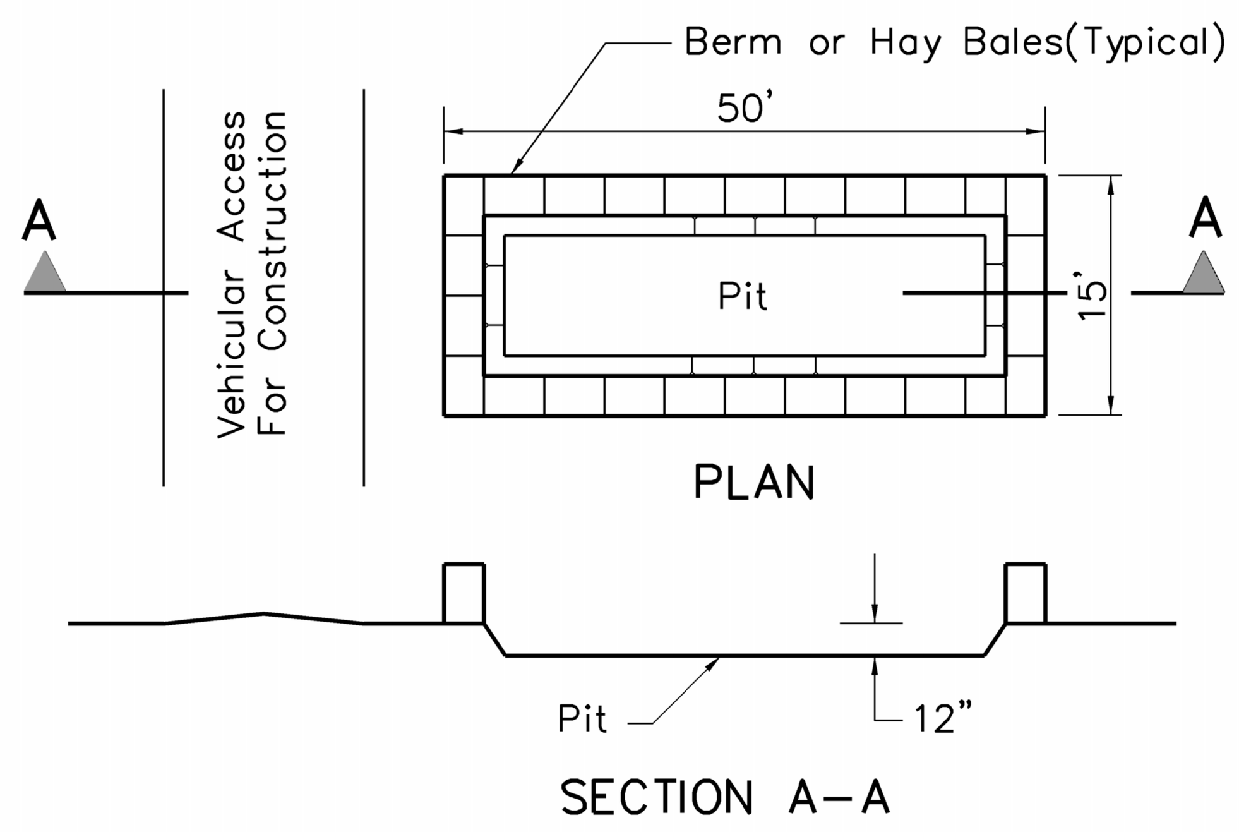
BAUMSQUAD BROTHERS DEVELOPMENT

STORM WATER POLLUTION PREVENTION PLAN

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		
SHEET:	C9.0		

Date: Aug 25, 2023, 9:45am User ID: angel.elizondo File: L:\develop\Proj_2022_KCI\7622E0677801_Thomas_Stone_and_Materials\CAD\7622E0677801-C9.0 Storm Water Pollution Prevention Plan.dwg

PLAT NO-22-11800217



NOTES:

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. IF HAY BALES ARE USED, THEY SHALL BE PLACED IN ACCORDANCE WITH DETAILS SHOWN ON EXHIBIT FOR HAY BALES.

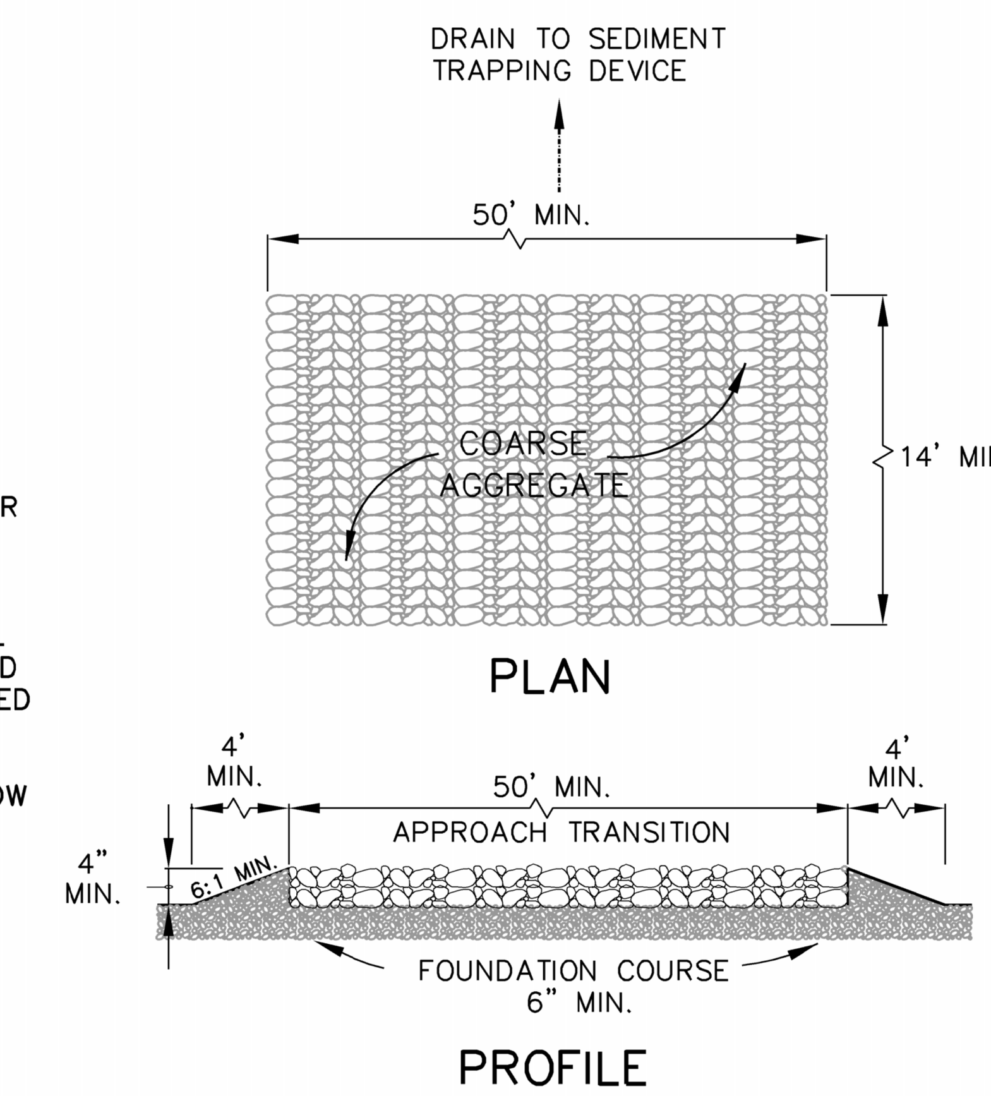
3. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

4. WASHOUT PIT SHALL NOT BE LOCATED IN AREA SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

CONCRETE TRUCK WASHOUT PIT

NOTES:

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS. BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE. BITUMINOUS CONCRETE. PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.



CONSTRUCTION ENTRANCE/EXIT (TYPE 1)

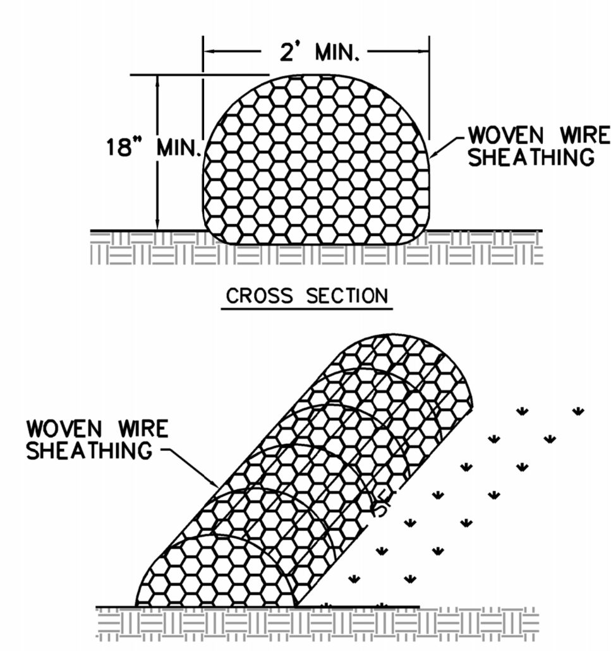
N.T.S.

CONTRACTOR MAY RELOCATE CONSTRUCTION ENTRANCE UPON APPROVAL BY ENGINEER

CONTRACTOR MAY RELOCATE CONSTRUCTION ENTRANCE UPON APPROVAL BY ENGINEER

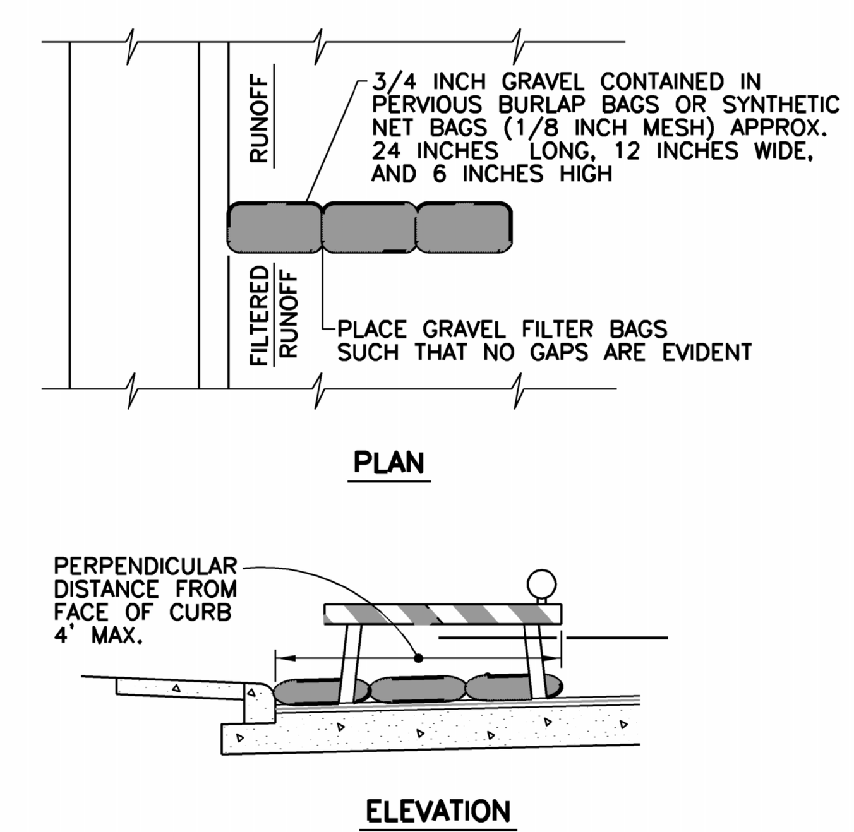
ROCK BERM GENERAL NOTES:

1. USE ONLY OPEN GRADED ROCK 4-8 INCH DIAMETER FOR STREAMFLOW CONDITION; USE OPEN GRADED ROCK 3-5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.
3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE- WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE AND IN A MANNER AS TO NOT TO CREATE ASILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SEVERE SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.



ROCK BERM

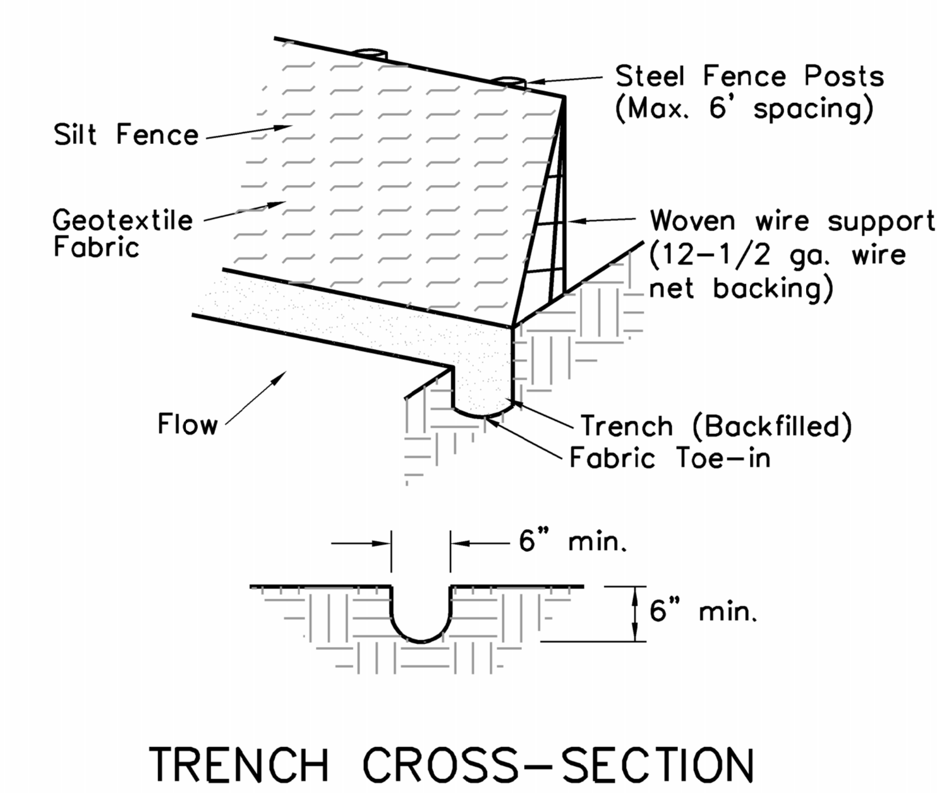
N.T.S.



NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS

N.T.S.



GENERAL NOTES:

1. Steelposts which support the silt fence shall be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of one foot.

2. The toe of the silt fence shall be trenched in with a spade or a mechanical trencher, so that the downslope face of the trench is flat and perpendicular to the line of flow. Where fence can not be trenched in (e.g. pavement) weight fabric flap with washed gravel on uphill side to prevent flow under fence.

3. The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be held in the ground and backfilled with compacted material.

4. Silt fence should be securely fastened to each steel support posts or to woven wire, which is in turn attached to the steel fence post.

5. Inspection shall be made weekly or after each rainfall event and repair or replacement shall be made promptly as needed.

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

7. Accumulated silt shall be removed when it reaches a depth of 6 inches. The silt shall be disposed of in an approved site and in such a manner as to not contribute to additional siltation.

SILT FENCE

N.T.S.

REV	DATE	DESCRIPTION

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KCI TECHNOLOGIES

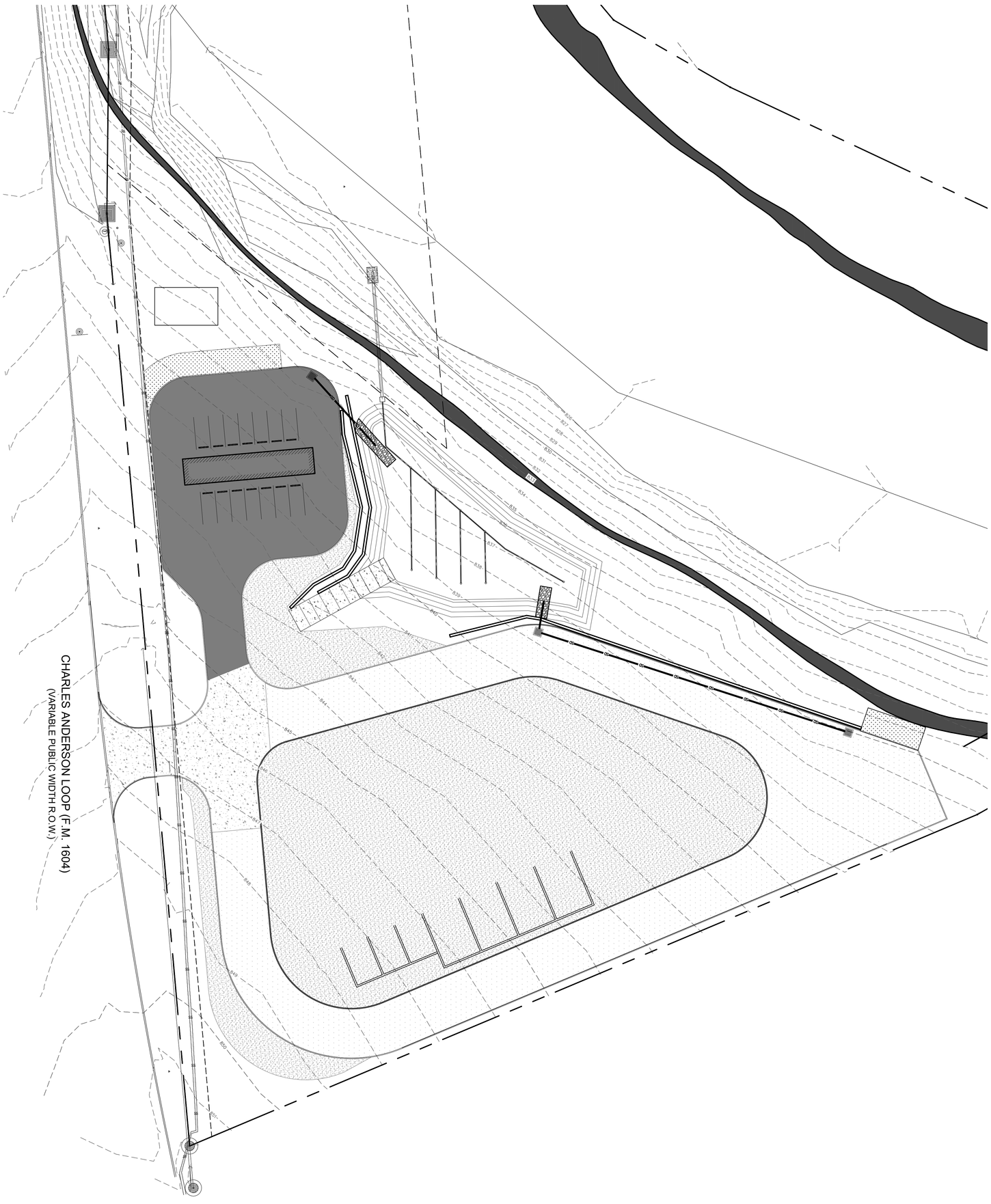
BAUMSQUAD BROTHERS DEVELOPMENT

SWPPP DETAILS

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET:
C10

Date: Jul 06, 2023, 4:19pm User ID: angel.elizondo File: L:\develop\Proj_2022_KCI\7622E0677801_Thomas_Stone_and_Materials\CAD\7622E0677801-C10.0 SWPPP Details.dwg



SCALE: 1" = 50'

PLAT NO-22-11800217

BAUMSQUAD BROTHERS DEVELOPMENT

FIRE PROTECTION PLAN

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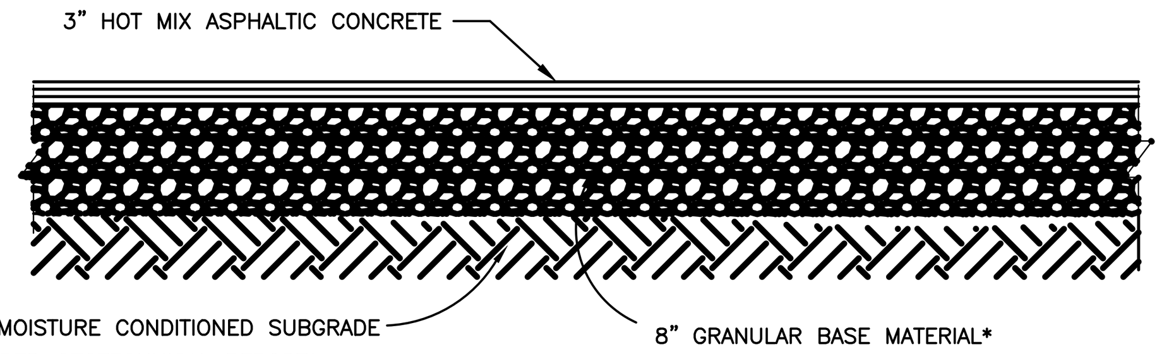
STATE OF TEXAS
JESSE F. CANTU II
93639
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

DRAFTING: A.J | CHECK: J.C
DESIGN: A.J | CHECK: J.C
SUBMITTAL PHASE:
DATE: 7/6/2023
KCI JOB #: 7622E067801

SHEET: C11.0

PLAT NO-22-11800217



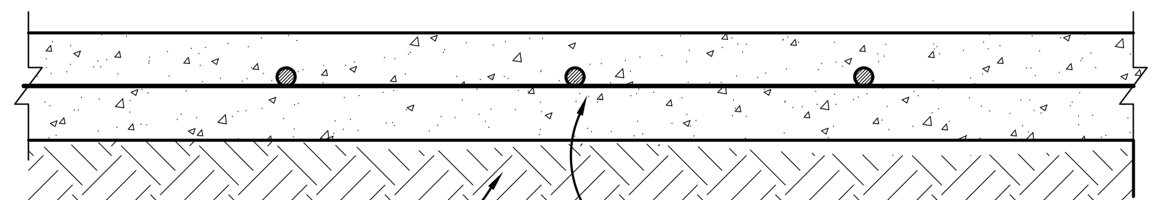
TRAFFIC TYPE	6" MOISTURE CONDITIONED SUBGRADE	8" GRANULAR BASE MATERIAL	3" HOT MIX ASPHALTIC CONCRETE
PARKING AREA ASPHALT PAVEMENT	6"	8"	3"

*AS PRESCRIBED IN GEOTECH REPORT PROVIDED BY TERRACON, PROJECT #90225365, JANUARY 27, 2023.

AUTOMOBILE PARKING ASPHALTIC LIGHT DUTY PAVEMENT SECTION

N.T.S.

1



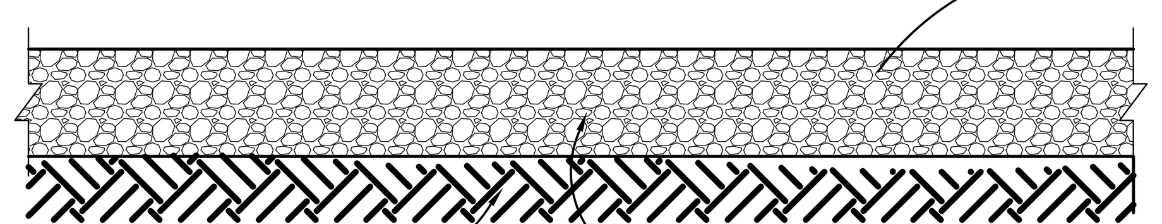
TRAFFIC TYPE	6" MOISTURE CONDITIONED SUBGRADE	8" REINFORCED CONCRETE
HEAVY DUTY CONCRETE PAVEMENT	6"	8"

*AS PRESCRIBED IN GEOTECH REPORT PROVIDED BY TERRACON, PROJECT #90225365, JANUARY 27, 2023.

HEAVY DUTY CONCRETE SECTION

N.T.S.

2



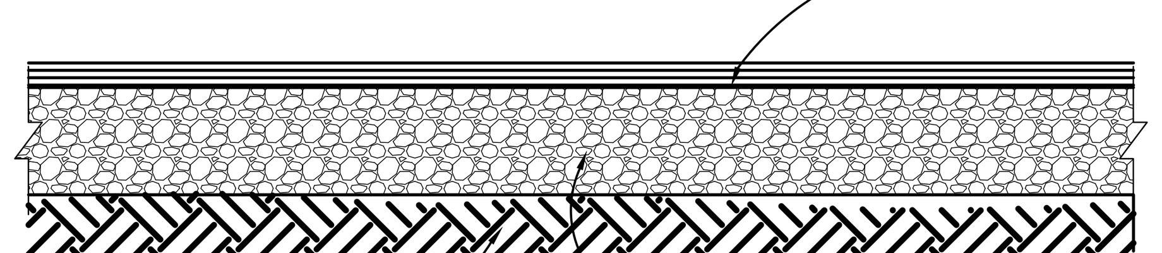
TRAFFIC TYPE	6" MOISTURE CONDITIONED SUBGRADE	6" GRANULAR BASE
GRAVEL YARD	6"	6"

*AS PRESCRIBED IN GEOTECH REPORT PROVIDED BY TERRACON, PROJECT #90225365, JANUARY 27, 2023.

GRAVEL YARD BASE SECTION

N.T.S.

3



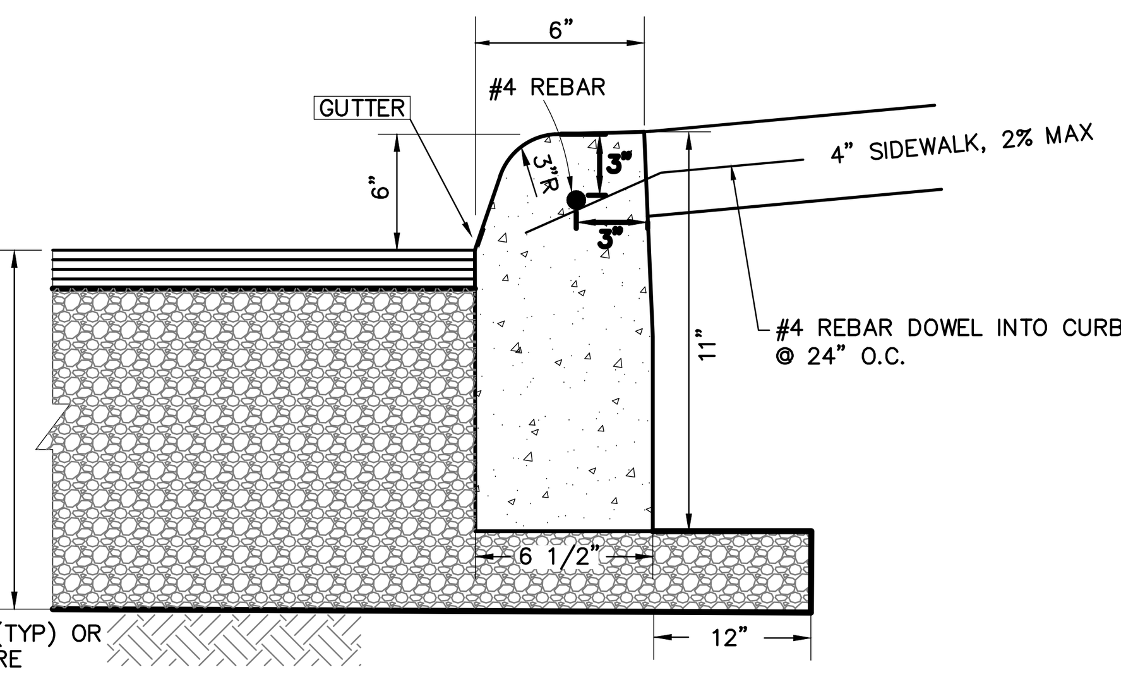
TRAFFIC TYPE	6" MOISTURE CONDITIONED SUBGRADE	14" GRANULAR BASE MATERIAL	HOT MIX ASPHALTIC CONCRETE
DRIVE AREA BASE	6"	14"	ASPHALT MILLS

*AS PRESCRIBED IN GEOTECH REPORT PROVIDED BY TERRACON, PROJECT #90225365, JANUARY 27, 2023.

DRIVE AREA BASE SECTION

N.T.S.

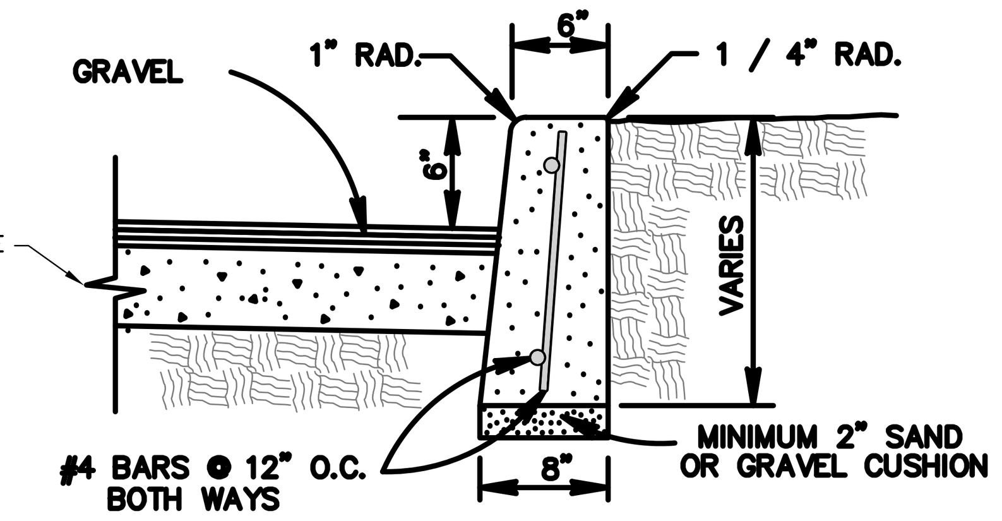
4



NOTE:
1. 1/2" DUMMY JOINTS @ 10' ON CENTER
2. 1/2" EXPANSION JOINT @ 40' ON CENTER (TYP) OR WHEN CURB ABUTS A CONCRETE STRUCTURE
3. CONCRETE SHALL BE f'c = 3,000 PSI, MAX 3" SLUMP
4. IF NO SIDEWALK REQUIRED AT BACK OF CURB BACKFILL/SLOPE AS SHOWN ON PLANS

CONCRETE CURB WITH ASPHALT PAVEMENT

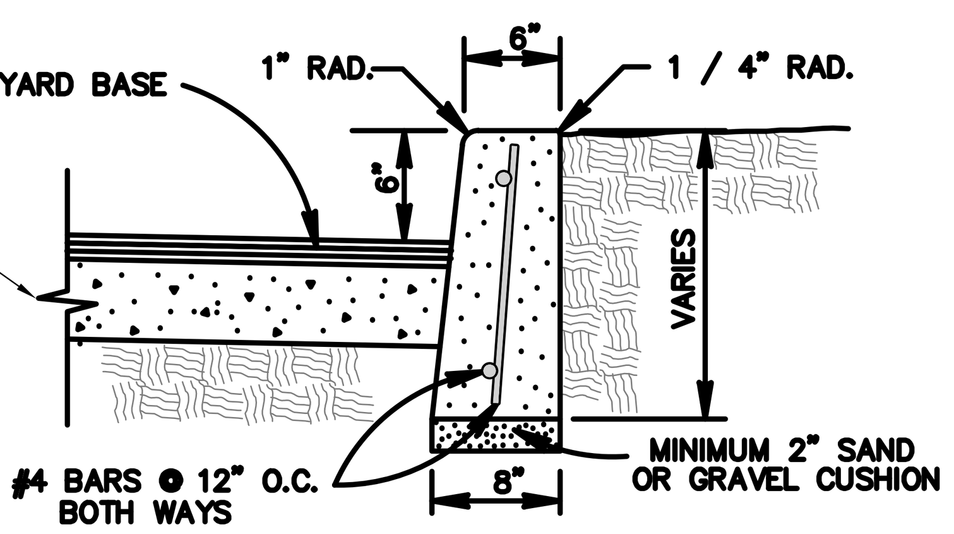
5



CURB DETAIL FOR CONCRETE PAVEMENT

N.T.S.

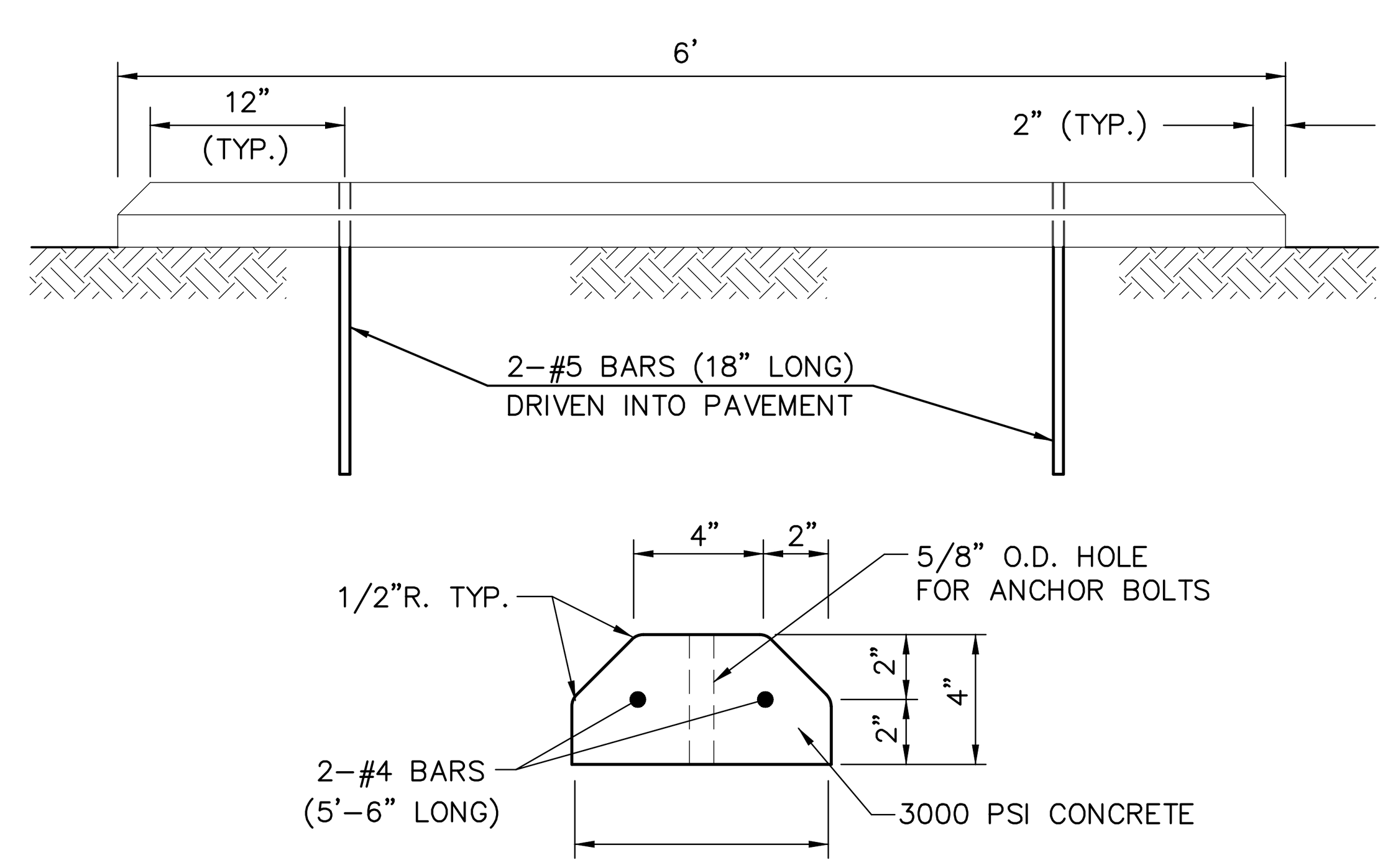
6



CURB DETAIL FOR GRAVEL YARD BASE PAVEMENT

N.T.S.

7

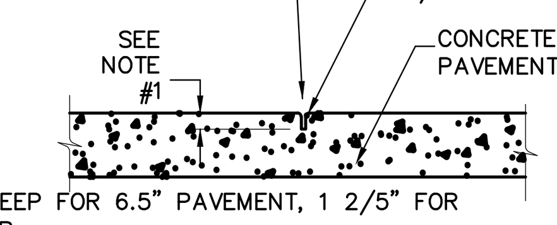


CONCRETE WHEEL STOP

N.T.S.

8

SAWCUT AS SOON AS THE CONCRETE IS STRONG ENOUGH TO SUPPORT THE SAWING EQUIPMENT AND TO PREVENT AGGREGATE RAVELING DURING THE SAWING OPERATION. ALL JOINTS SHOULD BE SAW CUT WITHIN 12 HOURS OF THE CONCRETE'S PLACEMENT. JOINTS SHALL BE FILLED WITH AN APPROVED ELASTIC TYPE MATERIAL AFTER SAW CUTTING.

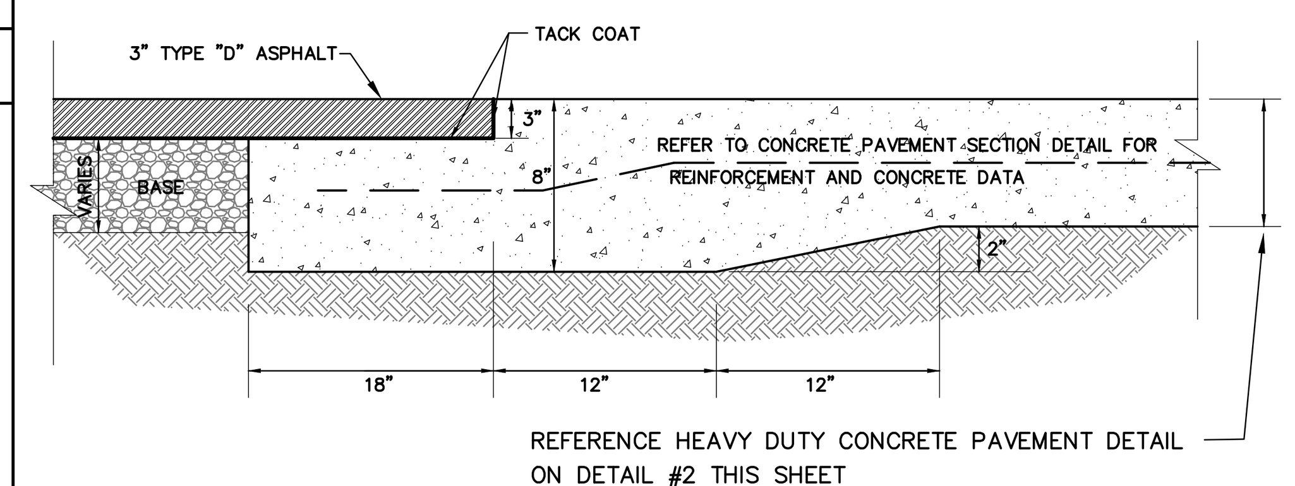


NOTE :
1. PLACE SAWED JOINTS (1 2/3" DEEP FOR 6.5" PAVEMENT, 1 2/5" FOR 5.5" PAVEMENT @ 11' ON CENTER.
2. RECOMMENDED JOINT SPACING'S ARE 15 FT. LONGITUDINAL AND 15 FT. TRANSVERSE
3. CONTINUE CONTROL JOINTS THROUGH CURB (TYPICAL)

(CONCRETE PAVEMENT) CONTROL JOINT DETAIL

N.T.S.

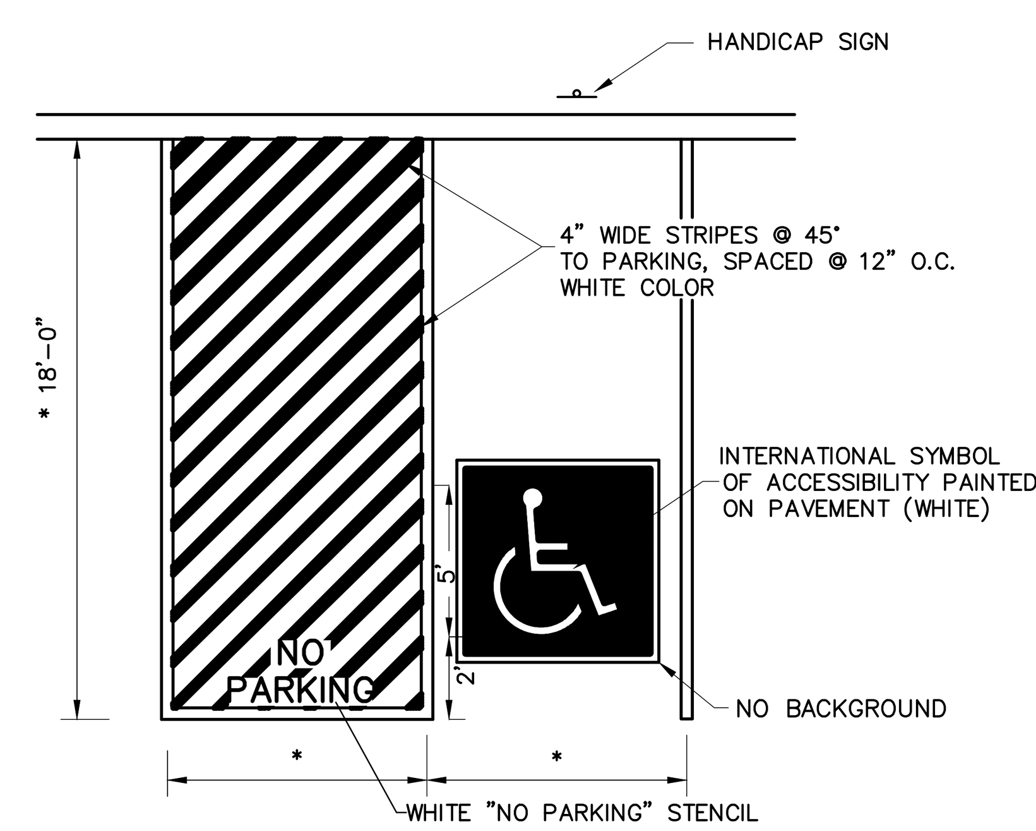
9



CONCRETE/ASPHALT PAVEMENT JUNCTION DETAIL

N.T.S.

10



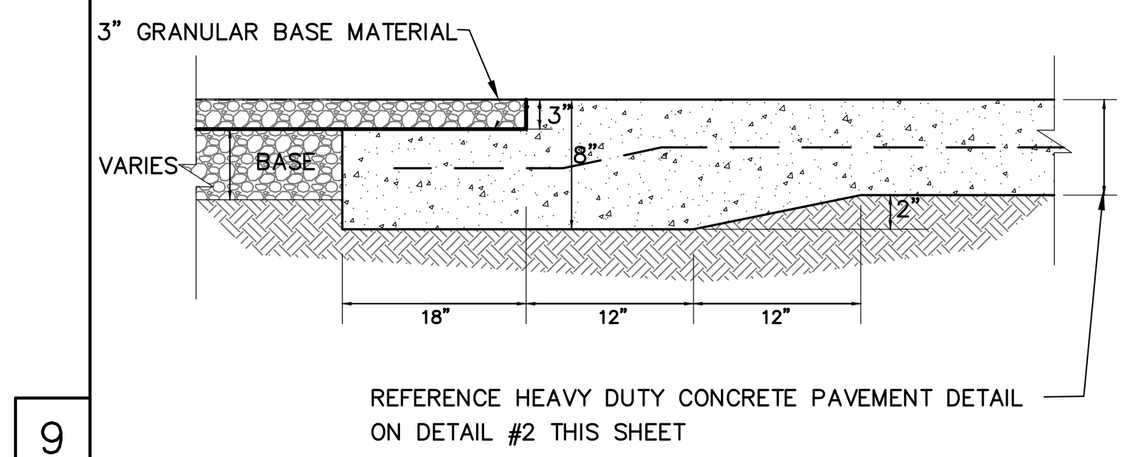
* SEE DIMENSIONAL SITE PLAN FOR SIZE (8' MIN.)

HANDICAP MARKINGS

N.T.S.

11

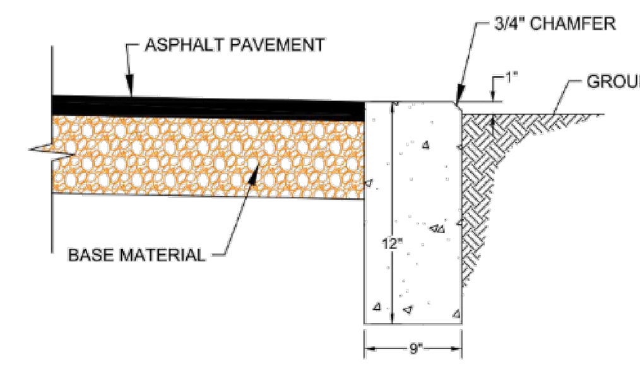
REFER TO CONCRETE PAVEMENT SECTION DETAIL FOR REINFORCEMENT AND CONCRETE DATA



CONCRETE/GRANUAL BASE JUNCTION DETAIL

N.T.S.

12



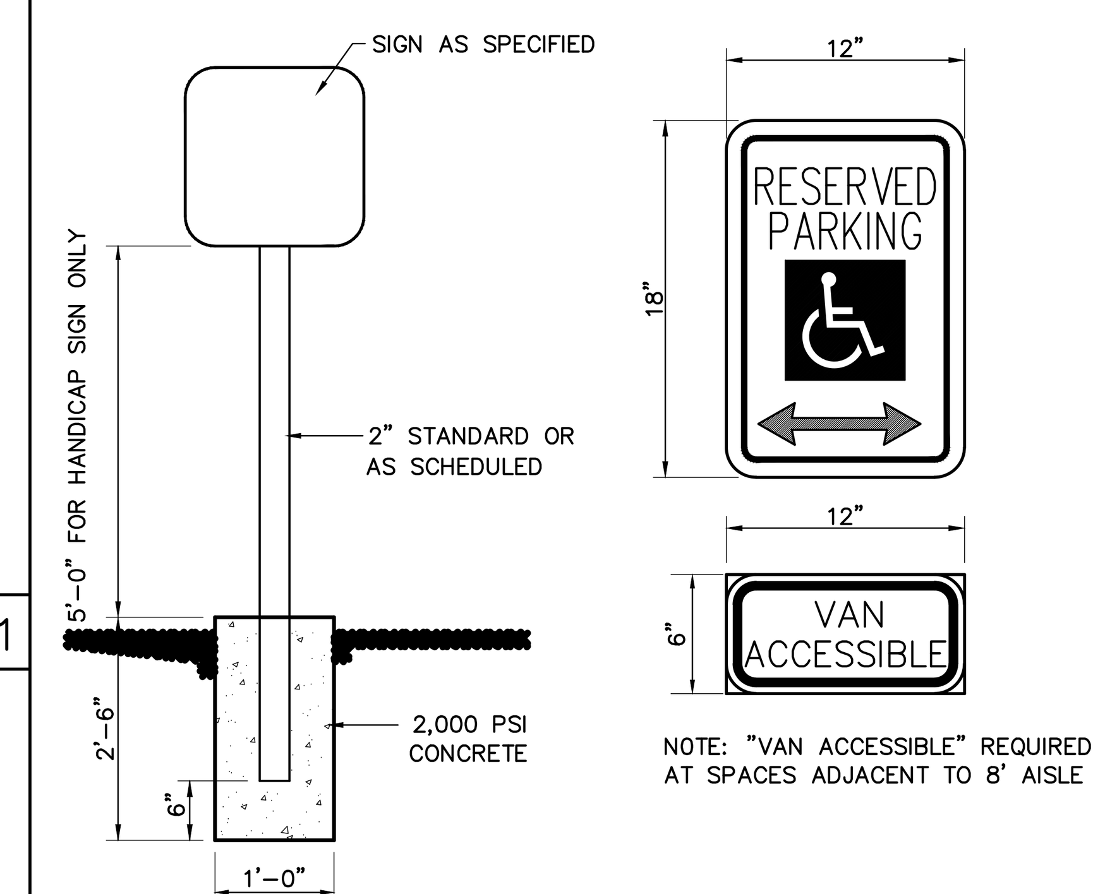
FLUSH CURB

(NOT TO SCALE)

TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12
8	1	18	12
9	1 1/4	18	12
10	1 1/4	18	12
11	1 1/4	18	12
12	1 1/4	18	12

13

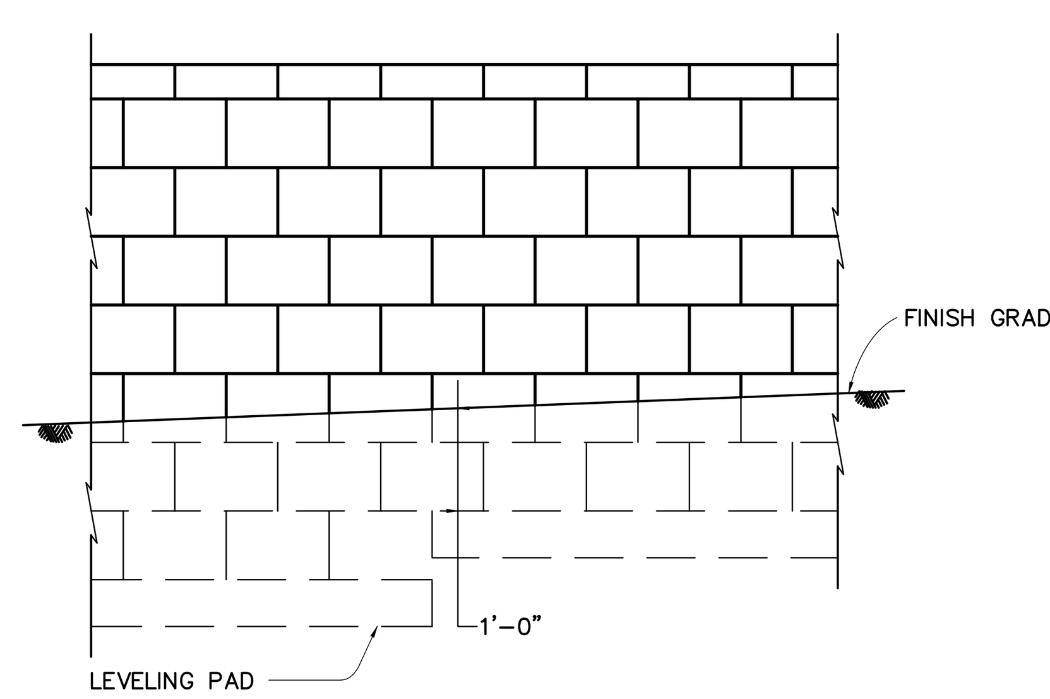


NOTE: "VAN ACCESSIBLE" REQUIRED AT SPACES ADJACENT TO 8' AISLE

HANDICAP SIGN AND POST

N.T.S.

14



TYPICAL ELEVATION

NOTES:

1. CAP UNITS SHALL BE SECURED WITH A MANUFACTURER APPROVED ADHESIVE.
2. WHERE THE BACK OR ENDS OF UNITS ARE EXPOSED, THE WALL DESIGN SHALL HAVE SOLID BLOCKS TO PROVIDE FOR A UNIFORM FACE.
3. CONTRACTOR SHALL PROVIDE SEALED "SHOP DRAWINGS" FOR REVIEW AND APPROVAL.

EARTH REINFORCEMENTS:

WALLS MAY BE CONSTRUCTED WITHOUT EARTH REINFORCEMENTS IF ALL STABILITY CRITERIA ARE MET WITH THE BLOCKS ALONE. IF ALL STABILITY CRITERIA ARE NOT SATISFIED, EARTH REINFORCEMENTS SHALL BE PROVIDED.

THE LONG TERM DESIGN STRENGTH (LTDS) OF EARTH REINFORCEMENT SHALL BE CALCULATED IN ACCORDANCE WITH AASHTO 1992 STANDARD AND CURRENT INTERIM SPECIFICATIONS.

SOIL-GEOGRID PULLOUT COEFFICIENT VALUES SHALL BE DETERMINED IN ACCORDANCE WITH GEOSYNTHETICS RESEARCH INSTITUTE (GRI) METHOD GG-5, "GUIDELINES FOR EVALUATING GEOGRID PULLOUT".

FOR THE COMBINATION OF CONCRETE BLOCK AND GEOGRID CHOSEN, CONNECTION STRENGTH DATA SHALL BE PROVIDED. THE ALLOWABLE CONNECTION LOAD SHALL BE LIMITED TO THE CONNECTION STRENGTH DEVELOPED AT 3/4 " DISPLACEMENT, DIVIDED BY A 1.5 SAFETY FACTOR.

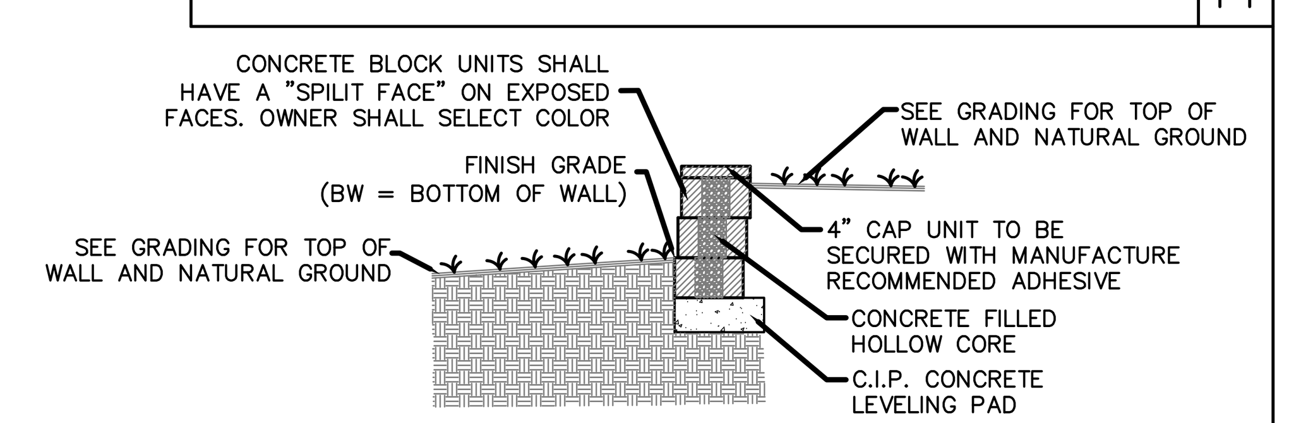
FOR INTERNAL STABILITY CALCULATIONS, THE FAILURE PLANE WILL BE ASSUMED TO ORIGINATE AT THE BACK OF THE CONCRETE BLOCKS.

THE FACTOR OF SAFETY AGAINST PULLOUT OF THE EARTH REINFORCEMENTS SHALL BE DETERMINED FROM TEST DATA EVALUATED AT 3/4" STRAIN.

THE MAXIMUM VERTICAL SPACING OF PRIMARY EARTH REINFORCEMENT LAYERS SHALL BE 40 INCHES.

THE MINIMUM LENGTH OF PRIMARY EARTH REINFORCEMENTS SHALL BE 8 FEET, MEASURED FROM THE FRONT OF THE BLOCKS.

A LAYER OF INTERMEDIATE REINFORCEMENT SHALL BE PROVIDED BETWEEN PRIMARY REINFORCEMENTS WHEN THE SPACING BETWEEN PRIMARY LAYERS EXCEEDS TWICE THE HORIZONTAL DEPTH OF THE CONCRETE BLOCK UNIT. INTERMEDIATE REINFORCEMENT SHALL HAVE A MINIMUM LENGTH OF 4 FEET, AND SHALL PROVIDE LOCAL STABILITY FOR THE CONCRETE BLOCK UNITS.



TYPICAL SECTION

(WITH EARTH REINFORCEMENTS)

STABILITY CRITERIA:

FACTOR OF SAFETY IN SLIDING ALONG THE BASE OF THE STRUCTURE SHALL BE GREATER THAN OR EQUAL TO 1.5. 3 FACTOR OF SAFETY IN OVERTURNING SHALL BE GREATER THAN OR EQUAL TO 2.0.

THE BASE PRESSURE RESULTANT SHALL FALL WITHIN THE MIDDLE THIRD OF THE RETAINING WALL.

DESIGN PARAMETERS:

STRUCTURE SHALL BE BASED ON THE FOLLOWING DESIGN PARAMETERS:

RANDOM BACKFILL: UNIT WEIGHT = 120 PCF.
(EMBANKMENT OR EXISTING SOILS) ø = 30° = 0 PSF

SELECT BACKFILL: UNIT WEIGHT = 120 PCF
ø = 34° = 0 PSF

GENERAL NOTES:

SECTIONS AND TYPICAL ELEVATION SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. SPECIFIC GEOMETRY IS TO BE DETERMINED BASED ON WALL LAYOUTS AND OTHER PLAN INFORMATION.

UNLESS OTHERWISE SHOWN IN THE PLANS, WALL BATTER SHALL BE NEAR VERTICAL. BLOCKS SHALL BE PLACED HORIZONTALLY, AND A POSITIVE MEANS OF OBTAINING BATTER SUCH AS PINS, KEYWAYS, OR CONCRETE LIPS SHALL BE PROVIDED.

RETAINING WALL DETAILS

N.T.S.

15

REV	DATE	DESCRIPTION

STATE OF TEXAS — JESSE F. CANTU II — 93639 — LICENSED PROFESSIONAL ENGINEER

KCI TECHNOLOGIES, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PHONE: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-10573 / #10194365

KCI TECHNOLOGIES

BAUMSQUAD BROTHERS DEVELOPMENT

CIVIL DETAILS

DRAFTING:	A.J.	CHECK:	J.C.
DESIGN:	A.J.	CHECK:	J.C.
SUBMITTAL PHASE:			
DATE:	7/6/2023		
KCI JOB #:	7622E0677801		

SHEET: C12.0

Attachment G

Inspection, Maintenance, Repair, and Retrofit Plan
Baumsquad Brothers Development

Vegetated Filter Strips (VFSs)

The Vegetated Filter Strips (VFSs) will continue to be and shall be accessible 24 hours a day. As such, any problems associated with the operation of any VFSs will be readily identifiable and can be addressed by the Owner or Owner's Facility Maintenance Personnel. Refer to Section 3.5.8 TCEQ 'Edwards Aquifer Technical Guidance Manual' RevJul05 pages 3-91/92 for additional intent and guidance on this plan.

The Owner agrees that the following minimum VFS maintenance requirements will be complied with:

1. **Pest Management**: The Owner shall develop and / or maintain their existing Integrated Pest Management Plan for the VFSs. This plan will specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.
2. **Seasonal Mowing and Lawn Care**: The VFSs will be sodded with native grass cover. The areas will be mowed as needed to maintain reasonable appearance and to keep grass under 6" high for engineered strips and left in their natural state for the regional, natural VFSs. Grass clippings and brush debris will not be deposited within VFSs. Regular mowing will include weed control practices, but herbicide use will be kept to a minimum.
3. **Inspection**: These VFSs shall be inspected a minimum of 2 times per year to check for erosion or damage to vegetation. Additional inspections are to be made after periods of heavy rainfall. Inspections shall check uniformity of grass cover, debris and litter, and areas of sediment accumulation. Bare spots and areas of erosion will be replanted and restored to meet original specifications. Additional measures may be required to be installed, without the use of (a) level spreader device(s), if necessary, to re-establish shallow overland flow.
4. **Debris and Litter Removal**: VFSs shall be kept free of obstructions to reduce floatables being flushed downstream and to maintain an aesthetically pleasing appearance and shall be inspected for conformance to this requirement a minimum of four (4) times per year.
5. **Sediment Removal**: Remove sediment from the VFSs when sediment buildup reaches a depth of 3 inches at any spot or when the proper functioning is impaired or when the vegetation is covered. Sediment should be cleared periodically as needed. Sediment shall be disposed of in a manner that will not cause additional siltation.
6. **Grass Reseeding and Mulching**: Eroded areas within the VFSs shall be filled, compacted, and new sod established in order to maintain a consistent final grade. Grass damaged during the sediment removal process shall be promptly replaced using the same species used during the establishment of the VFSs. Flow shall be diverted from the damaged area(s) until the grass is firmly established. Bare spots and areas of erosion identified during Item 3 inspections must be replanted and restored to meet specifications. The VFSs must be weeded and replanting should be done more frequently in the first two (2) to three (3) years after installation to ensure stabilization.
7. **Limits**: The limits of each VFSs shall be plainly marked to preclude inadvertent destructive activities within said limits.
8. **Record Keeping**: All inspections, maintenance, repairs, or other items done to each respective VFS shall be recorded in a log on-site. This log should be kept at the Owner's office for easy access. Please refer to the example provided on page 5 of Attachment G which shows a typical sample form.

Attachment G (Continued)

Inspection, Maintenance, Repair, and Retrofit Plan
Baumsquad Brothers Development

Sand Filtration Basins (SFB) or Water Quality Basins (WQBs)

The Sand Filtration Basin or Water Quality Basin for treating of the impervious cover contributing to the total suspended solids within respective watershed will remain accessible 24 hours a day. As such, any problems associated with the operation of the Sand Filtration Basin (SFB) or Water Quality Basin (WQB) will be readily identifiable and can be addressed by the Owner or Owner's Facility Maintenance Personnel. Refer to Section 3.5.9 TCEQ 'Edwards Aquifer Technical Guidance Manual' RevJul05 pages 3-92/93 for additional intent and guidance on this plan.

The Owner agrees that the following minimum SFB or WQB maintenance requirements will be complied with including items per the previous Inspection, Maintenance, Repair, and Retrofit Plan for this basin:

1. **Pest Management**: The Owner shall develop and / or maintain their existing Integrated Pest Management Plan for the EDB or WQB. This plan will specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.
2. **Seasonal Mowing and Lawn Care**: The EDB or WQB will be sodded with native grass cover. The areas will be mowed as needed to maintain reasonable appearance and to keep grass under 18" high. Grass clippings and brush debris will not be deposited within the SFB or WQB. Regular mowing will include weed control practices, but herbicide use will be kept to a minimum. Basin should be free of weeds or any other unwanted vegetation, such as trees or woody materials within the basin. Mowing shall occur at least twice a year.
3. **Inspection**: The SFB or WQB shall be inspected a minimum of 2 times per year to check for erosion, damage to vegetation, and / or damage to the inlet and outlet structures. Additional inspections are to be made during and after periods of heavy rainfall. Inspections shall check for signs of cracking in or other damage to the basin structures, damage to any of the pipes, damage to gabion or overflow structure, uniformity of grass cover, erosion around the basin, uniformity of grades, debris and litter accumulation, areas of sediment accumulation, and check for erosion of downstream areas from all discharge pipes coming from the basins. Bare spots and areas of erosion will be replanted and restored to meet original specifications. Repairs shall be performed immediately. Trees and large root systems should be removed to prevent growth in cracks or joints that may cause structural damage.
4. **Debris and Litter Removal**: Opening to the SFB or WQB shall be kept free of obstructions to reduce floatables being flushed downstream and to maintain an aesthetically pleasing appearance and shall be inspected for conformance to this requirement a minimum of two (2) times per year. Particular attention shall be paid to the cleaning of the outlet structure for sediment build up.
5. **Sediment Removal**: Remove sediment from the inlet structure and sedimentation chamber when sediment buildup reaches a depth of 6 inches or when the proper functioning of inlet and outlet structures is impaired. Sediment should be cleared from the inlet structure at least every year and from the sedimentation basin (including the gabion or overflow structures) at least every 5 years.
6. **Media Replacement**: Maintenance of the filter media is necessary when the drawdown time exceeds 48 hours. When this occurs, the upper layer of media should be removed and replaced with new material meeting the original specifications. Any discolored media should also be removed and replaced. In filters that have been regularly maintained, this should be limited to the top 2 or 3 inches.
7. **Filter Underdrain**: Clean underdrain piping network to remove any sediment buildup as needed to maintain design drawdown time.

Attachment G (Continued)

Inspection, Maintenance, Repair, and Retrofit Plan
Baumsquad Brothers Development

Sand Filtration Basins (SFB) or Water Quality Basins (WQBs) – Continued

8. **Grass Reseeding and Mulching**: Eroded areas within the WQBs shall be filled, compacted, and reseeded in order to maintain a level final grade. Grass damaged during the sediment removal process shall be promptly replaced using the same seed mix used during the establishment of the WQB or VFS adjacent to the basin. Flow shall be diverted from the damaged area(s) until the grass is firmly established. Bare spots and areas of erosion identified during Item 3 inspections must be replanted and restored to meet specifications.
9. **Limits**: The limits of each WQB shall be plainly marked to preclude inadvertent destructive activities within said limits. Any vertical basin walls shall be fenced off with a minimum 4' tall green chain link fence. A gate will be provided at the access point to the basin ramp and should remain locked when not being accessed for maintenance or inspections when a fence is installed. The sediment marker inside the basin should be visible at all times and if at some point it becomes faded or not legible, it should be remarked.
10. **Record Keeping**: All inspections, maintenance, repairs, or other items done to each respective SFB or WQB shall be recorded in a log on-site. This log should be kept at the Owner's office for easy access. Please refer to the example provided on page 5 of Attachment G which shows a typical sample form.

Attachment G (Continued)

Inspection, Maintenance, Repair, and Retrofit Plan
Baumsquad Brothers Development

PERMANENT BMP RECORD KEEPING LOG

		PASE CEMCK ON					PERSON DOCUMENTING ACTIVITY		
Date of Activity	*Location*	*Inspection Item*	*Maintenance Item*	*Repair Item*	*Other*	*Description of Item*	*Name*	*Job Title*	*Initial*
				✓		Resodded Bare Spot near toe of basin at inlet to basin as Example 1	John A. Buddy	ABC Contract	
			✓			Removed Weeds from VTS as Example 2	Noe L. Snow	Maintenance Team	
March			✓			Removed Weeds from EDB as Example 3	Noe L. Snow	Maintenance Team	
		✓				Inspected Basin for signs of erosion after 2 day Rain Event as Example 4	Abel B. Chavez	Maintenance Team	

Owner of Owner's Facility Management Representative _____ Date _____

Avinash Jadhav, P.E.
KCI Technologies Inc.
Certifying Engineer

Date _____

Attachment H

Pilot-Scale Field Testing Plan
Baumsquad Brothers Development

N/A

Attachment I

Measures for Minimizing Surface Stream Contamination
Baumsquad Brothers Development

All runoff from all onsite sources will discharge via a series of water quality basin, engineered Vegetative Filter Strips storm drains, and natural lows. As noted in sheet C7.0, the following apply.

- Drainage Areas 1 and 3 will have a TSS reduction by means of 15' Engineered Vegetative Filter Strips.

- Drainage Area 2 will have its TSS reduction accomplished by means of a Water Quality Basin. This Basin will have runoff from Drainage Area 1 entering the northeast side of the basin via a storm drain and runoff entering the southwest side of the basin via a storm drain. The outfall of the basin will be via an 18" HDPE pipe with a rip-rap surround near the northwest part of the basin.

During the construction phase of the project, all temporary and constructed permanent BMPs must be inspected every 7 days and within 24 hours of a rainfall event of 0.5 inches or more. These inspections and if any maintenance is performed on such BMPs, it must be documented within the inspection and maintenance report form and kept on site.

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

I Ryan Baum,
Print Name

Owner,
Title - Owner/President/Other

of Baumsquad Brothers, LLC,
Corporation/Partnership/Entity Name

have authorized Avinash S. Jadhav, P.E.
Print Name of Agent/Engineer

of KCI Technologies, Inc
Print Name of Firm

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

I also understand that:

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

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

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

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

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

SIGNATURE PAGE:

RAB
Applicant's Signature

5/8/23
Date

THE STATE OF Texas §

County of Bexar §

BEFORE ME, the undersigned authority, on this day personally appeared Ryan Braun 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 8th day of May, 2023.

PAUL ANTHONY MATHIS
My Notary ID # 126117986
Expires May 18, 2023

Paul A Mathis
NOTARY PUBLIC

Paul A. Mathis
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 18th, 2023

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Baumsquad Brothers, LLC
Regulated Entity Location: 4235 E. Loop 1604
Name of Customer: Ryan Baum
Contact Person: Avinash Jadhav Phone: 210-641-9999
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☒ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	12.63 Acres	$ 6500.00
Sewage Collection System	L.F.	$
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: 5/8/23

Application Fee Schedule

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

Date: 2-26-2021

Application Fee Schedule

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	***Fee***
Extension of Time Request	$150

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

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

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	04/04/2022

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Baumsquad Brothers	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0804208879	32080781241	87-2423951	

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

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

12. Number of Employees ☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated? ☒ Yes ☐ No

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

☒ Owner ☐ Operator ☐ Owner & Operator

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

15. Mailing Address:								
	490 Rodeo Dr.							
	City	Spring Branch	State	TX	ZIP	78070	ZIP + 4	

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(210) 445-8855		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Baumsquad Brothers

23. Street Address of the Regulated Entity: *(No PO Boxes)*	4235 E. Loop 1604							
	City	San Antonio	**State**	TX	**ZIP**	78259	**ZIP + 4**	
24. County								

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Approx 0.27 mile west of N Loop 1604 E and O'Conner Rd intersection

26. Nearest City	**State**	**Nearest ZIP Code**

27. Latitude (N) In Decimal:	29.60194	**28. Longitude (W) In Decimal:**	-98.4095

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	36	07	98	24	34.2

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)
5261		4442	

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

34. Mailing Address:								
	City		**State**		**ZIP**		**ZIP + 4**	
35. E-Mail Address:								

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

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

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

SECTION IV: Preparer Information

40. Name:	Avinash S. Jadhav, P.E.	**41. Title:**	Design Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(210) 641-9999		( ) -	Avinash.Jadhav@kci.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:	Baumsquad Brothers, LLC	**Job Title:**	
Name *(In Print):*	Ryan Baum	**Phone:**	(210) 445- **8855**

Signature:		Date:	5/8/23