

TCEQ EDWARDS AQUIFER CONTRIBUTING ZONE PLAN

HAIRY MAN ROAD/BRUSHY CREEK ROAD IMPROVEMENTS

PREPARED FOR:
WILLIAMSON COUNTY



AND

ATKINS



PREPARED BY



OCTOBER 2019

Contributing Zone Plan Checklist

X Edwards Aquifer Application Cover Page (TCEQ-20705)

X Contributing Zone Plan Application (TCEQ-10257)

- X Attachment A - Road Map
- X Attachment B - USGS Quadrangle Map
- X Attachment C - Project Narrative
- X Attachment D - Factors Affecting Surface Water Quality
- X Attachment E - Volume and Character of Stormwater
- X Site Plan
- N/A Attachment F - Suitability Letter from Authorized Agent (if OSSF is proposed)
- N/A Attachment G - Alternative Secondary Containment Methods (if AST with an alternative method of secondary containment is proposed)
- N/A Attachment H - AST Containment Structure Drawings (if AST is proposed)
- N/A Attachment I - 20% or Less Impervious Cover Declaration (if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site)
- X Attachment J - BMPs for Upgradient Stormwater
- X Attachment K - BMPs for On-site Stormwater
- X Attachment L - BMPs for Surface Streams
- X Attachment M - Construction Plans
 - TSS Removal Calculations
- X Attachment N - Inspection, Maintenance, Repair and Retrofit Plan
- N/A Attachment O - Pilot-Scale Field Testing Plan, if BMPs not based on Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs
- X Attachment P - Measures for Minimizing Surface Stream Contamination

N/A Storm Water Pollution Prevention Plan (SWPPP)

-OR-

X Temporary Stormwater Section (TCEQ-0602)

- X Attachment A - Spill Response Actions
- X Attachment B - Potential Sources of Contamination
- X Attachment C - Sequence of Major Activities
- X Attachment D - Temporary Best Management Practices and Measures
- N/A Attachment E - Request to Temporarily Seal a Feature, if sealing a feature
- X Attachment F - Structural Practices
- X Attachment G - Drainage Area Map
- N/A Attachment H - Temporary Sediment Pond(s) Plans and Calculations
- X Attachment I - Inspection and Maintenance for BMPs
- X Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

- X Copy of Notice of Intent (NOI)**
- X Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- X Brushy Creek MUD and Fern Bluff MUD Interlocal Agreements**
- X Application Fee Form (TCEQ-0574)**
- X Check Payable to the "Texas Commission on Environmental Quality"**
- X Core Data Form (TCEQ-10400)**

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.
3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.
4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

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

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

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.
2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: Hairy Man Road					2. Regulated Entity No.:				
3. Customer Name: Williamson County					4. Customer No.: CN600897888				
5. Project Type: (Please circle/check one)	<input checked="" type="radio"/> New	Modification			Extension		Exception		
6. Plan Type: (Please circle/check one)	WPAP	<input checked="" type="radio"/> CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	Residential	<input checked="" type="radio"/> Non-residential				8. Site (acres):		4.21	
9. Application Fee:	\$4,000		10. Permanent BMP(s):			Stormceptor			
11. SCS (Linear Ft.):	n/a		12. AST/UST (No. Tanks):			n/a			
13. County:	Williamson		14. Watershed:			Brushy 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.)	—	—	<u>1</u>
Region (1 req.)	—	—	<u>1</u>
County(ies)	—	—	<u>1</u>
Groundwater Conservation District(s)	<u>—</u> Edwards Aquifer Authority <u>—</u> Barton Springs/ Edwards Aquifer <u>—</u> Hays Trinity <u>—</u> Plum Creek	<u>—</u> Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	<u>—</u> Austin <u>—</u> Buda <u>—</u> Dripping Springs <u>—</u> Kyle <u>—</u> Mountain City <u>—</u> San Marcos <u>—</u> Wimberley <u>—</u> Woodcreek	<u>—</u> Austin <u>—</u> Bee Cave <u>—</u> Pflugerville <u>—</u> Rollingwood <u>—</u> Round Rock <u>—</u> Sunset Valley <u>—</u> West Lake Hills	<u>—</u> Austin <u>—</u> Cedar Park <u>—</u> Florence <u>—</u> Georgetown <u>—</u> Jerrell <u>—</u> Leander <u>—</u> Liberty Hill <u>—</u> Pflugerville <u>1</u> Round Rock

San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde
Original (1 req.)	—	—	—	—	—
Region (1 req.)	—	—	—	—	—
County(ies)	—	—	—	—	—
Groundwater Conservation District(s)	<u>—</u> Edwards Aquifer Authority <u>—</u> Trinity-Glen Rose	<u>—</u> Edwards Aquifer Authority	<u>—</u> Kinney	<u>—</u> EAA <u>—</u> Medina	<u>—</u> EAA <u>—</u> Uvalde
City(ies) Jurisdiction	<u>—</u> Castle Hills <u>—</u> Fair Oaks Ranch <u>—</u> Helotes <u>—</u> Hill Country Village <u>—</u> Hollywood Park <u>—</u> San Antonio (SAWS) <u>—</u> Shavano Park	<u>—</u> Bulverde <u>—</u> Fair Oaks Ranch <u>—</u> Garden Ridge <u>—</u> New Braunfels <u>—</u> Schertz	NA	<u>—</u> 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.

Craig L. Hebbe, PE

Print Name of Customer/Authorized Agent

Craig L. Hebbe, P.E.

09-12-19

Signature of Customer/Authorized Agent

Date

****FOR TCEQ INTERNAL USE ONLY****

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

Contributing Zone Plan Application

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Craig L. Hebbe, PE

Date: 09-12-19

Signature of Customer/Agent:



Regulated Entity Name: Hairy Man Road

Project Information

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

Contact Person: J. Terron Evertson, PE

Entity: Williamson County

Mailing Address: 3151 S.E. Inner Loop, Suite B

City, State: Georgetown, TX

Telephone: (512) 943-3330

Email Address: jevertson@wilco.org

Zip: 78626

Fax: (512) 943-3335

5. Agent/Representative (If any):

Contact Person: Craig L. Hebbe, PE

Entity: K Friese + Associates, Inc.

Mailing Address: 1120 S Capital of Texas Highway, Bdg II, Ste 100

City, State: Austin, TX

Zip: 78746

Telephone: (512) 338-1704

Fax: (512) 338-1784

Email Address: chebbe@kfriese.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 City of Round Rock.
- ☐ 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.

Hairy Man Road/Brushy Creek Road from the low water crossing at Brushy Bend Drive to Great Oaks Drive.

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: Paved parking

12. The type of project is:

- ☐ Residential: # of Lots: _____
- ☐ Residential: # of Living Unit Equivalents: _____
- ☐ Commercial
- ☐ Industrial
- ☒ Other: County Road Project

13. Total project area (size of site): 4.21 Acres

Total disturbed area: 4.21 Acres

14. Estimated projected population: 0

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

Table 1 - Impervious Cover

<i>Impervious Cover of Proposed Project</i>	<i>Sq. Ft.</i>	<i>Sq. Ft./Acre</i>	<i>Acres</i>
Structures/Rooftops		÷ 43,560 =	
Parking		÷ 43,560 =	
Other paved surfaces	101,059.20	÷ 43,560 =	2.32
Total Impervious Cover	101,059.20	÷ 43,560 =	2.32

Total Impervious Cover 2.32 ÷ Total Acreage 4.21 X 100 = 55.11% 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.: 2,155.67 feet.

Width of R.O.W.: 85.07 feet.

$L \times W = 183,387.60 \text{ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = 4.21$ acres.

21. Pavement Area:

Length of pavement area: 2,155.67 feet.

Width of pavement area: 46.88 feet.

$L \times W = 101,059.20 \text{ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = 2.32$ acres.

Pavement area 2.32 acres \div R.O.W. area 4.21 acres $\times 100 = 55.11\%$ 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

<i>AST Number</i>	<i>Size (Gallons)</i>	<i>Substance to be Stored</i>	<i>Tank Material</i>
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

5 of 11

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

<i>Length (L)(Ft.)</i>	<i>Width(W)(Ft.)</i>	<i>Height (H)(Ft.)</i>	<i>L x W x H = (Ft3)</i>	<i>Gallons</i>

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" = 100'.
35. 100-year floodplain boundaries:
- ☒ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
- ☐ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM 48491C0490E Dated September 26, 2008.
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.

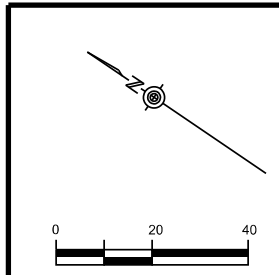
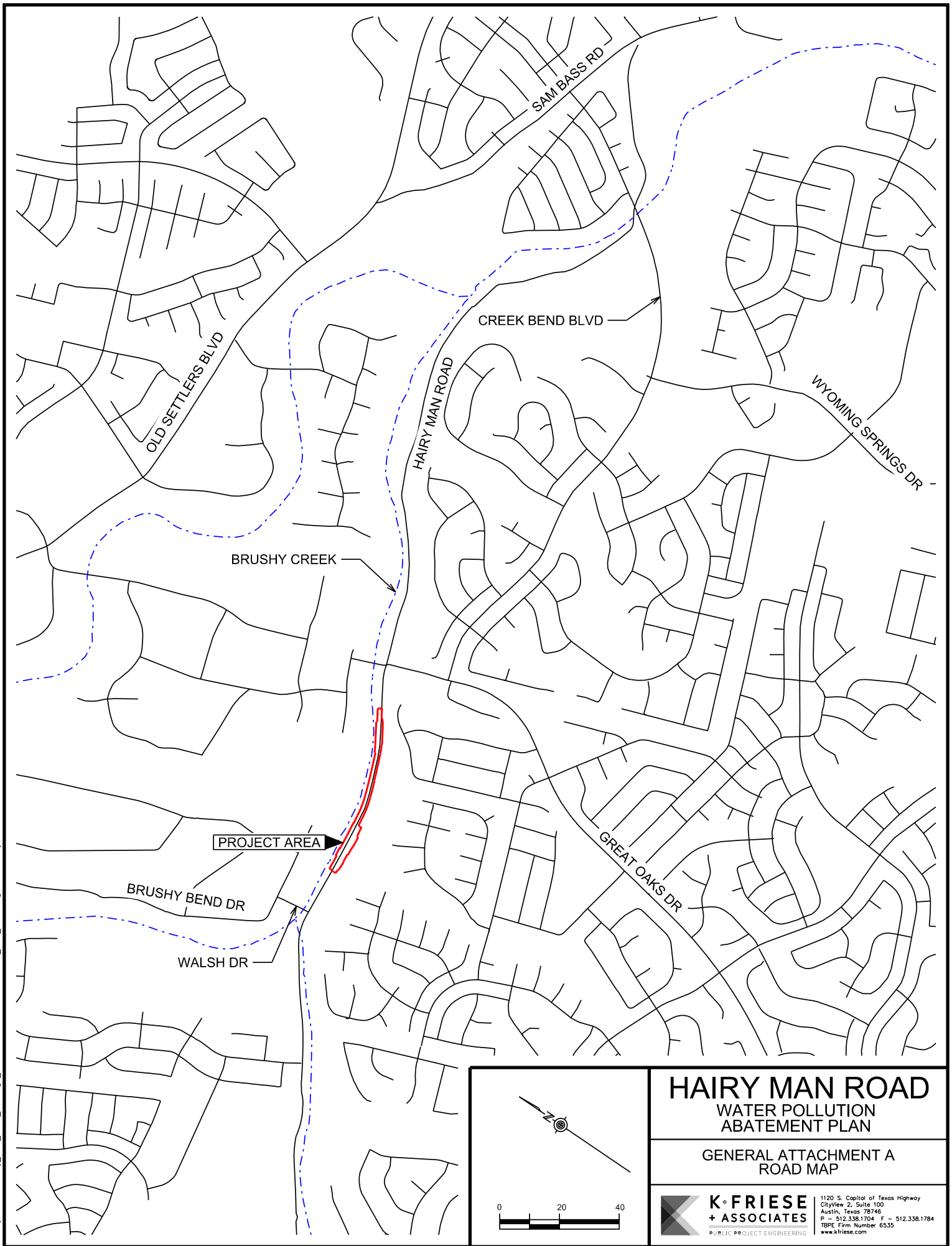
59. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or 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.

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HAIRY MAN ROAD

WATER POLLUTION ABATEMENT PLAN

GENERAL ATTACHMENT A
ROAD MAP



**K-FRIESE
+ ASSOCIATES**
PUBLIC PROJECT ENGINEERING

1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P - 512.338.1704 F - 512.338.1784
TBPE Firm Number 6535
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ATTACHMENT C **PROJECT NARRATIVE**

Williamson County proposes a maintenance project to widen a 2.4-mile segment of Hairy Man Road/Brushy Creek Road from the low water crossing at Brushy Bend Drive to Sam Bass Road. The maintenance project is located within the Edwards Aquifer Recharge Zone and Contributing Zone. The maintenance project will widen the existing roadway with shoulders to increase safety. The permitted portion of the project will add a left turn lane for the parking lots at Olson Meadows Park and Creekside Park. The maintenance project will widen the roadway less than ½-lane width with the exception of the turn lane area. Per TCEQ Guidance Document, *Regulation of Road construction After Effective Dates of 30 TAC §313*, and the coordination meeting with TCEQ on October 6, 2017, the widening of a roadway less than ½-lane width will not require treatment. The project permitted herein will include the area where the left turn lane will be added and require widening greater than ½-lane width. The following project description includes only information related to the permitted project area.

The site area for the permitted project is approximately 4.21 acres. In general, runoff is conveyed from the south to the north, crossing the right-of-way at two locations: 1. Culvert crossing from Olson Meadows Park to Brushy Creek, and 2. Runoff flows over the road without reaching a cross culvert from Olson Meadows Park to just east of the intersection with Great Oaks Drive. The offsite areas draining toward the right-of-way encompass approximately 337 acres and will be mixed with onsite water.

The existing and proposed right-of-way varies from 25 to 150 feet throughout the permitted project. The existing roadway consists of one 11-foot lane in each direction for a total pavement width of 22-feet. The permitted project area includes the parking lots at Olson Meadows Park. The total impervious cover of the existing roadway and parking lots is approximately 1.48 acres. The permitted project will improve the roadway to one 11.5-foot lane and one 2-foot shoulder in each direction with a 12-foot wide center turn lane for a total section width of 39-feet. The permitted project will also connect the two Olson Meadows parking lots with a 24-foot wide, 105-foot long drive. The total proposed impervious cover for the permitted project area is approximately 2.32 acres.

The Stormceptor has been selected as the water quality BMP to treat the impervious cover within the permitted project area. Two Stormceptor devices are proposed at the Olson Meadows Park outfall within the regulated portion of the project. The Stormceptor is an approved water quality treatment structure and design of the structure adheres to TCEQ design criteria outlined in the July 5, 2012 Addendum Sheet. No wastewater is included as part of this project.

Meeting Minutes

Hairy Man Road – TCEQ Coordination

Meeting Date: October 6, 2017, 9:00am

Meeting Location: TCEQ Building A

Meeting Purpose: Hairy Man Road design team met with TCEQ staff to discuss feasible options for permanent BMP design to meet TCEQ requirements.

Attendees: Kevin Smith, (TCEQ), Kyle Virr (TCEQ), Annie (TCEQ), Steve Lindsey (Atkins), Mark Cissell (HNTB), Chad Cormack (KFA)

- Began meeting with Steve giving overall project description and limits of roadway improvements.
 - Described that most of project is within the 100-year floodplain with exception to roadway east of Creek Bend Blvd.
- TCEQ went back and forth on the interpretation of the ½ lane memo (“Regulation of Road Construction After Effective Dates of 30 TAC 313”). Ultimately defined ½ a lane to be 5.5’ of total widening including both sides for the HMR project.
 - If roadway design can be revised to average less than 5.5’ of total widening, permanent BMP’s would only be required at the turn lanes.
 - Discussed that turn lanes would need to be treated regardless of ½ exception (5.5’), and could be treated independently if ½ requirement was met.
 - For linear roadway sections, where widening less than total of 5.5’, no treatment required.
 - Where widening more than 5.5’, treatment is required.
- Vegetative Filter Strips (VFS) as a permanent BMP within the 100-year floodplain will not be allowed for the HMR project.
- Overtreatment of project to meet all HMR TSS load removal East of Creek Bend Blvd (only location out of 100-yr floodplain) will not be allowed for the HMR project due to length of overall project.
- Curb/Gutter with storm drain devices such as a Stormceptor can be used within the 100-yr floodplain provided they are flood proofed.
- Overtreatment of the proposed Great Oaks Drive project was discussed:
 - The Great Oaks and HMR projects would be considered 1 project for TSS load removal if submitted as 1 WPAP application. Construction could be phased differently, but must be submitted as 1 WPAP. The following BMPs would need to be proposed to be acceptable:
 - VFS for the HMR project would be installed within the 100-yr floodplain and considered temporary BMP, but not count for the overall TSS removal. The temporary BMP would need to satisfy the overall TSS load removal for the HMR project until the Great Oaks project is constructed.

- Permanent BMPs East of Creek Bend Blvd (outside 100-yr floodplain) would be required
- Permanent BMPs within the Great Oaks Drive project would be required.
- Overall TSS load removal for the increase in impervious cover for both the HMR and Great Oaks project would need to be met with permanent BMPs.
- TCEQ will not review a WPAP until the plans are at the 90% phase. No submittals will be reviewed at the 60% stage.

Summary of Available Options for meeting TCEQ Requirements:

- Shorten HMR widening to be less than 5.5' with exception to the turn lanes. Provide permanent BMP to treat turn lane increase in impervious cover
- Capture runoff along HMR for entire project and treat with Stormceptor or similar devices. Treat with permanent BMP East of Creek Bend as well.
- Provide VFS within 100-yr Floodplain along HMR, and overtreat in area East of Creek Bend and within the Great Oaks Project. Submit 1 WPAP for both projects and phase construction.

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
EDWARDS AQUIFER PROTECTION PROGRAM
GUIDANCE DOCUMENT**

Guidance Document Title: Regulation of Road Construction After Effective Dates of 30 TAC §313

Purpose: The purpose of this document is to provide clarification and to assure consistency between the Field Operations Division's Austin and San Antonio Regional Offices during the review/approval process for Water Pollution Abatement Plans.

This Guidance Document sets forth the TNRCC's position on road construction regulated by 30 TAC §313.

Reference: 30 TAC §313.4 (Water Pollution Abatement Plans)

Discussion: Pursuant to 30 TAC §313.3, Regulated activity is defined as,

Any construction-related activity on the recharge zone of the Edwards Aquifer, such as, but not limited to: construction of buildings, utility stations, roads, highways, or railroads; clearing, excavation or any other activities which alter or disturb the topographic, geologic, or existing recharge characteristics of a site; or any other activities which may pose a potential for contaminating the Edwards Aquifer.

By definition, "Regulated Activity" does not include, in part, "...resurfacing of roads, parking lots, sidewalks, or other development-related impervious surfaces....and/or there is little or no change to the topographic, geologic, or existing recharge features."

- Decision:**
- I. A ROAD CONSTRUCTION WPAP is required if the proposed road is a:
 - 1. TXDOT road project.
 - 2. County road or roads built to county specifications.
 - 3. City thoroughfare or road to be dedicated to a municipality.
 - 4. Street or road providing access to private driveways.
 - II. Roads constructed as part of an associated development which requires its own WPAP should be included in the WPAP for that development,

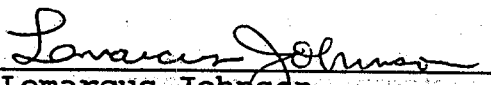
for example: streets within a residential subdivision.

III. Modifications to existing roadways requiring prior approval from the TNRCC include:

1. Widening roads/adding shoulders totaling $\geq \frac{1}{2}$ the width of one (1) existing lane.
2. Reconstruction of existing regulated roadways.

IV. Modifications to existing roadways that do not require approval from the TNRCC are limited to:

1. Resurfacing of roads
2. Resurfacing of parking lots.


Lemarcus Johnson
Director of Water Programs
Field Operations Division

June 19, 1995
Effective Date

ATTACHMENT D

FACTORS AFFECTING SURFACE WATER QUALITY

The following factors may affect water quality during both the construction and operation phases of the project.

1. The increase in impervious cover could result in an increase in runoff, potentially altering the quality and/or quantity of recharge to the aquifer.
2. Runoff and erosion of sediment and pollutants from exposed soil due to site preparation activities such as grading, excavating, trenching, drilling, boring, and clearing vegetation result in exposed soil. In addition to this disturbance of native soil, new soil will be brought onto the site for fill in the roadbed and other components of the project.
3. Runoff from the construction equipment storage, refueling and maintenance. This may include typical automotive fluids, lubricants, and fuels.
4. Runoff from construction product staging, storage, and waste.
5. Runoff from fuel or hazardous material spills. These may contain metals, nutrients, bacteria, herbicides, hydrocarbons, and other toxic constituents. Pesticides, de-icing salts, paint, and fertilizers introduce pollutants into the runoff. Standard vehicle use may also add pollutants through normal operations including braking and fuel combustion as well as through oil and fuel leaks. Vehicles can also transfer pollutants from other sources.

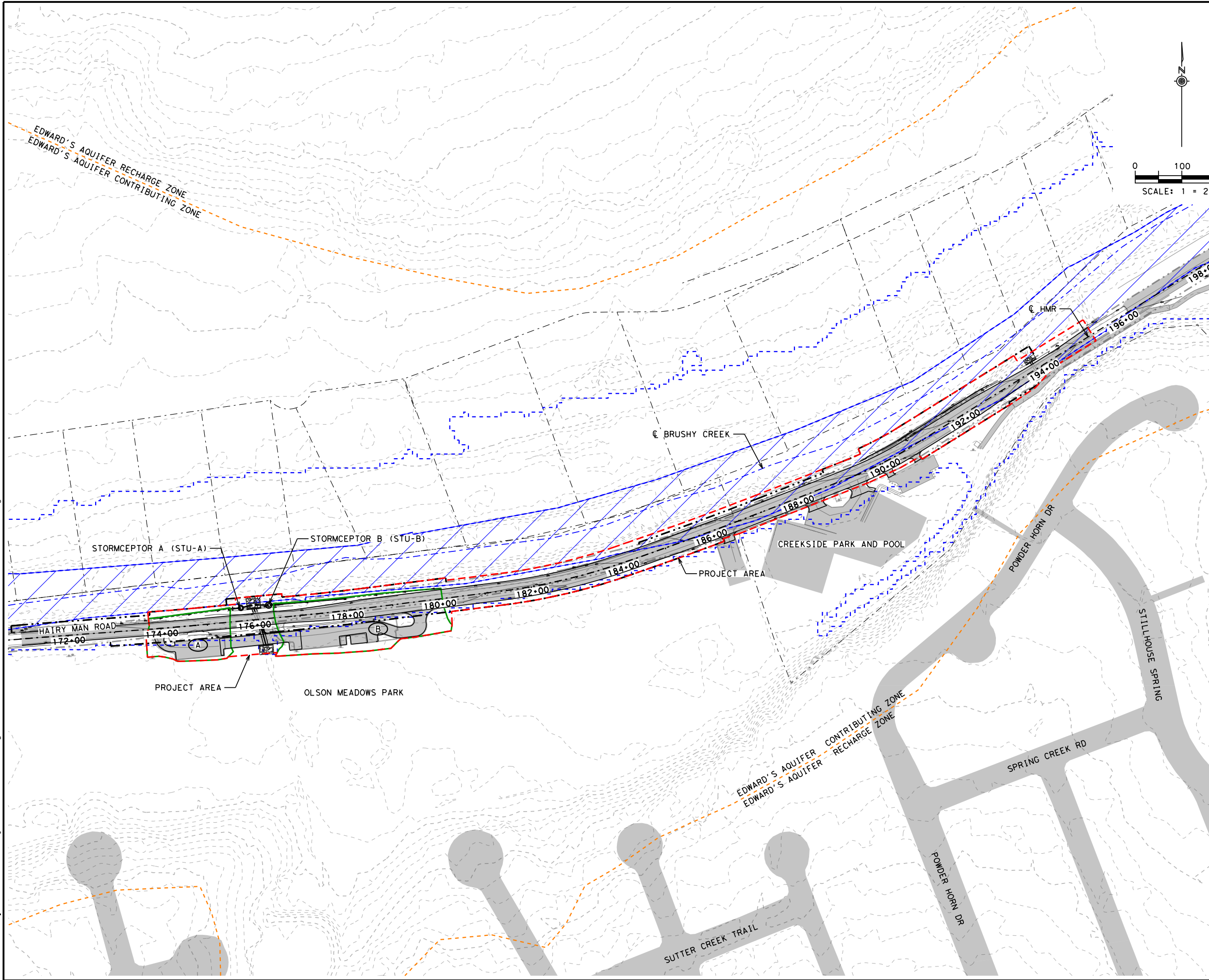
ATTACHMENT E
VOLUME AND CHARACTER OF STORMWATER

The project site is located within the Brushy Creek drainage basin. The project area generally flows from the south to the north.

The following stormwater runoff estimates were calculated using the rational method and standard engineering practices for time of concentration, runoff coefficients, and impervious cover. The drainage basins described in the table below only encompasses the project area shown in the site plan. For detailed hydrology see the Offsite and Onsite Drainage Area maps in 10257-Attachment M: Construction Plans. Flowrates presented below are for the 2-year and 10-year 24-hour frequency event.

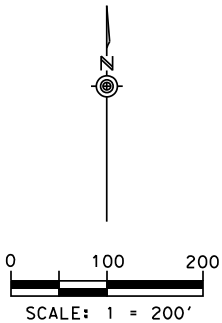
Basin ID	Basin Area	Impervious Cover (%)	Runoff Coefficient	Runoff (2-yr)	Runoff (10-yr)
	(ac)			(cfs)	(cfs)
Water Quality Project Area					
Existing	4.21	35.2	0.53	12.5	17.9
Proposed	4.21	55.2	0.64	15.0	21.5

The character of the stormwater is not expected to change significantly from the pre-project conditions. The proposed project will result in an additional 0.84 acres of impervious cover in the project area. Runoff from the proposed project near Olson Meadows Park will be conveyed through storm sewer and roadside channels to the Stormceptor devices before being discharged to surface water leaving the site. Runoff from the remainder of the site area will discharge to Brushy Creek. The Stormceptor BMPs will ensure at least 80% of the incremental increase in the total suspended solids from the site caused by the regulated activity is removed. All disturbed areas will be re-vegetated at the completion of the project; therefore, no significant degradation of stormwater quality is anticipated.



LEGEND

- PROPOSED R.O.W.
- EXISTING R.O.W.
- PROPOSED EOP
- EXISTING EOP
- EXISTING PARCELS
- EXISTING CONTOURS
- PROPOSED CONTOURS
- DRAINAGE AREA ID
- DRAINAGE DITCH
- PROJECT AREA
- BMP DRAINAGE AREA
- TCEQ EDWARDS AQUIFER RECHARGE ZONE BOUNDARY
- FEMA DFIRM FLOODPLAIN
- FEMA DFIRM FLOODWAY
- IMPERVIOUS COVER



9/11/2019

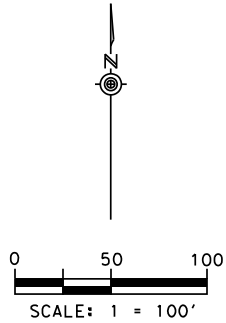
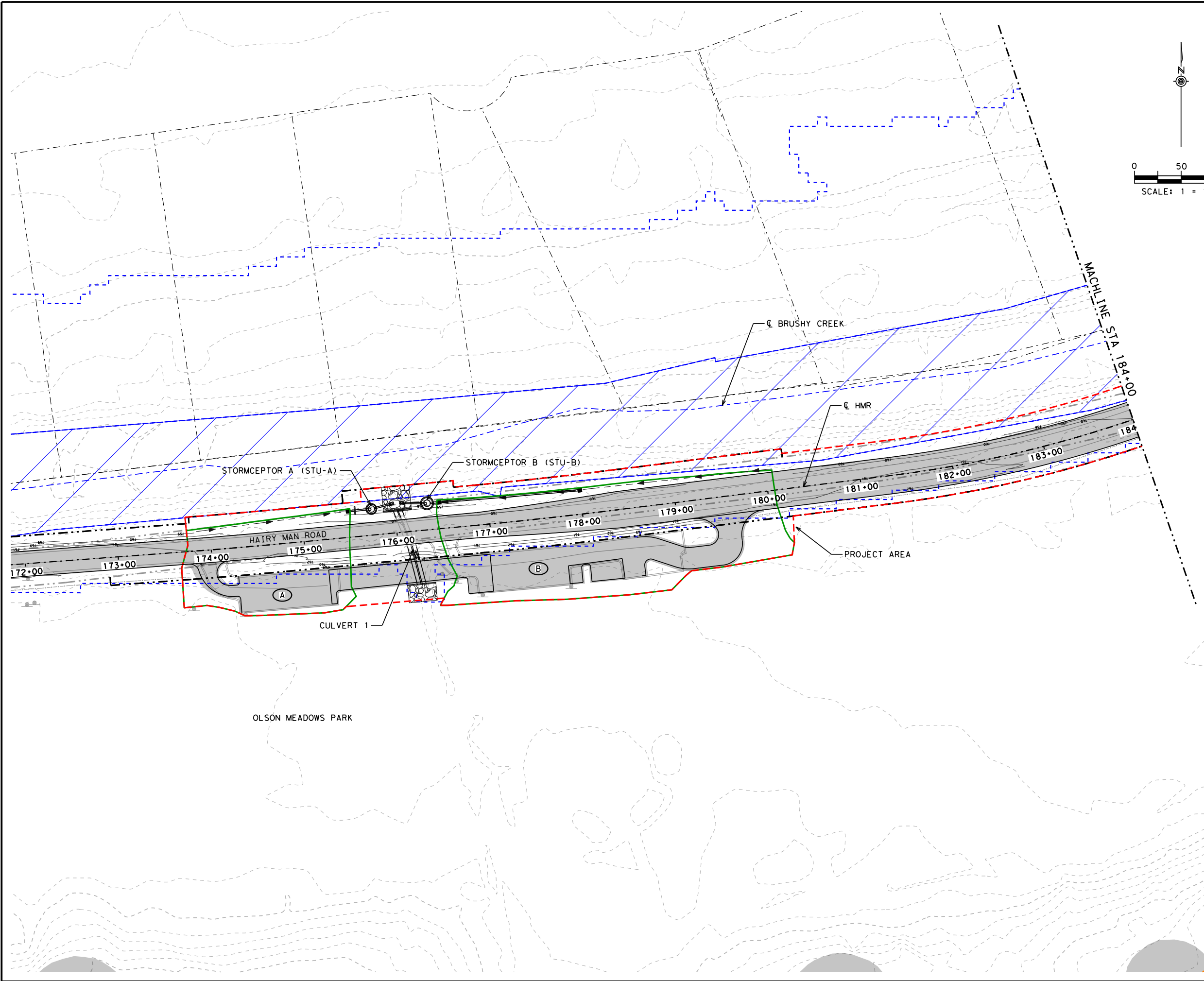
REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
WATER QUALITY
OVERALL SITE PLAN

SHEET 1 OF 3

DESIGNED: E.J.W.	FED. RD. DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: C.M.C.	X	TEXAS		HAIRY MAN RD
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: C.M.C.	AUSTIN	WILLIAMSON	XXX	XX
			JOB No.	SHEET No.
			XXX	1



LEGEND

- PROPOSED R.O.W.
- EXISTING R.O.W.
- PROPOSED EOP
- EXISTING EOP
- EXISTING PARCELS
- EXISTING CONTOURS
- PROPOSED CONTOURS
- DRAINAGE AREA ID
- DRAINAGE DITCH
- PROJECT AREA
- BMP DRAINAGE AREA
- TCEQ EDWARDS AQUIFER RECHARGE ZONE BOUNDARY
- FEMA DFIRM FLOODPLAIN
- FEMA DFIRM FLOODWAY
- IMPERVIOUS COVER



9/11/2019

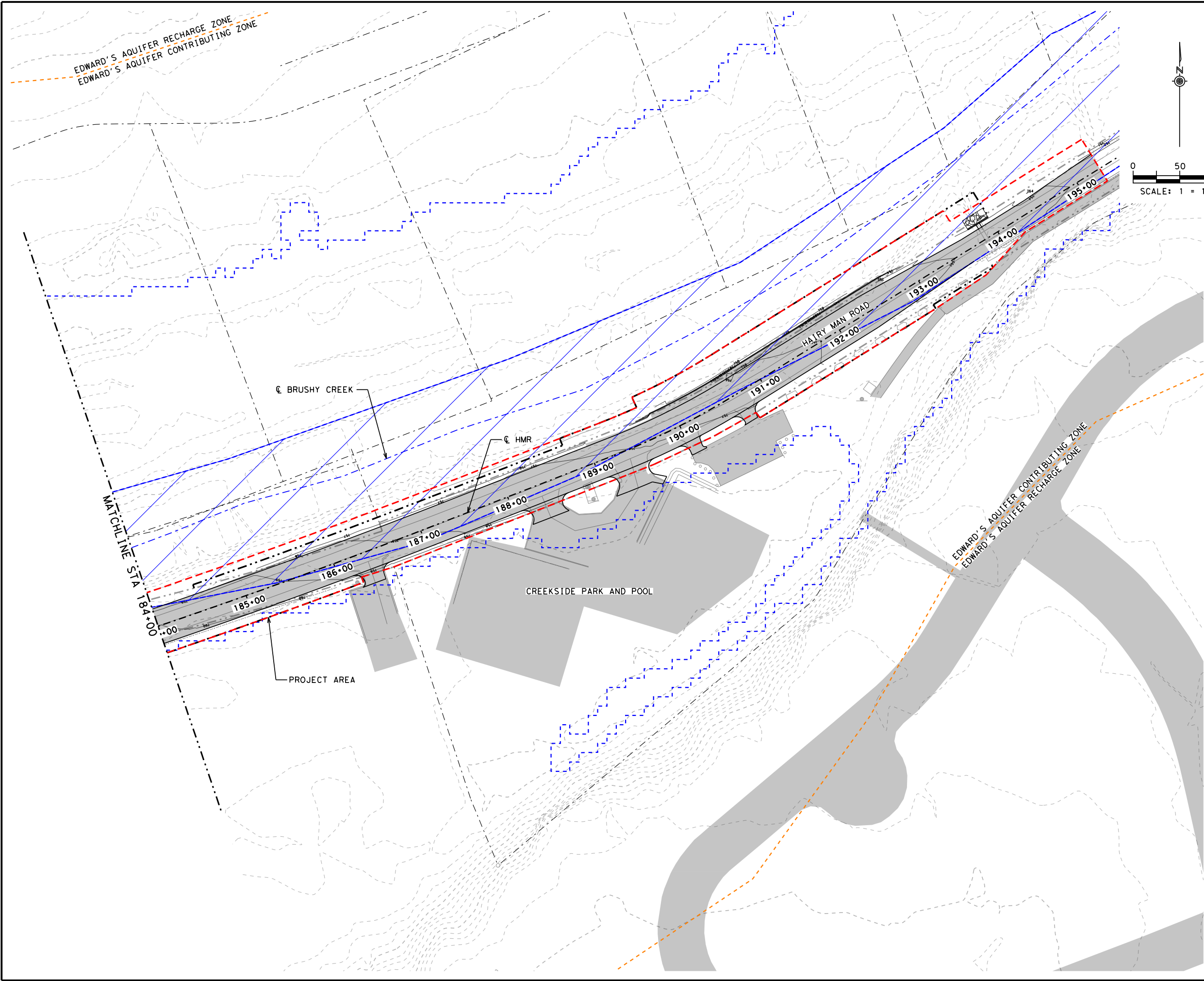
REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
WATER QUALITY
SITE PLAN

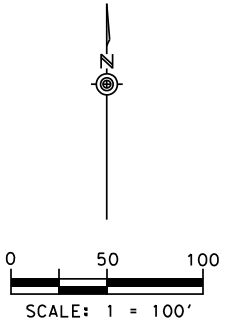
SHEET 2 OF 3

DESIGNED: EJJ	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: CMC	X	TEXAS		HAIRY MAN RD
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX
			JOB No.	SHEET No.
			XXX	2



LEGEND

- PROPOSED R.O.W.
- EXISTING R.O.W.
- PROPOSED EOP
- EXISTING EOP
- EXISTING PARCELS
- EXISTING CONTOURS
- PROPOSED CONTOURS
- DRAINAGE AREA ID
- DRAINAGE DITCH
- PROJECT AREA
- BMP DRAINAGE AREA
- TCEQ EDWARDS AQUIFER RECHARGE ZONE BOUNDARY
- FEMA DFIRM FLOODPLAIN
- FEMA DFIRM FLOODWAY
- IMPERVIOUS COVER



9/11/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
WATER QUALITY
SITE PLAN

SHEET 3 OF 3

DESIGNED: E.J.W.	FED. RD. DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: C.M.C.	X	TEXAS		HAIRY MAN RD
DRAWN: M.D.	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: C.M.C.	AUSTIN	WILLIAMSON	XXX	XX
			JOB No.	SHEET No.
			XXX	3

ATTACHMENT J
BMPs FOR UPGRADE STORMWATER

The surrounding topography drains from south to north with Hairy Man Road serving as a berm directing flows within the right-of-way, except between Culvert 1 and Culvert 2, where offsite runoff will sheet flow over Hairy Man Road to Brushy Creek. The flow that crosses Hairy Man Road from the Olson Meadows Park parking lots will be conveyed in roadside ditches and storm sewer to the Stormceptor units. The offsite stormwater will continue to flow over Hairy Man Road or to a cross culvert as under existing conditions. Refer to 10257-Attachment K for description of the BMPs that will be used to prevent pollution of waters originating onsite and offsite drainage area maps. Refer to 10257-Attachment M: Construction Plans for drainage areas to each Stormceptor unit.

ATTACHMENT K
BMPS FOR ON-SITE STORMWATER

Stormceptor units will be constructed on the site and will provide removal of at least 80% of the incremental increase in total suspended solids from the site caused by the regulated activity.

Proposed water quality Stormceptor units will treat onsite runoff before discharging into the surface waters. Stormwater runoff from the project area will be directed to two Stormceptor units. Runoff will enter the Stormceptor and be directed by weir and orifice plate to the lower treatment chamber of the unit. The treatment chamber allows suspended solids to settle at the bottom of the chamber while petroleum products rise and become trapped beneath a fiberglass insert. The permanent BMP was sized according to the Edwards Aquifer TSS Removal Calculations Spreadsheet (April 20, 2009). The calculations, plans, and details are included in 10257-Attachment M.

ATTACHMENT L **BMPs FOR SURFACE STREAMS**

Temporary BMPs such as erosion control logs and rock filter dams will be installed at the downstream side of the project and as a perimeter control to prevent onsite sediment and debris from entering surface streams during construction. After construction, the project limits will be revegetated to prevent pollution of surface streams. Soil retention blankets will be used in ditch conveyance areas to promote establishment of vegetation. Water quality Stormceptor units will be installed to achieve the required removal of at least 80% of the incremental increase in the total suspended solids from the site caused by the regulated activity.

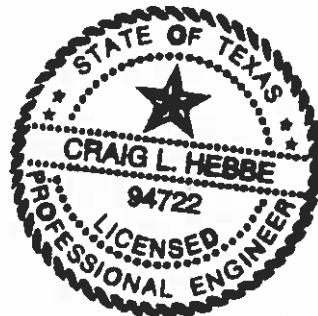
ATTACHMENT M
CONSTRUCTION PLANS

Find attached:

- I. Water Quality Calculations

Under separate cover:

- I. Construction Plans



Craig L. Hebbe, P.E.

09-12-19

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.

Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.

Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project:

Calculations from RG-348

Pages 3-27 to 3-30

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = 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 *	4.21	acres
Predevelopment impervious area within the limits of the plan *	1.48	acres
Total post-development impervious area within the limits of the plan *	2.32	acres
Total post-development impervious cover fraction *	0.55	
P =	32	inches

$L_{M \text{ TOTAL PROJECT}}$ = **731** lbs.

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

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

Treatment Unit ID	Description	Load Removed
STU A	Stormceptor 4800	234 lbs
STU B	Stormceptor 7200	527 lbs
Total TSS Removed		761 lbs

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.

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Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

KFA NOTES IN GREEN

1. The Required Load Reduction for the total project:

Calculations from RG-348

Pages 3-27 to 3-30

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = 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 * = **4.21** acres

Predevelopment impervious area within the limits of the plan * = **1.48** acres

Total post-development impervious area within the limits of the plan = **2.32** acres

Total post-development impervious cover fraction * = **0.55**

P = **32** inches

$L_{M \text{ TOTAL PROJECT}}$ = **731** lbs.

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

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

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

Drainage Basin/Outfall Area No. = **STU-A**

Total drainage basin/outfall area = **0.40** acres

Predevelopment impervious area within drainage basin/outfall area = **0.22** acres

Post-development impervious area within drainage basin/outfall area = **0.24** acres

Post-development impervious fraction within drainage basin/outfall area = **0.60**

$L_{M \text{ THIS BASIN}}$ = **24** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Stormceptor**

Removal efficiency = **80** percent

REFER TO ITEM 20. STORMCEPTOR FOR REMOVAL EFFICIENCY

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

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

where:

A_C = Total On-Site drainage area in the BMP catchment area

A_i = Impervious area proposed in the BMP catchment area

A_p = Pervious area remaining in the BMP catchment area

L_R = TSS Load removed from this catchment area by the proposed BMP

A_C = **0.40** acres

A_i = **0.24** acres

A_p = **0.16** acres

L_R = **218** lbs

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

Desired $L_{M \text{ THIS BASIN}}$ = **218** lbs.

REFER TO ITEM 20. STORMCEPTOR FOR LOAD REMOVAL PROVIDED

F = **1.00**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth = 4.00 inches
Post Development Runoff Coefficient = 0.42
On-site Water Quality Volume = 2473 cubic feet

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

Off-site area draining to BMP = 0.00 acres
Off-site Impervious cover draining to BMP = 0.00 acres
Impervious fraction of off-site area = 0
Off-site Runoff Coefficient = 0.00
Off-site Water Quality Volume = 0 cubic feet

Storage for Sediment = 495

Total Capture Volume (required water quality volume(s) x 1.20) = 2968 cubic feet

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

20. Stormceptor

Required TSS Removal in BMP Drainage Area = 24.02 lbs
Impervious Cover Overtreatment = 0.0000 ac
TSS Removal for Uncaptured Area = 0.00 lbs

Effective Area = 0.22 EA
Calculated Model Size(s) = 2400, 3600
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) = 4800 Model Size

BMP Sizing

Surface Area = 78.54 ft²
Overflow Rate = 0.003131 V_{or}
Rounded Overflow Rate = 0.003240 V_{or}
BMP Efficiency % = 86.00 %
L_R Value = 234 lbs

REMOVAL EFFICIENCY
LOAD REMOVAL PROVIDED

TSS Load Credit = 210 lbs

OVERTREATMENT PROVIDED BY IN THIS BASIN

Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.) Yes

TSS Treatment by BMP (LM + TSS Uncapt.) = 24.02

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.

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KFA NOTES IN GREEN

1. The Required Load Reduction for the total project:

Calculations from RG-348

Pages 3-27 to 3-30

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = 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 * = **4.21** acres

Predevelopment impervious area within the limits of the plan * = **1.48** acres

Total post-development impervious area within the limits of the plan * = **2.32** acres

Total post-development impervious cover fraction * = **0.55**

P = **32** inches

$L_{M \text{ TOTAL PROJECT}}$ = **731** lbs.

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

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

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

Drainage Basin/Outfall Area No. = **STU-B**

Total drainage basin/outfall area = **0.90** acres

Predevelopment impervious area within drainage basin/outfall area = **0.40** acres

Post-development impervious area within drainage basin/outfall area = **0.58** acres

Post-development impervious fraction within drainage basin/outfall area = **0.65**

$L_{M \text{ THIS BASIN}}$ = **158** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Stormceptor**

Removal efficiency = **80** percent

REFER TO ITEM 20. STORMCEPTOR FOR REMOVAL EFFICIENCY

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

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

where:

A_C = Total On-Site drainage area in the BMP catchment area

A_i = Impervious area proposed in the BMP catchment area

A_p = Pervious area remaining in the BMP catchment area

L_R = TSS Load removed from this catchment area by the proposed BMP

A_C = **0.90** acres

A_i = **0.58** acres

A_p = **0.31** acres

L_R = **521** lbs

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

Desired $L_{M \text{ THIS BASIN}}$ = **521** lbs.

REFER TO ITEM 20. STORMCEPTOR FOR LOAD REMOVAL PROVIDED

F = **1.00**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth = 4.00 inches
Post Development Runoff Coefficient = 0.46
On-site Water Quality Volume = 5987 cubic feet

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

Off-site area draining to BMP = 0.00 acres
Off-site Impervious cover draining to BMP = 0.00 acres
Impervious fraction of off-site area = 0
Off-site Runoff Coefficient = 0.00
Off-site Water Quality Volume = 0 cubic feet

Storage for Sediment = 1197
Total Capture Volume (required water quality volume(s) x 1.20) = 7185 cubic feet

20. Stormceptor

Required TSS Removal in BMP Drainage Area = 158.33 lbs
Impervious Cover Overtreatment = 0.0000 ac
TSS Removal for Uncaptured Area = 0.00 lbs
BMP Sizing
Effective Area = 0.53 EA
Calculated Model Size(s) = 7200
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) = 7200 Model Size

Surface Area = 113.10 ft²
Overflow Rate = 0.005195 V_{or}
Rounded Overflow Rate = 0.005360 V_{or}
BMP Efficiency % = 81.00 %
L_R Value = 527 lbs

REMOVAL EFFICIENCY
LOAD REMOVAL PROVIDED

TSS Load Credit = 369 lbs

OVERTREATMENT PROVIDED BY IN THIS BASIN

Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.) Yes

TSS Treatment by BMP (LM + TSS Uncapt.) = 158.33

ATTACHMENT N
INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

The maintenance plan has been prepared under the guidance of a professional engineer and has been attached. Maintenance of the permanent BMPs will be the responsibility of Williamson County.

INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

PROJECT NAME: Hairy Man Road
ADDRESS: From Walsh Drive to Great Oaks Drive

BMP maintenance operations should be performed on a regular basis as outlined below and as required to ensure that the BMPs and measures are constructed and functioning as designed. Operations must also be performed as required to maintain site aesthetics, vegetation, BMP access, and debris removal. After a Texas licensed professional engineer has certified that the permanent BMPs and measures were constructed as designed and submitted certification to the TCEQ regional office, the maintenance schedule as outlined below will commence.

General:

1. Records and diaries will be kept for maintenance activities listed and performed by Williamson County and contractors. All records must be retained for a period of not less than five (5) years.
2. Maintenance and contracted personnel may oversee minor repairs. Major repairs or retrofits must be overseen by Williamson County.
3. Roadways and roadsides will be reviewed regularly, by maintenance forces. BMPs will be inspected after rainfall events greater than four inches to ensure no damage to grass cover, accumulation of litter, or erosion has occurred. Areas of concern will be noted and any necessary maintenance scheduled.
4. Right-of-way areas, will be mowed by contract. Cutting height is a minimum of five inches. Mowing will be delayed during times when preferred vegetation is seeding to allow for natural propagation to continue.

Stormceptor Units:

1. At a minimum, monitoring and inspections should be performed four times annually. At least one of the inspections should occur during or immediately following a rainfall event to observe system operations. At least once annually maintenance shall be performed on each Stormceptor unit. Inspections are required after rainfall events greater than three inches.
2. Annual maintenance will include vacuuming of water, oils and sediments from the Stormceptor treatment basin. In addition to annually, vacuum maintenance will be performed as required if free oil or sediment exceeds maximum levels in Table 2 – Stormceptor Maximum Pollutant Levels in the July 5, 2012 Addendum Sheet to RG-348.
3. Monitoring of pollutant levels will be recorded monthly using the attached “Stormceptor Monitoring/Maintenance Plan Summary” sheet.
4. Williamson County may elect to perform more frequent inspections based on the observed site conditions and pollutant loads.

Maintenance Contact

The Maintenance Supervisor may be contacted for questions or concerns that pertain to the maintenance of this facility after it is completed and operating. The current maintenance supervisor is named below. The Maintenance Supervisor may be contacted at the following location:

Responsible Party: _____ Williamson County
Maintenance Contact: _____ J. Terron Evertson, PE, County Engineer

Signature Date

Name: J. Terron Evertson, PE
Address: 3151 S. E. Inner Loop, Suite B
Georgetown, TX 78626
Phone: (512) 943-3330

Hairy Man Road Stormceptor Maintenance Worksheet

Monitoring / Maintenance Completion – Summary

Company Name: _____
Company Address: _____
City/State/Zip: _____
Phone: _____
Engineer: _____
Engineers Address: _____
City/State/Zip: _____
Phone: _____
Property Owner: _____
*Stormceptor Model _____

Monitoring / Maintenance Table

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Oil Depth (inches)												
Sediment Depth (inches)												
Completed By												
Date												
Floatables (Optional)												

I hereby certify that the monitoring and maintenance of the Stormceptor unit was completed in accordance with the directions of the Stormceptor monitoring /maintenance plan.

(Signed by property owner or designee)

ATTACHMENT P
MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Temporary BMPs, such as erosion control logs and rock filter dam, will be installed at the downstream side of the project and as a perimeter control to prevent onsite sediment and debris from entering the surface streams during construction. After construction, the project limits will be revegetated to prevent pollution of surface streams. Water quality Stormceptor units will be utilized to achieve the required removal of at least 80% of the incremental increase in the total suspended solids from the site caused by the regulated activity.

Hydraulic impacts at the project outfalls have been minimized by placing permanent rock riprap at storm sewer outfalls to provide soil stabilization and velocity reduction. Based on the Drainage Impact Analysis, no increases in stream flashing, higher flows, in-stream velocities, or erosion are expected to occur.

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Craig L. Hebbe, PE

Date: 09-12-19

Signature of Customer/Agent:



Regulated Entity Name: Hairy Man Road

Project Information

Potential Sources of Contamination

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

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

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

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

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

- ☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
- ☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
- ☒ Fuels and hazardous substances will not be stored on the site.
- 2. ☒ **Attachment A - Spill Response Actions.** A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.
- 3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
- 4. ☒ **Attachment B - Potential Sources of Contamination.** A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

- 5. ☒ **Attachment C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.
 - ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.
 - ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.
- 6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Brushy Creek

Temporary Best Management Practices (TBMPs)

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

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

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

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

Soil Stabilization Practices

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

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

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

Administrative Information

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

ATTACHMENT A **SPILL RESPONSE ACTIONS**

Spill prevention, control, clean-up and reporting shall comply with TCEQ regulations 30 TAC, Chapter 327 – Spill prevention and control, attached, as well as any local regulations. The contractor will implement proper spill prevention measures and maintain appropriate spill response equipment on site. In the event of a hazardous materials spill, the safety of on-site personnel is the most important consideration. Once the safety of personnel is secured, the second priority becomes stopping the source of the spill. If it is safe to do so, the source of the spill will be stopped and the spill will be contained using items such as sand bags, berms or absorbent rolls. Once the spill is stopped and contained, the crew will commence proper cleanup and disposal based on the type, location and amount of material spilled. If a spill collects in a Stormceptor device, the discharge from the Stormceptor will be monitored for the hazardous material. If it is determined that the discharge from the Stormceptor contains the spilled material, the discharge from the Stormceptor shall be contained through the use of sand bags, berms or absorbent rolls. The Stormceptor shall be cleaned of any spilled material as soon as possible to limit the possibility and amount of hazardous material discharged. The contaminated water will be collected and properly disposed of.

If during the construction of the project (Temporary Stormwater Management) a hazardous substance or hydrocarbon spill of greater than 250 gallons occurs within the project limits, the contractor is to try to stop the spill from continuing, contact the local fire department, and the Engineer. If the spill is caused by the roadway contractor, the roadway contractor will be responsible for the proper clean-up of the spill as well as notifying the TCEQ Spill Reporting Hotline (1-800-832-8224). If a spill occurs within the project limits, but is caused by a third party (someone from the traveling public driving through the project), the contractor and/or the Engineer shall immediately contact local law enforcement, the fire department, and the TCEQ Spill Reporting Hotline. The local fire department will immediately respond to the spill and secure the scene (stop the spill and prevent it from spreading). Williamson County will work with the responsible party to facilitate the clean-up of the spill on Williamson County property.

Texas Administrative Code

TITLE 30 ENVIRONMENTAL QUALITY

PART 1 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

CHAPTER 327 SPILL PREVENTION AND CONTROL

RULE §327.1 Applicability

Source Note: The provisions of this §327.1 adopted to be effective May 23, 1996, 21 TexReg 4228; amended to be effective December 26, 1996, 21 TexReg 12175.

- (a) This chapter applies to discharges or spills that result in a release to the environment within the territorial limits of the State of Texas, including the coastal waters of this state.
- (b) This chapter does not apply to:
 - (1) discharges or spills of oil that enter or threaten to enter coastal waters of the State. Except for spills of oil of 240 barrels or less for which the Railroad Commission of Texas is the on-scene coordinator, such discharges or spills are regulated by the Texas General Land Office under the Oil Spill Prevention and Response Act of 1991, the Texas Natural Resources Code, Chapter 40, Subchapters C, D, E, F, and G;
 - (2) spills or discharges from activities subject to the jurisdiction of the Railroad Commission of Texas under the Texas Water Code, §26.131;
 - (3) releases only to air;
 - (4) the lawful placement of waste or accidental discharge of material into a solid waste management unit registered or permitted under Chapter 335, Subchapter A of this title (relating to Industrial Solid Waste and Municipal Hazardous Waste in General);
 - (5) units and activities regulated under the authority of the Texas Water Code, Chapter 26, Subchapter I (Underground and Aboveground Storage Tanks);
 - (6) the lawful application of materials, including but not limited to fertilizers and pesticides, to land or water;
 - (7) discharges that are authorized by a permit, order, or rule issued under federal law or any other law of the State of Texas; provided, however, that discharges not so authorized shall be reported under this chapter unless the permit, order, or another commission rule provides an applicable reporting requirement;
 - (8) discharges or spills that are continuous and stable in nature, and are reported to the United States Environmental Protection Agency (EPA) under 40 Code of Federal Regulations (CFR) §302.8; and
 - (9) discharges or spills occurring during the normal course of rail transportation.

RULE §327.2 Definitions

Source Note: The provisions of this §327.2 adopted to be effective May 23, 1996, 21 TexReg 4228.

The following words and terms when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise.

- (1) Agency on-scene coordinator--The official designated by the executive director to coordinate and direct agency responses, or to oversee private responses to discharges or spills.
- (2) Coastal waters--The definition of Coastal waters as it appears in Title 31, Texas Administrative Code, §19.2 (Definitions) of the Texas General Land Office rules.
- (3) Discharge or spill--An act or omission by which oil, hazardous substances, waste, or other substances are spilled, leaked, pumped, poured, emitted, entered, or dumped onto or into waters in the State of Texas or by which those substances are deposited where, unless controlled or removed, they may drain, seep, run, or otherwise enter water in the State of Texas.
- (4) Emergency response team--A unit of the agency that is responsible for the coordination of response to spills and discharges under the agency's jurisdiction.
- (5) Environment--Waters in the state, land surface or subsurface strata, for purposes of this chapter only.
- (6) Facility--Any structure or building, including contiguous land, or equipment, pipe or pipeline, well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, aircraft, or any site or area where a discharge or spill has occurred or may occur.
- (7) Hazardous substance--Any substance designated as such by the administrator of the United States Environmental Protection Agency under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601-9675, regulated under the Clean Water Act, §311, 33 USC 1321, or designated by the commission.
- (8) Industrial solid waste--Solid waste, as defined in §335.1 of this title (relating to Definitions), resulting from or incidental to any process of industry or manufacturing, or mining, or agricultural operations, which may include hazardous waste as defined in §335.1 of this title.
- (9) Oil--Oil of any kind or in any form including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil. Oil does not include used oil, petroleum product, or oil designated as a hazardous substance in 40 CFR §302.4.
- (10) Other substances--Substances that may be useful or valuable and therefore are not ordinarily considered to be waste, but that will cause pollution if discharged into water in the state.
- (11) Petroleum product--A petroleum substance obtained from distilling and processing crude oil that is liquid at standard conditions of temperature and pressure, and that is capable of being used as a fuel for the propulsion of a motor vehicle or aircraft, including but not necessarily limited to motor gasoline, gasohol, other alcohol blended fuels, aviation gasoline, kerosene, distillate fuel oil, and #1 and #2 diesel. The term does not include naphtha-type jet fuel, kerosene-type jet fuel, or a petroleum product destined for use in chemical manufacturing or feedstock of that manufacturing.
- (12) Petroleum storage tank (PST) exempted facilities--Electric service facilities including generation, transmission, distribution equipment and transformers; petrochemical plants; petroleum refineries; bulk loading facilities; and pipelines that are exempted from the Aboveground Storage Tank (AST) program under §334.123(a)(9) and (b) of this title (relating to Statutory Exemptions for ASTs), and §334.124(a)(4) of this title (relating to Commission Exclusions for ASTs).
- (13) Pipeline--A pipeline is:
 - (A) an interstate pipeline facility, including gathering lines and any aboveground storage tank connected to such facility, if the pipeline facility is regulated under:

- (i) the Natural Gas Pipeline Safety Act of 1968 (49 United States Code §§1671, et seq); or
 - (ii) the Hazardous Liquid Pipeline Safety Act of 1979 (49 United States Code §§2001, et seq).
- (B) an intrastate pipeline facility or any aboveground storage tank connected to such a facility, if the pipeline facility is regulated under one of the following state laws:
 - (i) the Natural Resources Code, Chapter 111;
 - (ii) the Natural Resources Code, Chapter 117; or
 - (iii) Texas Civil Statutes, Article 6053-1 and Article 6053-2.
- (14) Pollution--The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.
- (15) Responsible person--A person who is:
 - (A) the owner, operator, or demise charterer of a vessel from which a discharge or spill emanates; or
 - (B) the owner or operator of a facility from which a discharge or spill emanates; or
 - (C) any other person who causes, suffers, allows, or permits a discharge or spill.
- (16) Used oil--Oil that has been refined from crude oil, or synthetic oil, that as a result of use has been contaminated by physical or chemical impurities.
- (17) Vessel--Every description of watercraft, used or capable of being used as a means of transportation on the water.
- (18) Water or water in the state--Groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico, inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface waters, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.

RULE §327.3 Notification Requirements

Source Note: The provisions of this §327.3 adopted to be effective May 23, 1996, 21 TexReg 4228.

- (a) Reportable discharge or spill. A reportable discharge or spill is a discharge or spill of oil, petroleum product, used oil, hazardous substances, industrial solid waste, or other substances into the environment in a quantity equal to or greater than the reportable quantity listed in §327.4 of this title (relating to Reportable Quantities) in any 24-hour period.
- (b) Initial notification. Upon the determination that a reportable discharge or spill has occurred, the responsible person shall notify the agency as soon as possible but not later than 24 hours after the discovery of the spill or discharge.
- (c) Method of notification. The responsible person shall notify the agency in any reasonable manner including by telephone, in person, or by any other method approved by the agency. In all cases, the initial notification shall provide, to the extent known, the information listed in subsection (d) of this section. Notice provided under this section

satisfies the federal requirement to notify the State Emergency Response Commission in the State of Texas. The responsible person shall notify one of the following:

- (1) the State Emergency Response Center at 1-800-832-8224;
 - (2) during normal business hours only, the regional office for the agency region in which the discharge or spill occurred; or
 - (3) the agency at the agency 24-hour spill reporting number.
- (d) Information required in initial notification. The initial notification shall provide, to the extent known, the information in the following list. Copies of spill reports prepared for other governmental agencies shall satisfy this requirement if they contain, or are supplemented to contain, all the information required by this subsection. The initial notification shall contain:
- (1) the name, address and telephone number of the person making the telephone report;
 - (2) the date, time, and location of the spill or discharge;
 - (3) a specific description or identification of the oil, petroleum product, hazardous substances or other substances discharged or spilled;
 - (4) an estimate of the quantity discharged or spilled;
 - (5) the duration of the incident;
 - (6) the name of the surface water or a description of the waters in the state affected or threatened by the discharge or spill;
 - (7) the source of the discharge or spill;
 - (8) a description of the extent of actual or potential water pollution or harmful impacts to the environment and an identification of any environmentally sensitive areas or natural resources at risk;
 - (9) if different from paragraph (1) of this subsection, the names, addresses, and telephone numbers of the responsible person and the contact person at the location of the discharge or spill;
 - (10) a description of any actions that have been taken, are being taken, and will be taken to contain and respond to the discharge or spill;
 - (11) any known or anticipated health risks;
 - (12) the identity of any governmental representatives, including local authorities or third parties, responding to the discharge or spill; and
 - (13) any other information that may be significant to the response action.
- (e) Update notification. The responsible person shall notify the agency as soon as possible whenever necessary to provide information that would trigger a change in the response to the spill or discharge.
- (f) Correction of records. Notifying the agency that a reportable discharge or spill has occurred shall not be construed as an admission that pollution has occurred. Furthermore, if the responsible person determines, after notification, that a reportable discharge or spill did not occur, the responsible person may send a letter to the agency documenting that determination. If the executive director agrees with that determination, the executive director will note the determination in commission records. If the executive director disagrees with that determination, the executive director will notify the responsible person within 30 days.
- (g) Notification of local governmental authorities. If the discharge or spill creates an imminent health threat, the responsible person shall immediately notify and cooperate with local emergency authorities (fire department, fire marshal, law enforcement authority, health authority, or Local Emergency Planning Committee (LEPC), as appropriate). The responsible party will cooperate with the local emergency authority in

providing support to implement appropriate notification and response actions. The local emergency authority, as necessary, will implement its emergency management plan, which may include notifying and evacuating affected persons. In the absence of a local emergency authority, the responsible person shall take reasonable measures to notify potentially affected persons of the imminent health threat.

- (h) Notification to property owner and residents. As soon as possible, but no later than two weeks after discovery of the spill or discharge, the responsible person shall reasonably attempt to notify the owner (if identifiable) or occupant of the property upon which the discharge or spill occurred as well as the occupants of any property that the responsible person reasonably believes is adversely affected.
- (i) Additional notification required.
 - (1) Except as noted in paragraph (2) of this subsection, complying with the notification requirements set forth in this section does not relieve, satisfy, or fulfill any other notification requirements imposed by permit or other local, state, or federal law.
 - (2) Notice provided under this section satisfies the federal requirement to notify the State Emergency Response Commission in the State of Texas.
- (j) Alternative notification plans.
 - (1) Responsible persons in charge of activities and facilities may submit and implement an alternative notification plan. This alternative notification plan shall comply with the Texas Water Code, §26.039. Responsible persons shall obtain the agency's written approval before implementing any alternative notification plan.
 - (2) Upon approval of the agency regional manager, responsible persons may provide the initial notification by facsimile to the regional office during normal business hours.

RULE §327.4 Reportable Quantities

Source Note: The provisions of this §327.4 adopted to be effective May 23, 1996, 21 TexReg 4228.

- (a) Hazardous substances. The reportable quantities for hazardous substances shall be:
 - (1) for spills or discharges onto land--the quantity designated as the Final Reportable Quantity (RQ) in Table 302.4 in 40 CFR §302.4; or
 - (2) for spills or discharges into waters in the state--the quantity designated as the Final RQ in Table 302.4 in 40 CFR §302.4, except where the Final RQ is greater than 100 pounds in which case the RQ shall be 100 pounds.
- (b) Oil, petroleum product, and used oil.
 - (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 and used oil shall be:
 - (A) except as noted in subparagraph (B) of this paragraph, 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.
- (c) Industrial solid waste or other substances. The RQ for spills or discharges into water in the state shall be 100 pounds.

RULE §327.5 Actions Required

Source Note: The provisions of this §327.5 adopted to be effective May 23, 1996, 21 TexReg 4228; amended to be effective December 26, 1996, 21 TexReg 12175; amended to be effective September 23, 1999, 24 TexReg 7415

- (a) The responsible person shall immediately abate and contain the spill or discharge and cooperate fully with the executive director and the local incident command system. The responsible person shall also begin reasonable response actions which may include, but are not limited to, the following actions:
- (1) arrival of the responsible person or response personnel hired by the responsible person at the site of the discharge or spill;
 - (2) initiating efforts to stop the discharge or spill;
 - (3) minimizing the impact to the public health and the environment;
 - (4) neutralizing the effects of the incident;
 - (5) removing the discharged or spilled substances; and
 - (6) managing the wastes.
- (b) Upon request of the local government responders or the executive director, the responsible person shall provide a verbal or written description, or both, of the planned response actions and all actions taken before the local governmental responders or the executive director arrive. When the agency on-scene coordinator requests this information, it is subject to possible additional response action requirements by the executive director. The information will serve as a basis for the executive director to determine the need for:
- (1) further response actions by the responsible person;
 - (2) initiating state funded actions for which the responsible person may be held liable to the maximum extent allowed by law; and
 - (3) subsequent reports on the response actions.
- (c) Except for discharges or spills occurring during the normal course of transportation about which carriers are required to file a written report with the U.S. Department of Transportation under 49 CFR §171.16, the responsible person shall submit written information, such as a letter, describing the details of the discharge or spill and supporting the adequacy of the response action, to the appropriate TNRCC regional manager within 30 working days of the discovery of the reportable discharge or spill. The regional manager has the discretion to extend the deadline. The documentation shall contain one of the following items:
- (1) A statement that the discharge or spill response action has been completed and a description of how the response action was conducted. The statement shall include the initial report information required by §327.3(c) of this title (relating to Notification Requirements). The executive director may request additional information. Appropriate response actions at any time following the discharge or spill include use of the Texas Risk Reduction Program rules in Chapter 350 of this title (relating to Texas Risk Reduction Program).

- (2) A request for an extension of time to complete the response action, along with the reasons for the request. The request shall also include a projected work schedule outlining the time required to complete the response action. The executive director may grant an extension up to six months from the date the spill or discharge was reported. Unless otherwise notified by the appropriate regional manager or the Emergency Response Team, the responsible person shall proceed according to the terms of the projected work schedule.
- (3) A statement that the discharge or spill response action has not been completed nor is it expected to be completed within the maximum allowable six month extension. The statement shall explain why completion of the response action is not feasible and include a projected work schedule outlining the remaining tasks to complete the response action. This information will also serve as notification that the response actions to the discharge or spill will be conducted under the Texas Risk Reduction Program rules in Chapter 350 of this title (relating to Texas Risk Reduction Program).

RULE §327.31 Natural Resource Damage Assessment for Oil Spills in Coastal Waters

Source Note: The provisions of this §327.31 adopted to be effective January 11, 1995, 19 TexReg 10551.

Pursuant to a joint negotiated rulemaking mandated under Senate Bill 1049, 73rd Legislature, 1993, the Texas Natural Resource Conservation Commission incorporates by reference the provisions of 31 TAC §§20.1-20.4, 20.10, 20.20-20.23, 20.30-20.36, and 20.40-20.44, concerning Natural Resource Damage Assessment, as adopted by the Texas General Land Office, effective October 19, 1994.

ATTACHMENT B

POTENTIAL SOURCES OF CONTAMINATION

The potential sources of storm water pollution from the roadway improvements are displaced soil from the construction site from activities such as grading, clearing/grubbing, trenching, excavating, boring, and filling. Other potential sources include wastewater from portable bathrooms, litter generated during the construction process, de-watering from excavations, construction vehicles tracking onto roads, construction products and waste, and imported soils. There are also hazardous construction materials including fuel, chemicals such as automotive fluids and lubricants, curing additives, use of asphaltic products, and petroleum products from the operation of equipment on the site, and paints, all of which are potential sources of contamination.

The primary storm water contaminant expected to be generated during the construction project is the entrained solids (soil particles) which will affect the turbidity of the runoff. From this project, disturbed soils will result from:

1. Preparation of right-of-way
2. Removal of existing pavement structure
3. Driveway embankment grading
4. Roadway embankment grading
5. Parking lot embankment grading
6. Excavation and embankment for ditch grading
7. Trenching for storm sewer and culvert construction
8. Excavation for Stormceptors
9. Imported soil for fill and top-soil

Increased sediment loading in the storm water can be attributed to: a) direct impingement of rain onto disturbed soil areas, sand, gravel and rock areas where rains dislodge or entrain particles; b) erosion of disturbed soil areas; c) the transfer of soils and particulate matter via equipment or vehicle tires onto non-disturbed areas where they are wasted into drainage ditches or sheet flow offsite.

There is a potential for hydrocarbon contamination in the form of oil and grease from equipment, vehicles, and from fuel spillage on the site. Oil and grease are typically released into the environment because of equipment failure or maintenance operations. Most construction equipment operates hydraulically; there is a potential that the release of hydraulic fluids may occur. The clean-up and containment of any fuels, hydraulic fluids, hydrocarbons or other hazardous substances released on site will be the responsibility of the contractor.

Entrained solids in runoff during the construction phase will largely be mitigated by BMPs such as erosion control logs, rock filter dams, and temporary seeding as shown in the Erosion Control Plans included in 10257-Attachment M.

ATTACHMENT C

SEQUENCE OF MAJOR ACTIVITIES

The general order of construction activities is shown below. The project phasing of construction activities, including time frame information and interim and permanent stabilization measures are included in the Traffic Control Plan - Sequence of Construction and SW3P provided in 10257-Attachment M: Construction Plans. Temporary control measures include erosion control logs, rock filter dams, and construction exits and will be installed first in the sequence of construction and removed after all site work is complete and vegetation has been established.

Installation of Temporary Erosion and Sedimentation Controls

1. Notice of Intent/SWPPP Controls.
 - a. Install erosion and sediment control measures in accordance with the SW3P.

Phase 1: Construct eastbound and westbound lanes from the beginning of the project to Great Oaks Drive. (approx. 5.53 ac)

Note: Phase 1 has 3 Steps. See Traffic Control Plan - Sequence of Construction provided in 10257-Attachment M: Construction Plans for more detail..

1. Clearing, grubbing and grading from the beginning to Great Oaks Drive.
2. Construct joint bid utilities.
3. Remove applicable portions of existing culverts and begin construction of culvert and headwall adjustments.
4. Construction of storm drain structures, including Stormceptors.
5. Construct westbound lanes of Hairy Man Road.
6. Construct eastbound lanes of Hairy Man Road, parking lot improvements at Olson Meadows Park.
7. Make adjustments to erosion control measures as needed.

Removal of Temporary Erosion and Sedimentation Controls

1. Remove erosion control logs, rock filter dams, and construction exits.

ATTACHMENT D

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

Temporary BMPs will be installed before any construction activities begin and removed after all construction work and re-vegetation is complete. Refer to 0602-Attachment C: Sequence of Construction for more information on construction activities and sequence. A complete list of temporary BMPs is included in the SW3P included in 10257-Attachment M: Construction Plans.

The surrounding topography drains from south to north with Hairy Man Road serving as a berm directing flows within the right-of-way, except between Culvert 1 and Culvert 2, where offsite runoff will sheet flow over Hairy Man Road to Brushy Creek. The flow that crosses Hairy Man Road from the Olson Meadows Park parking lots will be conveyed in roadside ditches and storm sewer to the Stormceptor units. As the parking lots are owned and operated by Williamson County and flow across Hairy Man Road under existing conditions, they are considered onsite for the purposes of the water quality analysis and design.

BMPs for onsite flows will prevent pollution of surface streams, sensitive features, and the aquifer by filtering and detaining pollutant ridden water. These BMPs include erosion control logs, rock filter dams, and stabilized construction exits. Immediately following the placement of topsoil, seeding will be implemented to stabilize areas post-construction.

ATTACHMENT F **STRUCTURAL PRACTICES**

Temporary structural practices used to limit runoff discharge pollutants include erosion control logs, rock filter dams, and stabilized construction exits.

The TCEQ general guidelines included in Section 1.2 to Section 1.4 of RG-348 must be followed for installation and maintenance of temporary structural erosion and sediment control BMPs. Additional guidelines can also be found on the SWPPP included in 10257-Attachment M: Construction Plans.

ATTACHMENT G **DRAINAGE AREA MAP**

The Offsite and Onsite Drainage Area Maps are included in 10257-Attachment M: Construction Plans.

ATTACHMENT I

INSPECTION AND MAINTENANCE FOR BMPs

All erosion and sediment control measures will be maintained in effective operating condition by following the Project maintenance procedures. The general maintenance and inspection requirements are included in the SW3P included in 10257-Attachment M: Construction Plans. The maintenance plan for temporary BMPs meets the maintenance guidance provided in RG-348.

The Contractor shall install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until soil disturbing activities are completed and permanent erosion control features are in place or the disturbed area has been adequately stabilized as approved in accordance with contract documents including Standard TxDOT Specification 506, and Part II, Section F.6 of TPDES General Permit No. TXR150000.

Maintenance, repairs or retrofits will adhere to the project standards and details for the BMP. Damaged portions of BMPs shall be removed and replaced as needed to adhere to the contract documents. BMPs that cannot be adequately repaired or retrofitted to meet project requirements, shall be removed and replaced entirely in accordance with the contract documents.

The maintenance documentation procedures and recordkeeping practices are summarized in the TCEQ Edwards Aquifer General Construction Notes, which are included in the 10257-Attachment M: Construction Plans.

ATTACHMENT J

SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

The general order of construction activities is shown below. The project phasing of construction activities, including time frame information and interim and permanent stabilization measures are included in the Traffic Control Plan - Sequence of Construction and SW3P provided in 10257-Attachment M: Construction Plans. Temporary control measures include erosion control logs, rock filter dams, and construction exits and will be installed first in the sequence of construction and removed after all site work is complete and vegetation has been established.

Installation of Temporary Erosion and Sedimentation Controls

1. Notice of Intent/SWPPP Controls.
 - a. Install erosion and sediment control measures in accordance with the SW3P.

Phase 1: Construct eastbound and westbound lanes from the beginning of the project to Great Oaks Drive. (approx. 5.53 ac)

1. Clearing, grubbing and grading from the beginning to Great Oaks Drive.
2. Construct joint bid utilities.
3. Remove applicable portions of existing culverts and begin construction of culvert and headwall adjustments.
4. Construction of storm drain structures, including Stormceptors.
5. Construct westbound lanes of Hairy Man Road.
6. Construct eastbound lanes of Hairy Man Road, parking lot improvements at Olson Meadows Park.
7. Make adjustments to erosion control measures as needed.

Removal of Temporary Erosion and Sedimentation Controls

1. Remove erosion control logs, rock filter dams, and construction exits.

For all areas where construction activity temporarily ceases for more than 21 days will be stabilized by the contractor with temporary seeding within 14 days of the last disturbance.

Records will be kept at the site to document dated when:

- major grading activities occur;
- construction activities temporarily cease;
- construction activities permanently cease; and
- stabilization measures are initiated.

**HAIRY MAN ROAD/BRUSHY CREEK ROAD IMPROVEMENTS
CONTRIBUTING ZONE PLAN**

NOTICE OF INTENT (NOI)

The NOI for the Hairy Man Road/Brushy Creek Road Improvements project will be filled out and submitted by the contractor after the project is awarded.

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

I BILL GRAVELL,
Print Name
WILLIAMSON COUNTY JUDGE,
Title - Owner/President/Other
of WILLIAMSON COUNTY,
Corporation/Partnership/Entity Name
have authorized CRAIG L. HEBBE, PE
Print Name of Agent/Engineer
of K FRIESE & ASSOCIATES
Print Name of Firm

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

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.
4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.
5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Bill Gravell
Applicant's Signature

6/4/19
Date

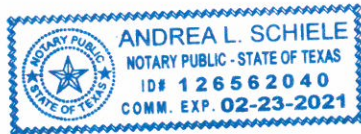
THE STATE OF Texas §

County of Williamson §

BEFORE ME, the undersigned authority, on this day personally appeared Bill Gravell 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 4th day of June, 2019.

Andrea L. Schiele
NOTARY PUBLIC



Andrea L. Schiele
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 2/23/2021

**INTERLOCAL AGREEMENT BETWEEN WILLIAMSON COUNTY AND
BRUSHY CREEK MUNICIPAL UTILITY DISTRICT REGARDING HAIRY MAN
ROAD IMPROVEMENTS AND THE HAIRY MAN ROAD AND GREAT OAKS AT
BRUSHY CREEK PROJECT**

THIS INTERLOCAL AGREEMENT is made and entered into effective this 23rd day of July, 2019, by and between WILLIAMSON COUNTY (the "County") and the BRUSHY CREEK MUNICIPAL UTILITY DISTRICT (the "District"), political subdivisions of the State of Texas.

WITNESSETH:

WHEREAS, V.T.C.A., Government Code, Chapter 791, the Texas Interlocal Cooperation Act, provides that any one or more public agencies may contract with each other for the performance of governmental functions or services for the promotion and protection of the health and welfare of the inhabitants of this State and the mutual benefit of the parties; and

WHEREAS, the County is in the process of designing and constructing a widening and rehabilitation of Hairy Man Road/Brushy Creek Road from Brushy Bend (Walsh Drive) to Sam Bass Road and improvements at the intersection of Hairy Man Road and Great Oaks Drive, including the construction of a new bridge crossing Brushy Creek (collectively, the "Project"); and

WHEREAS, the District and County desire to cooperate regarding certain aspects of the Project, as stated herein; and

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the undersigned parties agree as follows:

I.

General Purpose

This Agreement generally sets for the terms and conditions pursuant to which the District shall convey certain real property interests to the County for the Project, and pursuant to which the County shall incorporate certain improvements into the Project and convey certain real property interests to the District as consideration for the District's conveyance of real property interests.

II.

County Obligations

1. County agrees to include within the Project the following at the sole cost and expense of the County:

- a. Replace or reconstruct all trails and sidewalks impacted by the Project to a condition not less than the current trails and sidewalks. Attached hereto as **Exhibit "A"** is a description of the sidewalk and trail improvements to be undertaken by the County.
- b. Remove and replace the existing ornamental fence in Shirley McDonald Park impacted by the Project except as otherwise directed by the District. County shall purchase and install new replacement fencing of a type approved by the District to the extent any existing fence removed by the County may not be relocated.
- c. Reconstruct the driveway into the District's maintenance yard not less than 20 feet beyond the new right-of-way line, to ensure a smooth driveway profile. A description of the driveway improvements is set forth on **Exhibit**

"B" and the plans for the new driveway shall be subject to the District's reasonable approval as to location, width and design;

- d. Relocate the Creekside Pool sign within the same parking lot to a location specified by the District.
- e. Design and construct angled parking for the east side of the Creekside Pool parking lot, as shown on **Exhibit "C"**, attached hereto.
- f. Design and install water and wastewater lines to replace all existing District lines in conflict with the Project. All relocation plans and specifications must be approved by the District in advance of construction by the County, and shall be undertaken so as to prevent any disruption in water or sewer service to District customers.
- g. Furnish and install lighting improvements under the new Great Oaks Drive bridge structure of the kind, and at the locations, specified in **Exhibit "D"** attached.
- h. Complete the exterior of the new Great Oaks Drive bridge walls in accordance with **Exhibit "E"**.
- i. Take reasonable steps with the design and construction of the Project so as to preserve the tree more particularly identified in **Exhibit "F"** attached hereto. The District acknowledges that the Project may ultimately result in the death of the tree, in which event the County may remove the tree.
- j. Design and construct a turn lane as depicted on **Exhibit "G"** so as to allow vehicular ingress and egress from the parking area to Brushy Creek Drive.

- k. Furnish and install lighting improvements in the new Project parking lot adjacent to Brushy Creek as generally depicted in Exhibit "H" attached hereto.
- l. Install trail lighting improvements, of a type and at locations to be approved by the District, provided the District pays all costs of acquisition and installation of such lighting. Such lighting shall be served by one or more separate electric meters to be in the District's name. Upon receipt of unit price bids for the lighting improvements, the County shall furnish the bid pricing to the District, and the District will render a final decision as to whether the County shall include the trail lighting in the Project.

All of the foregoing improvements shall be constructed simultaneously with, and as part of, the road improvements that constitute the Project.

- 2. County acknowledges that the existing draft plans for the Project identify the construction of storm sewer line and inlet improvements on the west side of Great Oak Drive generally adjacent to Shirley McDonald Park that would conflict with existing waterline improvements of the District, require the removal of multiple trees, and potentially impact the District's park property. The County agrees to amend the Project plans so as to cause such storm sewer line improvements to be located on the east side of Great Oaks Drive to the maximum extent practicable.
- 3. Notwithstanding any provision herein to the contrary, to the extent that any components of the Project require repair, replacement or relocation of any existing improvements or property owned the District, the final design and completion of such repair(s),

replacement(s) and relocation(s) shall be subject to the approval of the District, which approval shall not be unreasonably withheld or delayed.

4. Simultaneously with the execution of this Agreement, the County shall convey to the District fee simple title to approximately 0.61 acres of real property on the east side of Shirley McDonald Park, as shown in the Deed attached hereto as **Exhibit "H"**.
5. Upon completion of construction, the County shall design, construct, and maintain all Project improvements that are not District property at the County's sole cost and expense.

III.

District Obligations

1. Simultaneously with the execution of this Agreement, the District shall execute that certain Quitclaim Deed in the form attached hereto as **"Exhibit I"** dedicating without warranty the certain real property described therein.
2. District will own, operate, maintain and repair the Creekside Pool parking lot, District trails, signage and other property that is relocated, repaired, replaced or modified by the County in accordance with the terms of this Agreement upon completion of installation by the County, and approval thereof by the District, in accordance with the terms of this Agreement.
3. After acceptance, District will own, operate, maintain and repair all District water and wastewater lines installed by the County as part of the Project. No formal conveyance of facilities shall be required, and upon acceptance by the District, the water and wastewater lines shall be deemed owned by the District for all purposes.
4. In the event the District elects for the Project to include trail lighting, the District shall be responsible for payment of all costs associated with the purchase and installation of trail

lighting, to be determined on a unit price basis, and the District shall be responsible for payment of subsequent electricity costs.

IV.

Miscellaneous

1. Neither the District nor County waives, modifies, or alters to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States with respect to claims brought by third parties. The parties acknowledge that this Agreement constitutes a contract for goods and services for which governmental immunity is waived.
2. This Agreement may not be amended or modified except in writing executed by both the District and Williamson County, and authorized by their respective governing bodies.
3. If any provision of this Agreement shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof, but rather this entire Agreement will be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligation of the Parties shall be constructed and enforced in accordance therewith. The parties acknowledge that if any provision of this Agreement is determined to be invalid or unenforceable, it is their desire and intention that such provision be reformed and construed in such a manner that it will, to the maximum extent practicable, to give effect to the intent of this Agreement and be deemed to be validated and enforceable.
4. This Agreement may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall be considered fully executed as of the date above

first written, when all parties have executed an identical counterpart, notwithstanding that all signatures may not appear on the same counterpart.

5. This Agreement shall commence upon execution of this Agreement and shall end upon the completion of the Project and acceptance of the public improvements by District. The Parties acknowledge that the Project could take considerable time to design and construct, due to the environmentally sensitive areas within the Project footprint. If the Project has not been constructed and opened to the public within five (5) years after the Effective Date, the District and/or the County reserves the right to terminate this Agreement.
6. The Effective Date of this Agreement shall be on the date the last Party signs this Agreement.
7. Each Party, in the performance of this Agreement, shall act in an individual capacity and not as agents, employees, partners, joint ventures or associates of one another. The employees or agents of one Party shall not be deemed or construed to be the employees or agents of the other Party for any purpose.

(signatures on following page)

IN WITNESS WHEREOF, the Parties have executed and attested this Agreement by
their officers thereunto duly authorized.

WILLIAMSON COUNTY

By: Bill Gravell Jr.
Bill Gravell Jr, County Judge

Attest:

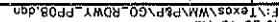
Nancy E. Rister
Nancy Rister, County Clerk

BRUSHY CREEK MUNICIPAL UTILITY
DISTRICT

By: [Signature]
Its: _____

[Signature]
District Secretary

Exhibit "A"



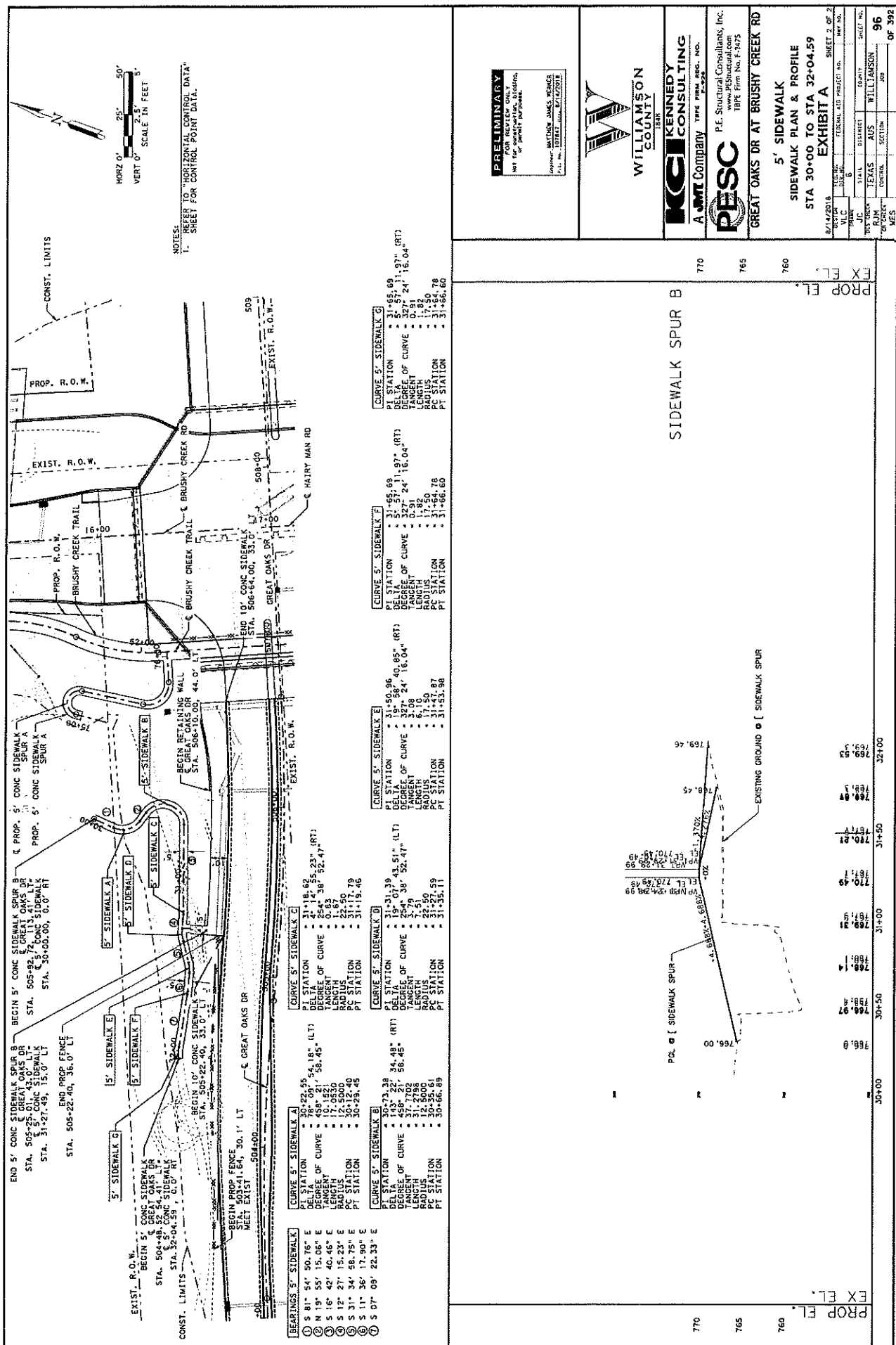
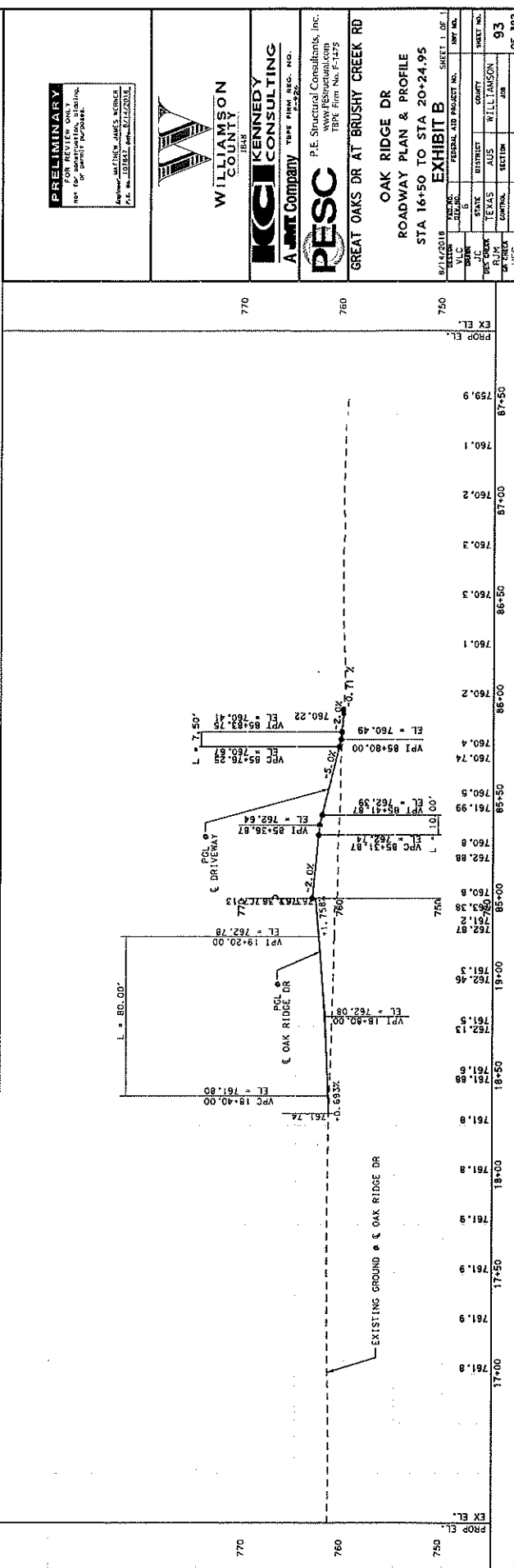


Exhibit "B"



PRELIMINARY
FOR REVIEW ONLY
Not for construction, bidding,
or permit purposes.

Engineer WARFENOW JAMES MCNER
P.E. no. 107847 exp. 01/14/2018



WILLIAMSON
COUNTY

KCI KENNEDY CONSULTING
A FULL COMPANY TYPE FIRM REG. NO.

PESC
P.E. Structural Consultants, Inc.
www.PEStructural.com
IRPC Firm No. 5-1475

GREAT OAKS DR AT BRUSHY CREEK RD
OAK RIDGE DR
ROADWAY PLAN & PROFILE
STA 16+50 TO STA 20+24.95

DESIGN	FEDERAL AID PROJECT NO.	SHEET 1 OF 1
DRAWN		
VLC	COUNTY	SHEET NO.
JC	DISTRICT	93
LESS CHECKS	AUS	WILLIAMSON
RJM	SECTION	JOB
CHECK		

Exhibit "C"

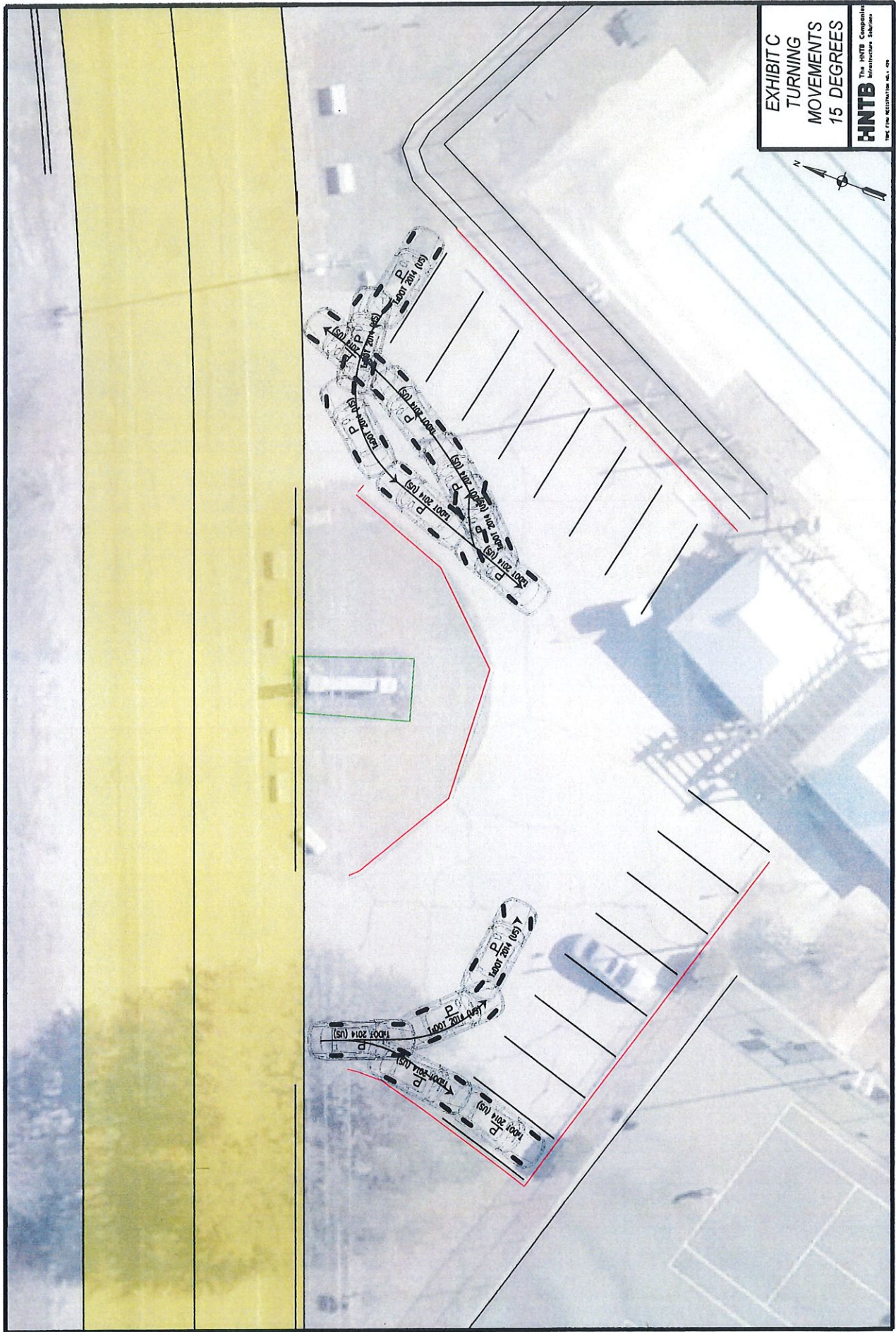


EXHIBIT C
TURNING
MOVEMENTS
15 DEGREES

HNTB The HNTB Corporation
Infrastructure Solutions
ONE ONE EIGHTY-THREE AVENUE, SUITE 200

Exhibit "D"



Exhibit "E"

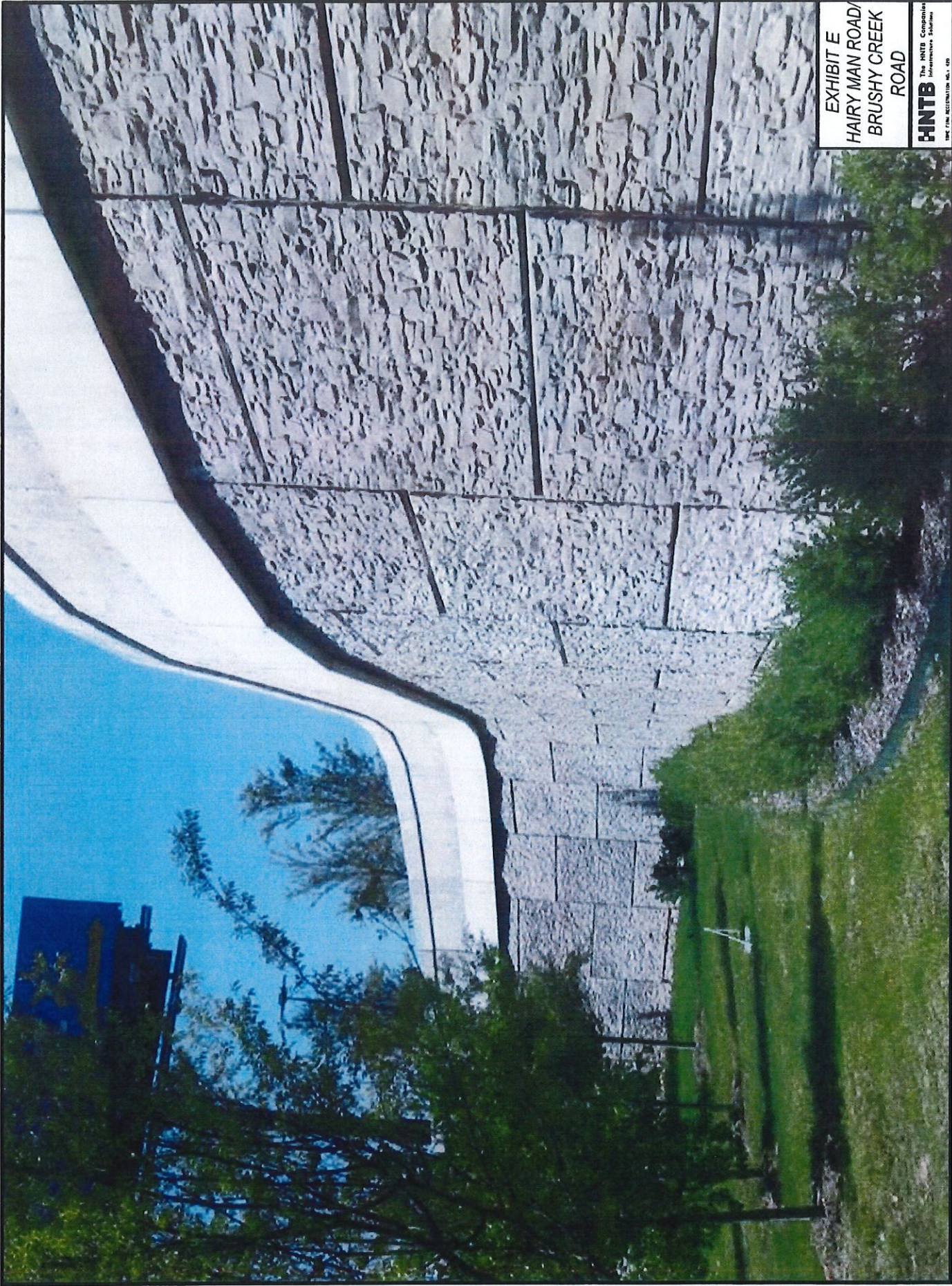


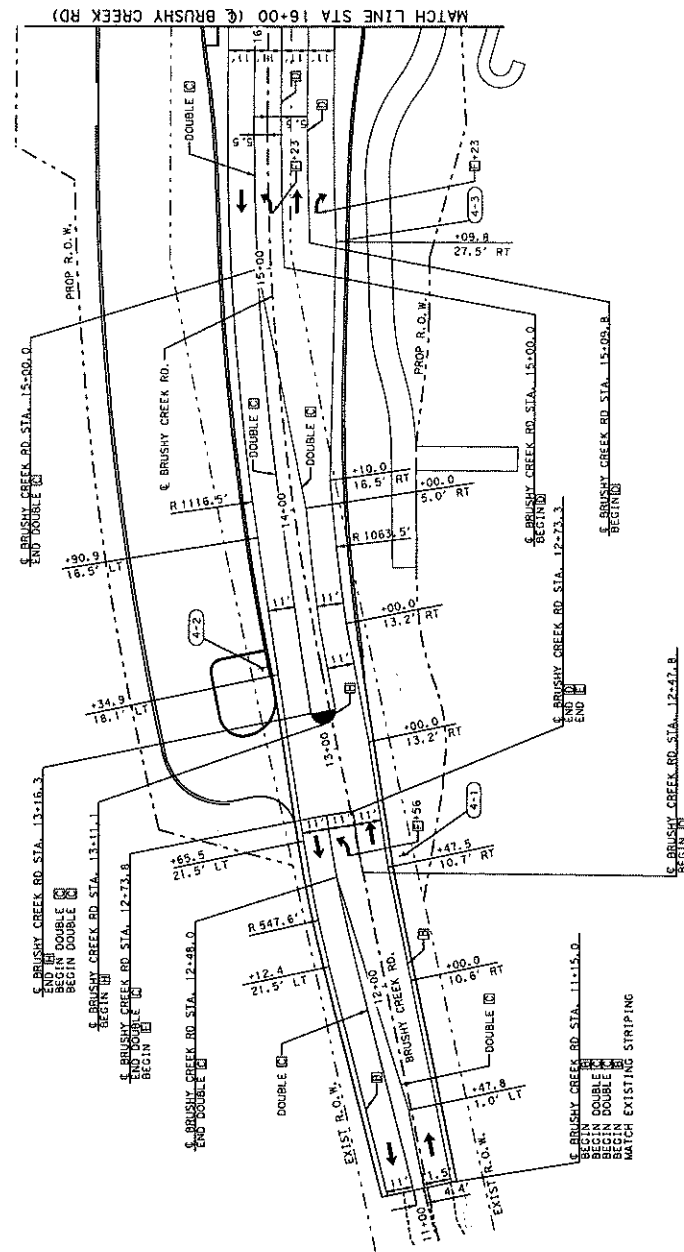
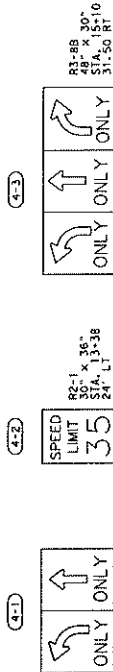
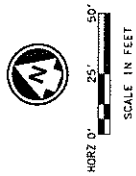
EXHIBIT E
HAIRY MAN ROAD/
BRUSHY CREEK
ROAD

HNTB
The HNTB Companies
Infrastructure • Buildings
1947 FIVE AVE. SUITE 1000, WASHINGTON, D.C. 20004

Exhibit "F"



Exhibit "G"



LEGEND

- RE PM W/RET REQ TY 1 (W) 4" (BRK) (090MIL)
- RE PM W/RET REQ TY 1 (W) 4" (SLD) (090MIL)
- RE PM W/RET REQ TY 1 (Y) 4" (SLD) (090MIL)
- RE PM W/RET REQ TY 1 (W) 12" (SLD) (090MIL)
- RE PM W/RET REQ TY 1 (W) 24" (SLD) (090MIL)
- RE PM TY 1 (W) (ASPH) (090MIL)
- RE PM TY 1 (W) (SLD) (090MIL)
- RE PM TY 1 (Y) (ISLAND) (090MIL)
- RE PM TY 1 (Y) (ISLAND) (090MIL)
- PROPOSED SIGN
- RELOCATE EXIST SIGN

NOTES:

- ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND SHOWN FOR INFORMATION ONLY. ACCURATE SITE CONDITIONS AS APPROVED.



WILLIAMSON COUNTY

KENNEDY CONSULTING

A J M Company TAPE FIRM REG. NO. 1-392

P.E. Structural Consultants, Inc. www.pescinc.com T&E Firm No. F-1425

PESC

GREAT OAKS DR AT BRUSHY CREEK RD

SIGN & PAYMENT MARKING PLAN

BRUSHY CREEK ROAD

BEGIN PROJECT TO STA 16+00

EXHIBIT G

5/16/2019 SHEET 1 OF 1

DATE	PROJECT NO.	SHEET NO.
5/16/2019	16-00	315
STATE	DISTRICT	CONTRACT
TEXAS	AJIS	WILLIAMSON
SECTION	SUBSECTION	SECTION
SECTION	SECTION	SECTION

Exhibit "H"

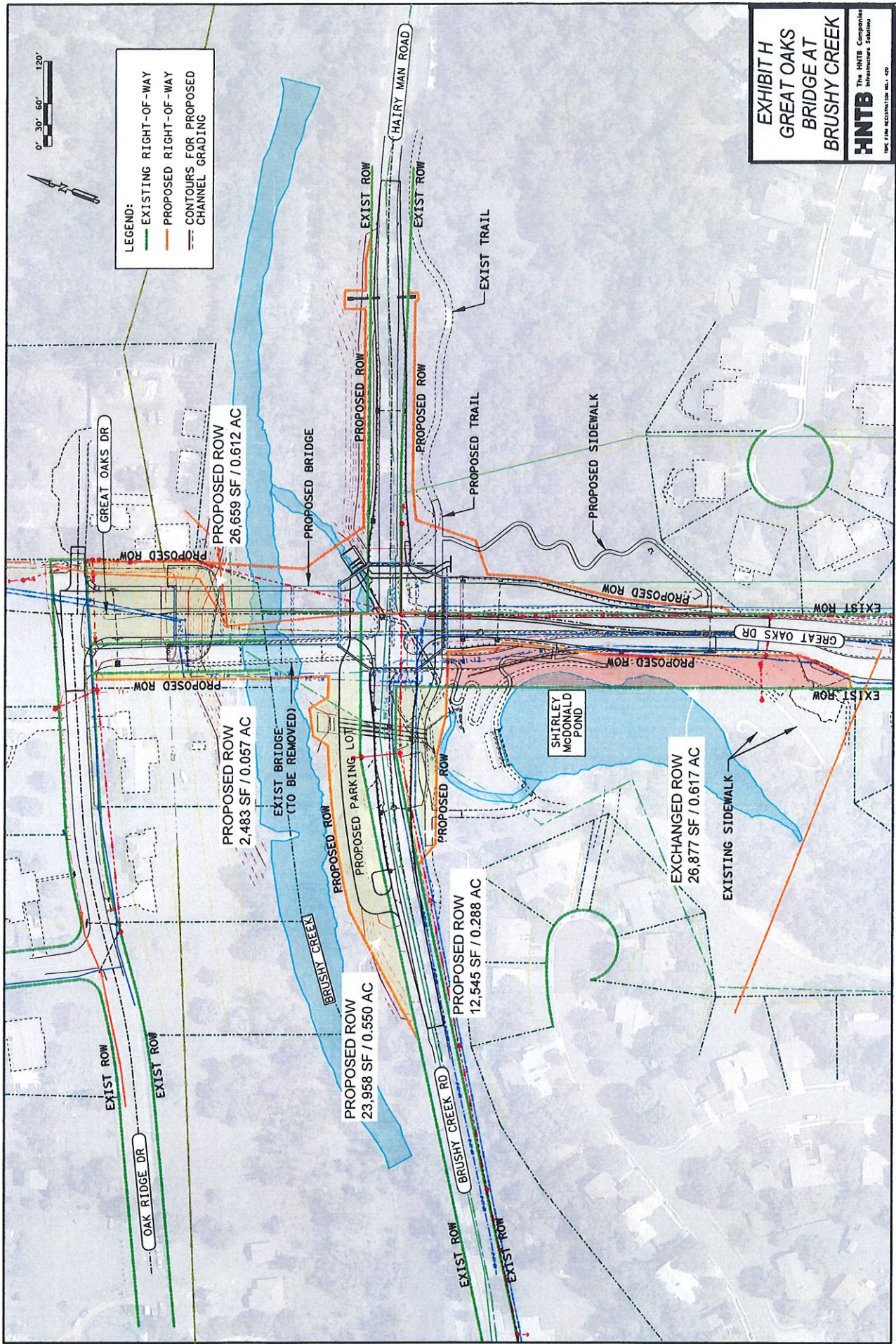
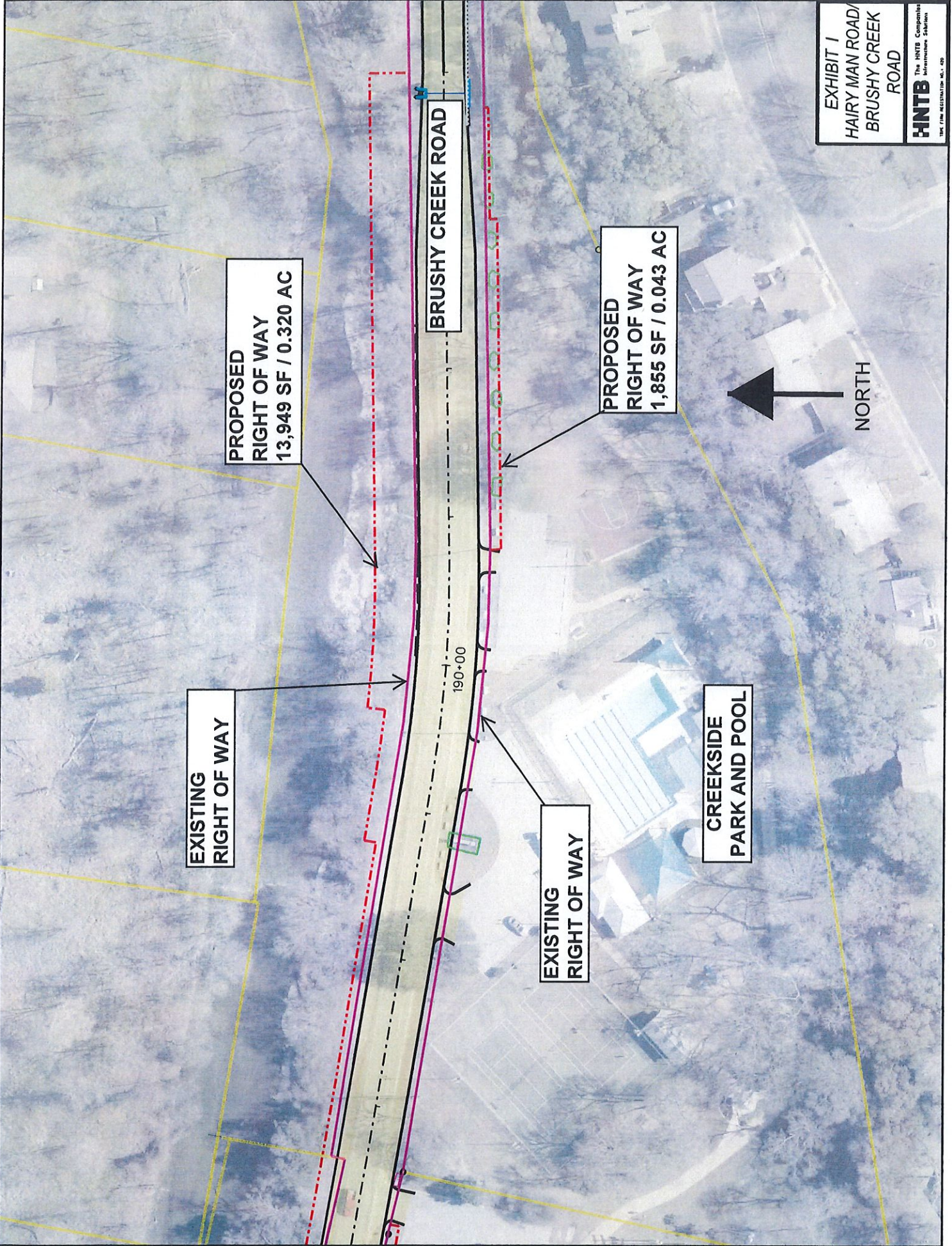


Exhibit "I"



EXISTING
RIGHT OF WAY

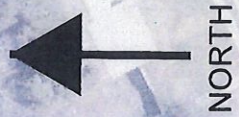
PROPOSED
RIGHT OF WAY
13,949 SF / 0.320 AC

BRUSHY CREEK ROAD

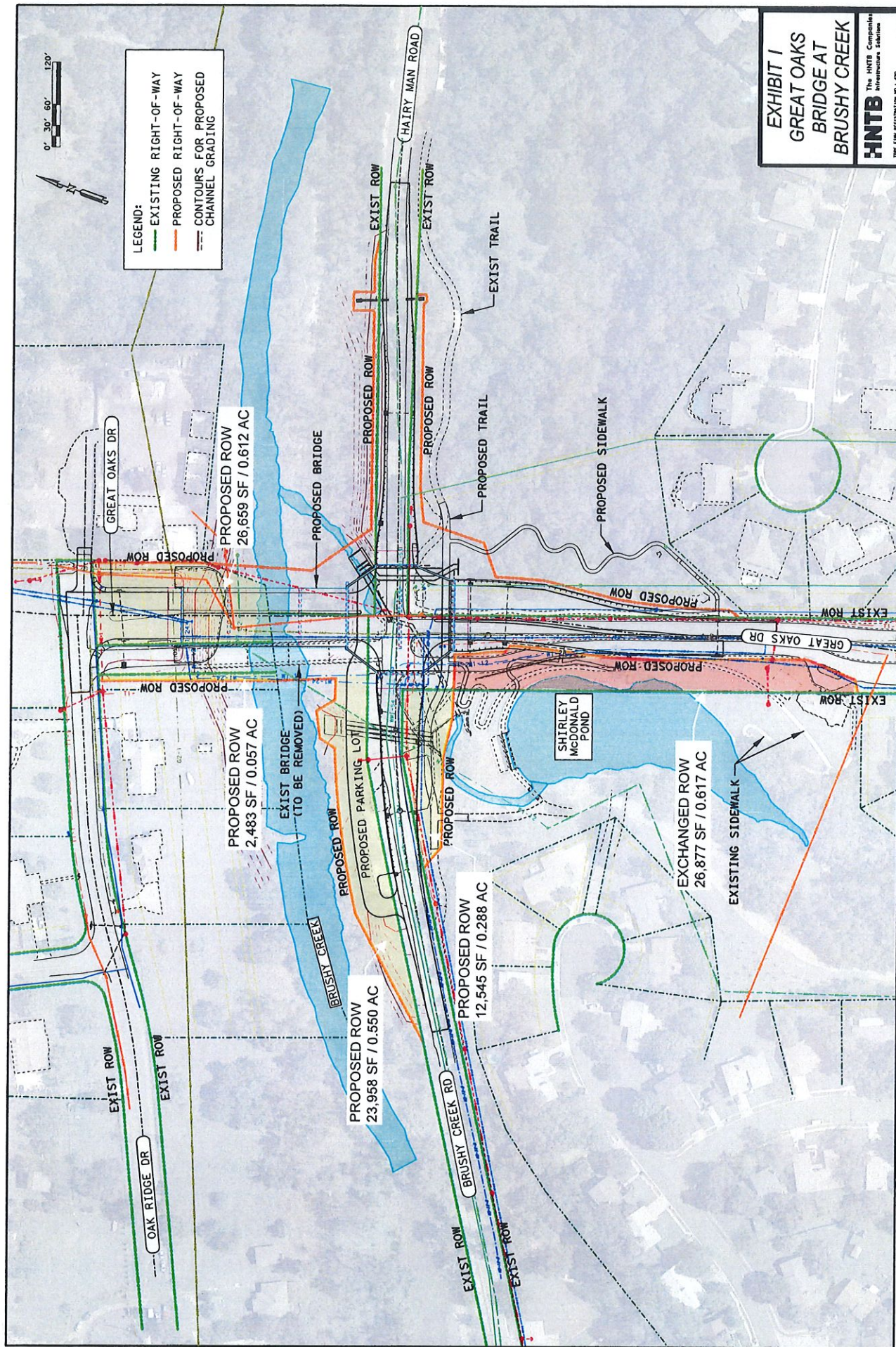
EXISTING
RIGHT OF WAY

PROPOSED
RIGHT OF WAY
1,855 SF / 0.043 AC

CREEKSIDE
PARK AND POOL



190+00



Fern Bluff Municipal Utility District
7320 Wyoming Springs Drive
Round Rock, TX 78681

October 18, 2019

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
12100 Park 35 Circle, Building A
Austin, Texas 78753

Re: Williamson County - Hairy Man Road Project

To Whom It May Concern:

I Rebecca Jane Miller, on behalf of the Fern Bluff Municipal Utility District, the Owner of tracts of 0.050 Acres, 0.251 Acres, 0.625 Acres, 0.055 Acres platted as Tract of the John H. Dillard Survey, Abstract No. 179, Document No. 9551845 of the Official records of Williamson County, Texas being a portion of tract of land conveyed to Fern Bluff Municipal Utility District, do hereby authorize Williamson County being the applicant for a TCEQ Contributing Zone Plan application filed for the referenced properties, to perform regulated activities related to said Permit including permitting, constructing, operating and maintaining temporary and permanent water quality controls, in accordance with said Permit, upon approval by TCEQ.

Sincerely,

Rebecca Jane Miller, General Manager

THE STATE OF Texas §

County of Williamson §

BEFORE ME, the undersigned authority, on this day personally appeared Rebecca Jane Miller 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 21st day of October, 2019.



[Signature]
NOTARY PUBLIC

Ryan Coleman
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 08/27/2022

METES AND BOUNDS DESCRIPTION

ROW PARCEL N38 – PART 1

BEING A 0.050 ACRE (2,169 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT "E") CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, RECORDED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS. SAID 0.050 ACRE TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 1/2" iron rod found (Grid Coordinates: N=10162555.31, E=3112638.00) monumenting the northeast corner of Lot 26, Brushy Bend Park a subdivision recorded in Cabinet B, Slides 311-315 of the Plat Records of Williamson County, Texas, and the southeast corner of Lot 25 of said Brushy Bend Park, from which an iron rod found with cap marked "Survtex" monumenting the northwest corner of Lot 3, Block A, Hidden Trails a subdivision recorded in Document No. 2014046834 of the Official Public Records of Williamson County, Texas, same being the southwest corner of Oak Ridge Drive (50' right-of-way width) as shown on said Hidden Trails final plat, bears S 87°51'24" E for a distance of 1.34 feet;

THENCE, S 20°38'55" E with the east boundary line of said Lot 26 and through the interior of said 3.233 acre Fern Bluff Municipal Utility District tract, passing at a distance of 331.99 feet a 1/2" iron rod found witnessing the southeast corner of said Lot 26, passing at a distance of 381.04 feet a calculated point on the southeast corner of said Lot 26, same being on the north boundary line of said 3.233 acre Fern Bluff Municipal Utility District tract, in all a total distance of 456.17 feet to a calculated point on the south boundary line of said 3.233 acre Municipal Utility District tract, same being on the curving north right-of-way line of Hairy Man Road;

THENCE, with said south boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and said north right-of-way line of Hairy Man Road with a curve to the left an arc length of 352.76 feet, said curve having a radius of 3075.06 feet, a delta angle of 06°34'22" and a chord which bears N 78°16'51" E for a distance of 352.57 feet to a 1/2" iron rod set with cap marked "Diamond Surveying" point (Grid Coordinates: N=10162200.10, E=3113144.02) for the southwest corner and **POINT OF BEGINNING** hereof;

THENCE, through the interior of said 3.233 acre Fern Bluff Municipal Utility District tract, the following two (2) courses and distances:

1. **N 19°13'14" W** for a distance of **3.93 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" for the northwest corner hereof;
2. With a curve to the left an arc length of **210.72 feet**, said curve having a radius of **7470.00 feet**, a delta angle of **01°36'59"** and a chord which bears **N 69°58'17" E** for a distance of **210.72 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on the east boundary line of said 3.233 acre Fern Bluff Municipal Utility District tract and the west boundary line of the called 2.957 acre tract of land conveyed to Brushy Creek Municipal Utility District, recorded in Document No. 2018064115 of the Official Public Records of Williamson County, Texas, for the northeast corner hereof;

THENCE, **S 20°55'00" E** with said east boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and said west boundary line of the 2.957 acre Brushy Creek Municipal Utility District tract for a distance of **5.86 feet** to a calculated point on the northwest corner of a 10' wide right-of-way dedication as shown on Brushy Creek Subdivision, Section One, a subdivision recorded in Cabinet C, Slides 310-315 of the Plat Records of Williamson County, Texas, same being the northwest corner of the 50' right-of-way as shown on said Brushy Creek Subdivision, Section One;

THENCE, **S 18°26'44" E** with said east boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and the west boundary line of said 10' wide right-of-way dedication for a distance of **9.64 feet** to a calculated point on the southeast corner of said 3.233 acre Fern Bluff Municipal Utility District tract and said north right-of-way line of Hairy Man Road, for the southeast corner hereof, from which a 3/8" iron rod found monumenting the northwest corner of the Park Reserve as shown on said Brushy Creek Subdivision, Section One and the northeast corner of the called 32.709 acre tract of land (Exhibit "D") conveyed to Fern Bluff Municipal Utility District, recorded in said Document No. 9551845, same being on the south right-of-way line of Hairy Man Road, bears **S 18°26'26" E** for a distance of 40.43 feet;

THENCE, with said south boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and said north right-of-way line of Hairy Man Road the following two (2) courses and distances:

1. **S 71°52'56" W** for a distance of **43.92 feet** to a calculated point on the beginning of a curve to the right;
2. With said curve to the right an arc length of **167.02 feet**, said curve having a radius of **3075.06 feet**, a delta angle of **03°06'43"** and a chord which bears **S 73°26'18" W** for a distance of **167.00 feet** to the **POINT OF BEGINNING** hereof and containing 0.050 acre of land more or less.

ROW PARCEL N38 – PART 2

BEING A 0.251 ACRE (10,941 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT "E") CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, RECORDED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS. SAID 0.251 ACRE TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 3/8" iron rod found (Grid Coordinates: N=10162360.56, E=3111464.17) monumenting the most westerly northwest corner of Lot 33, Brushy Bend Park, a subdivision recorded in Cabinet B, Slides 311-315 of the Plat Records of Williamson County, Texas, same being on the east right-of-way line of Walsh Drive (50' right-of-way width), from which a 1/2" iron rod found monumenting the most easterly northeast corner of Lot 34 of said Brushy Bend Park, same being on the west right-of-way line of Walsh Drive, bears S 81°46'38" W for a distance of 50.06 feet;

THENCE, S 08°12'15" E with the west boundary line of said Lot 33 and said east right-of-way line of Walsh Drive and through the interior of said 3.233 acre Fern Bluff Municipal Utility District tract, passing at a distance of 256.69 feet a 1/2" iron rod found witnessing the southwest corner of said Lot 33, passing at a distance of 320.60 the calculated southwest corner of said Lot 33, same being on the north boundary line of said 3.233 acre Fern Bluff Municipal Utility District tract, in all a total distance of 379.36 feet to a calculated point on the south boundary line of said 3.233 acre Fern Bluff Municipal Utility District tract, same being on the north right-of-way line of Hairy Man Road;

THENCE, N 84°53'46" E with said south boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and said north right-of-way line of Hairy Man Road for a distance of 279.77 feet to a 1/2" iron rod set with cap marked "Diamond Surveying" (Grid Coordinates: N=10162010.01, E=3111796.92) for the southwest corner and **POINT OF BEGINNING** hereof;

THENCE, through the interior of said 3.233 acre Fern Bluff Municipal Utility District tract, the following fourteen (14) courses and distances:

1. **N 04°45'45" W** for a distance of **15.12 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" for the northwest corner hereof;


2. **N 85°14'15" E** for a distance of **16.27 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on the beginning of a curve to the right;
3. With said curve to the right an arc length of **86.74 feet**, said curve having a radius of **10030.00 feet**, a delta angle of **00°29'44"** and a chord which bears **N 85°29'07" E** for a distance of **86.74 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on the end of this curve;
4. **N 85°43'59" E** for a distance of **195.57 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying";
5. **N 04°16'01" W** for a distance of **7.00 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying";
6. With a curve to the left an arc length of **98.92 feet**, said curve having a radius of **4963.00 feet**, a delta angle of **01°08'31"** and a chord which bears **N 85°09'43" E** for a distance of **98.92 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on the end of this curve;
7. **N 84°35'27" E** for a distance of **67.18 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying";
8. **N 05°24'33" W** for a distance of **13.00 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying";
9. **N 84°35'27" E** for a distance of **119.85 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying";
10. **S 05°24'33" E** for a distance of **7.00 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying";
11. **N 84°35'27" E** for a distance of **21.89 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on the beginning of a curve to the left;
12. With said curve to the left an arc length of **149.53 feet**, said curve having a radius of **4957.00 feet**, a delta angle of **01°43'42"** and a chord which bears **N 83°43'36" E** for a distance of **149.53 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on the end of this curve;
13. **N 82°51'45" E** for a distance of **182.28 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" for the northeast corner hereof;

14. **S 07°08'15" E** for a distance of **8.85 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying" on said south boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and said north right-of-way line of Hairy Man Road, from which a 1/2" iron rod found monumenting the northeast corner of Lot 26 and the southeast corner of Lot 25 of said Brushy Bend Park, bears N 82°13'15" E for a distance of 70.16 feet and N 20°38'55" W for a distance of 456.17 feet;

THENCE, with said south boundary line of the 3.233 acre Fern Bluff Municipal Utility District tract and said north right-of-way line of Hairy Man Road, the following three (3) courses and distances:

1. With a curve to the right an arc length of **8.16 feet**, said curve having a radius of **3075.06 feet**, a delta angle of **00°09'07"** and a chord which bears **S 82°57'02" W** for a distance of **8.16 feet** to a calculated point on the end of this curve;
2. **S 83°00'37" W** for a distance of **769.71 feet** to a calculated point;
3. **S 84°53'46" W** for a distance of **161.07 feet** to the **POINT OF BEGINNING** hereof and containing 0.251 acre of land more or less.

Bearing Basis: NAD-83, Texas Central Zone (4203) State Plane System. Distances shown hereon are surface distances based on a combined surface adjustment factor or 1.00011

 **DIAMOND SURVEYING, INC.**
116 SKYLINE ROAD, GEORGETOWN, TX 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900



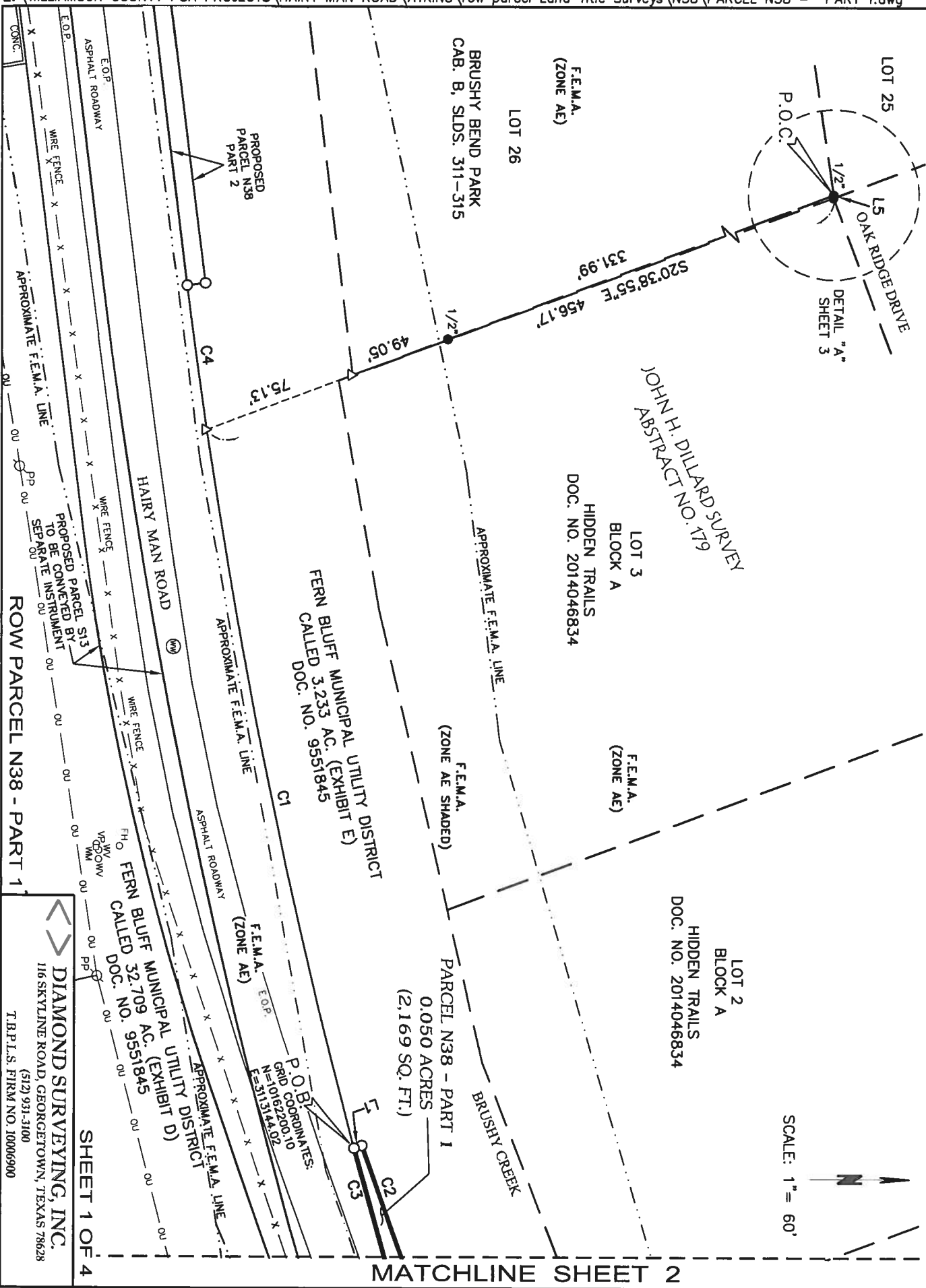
January 11, 2019

SHANE SHAFER, R.P.L.S. NO. 5281

DATE



DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.050 ACRE (2,169 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



ROW PARCEL N38 - PART 1

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

SHEET 1 OF 4

(A) FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 3.233 AC. (EXHIBIT E)
DOC. NO. 9551845

PHILLIP ANDREW TRIPP
CALLED 2.30 AC.
DOC. NO. 2004096612

HIDDEN TRAILS
DOC. NO. 2014046834

LOT 1

F.E.M.A.
(ZONE AE)

APPROXIMATE F.E.M.A. LINE

SCALE: 1" = 60'



JOHN H. DILLARD SURVEY
ABSTRACT NO. 179

BRUSHY CREEK

F.E.M.A.
E AE SHADED)

PROPOSED PARCEL N-41
TO BE CONVEYED BY
SEPARATE INSTRUMENT

BRUSHY CREEK
MUNICIPAL UTILITY DISTRICT
CALLED 2:55 P.M.
DOC. NO. 20180894115

PARCEL N38 - PART 1
0.050 ACRES
(2,169 SQ. FT.)

HAIRY MAN ROAD

APPROXIMATE DEDICATION
S.D. 310

E.O.P.
E.F.E.M.A. LINE

— PARK RESERVE —
BRUSHY CREEK SUBDIVISION
SECTION ONE
CAB. C. SLDS. 310-315

F.E.M.A.
(ZONE X SHADED)

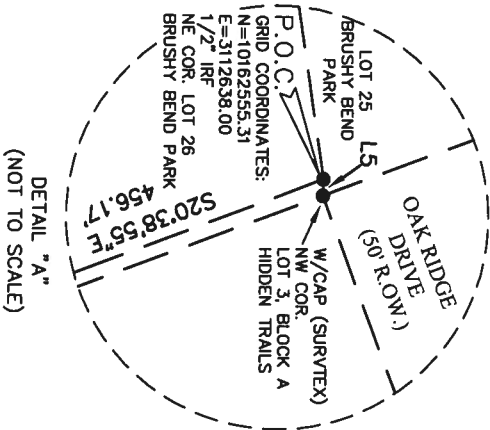
SHEET 2 OF 4

ROW PARCEL N38 - PART 1

<> DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78626
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

T.B.P.I.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.050 ACRE (2,169 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



DETAIL "A"
(NOT TO SCALE)

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N19°13'14"W	3.93'
L2	S20°55'00"E	5.86'
L3	S18°26'44"E	9.64'
L4	S71°52'56"W	43.92'
L5	S87°51'24"E	1.34'
L6	S18°26'26"E	40.43'

CURVE TABLE				
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING
C1	3075.06'	352.76'	06°34'22"	N78°16'51"E
C2	7470.00'	210.72'	01°36'59"	N69°58'17"E
C3	3075.06'	167.02'	03°06'43"	S73°26'18"W
C4	3075.06'	70.17'	01°18'26"	S82°13'15"W

LEGEND

- IRON ROD FOUND
- ⊙ 1/2" IRON ROD W/CAP SET MARKED "DIAMOND SURVEYING"
- Δ CALCULATED POINT
- ⊕ SIGN
- ⊕^{PP} POWER POLE
- ⊕ GUY ANCHOR
- ⊕^{WP} WOOD POST
- ⊕^{FH} FIRE HYDRANT
- ⊕^{WM} WATER METER
- ⊕^{WV} WATER VALVE
- ⊕^{VP} VENT PIPE
- x WIRE FENCE
- o CHAIN LINK FENCE
- - - - - APPROXIMATE F.E.M.A. LINE
- - - - - APPROXIMATE B.F.E. LINE
- CONC. CONCRETE
- E.O.P. EDGE OF PAVEMENT
- P.O.C. POINT OF COMMENCEMENT
- P.O.B. POINT OF BEGINNING
- F.E.M.A. FEDERAL EMERGENCY MANAGEMENT AGENCY
- B.F.E. F.E.M.A. BASE FLOOD ELEVATION

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.050 ACRE (2,169 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.

TITLE COMMITMENT NOTES:

Only those easements and restrictions listed in Schedule B of Title Resources Guaranty Company, Commitment for Title Insurance GF No. 1832021-KFD, which bears an effective date of August 2, 2018 and an issued date of August 14, 2018 were reviewed by the Surveyor. No other easement record research was performed by Diamond Surveying, Inc.

Restrictive covenants of record in Volume 1568, Page 184 and Volume 2344, Page 803, Official Records of Williamson County, Texas and Document No. 2004029826, Official Public Records of Williamson County, Texas. The subject tract is a part of the Property described in said documents.

10a) Notice regarding Waiver of Special Appraisal, recorded in Volume 1946, Page 272, Official Records of Williamson County, Texas. Not a survey matter.

10b) Terms, Conditions, and Stipulations in the Agreement, recorded in Volume 2361, Page 459, Official Records of Williamson County, Texas. Subject tract is a part of the property described in Exhibit 'A' of said document.

GENERAL NOTES:

1) ALL DOCUMENTS LISTED HEREON ARE RECORDED IN THE OFFICE OF THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.

2) BEARING BASIS: NAD-83, TEXAS CENTRAL (4203) STATE PLANE SYSTEM.
DISTANCES SHOWN HEREON ARE SURFACE DISTANCES BASED ON A COMBINED SURFACE ADJUSTMENT FACTOR OF 1.00011.

3) THE TRACT SHOWN HEREON LIES WITHIN ZONE 'AE', SHADED (THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS) ACCORDING TO F.E.M.A. FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0490E, DATED SEPTEMBER 26, 2008.

THE F.E.M.A. FLOOD LINES SHOWN HEREON ARE APPROXIMATE BY GRAPHIC PLOTTING ONLY AND WERE SCALED FROM THE ABOVE REFERENCED FLOOD INSURANCE RATE MAP. THE SURVEYOR MAKES NO ASSURANCE AS TO THE ACCURACY OF THE DELINEATIONS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS.

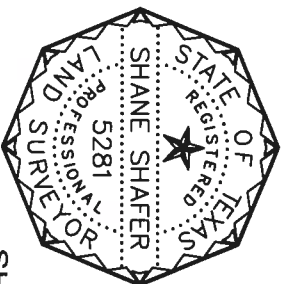
To: Williamson County, Texas and Title Resources Guaranty Company, exclusively.

I, Shane Shafer, Registered Professional Land Surveyor in the State of Texas, hereby certify that this drawing represents a survey made on the ground under my direct supervision completed on July 30, 2018. At the time of this survey there were no encroachments, conflicts or protrusions apparent on the ground, EXCEPT AS SHOWN. This survey substantially complies with the standards for a Category 1a, Condition III Land Title Survey per the current Manual of Practice for Land Surveying in the State of Texas, issued by the Texas Society of Professional Surveyors. USE OF THIS SURVEY BY OTHER PARTIES SHALL BE AT THEIR OWN RISK AND UNDERDESIGNED SURVEYOR IS NOT RESPONSIBLE FOR ANY LOSS RESULTING THEREFROM.

Shane Shafer
SHANE SHAFER, R.P.L.S. NO. 5281

JANUARY 11, 2019
DATE

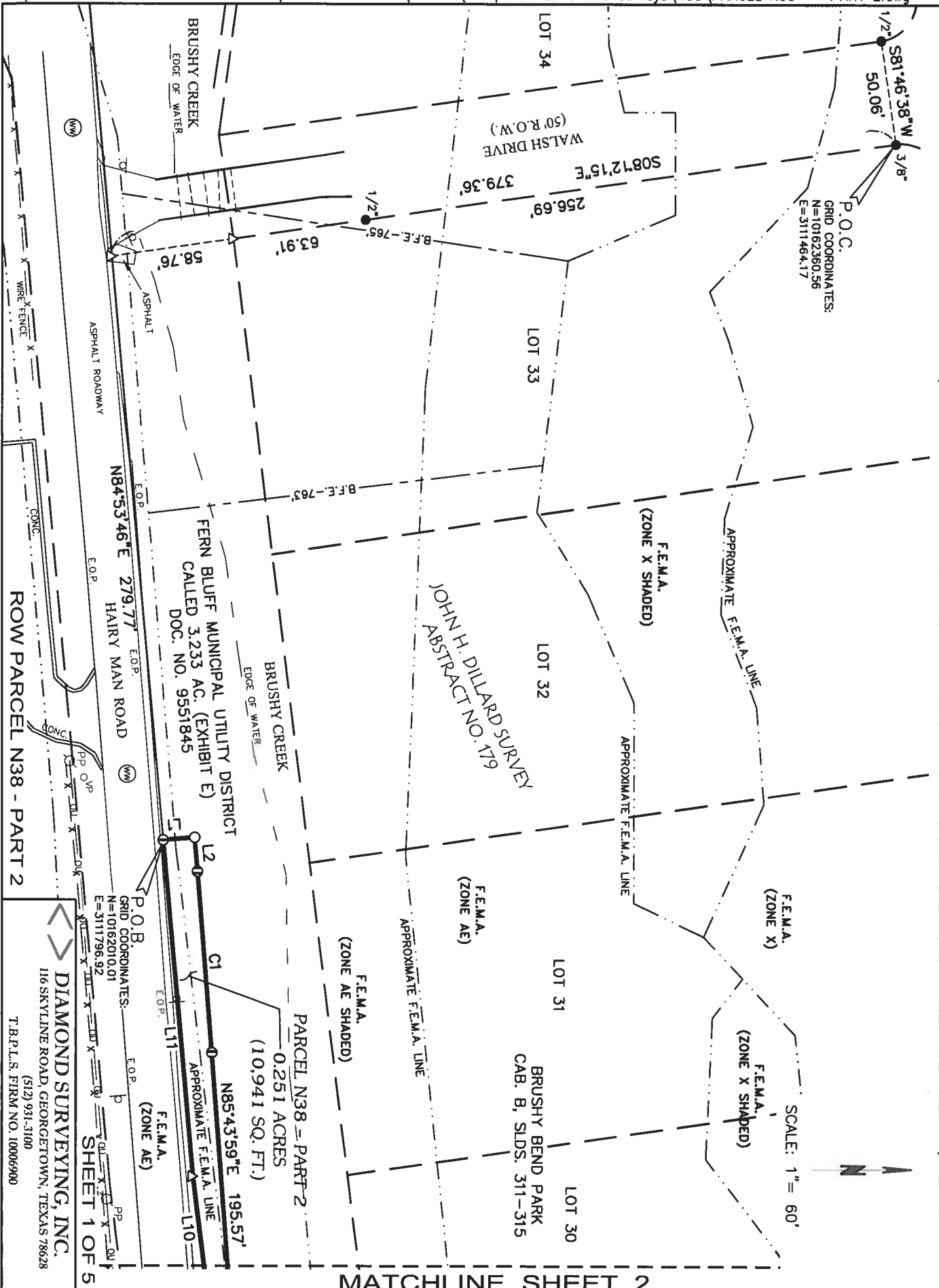
ROW PARCEL N38 - PART 1



SHEET 4 OF 4

<> DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.251 ACRE (10,941 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.

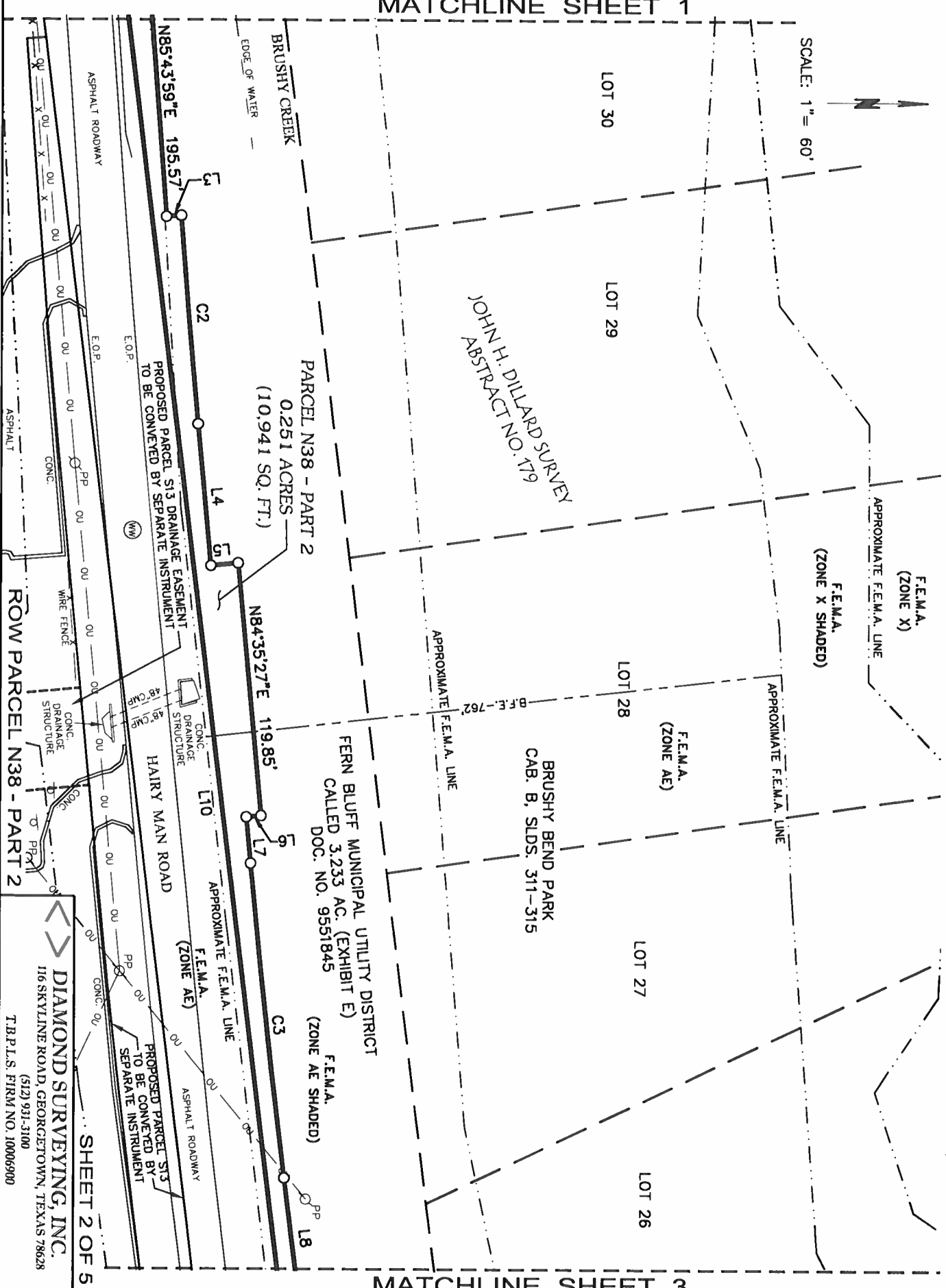


MATCHLINE SHEET 2

MATCHLINE SHEET 1

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.251 ACRE (10,941 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.

SCALE: 1" = 60'

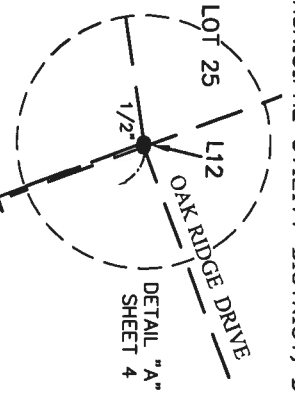


MATCHLINE SHEET 3

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
TABLS. FIRM NO. 10006900

MATCHLINE SHEET 2

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.251 ACRE (10,941 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



SCALE: 1" = 60'

JOHN H. DILLARD SURVEY
ABSTRACT NO. 179

F.E.M.A.
(ZONE AE)

LOT 26

BRUSHY BEND PARK
CAB. B. SLDS. 311-315

LOT 3
BLOCK A
HIDDEN TRAILS
DOC. NO. 2014046834

F.E.M.A.
(ZONE AE)

LOT 2
BLOCK A
HIDDEN TRAILS
DOC. NO. 2014046834

F.E.M.A.
(ZONE AE SHADED)

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 3.233 AC. (EXHIBIT E)
DOC. NO. 9551845

PARCEL N38 - PART 2
0.251 ACRES
(10,941 SQ. FT.)

L8
L10
C4
C5

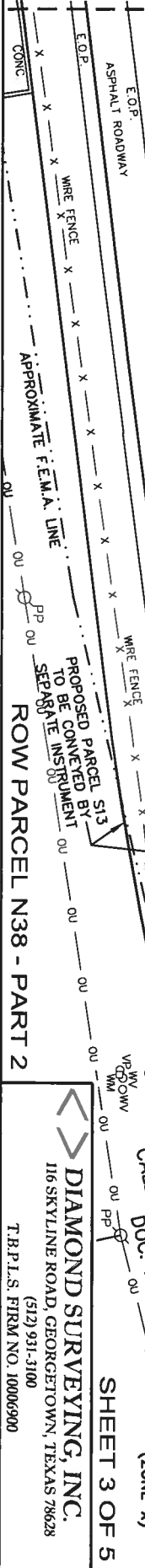
HAIRY MAN ROAD

PROPOSED
PARCEL N38
PART 1

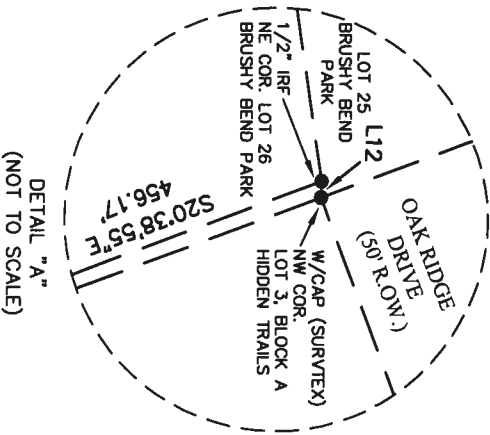
SHEET 3 OF 5

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

ROW PARCEL N38 - PART 2



DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.251 ACRE (10,941 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



DETAIL "A"
(NOT TO SCALE)

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N04°45'45"W	15.12'
L2	N85°14'15"E	16.27'
L3	N04°16'01"W	7.00'
L4	N84°35'27"E	67.18'
L5	N05°24'33"W	13.00'
L6	S05°24'33"E	7.00'
L7	N84°35'27"E	21.89'
L8	N82°51'45"E	182.28'
L9	S07°08'15"E	8.85'
L10	S83°00'37"W	769.71'
L11	S84°53'46"W	161.07'
L12	S87°51'24"E	1.34'

CURVE TABLE				
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING
C1	10030.00'	86.74'	00°29'44"	N85°29'07"E
C2	4963.00'	98.92'	01°08'31"	N85°09'43"E
C3	4957.00'	149.53'	01°43'42"	N83°43'36"E
C4	3075.06'	8.16'	00°09'07"	S82°57'02"W
C5	3075.06'	70.17'	01°18'26"	N82°13'15"E
C6	3075.06'	519.78'	09°41'05"	N76°43'29"E

LEGEND

- IRON ROD FOUND
- 1/2" IRON ROD W/CAP SET MARKED "DIAMOND SURVEYING"
- △ CALCULATED POINT
- ▽ SIGN
- ⊙ WASTEWATER MANHOLE
- ⊙^{PP} POWER POLE
- ⊙ GUY ANCHOR
- ⊙^{FH} FIRE HYDRANT
- ⊙^{WV} WATER VALVE
- ⊙^{WM} WATER METER
- ⊙^{VP} VENT PIPE
- x WIRE FENCE
- ou — OVERHEAD UTILITIES
- - - - - APPROXIMATE F.E.M.A. LINE
- - - - - APPROXIMATE B.F.E. LINE
- CONC. CONCRETE
- E.O.P. EDGE OF PAVEMENT
- CMP CORRUGATED METAL PIPE
- P.O.C. POINT OF COMMENCEMENT
- P.O.B. POINT OF BEGINNING
- F.E.M.A. FEDERAL EMERGENCY MANAGEMENT AGENCY
- B.F.E. F.E.M.A. BASE FLOOD ELEVATION

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.251 ACRE (10,941 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 3.233 ACRE TRACT OF LAND (EXHIBIT E), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.

TITLE COMMITMENT NOTES:

Only those easements and restrictions listed in Schedule B of Title Resources Guaranty Company, Commitment for Title Insurance GF No. 1832021-KFD, which bears an effective date of August 2, 2018 and an issued date of August 14, 2018 were reviewed by the Surveyor. No other easement record research was performed by Diamond Surveying, Inc.

Restrictive covenants of record in Volume 1568, Page 184 and Volume 2344, Page 803, Official Records of Williamson County, Texas and Document No. 2004029826, Official Public Records of Williamson County, Texas. The subject tract is a part of the Property described in said documents.

10a) Notice regarding Waiver of Special Appraisal, recorded in Volume 1946, Page 272, Official Records of Williamson County, Texas. Not a survey matter.

10b) Terms, Conditions, and Stipulations in the Agreement, recorded in Volume 2361, Page 459, Official Records of Williamson County, Texas. Subject tract is a part of the Property described in Exhibit 'A' of said document.

GENERAL NOTES:

1) ALL DOCUMENTS LISTED HEREON ARE RECORDED IN THE OFFICE OF THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.

2) BEARING BASIS: NAD-83, TEXAS CENTRAL (4203) STATE PLANE SYSTEM. DISTANCES SHOWN HEREON ARE SURFACE DISTANCES BASED ON A COMBINED SURFACE ADJUSTMENT FACTOR OF 1.00011.

3) THE TRACT SHOWN HEREON LIES WITHIN ZONE 'AE', BASE FLOOD ELEVATION DETERMINED, AND ZONE 'AE' SHADED (THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS) ACCORDING TO F.E.M.A. FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0490E, DATED SEPTEMBER 26, 2008.

THE F.E.M.A. FLOOD LINES SHOWN HEREON ARE APPROXIMATE BY GRAPHIC PLOTTING ONLY AND WERE SCALED FROM THE ABOVE REFERENCED FLOOD INSURANCE RATE MAP. THE SURVEYOR MAKES NO ASSURANCE AS TO THE ACCURACY OF THE DELINEATIONS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS.

To: Williamson County, Texas and Title Resources Guaranty Company, exclusively.

I, Shane Shafer, Registered Professional Land Surveyor in the State of Texas, hereby certify that this drawing represents a survey made on the ground under my direct supervision completed on August 8, 2018. At the time of this survey there were no encroachments, conflicts or protrusions apparent on the ground, EXCEPT AS SHOWN. This survey substantially complies with the standards for a Category 1A, Condition III Land Title Survey per the current Manual of Practice for Land Surveying in the State of Texas, issued by the Texas Society of Professional Surveyors. USE OF THIS SURVEY BY OTHER PARTIES SHALL BE AT THEIR OWN RISK AND UNDERSIGNED SURVEYOR IS NOT RESPONSIBLE FOR ANY LOSS RESULTING THEREFROM.



SHEET 5 OF 5

Shane Shafer
SHANE SHAFER, R.P.L.S. NO. 5281

JANUARY 11, 2019
DATE

ROW PARCEL N38 - PART 2

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.R.P.L.S. FIRM NO. 10006900

METES AND BOUNDS DESCRIPTION

PARCEL S13 DRAINAGE EASEMENT

BEING A 0.055 ACRE (2,402 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS. SAID 0.055 ACRE TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 3/8" iron rod found (Grid Coordinates: N=10162223.01, E=3113358.61) monumenting the northeast corner of said 32.709 acre Fern Bluff Municipal Utility District tract and the northwest corner of the Park Reserve shown on Brushy Creek Subdivision Section One a subdivision recorded in Cabinet C, Slides 310-315 of the Plat Records of Williamson County, Texas, same being on the south right-of-way line of Hairy Man Road, from which an iron pipe found monumenting the southeast corner of said Park Reserve, the northwest corner of Lot 40, Block 10 of said Brushy Creek Subdivision Section One and the most easterly southeast corner of said 32.709 acre Fern Bluff Municipal Utility District tract, bears S 18°26'16" E for a distance of 263.95 feet and S 21°50'28" E for a distance of 75.47 feet;

THENCE, with the north boundary line of said 32.709 acre Fern Bluff Municipal Utility District tract and said south right-of-way line of Hairy Man Road, the following three (3) courses and distances:


1. S 72°30'07" W for a distance of 42.99 feet to a calculated point on the beginning of a curve to the right, from which a 1/2" iron rod (bent) found bears S 01°13'49" W for a distance of 0.24 feet;
2. With said curve to the right an arc length of 607.05 feet, said curve having a radius of 3121.06 feet, a delta angle of 11°08'39" and a chord which bears S 77°26'18" W for a distance of 606.10 feet to a calculated point on the end of this curve;
3. S 83°00'37" W for a distance of 368.62 feet to a calculated point;

THENCE, S 05°24'33" E through the interior of said 32.709 acre Fern Bluff Municipal Utility District tract for a distance of 21.50 feet to a PK nail set (Grid Coordinates: N=10162012.02, E=3112362.28) on the proposed south right-of-way line of Hairy Man Road, for the northeast corner and **POINT OF BEGINNING** hereof;

THENCE, continuing through the interior of said 32.709 acre Fern Bluff Municipal Utility District tract, the following four (4) courses and distances:

1. **S 05°24'33" E** for a distance of **52.00 feet** to a Pk nail set for the southeast corner hereof, from which said iron pipe found monumenting the southeast corner of said Park Reserve, the northwest corner of Lot 40, Block 10 of said Brushy Creek Subdivision Section One and the most easterly southeast corner of said 32.709 acre Fern Bluff Municipal Utility District tract, bears S 87°00'26" E for a distance of 1104.60 feet;
2. **S 84°35'27" W** for a distance of **46.20 feet** to a PK nail set for the southwest corner hereof;
3. **N 05°24'33" W** for a distance of **52.00 feet** to a PK nail set on said proposed south right-of-way line of Hairy Man Road, for the northwest corner hereof;
4. **N 84°35'27" E** with said proposed south right-of-way line of Hairy Man Road for a distance of **46.20 feet** to the **POINT OF BEGINNING** hereof and containing 0.055 acre of land more or less.

Bearing Basis: NAD-83, Texas Central Zone (4203) State Plain System. Distances shown hereon are surface distances based on a combined surface adjustment factor or 1.00011

 **DIAMOND SURVEYING, INC.**
116 SKYLINE ROAD, GEORGETOWN, TX 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900



August 7, 2018

SHANE SHAFER, R.P.L.S. NO. 5281 DATE



MATCHLINE SHEET 2

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.055 ACRE (2,402 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



SCALE: 1" = 60'

LOT 3
BLOCK 2
HIDDEN TRAILS
DOC. NO. 2014046834

PROPOSED PART 1
N38° - PARCEL
TO BE CONVEYED BY
SEPARATE INSTRUMENT

F.E.M.A.
(ZONE AE SHADED)

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 3.233 AC. (EXHIBIT E)
DOC. NO. 9551845

F.E.M.A.
(ZONE AE)

APPROXIMATE F.E.M.A. LINE

HAIRY MAN ROAD

PROPOSED RIGHT-OF-WAY
APPROXIMATE F.E.M.A. LINE

SEE
DETAIL "A"
(SHEET 3)

F.E.M.A.
(ZONE X)

WILLIAMSON COUNTY
HIKE AND BIKE TRAIL
EASEMENT
DOC. NO. 2001065075

POSSIBLE LOCATION OF
ELECTRIC UTILITY EASEMENT
ELECTRIC UTILITIES
COOPERATIVE, INC.
VOL. 874, PG. 125

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 32.709 AC. (EXHIBIT D)
DOC. NO. 9551845

JOHN H. DILLARD SURVEY
ABSTRACT NO. 179

GRID COORDINATES:
N=10162223.01
E=3113358.61

F.E.M.A.
(ZONE X SHADED)

BRUSHY CREEK SUBDIVISION
SECTION ONE
CAB. C, S.LDS. 310-315
- PARK RESERVE -

S87°00'26"E 1104.60'

S21°50'28"E 75.47'
LOT 40
BLOCK 10

SHEET 1 OF 4

PARCEL S13 DE

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.055 ACRE (2,402 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



SCALE: 1" = 60'

LOT 27

BRUSHY BEND PARK
CAB. B, SLDs. 311-315

LOT 26

APPROXIMATE F.E.M.A. LINE

LOT 3
BLOCK A

HIDDEN TRAILS
DOC. NO. 2014046834

PROPOSED
PARCEL N38 - PART 2
TO BE CONVEYED BY
SEPARATE INSTRUMENT

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 3.233 AC. (EXHIBIT E)
DOC. NO. 9551845
F.E.M.A.
(ZONE AE SHADED)

APPROXIMATE F.E.M.A. LINE

GRID COORDINATES:
P.O.B. N=10162012.02
E=3112362.28

F.E.M.A.
(ZONE AE)

E.O.P. 368.62'

HAIRY MAN ROAD

EXISTING RIGHT-OF-WAY

C1

S83°00'37"W

APPROXIMATE F.E.M.A. LINE

PROPOSED RIGHT-OF-WAY

WIRE FENCE

WIRE FENCE

WILLIAMSON COUNTY
HIKE AND BIKE TRAIL
EASEMENT
DOC. NO. 2001085075

POSSIBLE LOCATION OF
ELECTRIC UTILITY EASEMENT
FEDERATES, INC.
COOPERATIVE, INC.
VOL. 874, PG. 126

PROPOSED
PARCEL S13
TO BE CONVEYED BY
SEPARATE INSTRUMENT

JOHN H. DILLARD SURVEY
ABSTRACT NO. 179

F.E.M.A.
(ZONE X)

S87°00'26"E 1104.60'

FERN BLUFF MUNICIPAL
UTILITY DISTRICT
WATER AND WASTEWATER
EASEMENT
VOL. 2570, PG. 700

CONC. ASPHALT
PARKING

CONC. ASPHALT
PARKING

CONC. ASPHALT
PARKING

CONC. ASPHALT
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PARCEL S13 DE
0.055 ACRE
(2,402 SQ. FT.)

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 32.709 AC. (EXHIBIT D)
DOC. NO. 9551845

PARCEL S13 DE
SHEET 2 OF 4

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

MATCHLINE SHEET 1

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.625 ACRE (27,231 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.

TITLE COMMITMENT NOTES:

Only those easements and restrictions listed in Schedule B of Title Resources Guaranty Company, Commitment for Title Insurance GF No. 1825241-KFD, which bears an effective date of June 18, 2018 and an issued date of June 26, 2018 were reviewed by the Surveyor. No other easement record research was performed by Diamond Surveying, Inc.

Restrictive covenants of record:

Volume 1568, Page 184, Official Records, Williamson County, Texas. Subject tract is a part of the property described in Exhibit "A" of said instrument.

Volume 2344, Page, 803, Official Records, Williamson County, Texas. Subject tract is a part of the property described in Paragraph (a)

Document No. 2004029826 Official Public Records, Williamson County, Texas. Subject tract is a part of the 51.28 acres described in Document No. 9551845.

Document No. 2004097126 Official Public Records, Williamson County, Texas. Subject tract may be a part of the property described in Exhibit "A", Paragraph 6 in said instrument.

10a) Electric transmission and distributing line easement to Texas Power & Light Company, recorded in Volume 235, Page 115, Deed Records, Williamson County, Texas. Not a part of subject tract

10b) Electric and/or telephone transmission or distribution line or system easement to Pedernales Electric Cooperative, Inc., recorded in Volume 874, Page 126, Deed Records, Williamson County, Texas. May be a part of subject tract. No Exhibit "A" attached as stated in said instrument. No width specified in said instrument, possible location shown hereon.

10c) Electric and/or telephone transmission or distribution line easement to Pedernales Electric Cooperative, Inc., recorded in Volume 874, Page 128, Deed Records, Williamson County, Texas. Not a part of subject tract.

10d) Water and wastewater easement to Fern Bluff Municipal Utility District, recorded in Volume 2570, Page 700, Official Records, Williamson County, Texas. Is a part of subject tract as plotted hereon.

10e) Hike and bike trail easement to Williamson County, recorded in Document No. 2001085075 Official Public Records, Williamson County, Texas. Is a part of subject tract as plotted hereon.

10f) Waiver of Special Appraisal, recorded in Volume 1946, Page 272, Official Records, Williamson County, Texas. Not a survey matter.

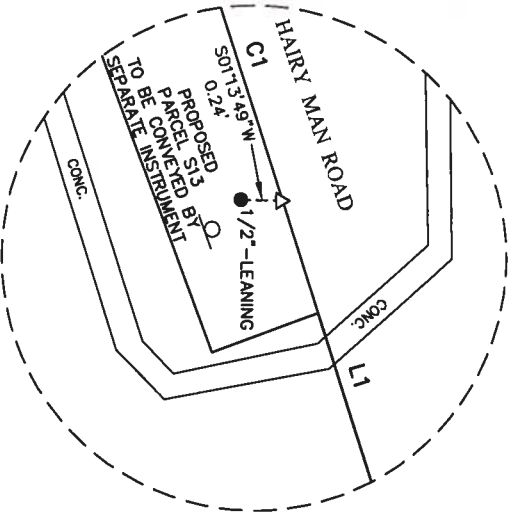
10g) Terms, Conditions, and Stipulations in Agreement Regarding Utility Matters, recorded in Volume 2361, Page 316 and Volume 2361, Page 459, Official Records, Williamson County, Texas. Subject tract is a part of the property described in Exhibit "A" of said Volume 2361, Page 316 and Volume 2361, Page 459.

10h) Notice Regarding Edwards Aquifer Protection Plan, recorded in Document No. 2002032774, 2002079087 and 2004003433, Official Public Records, Williamson County, Texas. Subject tract is a part of the 32.709 acre tract described in said documents.

PARCEL S13 DE
SHEET 3 OF 4

<> DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.055 ACRE (2,402 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



DETAIL "A"
(NOT TO SCALE)

LINE	BEARING	DISTANCE
L1	S72°30'07"W	42.99'
L2	S05°24'33"E	21.50'
L3	S05°24'33"E	52.00'
L4	S84°35'27"W	46.20'
L5	N05°24'33"W	52.00'
L6	N84°35'27"E	46.20'

CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	3121.06'	607.05'	1108°39'	S77°26'18"W	606.10'

To: Williamson County, Texas and Title Resources Guaranty Company, exclusively.

I, Shane Shafer, Registered Professional Land Surveyor in the State of Texas, hereby certify that this drawing represents a survey made on the ground under my direct supervision completed on August 2, 2018. At the time of this survey there were no encroachments, conflicts or protrusions apparent on the ground, EXCEPT AS SHOWN. This survey substantially complies with the standards for a Category 1A, Condition III Land Title Survey per the current Manual of Practice for Land Surveying in the State of Texas, issued by the Texas Society of Professional Surveyors. USE OF THIS SURVEY BY OTHER PARTIES SHALL BE AT THEIR OWN RISK AND UNDERSIGNED SURVEYOR IS NOT RESPONSIBLE FOR ANY LOSS RESULTING THEREFROM.

LEGEND

●	IRON ROD FOUND
▲	PK NAIL SET
○	IRON PIPE FOUND
△	CALCULATED POINT
○ ^{PP}	POWER POLE
○ ^{PA}	GUY ANCHOR
○ ^{WP}	WOOD POST
○ ^{WM}	WASTEWATER MANHOLE
○ ^{WH}	FIRE HYDRANT
○ ^{WV}	WATER VALVE
○ ^{WM}	WATER METER
○ ^{VP}	VENT PIPE
▽	SIGN
— x —	WIRE FENCE
— ou —	OVERHEAD UTILITIES
— — — —	APPROXIMATE F.E.M.A. LINE
— — — —	APPROXIMATE B.F.E. LINE
CONC.	CONCRETE
E.O.P.	EDGE OF PAVEMENT
CMP	CORRUGATED METAL PIPE
P.O.C.	POINT OF COMMENCEMENT
P.O.B.	POINT OF BEGINNING
F.E.M.A.	FEDERAL EMERGENCY MANAGEMENT AGENCY
B.F.E.	F.E.M.A. BASE FLOOD ELEVATION

GENERAL NOTES:

- 1) ALL DOCUMENTS LISTED HEREON ARE RECORDED IN THE OFFICE OF THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.
- 2) BEARING BASIS: NAD-83, TEXAS CENTRAL (4203) STATE PLANE SYSTEM. DISTANCES SHOWN HEREON ARE SURFACE DISTANCES BASED ON A COMBINED SURFACE ADJUSTMENT FACTOR OF 1.00011.
- 3) THE TRACT SHOWN HEREON LIES WITHIN ZONE 14E, (BASE FLOOD ELEVATION DETERMINED, AND ZONE "X" UNSHADED AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN) ACCORDING TO F.E.M.A. FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0490E, DATED SEPTEMBER 26, 2008.

THE F.E.M.A. FLOOD LINES SHOWN HEREON ARE APPROXIMATE BY GRAPHIC PLOTTING ONLY AND WERE SCALED FROM THE ABOVE REFERENCED FLOOD INSURANCE RATE MAP. THE SURVEYOR MAKES NO ASSURANCE AS TO THE ACCURACY OF THE DELINEATIONS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS.



PARCEL S13 DE
SHEET 4 OF 4

SHANE SHAFER, R.P.L.S. NO. 5281
AUGUST 7, 2018
DATE

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

METES AND BOUNDS DESCRIPTION

ROW PARCEL S13

BEING A 0.625 ACRE (27,231 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS. SAID 0.625 ACRE TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 3/8" iron rod found (Grid Coordinates: N=10162223.01, E=3113358.61) monumenting the northeast corner of said 32.709 acre Fern Bluff Municipal Utility District tract and the northwest corner of the Park Reserve shown on Brushy Creek Subdivision Section One a subdivision recorded in Cabinet C, Slides 310-315 of the Plat Records of Williamson County, Texas, same being on the south right-of-way line of Hairy Man Road, from which an iron pipe found monumenting the southeast corner of said Park Reserve, the northwest corner of Lot 40, Block 10 of said Brushy Creek Subdivision Section One and the most easterly southeast corner of said 32.709 acre Fern Bluff Municipal Utility District tract, bears S 18°26'16" E for a distance of 263.95 feet and S 21°50'28" E for a distance of 75.47 feet;

THENCE, S 72°30'07" W with the north boundary line of said 32.709 acre Fern Bluff Municipal Utility District tract and said south right-of-way line of Hairy Man Road for a distance of 36.63 feet to a 1/2" iron rod set with cap marked "Diamond Surveying", (Grid Coordinates: N=10162212.00, E=3113323.67) for the northeast corner and **POINT OF BEGINNING** hereof;

THENCE, through the interior of said 32.709 acre Fern Bluff Municipal Utility District tract, the following nine (9) courses and distances:


1. **S 20°32'33" E** for a distance of **6.15 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", for the southeast corner hereof;
2. With a curve to the right an arc length of **225.69 feet**, said curve having a radius of **7530.00 feet**, a delta angle of **01°43'02"** and a chord which bears **S 70°18'58" W** for a distance of **225.68 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on the beginning of a compound curve to the right;

3. With said curve to the right an arc length of **271.31 feet**, said curve having a radius of **1330.00 feet** a delta angle of **11°41'16"** and a chord which bears **S 77°01'07" W** for a distance of **270.84 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on the end of this curve;
4. **S 82°51'45" W** for a distance of **295.35 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on the beginning of a curve to the right;
5. With said curve to the right an arc length of **151.74 feet**, said curve having a radius of **5030.00 feet**, a delta angle of **01°43'42"** and a chord which bears **S 83°43'36" W** for a distance of **151.73 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on the end of this curve;
6. **S 84°35'27" W** for a distance of **208.91 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on the beginning of a curve to the right;
7. With said curve to the right an arc length of **100.26 feet**, said curve having a radius of **5030.00 feet**, a delta angle of **01°08'31"** and a chord which bears **S 85°09'43" W** for a distance of **100.26 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on the end of this curve;
8. **S 85°43'59" W** for a distance of **88.65 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", for the southwest corner hereof, from which a 1/2" iron rod found monumenting the northwest corner of Lot 74, Block A, Oak Brook Section One a subdivision recorded in Cabinet L, Slides 164-170 of the Plat Records of Williamson County, Texas, same being on the south boundary line of said 32.709 acre Fern Bluff Municipal Utility District tract, bears **S 33°30'51" W** for a distance of **555.87 feet**;
9. **N 04°16'01" W** for a distance of **8.97 feet** to a 1/2" iron rod set with cap marked "Diamond Surveying", on said north boundary line of the 32.709 acre Fern Bluff Municipal Utility District tract and said south right-of-way line of Hairy Man Road, for the northwest corner hereof;

THENCE, with said north boundary line of the 32.709 acre Fern Bluff Municipal Utility District tract and said south right-of-way line of Hairy Man Road, the following three (3) courses and distances:

1. **N 83°00'37" E** for a distance of **722.80 feet** to a calculated point on the beginning of a curve to the left;
2. With said curve to the left an arc length of **607.05 feet**, said curve having a radius of **3121.06 feet**, a delta angle of **11°08'39"** and a chord which bears **N 77°26'18" E** for a distance of **606.10 feet** to a calculated point on the end of this curve, from which a 1/2" iron rod (bent) found bears **S 01°13'49" W** for a distance of 0.24 feet;
3. **N 72°30'07" E** for a distance of **6.36 feet** to the **POINT OF BEGINNING** hereof and containing 0.625 acre of land more or less.

Bearing Basis: NAD-83, Texas Central Zone (4203) State Plain System. Distances shown hereon are surface distances based on a combined surface adjustment factor of 1.00011

 **DIAMOND SURVEYING, INC.**
116 SKYLINE ROAD, GEORGETOWN, TX 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900



August 7, 2018

SHANE SHAFER, R.P.L.S. NO. 5281

DATE



Z:\WILLIAMSON COUNTY PSA PROJECTS\HAIRY MAN ROAD\ATKINS\row parcel Land Title Surveys\S13\ROW PARCEL
S13.doc

APPROXIMATE FEMALE LINE

LOT 2
BLOCK A
HIDDEN TRAILS
DOC. NO. 2014046834

LOT 3
DOC. NO. 9551845

SCALE: 1" = 60'

FERN BLUFF MUNICIPAL UTILITY DISTRICT

50' RIGHT-OF-WAY
PER CAB. C. S.D. 310

QPP

F.E.M.A.
(ZONE AE)

GRID COORDINATES
N=10163337 01

F.E.M.A.
(ZONE X SHADED)

- PARK RESERVE -
BRUSHY CREEK SUBDIVISION
SECTION ONE
SLDS. 310-315

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 32.709 AC. (EXHIBIT D)
DOC. NO. 9551845

0.625 ACRES
(27,231 SQ. FT.)

JOHN H. DILLARD SURVEY
ABSTRACT NO. 179

LOT 40

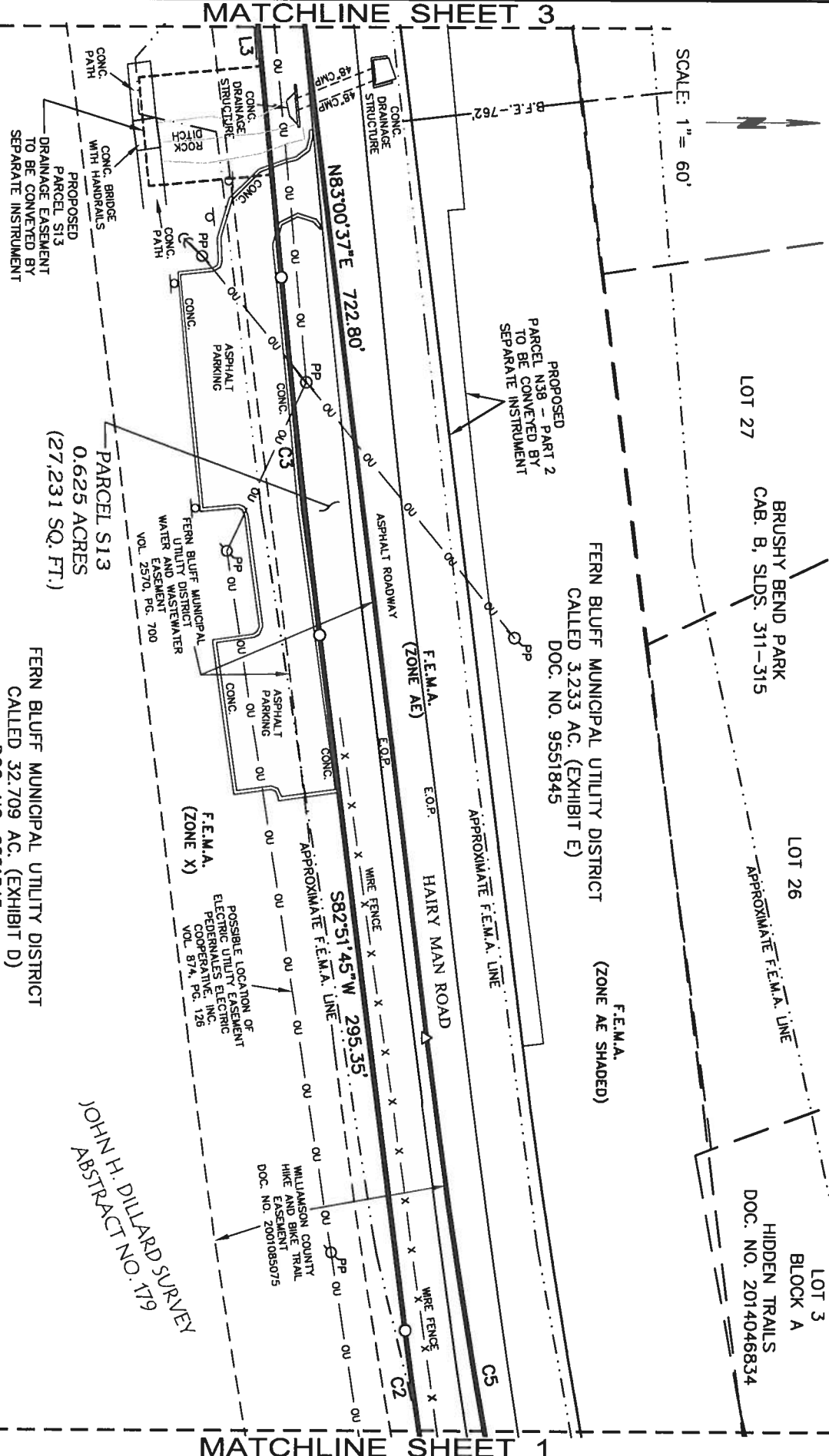
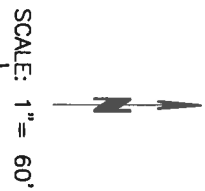
SHEET 1 OF 5

EASEMENT INFORMATION - SHEET 1	
E1	<p>LOWER COLORADO RIVER AUTHORITY BRAZOS RIVER AUTHORITY & FERN BLUFF MUNICIPAL UTILITY DISTRICT CORRECTION WASTEWATER EASEMENT DOC. NO. 2002028664</p>
E2	<p>FERN BLUFF MUNICIPAL UTILITY DISTRICT WATER LINE EASEMENT DOC. NO. 9630547</p>
E3	<p>FERN BLUFF MUNICIPAL UTILITY DISTRICT ACCESS AND PUBLIC UTILITY EASEMENT VOL. 2570, PG. 695</p>

ROW PARCEL S13

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.625 ACRE (27,231 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



CURVE TABLE

CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	7530.00'	225.69'	1°43'02"	S70°18'58"W	225.68'
C2	1330.00'	271.31'	11°41'16"	S77°01'07"W	270.84'
C3	5030.00'	151.74'	1°43'42"	S83°43'36"W	151.73'
C4	5030.00'	100.26'	1°08'31"	S85°09'43"W	100.26'
C5	3121.06'	607.05'	11°08'39"	N77°26'18"E	606.10'

PARCEL S13
0.625 ACRES
(27,231 SQ. FT.)
FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 32.709 AC. (EXHIBIT D)
DOC. NO. 9551845

ROW PARCEL S13
SHEET 2 OF 5

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.625 ACRE (27,231 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



SCALE: 1" = 60'

LOT 32

F.E.M.A.
(ZONE AE)

LOT 31

BRUSHY BEND PARK
CAB. B. SLDS. 311-315

LOT 30

LOT 29

F.E.M.A.
(ZONE AE SHADED)

BRUSHY CREEK
EDGE OF WATER

BRUSHY CREEK
EDGE OF WATER

PROPOSED
PARCEL N38 - PART 2
TO BE CONVEYED BY
SEPARATE INSTRUMENT

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 3.233 AC. (EXHIBIT E)
DOC. NO. 9551845

APPROXIMATE F.E.M.A. LINE

HAIRY MAN ROAD

ASPHALT ROADWAY

F.E.M.A.
(ZONE AE)

N83°00'37"E 722.80'

E.O.P.

E.O.P.

E.O.P.

E.O.P.

E.O.P.

E.O.P.

E.O.P.

E.O.P.

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E.O.P.

JOHN H. DILLARD SURVEY
ABSTRACT NO. 179

WILLIAMSON COUNTY
HIKE AND BIKE TRAIL
EASEMENT
DOC. NO. 2001085075

F.E.M.A.
(ZONE X)

FERN BLUFF MUNICIPAL UTILITY DISTRICT
CALLED 32.709 AC. (EXHIBIT D)
DOC. NO. 9551845

S33°30'51"W 555.87'

PARCEL S13
0.625 ACRES
(27,231 SQ. FT.)

POSSIBLE LOCATION OF
ELECTRIC UTILITY EASEMENT
FEDERNALES ELECTRIC
COOPERATIVE, INC.
VOL. 874, PG. 126

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DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.625 ACRE (27,231 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.

TITLE COMMITMENT NOTES:

Only those easements and restrictions listed in Schedule B of Title Resources Guaranty Company, Commitment for Title Insurance GF No. 1825240-KFD, which bears an effective date of June 14, 2018 and an issued date of June 26, 2018 were reviewed by the Surveyor. No other easement record research was performed by Diamond Surveying, Inc.

Restrictive covenants of record:

Volume 1568, Page 184, Official Records, Williamson County, Texas. Subject tract is a part of the property described in Exhibit "A" of said instrument.

Volume 2344, Page, 803, Official Records, Williamson County, Texas. Subject tract is a part of the property described in paragraph (a)

Document No. 2004029826 Official Public Records, Williamson County, Texas. Subject tract is a part of the 51.28 acres described in Document No. 9551845.

Document No. 2004097126 Official Public Records, Williamson County, Texas. Subject tract may be a part of the property described in Exhibit "A", Paragraph 6 in said instrument.

10a) Electric transmission and distributing line easement to Texas Power & Light Company, recorded in Volume 235, Page 115, Deed Records, Williamson County, Texas. Not a part of subject tract

10b) Electric and/or telephone transmission or distribution line or system easement to Pedernales Electric Cooperative, Inc., recorded in Volume 874, Page 126, Deed Records, Williamson County, Texas. May be a part of subject tract. No Exhibit "A" attached as stated in said instrument. No width specified in said instrument, possible location shown hereon.

10c) Electric and/or telephone transmission or distribution line easement to Pedernales Electric Cooperative, Inc., recorded in Volume 874, Page 128, Deed Records, Williamson County, Texas. Not a part of subject tract.

10d) Access and Public Utility Easement to Fern Bluff Municipal Utility District, recorded in Volume 2570, Page 695, Official Records, Williamson County, Texas. Is a part of subject tract as shown hereon.

10e) Water and wastewater easement to Fern Bluff Municipal Utility District, recorded in Volume 2570, Page 700, Official Records, Williamson County, Texas. Is a part of subject tract as plotted hereon.

10f) Water Line Easement to Fern Bluff Municipal Utility District, recorded in Document No. 9630547, Official Records, Williamson County, Texas. Not a part of subject tract, however is plotted hereon.

10g) Wastewater Easement to Lower Colorado River Authority, Brazos River Authority and Fern Bluff Municipal Utility District, recorded in Document No. 2001033018 and corrected in Document No. 2002028664, Official Public Records, Williamson County, Texas. Corrected easement is a part of subject tract as shown hereon.

10h) Hike and bike trail easement to Williamson County, recorded in Document No. 2001085075 Official Public Records, Williamson County, Texas. Is a part of subject tract as plotted hereon.

10i) Waiver of Special Appraisal, recorded in Volume 1946, Page 272, Official Records, Williamson County, Texas. Not a survey matter.

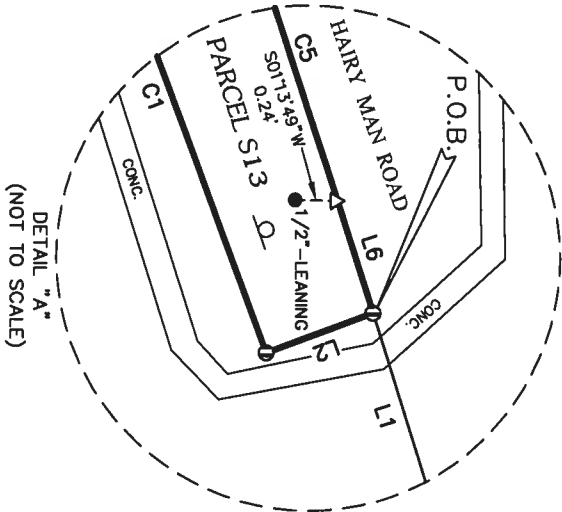
10j) Terms, Conditions, and Stipulations in Agreement Regarding Utility Matters, recorded in Volume 2361, Page 316 and Volume 2361, Page 459, Official Records, Williamson County, Texas. Subject tract is a part of the property described in Exhibit "A" of said Volume 2361, Page 316 and Volume 2361, Page 459.

10k) Notice Regarding Edwards Aquifer Protection Plan, recorded in Document No. 2002032774, 2002079087 and 2004003433, Official Public Records, Williamson County, Texas. Subject tract is a part of the 32.709 acre tract described in said documents.

ROW PARCEL S13
SHEET 4 OF 5

<> DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

DRAWING TO ACCOMPANY METES AND BOUNDS DESCRIPTION FOR A 0.625 ACRE (27,231 SQUARE FEET) TRACT OF LAND IN THE JOHN H. DILLARD SURVEY, ABSTRACT NO. 179, WILLIAMSON COUNTY, TEXAS AND BEING A PORTION OF THE CALLED 32.709 ACRE TRACT OF LAND (EXHIBIT D), CONVEYED TO FERN BLUFF MUNICIPAL UTILITY DISTRICT, DESCRIBED IN DOCUMENT NO. 9551845 OF THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS.



LINE	BEARING	DISTANCE
L1	S72°30'07\"W	36.63'
L2	S20°32'33\"E	6.15'
L3	S84°35'27\"W	208.91'
L4	S85°43'59\"W	88.65'
L5	N04°16'01\"W	8.97'
L6	N72°30'07\"E	6.36'

LEGEND

●	IRON ROD FOUND
▲	PK NAIL SET
⊙	IRON PIPE FOUND
⊕	1/2\" IRON ROD W/CAP SET MARKED \"DIAMOND SURVEYING\"
△	CALCULATED POINT
○ ^{PP}	POWER POLE
—○—	GUY ANCHOR
○ ^{WP}	WOOD POST
⊗	WASTEWATER MANHOLE
○ ^{FH}	FIRE HYDRANT
○ ^{WV}	WATER VALVE
○ ^{WM}	WATER METER
○ ^{VP}	VENT PIPE
⊖	SIGN
—x—	WIRE FENCE
—ou—	OVERHEAD UTILITIES
---	APPROXIMATE F.E.M.A. LINE
- - - - -	APPROXIMATE B.F.E. LINE
----	CONCRETE
----	EDGE OF PAVEMENT
----	CORRUGATED METAL PIPE
----	CMP
----	POINT OF COMMENCEMENT
----	POINT OF BEGINNING
----	P.O.B.
----	F.E.M.A.
----	FEDERAL EMERGENCY MANAGEMENT AGENCY
----	F.E.M.A. BASE FLOOD ELEVATION

GENERAL NOTES:

- 1) ALL DOCUMENTS LISTED HEREON ARE RECORDED IN THE OFFICE OF THE COUNTY CLERK OF WILLIAMSON COUNTY, TEXAS.
 - 2) BEARING BASIS: NAD-83, TEXAS CENTRAL (4203) STATE PLANE SYSTEM. DISTANCES SHOWN HEREON ARE SURFACE DISTANCES BASED ON A COMBINED SURFACE ADJUSTMENT FACTOR OF 1.00011.
 - 3) THE TRACT SHOWN HEREON LIES WITHIN ZONE 'AE', (BASE FLOOD ELEVATION DETERMINED), AND ZONE 'X' UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN) ACCORDING TO F.E.M.A. FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0490E, DATED SEPTEMBER 26, 2008.
- THE F.E.M.A. FLOOD LINES SHOWN HEREON ARE APPROXIMATE BY GRAPHIC PLOTTING ONLY AND WERE SCALED FROM THE ABOVE REFERENCED FLOOD INSURANCE RATE MAP. THE SURVEYOR MAKES NO ASSURANCE AS TO THE ACCURACY OF THE DELINEATIONS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS.

To: Williamson County, Texas and Title Resources Guaranty company, exclusively.

I, Shane Shafer, Registered Professional Land Surveyor in the State of Texas, hereby certify that this drawing represents a survey made on the ground under my direct supervision completed on August 2, 2018. At the time of this survey there were no encroachments, conflicts or protrusions apparent on the ground, EXCEPT AS SHOWN. This survey substantially complies with the standards for a Category 1a, Condition III Land Title Survey per the current Manual of Practice for Land Surveying in the State of Texas, issued by the Texas Society of Professional Surveyors. USE OF THIS SURVEY BY OTHER PARTIES SHALL BE AT THEIR OWN RISK AND UNDERSIGNED SURVEYOR IS NOT RESPONSIBLE FOR ANY LOSS RESULTING THEREFROM.

SHANE SHAFER, R.P.L.S. NO. 5281

AUGUST 7, 2018

DATE



ROW PARCEL S13
SHEET 5 OF 5

DIAMOND SURVEYING, INC.
116 SKYLINE ROAD, GEORGETOWN, TEXAS 78628
(512) 931-3100
T.B.P.L.S. FIRM NO. 10006900

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Hairy Man Road

Regulated Entity Location: From Walsh Drive to Great Oaks Drive

Name of Customer: Williamson County

Contact Person: Michael Hallmark

Phone: (512)930-3569

Customer Reference Number (if issued): CN 600897888

Regulated Entity Reference Number (if issued): RN _____

Austin Regional Office (3373)

☐ Hays

☐ Travis

☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar

☐ Medina

☐ Uvalde

☐ Comal

☐ Kinney

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

☒ Austin Regional Office

☐ San Antonio Regional Office

☐ Mailed to: TCEQ - Cashier

☐ Overnight Delivery to: TCEQ - Cashier

Revenues Section

Mail Code 214

P.O. Box 13088

Austin, TX 78711-3088

12100 Park 35 Circle

Building A, 3rd Floor

Austin, TX 78753

(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone

☒ Contributing Zone

☐ Transition Zone

Type of Plan	Size	Fee Due
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	4.09 Acres	\$ 4,000
Sewage Collection System	L.F.	\$
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$

Signature: Craig L. Heble, P.E.

Date: 09-03-2019



TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
<input checked="" type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
<input type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)	<input type="checkbox"/> 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 600897888		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	6/29/2017					
<input type="checkbox"/> New Customer <input checked="" type="checkbox"/> Update to Customer Information <input type="checkbox"/> Change in Regulated Entity Ownership							
<input type="checkbox"/> 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: e.g.: Doe, John)		If new Customer, enter previous Customer below:					
COUNTY OF WILLIAMSON							
7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)				
11. Type of Customer:	<input type="checkbox"/> Corporation	<input type="checkbox"/> Individual	Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited				
Government: <input type="checkbox"/> City <input checked="" type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> Other	<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Other:					
12. Number of Employees		13. Independently Owned and Operated?					
<input type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher		<input type="checkbox"/> Yes <input type="checkbox"/> No					
14. Customer Role (Proposed or Actual) - as it relates to the Regulated Entity listed on this form. Please check one of the following:							
<input type="checkbox"/> Owner <input type="checkbox"/> Operator <input checked="" type="checkbox"/> Owner & Operator							
<input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> Voluntary Cleanup Applicant <input type="checkbox"/> Other:							
15. Mailing Address:	Williamson County Department of Road and Bridge						
	3151 S.E. Inner Loop, Suite B						
	City	Georgetown	State	TX	ZIP	78626	ZIP + 4
16. Country Mailing Information (if outside USA)				17. E-Mail Address (if applicable)			
				tevertson@wilco.org			
18. Telephone Number		19. Extension or Code		20. Fax Number (if applicable)			
(512) 943 - 3330				(512) 943 - 3335			

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If "New Regulated Entity" is selected below this form should be accompanied by a permit application)	
<input checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information	
The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).	
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)	
Hairy Man Road	

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

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	From Walsh Drive to Great Oaks Drive							
26. Nearest City					State		Nearest ZIP Code	
Round Rock					TX		78681	
27. Latitude (N) In Decimal:		30.519		28. Longitude (W) In Decimal:		-97.742		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
30	31	9	-97	44	32			
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)		

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

County Roadway

34. Mailing Address:	Williamson County							
	3151 SE Inner Loop, Suite B							
	City	Georgetown	State	TX	ZIP	78626	ZIP + 4	
35. E-Mail Address:		jevertson@wilco.org						
36. Telephone Number			37. Extension or Code		38. Fax Number (if applicable)			
(512) 943 - 3330					(512) 943 - 3335			

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.


<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input checked="" type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input checked="" type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Waste Water	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

SECTION IV: Preparer Information

40. Name:	Craig L. Hebbe, PE		41. Title:	Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address	
(512) 338 - 1704		(512) 338 - 1784	chebbe@kfriese.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:	K Friese & Associates, Inc.	Job Title:	Project Manager
Name(In Print):	Craig L. Hebbe, PE	Phone:	(512) 338 - 1704
Signature:		Date:	09-03-2019

**TCEQ EDWARDS AQUIFER
CONTRIBUTING ZONE PLAN**

**CONTRIBUTING ZONE PLAN APPLICATION (TCEQ-10257)
HAIRY MAN ROAD**

ATTACHMENT M:
CONSTRUCTION PLANS

PREPARED FOR:
WILLIAMSON COUNTY



PREPARED:
SEPTEMBER 2019

WILLIAMSON COUNTY

HAIRY MAN ROAD / BRUSHY CREEK ROAD IMPROVEMENTS

PRECINCT NUMBER 1

NET LENGTH OF ROADWAY = 11396.29 FT (2.158 MILES)
NET LENGTH OF BRIDGE = 206.02 FT (0.039 MILES)
NET LENGTH OF PROJECT = 11602.31 FT (2.197 MILES)

LIMITS: FROM WALSH DRIVE TO SAM BASS ROAD

FOR THE CONSTRUCTION OF ROADWAY WIDENING, GRADING, RETAINING WALLS, DRAINAGE STRUCTURES, AND GUARDRAIL

DESIGN SPEED = 35 MPH
FUNCTIONAL CLASSIFICATION = MAJOR COLLECTOR
ROADWAY CLASSIFICATION = URBAN STREET
TERRAIN = ROLLING
TXDOT 3R DESIGN CRITERIA
CURRENT ADT (2018) = 8,960
DESIGN ADT (2040) = 13,215
TRUCK PERCENTAGE = 1%

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	INDEX OF SHEETS

100%
SUBMITTAL

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION NOT REQUIRED

BEGIN PROJECT
STA. 168+25.00

END PROJECT
STA. 296+28.26



VICINITY MAP
N.T.S.

EXCEPTIONS: GREAT OAK DR INTERSECTION (STA 195+28.75 TO STA 207+29.70)
HAIRY MAN RD BRIDGE (STA 271+75.07 TO STA 273+81.09)
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE
WATERSHEAD: BRUSHY CREEK
AREA OF DISTURBANCE: 18.44 ACRES

PREPARED BY:
ATKINS, FIRM# 474

Signature of Steven Lindsey

STEVEN LINDSEY
PROJECT MANAGER

8/5/2019

DATE



8/5/2019



APPROVED BY:
WILLIAMSON COUNTY

BILL GRAVELL JR.
WILLIAMSON COUNTY JUDGE

DATE

APPROVED BY:
WILLIAMSON COUNTY

TERRY COOK
WILLIAMSON COUNTY
COMMISSIONER, PRECINCT 1

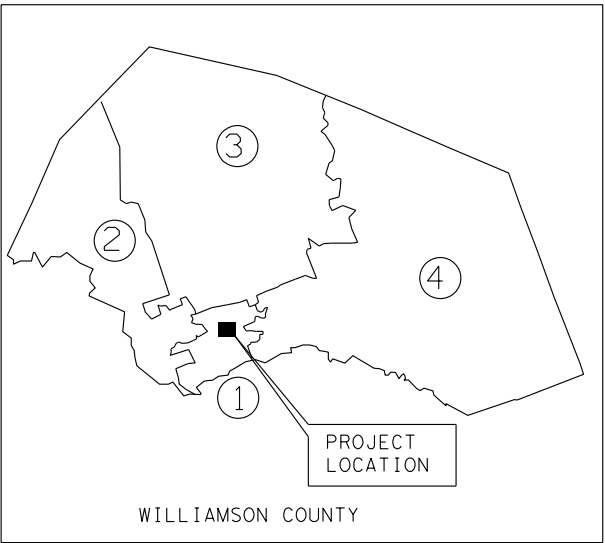
DATE

APPROVED BY:
HNTB CORPORATION

RICHARD L RIDINGS, PE
ROAD BOND MANAGEMENT TEAM

DATE

REQUIRED SIGNS SHALL BE PLACED IN ACCORDANCE WITH TEXAS
DEPARTMENT OF TRANSPORTATION STANDARD SHEETS BC(1)-14 THRU BC(12)-14
AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."



WILLIAMSON COUNTY

TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION
OF HIGHWAYS, STREETS AND BRIDGES ADOPTED ON
NOVEMBER 1, 2014 AND ALL APPLICABLE SPECIAL PROVISIONS
AND SPECIAL SPECIFICATIONS AS INDICATED IN THE BID
DOCUMENTS SHALL GOVERN ON THIS PROJECT.

ATKINS
TBPE REG. # F-474

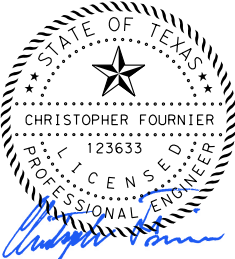
INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
GENERAL	
1	COVER SHEET
2	INDEX OF SHEETS
PROJECT LAYOUT TYPICAL SECTIONS	
3 - 4	PROJECT LAYOUT
5 - 6	HORIZONTAL DATA
7 - 10	TYPICAL SECTIONS
11 - 14	GENERAL NOTES
15	SUMMARY OF QUANTITIES (ROADWAY & REMOVAL)
16	SUMMARY OF QUANTITIES (DRAINAGE)
17	SUMMARY OF QUANTITIES (SIGN & PAVE MARKING)
ROADWAY SHEETS	
18 - 24	REMOVAL PLAN
25 - 37	PLAN AND PROFILE
38 - 47	PLAN AND PROFILE DRIVEWAYS
48	PARKING LOT
49	RETAINING WALL
STANDARDS	
50	CCCG-12
51	GF (31)LS-17
52	GF (31)TR-14
53	GF (31)-14
54 - 57	PED-18
58 - 60	PRD-13
61	ST-04
62	ST-06
63	RW 1 (H)C
64	RW 2
65	SGT (12S)31-18
TRAFFIC CONTROL PLAN	
66	TRAFFIC CONTROL PLAN SEQUENCE OF CONSTRUCTION
67 - 69	TYPICAL SECTION (PHASE 1 & PHASE 2)
70	TRAFFIC CONTROL PLAN HAIRY MAN ROAD DETOUR
STANDARDS	
71 - 82	BC (1)-14 THRU BC (12)-14
83	TCP (2-2)-18
84	TCP (7-1)-13
85	WZ (RCD)-13
DRAINAGE	
86	OFFSITE DRAINAGE AREA MAP
87	ONSITE DRAINAGE AREA MAP
88 - 89	DRAINAGE PLAN AND PROFILE
90	DITCH AND STORM SEWER HYDRAULIC TABLES
91	DITCH TABLES
92 - 100	CULVERT LAYOUT SHEET
101 - 109	CULVERT HYDRAULIC DATA SHEET
110	WATER QUALITY DRAINAGE AREA MAP
111	WATER QUALITY DRAINAGE PLAN
112	WATER QUALITY DETAILS
113	TCEQ EDWARDS AQUIFER GENERAL NOTES
114	STORM WATER POLLUTION PREVENTION PLAN (SW3P)
115 - 121	EROSION CONTROL PLAN
STANDARDS	
122	BCS
123 - 124	SCC-5&6
125 - 126	SCC-7
127	MC-MD
128 - 129	MC-6-16
130 - 131	MC--7-10
132	PW
133	CH-PW-0
134	CH-PW-S
135	ECD
136 - 137	SETP-CD
138	SETP-PD
139	PB
140	PJB
141	PDD
142 - 143	PSL
144	EC (1)-16
145	EC (2)-16
146	EC (3)-16
147 - 149	EC (9)-16

SIGNING & PAVEMENT MARKING

150 - 156	SIGNING & PAVEMENT MARKINGS PLAN
157 - 158	SUMMARY OF SMALL SIGNS
STANDARDS	
159	TSR (4)-13
160	TSR (5)-13
161	D&OM (1)-15
162	D&OM (2)-15
163	D&OM (3)-15b
164	D&OM (4)-15
165	D&OM (5)-15
166	D&OM (6)-15
167	D&OM (VIA)-15
168	PM (1)-12
169	PM (2)-12
170	PM (3)-12
171	SMD (GEN)-08
172	SMD (SLIP-1)-08
173	SMD (SLIP-2)-08
174	SMD (SLIP-3)-08
175	SMD (TWT)-08
CROSS SECTIONS	
176 - 313	CROSS SECTIONS

HIGHLIGHTED SHEETS ARE INCLUDED IN THE CZP 10257-ATTACHMENT M: CONSTRUCTION PLANS. NOTE ONLY PLAN SHEETS SHOWING THE PROJECT WEST OF GREAT OAKS DRIVE ARE INCLUDED.



THE ROADWAY AND TCP STANDARD SHEETS HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

Christopher Fournier P.E.
DATE: 8/9/2019


THE DRAINAGE STANDARD SHEETS HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

Craig L. Holbe, P.E. P.E.
DATE: 8/9/19


THE SIGNING AND PAVEMENT MARKING STANDARD SHEETS HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

Lacey L. Holbe P.E.
DATE: 8/9/19

REV. No.	DATE	REVISION	BY



WILLIAMSON COUNTY
1848



ATKINS
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
INDEX OF SHEETS

DESIGNED: CAF

FED. RD DIV. No.

STATE

PROJECT No.

HIGHWAY No.

CHECKED: WHL

TEXAS

HAIRY MAN RD

DRAWN: CAF

STATE DISTRICT

COUNTY

CONTROL No.

SECTION No.

JOB No.

SHEET No.

CHECKED: WHL

AUSTIN

WILLIAMSON

2

SHEET 1 OF 1

CONTROL POINT	SURFACE NORTH	SURFACE EAST	ELEVATION	DESCRIPTION
1	10165842.6997	3123251.2499	766.800	IRON ROD SET
15	10163096.6777	3111717.7833	758.500	IRON ROD SET
13001	10165729.2362	3123401.2633	764.730	IRON ROD SET
13002	10165936.5570	3123010.6334	768.252	IRON ROD SET
13004	10163925.2818	3114991.0813	756.974	IRON ROD SET
13005	10163784.7364	3115086.8299	765.319	IRON ROD SET
13006	10164291.9521	3114805.9090	757.346	IRON ROD SET
13009	10163027.7531	3111820.1306	767.695	IRON ROD SET
13287	10163589.6979	3114017.6793	746.453	PK NAIL SDET
13290	10164784.2643	3121584.6745	756.793	PK NAIL SDET
13291	10164870.1677	3121639.1505	754.582	PK NAIL SDET
13294	10165694.7514	3119208.6962	737.474	80D NAIL SET
13296	10165610.3061	3119183.9645	751.611	IRON ROD SET
13297	10165471.3919	3119141.5318	770.843	IRON ROD SET

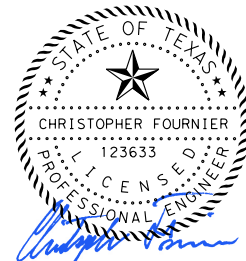
NOTES: BEARING VALUES BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD-83, CENTRAL (4203). COORDINATES ARE SURFACE VALUES BASED ON A COMBINED SURFACE ADJUSTMENT FACTOR OF 1.00011. ELEVATIONS BASED UPON GEOID 2012A, PER WESTERN DATA GPS REFERENCE NETWORK.

LAND	NAME	NUMBER
A	FERN BLUFF MUNICIPAL UTILITY DISTRICT	N38
B	FERN BLUFF MUNICIPAL UTILITY DISTRICT	S13
C	HY-LAND JOINT VENTURE	
D	BRUSHY CREEK SUBDIVISION	S12
E	FERN BLUFF MUNICIPAL UTILITY DISTRICT	N28
F	FERN BLUFF MUNICIPAL UTILITY DISTRICT	S11
G	KEITH AND SHERI DESPAIN	N27
H	RODNEY A. AND LYNN A. BROWN	N26
I	LANDY L. AND LORI E. WARREN	N25
J	ALLEN AND JULIE THOMAS	N24
K	KAREN SPARKS GUENTHER	N23
L	WILLIAMSON COUNTY	N22
M	HONEY BEAR PROPERTIES, LLC	N21
N	HONEY BEAR PROPERTIES, LLC	N20
O	CITY OF ROUND ROCK PARKLAND	N19
P	CLARENCE LORENZA SAULS	
Q	CORRI AND NELSON LEWIS	
R	WILLIAM P. AND FRANCINE L. HARRIS	
S	CITY OF ROUND ROCK CREEK BEND BLVD	
T	CITY OF ROUND ROCK CREEK BEND BLVD	N10
U	MARCOS I. REYNAGA	N9
V	ZACHARIA P. AND LISA M. PINEDA	N8
W	12 PROPERTIES LLC	N7
X	TZVETAN AND ANTONIA ANTOV	N6
Y	JOEL S. CAGLE III	N5
Z	PRIDEAUX LIMITED PARTNERSHIP	N4
AA	WESLEY E. WINTER	N3
AB	RANDY L. MENELEE	N2
AC	BOARDWALK AT SAM BASS INC	N1
AD	FERN BLUFF MUNICIPAL UTILITY DISTRICT	S10
AE	RSRF FERN BLUFF COMPANY, L.L.C.	S9
AF	FERN BLUFF MUNICIPAL UTILITY DISTRICT	S8
AG	CLARENCE LORENZA SAULS	S7
AH	CITY OF ROUND ROCK CREEK BEND BLVD	
AI	JORGE L. GONZALES	S6
AJ	CHRISTOPHER E. AND SANDRA K. SMITH	S5
AK	CAROLYN K. GILL	S4
AL	JIM M. AND MONTI M. BOLES	S3
AM	JIM M. AND MONTI M. BOLES	S2
AN	ONE WAY BAPTIST CHURCH	S1



LEGEND

- ⊙ CONTROL POINTS
- CEDAR PARK CITY LIMITS



8/9/2019

REV. No.	DATE	REVISION	BY



ATKINS

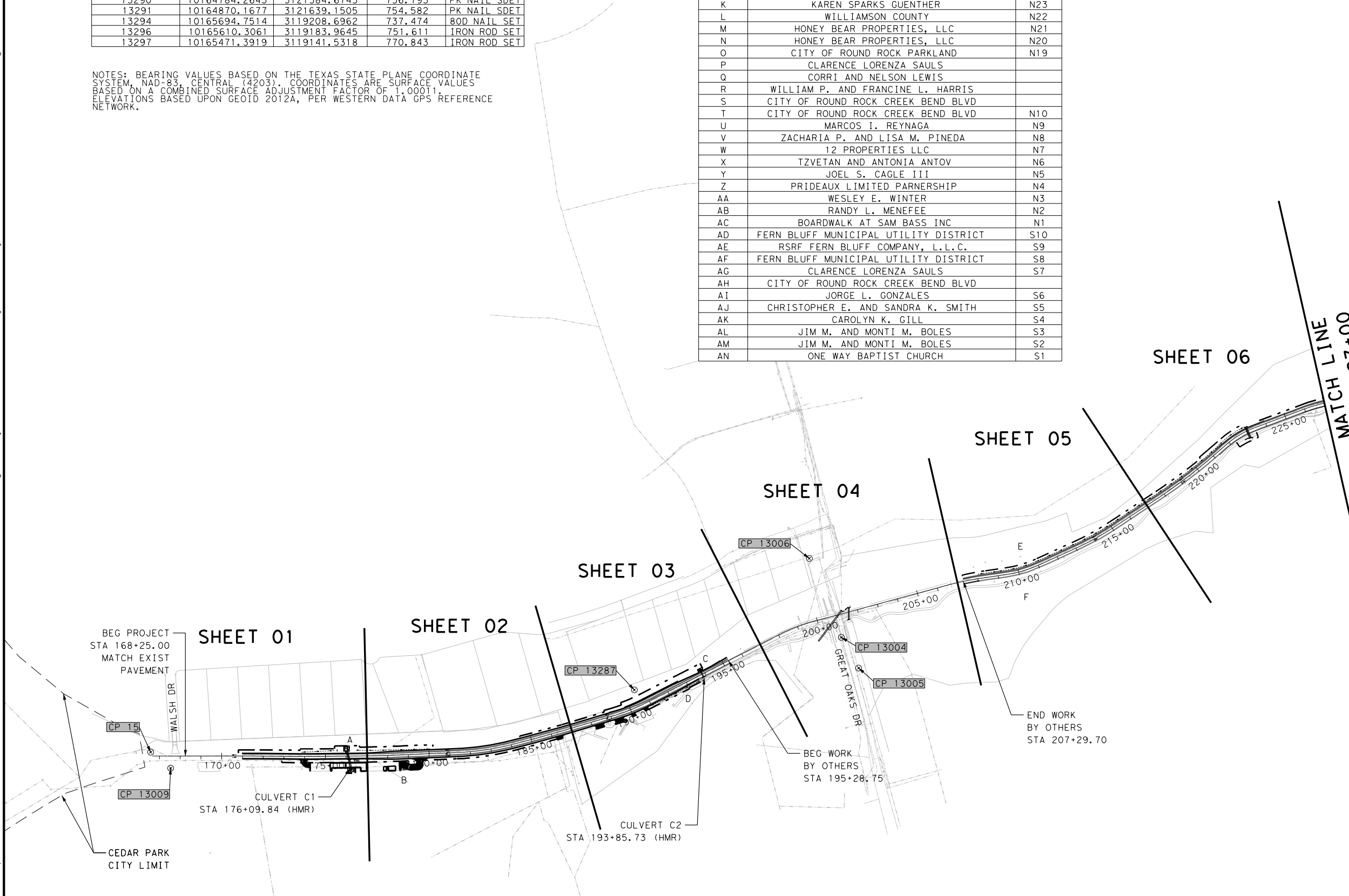
TBPE REG. # F-474

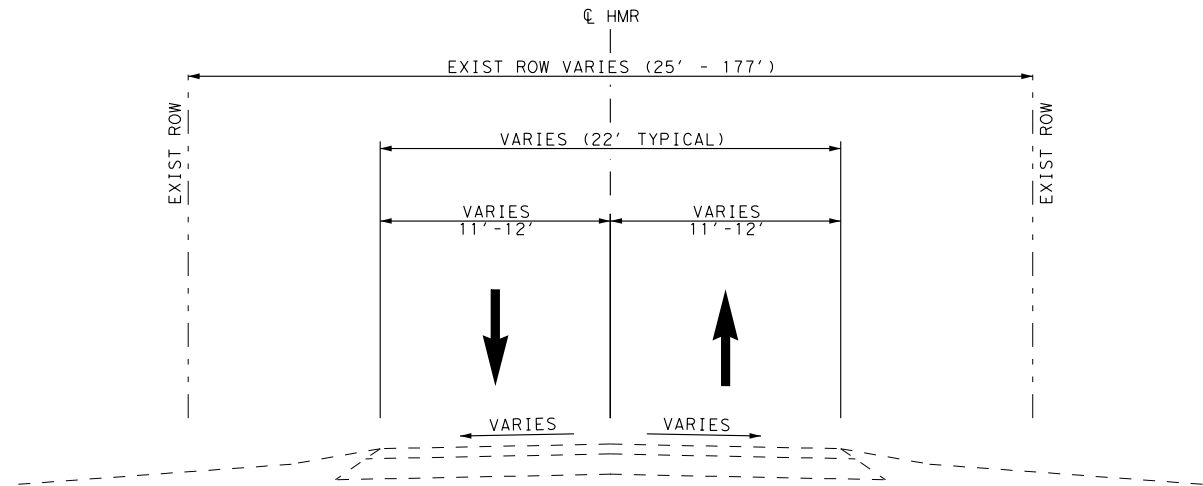
HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
PROJECT LAYOUT

SCALE: 1"=500'

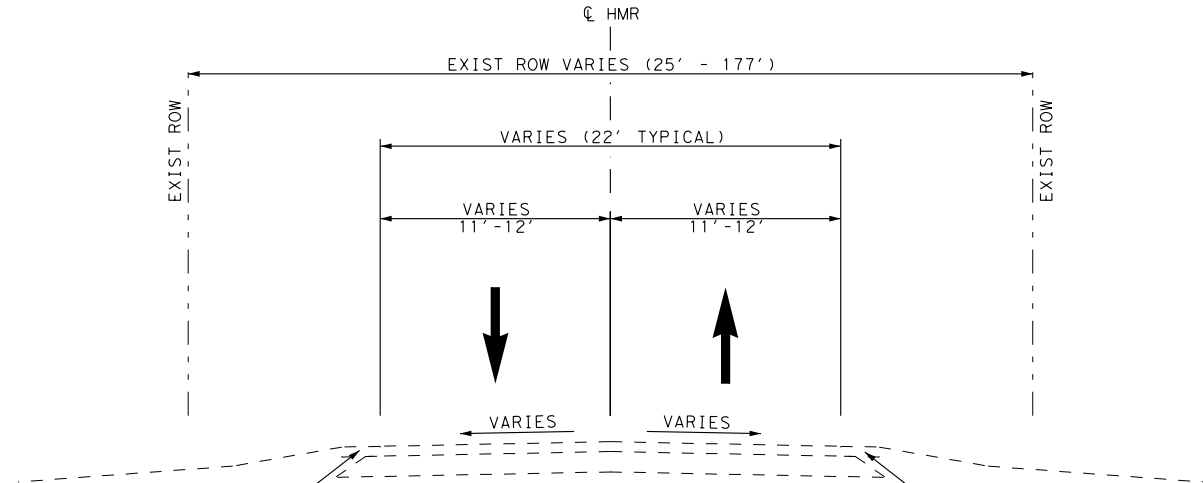
SHEET 1 OF 2

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL		TEXAS		HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		
			JOB No.	SHEET No.
				3

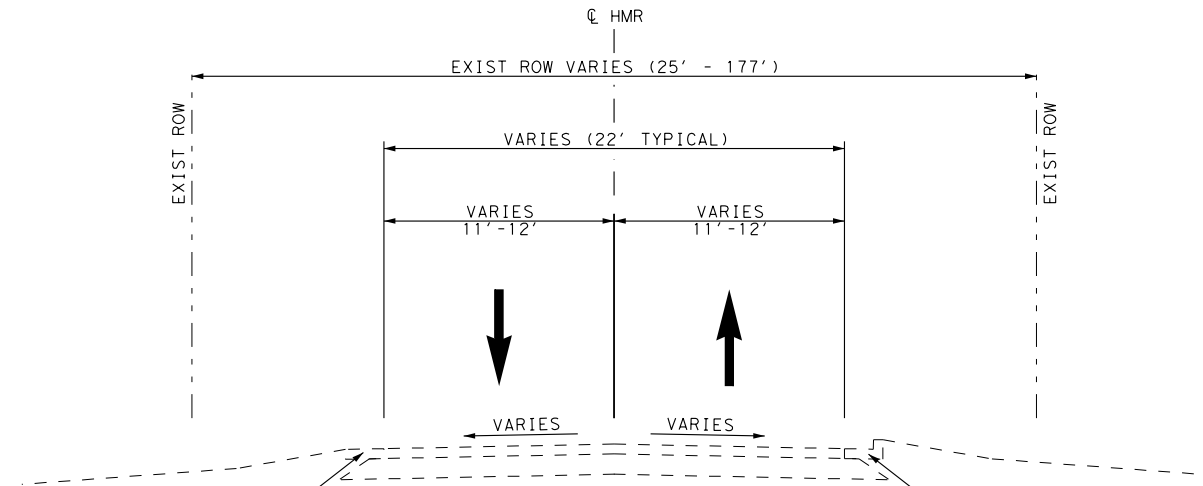




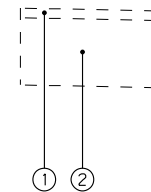
EXISTING TYPICAL
STA. 171+00.00 TO STA. 271+75.07



EXISTING TYPICAL
STA. 273+81.09 TO STA. 278+65.74
STA. 283+59.19 TO STA. 295+08.65

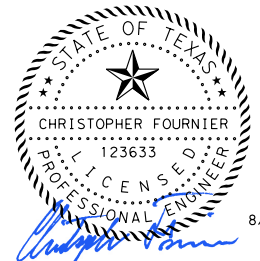


EXISTING TYPICAL
STA. 278+65.74 TO STA. 283+59.19
STA. 295+08.65 TO STA. 296+28.26



- ① 1.75" TO 5.25" HMAC
② 5.00" TO 11.75" FLEX. BASE

EXISTING PAVEMENT



8/9/2019

REV. No.	DATE	REVISION	BY

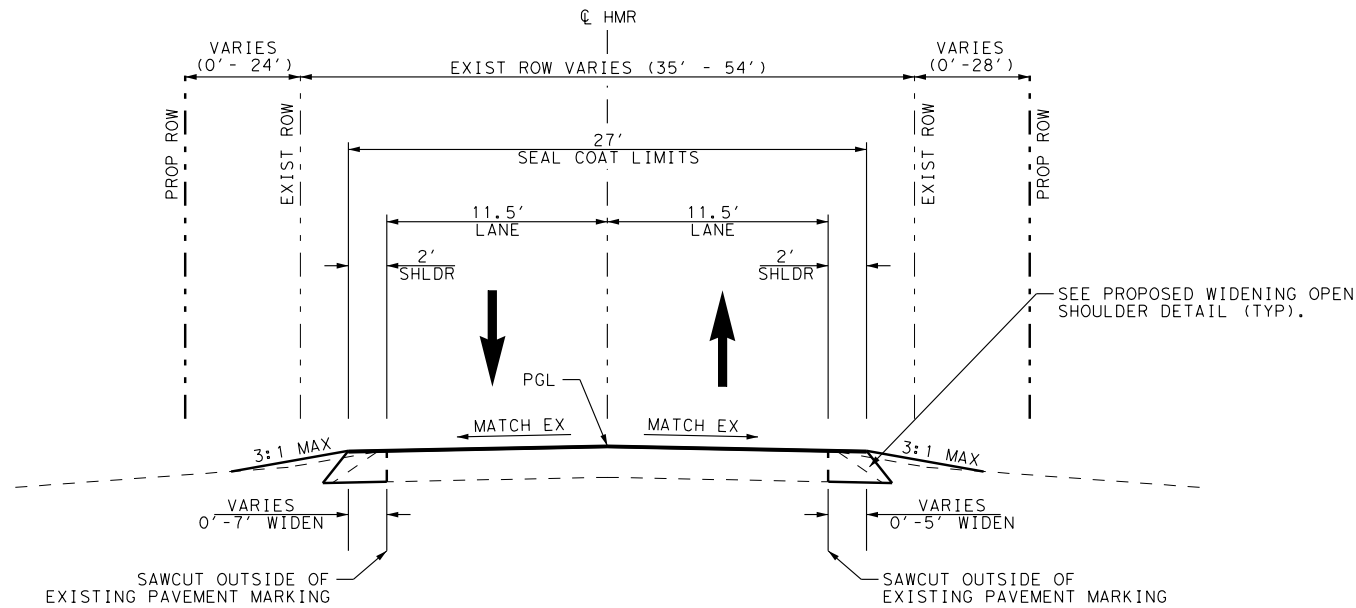


ATKINS

TBPE REG. # F-474

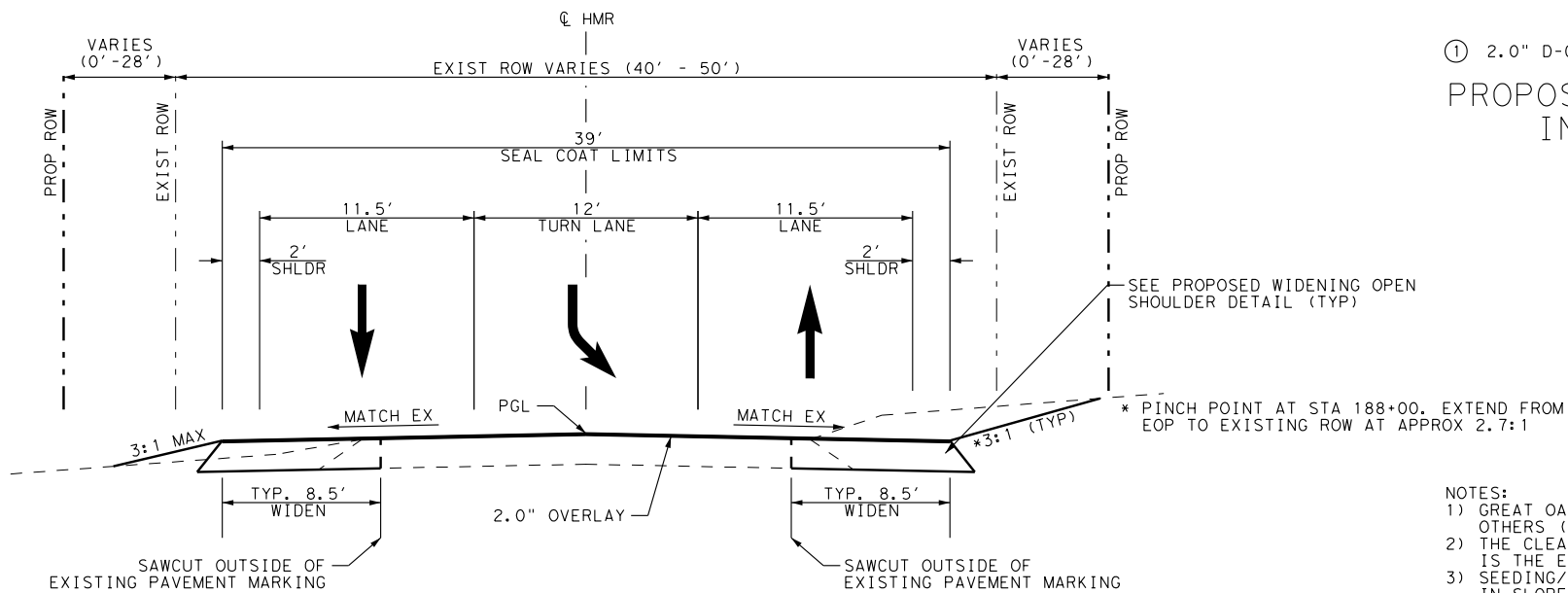
HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
TYPICAL SECTIONS

N. T. S.				SHEET 1 OF 4			
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.		
CHECKED: WHL		TEXAS			HAIRY MAN RD		
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: WHL	AUSTIN	WILLIAMSON				7	



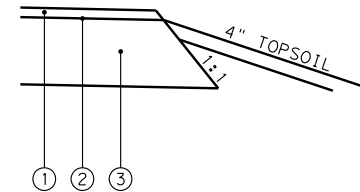
PROPOSED TYPICAL - WIDEN FROM CENTER

STA. 168+25.00 TO STA. 170+50.00 (MILL & OVERLAY 1.5")
STA. 170+50.00 TO STA. 171+00.00 (TRANSITION FROM 1.5" MILL & OVERLAY TO A 2" OVERLAY)
STA. 171+00.00 TO STA. 176+86.89 (2" OVERLAY)
STA. 207+29.70 TO STA. 207+79.70 (TRANSITION FROM A 1.5" MILL & OVERLAY TO A 2" OVERLAY)
STA. 207+79.70 TO STA. 208+06.85 (2" OVERLAY)
STA. 232+63.18 TO STA. 271+25.07 (2" OVERLAY)
STA. 271+25.07 TO STA. 271+75.07 (TRANSITION FROM A 2" OVERLAY TO EXISTING)
STA. 271+75.07 TO STA. 273+81.09 (BRIDGE LIMITS)



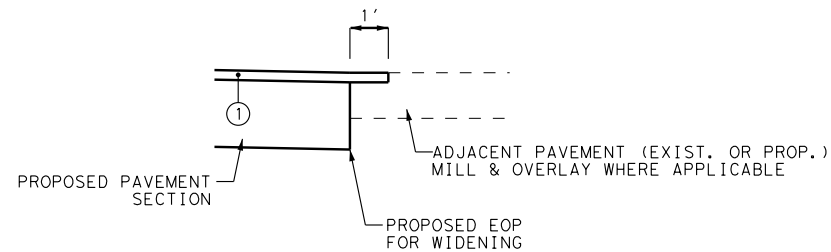
PROPOSED TYPICAL - TURN LANE

STA. 178+37.72 TO STA. 192+37.11
TRANSITION TAPERS
STA. 176+86.89 TO STA. 178+37.72
STA. 192+37.11 TO STA. 193+62.11



- ① 2.0" D-GR HMA TY-D SAC-A PG70-22 (OVERLAY)
- ② SEAL COAT ASPH (MLTI OPTION) & AGGR(TY-D GR-5 SAC-B)
- ③ 12" D-GR HMA TY-B SAC-B PG (64-22)

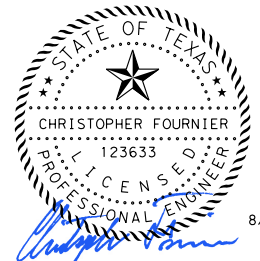
PROPOSED WIDENING
OPEN SHOULDER



- ① 2.0" D-GR HMA TY-D SAC-A PG70-22 (OVERLAY)

PROPOSED WIDENING
INTERFACE

- NOTES:
- 1) GREAT OAK DR IMPROVEMENT CONSTRUCTION BY OTHERS (STA 195+28.75 TO STA 207+29.70)
 - 2) THE CLEARZONE FOR THIS 3R CONSTRUCTION PROJECT IS THE EDGE OF PAVEMENT
 - 3) SEEDING/ TOP SOIL EXTENDS TO LIMITS OF PROPOSED TIE IN SLOPES
 - 4) WHERE DITCH BERMS ARE PROPOSED, BERM WIDTH IS 1'
 - 5) EXCAVATE ONLY WHAT CAN BE FILLED WITH TY B HMAC DAILY TO ELIMINATE LONG-TERM DROP OFFS



8/9/2019

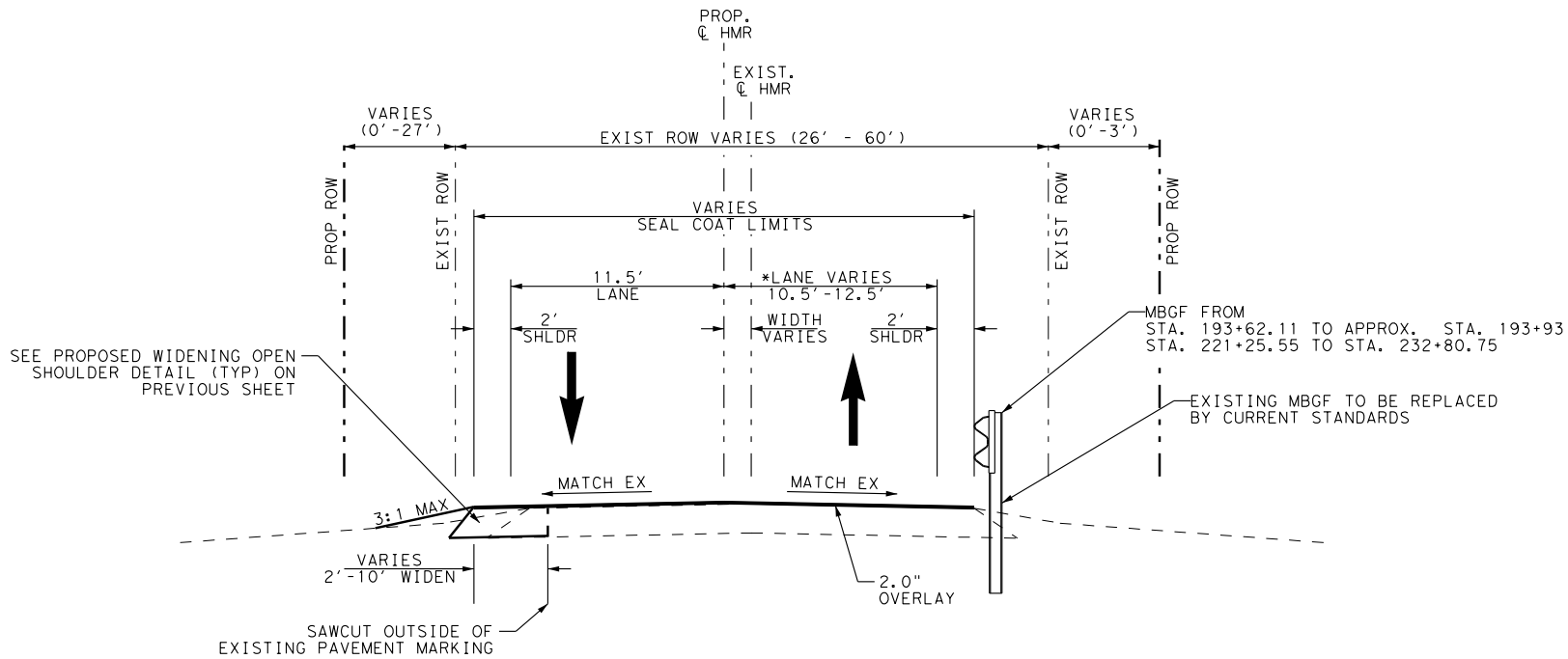
REV. No.	DATE	REVISION	BY



ATKINS
TBPE REG. # F-474

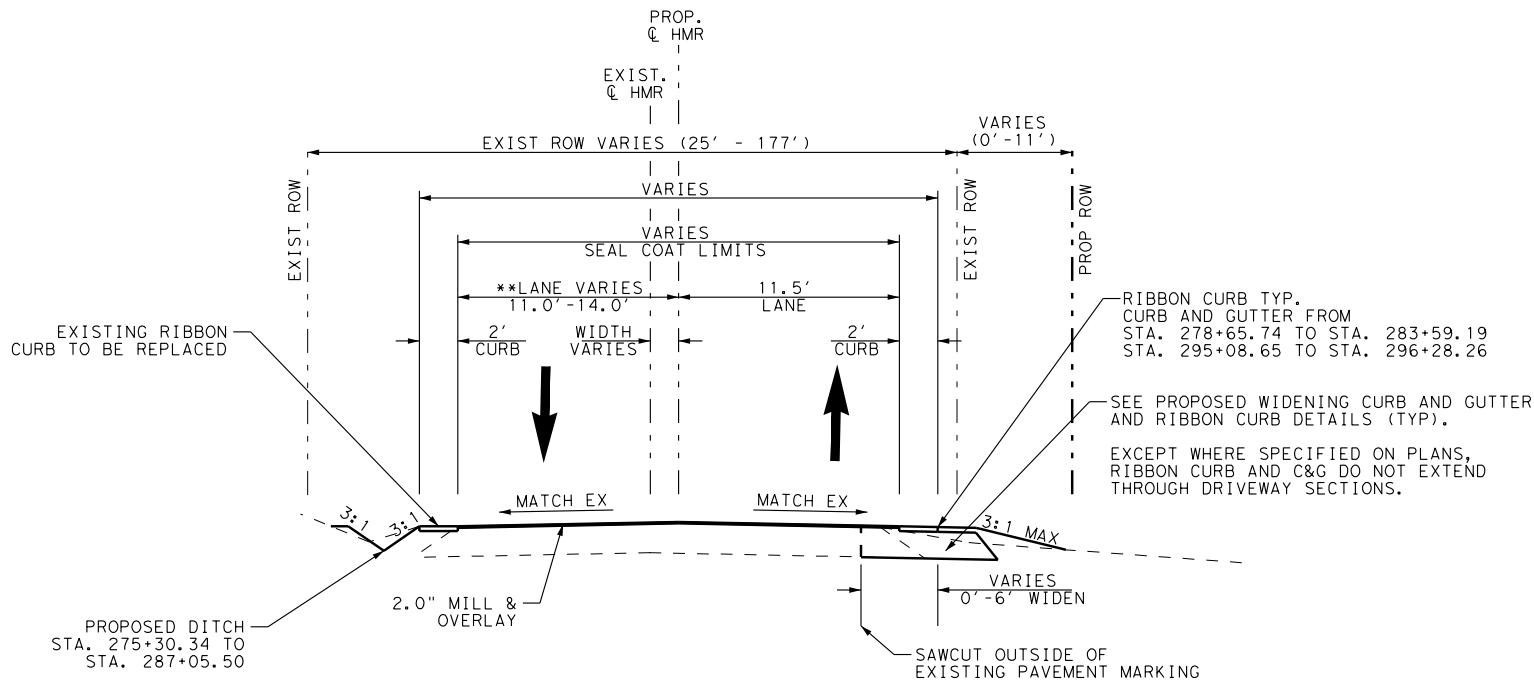
HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
TYPICAL SECTIONS

N. T. S.				SHEET 2 OF 4			
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.		
CHECKED: WHL		TEXAS			HAIRY MAN RD		
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: WHL	AUSTIN	WILLIAMSON				8	



PROPOSED TYPICAL - WIDEN FROM LEFT

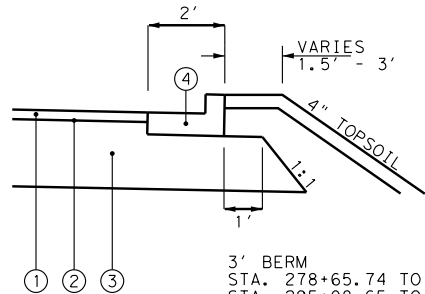
PROP. CROWN LEFT OF EXIST. CROWN
STA. 193+62.11 TO STA. 194+78.75
STA. 194+78.75 TO STA. 195+28.75 (TRANSITION FROM A 2" OVERLAY TO A 1.5" MILL & OVERLAY)
STA. 208+06.85 TO STA. 232+63.18
* EASTBOUND LANE MAINTAINS EXISTING EDGE OF PAVEMENT



PROPOSED TYPICAL - WIDEN FROM RIGHT

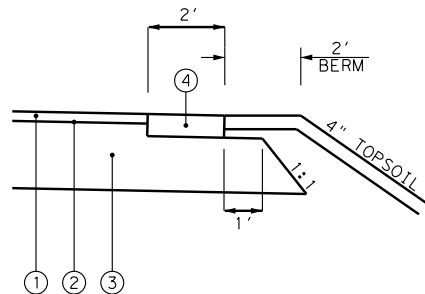
STA. 273+81.09 TO STA. 296+28.26

** WESTBOUND LANE MAINTAINS EXISTING EDGE OF PAVEMENT



- ① 2.0" D-GR HMA TY-D SAC-A PG70-22 (OVERLAY)
- ② SEAL COAT ASPH (MLTI OPTION) & AGGR(TY-D GR-5 SAC-B)
- ③ 12" D-GR HMA TY-B SAC-B PG (64-22)
- ④ TY II CURB AND GUTTER (6" THICK)

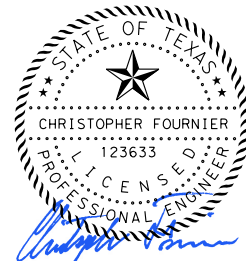
PROPOSED WIDENING CURB AND GUTTER



- ① 2.0" D-GR HMA TY-D SAC-A PG70-22 (MILL & OVERLAY)
- ② SEAL COAT ASPH (MLTI OPTION) & AGGR(TY-D GR-5 SAC-B)
- ③ 12" D-GR HMA TY-B SAC-B PG (64-22)
- ④ RIBBON CURB (6" THICK)

PROPOSED WIDENING RIBBON CURB

- NOTES:
- 1) GREAT OAK DR IMPROVEMENT CONSTRUCTION BY OTHERS (STA. 195+28.75 TO STA. 207+29.70)
 - 2) THE CLEARZONE FOR THIS 3R CONSTRUCTION PROJECT IS THE EDGE OF PAVEMENT
 - 3) SEEDING/ TOP SOIL EXTENDS TO LIMITS OF PROPOSED TIE IN SLOPES
 - 4) PLACE TY-B IN 3 EQUAL LIFTS. PLACE CURB SECTIONS ON TOP OF SECOND LIFT. MUST PROVIDE 3:1 SAFETY WEDGE AFTER SECOND COURSE OF TY-B TO REMAIN IN PLACE DURING CONSTRUCTION OF CURB. SAFETY WEDGE TO BE MILLED OUT PRIOR TO FINAL COURSE OF TY-B.
 - 5) WHERE DITCH BERMS ARE PROPOSED, BERM WIDTH IS 1'
 - 6) EXCAVATE ONLY WHAT CAN BE FILLED WITH TY B HMAC DAILY TO ELIMINATE LONG-TERM DROP OFFS



8/9/2019

REV. No.	DATE	REVISION	BY

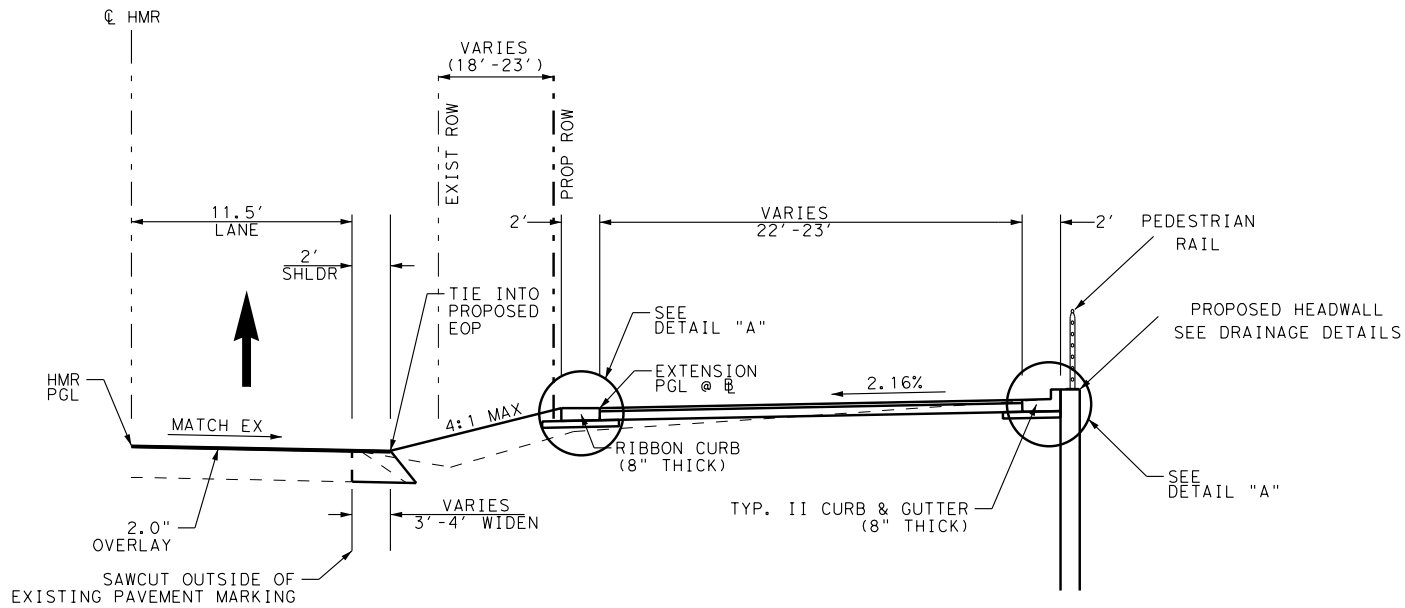


ATKINS

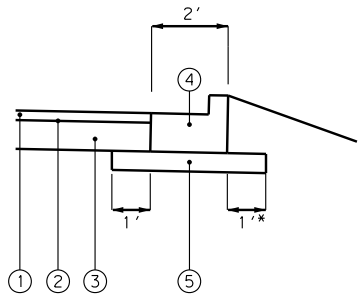
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
TYPICAL SECTIONS

N. T. S.				SHEET 3 OF 4			
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.		
CHECKED: WHL		TEXAS			HAIRY MAN RD		
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: WHL	AUSTIN	WILLIAMSON				9	



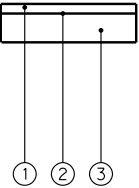
PROPOSED TYPICAL - PARKING LOT EXTENSION



*1' OVERHANG DOES NOT APPLY FOR PORTION OF CURB ADJACENT TO CULVERT HEADWALL

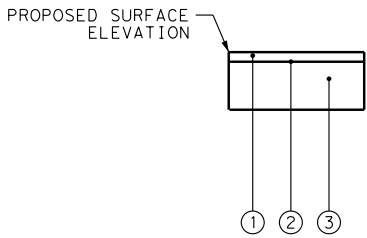
- 1 2.0" D-GR HMA TY-D SAC-A PG70-22 (OVERLAY)
- 2 SEAL COAT ASPH (MLTI OPTION) & AGGR(TY-D GR-5 SAC-B)
- 3 6" D-GR HMA TY-B SAC-B PG (64-22)
- 4 RIBBON CURB/TY II CURB AND GUTTER (8" THICK)
- 5 4" FL BS (CMP IN PLC) (TY A GR 5) (FNAL POS)

DETAIL "A"



- 1 2.0" D-GR HMA TY-D SAC-A PG70-22 (OVERLAY)
- 2 SEAL COAT ASPH (MLTI OPTION) & AGGR(TY-D GR-5 SAC-B)
- 3 6" D-GR HMA TY-B SAC-B PG (64-22)

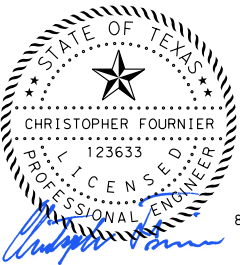
PROPOSED PARKING LOTS AND RECONSTRUCTED DRIVEWAYS



- 1 2.0" D-GR HMA TY-D SAC-A PG70-22 (OVERLAY)
- 2 SEAL COAT ASPH (MLTI OPTION) & AGGR(TY-D GR-5 SAC-B)
- 3 10" D-GR HMA TY-B SAC-B PG (64-22)

REPAIR EXISTING PAVEMENT AS DIRECTED

NOTES:
1) GREAT OAK DR IMPROVEMENT CONSTRUCTION BY OTHERS (STA 195+28.75 TO STA 207+29.70)
2) THE CLEARZONE FOR THIS 3R CONSTRUCTION PROJECT IS THE EDGE OF PAVEMENT
3) SEEDING/ TOP SOIL EXTENDS TO LIMITS OF PROPOSED TIE IN SLOPES



8/9/2019

REV. No.	DATE	REVISION	BY



ATKINS
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
TYPICAL SECTIONS

N. T. S.		SHEET 4 OF 4					
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.		
CHECKED: WHL		TEXAS			HAIRY MAN RD		
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: WHL	AUSTIN	WILLIAMSON				10	

BEGIN PROJECT
STA 168+25.00
MATCH EXISTING
X: 3111886.3364
Y: 10163091.8332

WALSH DR

TREE NO. 1243
TREE REMOVAL (4"-12")

REMOVING CONC
(CURB OR CURB
& GUTTER) 52 LF

REMOVE EXISTING
HEADWALL
REMOVE 2-48" CMP
X 2 LF (BREAKBACK)

REMOVING CONC
(CURB OR CURB
& GUTTER) 85 LF
REMOVING STAB BASE
AND ASPH PAV (2"-8")
115 SY
REMOVING CONC
(CURB OR CURB
& GUTTER) 31 LF

REMOVING CONC
(CURB OR CURB
& GUTTER) 61 LF
TREE NO. 1405
2-TREE REMOVAL
1-(4"-12")
1-(24"-30")

REMOVING STAB BASE
AND ASPH PAV (2"-8")
52 SY

REMOVING CONC
(CURB OR CURB
& GUTTER) 112 LF

MATCH LINE STA 177+00

MATCH LINE STA 177+00

TREE NO. 1534
TREE REMOVAL (4"-12")

TREE NO. 1533
TREE REMOVAL (4"-12")

TREE NO. 20262
TREE REMOVAL (4"-12")

TREE NO. 1532
TREE REMOVAL (18"-24")

TREE NO. 20251
TREE REMOVAL (4"-12")

TREE NO. 20209
TREE REMOVAL (4"-12")

TREE NO. 20223
TREE REMOVAL (4"-12")

TREE NO. 1801
TREE REMOVAL (4"-12")

TREE NO. 1805
TREE REMOVAL (18"-24")

TREE NO. 1804
TREE REMOVAL (4"-12")

TREE NO. 1691
2-TREE REMOVAL
1-(4"-12")
1-(12"-18")

REMOVING CONC
(CURB OR CURB
& GUTTER) 143 LF

REMOVE AND RETAIN EXISTING CURB STOPS
TO BE RELOCATED TO PROPOSED PARKING SPACES

REMOVING CONC
(CURB OR CURB
& GUTTER) 95 LF

REMOVING STAB BASE
AND ASPH PAV (2"-8")
12 SY

TREE NO. 1690
TREE REMOVAL (12"-18")

TREE NO. 1756
3-TREE REMOVAL
3-(4"-12")

TREE NO. 1755
TREE REMOVAL (12"-18")

TREE NO. 1767
TREE REMOVAL (4"-12")

TREE NO. 1766
TREE REMOVAL (4"-12")

REMOVING STAB BASE
AND ASPH PAV (2"-8")
38 SY

REMOVING CONC
(CURB OR CURB
& GUTTER) 33 LF






REMOVING CONC
(CURB OR CURB
& GUTTER) 29 LF

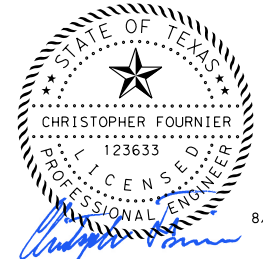
MATCH LINE STA 187+00

NOTES:

1. TREES BELOW 8" ARE NOT SHOWN ON THE PLANS.
2. TREE REMOVALS SHOWN ARE FROM 8" AND ABOVE. ANY TREES REMOVED BELOW 8" ARE SUBSIDIARY TO PREP ROW.
3. PROPOSED TREE REMOVAL TO BE FLAGGED BY CONTRACTOR. FINAL DETERMINATION OF REMOVAL TO BE APPROVED BY COUNTY.
4. REFER TO THE DRAINAGE SHEETS FOR PIPE AND HEADWALL REMOVALS.
5. ALL OTHER REMOVALS NOT SHOWN ARE SUBSIDIARY TO PREP ROW.
6. ASPH PAVEMENT REMOVAL IS SUBSIDIARY TO EXCAVATION.

LEGEND

-  TREE REMOVAL
-  PAVEMENT REMOVAL
-  PROPOSED R.O.W.
-  EXISTING R.O.W.
-  TEMP CONSTRUCTION EASEMENT



REV. NO.	DATE	REVISION	BY



ATKINS

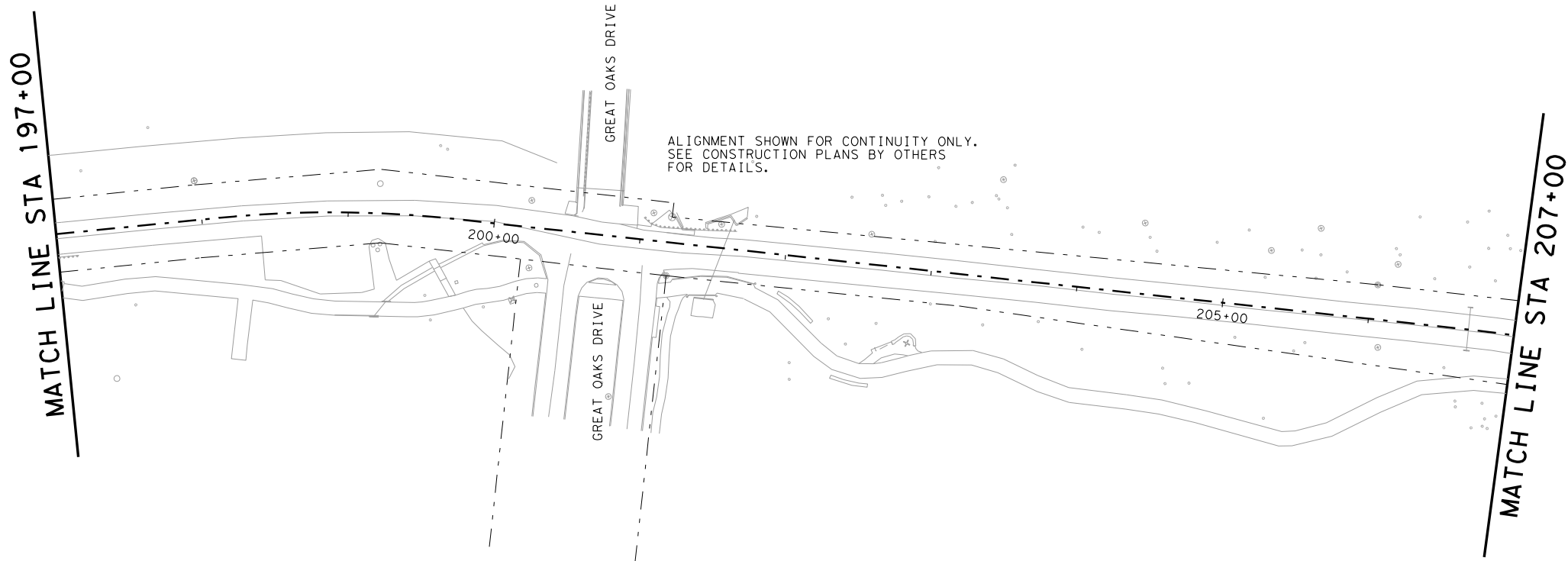
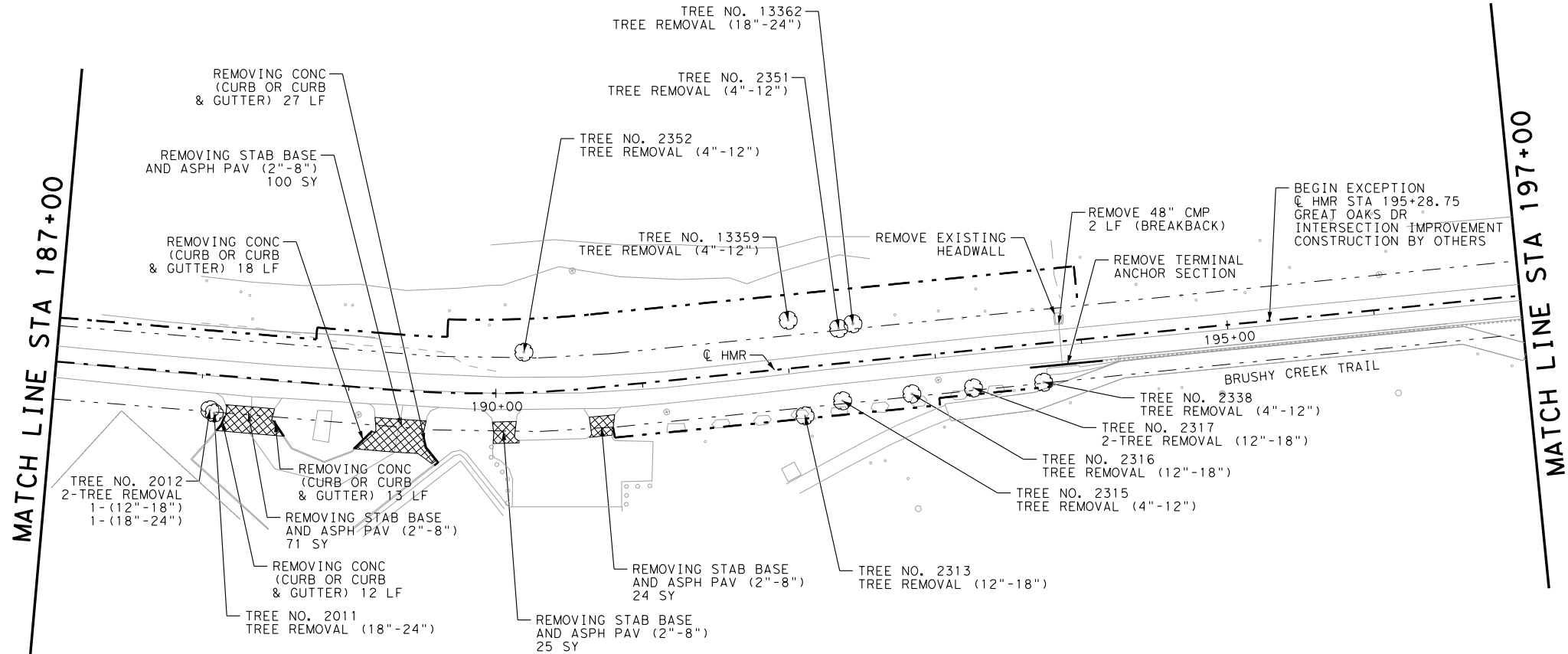
TBPE REG. # F-474

HAIRY MAN ROAD / BRUSHY CREEK ROAD IMPROVEMENTS REMOVAL PLAN

SCALE: 1"=100'H

SHEET 1 OF 7

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL		TEXAS		HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		
				JOB No.
				SHEET No.
				18



- NOTES:**
1. TREES BELOW 8" ARE NOT SHOWN ON THE PLANS.
 2. TREE REMOVALS SHOWN ARE FROM 8" AND ABOVE. ANY TREES REMOVED BELOW 8" ARE SUBSIDIARY TO PREP ROW.
 3. PROPOSED TREE REMOVAL TO BE FLAGGED BY CONTRACTOR. FINAL DETERMINATION OF REMOVAL TO BE APPROVED BY COUNTY.
 4. REFER TO THE DRAINAGE SHEETS FOR PIPE AND HEADWALL REMOVALS.
 5. ALL OTHER REMOVALS NOT SHOWN ARE SUBSIDIARY TO PREP ROW.
 6. ASPH PAVEMENT REMOVAL IS SUBSIDIARY TO EXCAVATION.

LEGEND

- TREE REMOVAL
- PAVEMENT REMOVAL
- PROPOSED R.O.W.
- EXISTING R.O.W.
- TEMP CONSTRUCTION EASEMENT

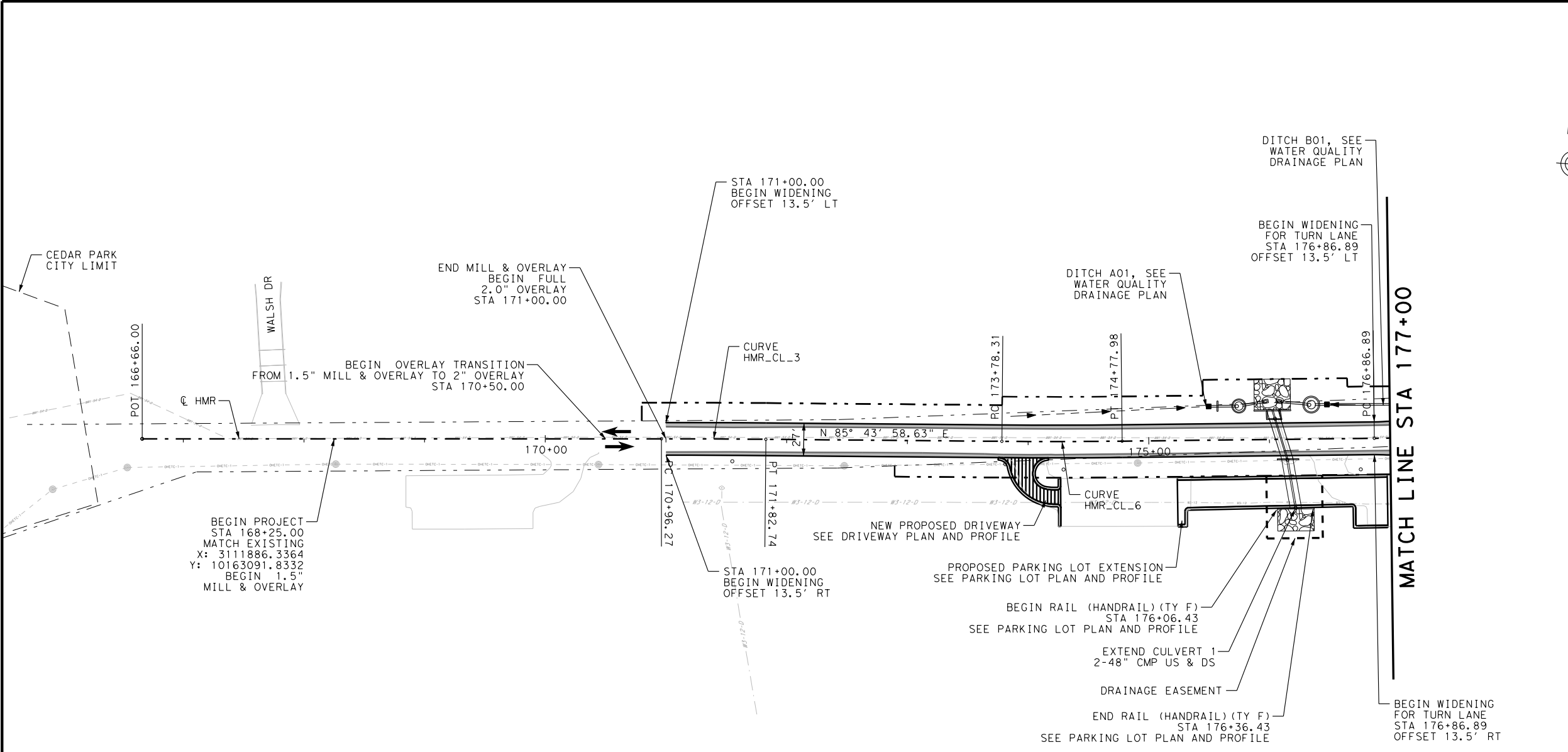


REV. No.	DATE	REVISION	BY



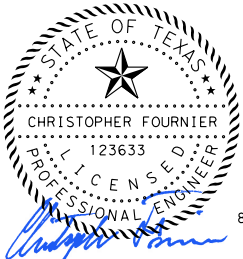
**HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
REMOVAL PLAN**

SCALE: 1"=100' H				SHEET 2 OF 7			
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.		
CHECKED: WHL		TEXAS			HAIRY MAN RD		
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: WHL	AUSTIN	WILLIAMSON				19	

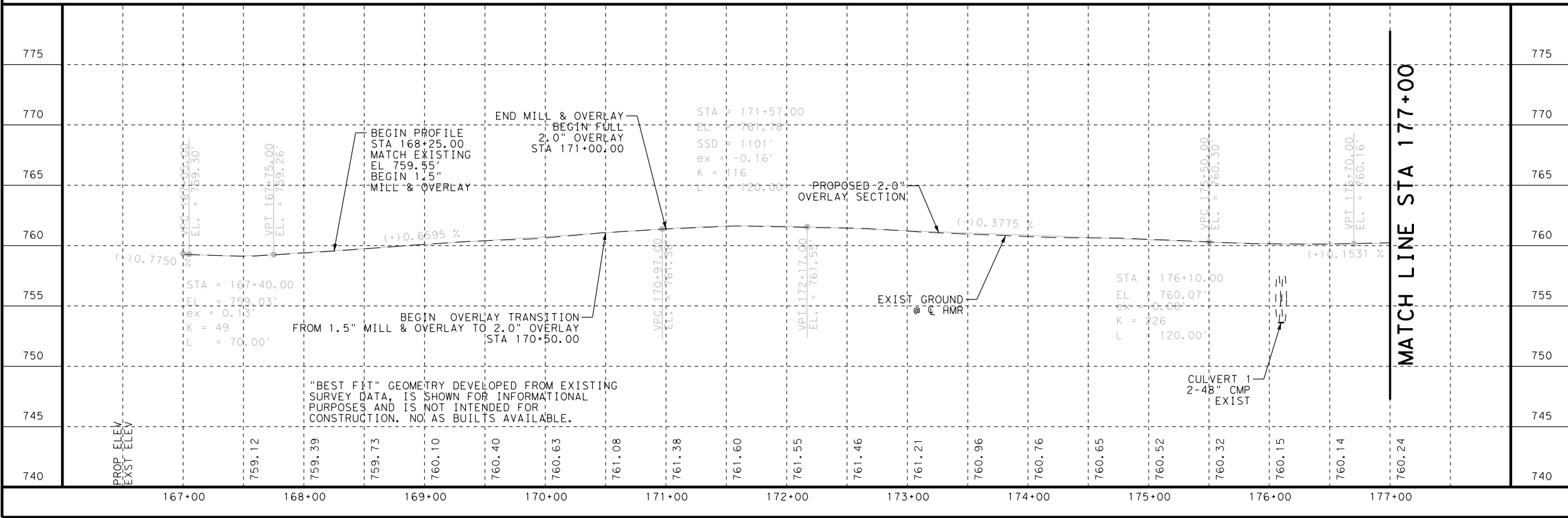


LEGEND

- NEW / RECONSTRUCTED DRIVEWAY
- TRAFFIC DIRECTION
- PROPOSED R.O.W.
- EXISTING R.O.W.
- WIDENING
- PROPOSED E.O.P.
- PROPOSED DITCH
- PROPOSED RIPRAP



8/9/2019



REV. No.	DATE	REVISION	BY

WILLIAMSON COUNTY
1848

ATKINS
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
PLAN AND PROFILE

SCALE: 1"=100'H, 1"=10'V SHEET 1 OF 13

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL	TEXAS			HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		

25



NEW / RECONSTRUCTED DRIVEWAY

→ TRAFFIC DIRECTION

- - - PROPOSED R. O. W.

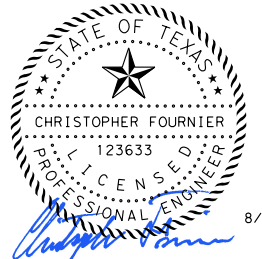
- - - EXISTING R. O. W.

WIDENING

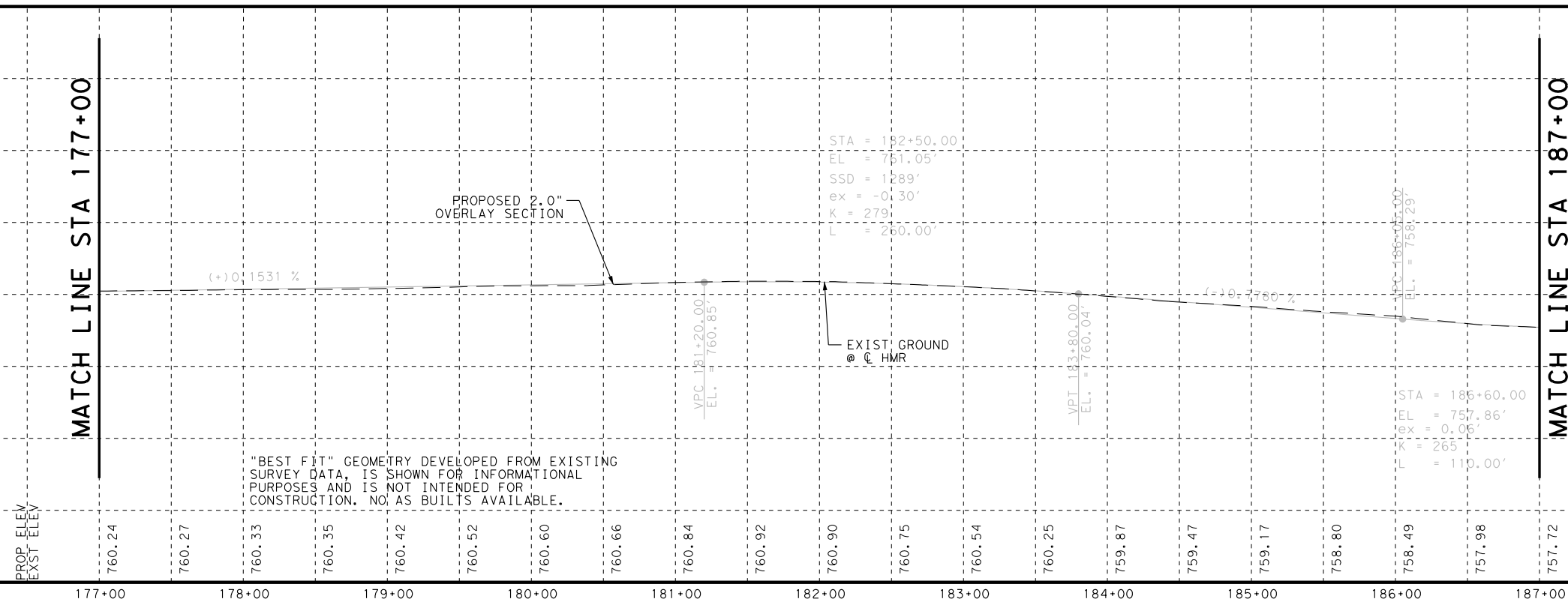
PROPOSED E. O. P.

→ PROPOSED DITCH


PROPOSED RIPRAP



5/9/2019



REV. No.	DATE	REVISION	BY



WILLIAMSON
COUNTY
1848

ATKINS

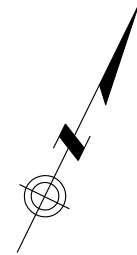
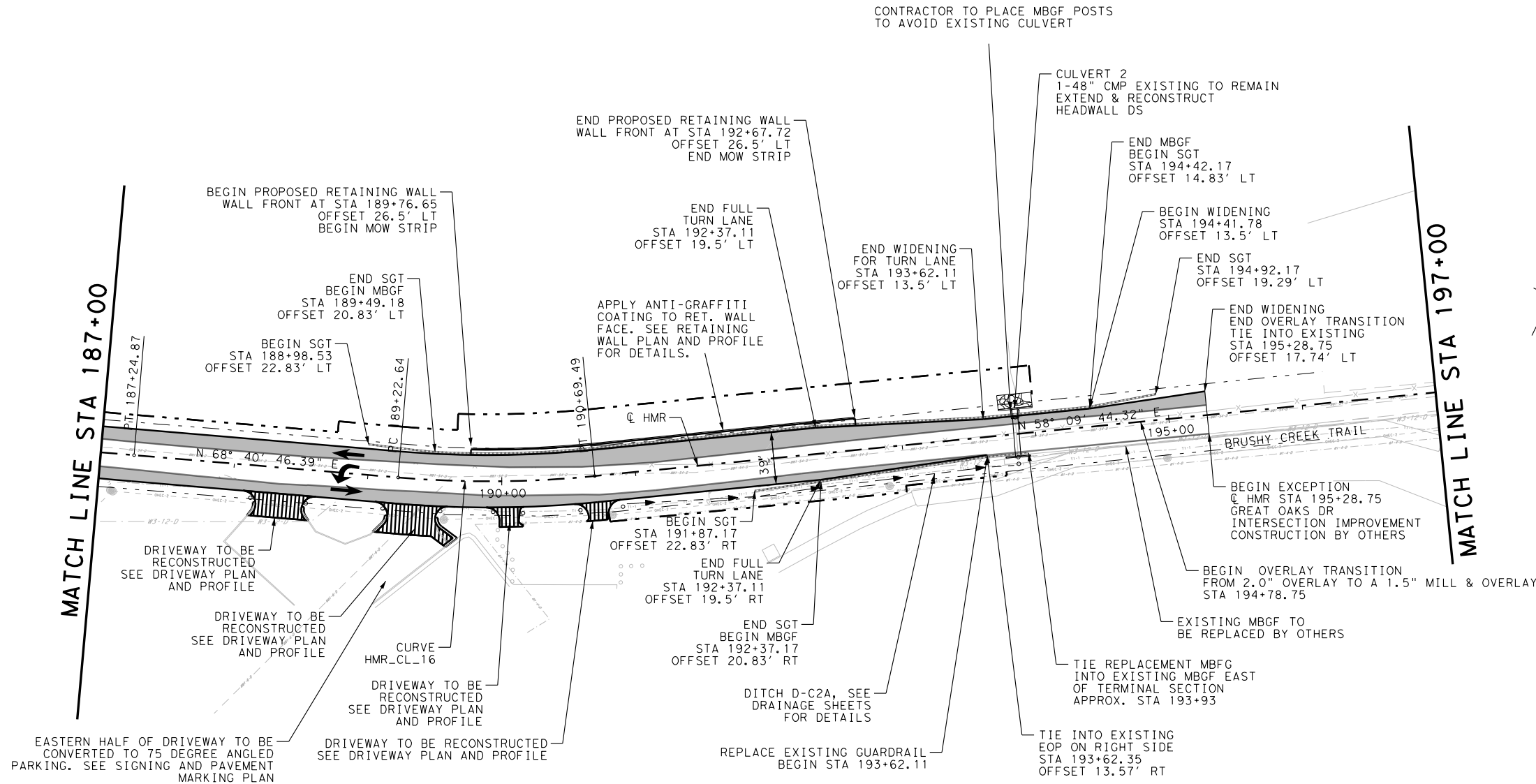
TBPE REG. # F-474

HAIRY MAN ROAD / BRUSHY CREEK ROAD IMPROVEMENTS PLAN AND PROFILE

SCALE: 1"=100'H, 1"=10'V

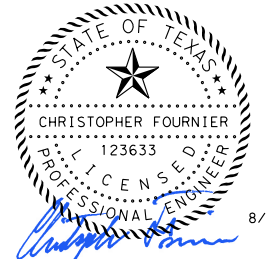
SHEET 2 OF 13

DESIGNED: CAF	FED. RD Div. No.	STATE	PROJECT No.		HIGHWAY No.
CHECKED: WHL	TEXAS				HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No. SHEET No.
CHECKED: WHL	AUSTIN	WILLIAMSON			26

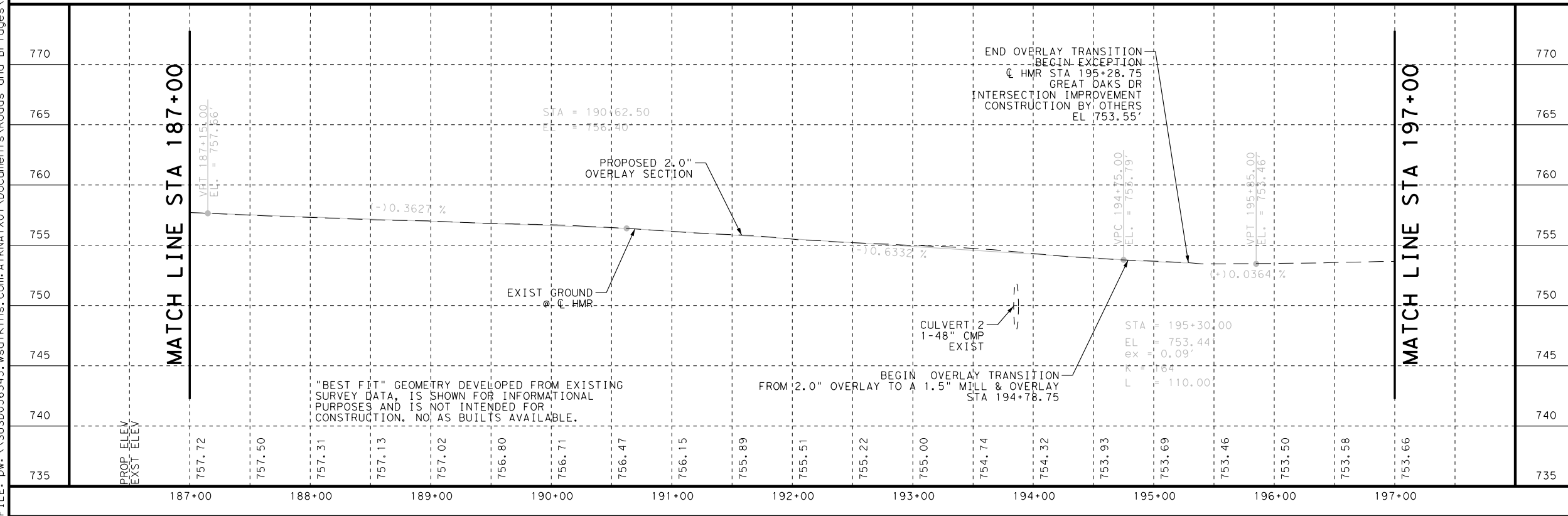


LEGEND

- NEW / RECONSTRUCTED DRIVEWAY
- TRAFFIC DIRECTION
- PROPOSED R.O.W.
- EXISTING R.O.W.
- WIDENING
- PROPOSED E.O.P.
- PROPOSED DITCH
- PROPOSED RIPRAP



8/9/2019



REV. No.	DATE	REVISION	BY

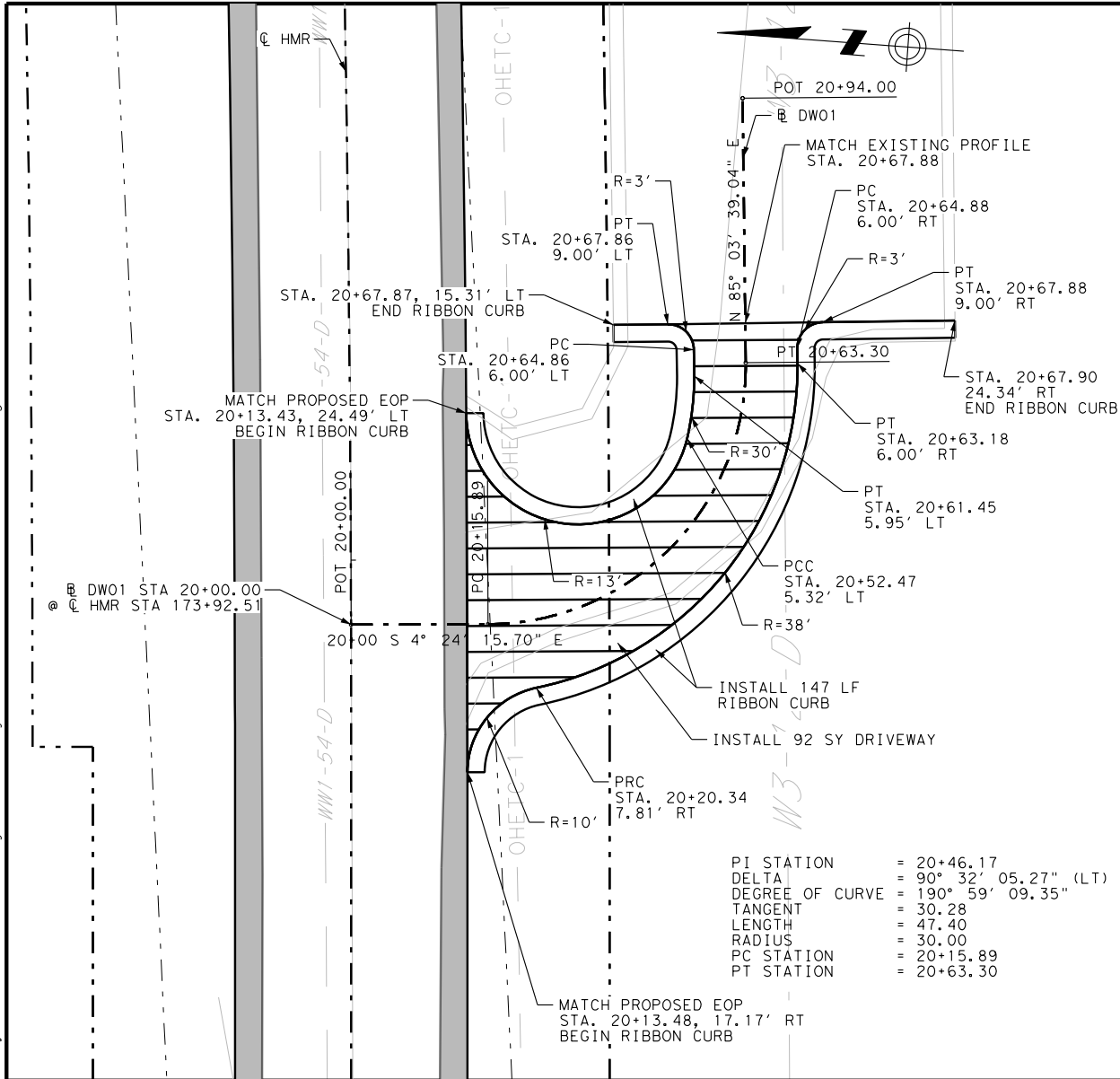
1848	
TBPE REG. # F-474	
HAIRY MAN ROAD / BRUSHY CREEK ROAD IMPROVEMENTS PLAN AND PROFILE	

SCALE: 1"=100'H, 1"=10'V		SHEET 3 OF 13	
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.
CHECKED: WHL	TEXAS		HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.
CHECKED: WHL	AUSTIN	WILLIAMSON	SECTION No.
			JOB No.
			SHEET No.
			27

100% SUBMITTAL

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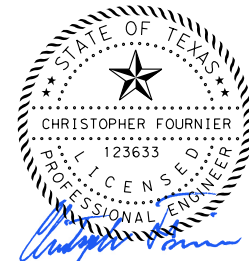
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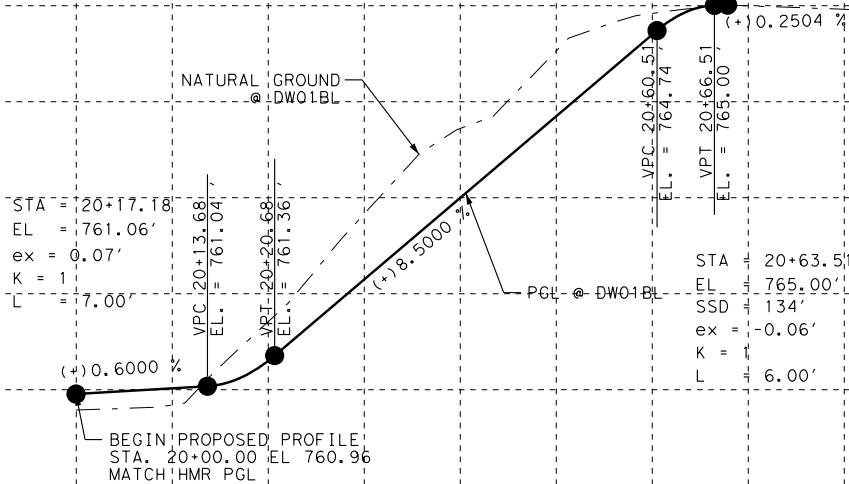
- NEW / RECONSTRUCTED DRIVEWAY
- TRAFFIC DIRECTION
- PROPOSED R.O.W.
- EXISTING R.O.W.
- WIDENING
- PROPOSED E.O.P.
- PROPOSED DITCH
- PROPOSED RIPRAP



8/9/2019

DW01 BL

END PROPOSED PROFILE
STA. 20+67.88 EL 765.01
MATCH EXISTING PROFILE



PURPOSELY
BLANK

REV. No.	DATE	REVISION	BY

WILLIAMSON COUNTY
1848

ATKINS
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
DRIVEWAY PLAN
AND PROFILE

SCALE: 1"=20'H, 1"=2'V SHEET 1 OF 10

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL	TEXAS			HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		

38

PURPOSELY
BLANK

℄ DW03 STA 20+0000
℄ HMR STA 186+36.32

RECONSTRUCT
43 SY
DRIVEWAY

℄ HMR

MATCH PROPOSED EOP
STA. 20+19.06
21.12' LT

INSTALL 21 LF RIBBON CURB

PT
STA. 20+28.79
11.35' LT

MATCH EXISTING
STA. 20+34.44
11.20' LT

℄ DW03

R=10'

R=5'

R=10'

MATCH EXISTING PROFILE
STA. 20+34.67

MATCH EXISTING CURVE
STA. 20+34.95
15.09' RT

PC
STA. 20+30.03
11.00' RT

PT
STA. 20+29.89
11.00' RT

INSTALL 23 LF RIBBON CURB

MATCH PROPOSED EOP
STA. 20+19.89
21.17' RT

DW03BL

BEGIN PROPOSED PROFILE
STA. 20+00.00 EL 758.28
MATCH HMR PGL

PGL @ DW03BL

END PROPOSED PROFILE
STA. 20+34.67 EL 759.65
MATCH EXISTING PROFILE

STA = 20+21.50
EL = 758.71'
ex = 0.04'
K = 1
L = 5.00'

STA = 20+31.99
EL = 759.54'
SSD = 302'
ex = -0.02'
K = 1
L = 5.00'

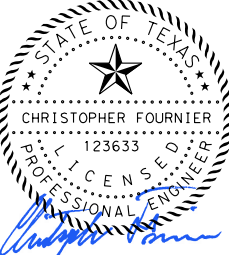
NATURAL GROUND
@ DW03BL

PROP. ELEV.
EXST. ELEV.

20+00

LEGEND

- NEW / RECONSTRUCTED DRIVEWAY
- TRAFFIC DIRECTION
- PROPOSED R.O.W.
- EXISTING R.O.W.
- WIDENING
- PROPOSED E.O.P.
- PROPOSED DITCH
- PROPOSED RIPRAP



8/9/2019



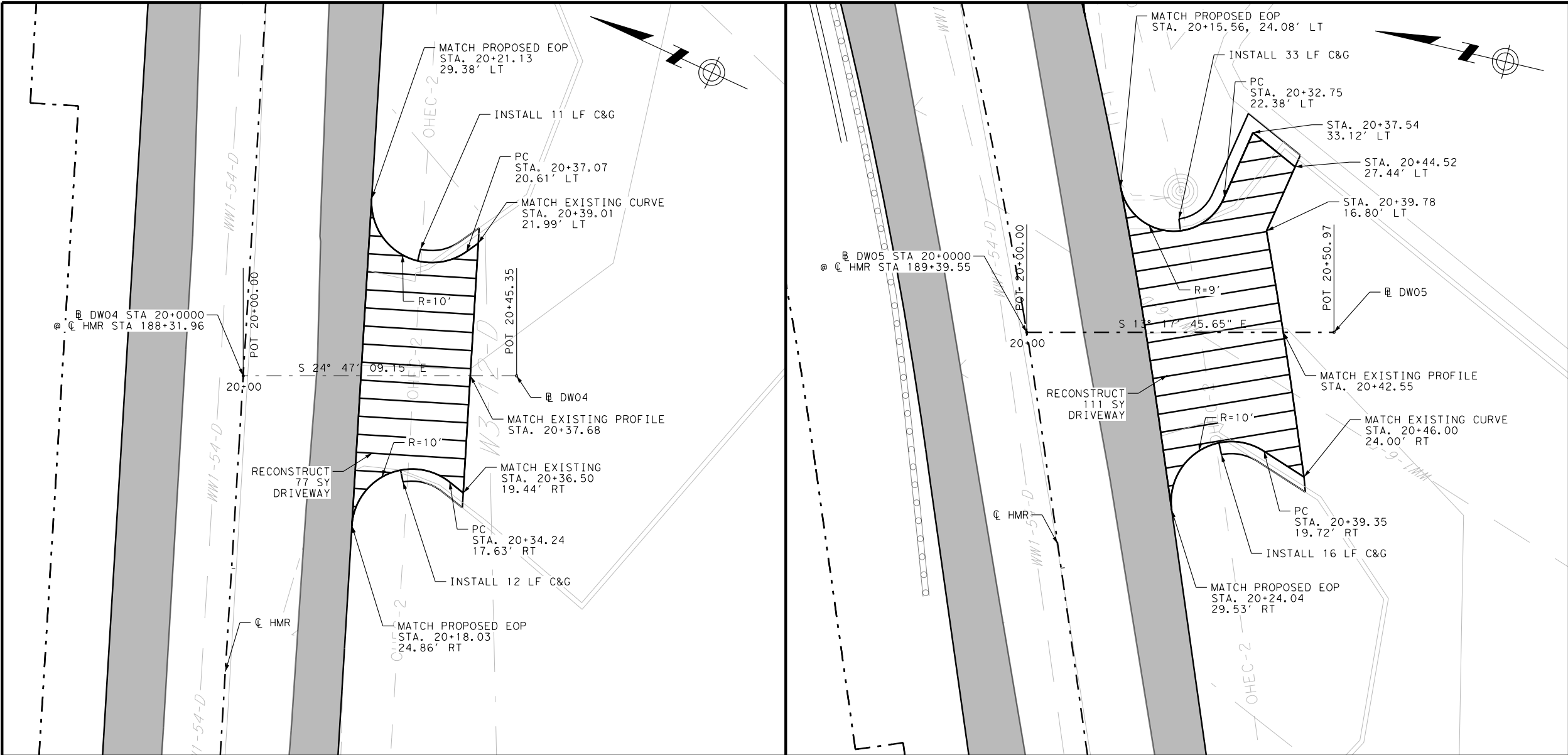
ATKINS

TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
DRIVEWAY PLAN
AND PROFILE

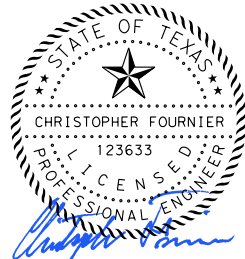
SCALE: 1"=20'H, 1"=2'V SHEET 3 OF 10

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL		TEXAS		HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		40

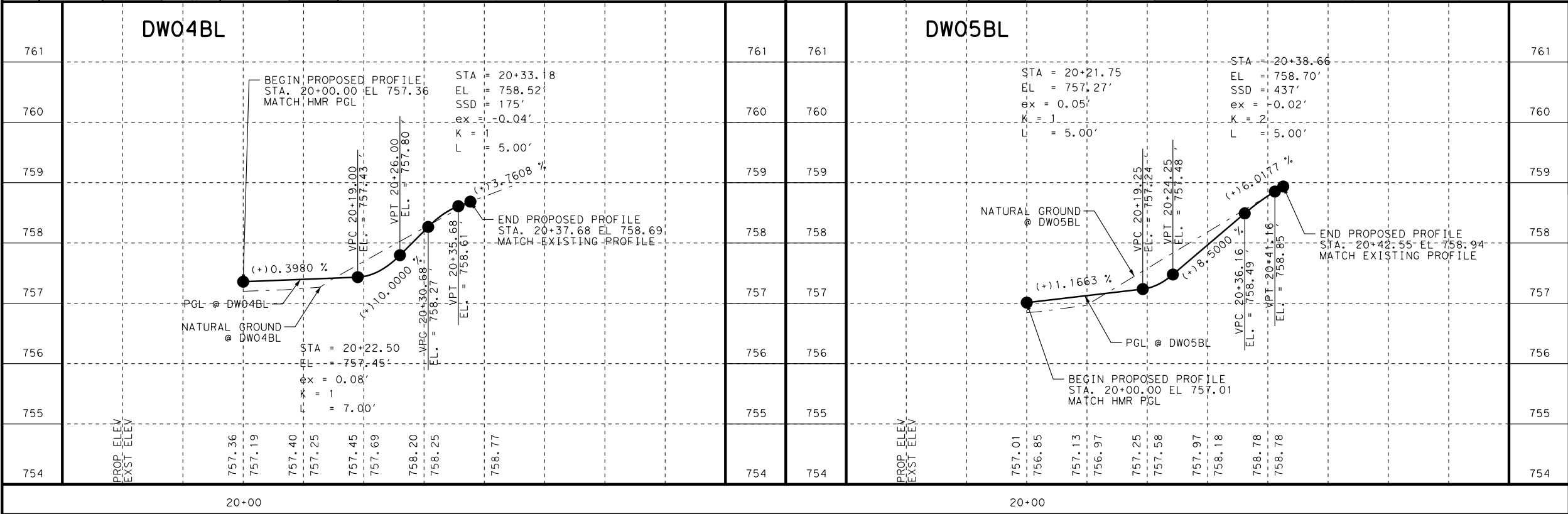


LEGEND

- NEW / RECONSTRUCTED DRIVEWAY
- TRAFFIC DIRECTION
- PROPOSED R.O.W.
- EXISTING R.O.W.
- WIDENING
- PROPOSED E.O.P.
- PROPOSED DITCH
- PROPOSED RIPRAP



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WILLIAMSON COUNTY
1848

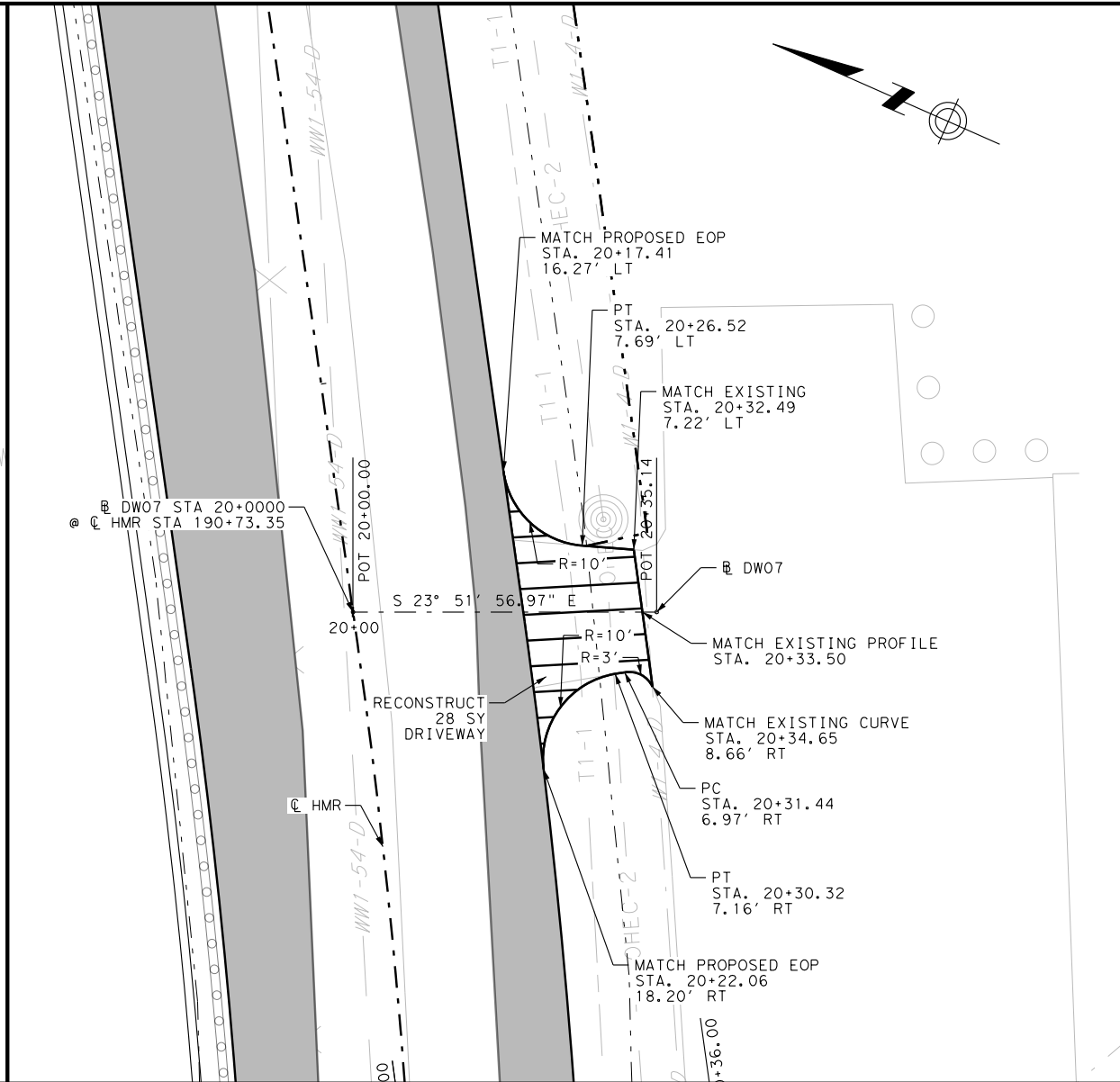
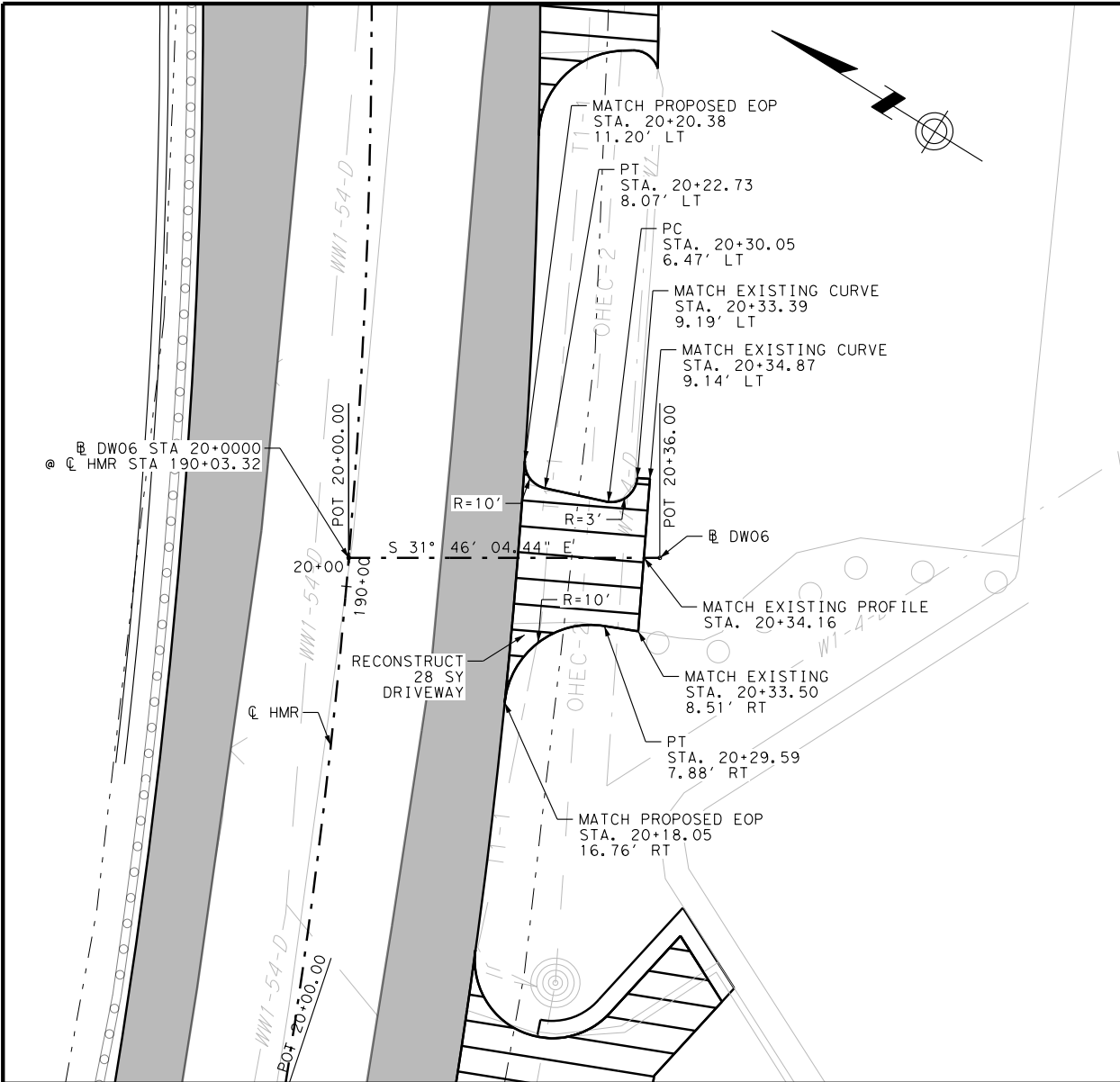
ATKINS
TBPE REG. # F-474

**HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
DRIVEWAY PLAN
AND PROFILE**

SCALE: 1"=20'H, 1"=2'V SHEET 4 OF 10

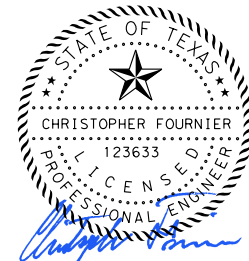
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CHECKED: WHL	TEXAS			HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		

41

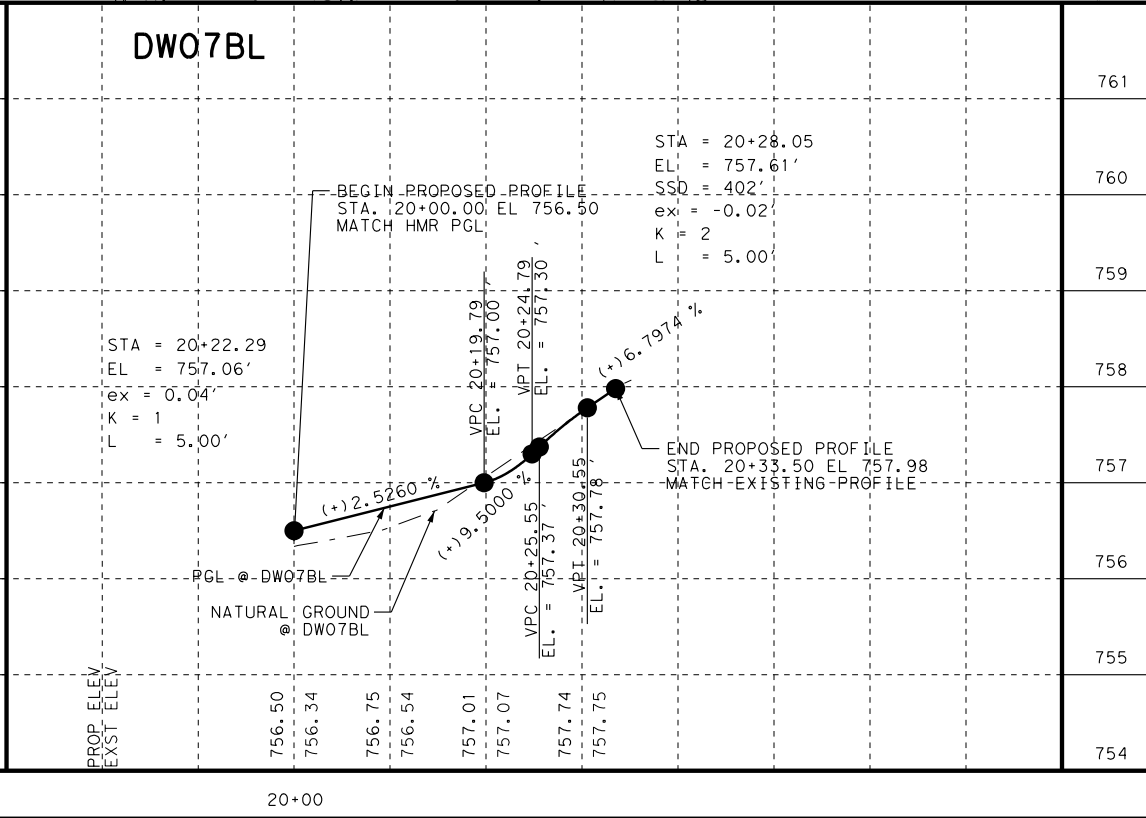
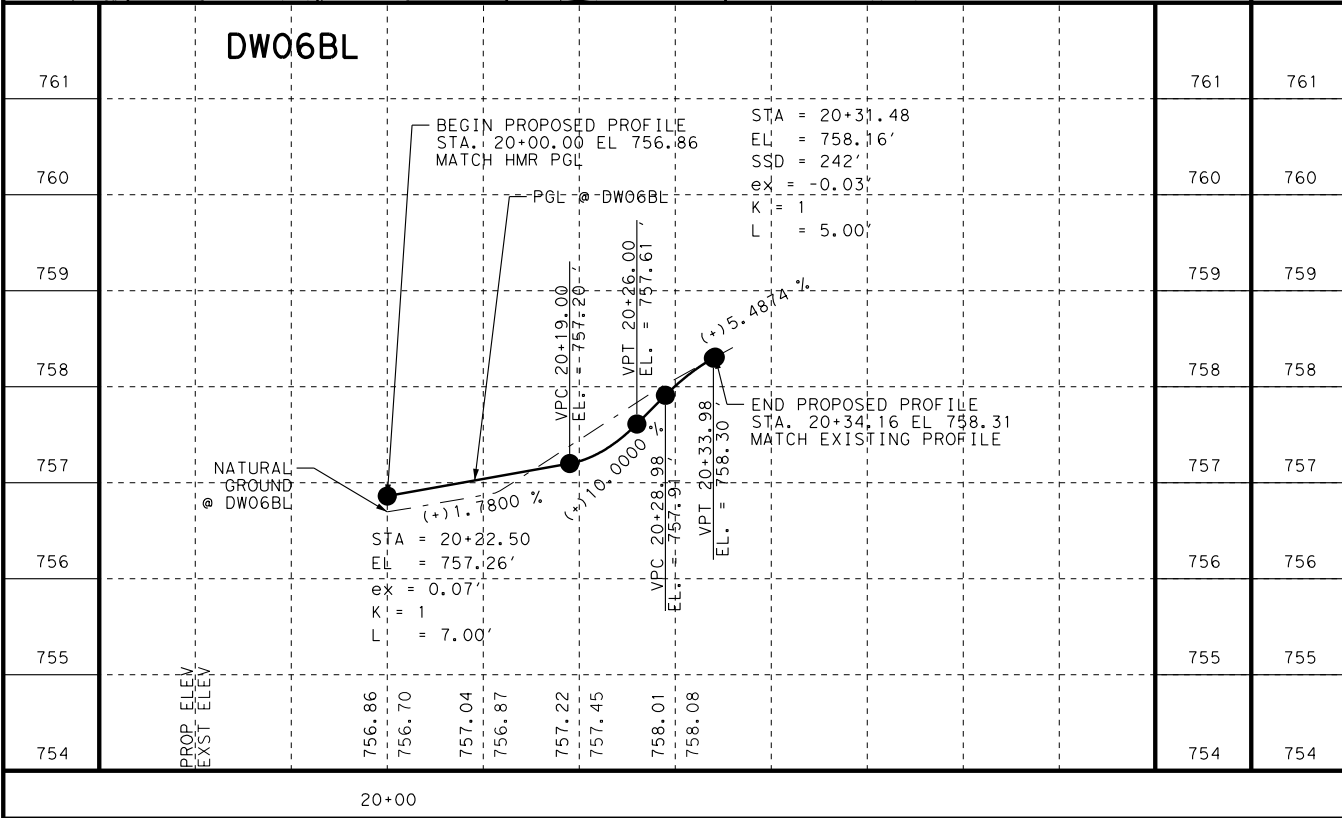


LEGEND

- NEW / RECONSTRUCTED DRIVEWAY
- TRAFFIC DIRECTION
- PROPOSED R.O.W.
- EXISTING R.O.W.
- WIDENING
- PROPOSED E.O.P.
- PROPOSED DITCH
- PROPOSED RIPRAP



8/9/2019



REV. NO.	DATE	REVISION	BY

WILLIAMSON COUNTY
1848

ATKINS
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
DRIVEWAY PLAN
AND PROFILE

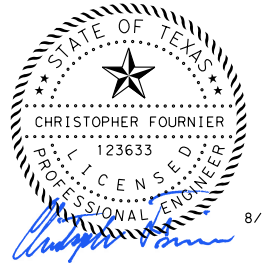
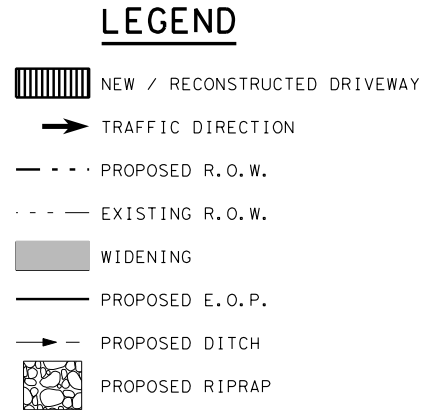
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DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL		TEXAS		HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		

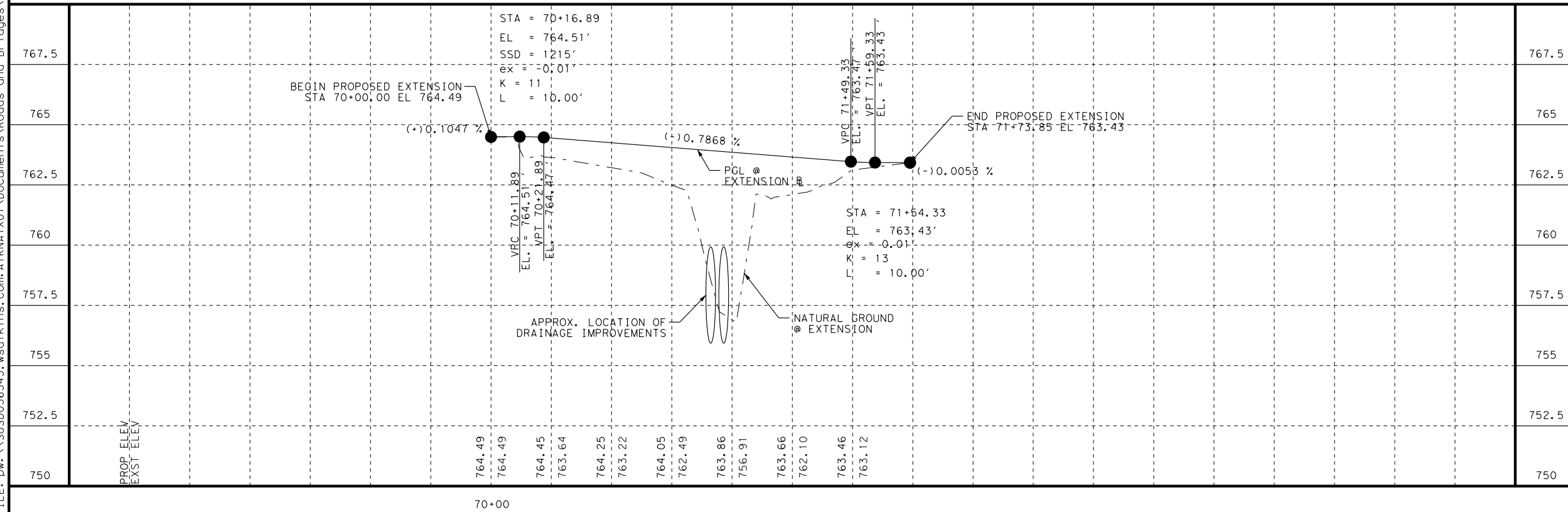
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/9/2019



REV. No.	DATE	REVISION	BY



WILLIAMSON
COUNTY

1848

ATKINS

TBPE REG. # F-474

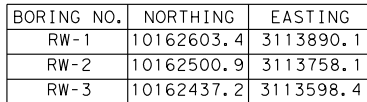
HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
PARKING LOT
PLAN AND PROFILE

SCALE: 1"=50'H, 1"=5'V		SHEET 1 OF 1	
DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.
CHECKED: WHL		TEXAS	HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.
CHECKED: WHL	AUSTIN	WILLIAMSON	SECTION No.
			JOB No.
			SHEET No.

48

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Projects\100055376 Hairy Man-Brushy Ck Rd PSE\CADD\PAV\HMR*RW01.dgn



5. EXCAVATION OPERATIONS TO CONSTRUCT THE RETAINING WALL WILL INITIALLY EXTEND THROUGH VERY STIFF LEAN CLAY (CL) AND LOOSE TO DENSE CLAYEY GRAVEL (GC) WITH VARYING AMOUNTS OF SAND AND LIMESTONE FRAGMENTS.
6. EXCAVATION OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH 29 CFR PART 1926, SUBPART P, AS AMENDED; INCLUDING RULES PUBLISHED IN THE FEDERAL REGISTER, VOL. 54, NO. 209, DATED OCTOBER 31, 1989, AT A MINIMUM. IN ADDITION, THE PROVISIONS OF LEGISLATION ENACTED BY THE TEXAS LEGISLATURE AND CONFORMANCE TO THE CITY OF AUSTIN STANDARD SPECIFICATION ITEM NO. 509S SHOULD BE SATISFIED. ALL BENCHING CONFIGURATIONS AND SHORING SYSTEMS SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER. SOIL TYPES FOR USE WITH OSHA TABLES ARE AS FOLLOWS: OSHA SOIL TYPE C FROM 0'-15' FOR RW-1, AND TYPE C FROM 0'-10' AND STABLE ROCK FROM 10'-15' FOR RW-2 AND RW-3.



NEW / RECONSTRUCTED DRIVEWAY

TRAFFIC DIRECTION

PROPOSED R.O.W.

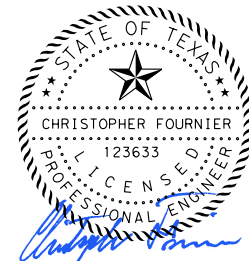
EXISTING R.O.W.

WIDENING

PROPOSED E.O.P.

PROPOSED DITCH


PROPOSED RIPRAP



8/9/2019



REV. No.	DATE	REVISION	BY



**WILLIAMSON
COUNTY**

1848

ATKINS

BTPE REG. # F-474

**HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
RETAINING WALL**

SCALE: 1"=50'H, 1"=5'V

SHEET 1 OF 1

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL	TEXAS			
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		
				49

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100% SUBMITTAL
DATE: 8/13/2019 TIME: 11:36:39 AM

TRAFFIC CONTROL PLAN NOTES

1. GENERAL

- A. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED / APPROVED BY THE ENGINEER.
- B. THE CONTRACTOR MAY PROPOSE / RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK BY THE ENGINEER. ANY MAJOR RECOMMEND MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, AND EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE / SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.
- C. DO NOT STORE CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD OR WILL ENDANGER TRAFFIC.
- D. THE CONTRACTOR WILL PROVIDE A MINIMUM OF 7 DAYS ADVANCE NOTIFICATION TO THE ENGINEER OF IMPENDING / UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND/ OR PERMANENT LANE, SHOULDER, ETC. CLOSURES OR DETOURS. SEE GENERAL NOTES FOR NOTIFICATION REQUIREMENTS.
- E. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.
- F. TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
- G. AT NO TIME SHALL TWO CONSECUTIVE INTERSECTING ROADWAYS BE CLOSED AT ONE TIME DURING CONSTRUCTION.
- H. COORDINATE WITH ADJACENT PROJECTS AND ONGOING UTILITY RELOCATIONS AND ADJUSTMENTS.
- I. USE THE TXDOT SURFACE TREATMENT METHOD FOR ALL ELIMINATION OF EXISTING PAVEMENT MARKINGS UNLESS OTHERWISE APPROVED.
- J. DURING NON- CONSTRUCTION HOURS AND OUTSIDE OF ROAD CLOSURE LIMITS, ROADWAYS IN BOTH DIRECTIONS SHALL BE OPEN AT THE END OF EACH WORKING DAY.
- K. CONTRACTOR TO SUBMIT DEMOLITION PLANS OF REQUIRED ITEMS AT LEAST 14 DAYS BEFORE STARTING WORK.

2. SEQUENCE OF WORK

- A. THIS PROJECT WILL BE CONSTRUCTED IN TWO (2) PHASES. BEFORE THE COMMENCEMENT OF EACH PHASE, INSTALL OR MAINTAIN ADVANCE WARNING SIGNS, TEMPORARY SIGNS, AND BARRICADES AS SHOWN IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SECTION 6.
- B. PREPARING ROW / REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURRING, AS PER THE PHASED NOTED BELOW.
- C. PLANING, SURFACE TREATMENTS AND OVERLAYS SHALL BE PERFORMED IN THE DIRECTION OF TRAFFIC.
- D. UNLESS NOTED OTHERWISE IN THE SEQUENCE OF WORK, CONSTRUCT JOINT BID UTILITIES WITHIN THE WORK ZONE OF EACH CORRESPONDING PHASE / STEP PRIOR TO THE ROADWAY CONSTRUCTION.
- E. INSTALL ALL EROSION CONTROL BMPS WITHIN THE WORK ZONE OF EACH CORRESPONDING PHASE PRIOR TO ROADWAY CONSTRUCTION.
- F. INSTALL ALL DRAINAGE IMPROVEMENTS WITHIN THE WORK ZONE OF EACH CORRESPONDING PHASE PRIOR TO ROADWAY CONSTRUCTION.
- G. CONSTRUCT ALL WATER QUALITY IMPROVEMENTS PRIOR TO BEGINNING PHASE 1.

3. SAFETY

- A. THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS BC(1-12)-14. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND THE "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS".
- B. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS, TO PROVIDE FOR THE PASSAGE OF TRAFFIC IN SAFETY AT ALL TIMES.
- C. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FLAGGERS AS DIRECTED / APPROVED BY THE ENGINEER, AT SUCH POINTS AND FOR SUCH PERIODS OF TIME AS MAY BE REQUIRED TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTORS PERSONNEL. FLAGGERS MUST BE PRESENT AT ALL DRIVEWAYS DURING CONSTRUCTION HOURS.
- D. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

4. HAULING EQUIPMENT

- A. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENTED SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LISCENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT, THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED / APPROVED BY THE ENGINEER.
- B. THROUGHOUT CONSTRUCTION OPERATIONS, THE CONTRACTOR WILL BE REQUIRED TO CONDUCT THEIR HAULING OPERATIONS IN A MANNER SUCH THAT VEHICLES WILL NOT HAUL OVER PREVIOUSLY RECOMPACTED SUBGRADE OR COMPACTED BASE MATERIAL, EXCEPT IN SHORT SECTIONS FOR DUMPING MANIPULATIONS.

5. FINAL CLEAN UP

- A. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE AND FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND AND LEAVE THE ENTIRE PROJECT IN A SMOOTH, NEAT AND SIGHTLY CONDITION.

PHASE 1

THE INTENT OF THIS PHASE IS TO CONSTRUCT THE EASTBOUND AND WESTBOUND LANES OF TRAFFIC FROM THE BEGINNING OF THE PROJECT TO GREAT OAKS DRIVE.

MAINTAIN ONE LANE OPERATIONS WITH FLAGGERS SIGNALING TRAFFIC WHEN TO SAFELY PROCEED. LANE CLOSURES SHALL ONLY BE ALLOWED FROM 9:00 AM TO 4:30 PM MONDAY-FRIDAY.

ALL PARKING LOTS TO REMAIN OPEN AND ACCESSIBLE AT ALL TIMES THROUGHOUT PHASE 1 CONSTRUCTION.

REFER TO TXDOT TRAFFIC CONTROL STANDARDS (TCP (2-2b)) FOR ONE LANE, TWO-WAY TRAFFIC CONTROL.

PHASE 1 STEP 1

WIDEN WESTBOUND LANES OF HAIRY MAN ROAD FROM THE BEGINNING OF THE PROJECT TO GREAT OAKS DRIVE. CONSTRUCT THE RETAINING WALL.

PHASE 1 STEP 2

WIDEN EASTBOUND LANES OF HAIRY MAN ROAD FROM THE BEGINNING OF THE PROJECT TO GREAT OAKS DRIVE. CONSTRUCT THE PARKING LOT EXTENSION.

PHASE 1 STEP 3

APPLY OVERLAY SURFACE COURSE. REFER TO TXDOT TRAFFIC CONTROL STANDARDS (TCP (7-1)-13) FOR SURFACING OPERATIONS.

PHASE 2

THE INTENT OF THIS PHASE IS TO ALLOW THE CONTRACTOR 30-DAYS FOR A FULL CLOSURE BETWEEN GREAT OAKS DRIVE AND SAM BASS RD USING THE DETOUR ROUTE. CONTRACTOR TO MAINTAIN LOCAL ACCESS TO BUSINESSES AND RESIDENCIES.

OUTSIDE OF THE 30-DAY FULL CLOSURE PERIOD, CONTRACTOR TO UTILIZE FLAGGER OPERATIONS FOR CONSTRUCTION. CONTRACTOR SHALL MAINTAIN ONE LANE OPEN AT ALL TIMES DURING CONSTRUCTION. TWO LANES (ONE IN EACH DIRECTION) SHALL BE OPEN TO TRAFFIC OUTSIDE OF WORK HOURS. LANE CLOSURES ALLOWED FROM 9:00AM TO 4:30 PM MONDAY-FRIDAY, ONLY.

ALL PARKING LOTS TO REMAIN OPEN AND ACCESSIBLE AT ALL TIMES THROUGHOUT PHASE 2 CONSTRUCTION.

ADDITIONAL ROAD CLOSURES BETWEEN SAM BASS RD AND THE BRIDGE OVER BRUSHY CREEK WILL BE CONSIDERED ON A DAY BY DAY BASIS AND SHALL BE APPROVED BY THE ENGINEER. CLOSURES SHALL UTILIZE THE DETOUR MENTIONED ABOVE UNLESS OTHERWISE APPROVED BY THE ENGINEER.

PHASE 2 STEP 1

DETOUR TRAFFIC AND CONSTRUCT HAIRY MAN ROAD BETWEEN GREAT OAKS DRIVE AND SAM BASS RD.

PHASE 2 STEP 2

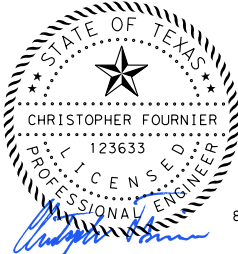
WIDEN EASTBOUND AND WESTBOUND LANES OF HAIRY MAN ROAD FROM GREAT OAKS DRIVE TO THE CREEK BEND BLVD BRIDGE.

PHASE 2 STEP 3

MILL EASTBOUND AND WESTBOUND LANES FROM THE CREEK BEND BLVD BRIDGE TO SAM BASS RD.

PHASE 2 STEP 4

APPLY OVERLAY SURFACE COURSE. REFER TO TXDOT TRAFFIC CONTROL STANDARDS (TCP (7-1)-13) FOR SURFACING OPERATIONS.



8/13/2019

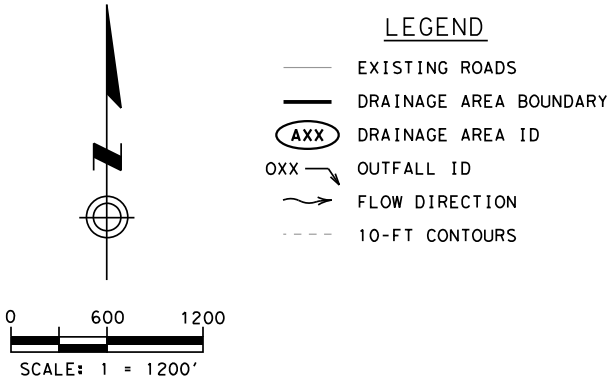
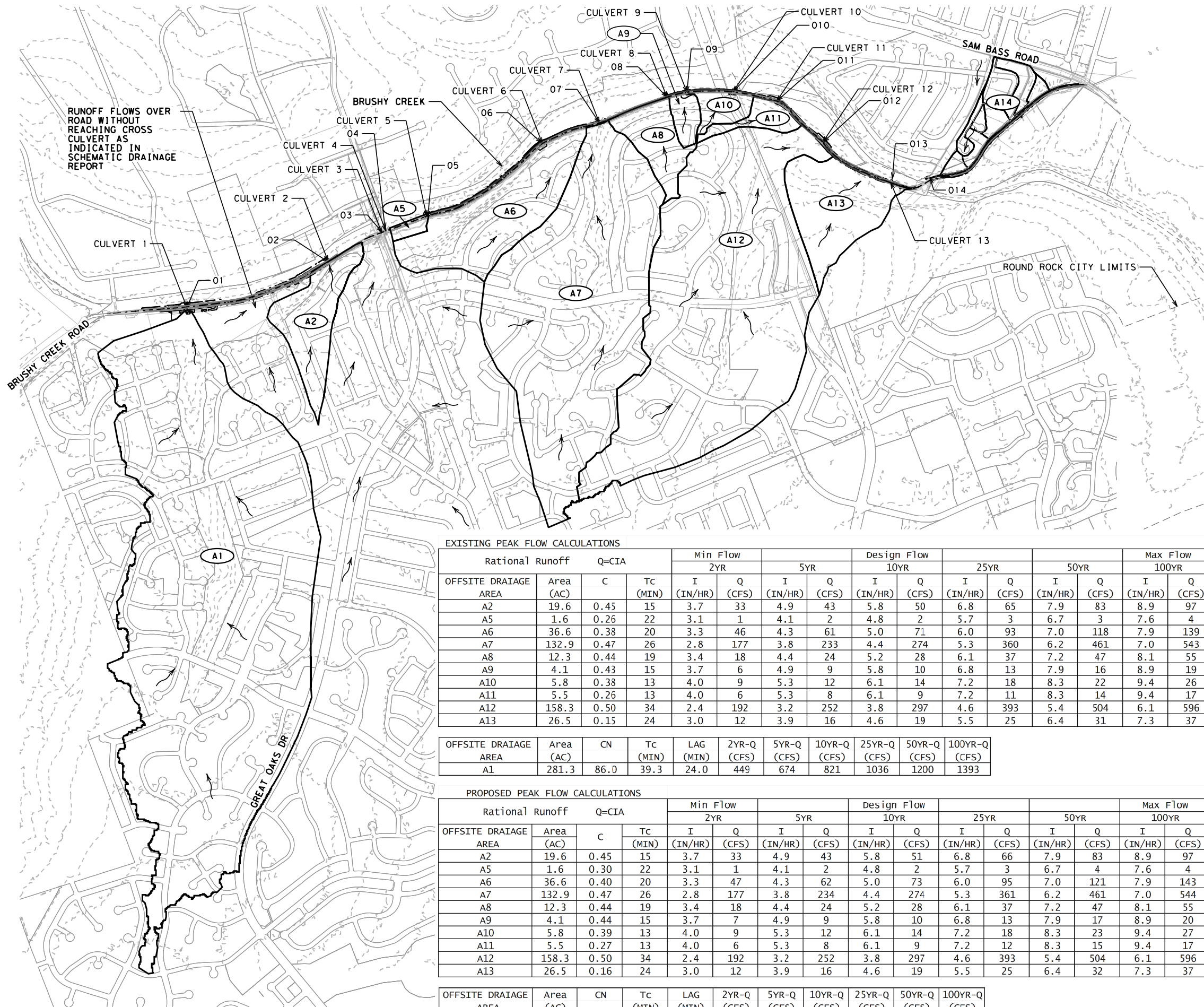
REV. No.	DATE	REVISION	BY

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS

TRAFFIC CONTROL PLAN
SEQUENCE OF CONSTRUCTION

SHEET 1 OF 1

DESIGNED: CAF	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: WHL		TEXAS		HAIRY MAN RD
DRAWN: CAF	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: WHL	AUSTIN	WILLIAMSON		
				JOB No.
				SHEET No.
				66



- 1. RATIONAL METHOD UTILIZED FOR PEAK FLOW CALCULATIONS FOR DA'S LESS THAN 200 AC.
- 2. CULVERT DESIGNED TO MEET OR EXCEED EXISTING HYDRAULIC CAPACITY, THEREFORE CULVERT MAY NOT MEET COUNTY DESIGN CRITERIA.
- 3. DIFFERENCE IN PEAK FLOW HAVE BEEN EVALUATED FOR 100 YR INCREASES DUE TO PROPOSED PROJECT AND NO STRUCTURES OR OTHER IMPROVEMENTS ARE IMPACTED BY PROPOSED PROJECT.
- 4. THE HYDROLOGIC MODEL FOR BASIN A1 WAS DEVELOPED IN HEC-HMS 4.2 BASED ON THE METHODOLOGY DESCRIBED IN THE TX HYDRAULIC MANUAL (2016).
- 5. BASIN A14 CALCULATION IS ON SHEET "ONSITE DRAINAGE AREA MAP".

EXISTING PEAK FLOW CALCULATIONS

OFFSITE DRAIAGE AREA	Rational Runoff Q=CIA				Min Flow 2YR		5YR		Design Flow 10YR		25YR		50YR		Max Flow 100YR	
	Area (AC)	C	Tc (MIN)		I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)
A2	19.6	0.45	15		3.7	33	4.9	43	5.8	50	6.8	65	7.9	83	8.9	97
A5	1.6	0.26	22		3.1	1	4.1	2	4.8	2	5.7	3	6.7	3	7.6	4
A6	36.6	0.38	20		3.3	46	4.3	61	5.0	71	6.0	93	7.0	118	7.9	139
A7	132.9	0.47	26		2.8	177	3.8	233	4.4	274	5.3	360	6.2	461	7.0	543
A8	12.3	0.44	19		3.4	18	4.4	24	5.2	28	6.1	37	7.2	47	8.1	55
A9	4.1	0.43	15		3.7	6	4.9	9	5.8	10	6.8	13	7.9	16	8.9	19
A10	5.8	0.38	13		4.0	9	5.3	12	6.1	14	7.2	18	8.3	22	9.4	26
A11	5.5	0.26	13		4.0	6	5.3	8	6.1	9	7.2	11	8.3	14	9.4	17
A12	158.3	0.50	34		2.4	192	3.2	252	3.8	297	4.6	393	5.4	504	6.1	596
A13	26.5	0.15	24		3.0	12	3.9	16	4.6	19	5.5	25	6.4	31	7.3	37

OFFSITE DRAIAGE AREA	Area (AC)	CN	Tc (MIN)	LAG (MIN)	2YR-Q (CFS)	5YR-Q (CFS)	10YR-Q (CFS)	25YR-Q (CFS)	50YR-Q (CFS)	100YR-Q (CFS)
A1	281.3	86.0	39.3	24.0	449	674	821	1036	1200	1393

PROPOSED PEAK FLOW CALCULATIONS

OFFSITE DRAIAGE AREA	Rational Runoff Q=CIA				Min Flow 2YR		5YR		Design Flow 10YR		25YR		50YR		Max Flow 100YR	
	Area (AC)	C	Tc (MIN)		I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)
A2	19.6	0.45	15		3.7	33	4.9	43	5.8	51	6.8	66	7.9	83	8.9	97
A5	1.6	0.30	22		3.1	1	4.1	2	4.8	2	5.7	3	6.7	4	7.6	4
A6	36.6	0.40	20		3.3	47	4.3	62	5.0	73	6.0	95	7.0	121	7.9	143
A7	132.9	0.47	26		2.8	177	3.8	234	4.4	274	5.3	361	6.2	461	7.0	544
A8	12.3	0.44	19		3.4	18	4.4	24	5.2	28	6.1	37	7.2	47	8.1	55
A9	4.1	0.44	15		3.7	7	4.9	9	5.8	10	6.8	13	7.9	17	8.9	20
A10	5.8	0.39	13		4.0	9	5.3	12	6.1	14	7.2	18	8.3	23	9.4	27
A11	5.5	0.27	13		4.0	6	5.3	8	6.1	9	7.2	12	8.3	15	9.4	17
A12	158.3	0.50	34		2.4	192	3.2	252	3.8	297	4.6	393	5.4	504	6.1	596
A13	26.5	0.16	24		3.0	12	3.9	16	4.6	19	5.5	25	6.4	32	7.3	37

OFFSITE DRAIAGE AREA	Area (AC)	CN	Tc (MIN)	LAG (MIN)	2YR-Q (CFS)	5YR-Q (CFS)	10YR-Q (CFS)	25YR-Q (CFS)	50YR-Q (CFS)	100YR-Q (CFS)
A1	281.3	86.0	39.3	24.0	449	674	821	1036	1200	1393

LEGEND

- EXISTING ROADS
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA ID
- OUTFALL ID
- FLOW DIRECTION
- 10-FT CONTOURS

8/1/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
OFFSITE
DRAINAGE AREA MAP

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.	
CHECKED: CMC	X	TEXAS			HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	86

DITCH TABLES

DITCH	STA	OFFSET	ELEVATION	FRONT SLOPE	BACK SLOPE
A01	174+00	21.51 LT	758.77	4:1	3:1
A01	175+00	26 LT	758.28	6:1	3:1

DITCH	STA	OFFSET	ELEVATION	FRONT SLOPE	BACK SLOPE
B01	177+00	27.14 LT	757.62	6:1	3:1
B01	178+00	26.52 LT	758.05	5:1	3:1
B01	179+00	25.28 LT	758.54	4:1	3:1
B01	180+00	23.59 LT	759.05	3:1	3:1

DITCH	STA	OFFSET	ELEVATION	FRONT SLOPE	BACK SLOPE
DC2A	191+00	23.34 RT	755.56	4:1	3:1
DC2A	192+00	27.66 RT	754.7	5:1	3:1
DC2A	193+00	23.53 RT	753.8	4:1	3:1
DC2A	193+50	22.80 RT	753.01	3:1	3:1

DITCH	STA	OFFSET	ELEVATION	FRONT SLOPE	BACK SLOPE
DC6A	208+00	17.40 LT	749.00	6:1	4:1
DC6A	209+00	18.74 LT	749.04	100:1	3:1
DC6A	210+00	18.74 LT	748.74	30:1	3:1
DC6A	211+00	18.74 LT	748.45	17:1	3:1
DC6A	212+00	18.74 LT	748.15	17:1	3:1
DC6A	213+00	18.74 LT	747.85	7:1	3:1
DC6A	214+00	18.74 LT	747.55	6:1	3:1
DC6A	215+00	18.74 LT	747.25	4:1	3:1
DC6A	216+00	18.74 LT	746.95	5:1	3:1
DC6A	217+00	18.74 LT	746.65	6:1	3:1
DC6A	218+00	18.74 LT	746.35	4:1	3:1
DC6A	219+00	18.74 LT	746.05	5:1	3:1
DC6A	220+00	18.74 LT	745.75	6:1	3:1
DC6A	221+00	18.85 LT	745.45	7:1	3:1
DC6A	222+00	23.49 LT	744.97	6:1	3:1

DITCH	STA	OFFSET	ELEVATION	FRONT SLOPE	BACK SLOPE
S14C3	276+00	20.43 LT	735.85	8:1	3:1
S14C3	277+00	20.19 LT	737.00	9:1	3:1
S14C3	278+00	20.39 LT	738.36	11:1	3:1
S14C4	279+00	20.36 LT	740.71	4:1	3:1
S14C4	280+00	17.47 LT	745.17	4:1	3:1
S14C4	281+00	19.03 LT	748.27	6:1	3:1
S14C4	282+00	19.16 LT	751.98	20:1	3:1
S14B1	283+00	17.69 LT	754.86	3:1	3:1
S14A2	284+00	19.44 LT	757.25	4:1	3:1
S14A2	285+00	19.15 LT	759.42	7:1	3:1
S14A2	286+00	18.87 LT	760.45	4:1	3:1
S14A2	287+00	18.74 LT	761.96	3:1	3:1

- NOTES:
- SEE EROSION CONTROL PLAN SHEETS FOR DITCH PLAN VIEW
 - SEE DITCH AND STORM SEWER HYDRAULIC TABLES SHEET FOR ADDITIONAL DITCH INFORMATION



8/1/2019

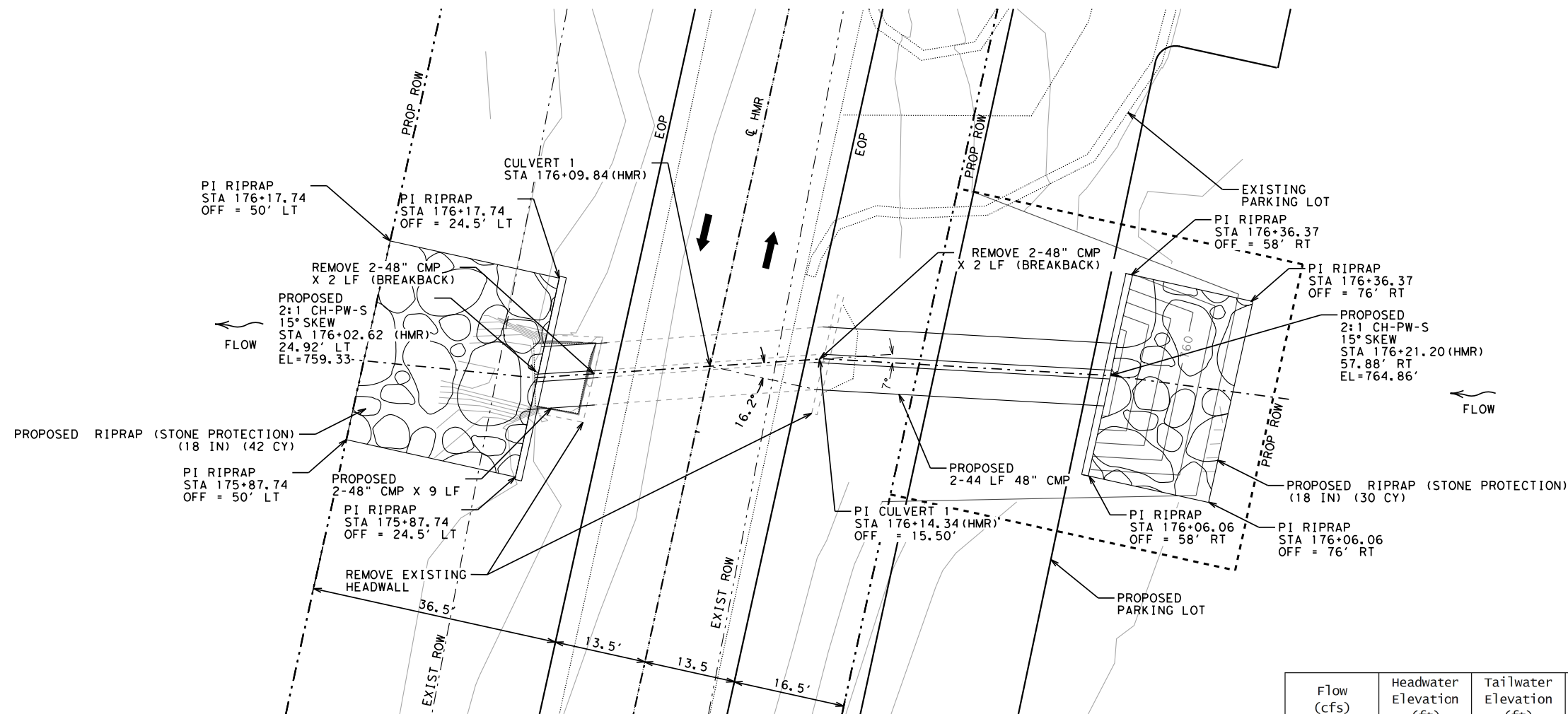
REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS

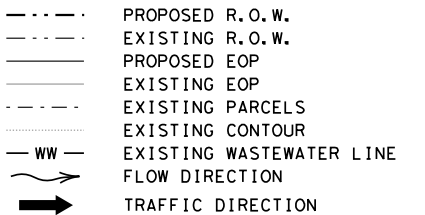
DITCH TABLES

DESIGNED: EJJ	FED. RD DIV. No.	STATE	PROJECT No.			HIGHWAY No.	
CHECKED: CMC	X	TEXAS				HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	91	



	Flow (cfs)	Headwater Elevation (ft)	Tailwater Elevation (ft)	Tailwater Velocity (ft/s)
10 year	821.00	765.70	757.18	23.62
25 year	1036.00	766.06	757.86	25.13
100 year	1393.00	766.59	758.94	27.05

LEGEND

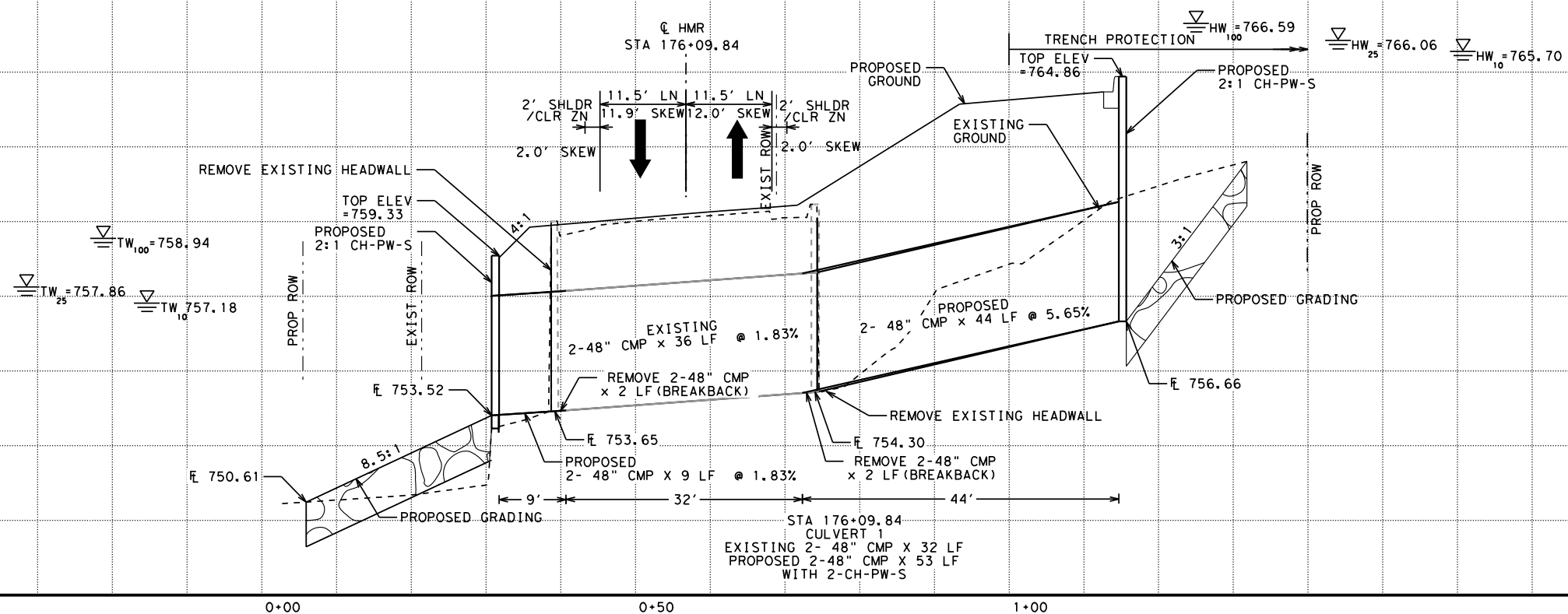


NOTES:

1. SEE HYDRAULIC DATA SHEET FOR HEADWATER AND TAILWATER ANALYSIS.
2. CULVERT DESIGNED TO MEET OR EXCEED EXISTING HYDRAULIC CAPACITY, THEREFORE CULVERT MAY NOT MEET COUNTY DESIGN CRITERIA.
3. THIS CULVERT EXTENSION HAS BEEN EVALUATED FOR 100 YR HEADWATER EFFECTS, NO SIGNIFICANT RISE IS CAUSED BY PROPOSED MODIFICATIONS. NO STRUCTURES OR OTHER IMPROVEMENTS ARE ADVERSELY IMPACTED BY PROPOSED PROJECT.
4. CMP COUPLING BAND AND 2' CMP BREAKBACK SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 460 "CORRUGATED METAL PIPE".



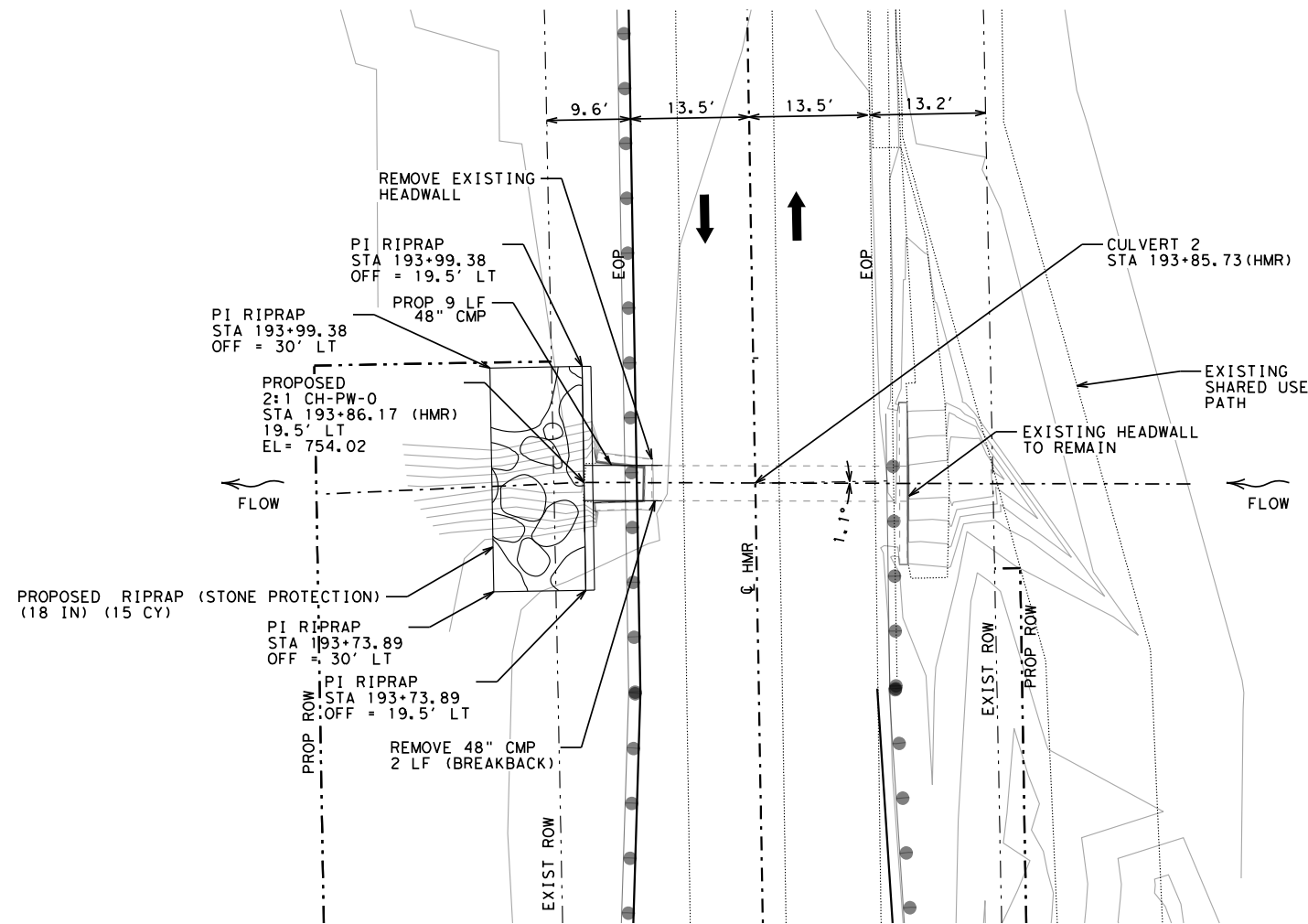
8/1/2019



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
CULVERT LAYOUT
CULVERT 1

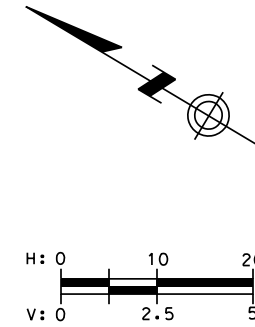
SHEET 1 OF 9

DESIGNED: EJV	FED. RD DIV. No.	STATE	PROJECT No.			HIGHWAY No.	
CHECKED: CMC	X	TEXAS				HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	92	











10 year
25 year
100 year

	Flow (cfs)	Headwater Elevation (ft)	Tailwater Elevation (ft)	Tailwater Velocity (ft/s)
r	50.59	752.05	751.36	2.56
	65.60	752.65	751.68	2.73
	97.49	754.65	753.10	N/A



LEGEND

-  PROPOSED R. O. W.
 EXISTING R. O. W.
 PROPOSED EOP
 EXISTING EOP
 EXISTING PARCELS
 EXISTING CONTOUR
 EXISTING WASTEWATER LINE
 FLOW DIRECTION

NOTES:

1. SEE HYDRAULIC DATA SHEET FOR HEADWATER AND TAILWATER ANALYSIS.
2. CULVERT DESIGNED TO MEET OR EXCEED EXISTING HYDRAULIC CAPACITY, THEREFORE CULVERT MAY NOT MEET COUNTY DESIGN CRITERIA.
3. THIS CULVERT EXTENSION HAS BEEN EVALUATED FOR 100 YR HEADWATER EFFECTS, NO SIGNIFICANT RISE IS CAUSED BY PROPOSED MODIFICATIONS. NO STRUCTURES OR OTHER IMPROVEMENTS ARE ADVERSELY IMPACTED BY PROPOSED PROJECT.
4. CMP COUPLING BAND AND 2' CMP BREAKBACK SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 460 "CORRUGATED METAL PIPE".



8/1/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
CULVERT LAYOUT
CULVERT 2

SHEET 2 OF 9

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.			HIGHWAY No.	
CHECKED: CMC	X	TEXAS				HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	93	

EXISTING CONDITIONS

Site Data: Existing
Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft
Inlet Elevation: 754.30 ft
Outlet Station: 36.00 ft
Outlet Elevation: 753.65 ft
Number of Barrels: 2

Culvert Data Summary: Existing
Barrel Shape: Circular

Barrel Diameter: 4.00 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0240
Culvert Type: Straight
Inlet Configuration: Square Edge with Headwall
Inlet Depression: NONE

Roadway Data: Existing
Roadway Profile Shape: Irregular
Station Elevation
Coord No. (ft) (ft)
1 -50 760.42
2 -25 760.37
3 0 760.35
4 25 760.32
5 50 760.36
Roadway Surface: Paved
Roadway Top Width: 25.00 ft

Tailwater Channel Data: Existing
Tailwater Channel Option: Rectangular Channel

Bottom Width: 9.50 ft
Channel Slope: 0.0168
Channel Manning's n: 0.0300
Channel Invert Elevation: 751.19 ft

CULVERT SUMMARY TABLE: EXISTING

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 YR	449	260	761.09	6.80~	6.52	7-M2c	4.00	3.41	3.41	4.28	11.40	11.03
5 YR	674	275	761.56	7.27~	7.01	7-M2c	4.00	3.49	3.49	5.82	11.82	12.19
10 YR	821	273	761.84	7.22	7.55	4-FFF	4.00	3.48	4.00	6.79	10.88	12.74
25 YR	1036	237	762.26	6.12	7.97	4-FFF	4.00	3.28	4.00	8.16	9.45	13.36
50 YR	1200	206	762.56	5.27	8.27	4-FFF	3.27	3.07	4.00	9.19	8.18	13.74
100 YR	1393	160	762.90	4.24	8.61	4-FFF	2.63	2.71	4.00	10.39	6.37	14.11

SUMMARY OF FLOWS AT CROSSING: EXISTING

	Headwater Elevation (ft)	Total Discharge (cfs)	Culvert Discharge (cfs)	Roadway Discharge (cfs)
2 YR	761.09	449	260	188
5 YR	761.56	674	275	399
10 YR	761.84	821	273	547
25 YR	762.26	1036	237	798
50 YR	762.56	1200	206	994
100 YR	762.90	1393	160	1232

DOWNSTREAM CHANNEL RATING CURVE: EXISTING

Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
431	755.47	4.28	11.03	4.36	0.97
655	757.01	5.82	12.19	5.97	0.95
802	757.98	6.79	12.74	6.98	0.94
1017	759.35	8.16	13.36	8.43	0.90
1183	760.38	9.19	13.74	9.52	0.87
1377	761.58	10.39	14.11	10.79	0.84

Site Data: Proposed
Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft
Inlet Elevation: 756.66 ft
Break Station: 43.40 ft
Break Elevation: 754.26 ft
Outlet Station: 85.00 ft
Outlet Elevation: 753.52 ft
Number of Barrels: 2

Culvert Data Summary: Proposed
Barrel Shape: Circular

Barrel Diameter: 4.00 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0240
Culvert Type: Single Broken-back
Inlet Configuration: Square Edge with Headwall
Inlet Depression: NONE

Roadway Data: Proposed
Roadway Profile Shape: Irregular
Station Elevation
Coord No. (ft) (ft)
1 -50 764.66
2 -25 764.48
3 0 764.31
4 25 764.15
5 50 763.98
Roadway Surface: Paved
Roadway Top Width: 39.00 ft

Tailwater Channel Data: Proposed
Tailwater Channel Option: Rectangular Channel

Bottom Width: 9.50 ft
Channel Slope: 0.1176
Channel Manning's n: 0.0350
Channel Invert Elevation: 753.52 ft

CULVERT SUMMARY TABLE: PROPOSED

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 YR	449	304	764.91	8.25	4.30	5-S2n	3.61	3.61	3.61	2.39	12.73	19.82
5 YR	674	318	765.42	8.76	5.55	5-S2n	3.66	3.66	3.66	3.17	13.09	22.35
10 YR	821	325	765.70	9.04	6.28	5-S2n	3.68	3.68	3.68	3.66	13.41	23.62
25 YR	1036	334	766.06	9.40	8.11	5-S1f	4.28	3.71	4.34	4.34	13.27	25.13
50 YR	1200	340	766.31	9.65	8.26	5-S1f	4.00	3.73	4.00	4.84	13.52	26.08
100 YR	1393	346	766.59	9.93	8.43	5-S1f	4.00	3.74	4.00	5.42	13.78	27.05

SUMMARY OF FLOWS AT CROSSING: PROPOSED

	Headwater Elevation (ft)	Total Discharge (cfs)	Culvert Discharge (cfs)	Roadway Discharge (cfs)
2 YR	764.91	449	304	145
5 YR	765.42	674	318	356
10 YR	765.70	821	325	496
25 YR	766.06	1036	334	702
50 YR	766.31	1200	340	860
100 YR	766.59	1393	346	1046

DOWNSTREAM CHANNEL RATING CURVE: PROPOSED

Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
449	755.91	2.39	19.82	17.50	2.26
674	756.69	3.17	22.35	23.29	2.21
821	757.18	3.66	23.62	26.85	2.18
1036	757.86	4.34	25.13	31.84	2.13
1200	758.36	4.84	26.08	35.54	2.09
1393	758.94	5.42	27.05	39.78	2.05

NOTES:

- 1. FHWA HY-8 VERSION 7.30 HYDRAULIC MODELING SOFTWARE WAS USED TO MODEL ALL CULVERTS.
- 2. 100 YEAR TAILWATER CONDITION IS CONTROLLED BY BRUSHY CREEK.



8/1/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS

CULVERT 1
HYDRAULIC DATA SHEET

SHEET 1 OF 9

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.	
CHECKED: CMC	X	TEXAS			HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	101

EXISTING CONDITIONS

Site Data: Existing

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft
Inlet Elevation: 748.30 ft
Outlet Station: 30.00 ft
Outlet Elevation: 748.24 ft
Number of Barrels: 1

Culvert Data Summary: Existing

Barrel Shape: Circular

Barrel Diameter: 4.00 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0240
Culvert Type: Straight
Inlet Configuration: Square Edge with Headwall
Inlet Depression: NONE

Roadway Data: Existing

Roadway Profile Shape: Irregular

Coord No.	Station (ft)	Elevation (ft)
1	-50	754.87
2	-25	754.71
3	0	754.54
4	25	754.31
5	50	754.08

Roadway Surface: Paved

Roadway Top Width: 25.00 ft

Tailwater Channel Data: Existing

Tailwater Channel Option: Triangular Channel

Side Slope (H:V): 2.00 (1:1)
Channel Slope: 0.0017
Channel Manning's n: 0.0300
Channel Invert Elevation: 747.60 ft

PROPOSED CONDITIONS

Site Data: Proposed

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft
Inlet Elevation: 748.30 ft
Outlet Station: 37.00 ft
Outlet Elevation: 748.22 ft
Number of Barrels: 1

Culvert Data Summary: Proposed

Barrel Shape: Circular

Barrel Diameter: 4.00 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0240
Culvert Type: Straight
Inlet Configuration: Square Edge with Headwall
Inlet Depression: NONE

Roadway Data: Proposed

Roadway Profile Shape: Irregular

Coord No.	Station (ft)	Elevation (ft)
1	-50	755.08
2	-25	754.9
3	0	754.74
4	25	754.5
5	50	754.28

Roadway Surface: Paved

Roadway Top Width: 27.00 ft

Tailwater Channel Data: Proposed

Tailwater Channel Option: Triangular Channel

Side Slope (H:V): 2.00 (1:1)
Channel Slope: 0.05
Channel Manning's n: 0.0300
Channel Invert Elevation: 748.22 ft

CULVERT SUMMARY TABLE: EXISTING

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 YR	33	33	751.31	2.40	3.02	3-M2t	3.44	1.70	2.67	2.67	3.68	2.30
5 YR	43	43	751.75	2.83	3.46	3-M2t	4.00	1.97	2.96	2.96	4.34	2.46
10 YR	50	50	752.03	3.11	3.74	3-M2t	4.00	2.13	3.14	3.14	4.77	2.56
25 YR	65	65	752.62	3.69	4.33	3-M2t	4.00	2.44	3.46	3.46	5.67	2.73
50 YR	83	83	753.39	4.40	5.10	7-M2t	4.00	2.76	3.78	3.78	6.75	2.90
100 YR	97	84	754.49	4.44	6.19	4-FFF	4.00	2.77	4.00	5.50	6.68	N/A

CULVERT SUMMARY TABLE: PROPOSED

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 YR	33	33	751.31	2.40	3.01	3-M2t	2.99	1.70	2.67	2.67	3.68	2.30
5 YR	43	43	751.76	2.83	3.46	3-M2t	4.00	1.97	2.97	2.97	4.34	2.47
10 YR	51	51	752.05	3.12	3.75	3-M2t	4.00	2.13	3.14	3.14	4.78	2.56
25 YR	66	66	752.65	3.69	4.35	3-M2t	4.00	2.44	3.46	3.46	5.67	2.73
50 YR	83	83	753.46	4.41	5.16	7-M2t	4.00	2.76	3.79	3.79	6.76	2.90
100 YR	97	86	754.65	4.54	6.35	4-FFF	4.00	2.81	4.00	4.88	6.87	N/A

SUMMARY OF FLOWS AT CROSSING: EXISTING

	Headwater Elevation (ft)	Total Discharge (cfs)	Culvert Discharge (cfs)	Roadway Discharge (cfs)
2 YR	751.01	33	33	0
5 YR	751.46	43	43	0
10 YR	751.76	50	50	0
25 YR	752.34	65	65	0
50 YR	753.04	83	83	0
100 YR	754.49	97	84	13

DOWNSTREAM CHANNEL RATING CURVE: EXISTING

	Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
33	750.91	2.67	2.30	0.28	0.35	
43	751.20	2.96	2.46	0.31	0.36	
50	751.38	3.14	2.56	0.33	0.36	
65	751.70	3.46	2.73	0.37	0.37	
83	752.02	3.78	2.90	0.40	0.37	
97	753.10	5.50	N/A	N/A	N/A	

SUMMARY OF FLOWS AT CROSSING: PROPOSED

	Headwater Elevation (ft)	Total Discharge (cfs)	Culvert Discharge (cfs)	Roadway Discharge (cfs)
2 YR	751.31	33	33	0
5 YR	751.76	43	43	0
10 YR	752.05	51	51	0
25 YR	752.65	66	66	0
50 YR	753.46	83	83	0
100 YR	754.65	97	86	11

DOWNSTREAM CHANNEL RATING CURVE: PROPOSED

	Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
33	750.89	2.67	2.30	0.28	0.35	
43	751.19	2.97	2.47	0.31	0.36	
51	751.36	3.14	2.56	0.33	0.36	
66	751.68	3.46	2.73	0.37	0.37	
83	752.01	3.79	2.90	0.40	0.37	
97	753.10	4.88	N/A	N/A	N/A	

NOTES:

1. FHWA HY-8 VERSION 7.30 HYDRAULIC MODELING SOFTWARE WAS USED TO MODEL ALL CULVERTS.

2. 100 YEAR TAILWATER CONDITION IS CONTROLLED BY BRUSHY CREEK.



8/1/2019

REV. No.	DATE	REVISION	BY

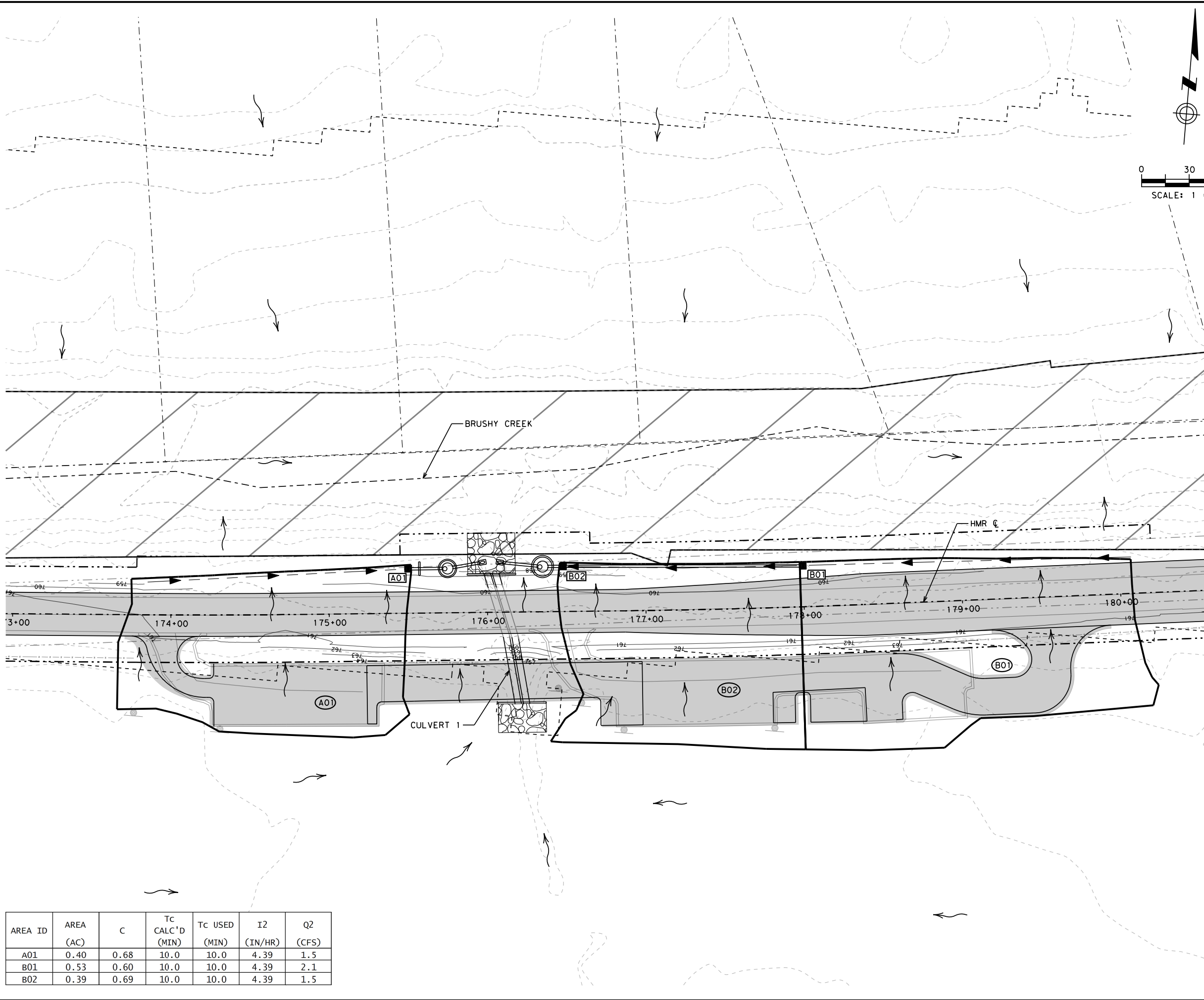


HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS

CULVERT 2
HYDRAULIC DATA SHEET

SHEET 2 OF 9

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.		HIGHWAY No.	
CHECKED: CMC	X	TEXAS			HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	102



LEGEND

- PROPOSED R.O.W.
- EXISTING R.O.W.
- PROPOSED EOP
- EXISTING EOP
- EXISTING PARCELS
- EXISTING CONTOURS
- (XX) DRAINAGE AREA ID
- [XX] DRAINAGE NODE ID
- FLOW ARROW
- DRAINAGE AREA
- FEMA DFIRM FLOODPLAIN
- [Hatched Box] FEMA DFIRM FLOODWAY
- [Solid Grey Box] IMPERVIOUS COVER

NOTES:

1. DRAINAGE AREA CALCULATIONS BASED ON THE 2-YEAR (50% AEP) USING GEOPAK DRAINAGE UTILIZING THE RATIONAL METHOD.
2. REFER TO WPAP FOR WQ PROJECT LIMITS AND DETAILED LOAD REMOVAL CALCULATIONS.
3. PROPOSED BMPS EXCEED TSS REQUIRED BASED ON ADDITIONAL IMPERVIOUS COVER DUE TO PROPOSED PROJECT.



8/1/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
WATER QUALITY
DRAINAGE AREA MAP

SHEET 1 OF 1

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: CMC	X	TEXAS		HAIRY MAN RD
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX
			JOB No.	SHEET No.
			XXX	110

AREA ID	AREA (AC)	C	Tc CALC'D (MIN)	Tc USED (MIN)	I2 (IN/HR)	Q2 (CFS)
A01	0.40	0.68	10.0	10.0	4.39	1.5
B01	0.53	0.60	10.0	10.0	4.39	2.1
B02	0.39	0.69	10.0	10.0	4.39	1.5

A01
TY PSL (FG) (3' x 3' - 3' x 3')
STA 173+50.00 (HMR_CL)
OFF -28.00

STU-A
STORMCEPTOR 4800 OR APPROVED EQUAL
STA 175+75.00 (HMR_CL)
OFF -28.00

A-OUT
18" 2:1 SETP-PD
STA 175+95.68 (HMR_CL)
OFF -31.31

B-OUT
18" 2:1 SETP-PD
STA 176+09.57 (HMR_CL)
OFF -31.23

STU-B
STORMCEPTOR 7200 OR APPROVED EQUAL
STA 176+35.00 (HMR_CL)
OFF -28.50

B02
TY PSL (FG) (3' x 3' - 3' x 3')
STA 176+48.00 (HMR_CL)
OFF -28.50

B01
TY PSL (FG) (3' x 3' - 3' x 3')
STA 178+00.00 (HMR_CL)
OFF -25.80

B00
BEGIN DITCH
STA 80+07.41
OFF -23.00'

A00
BEGIN DITCH
STA 173+85.33
OFF -20.72

LEGEND

- PROPOSED R.O.W.
- EXISTING R.O.W.
- PROPOSED EOP
- EXISTING EOP
- EXISTING PARCELS
- EXISTING CONTOURS
- PROPOSED CONTOURS
- XX DRAINAGE NODE ID
- FLOW ARROW
- FEMA DFIRM FLOODPLAIN
- ▨ FEMA DFIRM FLOODWAY
- IMPERVIOUS COVER

NOTES:

- GRATE INLET OFFSETS ARE TO THE INLET CENTERLINE.
- MANHOLE AND STORMCEPTOR OFFSETS ARE TO THE CENTERLINE OF THE STRUCTURE.
- INLET AND LINK ANALYSIS PERFORMED USING GEOPAK DRAINAGE (2004) EDITION.
- REFER TO WPAP FOR WQ PROJECT LIMITS AND DETAILED LOAD REMOVAL CALCULATIONS.
- PROPOSED BMPs EXCEED TSS REQUIRED BASED ON ADDITIONAL IMPERVIOUS COVER DUE TO PROPOSED PROJECT.



8/1/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
WATER QUALITY
DRAINAGE PLAN

SHEET 1 OF 1

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: CMC	X	TEXAS		HAIRY MAN RD
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX
			XXX	111

DROP INLET CALCULATIONS

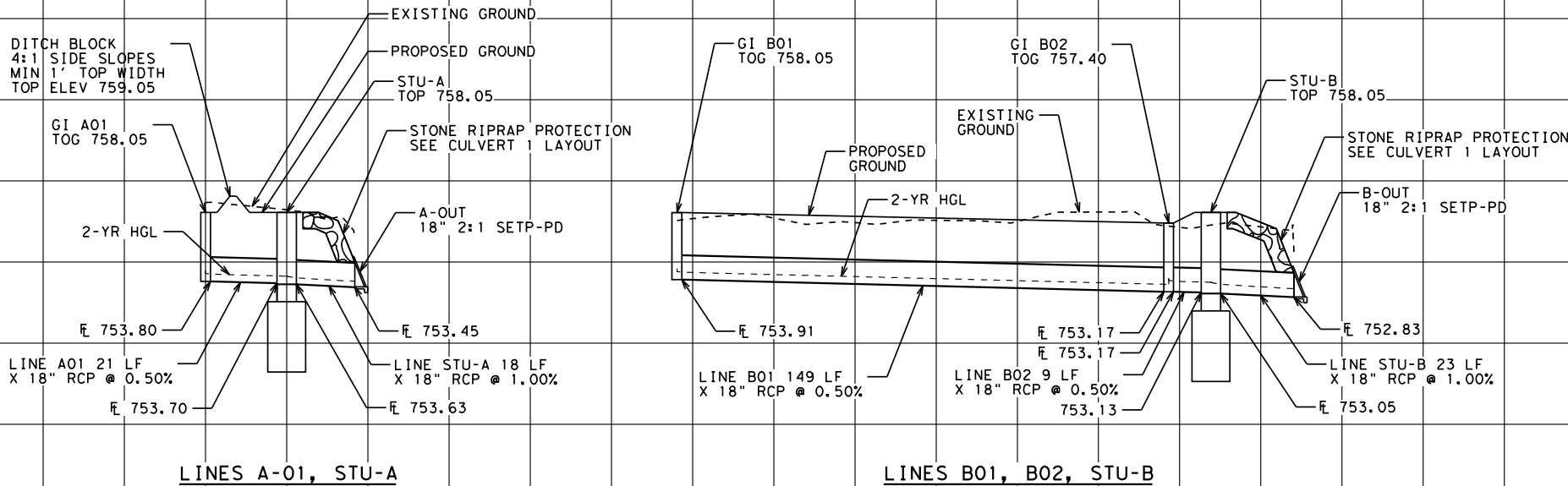
INLET ID	STATION	OFFSET	TYPE	PROFILE TYPE	GRATE TYPE	GRATE PERIMETER (FT)	GRATE AREA (SF)	CLOG REDUCTION FACTOR	PERIMETER REDUCTION FACTOR	* 2-YEAR DISCHARGE (CFS)	ALLOWABLE PONDED DEPTH (FT)	PONDED DEPTH (FT)
A01	175+50.00	-28.00	Grate	Sag	TY PSL (FG) (3' x 3')	12.7	5.5	0.5	0.5	1.45	0.50	0.18
B01	178+00.00	-25.80	Grate	On Grade	TY PSL (FG) (3' x 3')	12.7	5.5	0.5	0.5	1.58	0.50	0.20
B02	176+48.00	-28.50	Grate	Sag	TY PSL (FG) (3' x 3')	12.7	5.5	0.5	0.5	1.76	0.50	0.20

LINK CALCULATIONS

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	US HGL (FT)	JUNCTION LOSS (FT)	DS FL ELEV (FT)	DS HGL (ft)	ACTUAL VELOCITY (FPS)	SIZE	NUMBER OF BARRELS	ACTUAL LENGTH (FT)	LINK SLOPE (%)	FRICTION SLOPE (%)	MANNING'S N	Tc CALCULATED (MIN)	Tc USED (MIN)	* 2-YEAR DISCHARGE (CFS)	CAPACITY (CFS)
A01	A01	STU-A	753.80	754.44	0.17	753.70	754.13	3.4	18" RCP	1	21	0.50	0.51	0.012	10.0	10.0	1.4	8.7
B01	B01	B02	753.91	754.56	0.17	753.17	753.62	3.5	18" RCP	1	149	0.50	0.50	0.012	10.0	10.0	1.6	8.7
B02	B02	STU-B	753.17	753.95	0.11	753.13	753.75	4.2	18" RCP	1	9	0.50	0.50	0.012	10.7	10.7	2.9	8.7
STU-A	STU-A	A-OUT	753.63	754.11	0.00	753.45	753.81	4.3	18" RCP	1	18	1.00	1.01	0.012	10.0	10.0	1.4	12.2
STU-B	STU-B	B-OUT	753.05	753.73	0.00	752.83	753.36	5.2	18" RCP	1	23	1.00	1.01	0.012	10.7	10.7	2.9	12.2

*2-YR DISCHARGE SHOWN TO DEMONSTRATE PROPOSED INFRASTRUCTURE HAS ADEQUATE CAPACITY TO ACCEPT REQUIRED WQ RUNOFF.

WATER QUALITY STORM DRAIN PROFILES:



WATER QUALITY CALCULATIONS:

STU-A

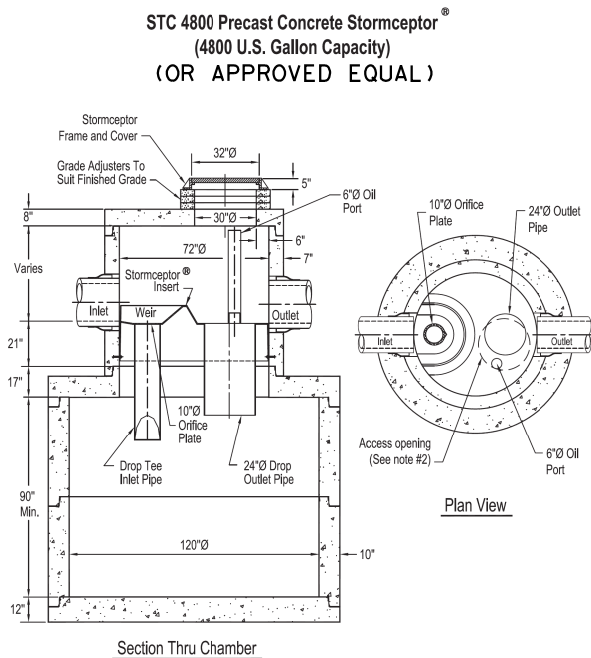
Required TSS Removal in BMP Drainage Area=	24.02	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs
BMP Sizing		
Effective Area =	0.22	EA
Calculated Model Size(s) =	2400, 3600	
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) =	4800	Model Size
Surface Area =	78.54	ft ²
Overflow Rate =	0.003131	V _{or}
Rounded Overflow Rate =	0.003240	V _{or}
BMP Efficiency % =	86.00	%
L _R Value =	234	lbs
TSS Load Credit =	210	lbs
Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.)	Yes	
TSS Treatment by BMP (LM + TSS Uncapt.) =	24.02	

STU-B

Required TSS Removal in BMP Drainage Area=	158.33	lbs
Impervious Cover Overtreatment=	0.0000	ac
TSS Removal for Uncaptured Area =	0.00	lbs
BMP Sizing		
Effective Area =	0.53	EA
Calculated Model Size(s) =	7200	
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) =	7200	Model Size
Surface Area =	113.10	ft ²
Overflow Rate =	0.005195	V _{or}
Rounded Overflow Rate =	0.005360	V _{or}
BMP Efficiency % =	81.00	%
L _R Value =	527	lbs
TSS Load Credit =	369	lbs
Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.)	Yes	
TSS Treatment by BMP (LM + TSS Uncapt.) =	158.33	

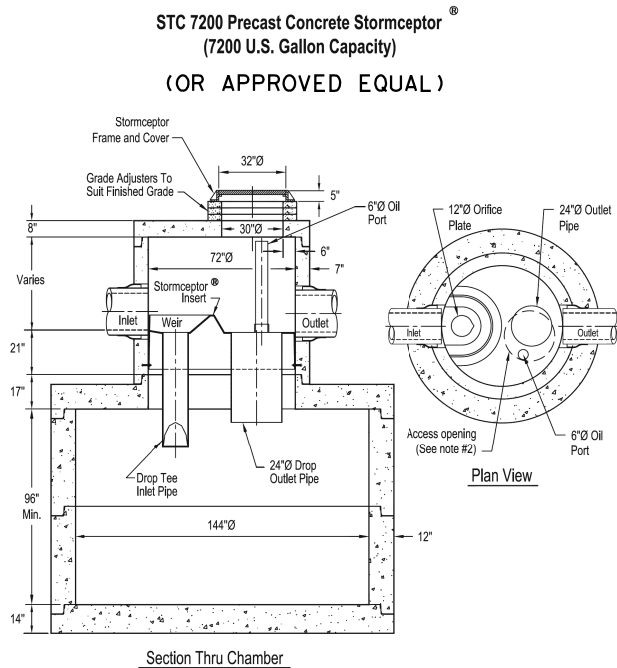
NOTES:

1. CALCULATIONS FROM THE TCEQ REMOVAL CALCULATIONS SPREADSHEET (04-20-2009) ITEM #20, STORMCEPTOR.
2. STU-A AND STU-B ARE BASED ON STORMCEPTOR STC 4800 AND 7200 UNIT RESPECTIVELY. CONTRACTOR MAY SUBMIT EQUIVALENT UNIT FOR ENGINEER APPROVAL.
3. REFER TO WPAP FOR WQ PROJECT LIMITS AND DETAILED LOAD REMOVAL CALCULATIONS.
4. PROPOSED BMPs EXCEED TSS REQUIRED BASED ON ADDITIONAL IMPERVIOUS COVER DUE TO PROPOSED PROJECT.
5. STORMCEPTOR FRAME AND COVER SHALL BE BOLTED AND GASKETED. MANUFACTURER TO PROVIDE SHOP DRAWING FOR APPROVAL OF STORMCEPTOR SYSTEM AND BOLTED AND GASKETED FRAME AND COVER. ALL ITEMS RELATED TO THE STORMCEPTOR SYSTEM SHALL BE PROVIDED BY THE MANUFACTURER.



Notes:

1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.



Notes:

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4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.



9/12/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS

WATER QUALITY DETAILS

DESIGNED: E.J.W.	FED. RD. DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: CMC	X	TEXAS		HAIRY MAN RD
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX
			XXX	112

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN
GENERAL CONSTRUCTION NOTES

1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any ground disturbance or construction activities. This notice must include:
 - the name of the approved project;
 - the activity start date; and
 - the contact information of the prime contractor.
2. All contractors conducting regulated activities associated with this project should be provided with complete copies of the approved Contributing Zone Plan (CZP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractor(s) should keep copies of the approved plan and approval letter on-site.
3. No hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.
4. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.
5. Any sediment that escapes the construction site must be collected and properly disposed of before the next rain event to ensure it is not washed into surface streams, sensitive features, etc.
6. Sediment must be removed from the sediment traps or sedimentation basins when it occupies 50% of the basin's design capacity.
7. Litter, construction debris, and construction chemicals exposed to 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



9/12/2019

REV. No.	DATE	REVISION	BY



Williamson
COUNTY
1848



K-FRIESE
+ ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6635)

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
TCEQ EDWARDS AQUIFER
GENERAL NOTES

DESIGNED: E.J.W.	FED. RD DIV. No.	STATE	PROJECT No.			HIGHWAY No.	
CHECKED: CMC	X	TEXAS				HAIRY MAN RD	
DRAWN: MD	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.	
CHECKED: CMC	AUSTIN	WILLIAMSON	XXX	XX	XXX	113	

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X:\Projects\0513-Hairy*Man*Road*Drainage*PS&E\DCN\Sheets\0513*SWPPP.dgn

A. GENERAL SITE DATA

1. PROJECT LIMITS: From Brushy Bend Drive Low-Water Crossing to Sam Bass Road
Begin Project Coordinates : Latitude (N): 30.5190 Longitude (W): -97.7452
End Project Coordinates : Latitude (N): 30.5256 Longitude (W): -97.7922

2. PROJECT SITE MAPS:

- * Project Location Map: The Title Sheet
- * Drainage Patterns: Drainage Area Maps
- * Slopes Anticipated After Major Gradings or Areas of Soil Disturbance: Typical Sections
- * Location of Erosion and Sediment Controls: SW3P Site Maps
- * Surface Waters and Discharge Locations: Drainage and Culvert Layouts
- * Project Specific Location(s) (PSL): To be determined by the project Construction Personnel. Location(s) shown on SW3P Site Map (if PSL location(s) is within one mile of project) and information located in project SW3P Binder (Reference Item #10 below).

3. PROJECT DESCRIPTION:
For the widening and overlay of Hairy Man Road consisting of grading, flex base, asphalt pavement, drainage, signing and pavement markings and water quality structures.

4. MAJOR SOIL DISTURBING ACTIVITIES:
Preparing Right of Way, excavation and embankment for the proposed roadway and drainage structures, erosion controls and topsoil work for final seeding.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:
The existing soils consist of Clayey Gravel, Fat Clay and Lean Clay with varying amounts of sand and limestone fragments.
Erosion within ROW exists, with areas of bare soil. Estimate 60% existing vegetative cover.

6. TOTAL PROJECT AREA: 18.44 Acres

7. TOTAL AREA TO BE DISTURBED: 18.44 Acres (100 %)

8. WEIGHTED RUNOFF COEFFICIENT
BEFORE CONSTRUCTION: 0.57
AFTER CONSTRUCTION: 0.62

9. NAME OF RECEIVING WATERS:
BRUSHY CREEK

10. PROJECT SW3P Binder:
A. For projects disturbing one to five acres, The Contractor will maintain a SW3P Binder at the project field office (if there is not a project field office, should be kept on the Job Site at all times) which contains the following: Index Sheet, TCEQ Signature Authority, TCEQ Small Construction Site Notice, Contractor Certification of Compliance, SW3P Inspector Qualification Statements, Inspection and Maintenance Reports (Form 2118), SW3P Sheet, Site Location Maps, Stored Material Lists specifying associated control measures and the Appendix which contains the TPDES Construction General Permit, MS4 Operator Notification(s) and the Construction PSL Permits per all applicable requirements.
B. For projects disturbing 5 acres or more, the Contractor will follow the actions listed in (10.A.) above with the addition of the following: Notice Of Intent (NOI) and Fee Payment Form, TCEQ Large Construction Site Notice (to be used instead of Small Site Notice), and TPDES Permit Coverage Notice.
C. For projects disturbing less than one acre, actions described in (10.A.) and (10.B.) above are not required. Acreage is calculated by adding Total Area To Be Disturbed Acres on project (See #7 above) and the PSL(s) acreage located within one mile of project.

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- | | |
|---------------------------------------|--|
| <u>T</u> TEMPORARY SEEDING | <u> </u> PRESERVATION OF NATURAL RESOURCES |
| <u> </u> MULCHING (Hay or Straw) | <u> </u> FLEXIBLE CHANNEL LINER |
| <u> </u> BUFFER ZONES | <u> </u> RIGID CHANNEL LINER |
| <u>P</u> PLANTING | <u>T</u> SOIL RETENTION BLANKET |
| <u>P</u> SEEDING | <u>P</u> COMPOST MANUFACTURED TOPSOIL |
| <u> </u> SODDING | <u> </u> VERTICAL TRACKING |
| | <u>T</u> OTHER: Disturbed areas on which construction activity has ceased, either temporarily or permanently, shall be stabilized within 14 days unless activities are scheduled to resume and do so within 21 days. |

2. STRUCTURAL PRACTICES:
(T = Temporary or P = Permanent)
 SILT FENCES
T EROSION CONTROL LOGS
 EROSION CONTROL COMPOST BERMS (Low Velocity)
T ROCK FILTER DAMS
 DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
 DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
 DIVERSION DIKE AND SWALE COMBINATIONS
 PIPE SLOPE DRAINS
 PAVED FLUMES
T ROCK BEDDING AT CONSTRUCTION EXIT
 TIMBER MATTING AT CONSTRUCTION EXIT
 CHANNEL LINERS
 SEDIMENT TRAPS
 SEDIMENT BASINS
 STORM INLET SEDIMENT TRAP
P STONE OUTLET STRUCTURES
P CURBS AND GUTTERS
P STORM SEWERS
P VELOCITY CONTROL DEVICES
P OTHER: STORMCEPTOR OR SIMILAR DEVICES PROPOSED FOR PERMANENT TSS LOAD REMOVAL

NOTE: TOP OF BMP'S SHOULD NOT BE HIGHER THAN ROADWAY ELEVATION AS NOT TO FLOOD ROADWAY UNLESS PRIOR APPROVAL FROM ENGINEER IS OBTAINED.

3. STORM WATER MANAGEMENT:
Stormwater drainage will be provided by ditches, inlets and stormwater system which carry drainage within the R.O.W. to the lows within the roadway and project site or naturally drain to Brushy Creek. Non-paved areas and ditches will be stabilized with a permanent vegetative cover. Other permanent erosion controls include velocity control structures downstream of culverts and grading design generally consisting of 3:1 or flatter slopes with permanent vegetative cover.

4. STORM WATER MANAGEMENT ACTIVITIES: (Sequence of Construction)
1) INSTALL TEMPORARY EROSION CONTROL MEASURES.
2) INSTALL CULVERT AND DRAINAGE IMPROVMENTS INCLUDING STORM SEWER AND DITCH GRADING.
3) ROADWAY CONSTRUCTION.
4) PLACE PERMANENT SIGNING AND STRIPING.
5) PLACE TOPSOIL, SEEDING AND PERMANENT EROSION CONTROLS.
6) PROJECT CLEAN UP AND REMOVAL OF TEMPORARY EROSION CONTROL MEASURES.

5. NON-STORM WATER DISCHARGES:
Filter non-storm water discharges, or hold in retention basins, before being allowed to mix with storm water. These discharges consist of, but not limited to, non-polluted ground water, spring water, foundation or footing drain water, water used for dust control or pavement washing and vehicle washwater containing no detergents.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:
Maintain all erosion and sediment controls in good working order. Perform any necessary cleaning/repairs/replacements at the earliest possible date prior to next rain event, but no later than 7 calendar days. Ensure the surrounding ground has dried sufficiently to prevent damage from equipment. "Too Wet" is the only reason for not adhering to time frames described. When construction activities permanently or temporarily cease and are not expected to resume for 14 or more days on a disturbed portion of the site, stabilization measures must be initiated immediately.
2. INSPECTION:
A Construction Observer will perform a regularly scheduled SW3P inspection every 7 calendar days. An Inspection and Maintenance Report, signed by the Construction Observer and the Contractor, will be filed for each inspection. Revise/clean/repair/replace each BMP control device in accordance with the current Field Inspection and Maintenance Report (Form 2118) and Item 1 (Maintenance) above.
3. WASTE MATERIALS:
On a daily basis, or as may be directed, collect all waste materials, trash and debris from the construction site and deposit into a metal dumpster having a secure cover and which meets all state and local city solid waste management requirements. Empty the dumpster as required by regulation, or as may be directed, at a local approved landfill site. Do not bury construction waste on the construction project site.
4. HAZARDOUS WASTE & SPILL REPORTING:
As a minimum, any products in the following categories are considered to be hazardous: Paints, Acids, Solvents, Fuels, Asphalt Products, Chemical Additives for Soil Stabilization, and Concrete Curing Compounds or Additives. Hazardous materials are not permitted to be stored on the project site. When storing hazardous materials at a Project Specific Location, take all practicable precaution to prevent and/or contain any spillage of these materials. In the event of a spill, contact the spill coordinator immediately.
5. SANITARY WASTE:
Use a licensed sanitary waste management contractor to collect all sanitary waste from portable units as may be required by local regulation, or as directed.
6. CONSTRUCTION VEHICLE TRACKING:
On a regular basis, or as may be directed, dampen haul roads for dust control and stabilize construction entrances/exits. Provide for a motorized broom or vacuum type sweeper to be available on a daily basis, or as may be directed, to remove sediment from paved roadways abutting or traversing the project site.
7. MANAGEMENT PRACTICES:
A. Construct disposal areas, stockpiles, haul roads and PSL's in a manner that will minimize and control the amount of sediment that may enter receiving waters. Do not locate disposal areas in any wetland, waterbody or streambed.
B. Locate construction staging areas, vehicle maintenance and PSL's areas in a manner to minimize the runoff of pollutants.
C. When working in or near a wetland, install and maintain operating silt erosion and sediment controls at all times during construction and isolate the work from the wetland.
D. Clear all waterways as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.
E. Procedures and/or practices should be taken to control dust.
F. Sediment to be removed from roadways daily or when work begins after weather events if construction activities have ceased due to weather event.
G. The Contractor will be required to contain wash water from concrete trucks in a manner that will prevent same from entering any waterway.
H. The Contractor is responsible for insuring that all Subcontractors are aware and comply with all components of the Temporary Erosion Control Plans.



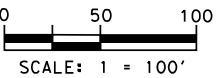
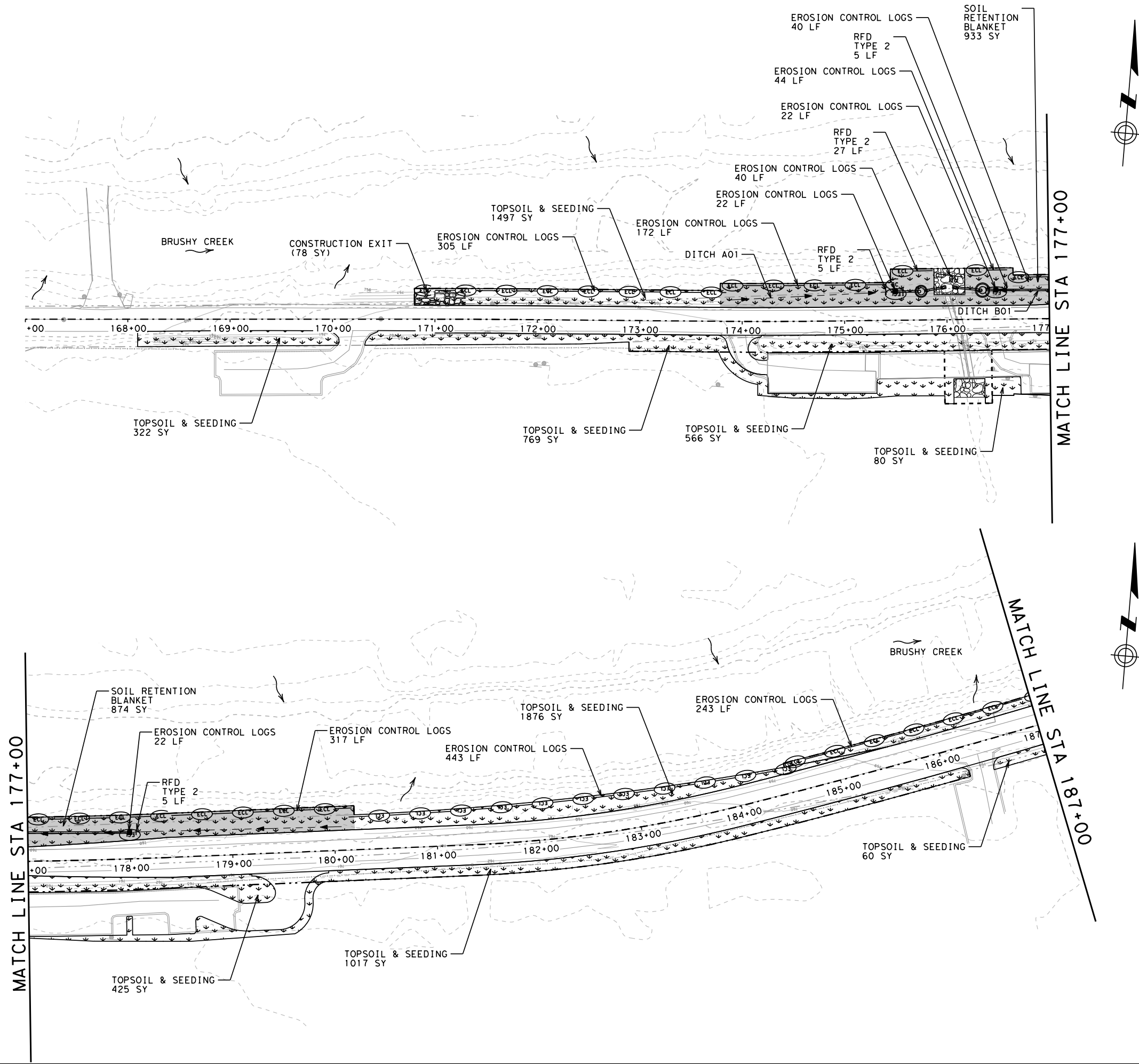
_____, P.E.
Signature of Registrant & Date



WILLIAMSON COUNTY
STORM WATER POLLUTION
PREVENTION PLAN (SW3P)

TEMPLATE REVISION DATE: 06/12/2015

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6			HMR
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS		WILLIAMSON	114
CHECK	CONTROL	SECTION	JOB	



LEGEND

- ECL EROSION CONTROL LOGS
- SF SEDIMENT CONTROL FENCE
- CONCRETE RIPRAP
- TOPSOIL (4") & SEEDING FOR EROSION CONTROL
- STONE RIPRAP PROTECTION
- SOIL RETENTION BLANKET CL 2 TY F

- NOTES:
1. PERIMETER CONTROLS SHALL BE IN PLACE PRIOR TO COMMENCING ANY SOIL DISTURBING ACTIVITIES. PERIMETER DEVICES TO BE PLACE AT ROW UNLESS OTHERWISE NOTED.
 2. THE LOCATION OF EROSION CONTROL AND OTHER SOIL STABILIZATION PRACTICES WILL BE BASED ON SITE SPECIFIC FIELD CONDITIONS AS NEEDED. QUANTITIES SHOWN ARE APPROXIMATE AND MAY BE ADJUSTED FOR FIELD CONDITIONS.
 3. CONSTRUCTION EXITS SHALL BE FIELD LOCATED AS NEED OR AS DIRECTED BY THE ENGINEER. SEE EC(3)-93 STANDARD.
 4. FOR RIPRAP PROTECTION DETAILS SEE CULVERT LAYOUT SHEETS.



8/1/2019

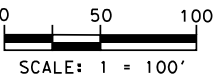
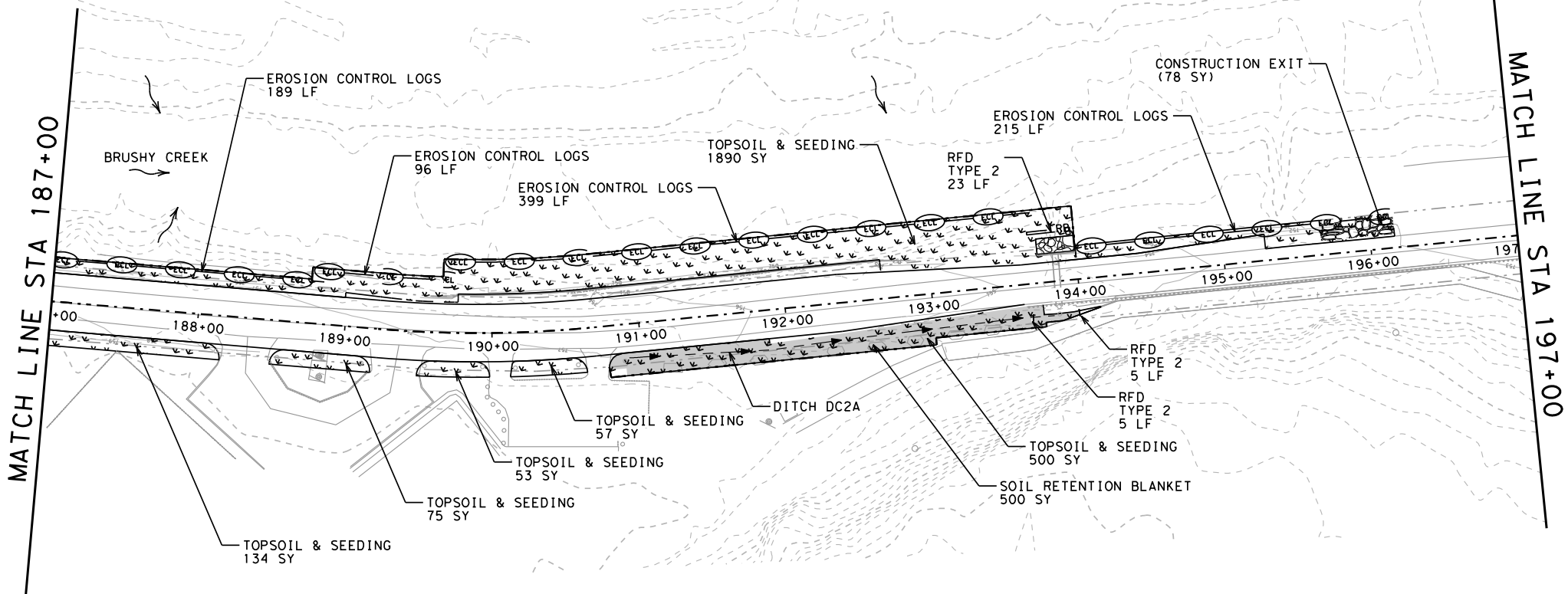
REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
EROSION CONTROL PLAN
BEGIN TO STA 187+00

SCALE: 1"=100'H SHEET 1 OF 7

DESIGNED:	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED:	X	TEXAS		HAIRY MAN RD
DRAWN:	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED:	AUSTIN	WILLIAMSON	XXX	XX
				JOB No.
				SHEET No.
				115



LEGEND

- ECL EROSION CONTROL LOGS
- SF SEDIMENT CONTROL FENCE
- CONCRETE RIPRAP
- TOPSOIL (4") & SEEDING FOR EROSION CONTROL
- STONE RIPRAP PROTECTION
- SOIL RETENTION BLANKET CL 2 TY F

NOTES:

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8/1/2019

REV. No.	DATE	REVISION	BY



HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS

EROSION CONTROL PLAN
STA 187+00 TO STA 207+00

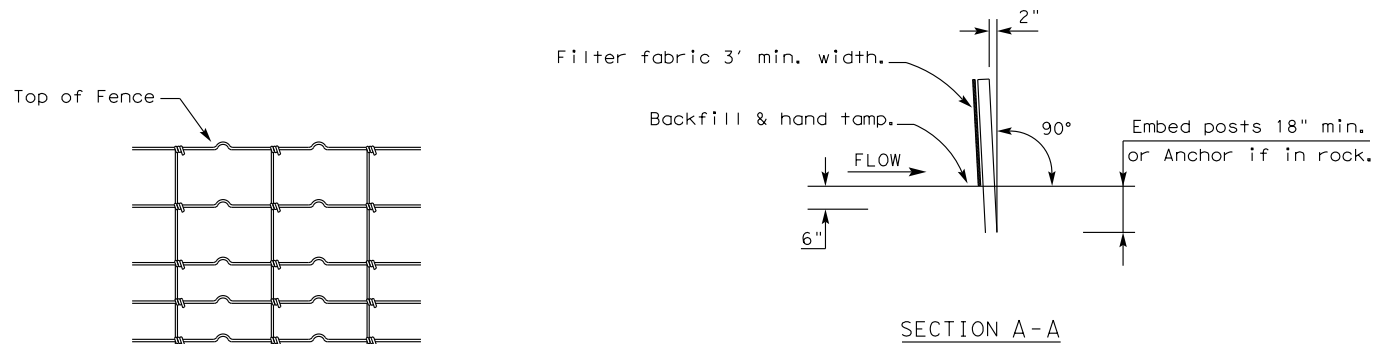
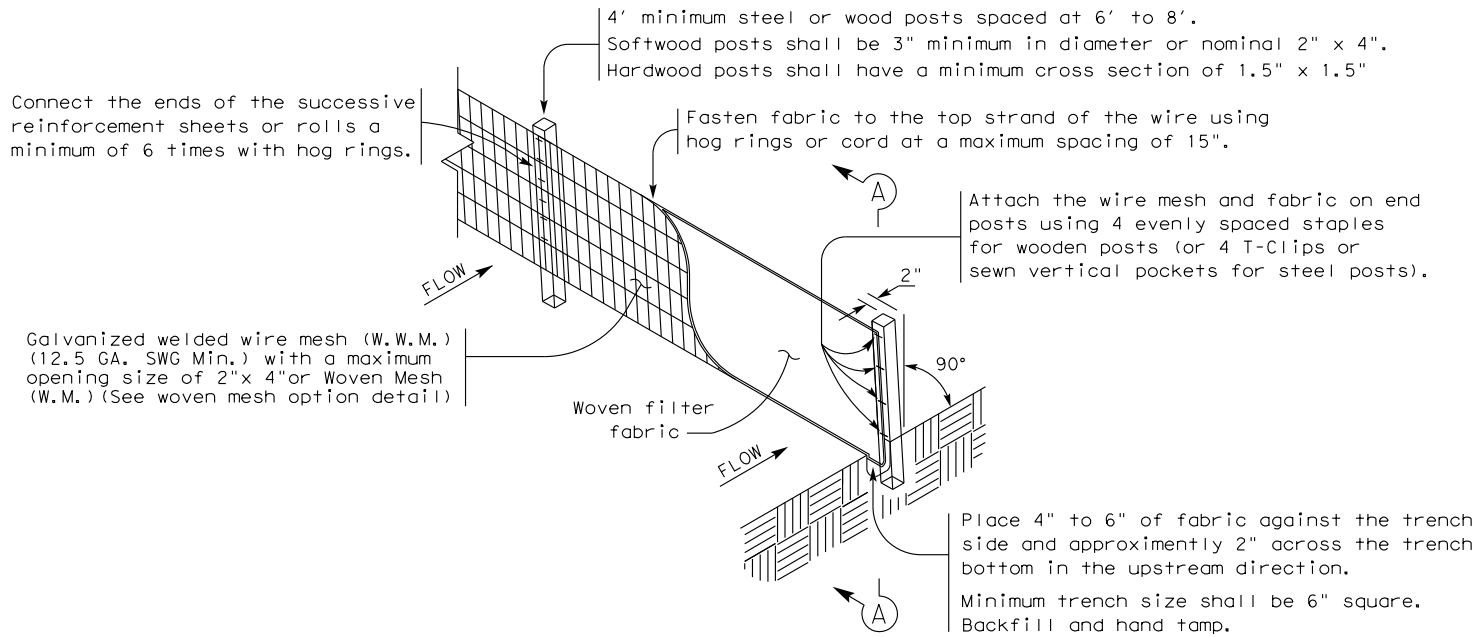
SCALE: 1"=100'H

SHEET 2 OF 7

DESIGNED:	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED:	X	TEXAS		HAIRY MAN RD
DRAWN:	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED:	AUSTIN	WILLIAMSON	XXX	XX
				JOB No.
				116

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DATE
FILE



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA. SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

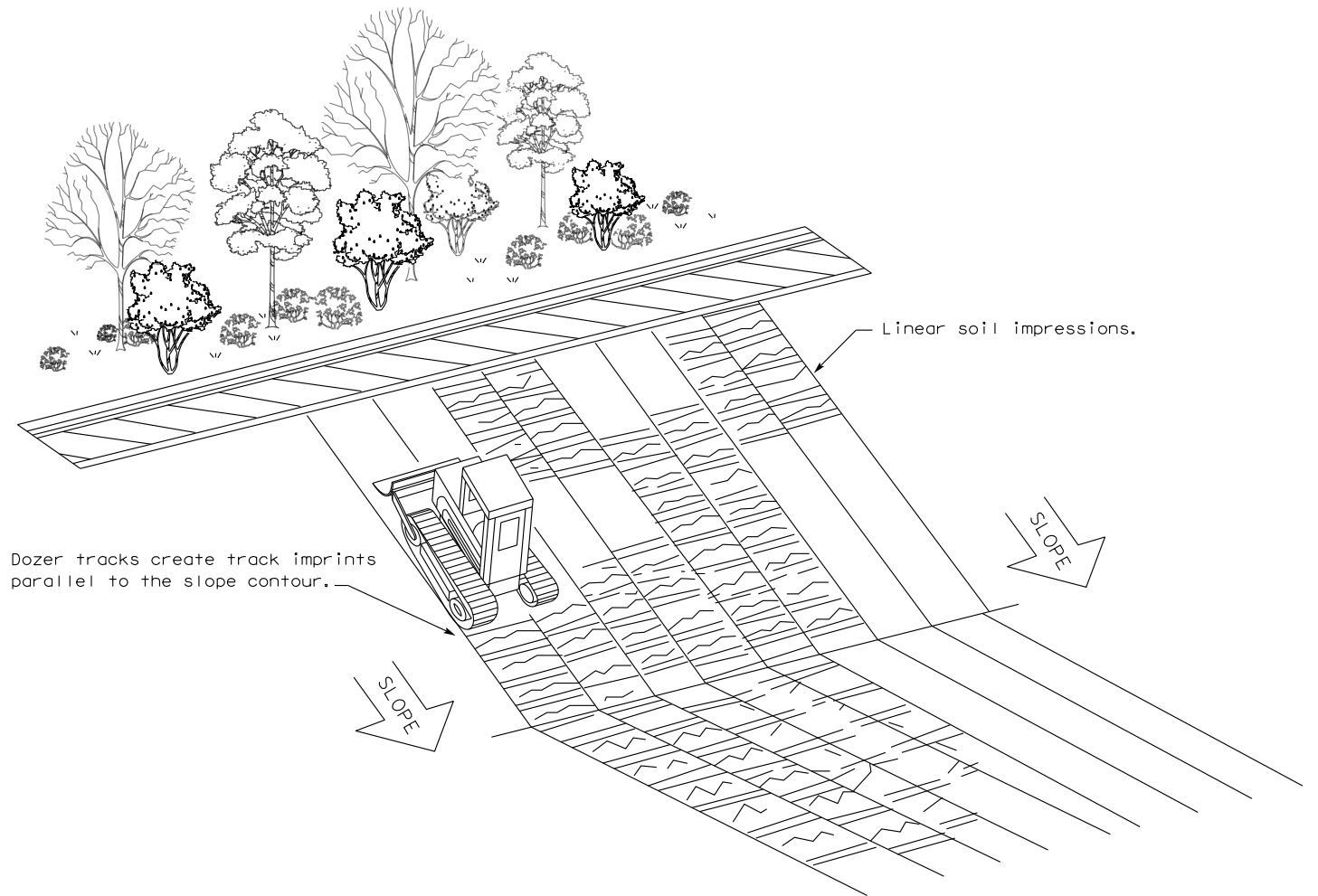
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

- Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
- Perform vertical tracking on slopes to temporarily stabilize soil.
- Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
- Do not exceed 12" between track impressions.
- Install continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING



Design
Division
Standard

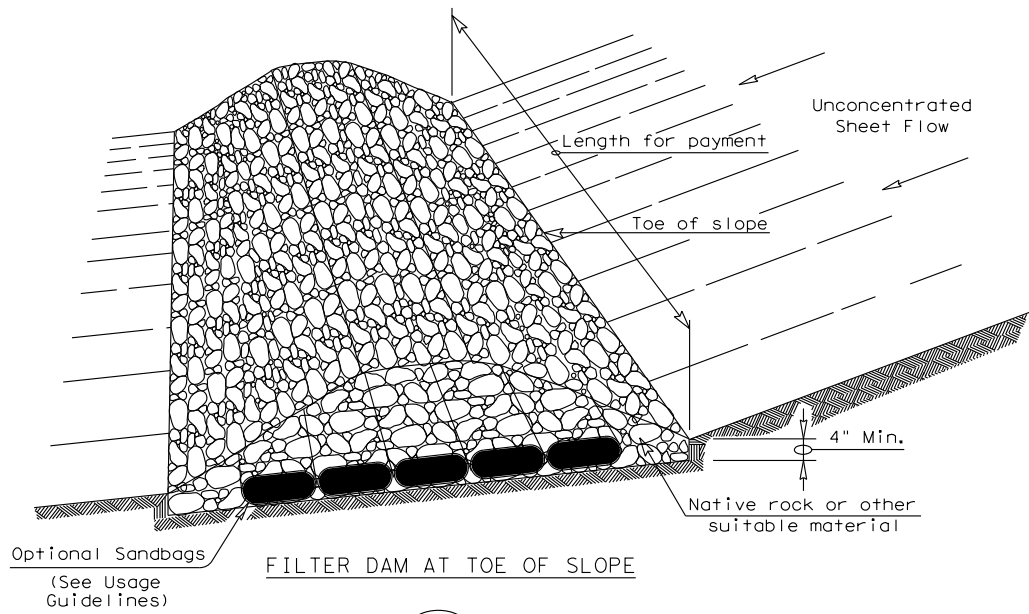
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING

EC(1) - 16

FILE: ec116	DN: TxDOT	CK: KM	DN: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	
			144	

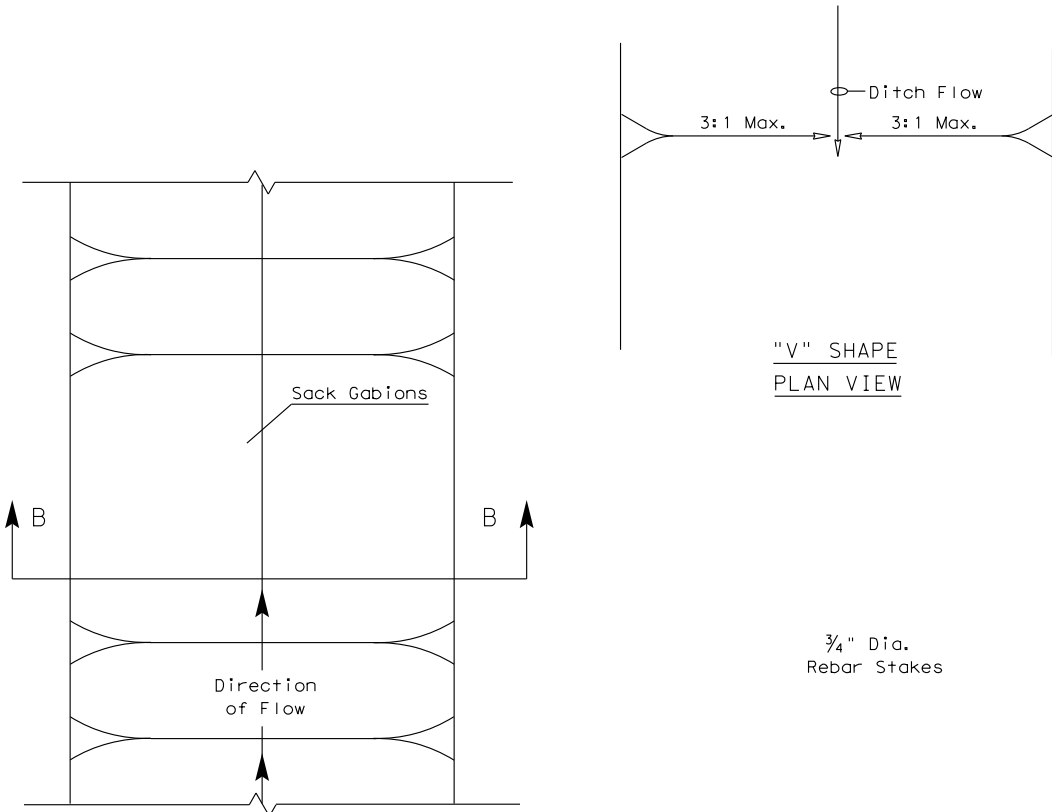
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DATE: FILE:



FILTER DAM AT TOE OF SLOPE

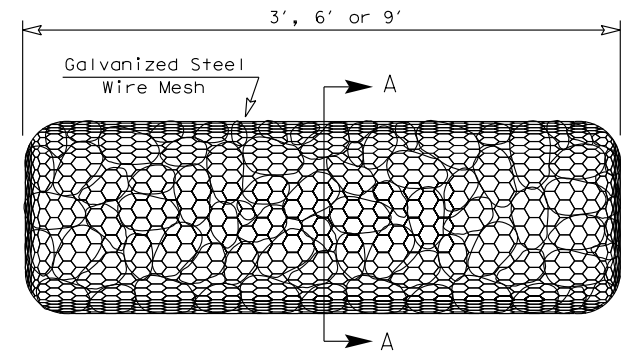
RFD1



"V" SHAPE
PLAN VIEW

3/4" Dia.
Rebar Stakes

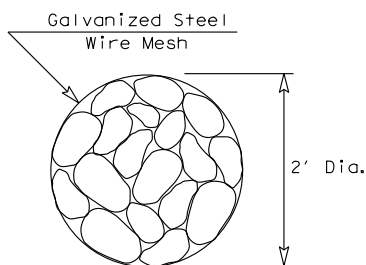
PLAN VIEW



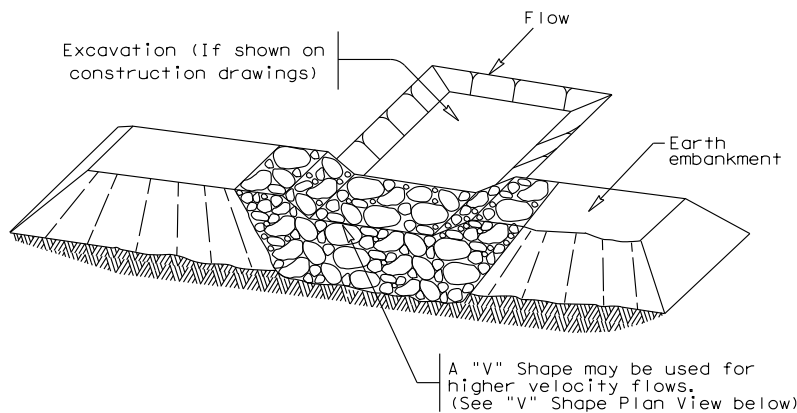
TYPE 4 (SACK GABIONS)

RFD4

SECTION B-B

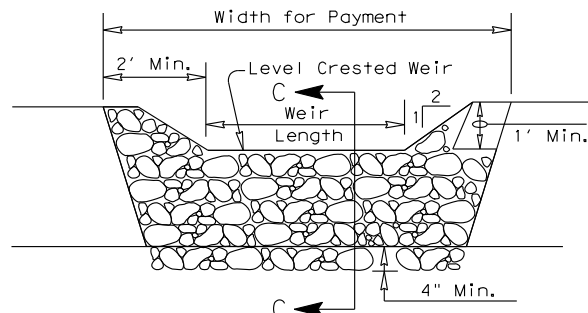


SECTION A-A

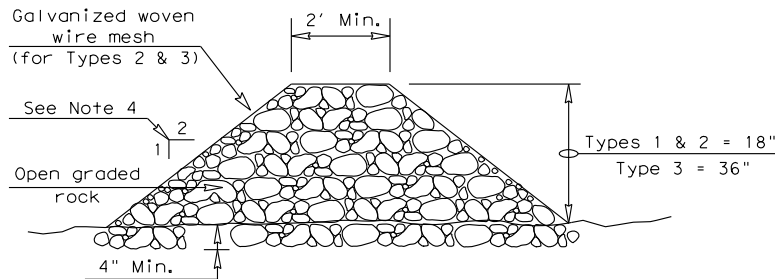


FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

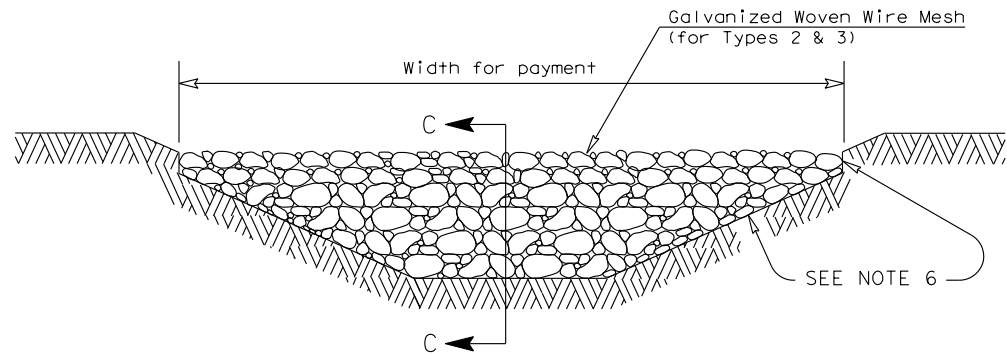
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximately 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.



FILTER DAM AT CHANNEL SECTIONS


RFD1 OR RFD2 OR RFD3

GENERAL NOTES

- If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
- Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
- The rock filter dam dimensions shall be as indicated on the SW3P plans.
- Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
- Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
- Filter dams should be embedded a minimum of 4" into existing ground.
- The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
- Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
- Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4".
- Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

- Type 1 Rock Filter Dam — RFD1 —
Type 2 Rock Filter Dam — RFD2 —
Type 3 Rock Filter Dam — RFD3 —
Type 4 Rock Filter Dam — RFD4 —



Texas Department of Transportation

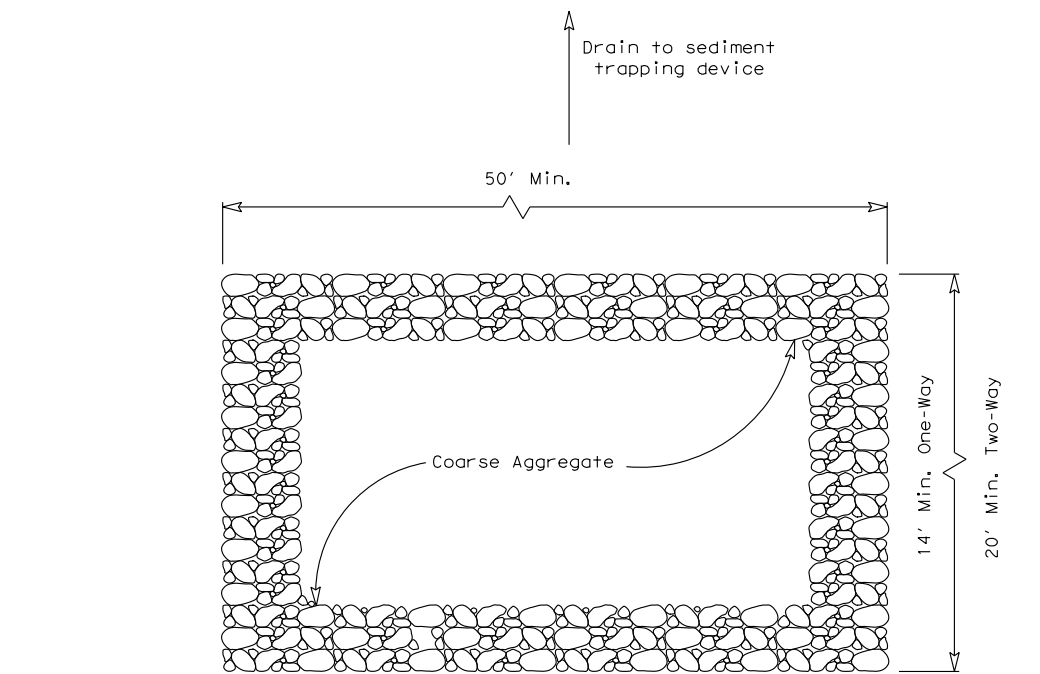
Design
Division
Standard

TEMPORARY EROSION,
SEDIMENT AND WATER
POLLUTION CONTROL MEASURES
ROCK FILTER DAMS
EC(2) - 16

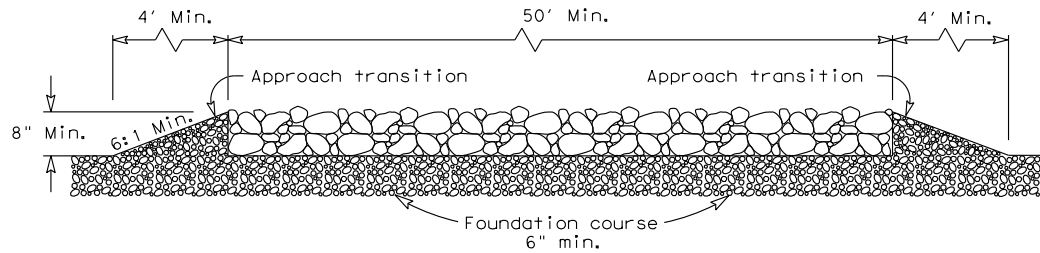
FILE: ec216	DN: TxDOT	CK: KM	DN: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
				145

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DATE:
FILE:



PLAN VIEW

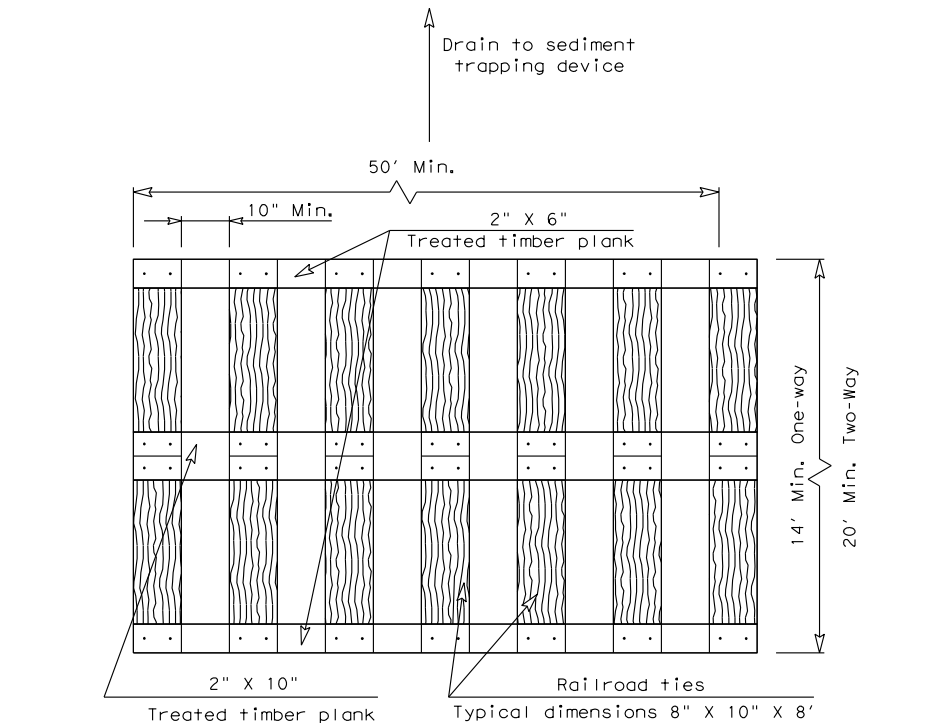


ELEVATION VIEW

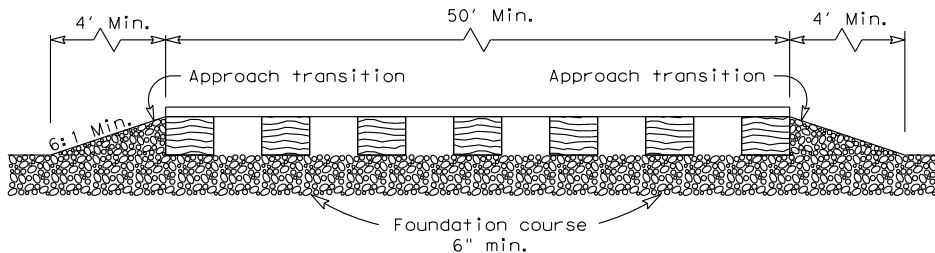
CONSTRUCTION EXIT (TYPE 1)
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

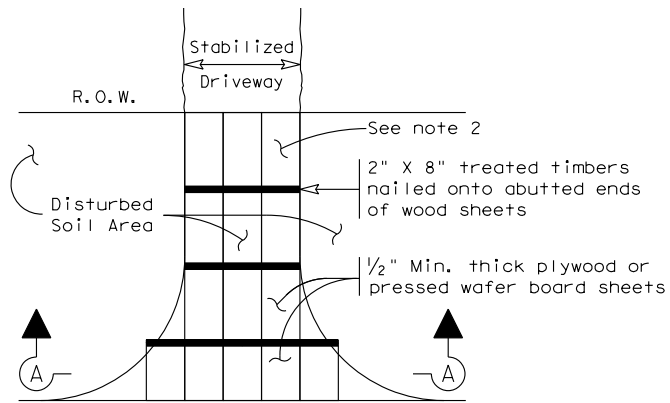


ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)
TIMBER CONSTRUCTION (LONG TERM)

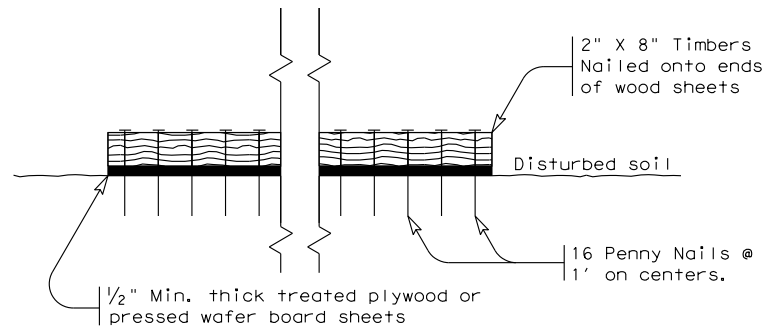
GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



Paved Roadway

PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)
SHORT TERM

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



Design
Division
Standard

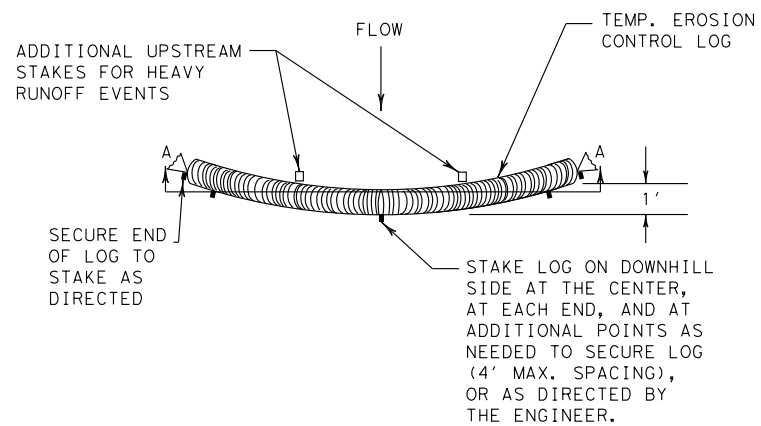
TEMPORARY EROSION,
SEDIMENT AND WATER
POLLUTION CONTROL MEASURES
CONSTRUCTION EXITS

EC(3)-16

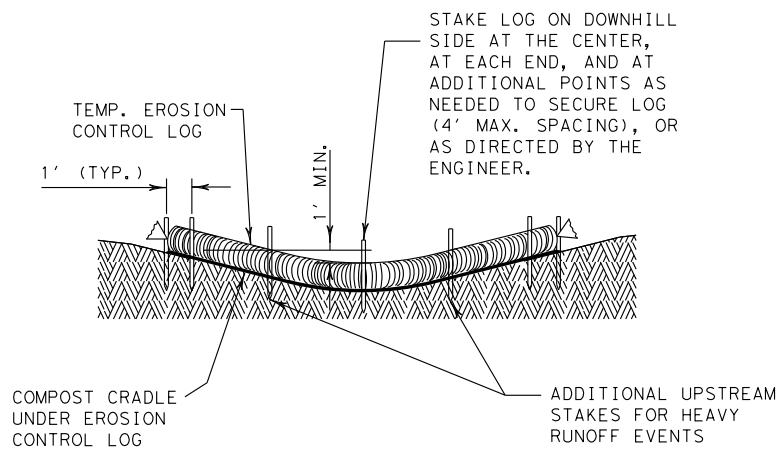
FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
				146

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DATE: FILE:



PLAN VIEW



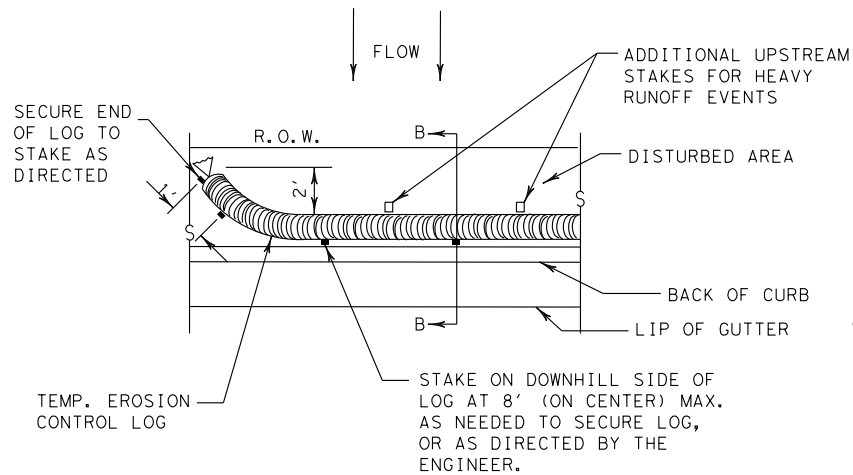
SECTION A-A

EROSION CONTROL LOG DAM

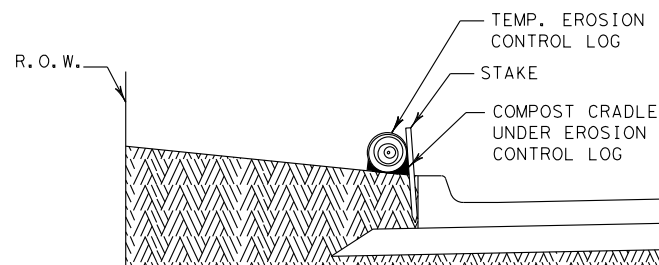
CL-D

LEGEND

- CL-D EROSION CONTROL LOG DAM
- CL-BOC EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI EROSION CONTROL LOG AT DROP INLET
- CL-CI EROSION CONTROL LOG AT CURB INLET
- CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET



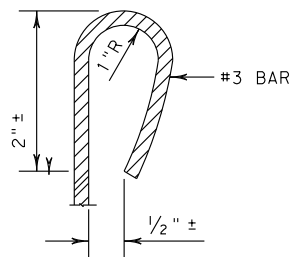
PLAN VIEW



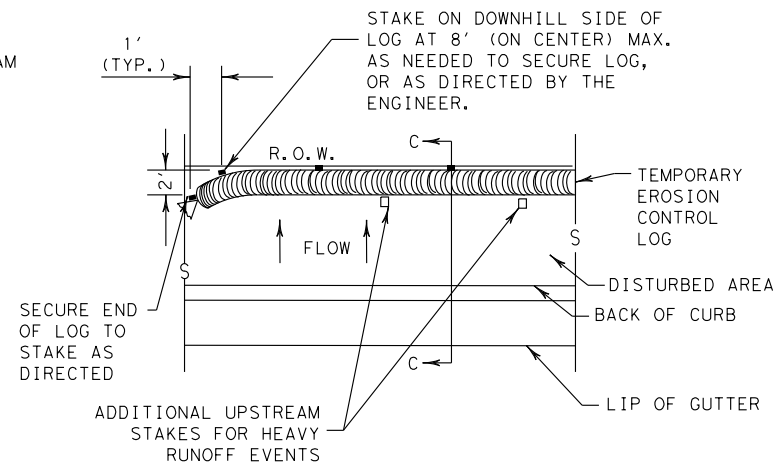
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

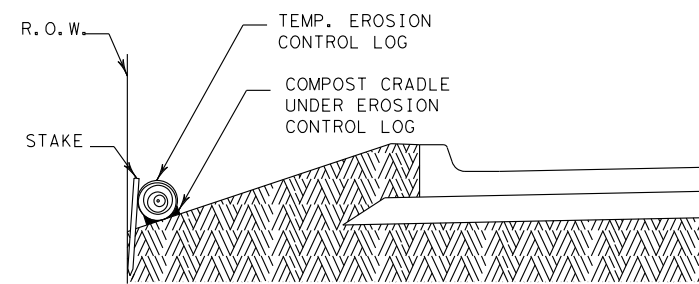
CL-BOC



REBAR STAKE DETAIL



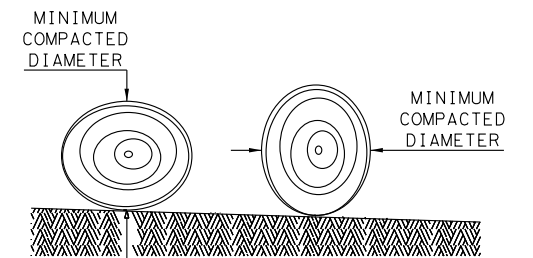
PLAN VIEW



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW




DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SHEET 1 OF 3

 Texas Department of Transportation		Design Division Standard		
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16				
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
				147

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

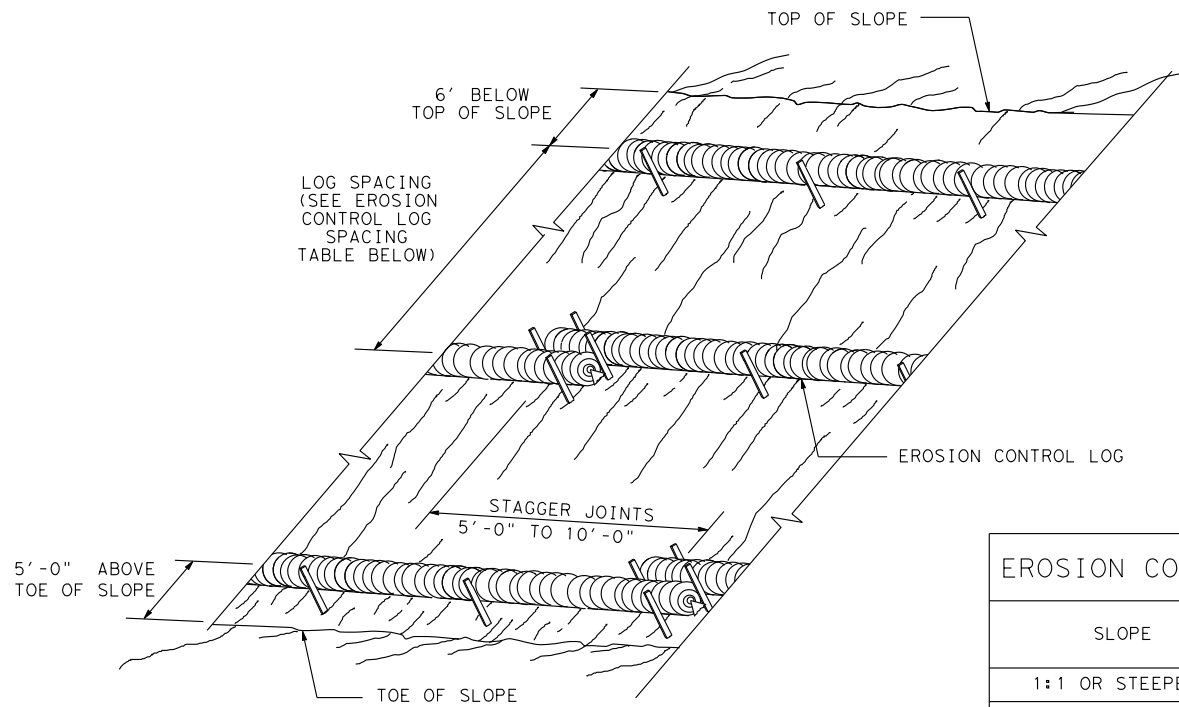
1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

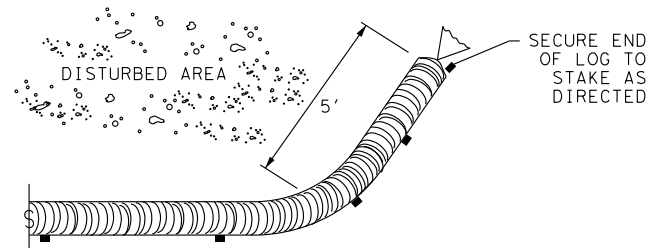
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DATE: FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

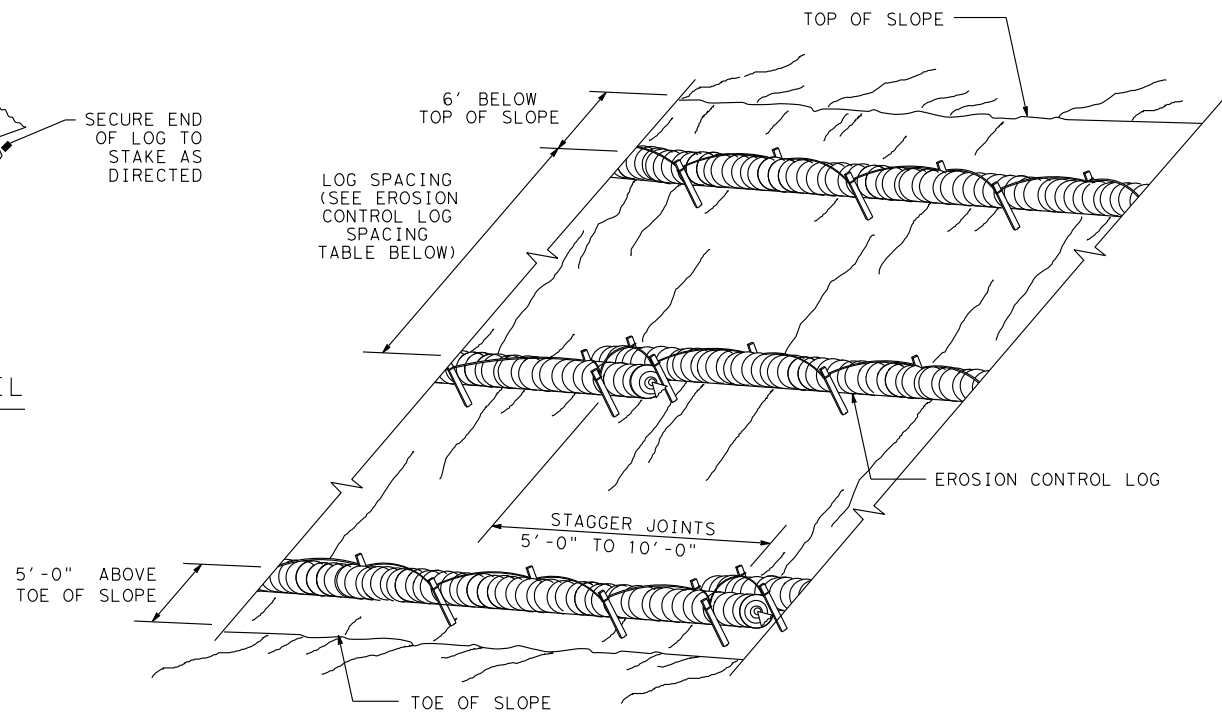
CL-SST



END SECTION RAP DETAIL

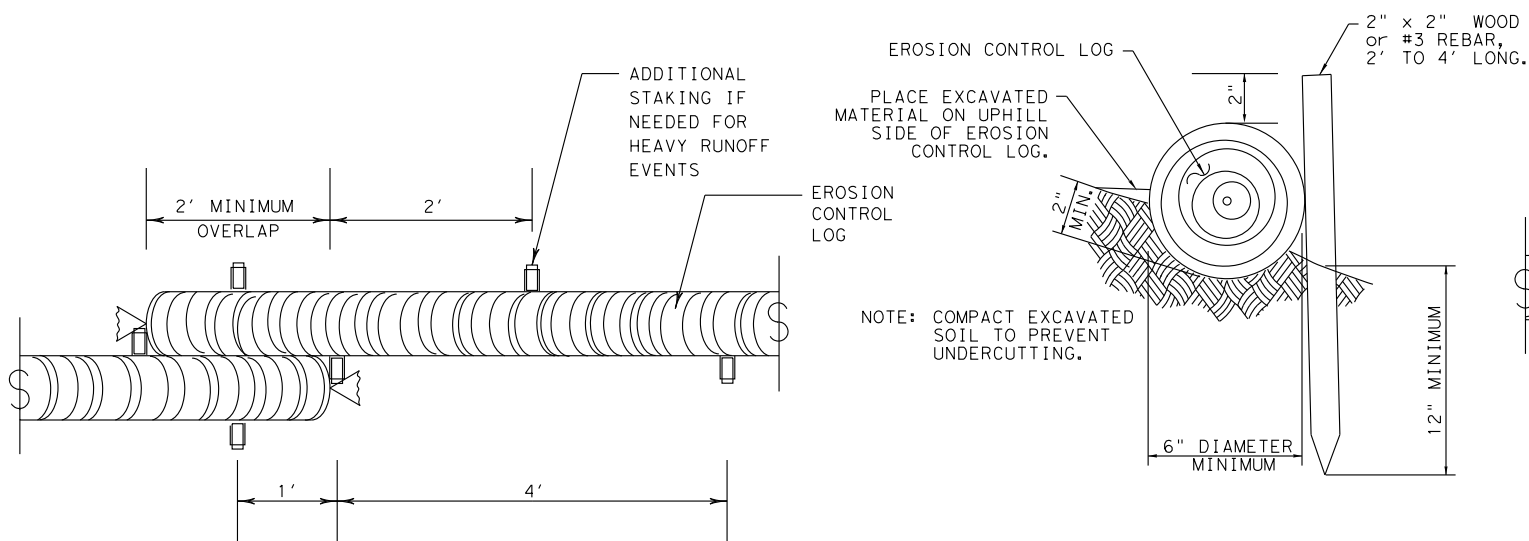
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

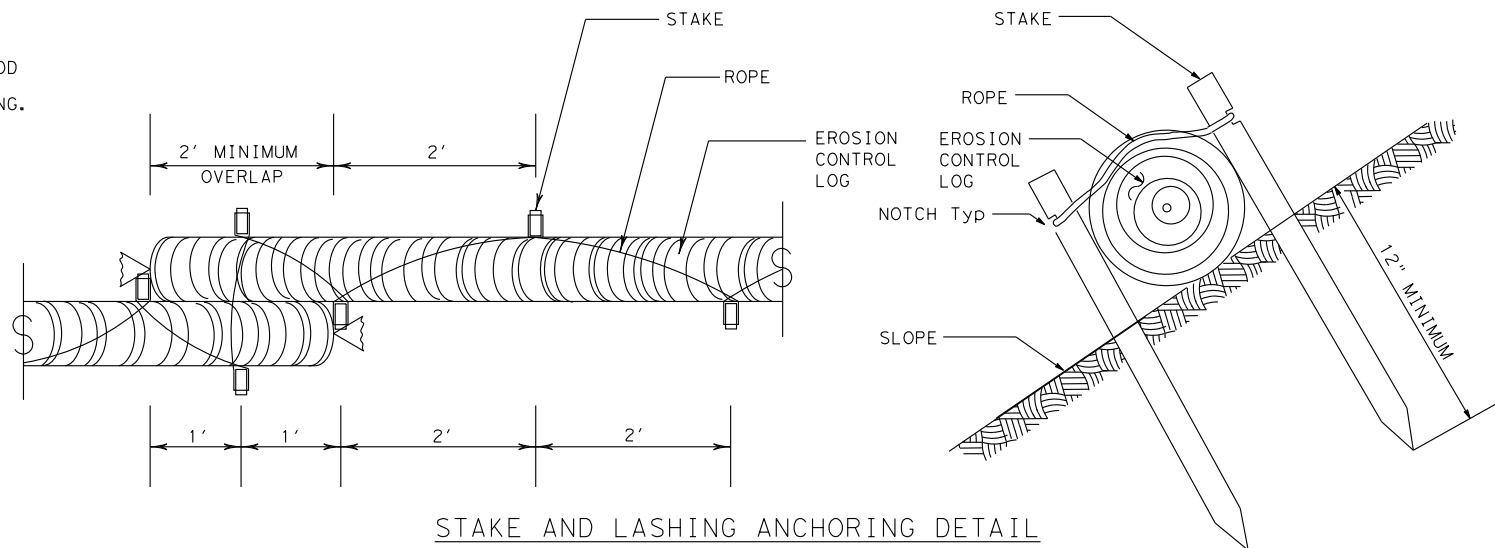
CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

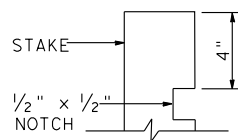
CL-SST

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"




STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3



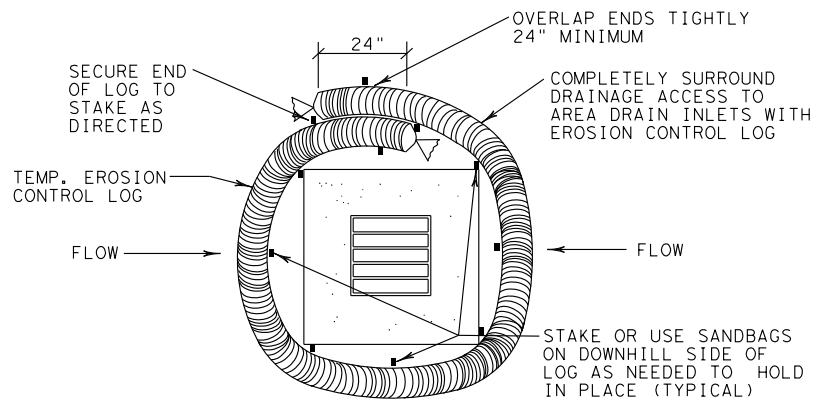
Design
Division
Standard

TEMPORARY EROSION,
SEDIMENT AND WATER
POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC (9) - 16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	
			148	

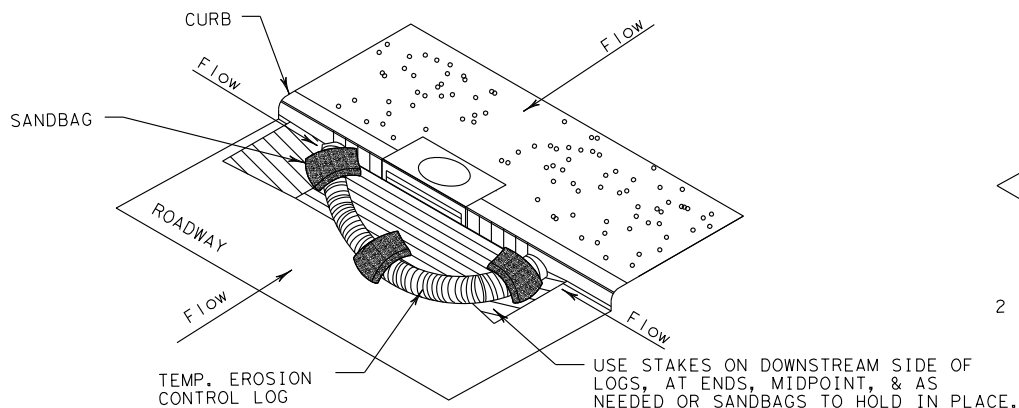
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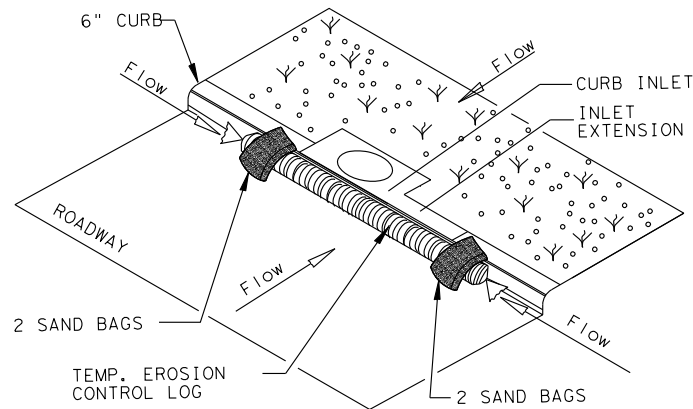
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

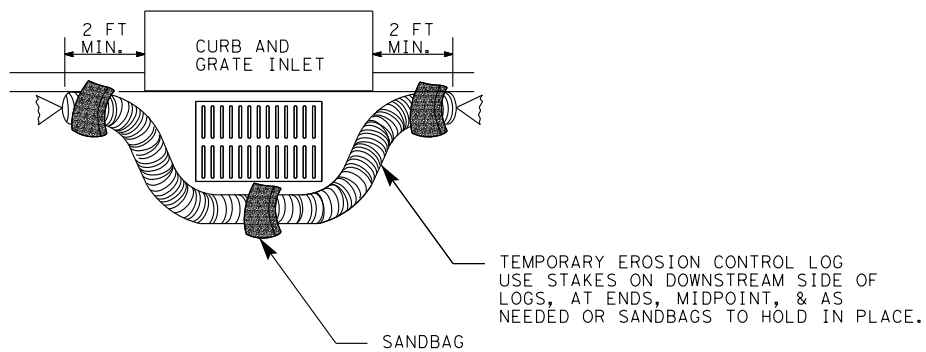
CL-CI



EROSION CONTROL LOG AT CURB INLET

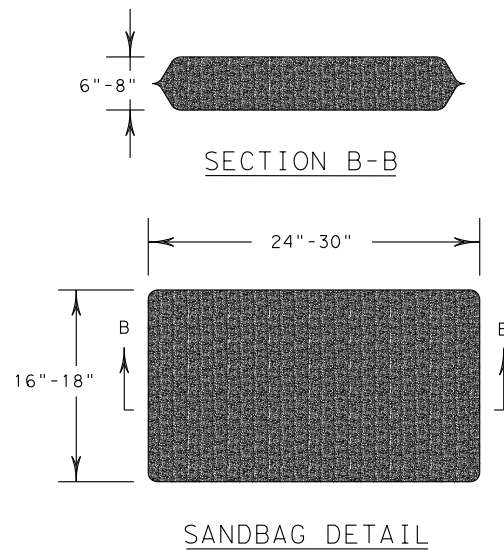
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS
SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE
TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE
STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SANDBAG DETAIL

SHEET 3 OF 3



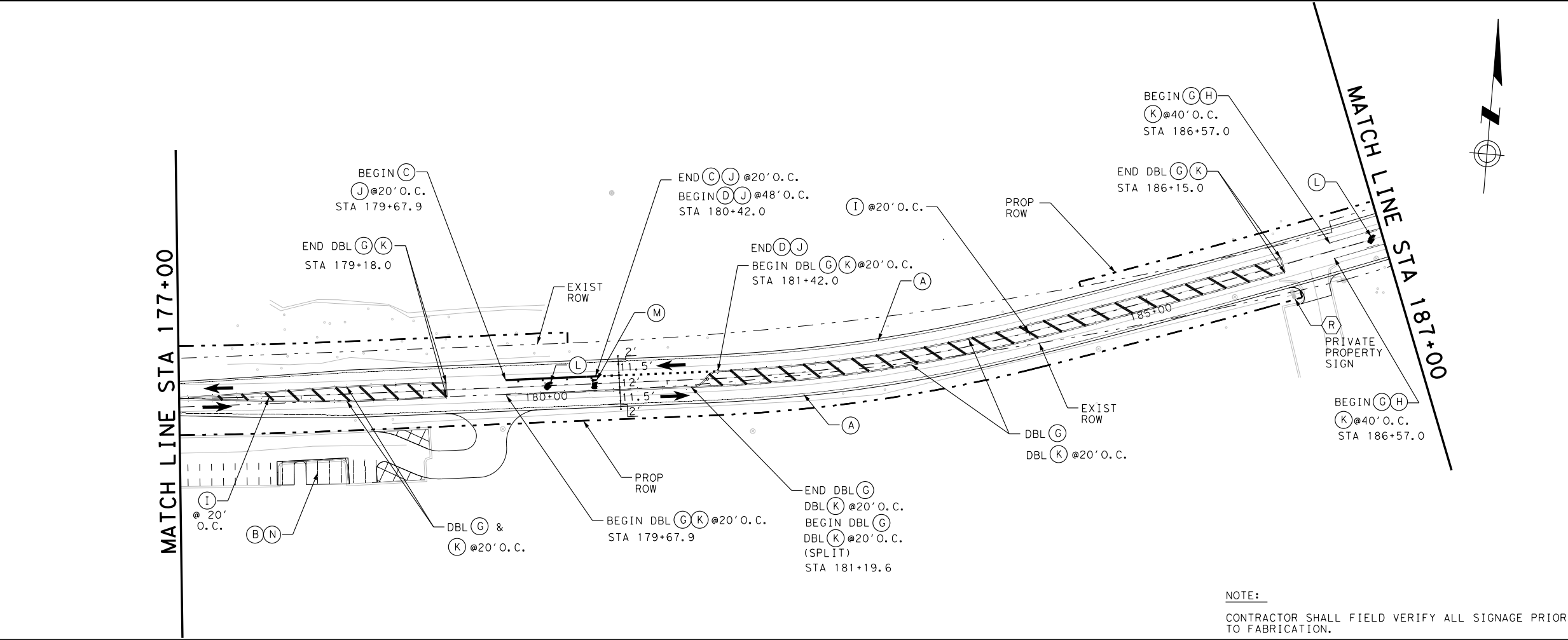
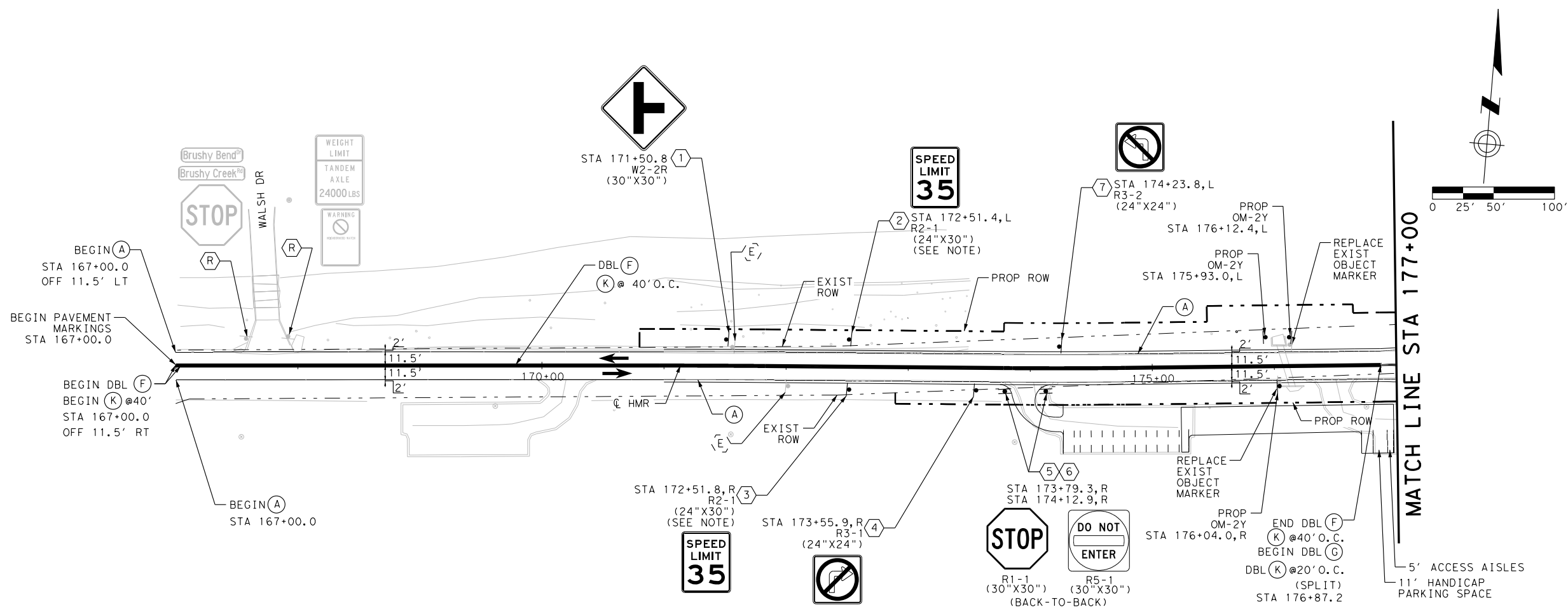
TEMPORARY EROSION,
SEDIMENT AND WATER
POLLUTION CONTROL MEASURES
EROSION CONTROL LOG

EC (9) - 16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
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REVISIONS	DIST	COUNTY	SHEET NO.	149

100% SUBMITTAL

PLOT DRIVER: RD*11x17*PDF.plt
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LEGEND

- (A) REF PROF PAV MRK TY I (W) (4") (SLD) & REF PAV MRK TY II (W) (4") (SLD)
- (B) RE PM W/RET REQ TY I (W) (4") (SLD) & REF PAV MRK TY II (W) (4") (SLD)
- (C) REFL PAV MRK TY I & TY II (W) (8") (SLD)
- (D) REFL PAV MRK TY I & TY II (W) (8") (DOT)
- (E) REFL PAV MRK TY I & TY II (W) (24") (SLD)
- (F) REF PROF PAV MRK TY I (Y) (4") (SLD) & RE PM W/RET REQ TY II (Y) (4") (SLD)
- (G) RE PM W/RET REQ TY I & TY II (Y) (4") (SLD)
- (H) RE PM W/RET REQ TY I & TY II (Y) (4") (BKN)
- (I) REFL PAV MRK TY I & TY II (Y) (24") (SLD)
- (J) REFL PAV MRKR TY I-C
- (K) REFL PAV MRKR TY II-A-A
- (L) REFL PAV MRK TY I & TY II (W) (ARROW)
- (M) REFL PAV MRK TY I & TY II (W) (WORD)
- (N) ELIM EXT PAV MRK & MRKS (4")
- (O) ELIM EXT PAV MRK & MRKS (ARROW)
- (P) ELIM EXT PAV MRK & MRKS (WORD)
- (#) PROPOSED SIGN - #
- (R) EXISTING SIGN & POST TO REMAIN
- (/E) EXISTING SIGN & POST TO BE REMOVED
- SIGN & POST
- DELINEATOR
- TRAFFIC DIRECTION/TRAVEL LANE



REV. No.	DATE	REVISION	BY



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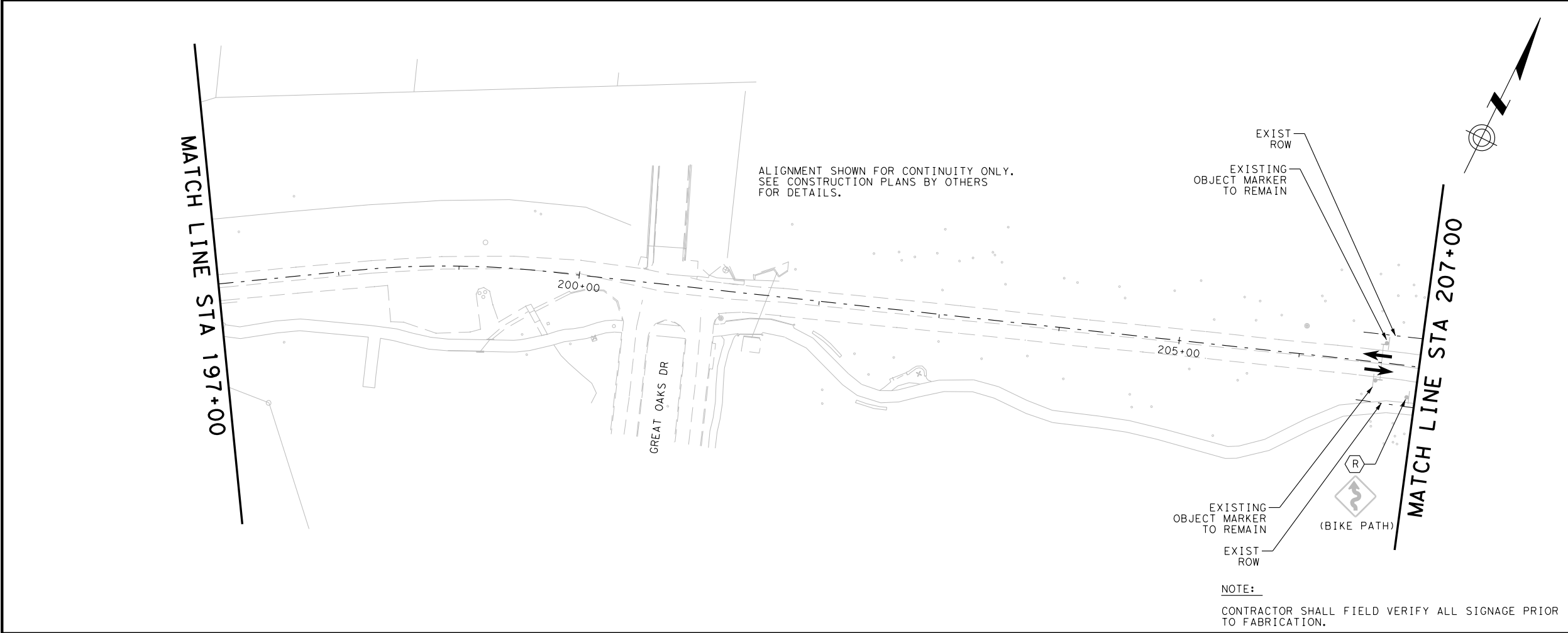
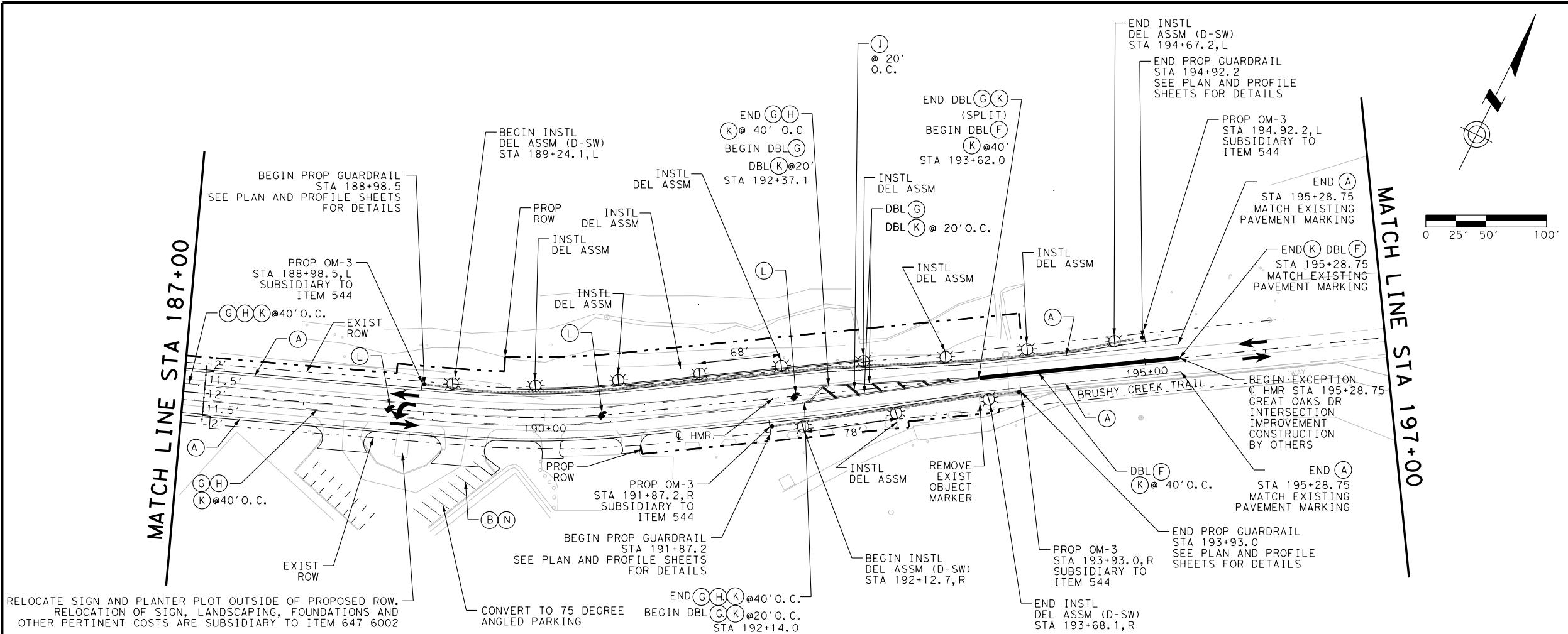
TBPE REG. # F-474

HAIRY MAN ROAD /
BRUSHY CREEK ROAD
IMPROVEMENTS
SIGNING & PAVEMENT
MARKINGS PLAN

SCALE: 1"=100'H				SHEET 1 OF 7			
DESIGNED: LLA		FED. RD DIV. NO.	STATE	PROJECT No.		HIGHWAY No.	
CHECKED: CRN		TEXAS			HAIRY MAN RD		
DRAWN: LLA		STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.	JOB No.	SHEET No.
CHECKED: CRN		AUSTIN	WILLIAMSON				150

NOTE:

CONTRACTOR SHALL FIELD VERIFY ALL SIGNAGE PRIOR TO FABRICATION.



LEGEND

- (A) REF PROF PAV MRK TY I (W) (4") (SLD) & REF PAV MRK TY II (W) (4") (SLD)
- (B) RE PM W/RET REQ TY I (W) (4") (SLD) & REF PAV MRK TY II (W) (4") (SLD)
- (C) REFL PAV MRK TY I & TY II (W) (8") (SLD)
- (D) REFL PAV MRK TY I & TY II (W) (8") (DOT)
- (E) REFL PAV MRK TY I & TY II (W) (24") (SLD)
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- (G) RE PM W/RET REQ TY I & TY II (Y) (4") (SLD)
- (H) RE PM W/RET REQ TY I & TY II (Y) (4") (BKN)
- (I) REFL PAV MRK TY I & TY II (Y) (24") (SLD)
- (J) REFL PAV MRKR TY I-C
- (K) REFL PAV MRKR TY II-A-A
- (L) REFL PAV MRK TY I & TY II (W) (ARROW)
- (M) REFL PAV MRK TY I & TY II (W) (WORD)
- (N) ELIM EXT PAV MRK & MRKS (4")
- (O) ELIM EXT PAV MRK & MRKS (ARROW)
- (P) ELIM EXT PAV MRK & MRKS (WORD)
- (#) PROPOSED SIGN - #
- (R) EXISTING SIGN & POST TO REMAIN
- (/E) EXISTING SIGN & POST TO BE REMOVED
- SIGN & POST
- DELINEATOR
- TRAFFIC DIRECTION/TRAVEL LANE



8/6/2019

REV. No.	DATE	REVISION	BY



ATKINS

TBPE REG. # F-474

HAIRY MAN ROAD / BRUSHY CREEK ROAD IMPROVEMENTS SIGNING & PAVEMENT MARKINGS PLAN

SCALE: 1"=100' H SHEET 2 OF 7

DESIGNED: LLA	FED. RD DIV. No.	STATE	PROJECT No.	HIGHWAY No.
CHECKED: CRN	TEXAS			HAIRY MAN RD
DRAWN: LLA	STATE DISTRICT	COUNTY	CONTROL No.	SECTION No.
CHECKED: CRN	AUSTIN	WILLIAMSON		151

NOTE:

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