Transmittal

Date: November 8, 2024

To: TCEQ Reviewer

From: Stacy Mulholland

Reference: Canyon Ranch Unit 4 CZP Application

Item No.	Number of Copies	Description
1	1	Edwards Aquifer Application Cover Page
2	1	Contributing Zone Plan Application
3	1	Temporary Stormwater Section
4	1	Agent Authorization Form
5	1	Owner Authorization Form
6	1	Application Fee Form
7	1	TCEQ Client Core Data Form
8	1	TCEQ Owner Core Data Form
9	1	Unit 1 TCEQ Approval Letter
10	1	Unit 2 TCEQ Approval Letter
11	1	Unit 3 TCEQ Approval Letter
12	1	Unit 4 Construction Plan Set

Comments:

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: Canyon Ranch Unit 4						**2. Regulated Entity No.:**			
3. Customer Name: Lennar Homes of Texas Land and Construction, LTD						**4. Customer No.:** CN 602412207			
5. Project Type: **(Please circle/check one)**	New **X**		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP **X**	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential **X**		Non-residential			**8. Site (acres):**			30.70
9. Application Fee:	$4,000		**10. Permanent BMP(s):**					Batch Detention Ponds, Filter Strips	
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**						
13. County:	Comal		**14. Watershed:**					Guadalupe River	

Application Distribution

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

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

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

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

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	_X_	___	___	___
Region (1 req.)	___	_X_	___	___	___
County(ies)	___	_X_	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	_X_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. Stacy Mulholland
Print Name of Customer/Authorized Agent
 11/08/2024
Signature of Customer/Authorized Agent Date

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

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), Effective June 1, 1999

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

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

Signature

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

Print Name of Customer/Agent: Stacy Mulholland

Date: 10/14/2024

Signature of Customer/Agent:

Regulated Entity Name: Canyon Ranch Unit 4

Project Information

1. County: Comal
2. Stream Basin: Guadalupe River
3. Groundwater Conservation District (if applicable): _____
4. Customer (Applicant):

   Contact Person: Richard Mott
   Entity: Lennar Homes of Texas Land and Construction LTD
   Mailing Address: 100 NE Loop 410, Suite 1155
   City, State: San Antonio, TX Zip: 78216
   Telephone: 210-889-5516 Fax: _____
   Email Address: richard.mott@lennar.com

5. Agent/Representative (If any):

   Contact Person: Stacy Mulholland
   Entity: BGE Inc
   Mailing Address: 7330 San Pedro Ave, Suite 202
   City, State: San Antonio, TX Zip: 78216
   Telephone: 210-581-3637 Fax: _____
   Email Address: smulholland@bgeinc.com

6. Project Location:

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

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

   _____

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

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

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

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. The project description is consistent throughout the application and contains, at a minimum, the following details:

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

11. Existing project site conditions are noted below:

    ☐ Existing commercial site
    ☐ Existing industrial site
    ☐ Existing residential site

☐ Existing paved and/or unpaved roads
☐ Undeveloped (Cleared)
☒ Undeveloped (Undisturbed/Not cleared)
☐ Other: _____

12. The type of project is:

☒ Residential: # of Lots: 177
☐ Residential: # of Living Unit Equivalents: _____
☐ Commercial
☐ Industrial
☐ Other: _____

13. Total project area (size of site): 30.70 Acres

Total disturbed area: 42.80 Acres

14. Estimated projected population: _____

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

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	***Sq. Ft.***	***Sq. Ft./Acre***	***Acres***
Structures/Rooftops	619,500	÷ 43,560 =	14.22
Parking	225,098	÷ 43,560 =	5.17
Other paved surfaces	5,340	÷ 43,560 =	0.12
Total Impervious Cover	849,938	÷ 43,560 =	19.51

Total Impervious Cover 19.51 **÷ Total Acreage** 30.70 **X 100 =** 63.55**% Impervious Cover**

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

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

For Road Projects Only

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

☒ N/A

18. Type of project:

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

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

- ☐ Concrete
- ☐ Asphaltic concrete pavement
- ☐ Other: _____

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

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

21. Pavement Area:

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

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

☐ N/A

26. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

The sewage collection system will convey the wastewater to the Canyon Ranch (name) Treatment Plant. The treatment facility is:

☐ Existing.

☒ Proposed.

☐ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

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

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			
4			
5			

Total x 1.5 = _____ Gallons

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

one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

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

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

Table 3 - Secondary Containment

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

Total: _____ Gallons

30. Piping:

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

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

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

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

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

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

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

Site Plan Requirements

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

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

    Site Plan Scale: 1" = 60'.

35. 100-year floodplain boundaries:

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

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

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM Panel 48091C0080F, effective 9/02/2009.

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

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

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

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

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

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

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

42. ☒ Surface waters (including wetlands).

    ☐ N/A

43. ☒ Locations where stormwater discharges to surface water.

    ☐ There will be no discharges to surface water.

44. ☐ Temporary aboveground storage tank facilities.

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

45. ☐ Permanent aboveground storage tank facilities.

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

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

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

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

☐ N/A

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

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

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

☐ N/A

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

☐ N/A

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

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.

☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.

☒ The site will not be used for low density single-family residential development.

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

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

52. ☒ **Attachment J - BMPs for Upgradient Stormwater**.

    ☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
    ☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
    ☒ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

53. ☒ **Attachment K - BMPs for On-site Stormwater**.

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

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

    ☐ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are

attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

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

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

☐ N/A

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

☒ N/A

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

☐ N/A

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

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

60. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development,

or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

Administrative Information

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

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

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

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

ATTACHMENT A

ROAD MAP

US HIGHWAY 281

BLANCO COUNTY

COMAL COUNTY

FM 306

FM 306

US HIGHWAY 281

UNIT 4

MYSTIC CANYON

CASCADA PKWY

N

0 500' 1,000' 2,000'

SCALE: 1" = 1000'

LEGEND

OVERALL PROPERTY BOUNDARY

COUNTY LINE

MASS GRADING BOUNDARY

PARCEL LINES

REV	DESCRIPTION	DATE	APR

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: LNH

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ATTACHMENT A – ROAD MAP

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER

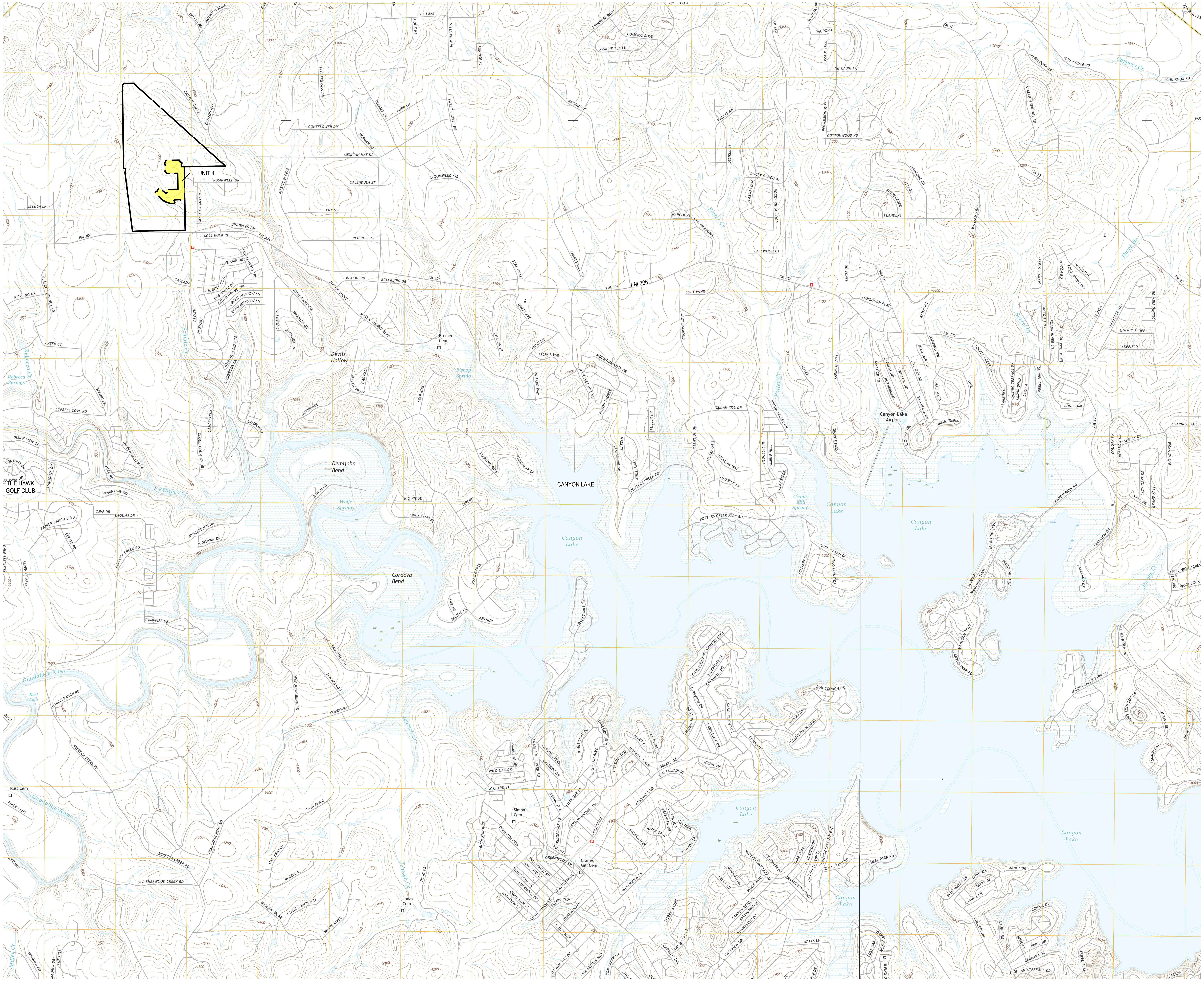
11/08/2024

SHEET

ATTACHMENT B

USGS QUADRANGLE MAP

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\05_Deliverables\01 - Submittals\04_TCEQ\01_TCEQ Unit 4 Submittal 1\03_Attachments\ATTACHMENT B - QUADRANGLE MAP.dwg Layout: Layout1 Plotted: 10/14/2024 11:09:08 AM By: Lhuck



ATTACHMENT C

PROJECT DESCRIPTION

Attachment C — Project Narrative

Canyon Ranch Unit 4 is located at the northwest corner of the FM 306 and Mystic Canyon intersection. The undeveloped 30.70 acres will be developed into multiple single family residential sites. The project lies within the Guadalupe River – Canyon Lake Watershed and does not contain any FEMA 100-yr floodplains.

Canyon Ranch Unit 4 will contain 177 single family residential units and associated roadway access. This project's scope includes clearing, grubbing, and grading of the overall site, as well as the installation of water, wastewater, and storm sewer lines. Sewage will be disposed of by conveyance to the Canyon Ranch WWTP owned and operated by Corix Utilities (Texas) (Permit Number WQ0015866001). The impervious cover will increase from natural conditions to 63.55%, or 19.51 acres of the 30.70 acre site. The permanent BMPs that will be utilized will be two batch detention ponds and engineered vegetative filter strips. Both batch detention ponds are located outside of the Unit 4 platted boundary but are proposed to be fully built with Unit 4. The first proposed batch detention pond, called Unit 4 pond, is located along the south unit boundary and will treat 7.79 acres of impervious cover. The other batch detention pond that treats Unit 4 flow is located northeast of the unit 4 boundary, contained in a drainage easement. This pond will be called the Unit 5 batch detention pond, since the pond is located in the future Unit 5 of the subdivision. The proposed Unit 5 batch detention pond will treat 7.74 acres of impervious cover flowing from Unit 4. There is 2.01 acres of impervious cover that will be treated by vegetative filters strips located along the eastern property boundary and the south-western unit boundary. The Unit 4 pond will provide 8,125 lbs of TSS removal and the Unit 5 pond will provide 8,065 lbs of TSS removal. The vegetative filters strips will provide the remaining 1,456 lbs of TSS removal for a total of 17,646 lbs of provided TSS removal in Unit 4. The required water quality volume for the Unit 4 pond is 95,702 CF and 95,702 CF is provided. For the Unit 5 pond, the required water quality volume is 188,691 CF and the provided water quality volume is 239,350 CF. Both the Unit 4 and Unit 5 ponds have been built for anticipation of future units.

ATTACHMENT C

Contributing Zone Plan Application

The construction plans submitted with this application include no plans for demolition. Most of the storm water will flow to the Unit 4 and 5 ponds through curb and gutter inlet storm drain systems. The stormwater flowing to the Vegetative Filter Strips will sheet flow to the engineered vegetative filter strips. Any uncaptured flow will be accounted for by the overtreatment by the proposed BMPs. All PBMPs have been designed in accordance with the Texas Commission on Environmental Quality's (TCEQ) Technical Guidance Manual (TGM) RG-348 (2005).

Both the Unit 4 and Unit 5 batch detention ponds, fully constructed in Unit 4, are designed to receive drainage from future development and overtreat flow for ultimate development conditions. This application package only reflects the impervious cover proposed in Unit 4, however, the future TSS removal has been considered to ensure both ponds are built for the ultimate conditions. The tables below summarize the TSS removal calculations to show the overall project satisfies TSS removal.

Unit 4 BMP Summary					
BMP	BMP Basin (AC)	Existing IC (AC)	Proposed IC (AC)	Required TSS Removal	Provided TSS Removal
Unit 4 Pond	12.16	0	7.79	6,992	8,125
Unit 5 Pond	11.59	0	7.74	6,947	8,065
Uncaptured - Unit 4	2.30	0	1.97	1,768	-
Unit 4 VFS	4.65	0	2.01	1,804	1,456
TOTAL	**30.70**	**0**	**19.51**	**17,511**	**17,646**

Table 1 – Unit 4 Pond Summary: The table above summarizes the Unit 4 Pond TSS removal calculations by BMP.

ATTACHMENT C

Project Narrative

BMP Summary				
BMP	BMP Basin (AC)	IC (AC)	TSS Required	TSS Provided
Unit 1 Pond	42.19	23.47	21,067	23,825
Unit 1 FM 306 VFS	1.44	0.60	539	609
Unit 1 Flores VFS	1.14	0.40	359	399
Unit 2 Pond	17.73	7.80	7,001	7,925
Unit 2 FM 306 VFS	0.66	0.20	180	201
Unit 3 Pond	58.83	24.40	21,901	24,226
Unit 4 Pond	17.73	9.10	8,168	9,451
Unit 4 VFS - uncap	4.65	2.01	1,804	1,456
Unit 1 Uncaptured	11.06	1.87	1,679	---
Unit 2 Uncaptured	2.72	1.10	987	---
Unit 3 Uncaptured*	8.08	2.94	2,639	---
Unit 4 Uncaptured	2.30	1.97	1,768	---
Total	**168.52**	**75.86**	**68,092**	**68,092**

Table 2 – BMP Summary: This table summarizes the TSS removal calculations by BMP once Unit 4 has been fully constructed. Future treatment has been estimated in this table to ensure the overall project satisfies TSS removal requirements. This table is to be updated with further submittals as development conditions are further refined.

ATTACHMENT C

Project Narrative

ATTACHMENT D

FACTORS AFFECTING WATER SURFACE QUALITY

Attachment D— Factors Affecting Surface Water Quality

Potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the site during construction include:

- *Soil erosion due to the clearing of the site;*
- *Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle drippings;*
- *Hydrocarbons from asphalt paving operations;*
- *Miscellaneous trash and litter from construction workers and material wrappings;*
- *Concrete truck washout.*
- *Potential overflow/spills from portable toilets*

Potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the site after development include:

- *Oil, grease, fuel and hydraulic fluid contamination from vehicle drippings;*
- *Dirt and dust which may fall off vehicles; and*
- *Miscellaneous trash and litter.*

ATTACHMENT E

VOLUME AND CHARACTER OF STORMWATER

Attachment E— Volume and Character of Stormwater

The total drainage area accounted for is 30.70 acres. Proposed impervious cover accounts for 19.51 acres of the total drainage area (no existing impervious cover). 7.79 acres of impervious cover will be treated by the batch detention pond called the Unit 4 pond, located along the southern unit boundary. 7.74 acres of impervious cover will be treated by the Unit 5 batch detention pond that is located along the northeastern unit boundary. Both batch detention ponds are located outside of the Unit 4 platted boundary but are proposed to be fully built with Unit 4. 2.01 acres of impervious cover will be treated by engineered vegetated filter strips located along the eastern property boundary and southwestern unit boundary in Unit 4. 1.97 acres of impervious cover is uncaptured in Unit 4. The Unit 4 pond will provide 8,125 lbs of TSS removal and the Unit 5 pond will provide 8,065 lbs of TSS removal.

Drainage area map and calculations for the site are provided with this application.

For an overview of sub-drainage basins on site, please refer to the included drainage map.

ATTACHMENT E

Contributing Zone Plan Application

ATTACHMENT J

BMPS FOR UPGRADIENT STORMWATER

BGE, Inc. • 7330 San Pedro, Suite 202 • San Antonio, Texas 78216 • 210-581-3600 • www.bgeinc.com

Attachment J- BMPs for Upgradient Stormwater

An internal underground storm drain system and open channels will convey upgradient storm water into the Devil's Hollow Tributary 1. The stormwater will not be treated within the proposed subdivision.

ATTACHMENT J

Contributing Zone Plan Application

ATTACHMENT K

BMPS FOR ON-SITE STORMWATER

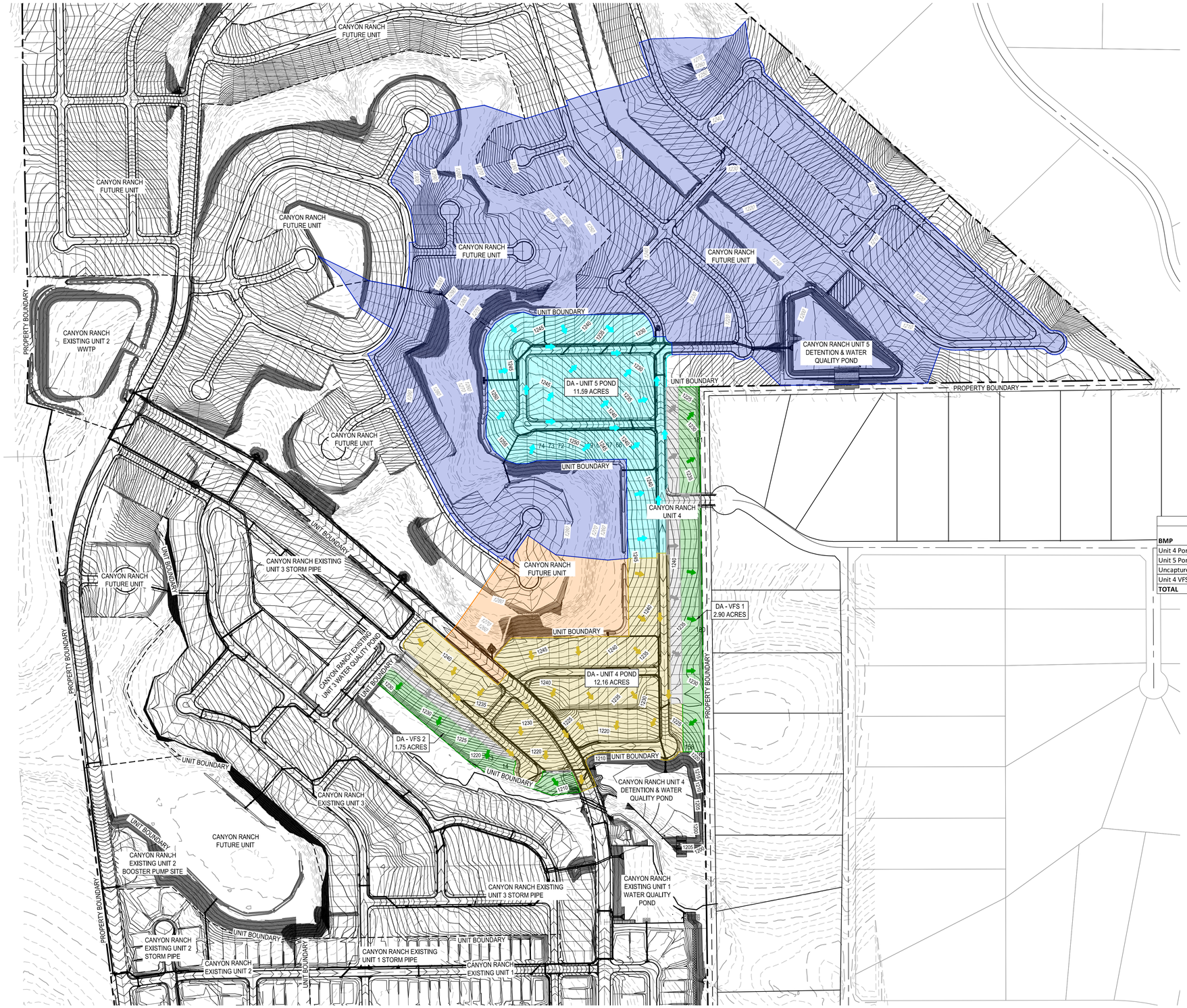
BGE, Inc. • 7330 San Pedro, Suite 202 • San Antonio, Texas 78216 • 210-581-3600 • www.bgeinc.com

Attachment K- BMPs for Onsite Stormwater

Silt control fences are to be installed to prevent stormwater from carrying sediment offsite during construction. Construction entrances are to be placed to facilitate the arrival and departure of construction vehicles without the addition of undue erosion. Batch detention ponds are to be installed in accordance with construction plans to treat pollutant areas of Unit 4. All PBMPs have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in TSS from the site.

ATTACHMENT K

Contributing Zone Plan Application



N

0 75 150 300

SCALE: 1" = 150'

LEGEND

- 1202 — 2' PROPOSED CONTOURS
- 1210 — 10' PROPOSED CONTOURS
- 1202 — 2' EXISTING CONTOURS
- 1210 — 10' EXISTING CONTOURS
- PROPERTY BOUNDARY
- UNIT BOUNDARY
- FLOW TO UNIT 4 POND
- FLOW TO UNIT 5 POND
- VEGETATIVE FILTER STRIPS IN UNIT 4
- UNCAPTURED FLOW, ACCOUNTED FOR IN UNIT 4
- UNIT 4 FLOW TO UNIT 4 POND
- UNIT 4 FLOW TO UNIT 5 POND
- UNIT 4 VFS FLOW ARROWS
- UNIT 4 UNCAPTURED FLOW ARROWS
- FUTURE UNIT FLOW TO UNIT 4 POND
- FUTURE UNIT FLOW TO UNIT 5 POND

Unit 4 BMP Summary

BMP	BMP Basin (AC)	Existing IC (AC)	Proposed IC (AC)	Required TSS Removal	Provided TSS Removal
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Uncaptured - Unit 4	2.30	0	1.97	1,768	-
Unit 4 VFS	4.65	0	2.01	1,804	1,456
TOTAL	**30.70**	**0**	**19.51**	**17,511**	**17,646**

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: LNH

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgemgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

PERMANENT BMP FLOW MAP

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
FIG 5.0

ATTACHMENT L

BMPs for SURFACE STREAMS

BGE, Inc. • 7330 San Pedro, Suite 202 • San Antonio, Texas 78216 • 210-581-3600 • www.bgeinc.com

Attachment L- BMPs for Surface Streams

No BMPs are proposed specifically for surface streams. Proposed on-site BMPs and drainage systems are designed to maintain existing flow patterns.

ATTACHMENT L

Contributing Zone Plan Application

ATTACHMENT M
CONSTRUCTION PLANS

Attachment M- Construction Plan

Construction plans for both temporary and permanent BMPs are attached in the complete plan set.

ATTACHMENT M

Contributing Zone Plan Application

ATTACHMENT N

INSPECTION, MAINTENANCE, REPAIR & RETROFIT PLAN

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CANYON RANCH UNIT 4

Contributing Zone Plan Application (TCEQ-10257)

Attachment N- Inspection, Maintenance, Repair, and Retrofit Plan

This document has been prepared to provide a description and schedule for the performance of maintenance on permanent pollution abatement measures. Maintenance measures to be performed will be dependent on what permanent pollution abatement measures are incorporated into the project. The project specific water pollution abatement plan should be reviewed to determine what permanent pollution abatement measures are incorporated into a project. It should also be noted that the timing and procedures presented herein are general guidelines. Adjustment to the timing and procedures may have to be made depending on project specific characteristics as well as weather related conditions but may not be altered without TCEQ approval.

Where a project is occupied by the owner, the owner may provide for maintenance with his own skilled forces or contract for recommended maintenance of Permanent Best Management Practices. Where a project is occupied or leased by a tenant, the owner shall require tenants to contract for such maintenance services either through a lease agreement, property owners association covenants, or other binding document.

I understand that I am responsible for maintenance of the Permanent Pollution Abatement Measures included in this project until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or ownership is transferred.

I, the owner, have read and understand the requirements of the attached Maintenance Plan and Schedule.

Kelly L

Signature

11/25/2024

Date

ATTACHMENT N

Contributing Zone Plan Application

BATCH DETENTION POND

Inspections should occur at least twice a year. If possible these inspections should be conducted during wet weather to determine if the pond is meeting target detention times. Inspections should check for clogging of the primary outfall mechanism, as well as erosion problems in the upper stage pilot channel, all flow paths, and any erodible areas inside and downstream of the basin. If any slumping or erosion is discovered, immediate regrading or revegetation should be performed to correct the problems. Structural faults discovered during inspection should be identified and repaired immediately. Faults to check for include cracked concrete, sealing of voids, and removal of vegetation from cracks and joints. All inlet/outlet and riser pipes will eventually deteriorate and require replacement.

The basin, basin side-slopes, and embankment of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. At the time of mowing, litter and debris should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed. Additionally at this time, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.).

With each inspection, any damage to structural elements of the basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a basin will eventually deteriorate and must be replaced.

Sediment shall be removed from the basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours. Care should be taken not to compromise the basin lining during maintenance.

ATTACHMENT N

Contributing Zone Plan Application

The Logic Controller should be inspected as part of the twice yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.

VEGETATED FILTER STRIPS

Inspection of the VFS for erosion and damage to vegetation should occur at least twice per year; additional inspection periods, however, should occur after heavy rainfall. The BMPs should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. If areas are found that have bare spots or that need restoration, those areas should be replanted to meet the TCEQ requirements.

Inspections for debris and litter removal should be performed twice per year, at the minimum. Routine periodic checks are preferred. The filter strips should be kept free of obstructions and debris to allow for proper usage and minimal blockage. Additionally, monitoring to ensure channels and preferential flow paths have not developed should be conducted during routine inspection.

Grass areas in and around basins must be mowed at least four times a year to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing is performed, a mulching mower should be used, or grass clippings should be caught and removed. Regular mowing should also include weed control practices; herbicide usage, however, should be kept to a minimum.

*All inspection and maintenance records must be kept at the office of the operator for the previous three years.

ATTACHMENT N

Contributing Zone Plan Application

ATTACHMENT P

MEASURES FOR MINIMISING SURFACE STREAM CONTAMINATION

Attachment P - Measures Minimizing Surface Stream Contamination

Any points where discharge from the site is concentrated and erosive velocities exist will include appropriately sized energy dissipators to reduce velocities to non-erosive levels.

ATTACHMENT P

Contributing Zone Plan Application

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: Stacy Mulholland

Date: 10/17/2024

Signature of Customer/Agent:

Regulated Entity Name: Canyon Ranch

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: Guadalupe River, Canyon Lake

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

ATTACHMENT A

SPILL RESPONSE

Attachment A — Spill Response Actions

In the event of an accidental leak or spill:

- Spill must be contained and cleaned up immediately.
- Spills will not be merely buried or washed with water.
- Contractor shall take action to contain spill. Contactor may use sand or other absorbent material stockpiled on site to absorb spill. Absorbent material should be spread over the spill area to absorb the spilled product.
- In the event of an uncontained discharge the contractor shall utilize onsite equipment to construct berms downgradient of the spill with sand or other absorbent material to contain and absorb the spilled product.
- Spill containment/absorbent materials along with impacted media must be collected and stored in such a way so as not to continue to affect additional media (soil/water). Once the spill has been contained, collected material should be placed on poly or plastic sheeting until removed from the site. The impacted media and cleanup materials should be covered with plastic sheeting and the edges weighed down with paving bricks or other similarly dense objects as the material is being accumulated. This will prevent the impacted media and cleanup materials from becoming airborne in windy conditions or impacting runoff during a rain event. The stockpiled materials should not be located within an area of concentrated runoff such as along a curb line or within aswale.

ATTACHMENT A

Temporary Stormwater Section

- Contaminated soils and cleanup materials will be sampled for waste characterization. When the analysis results are known the contaminated soils and cleanup materials will be removed from the site and disposed in a permitted landfill in accordance with applicable regulations.

- The contractor will be required to notify the owner, who will in turn contact TCEQ to notify them in the event of a significant hazardous/reportable quantity spill. Additional notifications as required by the type and amount of spill will be conducted by owner or owner's representative.

In the event of an accidental significant or hazardous spill:

- The contractor will be required to report significant or hazardous spills in reportable

  quantities to:

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

- For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110, 119, and 302, the contractor should notify the National Response Center at (800) 424-8802.

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

  The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.

  Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

ATTACHMENT A

Temporary Stormwater Section

- Contaminated soils will be sampled for waste characterization. When the analysis results are known the contaminated soils will be removed from the site and disposed in a permitted landfill in accordance with applicable regulations.

Additional guidance can be obtained from TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) Section 1.4.16. Contractor shall review this section.

ATTACHMENT A

Temporary Stormwater Section

ATTACHMENT B

POTENTIAL SOURCES OF CONTAMINATION

Attachment B — Potential Sources of Contamination

Other potential sources of contamination during construction include:

Potential Source	• Asphalt products used on this project.
Preventative Measure	▪ After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt product curing time, the contractor will maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a foretasted rain.
Potential Source	• Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle dripping.
Preventative Measure	▪ Vehicle maintenance when possible will be performed within the construction staging area.
	▪ Construction vehicles and equipment shelf be checked regularly for leaks and repaired immediately.

Temporary Stormwater Section (TCEQ-0602)

Potential Source	• Accidental leaks or spills of oil, petroleum products and substances fisted under 40 CFR parts 110, 117, and 302 used or stored temporarily on site.
Preventative Measure	▪ Contractor to incorporate into regular safety meetings, a discussion of spill prevention and appropriate disposal procedures. ▪ Contractor's superintendent or representative overseer shall enforce proper spill prevention and control measures. ▪ Hazardous materials and wastes shall be stored in covered containers and protected from vandalism. ▪ A stockpile of spill cleanup materials shall be stored on site where it will be readily accessible.
Potential Source	• Miscellaneous trash and litter from construction workers and material wrappings.
Preventative Measure	▪ Trash containers will be placed throughout the site to encourage proper trash disposal.
Potential Source	• Construction debris.
Preventative Measure	▪ Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case by case basis.

ATTACHMENT B

Temporary Stormwater Section

Temporary Stormwater Section (TCEQ-0602)

Potential Source	• Spills/Overflow of waste from portable toilets.
Preventative Measure	▪ Portable toilets will be placed away from high traffic vehicular areas and storm drain inlets. ▪ Portable toilets will be placed on a level ground surface. ▪ Portable toilets will be inspected regularly for leaks and will be serviced and sanitized at time intervals that will maintain sanitary conditions.

ATTACHMENT B

Temporary Stormwater Section

ATTACHMENT C

SEQUENCE OF MAJOR ACTIVITIES

Attachment C- Sequence of Major Activities

A. Unit 4 Lot Development (Approximately 30.70 Acres)

1. *Install temporary erosion and sediment controls and stabilized construction entrance as indicated on erosion control plan.*
2. *Rough grade all streets.*
3. *Install all utilities in the right of way.*
4. *Regrade and compact subgrade.*
5. *Ensure all underground utility crossings are in place and install first course of base.*
6. *Install curbs, rip-rap, and miscellaneous concrete.*
7. *Install second base course.*
8. *Prior to paving, mandrel, low pressure, hydrostatic, vacuum, and a camera golf ball test must be complete prior to paving.*
9. *Lay asphalt.*
10. *Camera inspection to ensure wastewater system is free of debris.*
11. *Final grade any ditches and parkways.*
12. *Revegetate disturbed areas, dispose of spoil.*
13. *Final inspection.*
14. *Removal of temporary erosion controls.*

ATTACHMENT D

TEMPORARY BMPS

Attachment D — Temporary Best Management Practices and Measures

a. 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.

Upgradient water will be intercepted by curb inlets and routed around the project limits. All TBMPs are adequate for the drainage areas they serve.

b. 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.

Site preparation, which is the initiation of all activity on the project, will disturb the largest amount of soil. Therefore, before any of this work can begin, the clearing and grading contractor will be responsible for the installation of all on-site control measures. The methodology for pollution prevention of on-site stormwater will include: (I) erection of silt fences along the downgradient boundary of construction activities for temporary erosion and sedimentation controls, (2) installation of rock berms with silt fencing downgradient from areas of concentrated stormwater flow for temporary erosion control, (3) installation of gravel filter bags downgradient of construction activities for temporary erosion and sedimentation controls (4) installation of stabilized construction entrance/exit(s) to reduce the dispersion of sediment from the site, and (5) installation of construction staging area(s).

Prior to the initiation of construction, all previously installed control measures will be repaired or reestablished for their designed or intended purpose. This work, which is the remainder of all activity on the project, may also disturb additional soil. The construction contractor will be responsible for the installation of all remaining on-site control measures that includes installation of the concrete truck washout pit(s), as construction phasing warrants.

Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solidly to settle out of the runoff. By containing the sediment and solids within the Site, they will not enter surface streams and/or sensitive features.

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

There were no naturally-occurring sensitive features observed on the site and no surface streams on, or adjacent, to the project limits. All Temporary BMPs utilized are adequate for the drainage areas served.

Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.

d. 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.

There were no naturally-occurring sensitive features observed on the site and no surface streams on, or adjacent, to the project limits. All Temporary BMPs utilized are adequate for the drainage areas served.

ATTACHMENT D

Temporary Stormwater Section

CANYON RANCH UNIT 4

Temporary Stormwater Section (TCEQ-0602)

Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.

ATTACHMENT D

Temporary Stormwater Section

ATTACHMENT F

STRUCTURAL PRACTICES

CANYON RANCH UNIT 4

Temporary Stormwater Section (TCEQ-0602)

Attachment F - Structural Practices

The following structural measures will be installed prior to the initiation of site preparation activities:

- *Erection of silt fences along the downgradient boundary of construction activities and rock berms with silt fence for secondary protection, as located on sheet C02.10 Erosion & Sedimentation Control Plan.*
- *Installation of inlet protection at downgradient inlets of construction activities, as located on sheet C02.10.*
- *Installation of stabilized construction entrance/exit[s) and construction staging area(s), as located on sheet C02.10.*

The following structural measures will be installed at the initiation of construction activities or as appropriate based on the construction sequencing:

- *Installation of concrete truck washout pit(s), as required and located on sheet C02.10.*

ATTACHMENT I

BMP MAINTENANCE

Attachment I - Inspection and Maintenance for BMPs

Designated and qualified person(s) shall inspect Pollution Control Measures weekly and within 24 hours after a storm event. An inspection report that summarizes the scope of the inspection, names and qualifications of personnel conducting the inspection, date of the inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of Storm Water TPDES data for a period of three years after the Notice of Termination (NOT) has been filed. A copy of the Inspection Report Form is provided in this Storm Water Pollution Prevention Plan.

As a minimum, the inspector shall observe: (1) significant disturbed areas for evidence of erosion, (2) storage areas for evidence of leakage from the exposed stored materials, (3) structural controls (rock berm outlets, silt fences, drainage swales, etc.) for evidence of failure or excess siltation (over 6 inches deep), (4) vehicle exit point for evidence of off-site sediment tracking, (5) vehicle storage areas for signs of leaking equipment or spills, (6) concrete truck rinse-out pit for signs of potential failure, (7) embankment, spillways, and outlet of sediment basin (where applicable) for erosion damage, and (8) Check sediment basin's embankment, spillways, and outlet for erosion damage, and inspect the embankment for piping and settlement. Repair should be made promptly as needed by the contractor. Trash and other debris within the basins should be removed after each rainfall to prevent clogging of the outlet structure. Accumulated silt within the basins should be removed and the basin should be re-graded to its original dimensions at such point that the capacity of the impoundment has been reduced to 75% of its original storage capacity. The removed sediment should be stockpiled or redistributed in areas that are protected from erosion.

Contractor shall review Sections 1.3 and 1.4 of TCEQ's Technical Guidance Manual for additional BMP inspection and maintenance requirements.

ATTACHMENT I

Temporary Stormwater Section

CANYON RANCH UNIT 4

Temporary Stormwater Section (TCEQ-0602)

Pollution Prevention Measure	Inspected in Compliance	Corrective Action Required	
		Description (use additional sheet if necessary)	Date Completed
Best Management Practices			
Natural vegetation buffer strips			
Temporary vegetation			
Permanent vegetation			
Sediment control basin			
Silt fences			
Rock berms			
Gravel filter bags			
Drain inlet protection			
Other structural controls			
Vehicle exits (off-site tracking)			
Material storage areas (leakage)			
Equipment areas (leaks, spills)			
Concrete washout pit (leaks, failure)			
General site cleanliness			
Trash receptacles			
Evidence of Erosion			
Site preparation			
Roadway or parking lot construction			
Utility construction			
Drainage construction			
Building construction			
Major Observations			
Sediment discharges from site			
BMPs requiring maintenance			
BMPs requiring modification			
Additional BMPs required			

_____ **A brief statement describing the qualifications of the inspector is included in this SWP3.**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

"I further certify I am an authorized signatory in accordance with the provisions of 30 TAC §305.128."

Inspector's Name _____ Inspector's Signature _____ Date _____

PROJECT MILESTONE DATES

Date when major site grading activities begin:

Construction Activity	Date
Installation of BMPs	

Dates when construction activities temporarily or permanently cease on all or a portion of the project:

Construction Activity	Date

Dates when stabilization measures are initiated:

Stabilization Activity	Date
Removal of BMPs	

ATTACHMENT J

SCHEDULE OF INTERIM & PERMANENT SOIL STABILIZATION PRACTICES

CANYON RANCH UNIT 4

Temporary Stormwater Section (TCEQ-0602)

Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

Interim on-site stabilization measures, which are continuous, will include minimizing soil disturbances by exposing the smallest practical area of land required for the shortest period of time and maximizing use of natural vegetation. As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance with pages 1-35 to 1-60 of TCEQ's Technical Guidance Manual (TGM) RG-348 (2005). Mulching, netting, erosion blankets and seeding are acceptable.

Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently teased, and except as provided below, will be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practicable. Stabilization measures in this instance shall comply with temporary stabilization as defined in TXR150000 or as defined otherwise in the landscape plans where applicable.

ATTACHMENT J

Temporary Stormwater Section

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

I Richard Mott,
Print Name

Authorized Agent,
Title - Owner/President/Other

of Lennar Homes of Texas Land and Construction, LTD,
Corporation/Partnership/Entity Name

have authorized BGE, Inc.
Print Name of Agent/Engineer

of BGE, Inc.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

10/22/2024
Date

THE STATE OF Texas §

County of Bexar §

BEFORE ME, the undersigned authority, on this day personally appeared Richard Mott 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 22 day of October, 2024.

ROBERT DAVID OESTREICH
Notary Public, State of Texas
Comm. Expires 06-10-2028
Notary ID 134938576

NOTARY PUBLIC

Robert D. Oestreich
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 6-10-2028

Owner Authorization Form

Texas Commission on Environmental Quality
for Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

Land Owner Authorization

I, Kelly Leach (Land Owner Signatory Name) of Canyon Ranch 400 LP (Land Owner Name (Legal Entity or Individual))

am the owner of the property located at

North of FM 306 between Loma Ranch Road and Mystic Canyon, approx 3 miles from US Highway 281 and the FM 306 Intersection

Legal description of the property referenced in the application

and am duly authorized in accordance with §213.4(c)(2) and §213.4(d)(1) or §213.23(c)(2) and §213.23(d) relating to the right to submit an application, signatory authority, and proof of authorized signatory.

I do hereby authorize Lennar Homes of Texas Land and Construction, LTD

Applicant Name (Legal Entity or Individual)

to conduct regulated activities allowed by the approved CZP

Description of the proposed regulated activities

at North of FM 306 between Loma Ranch Road and Mystic Canyon, approx 3 miles from US Highway 281 and the FM 306 Intersection.

Precise location of the authorized regulated activities

Land Owner Acknowledgement

I understand that Canyon Ranch 400 LP

Land Owner Name (Legal Entity or Individual)

Is ultimately responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation even if the responsibility for compliance and the right to possess and control the property referenced in the application has been contractually assumed by another legal entity. I further understand that any failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Land Owner Signature

Kelly L

Land Owner Signature

10/21/2024

Date

THE STATE OF § Texas

County of § Bexar

BEFORE ME, the undersigned authority, on this day personally appeared Kelly Leach 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 21 day of October 2024

NOTARY PUBLIC

ROSA MAIYA VINCENT
Notary ID #133600469
My Commission Expires
February 18, 2026

Rosa Maiya Vincent

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 2/18/2026

Attached: (Mark all that apply)

- ☐ Lease Agreement
- ☐ Signed Contract
- ☐ Deed Recorded Easement
- ☐ Other legally binding document

Applicant Acknowledgement

I, Richard Mott of Lennar Homes of Texas Land and Construction, LTD
Applicant Signatory Name — Applicant Name (Legal Entity or Individual)

acknowledge that Canyon Ranch 400 LP
Land Owner Name (Legal Entity or Individual)

has provided Lennar Homes of Texas Land and Construction, LTD
Applicant Name (Legal Entity or Individual)

with the right to possess and control the property referenced in the Edwards Aquifer protection plan.

I understand that Lennar Homes of Texas Land and Construction, LTD
Applicant Name (Legal Entity or Individual)

is contractually responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation. I further understand that failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Applicant Signature

Applicant Signature

10/22/2024
Date

THE STATE OF § TEXAS

County of § BEXAR

BEFORE ME, the undersigned authority, on this day personally appeared RICHARD MOTT 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 22 day of OCTOBER

NOTARY PUBLIC

ROBERT DAVID OESTREICH
Notary Public, State of Texas
Comm. Expires 06-10-2028
Notary ID 134938576

ROBERT D. OESTREICH
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 6-10-2028

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Canyon Ranch Unit 4

Regulated Entity Location: North of FM 306 between Loma Ranch Road and Mystic Canyon, approximately 3 miles from the US Highway 281 and FM 306 intersection.

Name of Customer: Lennar Homes of Texas Land and Construction, LTD

Contact Person: Richard Mott Phone: (210) 889-5516

Customer Reference Number (if issued):CN 602412207

Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde

☒ Comal ☐ Kinney

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

☐ Austin Regional Office

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

☒ San Antonio Regional Office

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

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	30.70 Acres	$ 4,000
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 4/22/2024

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 602412207		RN 111592846

SECTION II: Customer Information

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

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* *If new Customer, enter previous Customer below:*

Lennar Homes of Texas Land and Construction, LTD

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
		95 - 4 3 3 7 4 9 0	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

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

☐ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☒ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

100 NE Loop 410, Suite 1155

City	San Antonio	State	TX	ZIP	78216	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	richard.mott@lennar.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(210) 889-5516		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

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

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

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

Canyon Ranch Unit 4

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

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Approximately 3.68 miles northeast of Highway 281 and FM 306 intersection.

26. Nearest City	State	Nearest ZIP Code
Fischer	TX	78070

27. Latitude (N) In Decimal:	29.955		28. Longitude (W) In Decimal:	98.35278	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	57	18	98	21	10

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)
1521		236117	

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

Single family residential housing.

34. Mailing Address:							
	City		State		ZIP		ZIP + 4	
35. E-Mail Address:							

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

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Stacy Mulholland	41. Title:	PE

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 581-3637		( ) -	smulholland@bgeinc.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Lennar Homes of Texas Land & Construction, LTD	Job Title:	
Name *(In Print)*:	Richard Moon	Phone:	(210) 859 5516
Signature:		Date:	10/22/2021

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 605941475		RN 111592846

SECTION II: Customer Information

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

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* *If new Customer, enter previous Customer below:*

Canyon Ranch 400 LP

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0803641552	32074563134	742791904	

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☒ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

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

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

1141 N Loop 1604 E, Suite 105-114

City	State	ZIP	ZIP + 4
San Antonio	TX	78232	

16. Country Mailing Information *(if outside USA)*

17. E-Mail Address *(if applicable)*

kelly.welovedirt@gmail.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(210) 827-7918		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

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

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

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

Canyon Ranch Unit 4

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

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Approximately 3.68 miles northeast of Highway 281 and FM 306 intersection.

26. Nearest City	**State**	**Nearest ZIP Code**
Fischer	TX	78070

27. Latitude (N) In Decimal:	29.955		**28. Longitude (W) In Decimal:**	98.35278	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	57	18	98	21	10

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)
1521		236117	

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

Single family residential housing.

34. Mailing Address:							
	City		**State**		**ZIP**		**ZIP + 4**
35. E-Mail Address:							

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

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Stacy Mulholland	**41. Title:**	PE

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(210) 581-3637		( ) -	smulholland@bgeinc.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Canyon Ranch 400 LP	**Job Title:**	
Name *(In Print):*	Kelly Leach	**Phone:**	( ) -
Signature:		**Date:**	Oct 21 2024

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 9, 2022

Kelly Leach
Gram Vikas Partners, Inc.
141 N. Loop 1604, 105-114
San Antonio, Texas 78232

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Canyon Ranch Unit 1; Located approximately 3.66-miles northeast of US Highway 281 and FM 306 intersection; Comal County, Texas

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

Regulated Entity No. RN111346102; Additional ID No. 13001556

Dear Kelly Leach:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the San Antonio Regional Office by BGE, Inc. on behalf of Gram Vikas Partners, Inc. on June 15, 2022. Final review of the CZP was completed after additional material was received on August 11, 2022, and September 1, 2022. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The TCEQ approved the original CZP application titled Canyon Ranch Unit 1 by letter dated January 21,2021 (13001410).

PROJECT DESCRIPTION

The proposed single-family residential project will have an area increased from 26.02-acres approved January 21, 2021, to 32.34-acres in this project. It will include 112 residential lots and modification to the batch detention pond and adding one (1) vegetative filter strip. The impervious cover will be reduced from 14.04-acres to 13.85-acres (43 percent). Project wastewater will be disposed of by conveyance to the approved Canyon Ranch Wastewater Treatment Plant owned by Gram Vikas Partners, Inc.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one existing (13001410) (1) batch detention basin, one existing VFS (13001410), and one newly proposed VFS, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be utilized to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 12,432 pounds of TSS generated from the 13.85- acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

SPECIAL CONDITIONS

I. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated January 21, 2021.

II. All permanent pollution abatement measures shall be operational prior to occupancy of the facilities within their respective drainage areas.

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

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

<u>During Construction:</u>

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

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.

15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire, and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Drew Evans of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4053.

Sincerely,

Lillian Butler

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

LIB/de
Enclosures: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Aaron Neumann, P.E., BGE, Inc.
Ms. Stacy Mulholland, EIT, BGE, Inc

Change in Responsibility for Maintenance
on Permanent Best Management Practices and Measures

The applicant is no longer responsible for maintaining the permanent best management practice (BMP) and other measures. The project information and the new entity responsible for maintenance is listed below.

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

I acknowledge and understand that I am assuming full responsibility for maintaining all permanent best management practices and measures approved by the TCEQ for the site, until another entity assumes such obligations in writing or ownership is transferred.

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 26, 2022

Mr. Kelly Leach
Gram Vikas Partners, Inc
1141 N Loop 1604, 105-114
San Antonio, Texas 78232

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Canyon Ranch Unit 2; Located approximately 3.66 miles northeast of the US Hwy 281 and FM 306 intersection; Comal County, Texas

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

Regulated Entity No. RN111356259; Additional ID No. 13001557

Dear Mr. Leach:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the San Antonio Regional Office by BGE, Inc. on behalf of Gram Vikas Partners, Inc. on June 15, 2022. Final review of the CZP Modification was completed after additional material was received on August 3, 2022, and August 18, 2022. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original Canyon Ranch Unit 2 CZP (13001422) was approved by letter, dated January 28, 2022. The residential project had a site area of 14.55 acres and included the construction of 49 single-family residential lots with associated roadways. The impervious cover was approved to be 8.72 acres. One previously approved batch detention basin (13001410), one new batch detention basin, and one new engineered vegetative filter strip (VFS) were approved to treat stormwater generated by the project.

PROJECT DESCRIPTION

The proposed residential project will have an area of approximately 14.55 acres. It will include the construction of 46 single-family lots with associated roadways and modifications to the previously approved batch detention basin (13001422) and engineered VFS (13001422). The impervious cover will be 6.03 acres (41.44 percent). Project wastewater will be disposed of by conveyance to the existing Canyon Ranch Wastewater Treatment Plant owned by the Canyon Ranch Municipal Utility District.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one batch detention basin from Unit 1 (13001410), a second batch detention basin and an engineered VFS, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be utilized and constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 5,413 pounds of TSS generated from the 6.03 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

SPECIAL CONDITIONS

I. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated January 28, 2022.

II. All permanent pollution abatement measures shall be operational prior to first occupancy of the homes within their respective drainage areas.

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

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

<u>During Construction:</u>

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

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.

15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Joshua Vacek of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4028.

Sincerely,

Lillian Butler

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

LIB/jv

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

cc: Ms. Stacy Mulholland, EIT, BGE, Inc.

Change in Responsibility for Maintenance
on Permanent Best Management Practices and Measures

The applicant is no longer responsible for maintaining the permanent best management practice (BMP) and other measures. The project information and the new entity responsible for maintenance is listed below.

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

I acknowledge and understand that I am assuming full responsibility for maintaining all permanent best management practices and measures approved by the TCEQ for the site, until another entity assumes such obligations in writing or ownership is transferred.

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 14, 2024

Ms. Kelly Leach
Gram Vikas Partners, Inc.
1141 N Loop 1604
San Antonio, Texas, 78232

Re: Approval of a Modification of an approved Contributing Zone Plan (CZPMOD)
Canyon Ranch Unit 3; Located approximately 3.68 miles northeast of Hwy 281 and FM 306 intersection; Comal County, Texas
Edwards Aquifer Protection Program ID: 13001922, Regulated Entity No. RN111592846

Dear Ms. Leach:

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by BGE, Inc. on behalf of the applicant, Gram Vikas Partners, Inc. on April 24, 2024. Final review of the application was completed after additional material was received on June 11, 2024.

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

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

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

BACKGROUND

The original Canyon Ranch Unit 3 was approved by letter dated December 16, 2022. The 46.56-acre site was approved to consist of 24.28-acres of impervious cover. One (1) batch detention basin (Unit 3 Pond) was approved to treat stormwater generated by the project.

PROJECT DESCRIPTION

The current modification proposes to decrease the impervious cover and increase the weir structure length to the Unit 3 batch detention basin. The impervious cover will now be 23.26-acres (49.96 percent). Project wastewater will be disposed of by conveyance to the existing Canyon Ranch Wastewater Treatment Plant owned and operated by Corix Utilities of Texas.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one (1) previously approved batch detention basin (Unit 3 Pond – AI: 13001650), designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be implemented to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 20,878 pounds of TSS generated from the 23.26-acres of impervious cover. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

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

SPECIAL CONDITIONS

I. This modification is subject to all the special and standard conditions listed in the approval letter dated December 16, 2022.

STANDARD CONDITIONS

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

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

Prior to Commencement of Construction:

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

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

5. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site

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

During Construction:

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

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

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

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

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

After Completion of Construction:

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

12. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.

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

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Hunter Patterson of the Edwards Aquifer Protection Program at (210) 403-4026 or the regional office at 512-339-2929.

Sincerely,

Lori Wilson, Regional Director
Austin Region
Texas Commission on Environmental Quality

LW/hhp

cc: Ms. Stacy Mulholland, P.E., BGE, Inc.

CANYON RANCH UNIT 4

COMAL COUNTY

CIVIL CONSTRUCTION DRAWINGS

WATER, SEWER, STREET AND DRAINAGE IMPROVEMENTS

NOVEMBER 2024

STREETS - COMAL COUNTY
WATER - TEXAS WATER COMPANY, SJWTX
DRAINAGE - COMAL COUNTY
WASTEWATER - CANYON RANCH MUD OF COMAL COUNTY

FEMA PANEL: #48091C0080F, DATED SEPTEMBER 9, 2009
TRACT SIZE: 30.698 ACRES
TYPE: SINGLE FAMILY RESIDENTIAL

CONTACT INFORMATION FOR COORDINATION AND EMERGENCY

COMAL COUNTY ENGINEER'S OFFICE : (830) 608-2090
ELECTRIC UTILITY: PEDERNALES ELECTRIC COOPERATIVE: (512) 262-2161
WATER UTILITY: TEXAS WATER COMPANY, SJWTX: (830) 312-4600
WASTEWATER UTILITY: CANYON RANCH MUD OF COMAL COUNTY: (512) 328-2008
TEXAS DEPARTMENT OF TRANSPORTATION: (512) 832-7000
FIRE DEPARTMENT: COMAL COUNTY ESD #1 & #4: (830) 228-4501

BENCHMARK

BM #101: MAG NAIL SET IN ASPHALT DRIVEWAY APRON LOCATED ON THE SOUTH SIDE OF FARM TO MARKET 306, ±614' FROM THE SOUTHWEST CORNER OF THE 400.00 ACRE PARENT TRACT.
ELEVATION: 1,228.08'

BM #102: MAG NAIL SET 2' SOUTH FROM THE EDGE OF ASPHALT PAVEMENT OF FARM TO MARKET 306, ± 278' FROM THE SOUTEAST CORNER OF THE 400.00 ACRE PARENT TRACT,
ELEVATION: 1,195.17'

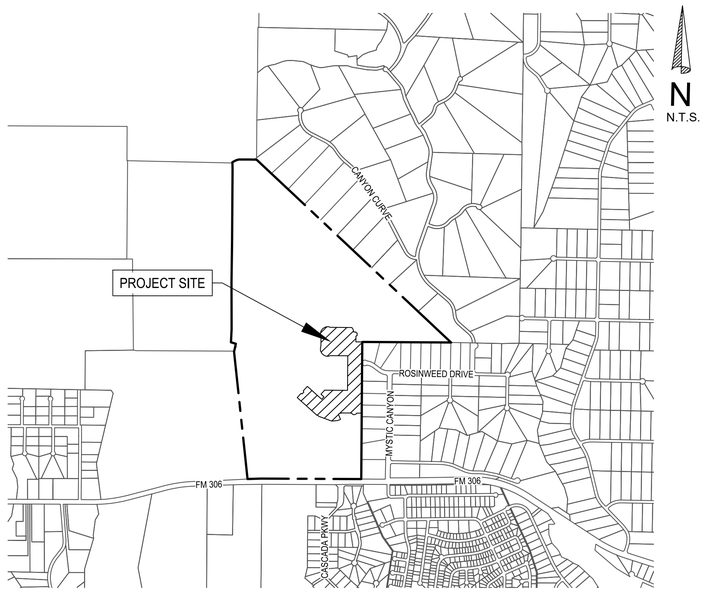
ACCEPTED FOR CONSTRUCTION:

COMAL COUNTY — DATE

TEXAS WATER COMPANY, SJWTX — DATE

CANYON RANCH MUD — DATE

VICINITY MAP



NAME: CANYON RANCH UNIT 4

OWNER: CANYON RANCH 400
CONTACT: KELLY LEACH, PRESIDENT
1141 N. LOOP 1604
SUITE 105-114
SAN ANTONIO, TEXAS 78232
PHONE: (210) 827-7918

ENGINEER: BGE, INC., TBPE-1046
CONTACT: STACY MULHOLLAND
EMAIL: SMULHOLLAND@BGEINC.COM
7330 SAN PEDRO AVENUE SUITE 202
SAN ANTONIO, TEXAS 78216
PHONE: (210) 581-3600

WATER: TEXAS WATER COMPANY, SJWTX
1399 SATTLER RD
NEW BRAUNFELS, TEXAS 78132
PHONE: (830) 312-4600

ELECTRIC: PEDERNALES COOP, INC.
PO BOX 1
JOHNSON CITY, TEXAS 78636
PHONE: (877) 372-0391

DEVELOPER: LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

LAND SURVEYOR: BGE INC., TBPE F1046
CONTACT: DION ALBERTSON R.P.L.S.
7330 SAN PEDRO AVE SUITE 202
SAN ANTONIO, TX 78216
PHONE: (210) 581-3600

WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
ATTN: MCLEAN & HOWARD LLP
901 SOUTHMOPAR SUITE 225
AUSTIN, TX 78746
PHONE: (512) 328-2008

REVISIONS/CORRECTIONS					
SHEET LIST	DESCRIPTION	DATE	REVISE (R) ADD (A) VOID (V) SHEET NO.'S	ACCEPTED BY	APPROVAL DATE

Know what's below. Call before you dig.

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

SHEET INDEX

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SUBMITTED BY

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7330 SAN PEDRO AVENUE
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SAN ANTONIO, TEXAS 78216
(210) 581-3600 (MAIN)

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7330 San Pedro Ave., Suite 202
San Antonio, TX 78216
Tel: 210-581-3600 • www.browngay.com
TBPE Registration No. F-1046

GENERAL NOTES

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF COUNTY APPROVAL FOR CONSTRUCTION INSPECTION THAT APPROVAL IS NO LONGER VALID.
2. THE MOST CURRENT EDITIONS OF COMAL COUNTY STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS, CITY OF SAN ANTONIO, OR CITY OF AUSTIN STANDARD DETAILS.
3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, COMAL COUNTY MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
4. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT COMAL COUNTY TO SET A PRE-CONSTRUCTION MEETING. A 48-HOUR NOTIFICATION IS REQUIRED FOR ALL INSPECTION AND MEETING REQUESTS.
   - ALL INSPECTIONS ARE TO BE CALLED IN AT (830) 608-2090
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS AND THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. IF, IN THE OPINION OF THE ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO THE ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES MAY BE ORDERED BY THE ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
6. A TXDOT TYPE II B-B BLUE REFLECTIVE RAISED PAVEMENT MARKER SHALL BE INSTALL IN THE CENTER OF THE ROADWAY ADJACENT TO ALL FIRE HYDRANTS. IN LOCATIONS WHERE FIRE HYDRANTS ARE SITUATED ON CORNERS, BLUE REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON BOTH APPROACHES FROM THE HYDRANT. THE RAISED PAVEMENT MARKER SHALL MEET TXDOT MATERIAL, EPOXY, AND ADHESIVE SPECIFICATIONS.
7. STRUCTURAL RETAINING WALL DESIGN IS NOT INCLUDED WITHIN THIS SET OF PLANS.

GROUND WATER:

1. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, CONTRACTOR, SUBCONTRACTORS, BUILDERS, GEO-TECHNICAL ENGINEER, AND PROJECT ENGINEER TO IMMEDIATELY NOTIFY THE OFFICE OF THE COUNTY ENGINEER AND PROJECT ENGINEER IF THE PRESENCE OF GROUNDWATER WITHIN THE SITE IS EVIDENT. UPON NOTIFICATION THE PROJECT ENGINEERS SHALL RESPOND WITH PLAN REVISIONS FOR THE MITIGATION OF THE GROUNDWATER ISSUE. THE COUNTY ENGINEER SHALL RESPOND WITHIN TWO (2) BUSINESS DAYS UPON RECEIPT OF THE MITIGATION PLAN. ALL CONSTRUCTION ACTIVITY, IMPACTED BY THE DISCOVERY OF GROUNDWATER, SHALL BE SUSPENDED UNTIL THE COUNTY ENGINEER GRANTS A WRITTEN APPROVAL OF THE GROUNDWATER MITIGATION PLAN.

RECORD DRAWINGS:

1. AS PER PLATTING ORDINANCE SECTION 118-38M: WHEN ALL OF THE IMPROVEMENTS ARE FOUND TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND WITH THE COUNTY'S STANDARDS, AND UPON RECEIPT OF ONE SET OF "RECORD DRAWING" PLANS, AND DIGITAL COPY OF ALL PLANS (PDF COPY) THE COUNTY ENGINEER SHALL ACCEPT SUCH IMPROVEMENTS FOR COMAL COUNTY, SUBJECT TO THE GUARANTY OF MATERIAL AND WORKMANSHIP PROVISIONS IN THIS SECTION.

CONSTRUCTION NOTE:

1. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT EROSION CONTROL MEASURES AND STORM WATER CONTROL SUFFICIENT TO MITIGATE OFF-SITE IMPACTS ARE IN PLACE AT ALL STAGES OF CONSTRUCTION.

DRAINAGE NOTE:

1. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER.

FINISHED FLOOR ELEVATIONS:

1. THE ELEVATIONS OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORM WATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORM WATER CONVEYANCE STRUCTURES MUST HAVE A FLOOR SLAB ELEVATION OR BOTTOM FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE.

SOILS TESTING:

1. PROCTORS SHALL BE SAMPLED FROM ON-SITE MATERIAL (ON-SITE IS DEFINED AS LIMITS OF CONSTRUCTION FOR THIS PLAN SET) AND A COPY OF THE PROCTOR RESULTS SHALL BE DELIVERED TO COMAL COUNTY STREET INSPECTOR PRIOR TO ANY DENSITY TESTS.

ROADWAY:

1. ALL ROADWAY COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FLEXIBLE BASE OR FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED SIX INCHES COMPACTED, EACH LAYER OF MATERIAL, INCLUSIVE OF SUB GRADE, SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, AND TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY COMAL COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100 LF FOR EACH UPLIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER WILL PROVIDE COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FLEXIBLE BASE, AND FILL MATERIAL AND SUB GRADE, HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.
2. ITEM 340: ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE "D" HOT MIX ASPHALT AS DEFINED IN TXDOT'S STANDARD SPECIFICATIONS FOR CURRENT TXDOT STANDARD SPECIFICATIONS FOR CONSTRICTION OF HIGHWAYS, STREET, AND BRIDGES.
3. COMAL COUNTY WILL NOT ACCEPT THE USE OF RECYCLED ASPHALT PAVEMENT (RAP) OR RECYCLED ASPHALT SHINGLES (RAS) IN ASPHALT MIXTURES FOR NEW ROADWAYS, ANY DEBRIS INCLUSIONS WITHIN NEW ASPHALT PAVEMENTS WILL RESULT IN ASPHALT REMOVAL AND REPLACEMENTS FROM CURB TO CURB FOR LIMITS TO BE DETERMINED BY COMAL COUNTY.
4. THE ASPHALTIC CONCRETE SURFACE COURSE SHALL BE PLANT MIXED, HOT LAID TYPE "D" MEETING THE SPECIFICATION REQUIREMENTS OF TXDOT ITEM 340, THE MIX SHALL BE DESIGNED FOR A STABILITY OF AT LEAST 35 AND SHALL BE COMPACTED TO BETWEEN 91 AND 95 PERCENT OF THE MAXIMUM THEORETICAL DENSITY AS DETERMINED BY TXDOT TEST METHOD TEX-227-F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHALL FALL WITHIN A TOLERANCE OF +/- 0.5 PERCENT FROM A SPECIFIC MIX DESIGN.

UTILITY TRENCH COMPACTION:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYER NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIALS SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, AND TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER SHALL PROVIDE COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

CURB CUT DUE TO CONSTRUCTION OF NEW RIGHT-OF-WAY CONSTRUCTION:

1. SAW CUT EXISTING STREET AND MATCH TO NEW CONSTRUCTION.
2. SAW CUT EXISTING CURB TO TIE INTO EXISTING CONSTRUCTION.

CONSTRUCTION STABILIZED ENTRANCE:

1. SAW CUT CURB FOR CONSTRUCTION ENTRANCE.
2. STABILIZED CONSTRUCTION AREA SHALL BE CONSTRUCTED OF 3"X5" ROCK TO BE PLACED A MINIMUM LENGTH OF 25-FT AND MAINTAINED SO THAT CONSTRUCTION DEBRIS DOES NOT FALL WITHIN THE CITY RIGHT-OF-WAY. RIGHT-OF-WAY MUST BE CLEARED FROM MUD, ROCKS, ETC.

SIGNING AND PAVEMENT MARKING PLAN NOTES:

1. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL ALL TXDOT SIGNS AND PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

TEXAS WATER COMPANY STANDARD CONSTRUCTION NOTES FOR PLANS:
EFFECTIVE JULY 27TH, 2023

1. NO CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD BETWEEN THE CONTRACTOR, ENGINEER OF RECORD, AND A REPRESENTATIVE OF THE TEXAS WATER CO.
2. IT IS THE INTENT OF THESE PLANS TO SHOW THE LOCATION OF EXISTING UNDERGROUND FACILITIES IN ACCORDANCE WITH EXISTING RECORDS. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY THE EXACT LOCATION OF ALL EXISTING UNDERGROUND FACILITIES PRIOR TO EXCAVATION. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES TO EXISTING FACILITIES.
3. BOUNDARY FENCES OR OTHER IMPROVEMENTS REMOVED TO PERMIT CONSTRUCTION SHALL BE REPLACED IN THE SAME LOCATION AND IN SAME CONDITION AS GOOD OR BETTER THAN IN WHICH THEY WERE FOUND. NO COMPENSATION SHALL BE GIVEN TO THE CONTRACTOR FOR REMOVAL AND REPLACEMENT OF FENCES.
4. CONTRACTOR SHALL NOTIFY THE TEXAS WATER CO (830-964-3854) AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION.
6. CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT PRIOR WRITTEN AGREEMENT WITH THE PROPERTY OWNER. A COPY OF ANY WRITTEN AGREEMENT BETWEEN PROPERTY OWNER AND CONTRACTOR SHALL BE FURNISHED TO THE TEXAS WATER CO.
7. NO EXCESS EXCAVATION MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAY WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
8. ALL VEGETATED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITIONS THAN FOUND PRIOR TO THE BEGINNING OF CONSTRUCTION.
9. BEFORE FINAL COMPLETION OF THE PROPOSED WORK, ALL ROADWAY, SLOPES, DITCHES AND BERMS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
10. REMOVE AND DISPOSE OF TREES, STUMPS, BRUSH, ROOTS, VEGETATION, LOGS, RUBBISH AND OTHER OBJECTIONABLE MATTER WITHIN THE LIMITS OF AREA AFFECTED BY THE WORK, INCLUDING ALL AREAS TO BE RE-GRADED, PROTECT TREES, SHRUBS, AND OTHER LANDSCAPE FEATURES SPECIFICALLY DESIGNATED FROM DAMAGE DURING CONSTRUCTION OPERATIONS.
11. CONTRACTOR TO CONFIRM ACTUAL HORIZONTAL AND VERTICAL LOCATION OF EXISTING STRUCTURES, PIPING, PAVING, FENCING AND ALL OTHER EXISTING FACILITIES PRIOR TO CONSTRUCTION.
12. CONTRACTOR SHALL COORDINATE FOR ALL NECESSARY UTILITY LOCATES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY TEXAS DEPARTMENT OF TRANSPORTATION AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN THE STATE RIGHT-OF-WAY.
14. CONTRACTOR SHALL NOT OPEN CUT ANY IMPROVED DRIVEWAY IN STATE RIGHT-OF-WAY WITHOUT PRIOR WRITTEN APPROVAL OF PROPERTY OWNER.
15. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED OR RESTORE EXISTING GRADES. REMOVE RUBBISH VEGETATION AND ROCKS OVER 1 ½" IN DIAMETER. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM STRUCTURES. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER WILL STAND.
16. NO UTILITY TRENCHES OR PITS ARE TO BE LEFT OPEN OVERNIGHT. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ADEQUATE SAFETY MEASURES ARE IN PLACE FOR BOTH HUMANS AND LIVESTOCK FOR ANY TRENCH LEFT OPEN OVERNIGHT. BACKFILLING WILL OCCUR DAILY AND AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OPERATIONS.
17. THE MOST RECENT TEXAS WATER CO STANDARDS AND SPECIFICATIONS SHALL APPLY TO ALL CONSTRUCTION REGARDLESS OF INFORMATION PROVIDED ON PLANS. CONTRACTORS ARE ENCOURAGED TO VERIFY CURRENT INFORMATION WITH TEXAS WATER CO STAFF PRIOR TO THE BEGINNING OF CONSTRUCTION.
18. ALL ROAD CROSSING UNDER COMAL COUNTY ROADWAYS SHALL REQUIRE A SEPARATE PERMIT FROM THE COMAL COUNTY ENGINEER. CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS AND SHALL CONSTRUCT ALL CROSSINGS IN ACCORDANCE WITH COMAL COUNTY STANDARDS.

CONTRACTOR SHALL:

1. FOLLOW METHODS AND PROCEDURES OF SHUTDOWN AS DIRECTED BY THE TEXAS WATER CO STAFF.
2. NOTIFY CONSUMERS OF, AND COORDINATE ALL SHUTDOWNS WITH TEXAS WATER CO, PER TEXAS WATER CO GUIDELINES.
3. ESTABLISH PIPE GRADES USING TOP OF FINISHED GRADE UNLESS OTHERWISE INDICATED ON PLANS.
4. GRADE MAIN TO AVOID USE OF AIR VALVES.
5. MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN MAINS AND SANITARY SEWERS.
6. CONSTRUCT ALL CROSSINGS WITH SANITARY SEWER FACILITIES IN ACCORDANCE WITH THE MOST RECENT VERSION OF APPLICABLE TCEQ STANDARDS.
7. MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN HYDRANTS AND DRIVEWAYS.
8. INSTALL SERVICES SUCH THAT CONSUMER'S LINES DO NOT CROSS DRIVEWAYS.
9. SHALL PROVIDE A CLEAN NEAT AS BUILT DRAWING WITHIN 30 DAYS OF JOB COMPLETION IN BOTH PAPER AND ELECTRONIC (PDF) FORMAT.
10. USE DUCTILE IRON FITTING WITH MECHANICAL JOINT AND MEGALUG PER TEXAS WATER CO STANDARD SPECIFICATIONS ON ALL PIPE REGARDLESS OF PIPE MATERIAL UNLESS OTHERWISE INDICATED ON PLANS.
11. INSTALL ALL APPURTENANCES ON WATER MAIN IN ACCORDANCE WITH APPLICABLE TEXAS WATER CO STANDARD DETAILS.
12. INSTALL TRACER WIRE ON ALL WATER MAINS LOCATED IN COMMERCIAL SUBDIVISIONS AND RESIDENTIAL SUBDIVISIONS WITH URBAN STREET CROSS SECTIONS.
13. MAINTAIN A COPY OF THE STAMPED SET OF PLANS "APPROVED FOR CONSTRUCTION" ON THE JOB SITE AT ALL TIMES.

TCEQ CZP GENERAL CONSTRUCTION NOTES:

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE OR CONSTRUCTION ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN (CZP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.
3. NO HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
4. 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. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
5. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
6. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORM WATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.
8. ALL EXCAVATED MATERIAL THAT WILL BE STORED ON-SITE MUST HAVE PROPER E&S CONTROLS.
9. IF PORTIONS OF THE SITE WILL HAVE A CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
    - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
    - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THIS SITE; AND
    - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
11. THE HOLDER OF ANY APPROVED CZP MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES (BMPS) OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
    B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE APPROVED CONTRIBUTING ZONE PLAN.

AUSTIN REGIONAL OFFICE
12100 PARK 35 CIRCLE, BLDG A
AUSTIN, TX 78753-1808
PHONE (512) 339-2929
FAX (512) 339-3795

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TX 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

GENERAL PAVING NOTES:

1. PAVEMENT SUBGRADE PREPARATION AND PAVEMENT DESIGN SHOULD BE IN MINIMUM CONFORMANCE WITH THE SOILS REPORT BY THE INTEC PROJECT/REPORT NUMBER S201370 DATED DECEMBER 10, 2020. IF DISCREPANCIES EXIST BETWEEN THE REPORT AND THE CONSTRUCTION DRAWINGS, THE MORE STRINGENT WILL APPLY, BUT MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER. THE LAB TEST WILL BE A NUCLEAR DENSITY TEST PREFORMED EVERY 150 FEE.

GEOTECHNICAL REPORT:

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS
CANYON RANCH SUBDIVISION
COMAL COUNTY, TEXAS
REPORT FOR GRAM VIKAS PARTNERS, INC
DECEMBER 10, 2020
BY INTEC OF SAN ANTONIO, LP.
12028 RADIUM
SAN ANTONIO, TX 78216

SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE, INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.0	-	6.00	NO	*	2.07
RESIDENTIAL COLLECTOR	3.00	-	18.50	NO	*	3.91
	3.00	-	15.50	YES	*	3.95
	3.00	-	-	NO	*	4.04

SUMMARY OF RECOMMENDED OPTIONS - RIDGID PAVEMENT**

STREET CLASSIFICATION	REINFORCED CONCRETE, INCHES	SUBGRADE THICKNESS, INCHES
RESIDENTIAL LOCAL (NO BUS TRAFFIC)	6.00	-
RESIDENTIAL COLLECTOR	10.00	-

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT

SUBGRADE NOTE (*):

1. CUT AND FILL DATA ARE NOT AVAILABLE AT THIS TIME.
2. BASED ON THE THICKNESS OF THE CLAYS ENCOUNTERED IN THE BORINGS, WE ANTICIPATE THE FINAL PAVEMENT SUBGRADE PLASTICITY INDEX VALUE TO BE LESS THAN 20. SUBGRADE TREATMENT/ STABILIZATION IS NOT NEEDED IF THE PLASTICITY INDEX VALUES ARE LESS THAN OR EQUAL TO 20.
3. HOWEVER, IF THE FINAL PAVEMENT SUBGRADE PLASTICITY INDEX VALUES ARE GREATER THAN 20, THEN THE FOLLOWING OPTION MAY BE FOLLOWED:
   3.1. THE CLAYS MAY BE REMOVED TO EXPOSE STRATUM II SOILS AT THE PAVEMENT SUBGRADE ELEVATION AND REPLACE WITH ON-SITE MILLED MATERIAL FILL (PLASTICITY INDEX VALUES ARE 20 OR LESS).
   3.2. IF THICKER CLAY SECTIONS ARE ENCOUNTERED OR IF THE CLAYEY FILL MATERIAL IS USED TO RAISE THE GRADE, PLEASE CONTACT INTEC TO EVALUATE THE SUBGRADE CONDITIONS AND PROVIDE RECOMMENDATIONS.
4. IF FILL IS USED TO RAISE THE GRADE, APPROVED FILL MATERIAL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 5.0 AND PLASTICITY INDEX VALUES OF 20 OR LESS. ANY STRATUM I CLAYS (ANY CLAYS WITH PLASTICITY INDEX VALUES GREATER THAN 20) SHOULD BE REMOVED PRIOR TO FILL PLACEMENT. THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN DIAMETER. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.

GENERAL NOTES (**):

1. INPUT PARAMETERS USED IN PAVEMENT SECTION CALCULATIONS ARE SHOWN IN TABLE NOS. 5A &5B. PLEASE CALL US TO PROVIDE PAVEMENT RECOMMENDATIONS, IF NEEDED, FOR DIFFERENT INPUT VALUES.
2. IF REPETITIVE TRUCK OR HEAVY TRUCK TRAFFIC IS ANTICIPATED, PLEASE CONTACT US FOR REVISED PAVEMENT RECOMMENDATIONS.
3. PAVEMENT SECTION RECOMMENDATIONS ARE BASED ON A SUBGRADE CBR VALUE OF 3.0. THE PAVEMENT RECOMMENDATIONS ARE NOT BASED ON THE SHRINK/ SWELL CHARACTERISTICS OF THE UNDERLYING SOILS.
4. IF WATER IS ALLOWED TO GET UNDERNEATH THE ASPHALT OR IF MOISTURE CONTENT OF THE BASE OR SUBGRADE CHANGES SIGNIFICANTLY, THEN THE PAVEMENT DISTRESS WILL OCCUR. MOISTURE PENETRATION UNDERNEATH THE ASPHALT PAVEMENT SURFACE MAY BE REDUCED BY INSTALLING A VERTICAL MOISTURE BARRIER, SUCH AS DEEPER CURBS; CURBS EXTENDING A MINIMUM OF 6 INCHES INTO SUBGRADE.

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS FOR CANYON RANCH UNIT 4
SPRING BRANCH, TEXAS
REPORT FOR LENNAR
OCTOBER 22, 2024
BY PROFESSIONAL SERVICE INDUSTRIES, INC
REPORT NUMBER: 0312-3287-1R

SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE, INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.5	-	7.00	NO	*	*

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: RRA
REVIEWED BY: SSM
DRAWN BY: RRA

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

GENERAL NOTES

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C00.01

MATCH LINE - SEE SHEET C00.11

TEMPORARY CULVERT
REFERENCE CANYON RANCH
UNIT 1 PLANS BY BGE, INC.

EXISTING CANYON
RANCH UNIT 3

ALMERIA AVENUE

LOGRONO COVES

FUTURE CANYON
RANCH UNIT 10

FUTURE UNIT 10 BOUNDARY
CANYON RANCH UNIT 4 BOUNDARY

CANYON RANCH
UNIT 4

CANYON RANCH UNIT 4 BOUNDARY
EXISTING UNIT 3 BOUNDARY

JURISDICTIONAL
WATERS OF THE US

EXISTING CANYON
RANCH UNIT 3

CANYON RANCH UNIT 4 BOUNDARY
EXISTING UNIT 1 BOUNDARY

CANYON LOOP

EXISTING VACUUM
STATION

JURISDICTIONAL
WATERS OF THE US

EXISTING CANYON
RANCH UNIT 1 POND

PROPERTY BOUNDARY

CANYON RANCH 400 LP
4.38 AC
DOC. NO. 202106065547
O.P.R.C.C.T.

20' GVTC TELE ESM'T
9806000146, O.R.C.C

MYSTIC SHORES 12, LOT 1408
PROPERTY ID: 138169
CURTIS & JACQUELINE MAGEE

MYSTIC SHORES 12, LOT 1407
PROPERTY ID: 138168
THOMAS & LORI TYE TRUST 7-19-22

MYSTIC SHORE U-12
DOC. # 2005060101160, M.P.R.C.C.

MYSTIC SHORES 12, LOT 1406
PROPERTY ID: 138167
JOHN & THERESA HALL

MYSTIC SHORES 12, LOT 1405
PROPERTY ID: 138166
JUSTIN & SARA MEIER

CANYON RANCH 400 LP
4.38 AC
DOC. NO. 202106065547
O.P.R.C.C.T.

MYSTIC SHORES 12, LOT 1404
PROPERTY ID: 138165
ANNA GOODWIN

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS
- WW EXISTING WASTEWATER
- W EXISTING WATER
- SS EXISTING STORM DRAIN

REV	DESCRIPTION	DATE	APR

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DRAWN BY: RRA

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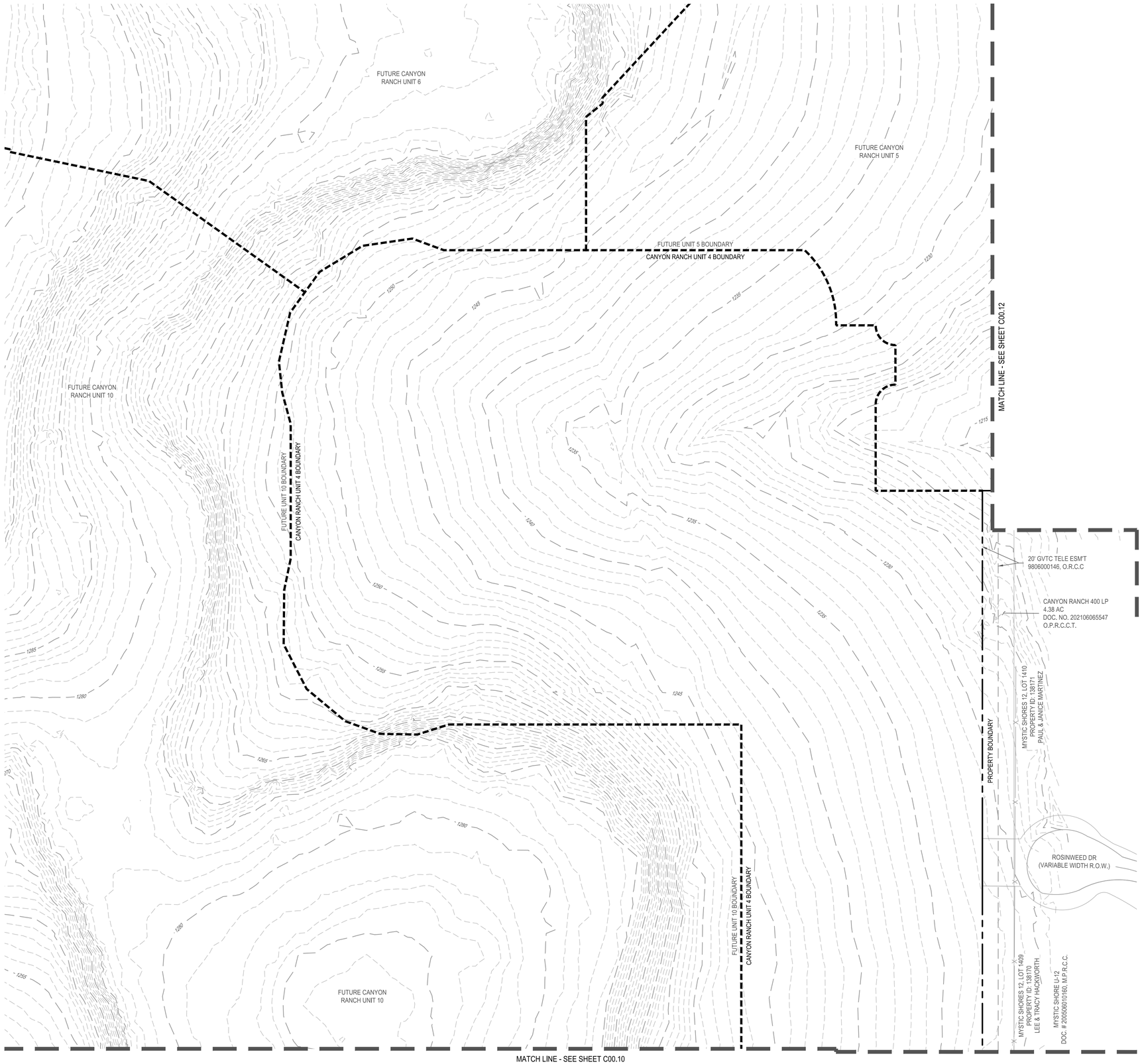
CANYON RANCH UNIT 4
EXISTING CONDITIONS SURVEY (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C00.10

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C00.10 - EXISTING CONDITIONS SURVEY.dwg Layout: C00.10 EXISTING CONDITIONS SURVEY (SHEET 1 OF 3) Plotted: 11/7/2024 9:29:08 AM By: Arath



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

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- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS
- EXISTING WASTEWATER
- EXISTING WATER
- EXISTING STORM DRAIN

REV	DESCRIPTION	DATE	APR

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REVIEWED BY: SSM

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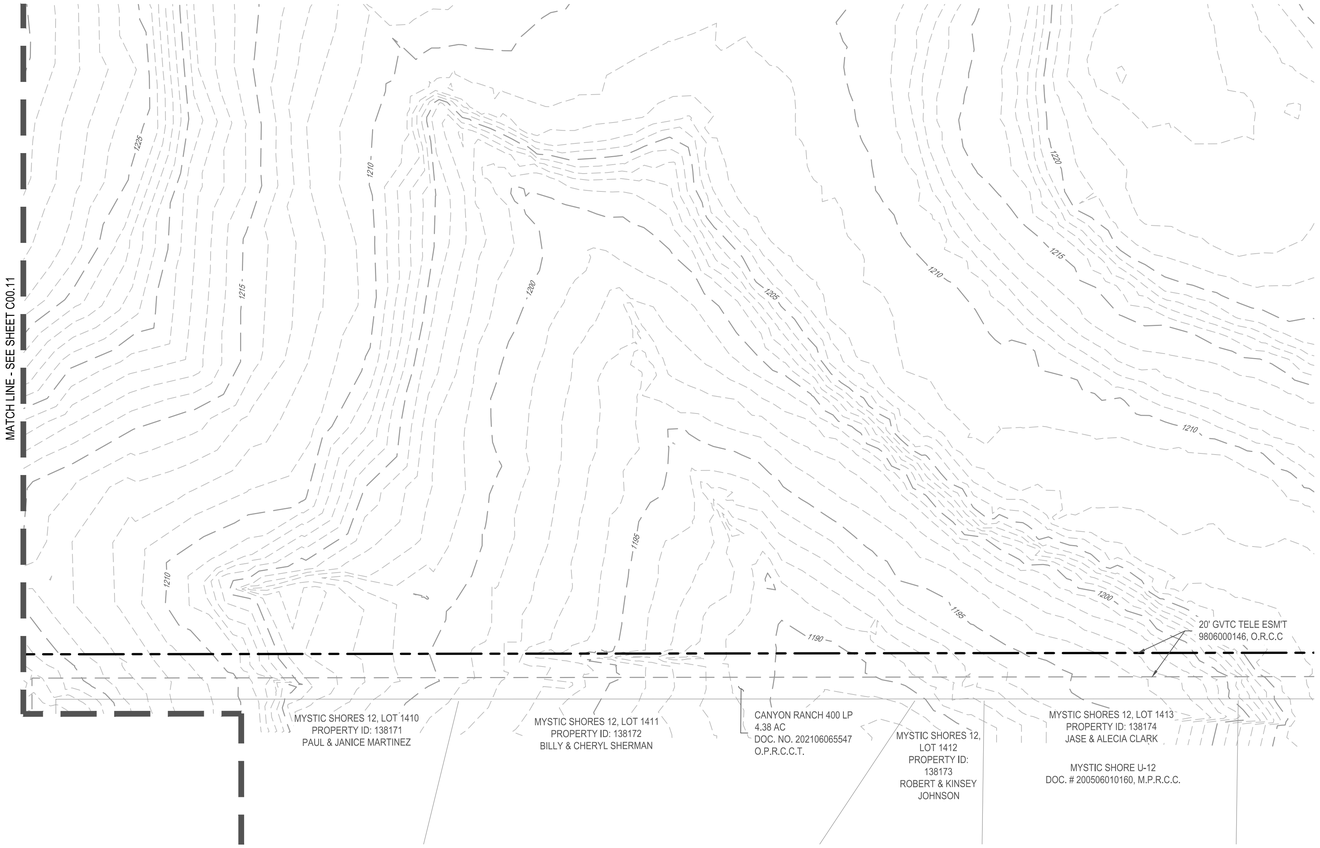
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

EXISTING CONDITIONS SURVEY (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C00.11



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SCALE: 1" = 60'

LEGEND

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- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS
- EXISTING WASTEWATER
- EXISTING WATER
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REV	DESCRIPTION	DATE	APR

DESIGNED BY: RRA

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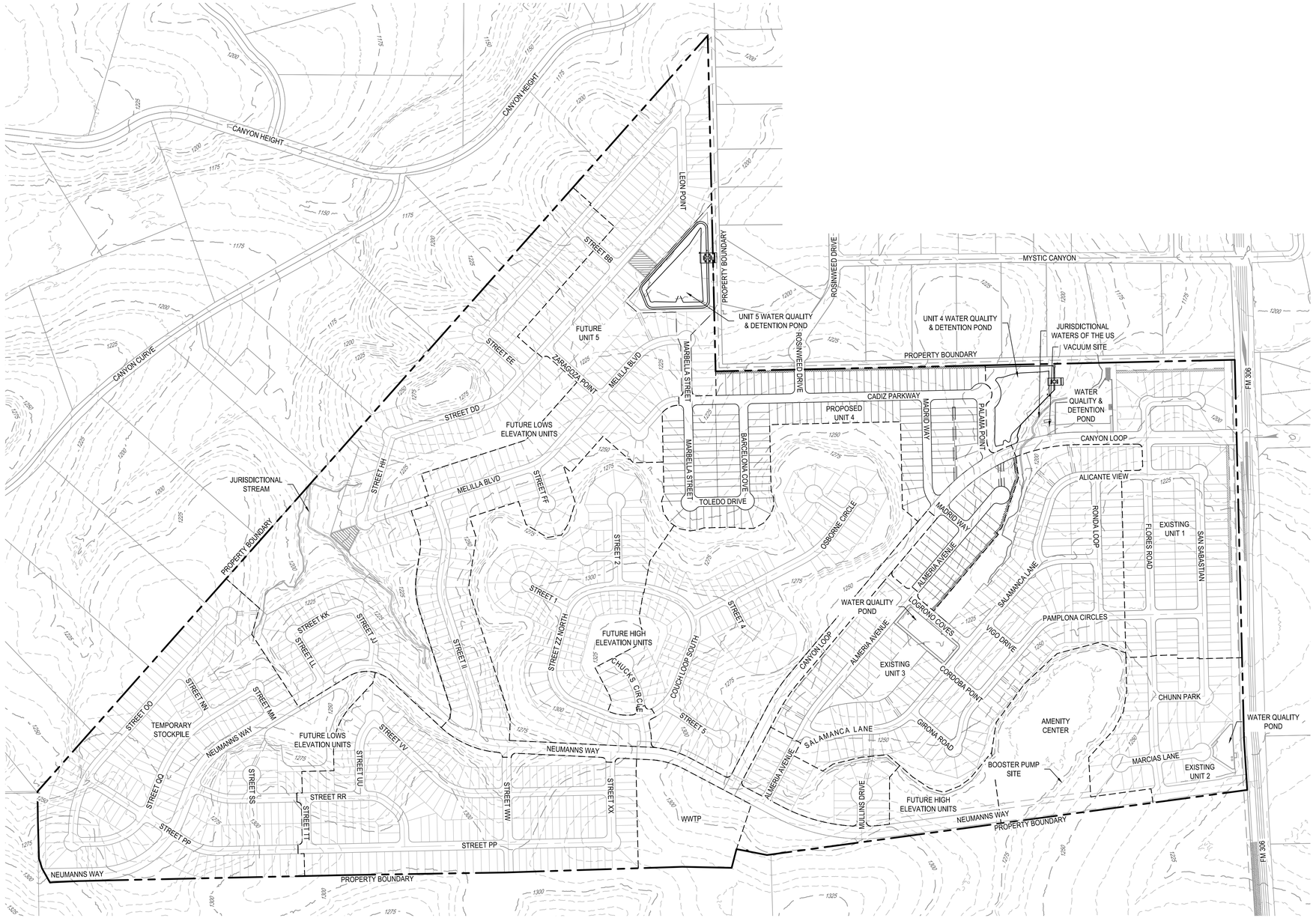
CANYON RANCH UNIT 4

EXISTING CONDITIONS SURVEY
(SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C00.12



0 150' 300' 600'

SCALE: 1" = 300'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT

GENERAL SITE PLAN NOTES

1. THIS DEVELOPMENT SHALL COMPLY WITH THE COMAL COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL AND THE DEVELOPMENT MANUAL.
2. THIS SITE PLAN SHALL MEET THE COMAL COUNTY STORM WATER REQUIREMENTS.
3. A HOMEOWNER'S ASSOCIATION WILL BE ESTABLISHED FOR THIS DEVELOPMENT.
4. WATER SERVICE IS TO BE PROVIDED BY THE TEXAS WATER COMPANY.
5. ALL ROADS WILL BE PUBLICLY OWNED
6. ELECTRIC SERVICE TO BE PROVIDED BY PEDERNALES ELECTRIC COOPERATIVE.
7. SANITARY SEWER SERVICE IS TO BE PROVIDED BY CANYON RANCH MUD OF COMAL COUNTY.
8. NO PORTION OF THIS SUBDIVISION IS WITHIN SPECIAL FLOOD HAZARD ZONE AS DELINEATED ON THE FLOOD INSURANCE MAP (FIRM) FOR COMAL COUNTY, TEXAS ON MAP NUMBER 48091C0080F RESPECTIVELY, DATED SEPTEMBER 9, 2009 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
9. DURING THE BUILDING PERMIT STAGE, THE INDIVIDUAL HOME BUILDER/OWNER SHALL BE RESPONSIBLE FOR CONSTRUCTION OF A 4' CONCRETE SIDEWALK ALONG THE FRONTAGE OF THE INDIVIDUAL LOT. THE DEVELOPER OF THIS PROJECT SHALL BE RESPONSIBLE FOR CONSTRUCTION OF CONCRETE SIDEWALK AT COMMON AREAS, DRAINAGE EASEMENT, AND ALL OTHER AREAS WHERE SIDEWALK IS REQUIRED TO BE CONSTRUCTED(SEE TYPICAL STREET SECTION FOR PLACEMENT OF SIDEWALK)
10. MAINTENANCE OF DRAINAGE EASEMENTS DESIGNATED WITH IN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, ANY USE, OF ANY EASEMENT, OR ANY PORTION OF IT, INCLUDING LANDSCAPING OR DRAINAGE FEATURES IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS OF IN THE EASEMENT, MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE EASEMENT TO THE UTILITIES, IT'S SUCCESSORS AND ASSIGNS, AND SHALL BE SUBJECT TO APPLICABLE PERMIT REQUIREMENTS OF HAYS COUNTY OR ANY OTHER GOVERNING BODY. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE UTILITIES TO UTILIZE THE EASEMENT, OR ANY PART OF IT.
11. ALL STREETS WITHIN THE CANYON RANCH SUBDIVISION WILL BE BUILT TO THE COMAL COUNTY SPECIFICATIONS AND WILL BE DEDICATED TO THE COUNTY UPON COMPLETION AND ACCEPTANCE.
12. CONTRACTOR SHALL REFER TO THE RECOMMENDATIONS CONTAINED WITHIN THE GEOTECHNICAL INVESTIGATION REPORTS PREPARED BY INTEC (PROJECT NO. S201370) & PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0312-3287).

UTILITIES:

- WATER PROVIDED BY: THE TEXAS WATER COMPANY
- WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
- ELECTRIC: PEDERNALES ELECTRIC COOPERATIVE

DEVELOPER:
LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

ENGINEER:
BGE INC.
7330 SAN PEDRO AVENUE, SUITE 202
SAN ANTONIO, TX 78216
PHONE: 210-581-3600

TOTAL ACREAGE: 30.698 ACRES

*COMAL COUNTY TO APPROVE, INSPECT, AND MAINTAIN ALL ROADWAY PAVEMENT

NOTE: SEE PLAT FOR EASEMENT DIMENSIONS & BUILDING SETBACKS

NOTE: REFERENCE C01.00 FOR REPORT INFORMATION AND ADDITIONAL NOTES.

UNIT 4 PROJECT LAND SUMMARY	
SITE ACREAGE	30.7 AC.
SINGLE FAMILY RESIDENTIAL LOTS:	177
LOCAL STREET (LF):	5,375 LF
COLLECTOR STREET (LF):	584 LF
DENSITY (LOT/AC):	5.77 LOT/AC

STREET CLASSIFICATION TABLE		
STREET NAME	CLASSIFICATION	LF
ALMERIA AVE	LOCAL STREET	734
BARCELONA COVE	LOCAL STREET	570
CADIZ PKWY	LOCAL STREET	1,693
CANYON LOOP	COLLECTOR STREET	584
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MARBELLA STREET	LOCAL STREET	620
PALAMA POINT	LOCAL STREET	391
ROSINWEED DRIVE	LOCAL STREET	217
TOLEDO DRIVE	LOCAL STREET	310

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: RRA
REVIEWED BY: SSM
DRAWN BY: RRA

BGE
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San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

OVERALL SITE PLAN

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C01.00

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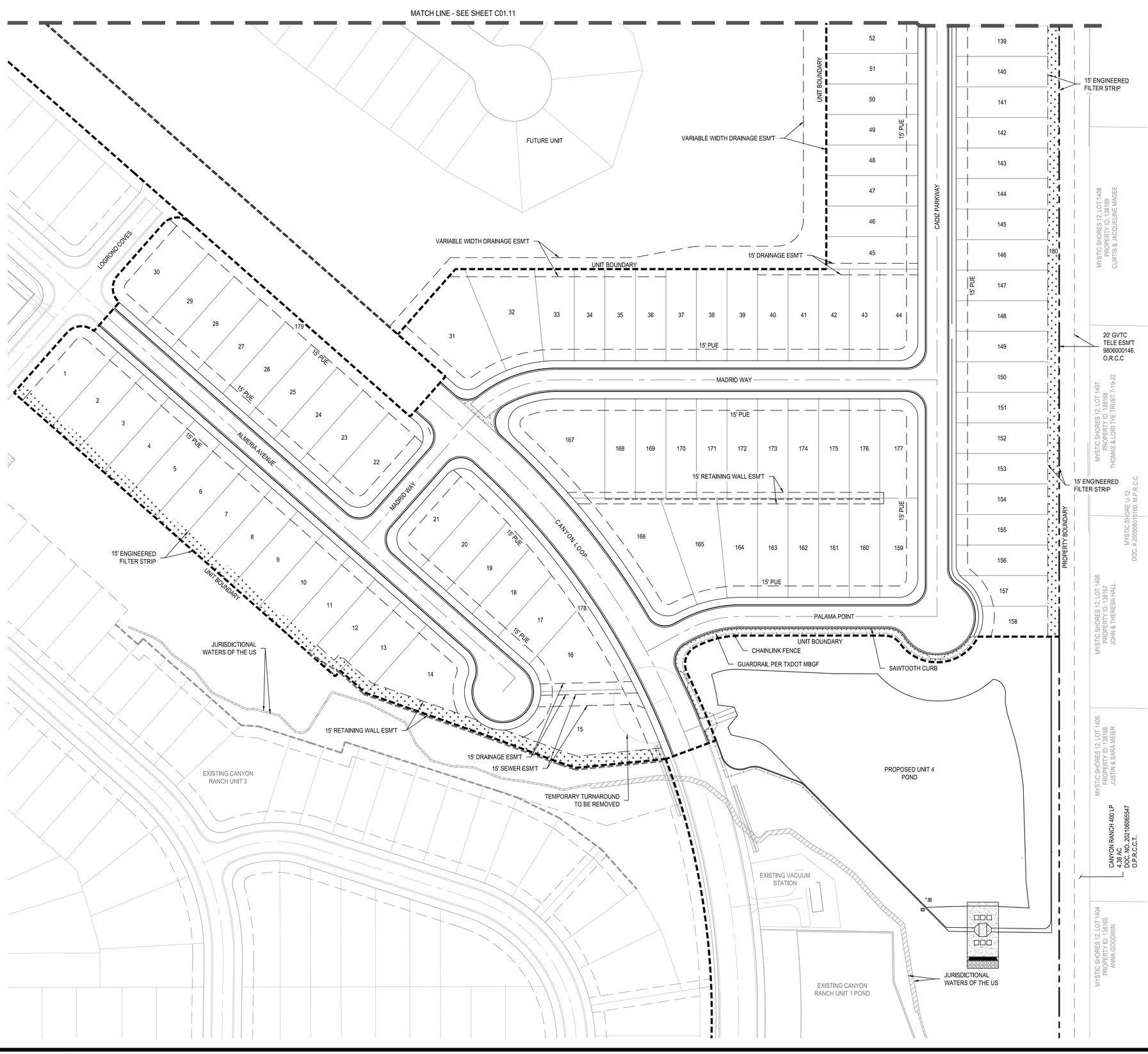

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- CONTRACTOR SIDEWALK
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- WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
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DEVELOPER:
LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

ENGINEER:
BGE INC.
7330 SAN PEDRO AVENUE, SUITE 202
SAN ANTONIO, TX 78216
PHONE: 210-581-3600

TOTAL ACREAGE: 30.698 ACRES

*COMAL COUNTY TO APPROVE, INSPECT, AND MAINTAIN ALL ROADWAY PAVEMENT

NOTE: SEE PLAT FOR EASEMENT DIMENSIONS & BUILDING SETBACKS

NOTE: REFERENCE C01.00 FOR REPORT INFORMATION AND ADDITIONAL NOTES.

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PALAMA POINT	LOCAL STREET	391
ROSINWEED DRIVE	LOCAL STREET	217
TOLEDO DRIVE	LOCAL STREET	310

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ####
REVIEWED BY: ####
DRAWN BY: ####

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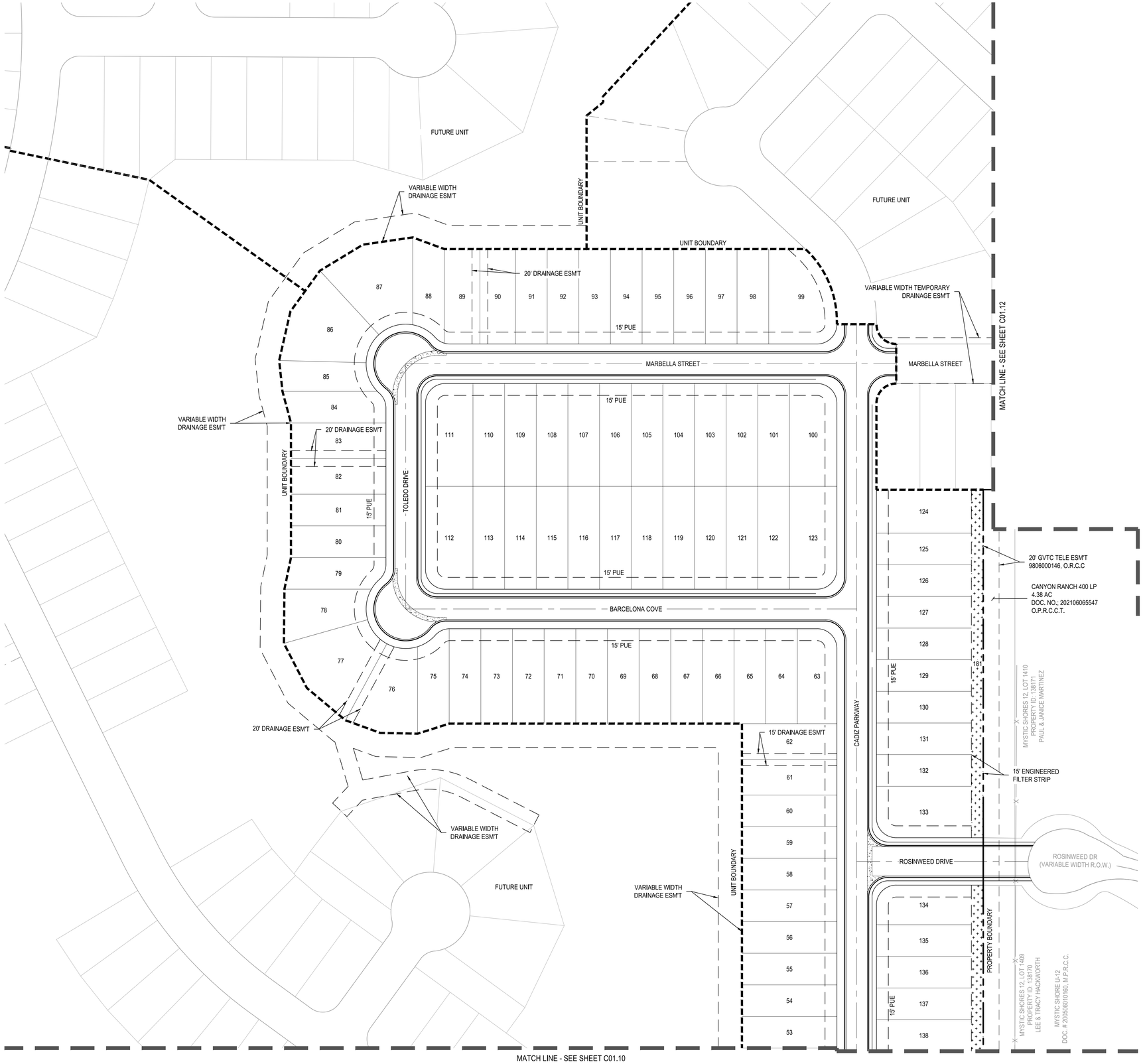
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetexas.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

DETAILED SITE PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C01.10



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
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- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET CXX.XX)
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TOTAL ACREAGE: 30.698 ACRES

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DESIGNED BY: ####
REVIEWED BY: ####
DRAWN BY: ####

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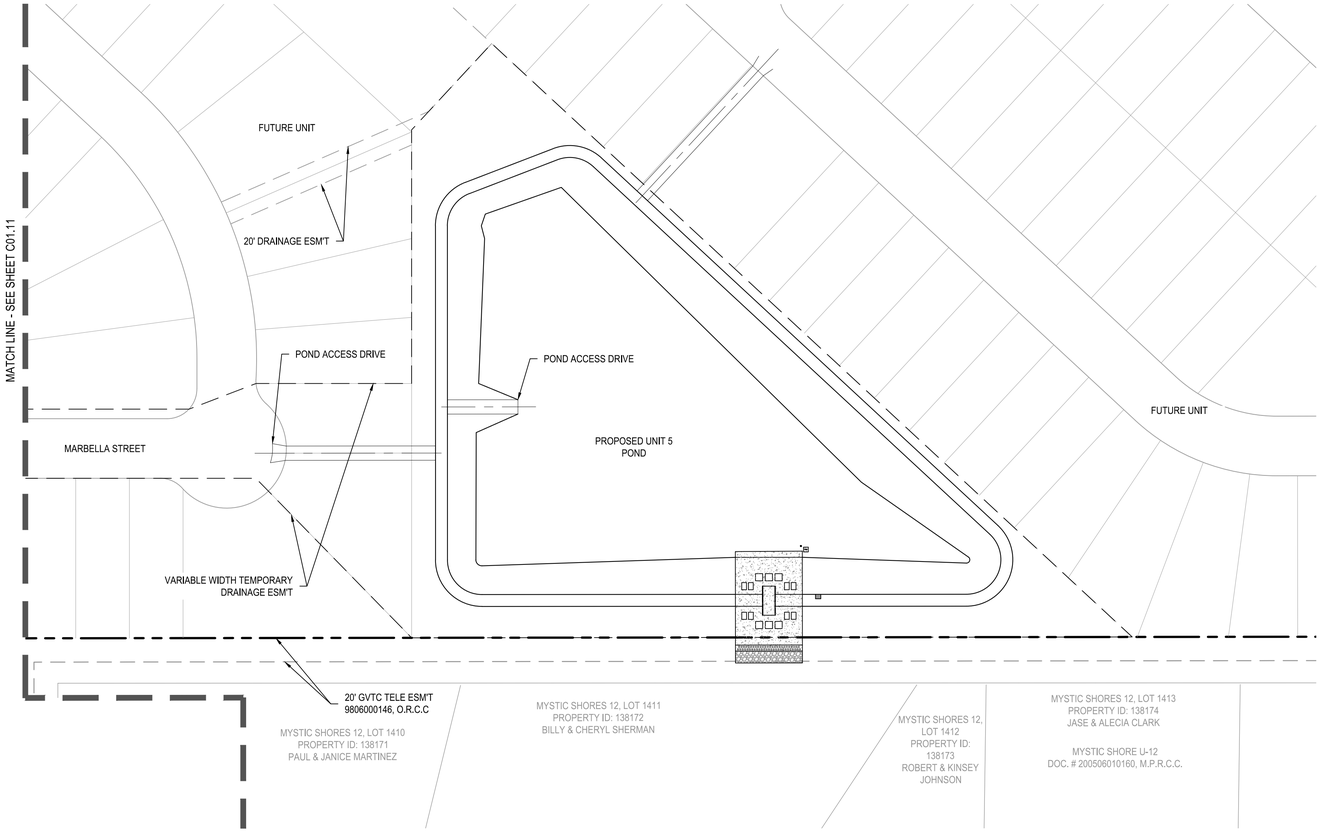
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

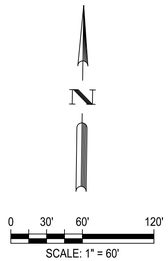
CANYON RANCH UNIT 4

DETAILED SITE PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C01.11





SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET CXX.XX)
- CONCRETE VALLEY GUTTER
- RETAINING WALL
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- 1 LOT NUMBER
- ENGINEERED FILTER STRIP
- JURISDICTIONAL WATERS

GENERAL SITE PLAN NOTES

1. THIS DEVELOPMENT SHALL COMPLY WITH THE COMAL COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL AND THE DEVELOPMENT MANUAL.
2. THIS SITE PLAN SHALL MEET THE COMAL COUNTY STORM WATER REQUIREMENTS.
3. A HOMEOWNER'S ASSOCIATION WILL BE ESTABLISHED FOR THIS DEVELOPMENT.
4. WATER SERVICE IS TO BE PROVIDED BY THE TEXAS WATER COMPANY.
5. ALL ROADS WILL BE PUBLICLY OWNED
6. ELECTRIC SERVICE TO BE PROVIDED BY PEDERNALES ELECTRIC COOPERATIVE.
7. SANITARY SEWER SERVICE IS TO BE PROVIDED BY CANYON RANCH MUD OF COMAL COUNTY.
8. NO PORTION OF THIS SUBDIVISION IS WITHIN SPECIAL FLOOD HAZARD ZONE AS DELINEATED ON THE FLOOD INSURANCE MAP (FIRM) FOR COMAL COUNTY, TEXAS ON MAP NUMBER 48091C0080F RESPECTIVELY, DATED SEPTEMBER 9, 2009 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
9. DURING THE BUILDING PERMIT STAGE, THE INDIVIDUAL HOME BUILDER/OWNER SHALL BE RESPONSIBLE FOR CONSTRUCTION OF A 4' CONCRETE SIDEWALK ALONG THE FRONTAGE OF THE INDIVIDUAL LOT. THE DEVELOPER OF THIS PROJECT SHALL BE RESPONSIBLE FOR CONSTRUCTION OF CONCRETE SIDEWALK AT COMMON AREAS, DRAINAGE EASEMENT, AND ALL OTHER AREAS WHERE SIDEWALK IS REQUIRED TO BE CONSTRUCTED(SEE TYPICAL STREET SECTION FOR PLACEMENT OF SIDEWALK)
10. MAINTENANCE OF DRAINAGE EASEMENTS DESIGNATED WITH IN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, ANY USE, OF ANY EASEMENT, OR ANY PORTION OF IT, INCLUDING LANDSCAPING OR DRAINAGE FEATURES IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS OF IN THE EASEMENT, MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE EASEMENT TO THE UTILITIES, IT'S SUCCESSORS AND ASSIGNS, AND SHALL BE SUBJECT TO APPLICABLE PERMIT REQUIREMENTS OF HAYS COUNTY OR ANY OTHER GOVERNING BODY. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE UTILITIES TO UTILIZE THE EASEMENT, OR ANY PART OF IT.
11. ALL STREETS WITHIN THE CANYON RANCH SUBDIVISION WILL BE BUILT TO THE COMAL COUNTY SPECIFICATIONS AND WILL BE DEDICATED TO THE COUNTY UPON COMPLETION AND ACCEPTANCE.
12. CONTRACTOR SHALL REFER TO THE RECOMMENDATIONS CONTAINED WITHIN THE GEOTECHNICAL INVESTIGATION REPORTS PREPARED BY INTEC (PROJECT NO. S201370) & PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0312-3287).

UTILITIES:

- WATER PROVIDED BY: THE TEXAS WATER COMPANY
- WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
- ELECTRIC: PEDERNALES ELECTRIC COOPERATIVE

DEVELOPER:
LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

ENGINEER:
BGE INC.
7330 SAN PEDRO AVENUE., SUITE 202
SAN ANTONIO, TX 78216
PHONE: 210-581-3600

TOTAL ACREAGE: 30.698 ACRES

*COMAL COUNTY TO APPROVE, INSPECT, AND MAINTAIN ALL ROADWAY PAVEMENT

NOTE: SEE PLAT FOR EASEMENT DIMENSIONS & BUILDING SETBACKS

NOTE: REFERENCE C01.00 FOR REPORT INFORMATION AND ADDITIONAL NOTES.

UNIT 4 PROJECT LAND SUMMARY	
SITE ACREAGE	30.7 AC.
SINGLE FAMILY RESIDENTIAL LOTS:	177
LOCAL STREET (LF):	5,375 LF
COLLECTOR STREET (LF):	584 LF
DENSITY (LOT/AC):	5.77 LOT/AC

STREET CLASSIFICATION TABLE		
STREET NAME	CLASSIFICATION	LF
ALMERIA AVE	LOCAL STREET	734
BARCELONA COVE	LOCAL STREET	570
CADIZ PKWY	LOCAL STREET	1,693
CANYON LOOP	COLLECTOR STREET	584
MADRID WAY	LOCAL STREET	841
MARBELLA STREET	LOCAL STREET	620
PALAMA POINT	LOCAL STREET	391
ROSINWEED DRIVE	LOCAL STREET	217
TOLEDO DRIVE	LOCAL STREET	310

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ####
REVIEWED BY: ####
DRAWN BY: ####

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

DETAILED SITE PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C01.12

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- LIMITS OF CONSTRUCTION
- SILT FENCE
- SILT FENCE/LIMITS OF CONSTRUCTION
- FLOW ARROW
- CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT AREA
- CONSTRUCTION STAGING AREA
- INLET PROTECTION
- ROCK BERM
- J HOOKS
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS OF THE US
- PROPOSED RETAINING WALL

NOTES:

1. INTERIM OR FINAL GRADING MUST BE COMPLETED PRIOR TO SEEDING, MINIMIZING ALL STEEP SLOPES.
2. FERTILIZER SHOULD BE APPLIED AT THE RATE OF 40 POUNDS OF NITROGEN AND 40 POUNDS OF PHOSPHORUS PER ACRE. COMPOST CAN BE USED INSTEAD OF FERTILIZER AND APPLIED AT THE SAME TIME AS THE SEED.
3. ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDED OR OTHERWISE STABILIZED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE TEMPORARY CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 21 DAYS.
4. ADD J HOOKS PER CITY OF AUSTIN DETAIL ALONG THE SILT FENCE.
5. A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MUST BE PREPARED/AMENDED BY A TX PE, CPESC, OR QPSWPPP [CITY CODE SECTION 86.529(B)(2) OR 86.529(C)(3)]. IMPLEMENTED, AND UPDATED TO MATCH SITE CONDITIONS DURING THE PROJECT. THE ASSOCIATED TPDES CONSTRUCTION SITE NOTICE MUST BE POSTED IN PUBLIC VIEW, TXR150000 PART III.D.2.
6. HAVE A CISEC, CESSWI, OR QCIS CONDUCT WEEKLY SWPPP INSPECTIONS AND DOCUMENT PER CITY CODE SECTIONS 86.523 AND 86.529(B)(9) OR 86.529(C)(10). MAINTAIN ALL ESC MEASURES AND ADDRESS ALL IDENTIFIED CORRECTIVE ACTIONS PER CITY CODE SECTION 86.529(C)(11).
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8. PER TXR150000 PART III.F.1.(M),, LOCATIONS OF THE FOLLOWING, AS APPLICABLE, MUST BE MARKED ON THIS ESCP IN THE FIELD: THE TPDES CONSTRUCTION SITE NOTICE POSTING IN PUBLIC VIEW, STAGING, SPOILS STORAGE, CONCRETE WASHOUT, DUMPSTERS, PORTABLE TOILET(S), FUELING POINT(S), AND/OR OTHER POTENTIAL CONTAMINANT SOURCES, THIS ESCP MUST ALSO BE UPDATED AS THESE POTENTIAL CONTAMINANT SOURCES MOVE OR OTHER CHANGES OCCUR ONSITE, PEN AND INK CHANGES ARE EXPECTED AND DON'T REQUIRE RESUBMITTAL; JUST DATE AND INITIAL.
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	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

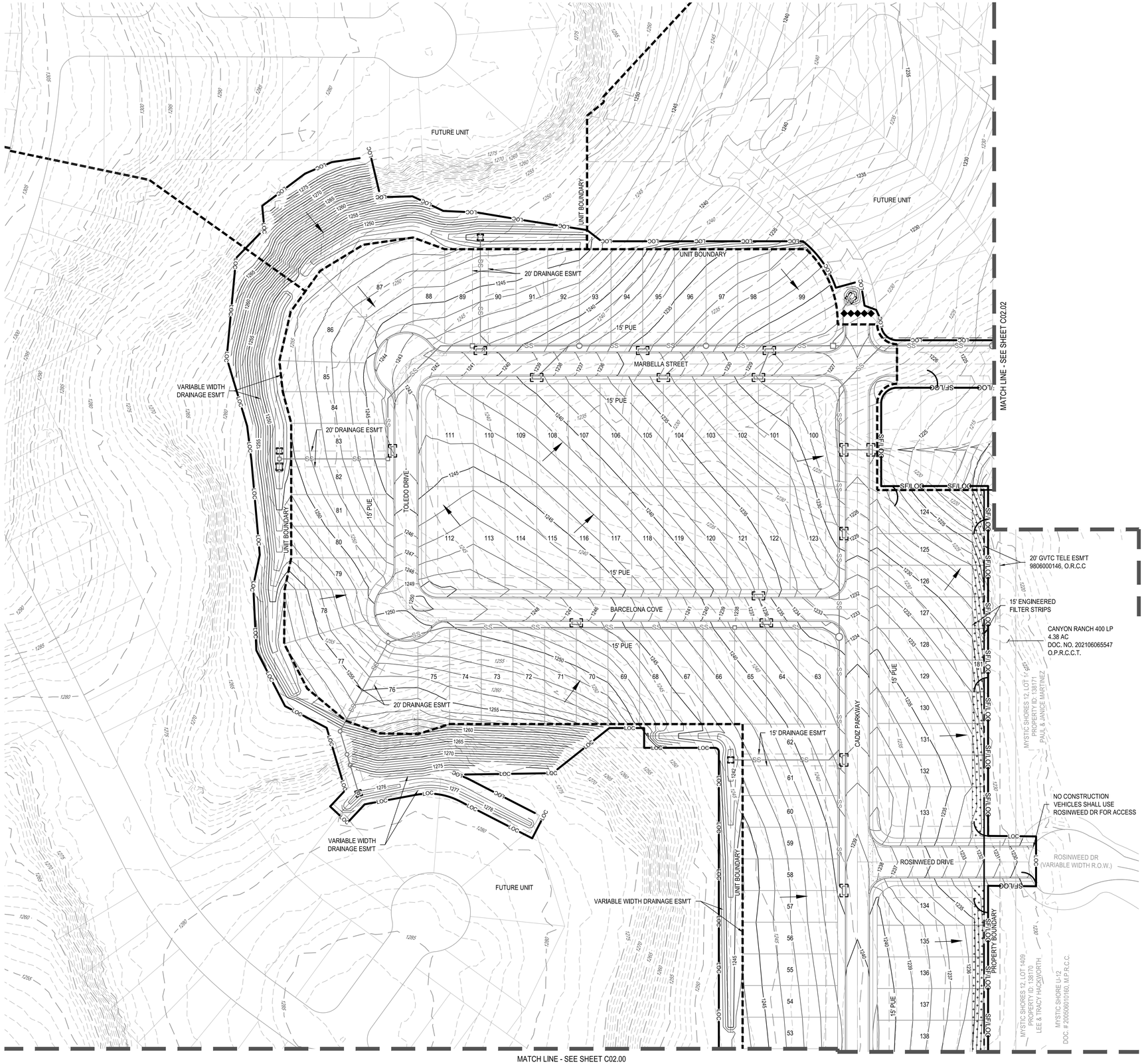
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.brwengtgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
EROSION & SEDIMENTATION CONTROL PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C02.00



0 30' 60' 120'

SCALE: 1" = 60'

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- UNIT BOUNDARY
- EASEMENT
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- EXISTING MAJOR CONTOUR
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							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

BGE

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

EROSION & SEDIMENTATION CONTROL PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C02.01

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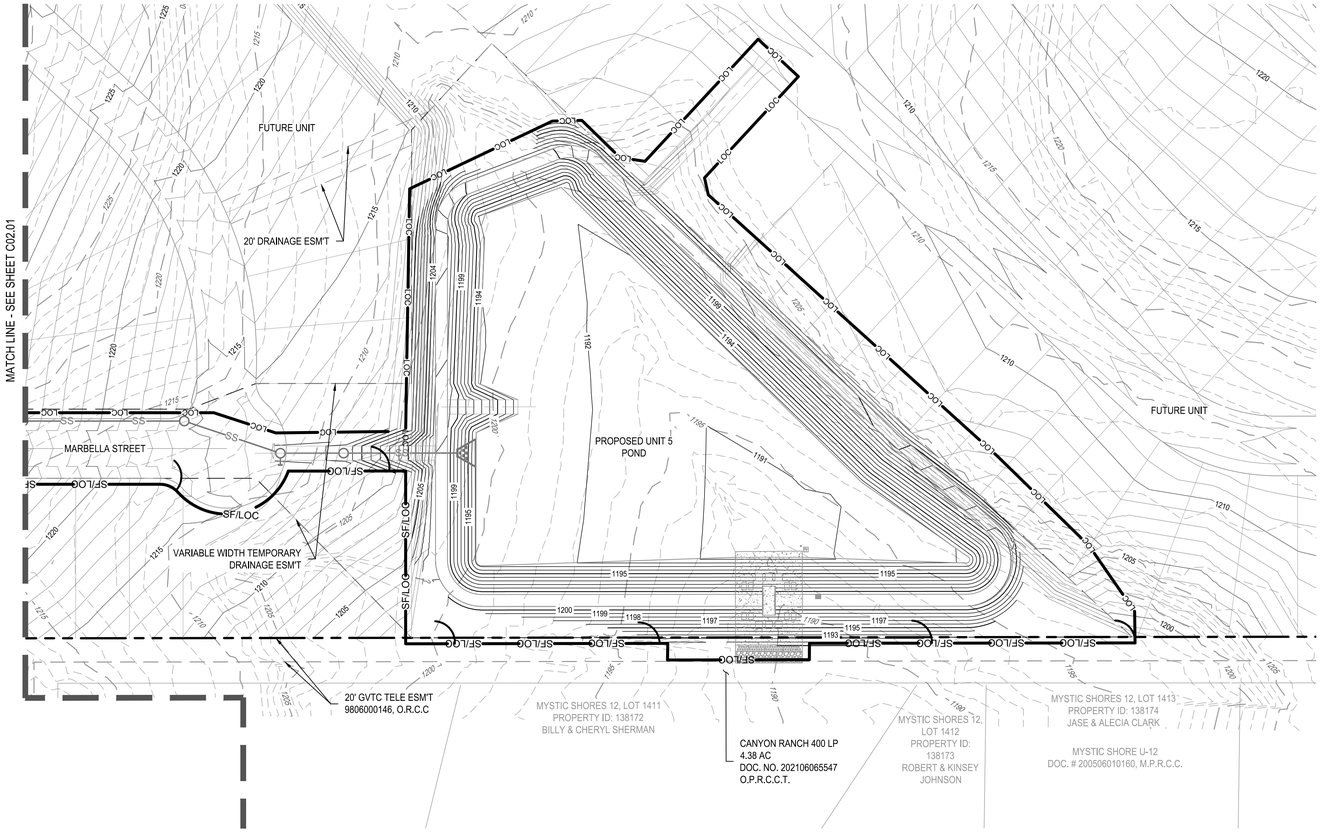

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- LOC LOC LIMITS OF CONSTRUCTION
- SF SF SILT FENCE
- SF/LOC SF/LOC SILT FENCE/LIMITS OF CONSTRUCTION
- FLOW ARROW
- CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT AREA
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DESIGNED BY: LNH
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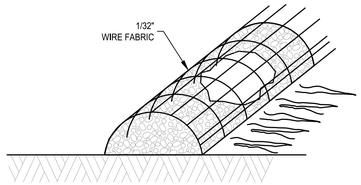
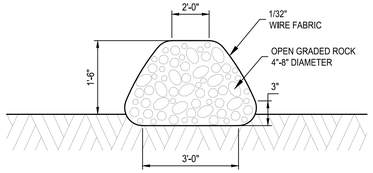
CANYON RANCH UNIT 4
EROSION & SEDIMENTATION CONTROL PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C02.02



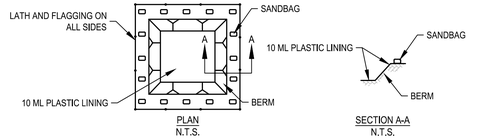


NOTES:

1. USE ONLY OPEN GRADED ROCK 4-8 INCHES DIAMETER FOR STREAM FLOW CONDITION; USE OPEN GRADED ROCK 3-5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 1/32 INCH.
3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 12 INCHES, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED SITE AND IN A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SERVE SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

ROCK BERM DETAIL

N.T.S.



CONCRETE WASHOUT NOTES:

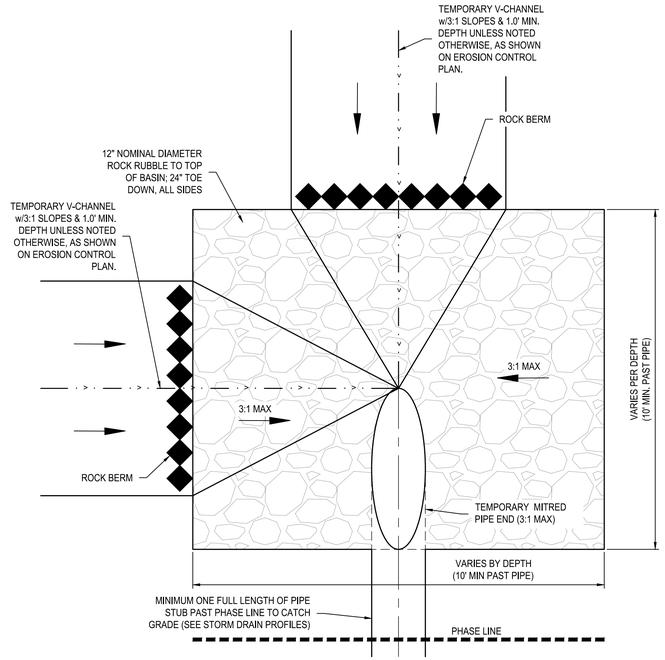
1. THE LINED WASHOUT PIT SHALL BE SUFFICIENTLY LARGE ENOUGH TO HOLD EXPECTED VOLUME OF WASHOUT MATERIAL.
2. WHEN FACILITY IS NO LONGER REQUIRED, HARDENED CONCRETE SHALL PROPERLY REMOVED AND DISPOSED OF.
3. CONTRACTOR TO BACKFIELD PIT UPON REMOVAL OF LINING.

SAND BAG NOTES:

1. THE SAND BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC. MINIMUM UNIT WEIGHT 4 OZ/YD2, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 TO 30 INCHES, WIDTH SHOULD BE 16 TO 18 INCHES AND THICKNESS SHOULD BE 6 TO 8 INCHES.
3. SANDBAGS SHOULD BE FILLED WITH COARSE GRADE SAND, FREE FROM DELETERIOUS MATERIAL. ALL SAND SHOULD PASS THROUGH A NO. 10 SIEVE. THE FILLED BAG SHOULD HAVE AN APPROXIMATE WEIGHT OF 40 POUNDS.
4. OUTLET PIPE SHOULD BE SCHEDULE 40 OR STRONGER POLYVINYL CHLORIDE (PVC) HAVING A NOMINAL INTERNAL DIAMETER OF 4 INCHES.

IN-GROUND CONCRETE WASHOUT PIT DETAIL

N.T.S.



TEMPORARY V-CHANNEL & HEADWALL

N.T.S.

COMPLIANCE CHECKLIST:

1. PERIMETER CONTROLS: INSTALL ESC'S (EROSION SEDIMENT CONTROLS) ALONG THE BACK OF THE CURB AND ALONG THE LOT LINE OF ADJACENT PROPERTIES, WHICH ARE DOWNHILL AND RECEIVE RUNOFF FROM YOUR LOT. FOLLOWING SIDEWALK INSTALLATION, ESC'S SHOULD BE REMOVED TO THE BACK OF THE SIDEWALK TO PREVENT SEDIMENT FROM REACHING THE SIDEWALK. MAINTAIN ESC'S TO ENSURE PROPER FUNCTION, INCLUDING REPAIR OR REPLACEMENT OF TORN, DEGRADED OR OTHERWISE INEFFECTIVE MATERIALS. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE PROTECTION.
2. STOCKPILES: INSTALL SEDIMENT CONTROLS AROUND STOCKPILES TO PREVENT SEDIMENT FROM REACHING THE STREET AND ADJACENT PROPERTIES. LOCATE STOCKPILES AWAY FROM THE STREET, PROPERTY LINES AND DRAINAGE WAYS.
3. LOT ACCESS: REQUIRED FOR EACH INDIVIDUAL LOT. MAINTAIN A SURFACE SUITABLE FOR PARKING AND UNLOADING TO PREVENT THE TRACKING OF MUD AND ROCK ONTO THE STREET. A MINIMUM 6-INCH DEPTH OF 3- TO 5-INCH AGGREGATE IS SUGGESTED. ALL VEHICLES THAT ACCESS THE LOT MUST USE THE CONSTRUCTION ENTRANCE. ANY SOILS THAT ARE TRUCKED ONTO THE STREET MUST BE REMOVED BY THE END OF THE DAY.
4. INTERMEDIATE CONTROL: LONG OR STEEP DRAINAGE PATHS MAY REQUIRE INTERMEDIATE OR INTERIOR ESC'S TO HELP SLOW THE FLOW OF RUNOFF. FAILURE OF PERIMETER CONTROLS DUE TO THE FORCE OF RUNOFF OFTEN DETERMINE THE NEED FOR INTERMEDIATE CONTROLS.
5. HOUSEKEEPING: PROVIDE ADEQUATE SANITARY FACILITIES, TRASH/REFUSE BINS, AND DESIGNATED CONCRETE WASHOUT.

CONTRACTOR/BUILDERS RESPONSIBILITY:

1. INSTALL NEEDED EROSION AND SEDIMENT CONTROL PRACTICES PRIOR TO ANY LAND DISTURBANCE TO PREVENT EXCESSIVE SEDIMENT FROM LEAVING THE SITE.
2. PERIODIC INSPECTION AND MAINTENANCE ARE VITAL TO THE PERFORMANCE OF EROSION AND SEDIMENT CONTROLS. IT IS RECOMMENDED THAT ALL TEMPORARY EROSION CONTROLS BE INSPECTED WEEKLY AND AFTER EVERY RAINFALL.
3. MAINTENANCE: ESC (EROSION SEDIMENT CONTROLS) SHOULD BE ROUTINELY INSPECTED AND MAINTAINED UNTIL SITE IS PERMANENTLY VEGETATED. SOMETIMES ROUTINE INSPECTIONS MAY SHOW A NEED FOR ADJUSTMENTS OR ADDITIONAL ESC'S.
4. SUBMIT A NOTICE OF TERMINATION (NOT) TO THE TCEQ AND LOCAL MS4 WHEN CONSTRUCTION IS COMPLETE.
5. REVEGETATE THE SITE: PREVENT EROSION ON INDIVIDUAL LOTS WITH GROUND COVER. EXISTING TREES AND VEGETATION SHOULD BE PROTECTED TO HELP MAINTAIN A STABLE GROUND SURFACE AND PREVENT LOSS OF VALUABLE TOPSOIL. EROSION CONTROL BLANKETS, MATTING AND MULCHES CAN HELP STABILIZE THE AREA UNTIL PERMANENT VEGETATION IS ESTABLISHED. THE SITE NEEDS TO HAVE AT LEAST 70 PERCENT COVER OF PERMANENT VEGETATION BEFORE ESC'S CAN BE REMOVED.

ENGINEERING FILTER STRIPS

1. THE FILTER STRIP SHOULD EXTEND ALONG THE ENTIRE LENGTH OF THE CONTRIBUTING AREA AND THE SLOPE SHOULD NOT EXCEED 20%. THE MINIMUM DIMENSION OF THE FILER STRIP (IN THE DIRECTION OF FLOW) SHOULD BE NO LESS THAN 15 FEET. THE MAXIMUM WIDTH (IN THE FLOW OF DIRECTION) OF THE CONTRIBUTING IMPERVIOUS AREA SHOULD NOT EXCEED 72 FEET. FOR ROADWAYS WITH A VEGETATED STRIP ALONG BOTH SIDES OF THE TOTAL WIDTH OF THE ROADWAY SHOULD NOT EXCEED 144 FEET.
2. THE MINIMUM VEGETATED COVER FOR ENGINEERED STRIPS IS 80%.
3. THE AREA CONTRIBUTING RUNOFF TO A FILTER STRIP SHOULD BE RELATIVELY FLAT SO THAT THE RUNOFF IS DISTRIBUTED EVENLY TO THE VEGETATED AREA WITHOUT THE USE OF A LEVEL SPREADER.
4. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
5. THE TOP EDGE OF THE FILTER STRIP ALONG THE PAVEMENT WILL BE DESIGNED TO AVOID THE SITUATION WHERE RUNOFF WOULD TRAVEL ALONG THE TOP OF THE FILTER STRIP, RATHER THAN THROUGH IT.
6. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL, OTHERWISE RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT. A LEVEL SPREADER SHOULD NOT BE USED TO DISTRIBUTE RUNOFF TO AND ENGINEERED FILTER STRIP.
7. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.

INTERIM FILTER STRIPS

1. THE FILTER STRIP AREA MUST BE 50% OF THE SIZE OF THE CONTRIBUTING IMPERVIOUS COVER.
2. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL; OTHERWISE, RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT. IF A LEVEL SPREADER IS USED (IS IS ONLY ALLOWED FOR INTERIM USE) TO DISTRIBUTE RUNOFF TO THE FILTER STRIP, IT MUST BE LINED OR BE CONSTRUCTED OF IMPERMEABLE MATERIALS (CONCRETE).
3. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
4. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED AND VEGETATION COVERAGE SHOULD BE AT LEAST 80%.

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C02.20

PLAN VIEW

I. SPACING REQUIREMENTS

DIRECTION OF SURFACE FLOW

100' MAX.

NOTE: SPACING DISTANCES WILL VARY, BUT ARE NOT TO EXCEED 100 FEET.

II. SIZING REQUIREMENTS:

15'R

10'

UP-GRADIENT SILT FENCE AND J-HOOK ARE ONE CONTINUOUS LINE

START DOWN-GRADIENT SILT FENCE LINE AS CLOSE AS POSSIBLE TO THE UP-GRADIENT J-HOOK

FOR CATCHMENT AREA <0.25 ACRES

≥30 DEGREES

DIRECTION OF SURFACE FLOW

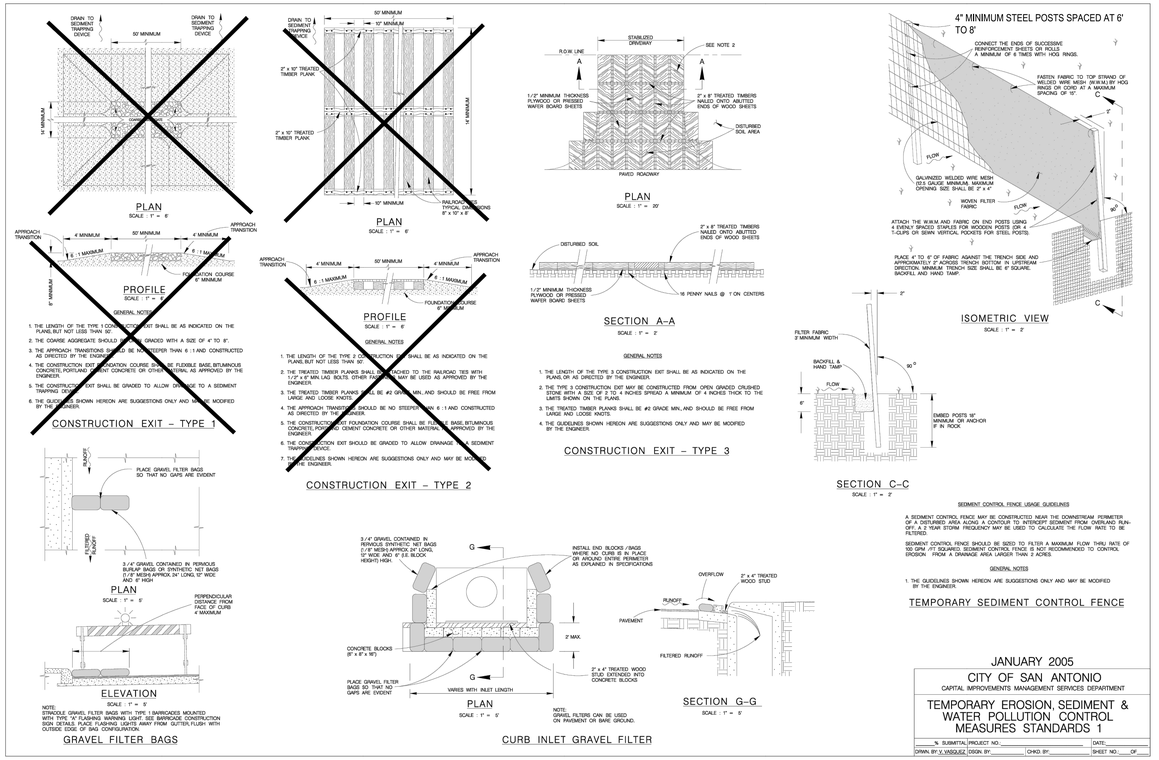
880

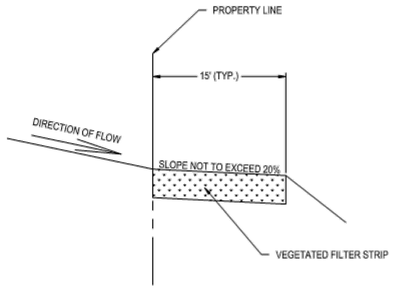
878

876

CONTOURS

NOTE: J-HOOKS SHALL ALSO BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.

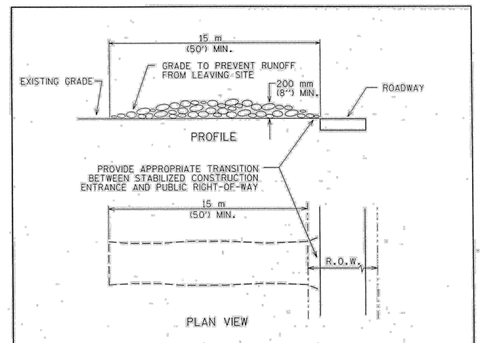




ENGINEERED VEGETATED FILTER STRIP DETAIL (TYP.)
N.T.S.

V.F.S. NOTES (TCEQ RG348)

1. THE FILTER STRIP SHOULD EXTEND ALONG THE ENTIRE LENGTH OF THE CONTRIBUTING AREA AND THE SLOPE SHOULD NOT EXCEED 20%. THE MINIMUM DIMENSION OF THE FILTER STRIP (IN THE DIRECTION OF FLOW) SHOULD BE NO LESS THAN 15 FEET. THE MAXIMUM WIDTH (IN THE DIRECTION OF FLOW) OF THE CONTRIBUTING IMPERVIOUS AREA SHOULD NOT EXCEED 72 FEET. FOR ROADWAYS WITH A VEGETATED STRIP ALONG BOTH SIDES THE TOTAL WIDTH OF THE ROADWAY SHOULD NOT EXCEED 144 FEET (I.E., 72 FEET DRAINING TO EACH SIDE).
2. THE MINIMUM VEGETATED COVER FOR ENGINEERED STRIPS IS 80%.
3. THE AREA CONTRIBUTING RUNOFF TO A FILTER STRIP SHOULD BE RELATIVELY FLAT SO THAT THE RUNOFF IS DISTRIBUTED EVENLY TO THE VEGETATED AREA WITHOUT THE USE OF A LEVEL SPREADER.
4. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW (SCHUELER, 1987).
5. THE TOP EDGE OF THE FILTER STRIP ALONG THE PAVEMENT WILL BE DESIGNED TO AVOID THE SITUATION WHERE RUNOFF WOULD TRAVEL ALONG THE TOP OF THE FILTER STRIP, RATHER THAN THROUGH IT.
6. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL, OTHERWISE RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT. A LEVEL SPREADER SHOULD NOT BE USED TO DISTRIBUTE RUNOFF TO AN ENGINEERED FILTER STRIP.
7. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.



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

CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT

STABILIZED CONSTRUCTION ENTRANCE

ADOPTED 5/23/00

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO. 641S-1

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: NA

REVIEWED BY: ACR

DRAWN BY: SSM

BGE

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.brwmgay.com
TBPE Registration No. F-1046

JANUARY 2005
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

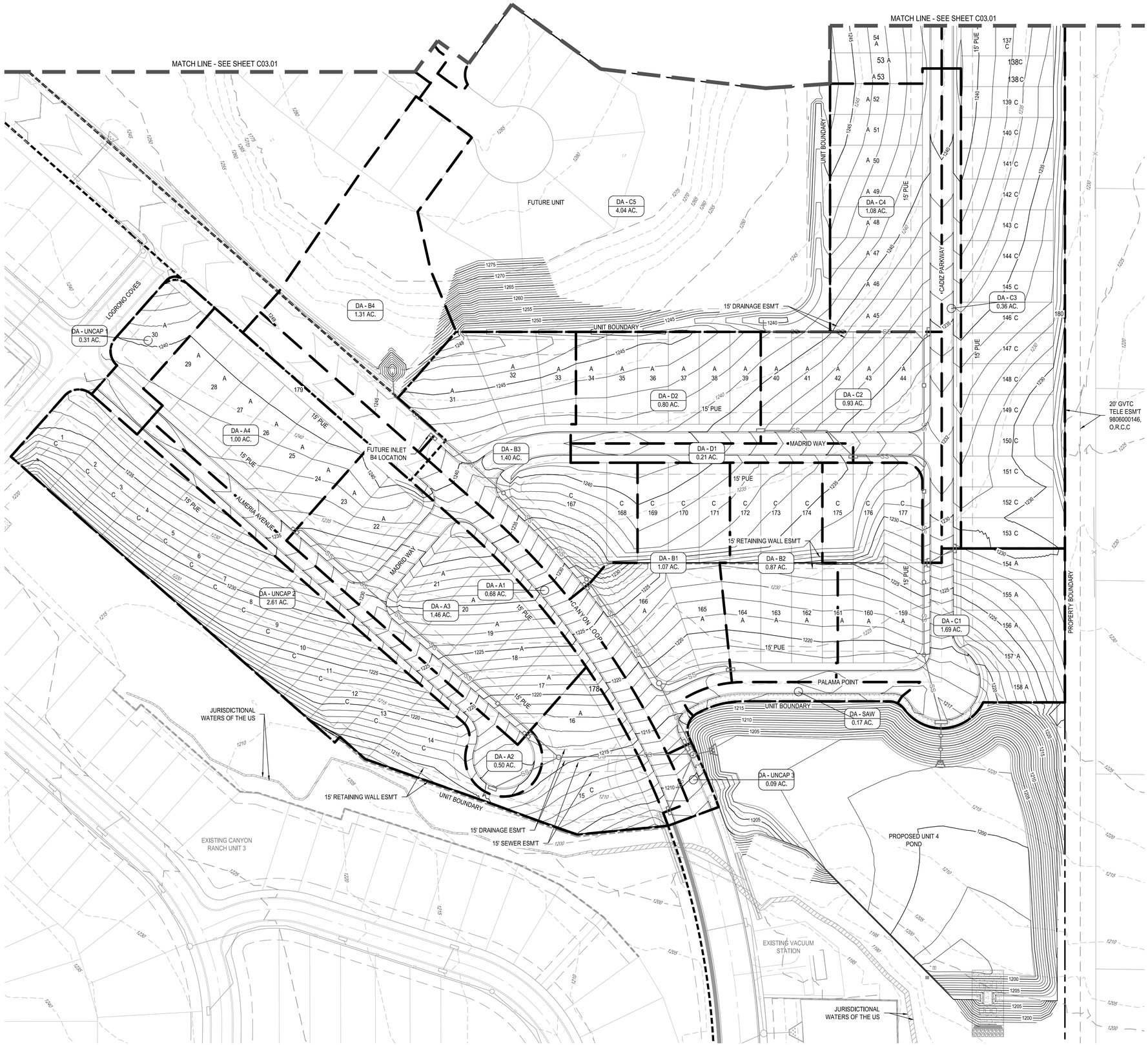
_N SUBMITTAL PROJECT NO.:_____ DATE:_____
DRAWN BY: V. VASQUEZ DSGN. BY:_____ CHKD. BY:_____ SHEET NO.:____ OF:____

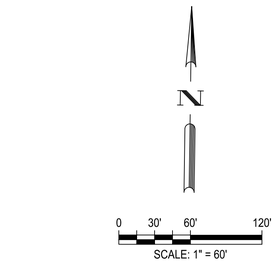
CANYON RANCH UNIT 4

EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 2 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C02.21





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- DRAINAGE AREA BOUNDARY
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- 3 LOT NUMBER
- DA - 37 / 0.79 AC. DRAINAGE AREA LABEL

NOTE:
1. PROPOSED DRAINAGE PATTERNS ARE TO FOLLOW THE FINISHED LOT/PAD GRADING BASED ON THE LOT TYPE DESIGNATION AND DETAIL SHOWN ON SHEET C03.11.
2. REFERENCE GRADING DETAIL ON SHEET C03.11

REV	DESCRIPTION	DATE	APR

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE

BGE, INC.
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San Antonio, TX 78216
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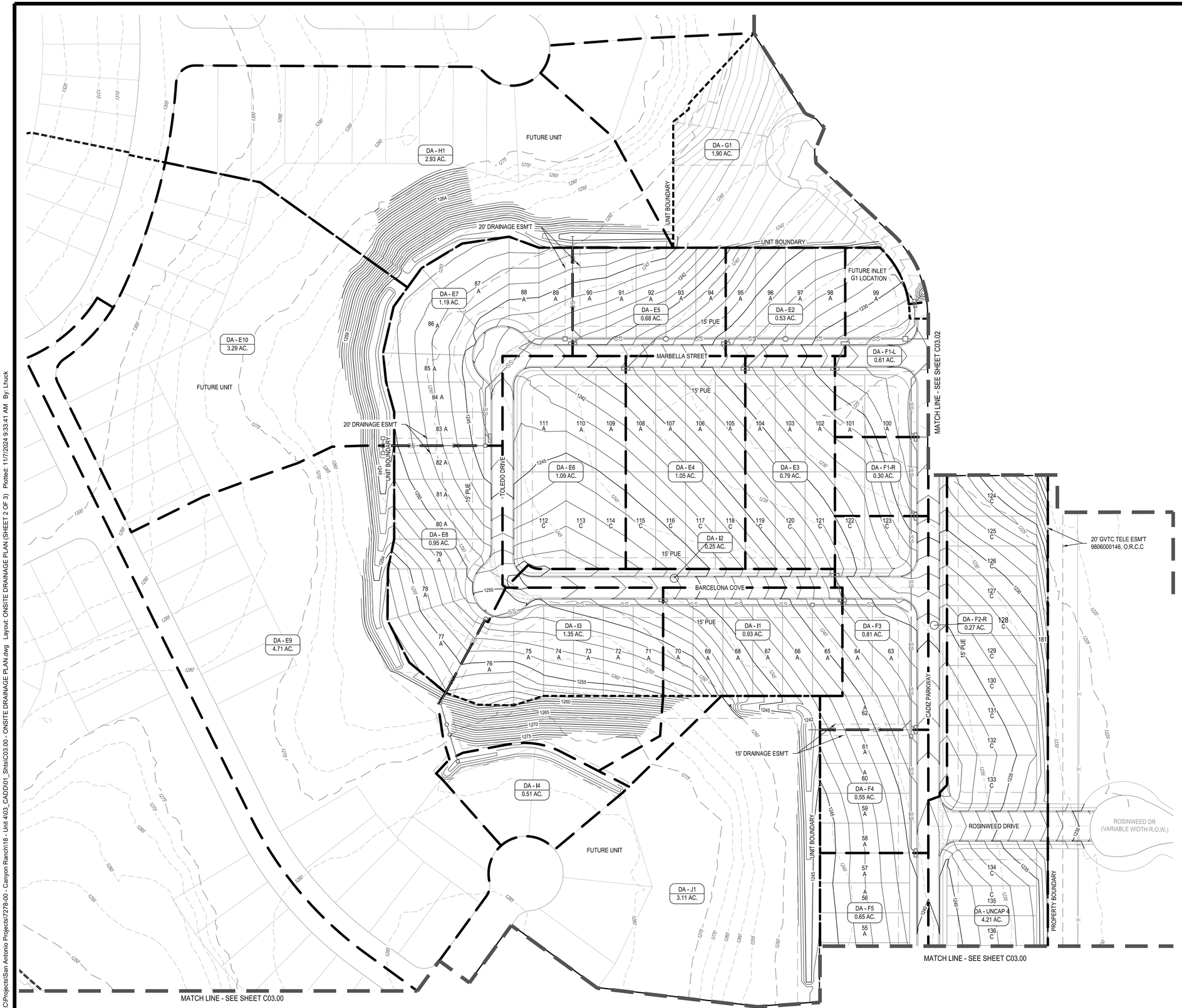
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.00



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- DRAINAGE AREA BOUNDARY
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- 3 LOT NUMBER
- DA - 37 / 0.79 AC. DRAINAGE AREA LABEL

NOTE:
1. PROPOSED DRAINAGE PATTERNS ARE TO FOLLOW THE FINISHED LOT/PAD GRADING BASED ON THE LOT TYPE DESIGNATION AND DETAIL SHOWN ON SHEET C03.11.
2. REFERENCE GRADING DETAIL ON SHEET C03.11

REV	DATE	APR	DESCRIPTION

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
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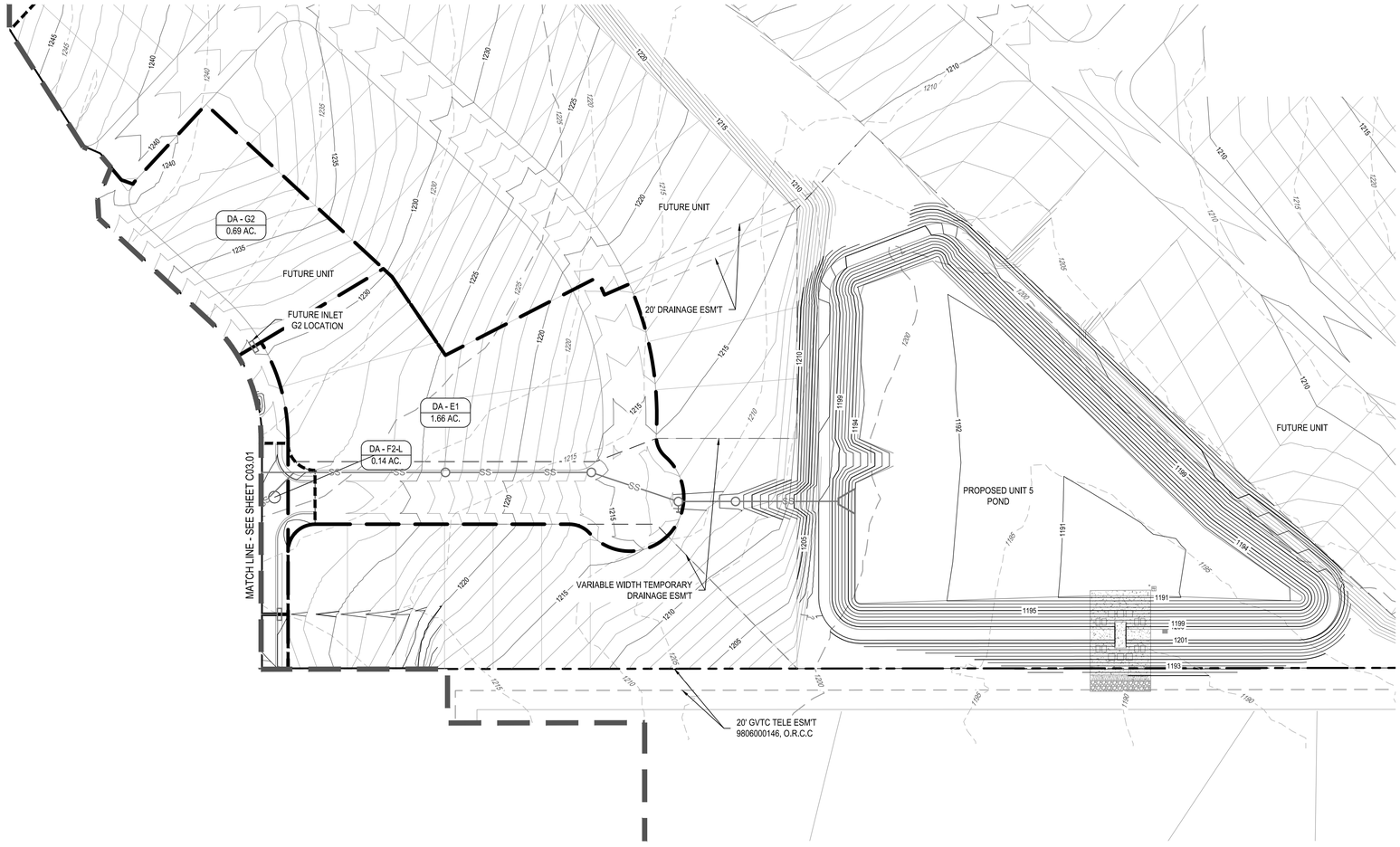
CANYON RANCH UNIT 4

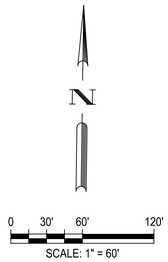
ONSITE DRAINAGE PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.01

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.00 - ONSITE DRAINAGE PLAN.dwg Layout: ONSITE DRAINAGE PLAN (SHEET 2 OF 3) Plotted: 11/7/2024 9:33:41 AM By: Lhuck





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- DRAINAGE AREA BOUNDARY
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- 3 LOT NUMBER
- DA - 37 / 0.79 AC. DRAINAGE AREA LABEL

NOTE:
1. PROPOSED DRAINAGE PATTERNS ARE TO FOLLOW THE FINISHED LOT/PAD GRADING BASED ON THE LOT TYPE DESIGNATION AND DETAIL SHOWN ON SHEET C03.11.
2. REFERENCE GRADING DETAIL ON SHEET C03.11

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
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San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.02

Runoff Coeffecients	10 Yr	25 Yr	100 Yr
Asphalt	0.81	0.86	0.95
Conc. / Roof	0.83	0.88	0.97
Grass (2-7%) good	0.35	0.39	0.46

Avg. Imperv. per lot
4,000 sf

			STREET								IMPERVIOUS				GRASS					
Drainage Area	Total Area (Ac)	Total Area (sf)	Street Width (ft)	Sidewalk Width (ft)	% of Street	Street Length (lf)	Sidewalk Length (lf)	Area Street (sf)	Area Street (Ac)	Area Street (%)	Num Homes in Area	Area Imper. (sf)	Area Imper. (Ac)	Area Imper. (%)	Area Grass (sf)	Area Grass (Ac)	Area Grass (%)	Composite 10 Yr "C"	Composite 25 Yr "C"	Composite 100 Yr "C"
A1	0.68	29,621	51	4	50%	565	565	16,678	0.38	56.3%	0	0	0.00	0.0%	12,943	0.30	43.7%	**0.61**	**0.65**	**0.74**
A2	0.50	21,780	31	4	50%	701	782	13,989	0.32	64.2%	0	0	0.00	0.0%	7,791	0.18	35.8%	**0.65**	**0.69**	**0.77**
A3	1.46	63,598	31	4	65%	564	529	14,027	0.32	22.1%	7	28,000	0.64	44.0%	21,571	0.50	33.9%	**0.66**	**0.71**	**0.79**
A4	1.00	43,560	31	4	50%	237	0	3,667	0.08	8.4%	6	24,000	0.55	55.1%	15,893	0.36	36.5%	**0.65**	**0.70**	**0.78**
B1	1.07	46,609	31	4	50%	118	124	8,405	0.19	18.0%	5	20,000	0.46	42.9%	18,204	0.42	39.1%	**0.64**	**0.69**	**0.77**
			51	4	50%	238	0													
B2	0.87	37,897	31	4	50%	136	136	2,643	0.06	7.0%	6.5	26,000	0.60	68.6%	9,254	0.21	24.4%	**0.71**	**0.76**	**0.84**
B3	1.40	60,984	31	4	100%	159	93	12,246	0.28	20.1%	5	20,000	0.46	32.8%	28,738	0.66	47.1%	**0.60**	**0.65**	**0.73**
			51	4	50%	258	0													
B4	1.31	57,064	51	4	50%	290	0	7,406	0.17	13.0%	2	8,000	0.18	14.0%	41,658	0.96	73.0%	**0.48**	**0.52**	**0.60**
C1	1.69	73,616	31	4	100%	342	250	12,619	0.29	17.1%	10.5	42,000	0.96	57.1%	18,998	0.44	25.8%	**0.70**	**0.75**	**0.83**
C2	0.93	40,511	31	4	61%	535	339	11,720	0.27	28.9%	5	20,000	0.46	49.4%	8,790	0.20	21.7%	**0.72**	**0.77**	**0.85**
C3	0.36	15,682	31	4	50%	624	0	9,666	0.22	61.6%	0	0	0.00	0.0%	6,015	0.14	38.4%	**0.63**	**0.68**	**0.76**
C4	1.08	47,045	31	4	50%	342	342	6,673	0.15	14.2%	8	32,000	0.73	68.0%	8,372	0.19	17.8%	**0.74**	**0.79**	**0.88**
C5	4.04	175,982	31	4	100%	173	413	8,680	0.20	4.9%	7	28,000	0.64	15.9%	139,303	3.20	79.2%	**0.45**	**0.49**	**0.57**
D1	0.21	9,148	31	4	50%	367	0	5,685	0.13	62.2%	0	0	0.00	0.0%	3,462	0.08	37.8%	**0.64**	**0.68**	**0.76**
D2	0.80	34,848	31	4	50%	247	247	4,813	0.11	13.8%	6	24,000	0.55	68.9%	6,035	0.14	17.3%	**0.74**	**0.79**	**0.88**
E1	1.66	72,310	31	4	100%	541	576	21,368	0.49	29.6%	3	12,000	0.28	16.6%	38,942	0.89	53.9%	**0.57**	**0.61**	**0.69**
E2	0.53	23,087	31	4	50%	160	160	3,120	0.07	13.5%	4	16,000	0.37	69.3%	3,967	0.09	17.2%	**0.74**	**0.79**	**0.88**
E3	0.79	34,412	31	4	50%	120	0	1,860	0.04	5.4%	6	24,000	0.55	69.7%	8,552	0.20	24.9%	**0.71**	**0.76**	**0.84**
E4	1.05	45,738	31	4	50%	160	0	2,480	0.06	5.4%	8	32,000	0.73	70.0%	11,258	0.26	24.6%	**0.71**	**0.76**	**0.84**
E5	0.68	29,621	31	4	50%	205	205	3,998	0.09	13.5%	5	20,000	0.46	67.5%	5,623	0.13	19.0%	**0.74**	**0.78**	**0.87**
E6	1.09	47,480	31	4	50%	400	0	6,200	0.14	13.1%	6	24,000	0.55	50.5%	17,280	0.40	36.4%	**0.65**	**0.70**	**0.78**
E7	1.19	51,836	31	4	50%	214	299	4,510	0.10	8.7%	7	28,000	0.64	54.0%	19,326	0.44	37.3%	**0.65**	**0.70**	**0.78**
E8	0.95	41,382	31	4	50%	218	251	4,381	0.10	10.6%	0	0	0.00	0.0%	37,001	0.85	89.4%	**0.40**	**0.44**	**0.51**
E9	4.71	205,168	31	4	50%	1,159	1,123	22,449	0.52	10.9%	13	52,000	1.19	25.3%	130,719	3.00	63.7%	**0.52**	**0.57**	**0.64**
E10	3.29	143,312	31	4	50%	0	0	0	0.00	0.0%	9	36,000	0.83	25.1%	107,312	2.46	74.9%	**0.47**	**0.51**	**0.59**
F1-L	0.61	26,572	31	4	71%	292	246	7,788	0.18	29.3%	2	8,000	0.18	30.1%	10,784	0.25	40.6%	**0.63**	**0.68**	**0.76**
F1-R	0.30	13,068	31	4	61%	106	106	2,530	0.06	19.4%	2	8,000	0.18	61.2%	2,538	0.06	19.4%	**0.73**	**0.78**	**0.87**
F2-L	0.14	6,098	31	4	50%	243	34	3,906	0.09	64.0%	0	0	0.00	0.0%	2,193	0.05	36.0%	**0.64**	**0.69**	**0.77**
F2-R	0.27	11,761	31	4	50%	486	0	7,540	0.17	64.1%	0	0	0.00	0.0%	4,221	0.10	35.9%	**0.64**	**0.69**	**0.77**
F3	0.81	35,284	31	4	50%	526	357	9,583	0.22	27.2%	4	16,000	0.37	45.3%	9,701	0.22	27.5%	**0.69**	**0.74**	**0.82**
F4	0.55	23,958	31	4	50%	165	165	3,218	0.07	13.4%	4	16,000	0.37	66.8%	4,741	0.11	19.8%	**0.73**	**0.78**	**0.87**
F5	0.65	28,314	31	4	50%	180	180	3,516	0.08	12.4%	5	20,000	0.46	70.6%	4,798	0.11	16.9%	**0.75**	**0.79**	**0.88**
SAW	0.17	7,405	31	4	50%	313	0	4,855	0.11	65.6%	0	0	0.00	0.0%	2,550	0.06	34.4%	**0.65**	**0.70**	**0.78**
G1	1.90	82,764	31	4	50%	310	310	6,048	0.14	7.3%	3	12,000	0.28	14.5%	64,716	1.49	78.2%	**0.45**	**0.50**	**0.57**
G2	0.92	40,075	31	4	50%	287	287	5,598	0.13	14.0%	5	20,000	0.46	49.9%	14,477	0.33	36.1%	**0.65**	**0.70**	**0.78**
H1	2.93	127,631	31	4	0%	0	0	0	0.00	0.0%	11	44,000	1.01	34.5%	83,631	1.92	65.5%	**0.52**	**0.56**	**0.64**
I1	0.93	40,511	31	4	50%	240	240	4,680	0.11	11.6%	6	24,000	0.55	59.2%	11,831	0.27	29.2%	**0.69**	**0.73**	**0.82**
I2	0.25	10,890	31	4	50%	441	441	8,592	0.20	78.9%	0	0	0.00	0.0%	2,298	0.05	21.1%	**0.71**	**0.76**	**0.85**
I3	1.35	58,806	31	4	50%	237	240	4,626	0.11	7.9%	6	24,000	0.55	40.8%	30,180	0.69	51.3%	**0.58**	**0.63**	**0.71**
I4	0.51	22,216	31	4	0%	0	0	0	0.00	0.0%	2	8,000	0.18	36.0%	14,216	0.33	64.0%	**0.52**	**0.57**	**0.64**
J1	3.11	135,472	31	4	100%	238	526	11,577	0.27	8.5%	3	12,000	0.28	8.9%	111,894	2.57	82.6%	**0.43**	**0.47**	**0.55**
UNCAP 1	0.31	13,504	31	4	100%	79	39	2,761	0.06	20.4%	1	4,000	0.09	29.6%	6,742	0.15	49.9%	**0.59**	**0.63**	**0.71**
UNCAP 2	2.61	113,692	31	4	0%	0	0	0	0.00	0.0%	16	64,000	1.47	56.3%	49,692	1.14	43.7%	**0.62**	**0.67**	**0.75**
UNCAP 3	0.09	3,920	51	4	61%	88	19	2,803	0.06	71.5%	0	0	0.00	0.0%	1,117	0.03	28.5%	**0.68**	**0.73**	**0.81**
UNCAP 4	4.21	183,388	31	4	69%	411	0	8,845	0.20	4.8%	30	120,000	2.75	65.4%	54,542	1.25	29.7%	**0.69**	**0.73**	**0.82**

STREET FLOW AND INLET CALCULATIONS

10 YEAR STORM

						STREET CAPACITY								INLET ON GRADE CAPACITY									SUMP INLET CAPACITY							
Drainage Area	Inlet	Area (Ac)	$Q_{(10)}$ (cfs)	$Q_{(pass)}$ (cfs)	$Q_{(basin)}$ (cfs)	FOC to FOC (ft)	Crown Type	Street Slope (ft/ft)	a (ft)	Z	Y_o (ft)	Ponded Width (ft)	Reduction Factor (%)	Q_a/L_a (ft)	L_a (ft)	Length (ft)	L/L_a	a/Y_o	Q/Q_a	Q_a (cfs)	$Q_{(pass)}$ (cfs)	Pass to Inlet #	Clogging Factor (%)	$Q_{(total)}$ (cfs)	Length (ft)	W (ft)	Opening Height (ft)	C_w	C_o	h (ft)
A1	ON GRADE	0.68	3.11	0.00	3.11	50	S	0.064	0.58	50	0.14	7.21	0%	0.93	3.34	10	2.99	4.05	0.33	9.3	0.00									
A2	SUMP	0.50	2.42	0.00	2.42	30	S	0.070	0.58	50	0.13	6.45											10%	2.4	10	2	0.583	2.3	0.67	0.19
A3	ON GRADE	1.46	7.26	0.00	7.26	30	S	0.070	0.58	50	0.19	9.74	0%	0.99	7.37	10	1.36	3.00	0.74	9.9	0.00									
A4	ON GRADE	1.00	4.90	0.00	4.90	30	S	0.040	0.58	50	0.19	9.33	0%	0.98	5.02	10	1.99	3.13	0.50	9.8	0.00									
B1	ON GRADE	1.07	5.13	0.00	5.13	30	S		0.58	50																				
						50		0.064	0.58	50	0.17	8.70	0%	0.96	5.33	15	2.82	3.35	0.36	14.4	0.00									
B2	ON GRADE	0.87	4.64	0.00	4.64	30	S	0.010	0.58	50	0.24	11.86	0%	1.03	4.49	10	2.22	2.46	0.45	10.3	0.00									
B3	ON GRADE	1.40	6.30	0.00	6.30	30	S		0.58	50																				
						50		0.064	0.58	50	0.19	9.39	0%	0.98	6.44	10	1.55	3.11	0.64	9.8	0.00									
B4	ON GRADE	1.31	4.69	0.00	4.69	50	S	0.030	0.58	50	0.19	9.70	0%	0.98	4.76	10	2.10	3.01	0.48	9.8	0.00									
C1	SUMP	1.69	8.91	0.00	8.91	30	S	0.008	0.58	50	0.32	15.98											10%	8.9	15	2	0.583	2.3	0.67	0.22
C2	ON GRADE	0.93	5.02	0.00	5.02	30	S	0.065	0.58	50	0.17	8.60	0%	0.96	5.23	10	1.91	3.39	0.52	9.6	0.00									
C3	ON GRADE	0.36	1.71	0.00	1.71	30	S	0.065	0.58	50	0.11	5.74	0%	0.90	1.90	10	5.25	5.08	0.19	9.0	0.00									
C4	ON GRADE	1.08	6.01	0.00	6.01	30	S	0.028	0.58	50	0.22	10.81	0%	1.01	5.95	10	1.68	2.70	0.60	10.1	0.00									
D1	ON GRADE	0.21	1.00	0.00	1.00	30	S	0.023	0.58	50	0.11	5.73	0%	0.90	1.11	10	8.97	5.09	0.11	9.0	0.00									
D2	ON GRADE	0.80	4.46	0.00	4.46	30	S	0.023	0.58	50	0.20	10.04	0%	0.99	4.50	10	2.22	2.91	0.45	9.9	0.00									
E1	ON GRADE	1.66	7.04	0.00	7.04	30	S	0.038	0.58	50	0.22	10.81	0%	1.01	6.98	10	1.43	2.70	0.70	10.1	0.00									
E2	ON GRADE	0.53	2.96	0.00	2.96	30	S	0.008	0.58	50	0.21	10.57	0%	1.00	2.95	10	3.39	2.76	0.29	10.0	0.00									
E3	ON GRADE	0.79	4.20	0.00	4.20	30	S	0.008	0.58	50	0.24	12.06	0%	1.04	4.05	10	2.47	2.42	0.41	10.4	0.00									
E4	ON GRADE	1.05	5.60	0.00	5.60	30	S	0.044	0.58	50	0.19	9.62	0%	0.98	5.70	10	1.76	3.03	0.57	9.8	0.00									
E5	ON GRADE	0.68	3.75	0.00	3.75	30	S	0.044	0.58	50	0.17	8.28	0%	0.95	3.94	10	2.54	3.52	0.39	9.5	0.00									
E6	ON GRADE	1.09	5.34	0.00	5.34	30	S	0.044	0.58	50	0.19	9.46	0%	0.98	5.45	10	1.84	3.08	0.54	9.8	0.00									
E7	ON GRADE	1.19	5.80	0.00	5.80	30	S	0.020	0.58	50	0.23	11.32	0%	1.02	5.68	10	1.76	2.58	0.57	10.2	0.00									
E8	ON GRADE	0.95	2.84	0.00	2.84	30	S	0.080	0.58	50	0.13	6.68	0%	0.92	3.09	10	3.23	4.37	0.31	9.2	0.00									
F1-L	SUMP	0.61	2.88	0.00	2.88	30	S	0.008	0.58	50	0.21	10.46											10%	4.5	10	2	0.583	2.3	0.67	0.30
F1-R	SUMP	0.30	1.65	0.00	1.65	30	S	0.008	0.58	50	0.17	8.49																		
F2-L	SUMP	0.14	0.68	0.00	0.68	30	S	0.008	0.58	50	0.12	6.08											10%	2.0	10	2	0.583	2.3	0.67	0.17
F2-R	SUMP	0.27	1.31	0.00	1.31	30	S	0.008	0.58	50	0.16	7.78																		
F3	ON GRADE	0.81	4.21	0.00	4.21	30	S	0.040	0.58	50	0.18	8.81	0%	0.96	4.36	10	2.29	3.31	0.44	9.6	0.00									
F4	ON GRADE	0.55	3.02	0.00	3.02	30	S	0.008	0.58	50	0.21	10.65	0%	1.01	3.00	10	3.33	2.74	0.30	10.1	0.00									
F5	ON GRADE	0.65	3.64	0.00	3.64	30	S	0.008	0.58	50	0.23	11.42	0%	1.02	3.56	10	2.81	2.55	0.36	10.2	0.00									
G1	ON GRADE	1.90	6.46	0.00	6.46	30	S	0.055	0.58	50	0.19	9.75	0%	0.99	6.55	10	1.53	2.99	0.66	9.9	0.00									
G2	ON GRADE	0.92	4.19	0.00	4.19	30	S	0.055	0.58	50	0.17	8.29	0%	0.95	4.40	10	2.27	3.52	0.44	9.5	0.00									
I1	ON GRADE	0.93	4.80	0.00	4.80	30	S	0.450	0.58	50	0.12	5.88	0%	0.90	5.32	10	1.88	4.96	0.53	9.0	0.00									
I2	ON GRADE	0.25	1.34	0.00	1.34	30	S	0.450	0.58	50	0.07	3.64	0%	0.85	1.56	10	6.39	8.01	0.16	8.5	0.00									
I3	ON GRADE	1.35	5.89	0.00	5.89	30	S	0.018	0.58	50	0.23	11.68	0%	1.03	5.73	10	1.75	2.50	0.57	10.3	0.00									
SAW	---	0.17	0.83	0.00	0.83																									
UNCAP 1	---	0.31	1.36	0.00	1.36																									
UNCAP 2	---	2.61	12.14	0.00	12.14																									
UNCAP 3	---	0.09	0.46	0.00	0.46																									
UNCAP 4	---	4.21	21.67	0.00	21.67																									

	APR	DATE	DESCRIPTION	REV
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				◁

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE CALCULATIONS (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.03

STREET FLOW AND INLET CALCULATIONS

25 YEAR STORM

						STREET CAPACITY								INLET ON GRADE CAPACITY										SUMP INLET CAPACITY							
Drainage Area	Inlet	Area (Ac)	$Q_{(25)}$ (cfs)	$Q_{(pass)}$ (cfs)	$Q_{(basin)}$ (cfs)	FOC to FOC (ft)	Crown Type	Street Slope (ft/ft)	a (ft)	Z	Y_o (ft)	Ponded Width (ft)	Reduction Factor (%)	Q_a/L_a (ft)	L_a (ft)	Length (ft)	L/L_a	a/Y_o	Q/Q_a	Q_a (cfs)	$Q_{(pass)}$ (cfs)	Pass to Inlet #	Clogging Factor (%)	$Q_{(total)}$ (cfs)	Length (ft)	W (ft)	Opening Height (ft)	C_w	C_o	h (ft)
A1	ON GRADE	0.68	4.06	0.00	4.06	50	S	0.064	0.58	50	0.16	7.97	0%	0.95	4.29	10	2.33	3.66	0.43	9.5	0.00									
A2	SUMP	0.50	3.15	0.00	3.15	30	S	0.070	0.58	50	0.14	7.12											10%	3.2	10	2	0.583	2.3	0.67	0.23
A3	ON GRADE	1.46	9.45	0.00	9.45	30	S	0.070	0.58	50	0.21	10.75	0%	1.01	9.37	10	1.07	2.71	0.94	10.1	0.00									
A4	ON GRADE	1.00	6.38	0.00	6.38	30	S	0.040	0.58	50	0.21	10.30	0%	1.00	6.39	10	1.56	2.83	0.64	10.0	0.00									
B1	ON GRADE	1.07	6.68	0.00	6.68	30	S		0.58	50																				
						50		0.064	0.58	50	0.19	9.61	0%	0.98	6.80	15	2.20	3.04	0.45	14.7	0.00									
B2	ON GRADE	0.87	6.02	0.00	6.02	30	S	0.010	0.58	50	0.26	13.07	0%	1.06	5.68	10	1.76	2.23	0.57	10.6	0.00									
B3	ON GRADE	1.40	8.24	0.00	8.24	30	S		0.58	50																				
						50		0.064	0.58	50	0.21	10.39	0%	1.00	8.24	10	1.21	2.81	0.82	10.0	0.00									
B4	ON GRADE	1.31	6.21	0.00	6.21	50	S	0.030	0.58	50	0.22	10.78	0%	1.01	6.16	10	1.62	2.70	0.62	10.1	0.00									
C1	SUMP	1.69	11.56	0.00	11.56	30	S	0.008	0.58	50	0.35	17.62											10%	11.6	15	2	0.583	2.3	0.67	0.29
C2	ON GRADE	0.93	6.51	0.00	6.51	30	S	0.065	0.58	50	0.19	9.48	0%	0.98	6.65	10	1.50	3.08	0.66	9.8	0.00									
C3	ON GRADE	0.36	2.23	0.00	2.23	30	S	0.065	0.58	50	0.13	6.34	0%	0.91	2.45	10	4.08	4.60	0.24	9.1	0.00									
C4	ON GRADE	1.08	7.78	0.00	7.78	30	S	0.028	0.58	50	0.24	11.91	0%	1.03	7.53	10	1.33	2.45	0.75	10.3	0.00									
D1	ON GRADE	0.21	1.31	0.00	1.31	30	S	0.023	0.58	50	0.13	6.33	0%	0.91	1.43	10	6.97	4.61	0.14	9.1	0.00									
D2	ON GRADE	0.80	5.78	0.00	5.78	30	S	0.023	0.58	50	0.22	11.06	0%	1.01	5.70	10	1.76	2.64	0.57	10.1	0.00									
E1	ON GRADE	1.66	9.24	0.00	9.24	30	S	0.038	0.58	50	0.24	11.97	0%	1.04	8.92	10	1.12	2.44	0.89	10.4	0.00									
E2	ON GRADE	0.53	3.83	0.00	3.83	30	S	0.008	0.58	50	0.23	11.65	0%	1.03	3.73	10	2.68	2.50	0.37	10.3	0.00									
E3	ON GRADE	0.79	5.46	0.00	5.46	30	S	0.008	0.58	50	0.27	13.30	0%	1.07	5.12	10	1.95	2.19	0.51	10.7	0.00									
E4	ON GRADE	1.05	7.26	0.00	7.26	30	S	0.044	0.58	50	0.21	10.61	0%	1.00	7.23	10	1.38	2.75	0.72	10.0	0.00									
E5	ON GRADE	0.68	4.86	0.00	4.86	30	S	0.044	0.58	50	0.18	9.13	0%	0.97	5.00	10	2.00	3.19	0.50	9.7	0.00									
E6	ON GRADE	1.09	6.95	0.00	6.95	30	S	0.044	0.58	50	0.21	10.45	0%	1.00	6.94	10	1.44	2.79	0.69	10.0	0.00									
E7	ON GRADE	1.19	7.55	0.00	7.55	30	S	0.020	0.58	50	0.25	12.50	0%	1.05	7.21	10	1.39	2.33	0.72	10.5	0.00									
E8	ON GRADE	0.95	3.81	0.00	3.81	30	S	0.080	0.58	50	0.15	7.46	0%	0.94	4.07	10	2.45	3.91	0.41	9.4	0.00									
F1-L	SUMP	0.61	3.76	0.00	3.76	30	S	0.008	0.58	50	0.23	11.56											10%	5.9	10	2	0.583	2.3	0.67	0.35
F1-R	SUMP	0.30	2.14	0.00	2.14	30	S	0.008	0.58	50	0.19	9.36																		
F2-L	SUMP	0.14	0.88	0.00	0.88	30	S	0.008	0.58	50	0.13	6.71											10%	2.6	10	2	0.583	2.3	0.67	0.20
F2-R	SUMP	0.27	1.70	0.00	1.70	30	S	0.008	0.58	50	0.17	8.59																		
F3	ON GRADE	0.81	5.47	0.00	5.47	30	S	0.040	0.58	50	0.19	9.72	0%	0.98	5.55	10	1.80	3.00	0.55	9.8	0.00									
F4	ON GRADE	0.55	3.91	0.00	3.91	30	S	0.008	0.58	50	0.23	11.74	0%	1.03	3.80	10	2.63	2.48	0.38	10.3	0.00									
F5	ON GRADE	0.65	4.71	0.00	4.71	30	S	0.008	0.58	50	0.25	12.58	0%	1.05	4.49	10	2.23	2.32	0.45	10.5	0.00									
G1	ON GRADE	1.90	8.58	0.00	8.58	30	S	0.055	0.58	50	0.22	10.85	0%	1.01	8.50	10	1.18	2.69	0.85	10.1	0.00									
G2	ON GRADE	0.92	5.44	0.00	5.44	30	S	0.055	0.58	50	0.18	9.14	0%	0.97	5.60	10	1.79	3.19	0.56	9.7	0.00									
I1	ON GRADE	0.93	6.23	0.00	6.23	30	S	0.450	0.58	50	0.13	6.49	0%	0.91	6.81	10	1.47	4.50	0.68	9.1	0.00									
I2	ON GRADE	0.25	1.73	0.00	1.73	30	S	0.450	0.58	50	0.08	4.02	0%	0.86	2.01	10	4.97	7.26	0.20	8.6	0.00									
I3	ON GRADE	1.35	7.72	0.00	7.72	30	S	0.018	0.58	50	0.26	12.92	0%	1.06	7.30	10	1.37	2.26	0.73	10.6	0.00									
SAW	---	0.17	1.08	0.00	1.08																									
UNCAP 1	---	0.31	1.78	0.00	1.78																									
UNCAP 2	---	2.61	15.85	0.00	15.85																									
UNCAP 3	---	0.09	0.60	0.00	0.60																									
UNCAP 4	---	4.21	28.16	0.00	28.16																									

STREET FLOW AND INLET CALCULATIONS

100 YEAR STORM

						STREET CAPACITY								INLET ON GRADE CAPACITY										SUMP INLET CAPACITY							
Drainage Area	Inlet	Area (Ac)	$Q_{(100)}$ (cfs)	$Q_{(pass)}$ (cfs)	$Q_{(basin)}$ (cfs)	FOC to FOC (ft)	Crown Type	Street Slope (ft/ft)	a (ft)	Z	Y_o (ft)	Ponded Width (ft)	Reduction Factor (%)	Q_a/L_a (ft)	L_a (ft)	Length (ft)	L/L_a	a/Y_o	Q/Q_a	Q_a (cfs)	$Q_{(pass)}$ (cfs)	Pass to Inlet #	Clogging Factor (%)	$Q_{(total)}$ (cfs)	Length (ft)	W (ft)	Opening Height (ft)	C_w	C_o	h (ft)
A1	ON GRADE	0.68	5.85	0.00	5.85	50	S	0.064	0.58	50	0.18	9.14	0%	0.97	6.02	10	1.66	3.19	0.60	9.7	0.00									
A2	SUMP	0.50	4.53	3.11	7.64	30	S	0.070	0.58	50	0.20	9.93											10%	7.6	10	2	0.583	2.3	0.67	0.42
A3	ON GRADE	1.46	13.54	0.00	13.54	30	S	0.070	0.58	50	0.25	12.30	0%	1.04	12.98	10	0.77	2.37	1.30	10.4	3.11	A2								
A4	ON GRADE	1.00	9.15	0.00	9.15	30	S	0.040	0.58	50	0.24	11.79	0%	1.03	8.87	10	1.13	2.47	0.89	10.3	0.00									
B1	ON GRADE	1.07	9.60	1.54	11.15	30	S		0.58	50																				
						50		0.064	0.58	50	0.23	11.64	0%	1.03	12.22	15	1.23	2.51	0.81	15.4	0.00									
B2	ON GRADE	0.87	8.59	0.00	8.59	30	S	0.010	0.58	50	0.30	14.94	0%	1.10	6.51	10	1.54	1.95	0.65	11.0	0.00									
B3	ON GRADE	1.40	11.89	0.00	11.89	30	S		0.58	50																				
						50		0.064	0.58	50	0.24	11.92	0%	1.03	11.49	10	0.87	2.45	1.15	10.3	1.54	B1								
B4	ON GRADE	1.31	9.12	0.00	9.12	50	S	0.030	0.58	50	0.25	12.46	0%	1.05	8.72	10	1.15	2.34	0.87	10.5	0.00									
C1	SUMP	1.69	16.51	0.00	16.51	30	S	0.008	0.58	50	0.40	20.14											10%	16.5	15	2	0.583	2.3	0.67	0.41
C2	ON GRADE	0.93	9.29	0.35	9.64	30	S	0.065	0.58	50	0.22	10.98	0%	1.01	9.52	10	1.05	2.66	0.95	10.1	0.00									
C3	ON GRADE	0.36	3.21	0.00	3.21	30	S	0.065	0.58	50	0.15	7.27	0%	0.93	3.45	10	2.90	4.01	0.34	9.3	0.00									
C4	ON GRADE	1.08	11.07	0.00	11.07	30	S	0.028	0.58	50	0.27	13.59	0%	1.07	10.33	10	0.97	2.15	1.03	10.7	0.35	C2								
D1	ON GRADE	0.21	1.88	0.00	1.88	30	S	0.023	0.58	50	0.15	7.26	0%	0.93	2.02	10	4.96	4.02	0.20	9.3	0.00									
D2	ON GRADE	0.80	8.23	0.00	8.23	30	S	0.023	0.58	50	0.25	12.62	0%	1.05	7.83	10	1.28	2.31	0.78	10.5	0.00									
E1	ON GRADE	1.66	13.39	0.00	13.39	30	S	0.038	0.58	50	0.28	13.75	0%	1.08	12.44	15	1.21	2.12	0.83	16.1	0.00									
E2	ON GRADE	0.53	5.45	0.00	5.45	30	S	0.008	0.58	50	0.27	13.30	0%	1.07	5.12	10	1.95	2.19	0.51	10.7	0.00									
E3	ON GRADE	0.79	7.78	0.00	7.78	30	S	0.008	0.58	50	0.30	15.19	0%	1.11	5.61	10	1.78	1.92	0.56	11.1	0.00									
E4	ON GRADE	1.05	10.36	0.00	10.36	30	S	0.044	0.58	50	0.24	12.12	0%	1.04	9.97	10	1.00	2.41	1.00	10.4	0.00									
E5	ON GRADE	0.68	6.93	0.00	6.93	30	S	0.044	0.58	50	0.21	10.42	0%	1.00	7.60	10	1.32	2.80	0.76	10.0	0.00									
E6	ON GRADE	1.09	9.97	0.00	9.97	30	S	0.044	0.58	50	0.24	11.96	0%	1.04	9.63	10	1.04	2.44	0.96	10.4	0.00									
E7	ON GRADE	1.19	10.83	0.00	10.83	30	S	0.020	0.58	50	0.29	14.31	0%	1.09	9.33	10	1.07	2.04	0.93	10.9	0.00									
E8	ON GRADE	0.95	5.69	0.00	5.69	30	S	0.080	0.58	50	0.17	8.67	0%	0.96	5.92	10	1.69	3.37	0.59	9.6	0.00									
F1-L	SUMP	0.61	5.40	2.18	7.58	30	S	0.008	0.58	50	0.30	15.05											10%	12.2	10	2	0.583	2.3	0.67	0.57
F1-R	SUMP	0.30	3.04	0.00	3.04	30	S	0.008	0.58	50	0.21	10.68																		
F2-L	SUMP	0.14	1.27	0.00	1.27	30	S	0.008	0.58	50	0.15	7.69											10%	3.7	10	2	0.583	2.3	0.67	0.26
F2-R	SUMP	0.27	2.45	0.00	2.45	30	S	0.008	0.58	50	0.20	9.84																		
F3	ON GRADE	0.81	7.81	1.22	9.03	30	S	0.040	0.58	50	0.23	11.74	0%	1.03	8.77	10	1.14	2.48	0.88	10.3	0.00									
F4	ON GRADE	0.55	5.58	0.00	5.58	30	S	0.008	0.58	50	0.27	13.41	0%	1.07	5.67	10	1.76	2.18	0.57	10.7	0.00									
F5	ON GRADE	0.65	6.70	0.00	6.70	30	S	0.008	0.58	50	0.29	14.36	0%	1.09	5.71	10	1.75	2.03	0.57	10.9	0.00									
G1	ON GRADE	1.90	12.67	0.00	12.67	30	S	0.055	0.58	50	0.25	12.55	0%	1.05	12.08	10	0.83	2.32	1.21	10.5	2.18	F1-L								
G2	ON GRADE	0.92	7.80	0.00	7.80	30	S	0.055	0.58	50	0.21	10.47	0%	1.00	7.79	10	1.28	2.79	0.78	10.0	0.00									
I1	ON GRADE	0.93	8.91	0.00	8.91	30	S	0.450	0.58	50	0.15	7.42	0%	0.93	11.31	10	0.88	3.93	1.13	9.3	1.22	F3								
I2	ON GRADE	0.25	2.48	0.00	2.48	30	S	0.450	0.58	50	0.09	4.59	0%	0.87	2.83	10	3.53	6.36	0.28	8.7	0.00									
I3	ON GRADE	1.35	11.16	0.00	11.16	30	S	0.018	0.58	50	0.30	14.84	0%	1.10	8.63	10	1.16	1.97	0.86	11.0	0.00									
SAW	---	0.17	1.55	0.00	1.55																									
UNCAP 1	---	0.31	2.58	0.00	2.58																									
UNCAP 2	---	2.61	22.81	0.00	22.81																									
UNCAP 3	---	0.09	0.85	0.00	0.85																									
UNCAP 4	---	4.21	40.26	0.00	40.26																									

	APR	DATE	DESCRIPTION	REV
				◁
				◁
				◁
				◁
				◁

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

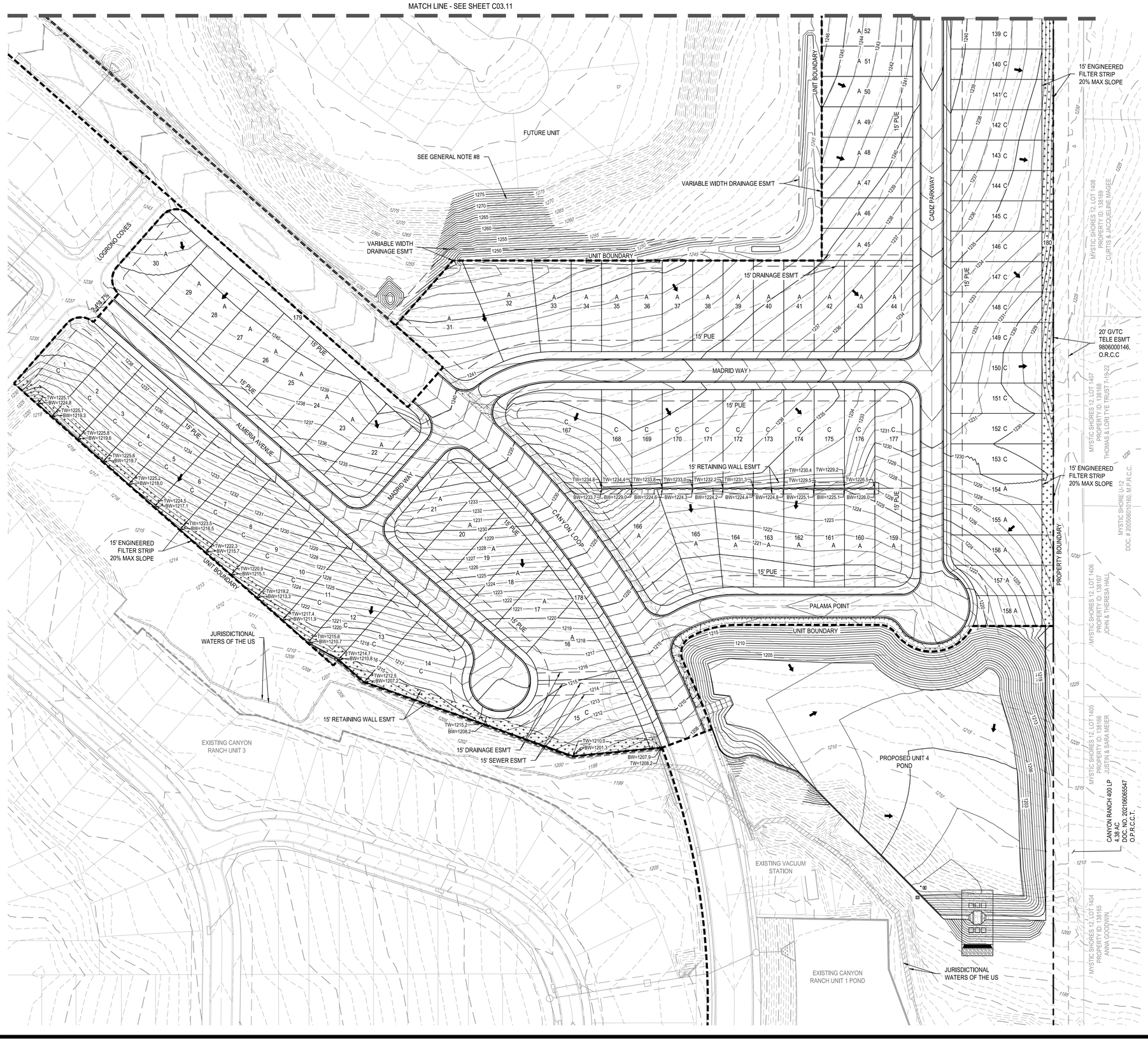
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE CALCULATIONS (SHEET 2 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.04



LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- RAMP (SEE SHEET C06.52)
- LOW POINT/HIGH POINT
- LOT NUMBER AND GRADING TYPE
- DIRECTION OF FLOW
- RETAINING WALL
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

GENERAL NOTES:

1. HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
2. AS SOON AS PRACTICAL, HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC...) TO PREVENT EROSION FROM OCCURRING.
3. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
4. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OF STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
5. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
6. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
7. EARTHEN GRADING SLOPES SHALL BE NO GREATER THAN 3:1.
8. SLOPES GREATER THAN 3:1 ARE ASSUMED TO BE MILLED ROCK. IF SITE CONDITIONS VARY FROM THIS, NOTIFY ENGINEER IMMEDIATELY.
9. SEE SHEET C03.12 FOR TYPICAL LOT GRADING TYPE DETAILS

LOT FILL NOTES:

1. ALL LOTS WITH FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE 79G PROCEDURE THAT MEETS THE REQUIREMENTS OF THE FHA DATA SHEET. DOCUMENTATION AND THE EVIDENCE OF COMPACTED SHALL BE FURNISHED TO THE ENGINEER & OWNER.

FINISHED FLOOR ELEVATIONS

THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND OR FINISHED FLOOR ELEVATION WHICH EVER IS HIGHER, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORM WATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO THE STORM WATER CONVEYANCE STRUCTURES MUST HAVE FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE STRUCTURE.

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

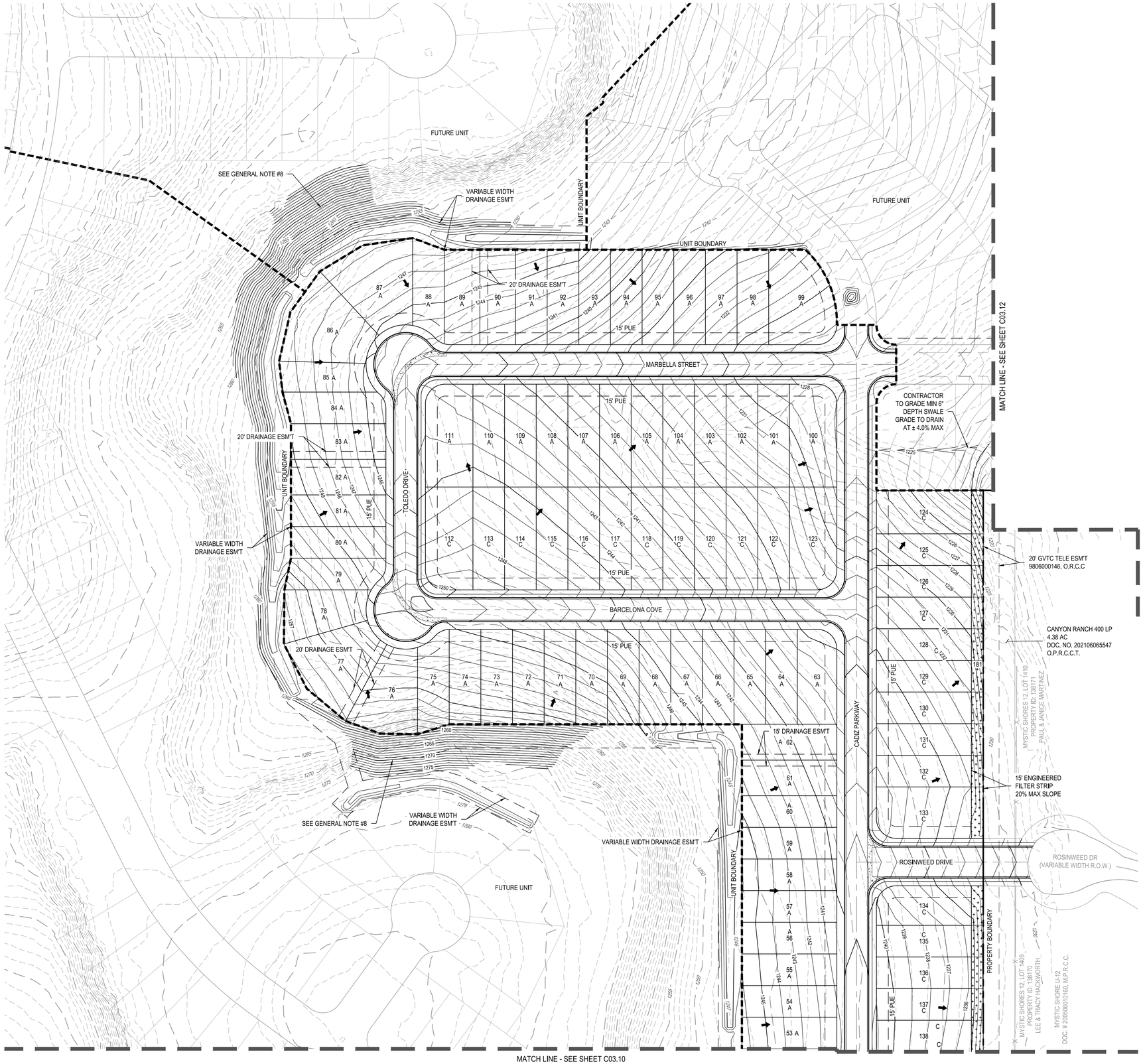
CANYON RANCH UNIT 4

OVERALL GRADING PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.10

G:\TX\Civil\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.10 - OVERALL GRADING PLAN.dwg Layout: C03.10 OVERALL GRADING PLAN (SHEET 1 OF 3) Plotted: 11/7/2024 9:35:51 AM By: Arath



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- RAMP (SEE SHEET C06.52)
- LP / HP LOW POINT/HIGH POINT
- 1 A LOT NUMBER AND GRADING TYPE
- DIRECTION OF FLOW
- RETAINING WALL
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

GENERAL NOTES:

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5. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
6. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
7. EARTHEN GRADING SLOPES SHALL BE NO GREATER THAN 3:1.
8. SLOPES GREATER THAN 3:1 ARE ASSUMED TO BE MILLED ROCK. IF SITE CONDITIONS VARY FROM THIS, NOTIFY ENGINEER IMMEDIATELY.
9. SEE SHEET C03.12 FOR TYPICAL LOT GRADING TYPE DETAILS

LOT FILL NOTES:

1. ALL LOTS WITH FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE 79G PROCEDURE THAT MEETS THE REQUIREMENTS OF THE FHA DATA SHEET. DOCUMENTATION AND THE EVIDENCE OF COMPACTED SHALL BE FURNISHED TO THE ENGINEER & OWNER.

FINISHED FLOOR ELEVATIONS

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							APR
							DATE
							DESCRIPTION
							REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

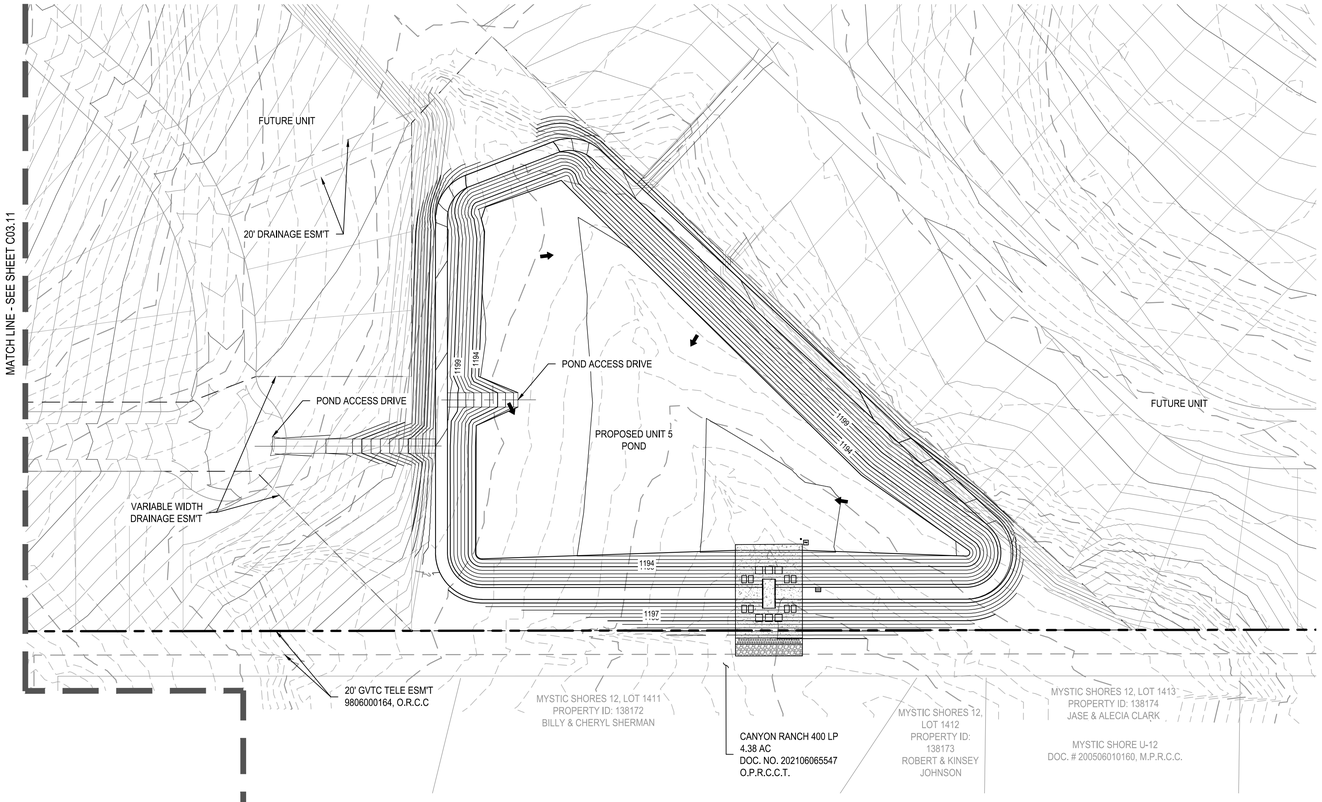
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

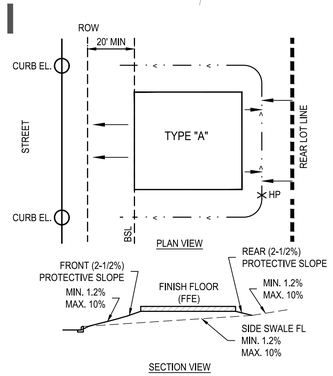
CANYON RANCH UNIT 4

OVERALL GRADING PLAN (SHEET 2 OF 3)

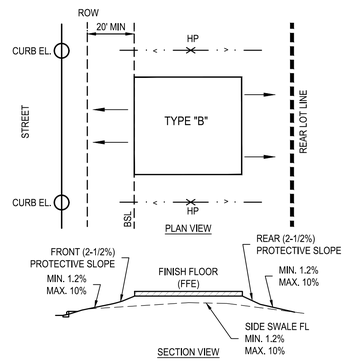
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C03.11

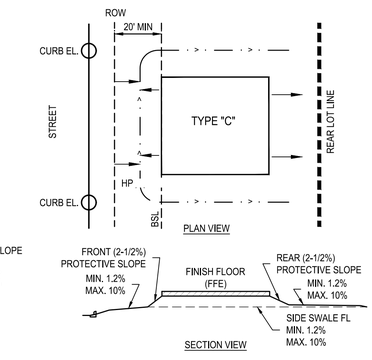




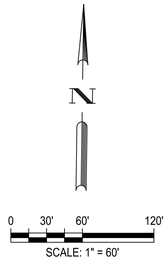
TYPE "A" - ALL DRAINAGE TO STREET
N.T.S.



TYPE "B" - DRAINAGE TO BOTH STREET AND REAR LOT LINE
N.T.S.



TYPE "C" - ALL DRAINAGE TO REAR LOT LINE
N.T.S.



LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- EASEMENT
- 831 — EXISTING MINOR CONTOUR
- 831 — EXISTING MAJOR CONTOUR
- 681 — PROPOSED MINOR CONTOUR
- 686 — PROPOSED MAJOR CONTOUR
- SS — PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- RAMP (SEE SHEET C06.52)
- LP / HP — LOW POINT/HIGH POINT
- 1 A — LOT NUMBER AND GRADING TYPE
- DIRECTION OF FLOW
- RETAINING WALL
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

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9. SEE SHEET C03.12 FOR TYPICAL LOT GRADING TYPE DETAILS

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	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

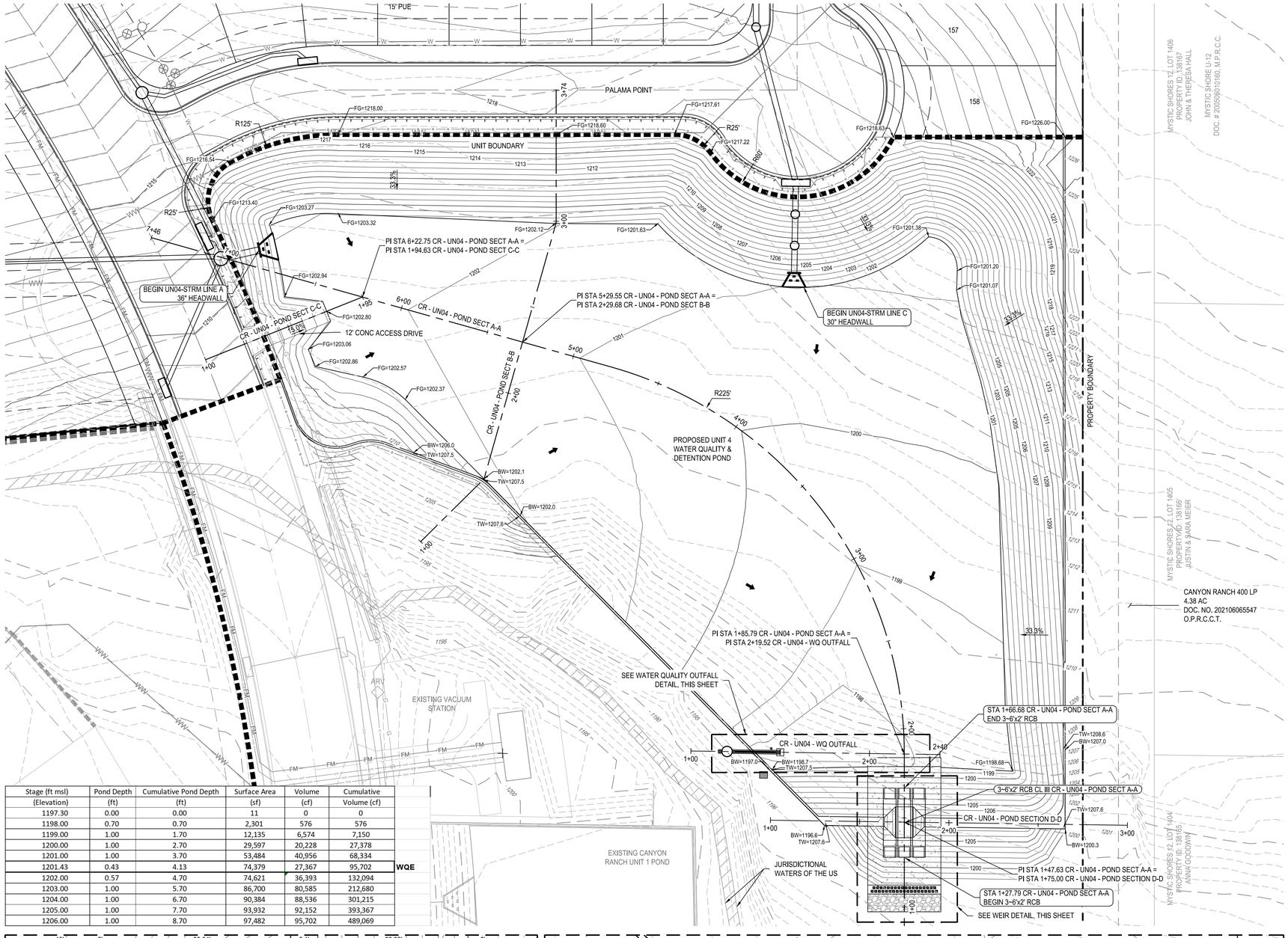
BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

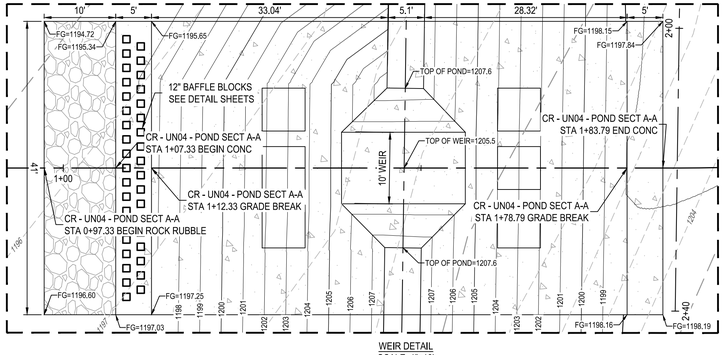
OVERALL GRADING PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

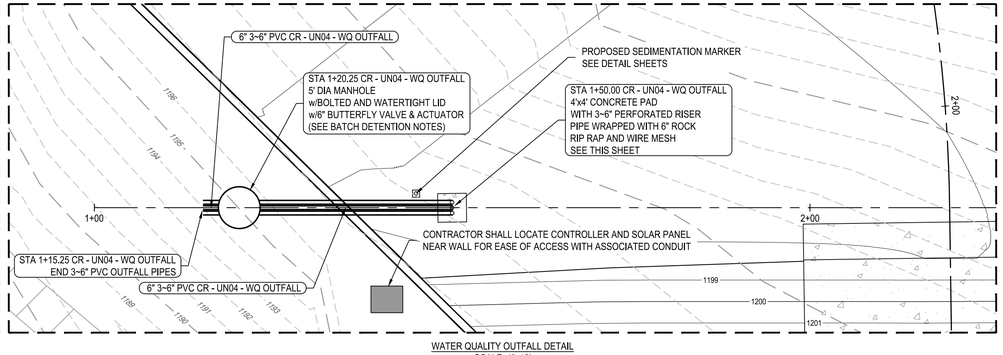
SHEET
C03.12



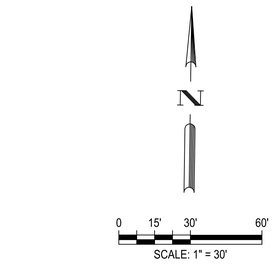
Stage (ft msl)	Pond Depth	Cumulative Pond Depth	Surface Area	Volume	Cumulative	
(Elevation)	(ft)	(ft)	(sf)	(cf)	Volume (cf)	
1197.30	0.00	0.00	11	0	0	
1198.00	0.70	0.70	2,301	576	576	
1199.00	1.00	1.70	12,135	6,574	7,150	
1200.00	1.00	2.70	29,597	20,228	27,378	
1201.00	1.00	3.70	53,484	40,956	68,334	
1201.43	0.43	4.13	74,379	27,367	95,702	WQE
1202.00	0.57	4.70	74,621	36,393	132,094	
1203.00	1.00	5.70	86,700	80,585	212,680	
1204.00	1.00	6.70	90,384	88,536	301,215	
1205.00	1.00	7.70	93,932	92,152	393,367	
1206.00	1.00	8.70	97,482	95,702	489,069	



WEIR DETAIL
SCALE: 1"=10'



WATER QUALITY OUTFALL DETAIL
SCALE: 1"=10'



LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED CURB INLET
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- DIRECTION OF FLOW
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

NOTE: UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF ACCEPTANCE OR OCCUPANCY BY THE PERMIT CENTER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION FACILITY, FILTRATION FACILITIES AND/OR WATER QUALITY FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

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	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	ACR
REVIEWED BY:	SSM
DRAWN BY:	ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

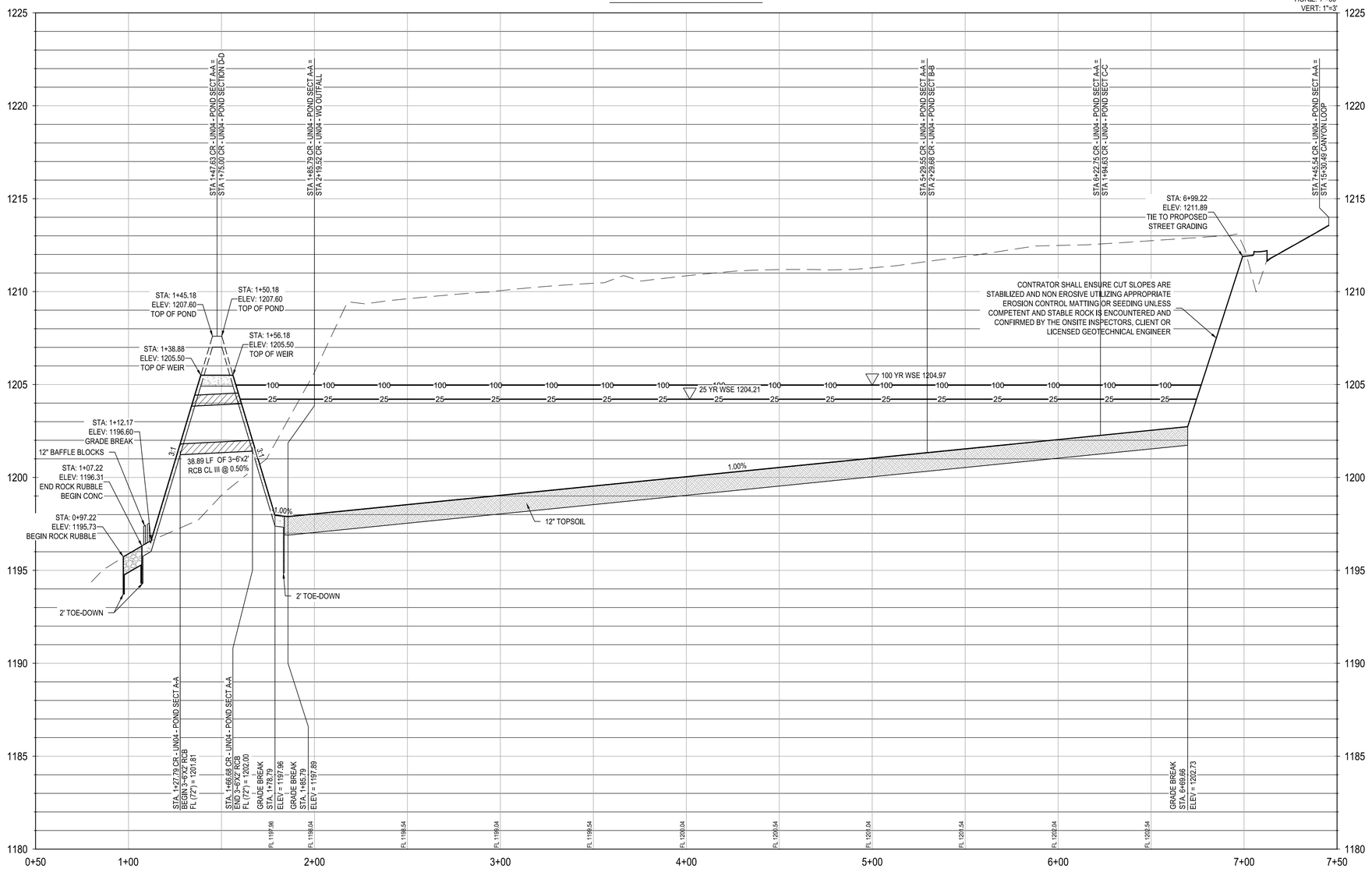
CANYON RANCH UNIT 4
UN04 DETENTION AND WATER QUALITY POND PLAN

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.00

CR - UN04 - POND SECT A-A

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



0 15' 30' 60'
SCALE: 1" = 30'

PROFILE LEGEND

- PROPOSED STORM PIPE
- WATER SURFACE ELEVATION
- PROPOSED GRADE
- EXISTING GRADE

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REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
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San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

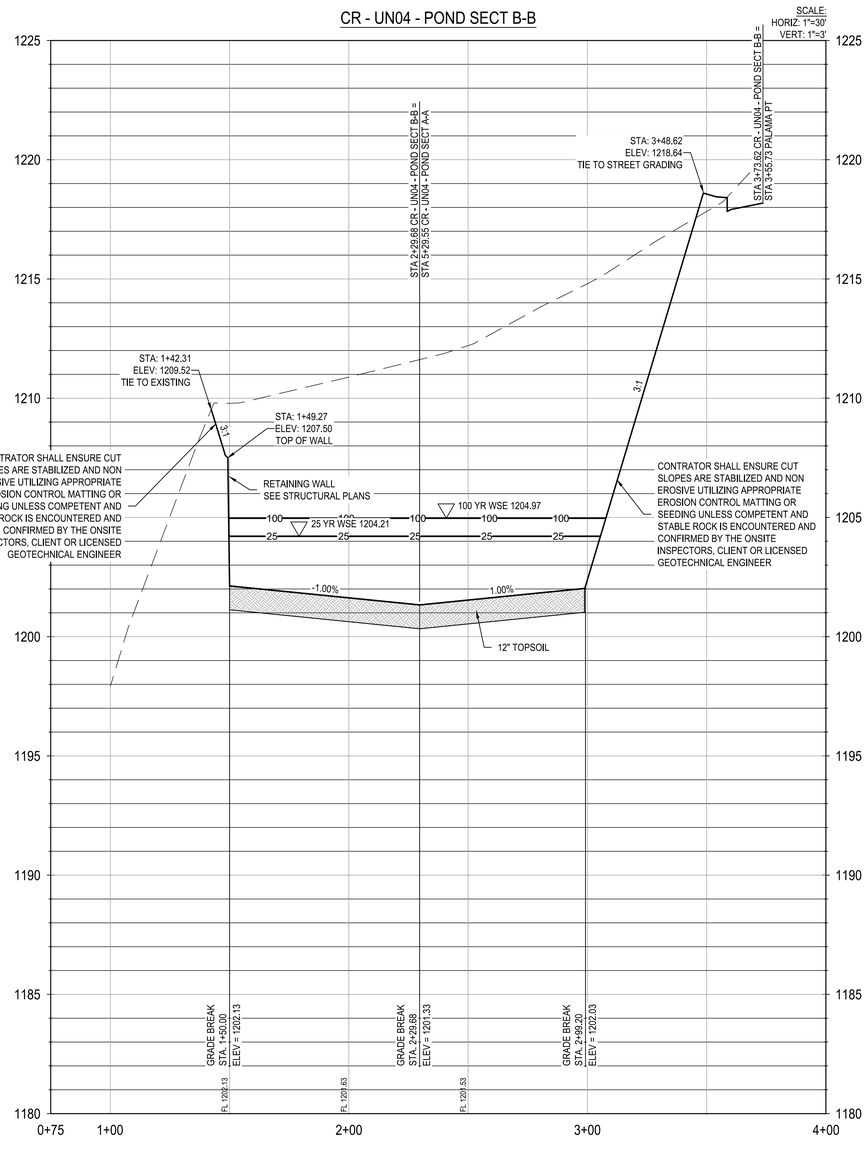
CANYON RANCH UNIT 4

UN04 POND SECTIONS (SHEET 1 OF 3)

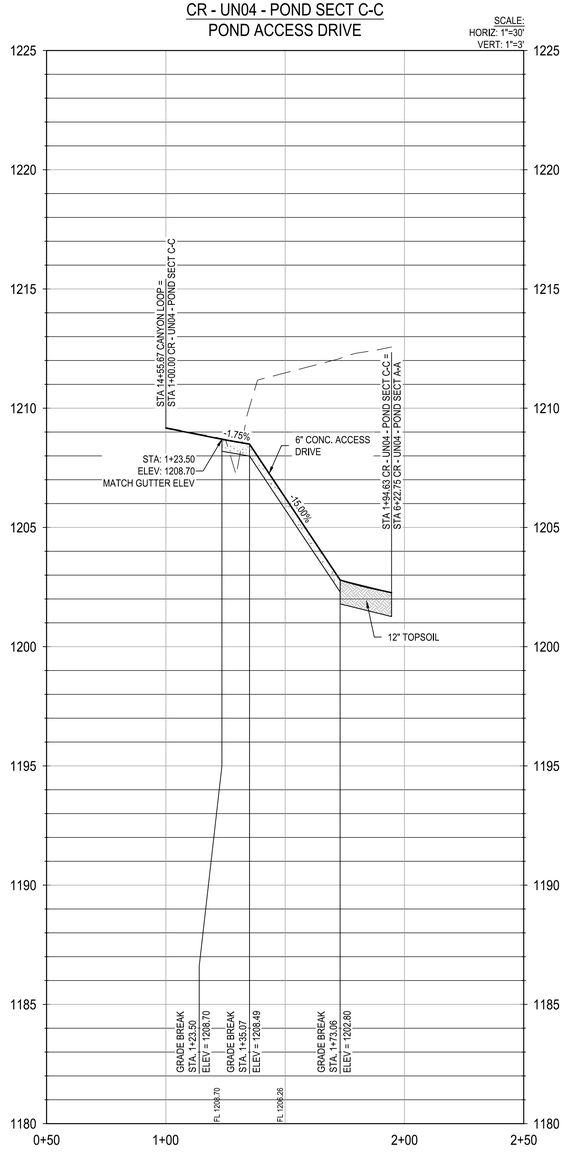
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

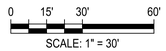
SHEET
C04.01

CR - UN04 - POND SECT B-B



CR - UN04 - POND SECT C-C
POND ACCESS DRIVE





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CANYON RANCH UNIT 4

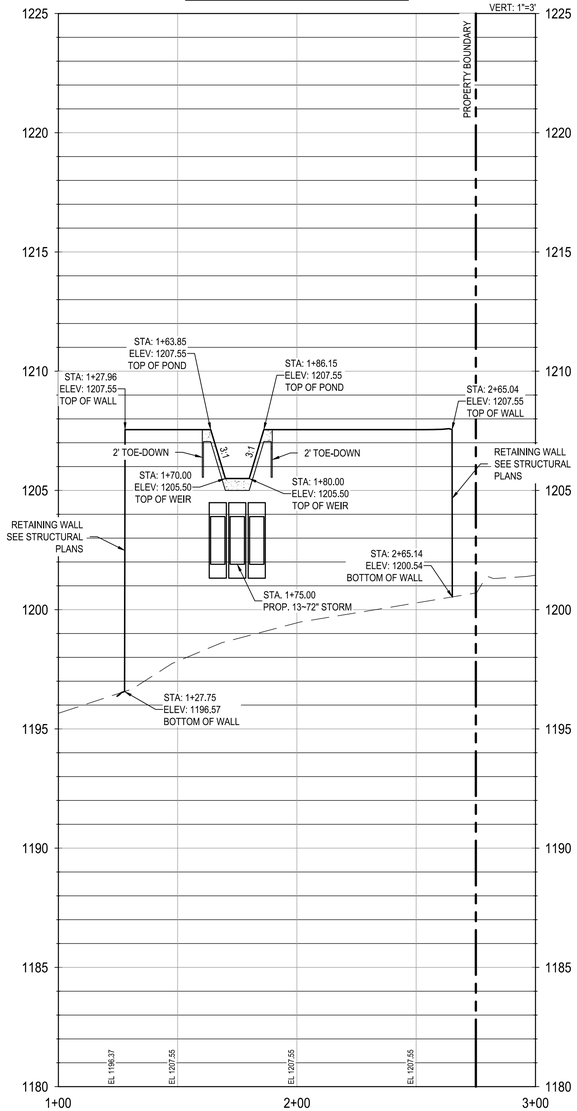
UN04 POND SECTIONS (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.02

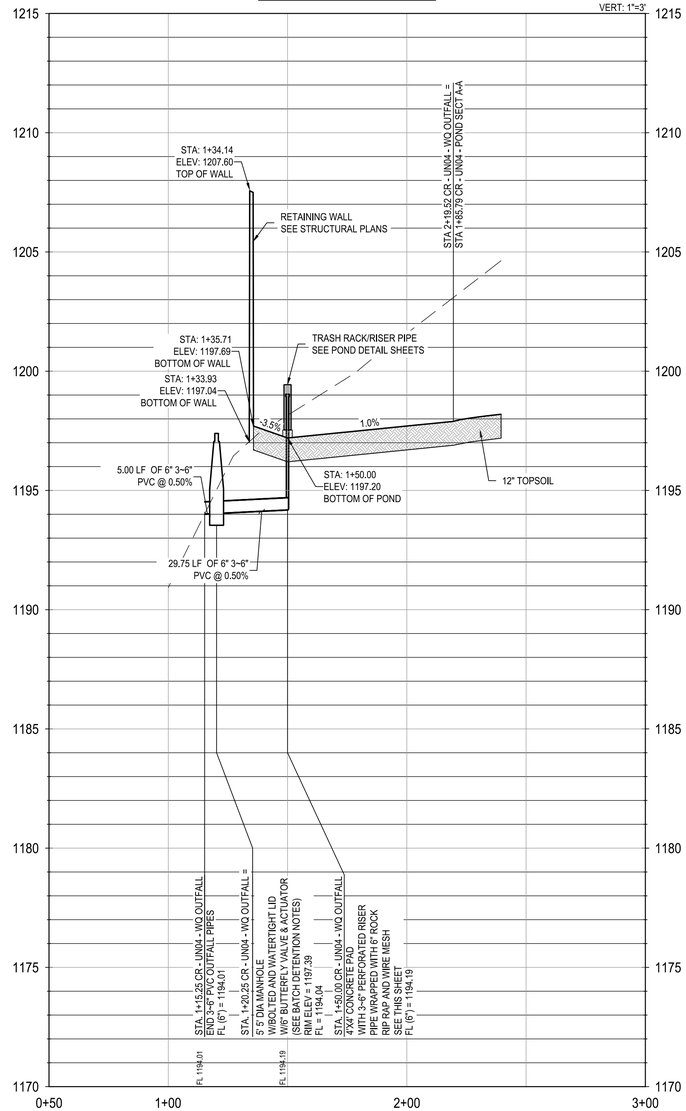
CR - UN04 - POND SECTION D-D

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



CR - UN04 - WQ OUTFALL

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



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CANYON RANCH UNIT 4

UN04 POND SECTIONS (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.03

Texas Commission on Environmental Quality — **UNIT 4 POND- UNIT 4 CONDITIONS**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 9/11/2024

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

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

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

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

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

County =	Comal	
Total project area included in plan * =	30.69	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	19.51	acres
Total post-development impervious cover fraction * =	0.64	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17512	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Unit 4 pond

Total drainage basin/outfall area =	12.16	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.79	acres
Post-development impervious fraction within drainage basin/outfall area =	0.64	
$L_{M\ THIS\ BASIN}$ =	6992	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

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

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

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

A_C =	12.16	acres
A_I =	7.79	acres
A_P =	4.37	acres
L_R =	8165	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 8125 lbs.

F = 1.00

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

Rainfall Depth =	4.00	inches
Post Development Runoff Coefficient =	0.45	
On-site Water Quality Volume =	79752	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	15950	
Total Capture Volume (required water quality volume(s) x 1.20) =	95702	cubic feet

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

Texas Commission on Environmental Quality — **UNIT 4 VFS - CADIZ**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 9/11/2024

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

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

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

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

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

County =	Comal	
Total project area included in plan * =	30.69	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	19.51	acres
Total post-development impervious cover fraction * =	0.64	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17512	lbs.

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

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

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

Drainage Basin/Outfall Area No. = U4 cadiz VFS

Total drainage basin/outfall area =	4.64	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	2.01	acres
Post-development impervious fraction within drainage basin/outfall area =	0.43	
$L_{M\ THIS\ BASIN}$ =	1804	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

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

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

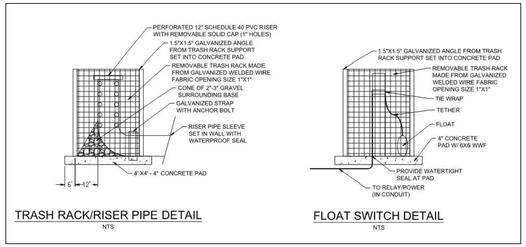
where:
- A_C = Total On-Site drainage area in the BMP catchment area
- A_I = Impervious area proposed in the BMP catchment area
- A_P = Pervious area remaining in the BMP catchment area
- L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	4.64	acres
A_I =	2.01	acres
A_P =	2.63	acres
L_R =	1991	lbs

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

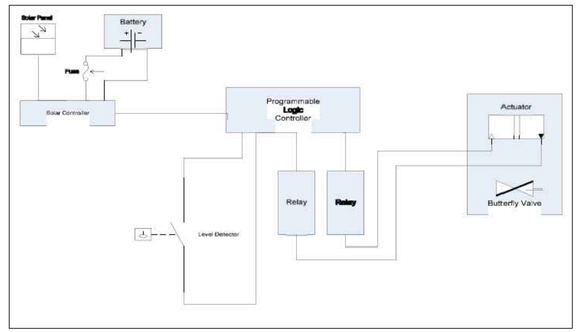
Desired $L_{M\ THIS\ BASIN}$ = 1456 lbs.

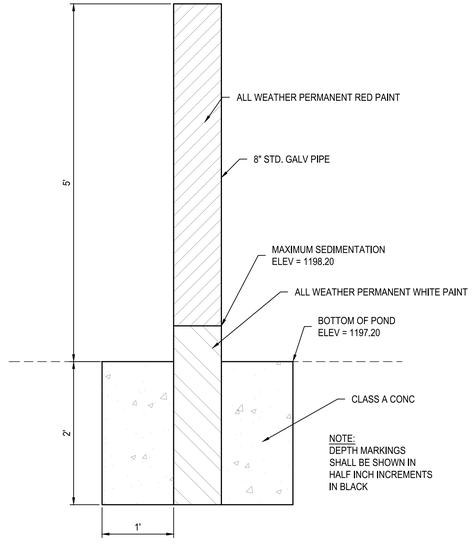
F = 0.73



TRASH RACK/RISER PIPE DETAIL
NTS

FLOAT SWITCH DETAIL
NTS





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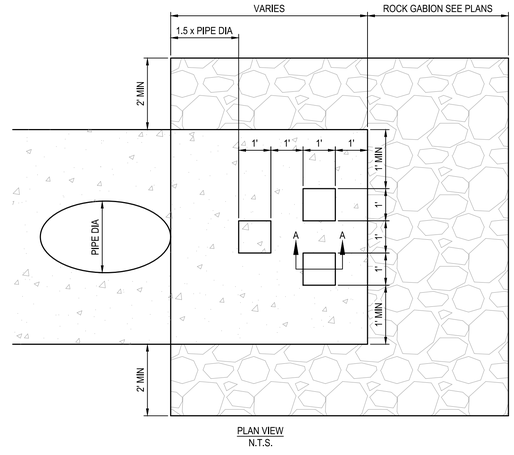
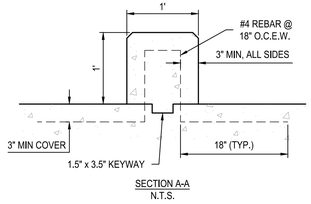


PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

ENERGY DISSIPATOR DETAILS
N.T.S.

	APR	DATE	DESCRIPTION	REV
				◁
				◁
				◁
				◁
				◁

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

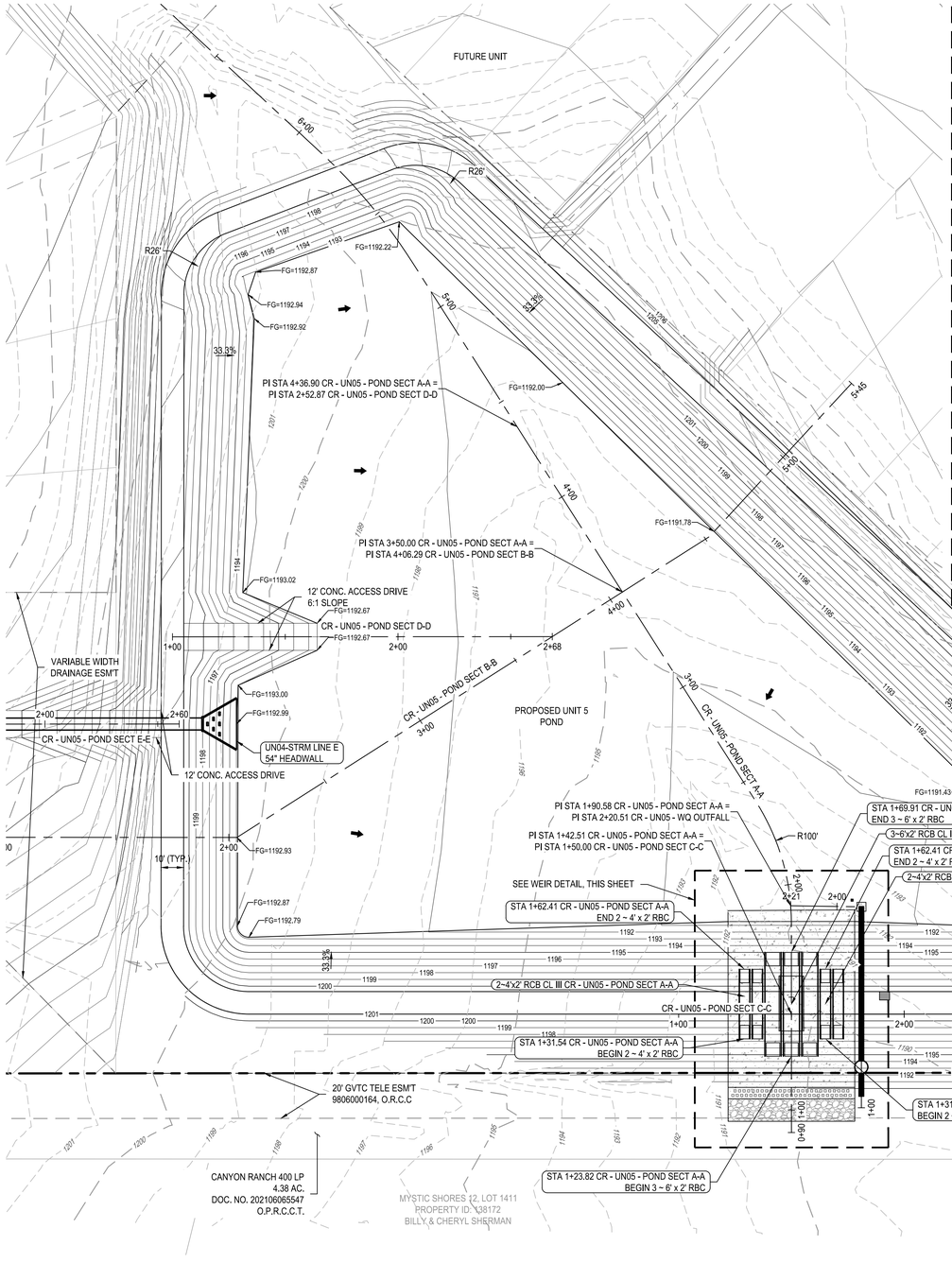
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

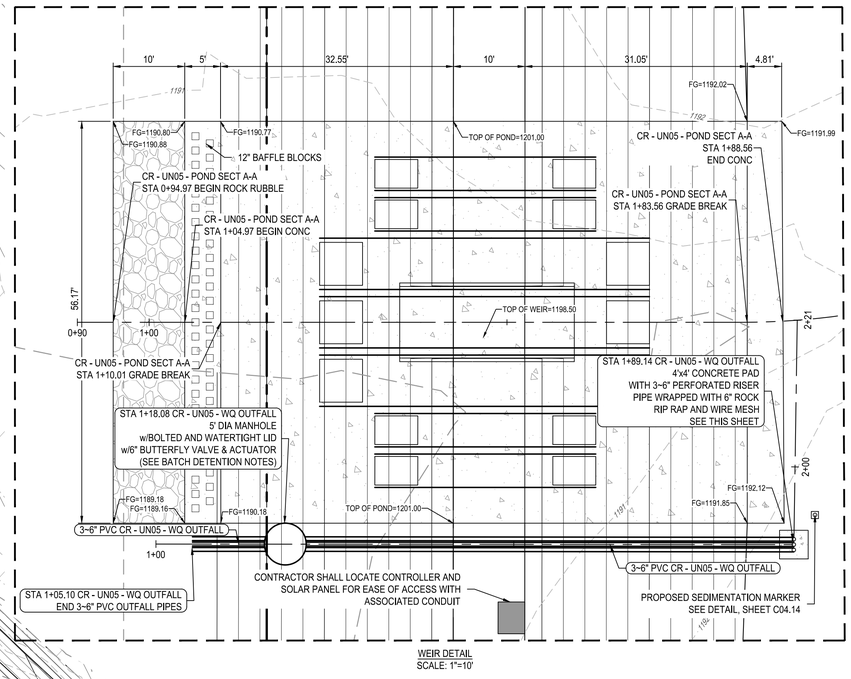
CANYON RANCH UNIT 4

UN04 POND DETAILS

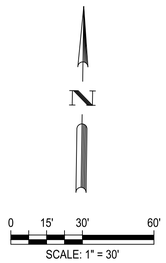
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.04





WEIR DETAIL
SCALE: 1"=10'



SCALE: 1" = 30'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED CURB INLET
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- DIRECTION OF FLOW
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED STORM PIPE
- WATER SURFACE ELEVATION
- PROPOSED GRADE
- EXISTING GRADE

Stage (ft msl) (Elevation)	Pond Depth (ft)	Cumulative Pond Depth (ft)	Surface Area (sf)	Volume (cf)	Cumulative Volume (cf)	
1190.30	0.00	0.00	36	0	0	
1191.00	0.70	0.70	8,908	2,218	2,218	
1192.00	1.00	1.70	44,678	24,512	26,730	
1193.00	1.00	2.70	73,279	58,392	85,122	
1194.00	1.00	3.70	77,146	75,205	160,327	
1195.00	1.00	4.70	80,915	79,023	239,350	WQE
1196.00	1.00	5.70	84,710	82,805	322,155	
1197.00	1.00	6.70	88,533	86,614	408,769	
1198.00	1.00	7.70	92,384	90,451	499,221	
1199.00	1.00	8.70	96,267	94,319	593,540	
1200.00	1.00	9.70	100,191	98,222	691,762	
1201.00	1.00	10.70	118,760	109,344	801,106	

NOTE: UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF ACCEPTANCE OR OCCUPANCY BY THE PERMIT CENTER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION FACILITY, FILTRATION FACILITIES AND/OR WATER QUALITY FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

NOTES:

1. POND SHALL MAINTAINED BY CANYON RANCH MUD OF COMAL COUNTY.
2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 188,691 CF AND THE PROVIDED WATER QUALITY VOLUME IS 239,350 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
2. VALVE/ACTUATOR: THE VALVE/ACTUATOR ASSEMBLY CONSISTS OF A BUTTERFLY VALVE WITH A SMALL 12VDC ACTUATOR. THE VALVE IS A QUARTER TURN VALVE. THE ACTUATOR OPERATES THE VALVE BETWEEN THE FULL OPEN AND FULL CLOSED POSITIONS. A MECHANICAL HAND CLANK ALLOWS A PHYSICAL OVERRIDE OF THE VALVE SYSTEM.
3. THE VALVE IS A KEYSTONE 6-INCH(100MM) BUTTERFLY VALVE MATED WITH A EPI-6 12VDC ACTUATOR. THE EPI-6 ACTUATOR REQUIRES AN OPEN OR CLOSE SIGNAL OF 10 SECONDS. THE ACTUATOR HAS LIMIT SWITCHES THAT DETECT END OF TRAVEL AND SHOT OFF THE INCOMING OPEN OR CLOSE SIGNAL TO THE ACTUATOR ONCE THE VALVES REACHES THE FULL OPEN OR CLOSED POSITION. OVER TORQUE SENSORS WILL SHUT DOWN THE ACTUATOR IN THE EVENT OF AN OVER TORQUE SITUATION.
4. CONTROLLER SYSTEM SPECIFICATIONS:
   - 4.1. POWER - THE CONTROLLER SHALL BE POWERED BY A SHIELD-CONTAINED RENEWABLE POWER SOURCE (SUCH AS SOLAR POWER) IF ELECTRICAL POWER IS NOT AVAILABLE. A SINGLE SUPPLY VOLTAGE FOR ALL COMPONENTS IS DESIRABLE.
   - 4.2. PROGRAMMABILITY - THE CONTROLLED SHALL BE PROGRAMMABLE. IT SHALL BE POSSIBLE TO UPDATE PROGRAMS IN THE FIELD. THE DETENTION TIME AND DRAW-DOWN TIME SHALL BE ADJUSTABLE IN HOURS FROM 0 HOURS TO 72 HOURS.
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   - 4.7. RELIABILITY - 40,000 HOURS(4.6 YEARS) OR GREATER.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
UN05 DETENTION AND WATER QUALITY POND PLAN

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.10

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C04.10 - UN05 DETENTION AND WATER QUALITY POND PLAN.dwg Layout: C04.10 UN05 DETENTION AND WATER QUALITY POND PLAN Plotted: 11/7/2024 9:40:30 AM By: Arath

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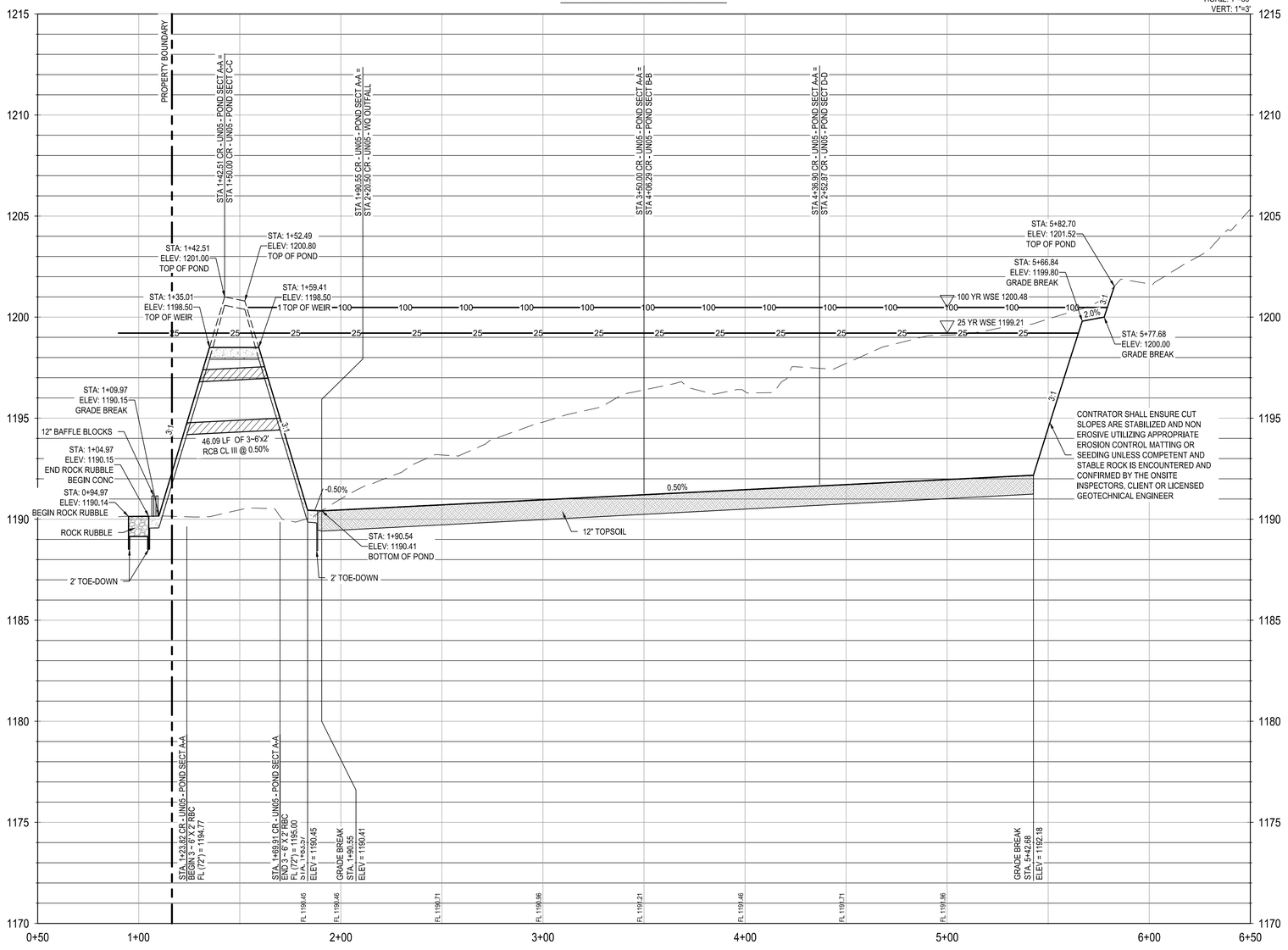
SCALE: 1" = 30'

CR - UN05 - POND SECT A-A

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



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NOTES:

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2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 188,691 CF AND THE PROVIDED WATER QUALITY VOLUME IS 239,350 CF.

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							APR
							DATE
							DESCRIPTION
△	△	△	△	△	△		REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

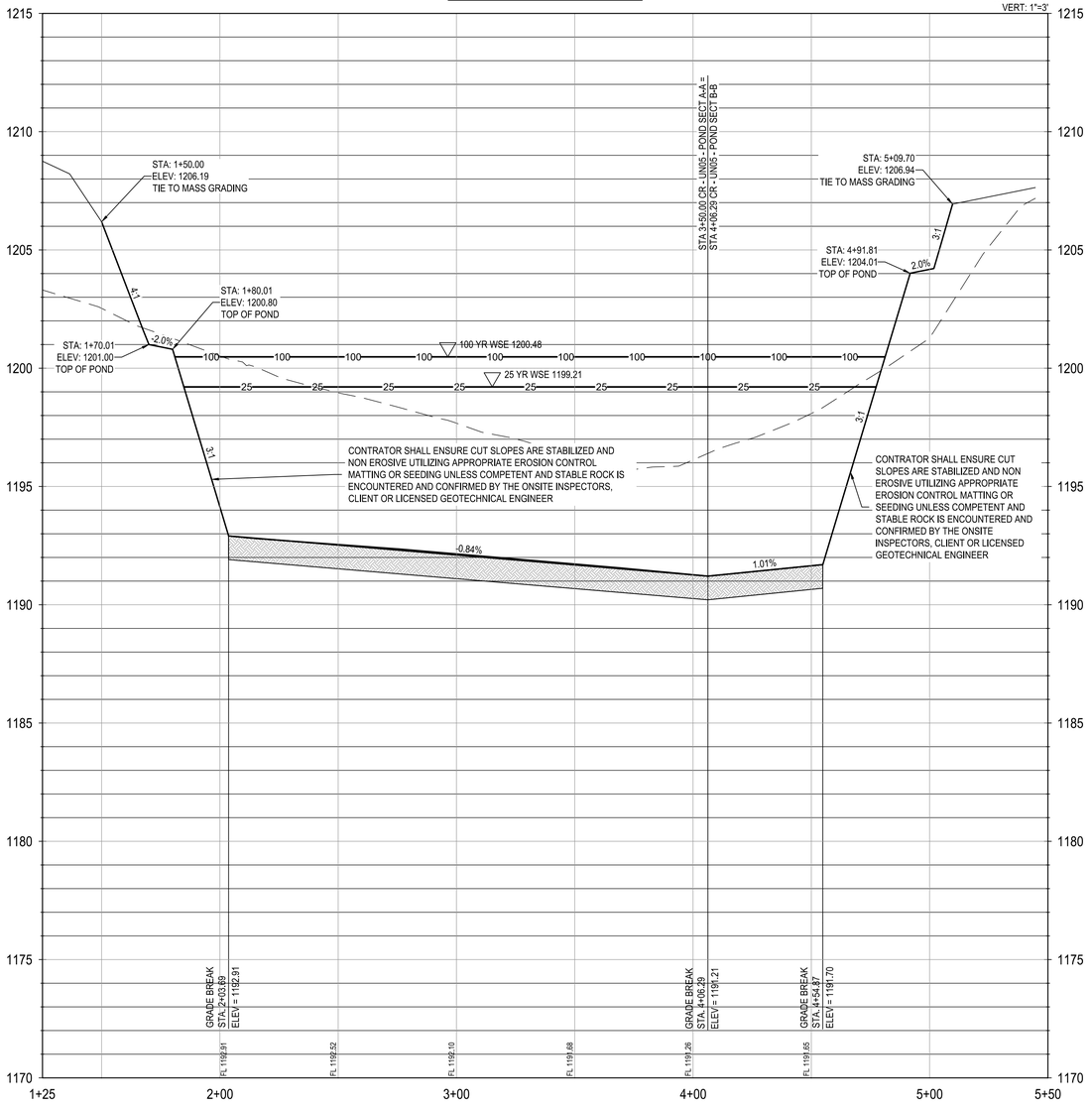
UN05 POND SECTIONS (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.11

CR - UN05 - POND SECT B-B

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



CR - UN05 - POND SECT C-C

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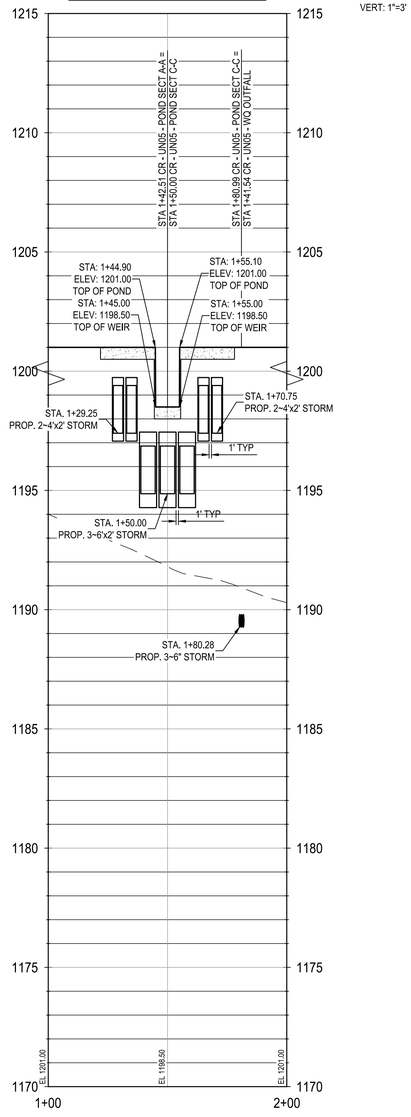

0 15' 30' 60'
SCALE: 1" = 30'

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REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

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TEL: 210-581-3600 www.bgetgy.com
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CANYON RANCH UNIT 4

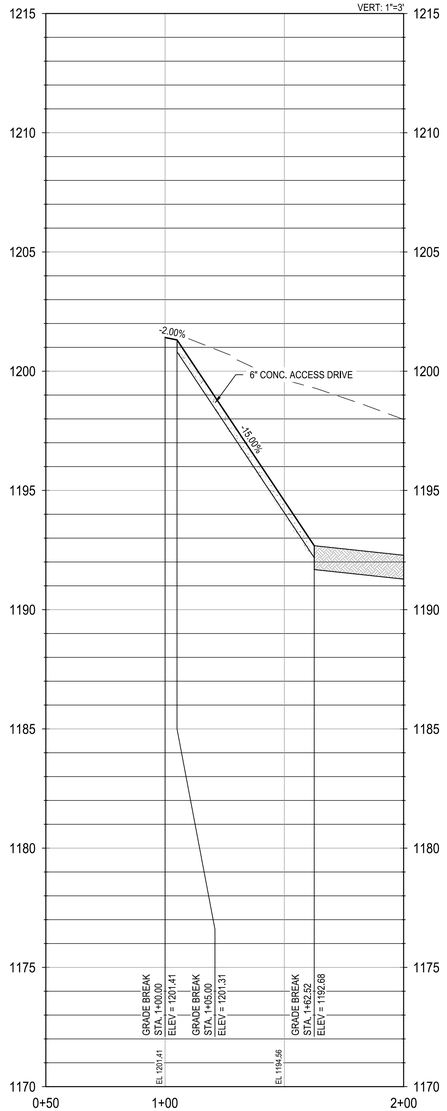
UN05 POND SECTIONS (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.12

CR - UN05 - POND SECT D-D
POND ACCESS DRIVE

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'

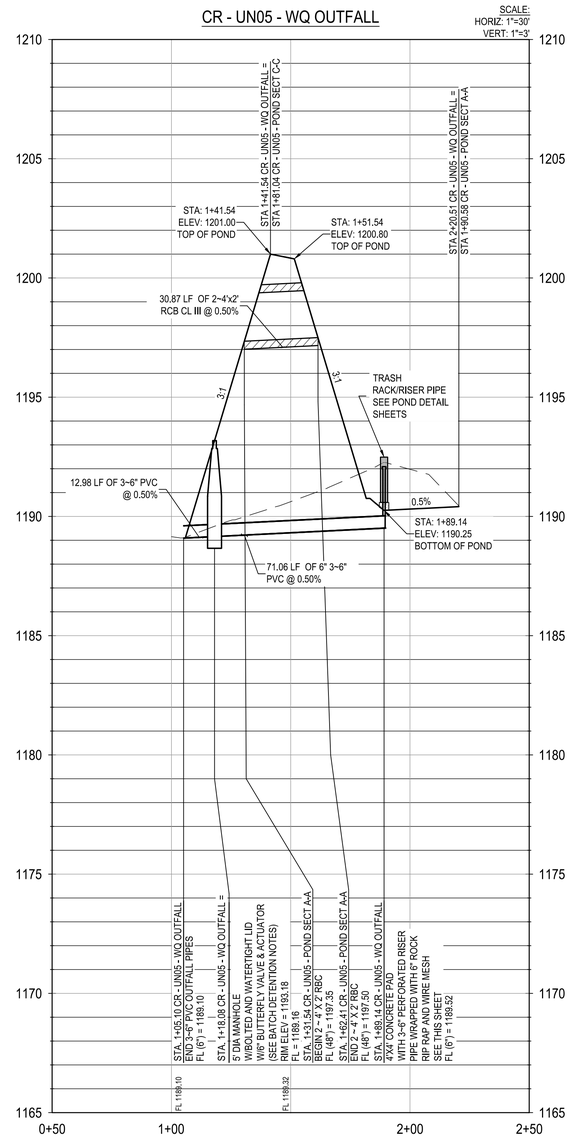


CR - UN05 - POND SECT E-E
POND ACCESS DRIVE

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'

CR - UN05 - WQ OUTFALL

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



0 15' 30' 60'
SCALE: 1" = 30'

NOTE: UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF ACCEPTANCE OR OCCUPANCY BY THE PERMIT CENTER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION FACILITY, FILTRATION FACILITIES AND/OR WATER QUALITY FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

NOTES:

1. POND SHALL MAINTAINED BY CANYON RANCH MUD OF COMAL COUNTY.
2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 188,691 CF AND THE PROVIDED WATER QUALITY VOLUME IS 239,350 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
2. VALVE/ACTUATOR: THE VALVE/ACTUATOR ASSEMBLY CONSISTS OF A BUTTERFLY VALVE WITH A SMALL 12VDC ACTUATOR. THE VALVE IS A QUARTER TURN VALVE. THE ACTUATOR OPERATES THE VALVE BETWEEN THE FULL OPEN AND FULL CLOSED POSITIONS. A MECHANICAL HAND CLANK ALLOWS A PHYSICAL OVERRIDE OF THE VALVE SYSTEM.
3. THE VALVE IS A KEYSTONE 6-INCH(100MM) BUTTERFLY VALVE MATED WITH A EPI-6 12VDC ACTUATOR. THE EPI-6 ACTUATOR REQUIRES AN OPEN OR CLOSE SIGNAL OF 10 SECONDS. THE ACTUATOR HAS LIMIT SWITCHES THAT DETECT END OF TRAVEL AND SHOT OFF THE INCOMING OPEN OR CLOSE SIGNAL TO THE ACTUATOR ONCE THE VALVES REACHES THE FULL OPEN OR CLOSED POSITION. OVER TORQUE SENSORS WILL SHUT DOWN THE ACTUATOR IN THE EVENT OF AN OVER TORQUE SITUATION.
4. CONTROLLER SYSTEM SPECIFICATIONS:
   - 4.1. POWER - THE CONTROLLER SHALL BE POWERED BY A SHIELD-CONTAINED RENEWABLE POWER SOURCE (SUCH AS SOLAR POWER) IF ELECTRICAL POWER IS NOT AVAILABLE. A SINGLE SUPPLY VOLTAGE FOR ALL COMPONENTS IS DESIRABLE.
   - 4.2. PROGRAMMABILITY - THE CONTROLLED SHALL BE PROGRAMMABLE. IT SHALL BE POSSIBLE TO UPDATE PROGRAMS IN THE FIELD. THE DETENTION TIME AND DRAW-DOWN TIME SHALL BE ADJUSTABLE IN HOURS FROM 0 HOURS TO 72 HOURS.
   - 4.3. EVENT SENSING - THE CONTROLLER SHALL BE ABLE TO SENSE THE BEGINNING OF A STORM (WATER FILLING THE BASIN), AND THE END OF A STORM (WATER HAS DRAINED FROM THE BASIN).
   - 4.4. ENVIRONMENT - THE CONTROLLER SHALL OPERATE IN TEMPERATURES FROM 0 DEGREES CELSIUS TO 55 DEGREES CELSIUS, IN HUMIDITY FROM 10% TO 90% (NON-CONDENSING). THE CONTROLLER SHALL OPERATE DURING PERIODS OF RAINFALL.
   - 4.5. SAFETY/SECURITY - THE SYSTEM COMPONENTS SHALL BE LOCKED IN ENCLOSURE TO PREVENT ACCIDENTAL CONTACT THAT COULD COMPROMISED THE FUNCTION OF THE APPARATUS OR CAUSE INJURY.
   - 4.6. MAINTENANCE - THE CONTROLLER SHALL REQUIRE MINIMAL PERIODIC MAINTENANCE TO CONTROLLER PROGRAM SHALL BE FIELD UPGRADEABLE. THE ABILITY TO MANUALLY OPERATE THE VALVE SHALL BE PROVIDED.
   - 4.7. RELIABILITY - 40,000 HOURS(4.6 YEARS) OR GREATER.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

UN05 POND SECTIONS (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.13

Texas Commission on Environmental Quality — **UNIT 5 POND - UNIT 4 CONDITIONS**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 9/11/2024

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

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

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

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

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

County =	Comal	
Total project area included in plan * =	30.69	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	19.51	acres
Total post-development impervious cover fraction * =	0.64	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17512	lbs.

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

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

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

Drainage Basin/Outfall Area No. = unit 5 pond

Total drainage basin/outfall area =	11.59	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.74	acres
Post-development impervious fraction within drainage basin/outfall area =	0.67	
$L_{M\ THIS\ BASIN}$ =	6947	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

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

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

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

A_C =	11.59	acres
A_I =	7.74	acres
A_P =	3.85	acres
L_R =	8105	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 8065 lbs.

F = 1.00

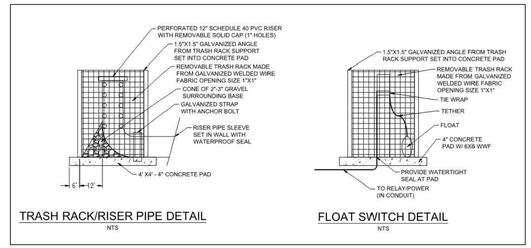
6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. — Calculations from RG-348 — Pages 3-34 to 3-36

Rainfall Depth =	4.00	inches
Post Development Runoff Coefficient =	0.48	
On-site Water Quality Volume =	79954	cubic feet

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

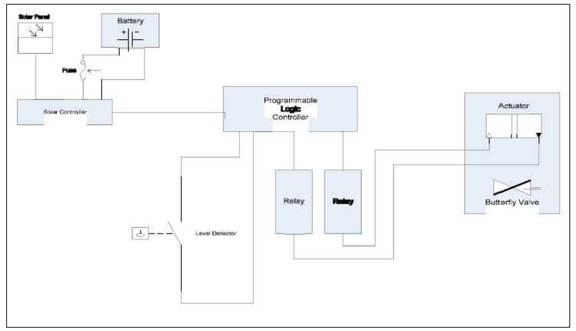
Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	15991	
Total Capture Volume (required water quality volume(s) x 1.20) =	95945	cubic feet

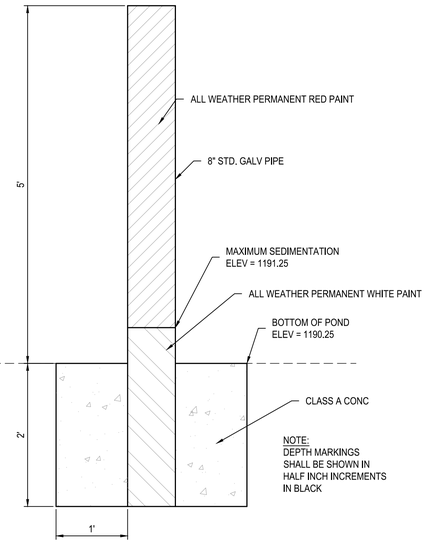
The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.



TRASH RACK/RISER PIPE DETAIL
NTS

FLOAT SWITCH DETAIL
NTS





CONCRETE FILLED FIXED SEDIMENT MARKER
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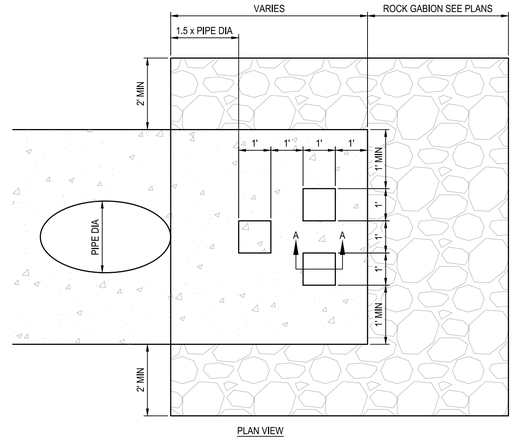
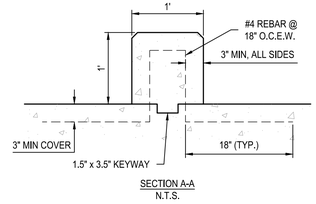


PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

ENERGY DISSIPATOR DETAILS
N.T.S.

	APR	DATE	DESCRIPTION	REV
				◁
				◁
				◁
				◁
				◁

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

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San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

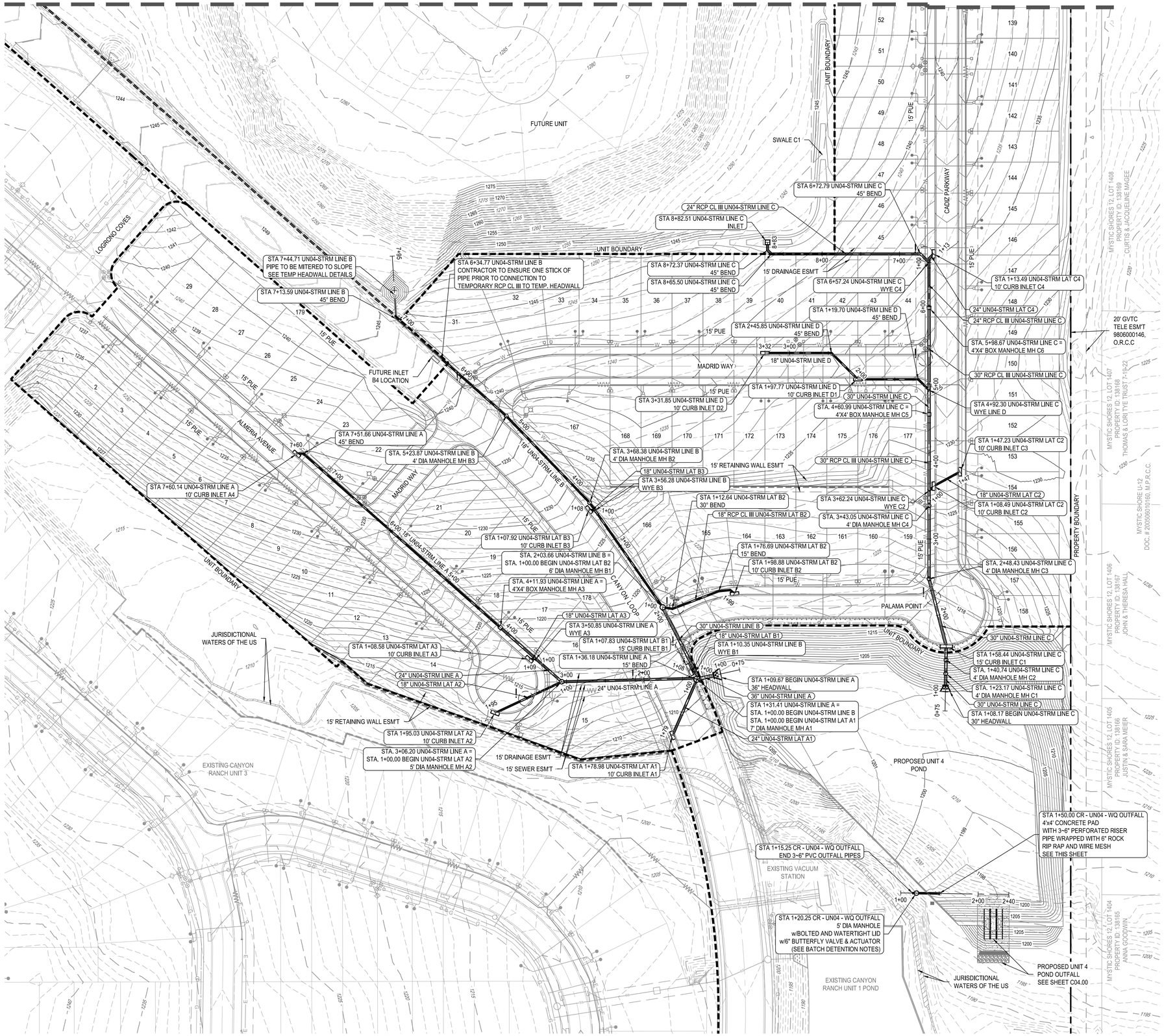
CANYON RANCH UNIT 4

UN05 POND DETAILS

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C04.14

MATCH LINE - SEE SHEET C06.01



0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

✳ ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

	APR
	DATE
	DESCRIPTION
◁ ◁ ◁ ◁ ◁ ◁	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

BGE

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN COLLECTION PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.00

G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.00 - STORM DRAIN COLLECTION PLAN.dwg Layout: C06.00 STORM DRAIN COLLECTION PLAN (SHEET 1 OF 3) Plotted: 11/7/2024 10:42:26 AM By: Mhernandez

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

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NOTES:

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2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
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4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

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REV	DATE	APR	DESCRIPTION

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

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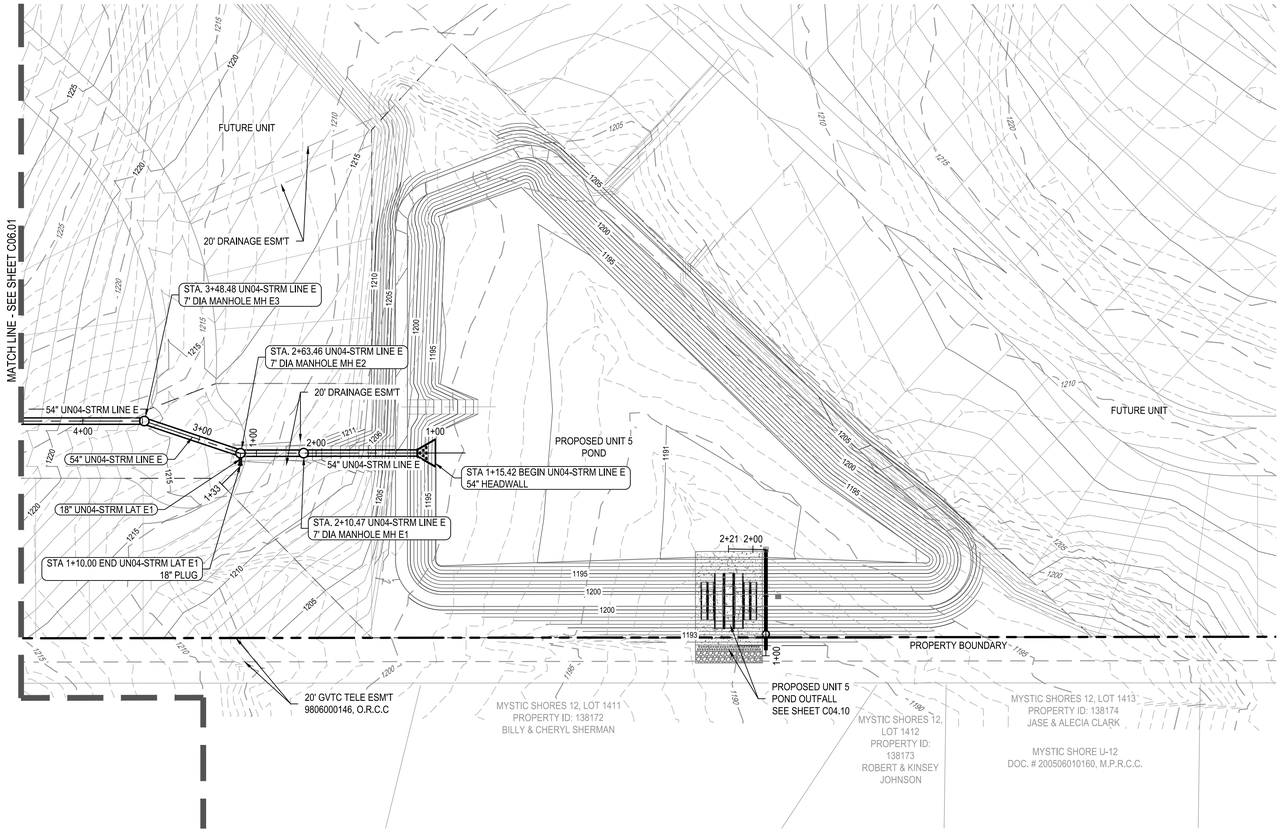
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN COLLECTION PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.01



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
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- EASEMENT
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	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

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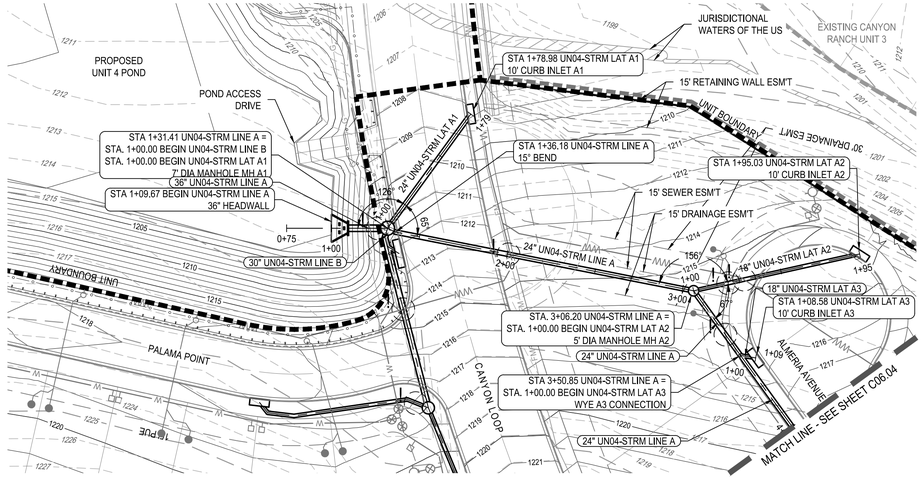
CANYON RANCH UNIT 4

STORM DRAIN COLLECTION PLAN (SHEET 3 OF 3)

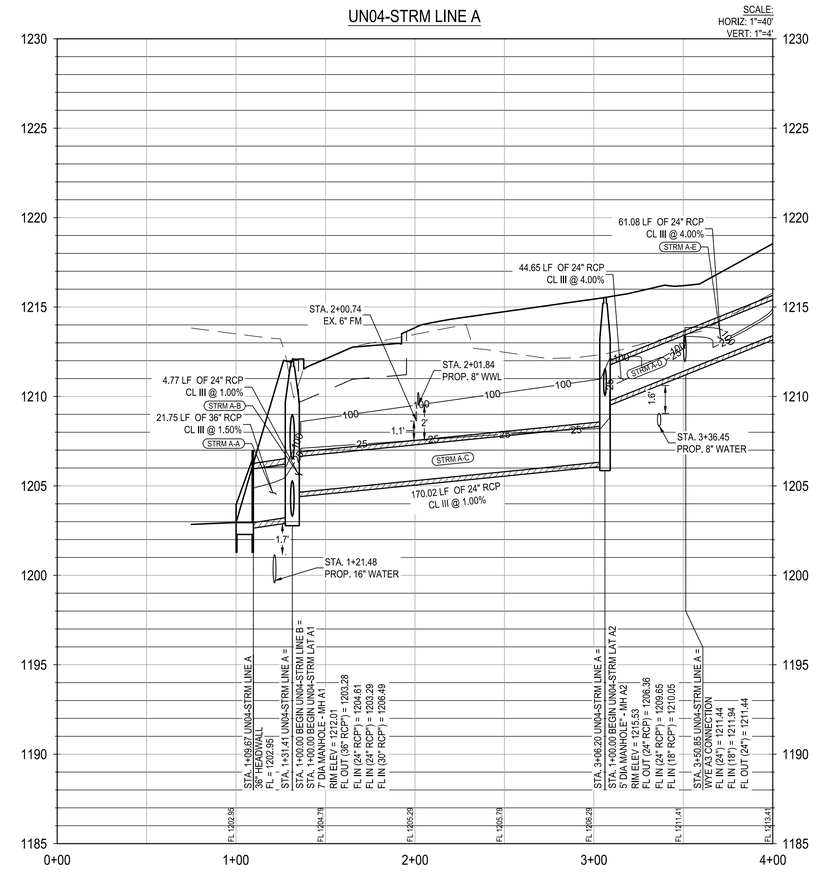
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

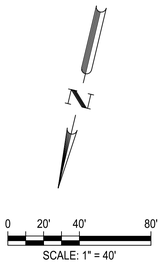
SHEET
C06.02



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM A-A	70.35	12.96	3.00
STRM A-B	26.42	8.41	3.10
STRM A-C	26.76	8.52	3.94
STRM A-D	22.37	14.35	2.45
STRM A-E	9.06	11.99	2.42

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM A-A	48.75	12.03	1.93
STRM A-B	18.44	5.87	2.06
STRM A-C	18.69	8.05	2.45
STRM A-D	15.63	13.07	0.89
STRM A-E	6.33	10.81	1.92





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

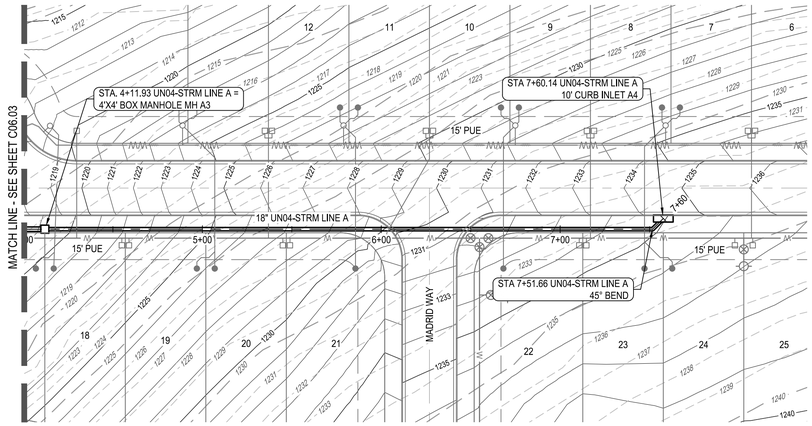
BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE A PLAN AND PROFILE
STA 1+00 TO 4+00

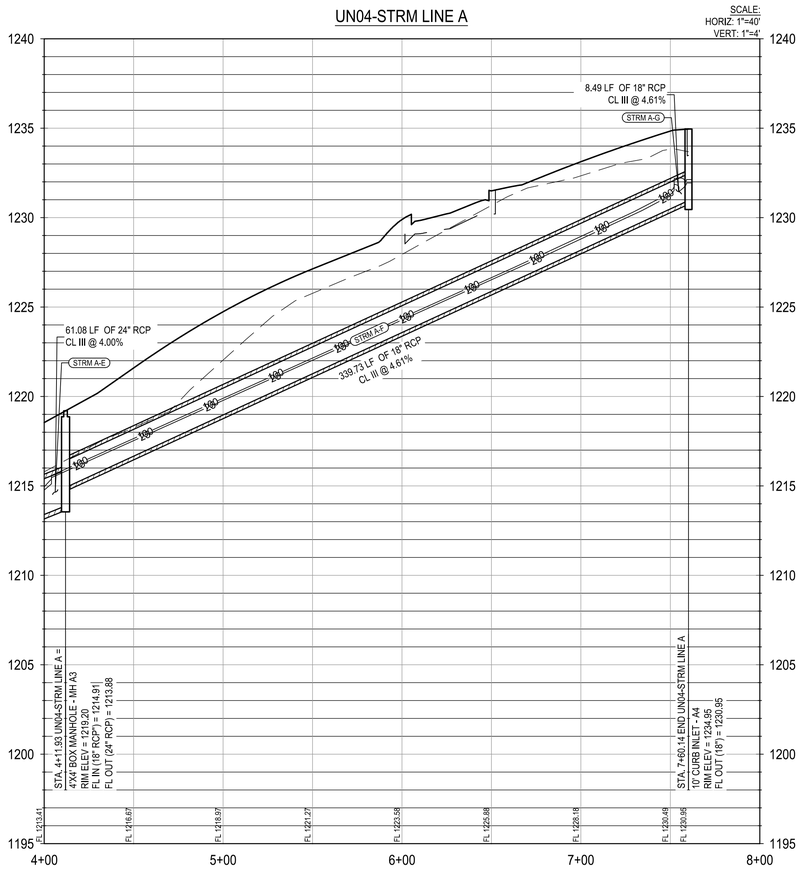
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

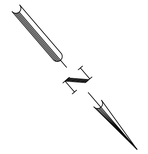
SHEET
C06.03



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM A-E	9.06	11.99	2.42
STRM A-F	9.23	11.98	0.67
STRM A-G	9.23	12.11	1.62

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM A-E	6.33	10.81	1.92
STRM A-F	6.45	10.89	0.55
STRM A-G	6.46	11.01	1.31





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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						APR
						DATE
						DESCRIPTION
						REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE

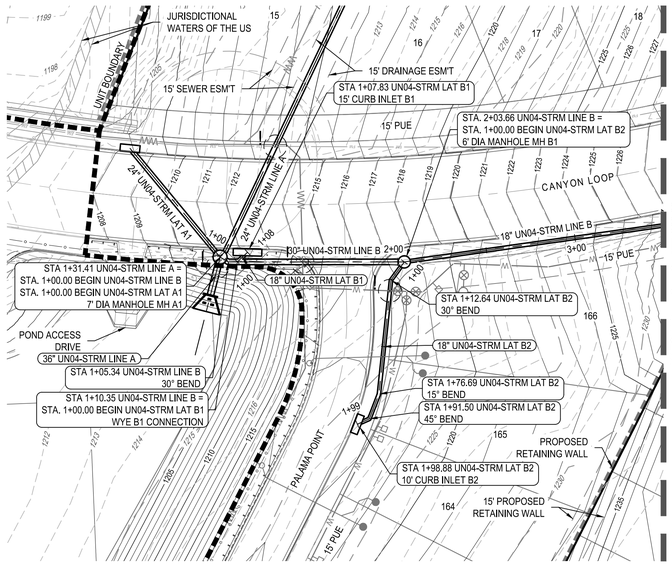
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE A PLAN AND PROFILE STA 4+00 TO END

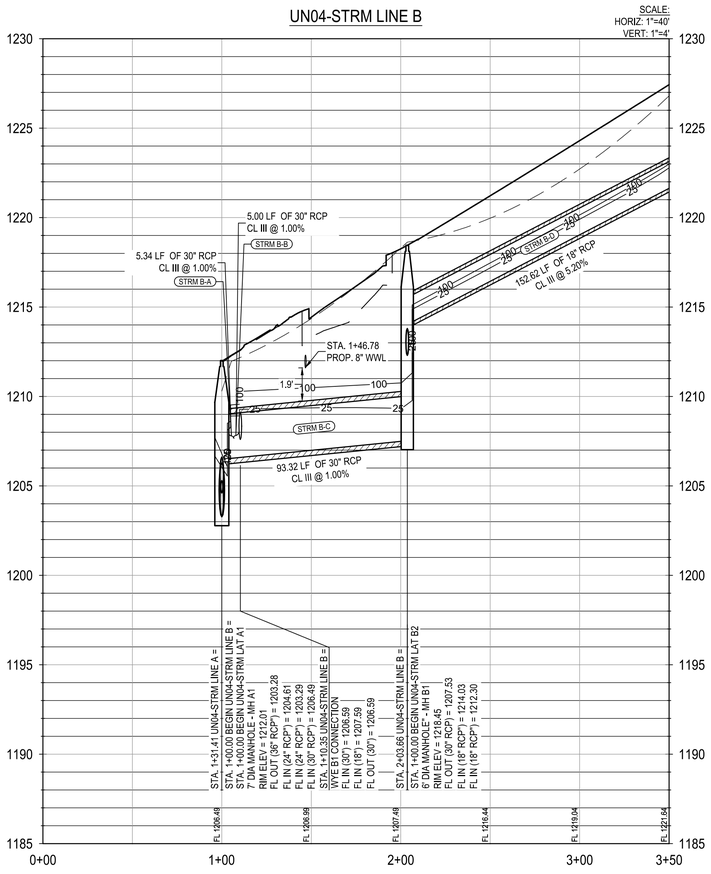
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

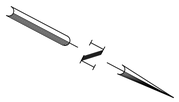
SHEET
C06.04



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM B-A	38.37	9.54	2.02
STRM B-B	38.39	7.82	2.98
STRM B-C	29.28	5.97	3.69
STRM B-D	20.94	15.27	1.09

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM B-A	26.61	8.92	1.64
STRM B-B	26.62	8.88	2.36
STRM B-C	20.20	8.32	2.69
STRM B-D	14.33	14.15	0.84





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
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NOTES:

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	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

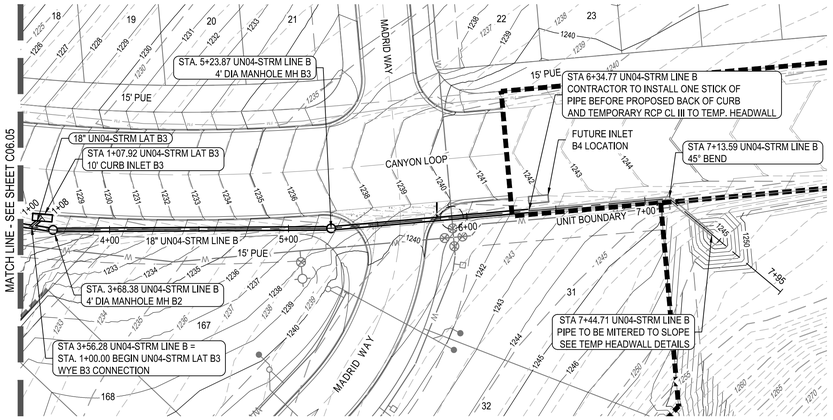
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE B PLAN AND PROFILE
STA 1+00 TO 3+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.05

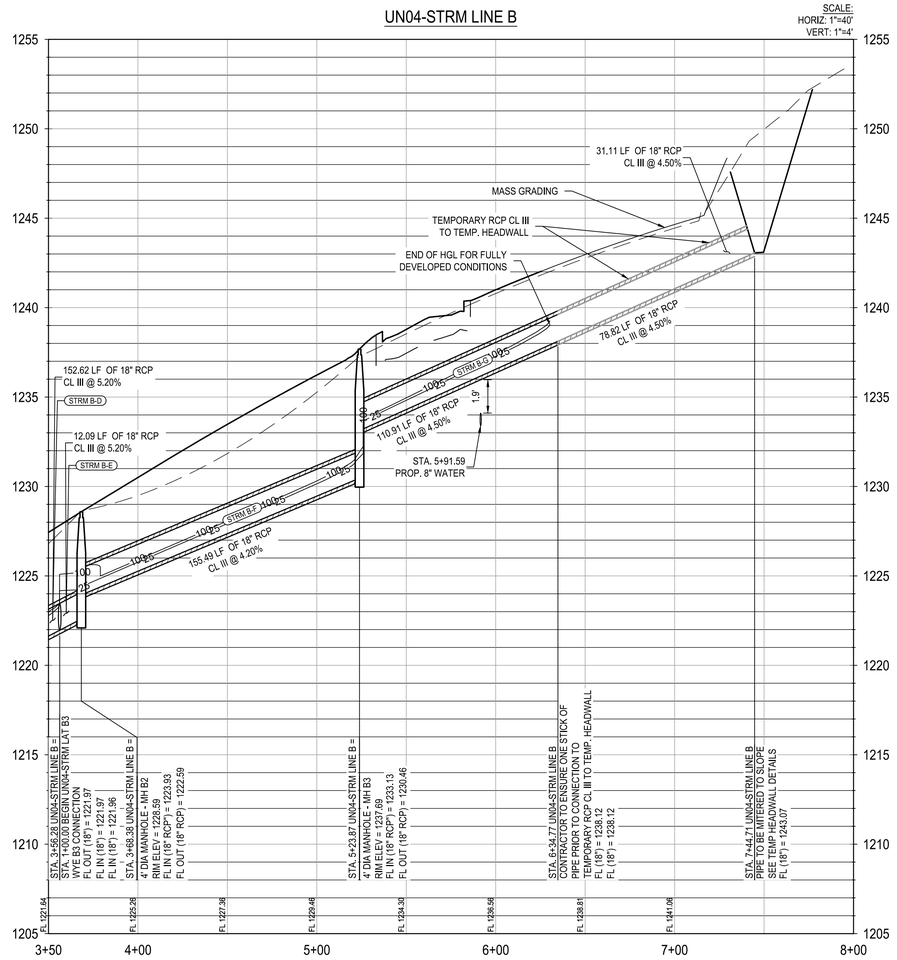


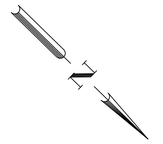
PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM B-D	20.94	15.27	1.09
STRM B-E	9.12	5.16	3.12
STRM B-F	9.20	11.69	1.66
STRM B-G	9.25	12.20	0.67

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM B-D	14.33	14.15	0.84
STRM B-E	6.15	3.48	2.21
STRM B-F	6.21	10.53	0.55
STRM B-G	6.25	10.98	0.54

UN04-STRM LINE B

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR (831)
- EXISTING MAJOR CONTOUR (831)
- PROPOSED MINOR CONTOUR (681)
- PROPOSED MAJOR CONTOUR (686)
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE (WW)
- PROPOSED WATER LINE (W)
- EXISTING FORCE MAIN (FM)
- PROPOSED ELECTRIC (E)
- PROPOSED GAS LINE (G)
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL (25 — 100)
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NOTES:

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						APR
						DATE
						DESCRIPTION
△	△	△	△	△	△	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

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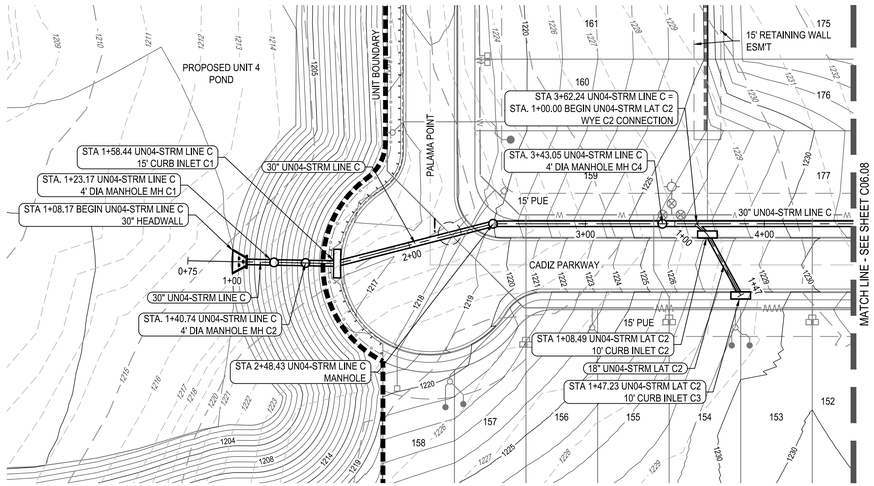
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE B PLAN AND PROFILE
STA 3+50 TO END

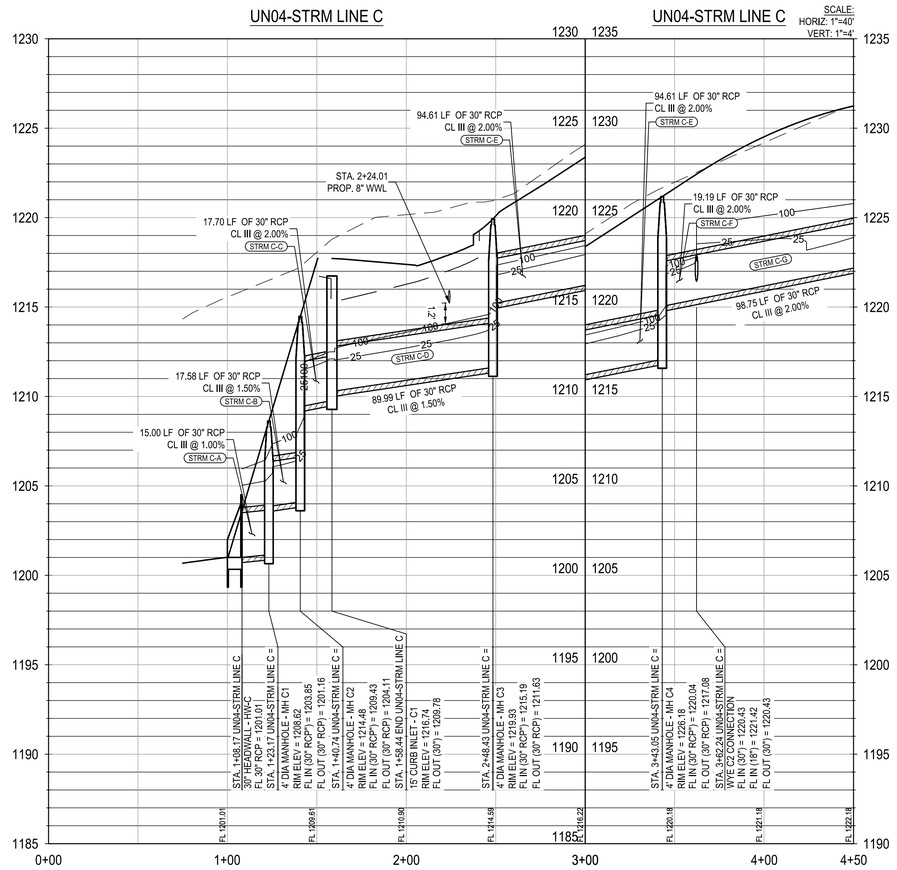
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.06



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM C-A	74.63	15.20	4.95
STRM C-B	74.69	15.22	3.50
STRM C-C	74.74	15.23	2.45
STRM C-D	59.13	12.05	2.39
STRM C-E	59.40	13.45	2.16
STRM C-F	59.45	13.45	2.27
STRM C-G	47.61	9.70	4.15

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM C-A	51.48	10.49	4.03
STRM C-B	51.53	11.63	2.21
STRM C-C	51.57	13.35	2.08
STRM C-D	40.59	11.39	1.75
STRM C-E	40.78	12.80	1.61
STRM C-F	40.82	12.80	1.81
STRM C-G	32.45	12.15	3.11



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

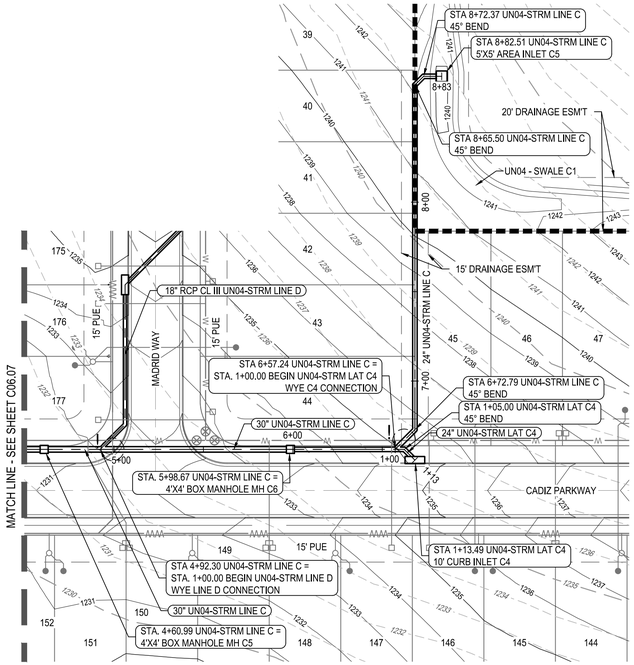
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE C PLAN AND PROFILE
STA 1+00 TO 4+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.07

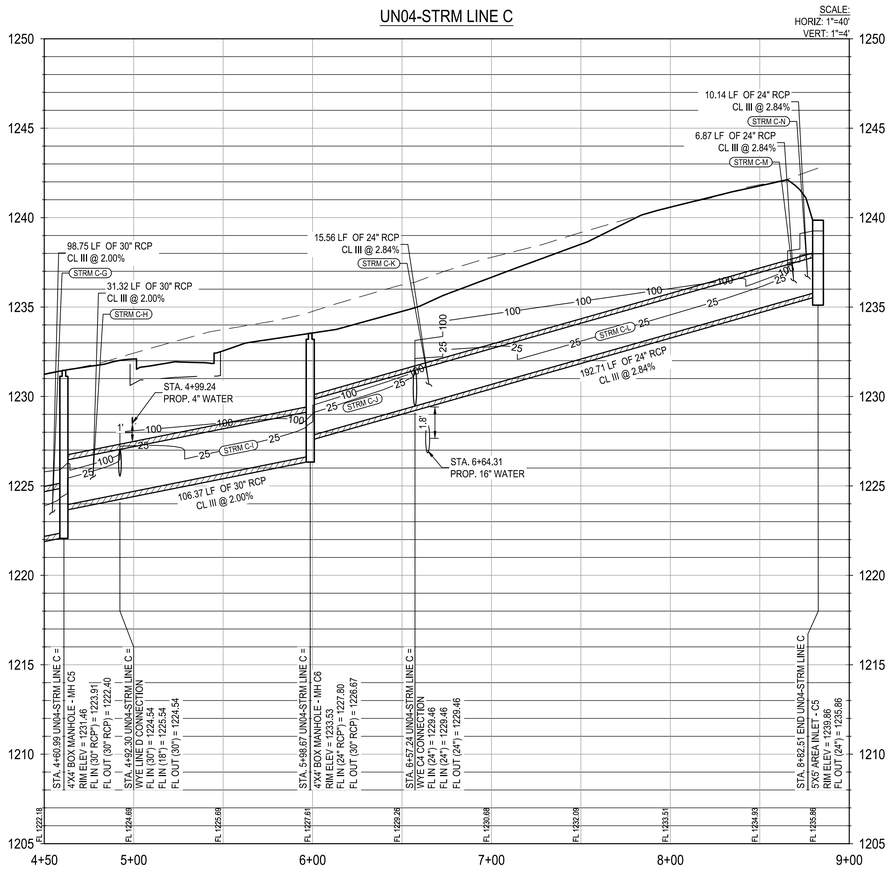


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM C-G	47.61	9.70	4.15
STRM C-H	47.69	13.19	2.36
STRM C-I	37.87	12.59	3.48
STRM C-J	37.97	13.84	1.72
STRM C-K	26.88	8.55	3.67
STRM C-L	27.12	13.16	4.30
STRM C-M	27.14	8.64	2.77
STRM C-N	27.16	8.64	3.54

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM C-G	32.45	12.15	3.11
STRM C-H	32.50	12.15	1.52
STRM C-I	25.66	11.46	2.68
STRM C-J	25.73	13.03	1.29
STRM C-K	17.99	5.73	2.66
STRM C-L	18.17	11.97	2.70
STRM C-M	18.18	12.10	2.11
STRM C-N	18.20	5.79	2.34

UN04-STRM LINE C

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE

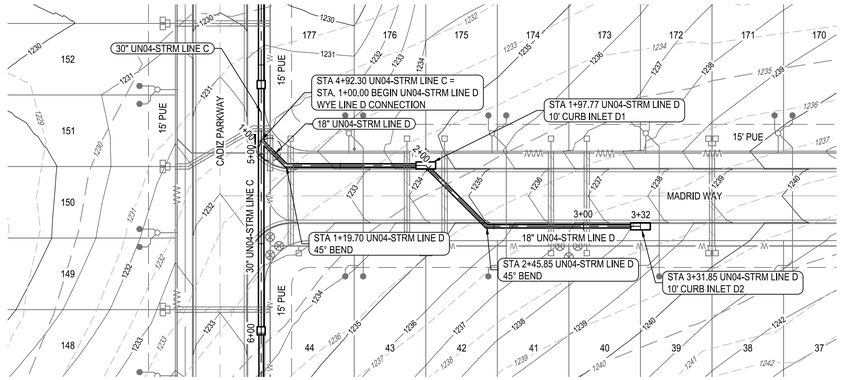
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE C PLAN AND PROFILE
STA 4+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.08

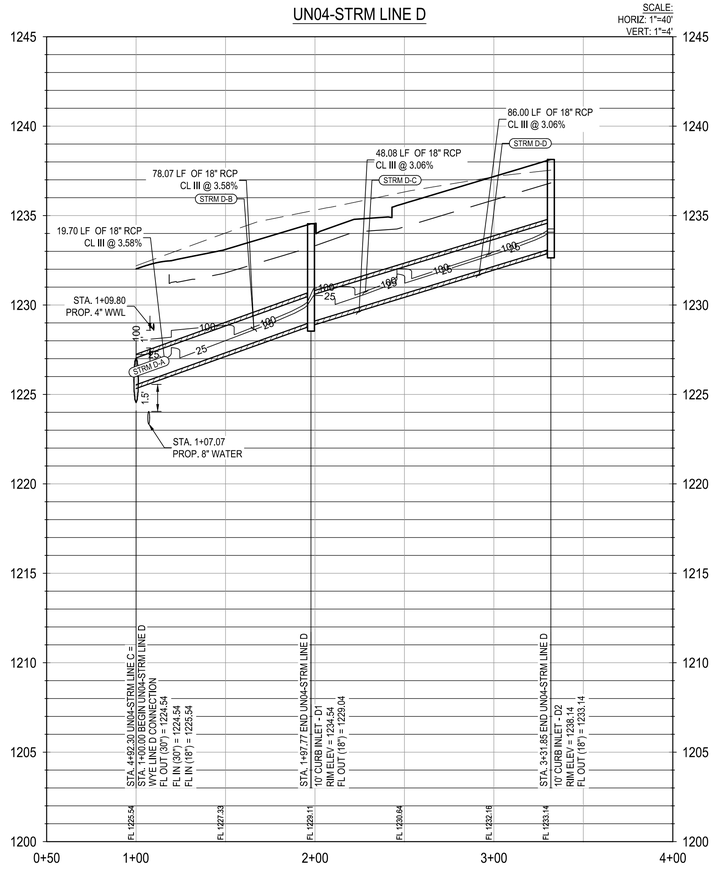


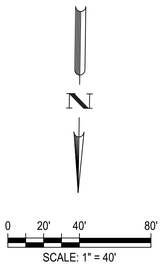
PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM D-A	10.12	10.89	2.48
STRM D-B	10.12	10.89	1.72
STRM D-C	8.33	10.37	1.87

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM D-A	7.07	9.93	1.68
STRM D-B	7.07	9.93	1.38
STRM D-C	5.83	9.42	1.38

UN04-STRM LINE D

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
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	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

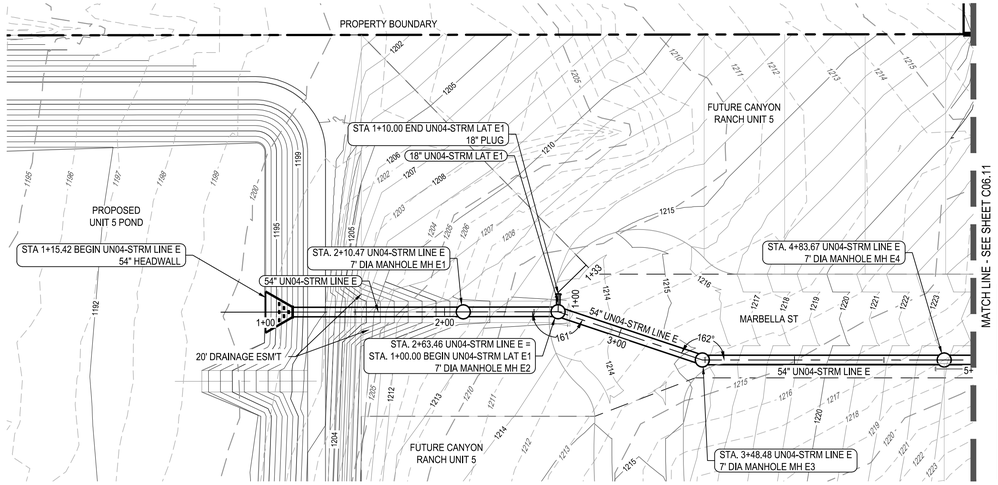
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE D PLAN AND PROFILE

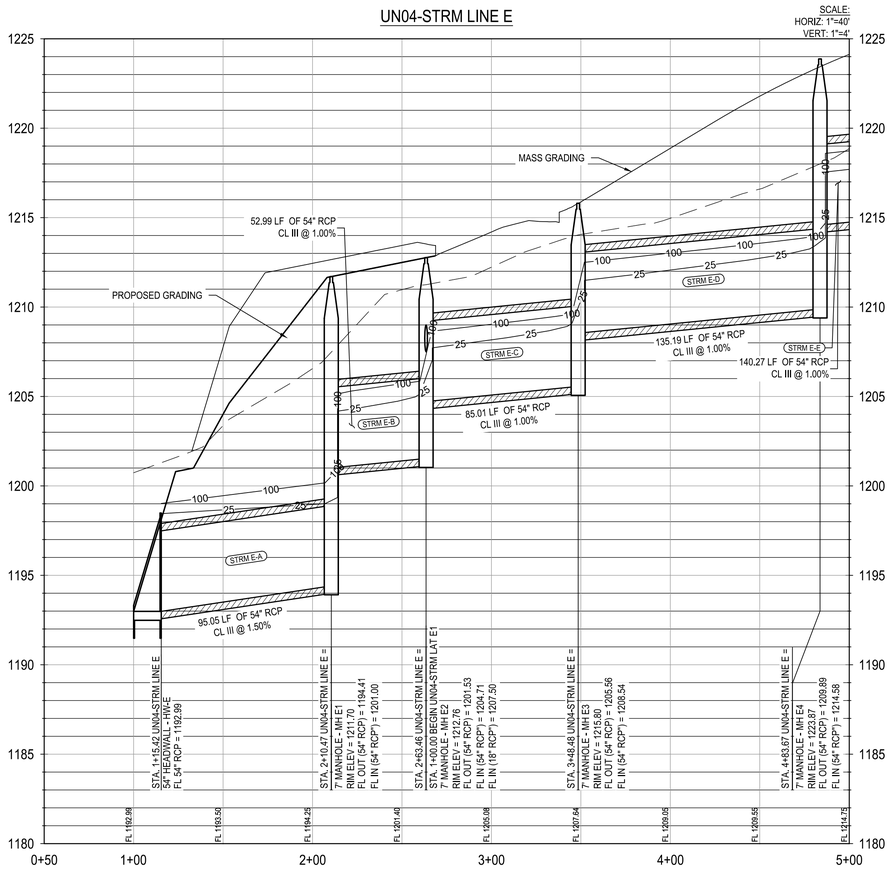
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

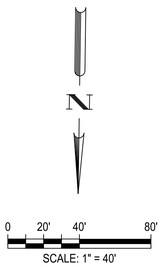
SHEET
C06.09



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM E-A	216.33	13.60	6.03
STRM E-B	216.87	13.64	4.14
STRM E-C	205.96	14.01	4.11
STRM E-D	207.23	13.99	3.96
STRM E-E	208.55	13.94	4.01

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM E-A	150.36	9.45	5.46
STRM E-B	150.74	13.63	3.17
STRM E-C	143.20	13.49	3.01
STRM E-D	144.12	13.51	2.96
STRM E-E	145.08	13.52	2.97





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR (831)
- EXISTING MAJOR CONTOUR (831)
- PROPOSED MINOR CONTOUR (681)
- PROPOSED MAJOR CONTOUR (686)
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE (WW)
- PROPOSED WATER LINE (W)
- EXISTING FORCE MAIN (FM)
- PROPOSED ELECTRIC (E)
- PROPOSED GAS LINE (G)
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL (25 — 100)
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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REVIEWED BY: SSM
DRAWN BY: JDC

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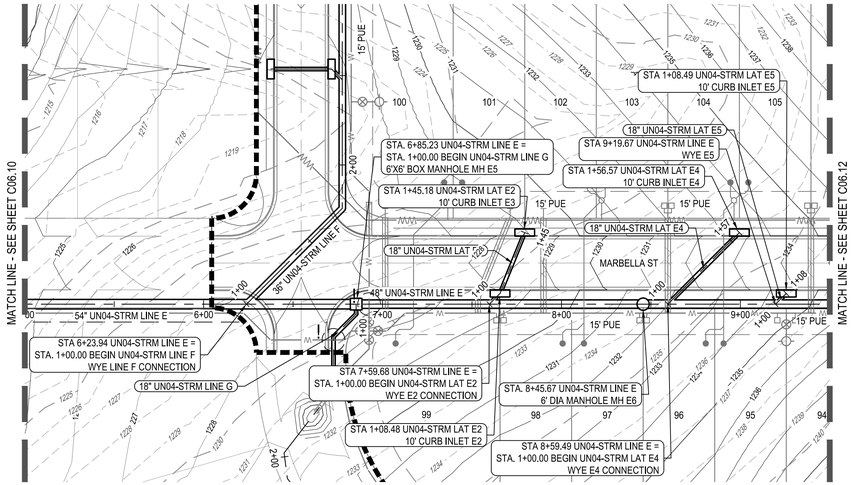
CANYON RANCH UNIT 4

STORM DRAIN LINE E PLAN AND PROFILE
STA 1+00 TO 5+00

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.10

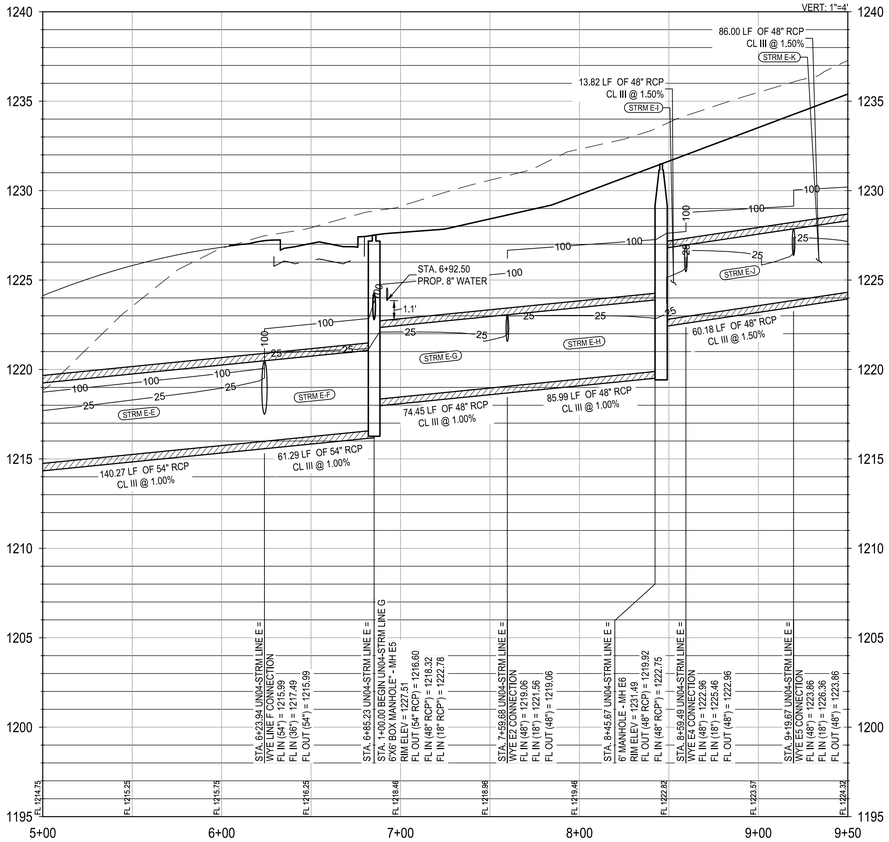


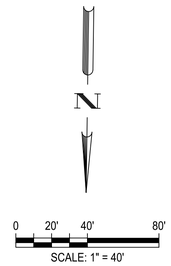
PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM E-E	208.55	13.94	4.01
STRM E-F	139.01	11.06	6.29
STRM E-G	131.72	10.48	6.43
STRM E-H	119.70	9.53	7.60
STRM E-I	119.81	9.53	4.87
STRM E-J	110.33	8.78	5.82
STRM E-K	104.26	8.30	6.17

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM E-E	145.08	13.52	2.97
STRM E-F	96.93	7.71	4.90
STRM E-G	91.77	12.09	3.77
STRM E-H	83.15	11.85	3.93
STRM E-I	83.20	13.82	2.40
STRM E-J	76.34	13.50	3.70
STRM E-K	71.88	13.29	3.52

UN04-STRM LINE E

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'





LEGEND

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- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
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- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
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- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
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NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

						APR
						DATE
						DESCRIPTION
△	△	△	△	△	△	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

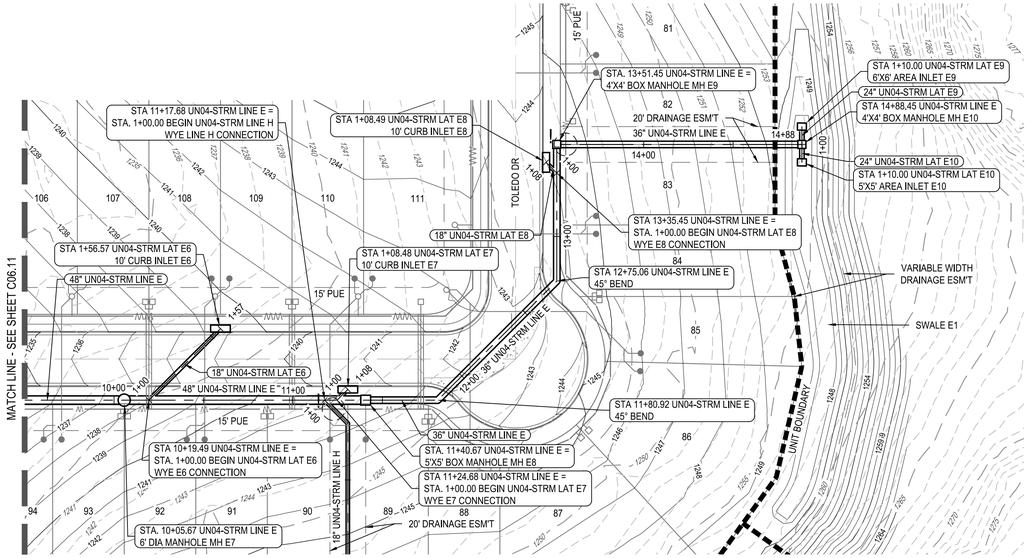
BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE E PLAN AND PROFILE
STA 5+00 TO 9+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.11

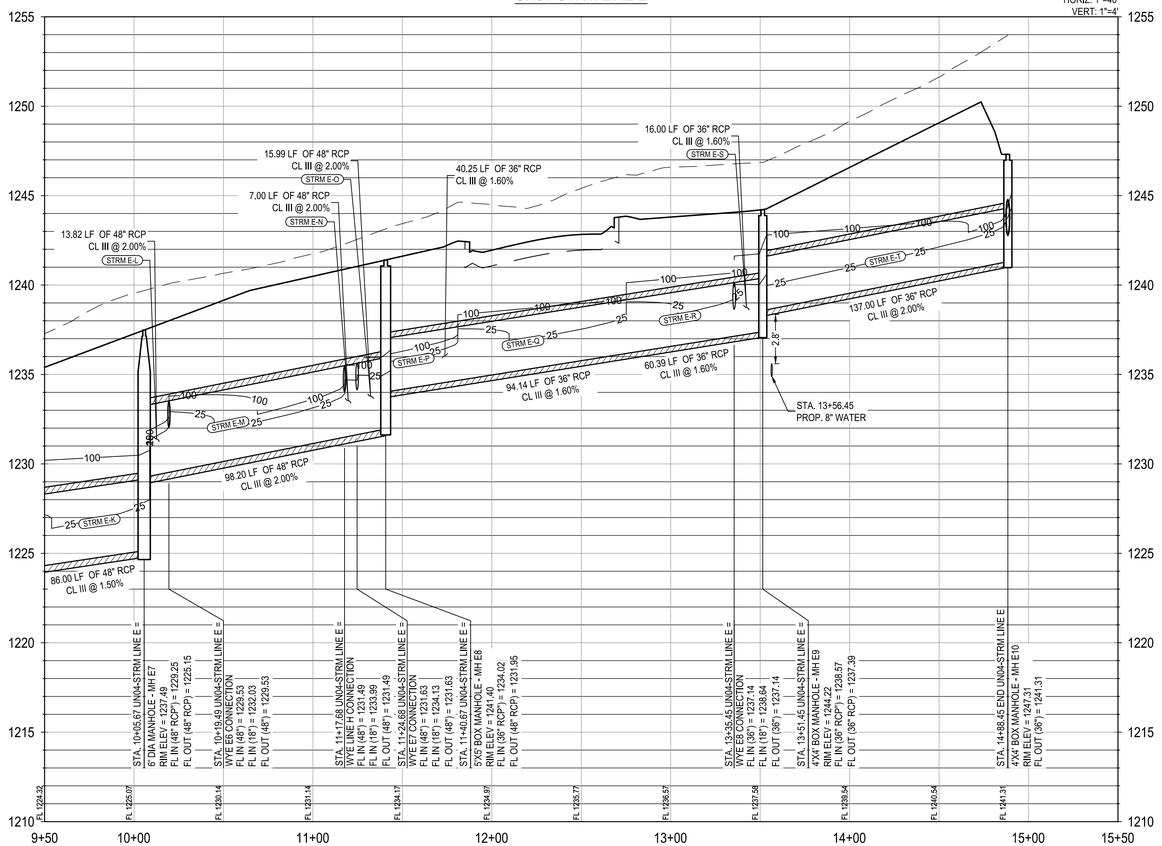


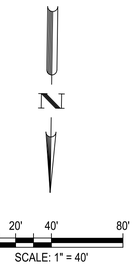
PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM E-K	104.26	8.30	6.17
STRM E-L	104.32	16.29	2.65
STRM E-M	94.96	15.89	4.26
STRM E-N	73.34	14.85	4.02
STRM E-O	62.82	5.00	4.29
STRM E-P	62.94	13.09	2.13
STRM E-Q	63.36	8.96	3.68
STRM E-R	63.63	9.00	3.96
STRM E-S	58.02	8.21	4.48
STRM E-T	58.38	14.05	4.22

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM E-K	71.88	13.29	3.52
STRM E-L	71.92	14.79	2.14
STRM E-M	65.37	14.40	3.40
STRM E-N	50.58	13.42	3.21
STRM E-O	43.13	12.82	3.33
STRM E-P	43.22	12.01	1.69
STRM E-Q	43.43	12.02	2.89
STRM E-R	43.57	12.05	2.90
STRM E-S	39.79	11.66	2.90
STRM E-T	40.05	12.80	1.40

UN04-STRM LINE E

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
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NOTES:

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						DATE
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DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

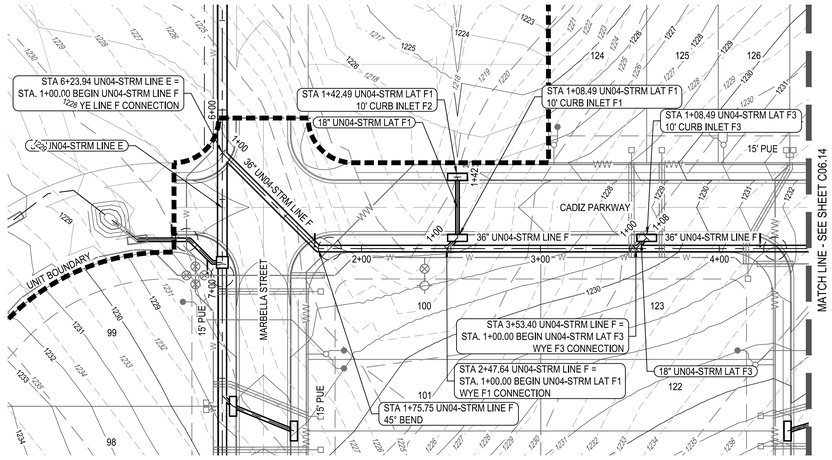
BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE E PLAN AND PROFILE
STA 9+50 TO END

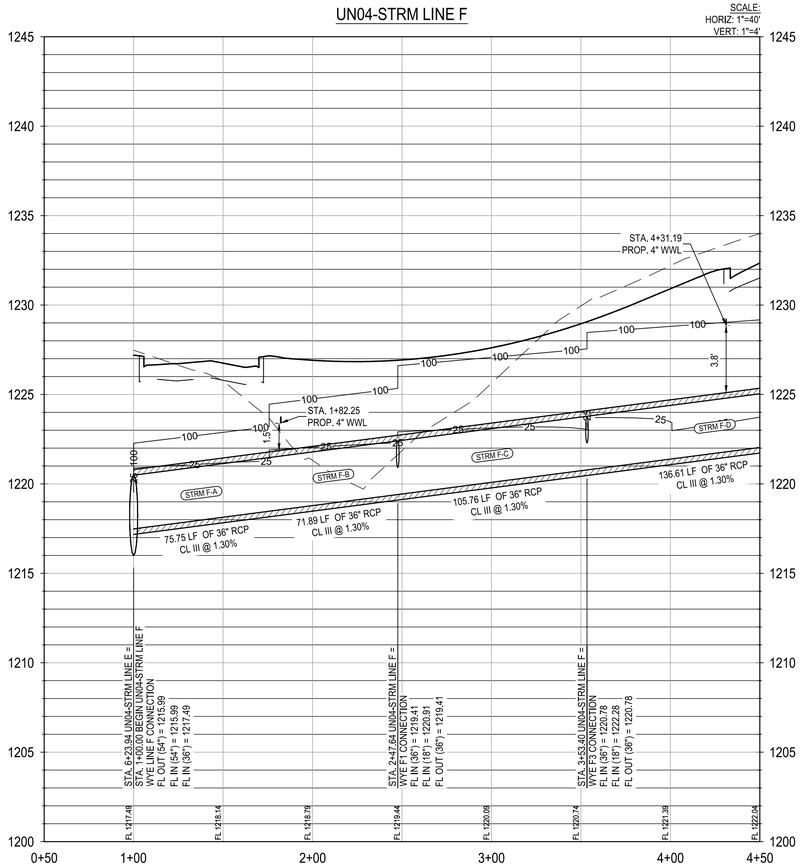
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

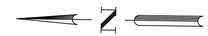
SHEET
C06.12



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM F-A	73.50	10.40	4.79
STRM F-B	73.84	10.45	5.98
STRM F-C	62.79	8.88	7.20
STRM F-D	56.08	7.93	7.69

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM F-A	50.67	11.52	3.40
STRM F-B	50.88	11.52	3.43
STRM F-C	43.09	11.09	3.51
STRM F-D	38.25	10.77	2.92





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
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						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

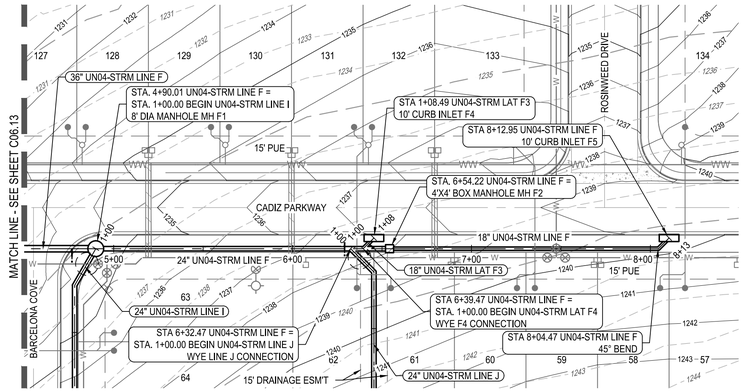
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE F PLAN AND PROFILE
STA 1+00 TO 4+50

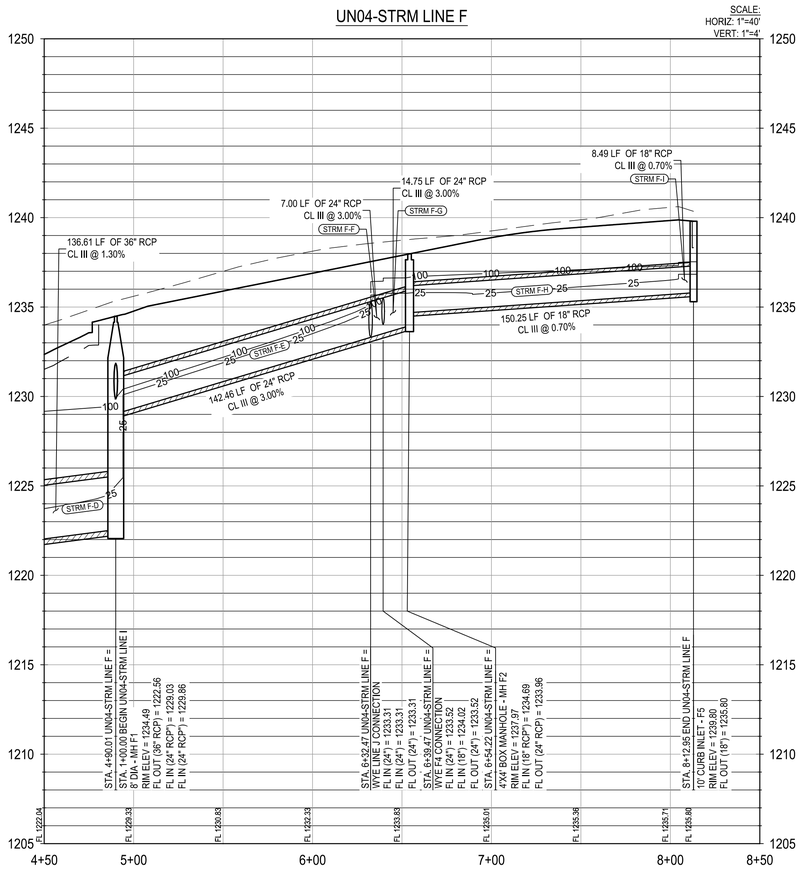
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

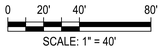
SHEET
C06.13



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM F-D	56.08	7.93	7.69
STRM F-E	31.56	13.88	1.38
STRM F-F	12.05	3.84	3.12
STRM F-G	6.62	2.11	3.10
STRM F-H	6.78	3.84	2.01
STRM F-I	6.79	3.84	1.76

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM F-D	38.25	10.77	2.92
STRM F-E	21.63	12.79	1.06
STRM F-F	8.51	2.71	2.36
STRM F-G	4.66	8.37	2.25
STRM F-H	4.75	5.07	1.12
STRM F-I	4.75	5.12	1.09





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
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DESIGNED BY:					LNH	
REVIEWED BY:					SSM	
DRAWN BY:					JDC	

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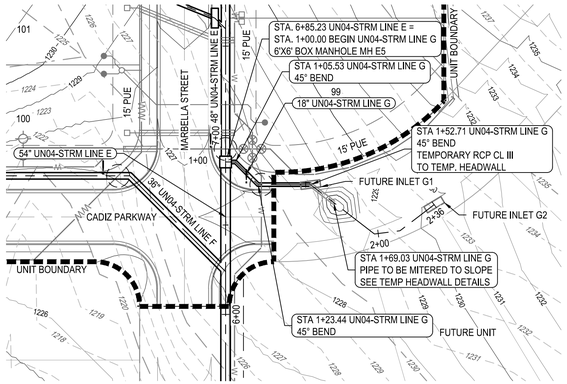
CANYON RANCH UNIT 4

STORM DRAIN LINE F PLAN AND PROFILE
STA 4+50 TO END

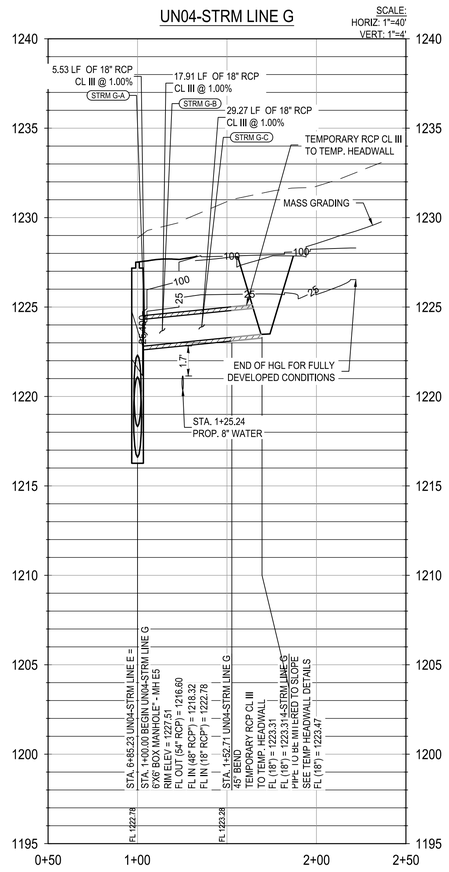
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.14



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM G-A	16.96	9.60	1.97
STRM G-B	16.98	9.61	3.13
STRM G-C	17.00	9.62	4.50

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM G-A	11.81	6.68	1.31
STRM G-B	11.83	6.69	1.93
STRM G-C	11.84	6.70	2.50



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
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UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE, EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

						APR
						DATE
						DESCRIPTION
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DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE

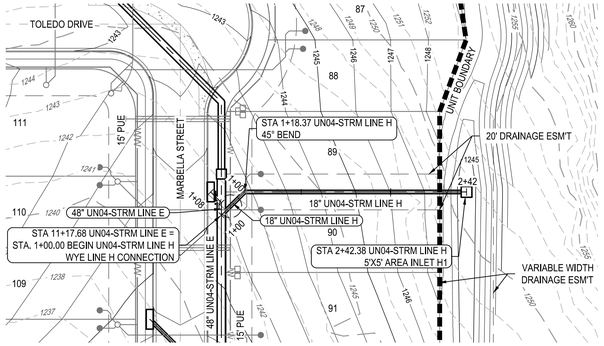
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinggy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE G PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.15

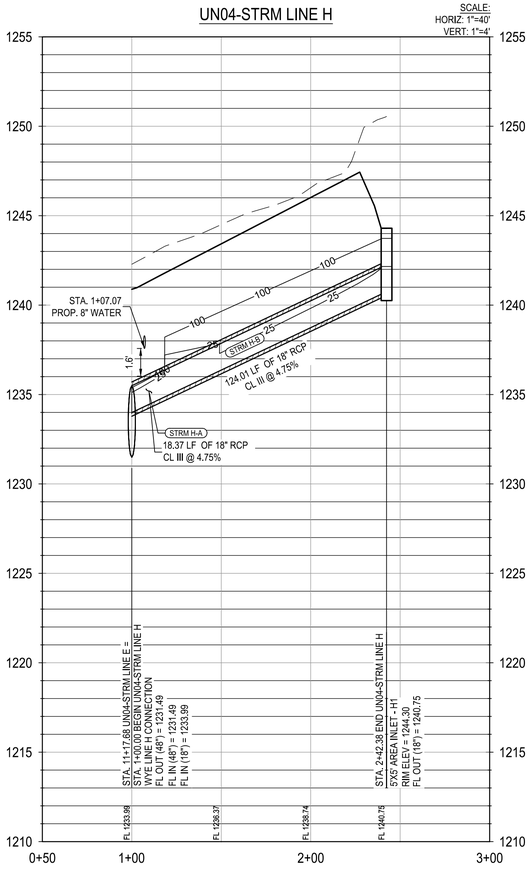


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM H-A	22.01	14.68	1.34
STRM H-B	22.15	12.54	3.30

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM H-A	15.02	13.76	1.06
STRM H-B	15.11	13.79	2.29

UN04-STRM LINE H

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
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DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

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TEL: 210-581-3600 www.bgeinggy.com
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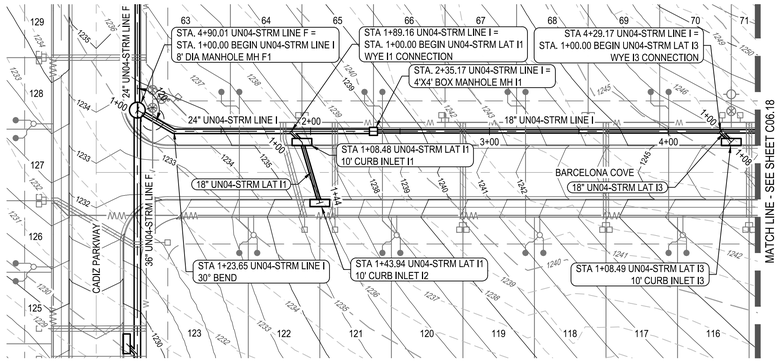
CANYON RANCH UNIT 4

STORM DRAIN LINE H PLAN AND PROFILE

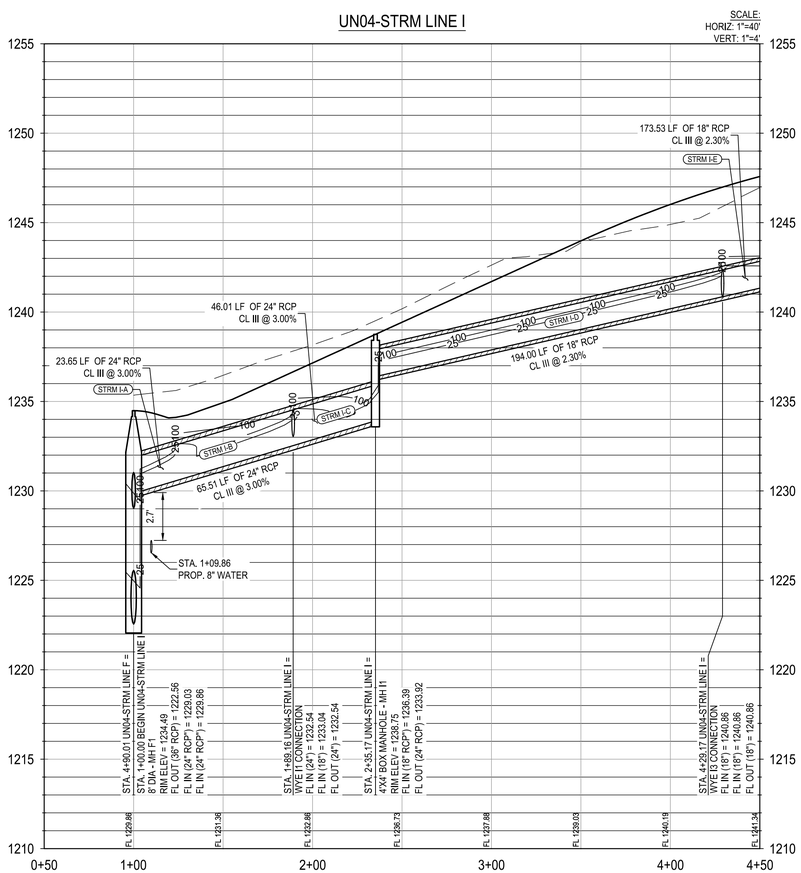
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

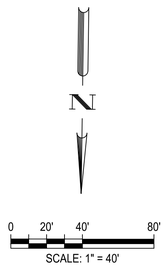
SHEET
C06.16



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM I-A	25.22	13.25	1.37
STRM I-B	25.30	13.27	2.63
STRM I-C	14.45	11.53	2.64
STRM I-D	14.63	10.23	1.13
STRM I-E	3.79	7.39	2.25

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM I-A	17.41	12.11	1.09
STRM I-B	17.47	12.12	2.05
STRM I-C	9.96	10.42	2.06
STRM I-D	10.09	9.54	0.87
STRM I-E	2.63	6.66	1.72





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
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NOTES:

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DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

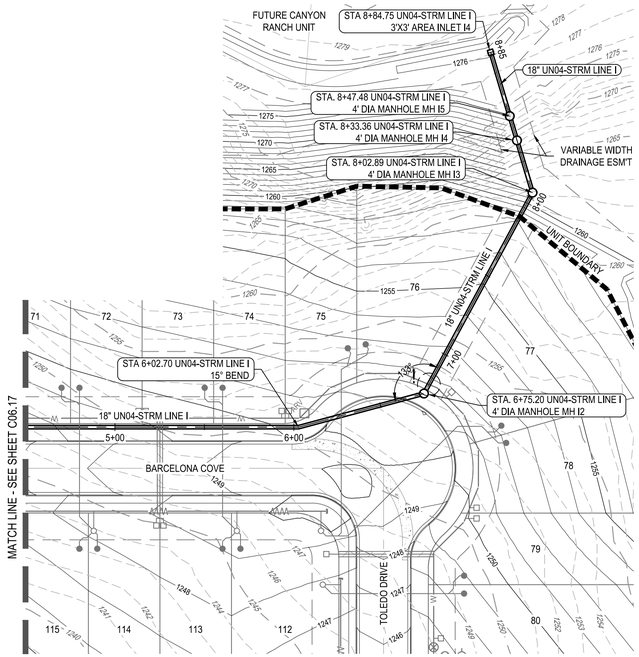
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE I PLAN AND PROFILE
STA 1+00 TO 4+50

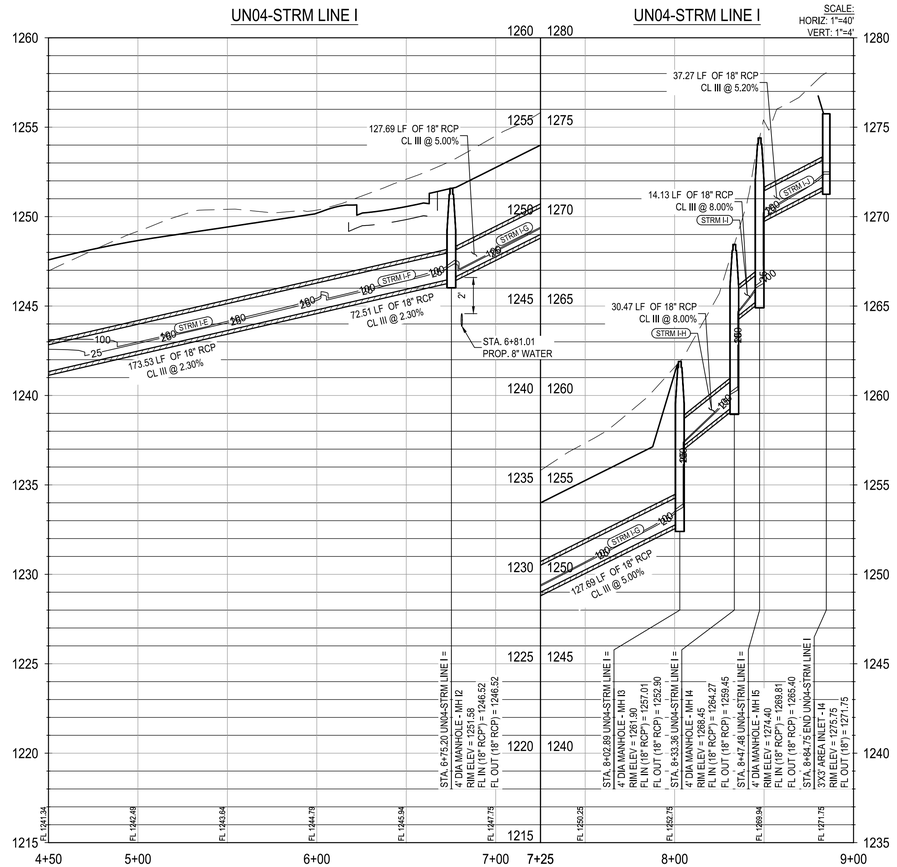
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

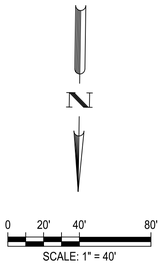
SHEET
C06.17



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM I-E	3.79	7.39	2.25
STRM I-F	3.82	7.41	0.96
STRM I-G	3.85	9.80	1.04
STRM I-H	3.86	11.58	0.38
STRM I-I	3.86	11.59	0.43
STRM I-J	3.87	9.96	0.42

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM I-E	2.63	6.66	1.72
STRM I-F	2.65	6.68	0.79
STRM I-G	2.67	8.82	0.85
STRM I-H	2.68	10.41	0.31
STRM I-I	2.68	10.42	0.34
STRM I-J	2.69	8.96	0.34





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 — 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
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DESIGNED BY:	LNH					
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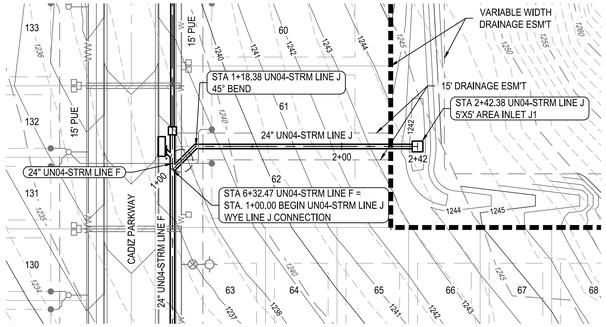
CANYON RANCH UNIT 4

STORM DRAIN LINE I PLAN AND PROFILE STA 4+50 TO END

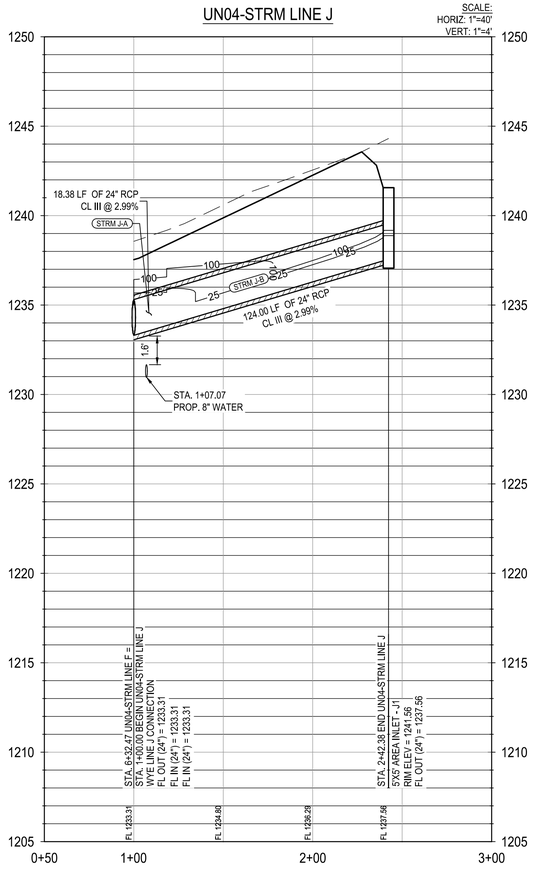
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

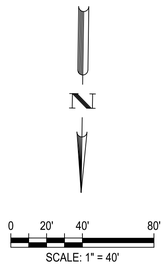
SHEET
C06.18



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM J-A	20.03	6.38	3.12
STRM J-B	20.16	12.50	3.15

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM J-A	13.33	11.53	2.36
STRM J-B	13.43	11.24	2.04





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- 831 EXISTING MINOR CONTOUR
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PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
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CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

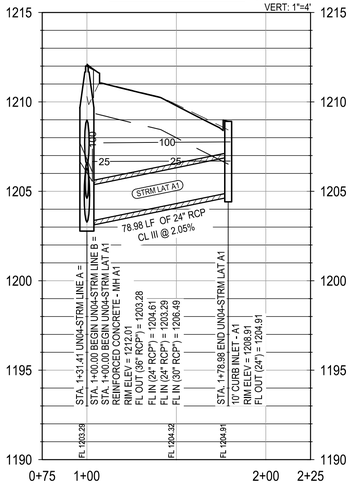
STORM DRAIN LINE J PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.19

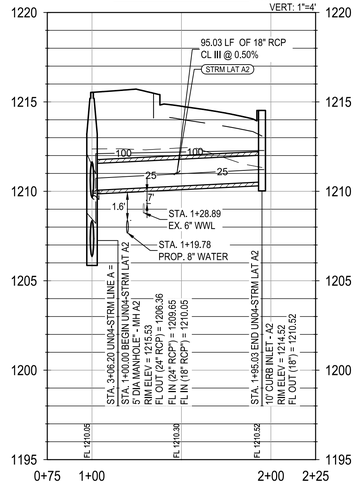
UN04-STRM LAT A1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



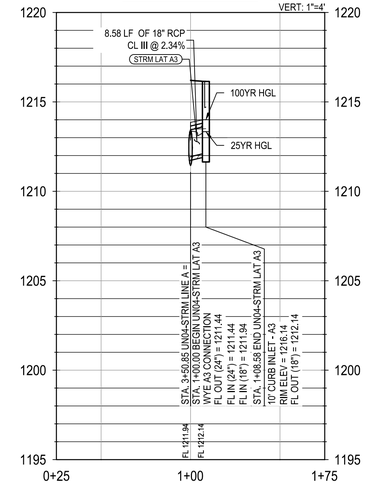
UN04-STRM LAT A2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



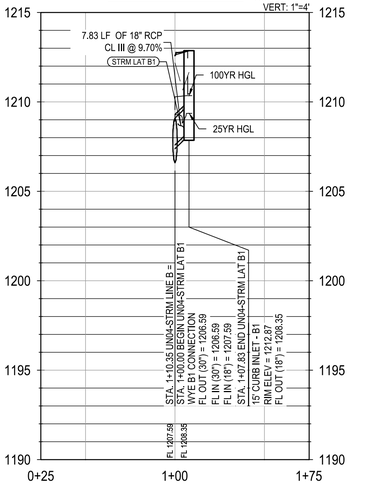
UN04-STRM LAT A3

SCALE: HORIZ: 1"=40' VERT: 1"=4'



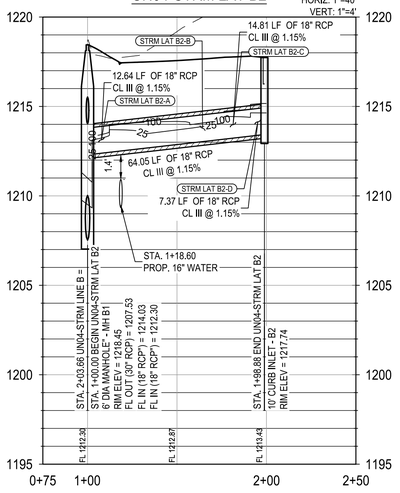
UN04-STRM LAT B1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



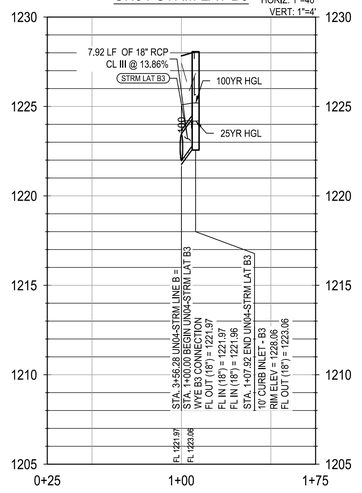
UN04-STRM LAT B2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



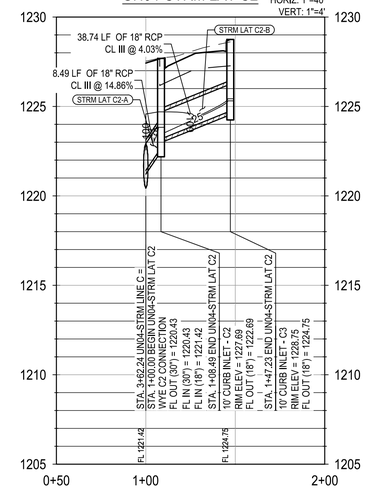
UN04-STRM LAT B3

SCALE: HORIZ: 1"=40' VERT: 1"=4'



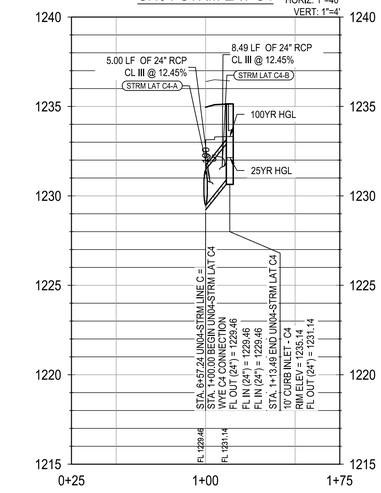
UN04-STRM LAT C2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



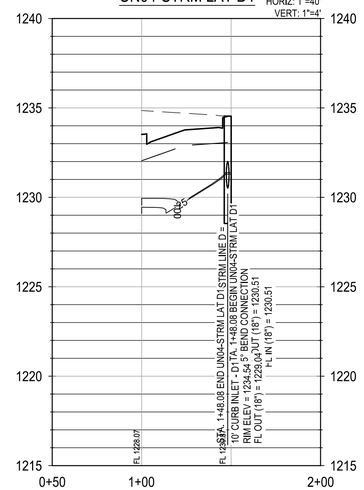
UN04-STRM LAT C4

SCALE: HORIZ: 1"=40' VERT: 1"=4'



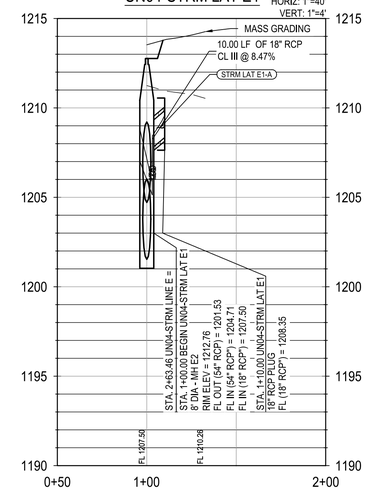
UN04-STRM LAT D1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



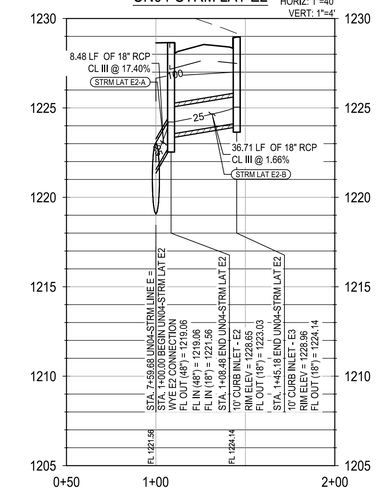
UN04-STRM LAT E1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



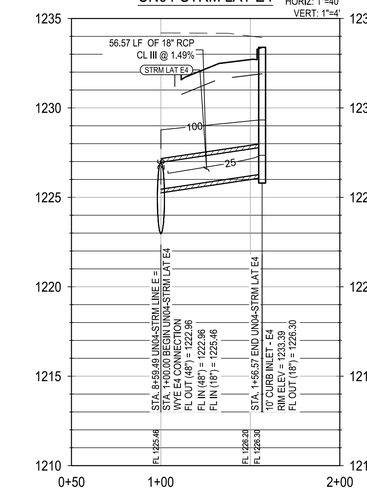
UN04-STRM LAT E2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



UN04-STRM LAT E4

SCALE: HORIZ: 1"=40' VERT: 1"=4'



0 20' 40' 80'

SCALE: 1" = 40'

PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM LAT A1	5.94	1.89	4.41
STRM LAT A2	4.54	2.57	2.05
STRM LAT A3	13.63	7.71	1.92
STRM LAT B1	9.71	5.49	2.69
STRM LAT B2-A	8.60	7.01	1.03
STRM LAT B2-B	8.65	7.02	1.55
STRM LAT B2-C	8.66	7.02	1.56
STRM LAT B2-D	8.67	4.90	1.77
STRM LAT B3	12.02	6.80	3.12
STRM LAT C2-A	12.46	7.05	3.15
STRM LAT C2-B	3.21	8.62	1.51
STRM LAT C4-A	11.24	3.58	3.67
STRM LAT C4-B	11.26	3.58	3.21
STRM LAT D1	1.89	8.40	1.87
STRM LAT E1-A	13.47	16.78	0.94
STRM LAT E1-B	13.49	16.74	2.11
STRM LAT E2-A	13.24	7.49	5.10
STRM LAT E2-B	7.78	4.40	3.26
STRM LAT E4	10.37	5.87	3.32

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM LAT A1	4.07	7.04	3.38
STRM LAT A2	3.17	4.04	0.68
STRM LAT A3	9.55	9.49	1.42
STRM LAT B1	6.78	14.54	1.69
STRM LAT B2-A	6.06	6.48	0.83
STRM LAT B2-B	6.10	6.49	1.26
STRM LAT B2-C	6.11	6.50	1.26
STRM LAT B2-D	6.11	6.50	1.30
STRM LAT B3	8.35	17.54	2.21
STRM LAT C2-A	8.76	18.23	2.11
STRM LAT C2-B	2.24	7.77	0.65
STRM LAT C4-A	7.88	2.51	2.66
STRM LAT C4-B	7.88	16.14	2.12
STRM LAT D1	1.32	7.55	1.38
STRM LAT E1-A	9.28	15.19	0.75
STRM LAT E1-B	9.29	15.16	1.63
STRM LAT E2-A	9.32	19.69	1.43
STRM LAT E2-B	5.49	7.25	0.68
STRM LAT E4	7.31	7.49	1.20

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

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						APR
						DATE
						DESCRIPTION
1	2	3	4	5	6	REV

DESIGNED BY: JDC

REVIEWED BY: ACR

DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

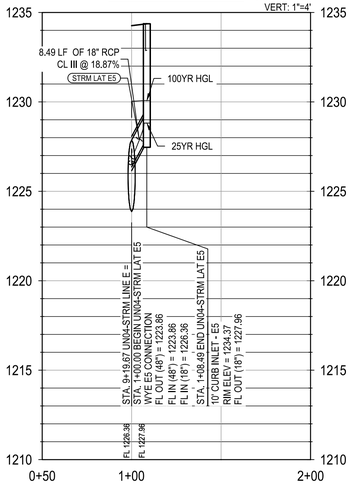
STORM DRAIN LATERAL PROFILES (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.20

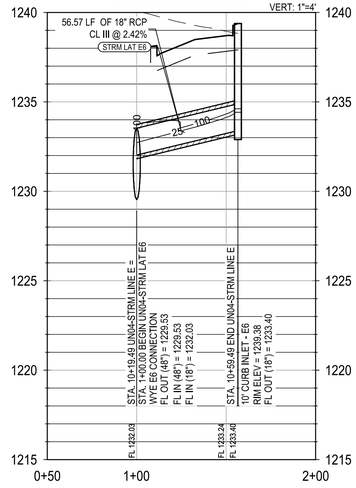
UN04-STRM LAT E5

SCALE: HORIZ: 1"=40' VERT: 1"=4'



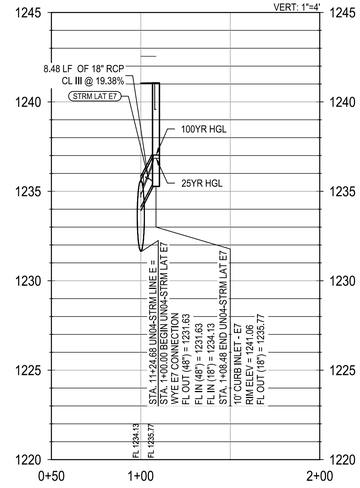
UN04-STRM LAT E6

SCALE: HORIZ: 1"=40' VERT: 1"=4'



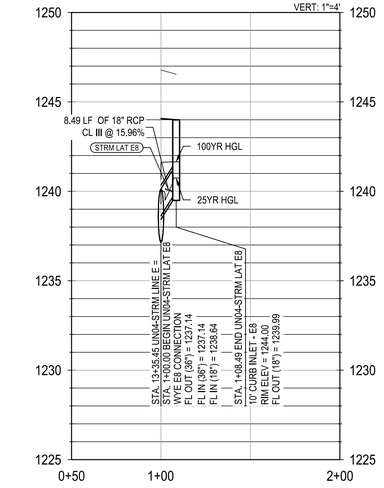
UN04-STRM LAT E7

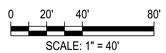
SCALE: HORIZ: 1"=40' VERT: 1"=4'



UN04-STRM LAT E8

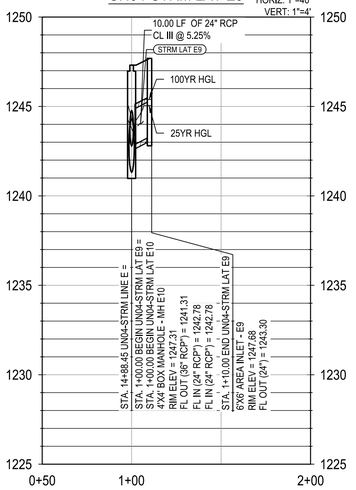
SCALE: HORIZ: 1"=40' VERT: 1"=4'





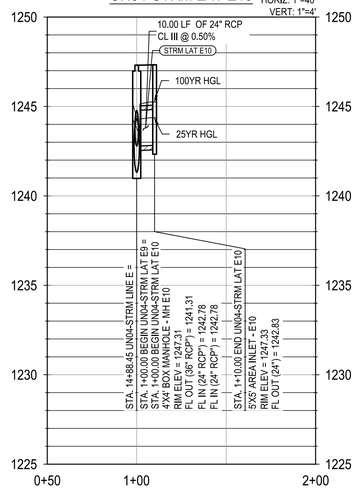
UN04-STRM LAT E9

SCALE: HORIZ: 1"=40' VERT: 1"=4'



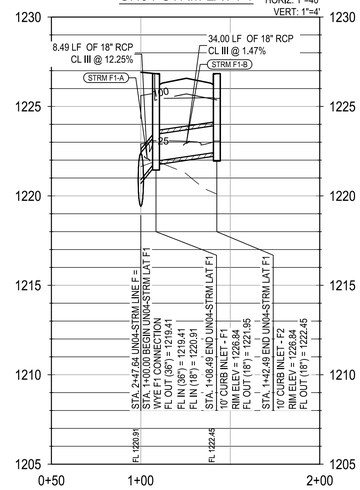
UN04-STRM LAT E10

SCALE: HORIZ: 1"=40' VERT: 1"=4'



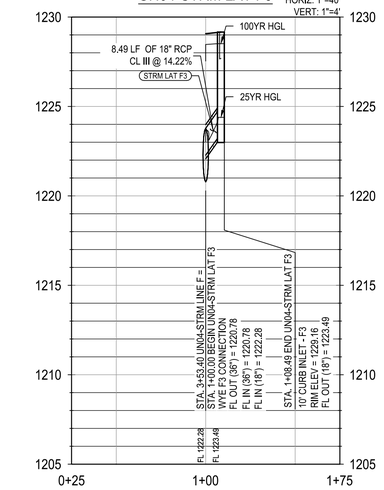
UN04-STRM LAT F1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



UN04-STRM LAT F3

SCALE: HORIZ: 1"=40' VERT: 1"=4'

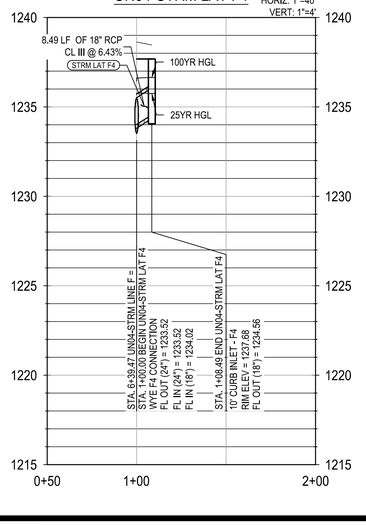


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM LAT E5	7.00	3.96	3.67
STRM LAT E6	10.01	9.71	1.76
STRM LAT E7	10.91	20.82	1.70
STRM LAT E8	5.73	3.24	2.98
STRM LAT E9	35.53	11.31	2.36
STRM LAT E10	22.90	7.29	2.37
STRM LAT F1-A	12.28	6.95	5.70
STRM LAT F1-B	3.80	2.15	4.50
STRM LAT F3	7.82	4.42	6.19
STRM LAT F4	5.64	3.19	2.60
STRM LAT I1-A	11.41	6.46	2.13
STRM LAT I1-B	2.47	8.02	2.13
STRM LAT I3	11.27	21.68	2.24

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM LAT E5	4.89	16.83	1.02
STRM LAT E6	7.00	8.88	0.70
STRM LAT E7	7.63	18.83	0.58
STRM LAT E8	3.85	14.78	1.40
STRM LAT E9	24.67	16.21	1.34
STRM LAT E10	15.43	5.80	1.52
STRM LAT F1-A	8.63	17.00	2.01
STRM LAT F1-B	2.65	5.69	1.14
STRM LAT F3	5.50	15.72	1.42
STRM LAT F4	3.94	10.75	1.75
STRM LAT I1-A	7.92	4.48	1.56
STRM LAT I1-B	1.72	7.22	1.51
STRM LAT I3	7.80	19.53	1.72

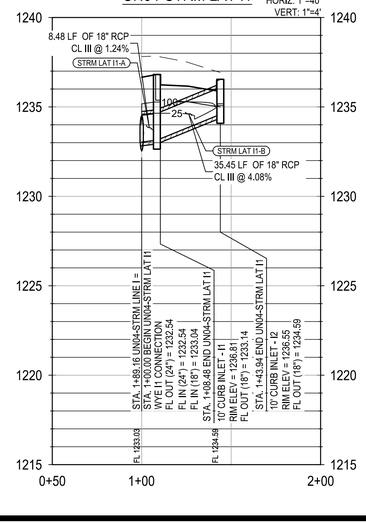
UN04-STRM LAT F4

SCALE: HORIZ: 1"=40' VERT: 1"=4'



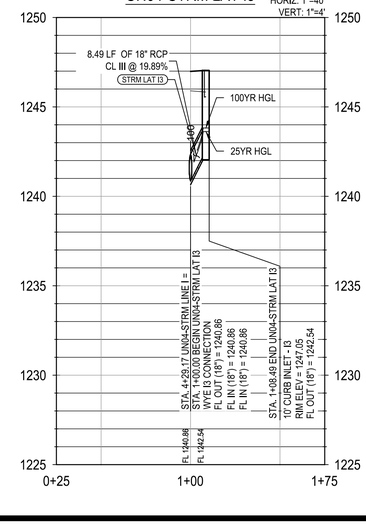
UN04-STRM LAT I1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



UN04-STRM LAT I3

SCALE: HORIZ: 1"=40' VERT: 1"=4'



PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
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						DATE
						DESCRIPTION
△	△	△	△	△	△	REV

DESIGNED BY: JDC

REVIEWED BY: ACR

DRAWN BY: SSM

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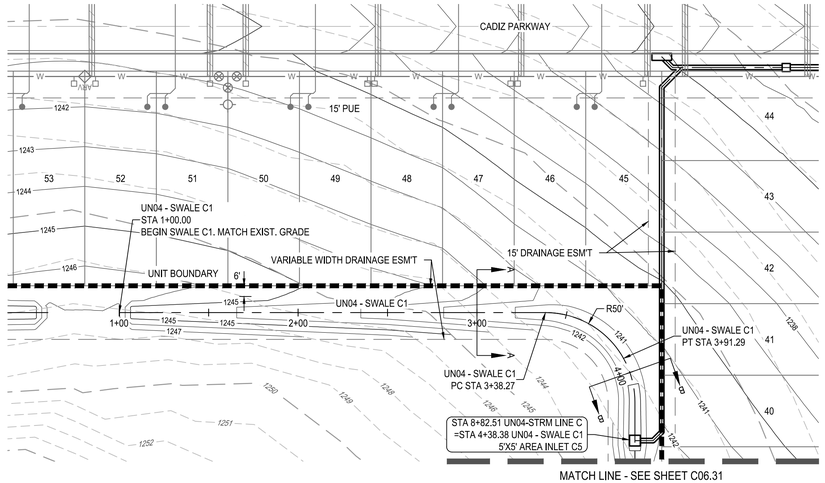
TBPE Registration No. F-1046

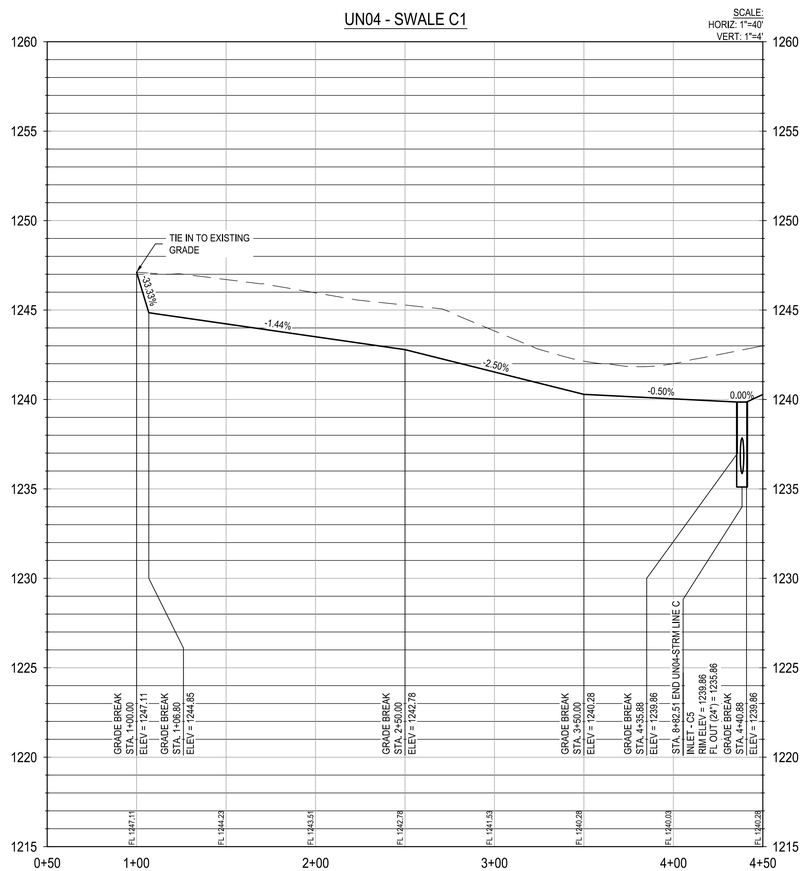
CANYON RANCH UNIT 4

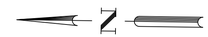
STORM DRAIN LATERAL PROFILES (SHEET 2 OF 2)

STATE OF TEXAS
146417
LICENSED PROFESSIONAL ENGINEER
STACY MULHOLLAND
11/08/2024

SHEET
C06.21







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW WW PROPOSED WASTEWATER LINE
- W W PROPOSED WATER LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

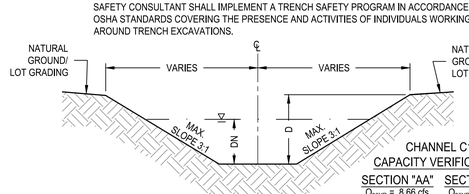
1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE, EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.



TRAPEZOIDAL CHANNEL TYPICAL SECTION

CHANNEL C1 CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 8.66 cfs	Q_{25YR} = 8.66 cfs
n = 0.030	n = 0.030
S = 2.50%	S = 0.50%
Dn = 0.35 ft	Dn = 0.56 ft
Vn = 3.99 fps	Vn = 2.01 fps
D = 1.25 ft	D = 1.25 ft
BW = 6.00 ft	BW = 6.00 ft

APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

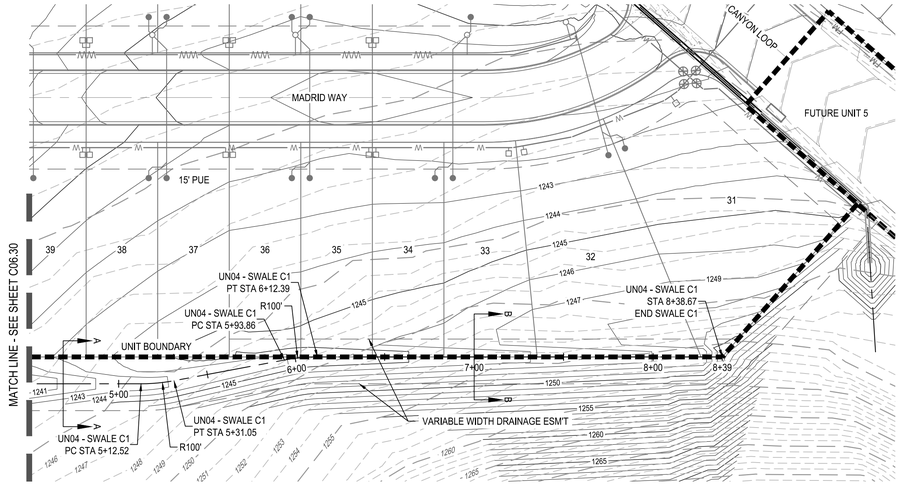
BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

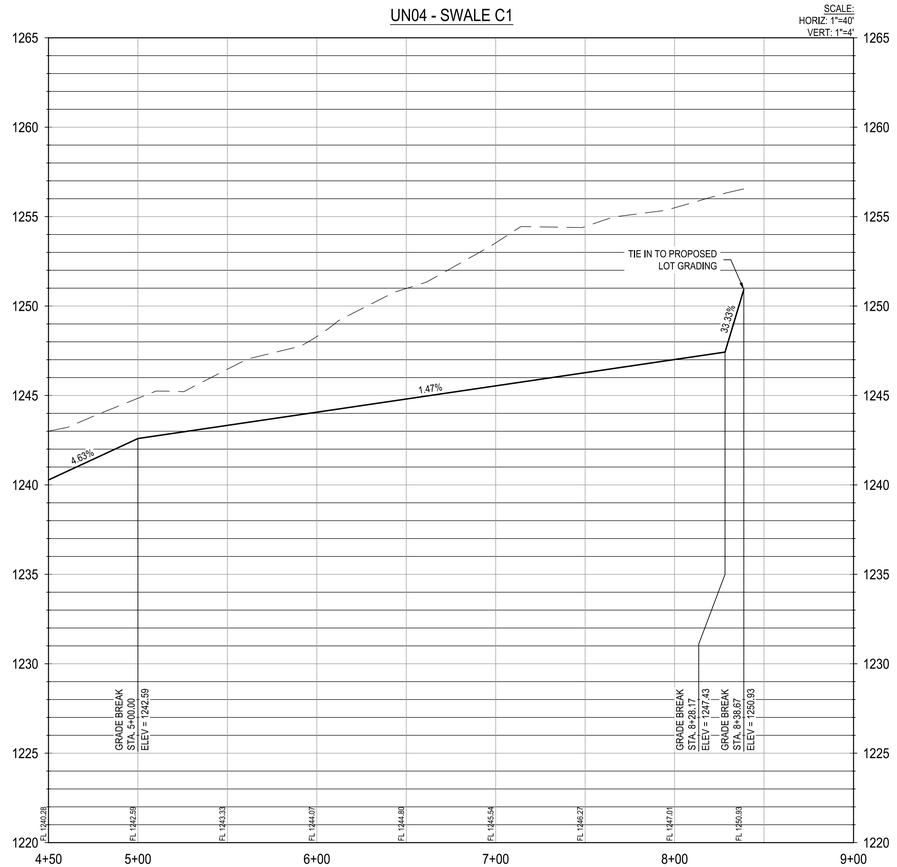
CANYON RANCH UNIT 4

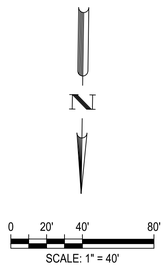
INTERCEPTOR CHANNEL C1 PLAN AND PROFILE STA 0+50 TO 4+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.30







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

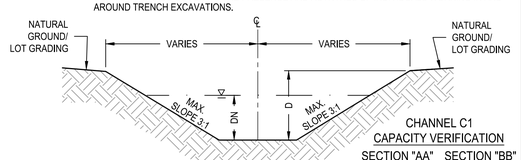
1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.



TRAPEZOIDAL CHANNEL
TYPICAL SECTION

CHANNEL C1
CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 9.44 cfs	Q_{25YR} = 9.44 cfs
n = 0.030	n = 0.030
S = 4.63%	S = 1.47%
Dn = 0.31 ft	Dn = 0.43 ft
Vn = 4.39 fps	Vn = 3.01 fps
D = 2.00 ft	D = 2.00 ft
BW = 6.00 ft	BW = 6.00 ft

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

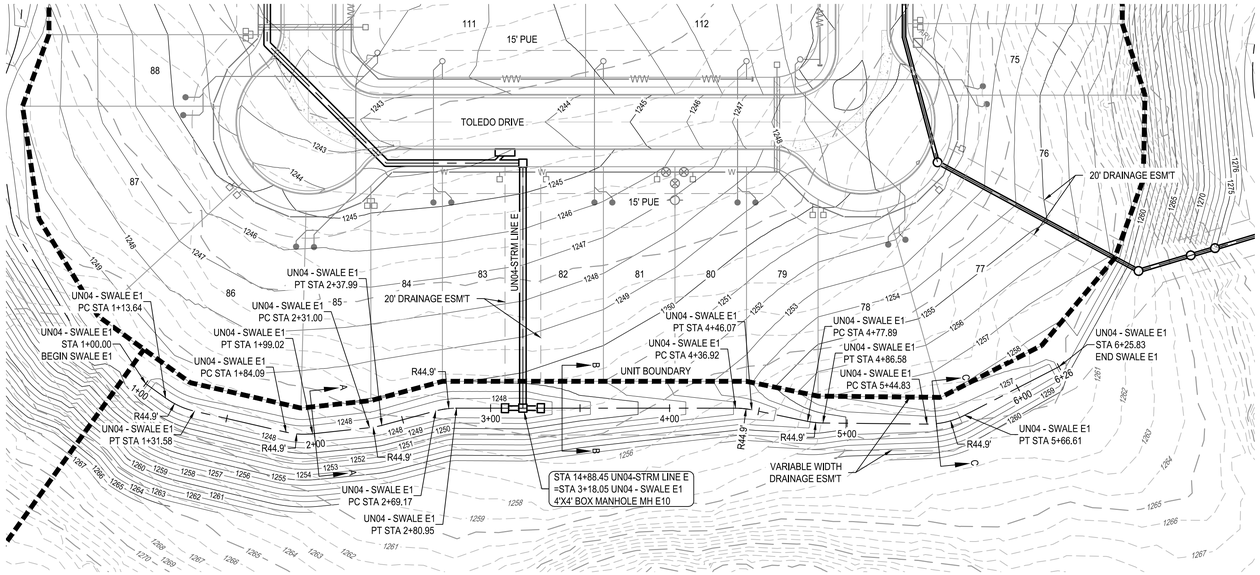
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

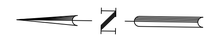
CANYON RANCH UNIT 4

INTERCEPTOR CHANNEL C1 PLAN AND PROFILE STA 4+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.31





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
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- PROPOSED STORM DRAIN w/ MANHOLE
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- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
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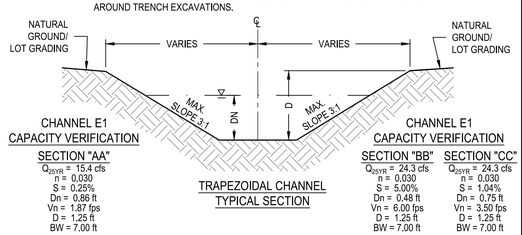
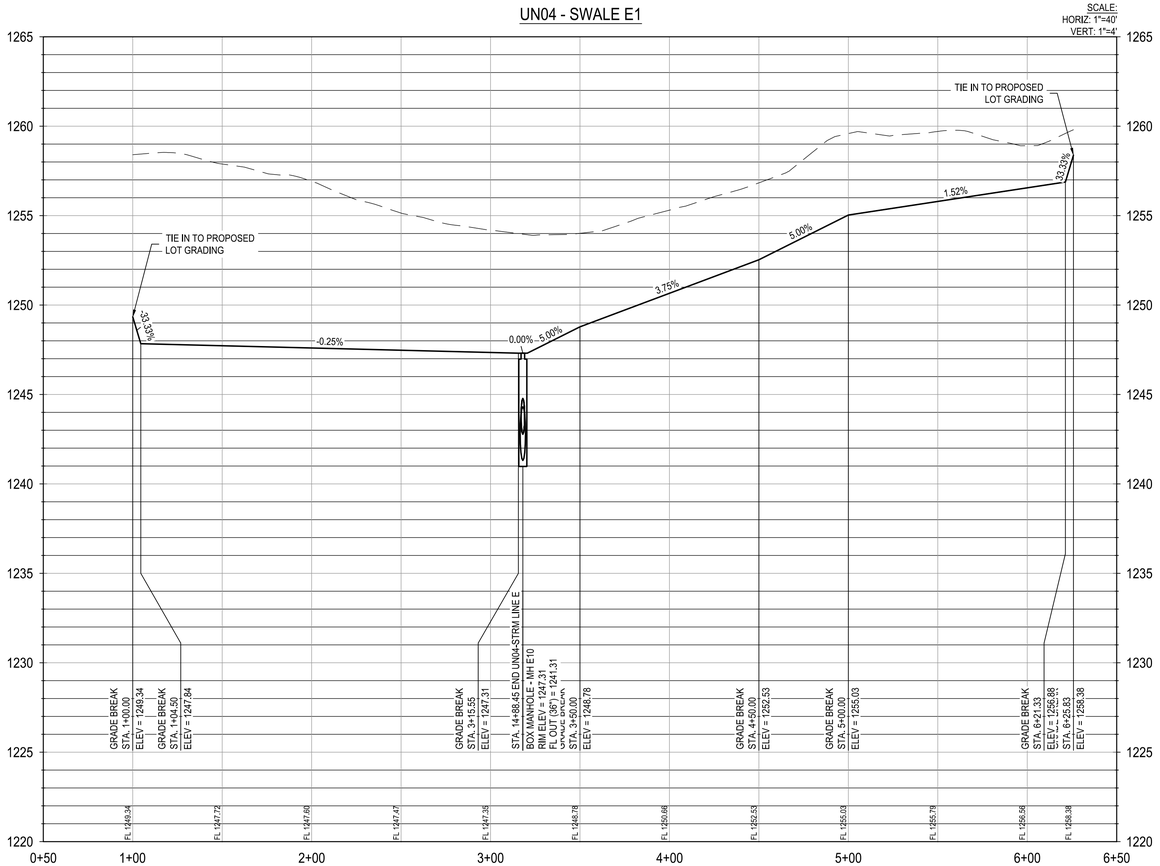




							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

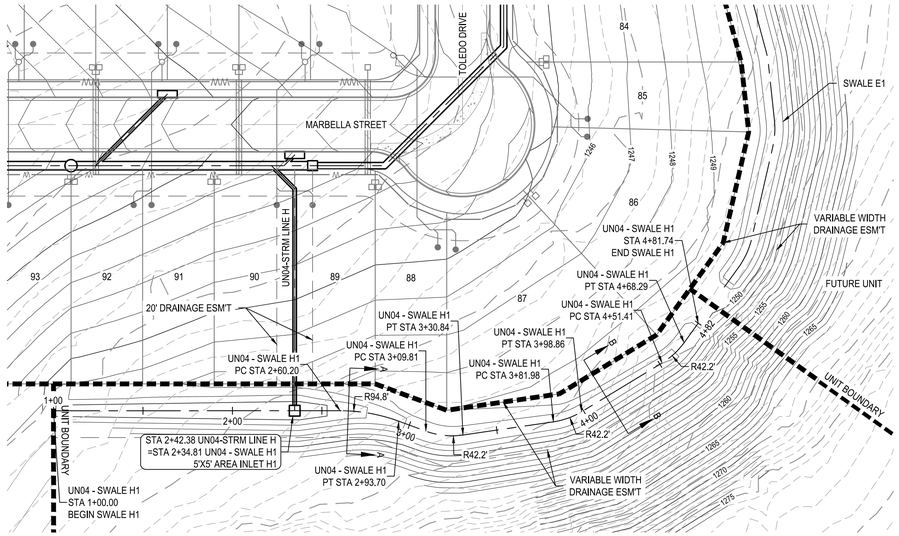
CANYON RANCH UNIT 4

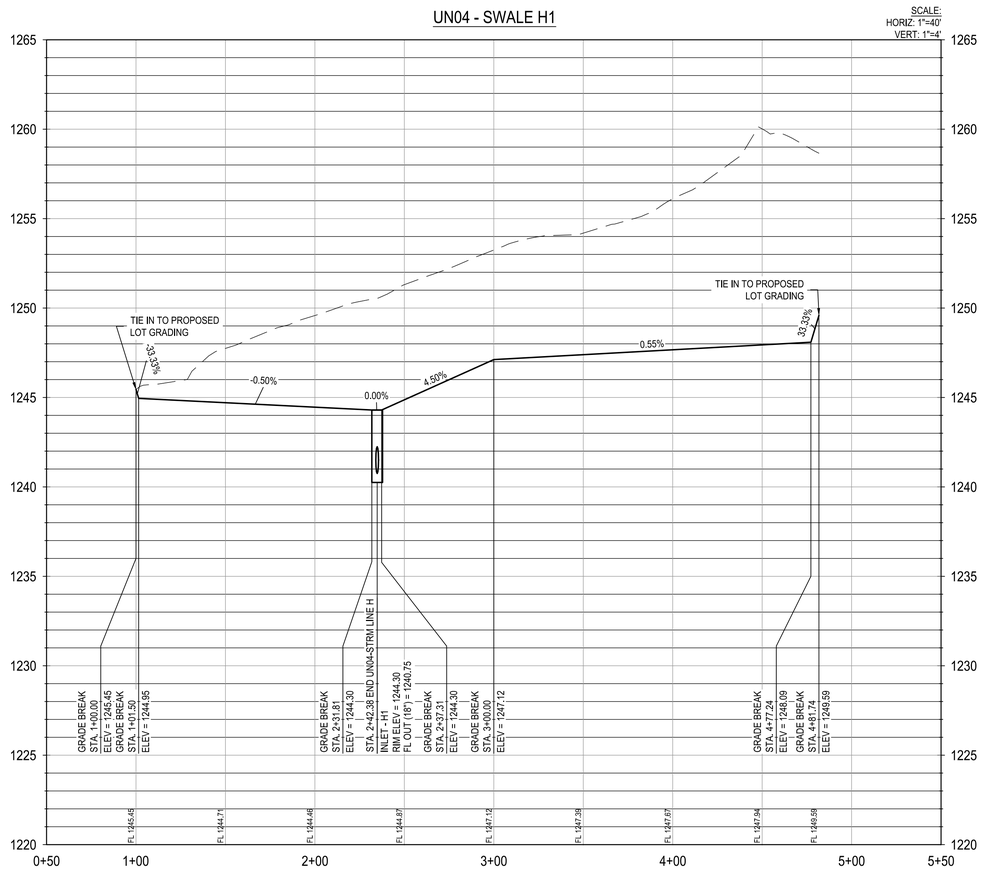
INTERCEPTOR CHANNEL E1 PLAN AND PROFILE

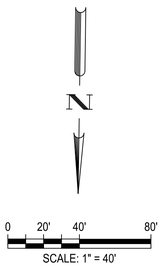
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.32

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.32 - INTERCEPTOR CHANNEL E1 PLAN AND PROFILE.dwg Layout: C06.32 INTERCEPTOR CHANNEL E1 PLAN AND PROFILE Plotted: 11/7/2024 11:05:58 AM By: Mhernandez







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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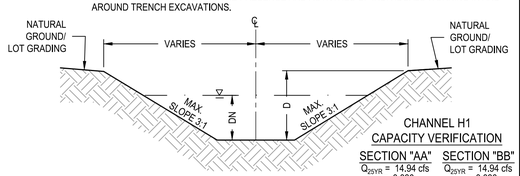

TRAPEZOIDAL CHANNEL TYPICAL SECTION

CHANNEL H1 CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 14.94 cfs	Q_{25YR} = 14.94 cfs
n = 0.030	n = 0.030
S = 2.78%	S = 0.50%
Dn = 1.13 ft	Dn = 1.74 ft
Vn = 1.41 fps	Vn = 0.77 fps
D = 2.50 ft	D = 2.50 ft
BW = 6.00 ft	BW = 6.00 ft

	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

BGE, INC.
7330 San Pedro, Suite 202
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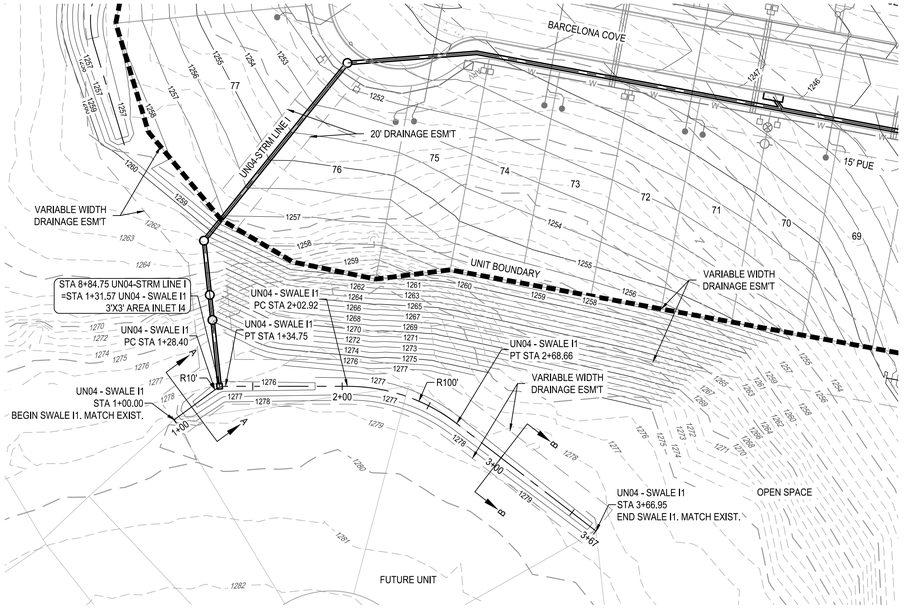
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

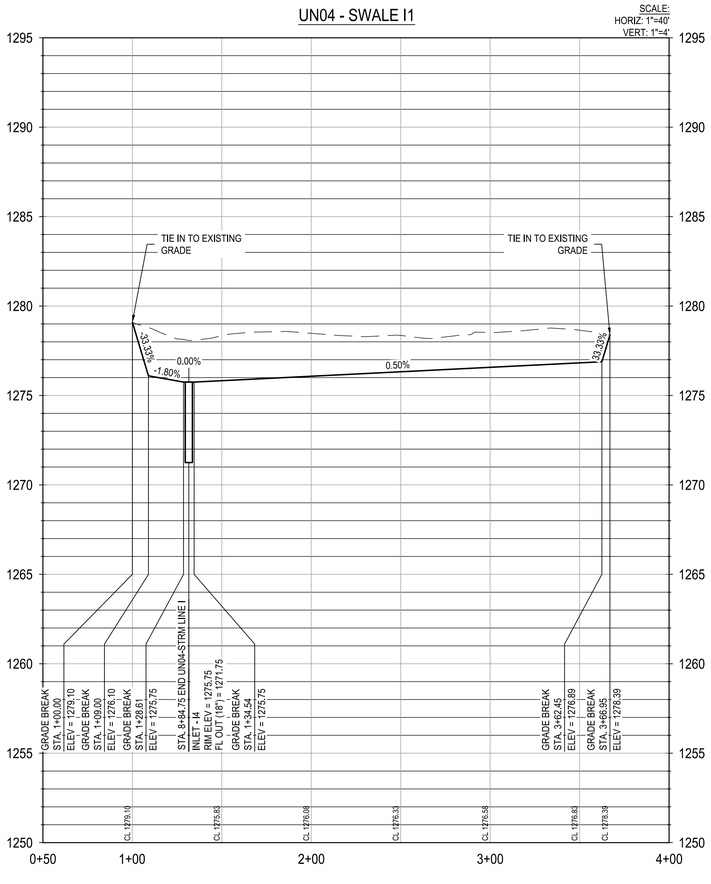
CANYON RANCH UNIT 4

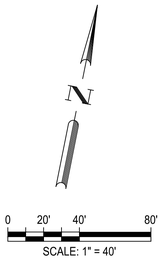
INTERCEPTOR CHANNEL H1 PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.33







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

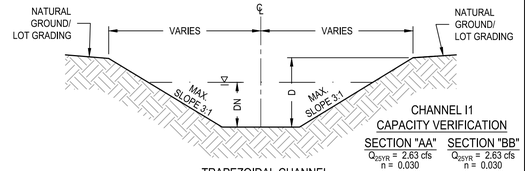
1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.



TRAPEZOIDAL CHANNEL TYPICAL SECTION

CHANNEL I1 CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 2.63 cfs	Q_{25YR} = 2.63 cfs
n = 0.030	n = 0.030
S = 1.80%	S = 0.50%
Dn = 0.30 ft	Dn = 0.43 ft
Vn = 2.61 fps	Vn = 1.69 fps
D = 1.00 ft	D = 1.00 ft
BW = 4.00 ft	BW = 4.00 ft

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

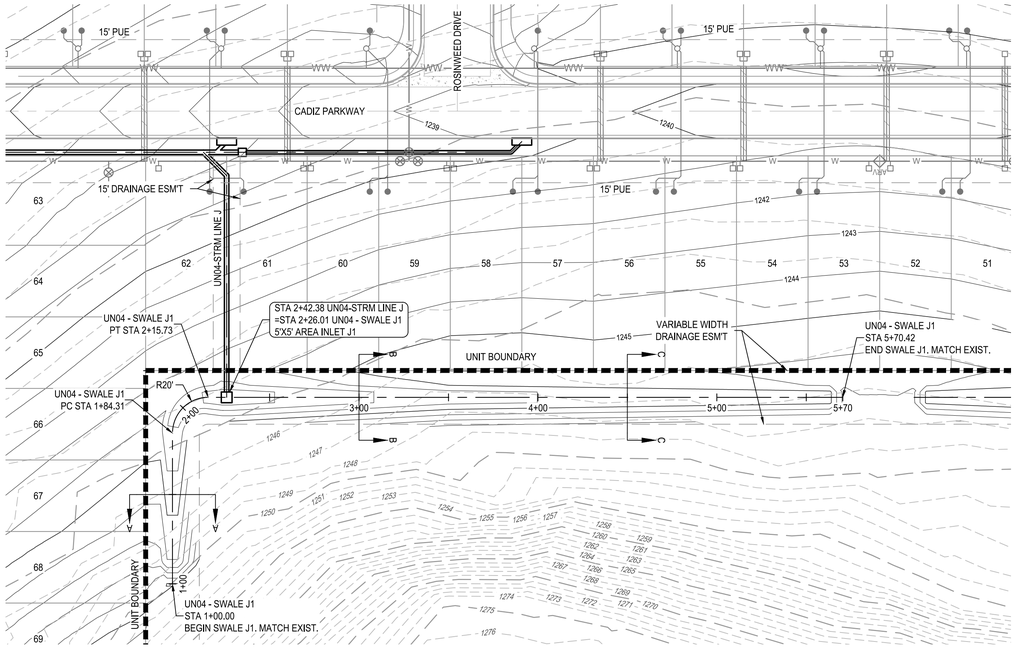
CANYON RANCH UNIT 4

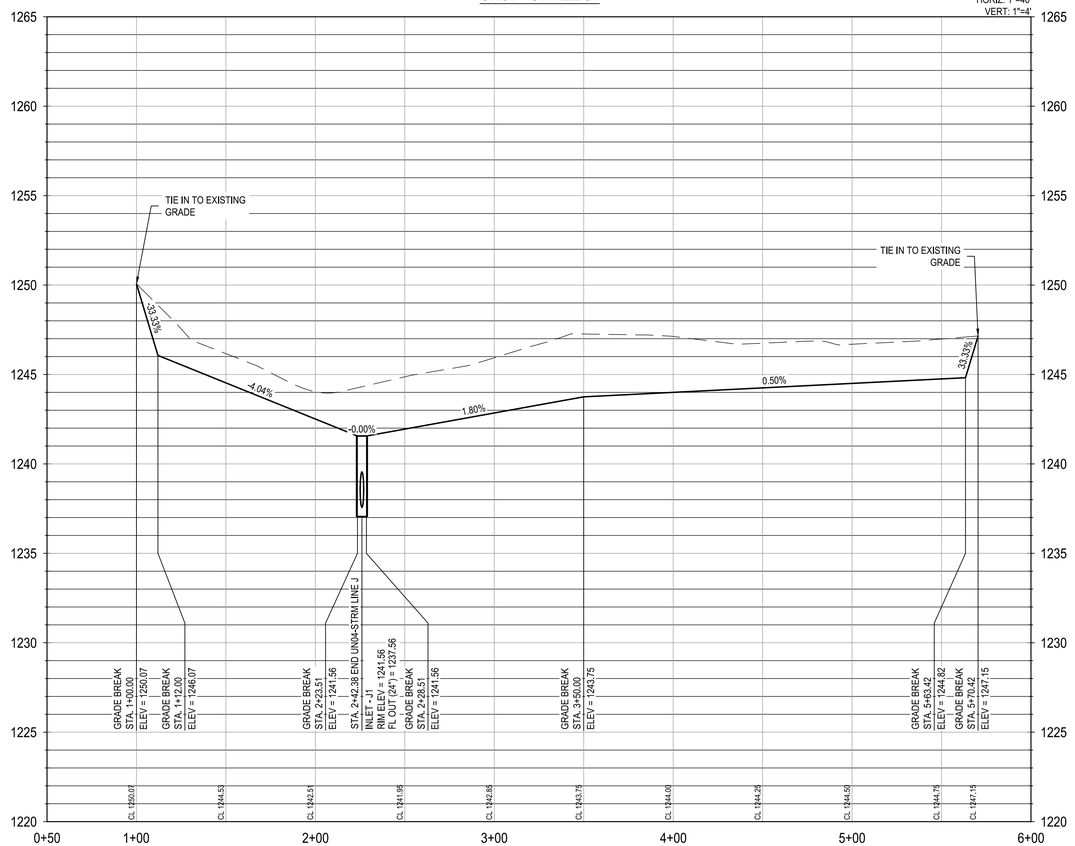
INTERCEPTOR CHANNEL I1 PLAN AND PROFILE

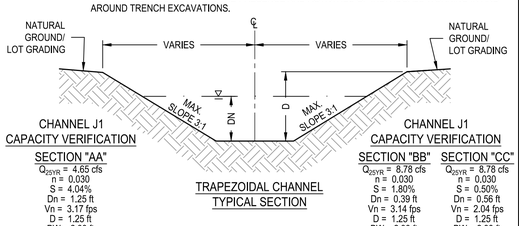
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.34

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Stds\C06.34 - INTERCEPTOR CHANNEL I1 PLAN AND PROFILE.dwg Layout: C06.34 INTERCEPTOR CHANNEL I1 PLAN AND PROFILE Plotted: 11/7/2024 11:08:52 AM By: Mhernandez







0 20' 40' 80'

SCALE: 1" = 40'

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- 831 EXISTING MINOR CONTOUR
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REV	DESCRIPTION	DATE	APR

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

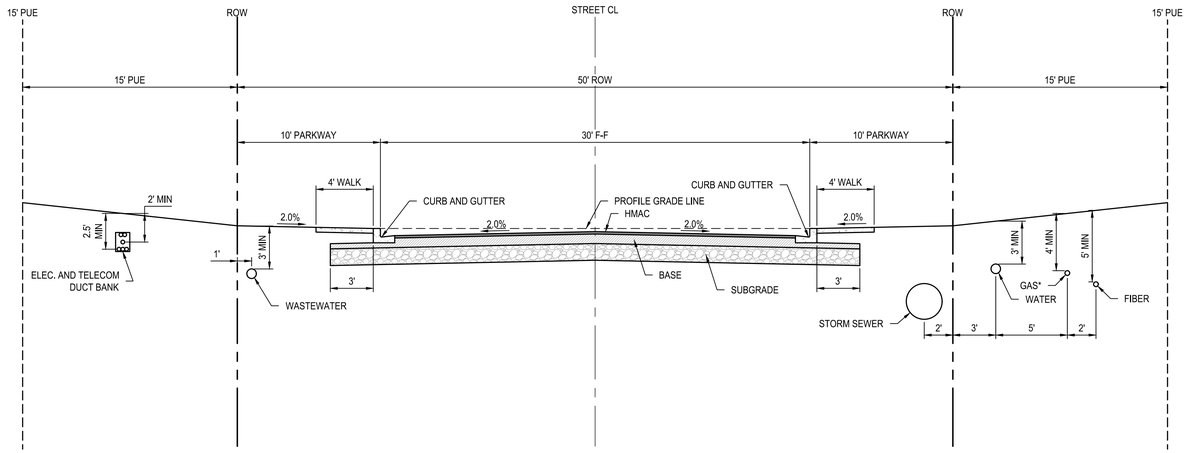
CANYON RANCH UNIT 4

INTERCEPTOR CHANNEL J1 PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.35

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.35 - INTERCEPTOR CHANNEL J1 PLAN AND PROFILE.dwg Layout: C06.35 INTERCEPTOR CHANNEL J1 PLAN AND PROFILE Plotted: 11/7/2024 11:10:21 AM By: Mhernandez



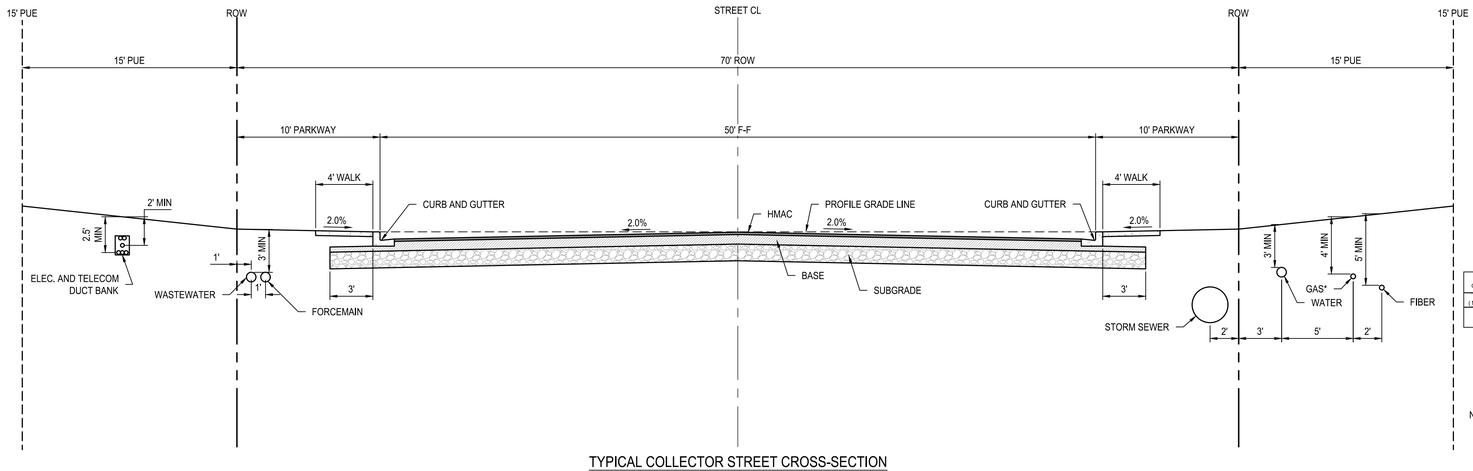
TYPICAL LOCAL STREET CROSS-SECTION

N.T.S.

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS FOR CANYON RANCH UNIT 4
SPRING BRANCH, TEXAS
REPORT FOR LENNAR
OCTOBER 22, 2024
BY PROFESSIONAL SERVICE INDUSTRIES, INC
REPORT NUMBER: 0312-3287-1R
SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE, INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.5	-	7.00	NO	-	-

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT



TYPICAL COLLECTOR STREET CROSS-SECTION

N.T.S.

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS
CANYON RANCH SUBDIVISION
COMAL COUNTY, TEXAS
REPORT FOR GRAM VIKAS PARTNERS, INC
DECEMBER 10, 2020
BY INTEC OF SAN ANTONIO, LP.
12028 RADIUM
SAN ANTONIO, TX 78216
SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE, INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.0	-	6.00	NO	-	2.07
RESIDENTIAL COLLECTOR	3.00	-	18.50	NO	-	3.91
	3.00	-	15.50	YES	-	3.95
	3.00	-		NO	-	4.04

SUMMARY OF RECOMMENDED OPTIONS - RIDGID PAVEMENT**

STREET CLASSIFICATION	REINFORCED CONCRETE, INCHES	SUBGRADE THICKNESS, INCHES
RESIDENTIAL LOCAL (NO BUS TRAFFIC)	6.00	-
RESIDENTIAL COLLECTOR	10.00	-

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

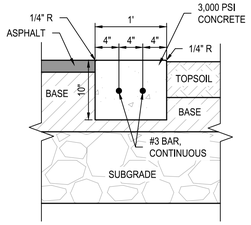
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

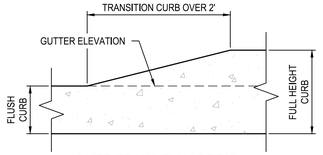
STREET AND DRAINAGE DETAILS (SHEET 1 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

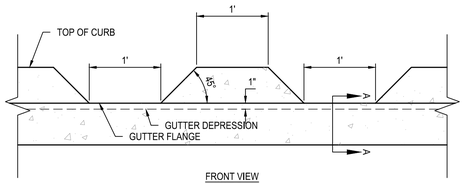
SHEET
C06.50



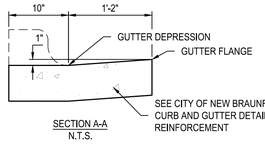
12" FLUSH CURB
N.T.S.



CURB TRANSITION DETAIL
SCALE: N.T.S.

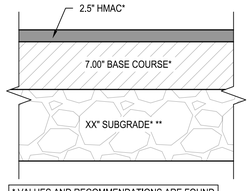


FRONT VIEW
N.T.S.



SECTION A-A
N.T.S.

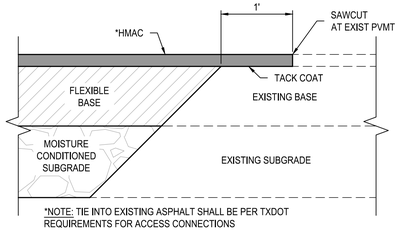
SAWTOOTH CURB
SCALE: N.T.S.



* VALUES AND RECOMMENDATIONS ARE FOUND IN THE GEOTECHNICAL REPORT NUMBER 0312-3287-1R PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC DATED 08/28/2024

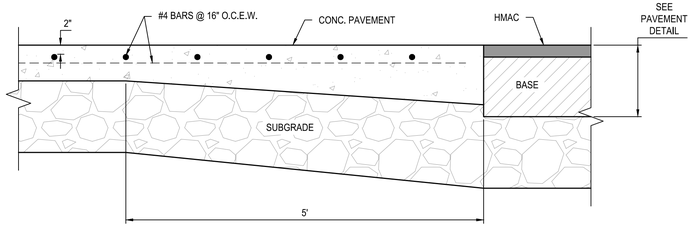
** LIME TREATED SUBGRADE ONLY REQUIRED IF PI IS ABOVE 20 PER THE GEOTECH REPORT

TYPICAL PAVEMENT DETAIL
SCALE: N.T.S.



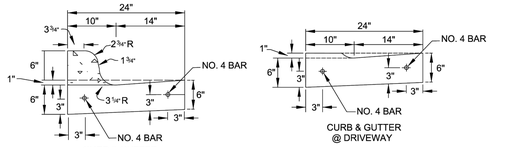
*NOTE: TIE INTO EXISTING ASPHALT SHALL BE PER TXDOT REQUIREMENTS FOR ACCESS CONNECTIONS

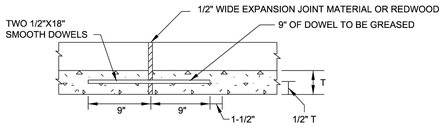
MATCH EXISTING PAVEMENT
N.T.S.



CONCRETE/ASPHALT PAVEMENT JUNCTURE
SCALE: N.T.S.

CURB AND GUTTER





LONGITUDINAL SECTION THRU CURB AND GUTTER
SHOWING TYPICAL EXPANSION JOINT DETAILS.
REINFORCING STEEL SHALL NOT CROSS EXPANSION JOINTS.
STEEL SHALL BE TERMINATED 3" (+ OR -) 1" FROM FACE OF THE JOINT.

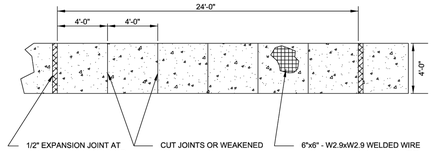
NOTES:

1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT ± 10'. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS NO GREATER THAN 100' AND AT ALL ADJACENT STRUCTURES.
4. UNLESS OTHERWISE SHOWN, TRANSITIONS BETWEEN CURBS OR CURBS AND GUTTER OF DIFFERING CROSS SECTION SHALL BE ACCOMPLISHED OVER A 10' LENGTH OR AS APPROVED BY THE CITY ENGINEER.
5. ALL CONCRETE TO BE CLASS "A" 3000 PSI CONCRETE.
6. ALL EXPOSED CONCRETE SURFACES TO BE BRUSHED SMOOTH AND UNIFORM.

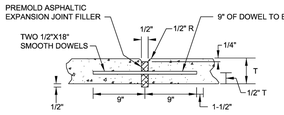
DATE APPROVED: 07/2008	DWG. NO: ST-013	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: CURB & GUTTER		

City of New Braunfels ENGINEERING DEPARTMENT

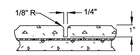
SIDEWALK
(RESIDENTIAL)



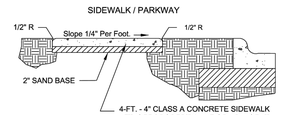
PLAN VIEW



EXPANSION JOINT



WEAKENED PLANE JOINT



TYPICAL SECTION

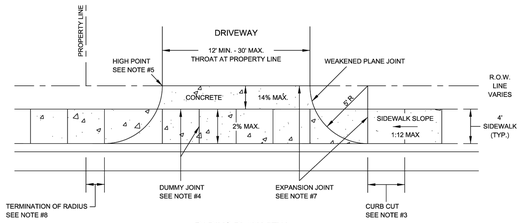
NOTES:

1. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
2. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
3. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

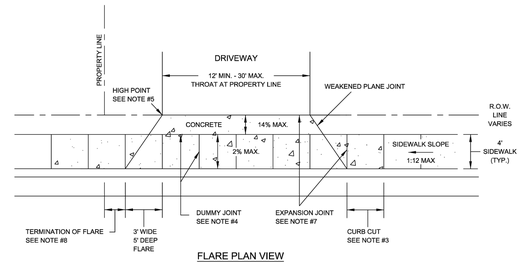
DATE APPROVED: 07/2008	DWG. NO: ST-016	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: SIDEWALK (RESIDENTIAL)		

City of New Braunfels ENGINEERING DEPARTMENT

DRIVEWAY APRON
(RESIDENTIAL - ONE OR TWO FAMILY)



RADIUS PLAN VIEW

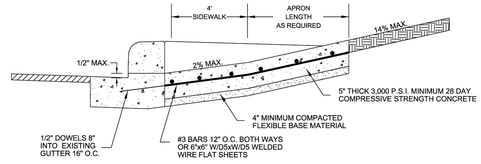


FLARE PLAN VIEW

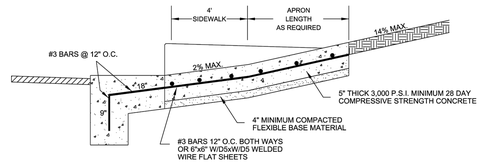
DATE APPROVED: 04/2016	DWG. NO: ST-014.1	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 2	
FILENAME: DRIVEWAY (RESIDENTIAL - ONE OR TWO FAMILY)		

City of New Braunfels ENGINEERING DEPARTMENT

DRIVEWAY APRON
(RESIDENTIAL - ONE OR TWO FAMILY)



STRUCTURAL SECTION



NO EXISTING CURB STRUCTURAL SECTION

NOTES:

1. WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6" WIDE 1' DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.
2. PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED PROVIDED CROSS SLOPE OF SIDEWALK IS NO GREATER THAN 2%.
3. CURB CUT LENGTH NO GREATER THAN AS REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.
4. DUMMY JOINTS TO BE PROVIDED AT MINIMUM 4-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.
5. PROVIDE A MINIMUM 7" HIGH POINT. HIGH POINT HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.
6. DRIVEWAY THROAT TRANSITION MAY OCCUR OUTSIDE OF ROW.
7. PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 16" O.C.
8. THE TANGENT POINT OF THE DRIVEWAY CURB RETURN AT THE PUBLIC ROADWAY LINE OR FLARE SHALL BE A MINIMUM DISTANCE OF 1' OFF THE PROPERTY PROJECTED PERPENDICULAR TO THE STREET CENTERLINE, EXCEPT SINGLE FAMILY OR ZERO LOT LINE LOTS. ON SINGLE FAMILY ZERO LOT LINE LOTS WHERE THE DRIVE IS ON THE ZERO LOT LINE, THE TANGENT POINT OR FLARE SHALL BE NO GREATER THAN 3' BEYOND THE ADJOINING PROPERTY LINE PROJECTED PERPENDICULAR TO THE STREET CENTERLINE.

DATE APPROVED: 04/2016	DWG. NO: ST-014.2	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 2 OF 2	
FILENAME: DRIVEWAY (RESIDENTIAL - ONE OR TWO FAMILY)		

City of New Braunfels ENGINEERING DEPARTMENT

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

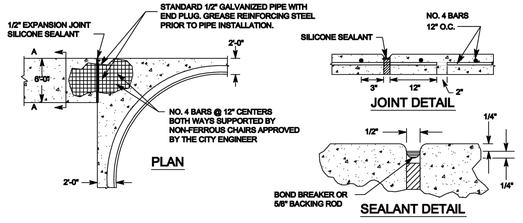
CANYON RANCH UNIT 4

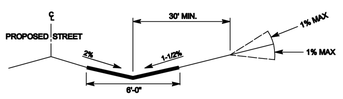
STREET AND DRAINAGE DETAILS
(SHEET 2 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.51

CROSS GUTTER



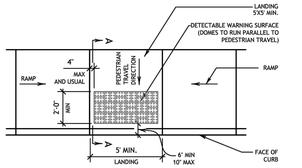


TYPICAL PROFILE AT LOCAL RESIDENTIAL STREET INTERSECTION

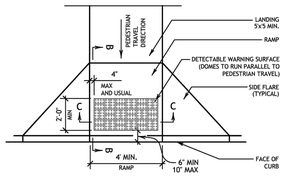
NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI.
2. FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH CROSS GUTTER LIP.
3. CONSTRUCTION OF CROSS GUTTER IS NOT ALLOWED ACROSS MAJOR COLLECTOR OR ARTERIAL STREETS.
4. ADJACENT SPANDREL SHALL BE 9" THICK CLASS "A" 3,000 PSI CONCRETE.

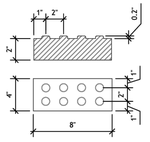
DATE APPROVED: 7/08	DWG. NO: ST-020	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: CROSS GUTTER			
P:\CURRENT NEW BRAUNFELS DETAILS\2008\			



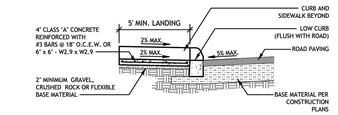
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



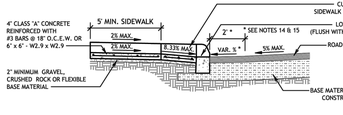
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



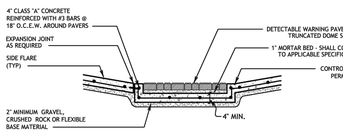
DETECTABLE WARNING PAVER



SECTION A-A



SECTION B-B



SECTION C-C

CURB RAMP NOTES

1. ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL STILL DRAIN PROPERLY SHOULD BE USED. ADJUST CURB RAMP LENGTH OR GRADE OF APPROACH SIDEWALKS AS DIRECTED.
2. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF CURB RAMPS ARE TO BE SHOWN ON THE CONSTRUCTION PLANS. ALL ACCESSIBLE WALK WAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE AMERICANS WITH DISABILITIES ACT (ADA) AND TEXAS ACCESSIBILITY STANDARDS (TAS). CITY ENGINEER OR BUILDING OFFICIAL MAY ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
3. THE MINIMUM STANDARD SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 118-49 OF THE NEW BRAUNFELS CODE OF ORDINANCES AND MAINTAIN A MINIMUM UNOBSTRUCTED WIDTH OF 3' (36").
4. ALL LANDINGS WHERE REQUIRED SHALL BE 5'X 5' (60"X60") MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION.
5. RAMP LENGTHS SHALL BE SUFFICIENT TO MAINTAIN A MAXIMUM SLOPE OF 8.33% (1:12). MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP SURFACES IS 2% (1:50).
6. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY. ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE GRADE OF THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS, AND LANDINGS IN ACCORDANCE WITH CURRENT ADA AND TAS REQUIREMENTS.
7. PROVIDE FLARED RAMP SIDES WITH A MAXIMUM SLOPE OF 10% (1:10) MEASURED ALONG THE CURB LINE. CURB RETURNS MAY BE USED IN-LIEU OF SIDE FLARES IN AREAS NOT NORMALLY WALKED ACROSS BY PEDESTRIANS, BECAUSE THE ADJACENT SURFACE IS VEGETATION OR OTHER NON-WALKING SURFACE OR WHERE THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
8. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4'X 4' (48"X48") WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
9. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, CURB RAMPS SHALL BE ALIGNED WITH THEORETICAL CROSSWALKS, OR AS DIRECTED BY THE CITY ENGINEER OR BUILDING OFFICIAL.
10. EXISTING FEATURES THAT COMPLY WITH CURRENT TAS REQUIREMENTS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
11. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. PROVIDE CURB RAMPS WHEREVER AN ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
12. SEPARATE CURB RAMP AND LANDINGS FROM ADJACENT SIDEWALK AND ANY OTHER ELEMENTS WITH PRE-MOLD OR BOARD JOINT OF 1/2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER OR BUILDING OFFICIAL.
13. PROVIDE A SMOOTH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.
14. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33-(-2.67)=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
15. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
16. ADA RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE WITH 2" MINIMUM GRAVEL,CRUSHED ROCK OR FLEXIBLE BASE MATERIAL. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6"x6" - W2.9 X W2.9 WIRE MESH.
17. THE EXTENTS OF ADA COMPLIANCE IN ALTERATIONS SHALL BE WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT AND AS DETERMINED BY THE CITY BUILDING OFFICIAL.

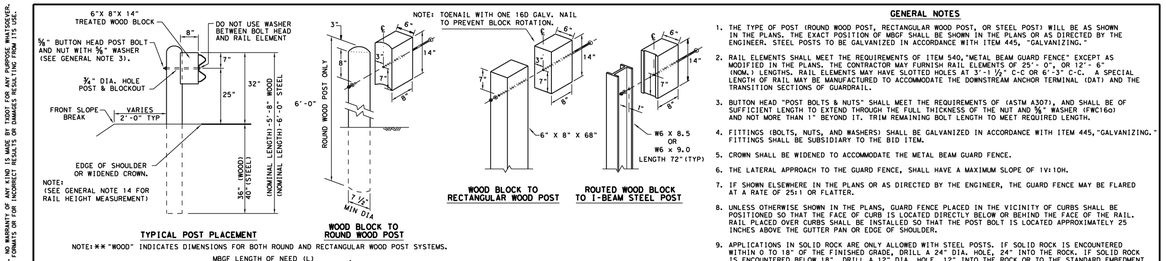
DETECTABLE WARNING NOTES

1. CURB RAMPS OR LANDINGS ABUTTING THE CROSSWALK MUST HAVE A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 4.29 OF THE TEXAS ACCESSIBILITY STANDARDS (TAS). THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACES, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
2. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT ALLOW WATER TO ACCUMULATE.
3. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
4. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
5. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS A MINIMUM OF 6" AND A MAXIMUM OF 10" FROM THE EXTENSION OF THE FACE OF CURB. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
7. WITHIN CITY RIGHT OF WAY AND WHERE APPLICABLE FURNISH DETECTABLE WARNING PAVER UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
8. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING PAVER UNITS USING A POWER SAW.

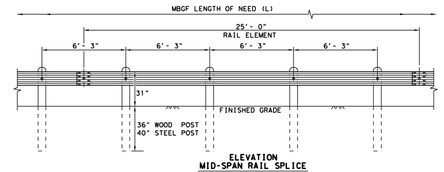
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the City of New Braunfels for any purpose whatsoever.

City of New Braunfels
ENGINEERING DIVISION
424 S. CASTELL AVE.
NEW BRAUNFELS, TEXAS 78130
PHONE: 830 221 4020
FAX: 830 626 3600

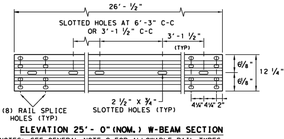
ADA RAMP STANDARDS		
APPROVED DATE: 7/5/2011	DWG. NO.:	SCALE: AS NOTED
DRAWN BY: AM	CONTACT: JK	SHEET: 1 OF 1



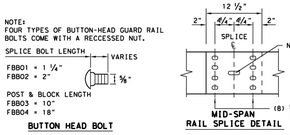
NOTE: ✱✱ "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES. SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.

NOTE: FOUR TYPES OF BUTTON-HEAD GUARD RAIL BOLTS COME WITH A RECCESSED NUT.

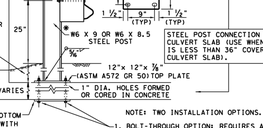
SPLICE BOLT LENGTH — VARIES
FBB01 = 1 1/4"
FBB02 = 2"
5/8"

POST & BLOCK LENGTH
FBB03 = 10"
FBB04 = 18"

BUTTON HEAD BOLT

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.

✱POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.



NOTE: TRANSISITIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

NOTE: TWO INSTALLATION OPTIONS.

1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. 5/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 5/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS 1/4" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 2511 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MO.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL. MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE(S) REVISED:
FILE:

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE TL-3 MASH COMPLIANT

GF(31)-19

FILE: gf3119.dgn	DN:TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

STACY MULHOLLAND 146417 LICENSED PROFESSIONAL ENGINEER 11/08/2024

	APR
	DATE
	DESCRIPTION
	REV

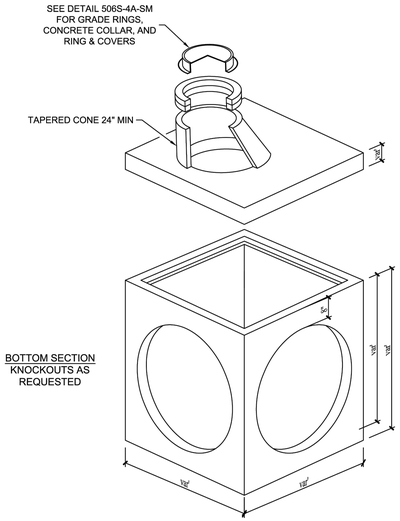
DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
STREET AND DRAINAGE DETAILS
(SHEET 3 OF 6)

SHEET
C06.52

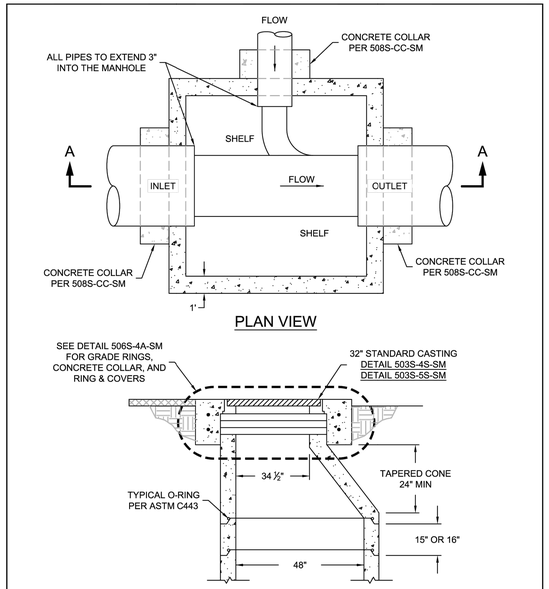
G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.50 - STREET AND DRAINAGE DETAILS.dwg Layout: STREET AND DRAINAGE DETAILS (SHEET 3 OF 6) Plotted: 11/7/2024 12:09:47 PM By: Lhuck



SPECIFICATIONS:
- CONCRETE HAS A 28 DAY STRENGTH OF 5,000 PSI
- STEEL REINFORCEMENT S ASTM A615 GRADE 60
-LOAD DESIGN IS H-20

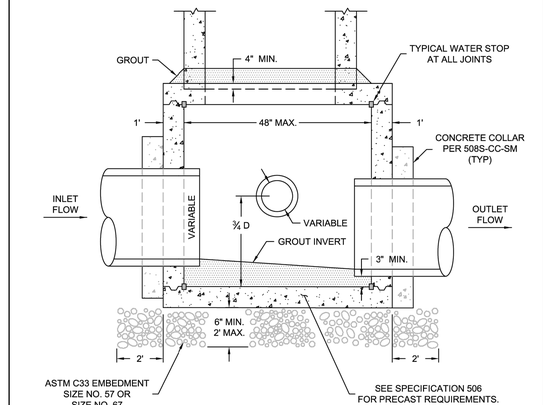
NOTES:
- CONSULT MANUFACTURER BEFORE HANDLING

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM JUNCTION BOX	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-5-SM
LAURIE MOYER, P.E.	ADOPTED		1 OF 3



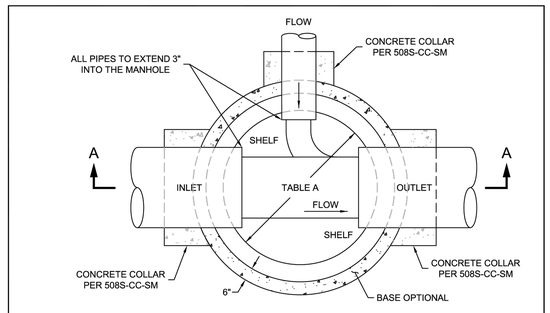
PLAN VIEW

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM JUNCTION BOX	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-5-SM
LAURIE MOYER, P.E.	ADOPTED		2 OF 3



SECTION A-A

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM JUNCTION BOX	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-5-SM
LAURIE MOYER, P.E.	ADOPTED		3 OF 3



PLAN VIEW

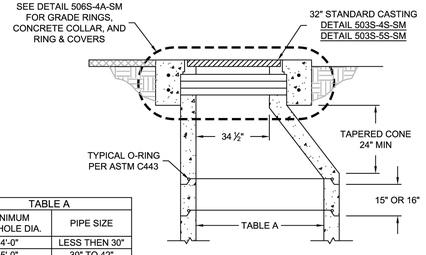
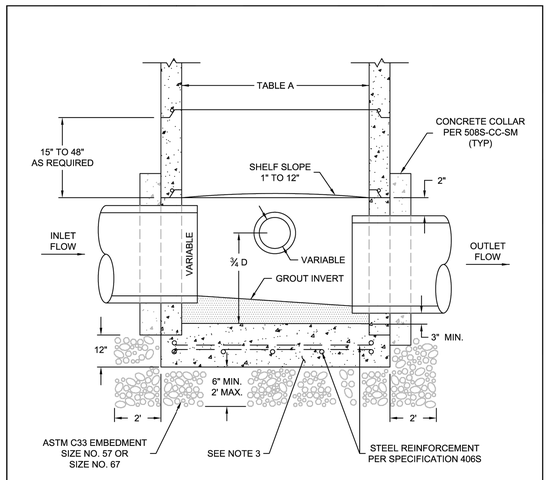


TABLE A	
MINIMUM MANHOLE DIA.	PIPE SIZE
4'-0"	LESS THEN 30"
5'-0"	30" TO 42"
6'-0"	48" TO 54"
7'-0"	60" TO 66"

THESE ARE MINIMUM. SIZE TO BE USED IS DEPENDENT ON DRAIN ANGLES.

ALTERNATE SECTION MAY BE SUBMITTED FOR APPROVAL

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3-SM
LAURIE MOYER, P.E.	ADOPTED		1 OF 2

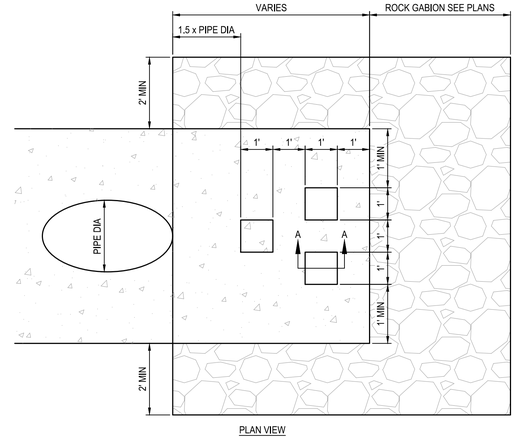


SECTION A-A

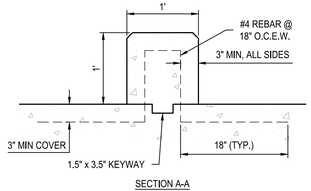
NOTES

1. STORM DRAIN MANHOLES SHOULD ONLY BE USED WHEN A JUNCTION BOX WILL NOT WORK DUE TO ODD ANGLES.
2. SEE DETAIL 506S-5-SM FOR JUNCTION BOX MANHOLE.
3. SEE SPECIFICATION 506 FOR PRECAST REQUIREMENTS.

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3-SM
LAURIE MOYER, P.E.	ADOPTED		2 OF 2



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

ENERGY DISSIPATOR DETAILS
N.T.S.

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

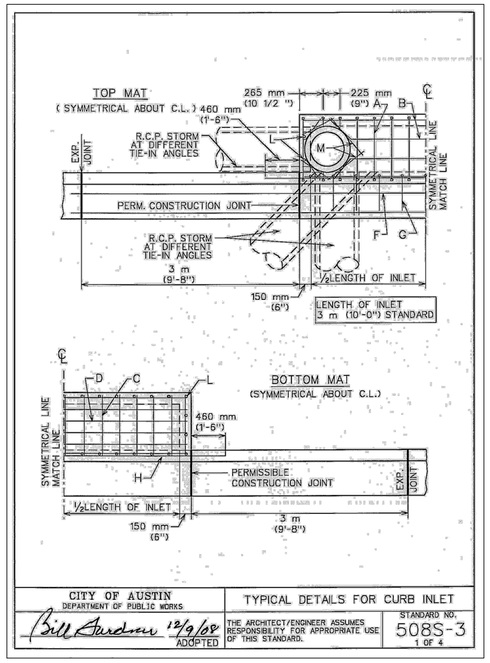
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

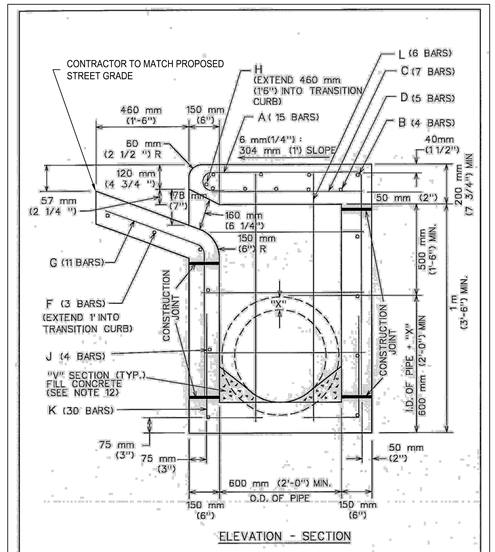
STREET AND DRAINAGE DETAILS (SHEET 4 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.53



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 1 OF 4



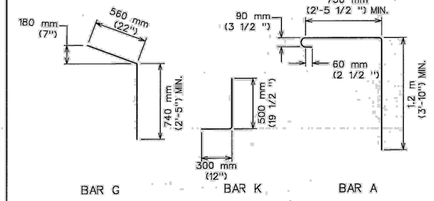
ELEVATION - SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 2 OF 4

TABLE OF QUANTITIES
FOR 18" OUTLET PIPE
REINFORCING STEEL QUANTITIES

BARS	SIZE	SPACING	NUMBER	LENGTH	WEIGHT
A	4	230mm (9")×	15	2 m (7'-0")	73
B	4	250 mm (10")	4	3.25 m (10'-8")	29
C	4	460 mm (18")	7	760 mm (2'-6")	12
D	6	150 mm (6")	5	3.25 m (10'-8")	80
E	4	300 mm (12")	6	760 mm (2'-6")	10
F	4	250 mm (10")	3	4 m (13'-0")	35
G	4	300 mm (12")	11	1.25 m (4'-3")	31
H	6	-	1	4.25 m (14'-0")	20
J	4	300 mm (12")	7	3.25 m (10'-8")	50
K	4	230 mm (9")×	30	800 mm (2'-7 1/2")	52
L	4	300 mm (12")×	6	1.3 m (4'-4")	17
M	4	-	4	500 mm (1'-8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.06

• EXCEPT AS SHOWN ON PLAN



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 3 OF 4

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

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

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL DETAILS FOR CURB INLET	
Bill Gardner 12/9/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-3 4 OF 4

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	Values for One Pipe W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	Values to be Added for Each Add'l Pipe X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4' - 7 ½"	2' - 6"	2' - 10"	3' - 3 ¼"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 ⅞"	2' - 9 ½"	3' - 4"	3' - 10 ¼"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 ¼"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 ⅝"	3' - 4 ½"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 ½"	3' - 9 ½"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 ½"	4' - 4 ½"	5' - 10"	6' - 8 ½"	203	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 ½"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 ½"	4' - 11 ½"	6' - 10"	7' - 10 ½"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 ½"	5' - 6 ½"	7' - 10"	9' - 0 ½"	298	2.8	5' - 10"	97	1.3
	48"	15' - 1"	6' - 1 ½"	9' - 4"	10' - 9 ½"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 ½"	6' - 8 ½"	10' - 4"	11' - 11 ½"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 ⅝"	7' - 3 ½"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 ½"	7' - 10 ½"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 ½"	8' - 5 ½"	13' - 4"	15' - 4 ½"	601	7.1	9' - 4"	213	3.3
3:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 ½"	5' - 0"	5' - 9 ¼"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 ⅜"	3' - 1"	5' - 9"	6' - 7 ⅜"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 ⅜"	3' - 4 ½"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 ½"	7' - 3"	8' - 4 ½"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 ⅜"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 ½"	8' - 9"	10' - 1 ¼"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 ⅜"	4' - 8"	9' - 6"	10' - 11 ⅜"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 ⅜"	4' - 11 ½"	10' - 2"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 ½"	5' - 6 ½"	11' - 9"	13' - 6 ⅜"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 ⅜"	6' - 1 ½"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 ½"	6' - 8 ½"	15' - 6"	17' - 10 ⅜"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 ⅛"	7' - 3 ½"	17' - 0"	19' - 7 ½"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 ½"	18' - 6"	21' - 4 ⅜"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 ⅜"	8' - 5 ½"	20' - 0"	23' - 1 ¼"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 ⅝"	2' - 6"	5' - 8"	6' - 6 ½"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 ½"	6' - 8"	7' - 8 ½"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 ½"	3' - 1"	7' - 8"	8' - 10 ½"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 ⅜"	3' - 4 ½"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 ½"	3' - 9 ½"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 ⅜"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 ⅛"	4' - 4 ½"	11' - 8"	13' - 5 ⅜"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 ⅜"	4' - 8"	12' - 8"	14' - 7 ½"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 ½"	13' - 8"	15' - 9 ¼"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 ⅜"	5' - 6 ½"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 ½"	6' - 1 ½"	18' - 8"	21' - 6 ⅜"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 ½"	20' - 8"	23' - 10 ¼"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 ⅜"	7' - 3 ½"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 ½"	7' - 10 ½"	24' - 8"	28' - 5 ⅜"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 ⅛"	8' - 5 ½"	26' - 8"	30' - 9 ½"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 ⅜"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 ½"	2' - 9 ½"	10' - 0"	11' - 6 ½"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 ½"	3' - 1"	11' - 6"	13' - 3 ⅛"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 ⅜"	3' - 4 ½"	13' - 0"	15' - 0 ⅛"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 ½"	3' - 9 ½"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 ⅜"	4' - 1"	16' - 0"	18' - 5 ⅜"	512	5.7	3' - 11"	96	1.4
	30"	23' - 5 ½"	4' - 4 ½"	17' - 6"	20' - 2 ½"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 ½"	4' - 8"	19' - 0"	21' - 11 ⅛"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 ⅜"	4' - 11 ½"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 ⅛"	5' - 6 ½"	23' - 6"	27' - 1 ½"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 ½"	6' - 1 ½"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 ⅛"	6' - 8 ½"	31' - 0"	35' - 9 ½"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 ⅜"	7' - 3 ½"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0

DATE FILE:

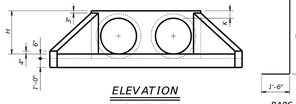
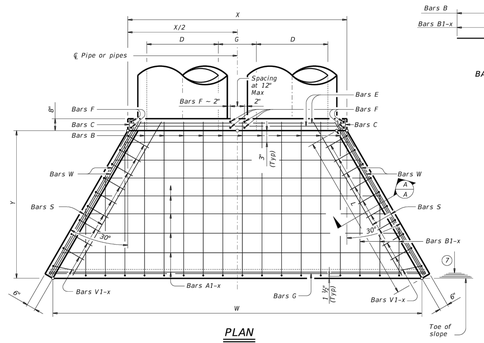


TABLE OF REINFORCING STEEL (3)

Bar	Size	Spa	No.
A	#4	1' - 0"	~
B	#3	1' - 6"	~
C	#4	1' - 0"	~
D	#3	1' - 0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1' - 0"	~
W	#5	~	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (4)	H
12"	0' - 9"	1' - 0"	2' - 0"
15"	0' - 11"	1' - 0"	2' - 3"
18"	1' - 2"	1' - 0"	2' - 6"
21"	1' - 4"	1' - 0"	2' - 9"
24"	1' - 7"	1' - 0"	3' - 0"
27"	1' - 8"	1' - 0"	3' - 3"
30"	1' - 10"	1' - 0"	3' - 6"
33"	1' - 11"	1' - 0"	3' - 9"
36"	2' - 1"	1' - 0"	4' - 0"
42"	2' - 4"	1' - 0"	4' - 6"
48"	2' - 7"	1' - 3"	5' - 3"
54"	3' - 0"	1' - 3"	5' - 9"
60"	3' - 3"	1' - 3"	6' - 3"
66"	3' - 3"	1' - 3"	6' - 9"
72"	3' - 4"	1' - 3"	7' - 3"

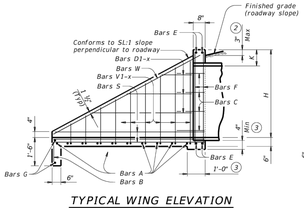


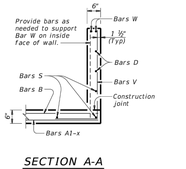
1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. Provide a 1'-0" footing as shown where required to maintain 4' minimum cover for pipes.
4. Dimensions shown are usual and maximum.
5. Quantities shown are for one structure end only (one headwall).
6. Min Length = 6" + 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$
   Max Length = 12 x H - 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$ - 1"
7. Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.





Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE: ch0s00a-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

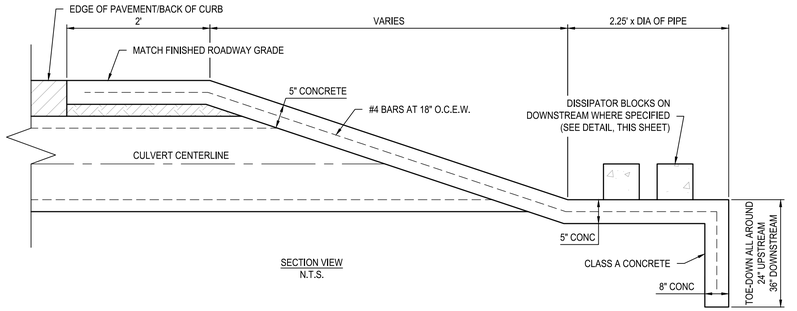
DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
STREET AND DRAINAGE DETAILS
(SHEET 5 OF 6)

SHEET
C06.54

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.50 - STREET AND DRAINAGE DETAILS.dwg Layout: STREET AND DRAINAGE DETAILS (SHEET 5 OF 6) Plotted: 11/7/2024 12:09:52 PM By: Lhuck



SECTION VIEW
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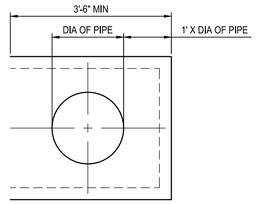


END VIEW
N.T.S.

PIPE END TREATMENT
N.T.S.

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

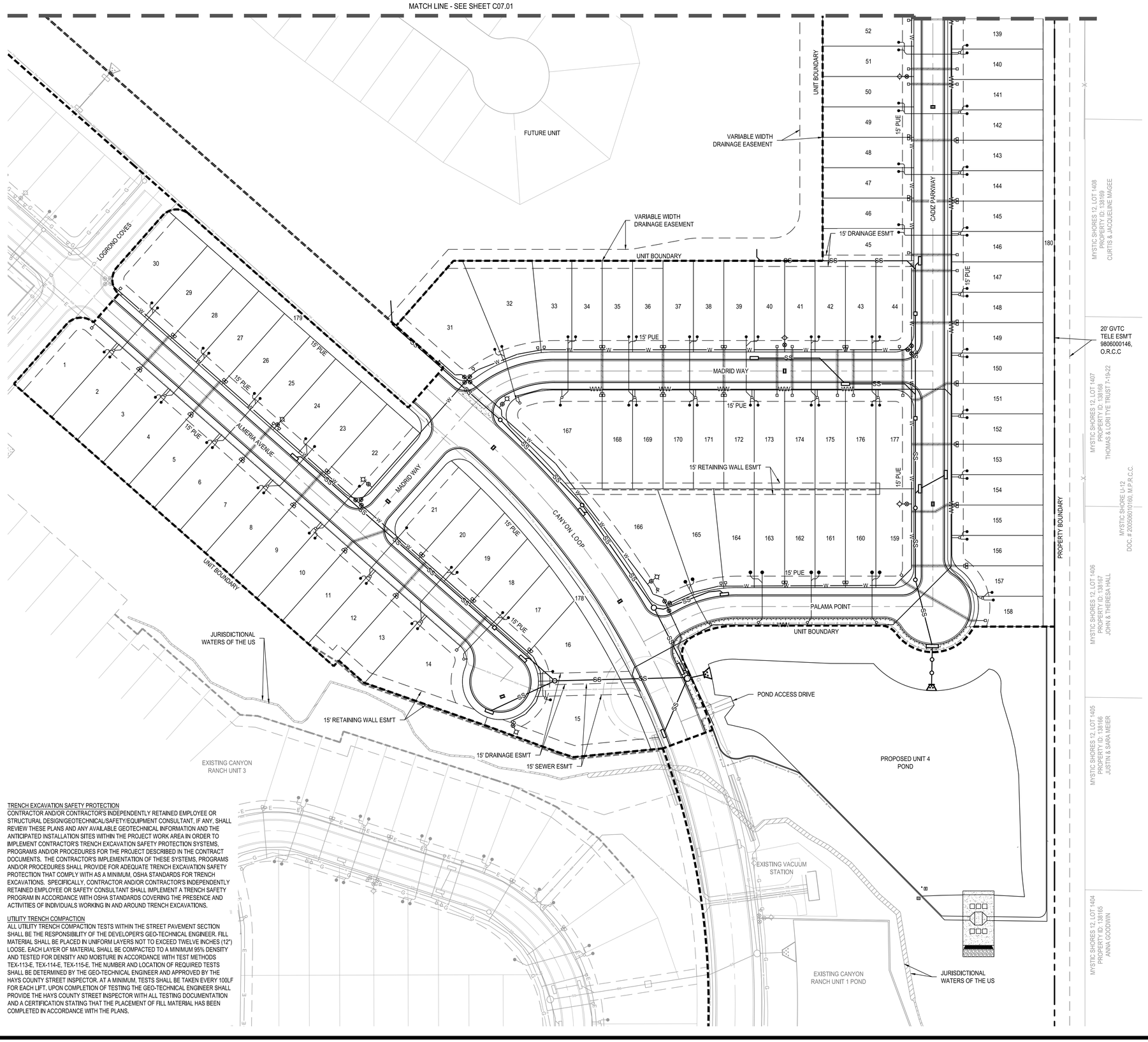
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STREET AND DRAINAGE DETAILS
(SHEET 6 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C06.55



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 ANY 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 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 COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE HAYS COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT, UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE HAYS COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- 100 YEAR FEMA FLOODPLAIN
- PROPOSED WATER MAIN
- DUAL/SINGLE WATER SERVICES
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SANITARY SEWER
- WASTEWATER SERVICES
- PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- PROPOSED NATURAL GAS LINE
- PROPOSED ELECTRIC LINE
- PROPOSED FIBER OPTIC LINE
- EXISTING FORCE MAIN
- PROPOSED STREET LIGHT
- RAISED REFLECTIVE HYDRANT MARKER

UTILITY GENERAL NOTES:

1. 2" WATERLINES SHALL BE ASTM D2241, SDR 21 UNLESS OTHERWISE APPROVED. ALL WATERLINES LARGER THAN 8" SHALL BE AWWA C900 DR 18.
2. ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

   CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY AUQA TEXAS, INC. FOR CHLORINATION INJECTION:
   1 ~ 1" CORPORATION STOP C.C. X I.P.
   1 ~ 1" COMP X 1R" CPL, CURB STOP
   1 ~ 1" 1/4" THD SOLID CAP FOR MACHINE CHLORINATION
   1 ~ 1" COPPER TUBING, CUT AS REQ'D
   CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN
3. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
4. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
6. ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS.
7. DEPTH OF BURY FOR ALL PIPE SHALL BE A MINIMUM OF 4' UNLESS OTHERWISE NOTED OR APPROVED BY TEXAS WATER COMPANY.
8. CONTRACTOR TO GRADE SITE TO WITHIN ± 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.
9. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES REGARDING THE LOCATION OF THE EXISTING FACILITIES PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS, PRIOR TO ANY CONSTRUCTION IN THE AREA.
11. ALL DISTURBED AREAS WITHIN THE EASEMENTS SHALL BE HYDRO-MULCHED IN ACCORDANCE WITH TXDOR SPECIFICATIONS.
12. FOR WATER METER SERVICED DETAIL, SEE SHEET C10.00
13. SEE SHEET C10.00 THROUGH C10.06 FOR UTILITY DETAILS
14. IF THE MAXIMUM STATIC PRESSURE EXCEEDS 80 PSI, A PRV WILL BE REQUIRED ON THE PROPERTY OWNER'S SIDE OF THE WATER METER

GENERAL UTILITY LOCATION NOTES:

TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES ON THE PLANS INDICATE LOCATIONS WHERE THE UTILITY INFORMATION SHOWN IS KNOWN TO FALL SHORT OF OR EXCEED THE STATED QUALITY LEVEL.

ABANDONED MAINS	QL D
NATURAL GAS MAINS	QL D
OVERHEAD ELECTRIC LINES	QL C
UNDERGROUND CATV LINES	QL D
UNDERGROUND TELECOMMUNICATION LINES	QL D
ALL UNDERGROUND UTILITY SERVICE LINES	QL D

NOTE:

UTILITY SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO UTILITY DETAIL SHEETS C10.00 - C10.08.

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: STAFF
REVIEWED BY: SSM
DRAWN BY: ACR

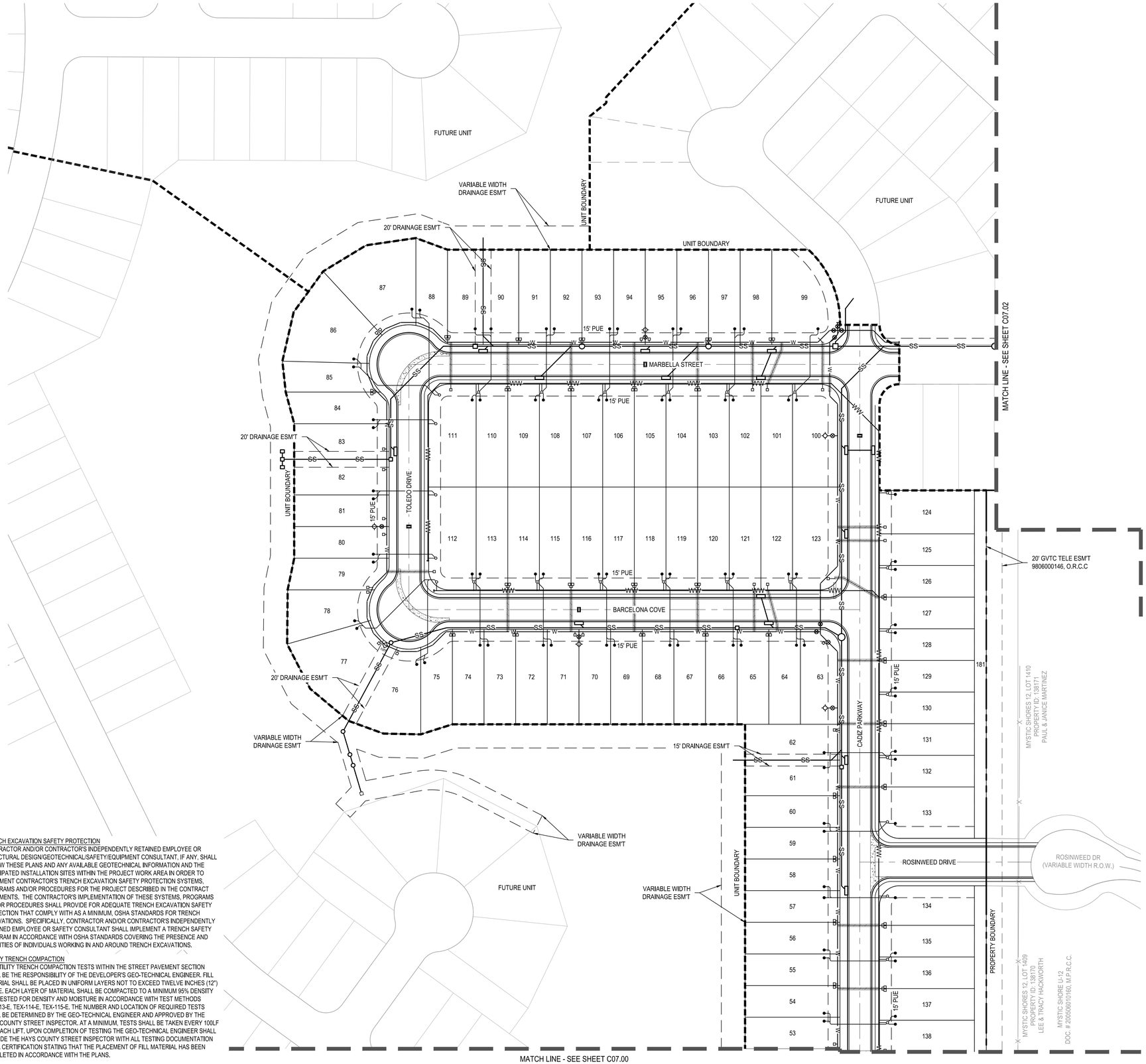
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE UTILITY PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

SHEET
C07.00



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SCALE: 1" = 60'

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	APR	DATE	DESCRIPTION	REV

DESIGNED BY: STAFF
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE UTILITY PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
11/08/2024

SHEET
C07.01

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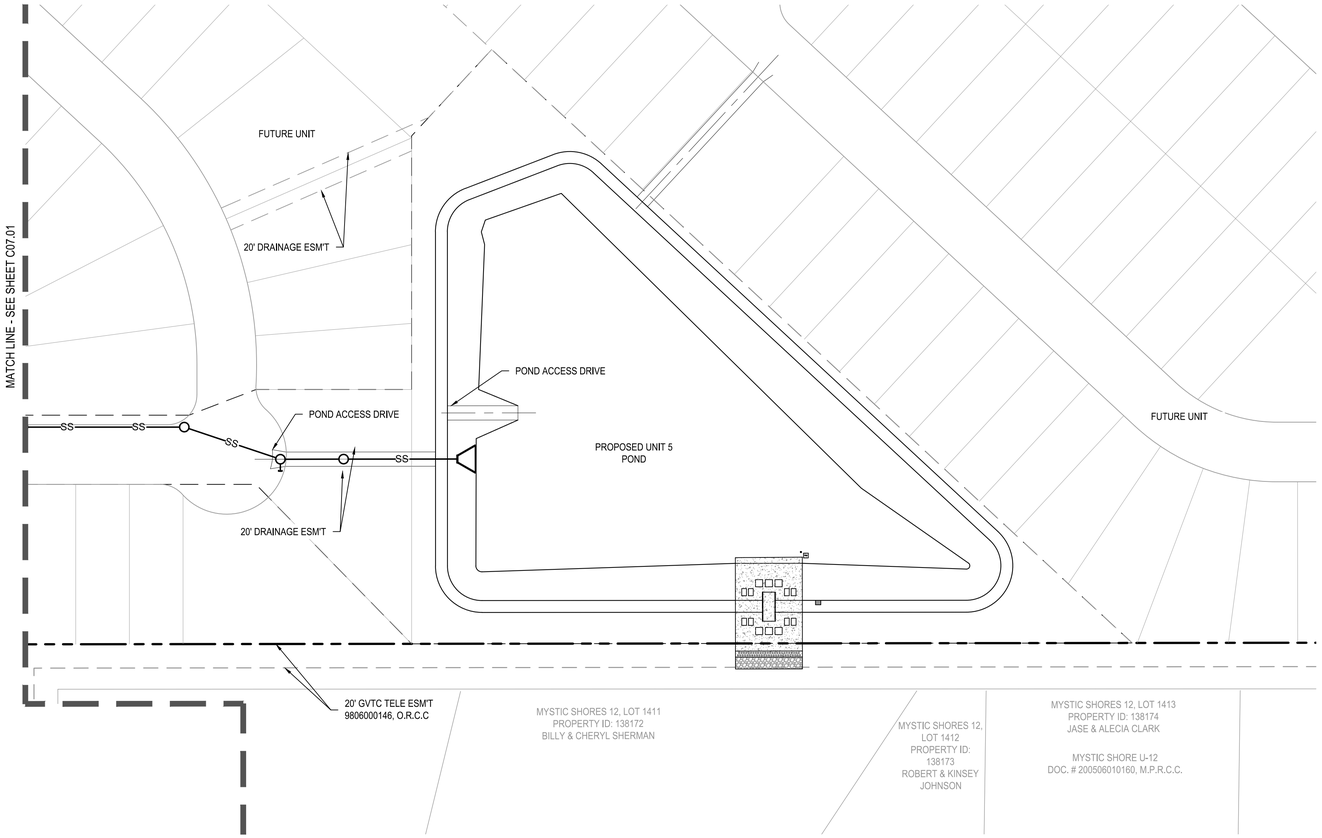

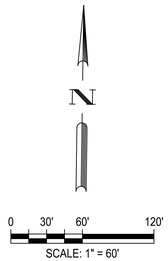

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CANYON RANCH UNIT 4

ONSITE UTILITY PLAN (SHEET 3 OF 3)

STATE OF TEXAS
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11/08/2024

SHEET
C07.02