512.439.4700
TBPELS F-1386
TBPELS 10110501
www.LJA.com
7500 Rialto Boulevard, Building II, Suite 100, Austin, Texas 78735

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN

FOR

SERENE ESTATES

MAY 2025

PREPARED FOR

SERENE ESTATES, LLC.
3321 BURKS LANE
AUSTIN, TEXAS 78732
(512) 784-8838



128935
7/11/25

PREPARED BY

LJA ENGINEERING, INC.
7500 RIALTO BLVD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
(512) 439-4700
FIRM NO. F-1386

`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: Serene Estates						**2. Regulated Entity No.:**			
3. Customer Name: Serene Estates, LLC.						**4. Customer No.:**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		98.196 ac	
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			Less than 20% allowable impervious cover restriction			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Williamson		**14. Watershed:**			Berry Creek			

Application Distribution

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

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

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	X
Region (1 req.)	___	___	X
County(ies)	___	___	X
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___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 x_Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.
Matthew Thomas Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 7/11/25

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: Matthew Thomas, P.E.

Date: 7/11/25

Signature of Customer/Agent:



Regulated Entity Name: Serene Estates LLC

Project Information

1. County: Williamson
2. Stream Basin: Berry Creek
3. Groundwater Conservation District (if applicable): N/A
4. Customer (Applicant):

   Contact Person: Jai Kanuri
   Entity: Serene Estates, LLC.
   Mailing Address: 3321 Burks Lane
   City, State: Austin, TX Zip: 78732
   Telephone: 512-784-8838 Fax: _____
   Email Address: jai@k2global.us

5. Agent/Representative (If any):

   Contact Person: Matthew Thomas, P.E.
   Entity: LJA Engineering, Inc.
   Mailing Address: 7500 Rialto Blvd., Building II, Suite 100
   City, State: Austin, Tx Zip: 78735
   Telephone: 512-439-4700 Fax: _____
   Email Address: mthomas@lja.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 Georgetown.
   ☐ The project site is not located within any city's limits or ETJ.

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

   The project is 98.19 acres located at the northeast corner of CR 249 and CR 246, in Williamson County.

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: 75
☐ Residential: # of Living Unit Equivalents: _____
☐ Commercial
☐ Industrial
☐ Other: _____

13. Total project area (size of site): 98.196 Acres

    Total disturbed area: 68.05 Acres

14. Estimated projected population: 225

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	573,000	÷ 43,560 =	13.15
Parking	0	÷ 43,560 =	0
Other paved surfaces	280,881	÷ 43,560 =	6.45
Total Impervious Cover	853,881	÷ 43,560 =	19.60

Total Impervious Cover 19.60 **÷ Total Acreage** 98.196 **X 100 =** 19.96**% 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 _____ (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" = 200'.

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): _____.

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.

Texas Commission on Environmental Quality
Contributing Zone Plan
General Construction Notes

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

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

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 stormwater 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 the 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;

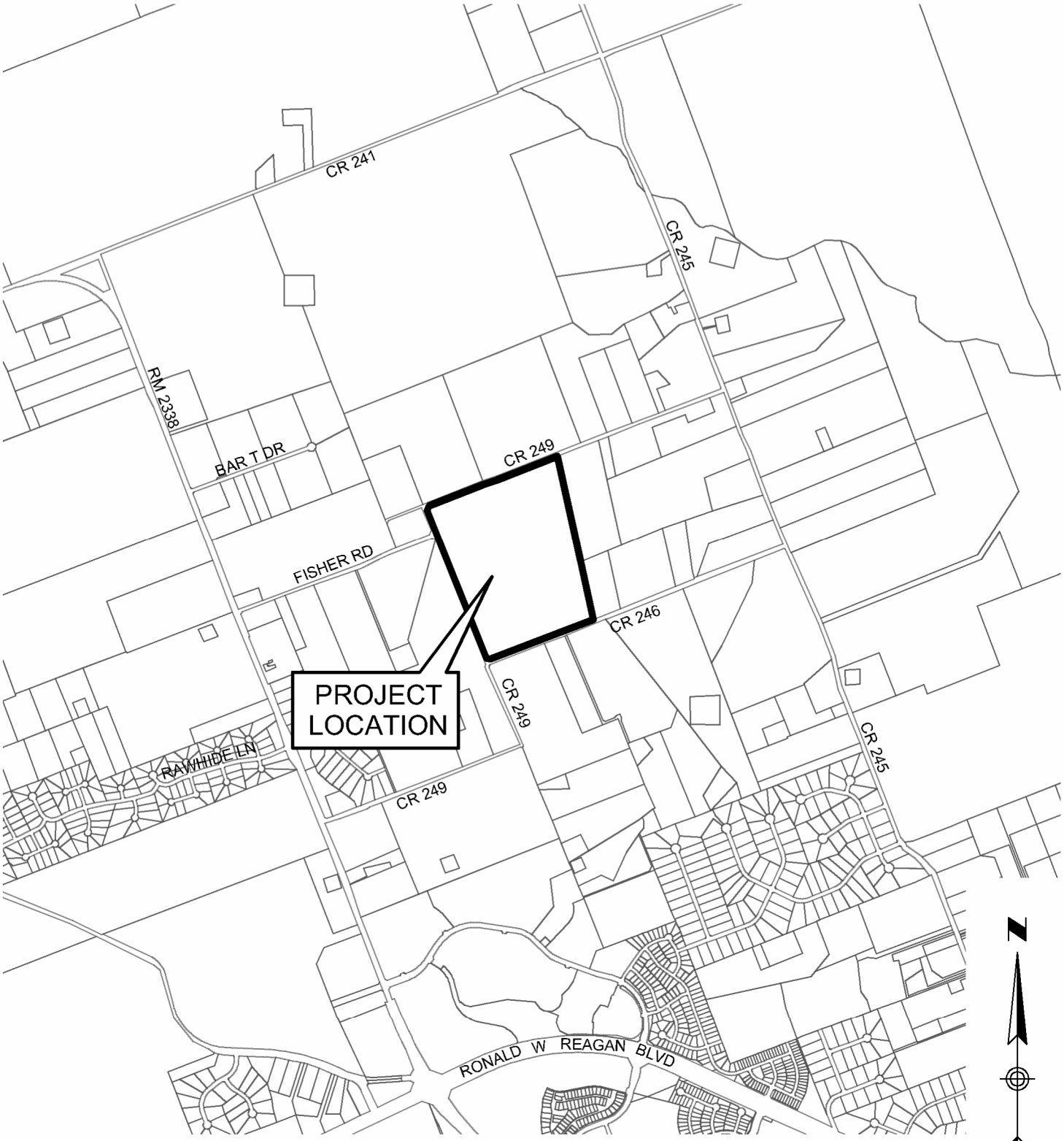
    C. any change that would significantly impact the ability to prevent pollution of the Edwards Aquifer; or

    D. any development of land previously identified as undeveloped in the approved contributing zone plan.

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

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

ATTACHMENT A – Road Map



LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716

SERENE ESTATES

ATTACHMENT A - ROAD MAP

CONTRIBUTING ZONE PLAN APPLICATION

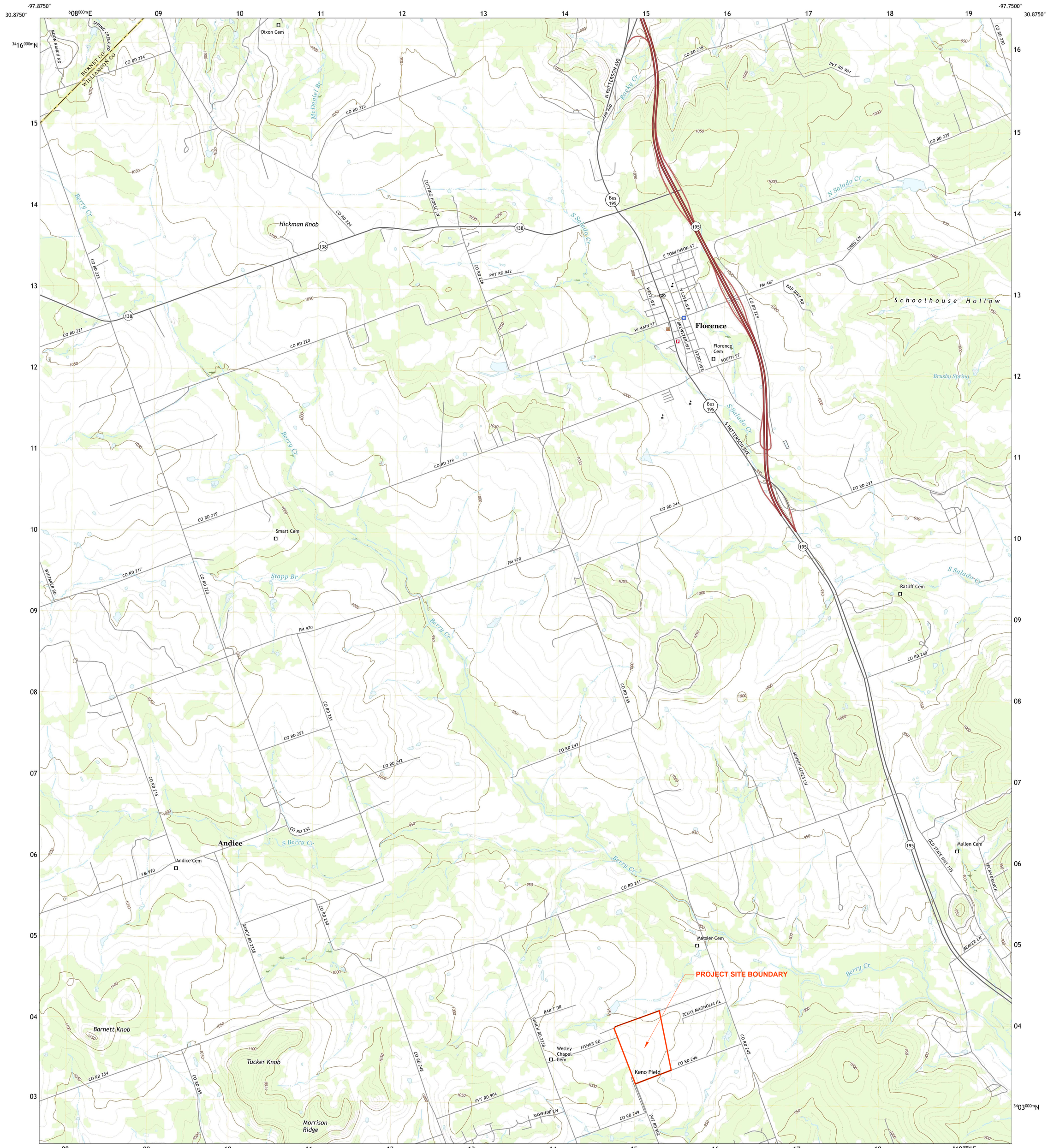
ATTACHMENT B – USGS Quadrangle Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

USGS science for a changing world

The National Map US Topo

FLORENCE QUADRANGLE
TEXAS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, August 2016 - November 2016
Roads..... U.S. Census Bureau, 2015 - 2019
Names.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2002 - 2020
Contours.....National Elevation Dataset, 2019
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
3°46´ 67 MILS
0°37´ 11 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PV
Grid Zone Designation 14R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Briggs
2 Ding Dong
3 Youngsport
4 Mahomet
5 Cobbs Cavern
6 Liberty Hill
7 Leander NE
8 Georgetown

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

FLORENCE, TX
2022

FOR PLANNING PURPOSES ONLY

SHEET NO. 1 OF 1 SHEETS

JOB NUMBER: A3336

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: USGS QUAD.dwg

REVISIONS			
NO.	DESCRIPTION	BY	DATE

SERENE ESTATES

CONTRIBUTING ZONE PLAN
ATTACHMENT B - FLORENCE, QUADRANGLE

ATTACHMENT C – Project Narrative

Serene Estates is a proposed 98.19 acre single-family development that will consist of 75 single family lots and 2 drainage/open space lots. The development will include paved roads, utilities that will include water, drainage, and dry utilities. The limit of construction consists of 68.05 acres. The proposed impervious cover after complete build out equals 19.60 acres or 19.96 percent of the site area.

The site is located on the northeast corner of CR 246 and CR 249 approximately 0.58 miles east of the intersection of FM 2338 and Fisher Road. The site is situated in the Berry Creek Watershed. The property drainage is split with roughly half of the site draining northeast and half of the site draining southeast.

The total impervious cover for the site will be kept under 20% with a maximum allowable impervious cover allowed per lot of 7600 SF, and a maximum impervious cover allowed on the drainage pond lots of 1500 SF.

The ponds will be located within a drainage lots dedicated to Serene Estates HOA and maintained by the HOA once they are accepted.

ATTACHMENT D – Factors Affecting Surface Water Quality

Potential sources of sediment to stormwater runoff:

- Clearing and grubbing operations
- Grading and site excavation operations
- Vehicle tracking
- Topsoil stripping and stockpiling
- Landscaping operation

Potential sources other than sediment:

- small fueling activities
- minor equipment maintenance
- sanitary facilities
- solvents, adhesives, paints, etc.
- paving materials, concrete, mortar

ATTACHMENT E – Volume and Character of Stormwater

The property drains toward the northeast and southeast with overland conditions. The proposed development will cause an increase in runoff due to impervious cover and reduced time of concentration; however, the increase in offsite runoff rate will be offset through the use of detention ponds. The total impervious cover for the development is being limited to less than 20% of the total site in order to meet standards for pollutant load minimization for the developed site as shown in these attachments.

As a result of these measures, the volume and character of the stormwater runoff from the site will be effectively unchanged from predevelopment levels.

ATTACHMENT F – Suitability Letter from Authorized Agent (if OSSF is proposed)

The preliminary plat was reviewed and approved by Williamson County as suitable for installation of OSSF systems. We have included a printout of the email stating such.

ATTACHMENT G – Alternative Secondary Containment Methods (if AST with an alternative method of secondary containment is proposed)

Not Applicable.

ATTACHMENT H – AST Containment Structure Drawings (if AST is proposed)

Not Applicable.

ATTACHMENT I – 20% or Less Impervious Cover Waiver

Not Applicable.

ATTACHMENT J – BMPs for Upgradient Stormwater

There is no upgradient stormwater flowing through the site. The proposed development is located in the Berry Creek Watershed. The area to the west that drains toward the site is diverted by the road ditch in CR 249 around the property. A berm is proposed along the southwestern edge of the property to ensure storm water in larger storms is maintained within the CR 249 roadside ditch.

ATTACHMENT K – BMPs for On-Site Stormwater

Temporary Controls: Prior to site clearing, grading and excavation, the stabilized construction entrance will be installed, tree protection/limit of construction fencing will be installed, and silt fencing and rock berms will be installed at the downstream edge of disturbed areas where shallow sheet runoff occurs. Rock berms will be placed where more concentrated flow occurs. The water quality ponds will act as a sediment trap for the project. During all aspects of construction, the contractor shall maintain these controls. The contractor will be responsible for stabilization practices (revegetation). The contractor will be responsible for removing the temporary controls once the revegetation is established.

Permanent Controls: The property drains toward the northeast and southeast with overland conditions. Water quality will be provided by maintaining less than 20% impervious cover for the development. No permanent structural controls will be constructed.

ATTACHMENT L – BMPs for Surface Streams

Temporary Controls: Prior to site clearing, grading and excavation, the stabilized construction entrance will be installed, tree protection/limit of construction fencing will be installed, and silt fencing and rock berms will be installed at the downstream edge of disturbed areas where shallow sheet runoff occurs. Rock berms will be placed where more concentrated flow occurs. The water quality ponds will act as a sediment trap for the project. During all aspects of construction, the contractor shall maintain these

controls. The contractor will be responsible for stabilization practices (revegetation). The contractor will be responsible for removing the temporary controls once the revegetation is established.

Permanent Controls: No permanent controls are required as the project consists of single-family lots with less than 20% proposed impervious cover.

ATTACHMENT M – Construction Plans

Copies of the construction plans are included with this submittal.

ATTACHMENT N – Inspection, Maintenance, Repair, and Retrofit Plan

No permanent controls are required as the project consists of single-family lots with less than 20% proposed impervious cover.

ATTACHMENT O – Pilot-Scale Field Testing Plan, if BMPs not based on Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs

Not Applicable.

ATTACHMENT P – Measures for Minimizing Surface Stream Contamination

Temporary Controls: Prior to site clearing, grading and excavation, the stabilized construction entrance will be installed, tree protection/limit of construction fencing will be installed, and silt fencing and rock berms will be installed at the downstream edge of disturbed areas where shallow sheet runoff occurs. Rock berms will be placed where more concentrated flow occurs. The water quality ponds will act as a sediment trap for the project. During all aspects of construction, the contractor shall maintain these controls. The contractor will be responsible for stabilization practices (revegetation). The contractor will be responsible for removing the temporary controls once the revegetation is established.

Permanent Controls: After construction there will be runoff from building surfaces, paved areas, and managed lawn/landscape areas. The total impervious cover will be less than 20% of the total area which will minimize any downgradient surface stream contamination.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: SERENE ESTATES
Date Prepared: 5/6/2025

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: $L_M = 27.7(A_N \times P)$

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 =	Williamson	
Total project area included in plan * =	98.196	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	19.60	acres
Total post-development impervious cover fraction * =	0.1996	
P =	32.00	inches

$L_{M\ TOTAL\ PROJECT}$ = 17373.44 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

WATER QUALITY SUMMARY TABLE						
WATER QUALITY DRAINAGE AREA	DRAINAGE AREA (acre)	I.C. (acre)	L_m REQ. (lbs.)	L_m DES. (lbs.)	WQV REQ. (c.f.)	WQV DES. (c.f.)
UNTREATED	98.196	19.60	N/A	N/A	N/A	N/A
TOTAL	**98.196**	**19.60**	**0**	**0**	**0**	**0**



SERENE ESTATES

TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM

STORMWATER POLLUTION PREVENTION PLAN

MAY 2025

PREPARED FOR:

SERENE ESTATES.
3321 BURKS LANE
AUSTIN TX, 78732
(512) 784-8838

PREPARED BY:

LJA ENGINEERING, INC.
7500 RIALTO BLVD
BUILDING II, SUITE 150
AUSTIN, TEXAS 78735
(512) 439-4700
FRN-F-1386

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SERENE ESTATES

TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM

STORMWATER POLLUTION PREVENTION PLAN

A. SITE DESCRIPTION

1. Project Name: Serene Estates

2. Location: The project is located on the northeast corner of CR 246 and CR 249 approximately 0.58 miles east of the intersection of FM 2338 and Fisher Road in Georgetown, Williamson County, Texas (see *Exhibit 1*)

3. Facility Operators: Serene Estates, LLC. *(Plans and Specifications)*
   3321 Burks Lane
   Austin, Texas 78732
   512-784-8838
   Date N.O.I. submitted:
   General Permit Authorization No.:

   _____ *(Contractor)*

   Date N.O.I. submitted:
   General Permit Authorization No.:

4. Property Owner: Serene Estates, LLC. *(Plans and Specifications)*
   3321 Burks Lane
   Austin, Texas 78732
   512-784-8838

Project Description: The Serene Estates project is a 98.19-acre single-family residential development project including 75 single-family lots and 2 drainage/open space lots located within the Berry Creek Watershed in the unincorporated area of Williamson County. The project is located 0.58 miles east of the intersection of FM 2338 and Fisher Road, at the northeast corner of CR 246 and CR 249. The proposed project consists of the construction of infrastructure for future subdivision phases, including streets, drainage, water, and wastewater.

5. Site Area: The construction limits and disturbance caused by construction will include roughly 68.05 acres, which includes some off-site water and drainage improvements.

6. Runoff Coefficient: Currently, the site area for the Serene Estates property is represented by a composite 25-year and 100-year runoff coefficient of 0.39 and 0.46, respectively. After construction is completed, the composite 25-year and 100-year runoff coefficient will be 0.48 and 0.56, respectively.

7. Existing Soils: According to the USDA Soil Survey of Williamson County, the soil classifications within the proposed project are Eckrant Cobbly Clay (EaD), Denton Silty Clay (DnB), and Fairlie Clay (FaB).

   Eckrant Cobbly Clay (EaD): The Eckrant series consists of well drained, moderately slowly permeable soils that are very shallow to shallow over indurated limestone bedrock. These nearly level to very steep soils soils formed in residuum derived from limestone and occur on summits, shoulders, and backslopes of ridges on dissected plateaus.

   Denton Silty Clay (DnB): The Denton series consist of deep, well drained, slowly permeable soils that formed in clayey materials over residuum weathered from limestone bedrock of lower Cretaceous age. These nearly level or gently sloping soils are on backslopes and footslopes of ridges.

   Fairlie Clay (FaB): The Fairlie series consists of deep, moderately well drained, very slowly permeable soils. These soils are on nearly level to gently sloping uplands. The slope is typically 1 to 3 percent but ranges from 0 to 5 percent.

9. Factors Affecting Surface Water Quality:

   Potential sources of sediment to stormwater runoff:
   - Clearing and grubbing operations
   - Grading and site excavation operations
   - Vehicle tracking
   - Topsoil stripping and stockpiling
   - Landscaping operations

   Potential sources other than sediment:
   - Small fueling activities
   - Minor equipment maintenance
   - Sanitary facilities
   - Solvents, adhesives, paints, etc.
   - Paving materials, concrete, mortar

10. Location of Receiving Waters: The Serene Estates project is located within the Berry Creek Watershed. Based on boundary maps prepared by the Texas Commission on Environmental Quality, the property is not located in the Edward's Aquifer Recharge Zone, but it is located in the Edwards Aquifer Contributing Zone. There are no wetlands associated with this project.

11. Off-Site Operations: Disposal of spoil material will be the responsibility of the Contractors. Spoil shall be temporarily disposed of at the designated onsite temporary disposal area and permanently removed to a permitted off-site spoil disposal area. The Contractors shall be independently responsible as Operators for obtaining necessary permits in conjunction with the off-site disposal of spoil material or acquisition of borrow material.

12. Endangered Species: There are no known endangered species within the boundaries of the project.

B. POLLUTION PREVENTION CONTROLS

1. Sequence of Construction:

   a. Install tree protection. (1 week) (0.9 acres)

   b. Install temporary erosion and sedimentation controls. (1 week) (3.1 acres)

   c. Clear and grub for roadways, underground utilities, and pond. (1 week) (18.2 acres)

   d. Excavate and place embankment to roadway subgrade. (4 weeks) (7.4 acres)

   e. Construct all underground utilities. (2 months) (7.4 acres)

   f. Test utilities. (2 weeks)

   g. Assure all utilities have been placed within roadway. (1 week) (7.4 acres)

   h. Once all utilities below subgrade have been tested, finish subgrade and test. (1 Month) (7.4 acres)

   i. Lay first coarse of base (2 weeks) (5.8 acres)

   j. Lay curb and gutter and sidewalk ramp turn downs. (4 weeks) (5.8 acres)

   k. Dress up behind back of curb. (2 weeks) (1.2 acres)

   l. Lay second coarse base. (2 weeks) (5.8 acres)

   m. After base has been tested and passed, lay asphalt. (2 weeks) (5.8 acres)

   n. Complete sidewalk ramps. (2 weeks) (0.5 acres)

   o. Finish grading behind curb and revegetate. (2 weeks) (1.2 acres)

   p. After vegetation is established, remove temporary erosion controls. (1 week)

2. Erosion and Sedimentation Controls:

Temporary vegetative stabilization:

1. From September 15 to March 1, seeding shall be with cool season cover crops (Wheat at 0.5 pounds per 1000 SF, Oats at 0.5 pounds per 1000 SF, Cereal Rye Grain at 0.5 pounds per 1000 SF) with a total rate of 1.5 pounds per 1000 SF. Cool season cover crops are not permanent erosion control.

2. From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of 1 pound per 1000 SF.
   a. Fertilizer shall be water soluble with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of ½ pound per 1000 SF.
   b. Hydromulch shall comply with Table 1, below.

c. Temporary erosion control shall be acceptable when the grass has grown at least 1 ½ inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.
d. When required, native grass seeding shall comply with requirements of the City of Austin Environmental Criteria Manual.

Table 1 Hydromulching for Temporary Vegetative Stabilization

Material	Description	Longevity	Typical Applications	Applications Rates
100% or any blend of wood, cellulose, straw, and/or cotton plant material (except no mulch shall exceed 30% paper)	70% or greater wood/straw 30% or less paper or natural fibers	0-3 Months	Moderate slopes From flat to 3:1	1500 to 2000 lbs per acre

Permanent vegetative stabilization:

1. From September 15 to March 1, seeding is considered to be temporary stabilization only. If cool season cover crops exist where permanent vegetation stabilization is desired, the grasses shall be mowed to a height of less than one half (1/2) inch and the area shall be re-seeded in accordance with 2. below.

2. From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of 1 pound per 1000 SF with a purity of 95% with 85% germination. Bermuda grass is a warm season grass and is considered permanent erosion control.
   a. Fertilizer shall be water soluble with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of ½ pound per 1000 SF.
   b. Hydromulch shall comply with table 2, below.
   c. The planted area shall be irrigated or sprinkled in a manner that will not erode the topsoil but will sufficiently soak the soil to a depth of six inches. The irrigation shall occur at daily intervals (minimum) during the first two months. Rainfall occurrences of ½ inch or more shall postpone the watering schedule for one week.
   d. Permanent erosion control shall be acceptable when the grass has grown at least 1 ½ inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.
   e. When required, native grass seeding shall comply with requirements of the City of Austin Environmental Criteria Manual.

Table 2 Hydromulching for Permanent Vegetation Stabilization

Material	Description	Longevity	Typical Applications	Applications Rates
Bonded Fiber Matrix (BFM)	80% Organic Defibrated Fibers 10% Tackifier	6 Months	On slopes up to 2:1 and erosive soil conditions	2500 to 4000 lbs per acre (see manufacturers recommendations)

Fiber Reinforced Matrix (FRM)	65% Organic Defibrated Fibers 25% Reinforcing Fibers or less 10% Tackifier	Up to 12 Months	On slopes up to 1:1 and erosive soil conditions	3000 to 4500 lbs per acre (see manufacturers recommendations)

b. Structural Controls:

(i) Erosion and sediment structural controls have been designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

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

(iii) Serene Estates, LLC. will be the facility operator with control over the construction plans and specifications, including the ability to make modifications in the plans and specifications. Prior to site clearing, grading and excavation, stabilized construction entrances will be installed, tree protection/limit of construction fencing will be installed, and silt fences will be installed at the downstream edge of disturbed areas where shallow sheet runoff occurs. Rock berms will be placed downstream of the areas where concentrated runoff occurs. To insure that no additional areas are disturbed other than those included in the limits of construction, orange mesh fences will be placed on the upstream side of the limits of construction to keep construction activity out of areas not designated for construction. The Contractor will install the stabilized construction entrance and silt fence prior to the start of any construction and be responsible for maintenance of those facilities throughout construction. The Contractor will be responsible for stabilization (revegetation). The Contractor will also be responsible for removing the temporary controls once the revegetation is established.

3. Stormwater Management Controls:

a. Temporary Sediment Controls: A stabilized construction entrance will be place as shown on the *Erosion/Sedimentation Control & Tree Protection Plan* and silt fences will be constructed at the downstream edge of the disturbed areas. Silt fence will also be used at selected locations of significant fill, around material stockpile sites, and around any other area that would be a pollutant source during storm events. The rock berms will be placed immediately downstream of areas where concentrated runoff occurs, and within defined channels downstream from development, as appropriate. Additionally, silt fence will typically be utilized on the downstream side of rock berms to supplement sediment removal. The batch detention pond will be rough graded at the beginning of construction so it can be used as a sediment trap during construction. The utility trenches will also be utilized as temporary sediment traps to the extent feasible during construction.

The contractor will install the erosion/sedimentation controls prior to the start of any construction. The contractor will be responsible for maintaining the erosion control measures and removing the controls once the revegetation is established. The locations of such controls are shown in *the Erosion/Sedimentation Control & Tree Protection Plan*.

b. Permanent Stormwater Controls: Once construction associated with this project is completed, the site will be revegetated in accordance with the stabilization practices identified in this plan.

4. Other Controls:

   a. Waste Disposal: All construction-related waste materials will be collected and stored at a temporary onsite spoil disposal site. The Contractors will be independently responsible as Operators for controlling and preventing offsite migration of litter, construction debris, and construction materials.

   b. Sanitary Waste: The Contractors will be responsible for placing portable units onsite during construction, and waste will be collected and disposed of in accordance with state and local regulations.

   c. Off-site Vehicle Tracking: Stabilized construction entrances will be provided at the entry location to the construction project. The Contractors will be responsible for maintaining the entrances, and removing any sediment deposited onto adjacent streets. Vehicles leaving the site will be washed, as required.

   d. Dust Control: Contractors will spray water on disturbed areas and spoils areas, and apply mulch, as required, to control dust.

   e. Dewatering: When it becomes necessary to pump standing water from the site, the Contractors shall utilize the methods depicted in the Dewatering Detail included with this plan. Standing water removed via open channel will be routed through silt fence and/or rock berm before leaving the site.

5. Timing of Controls and Measures: Erosion and sediment structural control measures will be in place prior to clearing, grading or construction of any portion of the site. Construction phasing may occur, but in all instances erosion and sedimentation control measures will be in place in those areas prior to start of construction. Disturbed areas will be restored as described under Stabilization Practices. Temporary erosion and sediment controls will be removed only after all disturbed areas have been restored.

C. STATE AND LOCAL REQUIREMENTS

The stormwater pollution prevention plan complies with the requirements of Williamson County and the Texas Commission on Environmental Quality (TCEQ) in effect at the time of permitting.

D. INSPECTION AND MAINTENANCE PROCEDURES

Serene Estates, LLC. (and/or their qualified agents) and Contractors, as Operators, shall be independently responsible for inspection of the controls, and for required record keeping (reference Appendix A). All Operators will be responsible for revisions to the controls, as necessary, based on inspections. The Contractors will be responsible for maintenance of the controls.

1. Inspection of Controls:

   a. Personnel provided by the Operators shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, discharge locations, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Personnel conducting these inspections must be knowledgeable of TPDES General Permit No. TXR150000, familiar with the construction site, and knowledgeable of this plan. Sediment and erosion control measures identified in this plan shall be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking. Inspections must be conducted at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

   b. Where sites have been finally or temporarily stabilized, inspections shall be conducted at least once every month.

   c. In the event of flooding or other uncontrollable situations which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable.

   d. This plan must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions to the plan must be completed within seven (7) calendar days following the inspection. If existing controls are modified or if additional controls are necessary, an implementation schedule must be described in this plan and/or Inspection and Maintenance Report, and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable.

   e. An Inspection and Maintenance Report summarizing the scope of the inspection, the dates of the inspection, and major observations relating to the implementation and/or revision of this plan must be made and retained as part of the plan. Major observations should include: The locations of discharges of sediment or other pollutants from the site; locations of controls that need to be maintained; locations of controls that failed to operate as designed or proved inadequate for a particular location; and locations where additional controls are needed. Reports must identify any incidents of non-compliance.

2. Maintenance of Controls:

   a. All protective measures and controls identified in this plan shall be maintained in effective operating condition. If, through inspections or other means, it is determined that controls are not operating effectively, then the Contractors, as Operators, shall perform maintenance as necessary to maintain the continued effectiveness of stormwater controls, and prior to the next rain event if feasible. If maintenance prior to the next anticipated storm event is impracticable, the reason shall be documented in the plan and maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run-

over, removed, or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

b. If periodic inspections or other information indicates a control has been used incorrectly, is performing inadequately, or is damaged, then the Operators shall replace or modify the control as soon as practicable after making the discovery.

c. Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%.

d. For perimeter controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.

e. If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event if feasible. If the Operators do not own or operate the off-site conveyance, then the Operators must work with the owner or operator of the property to remove the sediment.

E. POLLUTION PREVENTION MEASURES

1. Non-Storm Water Discharges: The following non-stormwater discharges may occur from the site during the construction period:

   a. discharges from fire fighting activities;

   b. uncontaminated fire hydrant flushings (excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life), which include flushings from systems that utilize potable water, surface water, or groundwater that does not contain additional pollutants (uncontaminated fire hydrant flushings do not include systems utilizing reclaimed wastewater as a source water);

   c. water from the routine external washing of vehicles, the external portion of buildings or structures, and pavement, where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials have been removed; and if local, state, or federal regulations are applicable, the materials are removed according to those regulations), and where the purpose is to remove mud, dirt, or dust;

   d. uncontaminated water used to control dust;

   e. potable water sources including waterline flushings (excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life);

   f. uncontaminated air conditioning condensate;

   g. uncontaminated ground water or spring water, including foundation or footing drains where flows are not contaminated with industrial materials such as solvents; and

   h. lawn watering and similar irrigation drainage.

2. Material Inventory: The materials or substances listed below are expected to be present onsite during construction:

    - Concrete and concrete products
    - Asphalt and asphalt products
    - Metal reinforcing materials - rebar, welded wire fabric
    - Fertilizers
    - Petroleum based products
    - Wood
    - Plastic (PVC) and metal pipe and fittings
    - Rock, gravel, sand, and soil
    - Paint

3. Material Management Practices: The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff:

    a. Good Housekeeping: The following good housekeeping practices will be followed onsite during the construction project:

        - An effort will be made to store only enough product required to do the job.
        - All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers.
        - Materials will be stored in the temporary spoils disposal area as shown on erosion/sedimentation control plan, or an area as may otherwise be approved by HM Parten Ranch Development, Inc. and Engineer.
        - Products will be kept in their original containers with the original manufacturers' labels.
        - Whenever possible, all of a product will be used before disposing of the container.
        - Manufacturers' recommendations for proper use and disposal will be followed.
        - The Contractor will inspect daily to ensure proper use and disposal of materials onsite.

    b. Hazardous Products: These practices are used to reduce the risks associated with hazardous materials (if applicable):

- Products will be kept in original containers unless they are not resealable.

- Original labels and material safety data will be retained, as they contain important product information.

- If surplus product must be disposed of, manufacturers' and/or local and state recommended methods for proper disposal will be followed.

c. The following product specific practices will be followed onsite:

- Petroleum Products: All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphaltic substances used onsite will be applied according to the manufacturers' recommendations.

- Fertilizers: Fertilizers will be applied only in the minimum amounts recommended by the manufacturer or as otherwise indicated on the plans. Once applied, fertilizer will be worked into the soil to limit exposure to stormwater. The contents of any partially used bags of fertilizer will be stored in a manner so as to avoid spills.

- Concrete: Onsite concrete truck wash out is allowed but is restricted as noted below. Excess dried concrete will be removed from the site and transported to a permitted off-site spoil disposal area.

  - Direct discharge of concrete truck wash out water to surface water in the state, including discharge to storm sewers, is prohibited.

  - Concrete truck wash out water shall be discharged to areas at the construction site where structural controls have been established to prevent direct discharge to surface waters, or to areas that have minimal slope that allow infiltration and filtering of wash out water to prevent direct discharge to surface waters. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measure to prevent runoff from the construction site.

  - Wash out of concrete trucks during rainfall events shall be minimized. The direct discharge of concrete truck washout water is prohibited at all times, and the Operators shall insure that controls are sufficient to prevent the discharge of concrete truck wash out as the result of rain.
  - The discharge of wash out water shall not cause or contribute to groundwater contamination.

4. <u>Spill Control Practices:</u> In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Site personnel will be made aware of the manufacturers' recommended methods for spill cleanup and the location of the information and cleanup supplies.

- Materials and equipment necessary for spill cleanup will be kept onsite in an accessible location known to site personnel.

- All spills will be cleaned up immediately upon discovery.

5. Releases of Reportable Quantities (RQ): The EPA has issued regulations that define what reportable quantity levels are for oil and hazardous substances. These regulations can be found at 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302. The TCEQ has issued similar regulations under 30 TAC Chapter 327. If there is an RQ release during the construction period, then the following steps must be taken:

    - For quantities less than the reportable quantity* – The contractor will contain and isolate the spilled substance. The remaining spilled substance and contaminated soil will be removed and disposed of properly.

    - For quantities more than the reportable quantity* – The contractor will contain and isolate the spilled substance in accordance with 30 TAC Chapter 327. The contractor will then contact the appropriate spill response team and the TCEQ Austin Regional Office (512)339-2929 or the State Emergency Response Center at 1 (800)832-8224 and the National Response Center immediately at (800) 424-8802. The remaining spilled substance and contaminated soil will be removed and disposed of in an using approved emergency response methods. The proper authorities shall be kept informed during the cleanup process. Within 14 days, modify the SWPPP with a written description of the release providing the date and circumstances of the release and the steps to be taken to prevent another release.

    * Reportable quantity (RQ) is defined in 30 TAC Chapter 327. The RQ for petroleum products, oil, and industrial solid waste are shown below. For hazardous substances see 30 TAC Chapter 327.4 and 40 CFR Chapter 302.4.

    The RQ for *oil, petroleum product and used oil* is as follows:

    (1) The RQ for crude oil and oil other than that defined as petroleum product or used oil shall be:
        (A) for spills or discharges onto land – 210 gallons (five barrels); or
        (B) for spills or discharges directly into water in the state – quantity sufficient to create a sheen.

    (2) The RQ for petroleum product or used oil shall be:
        (A) except as noted under (B) below, for spills or discharges onto land – 25 gallons;
        (B) for spills or discharges to land from PST exempted facilities – 210 gallons (five barrels); or
        (C) for spills or discharges directly into water in the state – quantity sufficient to create a sheen.

    The RQ for spills or discharges into water in the state for *industrial solid waste or other substances* shall be 100 pounds.

6. Spill Response Handbook: The TCEQ Small-Business Handbook for Spill Response (RG-285) is provided as a supplementary resource and can be found in *Appendix D*.

F. POLLUTION PREVENTION PLAN CERTIFICATION

I certify under penalty of law that this document was 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.

Facility Operator *(Plans and Specifications)*:

By:_____ _____
Name Title Date

Printed Name: _____
Company: Serene Estates, LLC.
Address: 3321 Burks Lane
Austin, TX 78732

F. POLLUTION PREVENTION PLAN CERTIFICATION

I certify under penalty of law that this document was 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.

Facility Operator *(Contractor)*:

By: _____ _____

Name Title Date

Printed Name: _____

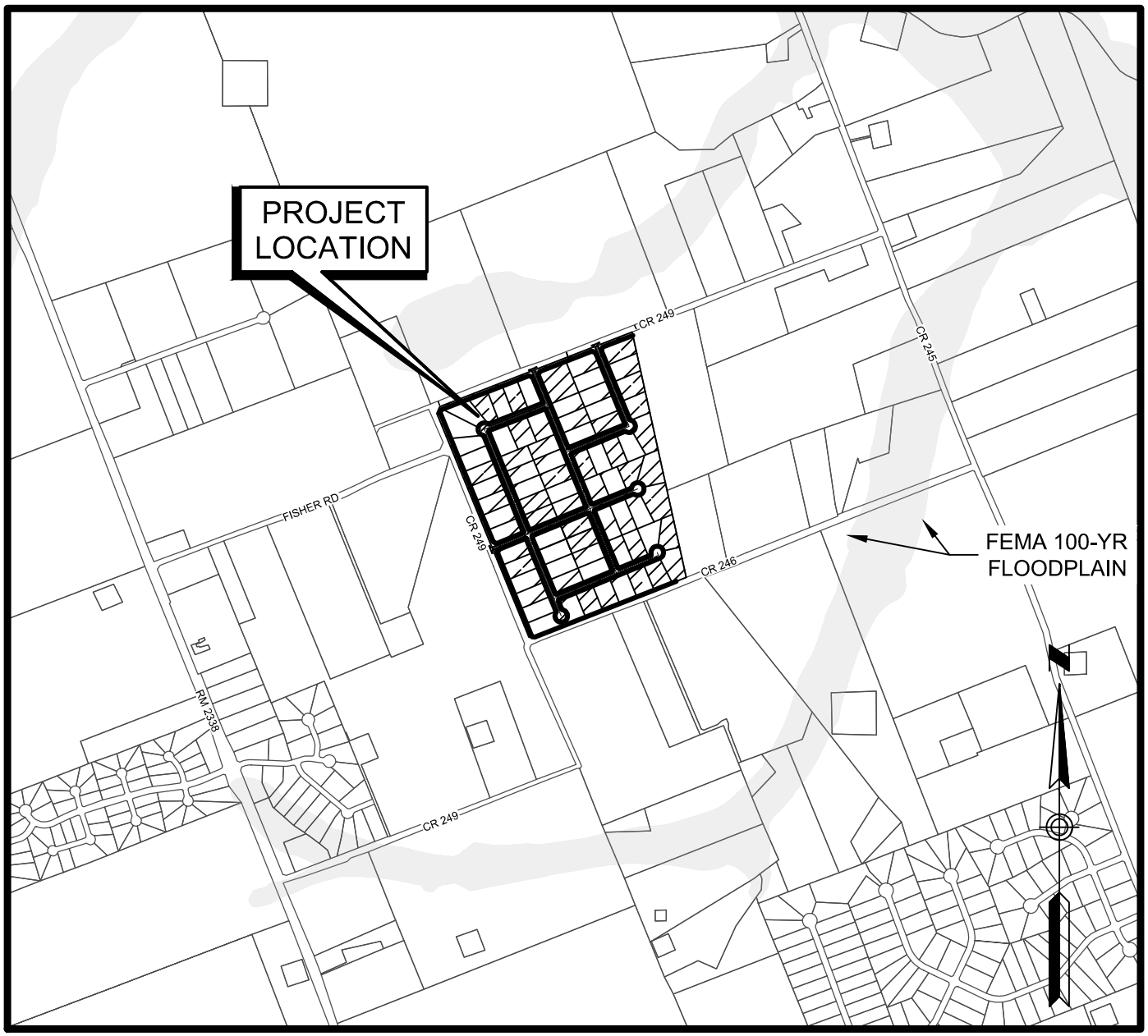
Company: _____

Address: _____

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EXHIBIT 1

PROJECT LOCATION MAP



LOCATION MAP

SCALE: 1" = 1500'

EXHIBIT 2

SITE MAP / TEMPORARY EROSION/SEDIMENTATION CONTROL & TREE PROTECTION PLAN

100 50 0 100 200

SCALE IN FEET

LIMITS OF CONSTRUCTION = 68.05 AC.

LEGEND

- PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- PROPOSED SILT FENCE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSE TREE PROTECTION
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- CONTRACTOR STAGING / TEMPORARY SPOILS AREA
- ROCK BERM
- PROPOSED CONCRETE WASHOUT
- ½ CRITICAL ROOT ZONE
- TR-5392 — TREE TO BE REMOVED
- TR-5396 — HERITAGE TREE
- TR-5365 — PROTECTED TREE

NOTES:
1. EROSION CONTROL STANDARD DETAILS LOCATED ON SHEET 6.
2. REFER TO GENERAL NOTES SHEET 2 FOR REVEGETATION OF DISTURBED AREAS.
3. PLACE SILT FENCE IMMEDIATELY DOWNSTREAM OF ROCK BERMS, FROM BANK TO BANK OF CHANNEL.

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
NP	TR-5343	13"	6.5'	HACKBERRY
NP	TR-5344	16" (11", 10")	8'	HACKBERRY
NP	TR-5345	8"	4'	HACKBERRY
NP	TR-5346	8"	4'	HACKBERRY
NP	TR-5347	8"	4'	HACKBERRY
NP	TR-5348	10"	5'	HACKBERRY
NP	TR-5349	12" (9", 6")	6'	HACKBERRY
P	TR-5350	13"	6.5'	LIVE OAK
NP	TR-5351	14"	7'	HACKBERRY
HT	TR-5352	37"	18.5'	LIVE OAK
P	TR-5353	20"	10'	LIVE OAK
P	TR-5354	16"	8'	LIVE OAK
P	TR-5355	14"	7'	LIVE OAK
P	TR-5356	8"	4'	LIVE OAK
P	TR-5357	14"	7'	LIVE OAK
P	TR-5358	14"	7'	LIVE OAK
NP	TR-5359	8"	4'	HACKBERRY
P	TR-5360	14"	7'	LIVE OAK
P	TR-5361	20"	10'	LIVE OAK
NP	TR-5362	9"	4.5'	HACKBERRY
P	TR-5363	15"	7.5'	LIVE OAK
P	TR-5364	14"	7'	LIVE OAK
P	TR-5365	15" (10", 9")	7.5'	LIVE OAK
P	TR-5366	8"	4'	LIVE OAK
P	TR-5367	8"	4'	LIVE OAK
P	TR-5368	9"	4.5'	LIVE OAK
P	TR-5369	9"	4.5'	LIVE OAK
P	TR-5370	15" (8", 11")	7.5'	LIVE OAK
P	TR-5371	9"	4.5'	LIVE OAK
P	TR-5372	17" (12", 10")	8.5'	LIVE OAK
P	TR-5373	19" (14", 10")	9.5'	LIVE OAK
NP	TR-5374	9"	4.5'	HACKBERRY
P	TR-5375	13" (10", 6")	6.5'	LIVE OAK
P	TR-5376	11"	5.5'	LIVE OAK
P	TR-5377	8"	4'	LIVE OAK
P	TR-5378	8"	4'	LIVE OAK
P	TR-5379	9"	4.5'	LIVE OAK
P	TR-5380	8"	4'	LIVE OAK
P	TR-5381	8"	4'	LIVE OAK
P	TR-5382	11"	5.5'	LIVE OAK
NP	TR-5383	9"	4.5'	HACKBERRY
HT	TR-5384	27" (21", 12")	13.5'	PECAN
HT	TR-5385	29" (16", 21")	14.5'	PECAN
P	TR-5386	24" (12", 18")	12'	PECAN
P	TR-5387	17" (12", 10")	8.5'	CEDAR ELM
NP	TR-5388	12"	6'	HACKBERRY
NP	TR-5389	21"	10.5'	HACKBERRY
P	TR-5390	24" (11", 12", 12")	12'	CEDAR ELM
NP	TR-5391	10"	5'	HACKBERRY
NP	TR-5392	12"	6'	HACKBERRY
NP	TR-5393	8"	4'	HACKBERRY
NP	TR-5394	9"	4.5'	HACKBERRY
P	TR-5395	24"	12'	POST OAK
HT	TR-5396	30"	15'	POST OAK

LEGEND: P = PROTECTED NP = NOT PROTECTED HT = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	32
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	10

COUNTY ROAD 249 (R.O.W. VARIES)

SERENE ESTATES DRIVE

COOL WIND DRIVE

RIVER EDDY COVE

JUNIPER BREEZE DRIVE

FOREST JAY DRIVE

BLOCK C

BLOCK D

BLOCK E

BLOCK A

BLOCK B

MATCHLINE-SHEET 4

MATCHLINE-SHEET 5

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
EROSION / SEDIMENTATION CONTOL & TREE PROTECTION PLAN - SHEET 1

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: se-eros.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-13386

JOB NUMBER: A492-100

SHEET NO. 4 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 03, 25 – 11:20
Xref Dependencies: Sep. 16, 25 – 10:22:35

100 50 0 100 200

SCALE IN FEET

LIMITS OF CONSTRUCTION = 68.05 AC.

LEGEND

- PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- PROPOSED SILT FENCE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSE TREE PROTECTION
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- CONTRACTOR STAGING / TEMPORARY SPOILS AREA
- ROCK BERM
- PROPOSED CONCRETE WASHOUT
- ½ CRITICAL ROOT ZONE
- TR-5392 — TREE TO BE REMOVED
- TR-5396 — HERITAGE TREE
- TR-5365 — PROTECTED TREE

NOTES:
1. EROSION CONTROL STANDARD DETAILS LOCATED ON SHEET 6,
2. REFER TO GENERAL NOTES SHEET 2 FOR REVEGETATION OF DISTURBED AREAS.
3. PLACE SILT FENCE IMMEDIATELY DOWNSTREAM OF ROCK BERMS, FROM BANK TO BANK OF CHANNEL.

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
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NP	TR-5347	8"	4'	HACKBERRY
NP	TR-5348	10"	5'	HACKBERRY
NP	TR-5349	12" (9", 6")	6'	HACKBERRY
P	TR-5350	13"	6.5'	LIVE OAK
NP	TR-5351	14"	7'	HACKBERRY
HT	TR-5352	37"	18.5'	LIVE OAK
P	TR-5353	20"	10'	LIVE OAK
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P	TR-5356	8"	4'	LIVE OAK
P	TR-5357	14"	7'	LIVE OAK
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P	TR-5363	15"	7.5'	LIVE OAK
P	TR-5364	14"	7'	LIVE OAK
P	TR-5365	15" (10", 9")	7.5'	LIVE OAK
P	TR-5366	8"	4'	LIVE OAK
P	TR-5367	8"	4'	LIVE OAK
P	TR-5368	9"	4.5'	LIVE OAK
P	TR-5369	9"	4.5'	LIVE OAK
P	TR-5370	15" (8", 11")	7.5'	LIVE OAK
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P	TR-5379	9"	4.5'	LIVE OAK
P	TR-5380	8"	4'	LIVE OAK
P	TR-5381	8"	4'	LIVE OAK
P	TR-5382	11"	5.5'	LIVE OAK
NP	TR-5383	9"	4.5'	HACKBERRY
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HT	TR-5385	29" (16", 21")	14.5'	PECAN
P	TR-5386	24" (12", 18")	12'	PECAN
P	TR-5387	17" (12", 10")	8.5'	CEDAR ELM
NP	TR-5388	12"	6'	HACKBERRY
NP	TR-5389	21"	10.5'	HACKBERRY
P	TR-5390	24" (11", 12", 12")	12'	CEDAR ELM
NP	TR-5391	10"	5'	HACKBERRY
NP	TR-5392	12"	6'	HACKBERRY
NP	TR-5393	8"	4'	HACKBERRY
NP	TR-5394	9"	4.5'	HACKBERRY
P	TR-5395	24"	12'	POST OAK
HT	TR-5396	30"	15'	POST OAK

LEGEND: P = PROTECTED NP = NOT PROTECTED HT = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	32
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	10

FOREST JAY DRIVE

COUNTY ROAD 249 (R.O.W. VARIES)

SERENE ESTATES DRIVE

COOL WIND DRIVE

COLD SNAP STREET

COUNTY ROAD 246 (R.O.W. VARIES)

BLOCK A

BLOCK B

BLOCK C

BLOCK D

MATCHLINE-SHEET 4

MATCHLINE-SHEET 5

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
EROSION / SEDIMENTATION CONTOL & TREE PROTECTION PLAN - SHEET 1

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: sb-ecnos.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 5 OF 51 SHEETS

2024-24-CON

I:\A492\2426-Serene Estates\Submittal Drawings\ae-eros.dwg
User: jmartinez
Last Modified: Sep 03, 25 - 12:20
Ref Xref Name: Sep 03, 25 - 10:40:57

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS

EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (1+00-23+00)

PROPOSED SERENE ESTATES SUBDIVISION

COUNTY ROAD 249 (R.O.W. VARIES)

FISHER ROAD (R.O.W. VARIES)

MATCH LINE STA. 12+00.00

MATCH LINE STA. 12+00.00

MATCH LINE STA. 23+00.00

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
P	TR-1	21"	10.5'	OSAGE
NP	TR-2	12"	6'	OSAGE
NP	TR-3	8"	4'	HACKBERRY
NP	TR-4	8"	4'	HACKBERRY
NP	TR-5	8"	4'	HACKBERRY
NP	TR-6	11"	5.5'	HACKBERRY
NP	TR-7	8"	4'	HACKBERRY
NP	TR-8	10"	5'	HACKBERRY
NP	TR-9	8"	4'	HACKBERRY
NP	TR-10	12"	6'	HACKBERRY
NP	TR-11	9"	4.5'	HACKBERRY
NP	TR-12	12"	6'	HACKBERRY
NP	TR-13	8"	4'	HACKBERRY
H	TR-14	51"	25.5'	OSAGE
NP	TR-15	9"	4.5'	LIVE OAK
P	TR-16	13"	6.5'	LIVE OAK
P	TR-17	25"	12.5'	LIVE OAK
P	TR-18	14"	7'	LIVE OAK
P	TR-19	17"	8.5'	LIVE OAK
P	TR-20	19"	9.5'	OSAGE
P	TR-21	14"	7'	LIVE OAK
P	TR-22	12"	6'	LIVE OAK
P	TR-23	23"	11.5'	LIVE OAK
H	TR-24	26"	13'	LIVE OAK
NP	TR-25	9"	4.5'	HACKBERRY
NP	TR-26	8"	4'	LIVE OAK
NP	TR-27	10"	5'	LIVE OAK
NP	TR-28	11"	5.5'	LIVE OAK
NP	TR-29	11"	5.5'	LIVE OAK
NP	TR-30	9"	4.5'	LIVE OAK
P	TR-31	12"	6'	LIVE OAK
H	TR-32	47"	23.5'	LIVEOAK
H	TR-33	34"	17'	LIVE OAK
H	TR-34	31"	15.5'	LIVE OAK
H	TR-35	26"	13'	CEDAR ELM

LEGEND: P = PROTECTED NP = NOT PROTECTED H = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	16
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	5

40 20 0 40 80

SCALE IN FEET

LEGEND

- SF LOC — PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- SF — SF — PROPOSED SILT FENCE
- LOC — PROPOSED LIMITS OF CONSTRUCTION
- TP — TP — TP — PROPOSE TREE PROTECTION
- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL — EX. WATERLINE
- WL — PROP. WATERLINE
- OHE — EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE
- TR-5396
- TR-5365 — PROTECTED TREE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR ERO.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

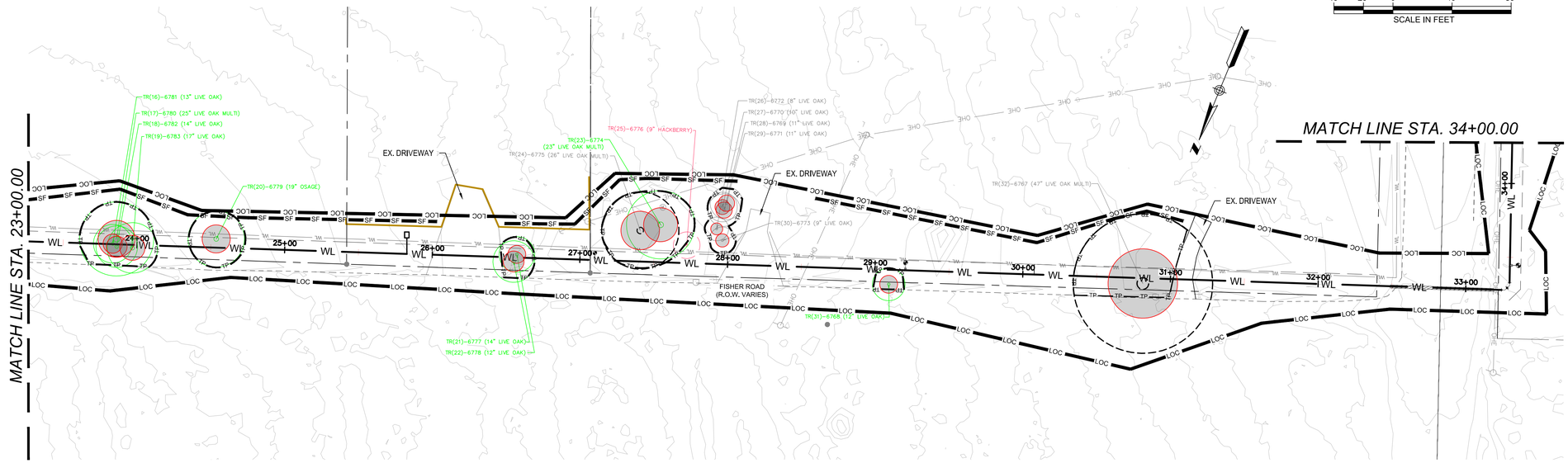
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

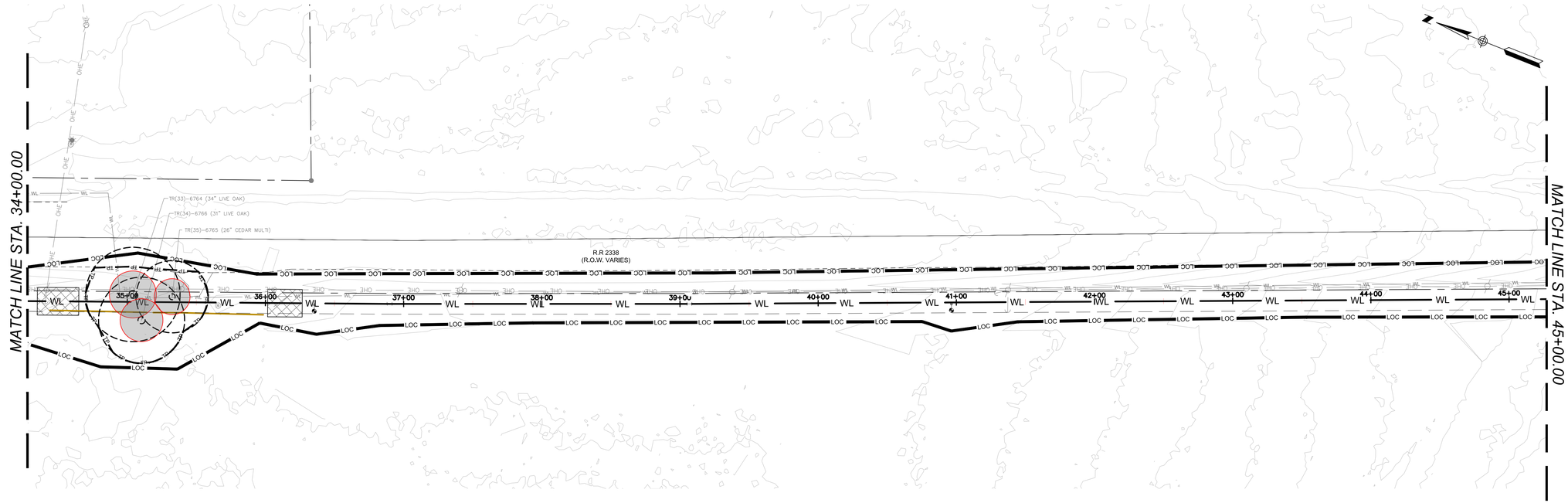
JOB NUMBER: A492-100

SHEET NO. 43 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
Plot Date/Time: Sep. 19, 25 - 15:38:16





KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
P	TR-1	21"	10.5'	OSAGE
NP	TR-2	12"	6'	OSAGE
NP	TR-3	8"	4'	HACKBERRY
NP	TR-4	8"	4'	HACKBERRY
NP	TR-5	8"	4'	HACKBERRY
NP	TR-6	11"	5.5'	HACKBERRY
NP	TR-7	8"	4'	HACKBERRY
NP	TR-8	10"	5'	HACKBERRY
NP	TR-9	8"	4'	HACKBERRY
NP	TR-10	12"	6'	HACKBERRY
NP	TR-11	9"	4.5'	HACKBERRY
NP	TR-12	12"	6'	HACKBERRY
NP	TR-13	8"	4'	HACKBERRY
H	TR-14	51"	25.5'	OSAGE
NP	TR-15	9"	4.5'	LIVE OAK
P	TR-16	13"	6.5'	LIVE OAK
P	TR-17	25"	12.5'	LIVE OAK
P	TR-18	14"	7'	LIVE OAK
P	TR-19	17"	8.5'	LIVE OAK
P	TR-20	19"	9.5'	OSAGE
P	TR-21	14"	7'	LIVE OAK
P	TR-22	12"	6'	LIVE OAK
P	TR-23	23"	11.5'	LIVE OAK
H	TR-24	26"	13'	LIVE OAK
NP	TR-25	9"	4.5'	HACKBERRY
NP	TR-26	8"	4'	LIVE OAK
NP	TR-27	10"	5'	LIVE OAK
NP	TR-28	11"	5.5'	LIVE OAK
NP	TR-29	11"	5.5'	LIVE OAK
NP	TR-30	9"	4.5'	LIVE OAK
P	TR-31	12"	6'	LIVE OAK
H	TR-32	47"	23.5'	LIVEOAK
H	TR-33	34"	17'	LIVE OAK
H	TR-34	31"	15.5'	LIVE OAK
H	TR-35	26"	13'	CEDAR ELM

LEGEND: P = PROTECTED NP = NOT PROTECTED H = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	16
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	5

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS

EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (23+00-45+00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR ERO.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
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JOB NUMBER: A492-100

SHEET NO. 44 OF 51 SHEETS

2024-24-CON

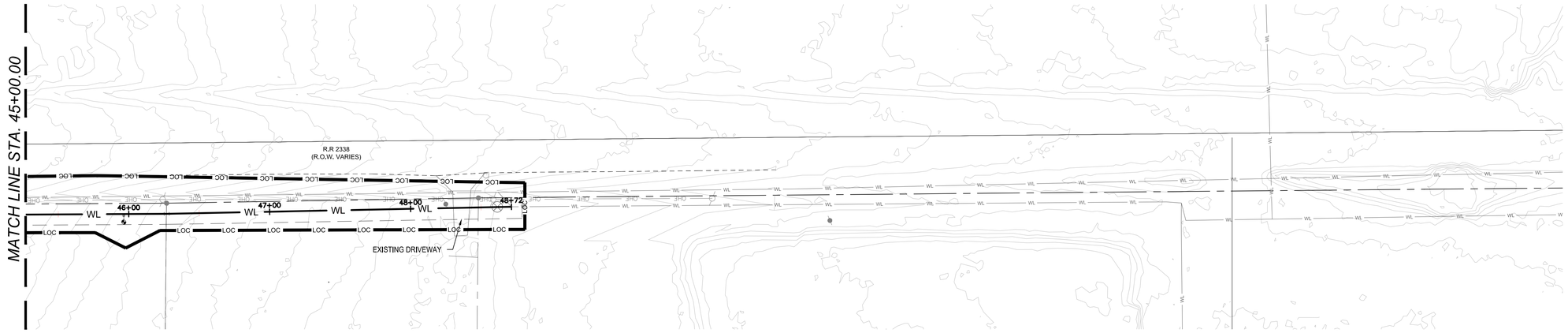
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User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
Plot Date/Time: Sep. 19, 25 - 15:39:31

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
P	TR-1	21"	10.5'	OSAGE
NP	TR-2	12"	6'	OSAGE
NP	TR-3	8"	4'	HACKBERRY
NP	TR-4	8"	4'	HACKBERRY
NP	TR-5	8"	4'	HACKBERRY
NP	TR-6	11"	5.5'	HACKBERRY
NP	TR-7	8"	4'	HACKBERRY
NP	TR-8	10"	5'	HACKBERRY
NP	TR-9	8"	4'	HACKBERRY
NP	TR-10	12"	6'	HACKBERRY
NP	TR-11	9"	4.5'	HACKBERRY
NP	TR-12	12"	6'	HACKBERRY
NP	TR-13	8"	4'	HACKBERRY
H	TR-14	51"	25.5'	OSAGE
NP	TR-15	9"	4.5'	LIVE OAK
P	TR-16	13"	6.5'	LIVE OAK
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P	TR-19	17"	8.5'	LIVE OAK
P	TR-20	19"	9.5'	OSAGE
P	TR-21	14"	7'	LIVE OAK
P	TR-22	12"	6'	LIVE OAK
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NP	TR-26	8"	4'	LIVE OAK
NP	TR-27	10"	5'	LIVE OAK
NP	TR-28	11"	5.5'	LIVE OAK
NP	TR-29	11"	5.5'	LIVE OAK
NP	TR-30	9"	4.5'	LIVE OAK
P	TR-31	12"	6'	LIVE OAK
H	TR-32	47"	23.5'	LIVEOAK
H	TR-33	34"	17'	LIVE OAK
H	TR-34	31"	15.5'	LIVE OAK
H	TR-35	26"	13'	CEDAR ELM
LEGEND:	P = PROTECTED	NP = NOT PROTECTED	H = HERITAGE TREE	
TOTAL NUMBER OF PROTECTED TREES:				16
PROTECTED TREE DENSITY:				0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:				5

LEGEND

- SF LOC — PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- SF SF — PROPOSED SILT FENCE
- LOC — PROPOSED LIMITS OF CONSTRUCTION
- TP TP TP — PROPOSE TREE PROTECTION
- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL — EX. WATERLINE
- WL — PROP. WATERLINE
- OHE — EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE
- TR-5396
- TR-5365 — PROTECTED TREE

40 20 0 40 80
SCALE IN FEET



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS

EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (45+00-END)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR ERO.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
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LICENSED
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09-19-2025

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FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 45
OF 51 SHEETS

2024-24-CON

I:\A492\2420-Serene Estates\White Water\Submittal Drawings\SE-WTR ERO.dwg
User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
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GUIDELINES FOR DESIGN AND INSTALLATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

TYPE OF STRUCTURE	REACH LENGTH	MAXIMUM DRAINAGE AREA	SLOPE
SILT FENCE	N/A	2 ACRES	0 – 10%
	200 FEET	2 ACRES	10 – 20%
	100 FEET	1 ACRE	20 – 30%
	50 FEET	1/2 ACRE	> 30%
TRIANGLE FILTER DIKE	100 FEET	1/2 ACRE	< 30% SLOPE
	50 FEET	1/4 ACRE	> 30% SLOPE
ROCK BERM *, **	500 FEET	< 5 ACRES	0 – 10%

* FOR ROCK BERM DESIGN WHERE PARAMETERS ARE OTHER THAN STATED, DRAINAGE AREA CALCULATIONS AND ROCK BERM DESIGN MUST BE SUBMITTED FOR REVIEW.

** HIGH SERVICE ROCK BERMS MAY BE REQUIRED IN AREAS OF ENVIRONMENTAL SIGNIFICANCE AS DETERMINED BY THE CITY OF GEORGETOWN.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

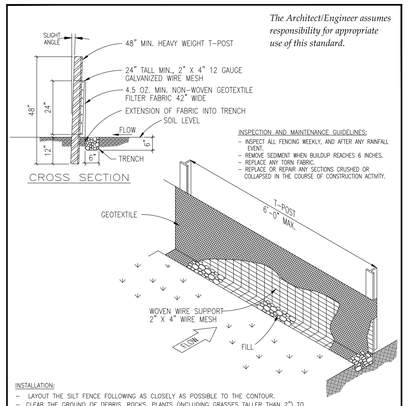
REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TEMPORARY EROSION AND SEDIMENTATION CONTROL GUIDELINES
EC01
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

NOTE: THIS SECTION IS INTENDED TO ASSIST THOSE PERSONS PREPARING WATER POLLUTION ABATEMENT PLANS (WPAP) OR STORM WATER POLLUTION PREVENTION PLANS (SWPP) THAT COMPLY WITH FEDERAL, STATE AND/OR LOCAL STORM WATER REGULATIONS.

1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION). CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
2. ALL PROJECTS WITHIN THE RECHARGE ZONE OF THE EDWARD'S AQUIFER SHALL SUBMIT A BEST MANAGEMENT PRACTICES AND WATER POLLUTION AND ABATEMENT PLAN TO THE TNRCC FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
3. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN AND WATER POLLUTION ABATEMENT PLAN. DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNER'S REPRESENTATIVE.
4. ALL PLANTING SHALL BE DONE BETWEEN MAY 1 AND SEPTEMBER 15 EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING. IF PLANTING IS AUTHORIZED TO BE DONE OUTSIDE THE DATES SPECIFIED, THE SEED SHALL BE PLANTED WITH THE ADDITION OF WINTER FESCUE (KENTUCKY 31) AT A RATE OF 100LB/ACRE. GRASS SHALL BE COMMON BERMUDA GRASS, HULLED, MINIMUM 80% PURE LIVE SEED. ALL GRASS SEED SHALL BE FREE FROM NOXIOUS WEED, GRADE "A" RECENT CROP, RECLEANED AND TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. SEED SHALL BE FURNISHED IN SEALED, STANDARD CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
5. ALL DISTURBED AREAS TO BE RESTORED AS NOTED IN THE WATER POLLUTION ABATEMENT PLAN.
6. THE PLANTED AREA TO BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF FOUR (4) INCHES. THE IRRIGATION TO OCCUR AT 10–DAY INTERVALS DURING THE FIRST TWO MONTHS TO INSURE GERMINATION AND ESTABLISHMENT OF THE GRASS - RAINFALL OCCURRENCES OF 1/2 INCH OR GREATER TO POSTPONE THE WATERING SCHEDULE ONE WEEK.
7. RESTORATION TO BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1–1/2 INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 25 SQUARE FEET EXIST.
8. A MINIMUM OF FOUR (4) INCHES OF TOPSOIL TO BE PLACED IN ALL AREAS DISTURBED BY CONSTRUCTION.
9. THE CONTRACTOR TO HYDROMULCH OR SOD (AS SHOWN ON PLANS) ALL EXPOSED CUTS AND FILLS UPON COMPLETION OF CONSTRUCTION.
10. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINE.
11. TO AVOID SOIL COMPACTION, CONTRACTOR SHALL NOT ALLOW VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IN THE TREE DRIPLINE AREAS.
12. WHERE A FENCE IS CLOSER THAN FOUR (4) FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED–ON PLANKING TO A HEIGHT OF EIGHT (8) FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE FENCING.
13. TREES TO BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
14. ANY ROOT EXPOSED BY CONSTRUCTION ACTIVITY TO BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
15. CONSTRUCTION TO PRUNE VEGETATION TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.). ALL FINISHED PRUNING TO BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY [REFERENCE THE "NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES"].
16. THE CONTRACTOR IS TO INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/4 INCH TO VERIFY THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY ACCUMULATED SEDIMENT AFTER A SIGNIFICANT RAINFALL TO BE REMOVED AND PLACED IN THE OWNER DESIGNATED SPOIL DISPOSAL SITE. THE CONTRACTOR TO CONDUCT PERIODIC INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROLS AND TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE.
17. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT IMMEDIATELY ADJACENT TO A PROTECTED TREE, ERECT THE FENCE APPROXIMATELY TWO TO FOUR FEET (2'–4") BEHIND THE AREA IN QUESTION.
18. NO ABOVE AND/OR BELOW GROUND TEMPORARY FUEL STORAGE FACILITIES TO BE STORED ON THE PROJECT SITE.
19. IF EROSION AND SEDIMENTATION CONTROL SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER'S REPRESENTATIVE AND THE CONTRACTOR TO EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF ANY DAMAGE TO PREEXISTING EROSION AND SEDIMENTATION CONTROLS NOTED TO BE REPAIRED AT OWNERS EXPENSE.
20. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATED SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES
EC01A
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

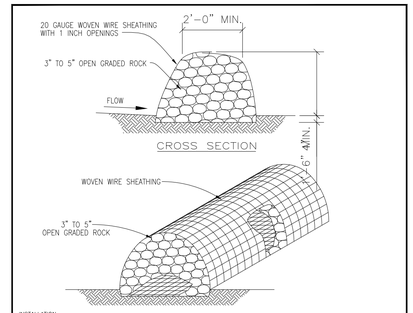


INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL EVENT.
- REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
- REPLACE ANY TORN FABRIC.
- REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY.

INSTALLATION:
- LAYOUT THE SILT FENCE FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS, PLANTS (INCLUDING GRASSES TALLER THAN 2") TO PROVIDE A SMOOTH FLOW APPROACH SURFACE. EXCAVATE 6" DEEP X 6" WIDE TRENCH ON UPSTREAM SIDE OF FACE PER PLANS.
- DRIVE THE HEAVY DUTY T–POST AT LEAST 12 INCHES INTO THE GROUND AND AT A SLIGHT ANGLE TOWARDS THE FLOW.
- ATTACH THE 2" X 4" 12 GAUGE WELDED WIRE MESH TO THE T–POST WITH 11 1/2 GAUGE GALVANIZED T–POST CLIPS. THE TOP OF THE WIRE TO BE 24" ABOVE GROUND LEVEL. THE WELDED WIRE MESH TO BE OVERLAPPED 6" AND TIED AT LEAST 6 TIMES WITH HOG RINGS.
- THE SILT FENCE TO BE INSTALLED WITH A SKIRT A MINIMUM OF 6" WIDE PLACED ON THE UPHILL SIDE OF THE FENCE INSIDE EXCAVATED TRENCH. THE FABRIC TO OVERLAP THE TOP OF THE WIRE BY 1".
- ANCHOR THE SILT FENCE BY BACKFILLING WITH EXCAVATED DIRT AND ROCKS (NOT LARGER THAN 2").
- GEOTEXTILE SPLICES SHOULD BE A MINIMUM OF 18" WIDE ATTACHED IN AT LEAST 6 PLACES. SPLICES IN CONCENTRATED FLOW AREAS WILL NOT BE ACCEPTED.
- SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
SILT FENCE DETAIL
EC02
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

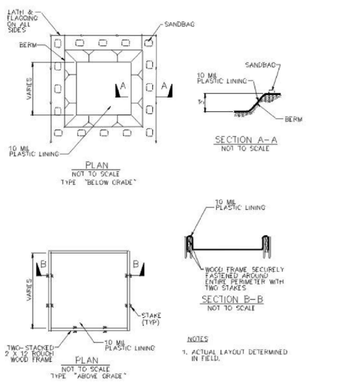


INSTALLATION:
- LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
- INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT. INSTALLATION SHOULD BE AS DESCRIBED IN DRAWING NO. EC–02 "SILT FENCE DETAIL".
- PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND ON BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT.
- WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE RETAINS IT'S SHAPE.
- SECURE WITH TIE WIRE.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

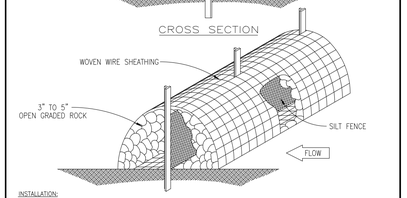
The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
ROCK BERM DETAIL
EC03
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB



TCEQ CONCRETE WASHOUT DETAIL

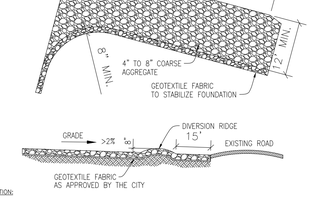
The Architect/Engineer assumes responsibility for appropriate use of this standard.



INSTALLATION:
- LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
- INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT. INSTALLATION SHOULD BE AS DESCRIBED IN DRAWING NO. EC–02 "SILT FENCE DETAIL".
- PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND ON BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT.
- WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE RETAINS IT'S SHAPE.
- SECURE WITH TIE WIRE.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE CONTRACTOR. FOR THE INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE ON ROCK BERM.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- THE BERM SHOULD BE REPLACES WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
HIGH SERVICE ROCK BERM DETAIL
EC04
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

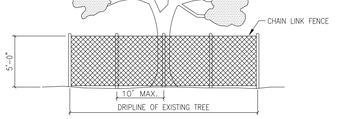


INSTALLATION:
- CLEAR THE AREA OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- GRADE THE AREA FOR THE ENTRANCE TO FLOW BACK ON TO THE CONSTRUCTION SITE. RUNOFF FROM THE STABILIZED CONSTRUCTION
- PLACE GEOTEXTILE FABRIC AS APPROVED BY THE CITY.
- PLACE ROCK AS APPROVED BY THE CITY.

INSPECTIONS AND MAINTENANCE GUIDELINES:
- THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
- WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY.
- WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
- ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

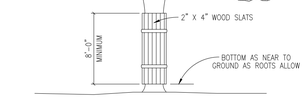
REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
STABILIZED CONSTRUCTION ENTRANCE
EC06
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB



NOTES:
1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; WILL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6") CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'–0") TO BUILDING.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – CHAIN LINK FENCE
EC09
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB



NOTES:
1. WHERE ANY EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN FOUR FEET (4'–0") TO A TREE TRUNK; PROTECT THE TRUNK WITH STRAPPED–ON–PLANKING TO A HEIGHT OF EIGHT FEET (8'–0"), OR TO THE LIMITS OF LOWER BRANCHING IN ADDITION TO THE REDUCED FENCING PROVIDED.
2. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO (2) DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE, AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
3. PRIOR EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINE, MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
4. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.
5. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
6. NO LANDSCAPE TOPSOIL DRESSING GREATER THE FOUR INCHES (4") SHALL BE PERMITTED WITHIN THE DRIPLINE OF A TREE. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
7. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – WOOD SLATS
EC10
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
EROSION / SEDIMENTATION CONTOL & TREE PROTECTION PLAN - DETAILS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-EROS-DETAILS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

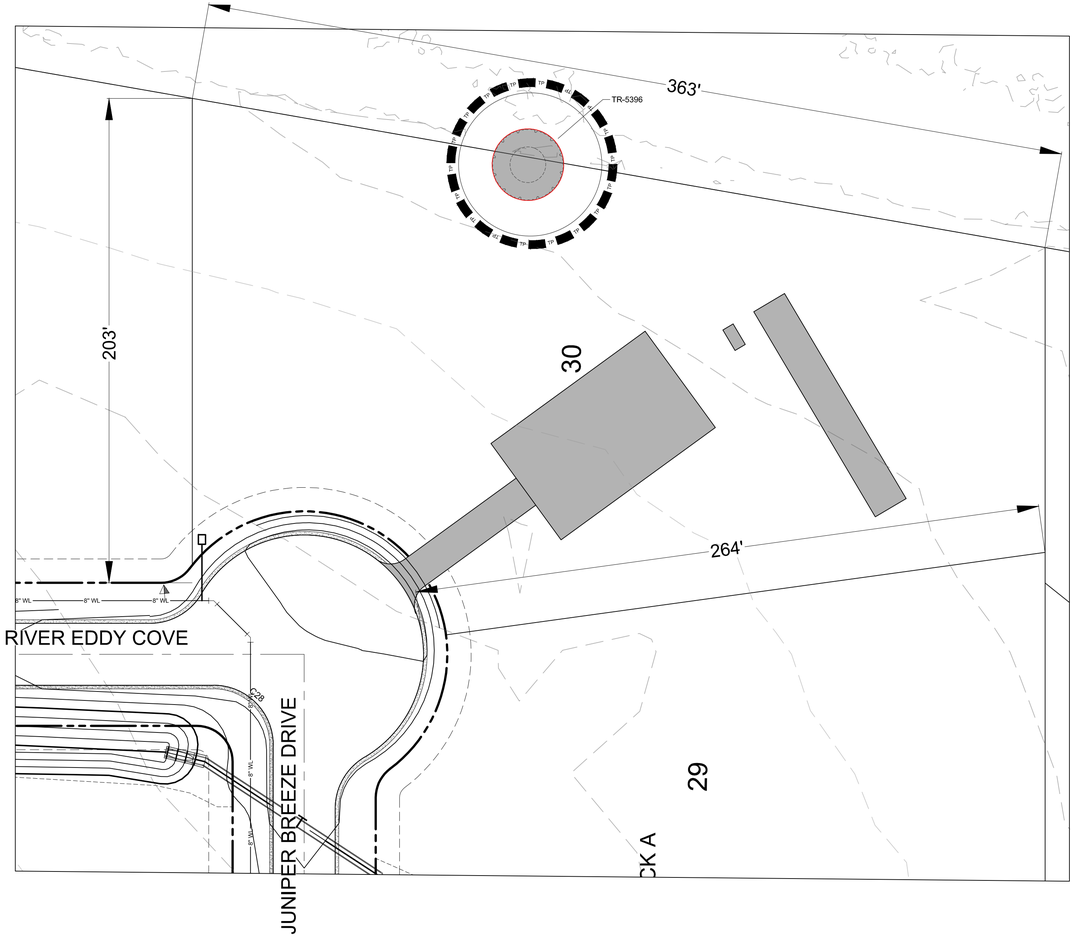
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

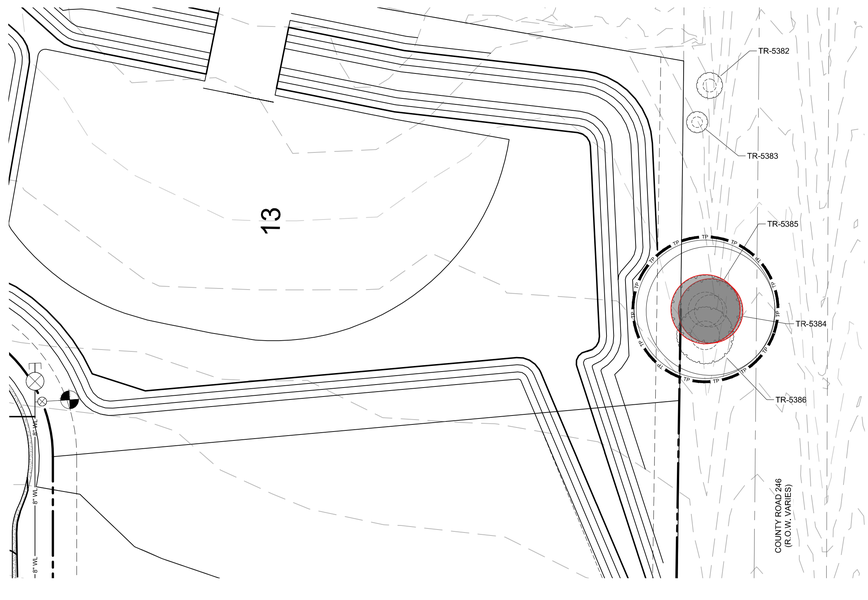
JOB NUMBER: A492-100

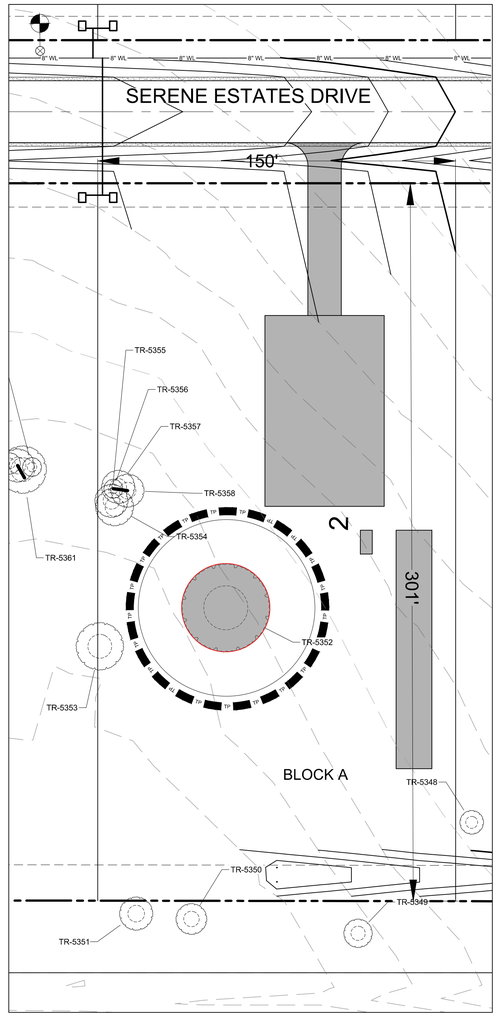
SHEET NO. 6 OF 51 SHEETS

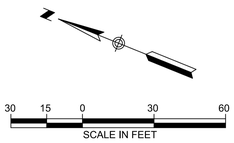
2024-24-CON

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User: jmartinez
Last Modified: Dec 05, 24 - 10:38
Plot Date/Time: Sep 19, 25 - 12:51:03









LEGEND

- PROPOSED BOUNDARY
- TREE PROTECTION
- ½ CRITICAL ROOT ZONE

NOTES:

1. HOUSING PADS SHOWN REPRESENT A 4,000 S.F. FOOTPRINT AND A PRELIMINARILY SIZED SEPTIC SYSTEM
2. BUILDER WILL BE SUBJECT TO GEORGETOWN TREE PRESERVATION PRIOR TO ANY REMOVALS.
3. NO PROPOSED SIDEWALKS IN THIS DEVELOPMENT.

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
NP	TR-5343	13"	6.5'	HACKBERRY
NP	TR-5344	16" (11", 10")	8'	HACKBERRY
NP	TR-5345	8"	4'	HACKBERRY
NP	TR-5346	8"	4'	HACKBERRY
NP	TR-5347	8"	4'	HACKBERRY
NP	TR-5348	10"	5'	HACKBERRY
NP	TR-5349	12" (9", 6")	6'	HACKBERRY
P	TR-5350	13"	6.5'	LIVE OAK
NP	TR-5351	14"	7'	HACKBERRY
HT	TR-5352	37"	18.5'	LIVE OAK
P	TR-5353	20"	10'	LIVE OAK
P	TR-5354	16"	8'	LIVE OAK
P	TR-5355	14"	7'	LIVE OAK
P	TR-5356	8"	4'	LIVE OAK
P	TR-5357	14"	7'	LIVE OAK
P	TR-5358	14"	7'	LIVE OAK
NP	TR-5359	8"	4'	HACKBERRY
P	TR-5360	14"	7'	LIVE OAK
P	TR-5361	20"	10'	LIVE OAK
NP	TR-5362	9"	4.5'	HACKBERRY
P	TR-5363	15"	7.5'	LIVE OAK
P	TR-5364	14"	7'	LIVE OAK
P	TR-5365	15" (10", 9")	7.5'	LIVE OAK
P	TR-5366	8"	4'	LIVE OAK
P	TR-5367	8"	4'	LIVE OAK
P	TR-5368	9"	4.5'	LIVE OAK
P	TR-5369	9"	4.5'	LIVE OAK
P	TR-5370	15" (8", 11")	7.5'	LIVE OAK
P	TR-5371	9"	4.5'	LIVE OAK
P	TR-5372	17" (12", 10")	8.5'	LIVE OAK
P	TR-5373	19" (14", 10")	9.5'	LIVE OAK
NP	TR-5374	9"	4.5'	HACKBERRY
P	TR-5375	13" (10", 6")	6.5'	LIVE OAK
P	TR-5376	11"	5.5'	LIVE OAK
P	TR-5377	8"	4'	LIVE OAK
P	TR-5378	8"	4'	LIVE OAK
P	TR-5379	9"	4.5'	LIVE OAK
P	TR-5380	8"	4'	LIVE OAK
P	TR-5381	8"	4'	LIVE OAK
P	TR-5382	11"	5.5'	LIVE OAK
NP	TR-5383	9"	4.5'	HACKBERRY
HT	TR-5384	27" (21", 12")	13.5'	PECAN
HT	TR-5385	29" (16", 21")	14.5'	PECAN
P	TR-5386	24" (12", 18")	12'	PECAN
P	TR-5387	17" (12", 10")	8.5'	CEDAR ELM
NP	TR-5388	12"	6'	HACKBERRY
NP	TR-5389	21"	10.5'	HACKBERRY
P	TR-5390	24" (11", 12", 12")	12'	CEDAR ELM
NP	TR-5391	10"	5'	HACKBERRY
NP	TR-5392	12"	6'	HACKBERRY
NP	TR-5393	8"	4'	HACKBERRY
NP	TR-5394	9"	4.5'	HACKBERRY
P	TR-5395	24"	12'	POST OAK
HT	TR-5396	30"	15'	POST OAK

LEGEND: P = PROTECTED NP = NOT PROTECTED HT = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	32
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	10

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
HERITAGE TREES EXHIBIT

NO.	DESCRIPTION	BY	DATE

REVISIONS

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-Trees.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 7 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:40
Plot Date/Time: Sep. 19, 25 - 15:40:25

APPENDIX A

SAMPLE INSPECTION AND MAINTENANCE REPORT FORM

TPDES Construction Inspection and Maintenance Report Form

Project Name: Serene Estates

Permit Number: _____

Facility Operators: _____

_____

_____

Inspector's Name: _____
(attach qualifications summary for each inspector) _____

_____

Date of Last Rainfall: _____
Amount of Last Rainfall: _____
Date of Inspection: _____

Inspection Notes

Condition Code*	Area Inspected	Changes Required (if any)
☐	Stabilized Construction Entrance(s)	
☐	Silt fencing and rock berms downstream of improvements	
☐	Severe service rock berm and silt fencing downstream of detention pond	
☐	Severe service rock berm and silt fencing inside Vega Avenue right-of-way	
☐	Sediment Trap (Water Quality Pond)	
☐	Silt fencing downstream of Temporary Spoils/ Construction Staging Areas	
☐	Areas temporarily and/or finally stabilized (inspect at least once every month)	
☐		

*Condition Codes
01 - In compliance with the storm water pollution prevention plan and permit
02 - To be repaired or replaced within 24 hours.
03 - To be repaired or replaced within 48 hours.
04 - To be repaired or replaced within 7 days.

Please note major construction activities taking place. Include dates when major grading activities and/or disturbances occur, dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated. Major observations should include: The locations of discharges of sediment or other pollutants from the site; locations of controls that need to be maintained; locations of controls that failed to operate as designed or proved inadequate for a particular location; and locations where additional controls are needed. (Attach additional pages as required and/or attach daily construction reports.)

_____

_____

_____

_____

_____

_____

I certify under penalty of law that this document was 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.

Signature: _____ Date: _____.

Signature: _____ Date: _____.

APPENDIX B

NAMES AND QUALIFICATIONS OF PERSONNEL MAKING INSPECTIONS

APPENDIX C

CERTIFIED NOTICES OF INTENT AND ACKNOWLEDGEMENT CERTIFICATES

TCEQ Office Use Only
Permit No:
CN:
RN:

Notice of Intent (NOI) for an Authorization for Stormwater Discharges Associated with Construction Activity under TPDES General Permit TXR150000

IMPORTANT INFORMATION

Please read and use the General Information and Instructions prior to filling out each question in the NOI form.

Use the NOI Checklist to ensure all required information is completed correctly. **Incomplete applications delay approval or result in automatic denial.**

Once processed your permit authorization can be viewed by entering the following link into your internet browser: http://www2.tceq.texas.gov/wq_dpa/index.cfm or you can contact TCEQ Stormwater Processing Center at 512-239-3700.

ePERMITS

Effective September 1, 2018, this paper form must be submitted to TCEQ with a completed electronic reporting waiver form (TCEQ-20754).

To submit an NOI electronically, enter the following web address into your internet browser and follow the instructions: https://www3.tceq.texas.gov/steers/index.cfm

APPLICATION FEE AND PAYMENT

The application fee for submitting a paper NOI is $325. The application fee for electronic submittal of a NOI through the TCEQ ePermits system (STEERS) is $225.

Payment of the application fee can be submitted by mail or through the TCEQ ePay system. The payment and the NOI must be mailed to separate addresses. To access the TCEQ ePay system enter the following web address into your internet browser: http://www.tceq.texas.gov/epay.

Provide your payment information for verification of payment:

- If payment was mailed to TCEQ, provide the following:
  - Check/Money Order Number: Click here to enter text
  - Name printed on Check: Click here to enter text
- If payment was made via ePay, provide the following:
  - Voucher Number: Click here to enter text
  - A copy of the payment voucher is attached to this paper NOI form.

RENEWAL (This portion of the NOI is not applicable after June 3, 2018)

Is this NOI for a renewal of an existing authorization? ☐ Yes ☐ No

If Yes, provide the authorization number here: TXR15 Click here to enter text.

NOTE: If an authorization number is not provided, a new number will be assigned.

SECTION 1. OPERATOR (APPLICANT)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? CN Click here to enter text.

(Refer to Section 1.a) of the Instructions)

b) What is the Legal Name of the entity (applicant) applying for this permit? (The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

Serene Estates, LLC.

c) What is the contact information for the Operator (Responsible Authority)?

Prefix (Mr. Ms. Miss): Mr.

First and Last Name: Jai Kanuri Suffix: Click here to enter text.

Title: Partner Credentials: Click here to enter text.

Phone Number: 512-784-8838 Fax Number: Click here to enter text.

E-mail: jai@k2global.us

Mailing Address: 3321 Burks Lane

City, State, and Zip Code: Austin, TX 78732

Mailing Information if outside USA:

Territory: Click here to enter text.

Country Code: Click here to enter text. Postal Code: Click here to enter text.

d) Indicate the type of customer:

☐ Individual	☐ Federal Government
☐ Limited Partnership	☐ County Government
☐ General Partnership	☐ State Government
☐ Trust	☐ City Government
☐ Sole Proprietorship (D.B.A.)	☐ Other Government
☒ Corporation	☐ Other: Click here to enter text.
☐ Estate	

e) Is the applicant an independent operator? ☒ Yes ☐ No

(If a governmental entity, a subsidiary, or part of a larger corporation, check No.)

f) Number of Employees. Select the range applicable to your company.

☐ 0-20 ☒ 251-500

☐ 21-100 ☐ 501 or higher

☐ 101-250

g) Customer Business Tax and Filing Numbers: (**Required** for Corporations and Limited Partnerships. **Not Required** for Individuals, Government, or Sole Proprietors.)

State Franchise Tax ID Number: 32082517072

Federal Tax ID: 87-4393295

Texas Secretary of State Charter (filing) Number: 0804368884

DUNS Number (if known): Click here to enter text.

SECTION 2. APPLICATION CONTACT

Is the application contact the same as the applicant identified above?

☐ Yes, go to Section 3

☒ No, complete this section

Prefix (Mr. Ms. Miss): Mr.

First and Last Name: Matthew Thomas Suffix: Click here to enter text.

Title: Sr. Project Manager Credential: P.E.

Organization Name: LJA Engineering, Inc.

Phone Number: 512-439-4700 Fax Number: Click here to enter text.

E-mail: mthomas@lja.com

Mailing Address: 7500 Rialto Blvd, Bldg II, Suite 100

Internal Routing (Mail Code, Etc.): Click here to enter text.

City, State, and Zip Code: Austin, TX 78735

Mailing information if outside USA:

Territory: Click here to enter text.

Country Code: Click here to enter text. Postal Code: Click here to enter text.

SECTION 3. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

a) If this is an existing permitted site, what is the Regulated Entity Number (RN) issued to this site? RN Click here to enter text.

(Refer to Section 3.a) of the Instructions)

b) Name of project or site (the name known by the community where it's located): Serene Estates

c) In your own words, briefly describe the type of construction occurring at the regulated site (residential, industrial, commercial, or other): The development will include paved roads and utilities including water, drainage, and dry utilities.

d) County or Counties (if located in more than one): Williamson County

e) Latitude: 30.759263 Longitude: -97.799449

f) Site Address/Location

If the site has a physical address such as 12100 Park 35 Circle, Austin, TX 78753, complete *Section A*.

If the site does not have a physical address, provide a location description in *Section B*. Example: located on the north side of FM 123, 2 miles west of the intersection of FM 123 and Highway 1.

Section A:

Street Number and Name: Click here to enter text

City, State, and Zip Code: Click here to enter text

Section B:

Location Description: Located on the northeast corner of CR 246 and CR 249 approximately 0.58 miles east of the intersection of FM 2338 and Fisher Road.

City (or city nearest to) where the site is located: Georgetown

Zip Code where the site is located: 78633

SECTION 4. GENERAL CHARACTERISTICS

a) Is the project or site located on Indian Country Lands?

☐ Yes, do not submit this form. You must obtain authorization through EPA Region 6.

☒ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes. Note: The construction stormwater runoff may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA Region 6.

☒ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site? **1611**

d) What is the Secondary SIC Code(s), if applicable? 1623

e) What is the total number of acres to be disturbed? 68.05

f) Is the project part of a larger common plan of development or sale?

☒ Yes

☐ No. The total number of acres disturbed, provided in e) above, must be 5 or more. If the total number of acres disturbed is less than 5, do not submit this form. See the requirements in the general permit for small construction sites.

g) What is the estimated start date of the project? 2024

h) What is the estimated end date of the project? 2025

i) Will concrete truck washout be performed at the site? ☒ Yes ☐ No

j) What is the name of the first water body(ies) to receive the stormwater runoff or potential runoff from the site? Berry Creek

k) What is the segment number(s) of the classified water body(ies) that the discharge will eventually reach? Click here to enter text.

l) Is the discharge into a Municipal Separate Storm Sewer System (MS4)?

☐ Yes ☒ No

If Yes, provide the name of the MS4 operator: Click here to enter text.

Note: The general permit requires you to send a copy of this NOI form to the MS4 operator.

m) Is the discharge or potential discharge from the site within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, as defined in 30 TAC Chapter 213?

☒ Yes, complete the certification below.

☐ No, go to Section 5

I certify that the copy of the TCEQ-approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) that is included or referenced in the Stormwater Pollution Prevention Plan will be implemented. ☐ Yes

SECTION 5. NOI CERTIFICATION

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☒ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☒ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☒ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the Construction General Permit (TXR150000). ☒ Yes

Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3, provided all obligations are confirmed by at least one operator.

SECTION 6. APPLICANT CERTIFICATION SIGNATURE

Operator Signatory Name: Click here to enter text

Operator Signatory Title: Click here to enter text

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

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature (use blue ink): _____Date: _____

APPENDIX D

SPILL NOTIFICATION PROCEDURE

APPENDIX D – SPILL NOTIFICATION PROCEDURE

To report an environmental emergency, discharge, spill or air release, contact:

STATE

- State of Texas Spill-Reporting Hotline and the SERC: 1-800-832-8224 (24 hours)
- TCEQ Regional Office – Austin Region 512-339-2929 (M-F 8:00 am – 5:00 pm)

FEDERAL

- National Response Center: 1-800-424-8802 (notifying NRC does not constitute notice to the state.)

When making a report of a spill or pollution complain, please have the following information at hand:

- The date and time of the spill or release.
- The identity of chemical name of any material released or spilled, as well as whether the substance is extremely hazardous.
- The estimate of the quantity of material released or spilled and the time or duration of the event.
- The exact location of the spill, including the name of receiving waters. Receiving waters for this project include Barton Creek.
- The extent of actual and potential water pollution.
- The source of the release or spill.
- The name, address, and phone number of the party in charge of, or responsible for, the facility, vessel, or activity associated with the release or spill.
- The name and phone number of the party at the site who is in charge of operations.
- The steps being taken or proposed to contain and clean up the released or spilled material and any precautions taken to minimize impacts, including evacuation.
- The extent of any injuries.
- Any known or anticipated health risks associated with the incident and where appropriate, advice regarding medical attention necessary for persons exposed.
- Possible hazards to the environment (air, soil, water, wildlife, etc.) This assessment may include references to accepted chemical databases, material safety data sheets, and health advisories. The TCEQ may request estimated or measured concentrations of contaminant for the state's hazard assessment.
- The identities of any government or private sector representative responding at the scene.

IMPORTANT WEBSITES:

Emergency Response Home (https://www.tceq.texas.gov/response/index.html)
Spills, Discharges, and Releases (https://www.tceq.texas.gov/response/spills/spills.html)

APPENDIX E

GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM

Texas Commission on Environmental Quality

P.O. Box 13087 Austin, Texas 78711-3087

GENERAL PERMIT TO DISCHARGE WASTES

under provisions of Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

This permit supersedes and replaces
TPDES General Permit No. TXG340000, issued October 24, 2012.

Facility wastewater, contact stormwater, and stormwater associated with industrial activities may be discharged from petroleum bulk stations and terminals, located in the State of Texas,

into or adjacent to water in the state, including exceptional, high, intermediate, limited, or minimal aquatic life use receiving waters as designated in the *Texas Surface Water Quality Standards*,

only according to effluent limitations, monitoring requirements and other conditions set forth in this general permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ or commission), the laws of the State of Texas, and other orders of the commission. The issuance of this general permit does not grant to the permittee the right to use private or public property for conveyance of wastewater along the discharge route. This includes property belonging to, but not limited to, any individual, partnership, corporation or other entity. Neither does this general permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This general permit and the authorization contained herein will expire at midnight on October 24, 2022.

EFFECTIVE DATE: October 24, 2017

DATE SIGNED: October 10, 2017

Signed by Bryan W. Shaw

For the Commission

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

I Jai Kanuri,
Print Name

Partner,
Title - Owner/President/Other

of Serene Estates, LLC.,
Corporation/Partnership/Entity Name

have authorized Matt Thomas, P.E.
Print Name of Agent/Engineer

of LJA Engineering
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:

K.J. Chandra Prasad
Applicant's Signature

10/09/2025
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Jai Kanwar 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 9th day of October, 2025.

NOTARY PUBLIC

Azucena Mosqueda
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

Azucena Oliva Mosqueda
Notary Public, State of Texas
My Comm. Exp. 10-14-2028
ID No. 135128617

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

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

SECTION II: Customer Information

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

☐ 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:*

Serene Estates, LLC.

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0804368884	32082517072	87-4393295	

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

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ 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 ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:	3321 Burks Lane						
	City	Austin	**State**	TX	**ZIP**	78732	**ZIP + 4**

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	jai@k2global.us

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 784-8838		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Serene Estates

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

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

25. Description to Physical Location:	The project is located on the northeast corner of CR 246 and CR 249 approximately 0.58 miles east of the intersection of FM 2338 and Fisher Road in Georgetown, Williamson County, Texas.				
26. Nearest City			**State**	**Nearest ZIP Code**	
Georgetown			TX	78633	

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

27. Latitude (N) In Decimal:	30.759263		**28. Longitude (W) In Decimal:**	-97.799449	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	45	33.4	-97	47	58.0

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)
1611	1623	23411	23491

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

Construction of roads and utilities

34. Mailing Address:	**3321 Burks Lane**						
	City	**Austin**	**State**	**TX**	**ZIP**	**78732**	**ZIP + 4**
35. E-Mail Address:	**jai@k2global.us**						

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(512) 784-8838		( ) -

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

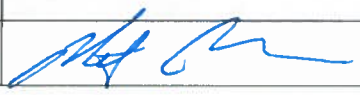
☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water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

SECTION IV: Preparer Information

40. Name:	Matthew Thomas, P.E.	**41. Title:**	SR. Project Manager
42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 439-4700		( ) -	mthomas@lja.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:	LJA Engineering, Inc.	**Job Title:**	SR. Project Manager
Name *(In Print):*	Matthew Thomas, P.E.	**Phone:**	(512) 439- 4700
Signature:		**Date:**	10/8/25

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Serene Estates
Regulated Entity Location: Northeast corner of the intersection of FM 246 and FM 249
Name of Customer: Serene Estates, LLC.
Contact Person: Jai Kanuri Phone: 512-784-8838
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	98.196 Acres	$ 6,500
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: 7/11/25

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

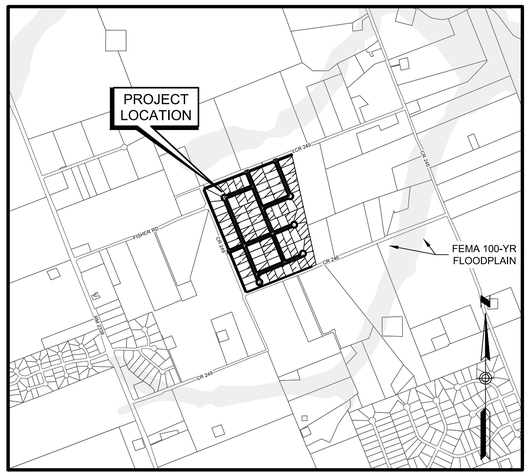
Project	***Fee***
Extension of Time Request	$150

CONSTRUCTION PLANS

SERENE ESTATES

PAVING, DRAINAGE, AND WATER IMPROVEMENTS

CR 246 & CR 249



LOCATION MAP
SCALE: 1" = 1500'

SUBMITTAL DATE: 2024

LEGAL DESCRIPTION

A 98.196-ACRE TRACT OF LAND, MORE OR LESS, SITUATED IN THE CHARLES DELANEY SURVEY, ABSTRACT NO. 181, WILLIAMSON COUNTY, TEXAS, BEING ALL OF A CALLED 98.19 ACRE TRACT CONVEYED TO SERENE ESTATES, LLC, AND RECORDED IN DOCUMENT NO. 2022009766, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.).

DEVELOPER/OWNER: SERENE ESTATES, LLC
3321 BURKS LANE
AUSTIN, TEXAS 78732

ENGINEER: LJA ENGINEERING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
CONTACT PERSON: MATT THOMAS, P.E.
PHONE # (512) 439-4700
FAX # (512) 439-4716

SURVEYOR: LJA SURVEYING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
CONTACT PERSON: MATT OVERALL, R.P.L.S.
PHONE # (512) 439-4700

GENERAL NOTES

1. UTILITY PROVIDERS FOR THIS DEVELOPMENT ARE
   WATER: CITY OF GEORGETOWN
   WASTEWATER/SEPTIC: ON-SITE SEWAGE FACILITIES
   ELECTRIC: PEDERNALES ELECTRIC COOPERATIVE
2. NO LOT IN THIS SUBDIVISION IS ENCROACHED BY A SPECIAL FLOOD HAZARD AREA INUNDATED BY THE 100-YEAR (1% CHANCE) FLOOD AS IDENTIFIED BY THE U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 48491C0100E, EFFECTIVE DATE SEPTEMBER 26, 2008 FOR WILLIAMSON COUNTY, TEXAS.
3. ALL STRUCTURES/OBSTRUCTIONS ARE PROHIBITED IN DRAINAGE EASEMENTS.
4. IN ORDER TO PROMOTE DRAINAGE AWAY FROM A STRUCTURE, THE SLAB ELEVATION SHOULD BE BUILT AT LEAST ONE-FOOT ABOVE THE SURROUNDING GROUND, AND THE GROUND SHOULD BE GRADED AWAY FROM THE STRUCTURE AT A SLOPE OF 1/2" PER FOOT FOR A DISTANCE OF AT LEAST 10 FEET.
5. ALL SEDIMENTATION, FILTRATION, DETENTION, AND/OR RETENTION BASINS AND RELATED APPURTENANCES SHOWN SHALL BE SITUATED WITHIN A DRAINAGE EASEMENT OR DRAINAGE LOT. THE OWNERS, HOA, OR ASSIGNEES OF THE TRACTS UPON WHICH ARE LOCATED SUCH EASEMENTS, APPURTENANCES, AND DETENTION FACILITIES SHALL MAINTAIN SAME AND BE RESPONSIBLE FOR THEIR MAINTENANCE, ROUTINE INSPECTION, AND UPKEEP.
6. PARKLAND DEDICATION REQUIREMENTS ARE BEING MET BY FEE-IN-LIEU.
7. ANY HERITAGE TREE AS NOTED ON THIS PLAT IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE CITY OF GEORGETOWN. APPROVED REMOVAL DOES NOT REQUIRE MODIFICATION OF THE PLAT.
8. ALL INDIVIDUAL LOTS CONTAINING HERITAGE TREES ARE CONFIGURED AND DESIGNED SO THAT THE LOT IS DEVELOPABLE FOR THE INTENDED PURPOSE WITHOUT REQUIRING REMOVAL OF THE HERITAGE TREES OR EXCEEDING THE PERCENTAGE OF ALLOWABLE DISTURBANCE WITHIN THE HERITAGE TREES CRZ.
9. A 10-FOOT PUBLIC UTILITY EASEMENT IS TO BE DEDICATED ALONG ALL STREET FRONTAGES WITHIN THE ASSOCIATED PLAT.
10. THE MONUMENTS OF THE ASSOCIATED PLAT HAVE BEEN ROTATED TO THE NAD 83/93 HARN - TEXAS CENTRAL ZONE AND NAVD 88.
11. IMPERVIOUS COVERAGE PLAT NOTES –
    THE MAXIMUM IMPERVIOUS COVERAGE PER DRAINAGE LOT IS 1500 S.F.
    THE MAXIMUM IMPERVIOUS COVERAGE PER ALL OTHER LOTS IS 7750 S.F.
12. THE LANDOWNER ASSUMES ALL RISKS ASSOCIATED WITH IMPROVEMENTS LOCATED IN THE RIGHT-OF-WAY, OR ROAD WIDENING EASEMENTS. BY PLACING ANYTHING IN THE RIGHT-OF-WAY OR ROAD WIDENING EASEMENTS, THE LANDOWNER INDEMNIFIES AND HOLDS THE CITY OF GEORGETOWN, WILLIAMSON COUNTY, THEIR OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY LIABILITY OWING TO PROPERTY DEFECTS OR NEGLIGENCE NOT ATTRIBUTABLE TO THEM AND ACKNOWLEDGES THAT THE IMPROVEMENTS MAY BE REMOVED BY THE CITY AND/OR COUNTY AND THAT THE OWNER OF THE IMPROVEMENTS WILL BE RESPONSIBLE FOR THE RELOCATION AND/OR REPLACEMENT OF THE IMPROVEMENTS.
13. NEITHER THE CITY OF GEORGETOWN NOR WILLIAMSON COUNTY ASSUMES ANY RESPONSIBILITY FOR THE ACCURACY OF REPRESENTATIONS BY OTHER PARTIES IN THIS SET OF PLANS. FLOODPLAIN DATA, IN PARTICULAR, MAY CHANGE DEPENDING ON SUBSEQUENT DEVELOPMENT. IT IS FURTHER UNDERSTOOD THAT THE OWNERS OF THE TRACT OF LAND COVERED BY THIS PLAT MUST INSTALL AT THEIR OWN EXPENSE ALL TRAFFIC CONTROL DEVICES AND SIGNAGE THAT MAY BE REQUIRED BEFORE THE STREETS IN THE SUBDIVISION HAVE FINALLY BEEN ACCEPTED FOR MAINTENANCE BY THE CITY AND / OR COUNTY.
14. RIGHT-OF-WAY EASEMENTS FOR WIDENING ROADWAYS OR IMPROVING DRAINAGE SHALL BE MAINTAINED BY THE LANDOWNER UNTIL ROAD OR DRAINAGE IMPROVEMENTS ARE ACTUALLY CONSTRUCTED ON THE PROPERTY. THE CITY AND/OR COUNTY HAVE THE RIGHT AT ANY TIME TO TAKE POSSESSION OF ANY ROAD WIDENING EASEMENT FOR CONSTRUCTION, IMPROVEMENT, OR MAINTENANCE OF THE ADJACENT ROAD.
15. UNLESS OTHERWISE NOTED HEREIN, ALL EASEMENTS DEDICATED TO THE CITY OF GEORGETOWN BY THIS PLAT SHALL BE EXCLUSIVE TO THE CITY OF GEORGETOWN, AND GRANTOR COVENANTS THAT GRANTOR AND GRANTOR'S HEIRS, SUCCESSORS, AND ASSIGNS SHALL NOT CONVEY ANY OTHER EASEMENT, LICENSE, OR CONFLICTING RIGHT TO USE IN ANY MANNER, THE AREA (OR ANY PORTION THEREOF) COVERED BY THIS GRANT.
16. ALL EASEMENTS DEDICATED TO THE CITY OF GEORGETOWN BY THIS PLAT ADDITIONALLY INCLUDE THE FOLLOWING RIGHTS: (1) THE RIGHT OF THE CITY TO CHANGE THE SIZE OF ANY FACILITIES INSTALLED, MAINTAINED, OR OPERATED WITHIN THE EASEMENT AREA; (2) THE RIGHT OF THE CITY TO RELOCATE ANY FACILITIES WITHIN THE EASEMENT AREA; AND (3) THE RIGHT OF THE CITY TO REMOVE FROM THE EASEMENT AREA ALL TREES AND PARTS THEREOF, OR OTHER OBSTRUCTIONS, WHICH ENDANGER OR MAY INTERFERE WITH THE EFFICIENCY AND MAINTENANCE OF ANY FACILITIES WITHIN THE EASEMENT AREA.
17. THIS PLAT IS SUBJECT TO THE PROVISIONS OF THE CITY OF GEORGETOWN WATER CONSERVATION ORDINANCE.
18. STATE-OWNED RIVERBEDS AND BEDS OF NAVIGABLE STREAMS IN THE PUBLIC DOMAIN ARE HELD IN TRUST FOR THE PUBLIC. THERE IS HEREBY GRANTED FOR THE USE AND BENEFIT OF THE PUBLIC A CONTINUING ACCESS EASEMENT FOR THE FREE AND UNOBSTRUCTED USE OF THE NAVIGABLE RIVER AND THE RIGHT OF PORTAGE ALONG ITS BANKS, ACROSS ANY PORTION OF THE PROPERTY BETWEEN THE MEAN HIGH-WATER MARKS OF THE RIVER IN ITS NATURAL STATE.
19. ALL STRUCTURES/OBSTRUCTIONS ARE PROHIBITED IN DRAINAGE EASEMENTS.
20. IMPROVEMENTS WITHIN THE COUNTY ROAD RIGHT-OF-WAY INCLUDING, BUT NOT LIMITED TO, LANDSCAPING, IRRIGATION LIGHTING, CUSTOM SIGNS, IS PROHIBITED WITHOUT FIRST OBTAINING AN EXECUTED LICENSE AGREEMENT WITH WILLIAMSON COUNTY.
21. ALL PUBLIC ROADWAYS AND EASEMENTS AS SHOWN ON THIS PLAT ARE FREE OF LIENS.
22. NO STRUCTURE OR LAND IN THIS PLAT SHALL HEREAFTER BE LOCATED OR ALTERED WITHOUT FIRST OBTAINING A CERTIFICATE OF COMPLIANCE FROM THE WILLIAMSON COUNTY FLOODPLAIN ADMINISTRATOR.
22. ALL SIDEWALKS SHALL BE MAINTAINED BY EACH OF THE ADJACENT PROPERTY OWNERS.
23. MAINTENANCE RESPONSIBILITY FOR DRAINAGE WILL NOT BE ACCEPTED BY THE COUNTY OTHER THAN THAT ACCEPTED IN CONNECTION WITH DRAINING OR PROTECTING THE ROAD SYSTEM. MAINTENANCE RESPONSIBILITY FOR STORM WATER MANAGEMENT CONTROLS WILL REMAIN WITH THE OWNER.
24. DRIVEWAYS SHALL ONLY CONNECT TO AN INTERNAL PLATTED ROAD AND NOT TO CR 249 OR CR 246, THE ADJACENT COUNTY ROADS.
25. THE CONTRACTOR SHALL OBTAIN A "NOTICE OF PROPOSED INSTALLATION OF UTILITY LINE" PERMIT FROM WILLIAMSON COUNTY FOR ANY WORK PERFORMED IN THE EXISTING COUNTY RIGHT-OF-WAY (DRIVEWAY APRON, WATER MAIN TIE-IN, ETC.) THIS PERMIT APPLICATION WILL REQUIRE A LIABILITY AGREEMENT, A CONSTRUCTION COST ESTIMATE FOR WORK WITHIN THE RIGHT-OF-WAY INCLUDING PAVEMENT REPAIR (IF NEEDED), A PERFORMANCE BOND, CONSTRUCTION PLANS AND, IF NECESSARY, A TRAFFIC CONTROL PLAN. AN INSPECTION FEE, AND A PRE-CONSTRUCTION MEETING MAY ALSO BE REQUIRED, DEPENDING ON THE SCOPE OF WORK. THE PERMIT WILL BE REVIEWED AND APPROVED BY THE COUNTY ENGINEER, AND MUST ALSO BE APPROVED BY THE WILLIAMSON COUNTY COMMISSIONERS COURT IF ANY ROAD CLOSURE IS INVOLVED.

ADDITIONAL NOTES:

1. THESE PLANS WERE PREPARED, SEALED, SIGNED, AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER, THEREFOR, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
3. ALL ELECTRIC DISTRIBUTION LINES AND INDIVIDUAL SERVICE LINES SHALL BE INSTALLED UNDERGROUND. IF OVERHEAD LINES EXISTED PRIOR TO UNDERGROUND INSTALLATION, SUCH POLES, GUY WIRES, AND RELATED STRUCTURES SHALL BE REMOVED FOLLOWING CONSTRUCTION OF THE UNDERGROUND INFRASTRUCTURE (ONLY APPLICABLE FOR RESIDENTIAL PROPERTY).
4. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE RE-INSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER (ONLY APPLICABLE FOR NON-RESIDENTIAL AND MULTI-FAMILY DEVELOPMENT)
5. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.

REVISIONS / CORRECTIONS

Number	Description	Revise (R) Add (A) Void (V) Sheet No.'s	Total # Sheets in Plan Set	W.C. Approval Date	Date Imaged	City of Georgetown Approval Date

ALLOWABLE IMPERVIOUS COVER TABLE

AREA	# OF LOTS	I.C. (S.F.)
ROADWAY	-	261913
DRAINAGE LOTS	2	1500/LOT
ALL OTHER LOTS	76	7750/LOT

GENERAL INFORMATION
TOTAL ACREAGE: 98.19 ACRES
LINEAR FOOTAGE OF 60' ROW: 8518'
ACREAGE OF ROW: 14.85 ACRES
NUMBER OF DRAINAGE LOTS: 2
ACREAGE OF DRAINAGE LOTS: 3.34 ACRES
NUMBER OF OTHER LOTS: 76
ACREAGE OF OTHER LOTS: 80.00 ACRES
NUMBER OF LOTS: 78
NUMBER OF BLOCKS: 6

INTERSECTION	PROPOSED ACCESS	AVERAGE DAILY TRAFFIC: SITE TURNING MOVEMENT PEAK HOUR VOLUME RIGHT TURNS	SITE TURNING MOVEMENT PEAK HOUR VOLUME LEFT TURNS	ADT	NUMBER OF UNITS
INTERSECTION OF COUNTY ROAD 249 & COOL WIND DRIVE	FULLL PURPOSE	8	8	168	21
INTERSECTION OF COUNTY ROAD 249 & RIVER EDDY COVE	FULLL PURPOSE	6	6	112	14
INTERSECTION OF COUNTY ROAD 249 & FOREST JAY DRIVE	FULLL PURPOSE	16	16	320	40

*PEAK HOUR VOLUME= ADT*0.1 (50% LT, 50% RT)*

TRIP RATE	8
TOTAL UNITS	75
TOTAL TRIPS	600

THE BEARING BASIS FOR THIS SURVEY PLAT WAS DETERMINED FROM GPS OBSERVATIONS AND REFERS TO GRID NORTH OF THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, SOUTH CENTRAL ZONE.

SURFACE TO GRID SCALE FACTOR = 0.99850
GRID TO SURFACE SCALE FACTOR = 1.00015
SCALED ABOUT 0,0

Sheet List Table

Sheet Number	Sheet Title
1	COVER SHEET
2	GENERAL NOTES
3	APPROVED PRELIMINARY PLAT
4	EROSION- SEDIMENTATION CONTROL & TREE PROTECTION PLAN-SHEET 1
5	EROSION- SEDIMENTATION CONTROL & TREE PROTECTION PLAN-SHEET 2
6	EROSION- SEDIMENTATION AND TREE PORTECTION DETAILS
7	HERITAGE TREES EXHIBIT
8	TREE SURVEY
9	EXISTING DRAINAGE ARE MAP
10	PROPOSED (ULTIMATE) DRAINAGE AREA MAP
11	ONSITE DRAINAGE AREA MAP
12	OVERALL GRADING PLAN
13	AVERAGE DAILY TRIPS EXHIBIT
14	SERENE ESTATES DRIVE & KNUCKLE (1+00.00-9+50.00)
15	SERENE ESTATES DRIVE (9+50.00-21+00.00)
16	SERENE ESTATES DRIVE & CULDESAC (21+00.-END)
17	FOREST JAY DRIVE (1+00-10+00)
18	FOREST JAY DRIVE & CULDESAC (10+00-15+98.91)
19	COLD SNAP STREET (1+38.00-6+50.00)
20	COLD SNAP STREET & CULDESAC (6+50.00-10+99.67)
21	COOL WIND DRIVE (0+65.00-10+50.00)
22	COOL WIND DRIVE (10+50.00-21+70.04)
23	JUNIPER BREEZE DRIVE & KNUCKLE (1+64.66-7+04.00)
24	RIVER EDDY DRIVE & KNUCKLE (1+00-8+89.90)
25	TYPICAL STREET SECTIONS
26	OVERALL STRIPING AND SIGNAGE PLAN
27	OVERALL WATER PLAN
28	OVERALL STORM SEWER PLAN
29	DRAINAGE AREAS TO CHANNELS AND SWALES
30	STORM SEWER CULVERTS-SHEET 1
31	STORM SEWER CULVERTS-SHEET 2
32	STORM SEWER CULVERTS-SHEET 3
33	CHANNEL A PLAN & PROFILE
34	CHANNEL B PLAN & PROFILE
35	CHANNEL C PLAN & PROFILE
36	CHANNEL E & F PLAN & PROFILE
37	DETENTION POND A PLAN
38	DETENTION POND B PLAN
39	WATER DETAILS
40	STORM DETAILS-SHEET 1
41	STORM DETAILS-SHEET 2
42	STORM DETAILS-SHEET 3
43	EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (1+00-23+00)
44	EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (23+00-45+00)
45	EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (45+00-END)
46	OFFSITE WATERLINE P&P (1+00-12+00)
47	OFFSITE WATERLINE P&P (12+00-23+50)
48	OFFSITE WATERLINE P&P (23+50-35+00)
49	OFFSITE WATERLINE P&P (35+00-44+00)
50	OFFSITE WATERLINE P&P (44+00-END)
51	TRAFFIC CONTROL PLAN DETAILS

SERENE ESTATES
PAVING, DRAINAGE, AND WATER

FOR REVIEW:

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF REVIEW UNDER THE AUTHORITY OF MATTHEW M. THOMAS, PROFESSIONAL ENGINEER NO. 128935. IT IS NOT TO BE USED FOR BIDDING, PERMIT, OR CONSTRUCTION.

NO PORTION OF THIS TRACT IS WITHIN THE DESIGNATED FLOOD HAZARD AREA AS SHOWN ON THE FEDERAL FLOOD INSURANCE ADMINISTRATION RATE MAP (FEMA) No. 48491C0100E, WILLIAMSON COUNTY, TEXAS , DATED SEPTEMBER 26, 2008.

I AM AUTHORIZED TO PRACTICE THE PROFESSION OF ENGINEERING IN THE STATE OF TEXAS. I AM RESPONSIBLE FOR THE PREPARATION OF THE ENGINEERING PORTIONS OF THIS PLAN. ALL ENGINEERING INFORMATION SHOWN ON THE PLAN IS ACCURATE AND CORRECT WITH REGARD TO THE ENGINEERING PORTIONS THEREOF, THE PLAN COMPLIES ALL APPLICABLE CITY AND WILLIAMSON COUNTY CODES, ORDINANCES AND RULES.

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER

LICENSED PROFESSIONAL ENGINEER — DATE 09-19-2025

WILLIAMSON COUNTY
(REVIEWED FOR COMPLIANCE WITH COUNTY REQUIREMENT "WCSR 2021B") — DATE

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
SERENE ESTATES DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,563'	RIBBON	N/A	25
COOL WIND DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,080'	RIBBON	N/A	25
COLD SNAP STREET	LOCAL STREET - RURAL	PUBLIC	60'	26'	1,104'	RIBBON	N/A	25
FOREST JAY DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	1,494'	RIBBON	N/A	25
JUNIPER BREEZE DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	642'	RIBBON	N/A	25
RIVER EDDY COVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	824'	RIBBON	N/A	25

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

Date/Time Fri, 19 Sep 2025 - 4:18pm
Path\Name I:\AA\2024\24-Serene Estates\Submittal Drawings\se-cvr.dwg

B4 - Construction – General

B4.1 A preconstruction meeting shall be scheduled prior to the start of construction. The Design Engineer, Owner, Contractor, Subcontractors, and County Engineer shall attend this meeting. All roads are to be constructed in accordance with the construction documents as approved by the County Engineer and in accordance with the specifications found in the current version of the "Texas Department of Transportation Manual Standard Specifications for Construction of Highways, Streets, and Bridges" unless otherwise stated on the construction documents approved by the County Engineer.

B4.2 All materials shall be sampled and tested by an Independent Testing Laboratory in accordance with the construction documents approved by the County Engineer. The Owner shall pay for all testing services and shall furnish the County Engineer with certified copies of these test results. The County Engineer must approve the test results prior to constructing the next course of the roadway structure. Any material which does not meet the minimum required test specifications shall be removed and recompacted or replaced unless alternative remedial action is approved in writing from the County Engineer.

B4.3 Except for electrical lines, all underground nonferrous utilities within a right-of-way or easement must be accompanied by ferrous metal lines to aid in tracing the location of said utilities through the use of a metal detector.

B4.4 All pavements are to be designed by a Registered Professional Engineer. The design shall be based on a 20-year design life and in conjunction with recommendations based upon a soils report of samples taken along the proposed roadways. Test borings shall be placed at a maximum spacing of 500 feet or other sampling frequency approved by the County Engineer based on recommendations provided by the geotechnical engineer. Borings shall be to a depth of ten ft or, if solid rock is encountered, one ft below non-fractured rock. The soils report and pavement design shall be submitted to the County Engineer for review. The pavement design must be approved by the County Engineer prior to or concurrently with the review and approval of the construction plans. In addition to the basis of the pavement design, the soils report shall contain the results of sampled and tested subgrade for plasticity index.

B5 - Subgrade

B5.1 The preparation of the subgrade shall follow good engineering practices as directed by the County Engineer in conjunction with recommendations outlined in the geotechnical report. When the Plasticity Index (PI) is greater than 20, a sufficient amount of lime shall be added as described in Item 260 of the current edition of the TxDOT Standard Specifications for Construction until the PI is less than 20. If the addition of lime as described in Item 260 is not feasible, an alternate stabilizing design shall be proposed and submitted to the County Engineer for approval. The subgrade shall be prepared and compacted to achieve a dry density per TxDOT Item 132. In addition, proof rolling may be required by the County Engineer.

B5.2 If Lime is necessary, then a sufficient amount of lime shall be added, as described in Item 260 of the current edition of the TxDOT Standard Specifications for Construction to properly stabilize subgrade. The use of Hydrated lime or lime slurry is approved; however, the use of Pelletized lime is not approved.

B5.3 Prior to lime stabilization, a sulfate test of in situ soils shall be performed by developer to confirm the appropriate means and methods of stabilization. Provide sulfate test to County Engineer prior to stabilization.

B5.4 Any variation to the County's stabilization requirements must be approved by the County Engineer.

B5.5 The subgrade shall be prepared and compacted to achieve a dry density per TxDOT Item 132. In addition, proof rolling may be required by the County Engineer.

B5.6 The subgrade shall be inspected and approved by an Independent Testing Laboratory and a certified copy of all inspection reports furnished to the County Engineer. The County Engineer must approve the report prior to application of the base material. All density test reports shall include a copy of the work sheet showing the percentage of the maximum dry (Proctor) density. The number and location of all subgrade tests shall be determined by the County Engineer.

B6 - Base Material

B6.1 Base material shall conform to Item 247 of the current edition of the TxDOT Standard Specifications for Construction, "Flexible Base". The base material shall be Type A Grade 4, or as approved by the County Engineer. Grade 4 material shall conform to the requirements of Table B6.1 below:

Table B6.1: Gradation Specification for TY A, Grade 4

Master gradation sieve size	Cumulative % Retained
2 ½"	-
1 ¾"	0
7/8"	10% - 35%
3/8"	30% - 65%
#4	45% - 75%
#40	70% - 90%
#200	87% - 95%

B6.2 Each layer of base course shall be tested for in-place dry density and measured for compacted thickness. The number and location of all base test samples shall be determined by the County Engineer.

B6.3 The base shall be prepared and compacted to achieve a minimum of 100% of the maximum (Proctor) dry density or as approved by the County Engineer upon recommendation by the testing laboratory. The maximum lift shall not exceed six inches. The base must be inspected and approved by an Independent Testing Laboratory and a certified copy of the test results furnished to the County Engineer for approval. Prior to the placement of the first lift of base, the stockpile shall be tested for the specifications found in Item 247 Table 1 and the result furnished to the County Engineer for approval.

B7 - Bituminous Pavement

B7.1 Urban roads require a minimum 2 inch wearing surface of HMAC Type D. The mix shall be from a TxDOT certified plant and the mix design shall be submitted to the County Engineer for approval prior to placement of the material.

B7.2 If Providing mixture Type C or D, use performance grade (PG) binder 70-22. Provide PG binder that does not contain Recycled Engine Oil Bottoms (REOBs) or Poly Phosphoric Acid (PPA). Recycled Asphalt Pavement (RAP) is not permitted for use as a component of the HMACP. The Contractor is also not permitted the use Recycled Asphalt Shingles (RAS) as a component of the HMACP.

B7.3 If providing mixture Type B, use PG binder 64-22. Provide PG binders that do not contain REOBs or PPA. For subsurface course Type B, the use of twenty percent (20%) RAP is permitted in the mix design. The Contractor is not permitted to use RAS as a component of the HMACP.

B7.4 Target laboratory molded density is 96.5% for all mixtures without RAP and when using a Texas Gyratory Compactor (TGC) for designing the mixture. When using Superpave Gyratory Compactor (SGC) to design mixtures, submit the SGC mix design to the Engineer for approval.

B7.5 All mixtures must meet the Hamburg requirement as stated in the table below.

High-Temperature Binder Grade	Test Method	Hamburg Wheel Test Requirements*
		Minimum # of Passes @ 0.5" Rut Depth, Tested @122°F
PG 64 or lower	Tex-242-F	7,000
PG 70	Tex-242-F	15,000
PG 76 or higher	Tex-242-F	20,000

** The County Engineer may accept Hamburg Wheel test results for production and placement if no more than 1of the 5 most recent tests is below the specified number of passes and the failing test is no more than 2,000 passes below the specified number of passes.*

B7.6 Submit any proposed adjustments or changes to a job mix formula to the County Engineer before production of the new job mix formula.

B7.7 Unless otherwise approved, provide Type B mixtures that have no less than 4.5% asphalt binder, and TY C and D mixtures with no less than 4.7% binder.

B7.8 For Mixture Design Verification, provide the Engineer with two 5-gallon buckets of each aggregate stockpile to be used on the project and three gallons of each PG binder to be used on the project. Also provide sufficient quantities of any other additives that will be used in the HMA mixture. This must be done prior to approval of the mix design, unless already performed within a one-year time period.

B7.9 Prior to allowing production of the trial batch, the Engineer will use the materials provided by the Contractor to perform the following tests to verify the HMA mixture design.

1. Indirect Tensile Test in accordance with Tex-226-F
2. Hamburg Wheel Test in accordance with Tex-242-F
3. Overlay Test in accordance with Tex-248-F
4. Cantabro Test in accordance with Tex-245-F

For mixtures designed with a Texas Gyratory Compactor (TGC), the Engineer may require that the target laboratory molded density be raised to no more than 97.5% or may lower the design number of gyrations to no less than 35 for mixtures designed with an SGC if any of the following conditions exist.

1. The Indirect Tensile Test results in a value greater than 200 PSI
2. The Hamburg Wheel Test results in a value less than 3.0 mm
3. The Overlay Test results in a value less than 100 cycles
4. The Cantabro Test results in a value of more than 20% loss

In lieu of, or in addition to evaluating the mixture design prior to allowing a trial batch to be produced, the Engineer may also evaluate the mixture produced during the trial batch for compliance with the 4 tests listed above.

B7.10 Contractor's Quality Control (CQC) test reports shall be submitted to the County Engineer on a daily basis. As a minimum, daily CQC testing on the produced mix shall include: Sieve Analysis TEX-200-F, Asphalt Content TEX-236-F, Hveem Stability TEX-208-F, Laboratory Compacted Density TEX-207-F, and Maximum Specific Gravity TEX-227-F. The number and location of all HMAC tests shall be determined by the County Engineer with a minimum of three, 6-inch diameter field cores secured and tested by the contractor from each day's paving. Each HMAC course shall be tested for in-place density, bituminous content and aggregate gradation, and shall be measured for compacted thickness. The number and location of all HMAC test samples shall be determined by the County Engineer.

B7.11 Rural roads may use either the specifications found in Section B7.1 or a two-course surface in accordance with Item 316, treatment wearing surface, of the current edition of the TxDOT Standard Specifications for Construction. The type and rate of asphalt and aggregate shall be indicated on the plans as a basis of estimate and shall be determined at the preconstruction conference. Aggregate used in the mix shall be on the TxDOT Quality Monitoring Schedule. Aggregate shall be Type B Grade 4. Gradation tests shall be required for each 300 cubic yards of material placed with a minimum of two tests per each grade per each project. Test results shall be reviewed by the County Engineer prior to application of the material.

B8 - Concrete Pavement

B8.1 In lieu of bituminous pavement, Portland cement concrete pavement may be used. In such cases, the pavement thickness shall be a minimum of 9 inches of concrete, and shall be jointed and reinforced in accordance with the detail included in Appendix J. The mix shall be from a TxDOT certified plant. The mix design shall be submitted to the County Engineer for approval prior to placement of the material.

B9 - Concrete - General

B9.1 Unless otherwise specified, concrete shall be in accordance with Item 421 of the current edition of the TxDOT Standard Specifications for Construction and be placed in accordance with the applicable item.

B9.2 All concrete shall be tested for compressive strength. One set of three concrete test cylinders shall be molded for every 50 cubic yards of concrete placed for each class of concrete per day, or at any other interval as determined by the County Engineer. A slump test shall be required with each set of test cylinders. One cylinder shall be tested for compressive strength at an age of seven days and the remaining two cylinders shall be tested at 28 days of age.

GENERAL CONSTRUCTION NOTES:

1. THESE PLANS WERE PREPARED, SEALED, SIGNED, AND DATED BY A TEXAS LICENSED PROFESSIONAL THEREFOR, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.

2. THIS PROJECT IS SUBJECT TO ALL CITY OF GEORGETOWN STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.

3. THIS SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN

4. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.

5. PRIVATE WATER SYSTEM FIRE LINES SHALL BE DUCTILE IRON PIPING FOR THE WATER MAIN TO THE BUILDING SPRINKLER SYSTEM, AND 200 PSI C900 PVC FOR ALL OTHERS

6. PUBLIC WATER MAINS SHALL BE TESTED BY THE CONTRACTOR AT 200 PSI FOR 15 MINUTES AND 150 PSI FOR 2 HOURS.

7. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.

8. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.

9. ALL WATER LINES ARE TO BE BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY OF GEORGETOWN STANDARDS AND SPECIFICATIONS.

10. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.

11. FLEXIBLE BASE MATERIAL FOR PUBLIC STREETS SHALL BE TXDOT TYPE A GRADE 1, UNLESS OTHERWISE INDICATED IN THE GEOTECHNICAL REPORT FOR THE PAVING DESIGN.

12. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE D UNLESS OTHERWISE SPECIFIED AND SHALL BE A MINIMUM OF 2 INCHES THICK ON PUBLIC STREETS AND ROADWAYS.

13. ALL SIDEWALK RAMPS ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.

14. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 2 YEARS IN THE AMOUNT OF 10% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.

15. RECORD DRAWINGS OF PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANCE OF THE PROJECT. THESE DRAWINGS SHALL BE A PDF EMAILED TO THE CITY DEVELOPMENT ENGINEER.

16. CONTRACTOR IS TO AVOID INSTALLATION OF IRRIGATION, PLANTINGS, SILT FENCE, ETC. IN THE BASE OVERBUILD.

STANDARD SEQUENCE OF CONSTRUCTION

May 31, 2016

1. Temporary erosion and sedimentation controls are to be installed as indicated on the approved site plan or subdivision construction plan and in accordance with the Stormwater Pollution Prevention Plan (SWPPP) that is required to be posted on the site. Install tree protection and initiate tree mitigation measures.
2. The Environmental Project Manager or Site Supervisor must contact the Watershed Protection Department, Environmental Inspection, at 512-930-3640, 72 hours prior to the scheduled date of the required on-site preconstruction meeting.
3. The Environmental Project Manager, and/or Site Supervisor, and/or Designated Responsible Party, and the General Contractor will follow the Storm Water Pollution Prevention Plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with City Inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.
4. Rough grade the pond(s) at 100% proposed capacity. Either the permanent outlet structure or a temporary outlet must be constructed prior to development of embankment or excavation that leads to ponding conditions. The outlet system must consist of a sump pit outlet and an emergency spillway meeting the requirements of the Drainage Criteria Manual and/or the Environmental Criteria Manual, as required. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until installation of the permanent water quality pond(s).
5. Temporary erosion and sedimentation controls will be inspected and maintained in accordance with the Storm Water Pollution Prevention Plan (SWPPP) posted on the site.
6. Begin site clearing/construction (or demolition) activities.
7. Rough grade streets. Geotechnical Engineers shall verify pavement design is appropriate.
8. Install all utilities to be located under the proposed pavement.
9. Environmental Project Manager or Site Supervisor will schedule a mid-construction conference to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site. Participants shall include the City Inspector, Project Engineer, General Contractor and Environmental Project Manager or Site Supervisor. The anticipated completion date and final construction sequence and inspection schedule will be coordinated with the appropriate City Inspector.
10. Complete all underground installations within the right-of-way.
11. Regrade streets to subgrade.
12. Ensure that all underground utility crossings are completed. Lay first course base material on all streets.
13. Install curb.
14. Lay final base course on all streets.
15. Lay asphalt.
16. Permanent water quality ponds or controls will be cleaned out and filter media will be installed prior to/concurrently with revegetation of site..
17. Complete construction and start revegetation of the site and installation of landscaping.
18. Upon completion of the site construction and revegetation of a project site, the design engineer shall submit an engineer's letter of concurrence to the Watershed Protection and Development Review Department indicating that construction, including revegetation, is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate City Inspector.
19. Upon completion of landscape installation of a project site, the Landscape Architect shall submit a letter of concurrence to the Watershed Protection and Development Review Department indicating that the required landscaping is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate City Inspector.
20. After a final inspection has been conducted by the City Inspector and with approval from the City Inspector, remove the temporary erosion and sedimentation controls and complete any necessary final revegetation resulting from removal of the controls. Conduct any maintenance and rehabilitation of the water quality ponds or controls.

EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES:

1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION), CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
2. ALL PROJECTS WITHIN THE RECHARGE ZONE OF THE EDWARDS AQUIFER SHALL SUBMIT A BEST MANAGEMENT PRACTICES AND WATER POLLUTION AND ABATEMENT PLAN TO THE TCEQ FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
3. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN AND WATER POLLUTION ABATEMENT PLAN. DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNERS REPRESENTATIVE.
4. ALL PLANTING SHALL BE DONE BETWEEN MAY 1 AND SEPTEMBER 15 EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING. IF PLANTING IS AUTHORIZED TO BE DONE OUTSIDE THE DATES SPECIFIED, THE SEED SHALL BE PLANTED WITH THE ADDITION OF WINTER FESCUE (KENTUCKY 31) AT A RATE OF 100LB/ ACRE. GRASS SHALL BE COMMON BERMUDA GRASS, HULLED, MINIMUM 82% PURE LIVE SEED. ALL GRASS SEED SHALL BE FREE FROM NOXIOUS WEED, GRADE "A" RECENT CROP, RECLEANED AND TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. SEED SHALL BE FURNISHED IN SEALED, STANDARD CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
5. ALL DISTURBED AREAS TO BE RESTORED AS NOTED IN THE WATER POLLUTION ABATEMENT PLAN.
6. THE PLANTED AREA TO BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF FOUR (4) INCHES. THE IRRIGATION TO OCCUR AT 10-DAY INTERVALS DURING THE FIRST TWO MONTHS TO INSURE GERMINATION AND ESTABLISHMENT OF THE GRASS. RAINFALL OCCURRENCES OF 1/2 INCH OR GREATER TO POSTPONE THE WATERING SCHEDULE ONE WEEK.
7. RESTORATION TO BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1-1/2 INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 225 SQUARE FEET EXIST.
8. A MINIMUM OF FOUR (4) INCHES OF TOPSOIL TO BE PLACED IN ALL AREAS DISTURBED BY CONSTRUCTION.
9. THE CONTRACTOR TO HYDROMULCH OR SOD (AS SHOWN ON PLANS) ALL EXPOSED CUTS AND FILLS UPON COMPLETION OF CONSTRUCTION.
10. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINE.
11. TO AVOID SOIL COMPACTION, CONTRACTOR SHALL NOT ALLOW VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IN THE TREE DRIPLINES AREAS.
12. WHERE A FENCE IS CLOSER THAN FOUR (4) FEET TO TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF EIGHT (8) FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE FENCING.
13. TREES TO BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
14. ANY ROOT EXPOSED BY CONSTRUCTION ACTIVITY TO BE PRUNED FLUSH WITH THE SOIL BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
15. CONTRACTOR TO PRUNE VEGETATION TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT BEFORE DAMAGE OCCURS (RIPPING OR BRANCHES, ETC.). ALL FINISHED PRUNING TO BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE "NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES").
16. THE CONTRACTOR TO INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/4 INCH TO VERIFY THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY ACCUMULATED SEDIMENT AFTER A SIGNIFICANT RAINFALL TO BE REMOVED AND PLACED IN THE OWNER DESIGNATION SPOIL DISPOSAL SITE. THE CONTRACTOR TO CONDUCT PERIODIC INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROLS AND TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE.
17. WHERE THERE IS TO AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT IMMEDIATELY ADJACENT TO A PROTECTED TREE, ERECT THE FENCE APPROXIMATELY TWO TO FOUR FEET (2'-4') BEHIND THE AREA IN QUESTION.
18. NO ABOVE AND/ OR BELOW GROUND TEMPORARY FUEL STORAGE FACILITIES TO BE STORED ON THE PROJECT SITE.
19. IF EROSION AND SEDIMENTATION CONTROL SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER'S REPRESENTATIVE AND THE CONTRACTOR TO EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS FOR DAMAGE PRIOR TO CONSTRUCTION. ANY DAMAGE TO PREEXISTING EROSION AND SEDIMENTATION CONTROLS NOTED TO BE REPAIRED AT OWNER'S EXPENSE.
20. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATES SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.

TCEQ NOTES:

March 4, 2015

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. Construction for public water systems must always, at a minimum, meet TCEQ's "Rules and Regulations for Public Water Systems.
2. An appointed engineer shall notify in writing the local TCEQ's Regional Office when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner shall notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the work has been completed essentially according to the plans and change orders on file with the commission as required in 30 TAC §290.39(h)(3).
3. All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI, as required by 30 TAC §290.44(a)(1).
4. Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less, as required by 30 TAC §290.44(a)(2).
5. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply, as required by 30 TAC §290.44(a)(3).
6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface, as required by 30 TAC §290.44(a)(4).
7. Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.

   o The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

   $Q = \frac{LD\sqrt{P}}{148{,}000}$

   Where:
   Q = the quantity of makeup water in gallons per hour,
   L = the length of the pipe section being tested, in feet,
   D = the nominal diameter of the pipe in inches, and
   P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

   o The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

   $L = \frac{SD\sqrt{P}}{148{,}000}$

   Where:
   L = the quantity of makeup water in gallons per hour,
   S = the length of the pipe section being tested, in feet,
   D = the nominal diameter of the pipe in inches, and
   P = the average test pressure during the hydrostatic test in pounds per square inch (psi).
8. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures to 0.25 percent.
9. The system must be designed to maintain a minimum pressure of 35 psi at all points within the distribution network at flow rates of at least 1.5 gallons per minute per connection. When the system is intended to provide firefighting capability, it must also be designed to maintain a minimum pressure of 20 psi under combined fire and drinking water flow conditions as required by 30 TAC §290.44(d).
10. The contractor shall install appropriate air release devices in the distribution system at all points where topography or other factors may create air locks in the lines. All vent openings to the atmosphere shall be covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent as required by 30 TAC §290.44(d)(1).
11. Pursuant to 30 TAC §290.44(d)(4), accurate water meters shall be provided. Service connections and meter locations should be shown on the plans.
12. Pursuant to 30 TAC §290.44(d)(5), sufficient valves and blow offs to make repairs. The engineering report shall establish criteria for this design.
13. Pursuant to 30 TAC §290.44(d)(6), the system shall be designed to afford effective circulation of water with a minimum of dead ends. All dead-end mains shall be provided with acceptable flush valves and discharge piping. All dead-end lines less than two inches in diameter will not require flush valves if they end at a customer service. Where dead ends are necessary as a stage in the growth of the system, they shall be located and arranged to ultimately connect the ends to provide circulation.
14. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes and septic tank drain fields, If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet 30 TAC §290.44(e)(1-4) of the current rules.
15. Pursuant to 30 TAC §290.44(e)(5), the separation distance from a potable waterline to a wastewater main or lateral manhole or clean out shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the spring line with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.
16. Pursuant to 30 TAC §290.44(e)(6), fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction.
17. Pursuant to 30 TAC §290.44(e)(7), suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.
18. Pursuant to 30 TAC §290.44(e)(8), waterlines shall not be installed closer than ten feet to septic tank drain fields.
19. Pursuant to 30 TAC §290.44(f)(1), the contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation.
20. Pursuant to 30 TAC §290.44(f)(2), when waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the water main shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested.
21. 21. The contractor shall disinfect the new water mains in accordance with AWWA Standard C-651 and then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer, in accordance with 30 TAC §290.44(f)(3).

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
GENERAL NOTES

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/15/20
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: se-cvr.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

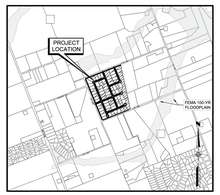
SHEET NO. 2 OF 51 SHEETS

2024-24-CON

Date/Time Fri, 19 Sep 2025 - 4:19pm
Path/Name L:\LJA\492\100-Serene Estates\Submittal Drawings\se-cvr.dwg
User jmartinez
Last Modified Sep. 19, 25 - 15:43
Plot Date/Time Sep. 19, 25 - 16:18:24

SERENE ESTATES
PRELIMINARY PLAT
CR 246 & CR 249

1. UTILITY PROVIDERS FOR THIS DEVELOPMENT ARE
   WATER: CITY OF GEORGETOWN
   WASTEWATER: CITY OF GEORGETOWN SEWAGE FACILITIES
   ELECTRIC: PEDERNALES ELECTRIC COOPERATIVE
8. NO LOT IN THIS SUBDIVISION IS ENCROACHED BY A SPECIAL FLOOD HAZARD AREA INUNDATED BY THE 100-YEAR (1% ANNUAL CHANCE) FLOOD, AS IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 48491C0105E, EFFECTIVE DATE SEPTEMBER 26, 2008 FOR WILLIAMSON COUNTY, TEXAS.
5. ALL STRUCTURES/OBSTRUCTIONS ARE PROHIBITED IN DRAINAGE EASEMENTS.
6. IN ORDER TO PROMOTE DRAINAGE AWAY FROM A STRUCTURE, THE SLAB ELEVATION SHOULD BE BUILT AT LEAST EIGHTEEN (18) INCHES ABOVE THE HIGHEST POINT OF THE LOT AND SHOULD BE GRADED AWAY FROM THE STRUCTURE AT A SLOPE OF 1/2" PER FOOT FOR A DISTANCE OF AT LEAST TEN (10) FEET.
5. ALL SEDIMENTATION, FILTRATION, DETENTION, AND/OR RETENTION BASINS AND RELATED APPURTENANCES SHOWN SHALL BE SITUATED WITHIN A DRAINAGE EASEMENT OR DRAINAGE LOT. THE OWNER(S), HOA, OR ASSIGNEE OF THE DRAINAGE LOT SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE DRAINAGE LOT. THE OWNER(S) SHALL MAINTAIN SAME AND BE RESPONSIBLE FOR THEIR MAINTENANCE, ROUTINE INSPECTION, AND UPKEEP.
6. PARKLAND DEDICATION REQUIREMENTS ARE BEING MET BY FEE-IN-LIEU.
7. THE OWNER OF EACH LOT IS RESPONSIBLE FOR THE PROPER CARE AND TREATMENT OF TREES, INCLUDING, BUT NOT LIMITED TO, THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE CITY OF GEORGETOWN. APPROVED REMOVAL DOES NOT REQUIRE MODIFICATION OF THE PLAT.
8. ON RESIDENTIAL LOTS CONTAINING HERITAGE TREES ARE CONFIGURED AND DESIGNED SO THAT THE LOT IS DEVELOPABLE FOR THE INTENDED PURPOSE WITHOUT REQUIRING REMOVAL OF THE HERITAGE TREES OR EXCEEDING THE PERCENTAGE OF ALLOWABLE DISTURBANCE WITHIN THE HERITAGE TREES CRZ.
9. THERE ARE NO ON-SITE SEWAGE FACILITIES (OSSF) PROPOSED FOR ANY OF THE LOTS/TRACTS WITHIN THIS PLAT.
10. THE MONUMENTS OF THIS PLAT HAVE BEEN ROTATED TO THE NAD 83/93 HARN - TEXAS CENTRAL ZONE AND NAVD 88.
11. IMPERVIOUS COVERAGE PLAT NOTES -
    THE MAXIMUM IMPERVIOUS COVERAGE PER DRAINAGE LOT IS 1500 S.F.
    THE MAXIMUM IMPERVIOUS COVERAGE PER LOT FOR ALL OTHER LOTS IS 7700 S.F.
12. THE LANDOWNER ASSUMES ALL RISKS ASSOCIATED WITH IMPROVEMENTS LOCATED IN THE RIGHT OF WAY, OR ROAD DRAINAGE EASEMENTS, AND AGREES TO RELEASE AND HOLD HARMLESS THE CITY OF GEORGETOWN, LANDOWNER INDEMNIFIES AND HOLDS THE CITY OF GEORGETOWN, WILLIAMSON COUNTY, THEIR OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY LIABILITY OWING TO PROPERTY DEFECTS OR NEGLIGENCE NOT ATTRIBUTABLE TO THE CITY OR COUNTY. THE CITY OF GEORGETOWN AND WILLIAMSON COUNTY ARE NOT RESPONSIBLE FOR ANY PART THE OWNER OF THE IMPROVEMENTS WILL BE RESPONSIBLE FOR THE RELOCATION AND/OR REPLACEMENT OF THE IMPROVEMENTS.
13. ALL ROADWAYS, ALL STREETS, ROADS, AND OTHER PUBLIC THOROUGHFARES AND ANY BRIDGES OR CULVERTS NECESSARY TO BE CONSTRUCTED OR PLACED IS THE RESPONSIBILITY OF THE OWNERS OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY THE CITY OF GEORGETOWN AND/OR WILLIAMSON COUNTY. NEITHER THE CITY OF GEORGETOWN NOR WILLIAMSON COUNTY ASSUMES ANY OBLIGATION TO BUILD ANY OF THE STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT OR OF CONSTRUCTING ANY OF THE BRIDGES OR DRAINAGE IMPROVEMENTS IN CONNECTION THEREWITH. NEITHER THE CITY OF GEORGETOWN NOR WILLIAMSON COUNTY ASSUMES ANY RESPONSIBILITY FOR DRAINAGE WAYS OR EASEMENTS IN THE SUBDIVISION, OTHER THAN THOSE DRAINING OR PROTECTING THE ROAD SYSTEM AND STREETS WITHIN THE JURISDICTION OF THE ROAD.
14. NEITHER THE CITY OF GEORGETOWN NOR WILLIAMSON COUNTY ASSUMES ANY RESPONSIBILITY FOR THE ACCURACY OF REPRESENTATIONS BY OTHER PARTIES IN THIS PLAT. FLOODPLAIN DATA, IN PARTICULAR, MAY CHANGE DEPENDING ON FUTURE ANALYSES AND REVISIONS. PROSPECTIVE PURCHASERS AND/OR USERS OF ALL LOTS SHOULD SATISFY THEMSELVES BY THIS PLAT MUST INSTALL AT THEIR OWN EXPENSE ALL TRAFFIC CONTROL DEVICES AND SIGNAGE THAT MAY BE REQUIRED BEFORE THE STREETS IN THE SUBDIVISION HAVE FINALLY BEEN ACCEPTED FOR MAINTENANCE BY THE CITY OF GEORGETOWN.
15. RIGHT-OF-WAY EASEMENTS FOR WIDENING ROADWAYS OR IMPROVING DRAINAGE SHALL BE MAINTAINED BY THE LANDOWNER (ATL ROAD OR DRAINAGE IMPROVEMENTS ARE ACTUALLY CONSTRUCTED ON THE PROPERTY. THE CITY OF GEORGETOWN AND/OR WILLIAMSON COUNTY SHALL HAVE THE RIGHT OF ROAD WIDENING EASEMENT FOR CONSTRUCTION, IMPROVEMENT, OR MAINTENANCE OF THE ADJACENT ROAD.
16. UNLESS OTHERWISE NOTED HEREIN, ALL EASEMENTS DEDICATED TO THE CITY OF GEORGETOWN BY THIS PLAT SHALL BE NON-EXCLUSIVE, PERPETUAL, AND IRREVOCABLE. THE EASEMENT AND RIGHTS HEREIN GRANTED SHALL INURE TO THE SUCCESSORS, AND ASSIGNS SHALL NOT CONVEY ANY OTHER EASEMENT, LICENSE, OR CONFLICTING RIGHT TO USE IN ANY MANNER, THE AREA (OR ANY PORTION THEREOF) COVERED BY THIS GRANT.
17. THE RIGHTS GRANTED TO THE CITY OF GEORGETOWN BY THIS PLAT SHALL ALSO INCLUDE THE FOLLOWING RIGHTS (1) THE RIGHT OF THE CITY TO CHANGE THE SIZE OF ANY FACILITIES INSTALLED, MAINTAINED, OR OPERATED WITHIN THE EASEMENT AREA; (2) THE RIGHT OF THE CITY TO RELOCATE ANY FACILITIES WITHIN THE EASEMENT AREA, WHETHER THE SAME ARE INSTALLED BY THE CITY OR OTHERWISE; AND (3) THE RIGHT OF THE CITY TO REMOVE OBSTRUCTIONS, WHICH ENDANGER OR MAY INTERFERE WITH THE EFFICIENCY AND MAINTENANCE OF ANY FACILITIES WITHIN THE EASEMENT AREA.
18. THIS PLAT IS SUBJECT TO THE PROVISIONS OF THE CITY OF GEORGETOWN WATER CONSERVATION ORDINANCE.
19. STATE-OWNED RIVERBEDS AND BEDS OF NAVIGABLE STREAMS IN THE PUBLIC DOMAIN ARE HELD IN TRUST FOR THE PUBLIC. THERE IS HEREBY GRANTED FOR THE USE AND BENEFIT OF THE PUBLIC A CONTINUING ACCESS EASEMENT FOR PASSAGE ALONG THE BANKS OF ALL NAVIGABLE STREAMS IN THE SUBDIVISION, TOGETHER WITH THE RIGHT OF PASSAGE ALONG THE BANKS ACROSS ANY PORTION OF THE PROPERTY NECESSITATED BY THE MEANDERING OR OTHER NATURAL SHIFTING OF THE RIVER IN ITS NATURAL STATE.
20. ALL STRUCTURES/OBSTRUCTIONS ARE PROHIBITED IN DRAINAGE EASEMENTS.
21. IMPROVEMENTS WITHIN THE COUNTY ROAD RIGHT-OF-WAY INCLUDING, BUT NOT LIMITED TO, LANDSCAPING, IRRIGATION LIGHTING, CUSTOM SIGNS, IS PROHIBITED WITHOUT FIRST OBTAINING AN EXECUTED LICENSE AGREEMENT WITH WILLIAMSON COUNTY.
22. ALL PUBLIC ROADWAYS AND EASEMENTS AS SHOWN ON THIS PLAT ARE FREE OF LIENS.
23. NO STRUCTURE OR LAND IN THIS PLAT SHALL HEREAFTER BE OCCUPIED OR ALTERED WITHOUT FIRST OBTAINING A CERTIFICATE OF OCCUPANCY FROM THE CITY OF GEORGETOWN BUILDING INSPECTOR.
24. ALL SIDEWALKS SHALL BE MAINTAINED BY EACH OF THE ADJACENT PROPERTY OWNERS.
25. MAINTENANCE RESPONSIBILITY FOR DRAINAGE WILL NOT BE ACCEPTED BY THE COUNTY OTHER THAN THAT ACCEPTED FOR MAINTENANCE OF THE COUNTY ROADWAY SYSTEM. ALL MAINTENANCE RESPONSIBILITY FOR STORM WATER MANAGEMENT CONTROLS WILL REMAIN WITH THE OWNERS.
26. DRIVEWAYS SHALL ONLY CONNECT TO AN INTERNAL PLATTED ROAD AND NOT TO CR 249 OR CR 246, THE ADJACENT COUNTY ROADS.



LOCATION MAP
SCALE: 1" = 1000'

SUBMITTAL DATE: JULY 17 2023

LEGAL DESCRIPTION

A 98.196-ACRE TRACT OF LAND, MORE OR LESS, SITUATED IN THE CHARLES DELANEY SURVEY, ABSTRACT NO. 181, WILLIAMSON COUNTY, TEXAS, BEING ALL OF A CALLED 98.19 ACRE TRACT CONVEYED TO SERENE ESTATES, LLC, AND RECORDED IN DOCUMENT NO. 2022029766, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.)

DEVELOPER/OWNER: SERENE ESTATES, LLC
3321 BURNS LANE
AUSTIN, TEXAS 78732

ENGINEER: LJA ENGINEERING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
CONTACT PERSON: MATT THOMAS, P.E.
PHONE # (512) 439-4700
FAX # (512) 439-4716

SURVEYOR: LJA SURVEYING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
CONTACT PERSON: MATT OVERALL, R.P.L.S.
PHONE # (512) 439-4700

THE BEARING BASIS FOR THIS SURVEY PLAT WAS DETERMINED FROM GPS OBSERVATIONS AND REFERS TO GRID NORTH OF THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD-83, SOUTH CENTRAL ZONE.

SURFACE TO GRID SCALE FACTOR = 0.99992
GRID TO SURFACE SCALE FACTOR = 1.00010
SCALED ABOUT 0,0

Approved by the City of Georgetown on:
June 12, 2024
Per Section 3.06.010.C of the Unified Development Code, this Preliminary Plat will expire on **June 12, 2029** if a Final Plat is not recorded.

GEORGETOWN TEXAS

REVISIONS / CORRECTIONS						
Number	Description	Revise (R) Add (A) Void (V) Route No. #	Total # Sheets in Set	W.O. Approval Date	Date Imaged	City of Georgetown Approval Date

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

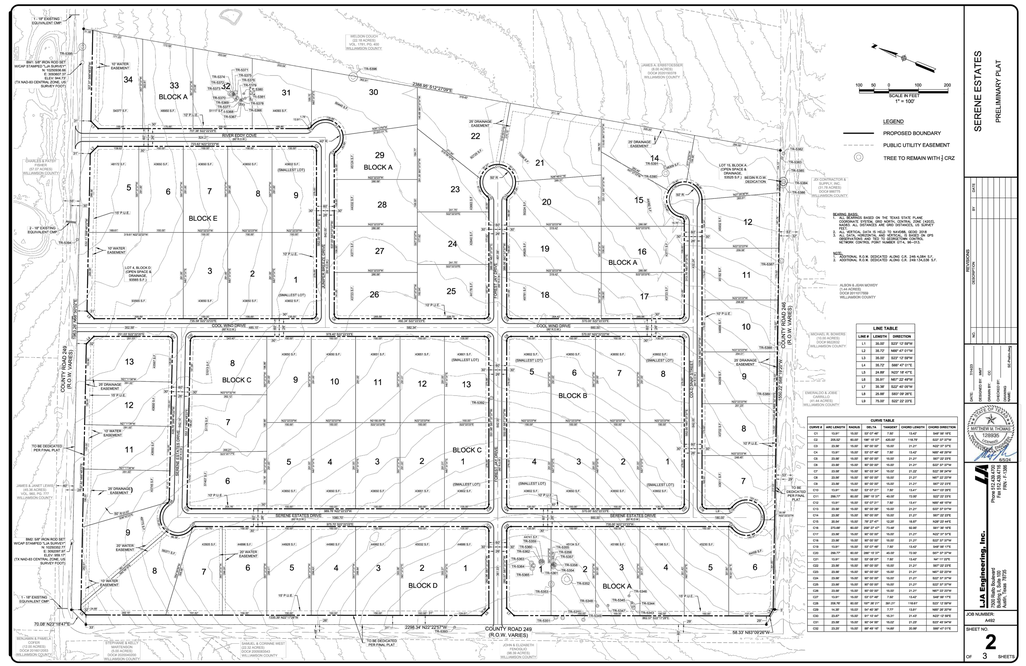
SHEET 1 OF 3
2023-17-PP

SHEET	DESCRIPTION
1.	COVER SHEET
2.	PRELIMINARY PLAT
3.	LEGAL DESCRIPTION

GENERAL INFORMATION
TOTAL ACREAGE: 98.19 ACRES
LINEAR FEET OF NEW ROAD: 8,700'
ACREAGE OF ROW: 15.47 ACRES
NUMBER OF DRAINAGE LOTS: 2
ACREAGE OF DRAINAGE LOTS: 3.38 ACRES
NUMBER OF OTHER LOTS: 75
ACREAGE OF OTHER LOTS: 79.84 ACRES
NUMBER OF LOTS: 77
NUMBER OF BLOCKS: 5

ALLOWABLE IMPERVIOUS COVER TABLE		
AREA	# OF LOTS	I. C. (S.F.)
ROADWAY		288861
DRAINAGE LOTS	2	1500 S.F.
ALL OTHER LOTS	75	7900 S.F.

STREET SUMMARY							
STREET NAME	STREET TYPE	MAINTENANCE	ROW	PSD/FSD	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
SERENE ESTATES DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	28'	2,063'	RIBBON	N/A	25
COOL KIND DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	28'	2,060'	RIBBON	N/A	25
COLD SNAP STREET	LOCAL STREET - RURAL	PUBLIC	60'	28'	1,104'	RIBBON	N/A	25
FOREST JAY DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	28'	1,404'	RIBBON	N/A	25
JUNIPER BREEZE DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	28'	843'	RIBBON	N/A	25
RIVER EDDY COVE	LOCAL STREET - RURAL	PUBLIC	60'	28'	324'	RIBBON	N/A	25



LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	30.00'	S22°18'47"W
L2	30.70'	N86°49'17"W
L3	30.00'	S22°18'47"W
L4	30.70'	S86°49'17"E
L5	24.88'	N22°18'47"E
L6	30.00'	S67°41'13"E
L7	35.36'	S22°18'47"W
L8	22.88'	S67°41'38"E
L9	75.00'	S22°23'20"E

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA	CHORD LENGTH	CHORD DIRECTION
C1	13.47'	15.00'	51°27.40"	13.02'	S66°35'18"E
C2	223.52'	30.00'	854°31.47"	43.00'	S22°12'27"W
C3	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C4	13.01'	15.00'	51°07.40"	12.60'	N66°42'27"W
C5	23.56'	15.00'	90°00.00"	21.21'	S67°32'33"E
C6	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C7	23.56'	15.00'	90°00.00"	21.21'	S67°32'33"E
C8	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C9	13.01'	15.00'	51°07.40"	12.60'	N66°42'27"W
C10	13.47'	15.00'	51°27.40"	13.02'	S66°35'18"E
C11	223.52'	30.00'	854°31.47"	43.00'	S22°12'27"W
C12	23.56'	15.00'	90°00.00"	21.21'	S67°32'33"E
C13	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C14	23.56'	15.00'	90°00.00"	21.21'	S67°32'33"E
C15	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C16	223.52'	30.00'	854°31.47"	43.00'	S22°12'27"W
C17	23.56'	15.00'	90°00.00"	21.21'	S67°32'33"E
C18	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C19	23.56'	15.00'	90°00.00"	21.21'	S67°32'33"E
C20	23.56'	15.00'	90°00.00"	21.21'	N22°12'27"E
C21	13.47'	15.00'	51°27.40"	13.02'	N66°35'18"W
C22	223.52'	30.00'	854°31.47"	43.00'	N22°12'27"E
C23	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C24	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C25	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C26	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C27	13.01'	15.00'	51°07.40"	12.60'	S66°42'27"E
C28	13.47'	15.00'	51°27.40"	13.02'	N66°35'18"W
C29	223.52'	30.00'	854°31.47"	43.00'	N22°12'27"E
C30	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C31	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C32	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C33	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C34	13.01'	15.00'	51°07.40"	12.60'	S66°42'27"E
C35	13.47'	15.00'	51°27.40"	13.02'	N66°35'18"W
C36	223.52'	30.00'	854°31.47"	43.00'	N22°12'27"E
C37	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C38	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C39	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C40	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C41	13.01'	15.00'	51°07.40"	12.60'	S66°42'27"E
C42	13.47'	15.00'	51°27.40"	13.02'	N66°35'18"W
C43	223.52'	30.00'	854°31.47"	43.00'	N22°12'27"E
C44	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C45	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C46	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C47	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W
C48	13.01'	15.00'	51°07.40"	12.60'	S66°42'27"E
C49	13.47'	15.00'	51°27.40"	13.02'	N66°35'18"W
C50	223.52'	30.00'	854°31.47"	43.00'	N22°12'27"E
C51	23.56'	15.00'	90°00.00"	21.21'	N67°32'33"W
C52	23.56'	15.00'	90°00.00"	21.21'	S22°12'27"W

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 7/17/2023
DESIGNED BY: MJET
DRAWN BY: CC
CHECKED BY: MJT
SURVEY: N/A
PROJECT MANAGER: MJT

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492
SHEET NO. 2 OF 3 SHEETS

SERENE ESTATES
PRELIMINARY PLAT

I, MATTHEW M. THOMAS, REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT NO PORTION OF THIS SUBDIVISION IS IN THE EDWARDS AQUIFER RECHARGE ZONE AND NO PORTION IS ENCROACHED BY A ZONE AE FLOOD AREA, AS DENOTED HEREIN, AND AS DEFINED BY FEDERAL EMERGENCY MANAGEMENT ADMINISTRATION FLOOD HAZARD BOUNDARY MAP, COMMUNITY PANEL NUMBER 48491C0105E, EFFECTIVE DATE SEPTEMBER 26, 2008, AND THAT EACH LOT CONFORMS TO THE CITY OF GEORGETOWN REGULATIONS.

THE FULLY DEVELOPED, CONCENTRATED STORMWATER RUNOFF RESULTING FROM THE ONE HUNDRED (100) YEAR FREQUENCY STORM IS CONTAINED IS WITHIN THE DRAINAGE EASEMENT SHOWN AND/OR PUBLIC RIGHTS-OF WAY DEDICATED BY THIS PLAT.

TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT AUSTIN, TRAVIS, TEXAS, THIS DAY _5th_ OF _JUNE_, 2024.

MATTHEW M. THOMAS
REGISTERED PROFESSIONAL ENGINEER
NO. 139939 STATE OF TEXAS

I, MATT OVERALL, REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE FROM AN ACTUAL SURVEY MADE ON THE GROUND OF THE PROPERTY LEGALLY DESCRIBED HEREON, AND THAT THERE IS NO APPARENT DISCREPANCIES, CONFLICTS, OVERLAPPING OF IMPROVEMENTS, VISIBLE UTILITY LINES OR ROADS IN PLACE, EXCEPT AS SHOWN ON THE ACCOMPANYING PLAT, AND THAT THE CORNER MONUMENTS SHOWN HEREON WERE PROPERLY PLACED UNDER MY SUPERVISION IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS OF THE CITY OF GEORGETOWN, TEXAS.

TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT AUSTIN, TRAVIS, TEXAS, THIS DAY _5th_ OF _JUNE_, 2024.

MATT OVERALL
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 6864 STATE OF TEXAS

LEGAL DESCRIPTION

DESCRIPTION OF A 98.196 ACRE TRACT OF LAND, MORE OR LESS, SITUATED IN THE CHARLES DELANEY SURVEY, ABSTRACT NO. 181, WILLIAMSON COUNTY, TEXAS, BEING ALL OF A CALLED 98.19 ACRE TRACT CONVEYED TO SERENE ESTATES, LLC, AND RECORDED IN DOCUMENT NO. 2022029766, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.); SAID 98.196 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT A 1/2-INCH IRON ROD (GRID NORTHING: 10,248,070.42 U.S. SURVEY FEET, GRID EASTING: 3,092,788.45 U.S. SURVEY FEET) FOUND ON THE NORTH RIGHT-OF-WAY LINE OF COUNTY ROAD 246, FOR A SOUTHWESTERLY CORNER OF THIS TRACT;

THENCE NORTH 83 DEGREES 09 MINUTES 26 SECONDS WEST, WITH THE NORTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 246 AND A SOUTHWESTERLY LINE OF THIS TRACT, A DISTANCE OF 58.33 FEET TO A 5/8-INCH IRON ROD WITH CAP STAMPED "LJA SURVEY" SET ON THE EAST RIGHT-OF-WAY LINE OF COUNTY ROAD 249, FOR A SOUTHWEST CORNER OF THIS TRACT;

THENCE NORTH 22 DEGREES 22 MINUTES 57 SECONDS WEST, WITH THE EAST RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 249 AND THE WESTERLY LINE OF THIS TRACT, A DISTANCE OF 2,298.34 FEET TO A 1/2-INCH IRON ROD FOUND AT A 3-INCH PIPE FENCE CORNER POST, FOR A NORTHWEST CORNER OF THIS TRACT;

THENCE NORTH 23 DEGREES 18 MINUTES 47 SECONDS EAST, WITH THE SOUTHEASTERLY RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 249 AND A NORTHWESTERLY LINE OF THIS TRACT, A DISTANCE OF 70.08 FEET TO A 1/2-INCH IRON ROD FOUND AT A 3-INCH PIPE FENCE CORNER POST, ON THE SOUTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 249, FOR A NORTHWEST CORNER OF THIS TRACT;

THENCE NORTH 68 DEGREES 50 MINUTES 02 SECONDS EAST, WITH THE SOUTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 249 AND THE NORTH LINE OF THIS TRACT, A DISTANCE OF 1,963.26 FEET TO A 1/2-INCH IRON ROD FOUND AT A 3-INCH PIPE FENCE CORNER POST FOR THE NORTHWEST CORNER OF A CALLED 14.09 ACRE TRACT CONVEYED TO WELDON COUCH, RECORDED IN VOLUME 1781, PAGE 400, DEED RECORDS, WILLIAMSON COUNTY, TEXAS (D.R.W.C.TX.), AND THE NORTHEAST CORNER OF THIS TRACT;

THENCE SOUTH 12 DEGREES 27 MINUTES 09 SECONDS EAST, WITH THE COMMON LINE OF SAID 14.09 ACRE TRACT AND THIS TRACT, A DISTANCE OF 2,388.95 FEET TO A 1/2-INCH IRON ROD FOUND AT A 3-INCH PIPE FENCE CORNER POST ON THE NORTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 246, FOR THE SOUTHWEST CORNER OF A CALLED 8.00 ACRE TRACT CONVEYED TO JAMES ARTHUR ERBSTOESSER, RECORDED IN VOLUME 2487, PAGE 506, D.R.W.C.TX., AND THE SOUTHEAST CORNER OF THIS TRACT;

THENCE SOUTH 68 DEGREES 19 MINUTES 20 SECONDS WEST, WITH THE NORTH RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 246 AND THE SOUTH LINE OF THIS TRACT, A DISTANCE OF 1,100.22 FEET TO THE **POINT OF BEGINNING** AND CONTAINING 98.196 ACRES OF LAND, MORE OR LESS.

Bearing Basis: All bearings shown are based on the Texas State Plane Coordinate System, Grid North, Central Zone (4203), NAD83. All distances are Grid Values. U.S. Survey Feet.

Matt Overall, RPLS No. 6864 — 11 July 2023
LJA Surveying, Inc.
7500 Rialto Blvd., Bldg. II, Ste. 150
Austin, Texas 78735
Texas Firm No. 10194382

TREE TABLE				
KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
NP	TR-5343	12"	8.5'	HACKBERRY
NP	TR-5344	24" (11", 10")	8'	HACKBERRY
NP	TR-5345	8"	4'	HACKBERRY
NP	TR-5346	8"	4'	HACKBERRY
NP	TR-5347	8"	4'	HACKBERRY
NP	TR-5348	10"	5'	HACKBERRY
NP	TR-5349	14" (9", 8")	8'	HACKBERRY
P	TR-5350	13"	6.5'	LIVE OAK
NP	TR-5351	14"	7'	HACKBERRY
HT	TR-5352	37"	18.5'	LIVE OAK
P	TR-5353	20"	10'	LIVE OAK
P	TR-5354	16"	8'	LIVE OAK
P	TR-5355	14"	7'	LIVE OAK
P	TR-5356	8"	4'	LIVE OAK
P	TR-5357	14"	7'	LIVE OAK
P	TR-5358	14"	7'	LIVE OAK
NP	TR-5359	8"	4'	HACKBERRY
P	TR-5360	14"	7'	LIVE OAK
P	TR-5361	20"	10'	LIVE OAK
NP	TR-5362	9"	4.5'	HACKBERRY
P	TR-5363	15"	7.5'	LIVE OAK
P	TR-5364	14"	7'	LIVE OAK
P	TR-5365	15" (10", 9")	7.5'	LIVE OAK
P	TR-5366	8"	4'	LIVE OAK
P	TR-5367	8"	4'	LIVE OAK
P	TR-5368	9"	4.5'	LIVE OAK
P	TR-5369	9"	4.5'	LIVE OAK
P	TR-5370	15" (8", 11")	7.5'	LIVE OAK
P	TR-5371	9"	4.5'	LIVE OAK
P	TR-5372	17" (12", 10")	8.5'	LIVE OAK
P	TR-5373	18" (14", 10")	9.5'	LIVE OAK
NP	TR-5374	9"	4.5'	HACKBERRY
P	TR-5375	13" (10", 6")	6.5'	LIVE OAK
P	TR-5376	11"	5.5'	LIVE OAK
P	TR-5377	8"	4'	LIVE OAK
P	TR-5378	8"	4'	LIVE OAK
P	TR-5379	9"	4.5'	LIVE OAK
P	TR-5380	8"	4'	LIVE OAK
P	TR-5381	8"	4'	LIVE OAK
P	TR-5382	11"	5.5'	LIVE OAK
NP	TR-5383	9"	4.5'	HACKBERRY
HT	TR-5384	27" (21", 13")	20.5'	PECAN
HT	TR-5385	29" (18", 21")	34.5'	PECAN
P	TR-5386	24" (12", 18")	12'	PECAN
P	TR-5387	17" (12", 10")	8.5'	CEDAR ELM
NP	TR-5388	12"	6'	HACKBERRY
NP	TR-5389	21"	10.5'	HACKBERRY
P	TR-5390	24" (21", 12", 12")	12'	CEDAR ELM
NP	TR-5391	10"	5'	HACKBERRY
NP	TR-5392	12"	6'	HACKBERRY
NP	TR-5393	8"	4'	HACKBERRY
NP	TR-5394	9"	4.5'	HACKBERRY
P	TR-5395	24"	12'	POST OAK
HT	TR-5396	30"	15'	POST OAK

LEGEND:	P = PROTECTED	NP = NOT PROTECTED	HT = HERITAGE TREE
TOTAL NUMBER OF PROTECTED TREES:			52
PROTECTED TREE DENSITY:			0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:			52

SERENE ESTATES
PRELIMINARY PLAT
LEGAL DESCRIPTION

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 7/17/2023
DESIGNED BY: MJET
DRAWN BY: CC
CHECKED BY: MJT
SURVEY: N/A
PROJECT MANAGER: MJT

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492
SHEET NO. 3 OF 3 SHEETS

DateTime: Fri, 19 Sep 2025, 4:18pm
PathName: I:\A492\0426-Serene Estates\Submittal Drawings\se-cvr.dwg

SHEET 3 OF 51
2024-24-CON

100 50 0 100 200

SCALE IN FEET

LIMITS OF CONSTRUCTION = 68.05 AC.

LEGEND

- PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- PROPOSED SILT FENCE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSE TREE PROTECTION
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- CONTRACTOR STAGING / TEMPORARY SPOILS AREA
- ROCK BERM
- PROPOSED CONCRETE WASHOUT
- ½ CRITICAL ROOT ZONE
- TR-5392 — TREE TO BE REMOVED
- TR-5396 — HERITAGE TREE
- TR-5365 — PROTECTED TREE

NOTES:
1. EROSION CONTROL STANDARD DETAILS LOCATED ON SHEET 6.
2. REFER TO GENERAL NOTES SHEET 2 FOR REVEGETATION OF DISTURBED AREAS.
3. PLACE SILT FENCE IMMEDIATELY DOWNSTREAM OF ROCK BERMS, FROM BANK TO BANK OF CHANNEL.

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
NP	TR-5343	13"	6.5'	HACKBERRY
NP	TR-5344	16" (11", 10")	8'	HACKBERRY
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NP	TR-5393	8"	4'	HACKBERRY
NP	TR-5394	9"	4.5'	HACKBERRY
P	TR-5395	24"	12'	POST OAK
HT	TR-5396	30"	15'	POST OAK

LEGEND: P = PROTECTED NP = NOT PROTECTED HT = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	32
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	10

COUNTY ROAD 249 (R.O.W. VARIES)

SERENE ESTATES DRIVE

COOL WIND DRIVE

RIVER EDDY COVE

JUNIPER BREEZE DRIVE

FOREST JAY DRIVE

BLOCK C

BLOCK D

BLOCK E

BLOCK A

BLOCK B

MATCHLINE-SHEET 4

MATCHLINE-SHEET 5

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
EROSION / SEDIMENTATION CONTOL & TREE PROTECTION PLAN - SHEET 1

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: se-eros.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-13386

JOB NUMBER: A492-100

SHEET NO. 4 OF 51 SHEETS

2024-24-CON

I:\A492\0426-Serene Estates\Submittal Drawings\se-eros.dwg
User: jmartinez
Last Modified: Sep. 03, 25 – 11:20
Xref Dependencies: Sep. 16, 25 – 10:22:35

100 50 0 100 200

SCALE IN FEET

LIMITS OF CONSTRUCTION = 68.05 AC.

LEGEND

- PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
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- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSE TREE PROTECTION
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- CONTRACTOR STAGING / TEMPORARY SPOILS AREA
- ROCK BERM
- PROPOSED CONCRETE WASHOUT
- ½ CRITICAL ROOT ZONE
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3. PLACE SILT FENCE IMMEDIATELY DOWNSTREAM OF ROCK BERMS, FROM BANK TO BANK OF CHANNEL.

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P	TR-5395	24"	12'	POST OAK
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LEGEND: P = PROTECTED NP = NOT PROTECTED HT = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	32
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	10

FOREST JAY DRIVE

COUNTY ROAD 249 (R.O.W. VARIES)

SERENE ESTATES DRIVE

COOL WIND DRIVE

COLD SNAP STREET

COUNTY ROAD 246 (R.O.W. VARIES)

BLOCK A

BLOCK B

BLOCK C

BLOCK D

MATCHLINE-SHEET 4

MATCHLINE-SHEET 5

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
EROSION / SEDIMENTATION CONTOL & TREE PROTECTION PLAN - SHEET 1

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: sb-ecnos.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 5 OF 51 SHEETS

2024-24-CON

I:\A492\2426-Serene Estates\Submittal Drawings\ae-eros.dwg
User: jmartinez
Last Modified: Sep 03, 25 - 12:20
Ref Xref Name: Sep 03, 25 - 10:40:57

GUIDELINES FOR DESIGN AND INSTALLATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

TYPE OF STRUCTURE	REACH LENGTH	MAXIMUM DRAINAGE AREA	SLOPE
SILT FENCE	N/A	2 ACRES	0 – 10%
	200 FEET	2 ACRES	10 – 20%
	100 FEET	1 ACRE	20 – 30%
	50 FEET	1/2 ACRE	> 30%
TRIANGLE FILTER DIKE	100 FEET	1/2 ACRE	< 30% SLOPE
	50 FEET	1/4 ACRE	> 30% SLOPE
ROCK BERM *, **	500 FEET	< 5 ACRES	0 – 10%

* FOR ROCK BERM DESIGN WHERE PARAMETERS ARE OTHER THAN STATED, DRAINAGE AREA CALCULATIONS AND ROCK BERM DESIGN MUST BE SUBMITTED FOR REVIEW.

** HIGH SERVICE ROCK BERMS MAY BE REQUIRED IN AREAS OF ENVIRONMENTAL SIGNIFICANCE AS DETERMINED BY THE CITY OF GEORGETOWN.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

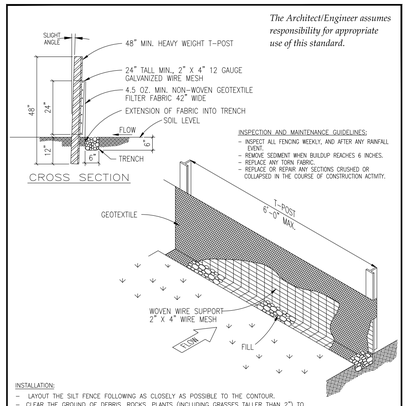
REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TEMPORARY EROSION AND SEDIMENTATION CONTROL GUIDELINES
EC01
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

NOTE: THIS SECTION IS INTENDED TO ASSIST THOSE PERSONS PREPARING WATER POLLUTION ABATEMENT PLANS (WPAP) OR STORM WATER POLLUTION PREVENTION PLANS (SWPP) THAT COMPLY WITH FEDERAL, STATE AND/OR LOCAL STORM WATER REGULATIONS.

1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION). CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
2. ALL PROJECTS WITHIN THE RECHARGE ZONE OF THE EDWARD'S AQUIFER SHALL SUBMIT A BEST MANAGEMENT PRACTICES AND WATER POLLUTION AND ABATEMENT PLAN TO THE TNRCC FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
3. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN AND WATER POLLUTION ABATEMENT PLAN. DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNER'S REPRESENTATIVE.
4. ALL PLANTING SHALL BE DONE BETWEEN MAY 1 AND SEPTEMBER 15 EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING. IF PLANTING IS AUTHORIZED TO BE DONE OUTSIDE THE DATES SPECIFIED, THE SEED SHALL BE PLANTED WITH THE ADDITION OF WINTER FESCUE (KENTUCKY 31) AT A RATE OF 100LB/ACRE. GRASS SHALL BE COMMON BERMUDA GRASS, HULLED, MINIMUM 80% PURE LIVE SEED. ALL GRASS SEED SHALL BE FREE FROM NOXIOUS WEED, GRADE "A" RECENT CROP, RECLEANED AND TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. SEED SHALL BE FURNISHED IN SEALED, STANDARD CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
5. ALL DISTURBED AREAS TO BE RESTORED AS NOTED IN THE WATER POLLUTION ABATEMENT PLAN.
6. THE PLANTED AREA TO BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF FOUR (4) INCHES. THE IRRIGATION TO OCCUR AT 10–DAY INTERVALS DURING THE FIRST TWO MONTHS TO INSURE GERMINATION AND ESTABLISHMENT OF THE GRASS - RAINFALL OCCURRENCES OF 1/2 INCH OR GREATER TO POSTPONE THE WATERING SCHEDULE ONE WEEK.
7. RESTORATION TO BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1–1/2 INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 25 SQUARE FEET EXIST.
8. A MINIMUM OF FOUR (4) INCHES OF TOPSOIL TO BE PLACED IN ALL AREAS DISTURBED BY CONSTRUCTION.
9. THE CONTRACTOR TO HYDROMULCH OR SOD (AS SHOWN ON PLANS) ALL EXPOSED CUTS AND FILLS UPON COMPLETION OF CONSTRUCTION.
10. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINE.
11. TO AVOID SOIL COMPACTION, CONTRACTOR SHALL NOT ALLOW VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IN THE TREE DRIPLINE AREAS.
12. WHERE A FENCE IS CLOSER THAN FOUR (4) FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED–ON PLANKING TO A HEIGHT OF EIGHT (8) FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE FENCING.
13. TREES TO BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
14. ANY ROOT EXPOSED BY CONSTRUCTION ACTIVITY TO BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
15. CONSTRUCTION TO PRUNE VEGETATION TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.). ALL FINISHED PRUNING TO BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY [REFERENCE THE "NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES"].
16. THE CONTRACTOR IS TO INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/4 INCH TO VERIFY THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY ACCUMULATED SEDIMENT AFTER A SIGNIFICANT RAINFALL TO BE REMOVED AND PLACED IN THE OWNER DESIGNATED SPOIL DISPOSAL SITE. THE CONTRACTOR TO CONDUCT PERIODIC INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROLS AND TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE.
17. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT IMMEDIATELY ADJACENT TO A PROTECTED TREE, ERECT THE FENCE APPROXIMATELY TWO TO FOUR FEET (2'–4") BEHIND THE AREA IN QUESTION.
18. NO ABOVE AND/OR BELOW GROUND TEMPORARY FUEL STORAGE FACILITIES TO BE STORED ON THE PROJECT SITE.
19. IF EROSION AND SEDIMENTATION CONTROL SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER'S REPRESENTATIVE AND THE CONTRACTOR TO EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF ANY DAMAGE TO PREEXISTING EROSION AND SEDIMENTATION CONTROLS NOTED TO BE REPAIRED AT OWNERS EXPENSE.
20. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATED SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES
EC01A
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

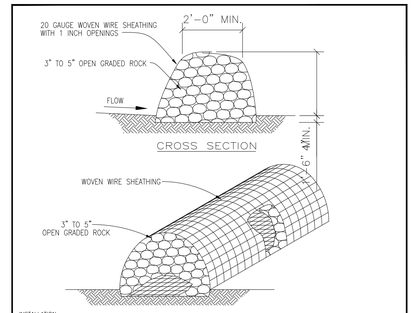


INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL EVENT.
- REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
- REPLACE ANY TORN FABRIC.
- REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY.

INSTALLATION:
- LAYOUT THE SILT FENCE FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS, PLANTS (INCLUDING GRASSES TALLER THAN 2") TO PROVIDE A SMOOTH FLOW APPROACH SURFACE. EXCAVATE 6" DEEP X 6" WIDE TRENCH ON UPSTREAM SIDE OF FACE PER PLANS.
- DRIVE THE HEAVY DUTY T–POST AT LEAST 12 INCHES INTO THE GROUND AND AT A SLIGHT ANGLE TOWARDS THE FLOW.
- ATTACH THE 2" X 4" 12 GAUGE WELDED WIRE MESH TO THE T–POST WITH 11 1/2 GAUGE GALVANIZED T–POST CLIPS. THE TOP OF THE WIRE TO BE 24" ABOVE GROUND LEVEL. THE WELDED WIRE MESH TO BE OVERLAPPED 6" AND TIED AT LEAST 6 TIMES WITH HOG RINGS.
- THE SILT FENCE TO BE INSTALLED WITH A SKIRT A MINIMUM OF 6" WIDE PLACED ON THE UPHILL SIDE OF THE FENCE INSIDE EXCAVATED TRENCH. THE FABRIC TO OVERLAP THE TOP OF THE WIRE BY 1".
- ANCHOR THE SILT FENCE BY BACKFILLING WITH EXCAVATED DIRT AND ROCKS (NOT LARGER THAN 2").
- GEOTEXTILE SPLICES SHOULD BE A MINIMUM OF 18" WIDE ATTACHED IN AT LEAST 6 PLACES. SPLICES IN CONCENTRATED FLOW AREAS WILL NOT BE ACCEPTED.
- SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
SILT FENCE DETAIL
EC02
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

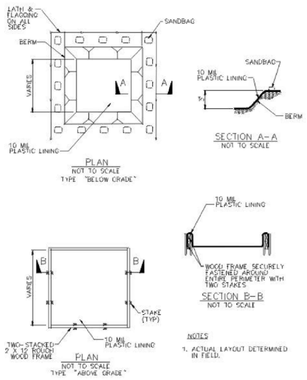


INSTALLATION:
- LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
- INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT. INSTALLATION SHOULD BE AS DESCRIBED IN DRAWING NO. EC–02 "SILT FENCE DETAIL".
- PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND ON BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT.
- WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE RETAINS IT'S SHAPE.
- SECURE WITH TIE WIRE.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

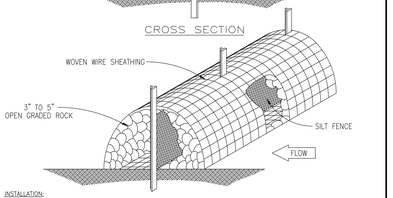
REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
ROCK BERM DETAIL
EC03
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB



TCEQ CONCRETE WASHOUT DETAIL

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
HIGH SERVICE ROCK BERM DETAIL
EC04
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

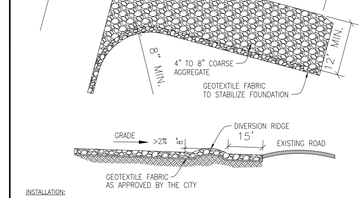


INSTALLATION:
- LAYOUT THE ROCK BERM FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
- INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT. INSTALLATION SHOULD BE AS DESCRIBED IN DRAWING NO. EC–02 "SILT FENCE DETAIL".
- PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND ON BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT.
- WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURE ENOUGH SO THAT WHEN WALKED ACROSS THE STRUCTURE RETAINS IT'S SHAPE.
- SECURE WITH TIE WIRE.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE CONTRACTOR. FOR THE INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE ON ROCK BERM.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- THE BERM SHOULD BE REPLACES WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
STABILIZED CONSTRUCTION ENTRANCE
EC06
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

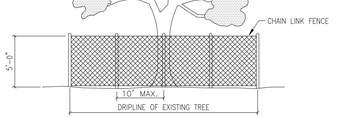


INSTALLATION:
- CLEAR THE AREA OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- GRADE THE AREA FOR THE ENTRANCE TO FLOW BACK ON TO THE CONSTRUCTION SITE. RUNOFF FROM THE STABILIZED CONSTRUCTION
- PLACE GEOTEXTILE FABRIC AS APPROVED BY THE CITY.
- PLACE ROCK AS APPROVED BY THE CITY.

INSPECTIONS AND MAINTENANCE GUIDELINES:
- THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
- WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY.
- WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
- ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

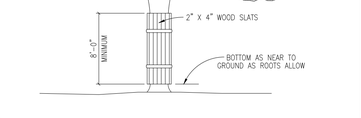
REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – CHAIN LINK FENCE
EC09
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB



NOTES:
1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; WILL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6") CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'–0") TO BUILDING.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – WOOD SLATS
EC10
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB



NOTES:
1. WHERE ANY EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN FOUR FEET (4'–0") TO A TREE TRUNK; PROTECT THE TRUNK WITH STRAPPED–ON–PLANKING TO A HEIGHT OF EIGHT FEET (8'–0"), OR TO THE LIMITS OF LOWER BRANCHING IN ADDITION TO THE REDUCED FENCING PROVIDED.
2. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO (2) DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE, AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
3. PRIOR EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINE, MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
4. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.
5. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
6. NO LANDSCAPE TOPSOIL DRESSING GREATER THE FOUR INCHES (4") SHALL BE PERMITTED WITHIN THE DRIPLINE OF A TREE. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
7. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

REVISION NOTE: ADOPTED 6/21/2006
DRAWING NAME:
CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TREE PROTECTION – WOOD SLATS
EC10
SCALE: NTS DATE: 1/2003
DRAWN BY: MPS APPROVED BY: TRB

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
EROSION / SEDIMENTATION CONTOL & TREE PROTECTION PLAN - DETAILS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-EROS-DETAILS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

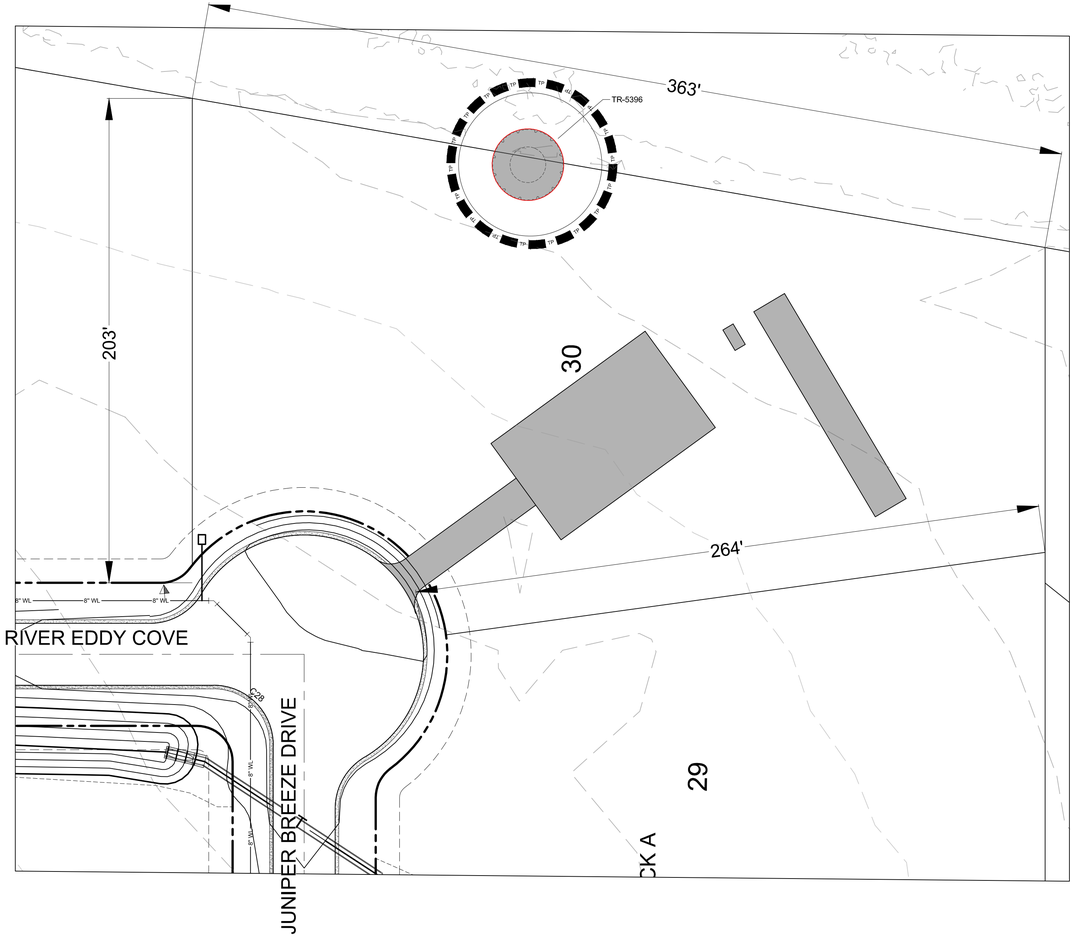
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

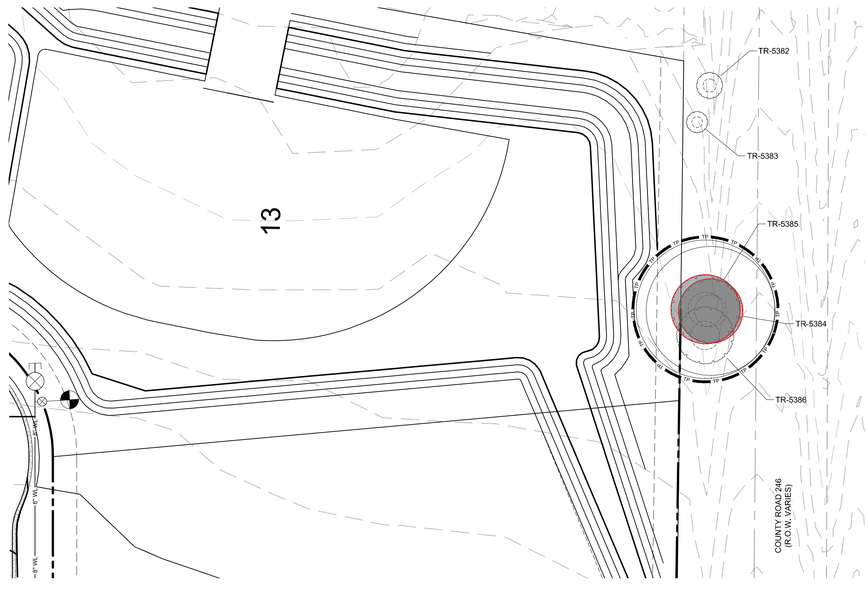
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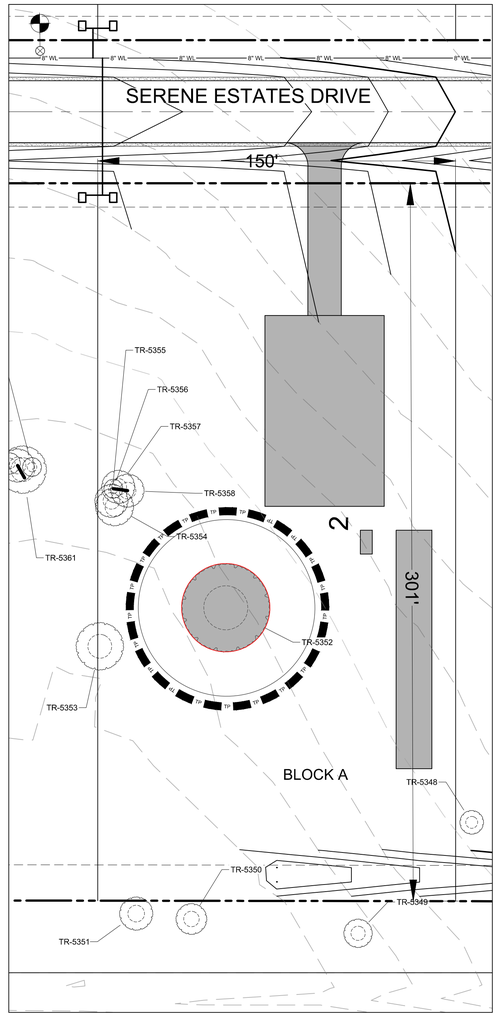
SHEET NO. 6 OF 51 SHEETS

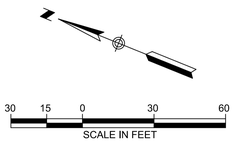
2024-24-CON

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User: jmartinez
Last Modified: Dec 05, 24 - 10:38
Plot Date/Time: Sep 19, 25 - 12:51:03









LEGEND

- PROPOSED BOUNDARY
- TREE PROTECTION
- ½ CRITICAL ROOT ZONE

NOTES:

1. HOUSING PADS SHOWN REPRESENT A 4,000 S.F. FOOTPRINT AND A PRELIMINARILY SIZED SEPTIC SYSTEM
2. BUILDER WILL BE SUBJECT TO GEORGETOWN TREE PRESERVATION PRIOR TO ANY REMOVALS.
3. NO PROPOSED SIDEWALKS IN THIS DEVELOPMENT.

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
NP	TR-5343	13"	6.5'	HACKBERRY
NP	TR-5344	16" (11", 10")	8'	HACKBERRY
NP	TR-5345	8"	4'	HACKBERRY
NP	TR-5346	8"	4'	HACKBERRY
NP	TR-5347	8"	4'	HACKBERRY
NP	TR-5348	10"	5'	HACKBERRY
NP	TR-5349	12" (9", 6")	6'	HACKBERRY
P	TR-5350	13"	6.5'	LIVE OAK
NP	TR-5351	14"	7'	HACKBERRY
HT	TR-5352	37"	18.5'	LIVE OAK
P	TR-5353	20"	10'	LIVE OAK
P	TR-5354	16"	8'	LIVE OAK
P	TR-5355	14"	7'	LIVE OAK
P	TR-5356	8"	4'	LIVE OAK
P	TR-5357	14"	7'	LIVE OAK
P	TR-5358	14"	7'	LIVE OAK
NP	TR-5359	8"	4'	HACKBERRY
P	TR-5360	14"	7'	LIVE OAK
P	TR-5361	20"	10'	LIVE OAK
NP	TR-5362	9"	4.5'	HACKBERRY
P	TR-5363	15"	7.5'	LIVE OAK
P	TR-5364	14"	7'	LIVE OAK
P	TR-5365	15" (10", 9")	7.5'	LIVE OAK
P	TR-5366	8"	4'	LIVE OAK
P	TR-5367	8"	4'	LIVE OAK
P	TR-5368	9"	4.5'	LIVE OAK
P	TR-5369	9"	4.5'	LIVE OAK
P	TR-5370	15" (8", 11")	7.5'	LIVE OAK
P	TR-5371	9"	4.5'	LIVE OAK
P	TR-5372	17" (12", 10")	8.5'	LIVE OAK
P	TR-5373	19" (14", 10")	9.5'	LIVE OAK
NP	TR-5374	9"	4.5'	HACKBERRY
P	TR-5375	13" (10", 6")	6.5'	LIVE OAK
P	TR-5376	11"	5.5'	LIVE OAK
P	TR-5377	8"	4'	LIVE OAK
P	TR-5378	8"	4'	LIVE OAK
P	TR-5379	9"	4.5'	LIVE OAK
P	TR-5380	8"	4'	LIVE OAK
P	TR-5381	8"	4'	LIVE OAK
P	TR-5382	11"	5.5'	LIVE OAK
NP	TR-5383	9"	4.5'	HACKBERRY
HT	TR-5384	27" (21", 12")	13.5'	PECAN
HT	TR-5385	29" (16", 21")	14.5'	PECAN
P	TR-5386	24" (12", 18")	12'	PECAN
P	TR-5387	17" (12", 10")	8.5'	CEDAR ELM
NP	TR-5388	12"	6'	HACKBERRY
NP	TR-5389	21"	10.5'	HACKBERRY
P	TR-5390	24" (11", 12", 12")	12'	CEDAR ELM
NP	TR-5391	10"	5'	HACKBERRY
NP	TR-5392	12"	6'	HACKBERRY
NP	TR-5393	8"	4'	HACKBERRY
NP	TR-5394	9"	4.5'	HACKBERRY
P	TR-5395	24"	12'	POST OAK
HT	TR-5396	30"	15'	POST OAK

LEGEND: P = PROTECTED NP = NOT PROTECTED HT = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	32
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	10

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
HERITAGE TREES EXHIBIT

NO.	DESCRIPTION	BY	DATE

REVISIONS

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-Trees.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 7 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:40
Plot Date/Time: Sep. 19, 25 - 15:40:25

OFFSITE ROUTE FOR SERENE ESTATES

INDEX INFORMATION:

1. COVER SHEET
2. RANCH ROAD 2338
3. FISHER RD
4. FISHER RD & TREE TABLE
5. COUNTY ROAD 249



INDEX MAP
(NOT TO SCALE)



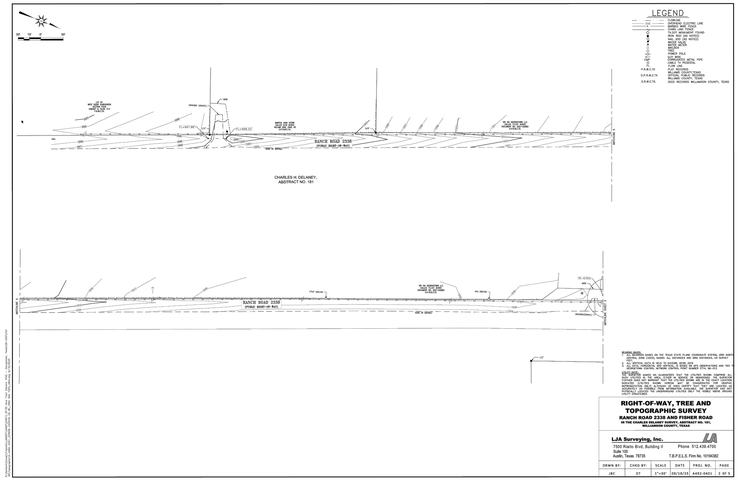
VICINITY MAP
(NOT TO SCALE)

CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	10036056.66	3656927.073	844.727	5/8 IRON ROD WITH CAP " LJA SURVEY"
2	10035850.77	3656387.867	858.172	5/8 IRON ROD WITH CAP " LJA SURVEY"

RIGHT-OF-WAY, TREE AND TOPOGRAPHIC SURVEY
RANCH ROAD 2338 AND FISHER ROAD
IN THE CHARLES M DELANEY SURVEY, ABSTRACT NO. 181,
WILLIAMSON COUNTY, TEXAS

LJA Surveying, Inc.
7500 Rialto Blvd, Building II
Suite 100
Austin, Texas 78735
Phone 512.439.4700
T.B.P.E.L.S. Firm No. 10194382

DRWN BY:	CHKD BY:	SCALE	DATE	PROJ. NO.	PAGE
JMC	ST	1"=100'	09/15/25	A492-0401	2 OF 5



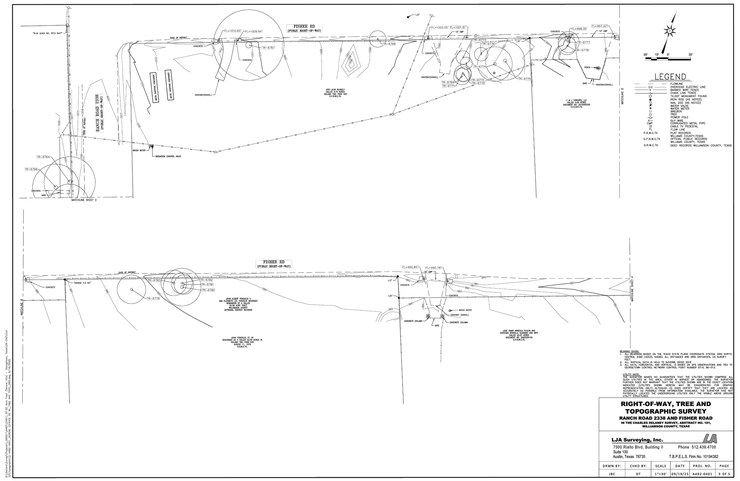
LEGEND

	OVERHEAD
	OVERHEAD ELECTRIC LINE
	UNDERGROUND ELECTRIC
	WIRE LINE TOWER
	WIRE LINE POLE GUY
	WIRE LINE POLE WITH COVER
	WIRE LINE GUY ANCHOR
	WATER LINE
	WATER VALVE
	WATER METER
	MANHOLE
	TREE
	SIGN POLE
	FLAG POLE
	COMMUNICATIONS MTG. PIPE
	OPTICAL PUBLIC NETWORK
	MAIL BOX
	WILLIAMSON COUNTY, TEXAS
	ROAD CENTER LINE
	WILLIAMSON COUNTY, TEXAS
	2022 REVISED WILLIAMSON COUNTY, TEXAS

BASIS OF BEARINGS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, 1983 (NAD83), CENTRAL ZONE (4203), NAD83, ALL DISTANCES ARE GRID DISTANCES, NO SCALE FACTOR APPLIED.

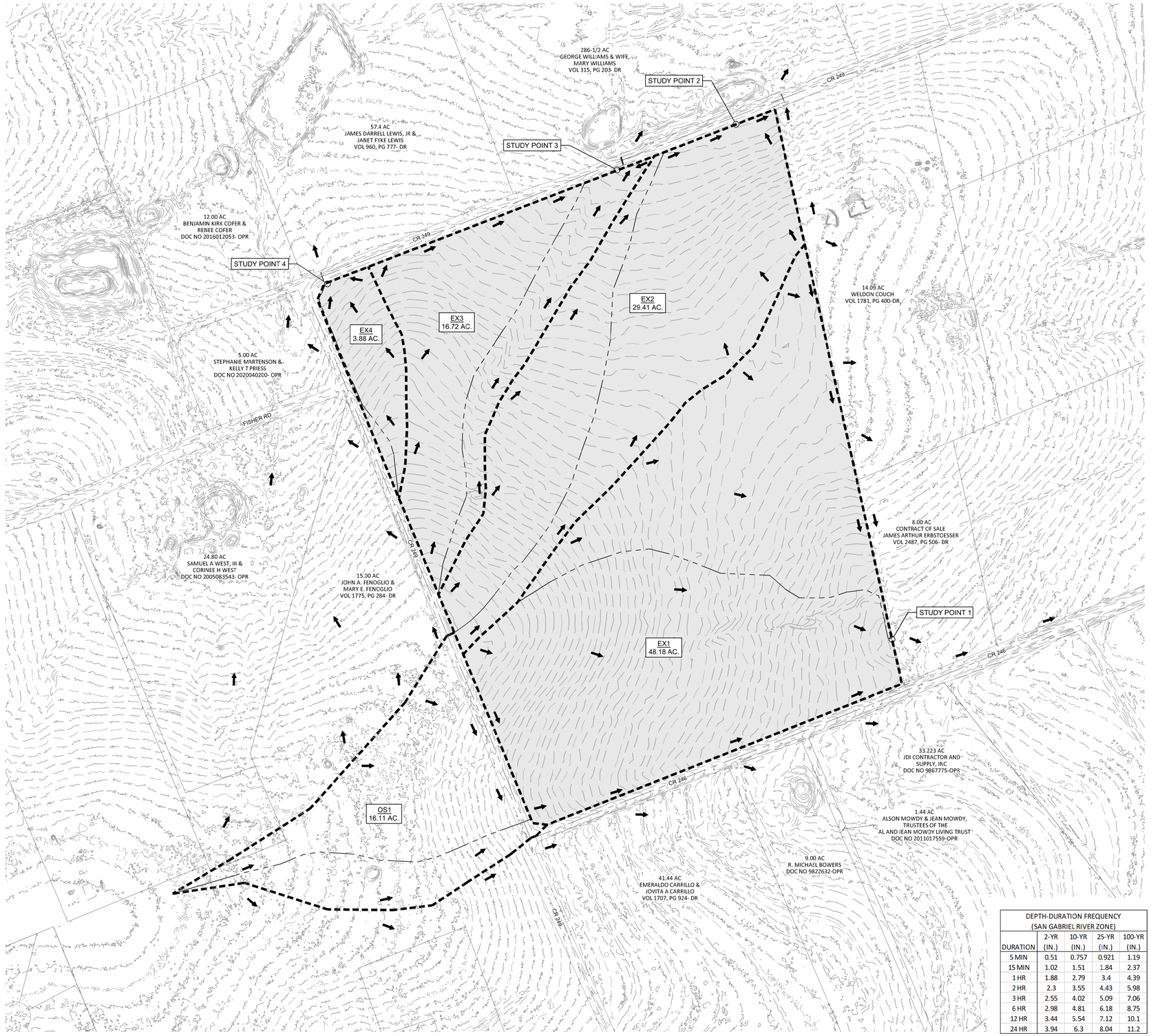
1. ALL CAPPED IRONRODS SET ON PROPERTY CORNERS ARE 5/8" IRONRODS WITH THE "LJA SURVEY" CAP UNLESS NOTED OTHERWISE.
2. ALL BEARINGS, DISTANCES AND ACREAGES SHOWN HEREON ARE RECORD UNLESS NOTED OTHERWISE.

SURVEYOR'S NOTES:
THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE COMMITMENT. IT IS POSSIBLE THAT THERE ARE DEED DOCUMENTS AFFECTING THIS TRACT THAT ARE NOT SHOWN HEREON. THIS SURVEY WAS PREPARED IN CONJUNCTION WITH THE DEED DESCRIPTION DATED SEPTEMBER 15, 2025 AND IS SUBJECT TO ANY AND ALL EASEMENTS AND/OR RESTRICTIONS THAT A TITLE SEARCH MIGHT DISCLOSE. THE SURVEYOR HAS NOT ABSTRACTED THE PROPERTY.





TREE TABLE			
TAG NUMBER	DBH (INCHES)	SPECIES NAME (COMMON)	STATUS
101000	10.0000	HACKBERRY	ALIVE
101001	42.0000	HACKBERRY	ALIVE
101002	8.0000	HACKBERRY	ALIVE
101003	8.0000	HACKBERRY	ALIVE
101004	8.0000	HACKBERRY	ALIVE
101005	8.0000	HACKBERRY	ALIVE



LEGEND

- DA X.XX AC. - DRAINAGE AREA (ACRES)
- DRAINAGE AREA BOUNDARY
- OVERALL PROPERTY LIMITS
- FLOW DIRECTION
- EXISTING CONTCURS (2' INTERVAL)
- DRAINAGE AREA FLOW PATH

DEPTH-DURATION FREQUENCY (SAN GABRIEL RIVER ZONE)

DURATION	2-YR (IN.)	10-YR (IN.)	25-YR (IN.)	100-YR (IN.)
5 MIN	0.51	0.757	0.921	1.19
15 MIN	1.02	1.51	1.84	2.37
1 HR	1.88	2.79	3.4	4.39
2 HR	2.3	3.55	4.43	5.98
3 HR	2.55	4.02	5.09	7.06
6 HR	2.98	4.81	6.18	8.75
12 HR	3.44	5.54	7.12	10.1
24 HR	3.94	6.3	8.04	11.2

SCS Method Peak Runoff Calculations

STUDY POINT	DRAINAGE AREA	ACRE	$T_{c\,LAG}$	I.C. (%)	CN	$Q_{2\,yr}$ (cfs)	$Q_{10\,yr}$ (cfs)	$Q_{25\,yr}$ (cfs)	$Q_{100\,yr}$ (cfs)
	OS1	16.11	14.8	0%	78	28.5	55.8	74.8	106.0
1	EX1	48.18	9.4	0%	78	105.1	205.5	275.2	388.3
2	EX2	29.41	15.1	0%	78	51.5	100.9	135.4	191.5
3	EX3	16.72	13.1	0%	78	31.4	61.4	82.4	116.4
4	EX4	3.88	7.3	0%	78	9.4	18.3	24.5	34.5

TIME OF CONCENTRATION

Reference: Chapter 3, Urban Hydrology for Small Watersheds, TR 55, USDA-SCS, June 1986

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
OS1	100	0.60%	Sheet	3.94	0.15	n/a	14.3	8.6
	1420	2.00%	SCF (Unpaved)	n/a	n/a	2.3	10.4	6.2
	0	n/a	Channel/SS	n/a	n/a	6	0.0	0
						Total:	24.7	14.8

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
EX1	100	2.80%	Sheet	3.94	0.15	n/a	7.7	4.6
	990	2.80%	SCF (Unpaved)	n/a	n/a	2.7	6.1	3.7
	675	n/a	Channel/SS	n/a	n/a	6	1.9	1.1
						Total:	15.7	9.4

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
EX2	100	1.35%	Sheet	3.94	0.15	n/a	10.3	6.2
	2085	2.10%	SCF (Unpaved)	n/a	n/a	2.3	14.9	8.9
	0	n/a	Channel/SS	n/a	n/a	6	0.0	0
						Total:	25.2	15.1

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
EX3	100	1.40%	Sheet	3.94	0.15	n/a	10.2	6.1
	1720	2.30%	SCF (Unpaved)	n/a	n/a	2.4	11.7	7
	0	n/a	Channel/SS	n/a	n/a	6	0.0	0
						Total:	21.9	13.1

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
EX4	100	2.25%	Sheet	3.94	0.15	n/a	8.4	5
	320	2.20%	SCF (Unpaved)	n/a	n/a	2.4	2.2	1.3
	540	n/a	Channel/SS	n/a	n/a	6	1.5	0.9
						Total:	12.1	7.3

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
DRAINAGE AREA MAP
EXISTING CONDITIONS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-DAM.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER

09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

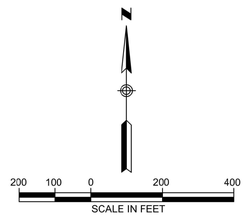
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OF 51 SHEETS

2024-24-CON

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LEGEND

- DA X.XX AC. - DRAINAGE AREA (ACRES)
- DRAINAGE AREA BOUNDARY
- OVERALL PROPERTY LIMITS
- FLOW DIRECTION
- EXISTING CONTOURS (2' INTERVAL)

STORM EVENT	STUDY POINT 1 EXISTING (CFS)	STUDY POINT 1 ULTIMATE (CFS)	STUDY POINT 2 EXISTING (CFS)	STUDY POINT 2 ULTIMATE (CFS)	STUDY POINT 3 EXISTING (CFS)	STUDY POINT 3 ULTIMATE (CFS)	STUDY POINT 4 EXISTING (CFS)	STUDY POINT 4 ULTIMATE (CFS)
2 YR	105.1	104.0	51.5	44.7	31.4	30.1	9.4	9.1
10 YR	205.5	203.5	100.9	80.8	61.4	54.0	18.3	16.5
25 YR	275.2	270.4	135.4	105.7	82.4	74.4	24.5	21.5
100 YR	388.3	378.5	191.5	146.1	116.4	112.5	34.5	29.8

SCS Method Peak Runoff Calculations

STUDY POINT	DRAINAGE AREA	ACRE	$T_{C\,LAG}$	I.C. (%)	CN	$Q_{2\,YR}$ (cfs)	$Q_{10\,YR}$ (cfs)	$Q_{25\,YR}$ (cfs)	$Q_{100\,YR}$ (cfs)
	OS1	16.11	14.8	0%	78	28.5	55.8	74.8	106.0
	DA1 (UNDETAINED)	48.64	9.8	20%	78	121.3	219.6	287.5	397.7
1	DA1	48.64	-	-	-	104.0	203.5	270.4	378.5
2	DA2	18.28	10.3	20%	78	44.7	80.8	105.7	146.1
	DA3A (UNDETAINED)	26.11	9.8	20%	78	65.1	117.9	154.3	213.5
	DA3B	1.92	11	20%	78	4.6	8.2	10.8	14.9
3	DA3A+DA3B	28.03	-	-	-	30.1	54.0	74.4	112.5
4	DA4	3.25	7.3	20%	78	9.1	16.5	21.5	29.8

TIME OF CONCENTRATION

Reference: Chapter 3, Urban Hydrology for Small Watersheds, TR 55, USDA-SCS, June 1986

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
OS1	100	0.60%	Sheet	3.94	0.15	n/a	14.3	8.6
	1420	2.00%	SCF (Unpaved)	n/a	n/a	2.3	10.4	6.2
	0	n/a	Channel/SS	n/a	n/a	6	0.0	0
						Total:	24.7	14.8

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
DA1	100	1.80%	Sheet	3.94	0.15	n/a	9.2	5.5
	485	3.75%	SCF (Unpaved)	n/a	n/a	3.1	2.6	1.6
	1660	n/a	Channel/SS	n/a	n/a	6	4.6	2.8
						Total:	16.4	9.8

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
DA2	100	3.00%	Sheet	3.94	0.15	n/a	7.5	4.5
	709	2.00%	SCF (Unpaved)	n/a	n/a	2.3	5.2	3.1
	1630	n/a	Channel/SS	n/a	n/a	6	4.5	2.7
						Total:	17.2	10.3

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
DA3A	100	2.00%	Sheet	3.94	0.15	n/a	8.8	5.3
	430	2.50%	SCF (Unpaved)	n/a	n/a	2.6	2.8	1.7
	1703	n/a	Channel/SS	n/a	n/a	6	4.7	2.8
						Total:	16.3	9.8

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
DA3B	100	0.50%	Sheet	3.94	0.15	n/a	15.4	9.2
	200	0.50%	SCF (Unpaved)	n/a	n/a	1.1	2.9	1.7
	0	n/a	Channel/SS	n/a	n/a	6	0.0	0
						Total:	18.3	11

Drainage Area	Length (ft)	Slope (%)	Flow Type	2-YR, 24-HR Rainfall (in)	Manning's *n*	Velocity (fps)	Tc (minutes)	Lag Time (minutes)
DA4	100	2.25%	Sheet	3.94	0.15	n/a	8.4	5
	320	2.20%	SCF (Unpaved)	n/a	n/a	2.4	2.2	1.3
	540	n/a	Channel/SS	n/a	n/a	6	1.5	0.9
						Total:	12.1	7.3

DEPTH-DURATION FREQUENCY
(SAN GABRIEL RIVER ZONE)

DURATION	2-YR (IN.)	10-YR (IN.)	25-YR (IN.)	100-YR (IN.)
5 MIN	0.51	0.757	0.921	1.19
15 MIN	1.02	1.51	1.84	2.37
1 HR	1.88	2.79	3.4	4.39
2 HR	2.3	3.55	4.43	5.98
3 HR	2.55	4.02	5.09	7.06
6 HR	2.98	4.81	6.18	8.75
12 HR	3.44	5.54	7.12	10.1
24 HR	3.94	6.3	8.04	11.2

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
DRAINAGE AREA MAP
PRPOSED (ULTIMATE)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: prelim DAM_rev.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
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Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

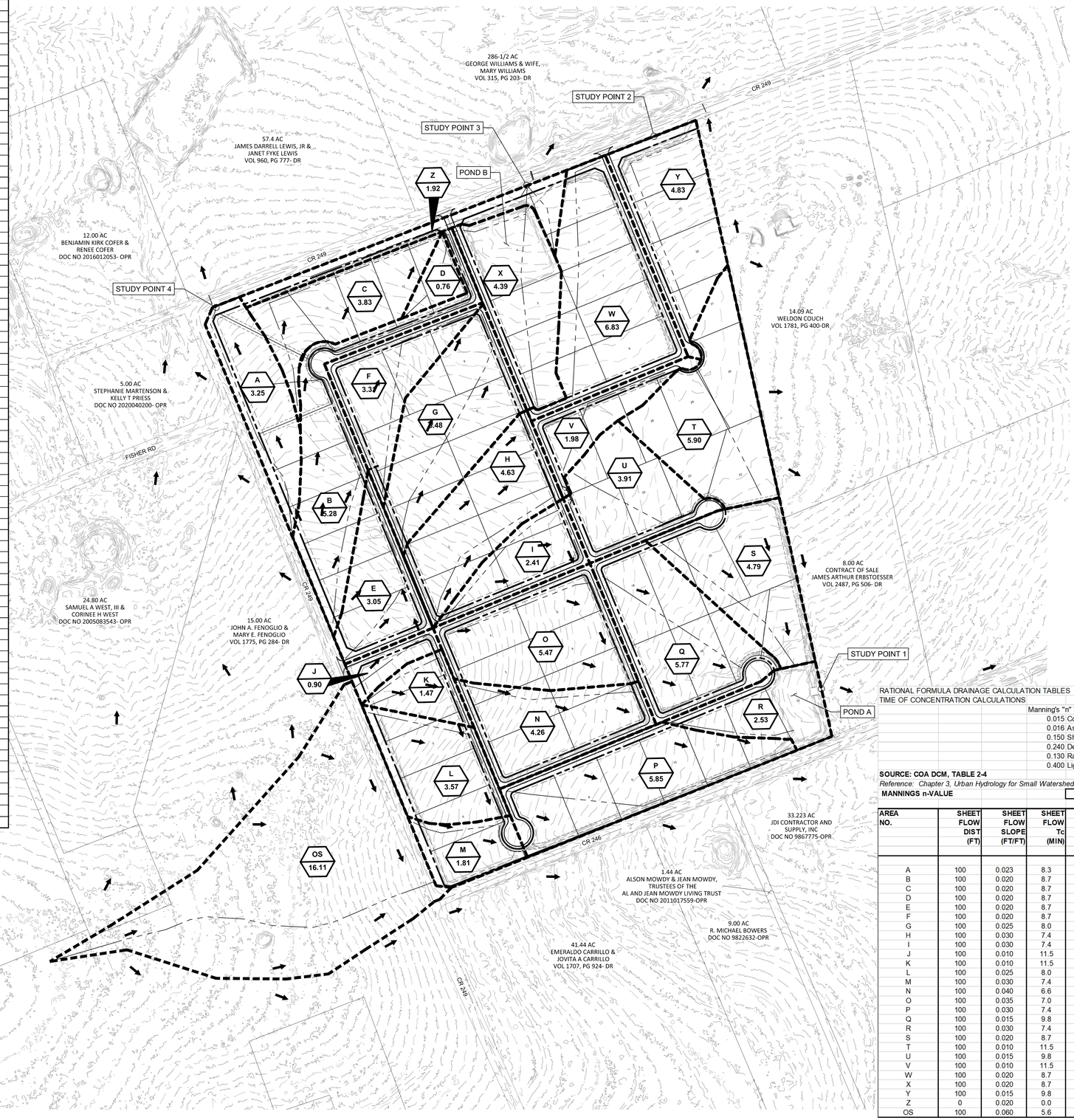
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OF 51 SHEETS

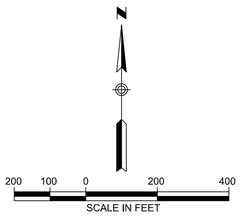
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User: jmortinez
Last Modified: Sep 19, 25 - 16:29
Plot Style/Time: Sep 19, 25 - 16:29:00

DRIVEWAY CULVERT SIZING CHART

BLOCK	LOT	SIZE (RCP)
A	1	24"
A	2	24"
A	3	24"
A	4	24"
A	5	24"
A	6	24"
A	7	DIP DRIVEWAY
A	8	DIP DRIVEWAY
A	9	DIP DRIVEWAY
A	10	DIP DRIVEWAY
A	11	DIP DRIVEWAY
A	12	DIP DRIVEWAY
A	14	24"
A	15	24"
A	16	24"
A	17	24"
A	18	DIP DRIVEWAY
A	19	DIP DRIVEWAY
A	20	DIP DRIVEWAY
A	21	DIP DRIVEWAY
A	22	18"
A	23	18"
A	24	18"
A	25	18"
A	26	DIP DRIVEWAY
A	27	DIP DRIVEWAY
A	28	DIP DRIVEWAY
A	29	DIP DRIVEWAY
A	30	DIP DRIVEWAY
A	31	24"
A	32	24"
A	33	24"
A	34	24"
B	1	DIP DRIVEWAY
B	2	DIP DRIVEWAY
B	3	DIP DRIVEWAY
B	4	DIP DRIVEWAY
B	5	24"
B	6	24"
B	7	24"
B	8	30"
C	1	DIP DRIVEWAY
C	2	DIP DRIVEWAY
C	3	DIP DRIVEWAY
C	4	DIP DRIVEWAY
C	5	DIP DRIVEWAY
C	6	18"
C	7	18"
C	8	18"
C	9	18"
C	10	24"
C	11	24"
C	12	18"
C	13	18"
D	1	24"
D	2	24"
D	3	24"
D	4	24"
D	5	24"
D	6	24"
D	7	24"
D	8	30"
D	9	30"
D	10	30"
D	11	30"
D	12	30"
D	13	30"
E	1	DIP DRIVEWAY
E	2	DIP DRIVEWAY
E	3	DIP DRIVEWAY
E	5	30"
E	6	30"
E	7	30"
E	8	30"
E	9	30"





LEGEND

- A2 / 1.10 - DRAINAGE AREA (ACRES)
- DRAINAGE AREA BOUNDARY
- OVERALL PROPERTY LIMITS
- FLOW DIRECTION
- EXISTING CONTOURS (2' INTERVAL)
- TIME OF CONCENTRATION

IDF COEFFICIENTS (ZONE 1)	2-YEAR	10-YEAR	25-YEAR	100-YEAR
a	45.2400	61.2500	69.6000	77.3100
b	9.3390	8.3520	7.9410	6.8320
c	0.7399	0.7147	0.6954	0.6524

IDF COEFFICIENTS (ZONE 2)	2-YEAR	10-YEAR	25-YEAR	100-YEAR
a	46.9900	60.7500	64.5600	76.9000
b	9.5750	8.3610	7.3820	6.7260
c	0.7517	0.7185	0.6726	0.6554

DEVELOPED DRAINAGE CALCULATIONS

Character of Pervious : Grass, Good — Slope: 3% — Pervious Coefficient: 0.39 (25 yr), 0.46 (100 yr)

Use Grass, Good for Single Family Lots; For Undeveloped Land use appropriate choic

MAKE SURE YOU CHECK ZONES!!! — ZONE: 2 (enter 1 or 2)

RATIONAL METHOD PEAK RUNOFF CALCULATION

AREA NO.	AREA (AC)	Pervious AREA (AC)	Imp.Cov. AREA (AC)	TC (MIN)	C25 COMP	C100 COMP	I25 (IN/HR)	I100 (IN/HR)	Q25 (CFS)	Q100 (CFS)
A	3.25	2.60	0.65	12.0	0.48	0.56	8.78	11.26	13.8	20.4
B	5.28	4.22	1.06	15.8	0.48	0.56	7.80	10.00	19.9	29.5
C	3.83	3.06	0.77	12.4	0.48	0.56	8.66	11.10	16.1	23.7
D	0.76	0.61	0.15	10.3	0.48	0.56	9.35	11.99	3.4	5.1
E	3.05	2.44	0.61	11.5	0.48	0.56	8.94	11.47	13.2	19.5
F	3.31	2.65	0.66	12.8	0.48	0.56	8.54	10.95	13.7	20.2
G	5.48	4.38	1.10	13.6	0.48	0.56	8.33	10.67	22.1	32.6
H	4.63	3.70	0.93	12.5	0.48	0.56	8.65	11.08	19.4	28.6
I	2.41	1.93	0.48	11.4	0.48	0.56	8.98	11.51	10.5	15.5
J	0.90	0.72	0.18	13.2	0.48	0.56	8.44	10.82	3.7	5.4
K	1.47	1.18	0.29	14.0	0.48	0.56	8.23	10.55	5.9	8.7
L	3.57	2.86	0.71	10.4	0.48	0.56	9.30	11.93	16.1	23.8
M	1.81	1.45	0.36	9.5	0.48	0.56	9.66	12.40	8.5	12.5
N	4.26	3.41	0.85	9.9	0.48	0.56	9.50	12.19	19.6	29.0
O	5.47	4.38	1.09	10.9	0.48	0.56	9.13	11.71	24.2	35.8
P	5.85	4.68	1.17	11.8	0.48	0.56	8.86	11.36	25.1	37.1
Q	5.77	4.62	1.15	13.4	0.48	0.56	8.38	10.74	23.4	34.6
R	2.53	2.02	0.51	9.7	0.48	0.56	9.55	12.26	11.7	17.3
S	4.79	3.83	0.96	12.4	0.48	0.56	8.69	11.13	20.1	29.8
T	5.90	4.72	1.18	15.8	0.48	0.56	7.80	9.99	22.3	32.9
U	3.91	3.13	0.78	13.0	0.48	0.56	8.50	10.89	16.1	23.8
V	1.98	1.58	0.40	14.0	0.48	0.56	8.23	10.55	7.9	11.7
W	6.83	5.46	1.37	14.7	0.48	0.56	8.05	10.32	26.6	39.3
X	4.39	3.51	0.88	13.6	0.48	0.56	8.32	10.67	17.7	26.1
Y	4.83	3.86	0.97	13.8	0.48	0.56	8.27	10.60	19.3	28.6
Z	1.92	1.54	0.38	8.0	0.48	0.56	10.26	13.18	9.5	14.1
OS	16.11	16.11	0.00	16.0	0.39	0.46	7.75	9.93	48.7	73.6

RATIONAL FORMULA DRAINAGE CALCULATION TABLES

TIME OF CONCENTRATION CALCULATIONS

Manning's "n" Values for Sheet and Shallow Concentrated Flow

0.015 Concrete(rough or smooth finish)
0.016 Asphalt
0.150 Short Grass Prairie
0.240 Dense Grasses
0.130 Range
0.400 Light Underbrush

SOURCE: COA DCM, TABLE 2-4

Reference: Chapter 3, Urban Hydrology for Small Watersheds, TR 55, USDA-SCS, June 1986

MANNINGS n-VALUE 0.15

AREA NO.	SHEET FLOW DIST (FT)	SHEET FLOW SLOPE (FT/FT)	SHEET FLOW Tc (MIN)	SHALLOW CONC FLOW DIST (FT)	SHALLOW CONC FLOW SLOPE (FT/FT)	SHALLOW CONC FLOW Tc (MIN)	STREET FLOW DIST (FT)	STREET FLOW SLOPE (FT/FT)	STREET FLOW Tc (MIN)	CHAN/PIPE FLOW DIST (FT)	CHAN/PIPE FLOW SLOPE (FT/FT)	CHAN/PIPE VELOCITY (FPS)	CHAN/PIPE FLOW Tc (MIN)	TOTAL Tc (MIN)
A	100	0.023	8.3	320	0.022	2.2	0	0.010	0.0	540		6.0	1.5	12.0
B	100	0.020	8.7	490	0.026	3.1	0	0.010	0.0	1410		6.0	3.9	15.8
C	100	0.020	8.7	305	0.030	1.8	0	0.020	0.0	687		6.0	1.9	12.4
D	100	0.020	8.7	218	0.020	1.6	0	0.024	0.0			6.0	0.0	10.3
E	100	0.020	8.7	277	0.027	1.7	0	0.020	0.0	388		6.0	1.1	11.5
F	100	0.020	8.7	476	0.021	3.4	0	0.034	0.0	269		6.0	0.7	12.8
G	100	0.025	8.0	750	0.021	5.3	0	0.034	0.0	128		6.0	0.4	13.6
H	100	0.030	7.4	601	0.022	4.2	0	0.027	0.0	312		6.0	0.9	12.5
I	100	0.030	7.4	507	0.023	3.5	0	0.028	0.0	190		6.0	0.5	11.4
J	100	0.010	11.5	248	0.022	1.7	0	0.028	0.0	0		6.0	0.0	13.2
K	100	0.010	11.5	242	0.020	1.8	0	0.037	0.0	266		6.0	0.7	14.0
L	100	0.025	8.0	296	0.037	1.6	0	0.037	0.0	324		6.0	0.9	10.4
M	100	0.030	7.4	240	0.022	1.7	0	0.041	0.0	142		6.0	0.4	9.5
N	100	0.040	6.6	544	0.034	3.0	0	0.022	0.0	90		6.0	0.3	9.9
O	100	0.035	7.0	474	0.030	2.9	0	0.008	0.0	405		6.0	1.1	10.9
P	100	0.030	7.4	422	0.026	2.7	0	0.020	0.0	603		6.0	1.7	11.8
Q	100	0.015	9.8	530	0.030	3.2	0	0.025	0.0	184		6.0	0.5	13.4
R	100	0.030	7.4	366	0.026	2.3	0	0.028	0.0	0		6.0	0.0	9.7
S	100	0.020	8.7	592	0.028	3.7	0	0.028	0.0	0		6.0	0.0	12.4
T	100	0.010	11.5	437	0.011	4.3	0	0.037	0.0	0		6.0	0.0	15.8
U	100	0.015	9.8	287	0.014	2.5	0	0.037	0.0	260		6.0	0.7	13.0
V	100	0.010	11.5	171	0.012	1.6	0	0.041	0.0	315		6.0	0.9	14.0
W	100	0.020	8.7	753	0.019	5.7	0	0.022	0.0	105		6.0	0.3	14.7
X	100	0.020	8.7	631	0.017	4.9	0	0.008	0.0	0		6.0	0.0	13.6
Y	100	0.015	9.8	530	0.026	3.4	0	0.020	0.0	253		6.0	0.7	13.8
Z	0	0.020	0.0	899	0.013	8.0	0	0.025	0.0	0		6.0	0.0	8.0
OS	100	0.060	5.6	1420	0.020	10.4	0	0.020	0.0			6.0	0.0	16.0

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
DRAINAGE AREA MAP
PROPOSED/ONSITE CONDITIONS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: DESIGNED BY: DRAWN BY: CHECKED BY: DRAWING NAME: SE-ONSITE DAM.DWG

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 11 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:34
Plot Style/Name: Page No. 25 - 17"x22.11

DRIVEWAY CULVERT SIZING CHART

BLOCK	LOT	SIZE (RCP)
A	1	24"
A	2	24"
A	3	24"
A	4	24"
A	5	24"
A	6	24"
A	7	DIP DRIVEWAY
A	8	DIP DRIVEWAY
A	9	DIP DRIVEWAY
A	10	DIP DRIVEWAY
A	11	DIP DRIVEWAY
A	12	DIP DRIVEWAY
A	14	24"
A	15	24"
A	16	24"
A	17	24"
A	18	DIP DRIVEWAY
A	19	DIP DRIVEWAY
A	20	DIP DRIVEWAY
A	21	DIP DRIVEWAY
A	22	18"
A	23	18"
A	24	18"
A	25	18"
A	26	DIP DRIVEWAY
A	27	DIP DRIVEWAY
A	28	DIP DRIVEWAY
A	29	DIP DRIVEWAY
A	30	DIP DRIVEWAY
A	31	24"
A	32	24"
A	33	24"
A	34	24"
B	1	DIP DRIVEWAY
B	2	DIP DRIVEWAY
B	3	DIP DRIVEWAY
B	4	DIP DRIVEWAY
B	5	24"
B	6	24"
B	7	24"
B	8	30"
C	1	DIP DRIVEWAY
C	2	DIP DRIVEWAY
C	3	DIP DRIVEWAY
C	4	DIP DRIVEWAY
C	5	DIP DRIVEWAY
C	6	18"
C	7	18"
C	8	18"
C	9	18"
C	10	24"
C	11	24"
C	12	18"
C	13	18"
D	1	24"
D	2	24"
D	3	24"
D	4	24"
D	5	24"
D	6	24"
D	7	24"
D	8	30"
D	9	30"
D	10	30"
D	11	30"
D	12	30"
D	13	30"
E	1	DIP DRIVEWAY
E	2	DIP DRIVEWAY
E	3	DIP DRIVEWAY
E	5	30"
E	6	30"
E	7	30"
E	8	30"
E	9	30"

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OVERALL GRADING PLAN

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-OVL GRADING.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

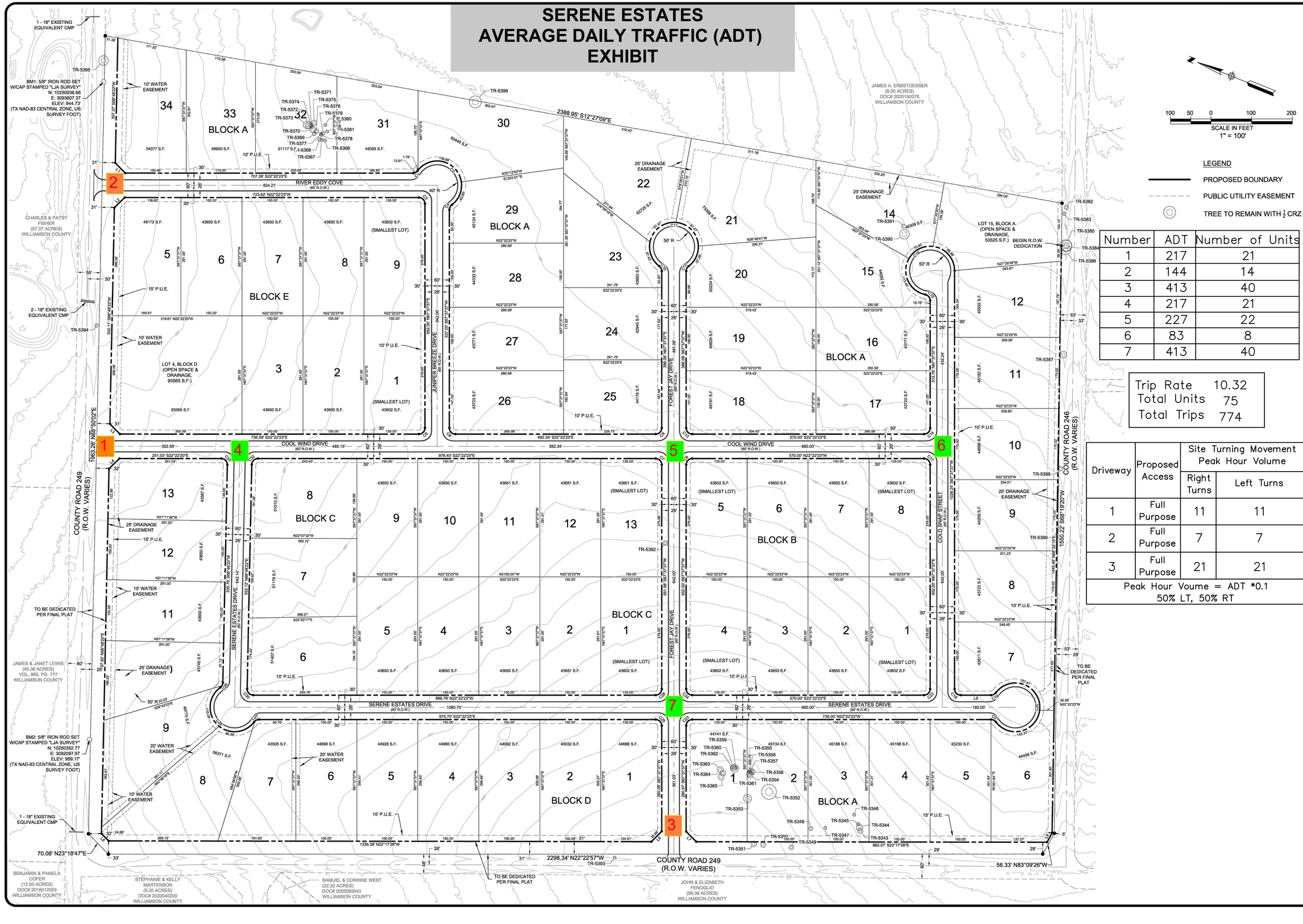
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SHEET NO. 12 OF 51 SHEETS

2024-24-CON

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User: jmartinez
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Plot Date/Time: Sep 19, 25 - 15:32:34

SERENE ESTATES
AVERAGE DAILY TRAFFIC (ADT) EXHIBIT



100 50 0 100 200
SCALE IN FEET
1" = 100'

LEGEND
- PROPOSED BOUNDARY
- PUBLIC UTILITY EASEMENT
- TREE TO REMAIN WITH ½ CRZ

Number	ADT	Number of Units
1	217	21
2	144	14
3	413	40
4	217	21
5	227	22
6	83	8
7	413	40

Trip Rate	10.32
Total Units	75
Total Trips	774

Driveway	Proposed Access	Site Turning Movement Peak Hour Volume	
		Right Turns	Left Turns
1	Full Purpose	11	11
2	Full Purpose	7	7
3	Full Purpose	21	21

Peak Hour Voume = ADT *0.1
50% LT, 50% RT

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
AVERAGE DAILY TRIPS EXHIBIT

NO.	DESCRIPTION	BY	DATE

DATE: 9/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-DETAILS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

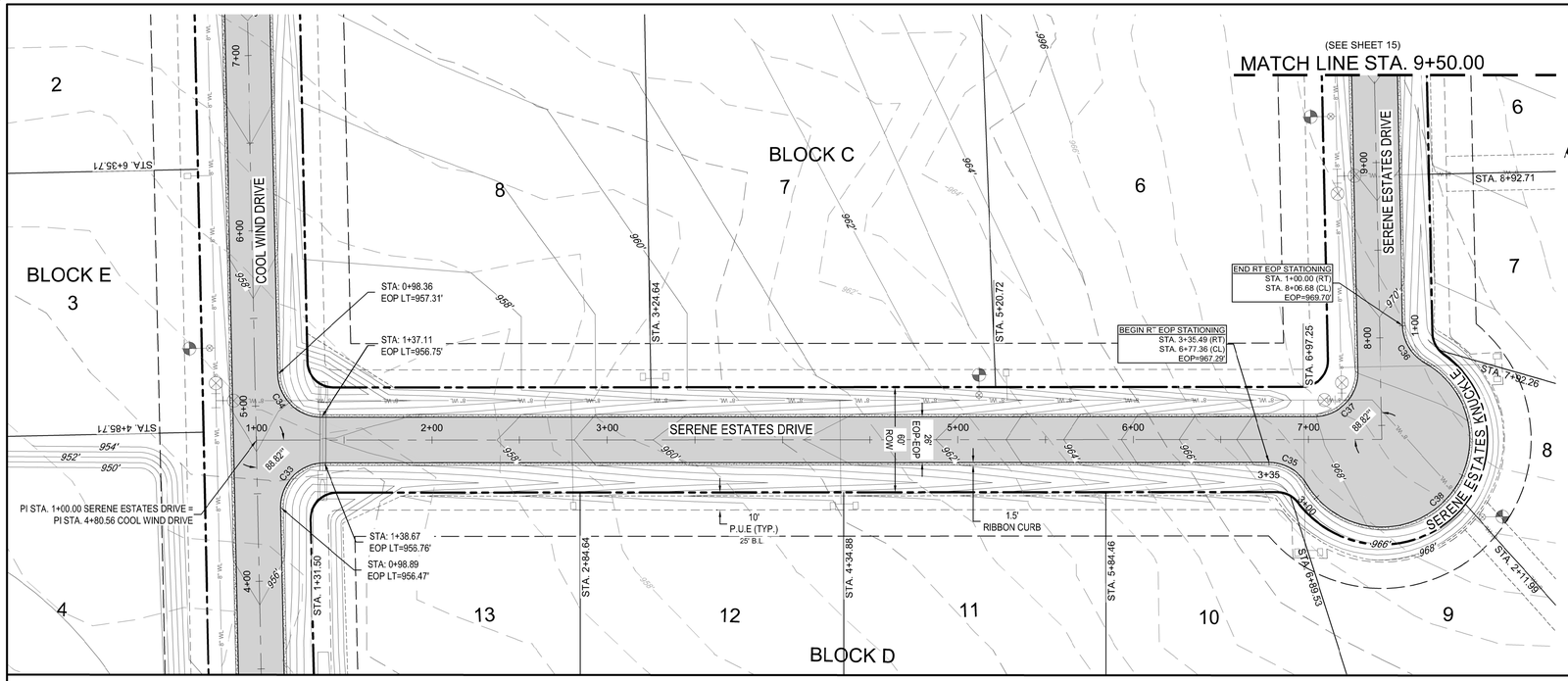
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7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

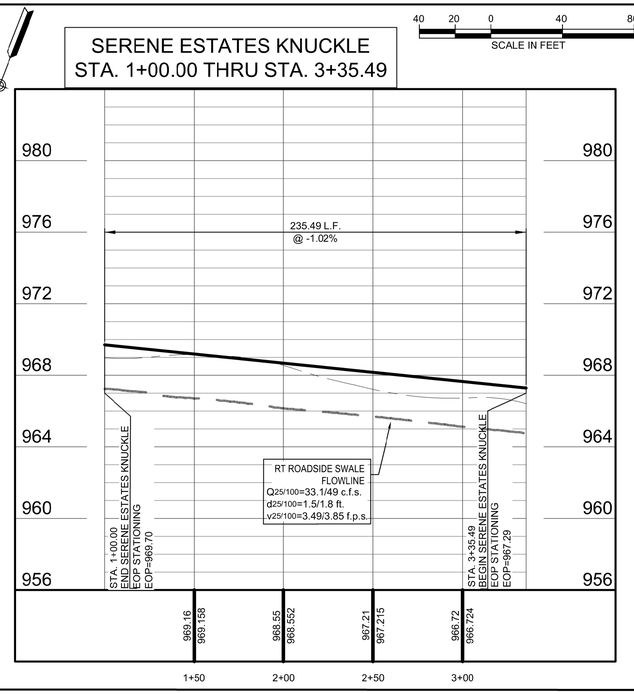
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SHEET NO. 13 OF 51 SHEETS

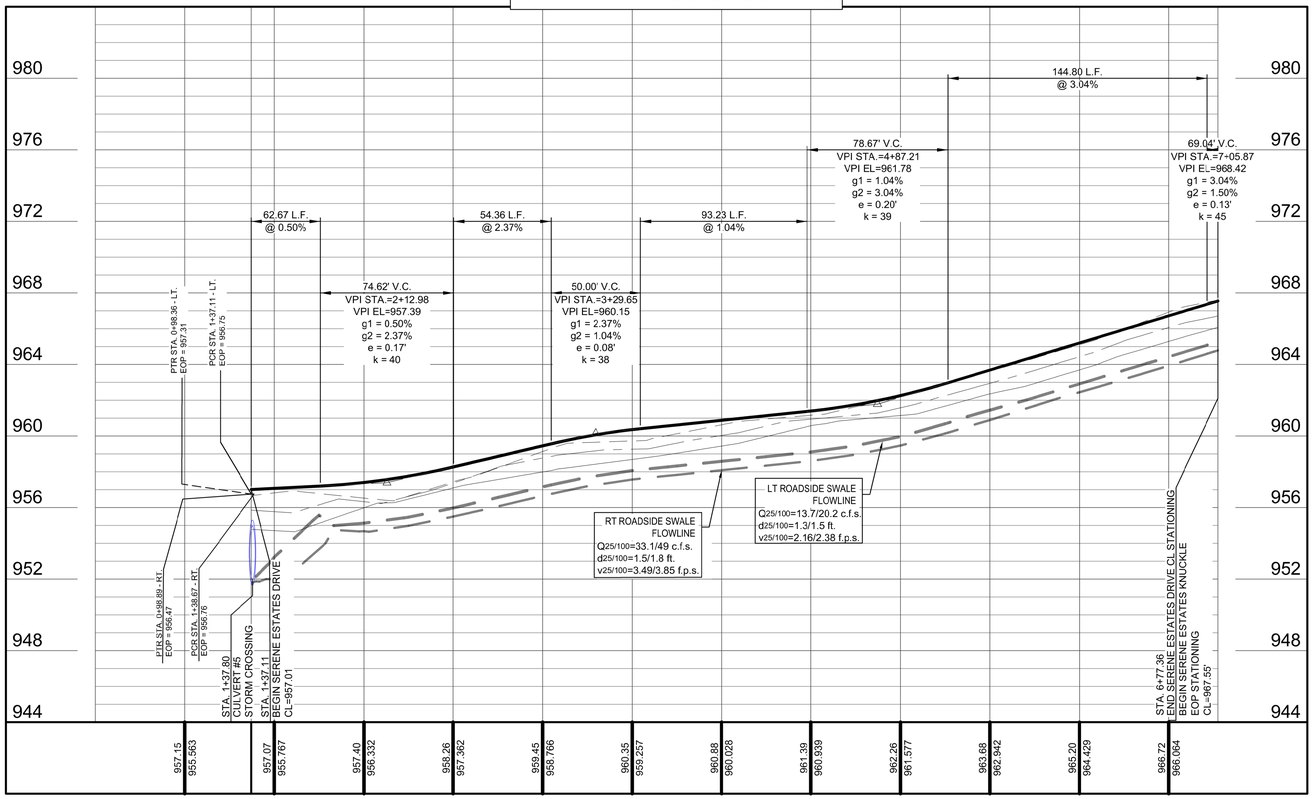
2024-24-CON

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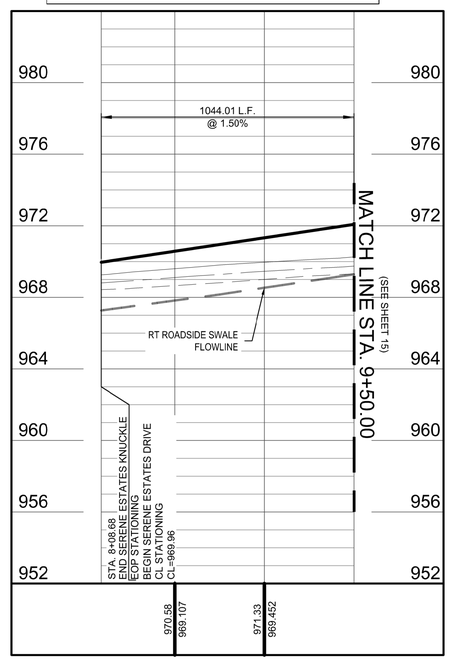




SERENE ESTATES DRIVE
STA. 1+37.11 THRU STA. 6+77.36



SERENE ESTATES DRIVE
STA. 8+08.68 THRU STA. 9+50.00



STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
SERENE ESTATES DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,563'	RIBBON	N/A	25

Curve Table

Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C33	91°10'44.31"	25.00'	39.78'	35.72'	S23°12'59"W
C34	88°49'15.69"	25.00'	38.76'	34.99'	S66°47'01"E
C35	59°33'28.61"	25.00'	25.99'	24.83'	N81°24'54"W
C36	59°33'28.61"	25.00'	25.99'	24.83'	S52°09'07"E
C37	91°10'44.31"	25.00'	39.78'	35.72'	N23°12'59"E
C38	210°17'41.54"	50.00'	183.52'	96.53'	S23°12'59"W

SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
SERENE ESTATES DRIVE & KNUCKLE
(1+00.00-9+50.00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwng

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

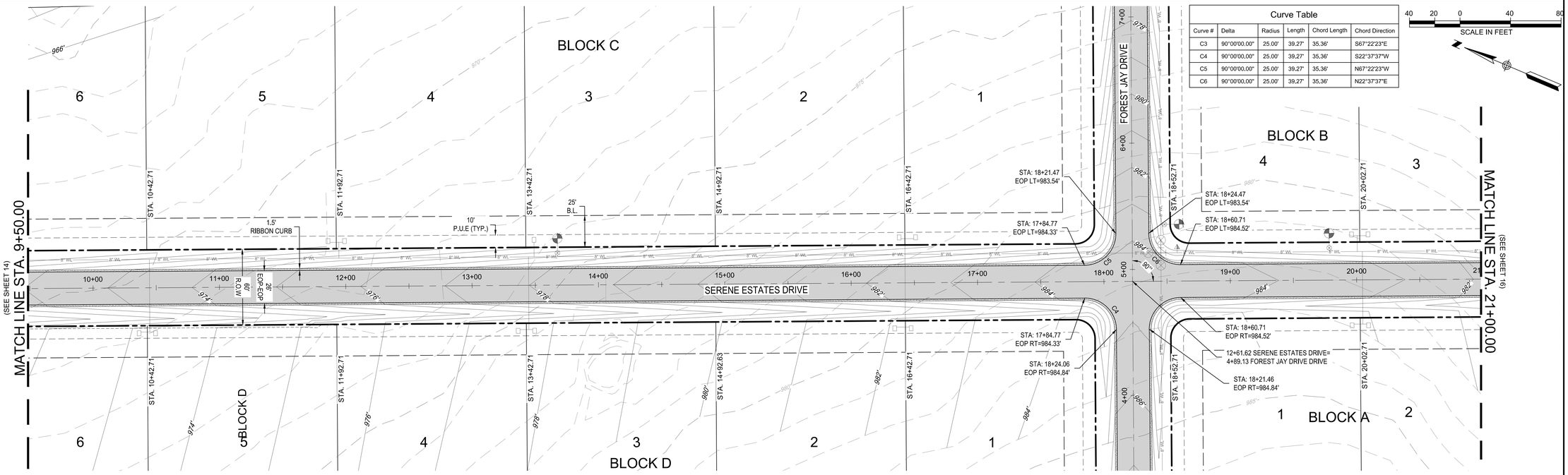
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 14 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep 19, 25 - 16:29
Plot Only/Plot Date: Sep 19, 25 - 16:30



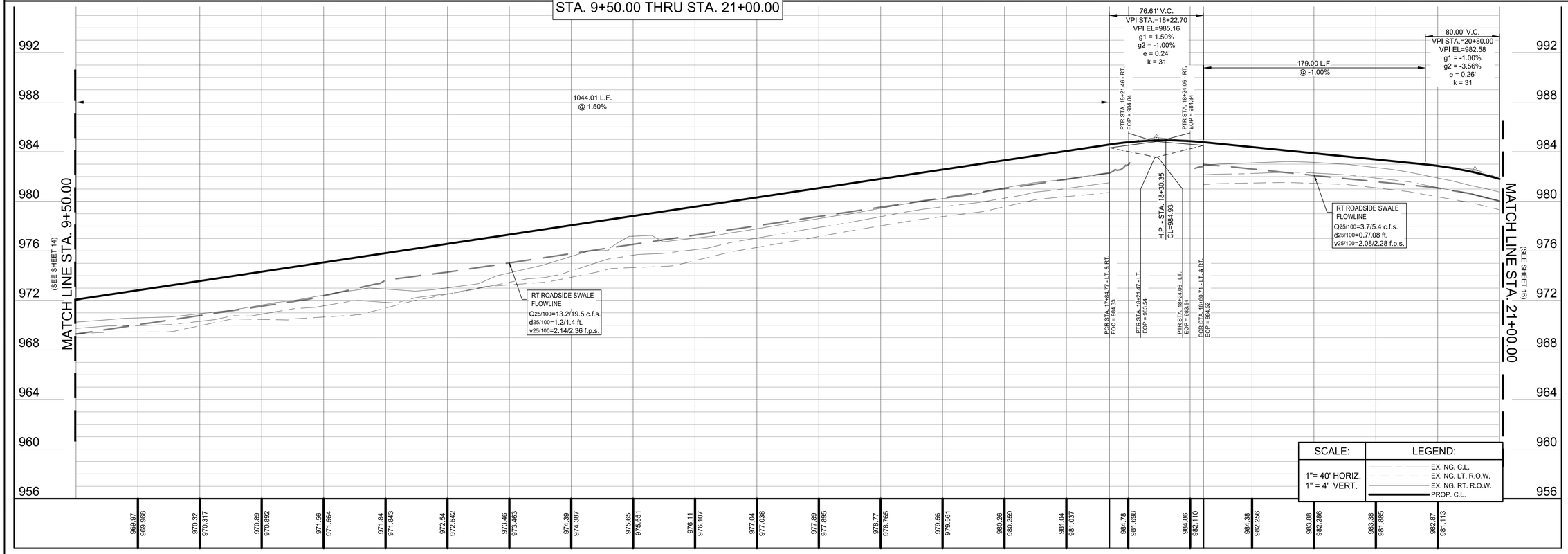
Curve Table					
Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C3	90°00'00.00"	25.00'	39.27'	35.36'	S67°22'23"E
C4	90°00'00.00"	25.00'	39.27'	35.36'	S22°37'37"W
C5	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C6	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E

40 20 0 40 80
SCALE IN FEET

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
SERENE ESTATES DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,563'	RIBBON	N/A	25

SERENE ESTATES DRIVE
STA. 9+50.00 THRU STA. 21+00.00



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
SERENE ESTATES DRIVE (9+50.00-21+00.00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

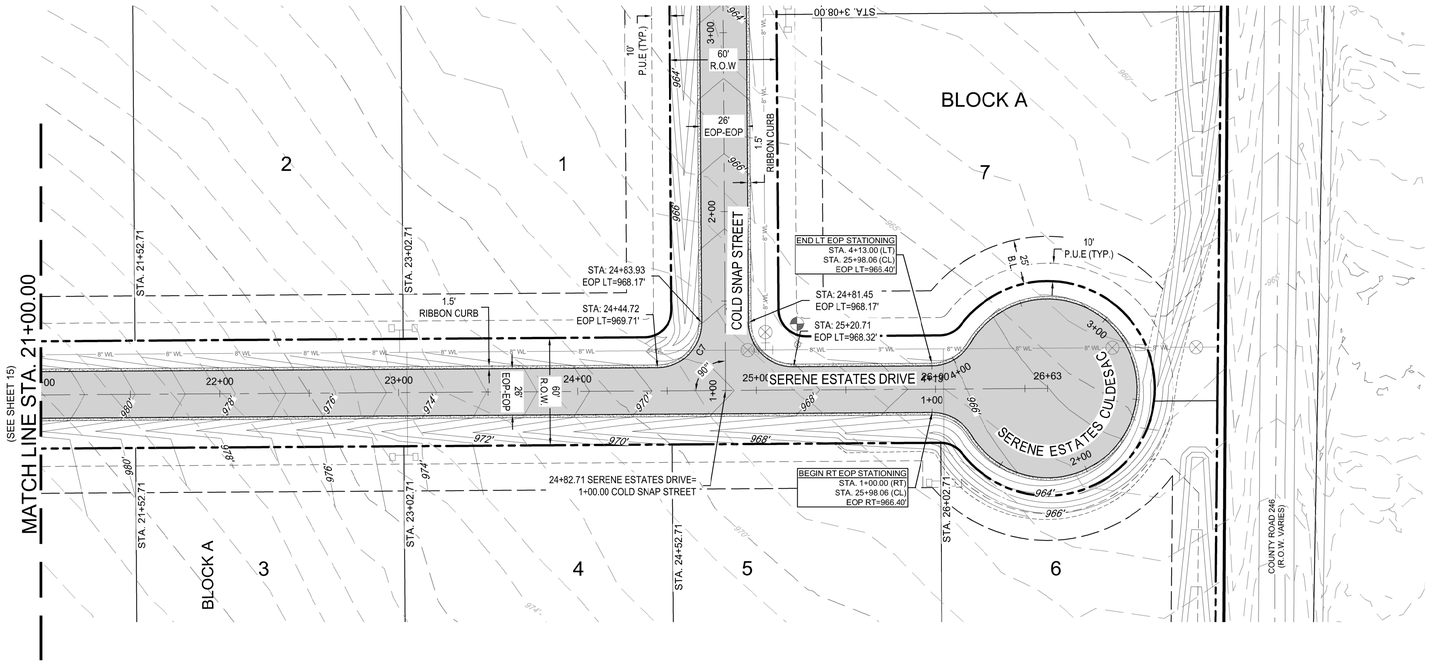
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 15 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:55
Plot Only/Plotted: Sep. 19, 25 - 15:53:52



40 20 0 40 80
SCALE IN FEET

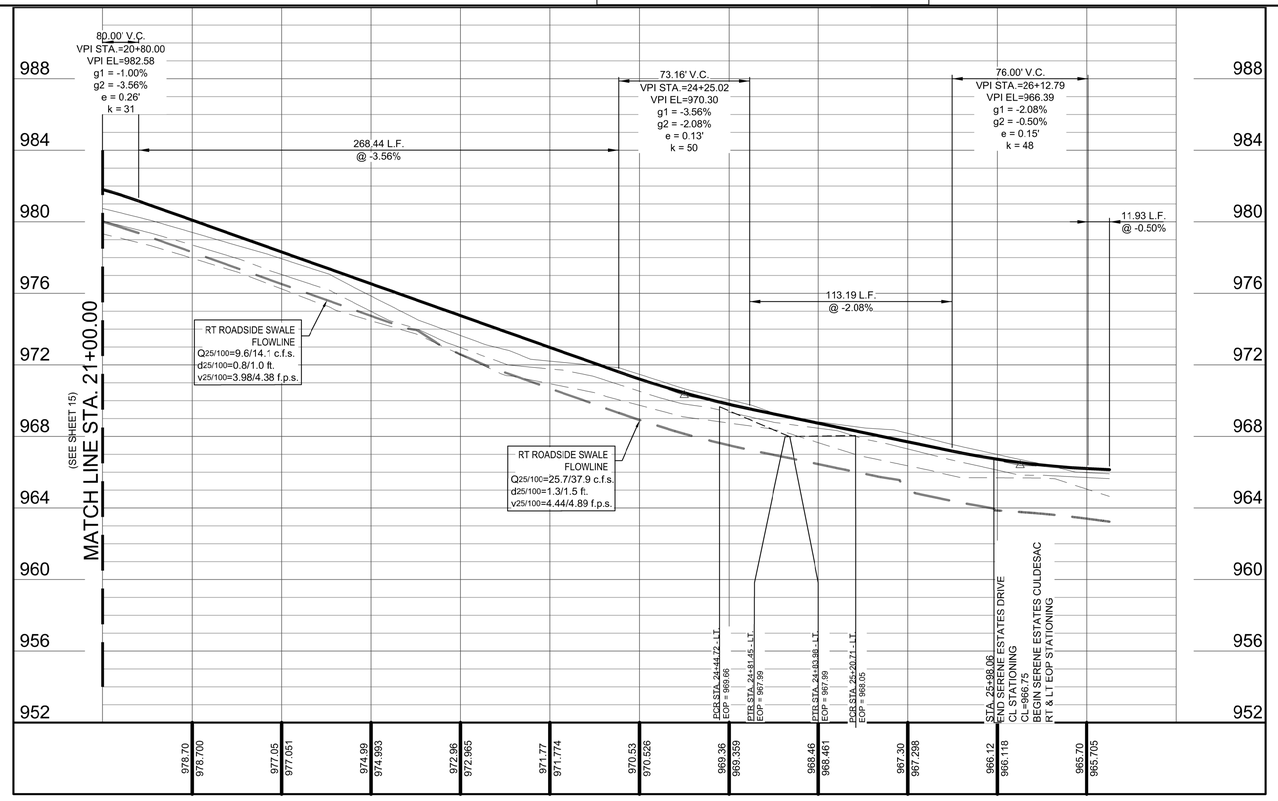
Curve Table					
Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C7	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C8	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C9	59°33'28.61"	25.00'	25.99'	24.83'	S7°24'22"W
C10	59°33'28.61"	25.00'	25.99'	24.83'	N52°09'07"W
C11	156°44'19.33"	50.00'	136.78'	97.95'	N3°33'42"W

SERENE ESTATES DRIVE
STA. 21+00. THRU STA. 24+98.06

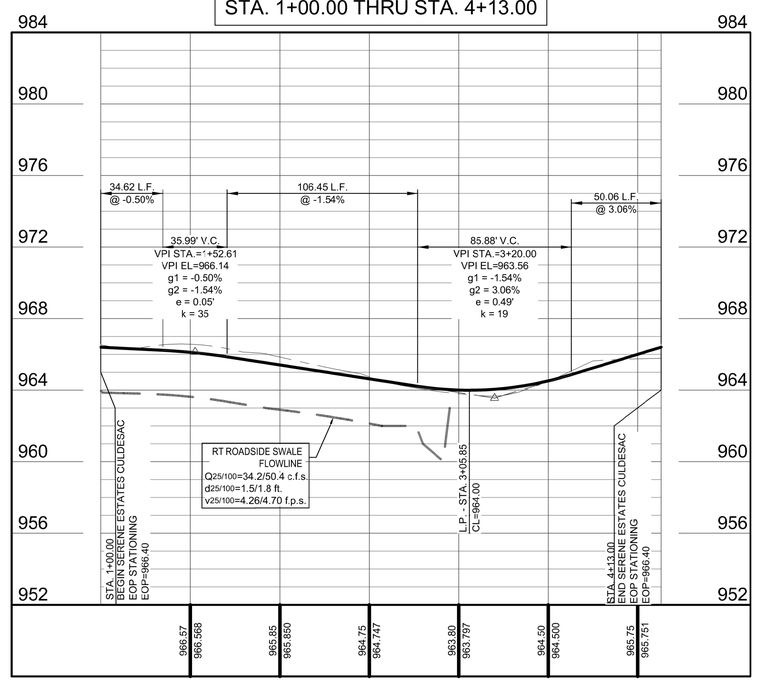
STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
SERENE ESTATES DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,563'	RIBBON	N/A	25

SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.



SERENE ESTATES CULDESAC
STA. 1+00.00 THRU STA. 4+13.00



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
SERENE ESTATES DRIVE & CULDESAC (21+00.-END)

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

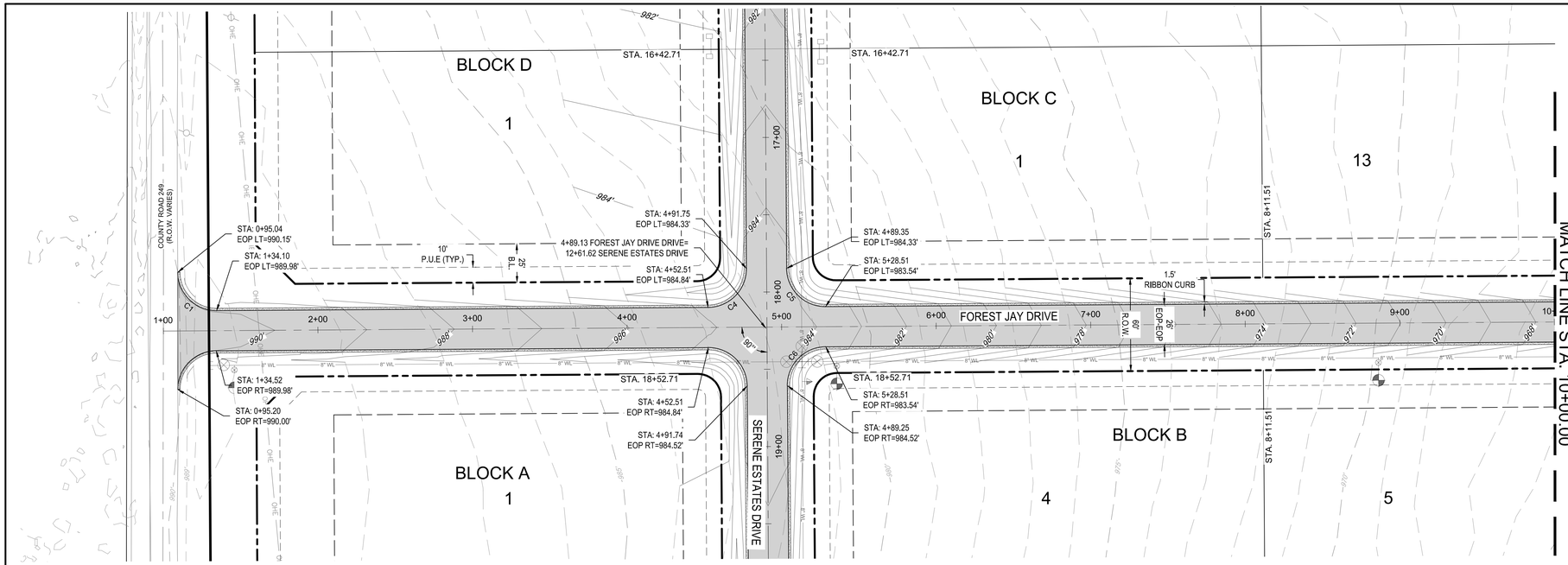
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 16 OF 51 SHEETS

2024-24-CON

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Last Modified: Sep. 19, 25 - 16:23
Plot Only/Plot: Sep. 19, 25 - 16:23:32

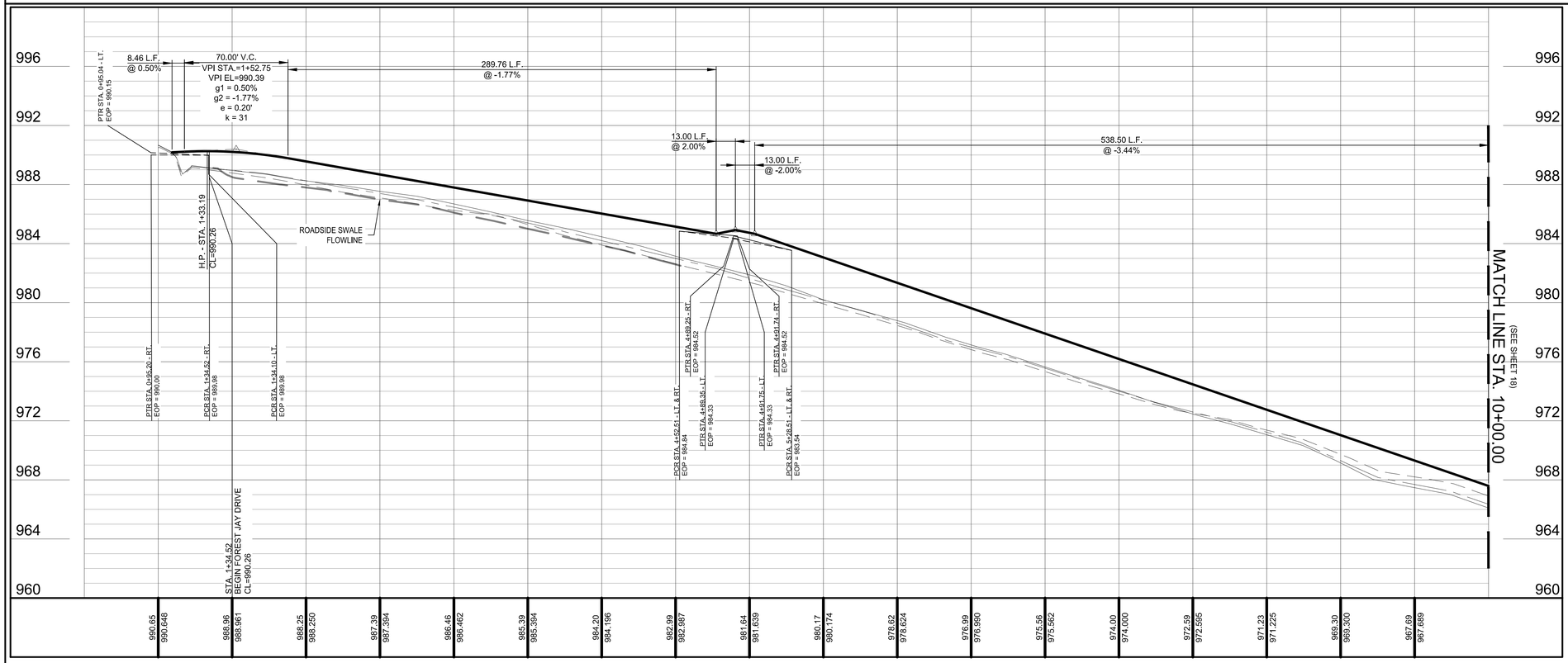


Curve Table					
Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C1	90°08'36.18"	25.00'	39.33'	35.40'	N67°18'05"W
C2	89°49'54.01"	25.00'	39.20'	35.30'	N22°42'40"E
C3	90°00'00.00"	25.00'	39.27'	35.36'	S67°22'23"E
C4	90°00'00.00"	25.00'	39.27'	35.36'	S22°37'37"W
C5	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C6	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E

FOREST JAY DRIVE
STA. 1+34.52 THRU STA. 10+00.00

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
FOREST JAY DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	1,494'	RIBBON	N/A	25



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
FOREST JAY DRIVE (1+00-10+00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
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PROFESSIONAL ENGINEER
09-19-2025

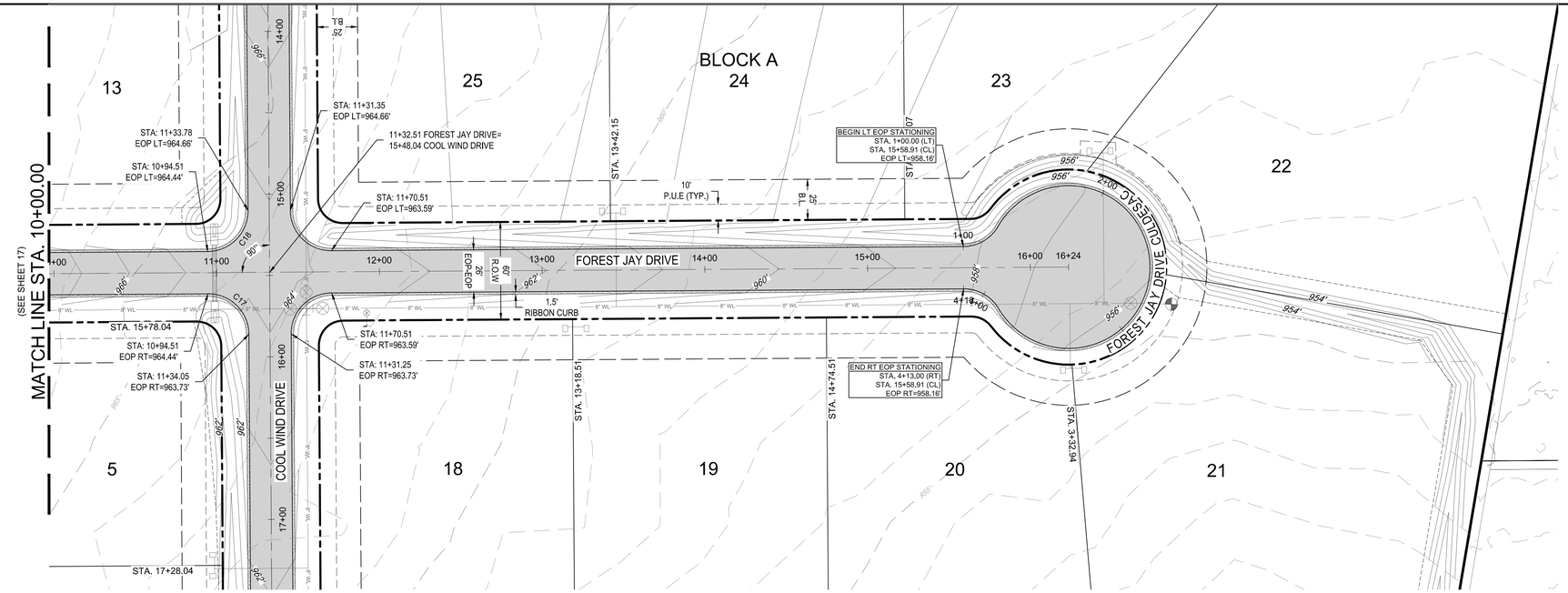
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 17 OF 51 SHEETS

2024-24-CON

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Last Modified: Sep. 19, 25 - 15:35
Plot Date/Time: Sep. 19, 25 - 15:54:14

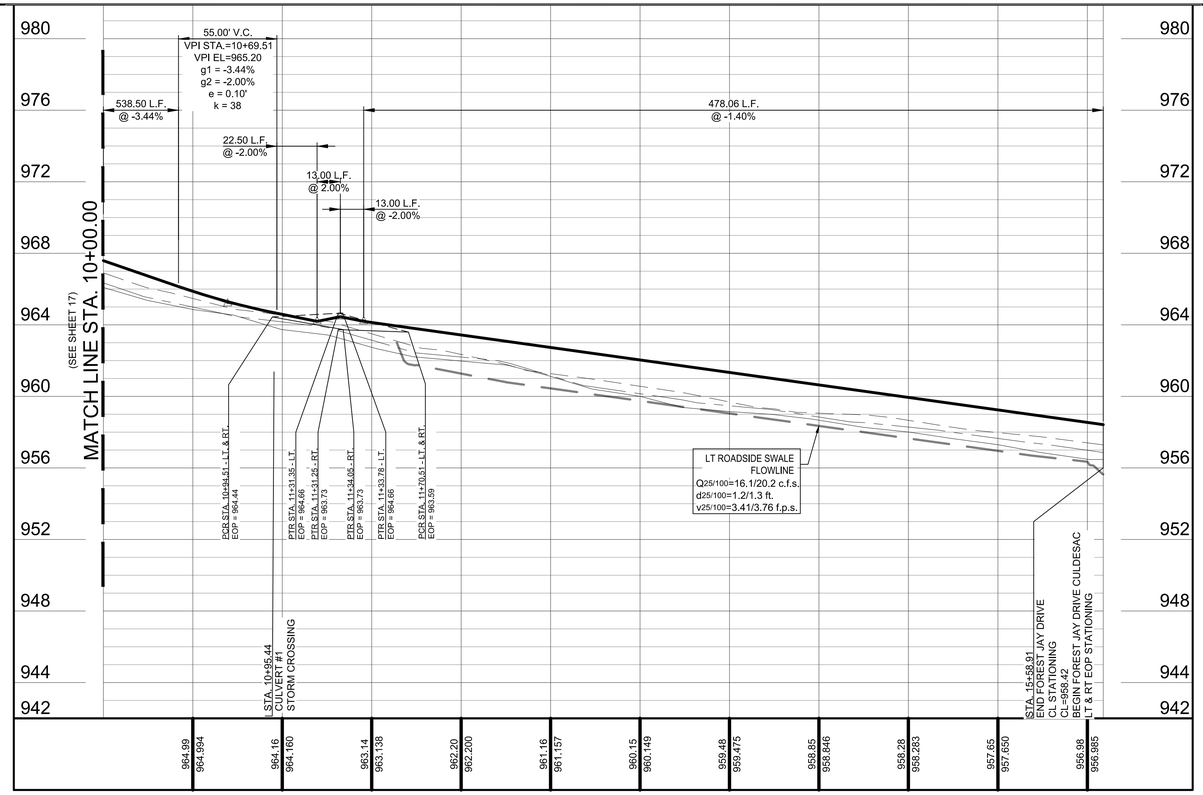


Curve Table					
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C17	90°00'00.00"	25.00'	39.27'	35.36'	S67°22'23"E
C18	90°00'00.00"	25.00'	39.27'	35.36'	S22°37'37"W
C19	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C20	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C21	59°33'28.61"	25.00'	25.99'	24.83'	S37°50'53"W
C22	59°33'28.61"	25.00'	25.99'	24.83'	S82°35'38"E
C23	299°06'57.23"	50.00'	261.03'	50.67'	N22°22'23"W

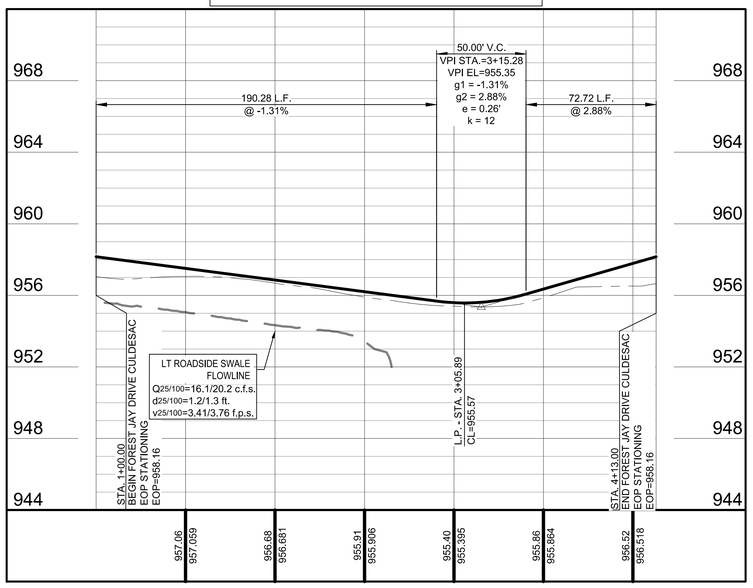
FOREST JAY DRIVE
STA. 10+00.00 THRU STA. 15+98.91

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
FOREST JAY DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	1,494'	RIBBON	N/A	25



FOREST JAY DRIVE CULDESAC
STA. 1+00.00 THRU STA. 4+13.00



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG, C.L. EX. NG, LT. R.O.W. EX. NG, RT. R.O.W. PROP, C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
FOREST JAY DRIVE AND CULDESAC
(1+01.09-5+26.40)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

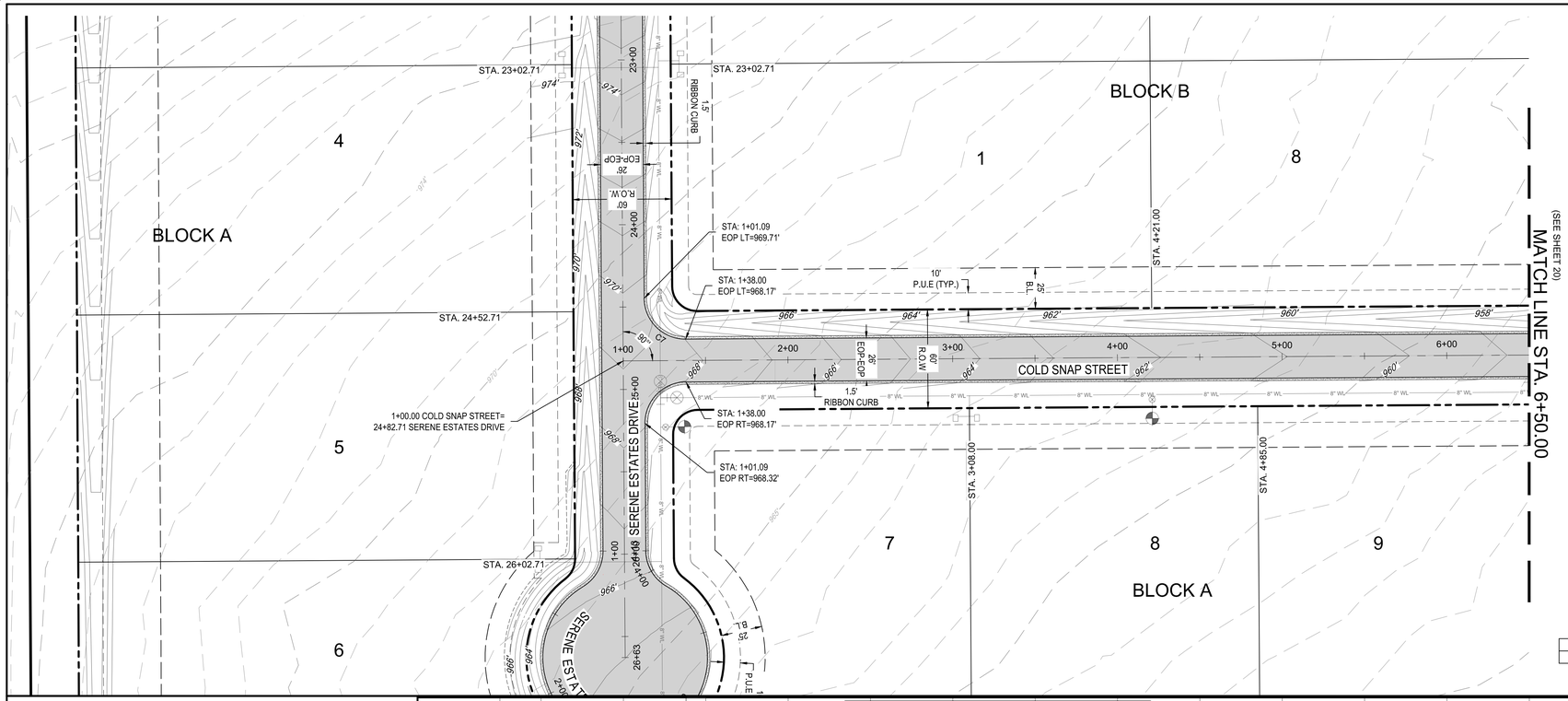
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 18 OF 51 SHEETS

2024-24-CON

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User: jmorfinez
Last Modified: Sep. 19, 25 - 15:35
Plot Only/Plotted: Sep. 19, 25 - 15:54:24



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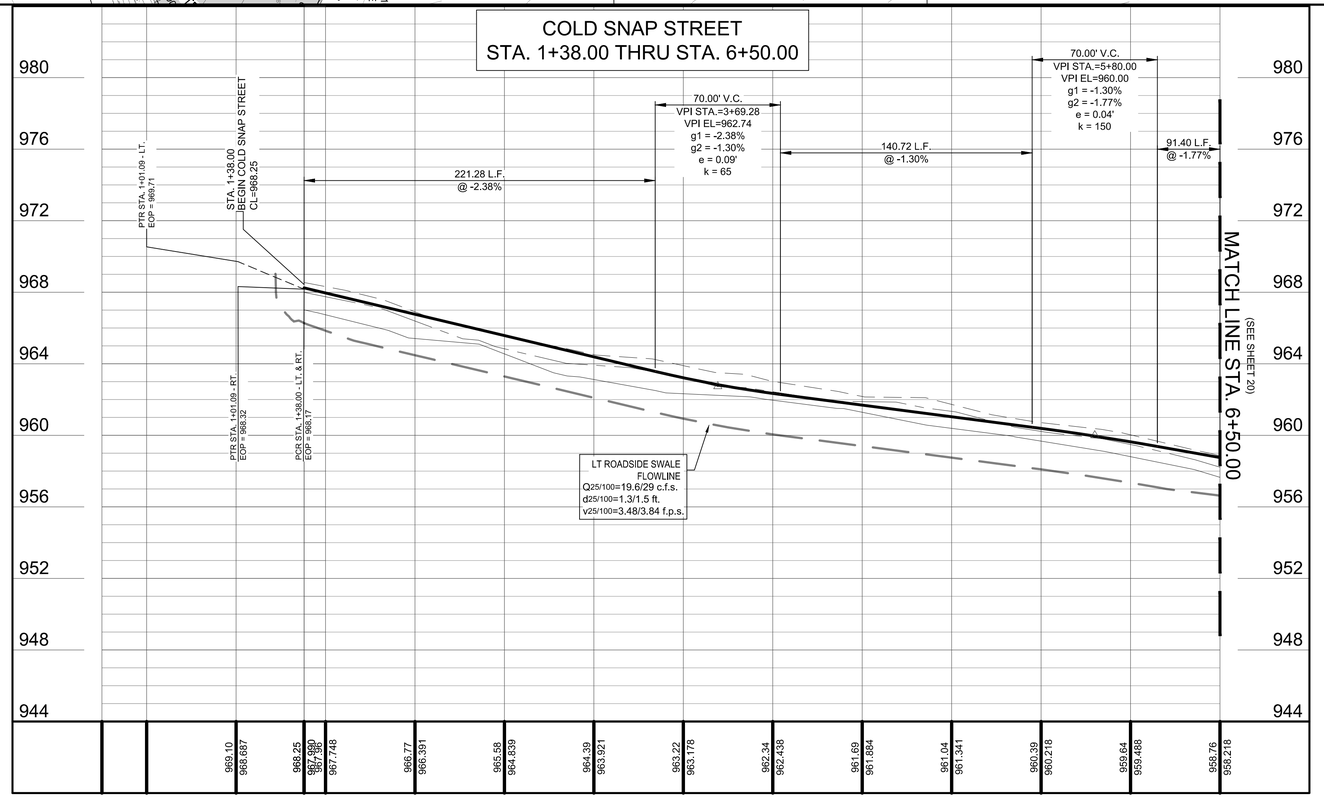
SCALE IN FEET

Curve Table					
Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C7	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C8	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C9	59°33'28.61"	25.00'	25.99'	24.83'	S7°24'22"W
C10	59°33'28.61"	25.00'	25.99'	24.83'	N52°09'07"W

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
COLD SNAP STREET	LOCAL STREET - RURAL	PUBLIC	60'	26'	1,104'	RIBBON	N/A	25

COLD SNAP STREET
STA. 1+38.00 THRU STA. 6+50.00



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
COLD SNAP STREET (11+38.00-6+50.00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

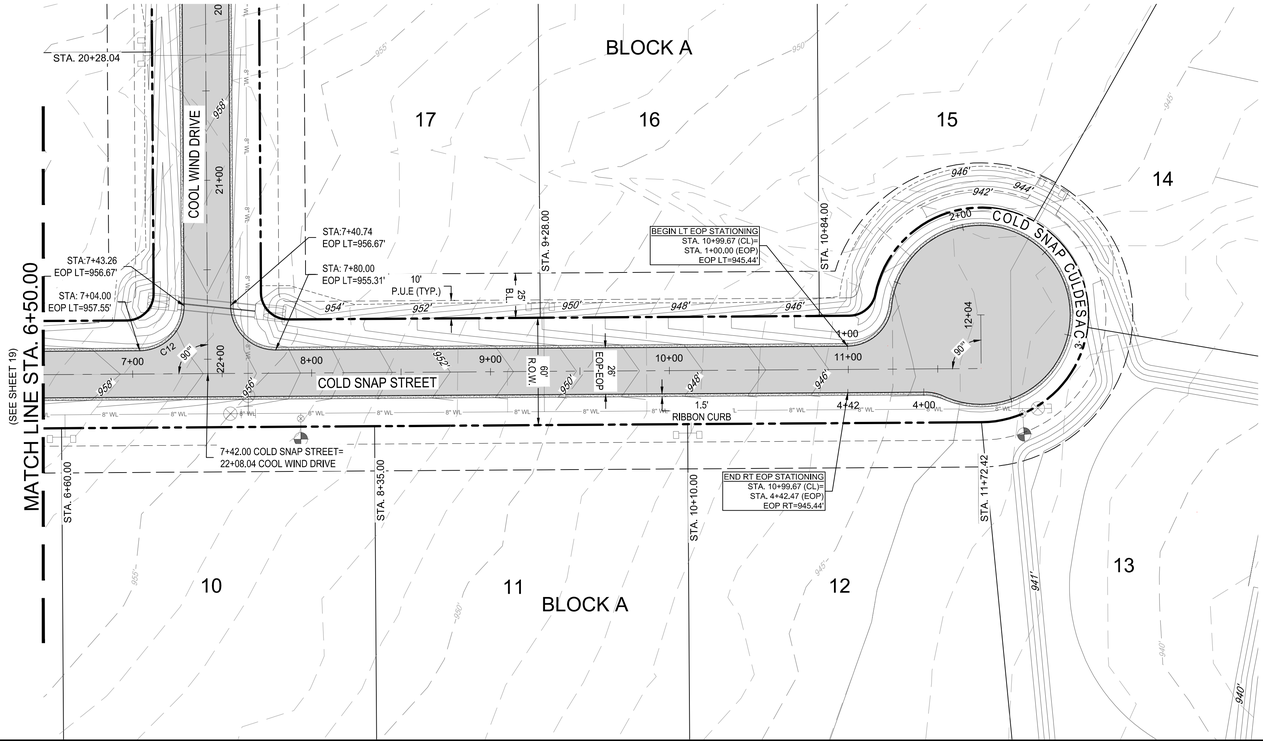
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 19 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep 19, 25 - 15:35
Plot Date/Time: Sep 19, 25 - 15:54:34



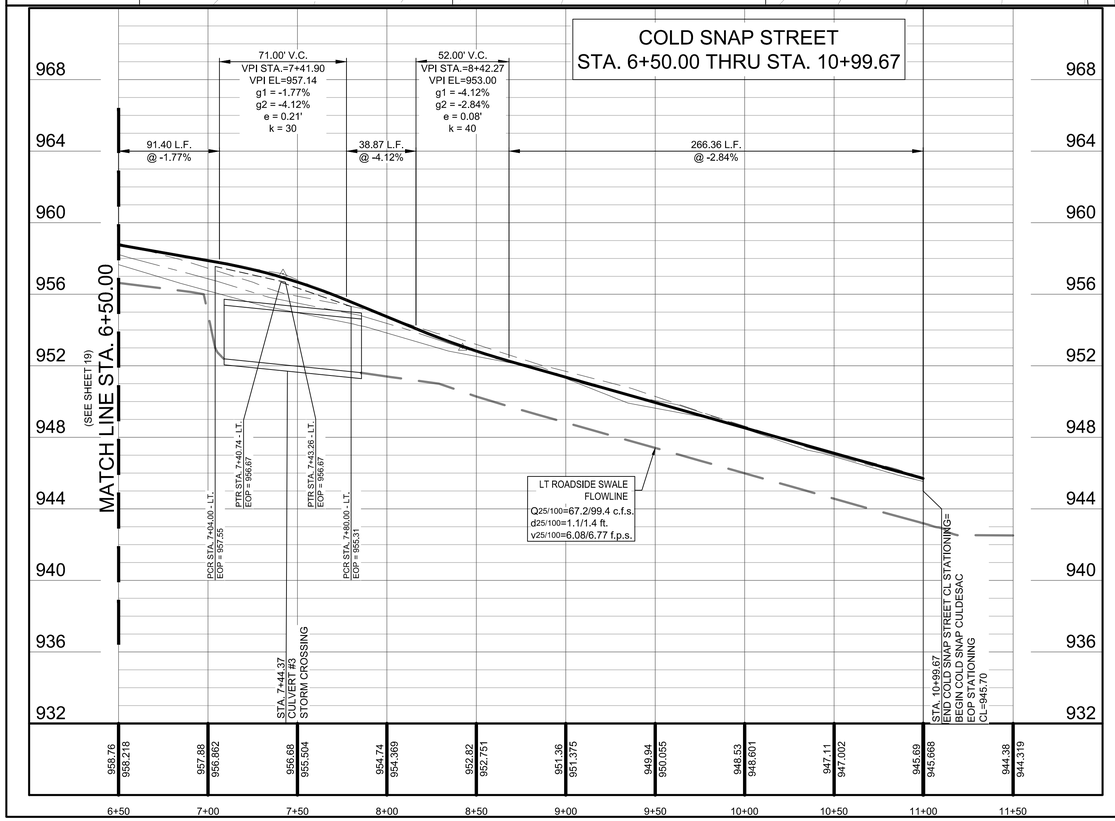
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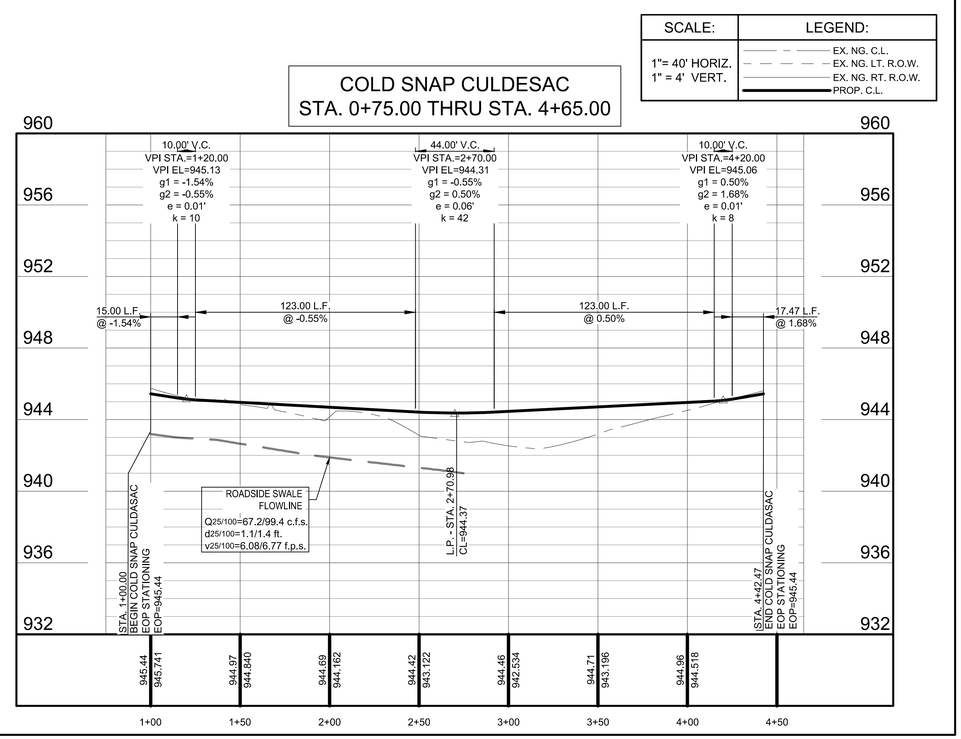
SCALE IN FEET

Curve Table					
Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C12	90°00'00.00"	25.00'	39.27'	35.36'	S22°37'37"W
C13	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C14	24°57'04.68"	25.00'	10.89'	10.80'	N80°06'10"E
C15	83°52'36.48"	25.00'	36.60'	33.42'	S25°41'19"W
C16	288°49'41.17"	50.00'	252.05'	58.19'	N51°50'09"W

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
COLD SNAP STREET	LOCAL STREET - RURAL	PUBLIC	60'	26'	1,104'	RIBBON	N/A	25





SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
COLD SNAP STREET & CULDESAC
(6+50.00-10+99.67)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

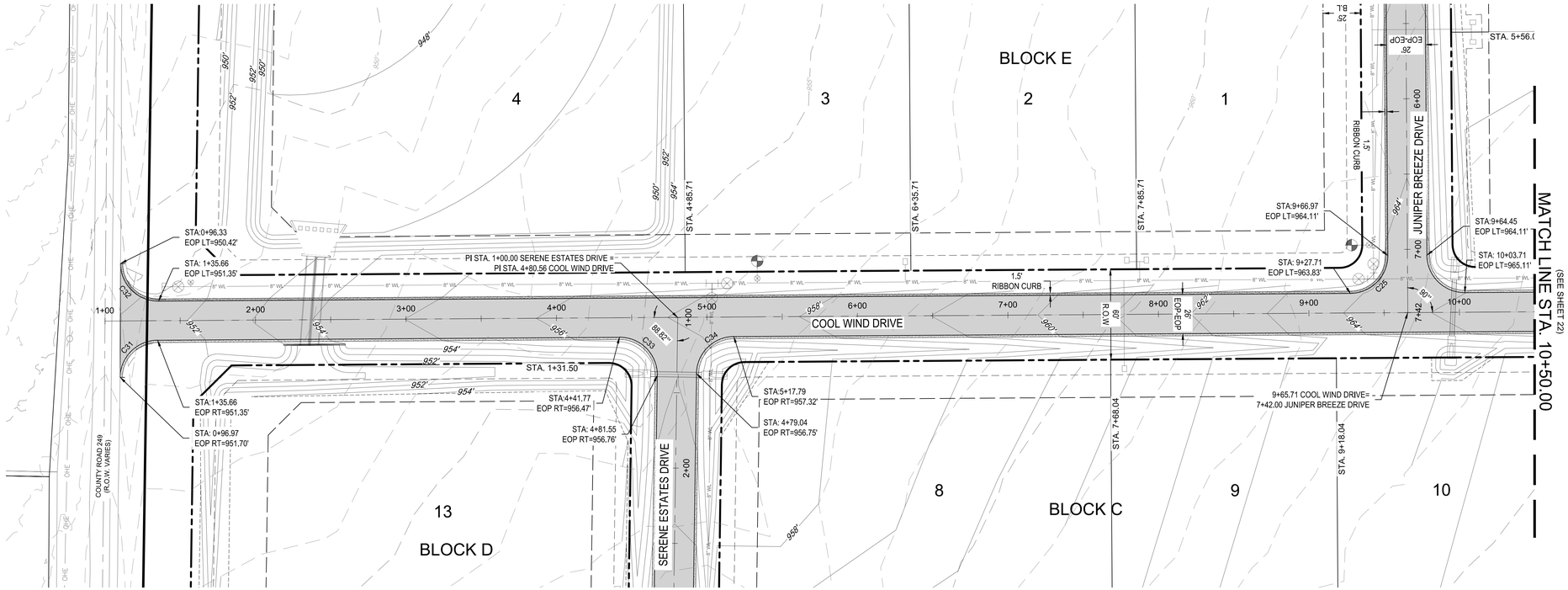
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 20 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:33
Plot Only/Plot Date: Sep. 19, 25 - 15:34:48



40 20 0 40 80
SCALE IN FEET

Curve Table					
Curve #	Delta	Radius	Length	Chord Length	Chord Direction
C24	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C25	90°00'00.00"	25.00'	39.27'	35.36'	S67°22'23"E
C31	88°40'28.39"	25.00'	38.69'	34.94'	S66°42'37"E
C32	90°29'12.32"	25.02'	39.51'	35.53'	S22°43'58"W
C33	91°10'44.31"	25.00'	39.78'	35.72'	S23°12'59"W
C34	88°49'15.69"	25.00'	38.76'	34.99'	S66°47'01"E

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
COOL WIND DRIVE (0+65.00-10+50.00)

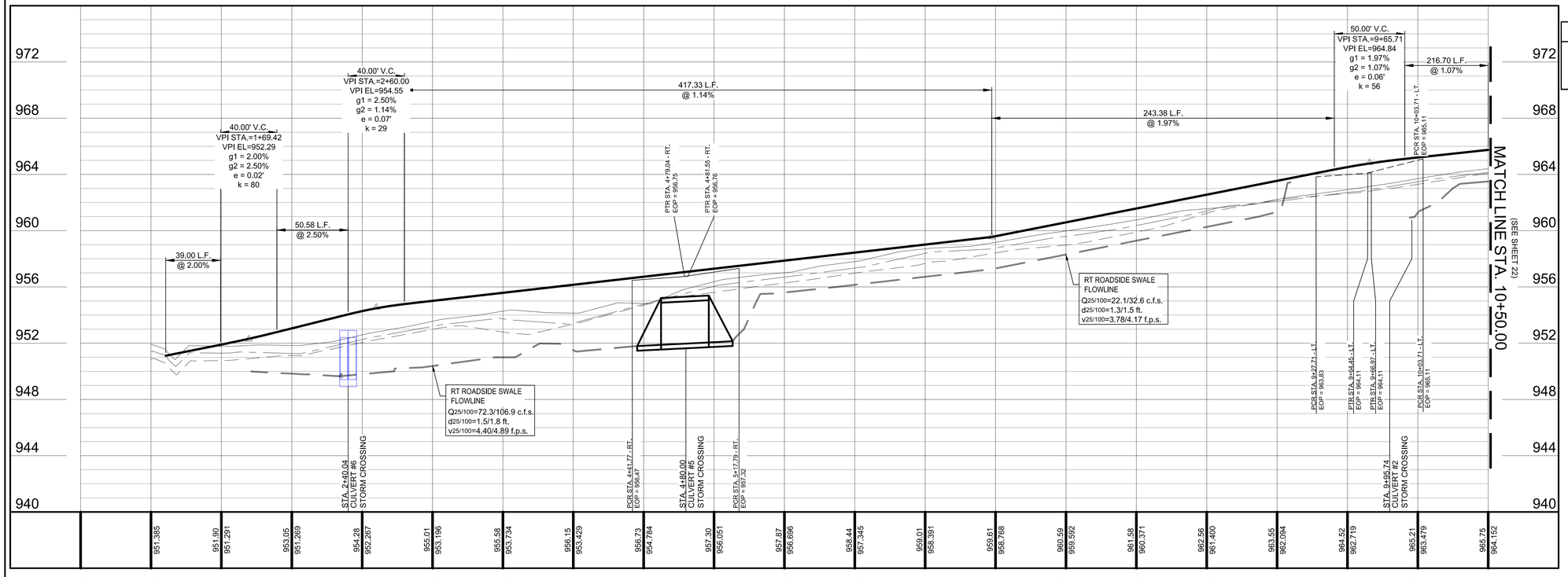
REVISIONS

NO.	DESCRIPTION	BY	DATE

COOL WIND DRIVE
STA. 1+35.66 THRU STA. 10+50.00

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
COOL WIND DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,080'	RIBBON	N/A	25



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

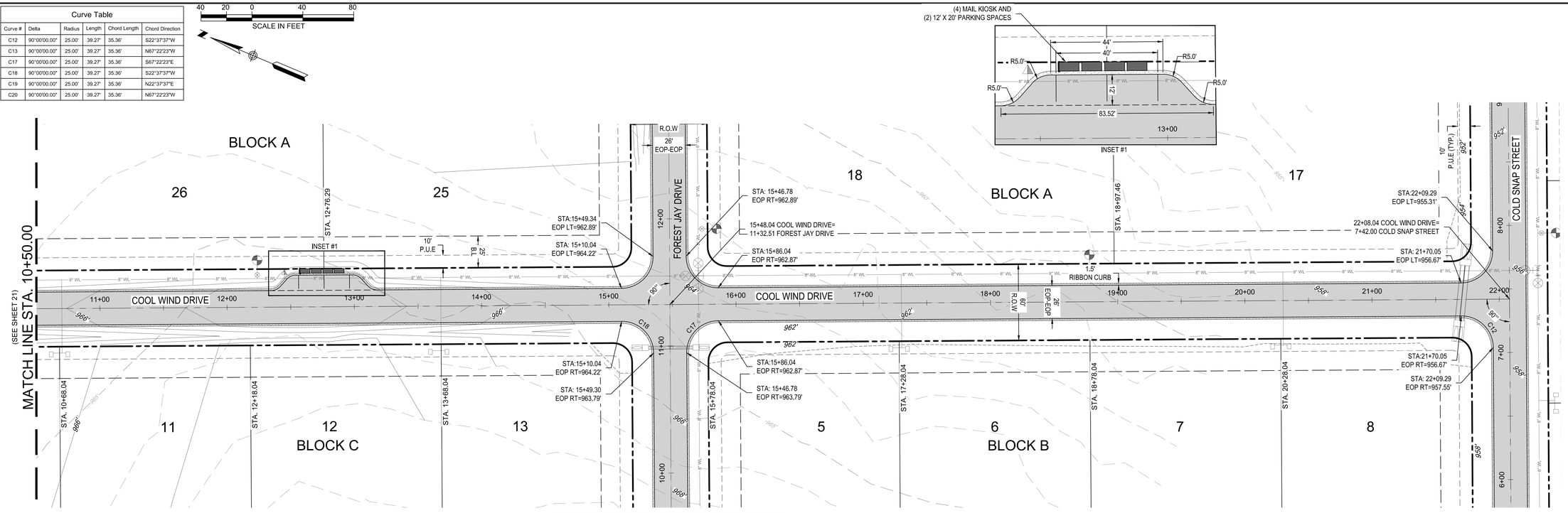
SHEET NO. 21 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep 19, 25 - 15:35
Plot Date/Time: Sep 19, 25 - 15:54:58

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C12	90°00'00.00"	25.00'	39.27'	35.36'	S22°37'37"W
C13	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W
C17	90°00'00.00"	25.00'	39.27'	35.36'	S67°22'23"E
C18	90°00'00.00"	25.00'	39.27'	35.36'	S22°37'37"W
C19	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C20	90°00'00.00"	25.00'	39.27'	35.36'	N67°22'23"W

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SCALE IN FEET

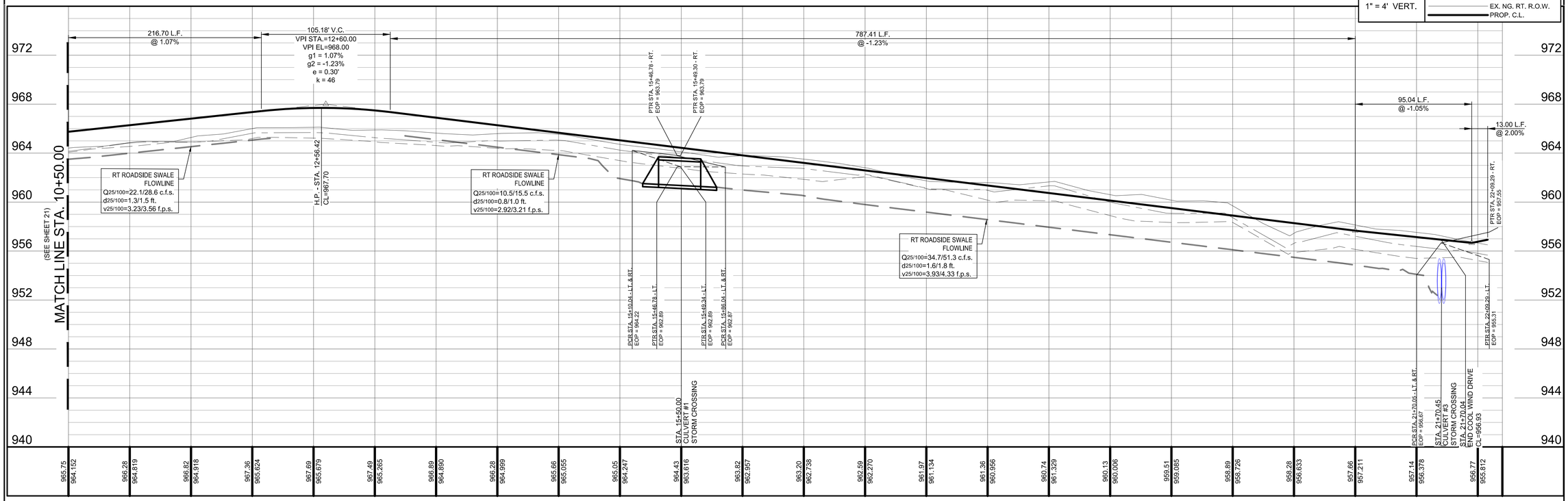


COOL WIND DRIVE
STA. 10+50.00 THRU STA. 21+70.40

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
COOL WIND DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	2,080'	RIBBON	N/A	25

SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
COOL WIND DRIVE (10+50.00-21+70.04)

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 22 OF 51 SHEETS

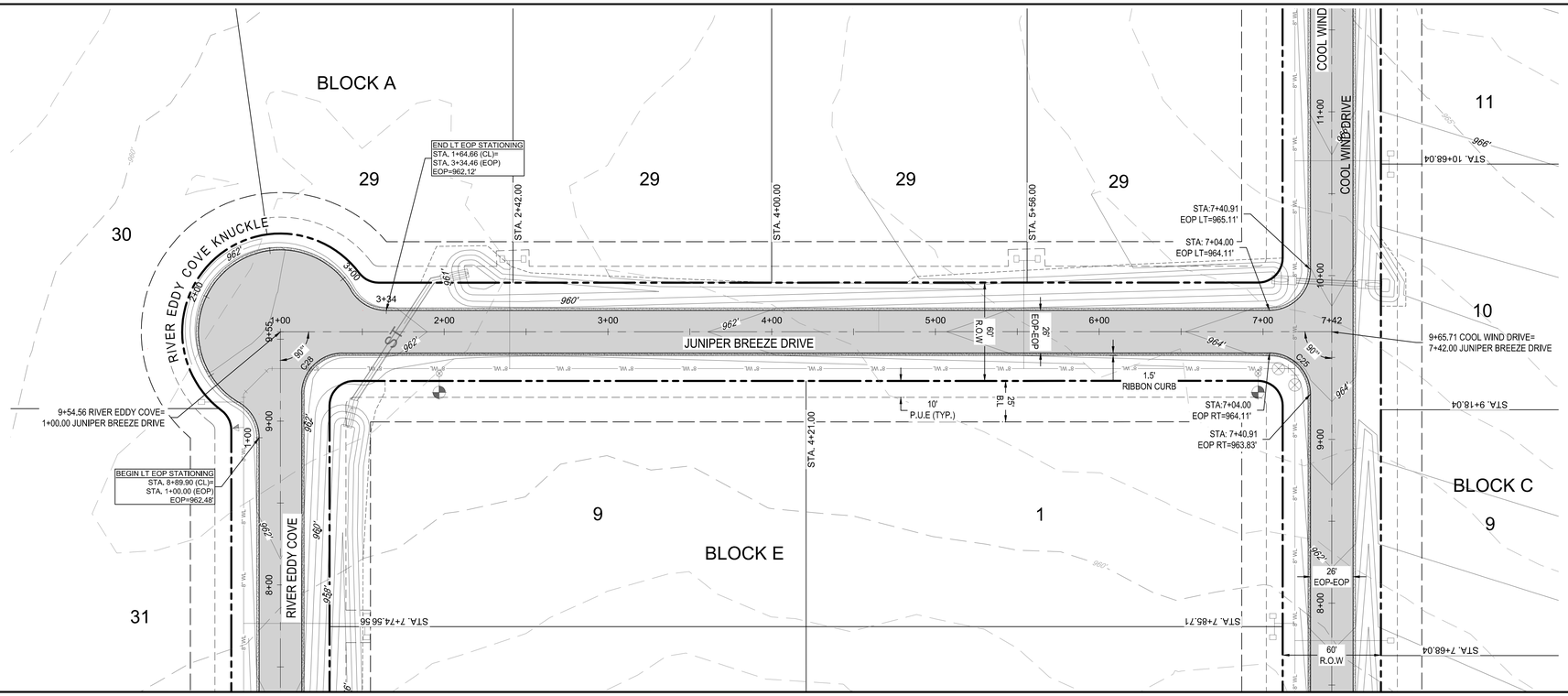
2024-24-CON

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Plot Date/Time: Sep. 19, 25 - 15:52:08

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SCALE IN FEET

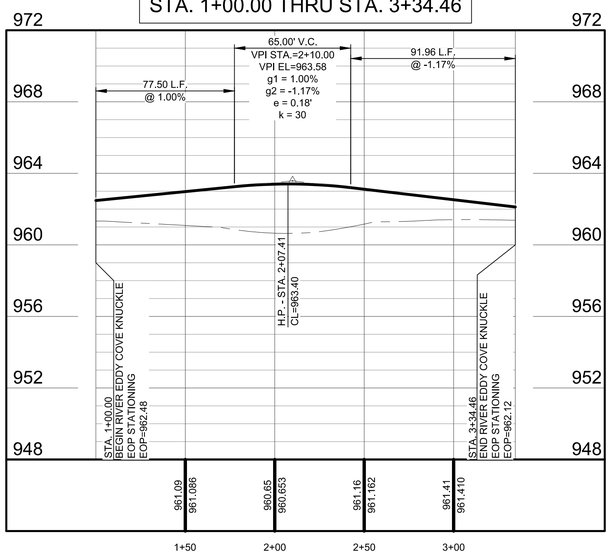
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C25	90°00'00.00"	25.00'	39.27'	35.36'	S67°22'23"E
C26	59°33'28.61"	25.00'	25.99'	24.83'	S82°35'38"E
C27	59°33'28.61"	25.00'	25.99'	24.83'	N52°09'07"W
C28	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C39	209°06'57.23"	50.00'	182.49'	96.79'	N22°37'37"E



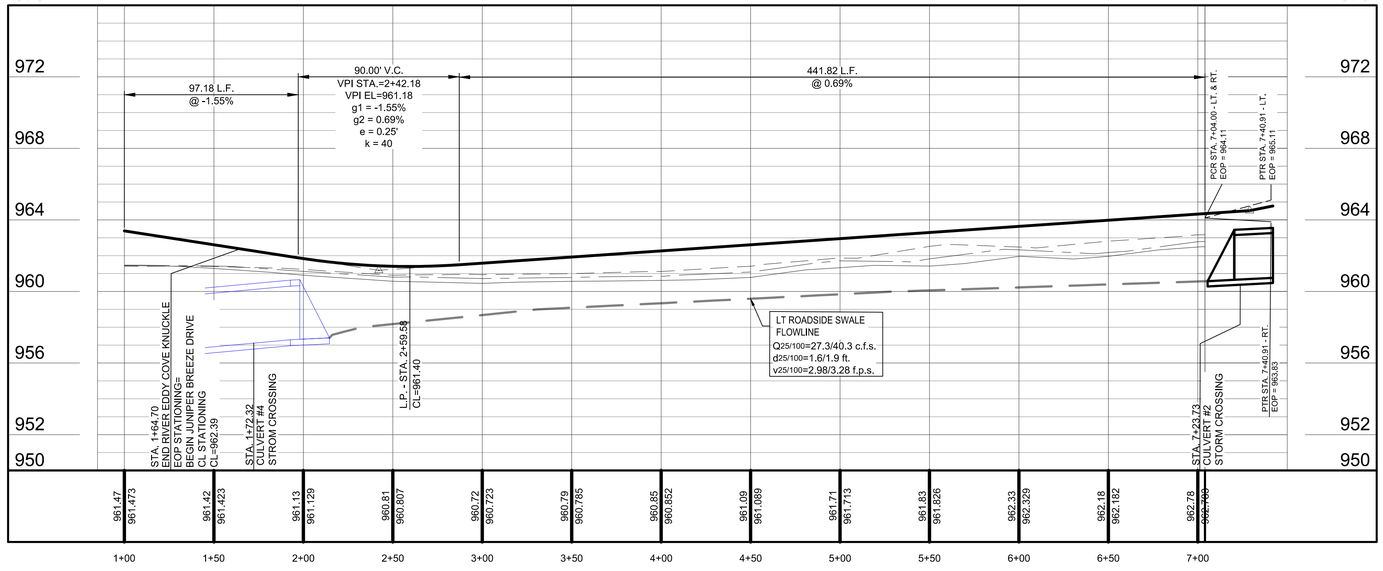
STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
JUNIPER BREEZE DRIVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	642'	RIBBON	N/A	25

RIVER EDDY COVE KNUCKLE
STA. 1+00.00 THRU STA. 3+34.46



JUNIPER BREEZE DRIVE
STA. 1+64.66 THRU STA. 7+04.00



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
JUNIPER BREEZE DRIVE AND KNUCKLE
(1+64.66-7+04.00)

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

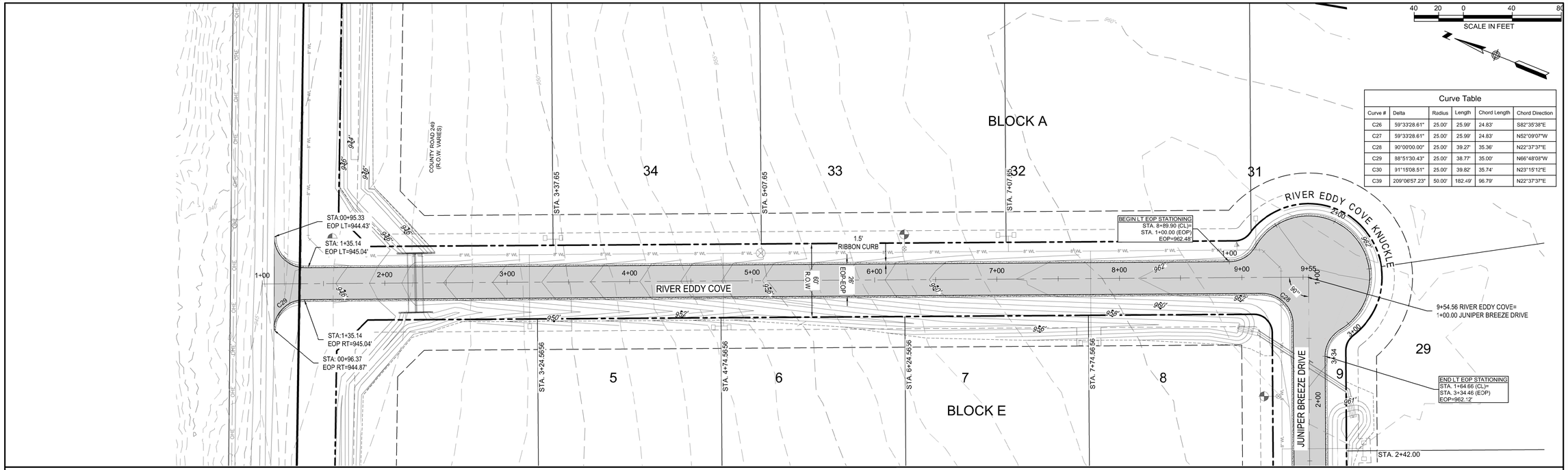
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 23 OF 51 SHEETS

2024-24-CON

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User: jmorinez
Last Modified: Sep. 19, 25 - 15:35
Plot Date/Time: Sep. 19, 25 - 15:35:18



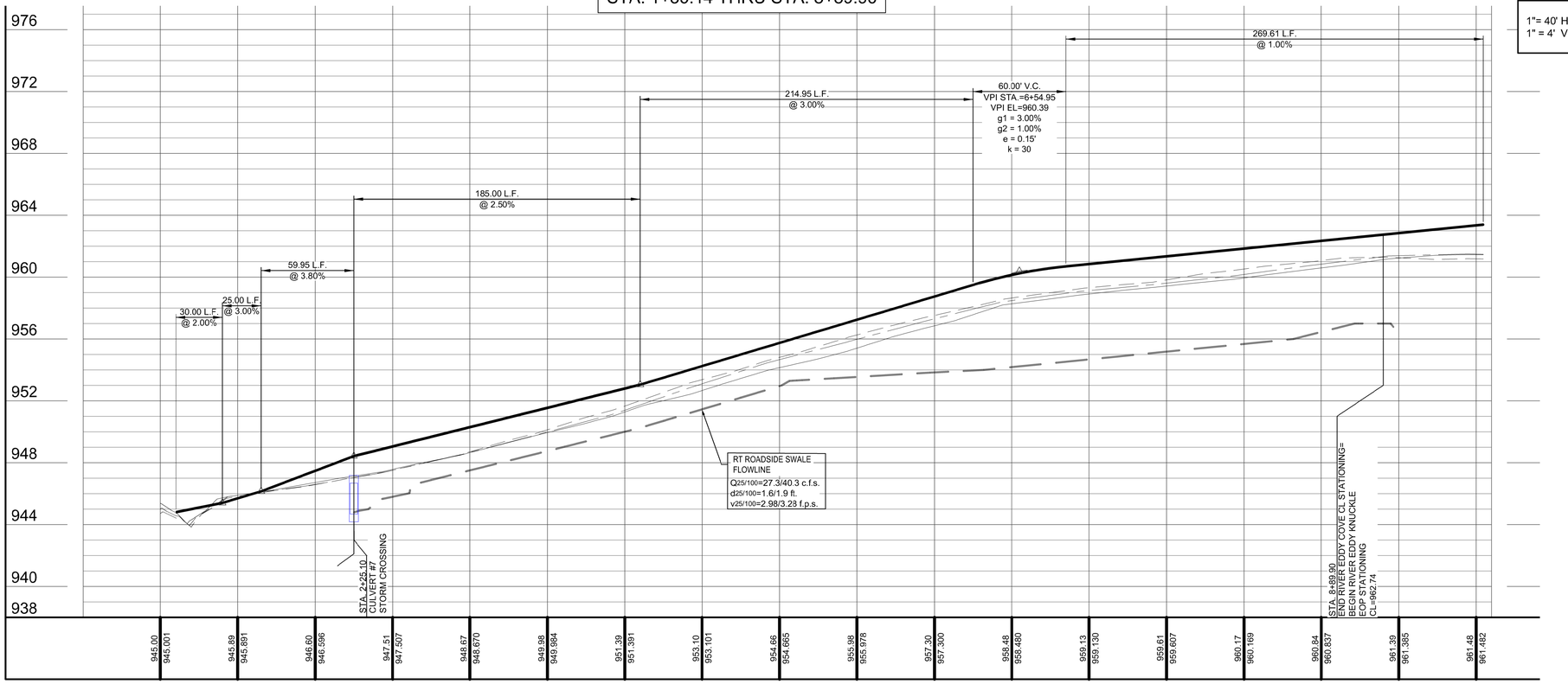
Curve Table

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C28	90°00'00.00"	25.00'	39.27'	35.36'	N22°37'37"E
C29	88°51'30.43"	25.00'	38.77'	35.00'	N66°48'08"W
C30	91°15'08.51"	25.00'	39.82'	35.74'	N23°15'12"E
C39	209°06'57.23"	50.00'	182.49'	96.79'	N22°37'37"E

STREET SUMMARY

STREET NAME	STREET TYPE	MAINTENANCE	ROW	FOC-FOC	LENGTH	CURB TYPE	CLEAR ZONE	DESIGN SPEED (MPH)
RIVER EDDY COVE	LOCAL STREET - RURAL	PUBLIC	60'	26'	824'	RIBBON	N/A	25

RIVER EDDY COVE
STA. 1+35.14 THRU STA. 8+89.90



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EX. NG. C.L. EX. NG. LT. R.O.W. EX. NG. RT. R.O.W. PROP. C.L.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
RIVER EDDY DRIVE & KNUCKLE (1+00-8+89.90)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

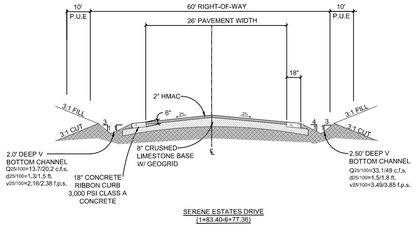
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

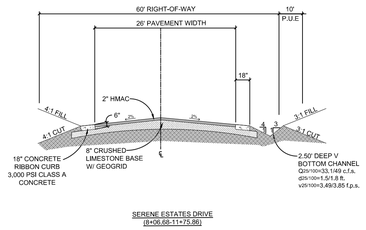
SHEET NO. 24 OF 51 SHEETS

2024-24-CON

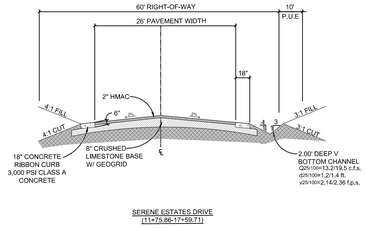
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User: jmortinez
Last Modified: Sep. 19, 25 - 16:19
Plot Style/Time: Sep. 19, 25 - 16:4:09



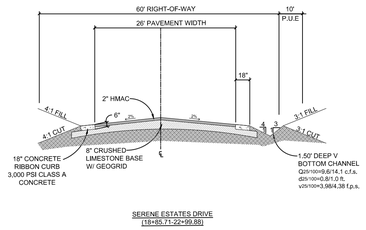
SERENE ESTATES DRIVE
(1+63.40+6+77.36)



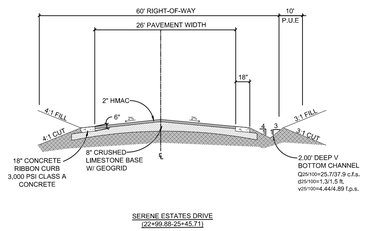
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(8+06.68-11+75.86)



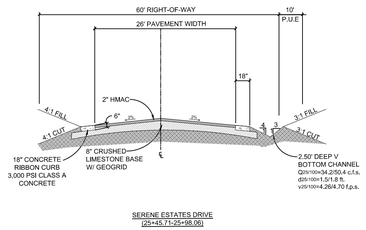
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(11+75.86-17+59.71)



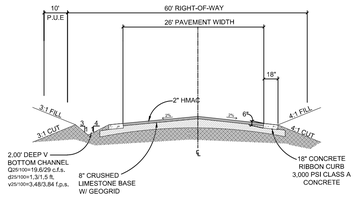
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(18+65.71-22+99.88)



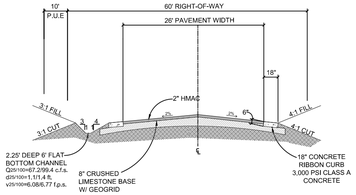
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(22+99.88-25+45.71)



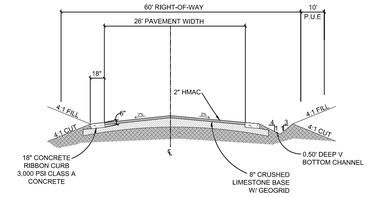
SERENE ESTATES DRIVE
(25+45.71-25+98.06)



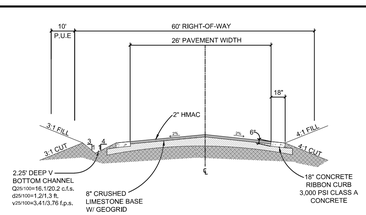
COLD SNAP STREET
1+36.00-7+04.00



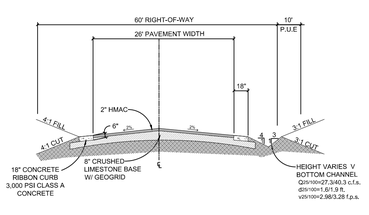
COLD SNAP STREET
7+80.00-10+99.67



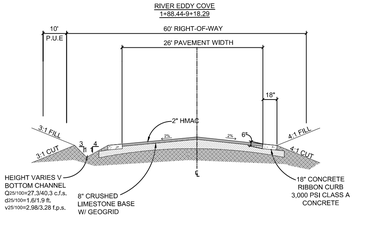
FOREST JAY DRIVE
1+34.52-4+52.51



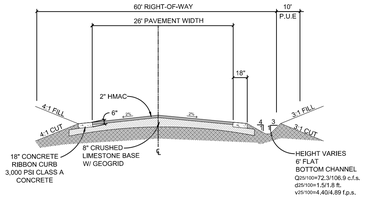
FOREST JAY DRIVE
11+95.51-15+58.91



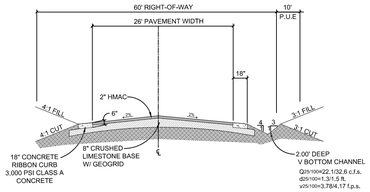
RIVER EDDY COVE
1+88.44-9+18.29



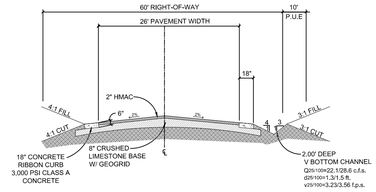
JUNIPER BREEZE DRIVE
1+96.05-7+03.76



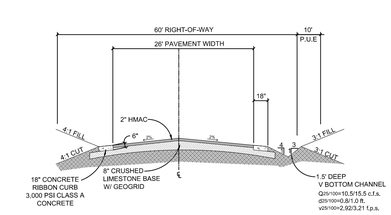
COOL WIND DRIVE
1+35.66-4+41.77



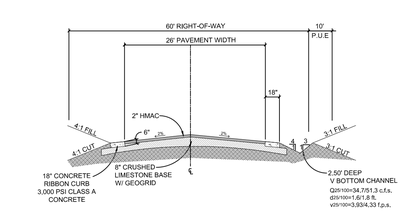
COOL WIND DRIVE
5+45.18-9+02.71



COOL WIND DRIVE
10+30.24-12+81.10



COOL WIND DRIVE
12+86.79-14+92.69



COOL WIND DRIVE
16+67.12-21+38.72

NOTES:
1. PAVEMENT DESIGN SHOWN IN TYPICAL SECTIONS PER GEOTECH REPORT.
2. REFERENCE GEOTECH REPORT FROM "MLA GEOTECHNICAL" JOB #23101100.114.

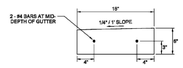


Figure H-2: 18" Ribbon Curb Detail

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
TYPICAL STREET SECTIONS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 6/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-STREETS.dwng

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

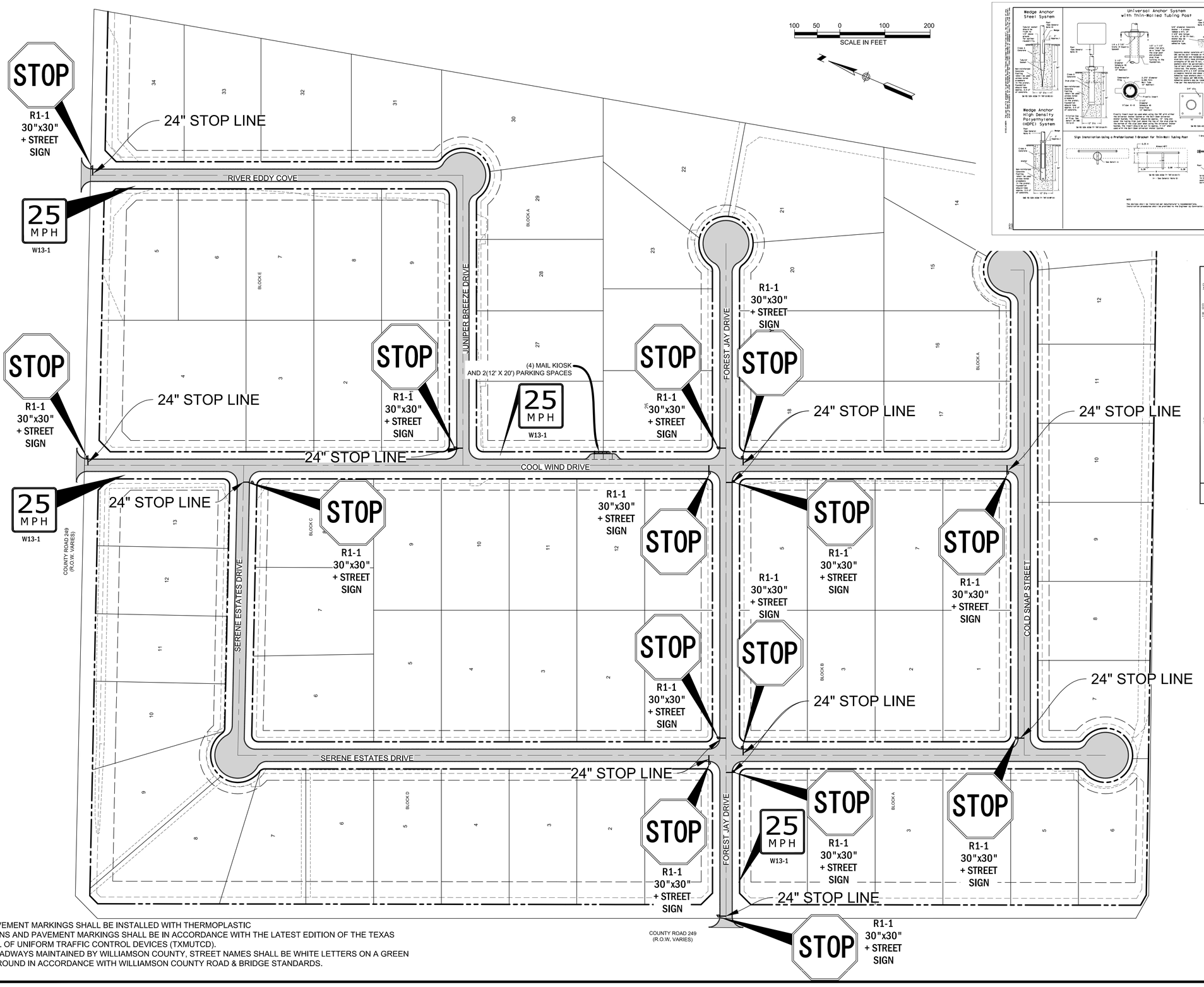
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

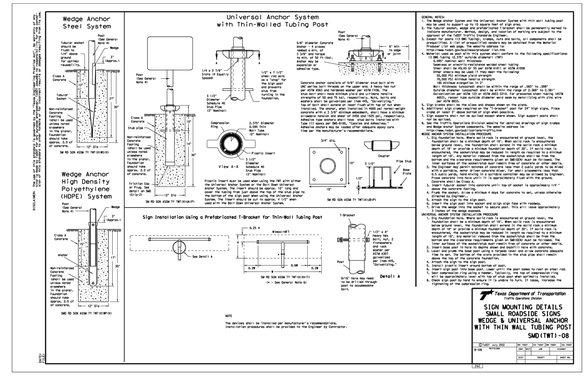
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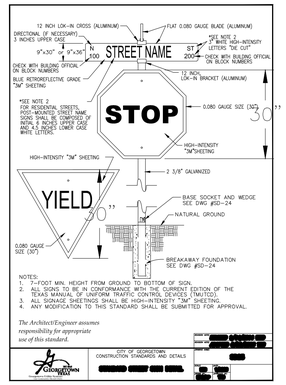
SHEET NO. 25 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:35
Plot Date/Time: Sep. 19, 25 - 15:50







NOTE:
1) ALL PAVEMENT MARKINGS SHALL BE INSTALLED WITH THERMOPLASTIC
2) ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TXMUTCD).
3) FOR ROADWAYS MAINTAINED BY WILLIAMSON COUNTY, STREET NAMES SHALL BE WHITE LETTERS ON A GREEN BACKGROUND IN ACCORDANCE WITH WILLIAMSON COUNTY ROAD & BRIDGE STANDARDS.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OVERALL STRIPING AND SIGNAGE PLAN

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: STRIPING AND SIGNAGE.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building III, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 26 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:36
Plot Date/Time: Sep. 19, 25 - 15:36:45

(SEE THIS SHEET)

MATCH LINE STA. 19+08.67

JOINT RESTRAINT TABLE				
JOINT	PIPE MATERIAL	PIPE SIZE	RESTAINT DISTANCE	LENGTH ALONG RUN
45° BEND	PVC	8"	7'	N/a
22.5 BEND	PVC	8"	4'	N/a
90 BEND	PVC	8"	16	N/a
TEE	PVC	8"x8"	8'	6'
CROSS	PVC	8" X 8"	36	N/a
DEAD END	PVC	8"	47'	N/a
REDUCER	PVC	8"	36'	N/a

RESTAINT LENGTH VALUES
PROGRAM: **EBAA IRON SALES INC.**
SOIL TYPE: **CL**
SAFETY FACTOR: **1.5**
TRENCH TYPE: **5**
DEPTH OF BURY: **5FT**
TEST PRESSURE: **150 PSI**
SEE DETAIL 510S-PR-SM

HYDRANT MARKER PLACEMENT DETAIL

Striped roadways - Marker placed 6" to hydrant side of solid or broken stripe

100 50 0 100 200
SCALE IN FEET

LEGEND
- PROP. WATER LINE
- PROP. WATER SINGLE SERVICE
- PROP. WATER DOUBLE SERVICE
- PROP. FIRE HYDRANT
- PROP. WATER LINE VALVE

LEGEND
- EXIST. WATER LINE
- EXIST. WATER SINGLE SERVICE
- EXIST. WATER DOUBLE SERVICE
- EXIST. FIRE HYDRANT
- EXIST. WATER LINE VALVE

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
2. 8" WATER LINES SHALL BE DR-14 C-900 PVC, 6" FIRE LINE LEADS SHALL BE CLASS 350 D.I.P.
3. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS, TEE'S AND DEADEND'S SHALL BE RESTRAINED TO THE WATER MAIN USING EBAA IRON MEGALUG 2006 PV TO 2021 PV AND PVC BELL RESTRAINT HARNESS 1500 OR APPROVED EQUAL.
4. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHLL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION, P.I.'S LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION. P.I.'S IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SINGLE DEFLECTION IS GREATER THAN 80% OF THE MAXIMUM.
5. PIPE JOINTS TO BE 18' LENGTHS. JOINT DEFLECTIONS EVENLY DISTRIBUTED THROUGHOUT PIPE.
6. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF GEORGETOWN.
7. ALL DOUBLE WATER SERVICES SHALL INCLUDE TWO (2) INDIVIDUAL METER BOXES.
8. SINGLE WATER METER BOXES SHALL BE REQUIRED.
9. ALL WATER SERVICE LINES SHALL BE HDPE PIPE.

STA: 14+40.26 WTR-LN-G
SS CROSSING
STA: 11+57.81 WTR-LN-G
1- GATE VALVE
STA: 15+33.55 WTR-LN-G
1-45° BEND
STA: 15+12.46 WTR-LN-G
1-45° BEND
10' P.U.E.
RIVER EDDY COVE
STA: 15+07.54 WTR-LN-G
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 10+40.39 WTR-LN-G
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
ADDITIONAL P.U.E.
STA: 7+68.70 WTR-LN-G
1- AIR RELEASE VALVE
STA: 6+61.97 WTR-LN-G
SS CROSSING
STA: 6+22.50 WTR-LN-G
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 7+48.30 WTR-LN-G
1-45° BEND
STA: 7+26.50 WTR-LN-G
1-45° BEND
ADDITIONAL P.U.E.
JUNIPER BREEZE DRIVE
STA: 15+42.64 END WTR-LN-C
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
1-AUTOMATIC FLUSH VALVE
STA: 15+32.23 WTR-LN-C
1- 8" GATE VALVE
ADDITIONAL P.U.E.
FOREST JAY DRIVE
STA: 11+90.93 END WTR-LN-B
1-8" GATE VALVE
1-8" CAP
ADDITIONAL P.U.E.
STA: 11+74.29 WTR-LN-B
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
8'FROM BOC
STA: 21+91.27 END WTR-LN-E
1-8" CAP
1-8" GATE VALVE
STA: 20+90.46 WTR-LN-E
SS CROSSING
STA: 18+25.81 WTR-LN-E=
STA: 12+40.69 END WTR-LN-H
1-8" TEE
1-8" GATE VALVES
8' FROM BOC
STA: 1+22.50 WTR-LN-G
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 10+62.51 WTR-LN-C
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 7+58.88 WTR-LN-E=
STA: 10+25.55 WTR-LN-C
1-8" CROSS
3-8" GATE VALVES
STA: 7+71.29 WTR-LN-B
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 7+42.0 WTR-LN-B=
STA: 1+00.00 BEGIN WTR-LN-E
1-8" TEE
2-8" GATE VALVES
COLD SNAP STREET
STA: 21+72.22 WTR-LN-E
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
SERENE ESTATES DRIVE
STA: 17+95.72 WTR-LN-E
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 11+80.58 WTR-LN-H
SS CROSSING
COOL WIND DRIVE
STA: 13+32.44 WTR-LN-E
SS CROSSING
STA: 13+86.14 WTR-LN-E=
STA: 1+00.00 BEGIN WTR-LN-G
1-8" TEE
2-8" GATE VALVES
STA: 10+84.23 WTR-LN-E
1- AIR RELEASE VALVE
STA: 11+05.59 WTR-LN-E
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 9+68.12 WTR-LN-C
SS CROSSING
STA: 1+57.95 WTR-LN-E
SS CROSSING
STA: 4+51.44 WTR-LN-E
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 7+56.54 WTR-LN-C
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
8'FROM BOC
STA: 3+98.50 WTR-LN-B
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
8'FROM BOC
25' D.E.
10' P.U.E.
STA: 8+05.38 WTR-LN-H
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 20+92.02 END WTR-LN-A=
STA: 5+98.55 WTR-LN-H
1-8" TEE
2-8" GATE VALVES
STA: 19+64.33 WTR-LN-A=
STA: 1+00.00 BEGIN WTR-LN-D
1-8" TEE
2-8" GATE VALVES
ADDITIONAL P.U.E.
STA: 5+81.15 WTR-LN-H
45° BEND
STA: 4+91.51 WTR-LN-H
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
20' WATERLINE EASEMENT
ADDITIONAL P.U.E.
SERENE ESTATES DRIVE
STA: 19+30.15 WTR-LN-A
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 14+89.33 WTR-LN-A
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 10+11.83 WTR-LN-A=
STA: 3+83.52 WTR-LN-C
1-8" CROSS
3-8" GATE VALVES
STA: 4+06.02 WTR-LN-C
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 3+51.83 WTR-LN-A=
STA: 1+00.00 BEGIN WTR-LN-B
1-8" TEE
2-8" GATE VALVES
10' P.U.E (TYP.)
25' B.L. (TYP.)
8' FROM BOC
STA: 8+78.46 WTR-LN-A
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 9+98.96 WTR-LN-A
1- AIR RELEASE VALVE
STA: 3+33.95 WTR-LN-A
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
25' B.L. (TYP.)
PROPOSED VARIABLE WIDTH DRAINAGE EASEMENT
STA: 22+23.91 END WTR-LN-G
TIE TO EXISTING WATERLINE
1-8" GATE VALVE
10' P.U.E.
ADDITIONAL P.U.E.
STA: 1+34.15 WTR-LN-A
1-8" GATE VALVE
STA: 1+31.15 WTR-LN-A
1-8" X 6" REDUCER
STA: 1+00.00 BEGIN WTR-LN-A
CONNECT TO EXISTING 6" PVC
(WET CONNECTION)
1-6" X 6" TAPPING SLEEVE
1-6" GATE VALVE
EXISTING 6" WATERLINE
11.00' WATERLINE EASEMENT
STA: 1+47.36 WTR-LN-H
45° BEND
20' WATERLINE EASEMENT
STA: 3+31.10 WTR-LN-D
1- AIR RELEASE VALVE
N23°18'47"E 70.08'
STA: 1+16.30 WTR-LN-C
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 1+00.00 BEGIN WTR-LN-H
1-8" GATE VALVE
1-AUTOMATIC FLUSH VALVE
1- FIRE HYDRANT ASSEMBLY
(SEE C.O.G. STD DETAIL W-10)
STA: 4+51.70 END WTR-LN-D
@ R.O.W LINE
1-8" CAP
STA: 1+00.00 BEGIN WTR-LN-C
1-8" GATE VALVE
N22°22'57"W 2298.34'
S12°27'00"E 2388.95'
N68°56'02"E 1963.39'
S83°19'20"W 1500.22'
N83°09'26"W 5

(SEE THIS SHEET)
MATCH LINE STA. 19+08.67

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OVERALL WATER PLAN

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 8/23/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-OVL WTR.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

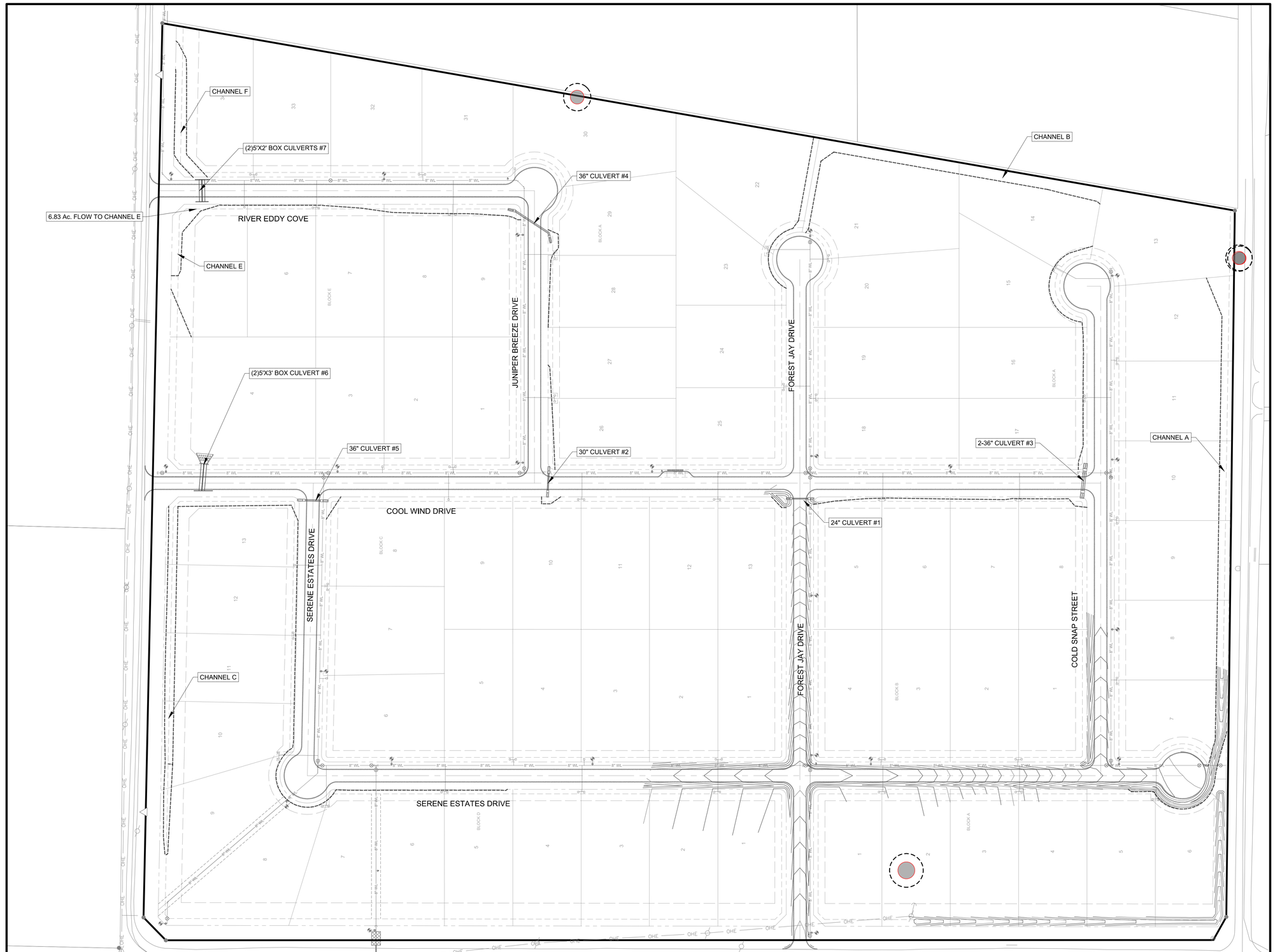
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 27 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:40
Plot Date/Time: Sep. 19, 25 - 15:56:57



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OVERALL STORM SEWER PLAN

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-OVL SS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 28 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 – 15:36
Plot Date/Time: Sep. 19, 25 – 15:36:02

18.27 Ac. FLOW TO CHANNEL F

CHANNEL F

4.83 Ac.

(2)5'X2' BOX CULVERTS #7

36" CULVERT #4

5.90 Ac.

CHANNEL B

10.69 Ac. FLOW TO CHANNEL B

6.83 Ac. FLOW TO CHANNEL E

RIVER EDDY COVE

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=27.34@3.3 c.f.s.
@S=10)=1.6@18 ft
v(tr-10)=2.98@3.28 f.p.s.

CHANNEL E

6.83 Ac.

JUNIPER BREEZE DRIVE

LT ROADSIDE SWALE FLOWLINE
Q(tr-10)=27.34@1.7 c.f.s.
@S=10)=1.8@1.9 ft
@S=5)=2.98@3.28 f.p.s.

LT ROADSIDE SWALE FLOWLINE
Q(tr-10)=16.1@32.0 f.p.s.
@S=10)=1.2@1.31 ft
@S=3)=3.41@3.57 f.p.s.

4.79 Ac.

LT ROADSIDE SWALE FLOWLINE
Q(tr-10)=67.2/99 c.f.s.
@S=10)=1.1/1.4 ft
v(tr-10)=6.08/8.77 f.p.s.

17.91 Ac. FLOW TO ROADSIDE SWALE

13.6 Ac. FLOW TO CHANNEL A

(2)5'X3' BOX CULVERT #6

3.91 Ac.

5.77 Ac.

FOREST JAY DRIVE

9.09 Ac. FLOW TO ROADSIDE SWALE

36" CULVERT #5

1.98 Ac.

30" CULVERT #2

2-36" CULVERT #3

CHANNEL A

3.83 Ac. FLOW TO CHANNEL C

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=72.3/106.9 c.f.s.
@S=10)=1.5/1.8 ft
v(tr-10)=4.48/4.89 f.p.s.

0.76 Ac.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=33.1/48.0 c.f.s.
@S=10)=1.5/1.8 ft
v(tr-10)=3.49/3.85 f.p.s.

SERENE ESTATES DRIVE

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=22.1/32.6 c.f.s.
@S=10)=1.3/1.5 ft
v(tr-10)=3.76/4.17 f.p.s.

COOL WIND DRIVE

8.79 Ac. FLOW TO ROADSIDE SWALE

LT ROADSIDE SWALE FLOWLINE
Q(tr-10)=13.7/20.1 c.f.s.
@S=10)=1.3/1.8 ft
v(tr-10)=2.16/2.58 f.p.s.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=22.1/28.6 c.f.s.
@S=10)=1.3/1.5 ft
v(tr-10)=3.23/3.56 f.p.s.

5.48 Ac.

4.63 Ac.

2.41 Ac.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=10.5/15.5 c.f.s.
@S=10)=0.8/1.0 ft
v(tr-10)=2.92/3.21 f.p.s.

24" CULVERT #1

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=54.7/55.1 c.f.s.
@S=10)=1.6/1.8 ft
v(tr-10)=3.93/4.33 f.p.s.

LT ROADSIDE SWALE FLOWLINE
Q(tr-10)=19.6/20 c.f.s.
@S=10)=1.3/1.5 ft
v(tr-10)=2.46/2.84 f.p.s.

5.85 Ac.

3.83 Ac.

3.31 Ac.

CHANNEL C

SERENE ESTATES DRIVE

FOREST JAY DRIVE

5.47 Ac.

4.26 Ac.

COLD SNAP STREET

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=3.7/5 lb.c.f.s.
@S=10)=1.2/1.5 ft
v(tr-10)=2.16/2.38 f.p.s.

SERENE ESTATES DRIVE

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=3.7/5 lb.c.f.s.
@S=10)=1.2/1.5 ft
v(tr-10)=2.16/2.38 f.p.s.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=8.7/11.6 f.p.s.
@S=10)=1.2/1.5 ft
v(tr-10)=2.66/2.98 f.p.s.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=8.7/14.1 c.f.s.
@S=10)=0.8/1.0 ft
v(tr-10)=3.98/4.38 f.p.s.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=25.7/37 lb.c.f.s.
@S=10)=1.5/1.8 ft
v(tr-10)=4.44/4.89 f.p.s.

RT ROADSIDE SWALE FLOWLINE
Q(tr-10)=34.2/50.4 c.f.s.
@S=10)=1.5/1.8 ft
v(tr-10)=4.26/4.70 f.p.s.

1.47 Ac.

3.05 Ac.

5.28 Ac.

3.57 Ac.

1.81 Ac.

0.90 Ac.

100 50 0 100 200
SCALE IN FEET

LEGEND

HERITAGE TREE

TR-5396

NOTE:
A MINIMUM OF 0.5' FREEBOARD TO BE PROVIDED FOR CHANNELS AND ROADSIDE SWALES CAPTURING LESS THAN 20 ACRES.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
DRAINAGE AREAS TO CHANNELS AND SWALES

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-DVL SS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

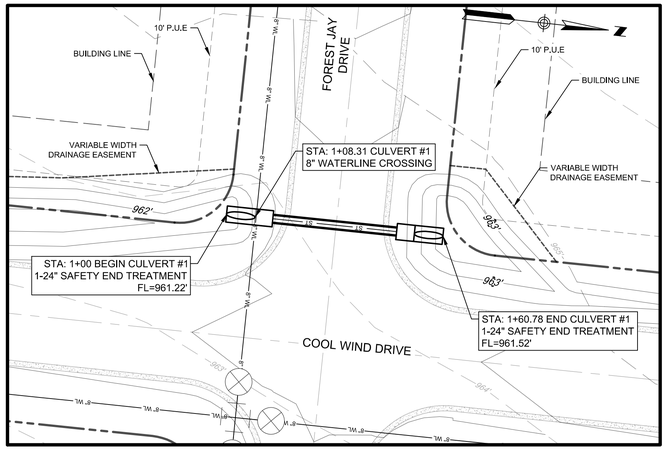
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

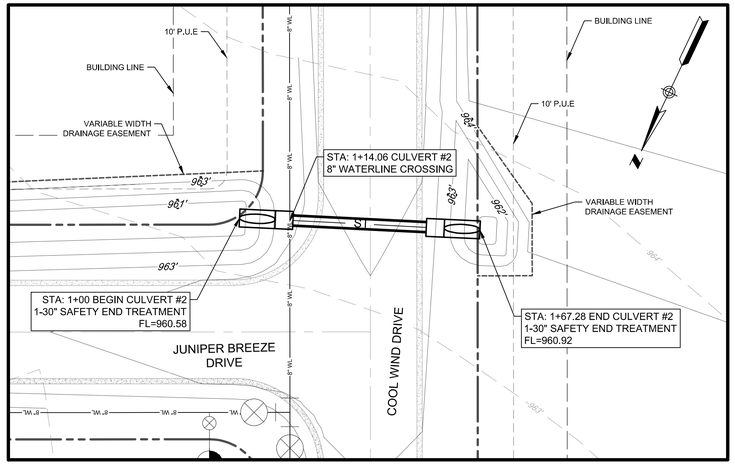
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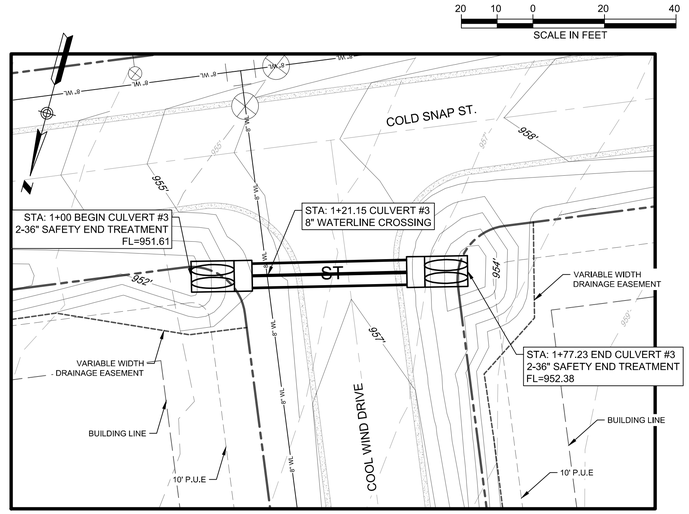
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2024-24-CON

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Plot Date/Time: Sep. 19, 25 – 16:36:32

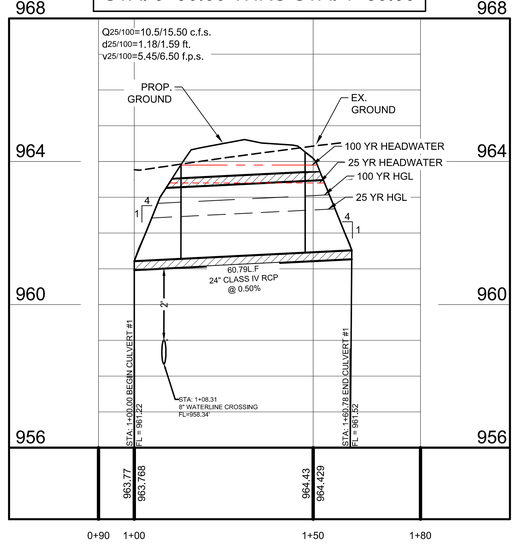




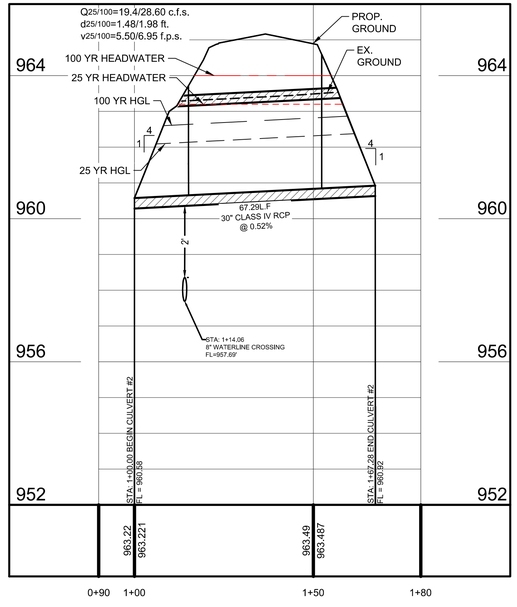


NOTE:
ALL SET SLOPE TO BE 4:1 (25%).

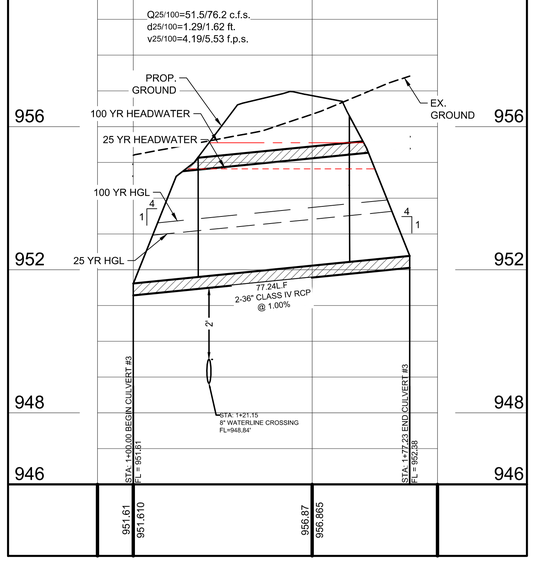
CULVERT #1
STA. 0+90.00 THRU STA. 1+80.00



CULVERT #2
STA. 0+90.00 THRU STA. 1+80.00



CULVERT #3
STA. 0+90.00 THRU STA. 1+85.00



SCALE: 1" = 20' (HORIZ.)
1" = 2' (VERT.)

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
STORM SEWER CULVERTS-SHEET 1

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: CULVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

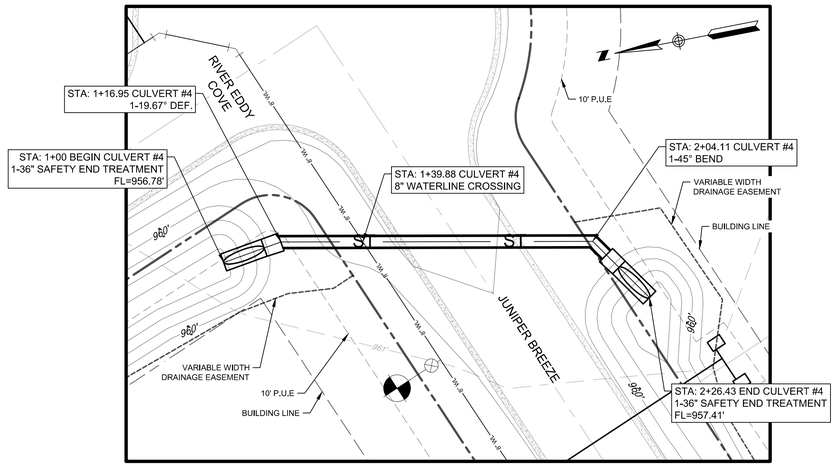
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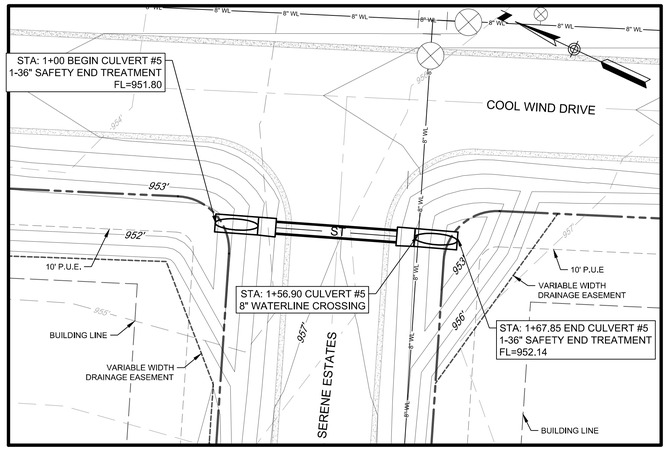
SHEET NO. 30 OF 51 SHEETS

2024-24-CON

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Plot Style/Time: Sep 19, 25 - 15:50:22

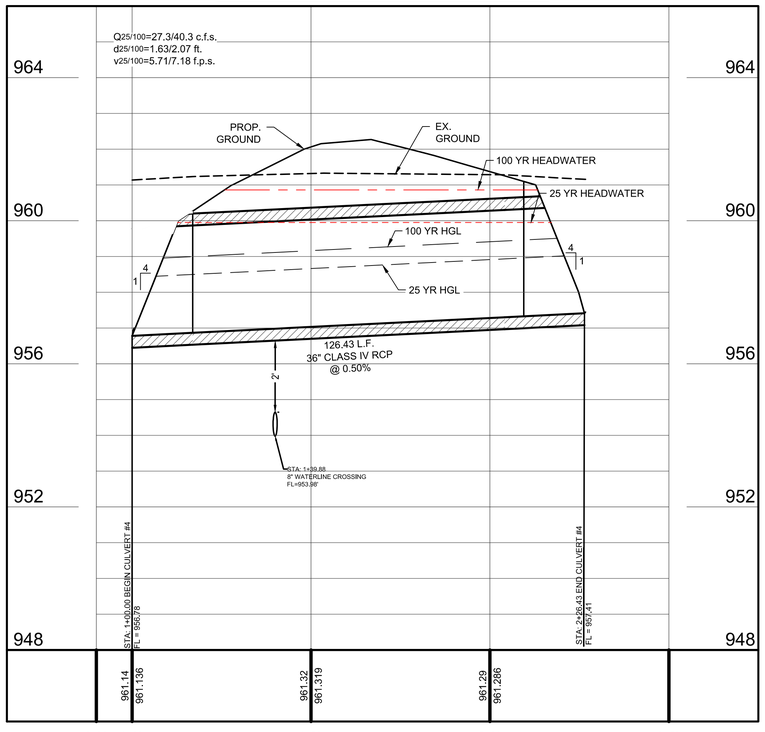
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SCALE IN FEET



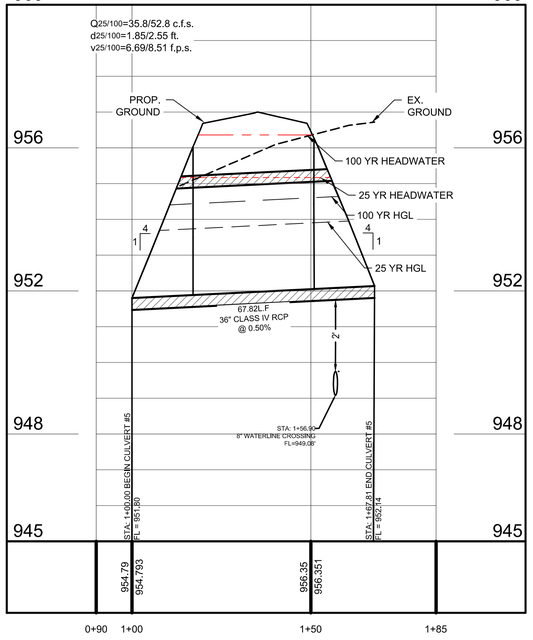


NOTE:
ALL SET SLOPE TO BE 4:1 (25%).

CULVERT #4
STA. 0+90.00 THRU STA. 2+50.00



CULVERT #5
STA. 0+90.00 THRU STA. 1+85.00



SCALE: 1" = 20' (HORIZ.)
1" = 2' (VERT.)

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
STORM SEWER CULVERTS-SHEET 2

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SS-CULVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

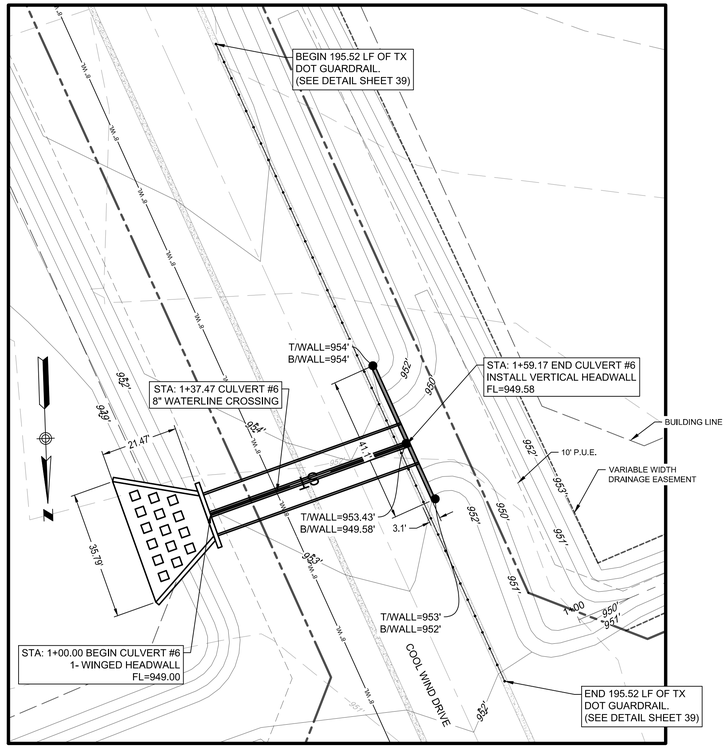
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER:
A492-100

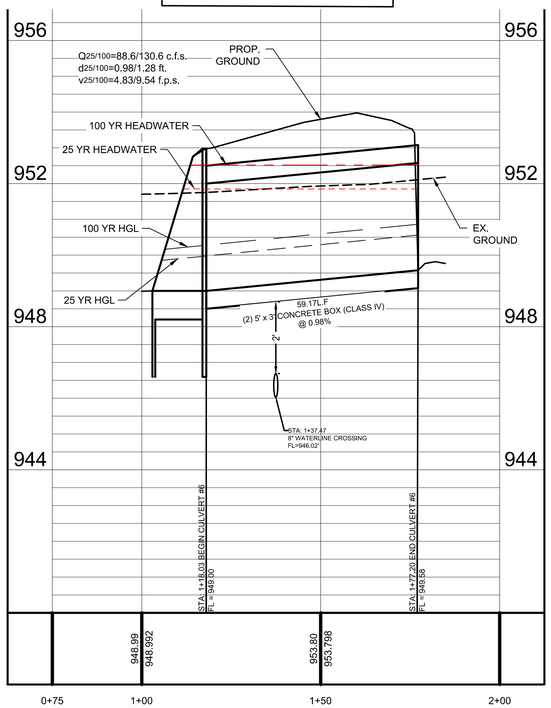
SHEET NO.
31
OF 51 SHEETS

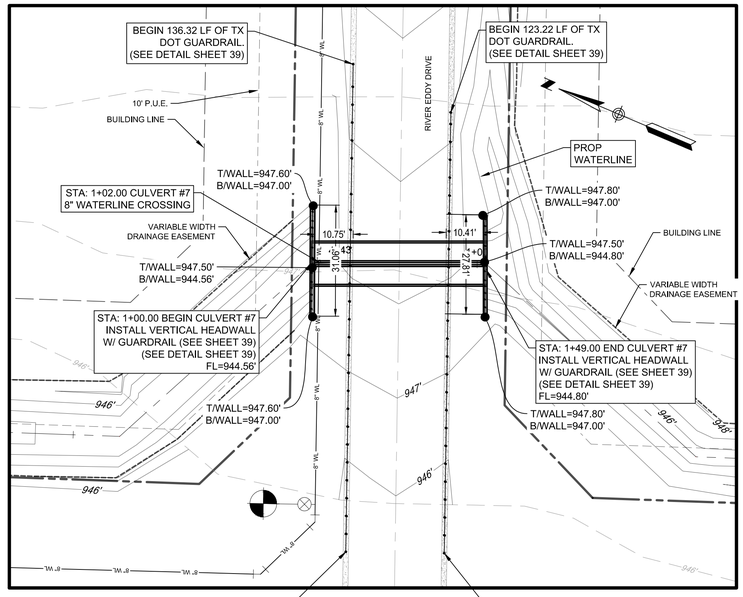
2024-24-CON

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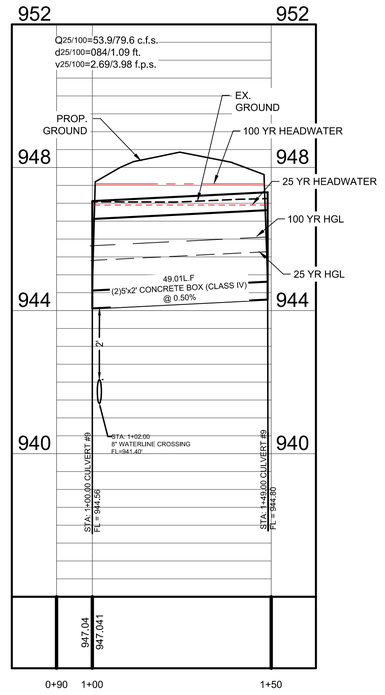


CULVERT #6 PROFILE





CULVERT #7 PROFILE



SCALE: 1" = 20' (HORIZ.)
1" = 2' (VERT.)



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
STORM SEWER CULVERTS-SHEET 3

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: C-CULVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

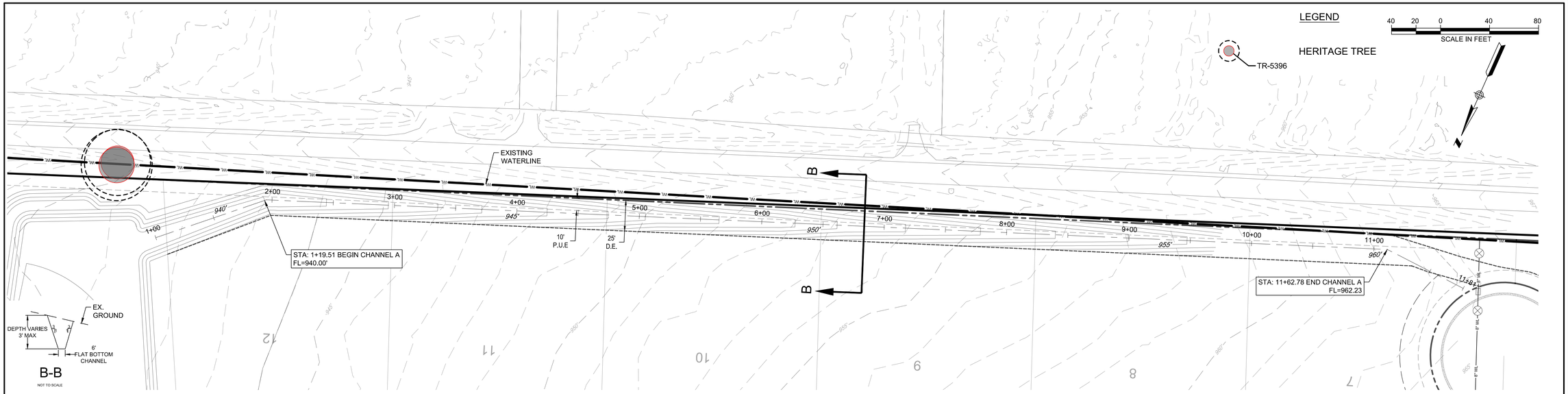
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. **32** OF 51 SHEETS

2024-24-CON

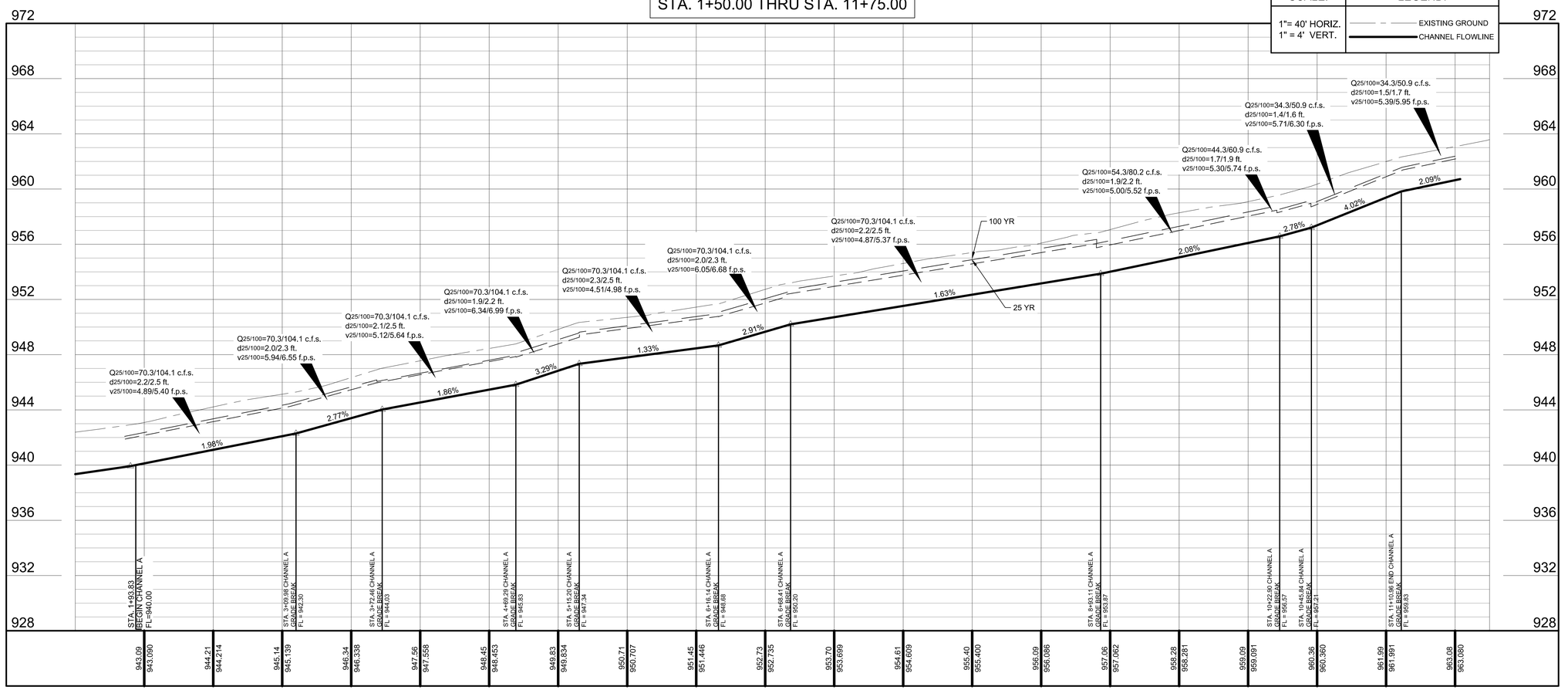
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Plot Date/Time: Sep. 19, 25 - 15:56:51



NOTE:
A MINIMUM OF 0.5' FREEBOARD TO BE PROVIDED FOR CHANNELS AND ROADSIDE SWALES CAPTURING LESS THAN 20 ACRES.

CHANNEL A
STA. 1+50.00 THRU STA. 11+75.00

SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EXISTING GROUND CHANNEL FLOWLINE



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
CHANNEL A PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: CULVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

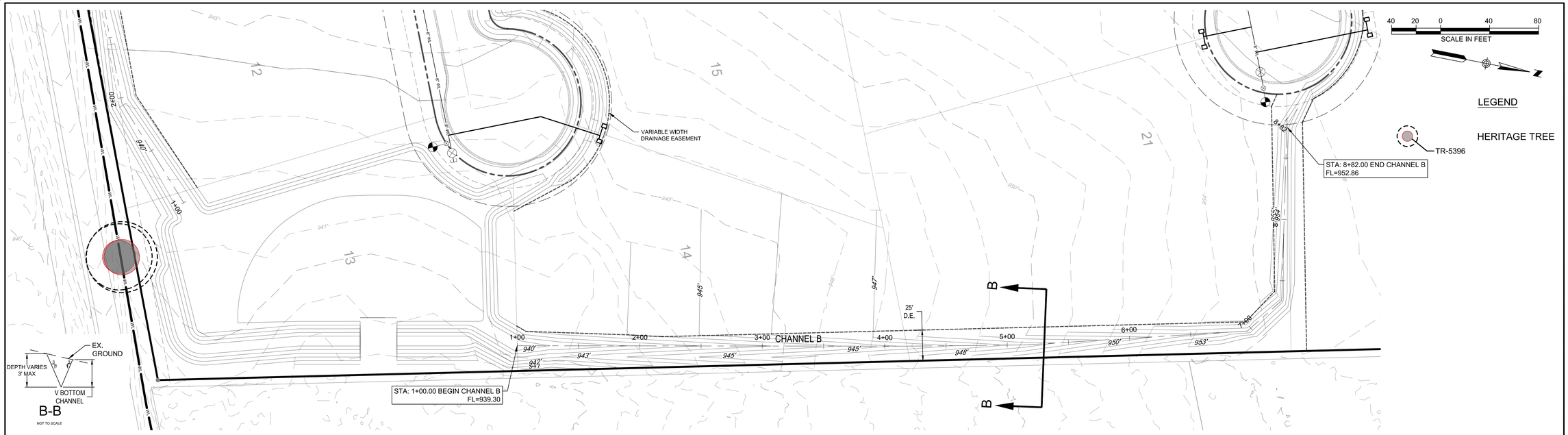
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

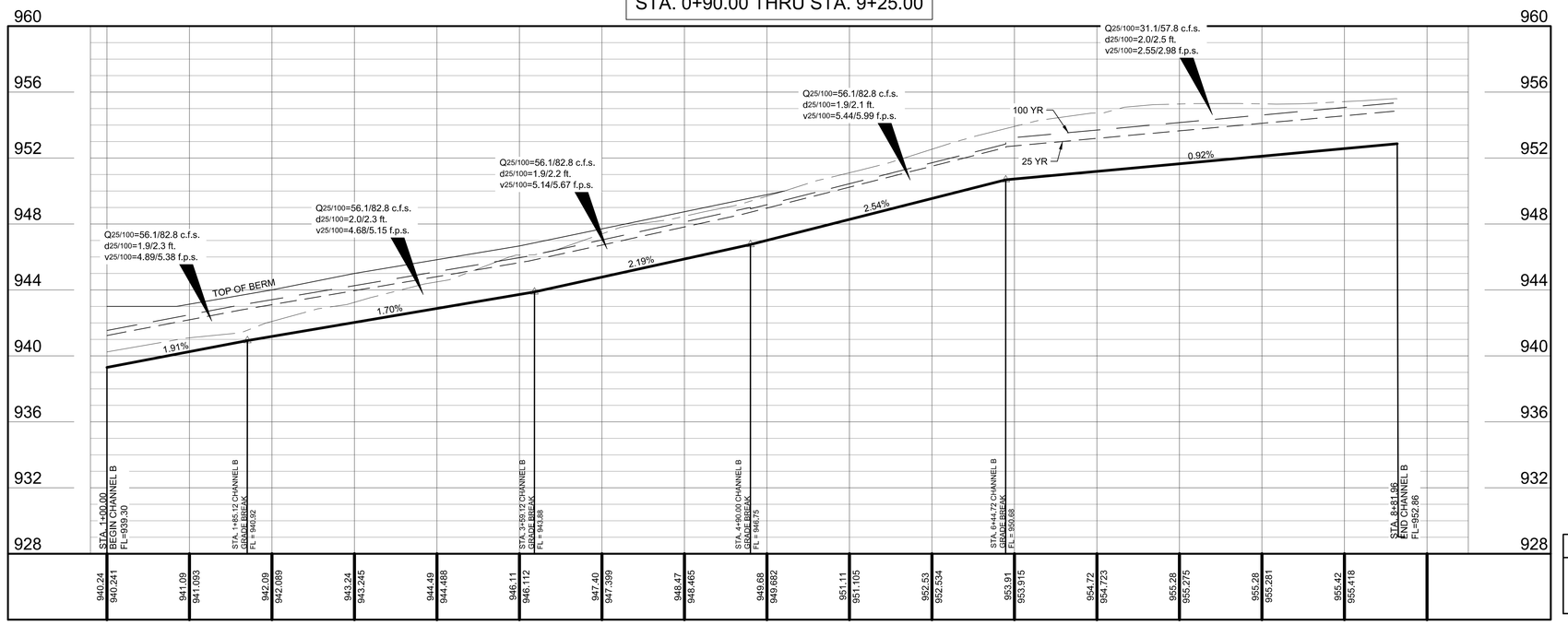
SHEET NO. 33 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep 19, 25 - 15:48
Plot Only/Time: Sep 19, 25 - 15:55:59



CHANNEL B
STA. 0+90.00 THRU STA. 9+25.00



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EXISTING GROUND CHANNEL FLOWLINE

NOTE:
A MINIMUM OF 0.5' FREEBOARD TO BE PROVIDED FOR CHANNELS AND ROADSIDE SWALES CAPTURING LESS THAN 20 ACRES.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
CHANNEL B PLAN & PROFILE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: C:\CULVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

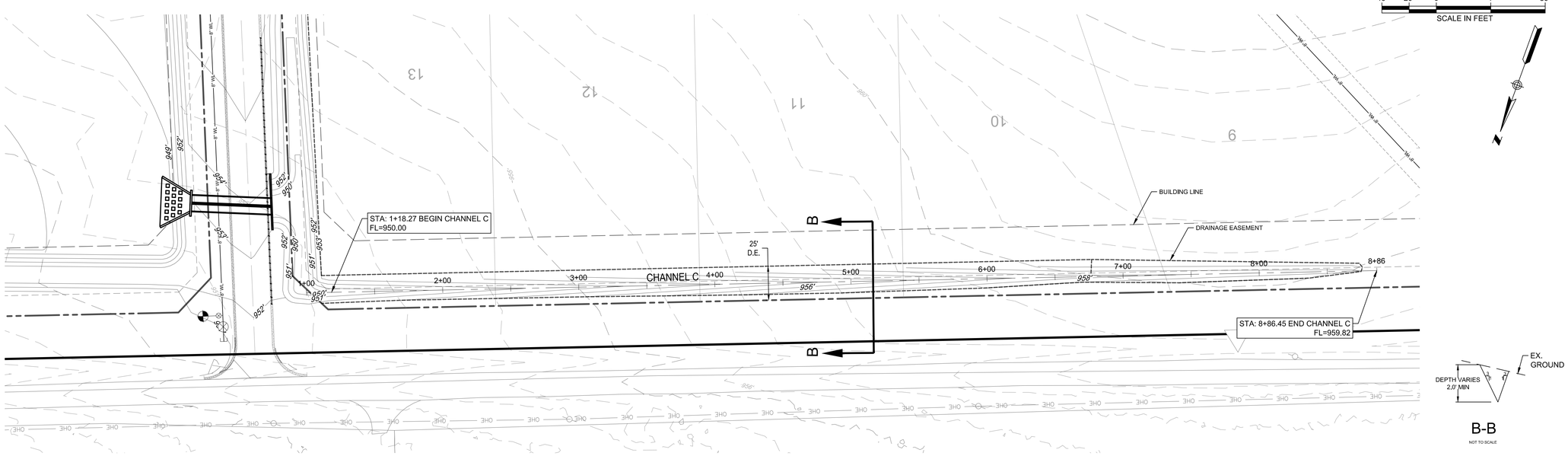
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 34 OF 51 SHEETS

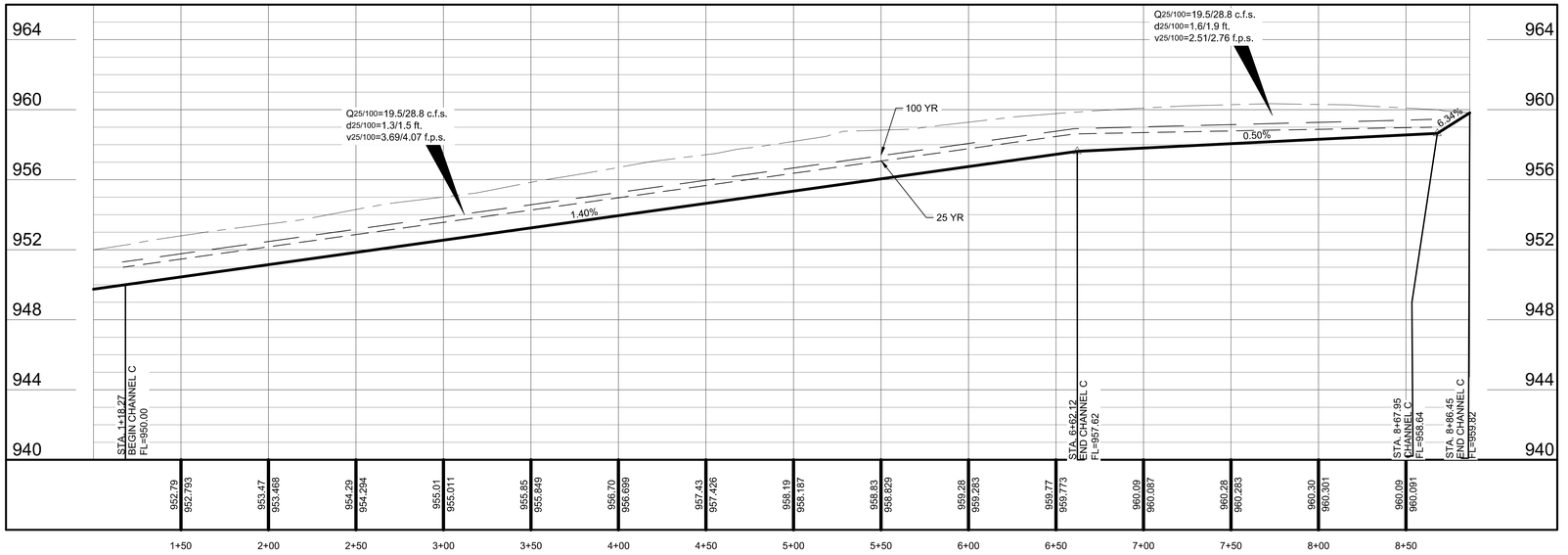
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Last Modified: Sep 19, 25 - 15:45
Plot Only/Time: Sep 19, 25 - 15:57:08



NOTE:
A MINIMUM OF 0.5' FREEBOARD TO BE PROVIDED FOR CHANNELS AND ROADSIDE SWALES CAPTURING LESS THAN 20 ACRES.

CHANNEL C
STA. 1+00.00 THRU STA. 8+86.45



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EXISTING GROUND CHANNEL FLOWLINE

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
CHANNEL C PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 8/22/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: C-CULVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

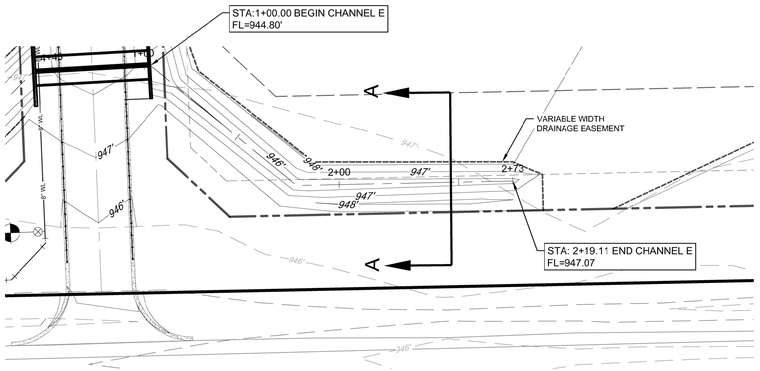
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

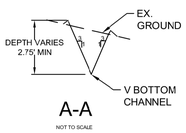
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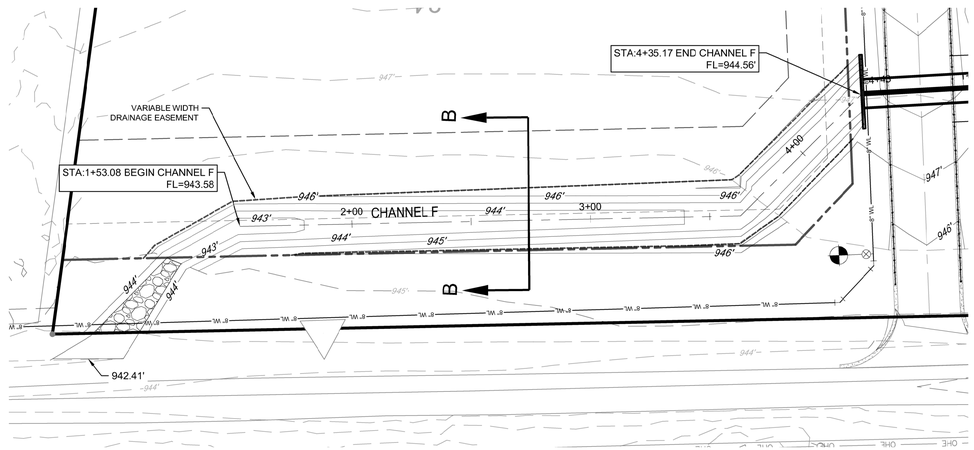
SHEET NO. 35 OF 51 SHEETS

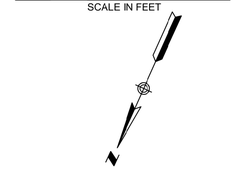
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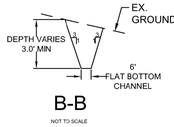
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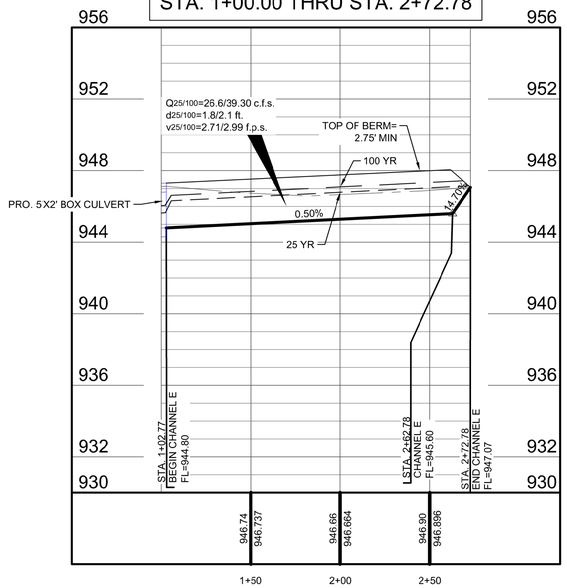




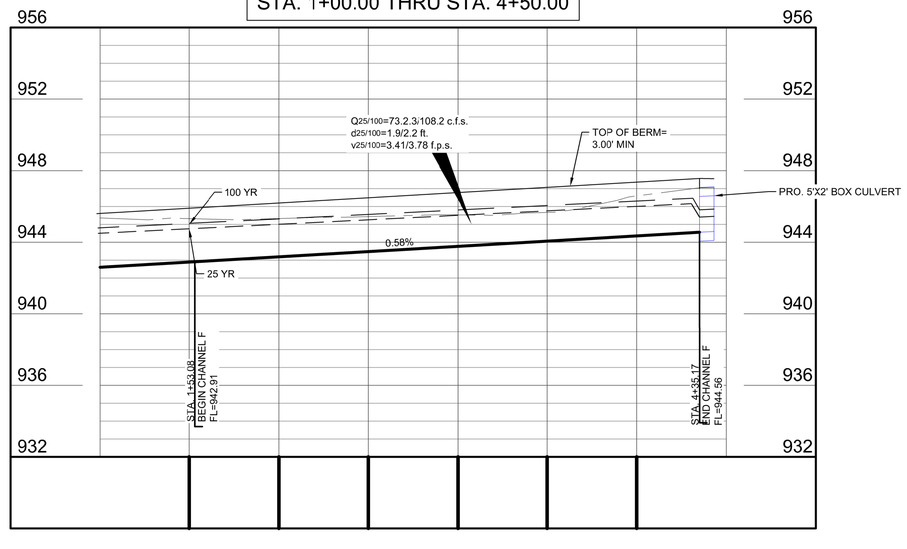


NOTE:
A MINIMUM OF 0.5' FREEBOARD TO BE PROVIDED FOR CHANNELS AND ROADSIDE SWALES CAPTURING LESS THAN 20 ACRES.

CHANNEL E
STA. 1+00.00 THRU STA. 2+72.78



CHANNEL F
STA. 1+00.00 THRU STA. 4+50.00



SCALE:	LEGEND:
1"= 40' HORIZ. 1" = 4' VERT.	EXISTING GROUND CHANNEL FLOWLINE

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
CHANNEL E & F PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: COLVERTS-CHANNELS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

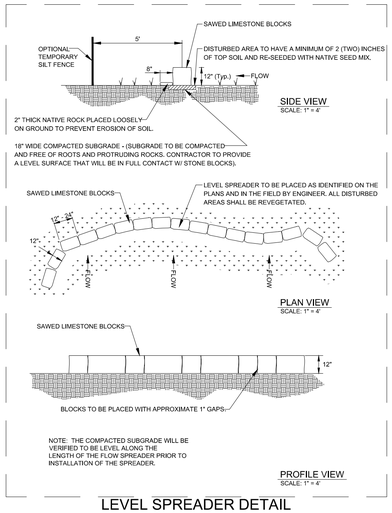
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 36
OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep 19, 25 - 15:48
Plot Date/Time: Sep 19, 25 - 16:40:35



LEVEL SPREADER DETAIL

SCALE AS NOTED

LEVEL SPREADER CALCULATION				
STORM EVENT	EXISTING FLOW, Q_{EXIST} (CFS)	EXISTING FLOW DEPTH, H_{EXIST} (FT)*	PROPOSED FLOW, Q_{PROP} (CFS)	PROPOSED FLOW DEPTH, H_{PROP} (FT)**
2 YR	105.1	0.87	104.9	0.63
10 YR	205.5	1.12	191.6	0.94
25 YR	275.2	1.25	257	1.14
100 YR	388.3	1.48	363.4	1.44

ASUMPTION: Cw = 3

PROPOSED LENGTH OF SPREADER (L) = 70FT

* EXISTING FLOW DEPTH DETERMINED USING HEC-RAS

** PROPOSED FLOW DEPTH, $H_{PROP} = (Q_{PROP}/(C_w L))^{2/3}$

CALCULATION FOR LEVEL SPREADER LENGTH

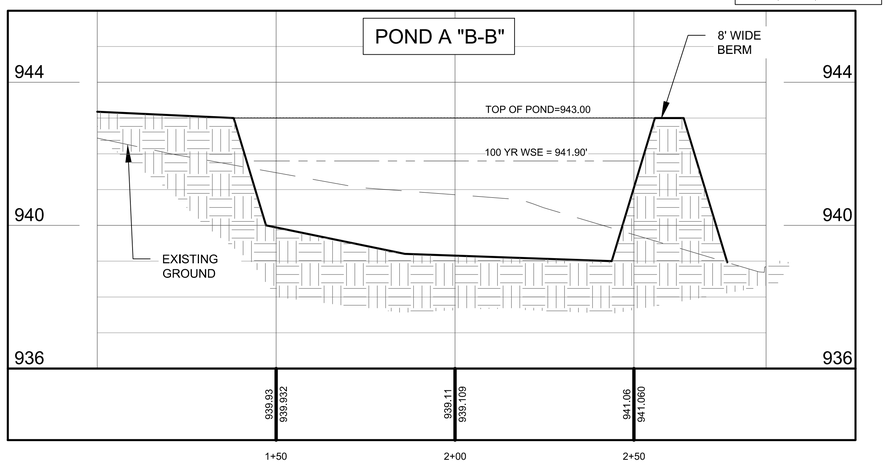
POND A STAGE-STORAGE-DISCHARGE					
STORM EVENT	ELEVATION (FT)	AREA* (FT^2)	STORAGE (AC-FT)	INFLOW (CFS)	OUTFLOW (CFS)**
	938.00	0	0.0	-	0.0
	939.00	17914	0.3	-	28.1
	940.00	28110	1.0	-	82.5
2 YR	**940.20**	**-**	**0.8**	**121.3**	**104**
10 YR	**940.90**	**-**	**1.3**	**219.6**	**203.5**
	941.00	30232	1.7	-	214.0
25 YR	**941.30**	**-**	**1.6**	**287.5**	**270.4**
100 YR	**941.90**	**-**	**1.9**	**397.7**	**378.5**
	942.00	32411	-	-	-
	943.00	34646	-	-	-

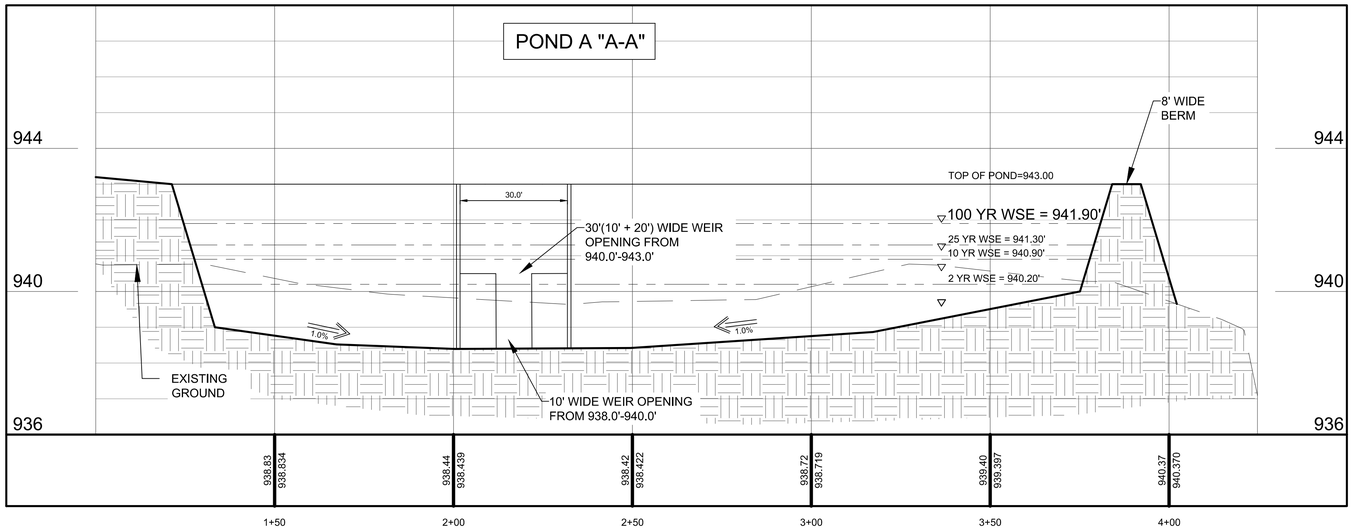
* ELEVATION-AREAS USED TO DETERMINE POND STORAGE

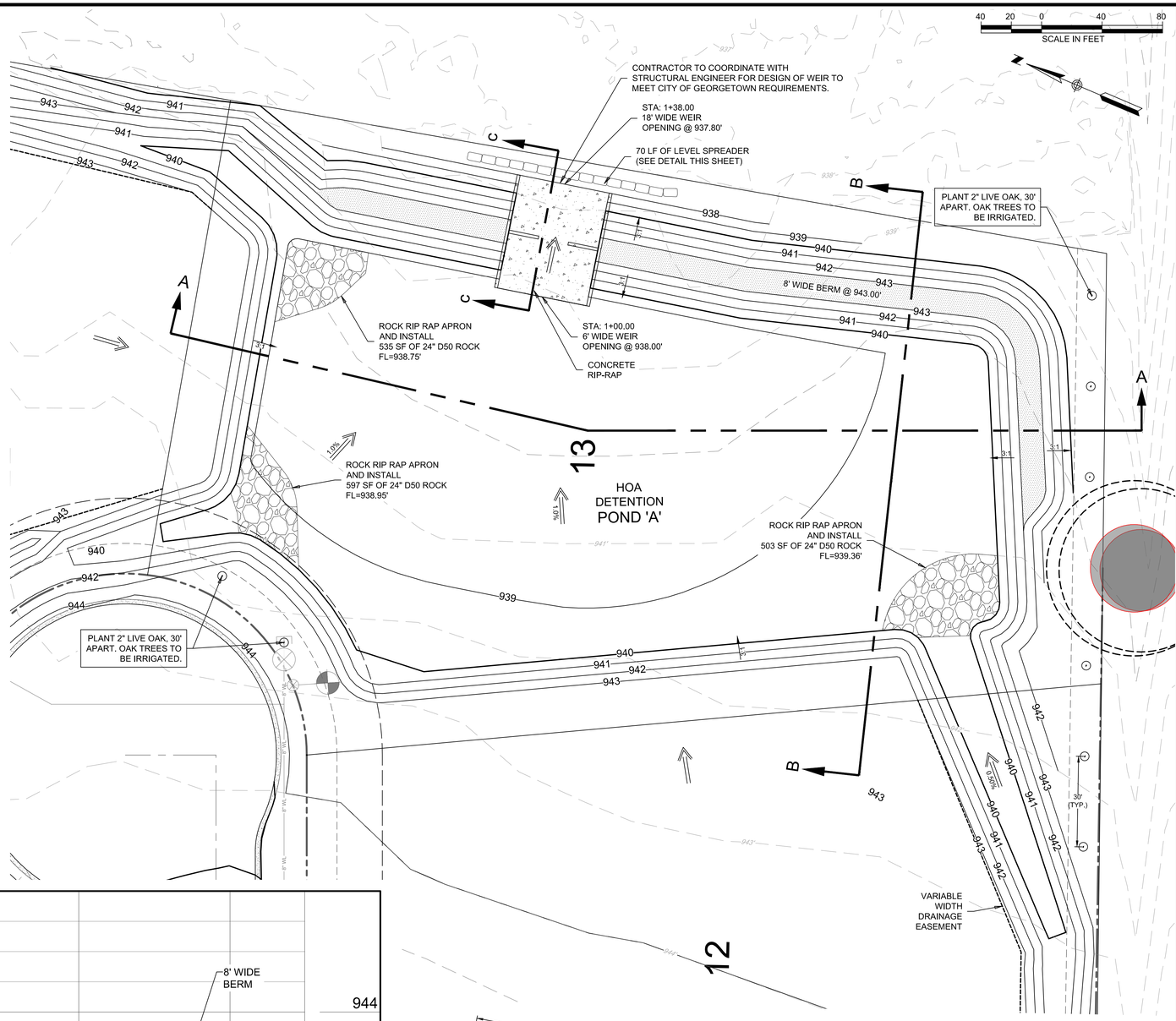
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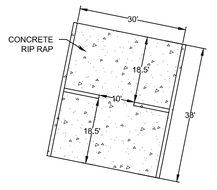
NOTE:
ALL PONDS WILL BE PRIVATELY MAINTAINED BY THE HOA.

SCALE: 1" = 20' (HORIZ.)
1" = 2' (VERT.)

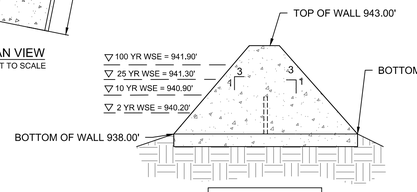








PLAN VIEW
NOT TO SCALE



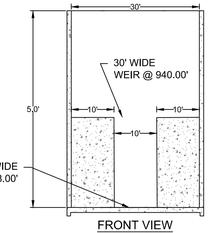
POND A "C-C"

NOT TO SCALE

LEGEND

HERITAGE TREE

TR-5396



FRONT VIEW
NOT TO SCALE

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
POND A PLAN

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-PONDS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

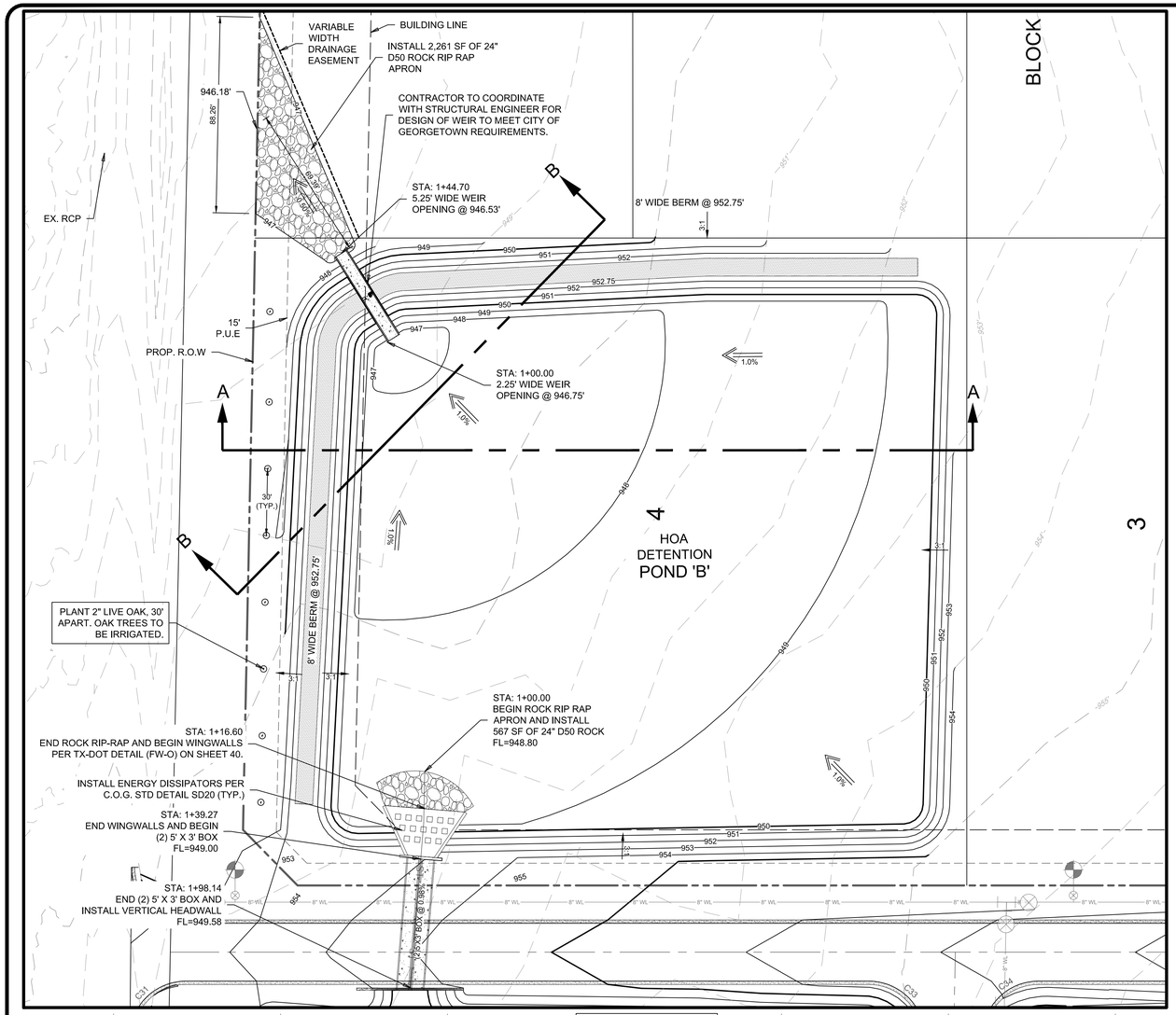
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
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FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 37 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 25 - 16:17
Plot Date/Time: Sep. 25 - 16:42:55



30 15 0 30 60

SCALE IN FEET

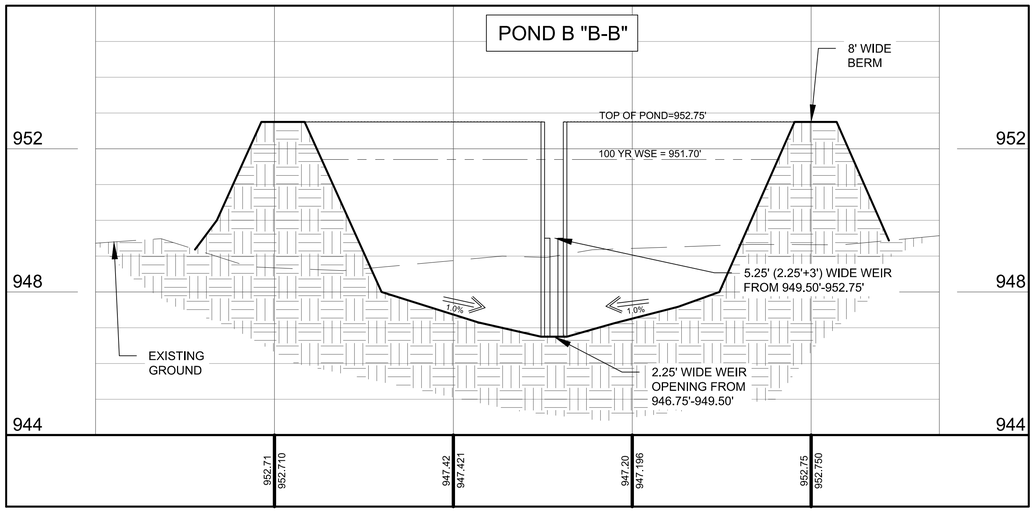
NOTE:
ALL PONDS WILL BE PRIVATELY MAINTAINED BY THE HOA.

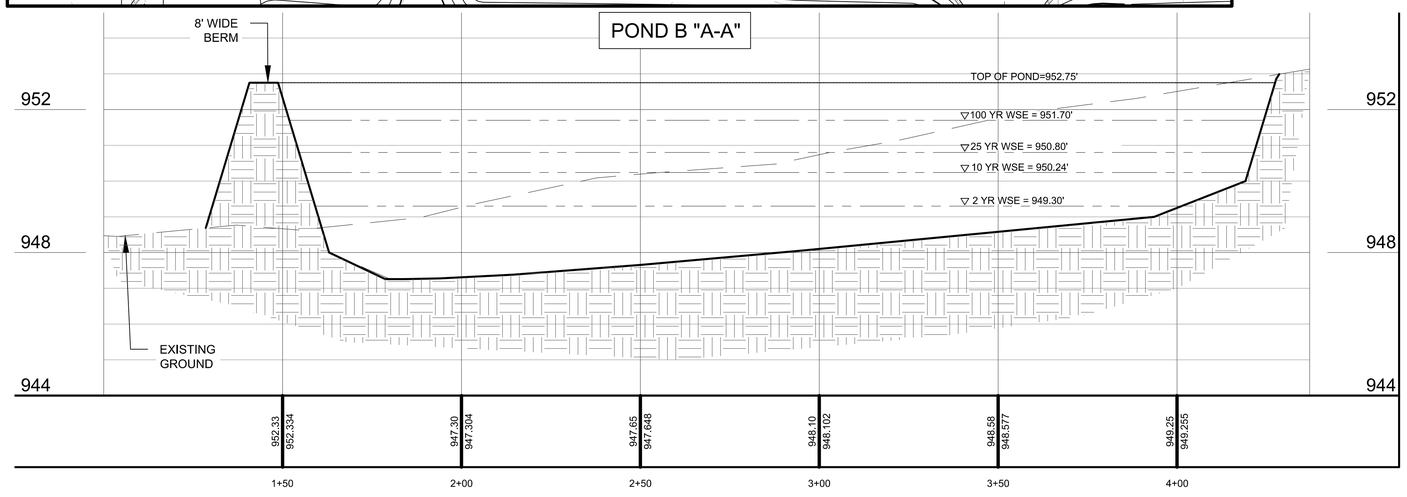
POND B
STAGE-STORAGE-DISCHARGE

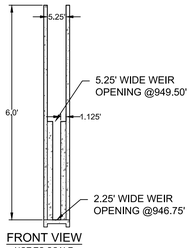
STORM EVENT	ELEVATION (FT)	AREA* (FT^2)	STORAGE (AC-FT)	INFLOW (CFS)	OUTFLOW (CFS)**
	946.75	0	0.0	-	0.0
	947.00	767	0.0	-	0.8
	948.00	15151	0.1	-	9.4
	949.00	46811	0.8	-	22.8
2 YR	**949.30**	**-**	**1.2**	**65.1**	**27.6**
	950.00	62462	2.2	-	44.4
10 YR	**950.24**	**-**	**2.4**	**117.9**	**49.7**
25 YR	**950.80**	**-**	**3.3**	**154.3**	**68.5**
	951.00	65426	3.7	-	78.8
100 YR	**951.70**	**-**	**4.6**	**213.5**	**103.6**
	952.00	68446	-	-	-
	952.75	70748	-	-	-

* ELEVATION-AREAS USED TO DETERMINE POND STORAGE

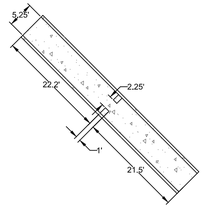
** WEIR COEFFICIENT OF 3.0 WAS USED IN THE ANALYSIS OF THE WEIR DISCHARGE RATE.



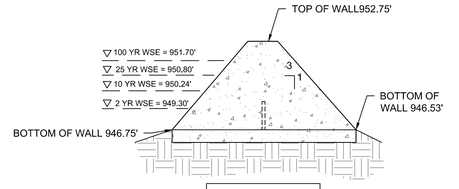




FRONT VIEW
NOT TO SCALE



PLAN VIEW
NOT TO SCALE



SIDE VIEW
NOT TO SCALE

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
DETENTION POND B PLAN

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-PONDS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

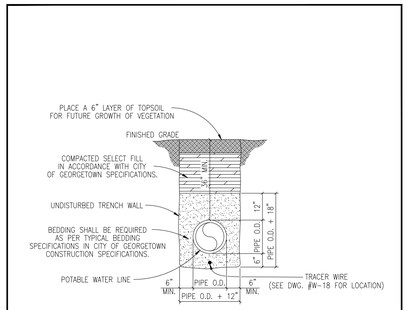
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JOB NUMBER: A492-100

SHEET NO. 38 OF 51 SHEETS

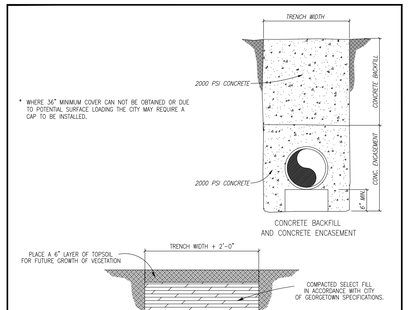
2024-24-CON

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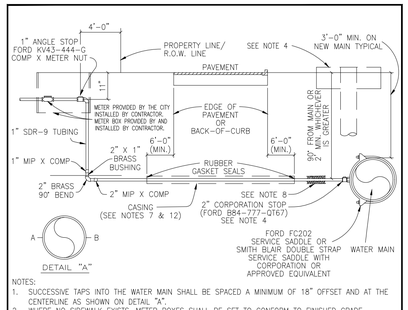
The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006	
TRENCH AND EMBEDMENT DETAIL UNDER NON-PAVED AREAS	DRAWING NAME:	W02
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB	



The Architect/Engineer assumes responsibility for appropriate use of this standard.

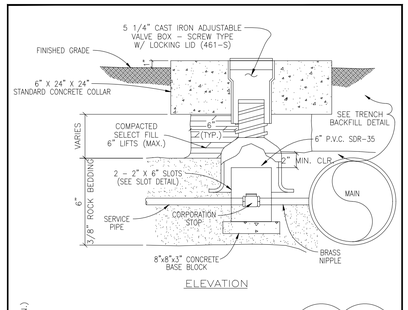
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006	
CONCRETE TRENCH CAP DETAIL	DRAWING NAME:	W02A
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB	



NOTES:
1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" OFFSET AND AT THE CENTERLINE AS SHOWN ON DETAIL "A"
2. WHERE NO SIDEWALK EXISTS, METER BOXES SHALL BE SET TO CONFORM TO FINISHED GRADE.
3. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
4. ROTATE THE CORPORATION STOP SO THAT THE OPERATING NUT IS ACTUATED FROM THE VERTICAL POSITION RATHER THAN THE HORIZONTAL. SEE STD. RISER FOR CORP. STOP DETAIL. (DWG. # W08).
5. SERVICE LINES SHALL BE CONTINUOUS FROM CORPORATION STOP TO CORPORATION STOP WITH NO FITTINGS IN BETWEEN.
6. SERVICE CASING SHALL NOT BE INSTALLED BY WATER JETTING UNDER ROADWAY.
7. CASING REQUIRED FOR ALL PAVEMENT CROSSINGS. 4" SDR-26 REQUIRED FOR OPEN-CUT. STEEL CASING PIPE REQUIRED FOR JACK AND BORE. LIMITS OF CASING SHOULD EXTEND SIX FEET BEYOND THE EDGE OF PAVEMENT OR BACK-OF-CURB.
8. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. METER BOX TO BE CAPABLE OF HOUSING ITRON AUTOMATIC METER READING DEVICE. USE DFW-PLASTICS, INC. PART NO. 1200.SBAMR OR APPROVED EQUAL.
11. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY. SEE DETAIL W23.
12. CASING SHALL EXTEND OUT TO WITHIN 4' INSIDE OF THE R.O.W. LINE, ON BOTH SIDES.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 01/23/2013	
TYPICAL WATER SERVICE-ELEVATION	DRAWING NAME:	W03
	SCALE: NTS; DATE: 1/2013; DRAWN BY: —; APPROVED BY: MH	



The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006	
STANDARD RISER BOX FOR CORPORATION STOP	DRAWING NAME:	W08
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB	

NOTES:
1. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
2. ANGLE STOPS SHALL BE 1" MINIMUM.
3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.
4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE.
6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.
7. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 01/23/2013	
SINGLE WATER SERVICE PLAN	DRAWING NAME:	W04
	SCALE: NTS; DATE: 1/2013; DRAWN BY: —; APPROVED BY: MH	

NOTES:
1. AUTHORIZED SERVICE LINE MATERIAL: POLYETHYLENE TUBING SHALL BE SDR-9. CLASS 200, SDR TUBING SHALL HAVE STAINLESS STEEL STIFFENERS.
2. ANGLE STOP SHALL BE 1" MINIMUM.
3. 1" ANGLE STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.
4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
5. ANGLE STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE.
6. ANGLE STOPS SHALL BE INSTALLED 8" BELOW FINISHED GRADE AND MARKED WITH A 2" X 2" X 48" TREATED WOOD STAKE, PAINTED BLUE.
7. BEDDING MATERIAL AS PER CITY OF GEORGETOWN CONSTRUCTION SPECIFICATIONS.
8. CASING REQUIREMENTS FOR SERVICE LINES CROSSING ROADWAYS SEE DETAIL W-03 NOTE #7.
9. ANY VARIATIONS ON FITTINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. ALL SERVICE LINES SHALL BE PLACED 90° PERPENDICULAR TO THE ROADWAY.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 01/23/2013	
DOUBLE WATER SERVICE PLAN	DRAWING NAME:	W05
	SCALE: NTS; DATE: 1/2013; DRAWN BY: —; APPROVED BY: MH	

NOTES:
1. VALVE BOX SHALL BE 5 1/4" CAST IRON ADJUSTABLE HAVING AN ADJUSTABLE RANGE OF + OR – 6 INCHES FROM INSTALLED FINISH GRADE.
2. ACCEPTABLE GATE VALVES ARE:
   A. AMERICAN FLOW CONTROL – SERIES 2500
   B. MUELLER – 2360 SERIES
   C. CLOW

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006	
TYPICAL VALVE SETTING	DRAWING NAME:	W07
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB	

NOTES:
1. FIRE HYDRANT SHALL BE INSTALLED ON SAME SIDE OF ROAD AS WATER MAIN.
2. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE.
3. ALL FIRE HYDRANT EXTERIORS SHALL BE FACTORY PRIMED AND PAINTED SILVER USING A HIGH GRADE ENAMEL.
4. HEEL AND THRUST BLOCKS TO REST IN UNDISTURBED SOIL.
5. THE ONLY FIRE HYDRANTS ACCEPTABLE ARE:
   A. KENNEDY – K81
   B. AMERICAN DARLING – B84B
   C. CLOW MEDALLION
6. DOUBLE BLUE REFLECTOR "IVE-I-ITES" BRAND, MANUFACTURED BY PAVEMENT MARKERS INC. TO BE INSTALLED AT CENTERLINE OF STREET PERPENDICULAR TO HYDRANT.
7. ALL METALLIC PIPES AND FITTINGS SHALL BE WRAPPED WITH 8 MIL. POLYETHELENE FILM.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS	REVISION NOTE: ADOPTED 6/21/2006	
TYPICAL FIRE HYDRANT INSTALLATION	DRAWING NAME:	W10
	SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB	

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
WATER DETAILS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-DETAILS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

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7500 Rialto Boulevard
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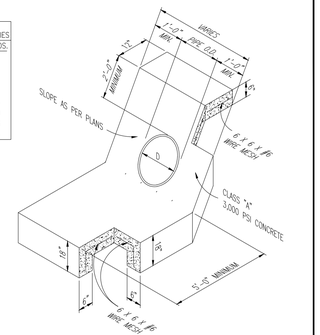
JOB NUMBER: A492-100

SHEET NO. 39 OF 51 SHEETS

2024-24-CON

I:\A492\0439-Serene Estates\Submittal Drawings\SE-DETAILS.dwg
User: jmartinez
Last Modified: Sep 19, 25 – 15:38
Plot Date/Time: Sep 19, 25 – 15:40:00

MINIMUM RIP-RAP QUANTITIES	
PIPE	SQ. YDS.
18"	6.2
24"	6.9
27"	7.8
30"	9.5
36"	10.4
42"	12.0
48"	14.3
54"	16.4



NOTES:

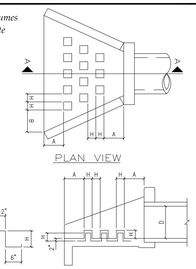
1. WHEN HEADWALLS AND WINGWALLS ARE REQUIRED, THEY SHALL CONFORM TO THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARDS, OR AS DIRECTED BY THE CITY.
2. ENERGY DISSIPATERS SHALL BE REQUIRED IF PIPE VELOCITY IS GREATER THAN 5.0 F.P.S. OR AS DIRECTED BY THE CITY OF GEORGETOWN.
3. SUPPORT REINFORCING WIRE MESH REQUIRED AS SUPPORT FOR APPROACH SLAB AND SHALL BE SUPPORTED BY REBAR CHAIRS OR OTHER APPROVED METHODS.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
TYPICAL CONCRETE RIP-RAP AT PIPE

DESIGN DATE: ADOPTED 6/21/2006
DRAWING NAME: SD19
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB

The Architect/Engineer assumes responsibility for appropriate use of this standard.



NOTES:

1. USE CLASS "A" CONCRETE, 3,000 PSI AT 28 DAYS, UNLESS NOTED.
2. REINFORCING STEEL – ASTM A615, GRADE 40, UNLESS NOTED.
3. LAP REINFORCING 30 BAR DIAMETERS MIN. AT SPLICES, UNLESS NOTED.
4. CHAMFER EXPOSED EDGES OF CONCRETE 3/4", UNLESS NOTED.
5. PLACE REINFORCING WITH THE CENTER OF THE OUTSIDE BARS 2 INCHES FROM THE SURFACE OF THE CONCRETE.

TABLE OF DIMENSIONS FOR ENERGY DISSIPATOR DETAIL

D PIPE DIAMETER (INCHES)	NUMBER OF ROWS OF DISSIPATORS	NUMBER OF DISSIPATORS IN FRONT ROW	H (INCHES)	A (INCHES)	B (INCHES)
12	1	3	4	4	9.1875
18	2	4	4 1/2	9 1/2	15.5625
24	2	5	6	14 3/4	16 1/2
30	3	6	7 1/2	12 1/2	14 3/8
36	3	6	9	16 1/4	18 5/16
42	3	6	10 1/2	20	22 1/4
48	3	6	12	23 3/4	26 1/4
54	3	6	13 1/2	27 1/2	27 3/4
60	3	6	15	31 1/4	31 5/8

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
ENERGY DISSIPATER DETAIL

DESIGN DATE: ADOPTED 6/21/2006
DRAWING NAME: SD20
SCALE: NTS | DATE: 1/2003
DRAWN BY: MRS | APPROVED BY: TRB

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2-wings) (3)	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2-wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:

(All values are in feet.)

Hw = H + T + C - 0.250'
A = (Hw - 0.333') (SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)

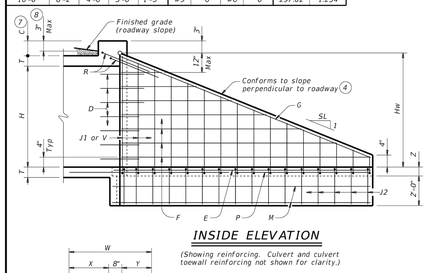
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N - 1) (0.5')

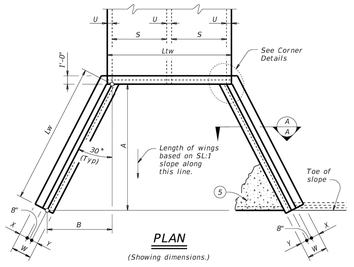
Total wingwall area (two wings ~ SF) = (Hw + 0.333') (Lw)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

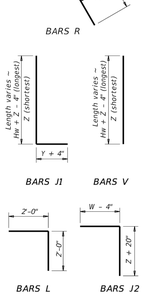
See applicable box culvert standard sheet for H, S, T, and U values.



(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



(Showing dimensions.)



1. *Extend Bars P 3'-0" minimum into bottom slab of box culvert.*
2. *Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.*
3. *Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.*
4. *Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.*
5. *When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.*
6. *At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.*
7. *0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.*
8. *For vehicle safety, the following requirements must be met:*
   - *For structures without bridge rail, construct curbs no more than 3" above finished grade.*
   - *For structures with bridge rail, construct curbs flush with finished grade.*

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



SECTION A-A





CORNER DETAILS
(Culvert and culvert toewall reinforcing not shown for clarity.)



SECTION B-B (5)

Texas Department of Transportation — **Bridge Division Standard**

CONCRETE WINGWALLS
WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

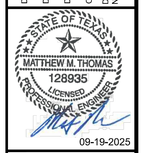
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NO.	DESCRIPTION	BY	DATE
	REVISIONS		

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
STORM DETAILS-SHEET 1

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-DETAILS.dwg



09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

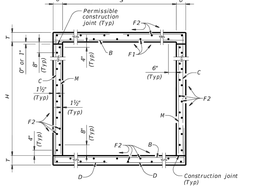
SHEET NO. **40** OF 51 SHEETS

2024-24-CON

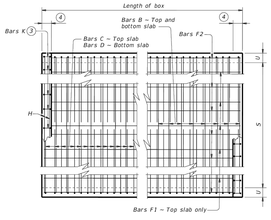
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User: jmartinez
Last Modified: Sep 19, 25 - 15:38
Plot Date/Time: Sep 19, 25 - 15:40:02

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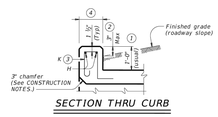
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TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

(1) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(2) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

(4) 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D306 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D306 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 = 1'-0" Min
- Uncoated or galvanized – #5 = 2'-1" Min
- Uncoated or galvanized – #6 = 2'-6" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

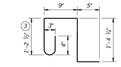
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-3 & 4

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SECTION DIMENSIONS				FILL HEIGHT (1)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																												QUANTITIES					
					Bars B					Bars C					Bars D						Bars M – #4				Bars F1 – #4 at 18" Spa			Bars F2 – #4 at 18" Spa			Bars H 4 – #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (lb)	Conc (CY)	Reinf (lb)	Conc (CY)	Reinf (lb)
3'-0"	2'-0"	8"	7"	30"	108	#5	9"	3'-11"	441	108	#4	9"	5'-4"	385	2'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	19	39'-9"	505	3'-11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3'-0"	3'-0"	8"	7"	30"	108	#5	9"	3'-11"	441	108	#4	9"	6'-4"	457	3'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	23	39'-9"	611	3'-11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4'-0"	2'-0"	8"	7"	30"	108	#5	9"	4'-11"	554	162	#4	6"	5'-8"	613	2'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	21	39'-9"	558	4'-11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4'-0"	3'-0"	8"	7"	30"	108	#5	9"	4'-11"	554	162	#4	6"	6'-8"	721	3'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4'-0"	4'-0"	8"	7"	30"	108	#5	9"	4'-11"	554	162	#4	6"	7'-8"	830	4'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	4'-0"	289	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

(5) For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

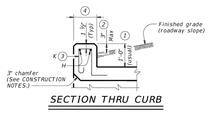
SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-3 & 4

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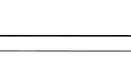
SECTION THRU CURB



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-5 & 6

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SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																												QUANTITIES					
					Bars B					Bars C					Bars D						Bars M – #4				Bars F1 – #4 at 18" Spa			Bars F2 – #4 at 18" Spa			Bars H 4 – #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (lb)	Conc (CY)	Reinf (lb)	Conc (CY)	Reinf (lb)
5'-0"	2'-0"	9"	7"	26"	108	#6	9"	5'-11"	960	108	#5	9"	6'-3"	704	2'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	2'-0"	144	4	39'-9"	106	22	39'-9"	584	5'-11"	16	14	39	0.391	80.5	0.5	55	16.1	3,276
5'-0"	2'-0"	9"	7"	30"	108	#6	9"	5'-11"	960	108	#5	9"	6'-4"	713	2'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	2'-0"	144	4	39'-9"	106	22	39'-9"	584	5'-11"	16	14	39	0.429	81.0	0.5	55	17.6	3,294
5'-0"	3'-0"	9"	7"	26"	108	#6	9"	5'-11"	960	108	#5	9"	7'-3"	817	3'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	3'-0"	216	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.434	87.8	0.5	55	17.8	3,567
5'-0"	3'-0"	9"	7"	30"	108	#6	9"	5'-11"	960	108	#5	9"	7'-4"	826	3'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	3'-0"	216	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.472	88.3	0.5	55	19.3	3,585
5'-0"	4'-0"	8"	7"	26"	108	#6	9"	5'-11"	960	108	#5	9"	8'-3"	929	4'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	4'-0"	289	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.477	92.4	0.5	55	19.5	3,752
5'-0"	4'-0"	9"	7"	30"	108	#6	9"	5'-11"	960	108	#5	9"	8'-4"	939	4'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	4'-0"	289	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.515	92.9	0.5	55	21.1	3,771
5'-0"	5'-0"	8"	7"	26"	108	#6	9"	5'-11"	960	108	#5	9"	9'-3"	1,042	5'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	5'-0"	361	4	39'-9"	106	30	39'-9"	797	5'-11"	16	14	39	0.521	99.7	0.5	55	21.3	4,044
5'-0"	5'-0"	9"	7"	30"	108	#6	9"	5'-11"	960	108	#5	9"	9'-4"	1,051	5'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	5'-0"	361	4	39'-9"	106	30	39'-9"	797	5'-11"	16	14	39	0.559	100.2	0.5	55	22.8	4,062
6'-0"	2'-0"	8"	7"	26"	108	#6	9"	6'-11"	1,122	108	#5	9"	6'-7"	742	2'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	2'-0"	144	5	39'-9"	133	25	39'-9"	664	6'-11"	18	16	45	0.440	89.1	0.5	63	18.1	3,628
6'-0"	2'-0"	9"	7"	26"	108	#6	9"	6'-11"	1,122	162	#5	6"	6'-8"	1,126	2'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	2'-0"	144	5	39'-9"	133	25	39'-9"	664	6'-11"	18	16	45	0.485	108.6	0.5	63	19.9	4,407
6'-0"	2'-0"	10"	8"	30"	108	#6	9"	7'-1"	1,149	162	#5	6"	6'-10"	1,155	2'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	2'-0"	110	5	39'-9"	133	25	39'-9"	664	7'-1"	19	18	50	0.551	109.9	0.5	69	22.6	4,463
6'-0"	3'-0"	8"	7"	26"	108	#6	9"	6'-11"	1,122	108	#5	9"	7'-7"	854	3'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	3'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.484	96.4	0.5	63	19.9	3,918
6'-0"	3'-0"	9"	7"	26"	108	#6	9"	6'-11"	1,122	162	#5	6"	7'-8"	1,295	3'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	3'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.528	117.3	0.5	63	21.6	4,754
6'-0"	3'-0"	10"	8"	30"	108	#6	9"	7'-1"	1,149	162	#5	6"	7'-10"	1,324	3'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	3'-0"	164	5	39'-9"	133	29	39'-9"	770	7'-1"	19	18	50	0.601	118.1	0.5	69	24.6	4,792
6'-0"	4'-0"	8"	7"	26"	108	#6	9"	6'-11"	1,122	108	#5	9"	8'-7"	967	4'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	4'-0"	289	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.527	101.0	0.5	63	21.6	4,104
6'-0"	4'-0"	9"	7"	26"	108	#6	9"	6'-11"	1,122	162	#5	6"	8'-8"	1,464	4'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	4'-0"	289	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.571	123.3	0.5	63	23.4	4,996
6'-0"	4'-0"	10"	8"	30"	108	#6	9"	7'-1"	1,149	162	#5	6"	8'-10"	1,493	4'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	4'-0"	219	5	39'-9"	133	29	39'-9"	770	7'-1"	19	18	50	0.650	123.7	0.5	69	26.5	5,016
6'-0"	5'-0"	8"	7"	26"	108	#6	9"	6'-11"	1,122	108	#5	9"	9'-7"	1,080	5'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	5'-0"	361	5	39'-9"	133	33	39'-9"	876	6'-11"	18	16	45	0.570	108.3	0.5	63	23.3	4,395
6'-0"	5'-0"	9"	7"	26"	108	#6	9"	6'-11"	1,122	162	#5	6"	9'-8"	1,633	5'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	5'-0"	361	5	39'-9"	133	33	39'-9"	876	6'-11"	18	16	45	0.614	132.0	0.5	63	25.1	5,343
6'-0"	5'-0"	10"	8"	30"	108	#6	9"	7'-1"	1,149	162	#5	6"	9'-10"	1,661	5'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	5'-0"	274	5	39'-9"	133	33	39'-9"	876	7'-1"	19	18	50	0.700	131.9	0.5	69	28.5	5,345
6'-0"	6'-0"	8"	7"	26"	108	#6	9"	6'-11"	1,122	108	#5	9"	10'-7"	1,192	6'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	6'-0"	433	5	39'-9"	133	37	39'-9"	982	6'-11"	18	16	45	0.613	115.6	0.5	63	25.0	4,685
6'-0"	6'-0"	9"	7"	26"	108	#6	9"	6'-11"	1,122	162	#5	6"	10'-8"	1,802	6'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	6'-0"	433	5	39'-9"	133	37	39'-9"	982	6'-11"	18	16	45	0.657	140.7	0.5	63	26.8	5,690
6'-0"	6'-0"	10"	8"	30"	108	#6	9"	7'-1"	1,149	162	#5	6"	10'-10"	1,830	6'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	6'-0"	329	5	39'-9"	133	37	39'-9"	982	7'-1"	19	18	50	0.749	140.2	0.5	69	30.5	5,675

(5) For direct tra c culverts (II height ≤ 2 ft.), identify the required box size and select the option with the minimum II height.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-5 & 6

File: CD-SCC56-21.dgn	Dn: TBE	Ck: BMP	Dw: TxDOT	Ck: TxDOT
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REVISIONS				
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
STORM DETAILS-SHEET 2

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 8/20/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-DETAILS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

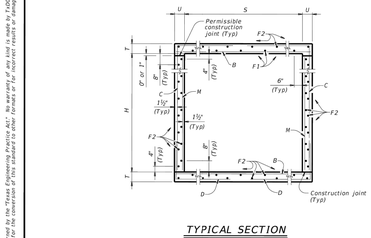
SHEET NO. 41 OF 51 SHEETS

2024-24-CON

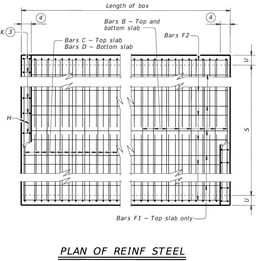
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User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
Print Date/Time: Sep. 19, 25 - 15:38:05

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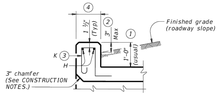
DATE:
FILE:



TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CH) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 @ 60 as 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86". Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 concave surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 = 1'-8" Min
- Uncoated or galvanized – #5 = 2'-1" Min
- Uncoated or galvanized – #6 = 2'-6" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



BARS C | BARS D | BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

HL93 LOADING — SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-7

FILE: CD-SCC07-21.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
04/2021 Update # values				

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

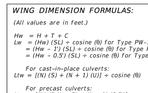
Maximum Wingwall Height He	W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing (2-wings) ④ Reinf (Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per Ft of Toewall (1-toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-0"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	11"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-6"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING (2-wings)

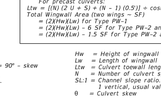
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2

WING DIMENSION FORMULAS:
(All values are in feet.)

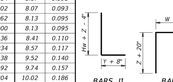
Hw = H + T + C
Lw = (Hw) (SL) + cosine (θ) for Type PW-1
= (Hw – 1) (SL) + cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw – 0.5) (SL) + cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = ((N) (S) + (N + 1) (U)) + cosine (θ)

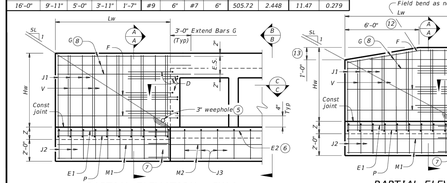
For precast culverts:
Ltw = ((N) (2 U + S) + (N – 1) (0.5)) + cosine (θ)
Total Wingwall Area (two wings = SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) – 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) – 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Total culvert length
N = Number of inside spans
SL:1 = Channel slope ratio (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

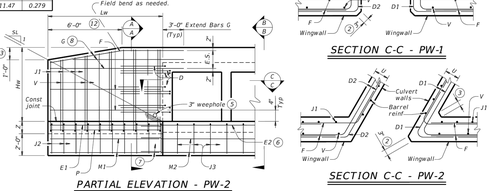
See applicable box culvert standard sheet for S, H, T, and U values.



BARS J1 | BARS J2 | BARS J3 | BARS V



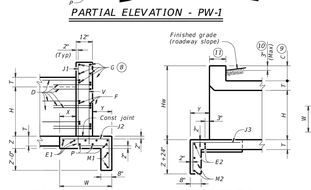
PARTIAL ELEVATION - PW-1



PARTIAL ELEVATION - PW-2

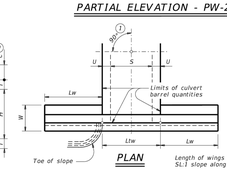
SECTION C-C - PW-1

SECTION C-C - PW-2



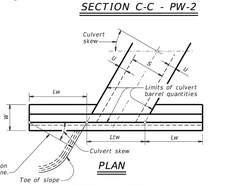
SECTION A-A
(Showing wing reinforcement.)

SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew = 1"
   For 30° skew = 2"
   For 45° skew = 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CH) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 0" for Hw < 4'.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'_c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

FILE: CD-PW-20.dgn	DN: GAT	CK: CAT	DW: TXDOT	CK: TXDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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DATE:
FILE:

BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

SECTION DIMENSIONS S	H	T	U	⑤ FILL HEIGHT	Bars B No.	Bars B Size	Bars B Spa	Bars B Length	Bars B Weight	Bars C No.	Bars C Size	Bars C Spa	Bars C Length	Bars C Weight	Bars C "X"	Bars C "Y"	Bars D No.	Bars D Size	Bars D Spa	Bars D Length	Bars D Weight	Bars D "Y"	Bars D "Z"	Bars M – #4 at 18" Spa No.	Bars M – #4 at 18" Spa Length	Bars M – #4 at 18" Spa Wt	Bars F1 – #4 at 18" Spa No.	Bars F1 – #4 at 18" Spa Length	Bars F1 – #4 at 18" Spa Wt	Bars F2 – #4 at 18" Spa No.	Bars F2 – #4 at 18" Spa Length	Bars F2 – #4 at 18" Spa Wt	Bars H 4 – #4 Length	Bars H 4 – #4 Wt	Bars K No.	Bars K Wt	QUANTITIES Per Foot of Barrel Conc (CY)	Per Foot of Barrel Reinf (Lb)	Curb Conc (CY)	Curb Reinf (Lb)	Total Conc (CY)	Total Reinf (Lb)
7'-0"	3'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	7'-11"	1,338	3'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	3'-0"	216	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.533	124.8	0.6	71	21.9	5,062
7'-0"	3'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	8'-0"	1,352	3'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	3'-0"	216	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.583	125.5	0.6	71	23.9	5,090
7'-0"	3'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	8'-2"	1,380	3'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	3'-0"	164	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.663	126.3	0.6	78	27.1	5,128
7'-0"	3'-0"	11"	8"	30'	108	#6	9"	8'-1"	1,311	162	#5	6"	8'-3"	1,394	3'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	3'-0"	164	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.714	127.0	0.6	78	29.2	5,156
7'-0"	4'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	8'-11"	1,507	4'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	4'-0"	289	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.576	130.8	0.6	71	23.6	5,304
7'-0"	4'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	9'-0"	1,521	4'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	4'-0"	289	5	39'-9"	133	31	39'-9"	823	7'-11"	21	18	50	0.627	131.5	0.6	71	25.7	5,332
7'-0"	4'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	9'-2"	1,549	4'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	4'-0"	219	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.712	131.9	0.6	78	29.1	5,352
7'-0"	4'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	9'-3"	1,563	4'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	4'-0"	219	5	39'-9"	133	31	39'-9"	823	8'-1"	22	20	56	0.763	149.0	0.6	78	31.1	6,036
7'-0"	5'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	9'-11"	1,676	5'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	5'-0"	361	5	39'-9"	133	35	39'-9"	929	7'-11"	21	18	50	0.619	139.5	0.6	71	25.4	5,651
7'-0"	5'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	10'-0"	1,690	5'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	5'-0"	361	5	39'-9"	133	35	39'-9"	929	7'-11"	21	18	50	0.670	140.2	0.6	71	27.4	5,679
7'-0"	5'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	10'-2"	1,718	5'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	5'-0"	274	5	39'-9"	133	35	39'-9"	929	8'-1"	22	20	56	0.761	140.1	0.6	78	31.1	5,682
7'-0"	5'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	10'-3"	1,732	5'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	5'-0"	274	5	39'-9"	133	35	39'-9"	929	8'-1"	22	20	56	0.813	157.2	0.6	78	33.1	6,366
7'-0"	6'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	10'-11"	1,845	6'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	6'-0"	433	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.663	148.2	0.6	71	27.1	5,999
7'-0"	6'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	11'-0"	1,859	6'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	6'-0"	433	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.713	148.9	0.6	71	29.1	6,027
7'-0"	6'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	11'-2"	1,887	6'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	82	12"	6'-0"	329	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.811	148.4	0.6	78	33.1	6,013
7'-0"	6'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	11'-3"	1,901	6'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	82	12"	6'-0"	329	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.862	165.5	0.6	78	35.1	6,697
7'-0"	7'-0"	8"	7"	16'	108	#6	9"	7'-11"	1,284	162	#5	6"	11'-10"	2,014	7'-6"	4'-5"	162	#5	6"	7'-1"	1,197	4'-5"	2'-8"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.706	154.2	0.6	71	28.8	6,240
7'-0"	7'-0"	9"	7"	20'	108	#6	9"	7'-11"	1,284	162	#5	6"	12'-0"	2,028	7'-7"	4'-5"	162	#5	6"	7'-2"	1,211	4'-5"	2'-9"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	7'-11"	21	18	50	0.756	154.9	0.6	71	30.8	6,268
7'-0"	7'-0"	10"	8"	23'	108	#6	9"	8'-1"	1,311	162	#5	6"	12'-2"	2,036	7'-8"	4'-6"	162	#5	6"	7'-4"	1,239	4'-6"	2'-10"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.860	157.0	0.6	78	35.0	6,358
7'-0"	7'-0"	11"	8"	30'	162	#6	6"	8'-1"	1,967	162	#5	6"	12'-3"	2,070	7'-9"	4'-6"	162	#5	6"	7'-5"	1,253	4'-6"	2'-11"	108	9"	7'-0"	505	5	39'-9"	133	39	39'-9"	1,036	8'-1"	22	20	56	0.912	174.1	0.6	78	37.1	7,042

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

HL93 LOADING — SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

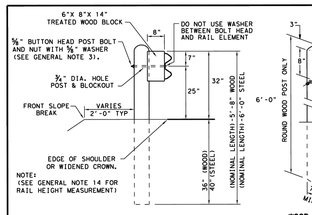
SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-7

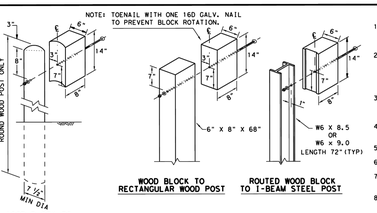
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
04/2021 Update # values				

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DATE:
FILE:



TYPICAL POST PLACEMENT



WOOD BLOCK TO RECTANGULAR WOOD POST | ROUTED WOOD BLOCK TO I-BEAM STEEL POST

WOOD BLOCK TO ROUND WOOD POST

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 SPLICE RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMODATE 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 ⅝" WASHER (FWC16G) 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 ACCOMODATE 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 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

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS

EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (1+00-23+00)

PROPOSED SERENE ESTATES SUBDIVISION

COUNTY ROAD 249 (R.O.W. VARIES)

FISHER ROAD (R.O.W. VARIES)

MATCH LINE STA. 12+00.00

MATCH LINE STA. 12+00.00

MATCH LINE STA. 23+00.00

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
P	TR-1	21"	10.5'	OSAGE
NP	TR-2	12"	6'	OSAGE
NP	TR-3	8"	4'	HACKBERRY
NP	TR-4	8"	4'	HACKBERRY
NP	TR-5	8"	4'	HACKBERRY
NP	TR-6	11"	5.5'	HACKBERRY
NP	TR-7	8"	4'	HACKBERRY
NP	TR-8	10"	5'	HACKBERRY
NP	TR-9	8"	4'	HACKBERRY
NP	TR-10	12"	6'	HACKBERRY
NP	TR-11	9"	4.5'	HACKBERRY
NP	TR-12	12"	6'	HACKBERRY
NP	TR-13	8"	4'	HACKBERRY
H	TR-14	51"	25.5'	OSAGE
NP	TR-15	9"	4.5'	LIVE OAK
P	TR-16	13"	6.5'	LIVE OAK
P	TR-17	25"	12.5'	LIVE OAK
P	TR-18	14"	7'	LIVE OAK
P	TR-19	17"	8.5'	LIVE OAK
P	TR-20	19"	9.5'	OSAGE
P	TR-21	14"	7'	LIVE OAK
P	TR-22	12"	6'	LIVE OAK
P	TR-23	23"	11.5'	LIVE OAK
H	TR-24	26"	13'	LIVE OAK
NP	TR-25	9"	4.5'	HACKBERRY
NP	TR-26	8"	4'	LIVE OAK
NP	TR-27	10"	5'	LIVE OAK
NP	TR-28	11"	5.5'	LIVE OAK
NP	TR-29	11"	5.5'	LIVE OAK
NP	TR-30	9"	4.5'	LIVE OAK
P	TR-31	12"	6'	LIVE OAK
H	TR-32	47"	23.5'	LIVEOAK
H	TR-33	34"	17'	LIVE OAK
H	TR-34	31"	15.5'	LIVE OAK
H	TR-35	26"	13'	CEDAR ELM

LEGEND: P = PROTECTED NP = NOT PROTECTED H = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	16
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	5

40 20 0 40 80

SCALE IN FEET

LEGEND

- SF LOC — PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- SF — SF — PROPOSED SILT FENCE
- LOC — PROPOSED LIMITS OF CONSTRUCTION
- TP — TP — TP — PROPOSE TREE PROTECTION
- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL — EX. WATERLINE
- WL — PROP. WATERLINE
- OHE — EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE
- TR-5396
- TR-5365 — PROTECTED TREE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR ERO.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

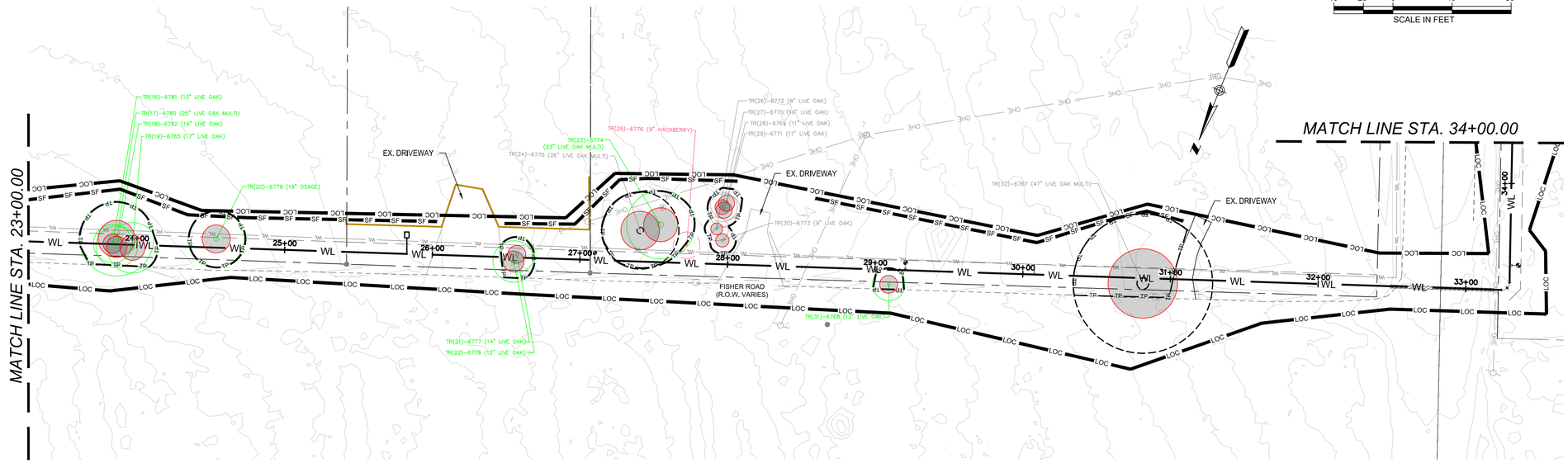
LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

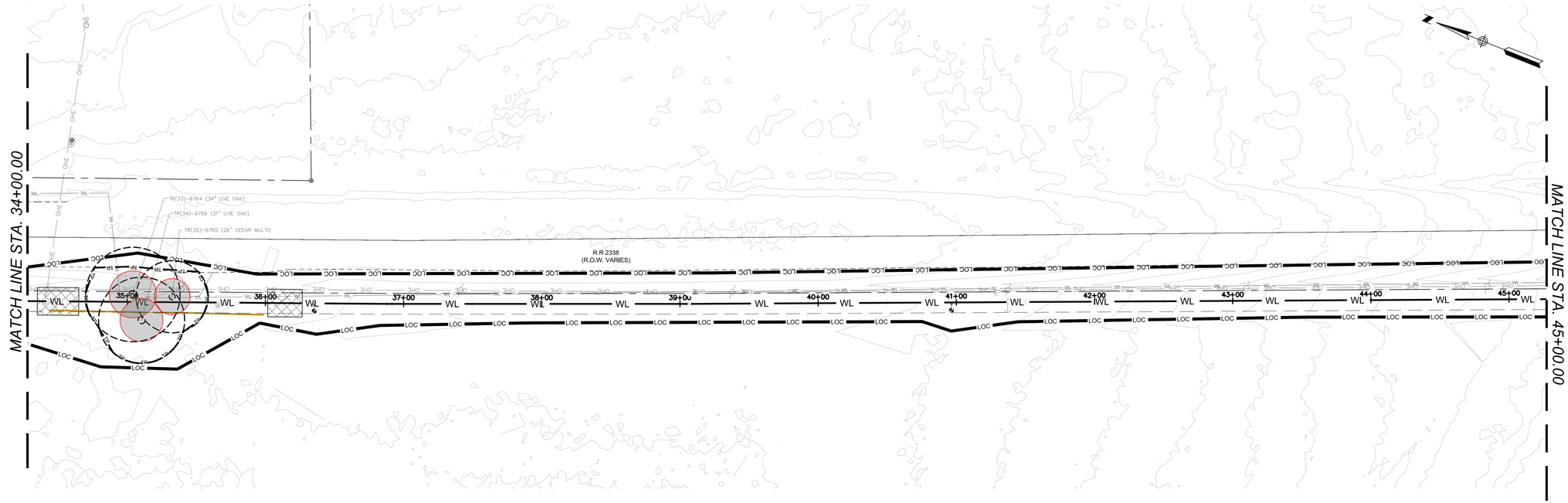
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SHEET NO. 43 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
Plot Date/Time: Sep. 19, 25 - 15:38:16





KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
P	TR-1	21"	10.5'	OSAGE
NP	TR-2	12"	6'	OSAGE
NP	TR-3	8"	4'	HACKBERRY
NP	TR-4	8"	4'	HACKBERRY
NP	TR-5	8"	4'	HACKBERRY
NP	TR-6	11"	5.5'	HACKBERRY
NP	TR-7	8"	4'	HACKBERRY
NP	TR-8	10"	5'	HACKBERRY
NP	TR-9	8"	4'	HACKBERRY
NP	TR-10	12"	6'	HACKBERRY
NP	TR-11	9"	4.5'	HACKBERRY
NP	TR-12	12"	6'	HACKBERRY
NP	TR-13	8"	4'	HACKBERRY
H	TR-14	51"	25.5'	OSAGE
NP	TR-15	9"	4.5'	LIVE OAK
P	TR-16	13"	6.5'	LIVE OAK
P	TR-17	25"	12.5'	LIVE OAK
P	TR-18	14"	7'	LIVE OAK
P	TR-19	17"	8.5'	LIVE OAK
P	TR-20	19"	9.5'	OSAGE
P	TR-21	14"	7'	LIVE OAK
P	TR-22	12"	6'	LIVE OAK
P	TR-23	23"	11.5'	LIVE OAK
H	TR-24	26"	13'	LIVE OAK
NP	TR-25	9"	4.5'	HACKBERRY
NP	TR-26	8"	4'	LIVE OAK
NP	TR-27	10"	5'	LIVE OAK
NP	TR-28	11"	5.5'	LIVE OAK
NP	TR-29	11"	5.5'	LIVE OAK
NP	TR-30	9"	4.5'	LIVE OAK
P	TR-31	12"	6'	LIVE OAK
H	TR-32	47"	23.5'	LIVEOAK
H	TR-33	34"	17'	LIVE OAK
H	TR-34	31"	15.5'	LIVE OAK
H	TR-35	26"	13'	CEDAR ELM

LEGEND: P = PROTECTED NP = NOT PROTECTED H = HERITAGE TREE

TOTAL NUMBER OF PROTECTED TREES:	16
PROTECTED TREE DENSITY:	0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:	5

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS

EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (23+00-45+00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR ERO.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN -F-1386

JOB NUMBER: A492-100

SHEET NO. 44 OF 51 SHEETS

2024-24-CON

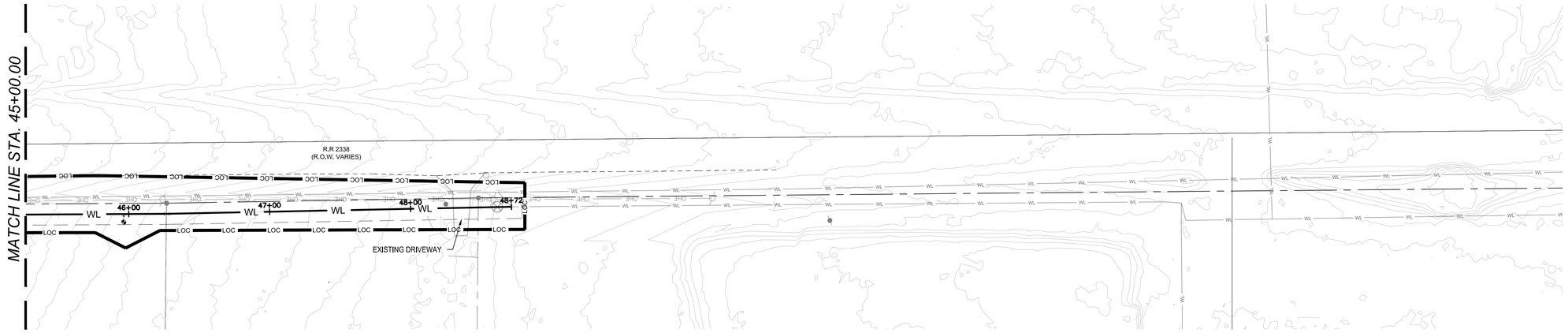
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User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
Plot Date/Time: Sep. 19, 25 - 15:39:31

KEY	TREE #	SIZE (INDIVIDUAL TRUNKS)	HALF CRITICAL ROOT ZONE	SPECIES
P	TR-1	21"	10.5'	OSAGE
NP	TR-2	12"	6'	OSAGE
NP	TR-3	8"	4'	HACKBERRY
NP	TR-4	8"	4'	HACKBERRY
NP	TR-5	8"	4'	HACKBERRY
NP	TR-6	11"	5.5'	HACKBERRY
NP	TR-7	8"	4'	HACKBERRY
NP	TR-8	10"	5'	HACKBERRY
NP	TR-9	8"	4'	HACKBERRY
NP	TR-10	12"	6'	HACKBERRY
NP	TR-11	9"	4.5'	HACKBERRY
NP	TR-12	12"	6'	HACKBERRY
NP	TR-13	8"	4'	HACKBERRY
H	TR-14	51"	25.5'	OSAGE
NP	TR-15	9"	4.5'	LIVE OAK
P	TR-16	13"	6.5'	LIVE OAK
P	TR-17	25"	12.5'	LIVE OAK
P	TR-18	14"	7'	LIVE OAK
P	TR-19	17"	8.5'	LIVE OAK
P	TR-20	19"	9.5'	OSAGE
P	TR-21	14"	7'	LIVE OAK
P	TR-22	12"	6'	LIVE OAK
P	TR-23	23"	11.5'	LIVE OAK
H	TR-24	26"	13'	LIVE OAK
NP	TR-25	9"	4.5'	HACKBERRY
NP	TR-26	8"	4'	LIVE OAK
NP	TR-27	10"	5'	LIVE OAK
NP	TR-28	11"	5.5'	LIVE OAK
NP	TR-29	11"	5.5'	LIVE OAK
NP	TR-30	9"	4.5'	LIVE OAK
P	TR-31	12"	6'	LIVE OAK
H	TR-32	47"	23.5'	LIVEOAK
H	TR-33	34"	17'	LIVE OAK
H	TR-34	31"	15.5'	LIVE OAK
H	TR-35	26"	13'	CEDAR ELM
LEGEND:	P = PROTECTED	NP = NOT PROTECTED	H = HERITAGE TREE	
TOTAL NUMBER OF PROTECTED TREES:				16
PROTECTED TREE DENSITY:				0.33
TOTAL NUMBER OF PROTECTED TREES REQUIRED TO REMAIN:				5

LEGEND

- SF LOC — PROPOSED SILT FENCE & LIMITS OF CONSTRUCTION
- SF SF — PROPOSED SILT FENCE
- LOC — PROPOSED LIMITS OF CONSTRUCTION
- TP TP TP — PROPOSE TREE PROTECTION
- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL — EX. WATERLINE
- WL — PROP. WATERLINE
- OHE — EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE
- TR-5396
- TR-5365 — PROTECTED TREE

40 20 0 40 80
SCALE IN FEET



SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS

EROSION-SEDIMENTATION CONTROL & TREE PROTECTION (45+00-END)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR ERO.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

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7500 Rialto Boulevard
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FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 45
OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 19, 25 - 15:38
Plot Date/Time: Sep. 19, 25 - 15:38

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OFFSITE WATERLINE P&P (1+00-12+00)

JOHN A. FENOGLIO AND WIFE, MARY E. FENOGLIO
TRACT I: CALLED 15.00 ACRES
VOLUME 1775, PAGE 284
D.R.W.C.TX.

SAMUEL A WEST III AND CORINNE H WEST
HUSBAND AND WIFE
CALLED 24.80 ACRES
DOCUMENT NO. 2005083543
O.P.R.W.C.TX.

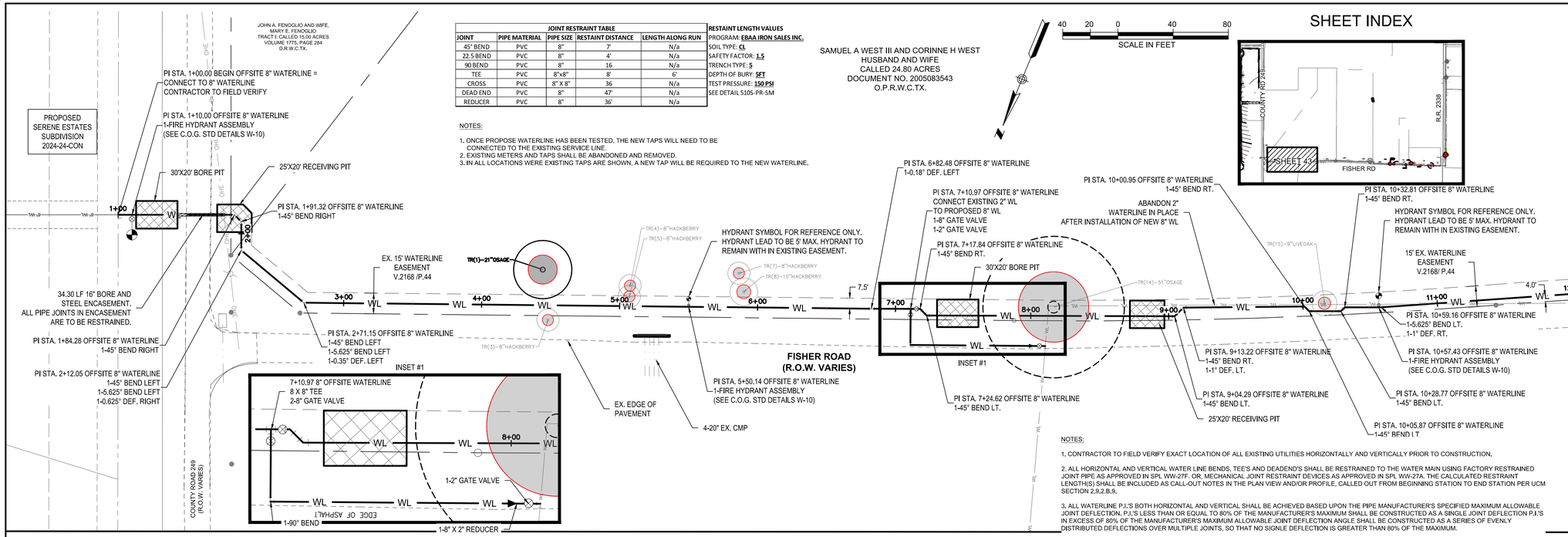
PROPOSED SERENE ESTATES SUBDIVISION 2024-24-CON

JOINT RESTRAINT TABLE				
JOINT	PIPE MATERIAL	PIPE SIZE	RESTAINT DISTANCE	LENGTH ALONG RUN
45° BEND	PVC	8"	7'	N/a
22.5 BEND	PVC	8"	4'	N/a
90 BEND	PVC	8"	16	N/a
TEE	PVC	8"x8"	8'	6'
CROSS	PVC	8" X 8"	36	N/a
DEAD END	PVC	8"	47'	N/a
REDUCER	PVC	8"	36'	N/a

RESTAINT LENGTH VALUES
PROGRAM: **EBAA IRON SALES INC.**
SOIL TYPE: **CL**
SAFETY FACTOR: **1.5**
TRENCH TYPE: **S**
DEPTH OF BURY: **5FT**
TEST PRESSURE: **150 PSI**
SEE DETAIL 5105-PR-SM

NOTES:

1. ONCE PROPOSE WATERLINE HAS BEEN TESTED, THE NEW TAPS WILL NEED TO BE CONNECTED TO THE EXISTING SERVICE LINE.
2. EXISTING METERS AND TAPS SHALL BE ABANDONED AND REMOVED.
3. IN ALL LOCATIONS WERE EXISTING TAPS ARE SHOWN, A NEW TAP WILL BE REQUIRED TO THE NEW WATERLINE.



SHEET INDEX

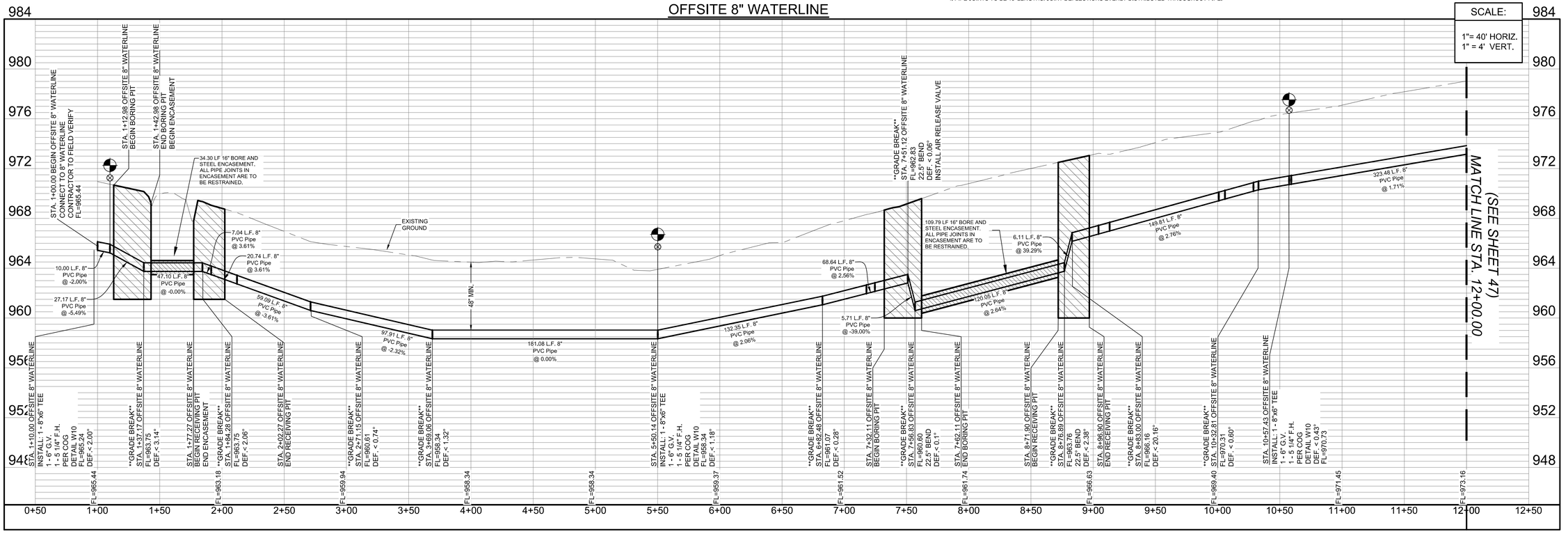
LEGEND
- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL EX. WATERLINE
- WL PROP. WATERLINE
- OHE EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- CRITICAL ROOT ZONE
- HERITAGE TREE
- TR-5396
- PROTECTED TREE
- TR-5365

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
2. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS, TEE'S AND DEADEND'S SHALL BE RESTRAINED TO THE WATER MAIN USING FACTORY RESTRAINED JOINT PIPE AS APPROVED IN SPL WW-27F, OR, MECHANICAL JOINT RESTRAINT DEVICES AS APPROVED IN SPL WW-27A. THE CALCUIATED RESTRAINT LENGTH(S) SHALL BE INCLUDED AS CALL-OUT NOTES IN THE PLAN VIEW AND/OR PROFILE, CALLED OUT FROM BEGINNING STATION TO END STATION PER UCM SECTION 2.9.2.B.9.
3. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION. P.I.'S LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION P.I.'S IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SIGNLE DEFLECTION IS GREATER THAN 80% OF THE MAXIMUM.
4. PIPE JOINTS TO BE 18' LENGTHS. JOINT DEFLECTIONS EVENLY DISTRIBUTED THROUGHOUT PIPE.

OFFSITE 8" WATERLINE

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



REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR P&P.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
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Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 46
OF 51 SHEETS

2024-24-CON

I:\A492\0436-Serene Estates\Offsite Water\Submittal Drawings\SE-WTR P&P.dwg
User: jmartinez
Last Modified: Sep. 19, 25 - 15:40
Plot Date/Time: Sep. 19, 25 - 15:40:54

NOTES:

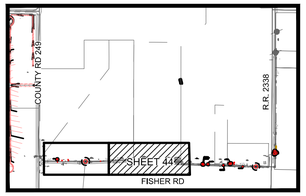
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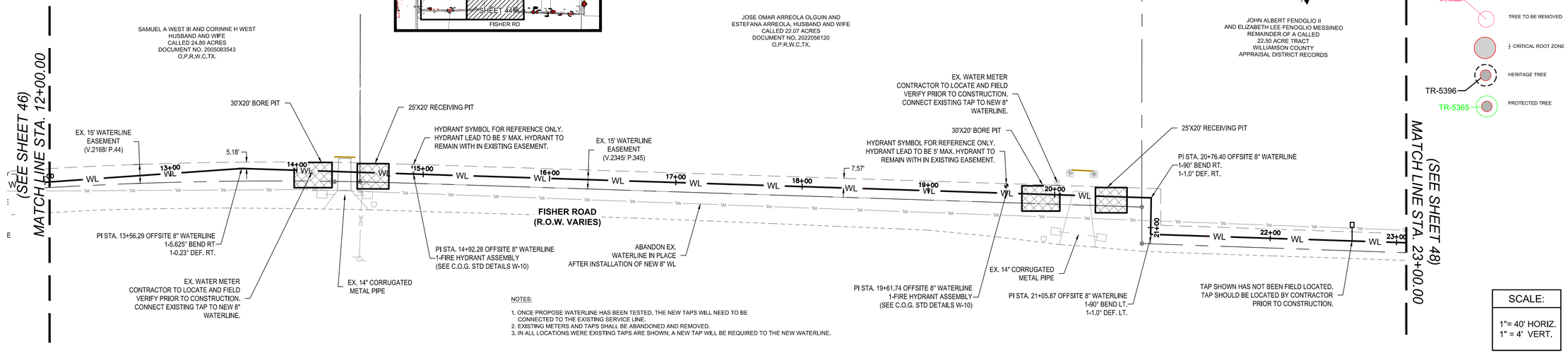
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SHEET INDEX



JOINT RESTRAINT TABLE				
JOINT	PIPE MATERIAL	PIPE SIZE	RESTAINT DISTANCE	LENGTH ALONG RUN
45° BEND	PVC	8"	7'	N/A
22.5 BEND	PVC	8"	4'	N/A
90 BEND	PVC	8"	16	N/A
TEE	PVC	8"x8"	8'	6'
CROSS	PVC	8" X 8"	36	N/A
DEAD END	PVC	8"	47'	N/A
REDUCER	PVC	8"	36'	N/A

RESTAINT LENGTH VALUES
PROGRAM: **EBAA IRON SALES INC.**
SOIL TYPE: **CL**
SAFETY FACTOR: **1.5**
TRENCH TYPE: **5**
DEPTH OF BURY: **5FT**
TEST PRESSURE: **150 PSI**
SEE DETAIL 510S-PR-SM



NOTES:

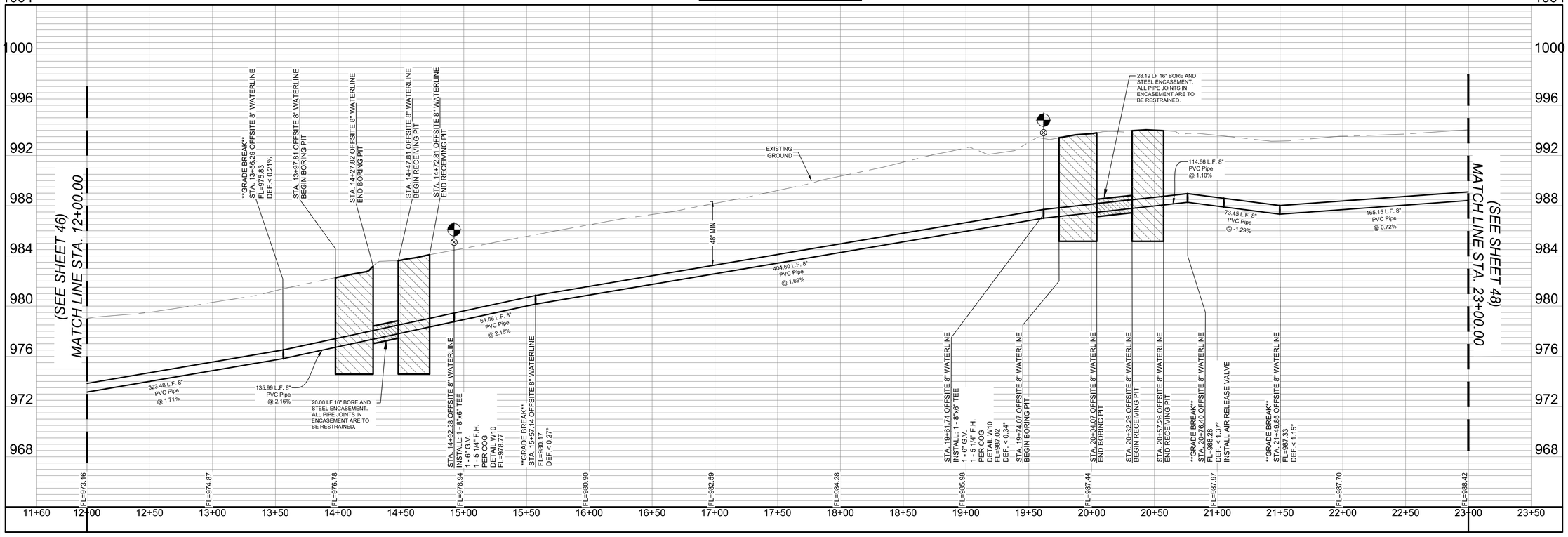
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LEGEND

- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL EX. WATERLINE
- WL PROP. WATERLINE
- OHE EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE
- TR-5396
- TR-5365 PROTECTED TREE

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

OFFSITE 8" WATERLINE



LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
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FRN - F-1386

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OFFSITE WATERLINE P&P (12+00-23+50)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR P&P.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

JOB NUMBER: A492-100

SHEET NO. **47**
OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep. 25 - 15:40
Plot Date/Time: Sep. 25 - 16:01:14

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.

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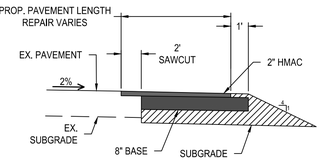
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4. PIPE JOINTS TO BE 18' LENGTHS. JOINT DEFLECTIONS EVENLY DISTRIBUTED THROUGHOUT PIPE.

40 20 0 40 80
SCALE IN FEET

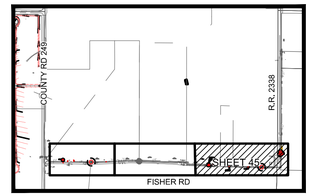
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JOINT	PIPE MATERIAL	PIPE SIZE	RESTAINT DISTANCE	LENGTH ALONG RUN
45° BEND	PVC	8"	7'	N/a
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TEE	PVC	8"x8"	8'	6'
CROSS	PVC	8" X 8"	36	N/a
DEAD END	PVC	8"	47'	N/a
REDUCER	PVC	8"	36'	N/a

RESTAINT LENGTH VALUES
PROGRAM: EBAA IRON SALES INC.
SOIL TYPE: CL
SAFETY FACTOR: 1.5
TRENCH TYPE: 5
DEPTH OF BURY: 5FT
TEST PRESSURE: 150 PSI
SEE DETAIL 5105-PR-SM



EXISTING PAVEMENT REPAIR DETAIL

SHEET INDEX



LEGEND
- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- EX. WATERLINE
- PROP. WATERLINE
- EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
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- PROTECTED TREE

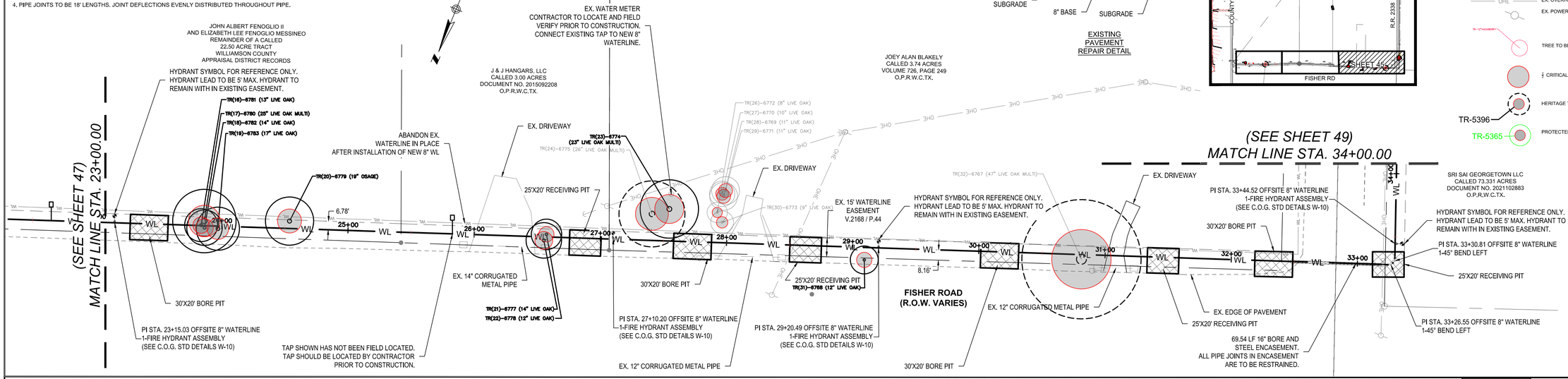
TR-5396
TR-5365

JOHN ALBERT FENOGLIO II AND ELIZABETH LEE FENOGLIO MESSINEO REMAINDER OF A CALLED 22.50 ACRE TRACT WILLIAMSON COUNTY APPRAISAL DISTRICT RECORDS

J & J HANGARS, LLC CALLED 3.00 ACRES DOCUMENT NO. 2015092208 O.P.R.W.C.TX.

JOEY ALAN BLAKELY CALLED 3.74 ACRES VOLUME 726, PAGE 249 O.P.R.W.C.TX.

SRI SAI GEORGETOWN LLC CALLED 73.331 ACRES DOCUMENT NO. 2021102883 O.P.R.W.C.TX.

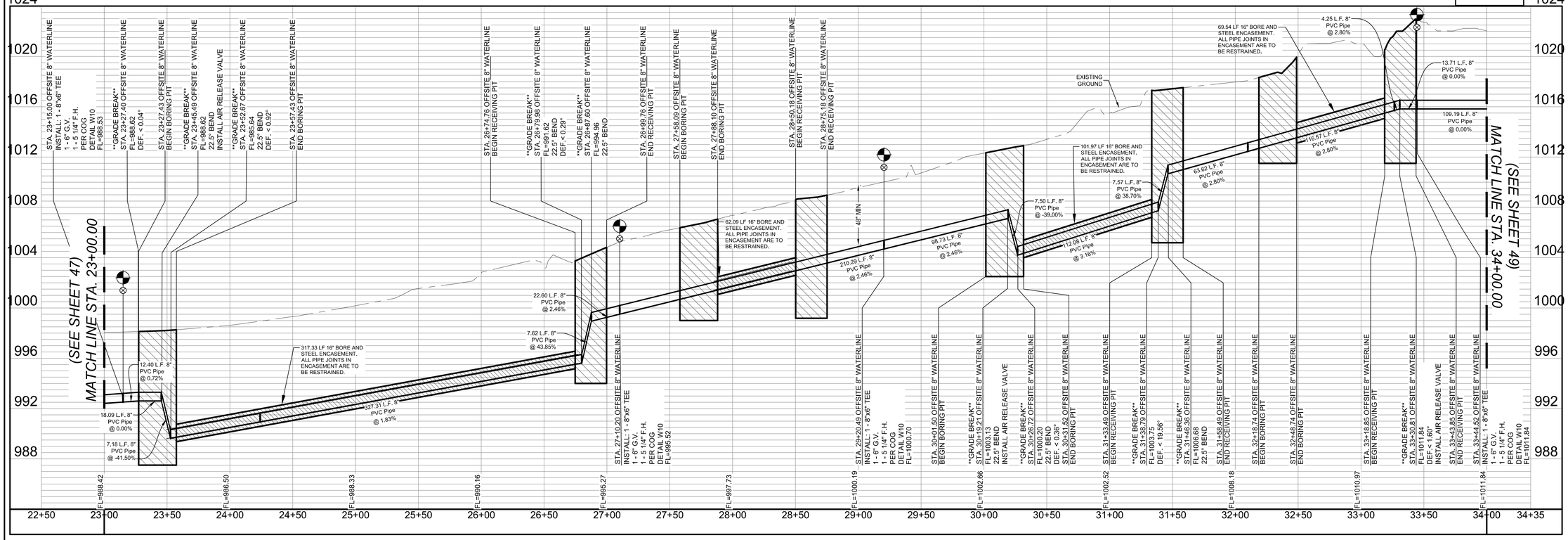


OFFSITE 8" WATERLINE

NOTES:

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SCALE:
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SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OFFSITE WATERLINE P&P (23+50-35+00)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR P&P.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

JOB NUMBER: A492-100

SHEET NO. 48
OF 51 SHEETS

2024-24-CON

I:\A492\2426-Serene Estates\Offsite Water\Submittal Drawings\SE-WTR P&P.dwg
User: jmartinez
Last Modified: Sep 19, 25 - 15:40
Plot Date/Time: Sep 19, 25 - 16:01:36

JOINT RESTRAINT TABLE				
JOINT	PIPE MATERIAL	PIPE SIZE	RESTAINT DISTANCE	LENGTH ALONG RUN
45° BEND	PVC	8"	7'	N/a
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CROSS	PVC	8" X 8"	36	N/a
DEAD END	PVC	8"	47'	N/a
REDUCER	PVC	8"	36'	N/a

RESTAINT LENGTH VALUES

PROGRAM: **EBAA IRON SALES INC.**

SOIL TYPE: **CL**

SAFETY FACTOR: **1.5**

TRENCH TYPE: **5**

DEPTH OF BURY: **5FT**

TEST PRESSURE: **150 PSI**

SEE DETAIL 510S-PR-SM

SHEET INDEX

NOTES:

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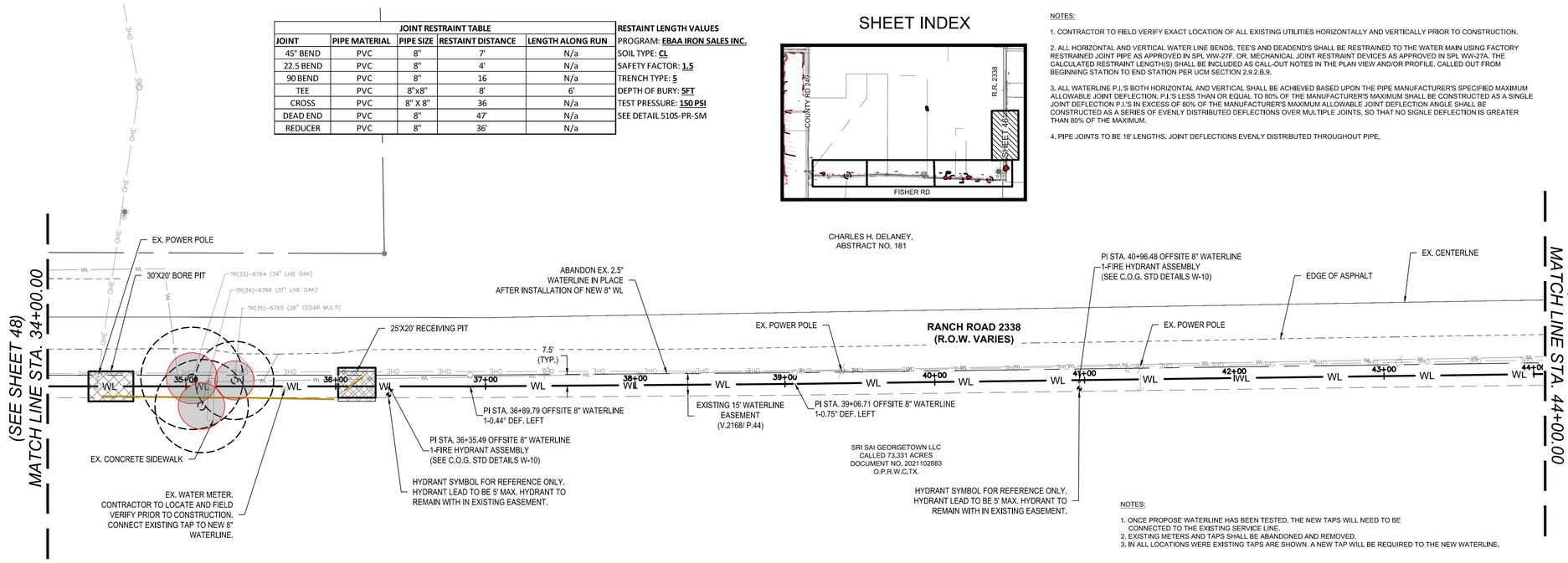
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40 20 0 40 80
SCALE IN FEET

LEGEND

- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- EX. WATERLINE
- PROP. WATERLINE
- EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE
- PROTECTED TREE

TR-5396
TR-5365

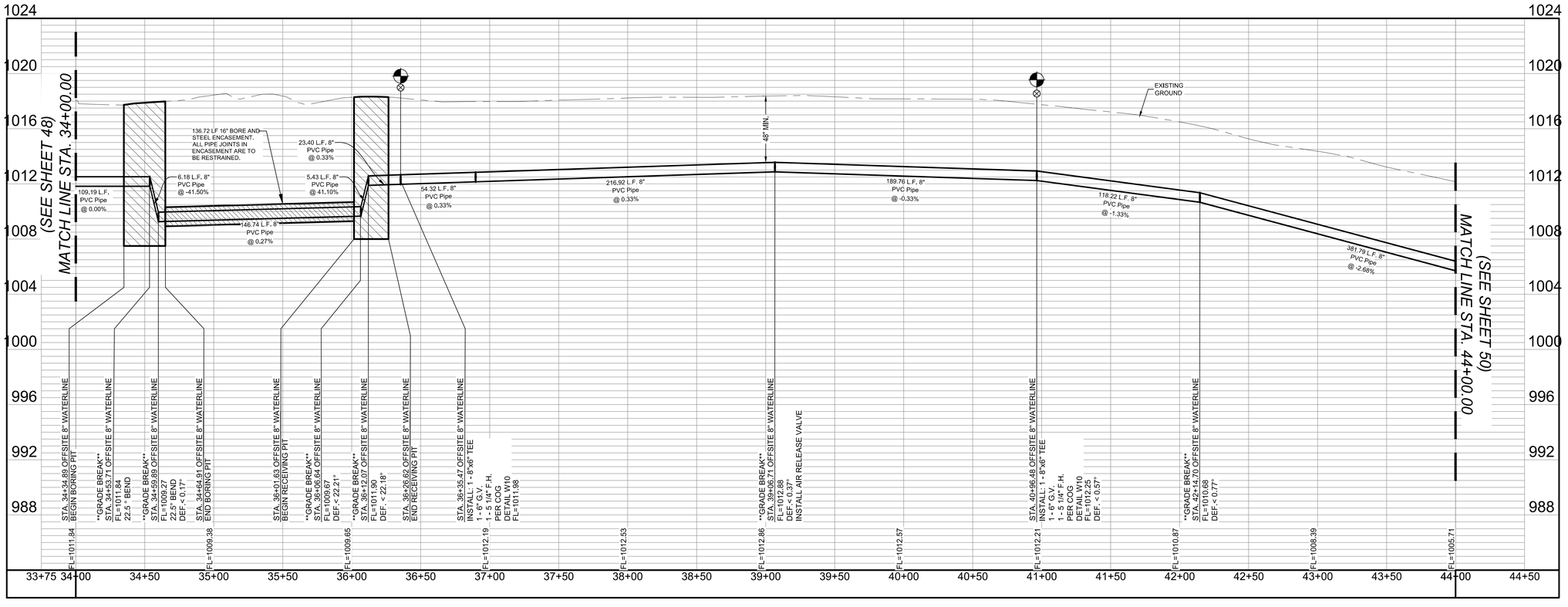


NOTES:

1. ONCE PROPOSE WATERLINE HAS BEEN TESTED, THE NEW TAPS WILL NEED TO BE CONNECTED TO THE EXISTING SERVICE LINE.
2. EXISTING METERS AND TAPS SHALL BE ABANDONED AND REMOVED.
3. IN ALL LOCATIONS WERE EXISTING TAPS ARE SHOWN, A NEW TAP WILL BE REQUIRED TO THE NEW WATERLINE.

SCALE:

1"= 40' HORIZ.
1" = 4' VERT.



REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR P&P.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 49 OF 51 SHEETS

2024-24-CON

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OFFSITE WATERLINE P&P (35+00-44+00)

I:\A492\0426-Serene Estates\Offsite Water\Submittal Drawings\SE-WTR P&P.dwg
User: jmartinez
Last Modified: Sep 19, 25 - 15:40
Plot Style/Pen: Sep 19, 25 - 15:38

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.

2. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS, TEE'S AND DEADEND'S SHALL BE RESTRAINED TO THE WATER MAIN USING FACTORY RESTRAINED JOINT PIPE AS APPROVED IN SPL WW-27F. OR, MECHANICAL JOINT RESTRAINT DEVICES AS APPROVED IN SPL WW-27A. THE CALCULATED RESTRAINT LENGTH(S) SHALL BE INCLUDED AS CALL-OUT NOTES IN THE PLAN VIEW AND/OR PROFILE, CALLED OUT FROM BEGINNING STATION TO END STATION PER UCM SECTION 2.9.2.B.9.

3. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S SPECIFIED MAXIMUM ALLOWABLE JOINT DEFLECTION. P.I.'S LESS THAN OR EQUAL TO 80% OF THE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION P.I.'S IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SIGNLE DEFLECTION IS GREATER THAN 80% OF THE MAXIMUM.

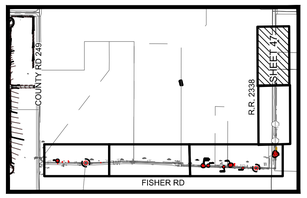
4. PIPE JOINTS TO BE 18' LENGTHS, JOINT DEFLECTIONS EVENLY DISTRIBUTED THROUGHOUT PIPE.

JOINT RESTRAINT TABLE				
JOINT	PIPE MATERIAL	PIPE SIZE	RESTAINT DISTANCE	LENGTH ALONG RUN
45° BEND	PVC	8"	7'	N/a
22.5 BEND	PVC	8"	4'	N/a
90 BEND	PVC	8"	16	N/a
TEE	PVC	8"x8"	8'	6'
CROSS	PVC	8" X 8"	36	N/a
DEAD END	PVC	8"	47'	N/a
REDUCER	PVC	8"	36'	N/a

RESTAINT LENGTH VALUES
PROGRAM: **EBAA IRON SALES INC.**
SOIL TYPE: **CL**
SAFETY FACTOR: **1.5**
TRENCH TYPE: **5**
DEPTH OF BURY: **5FT**
TEST PRESSURE: **150 PSI**
SEE DETAIL 5105-PR-SM

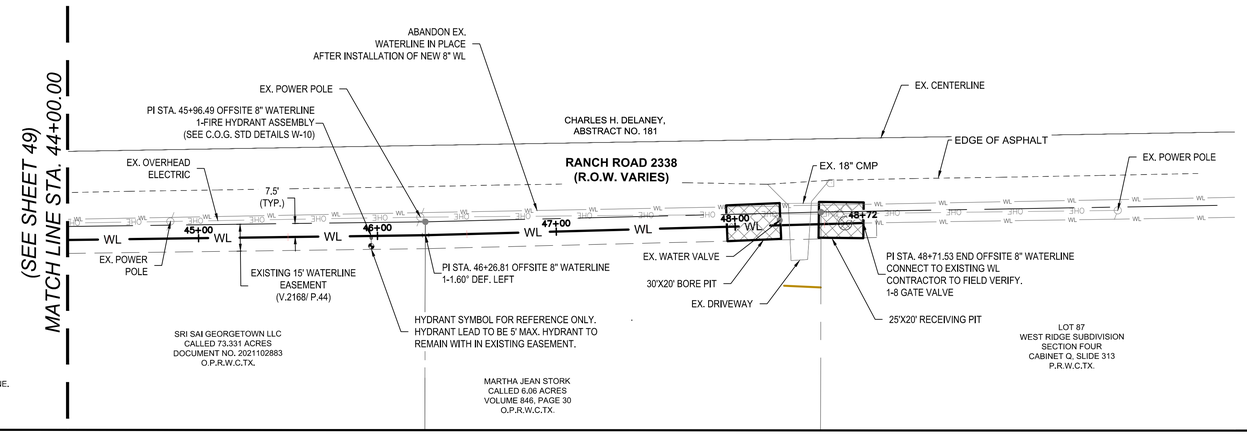
40 20 0 40 80
SCALE IN FEET

SHEET INDEX



NOTES:

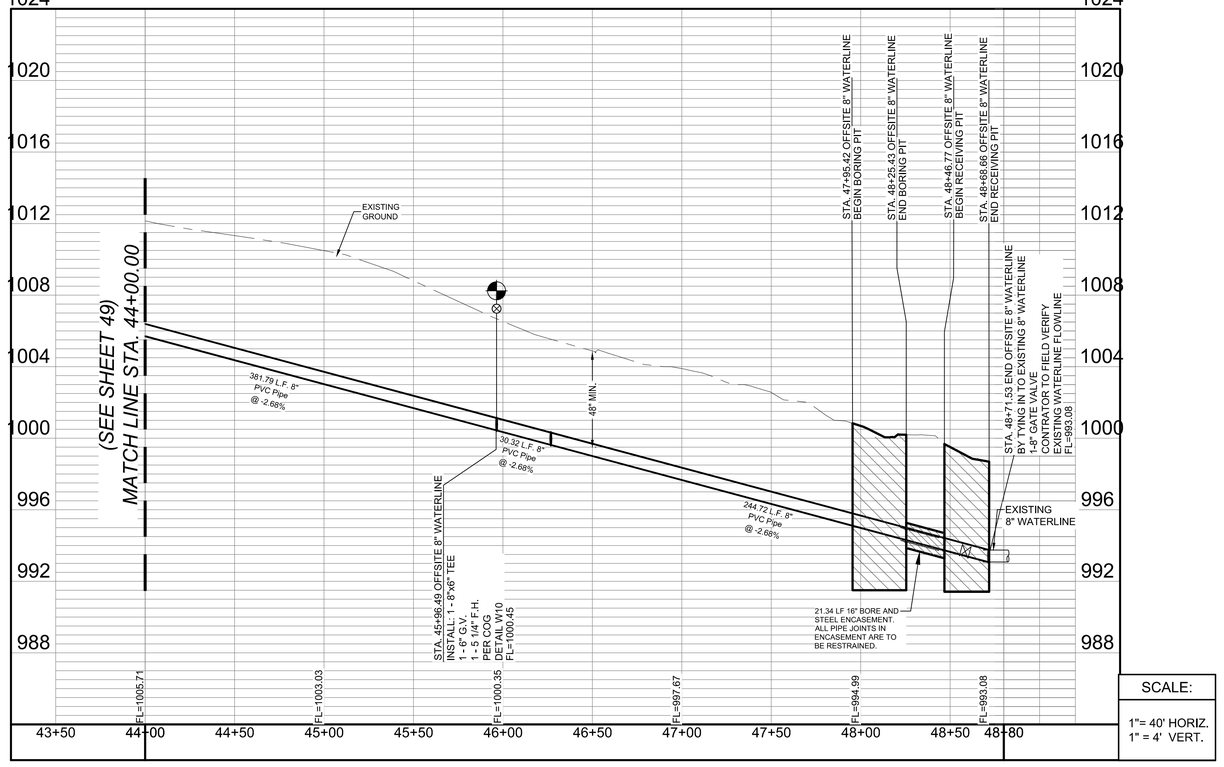
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2. EXISTING METERS AND TAPS SHALL BE ABANDONED AND REMOVED.
3. IN ALL LOCATIONS WERE EXISTING TAPS ARE SHOWN, A NEW TAP WILL BE REQUIRED TO THE NEW WATERLINE.



LEGEND

- EASEMENT LINE
- PROPERTY LINE
- EDGE OF ASPHALT
- ROAD CENTERLINE
- WL — EX. WATERLINE
- WL — PROP. WATERLINE
- OHE — EX. OVERHEAD ELECTRIC
- EX. POWER POLE
- TREE TO BE REMOVED
- ½ CRITICAL ROOT ZONE
- HERITAGE TREE — TR-5396
- PROTECTED TREE — TR-5365

OFFSITE 8" WATERLINE



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

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
OFFSITE WATERLINE P&P (44+00-END)

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
DRAWING NAME: SE-WTR P&P.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

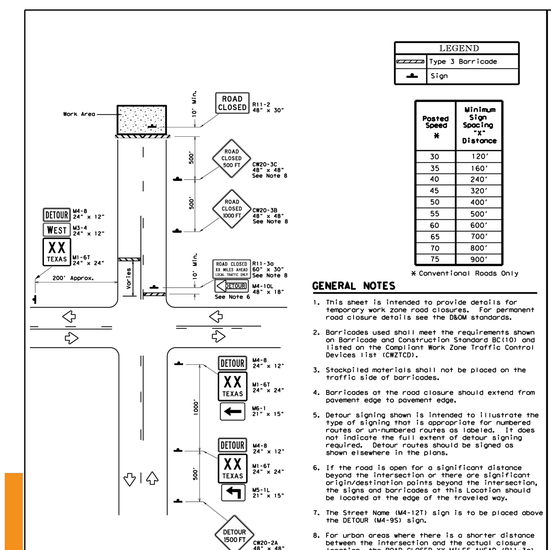
LJA Engineering, Inc.
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FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 50
OF 51 SHEETS

2024-24-CON

I:\A492\0429-Serene Estates\Offsite Water\Submittal Drawings\SE-WTR P&P.dwg
User: jmartinez
Last Modified: Sep 19, 25 - 15:40
Plot Date/Time: Sep 19, 25 - 16:42:20



ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour

LEGEND	
Type 3 Barricade	
Sign	

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

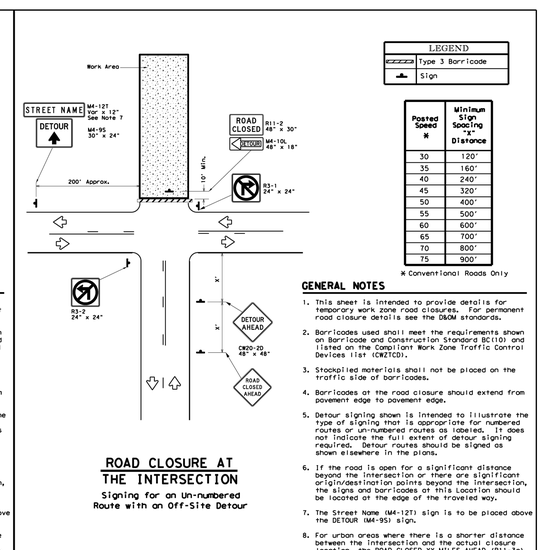
1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the DMOM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-95) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

SHEET 1 OF 2

Texas Department of Transportation | Traffic Operations Division Standard

WORK ZONE
ROAD CLOSURE
DETAILS

WZ(RCD)-13



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
Type 3 Barricade	
Sign	

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

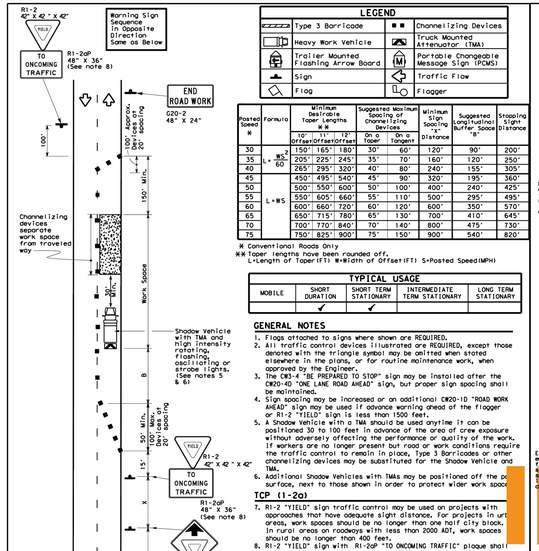
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6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-95) sign.
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9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

SHEET 2 OF 2

Texas Department of Transportation | Traffic Operations Division Standard

WORK ZONE
ROAD CLOSURE
DETAILS

WZ(RCD)-13



TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)

LEGEND			
Type 3 Barricade	■■	Channelizing Devices	
Heavy Work Vehicle		Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)	
Sign		Traffic Flow	
Flag		Flagger	

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Shoulder Width Offset
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55	L = WS	550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the pavement surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

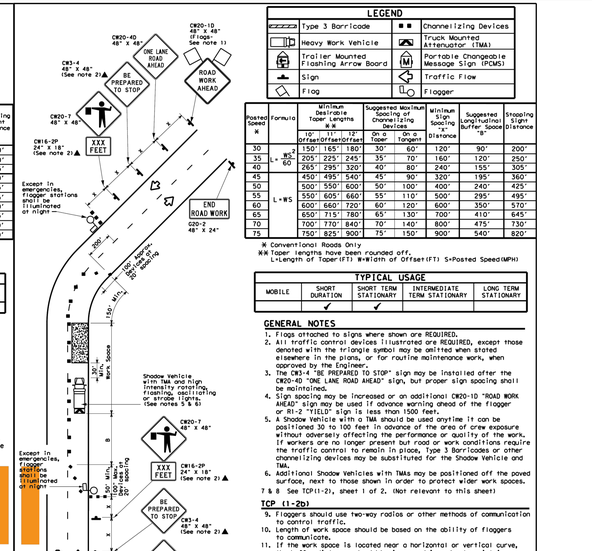
7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

SHEET 1 OF 2

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(1-2)-18



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

LEGEND			
Type 3 Barricade	■■	Channelizing Devices	
Heavy Work Vehicle		Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)	
Sign		Traffic Flow	
Flag		Flagger	

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Shoulder Width Offset
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55	L = WS	550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓			

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the pavement surface, next to those shown in order to protect wider work spaces.

7 & 8 See TCP(1-2), sheet 1 of 2. (Not relevant to this sheet)

TCP (1-2b)

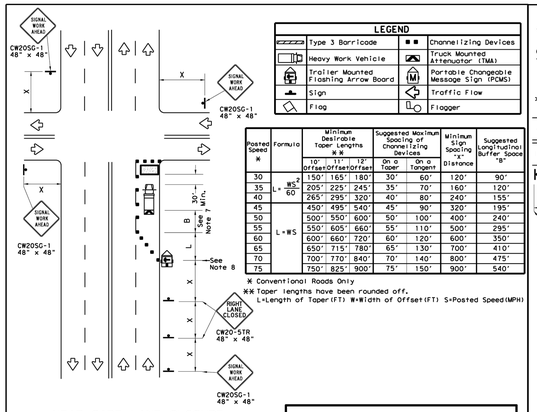
9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

SHEET 2 OF 2

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(1-2)-18



NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

LEGEND			
Type 3 Barricade	■■	Channelizing Devices	
Heavy Work Vehicle		Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)	
Sign		Traffic Flow	
Flag		Flagger	

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	L = WS	550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

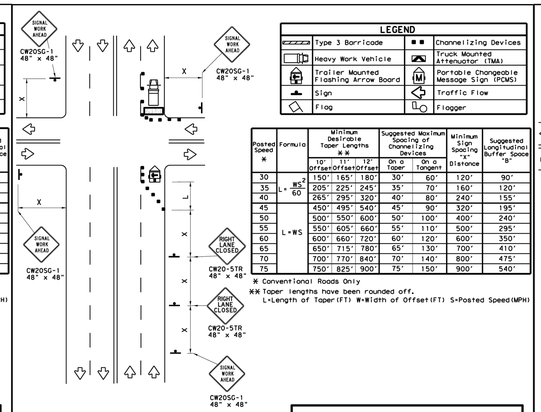
1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

SHEET 1 OF 4

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC SIGNAL WORK
TYPICAL DETAILS

WZ(BTS-1)-13



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

LEGEND			
Type 3 Barricade	■■	Channelizing Devices	
Heavy Work Vehicle		Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)	
Sign		Traffic Flow	
Flag		Flagger	

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	L = WS	550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

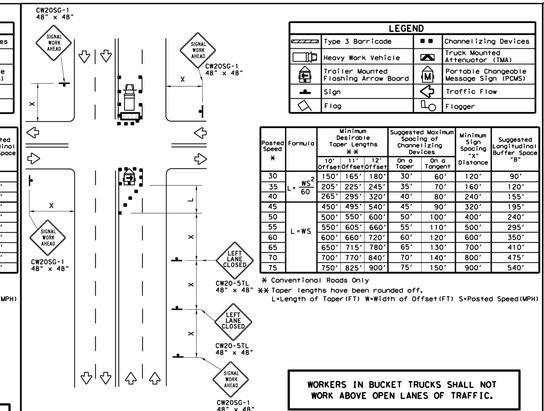
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2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

SHEET 2 OF 4

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC SIGNAL WORK
TYPICAL DETAILS

WZ(BTS-1)-13



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

LEGEND			
Type 3 Barricade	■■	Channelizing Devices	
Heavy Work Vehicle		Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)	
Sign		Traffic Flow	
Flag		Flagger	

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	L = WS	550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

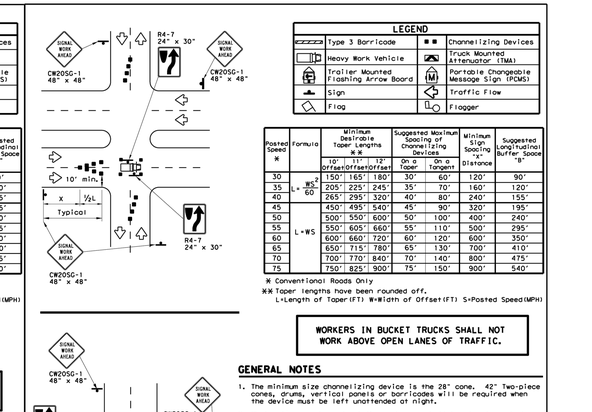
1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

SHEET 3 OF 4

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC SIGNAL WORK
TYPICAL DETAILS

WZ(BTS-1)-13



OPERATIONS IN THE INTERSECTION

SHORT DURATION

LEGEND			
Type 3 Barricade	■■	Channelizing Devices	
Heavy Work Vehicle		Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	(M)	Portable Changeable Message Sign (PCMS)	
Sign		Traffic Flow	
Flag		Flagger	

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
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L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

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GENERAL NOTES

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Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC SIGNAL WORK
TYPICAL DETAILS

WZ(BTS-1)-13

SERENE ESTATES
PAVING, DRAINAGE AND WATER IMPROVEMENTS
TRAFFIC CONTROL PLAN DETAILS

NO.	DESCRIPTION	BY	DATE

DATE: 8/25/2019
DESIGNED BY: RWK
DRAWN BY: JMC
CHECKED BY: RWK
DRAWING NAME: SE-DETAILS.dwg

STATE OF TEXAS
MATTHEW M. THOMAS
128935
LICENSED
PROFESSIONAL ENGINEER
09-19-2025

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A492-100

SHEET NO. 51 OF 51 SHEETS

2024-24-CON

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User: jmartinez
Last Modified: Sep 19, 25 - 15:38
Plot Date/Time: Sep 19, 25 - 16:20:34