Modification of a Previously Approved Contributing Zone Plan

Pearl Townhomes
13200 & 13216 Bee Cave Parkway
Bee Cave, Travis County, Texas 78738

Kimley»Horn

Prepared for:
TCEQ

Prepared by:
Lance Oriti, P.E.

AUGUST 15, 2023

Modification of a Previously Approved Contributing Zone Plan Checklist

- **Edwards Aquifer Application Cover Page (TCEQ-20705)**
- **Modification of a Previously Approved Contributing Zone Plan Form (TCEQ-10259)**

  Attachment A - Original Approval Letter and Approved Modification Letters
  Attachment B - Narrative of Proposed Modification
  Attachment C - Current site plan of the approved project

- **Contributing Zone Plan Application (TCEQ-10257)**
- **Storm Water Pollution Prevention Plan (SWPPP)**

  -OR-

- **Temporary Stormwater Section (TCEQ-0602)**
- **Copy of Notice of Intent (NOI)**
- **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: Pearl Townhomes					**2. Regulated Entity No.: 108924812**				
3. Customer Name: Huntsville Center LTD					**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):**		6.08	
9. Application Fee:	$5,000.00		**10. Permanent BMP(s):**			1			
11. SCS (Linear Ft.):			**12. AST/UST (No. Tanks):**						
13. County:	Travis		**14. Watershed:**			Little Barton 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 __X__ Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.
Lance Oriti, P.E. Print Name of Customer/Authorized Agent
Lance Oriti 7-25-2023 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):	

Modification of a Previously Approved Contributing Zone Plan

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), 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 **Modification of a Previously Approved Contributing Zone Plan** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Lance Oriti, P.E.

Date: 7-25-2023

Signature of Customer/Agent:

Lance Oriti

Project Information

1. Current Regulated Entity Name: Pearl Townhomes
   Original Regulated Entity Name: Hill Country Galleria
   Assigned Regulated Entity Number(s) (RN): 108924812
   Edwards Aquifer Protection Program ID Number(s): _____
   ☐ The applicant has not changed and the Customer Number (CN) is: _____
   ☒ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

2. ☒ **Attachment A: Original Approval Letter and Approved Modification Letters.** A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):

☒ Any physical or operational modification of any best management practices or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;
☒ Any change in the nature or character of the regulated activity from that which was originally approved;
☐ A change that would significantly impact the ability to prevent pollution of the Edwards Aquifer and hydrologically connected surface water; or
☐ Any development of land previously identified in a contributing zone plan as undeveloped.

4. ☒ Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

CZP Modification Summary	***Approved Project***	***Previous Modifications***				***Proposed Modification***
	June 28, 2005	Nov. 3, 2011	May 2, 2013	June 7, 2016	April 20, 2018	
Acres	156.08	156.08	160.21	20.01	22.60	6.08
Type of Development	Commercial	Commercial	Commercial	Commercial	Commercial	Commercial
Number of Residential Lots						
Impervious Cover (acres)	71.69	140.36	143.13	9.49	12.15	2.89
Impervious Cover (%)	53	89.9	89.3	47.4	53.8	47.5
Permanent BMPs	9	9	9	9	2	1
Other						

_____

AST Modification Summary	***Approved Project***	***Proposed Modification***
Number of ASTs	_____	_____
Other	_____	

_____

UST Modification Summary	***Proposed Modification***	
Approved Project		
Number of USTs	Other	_____

5. ☒ **Attachment B: Narrative of Proposed Modification**. A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including previous modifications, and how this proposed modification will change the approved plan.

6. ☒ **Attachment C: Current Site Plan of the Approved Projec**t. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
   - ☒ The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ☐ Acreage has not been added to or removed from the approved plan.
   ☒ Acreage has been added to or removed from the approved plan and is discussed in *Attachment B: Narrative of Proposed Modification*.

8. ☒ 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.

ATTACHMENT A

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 28, 2005

Mr. Christopher Milam
HCG Master Ground Lease, L.P.
101 East Old Settlers Blvd., Suite 230
Round Rock, Texas 78664

Re: Edwards Aquifer, Travis County
NAME OF PROJECT: Hill Country Galleria; Between RM 620 and FM 2244 North of Hwy 71; Village of Bee Cave, Texas
TYPE OF PLAN: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer
Edwards Aquifer Protection Program ID No. 05040601

Dear Mr. Milam:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP application for the referenced project submitted to the Austin Regional Office by Garrett-Ihnen Civil Engineers, Inc. on behalf of HCG Master Ground Lease, L.P. on April 6, 2005. Final review of the CZP submittal was completed after additional material was received on June 22, 2005. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed, and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Contributing Zone Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10% of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed commercial project will be located on 156.08 acres and will consist of the construction of multiple retail, restaurant and residential buildings along with associated parking, parking garages, and utilities. The proposed impervious cover for the development is approximately 71.69 acres (53.0% of the total area of the site not including pond liners).

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent pollution of stormwater runoff originating on-site and potentially flowing across and off the site after construction, nine retention irrigation ponds will be constructed. The individual treatment components will consist of the items listed in the table below. The names of the water quality ponds correspond to the drainage area maps in the construction plans. The approved measures meet the required 80 percent removal of the increased load in total suspended solids caused by the project.

Pond Name	Drainage Area (acres)	Minimum Water Quality Volume Provided (ft^3)	Irrigation Area Provided (acres)
WQ Pond A1	11.35	93,213	2.09
WQ Pond F1	5.83	42,297	1.00
WQ Pond G1	9.85	72,353	1.62
WQ Pond I1	5.56	42,950	0.96
WQ Pond I2	17.98	137,040	3.07
WQ Pond J1	11.29	89,146	1.99
WQ Pond L2	25.03	179,511	4.03
WQ Pond L3	12.28	96,529	2.16
WQ Pond L4	15.23	91,846	2.06

It is noted that the drainage area to WQ Pond A1 is sized to provide pollutant removal from Galleria Parkway and for future development (based on 45% impervious cover) on the property known as the Troublemaker tract.

SPECIAL CONDITIONS

I. Intentional discharges of sediment laden stormwater during construction are not allowed. If dewatering excavated areas and/or areas of accumulated stormwater becomes necessary, the discharge shall be filtered through appropriately selected temporary best management practices. These may include vegetative filter strips, sediment traps, rock berms, silt fence rings, etc.

II. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 3 below.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

Prior to Commencement of Construction:

2. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project until all regulated activities are completed.

3. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

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

5. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. The water quality ponds shall be used as sedimentation basins during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

6. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

7. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. 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).

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

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

After Completion of Construction:

10. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.

11. The applicant shall be 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. A copy

of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

12. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated aactivity.

13. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50% of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

14. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

If you have any questions or require additional information, please contact Ms. Heather L. Beatty, P.G., of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

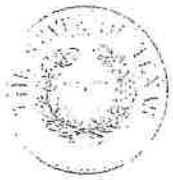
Sincerely,

Glenn Shankle
Executive Director
Texas Commission on Environmental Quality

GS/hlb

Enclosures: Change in Responsibility for Maintenance on Permanent BMPs, TCEQ-10263

cc: Mr. Steve Ihnen, P.E., Garrett-Inhen Civil Engineers, Inc.
Mr. James Fisher, Village of Bee Cave
The Honorable Sam Biscoe, County Judge, Travis County
TCEQ Central Records



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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 3, 2011

Mr. Adrian Overstreet
Hill Country Texas Galleria, LLC
12912 Hill Country Blvd., Suite T-100
Bee Cave, Texas 78738

Re: Edwards Aquifer, Travis County
NAME OF PROJECT: Hill Country Galleria; Located between RM 620 and FM 2244 North of SH 71; Bee Cave, Texas
TYPE OF PLAN: Request for Approval of a Modification to a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer Protection Program ID No. 05040601A; Investigation No. 963049; Regulated Entity No. RN104911169

Dear Mr. Overstreet:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the Austin Regional Office by Kimley-Horn and Associates, Inc. on behalf of Hill Country Texas Galleria, LLC on September 20, 2011. Final review of the CZP was completed after additional material was received on November 1, 2011. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original application for Hill Country Galleria was approved on June 28, 2005, Edwards Aquifer Protection Program ID No. 05040601. The Hill Country Galleria property is located within the Contributing Zone of the Edward's Aquifer and consists of an outdoor mall with adjoining office space, two multi-family developments, residential units, Dillard's, a movie theater, and multiple pad sites. The proposed impervious cover for the development was 71.69 acres.

PROJECT DESCRIPTION

The purpose of the contributing zone modification is to update the previously approved application and reassess the adequacy of the BMPs for the Hill Country Galleria. Also included are the relocation of the existing detention pond L3 and water quality pond L3, and the removal of the existing clay liner from water quality ponds F1, G1, and L2.

The BMPs for the Hill Country Galleria have been reevaluated from the previously approved TCEQ application. The drainage areas and the design impervious cover from the approved plans were updated to reflect the modifications within the site plan. This information was used to reevaluate the capacity of the ponds, per TCEQ and City of Austin Criteria. The water quality ponds can treat a maximum of 140.36 acres of impervious cover; however, City of Bee Cave Ordinance only allows a maximum impervious cover of 88.74 acres.

The existing detention pond L3 and water quality pond L3 are currently located within Lot 15, Block A of Hill Country Galleria. The ponds are proposed to be relocated to Lot 2A, Block A and Lot 2B, Block A of the re-subdivision of Lot 2, Bee Cave Plaza, Section 5. Lot 2A, Block A and Lot 2B, Block A consisting of 4.12 acres are being added to the project area. Proposed and future redevelopment of Lot 15, Block A and a portion of Lot 14, Block A is shown on the site plan.

The clay liner is planned to be removed from water quality ponds F1, G1, and L2 since it is not a requirement of either TCEQ or the City of Bee Cave. This is intended to be done by deepening the ponds by one foot. The clay liner removed and will be replaced with topsoil. Water quality ponds F1, G1, and L2 are approximately 1.7 acres within Lot 1, Block A of Hill Country Galleria.

The proposed site modifications have been made to improve the aesthetics and operational use of the site. Changes include:

- Reevaluation of Hill Country Galleria BMPs per TCEQ and City of Bee Cave design

- Addition of Lot 2A, Block A and Lot 2B, Block A of the re-subdivision of Lot 2, Bee Cave Plaza, Section 5 to the Contributing Zone Plan
- Relocation of water quality pond L3
- Relocation of detention pond L3
- Remove the existing impervious clay liner from water quality ponds F1, G1, and L2
- Redevelopment of the Lot 15 Block A and a portion of Lot 14 Block A

PERMANENT POLLUTION ABATEMENT MEASURES

The relocated Water Quality Pond L3 is a retention/irrigation pond that has been designed in accordance with TCEQ RG-348 Technical Guidance Manual. The drainage area for Water Quality Pond L3 has 14.97 acres of impervious cover for the 21.72 acres of drainage area. The pond was designed to treat a maximum of 15.97 acres of impervious cover. This equates to a required water quality volume of 51,380 cubic feet. The proposed pond has a water quality volume of 81,794 cubic feet. The additional volume is required to meet city of Bee Cave requirements. The required irrigation area is 40,298 square feet (0.93 acres) and the existing irrigation area is 94,175 square feet (2.16 acres). The proposed retention/irrigation water quality pond will utilize the existing wet well pump and irrigation area. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.

3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.

5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

<u>During Construction:</u>

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. 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).

10. Intentional discharges of sediment laden storm water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best

management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

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

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

13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.

15. The applicant shall be 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. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that

specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

If you have any questions or require additional information, please contact Mr. Ben E. Milford, P.G. of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Mark R. Vickery, P.G.
Executive Director
Texas Commission on Environmental Quality

MRV/bem

Enclosures: Change in Responsibility for Maintenance on Permanent BMPs, TCEQ-10263

cc: Mr. Scott J. Foster, Kimley-Horn and Associates, Inc., Austin
Mr. Frank Salvato, City Administrator, City of Bee Cave
Central Records, TCEQ Information Resources Division, Austin

COPY

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 2, 2013

Mr. Adrian Overstreet
Hill Country Texas Galleria, LLC
12912 Hill Country Blvd., Suite T-100
Bee Cave, TX 78738

Re: Edwards Aquifer, Travis County

NAME OF PROJECT: Hill Country Galleria; Located ; Located between the intersections of Bee Cave Road and US 71 and RR 620 and US 71; Bee Cave, Texas

TYPE OF PLAN: Request for Modification of an Approved Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Edwards Aquifer Protection Program ID No. 11-13021802; Investigation No. 1059021; Regulated Entity No. RN104911169

Dear Mr. Overstreet:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the Austin Regional Office by 360 Professional Services, Inc. on behalf of Hill Country Texas Galleria, LLC on February 18, 2013. Final review of the CZP was completed after additional material was received on April 15, 2013. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original CZP was approved on June 28, 2005 and covers a site of 156.08 acres (EAPP File ID: 11-05040601) with approximately 71.69 acres of impervious cover (53.0% impervious ratio). A modification to the original CZP was approved on November 3, 2011 (EAPP File ID: 11-05040601A). The modification consisted of modifying the existing water quality ponds and increasing the amount of additional allowable impervious cover for development. The water

quality ponds were designed and approved to treat runoff from a maximum of 140.36 acres of impervious cover (89.93% impervious ratio). Water quality pond L3 was relocated in the modification.

PROJECT DESCRIPTION

The proposed modification of the CZP will increase the site area to approximately 160.21 acres. The existing development consists of an outdoor mall with adjoining office space, two multi-family developments, residential units, Dillard's, a movie theater, and multiple pad sites. The application consists of updates of previous approved applications, modification of detention pond L2 and its associated diversion structure, the construction of a driveway on Lot 2B, Block A and the construction of an approximately 3,400 linear feet decomposed granite trail along Bee Cave Parkway. The maximum allowable impervious cover for the entire site will be 143.13 acres (89.34% impervious ratio).

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, six retention/irrigation facilities, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), have been constructed to treat stormwater runoff. The detention pond L2 will be modified to provide more impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The individual treatment measures will consist of retention ponds and irrigation areas. The modification is summarized in the table below.

Water Quality Pond	Drainage Area (Acres)	Provided WQ Volume (Cubic Feet)	Max. Allowable IC (Acres)	Irrigation Area required (Acres)	Irrigation Area Provided (Acres)	Soil Infiltration rate (inches/hour)	Time of Active Irrigation (hours)
A1	11.35	130,680	11.35	2.35	2.43	0.51	30
F1	7.36	59,215	7.36	0.91	0.95	0.51	35
G1	16.69	76,306	16.00	1.37	1.66	0.51	30
I2	28.26	185,398	28.26	3.34	4.82	0.51	30
J1	17.03	100,014	17.13	1.80	1.99	0.51	30
L2	30.13	213,176	30.13	3.84	4.42	0.51	30
L3	21.72	81,794	16.00	1.47	2.16	0.51	30
L4	16.90	96,834	16.90	1.74	2.29	0.51	30
Total	149.54		143.13				

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated November 3, 2011.

III. Formal TCEQ review for development in Lot 2, Block A; Lot 12, Block A; Lot 15, Block A and Lot 8, Block B may not be required if the impervious cover assumptions are not exceeded.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges

from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. 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).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.
15. The applicant shall be 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. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Lianxiang Du, P.E., of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Carolyn Runyon, Water Section Manager
Austin Region Office
Texas Commission on Environmental Quality

CDR/ld

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625A
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Scott J. Foster, P.E., 360 Professional Services, Inc.
Mr. Frank Salvato, City Administrator, City of Bee Cave
The Honorable Sam Biscoe, Travis County Judge, Travis County Courthouse
TCEQ Central Records, Building F, MC212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 7, 2016

Mr. Chris Milam
Terrace Partners, LLC
2700 Barton Creek Blvd.
Austin, Texas 78735

Re: Edwards Aquifer, Travis County

NAME OF PROJECT: The Terrace; Located at 13100, 13216 and 13500 Bee Cave Parkway; Bee Cave, Texas

TYPE OF PLAN: Request for Modification of an Approved Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Regulated Entity No. RN108924812; Additional ID No. 11000074

Dear Mr. Milam:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the Austin Regional Office by Stantec Consulting Services Inc. on behalf of Terrace Partners, LLC on January 19, 2016. Final review of the CZP was completed after additional material was received on April 29, 2016. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original CZP for the Hill Country Galleria was approved by letter dated June 28, 2005 for a commercial project located on 156.08 acres with 71.69 acres (53.0 percent)

of impervious cover. Development included construction of multiple retail, restaurant and residential buildings along with associated parking, parking garages and utilities. Nine retention/irrigation ponds were proposed as permanent BMPs.

The CZP Modification approved by letter dated November 3, 2011 included the following: 1) the addition of Lot 2A, Block A and Lot 2B, Block A of the re-subdivision of Lot 2, Bee Cave Plaza, Section 5 to the original CZP, 2) the relocation of retention/irrigation pond L3, 3) the removal of the existing impervious clay liner from ponds F1, G1 and L2 and 4) the redevelopment of Lot 15 Block A and a portion of Lot 14 Block A. In addition, the allowable impervious cover was increased. The retention/irrigation ponds were designed and approved to treat runoff from a maximum of 140.36 acres of impervious cover (89.93 percent).

The CZP Modification approved by letter dated May 2, 2013 included the following: 1) the modification of retention/irrigation pond L2, 2) the construction of a driveway on Lot 2B, Block A and 3) the construction of an approximately 3,400 linear feet of decomposed granite trail along Bee Cave Parkway. The site area was increased to 160.21 acres and the maximum allowable impervious cover for the entire site increased to 143.13 acres (89.34 percent).

PROJECT DESCRIPTION

The proposed Terrace development consists of 20.01 acres and is a part of the Hill Country Galleria site which is approximately 160.21 acres. New impervious cover for the Terrace development totals 9.49 acres (47.42 percent). This modification proposes the construction of the following: 1) Ethan's View at the Backyard, a residential condominium development, 2) the Bloom consisting of restaurant and office space, 3) a Bee Cave Parkway right turn lane and 4) the Terrace North Offices. Project wastewater will be disposed of by conveyance to the existing Lake Pointe Wastewater Treatment Plant owned by the West Travis County Public Utility Agency.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, the Ethan's View retention/irrigation pond, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. Two existing retention/irrigation ponds, A1 and F1, will also provide treatment of stormwater runoff. The Ethan's View retention/irrigation pond will treat 2.33 acres of new impervious cover from a part of the condominium development. Pond A1 will treat 5.36 acres of new impervious cover from the Bloom, Terrace North Offices and Bee Cave Parkway. Pond F1 will treat 1.80 acres of new impervious cover from a part of Ethan's View and Bee Cave Parkway. The required total suspended solids (TSS) treatment for this project is 8,260 pounds of TSS generated from the 9.49 acres of new impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The BMP Summary Table below summarizes the retention/irrigation ponds and irrigation areas for this modification.

BMP Summary Table					
Retention/Irrigation Pond	Provided WQ Volume (cubic feet)	Maximum Allowable IC (acres)	Total IC Existing and Proposed (acres)	Irrigation Area Required (acres)	Irrigation Area Provided (acres)
Existing A1	136,057	11.35	7.80*	2.35	2.43
Existing F1	58,541	7.36	3.06**	0.91	0.95
New Ethan's View	15,310	2.33	2.33	0.29	0.52

*Includes 5.36 acres proposed in this modification.
**Includes 1.80 acres proposed in this modification.

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated June 28, 2005 and modifications dated November 3, 2011 and May 2, 2013.

III. The Ethan's View retention/irrigation pond shall be operational prior to occupancy of the facility.

IV. All sediment and/or media removed from the water quality ponds during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. 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).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

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

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

13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.

15. The applicant shall be 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. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Dianne Pavlicek-Mesa, P.G., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4074.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/DPM/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625A
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Lance Oriti, P.E., Stantec Consulting Services, Inc.
Mr. Giancarlo Patino, City Engineer, City of Bee Cave
The Honorable Sarah Eckhardt, Travis County Judge
TCEQ Central Records, Building F, MC212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 20, 2018

Mr. Christopher F. Milam
Terrace Partners, LLC
13200 Bee Cave PKWY
Austin, Texas 78738

Re: Edwards Aquifer: Travis County
NAME OF PROJECT: The Terrace at Bee Cave; Located at 13100, 13216 and 13500 Bee Cave PKWY; Bee Cave, Texas
TYPE OF PLAN: Request for Approval of a Modification (MOD) to a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B
Edwards Aquifer Protection Program ID No. 11000991; Regulated Entity No. RN108924812

Dear Mr. Milam:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP MOD Application for the above-referenced project submitted to the Austin Regional Office by Stantec Consulting Services, Inc. on behalf of Terrace Partners, LLC on January 30, 2018. The Final review of the CZP MOD was completed after additional material was received on April 9, 2018. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213 Subchapter B. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original CZP was approved on June 28, 2005 and covers a site of 156.08 acres (EAPP File ID: 11-05040601) with approximately 71.69 acres of impervious cover (53.0% impervious ratio).

A modification to the original CZP was approved on November 3, 2011 (EAPP File ID: 11-05040601A). The modification consisted of modifying the existing water quality ponds and

increasing the amount of additional allowable impervious cover for development. The water quality ponds were designed and approved to treat runoff from a maximum of 140.36 acres of impervious cover (89.93% impervious ratio). Water quality pond L3 was relocated in the modification.

A CZP Modification was approved on May 2, 2013 (EAPP File ID: 11-13021802) included the following: 1) the modification of retention/irrigation pond L2, 2) the construction of driveway on lot L2, Block A, and 3) the construction of an approximately 3,400 linear feet of decomposed granite trail along Bee Cave Parkway. The site area was increased to 160.21 acres and the maximum allowable impervious cover for the entire site increased to 143.13 acres (89.34 percent).

A CZP Modification was approved on June 7, 2016 (EAPP File ID: 11000074) included 9.49 acres of impervious cover that included construction for 1) Ethan's View at the Backyard, a condominium development, 2) The Bloom, a restaurant/office space, 3) Bee Cave Parkway right turn lane, 4) the Terrace North Offices.

PROJECT DESCRIPTION

The CZP MOD proposes to modify Pond 1A and Ethan's View retention/irrigation ponds that treat a drainage area of 22.60 acres. The modification to Pond 1A includes the installation of a new out fall structure to stack detention volume above the water quality volume and increase the irrigation area from 0.09 acres to 0.71 acres. The irrigation area of the Ethan's View Pond will also be increased from 0.52 acres to 0.69 acres. The impervious cover amount from prior approvals will be reduced from 84.59 acres to 83.32 acres. Project wastewater will be conveyed to the existing Lake Pointe wastewater treatment plant.

In addition to the described activities, temporary erosion and sedimentation controls will be installed prior to commencing site disturbance and maintained during construction.

SPECIAL CONDITIONS

I. This modification is subject to all Special and Standard Conditions listed in the CZP and the CZP MOD approval letters dated June 28, 2005, November 3, 2011, May 2, 2013 and June 7, 2016.

II. Additional phases of this development will require approval of a CZP or CZP Modification as applicable prior to conducting additional regulated activities on the site.

III. All permanent and interim pollution abatement measures shall be operational prior to occupancy of the facilities.

IV. All sediment and/or media removed during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations

and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.

3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
10. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. 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).
11. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management

practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

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

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

14. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

15. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.

16. The applicant shall be 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. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

17. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

18. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

19. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Bryan Maynard of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Robert Sadlier
Water Section Team Leader
Austin Regional Office

RCS/bgm

Enclosure: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Lance Oriti, P.E., Stantec Consulting Services, Inc., Austin
Mr. MD Hossain, Associate Engineer, City of Bee Cave
The Honorable Sarah Eckhardt, County Judge, Travis County

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 23, 2023

Mr. Travis Russell
Bee Cave Parkway Owner, LLC
3000 Richmond Ave.
Houston, Texas 77098

Re: Modification of an approved Contributing Zone Plan (CZP-MOD)
The Pearl at Bee Cave; Located NE of Bee Cave Pkwy. and RR 620; Bee Cave, Travis County, Texas
Edwards Aquifer Protection Program ID: 11003516, Regulated Entity No. RN108924812

Dear Mr. Russell:

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by Kimley-Horn & Associates, Inc. on behalf of the applicant, Bee Cave Parkway Owner, LLC on March 7, 2023. Final review of the application was completed after additional material was received on June 19, 2023 and June 22, 2023.

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

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

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

BACKGROUND

Several Contributing Zone Plans (CZP) and CZP-MODs have been approved for the overall site. A CZP was approved by letter dated June 28, 2005 (EAPP ID No. 11-05040601). CZP-MODs were approved by letter on November 3, 2011 (EAPP ID No. 11-05040601A), May 2, 2013 (EAPP ID No. 11-13021802), June 7, 2016 (EAPP ID No. 11000074; expired December 17, 2015), and April 20, 2018 (EAPP ID No. 11000991).

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 13.4 acres. The modification will include redefinition of lots/project limits, construction of apartment units, an amenity center, pool, parking, sidewalks, utilities, water quality facilities, and associated appurtenances. The impervious cover will be 7.67 acres (57.24 percent). Project wastewater will be disposed of by conveyance to the existing Lake Pointe Wastewater Plant.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a retention/irrigation basin, designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 6,676 pounds of TSS generated from the 7.67 acres of impervious cover. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The permanent BMPS shall be operational prior to occupancy or use of the proposed project. Inspection, maintenance, repair, and retrofit of the permanent BMPs shall be in accordance with the approved application.

SPECIAL CONDITIONS

I. This modification is subject to all the special and standard conditions listed in the approval letter(s) dated June 28, 2005 (EAPP ID No. 11-05040601), November 3, 2011 (EAPP ID No. 11-05040601A), May 2, 2013 (EAPP ID No. 11-13021802), and April 20, 2018 (EAPP ID No. 11000991).

STANDARD CONDITIONS

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

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

Prior to Commencement of Construction:

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

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

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

During Construction:

6. The application must indicate the placement of permanent aboveground storage tanks facilities for static hydrocarbons and hazardous substances with cumulative storage capacity of 500 gallons or more. Subsequent permanent storage tanks on this project site require a modification to be submitted and approved prior to installation.

7. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

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

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

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

After Completion of Construction:

11. Owners of permanent BMPs and temporary measures must ensure that the BMPs and measures are constructed and function as designed. A Texas licensed PE **must certify** in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the EAPP within 30 days of site completion.

12. The applicant shall be 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 or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.

The holder of the approved contributing zone plan is responsible for compliance with Chapter §213 subchapter B and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 subchapter B and is subject to administrative rule or orders and penalties as provided under §213.25 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved contributing zone plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. James “Bo” Slone, P.G. of the Edwards Aquifer Protection Program at (512) 239-5711 or the regional office at 512-339-2929.

Sincerely,

Lillian Butler

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

LIB/jcs

cc: Mr. Lance Oriti, P.E., Kimley-Horn & Associates, Inc.

ATTACHMENT B

PROJECT BACKGROUND

Pearl Townhomes is a proposed townhome residential project located near the northeast corner of RM 620 and Bee Cave Parkway in the City of Bee Cave, Texas. The project site consists of two platted lots that will be replatted to support 54 townhome units and a pool. The overall site area is 6.08 acres.

The project site lies within the Edwards Aquifer Contributing Zone and several Contributing Zone modifications were submitted and previously approved by the TCEQ. The project name for the original Contribution Zone Plan was Hill Country Galleria. Subsequent Modifications were prepared for a portion of the Hill Country Galleria CZP under the project name: The Terrace. The Terrace project consisted of approximately 19.53 acres out of the Hill Country Galleria site but was never constructed. A detailed summary of the previously approved Terrace project is provided in the next section.

NARRATIVE OF PREVIOUSLY APPROVED PROJECT

The Terrace project consisted of approximately 19.53 acres at the northeast corner of RM 620 and Bee Cave Parkway in the City of Bee Cave, Texas. The Terrace was comprised of four (4) development components: Ethan's View at the Backyard, Bloom, Bee Cave Parkway right turn lane, and the Terrace North office development. Ethan's View at the Backyard was a residential condominium development comprised of 57 condominium units. Bloom was intended to be a restaurant/office. The Bee Cave Parkway right turn lane improvements add one new lane of pavement from the Ethan's View site to RM 620 (approximately 2,130 linear feet). The Terrace North office consisted of five (5) office buildings with subsurface parking garages. Several CZP modifications were approved for the Terrace Development, but construction was never started.

The original Contributing Zone Plan application for the Hill Country Galleria was approved on June 28, 2005, Edwards Aquifer Protection Program ID No. 05040601. This Contributing Zone Plan approved nine retention/irrigation ponds to act as water quality BMPs for 156.08 acres of mixed-use development and a proposed impervious cover of 71.69 acres. The approval letter issued to HCG Master Ground Lease, L.P. and a copy of the letter has been provided in ***Attachment A***.

On November 3, 2011, a modification to the original Contributing Zone Plan was approved. The purpose of the modification was to relocate one of the water quality ponds and remove existing clay liners from three other ponds. The approval letter was issued to Hill Country Texas Galleria, LLC and a copy of the letter has been provided in ***Attachment A***.

On May 2, 2013, a modification to the Contributing Zone Plan was approved. The purpose of this modification was to increase the overall site area to 160.21 acres and maximum allowable impervious cover to 143.13 acres. It also included the modification of one water quality pond and approximately 3,400 linear feet of a decomposed granite trail. The approval letter was issued to Hill Country Texas Galleria, LLC and a copy of the letter has been provided in ***Attachment A***.
On June 7, 2016, a modification to the Contributing Zone Plan was approved. The purpose of this modification was to include four new components into the Terrace development. These

components are 1.) Ethan's View 2.) Bloom 3.) Bee Cave Parkway right turn lane and 4.) Terrace North Offices. One new pond (Ethan's View Pond) was proposed with this modified CZP and the water quality volume and impervious cover data was updated for existing ponds A1 and F1. The approval letter was issued to Terrace Partners, LLC and a copy has been provided in ***Attachment A.***

On April 20, 2018, a modification to the Contributing Zone Plan was approved. The purpose of this modification was to modify the design of Pond A1 to incorporate a new outfall structure, increase the re-irrigation field areas for Pond A1 and the Ethan's View Pond and to update the project's impervious cover amount. The approval letter was issued to Terrace Partners, LLC and a copy has been provided in ***Attachment A.***

NARRATIVE OF PROPOSED PROJECT MODIFICATION

The main purpose of this modification application is to change the project limits and components from the 19.53-acre Terrace Project to the 6.08-acre Pearl Townhome Project. A modification to the Terrace Contributing Zone Plan from 2018 was recently approved to breakout the 13.40- acres Pearl Multifamily Project. The approval letter for Pearl Multifamily Project Contributing Zone Plan application has been provided in **Attachment A.**

This CZP Modification consists of proposing a new water quality pond for the Pearl Townhome Project.

A detailed explanation follows:

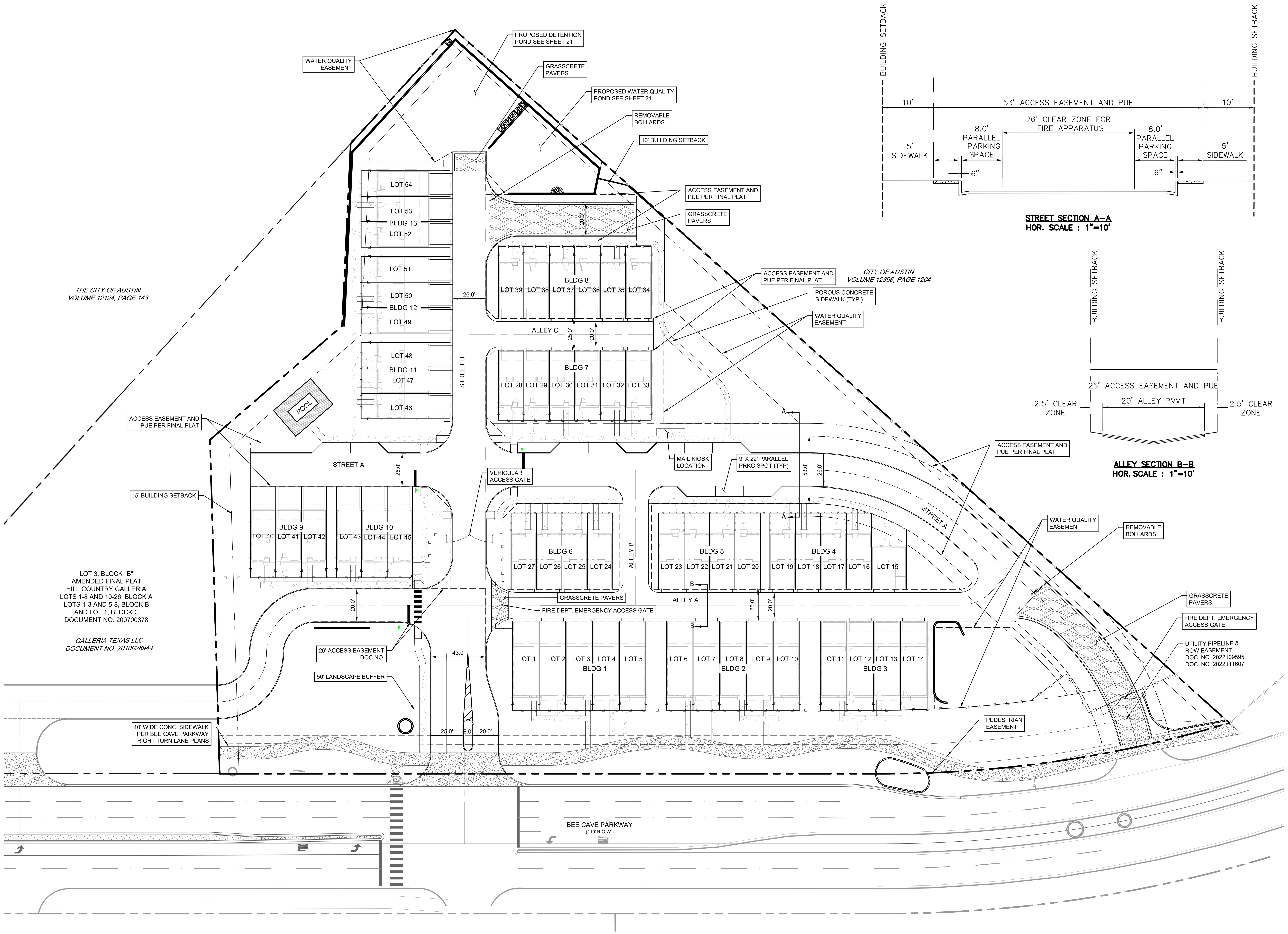
A storm sewer system, containing curb inlets, grate inlets and roof drains are proposed throughout the site to capture stormwater run-off and convey it to both the on-site water quality pond and detention pond (Point of Interest #1) and the off-site ponds F1 on the opposite side of Bee Cave Parkway (Point of Interest #3). Existing Pond F1 was designed to accept a portion of the stormwater runoff from the townhome site. No modifications are proposed to Pond F1 and it is not part of this CZP modification.

Drainage area P1 accounts for an area of ±4.91 acres and includes up to 50,000 sf of impervious cover from Lot 3 draining to the on-site water quality and detention ponds at the northeast corner of the townhome site, which ultimately discharges to point of interest #1. The on-site detention pond contains an outfall structure designed to release flows from the pond at less than existing conditions for the 2, 10, 25 and 100-year storm events. Drainage area P2 sheet flows, undetained to City of Austin property designated as point of interest #2. The discharge shown for point of interest #3 is less than the allowable flow per the Drainage Area Map of the Hill Country Galleria plans by Garret-Ihnen used to size Pond F1 located on the opposite side of Bee Cave Parkway and the storm sewer facilities located within Bee Cave Parkway. Point of interest #3 was analyzed using the rational method for an area of 4.88 acres and impervious cover area of 4.53 acres. Allowable Drainage Area Pond F1 (Sheet 19) of the Hill Country Galleria plan has been included in the construction plan set for reference.

On-site storm water will be conveyed to the proposed water quality pond located at the northeast corner of the property and existing Pond F1, across Bee Cave Parkway. The on-site water quality pond capacity is approximately 18,198 cf. The water quality volume will be sprayed on (2) re-irrigation fields located on the subject site. The irrigation fields were sized per City of Bee Cave

criteria utilizing the infiltration rates obtained from Amoozemeter testing performed by ECS Southwest, LLP and by using a safety factor of 2.

ATTACHMENT C



STREET SECTION A-A
HOR. SCALE : 1"=10'

ALLEY SECTION B-B
HOR. SCALE : 1"=10'

GRAPHIC SCALE 40' (0, 40', 80')

LEGEND

- PROPERTY LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTEWATER MANHOLE
- FENCE (SEE LANDSCAPE PLAN FOR DETAILS)
- EXISTING TREE TO BE PRESERVED

SITE DATA
ZONING ORDINANCE = 480, PLANNED DEVELOPMENT
SITE AREA = 6.07 ACRES

REQUIRED SETBACKS:
- 50' LANDSCAPE BUFFER ALONG BEE CAVE PARKWAY (FROM EXISTING RIGHT OF WAY)
- 15' BUILDING SETBACK ADJACENT TO LOT 3
- 10' BUILDING SETBACK ADJACENT TO THE EASTERN PROPERTY BOUNDARY

LTFR CODE MODIFICATION NOTE
A CODE MODIFICATION REQUEST WAS APPROVED ON MAY 05, 2022 TO ALLOW THE 3-STORY BUILDINGS ADJACENT TO BEE CAVE PARKWAY (LOTS 1-14) TO BE APPROX 80' FROM THE BEE CAVE PARKWAY CURB. THESE BUILDINGS WILL BE REQUIRED TO INSTALL AN NFPA 13 SPRINKLER SYSTEM. IN ADDITION, A GRASSCRETE PRODUCT SHALL BE PERMITED FOR FIRE LANES WITH LTFR APPROVAL OF THE SPECIFICATION.

PARKING SUMMARY

REQUIRED PARKING	
2 ENCLOSED GARAGE SPACES PER UNIT	= 108
1 VISITOR SPACE PER EVERY 4 UNITS (W/O DRIVEWAYS)	= 10
TOTAL REQUIRED PARKING	= 118
PROVIDED PARKING	
ENCLOSED GARAGE SPACES	= 108
VISITOR SPACES	= 10
TOTAL PROVIDED PARKING	= 118 SPACES

NOTE: VISITOR PARKING IS ALSO PROVIDED AT THE 15 UNITS WITH DRIVEWAYS (UNITS 40-54)

NOTES
1. DIMENSIONS SHOWN TO CURB ARE TAKEN TO FACE OF CURB.
2. SEE DIMENSION CONTROL PLAN, SHEET 12, FOR ADDITIONAL SITE DIMENSIONS.
3. SIDEWALKS ADJACENT TO STREET A SHALL BE 5' MINIMUM, ALL OTHER SIDEWALKS SHALL BE 4' MIN.

BUILDING DATA

Building #	Gross Floor Area (SF)	# Stories	Building Height	Construction Type
1	17,453	3	46'	V-A
2	17,422	3	46'	V-A
3	13,977	3	46'	V-A
4	17,223	4	56'	V-A
5	13,658	4	56'	V-A
6	13,694	4	56'	V-A
7	20,490	4	56'	V-A
8	20,490	4	56'	V-A
9	9,955	4	56'	V-A
10	9,955	4	56'	V-A
11	9,955	4	56'	V-A
12	9,923	4	56'	V-A
13	9,955	4	56'	V-A
Total	184,150			

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

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

No. | REVISIONS | DATE | BY

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM

STATE OF TEXAS — LANCE R. ORITI — 96173 — LICENSED PROFESSIONAL ENGINEER
7/27/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

SITE PLAN

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
11 OF 88

Table of Contents

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), 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 **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Lance Oriti, P.E.

Date: 7-25-2023

Signature of Customer/Agent:

Regulated Entity Name: Pearl Townhomes

Project Information

1. County: Travis
2. Stream Basin: Little Barton Creek
3. Groundwater Conservation District (if applicable): _____
4. Customer (Applicant):

   Contact Person: David Foor
   Entity: Huntsville Center LTD
   Mailing Address: 2410 Polk St #200
   City, State: Houston, TX Zip: 77003

   Telephone: 713-293-6901

Fax: _____
Email Address: DavidF@lovettcommercial.com

5. Agent/Representative (If any):

Contact Person: Lance Oriti, P.E.
Entity: Kimley-Horn and Associates, Inc.
Mailing Address: 10814 Jollyville Road Campus IV, Suite 200
City, State: Austin, TX Zip: 78759

Telephone: +1 512-910-8305 Fax: _____

Email Address: lance.oriti@kimley-horn.com

6. Project Location:

☒ The project site is located inside the city limits of Bee Cave.
☐ 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.

7. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

The project site is located near the northeast corner of RM 620 and Bee Cave Parkway in the City of Bee Cave. The street address of the property is 13200 & 13216 Bee Cave Parkway.

8. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

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

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. 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

11. 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/Not cleared)
☐ Other: _____

12. The type of project is:

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

13. Total project area (size of site): 6.08 Acres

Total disturbed area: 6.08 Acres

14. Estimated projected population: N/A

15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	***Sq. Ft.***	***Sq. Ft./Acre***	***Acres***
Structures/Rooftops	53,395.5	÷ 43,560 =	1.23
Parking	55,680	÷ 43,560 =	1.28
Other paved surfaces	16,769	÷ 43,560 =	0.38
Total Impervious Cover	125,844.5	÷ 43,560 =	2.89

Total Impervious Cover 2.89 **÷ Total Acreage** 6.08 **X 100 =** 47.5**% Impervious Cover**

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

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

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. 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.

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

☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

20. Right of Way (R.O.W.):

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

21. Pavement Area:

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.

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

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

23. ☐ 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

24. ☒ **Attachment E - 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 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

25. ☐ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC §213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☒ N/A

26. Wastewater will be disposed of by:

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

☐ **Attachment F - 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):

The sewage collection system will convey the wastewater to the Lake Pointe Wastewater (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

☐ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

    ☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

☐ All piping, hoses, and dispensers will be located inside the containment structure.
☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
☐ The piping will be aboveground
☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings**. A scaled drawing of the containment structure is attached that shows the following:

☐ Interior dimensions (length, width, depth and wall and floor thickness).
☐ Internal drainage to a point convenient for the collection of any spillage.
☐ Tanks clearly labeled
☐ Piping clearly labeled

☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

    ☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

    ☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

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

    Site Plan Scale: 1" = 60'.

35. 100-year floodplain boundaries:

    ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

    ☒ No part of the project site is located within the 100-year floodplain.

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM #48453C0405J (01/22/2020).

36. ☒ 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, etc. are shown on the site plan.

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

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

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

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

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

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

42. ☐ Surface waters (including wetlands).

    ☒ N/A

43. ☐ Locations where stormwater discharges to surface water.

    ☒ There will be no discharges to surface water.

44. ☐ Temporary aboveground storage tank facilities.

    ☒ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

    ☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

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

    ☐ N/A

48. ☒ 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

49. ☒ 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

50. 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.

51. 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 I - 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.

52. ☒ **Attachment J - 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.

53. ☒ **Attachment K - 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.

54. ☐ **Attachment L - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

☒ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

56. ☒ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan**. A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

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

☐ N/A

57. ☐ **Attachment O - 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

58. ☐ **Attachment P - 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 result in water quality degradation.

☒ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ 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.

60. ☒ 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.

Administrative Information

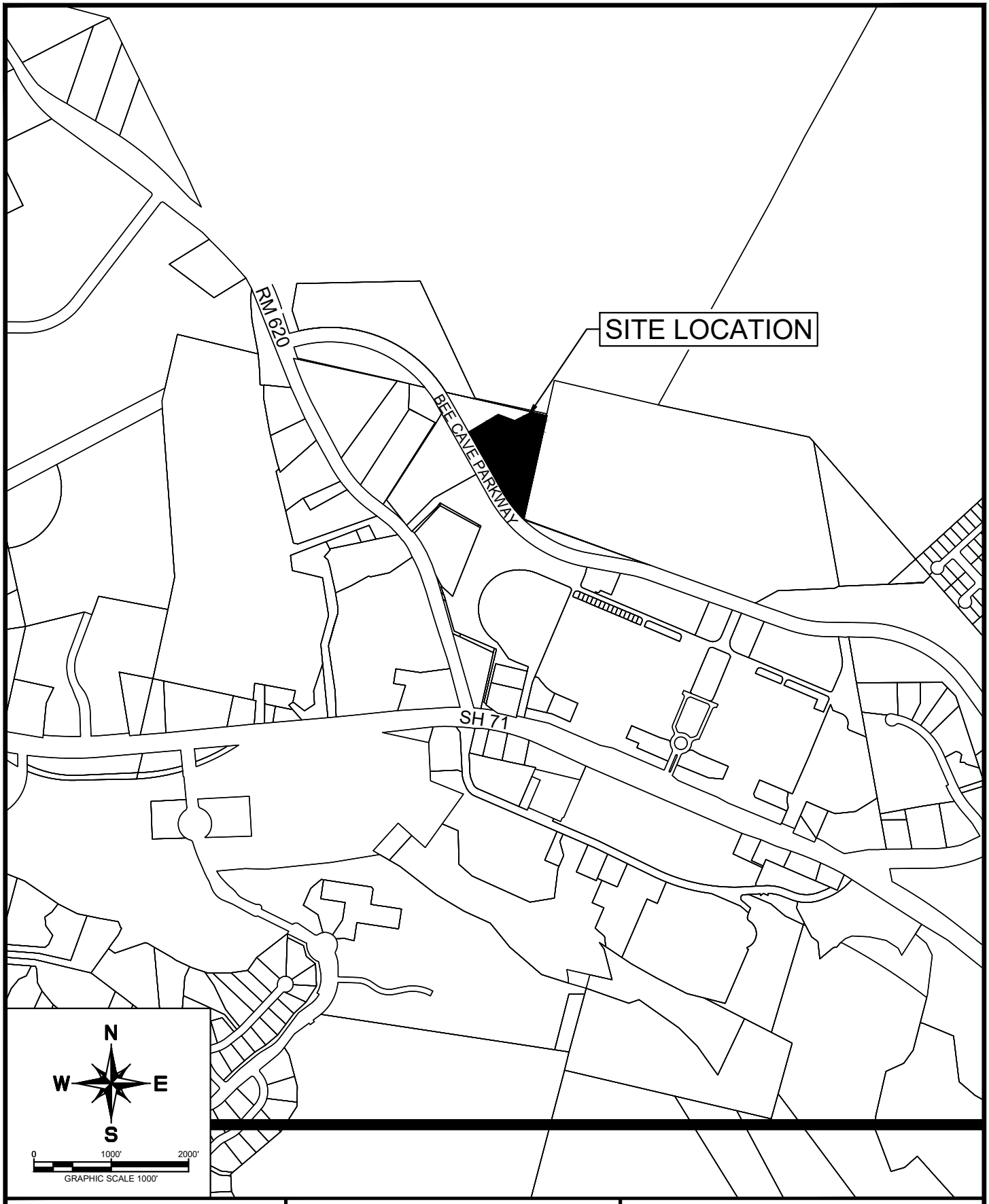
61. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions.

62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

☐ The Temporary Stormwater Section (TCEQ-0602) is included with the application.

ATTACHMENT A - SITE LOCATION MAP

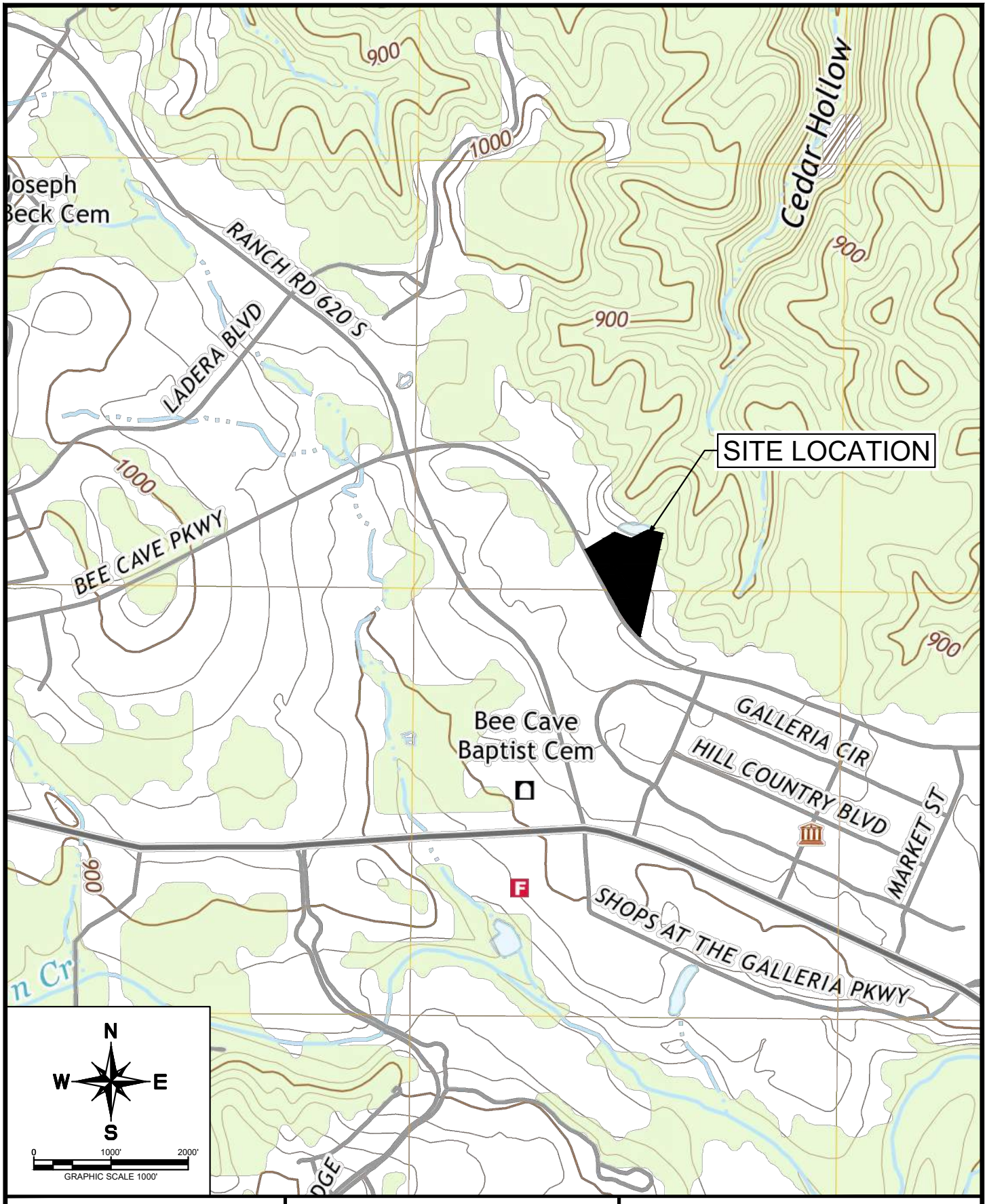


PEARL TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SITE LOCATION MAP

Kimley»Horn
10814 Jollyville Road
Campus IV, Suite 200
Austin, Texas 78759
(512) 418-1771

ATTACHMENT B – USGS QUADRANGLE MAP



PEARL TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

USGS TOPO MAP
BEE CAVE QUADRANGLE

Kimley»Horn
10814 Jollyville Road
Campus IV, Suite 200
Austin, Texas 78759
(512) 418-1771

ATTACHMENT C – PROJECT NARRATIVE

Found on Attachment B of TCEQ-12059

ATTACHMENT D – FACTORS AFFECTING SURFACE WATER QUALITY

Examples of items and activities to be expected with the proposed development include petroleum-based fuels used in vehicles from vehicle parking, and grass and leaves from landscaping.

During construction, water quality could be affected by the runoff carrying sediments and materials from the open construction area and from the construction of buildings. These materials include hydraulic fluid, diesel fuel, oils, asphalt, concrete, and paint. Silt fence will be installed along the downstream portion of the property and inlet protections will be installed around all proposed inlet structures (once constructed).

After construction, all disturbed areas on the site will be re-vegetated and runoff from the proposed improvements will be captured by the proposed inlets and conveyed to the BMP's for water quality treatment

ATTACHMENT E – VOLUME AND CHARACTER OF STORM WATER

Calculations for the required water quality volumes are provided on the Water Quality & Detention Pond Design (sheet 21) and Inlet Drainage Area Map (sheet 20) sheets of the construction drawings (see attachment M).

ATTACHMENT J– BMP'S FOR UPGRADIENT STORMWATER

There is no off-site up-gradient surface water that flows to Pearl Townhomes at Bee Cave development. The existing drainage area map, sheet 17 of the construction drawings, shows no upgradient surface water.

ATTACHMENT K – BMPS FOR ON-SITE STORM WATER

During construction, Best Management Practices include the use of silt fence and inlet protection to capture sediment from the construction area contained within the storm water runoff. Silt fence will be installed along the downstream portion of the property and inlet protection will be installed around all existing and proposed inlet structures (once constructed). Construction entrances will be utilized to limit sediment being taken off-site from construction vehicles. Concrete washout pits will be utilized on site and staging areas will be designated on site and contained using silt fence. The construction drawings provided contain erosion control plans and details. The post construction BMP is a water quality pond and a series of re-irrigation fields.

ATTACHMENT M – CONSTRUCTION PLANS

Please reference attached construction plans.

SITE AND NPS CONSTRUCTION DOCUMENTS

FOR

PEARL - TOWNHOMES

13200 & 13216 BEE CAVE PKWY
BEE CAVE, TEXAS 78738

LEGAL DESCRIPTION

LOT 4, BLOCK "B" OF THE HILL COUNTRY GALLERIA, A SUBDIVISION IN TRAVIS COUNTY, TEXAS, ACCORDING TO THE MAP OR PLAT THEREOF, RECORDED UNDER DOCUMENT NO. 200600357 OF THE OFFICIAL PUBLIC RECORDS OF TRAVIS COUNTY, TEXAS.

LOT 5, BLOCK "B" OF THE AMENDED FINAL HILL COUNTRY GALLERIA OF LOTS 1-8 AND 10-26, BLOCK A, LOTS 1-3 AND 5-8, BLOCK B AND LOT 1, BLOCK C, A SUBDIVISION IN TRAVIS COUNTY, TEXAS, ACCORDING TO THE MAP OR PLAT THEREOF, RECORDED UNDER DOCUMENT NO. 200700378 OF THE OFFICIAL PUBLIC RECORDS OF TRAVIS COUNTY, TEXAS.

WATERSHED STATUS

THIS PROJECT IS LOCATED WITHIN THE CEDAR HOLLOW AND LITTLE BARTON CREEK WATERSHED. A PORTION LIES WITHIN THE EDWARDS AQUIFER CONTRIBUTING ZONE.

FLOODPLAIN INFORMATION

THIS TRACT LIES WITHIN ZONE "X" (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, FEDERAL INSURANCE ADMINISTRATION AS SHOWN ON MAP NO. 48453C0405J, REVISED JANUARY 22, 2020, TRAVIS COUNTY, TEXAS AND INCORPORATED AREAS.

WTCPUA NOTES:

1. WEST TRAVIS COUNTY PUBLIC UTILITY AGENCY IS THE WATER AND WASTEWATER PROVIDER.
2. (55) 5/8" DOMESTIC WATER METERS ARE PROPOSED NO IRRIGATION WATER METERS ARE PROPOSED.
3. WTCPUA DOES NOT GUARANTEE FIRE FLOW.
4. A WTCPUA REPRESENTATIVE MUST BE PRESENT AT TIME OF CONNECTION TO THE EXISTING SYSTEM.
5. ALL WATER AND WASTEWATER INFRASTRUCTURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF AUSTIN SPECIFICATIONS AND WITH MATERIALS FROM THE CURRENT APPROVED CITY OF AUSTIN STANDARD PRODUCT LIST (SPL).

Water Public Improvements Material List

Water Quantities:	QTY	
8" Ductile Iron Pipe CL 350 (Unrestrained)	420	LF
8" Ductile Iron Pipe CL 350 (Restrained)	81	LF
8" C900 PVC Pipe (Restrained)	543	LF
8" C900 PVC Pipe (Unrestrained)	927	LF
6" PVC Fire Service	277	LF
6" D.I. F.H. Lead	44	LF
2" Service	566	LF
5 1/4" Fire Hydrant	4	EA
Fire BFP with Vault	13	EA
8" Gate Valve	19	EA
6" Gate Valve	18	EA
8" X 8" Tee	4	EA
8" X 6" Tee	15	EA
2" Service Saddle	44	EA
5/8" Domestic Meter	55	EA

Wastewater Public Improvements Material List

Wastewater Quantities:	QTY	
8" PVC SDR 26 (ASTM D3034) Gravity Wastewater	977	LF
8" PVC SDR 26 150 MIN. PSI (ASTM D2241) Gravity Wastewater	74	LF
4' Diameter Precast Concrete Wastewater Manhole	9	EA
4' Diameter Precast Concrete Wastewater Drop Manhole	1	EA
Connection to Existing WW Manhole	1	EA

Travis County ESD NO.6 - DESIGN STANDARDS = 2015 IFC

Building #	Gross Floor Area (SF)	# Stories	Building Height	Construction Type	High-Rise	Fire Sprinklers	Required Fire Flow @ 20 psi	Available Fire Flow @ 20 psi
1	17,453	3	46'	V-A	NO	NFPA 13	1,000	4,236*
2	17,422	3	46'	V-A	NO	NFPA 13	1,000	4,236*
3	13,977	3	46'	V-A	NO	NFPA 13	1,000	4,236*
4	17,223	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
5	13,658	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
6	13,694	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
7	20,490	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
8	20,490	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
9	9,955	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
10	9,955	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
11	9,955	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
12	9,923	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
13	9,955	4	56'	V-A	NO	NFPA 13R	1,500	4,236*
Total	184,150							

ZONING ORDINANCE No.: 480

TOTAL SITE AREA = 6.079 ACRES

PUA WW SYSTEM MAP GRID = C7, D7.

TRACT TAX ID# 740563, 740564

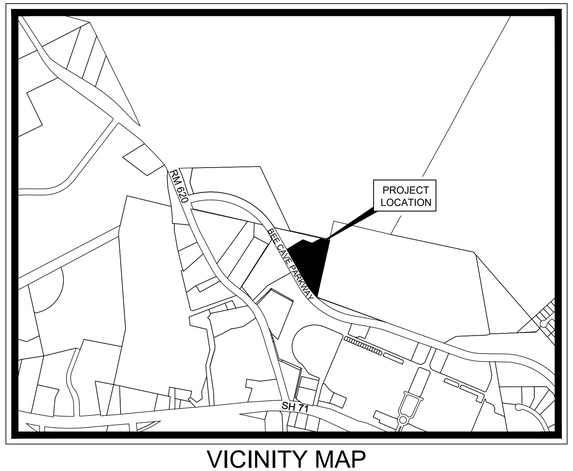
PRESSURE PLANE/HGL = 1175HGL
PUA WATER SYSTEM MAP GRID = PANEL H11, I11 (HWY 71 SYSTEM)

MAPSCO GRID 550J & 550N

NOTES:

1. OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL LANDSCAPING PER COBC CODE OF ORDINANCE SEC. 32.05.002 (J).
2. THE CONSTRUCTION PLAN MEETS ALL REQUIREMENTS STATED IN CITY OF BEE CAVE CODE OF ORDINANCE SEC. 16.03 FOR CONSTRUCTION IN PUBLIC RIGHTS-OF-WAY. CONTRACTOR MUST COMPLY WITH ALL THE REQUIREMENTS OF APPROVAL BODIES.
3. WITHIN FOURTEEN (14) DAYS OF COMPLETION OF EXCAVATION, CONSTRUCTION, INSTALLATION, EXPANSION OF FACILITIES OR OTHER WORK IN THE PUBLIC RIGHTS-OF-WAY, APPLICANT/CONTRACTOR SHALL TEMPORARILY RESTORE AND REPAIR THE PUBLIC RIGHTS-OF-WAY. WITHIN THIRTY (30) CALENDAR DAYS AFTER COMPLETION OF WORK IN THE PUBLIC RIGHTS-OF-WAY, RESPONSIBLE PARTY SHALL PERMANENTLY RESTORE THE SURFACE AND ALL OTHER INFRASTRUCTURE LOCATED ON, IN OR UNDER ANY PUBLIC RIGHTS-OF-WAY. RESPONSIBLE PARTY SHALL RESTORE ANY DISTURBED/DESTROYED RIGHT-OF-WAY MARKERS OR MONUMENTS WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION HAS CEASED.
4. THE PROPERTY IS SUBJECT TO A WATER QUALITY CONTROL MAINTENANCE PLAN, AN NPS POLLUTION CONTROL PERMIT, AND AN ANNUAL OPERATING PERMIT.
5. IF A SUBSURFACE VOID IS ENCOUNTERED DURING ANY PHASE OF THE PROJECT, CONSTRUCTION SHOULD BE HALTED UNTIL THE THE TCEQ (OR APPROPRIATE AGENCY) IS CONTACTED AND A LICENSED GEOLOGIST CAN INVESTIGATE THE FEATURE TO DEVELOP CLOSURE PLAN.
6. IRRIGATION WILL BE FROM RAINWATER HARVESTING TANKS, TREATED WASTEWATER EFFLUENT OR RAW WATER. POTABLE WATER FROM THE WTCPUA WILL NOT BE USED FOR IRRIGATION.
7. FOR ANY PROPOSED STRUCTURAL WALLS WHICH ARE OVER 4' IN HEIGHT, STRUCTURAL WALL PLANS ARE REQUIRED TO BE SUBMITTED TO THE CITY OF BEE CAVE FOR REVIEW. THESE PLANS MUST BE REVIEWED AND APPROVED BY THE ENGINEERING DEPARTMENT PRIOR TO STARTING CONSTRUCTION ON THE WALLS.
8. AT THE TIME OF SITE PLAN APPROVAL, ELECTRIC AND GAS UTILITY DESIGNS ARE NOT FINALIZED. MINIMUM VERTICAL AND HORIZONTAL UTILITY SEPARATIONS OUTLINED IN SECTION 5.8 OF THE CITY OF AUSTIN DCM SHALL BE FOLLOWED BY THE FINAL DESIGN AND THE FINAL UTILITY CROSSINGS SHALL BE REFLECTED IN THE FINAL AS-BUILT PLANS. IF WATER/WASTEWATER/STORMWATER UTILITY LINES ARE REQUIRED TO BE RELOCATED DURING CONSTRUCTION, DUE TO INADEQUATE CLEARANCES, THEN A CORRECTION TO THE SITE PLAN WILL BE REQUIRED.
9. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF BEE CAVE MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.
10. CONSTRICTION HOURS ARE 7:00AM TO 7:00PM.
11. A SITE AND NPS PERMIT IS REQUIRED PRIOR TO CONSTRUCTION OF THE SITE.
12. A SEPARATE BUILDING PERMIT FROM THE CITY OF BEE CAVE WILL BE REQUIRED.

AT EXISTING FIRE HYDRANT ON BEE CAVE PARKWAY



VICINITY MAP
SCALE: 1" = 1,000'

July 2023

I, LANCE R. ORITI, P.E., CERTIFY THAT THESE ENGINEERING DOCUMENTS ARE COMPLETE, ACCURATE AND ADEQUATE FOR THE INTENDED PURPOSES, INCLUDING CONSTRUCTION, BUT ARE NOT AUTHORIZED FOR CONSTRUCTION PRIOR TO FORMAL CITY APPROVAL. THE DRAWINGS, PLANS AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION COMPLY WITH APPLICABLE TECHNICAL CODES, RULES AND REGULATIONS. I DO CERTIFY THAT THE ENGINEERING WORK BEING SUBMITTED HEREIN COMPLIES WITH ALL PROVISIONS OF THE TEXAS ENGINEERING PRACTICE ACT.

PERMIT NO. : ----

1ST SUBMITTAL DATE : 7/3/2023

SUBMITTED BY : Lance Oriti 7/3/23
DATE

LANCE R. ORITI, P.E.
KIMLEY--HORN AND ASSOCIATES, INC
10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300
AUSTIN TX 78759
CERTIFICATE OF REGISTRATION #928

STATE OF TEXAS · LANCE R. ORITI · 96173 · LICENSED · PROFESSIONAL ENGINEER

APPROVED FOR ACCEPTANCE:

DATE OF OFFICIAL SUBMISSION

CZP PERMIT NUMBER — DATE

CITY OF BEE CAVE — DATE

WEST TRAVIS COUNTY PUBLIC UTILITY AGENT — DATE

LAKE TRAVIS FIRE AND RESCUE — DATE

Know what's below. Call before you dig.

Sheet List Table

ARCHITECTURAL SHEETS

OWNER:
HUNTSVILLE CENTER LTD.
2410 POLK ST. #200
HOUSTON, TEXAS 77003
(512) 653-0877
CONTACT: DAWN BAYARENA

SURVEYOR :
STANTEC CONSULTING SERVICES INC.
1905 ALDRICH STREET, SUITE 300
AUSTIN, TEXAS 78723
(512) 328-0011
CONTACT: JOHN BILNOSKI, RPLS

ENGINEER:
KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 200 AUSTIN, TX 78759
(512) 418-1771
CONTACT: LANCE ORITI, P.E.

ARCHITECT:
HUNTSVILLE CENTER LTD.
2410 POLK ST. #200
HOUSTON, TEXAS 77003
(512) 653-0877
CONTACT: DAWN BAYARENA

LANDSCAPE ARCHITECT:
WILLIAM S. BLAIR
100 CONGRESS AVE.
STE. 2000
AUSTIN, TX 78701
(512) 522-8979
CONTACT: WILLIAM S. BLAIR

PREPARED BY:
Kimley»Horn
10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 200
AUSTIN, TEXAS 78759
CERTIFICATE OF REGISTRATION #928
Tel. No. (512) 418-1771
Fax No. (512) 418-1791

REVISIONS/CORRECTIONS							
NO.	DESCRIPTION	REVISE (R) VOID (V) ADD (A) SHEET NO.'S	TOTAL NO. SHEETS IN PLAN SET	NET CHANGE IMP. COVER (SQ. FT.)	TOTAL SITE IMP. COVER (SQ. FT.)/%	CITY OF BEE CAVE APPROVAL DATE	DATE IMAGED

REVISIONS | DATE | BY | No.

PEARL - TOWNHOMES

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TBAE: KIMLEY-HORN ASSOCIATES, INC.
TBPE Firm No. 928

STATE OF TEXAS · LANCE R. ORITI · 96173 · LICENSED · PROFESSIONAL ENGINEER

7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

COVER SHEET

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
1 OF 88

PLATS 200700378
40 PGS

PLAT DOCUMENT # _____

PLAT

PLAT RECORDS INDEX SHEET:

SUBDIVISION NAME: Amended Final Plat, Hill Country Galleria of Lots 1-8 and 10-26, Block A, Lots 1-3 and 5-8, Block B and Lot 1, Block A

OWNERS NAME: HILL COUNTRY GALLERIA, L.P. ; ROD-AVE L.P. TROUBLEMAKER GP, INC. ; CITY OF BEE CAVE fka VILLAGE OF BEE CAVE HILL COUNTRY APARTMENTS L.P. ; OWR HILL COUNTRY INC.

RESUBDIVISION? YES ☒ NO ☐

ADDITIONAL RESTRICTIONS / COMMENTS:

Verification of Land Ownership 2007225455
Verification of Land Ownership 2007225456
Verification of Land Ownership 2007225457

RETURN:

City of Bee Cave, Norma Williams, 13333 A Hwy 71 West, Bee Cave, TX 78738

PLAT FILE STAMP
FILED AND RECORDED
OFFICIAL PUBLIC RECORDS
Dana DeBeauvoir
2007 Dec 18 10:57 AM 200700378
GONZALESM $1,091.00
DANA DEBEAUVOIR COUNTY CLERK
TRAVIS COUNTY TEXAS

PHOTOGRAPHIC MYLAR $1,091.00 DECEMBER 18, 2007 200700378

SHEET 1 OF 40

STATE OF TEXAS
KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF TRAVIS

KNOW ALL MEN BY THESE PRESENTS THAT HILL COUNTRY GALLERIA, L.P., ACTING HEREIN BY AND THROUGH(name) John Greer (title) Executive V.P. OF HILL COUNTRY GALLERIA, L.P., BEING OWNERS OF LOTS 1, 2, 3, 5, 8, 10-15, 19, 20, 24, 25 AND 26, BLOCK A, LOTS 3, 5, 6, 7, AND 8, BLOCK B AND A PORTION OF LOT 1 BLOCK C, ROD-AVE, L.P., ACTING BY AND THROUGH (name) Robert A. Rodriguez (title) President OF TROUBLEMAKER GP, INC., A TEXAS CORPORATION, GENERAL PARTNER OF ROD-AVE, L.P., BEING OWNERS OF LOT 6, BLOCK A, LOTS 1 AND 2, BLOCK B AND A PORTION OF LOT 1, BLOCK C, THE CITY OF BEE CAVE, TEXAS f/k/a THE VILLAGE OF BEE CAVE, ACTING BY AND THROUGH (name) James Fisher (title) City Administrator BEING OWNERS OF LOT 7 BLOCK A, AND HILL COUNTRY APARTMENTS, L.P., A DELAWARE LIMITED PARTNERSHIP, OWR HILL COUNTRY, INC., A DELAWARE CORPORATION, ITS GENERAL PARTNER, ACTING BY AND THROUGH(name) John Greer (title) Executive V.P. OF OWR HILL COUNTRY INC., OWNERS OF LOTS 16-18, 21-23, BLOCK A, ALL OF THE HILL COUNTRY GALLERIA, A SUBDIVISION OF RECORD IN DOCUMENT NUMBER 200600357, OFFICIAL PUBLIC RECORDS, TRAVIS COUNTY, TEXAS, DO HEREBY AMEND AND REPLAT SAID LOTS IN ACCORDANCE WITH THE PLAT AS SHOWN HEREON, TO BE KNOWN AS:

AMENDED FINAL PLAT HILL COUNTRY GALLERIA OF LOTS 1-3, 6-8 AND 10-26, BLOCK A, LOTS1-3 AND 6-8, BLOCK B AND LOT 1, BLOCK C

AND DO HEREBY DEDICATE TO THE PUBLIC THE EASEMENTS HEREON, SUBJECT TO ANY EASEMENTS AND OR RESTRICTIONS GRANTED AND NOT RELEASED.

LOT 6, BLOCK A, LOTS 1 AND 2, BLOCK B AND A PORTION OF LOT 1, BLOCK C
Owner: Rod-Ave, L.P., a Texas limited partnership

This plat approved subject to all platting ordinances, rules, regulations and Resolutions of the City of Bee Cave, Texas.

WITNESS, my hand, this the 3rd day of Dec, 2007

By: Robert A. Rodriguez, President of Troublemaker GP, Inc., a Texas corporation, general partner of Rod-Ave, L.P., a Texas limited partnership

Authorized Signature of Owner

Robert A. Rodriguez President
Printed Name and Title

STATE OF Texas §
COUNTY OF Travis §
Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Robert A. Rodriguez, President of Troublemaker GP, Inc., a Texas corporation, general partner of Rod-Ave, L.P., a Texas limited partnership, Owner, on behalf of said corporation and partnership, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this 3rd day of Dec, 2007

Rick Traphagen
Notary Public in and for the State of

My Commission Expires On:

RICK TRAPHAGEN
NOTARY PUBLIC
STATE OF TEXAS
My Comm. Exp. 06-07-2008

LOT 7, BLOCK A
Owner: The City of Bee Cave, Texas f/k/a
The Village of Bee Cave, Texas

This plat approved subject to all platting ordinances, rules, regulations and Resolutions of the City of Bee Cave, Texas.

WITNESS, my hand, this the 12 day of Dec, 2007

BY: James Fisher

Authorized Signature of Owner

James Fisher, City Administrator
Printed Name and Title

STATE OF TEXAS §
COUNTY OF TRAVIS §
Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared James Fisher, Owner, on behalf of said organization, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this 12th day of Dec, 2007

Notary Public in and for the State of Texas

My Commission Expires On:

Sherry Matthews
Notary Public
State of Texas
My Commission Expires
July 26, 2011

LOTS 16, 17, 18, 21, 22 AND 23, BLOCK A
Owner: Hill Country Apartments, L.P., a Delaware corporation,
By: OWR Hill Country, Inc., a Delaware Corporation, its General Partner

This plat approved subject to all platting ordinances, rules, regulations and Resolutions of the City of Bee Cave, Texas.

WITNESS, my hand, this the 7th day of December, 2007

By:
Name:

STATE OF TEXAS §
COUNTY OF TRAVIS §
Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared John Greer, Executive V.P., on behalf of said organization, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this 7 day of December, 2007

Notary Public in and for the State of Texas

My Commission Expires On:
August 31, 2010

STEPHANIE A. GRAY
Notary Public, State of Texas
My Commission Expires
August 31, 2010

LOTS 1, 2, 3, 5, 8, 10-15, 19, 20, 24, 25 AND 26 BLOCK A; LOTS 3, 5, 6, 7 AND 8, BLOCK B; ANDA PORTION OF LOT 1, BLOCK C
Owner: Hill Country Galleria, L.P.,
A Delaware limited partnership

This plat approved subject to all platting ordinances, rules, regulations and Resolutions of the City of Bee Cave, Texas.

WITNESS, my hand, this the 7th day of December, 2007

By: OWC Hill Country, Inc., a Delaware corporation
Its General Partner
By:
Name:

THE STATE OF TEXAS §
COUNTY OF TRAVIS§
This instrument was acknowledged before me this 7 day of December, 2007 by John Greer, Exec V.P. of OWC Hill Country, Inc., a Delaware corporation, General Partner of Hill Country Galleria, L.P., a Delaware limited partnership, on behalf of said corporation and partnership.

(SEAL)

STEPHANIE A. GRAY
Notary Public, State of Texas
My Commission Expires
August 31, 2010

Owners: CITY OF BEE CAVE, TEXAS
4000 Old Bee Cave Road
Bee Cave, Texas 78738
Telephone: (512) 767-6600
Fax: (512) 767-6601

Owners: HILL COUNTRY APARTMENTS, L.P.
c/o Opus West Corporation
Attn: Joel DeSpain
901 S. MoPac Expressway
Building V, Suite 250
Austin, Texas 78746
Telephone: (512) 306-4010
Fax: (512) 328-9361

Owners: HILL COUNTRY GALLERIA, L.P.
c/o Opus West Corporation
Attn: Joel DeSpain
901 S. MoPac Expressway
Building V, Suite 250
Austin, Texas 78746
Telephone: (512) 306-4010
Fax: (512) 328-9361

Owners: ROD-AVE, L.P.
c/o Elizabeth Avellini
4000 Old Manor Road
Austin, Texas 78723
Telephone:
Fax: (512) 391-1549

Surveying Firm Name: Delta Survey Group, Inc.
Contact Person: John Broughton
8213 Brodie Lane, Suite 102
Austin, Texas 78745
Telephone: (512) 282-5200
Fax: (512) 282-5230

1" = 100'

November 15, 2007

Matthew Williams Survey No. 900, Abstract no. 823,
Jas. G. Swisher Survey No. 152, Abstract No. 691,
Orrin Wade Survey No. 540, Abstract No. 911,
A. Zillet Survey No. 2, Abstract No. 2529,
John Hobson Survey No. 527, Abstract No. 387,
and the William P. Moore Survey No. 523, Abstract No. 557,
Travis County, Texas

Delta Survey Group Inc.
8213 Brodie Lane Ste. 102 Austin, TX. 78745
office: (512) 282-5200 fax: (512) 282-5230
WWW.DELTASURVEYGROUP.COM

AMENDED FINAL PLAT
HILL COUNTRY GALLERIA OF
LOTS 1-8 AND 10-26, BLOCK A,
LOTS 1-3 AND 5-8, BLOCK B AND LOT 1, BLOCK C
BEE CAVE, TRAVIS COUNTY, TEXAS
DECEMBER 06, 2007

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

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

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM

TBPE Firm No. 928

No.	REVISIONS	DATE	BY

7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

EXISTING AMENDED PLAT (SHEET 1 OF 3)

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
2 OF 88

(Page 4 of 41)

PHOTOGRAPHIC MYLAR

200700378

SHEET 3 OF 40

SPECIAL NOTICE :

NOTICE: EXCEPT AS SPECIFICALLY AUTHORIZED BY THE CITY OF BEE CAVE, SELLING A PORTION OF THIS ADDITION BY METES AND BOUNDS IS A VIOLATION OF CITY OF BEE CAVE ORDINANCES AND STATE LAW, AND IS SUBJECT TO FINES AND WITHHOLDING OF UTILITIES AND BUILDING PERMITS.

THE PLANS AND SPECIFICATIONS FOR A PRIVATE WATER SUPPLY SYSTEM MUST BE SUBMITTED BY A LICENSED PROFESSIONAL ENGINEER AND APPROVED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ);

OCCUPANCY OF ANY LOT IS PROHIBITED UNTIL AN ON-SITE WASTE DISPOSAL, SUCH AS A SEPTIC TANK, SYSTEM IS INSTALLED IN ACCORDANCE WITH THE CITY'S AND THE STATE'S RULES AND REGULATIONS GOVERNING SUCH SYSTEMS, AND UNTIL THE CITY HAS INSPECTED AND APPROVED THE INSTALLED SYSTEM.

FIRE LANES :
THAT THE UNDERSIGNED AS SHOWN ON SHEETS 1 AND 2 OF 40, DOES HEREBY COVENANT AND AGREE THAT HE SHALL CONSTRUCT UPON THE FIRE LANE EASEMENTS OR DEDICATED ACCESS EASEMENTS, AS DEDICATED AND SHOWN HEREON, A HARD SURFACE IN ACCORDANCE WITH THE CITY OF BEE CAVE'S PAVING STANDARDS FOR FIRE LANES, AND THAT HE SHALL MAINTAIN THE SAME IN A STATE OF GOOD REPAIR AT ALL TIMES AND KEEP THE SAME FREE AND CLEAR OF ANY STRUCTURES, FENCES, TREES, SHRUBS, OR OTHER IMPROVEMENTS OR OBSTRUCTION, INCLUDING BUT NOT LIMITED TO THE PARKING OF MOTOR VEHICLES, TRAILERS, BOATS OR OTHER IMPEDIMENTS TO THE ACCESSIBILITY OF FIRE APPARATUS. THE MAINTENANCE OF PAVING ON THE FIRE LANE EASEMENTS IS THE RESPONSIBILITY OF THE OWNER, AND THE OWNER SHALL POST AND MAINTAIN APPROPRIATE SIGNS IN CONSPICUOUS PLACES ALONG SUCH FIRE LANES, STATING "FIRE LANE, NO PARKING." THE LOCAL LAW ENFORCEMENT AGENCY(IES) IS HEREBY AUTHORIZED TO ENFORCE PARKING REGULATIONS WITHIN THE FIRE LANES, AND TO CAUSE SUCH FIRE LANES AND UTILITY EASEMENTS TO BE MAINTAINED FREE AND UNOBSTRUCTED AT ALL TIMES FOR FIRE DEPARTMENT AND EMERGENCY USE.

GENERAL NOTE:
IN APPROVING THIS PLAT, THE CITY OF BEE CAVE, TEXAS, ASSUMES NO OBLIGATION TO BUILD THE STREETS, ROADS, AND OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT OR BUILD ANY BRIDGES OR CULVERTS OR DRAINAGE STRUCTURES IN CONNECTION THEREWITH, OR PROVIDE ANY TRAFFIC CONTROL DEVICES OR SIGNS IN CONNECTION THEREWITH EXCEPT FOR TRAFFIC CONTROL ON ROADWAYS DEDICATED HEREBY. THE BUILDING OF ALL STREETS, ROADS AND OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT, AND ALL BRIDGES, CULVERTS, DRAINAGE STRUCTURES, CONSTRUCTED OR PLACED IN SUCH STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES OR IN CONNECTION THEREWITH, IS THE RESPONSIBILITY OF THE OWNER AND/OR DEVELOPER OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH PLANS AND SPECIFICATIONS PRESCRIBED BY THE CITY OF BEE CAVE, TEXAS, AND BY THE COMMISSIONERS COURT OF TRAVIS COUNTY, TEXAS.

NOTE #1:

WATER QUALITY AND RE-IRRIGATION EASEMENTS ARE FOR THE PROTECTION OF THE ENVIRONMENT BY IMPROVING THE QUALITY OF STORM WATER RUNOFF FROM DEVELOPED LANDS. THE NATIVE LAND OR MANAGEMENT PRACTICES WITHIN THE WATER QUALITY EASEMENT ARE TO HELP MAINTAIN CLEAN WATER IN CREEKS, RIVERS AND LAKES. NO STRUCTURE OR IMPROVEMENTS, OTHER THAN NATIVE PLANT ENHANCEMENTS, OR WATER QUALITY CONTROL IMPROVEMENTS IN ACCORDANCE WITH NON-POINT SOURCE POLLUTION CONTROL PERMIT FOR THIS SUBDIVISION, OR MAINTENANCE TO THE AREA IN ACCORDANCE TO NON-POINT SOURCE POLLUTION CONTROL PERMIT FOR THIS SUBDIVISION, MAY BE PLACED OR PREFORMED WITHIN THE WATER QUALITY EASEMENT WITHOUT PRIOR AUTHORIZATION AND APPROVAL IN WRITING FROM THE CITY OF BEE CAVE. THE WATER QUALITY EASEMENT SHALL BE MAINTAINED BY HILL COUNTRY GALLERIA, L.P. OR ITS APPROVED ASSIGNS IN ACCORDANCE WITH THE MAINTENANCE PLAN OF THE NON-POINT SOURCE POLLUTION CONTROL PERMIT APPLICABLE TO THE LOT. THE WATER QUALITY EASEMENT MAY NOT BE AMENDED OR ALTERED EXCEPT BY EXPRESS WRITTEN AGREEMENT OF THE CITY.

THIS LOT IS SUBJECT TO A CITY OF BEE CAVE NON-POINT SOURCE POLLUTION CONTROL PERMIT. SHOULD THE USE OF THIS PROPERTY CHANGE SO AS TO ALTER OR AMEND THE USE AS PERMITTED IN THE NON-POINT SOURCE POLLUTION CONTROL PERMIT, THEN AN AMENDED NON-POINT SOURCE POLLUTION CONTROL PERMIT SHALL BE REQUIRED.

THE LOWER COLORADO RIVER AUTHORITY ("LCRA") WILL PROVIDE WATER AND WASTEWATER FOR THIS LOT. WATER AND WASTEWATER SERVICES WILL BE PROVIDED IN ACCORDANCE WITH A SERVICE AGREEMENT, TO BE EXECUTED BY THE LCRA AND THIS LOT OWNER. PRIOR TO THE PROVISION OF WATER AND WASTEWATER SERVICES, THE LOT OWNER SHALL DEDICATE WATER AND WASTEWATER EASEMENTS TO THE LCRA, AS THE LCRA REASONABLY REQUIRES IN LOCATIONS ACCEPTABLE TO EACH LOT OWNER.

NOTE #2 ORDINANCE NOTE:
THE FOLLOWING LOTS ARE SUBJECT TO ORDINANCE #06-08-22-A AND #05-03-08A, AS IT MAY BE AMENDED WHICH INCLUDES IMPERVIOUS COVER REGULATIONS:
LOTS 1 THROUGH 3, 5, 8 THROUGH 14, 16 THROUGH 21, 23, 24, 25 AND 26 OF BLOCK A, LOTS 1, 3 AND 5 THROUGH 9 OF BLOCK B AND LOT 1 OF BLOCK C.

NOTE #3 LOT 1, BLOCK C NOTE:
CONTAINS A ROADWAY CONSTRUCTED BY HILL COUNTRY GALLERIA, L.P., AND IS HEREBY DEDICATED TO THE CITY OF BEE CAVE.

NOTE #4 LOT 7, BLOCK B NOTE:
THIS LOT TO BE OFFERED FOR CONVEYANCE TO THE CITY OF BEE CAVE.

NOTE #5:
PRIVATE ROADWAY WITH DEDICATED PUBLIC ACCESS EASEMENTS FOR LOTS 1, 7 THROUGH 23, BLOCK A.

NOTE #6:
DEDICATED AS PUBLIC ROADWAY/PUBLIC UTILITY EASEMENT.

NOTE #7:
THE UNDERSIGNED OWNER OF LOTS 1, 3, 5 THROUGH 9 OF BLOCK B, LOTS 1 THROUGH 3, 5, 8 THROUGH 14, 16 THROUGH 21, 23, 24, 25 AND 26 OF BLOCK A, LOT 1 OF BLOCK C, HEREBY DEDICATES TO PUBLIC UTILITIES SERVING THE SUBDIVISION, EMERGENCY SERVICES PROVIDERS WITH JURISDICTION, AND PUBLIC SERVICE AGENCIES, THE USE OF ALL PRIVATE STREET AND OTHER EASEMENTS SHOWN HEREON ON SUCH LOTS, SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED AND NOT RELEASED. THE MAINTENANCE AND PAYMENT OF REAL PROPERTY TAXES ON THE PRIVATE STREETS ARE THE RESPONSIBILITY OF THE OWNER(S) OF THE PROPERTY UNDER THE STREET. AN EXPRESS EASEMENT IS HEREBY GRANTED ACROSS SAID PRIVATE STREETS AND ANY COMMON AREAS FOR THE USE OF THE SURFACE FOR ALL GOVERNMENTAL FUNCTIONS, VEHICULAR AND NON VEHICULAR, INCLUDING FIRE AND POLICE PROTECTION, SOLID AND OTHER WASTE MATERIAL PICK-UP, ANY OTHER PURPOSE ANY GOVERNMENTAL AUTHORITY DEEMS NECESSARY, AND OWNER FURTHER AGREES THAT ALL GOVERNMENTAL ENTITIES, THEIR AGENTS OR EMPLOYEES, SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY DAMAGE OCCURRING TO THE SURFACE OF THE SAID PRIVATE STREET, AND TO ANY RESTRICTED FACILITIES ASSOCIATED WITH THE SAID PRIVATE STREET, AND TO ANY TRAFFIC CONTROLS ASSOCIATED WITH THE SAID PRIVATE STREET, AND TO ANY COMMON AREA AS A RESULT OF ANY SUCH REASONABLE USE BY THE GOVERNMENTAL ENTITIES. THE OWNER FURTHER AGREES TO RELEASE, INDEMNIFY, DEFEND AND HOLD HARMLESS ALL GOVERNMENTAL ENTITIES, THEIR AGENTS AND EMPLOYEES, FOR DAMAGES AND INJURY, INCLUDING DEATH, ARISING FROM ANY DAMAGE OCCURRING TO THE SURFACE OF THE SAID PRIVATE STREET, AND TO ANY RESTRICTED ACCESS FACILITIES ASSOCIATED WITH THE SAID PRIVATE STREET, AND TO ANY TRAFFIC CONTROLS ASSOCIATED WITH THE SAID PRIVATE STREET, AND TO ANY COMMON AREA AS A RESULT OF ANY SUCH REASONABLE USE BY THE GOVERNMENTAL ENTITIES.

NOTE #8:
EASEMENT IS FOR PEDESTRIAN ACCESS ONLY FOR THE BENEFIT OF LOT 26, BLOCK A.

NOTE #9:
UTILITIES IN P.U.E. = WATER, WASTEWATER, CABLE, TELEPHONE, ELECTRIC, GAS AND STORM SEWER.

Delta Survey Group Inc.
8213 Brodie Lane Ste. 102 Austin, TX. 78745
office: (512) 282-5200 fax: (512) 282-5230
WWW.DELTASURVEYGROUP.COM

AMENDED FINAL PLAT
HILL COUNTRY GALLERIA OF
LOTS 1-8 AND 10-26, BLOCK A,
LOTS 1-3 AND 5-8, BLOCK B AND LOT 1, BLOCK C
BEE CAVE, TRAVIS COUNTY, TEXAS
DECEMBER 06, 2007

(Page 3 of 41)

PHOTOGRAPHIC MYLAR

200700378

SHEET 2 OF 40

NOTE 1: ACCORDING TO F.E.M.A. MAP No. 48453C0335 E, DATED JUNE 16, 1993, AND F.E.M.A. MAP No. 48453C0295 E, DATED JUNE 16, 1993, THE SUBJECT PROPERTY SHOWN HEREON LIES WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN). THIS STATEMENT IS FOR INSURANCE PURPOSES ONLY AND IS NOT A GUARANTEE THAT THE PROPERTY WILL OR WILL NOT FLOOD.

STATE OF TEXAS
KNOW ALL MEN BY THESE PRESENTS
COUNTY OF TRAVIS

THAT I, STEVE L. IHNEN, A LICENSED PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THE PROPER ENGINEERING CONSIDERATIONS HAVE BEEN GIVEN TO THIS PLAT AND THAT IT MEETS THE REQUIREMENTS OF THE SUBDIVISION ORDINANCE OF THE CITY OF BEE CAVE, TEXAS.

12.7.07
DATE

STATE OF TEXAS
STEVEN L. IHNEN
81976
REGISTERED PROFESSIONAL ENGINEER

STEVE L. IHNEN
PROFESSIONAL ENGINEER
No. 81976 STATE OF TEXAS
GARRETT-IHNEN CIVIL ENGINEERS
3600 WEST PARMER LANE, STE 212
AUSTIN, TEXAS 78727

STATE OF TEXAS
KNOW ALL MEN BY THESE PRESENTS
COUNTY OF TRAVIS

I, JOHN E BRAUTIGAM, DO HEREBY CERTIFY THAT I PREPARED THIS PLAT FROM AN ACTUAL AND ACCURATE SURVEY OF THE LAND AND THAT THE CORNER MONUMENTS SHOWN THEREON AS SET WERE PROPERLY PLACED UNDER MY PERSONAL SUPERVISION IN ACCORDANCE WITH THE SUBDIVISION ORDINANCE OF THE CITY OF BEE CAVE, TEXAS.

12/7/07
DATE

JOHN E BRAUTIGAM
REGISTERED PROFESSIONAL LAND SURVEYOR
No. 5057 STATE OF TEXAS
DELTA SURVEY GROUP, INC
8213 BRODIE LANE, STE 102
AUSTIN, TEXAS 78745

RIGHT-OF-WAY DEDICATION:
NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

THAT James Fisher, ACTING HEREIN BY AND THROUGH HIS(ITS) DULY AUTHORIZED OFFICERS, DOES HEREBY ADOPT THIS PLAT DESIGNATING THE HEREIN ABOVE DESCRIBED PROPERTY AS Lot 1, Blk C, AN ADDITION TO THE CITY OF BEE CAVE, TEXAS, AND DOES HEREBY DEDICATE TO THE PUBLIC USE FOREVER BEE CAVE PARKWAY, AS SHOWN, AND OTHER PUBLIC IMPROVEMENTS SHOWN THEREON. BEE CAVE PARKWAY IS DEDICATED FOR STREET PURPOSES. THE EASEMENTS AND PUBLIC USE AREAS, AS SHOWN, ARE DEDICATED, FOR THE PUBLIC USE FOREVER, FOR THE PURPOSES INDICATED ON THIS PLAT. NO BUILDINGS, FENCES, TREES, SHRUBS OR OTHER IMPROVEMENTS OR GROWTHS SHALL BE CONSTRUCTED OR PLACED UPON, OVER OR ACROSS THE EASEMENTS AS SHOWN, EXCEPT THAT LANDSCAPE IMPROVEMENTS MAY BE PLACED IN LANDSCAPE EASEMENTS, IF APPROVED BY THE CITY COUNCIL. IN ADDITION, UTILITY EASEMENTS MAY ALSO BE USED FOR THE MUTUAL USE AND ACCOMMODATION OF ALL PUBLIC UTILITIES DESIRING TO USE OR USING THE SAME UNLESS THE EASEMENT LIMITS THE USE TO PARTICULAR UTILITIES, SAID USE BY PUBLIC UTILITIES BEING SUBORDINATE TO THE PUBLIC'S AND CITY OF BEE CAVE'S USE THEREOF. THE CITY OF BEE CAVE AND PUBLIC UTILITY ENTITIES SHALL HAVE THE RIGHT TO REMOVE AND KEEP REMOVED ALL OR PARTS OF ANY BUILDINGS, FENCES, TREES, SHRUBS OR OTHER IMPROVEMENTS OR GROWTHS WHICH MAY IN ANY WAY ENDANGER OR INTERFERE WITH THE CONSTRUCTION, MAINTENANCE, OR EFFICIENCY OF THEIR RESPECTIVE SYSTEMS IN SAID EASEMENTS. THE CITY OF BEE CAVE AND PUBLIC UTILITY ENTITIES SHALL AT ALL TIMES HAVE THE FULL RIGHT OF INGRESS AND EGRESS TO OR FROM THEIR RESPECTIVE EASEMENTS FOR THE PURPOSE OF CONSTRUCTING, RECONSTRUCTING, INSPECTING, PATROLLING, MAINTAINING, READING METERS, AND ADDING TO OR REMOVING ALL OR PARTS OF THEIR RESPECTIVE SYSTEMS WITHOUT THE NECESSITY AT ANY TIME PROCURING PERMISSION FROM ANYONE.

THIS PLAT APPROVED SUBJECT TO ALL PLATTING ORDINANCES, RULES, REGULATIONS AND RESOLUTIONS OF THE CITY OF BEE CAVE, TEXAS.

THE APPROVAL BY THE CITY COUNCIL OF THIS PLAT SHALL NOT, IN AND OF ITSELF, BE DEEMED TO CONSTITUTE OR IMPLY THE ACCEPTANCE BY THE CITY OF ANY STREET, PUBLIC AREA, EASEMENT OR PARK SHOWN ON THE PLAT.

WITNESS, MY HAND, THIS THE 12 DAY OF December 20 07

BY: ____________
AUTHORIZED SIGNATURE OF OWNER
James Fisher, City Administrator
PRINTED NAME AND TITLE

STATE OF TEXAS §
COUNTY OF Travis §

BEFORE ME, THE UNDERSIGNED AUTHORITY, A NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS, ON THIS DAY PERSONALLY APPEARED James Fisher, OWNER, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATIONS THEREIN EXPRESSED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS 12th DAY OF Dec, 2007

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES ON:

Sherry Mashburn
Notary Public
State of Texas
My Commission Expires
July 26, 2011

FINAL PLAT
APPROVED BY THE CITY OF BEE CAVE FOR FILING AT THE OFFICE OF COUNTY CLERK OF TRAVIS COUNTY, TEXAS.

APPROVED BY: PLANNING AND ZONING COMMISSION, CITY OF BEE CAVE, TEXAS

JACK McCOOL — 12/12/07
SIGNATURE OF CHAIRPERSON — DATE

APPROVED BY: CITY COUNCIL, CITY OF BEE CAVE, TEXAS

CAROLINE MURPHY — 12-11-07
SIGNATURE OF MAYOR — DATE

ATTEST:
SHERRY MASHBURN — 12-11-07
CITY SECRETARY — DATE

THIS PROPERTY IS LOCATED IN THE CORPORATE LIMITS OF THE CITY OF BEE CAVE, TRAVIS COUNTY, TEXAS.

CAROLINE MURPHY — 12-11-07
MAYOR — DATE

ATTEST:
SHERRY MASHBURN — 12-11-07
CITY SECRETARY — DATE

I, THE UNDERSIGNED, MAYOR OF THE CITY OF BEE CAVE, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THIS CITY, AND IS HERBY AUTHORIZED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF BEE CAVE FOR RECORDING IN THE PLAT RECORDS OF TRAVIS COUNTY, TEXAS.

CAROLINE MURPHY — 12-11-07
MAYOR, CITY OF BEE CAVE — DATE

ATTEST:
SHERRY MASHBURN — 12-11-07
CITY SECRETARY, CITY OF BEE CAVE — DATE

NOTICE: SELLING A PORTION OF THIS ADDITION BY METES AND BOUNDS IS A VIOLATION OF CITY OF BEE CAVE ORDINANCES AND STATE LAW, AND IS SUBJECT TO FINES AND WITHOLDING OF UTILITIES AND BUILDING PERMITS.

STATE OF TEXAS:
COUNTY OF TRAVIS:

I, DANA DEBEAUVOIR, CLERK OF TRAVIS COUNTY, TEXAS, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT OF WRITING AND ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE 18 DAY OF DEC, 2007, A.D., AT 10:57 O'CLOCK A M. AND DULY RECORDED ON THE 18 DAY OF DEC, 2007, A.D., AT 10:57 O'CLOCK A M., OFFICIAL PUBLIC RECORDS OF SAID COUNTY AND STATE IN DOCUMENT NO. 200700378. WITNESS MY HAND AND SEAL OF OFFICE OF THE COUNTY CLERK, THE 18 DAY OF DEC, 2007, A.D.

DANA DEBEAUVOIR, COUNTY CLERK, TRAVIS COUNTY, TEXAS.
Michael P. Gonzales, DEPUTY

FILED FOR RECORD AT 10:57 O'CLOCK A M., THIS THE 18 DAY OF DEC, 2007, A.D.

DANA DEBEAUVOIR, COUNTY CLERK, TRAVIS COUNTY, TEXAS
Michael P. Gonzales, DEPUTY

Owners: CITY OF BEE CAVE, TEXAS
c/o James Fisher
Vaca Galleria Pkwy
Bee Cave, Texas 78738
Telephone: (512) 767 6610
Fax: (512) 263 3317

Owners: HILL COUNTRY APARTMENTS, L.P.
c/o Opus West Corporation
Attn: Joel DeSpain
901 S. MoPac Expressway
Building V, Suite 250
Austin, Texas 78746
Telephone: (512) 306-4010
Fax: (512) 328-9361

Owners: HILL COUNTRY GALLERIA, L.P.
c/o Opus West Corporation
Attn: Joel DeSpain
901 S. MoPac Expressway
Building V, Suite 250
Austin, Texas 78746
Telephone: (512) 306-4010
Fax: (512) 328-9361

Owners: ROD-AVE, L.P.
c/o Elizabeth Avellar
4900 Old Manor Road
Austin, Texas 78723
Telephone:
Fax: (512) 391-1549

Surveying Firm Name: Delta Survey Group, Inc.
Contact Person: John Brautigam
8213 Brodie Lane, Suite 102
Austin, Texas 78745
Telephone: (512) 282-5200
Fax: (512) 282-5230

1" = 100'

December 06, 2007

Matthew Williams Survey No. 900, Abstract no. 823, Jas. G. Swisher Survey No. 152, Abstract No. 691, Orran Wade Survey No. 540, Abstract No. 811, A. Ziller Survey No. 2, Abstract No. 2529, John Hobson Survey No. 527, Abstract No. 387, and the William P. Moore Survey No. 525, Abstract No. 557, Travis County, Texas

Delta Survey Group Inc.
8213 Brodie Lane Ste. 102 Austin, TX. 78745
office: (512) 282-5200 fax: (512) 282-5230
WWW.DELTASURVEYGROUP.COM

AMENDED FINAL PLAT
HILL COUNTRY GALLERIA OF
LOTS 1-8 AND 10-26, BLOCK A,
LOTS 1-3 AND 5-8, BLOCK B AND LOT 1, BLOCK C
BEE CAVE, TRAVIS COUNTY, TEXAS
DECEMBER 06, 2007

Know what's below. Call before you dig.

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

No.	REVISIONS	DATE	BY

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM

TBPE Firm No. 928

7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

EXISTING AMENDED PLAT (SHEET 2 OF 3)

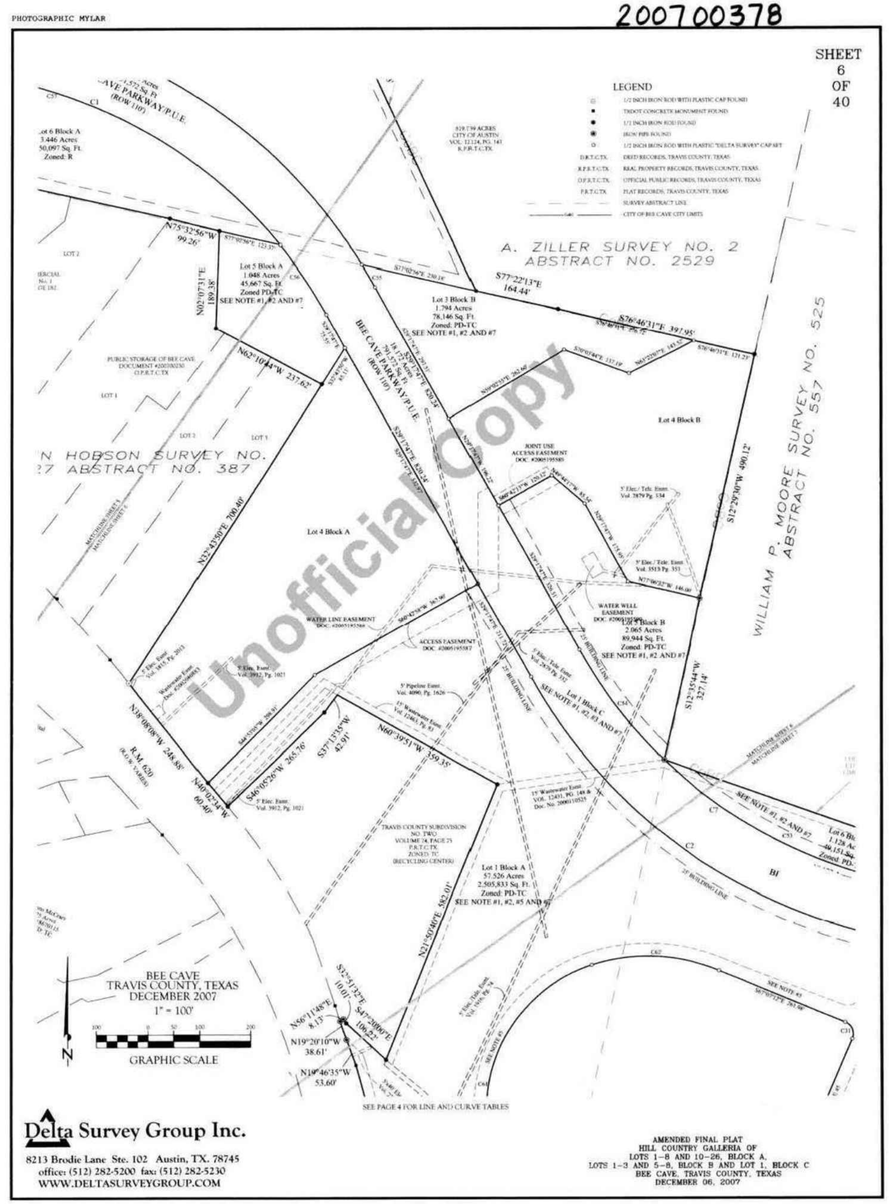
PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
3 OF 88

PHOTOGRAPHIC MYLAR

200700378

SHEET 6 OF 40



Delta Survey Group Inc.
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office: (512) 282-5200 fax: (512) 282-5230
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AMENDED FINAL PLAT
HILL COUNTRY GALLERIA OF
LOTS 1–8 AND 10–26, BLOCK A,
LOTS 1–3 AND 5–8, BLOCK B AND LOT 1, BLOCK C
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DECEMBER 06, 2007

Know what's below. Call before you dig.

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© 2022 KIMLEY-HORN AND ASSOCIATES, INC.
TBPE Firm No. 928

No.	REVISIONS	DATE	BY

7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

EXISTING AMENDED PLAT (SHEET 3 OF 3)

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
4 OF 88

CONSTRUCTION SEQUENCING - CITY OF BEE CAVE

1. COORDINATE ALL START-UP WORK WITH THE OWNER.
2. INSTALL TREE PROTECTION AND FENCING.
3. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
4. CONTACT THE CITY OF BEE CAVE (512) 767-6675 TO ARRANGE A PRECONSTRUCTION MEETING AT LEAST 3 DAYS IN ADVANCE OF ANTICIPATED START OF CONSTRUCTION DATE.
5. CONTRACTOR TO POST SITE DEVELOPMENT/NPS POLLUTION CONTROL PERMIT, BUILDING PERMIT, REQUIRED TCEQ PERMITS, TXDOT OR OTHER PERMITTING REQUIRED FOR DEVELOPMENT OF THE SITE PRIOR TO THE START OF CONSTRUCTION.
6. BEGIN DEMOLITION AND SITE CLEARING.
7. ROUGH GRADE SITE IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.
8. INSTALL UTILITY IMPROVEMENTS.
9. PROOF-ROLL SUB-GRADE AREA WITH A LOADED DUMP TRUCK, HEAVY SCRAPER, OR SIMILAR PNEUMATIC-TIRED EQUIPMENT. THE PROOF-ROLL SERVES TO COMPACT SOILS AND DETECT ANY SOFT OR LOOSE ZONES. ANY SOILS DEFLECTION OVER ½" UNDER MOVING LOADS SHALL BE UNDERCUT TO FIRM SOILS AND RE-COMPACTED. ALL PROOF-ROLLING AND UNDERCUTTING ACTIVITIES SHALL BE OBSERVED BY A QUALIFIED SOILS ENGINEER AND SHALL BE PERFORMED DURING A PERIOD OF DRY WEATHER.
10. CONSTRUCT "ALL-WEATHER DRIVING SURFACE."
11. COMPLETE GRADING, DRAINAGE, PAVING, AND STORMSEWER TIE-IN. INSTALLATION OF BASE MATERIAL AND/OR PAVING SHOULD OCCUR AS SOON AS IT IS FEASIBLE TO DO SO AFTER PONDS ARE COMPLETED.
12. COMPLETE ALL SITE IMPROVEMENTS INCLUDING PERMANENT EROSION CONTROL.
13. DISPOSE OF ALL CONSTRUCTION DEBRIS AND TRASH.
14. HYDROMULCH OR SOD ALL DISTURBED AREAS AND CLEAN UP SITE. PERFORM FINAL WALK THROUGH.
15. CLEAR TEMPORARY EROSION AND SEDIMENTATION CONTROLS, TREE PROTECTION, CLEAN STORM DRAINS AT COMPLETION OF PROJECT AND AFTER GROUND COVER IS RE-ESTABLISHED (INSPECTION AND RELEASE BY CITY OF BEE CAVE REQUIRED PRIOR TO REMOVAL).
16. PROVIDE ENGINEER'S CERTIFICATION LETTER THAT PERMANENT EROSION CONTROL STRUCTURES WERE CONSTRUCTED IN ACCORDANCE WITH APPROVED DRAWINGS.
17. RECEIVE CITY OF BEE CAVE CERTIFICATE OF OCCUPANCY. RELEASE OF NPS OPERATION PERMIT.

CITY OF BEE CAVE STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION

1. ALL TREES AND NATURAL AREAS SHOWN ON PLAN TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY FENCING.
2. PROTECTIVE FENCES SHALL BE ERECTED ACCORDING TO CITY OF AUSTIN STANDARDS FOR TREE PROTECTION.
3. PROTECTIVE FENCES SHALL BE INSTALLED PRIOR TO THE START OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING), AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF CONSTRUCTION PROJECT.
4. EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER THAT DOES NOT RESULT IN SOIL BUILD-UP WITHIN TREE DRIP LINES.
5. PROTECTIVE FENCES SHALL SURROUND THE TREES OR GROUP OF TREES, AND WILL BE LOCATED AT THE OUTERMOST LIMIT OF BRANCHES DRIP LINE), FOR NATURAL AREAS, PROTECTIVE FENCES SHALL FOLLOW THE LIMIT OF CONSTRUCTION LINE, IN ORDER TO PREVENT THE FOLLOWING:
   - A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGe OF EQUIPMENT OR MATERIALS;
   - B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6) CUT OR FILL), OR TRENCHING NOT REVIEWED BY THE CONTRACT ARBORIST AND AUTHORIZED BY THE CITY OF BEE CAVE BUILDING OFFICIAL.
   - C. WOUNDS TO EXPOSED ROOTS, TRUNK OR LIMBS BY MECHANICAL EQUIPMENT;
   - D. OTHER ACTIVITIES DETRIMENTAL TO TRESS SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING, AND FIRES.
6. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIP LINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   - A. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT, ERECT THE FENCE APPROXIMATELY TWO (2) FEET TO FOUR (4) FEET BEYOND THE AREA DISTURBED;
   - B. WHERE PERMEABLE PAVING IS TO BE INSTALLED WITHIN A TREE'S DRIP LINE, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA (PRIOR TO SITE GRADING SO THAT THIS AREA IS GRADED SEPARATELY PRIOR TO PAVING INSTALLATION TO MINIMIZE ROOT DAMAGE.
   - C. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE TO ALLOW SIX (6) FEET TO TEN (10) FEET OF WORK SPACE BETWEEN THE FENCE AND THE BUILDING;
   - D. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO THE TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE CITY OF BEE CAVE BUILDING OFFICIAL AT 512-767-6675 AND THE CONTRACT ARBORIST TO DISCUSS ALTERNATIVES.
   - E. FOR THE PROTECTION OF NATURAL AREAS, NO EXCEPTIONS TO INSTALLING FENCES AT THE LIMIT OF CONSTRUCTION LINE WILL BE PERMITTED.
7. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN FOUR (4) FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF EIGHT (8) FEET OR TO THE LIMITS OF LOWER BRANCHES IN ADDITION TO THE REDUCED FENCING PROVIDED.
8. TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER THAT DOES NOT IMPACT TREES TO BE PRESERVED.
9. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL BACKFILL ROOT AREAS WITH A GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO (2) DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER THAT REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
10. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
11. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN FOUR (4) INCHES SHALL BE PERMITTED WITHIN THE DRIP LINE OF THE TREES. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
12. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.).
13. ALL FINISHED PRUNING SHALL BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES) AND THE GUIDELINES OF ORDINANCE 03-04-22-C AS IT RELATES TO PREVENTION OF OAK WILT IN THE CITY OF BEE CAVE AND SPECIFICALLY SEC. 8.407 THROUGH SEC. 8.411.
14. DEVIATIONS FROM THE ABOVE NOTES MAY BE CONSIDERED ORDINANCE VIOLATIONS IF THERE IS SUBSTANTIAL NON-COMPLIANCE OR IF A TREE SUSTAINS DAMAGE AS A RESULT.

AMERICANS WITH DISABILITIES ACT

1. THE CITY OF BEE CAVE HAS REVIEWED THIS PLAN FOR COMPLIANCE WITH CITY DEVELOPMENT REGULATIONS ONLY. THE APPLICANT, PROPERTY OWNER, AND OCCUPANT OF THE PREMISES ARE RESPONSIBLE FOR DETERMINING WHETHER THE PLAN COMPLIES WITH ALL OTHER LAWS, REGULATIONS, AND RESTRICTIONS WHICH MAY BE APPLICABLE TO THE PROPERTY AND THE PLAN COMPLIES WITH ALL OTHER LAWS, REGULATIONS, AND ITS USE.

EROSION AND SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS, TREE/NATURAL AREA PROTECTIVE FENCING, AND CONDUCT "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE) PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
3. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND CITY OF BEE CAVE ENGINEERING DEPARTMENT AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS, TREE/NATURAL AREA PROTECTION MEASURES AND "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE) PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE OWNER OR OWNER'S REPRESENTATIVE SHALL NOTIFY THE CITY ENGINEER, 512-767-6615 OR KSAWTELLE@BEECAVETEXAS.GOV, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.
4. THE CONTRACTOR IS REQUIRED TO PROVIDE A CERTIFIED INSPECTOR TO INSPECT THE CONTROLS AND FENCES AT WEEKLY OR BI-WEEKLY INTERVALS AND AFTER ONE-HALF (½) INCH OR GREATER RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES OR ONE-THIRD (⅓) OF THE INSTALLED HEIGHT OF THE CONTROL WHICHEVER IS LESS.
5. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
6. TEMPORARY AND PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW.
   - ALL DISTURBED AREAS TO BE REVEGETATED ARE REQUIRED TO PLACE A MINIMUM OF SIX (6) INCHES OF TOPSOIL. DO NOT ADD TOPSOIL WITHIN THE CRITICAL ROOT ZONE OF EXISTING TREES.
   - SOIL AMENDMENTS SHALL BE WORKED INTO THE EXISTING ONSITE TOPSOIL WITH A DISC OR TILLER TO CREATE A WELL-BLENDED MATERIAL.

EROSION AND SEDIMENTATION CONTROL NOTES (CONT.)

THE VEGETATIVE STABILIZATION OF AREAS DISTURBED BY CONSTRUCTION SHALL BE AS FOLLOWS:

TEMPORARY VEGETATIVE STABILIZATION:

1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH OR INCLUDE A COOL SEASON COVER CROPS-(WESTERN WHEATGRASS (PASCOPYRUM SMITHII) AT 6 POUNDS PER ACRE, OATS (AVENA SATIVA) AT 4.0 POUNDS PER ACRE, CEREAL RYE GRAIN (SECALE CEREALE) 45 POUNDS PER ACRE. CONTRACTOR MUST ENSURE THAT ANY SEED APPLICATION REQUIRING A COOL SEASON COVER CROP DOES NOT UTILIZE ANNUAL RYEGRASS (LOLIUM MULTIFLORUM) OR PERENNIAL RYEGRASS (LOLIUM PERENNE). COOL SEASON COVER CROPS ARE NOT PERMANENT EROSION CONTROL.
2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERMUDA AT A RATE OF 5 POUNDS PER ACRE OR A NATIVE PLANT SEED MIX.
   - A. FERTILIZER SHALL BE APPLIED ONLY IF WARRANTED BY A SOIL TEST. FERTILIZATION SHOULD NOT OCCUR WHEN RAINFALL IS EXPECTED OR DURING SLOW PLANT GROWTH OR DORMANCY. CHEMICAL FERTILIZER MAY NOT BE APPLIED IN THE CRITICAL WATER QUALITY ZONE.
   - B. HYDROMULCH SHALL COMPLY WITH TABLE1, BELOW.
   - C. TEMPORARY EROSION CONTROL SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH A MINIMUM OF 95% TOTAL COVERAGE SO THAT ALL AREAS OF A SITE THAT RELY ON VEGETATION FOR TEMPORARY STABILIZATION ARE UNIFORMLY VEGETATED, AND PROVIDED THERE ARE NO BARE SPOTS LARGER THAN 10 SQUARE FEET.

TABLE 1: HYDROMULCHING FOR TEMPORARY VEGETATIVE STABILIZATION

MATERIAL	DESCRIPTION	LONGEVITY	TYPICAL APPLICATIONS	APPLICATION RATES
100% OR ANY BLEND OF WOOD, CELLULOSE, STRAW, AND/OR COTTON PLANT (EXCEPT NO MULCH SHALL EXCEED 30% PAPER)	70% OR GREATER WOOD/STRAW 30% OR LESS PAPER OR NATURAL FIBERS	0-3 MONTHS	MODERATE SLOPES; FROM FLAT TO 3:1	1500 TO 2000 LBS/ACRE

PERMANENT VEGETATIVE STABILIZATION:

1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING IS CONSIDERED TO BE TEMPORARY STABILIZATION ONLY. IF COOL SEASON COVER CROPS EXIST WHERE PERMANENT VEGETATIVE STABILIZATION IS DESIRED, THE GRASSES SHALL BE MOWED TO A HEIGHT OF LESS THAN ONE-HALF (½) INCH AND THE AREA SHALL BE RE-SEEDED IN ACCORDANCE WITH TABLE 2 BELOW. ALTERNATIVELY, THE COOL SEASON COVER CROP CAN BE MIXED WITH BERMUDAGRASS OR NATIVE SEED AND INSTALLED TOGETHER, UNDERSTANDING THAT GERMINATION OF WARM-SEASON SEED TYPICALLY REQUIRES SOIL TEMPERATURES OF 60 TO 70 DEGREES.
2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERMUDA AT A RATE OF ~45 POUNDS PER ACRE WITH A PURITY OF 95% AND A MINIMUM PURE LIVE SEED (PLS) OF 0.83. BERMUDA GRASS IS A WARM SEASON GRASS AND IS CONSIDERED PERMANENT EROSION CONTROL. PERMANENT VEGETATIVE STABILIZATION CAN ALSO BE ACCOMPLISHED WITH A NATIVE PLANT SEED MIX.
   - A. FERTILIZER USE SHALL FOLLOW THE RECOMMENDATION OF A SOIL TEST.
   - B. HYDROMULCH SHALL COMPLY WITH TABLE 2, BELOW.
   - C. WATER THE SEEDED AREAS IMMEDIATELY AFTER INSTALLATION TO ACHIEVE GERMINATION AND A HEALTHY STAND OF PLANTS THAT CAN ULTIMATELY SURVIVE WITHOUT SUPPLEMENTAL WATER. APPLY THE WATER UNIFORMLY TO THE PLANTED AREAS WITHOUT CAUSING DISPLACEMENT OR EROSION OF THE MATERIALS OR SOIL. MAINTAIN THE SEEDBED IN A MOIST CONDITION FAVORABLE FOR PLANT GROWTH.
   - D. PERMANENT EROSION CONTROL SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH A MINIMUM OF 95 PERCENT FOR THE NON-NATIVE MIX, AND 95 PERCENT COVERAGE FOR THE NATIVE MIX SO THAT ALL AREAS OF A SITE THAT RELY ON VEGETATION FOR STABILITY MUST BE UNIFORMLY VEGETATED, AND PROVIDED THERE ARE NO BARE SPOTS LARGER THAN 16 SQUARE FEET.

TABLE 2: HYDROMULCHING FOR PERMANENT VEGETATIVE STABILIZATION

MATERIAL	DESCRIPTION	LONGEVITY	TYPICAL APPLICATIONS	APPLICATION RATES
BONDED FIBER MATRIX (BFM)	80% ORGANIC DEFIBRATED FIBERS			
10% TACKIFIER	6 MONTHS	ON SLOPES UP TO 2:1 AND EROSIVE SOIL CONDITIONS	2500 TO 4000 LBS/ACRE (SEE MANUFACTURER'S RECOMMENDATIONS)	
FIBER REINFORCED MATRIX (FRM)	65% ORGANIC DEFIBRATED FIBERS 25% REINFORCING FIBERS OR LESS 10% TACKIFIER	UP TO 12 MONTHS	ON SLOPES UP TO 1:1 AND EROSIVE SOIL CONDITIONS	3000 TO 4500 LBS/ACRE (SEE MANUFACTURER'S RECOMMENDATIONS)

7. PROVIDE THE FOLLOWING INFORMATION:

OWNER:
HUNTSVILLE CENTER LTD. PHONE #: (512) 653-0877
ADDRESS:
2410 POLK ST. #200
HOUSTON, TEXAS 77003
CONTACT: DAWN BAYARENA

DEVELOPER:
SAME AS OWNER PHONE #: (512) 653-0877
ADDRESS:
SAME AS OWNER

OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:
KIMLEY-HORN AND ASSOCIATES, INC.
LANCE R. ORITI, P.E. PHONE #: (512) 418-1771

PERSON OR FIRM RESPONSIBLE FOR NON POINT SOURCE MAINTENANCE:
PHONE #:
PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE:
PHONE #:

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.
2. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES THAT ARE TO BE EXTENDED, TIED TO, CROSSED, OR ALTERED; OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
3. ANY CHANGES OR REVISIONS TO THESE PLANS MUST FIRST BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER FOR REVIEW AND WRITTEN APPROVAL PRIOR TO CONSTRUCTION OF THE REVISION. THE CITY ENGINEER MAY ALLOW FIELD ADJUSTMENTS WITHOUT FORMAL APPROVAL OF A CORRECTION, ON A CASE BY CASE BASIS, WITH THOSE CHANGES TO BE REFLECTED ON THE RECORD DRAWINGS.
4. NO WORK IS TO BE PERFORMED BETWEEN THE HOURS OF 7:00 P.M. AND 7:00 A.M PER THE CITY'S NOISE ORDINANCE. REQUESTS FOR EXCEPTIONS TO THE NOISE ORDINANCE MUST BE MADE IN WRITING TO THE CITY MANAGER.
5. CONTACT THE CITY ENGINEERING STAFF (512-767-6675) AT LEAST 4 DAYS PRIOR TO WORK TO SCHEDULE ANY INSPECTIONS ON WEEKENDS OR CITY HOLIDAYS.
6. NO STREET LIGHTS OR SIGNS OF ANY KIND ARE TO BE PLACED WITHIN ANY SIDEWALKS.
7. NO BLASTING IS ALLOWED.
8. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
9. THE CONTRACTOR AND ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF BEE CAVE
10. ACCURATE "RECORD DRAWINGS" FOLLOWING THE COMPLETION OF ALL CONSTRUCTION. THESE "RECORD DRAWINGS" SHALL MEET THE SATISFACTION OF THE ENGINEERING DEPARTMENTS PRIOR TO FINAL ACCEPTANCE
11. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. PRIOR TO ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT EASEMENTS AND PROVIDE REVEGETATION IN ACCORDANCE WITH CITY STANDARDS. CLEANUP SHALL BE TO THE SATISFACTION OF THE ENGINEER.

GENERAL NOTES (CONT.)

12. CONTRACTOR TO LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS. RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, AT NO ADDITIONAL COST TO OWNER.
13. THE CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. IN THE EVENT THAT A FENCE MUST BE REMOVED, THE CONTRACTOR SHALL REPLACE SAID FENCE OR PORTION THEREOF WITH THE SAME TYPE OF FENCING TO A QUALITY OF EQUAL OR BETTER THAN THE ORIGINAL FENCE.
14. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA STANDARDS MAY BE PURCHASED FROM THE GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 1033 LA POSADA DR. SUITE 375, AUSTIN, TEXAS 78752-3832.
15. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL CITY OF AUSTIN DETAILS AND STANDARD SPECIFICATIONS IN ACCORDANCE WITH THE CITY OF BEE CAVE ENGINEERING TECHNICAL MANUAL.
16. PROJECT SPECIFICATIONS TAKE PRECEDENCE OVER PLANS AND SPECIAL CONDITIONS GOVERN OVER TECHNICAL SPECIFICATIONS.
17. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE MINIMUM THICKNESS OF 2 INCHES WITH NO RECYCLED ASPHALT SHINGLES CONTENT.
18. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY RISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION BETWEEN HIMSELF AND OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THE PROJECT. THIS INCLUDES GAS, WATER, WASTEWATER, ELECTRICAL, TELEPHONE, CABLE TV AND STREET DRAINAGE WORK. ONCE THE CONTRACTOR BECMES AWARE OF A POSSIBLE CONFLICT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER WITHIN TWENTY-FOUR (24) HOURS.
21. THE CONTRACTOR MUST OBTAIN A CONSTRUCTION WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADS AND DRIVES ADJACENT TO AND NEAR THE SITE FREE FROM SOIL, SEDIMENT AND DEBRIS. CONTRACTOR WILL NOT REMOVE SOIL, SEDIMENT OR DEBRIS FROM ANY AREA OR VEHICLE BY MEANS OF WATER. ONLY SHOVELING AND SWEEPING WILL BE ALLOWED. CONTRACTOR WILL BE RESPONSIBLE FOR DUST CONTROL FROM THE SITE.
23. THE CITY OF BEE CAVE SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
24. AN ENGINEER'S CONCURRENCE LETTER AND RECORD DRAWINGS SHALL BE SUBMITTED TO THE CITY ENGINEER PRIOR TO CONDUCTING THE FINAL CITY INSPECTION. THE ENGINEER AND CONTRACTOR SHALL VERIFY THAT ALL FINAL REVISIONS AND CHANGES HAVE BEEN MADE TO THE DIGITAL COPY PRIOR TO CITY SUBMITTAL. RECORD CONSTRUCTION DRAWINGS, INCLUDING ROADWAY AND ALL UTILITIES SHALL BE PROVIDED TO THE CITY IN DIGITAL FORMAT AS AUTOCAD ".DWG" FILES, MICROSTATION ".DGN" FILES OR ESRI ".SHP" FILES. LINE WEIGHTS, LINE TYPES AND TEXT SIZE SHALL BE SUCH THAT IF HALF-SIZE PRINTS (11"X17") WERE PRODUCED, THE PLANS WOULD STILL BE LEGIBLE. ALL REQUIRED DIGITAL FILES SHALL CONTAIN A MINIMUM OF TWO CONTROL POINTS REFERENCED TO THE STATE PLANE COORDINATE SYSTEM – TEXAS CENTRAL ZONE (4203), IN US SURVEY FEET AND SHALL INCLUDE ROTATION INFORMATION AND SCALE FACTOR REQUIRED TO REDUCE SURFACE COORDINATES TO GRID COORDINATES IN US SURVEY FEET.

STREET AND DRAINAGE NOTES

1. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. THE CITY OF BEE CAVE HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, OR ANY OTHER ACCESSIBILITY LEGISLATION, AND DOES NOT WARRANTY OR APPROVE THESE PLANS FOR ANY ACCESSIBILITY STANDARDS.
2. PRIOR TO ACCEPTANCE THE ENGINEER SHALL SUBMIT DOCUMENTATION THAT THE IMPROVEMENTS WERE INSPECTED BY TDLR OR A REGISTERED ACCESSIBILITY SPECIALIST (RAS) AND ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE TABA.
3. CONTRACTOR SHALL PROVIDE QUALITY TESTING FOR ALL INFRASTRUCTURES TO BE ACCEPTED AND MAINTAINED BY THE CITY OF BEE CAVE AFTER COMPLETION. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AT 512-7697-6675 NO LESS THAN 48 HOURS PRIOR TO ANY TESTING.
4. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 6" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR.
5. WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 6" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE.
6. A MINIMUM OF 6" OF TOPSOIL SHALL BE PLACED BETWEEN THE CURB AND RIGHT-OF-WAY AND IN ALL DRAINAGE CHANNELS EXCEPT CHANNELS CUT IN STABLE ROCK.
7. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT, INCLUDING GAS, ELECTRIC TELEPHONE, CABLE TV, ETC., SHALL BE A MINIMUM OF 36" BELOW SUBGRADE.
8. STREET RIGHT-OF-WAY SHALL BE GRADED AT A SLOPE OF ¼" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT ¼" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY OF BEE CAVE ENGINEERING STAFF.
9. BARRICADES BUILT TO THE CITY OF BEE CAVE STANDARDS SHALL BE ERECTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
10. ALL REINFORCED CONCRETE PIPE SHALL BE MINIMUM CLASS III OF TONGUE AND GROOVE OR O-RING JOINT DESIGN.
11. THE CONTRACTOR IS TO NOTIFY THE ENGINEERING STAFF 48 HOURS PRIOR TO THE FOLLOWING TESTING: PROOF ROLLING SUB-GRADE AND EVERY LIFT OF ROADWAY EMBANKMENT, IN-PLACE DENSITY TESTING OF EVERY BASE COURSE, AND ASPHALT CORES. ALL OF THIS TESTING MUST BE WITNESSED BY A CITY OF BEE CAVE REPRESENTATIVE UNLESS OTHERWISE INSTRUCTED BY THE CITY ENGINEER.
12. THE CONTRACTOR MUST PROVIDE A PNEUMATIC TRUCK PER TXDOT SPEC FOR PROOF ROLLING.
13. ALL STRIPING, WITH THE EXCEPTION OF STOP BARS, CROSS WALKS, WORDS AND ARROWS, IS TO BE TYPE II (WATER BASED). STOP BARS, CROSS WALKS, WORDS AND ARROWS REQUIRE TYPE I THERMOPLASTIC.
14. MANHOLE FRAMES, COVERS, VALVES, CLEAN-OUTS, ETC. SHALL BE RAISED TO GRADE PRIOR TO FINAL PAVEMENT CONSTRUCTION.
15. CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AT LEAST 48 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET ROW.
16. A STOP BAR SHALL BE PLACED AT ALL STOP SIGN LOCATIONS.
17. A MINIMUM OF SEVEN DAYS OF CURE TIME IS REQUIRED FOR HMAC PRIOR TO THE INTRODUCTION OF PUBLIC VEHICULAR TRAFFIC TO ANY STREETS.
18. THE GEOTECHNICAL ENGINEER SHALL INSPECT THE SUBGRADE FOR COMPLIANCE WITH THE DESIGN ASSUMPTIONS MADE DURING PREPARATION OF THE SOILS REPORT. ANY ADJUSTMENTS THAT ARE REQUIRED SHALL BE MADE THROUGH REVISIONS OF THE CONSTRUCTION PLANS.

BENCHMARKS

ELEVATIONS HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) UTILIZING WESTERN DATA SYSTEMS CONTINUALLY OPERATING REFERENCE STATION (CORS) NETWORK AND ADDITIONALLY REFERENCED TO CITY OF AUSTIN GPS CONTROL MONUMENTS AT THE TIME OF THIS SURVEY.

TBM 101:
PK NAIL W/ SHINER SET ON THE SOUTHEASTERLY EDGE OF CONCRETE DRIVE OF EASTERLY RIGHT-OF-WAY LINE OF BEE CAVE PARKWAY, ± 1150' SOUTHERLY OF R.M. 620, ELEVATION=981.73' (NOT SHOWN)

TBM 106:
1/2" IRON ROD WITH BLUE CAP SET IN MEDIAN ON BEE CAVE PARKWAY, ±480' SOUTHERLY OF R.M. 620, ±40' SOUTHERLY OF SPEED LIMIT SIGN, ±60' SOUTHEASTERLY OF WASTEWATER MANHOLE. ELEVATION=967.84' (AS SHOWN)

TBM 107:
PK NAIL W/SHINER SET IN BACK OF CURB OF SIDEWALK IN MEDIAN AT THE INTERSECTION OF THE NORTHERLY RIGHT-OF-WAY LINE OF BEE CAVE PARKWAY AND THE WESTERLY RIGHT-OF-WAY LINE OF R.M. 620, ±50' NORTHWESTERLY OF TREE TAGGED NO. 902, ±67' SOUTHERLY OF TREE TAGGED NO. 903. ELEVATION=946.66' (AS SHOWN)

TRENCH SAFETY NOTES

1. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT ARE DESCRIBED IN

CONTACT INFORMATION

FACILITIES OWNER:
WEST TRAVIS COUNTY PUA
13215 BEE CAVE PARKWAY BUILDING B, SUITE 110
BEE CAVE, TEXAS 78738
(512) 263-0100
JRIECHERS@WTCPUA.ORG

LAND OWNER:
HUNTSVILLE CENTER LTD.
2410 POLK ST. #200
HOUSTON, TEXAS 77003
CONTACT: DAWN BAYARENA
(512) 653-0877

OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:
KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLYVILLE ROAD, CAMPUS IV, SUITE 200
AUSTIN, TEXAS 78759
CONTACT: LANCE R. ORITI, P.E.
(512) 418-1771

PERSON OR FIRM RESPONSIBLE FOR EROSION/ SEDIMENTATION CONTROL
CONTRACTOR: TBD
NAME/ADDRESS/ PHONE

PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION.
CONTRACTOR: TBD
NAME/ADDRESS/PHONE

SPOILS MANAGEMENT AND DISPOSAL NOTES

1. TEMPORARY HOLDING SITES AS NECESSARY TO STOCKPILE EXCAVATED SOILS, EMBEDMENT MATERIAL, AND/OR PIPING AND APPURTENANCES MAY BE LOCATED WITHIN THE LIMITS OF CONSTRUCTION AS SHOWN ON THE PLANS .
2. NO PERMANENT SPOILS DISPOSAL SHALL BE ALLOWED ON-SITE, UNLESS APPROVED BY THE OWNER AND GOVERNING AUTHORITY.
3. ALL SPOILS MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED SPOIL DISPOSAL SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SECURING A PERMIT FOR THE SITE; AND SHALL NOTIFY THE OWNER AND/OR ENGINEER AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO DISPOSAL OF ANY SPOIL MATERIAL.

EROSION /SEDIMENTATION CONTROL NOTES

1. USE LATEST CITY OF AUSTIN, CITY OF DRIPPING SPRINGS, CITY OF BEE CAVE, TRAVIS COUNTY, HAYS COUNTY EROSION/SEDIMENTATION CONTROL NOTES, AS APPROPRIATE.

STANDARD TREE PROTECTION NOTES

1. USE LATEST CITY OF AUSTIN, CITY OF DRIPPING SPRINGS, CITY OF BEE CAVE, TRAVIS COUNTY, HAYS COUNTY EROSION/SEDIMENTATION CONTROL NOTES, AS APPROPRIATE

WEST TRAVIS COUNTY PUBLIC UTILITY AGENCY (WTCPUA)

HOURS OF CONSTRUCTION

1. NO WORK SHALL BE DONE BETWEEN THE HOURS OF 8:00 P.M. AND 6:00 A.M; NOR ON SUNDAYS OR LEGAL HOLIDAYS WITHOUT THE WRITTEN PERMISSION OF THE WTCPUA IN EACH CASE, EXCEPT SUCH WORK AS MAY BE NECESSARY FOR THE PROPER CARE, MAINTENANCE AND PROTECTION OF THE WORK ALREADY DONE OR IN THE CASE OF AN EMERGENCY.

LIMITS OF CONSTRUCTION

1. THE LIMITS OF CONSTRUCTION SHALL BE BOUNDED BY THE RIGHT OF WAY LINE OR PERMANENT / TEMPORARY CASEMENT LIMITS SHOWN ON THE PLANS. LIMITS OF CONSTRUCTION MAY BE FURTHER RESTRICTED BY PLACEMENT OF SILT FENCE, TREE PROTECTION FENCING, OR OTHER APPURTENANCES AS SHOWN ON THE PLANS.
2. LIMITS OF CONSTRUCTION SHALL BE CLEARLY DELINEATED BY THE CONTRACTOR BY INSTALLING SILT FENCE, ORANGE TENSAR FENCING (4 - FOOT ROLL TIED TO 6-FOOT POSTS SET AT 10-FOOT INTERVALS) OR OTHER BARRIERS AS APPROVED BY THE ENGINEER. ALL TEMPORARY BARRIERS SHALL BE REMOVED AT THE END OF THE PROJECT.
3. ANY AREAS OUTSIDE THE LIMITS OF CONSTRUCTION DISTURBED BY THE CONTRACTOR SHALL IMMEDIATELY BE RESTORED TO PRECONSTRUCTION CONDITION.

SANITARY FACILITIES

PROVISIONS SHALL BE MADE FOR NECESSARY SANITARY CONVENIENCES FOR THE USE OF LABORERS ON THE WORK. THE FACILITIES MUST BE PROPERLY SECLUDED FROM PUBLIC OBSERVATION AND SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.

PROTECTION OF BORE PITS

INSTALL BARRIER FENCING (TENSAR ORANGE FENCING OR CHAIN LINK FENCING) TO SURROUND THE BORE PITS. BARRIER FENCING SHALL REMAIN IN PLACE AT ALL TIMES WHILE THE BORE PIT IS OPEN. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY AND SAFETY AT THE BORE PITS.

HORIZONTAL CONTROLS

ALL LINEWORK SHALL BE STAKED PRIOR TO CONSTRUCTION WITH SEALED CUT SHEETS PROVIDED TO THE WTCPUA INSPECTOR PRIOR TO CONSTRUCTION.

CONSTRUCTION SEQUENCING (MODIFY TO FIT PROJECT)

1. 48 HOURS PRIOR TO BEGINNING ANY WORK, CALL THE ONE-CALL BOARD OF TEXAS AT 811 OR 1-800-545-6005 FOR UTILITY LOCATIONS AND OBTAIN STREET CUT PERMIT FOR ANY WORK WITHIN CITY, COUNTY, AND/OR STATE RIGHT-OF-WAY.
2. INSTALL TEMPORARY EROSION CONTROLS AND TREE/NATURAL AREA PROTECTION FENCING PRIOR TO PRE- CONSTRUCTION MEETING AND PRIOR TO ANY SITE CLEARING, GRUBBING, EXCAVATION, MATERIAL STOCKPILING, OR OTHER CONSTRUCTION OPERATIONS.
3. SCHEDULE AND CONVENE A PRECONSTRUCTION MEETING INCLUDING BUT NOT LIMITED TO THE OWNER'S REPRESENTATIVE, ENGINEER, WTCPUA REPRESENTATIVE, FIRE DEPARTMENT, CITY, COUNTY, TXDOT REPRESENTATIVE, AND TCEQ REPRESENTATIVE, AS APPLICABLE.
4. INSTALL TRAFFIC CONTROL MEASURES.
5. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO INITIATING CONSTRUCTION.
6. ROUGH CUT WATER QUALITY PONDS AND DIRECT RUNOFF TO PONDS TO ACT AS A SEDIMENT TRAP.
7. REMOVE AND STOCKPILE TOPSOIL IN AREAS AS REQUIRED.
8. ROUGH CUT ROADS/SITE, AS NECESSARY.
9. INSTALL ALL UNDERGROUND UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE WTCPUA WHEN SWITCHING SERVICE TO THE WTCPUA SYSTEM. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS/FACILITIES TO ENSURE SERVICE IS MAINTAINED DURING SWITCHOVER.
10. COMPLETE ALL UNDERGROUND INSTALLATIONS, INCLUDING INSTALLATION OF SLEEVES.
11. COMPLETE SUBGRADE.
12. COMPLETE 1ST COURSE BASE.
13. COMPLETE FINAL COURSE BASE.
14. LAY PAVEMENT AND/OR COMPLETE ANY PAVEMENT REPAIR.
15. COMPLETE WATER QUALITY PONDS.
16. COMPLETE PERMANENT EROSION CONTROL AND SITE RESTORATION.
17. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
18. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED BY CONSTRUCTION OPERATIONS.

TRAFFIC CONTROL NOTES (INCLUDE IF APPLICABLE)

1. PLANS SHALL INDICATE RESPONSIBLE AGENT FOR TRAFFIC CONTROL (ENGINEER OR CONTRACTOR).
2. CONTRACTOR SHALL MAINTAIN REASONABLE LOCAL VEHICULAR TRAFFIC THROUGHOUT CONSTRUCTION OPERATIONS.
3. CONTRACTOR SHALL PROVIDE SIGNS, BARRICADES, FLAGGERS, AND OTHER MEASURES AS REQUIRED TO ALLOW FOR VEHICULAR AND PEDESTRIAN TRAFFIC TO PROCEED SAFELY WITH MINIMUM INCONVENIENCE.
4. SIGNS, BARRICADES, FLAGGERS, AND RELATED WORK SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND WITH THE REQUIREMENTS OF THE GOVERNING CITY/COUNTY.
5. FOR ANY ACTIVITY WITHIN TXDOT RIGHT-OF-WAY, PROJECT MUST HAVE A TXDOT PERMIT. A COPY OF THE TXDOT PERMIT SHALL BE PROVIDED TO THE WTCPUA PRIOR TO CONSTRUCTION.

SWPPP NOTES

THIS PROJECT IS SUBJECT TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) GENERAL PERMIT TXR150000 FOR CONSTRUCTION ACTIVITIES. THE GENERAL PERMIT REQUIRES THE PREPARATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH HAS BEEN PROVIDED BY THE OWNER FOR USE BY THE CONTRACTOR. THE OWNER SHALL PROVIDE THE OWNER'S NOTICE OF INTENT (NOI) AND NOTICE OF TERMINATION (N0T) TO THE TCEQ. THE CONTRACTOR'S RESPONSIBILITIES ARE AS FOLLOWS:

1. MAINTAIN A COPY OF THE SWPPP AND A SET OF CONSTRUCTION PLANS WITH THE TEMPORARY EROSION AND SEDIMENT CONTROL PLAN AT THE WORK SITE AT ALL TIMES.
2. FILE A NOTICE OF INTENT (NOI) AND APPLICABLE PAYMENT TO THE TCEQ AT LEAST 2 DAYS PRIOR TO SITE DISTURBANCE.
3. POST A COPY OF THE OWNER'S AND CONTRACTOR'S NOI FORMS AT THE WORK SITE.
4. SIGN THE CERTIFICATION AND OBTAIN A SIGNED CERTIFICATION STATEMENT FROM ALL SUBCONTRACTORS RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL MEASURES WHICH INDICATES THAT THE CONTRACTOR AND SUBCONTRACTOR UNDERSTANDS THE PERMIT REQUIREMENTS (FORMS ARE IN THE SWPPP).
5. FOLLOW AND COMPLY WITH ALL ASPECTS OF THE TPDES GENERAL PERMIT NO. TXR150000. THIS INCLUDES BUT IS NOT LIMITED TO FIELD INSPECTIONS AND REPORT, MAINTAINING AND REPAIRING EROSION CONTROLS AND UPDATING EROSION CONTROLS AND UPDATING EROSION CONTROL PLAN SHEETS BASED ON FIELD CHANGES AND MODIFICATIONS.
6. FILE A COPY OF THE CONTRACTOR'S NOTICE OF TERMINATION (NOT) WITH THE TCEQ ONCE THE WORK IS COMPLETED IN ACCORDANCE WITH THE TPDES GENERAL PERMIT NO TXR.150000 AND HAS BEEN ACCEPTED BY THE OWNER.

WTCPUA WATER & WASTEWATER GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE STATE STATUTES AND U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS (0.S.H.A.). COPIES OF O.S.H.A. STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE OBTAINED FROM O.S.H.A. AUSTIN AREA OFFICE - LA COSTA GREEN BLDG 1033, LA POSADA DR, SUITE 375, AUSTIN, TEXAS 78752-3832, 512- 374-0271.
2. THE ATTENTION OF THE CONTRACTOR IS DIRECTED TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS AND TO THE STATE LAW, (VERNON'S ANNOTATED TEXAS STATUTES, ARTICLE 1436 ©) AND THE NEED FOR EFFECTIVE PRECAUTIONARY MEASURES WHEN OPERATING IN THE VICINITY OF ELECTRICAL LINES. THE CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY REQUIREMENTS, AND FOR COORDINATION OF ALL WORK WITH THE APPROPRIATE ELECTRIC UTILITY COMPANY.
3. THE CONTRACTOR SHALL CONTACT THE ONE-CALL BOARD OF TEXAS AT 811 OR 1-800-545-6005 FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION. THE LOCATION AND TYPE OF UTILITIES AND UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE NOT GUARANTEED TO BE ACCURATE OR ALL- INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. IN ADDITIONAL TO NORMAL PRECAUTIONS WHEN EXCAVATING, USE EXTRA CAUTION WHEN EXCAVATING WITHIN 25 FEET OF ANY UTILITIES SHOWN ON THE PLANS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION BETWEEN HIMSELF AND OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THE PROJECT. THIS INCLUDES ALL WATER, WASTEWATER, GAS, ELECTRICAL, TELEPHONE, CABLE TELEVISION, AND STREET AND DRAINAGE WORK. ONCE THE CONTRACTOR BECOMES AWARE OF A POSSIBLE CONFLICT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER AND WTCPUA INSPECTOR WITHIN TWENTY-FOUR (24) HOURS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL SPOIL MATERIAL FROM THE CONSTRUCTION SITE. ALL SPOILS MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED SPOIL SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SECURING A PERMIT FOR THE SITE. THE CONTRACTOR SHALL NOTIFY THE WTCPUA INSPECTOR AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO DISPOSAL OF THE MATERIAL. NO SPOILS ARE TO REMAIN OVERNIGHT IN THE FLOODPLAIN.
6. NO BLASTING OR BURNING WILL BE ALLOWED.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR, AT HIS EXPENSE, ALL UTILITIES, PAVEMENT, CURB, FENCES OR ANY OTHER ITEMS DAMAGED DURING CONSTRUCTION REGARDLESS OF WHETHER THESE ITEMS ARE SHOWN ON THE CONSTRUCTION PLANS.
8. WHENEVER EXISTING UTILITIES, INDICATED OR NOT ON PLANS, PRESENT OBSTRUCTIONS TO GRADE AND/OR ALIGNMENT OF PROPOSED PIPE, CONTRACTOR IS TO IMMEDIATELY NOTIFY THE ENGINEER WHO WILL DETERMINE IF EXISTING IMPROVEMENTS ARE TO BE RELOCATED OR IF THE GRADE AND/OR ALIGNMENT OF PROPOSED PIPE IS TO BE CHANGED.
9. DUST PREVENTION SHALL BE PROVIDED BY THE CONTRACTOR AT HIS OWN EXPENSE. DUST CONTROL SHALL INCLUDE SPRAYING OF WATER ON ALL DISTURBED AREAS, SPOIL PILES, OR HAUL MATERIALS ASSOCIATED WITH THE PROJECT OR OTHER METHODS APPROVED BY THE WTCPUA.
10. CLEANUP - UPON COMPLETION AND BEFORE MAKING APPLICATION FOR ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL CLEAN ALL STREETS AND ALL GROUND OCCUPIED BY HIM IN CONNECTION WITH THE WORK OF ALL RUBBISH, EXCESS MATERIALS, EXCESS EXCAVATED MATERIALS, TEMPORARY STRUCTURES AND EQUIPMENT. ALL PARTS OF THE WORK SHALL BE LEFT IN A NEAT AND PRESENTABLE CONDITION SATISFACTORY TO THE WTCPUA AND OTHER GOVERNMENTAL BODIES HAVING JURISDICTION PRIOR TO SUBMITTAL OF THE FINAL PAYMENT.
11. THE CONTRACTOR SHALL MAINTAIN ACCESS TO BUSINESSES AND RESIDENCES AT ALL TIMES. THE CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS TO MINIMIZE DISRUPTION OF DELIVERIES, PARKING, AND OTHER ACTIVITIES.
12. DEWATERING, IF NECESSARY, SHALL BE CONSIDERED INCIDENTAL TO THE WORK AND SHALL NOT CONSTITUTE A BASIS FOR ADDITIONAL PAYMENT.
13. THE MINIMUM DEPTH OF COVER FROM TOP OF PIPE TO FINISHED GRADE FOR ALL WATER LINES SHALL BE FOUR FEET. INSTALL LINES TO AVOID HIGH POINTS.
14. CONCRETE SHALL BE CLASS 'A' WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI, UNLESS OTHERWISE NOTED.
15. REINFORCING STEEL SHALL BE ASTM A 615M, GRADE 60 UNLESS OTHERWISE NOTED.
16. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN REVIEWING THESE PLANS, THE WTCPUA MUST RELY ON THE ADEQUACY OF THE DESIGN ENGINEER. APPROVAL OF THESE PLANS BY THE WTCPUA DOES NOT RELEASE THE DESIGN ENGINEER OF THESE RESPONSIBILITIES.

WEST TRAVIS COUNTY PUA WATER AND WASTEWATER UTILITY NOTES

1. WEST TRAVIS COUNTY PUA IS THE WATER AND / OR WASTEWATER SERVICE PROVIDER FOR THIS PROJECT. A PRE-CONSTRUCTION MEETING WITH THE WTCPUA SHALL BE HELD PRIOR TO COMMENCEMENT OF CONSTRUCTION TO SCHEDULE INSPECTION OF INSTALLATION OF WATER/WASTEWATER FACILITIES. WATER FACILITIES WILL BE INSPECTED UP TO, AND INCLUDING, THE WATER METER AND/OR FIRE HYDRANTS. THE CONTACT NUMBER FOR WTCPUA IS (512) 263- 0100.
2. THE CITY OF AUSTIN STANDARD SPECIFICATIONS AND STANDARD DETAILS CURRENT AT THE TIME OF CONSTRUCTION SHALL GOVERN MATERIALS AND METHODS USED TO PERFORM THIS WORK. CITY OF AUSTIN SPECIFICATIONS AND STANDARD DETAILS ARE AVAILABLE AT HTTPS://LIBRARY.MUNICODE.COM/TX/AUSTIN/CODES/
3. CONTRACTOR SHALL OBTAIN ALL APPROVALS AND PERMITS, INCLUDING BUT NOT LIMITED TO STREET/DRIVEWAY CUT AND UTILITY CUT PERMITS FROM THE APPROPRIATE GOVERNMENTAL AGENCY BEFORE BEGINNING CONSTRUCTION WITHIN THE RIGHT-OF-WAY OF A PUBLIC STREET OR ALLEY.
4. THE WTCPUA SHALL BE CONTACTED AT (512) 263-0100 AT LEAST 48 HOURS BEFORE CONNECTING TO THEIR EXISTING WATER AND/OR WASTEWATER FACILITIES.
5. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM AT 811 OR 1-800-545-6005 FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION. IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES TO BE EXTENDED, TIED TO, OR ALTERED, OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
6. NO OTHER UTILITY SERVICE/APPURTENANCES SHALL BE PLACED NEAR THE PROPERTY LINE, OR OTHER ASSIGNED LOCATION DESIGNATED FOR WATER AND WASTEWATER UTILITY SERVICE THAT WOULD INTERFERE WITH THE WATER AND/OR WASTEWATER SERVICES.
8. WHERE WATER LINES AND SEWER LINE ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION). ANY DEVIATION THESE STANDARDS SHALL REQUIRE A VARIANCE APPROVED BY TCEQ BEFORE SUBMITTING PIPING ASSIGNMENTS TO THE WTCPUA.
9. THE CITY OF AUSTIN SPECIFICATION ITEM 509S WILL BE REQUIRED AS A MINIMUM TRENCH SAFETY MEASURE. CONTRACT DOCUMENTS, WHICH INCLUDE A TRENCH SAFETY PLAN SIGNED AND SEALED BY A TEXAS PROFESSIONAL ENGINEER AND A PAY ITEM FOR TRENCH SAFETY MEASURES, IN COMPLIANCE WITH OSHA, STATE, COUNTY, AND CITY REQUIREMENTS BEFORE BEGINNING WORK ON THE PROJECT.
10. ALL MATERIAL TESTS, INCLUDING SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS, SHALL BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY FUNDED BY THE OWNER IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATION ITEM 1804S.4.
11. CONNECTIONS TO EXISTING WTCPUA WATER LINES SHALL BE MADE BY CUT-IN TEES IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATION ITEM 510.3(24). ISOLATION VALVES SHALL BE INSTALLED ON THE ENDS OF THE CUT-IN TEE, AS NECESSARY. A SHUT-OUT VALVE PLAN SHALL BE PROVIDED SHOWING THE LOCATION OF EXISTING GATE VALVES IN THE VICINITY OF THE CONNECTION. THE SHUT-OUT PLAN SHALL IDENTIFY ALL AFFECTED PROPERTY OWNERS. CONTRACTOR SHALL PERFORM ALL WORK AND SHALL FURNISH ALL MATERIALS, INCLUDING DRAINING AND CUTTING INTO EXISTING PIPING AND CONNECTING A NEW PIPELINE OR OTHER EXTENSION INTO THE EXISTING PRESSURE PIPING, FORMING AN ADDITION TO THE POTABLE WATER TRANSMISSION AND DISTRIBUTION NETWORK AND PERFORMING NECESSARY SHUTOFFS. CONTRACTOR SHALL SCHEDULE ALL SUCH CONNECTIONS IN ADVANCE AND SUCH SCHEDULE SHALL BE APPROVED BY THE WTCPUA BEFORE BEGINNING THE WORK. AT LEAST 48 HOURS- NOTICE SHALL BE GIVEN TO THE WTCPUA PRIOR TO MAKING THE CONNECTION, AND A REPRESENTATIVE FROM THE WTCPUA SHALL BE PRESENT WHEN THE CONNECTION IS MADE. PRESSURE TAPS MAY BE APPROVED ON A CASE-BY-CASE BASIS. "SIZE ON SIZE" TAPS WILL NOT BE PERMITTED. WHEN APPROVED, ANY TAPS SHALL BE MADE BY USE OF AND APPROVED FULL CIRCLE, GASKETED CAST IRON OR DUCTILE IRON TAPPING SLEEVE. CONCRETE BLOCKING SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES PRIOR TO MAKING THE PRESSURE TAP AND THE USE OF PRECAST BLOCKS MAY BE USED TO HOLD THE TAP IN ITS CORRECTION POSITION PRIOR TO BLOCKING. THE BLOCKING BEHIND AND UNDER THE TAP SHALL HAVE A MINIMUM OF 24 HOURS CURING TIME BEFORE THE VALVE CAN BE REOPENED FOR SERVICE FROM THAT TAP. THE CONTRACTOR SHALL NOTIFY THE WTCPUA INSPECTOR A MINIMUM OF SEVENTY-TWO (72) HOURS IN ADVANCE FOR THE WTCPUA TO NOTIFY THE AFFECTED CUSTOMERS. THE WTCPUA SHALL BE PRESENT WHILE ALL WORK IS PERFORMED TO MAKE THE CONNECTION.
12. THRUST RESTRAINT SHALL BE BY METAL THRUST RESTRAINTS IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATION ITEM 510.3(22).
13. FIRE HYDRANTS SHALL BE SET IN ACCORDANCE WITH CITY OF STANDARD SPECIFICATION ITEM 51LS.3 E AND SHALL BE APPROVED FIRE DEPARTMENT OR OTHER APPROPRIATE PARTY PRIOR TO INSTALLATION. FIRE HYDRANTS ON MAINS UNDER CONSTRUCTION SHALL BE SECURELY WRAPPED WITH A POLY WRAP BAG AND TAPED INTO PLACE. THE POLY WRAP WILL BE REMOVED WHEN THE MAINS ARE ACCEPTED AND PLACED IN SERVICE. FIRE HYDRANTS THAT ARE TO BE USED AS DRAIN HYDRANTS SHALL BE PAINTED SILVER W/ BLUE CAPS PRIOR TO ACCEPTANCE. WHERE STORZ ADAPTORS ARE REQUIRED (HAYS COUNTY), FIRE HYDRANTS SHALL BE MANUFACTURED WITH INTEGRAL STORZ ADAPTORS.
14. WATER LINE TESTING AND STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATION ITEM 510.3(29) AND/OR TCEQ RULES.
15. TEST PRESSURE FOR 2-HOUR TEST SHALL BE AT 175 PSI AT THE LOWEST POINT IN THE LINE.

NOTE:
PRIOR TO PRESSURE TESTING, CONTRACTOR SHALL VERIFY THAT THRUST BLOCKING AND/OR THRUST RESTRAINT BACK TO AND INCLUDING THE VALVE AGAINST WHICH THE PRESSURE TEST SHALL BE PERFORMED, HAS BEEN INSTALLED TO AT LEAST THE SPECIFICATIONS OF THIS PROJECT. FAILURE TO VERIFY THAT THRUST BLOCKING AND/OR THRUST RESTRAINT IN THE EXISTING LINE MEETS OR EXCEEDS THE SPECIFICATIONS OF THIS PROJECT MAY RESULT IN SERIOUS DAMAGE TO THE EXISTING WATERLINE.

16. WATER LINES SHALL BE FILLED WITH WATER AND ALL AIR EXPELLED AT LEAST 24 HOURS BEFORE TESTING. ALL SERVICE LATERALS AND DRAIN VALVE LEADS, WITH THE HYDRANT VALVES CLOSED AND NOZZLE CAPS OPEN SHALL BE INCLUDED IN THE TESTS.
17. CONTRACTOR SHALL SUBMIT A DISINFECTION AND FLUSHING PLAN IN ACCORDANCE WITH AWWA STANDARDS TO THE WTCPUA FOR APPROVAL. REQUIRED FLUSHING VOLUMES, FLUSHING SCHEDULE, AND METHOD OF DISPOSAL OF FLUSH WATER SHALL BE IN ACCORDANCE WITH THE APPROVED PLAN.
18. GATE VALVES SHALL BE RESILIENT SEATED GATE VALVES CONFORMING TO AWWA C509, WITH A MINIMUM RATED WORKING PRESSURE OF 250 PSI.
19. FORCE MAIN TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATION ITEM 510.3(27) AND/OR TCEQ RULES.
20. GRAVITY SANITARY SEWER MAIN TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATION ITEMS 510.3(26) AND/OR TCEQ RULES. IN ADDITION, ALL GRAVITY SANITARY SEWER MAINS SHALL BE TELEVISED PRIOR TO ACCEPTANCE BY WTCPUA. DIGITAL FILES (VIA CD-ROM) CLEARLY SHOWING TELEVISED RECORDING SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOLLOWING INSPECTION.
21. LOCATOR 'FINDER' WIRE - ALL NON -METALLIC WATER LINES SHALL HAVE A FINDER WIRE LOCATED ABOVE THE PIPE. THE WIRE SHALL BE POLY-INSULATED NO. 10 SOLID COPPER AND WILL TERMINATE AT EACH ISOLATION VALVE SUCH THAT IT IS ACCESSIBLE FROM THE VALVE BOX.
22. LOCATOR 'FINDER' WIRE - ALL NON-METALLIC WASTEWATER LINES SHALL HAVE A FINDER WIRE LOCATED ABOVE THE PIPE. THE WIRE SHALL BE POLY-INSULATED NO. 10 SOLID COPPER AND WILL TERMINATE AT READILY ACCESSIBLE LOCATIONS THROUGHOUT THE COLLECTION SYSTEM.
23. ALL VALVE RISERS SHALL HAVE A 1'-6" SQUARE CONCRETE BOX POURED AROUND THEM AT FINISHED GRADE.
24. ALL MANHOLES SHALL BE LINED WITH A CORROSION RESISTANT LINING APPROVED BY THE WTCPUA.
25. BOLTED AND GASKETED COVERS SHALL BE USED FOR ALL MANHOLES LOCATED IN THE 100-YEAR FLOODPLAIN. WHERE THERE ARE MORE THAN THREE GASKETED MANHOLES IN A ROW, VENTS SHALL BE PROVIDED ON EVERY THIRD MANHOLE.
26. THE DOWNSTREAM END OF ANY FORCE MAIN SHALL BE TERMINATED IN A SANITARY SEWER MANHOLE IN A MANNER TO MINIMIZE TURBULENCE.
27. CONTRACTOR SHALL HAVE NECESSARY EROSION AND SEDIMENTATION CONTROLS IN PLACE PRIOR TO COMMENCING WATER/WASTEWATER FACILITY CONSTRUCTION.
28. RECORD DRAWINGS, AS STIPULATED BY THE WTCPUA, SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR VERIFICATION AND FURNISHED TO THE WTCPUA UPON COMPLETION OF THE PROJECT.
29. THE WTCPUA WILL OWN AND OPERATE ALL WATER LINES AND APPURTENANCES UP TO AND INCLUDING THE WATER METER. THESE IMPROVEMENTS WILL BE DEFINED BY A RECORDED EASEMENT OR IN PUBLIC RIGHT-OF-WAY.
30. ANY PORTIONS OF WASTEWATER LINES INCLUDING SERVICES THAT ARE LOCATED OUTSIDE OF A RECORDED EASEMENT OR PUBLIC RIGHT-OF-WAY WILL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER, OR HIS/HER ASSIGNS.
31. WHERE EXISTING WATER AND/OR WASTEWATER INFRASTRUCTURE IS TO BE ABANDONED, THE ENGINEER SHALL SUBMIT AN ABANDONMENT PLAN FOR APPROVAL BY THE WTCPUA.
32. WATER SERVICES SHALL BE INSTALLED USING HDPE PIPE. COPPER IS NOT ALLOWED.
33. FOR ANY STORM SEWER LINE CROSSING A WATER OR WASTEWATER LINE CLOSER THAN 18", THE STORM SEWER PIPE SHALL BE LAID SUCH THAT NO STORM SEWER JOINTS WILL BE OVER THE WATER PIPE CROSSING.

OTHER NOTES - ENGINEER IS RESPONSIBLE FOR INCLUDING ALL APPLICABLE NOTES, INCLUDING BUT NOT LIMITED TO COUNTY, CITY, TXDOT, STATE, FIRE DEPARTMENT, TCEQ (CZP, WPAP, ORGANIZED SEWAGE COLLECTION SYSTEM NOTES, GENERAL CONSTRUCTION NOTES). ENGINEER IS RESPONSIBLE FOR ENSURING THE CURRENT ADOPTED VERSION OF ALL NOTES IS INCLUDED IN THE CONSTRUCTION PLANS.

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES (REVISED FEBRUARY 2019)

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. AT A MINIMUM, CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."
2. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI [§290.44(A)(1)].
3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS [§290.44(A)(2)].
4. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY [§290.44(A)(3)].
5. ALL WATER LINE CROSSINGS OF WASTEWATER MAINS SHALL BE PERPENDICULAR [§290.44(E)(4)(B)].
6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE [§290.44(A)(4)].
7. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES IS 0.25 PERCENT [§290.44(B)].
8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES WITH VENT OPENINGS TO THE ATMOSPHERE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT [§290.44(D)(1)].
9. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN B

KH GENERAL NOTES

OVERALL:

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

EROSION CONTROL:

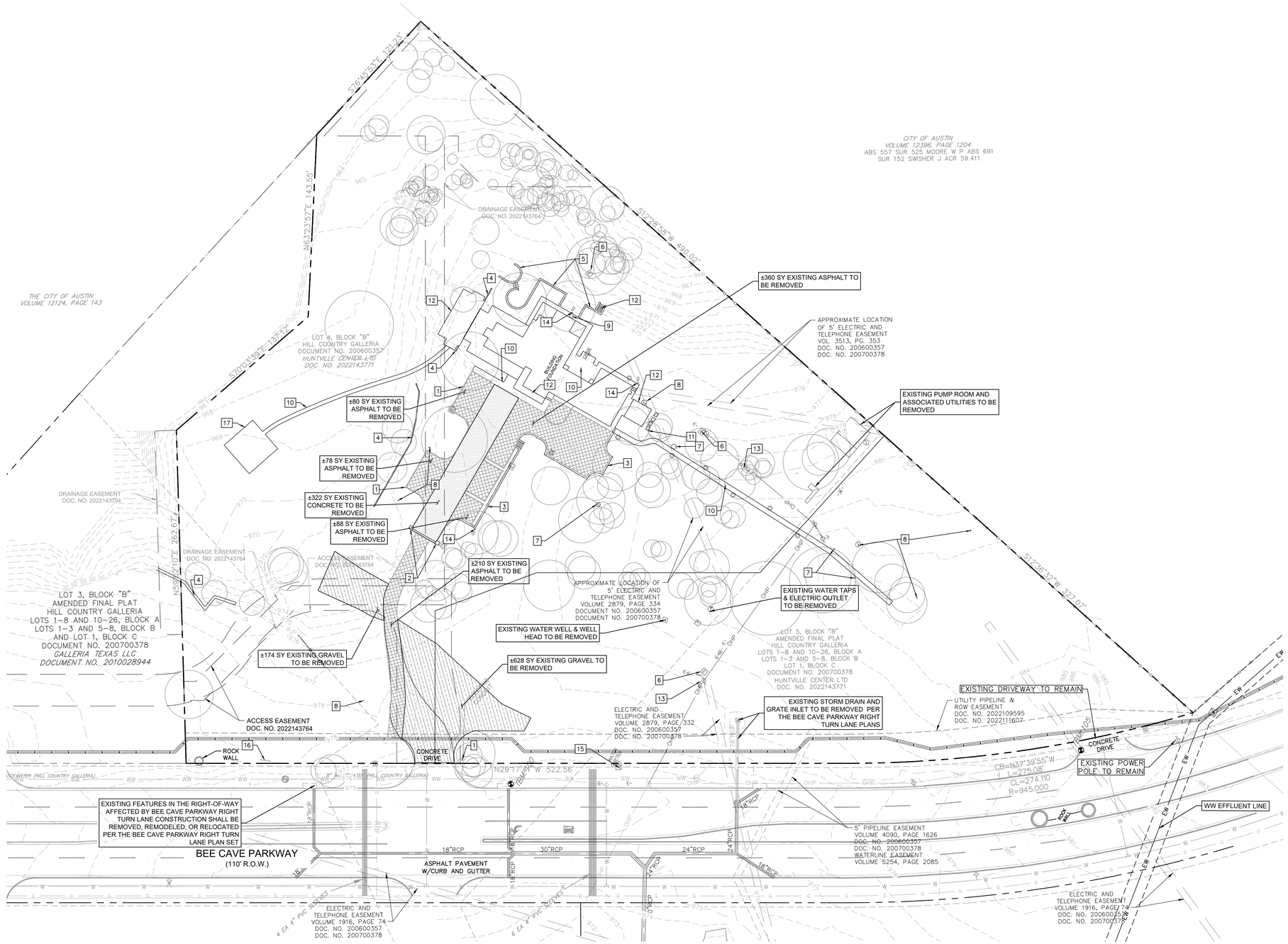
1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.
2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT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

STORM WATER DISCHARGE AUTHORIZATION:

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

DEMOLITION:

1. KH IS NOT RESPONSIBLE FOR THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THIS DEMOLITION PLAN. THIS PRELIMINARY DEMOLITION PLAN SIMPLY INDICATES THE KNOWN OBJECTS ON THE SUBJECT TRACT THAT ARE TO BE DEMOLISHED AND REMOVED FROM THE SITE.
2. KH DOES NOT WARRANT OR REPRESENT THAT THE PLAN, WHICH WAS PREPARED BASED ON SURVEY AND UTILITY INFORMATION PROVIDED BY OTHERS, SHOWS ALL IMPROVEMENTS AND UTILITIES, THAT THE IMPROVEMENTS AND UTILITIES ARE SHOWN ACCURATELY, OR THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES ON THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ITS OWN SITE RECONNAISSANCE TO SCOPE ITS WORK AND TO CONFIRM WITH THE OWNERS OF IMPROVEMENTS AND UTILITIES THE ABILITY AND PROCESS FOR THE REMOVAL OF THEIR FACILITIES.
3. THIS PLAN IS INTENDED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR SHALL ENSURE THAT SUFFICIENT POSITIVE SLOPE AWAY FROM THE BUILDING PAD IS ACHIEVED FOR ENTIRE PERIMETER OF THE PROPOSED BUILDING(S) DURING GRADING OPERATIONS AND IN THE FINAL CONDITION. IF THE CONTRACTOR OBSERVES THAT THIS WILL NOT BE ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO REVIEW THE LOCATION.
5. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY, AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS NEEDED FOR GRADING OPERATIONS AND TO ACCOMMODATE PROPOSED GRADE, INCLUDING THE UNKNOWN UTILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL REFER TO THE GENERAL NOTES "OVERALL" SECTION THESE PLANS FOR ADDITIONAL INFORMATION.
7. EXISTING TREE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES FOUND IN THE FIELD THAT AFFECT THE GRADING PLAN TO THE CIVIL ENGINEER.
8. CONTRACTOR SHALL FIELD VERIFY ALL PROTECTED TREE LOCATIONS, INDIVIDUAL PROTECTED TREE CRITICAL ROOT ZONES, AND PROPOSED SITE GRADING, AND NOTIFY THE CIVIL ENGINEER AND LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH THE TREE PRESERVATION PLAN BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING THE WORK.
9. TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY STANDARD TREE PROTECTION DETAILS AND THE APPROVED TREE PRESERVATION PLANS BY THE LANDSCAPE ARCHITECT.
10. CONTRACTOR SHALL REFER TO ALL TREE PRESERVATIONS PLANS FOR ALL INFORMATION AND DETAILS REGARDING EXISTING TREES TO BE REMOVED AND PRESERVED.
11. NO TREE SHALL BE REMOVED UNLESS A TREE REMOVAL PERMIT HAS BEEN ISSUED BY THE CITY, OR CITY HAS OTHERWISE CONFIRMED IN WRITING THAT ONE IS NOT NEEDED FOR THE TREE(S).
12. NO TREE SHAL



LEGEND

- PROPERTY LINE
- BENCHMARK
- EXIST. EASEMENT LINE
- W — EXIST. WATER LINE
- WW — EXIST. WASTEWATER LINE
- E.W — EXIST WASTEWATER EFFLUENT LINE
- EXIST. STORM LINE
- OHP — OVERHEAD ELECTRIC
- WW — WASTEWATER MANHOLE
- 600 — EXISTING CONTOUR
- EXISTING TREE
- EXISTING FENCE

SEE LANDSCAPE PLAN FOR EXISTING TREE LIST AND IDENTIFICATION OF TREES TO BE REMOVED

NOTES:

1. ALL EXISTING ON-SITE STRUCTURES, FEATURES TO BE DEMOLISHED & REMOVED UNLESS OTHERWISE NOTED.
2. ALL EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TREE PROTECTION PER DETAILS ON SHEET 9 PRIOR TO ANY DEMOLITION OPERATIONS.
3. CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANIES PRIOR TO REMOVAL AND/OR RELOCATION OF ANY EXISTING UTILITIES.
4. THIS PLAN IS ONLY AN EXHIBIT TO SHOW WHICH EXISTING FEATURES ARE TO BE REMOVED. ALL METHODS OF DEMOLITION ARE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REMOVE AND DISPOSE OF DEMOLITION IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.

1. CONCRETE CURB TO BE REMOVED (TYP.)
2. ELECTRIC GATE & COLUMNS TO BE REMOVED (TYP.)
3. STONE WALL TO BE REMOVED (TYP.)
4. ROCK WALL TO BE REMOVED (TYP.)
5. CONCRETE WALL TO BE REMOVED (TYP.)
6. ELECTRIC METERS & ELECTRIC PULL BOX TO BE REMOVED (TYP.)
7. ELECTRIC CONDUIT TO BE REMOVED (TYP.)
8. WATER TAP TO BE REMOVED (TYP.)
9. WATER VAULT TO BE REMOVED (TYP.)
10. CONCRETE SIDEWALK TO BE REMOVED (TYP.)
11. A/C PADS TO BE REMOVED (TYP.)
12. STRUCTURE (INCLUDING BUILDING FOUNDATION, FOUNTAIN, STEPS, COVERED AREA, WOOD DECK, PUMP HOUSE, SATELLITE DISH ON CONCRETE PAD, WOOD SHED, TELEVISION ANTENNA) TO BE REMOVED (TYP.)
13. OVERHEAD ELECTRIC LINES AND POLES TO BE REMOVED BY AUSTIN ENERGY AND PAID FOR BY OWNER (TYP.)
14. WASTEWATER CLEANOUTS AND ASSOCIATED PIPE TO BE REMOVED (TYP.)
15. WATER METER TO BE REMOVED
16. SIGN TO BE REMOVED
17. HELIPAD TO BE REMOVED

BENCHMARKS

ELEVATIONS HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) UTILIZING WESTERN DATA SYSTEMS CONTINUALLY OPERATING REFERENCE STATION (CORS) NETWOEK AND ADDITIONALLY REFERENCED TO CITY OF AUSTIN GPA CONTROL MONUMENTS AT THE TIME OF THIS SURVEY.

TBM 100:
PK NAIL W/SHINER SET ON SOUTHEAST CORNER OF INLET ON EASTERLY RIGHT-OF-WAY LINE OF BEE CAVE PARKWAY, ± 1750' SOUTHERLY OF R.M. 620, ± 28' SOUTHERLY OF TREE TAGGED NO. 962, ±75' NORTHWESTERLY OF FIRE HYDRANT.

ELEVATION=974.63' (NOT SHOWN)

TBM 105:
PK NAIL W/SHINER SET ON NORTHEASTERLY EDGE OF CONCRETE DRIVE ON EASTERLY RIGHT-OF-WAY LINE OF BEE CAVE PARKWAY, ±2200' SOUTHERLY OF R.M. 620.

ELEVATION=981.73' (AS SHOWN)

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

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

No.	REVISIONS	DATE	BY

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TX REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
LANCE R. ORITI
96172
LICENSED PROFESSIONAL ENGINEER
7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

EXISTING CONDITIONS & DEMO PLAN

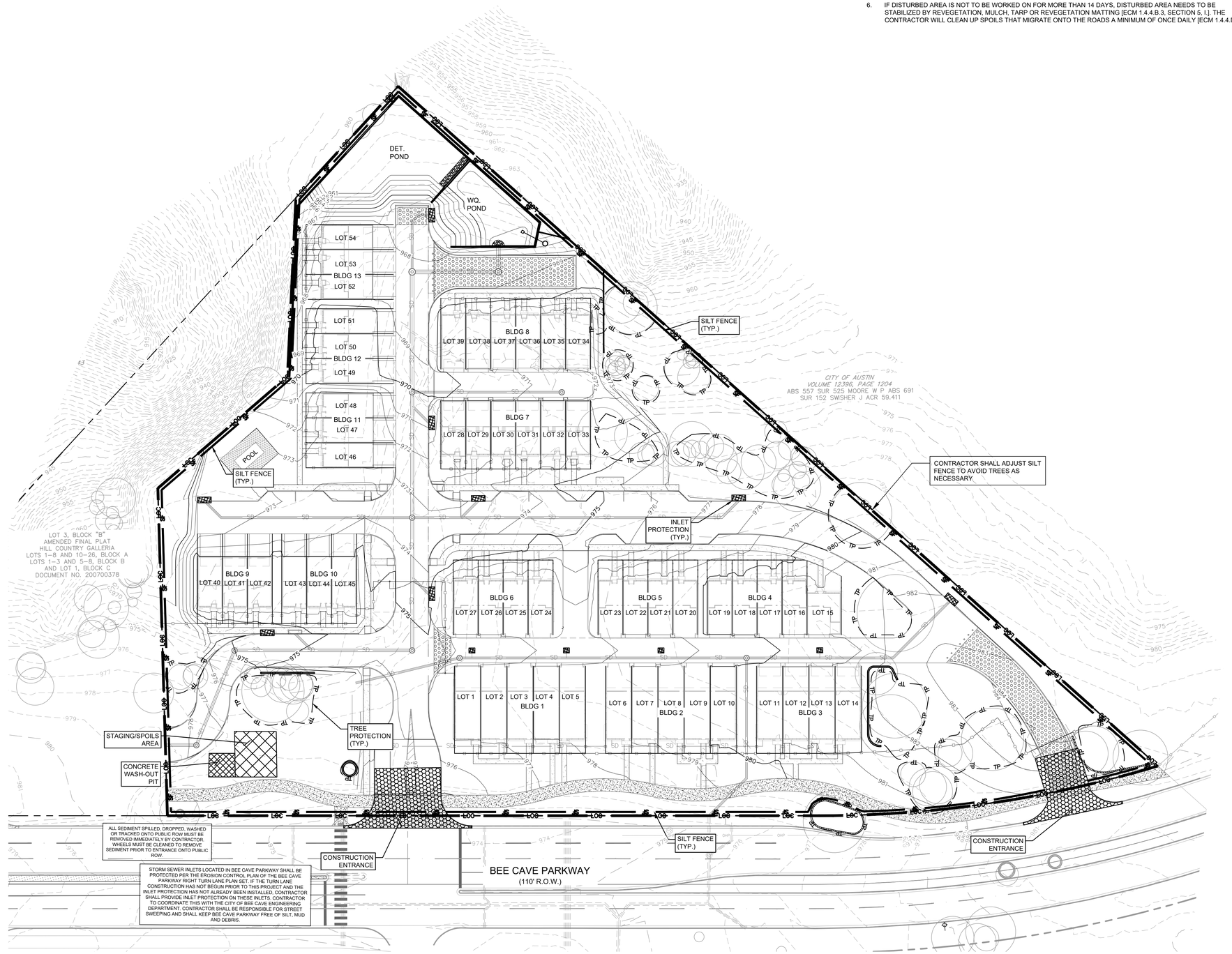
PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
8 OF 88

NOTES:

1. CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL SWPPP CONTROLS - CONTROLS SHOWN ON THIS SITE MAP ARE SUGGESTED CONTROLS ONLY.
2. CONTRACTOR SHALL RECORD INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL DATES FOR EACH BMP EMPLOYED (WHETHER CALLED OUT ON ORIGINAL SWPPP OR NOT) DIRECTLY ON THE SITE MAP.
3. THE CITY INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN COMPLIANCE WITH THE CITY OF BEE CAVE RULES AND REGULATIONS
4. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURE DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING.
5. REFERENCE EROSION CONTROL NOTES AND DETAILS ON SHEET 10.
6. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR MORE THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING [ECM 1.4.4.B.3, SECTION 5, I.]. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY [ECM 1.4.4.D.4].



0 40' 80'
GRAPHIC SCALE 40'

LEGEND

SF	SILT FENCE
TP	TREE PROTECTION
IP	PROPOSED INLET PROTECTION
CE	CONSTRUCTION ENTRANCE
970	EXISTING CONTOURS
970	PROPOSED CONTOURS
LOC	LIMITS OF CONSTRUCTION AREA
	PROPERTY LINE
	TREE PROTECTION

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TBPE Firm No. 928

STATE OF TEXAS
LANCE R. ORITI
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LICENSED
PROFESSIONAL ENGINEER

7/3/2023

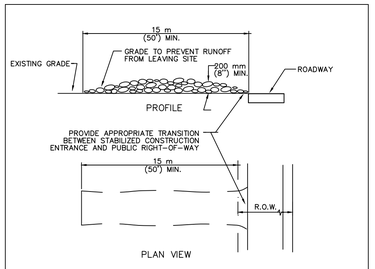
KHA PROJECT	069225663
DATE	July 2023
SCALE:	AS SHOWN
DESIGNED BY:	MAP
DRAWN BY:	CK
CHECKED BY:	LRO

EROSION CONTROL PLAN

PEARL - TOWNHOMES

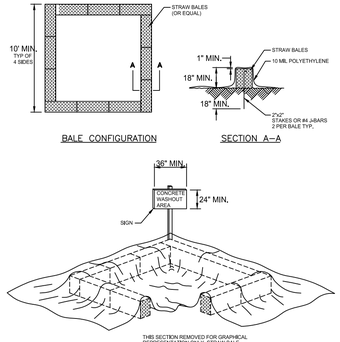
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
9 OF 88



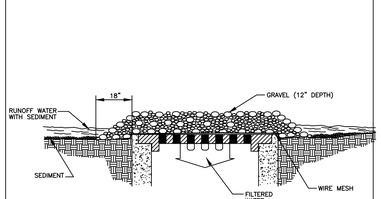
NOTES:
1. STONE SIZE: 75–125 mm (3–5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S–1



NOTES:
1.- FACE SIGN TOWARD NEAREST STREET OR ACCESS POINT
2.- CONCRETE WASHOUT SHALL BE LOCATED BEHIND CURB AND 50 FT. MINIMUM FROM DRAINAGE INLETS OR WATERCOURSES

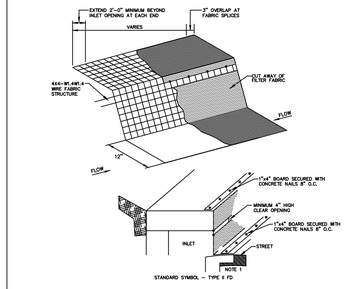
Concrete Washout Area



NOTE:
A. WIRE MESH SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS MINIMUM OF 1 FOOT BEYOND EACH SIDE OF THE INLET STRUCTURE. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2–INCH OPENINGS SHALL BE USED. IF MORE THAN ONE STRIP OF MESH IS NECESSARY, THE STRIPS SHALL BE OVERLAPPED.
B. AGGREGATE SHALL BE PLACED OVER THE WIRE MESH AS INDICATED ABOVE. THE DEPTH OF STONE SHALL BE AT LEAST 12 INCHES OVER THE ENTIRE INLET OPENING. THE STONE SHALL EXTEND BEYOND THE INLET OPENING AT LEAST 18 INCHES ON ALL SIDES.
C. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS IT'S FUNCTION, THE STONES MUST BE PULLED AWAY FROM THE INLET, CLEANED AND REPLACED.

INLET PROTECTION/SEDIMENT FILTER

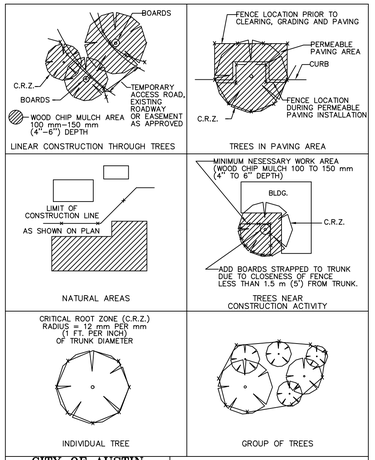
GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER
N.T.S.



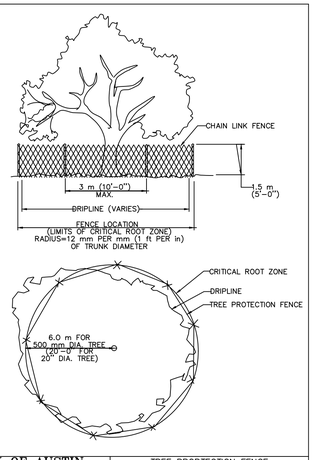
NOTE 1:
CONTRACTOR TO SECURE FILTER WITH 1"x4" BOARD SET WITH CONCRETE NAILS 8" ON CENTER.

NOTE 2:
REMOVE SECTION OF FILTER FABRIC IF CONCENTRATED FLOW OCCURS AT THIS LOCATION OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.

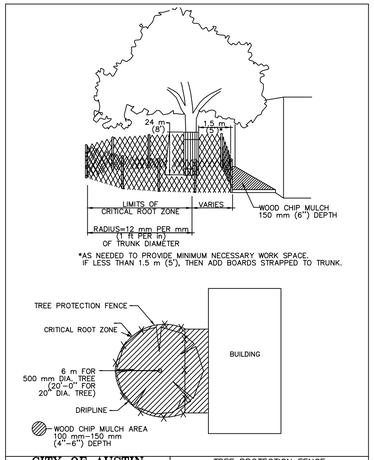
CURB INLET PROTECTION
N.T.S.



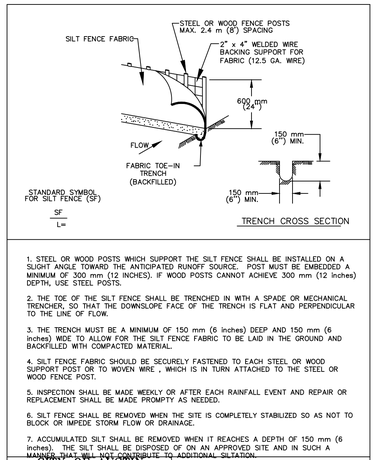
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE LOCATIONS	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S–1



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE TYPE A – CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S–2

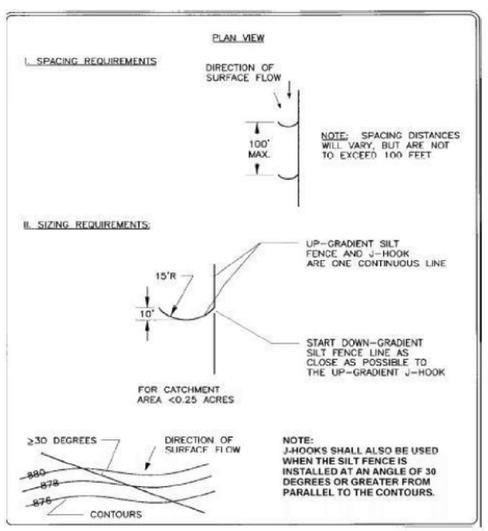


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE MODIFIED TYPE A – CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S–4



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY 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 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S–1



SILT FENCE J–HOOK DETAIL

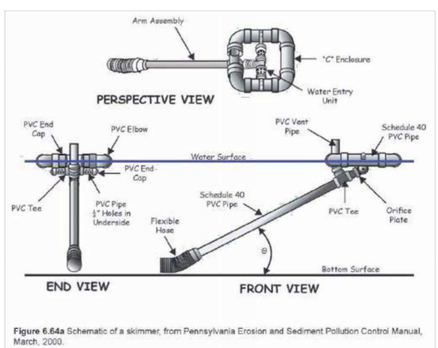


Figure 6.64a Schematic of a skimmer, from Pennsylvania Erosion and Sediment Pollution Control Manual, March, 2000.

FIGURE 1.4.5.K.1 DEWATERING SKIMMER DETAIL

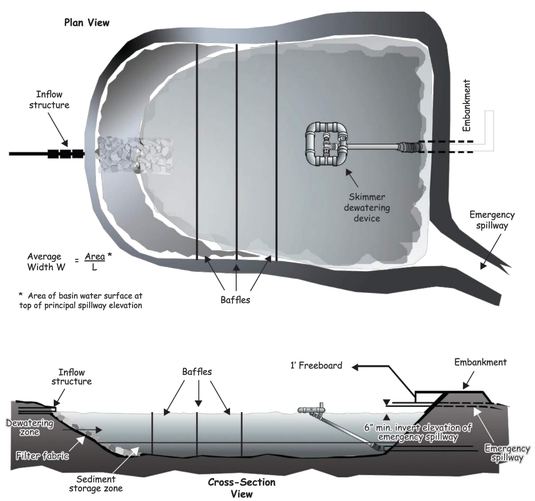


Figure 6.64c Example of a sediment basin with a skimmer outlet and emergency spillway. From Pennsylvania Erosion and Sediment Pollution Control Manual, March, 2000.

SKIMMER AND DEWATERING NOTES:

1. SIZING AND LOCATION OF SKIMMER TO BE IMPLEMENTED BY CONTRACTOR BEFORE ANY SITE GRADING TAKES PLACE WITHIN THE DRAINAGE AREA. THE SKIMMER SHOULD BE DESIGNED TO DEWATER IN 24-71 HOURS.
2. CONTRACTOR TO STABILIZE SKIMMER USING GEOTEXTILES AS NECESSARY TO WITHSTAND EXPECTED FLOWS.
3. SKIMMER SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH ½" OR GREATER RAIN EVENT. REPAIRS SHALL BE MADE IMMEDIATELY.
4. ALL SEDIMENT SHALL BE PLACED IN DESIGNATED DISPOSAL AREA.
5. CONTRACTOR SHALL NOT DISCHARGE DEWATERING AREAS OFF-SITE WITHOUT FILTERING WATER.

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

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

No.	REVISIONS	DATE	BY

Kimley»Horn
10814 JOLLYVILLE ROAD AVALON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM

TBPE Firm No. 928

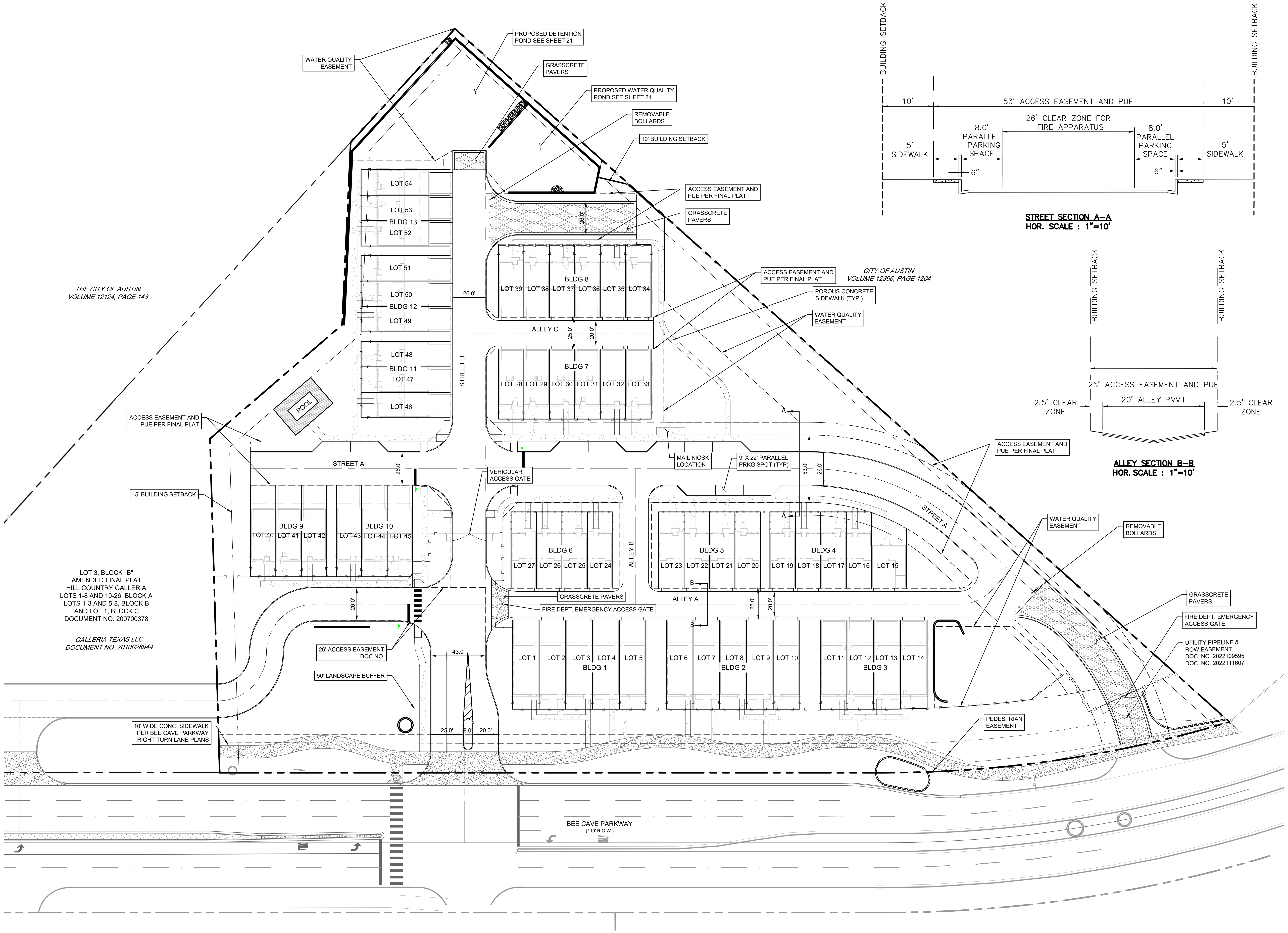
STATE OF TEXAS
LANCE R. ORITI
96172
LICENSED PROFESSIONAL ENGINEER
7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

EROSION CONTROL DETAILS

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
10 OF 88



GRAPHIC SCALE 40'

LEGEND

- PROPERTY LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTEWATER MANHOLE
- FENCE (SEE LANDSCAPE PLAN FOR DETAILS)
- EXISTING TREE TO BE PRESERVED

SITE DATA
ZONING ORDINANCE = 480, PLANNED DEVELOPMENT
SITE AREA = 6.07 ACRES

REQUIRED SETBACKS:
- 50' LANDSCAPE BUFFER ALONG BEE CAVE PARKWAY (FROM EXISTING RIGHT OF WAY)
- 15' BUILDING SETBACK ADJACENT TO LOT 3
- 10' BUILDING SETBACK ADJACENT TO THE EASTERN PROPERTY BOUNDARY

LTFR CODE MODIFICATION NOTE
A CODE MODIFICATION REQUEST WAS APPROVED ON MAY 05, 2022 TO ALLOW THE 3-STORY BUILDINGS ADJACENT TO BEE CAVE PARKWAY (LOTS 1-14) TO BE APPROX 80' FROM THE BEE CAVE PARKWAY CURB. THESE BUILDINGS WILL BE REQUIRED TO INSTALL AN NFPA 13 SPRINKLER SYSTEM. IN ADDITION, A GRASSCRETE PRODUCT SHALL BE PERMITED FOR FIRE LANES WITH LTFR APPROVAL OF THE SPECIFICATION.

PARKING SUMMARY

REQUIRED PARKING	
2 ENCLOSED GARAGE SPACES PER UNIT	= 108
1 VISITOR SPACE PER EVERY 4 UNITS (W/O DRIVEWAYS)	= 10
TOTAL REQUIRED PARKING	= 118
PROVIDED PARKING	
ENCLOSED GARAGE SPACES	= 108
VISITOR SPACES	= 10
TOTAL PROVIDED PARKING	= 118 SPACES

NOTE: VISITOR PARKING IS ALSO PROVIDED AT THE 15 UNITS WITH DRIVEWAYS (UNITS 40-54)

NOTES
1. DIMENSIONS SHOWN TO CURB ARE TAKEN TO FACE OF CURB.
2. SEE DIMENSION CONTROL PLAN, SHEET 12, FOR ADDITIONAL SITE DIMENSIONS.
3. SIDEWALKS ADJACENT TO STREET A SHALL BE 5' MINIMUM, ALL OTHER SIDEWALKS SHALL BE 4' MIN.

BUILDING DATA

Building #	Gross Floor Area (SF)	# Stories	Building Height	Construction Type
1	17,453	3	46'	V-A
2	17,422	3	46'	V-A
3	13,977	3	46'	V-A
4	17,223	4	56'	V-A
5	13,658	4	56'	V-A
6	13,694	4	56'	V-A
7	20,490	4	56'	V-A
8	20,490	4	56'	V-A
9	9,955	4	56'	V-A
10	9,955	4	56'	V-A
11	9,955	4	56'	V-A
12	9,923	4	56'	V-A
13	9,955	4	56'	V-A
Total	184,150			

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10814 JOLLYVILLE ROAD AVALLON IV SUITE 200 AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
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TBPE Firm No. 928

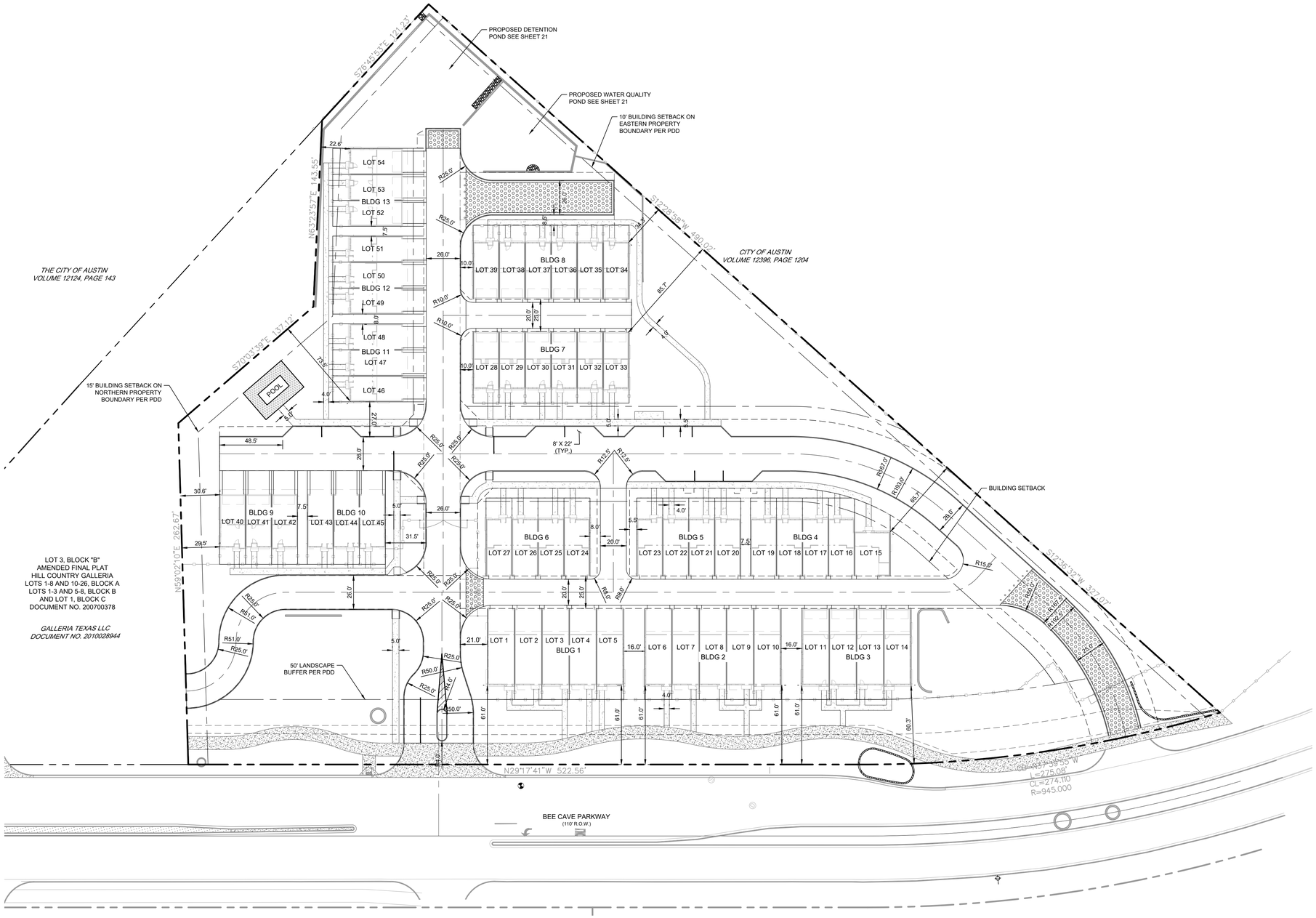
STATE OF TEXAS LANCE R. ORITI 96173 LICENSED PROFESSIONAL ENGINEER
7/27/2023

KHA PROJECT	DATE	SCALE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
069225663	July 2023	AS SHOWN	MAP	CK	LRO

SITE PLAN

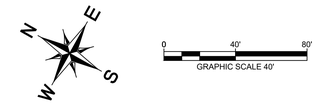
PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER



LOT 3, BLOCK "B"
AMENDED FINAL PLAT
HILL COUNTRY GALLERIA
LOTS 1-8 AND 10-26, BLOCK A
LOTS 1-3 AND 5-8, BLOCK B
AND LOT 1, BLOCK C
DOCUMENT NO. 200700378

GALLERIA TEXAS LLC
DOCUMENT NO. 2010028944



LEGEND

PROPERTY LINE

NOTES:

1. ALL DIMENSIONS AND RADII ON STANDARD VERTICAL CURB ARE TAKEN TO FACE OF CURB.

Know what's **below.**
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TEXAS REGISTERED ENGINEERING FIRM F-928

TBPE Firm No. 928

STATE OF TEXAS
LANCE R. ORITI
96173
LICENSED PROFESSIONAL ENGINEER

7/3/2023

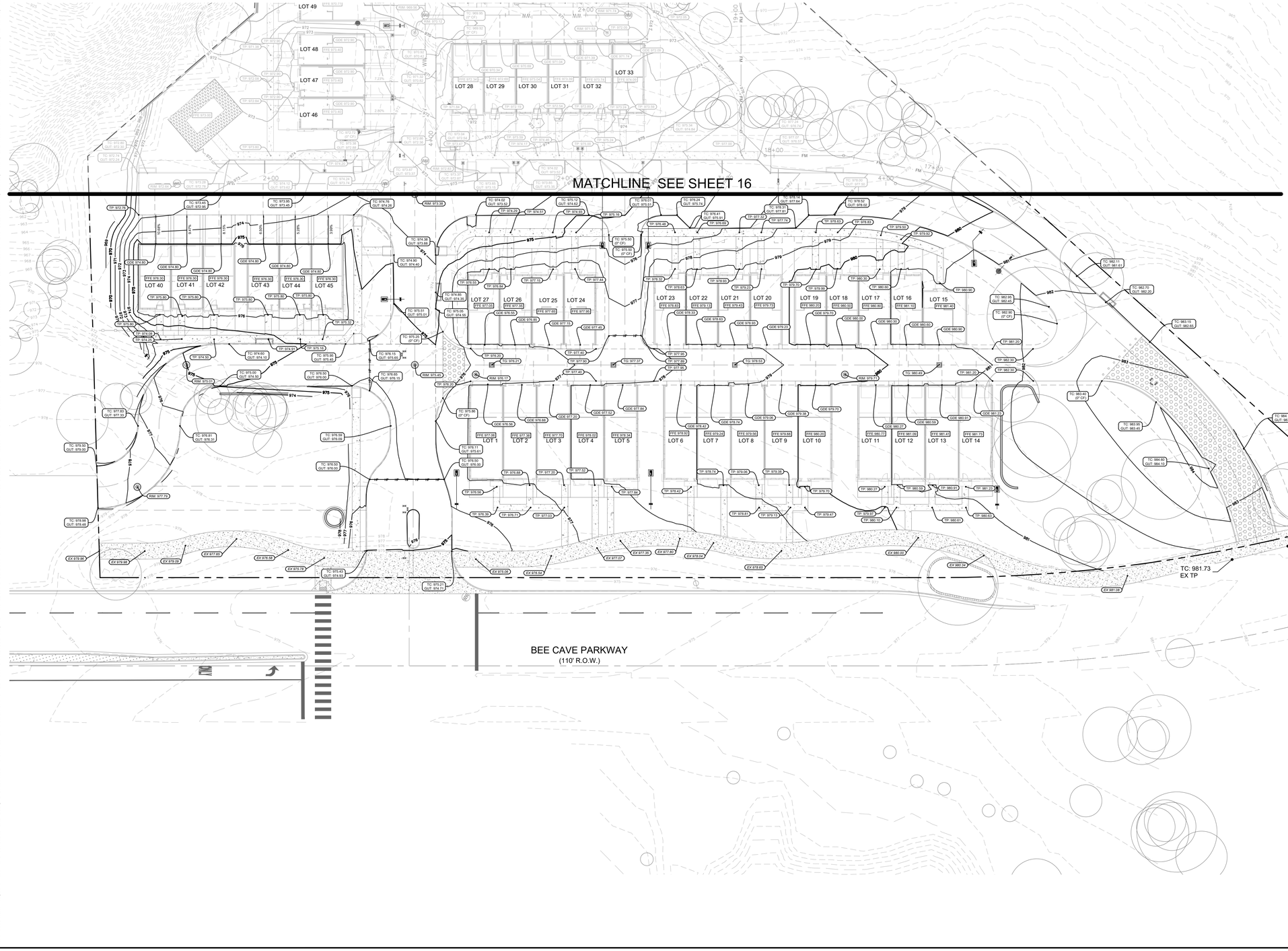
KHA PROJECT	069225663
DATE	July 2023
SCALE:	AS SHOWN
DESIGNED BY:	MAP
DRAWN BY:	CK
CHECKED BY:	LRO

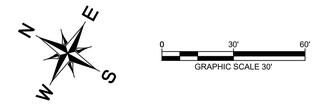
DIMENSION CONTROL PLAN

PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
12 OF 88





LEGEND

	PROPERTY LINE
FFE XXX.X●	PROPOSED FINISHED FLOOR ELEVATION
TP XXX.X●	PROPOSED TOP OF PAVEMENT ELEVATION
EX XXX.X ●	EXISTING TOP OF PAVEMENT ELEVATION
TG XXX.X ●	PROPOSED TOP OF GRATE
TW XXX.X●	PROPOSED TOP OF WALL ELEVATION
BW XXX.X●	PROPOSED BOTTOM OF WALL ELEVATION
EW XXX.X●	PROPOSED END OF WALL ELEVATION
GDE XXX.X●	PROPOSED ELEVATION AT GARAGE DOOR
GUT XXX.X●	PROPOSED BOTTOM OF CURB ELEVATION
	PROPOSED SWALE
HP	HIGH POINT
	FLOW DIRECTION
	PROPOSED RETAINING WALL
980	PROPOSED CONTOUR
980	EXISTING CONTOUR
	EXISTING TREE TO REMAI N

NOTES:

1. ALL PROPOSED ELEVATIONS ARE TOP OF PAVEMENT OR NATURAL GROUND UNLESS OTHERWISE NOTED.
2. ALL TOP OF WALL ELEVATIONS ARE TO TOP OF GRADE AT WALL.
3. ALL BOTTOM OF WALL ELEVATIONS ARE TO BOTTOM OF GRADE AT WALL.
4. CONTRACTOR TO VERIFY A.D.A. COMPLIANCE FOR GRADES IN ALL SIDEWALK ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSINGS, SHALL CONFORM TO ALL APPLICABLE A.D.A. STANDARDS: NOT EXCEED 5.0% ALONG TRAVEL PATH WITH NOT MORE THAN 2.0% CROSS SLOPE AND NOT EXCEED 2.0% IN ANY DIRECTION IN ACCESSIBLE PARKING AREAS.
5. MAINTAIN EXISTING GRADE IN TREE WELLS. CONTRACTOR TO ENSURE POSITIVE DRAINAGE TO AREA INLETS.

BENCHMARKS

ELEVATIONS HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) UTILIZING WESTERN DATA SYSTEMS CONTINUALLY OPERATING REFERENCE STATION (CORS) NETWOEK AND ADDITIONALLY REFERENCED TO CITY OF AUSTIN GPA CONTROL MONUMENTS AT THE TIME OF THIS SURVEY.

TBM 100:
PK NAIL W/SHINER SET ON SOUTHEAST CORNER OF INLET ON EASTERLY RIGHT-OF-WAY LINE OF BEE CAVES PARKWAY, ± 1750' SOUTHERLY OF R.M. 620, ± 28' SOUTHERLY OF TREE TAGGED NO. 962, ±75' NORTHWESTERLY OF FIRE HYDRANT.

ELEVATION=974.63' (NOT SHOWN)

TBM 105:
PK NAIL W/SHINER SET ON NORTHEASTERLY EDGE OF CONCRETE DRIVE ON EASTERLY RIGHT-OF-WAY LINE OF BEE CAVE PARKWAY, ±2200' SOUTHERLY OF R.M. 620.

ELEVATION=981.73' (AS SHOWN)

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TBPE Firm No. 928

STATE OF TEXAS
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96172
LICENSED
PROFESSIONAL ENGINEER
7/3/2023

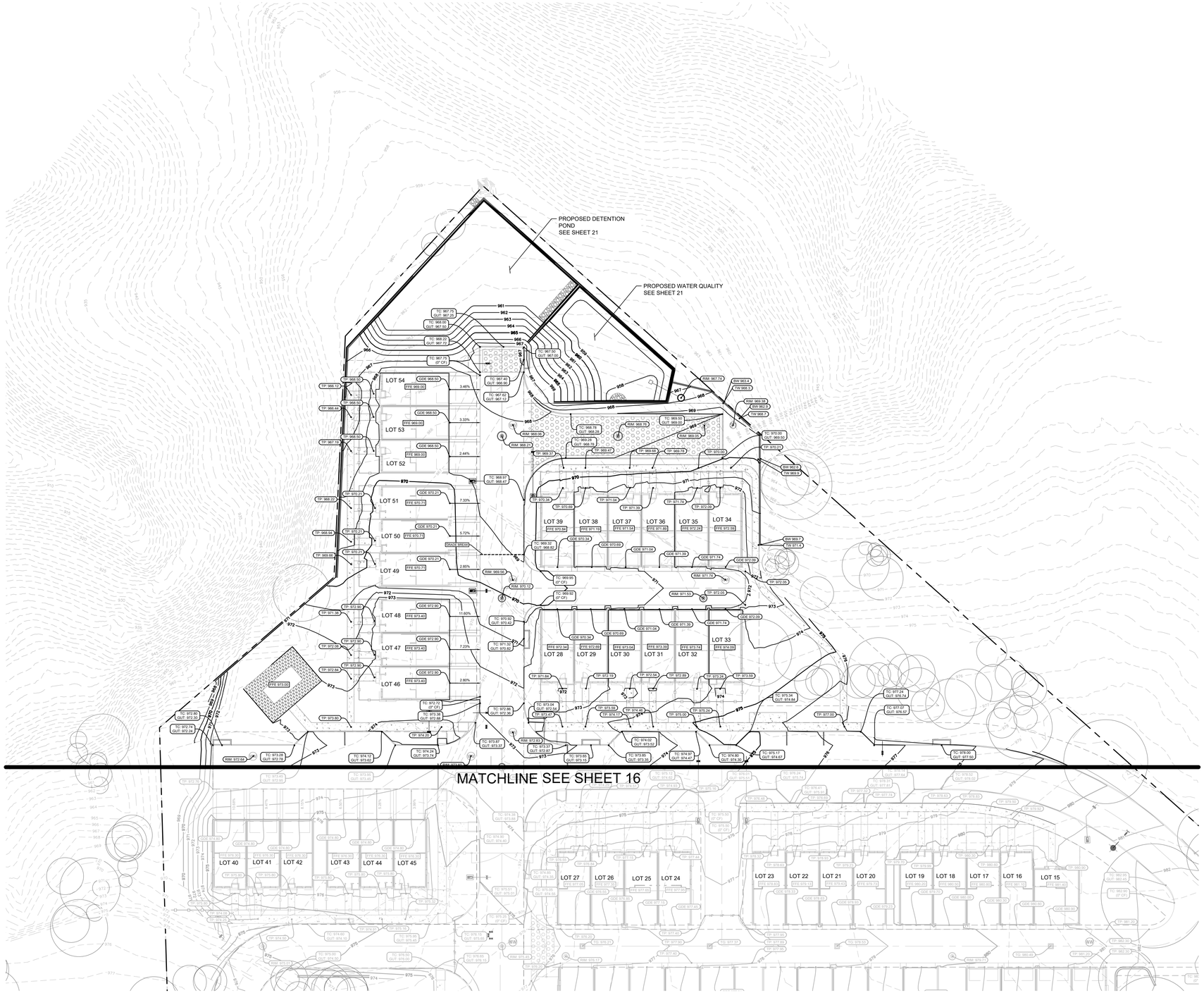
KHA PROJECT	069225663
DATE	July 2023
SCALE:	AS SHOWN
DESIGNED BY:	MAP
DRAWN BY:	CK
CHECKED BY:	LRO

PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

GRADING PLAN (SHEET 1 OF 2)

SHEET NUMBER
15 OF 88



0 30' 60'

GRAPHIC SCALE 30'

LEGEND

	PROPERTY LINE
FFE XXX.X●	PROPOSED FINISHED FLOOR ELEVATION
TP XXX.X●	PROPOSED TOP OF PAVEMENT ELEVATION
EX XXX.X ●	EXISTING TOP OF PAVEMENT ELEVATION
TG XXX.X ●	PROPOSED TOP OF GRATE
TW XXX.X●	PROPOSED TOP OF WALL ELEVATION
BW XXX.X●	PROPOSED BOTTOM OF WALL ELEVATION
EW XXX.X●	PROPOSED END OF WALL ELEVATION
GDE XXX.X●	PROPOSED ELEVATION AT GARAGE DOOR
GUT XXX.X●	PROPOSED BOTTOM OF CURB ELEVATION
	PROPOSED SWALE
HP	HIGH POINT
	FLOW DIRECTION
	PROPOSED RETAINING WALL
980	PROPOSED CONTOUR
980	EXISTING CONTOUR
	EXISTING TREE TO REMAI N

BENCHMARKS

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ELEVATION=974.63' (NOT SHOWN)

TBM 105:
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KIMLEY-HORN AND ASSOCIATES, INC.
TBPE Firm No. 928

LANCE R. ORITI
96172
LICENSED PROFESSIONAL ENGINEER
7/3/2023

KHA PROJECT	069225663
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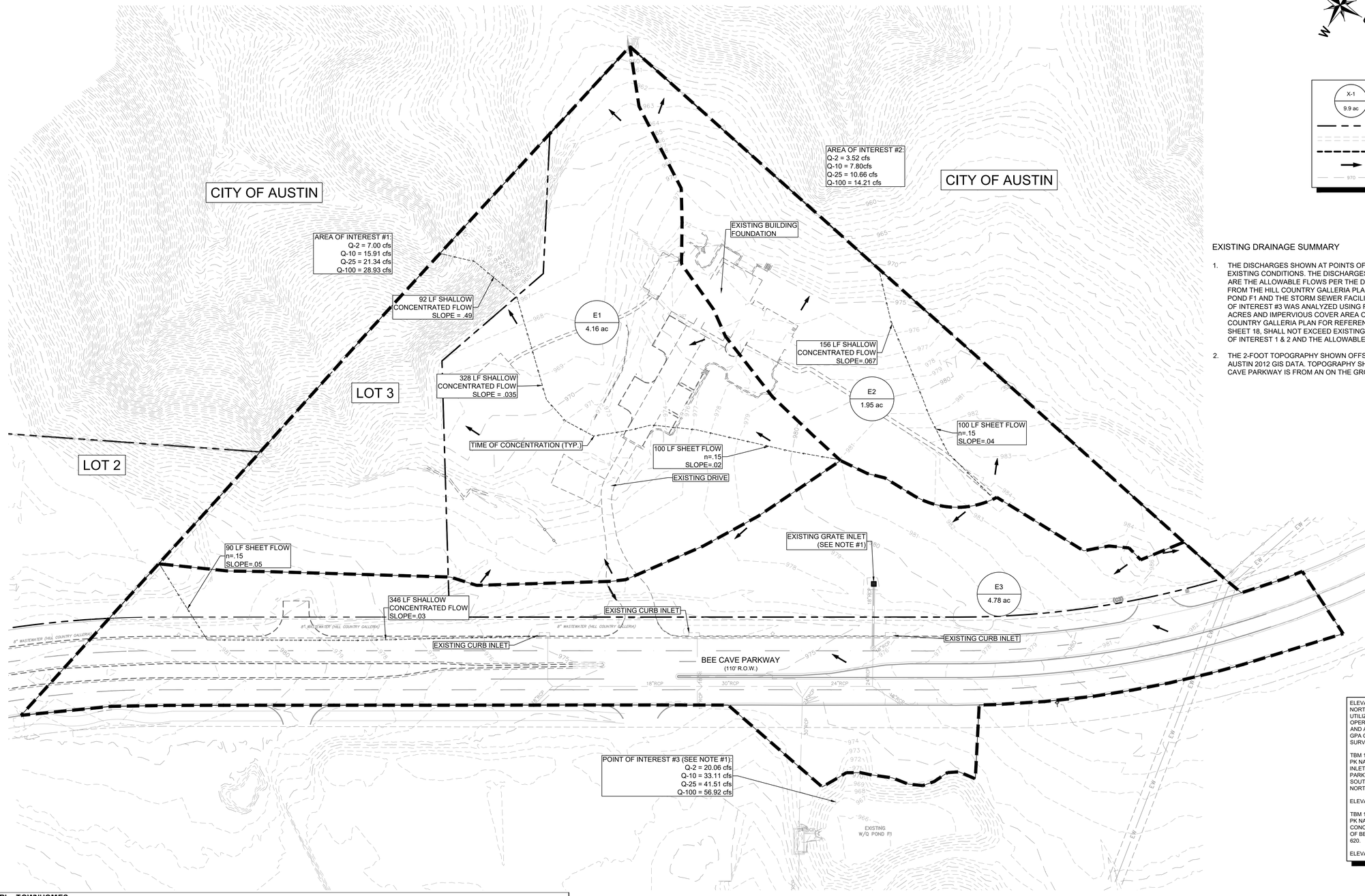
PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

GRADING PLAN (SHEET 2 OF 2)

SHEET NUMBER
16 OF 88



LEGEND

- X-1 / 9.9 ac — AREA DESIGNATOR / AREA IN ACRES
- PROPERTY LINE
- EXISTING STORM DRAIN LINE
- DRAINAGE DIVIDE
- FLOW DIRECTION
- 970 — EXISTING CONTOUR

EXISTING DRAINAGE SUMMARY

1. THE DISCHARGES SHOWN AT POINTS OF INTEREST 1 AND 2 REPRESENT EXISTING CONDITIONS. THE DISCHARGES SHOWN FOR POINT OF INTEREST #3 ARE THE ALLOWABLE FLOWS PER THE DRAINAGE AREA AND IMPERVIOUS COVER FROM THE HILL COUNTRY GALLERIA PLANS BY GARRET-IHNEN USED TO SIZE POND F1 AND THE STORM SEWER FACILITIES WITHIN BEE CAVE PARKWAY. POINT OF INTEREST #3 WAS ANALYZED USING RATIONAL METHOD. AN AREA OF 4.88 ACRES AND IMPERVIOUS COVER AREA OF 4.53 ACRES. SEE SHEET 19 FOR HILL COUNTRY GALLERIA PLAN FOR REFERENCE. PROPOSED FLOWS, SHOWN ON SHEET 18, SHALL NOT EXCEED EXISTING CONDITION FLOWS SHOWN FOR POINTS OF INTEREST 1 & 2 AND THE ALLOWABLE FLOW SHOWN AT POINT OF INTEREST 3.
2. THE 2-FOOT TOPOGRAPHY SHOWN OFFSITE HAS BEEN TAKEN FROM THE CITY OF AUSTIN 2012 GIS DATA. TOPOGRAPHY SHOWN WITHIN THE SITE AND WITHIN BEE CAVE PARKWAY IS FROM AN ON THE GROUND SURVEY.

BENCHMARKS

ELEVATIONS HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) UTILIZING WESTERN DATA SYSTEMS CONTINUALLY OPERATING REFERENCE STATION (CORS) NETWOEK AND ADDITIONALLY REFERENCED TO CITY OF AUSTIN GPA CONTROL MONUMENTS AT THE TIME OF THIS SURVEY.

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PEARL - TOWNHOMES
Peak Flow Calculation - Rational Method

DRAINAGE AREA	Area (Feet)	Area (Acres)	Impervious Cover (SQ. Feet)	Impervious Cover (Acres)	% I.C.	RUNOFF COEFFICIENT (C) C 2-Year	C 10-Year	C 25-Year	C 100-Year	Tc (min)	RAINFALL INTENSITY (I) I 2-Year	I 10-Year	I 25-Year	I 100-Year	PEAK FLOW (Q) Q 2-Year	Q 10-Year	Q 25-Year	Q 100-Year
E3	212573	4.78	84506.40	1.94	41%	0.45	0.52	0.56	0.64	7.70	5.07	7.56	8.96	11.27	10.98	18.62	23.95	34.33
ALLOWABLE E3	212573	4.88	197326.80	4.53	93%	0.71	0.79	0.84	0.93	5.00	5.76	8.57	10.11	12.54	20.06	33.11	41.51	56.92

	Hydrologic Runoff Coefficients: Austin, TX 2 yr	10 yr	25 yr	100 yr
Impervious C (Concrete)	0.75	0.83	0.88	0.97
Pervious C (Grass 0-2%)	0.25	0.3	0.34	0.41

	IDF Coefficients: Austin, TX (Pre-Atlas) 2 yr	10 yr	25 yr	100 yr
a	54.767	70.82	82.936	118.3
b	11.051	10.396	10.746	13.185
c	0.8116	0.7725	0.7634	0.7736

PEARL - TOWNHOMES
Existing Drainage Calculations - SCS Method

DRAINAGE AREA	POINT OF INTEREST	DESCRIPTION	AREA (sf)	AREA (Ac.)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER %	PERVIOUS CURVE NO. Cn[1]	WEIGHTED CURVE NO. Cn[2]	SHEET FLOW P-2yr24hr 3.44 IN N	L (ft)	S (ft/ft)	Tt(min)	SHALLOW CONCENTRATED FLOW Grass Surface L (ft)	V (fps)	S (ft/ft)	Tt(min)	Paved Surface L	V (fps)	S	Tt(min)	CHANNEL FLOW Channel Flow L (ft)	V (fps)	n	S (ft/ft)	Tt(min)	Pipe Flow L (ft)	V (fps)	n	S (ft/ft)	Tt(min)	TOTAL Tc[3] (min)	Q_2 (cfs)	$Q_{10\ (cfs)}$	Q_{25} (cfs)	Q_{100} (cfs)
E1	1	SHEET FLOW TO AUSTIN PROPERTY ADJACENT TO THE NORTH	181,210	4.16	0.38	9.0	80.00	81.63	0.150	100	0.02	**9.45**	420	8.27	0.26	**0.85**	-	-	-	**0.00**	-	-	-	-	**0.00**	-	-	-	-	**0.00**	**10.3**	7.00	15.91	21.34	28.93
E2	2	SHEET FLOW TO AUSTIN PROPERTY ADJACENT TO THE EAST	84,942	1.95	0.18	9.2	80.00	81.66	0.150	100	0.04	**7.16**	156	4.18	0.07	**0.62**	-	-	-	**0.00**	-	-	-	-	**0.00**	-	-	-	-	**0.00**	**7.8**	3.52	7.80	10.66	14.21

Existing Condition:
[1]The Curve Number (Cn) has been determined based on Table 2-2a of Technical Release 55. The cover type, hydrologic condition, and soil group determined for the proposed conditions are open space, good condition (grass cover >75%), and Type D soil group with a Cn of 80.
[2]Cn Values based on USDA TR-55 Manual
[3]The minimum Tc is 5 minutes per the COA DCM.

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TBPE Firm No. 928

LANCE R. ORITI 96172 LICENSED PROFESSIONAL ENGINEER
7/3/2023

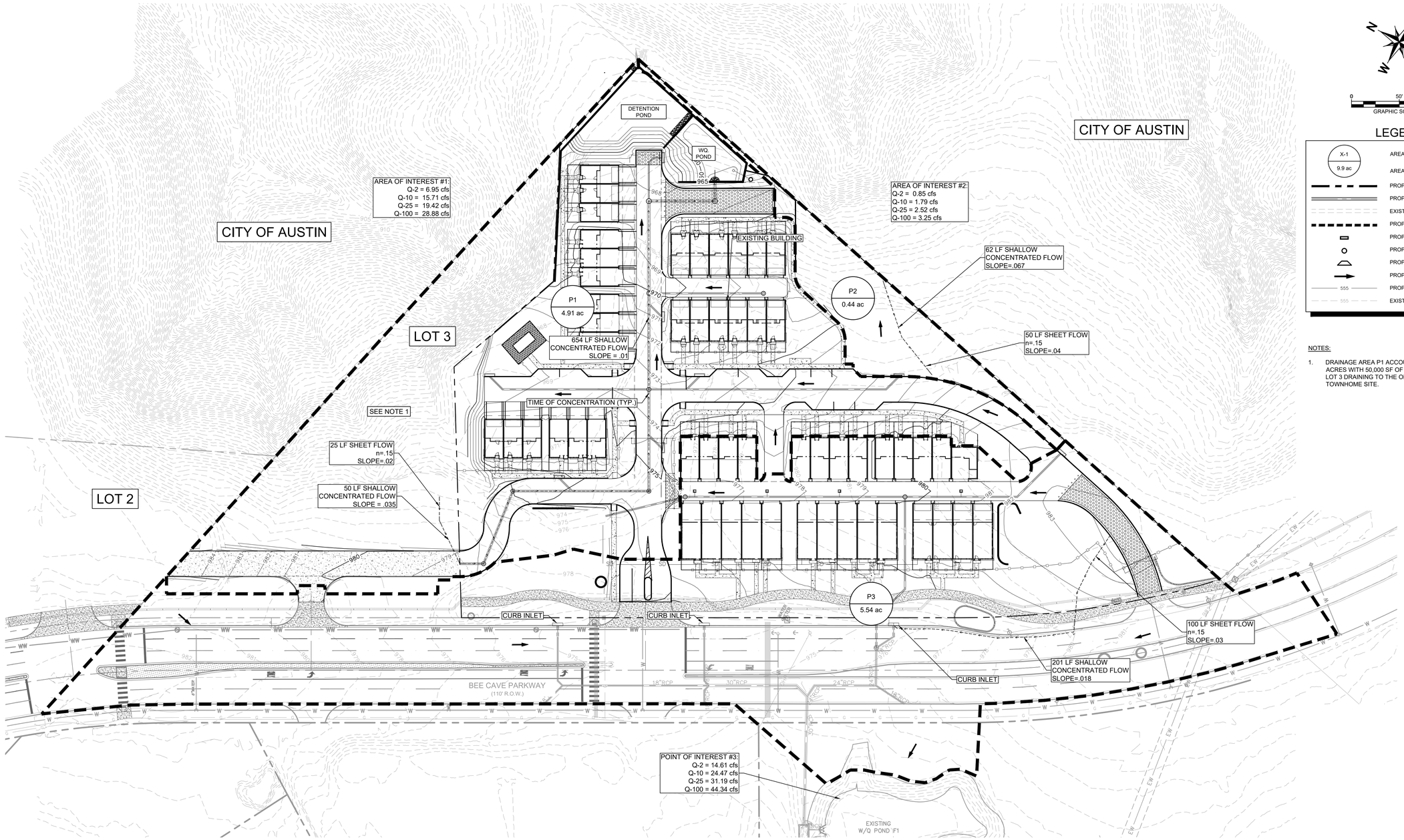
No.	REVISIONS	DATE	BY

KHA PROJECT 069225663
DATE July 2023
SCALE AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

EXISTING DRAINAGE AREA MAP

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
17 OF 88



NOTES:

1. DRAINAGE AREA P1 ACCOUNTS FOR AN AREA OF ±0.73 ACRES WITH 50,000 SF OF IMPERVIOUS COVER FROM LOT 3 DRAINING TO THE ON-SITE POND ON THE TOWNHOME SITE.

PEARL - TOWNHOMES

Proposed Drainage Calculations - SCS Method

DRAINAGE AREA	POINT OF INTEREST	DESCRIPTION	AREA	AREA	IMPERVIOUS COVER	IMPERVIOUS COVER	PERVIOUS CURVE NO.	WEIGHTED CURVE NO.	SHEET FLOW				SHALLOW CONCENTRATED FLOW										CHANNEL FLOW										TOTAL Tc[3]	Q_2 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
									P-2yr/24hr		3.44 IN		Grass Surface				Paved Surface				Channel Flow					Pipe Flow									
			(sf)	(Ac.)	(Ac.)	%		Cn[1]	N	L (ft)	S (ft/ft)	Tt(min)	L (ft)	V (fps)	S (ft/ft)	Tt(min)	L	V (fps)	S	Tt(min)	L (ft)	V (fps)	n	S (ft/ft)	Tt(min)	L (ft)	V (fps)	n	S (ft/ft)	Tt(min)	(min)				
P1	1	DRAINS TO NEW ON-SITE POND/SHEET FLOW TO AUSTIN PROPERTY ADJACENT TO THE NORTH	213,880	4.91	3.05	62.2	80.00	91.19	0.150	25	0.02	3.12	-	-	-	0.00	50	3.80	0.035	0.22	-	-	-	-	0.00	654	7.0	0.01	0.01	1.56	5.0	14.20	24.98	32.62	39.97
P2	2	SHEET FLOW TO AUSTIN PROPERTY ADJACENT TO THE EAST	19,166	0.44	0.00	0.0	80.00	80.00	0.150	50	0.04	4.11	62	4.18	0.07	0.25	-	-	-	0.00	-	-	-	-	0.00	-	-	-	-	0.00	5.0	0.85	1.79	2.52	3.25

Proposed Condition:

[1]The Curve Number (Cn) has been determined based on Table 2-2a of Technical Release 55. The cover type, hydrologic condition, and soil group determined for the proposed conditions are open space, good condition (grass cover >75%), and Type D soil group with a Cn of 80.

[2]Cn Values based on USDA TR-55 Manual

[3]The minimum Tc is 5 minutes per the COA DCM.

PEARL - TOWNHOMES

DRAINAGE RESULTS - SCS METHOD

Point of Analysis	Storm Event (Year)	Existing Runoff (CFS)	Developed Runoff (Pre-Detention) (CFS)	Developed Runoff (Post-Detention) (CFS)	Runoff Difference at Confluence	Is Proposed < Existing?
POINT OF ANALYSIS "1"	2	7.00	14.20	6.95	0.05	YES
	10	15.91	24.98	15.71	0.20	YES
	25	21.34	32.62	19.42	1.92	YES
	100	28.93	39.97	28.88	0.05	YES
POINT OF ANALYSIS "2"	2	3.52	0.85	N/A	2.67	YES
	10	7.80	1.79	N/A	6.01	YES
	25	10.66	2.52	N/A	8.14	YES
	100	14.21	3.25	N/A	10.96	YES

PEARL - TOWNHOMES

Peak Flow Calculation - Rational Method

DRAINAGE AREA	Area (Feet)	Area (Acres)	Impervious Cover (SQ. Feet)	Impervious Cover (Acres)	% I.C.	RUNOFF COEFFICIENT (C) C 2-Year	C 10-Year	C 25-Year	C 100-Year	Tc (min)	RAINFALL INTENSITY (I) I 2-Year	I 10-Year	I 25-Year	I 100-Year	PEAK FLOW (Q) Q 2-Year	Q 10-Year	Q 25-Year	Q 100-Year
P3	241322	5.54	152214.00	3.49	63%	0.57	0.63	0.68	0.76	9.74	4.67	6.96	8.27	10.49	14.61	24.47	31.19	44.34

Notes: Runoff Coefficient (C) and Rainfall Intensity (I) per City of Austin Drainage Criteria Manual; Runoff Coefficient C = Qperv*(Aperv/Atotal)+Qimperv*(Aimperv/Atotal); Rinafall Intensity I = a/(Tc+b)^c; Peak Flow Q = CIA

	Hydrologic Runoff Coefficients: Austin, TX				
	2 yr	10 yr	25 yr	100 yr	
Impervious C (Concrete)	0.75	0.83	0.88	0.97	
Pervious C (Grass 0-2%)	0.25	0.3	0.34	0.41	

	IDF Coefficients: Austin, TX (Pre-Atlas)			
	2 yr	10 yr	25 yr	100 yr
a	54.767	70.82	82.936	118.3
b	11.051	10.396	10.746	13.185
c	0.8116	0.7725	0.7634	0.7736

PEARL - TOWNHOMES

DRAINAGE RESULTS -RATIONAL METHOD

Point of Analysis	Storm Event (Year)	Existing Runoff (CFS)	Allowable Runoff (CFS)	Developed Runoff (CFS)	Runoff Difference at Confluence	Is Proposed < Existing?
POINT OF ANALYSIS "3"	2	10.98	20.06	14.61	5.45	YES
	10	18.62	33.11	24.47	8.64	YES
	25	23.95	41.51	31.19	10.32	YES
	100	34.33	56.92	44.34	12.58	YES

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

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

No.	REVISIONS	DATE	BY

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TBPE Firm No. 928

LANCE R. ORITI
96172
LICENSED
PROFESSIONAL ENGINEER
7/3/2023

KHA PROJECT 069225663		DESIGNED BY:	MAP	CK
DATE	July 2023	DRAWN BY:		LRO
SCALE	AS SHOWN	CHECKED BY:		

PROPOSED DRAINAGE AREA MAP

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
18 OF 88

FOR REFERENCE ONLY

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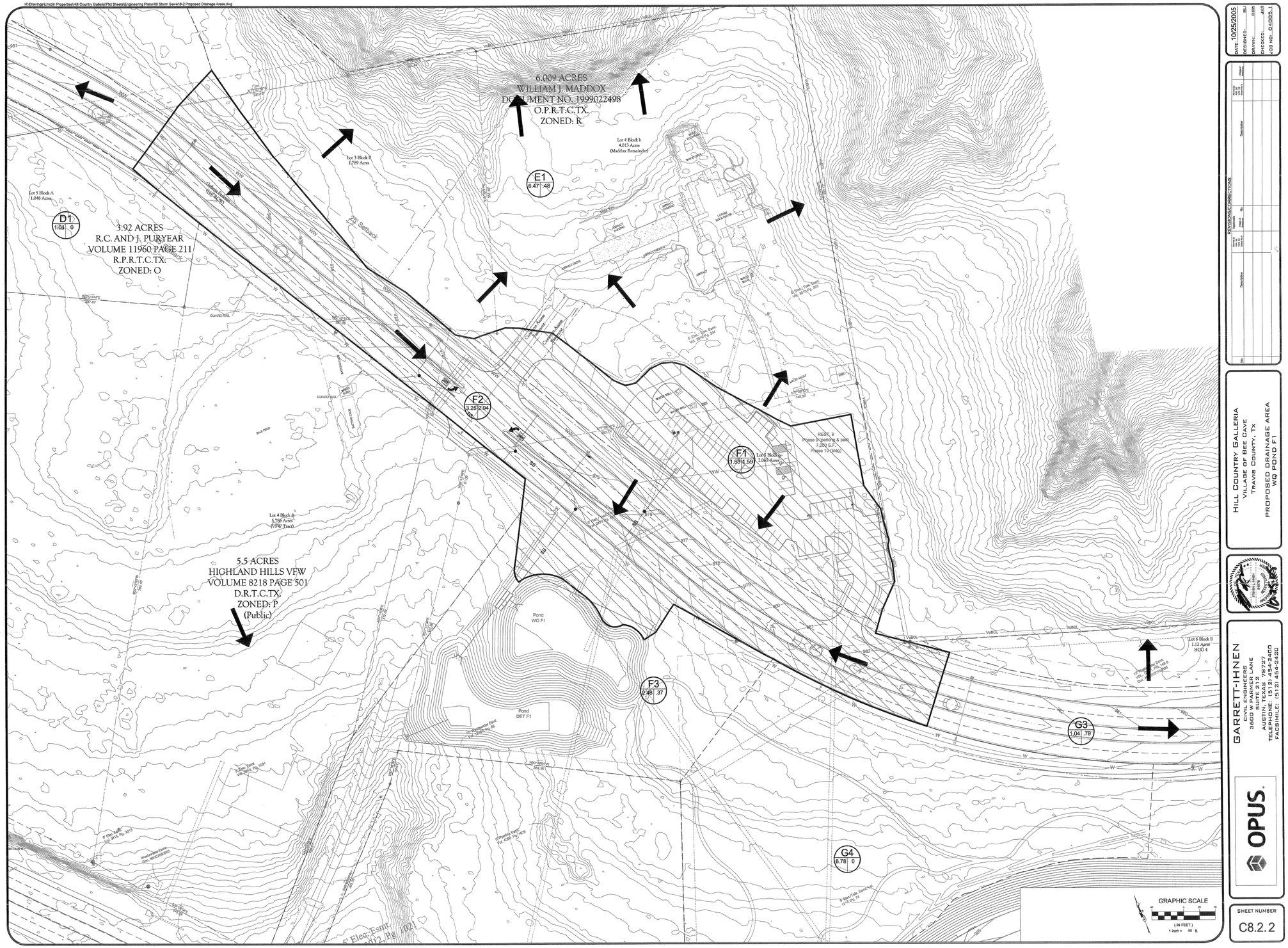

No.	Description	Date

REVISIONS/CORRECTIONS			
No.	Description	Date	Initial Approval

DATE: 10/25/2005
DESIGNED: BLJ
DRAWN: EBW
CHECKED: JKR
JOB NO.: 045053.1

HILL COUNTRY GALLERIA
VILLAGE OF BEE CAVE
TRAVIS COUNTY, TX

PROPOSED DRAINAGE AREA
WQ POND F1

GARRETT-IHNEN
CIVIL ENGINEERS
3600 PEDERNALES LANE
SUITE 212
AUSTIN, TEXAS 78727
TELEPHONE: (512) 454-3400
FACSIMILE: (512) 454-3420

OPUS

SHEET NUMBER
C8.2.2

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No.	REVISIONS	DATE	BY

7/3/2023

KHA PROJECT
069225663
DATE
July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

ALLOWABLE DRAINAGE
AREA MAP POND F1
(FOR REFERENCE)

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
19 OF 88

Plotted By: Knight, Colin Date: July 03, 2023 10:57:14am File Path: K:\AUS_Civil\069225663 - Pearl Townhomes\Civil\PlanSheets\C - As-built.dwg
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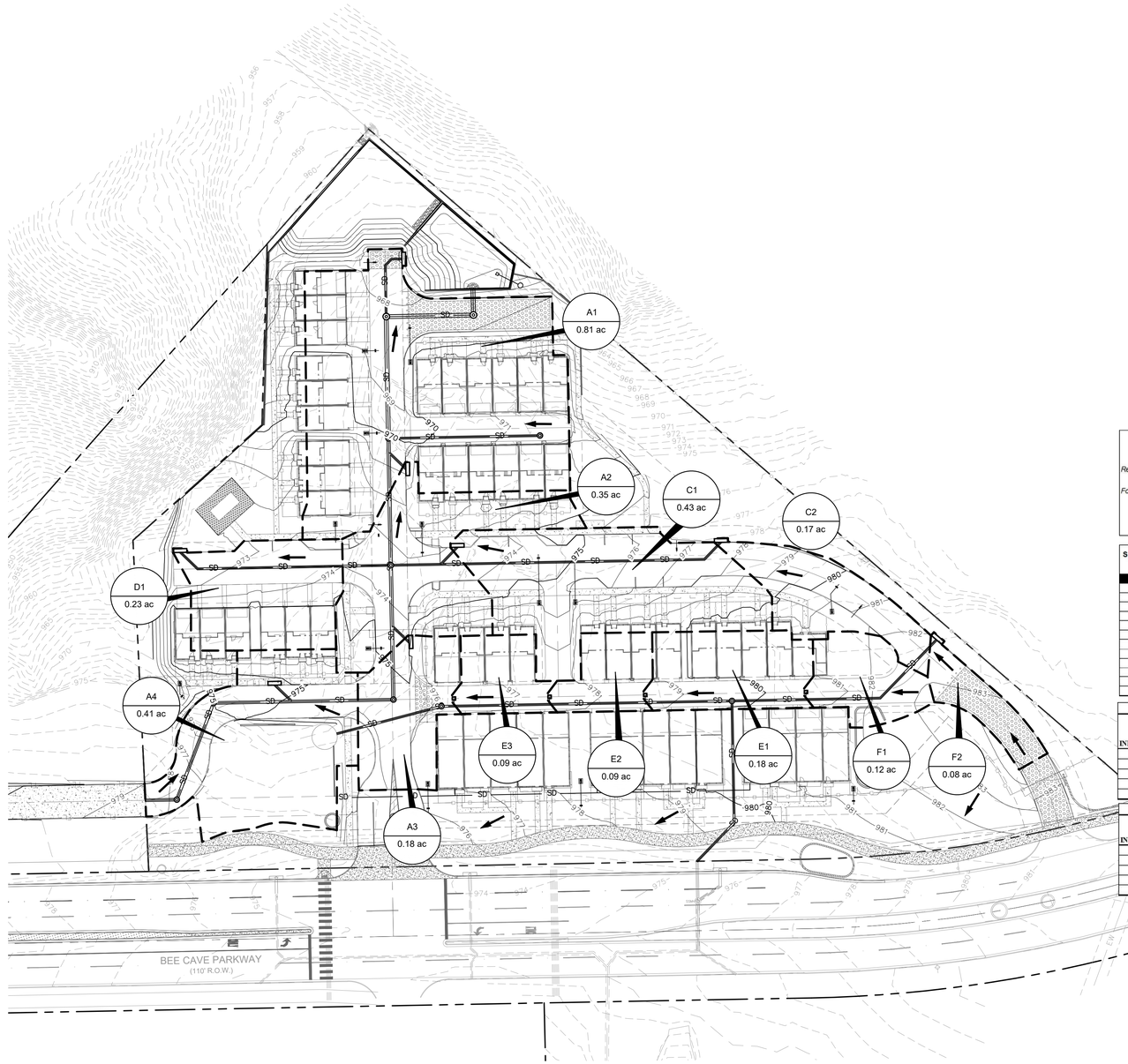

0 50 100 Feet

LEGEND

- X-X / X.X ac — AREA DESIGNATOR / AREA IN ACRES
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- EXISTING STORM DRAIN LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR

C Values- COA Drainage Criteria Manual				
	2 Yr	10 Yr	25 Yr	100 Yr
Pervious	0.29	0.35	0.39	0.46
Concrete Paving	0.75	0.83	0.88	0.97
Asphalt Paving	0.73	0.81	0.86	0.95

DRAINAGE BASIN AREA
RATIONAL METHOD CALCULATIONS

References: *City of Austin Drainage Criteria Manual*

Formulas: Rational Method — **Q = CIA**
Q = design flow (cfs)
C = weighted 'C' coefficient
i = Intensity (in/hr)

Intensity (in/hr) — $i = a / ((T_c+b)^c)$

	2-year	10-year	25-year	100-year
a=	54.767	70.82	82.936	118.3
b=	11.051	10.396	10.746	13.185
c=	0.8116	0.7725	0.7634	0.7736

Sub-Basin ID	Area (ac)	Tc* (min)	Impervious Cover (ac.)	2-YEAR Intensity (in/hr)	2-YEAR Weighted 'C' Value	2-YEAR Sub-Basin Q_2 (cfs)	10-YEAR Intensity	10-YEAR Weighted 'C' Value	10-YEAR Sub-Basin Q_{10} (cfs)	25-YEAR Intensity	25-YEAR Weighted 'C' Value	25-YEAR Sub-Basin Q_{25} (cfs)	100-YEAR Intensity	100-YEAR Weighted 'C' Value	100-YEAR Sub-Basin Q_{100} (cfs)	Comments
PROPOSED CONDITIONS DRAINAGE SUB-BASINS																
A1	0.81	5.0	0.66	5.76	0.66	3.09	8.57	0.74	5.14	10.11	0.79	6.46	12.54	0.87	8.89	Drains to curb inlet
A2	0.35	5.0	0.22	5.76	0.58	1.17	8.57	0.65	1.96	10.11	0.70	2.47	12.54	0.78	3.43	Drains to curb inlet
A3	0.18	5.0	0.13	5.76	0.62	0.64	8.57	0.69	1.07	10.11	0.74	1.35	12.54	0.82	1.86	Drains to curb inlet
A4	0.41	5.0	0.17	5.76	0.48	1.13	8.57	0.55	1.92	10.11	0.59	2.45	12.54	0.67	3.44	Drains to curb inlet
C1	0.43	5.0	0.30	5.76	0.61	1.51	8.57	0.68	2.52	10.11	0.73	3.18	12.54	0.81	4.40	Drains to curb inlet
C2	0.17	5.0	0.13	5.76	0.64	0.63	8.57	0.72	1.04	10.11	0.76	1.31	12.54	0.85	1.81	Drains to curb inlet
D1	0.23	5.0	0.21	5.76	0.70	0.93	8.57	0.78	1.54	10.11	0.83	1.93	12.54	0.92	2.64	Drains to curb inlet
E1	0.18	5.0	0.18	5.76	0.74	0.77	8.57	0.82	1.27	10.11	0.87	1.59	12.54	0.96	2.17	Drains to grate inlet
E2	0.09	5.0	0.09	5.76	0.74	0.38	8.57	0.82	0.63	10.11	0.87	0.79	12.54	0.96	1.08	Drains to grate inlet
E3	0.09	5.0	0.09	5.76	0.74	0.38	8.57	0.82	0.63	10.11	0.87	0.79	12.54	0.96	1.09	Drains to grate inlet
F1	0.12	5.0	0.06	5.76	0.51	0.35	8.57	0.58	0.59	10.11	0.62	0.76	12.54	0.70	1.06	Drains to grate inlet
F2	0.08	5.0	0.08	5.76	0.75	0.35	8.57	0.83	0.57	10.11	0.88	0.71	12.54	0.97	0.97	Drains to curb inlet

100-YEAR ON-GRADE CURB INLET CAPACITY CALCULATIONS

INLET #	DRAINAGE AREA	INLET SIZE (ft)	Q-100	Q-BY	Q-TOT	LONG. SLOPE (ft/ft)	CROSS SLOPE (ft/ft)	n	DEPTH OF GUTTER FLOW, y (ft.)	ROAD WIDTH (ft.)	PONDED WIDTH (ft.)	EFFECTIVE SLOPE (Se)	REQUIRED SIZE (ft)	PASS?	Q-bypass	BY-PASS TO DA-
A2	A2	10	3.43	0.00	3.43	0.020	0.020	0.016	0.20	26	10.03	0.35	7.04	OK	0.00	
A4	A4	10	3.44	0.00	3.44	0.019	0.026	0.016	0.22	26	8.66	0.35	6.88	OK	0.00	
C1	C1	10	4.40	0.00	4.40	0.019	0.026	0.016	0.24	26	9.49	0.35	7.67	OK	0.00	
C2	C2	10	1.81	0.00	1.81	0.019	0.026	0.016	0.18	26	6.81	0.36	5.16	OK	0.00	
F2	F2	10	2.64	0.00	2.64	0.019	0.026	0.016	0.20	26	7.84	0.35	6.11	OK	0.00	

25-YEAR ON-GRADE CURB INLET CAPACITY CALCULATIONS

INLET #	DRAINAGE AREA	INLET SIZE (ft)	Q-25	Q-BY	Q-TOT	LONG. SLOPE (ft/ft)	CROSS SLOPE (ft/ft)	n	DEPTH OF GUTTER FLOW, y (ft.)	ROAD WIDTH (ft.)	PONDED WIDTH (ft.)	EFFECTIVE SLOPE (Se)	REQUIRED SIZE (ft)	PASS?	Q-bypass	BY-PASS TO DA-
A2	A2	10	2.47	0.00	2.47	0.02	0.02	0.016	0.18	26	8.87	0.33	6.30	OK	0.00	
A4	A4	10	2.45	0.00	2.45	0.0188	0.0258	0.016	0.20	26	7.63	0.34	6.02	OK	0.00	
C1	C1	10	3.18	0.00	3.18	0.0188	0.0258	0.016	0.22	26	8.41	0.33	6.90	OK	0.00	
C2	C2	10	1.31	0.00	1.31	0.0188	0.0258	0.016	0.16	26	6.03	0.37	4.40	OK	0.00	
F2	F2	10	0.71	0.00	0.71	0.0188	0.0258	0.016	0.12	26	4.80	0.39	3.30	OK	0.00	

Curb Inlet in Sump Calculations (10% Clogging Factor)

Inlet No.	Q_{25} (cfs)	Q_{100} (cfs)	a (ft.)	Yo (ft)	Head at inlet (h) (ft.)	Submerged?	Length (ft)	Q cap (cfs)	Remarks
A1	6.46	**8.89**	0.5	0.167	0.67	yes	10	**17.2**	ok
A4	2.45	**3.44**	0.5	0.167	0.67	yes	10	**17.2**	ok
D1	1.93	**2.64**	0.5	0.167	0.67	yes	10	**17.2**	ok

Grate Inlet Flow Calculation Table (On Grade, Unsubmerged)

Inlet No.	Inlet Width (ft)	Inlet Length (ft)	Q 25Yr (CFS)	Q 100 Yr (CFS)	h (FT)	Perimeter Length (ft)	Q Max (CFS)	Capacity with 50% Clogging (CFS)
E1	2	2	1.59	2.17	0.42	8.00	**2.17**	**3.3**
E2	2	2	0.79	1.08	0.42	8.00	**1.08**	**3.3**
E3	2	2	0.79	1.09	0.42	8.00	**1.09**	**3.3**
F1	2	2	0.76	1.06	0.42	8.00	**1.06**	**3.3**

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No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — LANCE R. ORITI — 96172 — LICENSED PROFESSIONAL ENGINEER
7/3/2023

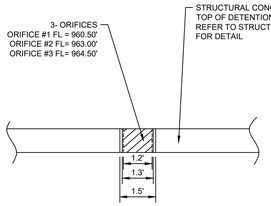
KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

INLET DRAINAGE AREA MAP

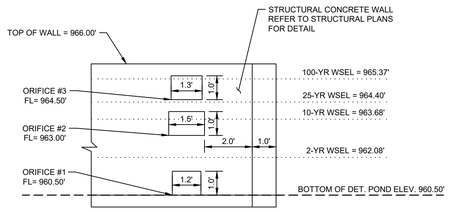
PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

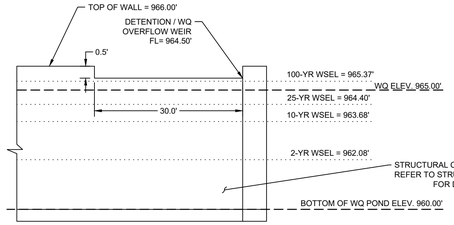
SHEET NUMBER
20 OF 88



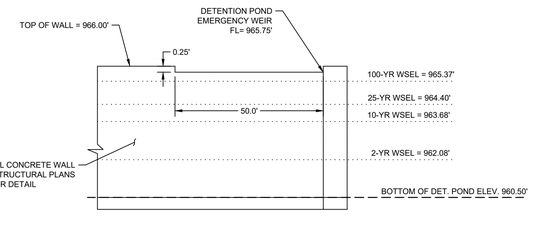
DETENTION BASIN OUTFALL STRUCTURE
PLAN VIEW
SCALE: N.T.S.



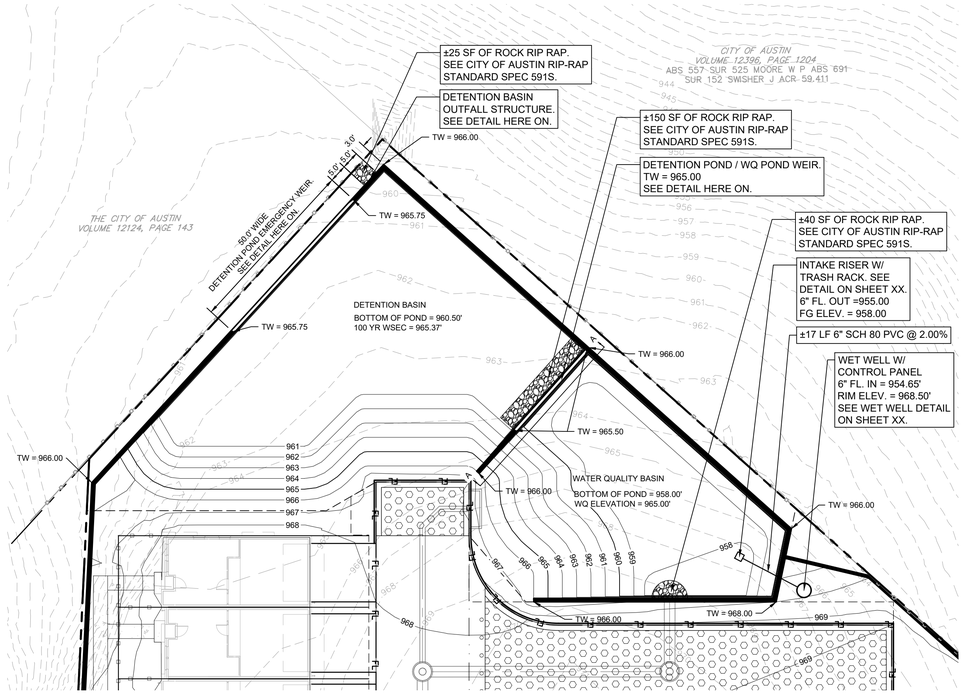
DETENTION BASIN OUTFALL STRUCTURE
SCALE: N.T.S.



DETENTION / WQ OVERFLOW WEIR
(SECTION A-A)
SCALE: N.T.S.



DETENTION POND EMERGENCY WEIR
SCALE: N.T.S.



0 20' 40'
GRAPHIC SCALE 20'

BY	DATE	REVISIONS	No.

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KIMLEY-HORN AND ASSOCIATES, INC.
TBPE Firm No. 928

STATE OF TEXAS
LANCE R. ORITI
96172
LICENSED
PROFESSIONAL ENGINEER

7/27/2023

KHA PROJECT 062922566.3	DESIGNED BY: MAP	CK
DATE July 2023	DRAWN BY:	LRO
SCALE: AS SHOWN	CHECKED BY:	

WATER QUALITY & DETENTION POND DESIGN

PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
21 OF 88

DRAINAGE AREA DATA:					
Drainage area to control (DA)	4.910	ac.			
Drainage area Impervious Cover	62.12%				
Capture Depth (CD)	0.921	in			
WATER QUALITY CONTROL CALCULATIONS	Required			Provided	
The Water Quality Control is to be **Retention Irrigation**					
25-year peak flow rate to control (Q25)	**19.42**	cfs			cfs
100-year peak flow rate to control (Q100)	28.88	cfs			
Water Qualtiy Volume (WQV=CD*DA*3630)	≥ **16,418**	cf			
+5% Factor For Sediment Build -Up (MIN. WQV)	≥ 17,239	cf		18,198	cf
Water Quality Elevation				966.00	ft msl

NOTE: GRASSCRETE FIRE LINES AND PERVIOUS PAVEMENT ARE TAKEN AT 100% IMPERVIOUS COVER FOR WATER QUALITY POND SIZING.

RAINWATER HARVESTING CALCULATIONS

IMPERVIOUS COVER CREDIT FOR RAINWATER HARVESTING
City of Bee Cave - TCSS Manual Sections

Town Homes

DESIGN DATA

Max allowable Impervious Cover with 5% rainwater harvesting per Ordinance No. 480	=	2.77	ac.		
Max Allowable Impervious Cover without rainwater harvesting per Ordinance No. 480	=	2.50	ac.		
Rainwater Impervious Cover Credit	=	0.27			
Roof Area Required to obtain Impervious Cover Credit	=	0.27	ac. =	11,761	SF
Water Quality Volume required for roof area	=	1,338.00	CF =	10,009	gal.
Provided roof area draining to rainwater harvesting tanks	=	17444.00	SF		
Provided rainwater harvesting tank volume	=	xx	gal.		

SEE SHEET XX FOR RE-IRRIGATION FIELD DESIGN AND CALCULATIONS.

POLLUTANT REMOVAL SUMMARY

BMP Order in Series	BMP Type	Removal Efficiency (%)		
		TSS	TP	O&G
1	Retention/Irrigation	100.0	90.0	100.0
2	None	0.0	0.0	0.0
3	None	0.0	0.0	0.0
	TOTAL EFFICIENCY	**100.0**	**90.0**	**100.0**

DETENTION / WQ POND
POND OVERFLOW WEIR DESIGN

Provided Overflow Elevation	=	965.50
Top of Pond Elevation	=	966.00

Using the weir flow equation:
Q = C*L*H^(3/2)

Q = 100 year developed flow outflow (cfs)	28.9
C = Weir coefficient	3.00
L = Width of weir (feet)	30.0
H = Depth of flow (feet)	0.47

Max. WSE_{100} OVER SPILLWAY (ft)	=	965.97
V_{100} OVER SPILLWAY (ft/s)	=	2.05

DETENTION POND EMERGENCY WEIR
POND OVERFLOW WEIR DESIGN

Provided Overflow Elevation	=	965.75
Top of Pond Elevation	=	966.00

Using the weir flow equation:
Q = C*L*H^(3/2)

Q = 100 year developed flow outflow (cfs)	28.9
C = Weir coefficient	3.00
L = Width of weir (feet)	50.0
H = Depth of flow (feet)	0.33

Max. WSE_{100} OVER SPILLWAY (ft)	=	966.08
V_{100} OVER SPILLWAY (ft/s)	=	1.73

WATER QUALITY STAGE AND STORAGE TABLE:

Water Quality Pond Storage Table

Stage (ft msl) (Elevation)	Pond Depth (ft)	Cumulative Pond Depth (ft)	Area (sf)	Volume (cf)	Cumulative Volume (cf)	
958.00	0.00	0.00	50.00	0	0	
959.00	1.00	1.00	1,673.00	862	862	
960.00	1.00	2.00	2,509.00	2,091	2,953	
961.00	1.00	3.00	2,735.00	2,622	5,575	
962.00	1.00	4.00	2,953.00	2,844	8,419	
963.00	1.00	5.00	3,162.00	3,058	11,476	
964.00	1.00	6.00	3,363.00	3,263	14,739	
965.00	1.00	7.00	3,555.00	3,459	18,198	WQV
966.00	1.00	8.00	3,739.00	3,647	21,845	

DETENTION STAGE AND STORAGE TABLE:

Detention Pond Storage Table

Stage (ft msl) (Elevation)	Pond Depth (ft)	Cumulative Pond Depth (ft)	Area (sf)	Volume (cf)	Cumulative Volume (cf)
960.50	0.00	0.00	0.00	0	0
961.00	0.50	0.50	4,547.00	1,137	1,137
962.00	1.00	1.50	4,935.00	4,741	5,878
963.00	1.00	2.50	5,321.00	5,128	11,006
964.00	1.00	3.50	5,704.00	5,513	16,518
965.00	1.00	4.50	6,086.00	5,895	22,413
966.00	1.00	5.50	6,466.00	6,276	28,689

DETENTION POND SUMMARY:

Detention Pond Analysis

STAGE STORAGE TABLE

Elevation	Area (SF)	Storage Volume (CF)	Cummulative Storage (CF)
960.50	0.00	0	0
961.00	4,547.00	758	758
962.00	4,935.00	4,740	5,498
963.00	5,321.00	5,127	10,625
964.00	5,704.00	5,511	16,136
965.00	6,086.00	5,894	22,030
966.00	6,466.00	6,275	28,305

ROUTING TABLE

Scenario	Computed Peak Outflow (cfs)	Max Water Surface Elevation (ft)	Maximum Storage (ac-ft)	Maximum Storage (cf)
2 YR	6.95	962.08	0.136	5,903
10 YR	15.71	963.68	0.328	14,307
25 YR	19.42	964.40	0.423	18,419
100 YR	28.88	965.37	0.558	24,313

Pond Pack V8i was used to calculate the computed peak outflow from the detention pond.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **PEARL -TOWNHOMES**
Date Prepared: **6/16/2023**

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

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

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

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

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

County =	Travis	
Total project area included in plan * =	6.08	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	2.89	acres
Total post-development impervious cover fraction * =	0.48	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	2515	lbs.

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

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

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

Drainage Basin/Outfall Area No. = P1

Total drainage basin/outfall area =	4.91	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	3.05	acres
Post-development impervious fraction within drainage basin/outfall area =	0.62	
L_M THIS BASIN =	2655	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Retention / Irrigation
Removal efficiency = 100 percent

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

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

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

A_C =	4.91	acres
A_I =	3.05	acres
A_P =	1.86	acres
L_R =	3409	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 2655 lbs.

F = 0.78

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

Rainfall Depth =	1.00	inches
Post Development Runoff Coefficient =	0.44	
On-site Water Quality Volume =	7774	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 =	1555	
Total Capture Volume (required water quality volume(s) x 1.20) =	9329	cubic feet

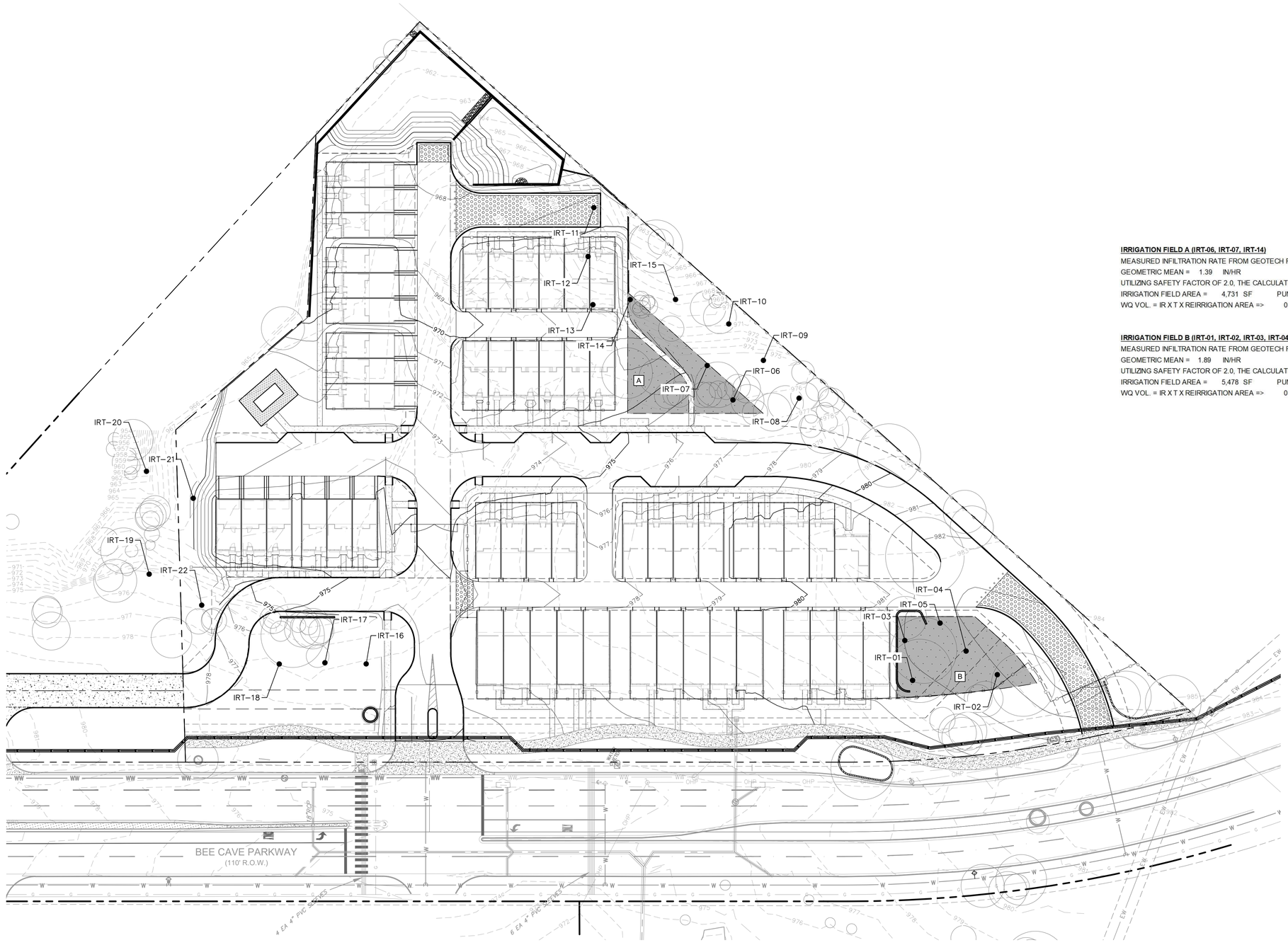
The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = 9329 cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.75	in/hr	**Enter determined permeability rate or assumed value of 0.1**
Irrigation area =	4875	square feet	
	0.11	acres	



0 40' 80'

GRAPHIC SCALE 40'

LEGEND

REIRRIGATION FIELD
(WATER QUALITY EASEMENT)

IRRIGATION FIELD A (IRT-06, IRT-07, IRT-14)

MEASURED INFILTRATION RATE FROM GEOTECH REPORT = 1.38 IN/HR, 1.475 IN/HR, 1.34 IN/HR.
GEOMETRIC MEAN = 1.39 IN/HR
UTILIZING SAFETY FACTOR OF 2.0, THE CALCULATED INFILTRATION RATE (IR) = 0.70 IN/HR
IRRIGATION FIELD AREA = 4,731 SF PUMP TIME (T) = 30 HOURS
WQ VOL. = IR X T X REIRRIGATION AREA => 0.70 (30/12) 4,731 = 8,279 CF

IRRIGATION FIELD B (IRT-01, IRT-02, IRT-03, IRT-04, IRT-05)

MEASURED INFILTRATION RATE FROM GEOTECH REPORT = 1.13 IN/HR, 1.10 IN/HR, 1.53 IN/HR, 3.30 IN/HR, 3.91 IN/HR.
GEOMETRIC MEAN = 1.89 IN/HR
UTILIZING SAFETY FACTOR OF 2.0, THE CALCULATED INFILTRATION RATE (IR) = 0.95 IN/HR
IRRIGATION FIELD AREA = 5,478 SF PUMP TIME (T) = 30 HOURS
WQ VOL. = IR X T X REIRRIGATION AREA => 0.95 (30/12) 5,478 = 13,010 CF

RE-IRRIGATION FIELD	CALCULATED WQ VOLUME (CF) (VOLUME OF WATER QUALITY THAT EACH FIELD CAN TREAT)
A	8,279
B	13,010
TOTAL	**21,290**

PERMEAMETER TEST RESULTS	
TEST HOLE	MEASURED FIELD SATURATED HYDRAULIC CONDUCTIVITY (KFS), IN/HOUR
IRT-01	1.126
IRT-02	1.101
IRT-03	1.525
IRT-04	3.300
IRT-05	3.905
IRT-06	1.375
IRT-07	1.475
IRT-08	1.475
IRT-09	4.228
IRT-10	1.988
IRT-11	1.825
IRT-12	2.949
IRT-13	1.663
IRT-14	1.338
IRT-15	2.600
IRT-16	2.875
IRT-17	5.450
IRT-18	1.250
IRT-19	4.200
IRT-20	1.288
IRT-21	2.150
IRT-22	2.164

Notes:
1. 0.2 in/hr infilitration rate was assumed for areas where infiltration rates were not provided.

IRRIGATION NOTES:
1. SEE SHEET XX FOR SPRINKLER LOCATIONS, PIPE LAYOUTS AND WET WELL DESIGN.
2. RE-IRRIGATION FIELDS SHALL BE SET BACK 50' MINIMUM FROM ADJACENT PROPERTIES.
3. RE-IRRIGATION AREAS SHALL NOT RECEIVE FERTILIZERS, PESTICIDES OR HERBICIDES.
4. EACH RE-IRRIGATION AREA SHALL HAVE SIGNAGE IDENTIFYING THE AREA AS A RE-IRRIGATION FIELD, WITH WARNINGS NOT TO DRINK THE WATER.
5. IRRIGATION AREA MUST HAVE NATIVE VEGETATION OR BE RESTORED OR RE-ESTABLISHED WITH NATIVE VEGETATION.

WATER QUALITY SUMMARY:
- WATER QUALITY VOLUME REQUIRED IN POND = 17,239 CF
- WATER QUALITY VOLUME PROVIDED IN POND = 18,198 CF
- WATER QUALITY VOLUME THAT CAN BE TREATED IN PROVIDED REIRRIGATION FIELDS = 21,290 CF

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

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

No.	REVISIONS	DATE	BY

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
LANCE R. ORITI
98173
LICENSED
PROFESSIONAL ENGINEER
7/3/2023

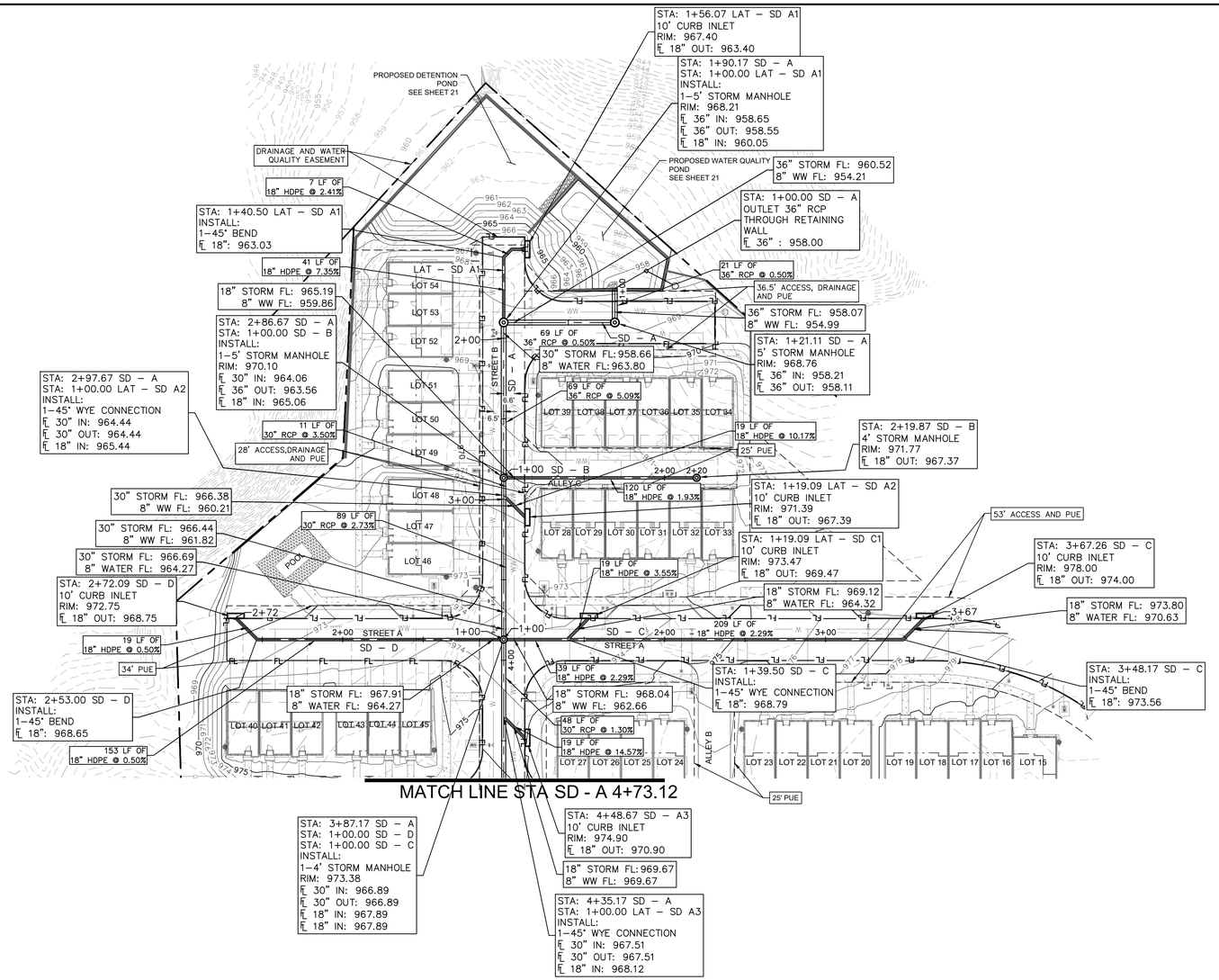
KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

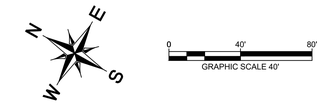
RE-IRRIGATION FIELD WATER QUALITY PLAN

PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
22 OF 88





LEGEND

- PROPERTY LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTEWATER MANHOLE
- PROPOSED WASTEWATER CLEANOUT
- WASTEWATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED TAPPING SLEEVE & VALVE
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN INLET
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTEWATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTEWATER MANHOLE

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STATE OF TEXAS
LANCE R. ORITI
96173
LICENSED
PROFESSIONAL ENGINEER

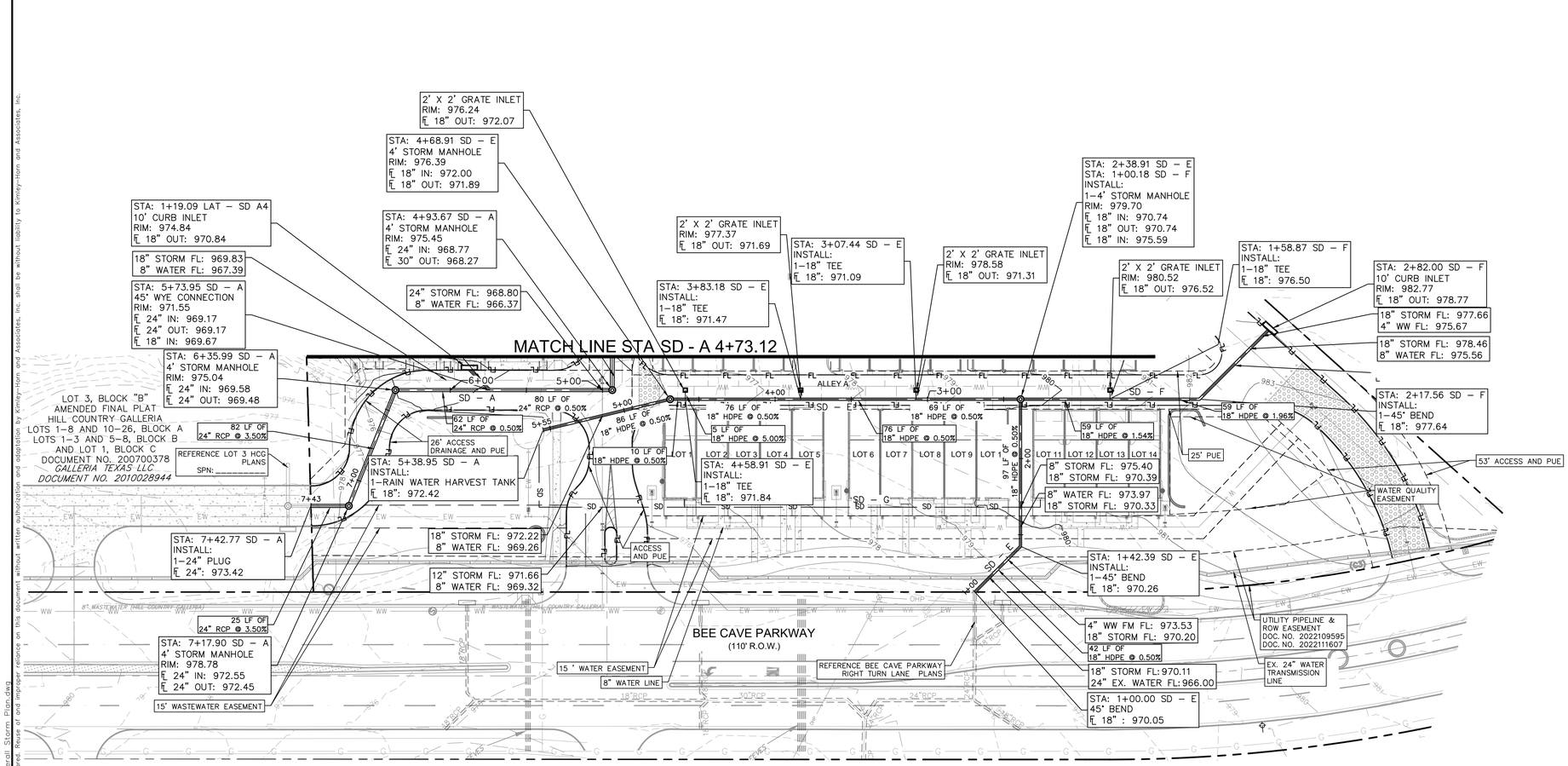
7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

STORM SEWER PLAN (SHEET 1 OF 2)

SHEET NUMBER
23 OF 88



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7/3/2023

KHA PROJECT 069225663
DATE July 2023
SCALE: AS SHOWN
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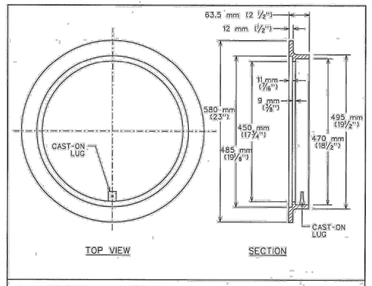
CHECKED BY: LRO

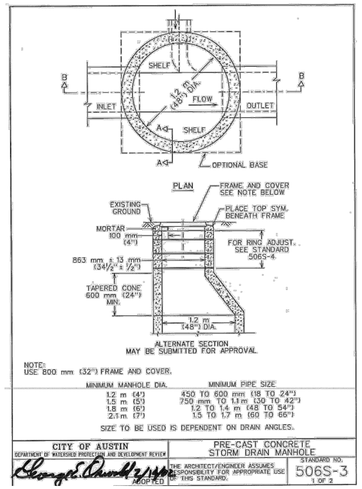
STORM SEWER PLAN (SHEET 2 OF 2)

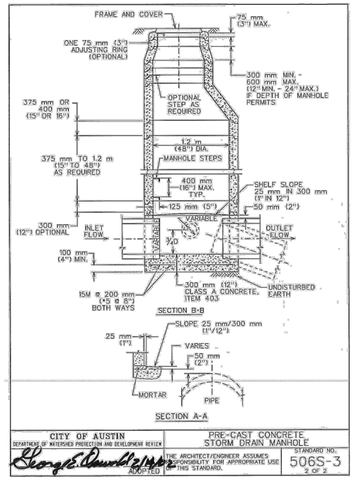
PEARL - TOWNHOMES

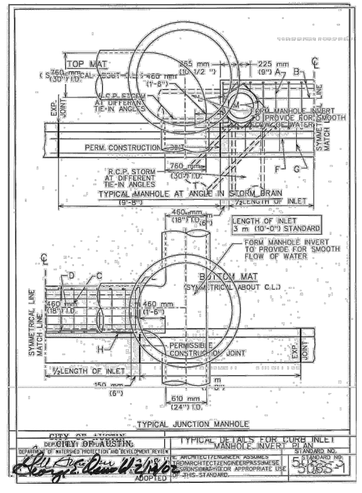
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
24 OF 88









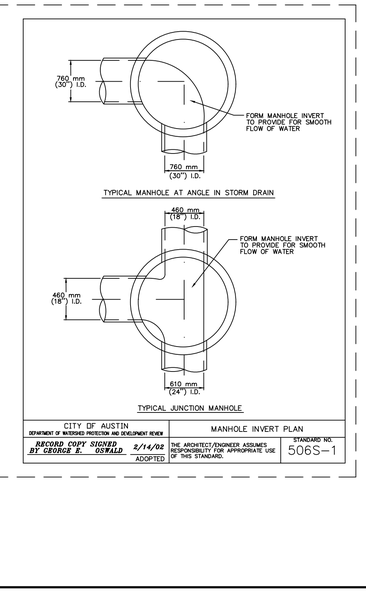
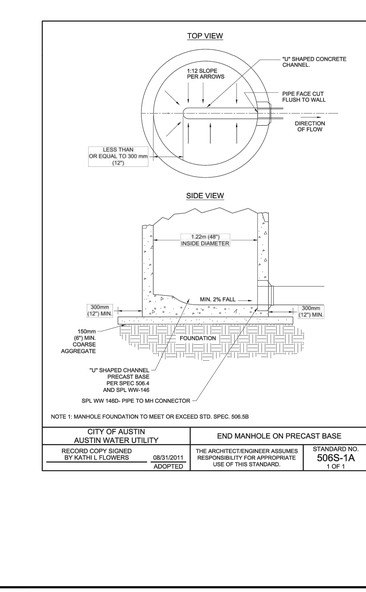


TABLE OF QUANTITIES
FOR 18" OUTLET PIPE
REINFORCING STEEL QUANTITIES

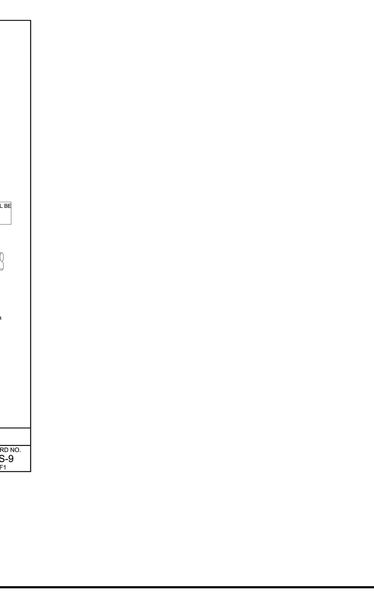
BARS	SIZE	SPACING	NUMBER	LENGTH	WEIGHT
A	4	230mm (9")±	15	2 m (7'-0")	73
B	4	250 mm (10")	4	3.25 m (10'-8")	29
C	4	460 mm (18")	7	760 mm (2'-6")	12
D	6	150 mm (6")	5	3.25 m (10'-8")	80
E	4	300 mm (12")	8	760 mm (2'-6")	10
F	4	250 mm (10")	3	4 m (13'-0")	35
G	4	300 mm (12")	11	1.25 m (4'-3")	31
H	6	-	1	4.25 m (14'-0")	20
J	4	300 mm (12")	7	3.25 m (10'-8")	50
K	4	230 mm (9")±	30	800 mm (2'-7 1/2")	52
L	4	300 mm (12")±	6	1.3 m (4'-3")	17
M	4	-	4	500 mm (1'-8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.05
* EXCEPT AS SHOWN ON PLAN					

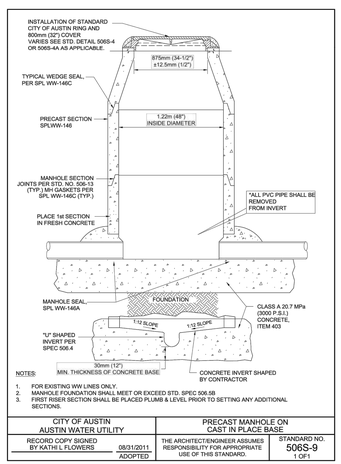


NOTES:
1. ALL CONCRETE SHALL BE CLASS "A"
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (380 mm or 15" MIN. LAP) IN THE LOWER ONE-HALF OF ALL INLET WALLS.S. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
5. QUANTITIES SHOWN HEREON ARE FOR THE CONTRACTOR'S INFORMATION ONLY. PAYMENT WILL BE MADE FOR EACH INLET OF THE TYPE SPECIFIED, COMPLETE IN PLACE INCLUDING MANHOLE FRAME AND OVER.
7. CHAMFER ALL EXPOSED EDGES 20 mm (3/4 ").
8. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S-1.
9. THE CONTRACTOR MAY PROPOSE ALTERNATE PROCEDURES FOR THE CONSTRUCTION OF INLETS, INCLUDING PRECAST UNITS.PLANS FOR SUCH PROPOSED ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE CONSTRUCTION.
10. ALL INLET WALLS SHALL BE FORMED EXCEPT WHERE THE NATURE OF THE SURROUNDING MATERIAL IS SUCH THAT IT CAN BE TRIMMED TO A SMOOTH VERTICAL FACE. WHEN INLET WALLS ARE PLACED TO NEAT EXCAVATION LINES THE WALL THICKNESS SHALL NOT EXCEED 10 INCHES.
11. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
12. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE, SHAPED AS "U" SECTION
13. NO SPLICING OF REINFORCING STEEL SHALL BE PERMITTED UNLESS OTHERWISE NOTED ON THE PLANS OR PERMITTED IN WRITING BY THE ENGINEER.

REFERENCES:
FOR EXPANSION JOINT DOWEL AND DOWEL LOCATION DETAILS SEE STD. 430S-3, "CURB EXPANSION JOINT DOWEL DETAIL".
FOR 18" MANHOLE FRAME AND COVER DETAILS SEE STD. 503S-1, "18" COVER AND FRAME".

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
TYPICAL DETAILS FOR CURB INLET
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011
ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-3
4 OF 4





811
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Kimley»Horn
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TBPE Firm No. 928

No.	REVISIONS	DATE	BY

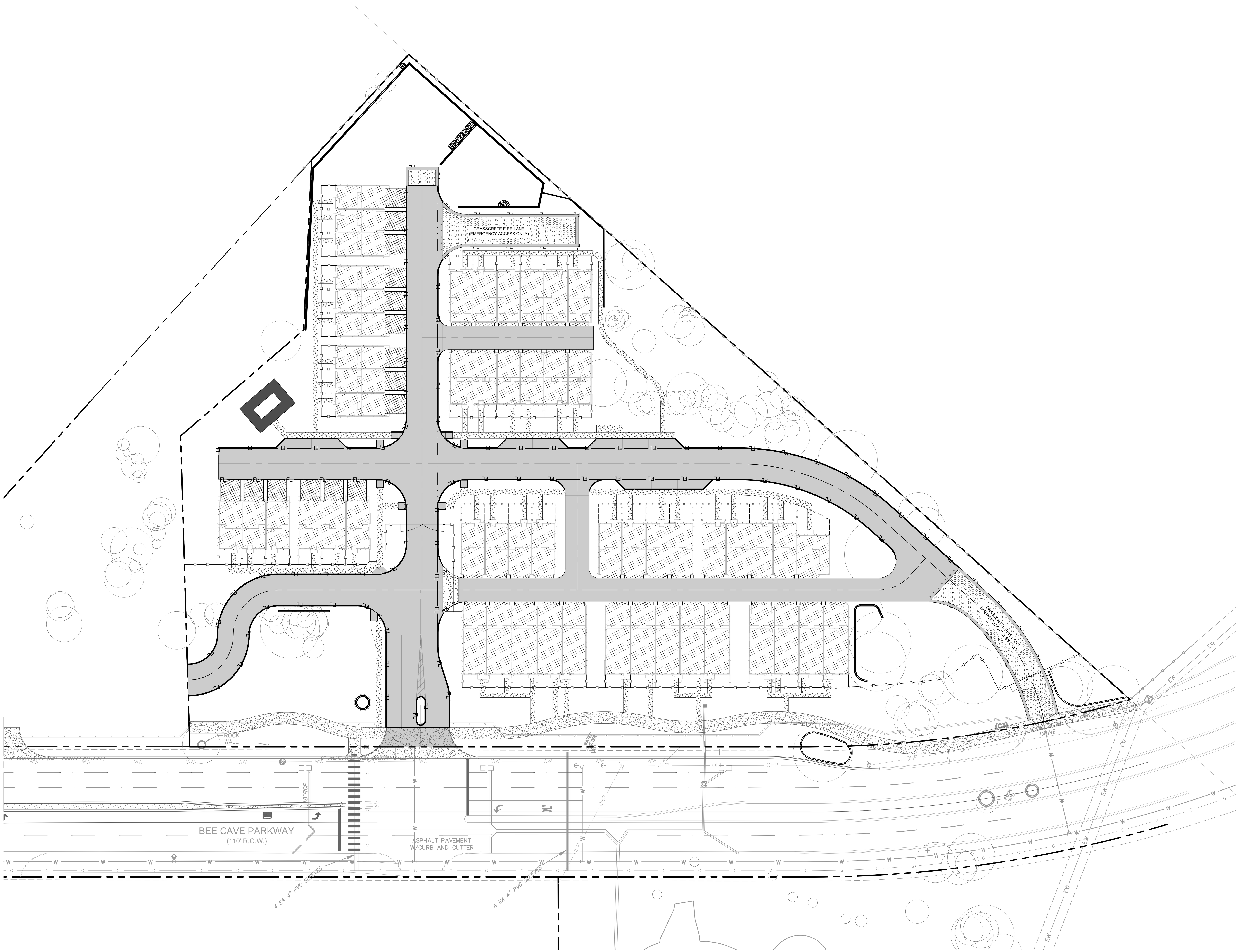
STATE OF TEXAS
LANCE R. ORITI
96172
LICENSED
PROFESSIONAL ENGINEER
7/3/2023

KHA PROJECT	069225663
DATE	July 2023
SCALE:	AS SHOWN
DESIGNED BY:	MAP
DRAWN BY:	CK
CHECKED BY:	LRO

STORM DRAIN DETAILS

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
25 OF 88



N E S W

0 40' 80'
GRAPHIC SCALE 40'

IMPERVIOUS COVER SUMMARY

PAVEMENT:
55,680 SQ.FT

BUILDINGS:
52,606.5 SQ.FT

DRIVEWAYS:
5,968 SQ.FT

SIDEWALK:
TOTAL IC = 10,801 SQ.FT
50% REDUCTION = 5400.5 SQ.FT

POOL DECK:
789 SQ.FT

TOTAL IMPERVIOUS COVER :

55,680+52,606.5+5,968+5,400.5+789 = **120,444 SQ.FT (2.76 AC.)**

MAX ALLOWABLE IMPERVIOUS COVER IS 2.77 AC. PER ORDINANCE NO. 480

NOTES:

1. 10' WIDE PUBLIC SIDEWALK ADJACENT TO BEE CAVE PARKWAY DOES NOT COUNT AS IMPERVIOUS COVER.
2. PRIVATE SIDEWALK SHALL BE CONSTRUCTED OF POROUS CONCRETE AND THEREFORE COUNT AS 50% IMPERVIOUS.
3. GRASSCRETE FIRE LANES DO NOT COUNT AS IMPERVIOUS COVER. BOLLARDS AND/OR GATES SHALL RESTRICT VEHICULAR ACCESS TO RESIDENTS.

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

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

No.	REVISIONS	DATE	BY

Kimley»Horn
10814 JOLLYVILLE ROAD AVALLON IV SUITE 200
AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM

TBPE Firm No. 928

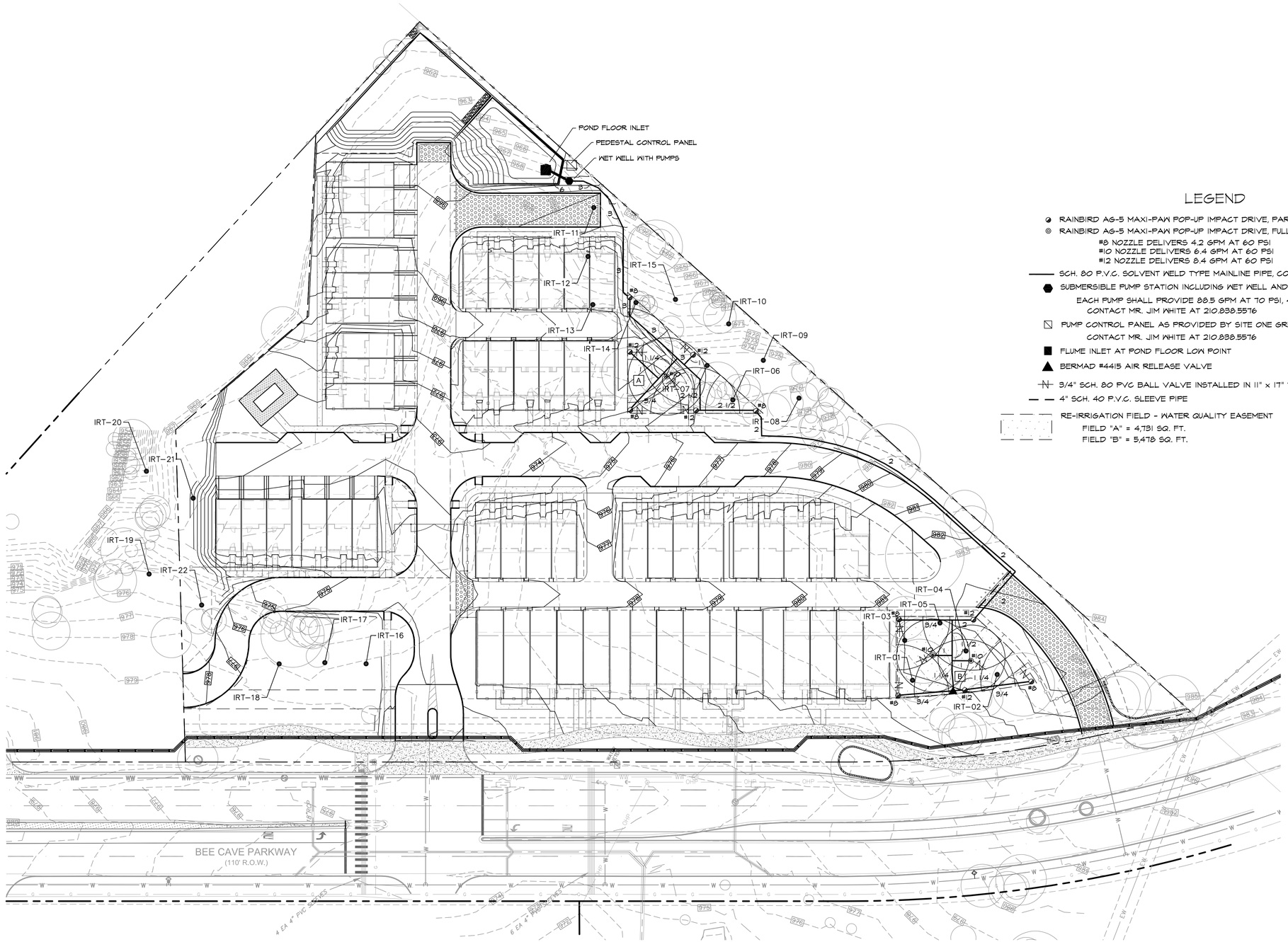
STATE OF TEXAS
LANCE R. ORITI
96173
LICENSED
PROFESSIONAL ENGINEER
7/27/2023

KHA PROJECT
069225663
DATE
July 2023
SCALE: AS SHOWN
DESIGNED BY: MAP
DRAWN BY: CK
CHECKED BY: LRO

IMPERVIOUS COVER TRACKING MAP

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
37 OF 88



LEGEND

- RAINBIRD AG-5 MAXI-PAW POP-UP IMPACT DRIVE, PART CIRCLE IMPACT ROTARY HEAD WITH NOZZLE # AS NOTED
- RAINBIRD AG-5 MAXI-PAW POP-UP IMPACT DRIVE, FULL CIRCLE IMPACT ROTARY HEAD WITH NOZZLE # AS NOTED
  - #8 NOZZLE DELIVERS 4.2 GPM AT 60 PSI
  - #10 NOZZLE DELIVERS 6.4 GPM AT 60 PSI
  - #12 NOZZLE DELIVERS 8.4 GPM AT 60 PSI
- SCH. 80 P.V.C. SOLVENT WELD TYPE MAINLINE PIPE, COLOR PURPLE
- SUBMERSIBLE PUMP STATION INCLUDING WET WELL AND LEVEL CONTROLS AS DETAILED
  - EACH PUMP SHALL PROVIDE 88.5 GPM AT 70 PSI, 460 v., 3 PHASE
  - CONTACT MR. JIM WHITE AT 210.838.5576
- PUMP CONTROL PANEL AS PROVIDED BY SITE ONE GREEN TECH COMPANY
  - CONTACT MR. JIM WHITE AT 210.838.5576
- FLUME INLET AT POND FLOOR LOW POINT
- BERMAD #4415 AIR RELEASE VALVE
- 3/4" SCH. 80 PVC BALL VALVE INSTALLED IN 11" x 17" VALVE BOX WITH GRAVEL SUMP.
- 4" SCH. 40 P.V.C. SLEEVE PIPE
- RE-IRRIGATION FIELD - WATER QUALITY EASEMENT
  - FIELD "A" = 4,731 SQ. FT.
  - FIELD "B" = 5,478 SQ. FT.

IRRIGATION NOTES:

1. RE-IRRIGATION FIELDS SHALL BE SET BACK 50' MINIMUM FROM ADJACENT PROPERTIES.
2. RE-IRRIGATION AREAS SHALL NOT RECEIVE FERTILIZERS, PESTICIDES OR HERBICIDES.
3. EACH RE-IRRIGATION AREA SHALL HAVE SIGNAGE IDENTIFYING THE AREA AS A RE-IRRIGATION FIELD, WITH WARNINGS NOT TO DRINK THE WATER.
4. IRRIGATION AREA MUST HAVE NATIVE VEGETATION OR BE RESTORED OR RE-ESTABLISHED WITH NATIVE VEGETATION.

WATER QUALITY SUMMARY:

- WATER QUALITY VOLUME REQUIRED IN POND = 17,299 CF
- WATER QUALITY VOLUME PROVIDED IN POND = 18,148 CF
- WATER QUALITY VOLUME THAT CAN BE TREATED IN PROVIDED REIRRIGATION FIELDS = 21,290 CF

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

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

James Pole
IRRIGATION CONSULTANTS
IRRIGATION DESIGN, CONSULTING, AND LANDSCAPE WATER MANAGEMENT
TEXAS L.I.C. #658
100 N. OAK ST., SUITE 106
DENTON, TEXAS 76201
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No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

TBPE Firm No. 928

STATE OF TEXAS
JAMES POLE
658
LICENSED IRRIGATOR

07 / 27 / 2023

KHA PROJECT 069225663
DATE JULY 2023
SCALE: AS SHOWN
DESIGNED BY: JP
DRAWN BY: JP
CHECKED BY: LRO

PEARL - TOWNHOMES

CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

RE-IRRIGATION FIELD WATER QUALITY PLAN

SHEET NUMBER
IRRI-1

OPERATING & MAINTENANCE GUIDELINES FOR WATER QUALITY SYSTEM

1. THE BANKS, SIDE SLOPES AND THE FLOORS OF THE BASIN SHOULD BE MOWED AT LEAST TWICE A YEAR. VEGETATION GROWING WITHIN THE BASINS MUST NOT BE ALLOWED TO EXCEEED 18 INCHES IN HEIGHT.

2. DEBRIS AND LITTER MAY ACCUMULATE AND CONCENTRATE AT THE STORM WATER INTAKE STRUCTURE. THIS DEBRIS SHOULD BE REMOVED EVERY 3 TO 6 MONTHS, OR MORE OFTEN IF NECESSARY DEPENDING UPON THE RATE OF ACCUMULATION.

3. SILT SHOULD BE REMOVED FROM EACH OF THE BASINS WHEN THE ACCUMULATION EXCEEDS 6 INCHES. AFTER HEAVY RAINS, THE INTAKE STRUCTURE SHOULD BE INSPECTED AND ANY SILT THAT HAS ACCUMULATED SHOULD BE RAKED BACK TO THE OUTER EDGE OF THE CONCRETE APRON. SILT ACCUMULATION ON THE FLOOR OF THE INTAKE STRUCTURE SHOULD NOT BE ALLOWED TO EXCEED 4 INCHES IN DEPTH.

A FIXED VETICAL DEPTH MARKER SHOULD BE INSTALLED IN THE RETENTION BASEIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 20 % OF THE WATER QUALITY VOLUME AND SEDIMENT REMOVAL IS REQUIRED.

4. SILT REMOVED FROM THE BASIN AS A RESULT OF MAINTENANCE SHOULD BE DISPOSED OF ON-SITE IF PROPERLY STABILIZED.

5. THE INTAKE STRUCTURE, THE PUMP STRAINER, THE LEVEL SENSER PROBES, THE CONTROL STATION, THE PUMP AND THE ELECTRONIC CONTROLS SHOULD BE INSPECTED PERIODICALLY, AT LEAST EVERY TWO MONTHS, TO INSURE THAT THE SYSTEM IS FUNCTIONING PROPERLY. INSPECT AFTER RAINY WEATHER.

6. THE RETENTION BASIN HAS BEEN DESIGNED TO CAPTURE AND HOLD RUNOFF WITHOUT ALLOWING DISCHARGE, THEREBY PROVIDE A SOURCE OF IRRIGATION WATER FOR NATURAL OR LANDSCAPED AREAS.

7. THE IRRIGATION CONTROLS FOR THE RETENTION BASINS HAVE BEEN DESIGNED TO EMPTY THE BASINS WITHIN APPROXIMATELY 72 HOURS AFTER THE RAINFALL EVENT. THE SYSTEM WILL REPEAT ALTERNATING ONE HOUR CYCLES OF RUN TIME ON / RUN TIME OFF, FOR ALL HEADS SIMULTANEOUSLY UNTIL THE BASIN IS EMPTY.

8. THE PUMP CONTROLS SHALL INCLUDE A CUSTOM CONTROL PANEL, A PUMP START RELAY, A PROBE TYPE LEVEL SENSOR, A 12-HOUR DELAY RELAY, A TIMING MECHANISM ALLOW PUMP OPERATION ON ONE HOUR ON - ONE HOUR OFF CYCLES, AND A RAIN SENSOR OVER-RIDE DEVICE AS MANUFACTURED BY MINI-CLIK.

TWELVE HOURS AFTER THE LEVEL SENSING SWITCH DETECTS WATER ENTERING THE POND (UNLESS FURTHER DELAYED BY THE AUTOMATIC RAIN SENSOR SHUT-OFF DEVICE) PUMPING WILL BE ENABLED. PUMPING CYCLES OF ONE HOUR ON FOLLOWED BY ONE HOUR OFF WILL CONTINUE UNTIL THE LEVEL SENSOR INDICATES THAT TH EPOND IS EMPTY.

ONLY ONE PUMP SHALL OPERATE AT A TIME, ALTERNATING WITH EVERY RAIN / PUMPING EVENT.

9. THE CONTROLS SHALL INCLUDE A MANUAL START TO BYPASS THE LEVEL SENSING SWITCH.

10. AFTER SYSTEM IS COMPLETED AND CONSTRUCTED AND WHEN POWER IS AVAILABLE, POND SHOULD BE FILLED TO AT LEAST 1/2 CAPACITY TO TEST ALL SYSTEM FUNCTIONS.

11. HEADS CLOSEGST TO THE RE-IRRIGATION LIMITS SHALL BE ADJUSTED TO MINIMIZE ANY OVERSPRAY BEYOND LIMIT LINE.

12. TREE PRESERVATION:

ALL PIPING AND HEAD LOCATIONS TO BE APPROVED BY ENGINEER & LANDSCAPE ARCHITECT BEFORE ANY CONSTRUCTION.
ALL HEAD LOCATIONS TO BE A MINIMUM OF 10' FROM ANY TREE.
TRENCHING SHOULD BE DONE WITH A ROCK SAW OR OTHER CLEAN-CUTTING INSTRUMENT TO PREVENT "PULLING" OF ROOT SYSTEMS OF EXISTING TREES.
NOTIFY LANDSCAPE ARCHITECT OF ANY TREE 12" OR OVER WITH 20' OF TRENCH (PIPING) OR HEAD LOCATION.
PLACEMENT OF HEADS IN FIELD SHOULD BE ADJUSTED AS NECESSARY TO CREATE MINIMUM IMPACT TO EXISTING VEGETATION. DISRUPTION OF NATIVE VEGETATION SHOULD BE KEPT TO THE VERY MINIMUM. THIS INCLUDES DELICATE UNDERSTORY AND GROUNDCOVERS.

SYSTEM FAULT DETECTION

THE SYSTEM SHALL PROVIDE FAULT DETECTION BY THE USE OF AN AMP DRAW SENSOR. THE SENSOR SHALL DETECT BAD BEARINGS, PUMP BIND-UP, A LOCKED ROTOR, ETC. SUCH CONDITIONS SHALL ACTIVATE A RED FLASHING LIGHT WHICH CAN BE VIEWED FROM THE ACCESS ROAD. WHEN THE LIGHT IS TURNED ON, A PHONE DIAL UP SYSTEM ALSO NEEDS TO BE INITIATED. THE PHONE SYSTEM SHALL BE CAPABLE OF DIALING UP TO FIVE DIFFERENT NUMBERS ON A ROTATING BASIS UNTIL A RESPONSE OCCURS, AND BE CAPABLE OF SENDING AN OUTGOING NUMBER (RETURN NUMBER IF PASING IS DESIRED). A FLASHING GREEN LIGHT VIEWABLE FROM THE ACCESS ROAD SHALL INDICATE THAT THE PUMP AND MOTOR ARE RUNNING PROPERLY. THE PUMP MOTOR SHALL BE THERMALLY PROTECTED TO SHUT DOWN IF "DEAD HEAD" OR DRY PUMPING OCCURS, ACTIVATING THE WARNING LIGHT / PHONE DIAL UP SEQUENCE.
MAINLINE "BLOWOUT" LEAKS SHALL BE DETECTED BY A PRESSURE SENSOR, SHUTTING DOWN THE PUMP AND ACTIVATING WARNINGS AS NOTED ABOVE.
IN ADDITION TO STANDARD THERMAL PROTECTION, THE AMP DRAW SENSOR MUST BE CAPABLE OF DETECTING SLIGHT CHANGES IN AMP DRAW TO PROTECT THE PUMP FROM IMPENDING FAILURE.
A RED "FAILURE" LIGHT SHALL BE LOCATED FIVE FEET ABOVE GRADE AT THE WET WELL.

PUMP CONTROL PANEL

THE CUSTOM CONTROL PANEL SHALL INCLUDE A 12-HR DELAY RELAY, AND ACTIVATE THE IRRIGATION CYCLE WHEN A LEVEL SENSOR DETECTS CATFURED WATER IN THE STORAGE TANK. IRRIGATION SHALL INCLUDE REPEATING WATERING CYCLES SHALL INCLUDE REPEATING WATERING CYCLES OF ONE HOUR "PUMP ON" FOLLOWED BY ONE HOUR "PUMP OFF" UNTIL THE LEVEL SENSOR DETECTS THAT THE STORAGE TANK IS EMPTY. THE TWO PUMPS WILL ALTERNATE TIME USE, ALLOWING EVEN WEAR. THE TWO SHALL NOT OPERATE SIMULTANEOUSLY.

THE CUSTOM PANEL SHALL BE AS PROVIDED BY SITEONE GREEN TECH.
CONTACT MR. JIM WHITE AT 210.838.5576

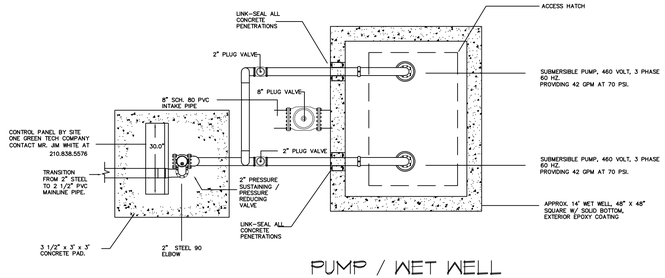
SYSTEM REQUIREMENTS

PROVIDED W.Q. VOLUME	PUMP PERFORMANCE (EACH PUMP)	TOTAL * PUMPING TIME
21,290 C.F.	88.5 GPM @ 70 PSI	60 HOURS

THE PUMP WILL OPERATE AT A ONE HOUR ON / ONE HOUR OFF REPEATING CYCLE UNTIL THE POND IS EMPTY.
* AFTER 12-HOUR DELAY, ONE HOUR ON / ONE HOUR OFF CYCLES PROVIDE 30 ACTUAL PUMPING HOURS. PUMPS WILL ALTERNATE WITH EVERY RE-IRRIGATION EVENT, AND WILL NOT OPERATE SIMULTANEOUSLY.

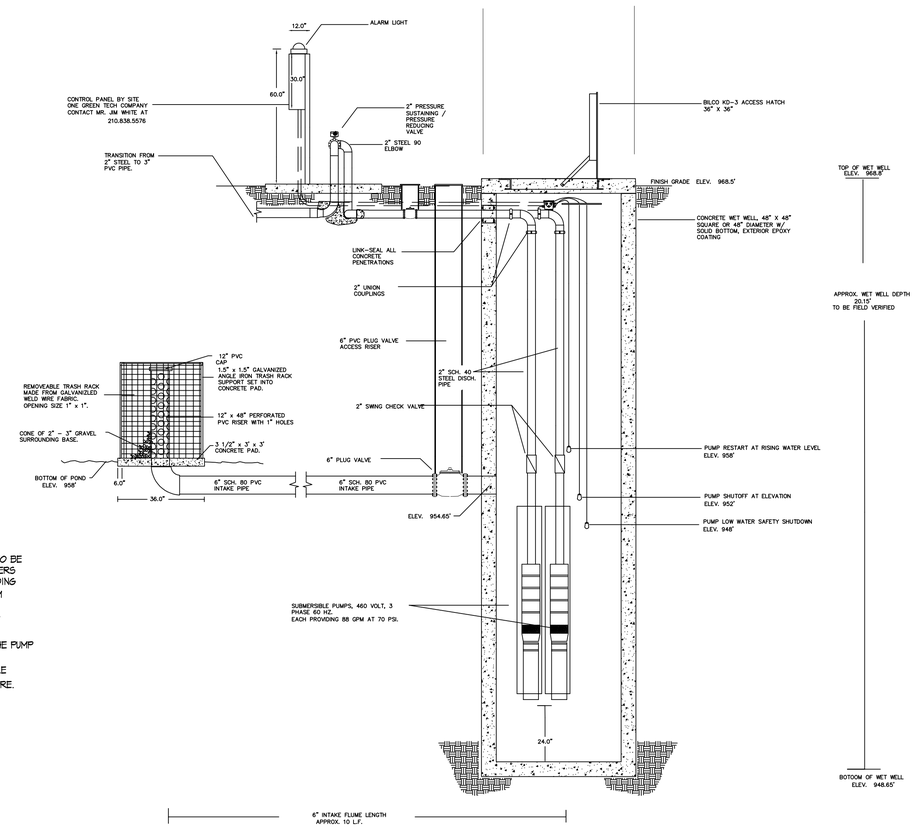
RE-IRRIGATION WATERING RATE

88.5 GPM PUMP FLOW RATE SHALL EMPTY THE FULL POND WITHIN A TOTAL OF 72 HOURS, AFTER A 12 HOUR DELAY, WITH REPEATING CYCLES OF 1 HOUR ON / ONE HOUR OFF.



PUMP / WET WELL

TOP VIEW



PUMP / WET WELL

SIDE VIEW

IRRIGATION FIELD A (IRT-06, IRT-07, IRT-14)
MEASURED INFILTRATION RATE FROM GEOTECH REPORT = 1.38 IN/HR, 1.475 IN/HR, 1.34 IN/HR.
GEOMETRIC MEAN = 1.39 IN/HR
UTILIZING SAFETY FACTOR OF 2.0, THE CALCULATED INFILTRATION RATE (IR) = 0.70 IN/HR
IRRIGATION FIELD AREA = 4,731 SF PUMP TIME (T) = 30 HOURS
WQ VOL. = IR X T X REIRRIGATION AREA => 0.70 (30/12) 4,731 = 8,279 CF

IRRIGATION FIELD B (IRT-01, IRT-02, IRT-03, IRT-04, IRT-05)
MEASURED INFILTRATION RATE FROM GEOTECH REPORT = 1.13 IN/HR, 1.10 IN/HR, 1.53 IN/HR, 3.30 IN/HR, 3.91 IN/HR.
GEOMETRIC MEAN = 1.89 IN/HR
UTILIZING SAFETY FACTOR OF 2.0, THE CALCULATED INFILTRATION RATE (IR) = 0.95 IN/HR
IRRIGATION FIELD AREA = 5,478 SF PUMP TIME (T) = 30 HOURS
WQ VOL. = IR X T X REIRRIGATION AREA => 0.95 (30/12) 5,478 = 13,010 CF

RE-IRRIGATION FIELD	CALCULATED WQ VOLUME (CF) (VOLUME OF WATER QUALITY THAT EACH FIELD CAN TREAT)
A	8,279
B	13,010
TOTAL	**21,290**

INSTALLATION NOTES

1. THE IRRIGATION CONTRACTOR WILL SECURE ALL REQUIRED PERMITS AND PAY ALL ASSOCIATED FEES UNLESS OTHERWISE NOTED. ALL LOCAL CODES SHALL PREVAIL OVER ANY DISCREPANCIES HEREIN.
2. PVC PIPE PIPE SHALL BE INSTALLED AT A MINIMUM DEPTH OF 18 INCHES.
3. IRRIGATION CONTRACTOR SHALL PROVIDE FINAL ELECTRIC HARD-WIRE TO CONTROL PANEL. GENERAL CONTRACTOR SHALL PROVIDE 460v., 3 PHASE ELECTRIC POWER WITHIN 5 FEET OF CONTROL PANEL LOCATION.
4. USE LASCO O-RING SWING JOINT ASSEMBLIES TO CONNECT ALL ROTARY HEADS
5. CONTRACTOR IS TO CONTACT APPROPRITE AUTHORITIES AND LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
6. THE RAIN SENSOR SHUT OFF DEVICE, WHEN ACTIVATED, SHALL INTERUPT THE PUMP START RELAY.

EXCAVATION / BACKFILL

1. THE CONTRACTOR SHALL INSURE THAT OSHA SAFETY GUIDLINES ARE OBSERVED, INCLUDING SHORING, DURING EXCAVATION.
2. TRENCH BACKFILL SHALL INCLUDE SELECT MATERIAL FROM EXCAVATION, REMOVING ROCKS 2" AND LARGER FROM THE FIRST 4" OF BACKFILL. WET WELL BACKFILL SHALL INCLUDE MATERIALS EXCAVATED, MECHANICALLY TAMPED IN 12" LAYERS SUFFICIENT TO PREVENT AFTER-SETTLING.
3. THE CONTRACTOR SHALL REMOVE FROM THE SITE ANY EXCAVATED SURPLUS OR MATERIAL NOT SUITED FOR BACKFILL

LEGEND

- RAINBIRD AG-5 MAXI-PAW POP-UP IMPACT DRIVE, PART CIRCLE IMPACT ROTARY HEAD WITH NOZZLE # AS NOTED
- RAINBIRD AG-5 MAXI-PAW POP-UP IMPACT DRIVE, FULL CIRCLE IMPACT ROTARY HEAD WITH NOZZLE # AS NOTED
  - #8 NOZZLE DELIVERS 4.2 GPM AT 60 PSI
  - #10 NOZZLE DELIVERS 6.4 GPM AT 60 PSI
  - #12 NOZZLE DELIVERS 8.4 GPM AT 60 PSI
- SCH. 80 P.V.C. SOLVENT WELD TYPE MAINLINE PIPE, COLOR PURPLE
- SUBMERSIBLE PUMP STATION INCLUDING WET WELL AND LEVEL CONTROLS AS DETAILED
  - EACH PUMP SHALL PROVIDE 88.5 GPM AT 70 PSI, 460 v., 3 PHASE
  - CONTACT MR. JIM WHITE AT 210.838.5576
- PUMP CONTROL PANEL AS PROVIDED BY SITE ONE GREEN TECH COMPANY
  - CONTACT MR. JIM WHITE AT 210.838.5576
- FLUME INLET AT POND FLOOR LOW POINT
- BERMAD #441S AIR RELEASE VALVE
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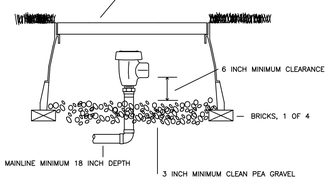
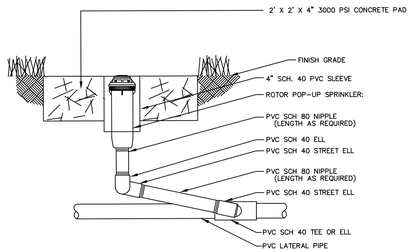
- 4" SCH. 40 P.V.C. SLEEVE PIPE
- RE-IRRIGATION FIELD - WATER QUALITY EASEMENT
  - FIELD "A" = 4,731 SQ. FT.
  - FIELD "B" = 5,478 SQ. FT.

PERMEAMETER TEST RESULTS	
TEST HOLE	MEASURED FIELD SATURATED HYDRAULIC CONDUCTIVITY (KFS), IN/HOUR
IRT-01	1.126
IRT-02	1.101
IRT-03	1.525
IRT-04	3.300
IRT-05	3.905
IRT-06	1.375
IRT-07	1.475
IRT-08	1.475
IRT-09	4.228
IRT-10	1.988
IRT-11	1.825
IRT-12	2.949
IRT-13	1.663
IRT-14	1.338
IRT-15	2.600
IRT-16	2.875
IRT-17	5.450
IRT-18	1.250
IRT-19	4.200
IRT-20	1.288
IRT-21	2.150
IRT-22	2.164

Notes:
1. 0.2 in/hr infiltration rate was assumed for areas where infiltration rates were not provided.



AIR RELIEF VALVE



ROTOR POP-UP SPRINKLER

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

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James Pole
IRRIGATION CONSULTANTS
IRRIGATION DESIGN, CONSULTING, AND LANDSCAPE WATER MANAGEMENT
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No.	REVISIONS	DATE	BY

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AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TBAE REGISTRATION NO. F-928 TBPE Firm No. 928

STATE OF TEXAS JAMES POLE 658 LICENSED IRRIGATOR

07 / 21 / 2023

KHA PROJECT 069225663	DATE JULY 2023	SCALE: AS SHOWN	DESIGNED BY: JP	DRAWN BY: JP	CHECKED BY: LRO

RE-IRRIGATION FIELD
WATER QUALITY PLAN
NOTES & DETAILS

PEARL - TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SHEET NUMBER
IRRI-2

ATTACHMENT N – INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

Inspection, Maintenance, Repair and Retrofit Plan, and Schedule for Retention/Reirrigation Ponds

PROJECT NAME: Pearl Townhomes
ADDRESS: 13200 & 13216 Bee Cave Parkway
CITY, STATE, ZIP: Bee Cave, Texas 78738

DRY PONDS

Sediment Removal. Remove sediment from splitter box, basin, and wet wells at least two times per year or when the depth reaches 6 inches.

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

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

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

MAJOR MAINTENANCE REQUIREMENTS

1. All Ponds

   The following maintenance activities shall be performed to ensure proper function:
   a. Accumulated paper, trash and debris shall be removed as necessary to maintain proper operation.
   b. Structural integrity shall be maintained at all times. Basins and all appurtenances shall be inspected annually, or more frequently if specified, and repairs shall be made if necessary. When maintenance or repairs are performed, the pond shall be restored to the original lines and grades.
   c. Corrective maintenance shall occur:
      i. Any time drawdown of the Water Quality Volume does not occur within ninety-six (96) hours (i.e., no standing water is allowed), unless a greater maximum drawdown time is specified in the plans.
      ii. For detention ponds only, any time drawdown does not occur within twenty-four (24) hours.
   d. The inlet and outlet shall be maintained unimpeded in order to convey flow at all times. Observed blockages to the inlet and outlet, due to vegetation, sediment, debris, or any other cause, shall be removed.
   e. Integrated pest management shall be performed and shall adhere to the Integrated Pest Management Guidelines.

IRRIGATION FIELDS

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

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

Responsible Party for Maintenance: Huntsville Center LTD

Address: 2410 POLK ST. #200

City, State, Zip: Houston, TX 77003

Telephone Number: 713-293-6901

Signature of Responsible Party: David Toor

STORM WATER POLLUTION PREVENTION PLAN

Kimley»Horn

Operator Checklist

☐	Complete/verify information on the cover sheet of the SWP3.
☐	Revisions of the SWP3 should be recorded on the revisions page found after the table of contents.
☐	Insert representative contact information in part "C" of Section 1.0.
☐	Review and complete the Roles and Responsibilities Checklist located in Appendix F. Sign the certification statement.
☐	Complete and submit Delegation of Signatories to Reports letter, which is included in Appendix J
☐	**Large Construction** – **Primary Operator(s)** - Sign and submit a completed Notice of Intent (NOI) to the TCEQ. Notice of Intent information, a copy of the NOI form, and NOI instructions are located in Appendix H.
☐	**Large Construction** – **Primary Operator(s)** - Post a copy of the signed NOI at the construction site in a location where it is readily available for viewing.
☐	**Large Construction** – Post a completed site notice where it is safely and readily available for viewing. A copy of the site notice is located in Appendix H.
☐	**Large Construction** – **Primary Operator(s)** - Provide a copy of the signed NOI to any secondary operator and to the operator of any municipal separate storm sewer system (MS4) receiving construction site discharge, at least seven days prior to commencing construction activities. The names and addresses of all MS4 operators receiving a copy of the NOI are to be recorded in Appendix H.
☐	**Large Construction** – **Primary Operator(s)** - If the Operator becomes aware that he/she failed to submit any relevant facts, or if any relevant information provided in the NOI changes, the correct information must be provided to the TCEQ in a Notice of Change (NOC) letter within fourteen (14) days after discovery. A copy of the NOC must be provided to the operator of any municipal separate storm sewer system (MS4) receiving discharge from the construction activity. The names and addresses of all MS4 operators receiving a copy of the NOC are to be recorded in Appendix H.
☐	Retain the SWP3 on-site, or if the site is inactive/does not have an on-site location, a notice must be posted describing the location of the SWP3.
☐	Complete the inventory of non-storm water discharges located in Appendix L. Update the inventory as needed.
☐	**Large Construction (Edwards Aquifer) – Primary Operator(s)** – Submit a copy of the NOI to the appropriate TCEQ regional office. Meet all applicable requirements of the Edwards Aquifer Rule. A copy of the Edwards Aquifer Rule is included in Appendix Q.
☐	**Large Construction (Edwards Aquifer) – Secondary Operator(s)** – Submit a copy of the construction site notice to the appropriate TCEQ regional office. Meet all applicable requirements of the Edwards Aquifer Rule. A copy of the Edwards Aquifer Rule is included in Appendix Q.
☐	Verify the maps located in Appendix A. Update the map as needed to reflect the type(s) and location(s) of BMPs, etc. Both onsite and offsite disturbed areas should be shown.
☐	Complete and/or update the Construction Activity Schedule located in Appendix B.
☐	Verify the type(s) of BMPs that will be utilized on the table located in Appendix C. Update the table as needed.
☐	Review and complete the Erosion Control Checklist located in Appendix D. Update the list as needed.
☐	Review the Record of Temporary/Permanent Ceasing of Construction Activities table located in Appendix I. Update the table as needed.

☐	Report releases of reportable quantities of oil or hazardous materials (if they occur). See Appendix K for more information.
☐	If a sedimentation basin is being utilized, review the information in Appendix N and include appropriate calculations.
☐	If storm water runoff from concrete batch plants will be present on the site, review the requirements in Part IV of the general permit (Appendix G) and update the SWP3 as required (Appendix P).
☐	If concrete truck wash out activities are present on the site, review the requirements in Part V of the general permit (Appendix G) and update the SWP3 as required.
☐	Include any applicable local requirements in Appendix O and update the SWP3 as necessary.
☐	**Large Construction** – **Primary Operator(s)** - Authorization under the general permit must be terminated by submitting a completed Notice of Termination (NOT) to TCEQ. A NOT form is provided in Appendix H. A copy of the NOT must be provided to the operator of any MS4 receiving the discharge within thirty (30) days after final stabilization has been achieved on all portions of the site that are the responsibility of the permittee, or another permitted contractor has assumed control over all areas of the site that have not been finally stabilized. The names and addresses of all MS4 operators receiving a copy of the NOT are to be recorded in Appendix H.
☐	**Large Construction** – **Secondary Operator(s)** – To terminate coverage of the permit, each operator that obtained authorization of the general permit without submitting a NOI must remove the site notice and complete the applicable portion of the notice related to removal of the notice. A copy of the completed notice must be submitted to the operator of any MS4 receiving site discharge.

Note: Checklist items above are a summary of requirements. Please refer to the SWP3 and general permit for additional information. A copy of all signed documents referenced above must be maintained with the SWP3. Please note that both Owners and Contractors can meet the definition of being an Operator and will need to fulfill the associated requirements.

STORM WATER POLLUTION PREVENTION PLAN (SWP3)

Bee Cave, Texas

JULY 2023

Project Owner:

Huntsville Center LTD
2410 Polk St #200
Houston, Texas 77003

Project Contractor:

_____
_____
_____

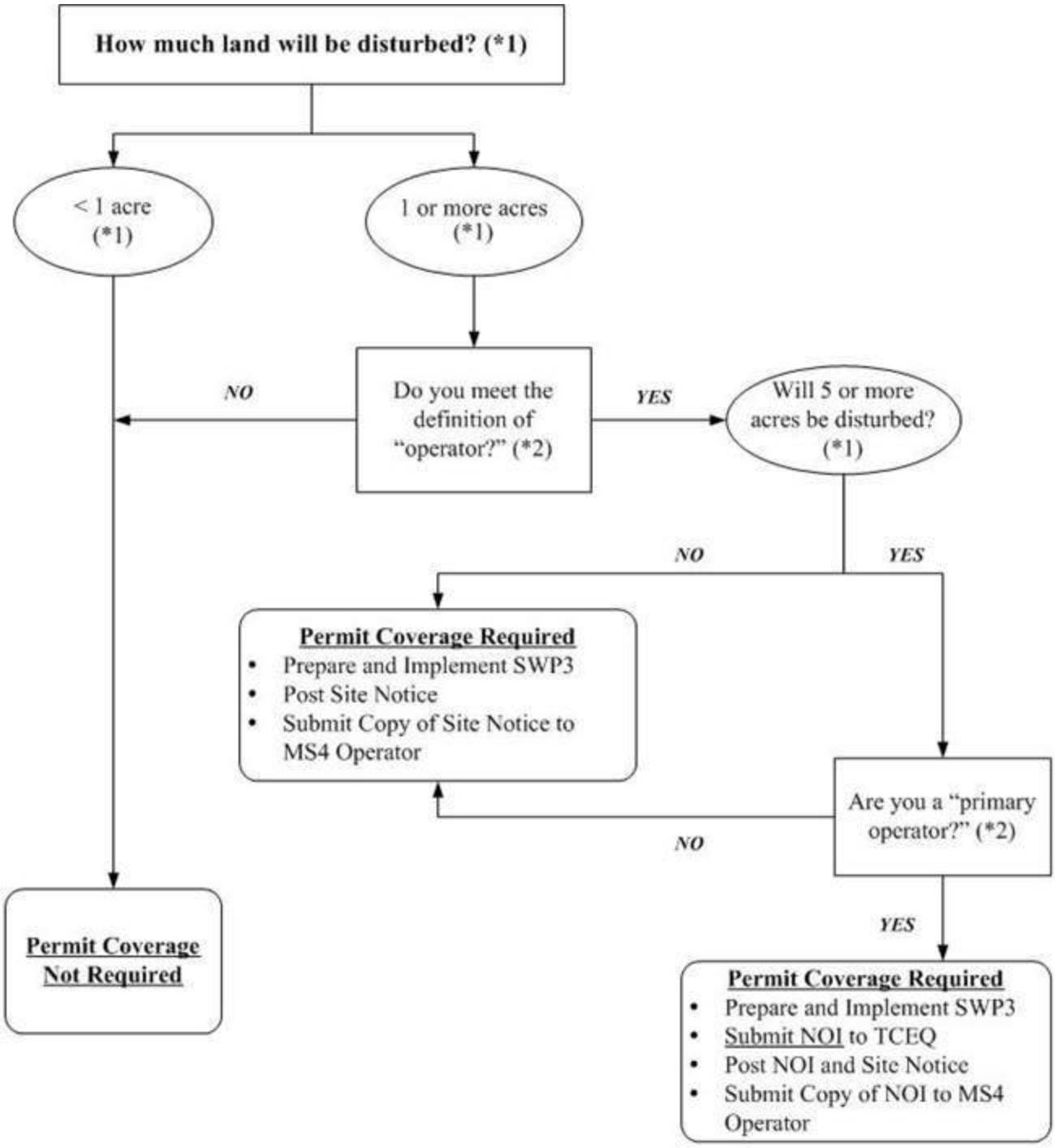
Prepared By:

Kimley-Horn and Associates, Inc.
10814 Jollyville Rd. Bldg. 4 Ste. 200
Austin, TX 78759
(512) 418- 1771

KHA No. 069225663

TABLE OF CONTENTS

APPENDICES



***(*1)** To determine the size of the construction project, use the size of the entire area to be disturbed, and include the size of the larger common plan of development or sale, if the project is part of a larger project (refer to Part I.B., "Definitions," for an explanation of "larger common plan of development or sale").*

***(*2)** Refer to the definitions for "operator," "primary operator," and "secondary operator" in Part I., Section B. of this permit.*

STORM WATER POLLUTION PREVENTION PLAN REVISIONS

Provide a general description and document the date of any revisions to the storm water pollution prevention plan during the course of this construction project. Revisions may be necessary as a result of site inspections or because of a change in the circumstances of the construction project (such as schedule change or a modification in design).

The Storm Water Pollution Prevention Plan (SWP3) must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions to the SWP3 must be completed within seven (7) calendar days following the inspection. If existing best management practices (BMPs) are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable.

REVISION (Refer to attachments if necessary)	DATE	SIGNATURE

1.0 INTRODUCTION

On March 10, 2003, responsibility for the administration of storm water protection associated with construction activities in Texas was delegated by the U.S. Environmental Protection Agency (EPA) to the Texas Commission on Environmental Quality (TCEQ). The Texas Pollutant Discharge Elimination System (TPDES) program in Texas meets or exceeds the National Pollutant Discharge Elimination System (NPDES) standards established on a federal level. This SWP3 has been developed in accordance with the TPDES requirements. Additional local requirements may apply and this SWP3 should be updated accordingly (Appendix O).

The purpose of the SWP3 is to provide guidelines for preventing or minimizing sediment and other pollutants that may originate on the site from flowing into municipal storm systems or jurisdictional waters during the construction period. This plan also addresses the principal activities known to disturb significant amounts of ground surface during construction. Stabilization measures must begin within fourteen (14) days of stoppage of construction activities (Appendix I). The permit coverage requirements terminate when areas disturbed for this project reach full stabilization (i.e., when disturbed areas are paved or achieve 70 percent native background vegetative coverage). Revisions to this plan will be made as necessary to accurately reflect project activities and storm water pollution prevention measures.

The storm water management controls included in this SWP3 focus on providing control of pollutant discharges with practical approaches that use readily available techniques, expertise, materials, and equipment. The necessary forms for implementing the SWP3 are found in the appendices of this document, including the Inspector's Qualifications, Inspection Form, Notice of Intent (NOI), Notice of Termination (NOT), and construction site notice. The SWP3 must be implemented prior to the start of construction activities.

The Project Owner's and the Contractor's roles and responsibilities for implementation and maintenance of the elements of the SWP3 are shown in a checklist in Appendix F of this document. Appendix F also includes a description of primary and secondary operators, along with associated responsibilities. The Project Owner and each Contractor must complete the checklist in Appendix F and sign the included certification statement. The certification statement indicates that each operator understands and accepts their roles and responsibilities with respect to storm water pollution prevention for this project.

A. Project Name and Location

PEARL TOWNHOMES– Bee Cave, Travis County, Texas (See Appendix A for a project location map).

B. Owner Information

Name: Huntsville Center LTD
Address: 2410 Polk St #200
Houston, Texas 77003
Representative: David Foor
Title: Vice President
Telephone: (713) 293-6901
Fax: _____

C. Contractor Information

Name: _____
Address: _____
_____
Representative: _____
Title: _____
Telephone: _____
Fax: _____

D. Subcontractor Information

Name: _____
Address: _____
_____
Representative: _____
Title: _____
Telephone: _____
Fax: _____

Name: _____
Address: _____
_____
Representative: _____
Title: _____
Telephone: _____
Fax: _____

E. Discharges Eligible for Authorization

The general permit for construction activities allows for storm water discharges from construction activities, construction support activities, and authorized non-storm water discharges. Under the general permit, construction support activities include, but are not limited to:

- concrete and asphalt batch plants,
- rock crushers,
- equipment staging areas,
- material storage yards,
- material borrow areas, and
- excavated material disposal areas.

Storm water discharges from these construction support activities are authorized under the general permit for construction activities provided:

- the activity is located within one mile of the permitted construction site and is directly supporting the construction activities,
- the SWP3 for the permitted construction activities is developed to include the controls and measures to reduce erosion and discharge of pollutants in storm water runoff from the construction support activities, and

- the construction support activities either do not operate beyond the completion date of the construction activity or, at the time that they do, are authorized under separate Texas Pollutant Discharge Elimination System (TPDES) authorization.

The following non-storm water discharges are also authorized under the general permit for construction activities:

- Discharges from firefighting activities,
- Uncontaminated fire hydrant flushings,
- Water from routine external washing of vehicles, the external portion of buildings or structures, and pavement (where detergents and soaps are not used),
- Uncontaminated water used to control dust,
- Potable water sources, including waterline flushings,
- Uncontaminated air conditioning condensate,
- Uncontaminated groundwater or spring water, and
- Lawn watering and similar Irrigation drainage.

Part II.A.3 of the general permit contains additional information and requirements for non-storm water discharges. Discharges of storm water runoff from concrete batch plants may be authorized provided that the benchmark sampling and associated requirements located in Part V of the general permit are met. The wash out of concrete trucks associated with off-site facilities may be conducted in accordance with the requirements of Part V of the general permit. The Operator will be responsible for updating the SWP3 to meet Part V requirements, if applicable. A non-storm water discharge inventory is located in Appendix L.

F. Obtaining Coverage under the General Permit

Construction activities, including the activities associated with this project, disturbing five (5) acres or more (definition of a large construction activity) are required to comply with the following requirements of the general permit to obtain permit coverage:

a) Develop a SWP3 according to the provisions of the general permit that covers either the entire site or all portions of the site for which the applicant is the operator and implement that plan prior to commencing construction activities.

b) Primary operators must submit a NOI:

   1) at least seven days prior to commencing construction activities if mailing a paper NOI, or

   2) prior to commencing construction activities if utilizing electronic submittal.

   A copy of the NOI form is located in Appendix H. Instructions for NOI submittal relating to primary operator additions or changes are also located in Appendix H.

c) Post a site notice where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction. The site notice must be maintained until completion of the construction activity.

   1) For linear construction activities, the site notice must be placed in a publicly accessible location near where construction is actively underway. A copy of the construction site notice is located in Appendix H.

d) All primary operators must also post a copy of the signed NOI at the construction site in a location where it is readily available for viewing by the general public, local, state, and federal authorities prior to starting construction activities until completion of the construction activity. If multiple crews will be conducting construction activities under the general permit simultaneously, copies of the signed NOI should be posted at each separate construction site.

e) All primary operators must provide a copy of the signed NOI at least seven days prior to commencement of construction activities to any secondary operator and to the operator of any municipal separate storm sewer system (MS4) receiving construction site discharge. The names and addresses of all MS4 operators receiving a copy of the NOI are to be recorded in this SWP3 (Appendix H).

f) Secondary operators are regulated under the general construction permit but are not required to submit a NOI provided that:

   1) a primary operator(s) at the site has submitted a NOI, or

   2) another operator(s) is required to submit a NOI and the secondary operator has provided notification to the operator(s) of the need to obtain coverage.

   Additional information for secondary operators seeking alternative coverage is located in the general permit.

Questions about the TPDES construction permit program can be directed to the TCEQ Storm Water and General Permits Team at (512) 239-4515. A copy of the TPDES General Permit (TXR150000) for Storm Water Discharges from Construction Activities has been included in Appendix G for reference.

G. Notice of Change Letter

If the Operator becomes aware that he/she failed to submit any relevant facts, or submitted incorrect information in a NOI, the correct information must be provided to the TCEQ in a Notice of Change (NOC) letter within fourteen (14) days after discovery. In addition, if relevant information provided in the NOI changes, a NOC letter must be submitted to the TCEQ within fourteen (14) days of the change. A copy of the NOC must be provided to the operator of any MS4 receiving discharge from the construction activity. The names and addresses of all MS4 operators receiving a copy of the NOC must be included in this SWP3 (Appendix H).

H. Notice of Termination

Authorization under the general permit must be terminated by submitting a completed and signed NOT form provided in Appendix H. The NOT must be submitted to the TCEQ, and a copy of the NOT must be provided to the operator of any municipal separate storm sewer system (MS4) receiving the discharge within thirty (30) days after final stabilization has been achieved on all portions of the site that are the responsibility of the permittee, or another permitted contractor has assumed control over all areas of the site that have not been finally stabilized. The names and addresses of all MS4 operators receiving a copy of the NOT must be recorded in this SWP3 (Appendix H).

I. Termination of Coverage for Secondary Operators

Each operator that obtained authorization of the general permit without submitting a NOI must remove the site notice and complete the applicable portion of the notice related to removal of the notice. A copy of

the completed notice must be submitted to the operator of any MS4 receiving site discharge within 30 days of any the following conditions:

a) final stabilization has been achieved on all portions of the site that are the responsibility of the permittee,

b) a transfer of operational control has occurred, or

c) the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

J. SWP3 Availability

This SWP3 must be retained on-site at the construction site, or if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3. This SWP3 must be made readily available at the time of an on-site inspection.

K. Hazardous Materials

The following potential pollutant sources may be present at the site due to the nature of the construction activities. An inventory of materials is located in Appendix L. Controls for potential pollutants are listed and described in Appendices C and D.

- Solvents
- Stains/paints
- Fuels
- Oils
- Grease
- Pesticides
- Fertilizer
- Sediment/total suspended solids
- Trash
- Paving
- Concrete curing compound
- Glue adhesives
- Joint compound
- Concrete, painting, and brick wash
- Excavation pump-out water
- Concrete

2.0 SITE DESCRIPTION

A. General Site Description

The development is situated on two (2) existing platted lots – Lot 4, Block "B" of the Hill Country Galleria, a Subdivision in Travis County, Document Number 200600357 and Lot 5, Block "B" of the Amended Final Plat Hill Country Galleria of Lots 1-8 and 10-26, Block A, Lots 1-3 and 5-8, Block B and Lot 1, Block C, a Subdivision in Travis County, Texas, Document No. 200700378. The total property area is approximately 6.08 acres. The site is within the City of Bee Cave, Travis County, Texas (Appendix A). The project is located in the Little Barton Creek and Cedar Hollow watersheds.

No portion of the property is located within the 100-year floodplain according to FEMA Firm Map 48453C0405J for Travis County, Texas and Incorporated Areas, dated January 22nd 2020. A portion of the site is located within the Edwards Aquifer Contributing Zone.

B. Nature of Construction Activity

The proposed development will consist of thirteen (13) townhome buildings (54 units). In addition, improvements will also include streets, sidewalk, parking, storm sewer, water, wastewater, pedestrian improvements, and other associated site improvements. A storm sewer system, containing curb inlets, grate inlets and roof drains are proposed throughout the site to capture stormwater run-off and convey it to both the on-site water quality pond and detention pond (Point of Interest #1) and the off-site ponds F1 on the opposite side of Bee Cave Parkway (Point of Interest #3).

C. Estimate of Total Site Area and Disturbed Area

The size of the site is estimated to be 6.08-acres. The estimated disturbed area is 6.08 acres.

The construction sequence of major activities along with the approximated corresponding acreage of disturbed area is:

1. Clear and grubbing: 6.08 acres
2. Grading: 6.08 acres
3. Pond/Building Excavation: 1.60 acres
4. Utility installation: 1.41 acres
5. Paving: 1.68 acres

Construction for the project is anticipated to commence in December of 2023. Start dates and duration of each specific activity are depended on contractor means and methods, but overall construction is expected to last 2 years.

D. Storm Water Discharge Locations and Quality Data

A storm sewer system, containing curb inlets, grate inlets and roof drains are proposed throughout the site to capture stormwater run-off and convey it to both the on-site water quality pond and detention pond (Point of Interest #1) and the off-site ponds F1 on the opposite side of Bee Cave Parkway (Point of Interest #3). Existing Pond F1 was designed to accept a portion of the stormwater runoff from the townhome site. Proposed flows, shown on the Proposed Drainage Area Map sheet, shall not exceed existing condition flows shown for points of interest 1 & 2 and the allowable flow shown at point of interest 3.

The proposed detention pond was modeled in PondPack. The outlet structure was designed to release flows from the pond at less than existing conditions for the 2, 10, 25 and 100-year storm events. The outlet structure consists of 3 orifice openings. Flows from the pond outlet structure will overland flow to adjacent City of Austin property.n-site storm water will be conveyed to the proposed water quality pond located at the northeast corner of the property and existing Pond F1, across Bee Cave Parkway. The on-site water quality pond capacity is approximately 18,198 cf. The water quality volume will be sprayed on (2) re-irrigation fields located on the subject site.

E. Information on Soil Types

A soils map showing the project site and surrounding area is included in Appendix A. The only soil types found on the project site are Brackett-Rock outcrop complex (BID) with 1-12 percent slopes, Brackett-Rockoutcrop-Real complex (BoF) with 8-30 percent slopes, and Volente silty clay loam (VoD) with 1-8 percent slopes). A description of the soils is available in appendix A (USDA, 202**3**).

F. Receiving Waters and Wetlands

New sources or new discharges of the constituents of concern to impaired waters are not authorized by the general construction permit (unless otherwise allowable under 30 TAC Chapter 305 and applicable state law). Impaired waters are those that do not meet applicable water quality standards and are listed on the EPA approved CWA 303(d) list. Pollutants of concern are those for which the water body is listed as impaired**.**

If discharges are expected to enter into a receiving water body located on the 303(d) list, constituents of concern are those for which the water body is listed as impaired. Discharges of the constituents of concern to impaired water bodies for which there is a total maximum daily load (TMDL) are not eligible for the general permit unless they are consistent with the approved TMDL. The receiving downstream water is Little Barton Creek. The receiving water does not have a known published TMDL. Permittees must incorporate the conditions and requirements applicable to their discharges, including monitoring frequency and reporting required by TCEQ rules, into this SWP3 in order to be eligible for coverage under the general permit. There are no known wetlands on the site. If any wetlands are identified on the site, the Operator should update this SWP3 accordingly.

G. Threatened and Endangered Species

Discharges that would adversely affect a listed endangered or threatened aquatic or aquatic-dependent species or its critical habitat are not authorized by the general construction permit, unless the requirements of the Endangered Species Act are satisfied. It is unlikely that the project has the potential to adversely affect a listed endangered or threatened species in Travis County, Texas. If information regarding the presence of protected species changes the Operator should consult with the appropriate state or federal agency.

H. Discharges to the Edwards Aquifer Recharge Zone

Discharges cannot be authorized by the general permit where prohibited by 30 Texas Administrative Code (TAC) Chapter 213.

6. New Discharges

   For new discharges located within the Edwards Aquifer Recharge Zone, or within that area upstream from the recharge zone and defined as the Contributing Zone, operators must meet all applicable requirements of, and operate according to, 30 TAC Chapter 213 (Edwards Aquifer Rule) in addition to the provisions and requirements of the general construction permit. A copy of 30 TAC Chapter 213 is located in Appendix Q.

7. Existing Discharges

   For existing discharges, the requirements of the agency-approved Water Pollution Abatement Plan under the Edwards Aquifer Rules are in addition to the requirements of the general construction permit. Best management practices and maintenance schedules for structural storm water controls, for example, may be required as a provision of the rule. All applicable requirements of the Edwards Aquifer Rule for reductions of suspended solids in storm water runoff are in addition to the requirements in the general construction permit. A copy of the 30 TAC Chapter 213 is located in Appendix Q.

For discharges from large construction activities located on the Edwards Aquifer recharge zone or the Edwards Aquifer contributing zone, applicants must also submit a copy of the NOI to the appropriate TCEQ regional office. For discharges from large construction activities by operators not required to submit a NOI, a copy of the construction site notice must be submitted to the appropriate TCEQ regional office.

For discharges from small construction activities located on the Edwards Aquifer recharge zone or the Edwards Aquifer contributing zone, a copy of the construction site notice must be submitted to the appropriate TCEQ regional office.

Counties:	**Contact:**
Comal, Bexar, Medina, Uvalde, and Kinney	TCEQ Water Program Manager San Antonio Regional Office 14250 Judson Road San Antonio, Texas (210) 490-3096
Williamson, Travis, and Hays	TCEQ Water Program Manager Austin Regional Office 2800 South IH 35, Suite 100 Austin, Texas 78704-5712 (512) 339-2929

3.0 BEST MANAGEMENT PRACTICE MEASURES AND CONTROLS

In order to manage and reduce soil erosion, sediment loss, construction-generated waste, and construction-related toxic materials, BMPs must be utilized at the construction site. A variety of structural controls, soil stabilization techniques, storm water management controls, dust controls, waste disposal techniques, and "good housekeeping" practices that will be utilized in this construction project are documented in a checklist in Appendix C.

A detailed set of fact sheets for BMPs excerpted from the *Integrated Storm Water Design Manual for Construction* (North Central Texas Council of Governments, 2010) is located in Appendix D. These fact sheets show many examples of BMPs that may be appropriate for the site. If another BMP is being used, include the BMP information in Appendix D. The Contractor is responsible for selecting, implementing, and maintaining BMPs.

A. General Requirements

1. Erosion and sediment controls must be designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

2. Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

3. Controls must be developed to minimize the offsite transport of litter, construction debris, and construction materials.

B. Erosion Control and Stabilization Practices

1. Erosion control and stabilization practices may include but are not limited to: establishment of temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, slope texturing, temporary velocity dissipation devices, flow diversion mechanisms, and other similar measures.

2. Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

    a) the dates when major grading activities occur,

    b) the dates when the construction activities temporarily or permanently cease on a portion of the site, and

    c) the dates when stabilization measures are initiated.

    A schedule of construction activities is located in Appendix B. Appendix I contains a record of temporary/permanent ceasing of construction activities.

3. Erosion control and stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily ceased. Stabilization measures that provide a protective cover must be initiated as soon as practicable in portions of the site where construction activities have permanently ceased. These measures must be initiated no more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased unless provided for in Part III.F.2.b.iii of the general permit

C. Sediment Control Practices

1. Sites with Drainage Areas of Ten or More Acres

    a) A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time. Sedimentation basin information is located in Appendix N.

    b) At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

2. Sites with Drainage Areas Less than Ten Acres

    a) Sediment traps and sediment basins may be used to control solids in storm water runoff for drainage locations serving less than ten (10) acres. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

    b) Alternatively, a sediment basin may be utilized. Sedimentation basin information is located in Appendix N.

3. A description of any measures that will be installed during the construction process to control pollutants in storm water discharges that may occur after construction operations or have been completed must be included in the SWP3. Permittees are only responsible for the installation and maintenance of storm water management measures prior to final stabilization of the site or prior to submission of an NOT.

4. Other required controls and BMPs are listed below. Best management practice checklists and fact sheets are included in Appendices C and D. A non-storm water discharge inventory is located in Appendix L.

    a) Permittees shall minimize, to the extent practicable, the off-site vehicle tracking of sediments and the generation of dust. Permittees must include a description of controls utilized to accomplish this requirement.

    b) Permittees must include a description of construction and waste materials expected to be stored on-site and a description of controls to minimize pollutants from these materials.

    c) Permittees must include a description of potential pollutant sources from areas other than construction (such as storm water discharges from dedicated asphalt plants and dedicated concrete batch plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

    d) Permittees shall place velocity dissipation devices at discharge locations and along the length of any outfall channel (i.e., runoff conveyance) to provide a non-erosive flow velocity from the structure to a water course, so that the natural physical and biological characteristics and functions are maintained and protected.

    e) Permittees shall design and utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water from the site.

    f) Permittees shall ensure that all other required controls and BMPs comply with all the requirements of Part III.G of the TXR150000 general permit.

D. Erosion and Sediment Control Requirements

Any discharge regulated under the TXR150000 general permit must achieve, at a minimum, the following effluent limitations representing the degree of effluent reduction attainable by application of the best practicable control technology current available (BPT).

a) Erosion and sediment control: The permittee must design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. Such controls must be designed, installed and maintained to meet minimum requirements outlined in section III.G.1. of the general permit, provided in Appendix G.

b) Soil stabilization: Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently creased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Temporary stabilization must be completed within 14 days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage.

c) Dewatering: Discharge from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited, unless managed by appropriate controls. Examples of appropriate controls are outlined below in Section 4.0 of this SWP3 document.

d) Pollution prevention measures: The permittee must design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. Such controls must be designed, installed, implemented, and maintained to meet requirements outlined in section III.G.4. of the general permit, provided in Appendix G.

e) Prohibited discharges: Certain discharges are not prohibited under the TXR150000 general permit. These prohibited discharges are outlined in section III.G.5. of the general permit, provided in Appendix G.

f) Surface outlets: When discharging from basins and impoundments, the permittee must utilize outlet structures that withdraw water from the surface, unless infeasible.

4.0 SITE SEPECIFIC BMPS

A. Temporary Best Management Practices (TBMPs)

The following TBMPs shall be utilized during construction:

1. Temporary Stabilization

   Topsoil stockpiles and disturbed portions of the site where construction activity temporarily ceases will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area. Areas of the site which are to be paved will be temporarily stabilized until pavement can be applied.

2. Dust Control/Sweeping

   All sediment spilled, dropped, washed or tracked onto public right of way must be removed immediately by sweeping. Dust control shall be limited by using irrigation trucks and mulching.

B. Structural TBMPs

The following structural TBMPs shall be utilized during construction:

1. Silt Fence

   A silt fence consists of geotextile fabric supported by poultry netting or other backing stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil. Silt fence provides both filtration and time for sedimentation to reduce sediment and the velocity of the runoff. Silt fence is normally used as perimeter control located downstream of disturbed areas. It is only feasible for non-concentrated, sheet flow conditions. **See Erosion Control Plan for locations of proposed silt fence.**

2. Inlet Control

   Inlet protection consists of a variety of methods of intercepting sediment at low point inlets through the use of stone, filter fabric and other materials. This is normally located at the inlet, providing either detention or filtration to reduce sediment and floatable materials in storm water. **See Erosion Control Plan for locations of proposed inlet protection.**

3. Stabilized Construction Entrance

   A stabilized construction entrance consists of a pad consisting of gravel, crushed stone, recycled concrete or other rock like material on top of geotextile filter cloth to facilitate the wash down and removal of sediment and other debris from construction equipment prior to exiting the construction site. For added effectiveness, a wash rack area can be incorporated into the design to further reduce sediment tracking. For long term projects, cattle guards or other type of permanent rack system can be used in conjunction with a wash rack. This directly addresses the problem of silt and mud deposition in roadways used for construction site access. Stabilized construction entrances are used primarily for sites in which significant truck traffic occurs on a daily basis. It reduces the need to remove sediment from streets. If used properly, it also directs the majority of traffic to a single location, reducing the number and quantity of disturbed areas on the site and providing protection for

other structural controls through traffic control. **See Erosion Control Plan for locations of proposed stabilized construction entrances.**

4. Tree Protection

   Tree protection prevents the disturbance of existing trees and their roots on a construction site. Trees are not the same shape below ground as they are above, so it is difficult to predict the length or location of their roots. One common method used to identify the critical root zone is to define the tree's "drip line" – the area directly below the branches of the tree. Many roots extend beyond the longest branches a distance equal to two or more times the height of the tree. For this reason, it is recommended to protect as much of the area beyond the drip line as feasible. **See Erosion Control Plan for locations of proposed tree protection.**

5.0 RELEASES OF REPORTABLE QUANTITIES

Because construction activities may handle certain hazardous substances over the course of the project, spills of these substances in amounts that equal or exceed Reportable Quantity (RQ) levels are a possibility. Material management practice guidelines are located in Appendix K.

EPA has issued regulations that define what reportable quantity levels are for oil and hazardous substances. These regulations are found at 40 CFR Part 110 Part 117, or 40 CFR Part 302. A list of RQs are included in Appendix M. If there is a RQ release during the construction period, then you must take the following steps:

- Notify TCEQ immediately at (800) 832-8224.
- Notify the National Response Center immediately at (800) 424-8802.
- Within fourteen (14) days, submit a written description of the release to TCEQ providing the date and circumstances of the release and the steps to be taken to prevent another release.
- Modify the pollution prevention plan to include the date of release, the circumstances leading to the release, and steps taken to prevent reoccurrence of the release.

6.0 STATE AND LOCAL PROGRAMS

The TPDES program meets or exceeds the NPDES standards established on a federal level. This SWP3 has been developed in accordance with the requirements of the TPDES requirements. Information for the City of Bee Cave has been included in Appendix O. Additional local requirements may apply and this SWP3 should be updated accordingly.

Storm water from the project construction area discharges into the storm sewer system of the City of Bee Cave (MS4).

Construction projects that discharge storm water to an MS4 are required to:

- submit a copy of the signed NOI to the operator of the MS4 at least seven days prior to the commencement of construction activities,
- post a copy of the signed NOI and construction site notice at the project site at all times,
- submit a copy of any NOCs to the operator of the MS4,
- submit a copy of the NOT to the operator of the MS4, and
- keep and maintain a list of the names and address of MS4s that receive NOI, NOT, and/or NOC forms (Appendix H).

7.0 INSPECTION AND MAINTENANCE

A. Inspection Schedule

1. All disturbed areas, as well as all erosion and sediment control devices, will be inspected according to one of the following schedules:

    a) at least every fourteen (14) calendar days and within 24 hours after a rainfall of 0.5 inch or greater, or

    b) every seven (7) days on the same day of the week each week, regardless of whether or not there has been a rainfall event since the previous inspection.

2. Inspections may occur on either schedule provided that this SWP3 reflects the current schedule and that any changes are in accordance with the following:

    a) the schedule is changed a maximum of one time each month,

    b) the schedule change must be implemented at the beginning of a calendar month, and

    c) the reason for the schedule change must be documented in this SWP3 (an inspection schedule form is located in Appendix E).

B. Inspection Reports

1. Completed inspection reports (Appendix E) will include the following information:
    a) scope of the inspection,
    b) date of the inspection,
    c) name(s) of personnel making the inspection,
    d) reference to qualifications of inspection personnel,
    e) observed major construction activities, and
    f) actions taken as a result of the inspection.

2. All disturbed areas (on and off-site), areas for material storage locations where vehicles enter or exit the site, and all of the erosion and sediment controls that were identified as part of the SWP3 must be inspected. The inspection report must state whether the site was in compliance or identify any incidents of non-compliance. The report will be signed by the qualified inspector in accordance with the TPDES general permit and filed in the SWP3. A sample Inspection Report is included in Appendix E, along with an Inspector Qualification Form. All reports and inspections required by the general construction permit will be completed by a duly authorized representative. A copy of a Delegation of Signatories to Reports letter is included in Appendix J.

3. The operator should correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than seven (7) calendar days after the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3, and wherever possible, those changes implemented before the next storm event or as soon as practicable. A list of maintenance guidelines is included in Appendix E.

4. Inspection reports will be kept in the Operator's file, along with the SWP3, for at least three years from the date that the NOT is submitted to the TCEQ for the construction site.

C. Final Stabilization

Final stabilization of the construction site has been achieved when all soil disturbing activities at the site have been completed, and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures. If a vegetative cover cannot be established, equivalent permanent stabilization measures (such as riprap, gabions, or geotextiles) can be employed. When these conditions have been met, BMPs can be removed from the construction area.

8.0 RECORD RETENTION

The permittee must retain the following records for a minimum period of three (3) years from the date that a NOT is submitted. Records include:

- A copy of the SWP3,
- All data used to complete the NOI, if an NOI is required for coverage under this general permit,
- All reports and actions required by this permit, including a copy of the construction site notice, and
- All records of submittal of forms submitted to the operator of any MS4 receiving the discharge and to the secondary operator of a large construction site, if applicable.

9.0 CONCRETE BATCH PLANTS (IF APPLICABLE)

A. Storm Water Runoff from Concrete Batch Plants

Discharges of storm water runoff from concrete batch plants may be authorized under the general permit provided that the requirements in Part IV of the permit are met (Appendix G). If discharges are not covered under the general permit, then discharges must be authorized under an alternative permit. Authorization for discharge or land disposal of concrete batch plant wastewater must be obtained under an alternative permit.

B. Benchmark Sampling Requirements

Operators of concrete batch plants must sample the storm water runoff from the concrete batch plant according to the requirements of the general permit. A table of benchmark monitoring values is located in Part IV.A. of the general permit. Analytical results that exceed a benchmark value are not a violation of the general construction permit. Results of analyses are indicators that modifications of the SWP3 should be assessed and may be necessary to protect water quality. Benchmark sampling records should be included in Appendix P.

C. Additional BMP and SWP3 Requirements

The following items are additional requirements for concrete batch plants. The Operator is responsible for updating the SWP3 as appropriate. Additional information for concrete batch plant requirements is located in Part IV of the general construction permit. Records and information for the concrete batch plant should be included in Appendix P.

1. A description of potential pollutant sources associated with the concrete batch plant must be kept in the SWP3.

2. The site map in Appendix A must include the following information:

    a) the location of all outfalls for storm water discharges associated with concrete batch plants;

    b) a depiction of the drainage area and the direction of flow to the outfall(s);

    c) structural controls used within the drainage area(s);

    d) the locations of the following areas associated with concrete batch plants that are exposed to precipitation: vehicle and equipment maintenance activity areas; areas used for the treatment, storage, or disposal of wastes; liquid storage tanks; material process and storage areas; and loading and unloading areas; and

    e) the locations of the following: any bag house or other dust control device(s); recycle/sedimentation pond, clarifier or other device used for the treatment of facility wastewater; areas with significant materials; and areas where major spills or leaks have occurred.

3. A list of materials handled at the concrete batch plant that may be exposed to storm water and that have a potential to affect the quality of storm water discharges associated with concrete batch plants must be kept in this SWP3.

4. A list of significant spills and leaks of toxic or hazardous pollutants that occurred in areas exposed to storm water and that drain to storm water outfalls associated with concrete batch plants must be developed, maintained, and updated.

5. A summary of existing storm water discharge sampling data must be maintained if available.

6. Good housekeeping measures must be developed and implemented in the area(s) associated with concrete batch plants.

7. Areas where potential spills that can contribute pollutants to storm water runoff, and the drainage areas from these locations must be identified. Include material handling procedures, storage requirements, and use of equipment information. Procedures for cleaning up spills must be identified and made available to the appropriate personnel.

8. Qualified facility personnel must be identified to inspect designated equipment and areas of the facility specified in this SWP3. Inspection frequency must be specified based upon a consideration of the level of concrete production, but must be a minimum of once per month while the facility is in operation. The inspection must take place while the facility is in operation and include all areas that are exposed to storm water at the site. Records of inspections must be maintained in Appendix P.

9. An employee training program must be developed to educate personnel. At a minimum, training must occur prior to the initiation of operation of the concrete batch plant.

10. A description of spills and similar incidents, plus additional information that is obtained regarding the quality and quantity of storm water discharges must be included with this SWP3.

11. Include a narrative consideration for reducing the volume of runoff from concrete batch plants by diverting runoff or otherwise managing runoff, including use of infiltration, detention ponds, retention ponds, or reusing of runoff.

12. At least once per year, one or more qualified personnel shall conduct a compliance evaluation of the plant. Evaluation requirements are listed in Part IV.B.3 of the general permit.

10.0 CONCRETE TRUCK WASH OUT (IF APPLICABLE)

The wash out of concrete trucks at the construction site is authorized, provided that the requirements in Part V of the general permit are met. Authorization is limited to the land disposal of wash out water from concrete trucks. Any other direct discharge of concrete production waste eater must be authorized under a separate general permit or individual permit.

A. Wash Out Requirements

1. Direct discharge of concrete truck wash out water to surface water in the state, including discharge to storm sewers, is prohibited by the general permit.

2. Concrete truck wash out water should be discharged to areas at the construction site where structural controls have been established to prevent direct discharge to surface waters, or to areas that have minimal slope that allow infiltration and filtering of wash out water to prevent direct discharge to surface waters. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measures to prevent runoff from the site.

3. Wash out of concrete trucks during rainfall events shall be minimized. The direct discharge of concrete wash out water is prohibited at all times, and the operator should have BMPs sufficient to prevent the discharge of concrete truck wash out as the result of rain.

4. The discharge of wash out water should not cause or contribute to groundwater contamination.

5. The Operator is responsible for showing concrete wash out areas on a map (Appendix A).

11.0 REFERENCES

North Central Texas Council of Governments (NCTCOG). 2010. Integrated Storm Water Management Technical Manual. http://iswm.nctcog.org/technical_manual.asp.

Texas Commission on Environmental Quality (TCEQ). 2014. "2014 Texas Water Quality Inventory and 303(d) List." [Online] (accessed on July 3, 2023). Available URL: http://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_basin12.pdf.

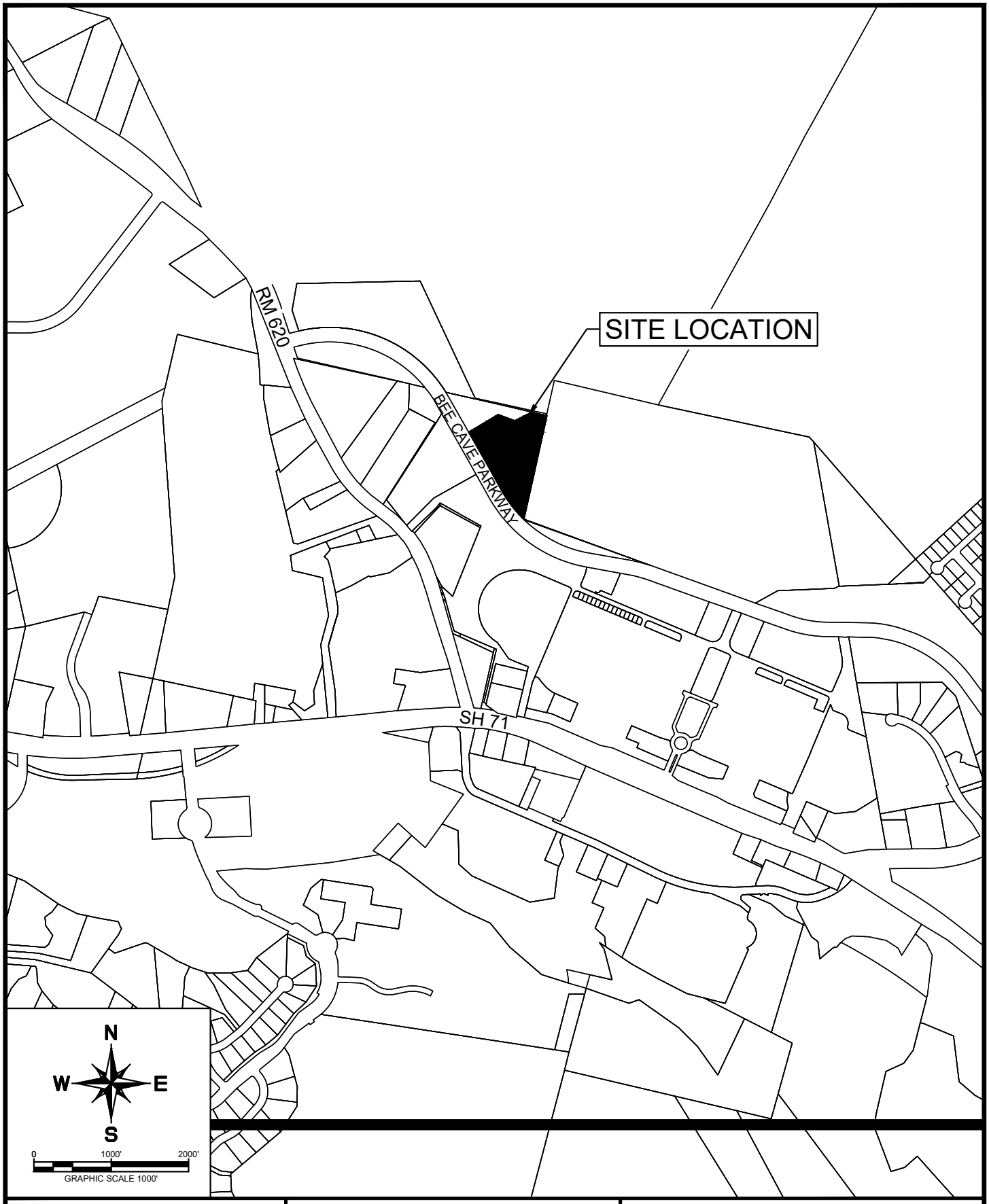
United States Department of Agriculture (USDA). 2018. Soil Survey of Williamson County, Texas. "Web Soil Survey." [Online] (accessed on July 3, 2023). Available URL: http://websoilsurvey.nrcs.usda.gov/app/

APPENDIX A

PROJECT MAPS

Map/Figure Notes:

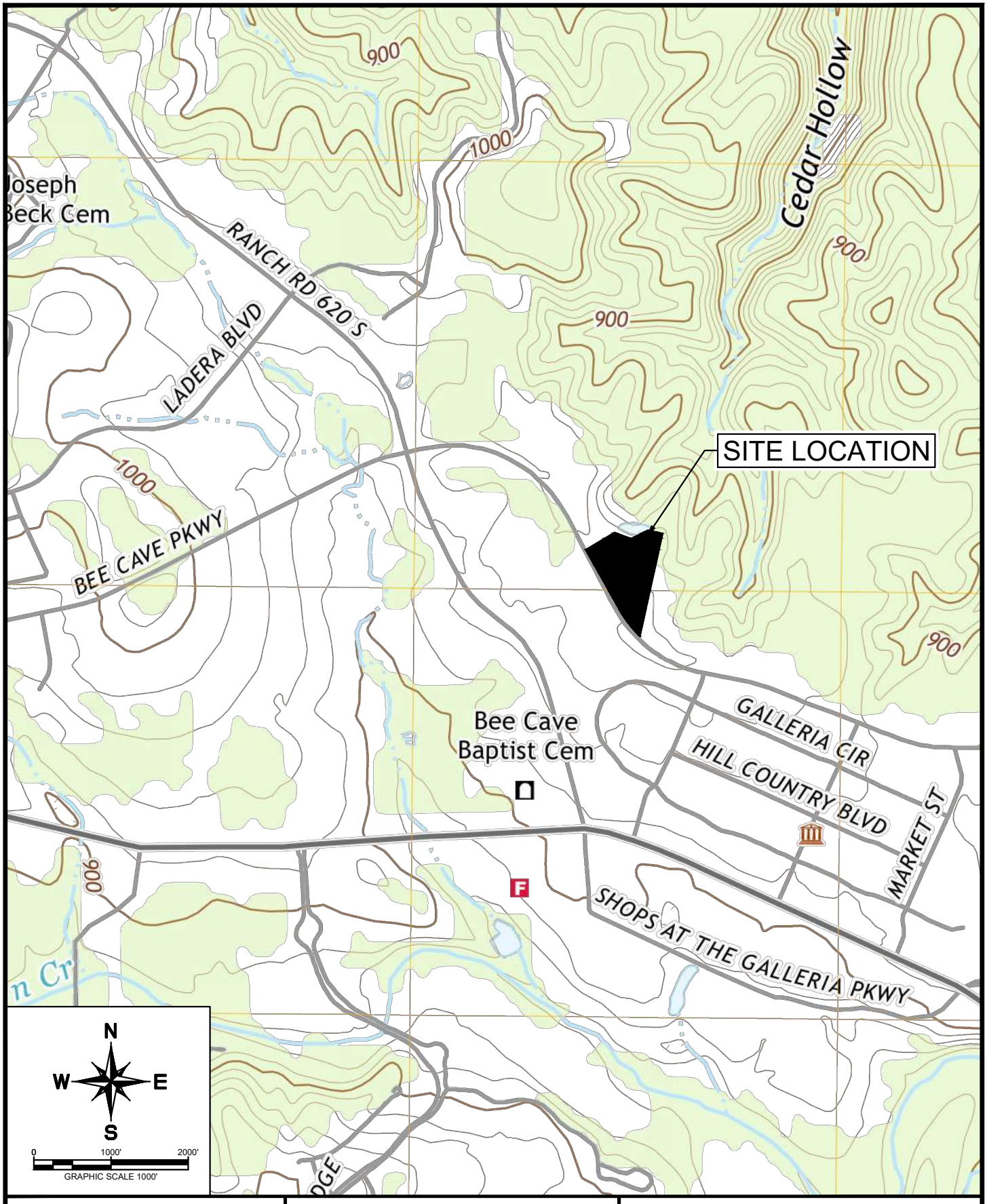
- The Operator is solely responsible for selection, implementation, maintenance, and effectiveness of all BMPs.
- Best management practices shown on the attached figures are suggested controls only. The Operator will record BMPs (whether called out on the original SWP3 or not) directly on the site map.
- If information is not shown or if site conditions change from the attached figures, the Operator is responsible for updating the maps. The following information should be included on maps.
  - drainage patterns and approximate slopes anticipated after major grading activities,
  - areas where soil disturbance will occur,
  - locations of all major structural controls either planned or in place,
  - locations where stabilization practices are expected to be used,
  - locations of off-site material, waste, borrow, fill, or equipment storage areas,
  - surface waters (including wetlands) either adjacent or in close proximity,
  - locations where storm water discharges from the site directly to a surface water body or a MS4, and
  - vehicle wash areas
  - designated points on the site where vehicles will exit onto paved roads
- Where the amount of information required to be included on the map would result in a single map being difficult to interpret, the operator shall develop a series of maps that collectively include the required information.



PEARL TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

SITE LOCATION MAP

Kimley»Horn
10814 Jollyville Road
Campus IV, Suite 200
Austin, Texas 78759
(512) 418-1771



PEARL TOWNHOMES
CITY OF BEE CAVE
TRAVIS COUNTY, TEXAS

USGS TOPO MAP
BEE CAVE QUADRANGLE

Kimley»Horn
10814 Jollyville Road
Campus IV, Suite 200
Austin, Texas 78759
(512) 418-1771

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Travis County, Texas

June 29, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

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

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BlD	Brackett-Rock outcrop complex, 1 to 12 percent slopes	4.1	67.6%
BoF	Brackett-Rock outcrop-Real complex, 8 to 30 percent slopes	1.9	31.4%
VoD	Volente silty clay loam, 1 to 8 percent slopes	0.1	1.0%
Totals for Area of Interest		**6.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Travis County, Texas

BID—Brackett-Rock outcrop complex, 1 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2yltz
Elevation: 820 to 1,330 feet
Mean annual precipitation: 33 to 37 inches
Mean annual air temperature: 65 to 69 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Brackett and similar soils: 68 percent
Rock outcrop: 20 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brackett

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 6 inches: gravelly clay loam
Bw - 6 to 18 inches: clay loam
Cr - 18 to 60 inches: bedrock

Properties and qualities

Slope: 1 to 12 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 90 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R081CY355TX - Adobe 29-35 PZ
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Limestone

Typical profile

R - 0 to 48 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 0 to 2 inches to lithic bedrock
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Eckrant

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R081CY363TX - Steep Rocky 29-35 PZ
Hydric soil rating: No

San saba

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R081CY356TX - Blackland 29-35 PZ
Hydric soil rating: No

Volente

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

BoF—Brackett-Rock outcrop-Real complex, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2t2m3
Elevation: 470 to 1,900 feet
Mean annual precipitation: 32 to 37 inches
Mean annual air temperature: 66 to 68 degrees F
Frost-free period: 230 to 265 days
Farmland classification: Not prime farmland

Map Unit Composition

Brackett and similar soils: 38 percent
Rock outcrop: 25 percent
Real and similar soils: 22 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brackett

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, footslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 6 inches: gravelly clay loam
Bk - 6 to 14 inches: gravelly clay loam
Cr - 14 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 90 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R081CY362TX - Steep Adobe 29-35 PZ
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Limestone

Typical profile

R - 0 to 80 inches: bedrock

Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: 0 to 2 inches to lithic bedrock
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Real

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 4 inches: gravelly loam
Ak - 4 to 14 inches: extremely gravelly loam
Cr - 14 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 8 to 19 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R081CY362TX - Steep Adobe 29-35 PZ
Hydric soil rating: No

Minor Components

Eckrant

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R081BY350TX - Steep Rocky 23-31 PZ
Hydric soil rating: No

Volente

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

VoD—Volente silty clay loam, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ynhg
Elevation: 400 to 1,400 feet
Mean annual precipitation: 32 to 35 inches
Mean annual air temperature: 65 to 69 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Volente and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volente

Setting

Landform: Ridges
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous clayey colluvium and/or alluvium derived from limestone

Typical profile

A - 0 to 22 inches: silty clay loam
BA - 22 to 36 inches: silty clay
Bw - 36 to 46 inches: silty clay
Ck - 46 to 59 inches: clay loam

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Minor Components

Lewisville

Percent of map unit: 15 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Brackett

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear

Across-slope shape: Convex
Ecological site: R081CY355TX - Adobe 29-35 PZ
Hydric soil rating: No

Orif

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R081CY561TX - Loamy Bottomland 29-35 PZ
Hydric soil rating: No

Eckrant

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R081CY360TX - Low Stony Hill 29-35 PZ
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

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1. APPLEWOOD CT
2. BRADENTON CT
3. CHARDON CT
4. CHEVERLY CT
5. CLIFFBROOK CT
6. COG HILL CT
7. DASHWOOD CT
8. DESERT FOREST CT
9. DESERT MOUNTAIN CT
10. FALLING OAKS CV
11. INDIGO RUN CV
12. JASPERWOOD CT
13. LINKS CT
14. MEADOWLAND DR
15. OUTCROP VIEW LN
16. PINE BARRENS CT
17. REFLECTION BAY CT
18. RIVULET LN
19. STILLMEADOW CT
20. STILLMEADOW DR
21. TORRINGTON CT
22. TORRINGTON LN
23. TREEHAVEN CT
24. TREEHAVEN LN
25. VALHALLA CT
26. VERSILIA CIR
27. YAUPON CIR
28. YAUPON CREEK DR

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- E 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from digital data obtained from City of Austin dated 2016, NFHL dated 2014, and CAPCOG dated 2014 and 2016.

SCALE

Map Projection:
State Plane Lambert Conformal Conic, Texas Central Zone FIPS 4203; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

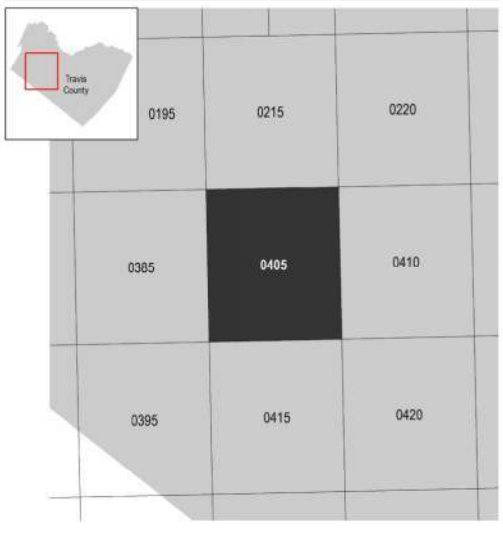
N

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 feet

0 250 500 1,000 meters

PANEL LOCATOR



FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

TRAVIS COUNTY, TEXAS and Incorporated Areas

PANEL 405 OF 730

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUSTIN, CITY OF	480624	0405	J
LAKEWAY, CITY OF	481303	0405	J
TRAVIS COUNTY	481026	0405	J
BEE CAVE, CITY OF	481610	0405	J
THE HILLS, VILLAGE OF	480063	0405	J

VERSION NUMBER
2.3.3.3

MAP NUMBER
48453C0405J

MAP REVISED
JANUARY 22, 2020

APPENDIX B

CONSTRUCTION ACTIVITY SCHEDULE

Construction Activity Schedule

Activities	Start Date	Finish Date
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

*Construction activity sequences for linear projects may be conducted on a rolling basis. As a result, construction activities may be at different stages at different locations in the project area. The Contractor is required to complete and update the schedule and adjust as necessary.

APPENDIX C

BEST MANAGEMENT PRACTICE MEASURES AND CONTROLS

Best Management Practice Measures and Controls

Best Management Practice (BMP)	In Use	Maintained Post Construction?
Interceptor Swale		
Diversion Dike		
Pipe Slope Drain		
Vegetation		
Mulching		
Erosion Control Blankets		
Channel Protection		
Dust Control		
Silt Fence		
Organic Filter Berm		
Triangular Sediment Filter Dike		
Inlet Protection		
Stone Outlet Sediment Trap		
Sediment Basin		
Check Dam		
Temporary Sediment Tank		
Stabilized Construction Entrance		
Wheel Wash		
Debris and Trash Management		
Chemical Management		
Concrete Waste Management		
Concrete Sawcutting Waste Management		
Sandblasting Waste Management		
Lime Stabilization Management		
Sanitary Facilities		
Other*		
Other*		

***If another BMP is being used, include the BMP information in Appendix D**

APPENDIX D

BEST MANAGEMENT PRACTICE CHECKLIST AND FACT SHEETS

EROSION AND SEDIMENT CONTROL CHECKLIST

Instructions: Check each item and fill in the blanks below to evaluate compliance for each drainage area and location.

Stabilization Practices:

☐ Stabilization will be initiated on all disturbed areas where construction activity will not occur for a period of more than 21 calendar days by the 14th day after construction activity has permanently or temporarily ceased. Stabilization measures to be used include:

- ☐ Temporary Seeding
- ☐ Permanent Seeding
- ☐ Mulching
- ☐ Sod Stabilization
- ☐ Geotextiles
- ☐ Other _____

Structural Practices

☐ Flows from upstream areas will be diverted from exposed soils to the degree attainable. Measures to be used include:

- ☐ Earth Dike
- ☐ Drainage Swale
- ☐ Interceptor Dike and Swale
- ☐ Pipe Slope Drain
- ☐ Other _____

For Drainage locations serving less than 10 disturbed acres, Sediment *Basin will be installed and will include:*

- ☐ Sediment Trap
- ☐ Silt Fence or equivalent along all sideslopes & downstream boundaries

For Drainage locations serving 10 or more disturbed acres, a Sediment Basin will be installed (See Appendix N), if a Sediment Basin is not attainable on-site, Sediment Controls will be installed & will include:

- ☐ Sediment Trap
- ☐ Silt Fence or equivalent along all sideslopes & downstream boundaries
- ☐ Sediment Basin

FINAL STABILIZATION / TERMINATION CHECKLIST

1. All soil disturbing activities are complete.

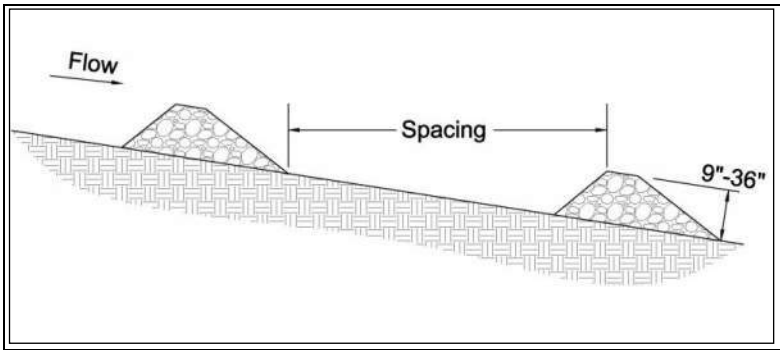
2. Temporary erosion and sediment control measures have been, or will be, removed at an appropriate time.

3. All areas of the construction site not otherwise covered by a permanent pavement or structure have been stabilized with a uniform perennial vegetative cover with a density of 70% or equivalent measures have been employed

2.0 Erosion Controls

2.1 Check Dam

Erosion Control



Description: Check dams are small barriers consisting of loose rock, rock bags, or organic filter tubes placed across a drainage swale or ditch. They reduce the velocity of small concentrated flows, provide a limited barrier for sediment and reduce the potential for erosion of the swale or ditch.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Heights between 9 inches and 36 inches
- Top of the downstream dam should be at the same elevation as the toe of the upstream dam

ADVANTAGES / BENEFITS:

- Reduced velocities in long drainage swales or ditches
- May be used with other channel protection measures
- Provides some sediment removal

DISADVANTAGES / LIMITATIONS:

- Cannot be used in live stream channels
- Minor ponding upstream of the check dams
- Extensive maintenance or replacement of the dams required after heavy flows or high velocity flows
- Mowing hazard from loose rocks if all rock is not removed at end of construction

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Remove silt when it reaches approximately ⅓ the height of the dam or 12 inches, whichever is less

TARGETED POLLUTANTS

◒ Sediment
○ Nutrients & Toxic Materials
○ Oil & Grease
◒ Floatable Materials
○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=0.30-0.50
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

◒ Capital Costs
● Maintenance
○ Training
◒ Suitability for Slopes > 5%

Other Considerations:

- *None*

2.1.1 Primary Use

Check dams are used in long drainage swales or ditches to reduce erosive velocities. They are typically used in conjunction with other channel protection techniques such as vegetation lining and turf reinforcement mats. Check dams provide limited treatment to sediment-laden flows. They are more useful in reducing flow velocities to acceptable levels for stabilization methods. Check dams may be used in combination with stone outlet sediment traps, where the check dams prevent erosion of the swale while the sediment trap captures sediment at the downstream end of the swale.

2.1.2 Applications

Check dams are typically used in swales and drainage ditches along linear projects such as roadways. They can also be used in short swales down a steep slope, such as swales down a highway embankment, to reduce velocities. Check dams shall not be used in live stream channels.

Check dams should be installed before the contributing drainage area is disturbed, so as to mitigate the effects on the swale from the increase in runoff. If the swale itself is graded as part of the construction activities, check dams are installed immediately upon completion of grading to control velocities in the swale until stabilization is completed.

2.1.3 Design Criteria

General Criteria

- Typically, the dam height should be between 9 inches and 36 inches, depending on the material of which they are made. The height of the check dam shall always be less than one-third the depth of the channel.
- Dams should be spaced such that the top of the downstream dam is at the same elevation as the toe of the upstream dam. On channel grades flatter than 0.4 percent, check dams should be placed at a distance that allows small pools to form between each check dam.
- The top of the side of the check dam shall be a minimum of 12 inches higher than the middle of the dam. In addition, the side of the dams shall be embedded a minimum of 18 inches into the side of the drainage ditch, swale or channel to minimize the potential for flows to erode around the side of the dam.
- Larger flows (greater than 2-year, 24-hour design storm) must pass the check dam without causing excessive upstream flooding.
- Check dams should be used in conjunction with other sediment reduction techniques prior to releasing flow offsite.
- Use geotextile filter fabric under check dams of 12 inches in height or greater. The fabric shall meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 250-lbs.
    - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 135-lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 420-psi.
    - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 20 (max).
- Loose, unconfined soil, wood chips, compost, and other material that can float or be transported by runoff shall not be used to construct check dams.

Rock Check Dams

- Stone shall be well graded with stone size ranging from 3 to 6 inches in diameter for a check dam height of 24 inches or less. The stone size range for check dams greater than 24 inches is 4 to 8 inches in diameter.
- Rock check dams shall have a minimum top width of 2 feet with side slopes of 2:1 or flatter.

Rock Bag Check Dams

- Rock bag check dams should have a minimum top width of 16 inches.
- Bag length shall be 24 inches to 30 inches, width shall be 16 inches to 18 inches and thickness shall be 6 inches to 8 inches and having a minimum weight of 40 pounds.
- Minimum rock bag dam height of 12 inches would consist of one row of bags stacked on top of two rows of bag. The dam shall always be one more row wide than it is high, stacked pyramid fashion.
- Bags should be filled with pea gravel, filter stone, or aggregate that is clean and free of deleterious material.
- Sand bags shall not be used for check dams, due to their propensity to break and release sand that is transported by the concentrated flow in the drainage swale or ditch.
- Bag material shall be polypropylene, polyethylene, polyamide or cotton burlap woven fabric, minimum unit weight 4-ounces-per-square-yard, Mullen burst strength exceeding 300-psi as determined by ASTM D3786, Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, and ultraviolet stability exceeding 70 percent.
- PVC pipes may be installed through the dam to allow for controlled flow through the dam. Pipe should be schedule 40 or heavier polyvinyl chloride (PVC) having a nominal internal diameter of 2 inches.

Sack Gabion Check Dams

- Sack gabion check dams may be used in channels with a contributing drainage area of 5 acres or less.
- Sack gabions shall be wrapped in galvanized steel, woven wire mesh. The wire shall be 20 gauge with 1 inch diameter, hexagonal openings.
- Wire mesh shall be one piece, wrapped around the rock, and secured to itself on the downstream side using wire ties or hog rings.
- Sack gabions shall be staked with ¾ inch rebar at a maximum spacing of three feet. Each wire sack shall have a minimum of two stakes.
- Stone shall be well graded with a minimum size range from 3 to 6 inches in diameter.

Organic Filter Tube Check Dams

- Organic filter tubes may be used as check dams in channels with a contributing drainage area of 5 acres or less.
- Organic filter tubes shall be a minimum of 12 inches in diameter.
- Filter material used within tubes to construct check dams shall be limited to coir, straw, aspen fiber and other organic material with high cellulose content. The material should be slow to decay or leach nutrients in standing water.
- Staking of filter tubes shall be at a maximum of 4 foot spacing and shall alternate through the tube and on the downstream face of the tube.
- Unless superseded by requirements in this section, filter tubes and filter material shall comply with the

criteria in *Section 3.6 Organic Filter Tubes*.

2.1.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.9 Check Dam (Rock). Specifications are also available in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004), Item 506.2.A and Item 506.4.C.1.

2.1.5 Inspection and Maintenance Requirements

Check dams should be inspected regularly (at least as often as required by the TPDES Construction General Permit). Silt must be removed when it reaches approximately 1/3 the height of the dam or 12 inches, whichever is less. Inspectors should monitor the edges of the dam where it meets the sides of the drainage ditch, swale or channel for evidence of erosion due to bypass or high flows. Eroded areas shall be repaired. If erosion continues to be a problem, modifications to the check dam or additional controls are needed.

Care must be used when taking out rock check dams in order to remove as much rock as possible. Loose rock can create an extreme hazard during mowing operations once the area has been stabilized.

2.1.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be adapted for the site by the designer. Dimensions and notes appropriate for the application must also be added by the designer.

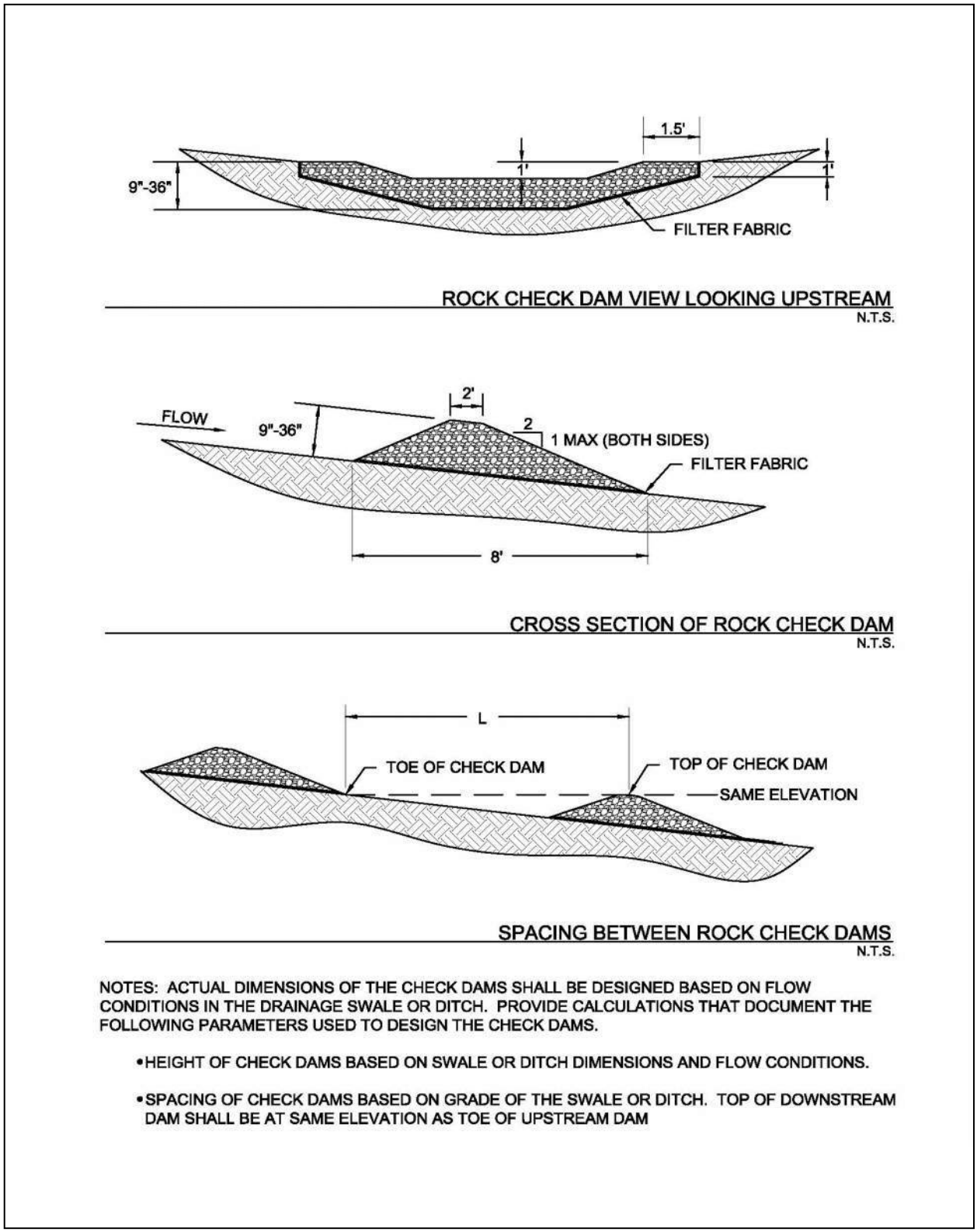
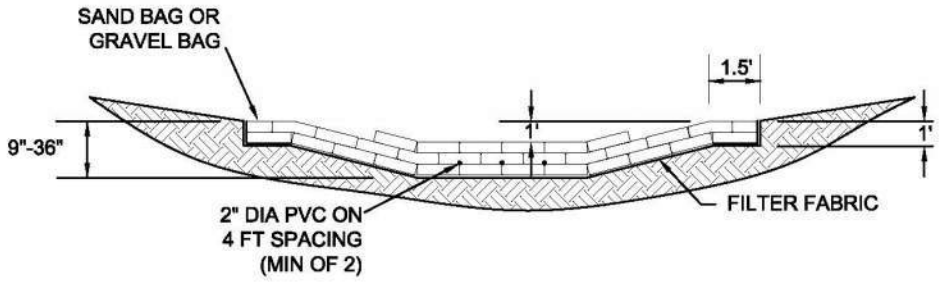
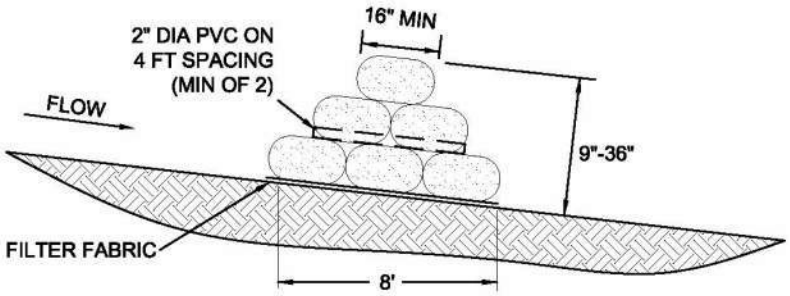


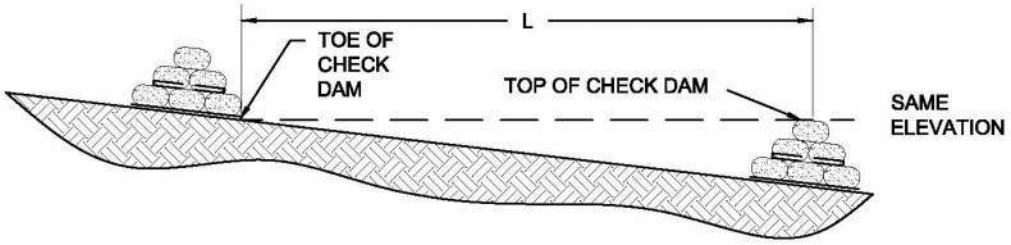
Figure 2.1 Schematics of Rock Check Dams
(Source: Modified from Stormwater Management Manual for Western Washington)



ROCK BAG CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.



CROSS SECTION OF ROCK BAG CHECK DAM
N.T.S.

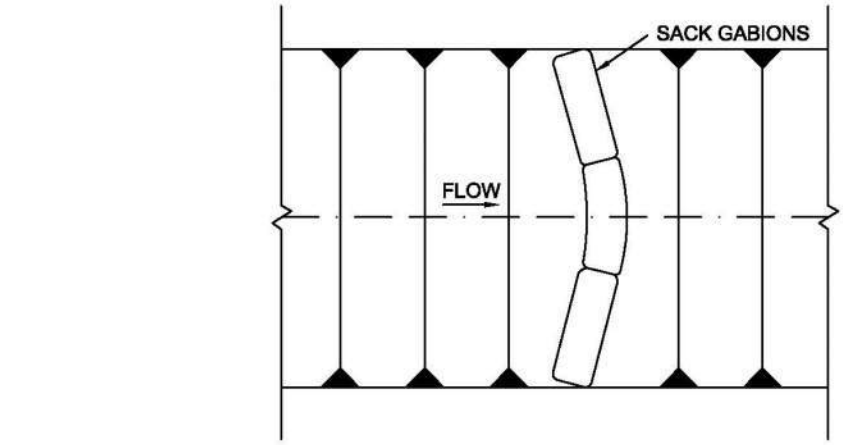


SPACING BETWEEN ROCK BAG CHECK DAMS
N.T.S.

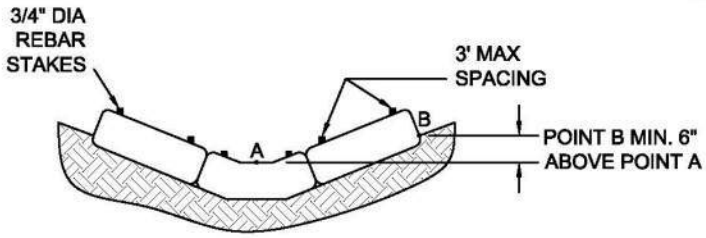
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM.

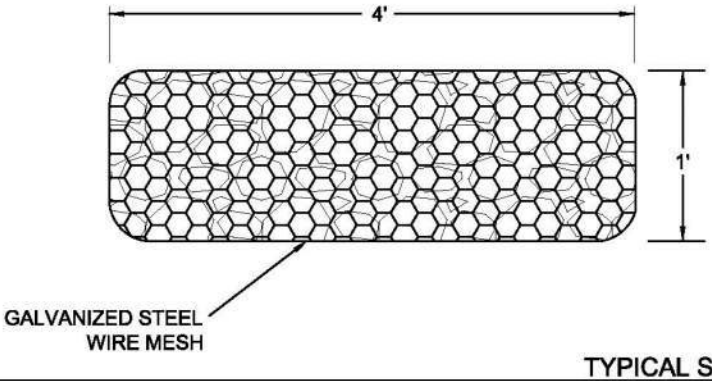
Figure 2.2 Schematics of Rock Bag Check Dams



SACK GABION CHECK DAM PLAN VIEW
N.T.S.



SACK GABION CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.

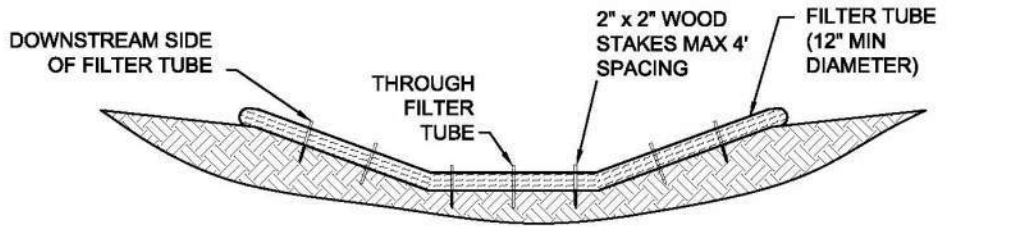


TYPICAL SACK GABION
N.T.S.

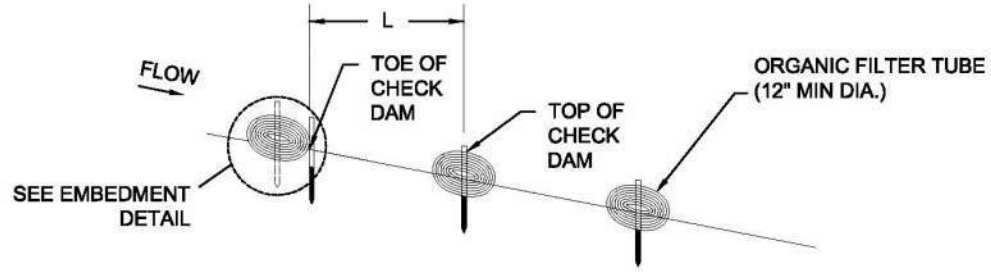
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM.

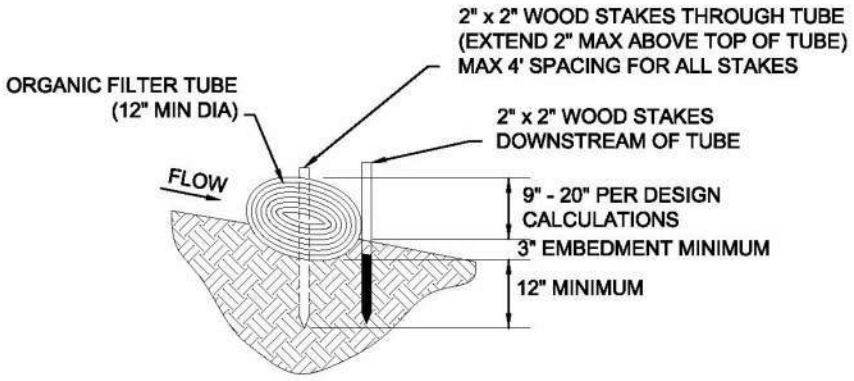
Figure 2.3 Schematics of Sack Gabion Check Dams
(Source: Modified from Texas Department of Transportation Detail Sheet EC (2)-93)



ORGANIC FILTER TUBE CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.



ORGANIC FILTER TUBE CHECK DAM PROFILE
N.T.S.



EMBEDMENT DETAIL FOR ORGANIC FILTER TUBE CHECK DAM
N.T.S.

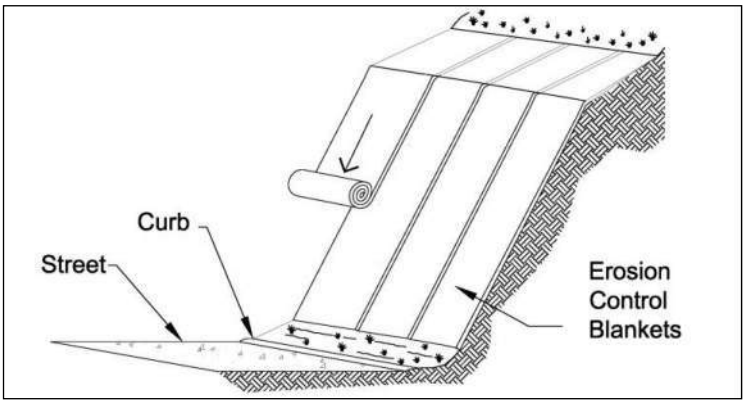
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM.

Figure 2.4 Schematics of Organic Filter Tube Check Dams
(Source: Modified from City of Plano BMP S-7)

2.3 Erosion Control Blankets

Erosion Control



Description: An erosion control blanket (ECB) is a temporary, degradable, rolled erosion control product that reduces soil erosion and assists in the establishment and growth of vegetation. ECBs, also known as soil retention blankets, are manufactured by many companies and are composed primarily of processed, natural, organic materials that are woven, glued, or structurally bound together with natural fiber netting or mesh on one or both sides.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- ECB selected based on slope, flow rate and length of service
- Specify preparation of soil surface to ensure uniform contact with blanket
- Installation and anchoring according to manufacturer's recommendations

ADVANTAGES / BENEFITS:

- Holds seed and soil in place until vegetation is established
- Effective for slopes, embankments and small channels

DISADVANTAGES / LIMITATIONS:

- Not for use on slopes greater than 2:1 or in channels with shear stresses greater than 2.0 pounds per square foot

MAINTENANCE REQUIREMENTS:

- Replace or re-anchor loosened blankets
- Remove sediment deposited on blankets

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Waste

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.90 (*Ground cover*)
Fe=0.65
(*Perimeter w/o vegetation*)

IMPLEMENTATION CONSIDERATIONS

- ● Capital Costs
- ◒ Maintenance
- ◒ Training
- ● Suitability for Slopes > 5%

Other Considerations:

- *Life expectancy, partial degradation, and mowing/ maintenance issues for ECBs left in place as part of final stabilization*

2.3.1 Primary Use

Erosion control blankets (ECBs) are used to hold seed and soil in place until vegetation is established on disturbed areas. They can be used on many types of disturbed areas, but are particularly effective for slopes and embankments and in small drainage swales.

ECBs seeded for vegetation may be used as a perimeter control. When used in combination with other sediment barriers, such as silt fence or organic filter tubes, blankets may be used as a perimeter control with or without vegetation.

2.3.2 Applications

ECBs may be used on many types of disturbed areas but are most applicable on gradual to steep (2:1) cut/fill slopes and in swales and channels with low to moderate flow velocities. In these applications they may provide temporary stabilization by themselves or may be used with seeding to provide final stabilization. ECBs are also used to establish vegetation in channels where velocities are less than 6.0 feet per second.

When seeded for establishment of vegetation, ECBs can be an effective perimeter along the down slope side of linear construction projects (roads and utilities). ECBs with vegetation are also used as perimeter controls for new development, particularly at the front on residential lots in new subdivisions. ECBs are an effective aid in establishing vegetated filter strips.

2.3.3 Design Criteria

- The designer shall specify the manufacturer, type of erosion control blanket to be used, and dimensioned limits of installation based on the site topography and drainage.
- The type and class of erosion control blanket must be specified in accordance with the manufacturer's guidance for the slope of the area to be protected, the flow rate (sheet flow on cut/fill slopes) or velocity (concentrated flow in swales) of stormwater runoff in contact in with the ECB, and the anticipated length of service.
- ECBs should meet the applicable "Minimum Performance Standards for TxDOT" as published by TxDOT in its "Erosion Control Report" and/or be listed on the most current annual "Approved Products List for TxDOT" applicable to TxDOT Item 169 Soil Retention Blanket and its Special Provisions.
- ECBs shall be installed vertically down slope (across contours) on cut/fill slopes and embankments and along the contours (parallel to flow) in swales and drainage ditches.
- ECBs designed to remain onsite as part of final stabilization shall have netting or mesh only on one side (the exposed side) of the ECB. The ECB shall be installed with the side that does not have netting or mesh in contact with the soil surface. All materials in the ECB, including anchors, should be 100 percent biodegradable within three years.
- On cut/fill slopes and drainage ditches or swales designed to receive erosion control blankets for temporary or final stabilization, installation of the ECBs shall be initiated immediately after completing grading of the slope or drainage way, and in no case later than 14 days after completion of grading these features. Do not delay installation of ECBs on these highly-erodible areas until completion of construction activities and stabilization of the remainder of the site.
- Unless the ECB is seeded to establish vegetation, perimeter control applications shall be limited to thirty foot wide drainage areas (i.e. linear construction projects) for an 8 foot width of ECB. When seeded for vegetation, use of ECBs for perimeter control shall follow the criteria in the *Section 3.15 Vegetated Filter Strips and Buffers*.
- Prior to the installation of the ECB, all rocks, dirt clods, stumps, roots, trash and any other obstructions that would prevent the ECB from lying in direct contact with the soil shall be removed.

- Anchor trenching shall be located along the top of slope of the installation area, except for small areas with less than 2 percent slope.
- Installation and anchoring shall conform to the recommendations shown within the manufacturer's published literature for the erosion control blanket. Anchors (staples) shall be a minimum of 6 inches in length and 1 inch wide. They shall be made of 11-gauge wire, or equivalent, unless the ECB is intended to remain in place with final stabilization and biodegrade.
- Particular attention must be paid to joints and overlapping material. Overlap along the sides and at the ends of ECBs should be per the manufacturer's recommendations for site conditions and the type of ECB being installed. At a minimum, the end of each roll of ECB shall overlap the next roll by 3 feet and the sides of rolls shall overlap 4 inches.
- After installation, the blankets should be checked for uniform contact with the soil, security of the lap joints, and flushness of the staples with the ground.
- When ECBs are installed to assist with establishing vegetation, seeding shall be completed before installation of the ECB. Criteria for seeding are provided in *Section 2.9 Vegetation*.
- Turf Reinforcement Mats should be used instead of ECBs for permanent erosion control and for stabilizing slopes greater than 2:1.
- ECBs are limited to use in swales and channels that have shear stresses of less than 2.0 pounds per square foot. Turf reinforcement mats shall be used in open channels with higher shear stresses.

2.3.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.15 Erosion Control Blankets and in Item 169 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT, 2004).

2.3.5 Inspection and Maintenance Requirements

Erosion control blankets should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for bare spots caused by weather or other events. Missing or loosened blankets must be replaced or re-anchored.

Check for excess sediment deposited from runoff. Remove sediment and/or replace blanket as necessary. In addition, determine the source of excess sediment and implement appropriate measures to control the erosion. Also check for rill erosion developing under the blankets. If found, repair the eroded area. Determine the source of water causing the erosion and add controls to prevent its reoccurrence.

2.3.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. The designer is responsible for working with ECB manufacturers to ensure the proper ECB is specified based on the site topography and drainage. Installation measures should be dictated by the ECB manufacturer and are dependent on the type of ECB installed. Manufacturer's recommendations for overlap, anchoring, and stapling shall always be followed. Criteria shown here are applicable only when they are more stringent than those provided by the manufacturer.

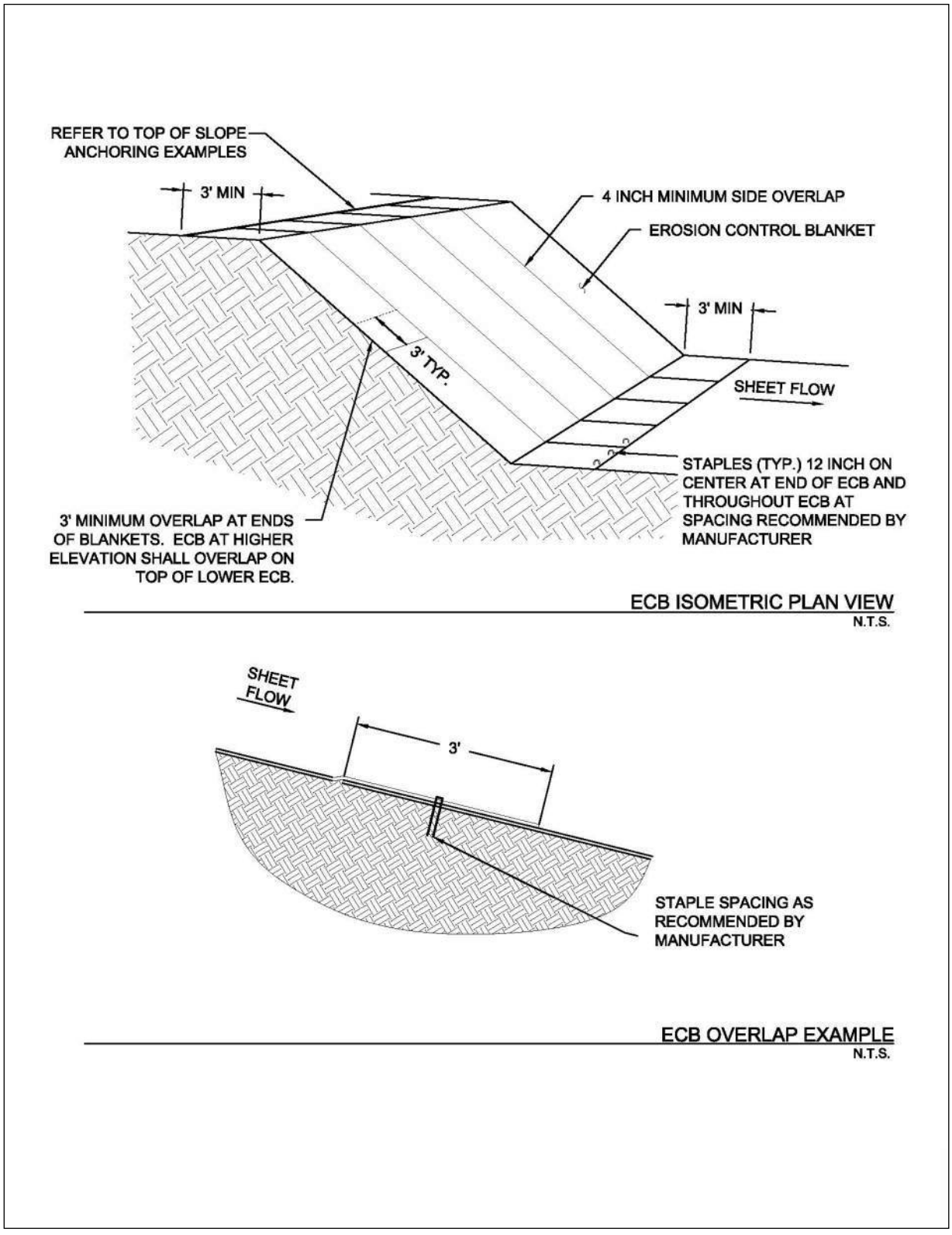
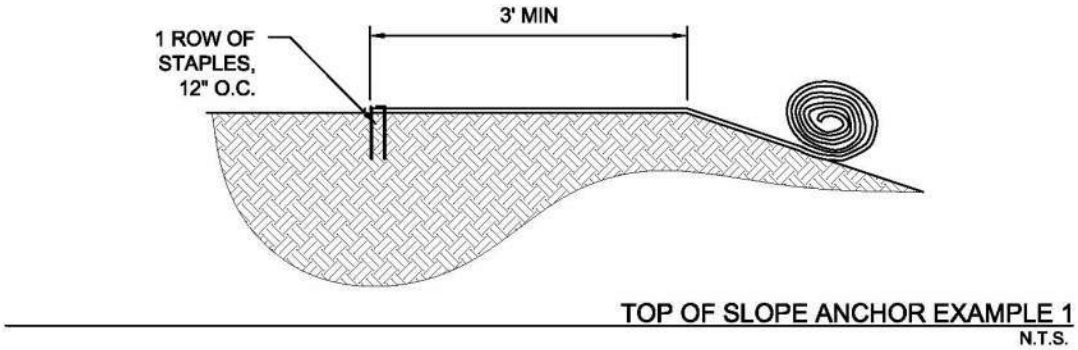
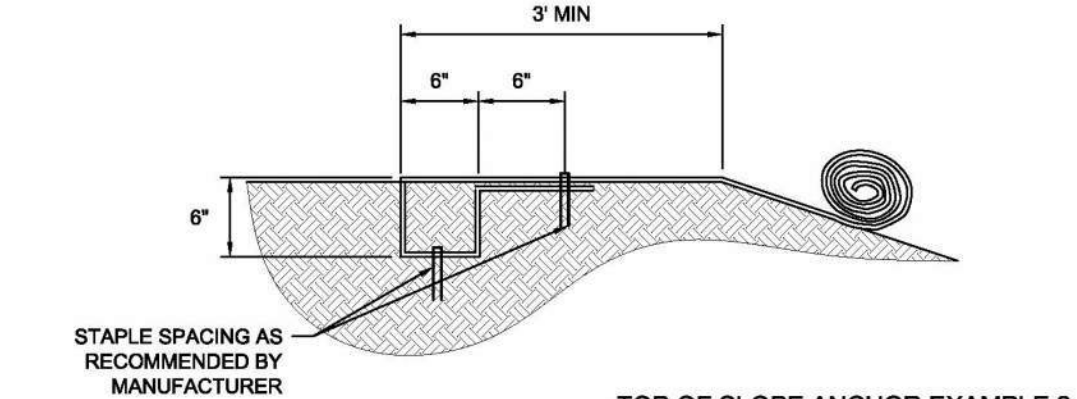


Figure 2.7 Schematics of Erosion Control Blankets



TOP OF SLOPE ANCHOR EXAMPLE 1
N.T.S.



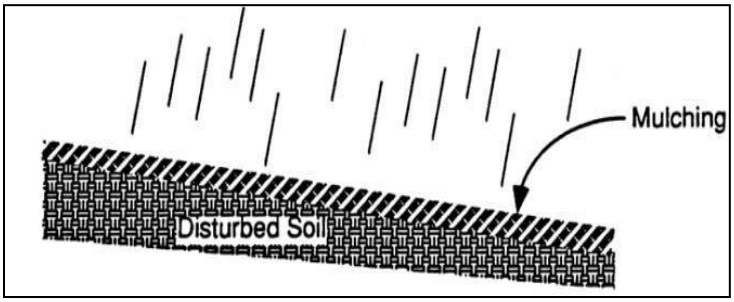
TOP OF SLOPE ANCHOR EXAMPLE 2
N.T.S.

NOTE: ANCHORING METHODS PROVIDED ARE EXAMPLES OF THE TYPE OF ANCHORING THE ECB MANUFACTURER MAY RECOMMEND. THERE ARE MORE THAN A DOZEN DIFFERENT TOP OF SLOPE ANCHORING METHODS BASED ON TYPE OF ECB, TYPE OF SOIL, SPECIFIED PERFORMANCE PERIOD, SLOPE STEEPNESS, ETC. ALWAYS FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR ANCHORING BASED ON THE SITE-SPECIFIC APPLICATION.

Figure 2.8 Anchor Examples for Erosion Control Blankets
(Sources: American Excelsior Company and Western Excelsior Corporation)

2.5 Mulching

Erosion Control



Description: Mulching is the application of a uniform layer of organic material over barren areas to reduce the effects of erosion from rainfall. Types of mulch include compost mixtures, straw, wood chips, bark, or other fibers. Commercialized surface treatments that combine straw or other mulch material with organic or inorganic soil binding systems are also available and are particularly useful on steep slopes.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Specify even, uniform application
- Thickness of 1 to 2 inches, depending on application
- Application criteria specific to type of mulch
- Anchor mulch on slopes of 3:1 to 1.5:1
- Do not use mulch on slopes steeper than 1.5:1

ADVANTAGES / BENEFITS:

- Provides immediate stabilization of bare areas
- May be used with seeding for final stabilization
- Decreases soil moisture loss
- Decreases velocity of sheet flow
- Reduces volume of sediment-laden flow

DISADVANTAGES / LIMITATIONS:

- Subject to removal by wind or water
- Results in lower soil temperature, which may yield longer seed germination periods
- Should not be applied within the ordinary high-water mark of natural surface waters or within the design flow depth of constructed ditches and channels

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Replace regularly in high traffic areas to maintain uniform thickness
- Maintain a stockpile of excess mulch at the site to repair problem spots

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.75-0.90

(Depends on coverage)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Availability of materials for mulch*
- *Application depends on slope*

2.5.1 Primary Use

Mulch may be used by itself to temporarily stabilize bare areas or with seed to establish final stabilization of bare areas. Mulch protects the soil from erosion and moisture loss by lessening the effects of wind, water, and sunlight. It also decreases the velocity of sheet flow, thereby reducing the volume of sediment-laden water flow leaving the mulched area.

2.5.2 Applications

Mulch may be applied on most areas disturbed by construction that require surface protection including:

- Freshly seeded or planted areas;
- Disturbed areas at risk of erosion due to the time period being unsuitable for growing vegetation;
- Disturbed areas that are not conducive to vegetation for temporary stabilization; or
- Steep slopes of 3:1 to 1.5:1, provided the mulch is anchored to the soil by use of soil stabilizers, netting, or crimping.

Mulch is frequently applied with seeding for vegetation. In these cases, refer to *Section 2.9 Vegetation* for related criteria that may affect mulching.

Mulch may also be applied with commercially available polymers for soil surface treatment to bind the mulch with the soil. This method is particularly useful on steep slopes. Related criteria are available in *Section 2.7 Soil Surface Treatments*.

2.5.3 Design Criteria

General

- Specific design information is required for the use of this control. The designer shall specify the type of mulch to be used, the application rate and/or thickness, and the type of anchoring (if applicable) based on site conditions.
- Choice of mulch depends largely on slope and soil type, in addition to availability of materials.
- Netting, adhesive polymers, or other methods of anchoring the mulch are required on slopes of 3:1 to 1.5:1. Do not use mulch on slopes steeper than 1.5:1.
- Mulch should be applied in an even and uniform manner where concentrated water flow is negligible. Do not apply mulch within the ordinary high-water mark of natural surface waters or within the design flow depth of constructed ditches and channels.
- Hay should not be used as mulch.
- Organic mulches may be distributed by hand or by mechanical means, provided a uniform thickness is achieved.
- When mulch is used with vegetation for final stabilization, fertilization and soil treatment for vegetation establishment should be done prior to placement of mulch, with the exception of hydroseeding or when seed is distributed following straw mulch spread during winter months.
- Table 2.1 on the following page contains a summary of mulch types and general guidelines.

Table 2.1 Mulch Standards and Guidelines			
Mulch Material	*Quality Standards*	*Application Rates*	*Remarks*
Straw	Air-dried, free of mold and not rotten. Certified Weed Free.	1.5 to 2 tons per acre	Cost-effective when applied with adequate thickness. Straw must be held in place by crimping, netting, or soil stabilizer.
Chipped Site Vegetation	Should include gradation from fine to coarse to promote interlocking properties. Must be free of waste materials such as plastic bags, metal debris, etc.	10 to 12 tons per acre	Cost-effective method to dispose of vegetative debris from site. Best application is for temporary stabilization where construction will resume. Use cautiously on areas where vegetation will be established, as wood chips will deplete soil nitrogen.
Erosion Control Compost (Wood Chip and Compost Mixture)	Shall meet the Physical Requirements in Table 1 of TxDOT Special Specification 1001.	Approx. 10 tons per acre	Special caution is advised regarding the source and composition of wood mulches. Ensure compost is free of herbicides. Ensure wood chips are from unpainted and untreated wood.
Hydraulic Mulch	Must not contain sawdust, cardboard, paper, paper byproducts, plastics, or synthetics. No petroleum-based tackifiers.	Follow the manufacturer's recommendations. Application rate increases with slope steepness.	May be particularly effective on slopes steeper than 3:1. Ensure wood fibers are from unpainted and untreated wood.

Straw Mulch

- Straw mulch shall be free of weed and grass seed.
- Straw mulch shall be air-dried, free of mold, and not rotten.
- Straw fibers shall be a minimum of 4 inches and a maximum of 8 inches in length.
- Straw mulch must be anchored by using a tractor-drawn crimper to punch into the soil, by placing degradable netting above the mulch, or by application of a soil stabilizer (*Section 2.7 Soil Surface Treatments*).

Chipped Site Vegetation

- Chipped site vegetation is suitable mulch for temporary stabilization before construction will resume in an area of the construction site.
- Ensure the cleared vegetation is free of trash, litter, and debris prior to chipping.

- Chipped pieces shall be a minimum of 2 inches and a maximum of 6 inches in length.
- Chipped woody vegetation that is greater than 50% wood chips by volume may result in mulch that depletes nitrogen in the soil. It is useful as mulch for temporary stabilization where construction activity will resume and result in removal of the mulch. However, it should be used with care on areas where vegetation will be established for final stabilization.
- Chipped vegetation that is greater than 50 percent wood chips by volume may require treatment with a nitrogen fertilizer when used for mulch with seeding.
- Chipped vegetation that includes green matter will include seeds. It should not be used on areas that have specific landscaping requirements.

Erosion Control Compost (Wood Chip and Compost Mixture)

- Wood chip and compost mixture used for mulch shall meet the criteria for Erosion Control Compost in TxDOT Special Specification 1001.
- Wood chips for the mixture shall be less than or equal to 5 inches in length with 95 percent passing a 2 inch screen and less than 30 percent passing a 1 inch screen. Mulch should not contain chipped manufactured boards or chemically treated wood such as particleboard, railroad ties, or similar treated wood.
- Compost for the mixture shall meet the Physical Requirements specified in Table 1 of 2004 TxDOT Special Specification 1001, Compost. It must be free of herbicides and other chemicals.
- Mixing of the Erosion Control Compost into the soil surface is allowed when vegetation is established for final stabilization, except for drill seeding, in which case it is best to leave the mulch as an undisturbed top layer.

Hydraulic Mulch (Including Bonded Fiber Matrix)

- Hydraulic mulch shall consist of a mixture of shredded wood fiber and a stabilizing binder. The mulch must not contain sawdust, cardboard, paper or paper byproducts.
- Shredded wood fiber shall be long strand, whole wood fibers that are:
    - Minimum of 25 percent of fibers 3/8 inch long;
    - Minimum of 50 percent held on a No. 25 sieve;
    - Free from paint, printing ink, varnish, petroleum products, seed germination inhibitors; and
    - Free from synthetic or plastic materials.
- Mulch binders may be organic or inorganic polymers. Asphaltic emulsions and other petroleum-based tackifiers shall not be used.
- The stabilizing emulsion must be nonflammable, non-toxic to aquatic organisms, and free from growth or germination inhibiting factors.
- Areas hydraulically mulched shall be protected from all traffic, including foot traffic, a minimum of 24 hours to allow the mulch to dry and cure. Depending on the mulch, up to 48 hours of protection may be required. Always follow manufacturer's recommendations.
- Hydraulic mulch provides limited to no protection until cured. Do not apply when rain is forecast within the next 24 hours.
- Hydraulic mulch may be particularly effective on slopes steeper than 3:1.

2.5.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.16 Mulching. Specifications for

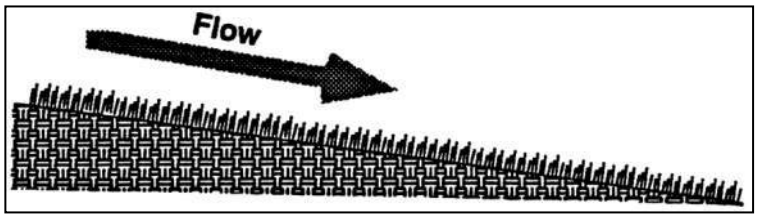
compost may be found in Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDOT 2004) Item 161.

2.5.5 Inspection and Maintenance Requirements

Mulched areas should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for thin or bare spots caused by natural decomposition or weather related events. Mulch in high traffic areas should be replaced on a regular basis to maintain uniform protection. Excess mulch should be brought to the site and stockpiled for use during the maintenance period to dress problem spots.

2.9 Vegetation

Erosion Control



Description: Vegetation, used as an erosion control, is the sowing or sodding of grasses, small grains, or legumes to provide temporary and final vegetative stabilization for disturbed areas.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Specify preparation of the soil surface before seeding or sodding
- Minimum of 4 to 6 inches of top soil required, depending on subsurface conditions
- Specify soil amendments depending on soil conditions
- Select seed or sod species appropriate for the climate, season, and soil

ADVANTAGES / BENEFITS:

- More effective and easier to maintain than sediment controls during a long construction period
- May be used for temporary or final stabilization

DISADVANTAGES / LIMITATIONS:

- Not appropriate for areas with heavy pedestrian, vehicular traffic, or concentrated, high velocity flow
- May require days to weeks for adequate establishment
- Alternate erosion control is needed until vegetation is established

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Protect newly seeded areas from excessive runoff, high velocity flow, and traffic until vegetation is established
- Water and fertilize until vegetation is established
- Reseed and/or provide mulch or another control for bare spots
- Rake accumulations of sediment from the vegetation

TARGETED POLLUTANTS

- ● Sediment
- ◒ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.90
(*When fully established; lower while vegetation is first growing*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Design is unique to soil and other conditions at each site*
- *Watering and other maintenance required until vegetation is established*

2.9.1 Primary Use

Vegetation is used as a temporary or final stabilization measure for areas disturbed by construction. As a temporary control, vegetation is used to stabilize stockpiles, earthen dikes, and barren areas that are inactive for longer than two weeks. As a final control at the end of construction, grasses and other vegetation provide good protection from erosion along with some filtering for overland runoff. Subjected to acceptable runoff velocities, vegetation can provide a positive method of long-term stormwater management as well as a visual amenity to the site.

Other control measures may be required to assist during the establishment of vegetation. These other controls include erosion control blankets, mulching, swales, and dikes to direct flow around newly seeded areas and proper grading to limit runoff velocities during construction.

2.9.2 Applications

Vegetation effectively reduces erosion in channels and swales and on stockpiles, dikes, and mild to medium slopes. Vegetative strips can provide some protection and sediment trapping when used as a perimeter control for utility and site development construction. Refer to *Section 3.15 Vegetated Filter Strips and Buffers* for more information.

In many cases, the initial cost of temporary seeding may be high compared to tarps or covers for stockpiles or other barren areas subject to erosion. This initial cost should be weighed with the amount of time the area is to remain inactive, since vegetation is more effective and the maintenance cost for vegetated areas is much less than most structural controls.

2.9.3 Design Criteria

General

- Vegetation is a highly effective erosion control when the vegetation is fully established. Until then, additional controls are needed. Sediment controls should not be removed from vegetated areas until the vegetation is established.
- On grades steeper than 20:1 (5 percent), anchored mulch or erosion control blankets are required to protect seeded areas until vegetation is established. Refer to *Section 2.5 Mulching* and *Section 2.3 Erosion Control Blankets* for design criteria.
- Vegetation may be used by itself for channel protection when the channel grade is less than 2 percent and the temporary control design storm (2-year, 24-hour) and the conveyance storm (25-year, 24-hour) flow velocities are less than 6 feet per second.
- If the velocity of the temporary control design storm is greater than 2 feet per second, erosion control blankets shall be used in the channel while vegetation is being established. Turf reinforcement mats are required when the velocity exceeds 6 feet per second. Refer to *Section 2.3 Erosion Control Blankets* and *Section 2.8 Turf Reinforcement Mats* for design criteria.
- Stabilization of channels with vegetation is limited to channels that have side slopes of 3:1 or flatter.
- On cut/fill slopes and channels designed to receive temporary or final vegetation, establishment of vegetation shall be initiated immediately after completing grading of the cut/fill slope or channel, and in no case later than 14 days after completion of grading on these features. It is not acceptable to delay establishing vegetation on these highly-erodible areas until completion of construction activities and stabilization of the remainder of the site.

Surface Preparation

- Unless infeasible, remove and stockpile existing topsoil at the start of grading activities. Store topsoil in a series of small stockpiles instead of one large stockpile to decrease the loss of aerobic soil micro-organisms during stockpiling.

- Interim or final grading must be completed prior to seeding or sodding.
- To minimize soil compaction of areas to be vegetated, limit vehicle and equipment traffic in these areas to the minimum necessary to accomplish grading.
- Install all necessary erosion structures such as dikes, swales, diversions, etc. prior to seeding or sodding.
- Spread stockpiled topsoil evenly over the disturbed area to be vegetated.
- Depth of topsoil shall be a minimum of 4 inches, with 6 inches required where the topsoil is over rock, gravel or otherwise unsuitable material for root growth. After spreading stockpiled topsoil, provide additional top soil as needed to achieve these depths.
- Compost Manufactured Topsoil as specified in TxDOT Special Specification 1001 may be used to achieve the specified depths or when it's infeasible to stockpile topsoil. Topsoil may also be acquired from another construction site if there is no space to stockpile the topsoil at that site.
- Topsoil shall have an organic content of 10 to 20 percent using ASTM D2974 Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
- Topsoil that does not meet the organic content requirement shall be amended with General Use Compost as specified in TxDOT Special Specification 1001. Amendment should be three parts of topsoil to one part compost by volume thoroughly blended.
- Seed bed should be well pulverized and loosened to a minimum depth of 3 inches and then raked to have a uniform surface.
- When establishing vegetation from seed, groove or furrow slopes steeper than 3:1 on the contour line before seeding.

Plant Selection, Fertilization and Seeding

- Use only high quality, USDA certified seed.
- Use an appropriate species or species mixture adapted to the local climate, onsite soil conditions and the season as shown below, or consult with the local office of the Natural Resource Conservation Service (NRCS) or Texas AgriLife Extension Service for selection of proper species and application technique in this area.
- Seeding rate should be in accordance with the Tables 2.4, 2.5 and 2.6 as follow in this section or as recommended by the Natural Resources Conservation Service (NRCS) or Texas AgriLife Extension Service.
- Chemical fertilization is not recommended at the time of seeding, because it typically stimulates and is consumed by fast growing weeds that out-compete the slower growing grasses and legumes. If the topsoil has not been amended by compost as discussed above, an 0.5 inch layer of General Use Compost (TxDOT Special Specification 1001) is recommended as a surface treatment to protect the seed and provide slow release nutrients
- Evenly apply seed using a seed drill, cultipacker, terraseeding, or hydroseeder.
- Hydro-seeding should not be used on slopes of 5:1 or steeper unless Bonded Fiber Matrix is used.
- Seeded areas shall be thoroughly watered immediately after planting. Water shall be applied at a rate that moistens the top 6 inches of soil without causing runoff. Provide water daily for the first 14 days after seeding and thereafter as needed to aid in establishment of vegetation.
- Use appropriate mulching techniques (*Section 2.5 Mulching*) where necessary, especially during cold periods of the year. Mulch consisting of chipped site vegetation is discouraged, since the wood content may result in depleting nitrogen from the soil.

Sodding

- Use of sod should be limited to planned landscapes due to the relatively high water use of most types of sod grass.
- When sod is necessary to achieve immediate stabilization, buffalograss (*Buchloe dactyloides*) is recommended. Other types of sod may be used in landscaping when specified by a landscape architect for a commercial property or a homebuyer for a residential lot.
- The sod should be mowed prior to sod cutting so that the height of the grass shall not exceed 3 inches and should not be harvested or planted when its moisture condition is so excessively wet or dry that its survival shall be affected.
- Sod shall have a healthy, virile, system of dense, thickly matted roots throughout a minimum soil thickness of 0.75 inch.
- Sod shall be planted within 3 days after it is excavated.
- In areas subject to direct sunlight, pre-moisten prepared sod bed by watering immediately prior to placing sod.
- Sodded areas shall be thoroughly watered immediately after they are planted.

Temporary Vegetation

The following table lists recommended plant species for the North Central Texas region depending on the season for planting.

Table 2.4 Recommended Grass Mixture for Temporary Erosion Control

Season	*Common Name*	*Pure Live Seed Rate (Lbs/Acre)*
Sep 1 - Nov 30	Tall Fescue Western Wheat Grass Wheat (Red, Winter)	4.5 5.6 34.0
May 1 - Aug 31	Foxtail Millet	34.0
Feb 15 – May 31 Sep 1 – Dec 31	Annual Rye	20.0

Areas receiving temporary seeding and vegetation shall be landscaped, re-seeded or sodded with perennial species to establish final vegetation at the end of construction.

Vegetation for Final Stabilization

Sodding or seeding may be used to establish vegetation for final stabilization of areas disturbed by construction activity. The vegetation must achieve a cover that is 70 percent of the native background vegetative cover to be considered final stabilization. Sod will achieve this coverage quicker than seeding; however, sod is usually more expensive than seeding. Sod is most cost-effective for small areas or areas of concentrated flow or heavy pedestrian traffic where it will be difficult to establish vegetation by seeding.

Grass seed for establishing final stabilization can be sown at the same time as seeding for temporary (annual) vegetation. Drought tolerant native vegetation is recommended rather than exotics as a long-term water conservation measure. Native grasses can be planted as seed or placed as sod. Buffalo 609, for example, is a hybrid grass that is placed as sod. Fertilizers are not normally used to establish native grasses, but mulching is effective in retaining soil moisture for the native plants.

Table 2.5 Recommended Grass Mixture for Final Stabilization of Upland in Rural Areas

County	Planting Date	Clay Soils Species and Pure Live Seed Rate (Lbs/Acre)		Sandy Soils Species and Pure Live Seed Rate (Lbs/Acre)	
Erath Hood Johnson Palo Pinto Parker Somervell Tarrant Wise	February 1 – May 15	Green Sprangletop Sideoats Grama (El Reno) Bermudagrass Little Bluestem (Native) Blue Grama (Hachita) Illinois Bundleflower	0.3 2.7 0.9 1.0 0.9 1.0	Green Sprangletop Sand Lovegrass Bermudagrass Weeping Lovegrass (Ermelo) Sand Dropseed Partridge Peal	0.3 0.5 1.8 0.8 0.4 1.0
Collin Dallas Denton Ellis Kaufman Navarro Rockwell	February 1 – May 15	Green Sprangletop Bermudagrass Sideoats Grama (El Reno) Little Bluestem (Native) Buffalograss (Texoka) Illinois Bundleflower	0.3 1.2 2.7 2.0 1.6 1.0	Green Sprangletop Bermudagrass Weeping Lovegrass (Ermelo) Sand Lovegrass Sand Dropseed Partridge Pea	0.3 1.8 0.6 0.6 0.4 1.0
Hunt	February 1 – May 15	Green Sprangletop Sideoats Grama (El Reno) Bermudagrass Little Bluestem (Native) Illinois Bundleflower	0.3 3.2 1.8 1.7 1.0	Green Sprangletop Bermudagrass Bahiagrass (Pensacola) Sand Lovegrass Weeping Lovegrass (Ermelo) Partridge Pea	0.3 1.5 6.0 0.6 0.8 1.0

(Source: TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 164)

Table 2.6 Recommended Grass Mixture for Final Stabilization of Upland in Urban Areas

County	Planting Date	Clay Soils Species and Pure Live Seed Rate (Lbs/Acre)		Sandy Soils Species and Pure Live Seed Rate (Lbs/Acre)	
Erath Hood Johnson Palo Pinto Parker Somervell Tarrant Wise	February 1 – May 15	Green Sprangletop Sideoats Grama (El Reno) Bermudagrass Buffalograss (Texoka)	0.3 3.6 2.4 1.6	Green Sprangletop Sideoats Grama (El Reno) Bermudagrass Sand Dropseed	0.3 3.6 2.1 0.3
Collin Dallas Denton Ellis Kaufman Navarro Rockwell	February 1 – May 15	Green Sprangletop Sideoats Grama (El Reno) Buffalograss (Texoka) Bermudagrass	0.3 3.6 1.6 2.4	Green Sprangletop Buffalograss (Texoka) Bermudagrass Sand Dropseed	0.3 1.6 3.6 0.4
Hunt	February 1 – May 15	Green Sprangletop Bermudagrass Sideoats Grama (Haskell)	0.3 2.4 4.5	Green Sprangletop Bermudagrass	0.3 5.4

(Source: TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 164)

Vegetation for final stabilization of channels requires grasses that are tolerant of periodic inundation, such as Bermuda grass, Kentucky bluegrass or a grass-legume mixture.

Additional Considerations

- Conditions for establishing vegetation vary significantly from site to site. Therefore, specifics of the vegetation design should be prepared based on the soil, slopes, drainage patterns, and the purpose of the vegetation at a each site.
- For construction activities that include landscaping in the development plans, the landscape architect should be consulted when specifying vegetation for temporary or final stabilization of disturbed areas.
- Vegetation is easier to establish if equipment and vehicle traffic is managed onsite to minimize soil compaction by traffic in the disturbed area that will be vegetated.
- Establishing a good vegetative cover is dependent on the season of the year. Projects that commence in the fall of the year may not be candidates for using vegetation as an erosion control.
- Where vegetation is used in swales and channels it may be necessary to use sod, rather than seeding, to establish an erosion resistant surface that accommodates rainfall runoff flows.
- Mulch should be used to enhance vegetative growth, in that mulch protects seeds from heat, prevents soil moisture loss, and provides erosion protection until the vegetation is established. Compost mulch has the additional benefit of providing some slow-release nutrients.
- Fertilizers have both beneficial and adverse effects. Fertilizers provide nutrients to the vegetation, but fertilizers are also a source of unwanted nutrients in streams and lakes. In this latter regard, they are a pollutant. The use of native vegetation rather than exotics reduces the need for fertilizers. Organic fertilizers, such as compost mulch, are generally preferred over chemical fertilizers. They provide a slow release of nutrients over a longer period of time and are less likely to cause environmental problems.
- Steep slopes represent a problem for establishing vegetation. Hydraulic mulches are useful for establishing vegetation on slopes. Refer to *Section 2.5 Mulching*.

2.9.4 Design Guidance and Specifications

Additional criteria for the application of vegetation in channels are in *Section 3.6.3 of the iSWM Criteria Manual* and design guidance is in *Section 3.2 of the Hydraulics Technical Manual*.

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Item 202 Landscaping. Additional specifications for the following components of this item are in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004):

- Topsoil, Item 160.
- Compost, Item 161.
- Sodding for Erosion Control, Item 162.
- Seeding for Erosion Control, Item 163.
- Fertilization, Item 164.
- Vegetative Watering 165.

2.9.5 Inspection and Maintenance Requirements

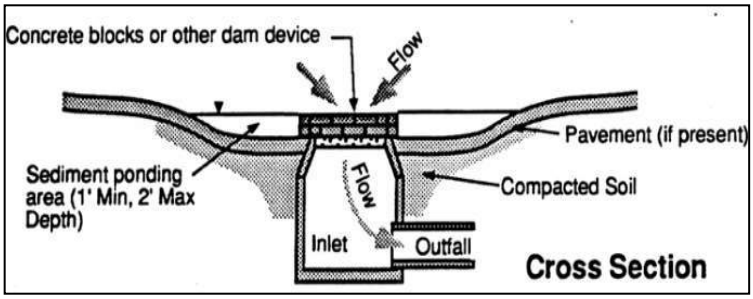
Protect newly seeded areas from excessive runoff and traffic until vegetation is established. Include a watering and fertilizing schedule in the iSWM Construction Plan facilitate the establishment of the vegetation. Vegetation for final stabilization must be maintained until the vegetative cover is 70 percent of the native background vegetative cover.

Vegetation should be inspected regularly (at least as often as required by the TPDES Construction General Permit) to ensure that the plant material is established properly and remains healthy. Bare spots shall be reseeded and/or protected from erosion by mulch or other measures. Accumulated sediment

deposited by runoff should be removed to prevent smothering of the vegetation. In addition, determine the source of excess sediment and implement appropriate measures to control the erosion.

3.4 Inlet Protection

Sediment Control



Description: Inlet protection consists of a variety of methods to intercept sediment at low point inlets through the use of depressed grading, filter stone, filter fabric, inlet inserts, organic filter tubes and other materials. The protection devices are placed around or across the inlet openings to provide localized detention or filtration of sediment and floatable materials in stormwater. Protection devices may be assembled onsite or purchased as manufactured assemblies.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Evaluate drainage patterns to ensure inlet protection will not cause flooding of roadway, property or structures
- Never block entire inlet opening
- Size according to drainage area and flow rates
- Include flow bypass for clogged controls and large storm events

ADVANTAGES / BENEFITS:

- May be the only feasible sediment control when all construction is located within rights-of-way

DISADVANTAGES / LIMITATIONS:

- Limited effectiveness and reliability
- High maintenance requirements
- Has potential to flood roadways or adjacent properties

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Check for and remove blockage of inlet after every storm event
- Remove sediment before it reaches half the design height or volume of the inlet protection, more frequently for curb inlets
- Repair or replace damaged materials
- Clean or replace filter stone and organic filter tubes is when clogged with sediment

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=0.35-0.65
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ○ Suitability for Slopes > 5%

Other Considerations:

- *Traffic hazards*
- *Passage of larger storm events without causing flooding*
- *Flow diversion to other inlets or drainage points*

3.4.1 Primary Use

Inlet protection is typically used as a secondary sediment barrier, due to its limited effectiveness and numerous disadvantages. It is used to reduce sediment in storm sewer systems by serving as a back-up system for areas that have newly applied erosion controls or for other sediment controls that cannot achieve adequate sediment removal by themselves.

Inlet protection may be used as a primary sediment control only when all other primary controls are infeasible because of site configuration or the type of construction activity.

3.4.2 Applications

Inlet protection is best applied at low point (sump) inlets where stormwater runoff will pond behind the protection measure, and then either filter through the protection measure or flow over a weir created by it. Most inlet protection measures depend on ponding to be effective. These types of inlet protection are not applicable to on-grade curb inlets, where the inlet protection will cause stormwater runoff to bypass the inlet and overload downstream inlets. Only inlet protection measures that allow for use of the inlet opening (e.g. inlet inserts) are applicable as inlet protection for on-grade inlets.

Inlet protection is normally used in new developments with new inlets and roads that are not in public use. It has limited applications in developed areas due to the potential for flooding, traffic safety, pedestrian safety, and maintenance problems. Potential applications in developed areas are on parking lot inlets where water can pond without causing damage and during major repairs to existing roadways where no other controls are viable.

The application of inlet protection is highly variable due to the wide variety of inlet configurations (existing and new) and site conditions. The schematics in Section 6 show example applications; however, applications in most cases must be site adapted. Different methods and materials may be used. It is the responsibility of the designer to ensure that the methods and materials applied for inlet protection are appropriate to the site and flow conditions following the design criteria in Section 3.

3.4.3 Design Criteria

General

- Drainage patterns shall be evaluated to ensure inlet protection will not divert flow or flood the roadway or adjacent properties and structures.
- Inlet protection measures or devices that completed block the inlet are prohibited. They must also include a bypass capability in case the protection measures are clogged.
- Inlet protection must be designed to pass the conveyance storm (25-year, 24-hour) without creating a road hazard or damaging adjacent property. This may be accomplished by any of the following measures:
    - An overflow weir on the protection measure.
    - An existing positive overflow swale on the inlet.
    - Sufficient storage volume around the inlet to hold the ponded water until it can all filter into the inlet.
    - Other engineered method.
- Positive overflow drainage is critical in the design of inlet protection. If overflow is not provided for at the inlet, temporary means shall be provided to route excess flows through established swales, streets, or other watercourses to minimize damage due to flooding.
- Filter fabric and wire mesh used for inlet protection shall meet the material requirements specified in *Section 3.10 Silt Fence*.

- Block and gravel (crushed stone or recycled concrete) protection is used when flows exceed 0.5 cubic feet per second and it is necessary to allow for overtopping to prevent flooding.
- The tube and filler for organic filter tubes shall be in accordance with the criteria in *Section 3.6 Organic Filter Tube*.
- Bags used to secure inlet protection devices on pavement shall be filled with aggregate, filter stone, or crushed rock that is less likely than sand to be washed into an inlet if the bag is broken. Filled bags shall be 24 to 30 inches long, 16 to 18 inches wide, and 6 to 8 inches thick. Bags shall be polypropylene, polyethylene, or polyamide woven fabric with a minimum unit weight of 4 ounces per square yard and meet the following criteria:
    - Greater than 300 psi Mullen Burst Strength using ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.
    - Greater than 70 percent UV Stability using ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus.

Curb Inlet Protection

- Municipality approval is required before installing inlet protection on public streets.
- Special caution must be exercised when installing curb inlet protection on publicly traveled streets or in developed areas. Ensure that inlet protection is properly designed, installed and maintained to avoid flooding of the roadway or adjacent properties and structures.
- A two inch overflow gap or weir is required on all curb inlet protection devices.
- Traffic cones, warning signs, or other measures shall be installed to warn motorists when the inlet protection measures extend beyond the gutter line.
- 2 inch X 4 inch Weir Protection:
    - Bend wire mesh around the 2 inch x 4 inch board and staple to the board. Bend wire mesh around the bottom of the board, the curb opening, and along the pavement to form a cage for the rock.
    - Rock bags shall be placed perpendicular to the curb, at both ends of the wooden frame, to disrupt the flow and direct water into the rock filter. Stack the bags two high if needed.
- Organic Filter Tube Protection:
    - The diameter of the tube shall be at least 2 inches less than the height of the inlet opening. The tube should not be allowed to block the entire opening, since it will clog.
    - The tube shall be placed on 4 inch x 4 inch or 2 inch x 4 inch wire mesh to prevent the tube from sagging into the inlet.
    - The tube should be long enough to extend a minimum of 12 inches past the curb opening on each side of the inlet.
- Hog Wire Weir Protection:
    - The filter fabric and wire mesh shall extend a minimum of 12 inches past the curb opening on each side of the inlet.
    - Filter fabric shall be placed on 2 inch x 4 inch wire mesh to prevent the tube from sagging into the inlet.
    - Rock bags are used to hold the wire mesh and filter fabric in contact with the pavement. At least one bag shall be placed on either side of the opening, parallel to and up against the concrete curb. The bags are in intended to disrupt and slow the flow and ensure it does not go under the fabric. Add bags if needed.

- If a board is used to anchor the wire mesh and fabric instead of rock bags, the board shall be secured with concrete nails at 3 inches on center. Upon removal clean any dirt or debris from the nailing locations, apply chemical sanding agent, and apply non-shrink grout flush with surface of concrete.

- Block and Gravel Protection:
  - Concrete blocks shall be standard 8 inch x 8 inch x 16 inch concrete masonry units and shall be in accordance with ASTM C139, Concrete Masonry Units for Construction. Filter gravel shall be ¾ inch washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
  - Concrete blocks are to be placed on their sides in a single row around the perimeter of the inlet, with ends abutting. Openings in the blocks should face outward, not upward. ½ inch x ½ inch wire mesh shall then be placed over the outside face of the blocks covering the holes. Filter gravel shall then be piled against the wire mesh to the top of the blocks with the base of the stone being a minimum of 18 inches from the blocks.
  - Alternatively, where loose stone is a concern (streets, etc.), the filter gravel may be placed in appropriately sized filter fabric bags.
  - Periodically, when the gravel filter becomes clogged, the gravel must be removed and cleaned in a proper manner or replaced with new gravel and piled back against the wire mesh.

- Organic Filter Tube On-Grade Protection:
  - Organic filter tubes may be used to provide sediment control at on-grade curb inlets where the tube will not be a traffic hazard, such as on residential streets where the pavement adjacent to the curb is allocated to parked cars. Tubes should not be used in this manner where they will extend into an active travel lane.
  - The filter tube shall be secured in a U-shape by rock bags. Runoff flowing in the gutter will pond within the U until it filters through the tube or overflows around the end.

- Inlet protection shall be phased on curb inlets being constructed. Controls shall be installed on the pipe inlet at the bottom of the catch basin as soon as it is installed and while the inlet box and top are being formed or placed.

Area Inlet Protection

- Installation methods for protection on area inlets vary depending on the type of inlet (drop, "Y," or other) and the type and use of the surface surrounding the inlet (parking lot, playground, etc.). It is the responsibility of the designer to appropriately adapt inlet protection measures and their installation methods for each site condition. Several types may be needed on one project.

- Filter Fabric Protection:
  - Filter fabric protection is appropriate where the drainage area is less than one acre and the basin slope is less than five (5) percent. Filter fabric, posts, and wire mesh shall meet the material requirements specified in *Section 3.10 Silt Fence*.
  - A 6 inch wide trench is to be cut 6 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel. This entrenchment prevents any bypass of runoff under the fence.
  - Stone overflow structures, according to the criteria in *Section 3.10 Silt Fence* shall be installed where flow to the inlet is concentrated and more than 1 cubic feet per second.

- Excavated Impoundment Protection:
  - Excavated inlet protection is usually the most effective type of area inlet protection; however, it is only applicable to drop inlets. It should not be applied to Y inlets because it will undermine the concrete pad surrounding the inlet opening. Nor can it be used for inlets on pavement.

- With this protection method, it is necessary to install weep holes to allow the impoundment to drain completely.
- The impoundment shall be sized such that the volume of excavation is equal to or exceeds the runoff volume from the temporary control design storm (2-year, 24-hour) for the inlet's drainage area.
- The trap shall have a minimum depth of one foot and a maximum depth of 2 feet as measured from the top of the inlet and shall have side slopes of 2:1 or flatter.

- Block and Gravel Protection:
  - Block and gravel inlet protection is the most stable area inlet protection and can handle more concentrated flows. It may be installed on paved or vegetated surfaces. Loose stone shall be carefully removed from vegetated surfaces at the end of construction to prevent the stone from becoming a mowing hazard.
  - The inlet protection may be one or two blocks high. Single block heights are applicable for drainage areas up to 3 acres in size. The double block height shall be used for larger drainage areas.
  - Concrete blocks shall be standard 8 inch x 8 inch x 16 inch concrete masonry units and shall be in accordance with ASTM C139, Concrete Masonry Units for Construction. Filter gravel shall be ¾ inch washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
- Organic Filter Tube Protection:
  - Organic filter tubes may be used on paved or unpaved surfaces.
  - On paved surfaces, tubes shall be secured in place by rock bags. On unpaved surfaces, the tubes shall be embedded in the ground a minimum of 3 inches and staked at 4 foot spacing.
  - Designer shall provide calculations and specify the diameter of tube to be used based on the inlet's drainage area and the flow rate of runoff to the inlet. The minimum allowable diameter is 12 inches.

Proprietary Inlet Protection

- Numerous proprietary protection devices are available from commercial vendors. The devices often have the advantage of being reusable on several projects if they are maintained in good condition.
- It is the policy of this manual not to recommend any specific commercial vendors for proprietary controls. However, this subsection is included in order to provide municipalities with a rationale for approving the use of a proprietary inlet protection device within their jurisdiction.
- The designer shall work with the supplier to provide the municipality with flow calculations or independent third-party tests that document the device's performance for conditions similar to the ones in which it is proposed to be installed. The conditions that should be considered include: type and size of inlet, inlet configuration, size of contributing drainage area, design flow rate, soil particle sizes to be removed, and other pollutants to be removed.
- The designer or vendor of the proprietary device shall provide a minimum of three references for projects where the device has been installed and maintained in operation at a construction site for at least six months. Local references are preferred; but references from other regions can be accepted if a similarity between the reference project and the proposed application can be demonstrated.
- Proprietary devices must not completely block the inlet. The device shall have a minimum of a 2 inch wide opening for the length of the inlet when it will be used in areas that water can safely pond to depths deeper than the design depths for the inlet. If ponding is not an option, then the device must have overflow capacity equal to the inlet design flow rate.
- Some proprietary devices are available with replaceable pads or filters. These pads or filters have the added benefit or removing pollutants such as metals and oils in addition to removing sediment.

These types of inserts are recommended in applications where prior or current land use in or adjacent to the construction areas may result in the discharge of pollutants.

- Proprietary protection devices shall be in accordance with the General criteria at the beginning of this section and any criteria listed under Curb Inlet Protection and Area Inlet Protection that are not specific to an inlet protection method.

3.4.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.15 Inlet Protection.

3.4.5 Inspection and Maintenance Requirements

Inlet protection should be inspected regularly (at least as often as required by the TPDES Construction General Permit). Inlet controls should also be inspected after every storm event to check for collapse into the inlet or other damages that may block flow in the inlet. In addition to routine inspection, inlet protection devices should be observed and monitored during larger storm events to verify that they are not ponding or diverting water in a manner that floods a roadway or damages property.

Floatable debris and other trash caught by the inlet protection should be removed after each storm event. Sediment should also be removed from curb inlet protection after each storm event because of the limited storage area associated with curb inlets.

Sediment collected at area inlet protection should be removed before it reaches half the height of the protection device. Sediment should be removed from inlets with excavated impoundment protection before the volume of the excavation is reduced by 50 percent. In addition, the weep holes should be checked and kept clear of blockage.

Concrete blocks, 2 inch x 4 inch boards, stakes, and other materials used to construct inlet protection should be checked for damaged and repaired or replaced if damaged.

When filter fabric or organic filter tubes are used, they should be cleaned or replaced when the material becomes clogged. For systems using filter stone, when the filter stone becomes clogged with sediment, the stones must be pulled away from the inlet and cleaned or replaced.

Because of the potential for inlet protection to divert runoff or cause localized flooding, remove inlet protection as soon as the drainage area contributing runoff to the inlet is stabilized. Ensure that all inlet protection devices are removed at the end of the construction.

3.4.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

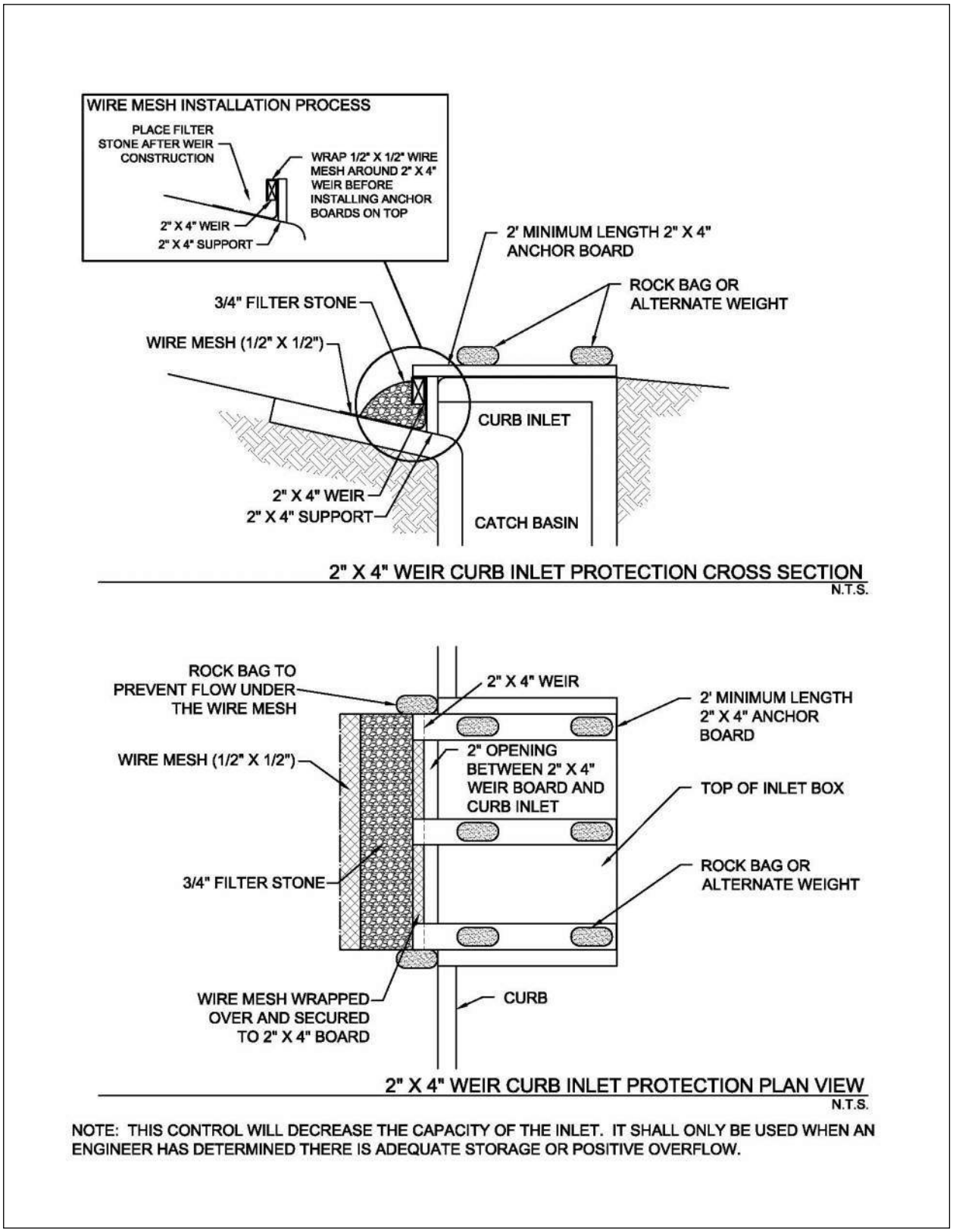
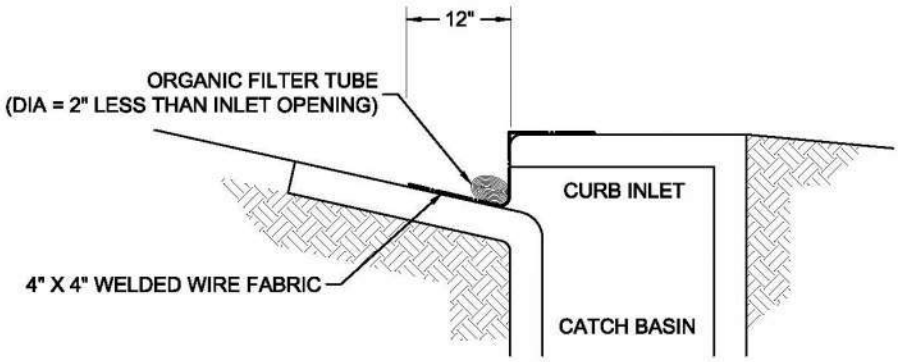
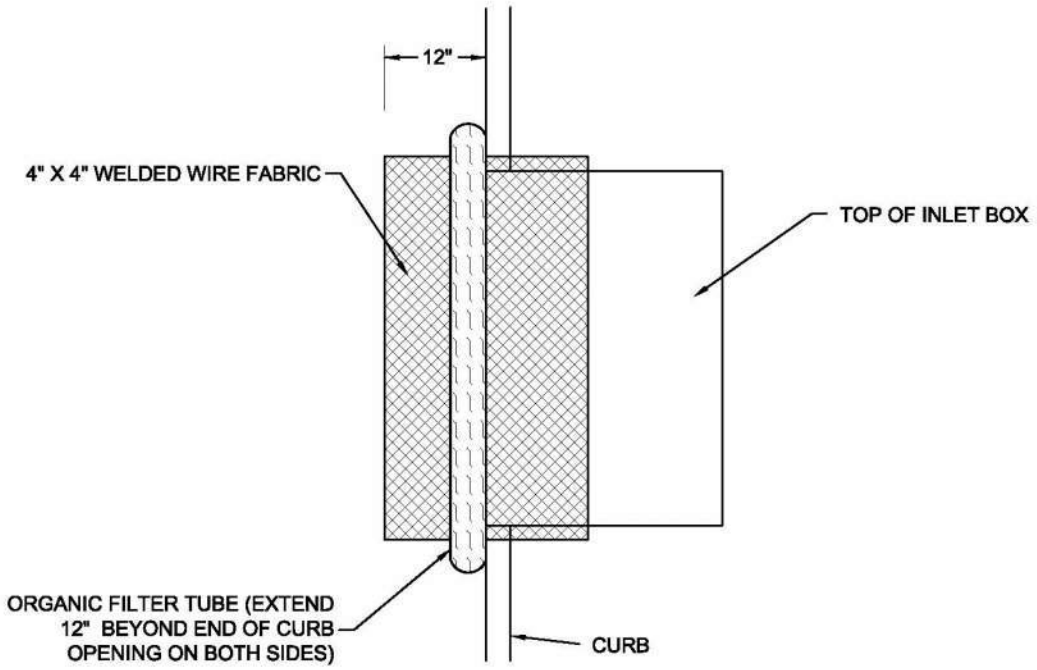


Figure 3.5 Schematics of 2"x4" Weir Curb Inlet Protection
(Source: Modified from Washington Suburban Sanitary Commission Detail SC-16.0)



ORGANIC FILTER TUBE CURB INLET PROTECTION CROSS SECTION
N.T.S.



ORGANIC FILTER TUBE CURB INLET PROTECTION PLAN VIEW
N.T.S.

NOTE: THIS CONTROL WILL DECREASE THE CAPACITY OF THE INLET. IT SHALL ONLY BE USED WHEN AN ENGINEER HAS DETERMINED THERE IS ADEQUATE STORAGE OR POSITIVE OVERFLOW.

Figure 3.6 Schematics of Organic Filter Tube Curb Inlet Protection
(Source: Modified from City of Plano BMP SP-4)

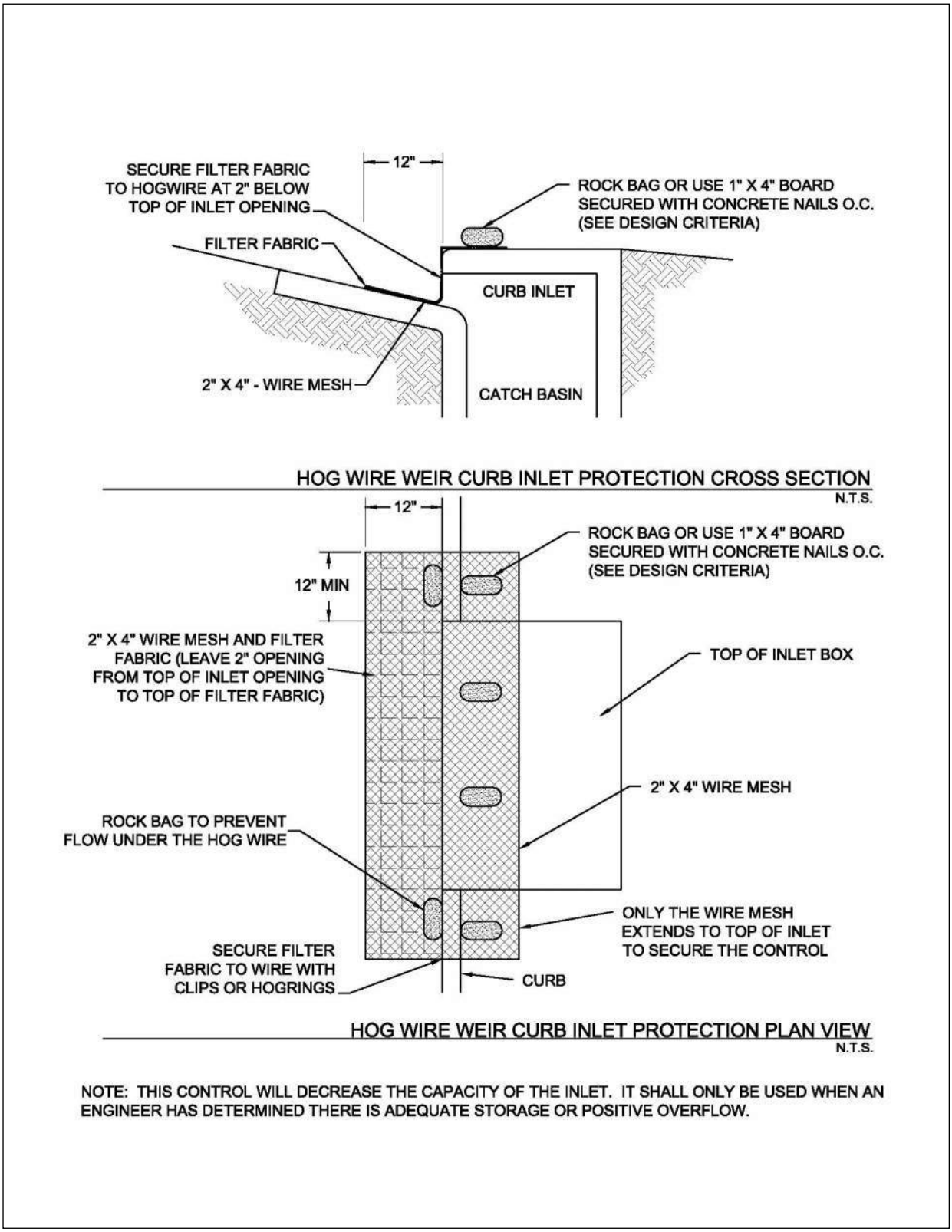
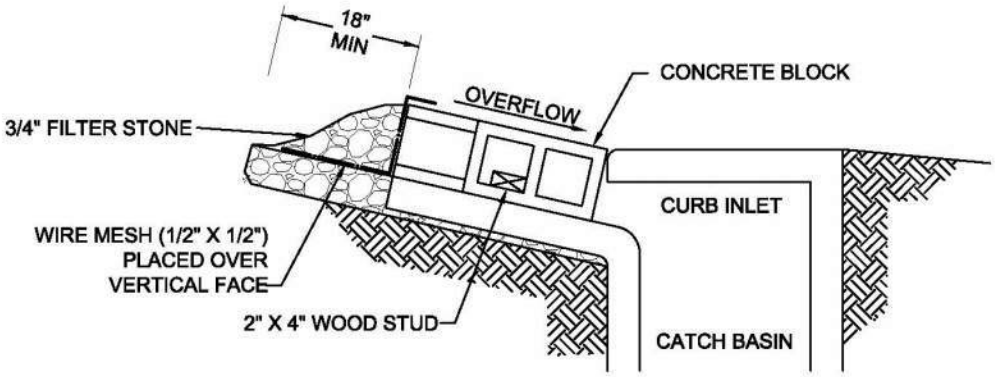
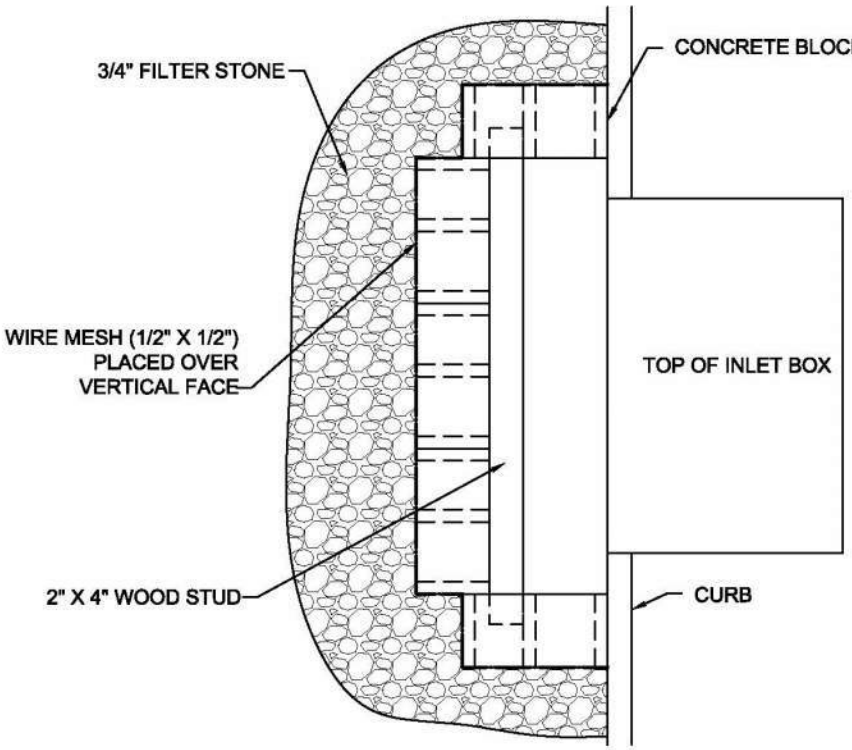


Figure 3.7 Schematics of Hog Wire Weir Curb Inlet Protection
(Source: Modified from City of Round Rock Detail E-03)



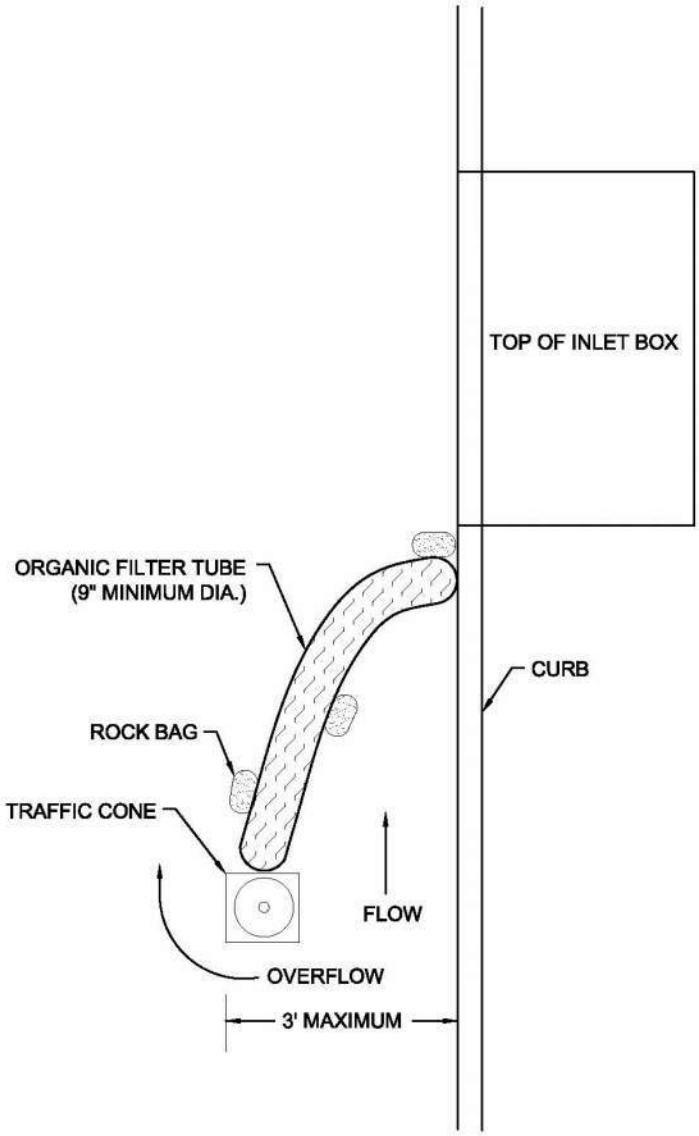
BLOCK AND GRAVEL FILTER CURB INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL FILTER CURB INLET PROTECTION PLAN VIEW
N.T.S.

NOTES:
1. DO NOT INSTALL ON INLETS IN A PUBLIC STREET OR OTHER ACTIVE TRAVEL LANE. BLOCK AND GRAVEL FILTER IS INTENDED FOR USE ON LOW POINT (SUMP) INLETS IN PARKING LOTS AND OTHER PAVEMENT THAT IS NOT AN ACTIVE TRAVEL LANE. THIS INLET PROTECTION METHOD ALLOWS FOR FULL USE OF THE INLET DESIGN CAPACITY.
2. INSTALL TRAFFIC CONES AS NEEDED TO MINIMIZE THE POTENTIAL FOR CARS HITTING THE BLOCK AND GRAVEL.

Figure 3.8 Schematics of Block and Gravel Filter Curb Inlet Protection

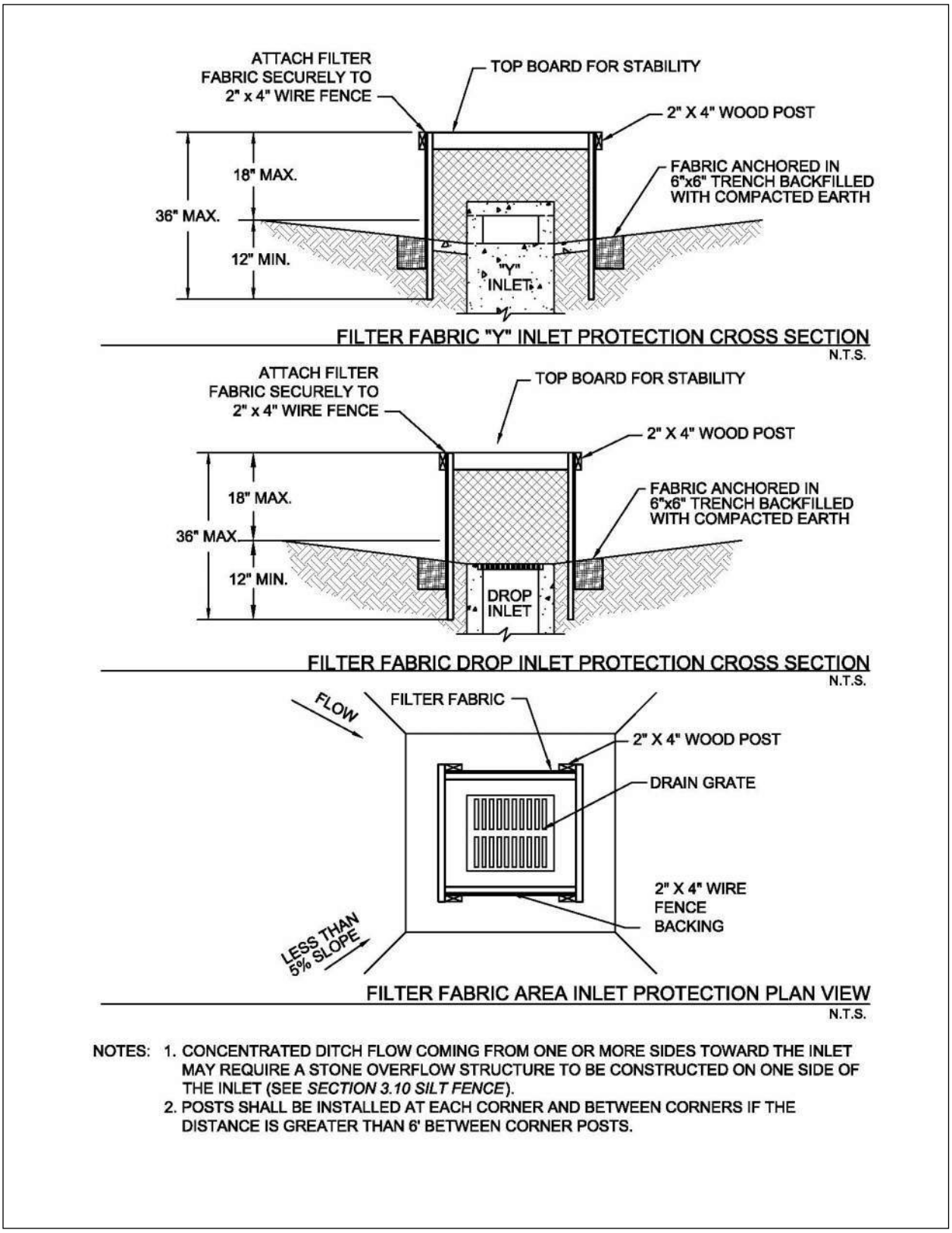


ORGANIC FILTER TUBE ON-GRADE CURB INLET PROTECTION DETAIL

N.T.S.

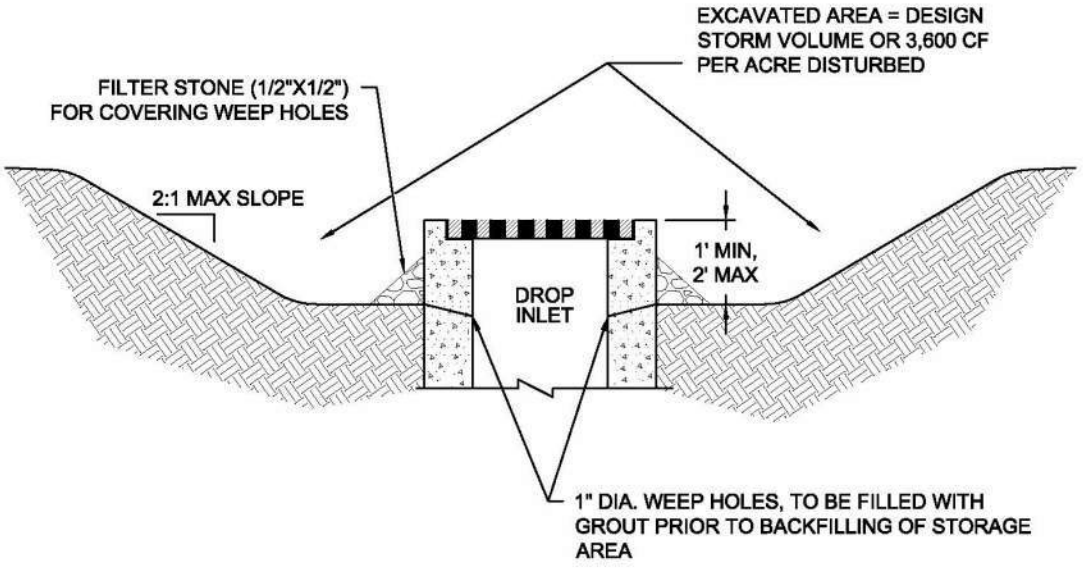
NOTES: 1. THIS DETAIL IS INTENDED FOR USE WITH ON-GRADE INLETS (NOT A LOW POINT) WHERE WATER WOULD BE DIVERTED INSTEAD OF PONDING BEHIND THE OTHER TYPES OF INLET PROTECTION.
2. DO NOT INSTALL ON INLETS WHERE THE ORGANIC FILTER TUBE WOULD EXTEND INTO AN ACTIVE TRAVEL LANE.

Figure 3.9 Schematic of Organic Filter Tube On-Grade Curb Inlet Protection

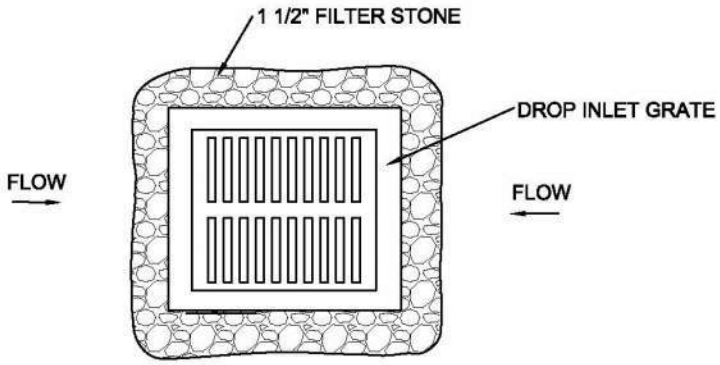


NOTES: 1. CONCENTRATED DITCH FLOW COMING FROM ONE OR MORE SIDES TOWARD THE INLET MAY REQUIRE A STONE OVERFLOW STRUCTURE TO BE CONSTRUCTED ON ONE SIDE OF THE INLET (SEE *SECTION 3.10 SILT FENCE*).
2. POSTS SHALL BE INSTALLED AT EACH CORNER AND BETWEEN CORNERS IF THE DISTANCE IS GREATER THAN 6' BETWEEN CORNER POSTS.

Figure 3.10 Schematics of Filter Fabric Area Inlet Protection
(Source: City of Plano BMP SP-4)

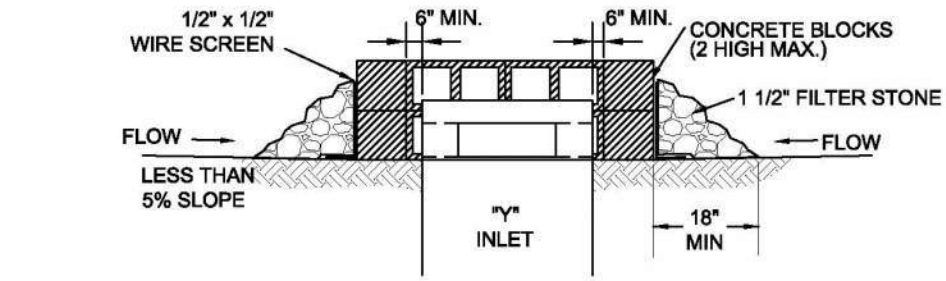


EXCAVATED IMPOUNDMENT DROP INLET PROTECTION CROSS SECTION
N.T.S.

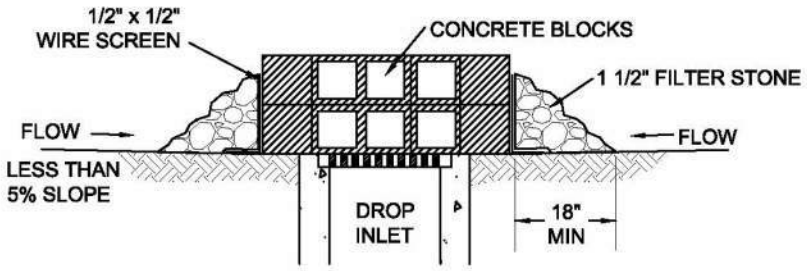


EXCAVATED IMPOUNDMENT AREA INLET PROTECTION PLAN VIEW
N.T.S.

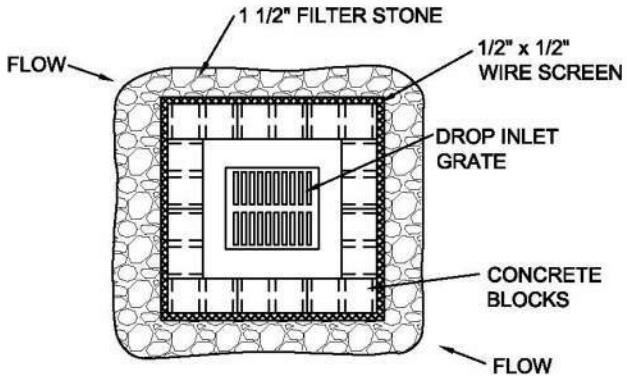
Figure 3.11 Schematics of Excavated Impoundment Area Inlet Protection



BLOCK AND GRAVEL "Y" INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL DROP INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL AREA INLET PROTECTION PLAN VIEW
N.T.S.

Figure 3.12 Schematics of Block and Gravel Area Inlet Protection
(Source: Modified from City of Plano BMP SP-4)

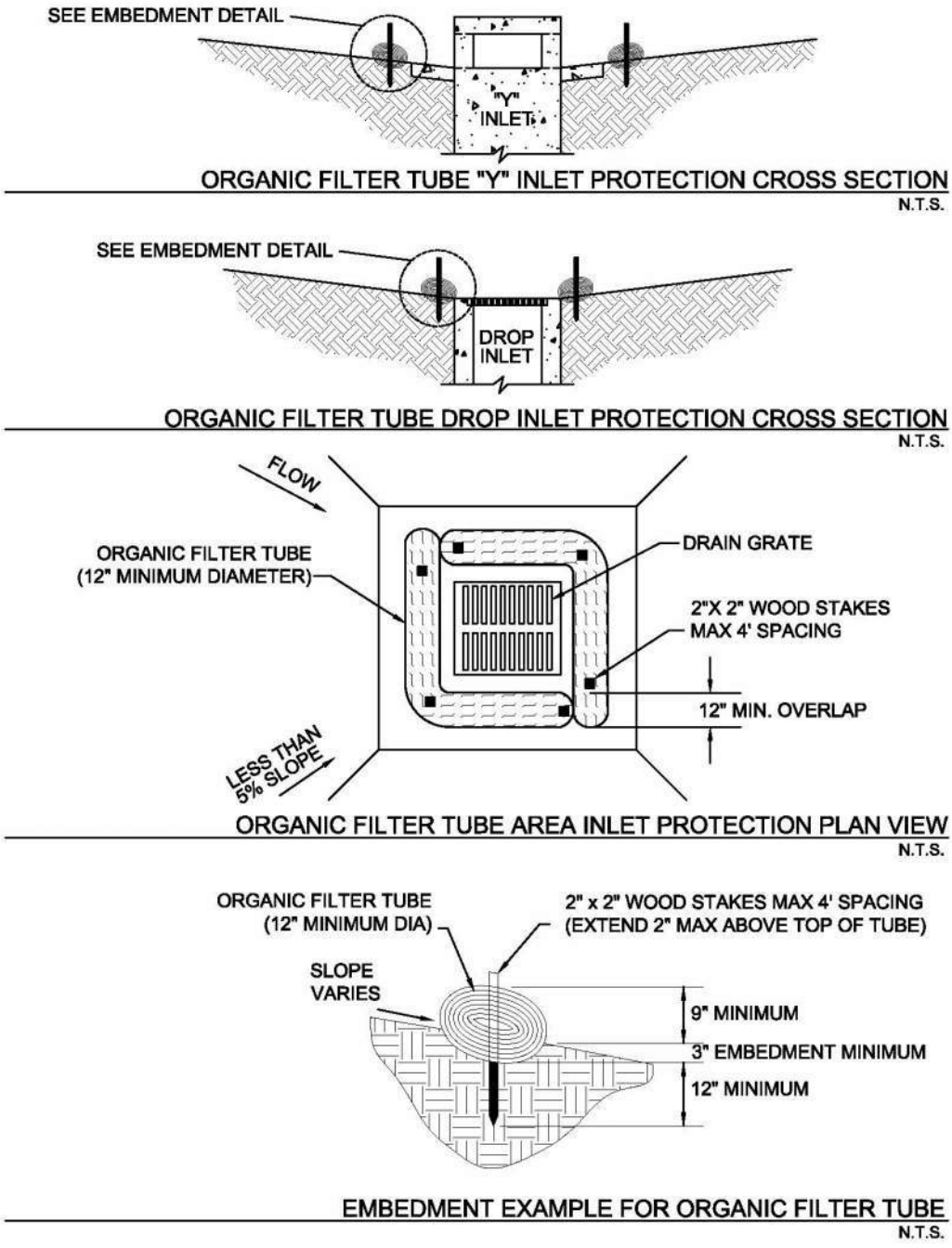
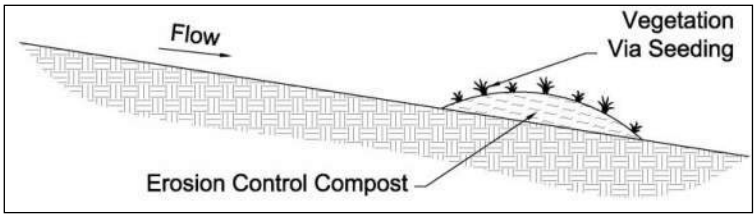


Figure 3.13 Schematics of Organic Filter Tube Area Inlet Protection

3.5 Organic Filter Berm

Sediment Control



Description: Organic filter berms, also called compost filter berms, are linear berms constructed of a mix of compost and wood chips. They are placed on a contour to control runoff. The organic filter berm provides both filtration and time for sediment settling by reducing the velocity of the runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum drainage area of 0.25 acre per 100 linear feet of berm
- Maximum 200 feet distance of flow to silt fence; 50 feet if slope exceeds 10 percent
- 1½ to 3 feet high, top width of 2 to 3 feet, and base of 3 to 5 feet for trapezoidal shaped berms
- 1 to 2 feet high and 2 to 4 feet wide for windrow (triangular) berms

ADVANTAGES / BENEFITS:

- Economical means to trap sediment
- Most effective with coarse to silty soil types
- May be tilled into the soil at end of project, thus adding organic content to the soil

DISADVANTAGES / LIMITATIONS:

- Localized flooding due to minor ponding upslope of the filter berm
- Not for use in swales or low areas where berms will be subject to concentrated flow
- Can interfere with construction operations
- Repeated clogging may require replacement of berm with another control

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Repair undercutting and other failures
- Remove sediment when before it reaches one-half the height of the berm
- Maintain dimensions of the berm by replacing organic filter material when necessary

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations

- *Effects of ponding on adjacent areas and property*

3.5.1 Primary Use

Organic filter berms are used as perimeter controls down slope of disturbed areas and on side slopes where stormwater may runoff the area. They are very well suited to sites with small disturbed drainage areas that are not subjected to concentrated flows and that will ultimately be seeded, sodded, or landscaped.

3.5.2 Applications

Properly designed, the organic filter berm is economical due to the ease of installation and because it can be tilled into the soil at the end of project, limiting the cost of removal and adding to the organic content of the soil. The berms are used as perimeter control devices for both development sites and linear (roadway) type projects. They are most effective with coarse to silty soil types. Additional controls, such as a passive treatment system, may be needed to remove fine silts and clay soils suspended in stormwater.

3.5.3 Design Criteria

- Filter berms are to be constructed along a line of constant elevation (along a contour line) where possible.
- Berms can interfere with construction operations; therefore planning of access routes onto the site is critical.
- Maximum drainage area shall be 0.25 acre per 100 linear feet of filter berm.
- Maximum flow to any 20 foot section of filter berm shall be 1cubic feet per second.
- Maximum distance of flow to berm shall be 200 feet or less. If the slope exceeds 10 percent the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the filter berm shall be 4:1.
- Trapezoidal shaped berms should be 1½ to 3 feet high with a top width of 2 to 3 feet and a base of 3 to 6 feet wide.
- Windrow (triangular) shaped berms should be 1 to 2 feet high and 2 to 4 feet wide.
- Berm side slopes shall be 2:1 or flatter.
- Roughen the soil surface before placing the berm to increase adherence of the compost.
- Compost shall conform to the requirements for Erosion Control Compost in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).
- Organic filter berms should be stabilized by seeding if there are no other sediment controls down slope of the filter berm. Seeding shall be as specified in *Section 2.9 Vegetation* at a seed loading of 1 lb. per 10 linear feet for small berms (1ft. by 2 ft.) or 2.25 lbs per 10 linear ft. for larger berms (1.5 ft. by 3 ft.)

3.5.4 Design Guidance and Specifications

Specifications for Erosion Control Compost to be used as filter material may be found in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).

3.5.5 Inspection and Maintenance Requirements

Filter berms should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for buildup of excess sediment, undercutting, and other failures. Silt must be removed

when before it reaches half the height of the berm. Silt may be raked from the disturbed side of the device to clean side the berm for the first few times that it becomes clogged to prevent ponding. Repeated clogging of the berm at one location will require replacement of the organic filter material or may require installation of another control to prevent failure of the berm.

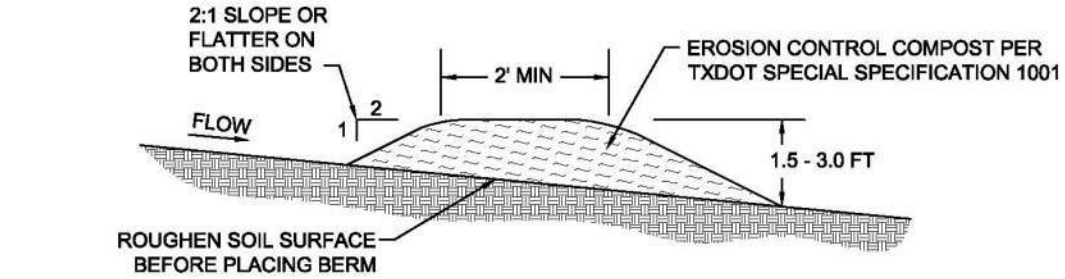
Dimensions of the berm must be maintained by replacing organic filter material when necessary. Typically excess material is stockpiled onsite for repairs to berms disturbed by construction activity.

There shall be no signs of erosion, breeching or runoff around or under the berm.

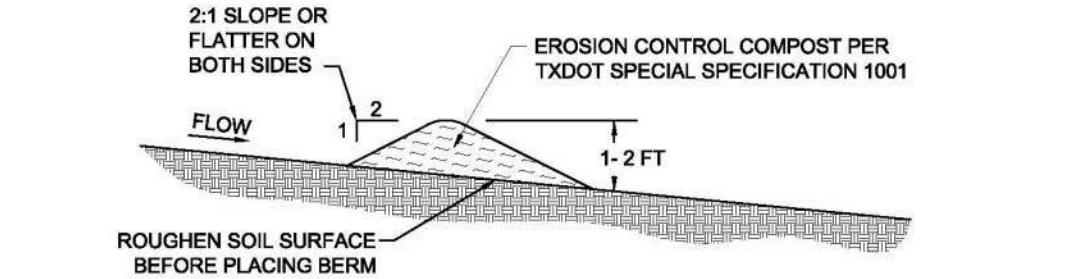
3.5.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



TRAPEZOIDAL SHAPED ORGANIC FILTER BERM
N.T.S.



TRIANGULAR SHAPED ORGANIC FILTER BERM
N.T.S.

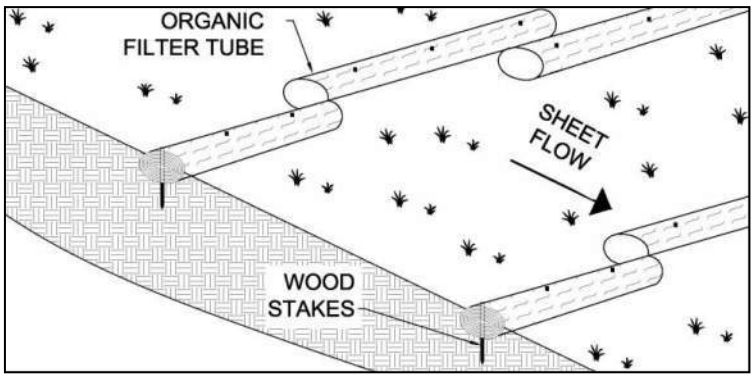
NOTE: DIMENSIONS OF THE BERM SHALL BE DESIGNED BASED ON FLOW CONDITIONS. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS TO DESIGN THE SWALE:

- SIZE OF CONTRIBUTING DRAINAGE AREA
- DESIGN STORM
- FLOW RATE
- BERM HEIGHT AND WIDTH

Figure 3.14 Schematics of Organic Filter Berm

3.6 Organic Filter Tubes

Sediment Control



Description: Organic filter tubes are comprised of an open weave, mesh tube that is filled with a filter material (compost, wood chips, straw, coir, aspen fiber, or a mixture of materials). The tube may be constructed of geosynthetic material, plastic, or natural materials. Organic filter tubes are also called fiber rolls, fiber logs, wattles, mulch socks, and/or coir rolls. Filter tubes detain flow and capture sediment as linear controls along the contours of a slope or as a perimeter control down-slope of a disturbed area.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Tube diameter when filled shall be specified on the plans
- 3 inch minimum embedment in soil
- 18 inch minimum overlap at ends of tubes
- Spacing based on drainage area and slope
- Must be staked on soil and secured with rockbags on pavement
- Turn ends of tube lines upslope a minimum of 10 feet

ADVANTAGES / BENEFITS:

- Effective means to treat sheet flow over a short distance
- Relatively easy to install
- May be used on steep slopes
- Can provide perimeter control on paved surfaces or where soil type prevents embedment of other controls
- Work well as perimeter controls around stockpiles

DISADVANTAGES / LIMITATIONS:

- Difficult to remove when wet and/or filled with sediment
- Relatively small effective areas for sediment capture

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Repair eroded areas underneath the organic filter tubes
- Re-align and stake tubes that are dislodged by flow
- Remove sediment before it reaches half the height of the exposed tube

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ◒ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *None*

3.6.1 Primary Use

Organic filter tubes are long, flexible controls that are used along a line of constant elevation (along a contour) on slopes. They are used as perimeter controls down slope of disturbed areas, around temporary stockpiles and on side slopes where stormwater may runoff the area. The tubes maintain sheet flow, slow velocities, and capture sediment. When used in series on slopes, they also shorten the slope length and protect the slope from erosion.

3.6.2 Applications

Organic filter tubes include a wide variety of tube and filter materials. Organic filter tubes are used as a perimeter sediment barrier, similar to silt fence, for development projects and linear projects, such as roadways and utilities. They work well on individual residential lots and on lots being re-developed, where space may be limited. Organic filter tubes are most effective with coarse to silty soil types. Additional controls may be needed to remove fine silts and clay soils suspended in stormwater.

Organic filter tubes can be used on paved surfaces where it's not possible to stake a silt fence. Applications on paved surfaces include perimeter controls for soil stockpiles, pavement repair areas, utility trenching, and building demolition. When compost filter material is used in tubes on pavement, the material has the added benefit of removing some oil and grease from stormwater runoff.

Applications on slopes include temporary sediment control during construction and erosion control of the disturbed soil on the slope. Organic filter tubes may be used to control sheet flow on slopes when final stabilization measures are being applied and established.

Organic filter tubes may also be used for inlet protection and, in limited cases, as check dams in small drainage swales. Refer to *Section 3.4 Inlet Protection* and *Section 2.1 Check Dam* for the design criteria to use organic filter tubes in these applications.

3.6.3 Design Criteria

General Criteria

- Filter tubes should be installed along the contour.
- Tubes shall be staked with 2 inch by 2 inch wooden stakes at a maximum spacing of 4 feet. Rebar or similar metal stakes may be used instead of wooden stakes.
- When placed on pavement, sand or rock bags shall be placed abutting the down-slope side of the tubes to prevent runoff from dislodging the tubes. At a minimum, bags shall be placed one foot from each end of the tube and at the middle of the tube.
- Filter tubes shall be embedded a minimum of three inches when placed on soil. Placement on rock shall be designed as placement on pavement.
- The end of tubes shall overlap a minimum of 18 inches when multiple tubes are connected to form a linear control along a contour or a perimeter.
- Loose mulch material shall be placed against the log on the upstream side to facilitate contact with the ground.
- The last 10 feet (or more) at the ends of a line of tubes shall be turned upslope to prevent bypass by stormwater. Additional upslope lengths of tubes may be needed every 200 to 400 linear feet, depending on the traverse slope along the line of tubes.
- The most common sizes of tubes are 6 to 24 inches in diameter; however, tubes are available in sizes as small as 4 inches and up to 36 inches in diameter. The designer shall specify a diameter based on the site application. Tubes less than 8 inches in diameter when filled will require more frequent maintenance if used.

- Manufactured organic filter tube products shall have documentation of a minimum 75 percent soil retention using ASTM D7351 Standard Test Method for Determination of Sediment Retention Device Effectiveness in Sheet Flow Applications.
- When using manufactured tubes, the manufacturer's recommendations for diameter and spacing based on slope, flow velocities, and other site conditions shall be followed when they are more stringent than the design criteria in this section.
- When used as a perimeter control on grades of 10:1 or less, criteria in the following table shall be used as a guide for the size and installation rate of the organic filter tube.

Table 3.1 Perimeter Control Applications*

Drainage Area (Max)	*Max Flow Length to the Tube*	*Tube Diameter (Min)*
1/3 Acre per 100 feet	145 feet	18 inches
1/4 Acre per 100 feet	110 feet	15 inches
1/5 Acre per 100 feet	85 feet	12 inches
1/8 Acre per 100 feet	55 feet	9 inches

(Source: Modified and expanded from City of Plano Fact Sheet SP-13)
*Applicable on grades of 10:1 or flatter.

- When installing organic filter tubes along contours on slopes, criteria in the following table shall be used as a general guide for size and spacing of the tubes. Actual tube diameter and spacing shall be specified by the designer. The designer shall consider the tube manufacturers recommendations, the soil type, flow volume on the slope, required performance life, and erosion control measures that may be used in conjunction with the tubes.

Table 3.2 Maximum Spacing for Slope Protection

	Tube Diameter (Min)			
Slope (H:V)	*9 Inches*	*12 Inches*	*18 Inches*	*24 Inches*
5:1 to 10:1	35 feet	40 feet	55 feet	60 feet
4:1	30 feet	40 feet	50 feet	50 feet
3:1	25 feet	35 feet	40 feet	40 feet
2:1	20 feet	25 feet	30 feet	30 feet
1:1	10 feet	15 feet	20 feet	20 feet

(Source: Modified and expanded from Iowa Statewide Urban Design and Specifications Standards for Filter Socks)

Tube Material

- The designer shall specify the type of mesh based on the required life of the tube. At a minimum, the mesh shall have a rated life of one year under field conditions.
- If the tubes will be left onsite as part of the final stabilization, they must be constructed of 100 percent biodegradable jute, coir, sisal or similar natural fiber or 100 percent UV photodegradable plastic, polyester or geosynthetic material.
- Mesh tubes may be oval or round in cross-section.
- Mesh for the tubes shall be open and evenly woven. Size of weave openings shall be specified based on filter material. Openings may range from ½ inch for Erosion Control Compost to 2 inches for straw and coir.
- Mesh openings should not exceed ½ inch in diameter.

Filter Material

- Different filter materials have different properties and will affect sheet flow differently. The designer shall specify the type of material to be used (or excluded) on a particular site.
- Straw filter material shall be Certified Weed Free Forage. The straw must be in good condition, air-dried, and not rotten or moldy.
- Compost shall conform to the requirements for Erosion Control Compost in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).
- Compost may provide some oil and grease removal; however, the large percentage of fines in compost will result in less filtering and more ponding of stormwater.
- Wood chips shall be 100 percent untreated chips and free of inorganic debris, such as plastic, glass, metal, etc. Wood chip size shall not be smaller than 1 inch and shall not exceed 3 inches in diameter. Shavings shall not be more than 5% of the total mass.

3.6.4 Design Guidance and Specifications

Specifications for Erosion Control Compost to be used as filter material may be found in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).

3.6.5 Inspection and Maintenance Requirements

Organic filter tubes should be inspected regularly (at least as often as required by the TPDES Construction General Permit). The filter tube should be checked to ensure that it is in continuous contact with the soil at the bottom of the embedment trench. Closely check for rill erosion that may develop under the filter tubes. Eroded spots must be repaired and monitored to prevent reoccurrence. If erosion under the tube continues, additional controls are needed.

Staking shall be checked to ensure that the filter tubes are not moving due to stormwater runoff. Repair and re-stake slumping filter tubes. Tubes that are split, torn or unraveling shall be repaired or replaced.

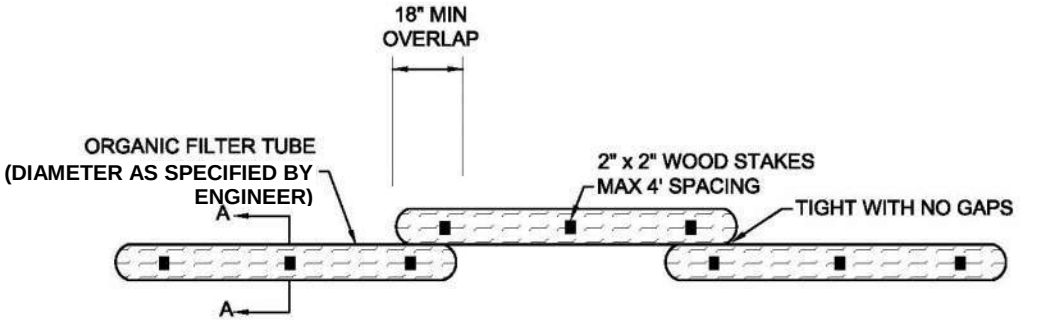
Check the filter tube material to make sure that it has not become clogged with sediment or debris. Clogged filter tubes usually lead to standing water behind the filter tube after the rain event. Sediment shall be removed from behind the filter tube before it reaches half the height of the exposed portion of the tube.

When sediment control is no longer needed on the site, the tubes may be split open and the filter material may be used for mulching during establishment of vegetation for final stabilization if it meets the criteria in *Section 2.5 Mulching*.

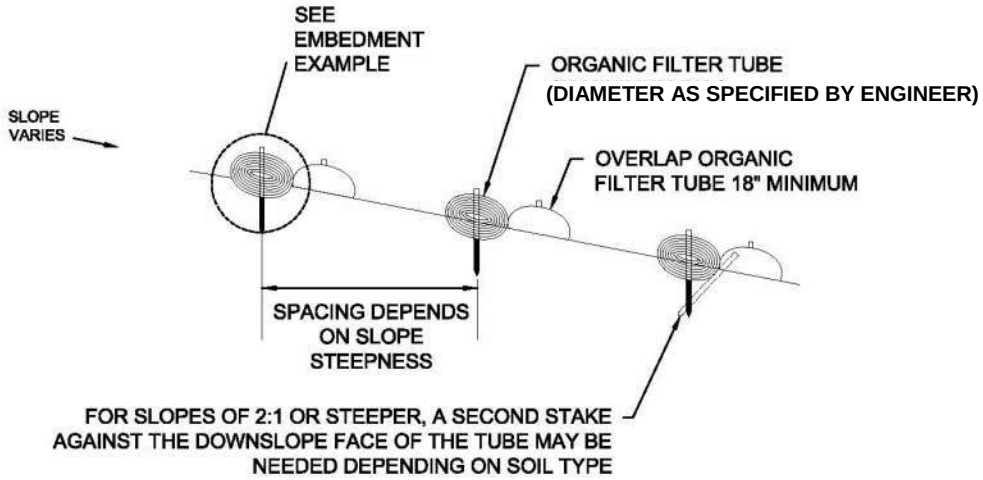
3.6.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



ORGANIC FILTER TUBE PERIMETER CONTROL PLAN VIEW
N.T.S.



ORGANIC FILTER TUBE SLOPE PROTECTION PROFILE
N.T.S.

NOTES:

1. TYPE OF NETTING, FILTER MATERIAL, DIAMETER OF TUBE, AND SPACING OF TUBES SHALL BE SPECIFIED BY THE DESIGNER BASED ON THE FOLLOWING SITE PARAMETERS.
   - SIZE OF CONTRIBUTING DRAINAGE AREA
   - STEEPNESS OF SLOPE
   - GROUND CONDITIONS (SOIL OR PAVEMENT)
2. DESIGNER SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE TUBES ARE TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE MINIMUM OF 10 FEET.

Figure 3.15 Schematics of Organic Filter Tubes

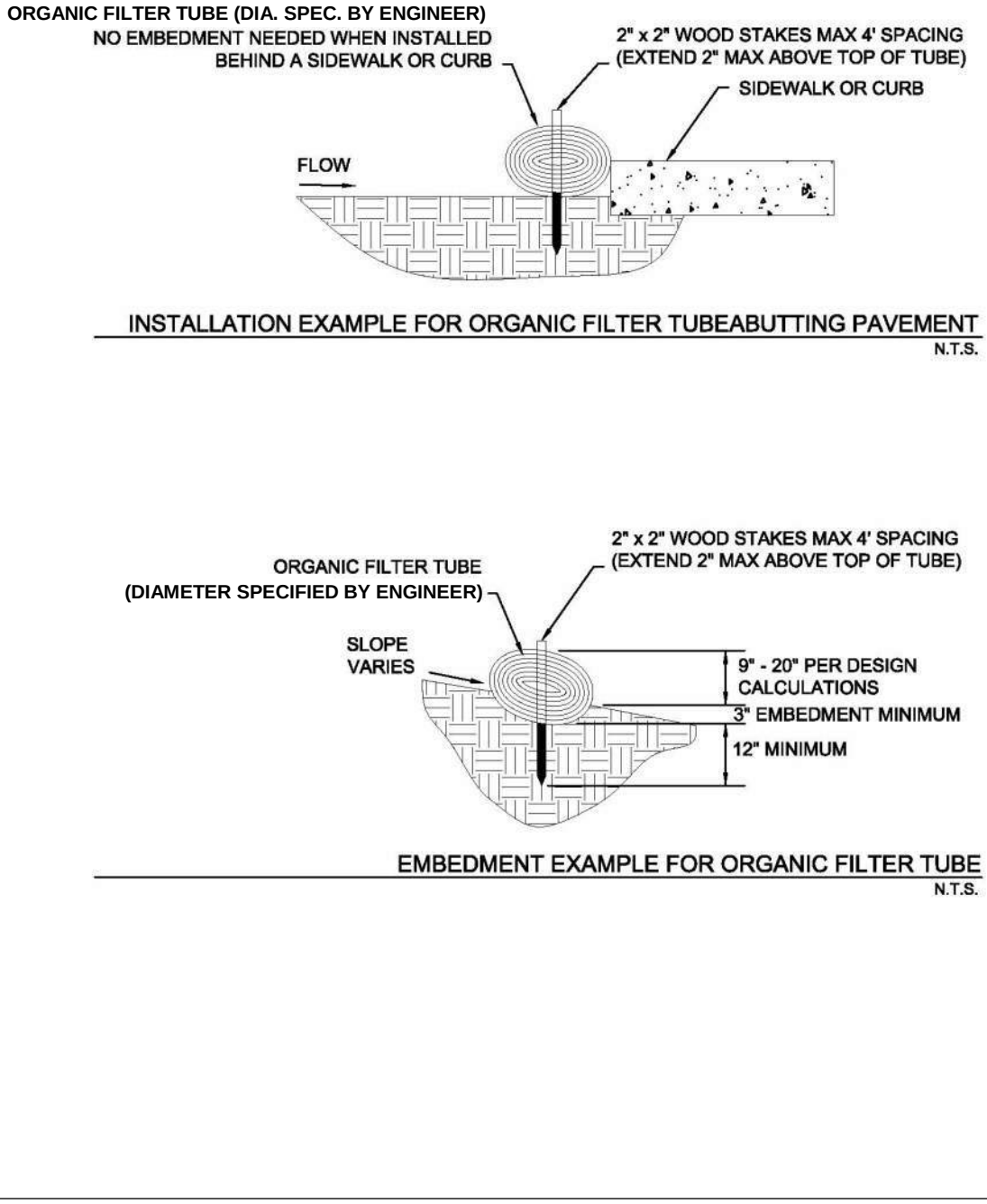
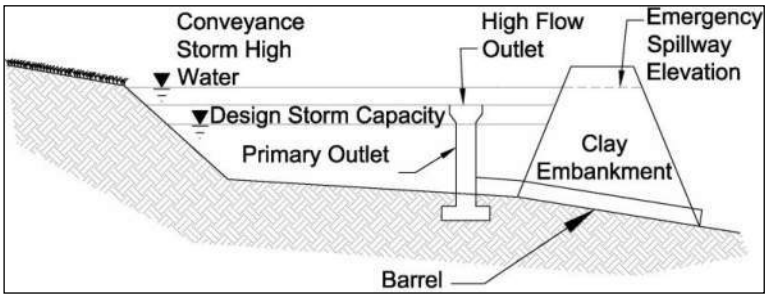


Figure 3.16 Examples of Organic Filter Tube Installation Methods

3.9 Sediment Basin

Sediment Control



Description: A sediment basin is an embankment with a controlled outlet that detains stormwater runoff, resulting in the settling of suspended sediment. The basin provides treatment for the runoff as well as detention and controlled release of runoff, decreasing erosion and flood impacts downstream.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Minimum 4:1 length to width ratio
- Maximum embankment height and storage capacity limited by TCEQ requirements
- Minimum dewatering time of 36 hours
- Safely pass 25-year, 24-hour storm event without structure damage

ADVANTAGES / BENEFITS:

- Effective at removing suspended sand and loam
- May be both a temporary and permanent control
- Can be used in combination with passive treatment

DISADVANTAGES / LIMITATIONS:

- Effectiveness depends on type of outlet
- Limited effectiveness in removing fine silt and clay
- May require a relatively large portion of the site
- Storm events that exceed the design storm event may damage the structure and cause downstream impacts

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Remove obstructions from discharge structures
- Remove sediment and re-grade basin when storage capacity reduced by 20 percent

TARGETED POLLUTANTS

- ● Sediment
- ◒ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.90
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ● Capital Costs
- ◒ Maintenance
- ○ Training
- ● Suitability for Slopes > 5%

Other Considerations:

- *Public safety*
- *Mosquito breeding habitat*
- *Requires comprehensive planning and design*

3.9.1 Primary Use

Sediment basins should be used for all sites with adequate open space for a basin and where the site topography directs a majority of the site drainage to one point. Sediment basins are necessary as either temporary or permanent controls for sites with disturbed areas of 10 acres and larger that are part of a common drainage area unless specific site conditions limit their use.

3.9.2 Applications

Sediment basins serve as treatment devices that can be used on a variety of project types. They are normally used in site development projects in which large areas of land are available for the basin, a minor stream or off-line drainage way crosses the site, or a specific water feature is planned for the site. Sediment basins are highly effective at reducing sediment and other pollutants for design storm conditions. Sediment basins are typically easier to maintain than other structural controls (e.g. silt fences, etc).

A sediment basin by itself does not typically remove a sufficient percentage of fine silts and clays to be an effective sediment barrier. Table 3.3 provides a summary of sediment basin effectiveness based on soil type.

Table 3.3 Sediment Basin Effectiveness for Different Soil Types

Soil Type	*Runoff Potential*	*Settling Rate*	*Sediment Basin Effectiveness*	*Efficiency Rating (Fe)*
Sand	Low	High	High	0.90
Sandy Loam	Low	High	High	0.90
Sandy Silt Loam	Moderate	Moderate	Moderate	0.75
Silt Loam	Moderate	Moderate	Moderate	0.75
Silty Clay Loam	Moderate	Low	Low	0.75
Clay Loam	Great	Low	Low	0.50
Clay	Great	Low	Low	0.50

(Source: Michigan Department of Environmental Quality Soil Erosion and Sedimentation Control Training Manual)

When the disturbed area contains a high percentage of fine silt or clay soil types, the sediment basin may be used with a passive or active treatment system to remove these finer suspended solids. Design criteria may be found in *Section 3.1 Active Treatment System* and *Section 3.7 Passive Treatment System*.

3.9.3 Design Criteria

Texas Administrative Code Title 30, Chapter 299 (30 TAC 299), Dams and Reservoirs, contains specific requirements for dams that:

- Have a height greater than or equal to 25 feet and a maximum storage capacity greater than or equal to 15 acre-feet; or
- Have a height greater than six feet and a maximum storage capacity greater than or equal to 50 acre feet.

If the size of the detention basin meets or exceeds the above applicability, the design must be in accordance with state criteria, and the final construction plans and specifications must be submitted to the TCEQ for review and approval.

The following design criteria are for temporary sediment basins that are smaller than the TCEQ thresholds. The sediment basin shall be designed by a licensed engineer in the State of Texas. The criteria and schematics are the minimum and, in some cases, only concept level. It is the responsibility of the engineer to design and size the embankment, outfall structures, overflow spillway, and downstream

energy dissipaters and stabilization measures. Alternative designs may be acceptable if submitted to the reviewing municipality with supporting design calculations.

Sediment Basin Location and Planning

- Design of the sediment basin should be coordinated with design of the permanent drainage infrastructure for the development.
- The basin shall not be located within a mapped 100-year floodplain unless its effects on the floodplain are modeled, and the model results are approved by the reviewing municipality.
- Basins shall not be located on a live stream that conveys stormwater from upslope property through the construction site.
- Basins may be located at the discharge point of a drainage swale that collects runoff from construction activities, or the basin may be located off-channel with a swale or dike constructed to divert runoff from disturbed areas to the basin. Design criteria for these controls are in *Section 2.2 Diversion Dike* and *Section 2.4 Interceptor Swale*.
- Sediment basins must be designed, constructed, and maintained to minimize mosquito breeding habitats by minimizing the creation of standing water.
- Temporary stabilization measures should be specified for all areas disturbed to create the basin.

Basin Size

- Minimum capacity of the basin shall be the calculated volume of runoff from a 2-year, 24-hour duration storm event plus sediment storage capacity of at least 1,000 cubic feet.
- The basin must be laid out such that the effective flow length to width ratio of the basin is a minimum of 4:1. Settling efficiencies are dependent on flow velocity, basin length, and soil type. Smaller particle sizes require slower velocities and longer basins. Basin dimensions should be designed based on flow velocities and anticipated particle sizes.
- Stoke's equation for settling velocities, as modified to Newton's equation for turbulent flow, may be used to estimate length required based on depth of the basin.

  Settling Velocity (ft/s) = 1.74 $[(\rho_p - \rho)gd/\rho]^{1/2}$ **(3.1)**

  Where:

  ρ_p = density of particles (lb/ ft^3)

  ρ = density of water (lb/ft^3)

  g = gravitational acceleration (ft/s^2)

  d = diameter of particles (ft)
- The effective length of sediment basins may be increased with baffles. Baffles shall be spaced at a minimum distance of 100 feet. Spacing should be proportional to the flow rate, with greater spacing for higher flow rates. Check the flow velocity in the cross section created by the baffles to ensure settling will occur.
- Baffles may be constructed by using excavated soil to create a series of berms within the basin; however, porous baffles are recommended. Porous baffles may consist of coir fiber, porous geotextiles, porous turbidity barriers, and similar materials. Porous materials disrupt the flow patterns, decrease velocities, and increase sedimentation.
- Basins have limited effectiveness on suspended clay soil particles. The basin's length to width ratio typically should be 10:1 to effectively remove suspended clay particles. The use of passive treatment systems can significantly reduce this ratio and improve removal rates. Criteria are in *Section 3.7 Passive Treatment System*.

Embankment

- Top width shall be determined by the engineer based on the total height of the embankment as measured from the toe of the slope on the downstream side.
- Embankment side slopes shall be 3:1 or flatter.
- The embankment shall be constructed with clay soil, minimum Plasticity Index of 30 using ASTM D4318 Standard Test for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- Clay soil for the embankment shall be placed in 8 inch lifts and compacted to 95 percent Standard Proctor Density at optimum moisture content using ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
- The embankment should be stabilized with rock riprap or temporary vegetation.

Outlet and Spillway

- The primary outlet shall have a minimum design dewatering time of 36 hours for the temporary control design storm (2-year, 24-hour).
- Whenever possible, the outlet shall be designed to drain the basin in less than 72 hours to minimize the potential for breeding mosquitoes.
- The basin's primary outlet and spillway shall be sized to pass the difference between the conveyance storm (25-year, 24-hour) and the temporary control design storm without causing damage to the embankment and structures.
- Unless infeasible, the primary outlet structure should withdraw water from the surface of the impounded water. Outlet structures that do this include surface skimmers, solid risers (non-perforated), flashboard risers, and weirs.
- Surface skimmers use a floating orifice to discharge water from the basin. Skimmers have the advantage of being able to completely drain the detention basin. Skimmers typically result in the greatest sediment removal efficiency for a basin, because they allow for a slower discharge rate than other types of surface outlets. Due to this slower discharge rate, a high flow riser may still be needed to discharge the conveyance storm if a large enough spillway is not feasible due to site constraints.
- Discharge rates for surface skimmers are dependent on the orifice configuration in the skimmer. Use manufacturer's flow rate charts to select the skimmer based on the flow rate needed to discharge the design storm from the basin within a selected time period (i.e. Q=Volume/time).
- Risers shall be designed using the procedures in *Section 3.9.7 Design Procedures*.
- Weir outlets should be designed using the guidance in *Section 2.2.2 of the Hydraulics Technical Manual*.
- Use of overflow risers and weirs result in a pool of water that should be accounted for in the design capacity of the basin. These outlet structures are good options when the temporary sediment basin will be retained as a permanent site feature upon completion of construction. If the basin is temporary and standing water is not acceptable during construction, the construction plans shall include procedures for dewatering the basin following criteria in *Section 3.3 Dewatering Controls*.
- Flashboard risers function like an overflow riser pipe, but they contain a series of boards that allow for adjustment of the pool level. The boards may be removed for draining the basin to a lower level. However, this operation can be difficult and a safety hazard when done manually.
- A perforated riser may be used as an outlet when surface discharge is not feasible. A perforated rise has the advantage of dewatering the basin; however, it also results in the lowest sediment removal efficiency. Perforated risers provide a relatively rapid drawdown of the pool, and they discharge water from the entire water column, resulting in more suspended sediment being discharged than with a surface outlet.

- Size and spacing of the orifices on a perforated riser shall be designed to provide the minimum detention time while allowing for the drawdown of detained water.
- Gravel (1½ to 3 inches) may be placed around the perforated riser to aid sediment removal, particularly the removal of fine soil particles, and to keep trash from plugging the perforations. The gravel is most effective when the basin will be used for less than a year. When installed for longer periods of time, the gravel may become clogged with fine sediments and require cleaning while submerged.
- The outlet of the outfall pipe (barrel) shall be stabilized with riprap or other materials designed using the conveyance storm flow rate and velocity. Velocity dissipation measures shall be used to reduce outfall velocities in excess of 5 feet per second.
- The outfall pipe through the embankment shall be provided with anti-seep collars connected to the exterior of the pipe section or at a normal joint of the pipe material. The anti-seep collar material shall be compatible with the pipe material used and shall have a watertight bond to the exterior of the pipe section. The size and number of collars shall be selected by the designer in accordance with the following formula and table:

  Collar Outside Dimension = X + Diameter of pipe in feet

  Example: Pipe Length = 45 feet
  Barrel Pipe Diameter = 12 inches = 1 foot
  2 anti-seep collars

  Anti-seep Collar Dimensions:
  3.4 feet (from table) + 1.0 foot (Pipe dia.) = 4.4 feet
  Use 2 anti-seep collars each being 4.4 feet square or 4.4 feet diameter if round.

Table 3.4 Number and Spacing of Anti-Seep Collars

	X Values - Feet			
Pipe Length	*Number of Anti-Seep Collars*			
	1	**2**	**3**	**4**
40	6.0	3.0		
45	6.8	3.4		
50	7.5	3.8	2.5	
55		4.2	2.8	
60		4.5	3.0	
65		4.9	3.3	
70		5.3	3.5	2.6
75		5.6	3.8	2.8
80		6.0	4.0	3.0

- Risers used to discharge high flows shall be equipped with an anti-vortex device and trash rack.
- Spillways shall be constructed in undisturbed soil material (not fill) and shall not be placed on the embankment that forms the basin.

3.9.4 Design Guidance and Specifications

Design guidance for temporary sediment basins is in *Section 3.9.7 Design Procedures*. Criteria for sediment basins that will become permanent detention basins are in *Section 3.6.3 of the iSWM Criteria Manual*. Additional design guidance for different types of outlet structures is in *Section 2.2 of the Hydraulics Technical Manual*.

No specification for construction of this item is currently available in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments.

3.9.5 Inspection and Maintenance Requirements

Sediment basins should be inspected regularly (at least as often as required by the TPDES Construction General Permit) to check for damage and to insure that obstructions are not diminishing the effectiveness of the structure. Sediment shall be removed and the basin shall be re-graded to its original dimensions when the sediment storage capacity of the impoundment has been reduced by 20 percent. The removed sediment may be stockpiled or redistributed onsite in areas that are protected by erosion and sediment controls.

Inspect temporary stabilization of the embankment and graded basin and the velocity dissipaters at the outlet and spillway for signs of erosion. Repair any eroded areas that are found. Install additional erosion controls if erosion is frequently evident.

3.9.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. Dimensions of the sediment basin, embankment, and appurtenances shall be designed by an engineer licensed in the State of Texas. Construction drawings submitted to the municipality for review shall include, but are not limited to, the following information and supporting calculations.

- Embankment height, side slopes and top width.
- Dimensions of the skimmer, riser, weir or other primary outlet.
- Diameter of outfall pipe (barrel).
- Pool elevation for the temporary control design storm and conveyance storm.
- Outfall pipe flow rate and velocity for the temporary control design storm and conveyance storm.
- Spillway cross section, slope, flow rate, and velocity for the conveyance storm.
- Depth, width, length, and mean stone diameter for riprap apron or other velocity dissipation device at the outfall pipe and spillway discharge points.

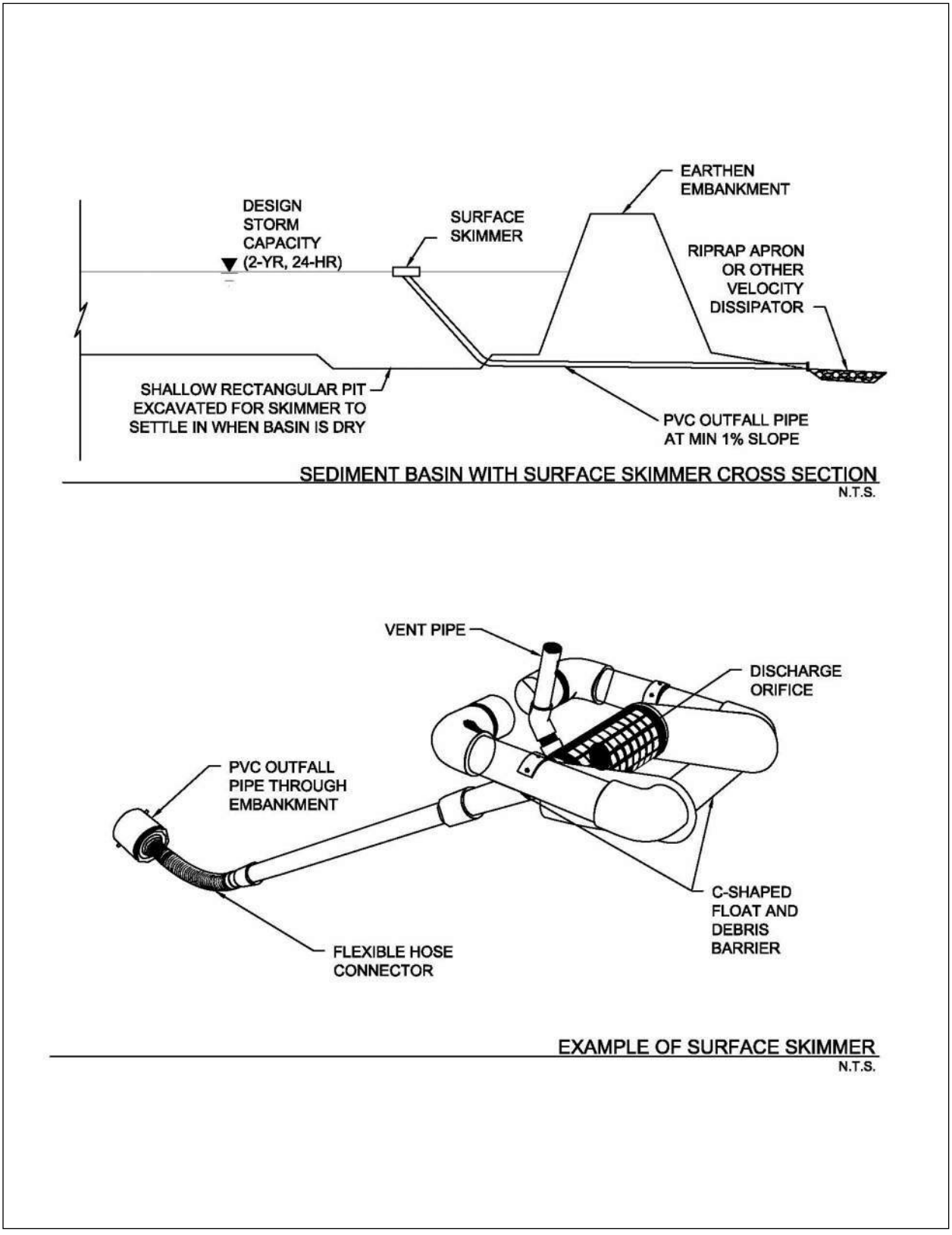


Figure 3.19 Schematics of Sediment Basin with Surface Skimmer
(Source: J.W. Faircloth & Son, Inc.)

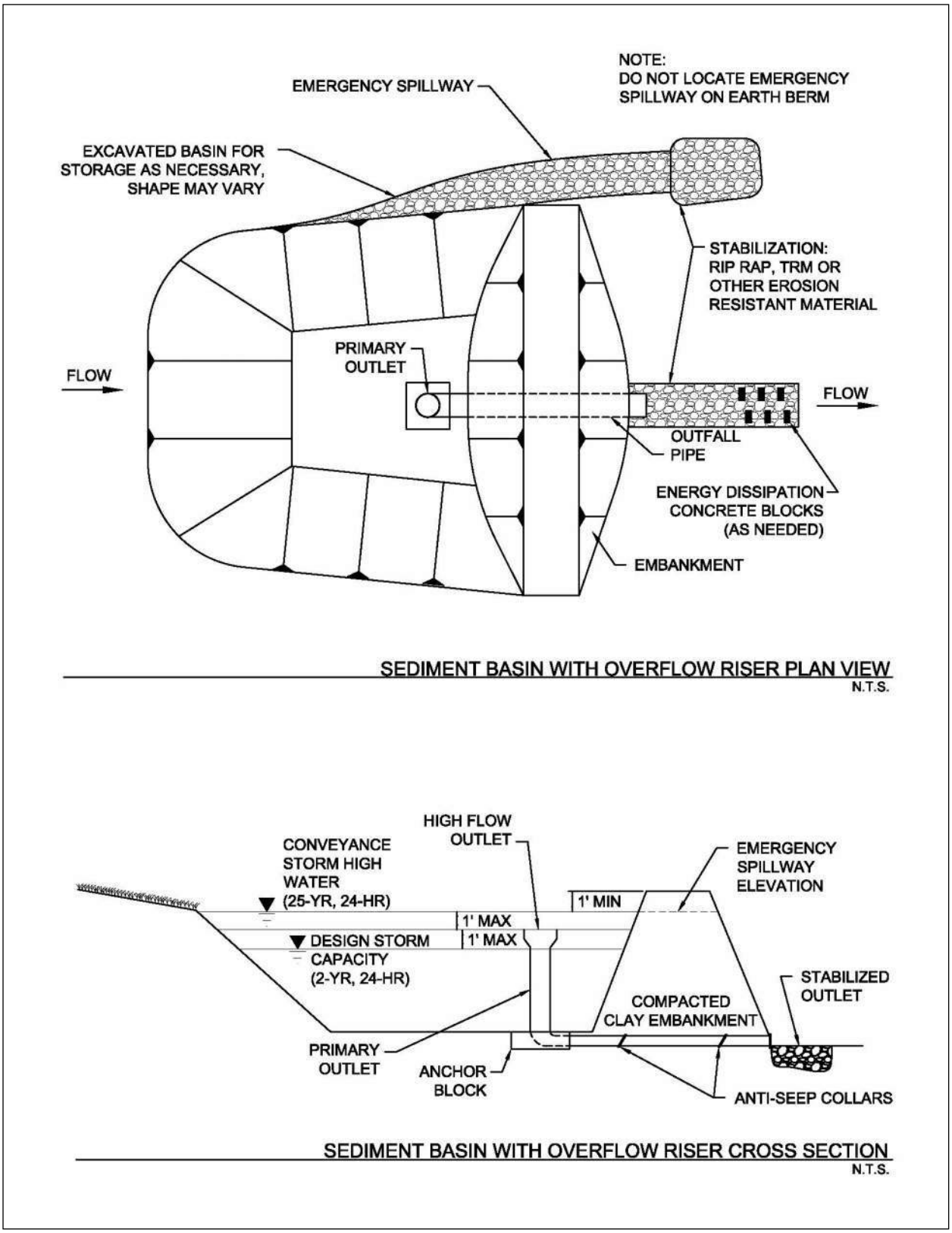


Figure 3.20 Schematics of Sediment Basin with Overflow Riser

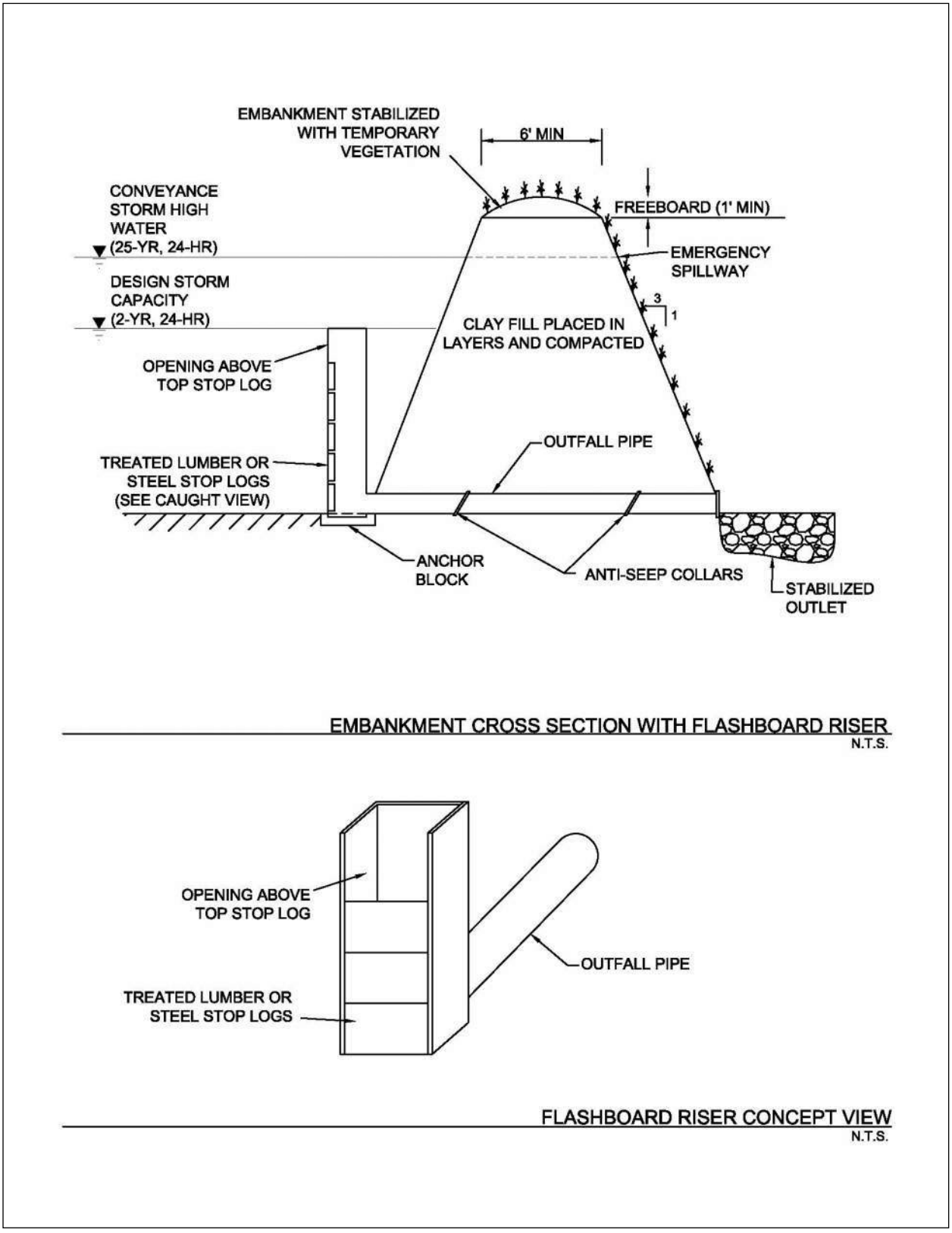


Figure 3.21 Schematics of Basin Embankment with Flashboard Riser

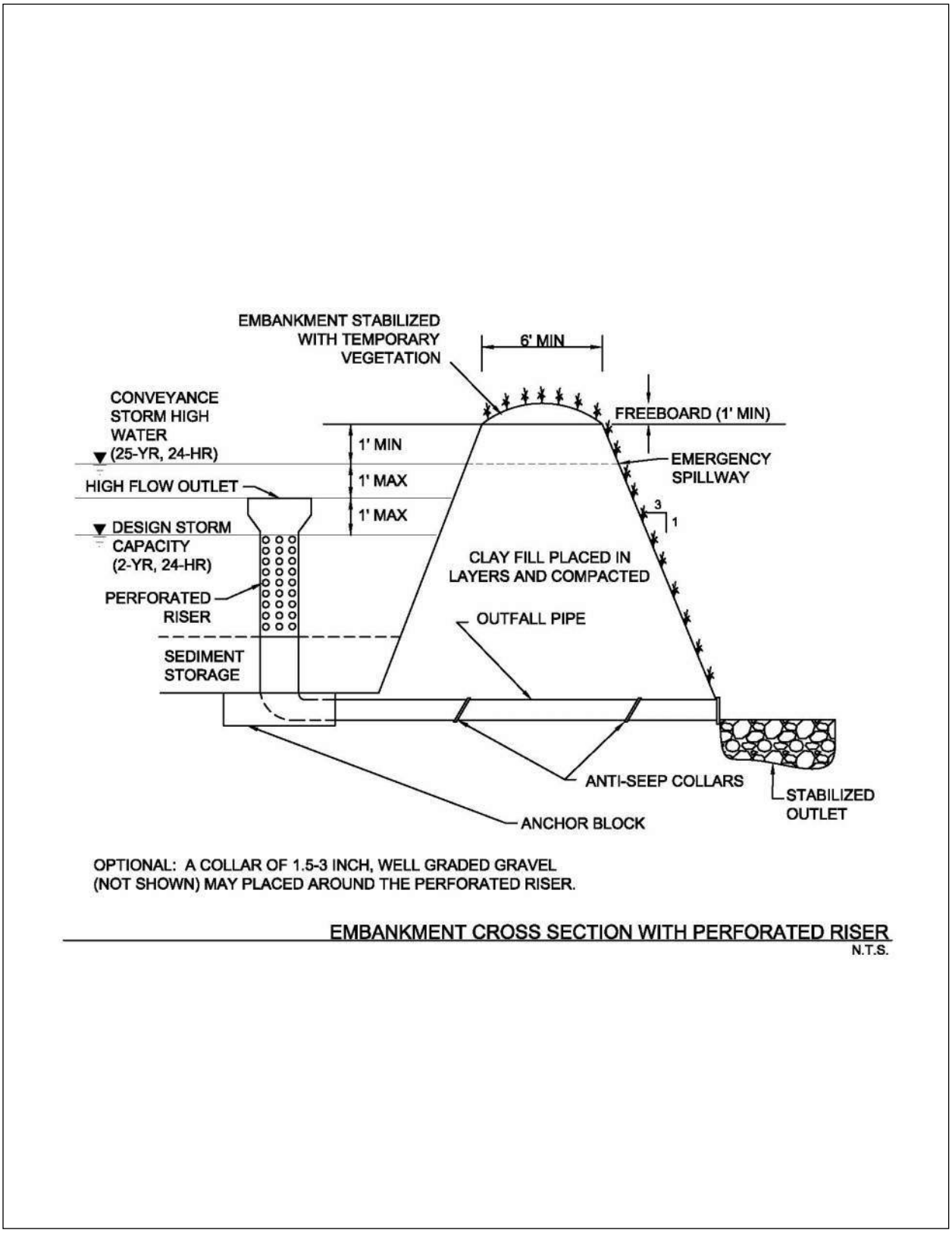


Figure 3.22 Schematic of Basin Embankment with Perforated Riser

3.9.7 Design Procedures

The following procedures provide a step-by-step method for the design of a temporary sediment basin that is smaller than the TCEQ thresholds for state requirements to apply. Criteria in *Section 3.8 of the iSWM Criteria Manual* should be used for the design of permanent basins (dry detention/extended dry detention) and stormwater ponds. *Section 3.9.8 Design Form* should be used to document the design values calculated for the temporary sediment basin.

These design procedures are provided as an example of the steps required to design a temporary sediment basin and are based on a specific type of primary outlet. When designing a sediment basin for a construction site, it's the engineer's responsibility to select the type of outlet that is appropriate based on criteria in the preceding sections and to modify the following procedures as needed to use appropriate calculations for the selected outlet, particularly in Steps 12, 13, and 14.

Step 1 Determine the required basin volume.

The basin volume shall be the calculated volume of runoff from the temporary control design storm (2-year, 24-hour) from each disturbed acre draining to the basin. When rainfall data is not available, a design volume of 3600 cubic feet of storage per acre drained may be used.

For a natural basin, the storage volume may be approximated as follows:

$$\mathbf{V_1 = 0.4 \times A_1 \times D_1} \qquad \mathbf{(3.2)}$$

where:

V_1 = the storage volume in cubic feet

A_1 = the surface area of the flooded area at the crest of the basin outlet, in square feet

D_1 = the maximum depth in feet, measured from the low point in the basin to the crest of the basin riser

Note 1: The volumes may be computed from more precise contour information or other suitable methods.

Note 2: Conversion between cubic feet and cubic yards is as follows:

Number of cubic feet x 0.037 = number of cubic yards

If the volume of the basin is inadequate or embankment height becomes excessive, pursue the use of excavation to obtain the required volume.

Step 2 Determine the basin shape.

The shape of the basin must be such that the length-to-width ratio is at least 4 to 1 according to the following equation:

$$\mathbf{\text{Length-to-width Ratio} = \frac{L}{We}} \qquad \mathbf{(3.3)}$$

where:

We = A/L = the effective width

A = the surface area of the normal pool

L = the length of the flow path from the inflow to the outflow. If there is more than one inflow point, any inflow that carries more than 30 percent of the peak rate of inflow must meet these criteria.

The correct basin length can be obtained by proper site selection, excavation, or the use of baffles. Baffles increase the flow length by interrupting flow and directing it through the basin in a circuitous path to prevent short-circuiting. Porous baffles are recommended. Spacing of baffles should be wide enough to not cause a channeling effect within the basin. Analyze the

flow cross section and velocity between baffles to ensure that velocities are not too fast for settling to occur.

Step 3 Design the embankment.

The side slopes of the embankment should be 3:1 or flatter.

Top width shall be determined by the engineer based on the total height of the embankment.

The area under the embankment should be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable materials. The pool area should also be cleared of all brush and trees.

The embankment fill material should be clay soil from an approved borrow area. It should be clean soil, free from roots, woody vegetation, oversized stones, and rocks.

Step 4 Select the type(s) of outlet(s).

The outlets for the basin may consist of a combination of a primary outlet and emergency spillway or a primary outlet alone. In either case, the outlet(s) must pass the peak runoff expected from the drainage area for the conveyance storm (25-year, 24-hour) without damage to the embankment, structures, or basin.

Step 5 Determine whether the basin will have a separate emergency spillway.

A side channel emergency spillway is required for sediment basins receiving stormwater from more than 10 acres.

Step 6 Determine the elevation of the crest of the basin outlet riser for the required volume.

Step 7 Estimate the elevation of the conveyance storm and the required height of the dam.

(a) If an emergency spillway is included, the crest of the basin outlet riser must be at least 1.0 foot below the crest of the emergency spillway.

(b) If an emergency spillway is included, the elevation of the peak flow through the emergency spillway (which will be the design high water for the conveyance storm) must be at least 1.0 foot below the top of embankment.

(c) If an emergency spillway is not included, the crest of the basin outlet riser must be at least 3 feet below the top of the embankment.

(d) If an emergency spillway is not included, the elevation of the design high water for the conveyance storm must be 2.0 feet below the top of the embankment.

Step 8 Determine the peak rate of runoff for a 25-year storm.

Using SCS TR 55 Urban Hydrology for Small Watersheds or other methods, determine the peak rate of runoff expected from the drainage area of the basin for the conveyance storm. The "C" factor or "CN" value used in the runoff calculation should be derived from analysis of the contributing drainage area at the peak of land disturbance (condition which will create greatest peak runoff).

Step 9 Design the basin outlet.

(a) If an emergency spillway is included, the basin outfall must at least pass the peak rate of runoff from the basin drainage area for the temporary control design storm (2-year, 24-hour).

Q_p = the 2-year peak rate of runoff.

(b) If an emergency spillway is not included, the basin outfall must pass the peak rate of runoff from the basin drainage area for the conveyance storm (25-year, 24-hour).

Q_{25} = the 25-year peak rate of runoff.

(c) Refer to Figure 3.23, where h is the difference between the elevation of the crest of the basin outlet riser and the elevation of the crest of the emergency spillway.

(d) Enter Figure 3.24 with Q_p. Choose the smallest riser which will pass the required flow with the available head, h.

(e) Refer to Figure 3.23, where H is the difference in elevation of the centerline of the outlet of the outfall and the crest of the emergency spillway. L is the length of the barrel through the embankment.

(f) Enter Table 3.5 or Table 3.6 with H. Choose the smallest size outlet that will pass the flow provided by the riser. If L is other than 70 feet, make the necessary correction.

(g) The basin riser shall consist of a solid (non-perforated), vertical pipe or box of corrugated metal joined by a watertight connection to a horizontal pipe (outfall) extending through the embankment and discharging beyond the downstream toe of the fill. Another approach is to utilize a perforated vertical riser section surrounded by filter stone.

(h) The basin outfall, which extends through the embankment, shall be designed to carry the flow provided by the riser with the water level at the crest of the emergency spillway. The connection between the riser and the outfall must be watertight. The outlet of the outfall must be protected to prevent erosion or scour of downstream areas.

(i) Weirs, skimmers and other types of outlets may be used if accompanied with appropriate calculations.

Step 10 Design the emergency spillway.

(a) The emergency spillway must pass the remainder of the 25-year peak rate of runoff not carried by the basin outlet.

(b) Compute: $Q_e = Q_{25} - Q_p$

(c) Refer to Figure 3.25 and Table 3.7.

(d) Determine approximate permissible values for b, the bottom width; s, the slope of the exit channel; and X, minimum length of the exit channel.

(e) Enter Table 3.7 and choose the exit channel cross-section which passes the required flow and meets the other constraints of the site.

(f) Notes:

1. The maximum permissible velocity for vegetated waterways must be considered when designing an exit channel.
2. For a given Hp, a decrease in the exit slope from S as given in the table decreases spillway discharge, but increasing the exit slope from S does not increase discharge. If an exit slope (Se) steeper than S is used, then the exit should be considered an open channel and analyzed using the Manning's Equation.
3. Data to the right of heavy vertical lines should be used with caution, as the resulting sections will be either poorly proportioned or have excessive velocities.

(g) The emergency spillway should not be constructed over fill material.

(h) The emergency spillway should be stabilized with rock riprap or temporary vegetation upon completion of the basin.

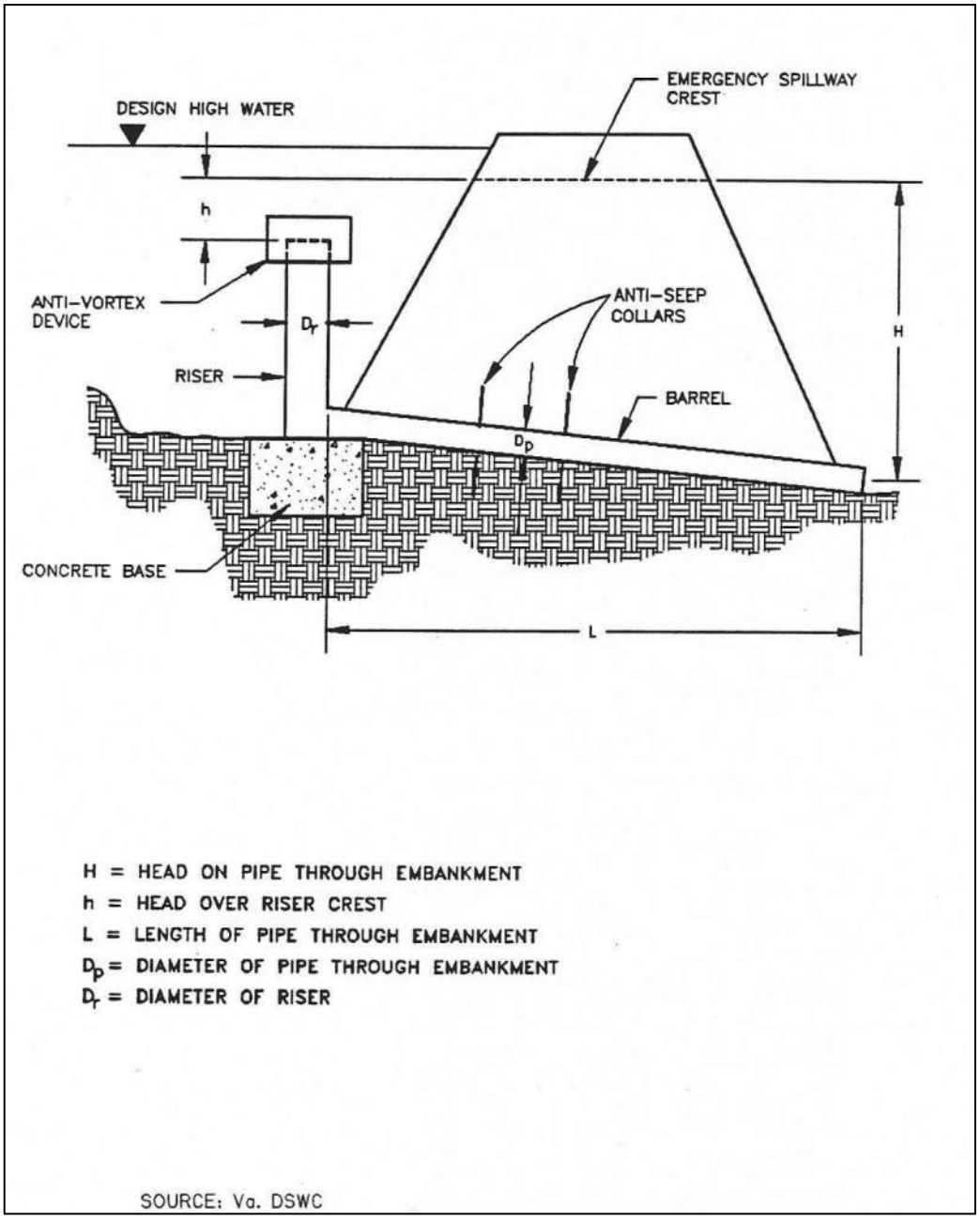


Figure 3.23 Example of Basin Outlet Design

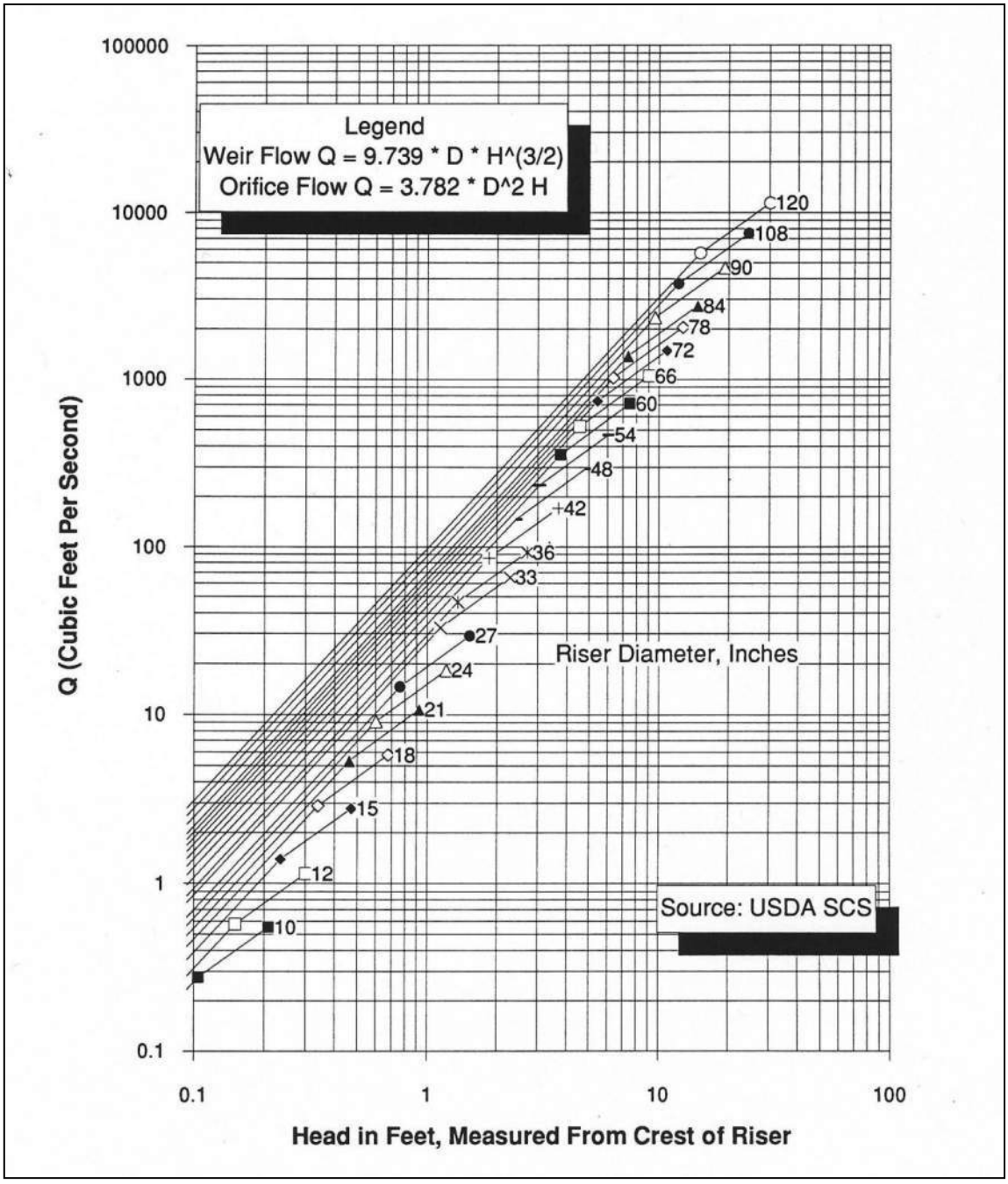
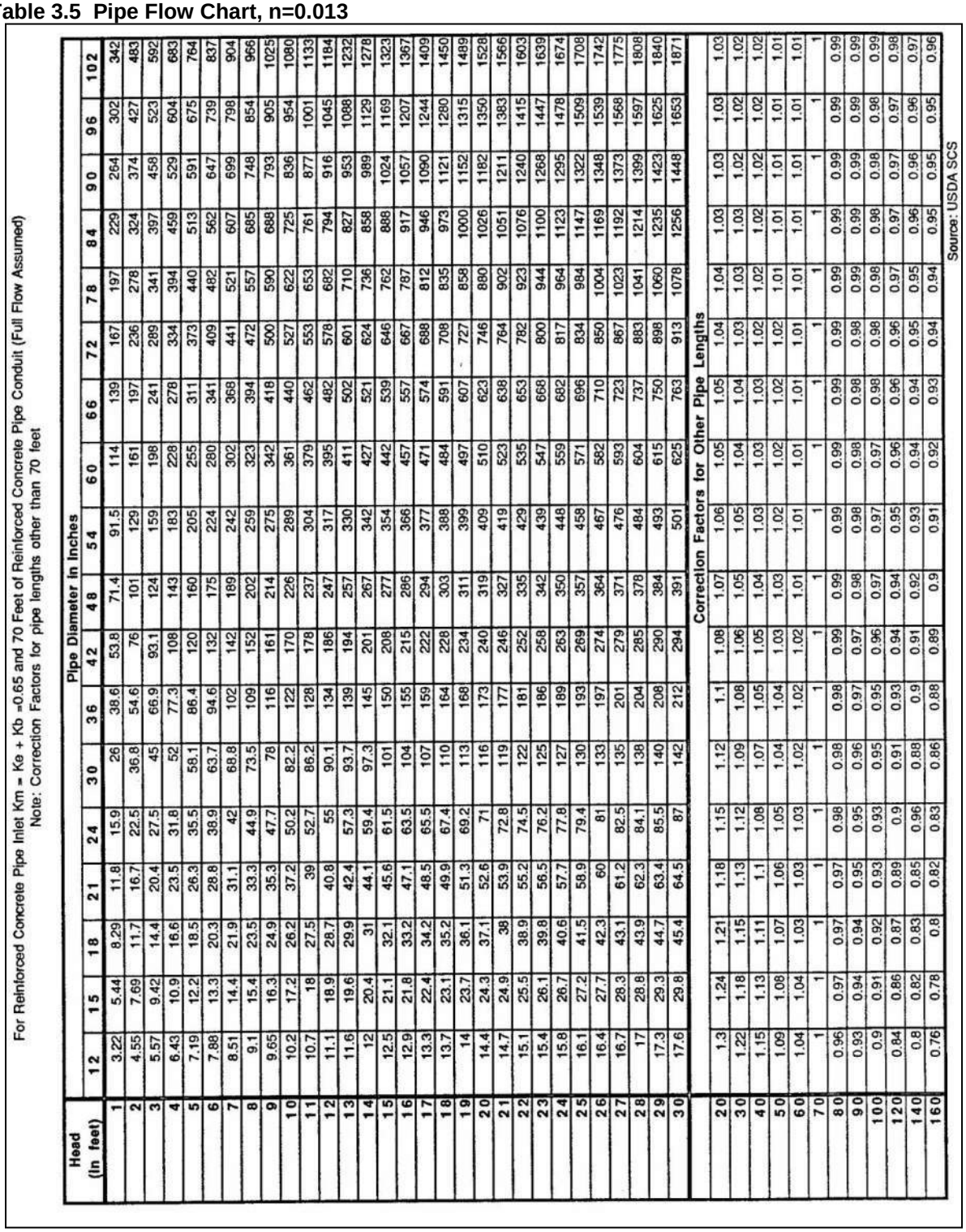


Figure 3.24 Riser Inflow Curves for Basin Outlet Design

Table 3.5 Pipe Flow Chart, n=0.013

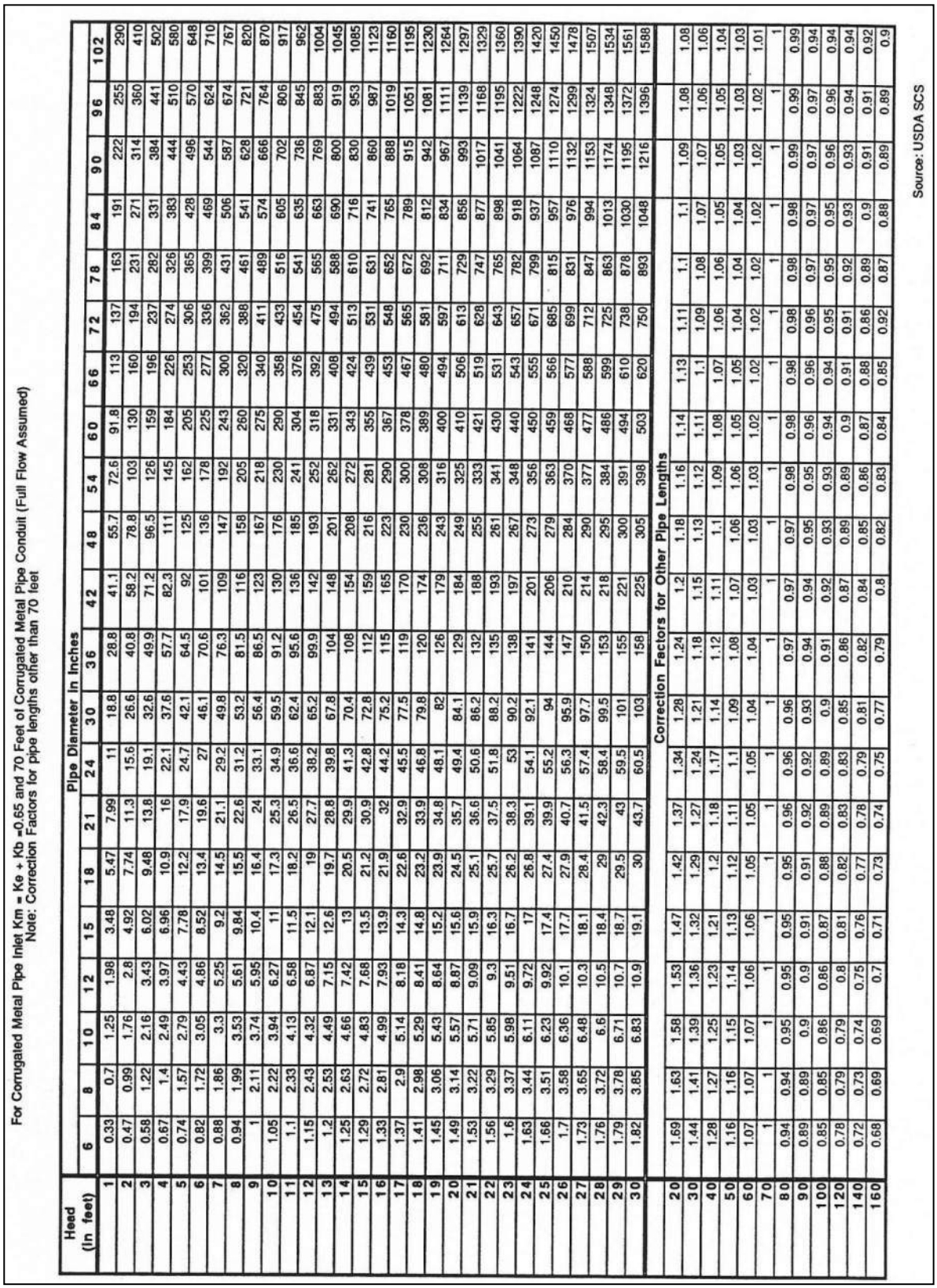


For Reinforced Concrete Pipe Inlet Km = Ke + Kb =0.65 and 70 Feet of Reinforced Concrete Pipe Conduit (Full Flow Assumed)
Note: Correction Factors for pipe lengths other than 70 feet

Head (in feet)	Pipe Diameter in Inches																	
	12	15	18	21	24	30	36	42	48	54	60	66	72	78	84	90	96	102
1	3.22	5.44	8.29	11.8	15.9	26	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.1	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	685	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18	27.5	39	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12	20.4	31	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60	81	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871
Correction Factors for Other Pipe Lengths																		
20	1.3	1.24	1.21	1.18	1.15	1.12	1.1	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.1	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
90	0.93	0.94	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.98	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99
100	0.9	0.91	0.92	0.93	0.93	0.95	0.95	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.98	0.98	0.98	0.99
120	0.84	0.86	0.87	0.89	0.9	0.91	0.93	0.94	0.94	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.98
140	0.8	0.82	0.83	0.85	0.96	0.88	0.9	0.91	0.92	0.93	0.94	0.94	0.95	0.95	0.96	0.96	0.96	0.97
160	0.76	0.78	0.8	0.82	0.83	0.86	0.88	0.89	0.9	0.91	0.92	0.93	0.94	0.94	0.95	0.95	0.95	0.96

Source: USDA SCS

Table 3.6 Pipe Flow Chart, n=0.025



For Corrugated Metal Pipe Inlet Km = Ke + Kb =0.65 and 70 Feet of Corrugated Metal Pipe Conduit (Full Flow Assumed)
Note: Correction Factors for pipe lengths other than 70 feet

Head (in feet)	Pipe Diameter In Inches																							
	6	8	10	12	15	18	21	24	30	36	42	48	54	60	66	72	78	84	90	96	102
1	0.33	0.7	1.25	1.98	3.48	5.47	7.99	11	18.8	28.8	41.1	55.7	72.6	91.8	113	137	163	191	222	255	290
2	0.47	0.99	1.76	2.8	4.92	7.74	11.3	15.6	26.6	40.8	58.2	78.8	103	130	160	194	231	271	314	360	410
3	0.58	1.22	2.16	3.43	6.02	9.48	13.8	19.1	32.6	49.9	71.2	96.5	126	159	196	237	282	331	384	441	502
4	0.67	1.4	2.49	3.97	6.96	10.9	16	22.1	37.6	57.7	82.3	111	145	184	226	274	326	383	444	510	580
5	0.74	1.57	2.79	4.43	7.78	12.2	17.9	24.7	42.1	64.5	92	125	162	205	253	306	365	428	496	570	648
6	0.82	1.72	3.05	4.86	8.52	13.4	19.6	27	46.1	70.6	101	136	178	225	277	336	399	469	544	624	710
7	0.88	1.86	3.3	5.25	9.2	14.5	21.1	29.2	49.8	76.3	109	147	192	243	300	362	431	506	587	674	767
8	0.94	1.99	3.53	5.61	9.84	15.5	22.6	31.2	53.2	81.5	116	158	205	260	320	388	461	541	628	721	820
9	1	2.11	3.74	5.95	10.4	16.4	24	33.1	56.4	86.5	123	167	218	275	340	411	489	574	666	764	870
10	1.05	2.22	3.94	6.27	11	17.3	25.3	34.9	59.5	91.2	130	176	230	290	358	433	516	605	702	806	917
11	1.1	2.33	4.13	6.58	11.5	18.2	26.5	36.6	62.4	95.6	136	185	241	304	376	454	541	635	736	845	962
12	1.15	2.43	4.32	6.87	12.1	19	27.7	38.2	65.2	99.9	142	193	252	318	392	475	565	663	769	883	1004
13	1.2	2.53	4.49	7.15	12.6	19.7	28.8	39.8	67.8	104	148	201	262	331	408	494	588	690	800	919	1045
14	1.25	2.63	4.66	7.42	13	20.5	29.9	41.3	70.4	108	154	208	272	343	424	513	610	716	830	953	1085
15	1.29	2.72	4.83	7.68	13.5	21.2	30.9	42.8	72.8	112	159	216	281	355	439	531	631	741	860	987	1123
16	1.33	2.81	4.99	7.93	13.9	21.9	32	44.2	75.2	115	165	223	290	367	453	548	652	765	888	1019	1160
17	1.37	2.9	5.14	8.18	14.3	22.6	32.9	45.5	77.5	119	170	230	300	378	467	565	672	789	915	1051	1195
18	1.41	2.98	5.29	8.41	14.8	23.2	33.9	46.8	79.8	120	174	236	308	389	480	581	692	812	942	1081	1230
19	1.45	3.06	5.43	8.64	15.2	23.9	34.8	48.1	82	126	179	243	316	400	494	597	711	834	967	1111	1264
20	1.49	3.14	5.57	8.87	15.6	24.5	35.7	49.4	84.1	129	184	249	325	410	506	613	729	856	993	1139	1297
21	1.53	3.22	5.71	9.09	15.9	25.1	36.6	50.6	86.2	132	188	255	333	421	519	628	747	877	1017	1168	1329
22	1.56	3.29	5.85	9.3	16.3	25.7	37.5	51.8	88.2	135	193	261	341	430	531	643	765	898	1041	1195	1360
23	1.6	3.37	5.98	9.51	16.7	26.2	38.3	53	90.2	138	197	267	348	440	543	657	782	918	1064	1222	1390
24	1.63	3.44	6.11	9.72	17	26.8	39.1	54.1	92.1	141	201	273	356	450	555	671	799	937	1087	1248	1420
25	1.66	3.51	6.23	9.92	17.4	27.4	39.9	55.2	94	144	206	279	363	459	566	685	815	957	1110	1274	1450
26	1.7	3.58	6.36	10.1	17.7	27.9	40.7	56.3	95.9	147	210	284	370	468	577	699	831	976	1132	1299	1478
27	1.73	3.65	6.48	10.3	18.1	28.4	41.5	57.4	97.7	150	214	290	377	477	588	712	847	994	1153	1324	1507
28	1.76	3.72	6.6	10.5	18.4	29	42.3	58.4	99.5	153	218	295	384	486	599	725	863	1013	1174	1348	1534
29	1.79	3.78	6.71	10.7	18.7	29.5	43	59.5	101	155	221	300	391	494	610	738	878	1030	1195	1372	1561
30	1.82	3.85	6.83	10.9	19.1	30	43.7	60.5	103	158	225	305	398	503	620	750	893	1048	1216	1396	1588
Correction Factors for Other Pipe Lengths																					
20	1.69	1.63	1.58	1.53	1.47	1.42	1.37	1.34	1.28	1.24	1.2	1.18	1.16	1.14	1.13	1.11	1.1	1.1	1.09	1.08	1.08
30	1.44	1.41	1.39	1.36	1.32	1.29	1.27	1.24	1.21	1.18	1.15	1.13	1.12	1.11	1.1	1.09	1.08	1.07	1.07	1.06	1.06
40	1.28	1.27	1.25	1.23	1.21	1.2	1.18	1.17	1.14	1.12	1.11	1.1	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.05	1.04
50	1.16	1.16	1.15	1.14	1.13	1.12	1.11	1.1	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.04	1.04	1.04	1.03	1.03	1.03
60	1.07	1.07	1.07	1.06	1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	0.94	0.94	0.95	0.95	0.95	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.98	0.98	0.98	0.99	0.99	0.99
90	0.89	0.89	0.9	0.9	0.91	0.91	0.92	0.92	0.93	0.94	0.94	0.95	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.94
100	0.85	0.85	0.86	0.86	0.87	0.88	0.89	0.89	0.9	0.91	0.92	0.93	0.93	0.94	0.94	0.95	0.95	0.95	0.96	0.96	0.94
120	0.78	0.79	0.79	0.8	0.81	0.82	0.83	0.83	0.85	0.86	0.87	0.89	0.89	0.9	0.91	0.91	0.92	0.93	0.93	0.94	0.94
140	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.81	0.82	0.84	0.85	0.86	0.87	0.88	0.86	0.89	0.9	0.91	0.91	0.92
160	0.68	0.69	0.69	0.7	0.71	0.73	0.74	0.75	0.77	0.79	0.8	0.82	0.83	0.84	0.85	0.92	0.87	0.88	0.89	0.89	0.9

Source: USDA SCS

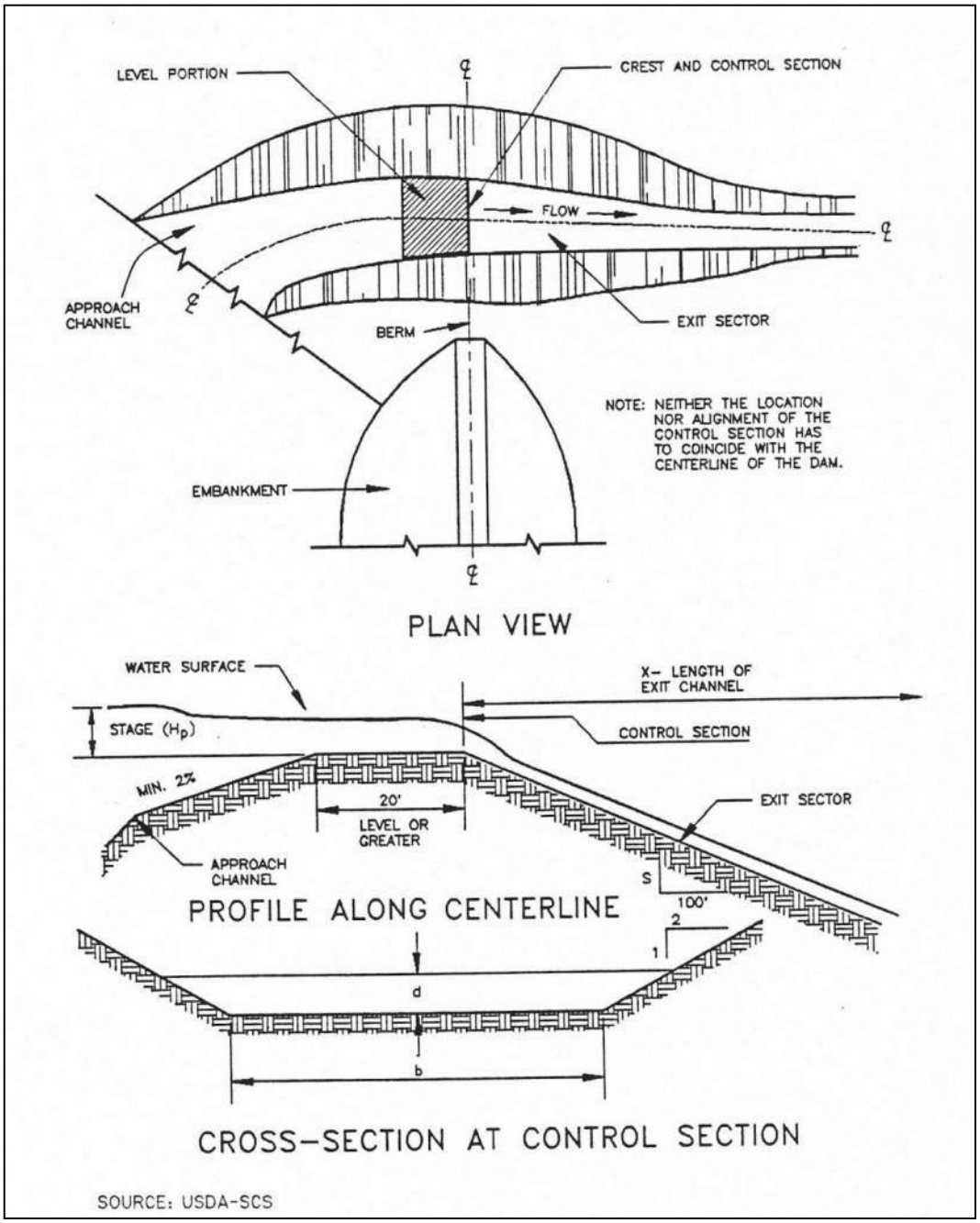


Figure 3.25 Example of Excavated Earth Spillway Design

Table 3.7 Design Data for Earth Spillways

Stage (Hp) In Feet	Spillway Variables	Bottom Width (b) In Feet																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
0.5	Q	6	7	8	10	11	13	14	15	17	18	20	21	22	24	25	27	28
	V	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	S	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	X	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
0.6	Q	8	10	12	14	16	18	20	22	24	26	28	30	32	34	35	37	39
	V	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	S	3.7	3.7	3.7	3.7	3.6	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	X	36	36	36	36	36	36	37	37	37	37	37	37	37	37	37	37	37
0.7	Q	11	13	16	18	20	23	25	28	30	33	35	38	41	43	44	46	48
	V	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
	S	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	X	39	40	40	40	41	41	41	41	41	41	41	41	41	41	41	41	41
0.8	Q	13	16	19	22	26	29	32	35	38	42	45	46	48	51	54	57	60
	V	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	S	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	X	44	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45
0.9	Q	17	20	24	28	32	35	39	43	47	51	53	57	60	64	68	71	75
	V	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	S	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	X	47	47	48	48	48	48	48	48	48	48	49	49	49	49	49	49	49
1	Q	20	24	29	33	38	42	47	51	56	61	63	68	72	77	81	86	90
	V	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	S	3.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	X	51	51	51	51	52	52	52	52	52	52	52	52	52	52	52	52	52
1.1	Q	23	28	34	39	44	49	54	60	65	70	74	79	84	89	95	100	105
	V	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	S	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	X	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56
1.2	Q	28	33	40	45	51	58	64	69	76	80	86	92	98	104	110	116	122
	V	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	S	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	X	58	58	59	59	59	59	59	59	60	60	60	60	60	60	60	60	60
1.3	Q	32	38	46	53	58	65	73	80	86	91	99	106	112	119	125	133	140
	V	4.5	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
	S	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	X	62	62	62	63	63	63	63	63	63	63	63	64	64	64	64	64	64
1.4	Q	37	44	51	59	66	74	82	90	96	103	111	119	127	134	143	150	158
	V	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
	S	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	X	65	66	66	66	66	67	67	67	67	67	67	68	68	68	68	68	69

Table 3.7 Design Data for Earth Spillways (continued)

Stage (Hp) In Feet	Spillway Variables	Bottom Width (b) In Feet																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1.5	Q	41	50	58	66	75	85	92	101	108	116	125	133	142	150	160	169	178
	V	4.8	4.9	5	5	5	5	5	5	5	5	5	5	5	5	5.1	5.1	5.1
	S	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5
	X	69	69	70	70	71	71	71	71	71	71	71	72	72	72	72	72	72
1.6	Q	46	56	65	75	84	94	104	112	122	132	142	149	158	168	178	187	197
	V	5	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
	S	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	X	72	74	74	75	75	76	76	76	76	76	76	76	76	76	76	76	76
1.7	Q	52	62	72	83	94	105	115	126	135	145	156	167	175	187	196	206	217
	V	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	S	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	X	76	78	79	80	80	80	80	80	80	80	80	80	80	80	80	80	80
1.8	Q	58	69	81	93	104	116	127	138	150	160	171	182	194	204	214	226	233
	V	5.3	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.6	5.6	5.6
	S	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	X	80	82	83	84	84	84	84	84	84	84	84	84	84	84	84	84	84
1.9	Q	64	76	88	102	114	127	140	152	164	175	188	201	213	225	235	248	260
	V	5.5	5.5	5.5	5.6	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	S	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	X	84	85	86	87	88	88	88	88	88	88	88	88	88	88	88	88	88
2	Q	71	83	97	111	125	138	153	164	178	193	204	218	232	245	256	269	283
	V	5.6	5.7	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.9	5.9	5.9	5.9	5.9	5.9
	S	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	X	88	90	91	91	91	91	92	92	92	92	92	92	92	92	92	92	92
2.1	Q	77	91	107	122	135	149	162	177	192	207	220	234	250	267	276	291	305
	V	5.7	5.8	5.9	5.9	5.9	5.9	5.9	6	6	6	6	6	6	6	6	6	6
	S	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	X	92	93	95	95	95	95	95	95	95	96	96	96	96	96	96	96	96
2.2	Q	84	100	116	131	146	163	177	194	210	224	238	253	269	288	301	314	330
	V	5.9	5.9	6	6	6	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.2	6.2	6.2
	S	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	X	96	98	99	99	99	99	99	100	100	100	100	100	100	100	100	100	100
2.3	Q	90	108	124	140	158	175	193	208	226	243	258	275	292	306	323	341	354
	V	6	6.1	6.1	6.1	6.2	6.2	6.2	6.2	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
	S	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	X	100	102	102	103	103	103	104	104	104	105	105	105	105	105	105	105	105
2.4	Q	99	116	136	152	170	189	206	224	241	260	275	294	312	327	346	364	378
	V	6.1	6.2	6.2	6.3	6.3	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
	S	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	X	105	105	106	107	107	108	108	108	108	109	109	109	109	109	109	109	109

Source: USDA - SCS

Step 11 Re-estimate the elevation of the design high water and the top of the dam based upon the design of the basin outlet and the emergency spillway.

Step 12 Design the anti-vortex device and trash rack.

If an outfall riser is used, an anti-vortex device and trash rack shall be attached to the top of the basin riser to improve the flow of water into the outfall and prevent floating debris from being carried out of the basin.

This design procedure for the anti-vortex device and trash rack refers only to round riser pipes of corrugated metal. There are numerous ways to provide protection for concrete pipe; these include various hoods and grates and rebar configurations which should be a part of project-specific design and will frequently be a part of a permanent structure.

Refer to Figure 3.26 and Table 3.8. Choose cylinder size, support bars, and top requirements from Table 3.8 based on the diameter of the riser pipe.

Step 13 Design the anchoring for the basin outlet.

The basin outlet must be firmly anchored to prevent its floating.

If the riser is over 10 feet high, the forces acting on the spillway must be calculated. A method of anchoring the spillway which provides a safety factor of 1.25 must be used (downward forces = 1.25 x upward forces).

If the riser is 10 feet or less in height, choose one of the two methods in Figure 3.27 to anchor the basin outlet.

Determine the number and spacing of anti-seep collars for the outfall pipe through the embankment.

Step 14 Provide for dewatering.

(a) Use a modified version of the discharge equation for a vertical orifice and a basic equation for the area of a circular orifice.

Naming the variables:

- A = flow area of orifice, in square feet
- D = diameter of circular orifice, in inches
- h = average driving head (maximum possible head measured from radius of orifice to crest of basin outlet divided by 2), in feet
- Q = volumetric flow rate through orifice needed to achieve approximate 6-hour drawdown, cubic feet per second
- S = total storage available in dry storage area, cubic feet
- Q = S/21,600 seconds

(b) An alternative approach for dewatering is the use of a perforated riser (0.75" to 1" diameter holes spaced every 12 inch horizontally and 8 inch vertically) with 1½ inch to 2 inch filter stone stacked around the exterior.

Use S for basin and find Q. Then substitute in calculated Q and find A:

$$A = \frac{Q}{(0.6) \times (64.32 \times \frac{h}{2})} \qquad (3.4)$$

Then, substitute in calculated A and find d:

$$d^* = 2 \times \frac{(A)}{(3.14)} \qquad (3.5)$$

Diameter of the dewatering orifice should never be less than 3 inches in order to help prevent clogging by soil or debris.

Flexible tubing should be at least 2 inches larger in diameter than the calculated orifice to promote improved flow characteristics.

Additional design guidance for orifices and perforated risers are in *Section 2.2.2 of the Hydraulics Technical Manual*.

(c) If a surface skimmer is used as the basin's primary outlet, it may also be used to dewater the basin. Orifice flowrates for the skimmer will be provided by the manufacturer.

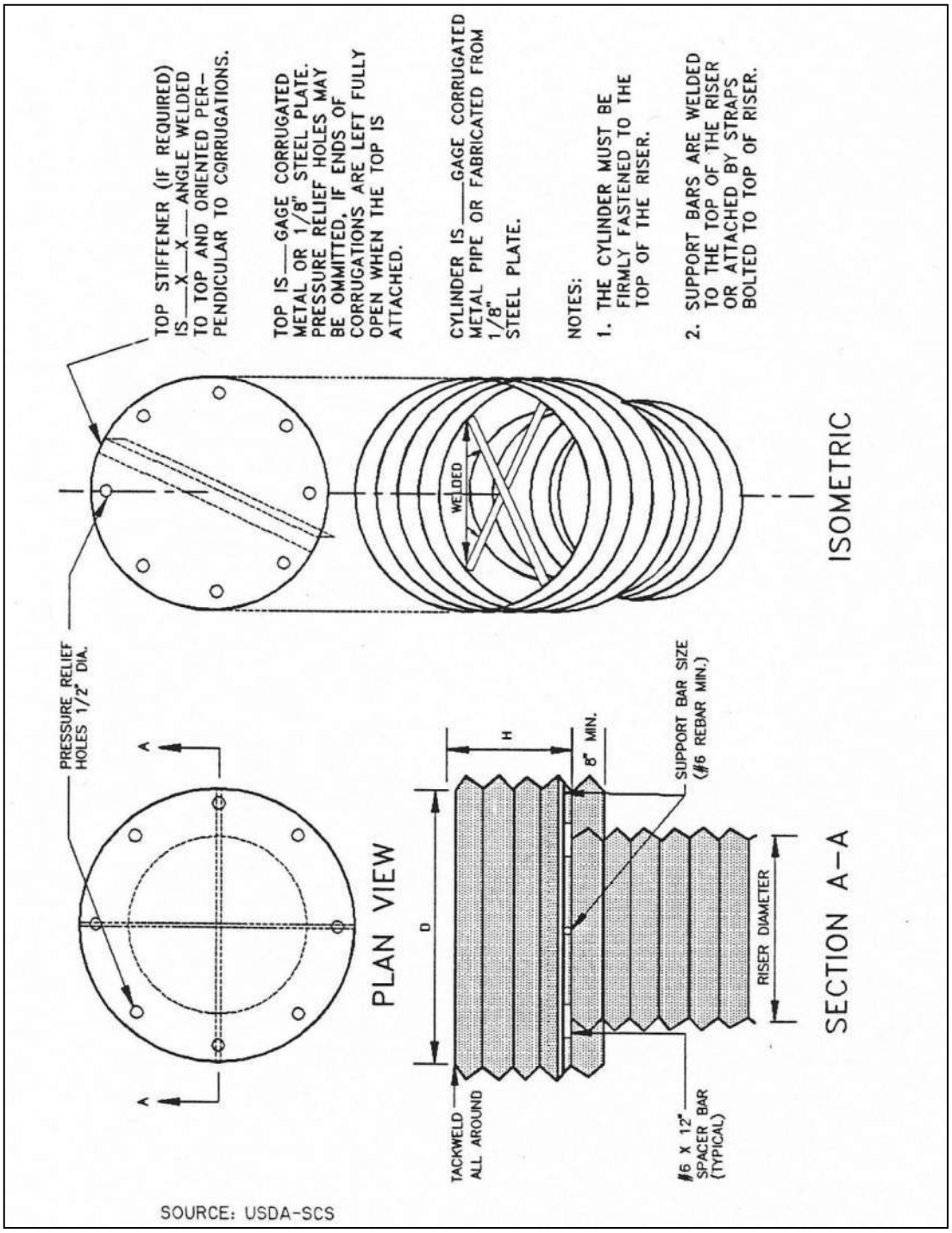


Figure 3.26 Example of Anti-Vortex Design for Corrugated Metal Pipe Riser

Table 3.8 Trash Rack and Anti-Vortex Device Design Table

Riser Diam., in.	Cylinder		Height inches	Minimum Size Support Bar	Minimum Top	
	Diameter inches	Thickness gage			Thickness	Stiffener
12	18	16	6	#6 Rebar or 1 ½ x 1 ½ x 3/16 angle	16 ga. (F&C)	-
15	21	16	7	" "	" "	-
18	27	16	8	" "	" "	-
21	30	16	11	" "	16 ga.(C), 14 ga.(F)	-
24	36	16	13	" "	" "	-
27	42	16	13	" "	" "	-
36	54	14	17	#8 Rebar	14 ga.(C), 12 ga.(F)	-
42	60	16	19	" "	" "	-
48	72	16	21	1 ¼" pipe or 1 ½ x 1 ½ x ¼ angle	14 ga.(C), 10 ga.(F)	-
54	78	16	25	" "	" "	-
60	90	14	29	1 ½" pipe or 1 ½ x 1 ½ x ¼ angle	12 ga.(C), 8 ga.(F)	-
66	96	14	33	2" pipe or 2 x 2 x 3/16 angle	12 ga.(C), 8	2 x 2 x ¼ angle
72	102	14	36	" "	" "	2 ½ x 2 ½ x ¼ angle
78	114	14	39	2 ½" pipe or 2 ½ x ¼ angle	" "	" "
84	120	12	42	2 ½" pipe or 2 ½ x 2 ½ x ¼ angle	" "	2 ½ x 2 ½ x 5/16 angle

Note$_1$: The criterion for sizing the cylinder is that the area between the inside of the cylinder and the outside of the riser is equal to or greater than the area inside the riser. Therefore, the above table is invalid for use with concrete pipe risers.
Note$_2$: Corrugation for 12"-36" pipe measures 2 ⅔ x ½"; for 42"-84" the corrugation measures 5" x 1" or 8" x 1".
Note$_3$: C = corrugated; F = flat.

Source: Adapted from USDA-SCS and Carl M. Henshaw Drainage Products Information.

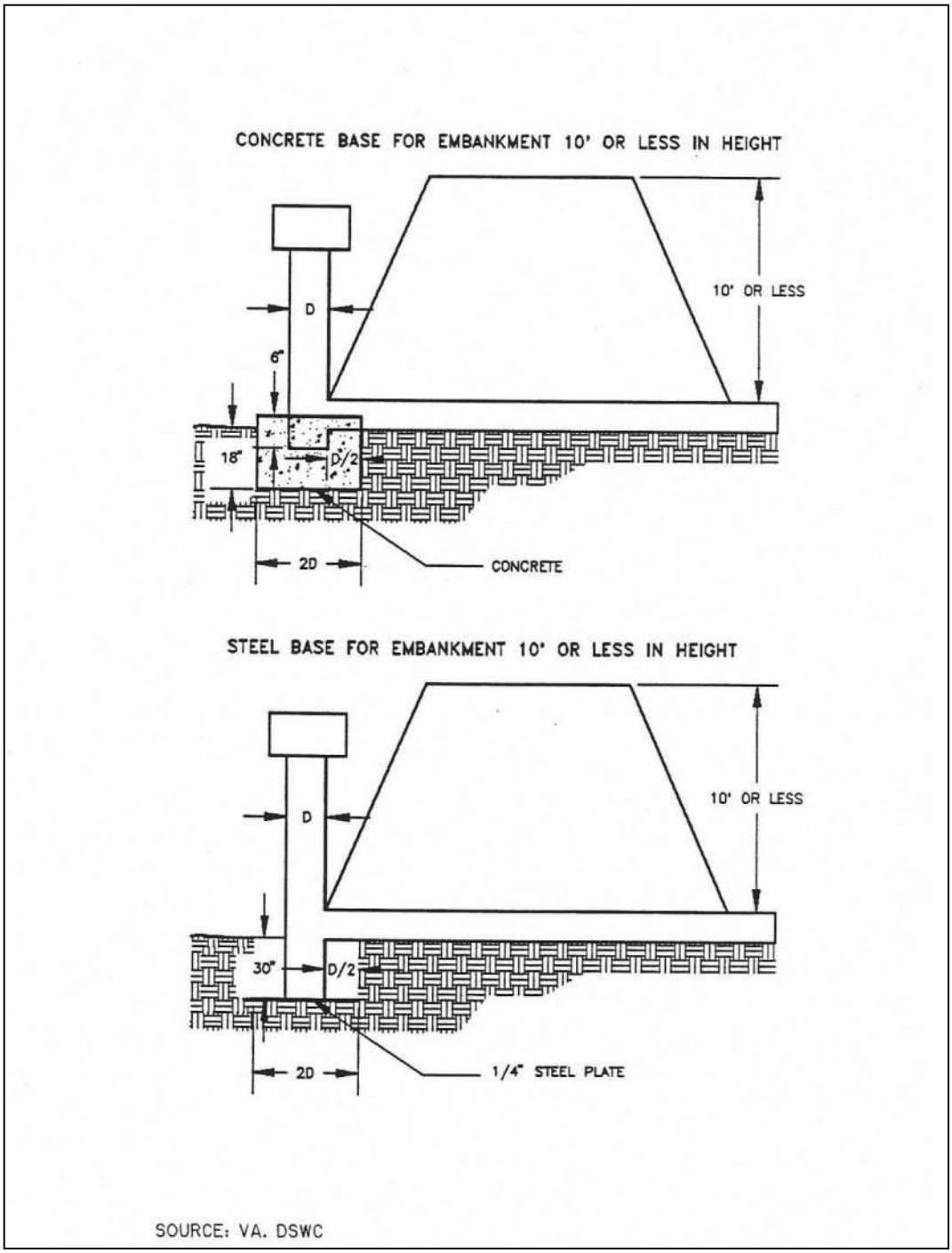


Figure 3.27 Riser Pipe Base Design for Embankment Less Than 10 Feet High

3.9.8 Design Form

Note: This design form is for basins designed with a riser as its primary outlet. It is provided as an example of the type of documentation required for a sediment basin. Different calculations will be needed for other types of outlets.

Project _____

Basin # _____ Location _____

Total area draining to basin: _____ acres.

Total disturbed area draining to basin: _____ acres.

Basin Volume Design

1. Minimum required volume is the lesser of

   a.) (3600 cu. ft. x _____ total drainage acres) / 27 = _____ cu. yds.

   b.) 2 yr, 24 hr storm volume in cubic yards = _____ cu. yds.

2. Total available basin volume at crest of riser* = _____ cu. yds. at elevation _____.
   (From Storage - Elevation Curve)

   * Minimum = Lesser of 3600 cubic feet/acre of Total Drainage Area or
   2yr. 24 hr. storm volume from Disturbed Area drained

3. Excavate _____ cu. yds. to obtain required volume*.

   *Elevation corresponding to required volume = invert of the dewatering orifice.

4. Diameter of dewatering orifice = _____ in.

5. Diameter of flexible tubing = _____ in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

6. Crest of Riser = _____

   Top of Dam = _____

   Design High Water = _____

   Upstream Toe of Dam = _____

Basin Shape

7. Length of Flow / Effective Width = L / We = _____

   If > 2, baffles are not required _____

   If < 2, baffles are required _____

Runoff

8. Q_2 = _____ cfs (From TR-55)

9. Q_{25} = _____ cfs (From TR-55)

Basin Outlet Design

10. With emergency spillway, required basin outlet capacity $Q_p = Q_2$ = _____ cfs. (riser and outfall)

    Without emergency spillway, required basin outlet capacity $Q_p = Q_{25}$ = _____ cfs. (riser and outfall)

11. With emergency spillway:

    Assumed available head (h) = _____ ft. (Using Q_2)

    h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

    Without emergency spillway:

    h = Design High Water Elevation - Crest of Riser Elevation

12. Riser diameter (D_r) = _____ in. Actual head (h) = _____ft.

    (Figure 3.23)

    Note: Avoid orifice flow conditions.

13. Barrel length (l) = _____ ft.

    Head (H) on outfall through embankment = _____ ft.

    (Figure 3.24)

14. Barrel Diameter = _____ in.

    (From Table 3.5 [concrete pipe] or Table 3.6 [corrugated pipe]).

15. Trash rack and anti-vortex device

    Diameter = _____ inches.

    Height = _____ inches.

    (From Table 3.8).

Emergency Spillway Design

16. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____ cfs.

17. Bottom width (b) = _____ ft.; the slope of the exit channel(s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
    (From Figure 3.25 and Table 3.7).

Final Design Elevations

18. Top of Dam = _____

    Design High Water = _____

    Emergency Spillway Crest = _____

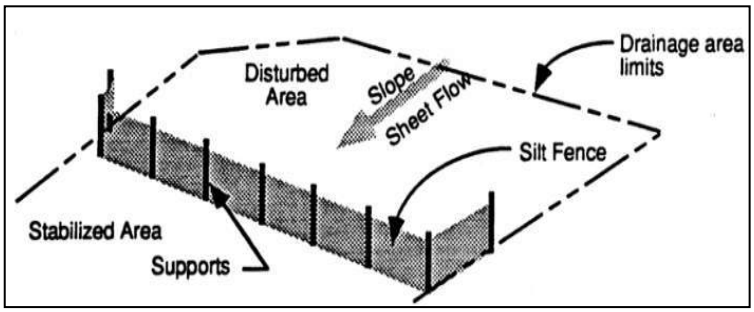
    Basin Riser Crest = _____

    Dewatering Orifice Invert = _____

    Elevation of Upstream Toe of Dam
    (if excavation was performed) = _____

3.10 Silt Fence

Sediment Control



Description: A silt fence consists of geotextile fabric supported by wire mesh netting or other backing stretched between metal posts with the lower edge of the fabric securely embedded six-inches in the soil. The fence is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. A silt fence provides both filtration and time for sediment settling by reducing the velocity of the runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum drainage area of 0.25 acre per 100 linear feet of silt fence
- Maximum 200 feet distance of flow to silt fence; 50 feet if slope exceeds 10 percent
- Minimum fabric overlap of 3 feet at abutting ends; join fabric to prevent leakage
- Turn end of silt fence line upslope a minimum of 10 feet
- Install stone overflow structure at low points or spaced at approximately 300 feet if no apparent low point

ADVANTAGES / BENEFITS:

- Economical means to treat sheet flow
- Most effective with coarse to silty soil types

DISADVANTAGES / LIMITATIONS:

- Limited effectiveness with clay soils due to clogging
- Localized flooding due to minor ponding at the upslope side of the silt fence
- Not for use as check dams in swales or low areas subject to concentrated flow
- Not for use where soil conditions prevent a minimum toe-in depth of 6 inches or installation of support posts to a depth of 12 inches
- Can fail structurally under heavy storm flows, creating maintenance problems and reducing effectiveness

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Repair undercutting, sags and other fence failures
- Remove sediment before it reaches half the height of the fence
- Repair or replace damaged or clogged filter fabric

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

- **Perimeter Control**
- **Slope Protection**
- **Sediment Barrier**
- **Channel Protection**
- **Temporary Stabilization**
- **Final Stabilization**
- **Waste Management**
- **Housekeeping Practices**

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Effects of ponding or the redirection of flow onto adjacent areas and property*

3.10.1 Primary Use

Silt fence is normally used as a perimeter control on the down slope side of disturbed areas and on side slopes where stormwater may runoff the area. It is only feasible for non-concentrated, sheet flow conditions. If it becomes necessary to place a silt fence where concentrated flows may be occur (e.g. where two silt fences join at an angle, or across minor channels or gullies), it will be necessary to reinforce the silt fence at that area by a rock berm or sand bag berm, or other structural measures that will support the silt fence.

3.10.2 Applications

Silt fence is an economical means to treat overland, non-concentrated flows for all types of projects. Silt fences are used as perimeter control devices for both site developers and linear (roadway) type projects. They are most effective with coarse to silty soil types. Due to the potential of clogging and limited effectiveness, silt fences should be used with caution in areas that have predominantly clay soil types. In this latter instance, a soils engineer or soil scientist should confirm the suitability of silt fence for that application. Additional controls may be needed to remove fine silts and clay soils suspended in stormwater.

3.10.3 Design Criteria

- Fences are to be constructed along a line of constant elevation (along a contour line) where possible.
- Silt fence can interfere with construction operations; therefore, planning of access routes onto the site is critical.
- Maximum drainage area shall be 0.25 acre per 100 linear feet of silt fence.
- Maximum flow to any 20 foot section of silt fence shall be 1 CFS.
- Maximum distance of flow to silt fence shall be 200 feet or less. If the slope exceeds 10 percent the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the fence shall be 2:1.
- Silt fences shall not be used where there is a concentration of water in a channel, drainage ditch or swale, nor should it be used as a control on a pipe outfall.
- If 50 percent or less soil, by weight, passes the U.S. Standard Sieve No. 200; select the apparent opening size (A.O.S.) to retain 85percent of the soil.
- If 85 percent or more of soil by weight, passes the U.S. Standard Sieve No. 200, silt fences shall not be used unless the soil mass is evaluated and deemed suitable by a soil scientist or geotechnical engineer concerning the erodiblity of the soil mass, dispersive characteristics, and the potential grain-size characteristics of the material that is likely to be eroded.
- Stone overflow structures or other outlet control devices shall be installed at all low points along the fence or spaced at approximately 300 feet if there is no apparent low point.
- Filter stone for overflow structure shall be 1 ½ inches washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
- Silt fence fabric must meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 90-lbs.
    - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 60-lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 280-psi.

  - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 30(max) to No. 100 (min).
  - Ultraviolet Resistance, ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus, Minimum 70 percent.
- Fence posts shall be steel and may be T-section or L-section, 1.3 pounds per linear foot minimum, and 4 feet in length minimum. Wood posts may be used depending on anticipated length of service and provided they are 4 feet in length minimum and have a nominal cross section of 2 inches by 4 inches for pine or 2 inches by 2 inches for hardwoods.
- Silt fence shall be supported by steel wire fence fabric as follows:
  - 4 inch x 4 inch mesh size, W1.4 /1.4, minimum 14 gauge wire fence fabric;
  - Hog wire, 12 gauge wire, small openings installed at bottom of silt fence;
  - Standard 2 inch x 2 inch chain link fence fabric; or
  - Other welded or woven steel fabrics consisting of equal or smaller spacing as that listed herein and appropriate gauge wire to provide support.
- Silt Fence shall consist of synthetic fabric supported by wire mesh and steel posts set a minimum of 1-foot depth and spaced not more than 6-feet on center.
- A 6 inch wide trench is to be cut 6 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel to prevent bypass of runoff under the fence. Fabric shall overlap at abutting ends a minimum of 3 feet and shall be joined such that no leakage or bypass occurs. If soil conditions prevent a minimum toe-in depth of 6 inches or installation of support post to depth of 12 inches, silt fences shall not be used.
- Sufficient room for the operation of sediment removal equipment shall be provided between the silt fence and other obstructions in order to properly maintain the fence.
- The last 10 feet (or more) at the ends of a line of silt fence shall be turned upslope to prevent bypass of stormwater. Additional upslope runs of silt fence may be needed every 200 to 400 linear feet, depending on the traverse slope along the line of silt fence.

3.10.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.5 Silt Fence and in the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDot 2004) Item 506.2.J and Item 506.4.C.9.

The American Society for Testing and Materials has established standard specifications for silt fence materials (ASTM D6461) and silt fence installation (ASTM D6462).

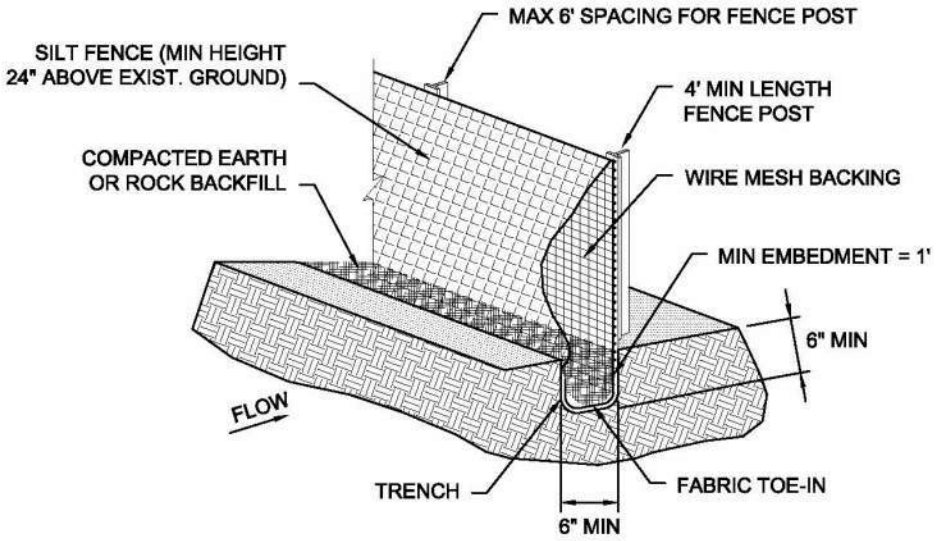
3.10.5 Inspection and Maintenance Requirements

Silt fence should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for buildup of excess sediment, undercutting, sags, and other failures. Sediment should be removed before it reaches half the height of the fence. In addition, determine the source of excess sediment and implement appropriate measures to control the erosion. Damaged or clogged fabric must be repaired or replaced as necessary.

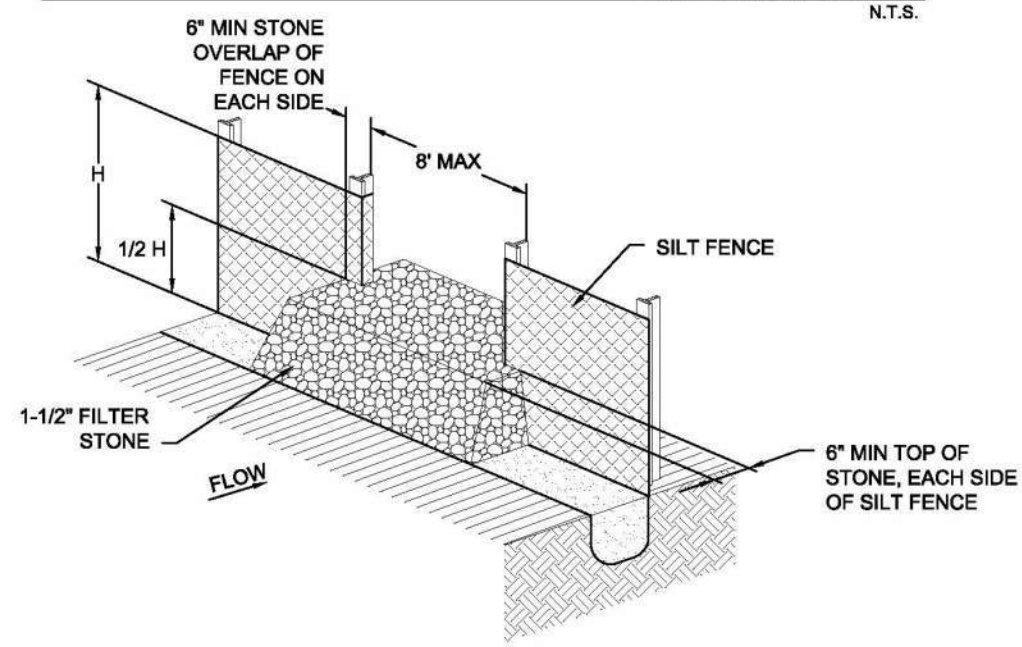
3.10.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



SILT FENCE EXAMPLE
N.T.S.



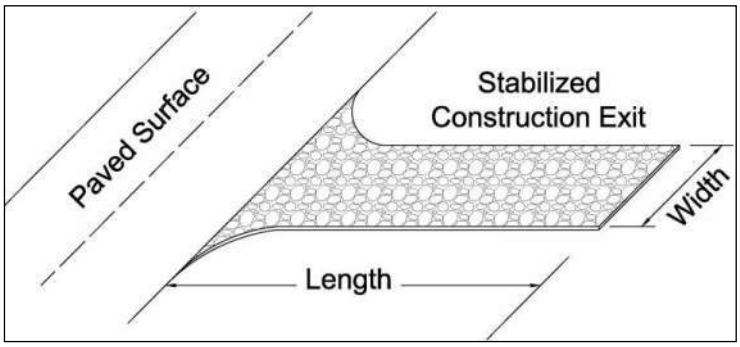
STONE OVERFLOW STRUCTURE EXAMPLE
N.T.S.

NOTES: 1. DESIGN SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE OVERFLOW STRUCTURES SHALL BE INSTALLED. OVERFLOW STRUCTURES ARE REQUIRED AT ALL LOW POINTS AND AT A SPACING OF APPROXIMATELY 300 FT WHERE NO LOW POINT IS APPARENT.
2. DESIGNER SHALL ON THE DRAWINGS THE LOCATIONS WHERE SILT FENCE IS TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE A MINIMUM OF 10 FEET.

Figure 3.28 Schematics of Silt Fence

3.11 Stabilized Construction Exit

Sediment Control



Description: A stabilized construction exit is a pad of crushed stone, recycled concrete or other rock material placed on geotextile filter cloth to dislodge soil and other debris from construction equipment and vehicle tires prior to exiting the construction site. The object is to minimize the tracking of soil onto public roadways where it will be suspended by stormwater runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Slope exit away from offsite paved surface
- Minimum width and length dependent on size of disturbed area, which correlates to traffic volume
- 6 inches minimum thickness of stone layer
- Stone of 3 to 5 inches in size
- Add a wheel cleaning system when inspections reveal the stabilized exit does not prevent tracking

ADVANTAGES / BENEFITS:

- Reduces tracking of soil onto public streets
- Directs traffic to a controlled access point
- Protects other sediment controls by limiting the area disturbed

DISADVANTAGES / LIMITATIONS:

- Effectiveness dependent on limiting ingress and egress to the stabilized exit
- A wheel washing system may also be required to remove clay soil from tires, particularly in wet conditions

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Replace rock when sediment in the void area between the rocks is visible on the surface
- Periodically re-grade and top dress with additional stone to maintain efficiency

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=N/A

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ○ Suitability for Slopes > 5%

Other Considerations:

- *None*

3.11.1 Primary Use

Stabilized construction exits are used to remove soil, mud and other matter from vehicles that drive off of a construction site onto public streets. Stabilized exits reduce the need to remove sediment from streets. When used properly, they also control traffic by directing vehicles a single (or two for larger sites) location. Controlling traffic onto and off of the site reduces the number and quantity of disturbed areas and provides protection for other sediment controls by decreasing the potential for vehicles to drive over the control.

3.11.2 Applications

Stabilized construction exits are used on all construction sites with a disturbed area of one acre or larger and are a recommended practice for smaller construction sites. A stabilized exit is used on individual residential lots until the driveway is placed. Stabilized construction exits may be used in conjunction with wheel cleaning systems as described in *Section 3.16 Wheel Cleaning Systems*.

3.11.3 Design Criteria

- Limit site access to one route during construction, if possible; two routes for linear and larger projects.
- Prevent traffic from avoiding or shortcutting the full length of the construction exit by installing barriers. Barriers may consist of silt fence, construction safety fencing, or similar barriers.
- Design the access point(s) to be at the upslope side of the construction site. Do not place construction access at the lowest point on the construction site.
- Stabilized construction exits are to be constructed such that drainage across the exit is directed to a controlled, stabilized outlet onsite with provisions for storage, proper filtration, and removal of wash water.
- The exit must be sloped away from the paved surface so that stormwater from the site does not discharge through the exit onto roadways.
- Minimum width of exit shall be 15 feet.
- The construction exit material shall be a minimum thickness of 6 inches. The stone or recycled concrete used shall be 3 to 5 inches in size with little or no fines.
- The geotextile fabric must meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 300 lbs.
    - Puncture Strength, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 120 lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 600 psi.
    - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 40 (max).
- Rock by itself may not be sufficient to remove clay soils from wheels, particularly in wet conditions. When necessary, vehicles must be cleaned to remove sediment prior to entering paved roads, streets, or parking lots. Refer to *Section 3.16 Wheel Cleaning Systems* for additional controls.
- Using water to wash sediment from streets is prohibited
- Minimum dimensions for the stabilized exit shall be as follows:

Table 3.9 Minimum Exit Dimensions		
Disturbed Area	*Min. Width of Exit*	*Min. Length of Exit*
< 1 Acre	15 feet	20 feet
≥ 1 Acre but < 5 Acres	25 feet	50 feet
≥ 5 Acres	30 feet	50 feet

- If a wheel cleaning system is used, the width of the stabilized exit may be reduced to funnel traffic into the system. Refer to *Section 3.16 Wheel Cleaning*.

3.11.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.10 Stabilized Construction Entrance and in the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDOT 2004) Item 506.2.E and Item 506.4.C.5.

3.11.5 Inspection and Maintenance Requirements

Construction exits should be inspected regularly (at least as often as required by the TPDES Construction General Permit). The stabilized construction exit shall be maintained in a condition that prevents tracking or flow of sediment onto paved surfaces. Periodic re-grading and top dressing with additional stone must be done to keep the efficiency of the exit from diminishing. The rock shall be re-graded when ruts appear. Additional rock shall be added when soil is showing through the rock surface.

Additional controls are needed if inspections reveal a properly installed and maintained exit, but tracking of soil outside the construction area is still evident. Additional controls may be daily sweeping of all soil spilled, dropped, or tracked onto public rights-of-way or the installation of a wheel cleaning system.

3.11.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

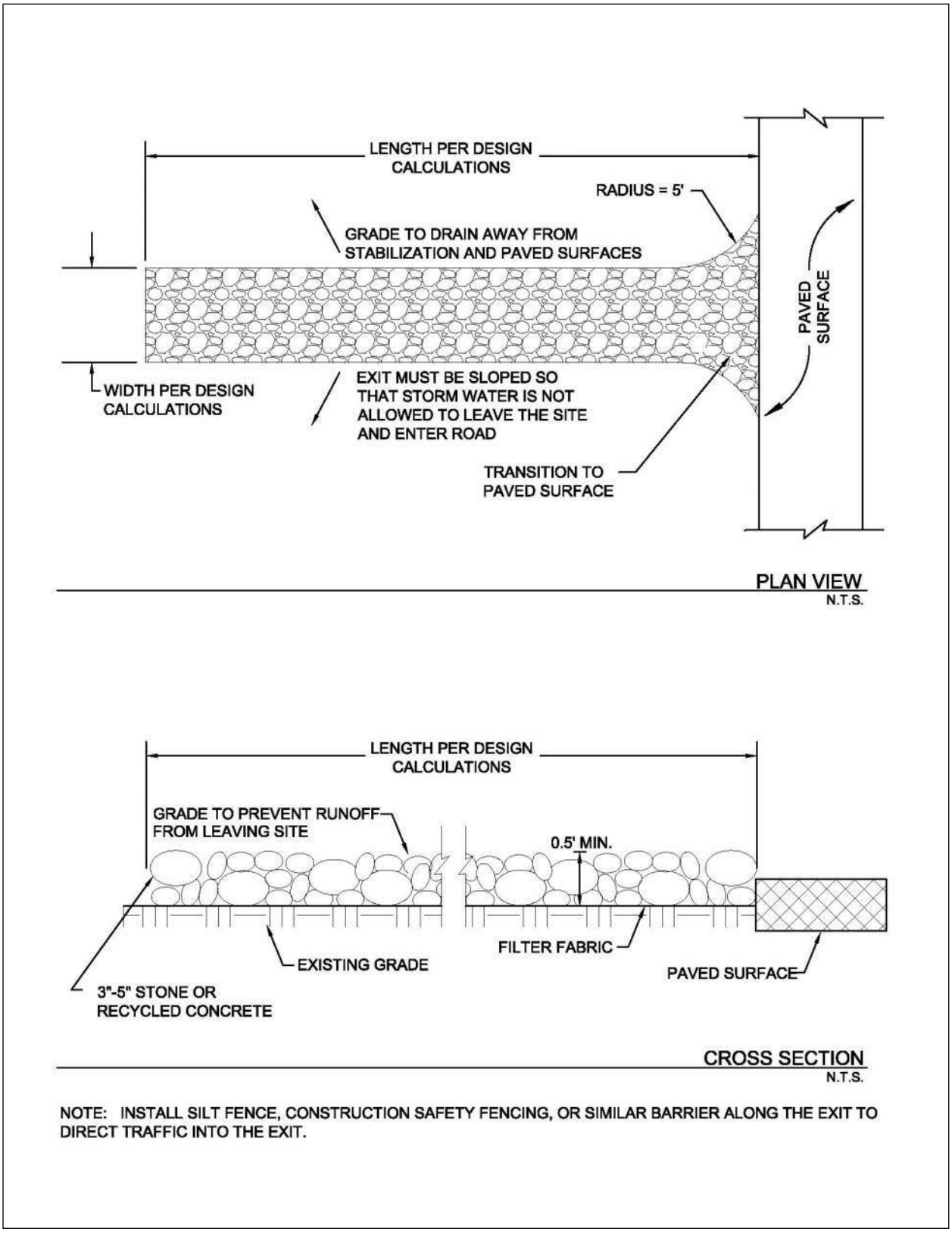
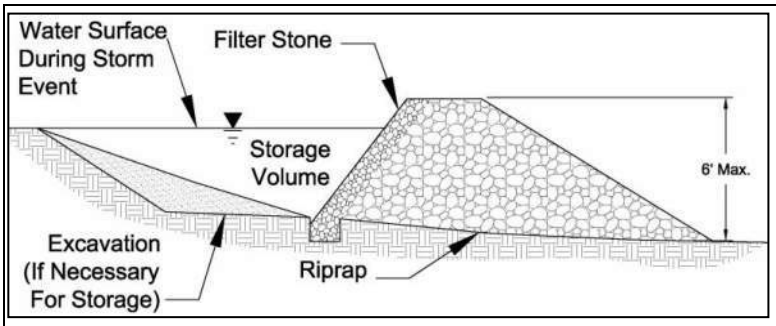


Figure 3.29 Schematics of Stabilized Construction Exit

3.12 Stone Outlet Sediment Trap

Sediment Control



Description: A stone outlet sediment trap is a small detention area formed by placing a stone embankment with an integral stone filter outlet across a drainage swale for the purpose of detaining sediment-laden runoff from construction activities. The sediment trap detains runoff long enough to allow most of the suspended sediment to settle while still allowing for diffused flow of runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum contributing drainage area of 10 acres for excavated trap and 5 acres for bermed trap
- Provide storage volume for the 2-year, 24-hour design storm
- Maximum embankment height of 6 feet
- Embankment slope of 1.5:1 or flatter
- 2 foot minimum top width

ADVANTAGES / BENEFITS:

- Effectively traps sediment in a drainage swale
- Reduces flow velocities
- Relatively long effective life

DISADVANTAGES / LIMITATIONS:

- Amount of land required
- Can cause minor upstream flooding, possibly impacting construction operations
- Not for use in “live” (normally flowing) channels

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Replace filter stone when it appears to be silted in such that efficiency is diminished
- Remove trash and debris after each storm event
- Remove deposited sediment when before the storage capacity is reduced by one third or has reached a depth of one foot, whichever is less

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=0.50-0.85
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ● Suitability for Slopes > 5%

Other Considerations:

- *Re-grading and stabilization of the control area after construction*

3.12.1 Primary Use

A sediment trap is used where flows are concentrated in a drainage swale or channel. The sediment trap detains and temporarily impounds stormwater, which allows for settling of sediment as the water is slowly discharged from the trap. Sediment traps may be used in combination with check dams when erosive velocities exist in the swale upstream of the sediment trap.

3.12.2 Applications

Temporary stone outlet sediment traps are installed at locations where concentrated flows require a protected outlet to contain sediment or spread flow prior to discharge. They are an effective, long term (12 – 18 months) application for sediment control on large construction sites where a sediment basin is not feasible due to site or construction method restrictions. Several traps may be used to control sediment on drainage sub-basins within the construction site, instead of one large sediment basin at the discharge point from the entire construction site. Sediment traps may also be used with a passive treatment system to provide better removal of fine silt and clay soil particles.

3.12.3 Design Criteria

- Design calculations are required for the use of this control. The designer shall provide drainage computations and dimensions for the stone outlet, berms, and excavated areas associated with this control.
- The maximum drainage area contributing to the trap shall be less than 10 acres for the excavated stone outlet sediment trap and 5 acres or less for the bermed trap.
- The minimum storage volume shall be the volume of runoff from the temporary control design storm (2-year, 24 hour) for the sediment trap's drainage area.
- The surface area of the design storage area shall not be less than 1 percent of the area draining to the device.
- The maximum height of the rock shall be 6 feet, as measured from the toe of the slope on the downstream side to the low point in the rock dam.
- Minimum width of the rock dam at the top shall be 2 feet.
- Rock dam slope shall be 1.5:1 or flatter.
- The rock dam shall have a depressed area, over the center of swale, to serve as the outlet with a minimum width of 4 feet.
- A six inch minimum thickness layer of 1½ inch filter stone shall be placed on the upstream face of the stone embankment when the stormwater runoff contains fine silt and clay soil particles.
- The embankment shall be comprised of well graded stone with a size range of 6 to 12 inches in diameter. The stone may be enclosed in wire mesh or gabion basket and anchored to the channel bottom to prevent washing away.
- The dam shall consist of stone riprap or a combination of compacted fill with a stone riprap outlet.
- Fill placed to constrict the swale for construction of the excavated stone outlet sediment trap and fill placed for the berm in the bermed stone outlet sediment trap shall consist of clay material, minimum Plasticity Index of 30, using ASTM D4318 Standard Test for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- Fill shall be placed in 8 inch loose lifts (maximum) and compacted to 95% Standard Proctor Density at optimum moisture content using ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
- The outlet shall be designed to have a minimum freeboard of 6" at design flow.

- Rock shall be placed on geotextilefilter fabric meeting the following minimum criteria:
  - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 250-lbs.
  - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 135-lbs.
  - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 420-psi.
  - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 20 (max).
- The geotextile fabric, covered with a layer of stone, shall extend past the base of the embankment on the downstream side a minimum of 2 feet.

3.12.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.12 Stone Outlet Sediment Trap.

3.12.5 Inspection and Maintenance Requirements

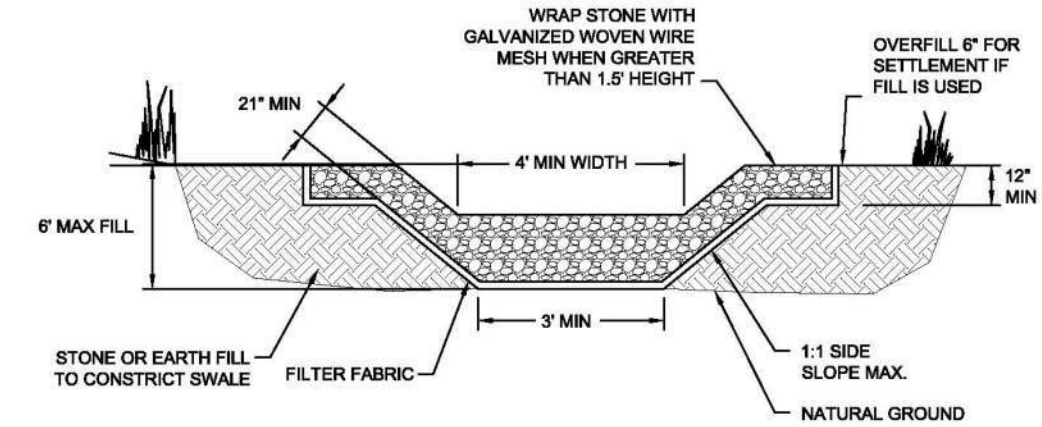
The stone outlet sediment trap should be inspected regularly (at least as often as required by the TPDES Construction General Permit) to check for clogging of the void spaces between stones. If the filter stone appears to be clogged, such that the basin will not completely drain, then the filter stone will require maintenance. If the filter stone is not completely clogged it may be raked with a garden rake to allow the water to release from the basin. If filter stone is completely clogged with mud and sediment, then the filter stone will have to be removed and replaced. Failure to keep the filter stone material properly maintained will lead to clogging of the stone riprap embankment. When this occurs, the entire stone rip-rap structure will need to be replaced. If the aggregate appears to be silted in such that efficiency is diminished, the stone should be replaced.

Trash and debris should be removed from the trap after each storm event to prevent it from plugging the rock. Deposited sediment shall be removed before the storage capacity is decreased by one-third, or sediment has reached a depth of one foot, whichever is less. The removed sediment shall be stockpiled or redistributed in areas that are protected with erosion and sediment controls.

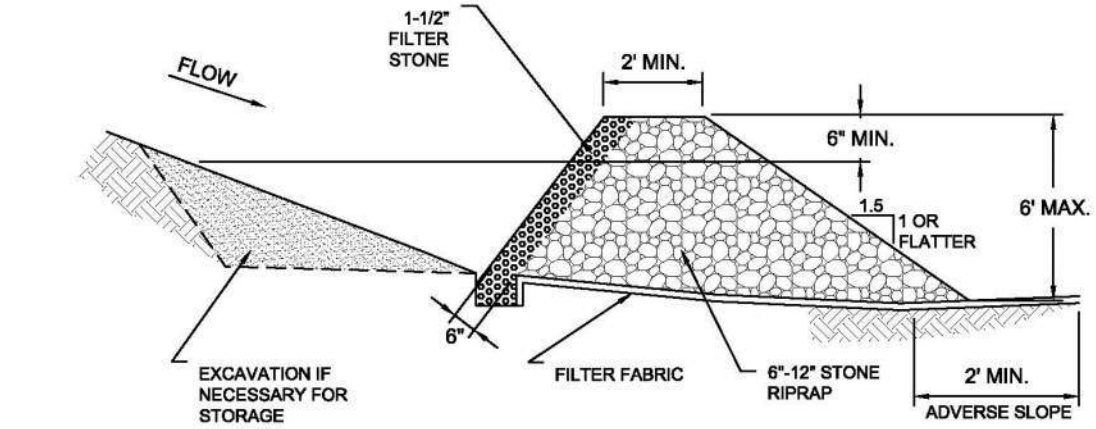
3.12.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



EXCAVATED STONE OUTLET SEDIMENT TRAP VIEW LOOKING UPSTREAM
N.T.S.

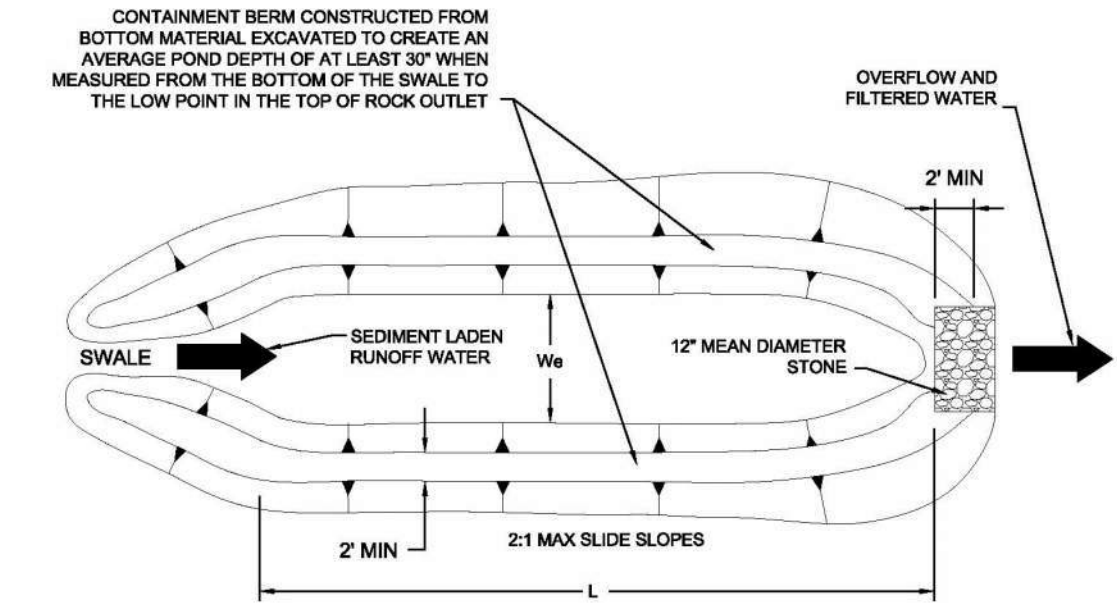


EXCAVATED STONE OUTLET SEDIMENT TRAP SECTION VIEW
N.T.S.

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND SITE TOPOGRAPHY. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETER USED TO DESIGN THE TRAP.

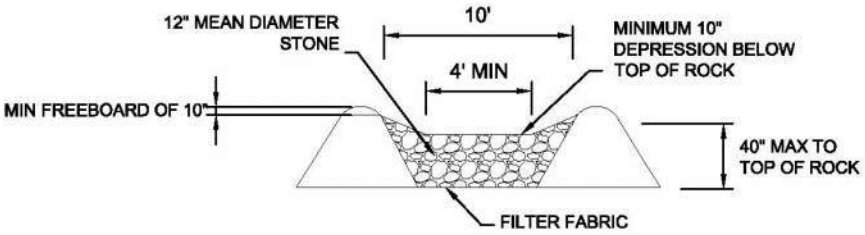
- SIZE OF CONTRIBUTING DRAINAGE AREA
- DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
- HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
- STORAGE VOLUME
- EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

Figure 3.30 Schematics of Excavated Stone Outlet Sediment Trap



BERMED STONE OUTLET SEDIMENT TRAP PLAN VIEW

N.T.S.



BERMED STONE OUTLET SEDIMENT TRAP SECTION VIEW

N.T.S.

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND SITE TOPOGRAPHY. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETER USED TO DESIGN THE TRAP.

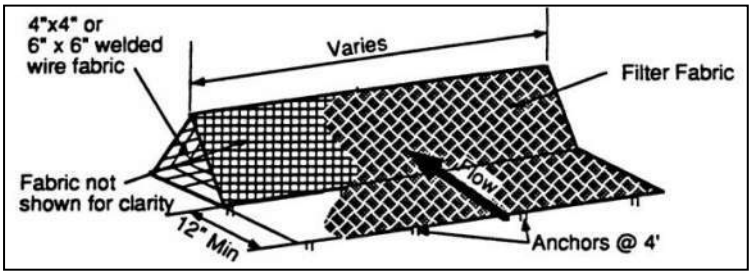
- SIZE OF CONTRIBUTING DRAINAGE AREA
- DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
- HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
- STORAGE VOLUME
- EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

TRIBUTARY AREA (ACRES)	L (FT)	We (FT)
< 0.5	59	13
0.51-1.0	82	16
1.01-1.5	102	20
1.51-2.0	118	23
2.01-2.5	131	26
2.51-3.0	144	30
3.01-3.5	154	30
3.51-4.0	167	33
4.01-4.5	177	36
4.51-5.0	187	36

Figure 3.31 Schematics of Bermed Stone Outlet Sediment Trap
(Source: City of Chesterfield Department of Public Works Detail SC 7.2)

3.13 Triangular Sediment Filter Dike

Sediment Control



Description: A triangular sediment filter dike is a self-contained silt fence consisting of filter fabric wrapped around welded wire fabric and shaped into a triangular cross section. While similar in use to a silt fence, the dike is reusable, sturdier, transportable, and can be used on paved areas or in situations where it is impractical to install embedded posts for support.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum drainage area of 0.25 acre per 100 linear feet of dike
- Maximum 200 feet distance of flow to filter dike; 50 feet if slope exceeds 10 percent
- Overlap ends of filter material 6 inches to cover dike-to-dike junction; secure with shoat rings

ADVANTAGES / BENEFITS:

- Can be installed on paved surfaces or where the soil type prevents embedment of other controls
- Withstands more concentrated flow and higher flow rates than silt fence

DISADVANTAGES / LIMITATIONS:

- Localized flooding due to minor ponding at the upslope side of the filter dike
- Not effective where there are substantial concentrated flows
- Not effective along contours due to the potential for flow concentration and overtopping

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Remove sediment before it reaches 6 inches in depth
- Clean or replace fabric if clogged
- Repair or replace dike when structural deficiencies are found

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Effects of ponding on adjacent areas and property*

3.13.1 Primary Use

Triangular filter dikes are used in place of silt fence, treating sediment flow at the perimeter of construction areas and at the perimeter of the site. Also, the dikes can serve as stream protection devices by preventing sediment from entering the streams or as check dams in small swales.

Triangular sediment filter dikes are especially useful for construction areas surrounded by pavement, where silt fence, filter berm, or other sediment control installations are impractical.

3.13.2 Applications

Triangular dikes are used to provide perimeter control by detaining sediment on a disturbed site with drainage that would otherwise flow onto adjacent properties. Triangular dikes function as sediment trapping devices when used in areas of sheet flow across disturbed areas or are placed along stream banks to prevent sediment-laden sheet flow from entering the stream. The dikes can be subjected to more concentrated flows and a higher flow rate than silt fence.

Dikes can be used on a variety of surfaces where other controls are not effective. They may be installed on paved surfaces and where the soil type prevents embedment of other sediment controls.

3.13.3 Design Criteria

- Dikes are to be installed along a line of constant elevation (along a contour line).
- Maximum drainage area shall be 0.25 acre per 100 linear feet of dike.
- Maximum flow to any 20 foot section of dike shall be 1 CFS.
- Maximum distance of flow to dike shall be 200 feet or less. If the slope exceeds 10 percent, the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the dike shall be 2:1.
- If 50 percent or less of soil, by weight, passes the U.S. Standard Sieve No. 200, select the apparent opening size (A.O.S.) to retain 85 percent of the soil.
- If 85 percent or more of soil, by weight, passes the U.S. Standard Sieve No. 200, triangular sediment dike shall not be used due to clogging.
- The filter fabric shall meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles 90-lbs.
    - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 60-lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 280-psi.
    - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Siev No. 30 (max) to 100 (min).
    - Ultraviolet Resistance, ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus, Minimum 70 percent.
- The internal support for the dike structure shall be 6-gauge 6 inch x 6 inch wire mesh or 6-guage 4 inch x 4 inch welded wire fabric folded into triangular form eighteen (18) inches on each side.
- Tie-in to the existing grade should be accomplished by:

  (i) embedding the fabric six-inches below the top of ground on the upslope side;

(ii) extending the fabric to form a 12 inch skirt on the upstream slope and covering it with 3 to 5 inches of 1½ inch washed filter stone; or

(iii) entrenching the base of the triangular dike four inches below ground.

For (ii) above, the skirt and the upslope portion of the triangular dike skeleton should be anchored by metal staples on two-foot centers, driven a minimum of six inches into the ground (except where crossing pavement or exposed limestone). When installed on pavement, the washed rock in option (ii) may be replaced by bags filled with 1½ inch washed filter stone placed at 4 foot spacing to anchor the end of the filter fabric to the pavement.

- Filter material shall lap over ends six (6) inches to cover dike-to-dike junction; each junction shall be secured by shoat rings. Where the dike is placed on pavement, two rock bags shall be used to anchor the overlap to the pavement. Additional bags shall be used as needed to ensure continuous contact with the pavement (no gaps).
- Sand bags or large rock should be used as ballast inside the triangular dike section to stabilize the dike against the effects of high flows.
- Sufficient room for the operation of sediment removal equipment shall be provided between the dike and other obstructions in order to properly remove sediment.
- The ends of the dike shall be turned upgrade to prevent bypass of stormwater.
- When used as a perimeter control on drainage areas larger than 0.5 acres, a stone overflow structure, similar to the one shown in *Section 3.10 Silt Fence*, may be necessary at low points to act as a controlled overflow point in order to prevent localized flooding and failure of the dike.
- If used as check dams in small swales (drainage areas less than 3 acres), the dikes shall be installed according to the spacing and other criteria in *Section 2.1 Check Dam*.

3.13.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.8 Triangular Sediment Filter Dike.

3.13.5 Inspection and Maintenance Requirements

Triangular sediment filter dikes should be inspected regularly (at least as often as required by the TPDES Construction General Permit). Sediment should be removed before it reaches 6 inches in depth. If the fabric becomes clogged, it should be cleaned or, if necessary, replaced. If structural deficiencies are found, the dike should be immediately repaired or replaced.

The integrity of the filter fabric is important to the effectiveness of the dike. Overlap between dike sections must be checked on a regular basis and repaired if deficient.

3.13.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

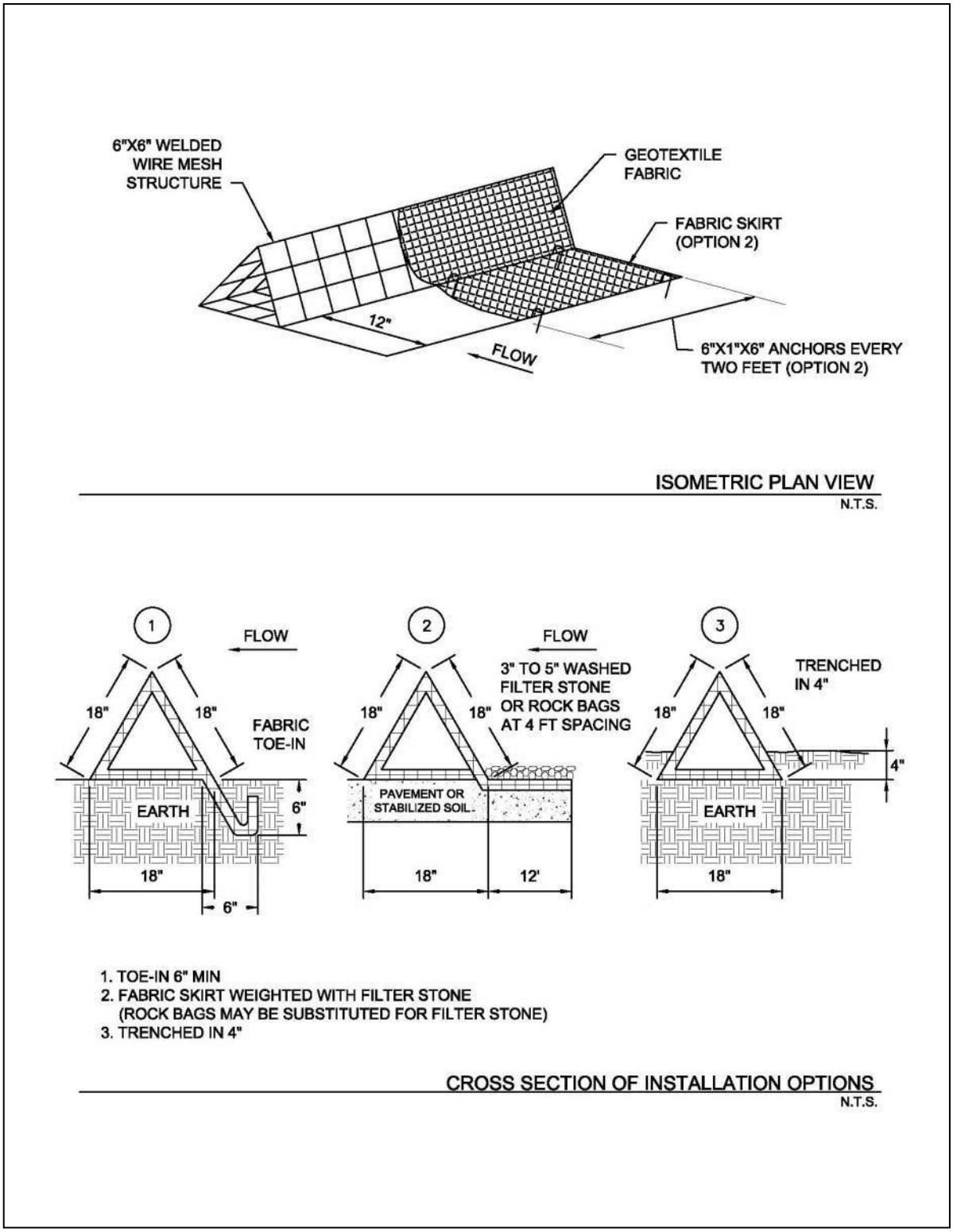
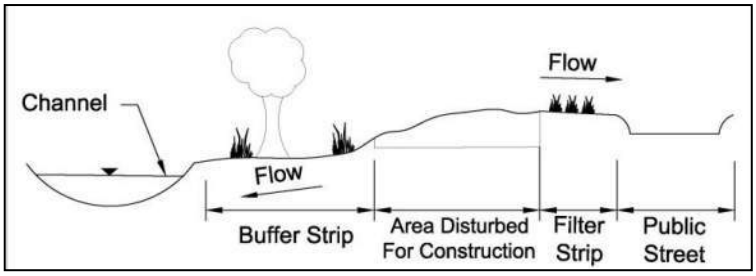


Figure 3.32 Schematics of Triangular Sediment Filter Dike

3.15 Vegetated Filter Strips and Buffers

Sediment Control



Description: Buffer strips (existing vegetation) and filter strips (planted vegetation) are sections of vegetated land adjacent to disturbed areas. They are designed with low slopes to convey sheet flow runoff from disturbed areas, resulting in the removal of sediment and other pollutants as the runoff passes through vegetation and infiltration occurs.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Minimum width (direction of flow across the vegetation) dependent on slope of disturbed area
- Maximum ratio of disturbed area to vegetated area dependent on slope
- Existing vegetation must meet criteria for type and coverage
- Dense grass required for planted vegetation
- Demarcate limits of vegetation and protect from traffic

ADVANTAGES / BENEFITS:

- Effective secondary control for removing clay particles
- Disperses flow and slows velocities to decrease erosion potential in receiving water
- Preserves the character of existing riparian corridor
- May become part of the permanent stormwater controls

DISADVANTAGES / LIMITATIONS:

- Appropriate as a primary control only for drainage areas of 2 acres or less and under certain site conditions
- Maximum 150 feet of flow to vegetated strip or buffer is used as a primary control
- Cannot treat large volumes or concentrated flows
- Not effective as a perimeter control when the perimeter cuts across contours instead of following contours
- Must limit access to vegetated portion of the site

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Rake accumulations of sediment from the vegetation
- Repair bare areas

TARGETED POLLUTANTS

- ● Sediment
- ◒ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.35-0.85
(*Depends on many conditions in addition to soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ○ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Coordination with final landscaping*

3.15.1 Primary Use

Vegetated filter strips and buffers are used to reduce the velocity of sheet flow and reduce the volume of runoff through infiltration. In the process, sediment is removed as the runoff is filtered through the vegetation and infiltration occurs.

Vegetated filter strips and buffers are frequently used a secondary sediment control, since their performance is highly variable. They may be used as a primary sediment control only for small areas and under select site conditions.

3.15.2 Applications

Vegetated buffers are most applicable on development projects that are adjacent or near to floodplains, wetlands, streams and other natural waterways. Vegetated strips may be established along roads and property lines as a perimeter control for development. They are also applicable along the down slope side of utility line projects.

Vegetated buffers may be a primary sediment control for small areas where the conditions meet design criteria. They are also commonly used as a secondary control with other perimeter controls to provide higher levels of sediment removal. Vegetated areas have more capability to remove fine particle sizes than many conventional sediment controls. Combinations such as an organic filter tube or silt fence at the upslope edge of a vegetated strip are very effective.

In addition to perimeter control, vegetated strips are applicable for slope protection. Strips may be established at regular intervals to interrupt long or steep slopes. The strips maintain sheet flow, decrease velocities, and decrease erosion on the slopes.

3.15.3 Design Criteria

Vegetated buffers should be preserved along existing floodplains, wetlands, channels, and other natural waters whenever possible, even when the buffer is not a primary sediment control. Check for local requirements, as many municipalities mandate a vegetated buffer to maintain the character of the riparian corridor along a natural waterway. Vegetated buffers are encouraged to protect existing waterways by decreasing velocities, dispersing flow, and attenuating volume before the runoff reaches the waterway. If the development plans necessitate disturbing the riparian corridor, phase the development (when possible) to retain a vegetated buffer until final grading and landscaping at the end construction.

The evaluation and use of vegetated strips and buffers for use as a sediment control are unique to each site. The designer should carefully consider slope, vegetation, soils, depth to impermeable layer, depth to ground water, and runoff sediment characteristics before specifying a vegetated strip or buffer as a primary sediment control. This consideration is especially true for buffer strips of existing vegetation. If the buffer is not correctly planned, the first storm event can damage the natural vegetation beyond repair.

Design criteria in this section are only applicable when a vegetated strip or buffer is intended to be a primary or secondary sediment control for the construction site. As discussed above, a vegetated buffer may be preserved for other reasons that do not necessitate the use of these criteria if other sediment controls are provided for the construction site.

General

- Maximum slope of the vegetated strip or buffer shall be 5% across the width of the vegetation in the direction of flow.
- To maintain sheet flow, maximum distance of flow to the vegetated filter shall be 150 feet.
- Vegetated buffers and strips may only serve as a primary sediment control when the contributing drainage area has a slope of 15% or less. On steeper slopes, another perimeter control (e.g. organic filter tube, silt fence) may be installed at the upslope edge of the vegetated buffer or strip as a primary control, with the vegetation serving as a secondary control.

- Maximum disturbed area contributing runoff to the vegetated strip or buffer shall be 2 acres.
- Vegetated filter strips and buffers shall be a minimum of 15 feet wide. Width shall be increased based on the slope of the disturbed area as shown in the following table. Although the slope of the disturbed area may be up 15%, the slope of the vegetated strip or buffer is still limited to 5% maximum if used as a primary control for sediment.

Table 3.10 Sizing of Vegetated Buffers and Strips

Maximum Slope of Contributing Drainage Area	*Maximum Ratio of Disturbed Area to Vegetated Area*	*Minimum Width of Vegetated Area (Direction of Flow)*
5%	8:1	15 feet
10%	5:1	30 feet
15%	3:1	50 feet

- Access to vegetated buffers and strips shall be prohibited. These areas shall be protected from all traffic. No activities should occur in these areas, including no parking of the workers' vehicles, no eating of lunch, etc.
- Install controlled and stabilized ingress/egress points to manage traffic and direct it away from vegetation. Fence the vegetation or provide other means of protection to prevent vehicles and equipment from driving on the vegetated areas.
- Vegetated buffers and filter strips should not be used when high ground water, shallow depth to bedrock, or low soil permeability will inhibit infiltration of runoff.

Buffers of Existing Vegetation

- Fencing, flagged stakes spaced at a maximum of 6 feet, or other measures shall be used to clearly mark existing vegetation that is being preserved as a buffer before the start of any clearing, grubbing, or grading.
- Existing vegetation must be well established to be used as a vegetated buffer. It may be a mix of trees, sapling/shrubs, vines and herbaceous plants. However, the herbaceous plants shall cover at least 80 percent of the ground area.
- Bare soil shall not be visible within the buffer. Area between herbaceous plants shall be covered with a natural litter of organic matter (e.g. leaves, dead grass).
- Lots with a thick stand of existing grasses may preserve strips of the grasses as perimeter control in addition to using vegetation as a buffer along a natural waterway.

Strips of Planted Vegetation

- Vegetated strips should only be used when the site perimeter is along (parallel to) contours. Erosion of the vegetated strip will be a problem when the strip is placed along roads or site perimeters that cut across contours, resulting in runoff flowing along, instead of across, the filter strip.
- Minimize vehicle and equipment traffic and other activities that could compact soils on areas that will be planted for vegetated strips.
- Sod is required when the strip is intended to immediately function as a sediment control.
- Erosion control blankets (ECBs) should be used to prevent erosion and provide sediment control while establishing vegetation for a filter strip. If ECBs are not used, than another perimeter control is required until the vegetation is mature. Refer to *Section 2.3 Erosion Control Blankets*.
- Refer to the *Section 2.9 Vegetation* for criteria on establishing vegetation.
- When using vegetated strips for slope protection, spacing of the strips should be designed based on

slope steepness and type of soil. The strips may be planted directly on the slope grade when the slope is flatter than 2:1. For slopes of 2:1 and steeper, vegetation should be established on terraces. Terraces shall have a transverse slope of 1 percent in the opposite direction of the slope (i.e. back into the ground).

3.15.4 Design Guidance and Specifications

Guidance for analysis of the hydraulic loading on filter strips is in *Section 13.3 of the Stormwater Controls Technical Manual*.

No specification for vegetated filter strips and buffers is currently available in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments.

3.15.5 Inspection and Maintenance Requirements

Vegetated filter strips and buffers should be inspected regularly (at least as often as required by the TPDES Construction General Permit). If rill erosion is developing, additional controls are needed to spread the flow before it enters the vegetated area. Rake light accumulations of sediment from the vegetation. Remove trash that accumulates in the vegetation. Additional sediment controls (e.g. a line of organic filter tubes or silt fence), are needed if sediment accumulations are large enough to bury the vegetation.

Inspect established planted vegetation for bare areas and place sod or install seeded erosion control blankets, as appropriate. Mow as needed after planted vegetation is mature.

3.15.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

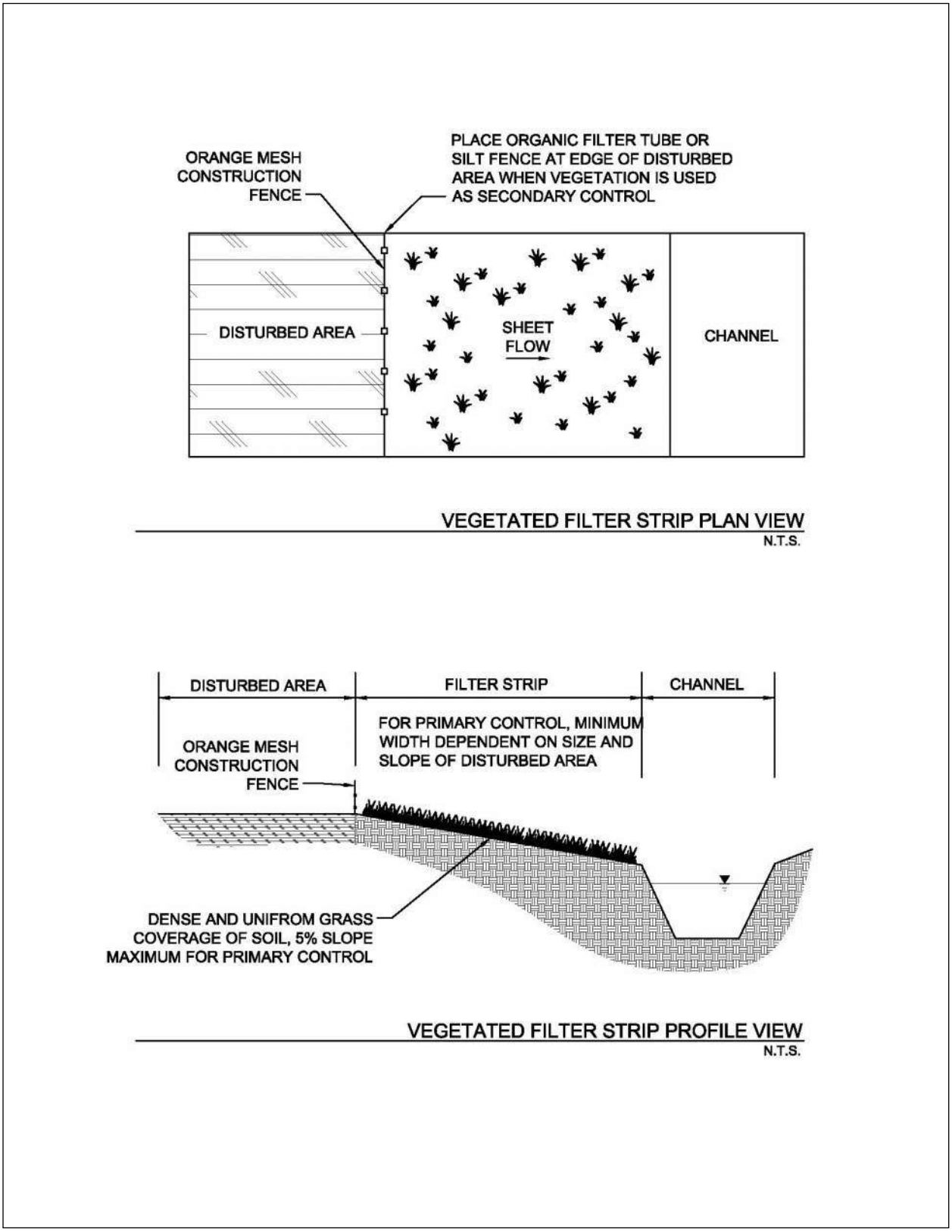


Figure 3.35 Schematics of Vegetated Filter Strip

4.3 Concrete Waste Management

Waste Control

Description: Concrete waste at construction sites comes in two forms: 1) excess fresh concrete mix, including residual mix washed from trucks and equipment, and 2) concrete dust and concrete debris resulting from demolition. Both forms have the potential to impact water quality through stormwater runoff contact with the waste. The objective of concrete waste management is to dispose of these wastes in a manner that protects surface and ground water.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Prohibit the discharge of untreated concrete washout water
- Prohibit dumping waste concrete anywhere except at pre-determined, regulated, recycling or disposal sites
- Provide a washout containment with a minimum of 6 cubic feet of containment volume for every 10 cubic yards of concrete placed
- Minimum 1 foot freeboard on containment
- Minimum 10 mil plastic lining of containment
- Washout water evaporation and concrete recycling are the recommended disposal methods
- Educate drivers and operators on proper disposal and equipment cleaning procedures

LIMITATIONS:

- Does not address concrete sawcutting waste

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Check for and repair any damage to washout containment areas
- Clean up any overflow of washout pits
- Regularly remove and properly dispose of concrete waste

TARGETED POLLUTANTS

- ○ Sediment
- ● Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ● Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ● Training
- ○ Suitability for Slopes > 5%

Other Considerations:

- *None*

4.3.1 Primary Use

Concrete waste management is used to prevent the discharge of concrete wash water and waste into stormwater runoff. A number of water quality parameters can be affected by the introduction of concrete, especially fresh concrete. Concrete affects the pH of runoff, causing significant chemical changes in water bodies and harming aquatic life. Suspended solids in the form of both cement and aggregated dust are also generated from both fresh and demolished concrete waste.

4.3.2 Applications

Concrete waste management is applicable to all construction sites where existing concrete is being demolished or new concrete is being placed, regardless of the size of the total area disturbed. It is also applicable on repair and maintenance projects that may not be required to implement erosion and sediment controls.

4.3.3 Design Criteria

- The discharge of washout water to an inlet, swale, or any portion of the storm drainage system or a natural drainage system (e.g. channel) shall be prohibited.
- Construction plan notes shall state that the discharge of concrete washout to anything except a designated containment area is prohibited.
- Show the location of the concrete washout containment on the drawings, or require the contractor to provide this information.
- The contractor should be required to designate the site superintendent, foreman, or other person who is responsible for concrete placement to also be responsible for concrete waste management.

Unacceptable Waste Concrete Disposal Practices

- Dumping in vacant areas on the job-site.
- Illicit dumping onto off-site lots or any other placed not permitted to receive construction demoliotion debris.
- Dumping into ditches, drainage facilities, or natural water ways.
- Using concrete waste as fill material or bank stabilization.

Recommended Disposal Procedures

- Identify pre-determined, regulated, facilities for disposal of solid concrete waste. Whenever possible, haul the concrete waste to a recycling facility. Disposal facilities must have a Class IV (or more stringent) municipal solid waste permit from the TCEQ.
- A concrete washout pit or other containment shall be installed a minimum of 50 feet away from inlets, swales, drainage ways, channels, and other waters, if the site configuration provides sufficient space to do so. In no case shall concrete washout occur closer than 20 feet from inlets, swales, drainage ways, channels and other waters.
- Provide a washout area with a minimum of 6 cubic feet of containment volume for every 10 cubic yards of concrete poured. Alternatively, the designer may provide calculations sizing the containment based on the number of concrete trucks and pumps to be washed out.
- The containment shall be lined with plastic (minimum 10 millimeters thick) or an equivalent measure to prevent seepage to groundwater.
- Mosquitoes do not typically breed in the high pH of concrete washout water. However, the concrete washout containment should be managed in a manner that prevents the collection of other water that could be a potential breeding habitat.

  - Do not excavate the washout area until the day before the start of concrete placement to minimize the potential for collecting stormwater.
  - Do not discharge any water or wastewater into the containment except for concrete washout to prevent dilution of the high pH environment that is hostile to mosquitoes.
  - Remove the waste concrete and grade the containment closed within a week of completing concrete placement. Do not leave it open to collect stormwater.
  - If water must be pumped from the containment, it shall be collected in a tank, neutralized to lower the pH, and then hauled to a treatment facility for disposal. Alternatively, it may be hauled to a batch plant that has an onsite collection facility for concrete washout water.
  - Do **not** pump water directly from the containment to the Municipal Separate Storm Sewer System or a natural drainage way without treating for removal of fine particles and neutralization of the pH.

- Multiple concrete washout areas may be needed for larger projects to allow for drying time and proper disposal of the washout water and waste concrete.
- Portable, pre-fabricated, concrete washout containers are commercially available and are an acceptable alternative to excavating a washout area.
- Evaporation of the washout water and recycling of the concrete waste is the preferred disposal method. After the water has evaporated from the washout containment, the remaining cuttings and fine sediment shall be hauled from the site to a concrete recycling facility or a solid waste disposal facility.
- Remove waste concrete when the washout containment is half full. Always maintain a minimum of one foot freeboard.
- Use waste and recycling haulers and facilities approved by the local municipality.
- When evaporation of the washout water is not feasible, discharge from the collection area shall only be allowed if a passive treatment system is used to remove the fines. Criteria are in *Section 3.7 Passive Treatment System*. Mechanical mixing is required within the containment for passive treatment to be effective. The pH must be tested, and discharge is allowed only if the pH does not exceed 8.0. The pH may be lowered by adding sulfuric acid to the water. Dewatering of the collection area after treatment shall follow the criteria in *Section 3.3 Dewatering Controls*.
- Care shall be exercised when treating the concrete washout water for discharge. Monitoring must be implemented to verify that discharges do not violate groundwater or surface water quality standards.
- On large projects that are using a nearby batch plant, a washout facility associated with the plant and under the plant's TPDES Multi-Sector General Permit may be used instead of installing an onsite containment area for truck washout.

Education

- Drivers and equipment operators should be instructed on proper disposal and equipment washing practices (see above).
- Supervisors must be made aware of the potential environmental consequences of improperly handled concrete waste.

Enforcement

- The construction site manager or foreman must ensure that employees and pre-mix companies follow proper procedures for concrete disposal and equipment washing.
- Employees violating disposal or equipment cleaning directives must be re-educated or disciplined if necessary.

Demolition Practices

- Monitor weather and wind direction to ensure concrete dust is not entering drainage structures and surface waters.
- Spray water on structures being demolished to wet them before start of demolition operations. Reapply water whenever dust is observed.
- Construct sediment traps or other types of sediment detention devices downstream of demolition activities to capture and treat runoff from demolition wetting operations.

4.3.4 Design Guidance and Specifications

No specification for concrete waste management is currently available in the Standard Specifications for Public Works – North Central Texas Council of Governemtns.

4.3.5 Inspection and Maintenance Requirements

Concrete waste management controls should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for proper handling of concrete waste. Check concrete washout pits and make repairs as needed. Washout pits should not be allowed to overflow. Maintain a schedule to regularly remove concrete waste and prevent over-filling.

If illicit dumping of concrete is found, remove the waste and reinforce proper disposal methods through education of employees.

4.3.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

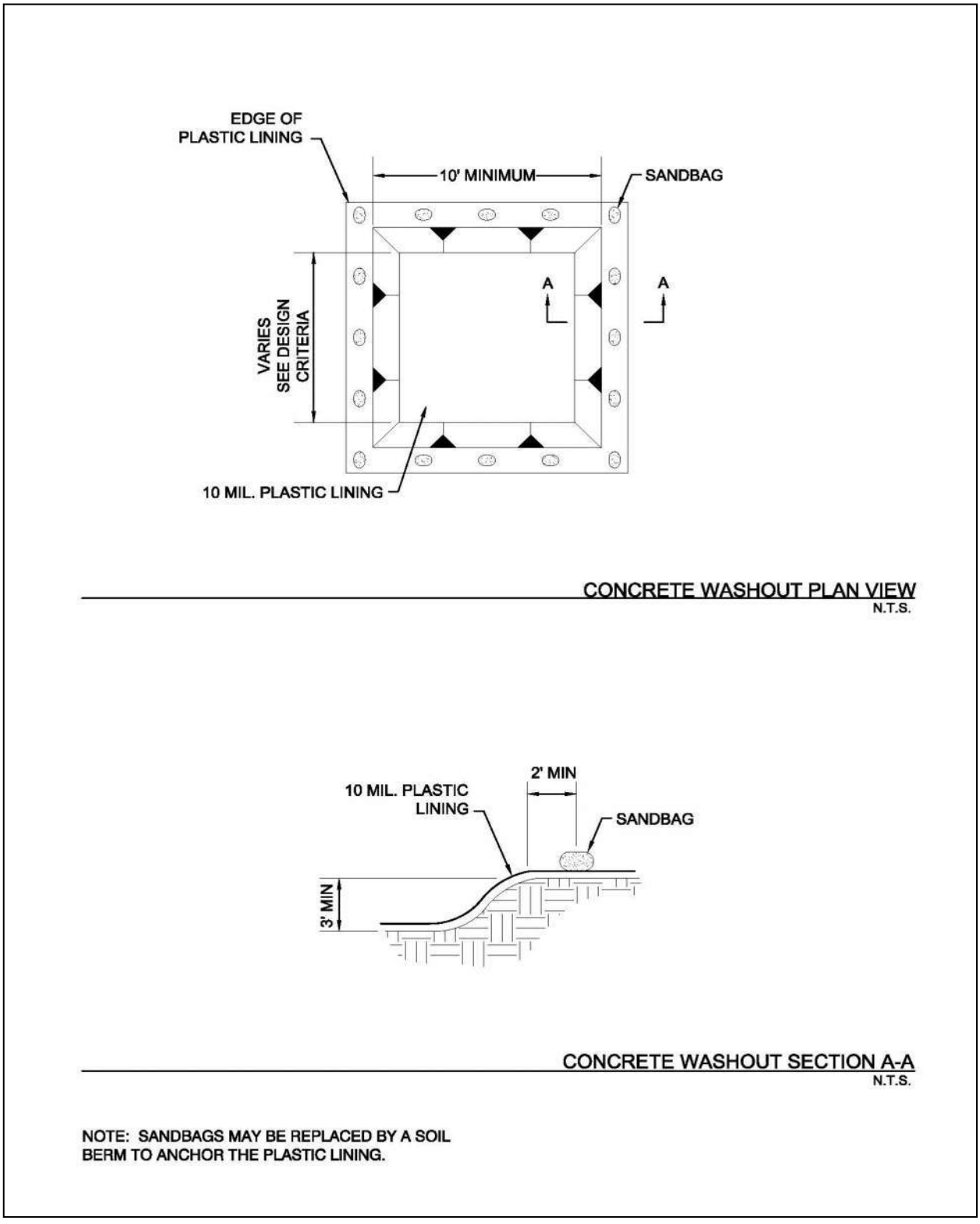


Figure 4.1 Schematics of Concrete Washout Containment

APPENDIX E

INSPECTION AND MAINTENANCE REPORTS

Inspector Qualifications*

Inspector Name: _____

Qualifications (Check as appropriate and provide description):

□ Training Course _____

□ Supervised Experience _____

□ Other _____

Inspector Name: _____

Qualifications (Check as appropriate and provide description):

□ Training Course _____

□ Supervised Experience _____

□ Other _____

Inspector Name: _____

Qualifications (Check as appropriate and provide description):

□ Training Course _____

□ Supervised Experience _____

□ Other _____

**Personnel conducting inspections must be knowledgeable of the general permit, familiar with the construction site, and knowledgeable of the SWP3 for the site.*

INSPECTION SCHEDULE

Inspections must be conducted:

- **Option 1** – at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inch or greater
- **Option 2** – at least once every 7 calendar days, regardless of whether or not there has been a rainfall event since the previous inspection.

Any changes to the schedule are conducted in accordance with the following:

- the schedule is changed a maximum of one time each month,
- the schedule change must be implemented at the beginning of a calendar month, and
- the reason for the schedule change must be documented below.

Date	Schedule Option	Reason for Schedule Change

Construction Site SWP3 Inspection Report

Status		
	☐ Complies	
	☐ Warning	No.
	☐ Project Shutdown	

SWP3	On-Site		Up-to-date	
	Yes	No[1]	Yes	No[2]

General Information		
	Project:	Date:
	Address:	Inspector:
		Qualifications: see Appendix E of SWP3
		Weather Conditions:
	Owner:	Contractor:

BMP	BMP In Use		Maint. Req'd		Comments
	Yes	No	Yes[2]	No	

[1]The SWP3 must be retained on-site at the construction site or, if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3.

[2]Items marked in this column need to be addressed in the Actions to be Taken table.

ACTIONS TO BE TAKEN	RESPONSIBLE PERSON(S)	DUE DATE	DATE COMPLETED	INITIALS

NOTE: These reports will be kept on file as part of the Storm Water Pollution Prevention Plan for at least three years. A copy of the SWP3 will be kept at the site at all times during construction.

CERTIFICATION STATEMENT: *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Name:	
Address:	
Telephone:	
Site Location:	
Inspector Signature:	Date:

MAINTENANCE GUIDELINES

1. Below are some maintenance practices to be used to maintain erosion and sediment controls:
   - All control measures will be inspected according to the schedule identified in Appendix E.
   - All measures will be maintained in good working order. The operator should correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than seven (7) calendar days after the inspection.
   - BMP Maintenance (as applicable)
     - Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%. For perimeter controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.
     - Silt fence will be inspected for depth of sediment, tears, to see of the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
     - Drainage swale will be inspected and repaired as necessary.
     - Inlet control will be inspected and repaired as necessary.
     - Check dam will be inspected and repaired as necessary.
     - Straw bale dike will be inspected and repaired as necessary.
     - Diversion dike will be inspected and any breaches promptly repaired.
     - Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
     - If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee must to work with the owner or operator of the property to remove the sediment.
     - Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

2. To maintain the above practices, the following will be performed:
   - Maintenance and repairs will be conducted before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. Following an inspection, deficiencies should be corrected no later than seven (7) calendar days after the inspection.
   - Any necessary revisions to the SWP3 as a result of the inspection must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event.
   - Personnel selected for inspection and maintenance responsibilities must be knowledgeable of the general permit, familiar with the construction site, and knowledgeable of the SWP3 for the site.

APPENDIX F

ROLES AND RESPONSIBILITIES CHECKLIST AND CERTIFICATION STATEMENT

PRIMARY AND SECONDARY OPERATOR GENERAL RESPONSIBILITIES

DEFINITIONS:

Operator - The person or persons associated with a large or small construction activity that is either a primary or secondary operator as defined below:

Primary Operator – the person or persons associated with a large or small construction activity that meets either of the following two criteria:

(a.) the person or persons have operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications, or

(b.) the person or persons have day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with a storm water pollution prevention plan (SWP3) for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

Secondary Operator – The person whose operational control is limited to the employment of other operators or to the ability to approve or disapprove changes to plans and specifications. A secondary operator is also defined as a primary operator and must comply with the permit requirements for primary operators if there are no other operators at the construction site.

Please note that both Owners and Contractors can meet the definition of being an Operator and will need to fulfill the associated requirements. The Roles and Responsibilities Checklist and Certification Statement located in Appendix F are to be completed and signed by the Owner and Contractor(s).

Secondary Operators and Primary Operators with Control Over Construction Plans and Specifications

All secondary operators and primary operators with control over construction plans and specifications must:

(a.) ensure the project specifications allow or provide that adequate BMPs are developed to meet the requirements of the general permit,

(b.) ensure that the SWP3 indicates the areas of the project where they have control over project specifications, including the ability to make modifications in specifications,

(c.) ensure all other operators affected by modifications in project specifications are notified in a timely manner so that those operators may modify their best management practices as necessary to remain compliant with the conditions of this general permit, and

(d.) ensure that the SWP3 for portions of the project where they are operators indicates the name and site-specific TPDES authorization numbers for permittees with the day-to-day operational control over those activities necessary to ensure compliance with the SWP3 and other permit conditions. If the party with day-to-day operational control has not been authorized or has abandoned the site, the

person with control over project specifications is considered to be the responsible party until the authority is transferred to another party and the SWP3 is updated.

Primary Operators with Day-to-Day Operational Control

Primary Operators with day-to-day operational control of those activities at a project that are necessary to ensure compliance with the SWP3 and other permit conditions must ensure that the SWP3 accomplishes the following requirements:

(a.) meets the requirements of the general permit for those portions of the project where they are operators,
(b.) the parties responsible for implementation of BMPs described in the SWP3,
(c.) indicates areas of the project where they have operational control over day-to-day activities, and
(d.) includes, for areas where they have operational control over day-to-day activities, the name and site-specific TPDES authorization number of the parties with control over project specifications, including the ability to make modifications in specifications.

Roles and Responsibilities Checklist

Role/Responsibility	Project Owner*	Primary Operator	Secondary Operator
Development of initial design specifications			
Payment for proposed construction activity			
Maintain SWP3 records for three years from the date that a NOT is submitted			
Complete, sign, and postmark NOI at least seven days prior to beginning of construction activity, or Complete, sign, and electronically submit NOI prior to the beginning of construction activity			
Post a copy of the signed NOI at project site and maintain through duration of project			
Post copy of completed construction site notice(s) at project site through duration of project			
Provide a copy of the signed NOI to any secondary operator and to the operator of any MS4 receiving construction site discharge, at least seven days prior to commencing construction activities			
Maintain schedule of major construction activities, keep a copy with SWP3, and retain a copy of the SWP3 at the construction site at all times			
Update SWP3 to reflect daily operations (e.g., revisions, installation dates, grading operation dates, BMP maintenance, and inspection information)			
Update SWP3 to reflect changes in the Contractor's contact information			
Identify, maintain and modify BMPs (as necessary) to control erosion and sedimentation due to construction activities throughout life of project			
Provide stabilized construction entrances and sediment barriers, and clean existing rock and/or add rock to prevent mud and dirt from entering streets or alleys			
Maintain and/or replace sediment barriers and silt traps (if installed), etc. throughout life of project			
Maintain erosion control on stockpiles without blocking drainage paths			
Perform SWP3 inspections in accordance with TPDES General Permit, and keep inspection reports with SWP3			
Based on inspection results, modify SWP3 and pollution prevention controls to maintain that storm water (or identified non-storm water discharges) are the only discharges leaving the site			

Role/Responsibility	Project Owner*	Primary Operator	Secondary Operator
Provide proper management of project-generated trash and debris, including debris collected from storm water protection devices			
Stabilize all disturbed areas related to construction for temporary or permanent ceasing of activities			
Comply with all State and local sanitary sewer or septic system regulations			
Provide copies of all SWP3 records to the Project Owner			
Complete, sign, and submit NOT form to the TCEQ and MS4 Operators when the project has been completed and stabilized			
Complete applicable portion of the site notice related to removal of the notice and submit to the operator of any MS4 receiving site discharge			

**Please note that the Project Owner can meet the definition of an operator. Please refer to the definitions of "primary operator" and "secondary operator" for more information.*

Each operator engaged in activities that disturb surface soils must be identified and must sign the following certification statement. Signatory requirement guidance and an additional certification statement form are attached (Appendix F).

Certification Statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign this document and can provide documentation in proof of such authorization upon request."

Project Owner

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

General Contractor

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

Subcontractor (as appropriate)

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

Subcontractor (as appropriate)

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

NOTICE OF INTENT (NOI) LOG			
Name	**Company**	**Date Submitted NOI**	**TPDES Permit No.**

Signature Requirements in 30 TAC §305.44

The purpose of this document is to clarify the signature requirements for water quality permit applications subject to 30 Texas Administrative Code (TAC) section (§)305.44. This includes most applications relating to authorizations issued under 30 TAC Chapter 305 (relating to Consolidated Permits), Chapter 205 (relating to General Permits for Waste Discharges), 30 TAC Chapter 312 (relating to Sludge Use, Disposal and Transportation), and 30 TAC Chapter 321 (relating to Control of Certain Activities By Rule).

TCEQ is currently updating the signatory instructions in its application forms. You may have recently received a notice of deficiency (NOD) letter indicating failure to meet the signatory requirements. Please review the information provided below concerning signatory requirements and have a person authorized to sign under §305.44 and submit the enclosed certification. The certification must clearly indicate the applicant and the original application form subject to the NOD. Upon satisfactory review of your signed certification, your submission will no longer be deficient for failing to meet the signatory requirements.

You are encouraged to use the attached certification page for water quality permit and registration applications, and other authorization forms subject to §305.44, until the forms have been updated.

IF YOU ARE A CORPORATION:

The regulation governing who may sign an application form is 30 TAC §305.44(a)(1) (see attached). According to this provision, any corporate representative may sign an application form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the application form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:

The regulation governing who may sign an application form is 30 Texas Administrative Code §305.44(a)(3) (see attached). According to this provision, only a ranking elected official or principal executive officer may sign an application form. Persons such as the City Mayor or County Commissioner are ranking elected officials. The principal executive officer may be identified in your city charter, county or city ordinances, or the Texas statute(s) under which your governmental entity was formed. An application form that is signed by a governmental official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the application , you are certifying that you are either a ranking elected official or principal executive officer. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have questions or need additional information concerning the signatory requirements discussed above, please contact either Matt Beeter at (512) 239-1406 or Carol Lear at (512) 239-1025, of the Texas Commission on Environmental Quality's Environmental Law Division.

30 Texas Administrative Code
§305.44. Signatories to Applications.

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

CERTIFICATION

Permit/Registration No._____

Applicant:_____

I, _____ _____
Typed or printed name *Title*

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign this document and can provide documentation in proof of such authorization upon request.

Signature:_____ Date:_____

APPENDIX G

TPDES GENERAL PERMIT (TXR150000) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Texas Commission on Environmental Quality

P.O. Box 13087, Austin, Texas 78711-3087

GENERAL PERMIT TO DISCHARGE UNDER THE

TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM

under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

This permit supersedes and replaces
TPDES General Permit No. TXR150000, issued March 5, 2008

Construction sites that discharge stormwater associated with construction activity

located in the state of Texas

may discharge to surface water in the state

only according to monitoring requirements and other conditions set forth in this general permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ or Commission), the laws of the State of Texas, and other orders of the Commission of the TCEQ. The issuance of this general permit does not grant to the permittee the right to use private or public property for conveyance of stormwater and certain non-stormwater discharges along the discharge route. This includes property belonging to but not limited to any individual, partnership, corporation or other entity. Neither does this general permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This general permit and the authorization contained herein shall expire at midnight, five years from the permit effective date.

EFFECTIVE DATE: March 5, 2013

ISSUED DATE: FEB 19 2013

Bryan W. Shaw

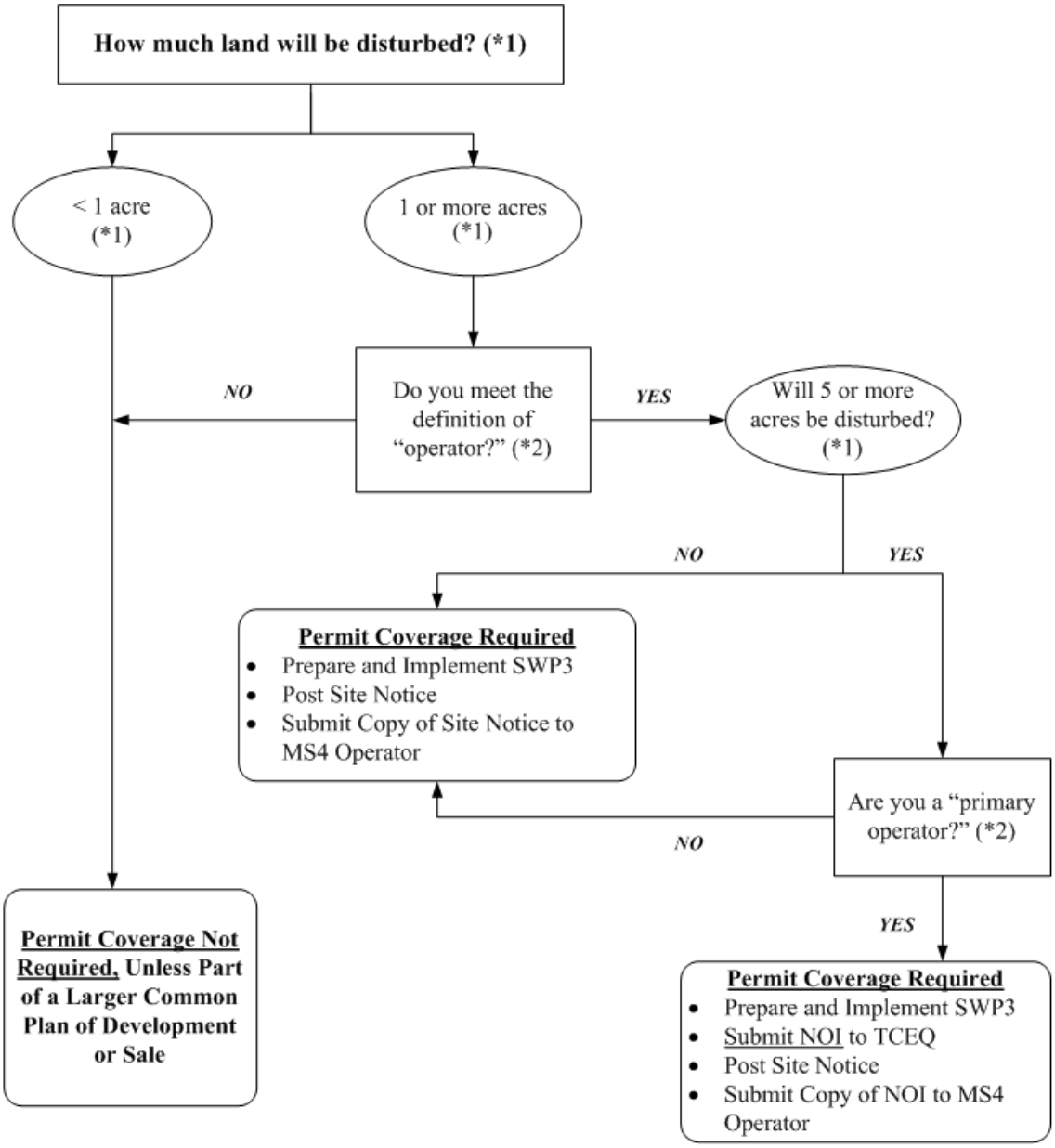
For the Commission

TPDES GENERAL PERMIT NUMBER TXR150000 RELATING TO STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

Table of Contents

Part I. Flow Chart and Definitions

Section A. Flow Chart to Determine Whether Coverage is Required



(*1) To determine the size of the construction project, use the size of the entire area to be disturbed, and include the size of the larger common plan of development or sale, if the project is part of a larger project (refer to Part I.B., "Definitions," for an explanation of "common plan of development or sale").

(*2) Refer to the definitions for "operator," "primary operator," and "secondary operator" in Part I., Section B. of this permit.

Section B. Definitions

Arid Areas - Areas with an average annual rainfall of 0 to 10 inches.

Best Management Practices (BMPs) - Schedules of activities, prohibitions of practices, maintenance procedures, structural controls, local ordinances, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures, and practices to control construction site runoff, spills or leaks, waste disposal, or drainage from raw material storage areas.

Commencement of Construction - The initial disturbance of soils associated with clearing, grading, or excavation activities, as well as other construction-related activities (e.g., stockpiling of fill material, demolition).

Common Plan of Development - A construction activity that is completed in separate stages, separate phases, or in combination with other construction activities. A common plan of development (also known as a "common plan of development or sale") is identified by the documentation for the construction project that identifies the scope of the project, and may include plats, blueprints, marketing plans, contracts, building permits, a public notice or hearing, zoning requests, or other similar documentation and activities. A common plan of development does not necessarily include all construction projects within the jurisdiction of a public entity (e.g., a city or university). Construction of roads or buildings in different parts of the jurisdiction would be considered separate "common plans," with only the interconnected parts of a project being considered part of a "common plan" (e.g., a building and its associated parking lot and driveways, airport runway and associated taxiways, a building complex, etc.). Where discrete construction projects occur within a larger common plan of development or sale but are located ¼ mile or more apart, and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale, provided that any interconnecting road, pipeline or utility project that is part of the same "common plan" is not included in the area to be disturbed.

Construction Activity - Includes soil disturbance activities, including clearing, grading, and excavating; and does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (e.g., the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities). Regulated construction activity is defined in terms of small and large construction activity.

Dewatering – The act of draining rainwater or groundwater from building foundations, vaults, and trenches.

Discharge – For the purposes of this permit, the drainage, release, or disposal of pollutants in stormwater and certain non-stormwater from areas where soil disturbing activities (e.g., clearing, grading, excavation, stockpiling of fill material, and demolition), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck wash out, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located.

Drought-Stricken Area – For the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely: (1) "Drought to persist or intensify", (2) "Drought ongoing, some improvement", (3) "Drought likely to improve, impacts ease", or (4) "Drought development likely". See http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html.

Edwards Aquifer - As defined under Texas Administrative Code (TAC) § 213.3 of this title (relating to the Edwards Aquifer), that portion of an arcuate belt of porous, water-bearing, predominantly carbonate rocks known as the Edwards and Associated Limestones in the Balcones Fault Zone trending from west to east to northeast in Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, and Williamson Counties; and composed of the Salmon Peak

Limestone, McKnight Formation, West Nueces Formation, Devil's River Limestone, Person Formation, Kainer Formation, Edwards Formation, and Georgetown Formation. The permeable aquifer units generally overlie the less-permeable Glen Rose Formation to the south, overlie the less-permeable Comanche Peak and Walnut Formations north of the Colorado River, and underlie the less-permeable Del Rio Clay regionally.

Edwards Aquifer Recharge Zone - Generally, that area where the stratigraphic units constituting the Edwards Aquifer crop out, including the outcrops of other geologic formations in proximity to the Edwards Aquifer, where caves, sinkholes, faults, fractures, or other permeable features would create a potential for recharge of surface waters into the Edwards Aquifer. The recharge zone is identified as that area designated as such on official maps located in the offices of the Texas Commission on Environmental Quality (TCEQ) and the appropriate regional office. The Edwards Aquifer Map Viewer, located at http://www.tceq.texas.gov/compliance/field_ops/eapp/mapdisclaimer.html, can be used to determine where the recharge zone is located.

Edwards Aquifer Contributing Zone - The area or watershed where runoff from precipitation flows downgradient to the recharge zone of the Edwards Aquifer. The contributing zone is located upstream (upgradient) and generally north and northwest of the recharge zone for the following counties: all areas within Kinney County, except the area within the watershed draining to Segment No. 2304 of the Rio Grande Basin; all areas within Uvalde, Medina, Bexar, and Comal Counties; all areas within Hays and Travis Counties, except the area within the watersheds draining to the Colorado River above a point 1.3 miles upstream from Tom Miller Dam, Lake Austin at the confluence of Barrow Brook Cove, Segment No. 1403 of the Colorado River Basin; and all areas within Williamson County, except the area within the watersheds draining to the Lampasas River above the dam at Stillhouse Hollow reservoir, Segment No. 1216 of the Brazos River Basin. The contributing zone is illustrated on the Edwards Aquifer map viewer at http://www.tceq.texas.gov/compliance/field_ops/eapp/mapdisclaimer.html.

Effluent Limitations Guideline (ELG) – Defined in 40 Code of Federal Regulations (CFR) § 122.2 as a regulation published by the Administrator under § 304(b) of the Clean Water Act (CWA) to adopt or revise effluent limitations.

Facility or Activity – For the purpose of this permit, a construction site or construction support activity that is regulated under this general permit, including all contiguous land and fixtures (for example, ponds and materials stockpiles), structures, or appurtances used at a construction site or industrial site described by this general permit.

Final Stabilization - A construction site status where any of the following conditions are met:

A. All soil disturbing activities at the site have been completed and a uniform (that is, evenly distributed, without large bare areas) perennial vegetative cover with a density of at least 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

B. For individual lots in a residential construction site by either:

   (1) the homebuilder completing final stabilization as specified in condition (a) above; or

   (2) the homebuilder establishing temporary stabilization for an individual lot prior to the time of transfer of the ownership of the home to the buyer and after informing the homeowner of the need for, and benefits of, final stabilization. If temporary stabilization is not feasible, then the homebuilder may fulfill this requirement by retaining perimeter controls or BMPs, and informing the homeowner of the need for removal of temporary controls and the establishment of final stabilization.

Fullfillment of this requirement must be documented in the homebuilder's stormwater pollution prevention plan (SWP3).

C. For construction activities on land used for agricultural purposes (such as pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to surface water and areas that are not being returned to their preconstruction agricultural use must meet the final stabilization conditions of condition (a) above.

D. In arid, semi-arid, and drought-stricken areas only, all soil disturbing activities at the site have been completed and both of the following criteria have been met:

(1) Temporary erosion control measures (for example, degradable rolled erosion control product) are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years without active maintenance by the operator, and

(2) The temporary erosion control measures are selected, designed, and installed to achieve 70% of the native background vegetative coverage within three years.

Hyperchlorination of Waterlines – Treatment of potable water lines or tanks with chlorine for disinfection purposes, typically following repair or partial replacement of the waterline or tank, and subsequently flushing the contents.

Impaired Water - A surface water body that is identified on the latest approved CWA §303(d) List as not meeting applicable state water quality standards. Impaired waters include waters with approved or established total maximum daily loads (TMDLs), and those where a TMDL has been proposed by TCEQ but has not yet been approved or established.

Indian Country Land – (from 40 CFR §122.2) (1) all land within the limits of any Indian reservation under the jurisdiction of the United States government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation; (2) all dependent Indian communities with the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and (3) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

Indian Tribe - (from 40 CFR §122.2) any Indian Tribe, band, group, or community recognized by the Secretary of the Interior and exercising governmental authority over a Federal Indian Reservation.

Large Construction Activity - Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than five (5) acres of land. Large construction activity also includes the disturbance of less than five (5) acres of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than five (5) acres of land. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (for example, the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities.)

Linear Project – Includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

Minimize - To reduce or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer System (MS4) - A separate storm sewer system owned or operated by the United States, a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over the disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, that discharges to surface water in the state.

Notice of Change (NOC) – Written notification to the executive director from a discharger authorized under this permit, providing changes to information that was previously provided to the agency in a notice of intent form.

Notice of Intent (NOI) - A written submission to the executive director from an applicant requesting coverage under this general permit.

Notice of Termination (NOT) - A written submission to the executive director from a discharger authorized under a general permit requesting termination of coverage.

Operator - The person or persons associated with a large or small construction activity that is either a primary or secondary operator as defined below:

Primary Operator – the person or persons associated with a large or small construction activity that meets either of the following two criteria:

(a) the person or persons have on-site operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or

(b) the person or persons have day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with a Storm Water Pollution Prevention Plan (SWP3) for the site or other permit conditions (for example, they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

Secondary Operator – The person or entity, often the property owner, whose operational control is limited to:

(a) the employment of other operators, such as a general contractor, to perform or supervise construction activities; or

(b) the ability to approve or disapprove changes to construction plans and specifications, but who does not have day-to-day on-site operational control over construction activities at the site.

Secondary operators must either prepare their own SWP3 or participate in a shared SWP3 that covers the areas of the construction site where they have control over the plans and specifications.

If there is not a primary operator at the construction site, then the secondary operator is defined as the primary operator and must comply with the requirements for primary operators.

Outfall - For the purpose of this permit, a point source at the point where stormwater runoff associated with construction activity discharges to surface water in the state and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances that connect segments of the same stream or other water of the U.S. and are used to convey waters of the U.S.

Permittee - An operator authorized under this general permit. The authorization may be gained through submission of a notice of intent, by waiver, or by meeting the requirements for automatic coverage to discharge stormwater runoff and certain non-stormwater discharges.

Point Source – (from 40 CFR §122.2) Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are, or may be, discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant - Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into any surface water in the state. The term "pollutant" does not include tail water or runoff water from irrigation or rainwater runoff from cultivated or uncultivated rangeland, pastureland, and farmland. For the purpose of this permit, the term "pollutant" includes sediment.

Pollution - (from Texas Water Code (TWC) §26.001(14)) The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any surface water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

Rainfall Erosivity Factor (R factor) - the total annual erosive potential that is due to climatic effects, and is part of the Revised Universal Soil Loss Equation (RUSLE).

Receiving Water - A "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

Semiarid Areas - areas with an average annual rainfall of 10 to 20 inches

Separate Storm Sewer System - A conveyance or system of conveyances (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains), designed or used for collecting or conveying stormwater; that is not a combined sewer, and that is not part of a publicly owned treatment works (POTW).

Small Construction Activity - Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than one (1) acre and less than five (5) acres of land. Small construction activity also includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one (1) and less than five (5) acres of land. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (for example, the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities.)

Steep Slopes – Where a state, Tribe, local government, or industry technical manual (e.g. stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

Stormwater (or Stormwater Runoff) - Rainfall runoff, snow melt runoff, and surface runoff and drainage.

Stormwater Associated with Construction Activity - Stormwater runoff from a construction activity where soil disturbing activities (including clearing, grading, excavating) result in the disturbance of one (1) or more acres of total land area, or are part of a larger common plan of development or sale that will result in disturbance of one (1) or more acres of total land area.

Structural Control (or Practice) - A pollution prevention practice that requires the construction of a device, or the use of a device, to reduce or prevent pollution in stormwater

runoff. Structural controls and practices may include but are not limited to: silt fences, earthen dikes, drainage swales, sediment traps, check dams, subsurface drains, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins.

Surface Water in the State - Lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state (from the mean high water mark (MHWM) out 10.36 miles into the Gulf), and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all water-courses and bodies of surface water, that are wholly or partially inside or bordering the state or subject to the jurisdiction of the state; except that waters in treatment systems which are authorized by state or federal law, regulation, or permit, and which are created for the purpose of waste treatment are not considered to be water in the state.

Temporary Stabilization - A condition where exposed soils or disturbed areas are provided a protective cover or other structural control to prevent the migration of pollutants. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either permanent stabilization can be achieved or until further construction activities take place.

Total Maximum Daily Load (TMDL) - The total amount of a pollutant that a water body can assimilate and still meet the Texas Surface Water Quality Standards.

Turbidity – A condition of water quality characterized by the presence of suspended solids and/or organic material.

Waters of the United States - (from 40 CFR §122.2) Waters of the United States or waters of the U.S. means:

(a) all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) all interstate waters, including interstate wetlands;

(c) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds that the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) which are or could be used by interstate or foreign travelers for recreational or other purposes;

(2) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) which are used or could be used for industrial purposes by industries in interstate commerce;

(d) all impoundments of waters otherwise defined as waters of the United States under this definition;

(e) tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) the territorial sea; and

(g) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the U.S. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the U.S. (such as

disposal area in wetlands) nor resulted from the impoundment of waters of the U.S. Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with EPA.

Part II. Permit Applicability and Coverage

Section A. Discharges Eligible for Authorization

1. Stormwater Associated with Construction Activity

Discharges of stormwater runoff from small and large construction activities may be authorized under this general permit.

2. Discharges of Stormwater Associated with Construction Support Activities

Examples of construction support activities include, but are not limited to, concrete batch plants, rock crushers, asphalt batch plants, equipment staging areas, material storage yards, material borrow areas, and excavated material disposal areas. Construction support activities authorized under this general permit are not commercial operations, and do not serve multiple unrelated construction projects. Discharges of stormwater runoff from construction support activities may be authorized under this general permit, provided that the following conditions are met:

(a) the activities are located within one (1) mile from the boundary of the permitted construction site and directly support the construction activity;

(b) an SWP3 is developed for the permitted construction site according to the provisions of this general permit, and includes appropriate controls and measures to reduce erosion and discharge of pollutants in stormwater runoff from the construction support activities; and

(c) the construction support activities either do not operate beyond the completion date of the construction activity or, at the time that they do, are authorized under separate Texas Pollutant Discharge Elimination System (TPDES) authorization. Separate TPDES authorization may include the TPDES Multi Sector General Permit (MSGP), TXR050000 (related to stormwater discharges associated with industrial activity), separate authorization under this general permit if applicable, coverage under an alternative general permit if available, or authorization under an individual water quality permit.

3. Non-Stormwater Discharges

The following non-stormwater discharges from sites authorized under this general permit are also eligible for authorization under this general permit:

(a) discharges from fire fighting activities (fire fighting activities do not include washing of trucks, run-off water from training activities, test water from fire suppression systems, or similar activities);

(b) uncontaminated fire hydrant flushings (excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life), which include flushings from systems that utilize potable water, surface water, or groundwater that does not contain additional pollutants (uncontaminated fire hydrant flushings do not include systems utilizing reclaimed wastewater as a source water);

(c) water from the routine external washing of vehicles, the external portion of buildings or structures, and pavement, where detergents and soaps are not used, where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials

have been removed; and if local state, or federal regulations are applicable, the materials are removed according to those regulations), and where the purpose is to remove mud, dirt, or dust;

(d) uncontaminated water used to control dust;

(e) potable water sources, including waterline flushings, but excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life;

(f) uncontaminated air conditioning condensate;

(g) uncontaminated ground water or spring water, including foundation or footing drains where flows are not contaminated with industrial materials such as solvents; and

(h) lawn watering and similar irrigation drainage.

4. Other Permitted Discharges

Any discharge authorized under a separate National Pollutant Discharge Elimination System (NPDES), TPDES, or TCEQ permit may be combined with discharges authorized by this general permit, provided those discharges comply with the associated permit.

Section B. Concrete Truck Wash Out

The wash out of concrete trucks at regulated construction sites must be performed in accordance with the requirements of Part V of this general permit.

Section C. Limitations on Permit Coverage

1. Post Construction Discharges

Discharges that occur after construction activities have been completed, and after the construction site and any supporting activity site have undergone final stabilization, are not eligible for coverage under this general permit. Discharges originating from the sites are not authorized under this general permit following the submission of the notice of termination (NOT) or removal of the appropriate site notice, as applicable, for the regulated construction activity.

2. Prohibition of Non-Stormwater Discharges

Except as otherwise provided in Part II.A. of this general permit, only discharges that are composed entirely of stormwater associated with construction activity may be authorized under this general permit.

3. Compliance With Water Quality Standards

Discharges to surface water in the state that would cause, have the reasonable potential to cause, or contribute to a violation of water quality standards or that would fail to protect and maintain existing designated uses are not eligible for coverage under this general permit. The executive director may require an application for an individual permit or alternative general permit (see Parts II.H.2. and 3.) to authorize discharges to surface water in the state if the executive director determines that any activity will cause, has the reasonable potential to cause, or contribute to a violation of water quality standards or is found to cause, has the reasonable potential to cause, or contribute to, the impairment of a designated use. The executive director may also require an application for an individual permit considering factors described in Part II.H.2. of this general permit.

4. Impaired Receiving Waters and Total Maximum Daily Load (TMDL) Requirements

New sources or new discharges of the pollutants of concern to impaired waters are not authorized by this permit unless otherwise allowable under 30 TAC Chapter 305 and applicable state law. Impaired waters are those that do not meet applicable water quality standards and are listed on the EPA approved CWA §303(d) List. Pollutants of concern are those for which the water body is listed as impaired.

Discharges of the pollutants of concern to impaired water bodies for which there is a TMDL are not eligible for this general permit unless they are consistent with the approved TMDL. Permittees must incorporate the conditions and requirements applicable to their discharges into their SWP3, in order to be eligible for coverage under this general permit. For consistency with the construction stormwater-related items in an approved TMDL, the SWP3 must be consistent with any applicable condition, goal, or requirement in the TMDL, TMDL Implementation Plan (I-Plan), or as otherwise directed by the executive director.

5. Discharges to the Edwards Aquifer Recharge or Contributing Zone

Discharges cannot be authorized by this general permit where prohibited by 30 TAC Chapter 213 (relating to Edwards Aquifer). In addition, commencement of construction (i.e., the initial disturbance of soils associated with clearing, grading, or excavating activities, as well as other construction-related activities such as stockpiling of fill material and demolition) at a site regulated under 30 TAC Chapter 213, may not begin until the appropriate Edwards Aquifer Protection Plan (EAPP) has been approved by the TCEQ's Edwards Aquifer Protection Program.

(a) For new discharges located within the Edwards Aquifer Recharge Zone, or within that area upstream from the recharge zone and defined as the Contributing Zone (CZ), operators must meet all applicable requirements of, and operate according to, 30 TAC Chapter 213 (Edwards Aquifer Rule) in addition to the provisions and requirements of this general permit.

(b) For existing discharges located within the Edwards Aquifer Recharge Zone, the requirements of the agency-approved Water Pollution Abatement Plan (WPAP) under the Edwards Aquifer Rule is in addition to the requirements of this general permit. BMPs and maintenance schedules for structural stormwater controls, for example, may be required as a provision of the rule. All applicable requirements of the Edwards Aquifer Rule for reductions of suspended solids in stormwater runoff are in addition to the requirements in this general permit for this pollutant.

6. Discharges to Specific Watersheds and Water Quality Areas

Discharges otherwise eligible for coverage cannot be authorized by this general permit where prohibited by 30 TAC Chapter 311 (relating to Watershed Protection) for water quality areas and watersheds.

7. Protection of Streams and Watersheds by Other Governmental Entities

This general permit does not limit the authority or ability of federal, other state, or local governmental entities from placing additional or more stringent requirements on construction activities or discharges from construction activities. For example, this permit does not limit the authority of a home-rule municipality provided by Texas Local Government Code §401.002.

8. Indian Country Lands

Stormwater runoff from construction activities occurring on Indian Country lands are not under the authority of the TCEQ and are not eligible for coverage under this general permit. If discharges of stormwater require authorization under federal NPDES

regulations, authority for these discharges must be obtained from the U.S. Environmental Protection Agency (EPA).

9. Oil and Gas Production

Stormwater runoff from construction activities associated with the exploration, development, or production of oil or gas or geothermal resources, including transportation of crude oil or natural gas by pipeline, are not under the authority of the TCEQ and are not eligible for coverage under this general permit. If discharges of stormwater require authorization under federal NPDES regulations, authority for these discharges must be obtained from the EPA.

10. Stormwater Discharges from Agricultural Activities

Stormwater discharges from agricultural activities that are not point source discharges of stormwater are not subject to TPDES permit requirements. These activities may include clearing and cultivating ground for crops, construction of fences to contain livestock, construction of stock ponds, and other similar agricultural activities. Discharges of stormwater runoff associated with the construction of facilities that are subject to TPDES regulations, such as the construction of concentrated animal feeding operations, would be point sources regulated under this general permit.

11. Endangered Species Act

Discharges that would adversely affect a listed endangered or threatened aquatic or aquatic-dependent species or its critical habitat are not authorized by this permit, unless the requirements of the Endangered Species Act are satisfied. Federal requirements related to endangered species apply to all TPDES permitted discharges and site-specific controls may be required to ensure that protection of endangered or threatened species is achieved. If a permittee has concerns over potential impacts to listed species, the permittee may contact TCEQ for additional information.

12. Other

Nothing in Part II of the general permit is intended to negate any person's ability to assert the force majeure (act of God, war, strike, riot, or other catastrophe) defenses found in 30 TAC §70.7.

Section D. Deadlines for Obtaining Authorization to Discharge

1. Large Construction Activities

(a) New Construction - Discharges from sites where the commencement of construction occurs on or after the effective date of this general permit must be authorized, either under this general permit or a separate TPDES permit, prior to the commencement of those construction activities.

(b) Ongoing Construction - Operators of large construction activities continuing to operate after the effective date of this permit, and authorized under TPDES general permit TXR150000 (effective on March 5, 2008), must submit an NOI to renew authorization or a NOT to terminate coverage under this general permit within 90 days of the effective date of this general permit. During this interim period, as a requirement of this TPDES permit, the operator must continue to meet the conditions and requirements of the previous TPDES permit.

2. Small Construction Activities

(a) New Construction - Discharges from sites where the commencement of construction occurs on or after the effective date of this general permit must be authorized, either

under this general permit or a separate TPDES permit, prior to the commencement of those construction activities.

(b) Ongoing Construction - Discharges from ongoing small construction activities that commenced prior to the effective date of this general permit, and that would not meet the conditions to qualify for termination of this permit as described in Part II.E. of this general permit, must meet the requirements to be authorized, either under this general permit or a separate TPDES permit, within 90 days of the effective date of this general permit. During this interim period, as a requirement of this TPDES permit, the operator must continue to meet the conditions and requirements of the previous TPDES permit.

Section E. Obtaining Authorization to Discharge

1. Automatic Authorization for Small Construction Activities With Low Potential for Erosion:

If all of the following conditions are met, then a small construction activity is determined to occur during periods of low potential for erosion, and a site operator may be automatically authorized under this general permit without being required to develop an SWP3 or submit an NOI:

(a) the construction activity occurs in a county listed in Appendix A;

(b) the construction activity is initiated and completed, including either final or temporary stabilization of all disturbed areas, within the time frame identified in Appendix A for the location of the construction site;

(c) all temporary stabilization is adequately maintained to effectively reduce or prohibit erosion, permanent stabilization activities have been initiated, and a condition of final stabilization is completed no later than 30 days following the end date of the time frame identified in Appendix A for the location of the construction site;

(d) the permittee signs a completed TCEQ construction site notice, including the certification statement;

(e) a signed copy of the construction site notice is posted at the construction site in a location where it is readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction activities, and maintained in that location until completion of the construction activity;

(f) a copy of the signed and certified construction site notice is provided to the operator of any MS4 receiving the discharge at least two days prior to commencement of construction activities;

(g) any supporting concrete batch plant or asphalt batch plant is separately authorized for discharges of stormwater runoff or other non-stormwater discharges under an individual TPDES permit, another TPDES general permit, or under an individual TCEQ permit where stormwater and non-stormwater is disposed of by evaporation or irrigation (discharges are adjacent to water in the state); and

(h) any non-stormwater discharges are either authorized under a separate permit or authorization, or are not considered to be a wastewater.

Part II.G. of this general permit describes how an operator may apply for and obtain a waiver from permitting, for certain small construction activities that occur during a period with a low potential for erosion, where automatic authorization under this section is not available.

2. Automatic Authorization For All Other Small Construction Activities:

Operators of small construction activities not described in Part II.E.1. above may be automatically authorized under this general permit, and operators of these sites shall not be required to submit an NOI, provided that they meet all of the following conditions:

(a) develop a SWP3 according to the provisions of this general permit, that covers either the entire site or all portions of the site for which the applicant is the operator, and implement that plan prior to commencing construction activities;

(b) sign and certify a completed TCEQ small construction site notice, post the notice at the construction site in a location where it is safely and readily available for viewing by the general public, local, state, and federal authorities, prior to commencing construction, and maintain the notice in that location until completion of the construction activity (for linear construction activities, e.g. pipeline or highway, the site notice must be placed in a publicly accessible location near where construction is actively underway; notice for these linear sites may be relocated, as necessary, along the length of the project, and the notice must be safely and readily available for viewing by the general public; local, state, and federal authorities); and

(c) provide a copy of the signed and certified construction site notice to the operator of any municipal separate storm sewer system receiving the discharge prior to commencement of construction activities.

Operators of small construction activities as defined in Part I.B of this general permit shall not submit an NOI for coverage unless otherwise required by the executive director.

As described in Part I (Definitions) of this general permit, large construction activities include those that will disturb less than five (5) acres of land, but that are part of a larger common plan of development or sale that will ultimately disturb five (5) or more acres of land, and must meet the requirements of Part II.E.3. below.

3. Authorization for Large Construction Activities:

Operators of large construction activities that qualify for coverage under this general permit must meet all of the following conditions:

(a) develop a SWP3 according to the provisions of this general permit that covers either the entire site or all portions of the site for which the applicant is the operator, and implement that plan prior to commencing construction activities;

(b) primary operators must submit an NOI, using a form provided by the executive director, at least seven (7) days prior to commencing construction activities, or if utilizing electronic submittal, prior to commencing construction activities. If an additional primary operator is added after the initial NOI is submitted, the new primary operator must submit an NOI at least seven (7) days before assuming operational control, or if utilizing electronic NOI submittal, prior to assuming operational control. If the primary operator changes after the initial NOI is submitted, the new primary operator must submit a paper NOI or an electronic NOI at least ten (10) days before assuming operational control;

(c) all operators of large construction activities must post a site notice in accordance with Part III.D.2. of this permit. The site notice must be located where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction, and must be maintained in that location until completion of the construction activity (for linear construction activities, e.g. pipeline or highway, the site notice must be placed in a publicly accessible location near where construction is actively underway; notice for these linear sites may be relocated, as necessary, along the length of the project, and the notice must be safely and readily available for viewing by the general public; local, state, and federal authorities);

(d) prior to commencing construction activities, all primary operators must (1) provide a copy of the signed NOI to the operator of any MS4 receiving the discharge and to any secondary construction operator, and (2) list in the SWP3 the names and addresses of all MS4 operators receiving a copy;

(e) all persons meeting the definition of "secondary operator" in Part I of this permit are hereby notified that they are regulated under this general permit, but are not required to submit an NOI, provided that a primary operator at the site has submitted an NOI, or is required to submit an NOI, and the secondary operator has provided notification to the operator(s) of the need to obtain coverage (with records of notification available upon request). Any secondary operator notified under this provision may alternatively submit an NOI under this general permit, may seek coverage under an alternative TPDES individual permit, or may seek coverage under an alternative TPDES general permit if available; and

(f) all secondary operators must provide a copy of the signed and certified Secondary Operator construction site notice to the operator of any MS4 receiving the discharge prior to commencement of construction activities.

4. Waivers for Small Construction Activities:

Part II.G. describes how operators of certain small construction activities may obtain a waiver from coverage.

5. Effective Date of Coverage

(a) Operators of small construction activities as described in either Part II.E.1. or II.E.2. above are authorized immediately following compliance with the applicable conditions of Part II.E.1. or II.E.2. Secondary operators of large construction activities as described in Part II.E.3. above are authorized immediately following compliance with the applicable conditions in Part II.E.3. For activities located in areas regulated by 30 TAC Chapter 213, related to the Edwards Aquifer, this authorization to discharge is separate from the requirements of the operator's responsibilities under that rule. Construction may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that rule are met.

(b) Primary operators of large construction activities as described in Part II.E.3. above are provisionally authorized seven (7) days from the date that a completed NOI is postmarked for delivery to the TCEQ, unless otherwise notified by the executive director. If electronic submission of the NOI is provided, and unless otherwise notified by the executive director, primary operators are authorized immediately following confirmation of receipt of the NOI by the TCEQ. Authorization is non-provisional when the executive director finds the NOI is administratively complete and an authorization number is issued for the activity. For activities located in areas regulated by 30 TAC Chapter 213, related to the Edwards Aquifer, this authorization to discharge is separate from the requirements of the operator's responsibilities under that rule. Construction may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that rule are met.

(c) Operators are not prohibited from submitting late NOIs or posting late notices to obtain authorization under this general permit. The TCEQ reserves the right to take appropriate enforcement actions for any unpermitted activities that may have occurred between the time construction commenced and authorization was obtained.

6. Notice of Change (NOC)

If relevant information provided in the NOI changes, an NOC must be submitted at least 14 days before the change occurs, if possible. Where 14-day advance notice is not possible, the operator must submit an NOC within 14 days of discovery of the change. If

the operator becomes aware that it failed to submit any relevant facts or submitted incorrect information in an NOI, the correct information must be provided to the executive director in an NOC within 14 days after discovery. The NOC shall be submitted on a form provided by the executive director, or by letter if an NOC form is not available. A copy of the NOC must also be provided to the operator of any MS4 receiving the discharge, and a list must be included in the SWP3 that includes the names and addresses of all MS4 operators receiving a copy.

Information that may be included on an NOC includes, but is not limited to, the following: the description of the construction project, an increase in the number of acres disturbed (for increases of one or more acres), or the operator name. A transfer of operational control from one operator to another, including a transfer of the ownership of a company, may not be included in an NOC.

A transfer of ownership of a company includes changes to the structure of a company, such as changing from a partnership to a corporation or changing corporation types, so that the filing number (or charter number) that is on record with the Texas Secretary of State must be changed.

An NOC is not required for notifying TCEQ of a decrease in the number of acres disturbed. This information must be included in the SWP3 and retained on site.

7. Signatory Requirement for NOI Forms, Notice of Termination (NOT) Forms, NOC Letters, and Construction Site Notices

NOI forms, NOT forms, NOC letters, and Construction Site Notices that require a signature must be signed according to 30 TAC § 305.44 (relating to Signatories for Applications).

8. Contents of the NOI

The NOI form shall require, at a minimum, the following information:

(a) the TPDES CGP authorization number for existing authorizations under this general permit, where the operator submits an NOI to renew coverage within 90 days of the effective date of this general permit;

(b) the name, address, and telephone number of the operator filing the NOI for permit coverage;

(c) the name (or other identifier), address, county, and latitude/longitude of the construction project or site;

(d) the number of acres that will be disturbed by the applicant;

(e) confirmation that the project or site will not be located on Indian Country lands;

(f) confirmation that a SWP3 has been developed in accordance with this general permit, that it will be implemented prior to construction, and that it is compliant with any applicable local sediment and erosion control plans; for multiple operators who prepare a shared SWP3, the confirmation for an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator;

(g) name of the receiving water(s);

(h) the classified segment number for each classified segment that receives discharges from the regulated construction activity (if the discharge is not directly to a classified segment, then the classified segment number of the first classified segment that those discharges reach); and

(i) the name of all surface waters receiving discharges from the regulated construction activity that are on the latest EPA-approved CWA § 303(d) List of impaired waters.

Section F. Terminating Coverage

1. Notice of Termination (NOT) Required

Each operator that has submitted an NOI for authorization under this general permit must apply to terminate that authorization following the conditions described in this section of the general permit. Authorization must be terminated by submitting an NOT on a form supplied by the executive director. Authorization to discharge under this general permit terminates at midnight on the day the NOT is postmarked for delivery to the TCEQ. If electronic submission of the NOT is provided, authorization to discharge under this permit terminates immediately following confirmation of receipt of the NOT by the TCEQ. Compliance with the conditions and requirements of this permit is required until an NOT is submitted.

The NOT must be submitted to TCEQ, and a copy of the NOT provided to the operator of any MS4 receiving the discharge (with a list in the SWP3 of the names and addresses of all MS4 operators receiving a copy), within 30 days after any of the following conditions are met:

(a) final stabilization has been achieved on all portions of the site that are the responsibility of the permittee;

(b) a transfer of operational control has occurred (See Section II.F.4. below); or

(c) the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

2. Minimum Contents of the NOT

The NOT form shall require, at a minimum, the following information:

(a) if authorization was granted following submission of an NOI, the permittee's site-specific TPDES authorization number for the construction site;

(b) an indication of whether the construction activity is completed or if the permittee is simply no longer an operator at the site;

(c) the name, address, and telephone number of the permittee submitting the NOT;

(d) the name (or other identifier), address, county, and location (latitude/longitude) of the construction project or site; and

(e) a signed certification that either all stormwater discharges requiring authorization under this general permit will no longer occur, or that the applicant is no longer the operator of the facility or construction site, and that all temporary structural erosion controls have either been removed, will be removed on a schedule defined in the SWP3, or have been transferred to a new operator if the new operator has applied for permit coverage. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal.

3. Termination of Coverage for Small Construction Sites and for Secondary Operators at Large Construction Sites

Each operator that has obtained automatic authorization and has not been required to submit an NOI must remove the site notice upon meeting any of the conditions listed below, complete the applicable portion of the site notice related to removal of the site notice, and submit a copy of the completed site notice to the operator of any MS4 receiving the discharge (or provide alternative notification as allowed by the MS4 operator, with documentation of such notification included in the SWP3), within 30 days of meeting any of the following conditions:

(a) final stabilization has been achieved on all portions of the site that are the responsibility of the permittee;

(b) a transfer of operational control has occurred (See Section II.F.4. below); or

(c) the operator has obtained alternative authorization under an individual or general TPDES permit.

Authorization to discharge under this general permit terminates immediately upon removal of the applicable site notice. Compliance with the conditions and requirements of this permit is required until the site notice is removed.

4. Transfer of Operational Control

Coverage under this general permit is not transferable. A transfer of operational control includes changes to the structure of a company, such as changing from a partnership to a corporation, or changing to a different corporation type such that a different filing (or charter) number is established with the Texas Secretary of State.

When the primary operator of a large construction activity changes or operational control is transferred, the original operator must submit an NOT within ten (10) days prior to the date that responsibility for operations terminates, and the new operator must submit an NOI at least ten (10) days prior to the transfer of operational control, in accordance with condition (a) or (b) below. A copy of the NOT must be provided to the operator of any MS4 receiving the discharge in accordance with Section II.F.1. above.

Operators of regulated construction activities who are not required to submit an NOI must remove the original site notice, and the new operator must post the required site notice prior to the transfer of operational control, in accordance with condition (a) or (b) below. A copy of the completed site notice must be provided to the operator of any MS4 receiving the discharge, in accordance with Section II.F.3. above.

A transfer of operational control occurs when either of the following criteria is met:

(a) Another operator has assumed control over all areas of the site that have not been finally stabilized; and all silt fences and other temporary erosion controls have either been removed, scheduled for removal as defined in the SWP3, or transferred to a new operator, provided that the permitted operator has attempted to notify the new operator in writing of the requirement to obtain permit coverage. Record of this notification (or attempt at notification) shall be retained by the operator in accordance with Part VI of this permit. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal.

(b) A homebuilder has purchased one or more lots from an operator who obtained coverage under this general permit for a common plan of development or sale. The homebuilder is considered a new operator and shall comply with the requirements listed above, including the development of a SWP3 if necessary. Under these circumstances, the homebuilder is only responsible for compliance with the general permit requirements as they apply to lot(s) it has operational control over, and the original operator remains responsible for common controls or discharges, and must amend its SWP3 to remove the lot(s) transferred to the homebuilder.

Section G. Waivers from Coverage

The executive director may waive the otherwise applicable requirements of this general permit for stormwater discharges from small construction activities under the terms and conditions described in this section.

1. Waiver Applicability and Coverage

Operators of small construction activities may apply for and receive a waiver from the requirements to obtain authorization under this general permit, where all of the following conditions are met. This waiver from coverage does not apply to non-stormwater discharges. The operator must insure that any non-stormwater discharges are either authorized under a separate permit or authorization, or are not considered to be a wastewater.

(a) the calculated rainfall erosivity (R) factor for the entire period of the construction project is less than five (5);

(b) the operator submits to the TCEQ a signed waiver certification form, supplied by the executive director, certifying that the construction activity will commence and be completed within a period when the value of the calculated R factor is less than five (5); and

(c) the waiver certification form is postmarked for delivery to the TCEQ at least seven (7) days before construction activity begins or, if electronic filing is available, then any time following the receipt of written confirmation from TCEQ that a complete electronic application was submitted and acknowledged.

2. Steps to Obtaining a Waiver

The construction site operator may calculate the R factor to request a waiver using the following steps:

(a) Estimate the construction start date and the construction end date. The construction end date is the date that final stabilization will be achieved.

(b) Find the appropriate Erosivity Index (EI) zone in Appendix B of this permit.

(c) Find the EI percentage for the project period by adding the results for each period of the project using the table provided in Appendix D of this permit, in EPA Fact Sheet 2.1, or in USDA Handbook 703, by subtracting the start value from the end value to find the percent EI for the site.

(d) Refer to the Isoerodent Map (Appendix C of this permit) and interpolate the annual isoerodent value for the proposed construction location.

(e) Multiply the percent value obtained in Step (c) above by the annual isoerodent value obtained in Step (d). This is the R factor for the proposed project. If the value is less than 5, then a waiver may be obtained. If the value is five (5) or more, then a waiver may not be obtained, and the operator must obtain coverage under Part II.E.2. of this permit.

Alternatively, the operator may calculate a site-specific R factor utilizing the following online calculator: http://ei.tamu.edu/index.html, or using another available resource.

The waiver certification form is not required to be posted at the small construction site.

3. Effective Date of Waiver

Operators of small construction activities are provisionally waived from the otherwise applicable requirements of this general permit seven (7) days from the date that a completed waiver certification form is postmarked for delivery to TCEQ, or immediately upon receiving confirmation of approval of an electronic submittal, if electronic form submittals are available.

4. Activities Extending Beyond the Waiver Period

If a construction activity extends beyond the approved waiver period due to circumstances beyond the control of the operator, the operator must either:

(a) recalculate the R factor using the original start date and a new projected ending date, and if the R factor is still under five (5), submit a new waiver certification form at least two (2) days before the end of the original waiver period; or

(b) obtain authorization under this general permit according to the requirements delineated in either Part II.E.2. or Part II.E.3. before the end of the approved waiver period.

Section H. Alternative TPDES Permit Coverage

1. Individual Permit Alternative

Any discharge eligible for coverage under this general permit may alternatively be authorized under an individual TPDES permit according to 30 TAC §305 (relating to Consolidated Permits). Applications for individual permit coverage should be submitted at least three hundred and thirty (330) days prior to commencement of construction activities to ensure timely authorization.

2. Individual Permit Required

The executive director may suspend an authorization or deny an NOI in accordance with the procedures set forth in 30 TAC §205 (relating to General Permits for Waste Discharges), including the requirement that the executive director provide written notice to the permittee. The executive director may require an operator of a construction site, otherwise eligible for authorization under this general permit, to apply for an individual TPDES permit in the following circumstances:

(a) the conditions of an approved TMDL or TMDL I-Plan on the receiving water;

(b) the activity being determined to cause a violation of water quality standards or being found to cause, or contribute to, the loss of a designated use of surface water in the state: and

(c) any other consideration defined in 30 TAC Chapter 205 (relating to General Permits for Waste Discharges) including 30 TAC Chapter 205.4(c)(3)(D), which allows the commission to deny authorization under the general permit and require an individual permit if a discharger “has been determined by the executive director to have been out of compliance with any rule, order, or permit of the commission, including non-payment of fees assessed by the executive director.”

Additionally, the executive director may cancel, revoke, or suspend authorization to discharge under this general permit based on a finding of historical and significant noncompliance with the provisions of this general permit, relating to 30 TAC §60.3 (Use of Compliance History). Denial of authorization to discharge under this general permit or suspension of a permittee’s authorization under this general permit shall be done according to commission rules in 30 TAC Chapter 205 (relating to General Permits for Waste Discharges).

3. Alternative Discharge Authorization

Any discharge eligible for authorization under this general permit may alternatively be authorized under a separate general permit according to 30 TAC Chapter 205 (relating to General Permits for Waste Discharges), if applicable.

Section I. Permit Expiration

1. This general permit is effective for a term not to exceed five (5) years. All active discharge authorizations expire on the date provided on page one (1) of this permit. Following public notice and comment, as provided by 30 TAC §205.3 (relating to

Public Notice, Public Meetings, and Public Comment), the commission may amend, revoke, cancel, or renew this general permit.

2. If the executive director publishes a notice of the intent to renew or amend this general permit before the expiration date, the permit will remain in effect for existing, authorized discharges until the commission takes final action on the permit. Upon issuance of a renewed or amended permit, permittees may be required to submit an NOI within 90 days following the effective date of the renewed or amended permit, unless that permit provides for an alternative method for obtaining authorization.
3. If the commission does not propose to reissue this general permit within 90 days before the expiration date, permittees shall apply for authorization under an individual permit or an alternative general permit. If the application for an individual permit is submitted before the expiration date, authorization under this expiring general permit remains in effect until the issuance or denial of an individual permit. No new NOIs will be accepted nor new authorizations honored under the general permit after the expiration date.

Part III. Stormwater Pollution Prevention Plans (SWP3)

All regulated construction site operators shall prepare an SWP3, prior to submittal of an NOI, to address discharges authorized under Parts II.E.2. and II.E.3. of this general permit that will reach Waters of the U.S., including discharges to MS4s and privately owned separate storm sewer systems that drain to Waters of the U.S., to identify and address potential sources of pollution that are reasonably expected to affect the quality of discharges from the construction site, including off-site material storage areas, overburden and stockpiles of dirt, borrow areas, equipment staging areas, vehicle repair areas, fueling areas, etc., used solely by the permitted project. The SWP3 must describe the implementation of practices that will be used to minimize to the extent practicable the discharge of pollutants in stormwater associated with construction activity and non-stormwater discharges described in Part II.A.3., in compliance with the terms and conditions of this permit.

Individual operators at a site may develop separate SWP3s that cover only their portion of the project, provided reference is made to the other operators at the site. Where there is more than one SWP3 for a site, permittees must coordinate to ensure that BMPs and controls are consistent and do not negate or impair the effectiveness of each other. Regardless of whether a single comprehensive SWP3 is developed or separate SWP3s are developed for each operator, it is the responsibility of each operator to ensure compliance with the terms and conditions of this general permit in the areas of the construction site where that operator has control over construction plans and specifications or day-to-day operations.

Section A. Shared SWP3 Development

For more effective coordination of BMPs and opportunities for cost sharing, a cooperative effort by the different operators at a site is encouraged. Operators must independently obtain authorization, but may work together to prepare and implement a single, comprehensive SWP3 for the entire construction site.

1. The SWP3 must clearly list the name and, for large construction activities, the general permit authorization numbers, for each operator that participates in the shared SWP3. Until the TCEQ responds to receipt of the NOI with a general permit authorization number, the SWP3 must specify the date that the NOI was submitted to TCEQ by each operator. Each operator participating in the shared plan must also sign the SWP3.

2. The SWP3 must clearly indicate which operator is responsible for satisfying each shared requirement of the SWP3. If the responsibility for satisfying a requirement is not described in the plan, then each permittee is entirely responsible for meeting the requirement within the boundaries of the construction site where they perform construction activities. The SWP3 must clearly describe responsibilities for meeting each requirement in shared or common areas.
3. The SWP3 may provide that one operator is responsible for preparation of a SWP3 in compliance with the CGP, and another operator is responsible for implementation of the SWP3 at the project site.

Section B. Responsibilities of Operators

1. Secondary Operators and Primary Operators with Control Over Construction Plans and Specifications

All secondary operators and primary operators with control over construction plans and specifications shall:

(a) ensure the project specifications allow or provide that adequate BMPs are developed to meet the requirements of Part III of this general permit;

(b) ensure that the SWP3 indicates the areas of the project where they have control over project specifications, including the ability to make modifications in specifications;

(c) ensure that all other operators affected by modifications in project specifications are notified in a timely manner so that those operators may modify their BMP s as necessary to remain compliant with the conditions of this general permit; and

(d) ensure that the SWP3 for portions of the project where they are operators indicates the name and site-specific TPDES authorization number(s) for operators with the day-to-day operational control over those activities necessary to ensure compliance with the SWP3 and other permit conditions. If the party with day-to-day operational control has not been authorized or has abandoned the site, the person with control over project specifications is considered to be the responsible party until the authority is transferred to another party and the SWP3 is updated.

2. Primary Operators with Day-to-Day Operational Control

Primary operators with day-to-day operational control of those activities at a project that are necessary to ensure compliance with an SWP3 and other permit conditions must ensure that the SWP3 accomplishes the following requirements:

(a) meets the requirements of this general permit for those portions of the project where they are operators;

(b) identifies the parties responsible for implementation of BMPs described in the SWP3;

(c) indicates areas of the project where they have operational control over day-to-day activities; and

(d) includes, for areas where they have operational control over day-to-day activities, the name and site-specific TPDES authorization number of the parties with control over project specifications, including the ability to make modifications in specifications.

Section C. Deadlines for SWP3 Preparation, Implementation, and Compliance

The SWP3 must be prepared prior to obtaining authorization under this general permit, and implemented prior to commencing construction activities that result in soil

disturbance. The SWP3 must be prepared so that it provides for compliance with the terms and conditions of this general permit.

Section D. Plan Review and Making Plans Available

1. The SWP3 must be retained on-site at the construction site or, if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3. The SWP3 must be made readily available at the time of an on-site inspection to: the executive director; a federal, state, or local agency approving sediment and erosion plans, grading plans, or stormwater management plans; local government officials; and the operator of a municipal separate storm sewer receiving discharges from the site. If the SWP3 is retained off-site, then it shall be made available as soon as reasonably possible. In most instances, it is reasonable that the SWP3 shall be made available within 24 hours of the request.
2. A primary operator of a large construction activity must post the TCEQ site notice near the main entrance of the construction site. An operator of a small construction activity seeking authorization under this general permit and a secondary operator of a large construction activity must post the TCEQ site notice required in Part II.E.1., 2., or 3. of this general permit in order to obtain authorization. If the construction project is a linear construction project, such as a pipeline or highway, the notices must be placed in a publicly accessible location near where construction is actively underway. Notices for these linear sites may be relocated, as necessary, along the length of the project. The notices must be readily available for viewing by the general public; local, state, and federal authorities; and contain the following information:
   (a) the site-specific TPDES authorization number for the project if assigned;
   (b) the operator name, contact name, and contact phone number;
   (c) a brief description of the project; and
   (d) the location of the SWP3.
3. This permit does not provide the general public with any right to trespass on a construction site for any reason, including inspection of a site; nor does this permit require that permittees allow members of the general public access to a construction site.

Section E. Revisions and Updates to SWP3s

The permittee must revise or update the SWP3 whenever the following occurs:

1. a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants and that has not been previously addressed in the SWP3;
2. changing site conditions based on updated plans and specifications, new operators, new areas of responsibility, and changes in BMPs; or
3. results of inspections or investigations by site operators, operators of a municipal separate storm sewer system receiving the discharge, authorized TCEQ personnel, or a federal, state or local agency approving sediment and erosion plans indicate the SWP3 is proving ineffective in eliminating or significantly minimizing pollutants in discharges authorized under this general permit.

Section F. Contents of SWP3

The SWP3 must include, at a minimum, the information described in this section and must comply with the construction and development effluent guidelines in Part III, Section G of the general permit.

1. A site or project description, which includes the following information:
   (a) a description of the nature of the construction activity;
   (b) a list of potential pollutants and their sources;
   (c) a description of the intended schedule or sequence of activities that will disturb soils for major portions of the site, including estimated start dates and duration of activities;
   (d) the total number of acres of the entire property and the total number of acres where construction activities will occur, including off-site material storage areas, overburden and stockpiles of dirt, and borrow areas that are authorized under the permittee's NOI;
   (e) data describing the soil or the quality of any discharge from the site;
   (f) a map showing the general location of the site (e.g. a portion of a city or county map);
   (g) a detailed site map (or maps) indicating the following:
      (i) drainage patterns and approximate slopes anticipated after major grading activities;
      (ii) areas where soil disturbance will occur;
      (iii) locations of all controls and buffers, either planned or in place;
      (iv) locations where temporary or permanent stabilization practices are expected to be used;
      (v) locations of construction support activities, including off-site activities, that are authorized under the permittee's NOI, including material, waste, borrow, fill, or equipment or chemical storage areas;
      (vi) surface waters (including wetlands) either at, adjacent, or in close proximity to the site, and also indicating those that are impaired waters;
      (vii) locations where stormwater discharges from the site directly to a surface water body or a municipal separate storm sewer system;
      (viii) vehicle wash areas; and
      (ix) designated points on the site where vehicles will exit onto paved roads (for instance, this applies to construction transition from unstable dirt areas to exterior paved roads).

      Where the amount of information required to be included on the map would result in a single map being difficult to read and interpret, the operator shall develop a series of maps that collectively include the required information.
   (h) the location and description of support activities authorized under the permittee's NOI, including asphalt plants, concrete plants, and other activities providing support to the construction site that is authorized under this general permit;
   (i) the name of receiving waters at or near the site that may be disturbed or that may receive discharges from disturbed areas of the project;
   (j) a copy of this TPDES general permit;
   (k) the NOI and acknowledgement certificate for primary operators of large construction sites, and the site notice for small construction sites and for secondary operators of large construction sites;
   (l) stormwater and allowable non-stormwater discharge locations, including storm drain inlets on site and in the immediate vicinity of the construction site; and

(m) locations of all pollutant-generating activities, such as paving operations; concrete, paint and stucco washout and water disposal; solid waste storage and disposal; and dewatering operations.

2. A description of the BMPs that will be used to minimize pollution in runoff.

The description must identify the general timing or sequence for implementation. At a minimum, the description must include the following components:

(a) General Requirements

(i) Erosion and sediment controls must be designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

(ii) Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

(iii) Controls must be developed to minimize the offsite transport of litter, construction debris, and construction materials.

(b) Erosion Control and Stabilization Practices

The SWP3 must include a description of temporary and permanent erosion control and stabilization practices for the site, compliant with the requirements of Part III.G.1 and G.2 of this general permit, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where it is possible.

(i) Erosion control and stabilization practices may include but are not limited to: establishment of temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, slope texturing, temporary velocity dissipation devices, flow diversion mechanisms, and other similar measures.

(ii) The following records must be maintained and either attached to or referenced in the SWP3, and made readily available upon request to the parties listed in Part III.D.1 of this general permit:

(A) the dates when major grading activities occur;

(B) the dates when construction activities temporarily or permanently cease on a portion of the site; and

(C) the dates when stabilization measures are initiated.

(iii) Erosion control and stabilization measures must be initiated immediately in portions of the site where construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days. Stabilization measures that provide a protective cover must be initiated immediately in portions of the site where construction activities have permanently ceased. The term "immediately" is used to define the deadline for initiating stabilization measures. In the context of this requirement, "immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased. Except as provided in (A) through (D) below, these measures must be completed as soon as practicable, but no more than 14 calendar days after the initiation of soil stabilization measures:

(A) Where the immediate initiation of stabilization measures after construction activity temporarily or permanently ceased is precluded

by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.

(B) In arid areas, semi-arid areas, or drought-stricken areas where the immediate initiation of stabilization measures after construction activity has temporarily or permanently ceased or is precluded by arid conditions, erosion control and stabilization measures must be initiated as soon as practicable. Where vegetative controls are not feasible due to arid conditions, the operator shall immediately install, and within 14 calendar days of a temporary or permanent cessation of work in any portion of the site complete, non-vegetative erosion controls. If non-vegetative controls are not feasible, the operator shall install temporary sediment controls as required in Paragraph (C) below.

(C) In areas where temporary stabilization measures are infeasible, the operator may alternatively utilize temporary perimeter controls. The operator must document in the SWP3 the reason why stabilization measures are not feasible, and must demonstrate that the perimeter controls will retain sediment on site to the extent practicable. The operator must continue to inspect the BMPs at the frequency established in Section III.F.7.(a) for unstabilized sites.

(D) If the initiation or completion of vegetative stabilization is affected by circumstances beyond the control of the permittee, vegetative stabilization must be initiated or completed as soon as conditions or circumstances allow it on the site. The requirement to initiate stabilization is triggered as soon as it is known with reasonable certainty that work will be stopped for 14 or more additional calendar days.

(iv) Final stabilization must be achieved prior to termination of permit coverage.

(v) TCEQ does not expect that temporary or permanent stabilization measures to be applied to areas that are intended to be left un-vegetated or un-stabilized following construction (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials).

(c) Sediment Control Practices

The SWP3 must include a description of any sediment control practices used to remove eroded soils from stormwater runoff, including the general timing or sequence for implementation of controls.

(i) Sites With Drainage Areas of Ten or More Acres

(A) Sedimentation Basin(s)

(1) A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time. A sedimentation basin may be temporary or permanent, and must provide sufficient storage to contain a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained. When calculating the volume of runoff from a 2-year, 24-hour storm event, it is not required to include the flows from offsite areas and flow from onsite areas that are either undisturbed or have already undergone permanent stabilization, if these flows are diverted around both the disturbed areas of the site and the sediment basin. Capacity calculations shall be included in the SWP3.

(2) Where rainfall data is not available or a calculation cannot be performed, the sedimentation basin must provide at least 3,600 cubic feet of storage per acre drained until final stabilization of the site.

(3) If a sedimentation basin is not feasible, then the permittee shall provide equivalent control measures until final stabilization of the site. In determining whether installing a sediment basin is feasible, the permittee may consider factors such as site soils, slope, available area, public safety, precipitation patterns, site geometry, site vegetation, infiltration capacity, geotechnical factors, depth to groundwater, and other similar considerations. The permittee shall document the reason that the sediment basins are not feasible, and shall utilize equivalent control measures, which may include a series of smaller sediment basins.

(4) Unless infeasible, when discharging from sedimentation basins and impoundments, the permittee shall utilize outlet structures that withdraw water from the surface.

(B) Perimeter Controls: At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

(ii) Controls for Sites With Drainage Areas Less than Ten Acres:

(A) Sediment traps and sediment basins may be used to control solids in stormwater runoff for drainage locations serving less than ten (10) acres. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

(B) Alternatively, a sediment basin that provides storage for a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained may be utilized. Where rainfall data is not available or a calculation cannot be performed, a temporary or permanent sediment basin providing 3,600 cubic feet of storage per acre drained may be provided. If a calculation is performed, then the calculation shall be included in the SWP3.

(C) If sedimentation basins or impoundments are used, the permittee shall comply with the requirements in Part III.G.6 of this general permit.

3. Description of Permanent Stormwater Controls

A description of any measures that will be installed during the construction process to control pollutants in stormwater discharges that may occur after construction operations have been completed must be included in the SWP3. Permittees are only responsible for the installation and maintenance of stormwater management measures prior to final stabilization of the site or prior to submission of an NOT.

4. Other Required Controls and BMPs

(a) Permittees shall minimize, to the extent practicable, the off-site vehicle tracking of sediments and the generation of dust. The SWP3 shall include a description of controls utilized to accomplish this requirement.

(b) The SWP3 must include a description of construction and waste materials expected to be stored on-site and a description of controls to minimize pollutants from these materials.

(c) The SWP3 must include a description of potential pollutant sources from areas other than construction (such as stormwater discharges from dedicated asphalt plants and dedicated concrete batch plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

(d) Permittees shall place velocity dissipation devices at discharge locations and along the length of any outfall channel (i.e., runoff conveyance) to provide a non-erosive flow velocity from the structure to a water course, so that the natural physical and biological characteristics and functions are maintained and protected.

(e) Permittees shall design and utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water from the site.

(f) Permittees shall ensure that all other required controls and BMPs comply with all of the requirements of Part III.G of this general permit.

5. Documentation of Compliance with Approved State and Local Plans

(a) Permittees must ensure that the SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or stormwater management site plans or site permits approved by federal, state, or local officials.

(b) SWP3s must be updated as necessary to remain consistent with any changes applicable to protecting surface water resources in sediment erosion site plans or site permits, or stormwater management site plans or site permits approved by state or local official for which the permittee receives written notice.

(c) If the permittee is required to prepare a separate management plan, including but not limited to a WPAP or Contributing Zone Plan in accordance with 30 TAC Chapter 213 (related to the Edwards Aquifer), then a copy of that plan must be either included in the SWP3 or made readily available upon request to authorized personnel of the TCEQ. The permittee shall maintain a copy of the approval letter for the plan in its SWP3.

6. Maintenance Requirements

(a) All protective measures identified in the SWP3 must be maintained in effective operating condition. If, through inspections or other means, the permittee determines that BMPs are not operating effectively, then the permittee shall perform maintenance as necessary to maintain the continued effectiveness of stormwater controls, and prior to the next rain event if feasible. If maintenance prior to the next anticipated storm event is impracticable, the reason shall be documented in the SWP3 and maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

(b) If periodic inspections or other information indicates a control has been used incorrectly, is performing inadequately, or is damaged, then the operator shall replace or modify the control as soon as practicable after making the discovery.

(c) Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%. For perimeter

controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.

(d) If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee shall work with the owner or operator of the property to remove the sediment.

7. Inspections of Controls

(a) Personnel provided by the permittee must inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, discharge locations, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Personnel conducting these inspections must be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWP3 for the site. Sediment and erosion control measures identified in the SWP3 must be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking. Inspections must be conducted at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

Where sites have been finally or temporarily stabilized or where runoff is unlikely due to winter conditions (e.g. site is covered with snow, ice, or frozen ground exists), inspections must be conducted at least once every month. In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.5 inches or greater. The SWP3 must also contain a record of the total rainfall measured, as well as the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections.

As an alternative to the above-described inspection schedule of once every 14 calendar days and within 24 hours of a storm event of 0.5 inches or greater, the SWP3 may be developed to require that these inspections will occur at least once every seven (7) calendar days. If this alternative schedule is developed, then the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

The inspections may occur on either schedule provided that the SWP3 reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented in the SWP3 (e.g., end of “dry” season and beginning of “wet” season).

(b) Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may provide inspection personnel with limited access to the areas described in Part III.F.7.(a) above. Inspection of these areas could require that vehicles compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described in Part III.F.7.(a)

above. The conditions of the controls along each inspected 0.25 mile portion may be considered as representative of the condition of controls along that reach extending from the end of the 0.25 mile portion to either the end of the next 0.25 mile inspected portion, or to the end of the project, whichever occurs first.

As an alternative to the above-described inspection schedule of once every 14 calendar days and within 24 hours of a storm event of 0.5 inches or greater, the SWP3 may be developed to require that these inspections will occur at least once every seven (7) calendar days. If this alternative schedule is developed, the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection. The inspections may occur on either schedule provided that the SWP3 reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented in the SWP3 (e.g., end of "dry" season and beginning of "wet" season).

(c) In the event of flooding or other uncontrollable situations which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable.

(d) The SWP3 must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions to the SWP3 must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable.

(e) A report summarizing the scope of the inspection, the date(s) of the inspection, and major observations relating to the implementation of the SWP3 must be made and retained as part of the SWP3. Major observations should include: The locations of discharges of sediment or other pollutants from the site; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.

Actions taken as a result of inspections must be described within, and retained as a part of, the SWP3. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the facility or site is in compliance with the SWP3 and this permit. The report must be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).

The names and qualifications of personnel making the inspections for the permittee may be documented once in the SWP3 rather than being included in each report.

8. The SWP3 must identify and ensure the implementation of appropriate pollution prevention measures for all eligible non-stormwater components of the discharge, as listed in Part II.A.3. of this permit.
9. The SWP3 must include the information required in Part III.B. of this general permit.
10. The SWP3 must include pollution prevention procedures that comply with Part III.G.4 of this general permit.

Section G. Erosion and Sediment Control Requirements Applicable to All Sites

Except as provided in 40 CFR §§125.30-125.32, any discharge regulated under this general permit, with the exception of sites that obtained waivers based on low rainfall erosivity, must achieve, at a minimum, the following effluent limitations representing the degree of effluent reduction attainable by application of the best practicable control technology currently available (BPT).

1. *Erosion and sediment controls*. Design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

   (a) Control stormwater volume and velocity within the site to minimize soil erosion;

   (b) If any stormwater flow will be channelized at the site, stormwater controls must be designed to control both peak flowrates and total stormwater volume to minimize erosion at outlets and to minimize downstream channel and streambank erosion;

   (c) Minimize the amount of soil exposed during construction activity;

   (d) Minimize the disturbance of steep slopes;

   (e) Minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;

   (f) If earth disturbance activities are located in close proximity to a surface water, provide and maintain appropriate natural buffers if feasible and as necessary, around surface waters, depending on site-specific topography, sensitivity, and proximity to water bodies. Direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration. If providing buffers is infeasible, the permittee shall document the reason that natural buffers are not feasible, and shall implement additional erosion and sediment controls to reduce sediment load;

   (g) Preserve native topsoil at the site, unless infeasible; and

   (h) Minimize soil compaction in post-construction pervious areas. In areas of the construction site where final vegetative stabilization will occur or where infiltration practices will be installed, either:

      (1) restrict vehicle and equipment use to avoid soil compaction; or

      (2) prior to seeding or planting areas of exposed soil that have been compacted, use techniques that condition the soils to support vegetative growth, if necessary and feasible;

   (i) TCEQ does not consider stormwater control features (e.g., stormwater conveyance channels, storm drain inlets, sediment basins) to constitute “surface waters” for the purposes of triggering the buffer requirement in Part III.G.(f) above.

2. *Soil stabilization*. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. In the context of this requirement, “immediately” means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased. Temporary

stabilization must be completed no more than 14 calendar days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage. In arid, semi-arid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative non-vegetative stabilization measures must be employed as soon as practicable. Refer to Part III.F.2.(b) for complete erosion control and stabilization practice requirements.

3. *Dewatering*. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited, unless managed by appropriate controls.
4. *Pollution prevention measures*. Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:
   (a) Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
   (b) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and
   (c) Minimize the discharge of pollutants from spills and leaks, and implement chemical spill and leak prevention and response procedures.
5. *Prohibited discharges*. The following discharges are prohibited:
   (a) Wastewater from wash out of concrete trucks, unless managed by an appropriate control (see Part V of the general permit);
   (b) Wastewater from wash out and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
   (c) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
   (d) Soaps or solvents used in vehicle and equipment washing.
6. *Surface outlets*. When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible.

Part IV. Stormwater Runoff from Concrete Batch Plants

Discharges of stormwater runoff from concrete batch plants at regulated construction sites may be authorized under the provisions of this general permit provided that the following requirements are met for concrete batch plant(s) authorized under this permit. If discharges of stormwater runoff from concrete batch plants are not covered under this general permit, then discharges must be authorized under an alternative general permit or individual permit. This permit does not authorize the discharge or land disposal of any wastewater from concrete batch plants at regulated construction sites. Authorization for these wastes must be obtained under an individual permit or an alternative general permit.

Section A. Benchmark Sampling Requirements

1. Operators of concrete batch plants authorized under this general permit shall sample the stormwater runoff from the concrete batch plants according to the requirements

of this section of this general permit, and must conduct evaluations on the effectiveness of the SWP3 based on the following benchmark monitoring values:

Table 1. Benchmark Parameters

Benchmark Parameter	Benchmark Value	Sampling Frequency	Sample Type
Oil and Grease	15 mg/L	1/quarter (*1) (*2)	Grab (*3)
Total Suspended Solids	100 mg/L	1/quarter (*1) (*2)	Grab (*3)
pH	6.0 – 9.0 Standard Units	1/quarter (*1) (*2)	Grab (*3)
Total Iron	1.3 mg/L	1/quarter (*1) (*2)	Grab (*3)

(*1) When discharge occurs. Sampling is required within the first 30 minutes of discharge. If it is not practicable to take the sample, or to complete the sampling, within the first 30 minutes, sampling must be completed within the first hour of discharge. If sampling is not completed within the first 30 minutes of discharge, the reason must be documented and attached to all required reports and records of the sampling activity.

(*2) Sampling must be conducted at least once during each of the following periods. The first sample must be collected during the first full quarter that a stormwater discharge occurs from a concrete batch plant authorized under this general permit.

January through March

April through June

July through September

October through December

For projects lasting less than one full quarter, a minimum of one sample shall be collected, provided that a stormwater discharge occurred at least once following submission of the NOI or following the date that automatic authorization was obtained under Section II.E.2., and prior to terminating coverage.

(*3) A grab sample shall be collected from the stormwater discharge resulting from a storm event that is at least 0.1 inches of measured precipitation that occurs at least 72 hours from the previously measurable storm event. The sample shall be collected downstream of the concrete batch plant, and where the discharge exits any BMPs utilized to handle the runoff from the batch plant, prior to commingling with any other water authorized under this general permit.

2. The permittee must compare the results of sample analyses to the benchmark values above, and must include this comparison in the overall assessment of the SWP3's effectiveness. Analytical results that exceed a benchmark value are not a violation of this permit, as these values are not numeric effluent limitations. Results of analyses are indicators that modifications of the SWP3 should be assessed and may be necessary to protect water quality. The operator must investigate the cause for each exceedance and must document the results of this investigation in the SWP3 by the end of the quarter following the sampling event.

The operator's investigation must identify the following:

(a) any additional potential sources of pollution, such as spills that might have occurred,

(b) necessary revisions to good housekeeping measures that are part of the SWP3,

(c) additional BMPs, including a schedule to install or implement the BMPs, and

(d) other parts of the SWP3 that may require revisions in order to meet the goal of the benchmark values.

Background concentrations of specific pollutants may also be considered during the investigation. If the operator is able to relate the cause of the exceedance to background concentrations, then subsequent exceedances of benchmark values for that pollutant may be resolved by referencing earlier findings in the SWP3. Background concentrations may be identified by laboratory analyses of samples of stormwater runon to the permitted facility, by laboratory analyses of samples of stormwater run-off from adjacent non-industrial areas, or by identifying the pollutant is a naturally occurring material in soils at the site.

Section B. Best Management Practices (BMPs) and SWP3 Requirements

Minimum SWP3 Requirements – The following are required in addition to other SWP3 requirements listed in this general permit (including, but not limited to Part III.F.7. of this permit):

1. Description of Potential Pollutant Sources - The SWP3 must provide a description of potential sources (activities and materials) that may reasonably be expected to affect the quality of stormwater discharges associated with concrete batch plants authorized under this permit. The SWP3 must describe practices that that will be used to reduce the pollutants in these discharges to assure compliance with this general permit, including the protection of water quality, and must ensure the implementation of these practices.

   The following must be developed, at a minimum, in support of developing this description:

   (a) Drainage – The site map must include the following information:

      (1) the location of all outfalls for stormwater discharges associated with concrete batch plants that are authorized under this permit;

      (2) a depiction of the drainage area and the direction of flow to the outfall(s);

      (3) structural controls used within the drainage area(s);

      (4) the locations of the following areas associated with concrete batch plants that are exposed to precipitation: vehicle and equipment maintenance activities (including fueling, repair, and storage areas for vehicles and equipment scheduled for maintenance); areas used for the treatment, storage, or disposal of wastes; liquid storage tanks; material processing and storage areas; and loading and unloading areas; and

      (5) the locations of the following: any bag house or other dust control device(s); recycle/sedimentation pond, clarifier or other device used for the treatment of facility wastewater (including the areas that drain to the treatment device); areas with significant materials; and areas where major spills or leaks have occurred.

   (b) Inventory of Exposed Materials – A list of materials handled at the concrete batch plant that may be exposed to stormwater and that have a potential to

affect the quality of stormwater discharges associated with concrete batch plants that are authorized under this general permit.

(c) Spills and Leaks - A list of significant spills and leaks of toxic or hazardous pollutants that occurred in areas exposed to stormwater and that drain to stormwater outfalls associated with concrete batch plants authorized under this general permit must be developed, maintained, and updated as needed.

(d) Sampling Data - A summary of existing stormwater discharge sampling data must be maintained, if available.

2. Measures and Controls - The SWP3 must include a description of management controls to regulate pollutants identified in the SWP3's "Description of Potential Pollutant Sources" from Part IV.B.1.(a) of this permit, and a schedule for implementation of the measures and controls. This must include, at a minimum:

(a) Good Housekeeping - Good housekeeping measures must be developed and implemented in the area(s) associated with concrete batch plants.

(1) Operators must prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), settled dust, or other significant materials from paved portions of the site that are exposed to stormwater. Measures used to minimize the presence of these materials may include regular sweeping or other equivalent practices. These practices must be conducted at a frequency that is determined based on consideration of the amount of industrial activity occurring in the area and frequency of precipitation, and shall occur at least once per week when cement or aggregate is being handled or otherwise processed in the area.

(2) Operators must prevent the exposure of fine granular solids, such as cement, to stormwater. Where practicable, these materials must be stored in enclosed silos, hoppers or buildings, in covered areas, or under covering.

(b) Spill Prevention and Response Procedures - Areas where potential spills that can contribute pollutants to stormwater runoff, and the drainage areas from these locations, must be identified in the SWP3. Where appropriate, the SWP3 must specify material handling procedures, storage requirements, and use of equipment. Procedures for cleaning up spills must be identified in the SWP3 and made available to the appropriate personnel.

(c) Inspections - Qualified facility personnel (i.e., a person or persons with knowledge of this general permit, the concrete batch plant, and the SWP3 related to the concrete batch plant(s) for the site) must be identified to inspect designated equipment and areas of the facility specified in the SWP3. The inspection frequency must be specified in the SWP3 based upon a consideration of the level of concrete production at the facility, but must be a minimum of once per month while the facility is in operation. The inspection must take place while the facility is in operation and must, at a minimum, include all areas that are exposed to stormwater at the site, including material handling areas, above ground storage tanks, hoppers or silos, dust collection/containment systems, truck wash down and equipment cleaning areas. Follow-up procedures must be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections must be maintained and be made readily available for inspection upon request.

(d) Employee Training - An employee training program must be developed to educate personnel responsible for implementing any component of the SWP3, or personnel otherwise responsible for stormwater pollution prevention, with the provisions of the SWP3. The frequency of training must be documented in

the SWP3, and at a minimum, must consist of one training prior to the initiation of operation of the concrete batch plant.

(e) Record Keeping and Internal Reporting Procedures - A description of spills and similar incidents, plus additional information that is obtained regarding the quality and quantity of stormwater discharges, must be included in the SWP3. Inspection and maintenance activities must be documented and records of those inspection and maintenance activities must be incorporated in the SWP3.

(f) Management of Runoff - The SWP3 shall contain a narrative consideration for reducing the volume of runoff from concrete batch plants by diverting runoff or otherwise managing runoff, including use of infiltration, detention ponds, retention ponds, or reusing of runoff.

3. Comprehensive Compliance Evaluation – At least once per year, one or more qualified personnel (i.e., a person or persons with knowledge of this general permit, the concrete batch plant, and the SWP3 related to the concrete batch plant(s) for the site) shall conduct a compliance evaluation of the plant. The evaluation must include the following.

(a) Visual examination of all areas draining stormwater associated with regulated concrete batch plants for evidence of, or the potential for, pollutants entering the drainage system. These include but are not limited to: cleaning areas, material handling areas, above ground storage tanks, hoppers or silos, dust collection/containment systems, and truck wash down and equipment cleaning areas. Measures implemented to reduce pollutants in runoff (including structural controls and implementation of management practices) must be evaluated to determine if they are effective and if they are implemented in accordance with the terms of this permit and with the permittee's SWP3. The operator shall conduct a visual inspection of equipment needed to implement the SWP3, such as spill response equipment.

(b) Based on the results of the evaluation, the following must be revised as appropriate within two weeks of the evaluation: the description of potential pollutant sources identified in the SWP3 (as required in Part IV.B.1., "Description of Potential Pollutant Sources"); and pollution prevention measures and controls identified in the SWP3 (as required in Part IV.B.2., "Measures and Controls"). The revisions may include a schedule for implementing the necessary changes.

(c) The permittee shall prepare and include in the SWP3 a report summarizing the scope of the evaluation, the personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the SWP3, and actions taken in response to the findings of the evaluation. The report must identify any incidents of noncompliance. Where the report does not identify incidences of noncompliance, the report must contain a statement that the evaluation did not identify any incidence(s), and the report must be signed according to 30 TAC §305.128, relating to Signatories to Reports.

(d) The Comprehensive Compliance Evaluation may substitute for one of the required inspections delineated in Part IV.B.2.(c) of this general permit.

Section C. Prohibition of Wastewater Discharges

Wastewater discharges associated with concrete production including wastewater disposal by land application are not authorized under this general permit. These wastewater discharges must be authorized under an alternative TCEQ water quality permit or otherwise disposed of in an authorized manner. Discharges of concrete truck wash out at construction sites may be authorized if conducted in accordance with the requirements of Part V of this general permit.

Part V. Concrete Truck Wash Out Requirements

This general permit authorizes the wash out of concrete trucks at construction sites regulated under Sections II.E.1., 2., and 3. of this general permit, provided the following requirements are met. Authorization is limited to the land disposal of wash out water from concrete trucks. Any other direct discharge of concrete production waste water must be authorized under a separate TCEQ general permit or individual permit.

1. Direct discharge of concrete truck wash out water to surface water in the state, including discharge to storm sewers, is prohibited by this general permit.
2. Concrete truck wash out water shall be discharged to areas at the construction site where structural controls have been established to prevent direct discharge to surface waters, or to areas that have a minimal slope that allow infiltration and filtering of wash out water to prevent direct discharge to surface waters. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measures to prevent runoff from the construction site.
3. Wash out of concrete trucks during rainfall events shall be minimized. The direct discharge of concrete truck wash out water is prohibited at all times, and the operator shall insure that its BMPs are sufficient to prevent the discharge of concrete truck wash out as the result of rainfall or stormwater runoff.
4. The discharge of wash out water must not cause or contribute to groundwater contamination.
5. If a SWP3 is required to be implemented, the SWP3 shall include concrete wash out areas on the associated site map.

Part VI. Retention of Records

The permittee must retain the following records for a minimum period of three (3) years from the date that a NOT is submitted as required by Part II.E.3. For activities in which an NOT is not required, records shall be retained for a minimum period of three (3) years from the date that the operator terminates coverage under Section II.F.3. of this permit. Records include:

1. A copy of the SWP3;
2. All reports and actions required by this permit, including a copy of the construction site notice;
3. All data used to complete the NOI, if an NOI is required for coverage under this general permit; and
4. All records of submittal of forms submitted to the operator of any MS4 receiving the discharge and to the secondary operator of a large construction site, if applicable.

Part VII. Standard Permit Conditions

1. The permittee has a duty to comply with all permit conditions. Failure to comply with any permit condition is a violation of the permit and statutes under which it was issued, and is grounds for enforcement action, for terminating, revoking, or denying coverage under this general permit, or for requiring a discharger to apply for and obtain an individual TPDES permit.
2. Authorization under this general permit may be suspended or revoked for cause. Filing a notice of planned changes or anticipated non-compliance by the permittee does not stay any permit condition. The permittee must furnish to the executive director, upon request and within a reasonable time, any information necessary for the executive director to determine whether cause exists for revoking, suspending, or

Appendix A: Automatic Authorization

Periods of Low Erosion Potential by County – Eligible Date Ranges

Andrews: Nov. 15 - Apr. 30

Archer: Dec. 15 - Feb. 14

Armstrong: Nov. 15 - Apr. 30

Bailey: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Baylor: Dec. 15 - Feb. 14

Borden: Nov. 15 - Apr. 30

Brewster: Nov. 15 - Apr. 30

Briscoe: Nov. 15 - Apr. 30

Brown: Dec. 15 - Feb. 14

Callahan: Dec. 15 - Feb. 14

Carson: Nov. 15 - Apr. 30

Castro: Nov. 15 - Apr. 30

Childress: Dec. 15 - Feb. 14

Cochran: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Coke: Dec. 15 - Feb. 14

Coleman: Dec. 15 - Feb. 14

Collingsworth: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Concho: Dec. 15 - Feb. 14

Cottle: Dec. 15 - Feb. 14

Crane: Nov. 15 - Apr. 30

Crockett: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Crosby: Nov. 15 - Apr. 30

Culberson: Nov. 1 - May 14

Dallam: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Dawson: Nov. 15 - Apr. 30

Deaf Smith: Nov. 15 - Apr. 30

Dickens: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Dimmit: Dec. 15 - Feb. 14

Donley: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Eastland: Dec. 15 - Feb. 14

Ector: Nov. 15 - Apr. 30

Edwards: Dec. 15 - Feb. 14

El Paso: Jan. 1 - Jul. 14, or May 15 - Jul. 31, or Jun. 1 - Aug. 14, or Jun. 15 - Sept. 14, or Jul. 1 - Oct. 14, or Jul. 15 - Oct. 31, or Aug. 1 - Apr. 30, or Aug. 15 - May 14, or Sept. 1 - May 30, or Oct. 1 - Jun. 14, or Nov. 1 - Jun. 30, or Nov. 15 - Jul. 14

Fisher: Dec. 15 - Feb. 14

Floyd: Nov. 15 - Apr. 30

Foard: Dec. 15 - Feb. 14

Gaines: Nov. 15 - Apr. 30

Garza: Nov. 15 - Apr. 30

Glasscock: Nov. 15 - Apr. 30

Hale: Nov. 15 - Apr. 30

Hall: Feb. 1 - Mar. 30

Hansford: Nov. 15 - Apr. 30

Hardeman: Dec. 15 - Feb. 14

Hartley: Nov. 15 - Apr. 30

Haskell: Dec. 15 - Feb. 14

Hockley: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Howard: Nov. 15 - Apr. 30

Hudspeth: Nov. 1 - May 14

Hutchinson: Nov. 15 - Apr. 30

Irion: Dec. 15 - Feb. 14

Jeff Davis: Nov. 1 - Apr. 30 or Nov. 15 - May 14

Jones: Dec. 15 - Feb. 14

Kent: Nov. 15 - Jan. 14 or Feb. 1 - Mar. 30

Kerr: Dec. 15 - Feb. 14

Kimble: Dec. 15 - Feb. 14

King: Dec. 15 - Feb. 14

Kinney: Dec. 15 - Feb. 14

Knox: Dec. 15 - Feb. 14

Lamb: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Loving: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Lubbock: Nov. 15 - Apr. 30

Lynn: Nov. 15 - Apr. 30

Martin: Nov. 15 - Apr. 30

Mason: Dec. 15 - Feb. 14

Maverick: Dec. 15 - Feb. 14

McCulloch: Dec. 15 - Feb. 14

Menard: Dec. 15 - Feb. 14

Midland: Nov. 15 - Apr. 30

Mitchell: Nov. 15 - Apr. 30

Moore: Nov. 15 - Apr. 30

Motley: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Nolan: Dec. 15 - Feb. 14

Oldham: Nov. 15 - Apr. 30

Parmer: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Pecos: Nov. 15 - Apr. 30

Potter: Nov. 15 - Apr. 30

Presidio: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Randall: Nov. 15 - Apr. 30

Reagan: Nov. 15 - Apr. 30

Real: Dec. 15 - Feb. 14

Reeves: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Runnels: Dec. 15 - Feb. 14

Schleicher: Dec. 15 - Feb. 14

Scurry: Nov. 15 - Apr. 30

Shackelford: Dec. 15 - Feb. 14

Sherman: Nov. 15 - Apr. 30

Stephens: Dec. 15 - Feb. 14

Sterling: Nov. 15 - Apr. 30

Stonewall: Dec. 15 - Feb. 14

Sutton: Dec. 15 - Feb. 14

Swisher: Nov. 15 - Apr. 30

Taylor: Dec. 15 - Feb. 14

Terrell: Nov. 15 - Apr. 30

Terry: Nov. 15 - Apr. 30

Throckmorton: Dec. 15 - Feb. 14

Tom Green: Dec. 15 - Feb. 14

Upton: Nov. 15 - Apr. 30

Uvalde: Dec. 15 - Feb. 14

Val Verde: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Ward: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Wichita: Dec. 15 - Feb. 14

Wilbarger: Dec. 15 - Feb. 14

Winkler: Nov. 1 - Apr. 30, or Nov. 15 - May 14

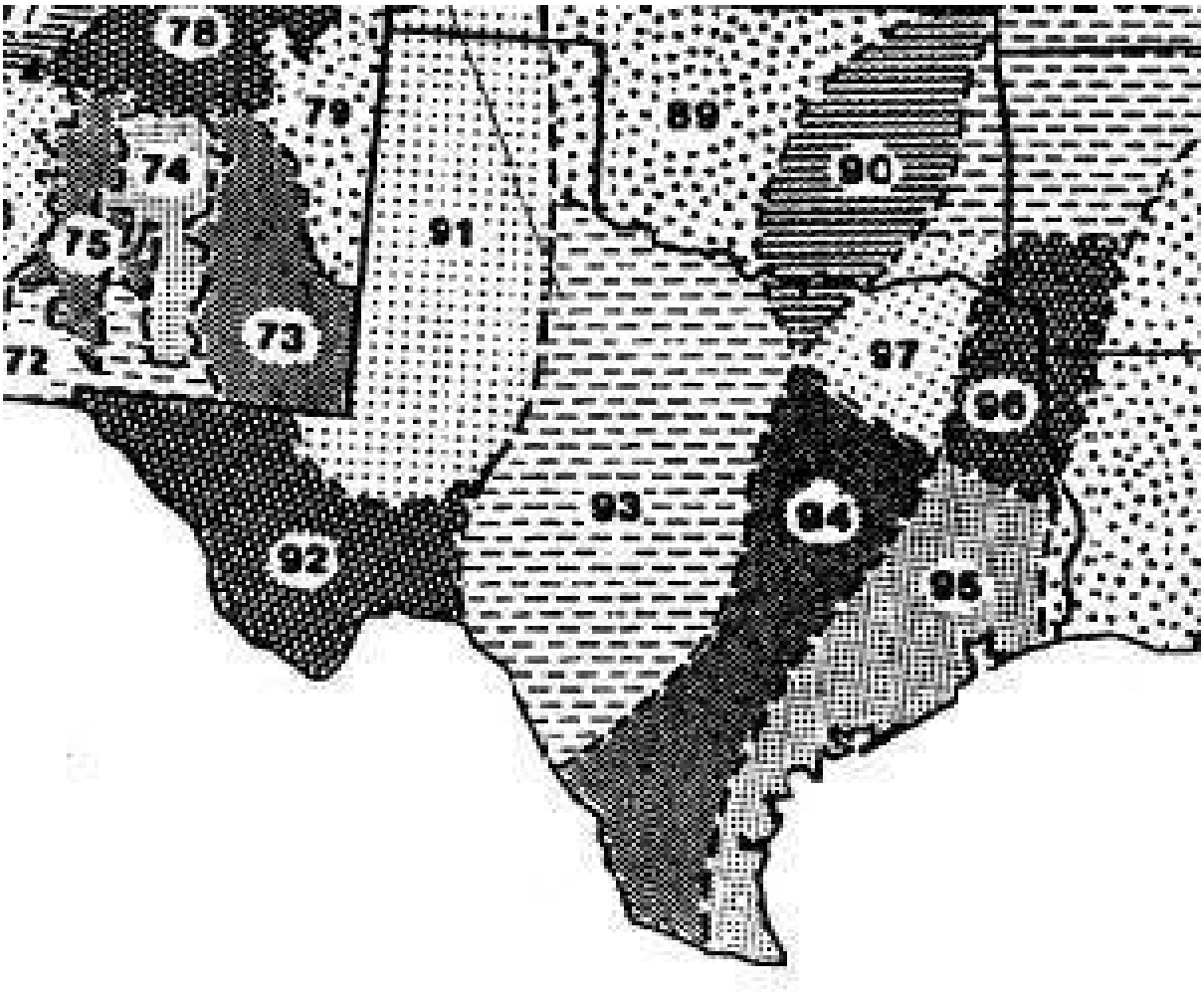
Yoakum: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Young: Dec. 15 - Feb. 14

Wheeler: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

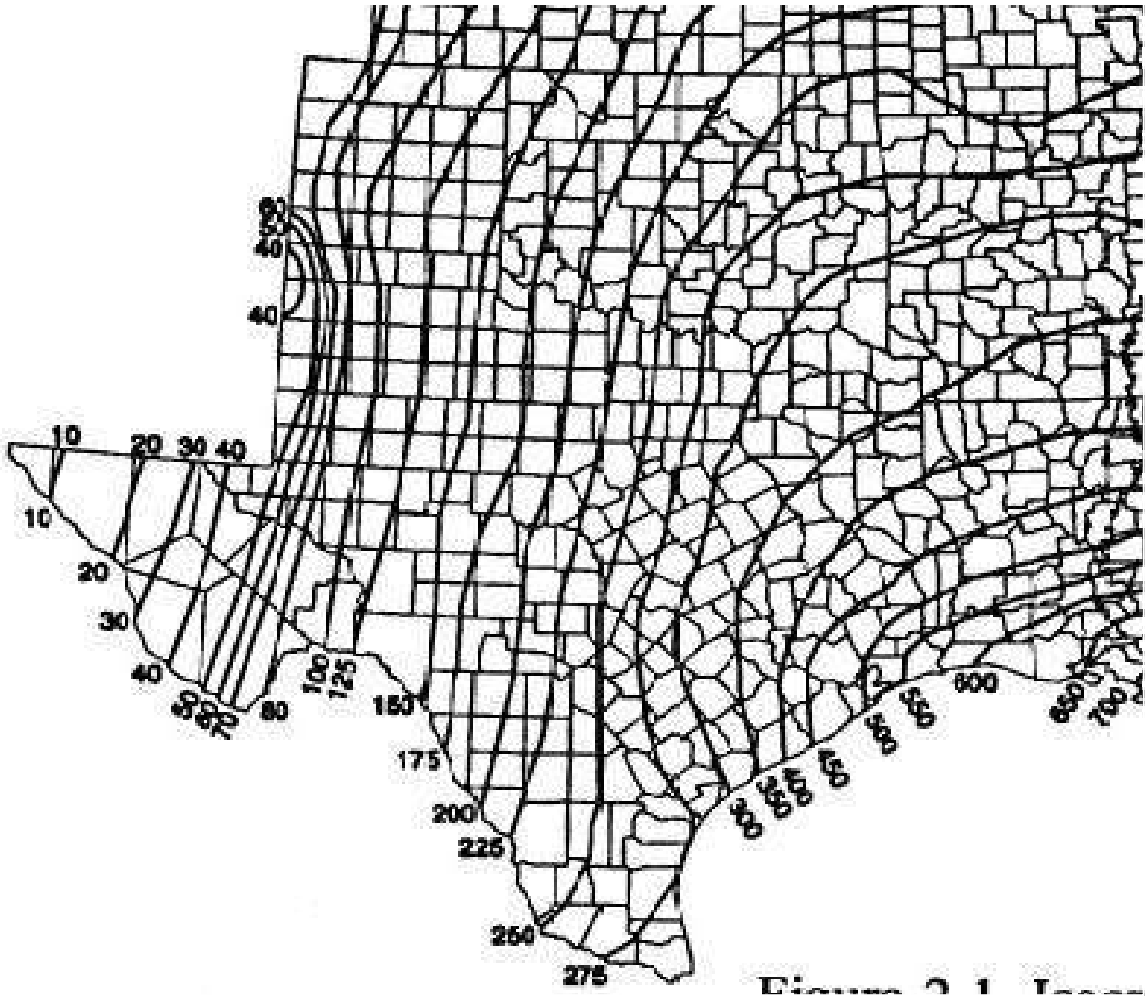
Zavala: Dec. 15 - Feb. 14

Appendix B: Erosivity Index (EI) Zones in Texas



Adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

Appendix C: Isoerodent Map



Adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

Appendix D: Erosivity Indices for EI Zones in Texas

Periods:

EI #	1/1	1/16	1/31	2/15	3/1	3/16	3/31	4/15	4/30	5/15	5/30	6/14	6/29	7/14	7/29	8/13	8/28	9/12	9/27	10/12	10/27	11/11	11/26	12/11	12/31
89	0	1	1	2	3	4	7	2	8	27	38	48	55	62	69	76	83	90	94	97	98	99	100	100	100
90	0	1	2	3	4	6	8	13	21	29	37	46	54	60	65	69	74	81	87	92	95	97	98	99	100
91	0	0	0	0	1	1	1	2	6	16	29	39	46	53	60	67	74	81	88	95	99	99	100	100	100
92	0	0	0	0	1	1	1	2	6	16	29	39	46	53	60	67	74	81	88	95	99	99	100	100	100
93	0	1	1	2	3	4	6	8	13	25	40	49	56	62	67	72	76	80	85	91	97	98	99	99	100
94	0	1	2	4	6	8	10	15	21	29	38	47	53	57	61	65	70	76	83	88	91	94	96	98	100
95	0	1	3	5	7	9	11	14	18	27	35	41	46	51	57	62	68	73	79	84	89	93	96	98	100
96	0	2	4	6	9	12	17	23	30	37	43	49	54	58	62	66	70	74	78	82	86	90	94	97	100
97	0	1	3	5	7	10	14	20	28	37	48	56	61	64	68	72	77	81	86	89	92	95	98	99	100
106	0	3	6	9	13	17	21	27	33	38	44	49	55	61	67	71	75	78	81	84	86	90	94	97	100

* Each period begins on the date listed in the table above and lasts until the day before the following period. The final period begins on December 11 and ends on December 31.

Table adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

APPENDIX H

SITE NOTICE, NOTICE OF INTENT, AND NOTICE OF CHANGE

Operator Notes

Construction Site Notice

The construction site notice located in Appendix H should be posted along with a signed copy of the Notice of Intent. The site notice must be located where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction.

Notice of Intent (NOI)

The TPDES General Permit TXR 150000 requires that a NOI be submitted before construction activities begin. The NOI is essentially an application and contains items such as important information about your site, including site location, owner information, operator (general contractor) information, receiving water(s), and a brief description of the project.

TCEQ has developed a form to be used by industrial facilities and construction activities when they submit NOIs. This form indicates all the information that you are required to provide and must be used in order for the NOI to be processed correctly.

Primary Operators

Please note that both Owners and Contractors can meet the definition of being a "primary operator."

Primary operators must submit a NOI at least seven days prior to commencing construction activities, or if utilizing electronic submittal, prior to commencing construction activities.

If an additional primary operator is added after the initial NOI is submitted, the new primary operator must:

- submit a paper NOI at least seven days before assuming operational control, or
- submit an electronic NOI prior to assuming operational control.

If the primary operator changes after the initial NOI is submitted, the new primary operator must:

- submit a paper NOI at least ten days before assuming operational control, or
- submit an electronic NOI at least ten days before assuming operational control

All primary operators must post a copy of the signed NOI at the construction site in allocation where it is readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction activities. A copy of the signed NOI must be submitted to the operator of any MS4 receiving the discharge and to any secondary operator, at least seven days prior to commencing construction activities. A list of the MS4 operators receiving a copy of the NOI is located in Appendix H.

Secondary Operators

Secondary operators are not required to submit a NOI, provided that another operator(s) at the site has submitted a NOI, or is required to submit a NOI and the secondary operator has provided notification to the operator(s) of the need to obtain coverage under the permit. Please refer to the general permit for more information.

NOI Fees

Please note the fees associated with NOI submission:

- $325 if submitting a paper NOI, or
- $225 if submitting an electronic NOI.

No separate annual fees will be assessed. The Water Quality Annual fee has been incorporated into the NOI fees.

It is anticipated that there will be projects where more than one entity (e.g., the owner, developer, or general contractor) will need to submit an NOI so that the requirements for an operator are met. In this case, those persons will share the Storm Water Pollution Plan, and the submittal of the NOI and the TPDES Permit Number will need to be recorded in the NOI log located in Appendix F.

Please refer to the general permit and NOI form instructions for more information.

Notice of Change (NOC)

The operators are responsible for updating the SWP3 to implement and maintain sediment controls and submit a Notice of Change (NOC) if off-site material, waste, borrow, fill or equipment storage areas are being utilized and are not under a separate permit. An operator must submit a NOC letter in conformance with TPDES General Permit TXR150000 if they become aware of any incorrect information in an NOI or failed to submit any relevant facts.

Information that may be included on an NOC includes, but is not limited to, the following: the description of the construction project, an increase in the number of acres disturbed (for increases of one or more acres), or the operator name. A transfer of operational control from one operator to another, including a transfer of the ownership of a company, may not be included in an NOC. A transfer of ownership of a company includes changes to the structure of a company, such as changing from a partnership to a corporation or changing corporation types, so that the filing number (or charter number) that is on record with the Texas Secretary of State must be changed.

An NOC is not required for notifying TCEQ of a decrease in the number of acres disturbed. This information must be included in the storm water pollution prevention plan (SWP3) and retained on site.

A list of the MS4 operators receiving a copy of the NOC is located in Appendix H.

Notice of Termination (NOT)

Any operator that has submitted a NOI must apply to terminate authorization of the general permit. The NOT is a form which should be completed and submitted to the TCEQ within 30 days of the following:

- final stabilization has been achieved on all portions of the site that are the responsibility of the permittee,
- a transfer of operational control has occurred, or

- the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

Information to be included on the NOT includes the location of the construction site; the name, address, and telephone number of the operator terminating coverage; the TPDES General Permit Number; an indication of why coverage under the permit should be terminated for the operator; and a signed certification statement.

Authorization under the general permit terminates at midnight on the day the NOT is postmarked for delivery to the TCEQ. If the NOT is submitted electronically, the permit terminates immediately following confirmation of receipt of the NOT by TCEQ.

Note that when there is a change in operators of a construction activity, then the new operator must submit an NOI.

NOT's should be submitted to MS4 Operator(s). A list of the MS4 operator(s) receiving a copy of the NOT is located in Appendix H.

Record of Submittals to MS4s

Form Type	MS4 Name	Address	Date Submitted

LARGE CONSTRUCTION SITE NOTICE

FOR THE
Texas Commission on Environmental Quality (TCEQ)
Storm Water Program

TPDES GENERAL PERMIT TXR150000

"PRIMARY OPERATOR" NOTICE

This notice applies to construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of storm water runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. This notice shall be posted along with a copy of the signed Notice of Intent (NOI), as applicable. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

http://www.tceq.state.tx.us/nav/permits/sw_permits.html

Site-Specific TPDES Authorization Number:	
Operator Name:	
Contact Name and Phone Number:	
Project Description: *Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.*	
Location of Storm Water Pollution Prevention Plan:	

LARGE CONSTRUCTION SITE NOTICE

FOR THE
Texas Commission on Environmental Quality (TCEQ)
Storm Water Program

TPDES GENERAL PERMIT TXR150000

"SECONDARY OPERATOR" NOTICE

This notice applies to secondary operators of construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of storm water runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

http://www.tceq.state.tx.us/nav/permits/sw_permits.html

Site-Specific TPDES Authorization Number:	TXR150000
Operator Name:	
Contact Name and Phone Number:	
Project Description: *Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.*	
Location of Storm Water Pollution Prevention Plan (SWP3):	

For Large Construction Activities Authorized Under Part II.E.3. (Obtaining Authorization to Discharge) the following certification must be completed:

I _____ (Typed or Printed Name Person Completing This Certification) certify under penalty of law that I have read and understand the eligibility requirements for claiming an authorization under Part II.E.3. of TPDES General Permit TXR150000 and agree to comply with the terms of this permit. A storm water pollution prevention plan has been developed and will be implemented prior to construction, according to permit requirements. A copy of this signed notice is supplied to the operator of the MS4 if discharges enter an MS4. I am aware there are significant penalties for providing false information or for conducting unauthorized discharges, including the possibility of fine and imprisonment for knowing violations.

Signature and Title_____ Date _____

_____*Date Notice Removed*
____*MS4 operator notified per Part II.F.3.*

TCEQ Office Use Only
Permit No:
CN:
RN:

Notice of Intent (NOI) for an Authorization for Stormwater Discharges Associated with Construction Activity under TPDES General Permit TXR150000

IMPORTANT INFORMATION

Please read and use the General Information and Instructions prior to filling out each question in the NOI form.

Use the NOI Checklist to ensure all required information is completed correctly. **Incomplete applications delay approval or result in automatic denial.**

Once processed your permit authorization can be viewed by entering the following link into your internet browser: http://www2.tceq.texas.gov/wq_dpa/index.cfm or you can contact TCEQ Stormwater Processing Center at 512-239-3700.

ePERMITS

Effective September 1, 2018, this paper form must be submitted to TCEQ with a completed electronic reporting waiver form (TCEQ-20754).

To submit an NOI electronically, enter the following web address into your internet browser and follow the instructions: https://www3.tceq.texas.gov/steers/index.cfm

APPLICATION FEE AND PAYMENT

The application fee for submitting a paper NOI is $325. The application fee for electronic submittal of a NOI through the TCEQ ePermits system (STEERS) is $225.

Payment of the application fee can be submitted by mail or through the TCEQ ePay system. The payment and the NOI must be mailed to separate addresses. To access the TCEQ ePay system enter the following web address into your internet browser: http://www.tceq.texas.gov/epay.

Provide your payment information for verification of payment:

- If payment was mailed to TCEQ, provide the following:
  - Check/Money Order Number: Click here to enter text
  - Name printed on Check: Click here to enter text
- If payment was made via ePay, provide the following:
  - Voucher Number: Click here to enter text
  - A copy of the payment voucher is attached to this paper NOI form.

RENEWAL (This portion of the NOI is not applicable after June 3, 2018)

Is this NOI for a renewal of an existing authorization? ☐ Yes ☐ No

If Yes, provide the authorization number here: TXR15 Click here to enter text

NOTE: If an authorization number is not provided, a new number will be assigned.

SECTION 1. OPERATOR (APPLICANT)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? CN Click here to enter text

(Refer to Section 1.a) of the Instructions)

b) What is the Legal Name of the entity (applicant) applying for this permit? (The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

Click here to enter text

c) What is the contact information for the Operator (Responsible Authority)?

Prefix (Mr. Ms. Miss): Click here to enter text

First and Last Name: Click here to enter text Suffix: Click here to enter text

Title: Click here to enter text Credentials: Click here to enter text

Phone Number: Click here to enter text Fax Number: Click here to enter text

E-mail: Click here to enter text

Mailing Address: Click here to enter text

City, State, and Zip Code: Click here to enter text

Mailing Information if outside USA:

Territory: Click here to enter text

Country Code: Click here to enter text Postal Code: Click here to enter text

d) Indicate the type of customer:

☐ Individual
☐ Limited Partnership
☐ General Partnership
☐ Trust
☐ Sole Proprietorship (D.B.A.)
☐ Corporation
☐ Estate
☐ Federal Government
☐ County Government
☐ State Government
☐ City Government
☐ Other Government
☐ Other: Click here to enter text

e) Is the applicant an independent operator? ☐ Yes ☐ No

(If a governmental entity, a subsidiary, or part of a larger corporation, check No.)

f) Number of Employees. Select the range applicable to your company.

☐ 0-20 ☐ 251-500

☐ 21-100 ☐ 501 or higher

☐ 101-250

g) Customer Business Tax and Filing Numbers: (**Required** for Corporations and Limited Partnerships. **Not Required** for Individuals, Government, or Sole Proprietors.)

State Franchise Tax ID Number: Click here to enter text.

Federal Tax ID: Click here to enter text.

Texas Secretary of State Charter (filing) Number: Click here to enter text.

DUNS Number (if known): Click here to enter text.

SECTION 2. APPLICATION CONTACT

Is the application contact the same as the applicant identified above?

☐ Yes, go to Section 3

☐ No, complete this section

Prefix (Mr. Ms. Miss): Click here to enter text.

First and Last Name: Click here to enter text. Suffix: Click here to enter text.

Title: Click here to enter text. Credential: Click here to enter text.

Organization Name: Click here to enter text.

Phone Number: Click here to enter text. Fax Number: Click here to enter text.

E-mail: Click here to enter text.

Mailing Address: Click here to enter text.

Internal Routing (Mail Code, Etc.): Click here to enter text.

City, State, and Zip Code: Click here to enter text.

Mailing information if outside USA:

Territory: Click here to enter text.

Country Code: Click here to enter text. Postal Code: Click here to enter text.

SECTION 3. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

a) If this is an existing permitted site, what is the Regulated Entity Number (RN) issued to this site? RN Click here to enter text.

(Refer to Section 3.a) of the Instructions)

b) Name of project or site (the name known by the community where it's located): Click here to enter text

c) In your own words, briefly describe the type of construction occurring at the regulated site (residential, industrial, commercial, or other): Click here to enter text

d) County or Counties (if located in more than one): Click here to enter text

e) Latitude: Click here to enter text Longitude: Click here to enter text

f) Site Address/Location

If the site has a physical address such as 12100 Park 35 Circle, Austin, TX 78753, complete *Section A*.

If the site does not have a physical address, provide a location description in *Section B*. Example: located on the north side of FM 123, 2 miles west of the intersection of FM 123 and Highway 1.

Section A:

Street Number and Name: Click here to enter text

City, State, and Zip Code: Click here to enter text

Section B:

Location Description: Click here to enter text

City (or city nearest to) where the site is located: Click here to enter text

Zip Code where the site is located: Click here to enter text

SECTION 4. GENERAL CHARACTERISTICS

a) Is the project or site located on Indian Country Lands?

☐ Yes, do not submit this form. You must obtain authorization through EPA Region 6.

☐ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes. Note: The construction stormwater runoff may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA Region 6.

☐ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site? Click here to enter text

d) What is the Secondary SIC Code(s), if applicable? Click here to enter text

e) What is the total number of acres to be disturbed? Click here to enter text

f) Is the project part of a larger common plan of development or sale?

☐ Yes

☐ No. The total number of acres disturbed, provided in e) above, must be 5 or more. If the total number of acres disturbed is less than 5, do not submit this form. See the requirements in the general permit for small construction sites.

g) What is the estimated start date of the project? Click here to enter text

h) What is the estimated end date of the project? Click here to enter text

i) Will concrete truck washout be performed at the site? ☐ Yes ☐ No

j) What is the name of the first water body(ies) to receive the stormwater runoff or potential runoff from the site? Click here to enter text

k) What is the segment number(s) of the classified water body(ies) that the discharge will eventually reach? Click here to enter text

l) Is the discharge into a Municipal Separate Storm Sewer System (MS4)?

☐ Yes ☐ No

If Yes, provide the name of the MS4 operator: Click here to enter text

Note: The general permit requires you to send a copy of this NOI form to the MS4 operator.

m) Is the discharge or potential discharge from the site within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, as defined in 30 TAC Chapter 213?

☐ Yes, complete the certification below.

☐ No, go to Section 5

I certify that the copy of the TCEQ-approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) that is included or referenced in the Stormwater Pollution Prevention Plan will be implemented. ☐ Yes

SECTION 5. NOI CERTIFICATION

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☐ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☐ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☐ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the Construction General Permit (TXR150000). ☐ Yes

Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3, provided all obligations are confirmed by at least one operator.

SECTION 6. APPLICANT CERTIFICATION SIGNATURE

Operator Signatory Name: Click here to enter text.

Operator Signatory Title: Click here to enter text.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature (use blue ink): _____Date: _____

TCEQ Office Use Only
Permit No.:
RN:
CN:
Region:

RESET FORM

Notice of Change to an Authorization for Stormwater Discharges Associated With Construction Activity under TPDES General Permit TXR150000

IMPORTANT – Please read the following information and INSTRUCTIONS before filling out this form.

ePERMITS: Sign up now for online NOC: https://www3.tceq.texas.gov/steers/index.cfm

This form will be returned for any of the following reasons:

1) The permit number is not provided, is invalid, or is no longer active,
2) Wet ink signature of person meeting signatory requirements is not provided,
3) The current permittee is not the applicant, and;
4) A requested change in operator name is not a legal name change.

This form cannot be used for a change in operator. Refer to your general permit for information.

What is the permit number of the authorization to be changed?

TXR15_____ or TXRCW_____

1) APPLICANT INFORMATION

a) What is the full Legal Name of the current operator as on the authorization?

_____

b) What is the Customer Number (CN) assigned to this operator? You may search for your CN at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

CN_____

c) What is the name and title of the person signing the application? (The person must be an executive official meeting signatory requirements in TAC 305.44(a).)

Prefix (Mr. Ms. Miss):_____
First/Last Name: _____ Suffix: _____
Title: _____Credential: _____

d) What is the Regulated Entity Reference Number (RN) assigned to this site?

RN_____

2) APPLICATION CONTACT

If TCEQ needs additional information regarding this application, who should be contacted?

Prefix (Mr. Ms. Miss):_____
First/Last Name: _____ Suffix:_____
Title:_____ Credential:_____
Organization Name:_____
Phone Number:_____ Extension:_____ Fax Number:_____
E-mail Address:_____
Mailing Address:_____
Internal Routing (Mail Code, Etc.):_____
City:_____ State:_____ ZIP Code:_____
Mailing Information if outside USA:
Territory: _____ Country Code:_____ Postal Code: _____

3) REQUESTED CHANGE TO PERMITTED INFORMATION

What information has changed or needs to be corrected? Check one or more of the following options and enter the new information below.

☐ Operator legal name change with Texas Secretary of State (TX SOS).
Fill out sections a) and b) as applicable.
Note: Permits are not transferable. If a change in entity has occurred, this NOC will not be processed.

☐ Address and contact information for the operator. Fill out section b).

☐ Site Information (Regulated Entity). Fill out section c).
Note: Permits under a general permit are site specific. If a change in site location has occurred, this NOC will not be processed.

☐ General characteristics relating to the regulated activity. Fill out section d).

a) Operator Legal Name Change

i. What is the NEW active Legal Name with TX SOS or on other legal document?
New Legal Name: _____

ii. What is the TX SOS Filing Number for us to confirm this official name change?
This is only applicable to Limited Partnerships or Corporations.
TX SOS Filing number: _____

b) Address and Contact Information for Operator
Verify mailing addresses with USPS: http://zip4.usps.com/zip4/welcome.jsp.

Prefix (Mr. Ms. Miss):_____
First/Last Name: _____ Suffix:_____
Title:_____ Credential:_____
Organization Name:_____

Phone Number:_____ Extension:_____ Fax Number:_____
E-mail Address:_____
Mailing Address:_____
Internal Routing (Mail Code, Etc.):_____
City:_____ State:_____ZIP Code:_____
Mailing Information if outside USA:
Territory: _____Country Code:_____ Postal Code: _____

c) Regulated Entity (Site) Information Correction

i. Is this a change to the location of the permitted activity?
☐ Yes This NOC will not be processed since the authorizations are site specific.
☐ No Continue with NOC form.

ii. Corrected Name of Project or Site:

_____

iii. Updated Physical Address (new 911 address):
Street Number:_____Street Name:_____
City:_____ State: Texas ZIP Code:_____

iv. Corrected location access description, if no physical address (street number/street name):

v. Corrected Latitude:_____ N

vi. Corrected Longitude:_____W

vii. Corrected County (Counties if >1):_____

d) Change in General Characteristics Provided on Original Form
Identify the specific change and provide the updates information. If an attachment is needed, please reference it below.

4) OPERATOR CERTIFICATION

I, _____ _____
Typed or printed name *Title*

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature:_____ Date:_____
(Use blue ink)

Notice of Change (NOC) for Authorizations for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

General Information and Instructions

GENERAL INFORMATION

Where to Send the NOC:

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Stormwater Processing Center (MC228)
P.O. Box 13087
Austin, Texas 78711-3087

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Stormwater Processing Center (MC228)
12100 Park 35 Circle
Austin, TX 78753

TCEQ Contact list:

Application – status and form questions:	*512/239-3700, swpermit@tceq.texas.gov*
Technical questions:	*512/239-4671, swgp@tceq.texas.gov*
Environmental Law Division:	*512/239-0600*
Records Management - obtain copies of forms:	*512/239-0900*
Reports from databases (as available):	*512/239-DATA (3282)*
Cashier's office:	*512/239-0357 or 512/239-0187*

NOC Process:

1. Administrative Review: The form will be reviewed to ensure the request is from the permittee (operator) on the authorization, the permit is active and initial coverage was acknowledged. Each item on the form will be reviewed for a complete response. In addition, the operator's legal name change must be verified with Texas Secretary of State (if applicable). The address(s) on the form must be verified with the US Postal Service (USPS) as an address receiving regular mail delivery. Never give an overnight/express mailing address.
If an item is incomplete or not verifiable, the operator may be notified by letter, phone call or email. In some instances as noted at the beginning of the form, the request may simply be returned.

2. NOC Confirmation: An updated Acknowledgment Certificate will be mailed to the operator only if the NOC is to change information provided on the acknowledgment certificate. The original coverage effective date will not change.

General Permit (Your Permit) and Forms

You may view and print your general permit on the TCEQ web site http://www.tceq.texas.gov. Search using key word TXR150000. General Permit Forms (NOI, Waiver, NOT, and NOC) and instructions are available on the TCEQ web site http://www.tceq.texas.gov.

Change in Operator

An authorization under the general permit is not transferable. If the operator of the regulated entity changes, the present permittee must submit a NOT and the new operator must submit a NOI. The NOI must be submitted not later than 10 days prior to the change in Operator status. Note that the NOT is effective on the postmarked date. It may be necessary to not terminate the existing permit until coverage by the new entity is confirmed.

TCEQ Central Registry Core Data Form

The Core Data Form has been incorporated into this form. Do not send a Core Data Form to TCEQ. You can find the information on the Central Registry web site at http://www12.tceq.texas.gov/crpub/index.cfm.

You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID".

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all associated authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area for approval to update the CN and RN data in central registry.

INSTRUCTIONS FOR FILLING OUT THE NOC FORM

1) APPLICANT INFORMATION

a) Legal Name

Provide the current legal name of the permittee, as on the permit.

b) Customer Number (CN)

TCEQ's Central Registry will assign each customer a number that begins with CN, followed by nine digits. You may search for your CN at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch.

If the name(s) provided do not match the current permittee name(s), this form will be returned. It is the responsibility of the permittee(s) to comply with the general permit.

Note: If a change is being made to the CN and the CN has other TCEQ authorization types, it is the entity's responsibility to update those authorizations at the same time. If an authorization has been cancelled or terminated, the name cannot be changed on the permit. Because of this, a new CN may be issued for the new name.

c) Person Signing this Application

Provide the name and title of the person signing the application. The person must be an executive official meeting signatory requirements in TAC §305.44.

d) Regulated Entity Reference Number (RN)

This is a number issued by TCEQ's Central Registry to sites (a location where a regulated activity occurs) regulated by TCEQ. This is not a permit number, registration number, or license number. Search for your RN: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch.

If the site has changed or the information provided indicates a new location, this form will be returned. It is the responsibility of the permittee to comply with the general permit.

2) APPLICATION CONTACT

Provide the name, title and contact information of the person that TCEQ can contact for additional information regarding this application.

3) REQUESTED CHANGE TO PERMITTED INFORMATION

Check one or more of the available options indicating the information in the form that is to be updated. Provide the updated information in 3 a) for Legal Name Change, 3 b) for Address and Contact Information Change, 3 c) for Regulated Entity Site Information Change, or 3 d) for General Characteristics Change, as applicable.

a) Legal Name Change

Provide the new legal name. If the entity is a Limited Partnership or Corporation, the name change must be verifiable with Texas Secretary of State. The TX SOS filing number must be provided to verify only a name change occurred. You may contact the SOS at (512)463 5555, for more information related to filing in Texas. If filed in the county where doing business, provide a copy of the legal documents showing the legal name change.

Legal name changes of a Corporation and Limited Partnership will be verified with Texas Secretary of State. If the entity is filed as a new entity with a new filing number, then the change cannot be made through a NOC. The permits are not transferable. If the operator changes, the old entity must terminate their permit and the new entity must submit a form for a new permit.

b) Address and Contact Information Change

Indicate the type of address and contact information for the operator that has changed from the original NOI or last NOC submitted to TCEQ.

Verify mailing addresses with USPS http://zip4.usps.com/zip4/welcome.jsp for regular mail delivery (not overnight express mail). If you find that the address is not verifiable please indicate the address is used by the USPS for regular mail delivery. Failure to provide a valid mailing address will delay or prohibit us from updating the permit.

Please note that address updates relating to a general permit authorization can ONLY be made through a Notice of Change. Address changes submitted through any other form cannot be processed.

c) Regulated Entity Site Information Change

The NOC form is only for use to update or correct information submitted on the original application or last NOC for the authorization. The authorization under a general permit is site specific. If this change is related to a new location, a Notice of Change will not be processed.

Provide the updated site name, updated site addresses, corrected latitude and longitude, and/or corrected county, as applicable to your NOC request. A new physical address for an existing location is usually the result of a newly assigned 911 address for emergencies.

If providing a corrected latitude and longitude, enter the latitude and longitude of the site in degrees, minutes, and seconds or decimal form. For help obtaining the latitude and longitude, go to http://www.tceq.texas.gov/gis/sqmaview.html
or http://nationalmap.gov/ustopo/.

d) Change in General Characteristics Provided on Original Form

Describe any other change that is not addressed through any question in this section of the application.

4) OPERATOR CERTIFICATION

The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.

IF YOU ARE A CORPORATION:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at 512/239-0600.

30 Texas Administrative Code
§305.44. Signatories to Applications

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

APPENDIX I

RECORD OF TEMPORARY/PERMANENT CEASING OF CONSTRUCTION ACTIVITIES

Record of Temporary/Permanent Ceasing of Construction Activities

Project Activity Area	Date Activities Ceased	Temporary* or Permanent	Date Soil Stabilization Implemented	Date Activities Resumed	Initials

*** "Temporarily Ceased" means inactive for less than 21 consecutive days.**

APPENDIX J

DELEGATION OF SIGNATORIES

Executive Director
Texas Commission on Environmental Quality
Storm Water and Pretreatment Team
P.O. Box 13087, MC-148
Austin, TX 78711-3087

Subject: Delegation of Signatories to Reports

Facility/Company/Site Name: _____
TPDES Permit Number: _____

Dear Executive Director:

This letter serves to designate the following people or positions as authorized personnel for signing reports, storm water pollution prevention plans, certifications or other information requested by the Executive Director or required by the general permit, as set forth by 30 TAC §305.128 (see page 2).

Name or Position	
Name or Position	
Name or Position	
Name or Position	

I understand that this authorization does not extend to the signing of a Notice of Intent for obtaining coverage under a storm water general permit.

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in 30 TAC §305.44 (see page 2).

Sincerely,

_____ _____ _____
Name Title Date

RELEVANT PROVISIONS

305.128(a) All reports requested by permits and other information requested by the executive director shall be signed by a person described in §305.44(a) of this title (relating to Signatories to Applications) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) the authorization is made in writing by a person described in §305.44(a) of this title (relating to Signatories to Applications);

(2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity or for environmental matters for the applicant, such as the position of plant manager, operator of a well or well field, environmental manager, or a position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(3) the written authorization is submitted to the executive director.

(b) If an authorization under this section is no longer accurate because of a change in individuals or position, a new authorization satisfying the requirements of this section must be submitted to the executive director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(c) Any person signing a report required by a permit shall make the certification set forth in §305.44(b) of this title (relating to Signatories to Applications).

305.44(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

(b) A person signing an application shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

APPENDIX K

MATERIAL MANAGEMENT PRACTICES

MATERIAL MANAGEMENT PRACTICES

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

1. Good Housekeeping: The following good housekeeping practices will be followed onsite during the construction project:
   - An effort will be made to store only enough product required to do the job.
   - All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
   - Products will be kept in their original containers with the original manufacturer's label.
   - Substances will not be mixed with one another unless recommended by the manufacturer.
   - Whenever possible, all of a product will be used up before disposing of the container.
   - Manufacturers' recommendations for proper use and disposal will be followed.
   - Designated areas for equipment maintenance and repair (control of oil, grease and fuel spills).
   - Waste receptacles with regular collection for litter and construction debris.
   - Equipment washdown area on-site with appropriate control of wash waters (including concrete truck wash down).
   - Protected storage areas for chemicals, paints, solvents, fertilizers and other potentially toxic materials.
   - Adequately maintained sanitary facilities.
   - Proper control of raw materials stored on-site (for example, sand, aggregate and cement used in the manufacture of concrete or stockpiles of topsoil).
   - Street sweeping or cleaning.
   - Removal of inlet protection barriers during major rainfall events if flooding occurs and verification that reinforced filter fabric fences are in proper condition prior to all rainfall events.
   - The site superintendent will ensure proper use and disposal of materials onsite.
2. Hazardous Products: The following practices are used to reduce the risks associated with hazardous materials.
   - Products will be kept in original containers unless they are not re-sealable.
   - Paints, solvents, fertilizer, fuel (small containers), and other stored chemical substances will be kept within an enclosure to protect the containers and the floor of the enclosure, from wind, precipitation, and storm water runoff.
   - Fuel storage and filling areas will be bermed off to provide collection of any spills and prevent exposure to storm water runoff.
   - Original labels and Material Safety Data Sheets (MSDS) will be retained on-site and available for review by workers.
   - If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

PRODUCT SPECIFIC PRACTICES

The following product specific practices will be followed onsite:

1. Petroleum Products: All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.
2. Fertilizers: Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Storage will be in a covered shed.
3. Paints: All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturers' instructions or State and local regulations.
4. Concrete Trucks: Discharges of concrete truck wash out at construction sites may be authorized if conducted in accordance with the requirements of Part V of the general permit.

SPILL CONTROL PRACTICES

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be maintained on-site in the material data sheets (MSDS) and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Contact the MS4 Operator, TCEQ (800-832-8224), and the National Response Center (800-424-8802) to inform of any spill of toxic or hazardous material regardless of the size.

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

APPENDIX L

NON-STORM WATER DISCHARGE INVENTORY

NON-STORM WATER DISCHARGE INVENTORY

Mark the materials or substances listed below expected to be present onsite during construction:

□ Concrete	□ Detergents	□ Paints (enamel/latex)
□ Metal Studs	□ Fuels	□ Lubricants
□ Fertilizers	□ Petroleum Based Products	□ Cleaning Solvents
□ Masonry Block	□ Electrical Equipment and Materials	□ Asphalt and Asphalt Related Products
□ Tar	□ Roof Shingles	□ Wood
□ Steel Products	□ _____	□ _____
□ _____	□ _____	□ _____

AUTHORIZED NON STORMWATER DISCHARGES ANTICIPATED DURING THE PROJECT

Mark the following non-storm water discharges expected to occur from the site during the construction period (refer to general permit in Appendix G for additional information):

- □ discharges from firefighting activities,
- □ uncontaminated fire hydrant flushings, which include flushings from systems that utilize potable water, surface water, or groundwater that does not contain additional pollutants,
- □ water from the routine external washing of vehicles, the external portion of buildings or structures, and pavement, where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred and where the purpose is to remove mud, dirt, or dust,
- □ uncontaminated water used to control dust,
- □ potable water sources including waterline flushings,
- □ uncontaminated air conditioning condensate,
- □ uncontaminated ground water or spring water, including foundation or footing drains where flows are not contaminated with industrial materials such as solvents,
- □ lawn watering and similar irrigation drainage,
- □ runoff from concrete batch plants (refer to Part IV of general permit),
- □ concrete truck wash out (refer to Part V of general permit).

APPENDIX M

REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES

Each substance in Table 117.3 that is listed in Table 302.4, 40 CFR part 302, is assigned the reportable quantity listed in Table 302.4 for that substance.

TABLE 117.3 -- REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES DESIGNATED PURSUANT TO SECTION 311 OF THE CLEAN WATER ACT

Note: The first number under the column headed "RQ" is the reportable quantity in pounds. The number in parentheses is the metric equivalent in kilograms. For convenience, the table contains a column headed "Category" which lists the code letters "X", "A", "B", "C", and "D" associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively.

Table 117.3_Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	D	5,000 (2,270)
Acetic anhydride	D	5,000 (2,270)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium bisulfite	D	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	A	10 (4.54)
Ammonium citrate dibasic	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	B	100 (45.4)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	B	100 (45.4)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Amyl acetate	D	5,000 (2,270)

Aniline	D	5,000 (2,270)
Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	B	100 (45.4)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony trioxide	C	1,000 (454)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)
Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	D	5,000 (2,270)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
Butyl acetate	D	5,000 (2,270)
Butylamine	C	1,000 (454)
n-Butyl phthalate	A	10 (4.54)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorosulfonic acid	C	1,000 (454)
Chlorpyrifos	X	1 (0.454)
Chromic acetate	C	1,000 (454)
Chromic acid	A	10 (4.54)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)

Crotonaldehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropane	C	1,000 (454)
Dichloropropene	B	100 (45.4)
Dichloropropene-Dichloropropane (mixture).	B	100 (45.4)
2,2-Dichloropropionic acid	D	5,000 (2,270)
Dichlorvos	A	10 (4.54)
Dicofol	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine	B	100 (45.4)
Dimethylamine	C	1,000 (454)
Dinitrobenzene (mixed)	B	100 (45.4)
Dinitrophenol	A	10 (45.4)
Dinitrotoluene	A	10 (4.54)
Diquat	C	1,000 (454)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Dodecylbenzenesulfonic acid	C	1,000 (454)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	B	100 (45.4)
Ethion	A	10 (4.54)
Ethylbenzene	C	1,000 (454)
Ethylenediamine	D	5,000 (2,270)
Ethylenediamine-tetraacetic acid (EDTA).	D	5,000 (2,270)
Ethylene dibromide	X	1 (0.454)
Ethylene dichloride	B	100 (45.4)
Ferric ammonium citrate	C	1,000 (454)
Ferric ammonium oxalate	C	1,000 (454)
Ferric chloride	C	1,000 (454)
Ferric fluoride	B	100 (45.4)
Ferric nitrate	C	1,000 (454)
Ferric sulfate	C	1,000 (454)
Ferrous ammonium sulfate	C	1,000 (454)
Ferrous chloride	B	100 (45.4)
Ferrous sulfate	C	1,000 (454)

Formaldehyde	B	100 (45.4)
Formic acid	D	5,000 (2,270)
Fumaric acid	D	5,000 (2,270)
Furfural	D	5,000 (2,270)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	A	10 (4.54)
Hydrochloric acid	D	5,000 (2,270)
Hydrofluoric acid	B	100 (45.4)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	B	100 (45.4)
Isopropanolamine dodecylbenzenesulfonate.	C	1,000 (454)
Kepone	X	1 (0.454)
Lead acetate	A	10 (4.54)
Lead arsenate	X	1 (0.454)
Lead chloride	A	10 (4.54)
Lead fluoborate	A	10 (4.54)
Lead fluoride	A	10 (4.54)
Lead iodide	A	10 (4.54)
Lead nitrate	A	10 (4.54)
Lead stearate	A	10 (4.54)
Lead sulfate	A	10 (4.54)
Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	C	1,000 (454)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Mexacarbate	C	1,000 (454)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)

Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)
Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	A	10 (4.54)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	C	1,000 (454)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	C	1,000 (454)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1,000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Quinoline	D	5,000 (2,270)
Resorcinol	D	5,000 (2,270)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)
Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)
Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	C	1,000 (454)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	C	1,000 (454)
2,4,5-T amines	D	5,000 (2,270)

2,4,5-T esters	C	1,000 (454)
2,4,5-T salts	C	1,000 (454)
TDE	X	1 (0.454)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Triethanolamine dodecylbenzenesulfonate.	C	1,000 (454)
Triethylamine	D	5,000 (2,270)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	D	5,000 (2,270)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	C	1,000 (454)
Zinc borate	C	1,000 (454)
Zinc bromide	C	1,000 (454)
Zinc carbonate	C	1,000 (454)
Zinc chloride	C	1,000 (454)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	C	1,000 (454)
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	B	100 (45.4)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	C	1,000 (454)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

– [50 FR 13513, Apr. 4, 1985, as amended at 51 FR 34547, Sept. 29, 1986; 54 FR 33482, Aug. 14, 1989; 58 FR 35327, June 30, 1993; 60 FR 30937, June 12, 1995]

APPENDIX N

SEDIMENTATION BASIN INFORMATION AND CALCULATIONS

Sites With Drainage Areas of Ten or More Acres

A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time.

A sedimentation basin may be temporary or permanent, and must provide sufficient storage to contain a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained. When calculating the volume of runoff from a 2-year, 24-hour storm event, it is not required to include the flows from offsite areas and flow from onsite areas that are either undisturbed or have already undergone permanent stabilization, if these flows are diverted around both the disturbed areas of the site and the sediment basin. Capacity calculations shall be included in Appendix N of this SWP3.

Where rainfall data is not available or a calculation cannot be performed, the sedimentation basin must provide at least 3,600 cubic feet of storage per acre drained until final stabilization of the site.

If a sedimentation basin is not feasible, then the permittee shall provide equivalent control measures until final stabilization of the site. In determining whether installing a sediment basin is feasible, the permittee may consider factors such as site soils, slope, available area, public safety, precipitation patterns, site geometry, site vegetation, infiltration capacity, geotechnical factors, depth to groundwater, and other similar considerations. The permittee shall document the reason that the sediment basins are not feasible, and shall utilize equivalent control measures, which may include a series of smaller sediment basins.

Sites With Drainage Areas Less than Ten Acres

Sediment traps and sediment basins may be used to control solids in storm water runoff for drainage locations serving less than ten (10) acres.

Alternatively, a sediment basin that provides storage for a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained may be utilized. Where rainfall data is not available or a calculation cannot be performed, a temporary or permanent sediment basin providing 3,600 cubic feet of storage per acre drained may be provided. If a calculation is performed, then the calculation shall be included in Appendix N of this SWP3.

APPENDIX O

LOCAL REQUIREMENTS

(NOT APPLICABLE)

APPENDIX P

CONCRETE BATCH PLANT RECORDS

(NOT APPLICABLE)

TCEQ Office Use Only
Permit No:
CN:
RN:

Notice of Intent (NOI) for an Authorization for Stormwater Discharges Associated with Construction Activity under TPDES General Permit TXR150000

IMPORTANT INFORMATION

Please read and use the General Information and Instructions prior to filling out each question in the NOI form.

Use the NOI Checklist to ensure all required information is completed correctly. **Incomplete applications delay approval or result in automatic denial.**

Once processed your permit authorization can be viewed by entering the following link into your internet browser: http://www2.tceq.texas.gov/wq_dpa/index.cfm or you can contact TCEQ Stormwater Processing Center at 512-239-3700.

ePERMITS

Effective September 1, 2018, this paper form must be submitted to TCEQ with a completed electronic reporting waiver form (TCEQ-20754).

To submit an NOI electronically, enter the following web address into your internet browser and follow the instructions: https://www3.tceq.texas.gov/steers/index.cfm

APPLICATION FEE AND PAYMENT

The application fee for submitting a paper NOI is $325. The application fee for electronic submittal of a NOI through the TCEQ ePermits system (STEERS) is $225.

Payment of the application fee can be submitted by mail or through the TCEQ ePay system. The payment and the NOI must be mailed to separate addresses. To access the TCEQ ePay system enter the following web address into your internet browser: http://www.tceq.texas.gov/epay.

Provide your payment information for verification of payment:

- If payment was mailed to TCEQ, provide the following:
  - Check/Money Order Number:
  - Name printed on Check:
- If payment was made via ePay, provide the following:
  - Voucher Number:
  - A copy of the payment voucher is attached to this paper NOI form.

RENEWAL (This portion of the NOI is not applicable after June 3, 2018)

Is this NOI for a renewal of an existing authorization? ☐ Yes ☑ No

If Yes, provide the authorization number here: TXR15

NOTE: If an authorization number is not provided, a new number will be assigned.

SECTION 1. OPERATOR (APPLICANT)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? CN

(Refer to Section 1.a) of the Instructions)

b) What is the Legal Name of the entity (applicant) applying for this permit? (The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

Huntsville Center LLC.

c) What is the contact information for the Operator (Responsible Authority)?

Prefix (Mr. Ms. Miss): Mr.

First and Last Name: David Foor Suffix:

Title: Vice President Credentials:

Phone Number: (713) 293-6901 Fax Number:

E-mail: DavidF@lovettcommercial.com

Mailing Address: 2410 Polk St. #200

City, State, and Zip Code: Houston, Texas 77003

Mailing Information if outside USA:

Territory:

Country Code: Postal Code:

d) Indicate the type of customer:

☐ Individual	☐ Federal Government
☐ Limited Partnership	☐ County Government
☐ General Partnership	☐ State Government
☐ Trust	☐ City Government
☐ Sole Proprietorship (D.B.A.)	☐ Other Government
☐ Corporation	☑ Other: LTD
☐ Estate	

e) Is the applicant an independent operator? ☑ Yes ☐ No

(If a governmental entity, a subsidiary, or part of a larger corporation, check No.)

f) Number of Employees. Select the range applicable to your company.

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

g) Customer Business Tax and Filing Numbers: (**Required** for Corporations and Limited Partnerships. **Not Required** for Individuals, Government, or Sole Proprietors.)

State Franchise Tax ID Number:

Federal Tax ID: 76-0620661

Texas Secretary of State Charter (filing) Number:

DUNS Number (if known):

SECTION 2. APPLICATION CONTACT

Is the application contact the same as the applicant identified above?

- ☑ Yes, go to Section 3
- ☐ No, complete this section

Prefix (Mr. Ms. Miss):

First and Last Name: Suffix:

Title: Credential:

Organization Name:

Phone Number: Fax Number:

E-mail:

Mailing Address:

Internal Routing (Mail Code, Etc.):

City, State, and Zip Code:

Mailing information if outside USA:

Territory:

Country Code: Postal Code:

SECTION 3. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

a) If this is an existing permitted site, what is the Regulated Entity Number (RN) issued to this site? RN 108924812

(Refer to Section 3.a) of the Instructions)

b) Name of project or site (the name known by the community where it's located):
Pearl Townhomes

c) In your own words, briefly describe the type of construction occurring at the regulated site (residential, industrial, commercial, or other): Residential (Townhomes)

d) County or Counties (if located in more than one): Travis

e) Latitude: 30.314033 Longitude: -97.944062

f) Site Address/Location

If the site has a physical address such as 12100 Park 35 Circle, Austin, TX 78753, complete *Section A.*

If the site does not have a physical address, provide a location description in *Section B.* Example: located on the north side of FM 123, 2 miles west of the intersection of FM 123 and Highway 1.

Section A:

Street Number and Name: 13200 & 13216 Bee Cave Parkway

City, State, and Zip Code: Bee Cave, TX 78738

Section B:

Location Description:

City (or city nearest to) where the site is located:

Zip Code where the site is located:

SECTION 4. GENERAL CHARACTERISTICS

a) Is the project or site located on Indian Country Lands?

☐ Yes, do not submit this form. You must obtain authorization through EPA Region 6.

☑ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes. Note: The construction stormwater runoff may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA Region 6.

☑ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site? 1522

d) What is the Secondary SIC Code(s), if applicable?

e) What is the total number of acres to be disturbed? 6.08

f) Is the project part of a larger common plan of development or sale?

☐ Yes

☑ No. The total number of acres disturbed, provided in e) above, must be 5 or more. If the total number of acres disturbed is less than 5, do not submit this form. See the requirements in the general permit for small construction sites.

g) What is the estimated start date of the project? 1-1-2024

h) What is the estimated end date of the project? 1-1-2026

i) Will concrete truck washout be performed at the site? ☑ Yes ☐ No

j) What is the name of the first water body(ies) to receive the stormwater runoff or potential runoff from the site? Little Barton Creek

k) What is the segment number(s) of the classified water body(ies) that the discharge will eventually reach? 143013

l) Is the discharge into a Municipal Separate Storm Sewer System (MS4)?

☑ Yes ☐ No

If Yes, provide the name of the MS4 operator: City of Bee Cave

Note: The general permit requires you to send a copy of this NOI form to the MS4 operator.

m) Is the discharge or potential discharge from the site within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, as defined in 30 TAC Chapter 213?

☑ Yes, complete the certification below.

☐ No, go to Section 5

I certify that the copy of the TCEQ-approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) that is included or referenced in the Stormwater Pollution Prevention Plan will be implemented. ☑ Yes

SECTION 5. NOI CERTIFICATION

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☑ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☑ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☑ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the Construction General Permit (TXR150000). ☑ Yes

Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3, provided all obligations are confirmed by at least one operator.

SECTION 6. APPLICANT CERTIFICATION SIGNATURE

Operator Signatory Name: David Foor

Operator Signatory Title: Vice President

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature (use blue ink): David Foor Date: 7-11-2023

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

I David Foor,
Print Name

Vice President,
Title - Owner/President/Other

of Huntsville Center LTD
Corporation/Partnership/Entity Name

have authorized Lance Oriti, P.E.
Print Name of Agent/Engineer

of Kimley-Horn
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:

David Foor
Applicant's Signature

7-11-2023
Date

THE STATE OF Texas §

County of Harris §

BEFORE ME, the undersigned authority, on this day personally appeared David Foor 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 11th day of July, 2023.

PHALYCA KONG
My Notary ID # 129877481
Expires July 8, 2026

P Kong
NOTARY PUBLIC

Phalyca Kong
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: July 8, 2026

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Pearl Townhomes
Regulated Entity Location: 13200 & 13216 Bee Cave Pkwy
Name of Customer: Huntsville Center LTD.
Contact Person: David Foor Phone: 713-293-6901
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN 108924812
Austin Regional Office (3373)

☐ Hays ☐ Williamson
☒ Travis

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

☒ Austin Regional Office ☐ San Antonio Regional Office

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

☐ 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	6.08 Acres	$ 5,000
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	$

Type of Plan	Size	Fee Due
Extension of Time	Each	$

Signature: David Zook Date: 7-11-2023

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 108924812

SECTION II: Customer Information

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

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* *If new Customer, enter previous Customer below:*

Huntsville Center LTD

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0012554610	32036195959	76-0620661	

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:

2410 Polk St #200

City	State	ZIP	ZIP + 4
Houston	TX	77003	

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 653-0877		( ) -

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.)*

Pearl Townhomes

23. Street Address of the Regulated Entity: *(No PO Boxes)*	13200 & 13216 Bee Cave Pkwy							
	City	Bee Cave	State	TX	ZIP	78738	ZIP + 4	
24. County								

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:								

26. Nearest City	State	Nearest ZIP Code
Bee Cave	TX	78738

27. Latitude (N) In Decimal:	30.314033		28. Longitude (W) In Decimal:	-97.944062	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	18	50.5182	-97	56	38.6232

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)
1522		236116	

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

Real Estate Developer

34. Mailing Address:	2410 Polk St #200							
	City	Houston	State	TX	ZIP	77003	ZIP + 4	

35. E-Mail Address:	DavidF@lovettcommercial.com

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(512) 653-0877	-	( ) -

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:	Lance Oriti, P.E.	41. Title:	Project Manager

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(512) 910-8305	-	( ) -	lance.oriti@kimley-horn.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Huntsville Center LTD	Job Title:	Vice President	
Name *(In Print)*:	David Foor		Phone:	(713) 293- 6901
Signature:	David Foor		Date:	7-11-2023