

**EDWARDS AQUIFER APPLICATION COVER PAGE
(TCEQ-20705)**

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: STONES CROSSING APARTMENTS					2. Regulated Entity No.:				
3. Customer Name: PEDCOR INVESTMENTS, a Limited Liability Company					4. Customer No.:				
5. Project Type: (Please circle/check one)	New ☒ X		Modification			Extension		Exception	
6. Plan Type: (Please circle/check one)	WPAP	CZP	SCS ☒ X	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	Residential		Non-residential ☒ X			8. Site (acres):		19.13	
9. Application Fee:	\$1,237.00		10. Permanent BMP(s):				BATCH DETENTION POND		
11. SCS (Linear Ft.):	2474		12. AST/UST (No. Tanks):				N.A.		
13. County:	BEXAR		14. Watershed:				SALADO CREEK		

Application Distribution

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

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

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

Austin Region			
County:	Hays	Travis	Williamson
Original (1 req.)	—	—	—
Region (1 req.)	—	—	—
County(ies)	—	—	—
Groundwater Conservation District(s)	☐ Edwards Aquifer Authority ☐ Barton Springs/ Edwards Aquifer ☐ Hays Trinity ☐ Plum Creek	☐ Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	☐ Austin ☐ Buda ☐ Dripping Springs ☐ Kyle ☐ Mountain City ☐ San Marcos ☐ Wimberley ☐ Woodcreek	☐ Austin ☐ Bee Cave ☐ Pflugerville ☐ Rollingwood ☐ Round Rock ☐ Sunset Valley ☐ West Lake Hills	☐ Austin ☐ Cedar Park ☐ Florence ☐ Georgetown ☐ Jerrell ☐ Leander ☐ Liberty Hill ☐ Pflugerville ☐ Round Rock

San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde
Original (1 req.)	—	—	—	—	—
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.

BRIAN CROWELL

Print Name of Customer/Authorized Agent

B. Crowell

08/12/2025

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):

GENERAL INFORMATION FORM
(TCEQ-0587)

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: BRIAN CROWELL

Date: 08/12/2025

Signature of Customer/Agent:

B. Crowell

Project Information

1. Regulated Entity Name: STONES CROSSING APARTMENTS

2. County: BEXAR

3. Stream Basin: SALADO CREEK

4. Groundwater Conservation District (If applicable): _____

5. Edwards Aquifer Zone:

☒ Recharge Zone

☐ Transition Zone

6. Plan Type:

☐ WPAP

☒ SCS

☐ Modification

☐ AST

☐ UST

☐ Exception Request

7. Customer (Applicant):

Contact Person: CRAIG H. LINTNER

Entity: PEDCOR INVESTMENTS, A Limited Liability Company

Mailing Address: 770 3RD Ave SW

City, State: CARMEL, INDIANA

Zip: 46032

Telephone: (317) 695-3018

FAX: (317) 587-0340

Email Address: clintner@pedcor.net

8. Agent/Representative (If any):

Contact Person: BRIAN CROWELL

Entity: CDS MUERY

Mailing Address: 100 NE Loop 410, Ste 300

City, State: San Antonio, TX

Zip: 78216

Telephone: (210) 581-1111

FAX: (210) 381-7844

Email Address: brian.crowell@cdsmuery.com

9. Project Location:

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

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

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: TO BE COORDINATED BETWEEN CDS
MUERY ENGINEER AND TCEQ.

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.

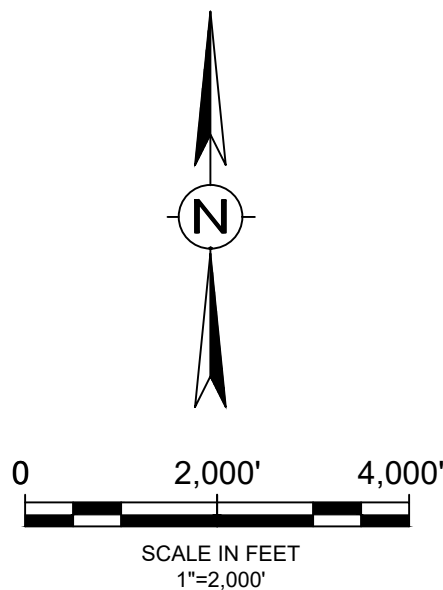
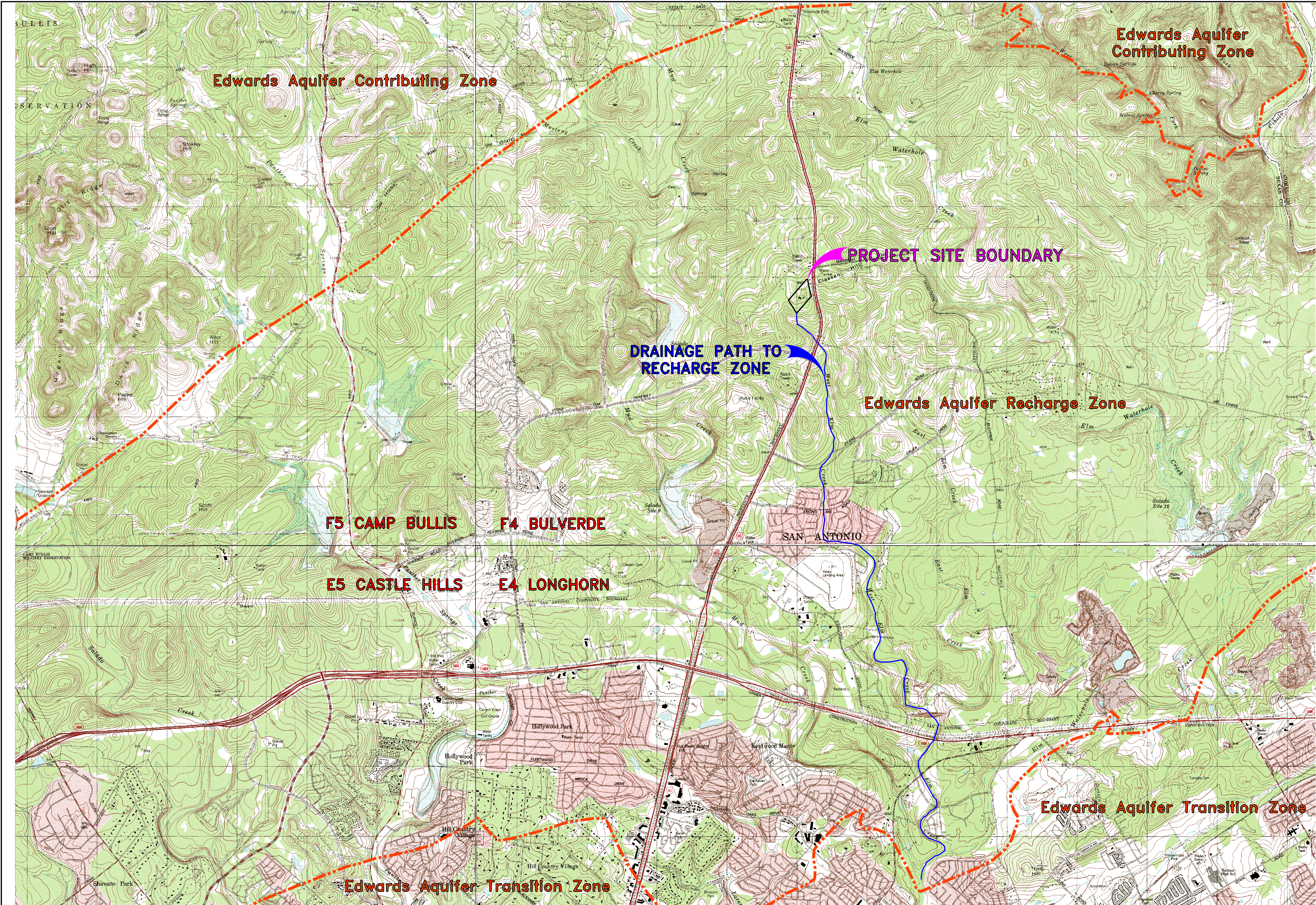
21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

**CANYON PASS APARTMENTS
GENERAL INFORMATION FORM**

ATTACHMENT A – ROAD MAP

**CANYON PASS APARTMENTS
GENERAL INFORMATION FORM**

ATTACHMENT B – USGS / EDWARDS RECHARGE ZONE MAP



- LEGEND
- RECHARGE ZONE
 - DRAINAGE PATH TO RECHARGE ZONE
 - SITE BOUNDARY

			DESIGNED BY	BC
			DRAWN BY	
			CHECKED BY	
			REVIEWED BY	BC
			DATE	5/28/2025
NO	DATE	REVISION	BY	



"ATTACHMENT B"
USGS & EDWARDS RECHARGE ZONE MAP

STONES CROSSING APARTMENTS
SAN ANTONIO, TX.

SHEET NO.

FILE NO. 124179

**CANYON PASS APARTMENTS
GENERAL INFORMATION FORM**

ATTACHMENT C – PROJECT DESCRIPTION

ATTACHMENT C – PROJECT DESCRIPTION

STONES CROSSING APARTMENTS

Stones Crossing Apartments is a proposed 18.847-acre, 336-unit apartment project located on the west side of Highway 281. An entrance to the project and a right turn lane are proposed along the adjacent US 281 access road.

The overall project area for TCEQ WPAP and SCS submittals is 19.12-acres (here after called the project area) because offsite improvements are proposed on the adjacent Highway 281 access road.

The site is currently largely undeveloped. The only current improvements within the project area are

- a. On-Site: an access road to four homes and overhead power lines.
- b. US 281 Access Road: - a two-lane road with a concrete curb and 6' wide sidewalk.

Additional existing development abutting the property includes an existing apartment development (Tacara Stone Oak) west of the property and a public storage development abutting the south property line. The land to the north of the property is currently undeveloped.

The scope of project improvements includes 14-three story apartment buildings, a clubhouse, twelve carports and three garages, parking for both automobiles and bicycles, curbs, walks and drives, retaining walls and amenities including a swimming pool, a playground, a pavilion, picnic tables and bar-b-que pits, a dog park, project sign and mail kiosk and other miscellaneous site work. Supporting infrastructure will include storm drains, one water quality and storm water detention pond, private sanitary sewers, private water mains, underground and overhead electric. A right turn lane will be provided on the US 281 access road to enhance project access.

A private on-site sanitary sewer main system will tie into an existing off-site manhole near the southwest corner of the project site.

Stones Crossing apartments is located on a topographic high point within the Salado Creek watershed and the majority of the drainage flow from the project will be collected and routed to proposed pond at southwest corner of the project site. A permanent BMP is proposed at this location using Batch Detention. The remaining drainage flow that is not captured by the Batch Detention pond will flow offsite to the existing multiple box culvert (east) and interceptor channel (west).

Stormwater detention will also be provided within this pond with detention storage volumes beginning at an elevation above the required batch detention storage volume. The batch detention BMPs will satisfy the increase in impervious cover associated with the site and the offsite improvements associated with the construction of a right turn lane on the US 281 access road.

Stormwater detention is provided to ensure that the development does not have an adverse drainage impact to abutting properties or infrastructure. The pond outflows are routed to the southwest corner of the project site, where it will be collected by an existing offsite interceptor channel. No offsite areas flow onto the Stones Crossing Apartment site.

The total impervious cover proposed for the project is 9.80-acres. The predevelopment impervious cover is 1.11-acres for a net increase in impervious cover of 8.69-acres.

GEOLOGIC ASSESSMENT FORM
(TCEQ-0585)

April 16, 2025
(Revised: April 18, 2025)

Mr. Jarreth Vance
Pedcor Investments, A Limited Liability Company
770 3rd Ave SW
Carmel, Indiana 46032

Via Email: JaVance@pedcor.net

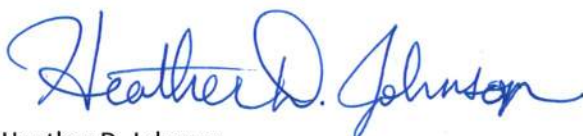
Re: Stones Crossing – Geologic Assessment

Dear Mr. Vance:

Please find enclosed a Geologic Assessment report, which summarizes our findings on the Stones Crossing property. We have enjoyed working on this project for Pedcor Investments, A Limited Liability Company.

If you have questions or require additional information, please do not hesitate to contact us at your earliest convenience.

Sincerely,
Pape-Dawson Consulting Engineers, LLC



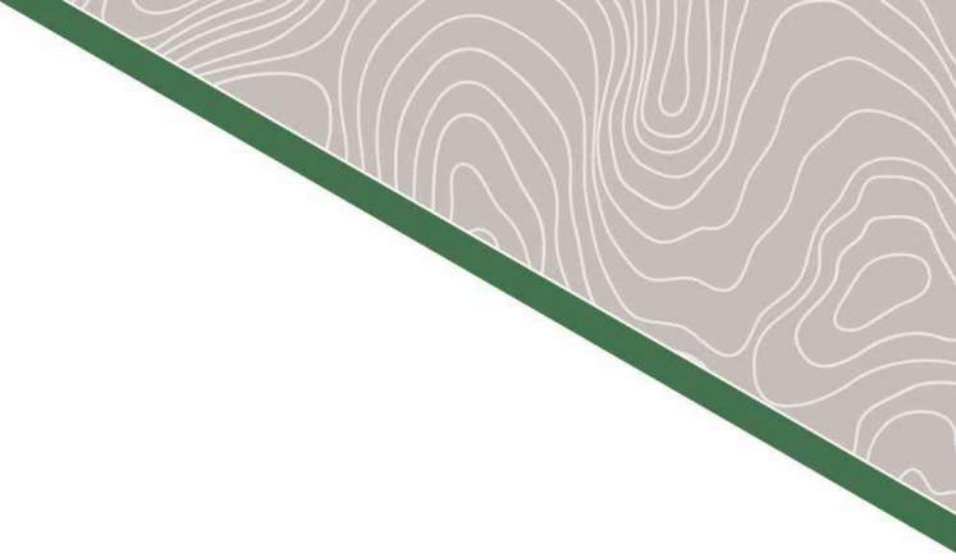
Heather D. Johnson
Senior Environmental Manager



Henry E. Stultz, III, P.G.
Project Geoscientist

Attachments

P:\131\27\02\ENV\GA\Report\GA Cover Letter R1.docx



STONES CROSSING

Geologic Assessment



Transportation | Water Resources | Land Development | Surveying | Environmental

STONES CROSSING

Geologic Assessment

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: Henry E. Stultz III, P.G.

Telephone: 210-375-9000

Date: April 18, 2025

Fax: 210-375-9090

Representing: Pape-Dawson Engineers, Inc., TBPGE registration number 50351

Signature of Geologist:



Regulated Entity Name: Stones Crossing

Project Information

1. Date(s) Geologic Assessment was performed: April 9, 2025

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)
Eckrant very cobbly clay, 5-15% slopes (TaC)	D	1-2

** 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" = 100'

Site Geologic Map Scale: 1" = 100'

Site Soils Map Scale (if more than 1 soil type): N/A

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 three (3) 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.

ATTACHMENT A
Geologic Assessment Table

GEOLOGIC ASSESSMENT TABLE									PROJECT NAME: Stones Crossing											
LOCATION			FEATURE CHARACTERISTICS											EVALUATION		PHYSICAL SETTING				
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	≥40	<1.6	≥1.6	
S-1	29.65741°	-98.45269°	MB	30	Kek	0.5	0.5						NX	20	50		50	X		Hillside
S-2	29.65724°	-98.45285°	MB	30	Kek	0.5	0.5	436					NX	20	50		50	X		Hillside
S-3	29.65721°	-98.45308°	MB	30	Kek	0.5	0.5						NX	20	50		50	X		Hillside
S-4	29.65685°	-98.45226°	MB	30	Kek	40	20	6					X	5	35	35		X		Hillside
S-5	29.65703°	-98.45271°	MB	30	Kek								FC	5	35	35		X		Hillside
S-6	29.65699°	-98.45207°	MB	30	Kek								FC	5	35	35		X		Hillside
S-7	29.65693°	-98.45165°	MB	30	Kek								FC	5	35	35		X		Hillside
S-8	29.65736°	-98.45185°	SC	20	Kek	2	3	1					F	10	30	30		X		Hillside
S-9	29.65797°	-98.45204°	SC	20	Kek	1	1	0.5					F	10	30	30		X		Hillside

** DATUM: NAD 83



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

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

12 TOPOGRAPHY	
Cliff, Hilltop, Hillside, 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 April 18, 2025

ATTACHMENT B
Stratigraphic Column

STONES CROSSING

Geologic Assessment (TCEQ-0585)

Attachment B – Stratigraphic Column

Period	Epoch	Group	Formation	Member	Thickness	Lithology	Hydro-logic Unit	Hydro-stratigraphic Unit	Hydrologic Function	Porosity	Cavern Development	
Cretaceous	Early Cretaceous	Edwards	Kainer	Grainstone	40–50	Hard, dense limestone that consists mostly of a tightly cemented miliolid skeletal fragment grainstone; contains interspersed chalky mudstone and wackestone; chert as beds and nodules; crossbedding and ripple marks are common primarily at the contact with the overlying regional dense bed	Edwards Aquifer	V	Aquifer	IP, IG, BU, FR, BP, CV	Few	
				Kirsch-berg Evaporite	40–50	Highly altered crystalline limestone and chalky mudstone with occasional grainstone associated with tidal channels; chert as beds and nodules, boxwork molds are common, matrix recrystallized to a coarse grain spar; intervals of collapse breccia and travertine deposits		VI	Aquifer	IG, MO, VUG, FR, BR, CV	Probably extensive cave development	
				Dolomitic	90–120	Hard, dense to granular, dolomitic limestone; chert as beds and nodules (absent in lower 20 ft); <i>Toucasia</i> sp. abundant; lower three-fourths composed of sucrosic dolomites and grainstones with hard, dense limestones interspersed; upper one-fourth composed mostly of hard, dense mudstone, wackestone, packstone, grainstone, and recrystallized dolomites with bioturbated beds		VII	Aquifer	IP, IC, IG, MO, BU, VUG, FR, BP, CV	Cave development as shafts with minor horizontal extent	
				Basal nodular	40–50	Moderately hard, shaly, nodular, burrowed mudstone to miliolid grainstone that also contains dolomite; contains dark, spherical textural features known as black rotund bodies; <i>Ceratostreon texana</i> , <i>Caprina</i> sp., miliolids, and gastropods		VIII	Aquifer, confining unit in areas without caves	IP, MO, BU, BP, FR, CV	Large lateral caves at surface	
		Trinity	Glen Rose Limestone	Upper Glen Rose	0–120 (absent in northern Comal Co.)	Alternating resistant and nonresistant beds of blue shale, nodular marl, and impure, fossiliferous limestone; gray to yellowish gray; stair-step topography; contains two distinct evaporite zones; distinct <i>Corbula</i> sp. bed marks the contact with the underlying lower member of the Glen Rose Limestone; <i>Orbitulina texana</i>	Upper Trinity Lower confining unit to the Edwards aquifer	Cavernous		Aquifer	MO, BR, BP, FR, CV	Some surface cave development
					120–230 (thicker in northern Comal Co.)			Camp Bullis		Confining	BU, BP, FR, occasional CV	
					0–10			Upper evaporite		Aquifer	IP, MO, BU, BR	
					0–40			Fossiliferous	Upper	Aquifer	MO, BU, FR, CV	
					80–150				Lower	Confining	MO, BU, FR	
					8–10			Lower evaporite		Aquifer	IP, MO, BU, BR	
				Lower Glen Rose	30–40 (typ. 30)	Massive, fossiliferous limestone grading upward into thin beds of limestone, dolomite, marl, and shale; numerous caves and reefs occur in the lower portion of the member; <i>Orbitulina texana</i> , <i>Caprina</i> sp., <i>Toucasia</i> sp., <i>Trigonia</i> sp., <i>Turritella</i> sp., miliolids, and various corals common; contains trace fossil burrows, oysters, pectens, and shell fragments	Middle Trinity	Bulverde		Semi-confining	MO, BR BP, FR	-
					30–40 (typ. 30)			Little Blanco		Aquifer	MO, BU, BP, FR	
					10–66 (typ. 30)			Twin Sisters		Semi-confining, confining shale beds	IP	
					40–80 (typ. 40)			Doeppenschmidt		Aquifer	IP, MO, BU, BP, FR, CV	
					40–70 (typ. 40)			Rust		Semi-confining	IP, FR, CV	
					45–60 (typ. 55)			Honey Creek		Aquifer	IP, MO, BU, BP, FR, CH, CV	

Source: Clark, Golab, and Morris (2016); Cavern development modified from Stein and Ozuna (1995). Porosity types - Fabric selective: IP, interparticle porosity; IG, intergranular porosity; IC, intercrystalline porosity; SH, shelter porosity; MO, moldic porosity; BU, burrowed porosity; FE, fenestral; BP, bedding plane porosity. Not fabric selective: FR, fracture porosity; CH, channel porosity; BR, breccia; VUG, vug porosity; CV, cave porosity.

ATTACHMENT C

Site Geology

STONES CROSSING

Geologic Assessment

Attachment C – Site Geology

SUMMARY

The Stones Crossing site is located at 23211 US-281, San Antonio, Bexar County, Texas.

Based on the results of the field survey conducted in accordance with *Instructions for Geologists for Geologic Assessments in the Edwards Aquifer Recharge/Transition Zones (TCEQ-0585 Instructions)*, no naturally occurring sensitive features were identified onsite. However, one naturally occurring sensitive feature was identified offsite, to the southeast. Surface flow to the feature was calculated using 1 foot contours in AutoCAD. Access was granted to the adjacent property to observe the feature and compare calculated flow with onsite conditions. Onsite conditions were consistent with calculated flow paths. Therefore, the buffer for feature S-31 was calculated as depicted on the attached exhibit. No springs or streams were identified on site. The overall potential for fluid migration to the Edwards Aquifer for the site is low.

SITE GEOLOGY

As observed through field evidence, the geologic units which outcrop at the surface within the subject site are the Kirschberg (Kekk) and grainstone (Kekg) members of the Kainer formation. These observations are consistent with published sources. These units are described below:

- The Kekk is a highly altered, crystalline limestone with chert. Karst development within the Kekk is characterized by extensive cave formation.
- The Kekg is characterized by a white, cross bedded, miliolid grainstone and mudstone. Karst development within the Kekg is uncommon.

The predominant trend of faults in the vicinity of the site is approximately N50°E, based on faults identified during the previous mapping of the area.

STONES CROSSING

Geologic Assessment

FEATURE DESCRIPTIONS:

A description of the features observed onsite is provided below:

Features S-1, S-2, and S-3

Features S-1, S-2, and S-3 are existing water wells near an existing residential structure. The casings extend above the ground surface but are not capped. Therefore, the probability of rapid infiltration is intermediate.

Feature S-4

Feature S-4 is a man-made feature in bedrock. This feature is a swimming pool with standing water at the bottom of the pool. Due to the non-karst origin and standing water, the probability of rapid infiltration is low.

Features S-5, S-6, and S-7

Features S-5, S-6, and S-7 are septic tanks. Due to the non-karst origin and the likelihood that the septic system is confined to the soil horizon, the probability of rapid infiltration is low.

Features S-8 and S-9

Features S-8 and S-9 are small solution cavities, primarily within the soil profile, and with minimal catchment area. The features were further evaluated by hand excavation. Tightly packed clay was observed at the bottom of the features. Due to the shallow profile and fine soil infilling plugging the feature, the probability of rapid infiltration is low.

STONES CROSSING

Geologic Assessment

REFERENCES

Clark, A.K., Golab, J.A., Morris, R.R., and Pedraza, D.E., 2023, Geologic framework and hydrostratigraphy of the Edwards and Trinity aquifers within northern Bexar and Comal Counties, Texas: U.S. Geological Survey Scientific Investigations Map 3510, 1 sheet, scale 1:24,000, 24-p. pamphlet, <https://doi.org/10.3133/sim3510>

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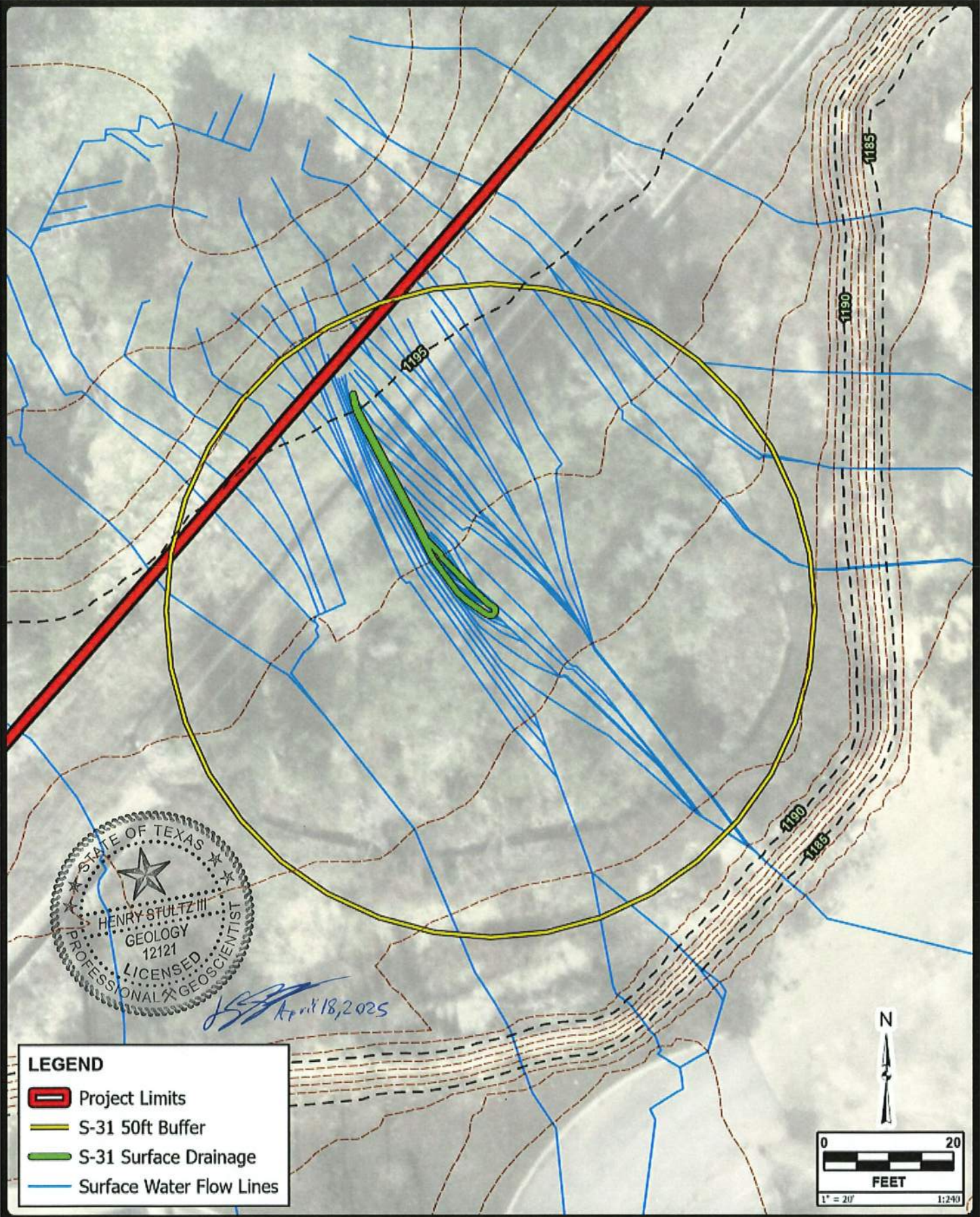
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U.S. Geological Survey, National Water Information System: Mapper, <https://maps.waterdata.usgs.gov/mapper/index.html>, April 8, 2025.

AERIAL IMAGERY PROVIDED BY GOOGLE & UNLESS OTHERWISE NOTED, MAPS ©2023, LANDSAT, DIGITAL GLOBE, NASA, OR OTHER SOURCES. U.S. GEOLOGICAL SURVEY



JS April 18, 2025

LEGEND

- Project Limits
- S-31 50ft Buffer
- S-31 Surface Drainage
- Surface Water Flow Lines

JOB NO.	13127-02
DATE	Apr 2025
DESIGNER	HS
CHECKED	HDJ
SHEET	ATTACHMENT C

STONES CROSSING
SAN ANTONIO, TEXAS
S-31 BUFFER CALCULATION

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Drawn: Apr 18, 2025 8:29 AM User: hstultz
File: P:\13127-02\DWG\13127-02.dwg

new ✓

Texas Water Development Board
Well Schedule

State Well Number 6821 808 Previous Well Number _____ County Bexar 29

River Basin San Antonio 19 Zone _____ Latitude 293926 Longitude 098 2709 Coordinates Accuracy 2

Owner's well No. _____ Location: _____ 1/4, _____ 1/4, Section _____ Block _____ Survey _____

Owner Manuel Centa Driller Unknown

Address _____ Tenant/Oper. _____

Date Drilled _____ Depth 436 Source of Depth L Altitude 1216 Source of Alt. Data m

Aquifer _____ 218 GCRS Aquifer ID 28 Well Type W User _____

Well Construction Const Method _____ Casing Material _____
Completion Method _____ Screen Material _____

Lift Data Pump Mfr. _____ Type of Lift _____ Pump Depth Setting (ft) _____ ft.
Motor Mfg _____ Power _____ H.P. _____

Yield Flow Rate _____ Pump Rate _____ GPM Meas Rept Est Date of Test _____

Performance Test Length of test _____ hr Production Rate _____ GPM Meas Rept Est Date of Test _____

Static Level _____ ft Pumping Level _____ ft Amount of Drawdown _____ ft Specific Capacity _____ GPM ft

Water Use Primary _____ Secondary _____ Tertiary _____

Water Quality (Remarks: EUWD log - 2/24/89)

Other Data Available Water Level N Water Quality N Logs BJ Other Data _____

Date _____ Meas. _____ Remarks _____ M.P. _____

Water _____

Date _____ Meas. _____ Remarks _____

Recorded by D. Coker Date Record Collected or Information Updated 07 23 2008 Reporting Agency _____

Remarks
1 _____
2 _____
3 _____
4 _____
5 _____
6 _____

Casing or Blank Pipe (C)		
Well Screen or Slotted Zone (S)		
Open Hole (O)		
Cemented from _____ to _____		
Diam. (in.)	Interval of C, S, or O. From To	
1	<u>CO8</u>	
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

Aquifer

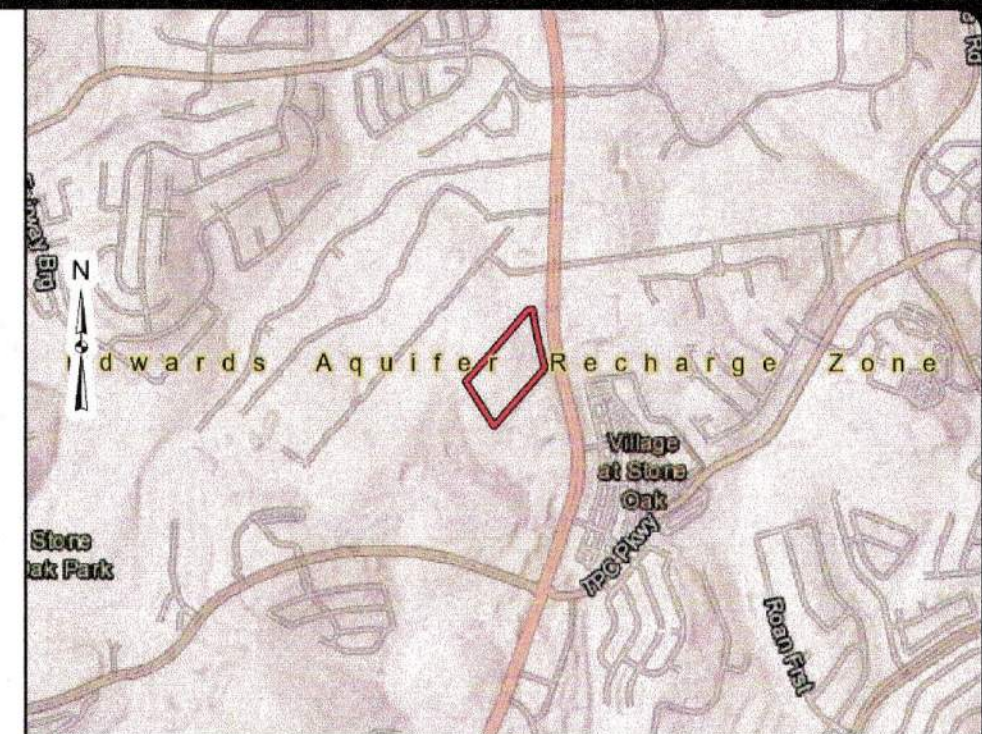
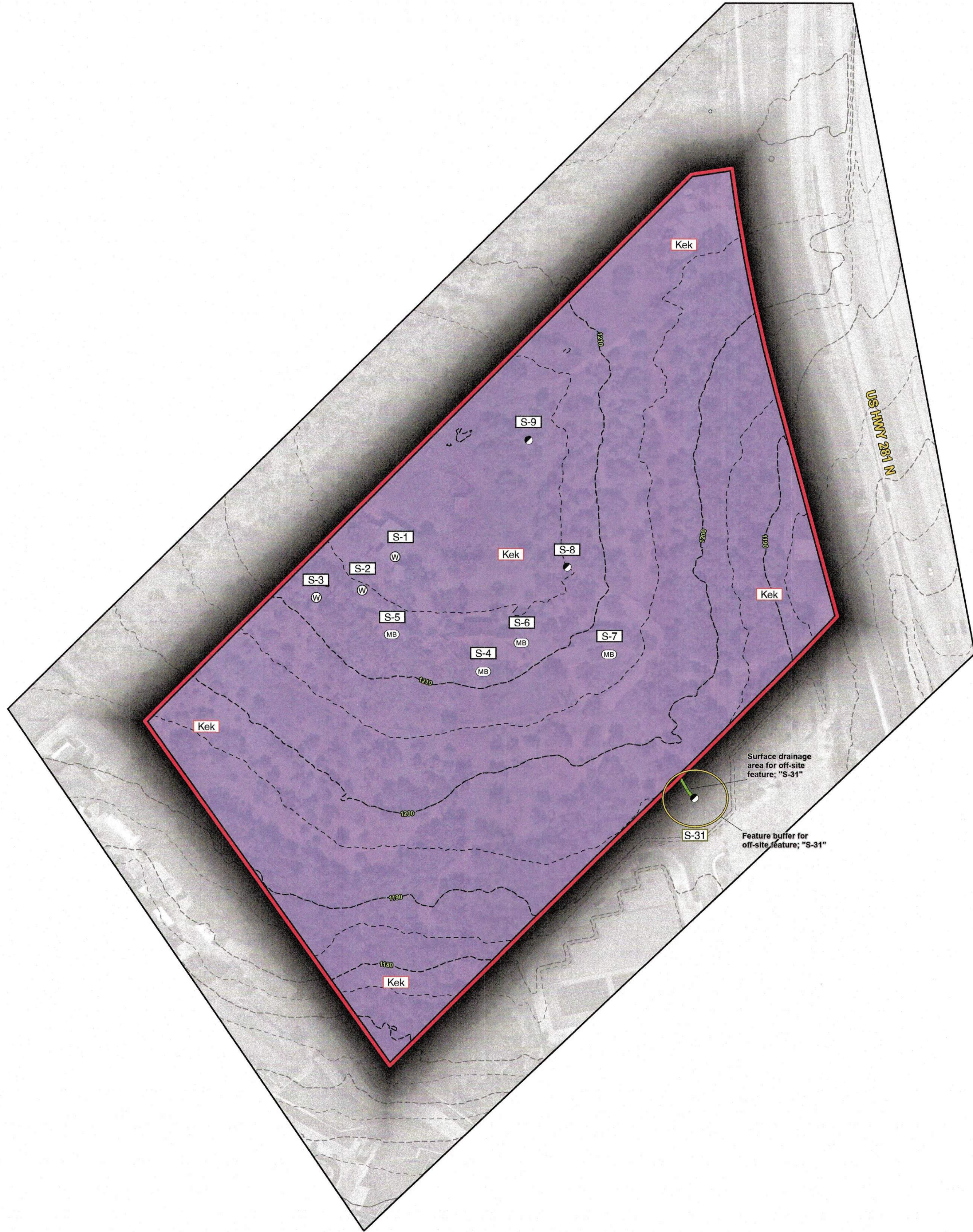
68-21 - 808

Well Number

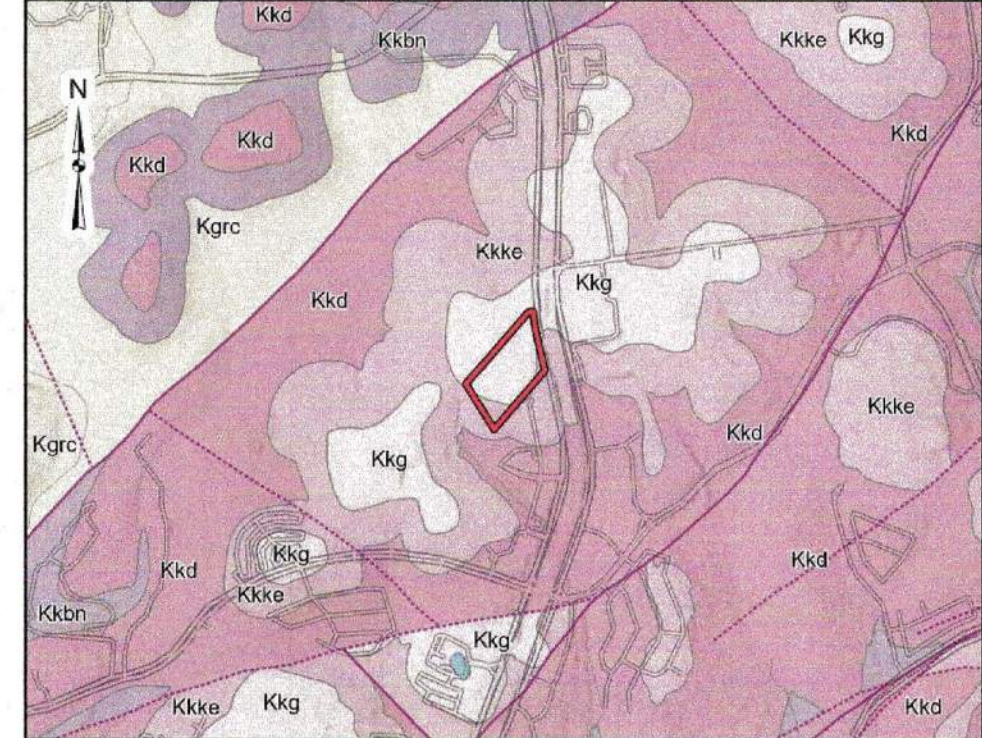
ATTACHMENT D
Site Geologic Map(s)

Dwg: Apr 18, 2025, 9:25 AM User: hndr
File: P:\13127\25ENV\GIS\WIP\figs.dwg

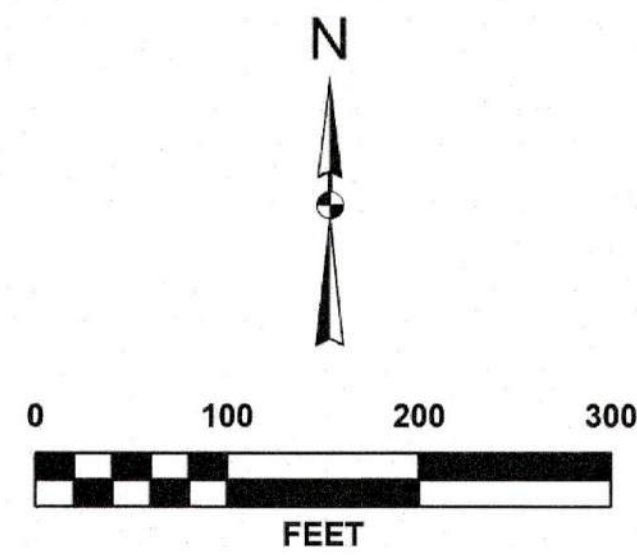
THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE © UNLESS OTHERWISE NOTED. Imagery © 2025, CAPCOG Digital Globe, Texas Orthoimagery Program, USDA Farm Service Agency.



Location Map
(not-to-scale)



Regional Geology Map (Clark 2023)
(not-to-scale)



LEGEND

PROJECT LIMITS	—
EXISTING CONTOUR LINE	--- 760 ---
100 YEAR FLOODPLAIN	---
STREAM	---
GEOLOGIC FORMATIONS	
Qal	ALLUVIUM
Kef	EAGLE FORD
Kbu	BUDA
Kdr	DEL RIO
Kgt	GEORGETOWN
Kep	PERSON
Kek	KAINER
Kgr	GLEN ROSE
SYMBOLS AND LINES	
S-1	POTENTIAL RECHARGE FEATURE
---	CONTACT, LOCATED APPROXIMATELY
---	CONTACT, INFERRED
U	FAULT, LOCATED APPROXIMATELY (D, DOWNTHROWN SIDE; U, UPTHROWN SIDE)
---	FAULT, EXTRAPOLATED
---	FAULT, INFERRED
---	STRIKE AND DIP OF BEDDING
---	STRIKE AND DIP OF JOINTS
---	STRIKE OF VERTICAL JOINTS
---	CAVE
---	SOLUTION CAVITY
---	SOLUTION ENLARGED FRACTURE
---	SWALLOW HOLE
---	SINKHOLE
---	NON-KARST CLOSED DEPRESSION
---	ZONE
---	OTHER NATURAL BEDROCK FEATURES
---	SPRING/SEEP
---	MAN-MADE FEATURE IN BEDROCK
---	WATER WELL
---	SANITARY SEWER LINE
---	STORM DRAIN LINE

NOTE: THE GEOSCIENTIST SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSES OF GEOLOGIC INFORMATION. ALL OTHER INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SIGNED AND SEALED CIVIL ENGINEERING DRAWINGS.

NOTE: THE RECHARGE ZONE BOUNDARY IS NOT WITHIN THE AREA SHOWN ON THIS SHEET. THE SITE IS LOCATED ENTIRELY WITHIN THE RECHARGE ZONE.

NOTE: ONLY THOSE GEOLOGIC FEATURES WITHIN THE AREA OF THIS ASSESSMENT ARE INCLUDED. THEREFORE, THE FEATURES MAY NOT BE NUMBERED SEQUENTIALLY.

NO.	REVISION	DATE



PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TYPE FIRM REGISTRATION #170 | TBPLS FIRM REGISTRATION #1028800

STONES CROSSING BEXAR COUNTY SITE GEOLOGIC MAP WATER POLLUTION ABATEMENT PLAN

PLAT NO.	---
JOB NO.	13127-02
DATE	Apr 2025
DESIGNER	HS
CHECKED	HDJ
DRAWN	HS
SHEET	ATT D

GEOLOGIC ASSESSMENT (SCS)

STONES CROSSING APARTMENTS +/- 2,465 LINEAR FEET OF PROPOSED SANITARY SEWER ALIGNMENT SAN ANTONIO, TEXAS

**FROST GEOSCIENCES, INC. PROJECT NO.: FGS-E25154
MAY 5, 2025**

Prepared exclusively for

**CDS Muery
100 NE Loop 410, Suite 300
San Antonio, Texas 78216**





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

May 5, 2025

CDS Muery
100 NE Loop 410, Suite 300
San Antonio, Texas 78216

Attn: Mr. Brian Crowell, P.E.

SUBJECT:

Geologic Assessment (SCS)
for the Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Stones Crossing Apartments
+/- 2,465 Linear Feet of Proposed Sanitary Sewer Alignment
San Antonio, Texas
FGS Project N^o FGS-E25154

Dear Mr. Crowell:

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

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

We appreciate the opportunity to perform these services for CDS Muery. Please contact the undersigned if you have questions regarding this report.

Respectfully submitted,
Frost GeoSciences, Inc.

Mr. Ethan Levine
Project Geologist

Mr. Steve Frost, P.G., C.P.G.
President

Copies Submitted: (1) Mr. Brian Crowell, P.E.; CDS Muery
(1) Electronic (pdf) Copy

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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: Steve Frost, P.G., C.P.G.

Telephone: (210) 372-1315

Date: May 5, 2025

Fax: (210) 372-1318

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

Signature of the Geologist:



Regulated Entity Name: Stones Crossing Apartments

Project Information

1. Date(s) Geologic Assessment was performed: April 29, 2025

2. Type of Project:

☐ WPAP
☒ SCS

☐ AST
☐ UST

3. Location of Project:

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

4. ☒ **Attachment A - Geologic Assessment Table.** Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.
5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
TaC	D	1-3

Soil Group Definitions (Abbreviated)

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

6. ☒ **Attachment B – Stratigraphic Column.** A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.
7. ☒ **Attachment C – Site Geology.** A narrative description of the site-specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.
8. ☒ **Attachment D – Site Geologic Map(s).** The Site Geologic Map must be the same scale as the applicant's Site Plan.
 Applicant's Site Plan Scale: 1" = 100'
 Site Geologic Map Scale: 1" = 100'
 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: 2025 Aerial Photograph
10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
- ☐ Geologic or manmade features were not discovered on the project site during the field investigation.
13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.
- ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
- ☐ The wells are not in use and have been properly abandoned.
- ☐ The wells are not in use and will be properly abandoned.
- ☐ The wells are in use and comply with 16 TAC Chapter 76.
- ☒ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

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

STRATIGRAPHIC COLUMN

EXPLANATION OF HYDROSTRATIGRAPHIC UNITS

Group or Formation	Formal and informal member	Hydrologic unit or Informal hydrostratigraphic unit
Taylor Group (Pecan Gap)		Kpg
Austin Group		Ka
Eagle Ford Group		Kef
Buda Limestone		Kb
Del Rio Clay		Kdr
Georgetown Formation		Kg
Person Formation	Cyclic and marine, undivided	Kpcm
	Leached and collapsed	Kplc
	Regional dense member	Kprd
Kainer Formation	Grainstone	Kkg
	Kirschberg evaporite	Kkke
	Dolomitic	Kkd
	Basal nodular	Kkbn
Glen Rose Limestone	Upper Glen Rose Limestone	Kgrc
		Kgrcb
		Kgrue
		Kgruf
		Kgrlf
		Kgrle
	Lower Glen Rose Limestone	Kgrb
		Kgrlb
		Kgrts
		Kgrd
		Kgrt
		Kgrhc
Pearsall Formation	Hensell Sand	Kheh
	Cow Creek Limestone	Kcccc
	Hammett Shale	Khah

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Stones Crossing Apartments

PROJECT NUMBER: FGS-E25154

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	POINT S	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY	
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-7	29°39'24.95"N	98°27'5.94"W	MB	30	Kek								FC	5	35	35		X		Hillside
S-9	29°39'28.69"N	98°27'7.34"W	CD	5	Kek	1	1	0.5					F	5	10	10		X		Hillside
S-10	29°39'24.23"N	98°27'2.38"W	MB	30	Kek	2	2						FC	9	39	39		X		Hillside

Datum: NAD 83

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

8A INFILLING

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

12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Floodplain, Streambed

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



Mr. Steve Frost, P.G., C.P.G.

Date: May 5, 2025

LOCATION

The project site is located along and east of U.S Highway 281, approximately 0.15 miles south of the intersection of U.S. Highway 281 and Northwind Blvd in San Antonio, Bexar County, Texas. An overall view of the area is shown on copies of the site plan, a street map, the U.S.G.S. Topographic Map, the EAA-Edwards Aquifer Recharge Zone and Contributing Zone Map, the FIRM Map, the U.S. Geological Survey: Water Resources Investigations Report (WRI) 95-4030 Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, an NRCS Web Soil Survey aerial photograph at a scale of 1"=500', and a 2025 aerial photograph at a scale of 1"=200'. These maps are included as Figures 1 through 10 in Appendix A.

METHODOLOGY

The Geologic Assessment was performed by Mr. Steve Frost, P.G., C.P.G., Senior Geologist, and Mr. Ethan Levine, Project Geologist, with Frost GeoSciences, Inc. Mr. Frost is a Licensed Professional Geoscientist in the State of Texas (License # 315).

Frost GeoSciences, Inc. researched the geology of the area west of U.S. Highway 281 in the vicinity of the Site. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FEMA maps, Edwards Aquifer Recharge Zone Maps, U.S.G.S. 7.5 Minute Quadrangle Maps, the Bureau of Economic Geology-Geologic Atlas of Texas, the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the U.S.G.S. Water-Resources Investigations Report 95-4030, and the U.S.D.A. Soil Survey of Bexar County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made Potential Recharge Features (PRFs). A transect spacing of approximately 50 feet, or less depending on vegetation thickness, was used to inspect the project area within a 50 ft boundary of the proposed sewer line. A 2025 aerial photograph, in conjunction with a hand-held Garmin GPS 72H Global Positioning System with an Estimated Potential Error ranging from 10 to 14 feet, was used to navigate around the property and identify the locations of PRFs, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any PRFs noted in the field were marked with blue and white flagging. The flagging is numbered with the same potential recharge feature I.D. # that is used on the Site Geologic Map. The Site Geologic Map, indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included in Appendix C at the end of this report. A copy of the 2025 aerial photograph at an approximate scale of 1" =200' indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included on Figure 10 in Appendix A. The Geologic Assessment Form TCEQ-0585, (Rev. 2-11-15), Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included on pages 1 through 5.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the U.S.G.S. 7.5 Minute Quadrangle Map, Bulverde Quad (1988), the elevation across the project site ranges from 1180 to 1224 feet above mean sea level. The project site has a total relief of approximately 44 feet. Runoff from the project site appears to flow to the south and west towards West Elm Creek. U.S. Highway 281 is located along and east of the project site. Multiple structures are depicted in the vicinity of the project site, as well as an unimproved road. A topographic high at 1224 feet above mean sea level is depicted to the immediate north of the project site. A copy of the U.S.G.S. 7.5 Minute Quadrangle Map indicating the location of the project site is included on Figure 3 in Appendix A.

Bexar County Watersheds Map

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

Recharge/Transition Zone

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

100-Year Floodplain

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the Flood Insurance Map, Community Panel Number 48029C0140G, dated September 29, 2010 was reviewed to determine if the project site is located in areas prone to flooding. A review of the above-mentioned Panel No. indicates that the project site is located within "Zone X". According to the Panel Legend, Zone X represents areas determined to be outside the 0.2% annual chance floodplain. A copy of the above referenced FIRM panel indicating the location of the project site is included on Figure 6 in Appendix A.

Soils

According to the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Bexar County (1966) and the USDA NRCS Web Soil Survey (WSS) website: <https://websoilsurvey.nrcs.usda.gov>, the Site is located on the Tarrant Association (TaC). A copy of the aerial photo (approximate scale: 1"=500') obtained from the Web Soil Survey (WSS) website: <https://websoilsurvey.nrcs.usda.gov> has been included on Figure 7 in Appendix A

- **Tarrant Association, 5 to 15 percent slopes, rolling (TaC)** consists of stony soils that are very shallow, dark colored, and gently undulating to steep. The Tarrant Association occurs on the limestone prairies in the northern third of the county. The surface layer is very dark grayish brown, calcareous clay loam and is about 10" thick. It has moderate, fine, sub angular blocky structure. This layer is crumbly and friable when moist. Limestone fragments that range from a quarter of an inch to 24

inches in diameter cover about 35 percent of the surface. The subsurface layer, about 8 inches thick, is hard fractured limestone. The cracks and spaces are filled with dark grayish brown clay loam. The bedrock is hard limestone. Tarrant soils have rapid surface drainage and good internal drainage. The capacity to hold water is low. Natural fertility is high. Water erosion is a hazard.

Narrative Description of the Site Geology

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. The locations of the PRFs are identified on the 2025 aerial photograph on Figure 10 in Appendix A, and on the Site Geologic Map provided in Appendix C. Color photos of the project site and some of the PRFs are included in Appendix B.

PRF #S-7 is a septic tank associated with a residential structure located in Area 9 of the project site. Frost GeoSciences rates the relative infiltration of this feature as low on figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). This feature scores 35 points on the sensitivity scale, column 10 in the Geologic Assessment Table on page 5 of this report. Frost GeoSciences, Inc. does not consider the septic tank to be a sensitive feature.

PRF #S-9 is a non-karst closed depression filled in with clay and leaves located in Area 8 of the project site. The non-karst closed depression occurs on a hillside located at the base of a tree within the exposed root structure. In the previous report, this feature was described as a solution cavity. Frost GeoSciences is of the opinion that this feature is a non-karst closed depression formed by an animal burrow. Frost GeoSciences rates this feature as low on figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). This feature scores 10 points on the sensitivity scale, column 10 of the Geologic Assessment Table included on page 5 of this report. Frost GeoSciences, Inc. does not consider the non-karst closed depression to be a sensitive feature.

PRF #S-10 is a manhole cover associated with a sanitary sewer easement observed at the southern end of the project site. Frost GeoSciences rates the relative infiltration of this feature as low on figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). This feature scores a 39 on the sensitivity scale, column 10 in the Geologic Assessment Table on page 5 of this report. Frost GeoSciences, Inc. does not consider the manhole cover to be a sensitive feature.

The project site is covered by a moderately dense stand of vegetative cover with numerous open grassy areas. Site visit photos indicating the condition of the property at the time of the on-site inspection are included in Appendix B. Overall vegetation on the project site consists of ashe juniper (*Juniperus ashei*), live oak (*Quercus virginiana*), and cedar elm (*Ulmus crassifolia*), with Texas persimmon (*Diospyros texana*), agarita (*Berberis trifoliolata*), yucca (*Yucca treculeana*), and prickly pear cactus (*Opuntia lindheimeri*). The variations in the vegetative cover on the property are visible in the 2025 aerial photo on Figures 9 and 10 in Appendix A. A copy of the site layout indicating the extent of the project site and the elevations is included on the Site Geologic Map in Appendix C of this report.

According to the U.S. Geological Survey: Water Resources Investigations Report (WRI) 95-4030 Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, and the Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet (1982), the project site is located on the Dolomitic Member and Kirschberg Evaporite Member of the Cretaceous Edwards Kainer Limestone Formation

(Kek). A copy of the WRI map and the Bureau of Economic Geology, Geologic Atlas of Texas, is included on Figure 8 in Appendix A. A copy of the Stratigraphic Column highlighting the outcropping formations is included on Page 3 of this report.

According to the site plan provided by CDS Muery, the surveyed elevations on the project site range from 1168 to 1219 feet. According to this survey, the total relief on the project site is approximately 51 feet. A copy of the site plan indicating the project site area and the elevations is included on the Site Plan on Figure 1 in Appendix A and the Site Geologic Map in Appendix C of this report.

The Dolomitic Member of the Edwards Kainer Limestone consists of mudstone to grainstone with crystalline limestone and chert. This member is massively bedded and light gray with abundant fossils of *Toucasia*. Karst features within this member are typically related to structure or bedding planes. Overall thickness ranges from 110 to 130 feet.

The Kirschberg Evaporite Member consists of a highly altered crystalline limestone, and chalky mudstone with chert. Boxwork voids with neospar and travertine frame is a common feature. Extensive cavernous development within this unit is probable. Overall thickness ranges from 50 to 60 feet.

BEST MANAGEMENT PRACTICES

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

DISCLAIMER

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

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

REFERENCES

1. USGS - 7.5 Minute Topographic Quadrangle of Bulverde, 1988
2. E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map, Bulverde (2014).
3. The Texas Commission on Environmental Quality (TCEQ) website: Edwards Aquifer Viewer – <https://tceq.maps.arcgis.com/apps/webappviewer/index.html>.
4. Clark, A.K., Golab, J.A. and Morris, R.R., 2016, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, United States Geological Survey.
5. Clark, A.K., Golab, J.A. and Morris, R.R., 2016, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, United States Geological Survey.
6. Collins, Edward, W., 2000, Geologic Map of the New Braunfels 30 X 60 Minute Quadrangle, Bureau of Economic Geology, The University of Texas at Austin, Texas.
7. Stein, W.G. and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, U.S. Geological Survey Water Resources Investigations 95-4030.
8. Barnes, V.L., 1982, Geologic Atlas of Texas, San Antonio Sheet, Bureau of Economic Geology and University of Texas at Austin, Geologic Atlas of Texas.
9. Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Panel Number 48029C0140G, dated September 29, 2010
10. United States Department of Agriculture Soil Conservation Service Soil Survey of Bexar County, 1966.
11. USDA NRCS Web Soil Survey (WSS) website: <https://websoilsurvey.nrcs.usda.gov> (2014)
12. TCEQ-0585-Instructions (Rev. 10-1-04), "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".
13. San Antonio Water Systems, Bexar County Watersheds Map, 2004.

APPENDIX A

SITE LOCATION FIGURES



Not to scale

PROJECT NAME:

Geologic Site Assessment (WPAP)
for Regulated Activities/Development on the
Edwards Aquifer Recharge/Transition Zone
Stones Crossing Apartments
Bexar County, Texas

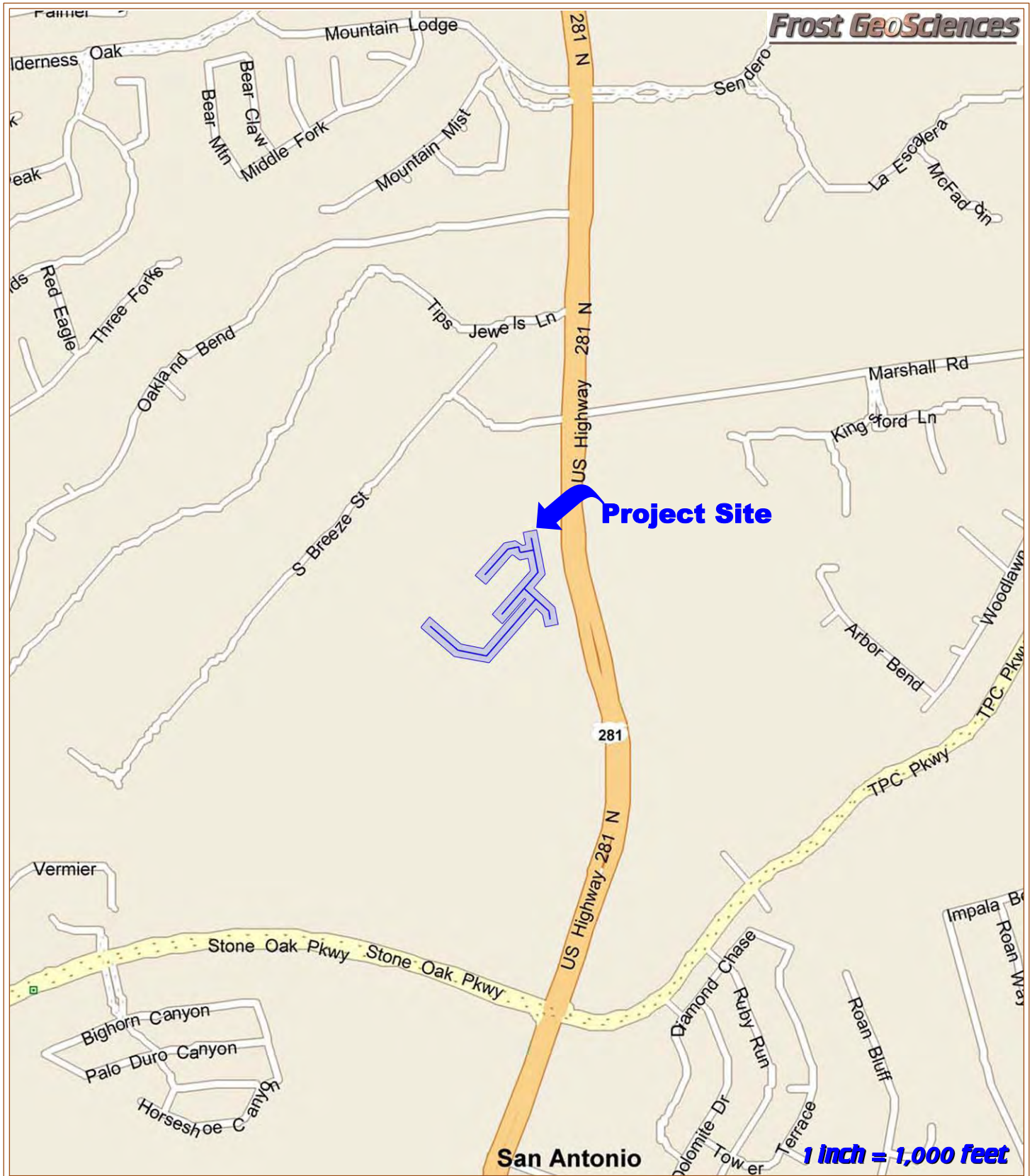
Site Plan

PROJECT No.:

FGS-E25154

DATE:

May 5, 2025



PROJECT NAME:

Geologic Site Assessment (WPAP)
for Regulated Activities/Development on the
Edwards Aquifer Recharge/Transition Zone
Stones Crossing Apartments
Bexar County, Texas

Street Map
Microsoft Streets and Trips (2013)

PROJECT No.:

FGS-E25154

DATE:

May 5, 2025



PROJECT NAME:

Geologic Site Assessment (WPAP)
for Regulated Activities/Development on the
Edwards Aquifer Recharge/Transition Zone
Stones Crossing Apartments
Bexar County, Texas

U.S.G.S. 7.5 Minute Quadrangle Map
Bulverde, TX Sheet (1988)

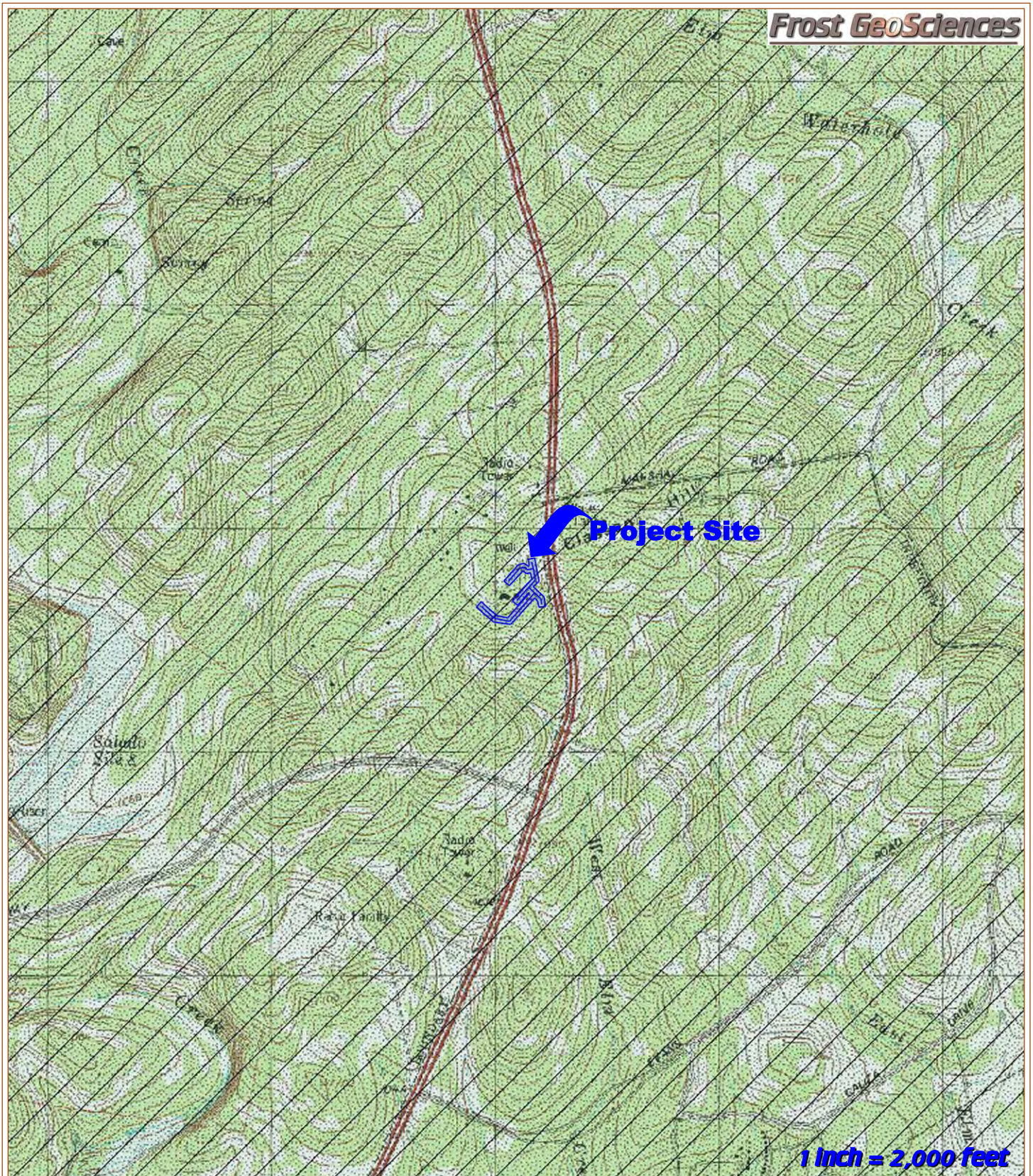
PROJECT No.:

FGS-E25154

DATE:

May 5, 2025





PROJECT NAME:

Geologic Site Assessment (WPAP)
for Regulated Activities/Development on the
Edwards Aquifer Recharge/Transition Zone
Stones Crossing Apartments
Bexar County, Texas

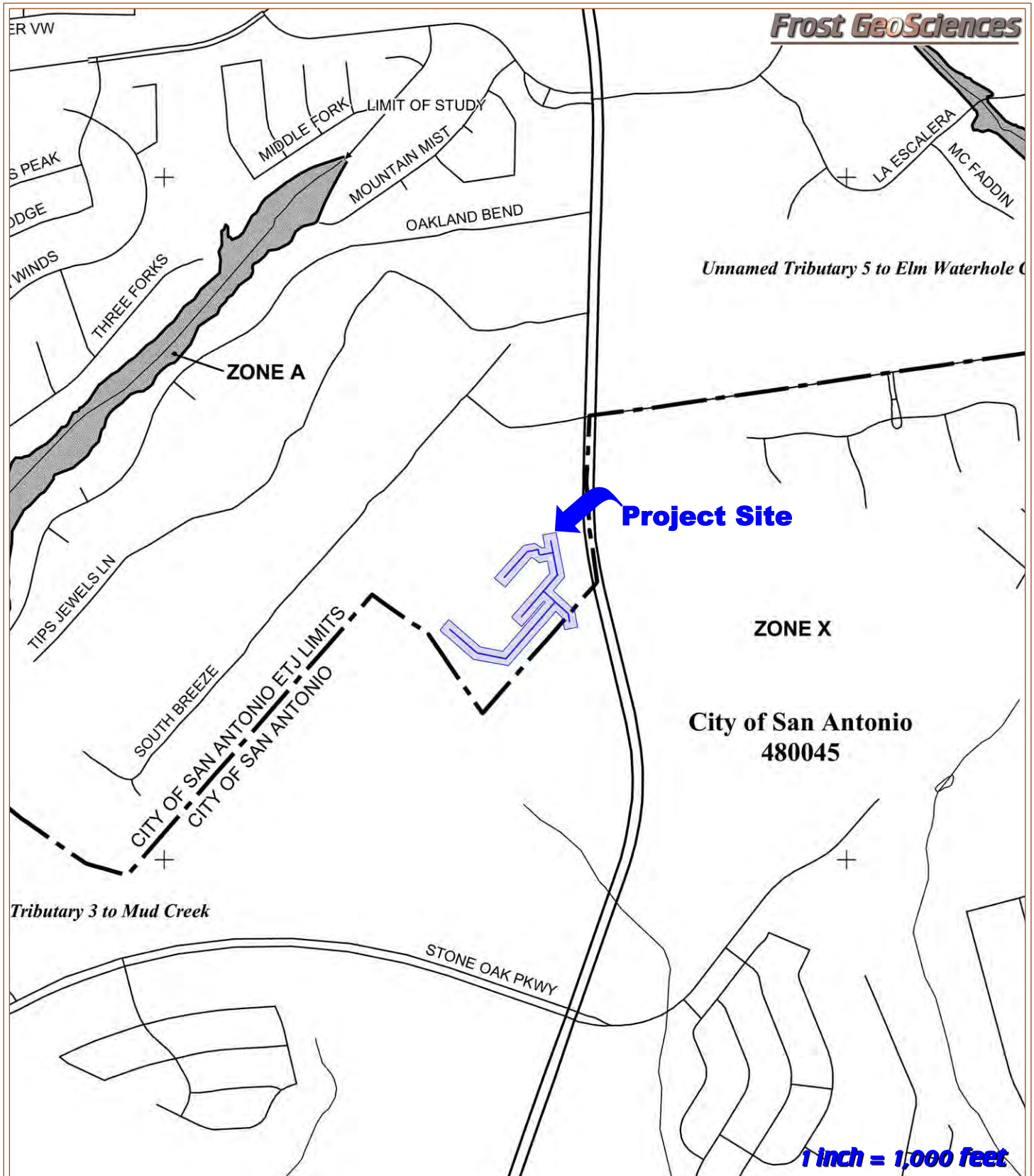
EAA Recharge & Contributing Zone Map
Bulverde, Texas (2014)

PROJECT No.:

FGS-E25154

DATE:

May 5, 2025

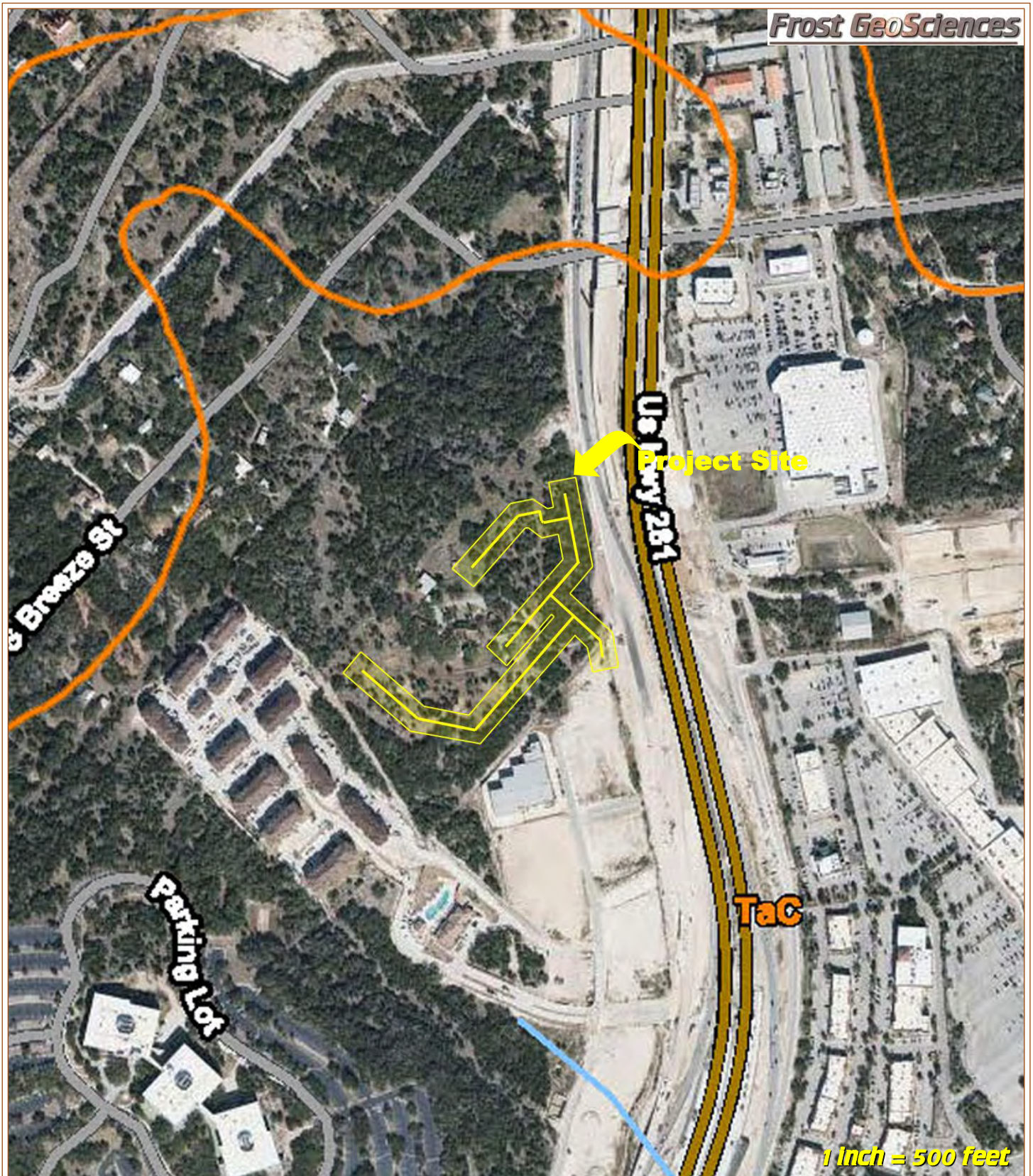


PROJECT NAME:
 Geologic Site Assessment (WPAP)
 for Regulated Activities/Development on the
 Edwards Aquifer Recharge/Transition Zone
 Stones Crossing Apartments
 Bexar County, Texas

Flood Insurance Rate Map (FIRM)
 Community Panel # 48029C0140G
 Revised 9/29/2010

PROJECT No.:
 FGS-E25154

DATE:
 May 5, 2025



PROJECT NAME:

Geologic Site Assessment (WPAP)
for Regulated Activities/Development on the
Edwards Aquifer Recharge/Transition Zone
Stones Crossing Apartments
Bexar County, Texas

Soils Map

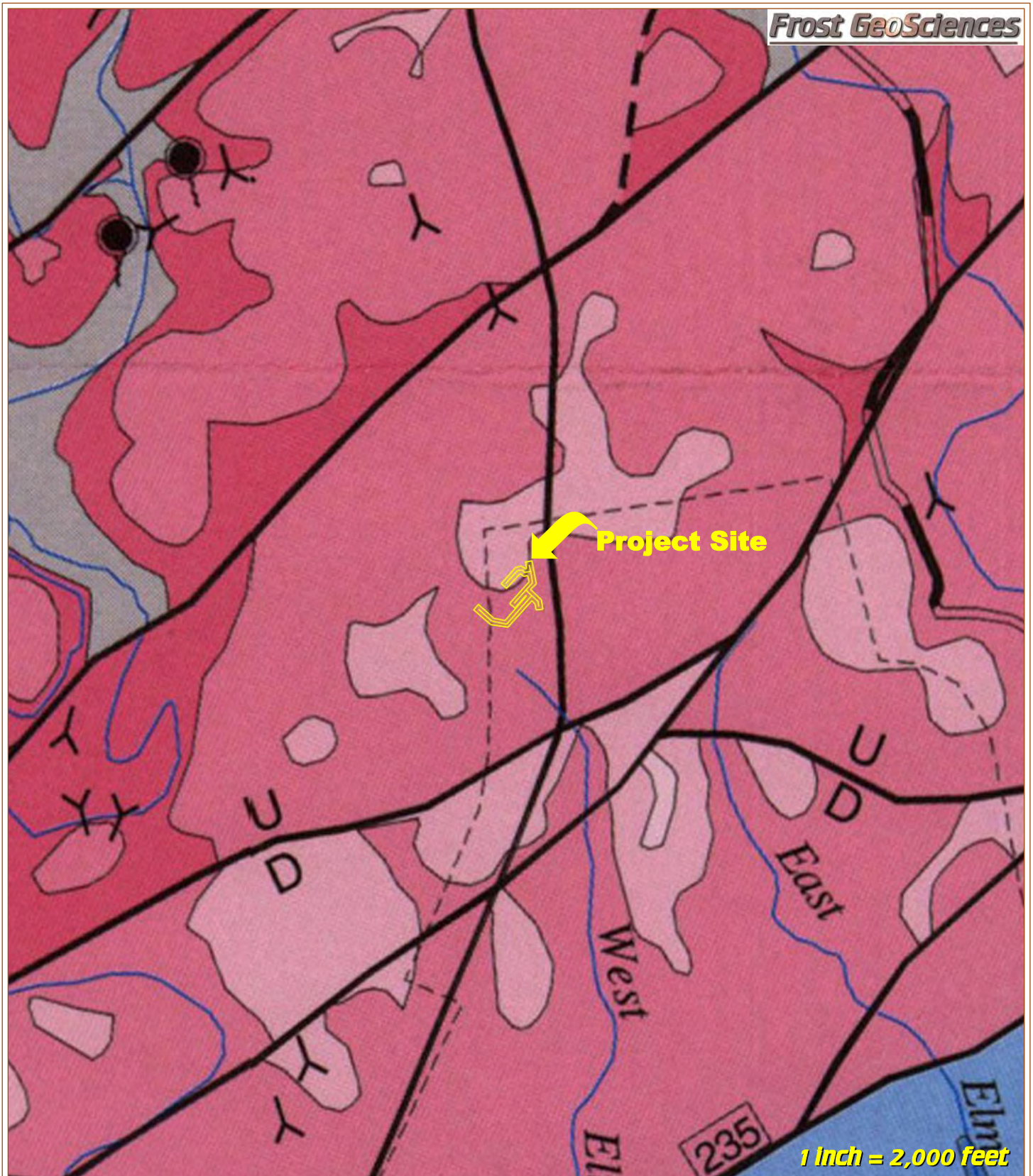
Bexar County Soil Survey
NRCS website: websoilsurvey.nrcs.usda.gov

PROJECT No.:

FGS-E25154

DATE:

May 5, 2025

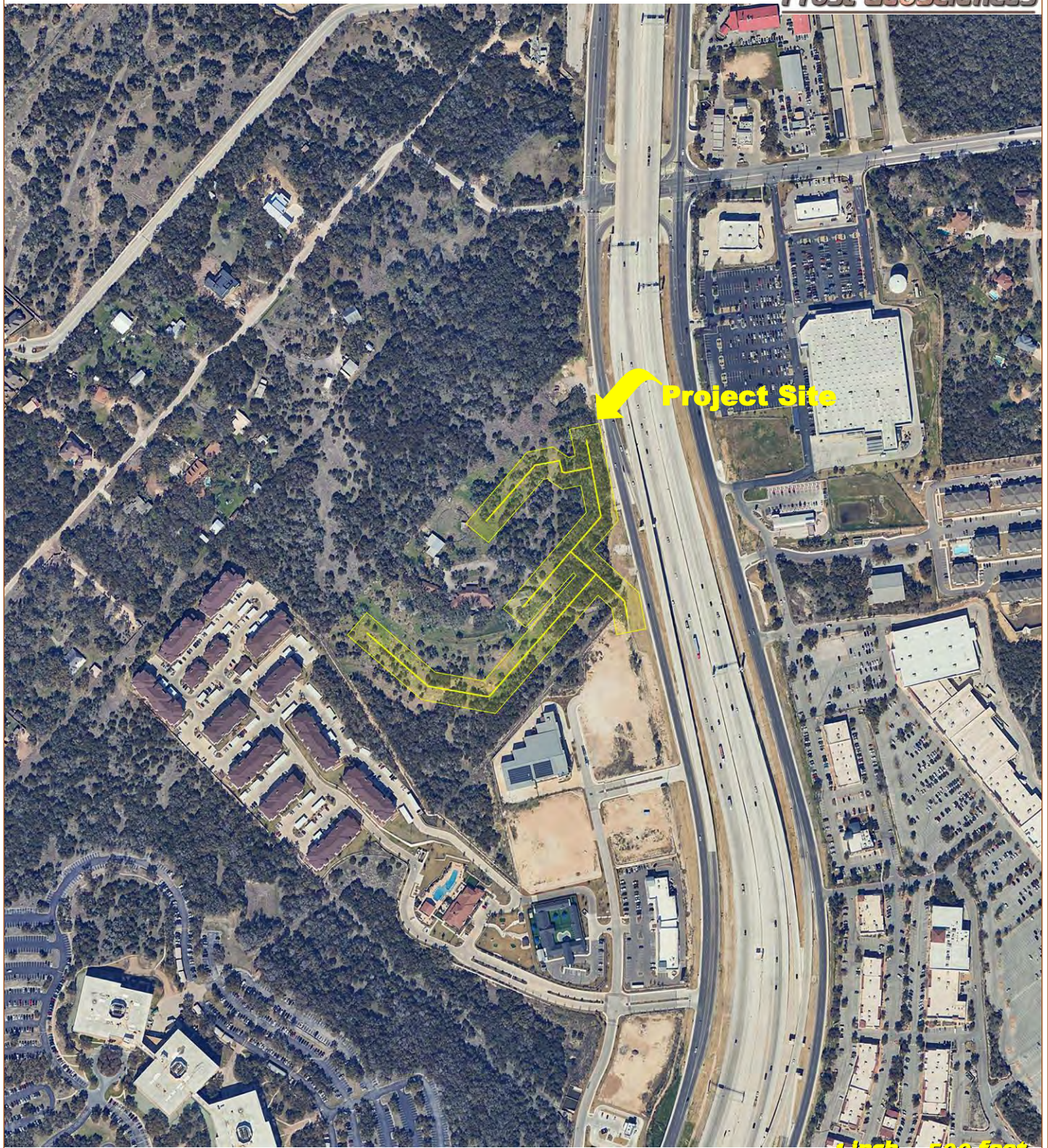


PROJECT NAME:
 Geologic Site Assessment (WPAP)
 for Regulated Activities/Development on the
 Edwards Aquifer Recharge/Transition Zone
 Stones Crossing Apartments
 Bexar County, Texas

United States Geological Survey
 Water Resource Investigation Map 95-4030
 Bexar County, Texas (1995)

PROJECT No.:
 FGS-E25154

DATE:
 May 5, 2025



1 inch = 500 feet

PROJECT NAME:

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

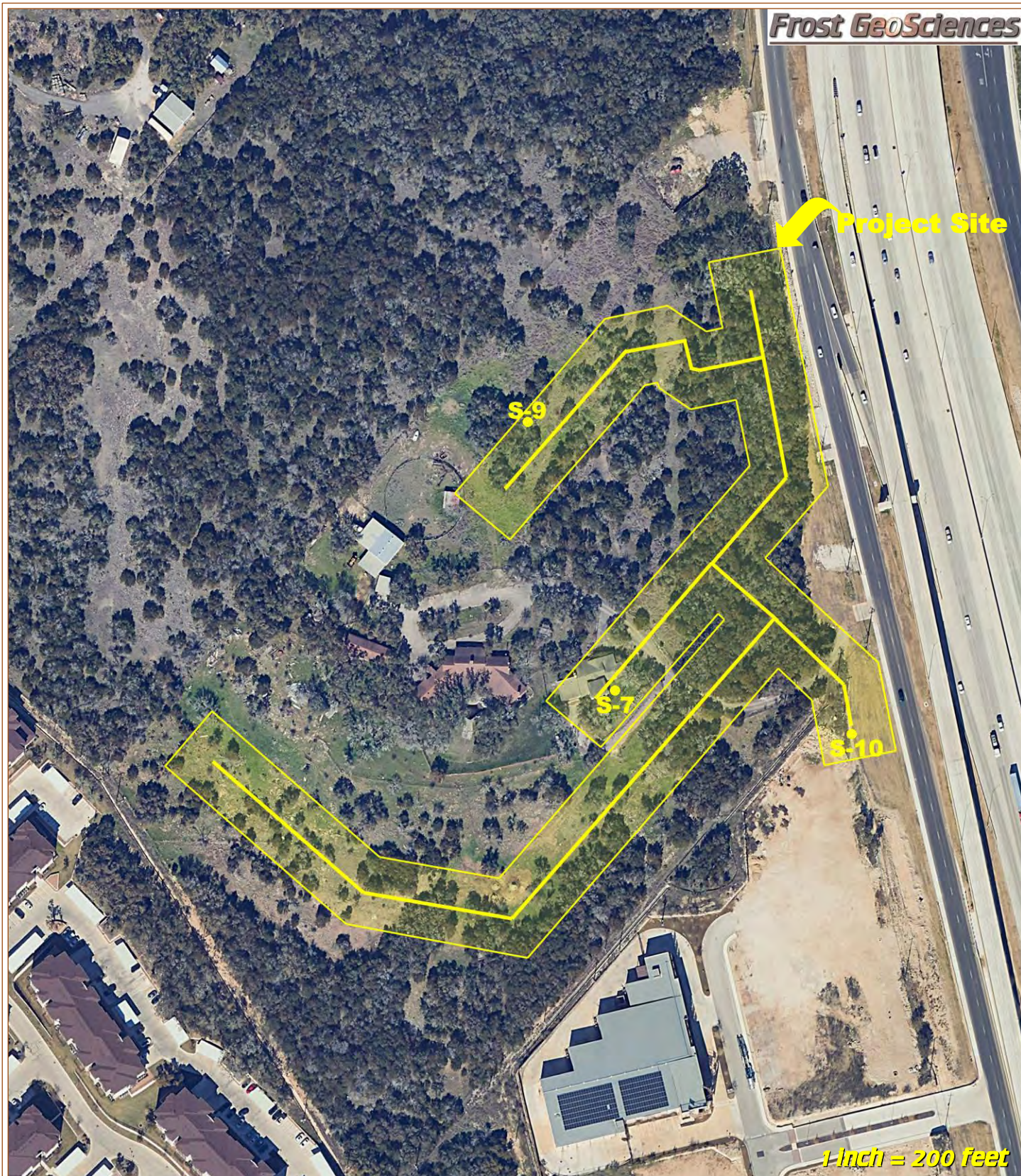
2025 Aerial Photograph
Google Earth Aerial Imagery

PROJECT No.:

FGS-E25154

DATE:

May 5, 2025



PROJECT NAME:

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

2025 Aerial Photograph with PRFs
Google Earth Aerial Imagery

PROJECT No.:

FGS-E25154

DATE:

May 5, 2025

APPENDIX B

SITE PHOTOGRAPHS

2025 Google Earth Aerial with Site Areas





Photo #1 – View to the north of Area 1.



Photo #2 – View to the south of Area 1.



Photo #3 – View to the north of Area 2.



Photo #4 – View to the south of Area 2.



Photo #5 – View to the west of Area 2.



Photo #6 – View to the north of Area 3.



Photo #7 – View to the south of Area 3.



Photo #8 – View to the north of Area 4.



Photo #9 – View to the south of Area 4.



Photo #10 – View to the east of Area 5.



Photo #11 – View to the north of Area 5.



Photo #12 – View to the west of Area 5.



Photo #13 – View to the west of Area 6.



Photo #14 – View to the south of Area 6.



Photo #15 – View to the east of Area 7.



Photo #16 – View to the west of Area 7.



Photo #17 – View to the east of Area 8.



Photo #18 – View of PRF #S-9 located in Area 8.



Photo #19 – View to the north of Area 9.



Photo #20 – View to the east of Area 9.



Photo #21 – View to the west of Area 9.



Photo #22 – View of PRF #S-7 located in Area 9.



Photo #23 – View to the east of Area 10.



Photo #24 – View to the west of Area 10.



Photo #25 – View to the east of Area 11.



Photo #26 – View to the west of Area 11.



Photo #27 – View to the south of Area 12.



Photo #28 – View to the north of Area 12.



Photo #29 – View to the south of Area 13.



Photo #30 – View to the north of Area 13.



Photo #31 – View of PRF #S-10 located in Area 4.



Photo #32 – Additional view of PRF #S-10.

APPENDIX C
GEOLOGIC MAP



Location Map



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

Site Geologic Map

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

Stones Crossing Apartments
+/- 2,465 Linear Feet of Proposed
Sanitary Sewer Alignment
San Antonio, Texas

Frost GeoSciences, Inc. Control # FGS-E25154

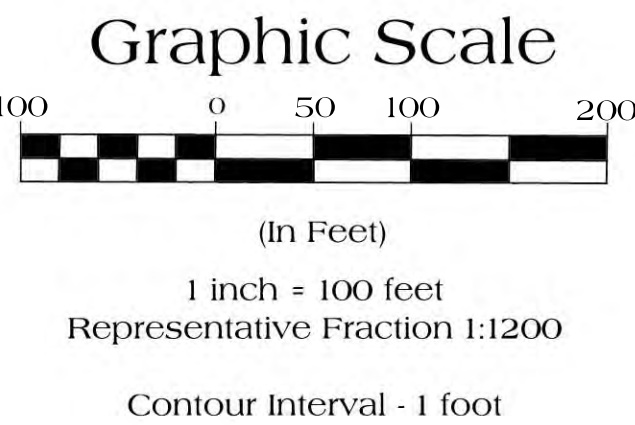
Legend

- Potential Recharge Feature (PRF)
- Formation Contact
- 50 Foot Transect
- Site Boundary

Kek - Cretaceous Kainer Formation

Floodplain Information Obtained From
FIRM: Flood Insurance Rate Map
Bexar County, Texas: Panel # 48029C0140G, Revised 9/29/2010

Fault Information Obtained From:
Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet (1983)
U.S. Geological Survey, Water Resources Investigations Report 95-4030 (1994)
Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000)
U.S. Geological Survey Geologic Framework and Hydrostratigraphy of the Edwards
and Trinity Aquifers within Northern Bexar and Comal Counties, Texas (2016)



Steve Frost
Signature of Texas Licensed Geoscientist
Steve Frost License No. 315

**ORGANIZED SEWAGE COLLECTION SYSTEM PLAN
(TCEQ-0582)**

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

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

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

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

Regulated Entity Name: STONES CROSSING APARTMENTS

1. ☒ **Attachment A – SCS Engineering Design Report.** This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

Customer Information

2. The entity and contact person responsible for providing the required engineering certification of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

Contact Person: Craig H. Lintner

Entity: Pedcor Investments, A Limited Liability Company

Mailing Address: 770 3rd Ave SW

City, State: Carmel, IN

Zip: 46032

Telephone: (317) 695-3018

Fax: (317) 587-0340

Email Address: clintner@pedcor.net

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

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

Contact Person: Brian Crowell

Texas Licensed Professional Engineer's Number: 82619

Entity: CDS Muery

Mailing Address: 100 NE Loop 410, Ste 300

City, State: San Antonio, TX

Zip: 78216

Telephone: (210) 581-1111

Fax: (210) 381-7844

Email Address: brian.crowell@cdsmuery.com

Project Information

4. Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):

- ☐ Residential: Number of single-family lots: _____
☒ Multi-family: Number of residential units: 336
☐ Commercial
☐ Industrial
☐ Off-site system (not associated with any development)
☒ Other: Pool & Clubhouse

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

100% Domestic 96,310 gallons/day
_____% Industrial _____ gallons/day
_____% Commingled _____ gallons/day
Total gallons/day: 96,310

6. Existing and anticipated infiltration/inflow is 11,300 gallons/day. This will be addressed by: Sewer pipe will be SDR-26 with watertight joints, pressure rated 160 psi and manholes will be watertight.

7. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

- ☐ The WPAP application for this development was approved by letter dated _____. A copy of the approval letter is attached.
☒ The WPAP application for this development was submitted to the TCEQ on 05/02/2025, but has not been approved.
☐ A WPAP application is required for an associated project, but it has not been submitted.
☐ There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

<i>Pipe Diameter(Inches)</i>	<i>Linear Feet (1)</i>	<i>Pipe Material (2)</i>	<i>Specifications (3)</i>
8	2615	PVC, SDR-26	ASTM D2241

Total Linear Feet: 2615

(1) Linear feet - Include stub-outs and double service connections. Do not include private service laterals.

(2) Pipe Material - If PVC, state SDR value.

- (3) Specifications - ASTM / ANSI / AWWA specification and class numbers should be included.
9. The sewage collection system will convey the wastewater to the SAWS-Sтивен M. Clouse Water Recycling Center (name) Treatment Plant. The treatment facility is:

- ☒ Existing
☐ Proposed

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

- ☒ The City of San Antonio Water System standard specifications.
☐ Other. Specifications are attached.

11. ☒ No force main(s) and/or lift station(s) are associated with this sewage collection system.
☐ A force main(s) and/or lift station(s) is associated with this sewage collection system and the **Lift Station/Force Main System Application** form (TCEQ-0624) is included with this application.

Alignment

12. ☐ There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.
13. ☒ There are no deviations from straight alignment in this sewage collection system without manholes.
- ☐ **Attachment B - Justification and Calculations for Deviation in Straight Alignment without Manholes.** A justification for deviations from straight alignment in this sewage collection system without manholes with documentation from pipe manufacturer allowing pipe curvature is attached.
- ☐ For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

Manholes and Cleanouts

14. ☒ Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below: (Please attach additional sheet if necessary)

Table 2 - Manholes and Cleanouts

<i>Line</i>	<i>Shown on Sheet</i>	<i>Station</i>	<i>Manhole or Clean-out?</i>
A	WW-5 Of WW-5	10+00	Existing Manhole
A	WW-5 Of WW-5	10+58	Manhole
A	C9.5 Of C9.13	11+89	Manhole
A	C9.5 Of C9.13	15+15	Manhole
A	C9.7 Of C9.13	17+41	Manhole
A	C9.8 Of C9.13	19+52	Manhole

<i>Line</i>	<i>Shown on Sheet</i>	<i>Station</i>	<i>Manhole or Clean-out?</i>
A	C9.8 Of C9.13	22+20	Manhole
B	C9.5 Of C9.13	11+13	Manhole
B	C9.6 Of C9.13	13+59	Manhole
C	C9.3 Of C9.13	11+57	Manhole
C	C9.2 Of 9.13	13+24	Manhole
C	C9.2 Of 9.13	14+15	Manhole
D	C9.2 Of 9.13	10+94	Clean-out
D	C9.2 Of 9.13	11+41	Clean-out
D	C9.4 Of 9.13	12+26	Clean-out
D	C9.4 Of 9.13	13+27	Clean-out
D	C9.4 Of 9.13	14+80	Clean-out

15. ☒ Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.
16. ☒ The maximum spacing between manholes on this project for each pipe diameter is no greater than:

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

- ☐ **Attachment C – Justification for Variance from Maximum Manhole Spacing.** The maximum spacing between manholes on this project (for each pipe diameter used) is greater than listed in the table above. A justification for any variance from the maximum spacing is attached, and must include a letter from the entity which will operate and maintain the system stating that it has the capability to maintain lines with manhole spacing greater than the allowed spacing.
17. ☐ All manholes will be monolithic, cast-in-place concrete.
- ☒ The use of pre-cast manholes is requested for this project. The manufacturer's specifications and construction drawings, showing the method of sealing the joints, are attached.

Site Plan Requirements

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

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

Site Plan Scale: 1" = 100'.

19. ☒ The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stub outs (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.

20. Lateral stub-outs:

- ☒ The location of all lateral stub-outs are shown and labeled.
☐ No lateral stub-outs will be installed during the construction of this sewer collection system.

21. Location of existing and proposed water lines:

- ☒ The entire water distribution system for this project is shown and labeled.
☐ If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
☐ There will be no water lines associated with this project.

22. 100-year floodplain:

- ☒ After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
☐ After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 3 - 100-Year Floodplain

<i>Line</i>	<i>Sheet</i>	<i>Station</i>
	of	to
	of	to
	of	to
	of	to

23. 5-year floodplain:

- ☒ After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.)

- ☐ After construction is complete, all sections located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 4 - 5-Year Floodplain

<i>Line</i>	<i>Sheet</i>	<i>Station</i>
	of	to
	of	to
	of	to
	of	to

24. ☒ Legal boundaries of the site are shown.
25. ☒ The ***final plans and technical specifications*** are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

Items 26 - 33 must be included on the Plan and Profile sheets.

26. ☒ All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.

- ☐ There will be no water line crossings.
- ☐ There will be no water lines within 9 feet of proposed sewer lines.

Table 5 - Water Line Crossings

<i>Line</i>	<i>Station or Closest Point</i>	<i>Crossing or Parallel</i>	<i>Horizontal Separation Distance</i>	<i>Vertical Separation Distance</i>
A	10+70	CROSSING	0	2.0
A	12+13	CROSSING	0	6.2
A	15+71	CROSSING	0	5.6
A	17+22	CROSSING	0	2.0
A	17+62	CROSSING	0	1.0
A	19+60	CROSSING	0	1.0

<i>Line</i>	<i>Station or Closest Point</i>	<i>Crossing or Parallel</i>	<i>Horizontal Separation Distance</i>	<i>Vertical Separation Distance</i>
A	21+33	CROSSING	0	1.0
B	11+01	CROSSING	0	10.1
C	10+53	CROSSING	0	8.4
C	12+85	CROSSING	0	1.7
C	13+18	CROSSING	0	2.0
D	10+59	CROSSING	0	1.9

*Note, water lines cross above sewer lines.

27. Vented Manholes:

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

Table 6 - Vented Manholes

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

28. Drop manholes:

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

Table 7 - Drop Manholes

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>
B	6	11+12.84	C9.5 Of C9.13
A	1	11+88.95	C9.5 Of C9.13

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

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

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

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

31. Minimum flow velocity (From Appendix A)

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

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

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

Table 8 - Flows Greater Than 10 Feet per Second

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

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

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

Administrative Information

34. ☒ The final plans and technical specifications are submitted for TCEQ review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.
35. ☒ Standard details are shown on the detail sheets, which are dated, signed, and sealed by the Texas Licensed Professional Engineer, as listed in the table below:

Table 9 - Standard Details

<i>Standard Details</i>	<i>Shown on Sheet</i>
Lateral stub-out marking [Required]	C9.9 of C9.13
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) [Required]	C9.10 of C9.13
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	C9.9 of C9.13
Typical trench cross-sections [Required]	C9.12 of C9.13
Bolted manholes [Required]	C9.11 of C9.13
Sewer Service lateral standard details [Required]	C9.9 of C9.13
Clean-out at end of line [Required, if used]	C9.9 of C9.13
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	of
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	C9.13 of C9.13
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	C9.10 of C9.13
Drop manholes [Required, if a pipe entering a manhole is more than 24 inches above manhole invert]	C9.10 of C9.13

36. ☒ All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.
37. ☒ All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.
- ☒ Survey staking was completed on this date: TO BE COORDINATED BETWEEN CDS MUERY ENGINEER AND TCEQ.

38. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
39. ☒ Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c) and 30 TAC §217 and prepared by:

Print Name of Licensed Professional Engineer: BRIAN CROWELL

Date: _____

Place engineer's seal here:



Signature of Licensed Professional Engineer:

Appendix A-Flow Velocity Table

Flow Velocity (Flowing Full) All gravity sewer lines on the Edwards Aquifer Recharge Zone shall be designed and constructed with hydraulic slopes sufficient to give a velocity when flowing full of not less than 2.0 feet per second, and not greater than 10 feet per second. The grades shown in the following table are based on Manning's formula and an n factor of 0.013 and shall be the minimum and maximum acceptable slopes unless provisions are made otherwise.

Table 10 - Slope Velocity

<i>Pipe Diameter(Inches)</i>	<i>% Slope required for minimum flow velocity of 2.0 fps</i>	<i>% Slope which produces flow velocity of 10.0 fps</i>
6	0.50	12.35
8	0.33	8.40
10	0.25	6.23
12	0.20	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.30
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*

**For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.*

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

Figure 1 - Manning's Formula

Where:

v = velocity (ft/sec)

n = Manning's roughness coefficient
(0.013)

R_h = hydraulic radius (ft)

S = slope (ft/ft)

**CANYON PASS APARTMENTS
ORGANIZED SEWAGE COLLECTION SYSTEM PLAN**

ATTACHMENT A – ENGINEERING DESIGN REPORT

TCEQ Engineering Design Report

(PEPP-SA EDR v4.0)

For

STONES CROSSING APARTMENTS

Organized Sewage Collection System



August 12, 2025

Prepared By:
CDS MUERY
100 NE Loop 410, Ste. 300
SAN ANTONIO, TEXAS 78216
TBPE Registration Number: F-1733

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PVC PIPE STANDARDS

The American Society for Testing and Materials (ASTM) also known as ASTM International (Reference: www.astm.org) governs the manufacturing specifications for Polyvinyl Chloride (PVC) pipes, including the dimension ratio and water pressure allowable for use of each pipe, through its D-3034 standard. ASTM D-3034 lists its pipe dimensions and pipe classes using the “SDR” mark up, such as SDR-13.5, SDR-21, SDR-26 and SDR-41. The SDR refers to the standard dimension ratio (SDR) of the outside pipe diameter and the wall thickness. This project specifies the use of SDR-26 PVC pipe, which are to meet the ASTM pressure rating of greater than 115 psi and fall in the size category listed below. ASTM D-3034 standards must be meticulously adhered to by all PVC pipe manufacturers and is recognized as the standard during PVC pressure pipe testing and quality checks. Other in-depth information can be found published in Thermoplastic Pressure Pipe Design and Selection UNI-TR-7, by the Uni-Bell PVC Pipe Association.

SDR 26 Pipe Size Matrix (Per ASTM D-3034)			
Size (in)	O.D. (in)	Calc I.D. (in)	Thickness (in)
4	4.215	3.891	0.162
6	6.275	5.793	0.241
8	8.400	7.754	0.323
10	10.500	9.692	0.404
12	12.500	11.538	0.481
15	15.300	14.124	0.588

PROPOSED TYPE OF PIPE

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:

Size of Pipe: **8.00** in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3212
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Calculated Inner Diameter (in) = (Outer Diameter - 2t)	7.754
Outer Diameter (inch):	8.400
Wall Thickness (inch):	0.323
Mean Pipe Diameter (in) = (Outer Diameter - Thickness)	8.077
Approximate Trenching Width (feet):	2.70

Minimum Pipe Depth (Cover) used (feet): **1.35**

Maximum Pipe Depth (Cover) used (feet): **11.09**

FLOW/CAPACITY ANALYSIS

Proposed Waste Water Usage: **96,310.00 GPD**

Q_{max} (As determined in Attachment A) = 0.149 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

A = Cross-Sectional Area, (ft²) = 0.328

S = Slope, decimal, minimum used = 0.005

R_h = hydraulic radius = 0.162

For the Specified Pipe at the Minimum Design Slope, the full flow is

$$Q_{full} = 0.786 \text{ CFS}$$

0.149 < 0.786
Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*
* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than 2.0 feet per second and less than 10.0 feet per second when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:

So, using 8.00 inch PVC Pipe:

$$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

V = velocity (ft/sec)	=	(solve)
n = Manning's coefficient	=	0.013
Calc. Inner Diameter (in)	=	7.754
A = Cross-Sectional Area, ft ²	=	0.328
Wp = Wetted Perimeter, ft	=	2.030
R _h = hydraulic radius, A/Wp	=	0.162
S = slope (ft/ft)	=	0.005

Minimum Slope Used (%): **0.50**

Maximum Slope Used (%): **8.59**

V_{min} = 2.40 ft/sec

V_{max} = 9.96 ft/sec

2.40 > **2.00** ft/sec

9.96 < **10.00** ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E'

Soil type-pipe bedding material (Unified Classification System)	Dumped	E' for Degree of Compaction of Bedding, in pounds per square inch		
		Slight <85% Proctor, <40% relative density	Moderate 85%-95% Proctor, 40%-70% relative density	High, >95% Proctor, >70% relative density
(1)	(2)	(3)	(4)	(5)
Fine-grained Soils (LL>50 _s) Soils with medium to high plasticity CH, MH, CH-MH	No data available; consult a competent soils engineer; Otherwise use E'=0			
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with less than 25% coarse-grained particles	50	200	400	1000
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with more than 25% coarse-grained particles	100	400	1000	2000
Coarse-grained Soils with Fines GM, GC, SM, SC ^c contains more than 12% fines				
Coarse-grained Soils with Little or no Fines GW, GP, SW, SP ^c contains less than 12% fines	200	1000	2000	3000
Crushed Rock	1000	3000	3000	3000
Accuracy in Terms of Percentage Deflection	± 2	± 2	± 1	± 0.5

Taken from: Howard, Amster K. "Soil Reaction for Buried Flexible Pipe"
U.S. Bureau of Reclamation, Denver, CO and the American Society of Civil Engineers.

Modulus of Soil Reaction for the in-situ soil is determined to be = 1000 psi

PIPE BEDDING CLASS

Taken from the American Society for Testing and Material (ASTM) D 2321 and American Association of State Highway and Transportation Officials (AASHTO) M43, and as published on Table 7, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 24.

Pipe Embedment Material						E', psi (kPa) for Degree of Embedment Compaction				
ASTM D 2321*		ASTM D 2487		AASHTO M43	Min. Std. Proctor	Lift Placement Depth	Dumped	Slightly < 85%	Moderate 85% - 95%	High > 95%
Class	Description	Notation	Description	Notation	Density (%)					
IA	Open-graded, clean manufactured aggregates	N/A	Angular crushed stone or rock, crushed gravel, crushed slag; large voids with little or no fines	5 56	Dumped	18" (0.45 m)	1000 (6,900)	3000 (20,700)	3000 (20,700)	3000 (20,700)
IB	Dense-graded, clean manufactured, processed aggregates	N/A	Angular crushed stone or other Class IA material and stone/sand mixtures; little or no fines							
II	Clean, coarse-grained soils	GW	Well-graded gravel, gravel/sand mixtures; little or no fines	57 6 67	85%	12" (0.30 m)	N/R	1000 (6,900)	2000 (13,800)	3000 (20,700)
		GP	Poorly graded gravel, gravel/sand mixtures; little or no fines							
		SW	Well-graded sands, gravelly sands; little or no fines							
		SP	Poorly graded sands, gravelly sands; little or no fines							
III	Coarse-grained soils with fines	GM	Silty gravels, gravel/sand/silt mixtures	Gravel and sand with <10% fines	90%	9" (0.20 m)	N/R	N/R	1000 (6,900)	2000 (13,800)
		GC	Clayey gravels, gravel/sand/clay mixtures							
		SM	Silty sands, sand/silt mixtures							
		SC	Clayey sands, sand/clay mixtures							

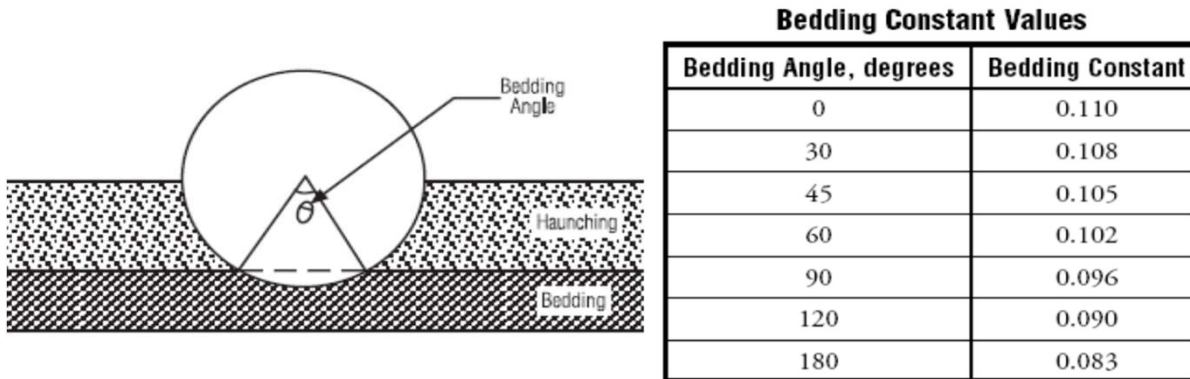
NOTE:

Per TCEQ guidelines, a contractor is allowed to use ASTM D 2321 Bedding Class 1A, 1B, II, or III at no less than 85% percent compaction. To grant the contractor its ability to make the proper judgment of which bedding class to use, the calculations provided in this Engineering Design Report reflect the use of **Bedding Class III, at 85%-95% compaction**, with an E' value of 1000 psi. This provides the "worst case" scenario for the SCS line. All other Bedding Class options will provide an improved value for the zeta factor as well as pipe deflection.

For Bedding Class III, 85%-95% Compaction, $E_b = 1000$ psi

PIPE BEDDING ANGLE

As Published on Figure 8 and Table 5, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pgs 18-19.



LIVE LOAD DETERMINATION

Source: AASHTO H20 and E80 Loads and as Published on Table 4, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 14.

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

¹ Simulates 20 ton truck + impact

² Simulates 80,000 lb/ft railway load + impact

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

* Negligible live load influence

PRISM LOAD DETERMINATION

Also referred to as the ‘dead’ load, the prism load is the pressure acting on the pipe by the weight of the soil column above a given section of the pipe. The following prism load columns are industry standards as referenced from Table 3, Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 13.

Table 3 Prism Load Soil Pressure (lbs/in ²)					
Height of Cover (ft)	Soil Unit Weight (lb/ft ³)				
	100	110	120	125	130
1	0.69	0.76	0.83	0.87	0.90
2	1.39	1.53	1.67	1.74	1.81
3	2.08	2.29	2.50	2.60	2.71
4	2.78	3.06	3.33	3.47	3.61
5	3.47	3.82	4.17	4.34	4.51
6	4.17	4.58	5.00	5.21	5.42
7	4.86	5.35	5.83	6.08	6.32
8	5.56	6.11	6.67	6.94	7.22
9	6.25	6.88	7.50	7.81	8.13
10	6.94	7.64	8.33	8.68	9.03
11	7.64	8.40	9.17	9.55	9.93
12	8.33	9.17	10.00	10.42	10.83
13	9.03	9.93	10.83	11.28	11.74
14	9.72	10.69	11.67	12.15	12.64
15	10.42	11.46	12.50	13.02	13.54
16	11.11	12.22	13.33	13.89	14.44
17	11.81	12.99	14.17	14.76	15.35
18	12.50	13.75	15.00	15.63	16.25
19	13.19	14.51	15.83	16.49	17.15
20	13.89	15.28	16.67	17.36	18.06
21	14.58	16.04	17.50	18.23	18.96
22	15.28	16.81	18.33	19.10	19.86
23	15.97	17.57	19.17	19.97	20.76
24	16.67	18.33	20.00	20.83	21.67
25	17.36	19.10	20.83	21.70	22.57
26	18.06	19.86	21.67	22.57	23.47
27	18.75	20.63	22.50	23.44	24.38
28	19.44	21.39	23.33	24.31	25.28
29	20.14	22.15	24.17	25.17	26.18
30	20.83	22.92	25.00	26.04	27.08
31	21.53	23.68	25.83	26.91	27.99
32	22.22	24.44	26.67	27.78	28.89
33	22.92	25.21	27.50	28.65	29.79
34	23.61	25.97	28.33	29.51	30.69
35	24.31	26.74	29.17	30.38	31.60
36	25.00	27.50	30.00	31.25	32.50
37	25.69	28.26	30.83	32.12	33.40
38	26.39	29.03	31.67	32.99	34.31
39	27.08	29.79	32.50	33.85	35.21
40	27.78	30.56	33.33	34.72	36.11
41	28.47	31.32	34.17	35.59	37.01
42	29.17	32.08	35.00	36.46	37.92
43	29.86	32.85	35.83	37.33	38.82
44	30.56	33.61	36.67	38.19	39.72
45	31.25	34.38	37.50	39.06	40.63
46	31.94	35.14	38.33	39.93	41.53
47	32.64	35.90	39.17	40.80	42.43
48	33.33	36.67	40.00	41.67	43.33
49	34.03	37.43	40.83	42.53	44.24
50	34.72	38.19	41.67	43.40	45.14

Note that the Prism Loads are calculated based upon the Marston Theory of Loads, developed by Professor Anson Marston, circa 1913, and is calculated using the formula:

$$P = \frac{\gamma_s * H}{144}$$

This formula determines the earth load on a flexible pipe and is regarded as a conservative approach to determining the dead load placed upon a buried flexible pipe.

At maximum burial depth of 11.09 feet, prism load = 9.55 psi

BUCKLING PRESSURE (ALLOWABLE)

Where:	q_a	=	Allowable buckling pressure (psi)	
	h	=	Height of soil above top of pipe (in)	= 133.08 in
	H	=	Depth of burial, feet, from ground surface to top of pipe	
	B'	=	Empirical coefficient of elastic support	
	E_b	=	Modulus of soil reaction for the bedding material (psi)	
	E	=	Modulus of elasticity of the pipe material (psi)	
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in ³)	
	t	=	Pipe wall thickness (in)	
	D	=	Mean Pipe Diameter (in)	$D = 8.077$ in

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design, 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$I = \left(\frac{t^3}{12}\right) = \left(\frac{\text{inches}^3}{\text{in}_{linear}}\right) =$$

$$B' = \frac{75140.7}{112809} = 0.666 \quad I = \frac{0.0337}{12} = 0.0028$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design, 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3}\right)} \quad \text{Where,}$$

$$R_w = 1 - 0.33(h_w / h)$$

$$q_a = \frac{1}{2.5} \sqrt{\left[\begin{matrix} 32 \\ \end{matrix} \right] \left[\begin{matrix} 1 \\ \end{matrix} \right] \left[\begin{matrix} 0.666 \\ \end{matrix} \right] \left[\begin{matrix} 1000 \\ \end{matrix} \right] \left[\begin{matrix} 400000 & \frac{0.0028}{526.93} \end{matrix} \right]}$$

$$q_a = 85.26 \quad \text{psi}$$

BUCKLING PRESSURE (INSTALLED CONDITION)

Where:	q_p	=	Pressure applied to pipe under installed conditions (psi)
	γ_w	=	Specific Weight of Water = 0.0361 (pci)
	γ_s	=	Specific Weight of Soil (pcf)
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)
	L_L	=	Live load as determined from chart
	hw	=	Height of Groundwater above pipe, typically = 0
	D	=	Mean Pipe Diameter (in) D = 8.077 in
	t	=	Pipe Wall Thickness (in) t = 0.323 in

The Vertical Soil Load can be calculated using Equation 6.6 of Uni-Bell's Handbook of PVC Pipe , Ch VI Superimposed Loads on Buried Pipe, Pg 183

$$W_c = H \times \gamma_s \times (D + t)$$

Where: $\gamma_s = 125$ Value taken from: **Data Provided by Geotechnical Engineer**

$$W_c = \left[11.09 \right] \left[12 \text{ in/ft} \right] \left[125.00 \right] \left[\frac{1 \text{ ft}^3}{1728 \text{ in}^3} \right] \left[8.40 \right]$$

$$W_c = 80.86 \text{ lb/in}$$

At Max Pipe Depth (H) of 11.09 ft

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, since hw = 0, the Water Buoyancy Factor (Rw) = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right) \text{ and } L_L = 0 \qquad R_w = 1 - 0.33 (h_w / h)$$
$$q_p = 0.0361 \times 0 + 1 \times \left[\frac{80.86}{8.077} \right]$$
$$q_p = 10.01 \text{ psi}$$

Note: The pressure applied to the pipe under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

WALL CRUSHING CALCULATION

Where:	D_o	=	outside pipe diameter, in.	=	8.4 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.		
	A	=	surface area of the pipe wall, in. ² /ft	=	0.323 in. ² /ft
	γ_s	=	specific weight of soil, pcf,	=	125 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe		

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \text{ where } T, \text{ Thrust, is calculated as } T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2 A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y :

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2 A} \text{ Rearranging this equation, it becomes: } 2 A P_c = \frac{\gamma_s * H}{144} D$$

And simplifies to:

$$288 A P_c = \gamma_s H D$$

Note that the Surface Area of the Pipe Wall, A , is per unit length in inches² per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24 A P_c = \gamma_s H D$$

Solving for H , the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24 \right] \left[4000 \right] \left[0.323 \times 12 \right]}{125 \times 8.4} = 354.38$$

$$H = 354.38 \text{ feet}$$

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

The Leonhardt's Zeta Factor Equation can be calculated using Equation 7.32 of Uni-Bell's Handbook of PVC Pipe , Ch VII Design of Buried PVC Pipe, Pg 268

Where: Do = Pipe Outer Diameter, in = 8.400
B = Trench Width, in, = 32.40 in
E_b = Modulus of soil reaction, bedding material (psi) = 1000
E_n = Modulus of soil reaction for the in-situ soil (psi) = 1000

$$\text{where, } zeta = \frac{1.44}{f + [1.44 - f] \times \left[\frac{E_b}{E'_n} \right]}$$

$$f = \frac{\frac{B}{Do} - 1}{1.154 + 0.444 \left[\frac{B}{Do} - 1 \right]}$$

$$f = \frac{2.857143}{2.420571} = 1.18036$$

Substituting f into the zeta equation:

$$zeta = \frac{1.44}{[1.180] [0.260] [1.000]}$$

The Leonhardt Zeta factor is then determined as: **1.000**

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D} \right)$$

Where: PS = Pipe Stiffness, for SDR-26 PVC (psi) = 11: 115 psi
C = Conversion factor = 0.8
RSC = Ring Stiffness Constant
D = Mean Pipe Diameter (in), D = 8.077 in

The RSC can be supplied by the manufacturer or calculated by rearranging Equation B.1

$$RSC = \frac{PS}{C \times \left(\frac{8.337}{D} \right)}$$

$$RSC = \frac{115}{0.825752}$$

$$RSC = 139.267$$

PREDICTED PIPE DEFLECTION

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at <http://www.uni-bell.org/faq.html>, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	% $\Delta Y/D$	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.096
	W'	=	Live Load, psi, = 0 At max depth (ft) : 11.09
	DR	=	Dimension Ratio = 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction (zeta x Eb) = 1000.00
	D _L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%) \frac{\Delta Y}{D} = \frac{(D_L KP + KW') \times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load,

$$P = \frac{\gamma_s * H}{144}$$

and/or from previous chart, prism load = 9.55 psi

The Predicted Deflection is determined as:

$$(\%) \frac{\Delta Y}{D} = \frac{\left[\left[\frac{1.5 \times 0.917}{\frac{800000}{46875}} \right] + 0 \right] \times 100}{\left[\frac{800000}{46875} \right] + [0.061 \times 1000.00]} = 1.76 \%$$

NOTE: 1.76 < 5%, therefore pipe design is acceptable

A deflection lag factor of 1.0 is typical for new pipes. Over the life of the pipe, the pipe will tend to deflect. Therefore, 1.5 is a conservative factor for the 50 year life.

PIPE STRAIN

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	ϵ_h	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness (in) = 0.323
	D	=	Pipe Diameter, Outer (in) = 8.400

$$\epsilon_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\frac{[0.00 + 9.55]}{2} \times \frac{8.400}{0.323 \times 400,000} = 3.104\text{E-}04 \frac{\text{in}}{\text{in}}$$

(Continued on following page)

Where:	ϵ_f	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness (in) = 0.323
	D	=	Pipe Diameter, Outer (in) = 8.400
	DR	=	Dimension Ratio, PVC Pipe= 26

$$\epsilon_f = \frac{t}{D} \left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D} \right] = \frac{1}{DR} \left[\frac{3\Delta Y}{D - 2\Delta Y} \right]$$

$$\frac{0.323}{8.400} \times \frac{412.560}{8.400 - 275.040} = -0.0595 \frac{\text{in}}{\text{in}}$$

$$\epsilon_{total} = \mathbf{-0.0592} \frac{\text{in}}{\text{in}}$$

TCEQ PIPE BEDDING AND TRENCHING REQUIREMENTS (30 TAC 217.54)

****These notes are provided in the Construction Documents on Sheet C9.12**

a. Pipe Embedment

1. A rigid pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are A, B, or C, as described in American Society for Testing and Materials (ASTM) C 12, American National Standards Institute (ANSI) A 106.2, Water Environment Federation Manual of Practice No. 9 or American Society of Civil Engineers (ASCE) MOP 37.
2. A flexible pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are IA, IB, II, or III, as described in ASTM D-2321 or ANSI K65.171.
3. Debris, large clods, or stones that are greater than six inches in diameter, organic matter, or other unstable materials are prohibited as bedding, haunching, or initial backfill.
4. Backfill must not disturb the alignment of a collection system pipe.
5. If trenching encounters significant fracture, fault zones, caves, or solutional modification to the rock strata, an owner must halt construction until an engineer prepares a written report detailing how construction will accommodate these site conditions.

b. Compaction.

1. Compaction of an embedment envelope must meet the manufacturer's recommendations for the collection system pipe used in a project.
2. Compaction of an embedment envelope must provide the modulus of soil reaction for the bedding material necessary to ensure a wastewater collection system pipe's structural integrity as required by §217.53 of this title (relating to Pipe Design).
3. The placement of the backfill above a pipe must not affect the structural integrity of a pipe.

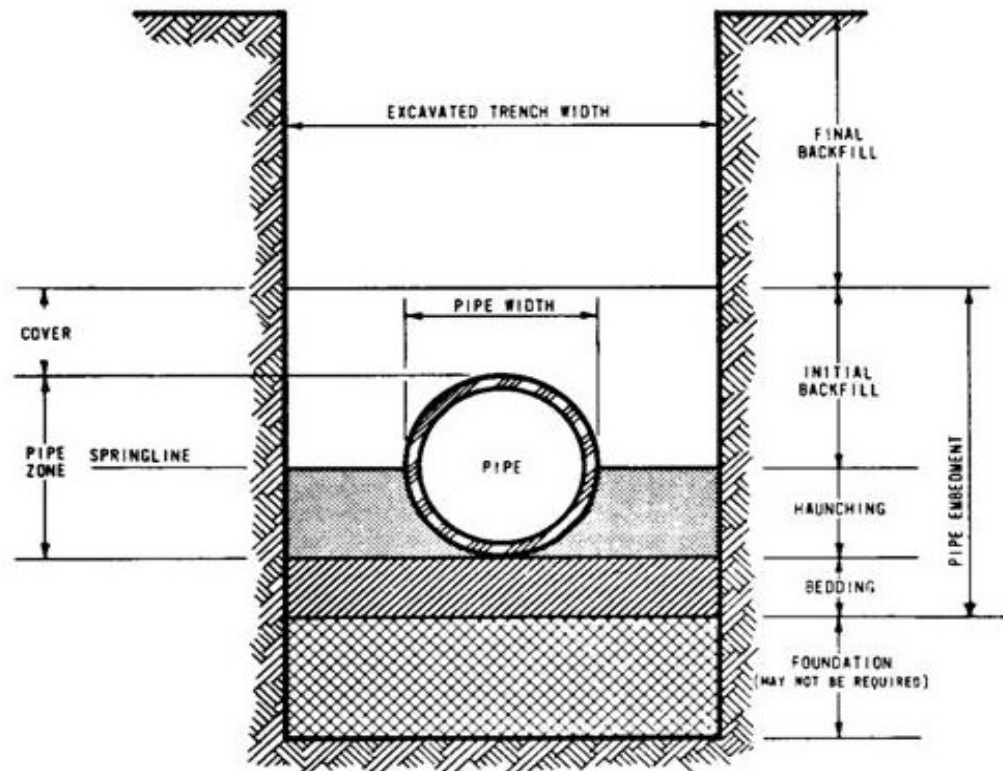
c. Envelope Size.

1. A minimum clearance of 6.0 inches below and on each side of the bell of all pipes to the trench walls and floor is required.
2. The embedment material used for haunching and initial backfill must be installed to a minimum depth of 12 inches above the crown of a pipe.

d. Trench Width.

1. The width of a trench must allow a pipe to be laid and jointed properly and must allow the backfill to be placed and compacted as needed.
2. The maximum and minimum trench width needed for safety and a pipe's structural integrity must be included in the report.
3. The width of a trench must be sufficient to properly and safely place and compact haunching materials.
4. The space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone.

TRENCH CROSS-SECTION (30 TAC 217.54)



NOTE:

Trenching Details along with 30 TAC 217.54 are annotated in the Construction Documents/Plan Sheets on [Sheet C9.12](#)

MANHOLE SPECIFICATIONS

30 TAC 217.55 Requirements with design comments:

- a. An owner must include manholes in a wastewater collection system at:
 - 1. All points of change in alignment, grade, or size;
 - 2. At the intersection of all pipes; and
 - 3. At the end of all pipes that may be extended at a future date. **All WW SCS**

Lines end with a Manhole

- b. Manholes placed at the end of a wastewater collection system pipe that may be extended in the future must include pipe stub outs with plugs. **(Self explanatory, see item a above)**
- c. A clean-out with watertight plugs may be installed in lieu of a manhole at the end of a wastewater collection system pipe if no extensions are anticipated. **(Self explanatory, clean outs not used in-lieu of manholes)**
- d. Cleanout installations must pass all applicable testing requirements outlined for gravity collection pipes in §217.57 of this title (relating to Testing Requirements for Installation of Gravity Collection System Pipes). **(Self explanatory, see Item c above)**

A manhole must be made of monolithic, cast-in-place concrete, fiberglass, pre-cast

- e. concrete, high-density polyethylene, or equivalent material that provides adequate structural integrity. **See the Pre-Cast Manhole Details following these construction notes along with San Antonio Water System (SAWS) MH Details in Construction Documents**

- f. The use of bricks to adjust a manhole cover to grade or construct a manhole is prohibited. **(Self explanatory, See Details following these notes)**

- g. Manholes may be spaced no further apart than the distances specified in the following table for a wastewater collection system with straight alignment and uniform grades, unless a variance based on the availability of cleaning equipment that is capable of servicing greater distances is granted by the executive director. **(Manholes are spaced no greater than 400 L.F. per SAWS specifications)**

Table C.2. - Maximum Manhole Spacing	
Pipe Diameter	Maximum Manhole
6-15	500
18-30	800
36-48	1000
54 or larger	2000

- h. Tunnels are exempt from manhole spacing requirements because of construction constraints. **(Self explanatory and not applicable)**
- i. An intersection of three or more collection pipes must have a manhole. **(Self explanatory and maintained throughout the design of the SCS)**
- j. A manhole must not be located in the flow path of a watercourse, or in an area where ponding of surface water is probable. **(Self explanatory and maintained throughout the design of the SCS)**
- k. The inside diameter of a manhole must be no less than 48 inches. A manhole diameter must be sufficient to allow personnel and equipment to enter, exit, and work in the manhole and to allow proper joining of the collection system pipes in the manhole wall. **(See Manhole Details following these notes)**
- l. Manholes must meet the following requirements for covers, inlets, and bases.

- 1. Manhole Covers

- A. A manhole where personnel entry is anticipated requires at least a 30 inch diameter clear opening. **(Covers to have 32" Openings per SAWS Specifications and Manhole Details on Sheet 6)**
- B. A manhole located within a 100-year flood plain must have a means of preventing inflow. **(Self explanatory but not applicable for this project)**
- C. A manhole cover construction must be constructed of impervious material. **(Self explanatory, See Manhole Details)**
- D. A manhole cover that is located in a roadway must meet or exceed the American Association of State Highways and Transportation Officials standard M-306 for load bearing. **(Self explanatory, See Manhole Details)**

- 2. Manhole Inverts

- A. The bottom of a manhole must contain a U-shaped channel that is a smooth continuation of the inlet and outlet pipes. **(Self explanatory, see SAWS Manhole Details)**
A manhole connected to a pipe less than 15 inches in diameter
- B. must have a channel depth equal to at least half the largest pipe's diameter **(Self explanatory, see SAWS Manhole Details)**
A manhole connected to a pipe at least 15 inches in diameter
- C. but not more than 24 inches in diameter must have a channel depth equal to at least three-fourths of the largest pipe's diameter **(Self explanatory, but not applicable for this project)**

- D. A manhole connected to a pipe greater than 24 inches in diameter must have a channel depth equal to at least the largest pipe's diameter **(Self explanatory, but not applicable for this project)**.
- E. A manhole with pipes of different sizes must have the tops of the pipes at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe. **(Self explanatory and maintained throughout the design of the SCS)**
- F. A bench provided above a channel must slope at a minimum of 0.5 inch per foot. **(Self Explanatory)**
- G. An invert must be filleted to prevent solids from being deposited if a wastewater collection system pipe enters a manhole higher than 24 inches above a manhole invert. **(Self Explanatory, but not applicable to this project)**
- H. A wastewater collection system pipe entering a manhole more than 24 inches above an invert must have a drop pipe. **(Self Explanatory, applicable to this project)**
- m. The inclusion of steps in a manhole is prohibited. **(Self Explanatory, steps are not included in SAWS manhole Details)**
- n. Connections. A manhole-pipe connection must use watertight, size-on-size resilient connectors that allow for differential settlement and must conform to American Society for Testing and Materials C-923. **(Self Explanatory, see SAWS Details Sheet 6)**
- o. Venting. An owner must use an alternate means of venting if manholes are at more than 1,500 foot intervals and gasketed manhole covers are required for more than three manholes in sequence. Vents must meet the following requirements: **(Self Explanatory, vented manhole provided at MH A-1, A-3,A-6.)**
 - 1. Vent design must minimize inflow;
 - 2. Vents must be located above a 100-year flood event elevation; and
 - 3. Tunnels must be vented in compliance with this subsection.
- p. Cleanouts. The size of a cleanout must be equal to the size of the wastewater collection system main. **(Self Explanatory)**

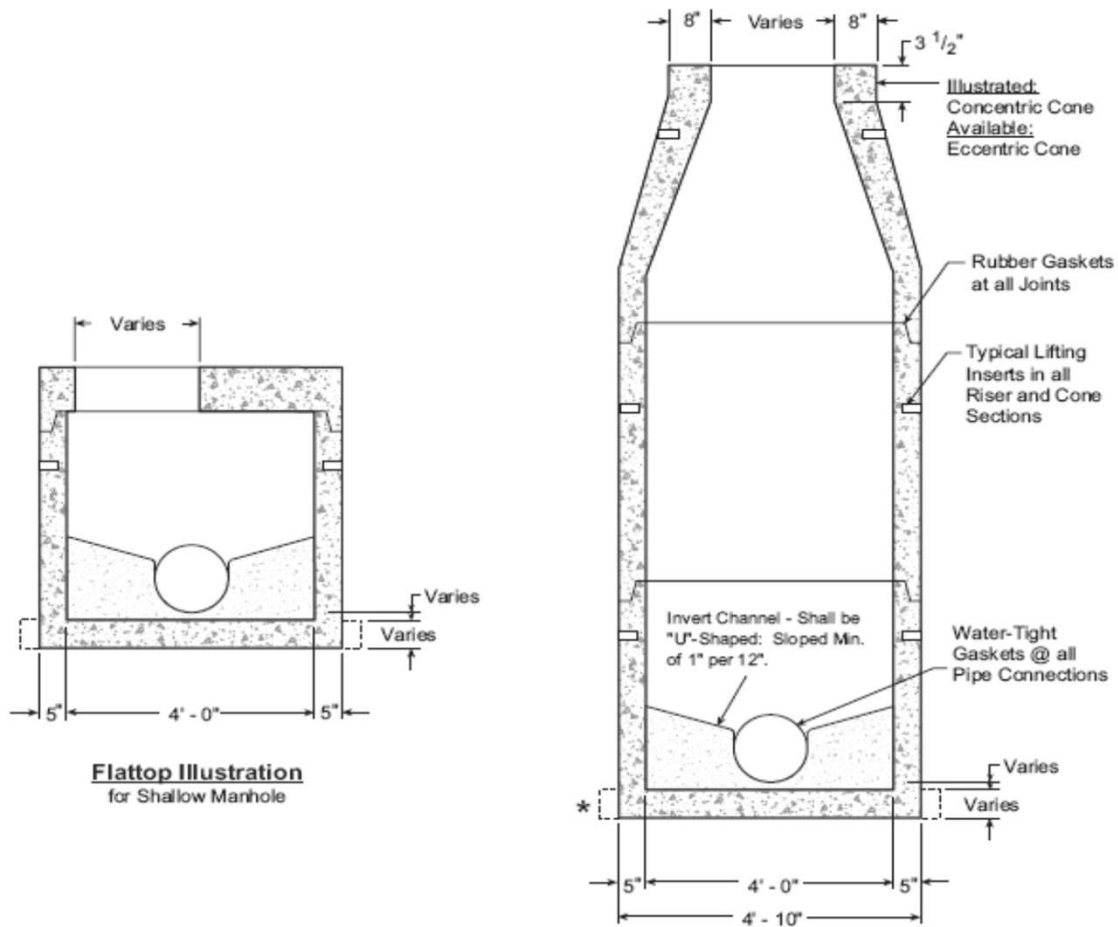
Precast Manhole Information:

Hanson Pipe and Precast

Hanson Building Products West
 300 E John Carpenter Freeway
 11th floor
 Irving, TX 75062
 972.653.5500

San Antonio Metro Area Contact:
 210.661.2351
 866.426.7661

Precast Manholes



Flattop Illustration
for Shallow Manhole

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

Materials & Features

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

* - Extended base is available to meet local requirements.

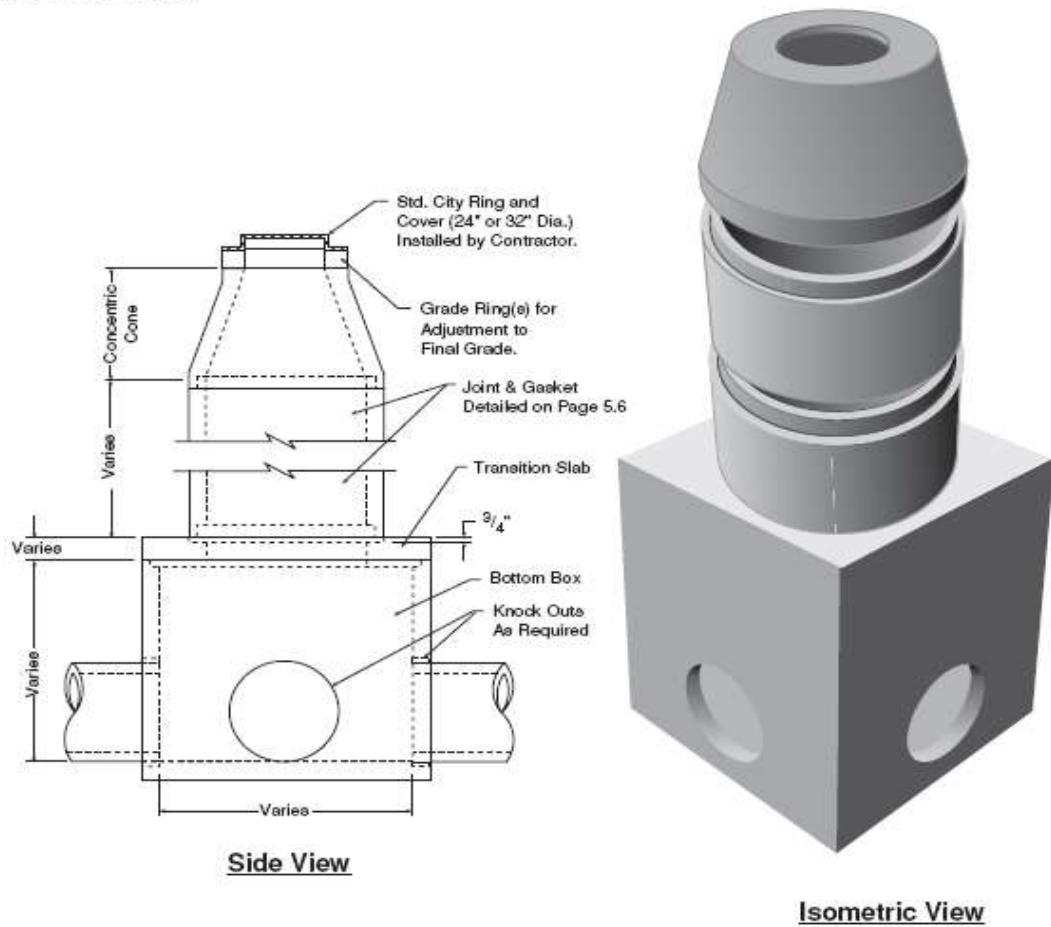
In the event a boot is loose contact your Hanson representative to resolve.

"Manufactured to your specifications."

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

TITLE	PLANT	STATE	SECTION/PAGE	DATE	
4' I.D. Manhole Regular Base w/Reducing Cone	All Plants	TX	5.5	07-01-06	

Precast Manholes



Materials & Features

CONCRETE: 5,000 PSI in 28 days.

REINFORCING STEEL: per ASTM A-615 / A-185

REINFORCING to meet AASHTO HS 20-44 Loading.

BASE DESIGN EQUAL TO OR EXCEEDS ASTM C-357

RISER DESIGN EQUAL TO OR EXCEEDS ASTM C-478

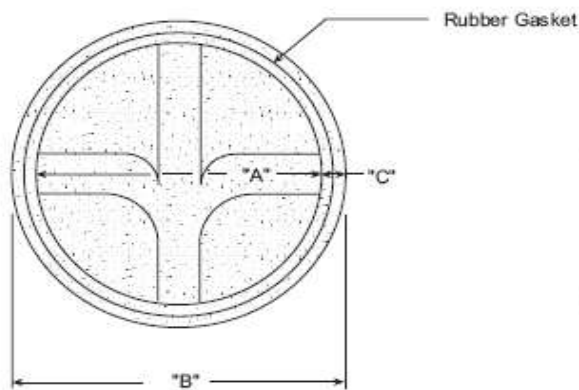
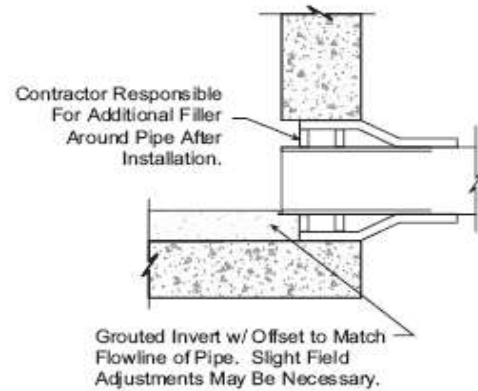
In the event a boot is loose contact your Hanson representative to resolve.

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

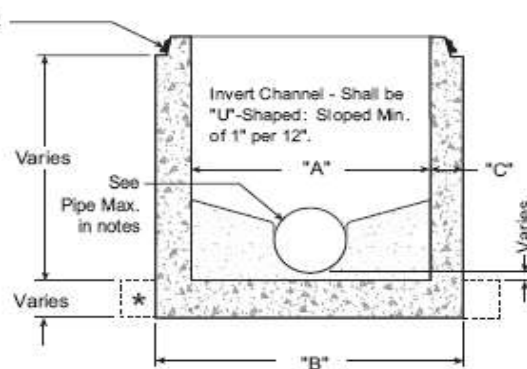
TITLE	PLANT	STATE	SECTION, PAGE	DATE	
Type "C" Manhole	Houston San Antonio	TX	5.11	07-01-06	

Precast Manholes

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



Plan View



Section View

Materials & Features

HOLES AS SPECIFIED:

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

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

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

CONCRETE: 5,000 PSI, 28 day strength.

REINFORCING: Meets or exceeds ASTM C478 requirements.

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

Water-tight gaskets at all pipe connections.

* - Regular base shown: Extended base also available.

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

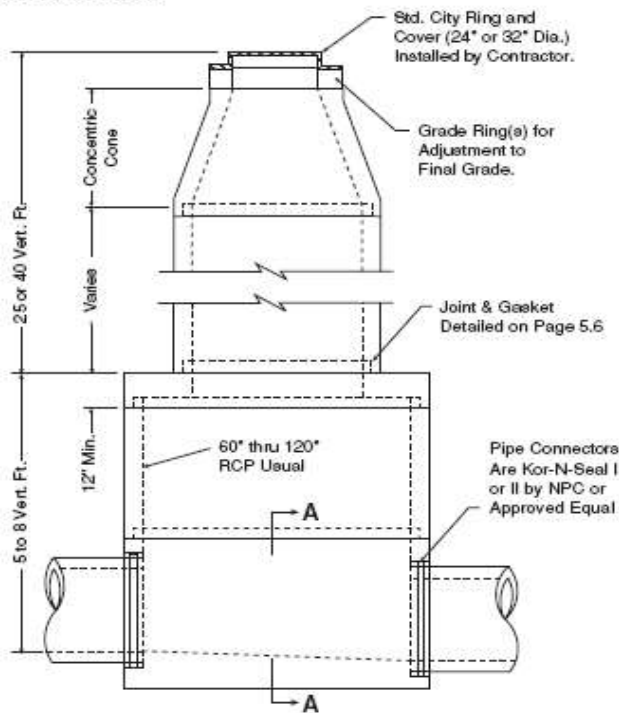
Pipe Size	I.D. "A"	O.D. "B"	Wall Thk. "C"
4'	4' - 0"	4' - 10"	5"
5'	5' - 0"	6' - 0"	6"
6'	6' - 0"	7' - 2"	7"

-No Scale-

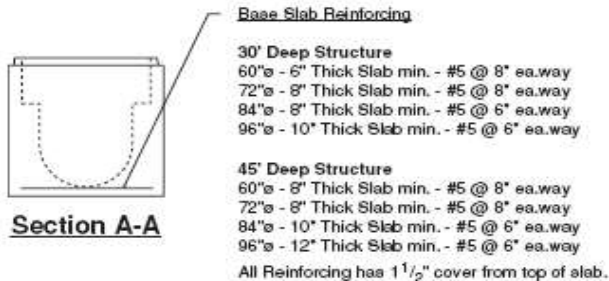
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION/PAGE	DATE	
Details: 4', 5' & 6' I.D. Precast Regular Manhole Base	All Plants	TX	5.7	07-01-06	

Precast Manholes



w/ Precast Base



Section A-A



Isometric View

Materials & Features

CONCRETE: 5,000 PSI in 28 days.

REINFORCING STEEL: per ASTM A-615, Grade 60.

REINFORCING to meet AASHTO HS 20-44 Loading.

DESIGN EQUAL TO OR EXCEEDS ASTM C-478

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

Note:

- Inverts shall be specifically sized for connecting pipes; and shall be U-Shaped with the min. depth 3/4 of the largest pipe diameter.

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

TITLE	PLANT	STATE	SECTION/PAGE	DATE	
30 & 45 Ft. Depth 60" thru 96" Large Base Manhole	Houston San Antonio	TX	5.10	07-01-06	

ATTACHMENT A

PROJECT DESCRIPTION / SEWAGE CALCULATIONS

San Antonio Water System Infrastructure Planning Equivalent Dwelling Unit (EDU) Calculation Sheet

Subdivision Name: STONES CROSSING APARTMENTSPlat I.D.# LAND-PLAT-24-11800347

The estimated Average Sewer Flows or Equivalent Dwelling Units that are shown on the SAWS Infrastructure Planning Application for Subdivision Plat Review has been calculated by one of the following methods:

- ☒ Equivalent Dwelling Units (EDU) calculation sheet.
☐ Engineering Study using actual consumption data from similar facilities based on twelve month data also submitted for review.
☐ Calculate estimated sewer discharge utilizing accepted SAWS referenced material.
☐ Unknown land use will be calculated at four (4) EDU's per acre.

SAWS has established recommended guidelines to be employed for future discharge calculations which are shown next to the referenced facility. The numbers shown, for each type of development, are based on flow rate table measurements from TNRCC regulations, ASCE Manuals on Engineering Practice, EPA Technology Transfer Manuals, Uniform Plumbing Code fixture unit count and other Wastewater Engineering texts. All applicants will use these guidelines to calculate average daily flows or EDU's.

SAWS will accept sewage flow calculations for any proposed development which is derived through an engineering study of actual measured sewer flows for similar facilities in lieu of the above criteria to determine the total estimated average daily flow or EDU's for the proposed development. If this data is not provided or new calculations are not submitted with initial plat package, the undersigned will allow SAWS to calculate the estimated average daily flows or EDU's at four EDU's per acre. The undersigned will then also accept SAWS these EDU calculations as final.

Types of Development: Identify all types of development that will be part of the proposed project and complete the related information listed for each to calculate as Estimated Average Daily Flow (EADF) or Equivalent Dwelling Units (EDU's). **Note:** One (1) EDU equals 240 gallons per day as average sewage flow and 313 gallons per day for average water flow. (Circle type of units used - EADF or EDU's)

Single Family Homes (1 EDU/Lot) [] **Manufactured Homes** (1 EDU/Pad) [] Number Lots _____ Number Pads _____ EADF or EDU's _____

Apartments [X] **Duplexes** [] **Town Homes** [] **Condominiums** [] (0.5 EDU/Unit) Total Number of Units 336 EADF or EDU's 168

Schools: Elementary [] (5 g/student) [] Middle (8 g/student) [] High School (10 g/student) [] University/College/Other (10g/student)

Number of Students _____ Number of Faculty & Staff _____ EADF or EDU's _____

Hotel [] (100 g/room) **Motel** [] (50 g/room) Number of Rooms _____ Number of Staff _____ Swimming Pool _____ EADF or EDU's _____

Hospital (250 g/bed) [] **Nursing Home** (100 g/bed) [] other _____ Number of Beds _____ Number of Staff _____ EADF or EDU's _____

Commercial [] **Industrial** [] **TBDDE** Type of Product _____ Water Consumption _____ Effluent Discharged _____

Number of Employees _____ Number of Fixtures _____ EADF or EDU's _____

(Contact SAWS Wastewater Compliance Division if a portion of the flow is industrial wastewater. Phone 233-3557)

Office Building [] (.035 g/sf) Building Square Footage _____ Number of employees _____ EADF or EDU's _____

Medical Building [] (.15 g/sf) Building Square Footage _____ Number of employees _____ EADF or EDU's _____

Restaurant [] **Cafeteria** [] (20 g/seat) Number of Seats _____ Business Hours _____ EADF or EDU's _____

Fast Food [] (4.4 edus per facility) Type of Food Served _____ EADF or EDU's _____

Cocktail Lounge [] **Night Club** [] **TBDDE** Number of Seats and at Bar _____ Number of Employees _____ EADF or EDU's _____

Health Club [] **Recreational Facility** [] **TBDDE** Building Square Footage _____ Customers per day _____ Swimming Pool Size _____

Seats in Snack Bar _____ Number of Restrooms _____ Number of Showers _____ EADF or EDU's _____

Department Store [] **Retail Store** [] (.07 g/sf) Type of Store _____ Building Sq. Ft. _____ Number of Customers _____

Number of Employees _____ Snack Bar _____ EADF or EDU's _____

Grocery Store [] **Food Store** [] **Convenience Stores** [] **TBDDE** Building Square Footage _____ Number of Employees _____

Business Hours _____ Number of Customer _____ Fuel Service _____ EADF or EDU's _____

Laundries [] (200 g/machine) Number of Machines _____ Business Hours _____ EADF or EDU's _____

Churches [] **Auditoriums** [] (5 Gal/Seat) Seating Capacity _____ Number Rest Rooms _____ Number of Fixtures _____ EADF or EDU's _____

Car Wash [] **TBDDE** (1.5 edu per Bay) Number of Bays _____ Number Cars per Day _____ EADF or EDU's _____

Automated Car Wash [] **TBDDE** Gallons for Premium Wash _____ Effluent Discharged per Wash _____ Number Cars per Day _____

EADF or EDU's _____ (Specifications Required)

Service stations [] 1 edu Gas Station _____ add 2 edu Grocery/Takeout Food _____ add 15 edu Car Wash _____ EADF or EDU's _____

Theatre [] (1.5 g/seat) Number of seats _____ Number of Employees _____ EADF or EDU's _____

Other Type of Development Proposed Land Use _____ Building Square Footage _____ Number of Employees _____

Number of Customers _____ Number of seats _____ Number of Fixtures _____ Business Hours _____ EADF or EDU's _____

Calculation work space for land use not shown: (Please type or print in ink)

SANITARY SEWER-EDU
 APARTMENTS : 336 UNITS AT 0.5 EDU = 168 EDU
 CLUBHOUSE = 2 EDU
 TOTAL SANITARY EDU = 170 EDU
 PEAK FLOW = 170 * 200 GPD * 2.5 + 600 * 18.85 ACRES = 96,310 GPD

Additional Information: _____

If additional space is needed add a separate sheet, on letterhead, and attach it to this sheet at time of submittal.

This form must be completely filled out and submitted with an original signature. No other form will be accepted.

Applicant or Applicant's Agent Signature

Date

ATTACHMENT B

CONNECTION OF DIS-LIKE PIPE TYPES - NOT APPLICABLE

ATTACHMENT C
GENERAL WASTEWATER NOTES

SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT

General Section

1. All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:
 - A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Wastewater System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.
 - B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".
 - C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction".
 - D. Current City of San Antonio "Standard Specifications for Public Works Construction".
 - E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).
2. The contractor shall not proceed with any pipe installation work until they obtain a copy of the approved Counter Permit or General Construction Permit (GCP) from the consultant and has been notified by SAWS Construction Inspection Division to proceed with the work and has arranged a meeting with the inspector and consultant for the work requirements. Work completed by the contractor without an approved Counter Permit and/or a GCP will be subject to removal and replacement at the expense of the contractors and/or the developer.
3. The Contractor shall obtain the SAWS Standard Details from the SAWS website, http://www.saws.org/business_center/specs. Unless otherwise noted within the design plans.
4. The Contractor is to make arrangements with the SAWS Construction Inspection Division at (210) 233-2973, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.
5. Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.
6. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:
 - SAWS Utility Locates: <http://www.saws.org/Service/Locates>
 - COSA Drainage (210) 207-0724 or (210) 207-6026
 - COSA Traffic Signal Operations (210) 206-8480
 - COSA Traffic Signal Damages (210) 207-3951
 - Texas State Wide One Call Locator 1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.
8. All work in Texas Department of Transportation (TxDOT) and/or Bexar County right-of-way shall be done in accordance with respective construction specifications and permit requirements.
9. The Contractor shall comply with City of San Antonio or other governing municipality's tree ordinances when excavating near trees.
10. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.
11. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to constworkreq@saws.org.

Weekend Work: Contractors are required to notify the SAWS Inspection Construction Department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org.

Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

12. Compaction note (Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the SAWS Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.
13. A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division.

Water Section

1. Prior to tie-ins, any shutdowns of existing mains of any size must be coordinated with the SAWS Construction Inspection Division at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.
 - For water mains 12" or higher: SAWS Emergency Operations Center (210) 233-2014
2. Asbestos Cement (AC) pipe, also known as transite pipe which is known to contain asbestos-containing material (ACM), may be located within the project limits. Special waste management procedures and health and safety requirements will be applicable when removal and/or disturbance of this pipe occurs. Such work is to be made under Special Specification Item No. 3000, "Special Specification for Handling Asbestos Cement Pipe".

3. Valve removal: Where the contractor is to abandon a water main, the control valve located on the abandoning branch will be removed and replaced with a cap/plug. (NSPI)
4. Suitable anchorage/thrust blocking or joint restraint shall be provided at all of the following main locations: dead ends, plugs, caps, tees, crosses, valves, and bends, in accordance with the Standard Drawings DD-839 Series and Item No. 839, in the SAWS Standard Specifications for Construction.
5. All valves shall read "open right".
6. PRVs Required: Contractor to verify that no portion of the tract is below ground elevation of _____ feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below _____ feet, the Developer or Builder shall install at each lot, on the customer's side of the meter, an approved type pressure regulator in conformance with the Plumbing Code of the City of San Antonio. No dual services allowed for any lot(s) if *PRV is/are required for such lot(s), only single service connections shall be allowed. *Note: A pressure regulator is also known as a pressure reducing valve (PRV).
7. Pipe Disinfection with Dry HTH for Projects less than 800 linear feet. (Item No. 847.3): Mains shall be disinfected with dry HTH where shown in the contract documents or as directed by the Inspector, and shall not exceed a total length of 800 feet. This method of disinfection will also be followed for main repairs. The Contractor shall utilize all appropriate safety measure to protect his personnel during disinfection operations.
8. Backflow Prevention Devices:
 - All irrigation services within residential areas are required to have backflow prevention devices.
 - All commercial backflow prevention devices must be approved by SAWS prior to installation.
9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie-in and use.

Sewer Notes

1. The Contractor is responsible for ensuring that no Sanitary Sewer Overflow (SSO) occurs as a result of their work. All contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the contractor shall:
 - A. Identify the source of the SSO and notify SAWS Emergency Operations Center (EOC) immediately at (210) 233-2014. Provide the address of the spill and an estimated volume or flow.
 - B. Attempt to eliminate the source of the SSO.
 - C. Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.
 - D. Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.
 - E. Clean the affected sewer mains and remove any debris.

- F. Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours.

Should the Contractor fail to address an SSO immediately and to SAWS satisfaction, they will be responsible for all costs incurred by SAWS, including any fines from EPA, TCEQ and/or any other Federal, State or Local Agencies.

No separate measurement or payment shall be made for this work. All work shall be done according to guidelines set by the TCEQ and SAWS.

2. If bypass pumping is required, the Contractor shall perform such work in accordance with SAWS Standard Specification for Water and Sanitary Sewer Construction, Item No. 864, "Bypass Pumping".
3. Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the SAWS Construction Inspection Division at (210) 233-2973 at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.
4. Sewer pipe where water line crosses shall be 160 psi and meet the requirements of ASTM D2241, TAC 217.53 and TCEQ 290.44(e)(4)(B). Contractor shall center a 20' joint of 160 psi pressure rated PVC at the proposed water crossing.
5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: It shall be the responsibility of the Contractor to make allowances and adjustments for top of manholes to match the finished grade of the project's improvements. (NSPI)
6. Spills, Overflows, or Discharges of Wastewater: All spills, overflows, or discharges of wastewater, recycled water, petroleum products, or chemicals must be reported immediately to the SAWS Inspector assigned to the Counter Permit or General Construction Permit (GCP). This requirement applies to every spill, overflow, or discharge regardless of size.
7. Manhole and all pipe testing (including the TV inspection) must be performed and passed prior to Final Field Acceptance by SAWS Construction Inspection Division, as per the SAWS Specifications For Water and Sanitary Sewer Construction.
8. All PVC pipe over 14 feet of cover shall be extra strength with minimum pipe stiffness of 115 psi.

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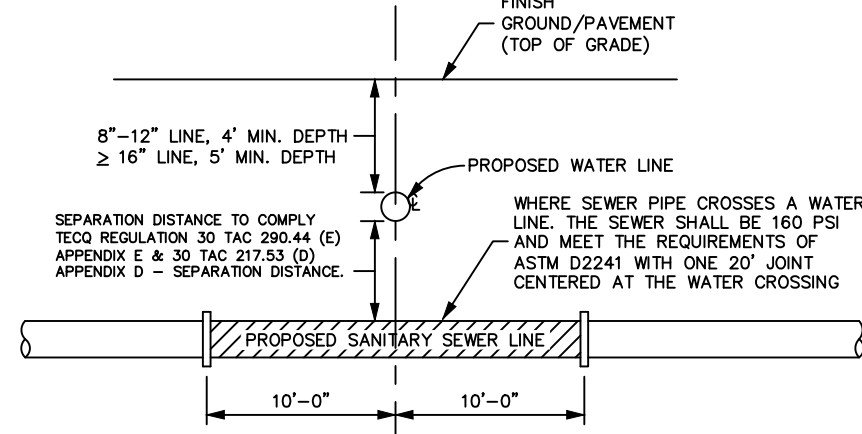
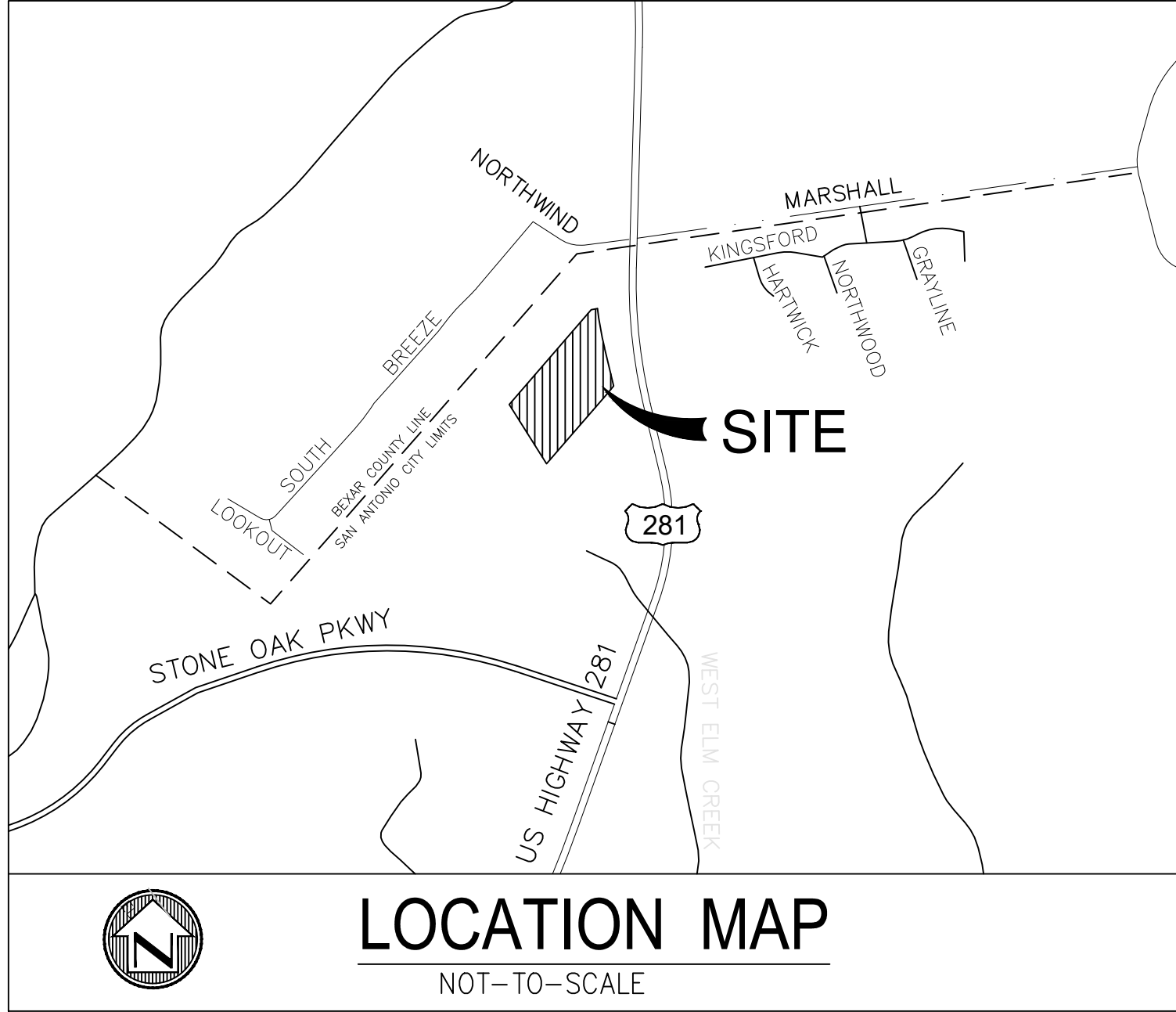
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 - Attempt to eliminate the source of the SSO.
 - Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.
 - Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.
 - Clean the affected sewer mains and remove any debris.
 - Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours.
- Should the Contractor fail to address an SSO immediately and to SAWS satisfaction, they will be responsible for all costs incurred by SAWS, including any fines from EPA, TCEQ and/or any other Federal, State or Local Agencies.
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- Manhole and all pipe testing (including the TV inspection) must be performed and passed prior to Final Field Acceptance by SAWS Construction Inspection Division, as per the SAWS Specifications For Water and Sanitary Sewer Construction.
- All PVC pipe over 14 feet of cover shall be extra strength with minimum pipe stiffness of 115 psi.

SANITARY SEWER CONSTRUCTION PLANS FOR

STONES CROSSING APARTMENTS

SAN ANTONIO, TEXAS



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL N.T.S.

CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.

CP 1
1/2" IRON ROD WITH RED PLASTIC CAP
STAMPED "CDS/MUERY TRAV"
NORTHING: 13,797,956.30
EASTING: 2,141,360.70

CP 2
1/2" IRON ROD WITH RED PLASTIC CAP
STAMPED "CDS/MUERY TRAV"
NORTHING: 13,797,621.35
EASTING: 2,141,620.62

IBM 1 - 1266.07'
CHISELED SQUARE ON CONC CURB
FOR RAMP CROSSING ACROSS
OVERLOOK PARKWAY MEDIAN @ US 281.

IBM 2 - 1232.93'
CHISELED SQUARE ON CONC CURB
LOCATED @ THE SOUTHEAST CORNER OF REGENCY
AT LOOKOUT CANYON APARTMENTS. NEXT TO GATE POST.

DATUM INFORMATION:

VERTICAL DATUM:
NORTH AMERICAN VERTICAL DATUM 1988, GEOID 12A

HORIZONTAL DATUM:
GRID NORTH, TEXAS STATE PLANE COORDINATE SYSTEM, NAD83(2011),
EPOCH:2010, TEXAS SOUTH CENTRAL ZONE (4204).

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

TEXAS ONE CALL	1-800-545-6005
SAN ANTONIO WATER SYSTEM	210-233-2010
CPS ENERGY	"
AT&T	"
TIME WARNER CABLE	"
VALERO ENERGY CO.	"

ADDITIONAL SEWER NOTES

- 98% COMPACTION NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
- SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER:
ATTENTION CONTRACTORS: ALL SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER, RECYCLED WATER, PETROLEUM PRODUCTS, OR CHEMICALS MUST BE REPORTED IMMEDIATELY TO THE SAWS INSPECTOR ASSIGNED TO YOUR COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP). THIS REQUIREMENT APPLIES TO EVERY SPILL, OVERFLOW, OR DISCHARGE - REGARDLESS OF SIZE. YOUR COMPLIANCE WILL ENABLE SAWS TO FULFILL REGULATORY REPORTING REQUIREMENTS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTROL SEWER FLOWS SO THAT A SPILL OVERFLOW, OR DISCHARGE DOES NOT OCCUR. IN THE EVENT THAT A SPILL, OVERFLOW, OR DISCHARGE OCCURS, THE CONTRACTOR MAY BE LIABLE FOR:

- ALL FINES, PENALTIES, OR OTHER COSTS ASSESSED TO OR AGAINST SAWS BY ANY STATE, FEDERAL, OR OTHER GOVERNMENTAL AGENCY.

2. SAWS STAFF AND MATERIAL COSTS TO RESPOND TO THE SPILL, OVERFLOW, OR DISCHARGE, OR TO MITIGATE THE EFFECTS OF THE SPILL, OVERFLOW, OR DISCHARGE, OR TO SUPPORT THE CLEANUP EFFORT.

3. ALL DAMAGES CAUSED TO SAWS, OR ANY OTHER PERSONS OR ENTITIES THAT RESULT FROM THE SPILL, OVERFLOW OR DISCHARGE.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NOTE TO CONTRACTOR

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH INDIVIDUAL UTILITY, FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

SAN ANTONIO WATER SYSTEM CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS

- WHERE A SEWER MAIN CROSSES OVER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) FEET, ALL PORTIONS OF THE SEWER MAIN WITHIN NINE FEET (9) OF THE WATER LINE SHALL BE CONSTRUCTED USING 150 PSI PRESSURE RATED DUCTILE IRON, CAST IRON OR PVC PIPE AND JOINED WITH EQUALLY PRESSURE RATED PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION OF 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET IN LENGTH MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM)
- WHERE A SEMI-RIGID OR RIGID SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET BUT GREATER THAN TWO FEET, THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTIONS OF THE SEWER WITHIN NINE FEET OF THE WATER MAIN.
- WHERE A SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN TWO FEET, THE SEWER MAIN SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI WITHIN NINE FEET OF THE WATER MAIN. SHALL HAVE A SEGMENT OF SEWER PIPE CENTERED ON THE WATER MAIN, SHALL BE PLACED NO CLOSER THAN SIX INCHES BETWEEN OUTER DIAMETERS, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION OF 150 PSI PRESSURE RATED PIPE OF A LENGTH GREATER THAN EIGHTEEN (18) FEET MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM)
- WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET, THE SEWER MAIN SHALL BE BELOW THE WATER MAIN. SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI FOR BOTH PIPE AND JOINTS FOR A DISTANCE OF NINE FEET BEYOND THE POINT OF CONFLICT, SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE BETWEEN OUTER DIAMETERS OF TWO FEET VERTICALLY AND FOUR FEET HORIZONTALLY, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIAL.
- SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE FEET TO WATER MAINS.

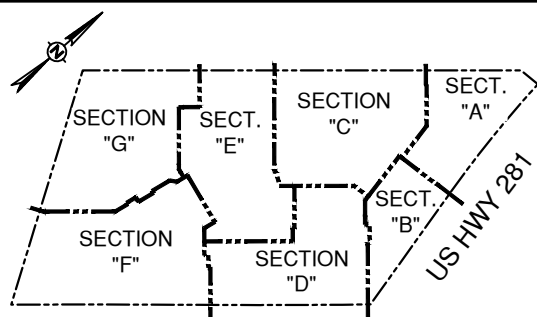
NOTES

- SANITARY SEWER LATERALS TO BE LOCATED AS SHOWN ON THE SANITARY SEWER PLANS.
- SANITARY SEWER WILL BE PVC SDR 26 PER A.S.T.M. SPECIFICATIONS, UNLESS OTHERWISE NOTED ON PLAN AND PROFILE SHEETS.
- SDR FITTINGS WILL MATCH SDR SEWER MAIN, NO SEPARATE PAY ITEM.
- ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADE SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
- QUANTITIES ARE BASED ON CURRENT SAWS SPECIFICATIONS.
- ALL SANITARY SEWER LATERALS SHALL HAVE A MIN. 2.0% SLOPE.

ESTIMATED SANITARY SEWER QUANTITIES

CIVIL SHEET INDEX

SHT NO.	TITLE
C9.0	SANITARY SEWER COVER SHEET
C9.0A	SANITARY SEWER TCEQ NOTES
C9.1	OVERALL SANITARY SEWER SITE PLAN
C9.2	SANITARY SEWER IMPROVEMENTS - SECTION "A"
C9.3	SANITARY SEWER IMPROVEMENTS - SECTION "B"
C9.4	SANITARY SEWER IMPROVEMENTS - SECTION "C"
C9.5	SANITARY SEWER IMPROVEMENTS - SECTION "D"
C9.6	SANITARY SEWER IMPROVEMENTS - SECTION "E"
C9.7	SANITARY SEWER IMPROVEMENTS - SECTION "F"
C9.8	SANITARY SEWER IMPROVEMENTS - SECTION "G"
C9.9	SITE UTILITY DETAILS 1 - SANITARY SEWER
C9.10	SITE UTILITY DETAILS 2 - SANITARY SEWER
C9.11	SITE UTILITY DETAILS 3 - SANITARY SEWER
C9.12	SITE UTILITY DETAILS 4 - SANITARY SEWER
C9.13	SITE UTILITY DETAILS 5 - SANITARY SEWER



SHEET NO. C9.0

FILE NO. 124179.00

Texas Commission on Environmental Quality
Organized Sewage Collection System
General Construction Notes

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following listed "construction notes" are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director, nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code, Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following listed "construction notes" restricts the powers of the Executive Director, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing "construction notes" is still responsible for compliance with Title 30, Texas Administrative Code, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the Executive Director's approval, whether or not in contradiction of any "construction notes," is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, Texas Administrative Code § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following listed "construction notes" in no way represent an approved exception by the Executive Director to any part of Title 30 Texas Administrative Code, Chapters 213 and 217, or any other TCEQ applicable regulation.

- This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules and any local government standard specifications.
- All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the SCS plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.
- A written notice of construction must be submitted to the presiding TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
 - the name of the approved project;
 - the activity start date; and
 - the contact information of the prime contractor.
- Any modification to the activities described in the referenced SCS application following the date of approval may require the submittal of an SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.
- Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. These controls must remain in place until the disturbed areas have been permanently stabilized.
- If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the TCEQ of the feature discovered. A geologist's assessment of the location and extent of the feature discovered must be reported to that regional office in writing and the applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the

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executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

- Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete shall have a minimum thickness of 6 inches.
- Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.
- All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

The diameter of the manholes must be a minimum of four feet and the manhole for entry must have a minimum clear opening diameter of 30 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on Plan Sheet **C9.10**.

It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.

- Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).
- Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: N/A.

If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: N/A.

Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.

- New sewage collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the extensions. Such stub outs must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new stub-outs must be constructed sufficiently to extend beyond the end of the street pavement. All stub-outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.

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If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet **C9.9**. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet **C9.2-C9.8** and marked after backfilling as shown in the detail on Plan Sheet **C9.9**.

- Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.
- Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E).
- All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:
 - For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:
 - Low Pressure Air Test.**
 - A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(i) of this paragraph.
 - For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
 - A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.
 - Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

Equation C.3
$$T = \frac{0.085 \times D \times K}{Q}$$

Where:
T = time for pressure to drop 1.0 pound per square inch gauge in seconds
K = 0.000419 X D X L, but not less than 1.0
D = average inside pipe diameter in inches

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- L = length of line of same size being tested, in feet
Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface
- (C) Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table C.3:

Pipe Diameter (inches)	Minimum Time (seconds)	Maximum Length for Minimum Time (feet)	Time for Longer Length (seconds/foot)
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

- An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.
 - If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.
 - Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.
 - A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.
- (2) **Infiltration/Exfiltration Test.**
- The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.
 - An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.
 - The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.
 - For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.
 - If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

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the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.

- If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:
 - For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.
 - Mandrel Sizing.**
 - A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.
 - If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.
 - All dimensions must meet the appropriate standard.
 - Mandrel Design.**
 - A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
 - A mandrel must have nine or more odd number of runners or legs.
 - A barrel section length must equal at least 75% of the inside diameter of a pipe.
 - Each size mandrel must use a separate proving ring.
 - Method Options.**
 - An adjustable or flexible mandrel is prohibited.
 - A test may not use television inspection as a substitute for a deflection test.
 - If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
 - For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
 - A deflection test method must be accurate to within plus or minus 0.2% deflection.
 - An owner shall not conduct a deflection test until at least 30 days after the final backfill.
 - Gravity collection system pipe deflection must not exceed five percent (5%).
 - If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

- All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.
 - All manholes must pass a leakage test.
 - An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.
- Hydrostatic Testing.

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THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

Austin Regional Office 12100 Park 35 Circle, Building A Austin, Texas 78753-1808 Phone (512) 339-2929 Fax (512) 339-3795	San Antonio Regional Office 14250 Judson Road San Antonio, Texas 78233-4480 Phone (210) 490-3096 Fax (210) 545-4329
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TCEQ-0596 (Rev. July 15, 2015)

Page 6 of 6

12/17/24	HUD REVIEW COMMENTS #1		
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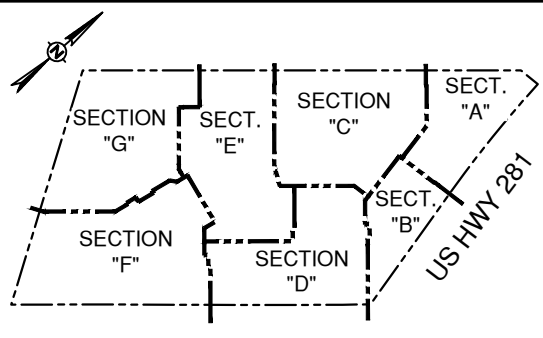
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CHECKED BY	
REVIEWED BY	BAC
DATE	8/11/2025



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100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

SANITARY SEWER TCEQ NOTES

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)

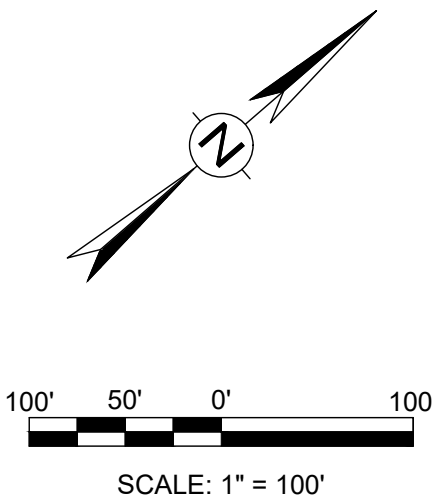
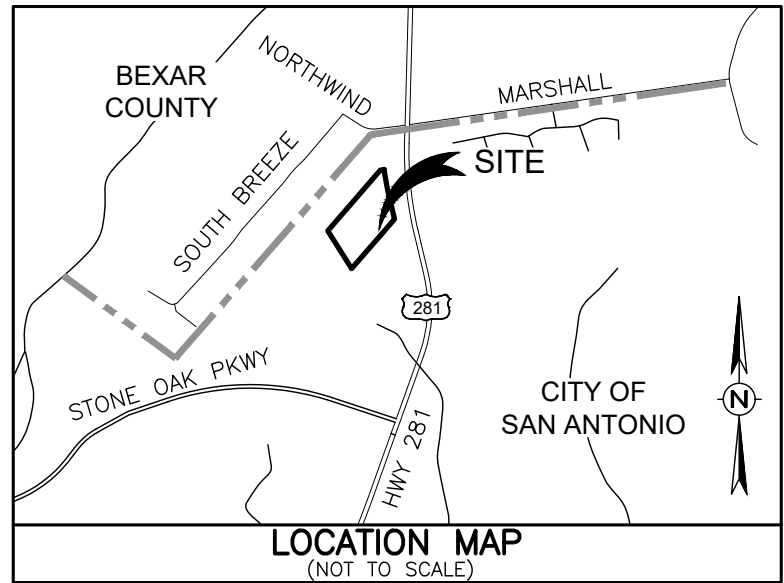
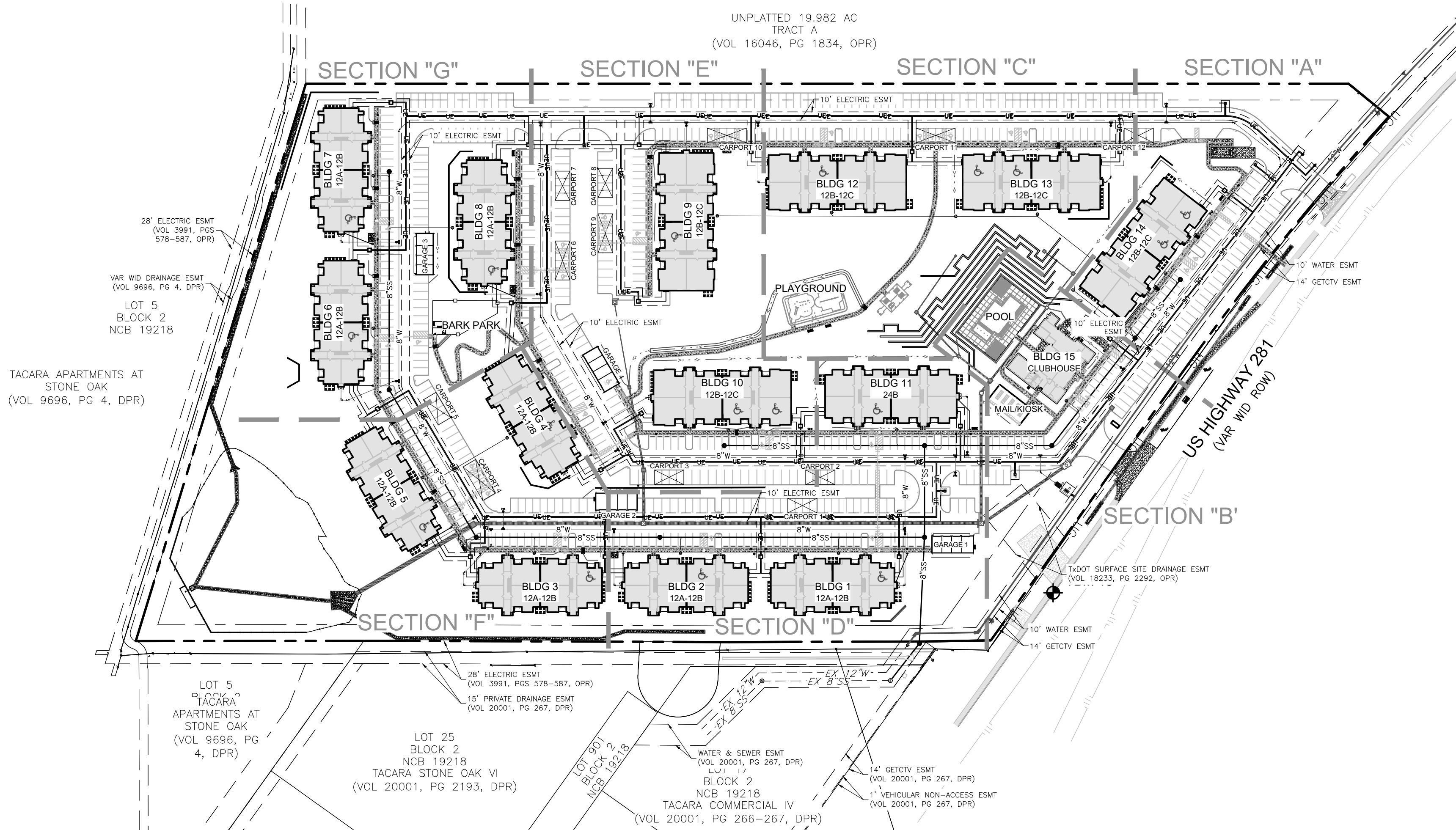


SHEET NO. C9.0A

FILE NO. 124179.00

TRENCH EXCAVATION

CONTRACTOR SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AT A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



EXISTING IMPROVEMENTS

- PROPERTY BOUNDARY
- EASEMENT LINE
- FENCE
- WIRE FENCE
- CONTROL POINT
- BENCHMARK

EXISTING UTILITY LEGEND

- WATER LINE
- OVERHEAD ELEC. LINE
- SAN. SEWER LINE
- GAS MAIN
- FIBER OPTIC
- STORM DRAIN LINE
- WATER VALVE
- FIRE HYDRANT
- WATER METER
- SAN. SEWER MANHOLE
- POWER POLE
- GUY WIRE
- SAN. SEWER MANHOLE

PROPOSED UTILITY LEGEND

- 12" W WATER LINE
- 3" IRRIGATION WATER MAIN
- IRRIGATION SERVICE
- FIRE HYDRANT
- WATER VALVE
- WATER FITTING
- WATER REDUCER
- FIRE DEPARTMENT CONNECTION (FDC)
- FIRE DEPARTMENT CONNECTION (FDC)
- UNDERGROUND ELEC. LINE
- ELEC. TRANSFORMER
- ELEC. PULL BOX
- LIGHT POLE
- POWER POLE
- 8" SS SANITARY SEWER LINE
- 4" SSFM SANITARY SEWER FORCE MAIN
- SAN. SEWER MANHOLE
- SAN. SEWER CLEANOUT
- PRIVATE STORM DRAIN
- CURB INLET
- GRATE INLET STRUCTURE
- STORM DRAIN JUNCTION BOX

PROPOSED IMPROVEMENTS

- EASEMENT LINE
- DRAINAGE SWALE
- MODULAR BLOCK WALL
- CONCRETE RETAINING WALL
- CHAINLINK FENCE
- WROUGHT IRON FENCE
- WROUGHT IRON FENCE W/COLUMNS
- ACCESS GATES
- BUILDING FINISHED FLOOR ELEVATION

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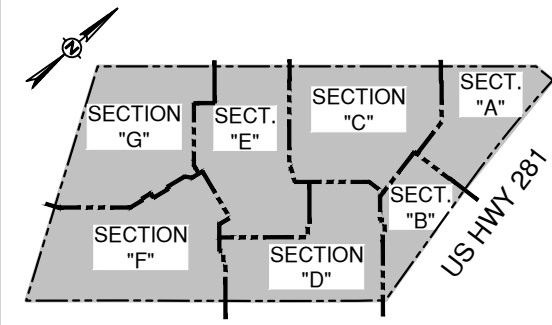
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OVERALL SANITARY SEWER SITE PLAN

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



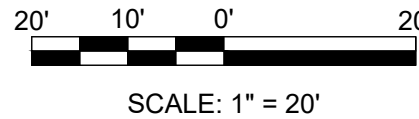
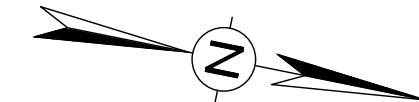
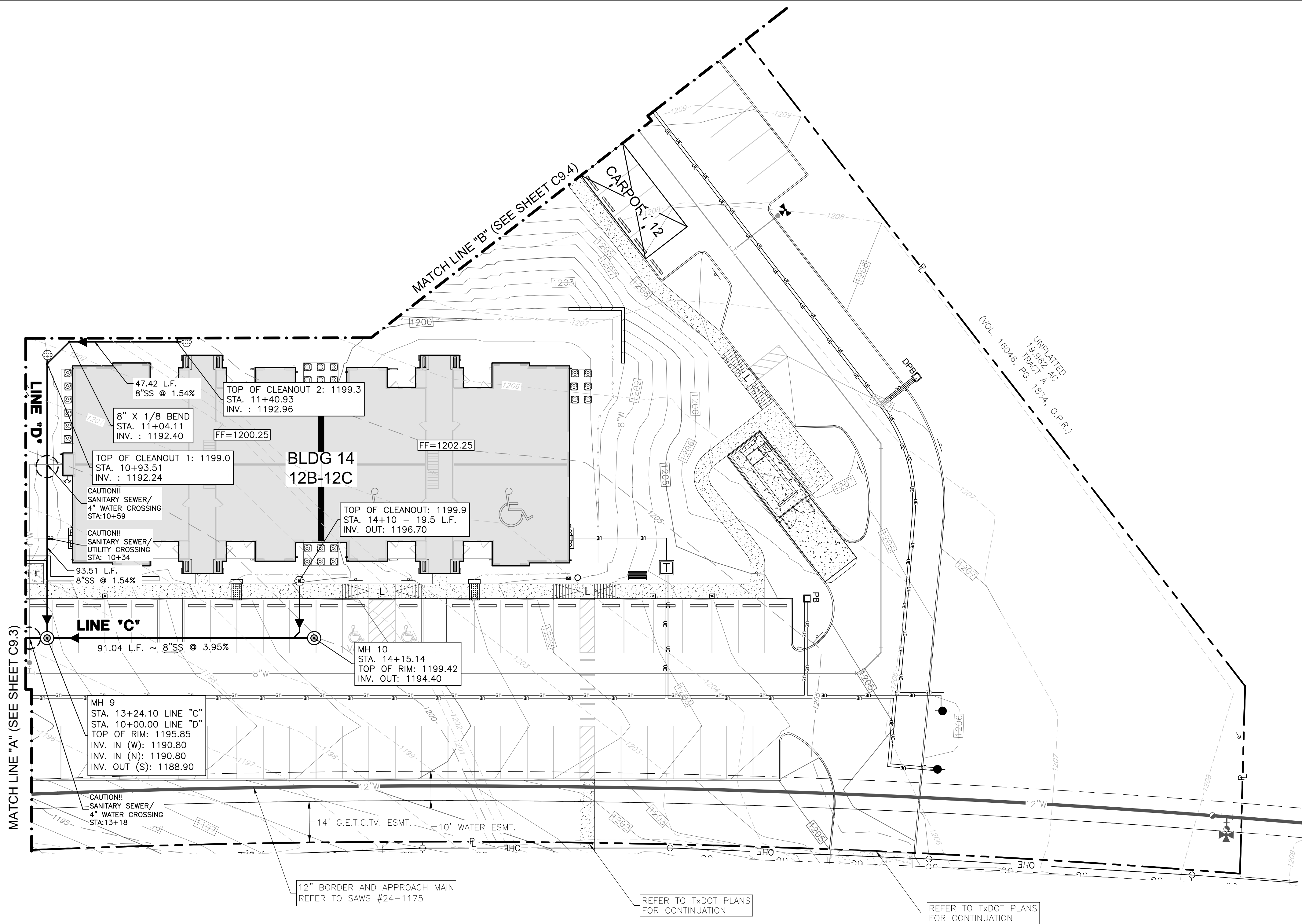
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- EXISTING IMPROVEMENTS**
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 - EASEMENT LINE
 - FENCE
 - WIRE FENCE
 - CONTROL POINT
 - BENCHMARK
- EXISTING UTILITY LEGEND**
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 - OHE OVERHEAD ELEC. LINE
 - S SAN. SEWER LINE
 - UG GAS MAIN
 - FOC FIBER OPTIC
 - STORM DRAIN LINE
 - W VALVE
 - FIRE HYDRANT
 - W METER
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- PROPOSED UTILITY LEGEND**
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 - CONCRETE RETAINING WALL
 - CHAINLINK FENCE
 - WROUGHT IRON FENCE
 - WROUGHT IRON FENCE W/COLUMNS
 - ACCESS GATES
 - BUILDING FINISHED FLOOR ELEVATION



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12/17/24	HUD REVIEW COMMENTS #1	
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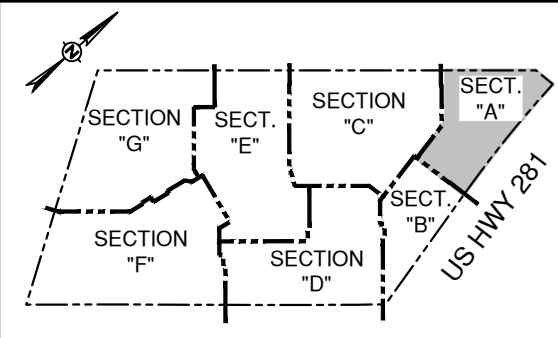
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SANITARY SEWER IMPROVEMENTS -
SECTION "A"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO. C9.2

FILE NO. 124179.00

PROPERTY BOUNDARY

EASEMENT LINE

FENCE

WIRE FENCE

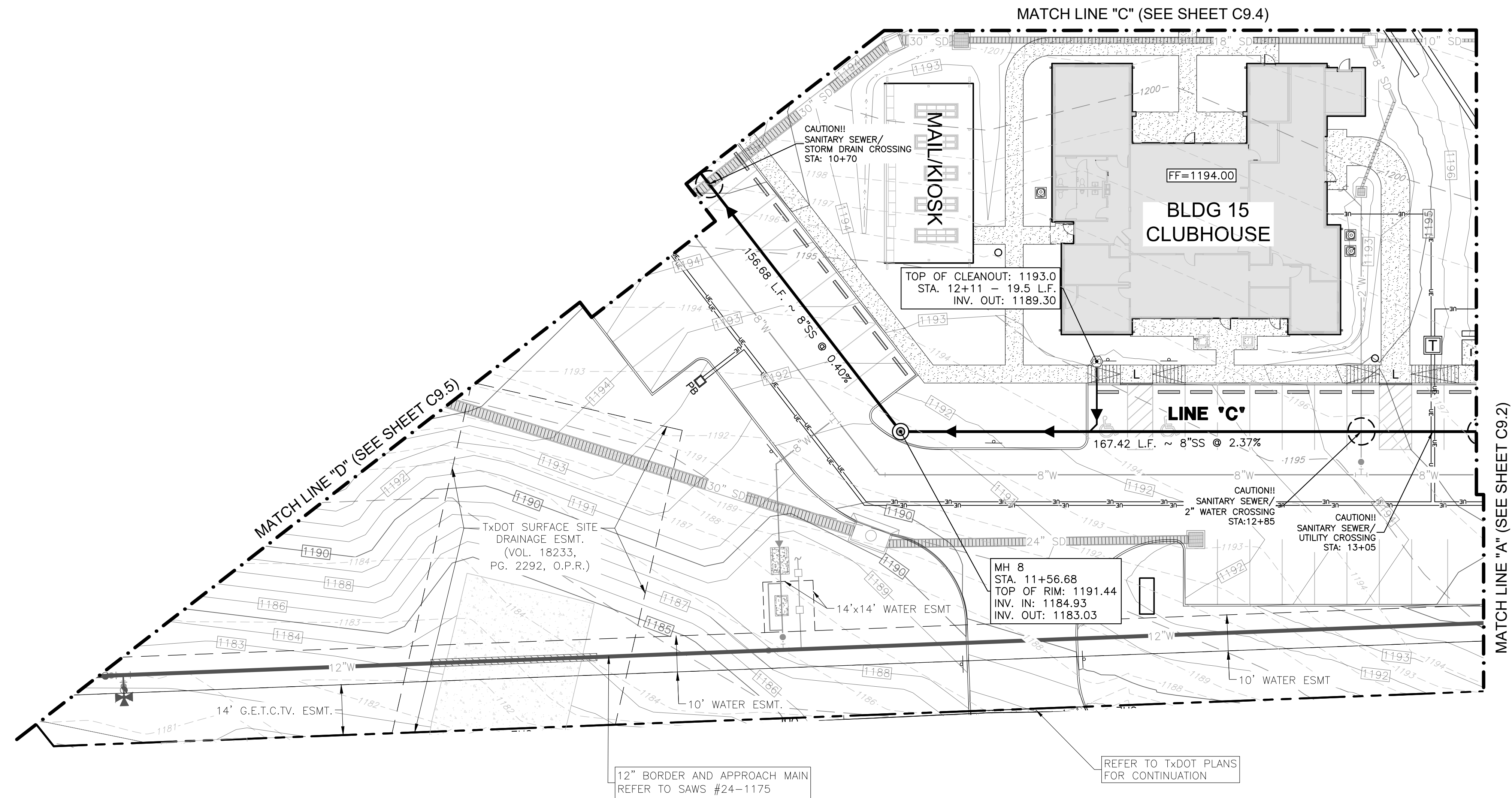
CONTROL POINT

BENCHMARK

— W ——— W ———	WATER LINE
————— OHE —————	OVERHEAD ELEC. LINE
———— S ——— S ———	SAN. SEWER LINE
— — — — UG ——— ———	GAS MAIN
— — — — FOC ——— ———	FIBER OPTIC
=====	STORM DRAIN LINE
(V)	WATER VALVE
FD	FIRE HYDRANT
(M)	WATER METER
(S)	SAN. SEWER MANHOLE
⊖	POWER POLE
—	GUY WIRE
(D)	SAN. SEWER MANHOLE

	12" W	WATER LINE
	3" IRRIGATION WATER MAIN	IRRIGATION SERVICE
	FIRE HYDRANT	
	WATER VALVE	
	WATER FITTING	
	WATER REDUCER	
	FIRE DEPARTMENT CONNECTION (FDC)	
	FIRE DEPARTMENT CONNECTION (FDC)	
	UNDERGROUND ELEC. LINE	
	ELEC. TRANSFORMER	
	ELEC. PULL BOX	
	LIGHT POLE	
	POWER POLE	
	8" SS	SANITARY SEWER LINE
	4" SSFM	SANITARY SEWER FORCE MAIN
	SAN. SEWER MANHOLE	
	SAN. SEWER CLEANOUT	
	PRIVATE STORM DRAIN	
	CURB INLET	
	GRATE INLET STRUCTURE	
	STORM DRAIN JUNCTION BOX	

	EASEMENT LINE
	DRAINAGE SWALE
	MODULAR BLOCK WALL
	CONCRETE RETAINING WALL
	CHAINLINK FENCE
	WROUGHT IRON FENCE
	WROUGHT IRON FENCE W/COLUMNS
	ACCESS GATES
FF = 851.25	BUILDING FINISHED FLOOR ELEVATION



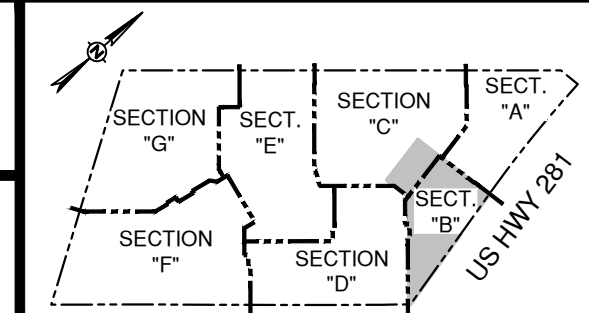
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				CHECKED BY _____
				REVIEWED BY _____ BAC
NO	DATE	REVISION	BY	DATE 8/11/2025



CDS muery
ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

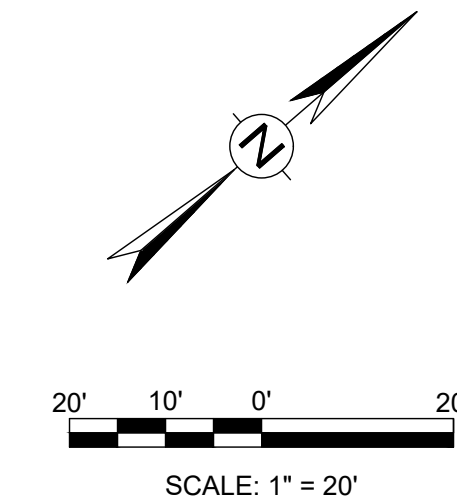
SANITARY SEWER IMPROVEMENTS - SECTION "B"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO. C9.3

FILE NO. 124179.00



EXISTING IMPROVEMENTS

- PROPERTY BOUNDARY
- EASEMENT LINE
- FENCE
- WIRE FENCE
- CONTROL POINT
- BENCHMARK

EXISTING UTILITY LEGEND

- WATER LINE
- OVERHEAD ELEC. LINE
- SAN. SEWER LINE
- GAS MAIN
- FIBER OPTIC
- STORM DRAIN LINE
- WATER VALVE
- FIRE HYDRANT
- WATER METER
- SAN. SEWER MANHOLE
- POWER POLE
- GUY WIRE
- SAN. SEWER MANHOLE

PROPOSED UTILITY LEGEND

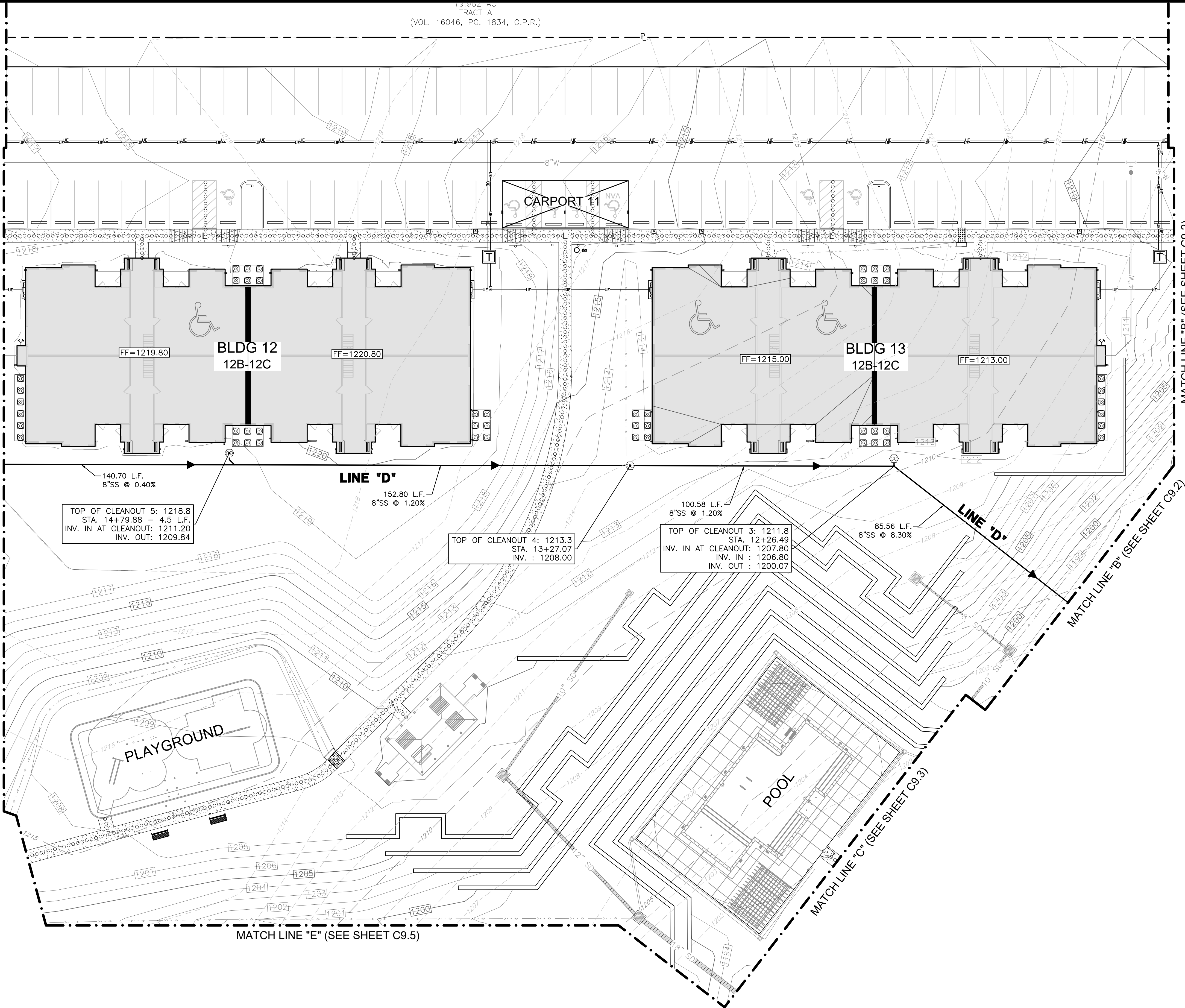
- 12"W WATER LINE
- 3" IRRIGATION WATER MAIN
- IRRIGATION SERVICE
- FIRE HYDRANT
- WATER VALVE
- WATER FITTING
- WATER REDUCER
- FIRE DEPARTMENT CONNECTION (FDC)
- FIRE DEPARTMENT CONNECTION (FDC)
- UNDERGROUND ELEC. LINE
- ELEC. TRANSFORMER
- ELEC. PULL BOX
- LIGHT POLE
- POWER POLE
- 8"SS SANITARY SEWER LINE
- 4"SSFM SANITARY SEWER FORCE MAIN
- SAN. SEWER MANHOLE
- SAN. SEWER CLEANOUT
- PRIVATE STORM DRAIN
- CURB INLET
- GRATE INLET STRUCTURE
- STORM DRAIN JUNCTION BOX

PROPOSED IMPROVEMENTS

- EASEMENT LINE
- DRAINAGE SWALE
- MODULAR BLOCK WALL
- CONCRETE RETAINING WALL
- CHAINLINK FENCE
- WROUGHT IRON FENCE
- WROUGHT IRON FENCE W/COLUMNS
- ACCESS GATES
- BUILDING FINISHED FLOOR ELEVATION

FF = 851.25

MATCH LINE "F" (SEE SHEET C9.6)



MATCH LINE "E" (SEE SHEET C9.5)

MATCH LINE "C" (SEE SHEET C9.3)

MATCH LINE "B" (SEE SHEET C9.2)

Date: Aug 11, 2025 1:08pm User: ID: public.dellng File: P:\0085\2024\124179 Pedon_Stores Crossing Apt. Project\Civil_3D\Draw\Engineer\SSWR-124179.dwg

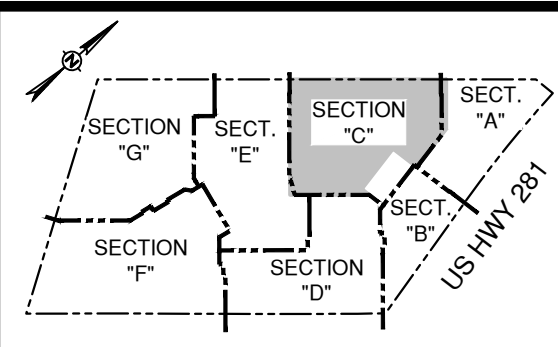
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DESIGNED BY	BAC
DRAWN BY	REA
CHECKED BY	
REVIEWED BY	BAC
DATE	8/11/2025

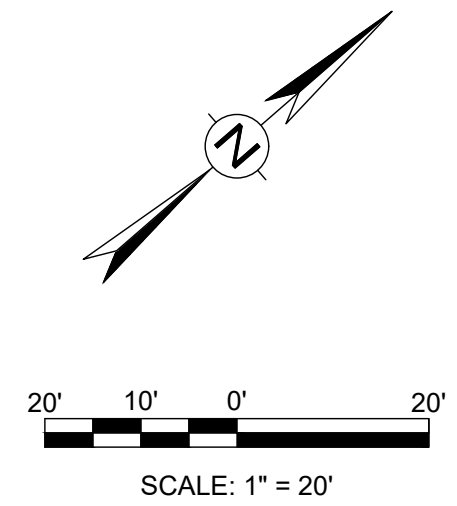


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(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

SANITARY SEWER IMPROVEMENTS -
SECTION "C"
STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO.	C9.4
FILE NO.	124179.00



EXISTING IMPROVEMENTS

- PROPERTY BOUNDARY
- EASEMENT LINE
- FENCE
- WIRE FENCE
- CONTROL POINT
- BENCHMARK

EXISTING UTILITY LEGEND

- WATER LINE
- OVERHEAD ELEC. LINE
- SAN. SEWER LINE
- GAS MAIN
- FIBER OPTIC
- STORM DRAIN LINE
- WATER VALVE
- FIRE HYDRANT
- WATER METER
- SAN. SEWER MANHOLE
- POWER POLE
- GUY WIRE
- SAN. SEWER MANHOLE

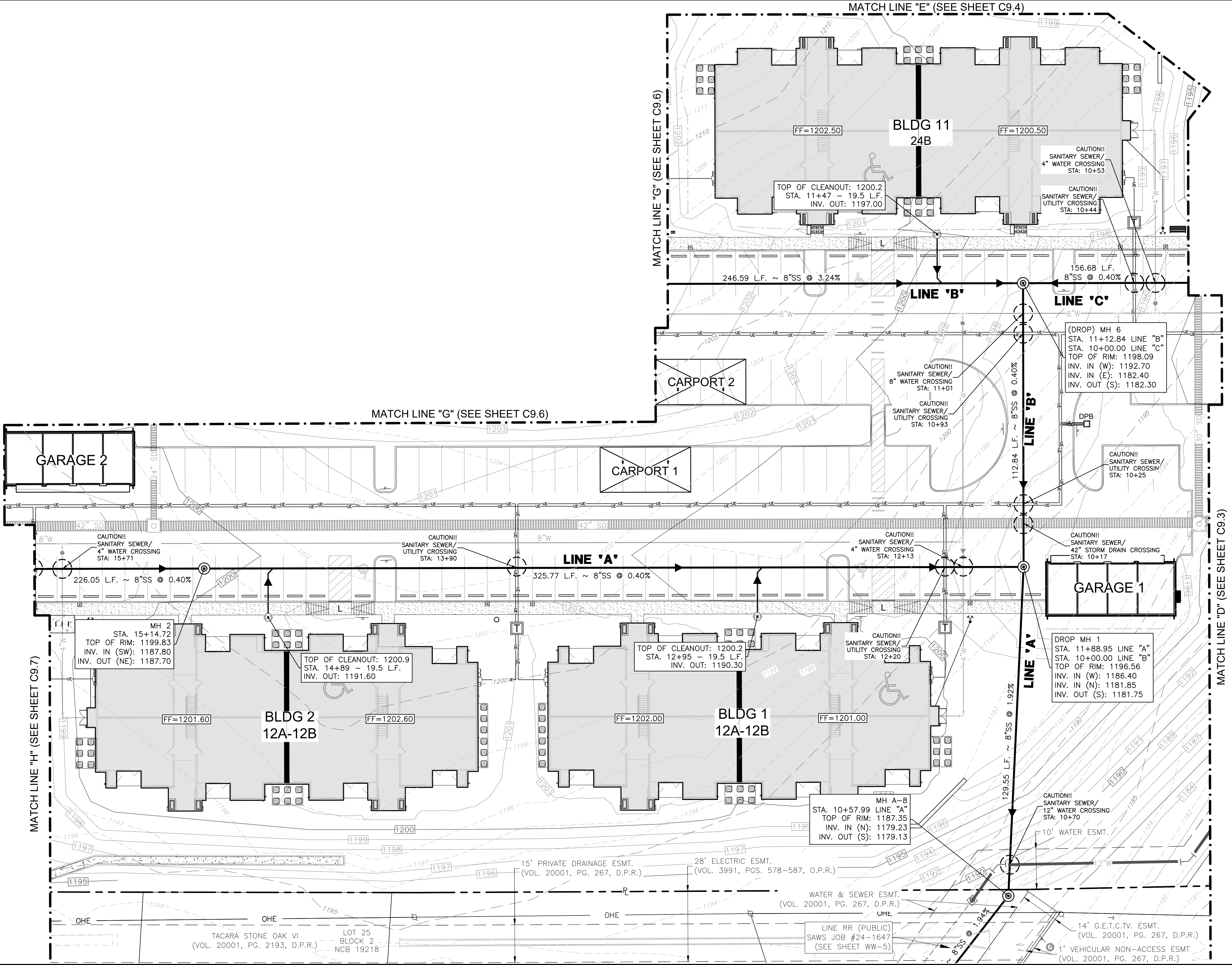
PROPOSED UTILITY LEGEND

- 12"W WATER LINE
- 3" IRRIGATION WATER MAIN
- IRRIGATION SERVICE
- FIRE HYDRANT
- WATER VALVE
- WATER FITTING
- WATER REDUCER
- FIRE DEPARTMENT CONNECTION (FDC)
- FIRE DEPARTMENT CONNECTION (FDC)
- UNDERGROUND ELEC. LINE
- ELEC. TRANSFORMER
- ELEC. PULL BOX
- LIGHT POLE
- POWER POLE
- 8"SS SANITARY SEWER LINE
- 4"SSFM SANITARY SEWER FORCE MAIN
- SAN. SEWER MANHOLE
- SAN. SEWER CLEANOUT
- PRIVATE STORM DRAIN
- CURB INLET
- GRATE INLET STRUCTURE
- STORM DRAIN JUNCTION BOX

PROPOSED IMPROVEMENTS

- EASEMENT LINE
- DRAINAGE SWALE
- MODULAR BLOCK WALL
- CONCRETE RETAINING WALL
- CHAINLINK FENCE
- WROUGHT IRON FENCE
- WROUGHT IRON FENCE W/COLUMNS
- ACCESS GATES
- BUILDING FINISHED FLOOR ELEVATION

FF = 851.25



Date: Aug 11, 2025 1:08pm User: ID: public.dellng File: P:\J0085\2024\124179 Pedestrian Crossing Apt. Project\Civil_3D\Draw\Engineer\SSW-124179.dwg

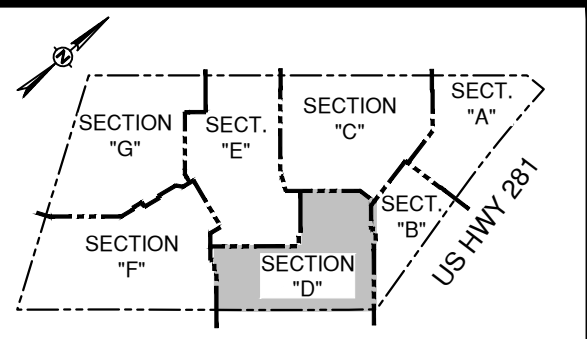
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NO	DATE	REVISION	BY

DESIGNED BY	BAC
DRAWN BY	REA
CHECKED BY	
REVIEWED BY	BAC
DATE	8/11/2025

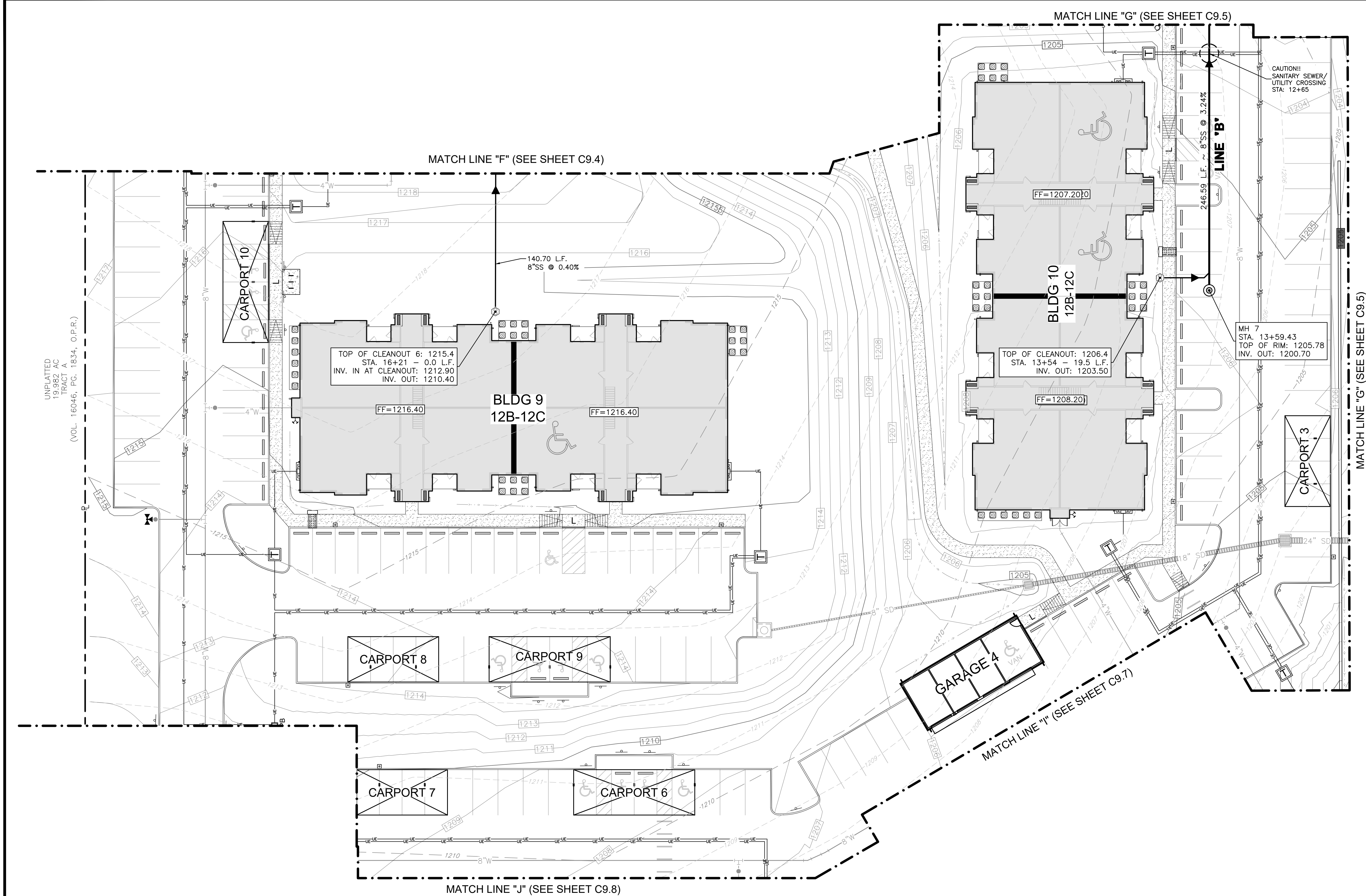
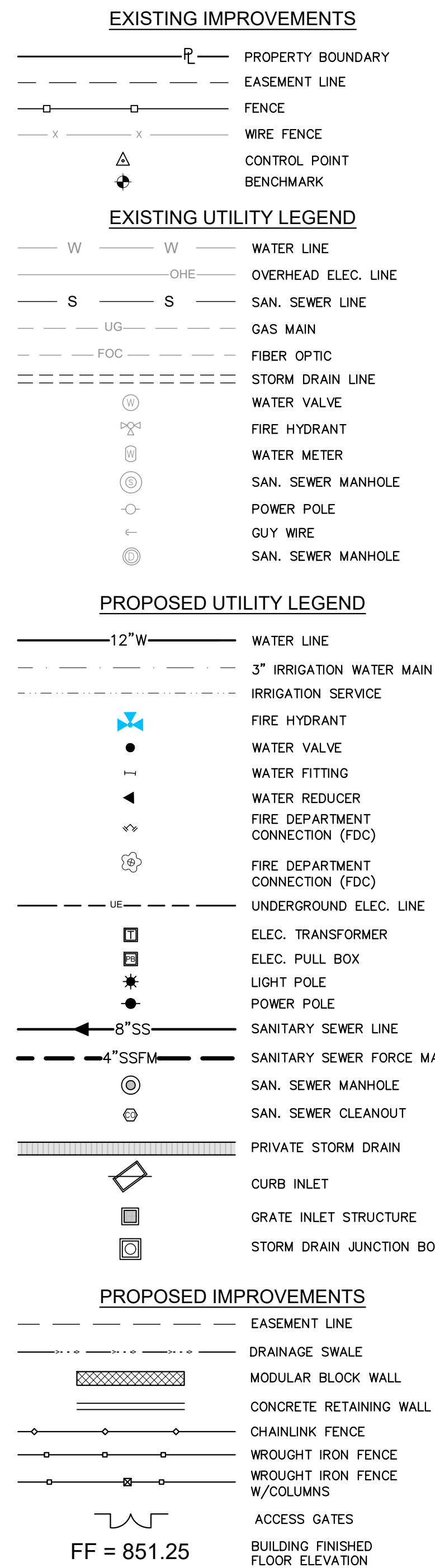
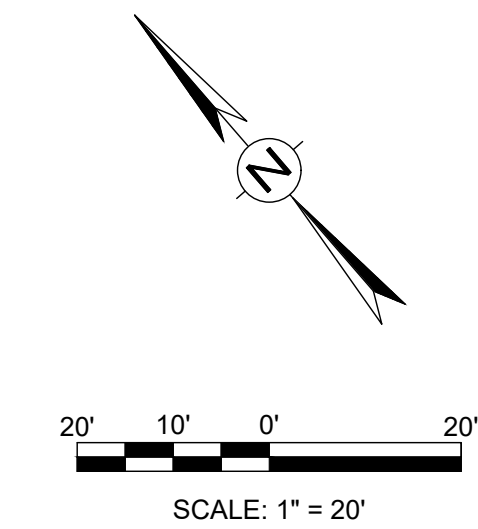


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(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

SANITARY SEWER IMPROVEMENTS - SECTION "D"
STONES CROSSING APARTMENTS (2025-05-02 CITY/SAHT SET)



SHEET NO.	C9.5
FILE NO.	124179.00



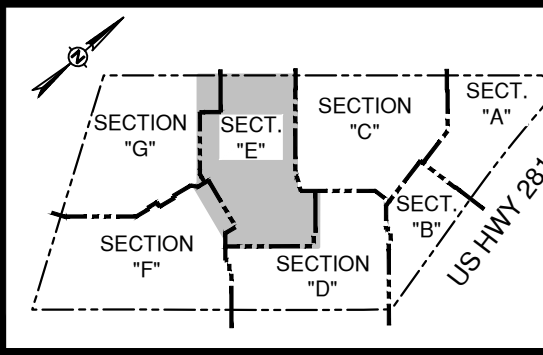
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		DRAWN BY	REA
		CHECKED BY	
		REVIEWED BY	BAC
		DATE	8/11/2025
NO	DATE	REVISION	BY



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ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

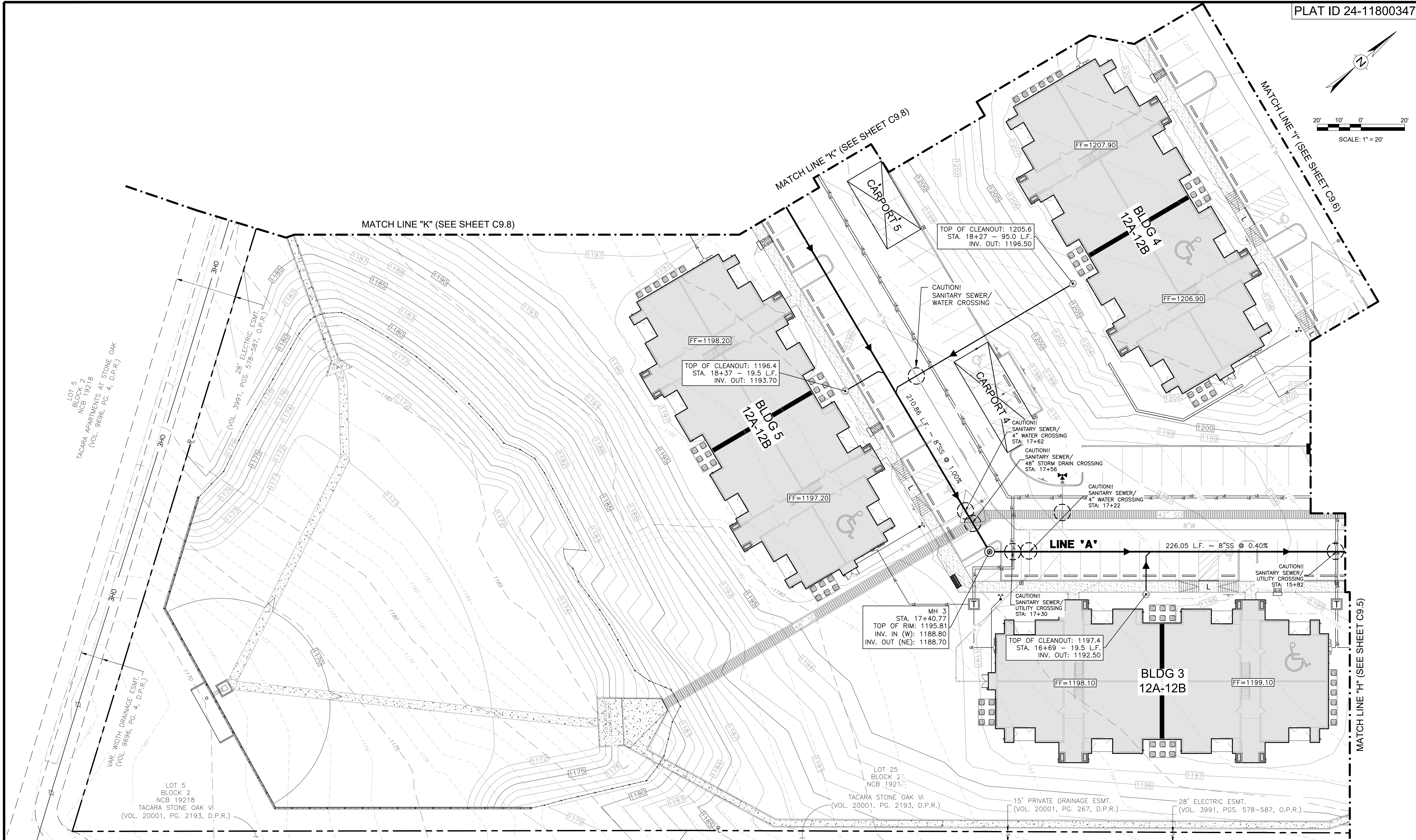
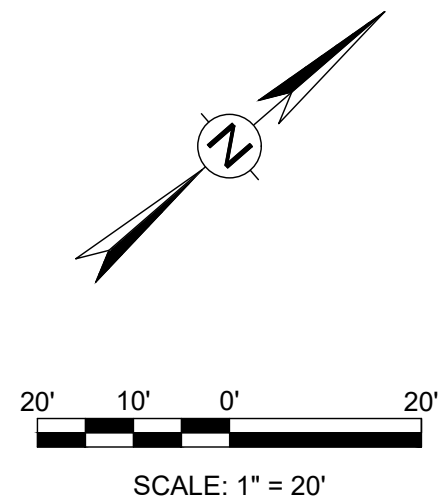
SANITARY SEWER IMPROVEMENTS -
SECTION "E"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO. C9.6

FILE NO. 124179.00



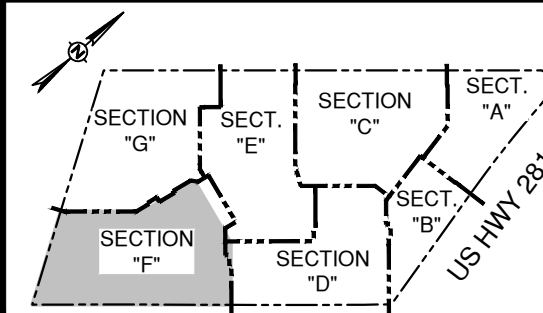
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		DATE	8/11/2025
NO	DATE	REVISION	BY



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SANITARY SEWER IMPROVEMENTS -
SECTION "F"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO. C9.7

FILE NO. 124179.00

EXISTING UTILITY LEGEND

PROPOSED UTILITY LEGEND

PROPOSED IMPROVEMENTS

Date: Aug 11, 2025, 1:08pm User ID: pablo.deluna
File: P:\JOS\2024\124179 Pedcor-Stones Crossing Apt. Project\Civil 3D\Dwg\Engineer\SSWR-124179.dwg

MATCH LINE "J" (SEE SHEET C9.6)

MATCH LINE "K" (SEE SHEET C9.7)

MATCHLINE "K" (SEE SHEET C9.7)

BLDG 8
12A-12B

TOP OF CLEANOUT: 1208.4
STA. 21+51 - 78.0 L.F.
INV. OUT: 1197.20

GARAGE

LINE "A"

BLDG 6
42A-12B

BLDG 7
12A-12B

STA. 21
TOP OF RIM:
INV. OUT:

TOP OF CLEANOUT: 1200.5
STA. 22+15 - 19.5 L.F.
INV. OUT: 1197.70

MH 4
STA. 19+51.63
TOP OF RIM: 1197.53
INV. IN: 1191.00
INV. OUT: 1190.90

210.86 L.F. ~
8"SS @ 1.00% —

CAUTION!!
SANITARY SEWER/
UTILITY CROSSING
STA: 19+38

LOT 5
BLOCK 2
B 19218

TACARA APARTMENTS AT STONE OAK
(VOL. 9696, PG. 4, D.P.R.)

28' ELECTRIC ESMT
(VOL. 3991, PGS. 578-587, O.P.R.)

	12/17/24	HUD REVIEW COMMENTS #1		DESIGNED BY _____ BAC
				DRAWN BY _____ REA
				CHECKED BY _____
				REVIEWED BY _____ BAC
NO	DATE	REVISION	BY	DATE 8/11/2025

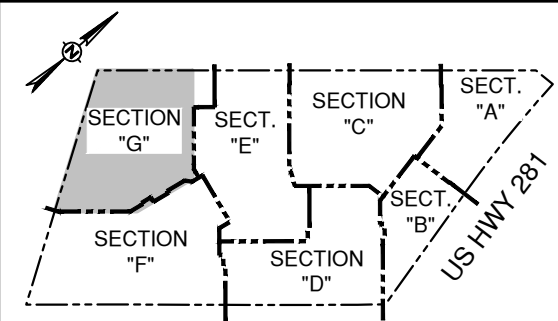
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REVIEWED BY _____ BAC
DATE 8/11/2025



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ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

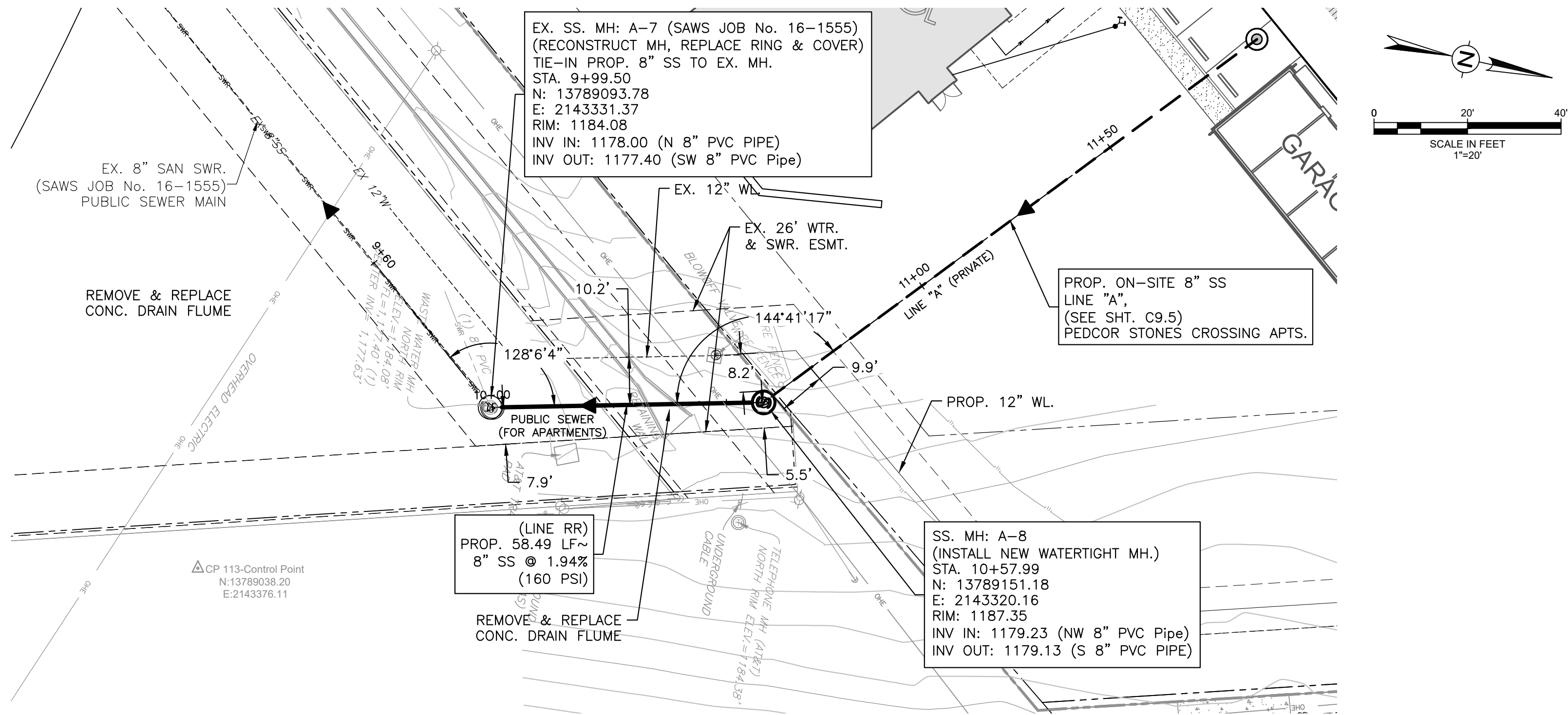
SANITARY SEWER IMPROVEMENTS - SECTION "G"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)

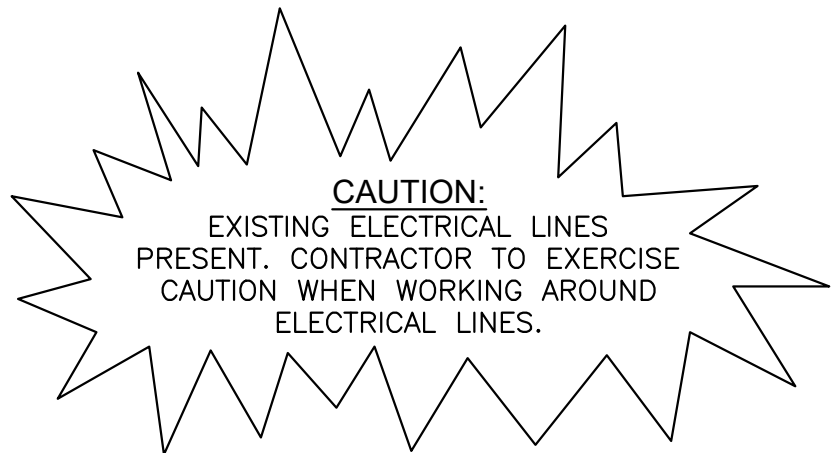


SHEET NO. C9.8

FILE NO. 124179.00



Item No.	Description	Unit	Quantity
103	REVEGETATION	SY	65.56
103.4	REMOVE MISCELLANEOUS CONCRETE	SF	67.00
505	CONCRETE RIPRAP - DRAIN FLUME (6" THICK) (COSA SPEC)	SY	8.00
515.1	TOPSOIL (COSA SPEC)	CY	13.00
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	59.00
848	8" PVC SANITARY SEWER LINE (6'-10')	LF	59.00
852.1	SANITARY SEWER MANHOLE (0'-8")	EA	1.00
852.2	EXTRA DEPTH MANHOLE (>6')	VF	0.95
855	RECONSTRUCTION OF EXISTING MANHOLE	EA	1.00
866	POST SEWER MAIN TELEVISION INSPECTION (6'-15')	LF	59.00
910	MANHOLE REHABILITATION	VF	0.90



- NOTES:
- ADDITIONAL BRUSH & SMALL TREES NOT SHOWN MAY REQUIRE REMOVAL ALONG THE WORK ROUTE. ASSOCIATED WORK SHALL BE CONSIDERED SUBSIDIARY TO PREPARATION OF ROW.
 - TREE REMOVAL (SUBSIDIARY TO PREP. OF ROW).
 - PRIOR TO THE START OF WORK, CALL 207-1111 TO SCHEDULE A PRE-CONSTRUCTION AND FENCING INSPECTION.
 - THE CITY ARBORIST RESERVES THE RIGHT TO IMPOSE ADDITIONAL CONDITIONS BASED ON CHANGING FIELD CONDITIONS OR WORK PRACTICES NOT INCLUDED IN THE APPLICATION.
 - THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF SAN ANTONIO - CITY ARBORIST, PRIOR TO CONSTRUCTION INITIATION, TO ENSURE COMPLIANCE WITH THE CITY'S TREE PRESERVATION REQUIREMENTS AND DIRECTIVES PRESENTED HEREIN.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING A LICENSED TREE MAINTENANCE PROFESSIONAL THROUGHOUT THE PROJECT PER CITY ORDINANCE ARTICLE VIII 21-171, TREE MAINTENANCE LICENSE (a).
 - 35-477 (j) IT SHALL BE THE RESPONSIBILITY OF THE PERMIT HOLDER TO MAINTAIN A COPY OF THE TREE PERMIT, THE DATA AND DRAWINGS REQUIRED BY THIS SECTION, AND THE CONDITIONS OF APPROVAL IMPOSED BY THE CITY ARBORIST READILY AVAILABLE AT THE SITE AT ALL TIMES DURING WHICH THE AUTHORIZED WORK IS IN PROGRESS.

SAWS PRESSURE ZONE: 1400 HGL			
Developer's Name <u>PEDCOR INVESTMENTS, A LIMITED LIABILITY COMPANY</u>			
Developer's Address <u>770 3RD AVE. SW</u>			
City	<u>CARMEL</u>	State	<u>IN</u> Zip <u>46032</u>
Phone #	<u>(317) 695-3018</u>	Fax #	
SAWS Block Map # <u>174652, 174654, 176650</u>		Total EDU's <u>172</u>	Total Acreage <u>18.847</u>
Total Linear Footage of Pipe <u>2,152 LF - 8" PVC (60.91 LF - 8" PVC) 1,192 LF - 10" PVC (30.27 LF - 10" PVC)</u>		SAWS Job No. <u>24-11800347</u>	
Number of Lots	<u>1</u>	SAWS Job No. <u>24-1647</u>	

NOTE

LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST ONE WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OF SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

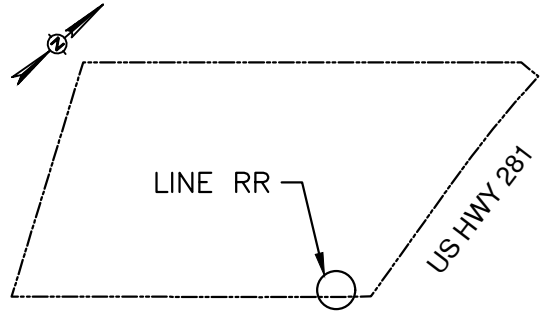
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DRAWN BY IL
CHECKED BY
REVIEWED BY CWR
DATE SEPTEMBER 2024



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100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

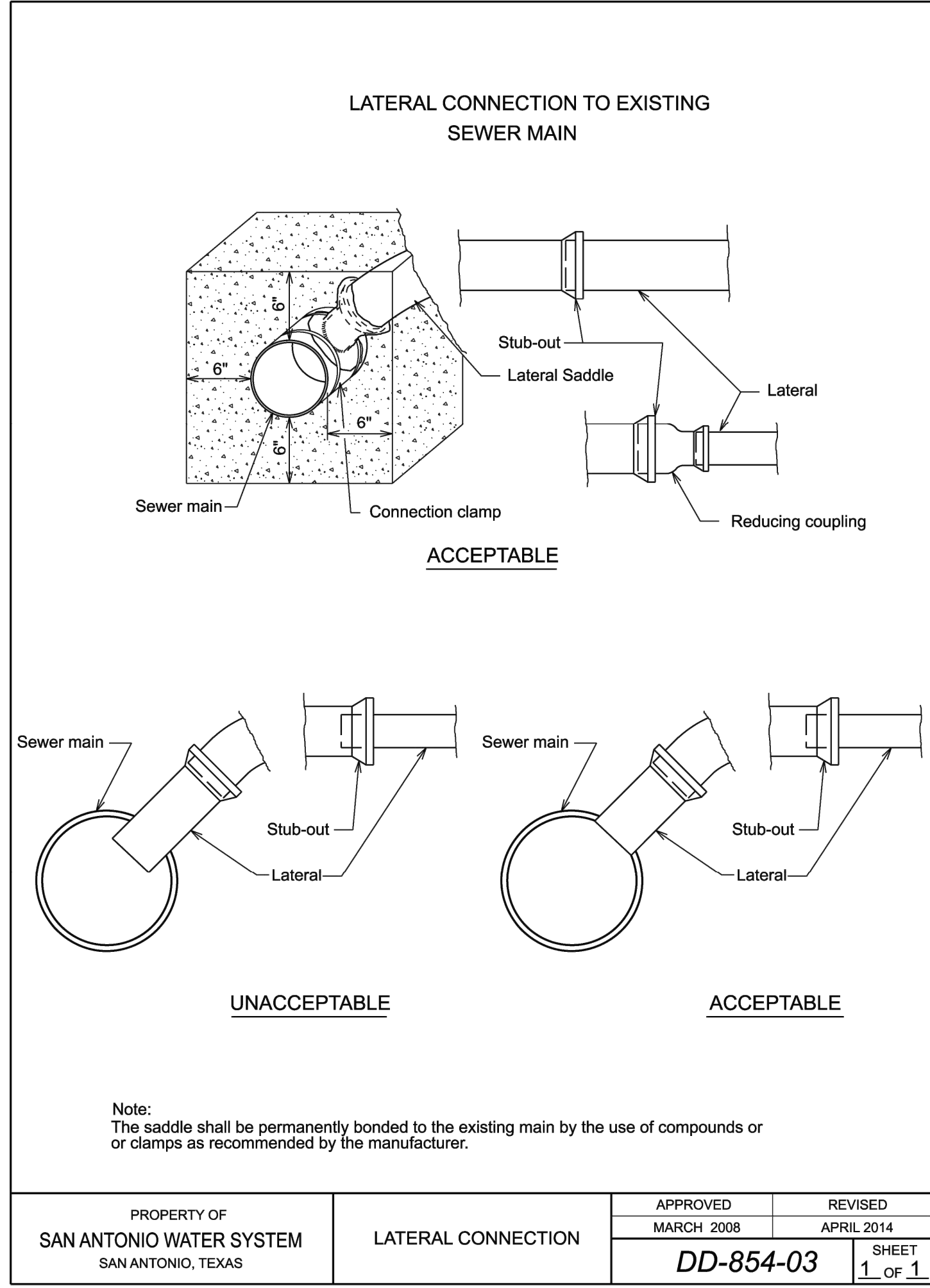
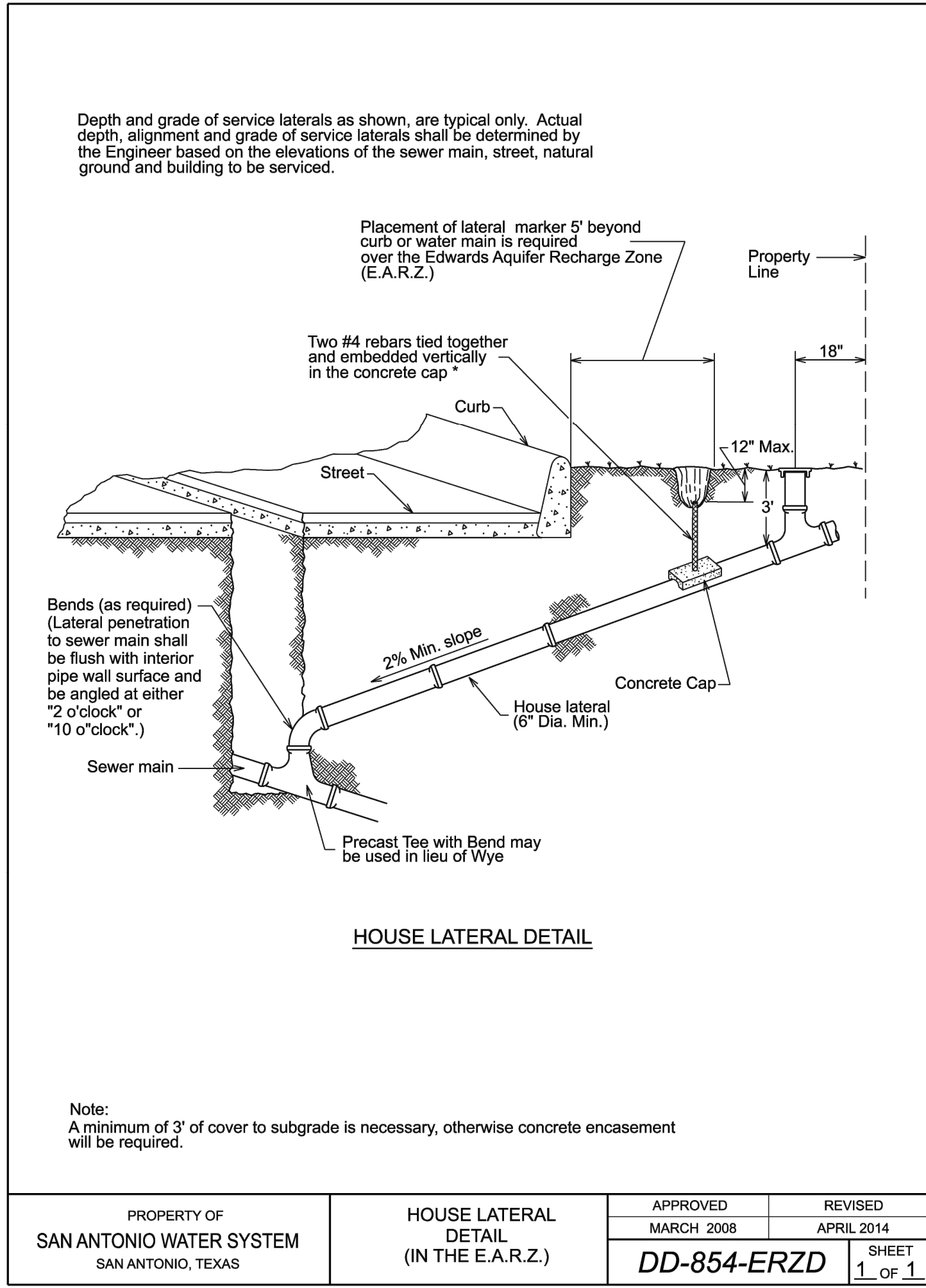
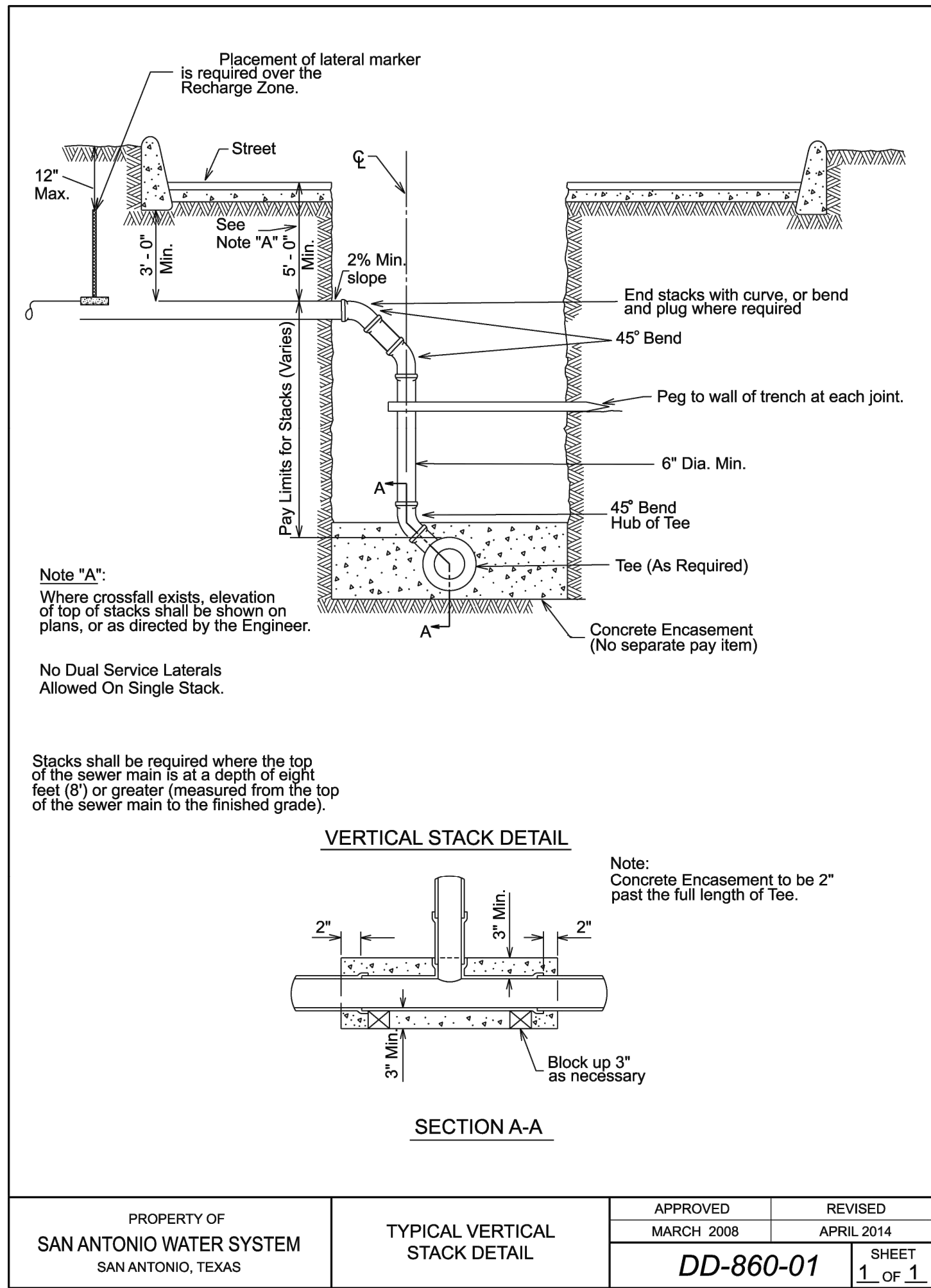
OFFSITE 8-INCH SEWER

STONES CROSSING APARTMENTS
OFFSITE SEWER PLANS

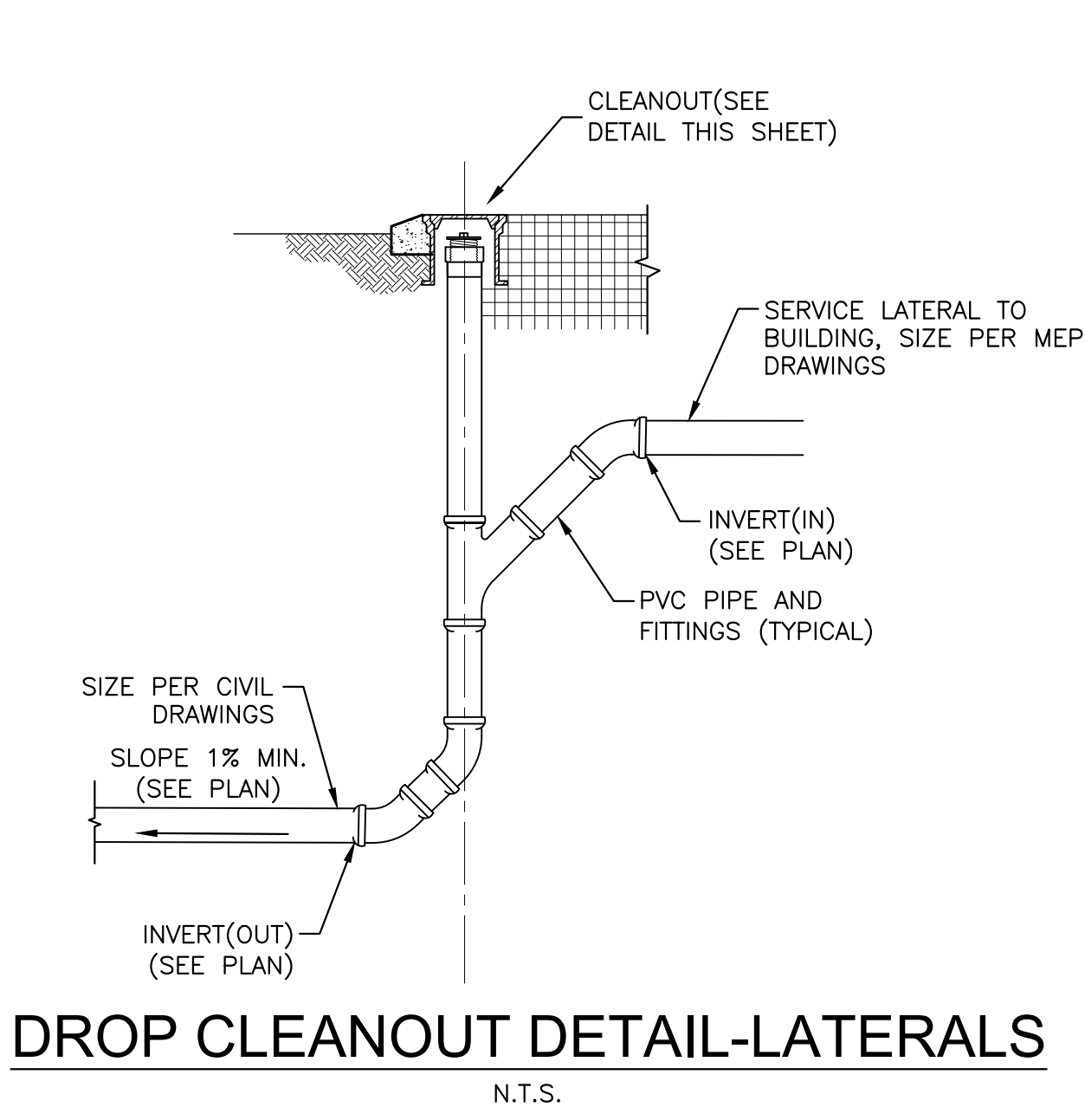
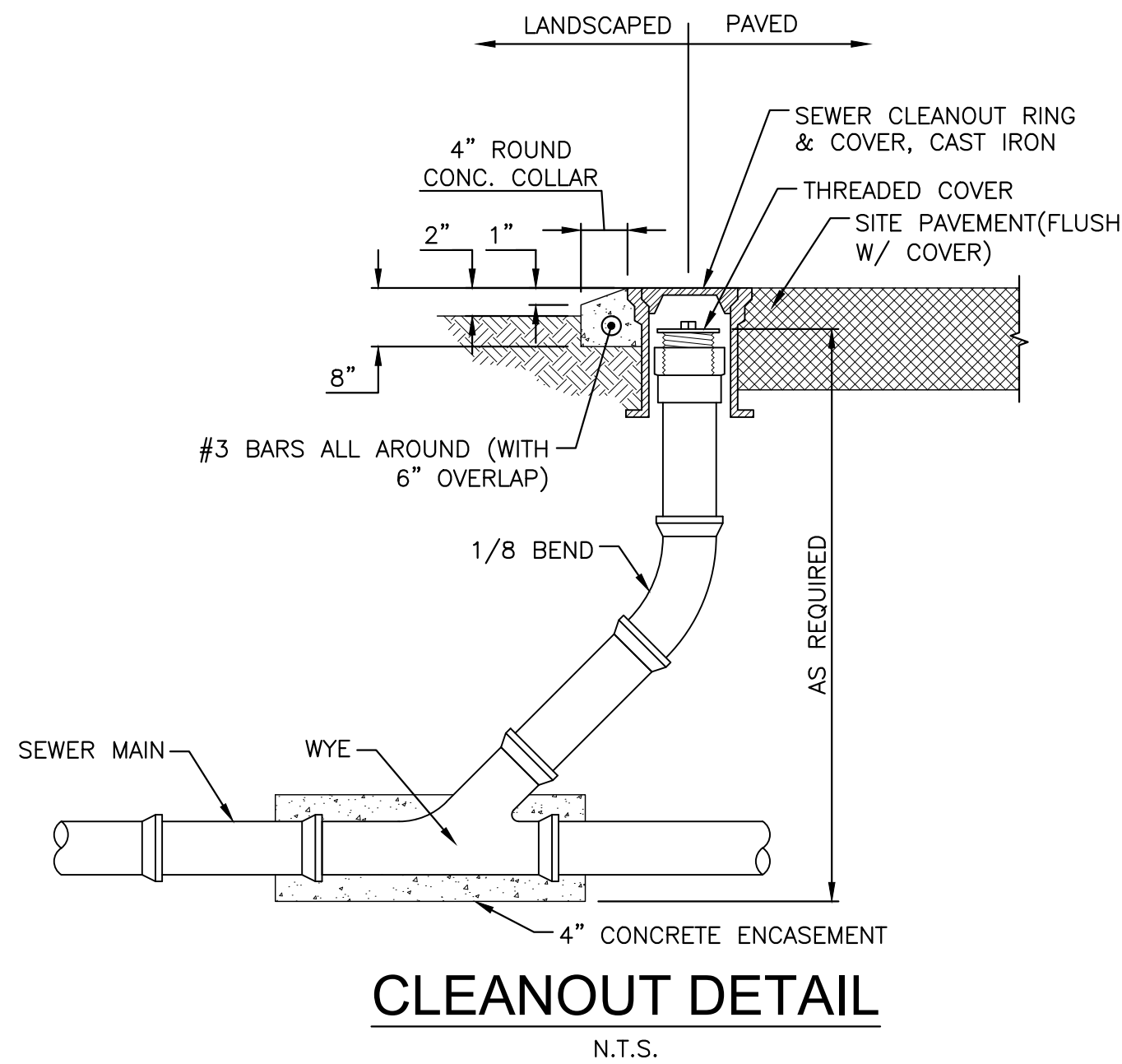


SHEET NO. WW-5

FILE NO. 124179.00



VERTICAL STACK DETAIL-LATERAL TO MAIN



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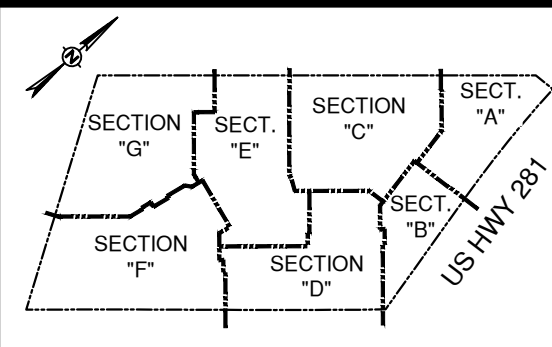
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		DRAWN BY	REA
		CHECKED BY	
		REVIEWED BY	BAC
		DATE	8/11/2025
NO	DATE	REVISION	BY



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ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

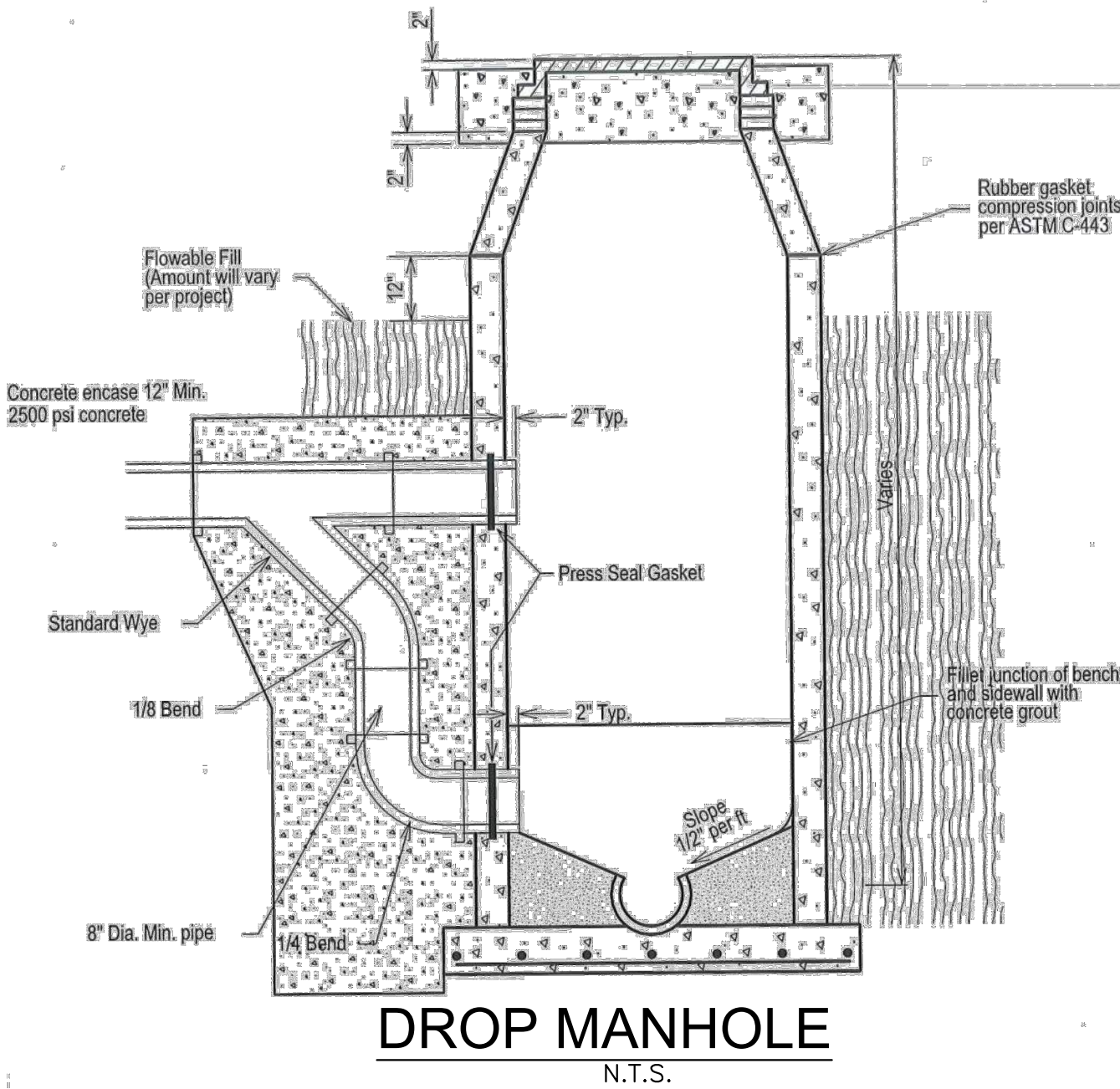
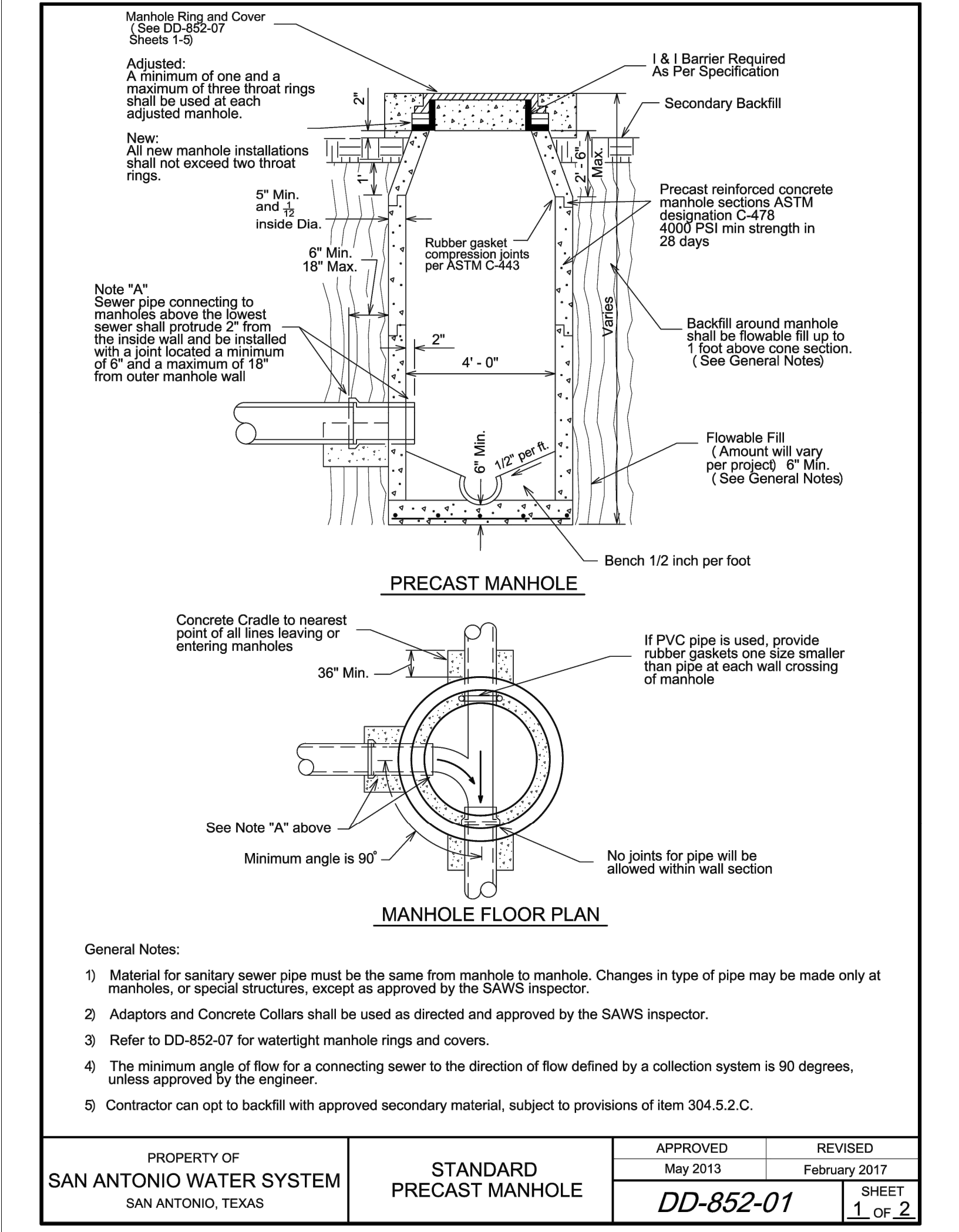
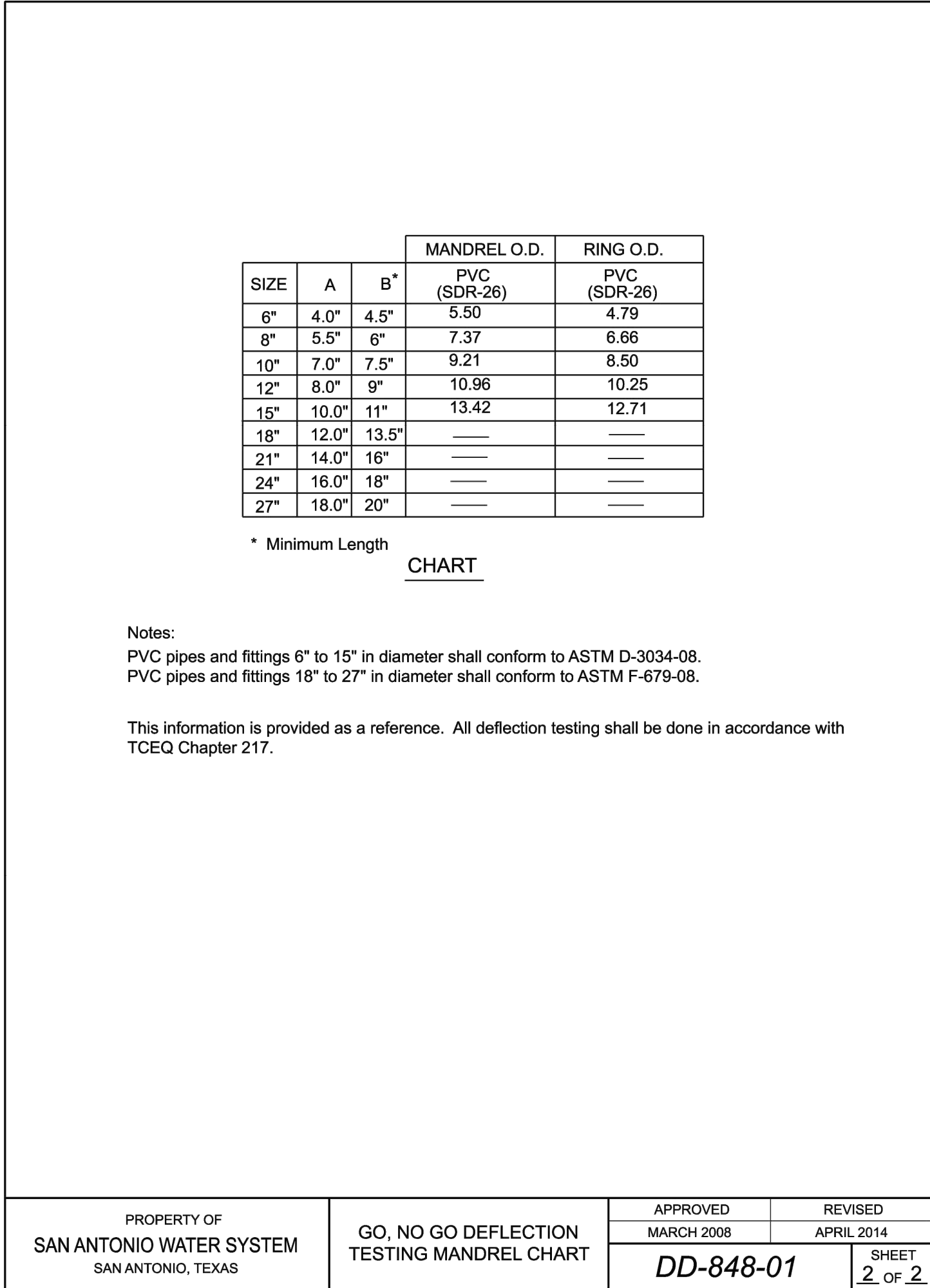
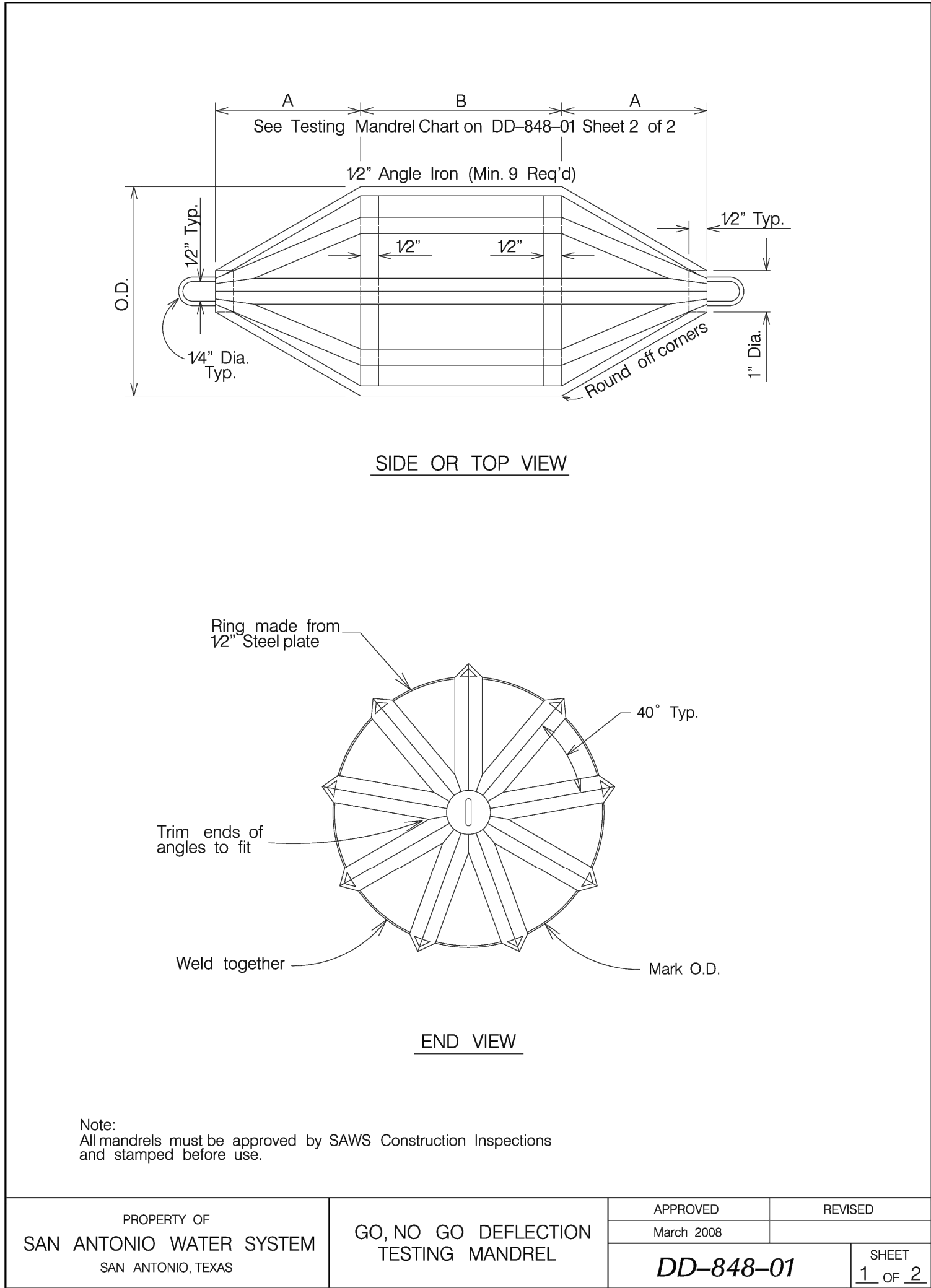
SITE UTILITY DETAILS 1 - SANITARY SEWER

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO. C9.9

FILE NO. 124179.00



12/17/24	HUD REVIEW COMMENTS #1	DESIGNED BY	BAC
		DRAWN BY	REA
		CHECKED BY	
		REVIEWED BY	BAC
		DATE	8/11/2025
NO	DATE	REVISION	BY



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CDS

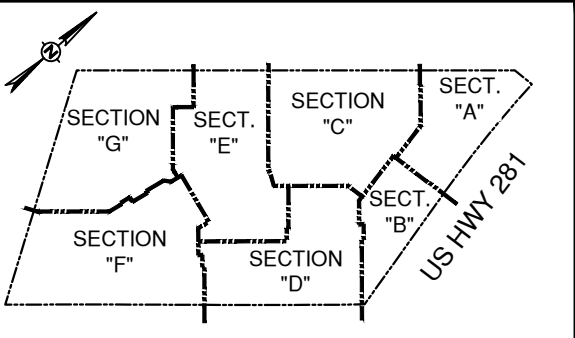
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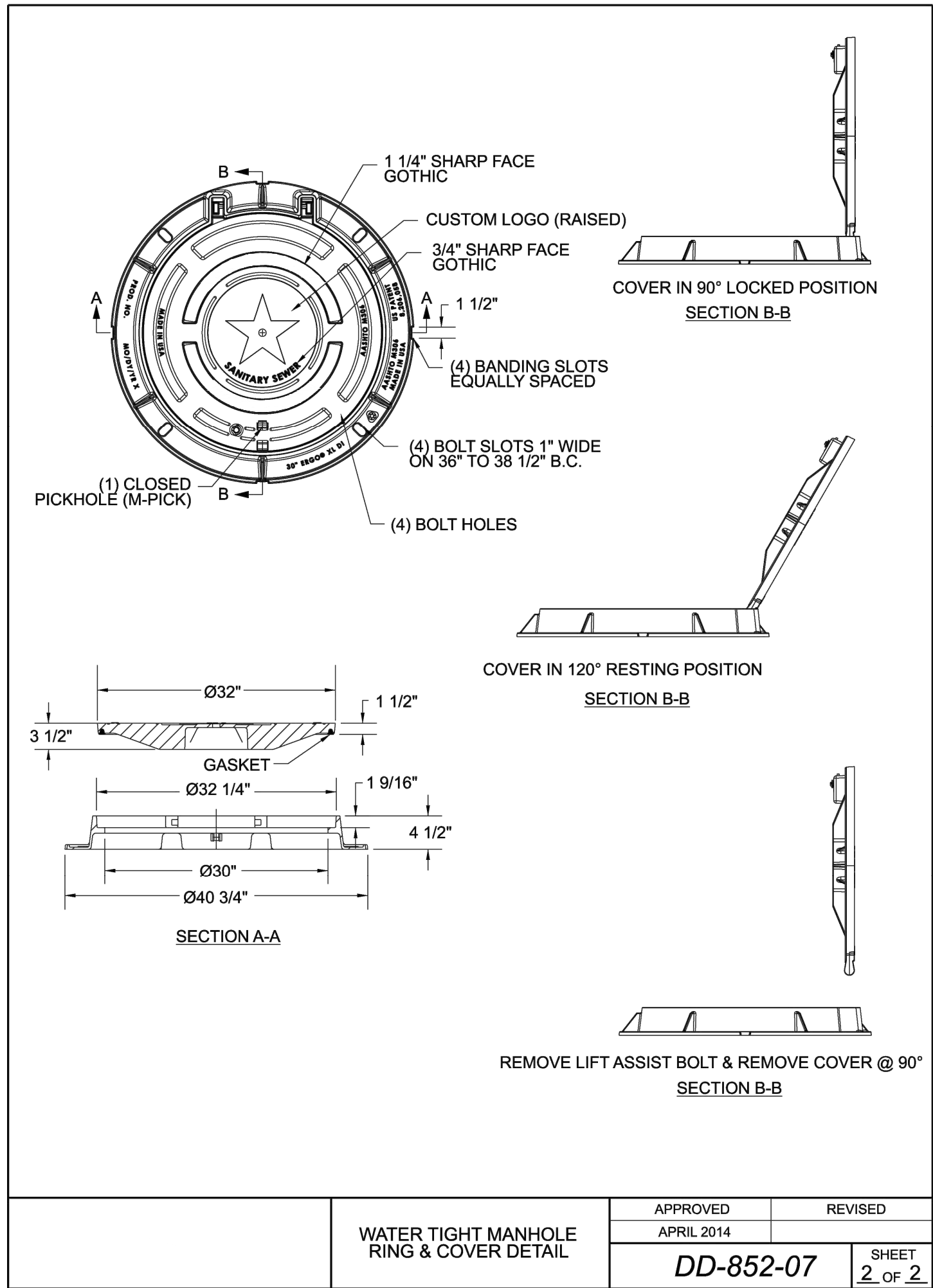
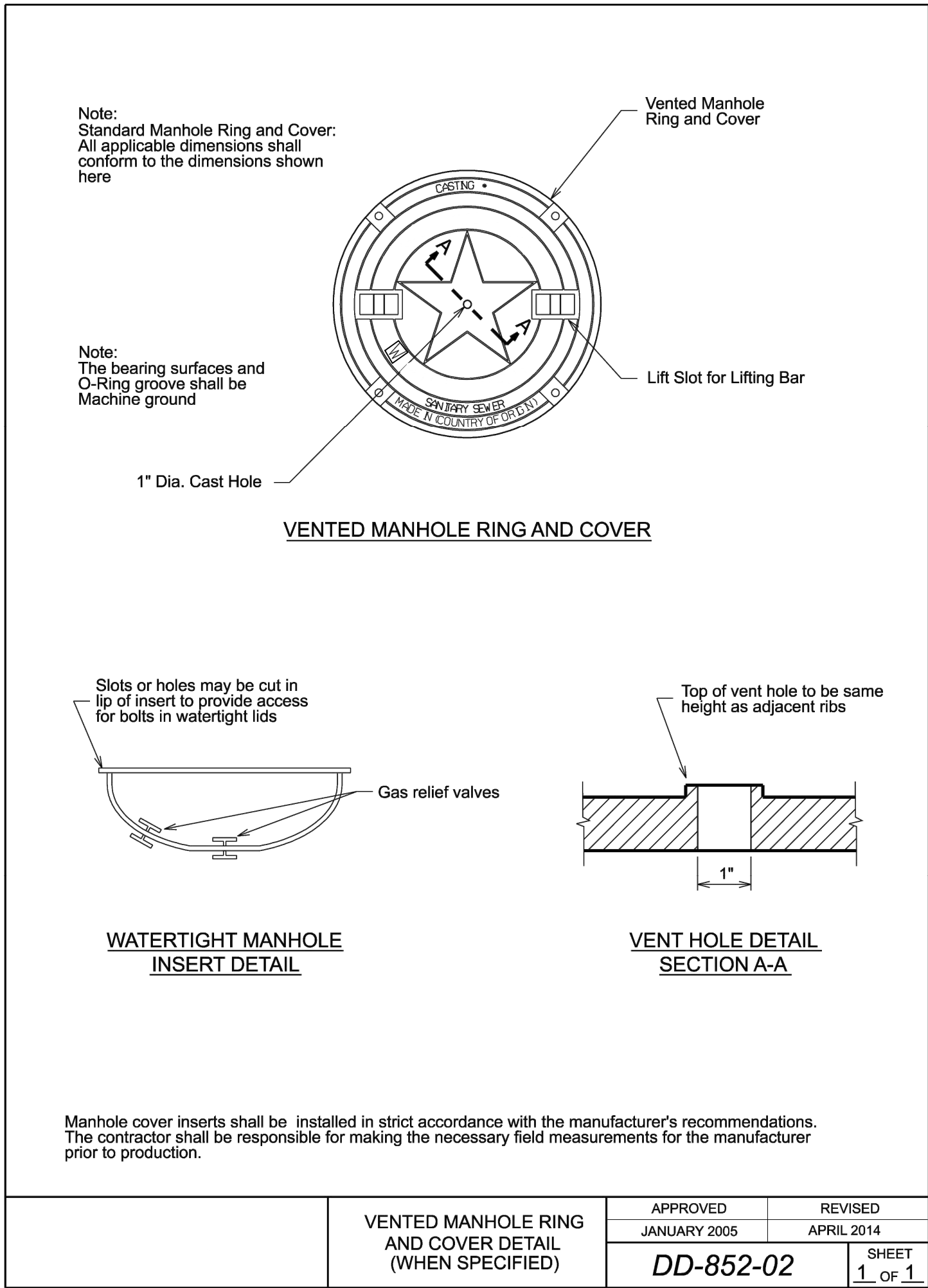
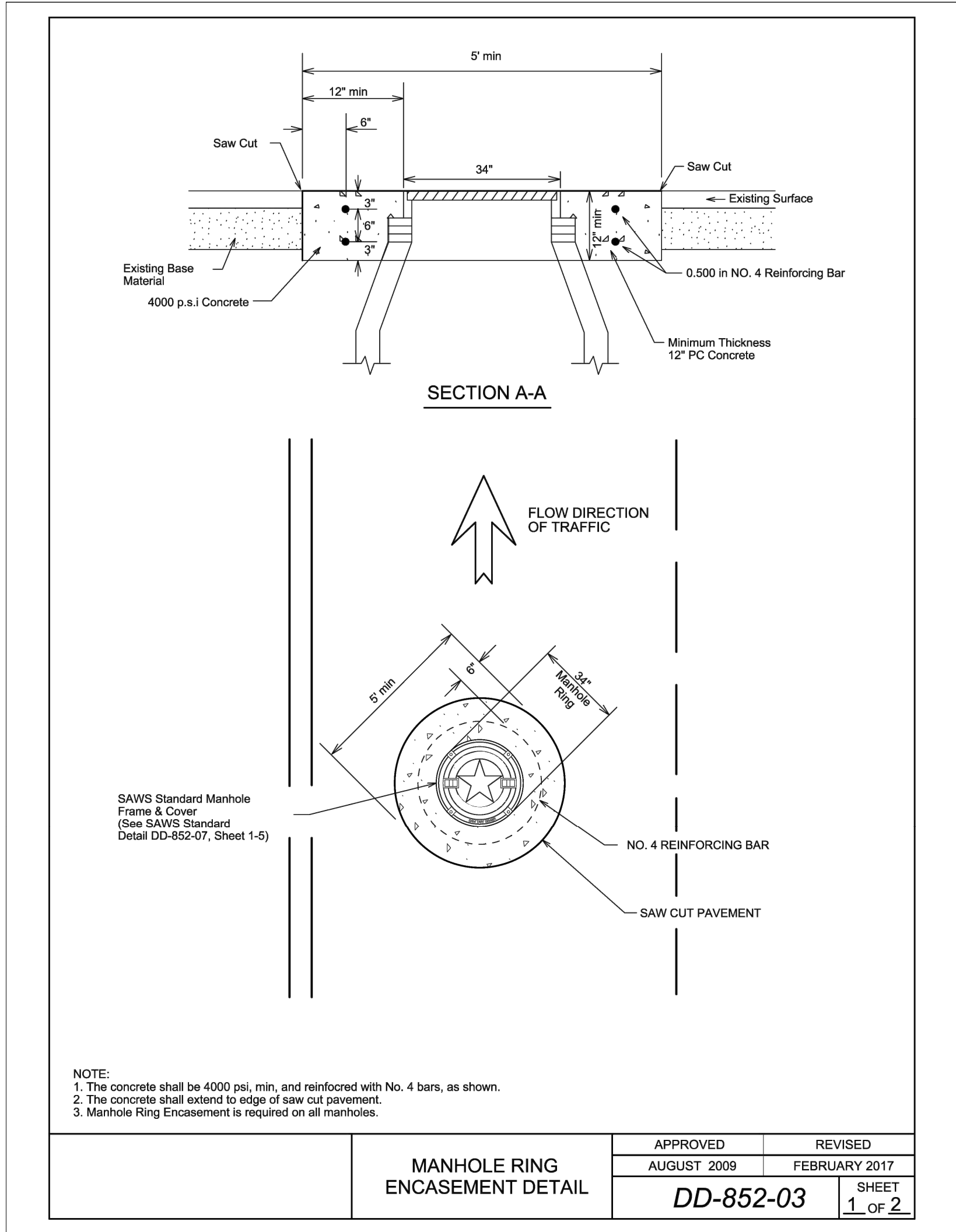
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

SITE UTILITY DETAILS 2 - SANITARY SEWER

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO.	C9.10
FILE NO.	124179.00



REFER TO SAN ANTONIO WATER SYSTEM STANDARDS SPECIFICATIONS FOR CONSTRUCTION ITEM NO. 852

Date: Aug 11, 2025, 8:35am User: ID: public.dclung File: P:\J0085\2024\124179 Pedestrian Crossing Apt. Project\Civil 3D\Drawings\Engineer\UTL-124179.DWG

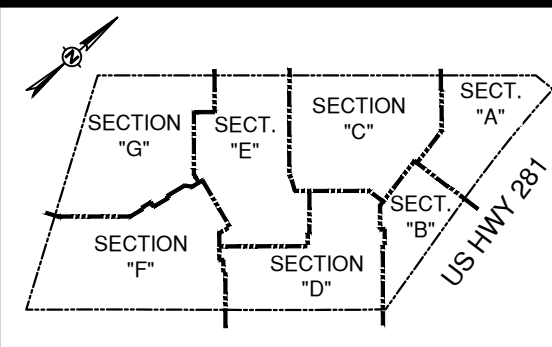
12/17/24	HUD REVIEW COMMENTS #1	DESIGNED BY	BAC
		DRAWN BY	REA
		CHECKED BY	
		REVIEWED BY	BAC
		DATE	8/11/2025
NO	DATE	REVISION	BY



SCDS muery
ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

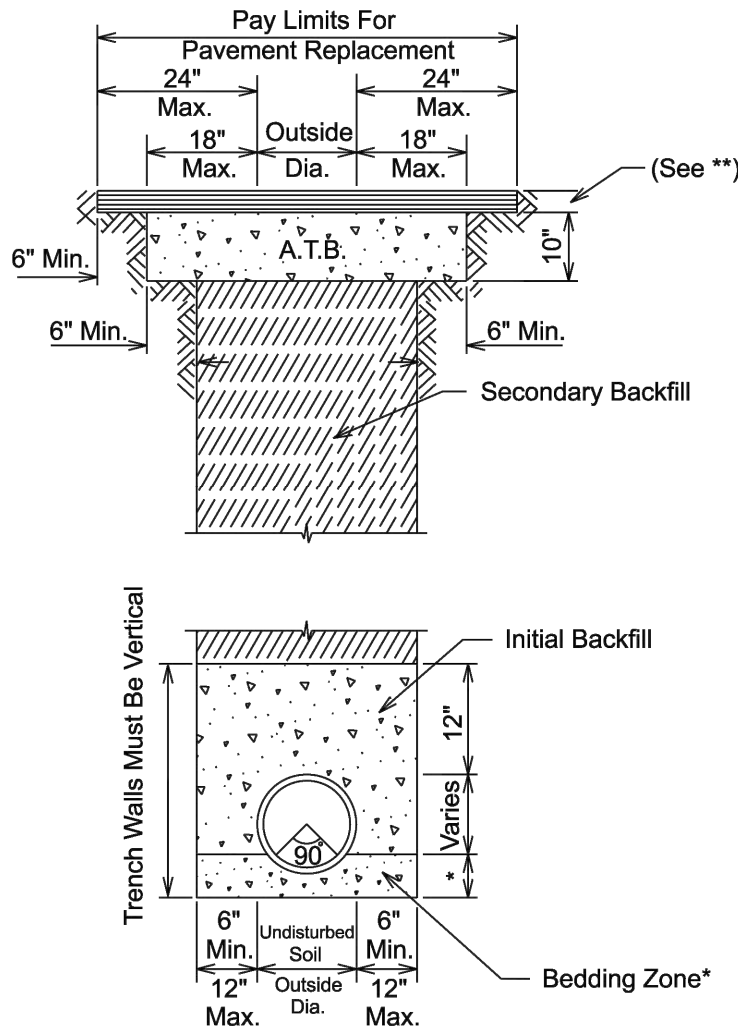
SITE UTILITY DETAILS 3 - SANITARY SEWER

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO. C9.11

FILE NO. 124179.00



* Sewer Gravel 6" Min. or 1/8 O.D. of the pipe, whichever is greater.

In areas of over excavation, encasement shall extend from trench wall to trench wall. Pay Limits shall not exceed 12" max. as shown on detail. Additional encasement shall be incidental.

** Min 2" HMAc Type "D" for trench repair in Local / Residential streets.

** Min 3" HMAc Type "C" for trench repair in Collector / Arterial streets.

TCEQ PIPE BEDDING AND TRENCHING REQUIREMENTS (30 TAC 217.54)

a. Pipe Embedment

1. A rigid pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are A, B, or C, as described in American Society for Testing and Materials (ASTM) C 12, American National Standards Institute (ANSI) A 106.2, Water Environment Federation (ASCE) MOP 37.
2. A flexible pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are IA, IB, II, or III, as described in ASTM D-2321 or ANSI K65.171.
3. Debris, large clods, or stones that are greater than six inches in diameter, organic matter, or other unstable materials are prohibited as bedding, haunching, or initial backfill.
4. Backfill must not disturb the alignment of a collection system pipe.
5. If trenching encounters significant fracture, fault zones, caves, or solutional modification to the rock strata, an owner must halt construction until an engineer prepares a written report detailing how construction will accommodate these site conditions.

b. Compaction.

1. Compaction of an embedment envelope must meet the manufacturer's recommendations for the collection system pipe used in a project.
2. Compaction of an embedment envelope must provide the modulus of soil reaction for the bedding material necessary to ensure a wastewater collection system pipe's structural integrity as required by §217.53 of this title (relating to Pipe Design).
3. The placement of the backfill above a pipe must not affect the structural integrity of a pipe.

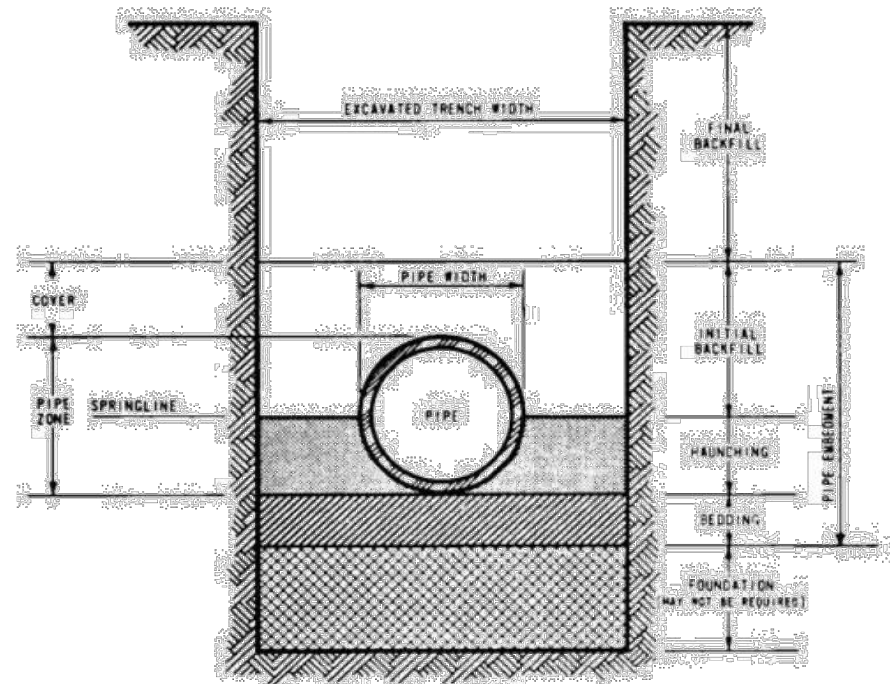
c. Envelope Size.

1. A minimum clearance of 6.0 inches below and on each side of the bell of all pipes to the trench walls and floor is required.
2. The embedment material used for haunching and initial backfill must be installed to a minimum depth of 12 inches above the crown of a pipe.

d. Trench Width.

1. The width of a trench must allow a pipe to be laid and jointed properly and must allow the backfill to be placed and compacted as needed.
2. The maximum and minimum trench width needed for safety and a pipe's structural integrity must be included in the report.
3. The width of a trench must be sufficient to properly and safely place and compact haunching materials.
4. The space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone.

TRENCH CROSS-SECTION (30 TAC 217.54)



NOTE:
Trenching Details along with 30 TAC 217.54 are annotated in the Construction Documents/Plan Sheets on C9.12

(PEPP-SA EDR v4.0)

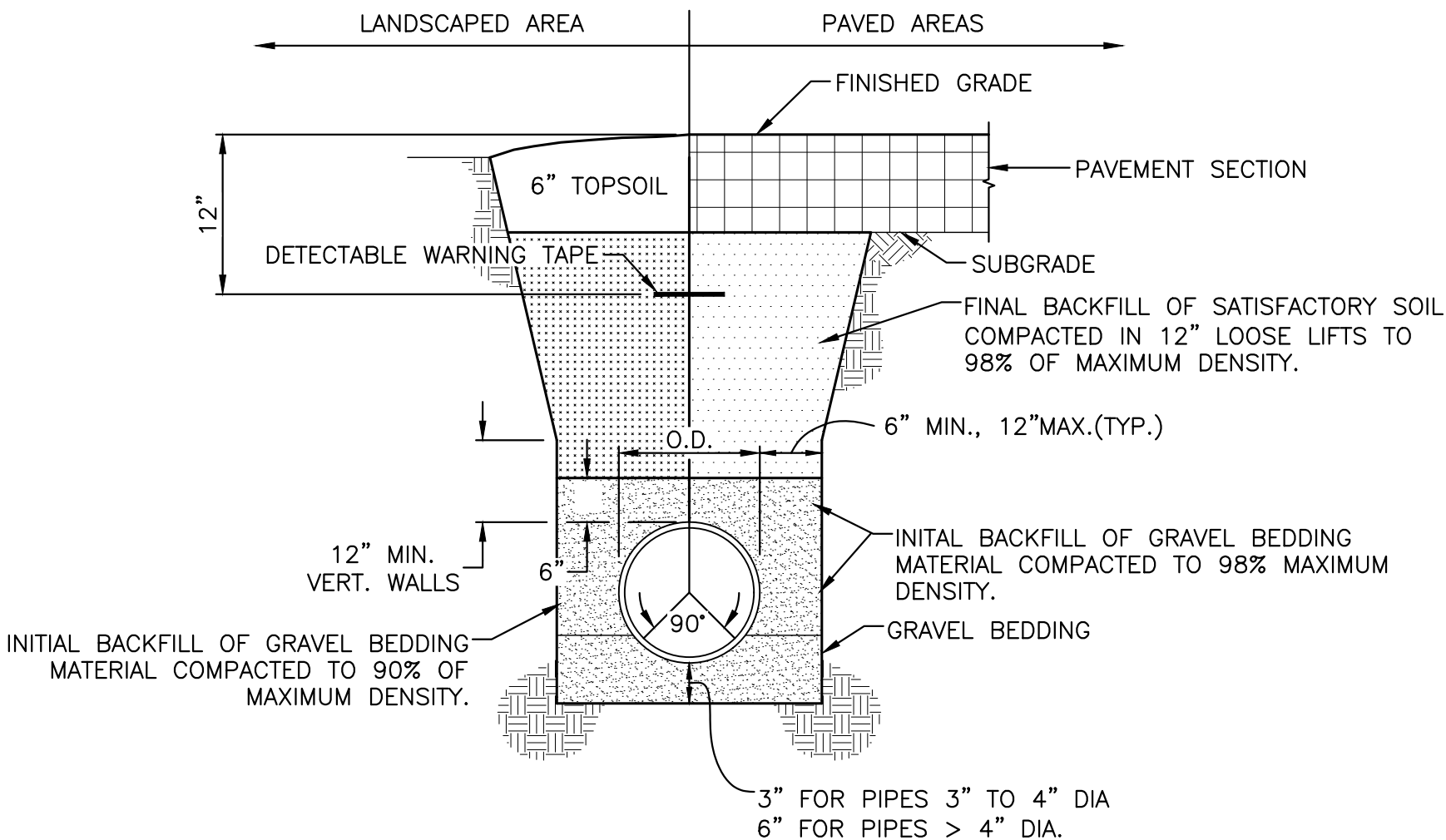
D3034

19 of 31

(PEPP-SA EDR v4.0)

D3034

20 of 31



TYPICAL UTILITY TRENCH
DETAIL

(PIPES 3" AND LARGER)
N.T.S.

REFER TO SAWS CONSTRUCTION NOTES, GENERAL SECTION, NOTE 3, SHEET C9.1 TO LOCATE OTHER SAWS STANDARD DETAILS INCLUDING THE MOST CURRENT MANHOLE DETAILS.

Date: Aug 11, 2025, 8:35am User: ID: publicdeling File: P:\J00BS\2024\124179 Pedestrian Crossing Apt. Project\Civil 3D\Draws\Engineers\UTIL-DTLS-124179.DWG

12/17/24	HUD REVIEW COMMENTS #1		
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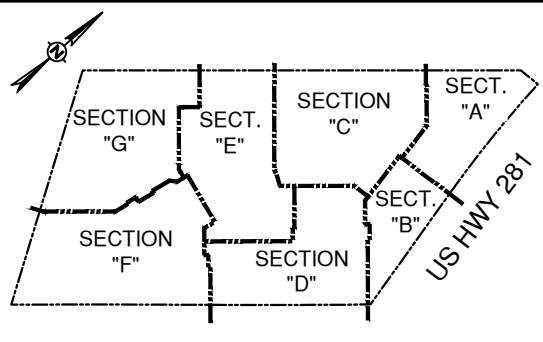
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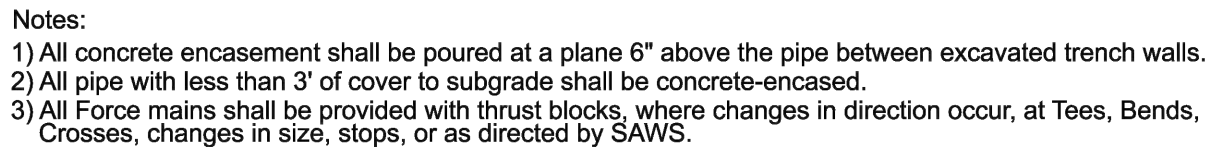
SITE UTILITY DETAILS 4 - SANITARY SEWER

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)

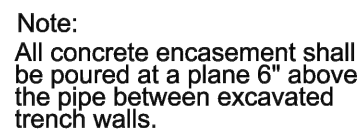


SHEET NO. C9.12

FILE NO. 124179.00



Pipe sections to be blocked and supported similar to the encasement detail shown below (subject to approval).



To be used wherever trench width is greater than two feet (2') plus O.D.

N.T.S.

FILE NO. 124179.00

STATE OF TEXAS
BRIAN A. CROWELL
82619
LICENSED
PROFESSIONAL ENGINEER
8/21/25



TEMPORARY STORMWATER SECTION
(TCEQ-0602)

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: PEDCOR INVESTMENTS, A LIMITED LIABILITY COMPANY

Date: 08/12/2025

Signature of Customer/Agent:

B. G. G. G.

Regulated Entity Name: STONES CROSSING APARTMENTS

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: WEST ELM CREEK

Temporary Best Management Practices (TBMPs)

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

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

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

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

Soil Stabilization Practices

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

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

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

Administrative Information

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

TEMPORARY STORMWATER SECTION

ATTACHMENT A

SPILL RESPONSE ACTIONS

Responsible Party

During construction, the responsible party for cleaning up spill can be any combination of the following individuals:

1. The owner or operator, including contractor (while during construction) of a **facility** from which a spill occurs.
2. The owner, operator, including contractor, operating a **vehicle** from which the spill occurs.
3. Other individual who **caused or allowed the** spill or discharge to occur.

Spill Classification

There are two main categories of spills that can be identified: Major Spills and Minor Spills. Spill response actions and notifications to municipal entities may differ depending on the type and degree of spill. Major Spills can be classified as any spills where:

1. Material is considered a health or physical hazard based on its chemical or physical make up, or if the quantity of the spill exceeds the Reportable Quantity (RQ) as defined under Title 30 of the Texas Administrative Code (TAC) Chapter 327.4.
2. The spilled material has entered into the storm water drainage system, catchment basin, or adjoining creek or if it appears that discharge into the storm system will occur in the immediate future.
3. The spilled material has the ability to travel offsite.
4. The spilled material adversely affects the environment.
5. The spilled material cannot be controlled or contained by the responsible party.
6. The chemical or physical properties of the spilled material cannot be identified or is unknown.

Minor Spills are those that do not meet the criteria above.

Notification and Reporting Agencies

The following entities shall be contact during discovery of a spill:

1. State of Texas 24-Hour Spill-Reporting Hotline and the State Emergency Response Commission at **1-800-832-8224**
2. Texas Commission on Environmental Quality (San Antonio Regional Office), Monday-Friday, 8:00 a.m.–5:00 p.m. at **14250 Judson Rd, San Antonio TX 78233-4480, Main Line: 210-490-3096.**
3. The City of San Antonio Transportation and Capital Improvements – Storm Water Division – **210-207-8052.**

Reporting Items for Major Spills

A spill log must be maintained on site by the contractor who will log all spills, major or minor, in the log. When reporting a spill, the following information may be required to help identify, log, and track the spill:

1. The date/time of the spill.
2. The identity/name of material released or spilled, and if the substance is considered hazardous.
3. The source of the release or spill.
4. The quantity of material released or spilled.
5. The time or duration of which the spill occurred.
6. The location/address of the spill.
7. The name of creek or waters involved or threatened and the extent of potential water pollution.

8. The contact information of the responsible party.
9. The steps being taken or proposed to contain and clean up the released or spilled material and any additional precautions.
10. Any injuries resulting from the spill, any known or anticipated health risks associated with the spill, or if additional medical precautions are required.
11. The identities of any municipal or private-sector representatives responding at the scene of the spill.
12. Possible hazards to the environment (air, soil, water, wildlife, etc.). This assessment may include references to accepted chemical databases, material safety data sheets, and health advisories. The TCEQ may request estimated or measured concentrations of the contaminant for the state's hazard assessment.

Reporting Items for Minor Spills

For minor spills that occur, the notification sequence described above is not required and can be treated directly onsite by the responsible parties involved by:

1. The first observer of the spill shall notify his/her supervisor and the onsite safety officer.
2. The supervisor must notify the owner, tenant, or their primary contact.
3. The immediate spill response plan/clean up actions shall be conveyed, documented and the owner/tenant shall be notified once cleanup is completed.

Equipment Needed for Minor Spills

Equipment and materials used to contain and/or restrict spreading of a spill can consist of spill pans and various forms of absorbent materials; which include granular material, socks, rock and gravel berms, pillows or pads, and sheets. Spill pans or pads can be placed under a continuing drip-type leak. Surrounding a minor spill with berms or socks can contain a small spill area until proper removal procedures can occur.

TEMPORARY STORMWATER SECTION
ATTACHMENT B
POTENTIAL SOURCES OF CONTAMINATION

Potential sources of contamination for this project include:

- Drippings from vehicles, both construction and non-construction related.
- Grading and excavation activities: Stormwater runoff has the potential to be contaminated during the construction process with related excavation and site grading.
- Building materials: Materials include, but not limited to, concrete, wood, mortar, and paint among other materials.
- Trash and debris: These may include household trash items such as paper bags, cups, plastic ware, and food items.

No hazardous substances will be stored on site.

TEMPORARY STORMWATER SECTION
ATTACHMENT C
SEQUENCE OF MAJOR ACTIVITIES

The following is the general sequence of major activities for this project:

1. Install temporary erosion control measures.
2. Site clearing and rough grading.
3. Excavate and shape the water quality/stormwater detention pond.
4. Install building foundations.
5. Trenching and utility work for on-site dry utilities, irrigation, storm water, water and sewer mains.
6. Prepare subgrade for roadways and sidewalks will be placed. Install curbs.
7. Pave roadways and sidewalks.
8. Construct a right turn lane on the US 281 access road.
9. Install landscaping and revegetate disturbed soil areas.
10. Remove temporary pollution prevention measures.

TEMPORARY STORMWATER SECTION

ATTACHMENT D

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

The temporary best management practices associated with this project will involve the implementation and maintenance of the storm water pollution prevention (SWPPP) measures.

1. Upgradient Offsite Flows

Stones Crossing apartments is located on a topographic high point within the Salado Creek watershed. No offsite areas flow onto the Stones Crossing Apartment site.

2. On-Site Flows or Flows Off-Site

On-site drainage flow from the project will be collected and routed to a proposed storm water quality/detention pond near the southwest corner of the project site. Rock Filter Dams are proposed for temporary BMPs at the outlets of all storm drains into the ponds and at the pond outlet. Gravel filter bags will be provided around all inlets to minimize buildup of sediment in the storm drain system. The ponds are designed to capture 16.38-acres of the on-site drainage flows, with the remaining 2.74-acres of the project site discharging flows offsite. Silt fences and construction exits are provided as temporary BMP measures to treat these flows off-site.

3. Preventing Pollutants from entering surface streams, sensitive features, or the aquifer.

Pollutants will be prevented from entering surface streams by employing the temporary BMPs described in item 2 above. Only one sensitive feature has been identified on site and is located in an area that will not be impacted by drainage from impervious upstream construction. This solution cavity is plugged with fine soil infilling and the probability for rapid infiltration is low according to the Geologic Assessment. A slit fence will be placed on the upgradient side of the feature during construction to minimize the potential to contaminate the feature. The feature is located in a project tree save area that will be protected during the construction process.

4. Maintaining flow to natural sensitive features.

As mentioned in item 3 the solution cavity identified in the Geologic Assessment will be protected during construction by a silt fence placed on the upgradient side of the feature. This will enable the existing natural sheet flow to be maintained during construction while protecting the feature from pollution. Post construction there will be no runoff from impervious surfaces flowing to the feature.

TEMPORARY STORMWATER SECTION
ATTACHMENT E
REQUEST TO TEMPORARILY SEAL A FEATURE

This section does not apply for this project. There will not be temporary sealing of naturally occurring sensitive features on the site.

TEMPORARY STORMWATER SECTION

ATTACHMENT F

STRUCTURAL PRACTICES

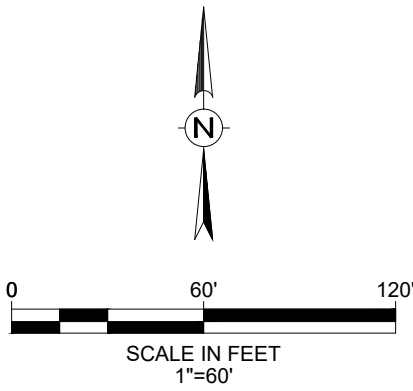
Temporary structural practices include:

- Silt Fencing: To be placed along the down gradient boundary of the limits of construction activities.
- Gravel Filter Bags: Shall be used at the entrance to curb openings, around inlets, etc. to minimize siltation of the storm drain system and/or water quality basin.
- Rock Filter Dam: To be placed in areas of concentrated flows, where indicated on construction plans, such as proposed channels and drainage swales and proposed pond outlets.
- Construction Entrance/Exit: Will be placed to limit migration of sediment from the jobsite as construction traffic enters and exits the construction site.
- Concrete Washout-Pits: To contain and control affected runoff from cement delivery trucks.

Please note that this site is not located within a studied floodplain and not exposed to potential flooding that may occur during heavy rainfall periods and therefore, would not adversely impact TBMP structures that are proposed to be used on-site during construction.

TEMPORARY STORMWATER SECTION
ATTACHMENT G
DRAINAGE AREA MAP

See following page.



- LEGEND**
- PROPERTY BOUNDARY
 - - - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - DRAINAGE AREA
 - - -> PROPOSED FLOW PATH (TC)
 - DA 1
2.05 AREA
ACREAGE
 - PROPOSED PRIVATE STORM DRAIN WITH INLETS

FLOW CALCULATION SUMMARY - RATIONAL METHOD (ATLAS 14 PRECIP, AREA 2)									
PROPOSED CONDITION	TOTAL	RUNOFF	RUNOFF	INTENSITY	FLOW	INTENSITY	FLOW	INTENSITY	FLOW
CONTRIBUTING	AREA	COEFFICIENT	TIME - "Tc"	I-5	Q-5	I-25	Q-25	I-100	Q-100
AREA(S)	(ACRES)	("C")	(MINUTES)	(IN/HR)	(CFS)	(IN/HR)	(CFS)	(IN/HR)	(CFS)
1	0.32	0.25	5	7.94	2.0	11.14	2.82	14.01	3.5
2	0.17	0.14	5	7.94	1.1	11.14	1.54	14.01	1.9
3	0.89	0.71	8	6.87	4.9	9.61	6.80	12.16	8.6
4	0.25	0.20	5	7.94	1.6	11.14	2.26	14.01	2.8
5	0.09	0.08	5	7.94	0.6	11.14	0.84	14.01	1.1
6	0.59	0.47	7	7.17	3.4	10.03	4.70	12.69	5.9
7	0.17	0.14	5	7.94	1.1	11.14	1.53	14.01	1.9
8	0.17	0.14	5	7.94	1.1	11.14	1.52	14.01	1.9
9	0.11	0.09	5	7.94	0.7	11.14	0.95	14.01	1.2
10	1.67	1.33	7	7.17	9.6	10.03	13.38	12.69	16.9
11	1.20	0.96	7	7.17	6.9	10.03	9.64	12.69	12.2
12	0.75	0.60	7	7.17	4.3	10.03	5.99	12.69	7.6
13	0.21	0.16	5	7.94	1.3	11.14	1.83	14.01	2.3
14	1.14	0.92	7	7.17	6.6	10.03	9.18	12.69	11.6
15	1.26	1.01	7	7.17	7.2	10.03	10.09	12.69	12.8
16	4.08	3.27	7	7.17	23.4	10.03	32.78	12.69	41.5
17	1.03	0.82	8	7.17	5.9	10.03	8.27	12.69	10.5
18	0.56	0.43	7	7.52	3.2	10.53	4.48	13.30	5.7
AREAS DRAINING									
OFFSITE									
19	1.90	1.09	17	4.98	5.4	6.91	7.5	8.64	9.4
20	1.29	0.53	8	6.87	3.6	9.61	5.1	12.16	6.4
21	0.17	0.09	5	7.94	0.7	11.14	1.0	14.01	1.3
22	1.52	0.65	12	6.13	4.0	8.56	5.6	10.81	7.1
23	0.09	0.06	6	7.52	0.4	10.53	0.6	13.30	0.7
24	0.12	0.06	8	6.87	0.4	9.61	0.5	12.16	0.7
25	0.66	0.38	9	6.87	2.6	9.61	3.6	12.16	4.6
26	1.08	0.88	6	7.52	6.6	10.53	9.3	13.30	11.7

			DESIGNED BY	
			DRAWN BY	
			CHECKED BY	
			REVIEWED BY	
NO	DATE	REVISION	BY	DATE

TEMPORARY STORMWATER SECTION

ATTACHMENT H

TEMPORARY SEDIMENT POND(S) PLANS AND CALCULATIONS

There are no areas of 10-acres or greater discharging to a singular discharge point on this site so a temporary sediment pond is not required.

TEMPORARY STORMWATER SECTION

ATTACHMENT I

INSPECTION AND MAINTENANCE FOR BMPS

All erosion and sediment controls shall be maintained in good working order. The contractor will inspect the condition of the temporary BMPs on a weekly basis and following every 0.25" or greater rain event. If a repair is necessary it shall be performed by the close of the next business day following discovery. If any sediment escapes the site during construction activities, off-site accumulations must be removed to minimize offsite impacts to water quality.

Silt Fence

1. Remove sediment when buildup reaches 6 inches.
2. Replace any torn fabric or install a second line of fencing parallel to the torn section.
3. Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at a common vehicle access points.
4. 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 re-vegetated. The fence itself should be disposed of in an approved landfill.

Gravel Filter Bags

1. Remove sediment when buildup reaches 4 inches.
2. Replace any torn bags or install a second line of bags parallel to the torn section.
3. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation.

Rock Filter Dam

1. 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.
2. Repair any loose wire sheathing.
3. The berm should be reshaped as needed during inspection.
4. 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.
5. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

Temporary Construction Entrance/Exit

1. The entrance should be maintained in a condition, which will prevent transfer 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. When necessary, wheels should be cleaned and remove sediment prior to entrance onto public right-of-way.
3. 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.
4. All sediment should be prevented from entering any storm, drain, ditch or water course by using approved methods.

TEMPORARY STORMWATER SECTION
ATTACHMENT J
SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION
PRACTICES.

Interim on-site stabilization measures will be on-going and consist with minimizing soil disturbances for the shortest duration of time "practical". As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance TCEQ's Technical Guidance Manual (TGM) RG-348. Project stabilization practices will include, but not limited to, the use of sod, erosion control blankets and seeding.

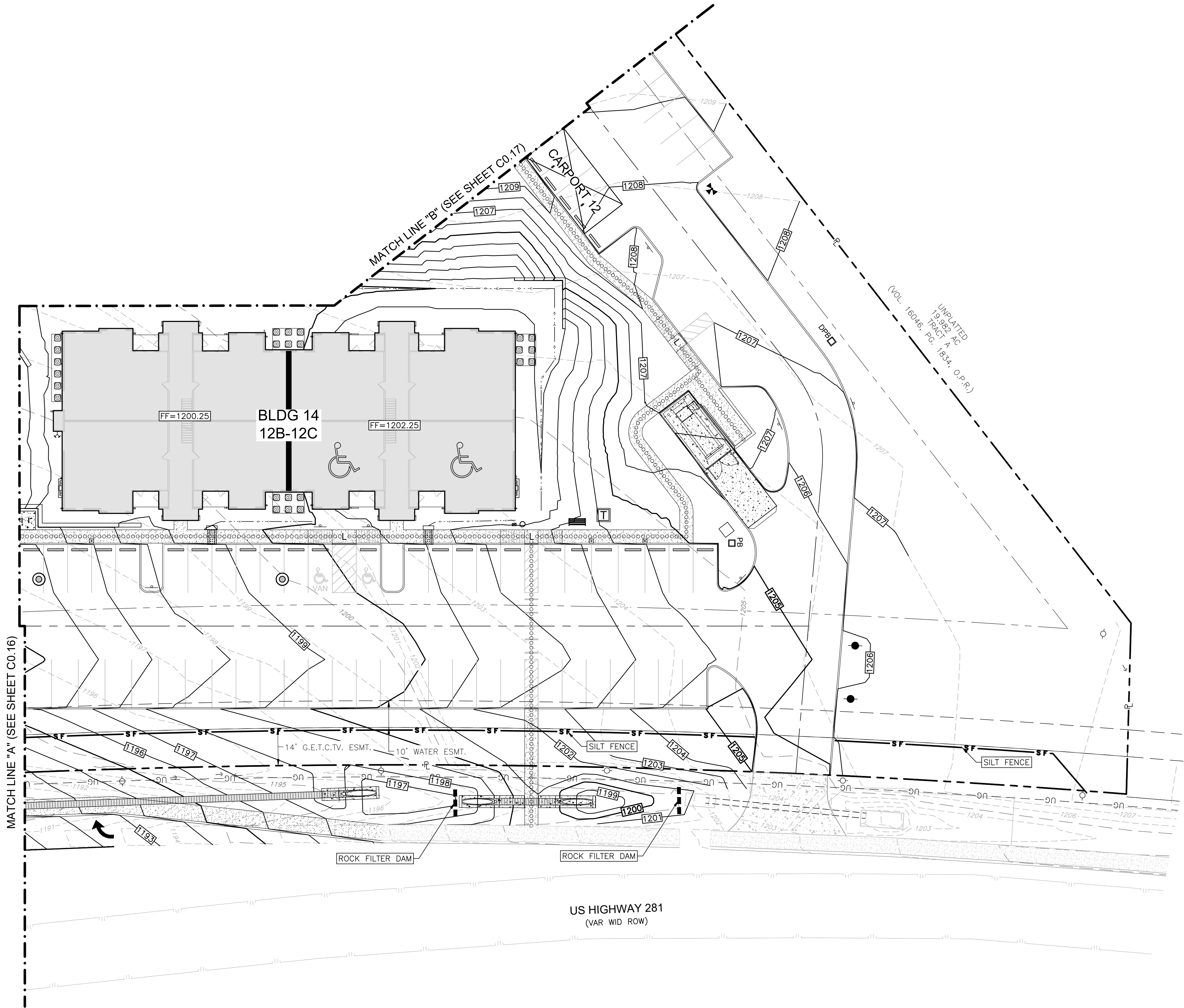
Stabilization measures are to be completed as soon as practicable at locations where construction activities have temporarily or permanently ceased. Bare soils are to be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days.

STORM WATER POLLUTION PREVENTION PLAN NOTES

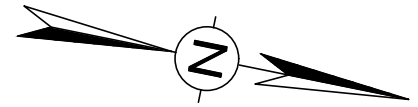
1. THE PURPOSE OF THE STORM WATER POLLUTION PREVENTION PLAN (SW3P) IS TO MINIMIZE SOIL EROSION AND SEDIMENT TRANSPORT DURING CONSTRUCTION AND TO ENSURE ADEQUATE STABILIZATION MEASURES ARE IMPLEMENTED TO PROVIDE PERMANENT STABILIZATION OF THE SITE.
2. TEMPORARY BEST MANAGEMENT PRACTICES INCLUDE BUT ARE NOT LIMITED TO USE OF THE FOLLOWING:
- a. SILT FENCES
 - b. ROCK FILTER DAMS
 - c. GRAVEL FILTER BAGS
 - d. SEEDING
3. PERMANENT STABILIZATION IS IDENTIFIED IN THE LANDSCAPE AND CIVIL DRAWINGS AND INCLUDES PAVEMENTS, LANDSCAPES, SOFTSCAPES, SODDING, SEEDING, ROCK RUBBLE RIPRAP, CONCRETE RIPRAP, ETC.
4. THESE SW3P DRAWINGS REPRESENT TEMPORARY MEASURES TO BE IMPLEMENTED DURING CONSTRUCTION AND MAINTAINED UNTIL THE PLAN STABILIZATION GOALS ARE MET.
5. THE SW3P WILL REQUIRE SEQUENCING OF CONTROL MEASURES AND RELOCATING CONTROLS AS WORK PROGRESSES. THE SW3P IS A WORKING DOCUMENT AND MAY REQUIRE MODIFICATION DURING CONSTRUCTION. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE SW3P AND RECORD ALL MODIFICATIONS TO THE PLAN, AS APPLICABLE.
6. GRAVEL FILTER BAGS OR SILT FENCE SHALL BE USED TO PROTECT AGAINST SILTATION OF INLETS AND STORM SEWER SYSTEMS. CONTRACTOR SHALL ERECT NECESSARY CONTROLS, AS APPLICABLE, TO ENSURE ADEQUATE PROTECTION OF ALL INLETS, AREA DRAINS, LANDSCAPE DRAINS, CULVERTS, ETC. WHETHER IDENTIFIED ON THE PLANS OR NOT.
7. DISTURBED AREAS THAT ARE NOT SCHEDULED FOR LANDSCAPING SHALL BE SEEDED AND STABILIZED PRIOR TO FINAL PROJECT COMPLETION. THESE AREAS MAY INCLUDE STAGING AREAS, HAUL ROUTES, LAY DOWN YARDS, SITE ACCESS DRIVES, AND STOCKPILE AREAS. SEEDING SHALL BE AS SPECIFIED IN THE LANDSCAPE SPECIFICATIONS.

CRITICAL CONSTRUCTION PHASING FOR SWPPP

1. INSTALL TEMPORARY EROSION CONTROL MEASURES
2. INSTALL DETENTION POND WALLS. EXCAVATE AND SHAPE BATCH DETENTION POND.
3. CLEAR AND ROUGH GRADE NORTH DRIVE AISLE. DIRECT SITE DRAINAGE TO POND.



PLAT ID 24-11800347



20' 10' 0' 20'
SCALE: 1" = 20'

LEGEND

- PROPERTY BOUNDARY
- EXISTING GROUND CONTOUR
- FINISHED GROUND CONTOUR
- DRAINAGE SWALE
- SILT FENCE
- GRAVEL FILTER BAGS
- ROCK FILTER DAM (TYPE 1)
- ROCK FILTER DAM (TYPE 2)
- CONSTRUCTION EXIT/ENTRANCE
- CONCRETE WASHOUT PIT
- CURB INLET
- GRATE INLET
- JUNCTION BOX
- SIDEWALK DRAIN
- STORM DRAIN
- CONCRETE LINED CHANNEL

Date: Jul 09, 2025, 6:58pm User: dr. alfredo.carranza
File: F:\J085\2024\124179 Pedon_Stones Crossing Apt. Project\Civil 3D\Drawg\Engineer\SW3P-124179.dwg

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NO	DATE	REVISION
		BY

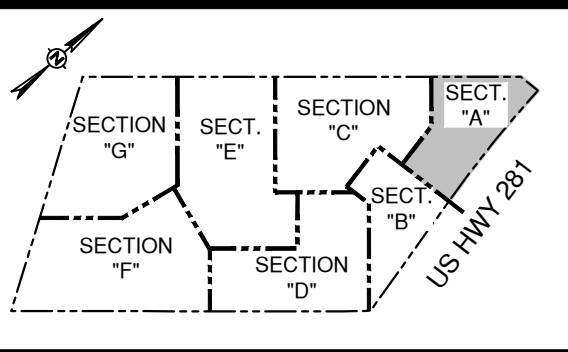
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DRAWN BY	REA
CHECKED BY	
REVIEWED BY	BAC
DATE	7/08/2025



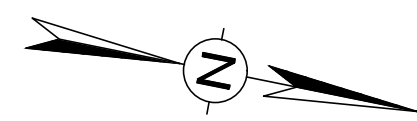
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ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

STORMWATER POLLUTION PREVENTION PLAN - SECTION "A"

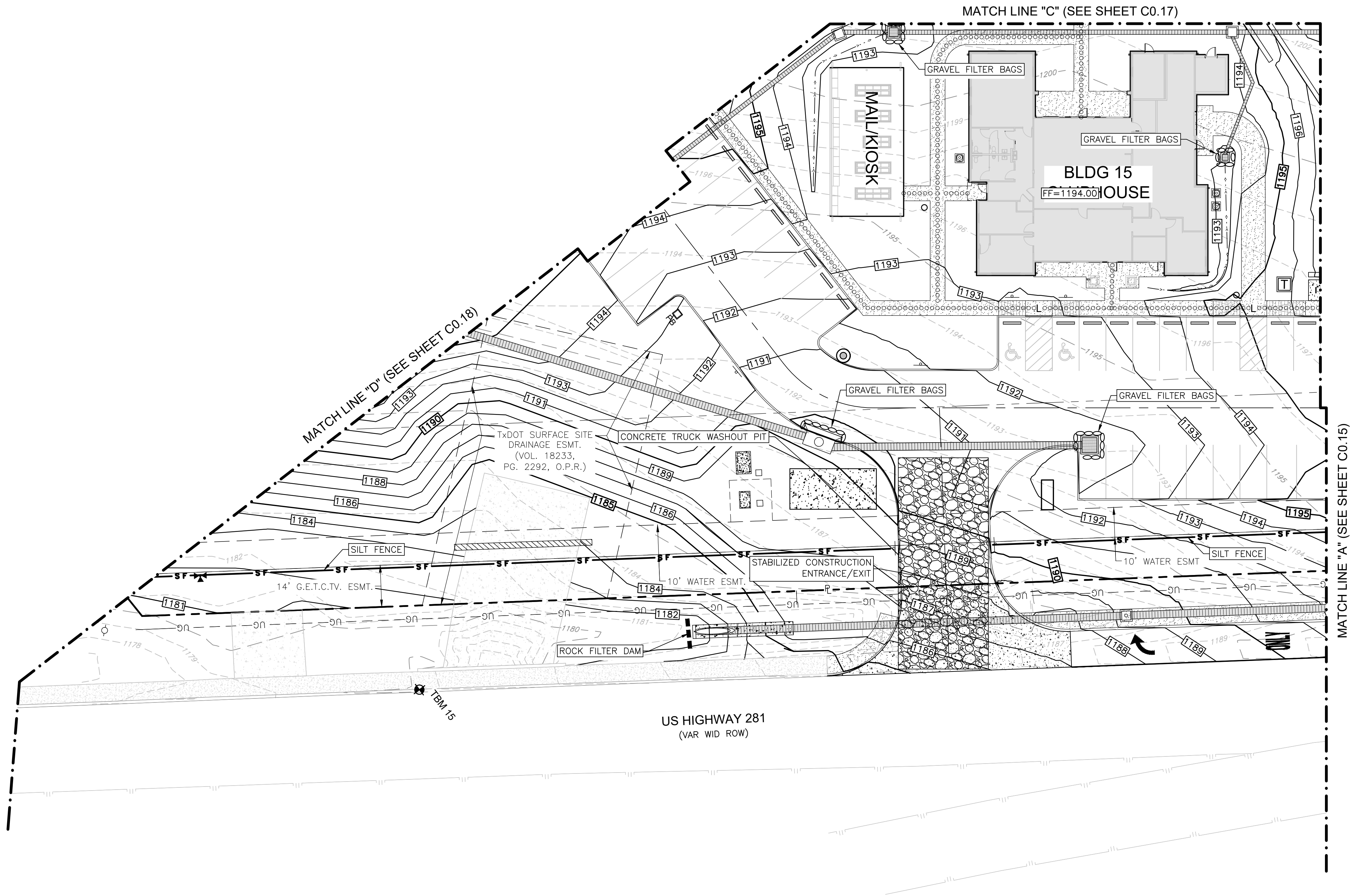
STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO.	C0.15
FILE NO.	124179.00



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SCALE: 1" = 20'



MATCH LINE "A" (SEE SHEET C0.15)

Date: Jul 09, 2025, 6:51pm User: drd\drd\camrora
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12/17/24	HUD REVIEW COMMENTS #1	
NO	DATE	REVISION
		BY

DESIGNED BY	BAC
DRAWN BY	REA
CHECKED BY	
REVIEWED BY	BAC
DATE	7/08/2025



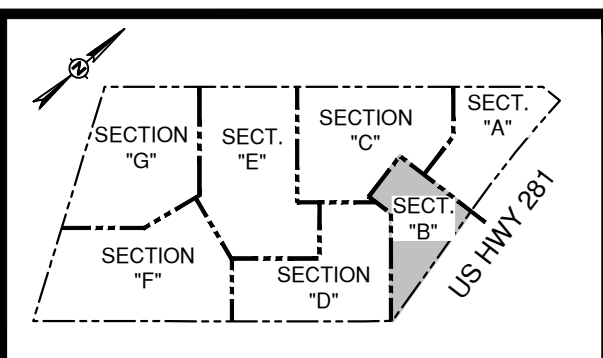


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ENGINEERS | SURVEYORS

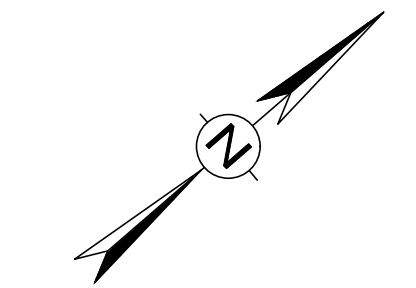
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

STORMWATER POLLUTION PREVENTION PLAN -
SECTION "B"

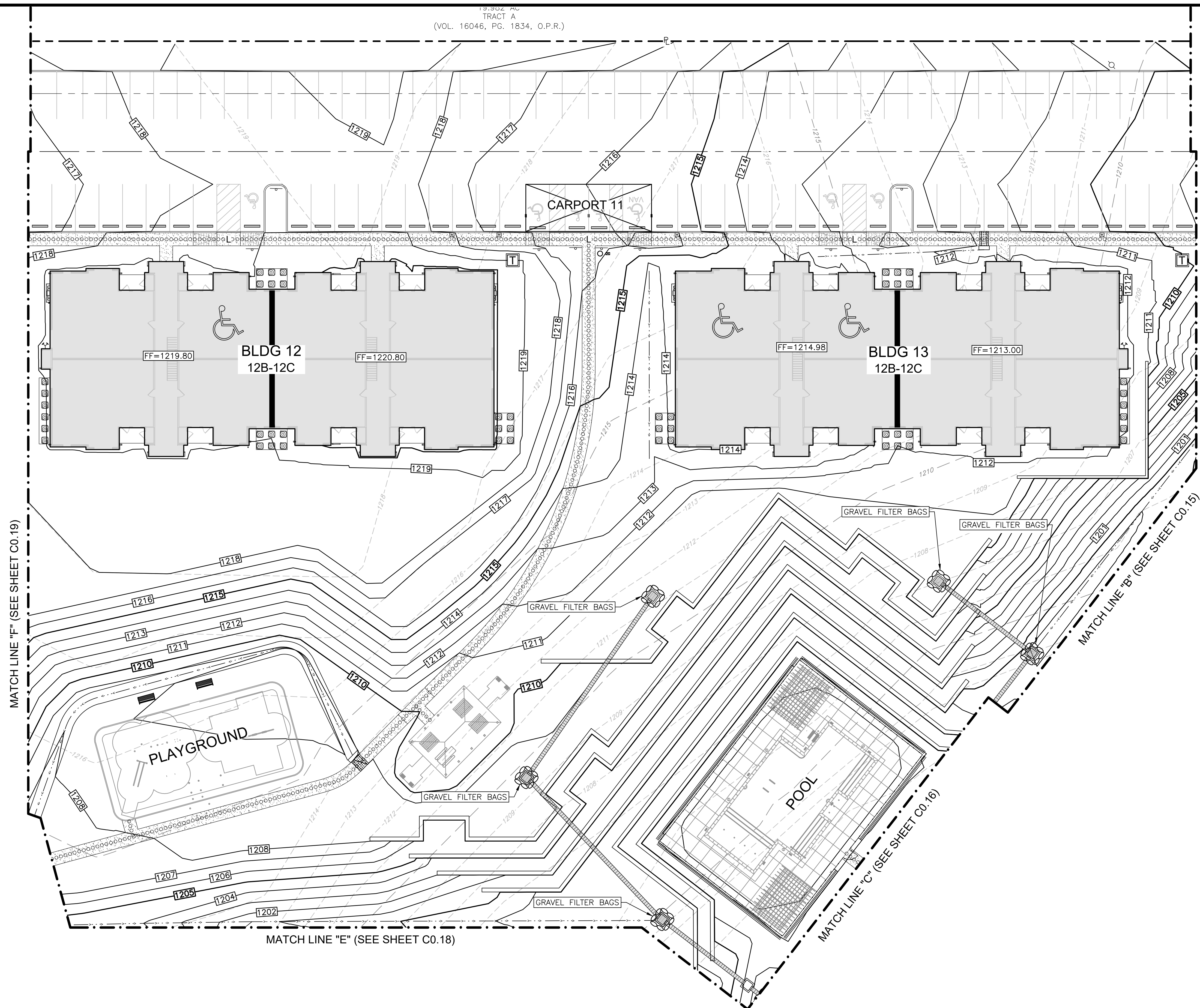
STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



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NO	DATE	REVISION
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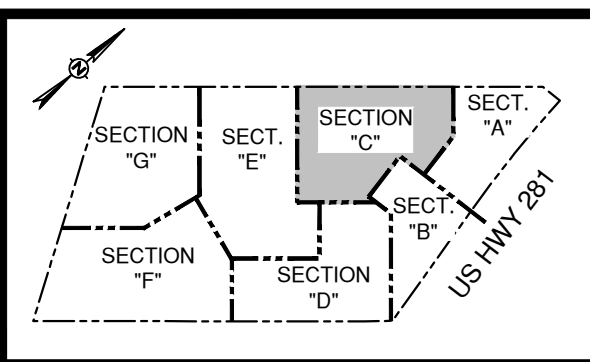
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REVIEWED BY	BAC
DATE	7/08/2025



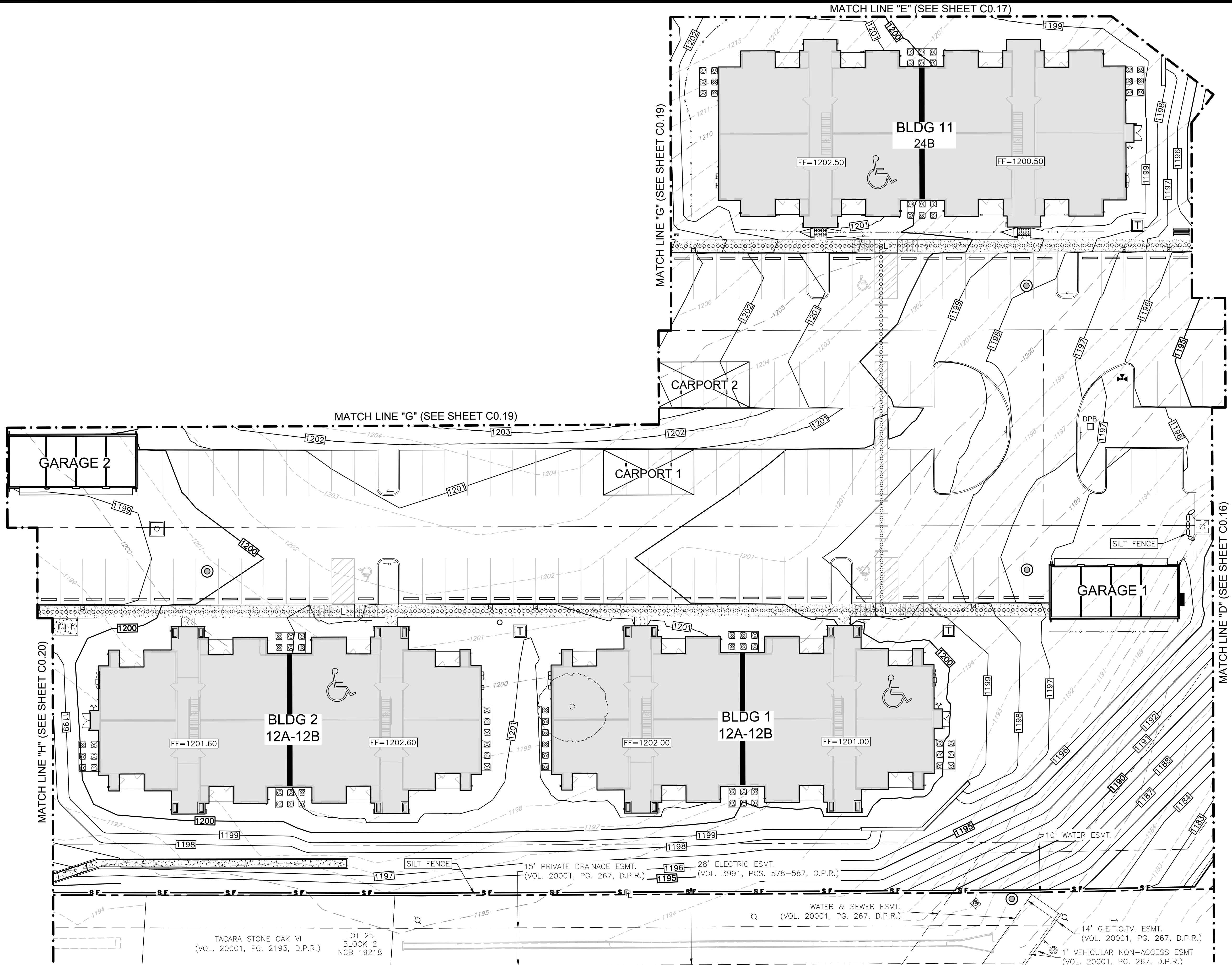
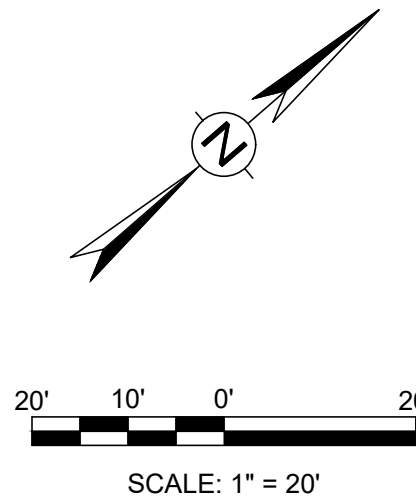
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STORMWATER POLLUTION PREVENTION PLAN -
SECTION "C"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



SHEET NO.	C0.17
FILE NO.	124179.00



12/17/24	HUD REVIEW COMMENTS #1	
NO	DATE	REVISION
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DESIGNED BY	BAC
DRAWN BY	REA
CHECKED BY	
REVIEWED BY	BAC
DATE	7/08/2025



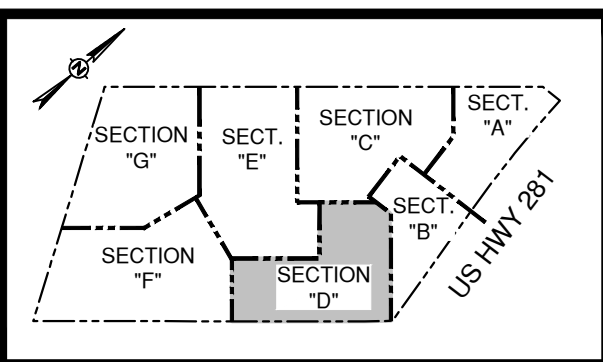


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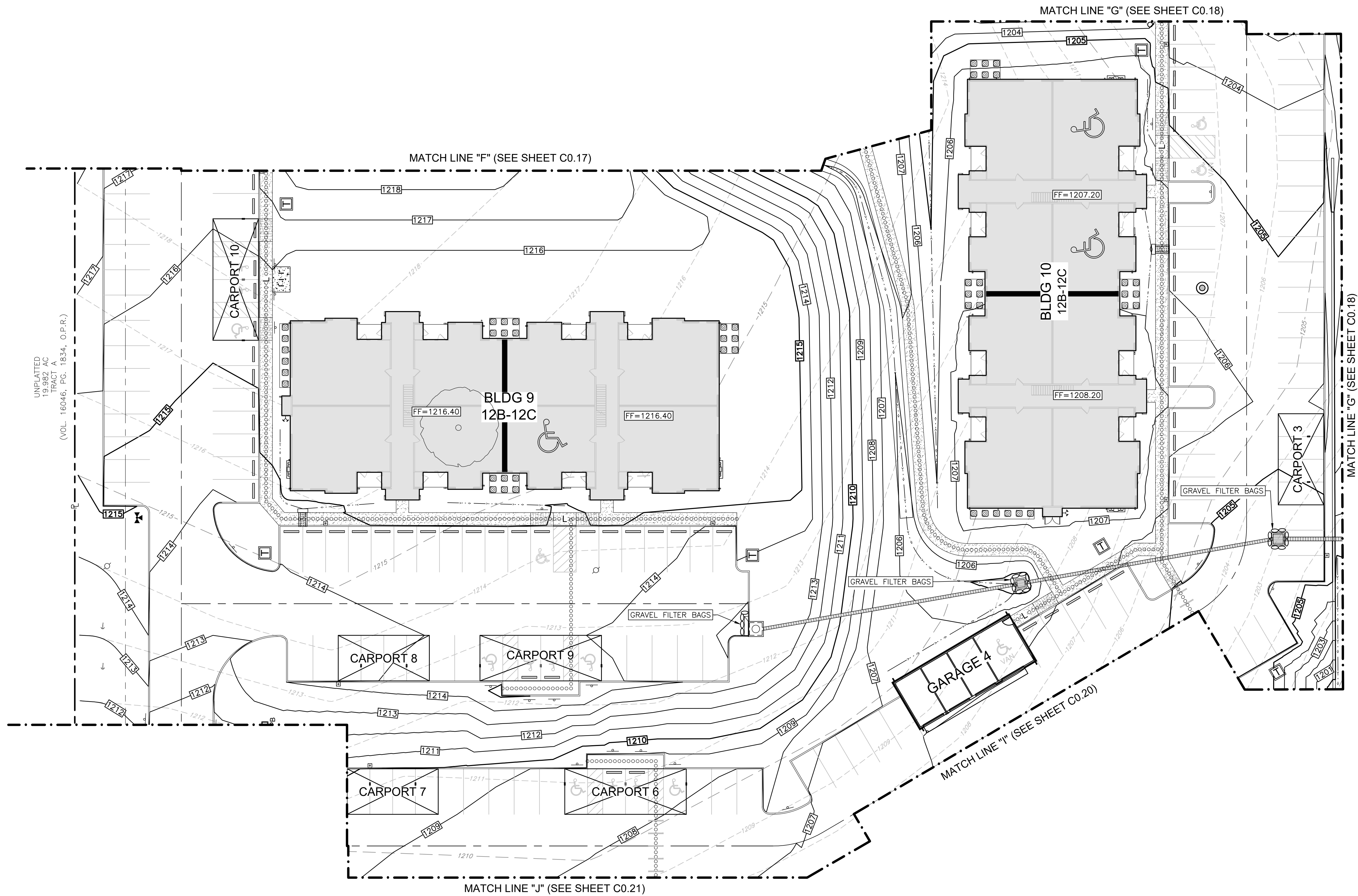
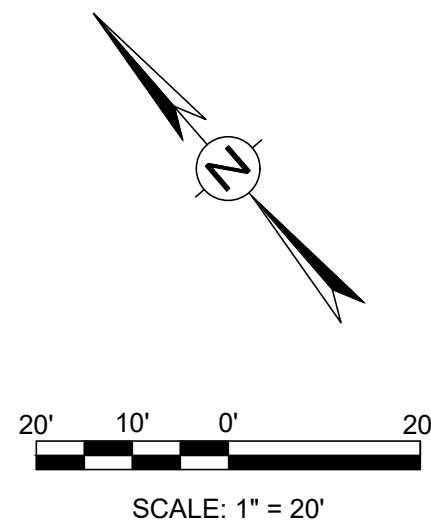
STORMWATER POLLUTION PREVENTION PLAN -
SECTION "D"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



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Date: Jul 09, 2025, 6:53pm User: dr. alfredo.carrasco
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NO	DATE	REVISION
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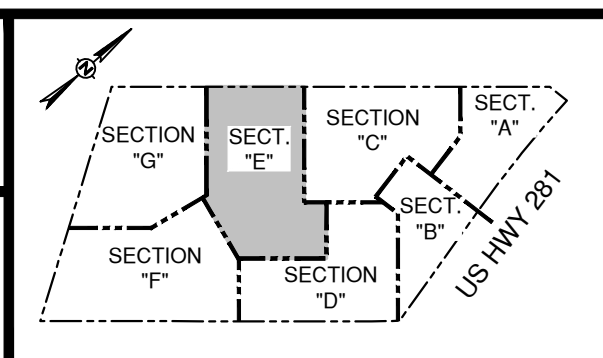
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REVIEWED BY	BAC
DATE	7/08/2025



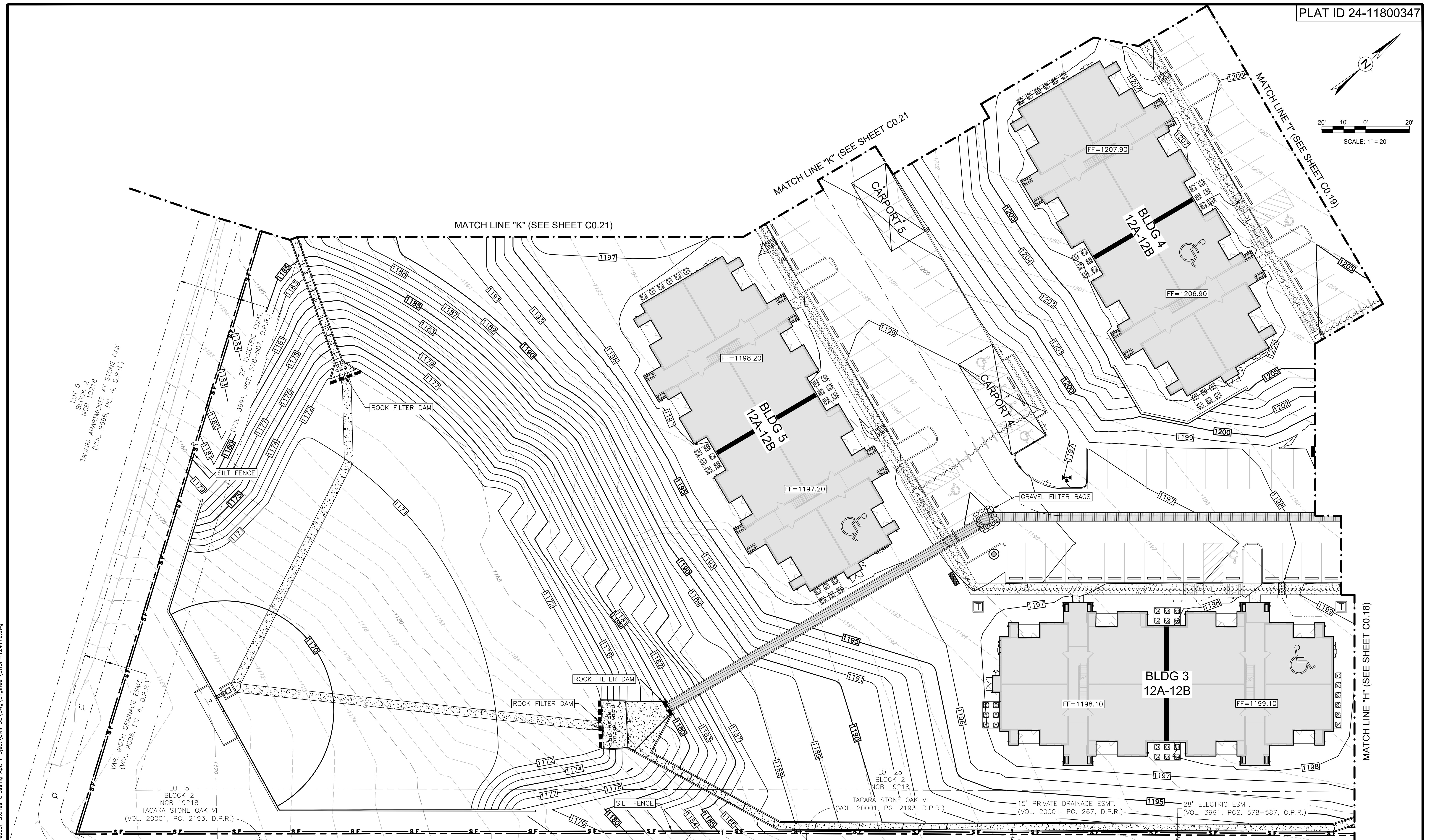
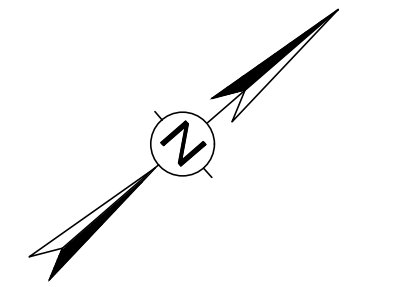
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STORMWATER POLLUTION PREVENTION PLAN -
SECTION "E"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



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FILE NO.	124179.00



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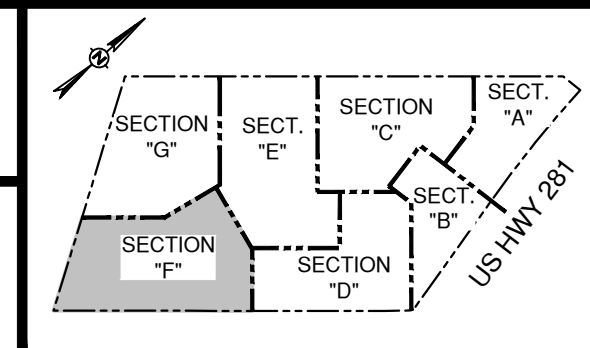
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CHECKED BY _____
REVIEWED BY _____ BAC
DATE 7/08/2025



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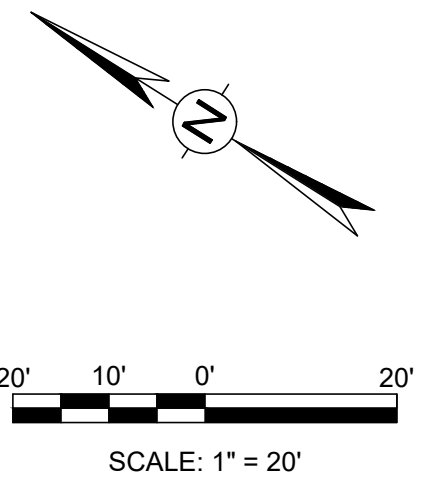
STORMWATER POLLUTION PREVENTION PLAN - SECTION "F"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)



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FILE NO. 124179.00



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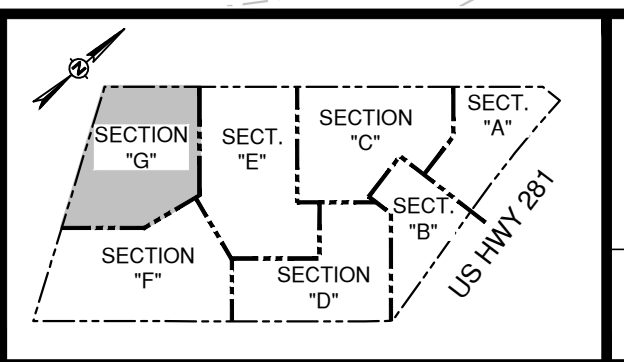
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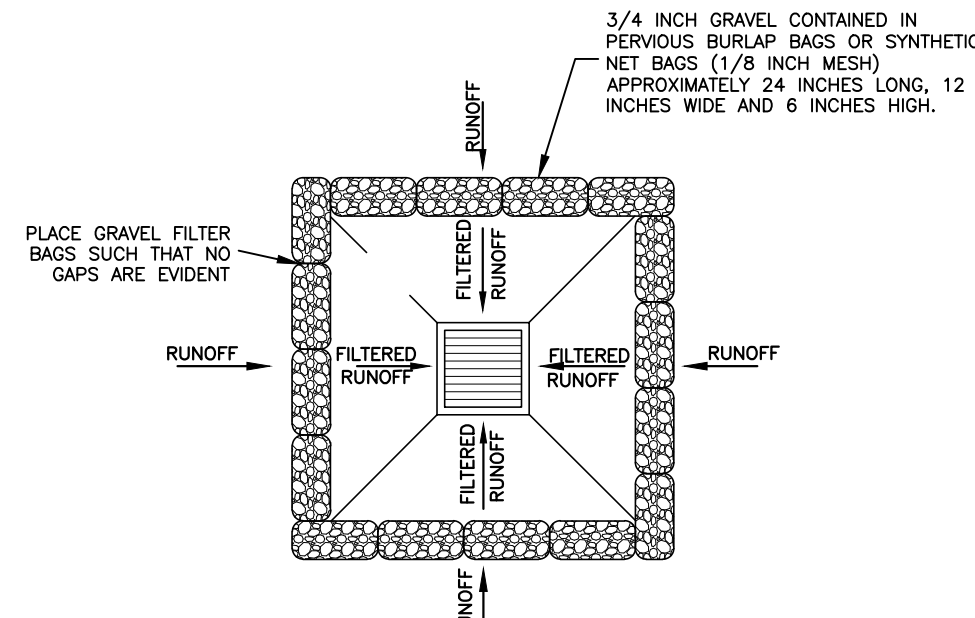
STORMWATER POLLUTION PREVENTION PLAN -
SECTION "G"

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)

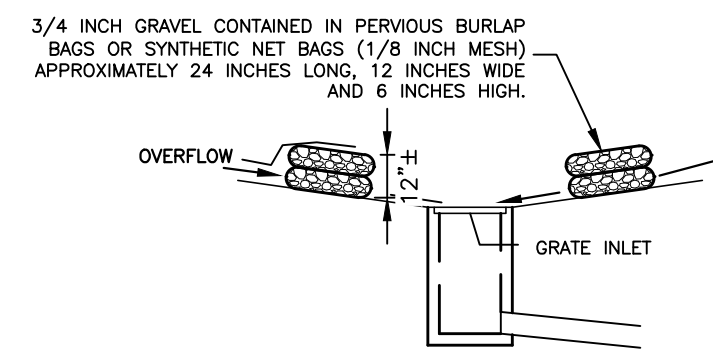


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PLAN

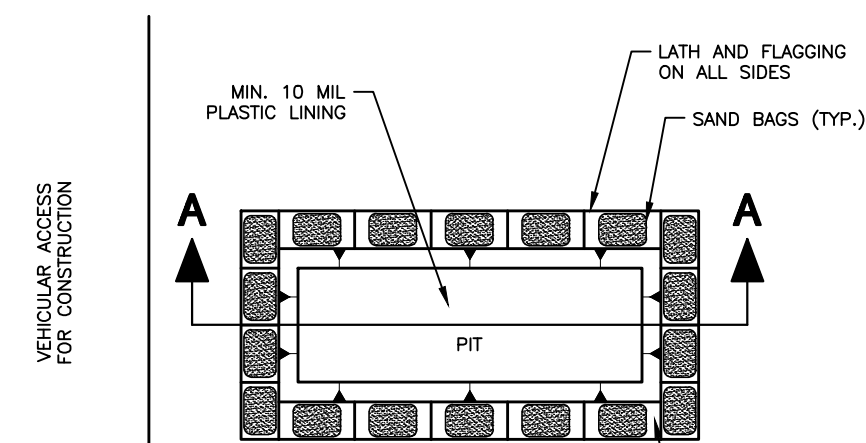


ELEVATION

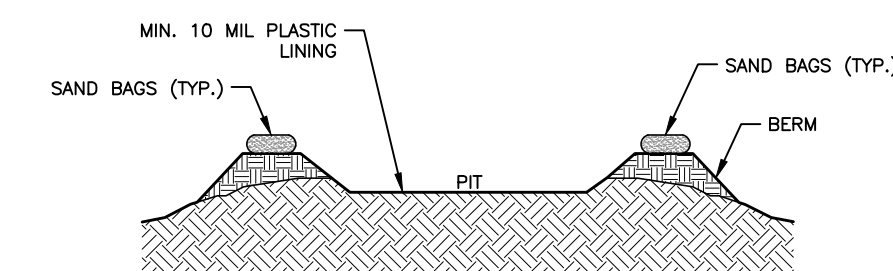
NOTE: STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER. FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

INLET GRAVEL FILTER BAGS

N.T.S.



PLAN



SECTION A-A

GENERAL NOTES

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.
2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.
4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.
5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

MATERIALS

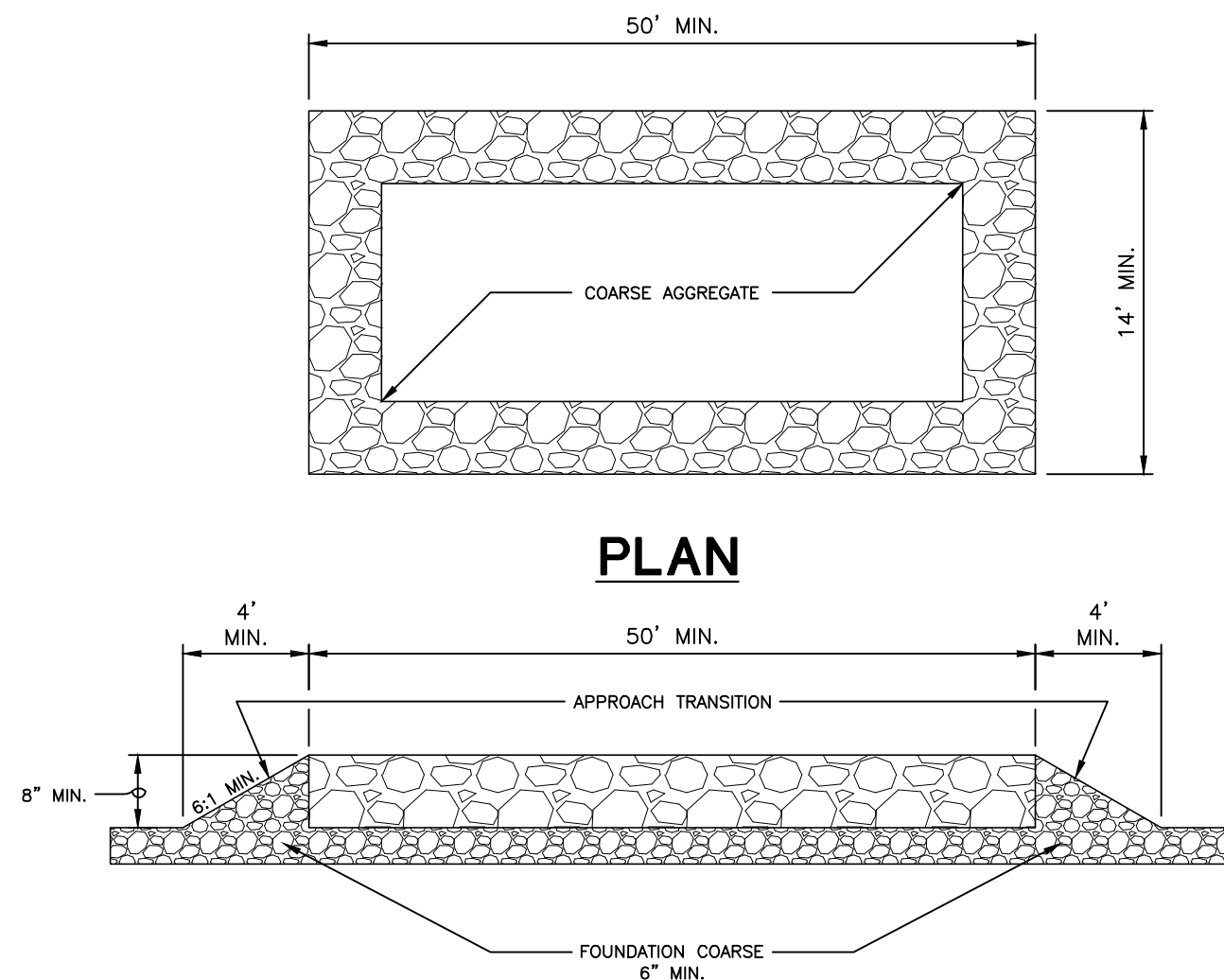
PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

MAINTENANCE

1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.
2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.
3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT PIT

N.T.S.



PLAN

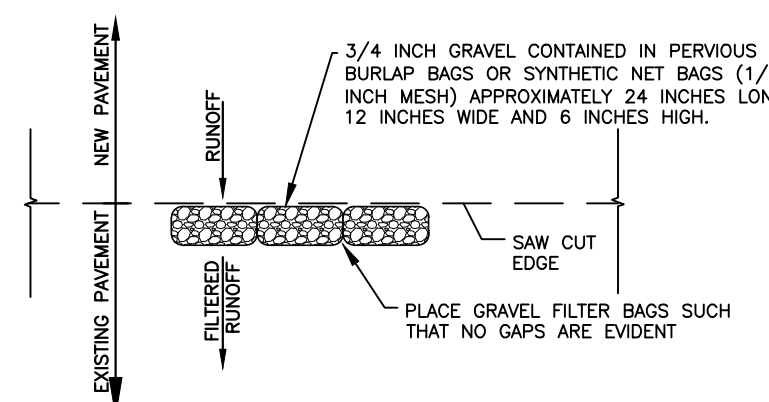
PROFILE

GENERAL NOTES

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COARSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

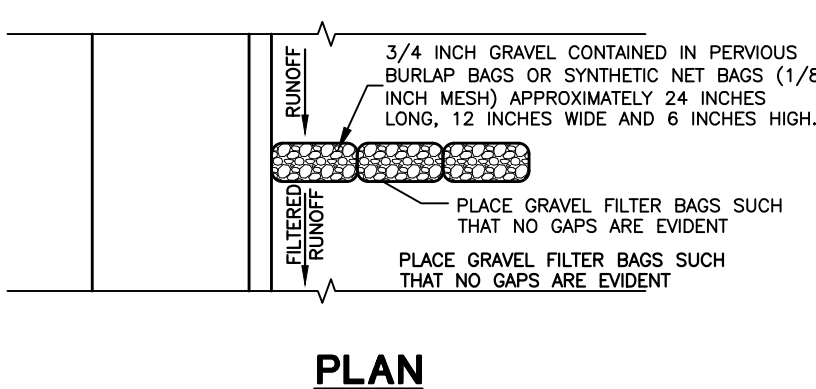
CONSTRUCTION EXIT (TYPE 1)

N.T.S.

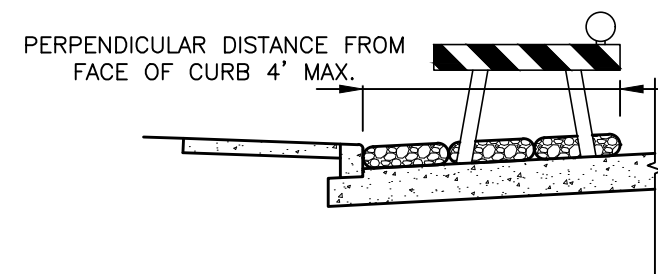


GRAVEL FILTER BAGS

N.T.S.



PLAN

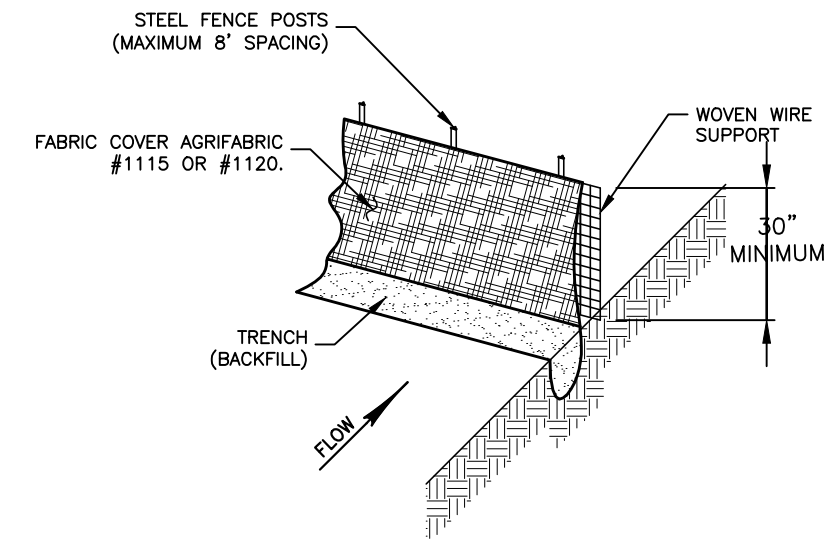


ELEVATION

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

GRAVEL FILTER BAGS

N.T.S.

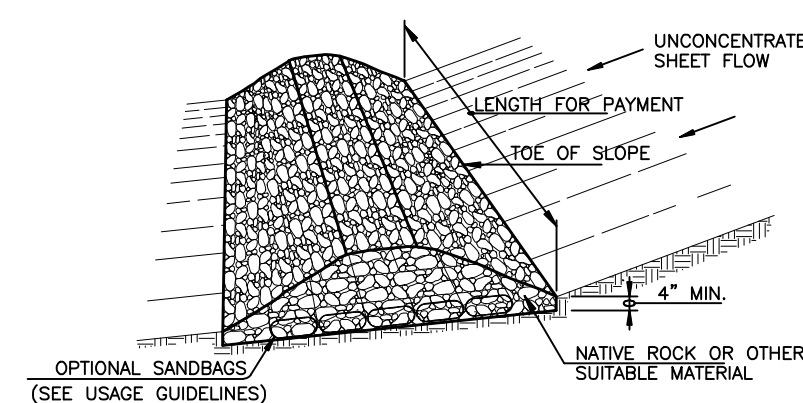


GENERAL NOTES

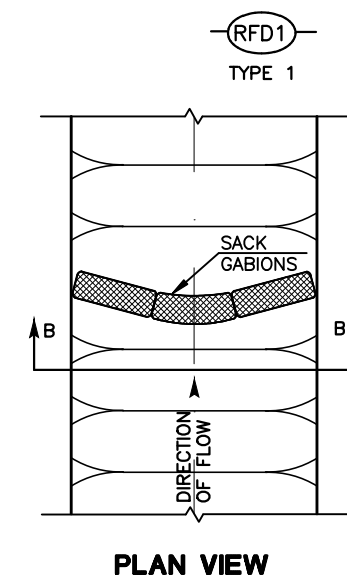
1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH SHOULD BE A MINIMUM OF 6 INCHES DEEP AND 4-8 INCHES WIDE TO ALLOW FOR THE SILT FENCE TO BE LAID IN THE GROUND AND BACKFILLED.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE SILT FENCE.
5. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE DISPOSED OF IN AN APPROVED SITE IN A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES AND DISPOSED OF IN AN APPROVED SPOIL SITE OR AS IN NO. 6 ABOVE.

SILT FENCE

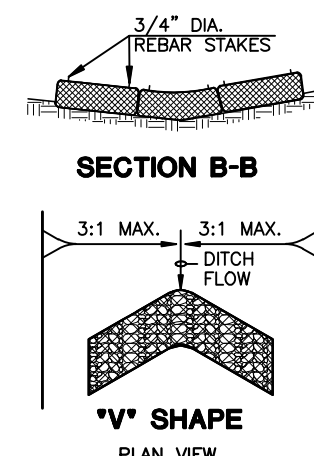
N.T.S.



FILTER DAM AT TOE OF SLOPE

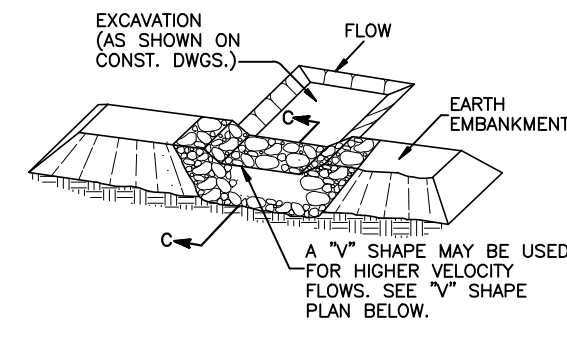


PLAN VIEW



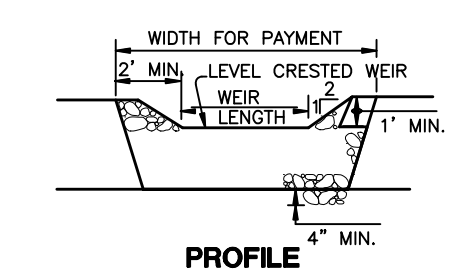
SECTION B-B

PLAN VIEW

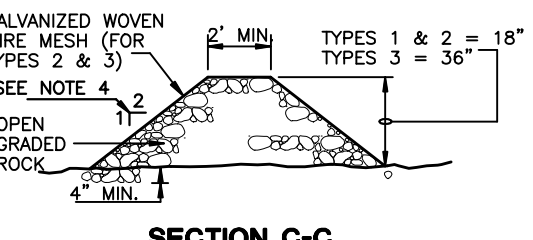


FILTER DAM AT SEDIMENT TRAP

TYPE 1 OR TYPE 2



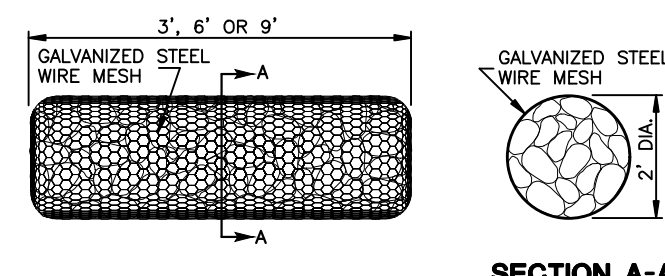
PROFILE



SECTION C-C

PLANS SHEET LEGEND

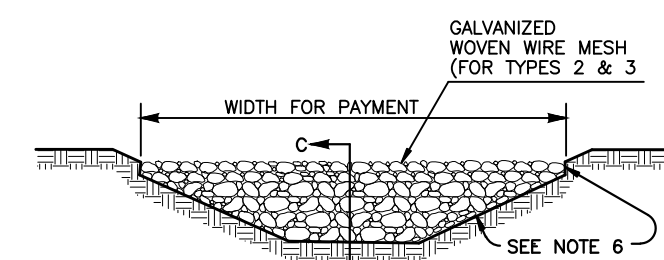
- TYPE 1 ROCK FILTER DAM (RFD1)
TYPE 2 ROCK FILTER DAM (RFD2)
TYPE 3 ROCK FILTER DAM (RFD3)



TYPE 4 (SACK GABIONS)

ROCK FILTER DAM

N.T.S.



FILTER DAM AT CHANNEL SECTIONS

TYPE 1 OR TYPE 2

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND/OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE SWAP PLANS.
4. SIDE SLOPES SHOULD BE 2:1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDESLOPES OF 6:1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4' INTO EXISTING GROUND.
7. THE SEDIMENT TRAP FOR FLOODING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOE RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3/4" DIA. REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

MATERIAL NOTES

1. ALL AGGREGATE USED FOR THE CONSTRUCTION OF THE ROCK FILTER DAMS SHALL BE HARD, DURABLE, CLEAN, OPEN-GRADED, AND SHALL NATURALLY RESIST CRUMBLING, FLAKING AND ERODING. AGGREGATE GRADATION SHALL BE 3 TO 6 INCHES FOR ROCK FILTER DAMS TYPES 1, 2 AND 4 AND SHALL BE 4 TO 8 INCHES FOR TYPE 3.
2. THE GALVANIZED STEEL WIRE MESH AND THE WIRES FOR TYPES 2 AND 3 SHALL BE A MINIMUM 20 GAUGE UNLESS SPECIFIED ON THE PLANS.
3. FOR TYPE 4: STEEL WIRE MESH SHALL UTILIZE A DOUBLE TWISTED HEXAGONAL WEAVE. MESH OPENING SHALL BE A NOMINAL 2.50 X 3.25 INCH. STEEL WIRE FOR NETTING SHALL BE 0.068 INCH MINIMUM. STEEL WIRE FOR SELVEDGES AND CORNERS SHALL BE 0.1083 INCH (U.S. GAUGE NO. 11) MINIMUM. AND BINDING OR THE WIRE SHALL BE 0.0866 INCH (U.S. GAUGE NO. 13) MINIMUM.
4. UNLESS OTHERWISE SPECIFIED, THE SANDBAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC. MINIMUM UNIT WEIGHT 4 OUNCES PER SQUARE YARD. MILLER BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT. THE SANDBAG SIZE SHALL BE 24 TO 30 INCHES IN LENGTH, 16 TO 18 INCHES IN WIDTH, 6 TO 8 INCHES THICK AND WEIGH 90 TO 125 POUNDS. THE SAND SHALL BE COARSE GRADE.

ROCK FILTER DAM USAGE GUIDELINES

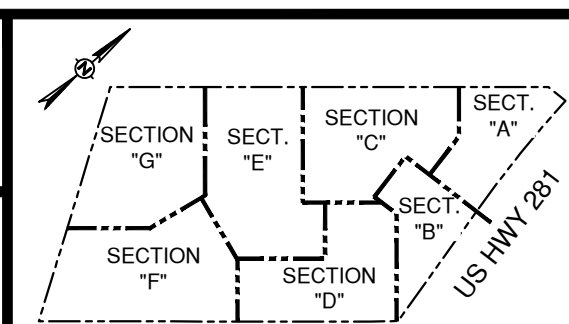
ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND/OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THROUGH RATE OF 60 GPM/FT OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (18" HIGH WITH NO WIRE MESH): TYPE 1 MAY BE USED AT THE TOE OF SLOPES AROUND INLETS, IN SMALL DITCHES, AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROX. 8 FT/SEC. OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR DIRECTED BY THE ENGINEER.

TYPE 2 (18" HIGH WITH WIRE MESH): TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (36" HIGH WITH WIRE MESH): TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS): TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.



SHEET NO. C0.22

FILE NO. 124179.00

12/17/24	HUD REVIEW COMMENTS #1	
NO	DATE	REVISION
		BY

DESIGNED BY	BAC
DRAWN BY	REA
CHECKED BY	
REVIEWED BY	BAC
DATE	7/30/2025



CDS muery
ENGINEERS | SURVEYORS
100 NE Loop 410, Ste. 300 | San Antonio, Texas 78216
(210) 581-1111 | TBPE No. F-1733 | TBPLS No. 100495-00

STORMWATER POLLUTION
PREVENTION PLAN DETAILS

STONES CROSSING APARTMENTS
(2025-05-02 CITY/SAHT SET)

AGENT AUTHORIZATION FORM
(TCEQ-0599)

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

I Craig Lintner
Print Name

Senior Vice President-Development
Title - Owner/President/Other

of Pedcor Investments, A Limited Liability Comapny
Corporation/Partnership/Entity Name

have authorized Brian Crowell
Print Name of Agent/Engineer

of CDS Muery
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:

Pedcor Investments, A Limited Liability Company

By:



Craig H. Lintner, Senior Vice President

Applicant's Signature

Date:

8/6/2025

THE STATE OF INDIANA §

County of Shelby §

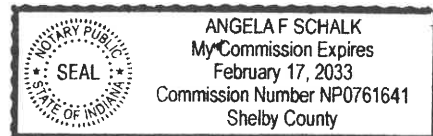
BEFORE ME, the undersigned authority, on this day personally appeared Craig Lintner known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 6th day of August 2025

Angela F. Schalk
NOTARY PUBLIC

Angela F. Schalk
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 2-17-33



APPLICATION FEE FORM
(TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: STONES CROSSING APARTMENTS

Regulated Entity Location: 23219 U.S. HWY 281 N, SAN ANTONIO

Name of Customer: PEDCOR INVESTMENTS, A LIMITED LIABILITY COMPANY

Contact Person: CRAIG H. LINTNER

Phone: (317) 695-3018

Customer Reference Number (if issued):CN _____

Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays

☐ Travis

☐ Williamson

San Antonio Regional Office (3362)

☒ Bexar

☐ Medina

☐ Uvalde

☐ Comal

☐ Kinney

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

☐ Austin Regional Office

☒ San Antonio Regional Office

☐ Mailed to: TCEQ - Cashier

☐ Overnight Delivery to: TCEQ - Cashier

Revenues Section

12100 Park 35 Circle

Mail Code 214

Building A, 3rd Floor

P.O. Box 13088

Austin, TX 78753

Austin, TX 78711-3088

(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone

☐ Contributing Zone

☐ Transition Zone

<i>Type of Plan</i>	<i>Size</i>	<i>Fee Due</i>
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	\$
Sewage Collection System	2615 L.F.	\$ 1,307.50
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$

Signature: _____



Date: 08/12/2025

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	\$1,500
	5 < 10	\$3,000
	10 < 40	\$4,000
	40 < 100	\$6,500
	100 < 500	\$8,000
	≥ 500	\$10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1	\$3,000
	1 < 5	\$4,000
	5 < 10	\$5,000
	10 < 40	\$6,500
	40 < 100	\$8,000
	≥ 100	\$10,000

Organized Sewage Collection Systems and Modifications

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

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

CORE DATA FORM
(TCEQ-10400)



TCEQ Core Data Form

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

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
☒ 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)			
☒ 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)					
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>					
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
Pedcor Investments, A Limited Liability Company					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
11. Type of Customer:		☐ Corporation		☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship		☒ Other: Limited Liability Company	
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:	770 3 rd Avenue, S.W.				
	City	Carmel	State	IN	ZIP 46032 ZIP + 4 2036
16. Country Mailing Information (if outside USA)				17. E-Mail Address (if applicable)	

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(318) 695-3018		(318) 587-0340

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								
<i>The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>								
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)								
Stones Crossing Apartments								
23. Street Address of the Regulated Entity: (No PO Boxes)	23219 U.S. HWY 281 N							
	City	San Antonio	State	TX	ZIP	78258	ZIP + 4	
24. County	Bexar							

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

25. Description to Physical Location:								
26. Nearest City						State	Nearest ZIP Code	
<i>Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).</i>								
27. Latitude (N) In Decimal:						28. Longitude (W) In Decimal:		
Degrees	Minutes		Seconds		Degrees	Minutes		Seconds
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)		
1623	1522		237110			236116		
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)								
Apartment Development								
34. Mailing Address:	770 3 rd Avenue, S.W.							
	City	Carmel	State	IN	ZIP	46032	ZIP + 4	
35. E-Mail Address:	clintner@pedcor.net							
36. Telephone Number	37. Extension or Code				38. Fax Number (if applicable)			
(317) 695-3018					(317) 587-0340			

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:	Craig H. Lintner	41. Title:	Senior Vice President
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(317) 695-3018		(317) 587-0340	clintner@pedcor.net

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:	Pedcor Investments, A Limited Liability Company	Job Title:	Senior Vice President
Name (In Print):	Craig H. Lintner	Phone:	(317) 695- 3018
Signature:	Pedcor Investments, A Limited Liability Company By: 	Date:	08/13/2025

Craig H. Lintner, Senior VP

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER

SPECIAL WARRANTY DEED

STATE OF TEXAS §
 § KNOW ALL MEN BY THESE PRESENTS THAT:
COUNTY OF BEXAR §

THE HERLINDA CANTU FAMILY LP, a Texas limited partnership, HERLINDA G. CANTU, as Trustee of the HERLINDA G. CANTU GST TRUST ESTABLISHED U/W/O MANUEL M. CANTU, MANUEL V. CANTU, as Trustee of the MANUEL V. CANTU GST TRUST ESTABLISHED U/W/O MANUEL M. CANTU, DAVID G. CANTU, as Trustee of the DAVID G. CANTU GST TRUST GST TRUST ESTABLISHED U/W/O MANUEL M. CANTU, ELIZABETH G. NEWCOMB, as Trustee of the ELIZABETH G. NEWCOMB GST TRUST ESTABLISHED U/W/O MANUEL M. CANTU, ELIZABETH CANTU NEWCOMB, an individual, and RICHARD LEE NEWCOMB, an individual (whether one or more, "*Grantor*"), for and in consideration of the sum of TEN AND NO/100 DOLLARS (\$10.00), and other good and valuable consideration paid by **PEDCOR INVESTMENTS, A LIMITED LIABILITY COMPANY**, a Wyoming limited liability company (whether one or more, "*Grantee*"), with an address of 770 3rd Avenue, S.W., Carmel, Indiana 46032, the receipt and sufficiency of which are hereby acknowledged and confessed, subject to the exceptions, liens, encumbrances, terms and provisions hereinafter set forth and described, has GRANTED, BARGAINED, SOLD and CONVEYED, and by these presents does hereby GRANT, BARGAIN, SELL and CONVEY, unto Grantee all of that certain lot, tract or parcel of land situated in Bexar County, Texas, and being more particularly described in Exhibit A attached hereto and incorporated herein by reference for all purposes.

TOGETHER WITH, all and singular, the rights, benefits, privileges, easements, tenements, hereditaments, appurtenances and interests thereon or in anywise appertaining thereto and with all improvements located thereon (said land, rights, benefits, privileges, easements, tenements, hereditaments, appurtenances, improvements and interests being hereinafter referred to as the "*Property*").

For the same consideration recited above, Grantor hereby BARGAINS, SELLS and TRANSFERS, without warranty, express or implied, all interest, if any, of Grantor in (i) strips or gores, if any, between the Property and abutting or immediately adjacent properties, and (ii) any land lying in or under the bed of any street, alley, road or right-of-way, opened or proposed, abutting or immediately adjacent to the Property.

This conveyance is made subject and subordinate to the encumbrances and exceptions ("*Permitted Exceptions*") described in Exhibit B attached hereto and incorporated herein by reference for all purposes.

TO HAVE AND TO HOLD the Property, subject to the Permitted Exceptions as aforesaid, unto Grantee, and Grantee's successors and assigns, forever; and Grantor does hereby bind Grantor, and Grantor's successors and assigns, to WARRANT and FOREVER DEFEND, all and singular, the Property, subject to the Permitted Exceptions unto Grantee, and Grantee's successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Grantor, but not otherwise.

Except as specifically stated herein, Grantor hereby specifically disclaims any warranty, guaranty, or representation, oral or written, past, present or future, of, as, to, or concerning (i) the nature and condition of the Property, including but not by way of limitation, the water, soil, geology and the suitability thereof, and of the Property, for any and all activities and uses which Grantee may elect to conduct thereon or any improvements Grantee may elect to construct thereon, income to be derived therefrom or expenses to be incurred with respect thereto, or any obligations or any other matter or thing relating to or affecting the same; (ii) the manner of construction and condition and state of repair or lack of repair of any improvements located thereon; (iii) except for any warranties contained herein, the nature and extent of any easement, right-of-way, lease, possession, lien, encumbrance, license, reservation, condition or otherwise; and (iv) the compliance of the Property or the operation of the Property with any laws, rules, ordinances, or regulations of any government or other body. **GRANTEE UNDERSTANDS AND AGREES THAT GRANTOR IS NOT MAKING AND HAS NOT AT ANY TIME MADE ANY WARRANTIES OR REPRESENTATIONS OF ANY KIND OR CHARACTER, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PROPERTY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OR REPRESENTATIONS AS TO HABITABILITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ZONING, TAX CONSEQUENCES, LATENT OR PATENT PHYSICAL OR ENVIRONMENTAL CONDITION, UTILITIES, OPERATING HISTORY OR PROJECTIONS, VALUATION, GOVERNMENTAL APPROVALS, THE COMPLIANCE OF THE PROPERTY WITH APPLICABLE LAWS, THE ABSENCE OR PRESENCE OF HAZARDOUS MATERIALS OR OTHER TOXIC SUBSTANCES (INCLUDING WITHOUT LIMITATION MOLD OR ANY MOLD CONDITION), COMPLIANCE WITH ENVIRONMENTAL LAWS OR ACCESS LAWS, THE TRUTH, ACCURACY OR COMPLETENESS OF THE PROPERTY DOCUMENTS OR ANY OTHER INFORMATION PROVIDED BY OR ON BEHALF OF GRANTOR TO GRANTEE, OR ANY OTHER MATTER OR THING REGARDING THE PROPERTY. THE CONVEYANCE OF THE PROPERTY AS PROVIDED FOR HEREIN IS MADE ON AN "AS IS, WHERE IS, WITH ALL FAULTS" BASIS. GRANTEE HAS NOT RELIED AND WILL NOT RELY ON, AND GRANTOR IS NOT LIABLE FOR OR BOUND BY, ANY EXPRESSED OR IMPLIED WARRANTIES, GUARANTIES, STATEMENTS, REPRESENTATIONS OR INFORMATION PERTAINING TO THE PROPERTY OR RELATING THERETO (INCLUDING SPECIFICALLY, WITHOUT LIMITATION, PROPERTY INFORMATION PACKAGES DISTRIBUTED WITH RESPECT TO THE PROPERTY) MADE OR FURNISHED BY GRANTOR, THE MANAGER OF THE PROPERTY, OR ANY REAL ESTATE BROKER OR AGENT REPRESENTING OR PURPORTING TO REPRESENT GRANTOR, TO WHOMEVER MADE OR GIVEN, DIRECTLY OR INDIRECTLY, ORALLY OR IN WRITING.**

Grantee, by its acceptance hereof, does hereby assume and agree to pay any and all ad valorem taxes and special assessments pertaining to the Property for calendar year 2024 and subsequent years, there having been a proper proration of ad valorem taxes for the current calendar year between Grantor and Grantee.

[Remainder of Page Intentionally Left Blank; Signature Pages Follows]

EXECUTED as of the 16th day of October, 2024.

GRANTOR:

THE HERLINDA CANTU FAMILY LP,
a Texas limited partnership

By: The Herlinda Cantu Family
Management LLC, a Texas limited
liability company, its General Partner

By: Herlinda G. Cantu
Herlinda G. Cantu, Member

By: Manuel V. Cantu
Manuel V. Cantu, Member

By: David G. Cantu
David G. Cantu, Member

By: Elizabeth G. Newcomb
Elizabeth G. Newcomb, Member

Herlinda G. Cantu
Herlinda G. Cantu, Trustee of the Herlinda
G. Cantu GST Trust Established U/W/O
Manuel M. Cantu

Manuel V. Cantu
Manuel V. Cantu, Trustee of the Manuel V.
Cantu GST Trust Established U/W/O
Manuel M. Cantu

David G. Cantu
David G. Cantu, Trustee of the David G.
Cantu GST Trust Established U/W/O
Manuel M. Cantu

Elizabeth Cantu Newcomb

Elizabeth G. Newcomb, Trustee of the
Elizabeth G. Newcomb GST Trust
Established U/W/O Manuel M. Cantu

Elizabeth Cantu Newcomb

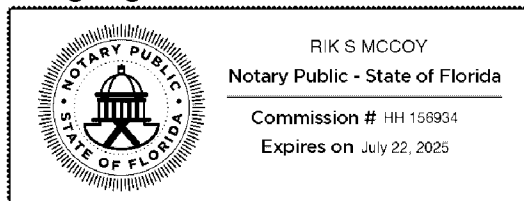
Elizabeth Cantu Newcomb, an individual

Richard Lee Newcomb

Richard Lee Newcomb, an individual

STATE OF FLORIDA §
§
COUNTY OF LEE §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Herlinda G. Cantu, Member of The Herlinda Cantu Family Management LLC, the General Partner of The Herlinda Cantu Family LP, known to me to be the person whose name is subscribed to the foregoing instrument.



Rik S McCoy

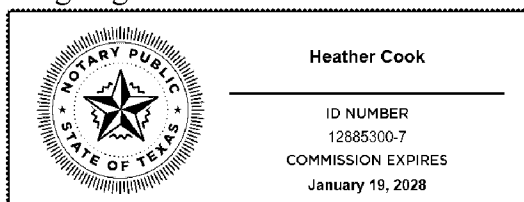
Rik S McCoy

Notary Public – State of Florida
My commission expires: 07/22/2025

Notarized remotely online using communication technology via Proof. ID's Produced: Driver's License

STATE OF Texas §
§
COUNTY OF Kerr §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Manuel V. Cantu, Member of The Herlinda Cantu Family Management LLC, the General Partner of The Herlinda Cantu Family LP, known to me to be the person whose name is subscribed to the foregoing instrument.



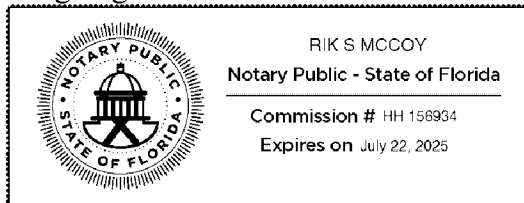
Heather Cook

Notary Public – State of Texas
My commission expires: 01/19/2028

Electronically signed and notarized online using the Proof platform.

STATE OF FLORIDA §
COUNTY OF LEE §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared David G. Cantu, Member of The Herlinda Cantu Family Management LLC, the General Partner of The Herlinda Cantu Family LP, known to me to be the person whose name is subscribed to the foregoing instrument.



Rik S McCoy

Notary Public – State of Florida
My commission expires: 07/22/2025

Notarized remotely online using communication technology via Proof. ID's Produced: Driver's License

STATE OF Virginia §
COUNTY OF Chesapeake §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Elizabeth G. Newcomb, Member of The Herlinda Cantu Family Management LLC, the General Partner of The Herlinda Cantu Family LP, known to me to be the person whose name is subscribed to the foregoing instrument.

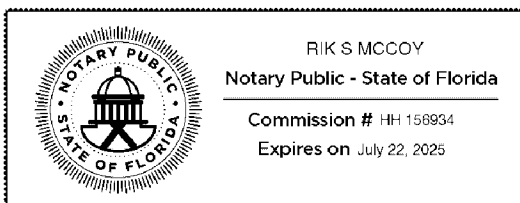


Notary Public – State of Virginia
My commission expires: 10/31/2025

Notarized remotely online using communication technology via Proof.

STATE OF FLORIDA §
COUNTY OF LEE §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Herlinda G. Cantu, Trustee of the Herlinda G. Cantu GST Trust Established U/W/O Manuel M. Cantu, known to me to be the person whose name is subscribed to the foregoing instrument.



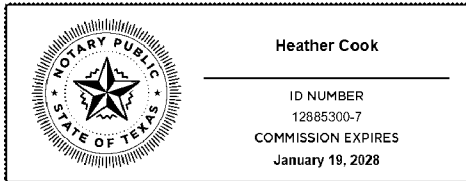
Rik S McCoy

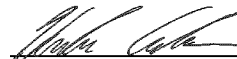
Notary Public – State of Florida
My commission expires: 07/22/2025

Notarized remotely online using communication technology via Proof. ID's Produced: Driver's License

STATE OF Texas §
COUNTY OF Kerr §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Manuel V. Cantu, Trustee of the Manuel V. Cantu GST Trust Established U/W/O Manuel M. Cantu, known to me to be the person whose name is subscribed to the foregoing instrument.

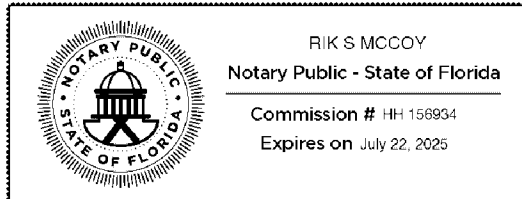



Notary Public – State of Texas
My commission expires: 01/19/2028

Electronically signed and notarized online using the Proof platform.

STATE OF FLORIDA §
COUNTY OF LEE §

BEFORE ME, the undersigned authority, on this 16 day of October 2024, personally appeared David G. Cantu, Trustee of the David G. Cantu GST Trust Established U/W/O Manuel M. Cantu, known to me to be the person whose name is subscribed to the foregoing instrument.




Notary Public – State of Florida
My commission expires: 07/22/2025

Rik S McCoy

Notarized remotely online using communication technology via Proof. ID's Produced: Driver's License

STATE OF Virginia §
COUNTY OF Chesapeake §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Elizabeth G. Newcomb, Trustee of the Elizabeth G. Newcomb GST Trust Established U/W/O Manuel M. Cantu, known to me to be the person whose name is subscribed to the foregoing instrument.




Notary Public – State of Virginia
My commission expires: 10/31/2025

Notarized remotely online using communication technology via Proof.

STATE OF Virginia §
COUNTY OF Chesapeake §

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Elizabeth Cantu Newcomb, known to me to be the person whose name is subscribed to the foregoing instrument.



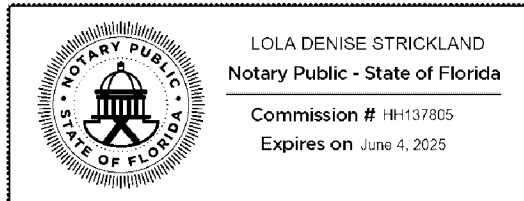
Brenda Turner
Notary Public – State of Virginia
My commission expires: 10/31/2025

Notarized remotely online using communication technology via Proof.

STATE OF Florida §
COUNTY OF Duval §

Sworn by

BEFORE ME, the undersigned authority, on this 16th day of October 2024, personally appeared Richard Lee Newcomb, known to me to be the person whose name is subscribed to the foregoing instrument.



Lola Denise Strickland
Lola Denise Strickland
Notary Public – State of Florida
My commission expires: 06/04/2025

Provided TX DRIVER LICENSE

GRANTEE'S ADDRESS FOR TAX NOTICES:

Pedcor Investments, A Limited Liability Company
770 3rd Avenue, SW
Carmel, IN 46032

Notarized remotely online using communication technology via Proof.

WHEN RECORDED, RETURN TO:

Pedcor Investments, A Limited Liability Company
770 3rd Avenue, SW
Carmel, IN 46032
Attn: Tim McKay, Esq.

EXHIBIT A

Legal Description of the Property

BEING an 17.042 acre tract or (742,339 square feet) of land lying within a portion of the William Brisbin Survey 89-1/2, Abstract 54, and a portion of the Eugene De La Roche Survey 95, Abstract 633, Bexar County, Texas, same being all of the remainder of a called 19.20 acre tract of land described in deed to the Herlinda Cantu Family LP, and recorded in volume 15875, page 81, Official Public Records, Bexar County, Texas, same also being described by a drawing (US 281_Stone Oak_ALTA.dwg dated November 9, 2023) attached to and made part hereof and more particularly described as follows:

BEGINNING at a 1/2" iron rod set with plastic cap stamped "CDS/MUERY S.A. TX." in the southwest right-of-way line of US Highway 281 (variable width right-of-way) for an angle corner of said US Highway 281, an angle corner of the aforementioned 19.20 acre tract, and the east corner of the herein described 17.042 acre tract;

THENCE along the southwest right-of-way line of the aforementioned US Highway 281, S39°52'40"W (Record - S40°07'06"W) a distance of 81.58 feet to a 1/2" iron rod found for an angle corner of said US Highway 281, an angle corner of the aforementioned 19.20 acre tract, an angle corner of a tract of land described in deed to PS LPT Properties Investors, recorded in document number 2022000059, Official Public Records, Bexar County, Texas, described as Lot 25, Block 2, of the Tacara Stone Oak VI, recorded in volume 20001, page 2191, Deed and Plat Records, of Bexar County, Texas, and an angle corner of the herein described 17.042 acre tract;

THENCE leaving the southwest right-of-way line of the aforementioned US Highway 281, along a southeast line of the aforementioned 19.20 acre tract, same being a northwest line of the aforementioned PS LPT Properties Investors tract, S40°41'37"W (Record - S40°31'08"W) a distance of 240.83 feet to a 1/2" iron rod found for an angle corner of said 19.20 acre tract, an angle corner of said PS LPT Properties Investors tract, and an angle corner of the herein described 17.042 acre tract;

THENCE along a southeast line of the aforementioned 19.20 acre tract, S41°04'48"W (Record - S41°18'29"W) a distance of 449.34 feet to a 1/2" iron rod found with plastic cap stamped "MBC ENGINEERS" for an angle corner of said 19.20 acre tract, the northwest corner of the aforementioned PS LPT Properties Investors, an exterior angle corner of a called 25.27 acre tract of land described in deed to Hilltop Stone Oak Limited Partnership, a Texas limited partnership, recorded in document number 20210291020, Official Public Records, Bexar County, Texas, being the remaining portion of Lot 5, of the Tacara Apartments at Stone Oak, and an angle corner of the herein described 17.042 acre tract;

THENCE along a southeast line of the aforementioned 19.20 acre tract, same being a northeast line of the aforementioned 25.27 acre tract, S40°47'19"W (Record - S40°44'03"E) a distance of 280.81 feet to a 1/2" iron rod found with plastic cap stamped "MBC ENGINEERS" for the south corner of said 19.20 acre tract, an interior angle corner of said 25.27 acre tract, and the south corner of the herein described 17.042 acre tract;

THENCE along the southwest line of the aforementioned 19.20 acre tract, same being an east line of the aforementioned 25.27 acre tract, N32°09'47"W a distance of 717.36 feet (Record - N32°09'16"W a distance of 717.03 feet) to a 1/2" iron found, for the west corner of said 19.20 acre tract, an exterior angle corner of said 25.27 acre tract, the south corner of a called 19.982 acre tract of land described as "Tract A" in deed to C-5 Holdings, LLC, recorded in volume 16046, page 1834, Official Public Records, Bexar County, Texas, and the west corner of the herein described 17.042 acre tract;

THENCE along a north line of the aforementioned 19.20 acre tract, same being a south line of the aforementioned 19.982 acre tract, N40°52'17"E a distance of 1,283.49 feet (Record - N40°52'16"E a distance of 1,283.41 feet) to a 1/2" iron rod found for an angle corner of said 19.20 acre tract, an angle corner of said 19.982 acre tract, and an angle corner of the herein described 17.042 acre tract;

THENCE along a north line of the aforementioned 19.20 acre tract, same being a south line of the aforementioned 19.982 acre tract, N80°08'42"E (Record - N79°08'42"E) a distance of 63.97 feet to a 1/2" iron rod set with plastic cap stamped "CDS/Muery S.A. TX" in the southwest right-of-way line of the aforementioned US Highway 281, for an angle corner of said 19.20 acre tract, an angle corner of said 19.982 acre tract, and the north corner of the herein described 17.042 acre tract;

THENCE along the southwest right-of-way line of the aforementioned US Highway 281, along a curve to the left having a radius of 3,420.00, arc length of 404.41, delta 06°46'30", a chord which bears S10°12'35"E a distance of 404.17 feet a TxDOT right-of-way monument (type II) found for an angle corner of the aforementioned 19.20 acre tract, and an angle corner of the herein described 17.042 acre tract;

THENCE along the southwest right-of-way line of the aforementioned US Highway 281, S13°35'38"E a distance of 405.84 feet (Record - S13°35'33"E a distance of 405.83 feet) to the **PLACE OF BEGINNING** and containing 17.042 acres or (742,339 square feet) of land;

SAVE AND EXCEPT a 1.23 acre tract of land, being described in deed and recorded in volume 18932, page 391, Official Public Records, Bexar County, Texas.

SAVE AND EXCEPT a 0.575 of an acre tract of land, described in a deed and recorded in volume 5237, page 490, Official Public Records, Bexar County, Texas.

The bearing basis for this survey is Grid North, Texas State Plane Coordinate System, NAD 1983(2011), Central Zone.

***** **TRACT II** *****

BEING a 1.230 acre tract of land lying within a portion of the William Brisbin Survey 89-1/2, Abstract 54, and a portion of the Eugene De La Roche Survey 95, Abstract 633, Bexar County, Texas, being all of a called 1.23 acre tract of land described in deed to Herlinda G. Cantu, as Independent Co-Executor of the estate of Herlinda G. Cantu; and as Co-Trustee of the Manuel M. Cantu Family Trust established u/w/o Manuel M. Cantu; Manuel V. Cantu, as Independent Co-Executor of the estate of Herlinda G. Cantu; and as Co-Trustee of the Manuel M. Cantu Family Trust established u/w/o Manuel M. Cantu; David G. Cantu, as Independent Co-Executor of the estate of Herlinda G. Cantu; and as Co-Trustee of the Manuel M. Cantu Family Trust established u/w/o Manuel M. Cantu; Elizabeth G. Cantu as Independent Co-Executor of the estate of Herlinda G. Cantu; and recorded in volume 18932, page 391, Official Public Records, Bexar County, Texas, same being a portion of the remainder of a called 19.20 acre tract of land described in deed to The Herlinda Cantu Family, LP, recorded in volume 15875, page 81, Official Public Records, Bexar County, Texas, same also being described by a drawing (US 281_Stone Oak_ALTA.dwg dated November 9, 2023) attached to and made part hereof and more particularly described as follows:

COMMENCING at a 1/2" iron rod found for the west corner of the aforementioned 19.20 acre tract, an angle corner of a called 25.27 acre tract of land described in deed to Hilltop Stone Oak Limited Partnership, recorded in document 20210291020, Official Public Records, Bexar County, Texas, as Lot 5, Block 2, of

the Tacara Apartments at Stone Oak, recorded in volume 20001, page 267, Deed and Plat Records, Bexar County, Texas, the south corner of a called 19.982 acre tract of land described in deed to C-5 Holdings, LLC, recorded in volume 16046, page 1834, Official Public Records, Bexar County, Texas;

THENCE across the lands of the aforementioned 19.20 acre tract, N50°36'49"E a distance of 323.60 to a 1/2" iron rod found, for the **PLACE OF BEGINNING**, the eastern most corner of the aforementioned 1.23 acre tract, and eastern most corner of the herein described 1.230 acre tract;

THENCE along the west line of the aforementioned 1.23 acre tract, N41°18'29"E a distance of 115.54 feet (Record – N41°18'29"W a distance of 115.54 feet) to a 1/2" iron rod found for the north corner of said 1.23 acre tract, and the north corner of the herein described 1.230 acre tract, from which a 1/2" iron rod found for an angle corner of the aforementioned 19.20 acre tract, and an angle corner of the aforementioned 19.982 acre tract bears N37°07'19"E a distance of 850.84 feet;

THENCE along the northwest line of the aforementioned 1.23 acre tract, S48°41'31"E a distance of 151.78 feet (Record – S48°41'31"W a distance of 151.78 feet) to a 1/2" iron rod found for an interior angle corner of said 1.23 acre tract, and an interior angle corner of the herein described 1.230 acre tract;

THENCE along the northeast line of the aforementioned 1.23 acre tract, N78°33'27"E a distance of 162.10 feet (Record – N78°33'27"W a distance of 162.11 feet) to a 1/2" iron rod found in the west line of a called 0.5932 of an acre tract of land described in deed to Elizabeth Cantu Newcomb and Richard Lee Newcomb, recorded in volume 5237, page 490, Official Public Records, Bexar County, Texas, for the northeast corner of said 1.23 acre tract, and the northeast corner of the herein described 1.230 acre tract;

THENCE along the east line of the aforementioned 1.23 acre tract, same being the west line of the aforementioned 0.5932 of an acre tract, S11°26'48"E a distance of 169.28 feet (Record – S11°26'39"E a distance of 169.28 feet) to a 1/2" iron rod found for the southeast corner of said 1.23 acre tract, and the southeast corner of the herein described 1.230 acre tract;

THENCE leaving the west line of the aforementioned 0.5932 of an acre tract, along the southeast line of the aforementioned 1.23 acre tract, S78°33'27"W a distance of 178.54 feet (Record – S78°33'27"W a distance of 178.54 feet) to a 1/2" iron found, for the south corner of said 1.23 acre tract, and the south corner of the herein described 1.230 acre tract;

THENCE along the southwest line of the aforementioned 1.23 acre tract, N48°41'31"W a distance of 276.59 feet (Record N48°41'31"W a distance of 276.59 feet) to the **PLACE OF BEGINNING** and containing 1.230 acres of land.

***** TRACT III *****

BEING a 0.575 of an acre tract of land lying within a portion of the William Brisbin Survey 89-1/2, Abstract 54, and a portion of the Eugene De La Roche Survey 95, Abstract 633, Bexar County, Texas, being all of a called 0.5932 of an acre tract of land described in deed to Elizabeth Cantu Newcomb and Richard Lee Newcomb, recorded in volume 5237, page 490, Official Public Records, Bexar County, Texas, same being a portion of the remainder of a called 19.20 acre tract of land described in deed to The Herlinda Cantu Family, LP, recorded in volume 15875, page 81, Official Public Records, Bexar County, Texas, same also being described by a drawing (US 281 _Stone Oak _ALTA.dwg dated November 9, 2023) attached to and made part hereof and more particularly described as follows:

COMMENCING at a 1/2" iron rod found with plastic cap stamped "MBC ENGINEERS" for the south corner of the aforementioned 19.20 acre tract, an angle corner of a called 25.27 acre tract of land described in deed to Hilltop Stone Oak Limited Partnership, recorded in document 20210291020, Official Public Records, Bexar County, Texas, as Lot 5, Block 2, of the Tacara Apartments at Stone Oak, recorded in volume 20001, page 267, Deed and Plat Records, Bexar County, Texas;

THENCE across the lands of the aforementioned 19.20 acre tract, N22°07'49"E a distance of 683.58 to a 1/2" iron rod found, for the **PLACE OF BEGINNING** the southern most corner of the aforementioned 0.5932 of an acre tract, and the southern most corner of the herein described 0.575 of an acre tract;

THENCE along the west line of the aforementioned 0.5932 of an acre tract, N11°26'48"W (Record – N11°08'37"W) at a distance of 32.88 feet passing a 1/2" iron rod found for the southeast corner of a called 1.23 acre tract of land described in deed to Herlinda G. Cantu Et Al of the Herlinda G. Cantu Family Trust, recorded in volume 18932, page 391, Official Public Records, Bexar County, Texas, continuing at a distance of 202.16 feet passing a 1/2" iron rod found for the northeast corner of said 1.23 acre tract, continuing for a total distance of 211.51 feet to a 1/2" iron rod found for the northwest corner of said 0.5932 of an acre tract, and the northwest corner of the herein described 0.575 of an acre tract;

THENCE along a northern line of the aforementioned 0.5932 of an acre tract, N59°47'36"E a distance of 24.16 feet (Record – N59°47'36"E a distance of 24.16 feet) to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along a northern line of the aforementioned 0.5932 of an acre tract, N83°22'21"E a distance of 30.29 feet (Record – N83°40'32"E a distance of 30.29 feet) to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.5932 of an acre tract;

THENCE along a northern line of the aforementioned 0.5932 of an acre tract, S79°20'15"E a distance of 13.29 feet (Record – S79°02'04"E a distance of 13.29 feet) to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along a northern line of the aforementioned 0.5932 of an acre tract, S68°28'26"E a distance of 34.60 feet (Record – S68°10'15"E a distance of 34.60 feet) to a 1/2" iron found, for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along a northeastern line of the aforementioned 0.5932 of an acre tract, S52°52'26"E a distance of 58.10 feet (Record S52°34'15"E a distance of 58.10 feet) to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along an eastern line of the aforementioned 0.5932 of an acre tract, S22°23'51"E a distance of 59.53 feet (Record S22°05'40"E a distance of 59.53 feet) to a 1/2" iron rod found for a point of curvature, an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along an eastern line of the aforementioned 0.5932 of an acre tract, along a curve to the right having a radius of 27.95', an arc length of 34.72 feet, delta 71°10'23", a chord bearing of S03°11'33"W a distance of 35.53 feet to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along a southeastern line of the aforementioned 0.5932 of an acre tract, S38°46'58"W a distance of 55.64 feet (Record – S39°05'09"W a distance of 55.64 feet) to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along a southeastern line of the aforementioned 0.5932 of an acre tract, S50°36'07"W a distance of 42.91 feet (Record – S50°54'18"W a distance 42.91 feet) to a 1/2" iron rod found for an angle corner of said 0.5932 of an acre tract, and an angle corner of the herein described 0.575 of an acre tract;

THENCE along a southern line of the aforementioned 0.5932 of an acre tract, S74°42'48"W (Record - 75°00'59"W) a distance of 55.38 feet to the **PLACE OF BEGINNING** and containing 0.575 of an acre of land.

EXHIBIT B

Permitted Exceptions

1. Standby fees, taxes and assessments by any taxing authority for the year 2024, and subsequent years; and subsequent taxes and assessments by any taxing authority for prior years due to change in land usage or ownership.
2. Electric easement granted to the City of San Antonio, by instrument dated July 23, 1951, recorded in Volume 3095, Page 467 of the Deed Records of Bexar County, Texas. (ALL TRACTS)
3. Electric easement granted to the City of San Antonio, by instrument dated October 8, 1984, recorded in Volume 3382, Page 1327 of the Official Public Records of Bexar County, Texas. (ALL TRACTS)
4. Drainage easement granted to the State of Texas, by instrument dated November 4, 2016, recorded in Volume 18233, Page 2292 of the Official Public Records of Bexar County, Texas, as shown on survey dated August 27, 2024, prepared by Daryl L. Zercher, Registered Professional Land Surveyor No. 5609 ("the Survey"). (TRACT 1)
5. Terms, conditions and stipulations of that certain Development Agreement dated October 1, 2015, recorded in Volume 18269, Page 2424 of the Official Public Records of Bexar County, Texas. (TRACT 1)
6. Location of power poles and lines, as shown on the Survey. (TRACTS 1 AND 2)
7. Any and all leases, recorded or unrecorded, with rights of tenants in possession.
8. Terms, conditions and stipulations of that certain Utility Service Agreement dated June 6, 2024, recorded under Document No. 20240104487 of the Official Public Records of Bexar County, Texas.

DESCRIPTION OF ATTACHED DOCUMENT

Title or Type of Document: Certificate of Acknowledgement

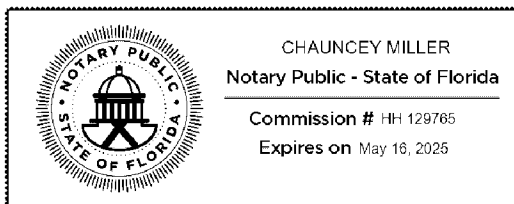
Document Date: 10/16/2024

Number of Pages (including notarial certificate): 14

State of Florida County of Hillsborough

This foregoing instrument was acknowledged before me by means of online notarization,

this 10/16/2024 by Manuel V. Cantu.



Chauncey Miller
Chauncey Miller

___ Personally Known OR ___ ☒ Produced Identification

Type of Identification Produced ID Produced Driver License

Notarized remotely online using communication technology via Proof.

File Information

**eFILED IN THE OFFICIAL PUBLIC eRECORDS OF BEXAR COUNTY
LUCY ADAME-CLARK, BEXAR COUNTY CLERK**

Document Number: 20240190669
Recorded Date: October 17, 2024
Recorded Time: 9:03 AM
Total Pages: 15
Total Fees: \$77.75

**** THIS PAGE IS PART OF THE DOCUMENT ****

**** Do Not Remove ****

Any provision herein which restricts the sale or use of the described real property because of race is invalid and unenforceable under Federal law

STATE OF TEXAS, COUNTY OF BEXAR

I hereby Certify that this instrument was eFILED in File Number Sequence on this date and at the time stamped hereon by me and was duly eRECORDED in the Official Public Record of Bexar County, Texas on: 10/17/2024 9:03 AM



Lucy Adame-Clark
Lucy Adame-Clark
Bexar County Clerk