WATER POLLUTION ABATEMENT PLAN

THE RESERVE AT COLE SPRINGS
COLE SPRINGS ROAD
BUDA, HAYS COUNTY, TEXAS

Prepared For:

BUDA COLE SPRINGS JV, LP
1308 Tinnin Ford Road, Unit 2
Austin, TX 78741
512-636-4390

Prepared By:

KIMLEY-HORN AND ASSOCIATES, INC.
501 S. Austin Ave, Suite 1310
Georgetown, Texas 78626
(512) 520-0768



Sarah Starkey

11/24/2025

TBPE Firm No. 928

Firm No. 928
KHA Project No. 069422600

November 24, 2025

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SECTION 1: EDWARDS AQUIFER APPLICATION COVER PAGE

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

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

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

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

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

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

Technical Review

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

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: The Reserve at Cole Springs						**2. Regulated Entity No.:** N/A			
3. Customer Name: Buda Cole Springs JV, LP						**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 Clarificatio	
7. Land Use: **(Please circle/check one)**	**Residential**		Non-residential			**8. Site (acres):**		98.96 ac	
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			Batch Detention WQP			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Hays		**14. Watershed:**			Onion Creek			

Application Distribution

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

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

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	_X_	___	___
Region (1 req.)	_X_	___	___
County(ies)	_X_	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority _X_Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin _X_Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	___	___	___	___
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. Sarah Starkey, P.E.
Print Name of Customer/Authorized Agent
Sarah Starkey 11/24/2025
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):	

A METES AND BOUNDS
DESCRIPTION OF A
98.961 ACRE TRACT OF LAND

BEING a 98.961 acre (4,310,749 square feet) tract of land situated in the Phillip J. Allen Survey No. 5, Abstract No. 1, Hays County, Texas; and containing all of that certain Tract 1 (23.974 acres) and that certain Tract 2 (2.854 acres) described in instrument to Buda Cole Springs JV, LP, recorded in Document No. 23028033 of the Official Public Records of Hays County, containing all of that certain 72.133 acre tract described in instrument to Buda Cole Springs JV, LP. recorded in Document No. 23028022 of the Official Public Records of Hay County; and being more particularly described as follows:

BEGINNING, at a 1/2-inch iron rod found at the intersection of the northerly right-of-way line of County Road No. 148 (Cole Springs Road - variable width public right-of-way) and the westerly line of Old Lane, a non-exclusive access easement and right-of-way recorded in Document No. 17002666 of the Official Public Records of Hays County, marking the southeast corner of said Tract 1 - 23.974 acre tract of the herein described tract, and marking the southwest corner of that certain 117.943 acre tract described in instrument to M/I HOMES OF AUSTIN, LLC and MERITAGE HOMES OF TEXAS, LLC, recorded in Document No. 20023599 of the Official Public Records of Hays County;;

THENCE, along the northerly right-of-way line of said County Road 148 and the southerly line of said 26.828 acre tract the following three (3) courses and distances:

1. South 89°06'19" West, 501.37 feet to a 6” cedar fence post found for corner, marking the southeast corner of said Tract 2 - 2.854 acre tract;
2. South 89°07'12" West, 235.85 feet to a 1/2-inch iron rod with a plastic cap stamped “KHA” set for corner;
3. South 88°46'23" West, 212.12 feet to a 6” cedar fence post found for corner on the easterly boundary line of that said 72.133 acre tract, and marking the southwest corner of said Tract 2 - 2.854 acre tract ;

THENCE, crossing said Cole Springs Road, and along the northerly and easterly lines of that certain 17.79 acre tract described in instrument to Laker Family Trust c/o Stephen G. Lacker, Trustee (originally described in Volume, Page 391-394 -1959) in Document No. 13037763 and in Volume 4796, Page 225 of the Official Public Records of Hay County, same being the apparent southerly and westerly lines of said Cole Springs Road the following eleven (11) courses and distances:

1. South 1°56'28" East, 36.31 feet crossing said Cole Springs Road;
2. South 89°21'39" West, 507.44 feet to a 1/2-iron pipe found for corner;
3. North 45°32'05" West, 206.86 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
4. North 84°55'08" West, 609.67 feet to a 3-inch metal fence post found for corner;
5. North 1°38'51" West, 12.00 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
6. North 21°39'22" West, 97.94 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
7. North 3°14'35" West, 274.38 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
8. North 3°23'35" West, 421.57 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
9. North 51°19'35" West, 79.88 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
10. North 63°58'38" West, 56.87 feet to a 1/2-iron rod with plastic cap stamped “KHA” set for corner;
11. South 83°52'49" West, 449.85 feet to a 1/2-iron rod with plastic cap stamped “KHA” set marking the northwest corner of the said 17.79 acre tract, and marking the intersection of the apparent southerly line of said Cole Springs Road with the easterly line of Little Pool Road (called Road Easement No. 1 in Volume 371, Page 195);

THENCE, along the westerly boundary of said 72.133 acre tract, and crossing said Cole Springs Road the following four (4) courses and distances:

1. North 0°37'48" West, 14.42 feet crossing said Cole Springs Road to a 2-inch iron pipe;
2. North 1°31'23" West, 240.76 feet to a 1/2-inch iron rod with plastic cap stamped “KHA” set for corner;
3. North 8°18'55" West, 15.71 feet to a 2-inch pipe found marking the southeast corner of that certain 1.19 acre tract described in instrument to Alejandro Martinez in Document No. 17040875 of the Official Public Records of Hays County;
4. North 2°06'38" West, 251.91 feet to a 1/2-iron pipe found marking the northeast corner of the said 1.19 acre tract and the southeast corner of Lot 2, Block 1 of Stanfield Business Park, plat of which is records in Volume 16, Page 19 of the Plat Records of Hays County;

THENCE, North 01°54'06" West, 577.05 feet to a 1/2-inch iron rod found along the easterly line of said Lot 2, Block 1 marking the southwest corner of that certain Tract No. 6 described to Ruth Fears in Volume 1170, Page 558, and marking the northwest corner of said 72.133 acre tract;

EXHIBIT OF A
98.961 ACRE TRACT

P.J. ALLEN SURVEY NO. 5, ABSTRACT NO. 1
CITY OF BUDA, HAYS COUNTY, TEXAS

JOHN G. MOSIER
REGISTERED PROFESSIONAL
LAND SURVEYOR NO. 6330
10101 REUNION PLACE, SUITE 400
SAN ANTONIO, TEXAS 78216
PH. 210-541-9166
greg.mosier@kimley-horn.com

Kimley»Horn
10101 Reunion Place, Suite 400
San Antonio, Texas 78216 FIRM # 10193973
Tel. No. (210) 541-9166
www.kimley-horn.com

Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
N/A	SAL	JGM	1/15/2024	067783115	1 OF 3

A METES AND BOUNDS
DESCRIPTION OF A
98.961 ACRE TRACT OF LAND
CONTINUED

THENCE, along the northerly boundary of the said 72.133 acre tract the following four (4) courses and distances:

1. North 87°42'17" East, 196.75 feet to a 1/2-inch iron rod found marking the southeast corner of the said Tract No. 6;
2. North 87°39'07" East, 238.23 feet to a 1/2-inch iron rod found marking the southeast corner of that certain Tract No. 7 described in instrument to Bunton Family Trust in Document No. 11004052, and the southwest corner of that certain 6.52 acre tract described in instrument to Alex Sedillo in Document No. 80039605, both in the Official Public Records of Hays County;
3. North 88°04'23" East, 430.03 feet to a 1/2-inch iron rod found marking the southeast corner of the said 6.52 acre tract and the southwest corner of that certain 11.5 acre tract described in instrument To Sylvester Pleasant in Volume 180, Page 603 of the Deed Records of Hays County;
4. North 89°15'06" East, 676.21 feet to a 1/2-inch iron rod found on the southerly boundary of that certain 4.25 acre tract described in Quitclaim Deed to Robert C. Smith et al in Document No. 9926158 of the Official Public Records of Hays County, and marking the northeast corner of the said 72.133 acre tract and the herein described tract;

THENCE, along the easterly boundary of the said 72.133 acre tract the following three (3) courses and distances:

1. South 11°22'45" West, 326.71 feet to a 60D nail found in a 46-inch live oak tree for corner;
2. South 61°13'42" East, 326.85 feet to a 60D nail found in a 40-inch live oak tree marking the east corner of the said 72.133 acre tract;
3. South 76°21'44" East, 133.54 feet to a 1/2-inch iron rod with plastic cap stamped “KHA” set marking the northwest corner of aforesaid Tract 1 - 23.974 acre tract;

THENCE, along the northwest northerly boundary corner of said Tract 1 - 23.974 acre tract the following two (2) courses and distances:

1. North 65°24'03" East, 17.93 feet to a 1/2-inch iron rod pipe found for corner;
2. South 83°29'46" East, 86.28 feet to a 1/2-inch iron rod pipe for corner, marking the southwest corner of that certain a called 5-3/8 acre tract of land described in instrument to Timothy Hunt and Yvette Hunt recorded in Document No. 17002880 of the Official Public Records of Hays County;

THENCE, along the southerly boundary line of said 5-3/8 acre tract the following three (3) courses and distances:

1. South 85°06'44" East, 103.96 feet to a 1/2-inch iron rod found for corner;
2. South 84°55'53" East, 236.67 feet to a 1/2-inch iron rod found for corner;
3. South 88°14'48" East, 89.36 feet to a 1/2-inch iron rod found on the westerly line of aforesaid Old Lane and aforesaid 117.943 acre tract for corner, marking the southeast corner of said 5-3/8 acre tract and northeast corner of said Tract 1 - 23.974 acre tract;

THENCE, along the easterly line of said Tract 1 - 23.974 acre tract, and the westerly line of said Old Lane and said 117.943 acre tract, a non-exclusive access easement and right-of-way, the following the following two (2) courses and distances:

1. South 15°43'45" East, 344.16 feet to a 1/2-inch iron rod found for a pointcorner;
2. South 16°41'21" East, 1284.62 feet to the **POINT OF BEGINNING**, and containing 98.961 acres of land in Hays County, Texas. The basis of bearing for this description is the Texas State Plane Coordinate System Grid, South Central Zone (FIPS 4204) (NAD'83). All distances are on the Grid and shown in U.S. Survey Feet. This description was generated on 9/19/2023 at 2:06 PM, based on geometry in the drawing file K:\SNA_Survey\Meritage Homes Buda Cole Springs\067783115-Meritage BUDA\Dwg\Exhbits\98.961 AC Boundary.dwg, in the office of Kimley-Horn and Associates in San Antonio, Texas.

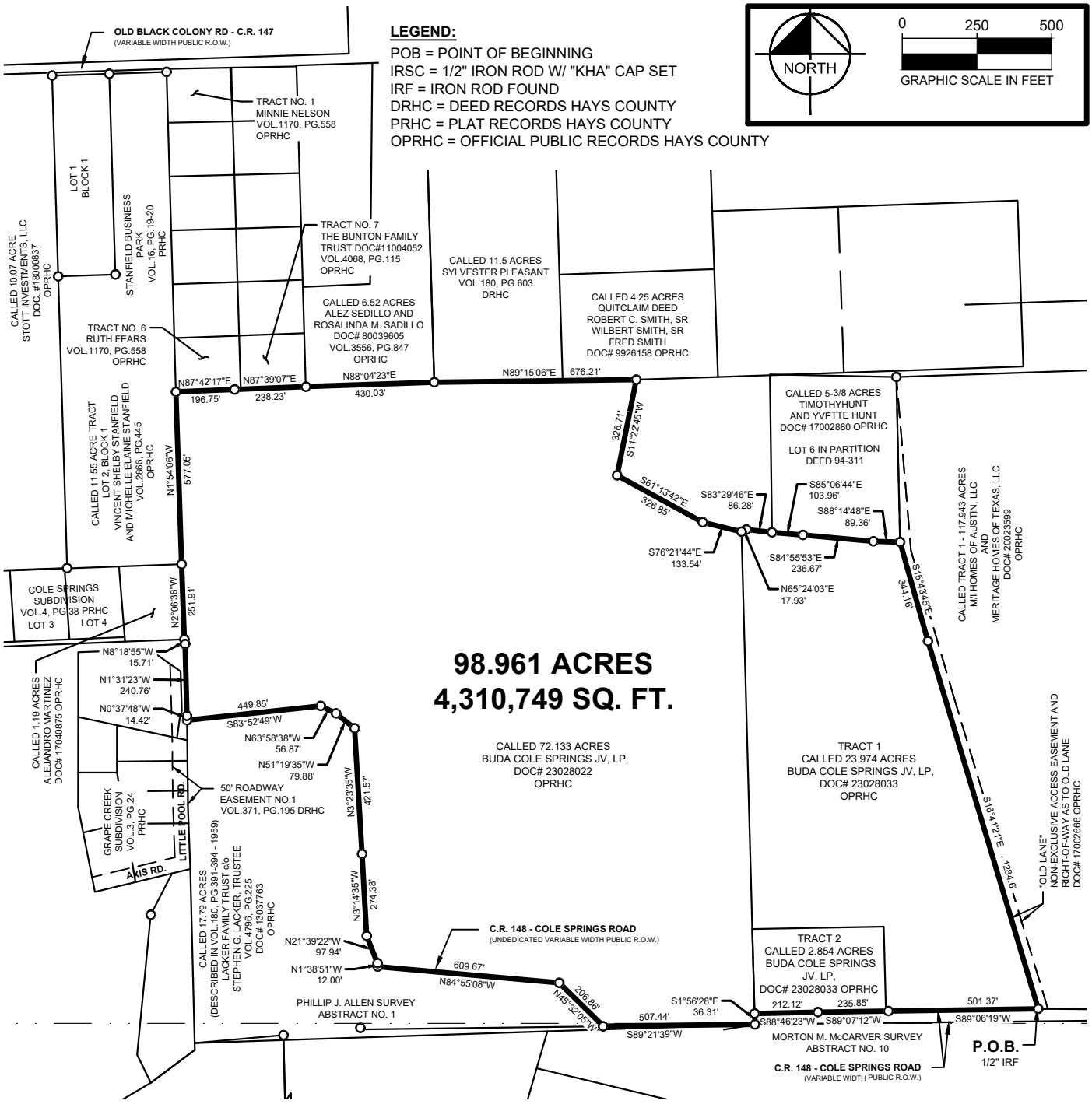
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Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
N/A	SAL	JGM	1/15/2024	067783115	2 OF 3



GEODETIC NOTE: THE BEARINGS, DISTANCES, AREAS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD'83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS). THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.

THIS IS A LEGAL DESCRIPTION BASED ON A FIELD SURVEY BY KIMLEY-HORN PERSONNEL. NO IMPROVEMENTS ARE SHOWN. ALL EXISTING EASEMENTS MAY NOT BE SHOWN. THIS IS NOT A LAND TITLE SURVEY. SEE THE SEPARATE LAND TITLE SURVEY UNDER JOB NUMBER 067783140 FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
REGISTERED
JOHN G. MOSIER
6330
PROFESSIONAL
LAND SURVEYOR

09/20/2023

EXHIBIT OF A
98.961 ACRE TRACT

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Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
1" = 500'	SAL	JGM	1/15/2024	067783115	3 OF 3

SECTION 2:
GENERAL INFORMATION

General Information Form

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Sarah Starkey, P.E.

Date: November 24, 2025

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: The Reserve at Cole Springs
2. County: Hays
3. Stream Basin: Onion Creek
4. Groundwater Conservation District (If applicable): Barton Springs/Edwards Aquifer CD
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☒ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

Contact Person: Rob Archer
Entity: Buda Cole Springs JV, LP
Mailing Address: 1308 Tinnin Ford Road, Unit 2
City, State: Austin, TX Zip: 78741
Telephone: 512-636-4390 Fax: N/A
Email Address: Elliot.Jones@outlook.com

8. Agent/Representative (If any):

Contact Person: Sarah Starkey, P.E.
Entity: Kimley-Horn
Mailing Address: 501 S. Austin Ave, Suite 1310
City, State: Georgetown, Texas Zip: 78626
Telephone: 512-520-0768 Fax: N/A
Email Address: sarah.starkey@kimley-horn.com

9. Project Location:

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

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation. North of Cole Springs Road, East of the intersection of Little Pool Road and Cole Springs Road

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

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

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

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

☒ Survey staking will be completed by this date: TBD

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

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

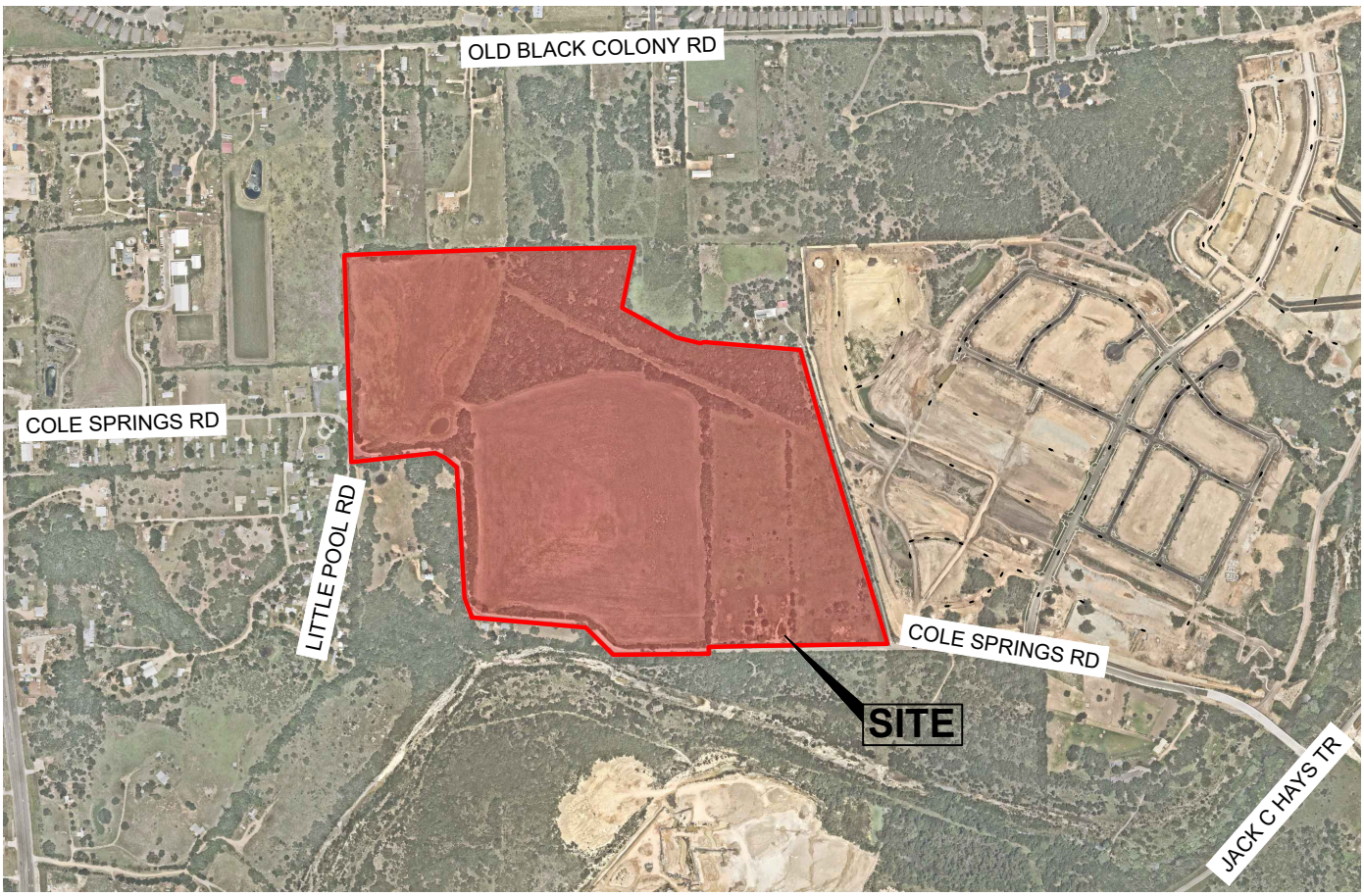
- ☐ TCEQ cashier
- ☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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

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

Kimley»Horn

Attachment A - Road Map





SCALE: 1"=1000'

DIRECTIONS FROM TCEQ HEADQUARTERS TO PROJECT SITE

1. HEAD SOUTH ON PARK 35 CIRCLE, TURNING RIGHT ONTO S IH-35 FRONTAGE ROAD
2. MERGE ONTO IH-35 SOUTH AND CONTINUE FOR APPROX. 6 MILES.
3. TAKE EXIT 221 TOWARD MAIN STREET.
4. TURN RIGHT AT THE FIRST STOP LIGHT ONTO MAIN STREET AND CONTINUE FOR APPROX. 1.5 MILES.
5. TURN RIGHT ONTO LIVE OAK ST/FM 967 AND CONTINUE FOR 0.5 MILE.
6. TURN LEFT ONTO COLE SPRINGS ROAD AND CONTINUE FOR 1.5 MILES.
7. THE SITE LOCATION IS ON THE RIGHT.

SHEET		
EX A	Scale:	1"=1000'
	Designed by:	AMW
	Drawn by:	AMW
	Checked by:	AEG
	Date:	SEPTEMBER, 2025
	Project No.	069422600

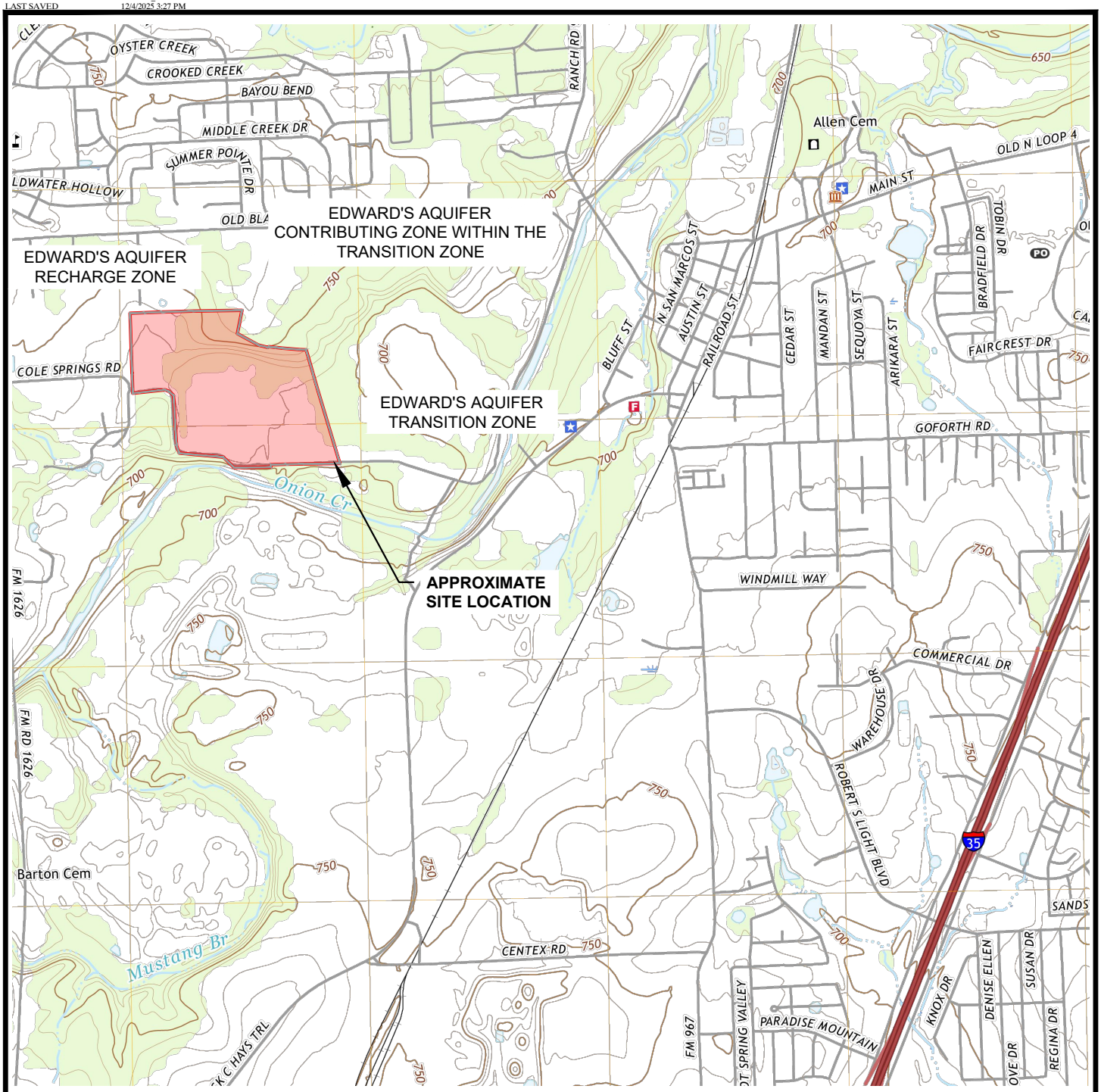
THE RESERVE AT
COLE SPRINGS
BUDA, TEXAS

Kimley»Horn
501 S. AUSTIN AVENUE, SUITE 1310 GEORGETOWN, TX 78626
PHONE: 512-520-0766
WWW.KIMLEY-HORN.COM
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TBPE Firm No. 928

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Attachment B - USGS/Edwards Recharge Zone Map

IMAGES
XREFS XREF Quad xBorder
PLOTTED BY FLYNN, ALYSSA 12/4/2025 3:28 PM
DWG NAME K:\GEO_CIVIL\069422600 - BUDA 98\CAD\PHASE 1\EXHIBITS\PLANSHEETS\USGS QUADRANGLE MAP.DWG
LAST SAVED 12/4/2025 3:27 PM



ATTACHMENT B	Scale: 1:2000 Designed by: AMW Drawn by: AMW Checked by: AEG Date: SEPTEMBER, 2025 Project No. 069422600	USGS Quadrangle	THE RESERVE AT COLE SPRINGS BUDA, TEXAS	N W E S	Kimley»Horn

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-th-ground survey and represents only the approximate relative location of property boundaries.

Introduction

The subject site is a mostly undeveloped ± 98.96 ac lot located on Cole Springs Road and within the Full Purpose city limits of the City of Buda. The subject property, The Reserve at Cole Springs, which encompasses ±99 acres will comprise of residential single-family.

A portion of this site is located in the Federal Emergency Management Agency's 100-year floodplain according to FIRM 48209C0280G, dated January 17, 2025. The site is located within the Edwards Aquifer Contributing Zone within the Transition Zone, the Edwards Aquifer Transition Zone and the Recharge Zone according to TCEQ Edwards Aquifer Map.

Current Tract Conditions

Legal Description

The legal description is described as ± 98.961 acre tract of land situated in the Phillip J. Allen Survey No. 5, Abstract No. 1, Hays County, Texas; and containing all of that certain Tract 1 (23.974 acres) and that certain Tract 2 (2.854 acres) described in instrument to Buda Cole Springs JV, LP, recorded in Doc. No. 23028033 of the Official Public Records of Hays County, containing all of that certain 72.133 acre tract described in instrument to Buda Cole Springs JV, LP, recorded in Doc. No. 23028022 of the Official Public Records of Hays County.

Land Use

The parcel is zoned for R2 (Suburban Residential) and R3 (1 & 2 Family Residential). The site resides within the Full Purpose city limits of the City of Buda in Hays County, Texas.

Existing Drainage Conditions

Under existing conditions, the site drains from west to southeast.

Proposed Development

The proposed Reserve at Cole Springs project includes the construction of 157 lots of single-family residential development. Water and wastewater lines will be designed according to City of Buda specifications and connect to City of Buda utility services. Access to the site will be through the proposed connection and reconstruction of Cole Springs Road. The project proposes 28.15 acres (28.45%) of total impervious cover. Water will be treated according to TCEQ requirements through one batch detention basin and reirrigation from the basin.

Drainage and Water Quality Analysis

Floodplain Information

According to the FEMA Flood Insurance Rate Map Panel No. 48209C0280G for Hays County, dated January 17, 2025, a portion of the development lies within the 100-yr floodplain.

On-Site Drainage

The proposed site will convey runoff through an underground storm pipe system into one batch detention basin. Other portions of the site will remain untreated. The catch detention pond will pipe water to the irrigation sites specified within the plans. Drainage area maps and calculations are included in the construction set included in the Exhibits Section.

Off-Site Drainage

Under existing conditions, offsite water enters the site from the north, northwest and west.

In proposed conditions, the offsite drainage will bypass the site via proposed channels and culverts.

Detention and Water Quality

Water Quality Best Management Practices (BMP) for The Reserve at Cole Springs will address the water quality requirements for the ultimate area disturbed within this phase. WQP, OS-WQP A1 and OS-CSR-WQP A1 will be treated by a batch detention pond (Pond A), constructed in the Reserve at Cole Springs development. UT-1, UT-2, UT-3, UT-4, and UT-5 will be left untreated and have a total of 1.72 acres of impervious cover. The UT areas will not be treated by any proposed BMPS. These drainage areas are to meet all water quality requirements per TCEQ requirements. See Permanent Stormwater Section – Attachment C for a breakdown on TSS calculations.

The batch detention pond requirements used for the purpose of this report are assumed to be based on the requirements outlined by the City of Austin Drainage Criteria Manual and TCEQ's RG-348. To capture and dispose of runoff without release into receiving streams, one batch detention pond (Pond A) will be constructed as a part of this development phase.

Erosion and Sedimentation Controls

Temporary erosion and sedimentation controls during construction are proposed on the Erosion Control Plan and include: silt fence, inlet protection, construction staging area, concrete washout, rock berm, and a stabilized construction entrance designed to City of Austin criteria. The land disturbed during construction, including the staging and stockpile areas, will drain into the proposed on-site storm sewer system where it will be conveyed to the proposed batch detention pond located on-site. The pond will discharge via pipe to designated re-irrigation areas on site.

SECTION 3: GEOLOGIC ASSESSMENT

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GEOLOGIC ASSESSMENT FOR THE APPROXIMATELY 70-ACRE LACKER TRACT

Hays County, Texas

April 2021

Submitted to:
Meritage Homes
8920 Business Park Drive, Suite 350
Austin, Texas 78759

Prepared by:
aci consulting
1001 Mopac Circle
Austin, Texas 78746
TBPG Firm License No. 50260

aci project #: 22-15-013M

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

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

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

Signature

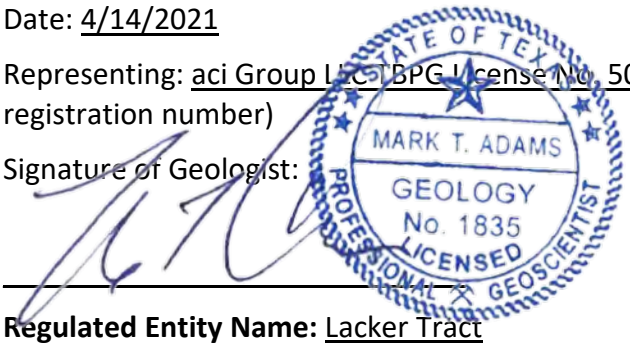
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Mark T. Adams Telephone: (512) 347-9000

Date: 4/14/2021 Fax: (512) 306-0974

Representing: aci Group LLC, TBPG License No. 50260 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Lacker Tract

Project Information

1. Date(s) Geologic Assessment was performed: February 2, 2021
2. Type of Project:

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

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

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
*See Section 4.0; Soils		
7 Soil Types		

** Soil Group Definitions (Abbreviated)*

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

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

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

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

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

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

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

   Applicant's Site Plan Scale: 1" = 200'
   Site Geologic Map Scale: 1" = 200'
   Site Soils Map Scale (if more than 1 soil type): 1" = 500'

9. Method of collecting positional data:

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

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

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

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

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

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

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

    ☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☐ The wells are not in use and will be properly abandoned.
    - ☒ The wells are in use and comply with 16 TAC Chapter 76.

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

Administrative Information

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

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Geologic and Manmade Feature Map (Figure 5)
Feature Descriptions and Recommendations

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Historic Aerial Photographs

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Geologic Assessment for the Lacker Tract located in Hays County, Texas

April 2021

1.0 INTRODUCTION

The Texas Commission on the Environmental Quality (TCEQ) regulates activities that have the potential to pollute the Edwards Aquifer through the Edwards Aquifer Protection Program. Projects meeting a certain criterion over the Edwards Aquifer Recharge Zone must submit an Edwards Aquifer Protection Plan (EAPP).

The purpose of this report is to identify all potential pathways for contaminant movement to the Edwards Aquifer and provide sufficient geologic information so that the appropriate Best Management Practices (BMPs) can be proposed in the Edwards Aquifer Protection Plan (EAPP). This report complies with the requirements of Title 30, Texas Administrative Code (TAC) Chapter 213 relating to the protection of the Edwards Aquifer Recharge Zone. Per the Rules, the Geologic Assessment must be completed by a Geologist licensed according to the Texas Geoscience Practice Act.

2.0 PROJECT INFORMATION

The Lacker Tract, hereafter referred to as the subject area or site, is located at 1585 Cole Springs Road in the City of Buda Extraterritorial Jurisdiction (ETJ) in Hays County, Texas (**Attachment A, Figure 1**). Pedestrian investigations of the 70-acre tract were performed on February 2, 2021, by Kara Posso, G.I.T., Marcos Cardenas, and Erin Wilson under the supervision of Mark Adams, P.G. with **aci consulting**.

This report is intended to satisfy the requirements for a Geologic Assessment, which shall be included as a component of a Water Pollution Abatement Plan (WPAP) and Sewage Collection System Plan (SCS). The site is approximately 70 acres in total. The proposed site use is for low-density, single-family, residential development. The scope of the report consists of a site reconnaissance, field survey, and review of existing data and reports. Features identified during the field survey were ranked utilizing the Texas Commission on Environmental Quality (TCEQ) matrix for Edwards Aquifer Recharge Zone features. The ranking of the features will determine their viability as "sensitive" features.

3.0 INVESTIGATION METHODS

The following investigation methods and activities were used to develop this report:

- Review of existing files and literature to determine the regional geology and any known caves associated with the project area;
- Review of past geological field reports, cave studies, and correspondence regarding the existing geologic features on the project area, if available;
- Site reconnaissance by a registered professional geologist to identify and examine caves, recharge features, and other significant geological structures;
- Evaluation of collected field data and a ranking of features using the TCEQ Ranking Table 0585 for the Edwards Aquifer Recharge Zone; and
- Review of historic aerial photographs to determine if there are any structural features present, and to determine any past disturbances on the subject property.

4.0 SOILS AND GEOLOGY

The following includes a site-specific description of the soils, geologic stratigraphy, geologic structure, and karstic characteristics as they relate to the Edwards aquifer. Also included in this section is a review of historic aerials for presence of geologic changes or changes to manmade features in bedrock.

Soils

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey (2021), seven soil units occur within the project alignment (**Attachment A, Figure 2**):

- AnB—Anhalt clay, 1 to 3 percent slopes

The Anhalt component makes up 92 percent of the map unit. Slopes are 1 to 3 percent. This component is on hillslopes on dissected plateaus. The parent material consists of clayey residuum weathered from limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is very high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R081CY358TX Deep Redland 29-35 Pz ecological site. Nonirrigated land capability classification is 3s. This soil

does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 2 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D. Thickness: 5 feet.

The remaining 8 percent of the map unit consists of the Tarpley (6 percent) and Krum (2 percent) components.

- DeB—Denton silty clay, 1 to 3 percent slopes

The Denton component makes up 88 percent of the map unit. Slopes are 1 to 3 percent. This component is on hillslopes on dissected plateaus. The parent material consists of silty and clayey slope alluvium over residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 22 to 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R081CY357TX Clay Loam 29-35 Pz ecological site. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D. Thickness: 6.66 feet.

The remaining 12 percent of the map unit consists of the Krum (6 percent), Doss (4 percent), and Anhalt (2 percent) components.

- ErG—Eckrant-Rock outcrop association, 8 to 30 percent slopes

The Eckrant component makes up 65 percent of the map unit. Slopes are 8 to 30 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 4 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 6 percent. This component is in the R081CY363TX Steep Rocky 29-35 Pz ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches,

typically, does not exceed 2 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D. Thickness: 6.66 feet.

The remaining 35 percent of the map unit consists of Rock outcrop (27 percent), Brckett (4 percent), Kerrville (2 percent), Tarpley (1 percent), and Krum (1 percent) components.

- GrC—Gruene clay, 1 to 5 percent slopes

The Gruene component makes up 85 percent of the map unit. Slopes are 1 to 5 percent. This component is on ridges on dissected plains. The parent material consists of clayey alluvium of Pliestocene age derived from mixed sources over gravelly alluvium of Pliestocene age derived from mixed sources. Depth to a root restrictive layer, petrocalcic, is 7 to 16 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrinkswell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R086AY002TX Southern Chalky Ridge ecological site. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D. Thickness: 6.66 feet.

The remaining map unit consists of Unnamed (15 percent) component.

- KrA—Krum clay, 0 to 1 percent slopes

The Krum component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on stream terraces on dissected plateaus. The parent material consists of calcareous silty and clayey alluvium derived from limestone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrinkswell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R086AY007TX Southern Clay Loam ecological site. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. There are no saline

horizons within 30 inches of the soil surface. Hydrologic Soil Group: C. Thickness: 6.66 feet.

The remaining map unit consists of the Bolar (4 percent), Branyon (2 percent), Lewisville (2 percent), and Sunev (2 percent) components.

- KrB – Krum clay, 1 to 3 percent slopes

The Krum component makes up 90 percent of the map unit. Slopes are 1 to 3 percent. This component is on stream terraces on dissected plateaus. The parent material consists of calcareous silty and clayey alluvium derived from limestone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrinkswell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R081CY357TX Clay Loam 29-35 Pz ecological site. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: C. Thickness: 6.66 feet.

The remaining map unit consists of the Bolar (5 percent), Doss (3 percent), and Lewisville (2 percent) components.

- PuC—Purves clay, 1 to 5 percent slopes

The Purves component makes up 90 percent of the map unit. Slopes are 1 to 5 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 8 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R081CY574TX Shallow 29-35 Pz ecological site. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does

not exceed 35 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D. Thickness 3.33 feet.

The remaining map unit consists of the Eckrant (4 percent), Brackett (3 percent), Doss (2 percent), and Rock outcrop (1 percent) components.

Geologic Stratigraphy

According to the Geologic Map of the Barton Springs Segment of the Edwards Aquifer. Barton Springs Edwards Aquifer Conservation District and the United States Geologic Survey, two geologic units occur within the project alignment (**Attachment A, Figure 3**). These units and a description by Small et al. (1996) are as follows:

- Buda Limestone (Upper Cretaceous) (bu)

The Buda Limestone consists of dense, variably nodular, sublithographic or "porcelaneous" limestone; and light-gray to buff mudstone, commonly containing calcispheres and tiny calcite-filled fractures. This formation is regionally considered a confining unit with minor surface karst, low porosity, and permeability (Small et al., 1996). Average thickness is 40-50 feet.

- Del Rio Clay (Upper Cretaceous) (dr)

Del Rio Clay is the primary upper confining unit of the Edwards aquifer, and does not demonstrate cavern development. It is described as 50 to 60 feet thick, dark blue-green to yellow-brown, variably gypsiferous clay, commonly containing pectin-type fossil clams and an abundance of the fossil oyster. Ilymatogyra arietina (formerly Exogyra arietina). These fossil oysters are known locally as "rams horns".

Site-Specific Stratigraphic Column

Formation	Members	Thickness (Small et al., 1996)
Buda Limestone	NA	40-50 feet
Del Rio Clay	NA	50-60 feet

Geologic Structure

The geologic strata associated with the Edwards Aquifer includes the Georgetown Limestone Formation of the Washita Group, the Edwards Limestone Group which is interfingered with the Comanche Peak Formation, followed by the Walnut formation, and finally the Glen Rose Formation of the Trinity Group. These Groups dip gently to the southeast and are a characterized by the Balcones Fault Escarpment, a zone of en echelon normal faults downthrown to the southeast. Locally, the dominant structural trend of faults within the area is approximately 30°, as evidenced by the mapped fault patterns (**Attachment A, Figure 4**). Thus, all features that have a trend ranging from 15° to 45° are considered "on trend" and were awarded the additional 10 points in the Geologic Assessment Table.

The subject area is underlain by the Buda Limestone Formation and the Del Rio Clay Formation (Hawert, et al., 2002). The Buda Limestone is stratigraphically higher than the Del Rio Clay Formation, and is positioned in the upland sections of the site towards the north of the tract. The geologic contact between the Buda Limestone and Del Rio Clay is conformable over the site, however to the east and west of the site there are observed normal faults with approximately 80-100 feet of vertical through.

Karstic Characteristics

In limestone landscapes, karst is expressed by erratically developed cavernous porosity from dissolution of bedrock as water combined with weak acids moves through the subsurface. Karst terrains are typical of the Edwards Limestone, occurring across a vast region of Central Texas, including the Balcones Fault Escarpment. The features produced by karst processes include, but are not limited to, sinkholes, solution cavities, solution enlarged fractures, and caves. These features can eventually provide conduits for fluid movement such as surface water runoff, as "point recharge" to the Edwards Aquifer. Faults and manmade features within bedrock can also provide conduits for point recharge in many cases.

According to Edwards Aquifer zone map produced by the TCEQ (2005), the majority of subject area is within the Barton Springs Segment of the Edwards Aquifer Recharge Zone, however there is a small section mapped as Contributing Zone within the Transition Zone. While the two geologic units mapped on the surface of the site (Buda Limestone and Del Rio Clay) are not generally considered part of the Edwards Aquifer geologic units, the subject area is largely mapped as being in the recharge zone, and thus all karst

features identified as sensitive within the project limits have the potential to be point recharge features into the Edwards Aquifer.

Review of Historic Aerials

Aerial photographs were reviewed for the site and adjoining properties from 1951, 1954, 1967, 1973, 1981, 1989, 1995, 2004, 2010, 2016, and 2020 (**Attachment C**). The 1954 aerial shows the first occurrence of a power transmission line crossing the northern portion of the site from northeast to southwest. The 2016 aerial show some modification to wooded areas on site, adding additional unpaved access roads, however geologic changes were not significant. The 2020 shows the first occurrence of a well-fed stock pond that was constructed near Cole Springs Road.

5.0 SUMMARY OF FINDINGS

This report documents the findings of a geologic assessment conducted by **aci consulting** personnel on February 2, 2021. Five features (two other natural features in bedrock and three manmade features in bedrock) were noted on the site. Comprehensive descriptions and recommendations for each feature can be found in **Attachment B**. The two naturally occurring features were determined to be non-sensitive and the three man-made features in bedrock were designated as sensitive to call the attention of the project engineer.

6.0 REFERENCES

Hauwert, N., et. al. 2002. Geologic Map of the Barton Springs Segment of the Edwards Aquifer. Barton Springs Edwards Aquifer Conservation District and the United States Geologic Survey. Austin, Texas.

(SCS) Soil Conservation Survey. 1983. Soil Survey of Hays County, Texas. United States Department of Agriculture. Texas Agriculture Experiment Station.

Small, T.A.; J.A. Hanson; and N.M. Hauwert. 1996. Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, (Barton Springs Segment) Northeastern Hays and Southwestern Travis Counties, Texas. U.S. Geological Survey Water Resources Investigations Report 96-4306.

(TCEQ) Texas Commission on Environmental Quality. 2004. Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones. October 1, 2004. Austin, Texas.

(TCEQ) Texas Commission on Environmental Quality. 2005. "Edwards Aquifer Protection Program, Chapter 213 Rules - Recharge Zone, Transition Zone, Contributing Zone, and Contributing Zone within the Transition Zone." Map. Digital data. September 1, 2005. Austin, Texas.

(TWDB) Texas Water Development Board. 2021 Water Data Interactive Groundwater Data Viewer. Accessed on January 26, 2021. Available at: http://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer

(USDA NRCS) U.S. Department of Agriculture Natural Resources Conservation Service. 2021. WebSoilSurvey.com. Soil Survey Area: Hays County, Texas. Date accessed: January 26, 2021.

ATTACHMENT A

Site Maps

P:\Project Folders\22-15-013 Meritage Continuing Services Agreement\22-15-013M Lacker Tract (1585 Cole Springs Road)\gis\maps\Task 1 - GA\Figure1_SiteLocationMap.mxd



This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.

N

500 250 0 500 Feet

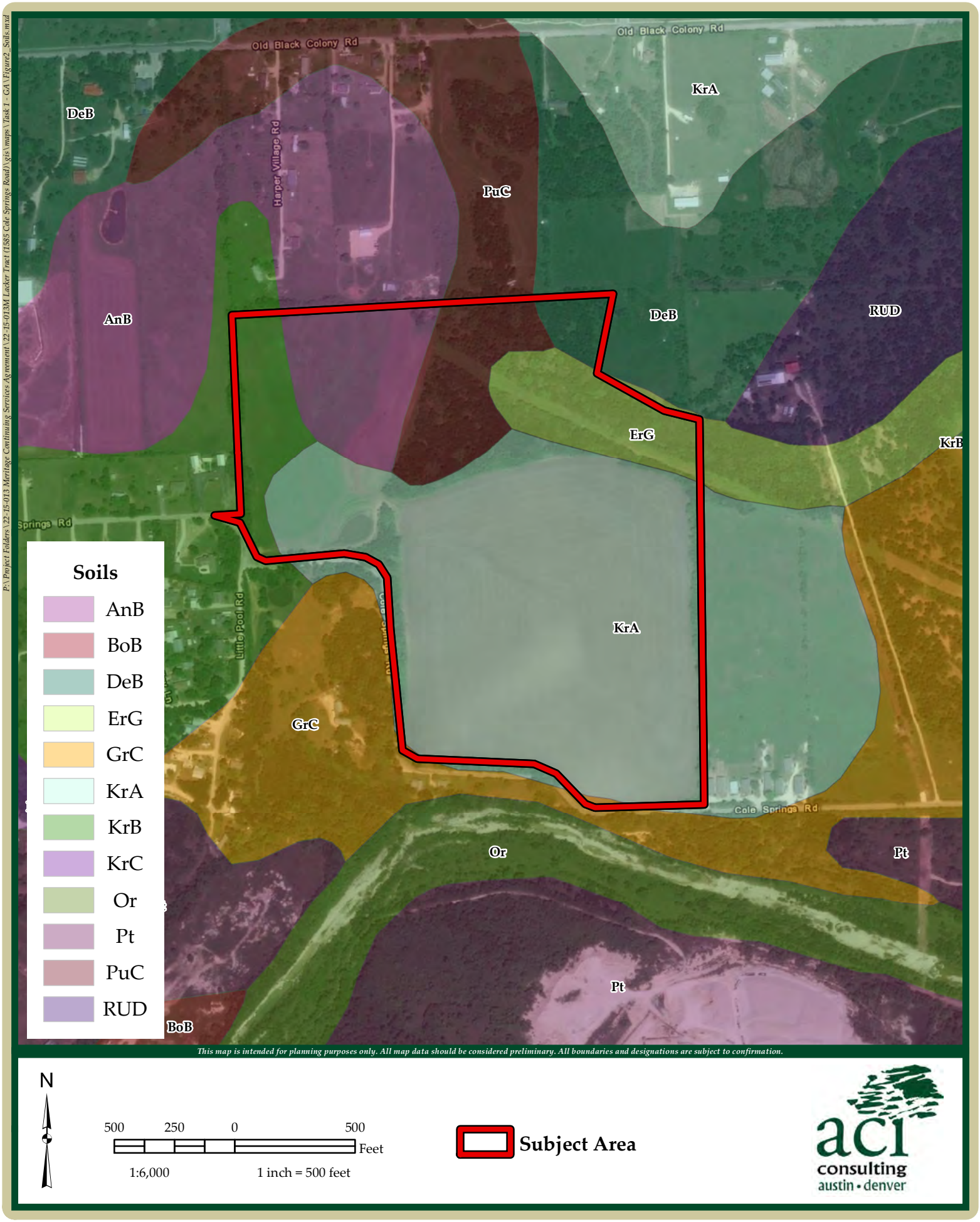
1:6,000 1 inch = 500 feet

Subject Area

aci consulting austin • denver

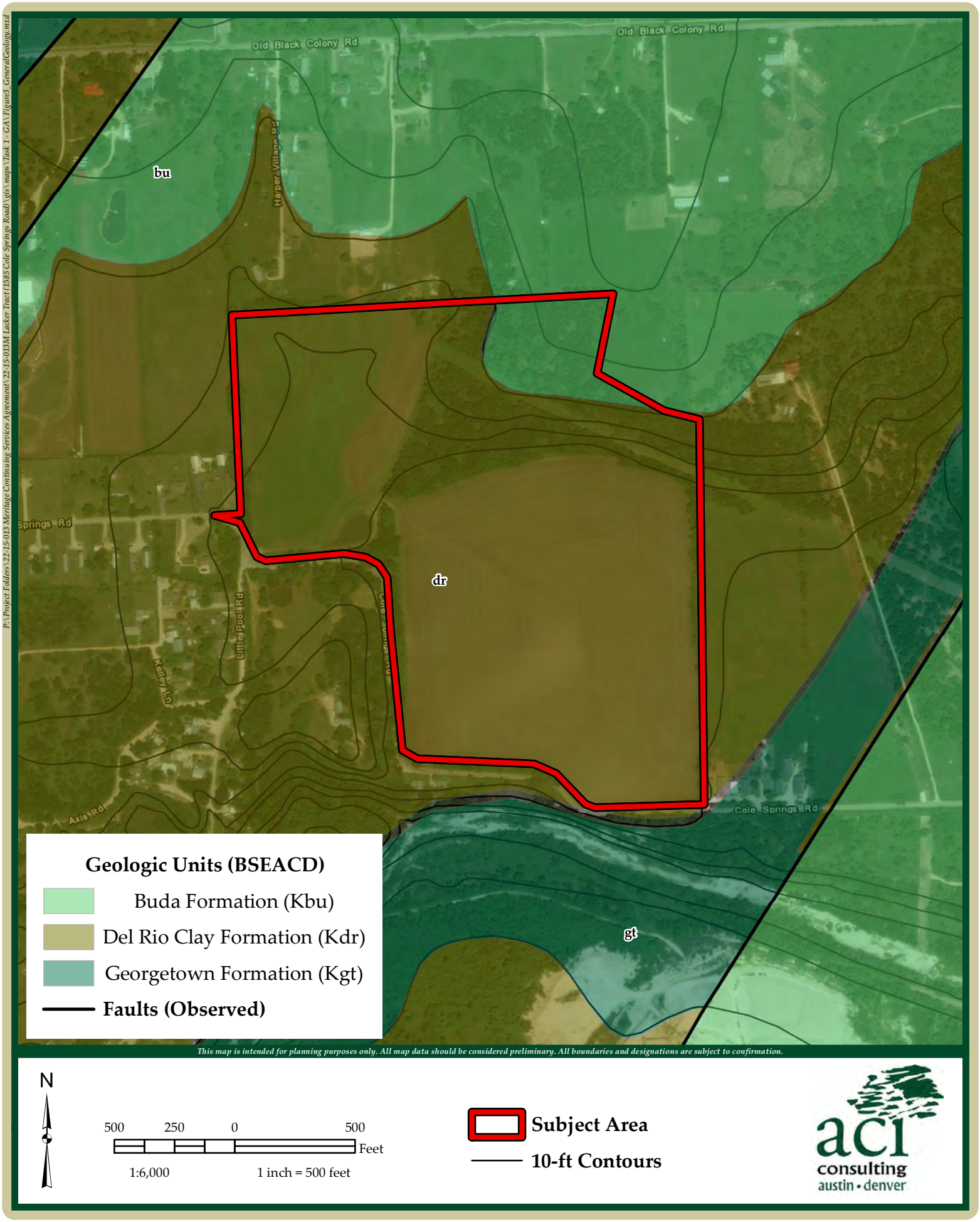
Lacker Tract **aci Project No.: 22-15-013M**

Figure 1: Site Location Map **April 2021**



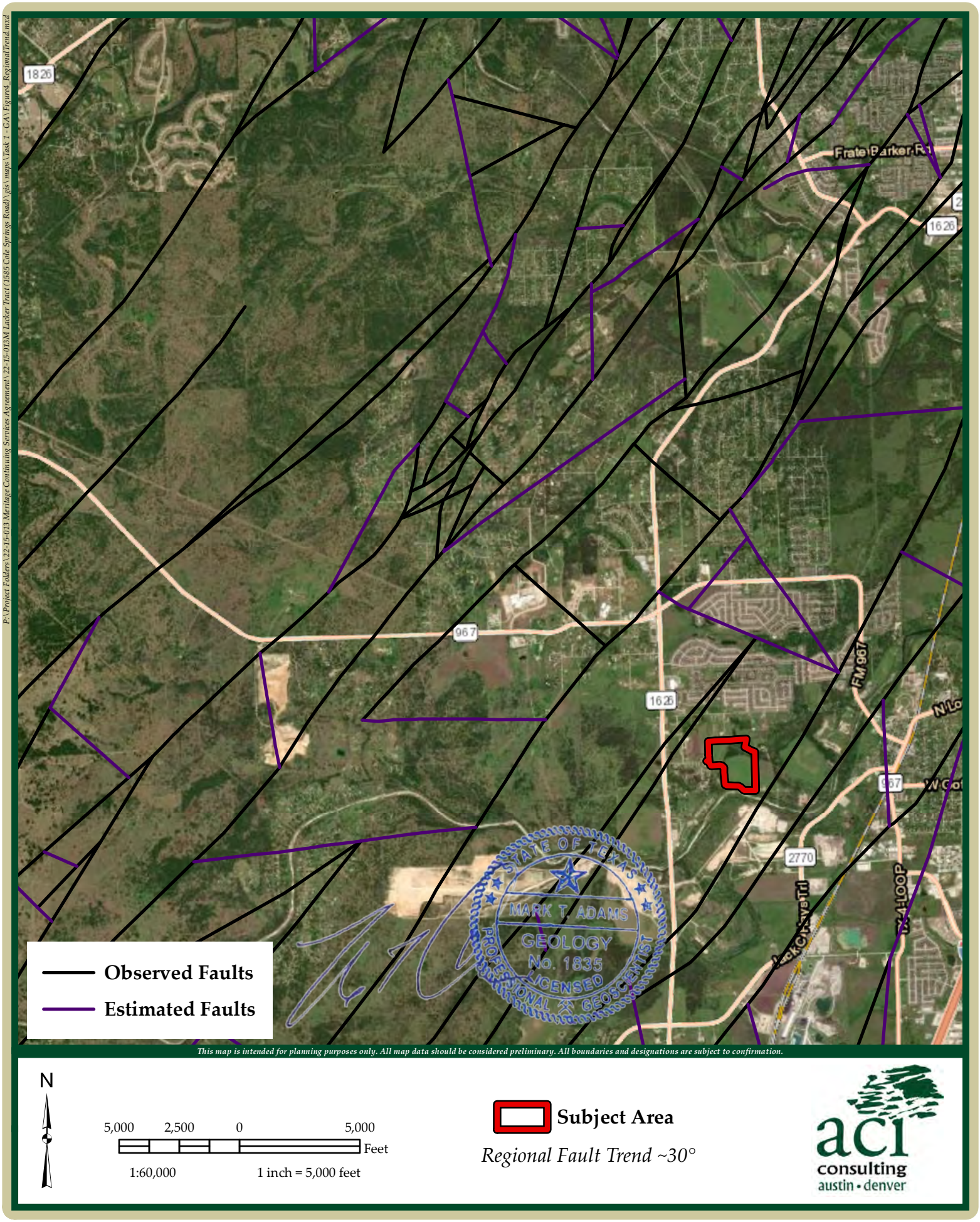
Lacker Tract **aci Project No.: 22-15-013M**

Figure 2: Site Soils **April 2021**



Lacker Tract **aci Project No.: 22-15-013M**

Figure 3: General Site Geology **April 2021**



Lacker Tract **aci Project No.: 22-15-013M**

Figure 4: Regional Fault Trend **April 2021**

ATTACHMENT B

Geologic Table
Geologic and Manmade Feature Map (Figure 5)
Feature Descriptions and Recommendations

GEOLOGIC ASSESSMENT TABLE — PROJECT NAME: Lacker Tract

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	MOD	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
LA-01A	30.081405	-97.863586	O	5	bu/dr	7	2	2	-	-	2/15	-	N,F,O	8	13	X		X		Hillside
LA-01B	30.081426	-97.863558	O	5	bu/dr	6	4	1.5	-	-	2/15	-	N,F,O	8	13	X		X		Hillside
MB-01	30.082036	-97.865001	MB	30	bu	15	15	15	-	-	-	3'x3'	X	10	40		X	X		Hillside
MB-02	30.079939	-97.8674	MB	30	dr	0.4	0.4	280	-	-	-	-	X	10	40		X	X		Pond
MB-03	Alignment - See Figure 5		MB	30	bu/dr	-	-	-	-	-	-	-	X	10	40		X	X		Hillside

* DATUM: NAD 1983 State Plane 4203

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

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

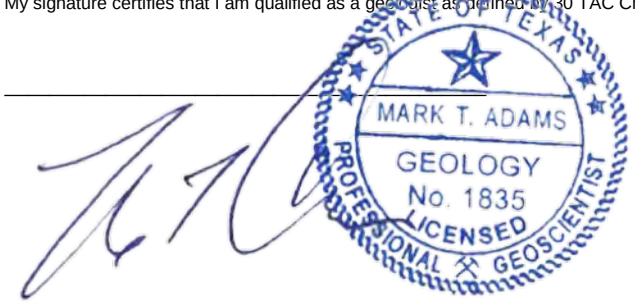
12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

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

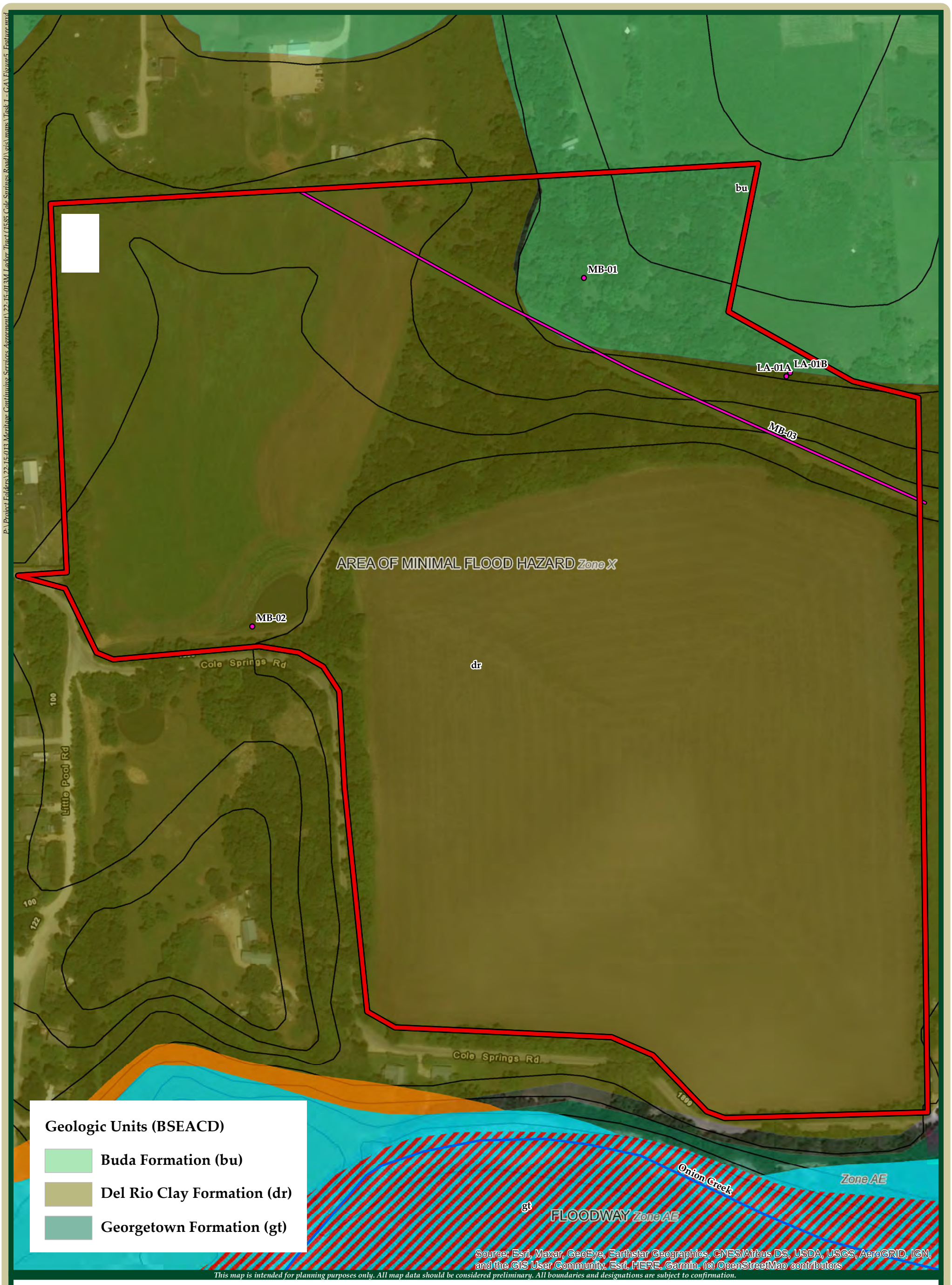
Date 4/14/2021



Sheet 1 fo 1

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

P:\Project Folders\22-15-013 Manitoga Continuing Services Agreement\22-15-013M Lacker Tract (1585 Cole Springs Road)\gis\mxds\Task1 - GA\Figure5_Feature.mxd



This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.

N

200 100 0 200 Feet

1:2,400 1 inch = 200 Feet

Subject Area

Point Features

Line Features

aci consulting austin • denver

Lacker Tract **aci Project No.: 21-15-013M**

Figure 5: Geologic Feature Map **April 2021**

LA-01A and LA-01B
LA-01A GPS: 30.081405, -97.863586
LA-01B **GPS: 30.081426, -97.863558**

LA-01A and LA-01B are "other natural bedrock features". These are scour features present at the contact between the Buda Limestone Formation and the Del Rio Formation; there is a clear linear break between the two units that is laterally continuous. LA-01A is approximately 7 feet long by 2 feet wide and 2 feet deep. LA-01B is approximately 6 feet long, 4 feet wide, and 1.5 feet deep. These two features are approximately 15 feet apart. Infill consists of exposed bedrock, moderately compact soils, and leaf litter. They are present on a hillside and have a drainage area of less than 1.6 acres. They probability of rapid infiltration has been designated as low (8 pts).

Recommendation: None. LA-01A and LA-01B are considered non-sensitive features, thus no protective buffers are required.



Overview of LA-01A and LA-01B.


Date & Time: Tue, Feb 02, 2021, 10:28:14 CST
Position: +030.081384° / -097.863574° (±19.7ft)
Altitude: 744ft (±9.8ft)
Datum: WGS-84
Azimuth/Bearing: 003° N03E 0053mils Magnetic (±12°)
Elevation Angle: -22.7°
Horizon Angle: -00.7°
Zoom: 1.0X
LA-01

LA-01A


Date & Time: Tue, Feb 02, 2021, 10:30:19 CST
Position: +030.081360° / -097.863581° (±19.7ft)
Altitude: 742ft (±9.8ft)
Datum: WGS-84
Azimuth/Bearing: 013° N13E 0231mils Magnetic (±12°)
Elevation Angle: -37.4°
Horizon Angle: +01.8°
Zoom: 1.0X
LA-01B

LA-01B

MB-01
GPS: 30.082036, -97.865001

MB-01 is a manmade feature in bedrock, a hand dug water cistern. The feature is present within the Buda Limestone Formation and is approximately 15 feet in diameter and 15 feet deep with a brick surface aperture that is 3 feet in diameter. The infill consists of exposed bedrock, some soils, and rock cobbles. MB-01 is present on a hillside with a drainage area of less than 1.6 acres. The probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-01; outer view of cistern.



MB-01; interior view of cistern.

MB-02
GPS: 30.079939, -97.867400

MB-02 is a manmade feature in bedrock, well for stock pond. The feature is present within the Del Rio Clay Formation. According to the TWBD database for Well # 5858426, the well is approximately 5 inches in diameter (0.41 feet) and 280 feet deep. The well is presumed to be below the bull rock shown in the photo below. MB-02 is present within a bermed stock pond with a drainage area of less than 1.6 acres. The probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-02

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 58-58-426

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	5858426
County	Hays
River Basin	Colorado
Groundwater Management Area	10
Regional Water Planning Area	K - Lower Colorado
Groundwater Conservation District	Barton Springs/Edwards Aquifer CD
Latitude (decimal degrees)	30.08
Latitude (degrees minutes seconds)	30° 04' 48" N
Longitude (decimal degrees)	-97.867222
Longitude (degrees minutes seconds)	097° 52' 02" W
Coordinate Source	Global Positioning System - GPS
Aquifer Code	218EBFZA - Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)
Aquifer	Edwards (Balcones Fault Zone)
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	721
Land Surface Elevation Method	Other (see remarks)
Well Depth (feet below land surface)	280
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	3/13/1995
Drilling Method	Air Rotary
Borehole Completion	Perforated or Slotted

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Bob Lowden
Driller	Associated Drilling
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Groundwater Conservation District
Created Date	7/30/2003
Last Update Date	10/24/2003

Remarks	Reported yield 400 GPM in 1995. Pumping level 260 feet. MP= +1.95 feet

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
5	Blank	Plastic (PVC)			0	180
5	Screen	Plastic (PVC)			180	280

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

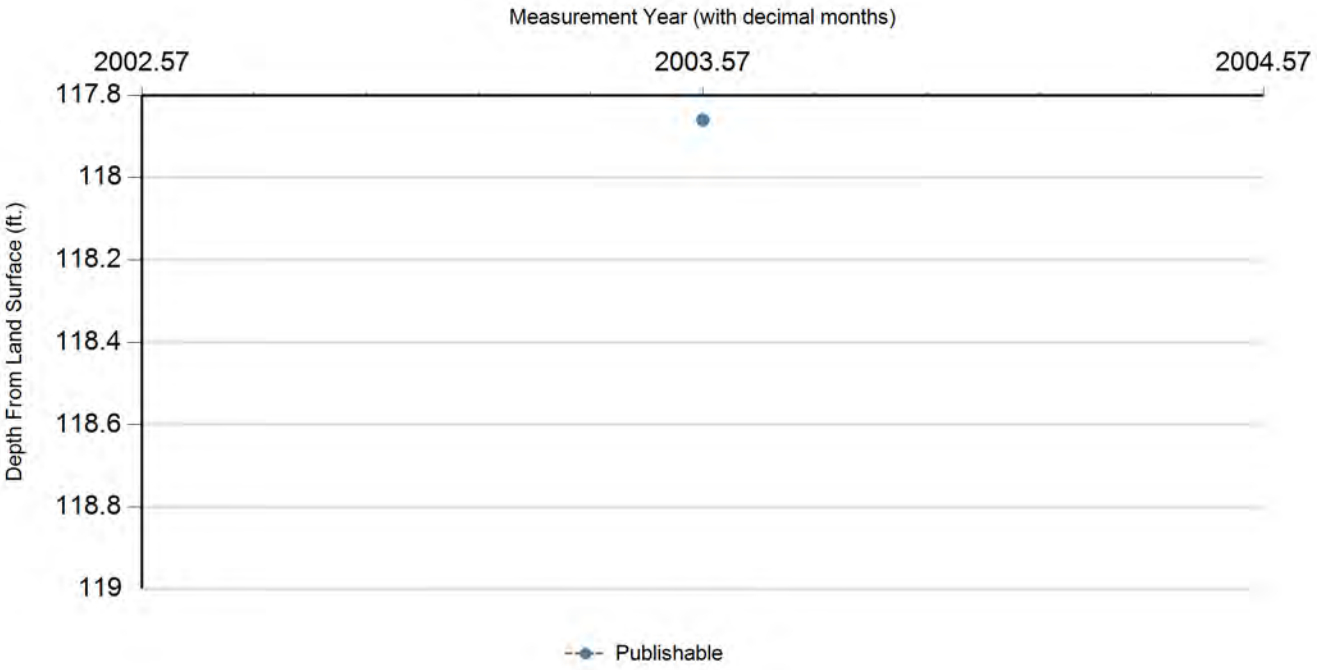
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/30/2003		117.86		603.14	1	Groundwater Conservation District	Electric Line		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/30/2003 **Sample Time:** **Sample Number:** 1 **Collection Entity:** Texas Commission on Environmental Quality

Sampled Aquifer: Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)

Analyzed Lab: Immunoassay at TCEQ **Reliability:** Sampled using TWDB protocols, but NOT filtered

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39033	ATRAZINE, TOTAL, UG/L	<	0.05	ug/L	
82612	METOLACHLOR, WHOLE WATER, TOTAL RECOVERABLE, UG/L	<	0.05	ug/L	

Water Quality Analysis

Sample Date: 7/30/2003 **Sample Time:** 1405 **Sample Number:** 1 **Collection Entity:** Barton Springs/Edwards Aquifer CD

Sampled Aquifer: Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)

Analyzed Lab: LCRA - Lower Colorado River Authority **Reliability:** Sampled using TWDB protocols

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		232	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		232	mg/L	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)	<	4	ug/L	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)	<	2	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		26.3	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		283.12	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)	<	50	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.0775	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		71.3	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		12.4	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)	<	1	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)		6.54	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.16	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		260	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	50	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)		2.95	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		2.9	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		20.1	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)	<	1	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)	<	1	ug/L	
01065	NICKEL, DISSOLVED (UG/L AS NI)		1.85	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		5.84	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)		1.32	mg/L	
00400	PH (STANDARD UNITS), FIELD		6	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		1.15	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SI02)		10.8	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		0.21		

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 58-58-426

groundwater division

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00932	SODIUM, CALCULATED, PERCENT		5	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		7.62	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		405	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		224	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		23.6	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		20.5	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		292	mg/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)		1.38	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)		28.7	ug/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

MB-03
GPS: Alignment - See Figure 5

MB-03 is a manmade feature in bedrock, electric transmission line easement. The feature crosses both the Buda Limestone Formation and the Del Rio Clay Formation. There is no infill and the exact dimensions are unknown. MB-03 is primarily on a hillside and has a drainage area of less than 1.6 acres at each installed pole. The probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-03

ATTACHMENT C

Historic Aerial Photographs

Prepared for:

ACI CONSULTING
1001 Mopac Circle
Austin, TX 78746

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Historical Aerial Photographs

1280 & 1585 Cole Springs Road

TX

Hays County

PO #: 22-15-013N

ES-135575

Thursday, January 28, 2021



Date: 2020
Source: TNRIS

0 250 500 1,000 Feet

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 2016
Source: USDA

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 2010
Source: USDA

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 2004
Source: USDA

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1995
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1989
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1981
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1973
Source: USGS

0 250 500 1,000 Feet

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1967
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1954
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



Date: 1951
Source: ASCS

0 250 500 1,000 Feet

BANKS ENVIRONMENTAL DATA
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AERIAL SOURCE DEFINITIONS

Acronym	Agency
NASA	National Aeronautics & Space Administration
AMS	Army Mapping Service
ASCS	Agricultural Stabilization & Conservation Service
SCS	Soil Conservation Service
USBR	United States Bureau of Reclamation
Fairchild	Fairchild Aerial Surveys
TXDOT	Texas Department of Transportation
BLM	Bureau of Land Management
USAF	United States Air Force
USCOE	United States Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WALLACE	Wallace-Zingery Aerial Surveys
TNRIS	Texas Natural Resources Information System

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

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aci consulting
austin • denver

GEOLOGIC ASSESSMENT
FOR THE APPROXIMATELY 26.827-ACRE
LIGUORI TRACT

Hays County, Texas

April 2021

Submitted to:
M/I Homes of Austin, LLC
6801 N. Capital of Texas Highway
Lakewood II, Suite 100
Austin, Texas 78731

Prepared by:
aci consulting
1001 Mopac Circle
Austin, Texas 78746
TBPG Firm License No. 50260

aci project #: 22-15-013N

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

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

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

Signature

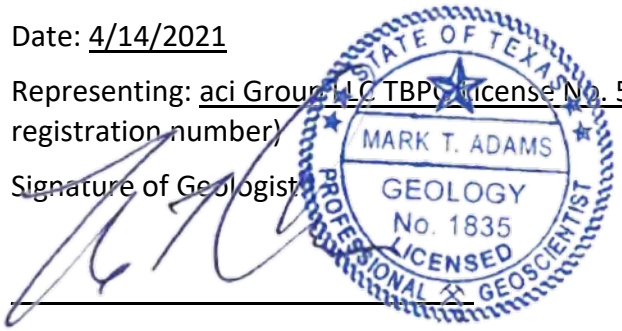
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Mark T. Adams Telephone: (512) 347-9000

Date: 4/14/2021 Fax: (512) 306-0974

Representing: aci Group LLC TBPG License No. 50260 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Liguori Tract

Project Information

1. Date(s) Geologic Assessment was performed: February 2, 2021
2. Type of Project:

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

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

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
ErG—Eckrant-Rock outcrop association, 8 to 30 percent slopes	D	6.6
GrC—Gruene clay, 1 to 5 percent slopes	D	6.6
KrA—Krum clay, 0 to 1 percent slopes	C	6.6
RUD—Rumple-Comfort, rubbly association, 1 to 8 percent slopes	D	5

** Soil Group Definitions (Abbreviated)*

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

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

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

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

   Applicant's Site Plan Scale: 1" = 200'

Site Geologic Map Scale: 1" = 200'
Site Soils Map Scale (if more than 1 soil type): 1" = 300'

9. Method of collecting positional data:

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

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

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

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

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

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

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

    ☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    ☐ The wells are not in use and have been properly abandoned.
    ☐ The wells are not in use and will be properly abandoned.
    ☒ The wells are in use and comply with 16 TAC Chapter 76.
    ☐ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

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

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Geologic Assessment for the Liguori Tract located in Hays County, Texas

April 2021

1.0 INTRODUCTION

The Texas Commission on the Environmental Quality (TCEQ) regulates activities that have the potential to pollute the Edwards Aquifer through the Edwards Aquifer Protection Program. Projects meeting a certain criterion over the Edwards Aquifer Recharge Zone must submit an Edwards Aquifer Protection Plan (EAPP).

The purpose of this report is to identify all potential pathways for contaminant movement to the Edwards Aquifer and provide sufficient geologic information so that the appropriate Best Management Practices (BMPs) can be proposed in the Edwards Aquifer Protection Plan (EAPP). This report complies with the requirements of Title 30, Texas Administrative Code (TAC) Chapter 213 relating to the protection of the Edwards Aquifer Recharge Zone. Per the Rules, the Geologic Assessment must be completed by a Geologist licensed according to the Texas Geoscience Practice Act.

2.0 PROJECT INFORMATION

The Liguori Tract, hereafter referred to as the subject area or site, is located at 1280 Cole Springs Road in the City of Buda Extraterritorial Jurisdiction (ETJ) in Hays County, Texas (**Attachment A, Figure 1**). Pedestrian investigations of the 26.827-acre tract were performed on February 2, 2021, by Kara Posso, G.I.T., Marcos Cardenas and Erin Wilson, under the supervision of Mark Adams, P.G. with **aci consulting**.

This report is intended to satisfy the requirements for a Geologic Assessment, which shall be included as a component of a Water Pollution Abatement Plan (WPAP) and Sewage Collection System Plan (SCS). The site is approximately 26.827 acres in total. The proposed site use is for low-density, single-family, residential development. The scope of the report consists of a site reconnaissance, field survey, and review of existing data and reports. Features identified during the field survey were ranked utilizing the Texas Commission on Environmental Quality (TCEQ) matrix for Edwards Aquifer Recharge Zone features. The ranking of the features will determine their viability as "sensitive" features.

3.0 INVESTIGATION METHODS

The following investigation methods and activities were used to develop this report:

- Review of existing files and literature to determine the regional geology and any known caves associated with the project area;
- Review of past geological field reports, cave studies, and correspondence regarding the existing geologic features on the project area, if available;
- Site reconnaissance by a registered professional geologist to identify and examine caves, recharge features, and other significant geological structures;
- Evaluation of collected field data and a ranking of features using the TCEQ Ranking Table 0585 for the Edwards Aquifer Recharge Zone; and
- Review of historic aerial photographs to determine if there are any structural features present, and to determine any past disturbances on the subject property.

4.0 SOILS AND GEOLOGY

The following includes a site-specific description of the soils, geologic stratigraphy, geologic structure, and karstic characteristics as they relate to the Edwards aquifer. Also included in this section is a review of historic aerials for presence of geologic changes or changes to manmade features in bedrock.

Soils

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey (2021), four soil units occur within the project alignment (**Attachment A, Figure 2**):

- ErG—Eckrant-Rock outcrop association, 8 to 30 percent slopes

The Eckrant component makes up 65 percent of the map unit. Slopes are 8 to 30 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 4 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 6 percent. This component is in the R081CY363TX

Steep Rocky 29-35 Pz ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 2 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D.

The remaining 35 percent of the map unit consists of Rock outcrop (27 percent), Brackett (4 percent), Kerrville (2 percent), Tarpley (1 percent), and Krum (1 percent) components.

- GrC—Gruene clay, 1 to 5 percent slopes

The Gruene component makes up 85 percent of the map unit. Slopes are 1 to 5 percent. This component is on ridges on dissected plains. The parent material consists of clayey alluvium of Pliestocene age derived from mixed sources over gravelly alluvium of Pliestocene age derived from mixed sources. Depth to a root restrictive layer, petrocalcic, is 7 to 16 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrinkswell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R086AY002TX Southern Chalky Ridge ecological site. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D.

The remaining map unit consists of Unnamed (15 percent) component.

- KrA—Krum clay, 0 to 1 percent slopes

The Krum component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on stream terraces on dissected plateaus. The parent material consists of calcareous silty and clayey alluvium derived from limestone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R086AY007TX Southern Clay Loam ecological site. Nonirrigated land capability

classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: C.

The remaining map unit consists of the Bolar (4 percent), Branyon (2 percent), Lewisville (2 percent), and Sunev (2 percent) components.

- RUD—Rumple-Comfort, rubbly association, 1 to 8 percent slopes

The Rumple component makes up 60 percent of the map unit. Slopes are 1 to 8 percent. This component is on ridges on dissected plateaus. The parent material consists of colluvium and/or residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrinkswell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R081CY359TX Gravelly Redland 29-35 Pz ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D.

The Comfort component makes up 20 percent of the map unit. Slopes are 1 to 8 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 6 percent. This component is in the R081CY360TX Low Stony Hill 29-35 Pz ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. Hydrologic Soil Group: D.

The remaining map unit consists of the Tarpley (15 percent) and Rock outcrop (5 percent) soil components.

Geologic Stratigraphy

According to the Geologic Map of the Barton Springs Segment of the Edwards Aquifer. Barton Springs Edwards Aquifer Conservation District and the United States Geologic Survey, two geologic units occur within the project alignment (**Attachment A, Figure 3**). These units and a description by Small et al. (1996) are as follows:

- Buda Limestone (Upper Cretaceous) (bu)

The Buda Limestone consists of dense, variably nodular, sublithographic or "porcelaneous" limestone; and light-gray to buff mudstone, commonly containing calcispheres and tiny calcite-filled fractures. This formation is regionally considered a confining unit with minor surface karst, low porosity, and permeability (Small et al., 1996). Average thickness is 40-50 feet.

- Del Rio Clay (Upper Cretaceous) (dr)

Del Rio Clay is the primary upper confining unit of the Edwards aquifer, and does not demonstrate cavern development. It is described as 50 to 60 feet thick, dark blue-green to yellow-brown, variably gypsiferous clay, commonly containing pectin-type fossil clams and an abundance of the fossil oyster. Ilymatogyra arietina (formerly Exogyra arietina). These fossil oysters are known locally as “rams horns”.

- Georgetown Limestone (Lower Cretaceous) (gt)

The Georgetown Formation overlies the Edwards Group. It is described it as gray to light-tan marly fossiliferous limestone usually containing ammonites, oyster-like clams, and the brachiopod *Waconella wacoensis*, formerly *Kingena wacoensis* (Roemer). The contact of the Georgetown Formation and the underlying Person Formation is, in places, a slightly red-brown, oxidized bored and pitted horizon. The Georgetown Formation has no recognized cavern development and low porosity and permeability. The thickness of the Georgetown Formation increases across the Barton Springs segment from about 40 feet in the south to about 60 feet in the north.

Site-Specific Stratigraphic Column

Formation	Members	Thickness (Small et al., 1996)
Buda Limestone	NA	40-50 feet
Del Rio Clay	NA	50-60 feet
Georgetown Limestone	NA	40-60 feet

Geologic Structure

The geologic strata associated with the Edwards Aquifer includes the Georgetown Limestone Formation of the Washita Group, the Edwards Limestone Group which is interfingered with the Comanche Peak Formation, followed by the Walnut formation, and finally the Glen Rose Formation of the Trinity Group. These Groups dip gently to the southeast and are a characterized by the Balcones Fault Escarpment, a zone of en echelon normal faults downthrown to the southeast. Locally, the dominant structural trend of faults within the area is approximately 30°, as evidenced by the mapped fault patterns (**Attachment A, Figure 4**). Thus, all features that have a trend ranging from 15° to 45° are considered "on trend" and were awarded the additional 10 points in the Geologic Assessment Table.

The subject area is underlain by three formations including the Buda Limestone Formation, Del Rio Clay Formation, and the Georgetown Limestone Formation (Hauwert, et al., 2002). The Buda Limestone is stratigraphically higher than the Del Rio Clay and Georgetown Limestone formations and is positioned in the upland sections of the site towards the northwest corner of the tract. This is followed by the Del Rio Clay, and finally the Georgetown Limestone Formation in the lower elevations of the site towards the southeast. While the geologic contact between the Buda Limestone, Del Rio Clay, and Georgetown Limestone appears to be conformable over the majority of the site, according to Hauwert et al. (2002), there is a mapped normal fault in the southeast corner that juxtapositions the Georgetown Limestone and Buda Limestone Formations. This

fault is on trend (30°) with approximately 100 feet of displacement based on review of the literature. No physical indications of the fault were observed on-site.

Karstic Characteristics

In limestone landscapes, karst is expressed by erratically developed cavernous porosity from dissolution of bedrock as water combined with weak acids moves through the subsurface. Karst terrains are typical of the Edwards Limestone, occurring across a vast region of Central Texas, including the Balcones Fault Escarpment. The features produced by karst processes include, but are not limited to, sinkholes, solution cavities, solution enlarged fractures, and caves. These features can eventually provide conduits for fluid movement such as surface water runoff, as "point recharge" to the Edwards Aquifer. Faults and manmade features within bedrock can also provide conduits for point recharge in many cases.

According to Edwards Aquifer zone map produced by the TCEQ (2005), the majority of subject area is within the Barton Springs Segment of the Edwards Aquifer Contributing Zone within the Transition Zone, however there are two additional sections mapped as the Edwards Aquifer Recharge Zone, as well as Edwards Aquifer Transition Zone within the Contributing Zone. Two of the three geologic units mapped on the site, the Buda Limestone and Del Rio Clay Formations, are not typically associated with the Edwards Aquifer and are considered to be in the transition zone and the transition zone within the contributing zone, however, the Georgetown Limestone Formation is defined as part of the Edwards Aquifer and is present within an area mapped as the recharge zone. All karst features identified as sensitive within the project limits have the potential to be point recharge features into the Edwards Aquifer based on the designations delineated in the TCEQ map.

Review of Historic Aerials

Aerial photographs were reviewed for the site and adjoining properties from 1951, 1954, 1967, 1973, 1981, 1989, 1995, 2004, 2010, 2016 and 2020 (**Attachment C**). A pipeline easement (associated with the Hearne Pipeline) crossing the site in the lower southeast corner is first visible in the 1951 aerial. The 1954 aerial shows the first occurrence of a power transmission line crossing the northern portion of the site from northeast to southwest. The establishment of a rural residence first appeared along the southern site boundary in the 1981 aerial. Some site disturbances and additional structures towards the north of the site are first visible in the 1989 (and possibly the 1981) aerial. In the 1989

aerial and beyond, changes to the residential area along Cole Springs Road and along the electric transmission line easement occur throughout the years, expanding and the reducing to the present-day configuration of homes.

5.0 SUMMARY OF FINDINGS

This report documents the findings of a geologic assessment conducted by **aci consulting** personnel on February 2, 2021. Seven features, all manmade features in bedrock, were noted on the site. Comprehensive descriptions and recommendations for each feature can be found in **Attachment B**. The seven features identified were designated as sensitive to call the attention of the project engineer.

6.0 REFERENCES

Hauwert, N., et. al. 2002. Geologic Map of the Barton Springs Segment of the Edwards Aquifer. Barton Springs Edwards Aquifer Conservation District and the United States Geologic Survey. Austin, Texas.

(SCS) Soil Conservation Survey. 1983. Soil Survey of Hays County, Texas. United States Department of Agriculture. Texas Agriculture Experiment Station.

Small, T.A.; J.A. Hanson; and N.M. Hauwert. 1996. Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, (Barton Springs Segment) Northeastern Hays and Southwestern Travis Counties, Texas. U.S. Geological Survey Water Resources Investigations Report 96-4306.

(TCEQ) Texas Commission on Environmental Quality. 2004. Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones. October 1, 2004. Austin, Texas.

(TCEQ) Texas Commission on Environmental Quality. 2005. "Edwards Aquifer Protection Program, Chapter 213 Rules - Recharge Zone, Transition Zone, Contributing Zone, and Contributing Zone within the Transition Zone." Map. Digital data. September 1, 2005. Austin, Texas.

(TWDB) Texas Water Development Board. 2021 Water Data Interactive Groundwater Data Viewer. Accessed on January 26, 2021. Available at: http://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer

(USDA NRCS) U.S. Department of Agriculture Natural Resources Conservation Service. 2021. WebSoilSurvey.com. Soil Survey Area: Hays County, Texas. Date accessed: January 26, 2021.

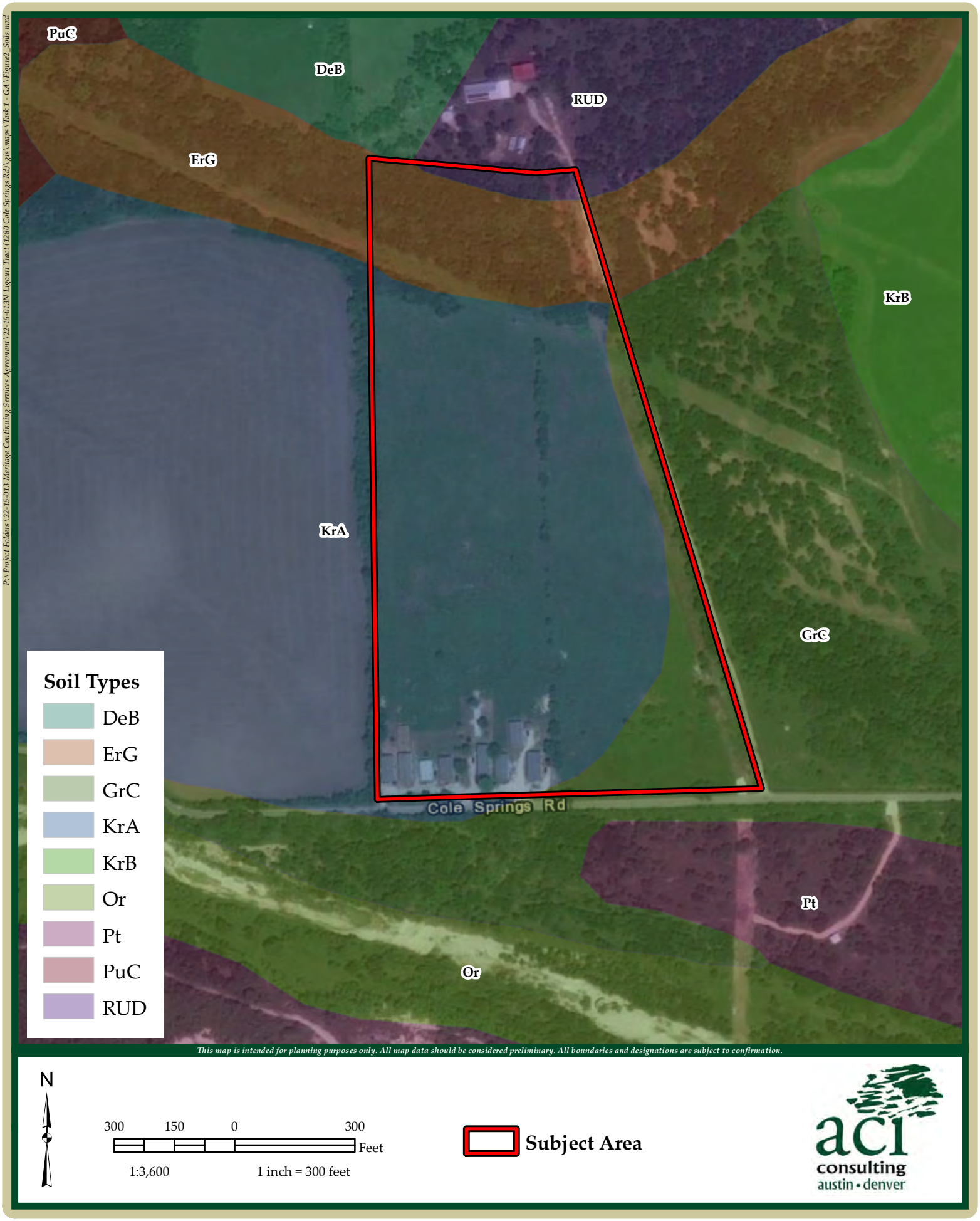
ATTACHMENT A

Site Maps



Liguori Tract **aci Project No.: 22-15-013N**

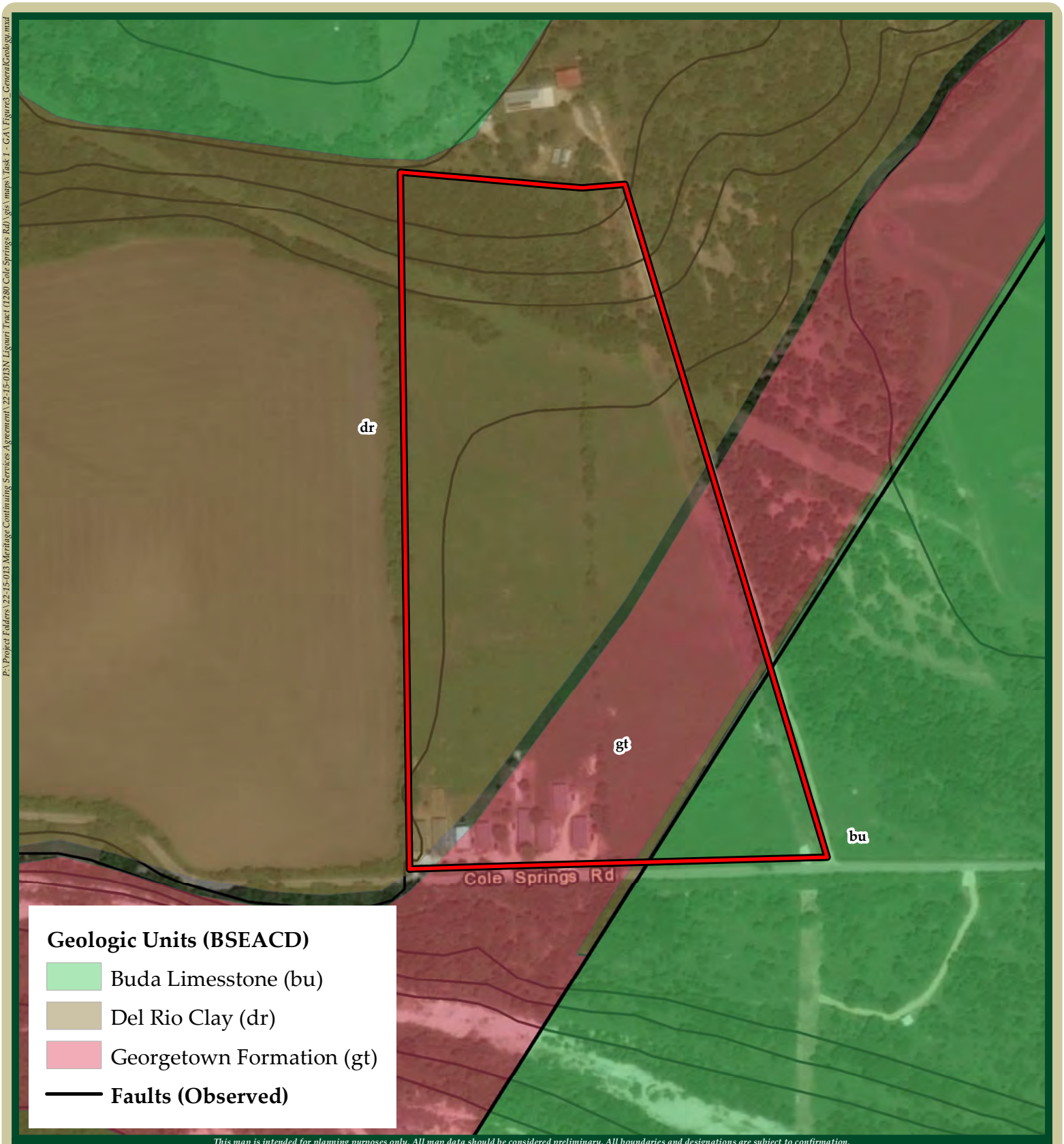
Figure 1: Site Location Map **April 2021**



Liguori Tract **aci Project No.: 22-15-013N**

Figure 2: Site Soils **April 2021**

P:\Project Folders\22-15-013 Meritage Continuing Services Agreement\22-15-013N Liguori Tract (1280 Cole Springs Rd)\gis\maps\Task 1 - GA\Figure3_GeneralGeology.mxd



This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.

N

300 150 0 300 Feet

1:3,600 1 inch = 300 feet

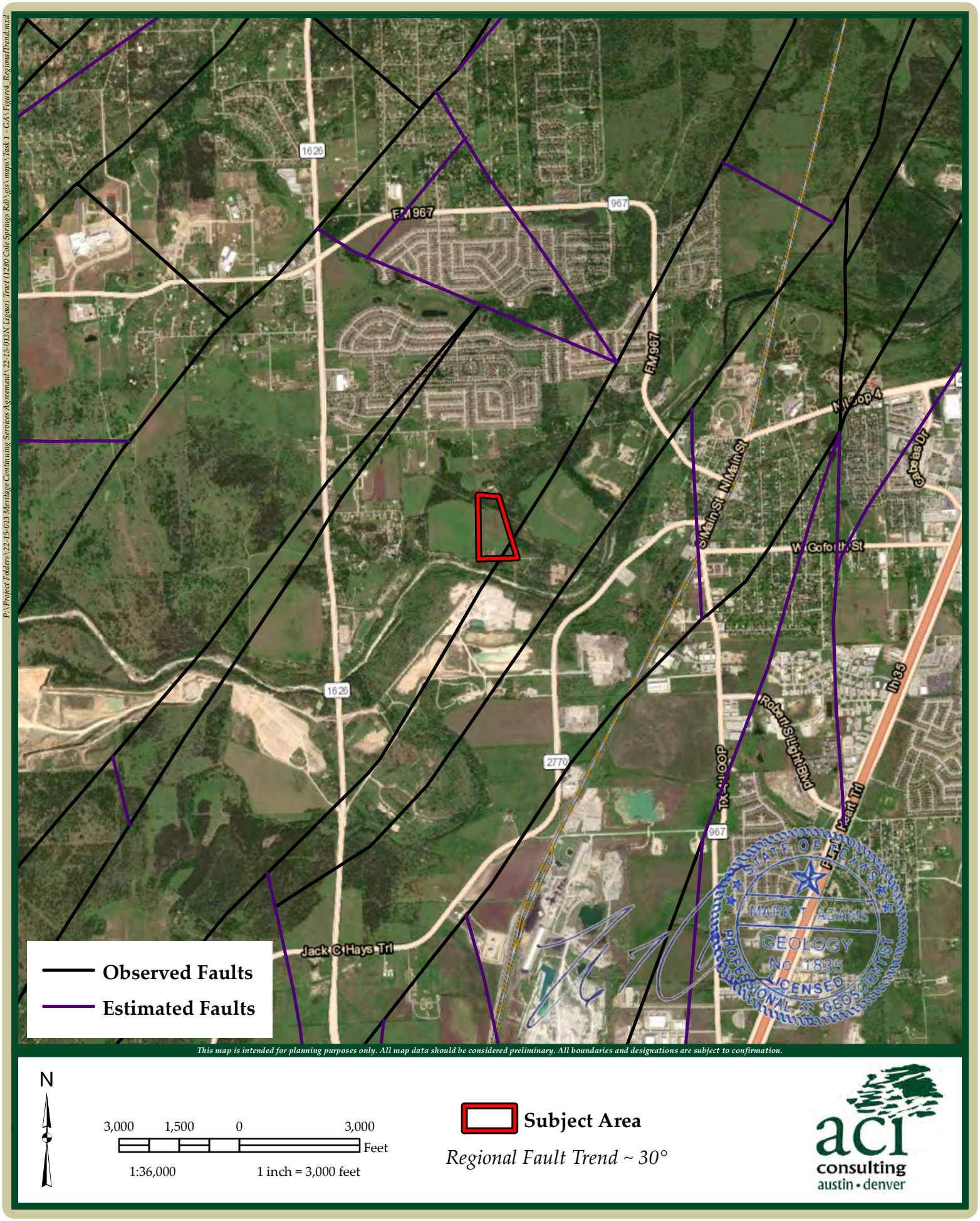
Subject Area

10-ft Contours

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Liguori Tract **aci Project No.: 22-15-013N**

Figure3: General Site Geology **April 2021**



Liguori Tract **aci Project No.: 22-15-013N**

Figure4: Regional Fault Trend **April 2021**

ATTACHMENT B

Geologic Table
Geologic and Manmade Feature Map (Figure 5)
Feature Descriptions and Recommendations

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Liguori Tract

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
MB-01	30.07751	-97.860497	MB	30	bu/dr	10	2	4	-	-	-	-	C	10	40		X	X		Hillside
MB-02	Alignment -See Figure 5		MB	30	bu/gt/dr	-	-	-	-	-	-	-	X	10	40		X	X		Hilltop/side
MB-03	30.077177	-97.861323	MB	30	gt	-	-	-	-	-	-	-	X	10	40		X	X		Hillside
MB-04	30.077347	-97.861746	MB	30	gt	0.4	0.4	?	-	-	-	-	X	10	40		X	X		Hillside
MB-05	30.077242	-97.862391	MB	30	dr	-	-	-	-	-	-	-	X	10	40		X	X		Hillside
MB-06	Alignment - See Figure 5		MB	30	bu/gt	-	-	-	40	-	-	-	X	10	40		X	X		Hillside
MB-07	Alignment - See Figure 5		MB	30	dr	-	-	-	-	-	-	-	X	10	40		X	X		Hillside

* DATUM: NAD 1983 State Plane 4203

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

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

12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

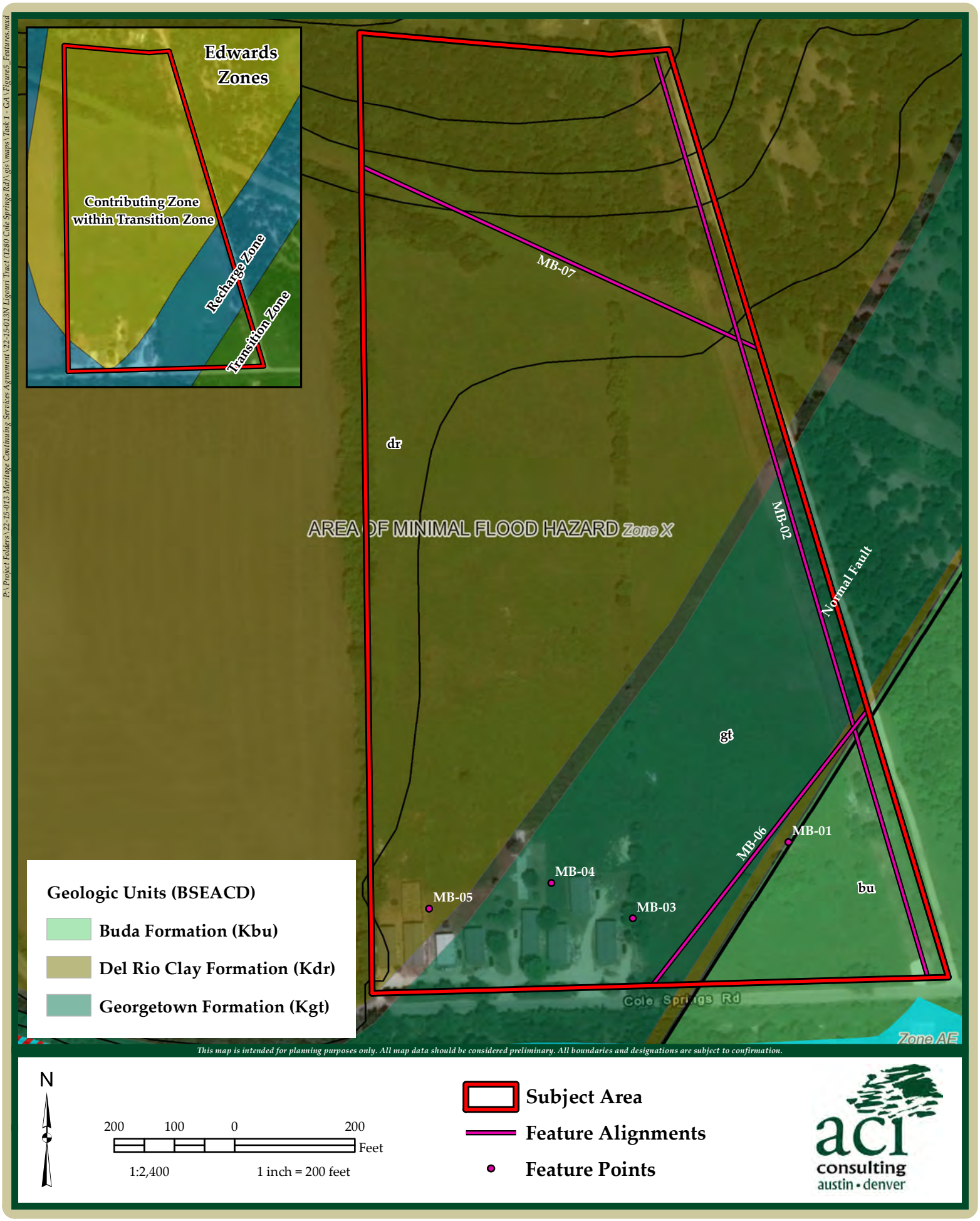
My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date 4/14/2021

STATE OF TEXAS
MARK T. ADAMS
GEOLOGY
No. 1835
LICENSED
PROFESSIONAL GEOSCIENTIST

Sheet 1 of 1

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



Liguori Tract **aci Project No.: 22-15-013N**

Figure 5: Geologic Feature Map **April 2021**

MB-01
GPS: 30.07751, -97.860497

This feature is a manmade feature in bedrock and is a test pit. The approximate dimensions of this feature are 10 feet by 2 feet by 4 feet deep. The feature is located between the Buda Limestone Formation and the Georgetown Limestone Formation and is positioned on a gently sloping hillside. Infill material consists of well sorted, rounded cobbles with some degree of cementation and soil. According to the Geologic Map of the Barton Springs Segment of the Edwards Aquifer (Hauwert, et al., 2002), this test pit coincides with the location of an observed normal fault juxtapositioning the Buda Limestone Formation with the Georgetown Formation. Light hand excavation was performed in an attempt to determine if the test pit was related to previous observations of the fault, however, upon excavation no observable changes in soils or geology were noticed, thus there was no visual confirmation of the fault. The drainage area is less than 1.6 acres, and the probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-01

MB-02
GPS: Alignment – See Figure 5

MB-02 is a manmade feature in bedrock, municipal waterline. The feature is present within Buda Limestone Formation, Del Rio Clay Formation, and Georgetown Limestone Formation and is located on a hilltop and hillside. The length, diameter, and depth of the waterline is unknown. The drainage area is less than 1.6 acres, and the probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-02

MB-03
GPS: 30.077177, -97.861323

This feature is a manmade feature in bedrock, a water well (state well number 58-58-427) with a 5-inch diameter (0.41 feet) extending below the surface for an unknown depth. The feature is located in an area mapped as the Georgetown Limestone Formation and is positioned on a gently sloping hillside. The drainage area is less than 1.6 acres, and the probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-03

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 58-58-427

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	5858427
County	Hays
River Basin	Colorado
Groundwater Management Area	10
Regional Water Planning Area	K - Lower Colorado
Groundwater Conservation District	Barton Springs/Edwards Aquifer CD
Latitude (decimal degrees)	30.077222
Latitude (degrees minutes seconds)	30° 04' 38" N
Longitude (decimal degrees)	-97.861389
Longitude (degrees minutes seconds)	097° 51' 41" W
Coordinate Source	Global Positioning System - GPS
Aquifer Code	218EBFZA - Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)
Aquifer	Edwards (Balcones Fault Zone)
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	707
Land Surface Elevation Method	Other (see remarks)
Well Depth (feet below land surface)	
Well Depth Source	
Drilling Start Date	
Drilling End Date	
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Domestic
Water Level Observation	Historical Observation Well
Water Quality Available	Yes
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	David Dement
Driller	
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Groundwater Conservation District
Created Date	7/26/2004
Last Update Date	10/28/2004

Remarks	MP= +1.75 feet

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
5	Blank	Plastic (PVC)			0	

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

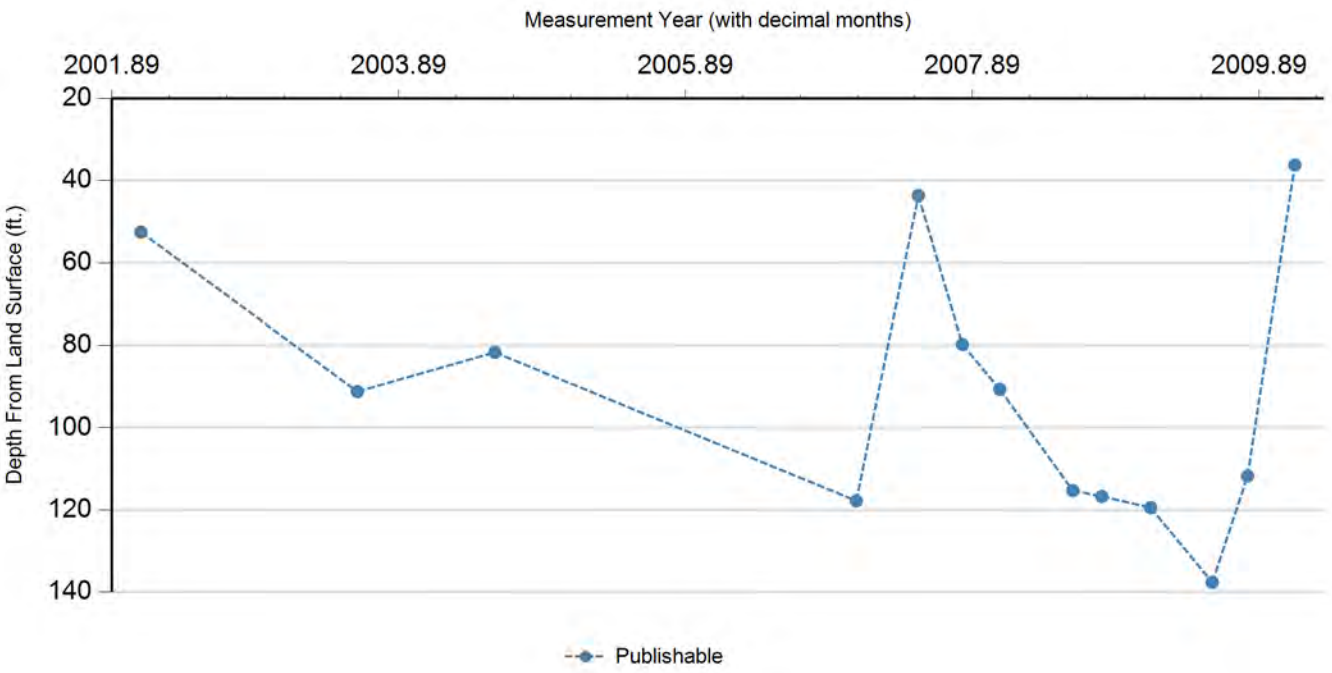
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/5/2002		52.55		654.45	1	Registered Water Well Driller	Unknown		
P	8/11/2003		91.2	38.65	615.8	1	Groundwater Conservation District	Electric Line		
P	7/26/2004		81.66	(9.54)	625.34	1	Groundwater Conservation District	Electric Line		
P	1/31/2007		117.79	36.13	589.21	1	Groundwater Conservation District	Steel Tape		
P	7/9/2007		43.67	(74.12)	663.33	1	Groundwater Conservation District	Electric Line		
P	11/1/2007		79.75	36.08	627.25	1	Groundwater Conservation District	Steel Tape		
P	1/31/2008		90.63	10.88	616.37	1	Groundwater Conservation District	Steel Tape		
P	8/7/2008		115.29	24.66	591.71	1	Groundwater Conservation District	Steel Tape		
P	10/21/2008		116.71	1.42	590.29	1	Groundwater Conservation District	Steel Tape		
P	2/20/2009		119.43	2.72	587.57	1	Groundwater Conservation District	Steel Tape		
P	7/27/2009		137.64	18.21	569.36	1	Groundwater Conservation District	Steel Tape		
P	10/27/2009		111.73	(25.91)	595.27	1	Groundwater Conservation District	Steel Tape		
P	2/22/2010		36.24	(75.49)	670.76	1	Groundwater Conservation District	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 8/11/2003 **Sample Time:** **Sample Number:** 1 **Collection Entity:** Texas Commission on Environmental Quality

Sampled Aquifer: Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)

Analyzed Lab: Immunoassay at TCEQ **Reliability:** Sampled using TWDB protocols, but NOT filtered

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39033	ATRAZINE, TOTAL, UG/L	<	0.05	ug/L	
82612	METOLACHLOR, WHOLE WATER, TOTAL RECOVERABLE, UG/L	<	0.05	ug/L	

Water Quality Analysis

Sample Date: 8/11/2003 **Sample Time:** 1414 **Sample Number:** 1 **Collection Entity:** Barton Springs/Edwards Aquifer CD

Sampled Aquifer: Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)

Analyzed Lab: LCRA - Lower Colorado River Authority **Reliability:** Sampled using TWDB protocols

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		218	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		226	mg/L	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)	<	4	ug/L	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)	<	2	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		27.8	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		275.8	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)	<	50	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.0699	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		67.6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		10.1	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)	<	1	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)	<	1	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.22	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		247	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	50	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		4.01	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		19.1	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)	<	1	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)		2.01	ug/L	
01065	NICKEL, DISSOLVED (UG/L AS NI)		2.48	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		11.91	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)		2.69	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.23	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		1.32	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SI02)		11.1	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		0.2		

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00932	SODIUM, CALCULATED, PERCENT		5	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		7.21	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		487	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		236	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		30.7	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		20.6	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		295	mg/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)		2.07	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)		31.3	ug/L	

Water Quality Analysis

Sample Date: 7/26/2004 **Sample Time:** 1830 **Sample Number:** 1 **Collection Entity:** Barton Springs/Edwards Aquifer CD

Sampled Aquifer: Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)

Analyzed Lab: LCRA - Lower Colorado River Authority **Reliability:** Sampled using TWDB protocols

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		264	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		256	mg/L	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)	<	4.08	ug/L	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1.02	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)	<	2.04	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		36.3	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1.02	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		312.4	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		87.4	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.265	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1.02	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		93.2	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		12.9	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)		1.7	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1.02	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)		1.22	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.22	mg/L	
04241	GROSS ALPHA RADIATION,TOTAL, PRODUCED WATER(pCi/L)		4.1	pCi/L	2.5
04242	GROSS BETA RADIATION, TOTAL, PRODUCED WATER(pCi/L)		23	pCi/L	3
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		312	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	50	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1.02	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		5.68	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		19.2	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)	<	1.02	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)	<	1.02	ug/L	
01065	NICKEL, DISSOLVED (UG/L AS NI)		3.34	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		6.24	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)		1.41	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.25	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		1.64	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4.08	ug/L	

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00955	SILICA, DISSOLVED (MG/L AS SI02)		14.3	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		0.18		
00932	SODIUM, CALCULATED, PERCENT		5	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		7.44	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		525	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		287	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		38.6	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		22.7	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1.02	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		348	mg/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)		1.54	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)		24.8	ug/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

MB-04
GPS: 30.077347, -97.861746

MB-04 is a manmade feature in bedrock and is a septic leach field. The feature is present within the Georgetown Limestone Formation and is positioned on a gently sloping hillside. This system is comprised of eight tanks. The approximate size of the tanks is unknown. The drainage area is less than 1.6 acres, and the probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-04

MB-05
GPS: 30.077242, -97.862391

MB-05 is a manmade feature in bedrock and is a septic leach field. The feature is present within the Georgetown Limestone Formation and is positioned on a gently sloping hillside. This system is comprised of eight tanks. The approximate size of the tanks is unknown. The drainage area is less than 1.6 acres, and the probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-05

MB-06
GPS: Alignment – See Figure 5

MB-06 is a manmade feature in bedrock and is a segment of an abandoned oil pipeline, the Hearne Pipeline. The feature is present within the Buda Limestone Formation and Georgetown Limestone Formation, and crosses the mapped fault discussed in previous sections. The below length, diameter, and depth of the pipeline is unknown. The trend of the pipeline is roughly 40 °. It is positioned on a gently sloping hillside and has a drainage area of less than 1.6 acres. The probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-06

GIS Identify Results - Pipeline Attributes

COUNTY_FIPS	209
OPERATOR	SUNOCO PIPELINE L.P.
COMMODITY DESCRIPTION	REFINED LIQUID PRODUCT, TRANSMISSION
SYSTEM NAME	HEARNE
DIAMETER	6.63
P5 NUMBER	829627
T4PERMIT	06566
T4PERMIT MILES	25.16
STATUS	Abandoned
INTERSTATE	No

MB-07
GPS: Alignment – See Figure 5

MB-07 is a manmade feature in bedrock and is an electric transmission line easement. The feature crosses both the Buda Limestone Formation and the Del Rio Clay Formation. There is no infill and the exact dimensions are unknown. MB-07 is primarily on a hillside and has a drainage area of less than 1.6 acres at each installed pole. The probability of rapid infiltration has been designated as low (10 pts). As this feature is a manmade feature in bedrock, it has been designated as sensitive to call the attention of the engineer.

Recommendation: Notify engineer for proper handling.



MB-07

ATTACHMENT C

Historic Aerial Photographs

Prepared for:

ACI CONSULTING
1001 Mopac Circle
Austin, TX 78746

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Historical Aerial Photographs

1280 & 1585 Cole Springs Road

TX

Hays County

PO #: 22-15-013N

ES-135575

Thursday, January 28, 2021



Date: 2020
Source: TNRIS

0 250 500 1,000 Feet

BANKS
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Date: 2016
Source: USDA

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
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Date: 2010
Source: USDA

0 250 500 1,000 Feet

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Date: 2004
Source: USDA

0 250 500 1,000 Feet

BANKS
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Date: 1995
Source: USGS

0 250 500 1,000 Feet

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Date: 1989
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
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Date: 1981
Source: USGS

0 250 500 1,000 Feet

BANKS
ENVIRONMENTAL DATA
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Date: 1973
Source: USGS

0 250 500 1,000 Feet

BANKS ENVIRONMENTAL DATA
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Date: 1967
Source: USGS

0 250 500 1,000 Feet

BANKS ENVIRONMENTAL DATA
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Date: 1954
Source: USGS

0 250 500 1,000 Feet

BANKS
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Date: 1951
Source: ASCS

0 250 500 1,000 Feet

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AERIAL SOURCE DEFINITIONS

Acronym	Agency
NASA	National Aeronautics & Space Administration
AMS	Army Mapping Service
ASCS	Agricultural Stabilization & Conservation Service
SCS	Soil Conservation Service
USBR	United States Bureau of Reclamation
Fairchild	Fairchild Aerial Surveys
TXDOT	Texas Department of Transportation
BLM	Bureau of Land Management
USAF	United States Air Force
USCOE	United States Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WALLACE	Wallace-Zingery Aerial Surveys
TNRIS	Texas Natural Resources Information System

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

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SECTION 4: WATER POLLUTION ABATEMENT PLAN

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Sarah Starkey, P.E.

Date: November 24, 2025

Signature of Customer/Agent:

Sarah Starkey

Regulated Entity Name: The Reserve at Cole Springs

Regulated Entity Information

1. The type of project is:

   ☒ Residential: Number of Lots: 157
   ☐ Residential: Number of Living Unit Equivalents:
   ☐ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):98.96 ac

3. Estimated projected population: 550

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	685,285	÷ 43,560 =	15.73
Other paved surfaces	541,010	÷ 43,560 =	12.42
Total Impervious Cover	1,226,295	÷ 43,560 =	28.15

Total Impervious Cover 28.15 **÷ Total Acreage** 98.96 ac **X 100 =** 28.45 **% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening

roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100 % Domestic	43,365	Gallons/day
_____% Industrial	_____	Gallons/day
_____% Commingled	_____	Gallons/day

TOTAL gallons/day 43,365

15. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

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

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

☐ The SCS was previously submitted on_____.

☒ The SCS was submitted with this application.

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

☒ The sewage collection system will convey the wastewater to the City of Buda Wastewater Treatment Plant. The treatment facility is:

☒ Existing.

☐ Proposed.

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

Site Plan Requirements

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

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

    Site Plan Scale: 1" = 100'.

18. 100-year floodplain boundaries:

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

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

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s):

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

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

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

    ☒ There are two (2) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

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

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

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

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

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

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

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

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

26. ☐ Surface waters (including wetlands).

    ☒ N/A

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

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

28. ☒ Legal boundaries of the site are shown.

Administrative Information

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

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

Attachment A - Factors Affecting Water Quality

Materials that are anticipated to be used on site that could be a potential source of contamination include the following:

During Construction:

1. Concrete and Masonry Materials
2. Wood, plastic, and metal Materials
3. Tar and hydrocarbons from paving operations
4. Oil, Grease, fuel, and hydraulic fluid from construction equipment and vehicle drippings
5. Fertilizers, Herbicides, and Pesticides
6. Cleaning solutions and detergents
7. Miscellaneous construction trash and debris
8. Soil erosion and sedimentation due to construction activity

Ultimate Use:

1. Pollutants generated from vehicles utilizing the site
2. Fertilizers, Herbicides, and pesticides used to maintain landscaping
3. Miscellaneous trash and debris generated from the public

(This is not intended to be an all-inclusive list)

All practical management practices will be used to reduce the risk of spills and other exposure of any contaminant to surface or groundwater.

Attachment B – Volume and Character of Storm Water

The proposed The Reserve at Cole Springs project includes the construction of 157 single family lots and associated civil improvements including, water, wastewater, roadways. Access to the site will be provided through the reconstruction and realignment of a portion of Cole Springs Road. Seven (7) driveways to ingress and egress from the site along Cole Springs Road will be constructed. Impervious cover for the site totals 28.15 total acres (28.45%).

Under existing conditions, water flows from west to southeast across the property.

A small portion of the site is located in the Federal Emergency Management Agency's 100-year floodplain according to FIRM 48209C0280G, Hays County Texas and incorporated areas, dated January 17, 2025. In proposed conditions, the majority of onsite flow will be captured and conveyed through a proposed storm system. There will be 5 untreated areas, of which 4 will be used for channel conveyance of bypass from offsite. Water will be treated according to TCEQ requirements through one (1) on site proposed batch detention pond. The batch detention pond will be used to irrigate designated areas within the development.

The subject site has no existing detention or water quality ponds. One water quality system and one batch detention pond is proposed on site. The Water Quality Structures are sized per current City of Buda and TCEQ design standards. Drainage area maps and calculations are included in the plan set for reference

Regarding stormwater volume (quantity) of the stormwater runoff which is expected to occur from the proposed project, see table below depicting existing vs proposed runoff volume.

f	Storm Event	Volume of Runoff (CF)
EXISTING	2 10 25 100	1,935,082 3,997,477 5,649,170 8,853,855
PROPOSED	2 10 25 100	921,089 1,806,410 2,498,362 3,825,261

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Attachment C - Suitability Letter From Authorized Agent

An on-site sewage facility will **not** be used to treat and dispose of the wastewater.

Attachment D – Exception to the Required Geologic Assessment

No sensitive geologic or manmade features were identified in the geologic assessment. Therefore, an exception to the Geologic Assessment Requirements will not be required.

SECTION 5: TEMPORARY STORMWATER SECTION

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Sarah Starkey, P.E.

Date: November 24, 2025

Signature of Customer/Agent:



Regulated Entity Name: The Reserve at Cole Springs

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

   ☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site-specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed, or which will receive discharges from disturbed areas of the project: N/A

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

Kimley»Horn

Attachment A - Spill Response Actions

If there is an accidental spill on site, the contractor shall respond with appropriate action. The contractor will be required to contact the owner and in turn the owner will contact the TCEQ in the event of a spill on site. In addition to the following guidance, reference the latest version of TCEQ's Technical Guidance Manual (TGM) RG-348 Section 2.4.16.

Cleanup

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

Minor Spills

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

Semi-Significant Spills

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

Spills should be cleaned up immediately:

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

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

- Notify the TCEQ by telephone as soon as possible and within 24 hours at (512)339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

- For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
- Notification should first be made by telephone and followed up with a written report.
- The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
- Other agencies which may need to be consulted include, but not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

Attachment B – Potential Sources of Contamination

Potential Source: Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle dripping.

Preventative Measures: Vehicle maintenance will be performed within the construction staging area or a local maintenance shop.

Potential Source: Miscellaneous trash and litter from construction workers and material wrappings.

Preventative Measures: Trash containers will be placed throughout the site to encourage proper disposal of trash.

Potential Source: Silt leaving the site.

Preventative Measures: Contractor will install all temporary best management practices prior to start of construction including the stabilized construction entrance to prevent tracking onto adjoining streets.

Potential Source: Construction Debris.

Preventative Measures: Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.

Potential Source: Soil and Mud from Construction Vehicle tires as they leave the site.

Preventative Measures: A stabilized construction exit shall be utilized as vehicles leave the site. Any soil, mud, etc. carried from the project onto public roads shall be cleaned up within 24 hours.

Potential Source: Sediment from soil, sand, gravel, and excavated materials stockpiled on site.

Preventative Measures: Silt fence shall be installed on the down gradient side of the stockpiled materials. Reinforced rock berms shall be installed at all downstream discharge locations.

Potential Source: Portable toilet spill.

Preventative Measures: Toilets on the site will be emptied on a regular basis by the contracted toilet company.

Kimley»Horn

Attachment C - Sequence of Major Activities

The installation of erosion and sedimentation controls shall occur prior to any excavation of materials or major disturbances on the site. The sequence of major construction activities will be as follows. Approximate acreage to be disturbed is listed in parentheses next to each activity.

Intended Schedule or Sequence of Major Activities:

1. Construct Access (0.05 Acres)
2. Installation of Temporary BMPs (98.96 ac Acres)
3. Initiate Grubbing and Topsoil Stripping of Site (98.96 ac Acres)
4. Rough Subgrade Preparation (earthwork, grading, street and drainage excavation and embankment) (98.96 ac Acres)
5. Wet and Dry Utility Construction (16 Acres)
6. Final Subgrade Preparation (16 Acres)
7. Installation of Base Materials (16 Acres)
8. Concrete (curbs, flatwork) (12 Acres)
9. Paving Activities (7 Acres)
10. Topsoil, Irrigation and Landscaping (98.96 ac Acres)
11. Site cleanup and Removal of Temporary BMPs (98.96 ac Acres)

Maximum total construction time is not expected to exceed 36 months.

Attachment D – Temporary Best Management Practices and Measures

A. No storm water originates up gradient that impacts the site. Two upstream off-site areas will bypass through proposed channels and culverts around the site.

B. Temporary BMPs will be installed prior to soil disturbing construction activity. Silt fencing will be placed along the down-gradient sides of the property to prevent silt from escaping the construction area. A temporary construction entrance will be placed on site to reduce vehicle "tracking" onto adjoining streets. A concrete washout pit will be used to collect all excess concrete during construction.

BMPs for this project will protect surface water or groundwater from turbid water, phosphorus, sediment, oil, and other contaminants, which may mobilize in storm water flows by slowing the flow of runoff to allow sediment and suspended solids to settle out of the runoff.

Practices may also be implemented on site for interim and permanent stabilization. Stabilization practices may include but are not limited to: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, and other similar measures.

C. There no sensitive features, as noted in the geologic assessment.

There are no surface streams within the boundaries of the project. The temporary onsite BMPs will be used to treat stormwater runoff before it leaves the project and prevent pollutants from entering into surface streams or any sensitive features down-gradient of the site.

D. The BMPs for this project are designed to allow water to pass through after sedimentation has occurred. Existing flow patterns will be maintained to any naturally occurring sensitive features that are discovered during construction.

Temporary runoff protection measures will be installed according to the recommendations made in Chapter 1 of RG-348. Temporary erosion control will be placed as close to the site of construction soil disturbance as possible to minimize any disturbance with drainage areas. Frequent inspections of erosion controls will be warranted near the environmentally sensitive features, especially after every rainfall.

Attachment E - Request To Temporarily Seal a Feature

Naturally occurring features will not be sealed on the site.

Attachment F - Structural Practices

Structural BMPs will be used to limit runoff discharge of pollutants from exposed areas of the site. BMPs will be installed prior to soil disturbing construction activity. Silt fencing will be placed along the down-gradient sides of the property to prevent silt from escaping the construction area. A temporary construction entrance will be placed at the site entry/exit point to reduce tracking onto adjoining streets. A construction staging area will be used onsite to perform all vehicle maintenance and for equipment and material storage. A concrete truck washout pit will be placed on site to provide containment and easier cleanup of waste from concrete operations. The location of all structural temporary BMP's are shown on the erosion control plan sheet and details and specifications are provided on the erosion control details sheet which can be found at the end of this report under Section 8.

Description of Temporary BMPs

Temporary Construction Entrance/Exit

The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice should be used at all points of construction ingress and egress.

Excessive amounts of mud can also present a safety hazard to roadway users. To minimize the amount of sediment loss to nearby roads, access to the construction site should be limited to as few points as possible and vegetation around the perimeter should be protected where access is not necessary. A rock stabilized construction entrance should be used at all designated access points.

Inspection and Maintenance Guidelines:

(1) The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.
(2) All sediment spilled, dropped, washed, or tracked onto public rights-of-way should be removed immediately by contractor.
(3) When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.
(4) When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
(5) All sediment should be prevented from entering any storm drain, ditch, or water course by using approved methods.

Silt Fence

The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow.

Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

Inspection and Maintenance Guidelines:

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

Concrete Washout Area

The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
- Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.

Below grade concrete washout facilities are typical. These consist of a lined excavation sufficiently large to hold expected volume of washout material. Above grade facilities are used if excavation is not practical. Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this section, with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

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

Rock Berm

The purpose of a rock berm is to serve as a check dam in areas of concentrated flow, to intercept sediment-laden runoff, detain the sediment and release the water in sheet flow. The rock berm should be used when the contributing drainage area is less than 5 acres. Rock berms are used in areas where the volume of runoff is too great for a silt fence to contain. They are less effective for sediment removal than silt fences, particularly for fine particles, but are able to withstand higher flows than a silt fence. As such, rock berms are often used in areas of channel flows (ditches, gullies, etc.). Rock berms are most effective at reducing bed load in channels and should not be substituted for other erosion and sediment control measures further up the watershed.

Inspection and Maintenance Guidelines:

(1) Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.
(2) Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
(3) Repair any loose wire sheathing.
(4) The berm should be reshaped as needed during inspection.
(5) The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
(6) The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

Inlet Protection

Storm sewers that are made operational prior to stabilization of the associated drainage areas can convey large amounts of sediment to natural drainage ways. In case of extreme sediment loading, the storm sewer itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets. The following guidelines for inlet protection are based primarily on recommendations by the Virginia Dept. of Conservation and Recreation (1992) and the North Central Texas Council of Governments (NCTCOG, 1993b).

In developments for which drainage is to be conveyed by underground storm sewers (i.e., streets with curbs and gutters), all inlets that may receive storm runoff from disturbed areas should be protected. Temporary inlet protection is a series of different measures that provide protection against silt transport or accumulation in storm sewer systems. This clogging can greatly reduce or completely stop the flow in the pipes. The different measures are used for different site conditions and inlet types.

Care should be taken when choosing a specific type of inlet protection. Field experience has shown that inlet protection that causes excessive ponding in an area of high construction activity may become so inconvenient that it is removed or bypassed, thus transmitting sediment-laden flows unchecked. In such situations, a structure with an adequate overflow mechanism should be utilized.

It should also be noted that inlet protection devices are designed to be installed on construction sites and not on streets and roads open to the public. When used on public streets these devices will cause ponding of runoff, which can cause minor flooding and can present a traffic hazard. An example of appropriate siting would be a new subdivision where the storm drain system is installed before the area is stabilized and the streets open to the general public. When construction occurs adjacent to active streets, the sediment should be controlled on site and not on public thoroughfares. Occasionally, roadwork or utility installation will occur on public roads. In these cases, inlet protection is an appropriate temporary BMP.

The following inlet protection devices are for drainage areas of one acre or less. Runoff from larger disturbed areas should be routed to a temporary sediment trap or basin.

Filter barrier protection using silt fence is appropriate when the drainage area is less than one acre and the basin slope is less than five percent. This type of protection is not applicable in paved areas.

Block and gravel protection is used when flows exceed 0.5 cubic feet per second and it is necessary to allow for overtopping to prevent flooding. This form of protection is also useful for curb type inlets as it works well in paved areas.

Wire mesh and gravel protection is used when flows exceed 0.5 cubic feet per second and construction traffic may occur over the inlet. This form of protection may be used with both curb and drop inlets.

Excavated impoundment protection around a drop inlet may be used for protection against sediment entering a storm drain inlet. With this method, it is necessary to install weep holes to allow the impoundment to drain completely. If this measure is implemented, the impoundment should be sized such that the volume of excavation is 3,600 cubic feet per acre (equivalent to 1 inch of runoff) of disturbed area entering the inlet.

Inspection and Maintenance Guidelines:

(1) Inspection should be made weekly and after each rainfall. Repair or replacement should be made promptly as needed by the contractor.
(2) Remove sediment when buildup reaches a depth of 3 inches. Removed sediment should be deposited in a suitable area and in such a manner that it will not erode.
(3) Check placement of device to prevent gaps between device and curb.
(4) Inspect filter fabric and patch or replace if torn or missing.
(5) Structures should be removed, and the area stabilized only after the remaining drainage area has been properly stabilized.

Attachment G – Drainage Area Map

There is one area greater than 10 acres within a common drainage area that will be disturbed at one time. WQP A. An existing and proposed drainage area map is provided at the end of this report in Section 8 to support the aforementioned requirement.

Attachment H - Temporary Sediment Pond(s) Plans and Calculations

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.

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.

Proposed Sedimentation Basin Calculations

For The Reserve at Cole Springs, the proposed onsite batch detention pond will serve as a storage for on-site and off-site drainage. The basins will be designed to contain the 3,600 cubic feet per acre of disturbed area draining to the pond.

Temporary Sedimentation

One batch detention pond will serve as storage for on-site and off-site drainage for The Reserve at Cole Springs (as shown on sheets 87 & 88 of the construction drawings) during the construction phase. Drainage area WQP A includes 94.49 acres and generates a volume of 340,164 ft^3. The proposed detention pond (WQP A) will contain a volume of 419,401 ft^3, thus the constructed detention pond will be adequately sized for sedimentation purposed for drainage area WQP A.

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Attachment I - Inspection and Maintenance for BMPs

Personnel Responsible for Inspections

The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. The contractor is to provide an inspector with a CPESC, CESSWI, or CISEC certification. Documentation of the inspector's qualifications is to be included in the attached Inspector Qualifications Log.

Inspection Schedule

The primary operator is required to choose one of the two inspections listed below.

☐ **Option 1:** Once every seven 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.

☐ **Option 2:** Once every 14 calendar days and within 24 hours of the end of a storm event of two inches or greater.

The inspections may occur on either schedule provided that documentation 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 (e.g., end of "dry" season and beginning of "wet" season).

If option 2 is the chosen frequency of inspections a rain gauge must be properly maintained on site or the storm event information from a weather station that is representative of the site location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, proper documentation of the total rainfall measured for that day must be recorded.
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;
- structural controls (for evidence of, or the potential for, pollutants entering the drainage system);
- sediment and erosion control measures identified in the SWP3 (to ensure they are operating correctly); and
- locations where vehicles enter or exit the site (for evidence of off-site sediment tracking).

Reductions in Inspection Frequency

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. 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 in the attached Rain Gauge Log.

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.

Inspection Report Forms

Use the Inspection Report Forms given as a checklist to ensure that all required areas of the construction site are addressed. There is space to document the inspector's name as well as when the inspections regularly take place. The tables will document that the required area was inspected. (If there were any

areas of concern, briefly describe them in this space with a more detailed description in the narrative section. Use the last table to document any discharges found during the inspections).
Describe how effective the installed BMPs are performing. Describe any BMP failures that were noted during the investigation and describe any maintenance required due to the failure. If new BMPs are needed as the construction site changes, the inspector can use the space at the bottom of the section to list BMPs to be implemented before the next inspection.

Describe the inspector's qualifications, how the inspection was conducted, and describe any areas of non-compliance in detail. If an inspection report does not identify any incidents of non-compliance, then it must contain a certifying signature stating that the facility or site is in compliance. The report must be signed by a person and in a manner required by 30 TAC 305.128. There is space at the end of the form to allow for this certifying signature.

Whenever an inspection shows that BMP modifications are needed to better control pollutants in runoff, the changes must be completed within seven calendar days following the inspection. If existing BMPs are modified or if additional BMPs are needed, you must describe your implementation schedule, and wherever possible, make the required BMP changes before the next storm event.

The Inspection Report Form functions as the required report and must be signed in accordance with TCEQ rules at 30 TAC 305.128.

Corrective Action

Personnel Responsible for Corrective Actions

Both Primary and Secondary Operators are responsible for maintaining all necessary Corrective Actions. If an individual is specifically identified as the responsible party for modifying the contact information for that individual should be documented in the attached Inspector Qualifications Log.

Corrective Action Forms

The Temporary BMPs must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions 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 attached forms 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. Actions taken as a result of inspections must be properly documented by completing the corrective action forms given.

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Attachment J - Schedule of Interim and Permanent Soil Stabilization

Construction practices shall disturb the minimal amount of existing ground cover as required for land clearing, grading, and construction activity for the shortest amount of time possible to minimize the potential of erosion and sedimentation from the site. Existing vegetation shall be maintained and left in place until it is necessary to disturb for construction activity. For this project the following stabilization practices will be implemented:

1. Hydraulic Mulch and Seeding: Disturbed areas subject to erosion shall be stabilized with hydraulic mulch and/or seeded and watered to provide interim stabilization. For areas that are not to be sodded as per the project landscaping plan, a minimum of 85% vegetative cover will be established to provide permanent stabilization.
2. Sodding and Wood Mulch: As per the project landscaping plan, Sodding and wood mulch will be applied to landscaped areas to provide permanent stabilization prior to project completion.

Records of the following shall be maintained:

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.

Stabilization measures must be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, and except as provided in the following, must be initiated no more that fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased:

Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practical.

Where construction activity on a portion of the site is temporarily ceased and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site.

In arid areas (areas with an average rainfall of 0-10 inches), semiarid areas (areas with an average annual rainfall of 10 to 20 inches), and areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practical.

Maintenance

Below are some maintenance practices to be used to maintain erosion and sediment controls:

- 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.

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.

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Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

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Construction Activity Sequence Log

Name of Operator	Projected dates Month/year	Activity Disturbing Soil clearing, excavation, etc.	Location on-site where activity will be conducted	Acreage being disturbed

*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.

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Stormwater Control Installation and Removal Log

Stormwater Control	Location On-Site	Installation Date	Removal Date

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Stabilization Activities Log

Date Activity Initiated	Description of Activity	Description of Stabilization Measure and Location	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated

Stabilization and erosion control practices may include, but are not limited to: establishing temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, and protecting existing trees and vegetation. List practices used where they are located, when they will be implemented, and whether they are temporary (interim) or permanent.

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Inspection Frequency Log

Date	Frequency Schedule and Reason for Change

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Rain Gauge Log

Date	Location of Rain Gauge	Gauge Reading

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General Information					
Name of Project		**Tracking No.**		**Inspection Date**	
Inspector Name, Title & Contact Information					
Present Phase of Construction					
Inspection Location (if multiple inspections are required, specify location where this inspection is being conducted)					

Inspection Frequency

Standard Frequency: ☐ Weekly ☐ Every 14 days and within 24 hours of a 0.25" rain

Increased Frequency: ☐ Every 7 days and within 24 hours of a 0.25" rain

Reduced Frequency:

- ☐ Once per month (for stabilized areas)
- ☐ Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)
- ☐ Once per month (for frozen conditions where earth-disturbing activities are being conducted)

Was this inspection triggered by a 0.25" storm event? ☐ Yes ☐ No

If yes, how did you determined whether a 0.25" storm event has occurred?

☐ Rain gauge on site ☐ Weather station representative of site. Specify weather station source:

Total rainfall amount that triggered the inspection (in inches)**:**

Unsafe Conditions for Inspection

Did you determine that any portion of your site was unsafe for inspection? ☐ Yes ☐ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

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Condition and Effectiveness of Erosion and Sediment (E&S) Controls				
Type/Location of E&S Control	**Repairs or Other Maintenance Needed?**	**Corrective Action Required?**	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
1.	☐Yes ☐No	☐Yes ☐No		
2.	☐Yes ☐No	☐Yes ☐No		
3.	☐Yes ☐No	☐Yes ☐No		
4.	☐Yes ☐No	☐Yes ☐No		
5.	☐Yes ☐No	☐Yes ☐No		
6.	☐Yes ☐No	☐Yes ☐No		
7.	☐Yes ☐No	☐Yes ☐No		
8.	☐Yes ☐No	☐Yes ☐No		
9.	☐Yes ☐No	☐Yes ☐No		
10.	☐Yes ☐No	☐Yes ☐No		

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Condition and Effectiveness of Pollution Prevention (P2) Practices				
Type/Location of P2 Practices	**Repairs or Other Maintenance Needed?**	**Corrective Action Required?**	**Identification Date**	**Notes**
1.	☐Yes ☐No	☐Yes ☐No		
2.	☐Yes ☐No	☐Yes ☐No		
3.	☐Yes ☐No	☐Yes ☐No		
4.	☐Yes ☐No	☐Yes ☐No		
5.	☐Yes ☐No	☐Yes ☐No		
6.	☐Yes ☐No	☐Yes ☐No		
7.	☐Yes ☐No	☐Yes ☐No		
8.	☐Yes ☐No	☐Yes ☐No		
9.	☐Yes ☐No	☐Yes ☐No		
10.	☐Yes ☐No	☐Yes ☐No		

Stabilization of Exposed Soil			
Stabilization Area	**Stabilization Method**	**Have You Initiated Stabilization?**	**Notes**
1.		☐ YES ☐ NO If yes, provide date:	
2.		☐ YES ☐ NO If yes, provide date:	
3.		☐ YES ☐ NO If yes, provide date:	
4.		☐ YES ☐ NO If yes, provide date:	
5.		☐ YES ☐ NO If yes, provide date:	

Description of Discharges	
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? ☐ Yes ☐ No **If "yes", provide the following information for each point of discharge:**	
Discharge Location	**Observations**
1.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
2.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
3.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:

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Contractor or Subcontractor Certification and Signature
"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." **Signature of Contractor or Subcontractor:** _____ **Date:** **Printed Name and Affiliation:** _____
Certification and Signature by Permittee
"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." **Signature of Permittee or "Duly Authorized Representative":** _____ **Date:** **Printed Name and Affiliation:** _____

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Section A – Initial Report (Complete this section within 24 hours of discovering the condition that triggered corrective action)					
Name of Project		Tracking No.		Today's Date	
Date Problem First Discovered			Time Problem First Discovered		
Name and Contact Information of Individual Completing this Form					

What site conditions triggered the requirement to conduct corrective action:

☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3

☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards

☐ A prohibited discharge has occurred or is occurring

Provide a description of the problem:

Deadline for completing corrective action (*Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day)*:

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress
(Complete this section no later than 7 calendar days after discovering the condition that triggered corrective action)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem (Add an additional sheet if necessary)	How This Was Determined and the Date You Determined the Cause
1.	1.
2.	2.
3.	3.

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem

List of Stormwater Control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes
1.		☐Yes ☐No Date:	
2.		☐Yes ☐No Date:	
3.		☐Yes ☐No Date:	

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Section A – Initial Report (Complete this section within 24 hours of discovering the condition that triggered corrective action)					
Name of Project		Tracking No.		Today's Date	
Date Problem First Discovered			Time Problem First Discovered		
Name and Contact Information of Individual Completing this Form					

What site conditions triggered the requirement to conduct corrective action:

☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3
☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards
☐ A prohibited discharge has occurred or is occurring

Provide a description of the problem:

Deadline for completing corrective action (*Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day)*:

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress
(Complete this section no later than 7 calendar days after discovering the condition that triggered corrective action)

Section B.1 – Why the Problem Occurred	
Cause(s) of Problem (Add an additional sheet if necessary)	How This Was Determined and the Date You Determined the Cause
1.	1.
2.	2.
3.	3.

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem			
List of Stormwater Control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes
1.		☐Yes ☐No Date:	
2.		☐Yes ☐No Date:	
3.		☐Yes ☐No Date:	

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Contractor or Subcontractor Certification and Signature
"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." **Signature of Contractor or Subcontractor:** _____ **Date:** **Printed Name and Affiliation:** _____
Certification and Signature by Permittee
"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." **Signature of Permittee or "Duly Authorized Representative":** _____ **Date:** **Printed Name and Affiliation:** _____

SECTION 6: PERMANENT STORMWATER

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Sarah Starkey, P.E.

Date: November 24, 2025

Signature of Customer/Agent



Regulated Entity Name: The Reserve at Cole Springs

Permanent Best Management Practices (BMPs)

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

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

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 85% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

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

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

☐ N/A

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

   ☐ N/A

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

☒ Design calculations (TSS removal calculations)

☒ TCEQ construction notes

☒ All geologic features

☒ All proposed structural BMP(s) plans and specifications

☐ N/A

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

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

    ☐ N/A

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

    ☒ N/A

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

    ☒ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

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

    ☐ N/A

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

    ☐ N/A

Attachment A - 20% or Less Impervious Cover Waiver

The site has more than 20% impervious cover. Therefore, a waiver will not be submitted for this project.

Attachment B - BMPs for UP-GRADIENT STORMWATER

Up-gradient storm water exists north and west of the site based on current topography maps and field observations. Up-gradient water bypasses all improvements via proposed channel and culvert. Please refer to the Existing and Proposed Drainage Area Maps that are provided at the end of this report in Section 8.

Attachment C - BMPs for On-Site Stormwater

The Reserve at Cole Springs has a total of 6 onsite basins and 2 off-site basins. The overall required removal for this development is Lm = 22,799 LBS. The system has been designed to provide 24,500 LBS of TSS removal. The basins have been broken out and are shown on Water Quality Drainage Area Map. Water quality drainage area WQP A PH 1 will overland flow to drainage inlets then pipe flow to Batch Detention WQP A. Batch Detention Pond A will provide 24,500 LBS of TSS removal for this development. UT-1, UT-2, UT-3, UT-4 and UT-5 will not be treated by any permanent BMPs.

After construction, all disturbed areas on the site will be re-vegetated and runoff from the proposed improvements will be captured by the proposed storm system and conveyed through the proposed BMP's.

Construction plans, calculations and specifications are provided in Section 8 which is located at the end of this report.

Attachment D – BMPs for Surface Streams and Sensitive Features

There are no identified sensitive features on site, as noted in the geologic assessment. There is one critical water quality feature off site to the south of the property. The buffer zone includes a small piece on the site, and no construction is proposed in the area. Temporary erosion control will be placed as close to the site of construction soil disturbance as possible to minimize any disturbance. Frequent inspections of erosion controls will be warranted near the sensitive features, especially after rainfall. All permanent BMP's have been designed to remove 80% of the increase in Total Suspended Solids as per current TCEQ and City of Buda requirements.

Attachment E - Request To Seal a Feature

The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.

Attachment F – Construction Plans

Calculations for the load removal requirements for the project and the load removal provided by the permanent BMP's are provided as an exhibit in Section 8 which have been preliminary approved by a professional engineer licensed in the state of Texas. The load removal requirements are derived from the equations from the technical guidance manual based upon project area and increase in impervious cover. All stormwater runoff from impervious areas will be treated by the proposed permanent BMP's to provide the overall required removal of 85% of the increase in Total Suspended Solids. Provided within the calculations is a summary of the amount of pollutant load required to be removed from the drainage areas and the amount of removal provided by the permanent BMP's.

Construction plans, details, specifications, calculations, and construction notes are provided in Section 8 which is attached at the end of this report.

Attachment G - Inspection, Maintenance, Repair and Retrofit Plan

The inspection and maintenance plan outlines the procedures necessary to maintain the performance of the Permanent Best Management Practices for this project. It should be noted that the plan provides guidelines that may have to be adjusted dependent on site specific and weather-related conditions.

It is the responsibility of the owner to provide the inspections and maintenance as outlined in the plan for the duration of the project. The owner will maintain this responsibility until it is assumed or transferred to another entity in writing. If the property is leased or sold, the responsibility for the maintenance will be required to be transferred through the lease agreement, binding covenants, closing documents, or other binding legal instrument.

Disposal of accumulated silt shall be accomplished following Texas Commission on Environmental Quality guidelines and specifications.

Maintenance records shall be kept on the installation, maintenance, or removal of items necessary for the proper operation of the facilities. All inspections shall be documented.

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

Responsible Party: Buda Cole Springs JV, LP

Mailing Address: 1308 Tinnin Ford Road, Unit 2

City, State: Austin, TX Zip: 78741

Telephone: 512-636-4390 Fax: N/A

I, the owner, have read and understand the requirements of the attached Inspection and Maintenance Plan for the proposed Permanent Best Management Practices for my project. I acknowledge that I will maintain responsibility for the implementation and execution of the plan until the responsibility is transferred to or assumed by another party in writing through a binding legal instrument.

Signature of Responsible Party _____ Date 12-5-2025

This Maintenance Plan is based on TCEQ Maintenance Guidelines.

By: _____ Date 11/24/2025
Sarah Starkey, P.E.

INSPECTION AND MAINTENANCE FOR BMPS

Batch Detention Basin

1. Inspections: Basins should be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation. When possible, inspections should be conducted during wet weather to determine if the pond is meeting the target detention times. In particular, the extended detention control device should be regularly inspected for evidence of clogging, or conversely, for too rapid a release. If the design drawdown times are exceeded by more than 24 hours, then repairs should be scheduled immediately. The upper stage pilot channel, if any, and its flow path to the lower stage should be checked for erosion problems. During each inspection, erosion areas inside and downstream of the BMP should be identified and repaired or revegetated immediately.
2. Mowing. The upper stage, side slopes, embankment, and emergency spillway of an extended detention basin must be mowed regularly to discourage woody growth and control weeds. Grass areas in and around basins should be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing of grass is performed, a mulching mower should be used, or grass clippings should be caught and removed.
3. Debris and Litter Removal. Debris and litter will accumulate near the extended detention control device and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the control device or riser.
4. Erosion Control. The pond side slopes, emergency spillway, and embankment all may periodically suffer from slumping and erosion, although this should not occur often if the soils are properly compacted during construction. Regrading and revegetation may be required to correct the problems. Similarly, the channel connecting an upper stage with a lower stage may periodically need to be replaced or repaired. g: Grass areas in and around sand filters must be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscape areas. Vegetation on the pond embankments should be mowed as appropriate to prevent the establishment of woody vegetation
5. Structural Repairs and Replacement. With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. These repairs should include patching of cracked concrete, sealing of voids, and removal of vegetation from cracks and joints. The various inlet/outlet and riser works in a basin will eventually deteriorate and must be replaced. Public works experts have estimated that corrugated metal pipe (CMP) has a useful life of about 25 yr, whereas reinforced concrete barrels and risers may last from 50 to 75 yr.
6. Nuisance Control. Standing water (not desired in a extended detention basin) or soggy conditions within the lower stage of the basin can create nuisance conditions for nearby residents. Odors, mosquitoes, weeds, and litter are all occasionally perceived to be problems. Most of these problems are generally a sign that regular inspections and maintenance are not being performed (e.g., mowing, debris removal, clearing the outlet control device).
7. Sediment Removal. When properly designed, dry extended detention basins will accumulate quantities of sediment over time. Sediment accumulation is a serious maintenance concern in extended detention dry ponds for several reasons. First, the sediment gradually reduces available stormwater management storage capacity within the basin. Second, unlike wet extended detention basins (which have a permanent pool to conceal deposited sediments), sediment accumulation can make dry extended detention basins very unsightly. Third, and perhaps most importantly, sediment tends to accumulate around the control device. Sediment deposition increases the risk that the orifice will become clogged, and gradually reduces storage capacity reserved for pollutant removal. Sediment can also be resuspended if allowed to accumulate over time and escape through the hydraulic control to downstream channels and streams. For these reasons, accumulated sediment needs to be removed from the lower stage when sediment buildup fills 20% of the volume of the basin or at least every 10 years.

Rock Berm

1. Inspection should be made weekly and after each rainfall in accordance to Section 2.4.5 of RG-348. If placed in streambeds, inspection should occur on a daily basis.
2. Accumulated silt shall be removed when it reaches a depth of six (6) inches. The silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation.
3. Loose wire sheathing shall be repaired immediately when necessary and the berm shall be reshaped as needed during inspection.
4. Berm shall be replaced if the structure ceases to function as initially intended due to factors such as silt accumulation, washout, construction traffic damage, etc.
5. When all upstream areas are stabilized and the accumulated silt has been removed, the rock berm should be removed and disposed of.

Attachment H – Pilot-Scale Field Testing Plan

The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site; therefore pilot-scale field testing is not required.

Attachment I – Measures for Minimizing Surface Stream Contamination

Surface streams do not exist on site. Therefore, 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 not provided at the end of this form. All disturbed areas will be re-vegetated as soon as practical.

Section 7: Additional Forms

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

I Rob Archer,
Print Name

Owner,
Title - Owner/President/Other

of Buda Cole Springs JV, LP,
Corporation/Partnership/Entity Name

have authorized Sarah Starkey, P.E.
Print Name of Agent/Engineer

of Kimley-Horn and Associates
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:

Applicant's Signature

12.5.2025
Date

THE STATE OF TEXAS §

County of Hays §

BEFORE ME, the undersigned authority, on this day personally appeared Rob Archer 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 5 day of December.

MACKENZIE ANN MORTON
Notary Public, State of Texas
Comm. Expires 08-04-2029
Notary ID 135526700

Mackenzie Ann Morton
NOTARY PUBLIC

Mackenzie Ann Morton
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 8/4/2029

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: The Reserve at Cole Springs
Regulated Entity Location: Cole Springs Road
Name of Customer: Buda Cole Springs JV, LP
Contact Person: Rob Archer Phone: 512-636-4390
Customer Reference Number (if issued): N/A
Regulated Entity Reference Number (if issued):N/A

Austin Regional Office (3373)

☒ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☒ Contributing Zone ☒ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	98.96 Acres	$ 6,500
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	
Sewage Collection System		
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: Sarah Stro Date: November 24, 2025

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

Kimley»Horn

Core Data Form

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

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

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)	10/1/2025

☒ 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:*
Buda Cole Springs JV, LP	

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0805121749	32090533087		

11. Type of Customer:	☐ Corporation	☐ Individual	Partnership: ☐ General ☒ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship	☐ Other:

12. Number of Employees	**13. Independently Owned and Operated?**
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher	☐ **Yes** ☒ **No**

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

☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other:
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address:	1308 Tinnin Ford Road, Unit 2						
	City	Austin	**State**	TX	**ZIP**	78741	**ZIP + 4**

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	Elliot.Jones@outlook.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 636-4390		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

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

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

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

Buda Cole Springs JV, LP

23. Street Address of the Regulated Entity: ***(No PO Boxes)***								
	City	Buda	**State**	TX	**ZIP**	78610	**ZIP + 4**	
24. County	Hays County							

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

25. Description to Physical Location:	North of Cole Springs Road, east of the intersection of Cole Springs Road and Little Pool Road				
26. Nearest City			**State**	**Nearest ZIP Code**	
Buda			TX	78610	

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	30.077556		**28. Longitude (W) In Decimal:**	-97.860504	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	4	39.2016	-97	51	37.8144

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)
6552		237210	

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

Single Family Homes

34. Mailing Address:	**1308 Tinnin Ford Road**							
	City	**Austin**	**State**	**TX**	**ZIP**	**78741**	**ZIP + 4**	
35. E-Mail Address:	**Elliot.Jones@outlook.com**							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(512) 636-4390		( ) -

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	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Sarah Starkey, P.E.	41. Title:	Project Manager

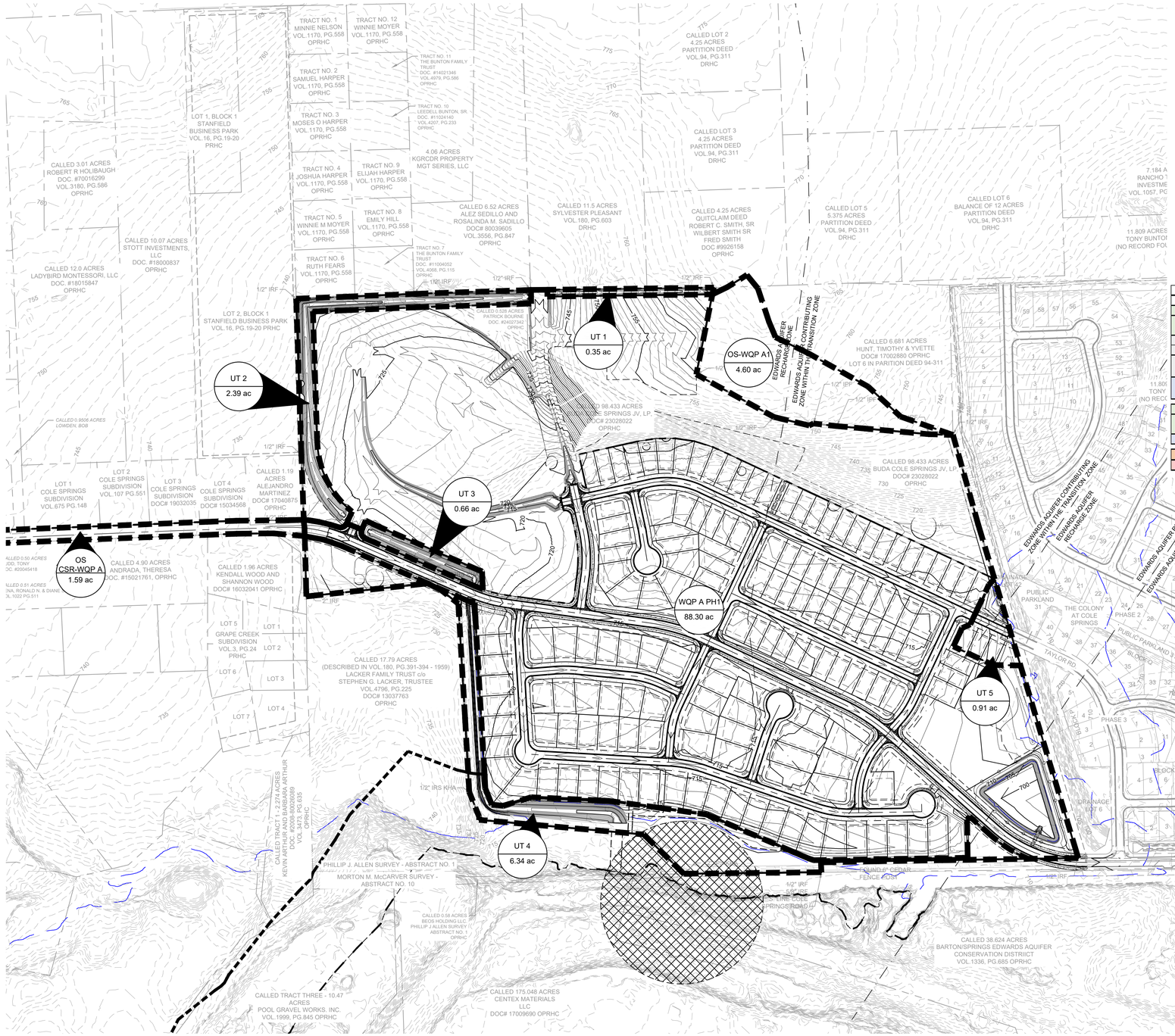
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(512) 520-0768		( ) -	sarah.starkey@kimley-horn.com

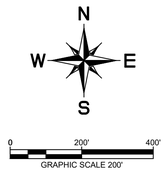
SECTION V: Authorized Signature

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:	~~Sarah Starkey, P.E.~~ Kimley-Horn	Job Title:	Project Manager	
Name *(In Print)*:	Sarah Starkey, P.E.		Phone:	( ) -
Signature:	Sarah Starkey		Date:	12/5/2025

SECTION 8: EXHIBITS





LEGEND

- X-1 / 9.9 ac — AREA DESIGNATOR / AREA IN ACRES
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR
- EDWARDS AQUIFER ZONE BOUNDARIES
- PROPOSED 100-YEAR ATALS 14 FLOODPLAIN
- WATER QUALITY TRANSITION ZONE BUFFER
- CRITICAL WATER QUALITY ZONE BUFFER

TCEQ OVERALL Water Quality Drainage Basins

	Proposed Area (AC)	Proposed Impervious Cover (AC)	% Impervious Cover	REQUIRED TSS REMOVAL	PROPOSED TSS REMOVAL
WQP A PH1	88.30	26.43	30%	22655	24500
TOTAL ONSITE TO POND A	**88.30**	**26.43**	**30%**		
OS-WQP A1	4.60	0.00	0%		
OS-CSR-WQP A1	1.59	0.84	53%		
TOTAL OFFSITE TO POND A	**6.19**	**0.84**	**14%**		
TOTAL TO POND A	**94.49**	**27.27**	**29%**	**22655**	**24500**
UT 1-5	10.65	1.72	16%	144	0
TOTAL ONSITE UNTREATED	**10.65**	**1.72**	**16%**		
TOTAL UNTREATED	**10.65**	**1.72**	**16%**	**144**	**0**
TOTAL ONSITE	**98.95**	**28.15**	**28%**		
TOTALS	**105.14**	**28.99**	**28%**	**22799**	**24500**

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70±s NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

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

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

CONSTRUCTION PLAN APPROVAL SHEET ____ OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

WATER QUALITY AREA MAP

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:45:11am File Path: K:\GEO_Civil\069422600 – Buda 98\Civil\Phase 1\PlanSheets\FOR TCEQ USE ONLY\C-Water Quality Map.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: The Reserve at Cole Springs
Date Prepared: 11/17/2025

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 =	Hays	
Total project area included in plan * =	98.95	acres
Predevelopment impervious area within the limits of the plan * =	2.91	acres
Total post-development impervious area within the limits of the plan* =	28.15	acres
Total post-development impervious cover fraction * =	0.28	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	22655	lbs.

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

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

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

Drainage Basin/Outfall Area No. = WQP A

Total drainage basin/outfall area =	88.30	acres
Predevelopment impervious area within drainage basin/outfall area =	1.35	acres
Post-development impervious area within drainage basin/outfall area =	26.43	acres
Post-development impervious fraction within drainage basin/outfall area =	0.30	
$L_{M\ THIS\ BASIN}$ =	22512	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Extended Detention
Removal efficiency = 91 percent

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

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

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

A_C =	88.30	acres
A_I =	26.43	acres
A_P =	61.87	acres
L_R =	28465	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 24500 lbs.

F = 0.86

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 =	1.38	inches	
Post Development Runoff Coefficient =	0.26		
On-site Water Quality Volume =	114029	cubic feet	

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

Off-site area draining to BMP =	6.19	acres	OS-WQP A (4.60 AC) + OS CSR-WQP A (1.59 AC)
Off-site Impervious cover draining to BMP =	0.84	acres	OS-WQP A (0.00 AC) + OS CSR-WQP A (0.84 AC)
Impervious fraction of off-site area =	0.14		
Off-site Runoff Coefficient =	0.15		
Off-site Water Quality Volume =	4804	cubic feet	
Storage for Sediment =	23767		
Total Capture Volume (required water quality volume(s) x 1.20) =	142600	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.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: The Reserve at Cole Springs
Date Prepared: 11/17/2025

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 =	Hays	
Total project area included in plan * =	98.95	acres
Predevelopment impervious area within the limits of the plan * =	2.91	acres
Total post-development impervious area within the limits of the plan* =	28.15	acres
Total post-development impervious cover fraction * =	0.28	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	22655	lbs.

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

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

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

Drainage Basin/Outfall Area No. = UNTREATED

Total drainage basin/outfall area =	10.65	acres
Predevelopment impervious area within drainage basin/outfall area =	1.56	acres
Post-development impervious area within drainage basin/outfall area =	1.72	acres
Post-development impervious fraction within drainage basin/outfall area =	0.16	
$L_{M\ THIS\ BASIN}$ =	144	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Untreated
Removal efficiency = 0 percent

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

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

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

A_C =	10.65	acres
A_I =	1.72	acres
A_P =	8.93	acres
L_R =	0	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 0 lbs.

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WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

No.	REVISIONS	DATE	BY

WATER QUALITY CALCULATIONS

THE RESERVE AT COLE SPRINGS PHASE 1
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
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ELEV.=732.56' (NAVD '88)

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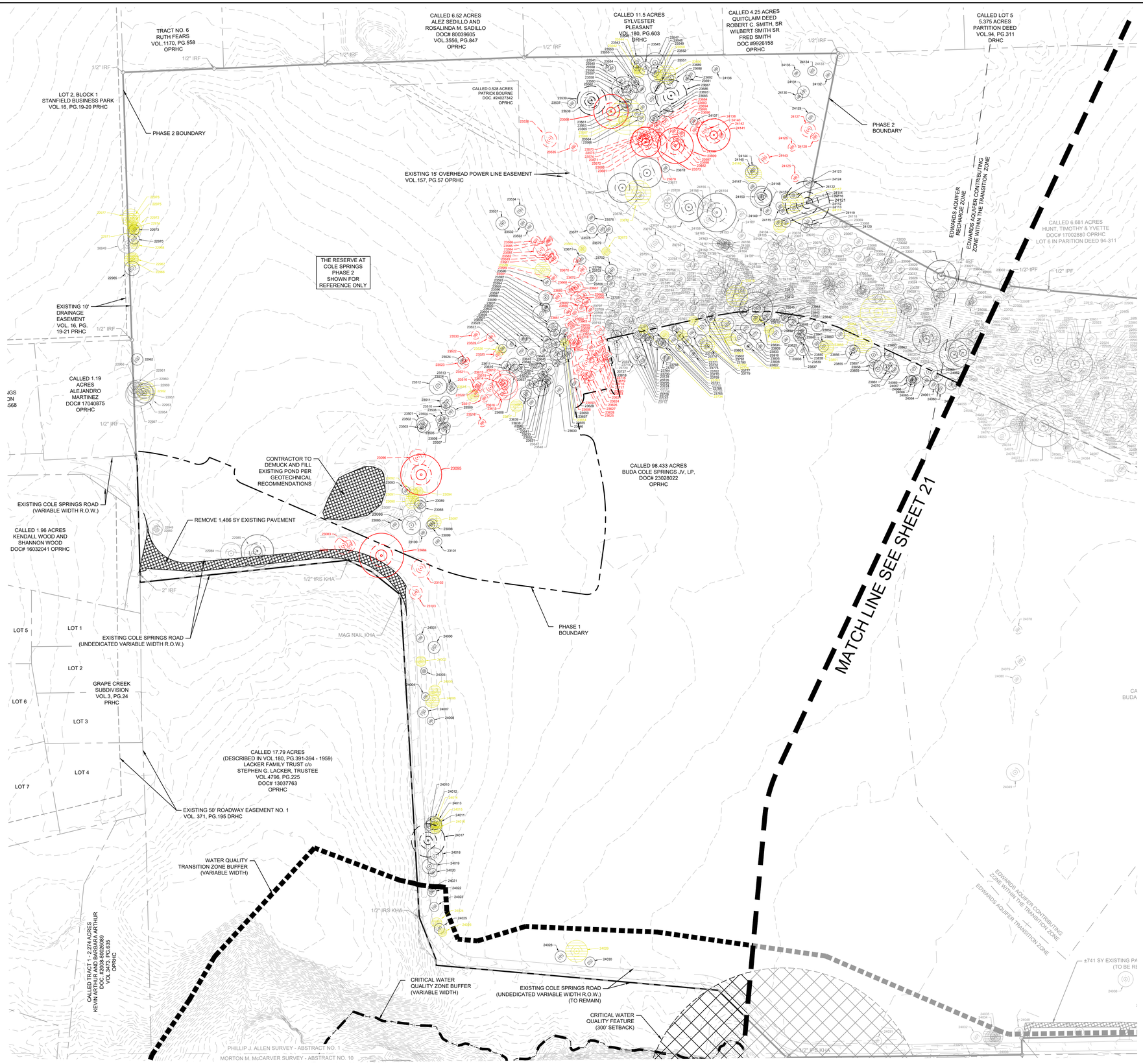
CONSTRUCTION PLAN APPROVAL SHEET ___ OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

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PERMIT NUMBER:

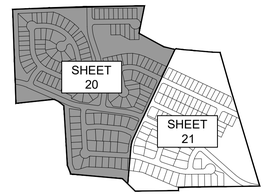
Plotted By:Flynn, Alyssa Date:December 05, 2025 11:44:04am File Path:K:\CFO_Civil\069422602 — Buda 08\Cad\Phase 1\PlanSheets\FOR TCEQ USE ONLY\C-Water Quality Map.dwg
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N
W E
S
0 100' 200'
GRAPHIC SCALE 100'

LEGEND

- PROPERTY LINE
- 632 EXISTING CONTOUR
- EXISTING STREET CENTERLINE
- EDWARDS AQUIFER ZONE BOUNDARIES
- EXISTING 100-YR ATLAS 14 FLOODPLAIN
- W EXISTING WATER LINE
- SS EXISTING WASTEWATER LINE
- EXISTING FIRE HYDRANT
- EXISTING WW MANHOLE
- TREE TO REMAIN
- TREE TO BE REMOVED
- TREE TO BE REMOVED IN R.O.W.
- UNHEALTHY TREE



KEY MAP

BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 20 OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

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PERMIT NUMBER: _____

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602	
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

EXISTING CONDITIONS AND DEMOLITION PLAN (SHEET 1 OF 2)

THE RESERVE AT COLE SPRINGS PHASE 1

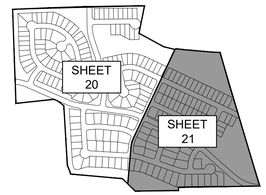
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
20 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:12:56am File Path: K:\aus_civil\069422600 - buda 08\Cad\Phase 1\plansheets\C-Existing Conditions and Demolition Plan.dwg
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LEGEND

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- EXISTING STREET CENTERLINE
- EDWARDS AQUIFER ZONE BOUNDARIES
- EXISTING 100-YR ATLAS 14 FLOODPLAIN
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STATE OF TEXAS
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KHA PROJECT 069422602			
DATE	NOVEMBER 2025		
SCALE:	AS SHOWN	DESIGNED BY:	KB
		DRAWN BY:	KB
		CHECKED BY:	RBW

EXISTING CONDITIONS AND DEMOLITION PLAN (SHEET 2 OF 2)

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
21 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:13:03am File Path: K:\pro...civil\069422600 – buda 98\Civil\Phase 1\Volumesheets\VC-Existing Conditions and Demolition Plan.dwg
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EROSION CONTROL LEGEND

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- 632 EXISTING CONTOUR
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- CE STABALIZED CONSTRUCTION ENTRANCE/EXIT
- IP INLET PROTECTION
- RB ROCK BERM
- LOC — LOC — LIMITS OF CONSTRUCTION
- TP — TP — TREE PROTECTION
- V LIMITS OF REVEGETATION
- CURLEX MATTING (LANDLOK 450 ARMORMAX)
- CONCRETE CHANNEL

NOTES:

1. FLOODPLAIN EASEMENT RESTRICTION: CONSTRUCTION WITHIN THE FLOODPLAIN MAY ONLY OCCUR WITH THE WRITTEN APPROVAL OF THE CITY. A REQUEST FOR CONSTRUCTION WITHIN THE FLOODPLAIN EASEMENT MUST BE ACCOMPANIED WITH DETAILED CONSTRUCTION PLANS AND STUDIES INDICATING THAT NO FLOODING WILL RESULT, THAT NO OBSTRUCTION TO THE NATURAL FLOW OF WATER WILL RESULT; AND SUBJECT TO ALL OWNERS OR THE PROPERTY AFFECTED BY SUCH CONSTRUCTION BECOMING A PARTY TO THE REQUEST. WHERE CONSTRUCTION IS PERMITTED, ALL FINISHED FLOOR ELEVATIONS SHALL BE A MINIMUM OF TWO (2) FEET ABOVE THE 100-YEAR FLOOD ELEVATION AS DETERMINED BY ANALYZING THE ULTIMATE BUILD-OUT CONDITIONS OF THE ENTIRE DRAINAGE BASIN.
2. EXISTING CREEKS, LAKES, RESERVOIRS, OR DRAINAGE CHANNELS TRAVERSING ALONG OR ACROSS PORTIONS OF THIS ADDITION, WILL REMAIN AS AN OPEN CHANNEL AT ALL TIMES AND WILL BE MAINTAINED BY THE INDIVIDUAL OWNERS OF THE LOT OR LOTS THAT ARE TRAVERSED BY THE DRAINAGE COURSES ALONG OR ACROSS SAID LOTS. THE CITY WILL NOT BE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF SAID DRAINAGE WAYS OR FOR THE CONTROL OF EROSION. EACH PROPERTY OWNER SHALL KEEP THE NATURAL DRAINAGE CHANNELS TRAVERSING HIS PROPERTY CLEAN AND FREE OF DEBRIS, SILT, OR ANY SUBSTANCE, WHICH WOULD RESULT IN UNSANITARY CONDITIONS. THE CITY SHALL HAVE THE RIGHT OF INGRESS AND EGRESS FOR THE PURPOSE OF INSPECTION AND SUPERVISION OF MAINTENANCE WORK BY THE PROPERTY OWNER TO ALLEVIATE ANY UNDESIRABLE CONDITIONS, WHICH MAY OCCUR.
3. EASEMENTS: ANY PUBLIC UTILITY, INCLUDING THE CITY, SHALL HAVE THE RIGHT TO MOVE AND KEEP MOVED ALL OR PART OF ANY BUILDING, FENCES, TREES, SHRUBS, OTHER GROWTHS OR IMPROVEMENTS WHICH IN ANY WAY ENDANGER OR INTERFERE WITH THE CONSTRUCTION, MAINTENANCE, OR EFFICIENCY OF ITS RESPECTIVE SYSTEMS ON ANY OF THE EASEMENTS OR RIGHT-OF-WAY SHOWN ON THE PLAT (OR FILED BY SEPARATE INSTRUMENT THAT IS ASSOCIATED WITH SAID PROPERTY); AND ANY PUBLIC, INCLUDING THE CITY, SHALL HAVE THE RIGHT AT ALL TIMES OF INGRESS AND EGRESS TO AND FROM AND UPON SAID EASEMENTS FOR THE PURPOSE OF CONSTRUCTION, RECONSTRUCTION, INSPECTION, PATROLLING, MAINTAINING AND ADDING TO REMOVING ALL OR PART OF ITS RESPECTIVE SYSTEMS WITHOUT THE NECESSITY AT ANY TIME OF PROCURING THE PERMISSION OF ANYONE. EASEMENTS SHALL BE MAINTAINED BY PROPERTY OWNERS. THE CITY CAN MOVE TREES OR ANY OTHER IMPROVEMENTS AND DOES NOT HAVE THE RESPONSIBILITY TO REPLACE THEM.
4. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
5. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL AS ADOPTED BY THE CITY OF BUDA.
6. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY THE CITY OF BUDA ENGINEERING DEPARTMENT, 312-0084, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.
7. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER, ENVIRONMENTAL SPECIALIST OR CITY ARBORIST AS APPROPRIATE. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE PLAN MAY BE REQUIRED BY THE INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
8. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR THE MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHED SIX (6) INCHES.
9. WHERE A DIVERSION OR PERIMETER CONTROL SILT FENCE IS INSTALLED IN THE DIRECTION OF A SLOPE, A 20-FLOOR LENGTH OF FENCE SHOULD BE TURNED IN, ACROSS THE SLOPE, AT REGULAR INTERVALS (100 FEET) TO CREATE A "J" HOOK.

PERMANENT EROSION CONTROL:

ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND BETWEEN THE CURB AND RIGHT-OF-WAY LINE.

THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE AS SPECIFIED IN THE CITY OF AUSTIN STANDARD SPECIFICATION 604S, AS ADOPTED BY THE CITY OF BUDA. USE NATIVE SEEDING.

DUST CONTROL:

DUST CONTROL METHODS ARE REQUIRED AS PER CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL SECTION 1.4.5.D AS ADOPTED BY THE CITY OF BUDA.

BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 28 OF 151
FILE NUMBER_____APPLICATION DATE_____
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EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
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PERMIT NUMBER:

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS — SARAH F. STARKEY — 145662 — LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

EROSION CONTROL PLAN (SHEET 1 OF 2)

SHEET NUMBER
28 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:16:59pm File Path: K:\Aps_civil\069422602 – buda 08\Civil\Phase 1\plansheet\CC-Erosion Control Plan.dwg
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2. EXISTING CREEKS, LAKES, RESERVOIRS, OR DRAINAGE CHANNELS TRAVERSING ALONG OR ACROSS PORTIONS OF THIS ADDITION, WILL REMAIN AS AN OPEN CHANNEL AT ALL TIMES AND WILL BE MAINTAINED BY THE INDIVIDUAL OWNERS OF THE LOT OR LOTS THAT ARE TRAVERSED BY THE DRAINAGE COURSES ALONG OR ACROSS SAID LOTS. THE CITY WILL NOT BE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF SAID DRAINAGE WAYS OR FOR THE CONTROL OF EROSION. EACH PROPERTY OWNER SHALL KEEP THE NATURAL DRAINAGE CHANNELS TRAVERSING HIS PROPERTY CLEAN AND FREE OF DEBRIS, SILT, OR ANY SUBSTANCE, WHICH WOULD RESULT IN UNSANITARY CONDITIONS. THE CITY SHALL HAVE THE RIGHT OF INGRESS AND EGRESS FOR THE PURPOSE OF INSPECTION AND SUPERVISION OF MAINTENANCE WORK BY THE PROPERTY OWNER TO ALLEVIATE ANY UNDESIRABLE CONDITIONS, WHICH MAY OCCUR.
3. EASEMENTS: ANY PUBLIC UTILITY, INCLUDING THE CITY, SHALL HAVE THE RIGHT TO MOVE AND KEEP MOVED ALL OR PART OF ANY BUILDING, FENCES, TREES, SHRUBS, OTHER GROWTHS OR IMPROVEMENTS WHICH IN ANY WAY ENDANGER OR INTERFERE WITH THE CONSTRUCTION, MAINTENANCE, OR EFFICIENCY OF ITS RESPECTIVE SYSTEMS ON ANY OF THE EASEMENTS OR RIGHT-OF-WAY SHOWN ON THE PLAT (OR FILED BY SEPARATE INSTRUMENT THAT IS ASSOCIATED WITH SAID PROPERTY); AND ANY PUBLIC, INCLUDING THE CITY, SHALL HAVE THE RIGHT AT ALL TIMES OF INGRESS AND EGRESS TO AND FROM AND UPON SAID EASEMENTS FOR THE PURPOSE OF CONSTRUCTION, RECONSTRUCTION, INSPECTION, PATROLLING, MAINTAINING AND ADDING TO REMOVING ALL OR PART OF ITS RESPECTIVE SYSTEMS WITHOUT THE NECESSITY AT ANY TIME OF PROCURING THE PERMISSION OF ANYONE. EASEMENTS SHALL BE MAINTAINED BY PROPERTY OWNERS. THE CITY CAN MOVE TREES OR ANY OTHER IMPROVEMENTS AND DOES NOT HAVE THE RESPONSIBILITY TO REPLACE THEM.
4. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
5. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL AS ADOPTED BY THE CITY OF BUDA.
6. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY THE CITY OF BUDA ENGINEERING DEPARTMENT, 312-0084, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.
7. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER, ENVIRONMENTAL SPECIALIST OR CITY ARBORIST AS APPROPRIATE. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE PLAN MAY BE REQUIRED BY THE INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
8. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR THE MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHED SIX (6) INCHES.
9. WHERE A DIVERSION OR PERIMETER CONTROL SILT FENCE IS INSTALLED IN THE DIRECTION OF A SLOPE, A 20-FLOOR LENGTH OF FENCE SHOULD BE TURNED IN, ACROSS THE SLOPE, AT REGULAR INTERVALS (100 FEET) TO CREATE A "J" HOOK.

PERMANENT EROSION CONTROL:

ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND BETWEEN THE CURB AND RIGHT-OF-WAY LINE.

THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE AS SPECIFIED IN THE CITY OF AUSTIN STANDARD SPECIFICATION 604S, AS ADOPTED BY THE CITY OF BUDA. USE NATIVE SEEDING.

DUST CONTROL:

DUST CONTROL METHODS ARE REQUIRED AS PER CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL SECTION 1.4.5.D AS ADOPTED BY THE CITY OF BUDA.

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

Know what's below. Call before you dig.

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

CONSTRUCTION PLAN APPROVAL SHEET 29 OF 151
FILE NUMBER APPLICATION DATE
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE CASE MANAGER

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: ZONING N/A
Rev. 1 Correction 1
Rev. 2 Correction 2
Rev. 3 Correction 3

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

EROSION CONTROL PLAN (SHEET 2 OF 2)

THE RESERVE AT COLE SPRINGS PHASE 1

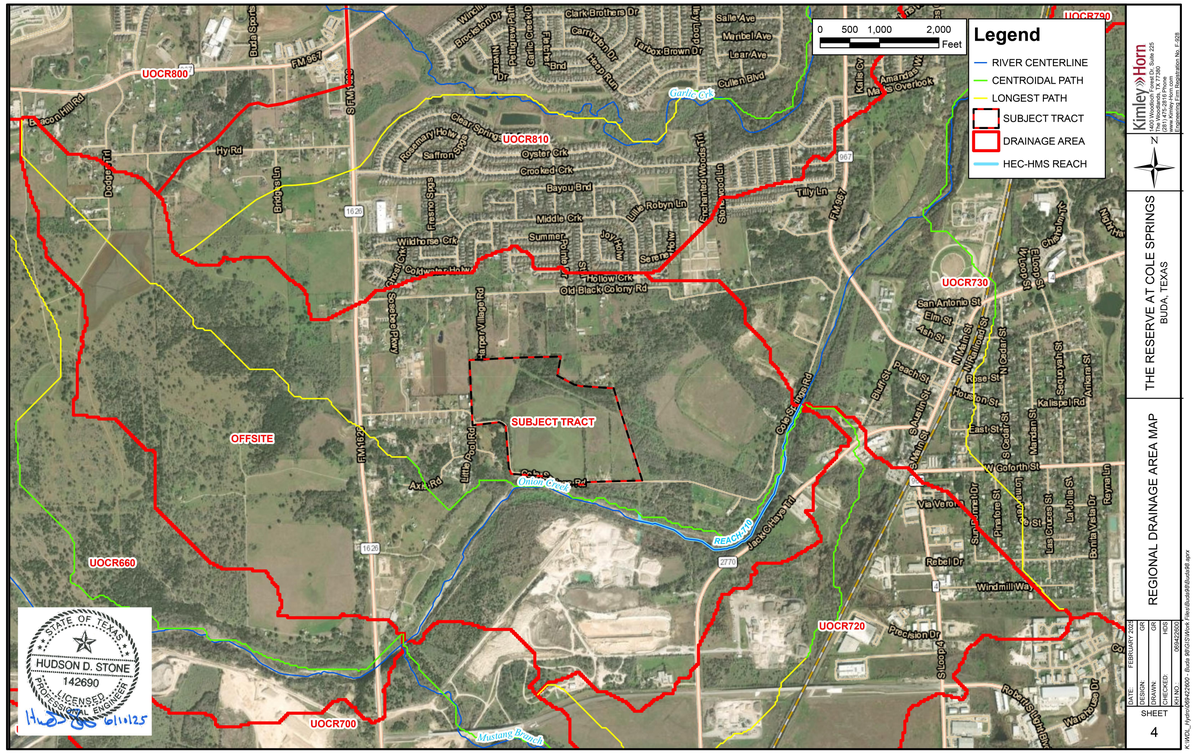
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
29 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:18:30am File Path: K:\Aps_civil\069422600 – buda 98\Civil\Phase 1\plansheets\C-Erosion Control Plan.dwg
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Plotted By: Flynn, Alyssa Date: December 05, 2025 10:43:12am File Path: K:\pro...civil\069422600 – buda 98\Civil\Phase 1\volumesheet\VC–Drainage Area Map.dwg
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REGIONAL DRAINAGE AREA MAP



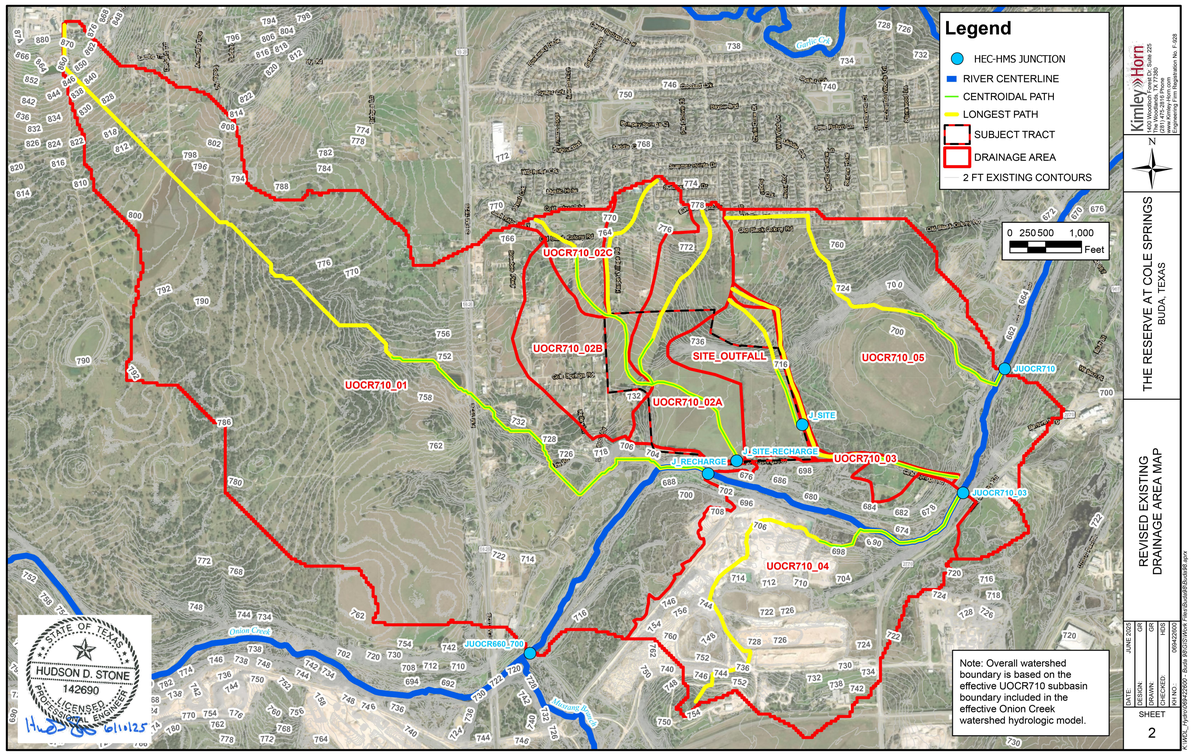
LAG TIME CALCULATIONS

Revised Existing				
Subbasin	C_t	L (miles)	L_{ca} (miles)	t_p (hours)
SITE-OUTFALL	0.61	0.399	0.163	0.269
UOCR710_01	0.51	2.401	1.083	0.679
UOCR710_02A	0.61	0.880	0.477	0.470
UOCR710_02B	0.51	0.667	0.254	0.299
UOCR710_02C	0.51	0.348	0.200	0.229
UOCR710_03	0.51	0.909	0.288	0.341
UOCR710_04	0.51	1.334	0.480	0.446
UOCR710_05	0.51	1.023	0.370	0.381

REVISED EXISTING SUBBASIN PARAMETERS

Subbasin	Area (ac.)	CN	Impervious %	Standard Lag (hr)	Peaking Coefficient
SITE_OUTFALL	49.5	82	15.2	0.269	0.75
UOCR710_01	825.9	82	49.0	0.679	0.75
UOCR710_02A	81.7	82	26.6	0.470	0.75
UOCR710_02B	100.0	82	52.4	0.299	0.75
UOCR710_02C	24.6	82	37.3	0.229	0.75
UOCR710_03	15.6	82	61.3	0.341	0.75
UOCR710_04	259.5	82	60.4	0.446	0.75
UOCR710_05	261.1	82	55.6	0.381	0.75

REVISED EXISTING DRAINAGE AREA MAP



2-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	4,617	4,617	0
J_RECHARGE	4,616	4,616	0
J_SITE	29	170	141
JUOCR710_03	4,615	4,615	0
JUOCR710	4,614	4,614	0
JUOCR710_720	4,613	4,613	0
JUOCR730	4,601	4,601	0
JUOCR740	4,597	4,597	0
JUOCR740_780	4,593	4,593	0

10-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	31,901	31,901	0
J_RECHARGE	31,970	31,967	-3
J_SITE	165	373	208
JUOCR710_03	31,990	31,990	0
JUOCR710	32,005	32,005	0
JUOCR710_720	32,051	32,051	0
JUOCR730	32,141	32,141	0
JUOCR740	32,143	32,143	0
JUOCR740_780	32,220	32,220	0

25-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	60,583	60,583	0
J_RECHARGE	60,681	60,676	-5
J_SITE	254	500	246
JUOCR710_03	60,707	60,707	0
JUOCR710	60,726	60,726	0
JUOCR710_720	60,792	60,792	0
JUOCR730	60,856	60,856	0
JUOCR740	60,845	60,845	0
JUOCR740_780	60,953	60,953	0

100-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	119,208	119,208	0
J_RECHARGE	119,402	119,392	-10
J_SITE	370	681	311
JUOCR710_03	119,447	119,445	-2
JUOCR710	119,479	119,477	-2
JUOCR710_720	119,608	119,607	-1
JUOCR730	119,763	119,761	-2
JUOCR740	119,710	119,708	-2
JUOCR740_780	119,882	119,881	-1

RECHARGE ZONE RESULTS

Storm Event	Peak Flow (cfs)			Volume (ac-ft)		
	Revised Existing	Proposed	Difference	Revised Existing	Proposed	Difference
2-Year	236	270	34	32.5	30.7	-1.8
10-Year	687	652	-35	81.4	68.6	-12.8
25-Year	983	890	-93	120.3	97.3	-23.0
100-Year	1,390	1,225	-165	195.8	152.5	-43.3

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
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ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 48 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____
City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____
Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.
PERMIT NUMBER:

Kimley»Horn
401 Woodson Parkway, Suite 225
The Woodlands, TX 77380
(281) 973-2918 Phone
www.kimley-horn.com
Engineering Firm Registration No. F-928

THE RESERVE AT COLE SPRINGS
BUDA, TEXAS

REGIONAL DRAINAGE AREA MAP

REVISED EXISTING DRAINAGE AREA MAP

DATE: FEBRUARY 2025
DESIGN: GR
DRAWN: GR
CHECKED: KBS
KHA NO: 069422600

SHEET 4 / SHEET 2

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

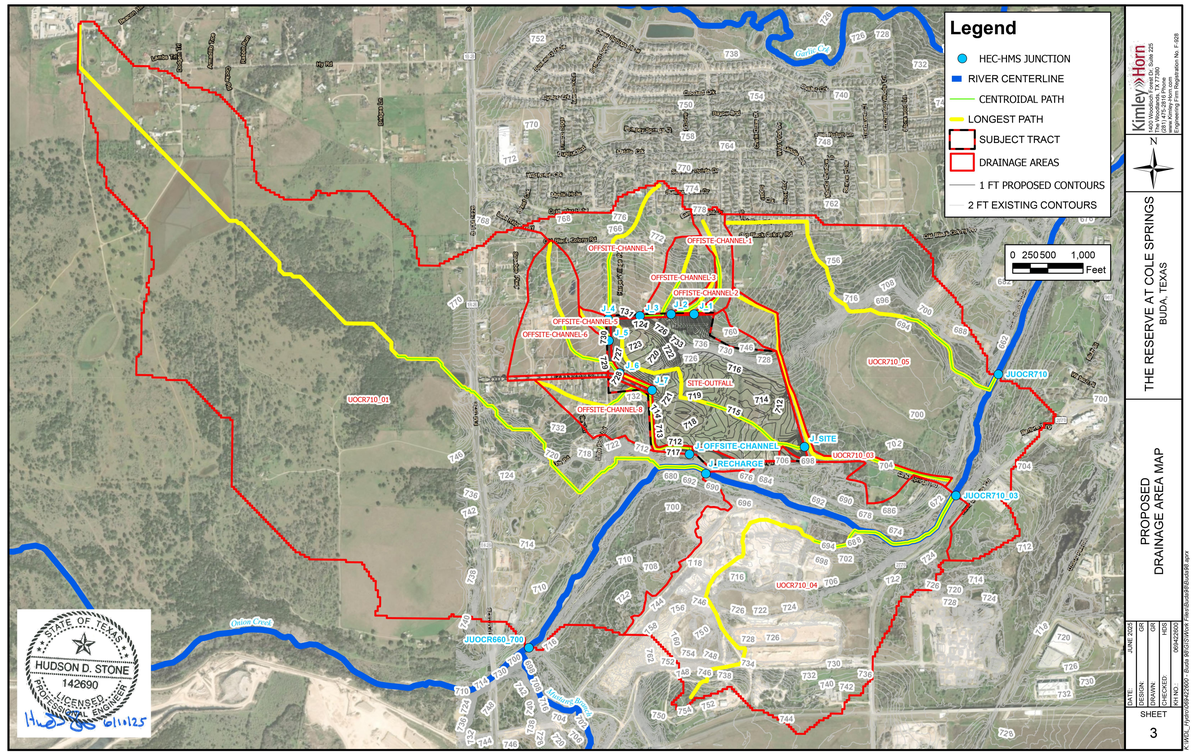
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
48 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:43:32am File Path: K:\grps_civil\069422600 - buda 98\Civil\Phase 1\plansheets\C-Drainage Area Map.dwg
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PROPOSED DRAINAGE AREA MAP



STATE OF TEXAS
HUDSON D. STONE
142690
LICENSED
PROFESSIONAL ENGINEER
12/11/25

LAG TIME CALCULATIONS

Proposed				
Subbasin	C_t	L (miles)	L_{ca} (miles)	t_p (hours)
OFFSITE-CHANNEL-8	0.51	0.565	0.362	0.317
OFFSITE-CHANNEL-7	0.51	0.105	0.052	0.107
OFFSITE-CHANNEL-6	0.51	0.440	0.220	0.253
OFFSITE-CHANNEL-5	0.51	0.121	0.052	0.112
OFFSITE-CHANNEL-4	0.51	0.425	0.201	0.244
OFFSITE-CHANNEL-3	0.51	0.289	0.174	0.208
OFFSITE-CHANNEL-2	0.51	0.163	0.084	0.141
OFFSITE-CHANNEL-1	0.51	0.294	0.191	0.215
SITE-OUTFALL	0.51	0.719	0.299	0.322
UOCR710_01	0.51	2.401	1.083	0.679
UOCR710_03	0.51	0.909	0.288	0.341
UOCR710_04	0.51	1.334	0.480	0.446
UOCR710_05	0.51	1.023	0.370	0.381

PROPOSED SUBBASIN PARAMETERS

Subbasin	Area (ac.)	CN	Impervious %	Standard Lag (hr)	Peaking Coefficient
OFFSITE-CHANNEL-8	25.1	82	65.0	0.317	0.75
OFFSITE-CHANNEL-7	0.7	82	65.0	0.107	0.75
OFFSITE-CHANNEL-6	39.4	82	64.7	0.253	0.75
OFFSITE-CHANNEL-5	2.6	82	65.0	0.112	0.75
OFFSITE-CHANNEL-4	57.4	82	43.5	0.244	0.75
OFFSITE-CHANNEL-3	16.2	82	63.4	0.208	0.75
OFFSITE-CHANNEL-2	2.5	82	65.0	0.141	0.75
OFFSITE-CHANNEL-1	11.3	82	65.0	0.215	0.75
SITE-OUTFALL	95.2	82	65.0	0.322	0.75
UOCR710_01	824.4	82	49.1	0.679	0.75
UOCR710_03	22.6	82	61.3	0.341	0.75
UOCR710_04	259.2	82	60.7	0.446	0.75
UOCR710_05	261.1	82	55.6	0.381	0.75

2-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	4,617	4,617	0
J_RECHARGE	4,616	4,616	0
J_SITE	29	170	141
JUOCR710_03	4,615	4,615	0
JUOCR710	4,614	4,614	0
JUOCR710_720	4,613	4,613	0
JUOCR730	4,601	4,601	0
JUOCR740	4,597	4,597	0
JUOCR740_780	4,593	4,593	0

10-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	31,901	31,901	0
J_RECHARGE	31,970	31,967	-3
J_SITE	165	373	208
JUOCR710_03	31,990	31,990	0
JUOCR710	32,005	32,005	0
JUOCR710_720	32,051	32,051	0
JUOCR730	32,141	32,141	0
JUOCR740	32,143	32,143	0
JUOCR740_780	32,220	32,220	0

25-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	60,583	60,583	0
J_RECHARGE	60,681	60,676	-5
J_SITE	254	500	246
JUOCR710_03	60,707	60,707	0
JUOCR710	60,726	60,726	0
JUOCR710_720	60,792	60,792	0
JUOCR730	60,856	60,856	0
JUOCR740	60,845	60,845	0
JUOCR740_780	60,953	60,953	0

100-YEAR PEAK FLOW (CFS)

Junction	Revised Existing	Proposed	Difference
JUOCR660_700	119,208	119,208	0
J_RECHARGE	119,402	119,392	-10
J_SITE	370	681	311
JUOCR710_03	119,447	119,445	-2
JUOCR710	119,479	119,477	-2
JUOCR710_720	119,608	119,607	-1
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Storm Event	Peak Flow (cfs)			Volume (ac-ft)		
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100-Year	1,390	1,225	-165	195.8	152.5	-43.3

BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 49 OF 151
FILE NUMBER_____APPLICATION DATE_____
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EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
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No.	REVISIONS	DATE	BY

Kimley»Horn
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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025
STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

PROPOSED DRAINAGE AREA MAP

THE RESERVE AT COLE SPRINGS
PHASE 1
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
49 OF 151



LEGEND

- X-1 / 9.9 ac — AREA DESIGNATOR / AREA IN ACRES
- A-1 — INLET NUMBER
- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- 555 — PROPOSED CONTOUR
- 555 — EXISTING CONTOUR
- 100-YR ATLAS-14 FLOODPLAIN

N W E S

0 100' 200'
GRAPHIC SCALE 100'

PLEASE REFER TO SHEET 49 FOR ALL OFFSITE CHANNEL AREAS AND CALCULATIONS.

BENCHMARKS

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City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602	
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

INLET DRAINAGE AREA MAP (SHEET 1 OF 4)

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
50 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:48:00am File Path: K:\pro_civil\069422600 - buda 98 Cod\Phase 1\plansheets\C-inlet Drainage Area Map.dwg
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LEGEND

X-1 / 9.9 ac	AREA DESIGNATOR / AREA IN ACRES
A-1	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR
	100-YR ATLAS-14 FLOODPLAIN

N W E S

0 100' 200'
GRAPHIC SCALE 100'

PLEASE REFER TO SHEET 49 FOR ALL OFFSITE CHANNEL AREAS AND CALCULATIONS.

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 707± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

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

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

CONSTRUCTION PLAN APPROVAL SHEET 51 OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

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No.	REVISIONS	DATE	BY

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11/24/2025
STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

INLET DRAINAGE AREA MAP (SHEET 2 OF 4)

SHEET NUMBER
51 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:48:12am File Path: K:\pro-civil\069422600 - buda 98\Civil\Phase 1\plansheets\C-Inlet Drainage Area Map.dwg
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LEGEND

X-1 / 9.9 ac	AREA DESIGNATOR / AREA IN ACRES
A-1	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR
	100-YR ATLAS-14 FLOODPLAIN

N W E S

0 100' 200'
GRAPHIC SCALE 100'

PLEASE REFER TO SHEET 49 FOR ALL OFFSITE CHANNEL AREAS AND CALCULATIONS.

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 52 OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

INLET DRAINAGE AREA MAP (SHEET 3 OF 4)

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
52 OF 151

Posted By:Flynn, Alyssa Date:December 05, 2025 10:48:24am File Path:K:\Lpo_civil\069422602 - buda 98\Cad\Phase 1\plotsheets\C-Inlet Drainage Area Map.dwg
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Plotted By: Flynn, Alyssa Date: December 05, 2025 10:48:34am File Path: K:\geo_civil\069422600 - buda 98\Cad\Phase 1\plansheets\C-Inlet Drainage Area Map.dwg
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LEGEND

X-1 / 9.9 ac	AREA DESIGNATOR / AREA IN ACRES
A-1	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR
	100-YR ATLAS-14 FLOODPLAIN

N W E S

0 100' 200'
GRAPHIC SCALE 100'

PLEASE REFER TO SHEET 49 FOR ALL OFFSITE CHANNEL AREAS AND CALCULATIONS.

MATCH LINE SEE SHEET 52

MATCH LINE SEE SHEET 50

TRACT NO. 1 MINNIE NELSON VOL.1170, PG.558 OPRHC

TRACT NO. 12 WINNIE MOYER VOL.1170, PG.558 OPRHC

TRACT NO. 11 THE BUNTON FAMILY TRUST DOC. #14021346 VOL.4970, PG.586 OPRHC

TRACT NO. 2 SAMUEL HARPER VOL. 1170, PG.558 OPRHC

TRACT NO. 10 LEEDELL BUNTON, SR. DOC. #11024140 VOL.4207, PG.233 OPRHC

TRACT NO. 3 MOSES O HARPE VOL. 1170, PG.558 OPRHC

LOT 1, BLOCK 1 STANFIELD BUSINESS PARK VOL.16, PG.19-20 PRHC

4.06 ACRES KGRCDR PROPERTY MGT SERIES, LLC

TRACT NO. 4 JOSHUA HARPER VOL.1170, PG.558 OPRHC

TRACT NO. 9 ELIJAH HARPER VOL. 1170, PG.558 OPRHC

TRACT NO. 5 WINNIE M MOYER VOL.1170, PG.558 OPRHC

TRACT NO. 8 EMILY HILL VOL.1170, PG.558 OPRHC

CALLED 10.07 ACRES STOTT INVESTMENTS, LLC DOC. #18000837 OPRHC

OFFSITE CHANNEL-4 57.42 ac

OFFSITE CHANNEL-3 16.24 ac

OFFSITE CHANNEL-2 2.50 ac

OFFSITE CHANNEL-1 11.25 ac

OFFSITE CHANNEL-5 2.58 ac

TRACT NO. 7 THE BUNTON FAMILY TRUST DOC. #11004052 VOL.4068, PG.11 OPRHC

TRACT NO. 6 RUTH FEARS VOL.1170, PG.558 OPRHC

CALLED 6.52 ACRES ALEZ SEDILLO AND ROSALINDA M. SADILLO DOC# 80039605 VOL.3556, PG.847 OPRHC

CALLED 11.5 ACRES SYLVESTER PLEASANT VOL.180, PG.603 DRHC

CALLED 4.0 ACRES QUITCLAIM DEED ROBERT C. SMITH, SR ALBERT SMITH SR FRED SMITH DOC #9926158 OPRHC

CALLED LOT 2 4.25 ACRES PARTITION DEED VOL.94, PG.311 DRHC

CALLED LOT 3 4.25 ACRES PARTITION DEED VOL.94, PG.311 DRHC

CALLED LOT 5 5.375 ACRES PARTITION DEED VOL.94, PG.311 DRHC

CALLED 0.528 ACRES PATRICK BOURNE DOC. #24027342 OPRHC

LOT 2, BLOCK 1 STANFIELD BUSINESS PARK VOL.16, PG.19-20 PRHC

1/2" IRF

BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 53 OF 151
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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
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LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
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DRAWN BY:	KB
CHECKED BY:	RBW

INLET DRAINAGE AREA MAP (SHEET 4 OF 4)

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
53 OF 151

	AREA (ACRES)	Sheet Flow				Shallow Concentrated Flow Unpaved				Channel Flow Gutter								Actual	Design	Flow Rate 25-yr	Flow Rate 100-yr
DRAINAGE AREA (DA)		n	S	L	T_{t1}	L	S	V	T_{t2}	L	V	a	P_W	r	n	S	T_{t3}	T_c, min.	T_c, min.	cfs	cfs
A0	1.58	0.15	0.015	25	3.3	0	0	0.00	0	2207	3.6	3.8	15.5	0.245	0.016	0.01	10.09	13.3	13.34	10.47	15.14
A1	1.27	0.15	0.015	25	3.3	0	0	0.00	0	2207	3.6	3.8	15.5	0.245	0.016	0.01	10.09	13.3	13.34	8.00	11.57
A2	0.75	0.15	0.016	50	5.5	100	0.012	1.77	0.94	122	2.6	3.8	15.5	0.245	0.016	0.005	0.79	7.3	7.26	5.63	8.20
A3	0.77	0.15	0.016	50	5.5	130	0.024	2.50	0.87	118	4.2	3.8	15.5	0.245	0.016	0.013	0.47	6.9	6.86	5.10	7.50
A4	1.29	0.15	0.012	50	6.2	155	0.018	2.16	1.19	61	2.6	3.8	15.5	0.245	0.016	0.005	0.39	7.8	7.79	9.01	13.15
A5A	1.18	0.15	0.019	100	9.0	0	0	0.00	0	255	2.6	3.8	15.5	0.245	0.016	0.005	1.65	10.6	10.63	6.73	9.87
A5B	0.66	0.15	0.012	50	6.2	99	0.025	2.55	0.65	10	2.6	3.8	15.5	0.245	0.016	0.005	0.06	6.9	6.91	4.61	6.75
A6A	1.31	0.15	0.016	50	5.5	126	0.016	2.04	1.03	218	2.6	3.8	15.5	0.245	0.016	0.005	1.41	8.0	7.96	9.09	13.26
A6B	0.41	0.15	0.016	50	5.5	114	0.016	2.04	0.93	10	2.6	3.8	15.5	0.245	0.016	0.005	0.06	6.5	6.52	3.10	4.53
A7	1.33	0.15	0.01	100	11.6	200	0.012	1.77	1.89	150	2.6	3.8	15.5	0.245	0.016	0.005	0.97	14.5	14.46	7.02	10.28
A8	1.45	0.15	0.01	50	6.7	68	0.01	1.61	0.70	425	2.6	3.8	15.5	0.245	0.016	0.005	2.75	10.1	10.12	9.00	13.16
A9	0.63	0.15	0.013	30	4.0	0	0	0.00	0	650	2.6	3.8	15.5	0.245	0.016	0.005	4.20	8.2	8.19	4.43	6.45
A10A	0.45	0.15	0.024	50	4.7	31	0.01	1.61	0.32	270	2.6	3.8	15.5	0.245	0.016	0.005	1.75	6.8	6.76	3.07	4.51
A10B	0.21	0.15	0.022	50	4.9	0	0	0.00	0	135	2.6	3.8	15.5	0.245	0.016	0.005	0.87	5.7	5.74	1.50	2.21
A11A	0.86	0.15	0.01	50	6.7	73	0.01	1.61	0.75	383	2.6	3.8	15.5	0.245	0.016	0.005	2.48	9.9	9.90	5.56	8.10
A11B	0.10	0.15	0.015	25	3.3	0	0	0.00	0	132	2.6	3.8	15.5	0.245	0.016	0.005	0.85	4.1	5.00	0.93	1.35
A12A	1.16	0.15	0.01	50	6.7	123	0.01	1.61	1.27	212	2.6	3.8	15.5	0.245	0.016	0.005	1.37	9.3	9.31	7.40	10.81
A12B	0.83	0.15	0.01	50	6.7	73	0.01	1.61	0.75	189	2.6	3.8	15.5	0.245	0.016	0.005	1.22	8.6	8.64	5.92	8.60
A13	0.49	0.15	0.022	50	4.9	0	0	0.00	0	310	2.8	3.8	15.5	0.245	0.016	0.006	1.83	6.7	6.69	3.28	4.82
A14	0.39	0.15	0.028	50	4.4	0	0	0.00	0	152	2.8	3.8	15.5	0.245	0.016	0.006	0.90	5.3	5.31	2.97	4.35
A15	0.96	0.15	0.01	100	11.6	148	0.01	1.61	1.53	64	2.8	3.8	15.5	0.245	0.016	0.006	0.38	13.5	13.51	4.67	6.88
A16A	0.40	0.15	0.01	40	5.6	0	0	0.00	0	390	3.1	3.8	15.5	0.245	0.016	0.007	2.13	7.7	7.71	3.08	4.46
A16B	0.14	0.15	0.01	25	3.8	0	0	0.00	0	179	2.6	3.8	15.5	0.245	0.016	0.005	1.16	5.0	5.00	1.28	1.85
A17A	0.62	0.15	0.026	50	4.5	57	0.014	1.91	0.50	370	3.1	3.8	15.5	0.245	0.016	0.007	2.02	7.1	7.07	4.48	6.54
A17B	0.14	0.15	0.01	25	3.8	0	0	0.00	0	179	2.6	3.8	15.5	0.245	0.016	0.005	1.16	5.0	5.00	1.28	1.86
A18A	0.08	0.15	0.01	25	3.8	0	0	0.00	0	103	2.6	3.8	15.5	0.245	0.016	0.005	0.67	4.5	5.00	0.73	1.06
A18B	0.09	0.15	0.01	25	3.8	0	0	0.00	0	113	2.6	3.8	15.5	0.245	0.016	0.005	0.73	4.6	5.00	0.84	1.22
A19A	0.08	0.15	0.01	25	3.8	0	0	0.00	0	103	2.6	3.8	15.5	0.245	0.016	0.005	0.67	4.5	5.00	0.76	1.10
A19B	0.10	0.15	0.01	25	3.8	0	0	0.00	0	113	2.6	3.8	15.5	0.245	0.016	0.005	0.73	4.6	5.00	0.87	1.27
B0A	0.32	0.15	0.01	25	3.8	0	0	0.00	0	260	4.3	3.8	15.5	0.245	0.016	0.014	1.00	4.8	5.00	2.42	3.55
B0B	0.60	0.15	0.01	50	6.7	175	0.01	1.61	1.81	115	2.6	3.8	15.5	0.245	0.016	0.005	0.74	9.2	9.22	3.91	5.70
B1A	1.62	0.15	0.01	50	6.7	93	0.01	1.61	0.96	347	3.6	3.8	15.5	0.245	0.016	0.01	1.59	9.2	9.21	10.41	15.21
B1B	0.53	0.15	0.01	50	6.7	93	0.01	1.61	0.96	122	2.6	3.8	15.5	0.245	0.016	0.005	0.79	8.4	8.42	3.70	5.38
B2	0.95	0.15	0.01	50	6.7	135	0.01	1.61	1.39	135	2.6	3.8	15.5	0.245	0.016	0.005	0.87	8.9	8.93	6.16	9.00
B3	0.20	0.15	0.01	50	6.7	0	0	0.00	0	136	3.5	3.8	15.5	0.245	0.016	0.009	0.66	7.3	7.32	1.33	1.95
B4A	0.89	0.15	0.01	50	6.7	117	0.01	1.61	1.21	167	2.6	3.8	15.5	0.245	0.016	0.005	1.08	9.0	8.95	6.24	9.08
B4B	0.15	0.15	0.025	50	4.6	0	0	0.00	0	45	2.6	3.8	15.5	0.245	0.016	0.005	0.29	4.9	5.00	1.12	1.64
B5A	1.27	0.15	0.02	50	5.1	97	0.02	2.28	0.71	290	2.6	3.8	15.5	0.245	0.016	0.005	1.87	7.6	7.64	9.04	13.18
B5B	0.55	0.15	0.014	50	5.8	98	0.014	1.91	0.86	98	2.6	3.8	15.5	0.245	0.016	0.005	0.63	7.3	7.32	3.95	5.77
B6A	0.89	0.15	0.01	50	6.7	185	0.01	1.61	1.91	170	2.6	3.8	15.5	0.245	0.016	0.005	1.10	9.7	9.68	5.66	8.27
B6B	0.11	0.15	0.02	33	3.6	0	0	0.00	0	55	2.6	3.8	15.5	0.245	0.016	0.005	0.36	4.0	5.00	0.82	1.20
B7A	0.59	0.15	0.01	50	6.7	112	0.01	1.61	1.16	83	2.6	3.8	15.5	0.245	0.016	0.005	0.54	8.4	8.36	4.15	6.04
B7B	0.57	0.15	0.01	50	6.7	119	0.01	1.61	1.23	85	2.6	3.8	15.5	0.245	0.016	0.005	0.55	8.4	8.45	3.82	5.58
B8	0.38	0.15	0.015	50	5.7	76	0.015	1.98	0.64	159	3.1	3.8	15.5	0.245	0.016	0.007	0.87	7.2	7.18	2.21	3.27
B9	1.87	0.15	0.01	50	6.7	132	0.01	1.61	1.36	322	3.3	3.8	15.5	0.245	0.016	0.008	1.65	9.7	9.68	11.88	17.35
B10A	1.28	0.15	0.01	50	6.7	108	0.02	2.28	0.79	411	2.8	3.8	15.5	0.245	0.016	0.006	2.43	9.9	9.88	7.90	11.55
B10B	1.21	0.15	0.01	50	6.7	110	0.01	1.61	1.14	146	2.6	3.8	15.5	0.245	0.016	0.005	0.94	8.7	8.75	7.62	11.16
C0	1.06	0.15	0.037	100	6.9	410	0.08	4.56	1.50	43	2.6	3.8	15.5	0.245	0.016	0.005	0.28	8.7	8.65	5.92	8.75
C1A	0.90	0.15	0.052	100	6.0	279	0.11	5.35	0.87	50	2.6	3.8	15.5	0.245	0.016	0.005	0.32	7.2	7.19	5.34	7.90
C1B	0.87	0.15	0.067	100	5.4	211	0.127	5.75	0.61	80	2.6	3.8	15.5	0.245	0.016	0.005	0.52	6.6	6.55	5.27	7.80
C2A	0.82	0.15	0.01	25	3.8	0	0	0.00	0	174	2.6	3.8	15.5	0.245	0.016	0.005	1.12	5.0	5.00	6.91	10.07
C2B	0.51	0.15	0.013	50	6.0	92	0.013	1.84	0.83	87	2.6	3.8	15.5	0.245	0.016	0.005	0.56	7.4	7.40	3.58	5.23
C3	1.84	0.15	0.013	100	10.5	702	0.078	4.51	2.60	31	2.6	3.8	15.5	0.245	0.016	0.005	0.20	13.2	13.25	7.84	11.68
C4	1.91	0.15	0.03	100	7.5	579	0.0877	4.78	2.02	99	4.0	3.8	15.5	0.245	0.016	0.012	0.41	9.9	9.91	9.56	14.19
C5	0.76	0.15	0.01	50	6.7	261	0.01	1.61	2.70	89	2.8	3.8	15.5	0.245	0.016	0.006	0.53	9.9	9.89	4.65	6.80
C6	1.64	0.15	0.044	100	6.4	586	0.081	4.59	2.13	81	2.8	3.8	15.5	0.245	0.016	0.006	0.48	9.0	9.02	8.39	12.47
C7A	1.61	0.15	0.031	100	7.4	611	0.0749	4.42	2.31	27	2.6	3.8	15.5	0.245	0.016	0.005	0.17	9.9	9.86	7.82	11.63
C7B	1.54	0.15	0.037	100	6.9	530	0.0813	4.60	1.92	53	2.8	3.8	15.5	0.245	0.016	0.006	0.31	9.1	9.11	7.81	11.62
C8A	0.67	0.15	0.01	50	6.7	100	0.01	1.61	1.03	192	2.6	3.8	15.5	0.245	0.016	0.005	1.24	8.9	8.94	4.65	6.76
C8B	0.84	0.15	0.01	50	6.7	100	0.01	1.61	1.03	246	2.6	3.8	15.5	0.245	0.016	0.005	1.59	9.3	9.29	5.95	8.64
C9	1.97	0.15	0.033	100	7.2	651	0.0646	4.10	2.65	100	2.6	3.8	15.5	0.245	0.016	0.005	0.65	10.5	10.49	9.63	14.29
C10	1.42	0.15	0.032	100	7.3	663	0.066	4.15	2.67	53	3.5	3.8	15.5	0.245	0.016	0.009	0.26	10.2	10.21	6.99	10.38
C11A	1.39	0.15	0.043	100	6.5	596	0.0726	4.35	2.28	30	3.5	3.8	15.5	0.245	0.016	0.009	0.14	8.9	8.91	7.15	10.63
C11B	1.46	0.15	0.034	100	7.1	530	0.0733	4.37	2.02	54	2.6	3.8	15.5	0.245	0.016	0.005	0.35	9.5	9.49	7.34	10.92
C12A	0.64	0.15	0.01	50	6.7	70	0.0136	1.88	0.62	165	3.6	3.8	15.5	0.245	0.016	0.01	0.75	8.0	8.04	4.88	7.09
C12B	0.31	0.15	0.01	50	6.7	86	0.012	1.77	0.81	33	2.8	3.8	15.5	0.245	0.016	0.006	0.19	7.7	7.67	2.45	3.55
C13	0.90	0.15	0.019	100	9.0	556	0.074	4.39	2.11	85	5.2	3.8	15.5	0.245	0.016	0.02	0.27	11.4	11.36	4.55	6.72
C14	0.37	0.15	0.015	50	5.7	10	0.022	2.39	0.07	184	2.8	3.8	15.5	0.245	0.016	0.006	1.09	6.8	6.82	2.41	3.55
C15A	0.83	0.15	0.01	50	6.7	68	0.01	1.61	0.70	271	3.6	3.8	15.5	0.245	0.016	0.01	1.24	8.6	8.61	5.99	8.70
C15B	0.11	0.15	0.012	45	5.7	0	0	0.00	0	51	2.6	3.8	15.5	0.245	0.016	0.005	0.33	6.0	6.03	0.74	1.09
C16A	0.24	0.15	0.022	21	2.4	0	0	0.00	0	304	2.8	3.8	15.5	0.245	0.016	0.006	1.79	4.2	5.00	2.05	2.99
C16B	0.07	0.15	0.02	23	2.7	0	0	0.00	0	88	2.8	3.8	15.5	0.245	0.016	0.006	0.52	3.2	5.00	0.64	0.93
D0A	1.47	0.15	0.01	50	6.7	67	0.012	1.77	0.63	273	2.6	3.8	15.5	0.245	0.016	0.005	1.76	9.1	9.06	9.64	14.07
D0B	0.42	0.15	0.017	50	5.4	110	0.018	2.16	0.85	79	2.6	3.8	15.5	0.245	0.016	0.005	0.51	6.7	6.75	3.08	4.50
D1A	1.04	0.15	0.013	50	6.0	68	0.015	1.98	0.57	255	2.6	3.8	15.5	0.245	0.016	0.005	1.65	8.2	8.22	7.73	11.22
D1B	0.32	0.15	0.01	50	6.7	66	0.01	1.61	0.68	53	2.6	3.8	15.5	0.245	0.016	0.005	0.34	7.7	7.69	2.47	3.58
D2	0.84	0.15	0.01	50	6.7	107	0.022	2.39	0.75	160	3.1	3.8	15.5	0.245	0.016	0.007	0.87	8.3	8.29	5.78	8.43
E1	1.24	0.15	0.021	50	5.0	100	0.022	2.39	0.70	229	2.6	3.8	15.5	0.245	0.016	0.005	1.48	7.1	7.13	8.38	12.29
E2	1.23	0.15	0.01	50	6.7	119	0.01	1.61	1.23	257	2.8	3.8	15.5	0.245	0.016	0.006	1.52	9.4	9.41	8.04	11.72
FUTR-E	6.90	0.15	0.01	100	11.6	146	0.01	1.61	1.51	1068	6.7	3.8	15.5	0.245	0.016	0.034	2.65	15.8	15.76	33.94	49.81
FUTR-F	16.65	0.15	0.01	50	6.7	135	0.01	1.61	1.39	1219	3.1	3.8	15.5	0.245	0.016	0.007	6.66	14.7	14.72	87.07	127.46
FUTR-AMENITY	3.94	0.15	0.019	100	9.0	100	0.011	1.69	0.98	183	3.8	3.8	15.5	0.245	0.016	0.011	0.80	10.8	10.76	19.10	28.35

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:48:46am File Path: K:\Lpgc_civil\069422600 – buda 98\Cad\Phase 1\plansheets\C-Inlet Drainage Calculations.dwg
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No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

INLET DRAINAGE CALCULATIONS (SHEET 1 OF 4)

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

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

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

CONSTRUCTION PLAN APPROVAL SHEET 54 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

SHEET NUMBER
54 OF 151

Drainage Area ID	Area (Ac.)	Impervious %	Impervious Area (Ac.)	Pervious Area (Ac.)	C, 2 Yr.	C, 10 Yr.	C, 25 Yr.	C, 100 Yr.	Tc, min.	I, 2 Yr.	I, 10 Yr.	I, 25 Yr.	I, 100 Yr.	Q, 2 Yr.	Q, 10 Yr.	Q, 25 Yr.	Q, 100 Yr.
A0	1.58	80%	1.26	0.32	0.67	0.75	0.80	0.88	13.34	4.49	6.79	8.34	10.89	4.77	8.03	10.47	15.14
A1	1.20	81%	0.97	0.23	0.68	0.75	0.80	0.89	13.34	4.49	6.79	8.34	10.89	3.65	6.14	8.00	11.57
A2	0.75	60%	0.45	0.30	0.60	0.67	0.71	0.79	7.26	5.66	8.59	10.55	13.76	2.54	4.32	5.63	8.20
A3	0.77	38%	0.29	0.48	0.51	0.58	0.62	0.70	6.86	5.76	8.75	10.74	14.02	2.27	3.91	5.10	7.50
A4	1.29	52%	0.67	0.62	0.57	0.64	0.68	0.76	7.79	5.53	8.39	10.30	13.44	4.05	6.91	9.01	13.15
A5A	1.18	38%	0.45	0.73	0.51	0.58	0.62	0.70	10.63	4.94	7.47	9.17	11.97	3.01	5.15	6.73	9.87
A5B	0.66	45%	0.30	0.36	0.54	0.61	0.65	0.73	6.91	5.75	8.73	10.72	13.99	2.06	3.53	4.61	6.75
A6A	1.31	52%	0.68	0.63	0.57	0.64	0.68	0.76	7.96	5.49	8.33	10.22	13.33	4.08	6.96	9.09	13.26
A6B	0.41	56%	0.23	0.18	0.58	0.66	0.70	0.78	6.52	5.85	8.90	10.92	14.25	1.40	2.38	3.10	4.53
A7	1.33	47%	0.62	0.71	0.55	0.62	0.66	0.74	14.46	4.33	6.55	8.05	10.51	3.15	5.37	7.02	10.28
A8	1.45	48%	0.70	0.75	0.55	0.62	0.66	0.74	10.12	5.03	7.62	9.35	12.20	4.04	6.90	9.00	13.16
A9	0.63	55%	0.35	0.28	0.58	0.65	0.69	0.77	8.19	5.44	8.24	10.12	13.20	1.99	3.40	4.43	6.45
A10A	0.45	43%	0.19	0.26	0.53	0.60	0.64	0.72	6.76	5.79	8.79	10.79	14.09	1.37	2.36	3.07	4.51
A10B	0.21	37%	0.08	0.13	0.51	0.58	0.62	0.69	5.74	6.08	9.25	11.35	14.83	0.67	1.15	1.50	2.21
A11A	0.86	53%	0.46	0.40	0.57	0.64	0.68	0.77	9.90	5.07	7.69	9.43	12.30	2.50	4.26	5.56	8.10
A11B	0.10	81%	0.08	0.02	0.68	0.75	0.80	0.89	5.00	6.31	9.61	11.79	15.42	0.42	0.72	0.93	1.35
A12A	1.16	47%	0.55	0.61	0.55	0.62	0.66	0.74	9.31	5.19	7.87	9.66	12.60	3.32	5.67	7.40	10.81
A12B	0.83	61%	0.51	0.32	0.60	0.68	0.72	0.80	8.64	5.33	8.09	9.92	12.95	2.67	4.54	5.92	8.60
A13	0.49	36%	0.18	0.31	0.51	0.58	0.61	0.69	6.69	5.81	8.82	10.83	14.13	1.46	2.51	3.28	4.82
A14	0.39	46%	0.18	0.21	0.54	0.61	0.65	0.73	5.31	6.21	9.45	11.60	15.16	1.32	2.27	2.97	4.35
A15	0.96	30%	0.29	0.67	0.48	0.55	0.59	0.66	13.51	4.47	6.75	8.30	10.83	2.08	3.57	4.67	6.88
A16A	0.40	67%	0.27	0.13	0.63	0.70	0.74	0.83	7.71	5.55	8.42	10.33	13.48	1.39	2.36	3.08	4.46
A16B	0.14	81%	0.11	0.03	0.68	0.75	0.80	0.89	5.00	6.31	9.61	11.79	15.42	0.58	0.98	1.28	1.85
A17A	0.62	51%	0.32	0.30	0.57	0.64	0.68	0.76	7.07	5.71	8.67	10.64	13.88	2.01	3.43	4.48	6.54
A17B	0.14	81%	0.11	0.03	0.68	0.75	0.80	0.89	5.00	6.31	9.61	11.79	15.42	0.58	0.99	1.28	1.86
A18A	0.08	75%	0.06	0.02	0.66	0.73	0.78	0.86	5.00	6.31	9.61	11.79	15.42	0.33	0.56	0.73	1.06
A18B	0.09	76%	0.07	0.02	0.66	0.74	0.78	0.87	5.00	6.31	9.61	11.79	15.42	0.38	0.65	0.84	1.22
A19A	0.08	71%	0.06	0.02	0.64	0.71	0.76	0.84	5.00	6.31	9.61	11.79	15.42	0.34	0.58	0.76	1.10
A19B	0.10	72%	0.07	0.03	0.64	0.72	0.76	0.85	5.00	6.31	9.61	11.79	15.42	0.39	0.67	0.87	1.27
B0A	0.32	44%	0.14	0.18	0.54	0.61	0.64	0.72	5.00	6.31	9.61	11.79	15.42	1.08	1.85	2.42	3.55
B0B	0.60	50%	0.30	0.30	0.56	0.63	0.67	0.75	9.22	5.21	7.90	9.69	12.64	1.76	2.99	3.91	5.70
B1A	1.62	48%	0.78	0.84	0.55	0.62	0.66	0.74	9.21	5.21	7.90	9.69	12.64	4.67	7.98	10.41	15.21
B1B	0.53	57%	0.30	0.23	0.59	0.66	0.70	0.78	8.42	5.38	8.17	10.02	13.07	1.67	2.83	3.70	5.38
B2	0.95	49%	0.46	0.49	0.55	0.62	0.66	0.74	8.93	5.27	7.99	9.80	12.79	2.77	4.72	6.16	9.00
B3	0.20	40%	0.08	0.12	0.52	0.59	0.63	0.70	7.32	5.64	8.57	10.51	13.72	0.59	1.02	1.33	1.95
B4A	0.89	61%	0.54	0.35	0.60	0.67	0.71	0.80	8.95	5.27	7.98	9.80	12.78	2.82	4.79	6.24	9.08
B4B	0.15	40%	0.06	0.09	0.52	0.59	0.63	0.71	5.00	6.31	9.61	11.79	15.42	0.50	0.85	1.12	1.64
B5A	1.27	55%	0.69	0.58	0.58	0.65	0.69	0.77	7.64	5.57	8.45	10.37	13.53	4.07	6.93	9.04	13.18
B5B	0.55	53%	0.29	0.26	0.57	0.64	0.68	0.76	7.32	5.65	8.57	10.52	13.73	1.77	3.03	3.95	5.77
B6A	0.89	49%	0.44	0.45	0.56	0.63	0.67	0.75	9.68	5.12	7.75	9.52	12.41	2.54	4.34	5.66	8.27
B6B	0.11	47%	0.05	0.06	0.55	0.62	0.66	0.74	5.00	6.31	9.61	11.79	15.42	0.37	0.63	0.82	1.20
B7A	0.59	58%	0.34	0.25	0.59	0.66	0.70	0.78	8.36	5.40	8.18	10.04	13.10	1.87	3.18	4.15	6.04
B7B	0.57	51%	0.29	0.28	0.56	0.64	0.68	0.76	8.45	5.38	8.16	10.01	13.05	1.72	2.93	3.82	5.58
B8	0.38	21%	0.08	0.30	0.45	0.51	0.55	0.62	7.18	5.68	8.63	10.58	13.81	0.97	1.69	2.21	3.27
B9	1.87	49%	0.92	0.95	0.56	0.63	0.67	0.75	9.68	5.12	7.75	9.52	12.41	5.34	9.10	11.88	17.35
B10A	1.28	46%	0.59	0.69	0.55	0.61	0.65	0.73	9.88	5.08	7.69	9.44	12.31	3.54	6.05	7.90	11.55
B10B	1.21	42%	0.51	0.70	0.53	0.60	0.64	0.72	8.75	5.31	8.05	9.88	12.89	3.41	5.84	7.62	11.16
C0	1.06	25%	0.26	0.80	0.46	0.53	0.56	0.64	8.65	5.33	8.08	9.92	12.94	2.62	4.53	5.92	8.75
C1A	0.90	25%	0.22	0.68	0.46	0.53	0.56	0.64	7.19	5.68	8.62	10.57	13.80	2.36	4.08	5.34	7.90
C1B	0.87	23%	0.20	0.67	0.46	0.52	0.56	0.63	6.55	5.84	8.88	10.90	14.23	2.32	4.03	5.27	7.80
C2A	0.82	61%	0.50	0.32	0.60	0.67	0.72	0.80	5.00	6.31	9.61	11.79	15.42	3.11	5.30	6.91	10.07
C2B	0.51	49%	0.25	0.26	0.55	0.62	0.66	0.74	7.40	5.62	8.54	10.48	13.67	1.61	2.74	3.58	5.23
C3	1.84	11%	0.21	1.63	0.41	0.48	0.51	0.58	13.25	4.51	6.81	8.37	10.92	3.43	5.97	7.84	11.68
C4	1.91	17%	0.32	1.59	0.43	0.50	0.53	0.60	9.91	5.07	7.68	9.43	12.30	4.20	7.30	9.56	14.19
C5	0.76	45%	0.34	0.42	0.54	0.61	0.65	0.73	9.89	5.08	7.69	9.44	12.31	2.08	3.56	4.65	6.80
C6	1.64	15%	0.25	1.39	0.43	0.49	0.52	0.60	9.02	5.25	7.96	9.77	12.74	3.68	6.40	8.39	12.47
C7A	1.61	13%	0.21	1.40	0.42	0.48	0.51	0.59	9.86	5.08	7.70	9.45	12.32	3.43	5.97	7.82	11.63
C7B	1.54	14%	0.22	1.32	0.42	0.49	0.52	0.59	9.11	5.23	7.93	9.73	12.70	3.43	5.97	7.81	11.62
C8A	0.67	58%	0.39	0.28	0.59	0.66	0.70	0.78	8.94	5.27	7.99	9.80	12.79	2.10	3.56	4.65	6.76
C8B	0.84	66%	0.55	0.29	0.62	0.69	0.74	0.82	9.29	5.20	7.87	9.66	12.60	2.70	4.57	5.95	8.64
C9	1.97	17%	0.33	1.64	0.43	0.50	0.53	0.60	10.49	4.96	7.51	9.22	12.03	4.24	7.35	9.63	14.29
C10	1.42	16%	0.23	1.19	0.43	0.49	0.53	0.60	10.21	5.01	7.59	9.32	12.16	3.07	5.33	6.99	10.38
C11A	1.39	15%	0.21	1.18	0.43	0.49	0.52	0.60	8.91	5.28	8.00	9.82	12.80	3.14	5.46	7.15	10.63
C11B	1.46	15%	0.22	1.24	0.43	0.49	0.52	0.60	9.49	5.16	7.81	9.59	12.51	3.23	5.61	7.34	10.92
C12A	0.64	69%	0.44	0.20	0.63	0.70	0.75	0.83	8.04	5.47	8.30	10.18	13.29	2.21	3.75	4.88	7.09
C12B	0.31	70%	0.22	0.09	0.64	0.71	0.76	0.84	7.67	5.56	8.43	10.35	13.50	1.11	1.88	2.45	3.55
C13	0.90	26%	0.23	0.67	0.47	0.53	0.57	0.64	11.36	4.81	7.27	8.93	11.65	2.02	3.48	4.55	6.72
C14	0.37	35%	0.13	0.24	0.50	0.57	0.61	0.68	6.82	5.77	8.77	10.76	14.05	1.07	1.85	2.41	3.55
C15A	0.83	64%	0.53	0.30	0.61	0.69	0.73	0.81	8.61	5.34	8.10	9.94	12.96	2.71	4.59	5.99	8.70
C15B	0.11	37%	0.04	0.07	0.51	0.58	0.62	0.69	6.03	5.99	9.11	11.18	14.61	0.33	0.57	0.74	1.09
C16A	0.24	62%	0.15	0.09	0.61	0.68	0.72	0.80	5.00	6.31	9.61	11.79	15.42	0.92	1.57	2.05	2.99
C16B	0.07	70%	0.05	0.02	0.63	0.71	0.75	0.84	5.00	6.31	9.61	11.79	15.42	0.29	0.49	0.64	0.93
D0A	1.47	50%	0.74	0.73	0.56	0.63	0.67	0.75	9.06	5.24	7.95	9.75	12.72	4.33	7.38	9.64	14.07
D0B	0.42	52%	0.22	0.20	0.57	0.64	0.68	0.76	6.75	5.79	8.80	10.80	14.10	1.38	2.36	3.08	4.50
D1A	1.04	65%	0.68	0.36	0.62	0.69	0.73	0.82	8.22	5.43	8.23	10.10	13.18	3.50	5.93	7.73	11.22
D1B	0.32	69%	0.22	0.10	0.63	0.71	0.75	0.83	7.69	5.55	8.43	10.34	13.49	1.12	1.90	2.47	3.58
D2	0.84	52%	0.44	0.40	0.57	0.64	0.68	0.76	8.29	5.41	8.21	10.08	13.14	2.60	4.43	5.78	8.43
E1	1.24	42%	0.52	0.72	0.53	0.60	0.64	0.71	7.13	5.69	8.64	10.61	13.84	3.75	6.42	8.38	12.29
E2	1.23	52%	0.64	0.59	0.57	0.64	0.68	0.76	9.41	5.17	7.84	9.62	12.54	3.62	6.16	8.04	11.72
FUTR-E	6.90	42%	2.89	4.01	0.53	0.60	0.64	0.71	15.76	4.17	6.30	7.74	10.11	15.21	25.95	33.94	49.81
FUTR-F	16.65	46%	7.72	8.94	0.55	0.62	0.65	0.73	14.72	4.30	6.50	7.99	10.43	39.11	66.61	87.07	127.46
FUTR-AMENITY	3.94	17%	0.67	3.27	0.43	0.50	0.53	0.60	10.76	4.91	7.44	9.13	11.91	8.41	14.58	19.10	28.35

Plotted By:Flynn, Alyssa Date:December 05, 2025 10:48:51pm File Path:K:\Lpc_civil\069422600 - buda 9B\Cad\Phase 1\volumesheets\VC-inlet Drainage Calculations.dwg
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No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

INLET DRAINAGE CALCULATIONS (SHEET 2 OF 4)

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
55 OF 151

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

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

CONSTRUCTION PLAN APPROVAL SHEET 55 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

THE RESERVE AT COLE SPRINGS PHASE 1
INLET FLOW CALCULATION TABLE (25-Yr Flows)

		2% Straight Crown										ON GRADE INLETS																			SUMP INLETS										
Column 1	Column 2			Column 3	Column 4	Column 5	Column 6	Column 7	Column 8		Column 9					Column 11	Column 12	Column 13	Column 14	Column 15			Column 16	Column 17	Column 18																
Inlet No.	Drainage Area No.	Inlet Type	Street Type	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Slope (%)	a (in.)	y_o (ft.)	yo (in.)	Ponded Width (ft)	Min. Clear	Width Allow	1/2 Street Cpcty (cfs)	E_0	S_E (eq. slope)	Qa/La	La	Length (ft)	L/La	a/y_o	E (efficiency)	Q/Qa	Q Intercept (cfs)	Q Pass (cfs)	Sump Inlet Numbers	Inlet Type	Street Type	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Slope (%)	a (in.)	yo (ft.)	yo (in.)	Ponded Width (ft)	Min. Clear	Width Allow	1/2 Street Cpcty (cfs)	E_0	S_E	Qa/La	La	Length (ft)	L/La	a/y_o	E (efficency)	Q/Qa	Q Intercept (cfs)	Q Pass (cfs)
A0	A0	Grade	Collector	10.47	0.00	10.47	1.00%	5.00	0.348	4.174	MINCLEAR	12'	9.500	23.98	0.43	0.17	0.76	13.85	15	1.08	1.20	1.00	1.00	10.47	0.00	A5A & A5B	Sump	Collector	11.34	0.000	11.34	0.50%	5.000	0.399	4.786	MINCLEAR	12'	9.500	-	0.37	0.15	1.01	11.240	15	1.33	1.04	0.00	1.00	15.91	0.00
A1	A1	Grade	Collector	8.00	0.00	8.00	1.00%	5.00	0.314	3.774	MINCLEAR	12'	9.500	23.98	0.48	0.19	0.69	11.66	15	1.29	1.32	1.00	1.00	8.00	0.00	A6A & A6B	Sump	Collector	12.19	0.000	12.19	0.50%	5.000	0.419	5.024	MINCLEAR	12'	9.500	-	0.35	0.14	0.99	12.291	15	1.22	1.00	0.00	1.00	15.91	0.00
A2	A2	Grade	Collector	5.63	0.00	5.63	0.50%	5.00	0.314	3.768	MINCLEAR	12'	9.500	16.96	0.48	0.19	0.79	7.14	10	1.40	1.33	1.00	1.00	5.63	0.00	A10A & A10B	Sump	Collector	4.58	0.000	4.58	0.50%	5.000	0.285	3.425	MINCLEAR	12'	9.500	-	0.53	0.21	1.56	2.927	10	3.42	1.46	0.00	1.00	10.61	0.00
A3	A3	Grade	Collector	5.10	0.00	5.10	1.30%	5.00	0.253	3.035	MINCLEAR	12'	9.500	27.34	0.60	0.23	0.55	9.28	10	1.08	1.65	1.00	1.00	5.10	0.00	A11A & A11B	Sump	Collector	6.49	0.000	6.49	0.50%	5.000	0.360	4.325	MINCLEAR	12'	9.500	-	0.41	0.17	1.23	5.282	10	1.89	1.16	0.00	1.00	10.61	0.00
A4	A4	Grade	Collector	9.01	0.00	9.01	0.50%	5.00	0.374	4.493	MINCLEAR	12'	9.500	16.96	0.40	0.16	0.93	9.66	10	1.03	1.11	1.00	1.00	9.01	0.00	A12A & A12B	Sump	Local	13.31	0.000	13.31	0.50%	5.000	0.444	5.328	OVER CNTR	N/A	14.000	-	0.32	0.13	0.97	13.674	15	1.10	0.94	0.00	1.00	15.91	0.00
A5A	A5A	Sump	Collector	6.73	0.00	6.73	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										A16A & A16B	Sump	Collector	4.35	0.000	4.35	0.70%	5.000	0.276	3.315	MINCLEAR	12'	9.500	-	0.55	0.22	1.64	2.655	10	3.77	1.51	0.00	1.00	10.61	0.00
A5B	A5B	Sump	Collector	4.61	0.00	4.61	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										A17A & A17B	Sump	Collector	5.76	0.000	5.76	0.70%	5.000	0.333	3.995	MINCLEAR	12'	9.500	-	0.45	0.18	1.31	4.387	10	2.28	1.25	0.00	1.00	10.61	0.00
A6A	A6A	Sump	Collector	9.09	0.00	9.09	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										A18A & A18B	Sump	Collector	1.57	0.000	1.57	0.50%	5.000	0.140	1.680	7.001	12'	9.500	-	0.87	0.33	0.00	0.000	10	0.00	2.98	0.00	1.00	10.61	0.00
A6B	A6B	Sump	Collector	3.10	0.00	3.10	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										A19A & A19B	Sump	Collector	1.63	0.000	1.63	1.40%	5.000	0.143	1.721	7.171	12'	9.500	-	0.86	0.33	0.00	0.000	10	0.00	2.91	0.00	1.00	10.61	0.00
A7	A7	Grade	Local	7.02	0.00	7.02	0.50%	5.00	0.341	4.092	OVER CNTR	N/A	14.000	16.40	0.44	0.18	0.85	8.22	10	1.22	1.22	1.00	1.00	7.02	0.00	B0A & B0B	Sump	Local	6.33	0.000	6.33	1.40%	5.000	0.354	4.252	OVER CNTR	N/A	14.000	-	0.42	0.17	1.25	5.083	10	1.97	1.18	0.00	1.00	10.61	0.00
A8	A8	Grade	Local	9.00	0.00	9.00	0.50%	5.00	0.374	4.491	OVER CNTR	N/A	14.000	16.40	0.40	0.16	0.93	9.66	10	1.04	1.11	1.00	1.00	9.00	0.00	B1A & B1B	Sump	Local	14.11	0.000	14.11	1.00%	5.000	0.461	5.537	OVER CNTR	N/A	14.000	-	0.31	0.13	0.96	14.647	15	1.02	0.90	0.00	1.00	15.91	0.00
A9	A9	Grade	Local	4.43	0.00	4.43	0.50%	5.00	0.287	3.442	OVER CNTR	N/A	14.000	16.40	0.53	0.21	0.72	6.13	10	1.63	1.45	1.00	1.00	4.43	0.00	B4A & B4B	Sump	Local	7.36	0.000	7.36	0.50%	5.000	0.392	4.702	OVER CNTR	N/A	14.000	-	0.37	0.15	1.16	6.348	10	1.58	1.06	0.00	1.00	10.61	0.00
A10A	A10A	Sump	Collector	3.07	0.00	3.07	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										B5A & B5B	Sump	Local	12.99	0.000	12.99	0.50%	5.000	0.437	5.241	OVER CNTR	N/A	14.000	-	0.33	0.14	0.98	13.273	15	1.13	0.95	0.00	1.00	15.91	0.00
A10B	A10B	Sump	Collector	1.50	0.00	1.50	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										B6A & B6B	Sump	Local	6.48	0.000	6.48	0.50%	5.000	0.360	4.320	OVER CNTR	N/A	14.000	-	0.41	0.17	1.23	5.269	10	1.90	1.16	0.00	1.00	10.61	0.00
A11A	A11A	Sump	Collector	5.56	0.00	5.56	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										B7A & B7B	Sump	Local	7.97	0.000	7.97	0.50%	5.000	0.413	4.958	OVER CNTR	N/A	14.000	-	0.35	0.14	1.12	7.098	10	1.41	1.01	0.00	1.00	10.61	0.00
A11B	A11B	Sump	Collector	0.93	0.00	0.93	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										B10A & B10B	Sump	Local	15.52	0.000	15.52	0.60%	5.000	0.492	5.901	OVER CNTR	N/A	14.000	-	0.28	0.12	0.95	16.381	15	0.92	0.85	0.00	1.00	15.91	0.00
A12A	A12A	Sump	Local	7.40	0.00	7.40	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										C1A & C1B	Sump	Local	10.61	0.000	10.61	0.50%	5.000	0.500	6.001	OVER CNTR	N/A	14.000	-	0.28	0.12	1.03	10.348	10	0.97	0.83	0.00	1.00	10.61	0.00
A12B	A12B	Sump	Local	5.92	0.00	5.92	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										C2A & C2B	Sump	Local	10.49	0.000	10.49	0.50%	5.000	0.379	4.545	OVER CNTR	N/A	14.000	-	0.39	0.16	1.03	10.199	15	1.47	1.10	0.00	1.00	15.91	0.00
A13	A13	Grade	Collector	3.28	0.00	3.28	0.60%	5.00	0.248	2.972	MINCLEAR	12'	9.500	18.57	0.61	0.24	0.62	5.29	10	1.89	1.68	1.00	1.00	3.28	0.00	C7A & C7B	Sump	Local	15.63	0.000	15.63	0.60%	5.000	0.494	5.930	OVER CNTR	N/A	14.000	-	0.28	0.12	0.95	16.522	15	0.91	0.84	0.00	1.00	15.91	0.00
A14	A14	Grade	Collector	2.97	0.00	2.97	0.60%	5.00	0.238	2.862	MINCLEAR	12'	9.500	18.57	0.63	0.24	0.60	4.92	10	2.01	1.75	1.00	1.00	2.97	0.00	C8A & C8B	Sump	Local	10.60	0.000	10.60	0.50%	5.000	0.500	5.998	OVER CNTR	N/A	14.000	-	0.28	0.12	1.03	10.336	10	0.97	0.83	0.00	1.00	10.61	0.00
A15	A15	Grade	Local	4.67	0.00	4.67	0.60%	5.00	0.283	3.393	OVER CNTR	N/A	14.000	17.97	0.54	0.21	0.71	6.57	10	1.52	1.47	1.00	1.00	4.67	0.00	C11A & C11B	Sump	Local	14.50	0.000	14.50	0.90%	5.000	0.470	5.639	OVER CNTR	N/A	14.000	-	0.30	0.13	0.96	15.128	15	0.99	0.89	0.00	1.00	15.91	0.00
A16A	A16A	Sump	Collector	3.08	0.00	3.08	0.70%	5.00								SEE SUMP CALCULATIONS BELOW										C12A & C12B	Sump	Local	7.33	0.000	7.33	1.00%	5.000	0.391	4.690	OVER CNTR	N/A	14.000	-	0.38	0.15	1.16	6.314	10	1.58	1.07	0.00	1.00	10.61	0.00
A16B	A16B	Sump	Collector	1.28	0.00	1.28	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										C15A & C15B	Sump	Local	6.73	0.000	6.73	1.00%	5.000	0.282	3.381	OVER CNTR	N/A	14.000	-	0.54	0.21	1.21	5.575	15	2.69	1.48	0.00	1.00	15.91	0.00
A17A	A17A	Sump	Collector	4.48	0.00	4.48	0.70%	5.00								SEE SUMP CALCULATIONS BELOW										C16A & C16B	Sump	Local	2.69	0.000	2.69	0.60%	5.000	0.200	2.403	10.013	N/A	14.000	-	0.72	0.28	4.43	0.606	10	16.49	2.08	0.00	1.00	10.61	0.00
A17B	A17B	Sump	Collector	1.28	0.00	1.28	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										D0A & D0B	Sump	Local	12.72	0.000	12.72	0.50%	5.000	0.431	5.168	OVER CNTR	N/A	14.000	-	0.33	0.14	0.98	12.939	15	1.16	0.97	0.00	1.00	15.91	0.00
A18A	A18A	Sump	Collector	0.73	0.00	0.73	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										D1A & D1B	Sump	Local	10.20	0.000	10.20	0.50%	5.000	0.487	5.845	OVER CNTR	N/A	14.000	-	0.29	0.12	1.04	9.842	10	1.02	0.86	0.00	1.00	10.61	0.00
A18B	A18B	Sump	Collector	0.84	0.00	0.84	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
A19A	A19A	Sump	Collector	0.76	0.00	0.76	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
A19B	A19B	Sump	Collector	0.87	0.00	0.87	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B0A	B0A	Sump	Local	2.42	0.00	2.42	1.40%	5.00								SEE SUMP CALCULATIONS BELOW																												
B0B	B0B	Sump	Local	3.91	0.00	3.91	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B1A	B1A	Sump	Local	10.41	0.00	10.41	1.00%	5.00								SEE SUMP CALCULATIONS BELOW																												
B1B	B1B	Sump	Local	3.70	0.00	3.70	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B2	B2	Grade	Local	6.16	0.00	6.16	0.50%	5.00	0.325	3.896	OVER CNTR	N/A	14.000	16.40	0.47	0.19	0.82	7.56	10	1.32	1.28	1.00	1.00	6.16	0.00																							
B3	B3	Grade	Local	1.33	0.00	1.33	0.90%	5.00	0.164	1.964	8.182	N/A	14.000	22.01	0.81	0.31	0.38	3.49	10	2.87	2.55	1.00	1.00	1.33	0.00																							
B4A	B4A	Sump	Local	6.24	0.00	6.24	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B4B	B4B	Sump	Local	1.12	0.00	1.12	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B5A	B5A	Sump	Local	9.04	0.00	9.04	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B5B	B5B	Sump	Local	3.95	0.00	3.95	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B6A	B6A	Sump	Local	5.66	0.00	5.66	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B6B	B6B	Sump	Local	0.82	0.00	0.82	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B7A	B7A	Sump	Local	4.15	0.00	4.15	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B7B	B7B	Sump	Local	3.82	0.00	3.82	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
B8	B8	Grade	Local	2.21	0.00	2.21	0.70%	5.00	0.207	2.489	10.371	N/A	14.000	19.41	0.70	0.27	0.51	4.34	10	2.31	2.01	1.00	1.00	2.21	0.00																							
B9	B9	Grade	Local	11.88	0.00	11.88	0.80%	5.00	0.380	4.563	OVER CNTR	N/A	14.000	20.75	0.39	0.16	0.94	12.62	15	1.19	1.10	1.00	1.00	11.88	0.00																							
B10A	B10A	Sump	Local	7.90	0.00	7.90	0.60%	5.00								SEE SUMP CALCULATIONS BELOW																												
B10B	B10B	Sump	Local	7.62	0.00	7.62	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C0	C0	Grade	Local	5.92	0.00	5.92	0.50%	5.00	0.320	3.839	OVER CNTR	N/A	14.000	16.40	0.47	0.19	0.80	7.37	10	1.36	1.30	1.00	1.00	5.92	0.00																							
C1A	C1A	Sump	Local	5.34	0.00	5.34	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C1B	C1B	Sump	Local	5.27	0.00	5.27	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C2A	C2A	Sump	Local	6.91	0.00	6.91	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C2B	C2B	Sump	Local	3.58	0.00	3.58	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C3	C3	Grade	Local	7.84	0.00	7.84	0.50%	5.00	0.355	4.264	OVER CNTR	N/A	14.000	16.40	0.42	0.17	0.89	8.82	10	1.13	1.17	1.00	1.00	7.84	0.00																							
C4	C4	Grade	Local	9.56	0.00	9.56	1.20%	5.00	0.325	3.897	OVER CNTR	N/A	14.000	25.41	0.46	0.19	0.71	13.51	15	1.11	1.28	1.00	1.00	9.56	0.00																							
C5	C5	Grade	Local	4.65	0.00	4.65	0.60%	5.00	0.282	3.387	OVER CNTR	N/A	14.000	17.97	0.54	0.21	0.71	6.55	10	1.53	1.48	1.00	1.00	4.65	0.00																							
C6	C6	Grade	Local	8.39	0.00	8.39	0.60%	5.00	0.352	4.227	OVER CNTR	N/A	14.000	17.97	0.42	0.17	0.88	9.54	10	1.05	1.18	1.00	1.00	8.39	0.00																							
C7A	C7A	Sump	Local	7.82	0.00	7.82	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C7B	C7B	Sump	Local	7.81	0.00	7.81	0.60%	5.00								SEE SUMP CALCULATIONS BELOW																												
C8A	C8A	Sump	Local	4.65	0.00	4.65	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C8B	C8B	Sump	Local	5.95	0.00	5.95	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C9	C9	Grade	Local	9.63	0.00	9.63	0.50%	5.00	0.384	4.606	OVER CNTR	N/A	14.000	16.40	0.38	0.16	0.95	10.09	10	0.99	1.09	1.00	1.00	9.63	0.00																							
C10	C10	Grade	Local	6.99	0.00	6.99	0.90%	5.00	0.305	3.658	OVER CNTR	N/A	14.000	22.01	0.50	0.20	0.76	9.16	10	1.09	1.37	1.00	1.00	6.99	0.00																							
C11A	C11A	Sump	Local	7.15	0.00	7.15	0.90%	5.00								SEE SUMP CALCULATIONS BELOW																												
C11B	C11B	Sump	Local	7.34	0.00	7.34	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C12A	C12A	Sump	Local	4.88	0.00	4.88	1.00%	5.00								SEE SUMP CALCULATIONS BELOW																												
C12B	C12B	Sump	Local	2.45	0.00	2.45	0.60%	5.00								SEE SUMP CALCULATIONS BELOW																												
C13	C13	Grade	Local	4.55	0.00	4.55	2.00%	5.00	0.223	2.682	11.174	N/A	14.000	32.81	0.66	0.26	0.48	9.50	10	1.05	1.86	1.00	1.00	4.55	0.00																							
C14	C14	Grade	Local	2.41	0.00	2.41	0.60%	5.00	0.221	2.650	11.040	N/A	14.000	17.97	0.67	0.26	0.55	4.41	10	2.27	1.89	1.00	1.00	2.41	0.00																							
C15A	C15A	Sump	Local	5.99	0.00	5.99	1.00%	5.00								SEE SUMP CALCULATIONS BELOW																												
C15B	C15B	Sump	Local	0.74	0.00	0.74	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
C16A	C16A	Sump	Local	2.05	0.00	2.05	0.60%	5.00								SEE SUMP CALCULATIONS BELOW																												
C16B	C16B	Sump	Local	0.64	0.00	0.64	0.60%	5.00								SEE SUMP CALCULATIONS BELOW																												
D0A	D0A	Sump	Local	9.64	0.00	9.64	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
D0B	D0B	Sump	Local	3.08	0.00	3.08	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
D1A	D1A	Sump	Local	7.73	0.00	7.73	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
D1B	D1B	Sump	Local	2.47	0.00	2.47	0.50%	5.00								SEE SUMP CALCULATIONS BELOW																												
D2	D2	Grade	Local	5.78	0.00	5.78	0.70%	5.00	0.298	3.570	OVER CNTR	N/A	14.000	19.41	0.51	0.20	0.75	7.74	10	1.29	1.40	1.00	1.00	5.78	0.00																							
E1	E1	Grade	Collector	8.38	0.00	8.38	0.50%	5.00	0.364	4.373	MINCLEAR	12'	9.500	16.96	0.41	0.16	0.91	9.22	10	1.08	1.14	1.00	1.00	8.38	0.00																							
E2	E2	Grade	Collector	8.04	0.00	8.04	0.60%	5.00	0.347	4.159	MINCLEAR	12'	9.500	18.57	0.43	0.17	0.87	9.28	10	1.08	1.20	1.00	1.00	8.04	0.00																							
FUTR-AMENITY	FUTR-AMENITY	Area	Local	19.10	0.00	19.10	1.10%	5.00								SEE AREA INLET CALCULATIONS BELOW																												

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:48:56am File Path: K:\ges_civil\069422600 - buda 98\Cad\Phase 1\plansheets\C-inlet Drainage Calculations.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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

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

CONSTRUCTION PLAN APPROVAL SHEET 56 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025
STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER

BY	DATE	REVISIONS	No.

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

INLET DRAINAGE CALCULATIONS (SHEET 3 OF 4)

THE RESERVE AT COLE SPRINGS PHASE 1
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
56 OF 151

THE RESERVE AT COLE SPRINGS PHASE 1
INLET FLOW CALCULATION TABLE (100-Yr Flows)

2% Straight Crown — **ON GRADE INLETS**

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9						Column 11	Column 12	Column 13	Column 14	Column 15		Column 16	Column 17	Column 18
Inlet No.	Drainage Area No.	Inlet Type	Street Type	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Slope (%)	a (in.)	y_a (ft.)	yo (in.)	Ponded Width (ft)	Min. Clear	Width Allow	1/2 Street Cpcty (cfs)	E_o	S_E (eq. slope)	Qa/La	La (ft)	Length (ft)	L/La	ay_a	E (effiencyy)	Q/Qa	Q Intercept (cfs)	Q Pass (cfs)	Ensuing DA No.
A0	A0	Grade	Collector	15.14	0.00	15.14	1.00%	5.00	0.399	4.793	MINCLEAR	12'	9.500	23.98	0.37	0.15	0.86	17.61	15	0.85	1.04	0.97	1.00	14.66	0.49	A3
A1	A1	Grade	Collector	11.57	0.00	11.57	1.00%	5.00	0.361	4.333	MINCLEAR	12'	9.500	23.98	0.41	0.17	0.78	14.78	15	1.02	1.15	1.00	1.00	11.57	0.00	
A2	A2	Grade	Collector	8.20	0.00	8.20	0.50%	5.00	0.361	4.337	MINCLEAR	12'	9.500	16.96	0.41	0.17	0.90	9.09	10	1.10	1.15	1.00	1.00	8.20	0.00	
A3	A3	Grade	Collector	7.50	0.49	7.98	1.30%	5.00	0.299	3.589	MINCLEAR	12'	9.500	27.34	0.51	0.20	0.65	12.24	10	0.82	1.39	0.95	0.94	7.61	0.38	A5A
A4	A4	Grade	Collector	13.15	0.00	13.15	0.50%	5.00	0.431	5.177	MINCLEAR	12'	9.500	16.96	0.33	0.14	1.06	12.38	10	0.81	0.97	0.95	1.00	12.48	0.68	A6A
A5A	A5A	Sump	Collector	9.87	1.23	11.10	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A5B	A5B	Sump	Collector	6.75	0.00	6.75	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A6A	A6A	Sump	Collector	13.26	0.68	13.94	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A6B	A6B	Sump	Collector	4.53	0.00	4.53	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A7	A7	Grade	Local	10.28	0.00	10.28	0.50%	5.00	0.393	4.720	OVER CNTR	N/A	14.000	16.40	0.37	0.15	0.98	10.53	10	0.95	1.06	1.00	1.00	10.23	0.05	A10A
A8	A8	Grade	Local	13.16	0.00	13.16	0.50%	5.00	0.431	5.178	OVER CNTR	N/A	14.000	16.40	0.33	0.14	1.06	12.38	10	0.81	0.97	0.95	1.00	12.48	0.68	A9
A9	A9	Grade	Local	6.45	0.68	7.13	0.50%	5.00	0.343	4.115	OVER CNTR	N/A	14.000	16.40	0.44	0.18	0.86	8.30	10	1.20	1.21	1.00	0.91	7.13	0.00	
A10A	A10A	Sump	Collector	4.51	0.05	4.56	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A10B	A10B	Sump	Collector	2.21	0.00	2.21	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A11A	A11A	Sump	Collector	8.10	0.00	8.10	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A11B	A11B	Sump	Collector	1.35	0.00	1.35	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A12A	A12A	Sump	Local	10.81	0.00	10.81	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A12B	A12B	Sump	Local	8.60	0.00	8.60	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A13	A13	Grade	Collector	4.82	0.00	4.82	0.60%	5.00	0.286	3.435	MINCLEAR	12'	9.500	18.57	0.53	0.21	0.72	6.71	10	1.49	1.46	1.00	1.00	4.82	0.00	
A14	A14	Grade	Collector	4.35	0.00	4.35	0.60%	5.00	0.275	3.303	MINCLEAR	12'	9.500	18.57	0.55	0.22	0.69	6.29	10	1.59	1.51	1.00	1.00	4.35	0.00	
A15	A15	Grade	Local	6.88	0.00	6.88	0.60%	5.00	0.327	3.925	OVER CNTR	N/A	14.000	17.97	0.46	0.18	0.82	8.40	10	1.19	1.27	1.00	1.00	6.88	0.00	
A16A	A16A	Sump	Collector	4.46	0.00	4.46	0.70%	5.00								SEE SUMP CALCULATIONS BELOW										
A16B	A16B	Sump	Collector	1.85	0.00	1.85	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A17A	A17A	Sump	Collector	6.54	0.00	6.54	0.70%	5.00								SEE SUMP CALCULATIONS BELOW										
A17B	A17B	Sump	Collector	1.86	0.00	1.86	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A18A	A18A	Sump	Collector	1.06	0.00	1.06	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A18B	A18B	Sump	Collector	1.22	0.00	1.22	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A19A	A19A	Sump	Collector	1.10	0.00	1.10	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
A19B	A19B	Sump	Collector	1.27	0.00	1.27	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B0A	B0A	Sump	Local	3.55	0.00	3.55	1.40%	5.00								SEE SUMP CALCULATIONS BELOW										
B0B	B0B	Sump	Local	5.70	0.00	5.70	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B1A	B1A	Sump	Local	15.21	0.00	15.21	1.00%	5.00								SEE SUMP CALCULATIONS BELOW										
B1B	B1B	Sump	Local	5.38	0.00	5.38	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B2	B2	Sump	Local	9.00	0.00	9.00	0.50%	5.00	0.374	4.491	OVER CNTR	N/A	14.000	16.40	0.40	0.16	0.93	9.66	10	1.04	1.11	1.00	1.00	9.00	0.00	
B3	B3	Grade	Local	1.95	0.00	1.95	0.90%	5.00	0.189	2.267	9.448	N/A	14.000	22.01	0.75	0.29	0.46	4.29	10	2.33	2.21	1.00	1.00	1.95	0.00	
B4A	B4A	Sump	Local	9.08	0.00	9.08	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B4B	B4B	Sump	Local	1.64	0.00	1.64	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B5A	B5A	Sump	Local	13.18	0.00	13.18	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B5B	B5B	Sump	Local	5.77	0.00	5.77	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B6A	B6A	Sump	Local	8.27	0.00	8.27	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B6B	B6B	Sump	Local	1.20	0.00	1.20	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B7A	B7A	Sump	Local	6.04	0.00	6.04	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B7B	B7B	Sump	Local	5.58	0.00	5.58	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
B8	B8	Grade	Local	3.27	0.00	3.27	0.70%	5.00	0.240	2.885	12.019	N/A	14.000	19.41	0.63	0.24	0.60	5.46	10	1.83	1.73	1.00	1.00	3.27	0.00	
B9	B9	Grade	Local	17.35	0.00	17.35	0.80%	5.00	0.438	5.259	OVER CNTR	N/A	14.000	20.75	0.33	0.14	1.07	16.17	15	0.93	0.95	0.99	1.00	17.19	0.15	B10B
B10A	B10A	Sump	Local	11.55	0.00	11.55	0.60%	5.00								SEE SUMP CALCULATIONS BELOW										
B10B	B10B	Sump	Local	11.16	0.15	11.32	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C0	C0	Grade	Local	8.75	0.00	8.75	0.50%	5.00	0.370	4.444	OVER CNTR	N/A	14.000	16.40	0.40	0.16	0.92	9.48	10	1.05	1.13	1.00	1.00	8.75	0.00	
C1A	C1A	Sump	Local	7.90	0.00	7.90	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C1B	C1B	Sump	Local	7.80	0.28	8.08	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C2A	C2A	Sump	Local	10.07	0.00	10.07	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C2B	C2B	Sump	Local	5.23	0.00	5.23	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C3	C3	Grade	Local	11.68	0.00	11.68	0.50%	5.00	0.413	4.952	OVER CNTR	N/A	14.000	16.40	0.35	0.14	1.02	11.45	10	0.87	1.01	0.98	1.00	11.40	0.28	C1B
C4	C4	Grade	Local	14.19	0.00	14.19	1.20%	5.00	0.377	4.520	OVER CNTR	N/A	14.000	25.41	0.39	0.16	0.81	17.45	15	0.86	1.11	0.97	1.00	13.77	0.41	C6
C5	C5	Grade	Local	6.80	0.00	6.80	0.60%	5.00	0.326	3.907	OVER CNTR	N/A	14.000	17.97	0.46	0.18	0.82	8.34	10	1.20	1.28	1.00	1.00	6.80	0.00	
C6	C6	Grade	Local	12.47	0.41	12.88	0.60%	5.00	0.414	4.964	OVER CNTR	N/A	14.000	17.97	0.35	0.14	1.02	12.62	10	0.79	1.01	0.94	0.97	12.12	0.76	C7A
C7A	C7A	Sump	Local	11.63	0.76	12.39	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C7B	C7B	Sump	Local	11.62	1.06	12.68	0.60%	5.00								SEE SUMP CALCULATIONS BELOW										
C8A	C8A	Sump	Local	6.76	0.00	6.76	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C8B	C8B	Sump	Local	8.64	0.00	8.64	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C9	C9	Grade	Local	14.29	0.00	14.29	0.50%	5.00	0.445	5.342	OVER CNTR	N/A	14.000	16.40	0.32	0.13	1.09	13.08	10	0.76	0.94	0.93	1.00	13.24	1.06	C7B
C10	C10	Grade	Local	10.38	0.00	10.38	0.90%	5.00	0.354	4.243	OVER CNTR	N/A	14.000	22.01	0.42	0.17	0.88	11.81	10	0.85	1.18	0.97	1.00	10.02	0.35	C11A
C11A	C11A	Sump	Local	10.63	0.35	10.99	0.90%	5.00								SEE SUMP CALCULATIONS BELOW										
C11B	C11B	Sump	Local	10.92	0.00	10.92	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C12A	C12A	Sump	Local	7.09	0.00	7.09	1.00%	5.00								SEE SUMP CALCULATIONS BELOW										
C12B	C12B	Sump	Local	3.55	0.00	3.55	0.60%	5.00								SEE SUMP CALCULATIONS BELOW										
C13	C13	Grade	Local	6.72	0.00	6.72	2.00%	5.00	0.259	3.104	12.935	N/A	14.000	32.81	0.59	0.23	0.56	11.99	10	0.83	1.61	0.96	1.00	6.46	0.27	
C14	C14	Grade	Local	3.55	0.00	3.55	0.60%	5.00	0.255	3.062	12.759	N/A	14.000	17.97	0.59	0.23	0.64	5.55	10	1.80	1.63	1.00	1.00	3.55	0.00	
C15A	C15A	Sump	Local	8.70	0.00	8.70	1.00%	5.00								SEE SUMP CALCULATIONS BELOW										
C15B	C15B	Sump	Local	1.09	0.00	1.09	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
C16A	C16A	Sump	Local	2.99	0.00	2.99	0.60%	5.00								SEE SUMP CALCULATIONS BELOW										
C16B	C16B	Sump	Local	0.93	0.00	0.93	0.60%	5.00								SEE SUMP CALCULATIONS BELOW										
D0A	D0A	Sump	Local	14.07	0.00	14.07	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
D0B	D0B	Sump	Local	4.50	0.00	4.50	0.50%	5.00								A5A										
D1A	D1A	Sump	Local	11.22	0.00	11.22	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
D1B	D1B	Sump	Local	3.58	0.00	3.58	0.50%	5.00								SEE SUMP CALCULATIONS BELOW										
D2	D2	Grade	Local	8.43	0.00	8.43	0.70%	5.00	0.343	4.114	OVER CNTR	N/A	14.000	19.41	0.44	0.18	0.86	9.85	10	1.02	1.22	1.00	1.00	8.43	0.00	
E1	E1	Grade	Collector	12.29	0.00	12.29	0.50%	5.00	0.421	5.048	MINCLEAR	12'	9.500	16.96	0.34	0.14	1.04	11.84	10	0.84	0.99	0.96	1.00	11.86	0.43	A5A
E2	E2	Grade	Collector	11.72	0.00	11.72	0.60%	5.00	0.399	4.792	MINCLEAR	12'	9.500	18.57	0.37	0.15	0.99	11.87	10	0.84	1.04	0.96	1.00	11.30	0.42	A5A
FUTR-AMENITY	FUTR-AMENITY	Area	Local	28.35	0.00	28.35	1.10%	5.00								SEE AREA INLET CALCULATIONS BELOW										

2% Straight Crown — **SUMP INLETS**

Sump Inlet Numbers	Inlet Type	Street Type	Q (cfs)	Q Pass (cfs)	Q Total (Qa) (cfs)	Slope (%)	a (in.)	yo (ft.)	yo (in.)	Ponded Width (ft)	Min. Clear	Width Allow	1/2 Street Cpcty (cfs)	E_o	S_E	Qa/La	La (ft)	Length (ft)	L/La	ay_a	E (effiencyy)	Q/Qa	Q Intercept (cfs)	Q Pass (cfs)
A5A & A5B	Sump	Collector	16.62	1.228	17.849	0.50%	5.000	0.540	6.478	MINCLEAR	12'	9.500	-	0.25	0.11	0.93	19.250	15	0.78	0.77	1.94	0.93	15.91	1.94
A6A & A6B	Sump	Collector	17.79	0.676	18.464	0.50%	5.000	0.552	6.626	MINCLEAR	12'	9.500	-	0.24	0.11	0.92	20.006	15	0.75	0.75	2.55	0.96	15.91	2.55
A10A & A10B	Sump	Collector	6.72	0.047	6.762	0.50%	5.000	0.370	4.445	MINCLEAR	12'	9.500	-	0.40	0.16	1.20	5.616	10	1.78	1.12	0.00	0.99	10.61	0.00
A11A & A11B	Sump	Collector	9.46	0.000	9.456	0.50%	5.000	0.463	5.558	MINCLEAR	12'	9.500	-	0.31	0.13	1.06	8.928	10	1.12	0.90	0.00	1.00	10.61	0.00
A12A & A12B	Sump	Local	19.42	0.000	19.417	0.50%	5.000	0.571	6.852	OVER CNTR	N/A	14.000	-	0.23	0.10	0.92	21.178	15	0.71	0.73	3.51	1.00	15.91	3.51
A16A & A16B	Sump	Collector	6.32	0.000	6.318	0.60%	5.000	0.354	4.248	MINCLEAR	12'	9.500	-	0.42	0.17	1.25	5.069	10	1.97	1.18	0.00	1.00	10.61	0.00
A17A & A17B	Sump	Collector	8.40	0.000	8.402	0.70%	5.000	0.426	5.137	MINCLEAR	12'	9.500	-	0.34	0.14	1.10	7.632	10	1.31	0.97	0.00	1.00	10.61	0.00
A18A & A18B	Sump	Collector	2.28	0.000	2.281	0.50%	5.000	0.179	2.154	8.973	12'	9.500	-	0.77	0.29	21.74	0.105	10	95.32	2.32	0.00	1.00	10.61	0.00
A19A & A19B	Sump	Collector	2.37	0.000	2.367	0.50%	5.000	0.184	2.208	9.199	12'	9.500	-	0.76	0.29	11.21	0.211	10	47.36	2.26	0.00	1.00	10.61	0.00
B0A & B0B	Sump	Local	9.26	0.000	9.259	1.40%	5.000	0.457	5.481	OVER CNTR	N/A	14.000	-	0.31	0.13	1.07	8.687	10	1.15	0.91	0.00	1.00	10.61	0.00
B1A & B1B	Sump	Local	20.60	0.000	20.595	1.00%	5.000	0.594	7.127	OVER CNTR	N/A	14.000	-	0.22	0.10	0.91	22.627	15	0.66	0.70	4.69	1.00	15.91	4.69
B4A & B4B	Sump	Local	10.72	0.000	10.719	0.50%	5.000	0.504	6.042	OVER CNTR	N/A	14.000	-	0.27	0.12	1.02	10.481	10	0.95	0.83	0.11	1.00	10.61	0.11
B5A & B5B	Sump	Local	18.95	0.000	18.945	1.00%	5.000	0.562	6.741	OVER CNTR	N/A	14.000	-	0.24	0.10	0.92	20.598	15	0.73	0.74	3.04	1.00	15.91	3.04
B6A & B6B	Sump	Local	9.47	0.000	9.468	0.50%	5.000	0.464	5.563	OVER CNTR	N/A	14.000	-	0.30	0.13	1.06	8.944	10	1.12	0.90	0.00	1.00	10.61	0.00
B7A & B7B	Sump	Local	11.61	0.000	11.614	0.90%	5.000	0.531	6.374	OVER CNTR	N/A	14.000	-	0.26	0.11	1.00	11.583	10	0.86	0.78	1.01	1.00	10.61	1.01
B10A & B10B	Sump	Local	22.71	0.000	22.711	0.50%	5.000	0.634	7.607	OVER CNTR	N/A	14.000	-	0.20	0.09	0.90	25.229	15	0.59	0.66	6.80	1.00	15.91	6.80
C1A & C1B	Sump	Local	15.70	0.000	15.701	0.50%	5.000	0.649	7.793	OVER CNTR	N/A	14.000	-	0.20	0.09	0.95	16.608	10	0.60	0.64	5.09	1.00	10.61	5.09
C2A & C2B	Sump	Local	15.31	0.000	15.306	0.50%	5.000	0.487	5.847	OVER CNTR	N/A	14.000	-	0.29	0.12	0.95	16.122	15	0.93	0.86	0.00	1.00	15.91	0.00
C7A & C7B	Sump	Local	23.25	0.000	23.254	0.50%	5.000	0.644	7.727	OVER CNTR	N/A	14.000	-	0.20	0.09	0.90	25.897	15	0.58	0.65	7.34	1.00	15.91	7.34
C8A & C8B	Sump	Local	15.41	0.000	15.407	0.50%	5.000	0.641	7.696	OVER CNTR	N/A	14.000	-	0.20	0.09	0.95	16.247	10	0.62	0.65	4.80	1.00	10.61	4.80
C11A & C11B	Sump	Local	21.55	0.000	21.549	0.50%	5.000	0.612	7.345	OVER CNTR	N/A	14.000	-	0.21	0.10	0.91	23.800	15	0.63	0.68	5.64	1.00	15.91	5.64
C12A & C12B	Sump	Local	10.63	0.000	10.632	0.70%	5.000	0.501	6.010	OVER CNTR	N/A	14.000	-	0.28	0.12	1.02	10.375	10	0.96	0.83	0.03	1.00	10.61	0.03
C15A & C15B	Sump	Local	9.79	0.000	9.787	0.50%	5.000	0.362	4.340	OVER CNTR	N/A	14.000	-	0.41	0.17	1.05	9.336	15	1.61	1.15	0.00	1.00	15.91	0.00
C16A & C16B	Sump	Local	3.92	0.000	3.916	0.70%	5.000	0.257	3.088	12.867	N/A	14.000	-	0.59	0.23	1.85	2.116	10	4.73	1.62	0.00	1.00	10.61	0.00
D0A & D0B	Sump	Local	18.57	0.000	18.567	0.80%	5.000	0.554	6.651	OVER CNTR	N/A	14.000	-	0.24	0.11	0.92	20.133	15	0.75	0.75	2.66	1.00	15.91	2.66
D1A & D1B	Sump	Local	14.81	0.000	14.807	0.80%	5.000	0.625	7.495	OVER CNTR	N/A	14.000	-	0.21	0.09	0.95	15.509	10	0.64	0.67	4.20	1.00	10.61	4.20

The Reserve at Cole Springs
AREA INLET FLOW CALCULATIONS (100 YR STORM)

AREA INLET SIZING CALCULATIONS

Drainage Area	Inlet No.	Inlet Type	Q100 (cfs)	Head (ft)	Inlet Length (req.) (ft)	Q(max.) (cfs)	Length (prop.) (ft)
FUTR-AMENITY	FUTR-AMENITY	4' x 4' Surface Area Inlet (Type S-4)	28.35	0.50	15.73	28.84	16.00

STREET CROSS SECTION

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. — Monday, Oct 20 2025

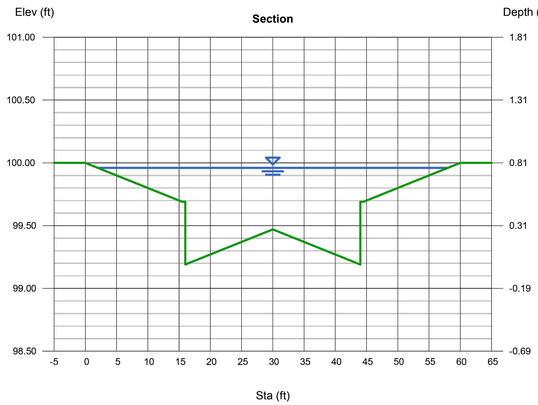
Local-100

User-defined
Invert Elev (ft) = 99.19
Slope (%) = 0.50
N-Value = 0.029

Calculations
Compute by: Known Q
Known Q (cfs) = 41.00

Highlighted
Depth (ft) = 0.77
Q (cfs) = 41.00
Area (sqft) = 21.55
Velocity (ft/s) = 1.90
Wetted Perim (ft) = 57.01
Crit Depth, Yc (ft) = 0.57
Top Width (ft) = 56.00
EGL (ft) = 0.83

(Sta, El, n)-(Sta, El, n)...
(0.00,100.00)-(15.50, 99.69, 0.040)-(15.00, 99.69, 0.016)-(16.00, 99.19, 0.016)-(30.00, 99.47, 0.016)-(44.00, 99.19, 0.016)-(44.00, 99.69, 0.016)
-(44.50, 99.69, 0.016)-(60.00, 100.00, 0.040)



STREET CROSS SECTION

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. — Monday, Oct 20 2025

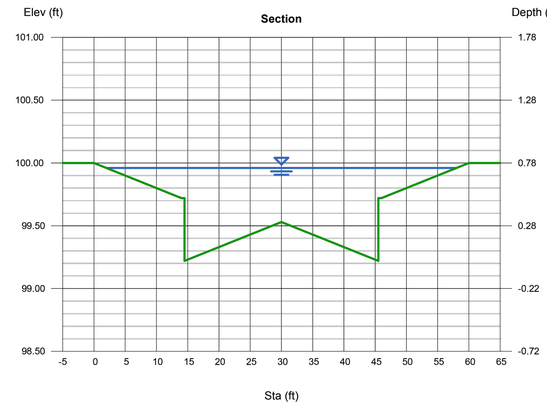
Collector-100

User-defined
Invert Elev (ft) = 99.22
Slope (%) = 0.50
N-Value = 0.027

Calculations
Compute by: Known Q
Known Q (cfs) = 42.00

Highlighted
Depth (ft) = 0.74
Q (cfs) = 42.00
Area (sqft) = 21.25
Velocity (ft/s) = 1.98
Wetted Perim (ft) = 57.01
Crit Depth, Yc (ft) = 0.56
Top Width (ft) = 56.00
EGL (ft) = 0.80

(Sta, El, n)-(Sta, El, n)...
(0.00,100.00)-(14.00, 99.72, 0.040)-(14.50, 99.72, 0.016)-(14.50, 99.22, 0.016)-(30.00, 99.53, 0.016)-(45.50, 99.22, 0.016)-(45.50, 99.72, 0.016)
-(46.00, 99.72, 0.016)-(60.00, 100.00, 0.040)



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

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

CONSTRUCTION PLAN APPROVAL SHEET 57 OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS — SARAH F. STARKEY — 145662 — LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

INLET DRAINAGE CALCULATIONS (SHEET 4 OF 4)

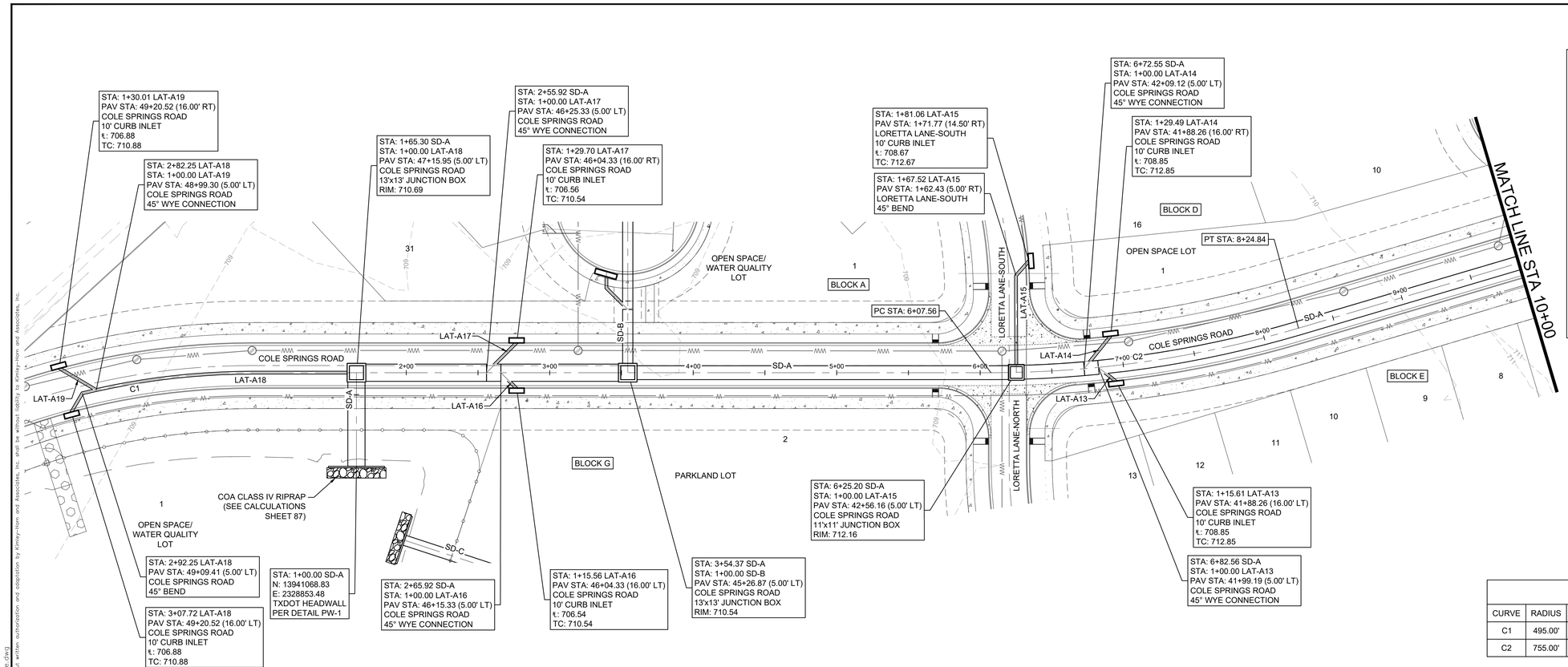
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
57 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:48:58am File Path: X:\pgc\...civil\069422600 - buda 98\Cad\Phase 1\plansheet\C-Inlet Drainage Calculations.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:51:45am File Path: K:\Lpc_civil\069422600 – buda 98\Cad\Phase 1\plansheet\C-Storm Plan and Profile.dwg
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LEGEND

- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- W WATER MAIN
- WW WASTEWATER MAIN
- W EXISTING WATER LINE
- SS EXISTING WASTEWATER LINE
- EXISTING STORM SEWER LINE

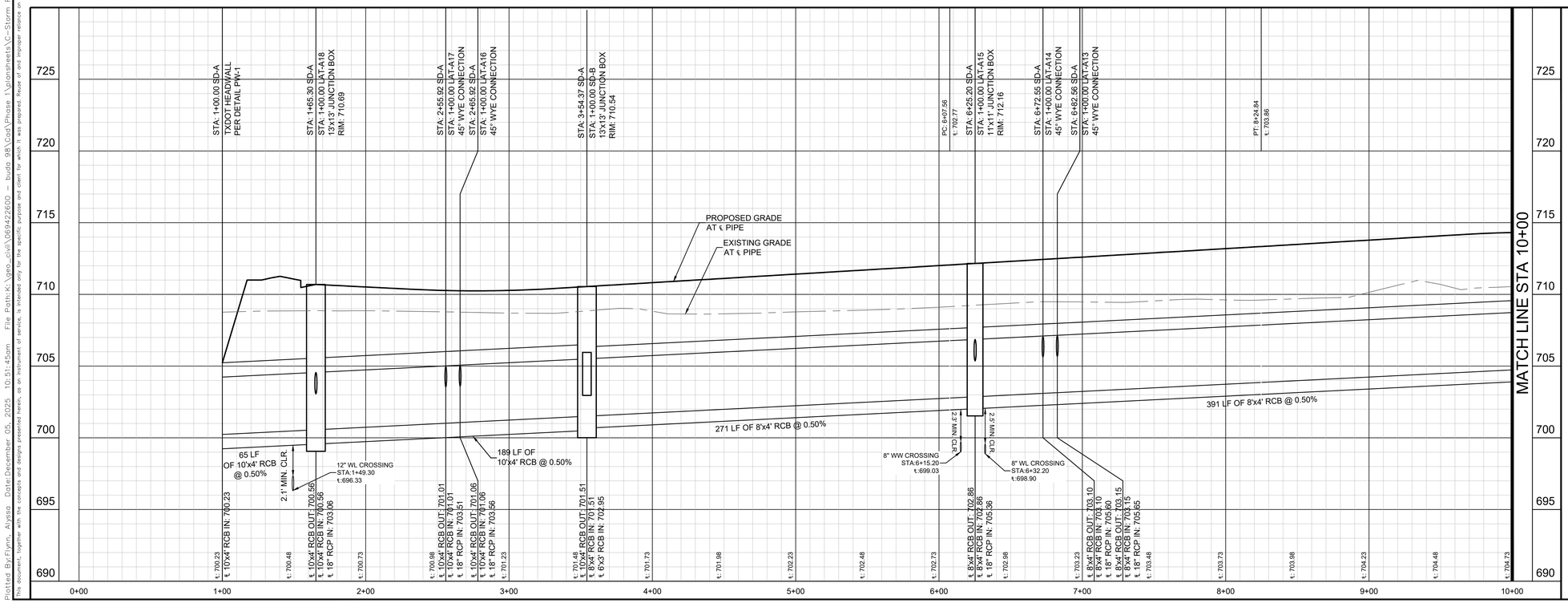
NOTES:
1. ALL CONCRETE STRUCTURES SHALL HAVE MINIMUM STRENGTH OF 4200 PSI.
2. FILL TO BE COMPACTED TO 95% STD PROCTOR DENSITY OR PER GEOTECH RECOMMENDATION.
3. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.

GRAPHIC SCALE 40'

CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	495.00'	119.51'	S55°17'04"E	119.22'	13°49'58"	60.04'
C2	755.00'	217.28'	N56°36'45"W	216.53'	16°29'19"	109.39'

SD-A



PROFILE SCALE

1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

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

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CONSTRUCTION PLAN APPROVAL SHEET 58 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
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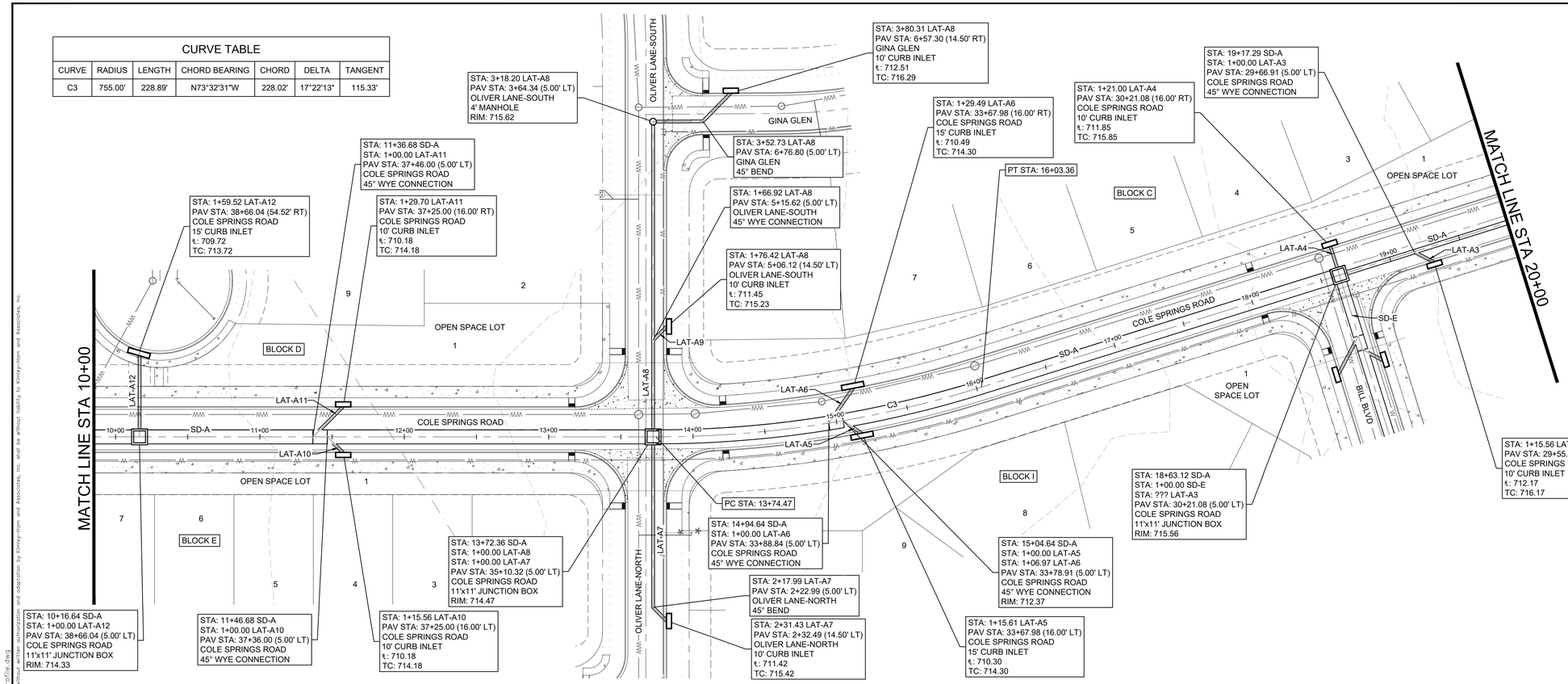
STORM PLAN AND PROFILE SD-A STA. 1+00 TO 10+00

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
58 OF 151

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C3	755.00'	228.89'	N73°32'31"W	228.02'	17°22'13"	115.33'



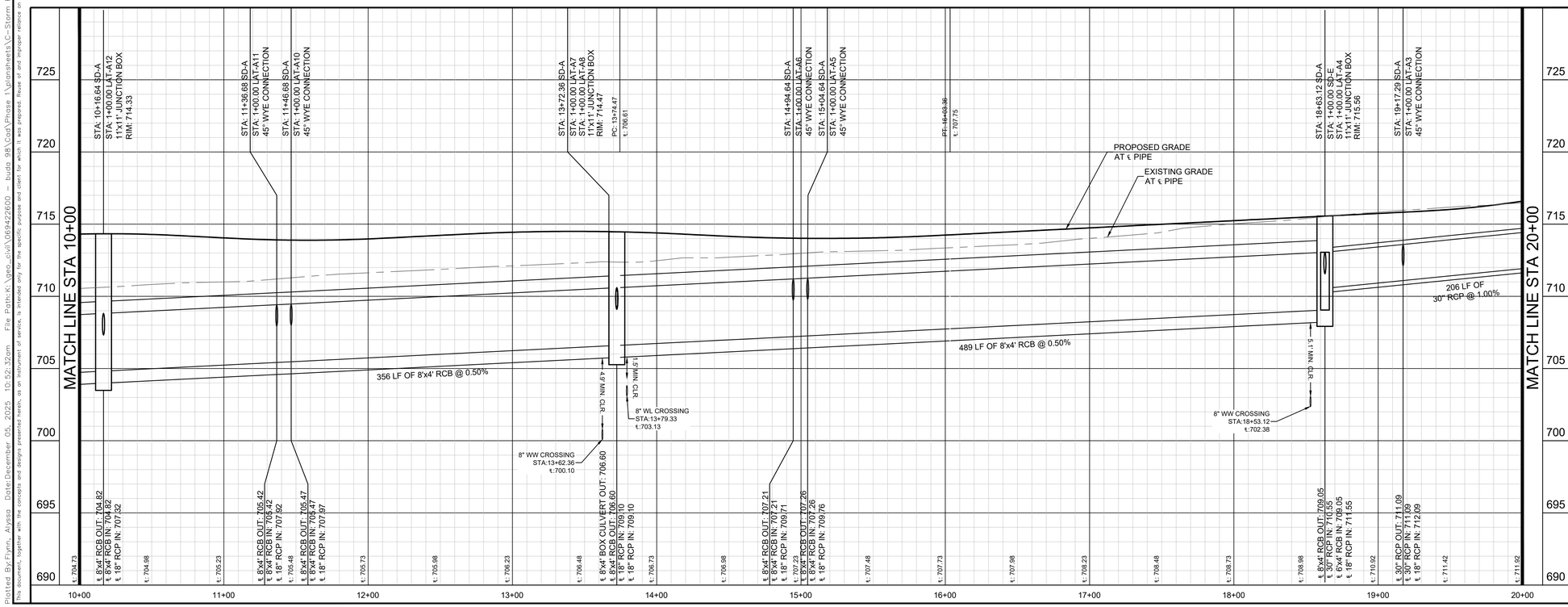
LEGEND

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- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
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- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- W WATER MAIN
- WW WASTEWATER MAIN
- W EXISTING WATER LINE
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- EXISTING STORM SEWER LINE

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EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
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No.	REVISIONS	DATE	BY

Kimley»Horn
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5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

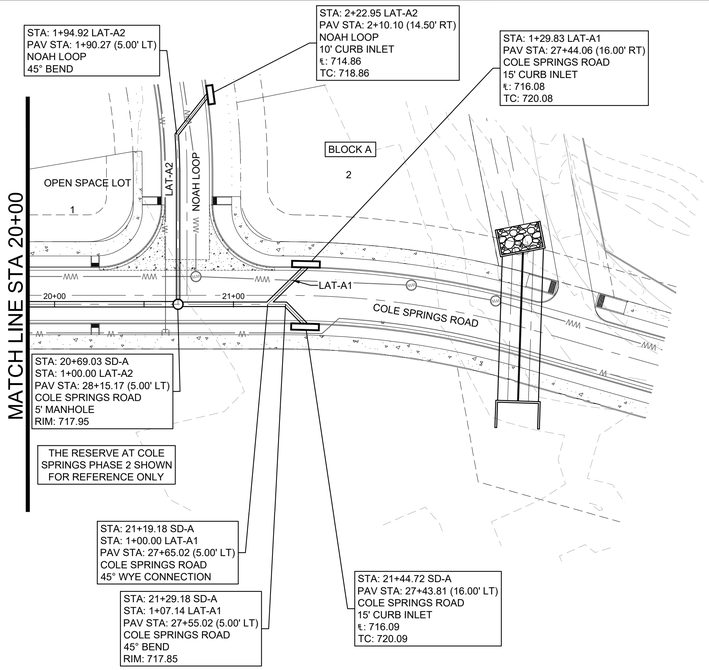
STORM PLAN AND PROFILE SD-A STA. 10+00 TO 20+00

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
59 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:52:32am File Path: K:\aus_civil\069422602 - buda 98\Cad\Phase 1\plansheets\C- Storm Plan and Profile.dwg
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LEGEND

- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- W WATER MAIN
- WW WASTEWATER MAIN
- W EXISTING WATER LINE
- SS EXISTING WASTEWATER LINE
- EXISTING STORM SEWER LINE

NOTES:
1. ALL CONCRETE STRUCTURES SHALL HAVE MINIMUM STRENGTH OF 4200 PSI.
2. FILL TO BE COMPACTED TO 95% STD PROCTOR DENSITY OR PER GEOTECH RECOMMENDATION.
3. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.

S E M N

0 40' 80'
GRAPHIC SCALE 40'

SD-A



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 60 OF 151
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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

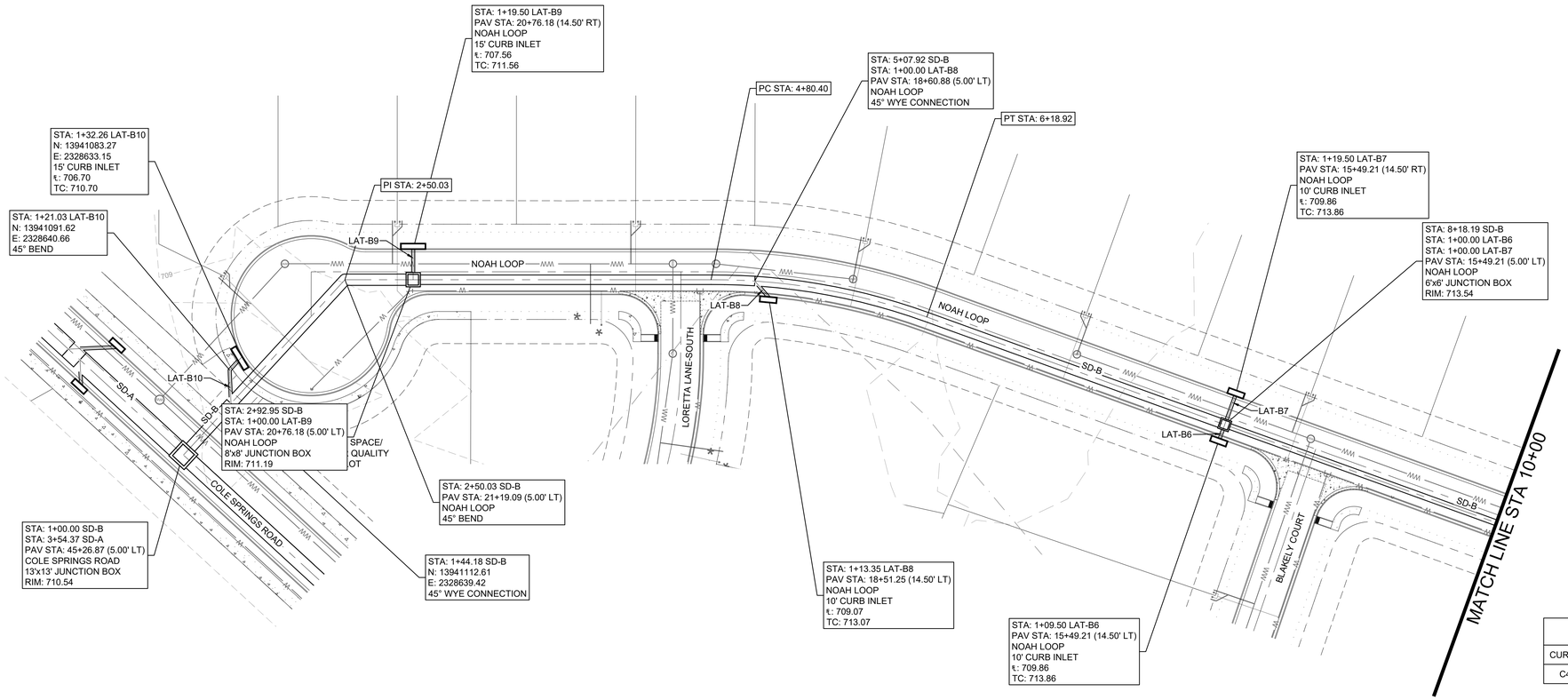
STORM PLAN AND PROFILE SD-A STA. 20+00 TO END

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
60 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:53:06pm File Path: K:\Aus_civil\069422600 - buda 98\Cad\Phase 1\plansheets\VC-Storm Plan and Profile.dwg
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LEGEND

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- STREET DRAINAGE FLOW DIRECTION
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- EXPOSED FACE OF RETAINING WALL
- PROPOSED CONTOUR (555)
- EXISTING CONTOUR (555)
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- WATER MAIN (W)
- WASTEWATER MAIN (WW)
- EXISTING WATER LINE (W)
- EXISTING WASTEWATER LINE (ss)
- EXISTING STORM SEWER LINE

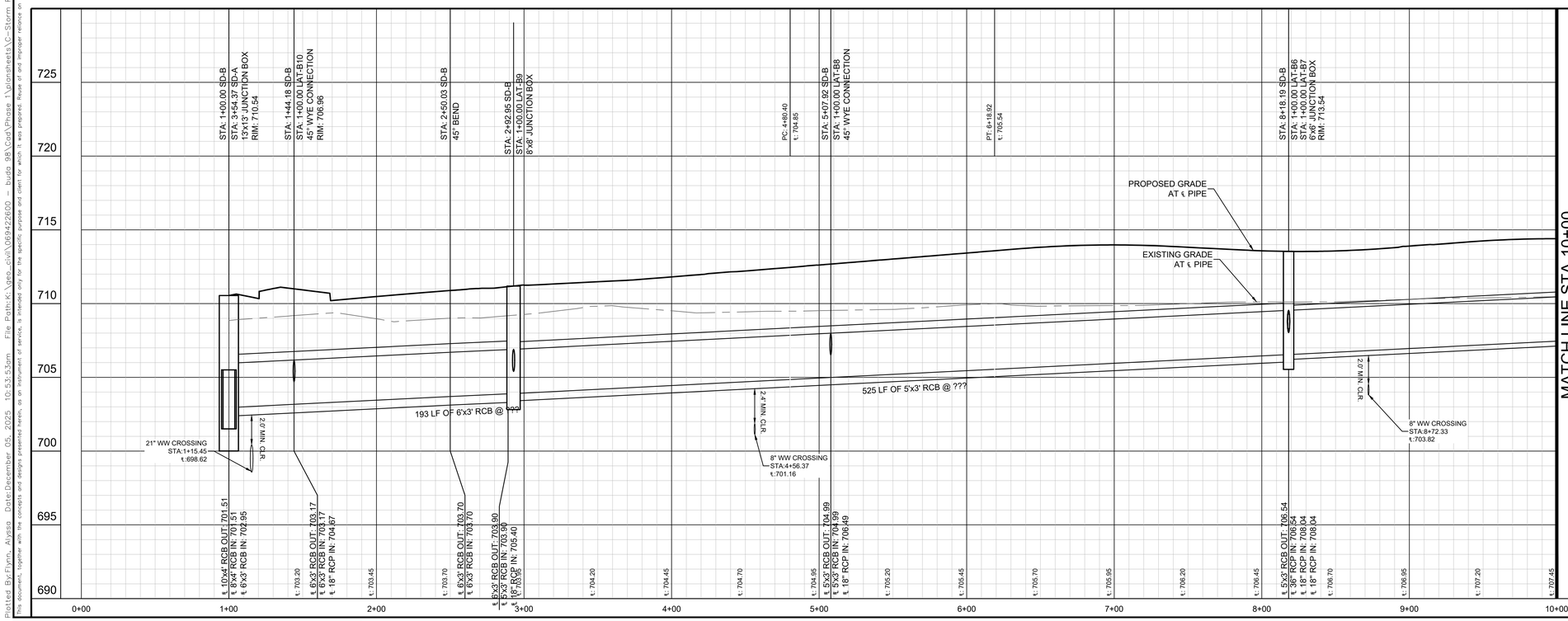
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S E M N

0 40' 80'
GRAPHIC SCALE 40'

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C4	395.00'	138.53'	N81°10'54"W	137.82'	20°05'37"	69.98'

SD-B



PROFILE SCALE

1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
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ELEV.=712.04' (NAVD '88)

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ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 61 OF 151
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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602	
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

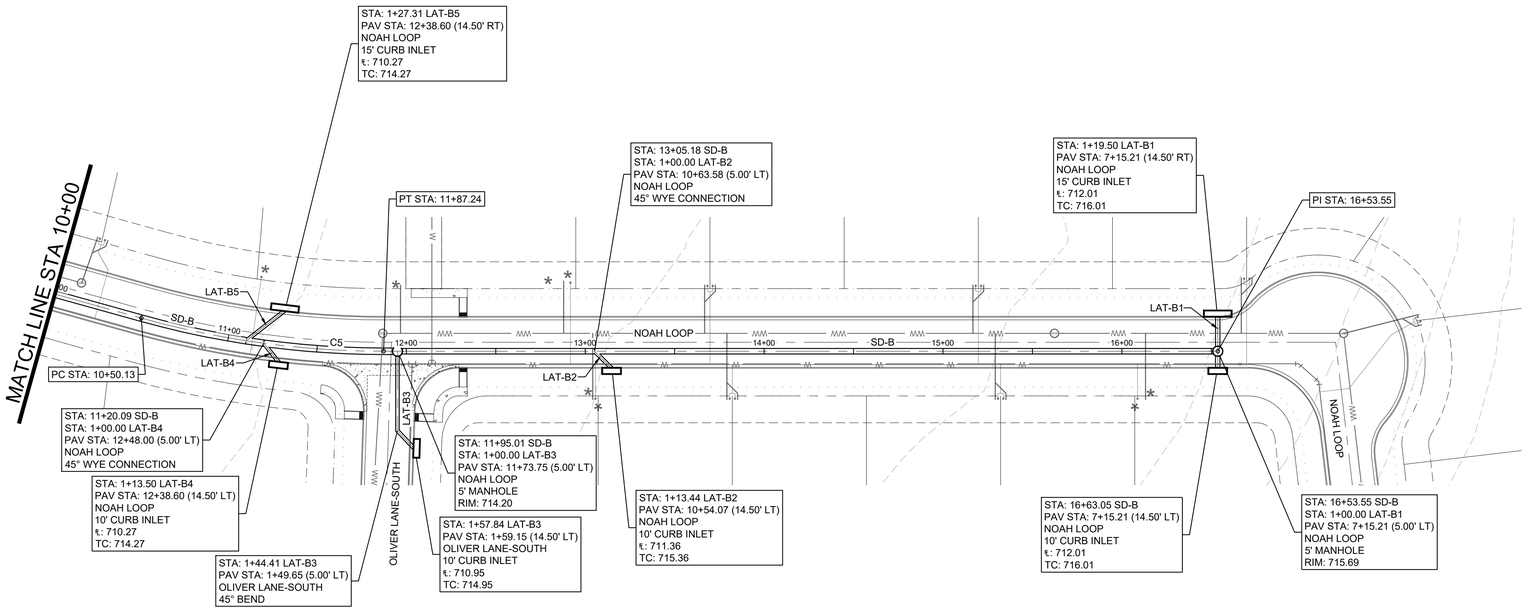
STORM PLAN AND PROFILE SD-B STA. 1+00 TO 10+00

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
61 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:53:53am File Path: K:\geo_civil\069422600 – buda 981\Cad\Phase 1\plansheets\C-Storm Plan and Profile.dwg
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CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C5	505.00'	137.11'	N78°54'46"W	136.69'	15°33'21"	68.98'

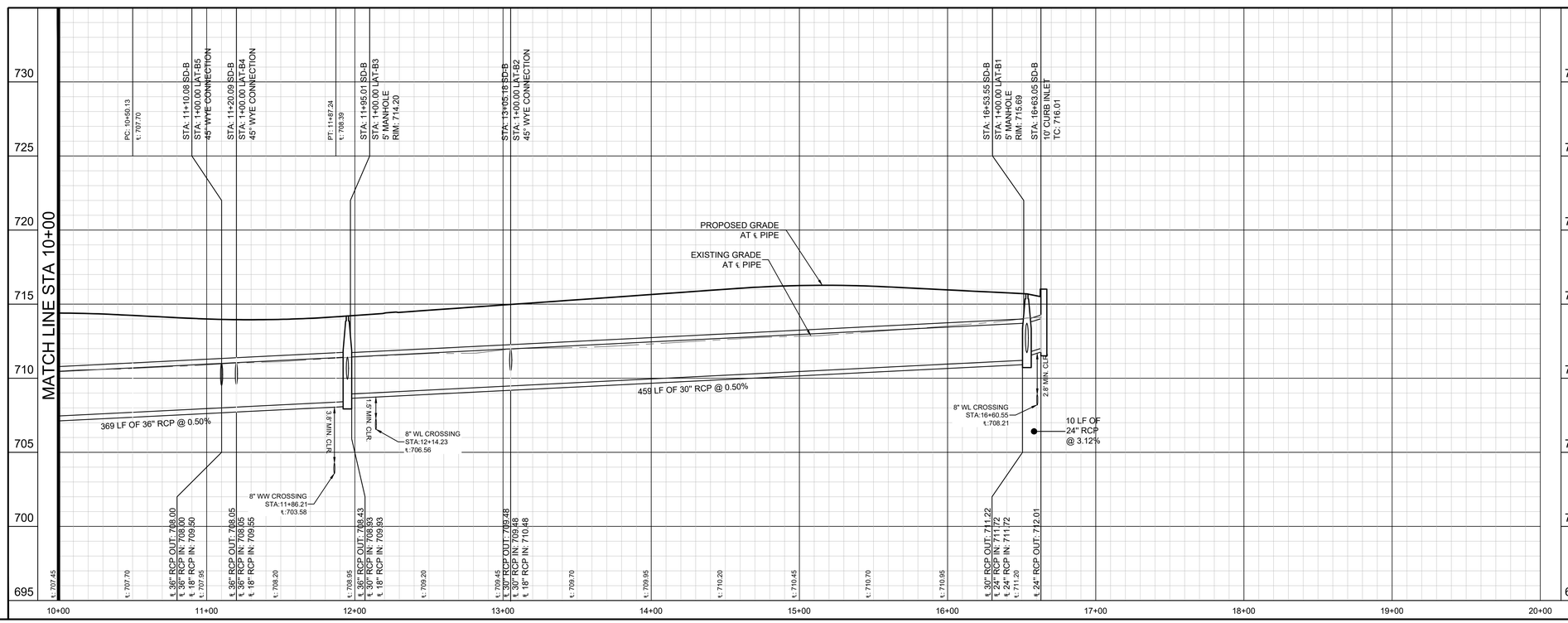


LEGEND

- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- PROPOSED CONTOUR (555)
- EXISTING CONTOUR (555)
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- WATER MAIN (W)
- WASTEWATER MAIN (WW)
- EXISTING WATER LINE (W)
- EXISTING WASTEWATER LINE (ss)
- EXISTING STORM SEWER LINE

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SD-B



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
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LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
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CHECKED BY:	RBW

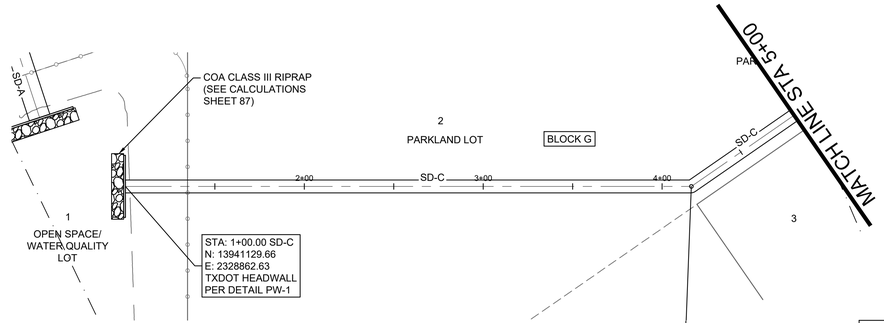
STORM PLAN AND PROFILE SD-B STA. 10+00 TO END

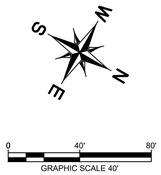
THE RESERVE AT COLE SPRINGS PHASE 1

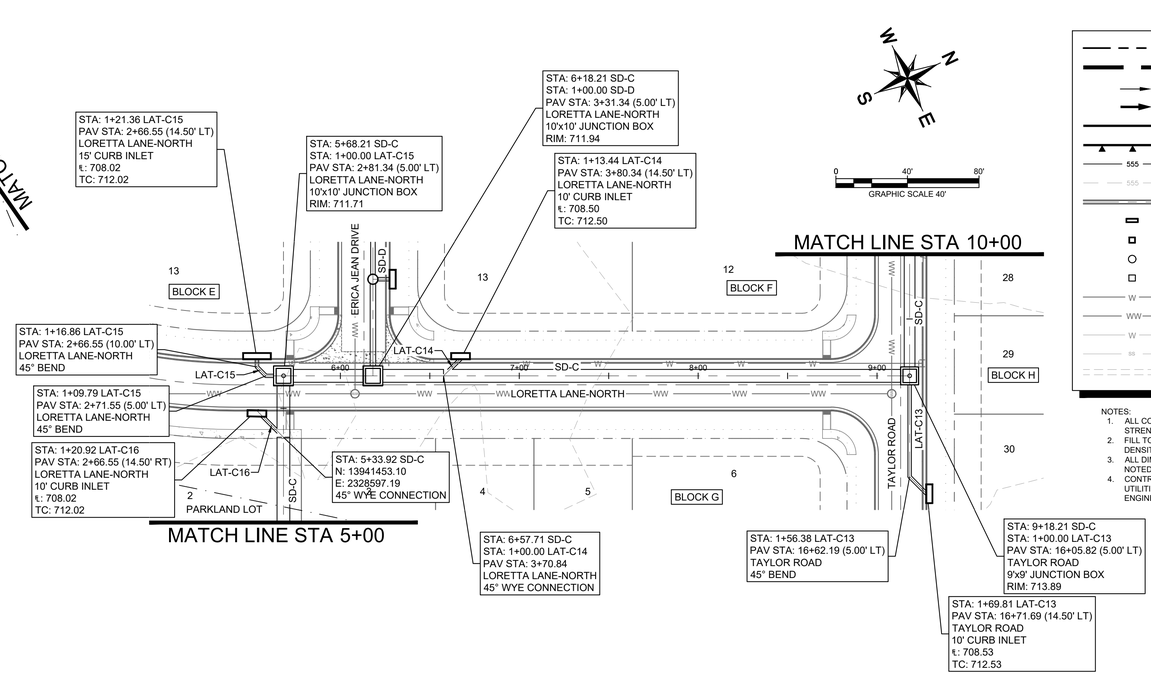
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
62 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 10:54:39am File Path: K:\yeo_civil\069422600 – buda 98\Civil\Phase 1\plansheet\VC–Storm Plan and Profile.dwg
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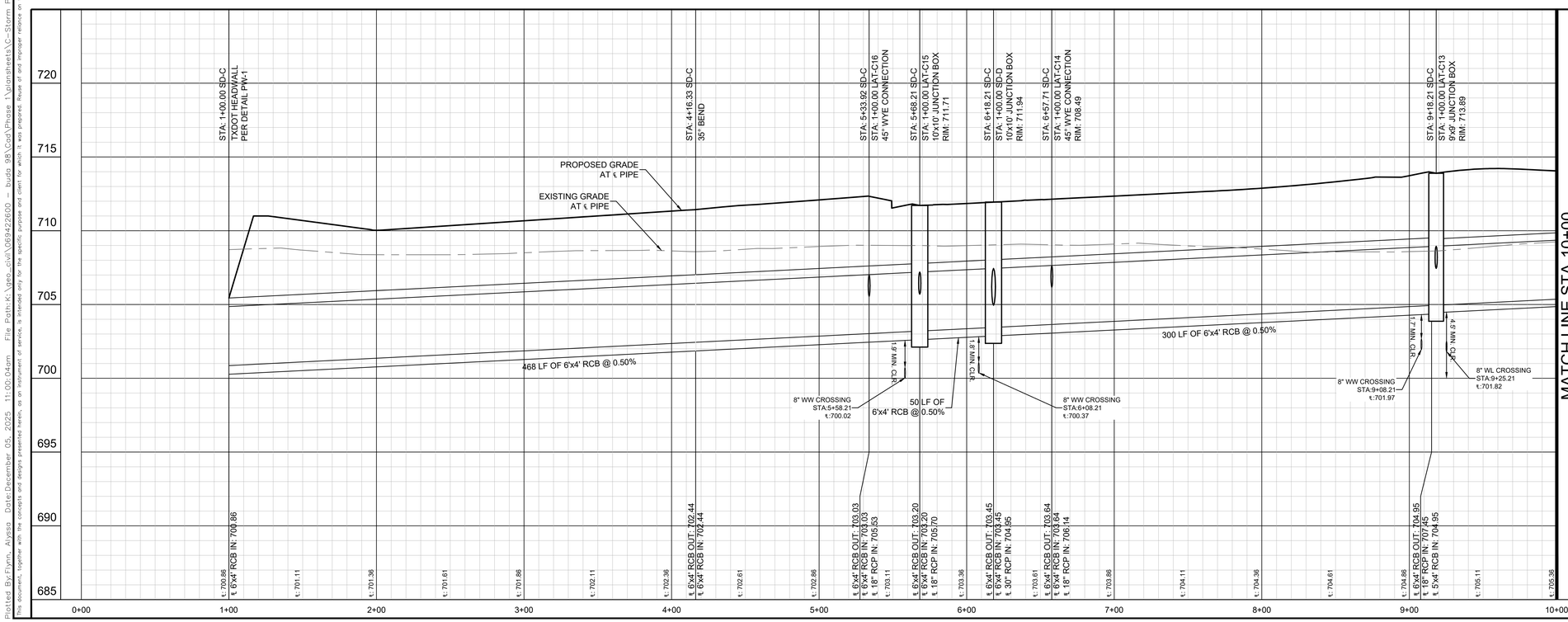


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- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
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- JUNCTION BOX
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- W EXISTING WATER LINE
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SD-C



PROFILE SCALE

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BENCHMARKS

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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
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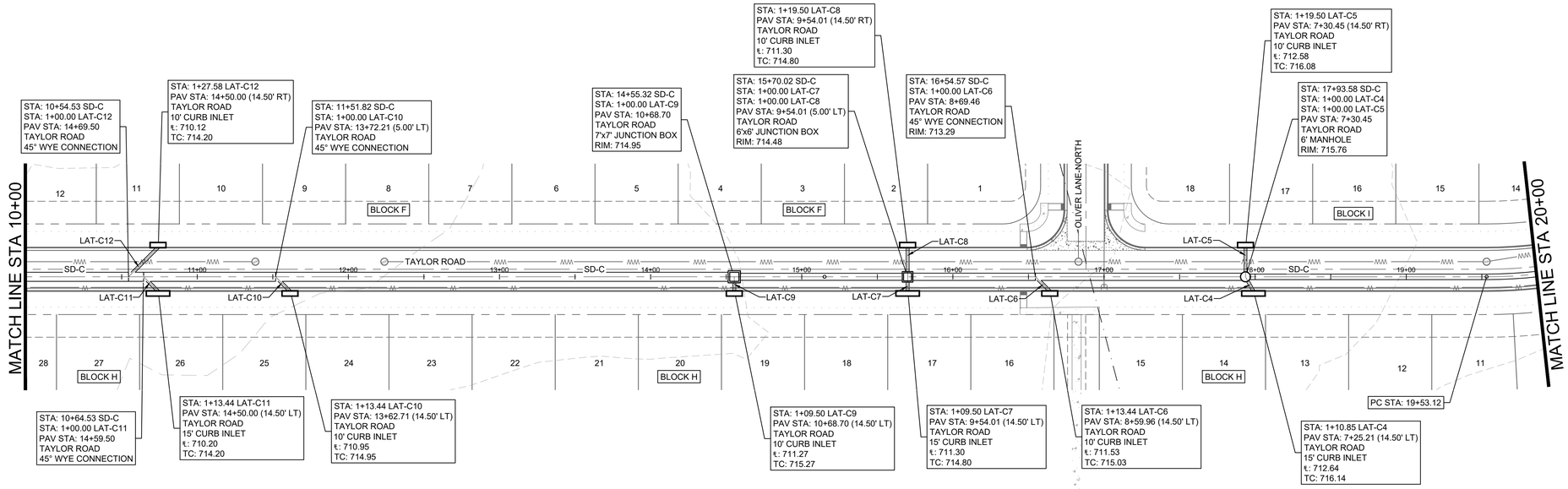
STORM PLAN AND PROFILE SD-C STA. 1+00 TO 10+00

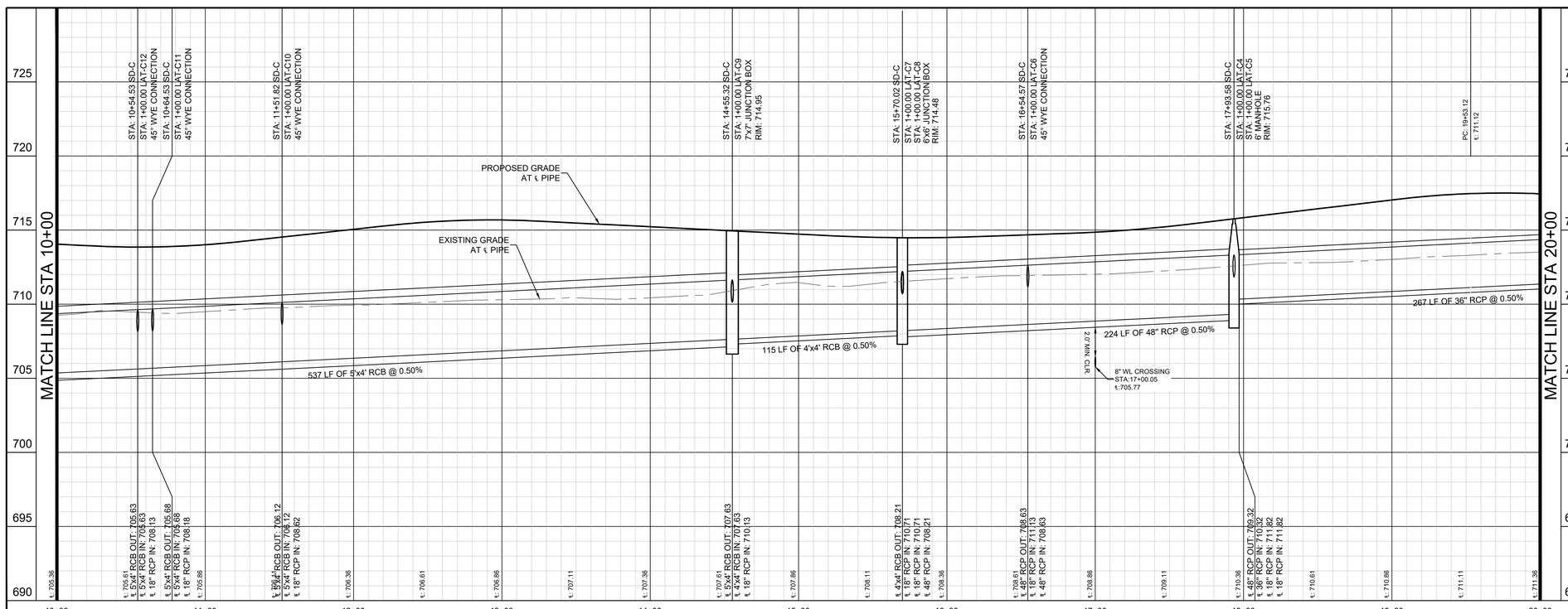
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
63 OF 151

Plotted By:Flynn, Alyssa Date:December 05, 2025 11:00:04am File Path:K:\yeo_civil\069422602 - buda 98\Civil\Phase 1\plansheets\VC-Storm Plan and Profile 2.dwg
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- SS EXISTING WASTEWATER LINE
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GRAPHIC SCALE 40' (0, 40', 80')

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PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

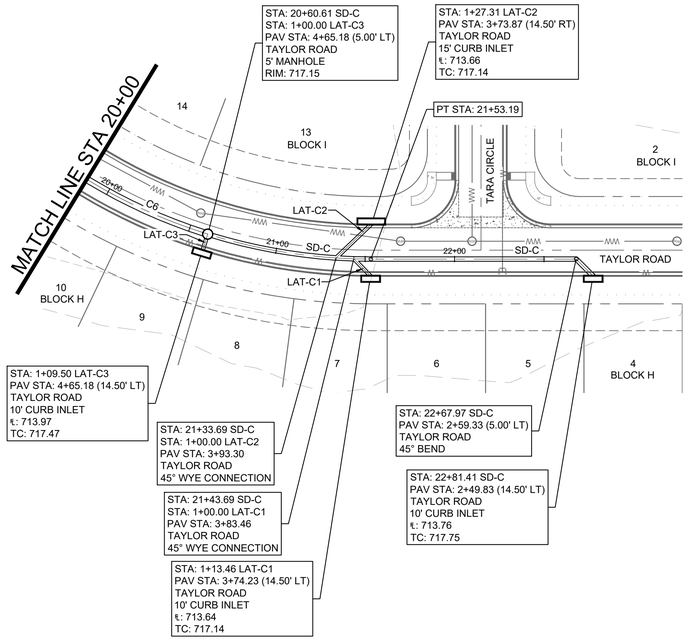
STORM PLAN AND PROFILE SD-C STA. 10+00 TO 20+00

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
64 OF 151

Plotted By:Flynn, Alyssa Date:December 05, 2025 11:00:38pm File Path:K:\yeo_civil\069422600 - buda 9&\Cad\Phase 1\plansheets\VC-Storm Plan and Profile 2.dwg
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CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C6	305.00'	200.07'	N83°38'55"W	196.50'	37°35'01"	103.78'

LEGEND

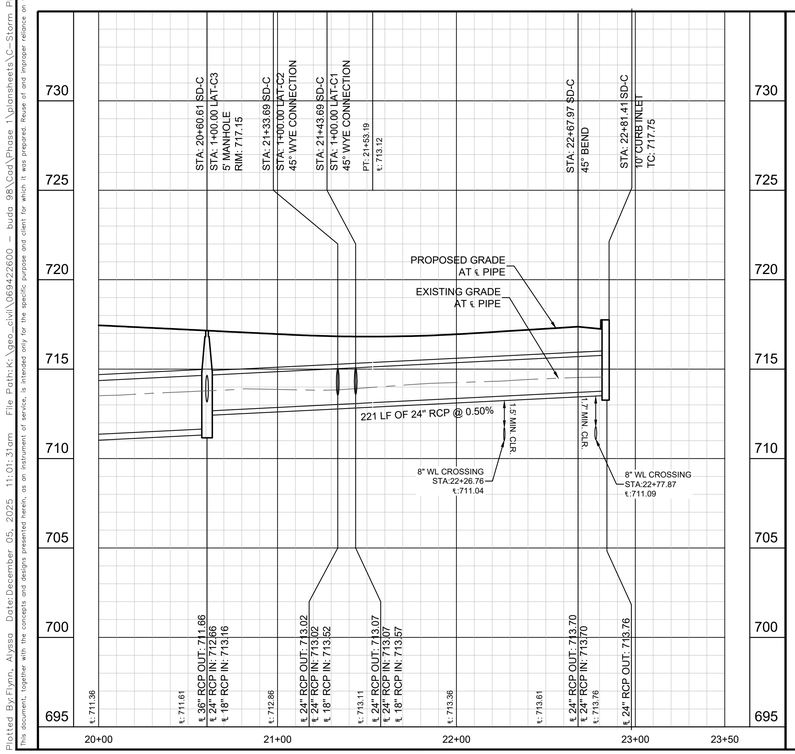
- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- W WATER MAIN
- WW WASTEWATER MAIN
- W EXISTING WATER LINE
- SS EXISTING WASTEWATER LINE
- EXISTING STORM SEWER LINE

S E W N

0 40' 80'
GRAPHIC SCALE 40'

NOTES:
1. ALL CONCRETE STRUCTURES SHALL HAVE MINIMUM STRENGTH OF 4200 PSI.
2. FILL TO BE COMPACTED TO 95% STD PROCTOR DENSITY OR PER GEOTECH RECOMMENDATION.
3. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.

SD-C



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE.
ELEV.=732.56' (NAVD '88)

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

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

CONSTRUCTION PLAN APPROVAL SHEET 65 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

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© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

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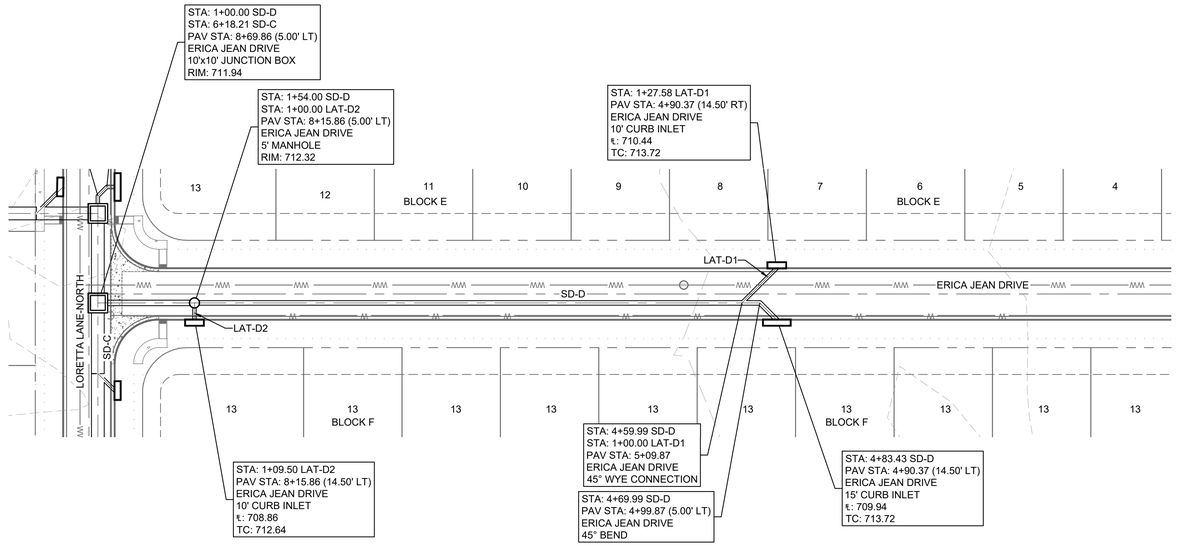
STORM PLAN AND PROFILE SD-C STA. 20+00 TO END

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

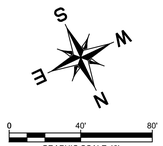
SHEET NUMBER
65 OF 151

Plotted By:Flynn, Alyssa Date:December 05, 2025 11:01:31am File Path:K:\geo_civil\069422600 – buda 98\Civil\Phase 1\plansheet\C-Storm Plan and Profile 2.dwg
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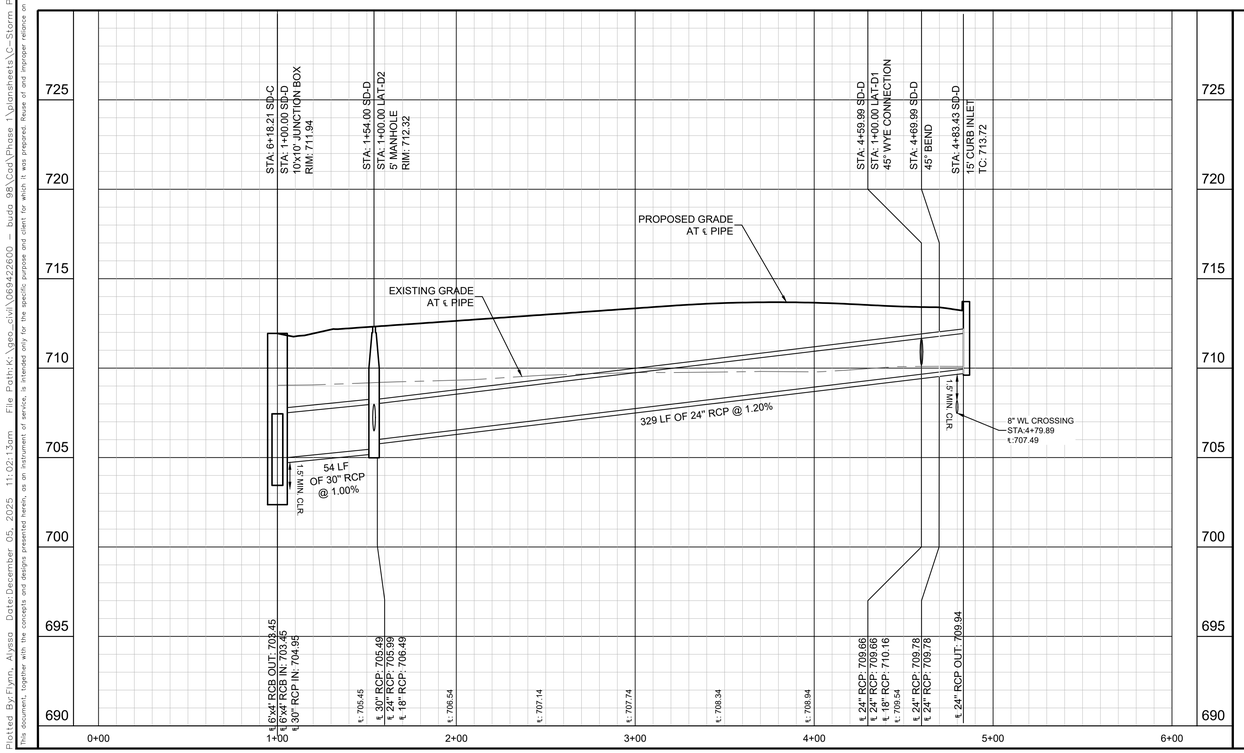
LEGEND

- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- W WATER MAIN
- WW WASTEWATER MAIN
- W EXISTING WATER LINE
- SS EXISTING WASTEWATER LINE
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SD-D



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City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
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11/24/2025



KHA PROJECT	069422602
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SCALE:	AS SHOWN
DESIGNED BY:	KB
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CHECKED BY:	RBW

STORM PLAN AND PROFILE SD-D

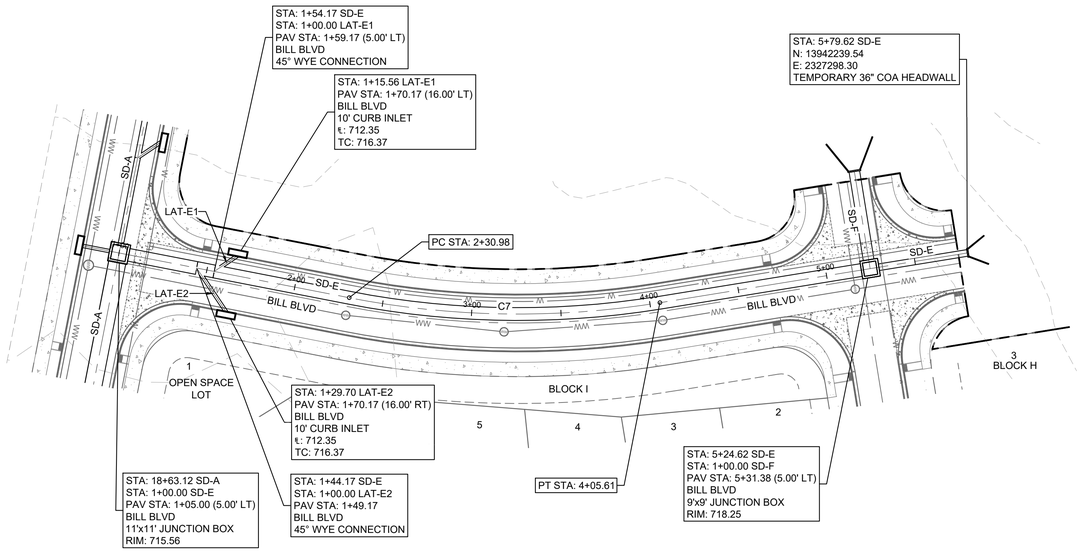
THE RESERVE AT COLE SPRINGS PHASE 1

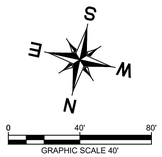
CITY OF BUDA
HAYS COUNTY, TEXAS

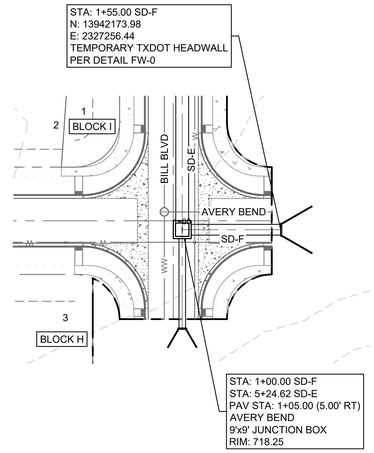
SHEET NUMBER
66 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:02:13am File Path: K:\geo_civil\069422600 - buda 98\Cad\Phase 1\plansheet\C- Storm Plan and Profile 2.dwg
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CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C7	495.00'	174.63'	N2°20'02"W	173.73'	20°12'48"	88.23'





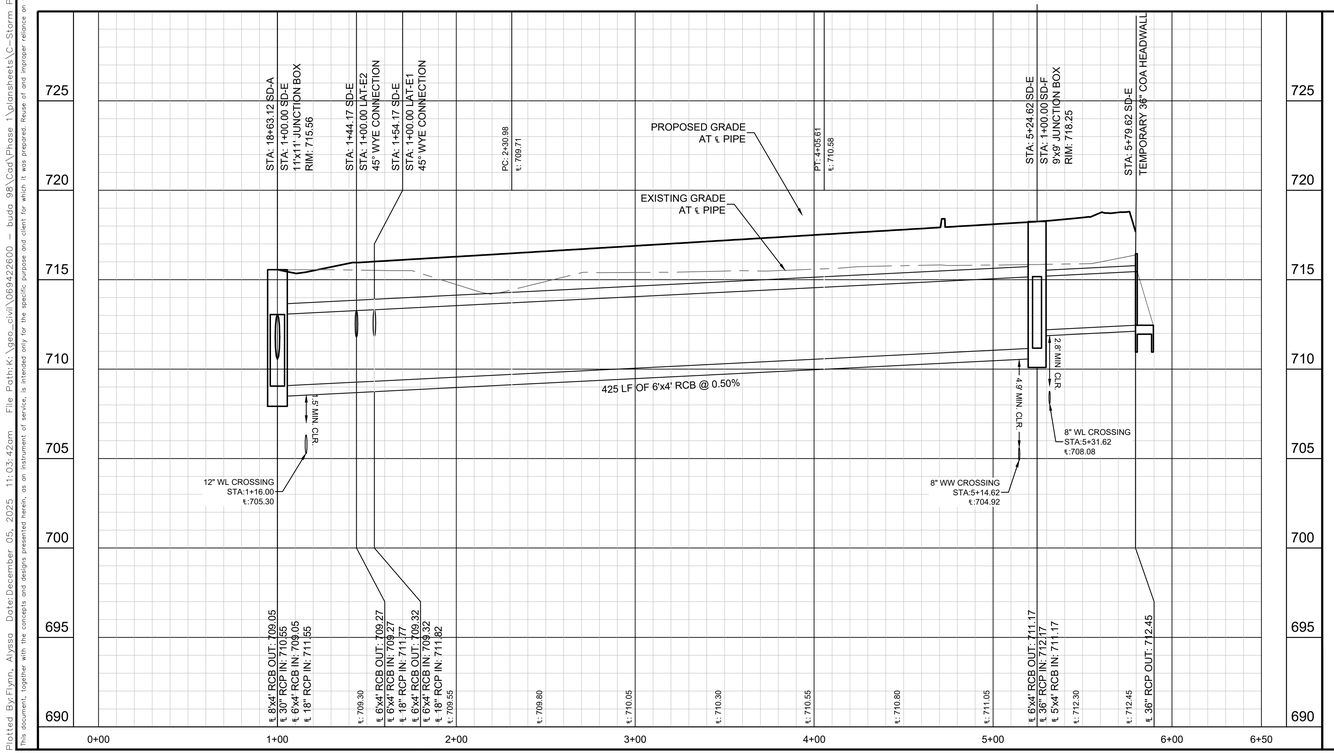


LEGEND

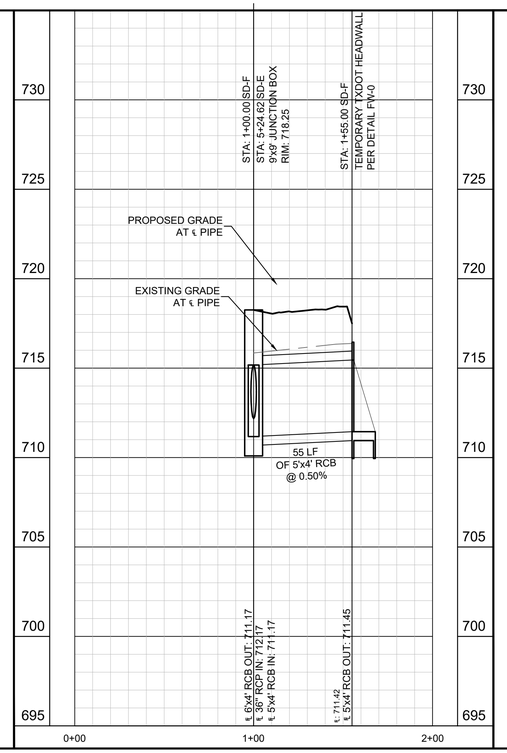
- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- PROPOSED CONTOUR (555)
- EXISTING CONTOUR (555)
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE
- JUNCTION BOX
- WATER MAIN (W)
- WASTEWATER MAIN (WW)
- EXISTING WATER LINE (W)
- EXISTING WASTEWATER LINE (ss)
- EXISTING STORM SEWER LINE

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SD-E



SD-F



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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

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DATE	NOVEMBER 2025
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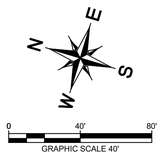
STORM PLAN AND PROFILE SD-E & SD-F

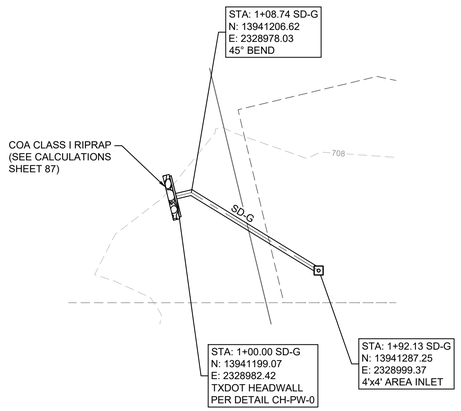
THE RESERVE AT COLE SPRINGS PHASE 1

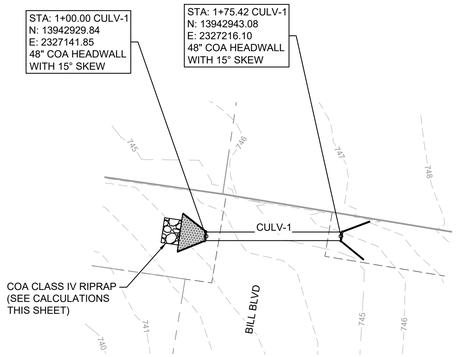
CITY OF BUDA
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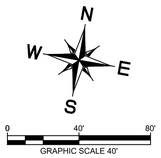
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Plotted By:Flynn, Alyssa Date:December 05, 2025 11:03:42pm File Path:K:\yeo_civil\069422600 - buda 9B\Cad\Phase 1\plansheets\VC-Storm Plan and Profile 2.dwg
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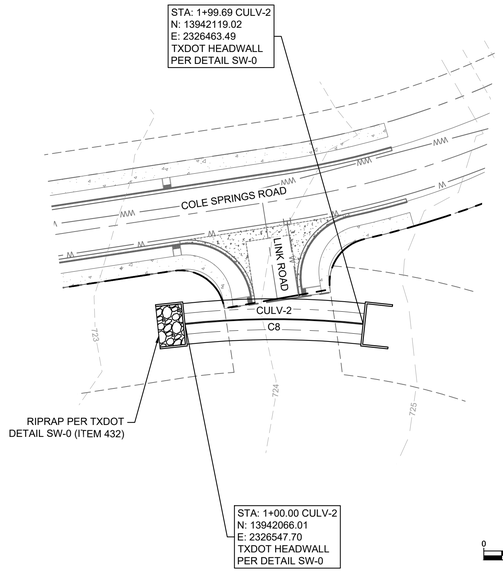


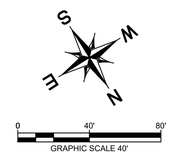






CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C8	471.60'	129.70'	N57°48'38"W	129.29'	15°45'25"	65.26'





LEGEND

- PROPERTY LINE
- PHASE LINE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- PROPOSED RETAINING WALL
- EXPOSED FACE OF RETAINING WALL
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
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- JUNCTION BOX
- W WATER MAIN
- WW WASTEWATER MAIN
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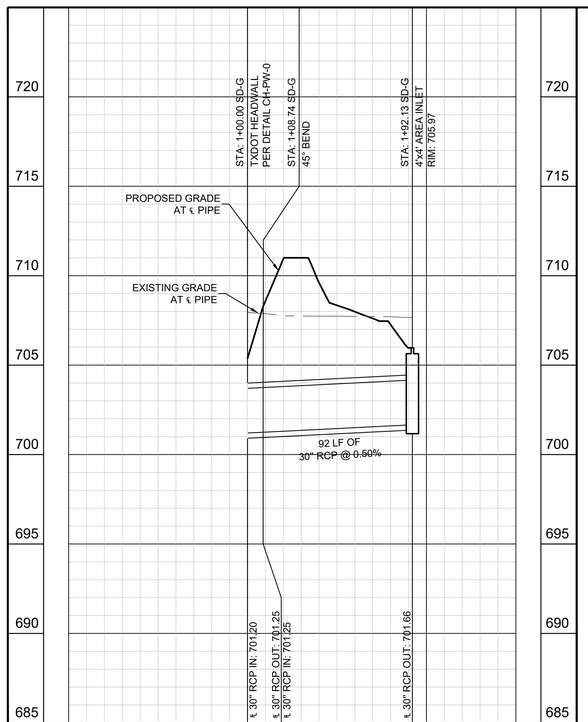
STORM OUTFALL DESIGN - CULV-1

Heritage Phase 4

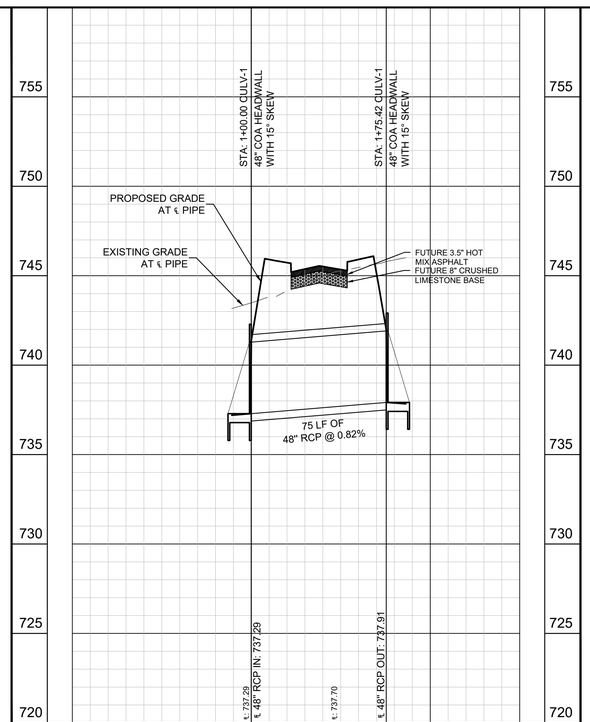
INPUT VALUES			
	CULV-1	Unit	Source
Discharge (Q) =	119	cfs	StormCAD Model
Velocity at Outfall (V_1) =	12.06	ft/s	StormCAD Model
Outlet Pipe Diameter (D) =	4.0	ft	Required Size for Conveyance
HEADWALL[1]			
Headwall Length (L) =	12.00	ft	COA Detail 508S-13, Based on Outlet Diameter
Headwall Width (C) =	12	ft	Headwall Width = 3D
Depth of Flow at End of Headwall (d) =	1.01	ft	Based on Manning's Equation, using Goal Seek in Excel to solve for depth
Velocity at End of Headwall (V_2) =	9.87	ft/sec	$V = \frac{Q}{A}, \quad where\ A = Cd$
RIPRAP			
Riprap Size (D_{50}) =	1.17	ft	$D_{50} = 0.0105 V_2^{2.06}$ (ECM 1.4.6.D.5)
	15.00	in	Rounded up to Nearest Diameter Size in City of Austin ECM, 591S.3 Rock Riprap Gradation Table
Riprap Classification =	IV	---	Based on City of Austin ECM, 591S.3 Rock Riprap Gradation Table
Apron Width =	14.00	ft	Apron Width $= C + 2$
Apron Length =	9.65	ft	Apron Length $= 0.2VD$ (DCM 7.3.0)
Apron Depth =	3.75	ft	Apron Depth $= 3D_{50}$ (508S-20)

[1]For additional headwall geometry, refer to COA Standard Detail 508S-13

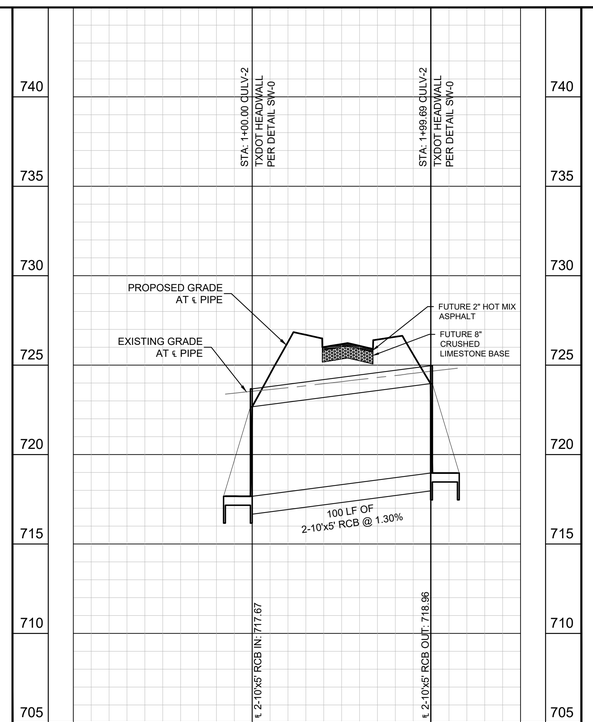
SD-G



CULV-1



CULV-2



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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

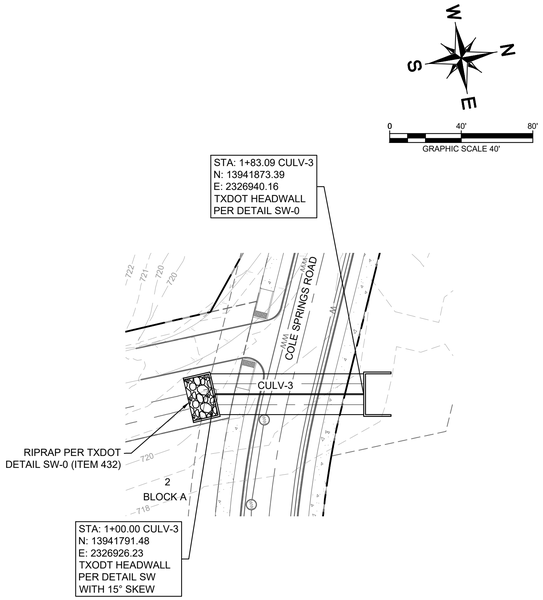
STORM PLAN AND PROFILE SD-G & CULVERTS 1 & 2

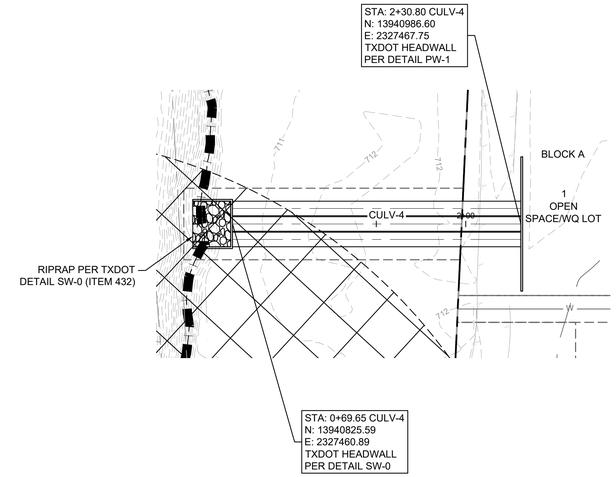
THE RESERVE AT COLE SPRINGS PHASE 1

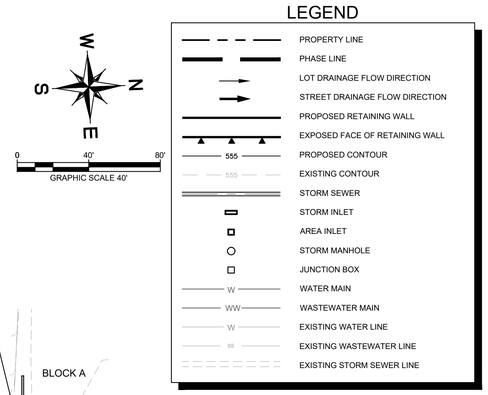
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
68 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:05:54am File Path: K:\Aus_civil\069422602 – buda 98\Civil\Phase 1\plansheets\C-Storm Plan and Profile 2.dwg
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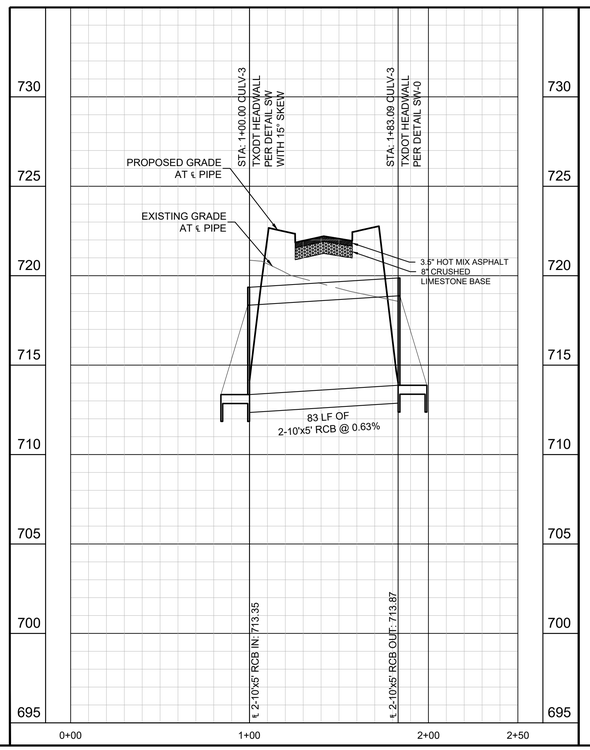




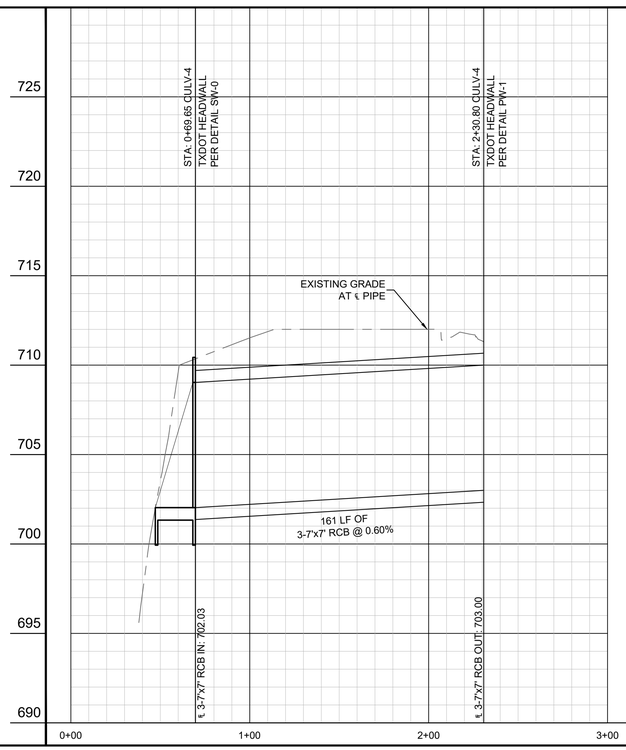


NOTES:
1. ALL CONCRETE STRUCTURES SHALL HAVE MINIMUM STRENGTH OF 4200 PSI.
2. FILL TO BE COMPACTED TO 95% STD PROCTOR DENSITY OR PER GEOTECH RECOMMENDATION.
3. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.

CULV-3



CULV-4



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

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ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 69 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

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PERMIT NUMBER:

No.	REVISIONS	DATE	BY

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DATE NOVEMBER 2025
SCALE: AS SHOWN
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DRAWN BY: KB
CHECKED BY: RBW

STORM PLAN AND PROFILE CULVERTS 3 & 4

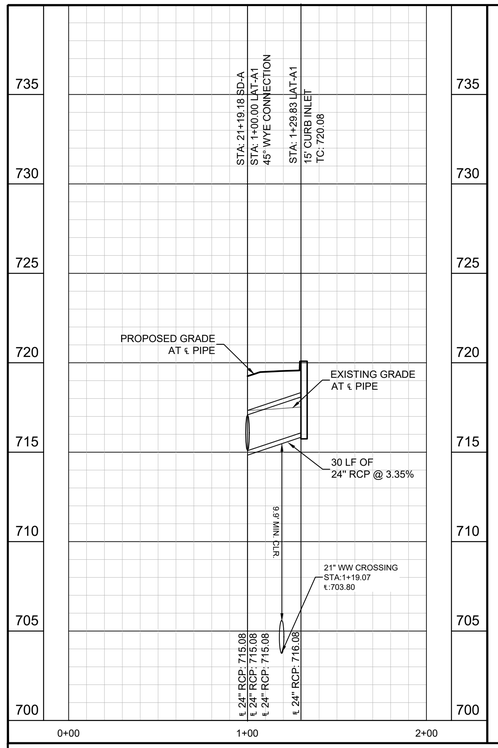
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

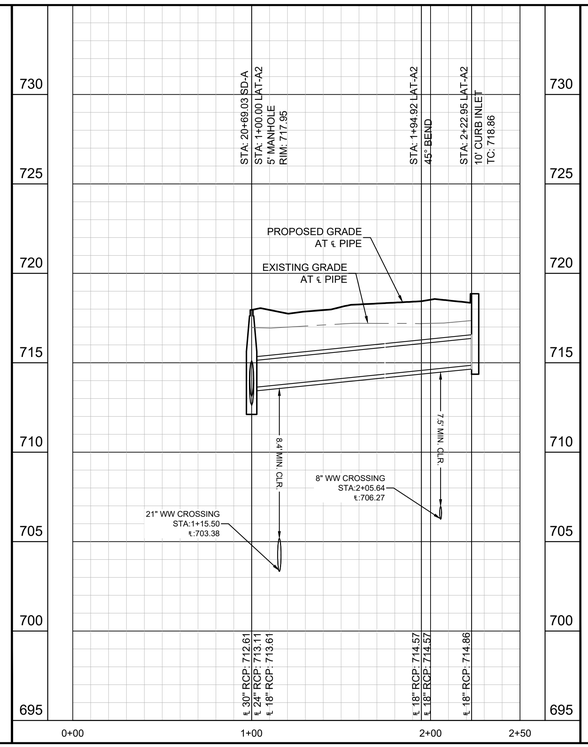
SHEET NUMBER
69 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:07:18am File Path: K:\Aus_civil\069422600 – buda 98\Cad\Phase 1\plansheet\C– Storm Plan and Profile 2.dwg
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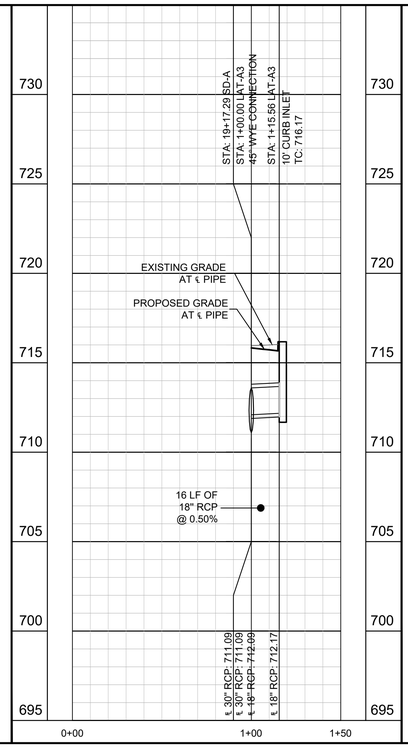
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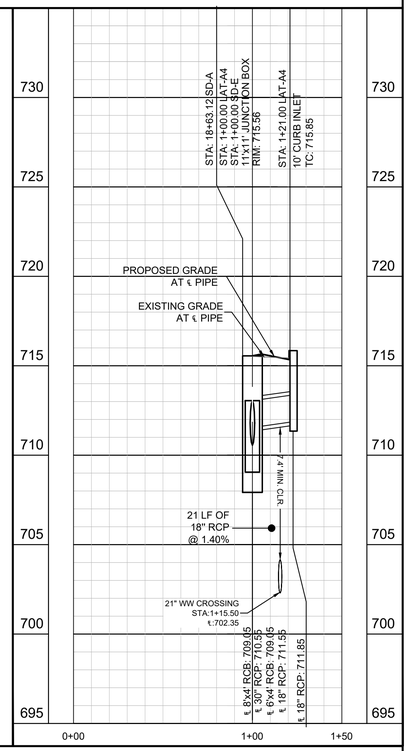
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LAT-A3

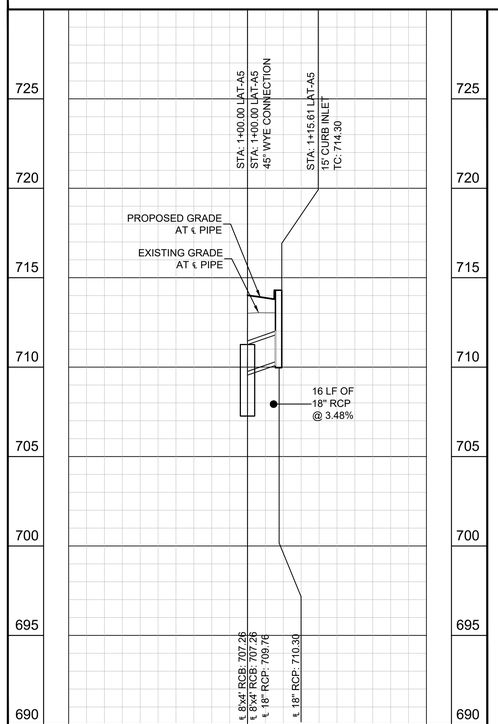


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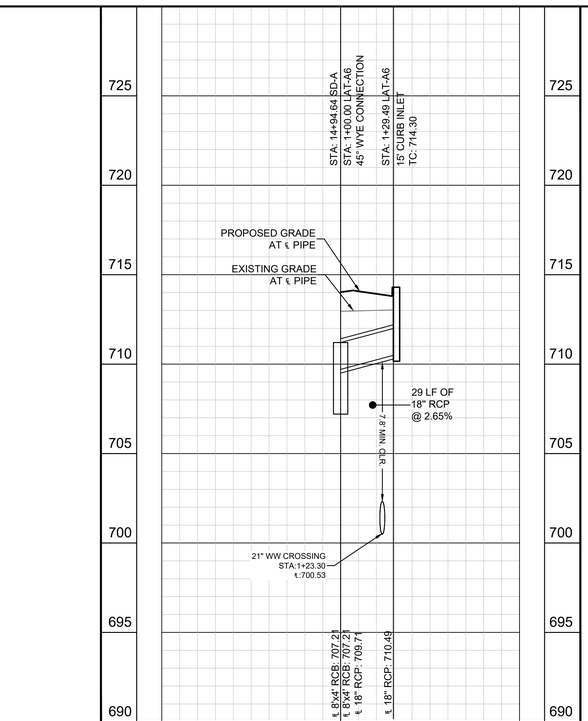


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

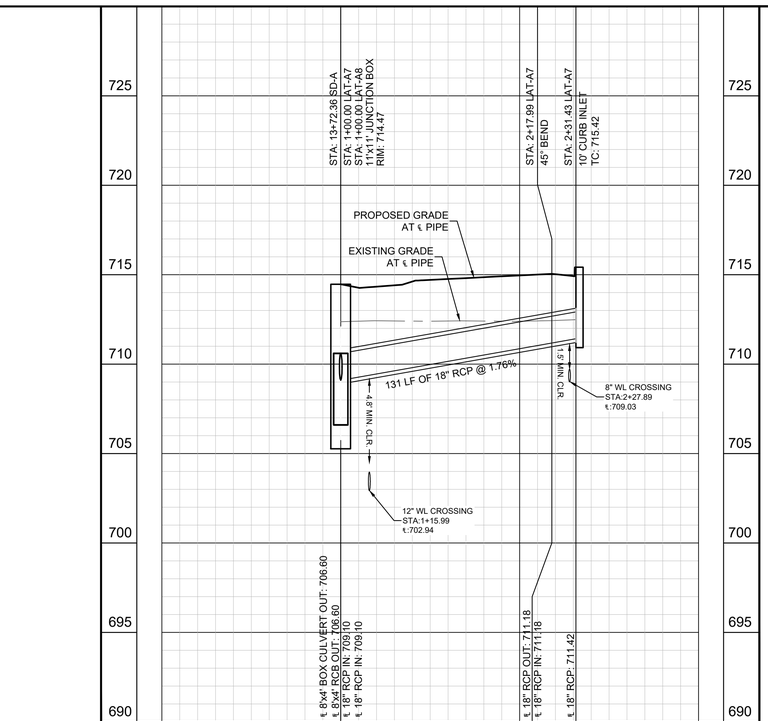
LAT-A5



LAT-A6



LAT-A7



PROFILE SCALE
1" = 40' HORIZONTAL
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BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 70 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____
City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
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No.	REVISIONS	DATE	BY

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11/24/2025
STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

STORM LATERALS (SHEET 1 OF 8)

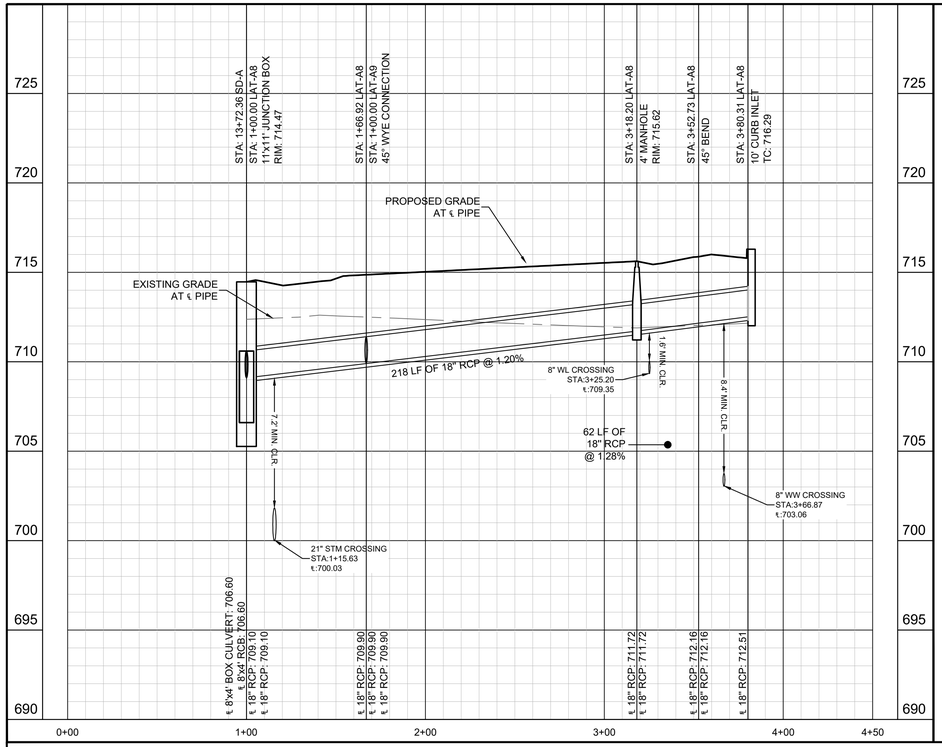
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

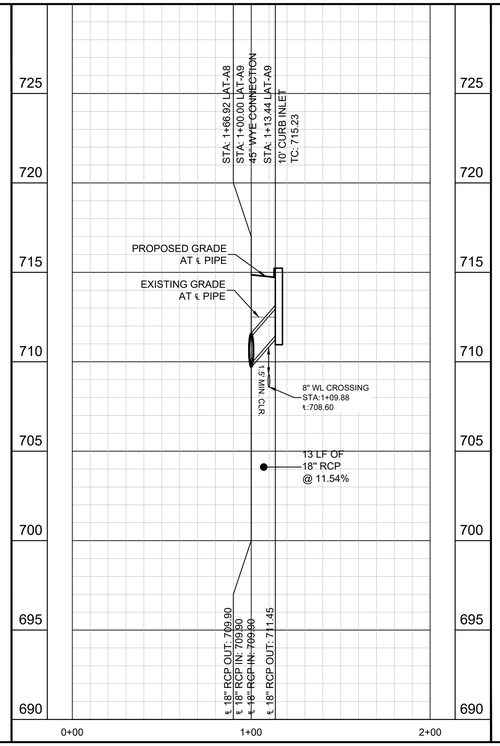
SHEET NUMBER
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Plotted By:Flynn, Alyssa Date:December 05, 2025 11:12:27am File Path:K:\geo_civil\069422600 - buda gt\Cad\Phase 1\plansheets\C-Storm Laterals.dwg
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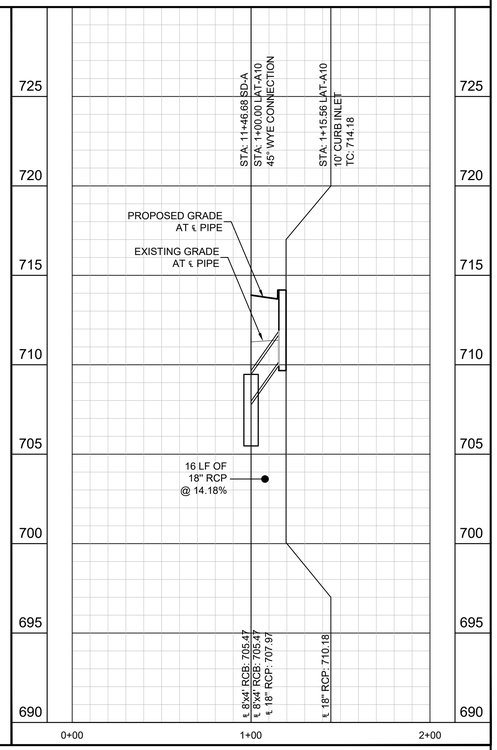
LAT-A8



LAT-A9

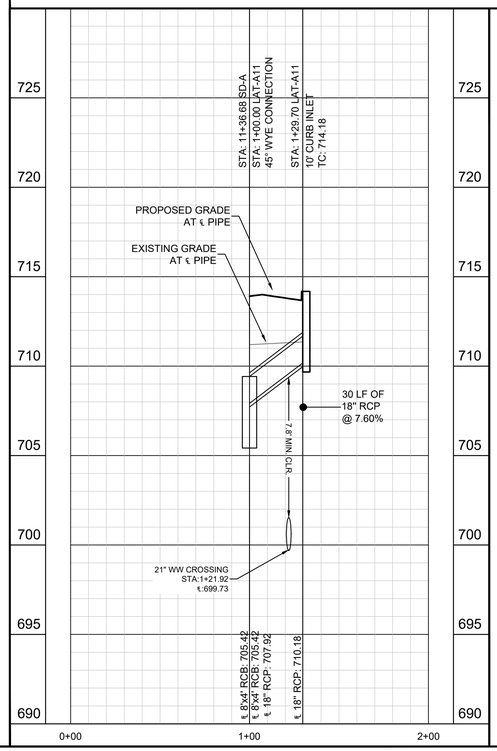


LAT-A10

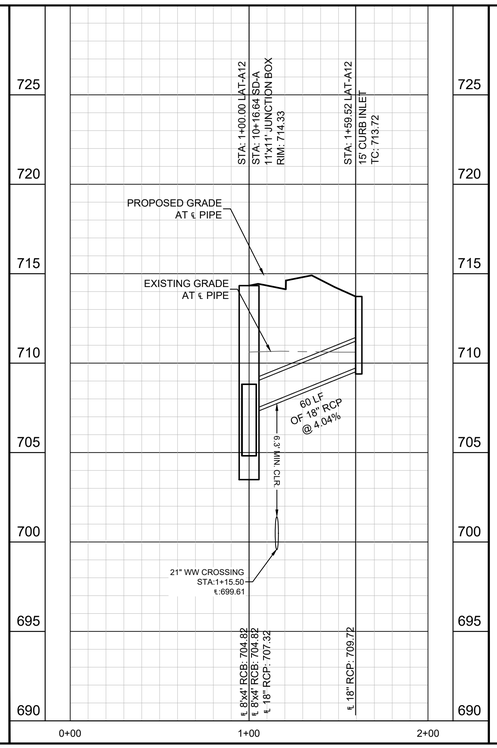


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

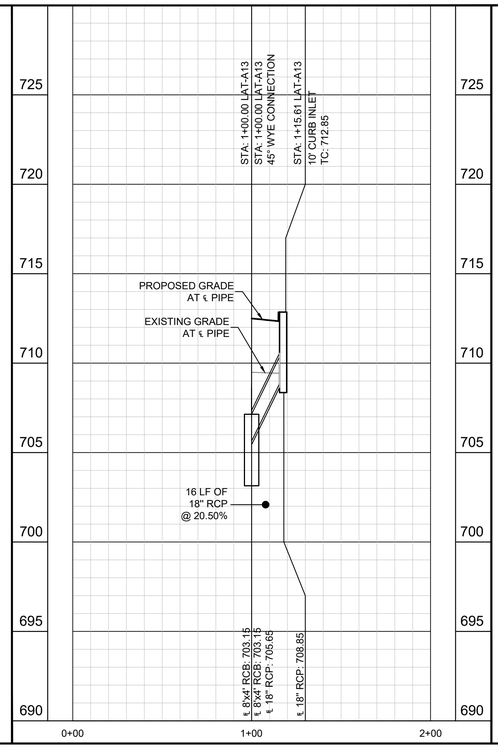
LAT-A11



LAT-A12



LAT-A13



PROFILE SCALE
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BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 71 OF 151
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APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
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STORM LATERALS (SHEET 2 OF 8)

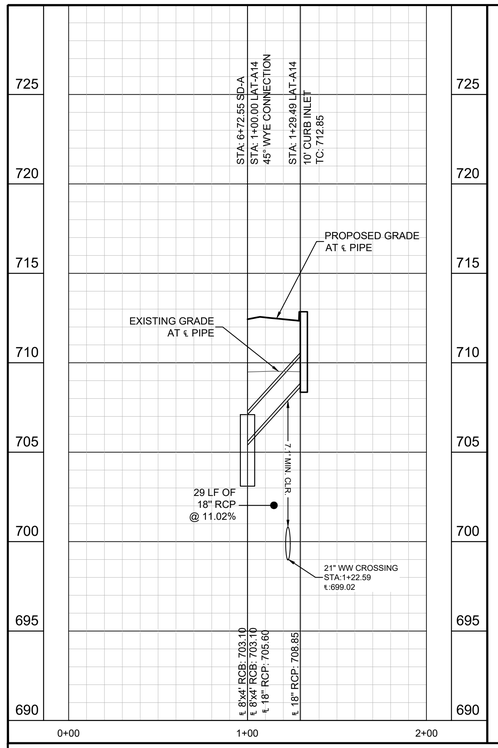
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

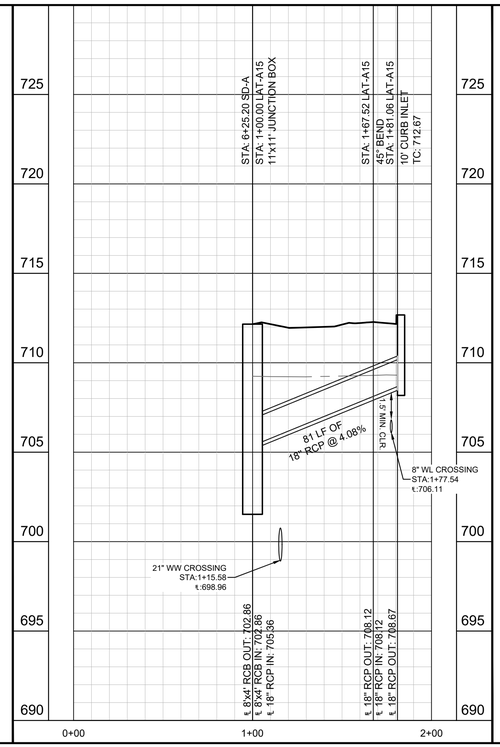
SHEET NUMBER
71 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:12:45am File Path: K:\geo_civil\069422600 – buda 98\Cad\Phase 1\plansheets\C-Storm Laterals.dwg
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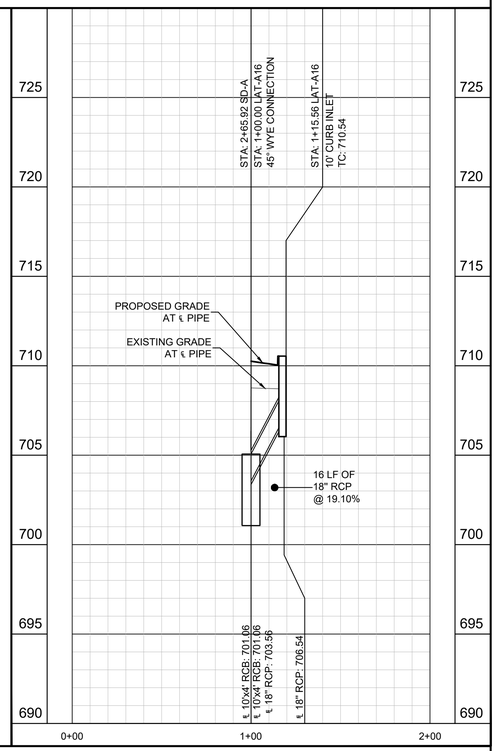
LAT-A14



LAT-A15

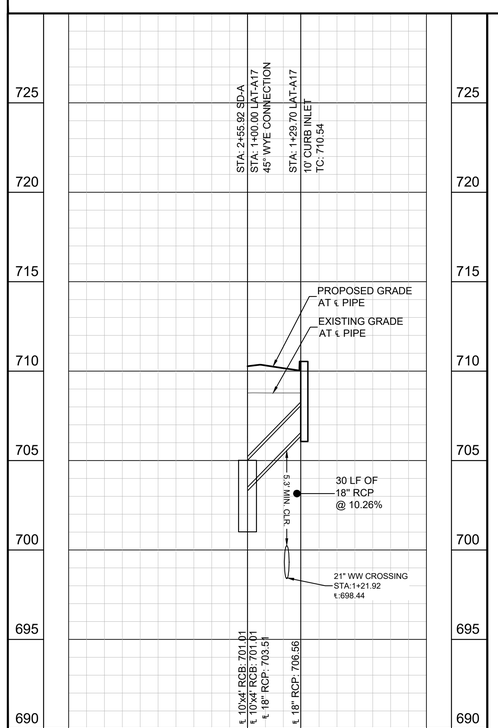


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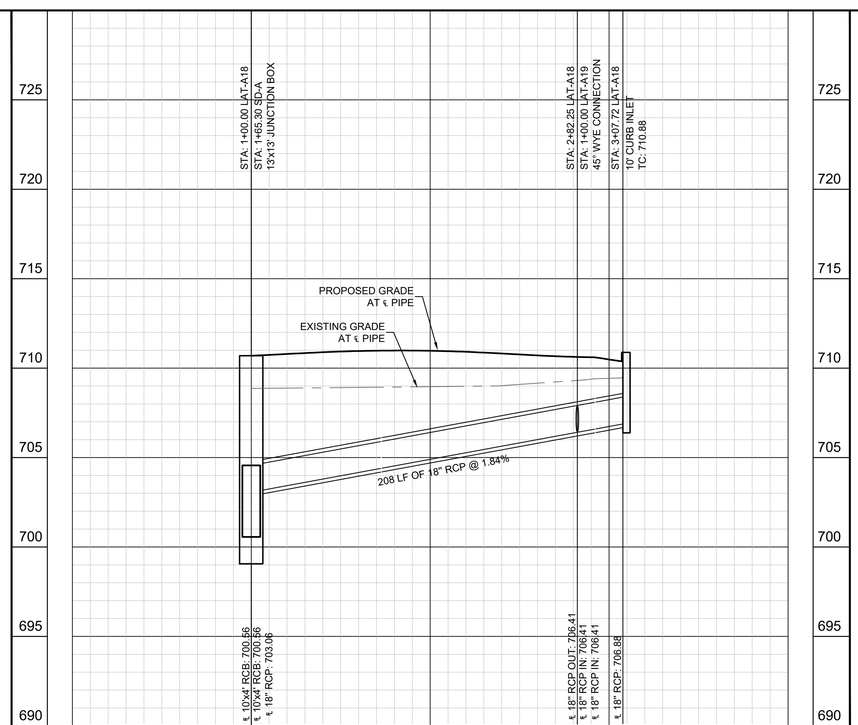


PROFILE SCALE
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1" = 4' VERTICAL

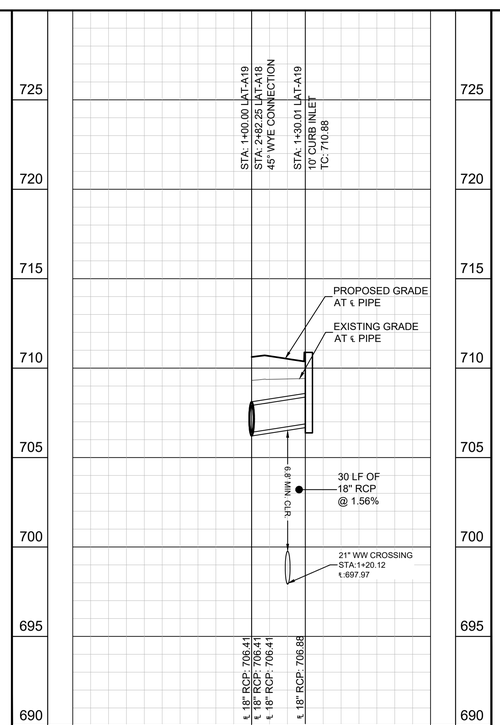
LAT-A17



LAT-A18



LAT-A19



PROFILE SCALE
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BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 72 OF 151
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APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
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Sarah Starkey

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STORM LATERALS (SHEET 3 OF 8)

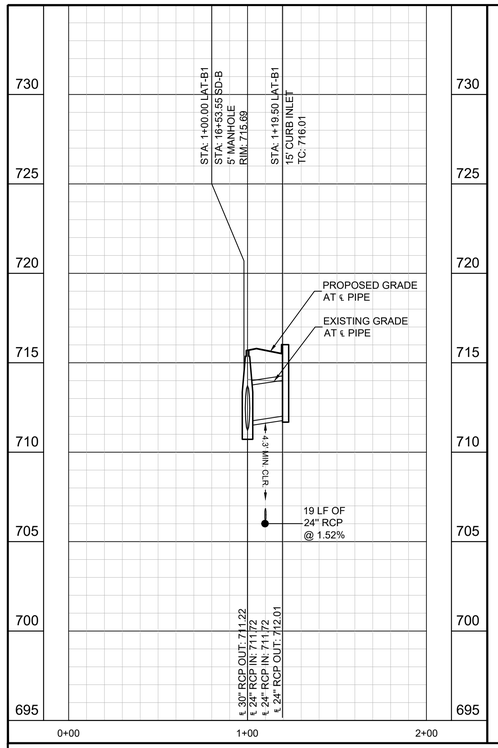
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
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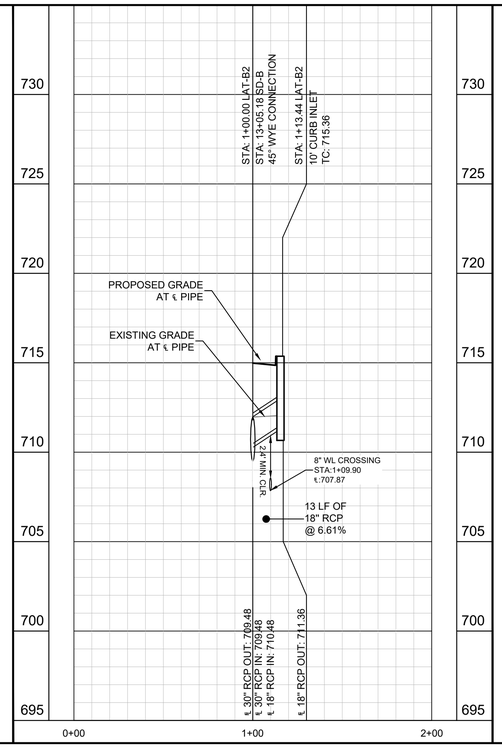
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72 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:13:02am File Path: K:\geo_civil\069422600 – buda gis\Cad\Phase 1\plansheet\C-Storm Laterals.dwg
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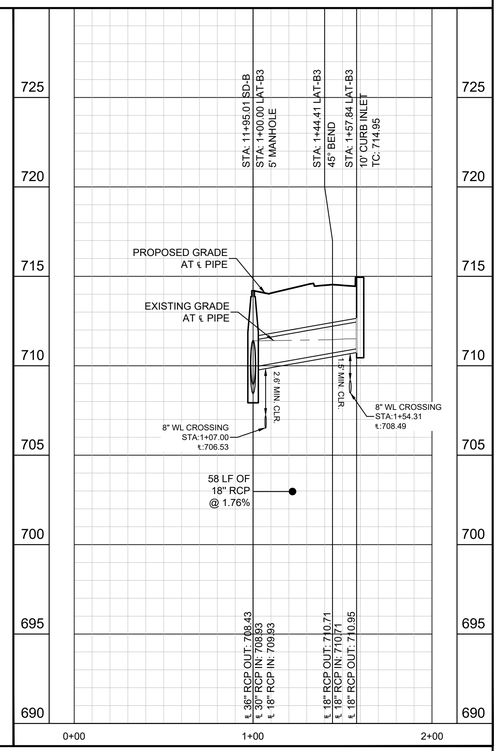
LAT-B1



LAT-B2

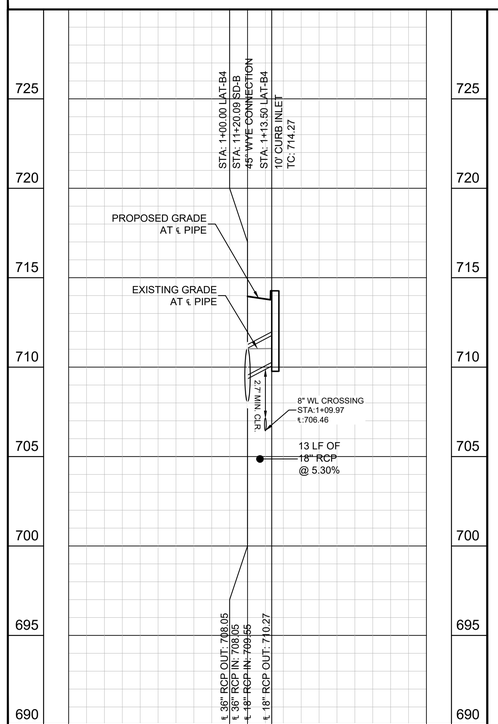


LAT-B3

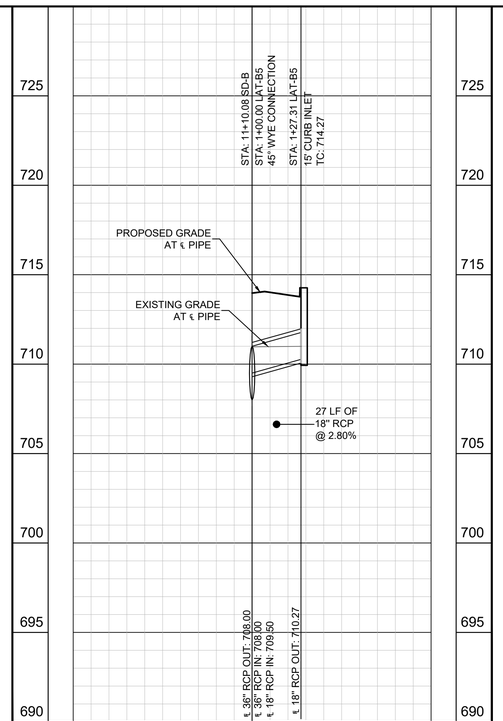


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

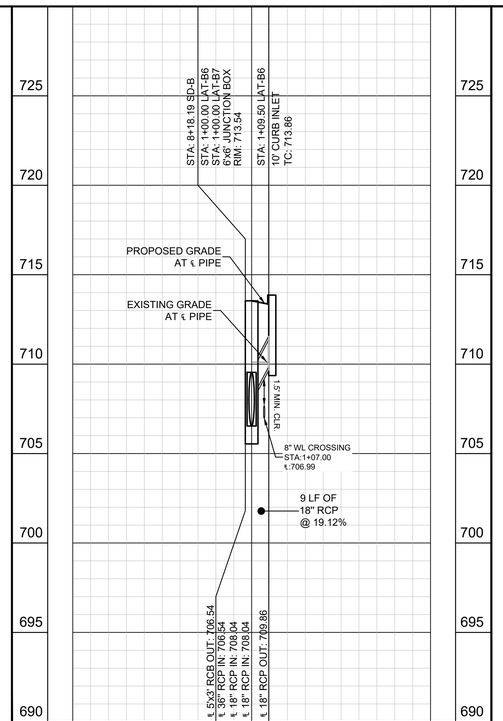
LAT-B4



LAT-B5



LAT-B6



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
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ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 73 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
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PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
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5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

STORM LATERALS (SHEET 4 OF 8)

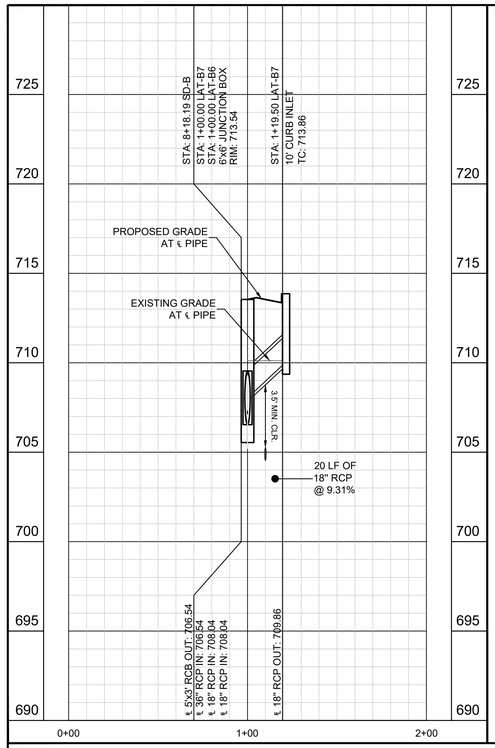
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

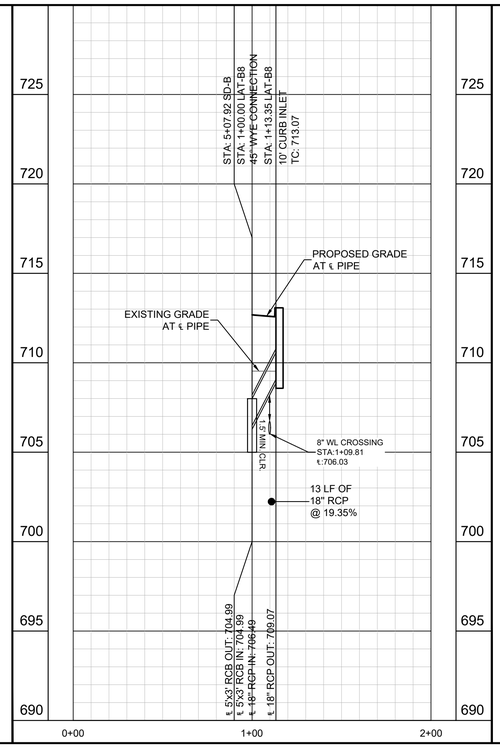
SHEET NUMBER
73 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:13:21 am File Path: K:\geo_civil\069422600 – buda 98\Civil\Phase 1\plansheets\C- Storm Laterals.dwg
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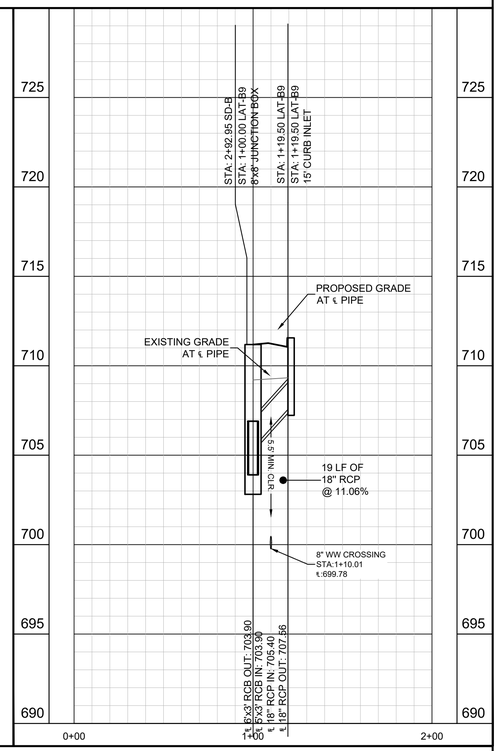
LAT-B7



LAT-B8

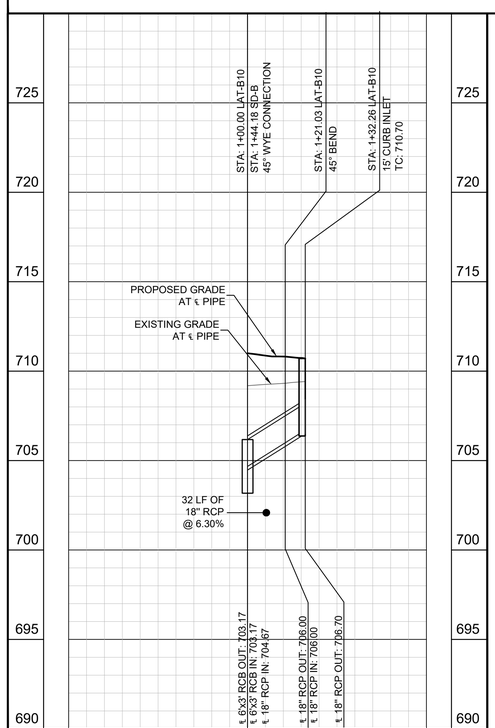


LAT-B9

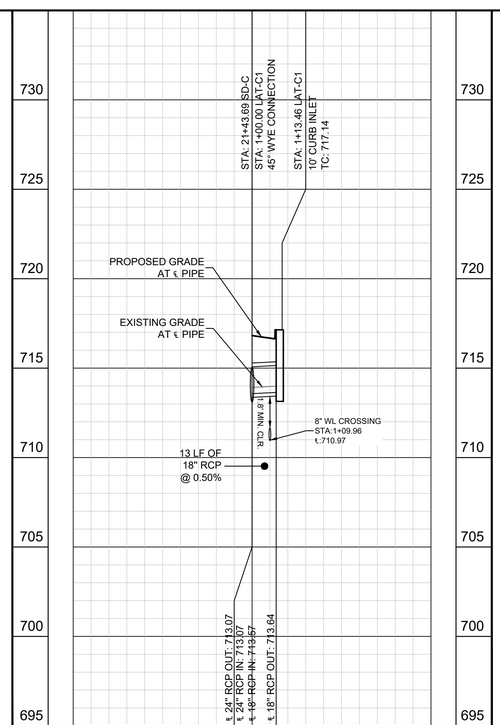


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

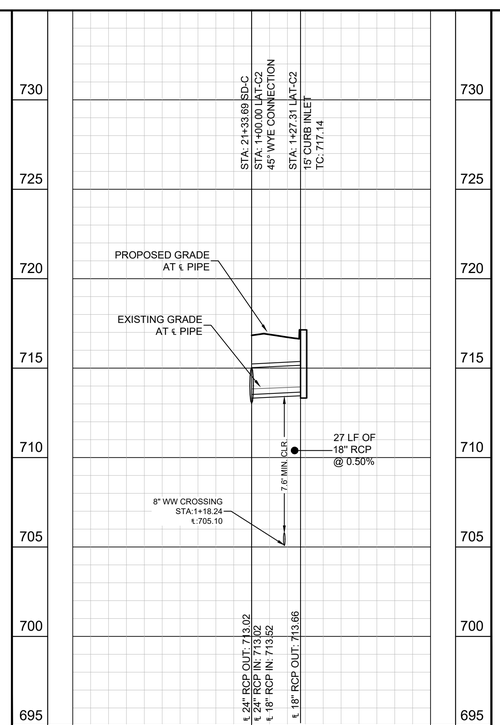
LAT-B10



LAT-C1



LAT-C2



PROFILE SCALE
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BENCHMARKS

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CONSTRUCTION PLAN APPROVAL SHEET 74 OF 151
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City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

STORM LATERALS (SHEET 5 OF 8)

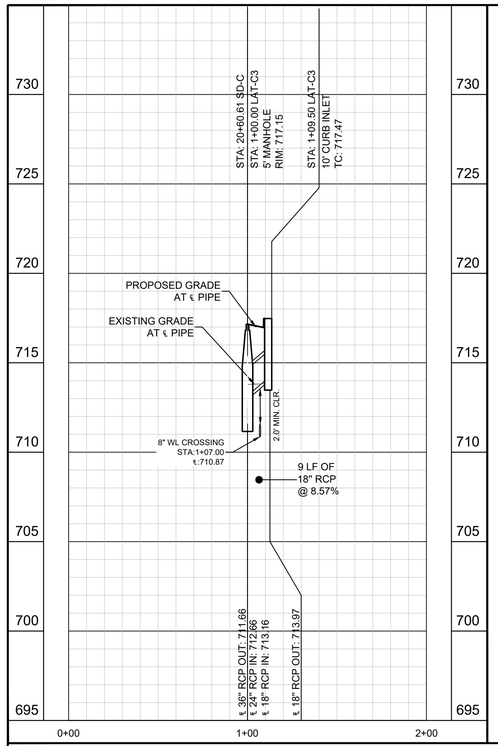
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

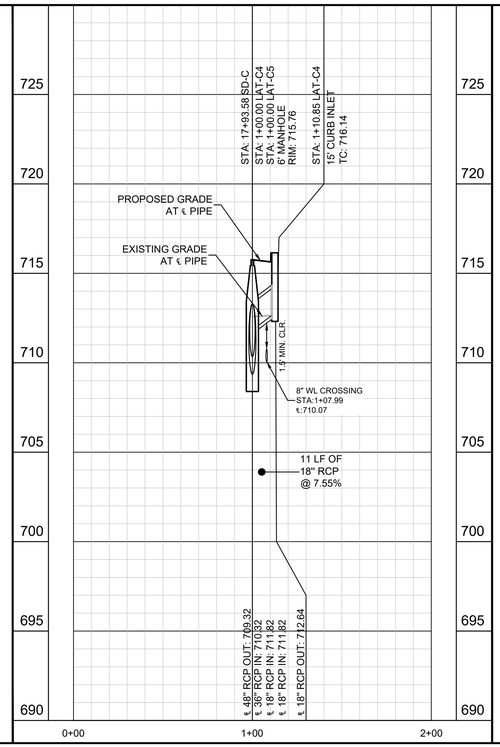
SHEET NUMBER
74 OF 151

Plotted By:Flynn, Alyssa Date:December 05, 2025 11:13:41am File Path:K:\geo_civil\069422600 – buda 98\Civil\Phase 1\plansheets\C-Storm Laterals.dwg
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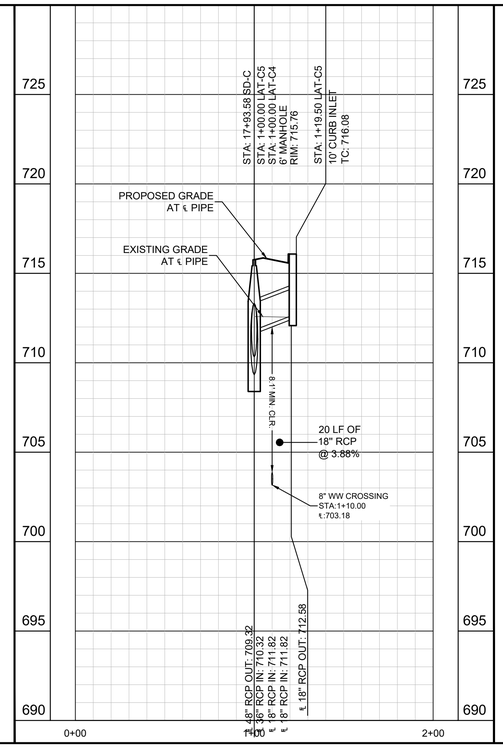
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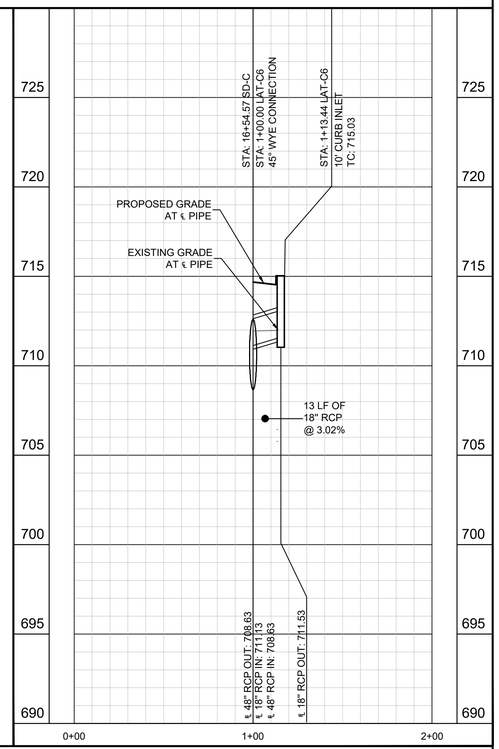
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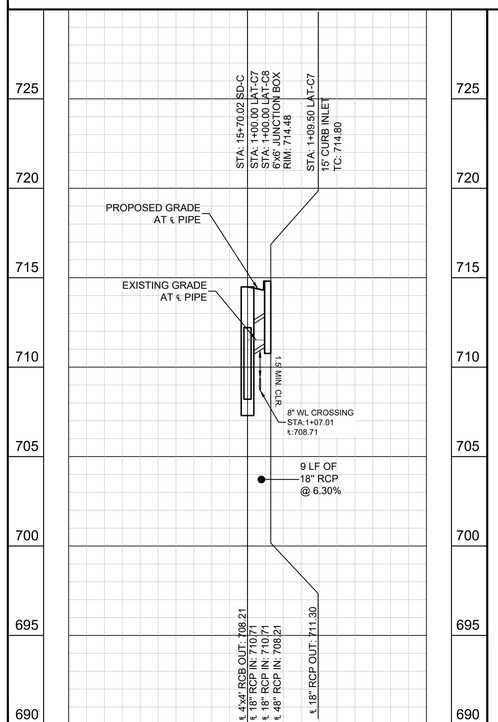
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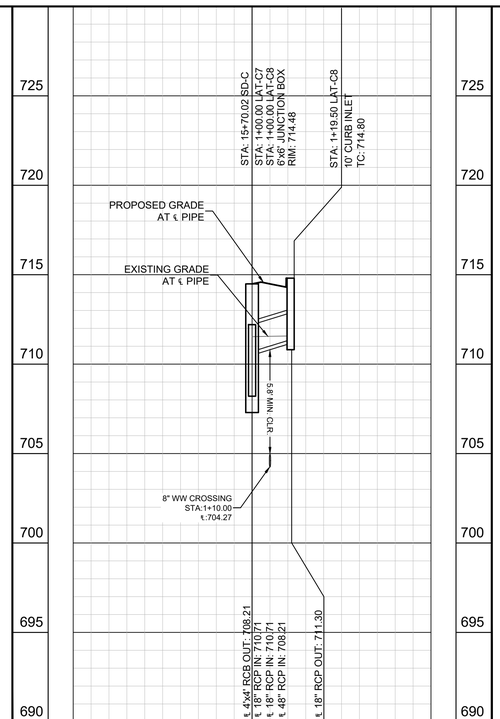
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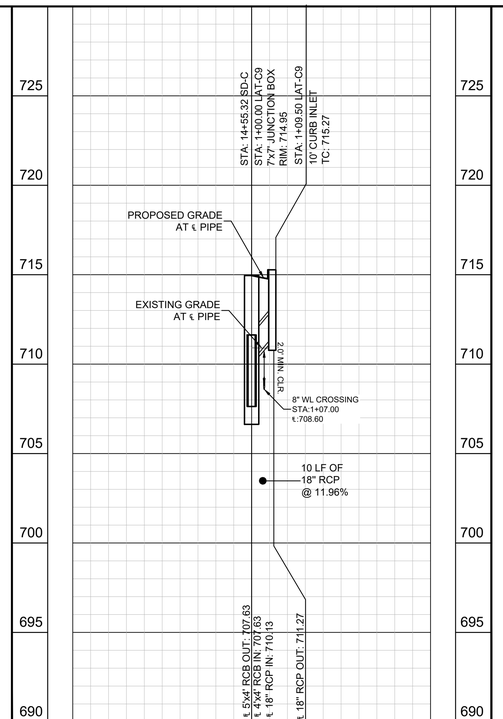
LAT-C7



LAT-C8



LAT-C9



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

PROFILE SCALE
1" = 40' HORIZONTAL
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STORM LATERALS (SHEET 6 OF 8)

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
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CONSTRUCTION PLAN APPROVAL SHEET 75 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
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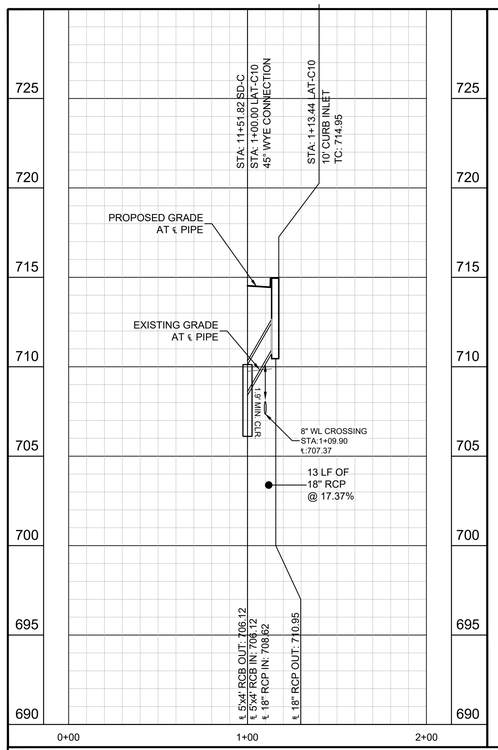
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

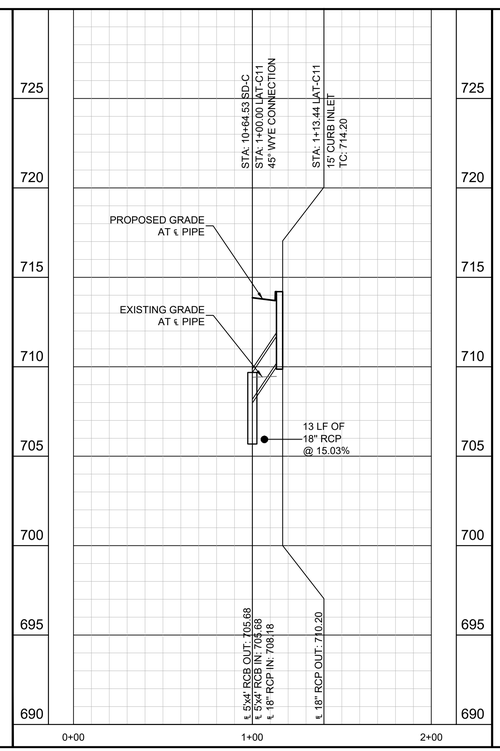
SHEET NUMBER
75 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:15:51am File Path: K:\geo_civil\069422600 – buda 98\Cad\Phase 1\plansheets\C-Storm Laterals – 2.dwg
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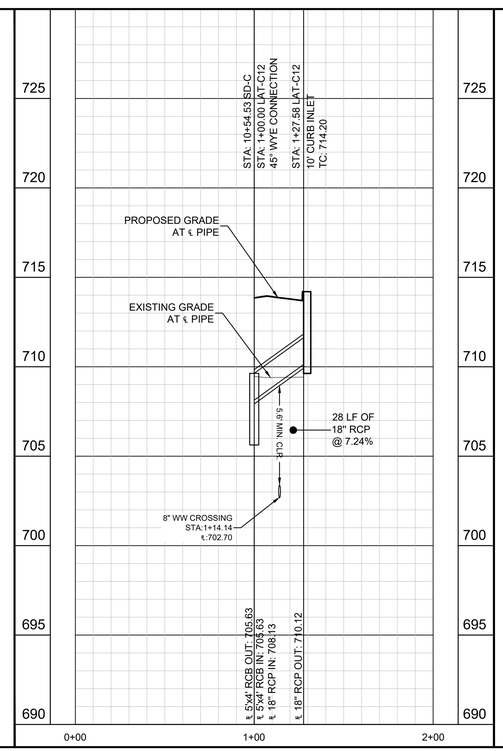
LAT-C10



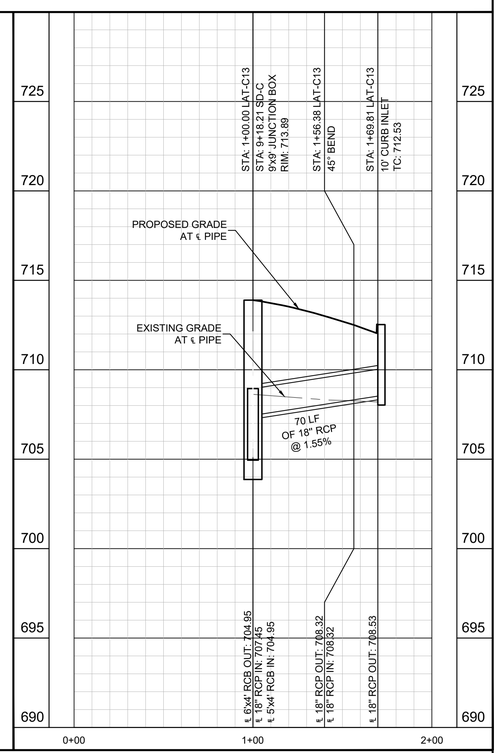
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LAT-C12

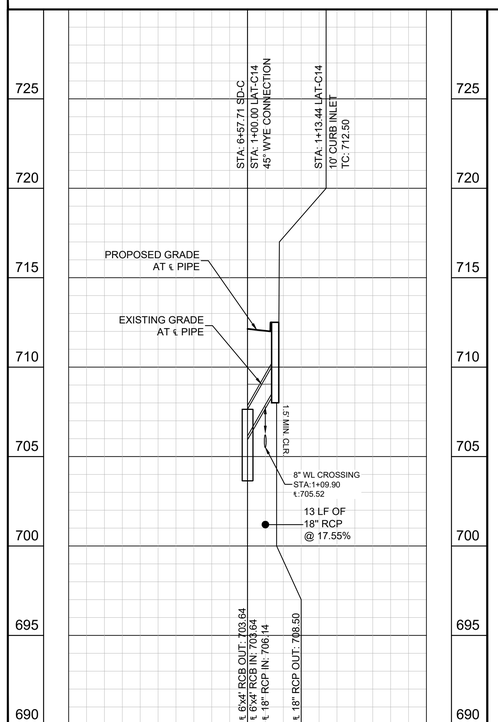


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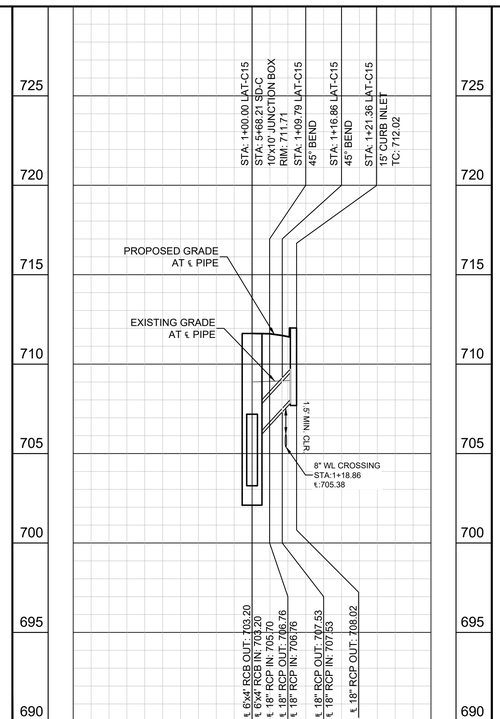


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

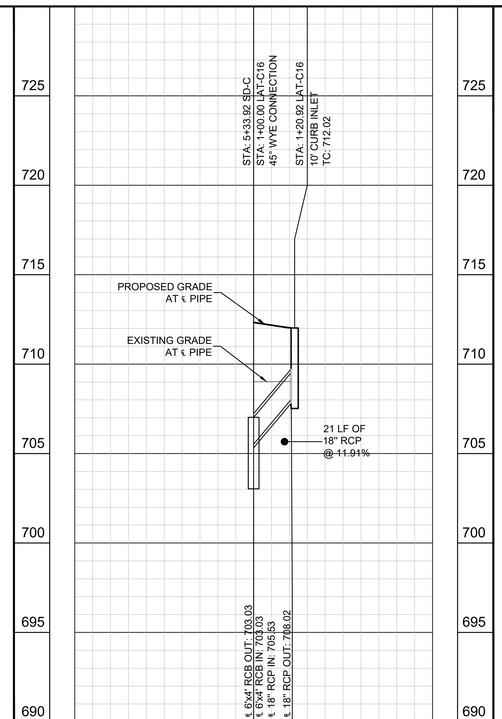
LAT-C14



LAT-C15



LAT-C16



PROFILE SCALE
1" = 40' HORIZONTAL
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BENCHMARKS

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FILE NUMBER_____APPLICATION DATE_____
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EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
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SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

STORM LATERALS (SHEET 7 OF 8)

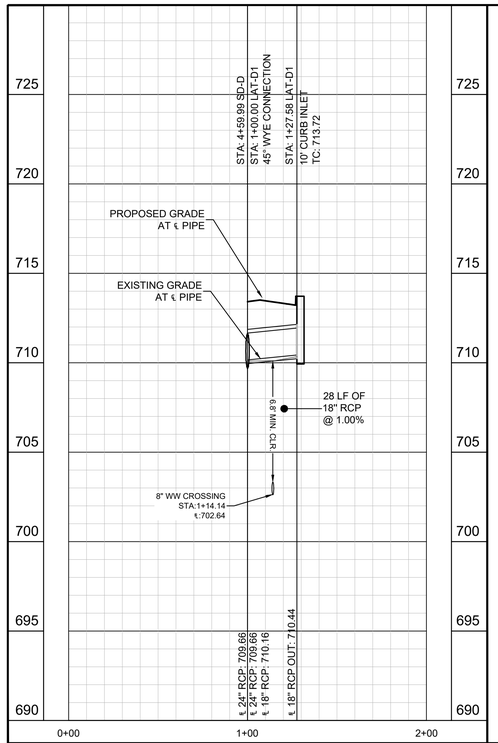
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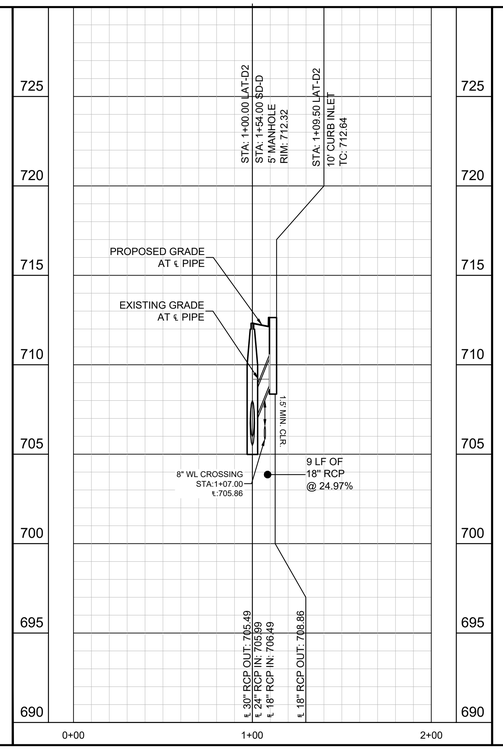
SHEET NUMBER
76 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:16:11am File Path: K:\Geo_civil\069422600 – buda 98\Cad\Phase 1\plansheets\C- Storm Laterals – 2.dwg
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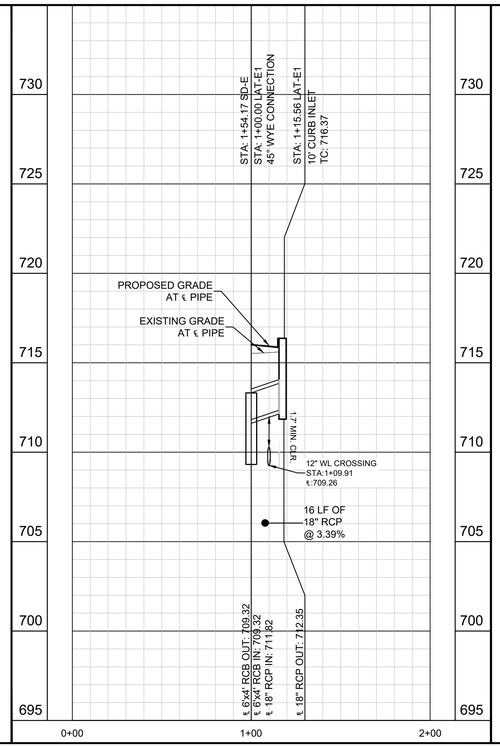
LAT-D1



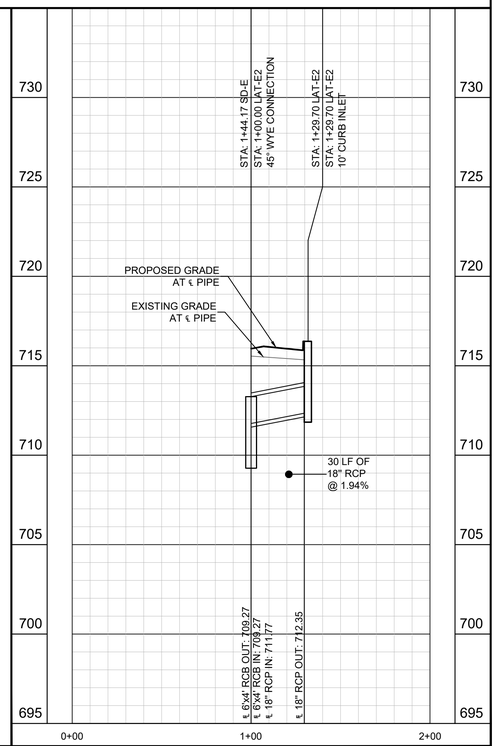
LAT-D2



LAT-E1



LAT-E2



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1" = 4' VERTICAL

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

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No.	REVISIONS	DATE	BY

Kimley»Horn
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5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

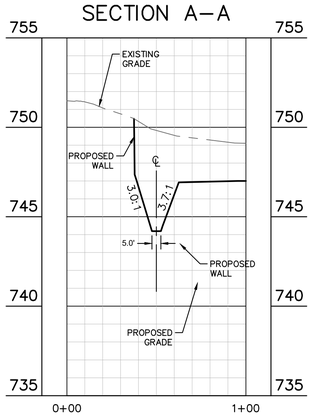
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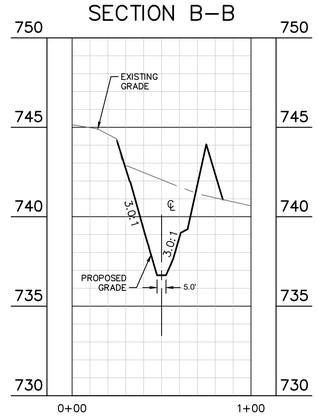
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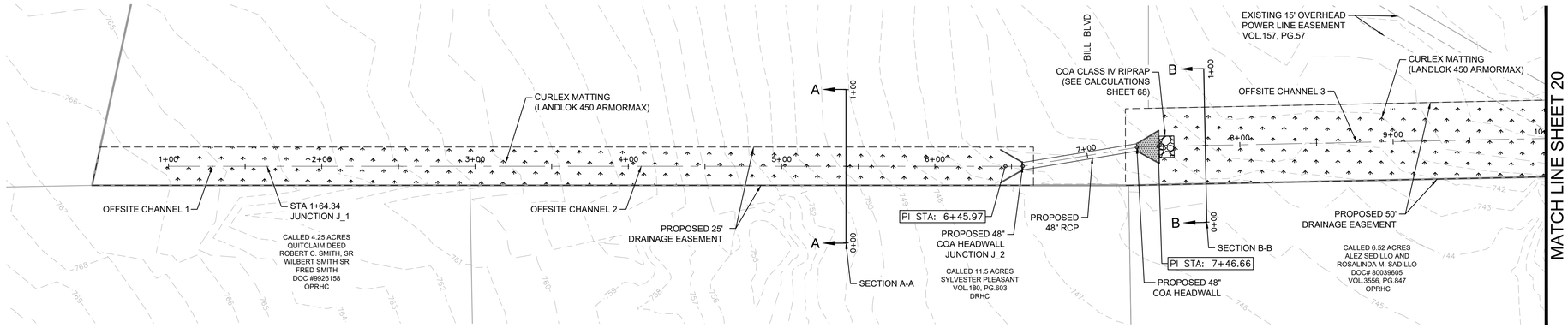
CITY OF BUDA
HAYS COUNTY, TEXAS

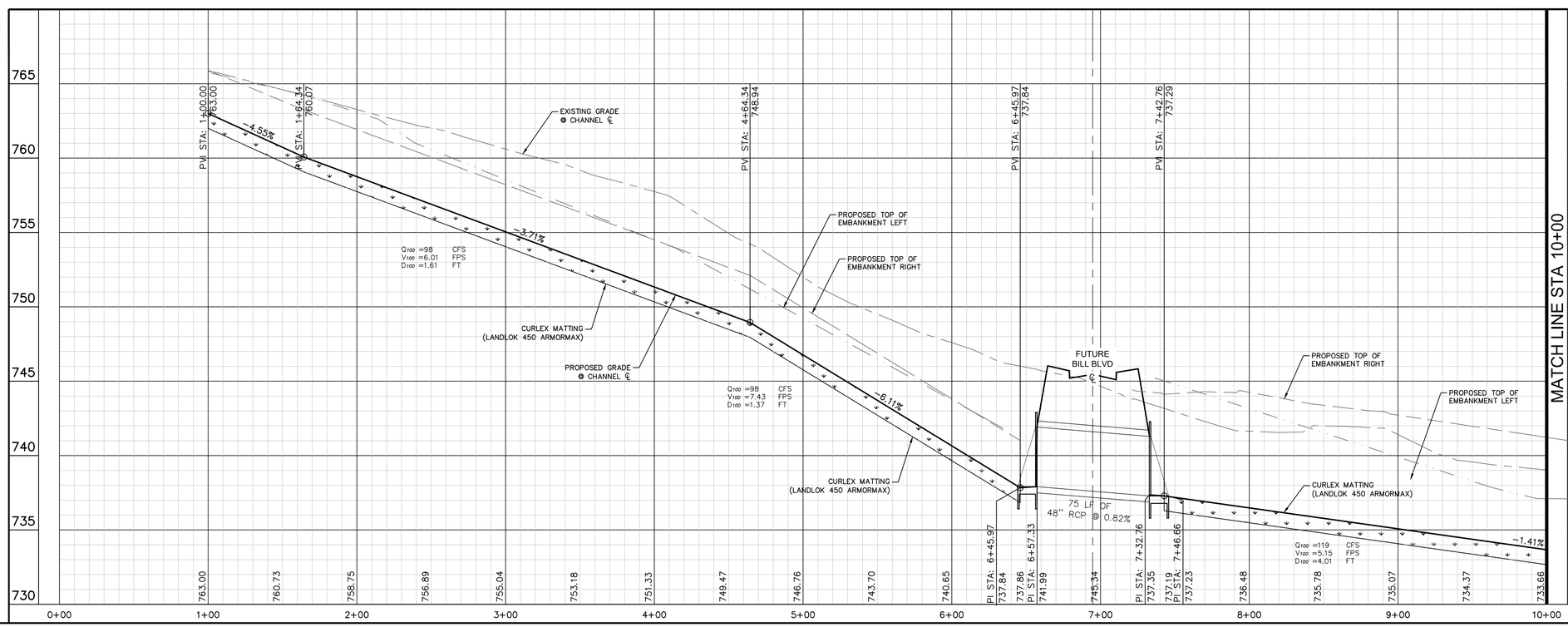
SHEET NUMBER
77 OF 151

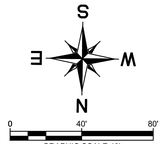
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LEGEND

- PROPOSED CONTOUR
- EXISTING CONTOUR
- STORM SEWER
- STORM INLET
- AREA INLET
- STORM MANHOLE

NOTES:
1. NO OFFSITE AREAS SHALL BE TREATED BY THE ONSITE STORMWATER CONROL MEASURES, ALL OFFSITE AREAS TO FLOW TO ONION CREEK. ALL CHANNELS HAVE BEEN DESIGNED AND CONSTRUCTED TO CONVEY FULLY DEVELOPED FLOWS. PLEASE SEE THE RESERVE AT COLE SPRINGS DETENTION WAVIER REQUEST FOR THE PROPOSED FLOWS AND JUNCTIONS.
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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
146662
LICENSED PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT 069422602	
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

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ELEV.=732.56' (NAVD '88)

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CONSTRUCTION PLAN APPROVAL SHEET 78 OF 151
FILE NUMBER _____ APPLICATION DATE _____
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EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
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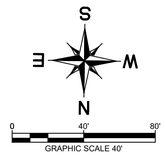
CHANNEL P&P STA. 1+00 TO 10+00

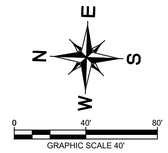
THE RESERVE AT COLE SPRINGS PHASE 1

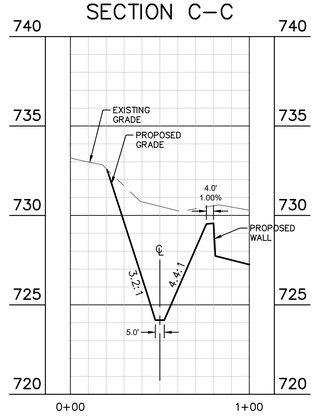
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
78 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:19:44am File Path: K:\Aus_civil\069422600 — Buda 98\Civil\Phase 1\plansheets\C-Channel P&P.dwg
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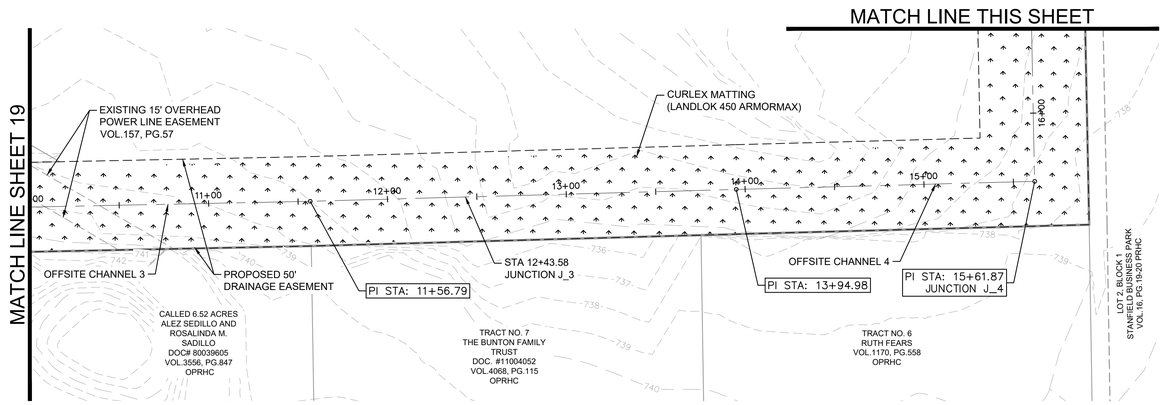


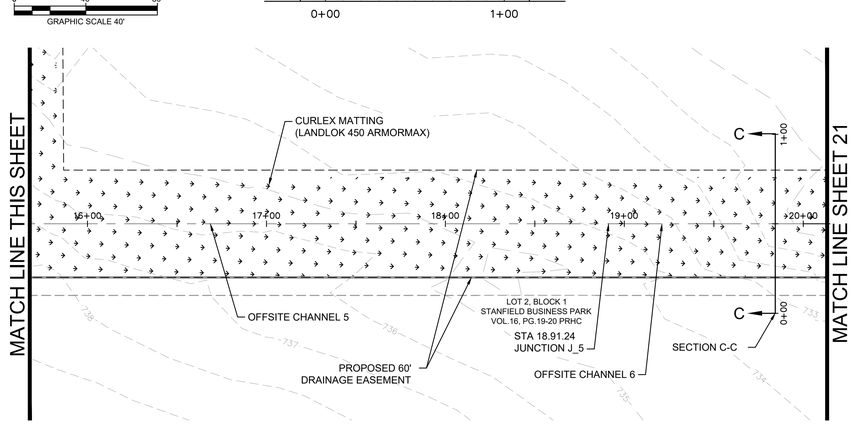


LEGEND

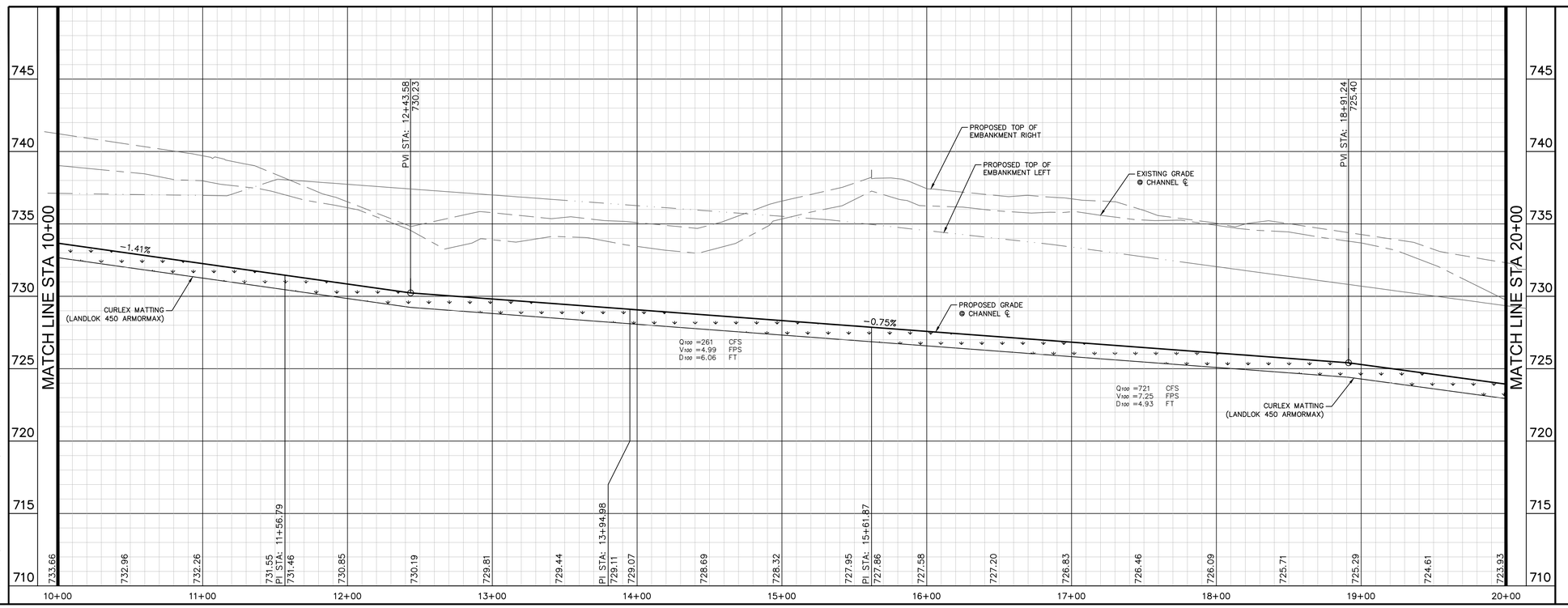
- 555 — PROPOSED CONTOUR
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- STORM INLET
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OFFSITE CHANNEL



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CONSTRUCTION PLAN APPROVAL SHEET 79 OF 151
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City Engineer, City of Buda
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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
146662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT	068422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

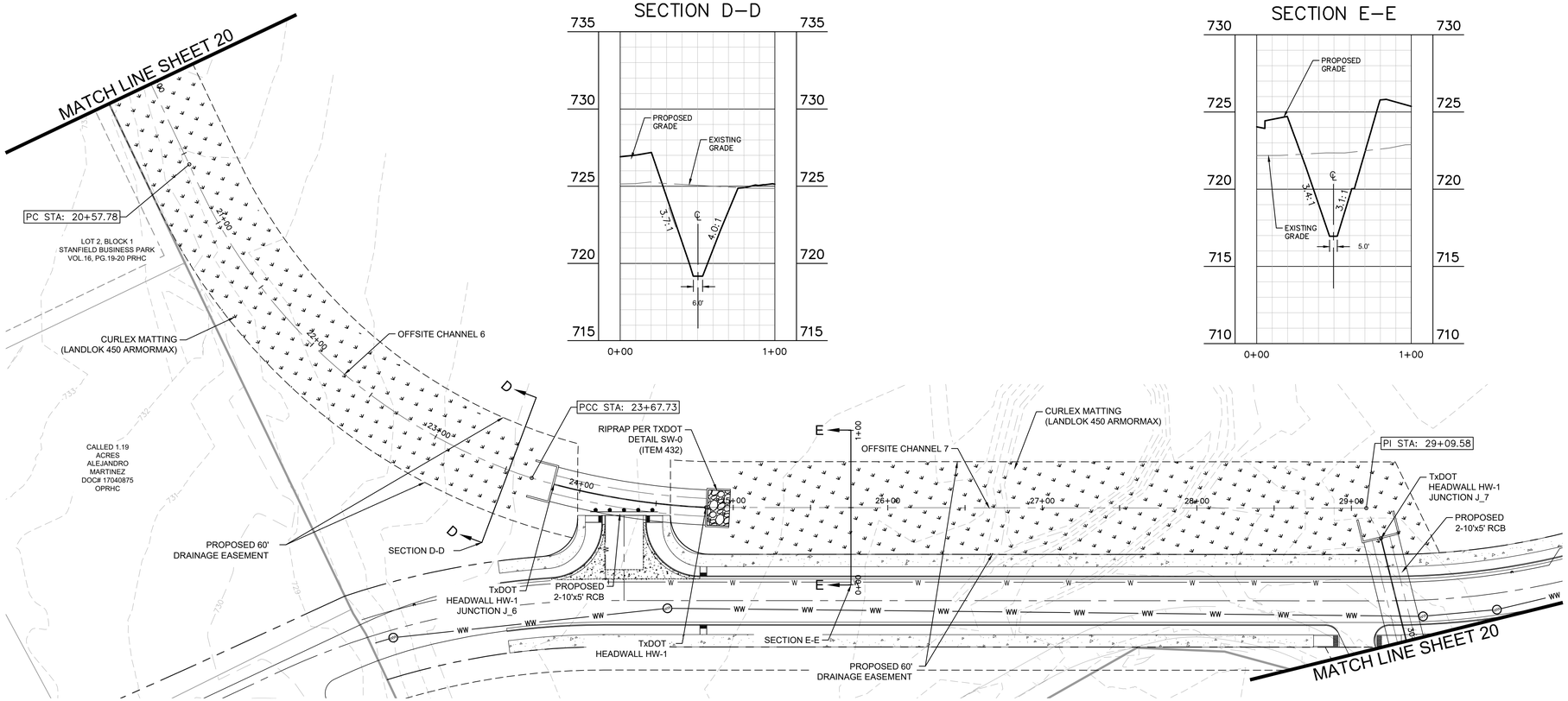
CHANNEL P&P STA. 10+00 TO 20+00

THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

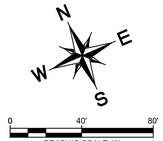
SHEET NUMBER
79 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:20:04am File Path: K:\pro_civil\068422600 - buda 98\Cad\Phase 1\plansheets\C-Channel P&P.dwg
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SECTION D–D

SECTION E–E



LEGEND

555	PROPOSED CONTOUR
555	EXISTING CONTOUR
	STORM SEWER
	STORM INLET
	AREA INLET
	STORM MANHOLE

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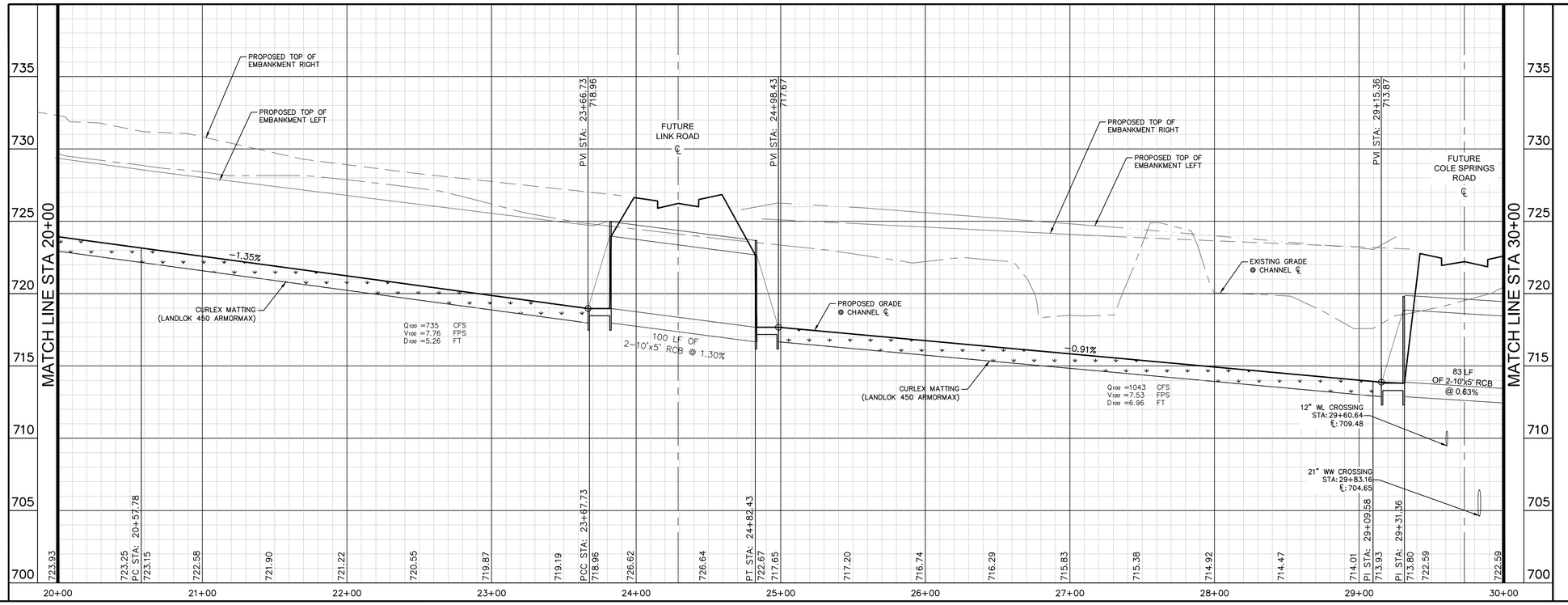
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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
146662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

OFFSITE CHANNEL



BENCHMARKS

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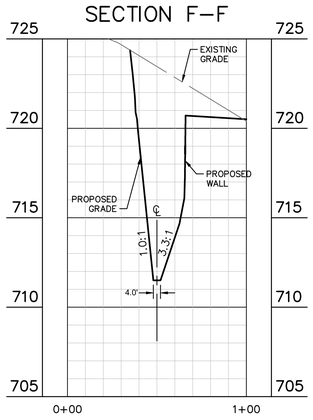
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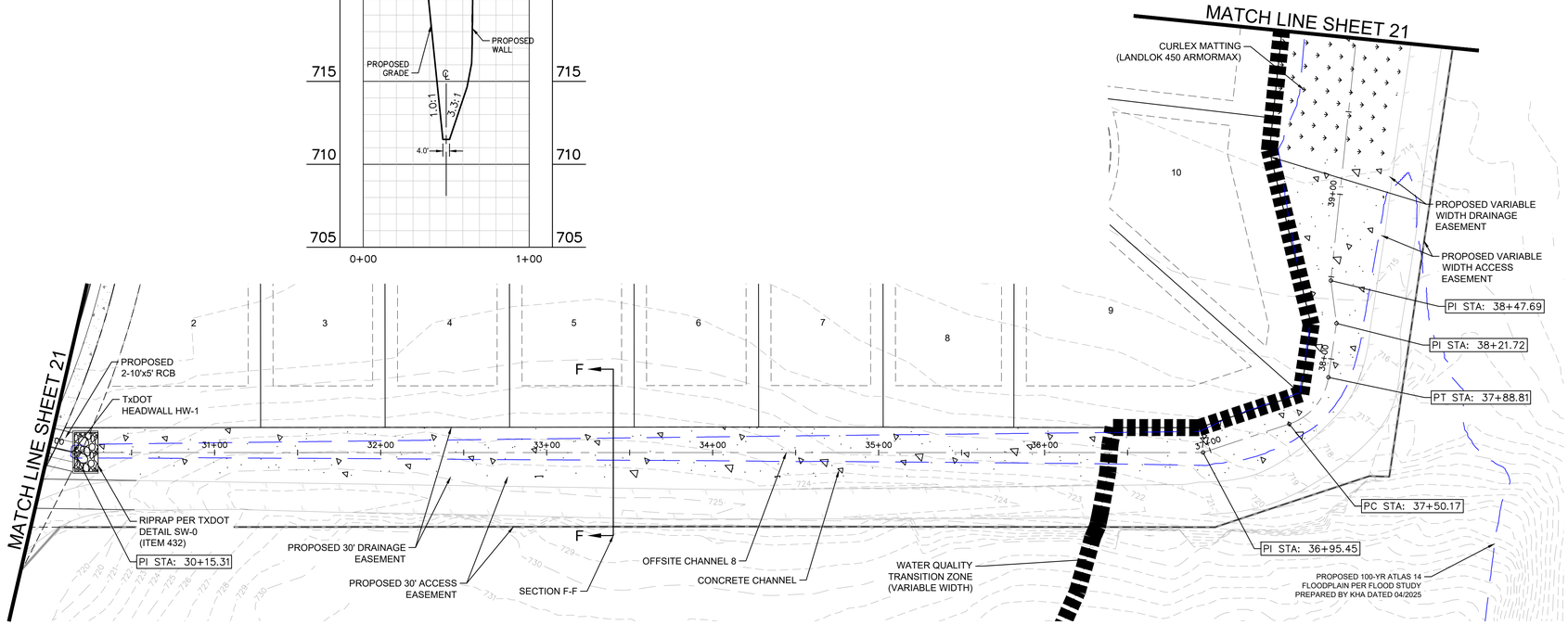
THE RESERVE AT COLE SPRINGS PHASE 1

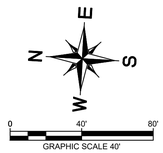
CITY OF BUDA
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SHEET NUMBER
80 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:20:25am File Path: K:\pro_civil\069422602 - buda 98\Civil\Phase 1\plansheets\C-Channel P&P.dwg
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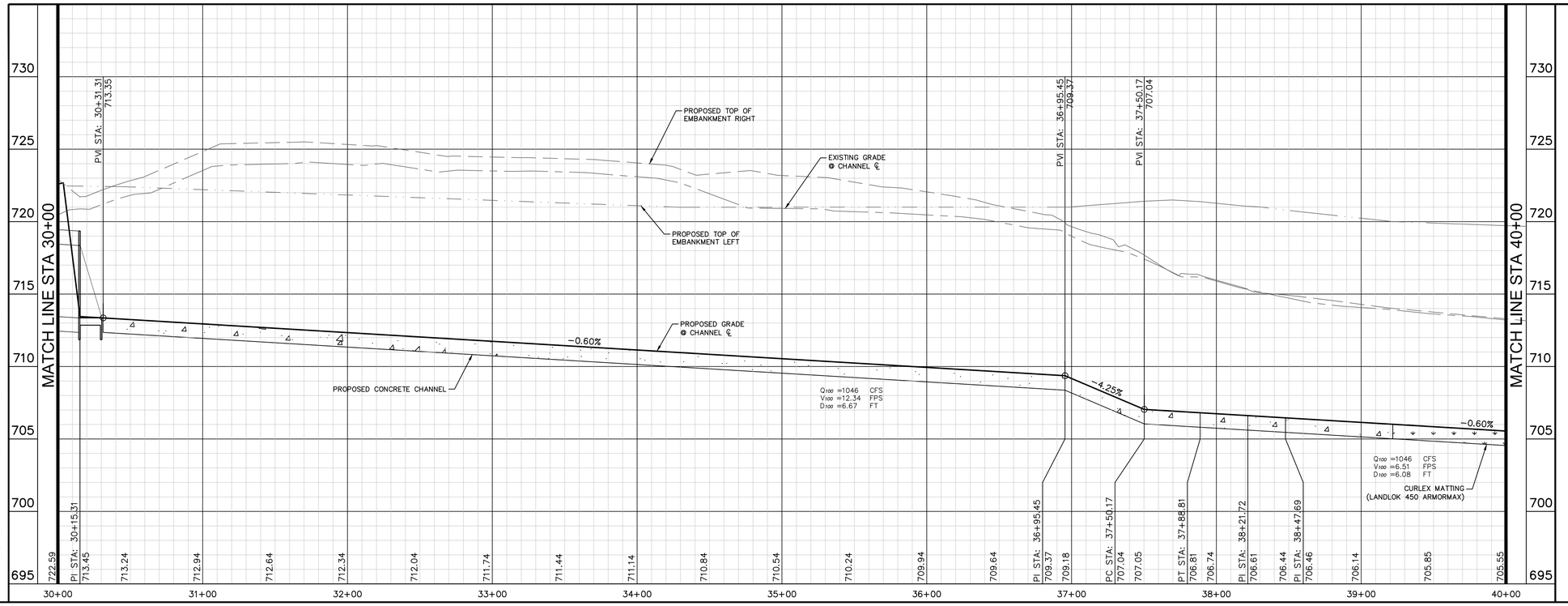


LEGEND

555	PROPOSED CONTOUR
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11/24/2025

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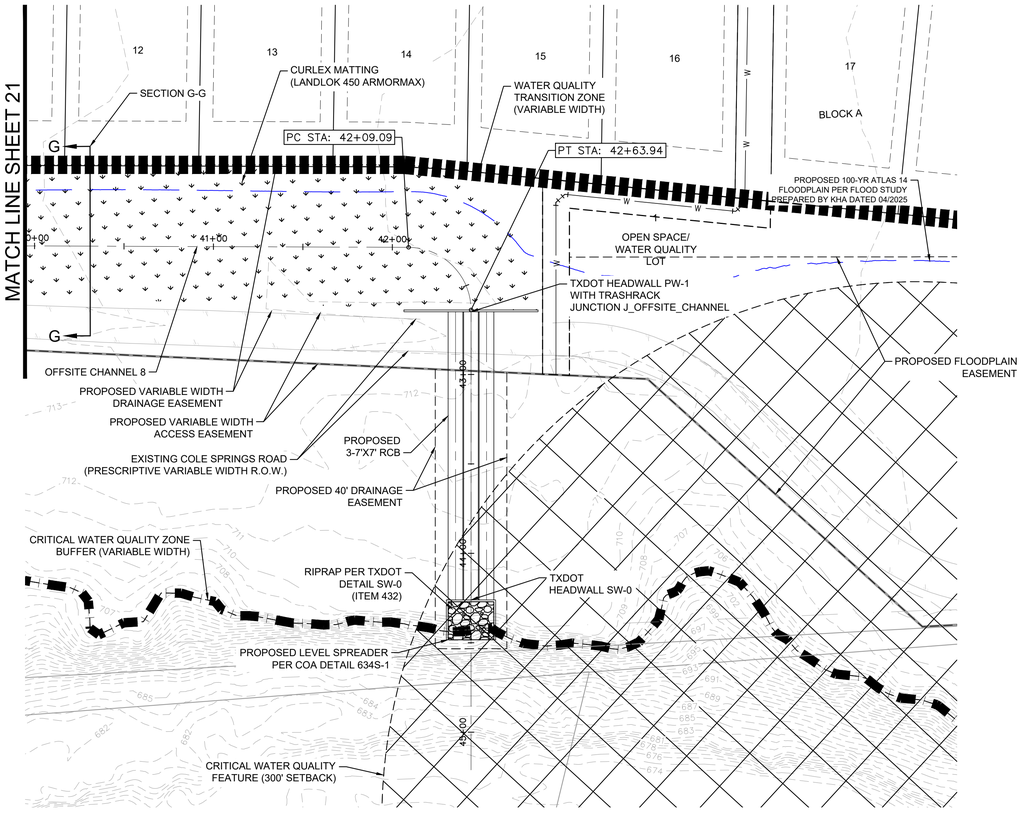
CHANNEL P&P STA. 30+00 TO 40+00

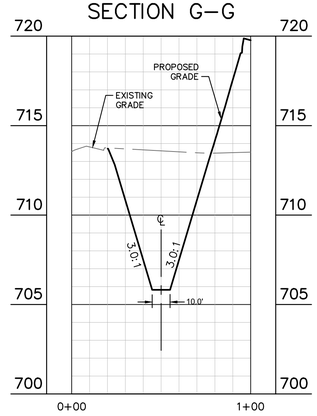
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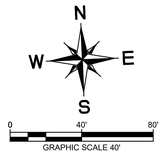
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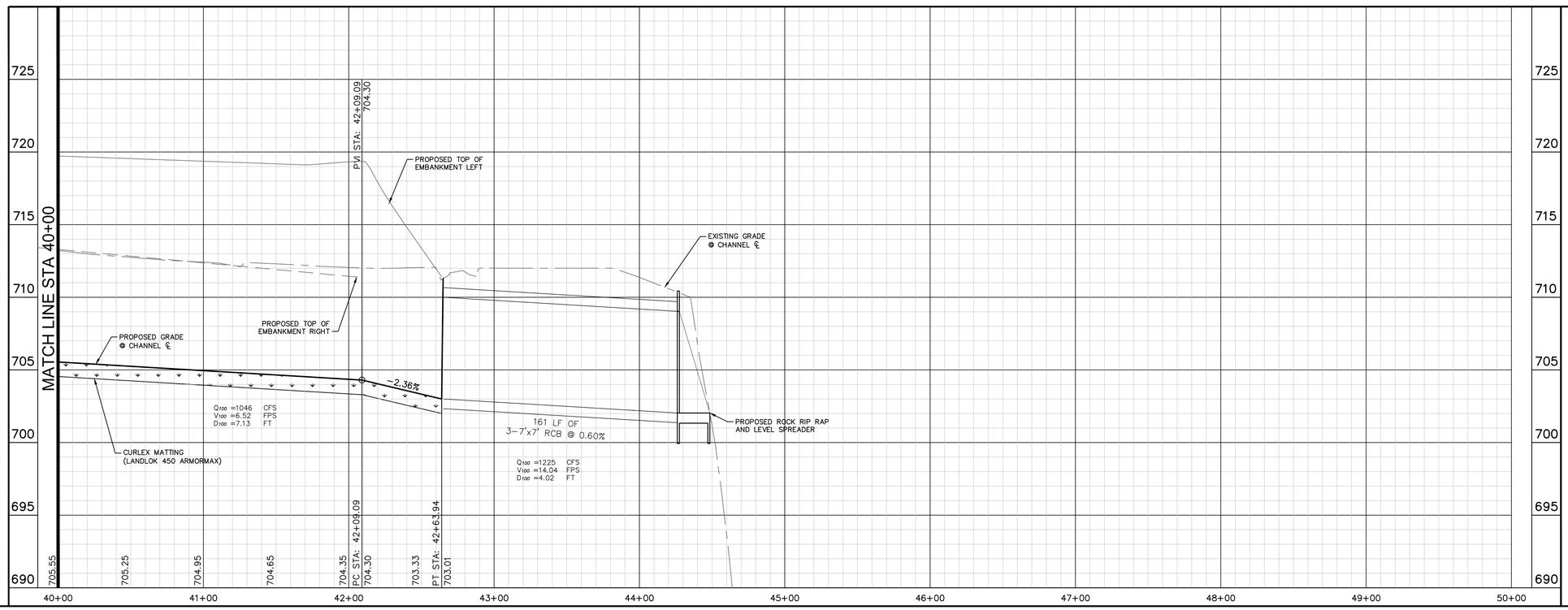


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1" = 4' VERTICAL

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
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ELEV.=732.56' (NAVD '88)

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

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CONSTRUCTION PLAN APPROVAL SHEET 82 OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

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PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
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5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

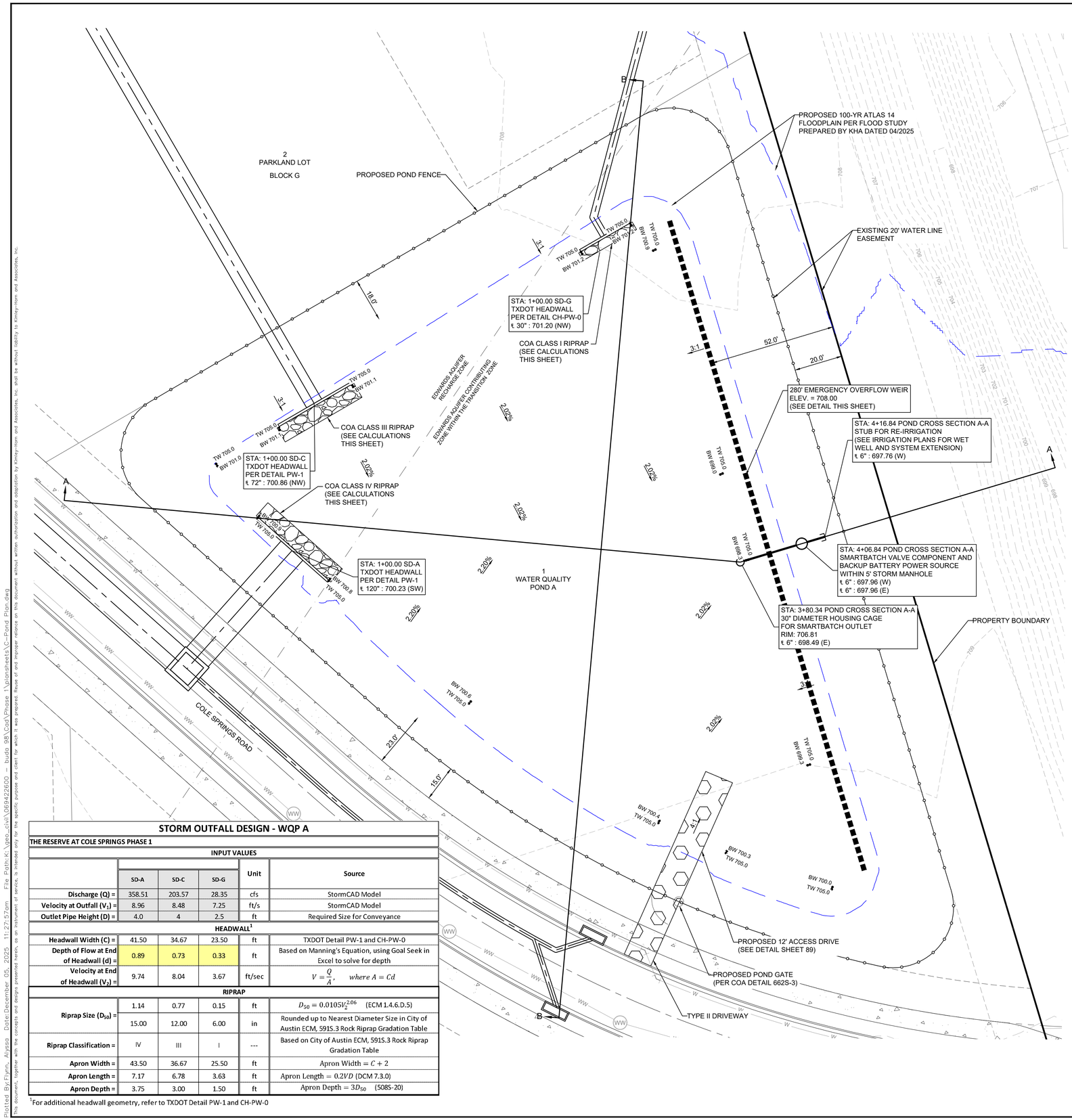
CHANNEL P&P STA. 40+00 TO END

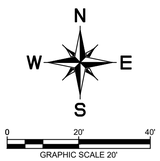
THE RESERVE AT COLE SPRINGS PHASE 1

CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
82 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:20:58am File Path: K:\pro_civil\069422600 - buda 98\Civil\Phase 1\plansheets\C-Channel P&P.dwg
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LEGEND

- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- EDWARDS AQUIFER ZONE BOUNDARIES
- PROPOSED 100-YR ATLAS 14 FLOODPLAIN
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR

NOTES:
1. A DETENTION WAIVER REQUEST HAS BEEN APPROVED FOR THIS DEVELOPMENT WITH THE PRELIMINARY PLAT, PLEASE REFER TO THE RESERVE AT COLE SPRINGS DETENTION WAIVER REQUEST DATED 06/10/2025, FOR ADDITIONAL INFORMATION, AS STATED IN THE CONCLUSION OF THE DETENTION WAIVER REQUEST: "THE PROPOSED DEVELOPMENT, IF DEVELOPED WITHOUT STORMWATER DETENTION, WILL INCREASE PEAK FLOW MINIMALLY IN ONION CREEK BY LESS THAN 0.02 PERCENT IN ALL STORM EVENTS. IF DEVELOPED WITH DETENTION, RESULTING PEAK FLOWS WILL BE GREATER IN ONION CREEK THAN THE PROPOSED DEVELOPMENT WITHOUT DETENTION. FURTHERMORE, THE RISE IN WATER SURFACE ELEVATION IN ONION CREEK DUE TO THE PROPOSED DEVELOPMENT IS MINIMAL AND RESULTS IN THE SAME 0.01 FT CHANGE WITH OR WITHOUT DETENTION. AS SUCH, DEVELOPMENT OF THE SUBJECT TRACT WITHOUT DETENTION WILL NOT ADVERSELY IMPACT OFFSITE PROPERTIES.
2. FINAL PLAT AND CONSTRUCTION PLAN APPROVAL IS CONTINGENT UPON APPROVAL OF WATER QUALITY BMP'S BY THE TCEQ.
3. THE WATER QUALITY TREATMENT REQUIRED IS SUBJECT TO "EXHIBIT N - WATER QUALITY BUFFER ZONES" AND "EXHIBIT O - WATER QUALITY TREATMENT SPECIFICATIONS" WITHIN THE "CITY OF BUDA ANNEXATION, DEVELOPMENT, AND MUNICIPAL UTILITY DISTRICT CONSENT AGREEMENT FOR THE RESERVE AT COLE SPRINGS".
4. BATCH DETENTION PONDS SHALL BE UTILIZED AS THE FIRST STORMWATER CONTROL MEASURE PER TCEQ STANDARDS. PER "EXHIBIT O - WATER QUALITY TREATMENT SPECIFICATIONS" AND IRRIGATION DRAIN FIELDS SHALL BE UTILIZED AS THE SECOND STORMWATER CONTROL MEASURE PER CITY OF AUSTIN SLAT TOOL.
5. NO OFFSITE AREAS SHALL BE TREATED BY THE ONSITE STORMWATER CONTROL MEASURES. ALL OFFSITE AREAS TO FLOW TO ONION CREEK. ALL CHANNELS HAVE BEEN DESIGNED AND CONSTRUCTED TO CONVEY FULLY DEVELOPED FLOWS.
6. RIP RAP SHALL BE DESIGNED PER CITY OF AUSTIN ECM APPENDIX V CRITERIA, AS ADOPTED BY THE CITY OF BUDA.
7. AREAS NOTED FOR REQUIRED RE-IRRIGATION SHALL HAVE A BUFFER OF 50' DOWNSTREAM OF ANY IRRIGATION AREAS NOT ROUTED TO THE RETENTION BASIN PER THE CITY OF AUSTIN ECM 1.6.7.5.A.4.J, AND SHALL NOT BE LOCATED ON ANY AREAS WITH SLOPES GREATER THAN 15%, PER "EXHIBIT O - WATER QUALITY TREATMENT SPECIFICATIONS" WITHIN THE "CITY OF BUDA ANNEXATION, DEVELOPMENT, AND MUNICIPAL UTILITY DISTRICT CONSENT AGREEMENT FOR THE RESERVE AT COLE SPRINGS".
8. THE CITY OF AUSTIN STORMWATER LOAD ANALYSIS TOOL (SLAT) WILL GOVERN THE WATER QUALITY VOLUME.

WSE Table	
2-yr	708.41
10-yr	708.60
25-yr	708.75
100-yr	708.99

P =	0.5	IN	
A =	75.11	AC	RECHARGE ZONE
V =	**3.13**	AC-FT	RUNOFF VOLUME

Water Quality Pond A:

Stage (FT MSL)	Area (SF)	Area (AC)	Storage (CF)	Cumm. Storage (CF)	Cumm. Storage (AC-FT)	Flow (CFS)	Rating Table
699.00	3,138	0.07					
700.00	17,270	0.40	10,204	10,204	0.23	0.00	
701.00	31,764	0.73	24,517	34,721	0.80	0.00	
702.00	33,303	0.76	32,533	67,255	1.54	0.00	
703.00	33,559	0.77	33,431	100,685	2.31	0.00	
704.00	33,828	0.78	33,693	134,378	3.08	0.00	
704.06	***33,846***	***0.78***	***2,166***	***136,544***	***3.13***	***0.00***	***RUNOFF VOLUME***
705.00	34,110	0.78	33,969	168,347	3.86	0.00	
706.00	36,603	0.84	35,357	203,704	4.68	0.00	
706.81	***38,673***	***0.89***	***30,565***	***234,268***	***5.38***	***0.00***	***WATER QUALITY ELEVATION***
707.00	39,152	0.90	37,877	241,581	5.55	0.00	
708.00	**41,755**	**0.96**	**40,453**	**282,034**	**6.47**	**0.00**	**WEIR-1**
709.00	44,414	1.02	43,084	325,119	7.46	845.16	
710.00	47,127	1.08	45,770	370,889	8.51	0.00	FREEBOARD
711.00	49,896	1.15	48,512	419,401	9.63	0.00	FREEBOARD

WATER QUALITY POND A

POND OVERFLOW WEIR DESIGN

Provided Overflow Elevation	=	708.00
Top of Pond Elevation	=	711.00

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

Q = 100 year developed flow outflow	845.16
C = Weir coefficient	3.00
L = Width of weir (feet)	280.0
H = Depth of flow (feet)	1.00
V = Velocity of weir outflow (ft/s)	3.01
Max. WSE_{100} OVER SPILLWAY =	709.00

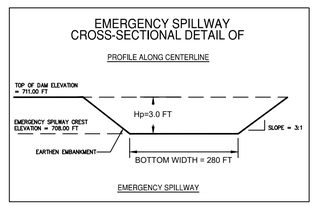
STORM OUTFALL DESIGN - WQP A

THE RESERVE AT COLE SPRINGS PHASE 1

INPUT VALUES

	SD-A	SD-C	SD-G	Unit	Source
Discharge (Q) =	358.51	203.57	28.35	cfs	StormCAD Model
Velocity at Outfall (V_1) =	8.96	8.48	7.25	ft/s	StormCAD Model
Outlet Pipe Height (D) =	4.0	4	2.5	ft	Required Size for Conveyance
HEADWALL[1]					
Headwall Width (C) =	41.50	34.67	23.50	ft	TXDOT Detail PW-1 and CH-PW-0
Depth of Flow at End of Headwall (d) =	0.89	0.73	0.33	ft	Based on Manning's Equation, using Goal Seek in Excel to solve for depth
Velocity at End of Headwall (V_2) =	9.74	8.04	3.67	ft/sec	$V = \frac{Q}{A}, \quad where\ A = Cd$
RIPRAP					
Riprap Size (D_{50}) =	1.14	0.77	0.15	ft	$D_{50} = 0.0105V_2^{2.06}$ (ECM 1.4.6.D.5)
	15.00	12.00	6.00	in	Rounded up to Nearest Diameter Size in City of Austin ECM, 591S.3 Rock Riprap Gradation Table
Riprap Classification =	IV	III	I	---	Based on City of Austin ECM, 591S.3 Rock Riprap Gradation Table
Apron Width =	43.50	36.67	25.50	ft	Apron Width $= C + 2$
Apron Length =	7.17	6.78	3.63	ft	Apron Length $= 0.2VD$ (DCM 7.3.0)
Apron Depth =	3.75	3.00	1.50	ft	Apron Depth $= 3D_{50}$ (508S-20)

[1]For additional headwall geometry, refer to TXDOT Detail PW-1 and CH-PW-0



BENCHMARKS

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City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

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WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED
PROFESSIONAL ENGINEER

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

WATER QUALITY POND A

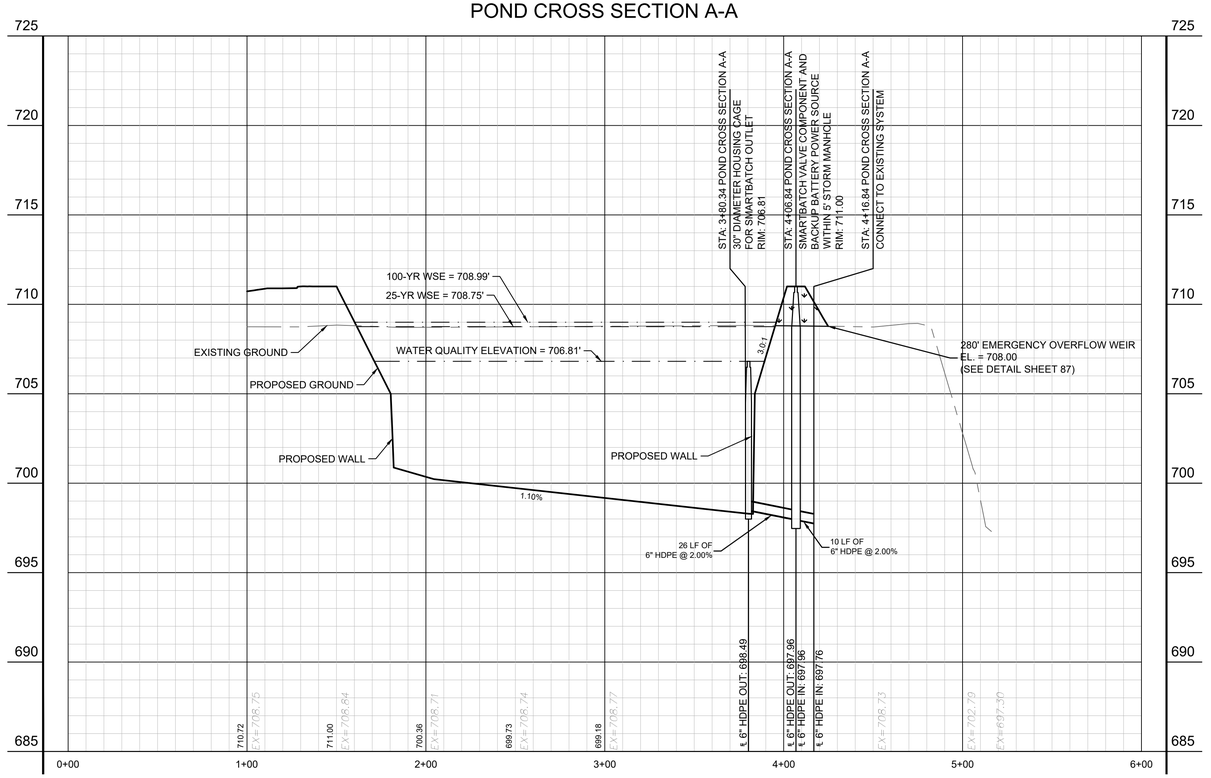
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CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
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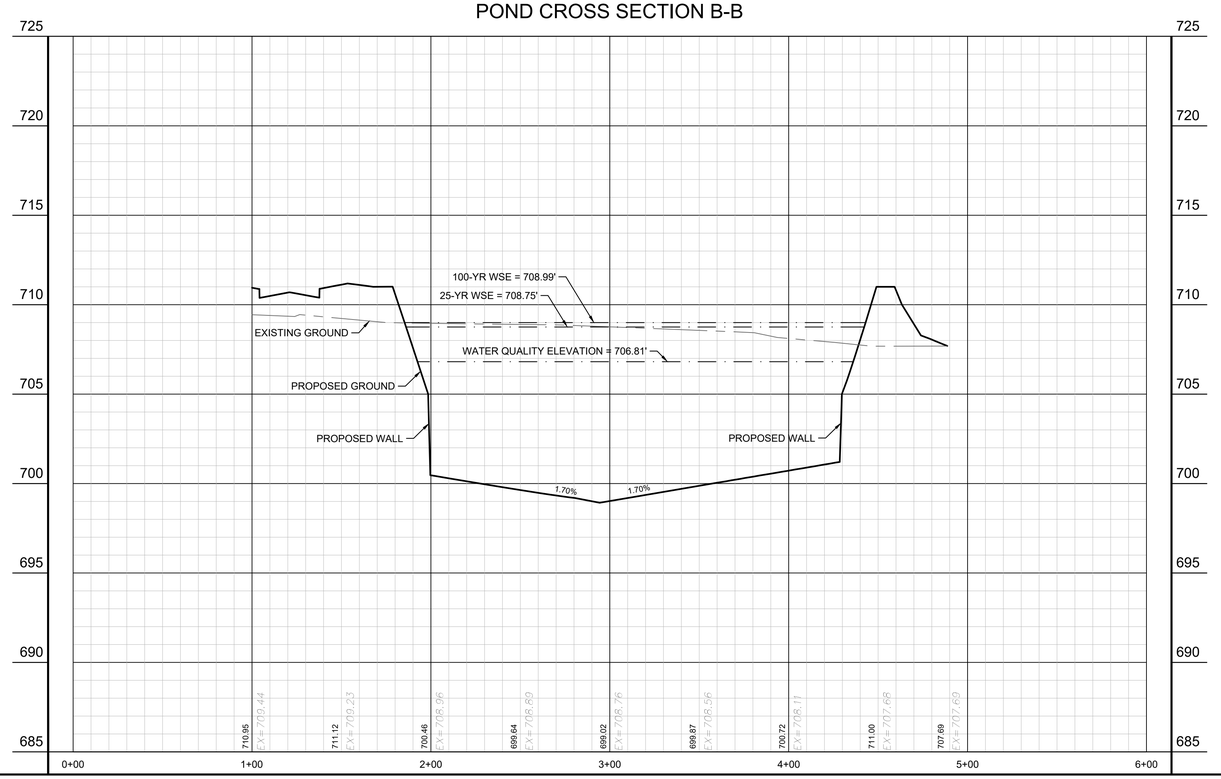
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POND CROSS SECTION A-A



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

POND CROSS SECTION B-B



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

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11/24/2025

STATE OF TEXAS
SARAH F. STARKEY
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LICENSED
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Sarah Starkey

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
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POND CROSS SECTIONS

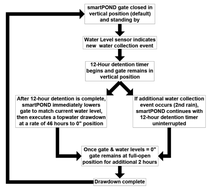
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CITY OF BUDA
HAYS COUNTY, TEXAS

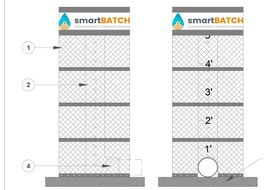
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88 OF 151

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PROGRAMMABLE LOGIC FLOW CHART

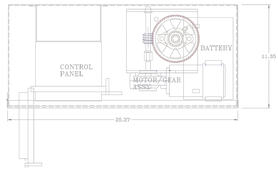


TRASH CAGE WITH PERFORATED RISER PIPE

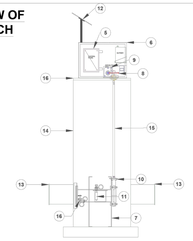


Parts List	
Item	smartPOND Valve Component
1	30" DIAMETER CAGE WITH 1 $\frac{1}{2}$" GALVANIZED MESH SCREEN
2	8" SQUARE PERFORATED TUBING WITH 1" PERFORATION, WITH 4" VERTICAL SPACING ON CENTERS WITH WATER DEPTH MARKER
3	3 $\frac{1}{2}$' X 3 $\frac{1}{2}$' X 4" CONCRETE PAD (BY OTHERS)
4	6" PVC OUTFALL PIPE (BY OTHERS)
5	WEATHERPROOF ELECTRONIC BOX
6	CONTROL BOX
7	PEDESTAL
8	ACTUATOR
9	MOTOR
10	6" VALVE
11	LEVEL TRANSDUCER
12	SOLAR PANEL
13	OUTLET PIPE (BY OTHERS)
14	30" DRAIN BASIN
15	VALVE STEM
16	QUICK DISCONNECT VALVE CONNECTION

PLAN VIEW OF ENCLOSER



SECTION VIEW OF SMARTBATCH



FRONT VIEW OF SMARTBATCH



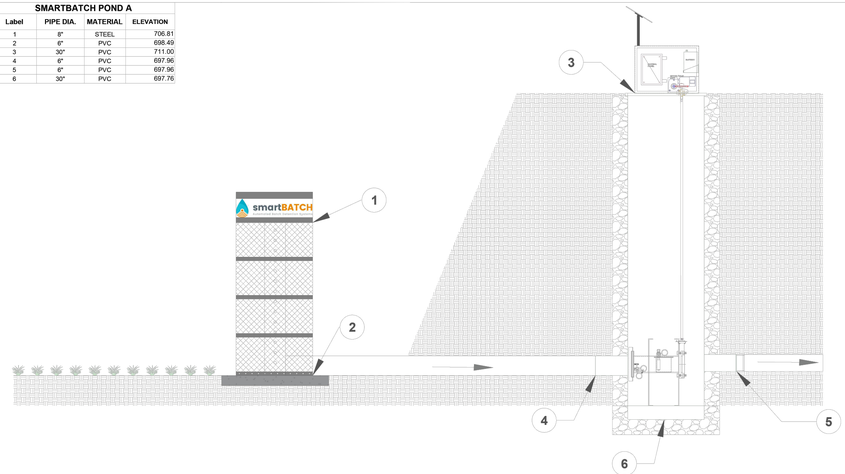
smartBATCH
Automated Batch Detention Systems

FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

CONVERGENT WATER TECHNOLOGIES

SMARTBATCH POND A

Label	PIPE DIA.	MATERIAL	ELEVATION
1	8"	STEEL	706.81
2	6"	PVC	698.49
3	30"	PVC	711.00
4	6"	PVC	697.96
5	6"	PVC	697.96
6	30"	PVC	697.76



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CONVERGENT WATER TECHNOLOGIES

NOTE:
CONTRACTOR TO PROVIDE SHOP DRAWING SHOWING ELEVATIONS OF ALL PROPOSED SMARTBATCH VALVE PIPING PRIOR TO FABRICATION.

smartPOND Valve SPECIFICATION

Continuously Monitored Automated Stormwater System with Valve

smartPOND Automated Stormwater Control

THE ORIGINAL PATENTED SYSTEM FOR CONTINUOUSLY MONITORED STORMWATER CONTROL
WWW.SMARTPOND.COM

smartPOND Valve Specifications

REVISION NO. 0

5/26/2020
DATE

1. Introduction
The following specifications describe the components, general functions, and applications of a smartPOND Continuously Monitored Automated Stormwater System (C-MASS) with Valve. The smartPOND system is a combination of hardware and software components providing precision management capabilities and real-time data. Using sensors, solar power, an electronic actuator, and an internet-based control interface, the smartPOND valve controls the release of a specialized perforated riser inside the stormwater impoundment to enable managers to precisely control water retention and detention automatically or in real time.

2. smartPOND Valve Applications in Stormwater Management
The smartPOND valve is designed for active stormwater management. As opposed to passive devices such as floating skimmers or stationary weirs, active water management dramatically increases the efficiency and effectiveness of a detention or retention pond. Where a passive stormwater detention system allows water to leave immediately upon collection, the smartPOND valve can detain newly caught Stormwater and allow it to settle for a programmed period before automatically dewatering the impoundment completely. For stormwater retention systems, it is possible to manage the treatment volume while maintaining a specified amount of capacity for flood storage or other use.

2.1 Pre-Programmed Control
The valve can be pre-programmed without any human interactions, leaving the valve to automatically receive commands based on environmental conditions and respond as programmed.

2.1.1 Batch Detention Function for Stormwater Quality
The smartPOND valve meets TCEQ Batch Detention specifications for a 91% Total Suspended Solid removal value. The function proceeds as follows. With the valve in the closed position and the impoundment dry, the system will stand by and wait for a water collection event. At the first sign of water collection, the unit will begin a 12-hour detention timer. At the end of the 12-hour detention period, the valve will open and release all of the water that has been collected. After the water level drops to 0", the valve will remain open for an additional 2 hours to facilitate final drainage, then return to the closed position to stand by for the next water collection event.

2.1.2 Predevelopment Hydrograph Function for Flood Control
The smartPOND valve predevelopment hydrograph function takes in site specific variables to determine a maximum release rate based on predevelopment conditions. The valve then operates in the same fashion as the batch detention to determine the maximum release rate desirable to ensure the impoundment neither overtaxes, nor exceeds its maximum release based on predevelopment flows.

2.1.3 Normal Function for Spill Containment
smartPOND when specified for Hazmat spill containment can be equipped with pollutant specific sensors that when triggered automatically close the valve until the command is overridden.

2.2 Real Time Monitoring
smartPOND comes standard with telemetry available on each unit and access to the user app available at no additional cost for 1 year. This option allows for real time monitoring of the unit and it's functions including with it. From the real time monitoring app, a user can:
- Control the valve, either open or close
- See the water level
- See if trash or debris is surrounding the inlet
- Get maintenance alerts (Low Battery, Valve Failure, Etc.)
- Maintain specified water level

3. Components
The smartPOND valve may be implemented either above or below ground, and is comprised of the following components:

3.1 Hardware and Configuration
The smartPOND valve is a motorized gate that delivers a cast 6" valve. An extended spool and mounting flange on each side of the valve allows it to be attached to the outfall pipe in various configurations. The valve is actuated with an electric motor connected by an extendable drive shaft for underground applications.

For above-ground applications, the entire system including all necessary components for operation assemble into one kit and are housed under a single lockable steel enclosure with the solar panel mounted on top. In this configuration, the unit can be installed on a stable, level pad and be bolted onto the back of the outfall pipe with six ¾" bolts and then switched to the "ON" position.

For underground applications, the valve is installed in a vault or concrete encasement as needed. An extended drive shaft connects between the underground valve and the rest of the components, including the motor and all electronics, which are housed in the lockable steel enclosure directly above ground.

3.2 Electronics and Software Specifications
- **Control Box** - The control box houses the smartPOND valve's electronics box serves as the main connection terminal for all sensors and additional control boards
- **Motor Controller Board** - The motor controller board of the smartPOND valve regulates the connection between the battery and the motor and receives inputs from the main board to control motor direction. It also powers the main board.
- **Motor** - The smartPOND valve motor operates on 12 volts and has two wires connecting to the motor controller board. It is mounted on a bracket and connects to the valve directly by the valve with a driveshaft.
- **Battery** - The smartPOND valve is powered by a 12-volt, 30 amp/hour gel battery. Two terminals at the top connect the power wires to the motor controller board and the solar panel controller.
- **Solar Panel** - The solar panel of the smartPOND valve is 12 volts with 12 watt charging capability. It connects to a solar charge controller which regulates the voltage and current before connecting with two wires to the positive and negative battery terminals.
- **Sensors**
  - Pressure Transducer - The water level sensor is a pressure transducer sensor capable of staying submersed in water indefinitely. It mounts on the side of the smartPOND valve's center spool.
  - Valve position sensor - A proximity sensor senses the position of the valve's drive shaft in order to control and determine the position of the valve.
- **(Optional)**
  - Cell data modem - A cellular data modem will be required for real time control and alert options as well as predevelopment hydrograph functions.
  - Hydrocarbon Sensor - This optional sensor may be fitted to the smartPOND valve to perform specific functions based on the presence of hydrocarbon contamination.

4. Real Time Monitoring Interface (optional)
If the real time monitoring option is selected, the smartPOND valve may be monitored in real time through the Autoflow app. Live and historical data from each unit may be viewed in the app, as well as alerts (detailed in section 5).

4.1 Accessing web data
To access live and historical data in the Autoflow app, select the unit of interest on the home page by clicking on the unit's name. From there, select the "Data" button, and the data page for that unit will be displayed.

4.2 Sending a command
To send a remote control command to the SmartPOND valve, click the "Send New Command" button on the unit's home page. The unit's current position will be displayed at the top. To change the unit's position, simply select "OPEN" or "CLOSE". Within 1-3 minutes, the unit will move to the new position and update its status in the app.

5. Alerts
The smartPOND valve will indicate the following alerts by illuminating an externally visible red LED light
- Low battery
- Loss of function
- Valve malfunction
- Hydrocarbon contamination (optional)

If the telemetry option is selected, the unit will upload the above alerts to the Autoflow app and notify the operator via text or email.

6. In Case of Failure
To bypass the smartPOND valve's normal automated functions and control the valve position in case of failure:

6.1 Removal of motor and manual direct control
In case of a total electronic or motor failure, the motor and motor bracket can be uninstalled together by removing the two bolts at the bottom of the motor bracket. With the motor and motor bracket removed, the output shaft on the butterfly valve can be manually controlled with a socket wrench, or any other tool that can grip the output shaft.

7. Additional Components List

7.1 Perforated Riser
The smartPOND valve system includes a stackable perforated steel riser which installs on the inlet side of the outfall pipe within the impoundment area. The perforated riser features an 8-inch steel perforated square tube within a 24" round steel mesh tube. At the bottom of the 8-inch square tube, there is a female threaded fitting for a 6-inch PVC outfall pipe to connect. The steel tube is perforated with 1-inch holes every 4" on center to the height of the impoundment.

7.2 Trash Cage
The trash cage attaches to the perforated riser with a coupling and ratdler pin. The trash cage will be comprised of steel banding and a 1.5" x 1.5" mesh to prevent floatable's and other contaminants from entering and clogging the perforated riser. The trash cage will sit 5.5" above the bottom of the impoundment to allow the last 5.5" out of the impoundment.

7.3 Valve Stem Extension
The drive shaft/valve stem of the smartPOND system may be extended to any length necessary for instances where the valve will be in an underground vault or manhole. The valve stem will connect the valve to the above ground controls.

8. Maintenance

8.1 Grease
The smartPOND valve includes a grease fitting on the valve itself which should be greased twice per year. It is also recommended that a thick, mildly heat-resistant grease be used to avoid grease melting out of the groove in warmer temperatures.

8.2 Flange Bolts
There are 6 bolts connecting the smartPOND valve's flange to the outfall pipe or fixture. During routine maintenance intervals, these bolts should be checked for tightness. All bolts should be tightened evenly.

8.3 Perforated Riser
Trash, debris, and debris can build up around the perforated riser with time. An annual inspection of the unit is necessary to ensure that excess debris or sediment has not limited the drainage capacity of the perforated riser. To access the perforated riser for maintenance, lift the trash cage off of the riser, dig out any accumulated sediment, and clear all perforations.

8.4 Trash Cage
As a part of routine maintenance, it is advisable to remove trash and debris that has accumulated on the trash cage and properly dispose.

8.5 Solar Panel
During inspection visits, it is necessary to confirm that the solar panel is facing south and is well secured. The solar panel is commonly utilized by birds and insects. It is important to keep the surface clear of bird litter, insect nests and debris in order to maintain optimal performance.

8.6 Battery
Over time, battery terminals may corrode. Check annually for corrosion and clean as needed. The battery should be replaced every 4 to 6 years.

8.7 Storage
The smartPOND valve is shipped in a near-fully assembled configuration and should be stored likewise. The systems are transported and stored on pallets and must remain secured via straps or steel bands to said pallet at all times. The solar panel is not installed at times of transport or storage and should not be installed until the unit is ready to begin operation. The battery may be stored inside the electronics box and if removed, should never be stored on a concrete surface.

9. Installation
The smartPOND valve can be installed in a near-completely assembled configuration. Only the solar panel should be removed during the installation process. There are several ways to install the smartPOND valve with the key being structured support.

9.1 Structural Support
If the smartPOND valve is mounted to a steel pipe in an above ground/fully assembled configuration, the weight of the unit may be supported by the steel pipe. For plastic or underground pipe installations, a concrete pad must be poured to support the weight of the smartPOND valve. For above ground installations, the upper unit (electronics and actuator) should be fastened to the surface of the concrete vault. For vault installations, see design details for standard vault design.

10. Important Safety Information and Warnings:
- Always keep hands clear of the valve and motor when unit is in operation.
- Turn the power switch off when doing any electrical work.
- Do not operate the smartPOND valve in standing water
- Always use proper PPE and confined space protocol when servicing a valve beneath ground.

11. PRODUCTS
Manufacturer/Supplier/Reseller shall be an established stormwater company that has at least 3 installations of automated stormwater management devices that have been in use and functional for the past 3 or more years.

A. Acceptable smartPOND Valve
"smartBATCH" Automated Batch Detention System
"smartPOND" Automated Detention System

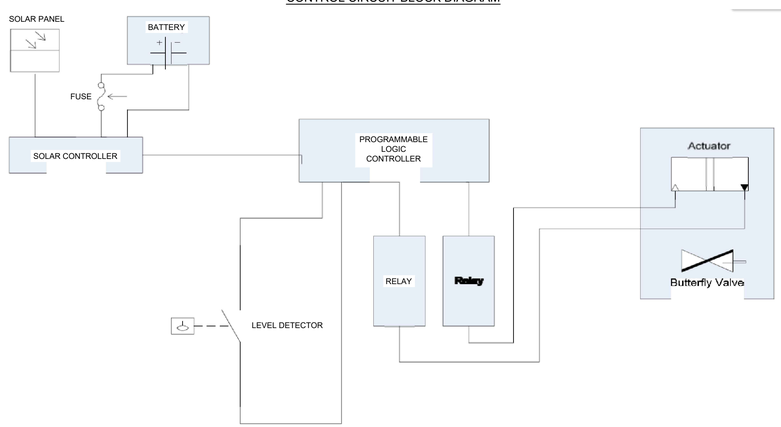
B. Acceptable System Supplier
Convergent Water Technologies, Inc.
(800)713-5428
www.convergentwater.com

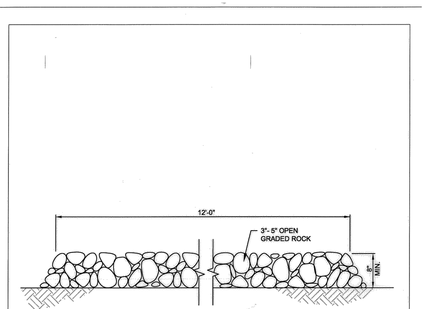
C. Authorized Valve Added Reseller
Ecological Services
(800)456-1043
www.ecosvs.com

12. Quality Assurance and Performance Specifications
The quality of all system components and all other appurtenances and their assembly process shall be subject to inspection upon delivery of the system to the work site.Installation is to be performed only by skilled work people with satisfactory record of performance on earthworks, pipe, welding, chamber, or pond/landfill construction projects of comparable size and quality.

NOTE: ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

CONTROL CIRCUIT BLOCK DIAGRAM





NOTES:
1. STONE SIZE: 75–125 mm (3–5") OPEN GRADED ROCK.
2. THICKNESS: NOT LESS THAN 200 mm (8").
3. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.

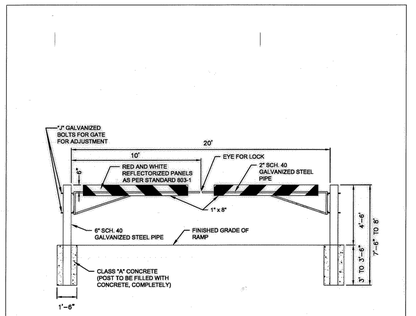
CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS

E. J. Rourk, P.E. 1/9/2016
ADOPTED

POND MAINTENANCE ROAD CROSS SECTION

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO. 662S-2



NOTE:
RAMP BARRICADE SUBSIDIARY TO ITEM 403-G CONCRETE STRUCTURES

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS

E. J. Rourk, P.E. 1/9/2016
ADOPTED

POND PIPE GATE AT RAMP DETAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO. 662S-1

BENCHMARKS

BM #102 PK NAIL SET IN THE MIDDLE OF A CURB INLET ON THE WEST SIDE OF FM 967 70'± NORTH OF THE EDGE NORTH EDGE OF PAVEMENT OF COLE SPRINGS ROAD
ELEV.=691.51' (NAVD '88)

BM #104 PK NAIL SET IN ROCK ON THE SOUTHEAST SIDE OF FM 2770 IN FRONT OF AN ELECTRIC SUB STATION BELOW THREE OVERHEAD ELECTRIC LINES
ELEV.=712.04' (NAVD '88)

BM #106 PK NAIL SET IN ASPHALT ON THE SOUTH SIDE OF OLD BLACK COLONY ROAD ON THE WEST SIDE OF THE GATED ENTRANCE TO THE SITE
ELEV.=732.56' (NAVD '88)

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

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

CONSTRUCTION PLAN APPROVAL SHEET 89 OF 151
FILE NUMBER_____APPLICATION DATE_____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE_____CASE MANAGER_____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE:_____ZONING N/A
Rev. 1_____Correction 1_____
Rev. 2_____Correction 2_____
Rev. 3_____Correction 3_____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
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PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025

THE STATE OF TEXAS
SARAH F. STARKEY
145662
LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	069422602
DATE	NOVEMBER 2025
SCALE:	AS SHOWN
DESIGNED BY:	KB
DRAWN BY:	KB
CHECKED BY:	RBW

POND DETAILS

THE RESERVE AT COLE SPRINGS PHASE 1
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
89 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:28:17am File Path: K:\Aus_civil\069422600 - buda 08\Cad\Phase 1\plansheets\C-Pond Pipe.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

CITY OF BUDA EROSION AND SEDIMENTATION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).

2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL AS ADOPTED BY THE CITY OF BUDA.

3. IF TREES DO NOT EXIST WITHIN THE PROJECT LIMITS, TREE PROTECTION WILL NOT BE REQUIRED.

4. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY THE CITY OF BUDA ENGINEERING DEPARTMENT, 312-0084, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.

5. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER, ENVIRONMENTAL SPECIALIST OR CITY ARBORIST AS APPROPRIATE. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE PLAN MAY BE REQUIRED BY THE INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

6. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR THE MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHED SIX (6) INCHES.

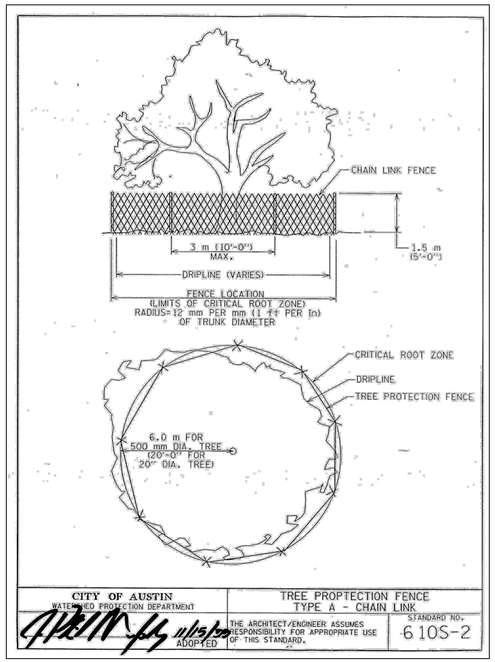
PERMANENT EROSION CONTROL:

ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND BETWEEN THE CURB AND RIGHT-OF-WAY LINE.

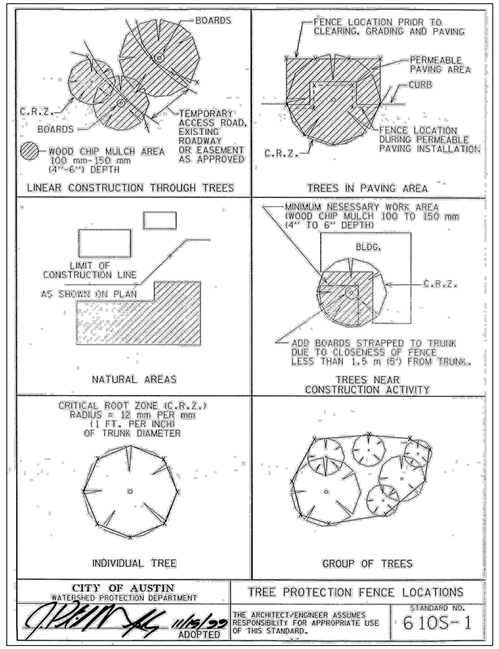
THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE AS SPECIFIED IN THE CITY OF AUSTIN STANDARD SPECIFICATION 604S, AS ADOPTED BY THE CITY OF BUDA.

DUST CONTROL:

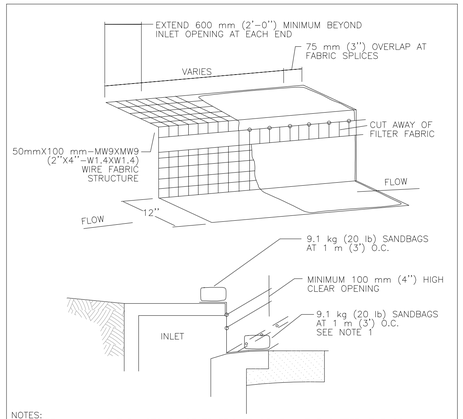
DUST CONTROL METHODS ARE REQUIRED AS PER CITY OF AUSTIN'S ENVIRONMENTAL CRITERIA MANUAL SECTION 1.4.5.D AS ADOPTED BY THE CITY OF BUDA.



CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
TREE PROPTECTION FENCE TYPE A - CHAIN LINK
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 610S-2
ADOPTED 11/15/99

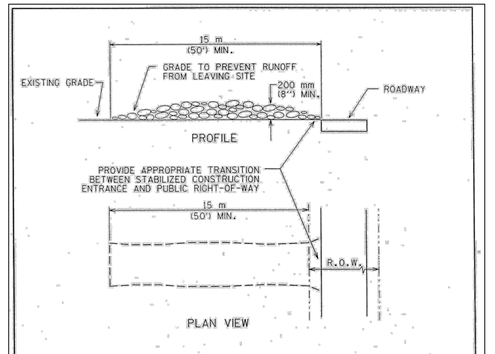


CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
TREE PROTECTION FENCE LOCATIONS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 610S-1
ADOPTED 11/15/99



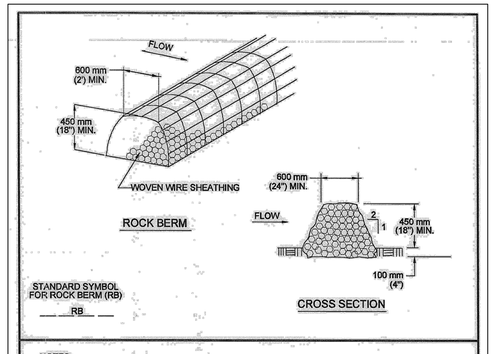
NOTES:
1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, THE CONCRETE TRACTOR MAY SUBSITITUTE A 25 mm X 100 mm (1" X 4") BOARD SECURED WITH CONCRETE NAILS 1 m (3') O.C. NAILED INTO THE GUTTER IN LIEU OF SANDBAGS TO HOLD THE FILTER DIKE IN PLACE. UPON REMOVAL, CLEAN ANY DIRT/DEBRIS FROM NAILING LOCATIONS. APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH SURFACE OF GUTTER.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUSTBE REMOVED WHEN DEPTH REACHES 50 mm (2").
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
FILTER DIKE CURB INLET PROTECTION
RECORD COPY SIGNED BY J. PATRICK MURPHY 2/21/01 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 628S-2



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.

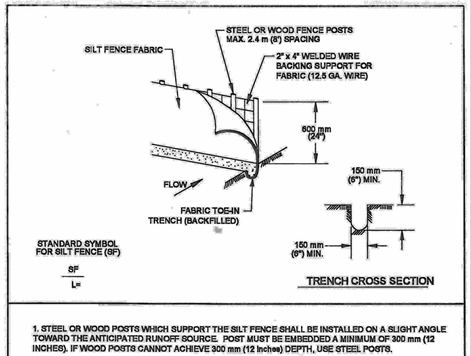
CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
STABILIZED CONSTRUCTION ENTRANCE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 641S-1
ADOPTED 5/23/00



STANDARD SYMBOL FOR ROCK BERM (RB)
RB

NOTES:
1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
ROCK BERM
8/24/2010 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 639S-1



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 PROTEDTION DEPARTMENT
SILT FENCE
9/1/2011 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 642S-1

CONSTRUCTION PLAN APPROVAL SHEET 142 OF 151
FILE NUMBER _____ APPLICATION DATE _____
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE _____ CASE MANAGER _____

City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: _____ ZONING N/A
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

PERMIT NUMBER:

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
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PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

11/24/2025
STATE OF TEXAS — SARAH F. STARKEY — 145662 — LICENSED PROFESSIONAL ENGINEER

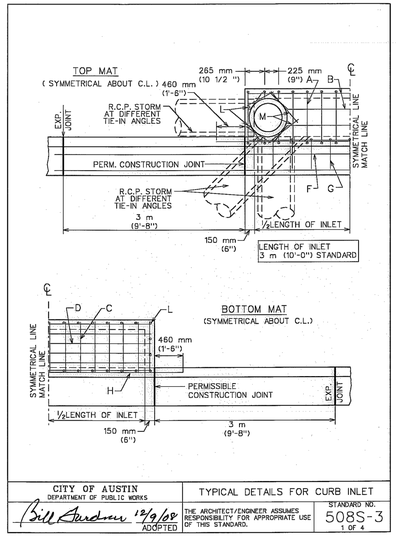
KHA PROJECT 069422602
DATE: NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

EROSION CONTROL DETAILS

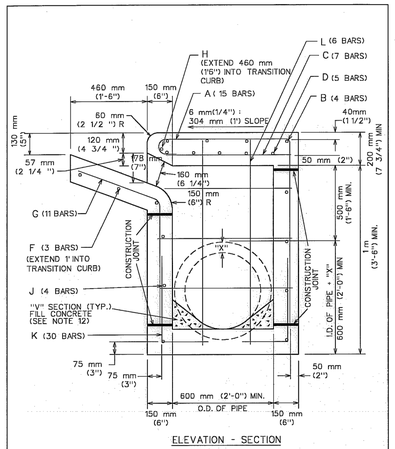
THE RESERVE AT COLE SPRINGS PHASE 1
CITY OF BUDA
HAYS COUNTY, TEXAS

SHEET NUMBER
142 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 - 11:28:32am File Path: K:\Aus_civil\069422600 - buda 98\Cad\Phase 1\plansheets\C-Erosion Control Details.dwg
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CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 1 OF 4

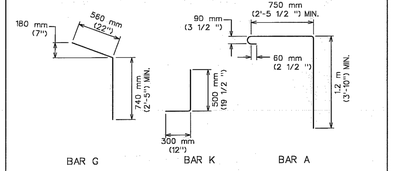


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 2 OF 4

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")	6	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'-4")	17
M	4	-	4	500 mm (1'-8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.06

• EXCEPT AS SHOWN ON PLAN

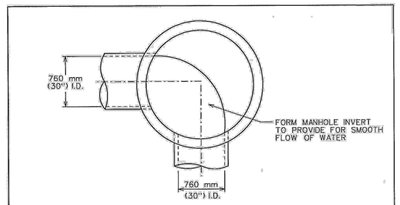


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 3 OF 4

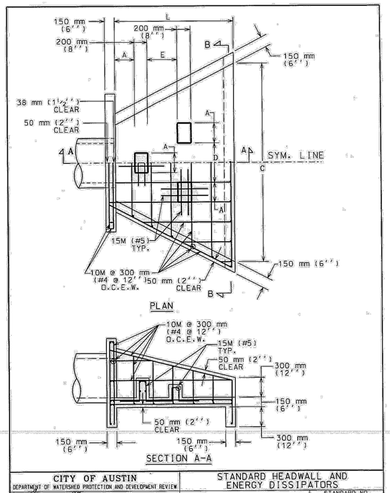
NOTES:
1. ALL CONCRETE SHALL BE CLASS "A"
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (380 mm or 15" MIN. LAP) IN THE LOWER ONE-HALF OF ALL INLET WALLS.5. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
6. 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 "V" 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".

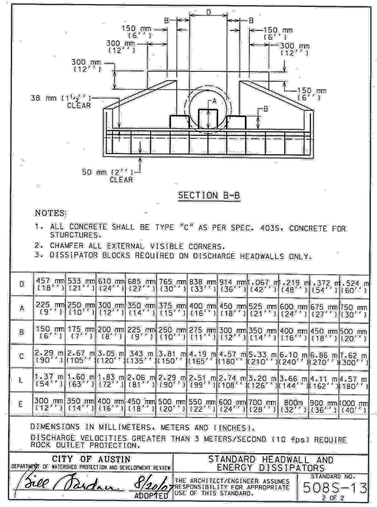
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 4 OF 4



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	MANHOLE INVERT PLAN	
George E. Dowell 2/14/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-1



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	
Bill Gardner 8/20/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-13 1 OF 2

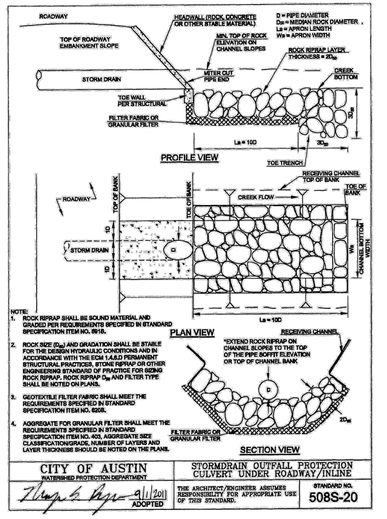


NOTES:
1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S. CONCRETE FOR STRUCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

D	457 mm (18")	533 mm (21")	610 mm (24")	685 mm (27")	765 mm (30")	838 mm (33")	914 mm (36")	.067 m³ (42")	.219 m³ (48")	.372 m³ (54")	.524 m³ (60")		
A	225 mm (9")	250 mm (10")	300 mm (12")	350 mm (14")	375 mm (15")	400 mm (16")	450 mm (18")	525 mm (21")	600 mm (24")	675 mm (27")	750 mm (30")		
B	150 mm (6")	175 mm (7")	200 mm (8")	225 mm (9")	250 mm (10")	275 mm (11")	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")		
C	2.29 m (90")	2.67 m (105")	3.05 m (120")	3.43 m (135")	3.81 m (150")	4.19 m (165")	4.57 m (180")	5.33 m (210")	6.10 m (240")	6.86 m (270")	7.62 m (300")		
L	1.37 m (54")	1.60 m (63")	1.83 m (72")	2.06 m (81")	2.29 m (90")	2.51 m (99")	2.74 m (108")	3.20 m (126")	3.66 m (144")	4.11 m (162")	4.57 m (180")		
E	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")	550 mm (22")	600 mm (24")	700 mm (28")	800 mm (32")	900 mm (36")	1000 mm (40")		

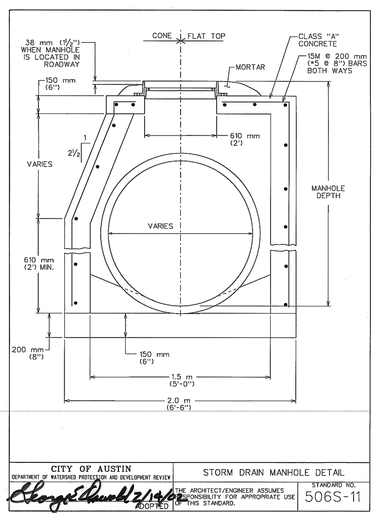
DIMENSIONS IN MILLIMETERS, METERS AND (INCHES).
DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	
Bill Gardner 8/20/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-13 2 OF 2

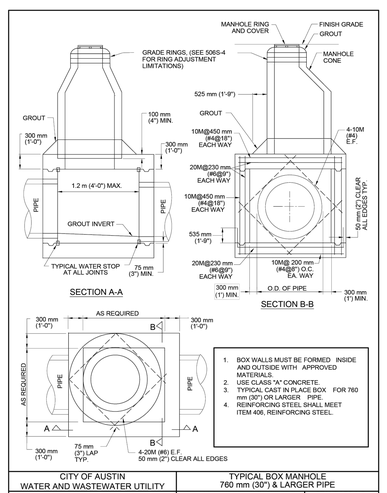


NOTE:
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 601S.
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE ECM 1.6.6.D PERMANENT STRUCTURAL PRACTICES. STONE RIPRAP OR OTHER ENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP D_{50} AND FILTER TYPE SHALL BE NOTED ON PLANS.
3. GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 604S.
4. AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 403. AGGREGATE SIZE CLASSIFICATION/GRADE, NUMBER OF LAYERS AND LAYER THICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORMDRAIN OUTFALL PROTECTION CULVERT UNDER ROADWAY/INLINE	
Bill Gardner 11/1/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-20

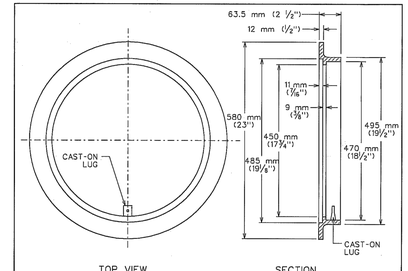


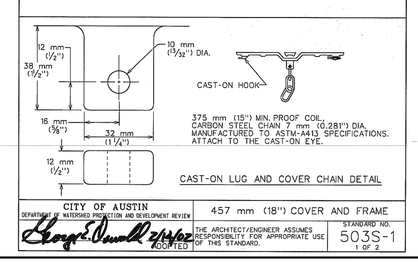
CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STORM DRAIN MANHOLE DETAIL	
George E. Dowell 2/14/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-11



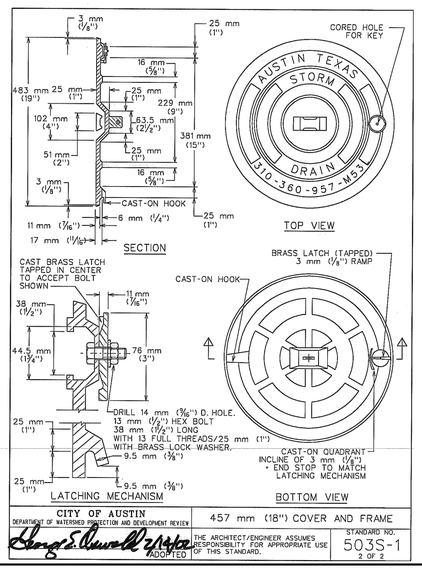
1. BOX WALLS MUST BE FORMED INSIDE AND OUTSIDE WITH APPROVED MATERIALS.
2. USE CLASS "A" CONCRETE.
3. TYPICAL CAST IN PLACE BOX FOR 760 mm (30") OR LARGER PIPE.
4. REINFORCING STEEL SHALL MEET ITEM 406, REINFORCING STEEL.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY	TYPICAL BOX MANHOLE 760 mm (30") & LARGER PIPE	
RECORD COPY SIGNED BY KATHI F. PAYNE 2/17/00 ADOPTED	THE ENGINEER/ARCHITECT ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. MODIFICATIONS TO THIS STANDARD ARE PROHIBITED.	STANDARD NO. 506S-5 1 OF 1

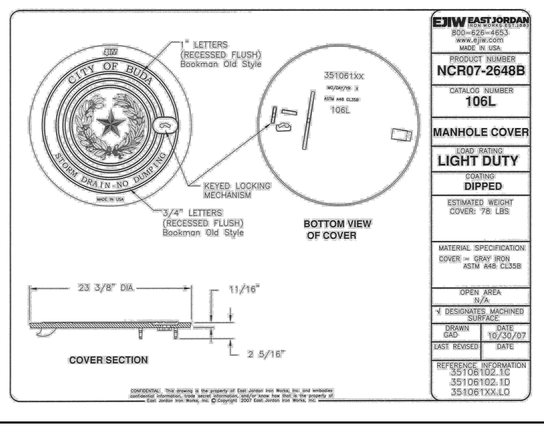


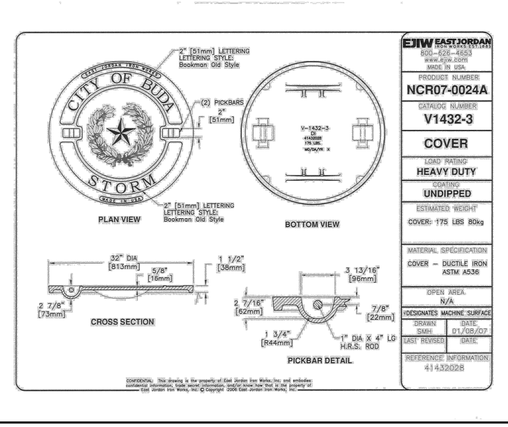


CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	457 mm (18") COVER AND FRAME	
George E. Dowell 2/14/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-1 1 OF 2



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	457 mm (18") COVER AND FRAME	
George E. Dowell 2/14/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-1 2 OF 2







STORM DRAIN WATERWAY MARKER DETAIL

CONSTRUCTION PLAN APPROVAL SHEET 147 OF 151
FILE NUMBER APPLICATION DATE
APPROVED BY COMMISSION ON N/A UNDER THE CITY OF BUDA UNIFIED DEVELOPMENT CODE.
EXPIRATION DATE CASE MANAGER
City Engineer, City of Buda
RELEASED FOR GENERAL COMPLIANCE: ZONING N/A
Rev. 1 Correction 1
Rev. 2 Correction 2
Rev. 3 Correction 3
Final plat must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.
PERMIT NUMBER:

Kimley»Horn
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5301 SOUTHWEST PARKWAY, BUILDING 2, SUITE 100, AUSTIN, TX 78735
PHONE: 512-646-2237 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

No.	REVISIONS	DATE	BY

11/24/2025
STATE OF TEXAS SARAH F. STARKEY 145662 LICENSED PROFESSIONAL ENGINEER
Sarah Starkey

KHA PROJECT 069422602
DATE NOVEMBER 2025
SCALE: AS SHOWN
DESIGNED BY: KB
DRAWN BY: KB
CHECKED BY: RBW

THE RESERVE AT COLE SPRINGS PHASE 1
CITY OF BUDA
HAYS COUNTY, TEXAS

STORM DETAILS (SHEET 1 OF 2)

SHEET NUMBER
147 OF 151

Plotted By: Flynn, Alyssa Date: December 05, 2025 11:28:52am File Path: K:\ops_civil\069422600 – buda 08\Civil\Phase 1\plansheet\C-Storm Drain Details.dwg
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TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (1)

Slope (S) (ft/ft)	Values for One Pipe W	Values for One Pipe Reinf. (CY) (2)	Values for One Pipe Conc. (CY) (2)	Values To Be Added For Each Addtl Pipe W	Values To Be Added For Each Addtl Pipe Reinf. (CY) (2)	Values To Be Added For Each Addtl Pipe Conc. (CY) (2)
12"	9'-0"	1.02	1.1	1'-9"	1.5	0.2
15"	10'-3"	1.36	1.3	2'-2"	1.6	0.2
18"	11'-6"	1.83	1.5	2'-8"	1.9	0.3
21"	12'-9"	2.00	1.8	3'-1"	3.1	0.4
24"	14'-0"	2.17	2.1	3'-7"	3.4	0.4
27"	15'-3"	2.54	2.4	3'-11"	3.7	0.5
30"	16'-6"	2.72	2.7	4'-4"	4.0	0.6
33"	17'-9"	3.14	3.1	4'-8"	4.3	0.6
36"	19'-0"	3.71	3.5	5'-1"	4.6	0.8
42"	21'-6"	4.42	4.8	5'-10"	5.2	1.0
48"	25'-0"	5.69	6.4	6'-5"	5.9	1.2
54"	27'-6"	7.01	7.5	7'-0"	8.2	1.6
60"	30'-0"	7.94	8.8	8'-3"	9.0	1.8
66"	32'-6"	8.94	10.2	8'-9"	9.6	2.0
72"	35'-0"	1.055	11.7	9'-4"	10.3	2.3
12"	9'-3"	1.05	1.2	1'-9"	1.6	0.2
15"	14'-9"	1.93	1.9	2'-2"	1.7	0.2
18"	16'-6"	2.28	2.2	2'-8"	1.9	0.3
21"	18'-3"	2.99	2.6	3'-1"	3.1	0.4
24"	20'-0"	3.03	3.0	3'-7"	3.3	0.4
27"	21'-9"	3.71	3.5	3'-11"	3.7	0.5
30"	23'-6"	4.15	4.0	4'-4"	4.0	0.5
33"	25'-3"	4.69	4.6	4'-8"	4.3	0.6
36"	27'-0"	5.56	5.7	5'-1"	4.6	0.8
42"	30'-6"	6.73	7.1	5'-10"	5.2	1.0
48"	35'-6"	8.37	9.2	6'-5"	5.9	1.2
54"	39'-0"	1.015	11.0	7'-0"	8.4	1.6
60"	42'-6"	1.171	12.9	8'-3"	9.1	1.8
66"	46'-0"	1.298	14.8	8'-9"	9.8	2.0
72"	49'-6"	1.561	17.1	9'-4"	10.5	2.3
12"	9'-6"	1.07	1.2	1'-9"	1.6	0.2
15"	19'-3"	.966	2.4	2'-2"	1.7	0.2
18"	21'-0"	.308	2.9	2'-8"	1.9	0.3
21"	22'-9"	.382	3.5	3'-1"	3.1	0.3
24"	24'-6"	4.03	3.9	3'-7"	3.3	0.4
27"	28'-3"	486	4.1	3'-11"	3.7	0.5
30"	30'-0"	5.39	5.2	4'-4"	4.0	0.6
33"	32'-9"	6.03	6.0	4'-8"	4.2	0.6
36"	35'-0"	7.38	7.5	5'-1"	4.7	0.8
42"	39'-6"	8.93	9.5	5'-10"	5.2	1.0
48"	46'-0"	1.102	12.1	6'-7"	6.1	1.3
54"	50'-6"	1.364	14.3	7'-0"	8.5	1.6
60"	55'-0"	1.547	16.9	8'-3"	9.1	1.8
66"	59'-6"	1.741	19.5	8'-9"	9.8	2.0
72"	64'-0"	2.071	22.4	9'-4"	10.5	2.3
12"	9'-9"	1.09	1.3	1'-9"	1.6	0.2
15"	20'-3"	384	3.6	2'-2"	1.7	0.2
18"	21'-9"	452	4.2	2'-8"	1.9	0.3
21"	24'-9"	581	5.1	3'-1"	3.1	0.4
24"	28'-0"	644	5.8	3'-7"	3.4	0.4
27"	31'-3"	737	6.8	3'-11"	3.7	0.5
30"	34'-6"	807	7.7	4'-4"	3.9	0.6
33"	37'-9"	912	8.9	4'-8"	4.4	0.6
36"	41'-0"	1.108	11.0	5'-1"	4.8	0.8
42"	47'-3"	1.318	13.7	5'-10"	5.4	1.0
48"	53'-6"	1.682	17.8	6'-7"	5.9	1.3
54"	59'-9"	2.072	21.3	7'-0"	8.3	1.6
60"	66'-0"	2.393	24.8	8'-3"	8.9	1.8
66"	72'-3"	2.643	28.0	8'-9"	9.6	2.0
72"	78'-6"	3.125	33.1	9'-4"	10.1	2.3

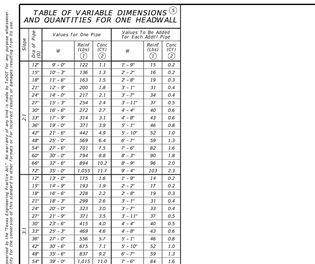
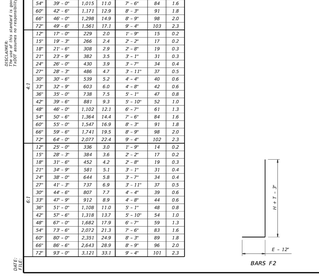


TABLE OF CONSTANT DIMENSIONS

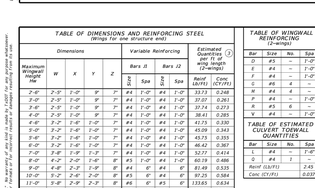
Dia of Pipe (D)	G	K (6)	H	T	E
12"	0'-9"	1'-0"	2'-8"	0'-9"	1'-9"
15"	0'-11"	1'-0"	2'-10"	0'-9"	1'-9"
18"	1'-2"	1'-0"	3'-2"	0'-9"	1'-9"
21"	1'-4"	1'-0"	3'-5"	0'-9"	2'-0"
24"	1'-7"	1'-0"	3'-8"	0'-9"	2'-0"
27"	1'-9"	1'-0"	3'-10"	0'-9"	2'-3"
30"	1'-10"	1'-0"	4'-2"	0'-9"	2'-3"
33"	1'-11"	1'-0"	4'-5"	0'-9"	2'-6"
36"	2'-1"	1'-0"	4'-8"	1'-0"	2'-6"
42"	2'-4"	1'-0"	5'-1"	1'-0"	2'-9"
48"	2'-7"	1'-3"	5'-7"	1'-0"	3'-0"
54"	2'-10"	1'-3"	6'-1"	1'-0"	3'-3"
60"	3'-1"	1'-3"	6'-7"	1'-0"	3'-6"
66"	3'-4"	1'-3"	7'-1"	1'-0"	3'-9"
72"	3'-7"	1'-3"	7'-7"	1'-0"	4'-0"

TABLE OF REINFORCING STEEL (4)

Bar	Size	Spa	No.
F1	#5	1'-0"	–
F2	#5	1'-0"	–



1. Total quantities include one 3'-1" lap for bars over 60' in length.
2. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
3. Dimension E is perpendicular to centerline pipe or pipes.
4. For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
5. Dimensions shown are usual and maximum.
6. Quantities shown are for one structure and only (one headwall).



MATERIAL NOTES:
Provide Class C reinforcing steel.
Provide Class C concrete (f'_c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
The standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

File: CH-CH-PW0-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (1)

Slope (S) (ft/ft)	Values for One Pipe W	X	Y	L	Reinf. (CY) (2)	Conc. (CY) (2)	Values to be Added for Each Addtl Pipe X and W	Reinf. (CY) (2)	Conc. (CY) (2)
12"	4'-7 ½"	2'-4"	2'-10"	7'-3 ½"	88	0.6	1'-9"	20	0.2
15"	5'-5 ½"	2'-9 ½"	3'-4"	7'-10 ½"	103	0.7	2'-2"	24	0.3
18"	6'-4 ½"	3'-1"	3'-10"	8'-4 ½"	126	0.9	2'-8"	30	0.3
21"	7'-2 ½"	3'-4 ½"	4'-4"	9'-0"	143	1.1	3'-1"	43	0.4
24"	8'-1 ½"	3'-9 ½"	4'-10"	9'-7"	164	1.3	3'-7"	50	0.5
27"	9'-1"	4'-1"	5'-4"	6'-2"	178	1.5	3'-11"	56	0.6
30"	9'-11 ½"	4'-4 ½"	5'-10"	6'-8 ½"	203	1.7	4'-4"	65	0.8
33"	10'-10"	4'-8"	6'-4"	7'-3 ½"	224	2.0	4'-8"	71	0.8
36"	11'-8 ½"	4'-11 ½"	6'-10"	7'-10 ½"	248	2.2	5'-1"	81	1.0
42"	13'-5 ½"	5'-6 ½"	7'-10"	9'-0 ½"	298	2.8	5'-10"	97	1.3
48"	15'-2"	6'-2"	8'-9"	10'-1 ½"	345	3.4	6'-7"	117	1.7
54"	17'-5 ½"	6'-8 ½"	10'-4"	11'-11 ½"	422	4.5	7'-0"	151	2.1
60"	19'-2 ½"	7'-3 ½"	11'-4"	13'-1"	481	5.3	8'-3"	174	2.5
66"	20'-11"	7'-10 ½"	12'-4"	14'-2"	544	6.2	8'-9"	194	2.9
72"	22'-8 ½"	8'-5 ½"	13'-4"	15'-4 ½"	601	7.1	9'-4"	213	3.3
12"	5'-1"	2'-6"	2'-8"	7'-3"	4'-11"	118	0.8	1'-9"	22	0.2
15"	7'-3"	2'-9 ½"	3'-0"	7'-9 ½"	137	1.1	2'-2"	28	0.3
18"	8'-6 ½"	3'-2"	3'-4"	8'-4 ½"	170	1.3	2'-8"	37	0.3
21"	9'-8 ½"	3'-6 ½"	3'-8"	9'-0"	195	1.6	3'-1"	48	0.6
24"	11'-0"	3'-9 ½"	3'-7"	8'-4 ½"	222	2.0	3'-7"	58	0.7
27"	12'-2"	4'-1"	4'-0"	9'-2 ½"	251	2.3	3'-11"	67	0.8
30"	13'-4"	4'-4 ½"	4'-4"	10'-1 ½"	293	2.7	4'-4"	77	1.0
33"	14'-5 ½"	4'-8"	4'-8"	10'-11 ½"	318	3.1	4'-8"	84	1.2
36"	15'-7"	4'-11 ½"	5'-0"	11'-10"	351	3.5	5'-1"	96	1.4
42"	17'-11 ½"	5'-6 ½"	5'-7"	13'-4 ½"	432	4.5	5'-10"	118	1.7
48"	21'-1 ½"	6'-1 ½"	6'-5"	15'-2"	537	6.1	6'-7"	146	2.3
54"	23'-5 ½"	6'-8 ½"	7'-0"	16'-7"	630	7.3	7'-0"	186	2.8
60"	25'-9 ½"	7'-3 ½"	7'-7"	18'-1 ½"	719	8.7	8'-3"	219	3.4
66"	28'-1"	7'-10 ½"	8'-0"	19'-4 ½"	811	10.1	8'-9"	242	3.9
72"	30'-4 ½"	8'-5 ½"	8'-5"	20'-10"	894	11.7	9'-4"	272	4.4
12"	5'-3"	2'-6"	2'-8"	7'-3"	5'-0"	148	1.1	1'-9"	22	0.2
15"	7'-6"	2'-9 ½"	3'-0"	7'-8 ½"	181	1.5	2'-2"	32	0.4
18"	8'-9"	3'-2"	3'-4"	8'-3 ½"	221	1.9	2'-8"	42	0.5
21"	10'-0"	3'-5 ½"	3'-8"	8'-11"	260	2.3	3'-1"	57	0.7
24"	11'-4"	3'-9 ½"	3'-11"	9'-6 ½"	301	2.8	3'-7"	67	0.9
27"	12'-7"	4'-1"	4'-2"	10'-4"	334	3.3	3'-11"	77	1.0
30"	13'-8 ½"	4'-4 ½"	4'-5"	11'-2 ½"	370	3.8	4'-4"	89	1.2
33"	14'-11"	4'-8"	4'-8"	11'-11"	425	4.5	4'-8"	101	1.4
36"	16'-1"	4'-11 ½"	4'-11"	12'-9 ½"	472	5.1	5'-1"	115	1.7
42"	18'-6"	5'-6 ½"	5'-5"	14'-4"	581	6.5	5'-10"	141	2.1
48"	21'-6"	6'-1"	5'-11"	15'-7"	680	8.0	6'-7"	175	2.8
54"	24'-1"	6'-8"	6'-4"	16'-11"	730	8.9	7'-0"	206	3.4
60"	26'-5"	7'-3"	6'-10"	18'-5"	785	10.1	8'-3"	226	3.8
66"	28'-9"	7'-10"	7'-3"	19'-8"	861	11.5	8'-9"	240	4.2
72"	31'-1"	8'-5"	7'-8"	21'-2"	930	13.2	9'-4"	262	4.7
12"	5'-5"	2'-6"	2'-8"	7'-3"	5'-3"	178	1.3	1'-9"	28	0.4
15"	7'-9"	2'-9 ½"	3'-0"	7'-8"	5'-8"	214	1.8	2'-2"	37	0.5
18"	9'-0"	3'-2"	3'-4"	8'-3"	6'-2"	260	2.3	2'-8"	50	0.7
21"	10'-3"	3'-5 ½"	3'-8"	8'-11"	6'-8"	301	2.8	3'-1"	69	0.9
24"	11'-6"	3'-9 ½"	3'-11"	9'-6 ½"	6'-11"	353	3.4	3'-7"	80	1.1
27"	12'-9"	4'-1"	4'-2"	10'-4"	7'-5"	393	4.0	3'-11"	90	1.3
30"	13'-11"	4'-4 ½"	4'-5"	11'-2 ½"	8'-0"	437	4.6	4'-4"	103	1.5
33"	15'-2"	4'-8"	4'-8"	11'-11 ½"	8'-5"	498	5.3	4'-8"	117	1.8
36"	16'-4"	4'-11 ½"	4'-11"	12'-9 ½"	9'-0"	552	6.0	5'-1"	133	2.1
42"	18'-9"	5'-6 ½"	5'-5"	14'-4"	10'-0"	680	7.6	5'-10"	163	2.7
48"	21'-10"	6'-1"	5'-11"	15'-7"	11'-0"	796	9.3	6'-7"	202	3.5
54"	24'-5"	6'-8"	6'-4"	16'-11"	11'-8"	855	10.4	7'-0"	239	4.0
60"	26'-9"	7'-3"	6'-10"	18'-5"	12'-9"	919	11.8	8'-3"	261	4.4
66"	29'-1"	7'-10"	7'-3"	19'-8"	13'-7"	1,008	13.4	8'-9"	278	4.8
72"	31'-6"	8'-5"	7'-8"	21'-2"	14'-6"	1,089	15.2	9'-4"	302	5.3
12"	5'-7"	2'-6"	2'-8"	7'-3"	5'-5"	208	1.5	1'-9"	28	0.4
15"	7'-10"	2'-9 ½"	3'-0"	7'-8"	5'-10"	268	2.3	2'-2"	37	0.5
18"	9'-3"	3'-2"	3'-4"	8'-3"	6'-4"	320	3.0	2'-8"	50	0.7
21"	10'-6"	3'-5 ½"	3'-8"	8'-11"	6'-10"	380	3.8	3'-1"	69	0.9
24"	11'-9"	3'-9 ½"	3'-11"	9'-6 ½"	7'-2"	453	4.8	3'-7"	80	1.2
27"	13'-0"	4'-1"	4'-2"	10'-4"	7'-8"	514	5.5	3'-11"	90	1.4
30"	14'-2"	4'-4 ½"	4'-5"	11'-2 ½"	8'-2"	581	6.5	4'-4"	103	1.7
33"	15'-5"	4'-8"	4'-8"	11'-11 ½"	8'-8"	653	7.6	4'-8"	117	2.0
36"	16'-7"	4'-11 ½"	4'-11"	12'-9 ½"	9'-1"	715	8.6	5'-1"	133	2.4
42"	19'-0"	5'-6 ½"	5'-5"	14'-4"	10'-2"	860	10.8	5'-10"	163	3.1
48"	22'-2"	6'-1"	5'-11"	15'-7"	11'-2"	1,006	13.3	6'-7"	202	4.0
54"	24'-9"	6'-8"	6'-4"	16'-11"	11'-11"	1,080	14.8	7'-0"	239	4.6
60"	27'-2"	7'-3"	6'-10"	18'-5"	12'-11"	1,161	16.8	8'-3"	261	5.0
66"	29'-6"	7'-10"	7'-3"	19'-8"	13'-9"	1,274	19.0	8'-9"	278	5.5
72"	32'-0"	8'-5"	7'-8"	21'-2"	14'-8"	1,376	21.4	9'-4"	302	6.1

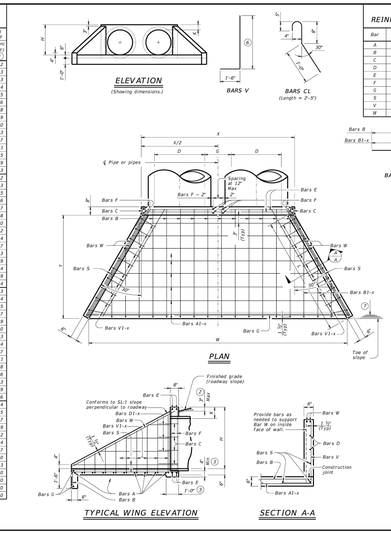


TABLE OF REINFORCING STEEL (3)

Bar	Size	Spa	No.
A	#4	1'-0"	–
B	#3	1'-0"	–
C	#4	1'-0"	–
D	#3	1'-0"	–
E	#5	–	4
F	#5	–	2
G	#3	–	2
S	#4	–	6
V	#4	1'-0"	–
W	#5	–	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (6)	H
12"	0'-9"	1'-0"	2'-0"
15"	0'-11"	1'-0"	2'-1"
18"	1'-2"	1'-0"	2'-4"
21"	1'-4"	1'-0"	2'-9"
24"	1'-7"	1'-0"	3'-0"
27"	1'-9"	1'-0"	3'-3"
30"	1'-10"	1'-0"	3'-6"
33"	1'-11"	1'-0"	3'-9"
36"	2'-1"	1'-0"	4'-0"
42"	2'-4"	1'-0"	4'-6"
48"	2'-7"	1'-3"	5'-3"
54"	2'-10"	1'-3"	5'-9"
60"	3'-1"	1'-3"	6'-3"
66"	3'-4"	1'-3"	6'-9"
72"	3'-7"	1'-3"	7'-3"

1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. Provide a 1'-0" footing as shown where required to maintain 4' minimum cover for pipes.
4. Dimensions shown are usual and maximum.
5. Quantities shown are for one structure and only (one headwall).
6. Min Length = $H + P + \left(\frac{1.5(F_2 - 2)}{12 \times S}\right) + \left(\frac{1.5(F_1 - 2)}{12 \times S}\right) - 1'$

   Max Length = $12 \times H - P + \left(\frac{1.5(F_2 - 2)}{12 \times S}\right) - 1'$
7. Lengths of wings based on SLI slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'_c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

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DISCLAIMER:
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TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)

Slope (S) (ft/ft)	Maximum Wingwall Height H	Dimensions W	X	Y	Z	Variable Reinforcing Bars E Spa	Bars E Size	Bars F Spa	Bars F Size	Estimated Quantities (CY) (2) Reinf. (Unit)	Conc. (Unit)
12"	3'-6"	3'-0"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
15"	3'-6"	3'-0"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
18"	3'-6"	3'-0"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
21"	3'-6"	3'-0"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.283
24"	4'-6"	3'-2"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
27"	4'-6"	3'-2"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
30"	5'-6"	3'-2"	1'-0"	7"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
33"	5'-6"	3'-2"	1'-0"	7"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
36"	5'-6"	3'-2"	1'-0"	7"	7"	#4	1'-0"	#4	1'-0"	52.77	0.415
42"	6'-0"	4'-2"	2'-0"	7"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
48"	6'-0"	4'-2"	2'-0"	7"	8"	#5	1'-0"	#4	1'-0"	81.49	0.535
54"	7'-0"	4'-2"	2'-0"	7"	8"	#5	1'-0"	#4	1'-0"	97.25	0.584
60"	7'-0"	4'-2"	2'-0"	7"	8"	#6	1'-0"	#5	1'-0"	133.65	0.634
66"	7'-0"	4'-2"	2'-0"	7"	8"	#6	1'-0"	#5	1'-0"	162.29	0.721
72"	7'-0"	4'-2"	2'-0"	7"	8"	#6	1'-0"	#5	1'-0"	178.80	0.856
12"	6'-2"	3'-2"	2'-0"	9"	8"	#5	1'-0"	#4	1'-0"	216.78	0.959
15"	7'-8"	4'-0"	2'-0"	1'-7"	#9	6"	#6	1'-0"	283.06	1.068	
18"	8'-2"	4'-4"	2'-0"	1'-7"	#9	6"	#6	1'-0"	297.02	1.234	

TABLE OF WINGWALL REINFORCING (3-wingtip)

Bar	Size	No.	Spa
D	#5	–	1'-0"
S	#4	–	1'-0"
I	#4	–	1'-0"
E	#6	4	–
N	#4	4	–
M	#4	–	1'-0"
R	#5	6	–
V	#4	–	1'-0"
L	#4	–	1'-0"
S	#4	1	–
Reinf (LS/YI)			2.45
Conc (CY/FI)			0.031

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
S	#4	1	–
Reinf (LS/YI)			2.45
Conc (CY/FI)			0.031

WING DIMENSION FORMULAS:
(All values are in feet.)

$H_W = H + T + C - 0.250$

$L_W = (H_W - 0.333) / SL_1$

For cast-in-place culverts:
$L_{TW} = (H_W / SL_1) + (H_W - 1) / 0.5$

For precast culverts:
$L_{TW} = (H_W / SL_1) + (H_W - 1) / 0.5$

Total Wingwall Area (two wings – SF) = $(H_W + 0.333) (L_W)$

H_W = Height of wingwall
SL_1 = Side slope ratio (horizontal:1 vertical)
L_W = Length of wingwall
L_{TW} = Length of toewall
N = Number of culvert spans

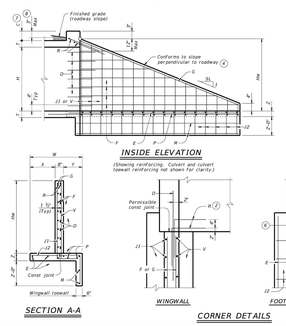
See applicable box culvert standard sheet for H, S, T, and U values.

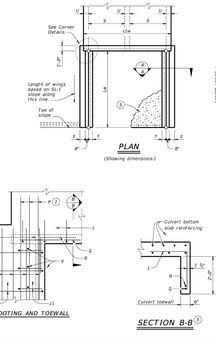
1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1/4" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.9.
4. Recommended values of slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 3" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap" Unless otherwise shown on the plans, for box culverts 10' or greater, provide 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap. Provide expansion joints in the toewall to match joints in riprap. Extend typical reinforcing into the toewall, and extend construction joints or grooved joints through the toewall. Provide a 1'-0" wide by 1'-0" deep reinforced concrete toewall along all edges of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. For H= 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with bridge rail, construct curbs flush with bridge rail other than T631 or T631LS.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'_c=3,600 psi).
Provide galvanized reinforcing steel if required elsewhere in the plans.
Fibers: Only synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Where the culvert is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See the Box Culvert Wingwall Details (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.





Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-0

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TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)

Slope (S) (ft/ft)	Maximum Wingwall Height H	Dimensions W	X	Y	Z	Variable Reinforcing Bars E Spa	Bars E Size	Bars F Spa	Bars F Size	Estimated Quantities (CY) (2) Reinf. (Unit)	Conc. (Unit)
12"	3'-10"	3'-0"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
15"	3'-10"	3'-0"	1'-0"	7