

IH 35 Reconstruction of Interchange and Operational Improvements from  
South of Williams Drive to Lakeway Drive

## **WATER POLLUTION ABATEMENT PLAN APPLICATION**

**CSJ(s): 0015-08-144 & 0015-08-147**

Prepared by:



Technologies

TBPE Registration No. F-10573

Report Date: August 18, 2023

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## Section I

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### Edwards Aquifer Application Cover Page

# Texas Commission on Environmental Quality

## Edwards Aquifer Application Cover Page

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### 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.

<b>1. Regulated Entity Name: IH 35 Improvements from South of Williams Drive to Lakeway Drive</b>					<b>2. Regulated Entity No.: RN111009577</b>				
<b>3. Customer Name: Texas Department of Transportation</b>					<b>4. Customer No.: CN 600803456</b>				
<b>5. Project Type:</b> (Please circle/check one)	New	Modification			Extension	Exception			
<b>6. Plan Type:</b> (Please circle/check one)	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
<b>7. Land Use:</b> (Please circle/check one)	Residential	Non-residential			<b>8. Site (acres):</b>			144.92	
<b>9. Application Fee:</b>					<b>10. Permanent BMP(s):</b>		Sand Filter Ponds		
<b>11. SCS (Linear Ft.):</b>	N/A				<b>12. AST/UST (No. Tanks):</b>		N/A		
<b>13. County:</b>	Williamson				<b>14. Watershed:</b>			San Gabriel River	

# Application Distribution

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

[http://www.tceq.texas.gov/assets/public/compliance/field\\_ops/eapp/EAPP%20GWCD%20map.pdf](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.

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

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

Carlos Juarez, P.E.

Print Name of Customer/Authorized Agent

*Carlos Juarez*

07-26-2023

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):

## Section II

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### General Information

# General Information Form

## Texas Commission on Environmental Quality

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

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

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

## Signature

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

Print Name of Customer/Agent: Carlos Juarez, P.E.

Date: 07-26-2023

Signature of Customer/Agent:

Carlos Juarez

## Project Information

1. Regulated Entity Name: IH35 reconstruction of interchange from South of Williams Drive to Lakeway Drive.
2. County: Williamson
3. Stream Basin: Pecan Branch and North and South Fork of the San Gabriel River
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:  
 Recharge Zone  
 Transition Zone
6. Plan Type:  
 WPAP  
 SCS  
 Modification  
 AST



UST

Exception Request

7. Customer (Applicant):

Contact Person: John Peters, P.E.

Entity: Texas Department of Transportation

Mailing Address: 2727 S. Austin Ave.

City, State: Georgetown, TX

Zip: 78626

Telephone: 512-930-5402

FAX: \_\_\_\_\_

Email Address: John.Peters@txdot.gov

8. Agent/Representative (If any):

Contact Person: Carlos Juarez, P.E.

Entity: KCI Technologies

Mailing Address: 2610 North Shary Road

City, State: Mission, TX

Zip: 78574

Telephone: 956-271-6697

FAX: \_\_\_\_\_

Email Address: Carlos.Juarez@kci.com

9. Project Location:

The project site is located inside the city limits of Georgetown.

The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of \_\_\_\_\_.

The project site is not located within any city's limits or ETJ.

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

Project is located along IH35 from South of Williams Drive to Lakeway Drive

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

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

Project site boundaries.

USGS Quadrangle Name(s).

Boundaries of the Recharge Zone (and Transition Zone, if applicable).

Drainage path from the project site to the boundary of the Recharge Zone.

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

Survey staking will be completed by this date: Survey Completed March 2018

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

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

15. Existing project site conditions are noted below:

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

### ***Prohibited Activities***

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

- (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
- (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
- (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;
- (4) The use of sewage holding tanks as parts of organized collection systems; and
- (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).
- (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

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

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

- (2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and
- (3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

### ***Administrative Information***

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

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

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

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

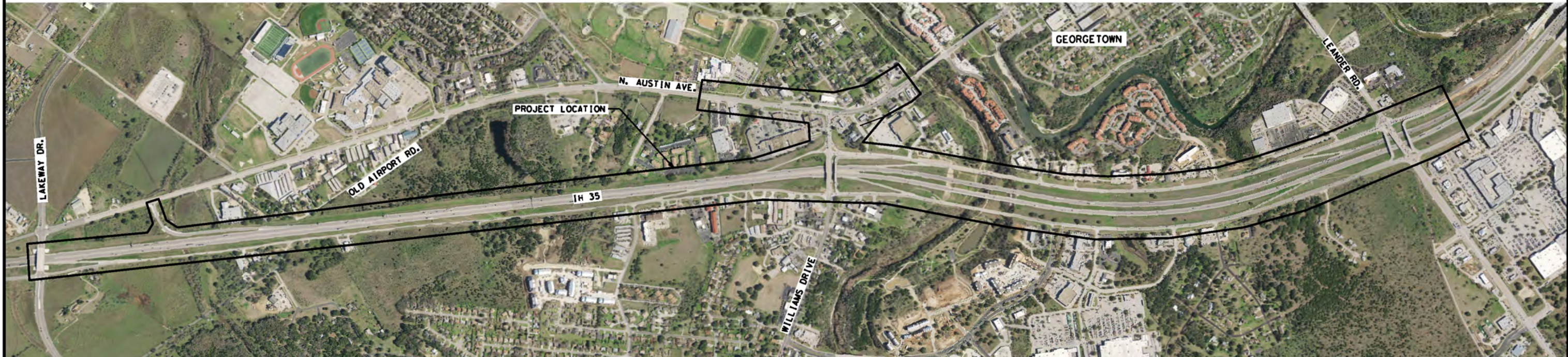
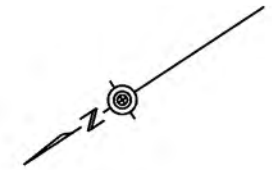
20.  Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies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

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



# ROAD MAP

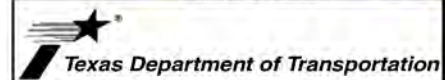
GEORGETOWN, TX



NOTE: THE PROJECT SITE IS LOCATED ALONG A 1.928 MILE REACH OF IH 35 FROM SOUTH OF WILLIAMS DRIVE TO SOUTH OF LAKEWAY DRIVE, AND A 0.763 MILE REACH OF NORTH AUSTIN AVE (ADJACENT TO IH 35).

NOT TO SCALE

**LANDTECH**  
 engineering • surveying  
 Houston, Texas  
 TBPE Registration No. F-1364; TBPLS Registration No. 10019100



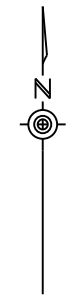
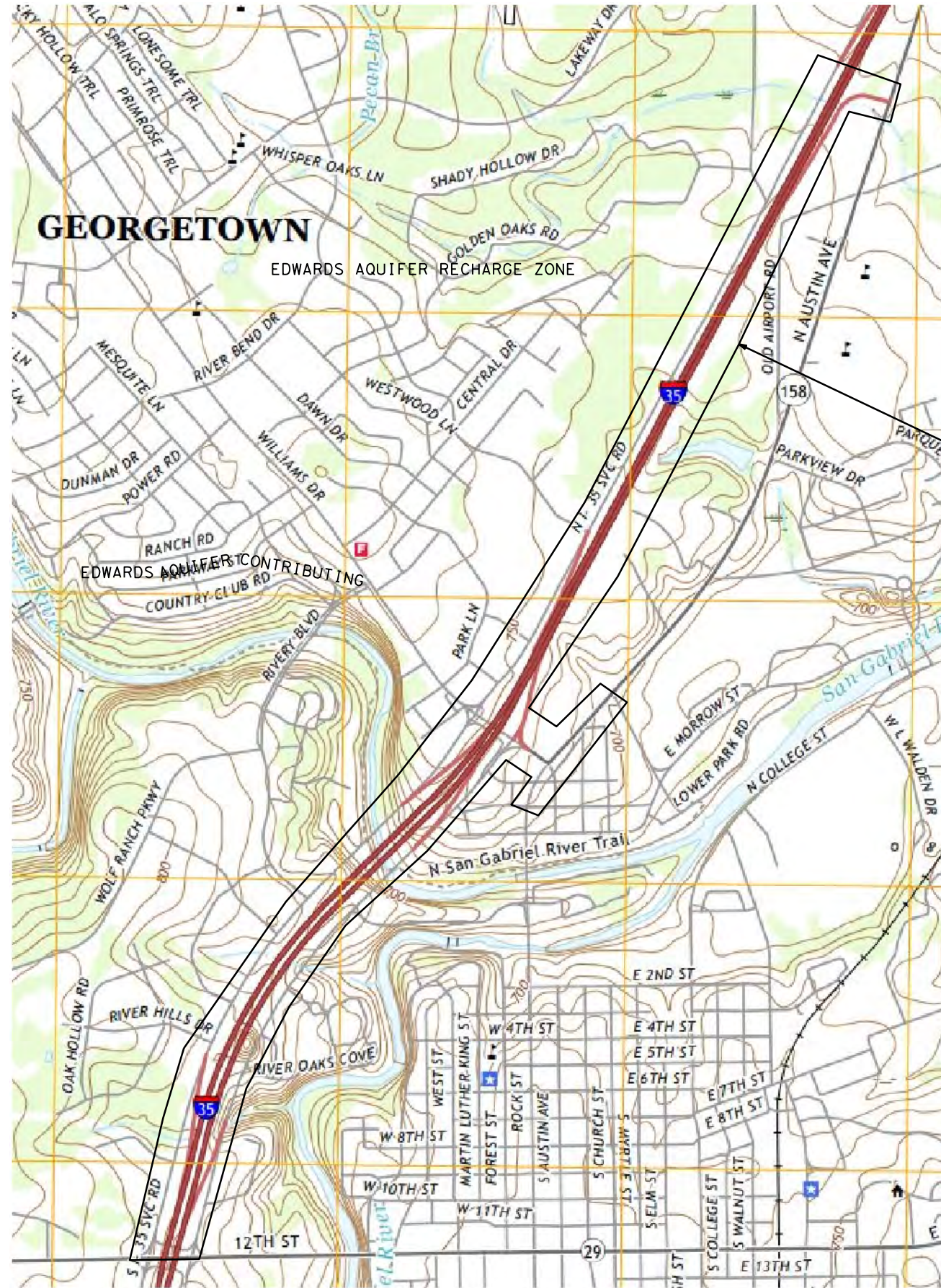
## ATTACHMENT A ROAD MAP

DATE	CONT	SECT	JOB	HIGHWAY
2018	0015	08	144	I-35
DIST	COUNTY		SHEET NO.	
AUS	WILLIAMSON			



# USGS QUADRANGLE MAP

GEORGETOWN, TX



PROJECT LOCATION

NOT TO SCALE

**LANDTECH**  
 engineering • surveying  
 Houston, Texas  
 TBPE Registration No. F-1364; TBPLS Registration No. 10019100

**mobility**   
 CAPITAL AREA

Texas Department of Transportation

## ATTACHMENT B USGS QUAD MAP

© 2018	CONT	SECT	JOB	HIGHWAY
DS: 0015	CK: 08		144	I-35
DW:	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON		

DATE: \$DATE\$ \$TIME\$  
 FILE: \$FILES\$

## **ATTACHMENT C – Project Description**

The Texas Department of Transportation (TxDOT) proposes improvements along IH 35 from South of Williams Drive to Lakeway Drive which will consist of the reconstruction of the existing interchange at Williams Drive to a diverging diamond interchange which includes total replacement of the existing bridge at the intersection, along with the addition and modification of frontage roads and ramps, construction of collector/distributor roads along the IH 35 frontage roads, and construction of a shared used path. The approximate area of the site is 144.92 acres.

### **Existing Site Conditions:**

The existing IH-35 interchange at Williams Drive is a traditional intersection, which consists of four 11 to 12-foot-wide lanes (two in each direction and a 13-foot left turn lane within R.O.W. that varies from 80 feet to 100 feet wide. IH 35 from South of Williams Drive to Lakeway is a 6-lane divided freeway with 2 lane frontage roads in both North and Southbound directions. This major corridor is bordered by commercial businesses, and some residential communities. In addition, there are existing Water Pollution Abatement Plan (WPAP) Best Management Practices (BMPs) at the existing interchange (Hazmat Ponds that do not meet current TCEQ requirements). The receiving waters at or near the site include Pecan Branch and North and South Fork of the San Gabriel River, which flows into the Brazos River basin.

### **Proposed Site Conditions:**

The proposed Williams Drive Interchange will be replaced with a Diverging Diamond Interchange (DDI). This type of intersection temporarily shifts traffic to the left side of the road, allowing through-traffic and left-turning traffic to proceed through the intersection simultaneously, which eliminates the need for signalized left turn movements. In addition through-traffic on the frontage road can bypass the intersection via proposed northbound and southbound collector-distributor roads, which allow traffic to proceed through the intersection and avoid the traffic signal. The proposed northbound and southbound collector-distributor roads would each consist of two 12-foot wide lanes. The proposed work will consist of removing existing pavement, clearing and grubbing, grading, drainage structures, subgrade, flex base, HMAC, Curb and Gutter, Illumination, signing and pavement markings, and erosion control devices (BMPs both temporary and permanent). The proposed roadway improvements will increase impervious cover relative to the existing roadway configuration from 64.41 acres to 84.42 acres.

## **Section III**

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### **Geologic Assessment**





# Geologic Assessment

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Interstate Highway 35

From South of Williams Drive to Lakeway Drive

Williamson County, Texas

CSJs: 0015-08-144 & 0015-08-147

April 2017; Revised: May, November, and December 2017,  
July 2018, October 2019

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.*



# Geologic Assessment

## Texas Commission on Environmental Quality

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

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

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

## Signature

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

Print Name of Geologist: Paula Jo Lemonds

Telephone: 512-912-5100

Date: July 30, 2018

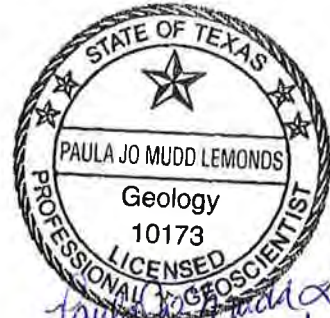
Fax: 512-912-5158

Representing: HDR Engineering, Inc. (TBPG Firm No. 50226; TBPE Firm No. F-754) (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

*Paula Jo Mudd Lemonds*

Regulated Entity Name: Interstate Highway 35 from south of Williams Drive to Lakeway Drive, Williamson County, Texas



*Paula Jo Mudd Lemonds*  
*10/15/19*

## Project Information

1. Date(s) Geologic Assessment was performed: March 17, April 26, October 25, 2017, and October 3, 2019

2. Type of Project:

WPAP

AST

SCS

UST

3. Location of Project:

Recharge Zone

Transition Zone

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

**Table 1 - Soil Units, Infiltration Characteristics and Thickness**

Soil Name	Group*	Thickness(feet)
Crawford clay, 1 to 3 percent slopes (CfB)	D	2.3 to 2.5 ft
Denton silty clay, 1 to 3 percent slopes (DnB)	D	3 to 6.7 ft
Doss silty clay, moist, 1 to 5 percent slopes (DoC)	D	1.4 to 6.7 ft
Eckrant cobbly clay, 1 to 8 percent slopes (EaD)	D	0.9 ft
Eckrant extremely stony clay, 0 to 3 percent slopes (EeB)	D	0.9 to 1.3 ft
Eckrant-Rock outcrop association, 1 to 10 percent slopes (ErE)	D	0.9 to 6.6 ft
Fairlie clay, 1 to 2 percent slopes (FaB)	D	3.8 to 4.5 ft

Soil Name	Group*	Thickness(feet)
Georgetown clay loam, 0 to 2 percent slopes (GeB)	D	2.9 to 5.0 ft
Georgetown stony clay loam, 1 to 3 percent slopes (GsB)	D	2.9 to 5.0 ft
Krum silty clay, 0 to 1 percent slopes (KsA)	C	6 ft
Krum silty clay, 1 to 3 percent slopes (KsB)	C	6 ft
Oakalla soils, 0 to 1 percent slopes, channeled, frequently flooded (Oc)	B	6.7 ft
Sunev silty clay loam, 1 to 3 percent slopes (SuB)	B	5 ft

\* Soil Group Definitions (Abbreviated)

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

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

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

6.  **Attachment B – Stratigraphic Column.** A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.
7.  **Attachment C – Site Geology.** A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.
8.  **Attachment D – Site Geologic Map(s).** The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'  
 Applicant's Site Plan Scale: 1" = 400'  
 Site Geologic Map Scale: 1" = 400'  
 Site Soils Map Scale (if more than 1 soil type): 1" = 400'
9. Method of collecting positional data:
  - Global Positioning System (GPS) technology.
  - Other method(s). Please describe method of data collection: \_\_\_\_\_
10.  The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11.  Surface geologic units are shown and labeled on the Site Geologic Map.
12.  Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.  
 Geologic or manmade features were not discovered on the project site during the field investigation.
13.  The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.
  - There are \_\_\_\_\_ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - The wells are not in use and have been properly abandoned.
    - The wells are not in use and will be properly abandoned.
    - The wells are in use and comply with 16 TAC Chapter 76.
  - There are no wells or test holes of any kind known to exist on the project site.

## ***Administrative Information***

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

## **LIST OF ATTACHMENTS**

- A. Geologic Assessment Table
- B. Stratigraphic Column
- C. Narrative of Project Specific Geology
- D. Site Geologic Maps

## ATTACHMENT A

Geologic Assessment Table (TCEQ-0585 Table)

Comments to Geologic Assessment Table

Feature Photographs



**Comments to Geologic Assessment Table**  
**Interstate Highway 35**  
**From South of Williams Drive to Lakeway Drive**  
**Williamson County, Texas**  
**CSJs: 0015-08-144 & 0015-08-147**

**Feature 1**

GPS Location: N. 30.65356 W. - 97.67648

In a site visit conducted on March 17, 2017, this identified feature consisted of a depression located west of Apple Creek Drive on the east side of the northbound lanes of I-35. The length and depth of this feature were 8 inches and 3 to 4 inches, respectively. The depression extended at least 12 inches deep. Infill materials consisted of fines and organic matter. The relative infiltration potential/recharge potential of the feature was determined to be low. There was no evidence of sapping or piping of soil that can be indicative of a sinkhole exhibiting soil subsidence. The catchment area is less than 1.6 acres. In plan view, the depression was rectangular in shape.

Cambrian Environmental staff conducted a site visit on April 25, 2017. Part of their visit included excavation of Feature 1. The staff concluded after excavation that the depression was caused by settling of fine-grained material into voids within unconsolidated backfill. The backfill included large limestone boulders.

HDR staff conducted a second site visit of Feature 1 on April 26, 2017, after the Cambrian Environmental staff excavated the depression. Evidence of excavation existed, and limestone boulders had been returned to the depression area after the excavation. The feature consists of unconsolidated boulders, showing that the depression is part of a non-karst setting.

**Feature 2**

GPS Location: N. 30.649722 W. - 97.678056

This feature consisted of a zone of horizontal fractures parallel in the exposed face of a horizontal bedding plane. The feature is located northeast of the intersection of the northbound lanes of I-35 and Williams Drive. The feature is west of the existing Cricket Wireless store in the Republic Square shopping center and is located on an approximately 50-ft-long bench that is adjacent to the shopping center parking lot. It is unclear if the outcropping rock bench was formed during construction of the parking lot or previously existed before development.

Fractures are present at an approximate density of 1 per 1.5 ft with a maximum aperture of 5 cm. Sediments within the fractures include modern soils and leaf litter. The relative infiltration potential/recharge potential of the feature was determined to be minimal because of its location on the side of a bench.



**Feature 3**

GPS Location: N. 30.64948611      W. -97.67805556

This feature is an inferred fault that is located in the Edwards Limestone and the Georgetown Formation north of Williams Drive and across the project area as indicated on published geologic maps. The fault is shown on Figure 2, and on the project geologic map in **Attachment D, Site Geologic Maps**.

**Recommendations**

At this time, no further activities are recommended for the features identified as part of the Geologic Assessment, other than those activities described in the Water Pollution Abatement Plan (WPAP) upon completion of final design of the proposed project.

The geologic features identified during reconnaissance on the proposed project site were determined to have limited relative infiltration and recharge potential because of the small (less than 1.6 acres) catchment area for Feature 1, the location of Feature 2 on the side of a rock bench, and the inferred nature of the fault identified as Feature 3.

Temporary best management practices (BMPs) should be used during construction activities to limit drainage to identified features. Construction activities, including clearing, grading, trenching, and excavation, increase the likelihood of intersecting features with a direct connection to the Edwards Aquifer and to the recharge of the aquifer. Any recharge features found during construction are regulated by Title 30, Texas Administrative Code (TAC) Chapter 213, related to the protection of the Edwards Aquifer Recharge Zone (TCEQ, 2001).

**Feature Photographs**  
**Interstate Highway 35**  
**From South of Williams Drive to Lakeway Drive**  
**Williamson County, Texas**  
**CSJs: 0015-08-144 & 0015-08-147**

**Feature 1**



Oblique view of depression;  
(Photo taken March 17, 2017.)



Depression with Apple Creek Apartments in  
background. (Photo taken March 17, 2017.)



Depression with I-35 in background  
(Photo taken March 17, 2017.)



Depression after excavation showing limestone  
boulders intermixed with soil.  
(Photo taken April 26, 2017.)



**Feature 2**



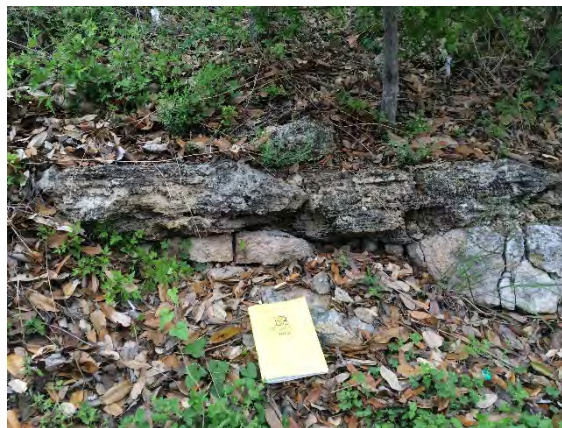
Entire length of zone of fractures looking to the north with I-35 in the background



Portion of fracture zone



Portion of fracture zone;



Portion of fracture zone

**Feature 3**



Part of the inferred fault as delineated on published geologic maps.

## ATTACHMENT B

### Stratigraphic Column

**Stratigraphic Column**  
**Interstate Highway 35**  
**From South of Williams Drive to Lakeway Drive**  
**Williamson County, Texas**  
**CSJs: 0015-08-144 & 0015-08-147**

The stratigraphic column shows the formations, members, and thicknesses of the hydrogeologic subdivisions of the proposed project site. The stratigraphic column is after Duffin and Musick (1991) and Housh (2007).

System	Series	Group	Stratigraphic Unit	Hydrologic Unit	Estimated Maximum Thickness (ft)	
Quaternary	Recent		Alluvium	Alluvium and terrace deposits	60	
	Pleistocene		Terrace deposits		60	
			High gravel		20	
Tertiary	Eocene	Wilcox	Simsboro Sand Member	Wilcox	200	
		Midway		Midway	300	
Cretaceous	Gulf	Navarro		Navarro and Taylor Groups	820	
		Taylor				
		Comanche	Austin		Austin Chalk	425
	Eagle Ford				30	
	Washita		Buda Limestone			50
			Del Rio clay			60
			Georgetown Formation		Edwards and associated limestones	90
	Fredericksburg		Kiamichi			15
			Edwards			185
			Comanche Peak			50
	Trinity		Walnut			110
			Paluxy Formation		Upper Trinity	10
		Glen Rose		440		
				Middle Trinity	450	

### References

- Duffin, G., and S. P. Musick, 1991. Evaluation of Water Resources in Bell, Burnet, Travis, Williamson, and Parts of Adjacent Counties, Texas. Texas Water Development Board Report 326, 105 p.
- Housh, Todd B., 2007. Bedrock Geology of Round Rock and Surrounding Areas, Williamson and Travis Counties, Texas. Round Rock, Texas. 65 pp.

## ATTACHMENT C

Site Geology

Narrative of Project Specific Geology

**Narrative of Project Specific Geology**  
**Interstate Highway 35**  
**From South of Williams Drive to Lakeway Drive**  
**Williamson County, Texas**  
**CSJs: 0015-08-144 & 0015-08-147**

## **1.0 Introduction**

The Texas Department of Transportation (TxDOT) proposes improvements along Interstate Highway 35 (I-35) from south of Williams Drive to Lakeway Drive, approximately 3.4 miles in length, in the City of Georgetown, Williamson County, Texas (control-section-job numbers (CSJs): 0015-08-144 & 0015-08-147). The proposed project would include the reconstruction of the Williams Drive interchange at I-35, the addition and modification of the I-35 frontage roads and ramps, construction of collector-distributor roads along the I-35 frontage roads, and construction of a shared-use path. Anticipated benefits include increased efficiency of traffic operations, reduced congestion, enhanced intersection mobility and safety, and new bicycle and pedestrian facilities. The proposed project would require approximately 8.7 acres of additional right-of-way (ROW) and approximately 0.07 acre of license agreements.

The purpose of this site investigation and report is to identify any karst features and their recharge potential on the tract identified as Interstate Highway 35 from south of Williams Drive to Lakeway Drive, located within Williamson County, Texas. This report complies with the requirements of Title 30, Texas Administrative Code (TAC) Chapter 213, related to the protection of the Edwards Aquifer Recharge Zone (TCEQ, 2001). The site investigation included a karst feature survey. The location of the proposed project is shown in **Figure 1**.

## **2.0 Scope**

This description is intended to satisfy the requirements for a Geologic Assessment, which will be included as a component of a Water Pollution Abatement Plan (WPAP). The WPAP identifies measures that will be implemented to protect the water quality of the aquifer. The scope of the work consists of a site reconnaissance, field survey, and review of existing data and reports. Features identified during the field survey will be ranked utilizing the Texas Commission on Environmental Quality (TCEQ) matrix for Edwards Aquifer Recharge Zone Features as part of the WPAP upon completion of final design of the proposed project. The ranking of the features determines their viability for recharge potential.

### 3.0 Investigation Methods

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

- Review of existing files and literature to determine the regional geology and known caves associated with the proposed project;
- Review of past geological field reports and correspondence regarding the existing geologic features on the proposed project;
- Site reconnaissance by a registered professional geologist to identify and examine caves, recharge features, and other significant geologic features; and
- Evaluation of collected field data.

Reconnaissance of all existing and proposed ROW included the methodology described in TCEQ (2004). The geologic assessment site visit was completed by Paula Jo Lemonds (Texas PG #10173). The site reconnaissance was completed on March 17, 2017, April 26, 2017, and October 25, 2017. The purposes for each visit were:

- March 17, 2017: Initial site visit in which all existing and proposed ROW were surveyed.
- April 26, 2017: Visit of Feature 1 after karst biologist excavated and to verify GPS coordinates of Feature 1.
- October 25, 2017: Follow-up site visit in which all additional parcels of proposed ROW were surveyed after right-of-entry was obtained.

### 4.0 Proposed Site Use

The purpose of the proposed project is to enhance safety and mobility within the project area by providing a continuous northbound frontage road along I-35, reducing potential crash points, and allowing vehicles to move through the I-35 and Williams Drive intersection with greater efficiency. The proposed project would also enhance bicycle and pedestrian connectivity throughout the project area.

### 5.0 Regional and Site Geology

The site lies within the Edwards Aquifer Recharge Zone as defined by the TCEQ. A small portion of the proposed project along the North Fork of the San Gabriel River is delineated as Edwards Aquifer Contributing Zone. The surface geology overlying the Edwards Aquifer includes Cretaceous limestone and Quaternary alluvial terrace deposits.

Surface geology in the vicinity of the proposed project includes Cretaceous Age Edwards Limestone of the Fredericksburg Group (Ked) and the Georgetown Formation (Kdg) as described in Duffin and Musick (1991), Collins (2005), and Housh (2007). Types of rock include limestone, chert, dolomite, and quartz. In addition, Quaternary age deposits of alluvial (Qal), fluvial terrace (Qt), and undivided alluvium (Qu) settings are present in the northeastern portion of the proposed project area.



Outcropping geology of the project area from the Austin Sheet of the Geologic Atlas of Texas (1981) and Collins (2005) was reviewed. Several faults have been mapped in or near the study area and are related to the dominant structural feature of the area, the Balcones Fault Zone. These faults are en echelon normal faults downthrown toward the Gulf of Mexico. **Figure 2** shows the project area, including topography and regional outcropping geology with the Edwards formation outcrop shown.

Karst terrain is typical of the Edwards Limestone. The karst is defined by voids, sinkholes, and vuggy rocks. The characteristics of the karst in the Edwards Limestone allow the potential for rapid infiltration directly to the Edwards Aquifer. The TCEQ requires protective activities of these areas to ensure protection of recharge and endangered species habitat prior to, during, and after construction is completed.

### *5.1 Off-Site Karst Feature*

In a WPAP approval letter dated June 22, 2007, the TCEQ (Shankle, 2007) describes a cave opening located along the southern end of a sinkhole adjacent to the present location of Mel's Lone Star Lanes bowling alley. The area is protected by an environmental easement and the area will remain in its natural state. This feature is shown in **Attachment D, Site Geologic Maps**. This feature and associated environmental easement are adjacent and outside the existing ROW. This is not part of the proposed project.

### *5.2 Wells and Springs*

A review of Texas Water Development Board (TWDB) records indicated no wells or springs within the proposed project area. There are several wells in the vicinity but outside the proposed project area (TWDB, 2017).

### *5.3 Additional Reconnaissance*

Field geologic assessment was conducted on October 25, 2017, for additional areas of proposed right of way. No karst features were noted. The areas surveyed during this assessment consisted primarily of clay with scattered outcropping of chert nodules and marls exposed on the surface. The areas of survey and the outcropping geology in these areas are the Georgetown Formation, as shown in **Attachment D, Site Geologic Maps**.

Field geologic assessment was conducted on October 3, 2019, for a proposed waterline relocation located along Austin Avenue. No karst features were noted. The proposed waterline relocation is shown on page 3 of 4 in **Attachment D, Site Geologic Maps**.

## **6.0 References**

Austin Sheet of the Geologic Atlas of Texas, Revised 1981.

<https://www.twdb.texas.gov/groundwater/aquifer/GAT/>. Accessed March 22, 2017.

Collins, Edward W., 2005. Geologic Map of the West Half of the Taylor, Texas, 30 x 60 Minute Quadrangle: Central Texas Urban Corridor, Encompassing Round Rock Georgetown, Salado, Briggs, Liberty Hill, and Leander. Miscellaneous Map No. 43, Bureau of Economic Geology.

Duffin, G., and S. P. Musick, 1991. Evaluation of Water Resources in Bell, Burnet, Travis, Williamson,

and Parts of Adjacent Counties, Texas. Texas Water Development Board Report 326, 105 p.

Housh, Todd B., 2007. Bedrock Geology of Round Rock and Surrounding Areas, Williamson and Travis Counties, Texas. Round Rock, Texas. 65 pp.

Lindgren, R.J., Dutton, A.R., Hovorka, S.D., Worthington, S.R.H., Painter, S., 2004. Conceptualization and Simulation of the Edwards Aquifer, San Antonio Region, Texas: U.S. Geological Survey Scientific Investigation Report 2004-5277, 143 p.

Shankle, Glenn, 2007. From Glenn Shankle, Executive Director, TCEQ. To David Kellerman, MFBC, Inc. 26 June 2007. Re: Edwards Aquifer, Williamson County, Mel's Lonestar Lanes, 1010 North Austin Avenue, Georgetown, Texas; Request for Approval of a Water Pollution Abatement Plan (WPAP). Edwards Aquifer Protection Program ID No. 11-07042302.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/> accessed March 20, 2017.

(TCEQ) Texas Commission on Environmental Quality, 2001. "Edwards Aquifer Protection Program, Chapter 213 Rules - Recharge Zone, Transition Zone, Contributing Zone, and Contributing Zone within the Transition Zone." Map. Digital Data. November 28, 2001. Austin, Texas.

TCEQ, 2004. Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge / Transition Zones. TCEQ Form 0585.

(TWDB) Texas Water Development Board, 2017. Groundwater Data Viewer, <https://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer>, accessed March 28, 2017.

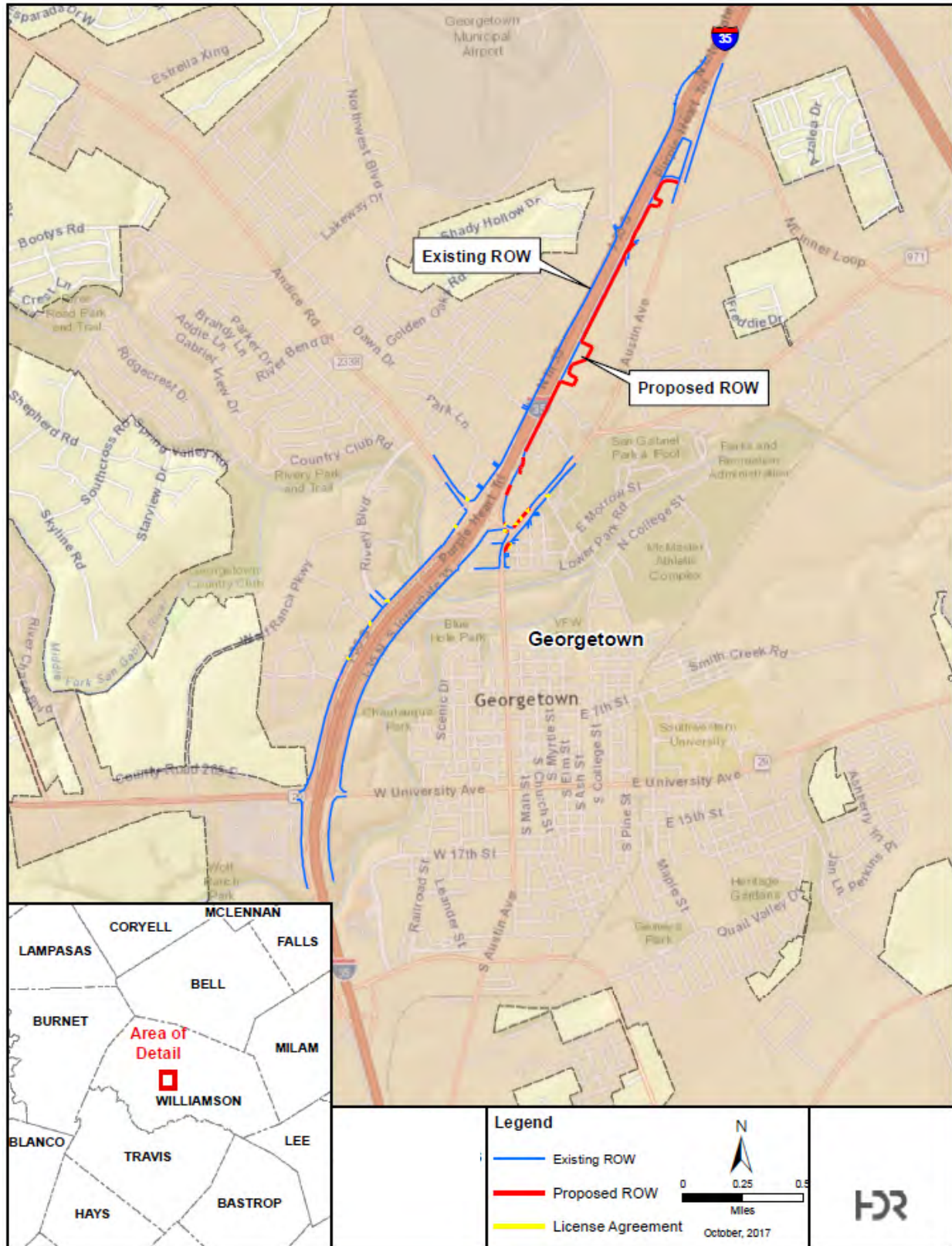


Figure 1. Project location map.





## ATTACHMENT D

Site Geologic Map

Soil Profile and Narrative of Soil Units

Site Soils Map

**Site Geologic Map**  
**Interstate Highway 35**  
**From South of Williams Drive to Lakeway Drive**  
**Williamson County, Texas**  
**CSJs: 0015-08-144 & 0015-08-147**



**Legend**

- Geologic Features
- Fault
- Existing ROW
- Proposed ROW
- License Agreement
- Streams

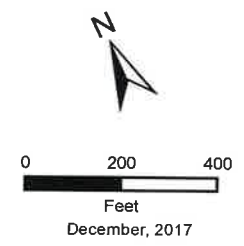
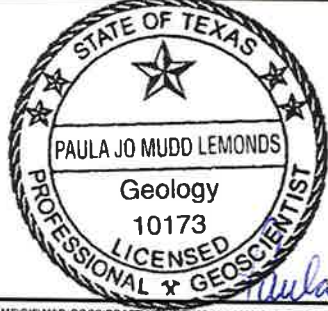
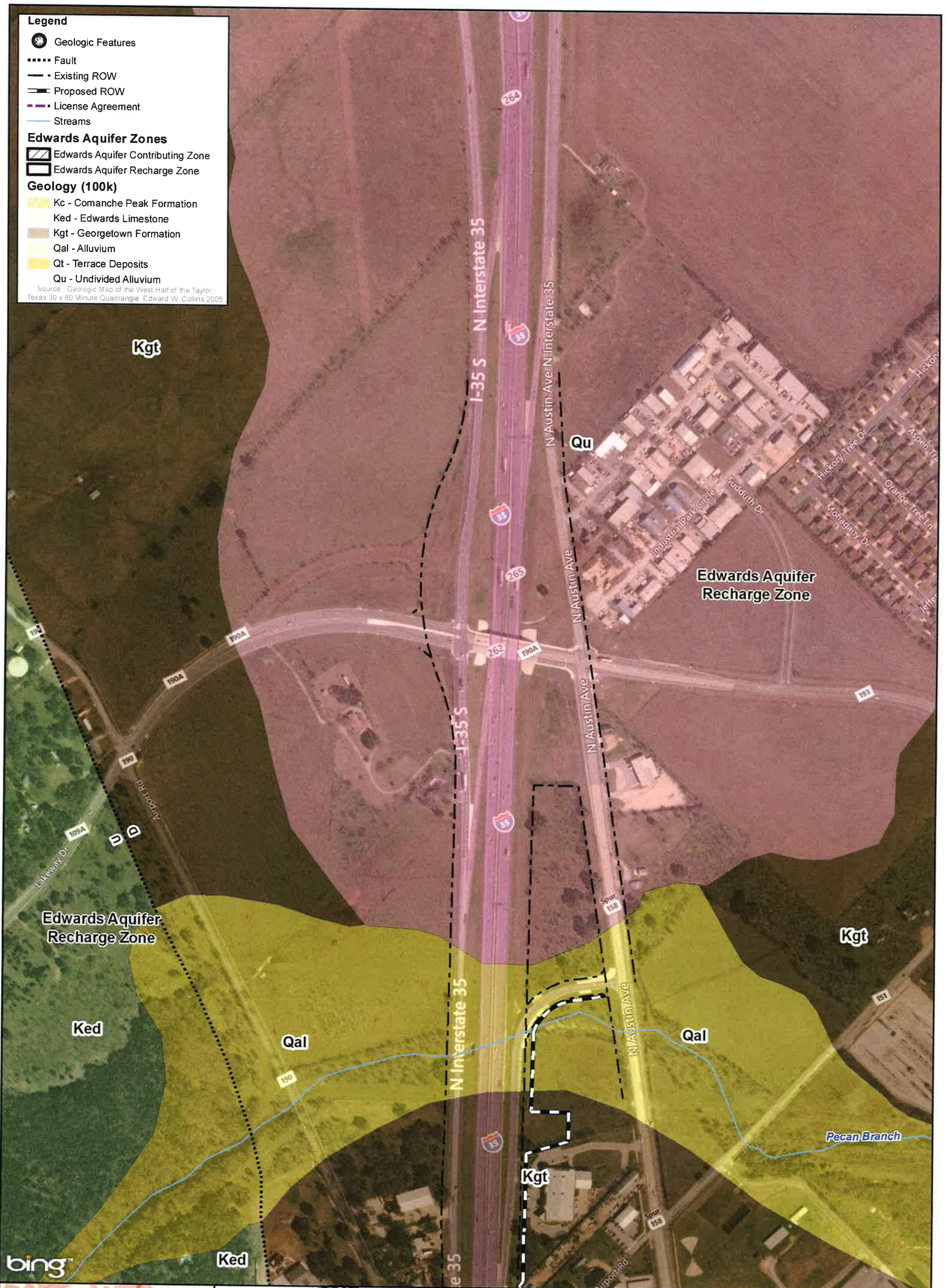
**Edwards Aquifer Zones**

- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone

**Geology (100k)**

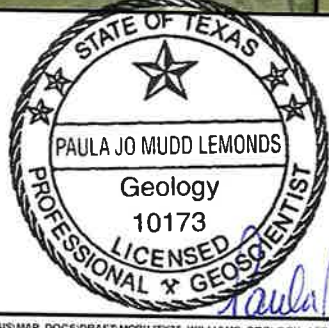
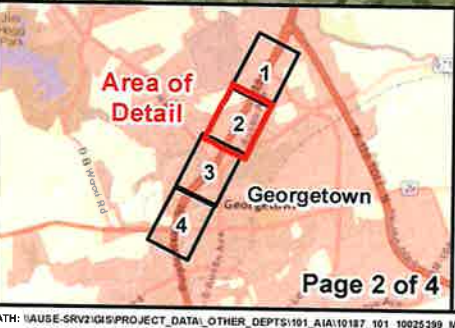
- Kc - Comanche Peak Formation
- Ked - Edwards Limestone
- Kgt - Georgetown Formation
- Qal - Alluvium
- Qt - Terrace Deposits
- Qu - Undivided Alluvium

Source: Geologic Map of the West Half of the Taylor, Texas 30 x 60 Minute Quadrangle, Edward W. Collins, 2005

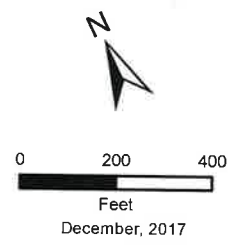




- Legend**
- Geologic Features
  - ..... Fault
  - - Existing ROW
  - - Proposed ROW
  - - License Agreement
  - Streams
- Edwards Aquifer Zones**
- ▨ Edwards Aquifer Contributing Zone
  - ▨ Edwards Aquifer Recharge Zone
- Geology (100k)**
- Kc - Comanche Peak Formation
  - Ked - Edwards Limestone
  - Kgt - Georgetown Formation
  - Qal - Alluvium
  - Qt - Terrace Deposits
  - Qu - Undivided Alluvium
- Source: Geologic Map of the West Half of the Taylor, Texas 30 x 60 Minute Quadrangle, Edward W. Collins 2005



*Paula Jo Mudd Lemonds 7/30/18*

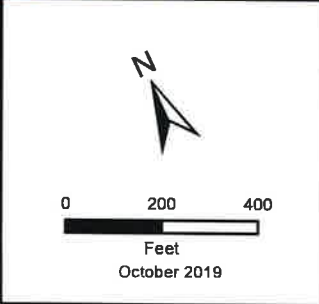
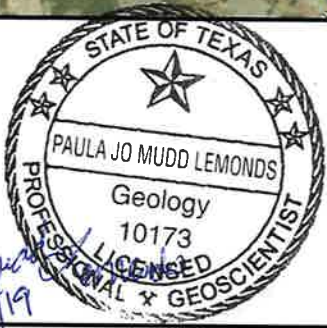
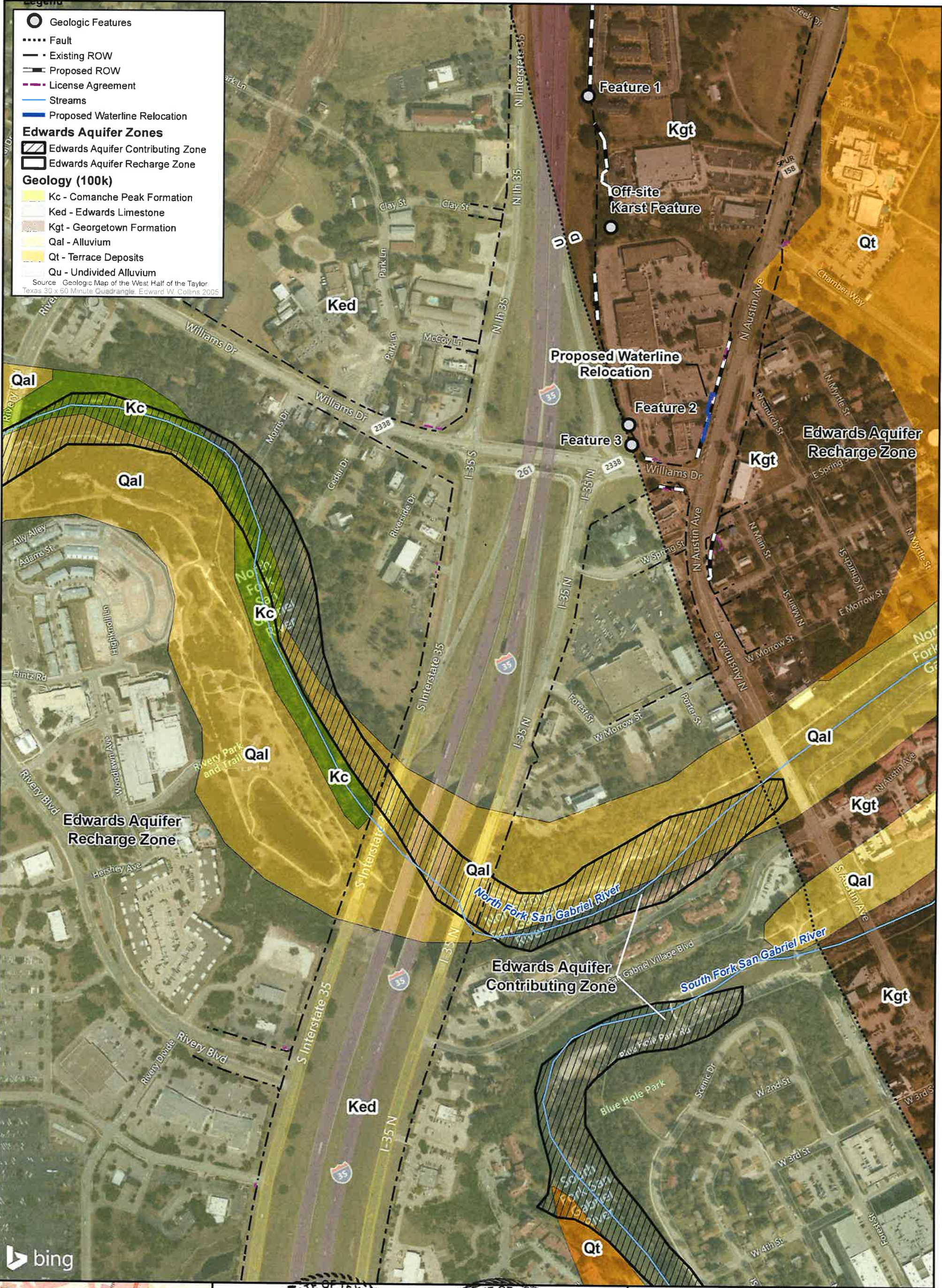




**Legend**

- Geologic Features
- Fault
- Existing ROW
- Proposed ROW
- License Agreement
- Streams
- Proposed Waterline Relocation
- Edwards Aquifer Zones**
- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone
- Geology (100k)**
- Kc - Comanche Peak Formation
- Ked - Edwards Limestone
- Kgt - Georgetown Formation
- Qal - Alluvium
- Qt - Terrace Deposits
- Qu - Undivided Alluvium

Source: Geologic Map of the West Half of the Taylor, Texas 30 x 60 Minute Quadrangle, Edward W. Collins 2005





**Legend**

- Geologic Features
- ..... Fault
- Existing ROW
- Proposed ROW
- License Agreement
- Streams

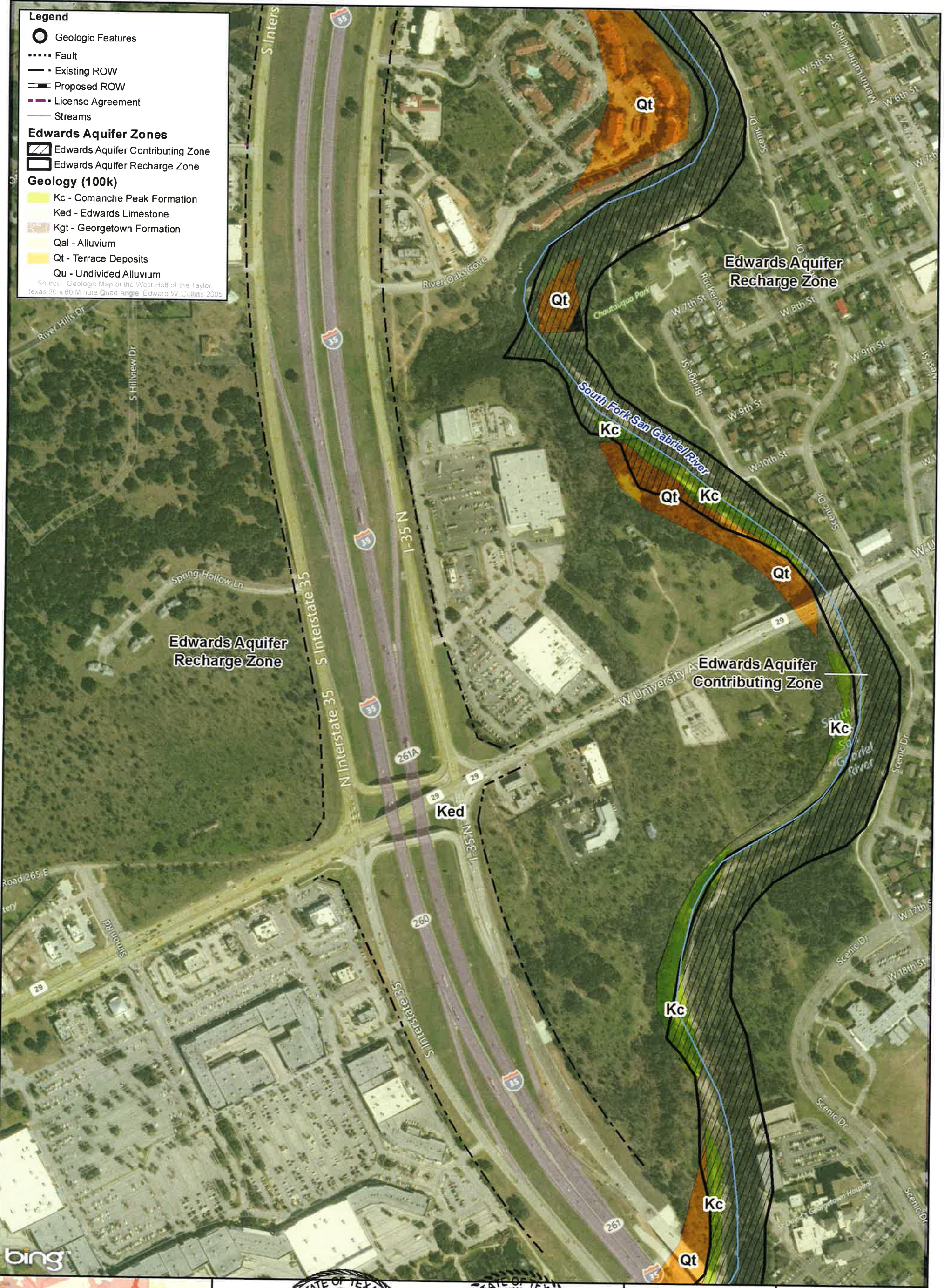
**Edwards Aquifer Zones**

- ▨ Edwards Aquifer Contributing Zone
- ▭ Edwards Aquifer Recharge Zone

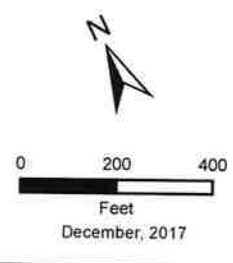
**Geology (100k)**

- Kc - Comanche Peak Formation
- Ked - Edwards Limestone
- Kgt - Georgetown Formation
- Qal - Alluvium
- Qt - Terrace Deposits
- Qu - Undivided Alluvium

Source: Geologic Map of the West Half of the Taylor Texas 30 x 60 Minute Quadrangle, Edward W. Collins, 2005



*Paula Jo Mudd Lemonds 7/30/18*





**Soil Profile, Narrative of Soil Units, Site Soils Map**  
**Interstate Highway 35**  
**From South of Williams Drive to Lakeway Drive**  
**Williamson County, Texas**  
**CSJs: 0015-08-144 & 0015-08-147**

**Site Soils**

The site soil descriptions are based on two sources, the United States Department of Agriculture's Natural Resources Conservation Service Web Soil Survey (Soil Survey Staff, 2017) and field observations.

Soils present in the project area are shown in **Table 1** and the **Site Soils Map**. The majority of the soils are formed from the residuum of weathered limestone. The soils are shallow throughout most of the proposed project, and have very low (Crawford, Georgetown, Fairlie associations) to high (Oakalla and Sunev associations) saturated hydraulic conductivity values. Descriptions of the soils are included below. Because the majority of the proposed project area is within the developed ROW, soils within the proposed project area are likely disturbed or altered from their original profiles.

**Table 1. Soil map units present in project area**

<b>Map Unit Symbol</b>	<b>Map Unit Name</b>
CfB	Crawford clay, 1 to 3 percent slopes
DnB	Denton silty clay, 1 to 3 percent slopes
DoC	Doss silty clay, moist, 1 to 5 percent slopes
EaD	Eckrant cobbly clay, 1 to 8 percent slopes
EeB	Eckrant extremely stony clay, 0 to 3 percent slopes
ErE	Eckrant-Rock outcrop association, 1 to 10 percent slopes
FaB	Fairlie clay, 1 to 2 percent slopes
GeB	Georgetown clay loam, 0 to 2 percent slopes
GsB	Georgetown stony clay loam, 1 to 3 percent slopes
KsA	Krum silty clay, 0 to 1 percent slopes
KsB	Krum silty clay, 1 to 3 percent slopes
Oc	Oakalla soils, 0 to 1 percent slopes, channeled, frequently flooded
SuB	Sunev silty clay loam, 1 to 3 percent slopes

The Crawford clay, 1 to 3 percent slopes (CfB) is found in small areas on the east side of the project area. The soil's parent material is residuum weathered from limestone. The soil exhibits very low to moderately low saturated hydraulic conductivity (0.00 to 0.06 in/hr) and is well drained.

The Denton silty clay, 1 to 3 percent slopes (DnB) is found in small areas on the northern portion of

the project area. The soil's parent material is silty and clayey slope alluvium over residuum weathered from limestone. The soil exhibits moderately low to moderately high saturated hydraulic conductivity (0.06 to 0.20 in/hr) and is well drained.

The Doss silty clay, moist, 1 to 5 percent slopes (DoC) is found interspersed throughout the project area. The soil's parent material is residuum weathered from limestone. The soil has moderately low to moderately high hydraulic conductivity (0.06 to 0.57 in/hr) and is well drained.

The Eckrant cobbly clay, 1 to 8 percent slopes (EaD) is found in the central portions of the project area. The soil's parent material is residuum weathered from limestone. The soil has moderately low to moderately high hydraulic conductivity (0.06 to 0.57 in/hr) and is well drained.

The Eckrant extremely stony clay, 0 to 3 percent slopes (EeB) is found in the western portions of the project area. The soil's parent material is residuum weathered from limestone. The soil has moderately low to moderately high hydraulic conductivity (0.06 to 0.57 in/hr) and is well drained.

The Eckrant-Rock outcrop association, 1 to 10 percent slopes (ErE) is the second most predominant soil association of the project area, where it is found in the southern two-thirds of the project area. The soil's parent material is residuum weathered from limestone. The soil has moderately low to moderately high hydraulic conductivity (0.06 to 0.57 in/hr) and is well drained.

The Fairlie clay, 1 to 2 percent slopes (FaB) is found in a small portion of the northeast corner of the project area. The soil's parent material is Residuum weathered from Austin Chalk formation. The soil exhibits very low to moderately low saturated hydraulic conductivity (0.00 to 0.06 in/hr) and is moderately well drained.

The Georgetown clay loam, 0 to 2 percent slopes (GeB) is found interspersed throughout the project area. The soil's parent material is clayey residuum weathered from limestone. The soil very low to moderately low saturated hydraulic conductivity (0.00 to 0.06 in/hr) and is well drained.

The Georgetown stony clay loam, 1 to 3 percent slopes (GsB) is the most dominant soil association of the project area, and it is located in the southern two-thirds of the project area. The soil's parent material clayey residuum weathered from limestone. The soil has very low to moderately low saturated hydraulic conductivity (0.00 to 0.06 in/hr) and is well drained.

The Krum silty clay, 0 to 1 percent slopes (KsA) is found in a small area in the northern portion of the project area. The soil's parent material is clayey alluvium of Pleistocene age derived from mixed sources. The soil exhibits moderately high (0.20 to 0.57 in/hr) saturated hydraulic conductivity and is well drained.

The Krum silty clay, 1 to 3 percent slopes (KsB) is found in a small area in the northern portion of the project area. The soil's parent material is clayey alluvium of Pleistocene age derived from mixed sources. The soil exhibits moderately high (0.20 to 0.57 in/hr) saturated hydraulic conductivity and is well drained.

The Oakalla soils, 0 to 1 percent slopes, channeled, frequently flooded (Oc) is found in the southeastern portion of the project area. The soil's parent material is loamy alluvium derived from limestone. The soil exhibits moderately high to high (0.20 to 1.98 in/hr) saturated hydraulic conductivity and is well drained.

The Sunev silty clay loam, 1 to 3 percent slopes (SuB) is found in the central portion of the project area. The soil's parent material is loamy alluvium of Quaternary age derived from mixed sources. The soil exhibits moderately high to high (0.57 to 1.98 in/hr) saturated hydraulic conductivity and is well drained.

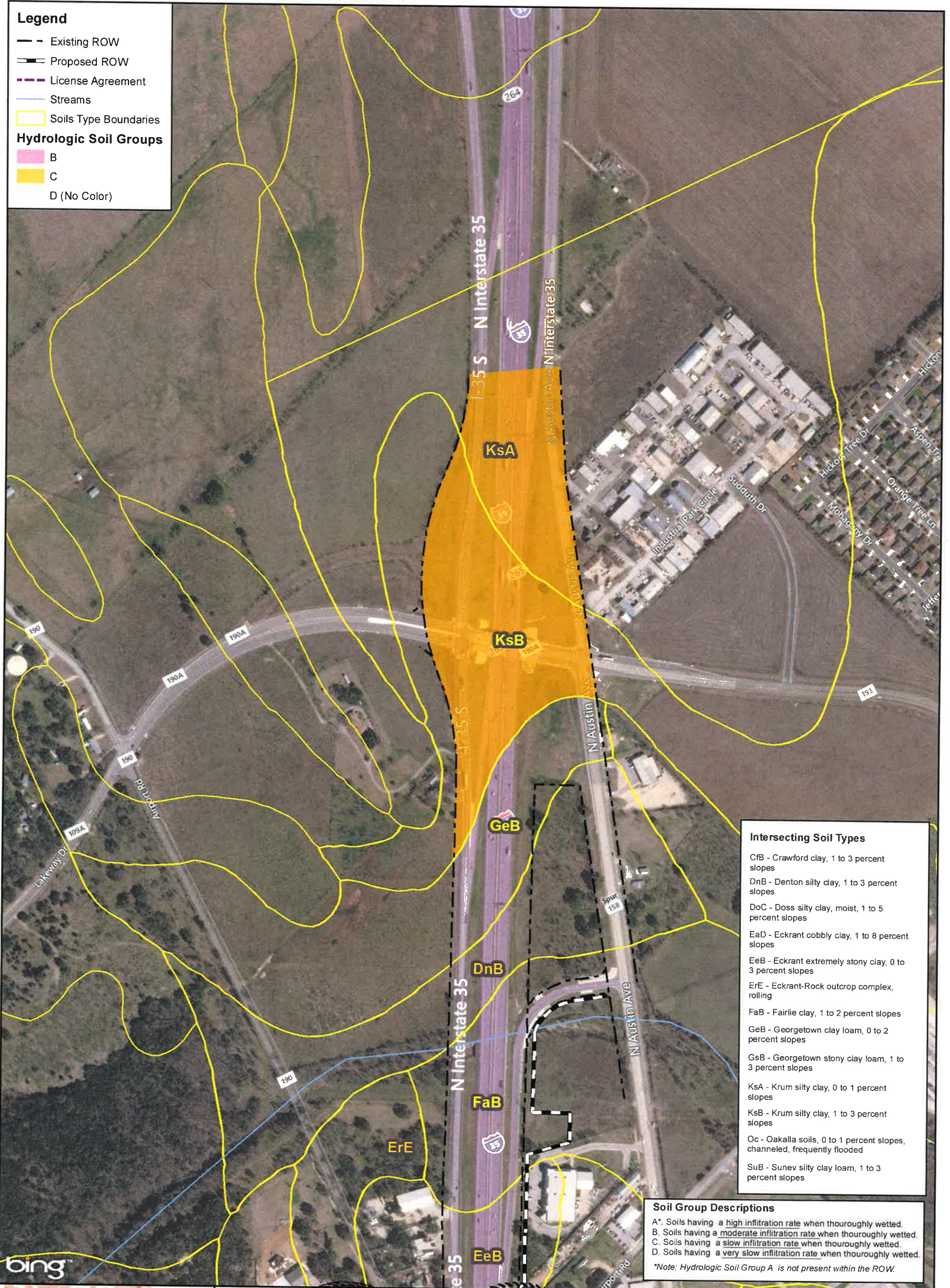


**Legend**

- Existing ROW
- Proposed ROW
- License Agreement
- Streams
- Soils Type Boundaries

**Hydrologic Soil Groups**

- B
- C
- D (No Color)



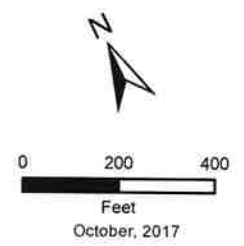
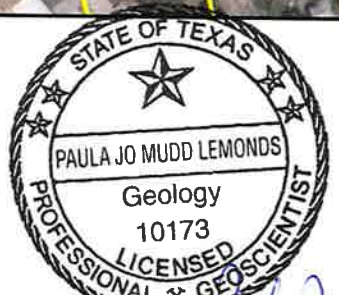
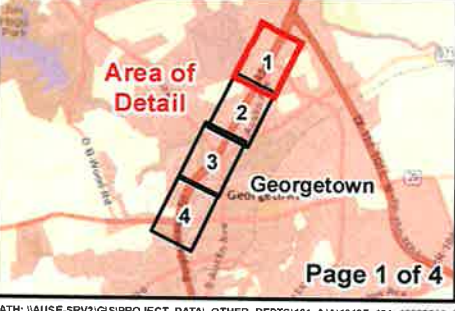
**Intersecting Soil Types**

- CfB - Crawford clay, 1 to 3 percent slopes
- DnB - Denton silty clay, 1 to 3 percent slopes
- DoC - Doss silty clay, moist, 1 to 5 percent slopes
- EaD - Eckrant cobbly clay, 1 to 8 percent slopes
- EeB - Eckrant extremely stony clay, 0 to 3 percent slopes
- ErE - Eckrant-Rock outcrop complex, rolling
- FaB - Fairlie clay, 1 to 2 percent slopes
- GeB - Georgetown clay loam, 0 to 2 percent slopes
- GsB - Georgetown stony clay loam, 1 to 3 percent slopes
- KsA - Krum silty clay, 0 to 1 percent slopes
- KsB - Krum silty clay, 1 to 3 percent slopes
- Oc - Oakalla soils, 0 to 1 percent slopes, channeled, frequently flooded
- SuB - Sunev silty clay loam, 1 to 3 percent slopes

**Soil Group Descriptions**

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

\*Note: Hydrologic Soil Group A is not present within the ROW.



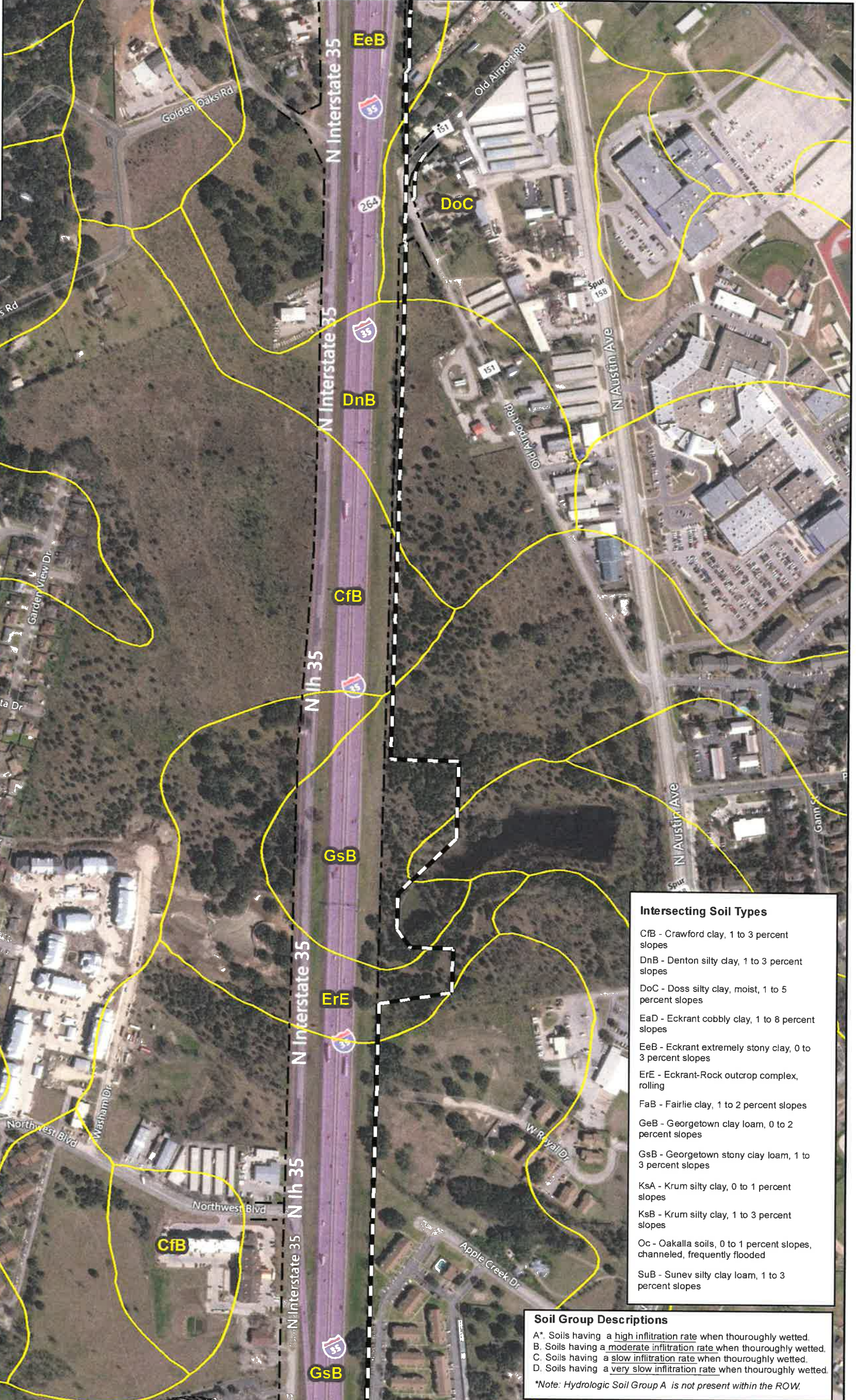


**Legend**

- Existing ROW
- Proposed ROW
- License Agreement
- Streams
- Soils Type Boundaries

**Hydrologic Soil Groups**

- B
- C
- D (No Color)



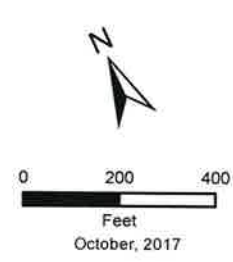
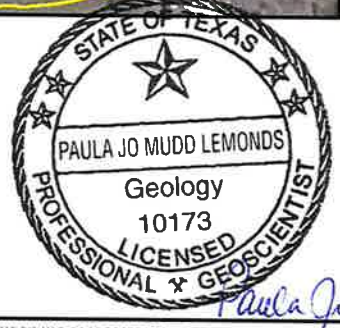
**Intersecting Soil Types**

- CfB - Crawford clay, 1 to 3 percent slopes
- DnB - Denton silty clay, 1 to 3 percent slopes
- DoC - Doss silty clay, moist, 1 to 5 percent slopes
- EaD - Eckrant cobbly clay, 1 to 8 percent slopes
- EeB - Eckrant extremely stony clay, 0 to 3 percent slopes
- ErE - Eckrant-Rock outcrop complex, rolling
- FaB - Fairlie clay, 1 to 2 percent slopes
- GeB - Georgetown clay loam, 0 to 2 percent slopes
- GsB - Georgetown stony clay loam, 1 to 3 percent slopes
- KsA - Krum silty clay, 0 to 1 percent slopes
- KsB - Krum silty clay, 1 to 3 percent slopes
- Oc - Oakalla soils, 0 to 1 percent slopes, channeled, frequently flooded
- SuB - Sunev silty clay loam, 1 to 3 percent slopes

**Soil Group Descriptions**

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

*\*Note: Hydrologic Soil Group A is not present within the ROW.*



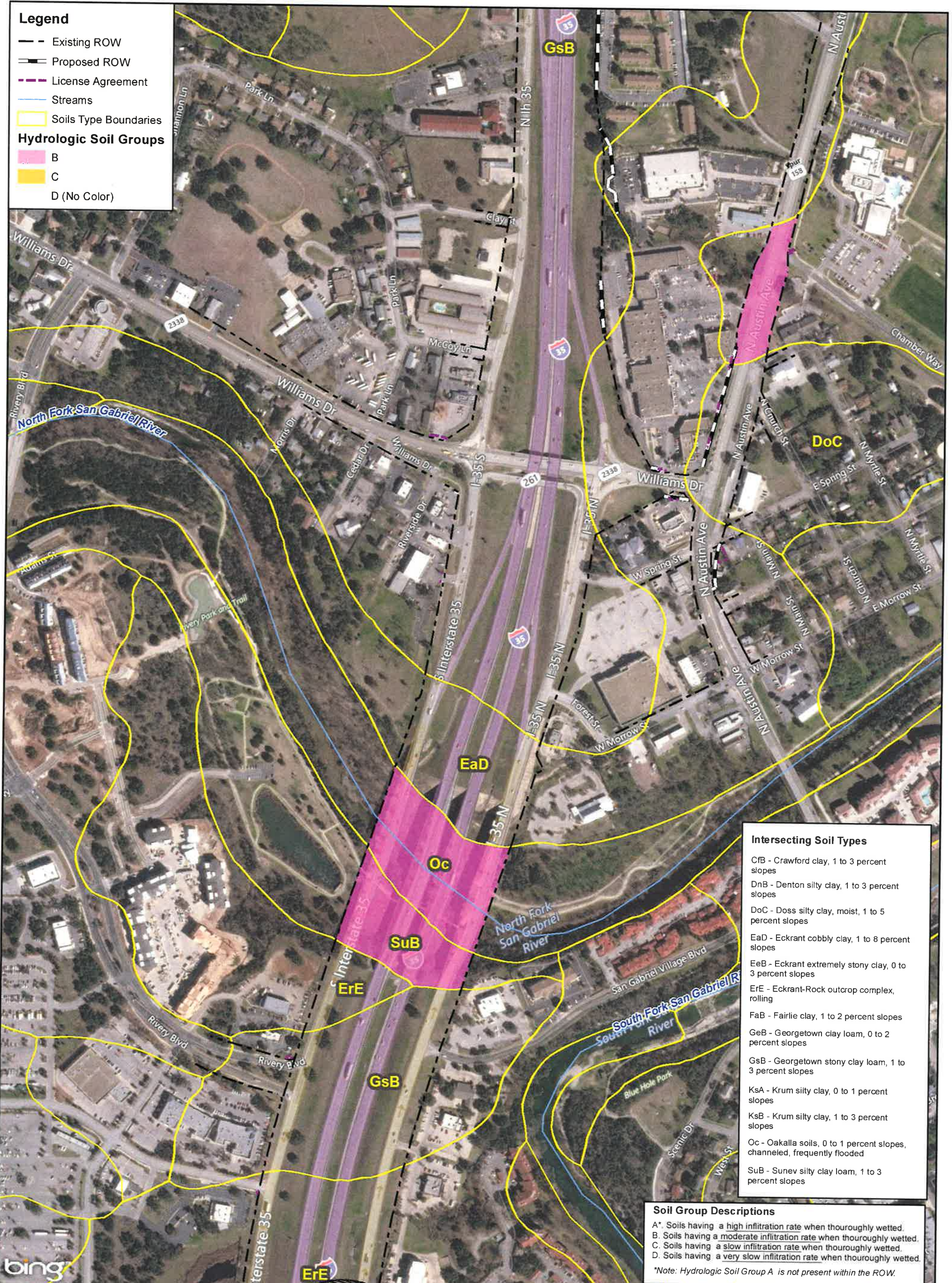


**Legend**

- Existing ROW
- Proposed ROW
- License Agreement
- Streams
- Soils Type Boundaries

**Hydrologic Soil Groups**

- B (Pink)
- C (Yellow)
- D (No Color)



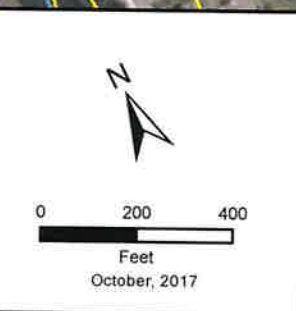
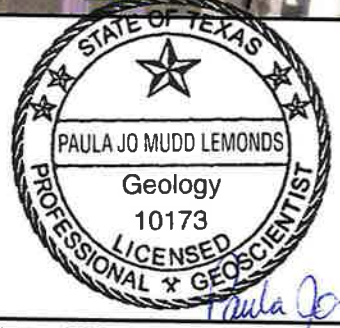
**Intersecting Soil Types**

- CfB - Crawford clay, 1 to 3 percent slopes
- DnB - Denton silty clay, 1 to 3 percent slopes
- DoC - Doss silty clay, moist, 1 to 5 percent slopes
- EaD - Eckrant cobbly clay, 1 to 8 percent slopes
- EeB - Eckrant extremely stony clay, 0 to 3 percent slopes
- ErE - Eckrant-Rock outcrop complex, rolling
- FaB - Fairlie clay, 1 to 2 percent slopes
- GeB - Georgetown clay loam, 0 to 2 percent slopes
- GsB - Georgetown stony clay loam, 1 to 3 percent slopes
- KsA - Krum silty clay, 0 to 1 percent slopes
- KsB - Krum silty clay, 1 to 3 percent slopes
- Oc - Oakalla soils, 0 to 1 percent slopes, channelled, frequently flooded
- SuB - Sunev silty clay loam, 1 to 3 percent slopes

**Soil Group Descriptions**

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

\*Note: Hydrologic Soil Group A is not present within the ROW.



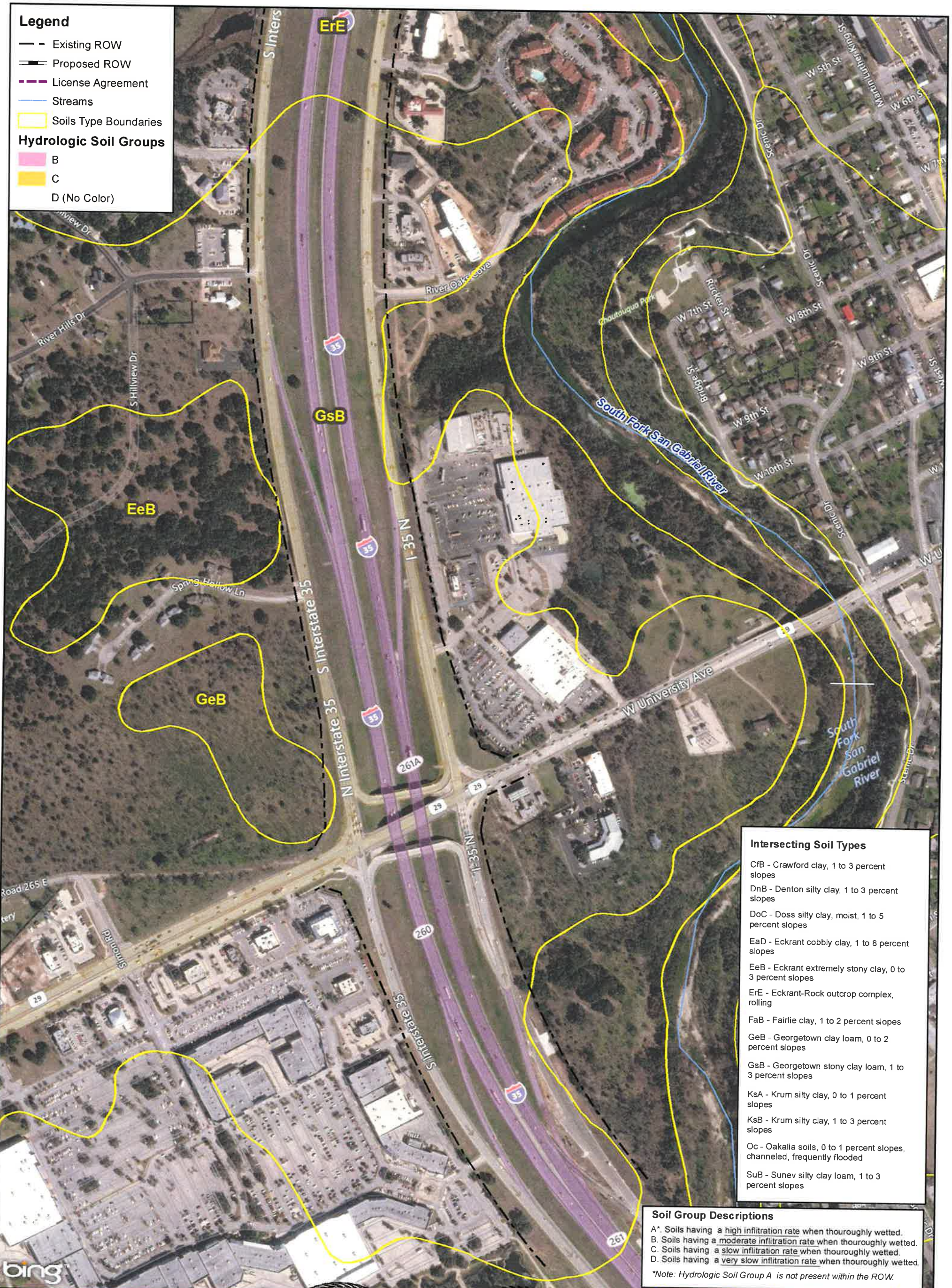


**Legend**

- Existing ROW
- Proposed ROW
- License Agreement
- Streams
- Soils Type Boundaries

**Hydrologic Soil Groups**

- B
- C
- D (No Color)



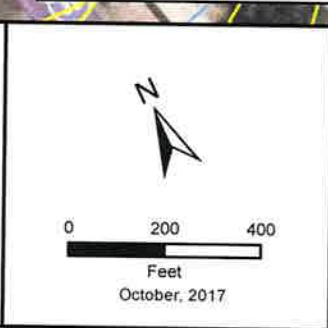
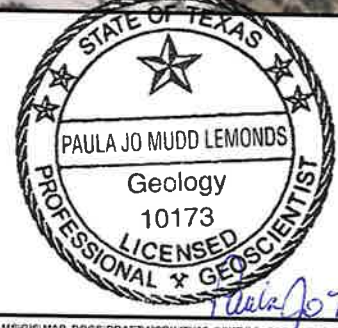
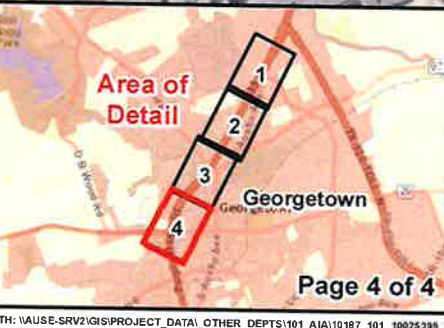
**Intersecting Soil Types**

- CfB - Crawford clay, 1 to 3 percent slopes
- DnB - Denton silty clay, 1 to 3 percent slopes
- DoC - Doss silty clay, moist, 1 to 5 percent slopes
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**Soil Group Descriptions**

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\*Note: Hydrologic Soil Group A is not present within the ROW.





## Section IV

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### **Modification of a Previously Approved Plan**

# Modification of a Previously Approved Plan

## Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), 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 request for a **Modification of a Previously Approved Plan** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Carlos Juarez, P.E.

Date: 07-26-2023

Signature of Customer/Agent:



## Project Information

1. Current Regulated Entity Name: IH 35 Improvements from South of Williams Drive to Lakeway Drive

Original Regulated Entity Name: IH 35 Improvements from South of Williams Drive to Lakeway Drive

Regulated Entity Number(s) (RN): \_\_\_\_\_

Edwards Aquifer Protection Program ID Number(s): \_\_\_\_\_

The applicant has not changed and the Customer Number (CN) is: CN 600803456

The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

2.  **Attachment A: Original Approval Letter and Approved Modification Letters.** A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):
- Physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
  - Change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
  - Development of land previously identified as undeveloped in the original water pollution abatement plan;
  - Physical modification of the approved organized sewage collection system;
  - Physical modification of the approved underground storage tank system;
  - Physical modification of the approved aboveground storage tank system.
4.  Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

<b><i>WPAP Modification</i></b>	<b><i>Approved Project</i></b>	<b><i>Proposed Modification</i></b>
<b><i>Summary</i></b>		
Acres	<u>144.92</u>	<u>No change</u>
Type of Development	<u>Roadway Improvement</u>	<u>No change</u>
Number of Residential Lots	<u>N/A</u>	<u>N/A</u>
Impervious Cover (acres)	<u>84.42</u>	<u>No change</u>
Impervious Cover (%)	<u>58.45%</u>	<u>No change</u>
Permanent BMPs	<u>Sand Filter &amp; Veg. Filter</u>	<u>Updated pond 16 shape</u>
Other	<u>N/A</u>	<u>N/A</u>

<b><i>SCS Modification</i></b>	<b><i>Approved Project</i></b>	<b><i>Proposed Modification</i></b>
<b><i>Summary</i></b>		
Linear Feet	_____	_____
Pipe Diameter	_____	_____
Other	_____	_____

<b>AST Modification</b>	<b>Approved Project</b>	<b>Proposed Modification</b>
<b>Summary</b>		
Number of ASTs	_____	_____
Volume of ASTs	_____	_____
Other	_____	_____

<b>UST Modification</b>	<b>Approved Project</b>	<b>Proposed Modification</b>
<b>Summary</b>		
Number of USTs	_____	_____
Volume of USTs	_____	_____
Other	_____	_____

5.  **Attachment B: Narrative of Proposed Modification.** A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including any previous modifications, and how this proposed modification will change the approved plan.
  
6.  **Attachment C: Current Site Plan of the Approved Project.** A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
  - The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
  - The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
  - The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.
  - The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
  - The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.
  
7.  The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.
  - Acreage has not been added to or removed from the approved plan.
  
8.  Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional

copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

Jon Niermann, *Chairman*  
Emily Lindley, *Commissioner*  
Bobby Janecka, *Commissioner*  
Toby Baker, *Executive Director*



## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

May 7, 2020

Mr. Bobby Ramthun, P.E.  
Georgetown Area Office  
Texas Department of Transportation  
2727 South Austin Avenue  
Georgetown, Texas 78626

Re: Edwards Aquifer, Williamson County  
IH 35 Williams Dr to Lakeway Dr; South of Williams Drive to Lakeway Drive;  
Georgetown, Texas  
Request for Approval of a Water Pollution Abatement Plan (WPAP)  
30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer  
Edwards Aquifer Protection Program ID No. 11001977; RN111009577

Dear Mr. Ramthun:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the referenced project submitted to the Austin Regional Office by the Texas Department of Transportation on March 12, 2020. Final review of the WPAP submittal was completed after additional material was received on April 28, 2020. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas licensed professional engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed, and dated by a Texas licensed professional engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this WPAP. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10% of the construction has commenced on the project or an extension of time has been requested.*

### PROJECT DESCRIPTION

The proposed expansion to the current roadway design consists of reconstruction of the existing interchange at Williams Drive into a diverging diamond interchange which includes complete replacement of the existing bridge at the intersection, along with the addition and modification of frontage roads and ramps, reconstruction of collector/distributor roads along IH-35 frontage road and addition of a shared-use path.

The project ROW is approximately 144.9 acres within the Pecan Branch and North and South Fork of the San Gabriel River. The project extends between Williams Drive and Lakeway Drive and includes part of Austin Avenue within the City of Georgetown.

The project traverses the Recharge Zone and approves:

- Adding a diverging diamond-type interchange and razing the previous intersection at Williams Drive,
- Adding improvements at Austin Avenue, and shared-use paths,
- Expanding the frontage roads, and modifying approaches,
- Extending culverts, and adding curb and gutter,
- Demolition of existing structures and surfaces,
- Utilizing vegetated filter strips (VFS) and sand filter systems (SFS) to treat runoff,
- Re-stabilizing the ROW after construction.

In addition to the described activities, temporary erosion and sedimentation controls will be installed prior to commencing site disturbance and maintained during construction. No wastewater will be generated by this roadway project.

#### PERMANENT POLLUTION ABATEMENT MEASURES

To prevent pollution of stormwater runoff originating on-site or up-gradient of the site and potentially flowing across and off the site after construction, five (5) SFS and eight (8) VFS will be constructed for the added and improved roadway to treat IC using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005).

The approved measures meet the required 80 percent removal of the increased load in total suspended solids caused by the project. Treatment design calculations were sealed by Mark Litzmann, P.E., on February 4, 2020 to demonstrate the total treatment load removal to exceed the required additional total suspended solids (TSS) loading.

#### GEOLOGY

According to the Geologic Assessment, the site contains Georgetown Formation, Edwards Limestone, and other Quaternary age alluvial deposits. The site has been previously disturbed by construction of the IH 35 roadway and consists of pavement, non-native soil, and fills within the existing right-of-way. Several minor faults are mapped across the site. No sensitive features are listed onsite as present. One is adjacent Mel's Lone Star cave, which will be protected during and after construction, by directing any polluted runoff away from the feature. The site visit of April 8, 2020 confirms this general description.

#### SPECIAL CONDITIONS

- I. Since this is a roadway construction project, deed recordation of this approval letter is not required.
- II. A staging area was not proposed for this project. If the contractor desires a staging area, information indicating the proposed location and placement of appropriate temporary erosion and sedimentation controls must be submitted to the TCEQ for review and approved prior to its installation.



STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

Prior to Commencement of Construction:

2. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
3. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
4. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
5. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
6. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

7. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

8. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas licensed professional engineer.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
10. No known water wells exist. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
11. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
12. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
13. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

14. 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 Austin Regional Office within 30 days of site completion.

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

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Kevin Lee Smith, P.E. of the Edwards Aquifer Protection Program of the Austin Regional Office at 512-339-2929.

Sincerely,



Robert Sadlier, Section Manager  
Edwards Aquifer Protection Program  
Texas Commission on Environmental Quality

RCS/cls

## **ATTACHMENT B – Narrative of Proposed Modifications**

### **Project Background:**

The Texas Department of Transportation (TxDOT) proposes improvements along IH 35 from South of Williams Drive to Lakeway Drive which will consist of the reconstruction of the existing interchange at Williams Drive to a diverging diamond interchange which includes total replacement of the existing bridge at the intersection, along with the addition and modification of frontage roads and ramps, construction of collector/distributor roads along the IH 35 frontage roads, and construction of a shared used path. The approximate area of the site is 144.92 acres.

### **Existing Site Conditions:**

The existing IH-35 interchange at Williams Drive is a traditional intersection, which consists of four 11 to 12-foot-wide lanes (two in each direction and a 13-foot left turn lane within R.O.W. that varies from 80 feet to 100 feet wide. IH 35 from South of Williams Drive to Lakeway is a 6-lane divided freeway with 2 lane frontage roads in both North and Southbound directions. This major corridor is bordered by commercial businesses, and some residential communities. In addition, there are existing Water Pollution Abatement Plan (WPAP) Best Management Practices (BMPs) at the existing interchange (Hazmat Ponds that do not meet current TCEQ requirements). The receiving waters at or near the site include Pecan Branch and North and South Fork of the San Gabriel River, which flows into the Brazos River basin.

### **Previously Proposed Site Conditions:**

The proposed Williams Drive Interchange will be replaced with a Diverging Diamond Interchange (DDI). This type of intersection temporarily shifts traffic to the left side of the road, allowing through-traffic and left-turning traffic to proceed through the intersection simultaneously, which eliminates the need for signalized left turn movements. In addition through-traffic on the frontage road can bypass the intersection via proposed northbound and southbound collector-distributor roads, which allow traffic to proceed through the intersection and avoid the traffic signal. The proposed northbound and southbound collector-distributor roads would each consist of two 12-foot wide lanes. The proposed work will consist of removing existing pavement, clearing and grubbing, grading, drainage structures, subgrade, flex base, HMAC, Curb and Gutter, Illumination, signing and pavement markings, and erosion control devices (BMPs both temporary and permanent). The proposed roadway improvements will increase impervious cover relative to the existing roadway configuration from 64.41 acres to 84.42 acres.

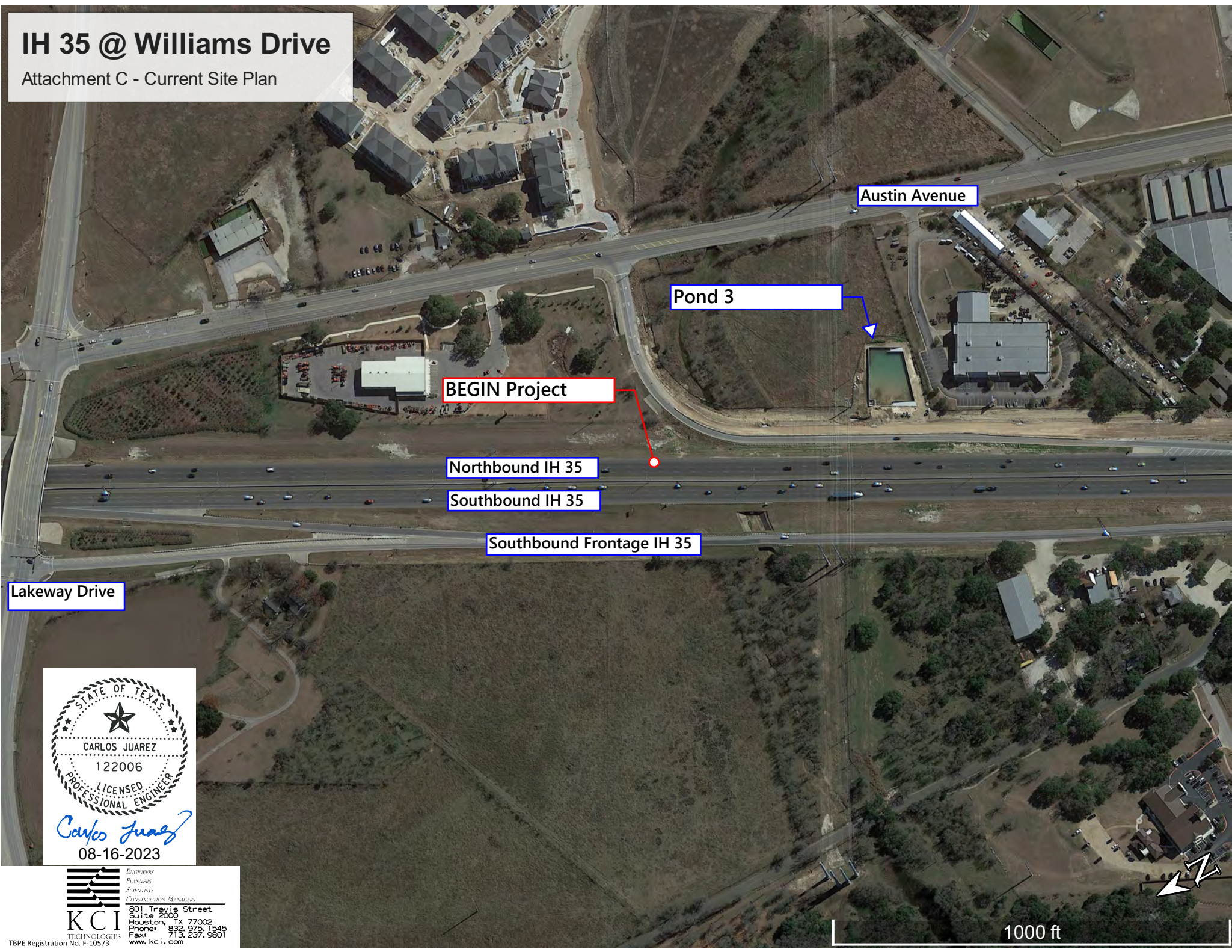
### **Proposed Modifications:**

Pond 16 is to be re-designed and relocated so that it runs between IH 35 NB & NBFR. This would eliminate the risk of causing damage to the 2 bents and bridge structure during excavation. The re-designed pond is to be constructed near existing grade to avoid deep excavations near bridge structures. The TSS removal calculations for Pond 16 will remain unchanged. The total Capture Volume (required water quality volume(s) x 1.20) = 54,637 cubic feet. The previous Pond 16 capture volume provided was significantly higher at 148,959 cubic feet to accommodate any future construction. The previous capture volume will be reduced but the minimum of 54,637 cubic feet will be maintained. No reduction in current TSS removal calculations are proposed with the updated Pond 16 re-design.



# IH 35 @ Williams Drive

Attachment C - Current Site Plan



Austin Avenue

Pond 3

BEGIN Project

Northbound IH 35

Southbound IH 35

Southbound Frontage IH 35

Lakeway Drive



1000 ft



# IH 35 @ Williams Drive

Attachment C - Current Site Plan

Pond 6

Northbound Frontage IH 35

Northbound IH 35

Southbound IH 35

Southbound Frontage IH 35



TBPE Registration No. F-10573

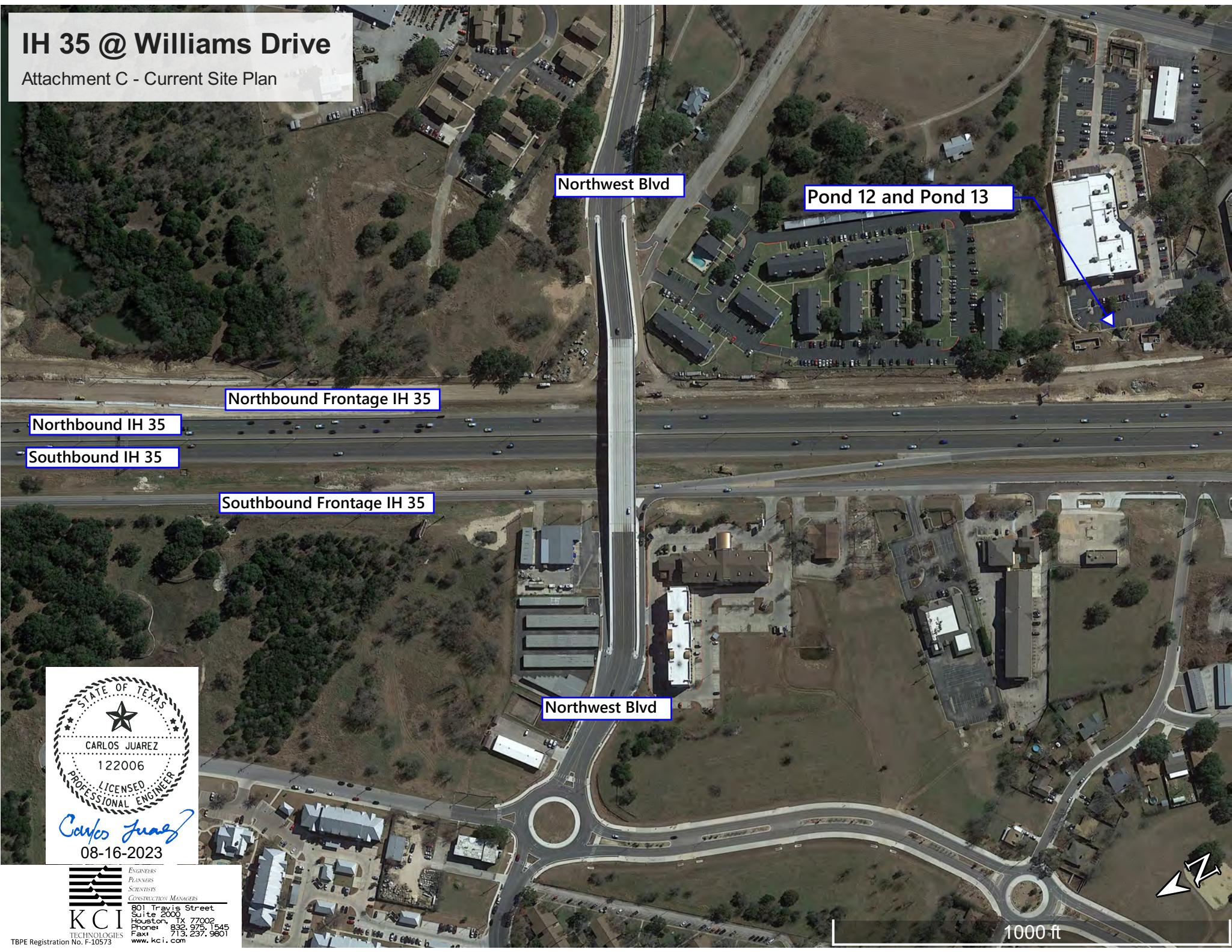


1000 ft



# IH 35 @ Williams Drive

Attachment C - Current Site Plan



Northwest Blvd

Pond 12 and Pond 13

Northbound Frontage IH 35

Northbound IH 35

Southbound IH 35

Southbound Frontage IH 35

Northwest Blvd



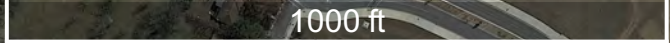
*Carlos Juarez*

08-16-2023



ENGINEERS  
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www.kci.com

TBPE Registration No. F-10573





# IH 35 @ Williams Drive

Attachment C - Current Site Plan

San Gabriel River

Austin Ave

Proposed Pond 16 location  
(construction not started pending  
shape modification and report  
approval)

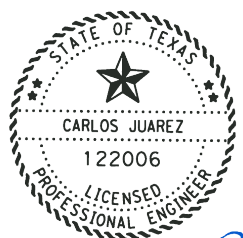
Northbound IH 35

Northbound Frontage IH 35

Southbound IH 35

Williams  
Drive  
Overpass @  
IH35

Southbound Frontage IH 35



*Carlos Juarez*  
08-16-2023

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San Gabriel River

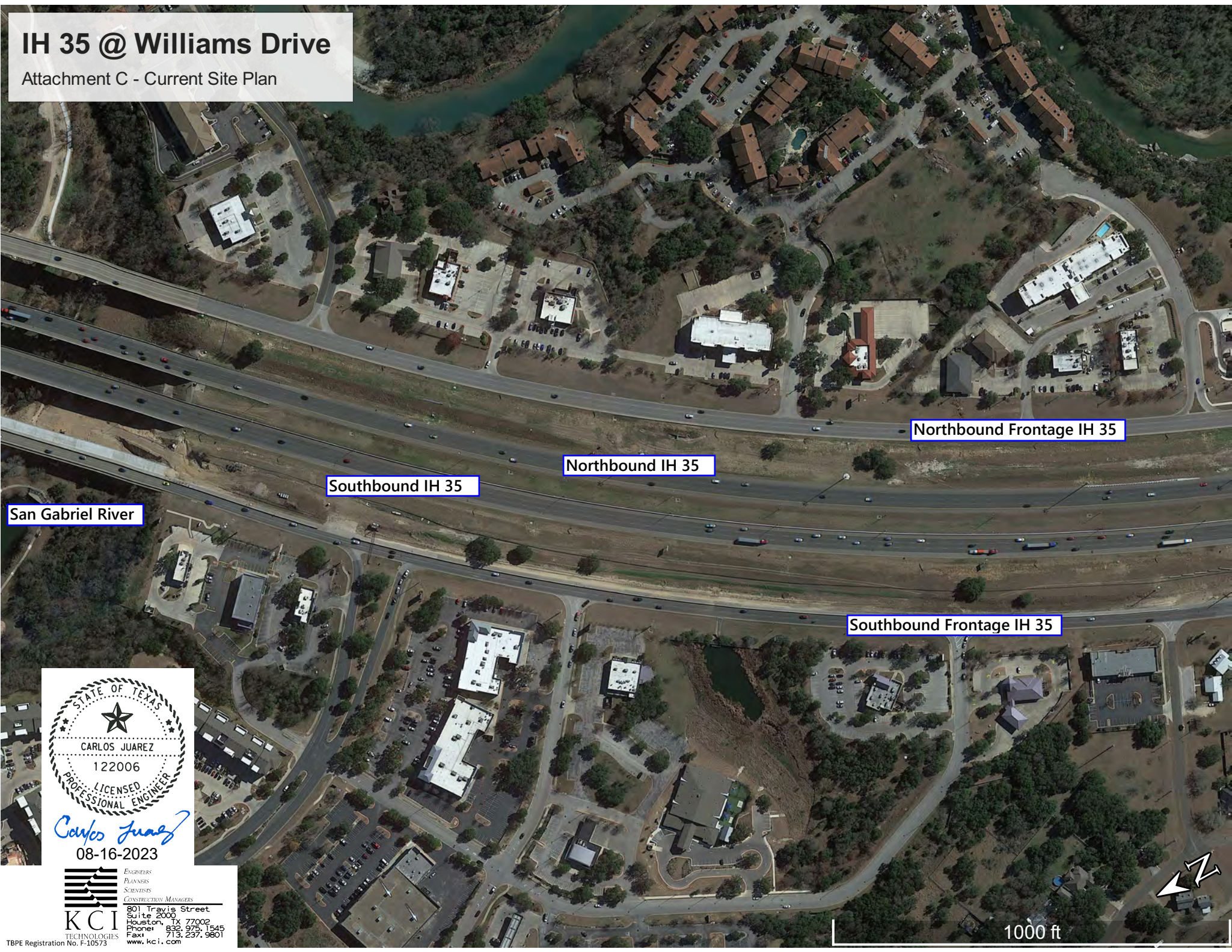


1000 ft



# IH 35 @ Williams Drive

Attachment C - Current Site Plan



Southbound IH 35

Northbound IH 35

Northbound Frontage IH 35

San Gabriel River

Southbound Frontage IH 35



*Carlos Juarez*  
08-16-2023

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1000 ft



# IH 35 @ Williams Drive

Attachment C - Current Site Plan

SH 29  
(University Ave)

END Project

Northbound Frontage IH 35

Northbound IH 35

Southbound Frontage IH 35

Southbound IH 35

SH 29  
(University Ave)



*Carlos Juarez*  
08-16-2023



TBPE Registration No. F-10573

1000 ft





## Section V

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### **Water Pollution Abatement Plan Application**



# Edwards Aquifer Protection Program Roadway Application

## Texas Commission on Environmental Quality

This application is intended only for projects which a major roadway is designed for construction, such as State highways, County roads, and City thoroughfares.

Designed for Regulated Activities on the Contributing Zone to the Edwards Aquifer in relation to 30 TAC §213.24, Regulated Activities on the Edwards Aquifer Recharge Zone, in relation to 30 TAC §213.5(b), Effective June 1, 1999.

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

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

## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer.

The application was prepared by:

Print Name of Customer/Agent: Carlos Juarez, P.E.

Date: 8-09-2023

Signature of Customer/Agent:



---

## Project Information

1. Regulated Entity (Project) Name: IH 35
2. County: Williamson
3. Stream Basin(s): San Gabriel River
4. Groundwater Conservation District (if applicable): N/A
5. Customer (Applicant):

Contact Person: John Peters, P.E.

Entity: Texas Department of Transportation

Mailing Address: 2727 S. Austin Ave.

City, State: Georgetown, TX Zip: 78626

Telephone: (512)930-5402

Email Address: John.Peters@txdot.gov

6. Agent (Representative):

Contact Person: Carlos Juarez, P.E.  
Entity: KCI Technologies  
Mailing Address: 2610 North Shary Road  
City, State: Mission, TX Zip: 78574  
Telephone: (956)271-6697  
Email Address: Carlos.Juarez@kci.com

7. Landowner of R.O.W. (Right of Way)

Person or entity responsible for maintenance of water quality Best Management Practices (BMPs), if not applicant.

Contact Person: \_\_\_\_\_  
Entity: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City, State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email Address: \_\_\_\_\_

8.  **The TCEQ must be able to inspect the project site or the application will be returned.**

Sufficient survey marking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of any regulated activities and the geologic or manmade features noted in the Geologic Assessment.

Survey marking will be completed by this date: Completed March 2018

9.  **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.

10.  **Attachment B - USGS Quadrangle.** 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)
- All drainage paths from site to surface waters

11.  **This project extends into (Check all that apply):**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Recharge Zone (RZ) | <input type="checkbox"/> Contributing Zone within   |
| <input type="checkbox"/> Contributing Zone (CZ)        | Transition Zone (CZ/TZ)                             |
| <input type="checkbox"/> Transition Zone (TZ)          | <input type="checkbox"/> Zone not regulated by EAPP |

12.  **Attachment C - Project Description.** 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:

- Complete site area [Acres]
- Offsite upgradient stormwater areas to be captured
- Impervious area [Acres]
- Permanent BMP(s)
- Proposed site use
- Existing roadway (paved and/or unpaved)
- Structures to be demolished [Include demo phase]
- Major interim phases

13. Existing project site conditions are noted below:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Existing paved and/or unpaved roads | <input type="checkbox"/> Existing commercial site  |
| <input type="checkbox"/> Undeveloped (Cleared)                          | <input type="checkbox"/> Existing industrial site  |
| <input type="checkbox"/> Undeveloped (Undisturbed/Not cleared)          | <input type="checkbox"/> Existing residential site |
|   | <input type="checkbox"/> Other: _____              |

14.  **Attachment D - Factors Affecting Surface Water Quality.** A detailed description of all factors that could affect surface water quality is attached.

15.  Only inert materials as defined by 30 TAC §330.3 will be used as fill material.

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

- Concrete
- Asphaltic concrete pavement
- Permeable Friction Course (PFC)
- Other: \_\_\_\_\_

17. Right of Way (R.O.W.) and Pavement Area:

R.O.W. for project: 144.92 (ac.)

Length: 10,179.84 ft.

Width: varies from 350 ft. to 550 ft.

Impervious cover (IC): 84.42 (ac.)

Total of Pavement area 84.42 (ac.) ÷ R.O.W. area 144.92 (ac.) x 100 = 58.25% IC.

- CAD program was used to determine areas.
- Number of travel lanes: proposed: 3, existing: 3
- Typical widths of lanes: 12 (ft.)
- Are intersections also being improved? (Y/N) Y



## Site Plan Requirements

Items 18 - 28 must be included on the Site Plan.

18.  The Site Plan must have a minimum scale of 1" = 400'.  
Site Plan Scale: 1" = 100'
19. 100-year floodplain boundaries:
- Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled. The 100-year floodplain boundaries are based on the following specific (including date of material) source(s): FEMA FIRM Panel Number(s) 48491C0290E & 48491C0295; 09/25/2008.
  - No part of the project site is located within the 100-year floodplain.
20.  A layout of the development with existing and finished contours at appropriate, but not greater than ten-foot contour intervals is shown. Sensitive features, lots, wells, buildings, roads, culverts, etc. are shown on the site plan.
21.  A figure (map) indicating all paths of drainage from the site to surface waters.
- Name all stream crossings: San Gabriel River, Pecan Branch Creek
  - Drainage patterns and approximate slopes.
  - There will be no discharge to surface waters.
22.  Distinguish between areas of soil disturbance and areas which will not be disturbed.
23.  Show locations of major structural and nonstructural controls. These are the temporary and permanent best management practices. Include the following:
- Show design and location of any hazardous materials traps.
  - Show design at outfalls of major control structures and conveyances.
  - A description of the BMPs and measures that prevent pollutants from entering surface streams.
24. Show locations of staging areas or project specific locations (PSL). Are they:
- Onsite, within project R.O.W.
  - Offsite.
  - Not yet determined. (Requires future authorization)
25.  Show locations where soil stabilization practices are expected to occur.
26.  Show surface waters (including wetlands).
27. Temporary aboveground storage tank facilities:
- Temporary aboveground storage tank facilities will be located on this site. Show on site plan.
  - Temporary aboveground storage tank facilities will not be located on this site.
28.  Plan(s) also include:
- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Sidewalks | <input checked="" type="checkbox"/> Shared-use paths             |
| <input type="checkbox"/> Related turn lanes   | <input type="checkbox"/> Off-site improvements and staging areas |
| <input type="checkbox"/> Demolition plans     | <input type="checkbox"/> Utility relocations                     |

Other improved areas: \_\_\_\_\_

## **Permanent Best Management Practices (BMPs)**

**Description of practices and measures that will be used after construction is completed.**

29.  Permanent BMPs and measures have been designed, and will be constructed, operated, and maintained to ensure 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 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: \_\_\_\_\_

30.  **Attachment E - BMPs for Upgradient (Offsite) 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.

31.  **Attachment F - 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.

32.  **Attachment G - 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 all proposed structural plans and specifications, and appropriate details.

Major bridge cross-sections, and roadway plan and profiles

BMP plans and details

Design calculations

Erosion control

TCEQ Construction Notes

SW3P

EPIC, as necessary

33.  **Attachment H - 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 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 recordkeeping procedures.

34.  **Attachment I - 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

35.  **Attachment J - 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 effects caused by the regulated activity which increase erosion or may result in water quality degradation.

Include permanent spill measures used to contain hydrocarbons or hazardous substances by way of traps, or response contingencies.

36. 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.

If the applicant intends to transfer responsibility, check the box below.

Yes

A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days.



## ***Stormwater to be generated by the Proposed Project***

### ***Description of practices and measures that will be used during construction.***

37.  The site description, controls, maintenance, and inspection requirements for the Storm Water Pollution Prevention Plan (SWPPP or SW3P) developed under the Texas Pollutant Discharge Elimination System (TPDES) general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) & §213.5(b) of the technical report.
- The Temporary Stormwater Section (TCEQ-0602) is included with the application.
  - The SWPPP (SW3P) will serve as the Temporary Stormwater Section (TCEQ-0602).
38.  **Attachment K - Volume and Character of Stormwater.** A detailed description of the volume (quantity) and character (quality) of the stormwater runoff 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 pre-construction runoff coefficient.
  - Include the post-construction runoff coefficient.

### ***Administrative Information***

39.  Submit one (1) original and one (1) copy of the application, plus one electronic copy as needed, for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ is required to distribute the additional copies to these jurisdictions.
40. The fee for the plan(s) is based on:
- The total R.O.W. (as in Item 17).
  - TxDOT roadway project.

## **ATTACHMENT A – Factors Affecting Surface Water Quality**

### **Existing Site Conditions**

IH 35 between South of Williams Drive to Lakeway Drive is a 6-lane divided freeway with 2 lane frontage roads in both north and southbound directions, including existing exit and entrance ramps within the limits of the project. The facility is bordered by commercial businesses or zoned to be commercial business on all bordering properties.

### **Proposed Site Conditions**

The proposed site at IH 35 from South of Williams Drive to Lakeway Drive will consist of a diverging diamond interchange at William drive. This type of intersection temporarily shifts traffic to the left side of the road, allowing through-traffic and left-turning traffic to proceed through the intersection simultaneously, which eliminates the need for signalized left turn movements. In addition, through-traffic on the frontage roads can bypass the intersection via proposed northbound and southbound collector distributor roads, which allow traffic to proceed through intersection and avoid the traffic signal. The proposed northbound and southbound collector-distributor roads would each consist of two 12-foot wide lanes. The proposed work will consist of removing existing pavement, clearing and grubbing, grading, drainage structures, subgrade, flexbase, HMAC, Curb and Gutter, Illumination, signing and pavement markings, and erosion control devices (BMPs both temporary and permanent). The proposed roadway improvements will increase impervious cover relative to the existing roadway configuration from 64.41 acres to 84.42 acres. The additional 20.01 acres of impervious cover will result in runoff carrying sediment, materials, trash, debris, and other particles that could result in additional and undesired pollution to the overall stormwater system.

As a result, TCEQ certified permanent BMPs will be installed to mitigate for pollutants caused by the increase in impervious area.

### **Possible Surface Water Quality Affecting Factors:**

1. Sediment – Sediment from clearing and grubbing, pavement removal, and grading is the primary concern for surface water contaminants for this project.
2. Miscellaneous Material – Once this project is completed, highway traffic, including commercial trucking, may result in small amounts of contaminants being introduced into the surface water runoff. In addition, after the completion of the project there will be a potential for spills. In general, the drainage system contains spills, and local responders and TxDOT personnel will ensure that any spills are remediated.

**Runoff Quality:**

A water quality analysis was conducted with the purpose of meeting or exceeding the Texas Commission on Environmental Quality (TCEQ) regulations for increases in total suspended solids (TSS).

The quality of the stormwater can be affected by sediment and materials. Sediment will occur from clearing and grubbing, pavement removal, and grading. Once the project is completed, highway traffic, including commercial trucking may result in small amounts of contaminants being introduced to surface water runoff.

Existing condition water quality treatment include vegetative filter strips. Some of these will be removed by project construction and the treatment impacted by the proposed project construction is shown in the table below.

Sand filter ponds and VFS were selected for TSS removal and compatibility of storm drainage system; curb & gutter sections were preferred due to the additional safety they provide to the adjacent shared use path. By constructing additional lanes and ramps, the proposed project increases the impervious cover from 64.41 acres to 84.42 acres (20.01-acre increase).

The majority of the stormwater runoff will be contained and transferred to proposed sand filter ponds via a proposed storm drain system. The proposed sand filter ponds will provide sufficient treatment and maximum feasible coverage for the proposed project. Other BMPs were considered for the proposed improvements however were not chosen due to existing constraints by roadway geometrics and other features that didn't allow for those BMPs to be constructed in compliance with TCEQ RG-348.

The following data summarizes runoff quality information:

<b>I35 Williams Drive Proposed Improvements - Runoff Quality</b>		
Total Project Area	144.92	<i>acres</i>
Pre-Development Impervious Cover	64.41	<i>acres</i>
Post-Development Impervious Cover	84.42	<i>acres</i>
Net Increase in Impervious Cover	20.01	<i>acres</i>
TSS Load Removal Required for Increase in Impervious Cover	17,417	<i>lbs.</i>
Existing Treatment Eliminated by Project Construction	6,419	<i>lbs.</i>
Total Req. Treatment = (17,417 + 6,419)	23,836	<i>Lbs.</i>

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**  
 Date Prepared: **10/22/2019**

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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **POND 3**

Total drainage basin/outfall area = **8.79** acres

Predevelopment impervious area within drainage basin/outfall area = **3.67** acres

Post-development impervious area within drainage basin/outfall area = **7.68** acres

Post-development impervious fraction within drainage basin/outfall area = **0.87**

$L_{M \text{ THIS BASIN}}$  = **3490** lbs.



**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Sand Filter**  
 Removal efficiency = **89** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area  
 A<sub>i</sub> = Impervious area proposed in the BMP catchment area  
 A<sub>p</sub> = Pervious area remaining in the BMP catchment area  
 L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **8.79** acres  
 A<sub>i</sub> = **7.68** acres  
 A<sub>p</sub> = **1.11** acres  
 L<sub>R</sub> = **7585** lbs

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

Desired L<sub>M THIS BASIN</sub> = **7000** lbs.  
 F = **0.92**

**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 = **2.00** inches  
 Post Development Runoff Coefficient = **0.71**  
 On-site Water Quality Volume = **45530** 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 = **9106**

**Total Capture Volume (required water quality volume(s) x 1.20) = 54637** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **54637** cubic feet

Minimum filter basin area = **2529** square feet

Maximum sedimentation basin area = **22765** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **5691** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **54637** cubic feet

Minimum filter basin area = **4553** square feet

Maximum sedimentation basin area = **18212** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **1138** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: IH35 WILLIAMS

Date Prepared: 10/22/2019

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<sub>M</sub> = 27.2(A<sub>N</sub> x P)

where:

- L<sub>M TOTAL PROJECT</sub> = Required TSS removal resulting from the proposed development = 80% of increased load
- A<sub>N</sub> = 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 =	<b>Williamson</b>	
Total project area included in plan *	<b>144.92</b>	acres
Predevelopment impervious area within the limits of the plan *	<b>64.41</b>	acres
Total post-development impervious area within the limits of the plan *	<b>84.42</b>	acres
Total post-development impervious cover fraction *	<b>0.58</b>	
P =	<b>32</b>	inches

L<sub>M TOTAL PROJECT</sub> = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. =	<b>POND 6</b>	
Total drainage basin/outfall area =	<b>6.18</b>	acres
Predevelopment impervious area within drainage basin/outfall area =	<b>2.37</b>	acres
Post-development impervious area within drainage basin/outfall area =	<b>5.08</b>	acres
Post-development impervious fraction within drainage basin/outfall area =	<b>0.82</b>	
L <sub>M THIS BASIN</sub> =	<b>2359</b>	lbs.

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Sand Filter**  
 Removal efficiency = **89** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area  
 A<sub>i</sub> = Impervious area proposed in the BMP catchment area  
 A<sub>p</sub> = Pervious area remaining in the BMP catchment area  
 L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **6.18** acres  
 A<sub>i</sub> = **5.08** acres  
 A<sub>p</sub> = **1.10** acres  
 L<sub>R</sub> = **5023** lbs

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

Desired L<sub>M THIS BASIN</sub> = **4990** lbs.

F = **0.99**

**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 = **3.66** inches  
 Post Development Runoff Coefficient = **0.66**  
 On-site Water Quality Volume = **53803** 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 = **10761**

**Total Capture Volume (required water quality volume(s) x 1.20) = 64563** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
 Irrigation area = **NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **64563** cubic feet  
 Minimum filter basin area = **2989** square feet  
 Maximum sedimentation basin area = **26901** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **6725** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **64563** cubic feet  
 Minimum filter basin area = **5380** square feet  
 Maximum sedimentation basin area = **21521** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **1345** square feet **For maximum water depth of 8 feet**

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **10/22/2019**

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.

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **POND 12**

Total drainage basin/outfall area = **2.17** acres

Predevelopment impervious area within drainage basin/outfall area = **0.03** acres

Post-development impervious area within drainage basin/outfall area = **2.00** acres

Post-development impervious fraction within drainage basin/outfall area = **0.92**

$L_{M \text{ THIS BASIN}}$  = **1715** lbs.



**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Sand Filter**  
 Removal efficiency = **89** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **2.17** acres  
 A<sub>I</sub> = **2.00** acres  
 A<sub>P</sub> = **0.17** acres  
 L<sub>R</sub> = **1973** lbs

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

Desired L<sub>M THIS BASIN</sub> = **1200** lbs.

F = **0.61**

**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 = **0.60** inches  
 Post Development Runoff Coefficient = **0.75**  
 On-site Water Quality Volume = **3545** 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 = **709**

**Total Capture Volume (required water quality volume(s) x 1.20) = 4254** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **4254** cubic feet

Minimum filter basin area = **197** square feet

Maximum sedimentation basin area = **1772** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **443** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **4254** cubic feet

Minimum filter basin area = **354** square feet

Maximum sedimentation basin area = **1418** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **89** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: IH35 WILLIAMS
Date Prepared: 10/22/2019

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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: LM = 27.2(AN x P)

where: LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased load
AN = 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 \* = 144.92 acres
Predevelopment impervious area within the limits of the plan \* = 64.41 acres
Total post-development impervious area within the limits of the plan \* = 84.42 acres
Total post-development impervious cover fraction \* = 0.58
P = 32 inches

LM TOTAL PROJECT = 17417 lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 5

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

Drainage Basin/Outfall Area No. = POND 13
Total drainage basin/outfall area = 1.77 acres
Predevelopment impervious area within drainage basin/outfall area = 0.50 acres
Post-development impervious area within drainage basin/outfall area = 1.62 acres
Post-development impervious fraction within drainage basin/outfall area = 0.92
LM THIS BASIN = 975 lbs.

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Sand Filter**  
 Removal efficiency = **89** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **1.77** acres  
 A<sub>I</sub> = **1.62** acres  
 A<sub>P</sub> = **0.15** acres  
 L<sub>R</sub> = **1599** lbs

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

Desired L<sub>M THIS BASIN</sub> = **930** lbs.  
 F = **0.58**

**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 = **0.54** inches  
 Post Development Runoff Coefficient = **0.75**  
 On-site Water Quality Volume = **2598** 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 = **520**

**Total Capture Volume (required water quality volume(s) x 1.20) = 3117** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **3117** cubic feet

Minimum filter basin area = **144** square feet

Maximum sedimentation basin area = **1299** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **325** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **3117** cubic feet

Minimum filter basin area = **260** square feet

Maximum sedimentation basin area = **1039** square feet **For minimum water depth of 2 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **10/22/2019**

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **POND 16**

Total drainage basin/outfall area = **6.86** acres

Predevelopment impervious area within drainage basin/outfall area = **2.97** acres

Post-development impervious area within drainage basin/outfall area = **4.39** acres

Post-development impervious fraction within drainage basin/outfall area = **0.64**

$L_{M \text{ THIS BASIN}}$  = **1236** lbs.

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Sand Filter**  
 Removal efficiency = **89** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **6.86** acres  
 A<sub>I</sub> = **4.39** acres  
 A<sub>P</sub> = **2.47** acres  
 L<sub>R</sub> = **4364** lbs

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

Desired L<sub>M THIS BASIN</sub> = **4350** lbs.

F = **1.00**

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

[Calculations from RG-348](#)

[Pages 3-34 to 3-36](#)

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.45**  
 On-site Water Quality Volume = **44936** 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 = **8987**

**Total Capture Volume (required water quality volume(s) x 1.20) = 53923** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
 Irrigation area = **NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **53923** cubic feet  
 Minimum filter basin area = **2496** square feet  
 Maximum sedimentation basin area = **22468** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **5617** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **53923** cubic feet  
 Minimum filter basin area = **4494** square feet  
 Maximum sedimentation basin area = **17974** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **1123** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-1**

Total drainage basin/outfall area = **0.71** acres

Predevelopment impervious area within drainage basin/outfall area = **0.71** acres

Post-development impervious area within drainage basin/outfall area = **0.71** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**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

$A_C$  = **0.71** acres  
 $A_i$  = **0.71** acres  
 $A_p$  = **0.00** acres  
 $L_R$  = **668** lbs

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

Desired  $L_{M \text{ THIS BASIN}}$  = **668** lbs.

F = **1.00**

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

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **8415** 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 = **1683**

**Total Capture Volume (required water quality volume(s) x 1.20) = 10098** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
 Irrigation area = **NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet  
 Minimum filter basin area = **NA** square feet  
 Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet  
 Minimum filter basin area = **NA** square feet  
 Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-2**

Total drainage basin/outfall area = **1.11** acres

Predevelopment impervious area within drainage basin/outfall area = **0.70** acres

Post-development impervious area within drainage basin/outfall area = **0.70** acres

Post-development impervious fraction within drainage basin/outfall area = **0.63**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **0.40** acres  
 A<sub>I</sub> = **0.40** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **376** lbs

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

Desired L<sub>M THIS BASIN</sub> = **376** lbs.

F = **1.00**

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

[Calculations from RG-348](#)

[Pages 3-34 to 3-36](#)

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **4741** 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 = **948**

**Total Capture Volume (required water quality volume(s) x 1.20) = 5689** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**  
 Date Prepared: **2/3/2020**

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.

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-3**

Total drainage basin/outfall area = **3.45** acres

Predevelopment impervious area within drainage basin/outfall area = **3.45** acres

Post-development impervious area within drainage basin/outfall area = **3.45** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area  
 A<sub>I</sub> = Impervious area proposed in the BMP catchment area  
 A<sub>P</sub> = Pervious area remaining in the BMP catchment area  
 L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **3.45** acres  
 A<sub>I</sub> = **3.45** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **3247** lbs

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

Desired L<sub>M THIS BASIN</sub> = **3247** lbs.  
 F = **1.00**

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

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **40891** 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 = 8178

Total Capture Volume (required water quality volume(s) x 1.20) = 49069 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = 0.1 in/hr Enter determined permeability rate or assumed value of 0.1  
 Irrigation area = NA square feet  
 NA acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

Maximum sedimentation basin area = NA square feet For minimum water depth of 2 feet

Minimum sedimentation basin area = NA square feet For maximum water depth of 8 feet

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

Maximum sedimentation basin area = NA square feet For minimum water depth of 2 feet

Minimum sedimentation basin area = NA square feet For maximum water depth of 8 feet



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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.

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-4**

Total drainage basin/outfall area = **0.38** acres

Predevelopment impervious area within drainage basin/outfall area = **0.38** acres

Post-development impervious area within drainage basin/outfall area = **0.38** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **0.38** acres  
 A<sub>I</sub> = **0.38** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **358** lbs

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

Desired L<sub>M THIS BASIN</sub> = **358** lbs.

F = **1.00**

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

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **4504** 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 = **901**

**Total Capture Volume (required water quality volume(s) x 1.20) = 5405** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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.

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**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 =	<b>Williamson</b>	
Total project area included in plan * =	<b>144.92</b>	acres
Predevelopment impervious area within the limits of the plan * =	<b>64.41</b>	acres
Total post-development impervious area within the limits of the plan * =	<b>84.42</b>	acres
Total post-development impervious cover fraction * =	<b>0.58</b>	
$P$ =	<b>32</b>	inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-5**

Total drainage basin/outfall area =	<b>1.21</b>	acres
Predevelopment impervious area within drainage basin/outfall area =	<b>1.21</b>	acres
Post-development impervious area within drainage basin/outfall area =	<b>1.21</b>	acres
Post-development impervious fraction within drainage basin/outfall area =	<b>1.00</b>	
$L_{M \text{ THIS BASIN}}$ =	<b>0</b>	lbs.

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **1.21** acres  
 A<sub>I</sub> = **1.21** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **739** lbs

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

Desired L<sub>M THIS BASIN</sub> = **739** lbs.  
 F = **1.00**

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

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **14342** 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 = **2868**

**Total Capture Volume (required water quality volume(s) x 1.20) = 17210** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet  
 Minimum filter basin area = **NA** square feet  
 Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet  
 Minimum filter basin area = **NA** square feet  
 Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**  
 Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-6**

Total drainage basin/outfall area = **0.21** acres

Predevelopment impervious area within drainage basin/outfall area = **0.21** acres

Post-development impervious area within drainage basin/outfall area = **0.21** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **0.21** acres  
 A<sub>I</sub> = **0.21** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **198** lbs

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

Desired L<sub>M THIS BASIN</sub> = **198** lbs.

F = **1.00**

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

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **2489** 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 = **498**

**Total Capture Volume (required water quality volume(s) x 1.20) = 2987** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
 Irrigation area = **NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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**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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-7**

Total drainage basin/outfall area = **0.07** acres

Predevelopment impervious area within drainage basin/outfall area = **0.07** acres

Post-development impervious area within drainage basin/outfall area = **0.07** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **0.07** acres  
 A<sub>I</sub> = **0.07** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **66** lbs

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

Desired L<sub>M THIS BASIN</sub> = **66** lbs.

F = **1.00**

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

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **830** 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 = **166**

**Total Capture Volume (required water quality volume(s) x 1.20) = 996** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **IH35 WILLIAMS**

Date Prepared: **1/28/2020**

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 \* = **144.92** acres

Predevelopment impervious area within the limits of the plan \* = **64.41** acres

Total post-development impervious area within the limits of the plan \* = **84.42** acres

Total post-development impervious cover fraction \* = **0.58**

$P$  = **32** inches

$L_{M \text{ TOTAL PROJECT}}$  = **17417** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **5**

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

Drainage Basin/Outfall Area No. = **VFS-8**

Total drainage basin/outfall area = **0.41** acres

Predevelopment impervious area within drainage basin/outfall area = **0.41** acres

Post-development impervious area within drainage basin/outfall area = **0.41** acres

Post-development impervious fraction within drainage basin/outfall area = **1.00**

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

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Vegetated Filter Strips**  
 Removal efficiency = **85** percent

- Aqualogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault

**4. Calculate Maximum TSS Load Removed (L<sub>R</sub>) 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<sub>C</sub> = Total On-Site drainage area in the BMP catchment area
- A<sub>I</sub> = Impervious area proposed in the BMP catchment area
- A<sub>P</sub> = Pervious area remaining in the BMP catchment area
- L<sub>R</sub> = TSS Load removed from this catchment area by the proposed BMP

A<sub>C</sub> = **0.41** acres  
 A<sub>I</sub> = **0.41** acres  
 A<sub>P</sub> = **0.00** acres  
 L<sub>R</sub> = **386** lbs

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

Desired L<sub>M THIS BASIN</sub> = **386** lbs.

F = **1.00**

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

[Calculations from RG-348](#)

[Pages 3-34 to 3-36](#)

Rainfall Depth = **4.00** inches  
 Post Development Runoff Coefficient = **0.82**  
 On-site Water Quality Volume = **4860** 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 = **972**

**Total Capture Volume (required water quality volume(s) x 1.20) = 5831** 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.

**7. Retention/Irrigation System**

Designed as Required in RG-348

Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr **Enter determined permeability rate or assumed value of 0.1**  
 Irrigation area = **NA** square feet  
**NA** acres

**8. Extended Detention Basin System**

Designed as Required in RG-348

Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **NA** cubic feet

**9. Filter area for Sand Filters**

Designed as Required in RG-348

Pages 3-58 to 3-63

**9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

**9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet **For minimum water depth of 2 feet**

Minimum sedimentation basin area = **NA** square feet **For maximum water depth of 8 feet**

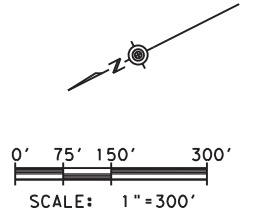


## **Water Pollution Abatement Plan (WPAP Site Plan)**








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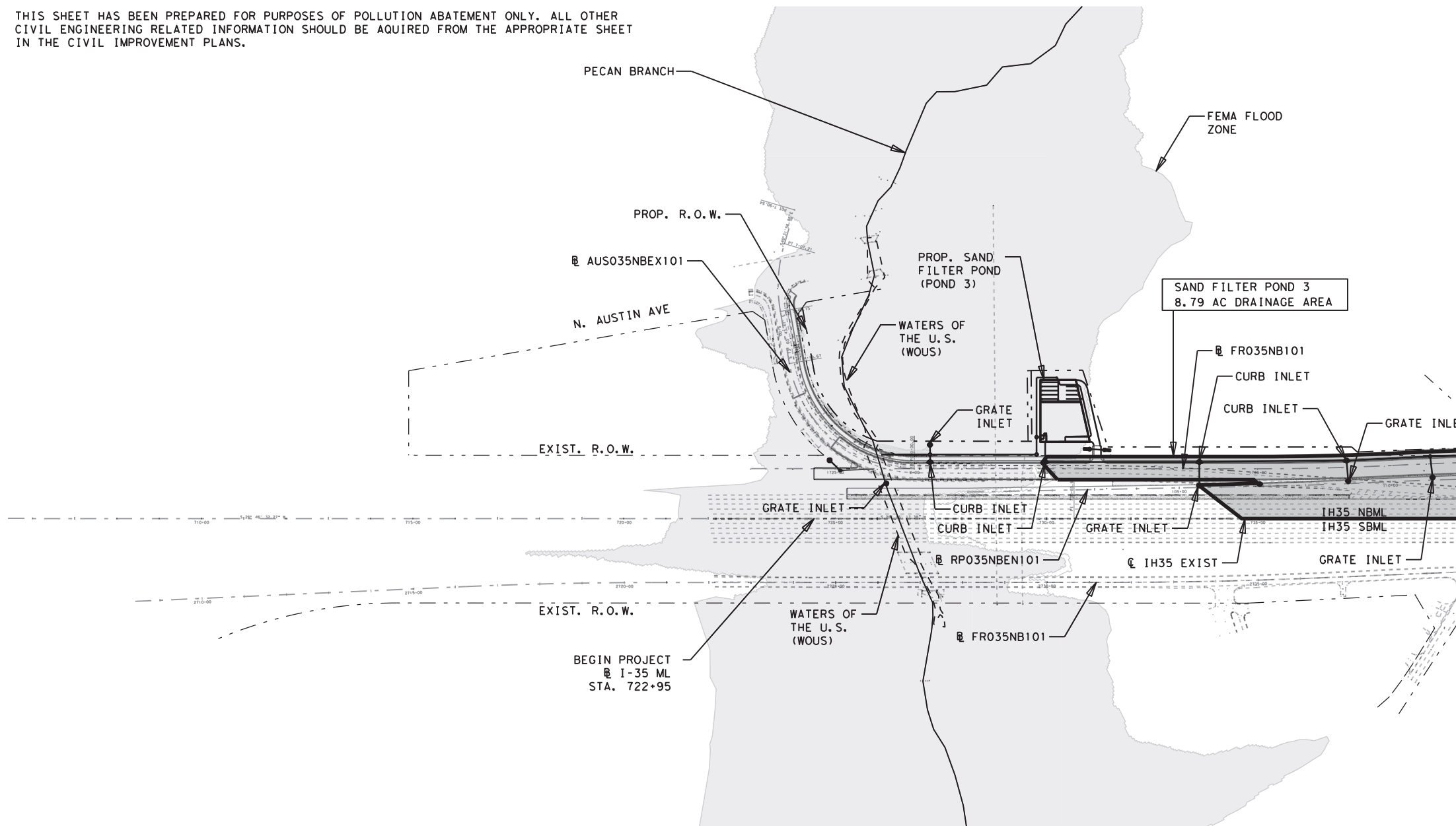
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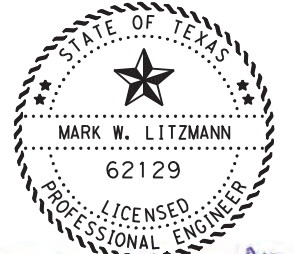


**LEGEND**

-  100 YR FEMA FLOOD ZONE
-  WATER QUALITY DRAINAGE AREA
-  APPROXIMATE STREAM ALIGNMENT
-  STORM SEWER LINE
-  STORM SEWER GRATE INLET
-  STORM SEWER CURB INLET
-  VEGETATIVE FILTER STRIP



MATCHLINE STA. 740+00.00



*Mark W. Litzmann, P.E.*  
02.04.2020

DESCRIPTION	BMP CATCHMENT AREA (acres)	PRE-DEVELOPMENT IMPERVIOUS AREA (acres)	POST DEVELOPMENT IMPERVIOUS AREA (acres)	Lm Basin (lbs)	PROPOSED BMP (per TCEQ RG-348)	BMP EFFICIENCY (%)	TSS REMOVED WITH BMP (lbs)
POND-3 DRAINAGE BASIN	8.79	3.67	7.68	3490	Sand Filter Pond	89	7000
POND-6 DRAINAGE BASIN	6.18	2.37	5.08	2359	Sand Filter Pond	89	4990
POND-12 DRAINAGE BASIN	2.17	0.03	2.00	1715	Sand Filter Pond	89	1200
POND-13 DRAINAGE BASIN	1.77	0.50	1.62	975	Sand Filter Pond	89	930
POND-16 DRAINAGE BASIN	6.86	2.97	4.39	1236	Sand Filter Pond	89	4350
VFS-1	0.71	0.71	0.71	0	Vegetated Filter Strip	85	668
VFS-2	0.40	0.40	0.40	0	Vegetated Filter Strip	85	376
VFS-3	3.45	3.45	3.45	0	Vegetated Filter Strip	85	3247
VFS-4	0.38	0.38	0.38	0	Vegetated Filter Strip	85	358
VFS-5	1.21	1.21	1.21	0	Vegetated Filter Strip	85	1139
VFS-6	0.21	0.21	0.21	0	Vegetated Filter Strip	85	198
VFS-7	0.07	0.07	0.07	0	Vegetated Filter Strip	85	66
VFS-8	0.41	0.41	0.41	0	Vegetated Filter Strip	85	386
Additional areas from proposed project		48.02	56.80	7642	None		
Project TSS required for increase in impervious cover:		64.41	84.42	17417			
Additional TSS from de-facto BMP removed				6419			
			TSS removal req. (defacto removed + increase in impervious)	23836			24908

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**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

**IH 35 @ WILLIAMS DRIVE  
WATER POLLUTION  
ABATEMENT PLAN  
PROJECT LAYOUT**

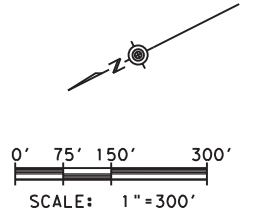
SHEET 1 OF 6

© 2019	CONT	SECT	JOB	HIGHWAY
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



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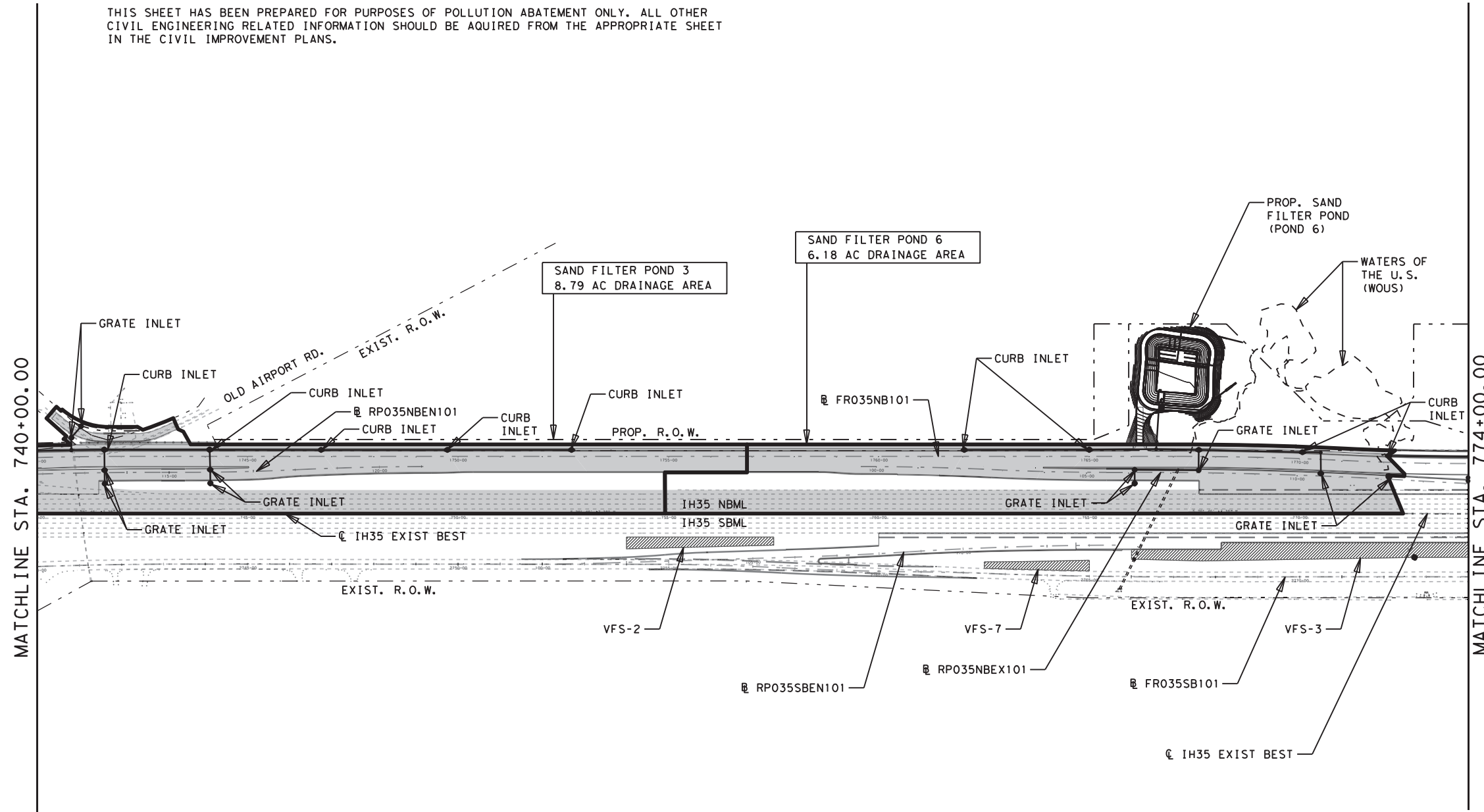
THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

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**LEGEND**

-  100 YR FEMA FLOOD ZONE
-  WATER QUALITY DRAINAGE AREA
-  APPROXIMATE STREAM ALIGNMENT
-  STORM SEWER LINE
-  STORM SEWER GRATE INLET
-  STORM SEWER CURB INLET
-  VEGETATIVE FILTER STRIP



*Mark W. Litzmann P.E.*  
02.04.2020

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CAPITAL AREA

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**IH 35 @ WILLIAMS DRIVE  
WATER POLLUTION  
ABATEMENT PLAN  
PROJECT LAYOUT**

SHEET 2 OF 6

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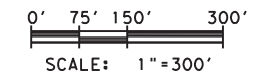


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




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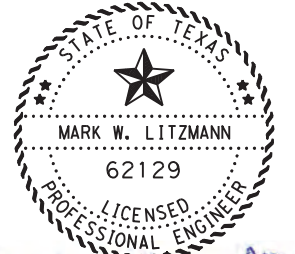
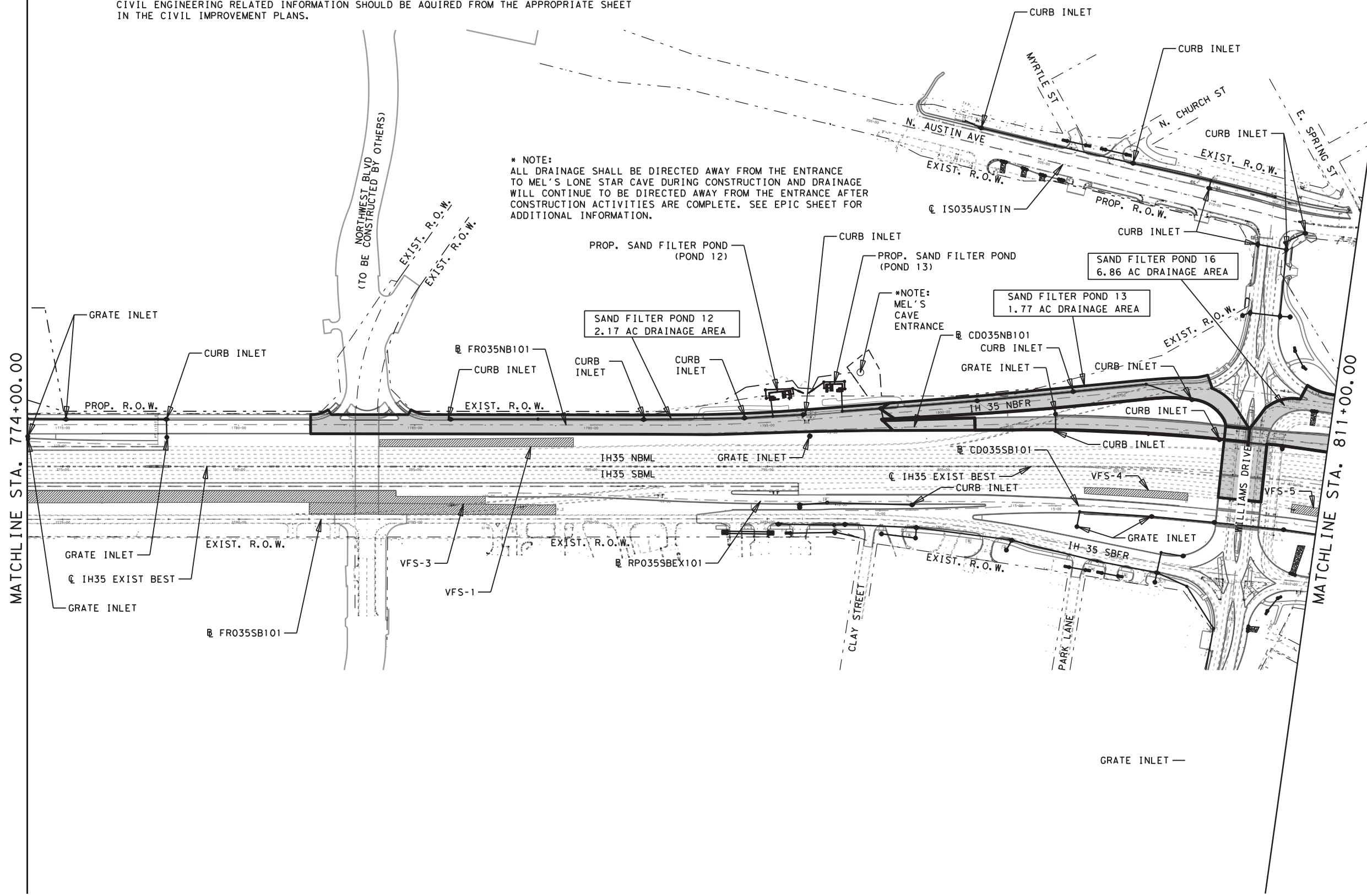
\* NOTE:  
ALL DRAINAGE SHALL BE DIRECTED AWAY FROM THE ENTRANCE TO MEL'S LONE STAR CAVE DURING CONSTRUCTION AND DRAINAGE WILL CONTINUE TO BE DIRECTED AWAY FROM THE ENTRANCE AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE. SEE EPIC SHEET FOR ADDITIONAL INFORMATION.

\*NOTE:  
MEL'S CAVE ENTRANCE



**LEGEND**

-  100 YR FEMA FLOOD ZONE
-  WATER QUALITY DRAINAGE AREA
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-  STORM SEWER CURB INLET
-  VEGETATIVE FILTER STRIP



*Mark W. Litzmann, P.E.*  
02.04.2020

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**mobility** 35  
CAPITAL AREA

**Texas Department of Transportation**

**IH 35 @ WILLIAMS DRIVE  
WATER POLLUTION  
ABATEMENT PLAN  
PROJECT LAYOUT**

SHEET 3 OF 6

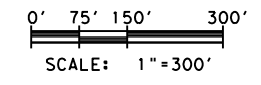
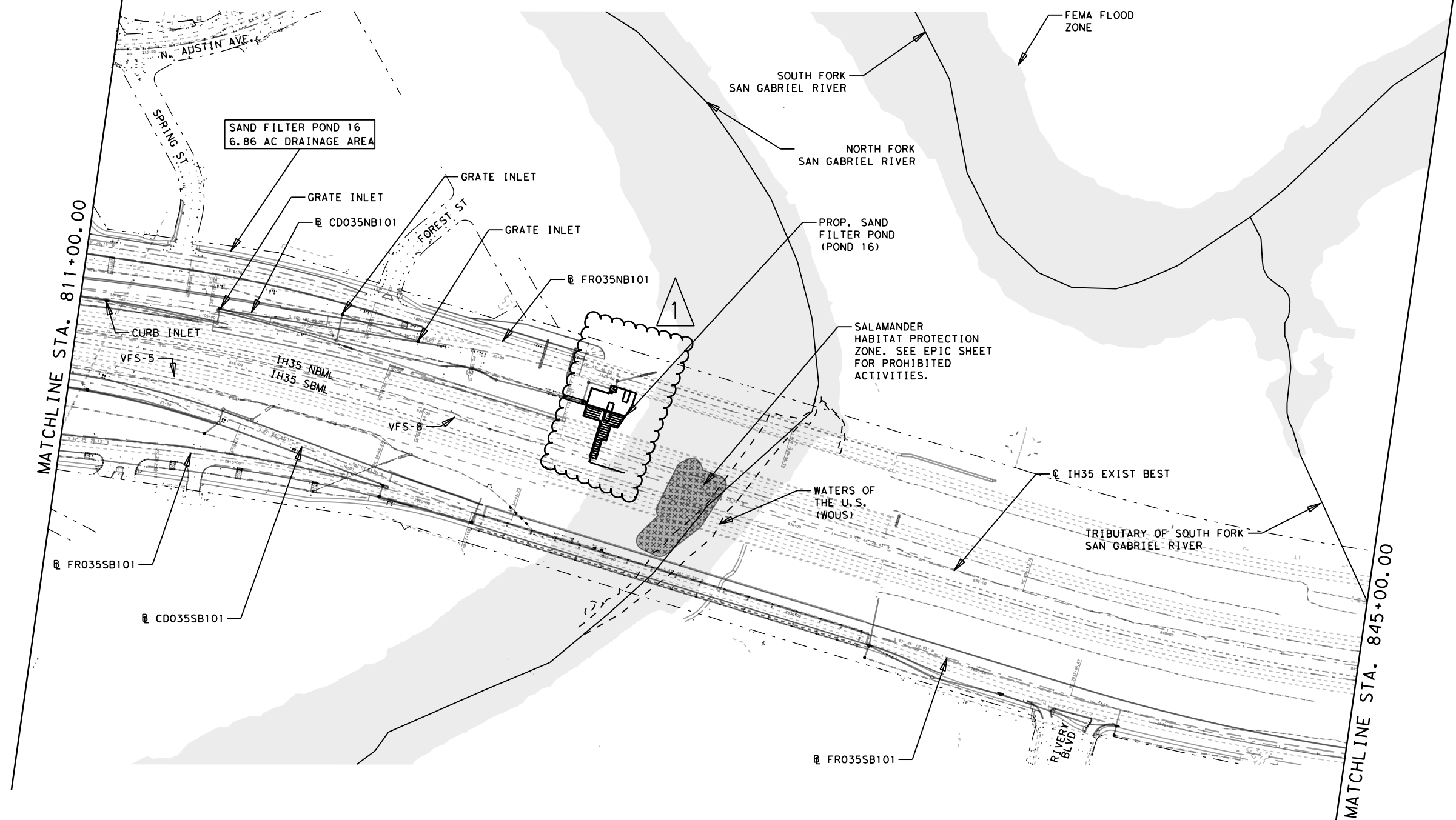
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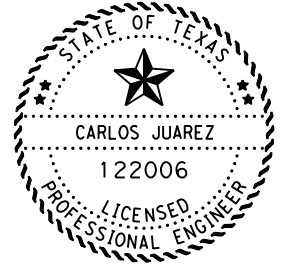
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**LEGEND**

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- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- VEGETATIVE FILTER STRIP



*Carlos Juarez*  
 REVISED 08-07-2023

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**mobility 35**  
 CAPITAL AREA

**Texas Department of Transportation**

**IH 35 @ WILLIAMS DRIVE  
 WATER POLLUTION  
 ABATEMENT PLAN  
 PROJECT LAYOUT**

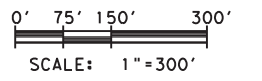
SHEET 4 OF 6

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1 REVISED 08-07-2023 (RFI 186 Pond 16 Updates)

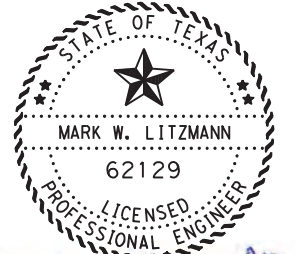
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**LEGEND**

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- STORM SEWER LINE
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*Mark W. Litzmann P.E.*  
02.04.2020

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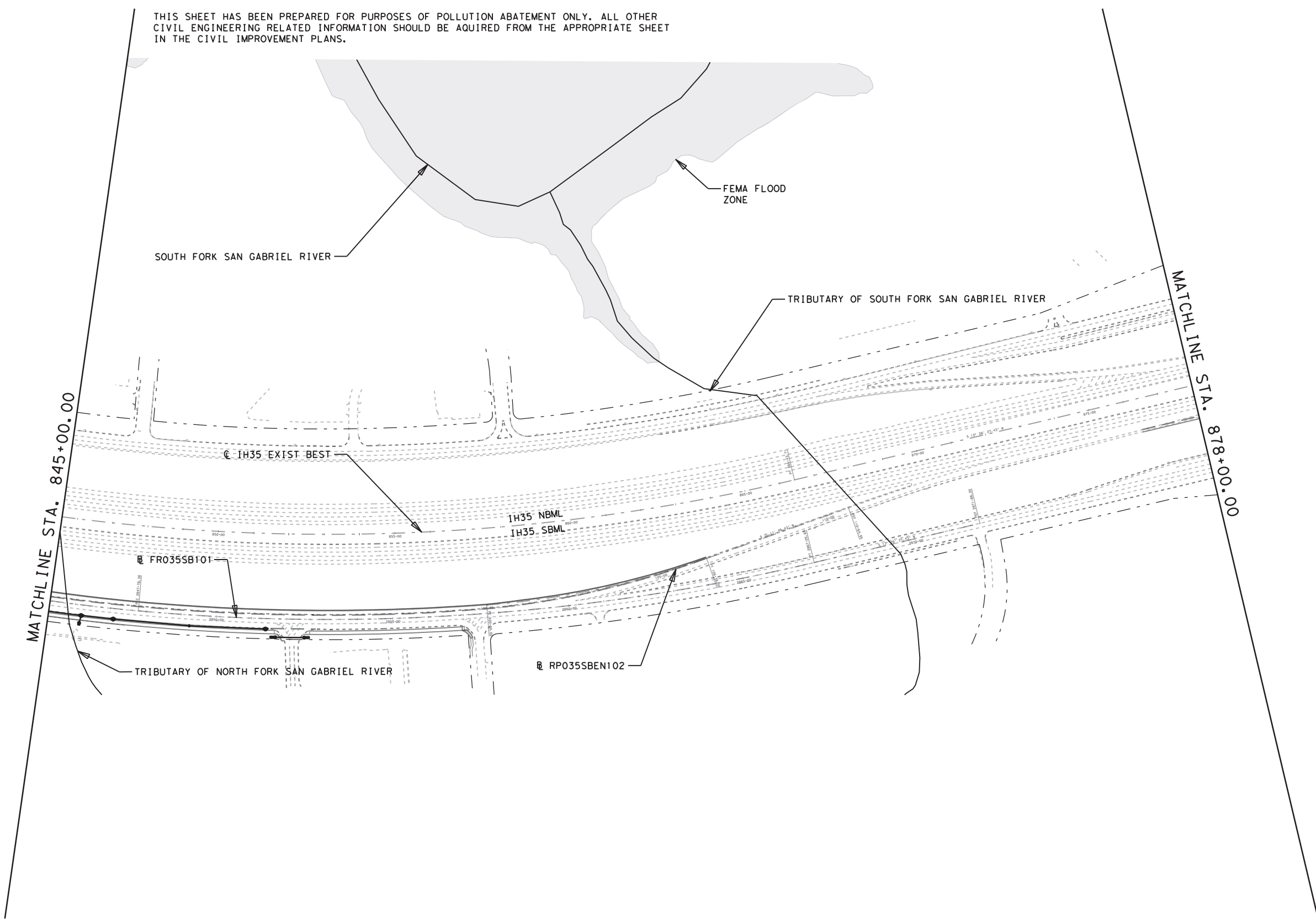


**IH 35 @ WILLIAMS DRIVE  
WATER POLLUTION  
ABATEMENT PLAN  
PROJECT LAYOUT**

SHEET 5 OF 6

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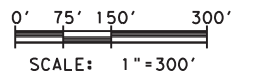
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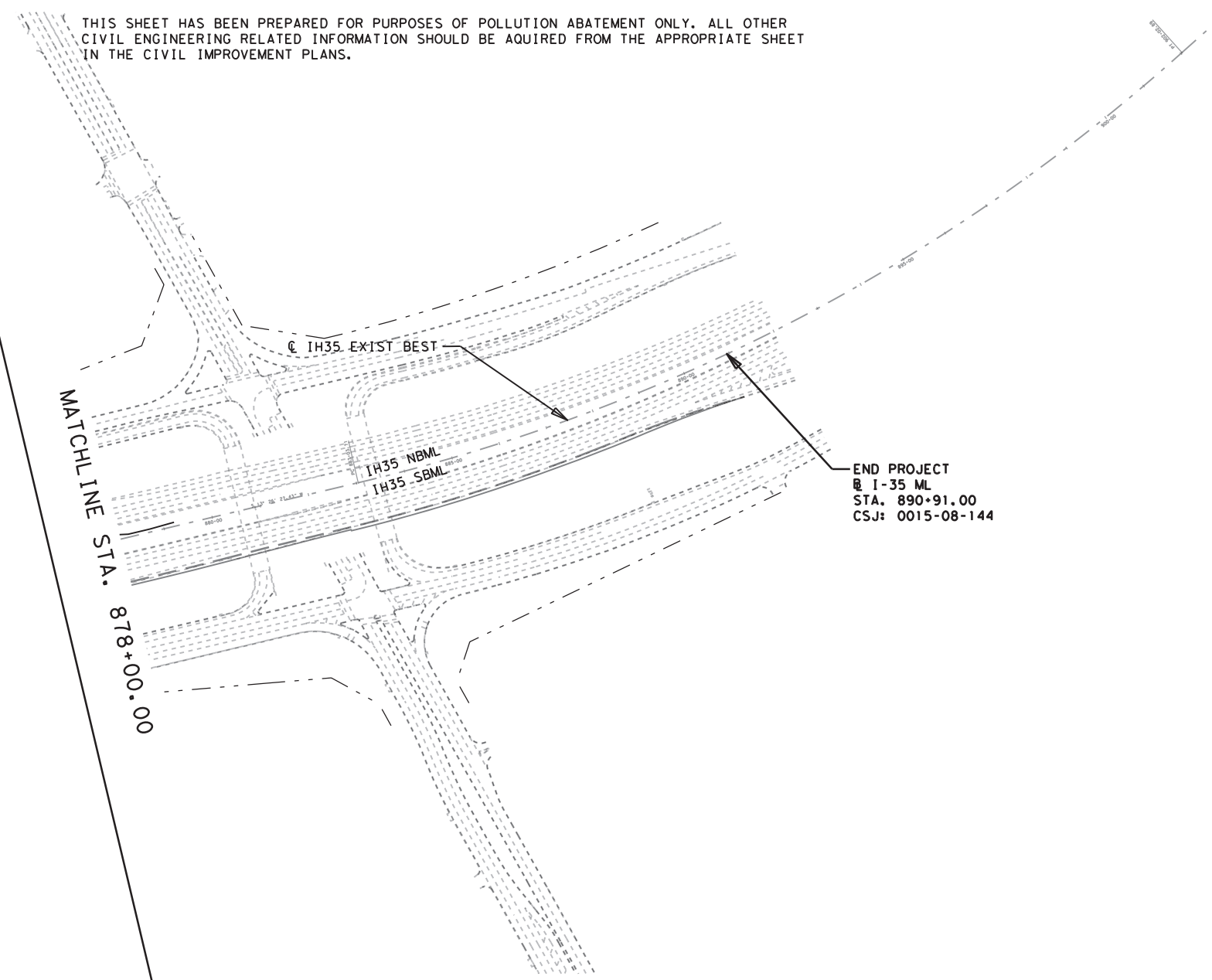
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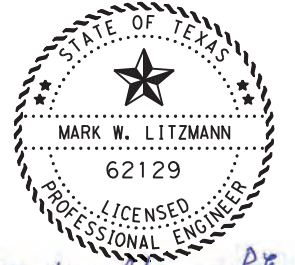
**LEGEND**

- 100 YR FEMA FLOOD ZONE
- WATER QUALITY DRAINAGE AREA
- APPROXIMATE STREAM ALIGNMENT
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- VEGETATIVE FILTER STRIP



END PROJECT  
 @ I-35 ML  
 STA. 890+91.00  
 CSJ: 0015-08-144

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**mobility** 35  
 CAPITAL AREA

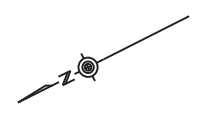
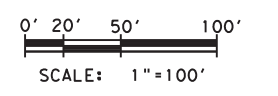


**IH 35 @ WILLIAMS DRIVE  
 WATER POLLUTION  
 ABATEMENT PLAN  
 PROJECT LAYOUT**

SHEET 6 OF 6

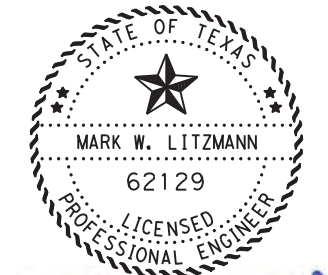
© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1131

N. AUSTIN AVE.



LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



*Mark W. Litzmann P.E.*

02.05.2020

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**mobility** 35  
 CAPITAL AREA

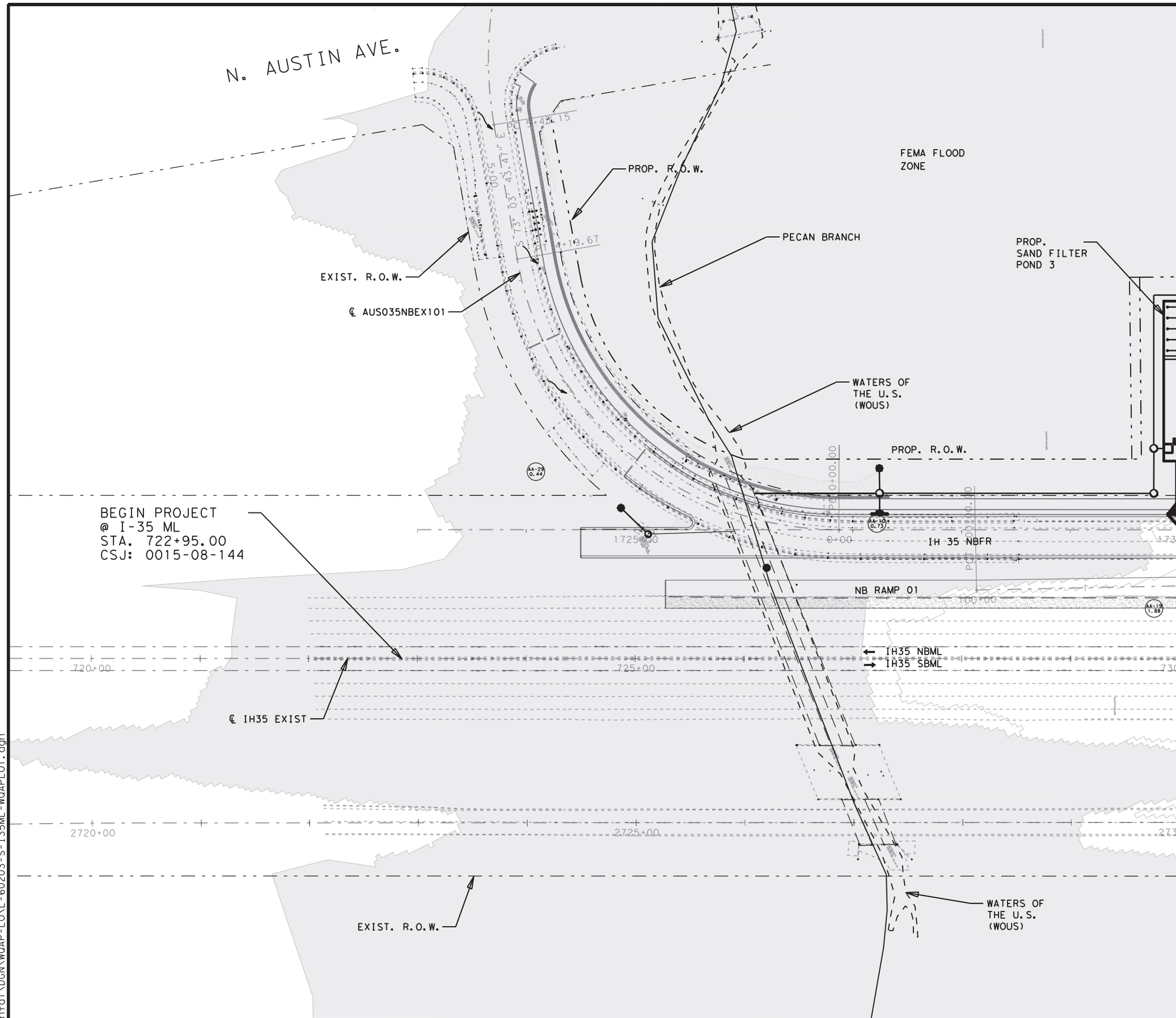
**Texas Department of Transportation**

**I-35 @ WILLIAMS DR.  
 WATER POLLUTION  
 ABATEMENT PLAN**

SHEET 1 OF 12

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1132

MATCHLINE STA. 730+00.00



BEGIN PROJECT  
 @ I-35 ML  
 STA. 722+95.00  
 CSJ: 0015-08-144

720+00

EXIST. R.O.W.

2720+00

EXIST. R.O.W.

1725+00

725+00

2725+00

NB RAMP 01

IH35 NBML  
 IH35 SBML

WATERS OF  
 THE U.S.  
 (WOUS)

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NOTE: REFER TO IH 35 DRAINAGE P&Ps FOR PIPE SLOPES AND ADDITIONAL INFORMATION.

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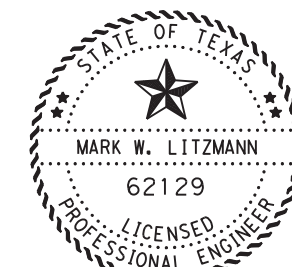
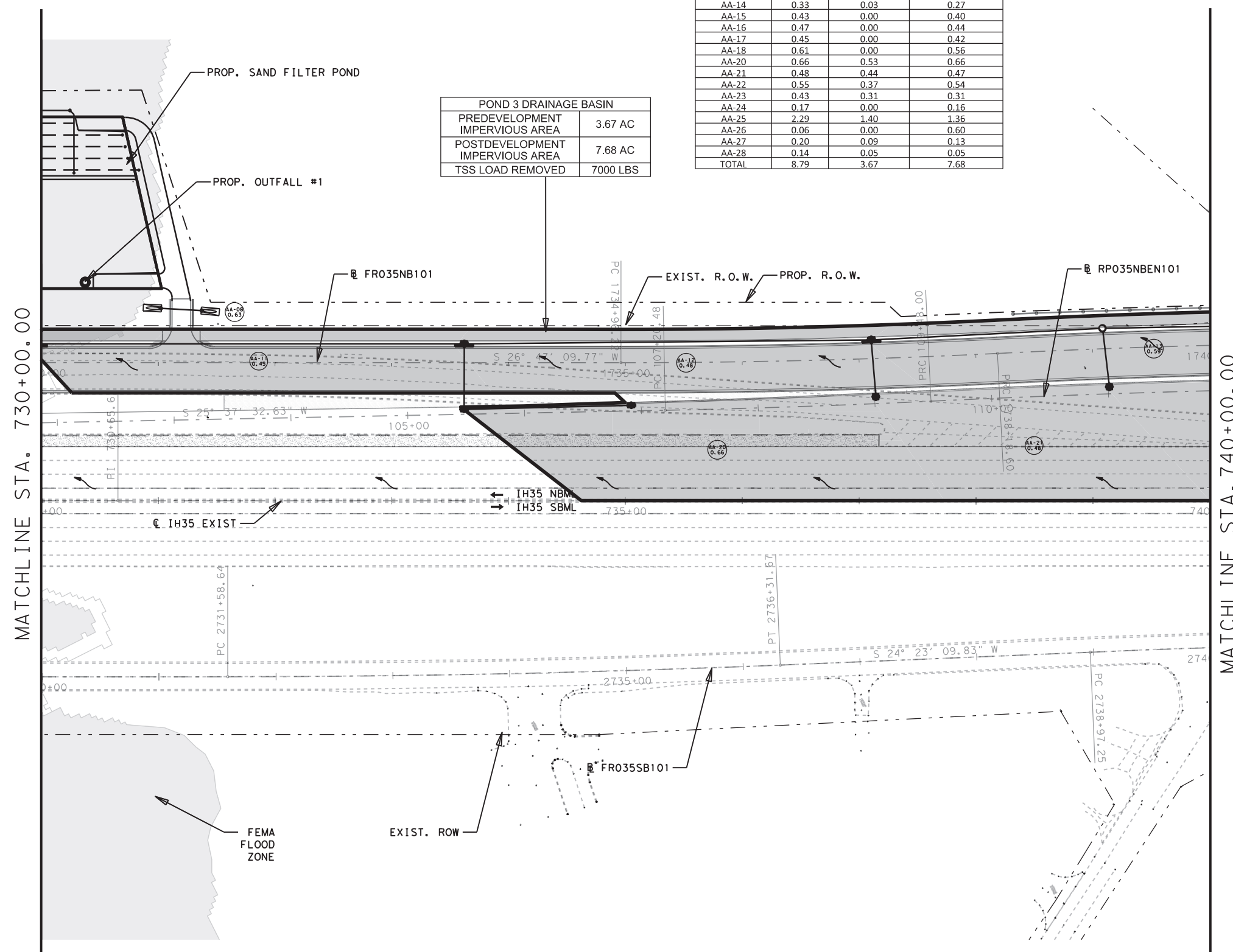


LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP

Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
AA-11	0.45	0.27	0.41
AA-12	0.48	0.14	0.41
AA-13	0.59	0.04	0.50
AA-14	0.33	0.03	0.27
AA-15	0.43	0.00	0.40
AA-16	0.47	0.00	0.44
AA-17	0.45	0.00	0.42
AA-18	0.61	0.00	0.56
AA-20	0.66	0.53	0.66
AA-21	0.48	0.44	0.47
AA-22	0.55	0.37	0.54
AA-23	0.43	0.31	0.31
AA-24	0.17	0.00	0.16
AA-25	2.29	1.40	1.36
AA-26	0.06	0.00	0.60
AA-27	0.20	0.09	0.13
AA-28	0.14	0.05	0.05
TOTAL	8.79	3.67	7.68

POND 3 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	3.67 AC
POSTDEVELOPMENT IMPERVIOUS AREA	7.68 AC
TSS LOAD REMOVED	7000 LBS



*Mark W. Litzmann, P.E.*

02.05.2020

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**I-35 @ WILLIAMS DR.  
WATER POLLUTION  
ABATEMENT PLAN**

SHEET 2 OF 12

DS:	CK:	CONT:	SECT:	JOB:	HIGHWAY:
		0015	08	147, ETC	IH 35
DW:	CK:	DIST:	COUNTY:	SHEET NO.	
		AUS	WILLIAMSON	1133	

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NOTE: REFER TO IH 35 DRAINAGE P&Ps FOR PIPE SLOPES AND ADDITIONAL INFORMATION.

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Pond 3			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
AA-11	0.45	0.27	0.41
AA-12	0.48	0.14	0.41
AA-13	0.59	0.04	0.50
AA-14	0.33	0.03	0.27
AA-15	0.43	0.00	0.40
AA-16	0.47	0.00	0.44
AA-17	0.45	0.00	0.42
AA-18	0.61	0.00	0.56
AA-20	0.66	0.53	0.66
AA-21	0.48	0.44	0.47
AA-22	0.55	0.37	0.54
AA-23	0.43	0.31	0.31
AA-24	0.17	0.00	0.16
AA-25	2.29	1.40	1.36
AA-26	0.06	0.00	0.60
AA-27	0.20	0.09	0.13
AA-28	0.14	0.05	0.05
TOTAL	8.79	3.67	7.68

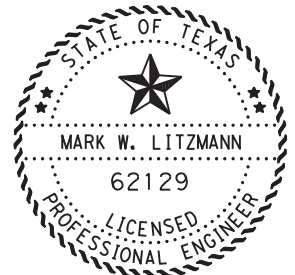
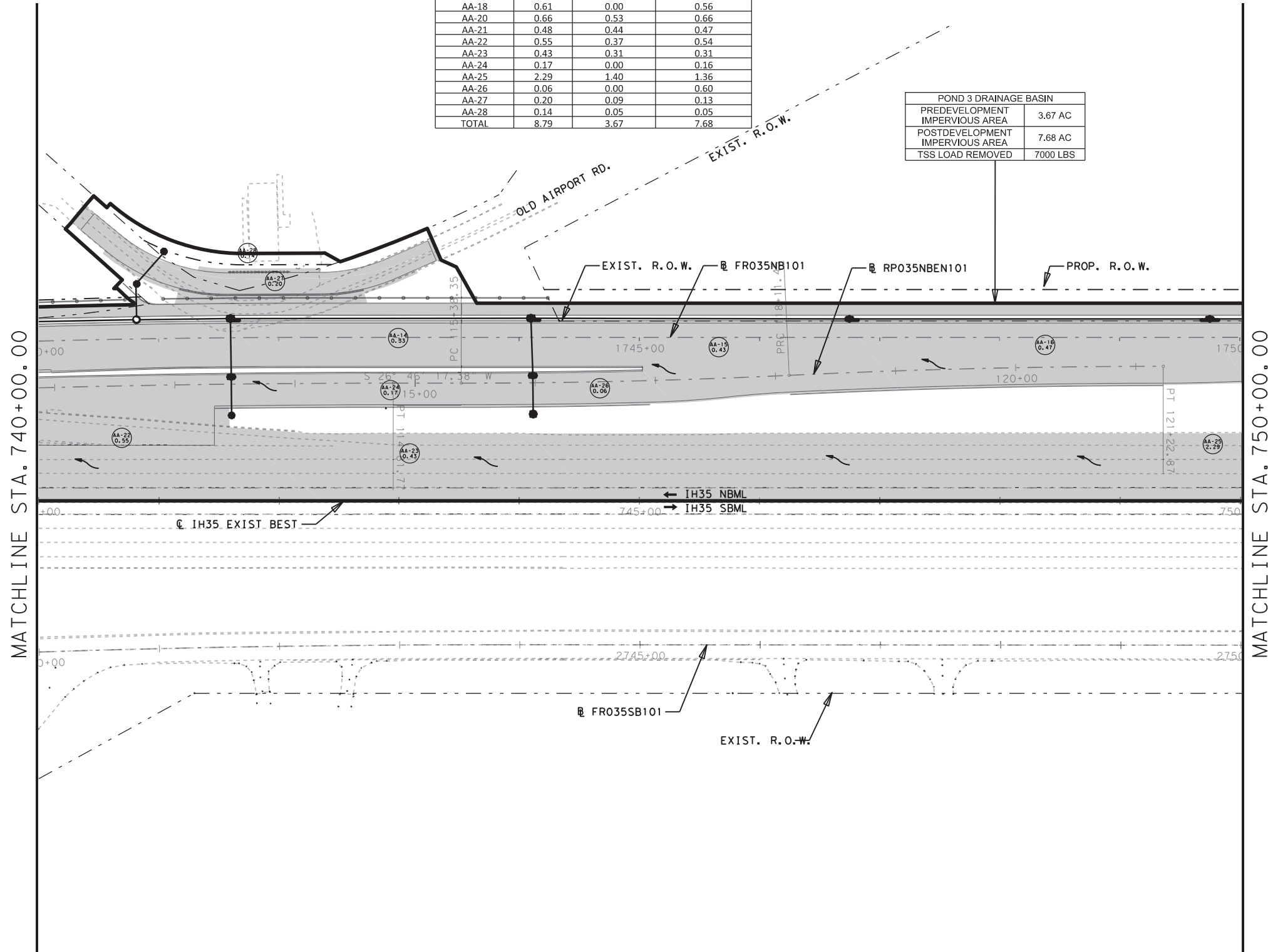
POND 3 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	3.67 AC
POSTDEVELOPMENT IMPERVIOUS AREA	7.68 AC
TSS LOAD REMOVED	7000 LBS

0' 20' 50' 100'  
SCALE: 1"=100'



LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



*Mark W. Litzmann, P.E.*

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**I-35 @ WILLIAMS DR.  
WATER POLLUTION  
ABATEMENT PLAN**

SHEET 3 OF 12

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1134

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

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DATE: 2/5/2020 4:01:49 PM  
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Pond 3			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
AA-11	0.45	0.27	0.41
AA-12	0.48	0.14	0.41
AA-13	0.59	0.04	0.50
AA-14	0.33	0.03	0.27
AA-15	0.43	0.00	0.40
AA-16	0.47	0.00	0.44
AA-17	0.45	0.00	0.42
AA-18	0.61	0.00	0.56
AA-20	0.66	0.53	0.66
AA-21	0.48	0.44	0.47
AA-22	0.55	0.37	0.54
AA-23	0.43	0.31	0.31
AA-24	0.17	0.00	0.16
AA-25	2.29	1.40	1.36
AA-26	0.06	0.00	0.60
AA-27	0.20	0.09	0.13
AA-28	0.14	0.05	0.05
TOTAL	8.79	3.67	7.68

Pond 6			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
A-12	0.81	0.00	0.75
A-11	0.48	0.00	0.45
A-14	0.14	0.00	0.14
A-10	0.34	0.11	0.32
A-15	2.57	1.62	1.62
A-13	0.1	0.00	0.10
A-21	1.09	0.63	1.09
A-20	0.65	0.00	0.61
TOTAL	6.18	2.37	5.08

POND 3 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	3.67 AC
POSTDEVELOPMENT IMPERVIOUS AREA	7.68 AC
TSS LOAD REMOVED	7000 LBS

POND 6 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	2.37 AC
POSTDEVELOPMENT IMPERVIOUS AREA	5.08 AC
TSS LOAD REMOVED	4999 LBS

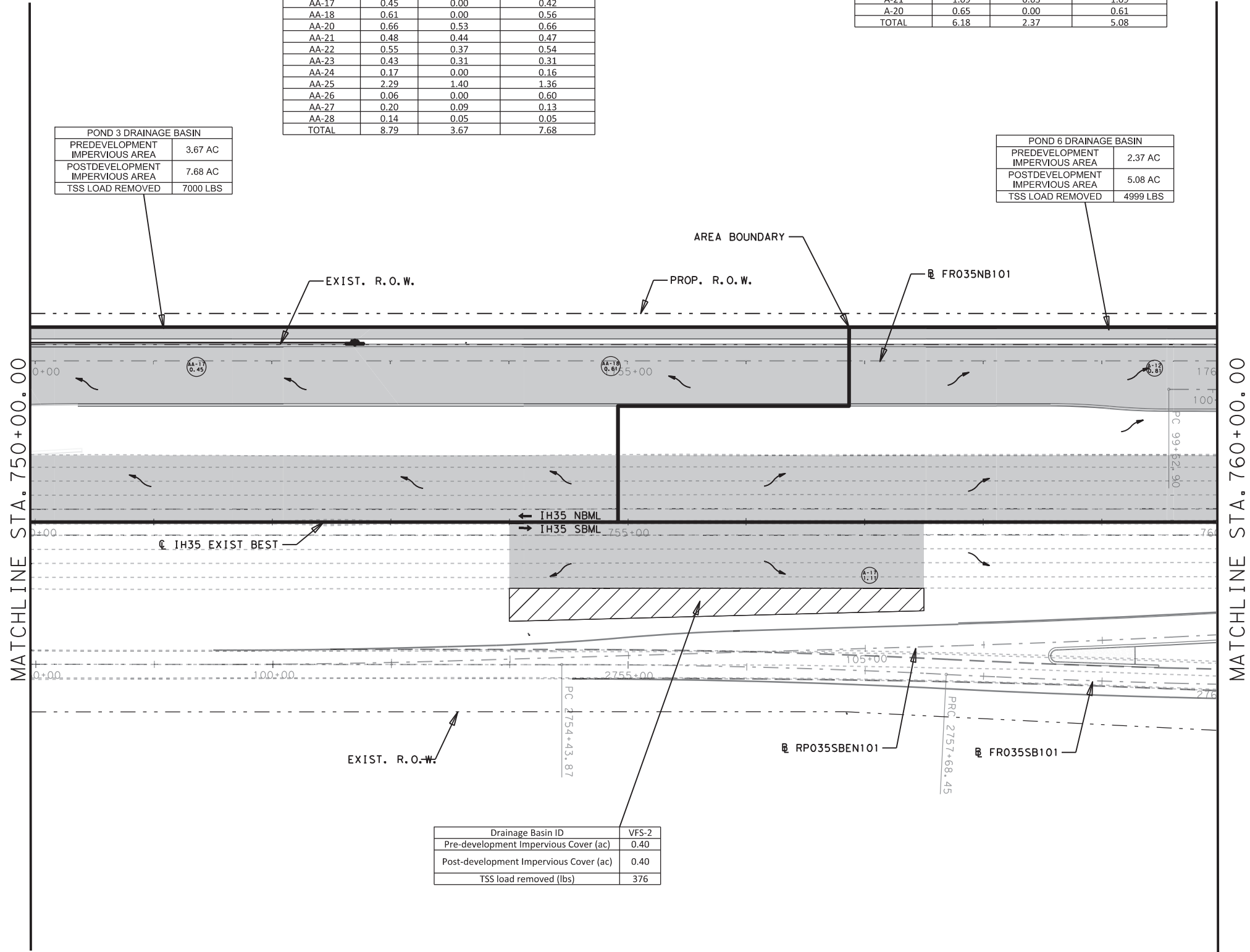
Drainage Basin ID	VFS-2
Pre-development Impervious Cover (ac)	0.40
Post-development Impervious Cover (ac)	0.40
TSS load removed (lbs)	376

0' 20' 50' 100'  
 SCALE: 1"=100'



LEGEND

- WATER QUALITY DRAINAGE AREA
- AREA BOUNDARY
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



*Mark W. Litzmann, P.E.*  
 02.05.2020

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**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

**I-35 @ WILLIAMS DR.  
 WATER POLLUTION  
 ABATEMENT PLAN**

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NOTE: REFER TO IH 35 DRAINAGE P&Ps FOR PIPE SLOPES AND ADDITIONAL INFORMATION.

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SHEET 4 OF 12

DATE	CONT	SECT	JOB	HIGHWAY
© 2019	0015	08	147, ETC	IH 35
DIST	COUNTY		SHEET NO.	
AUS	WILLIAMSON		1135	

0' 20' 50' 100'  
SCALE: 1"=100'



Pond 6		
Drainage Area ID	Pre-development Impervious Cover	Post-development Impervious Cover
A-12	0.00	0.75
A-11	0.00	0.45
A-14	0.00	0.14
A-10	0.11	0.32
A-15	1.62	1.62
A-13	0.00	0.10
A-21	0.63	1.09
A-20	0.00	0.61
TOTAL	2.37	5.08

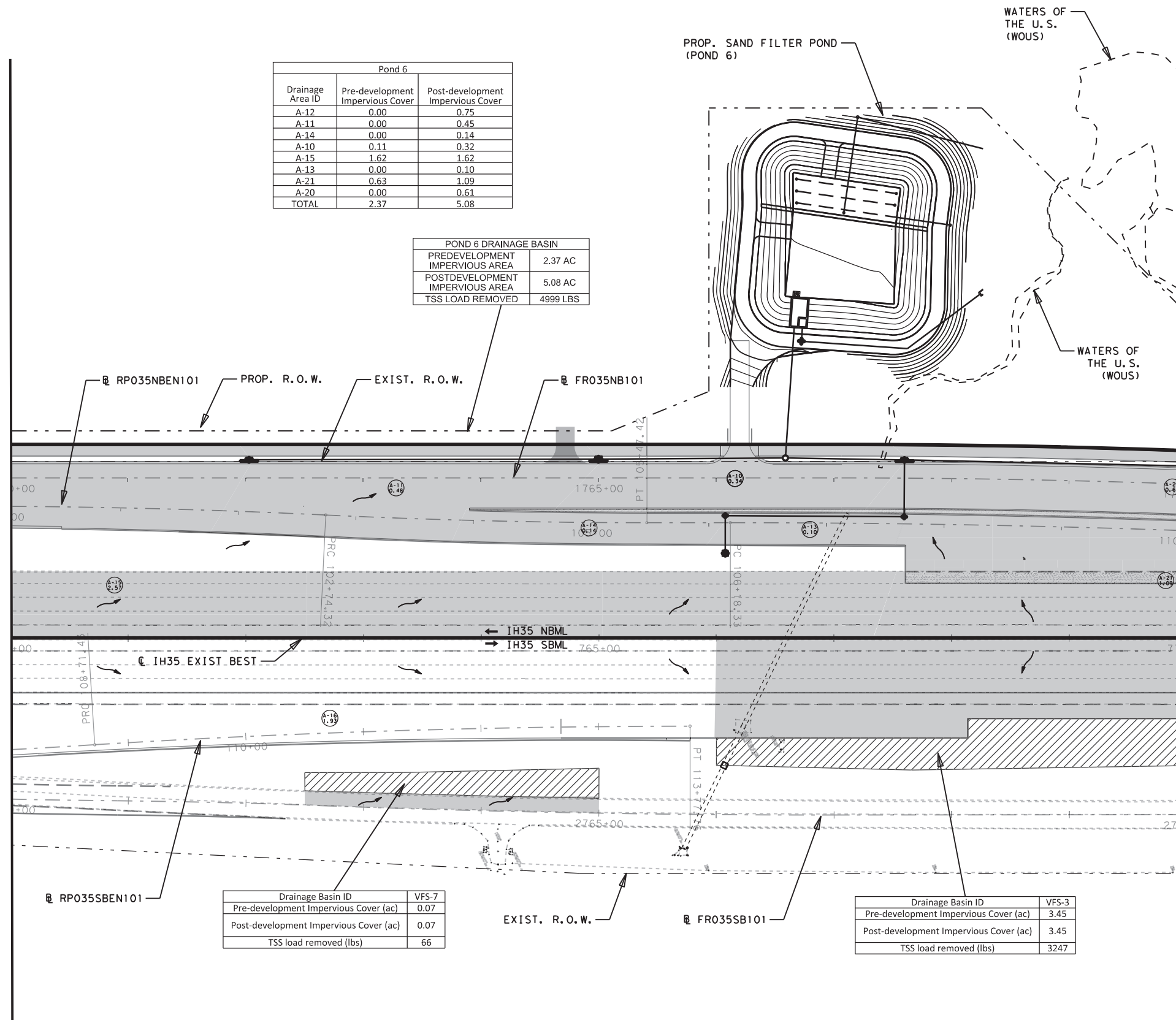
POND 6 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	2.37 AC
POSTDEVELOPMENT IMPERVIOUS AREA	5.08 AC
TSS LOAD REMOVED	4999 LBS

LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP

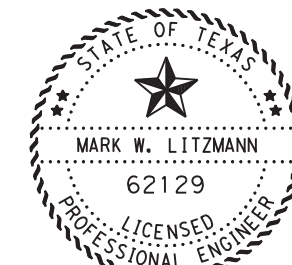
MATCHLINE STA. 760+00.00

MATCHLINE STA. 770+00.00



Drainage Basin ID	VFS-7
Pre-development Impervious Cover (ac)	0.07
Post-development Impervious Cover (ac)	0.07
TSS load removed (lbs)	66

Drainage Basin ID	VFS-3
Pre-development Impervious Cover (ac)	3.45
Post-development Impervious Cover (ac)	3.45
TSS load removed (lbs)	3247



*Mark W. Litzmann P.E.*

02.05.2020

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**I-35 @ WILLIAMS DR.  
WATER POLLUTION  
ABATEMENT PLAN**

SHEET 5 OF 12

DS:	CK:	CONT:	SECT:	JOB:	HIGHWAY:
		0015	08	147, ETC	IH 35
DW:	CK:	DIST:	COUNTY:	SHEET NO.	
		AUS	WILLIAMSON	1136	

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0' 20' 50' 100'  
SCALE: 1"=100'



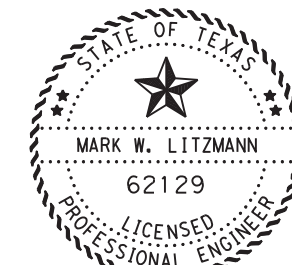
Pond 6		
Drainage Area ID	Pre-development Impervious Cover	Post-development Impervious Cover
A-12	0.00	0.75
A-11	0.00	0.45
A-14	0.00	0.14
A-10	0.11	0.32
A-15	1.62	1.62
A-13	0.00	0.10
A-21	0.63	1.09
A-20	0.00	0.61
TOTAL	2.37	5.08

POND 6 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	2.37 AC
POSTDEVELOPMENT IMPERVIOUS AREA	5.08 AC
TSS LOAD REMOVED	4999 LBS

Drainage Basin ID	VFS-3
Pre-development Impervious Cover (ac)	3.45
Post-development Impervious Cover (ac)	3.45
TSS load removed (lbs)	3247

LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



*Mark W. Litzmann P.E.*  
02.05.2020

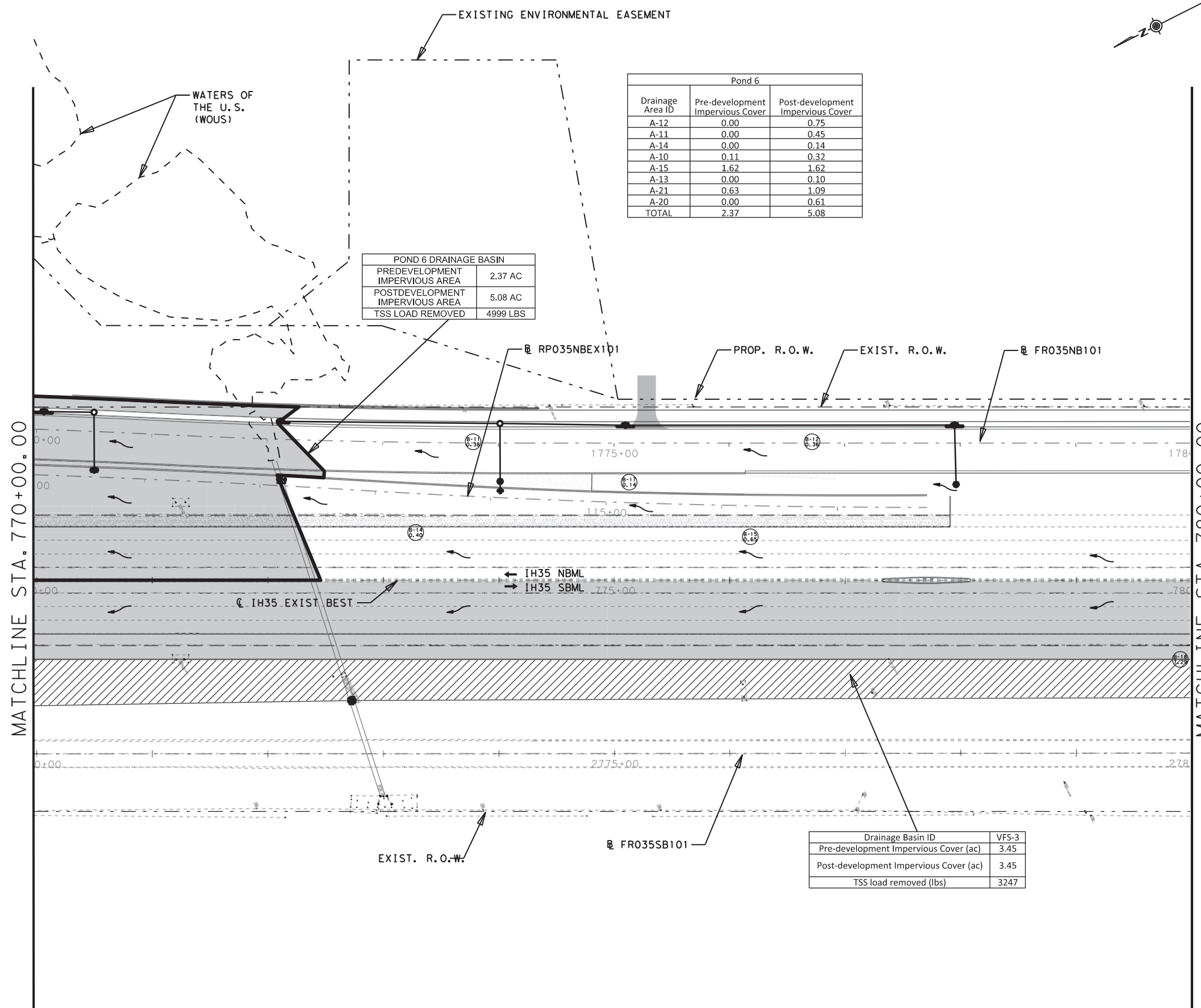
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**I-35 @ WILLIAMS DR.  
WATER POLLUTION  
ABATEMENT PLAN**

SHEET 6 OF 12

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1137



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0' 20' 50' 100'  
SCALE: 1"=100'



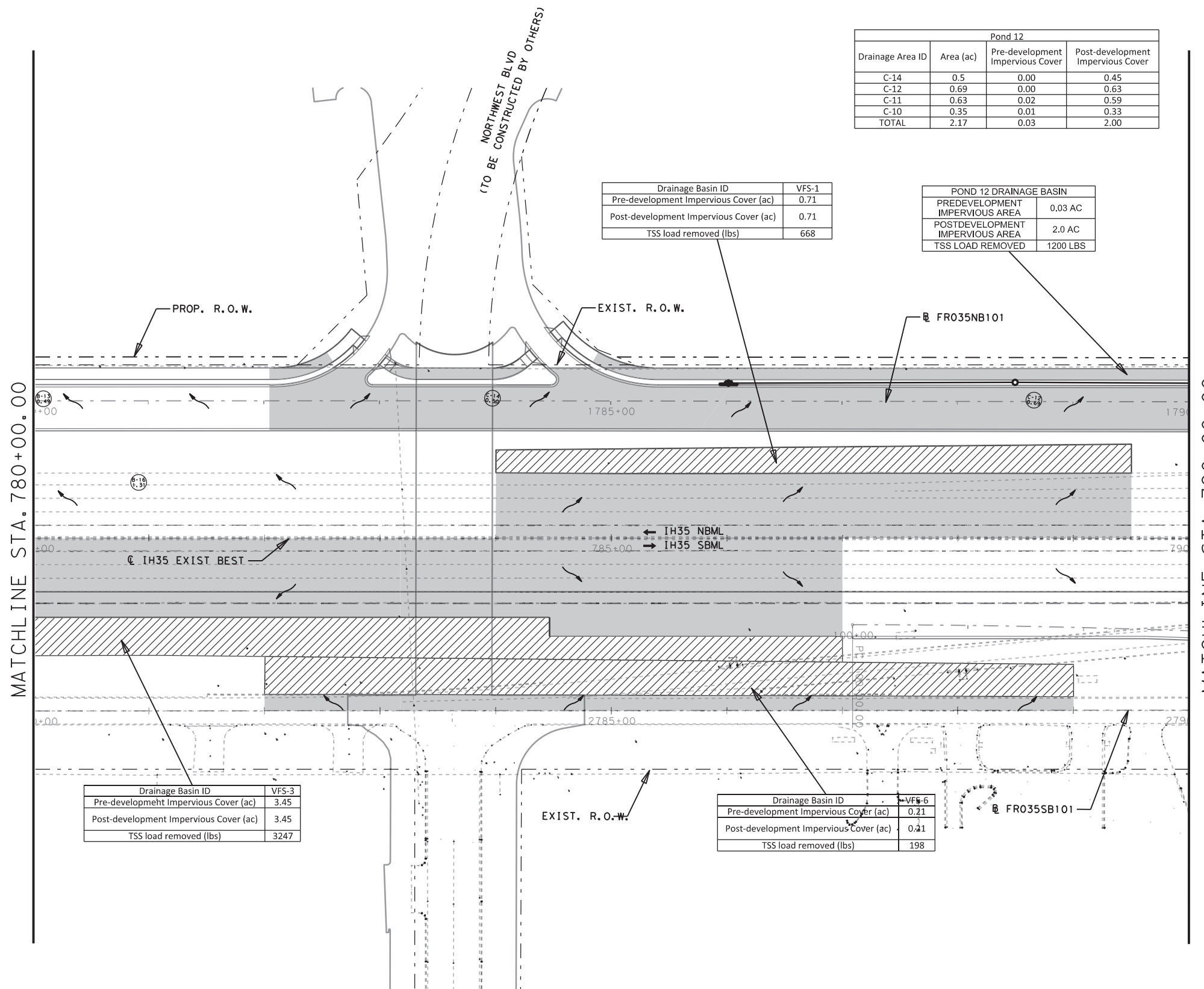
Pond 12			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
C-14	0.5	0.00	0.45
C-12	0.69	0.00	0.63
C-11	0.63	0.02	0.59
C-10	0.35	0.01	0.33
TOTAL	2.17	0.03	2.00

Drainage Basin ID	VFS-1
Pre-development Impervious Cover (ac)	0.71
Post-development Impervious Cover (ac)	0.71
TSS load removed (lbs)	668

POND 12 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	0.03 AC
POSTDEVELOPMENT IMPERVIOUS AREA	2.0 AC
TSS LOAD REMOVED	1200 LBS

LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



Drainage Basin ID	VFS-3
Pre-development Impervious Cover (ac)	3.45
Post-development Impervious Cover (ac)	3.45
TSS load removed (lbs)	3247

Drainage Basin ID	VFS-6
Pre-development Impervious Cover (ac)	0.21
Post-development Impervious Cover (ac)	0.21
TSS load removed (lbs)	198



*Mark W. Litzmann, P.E.*

02.05.2020

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**I-35 @ WILLIAMS DR.  
WATER POLLUTION  
ABATEMENT PLAN**

SHEET 7 OF 12

DATE	CONT	SECT	JOB	HIGHWAY
© 2019	0015	08	147, ETC	IH 35
DIST	COUNTY	SHEET NO.		
AUS	WILLIAMSON	1138		

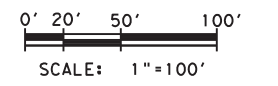
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NOTE: REFER TO IH 35 DRAINAGE P&Ps FOR PIPE SLOPES AND ADDITIONAL INFORMATION.

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\* NOTE:  
 ALL DRAINAGE SHALL BE DIRECTED AWAY FROM THE ENTRANCE TO MEL'S LONE STAR CAVE DURING CONSTRUCTION AND DRAINAGE WILL CONTINUE TO BE DIRECTED AWAY FROM THE ENTRANCE AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE. SEE EPIC SHEET FOR ADDITIONAL INFORMATION.



NOTE:  
 ALL DRAINAGE SHALL BE DIRECTED AWAY FROM EXISTING ENVIRONMENTAL EASEMENT AT MEL'S LONE STAR CAVE

Pond 12			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
C-14	0.5	0.00	0.45
C-12	0.69	0.00	0.63
C-11	0.63	0.02	0.59
C-10	0.35	0.01	0.33
TOTAL	2.17	0.03	2.00

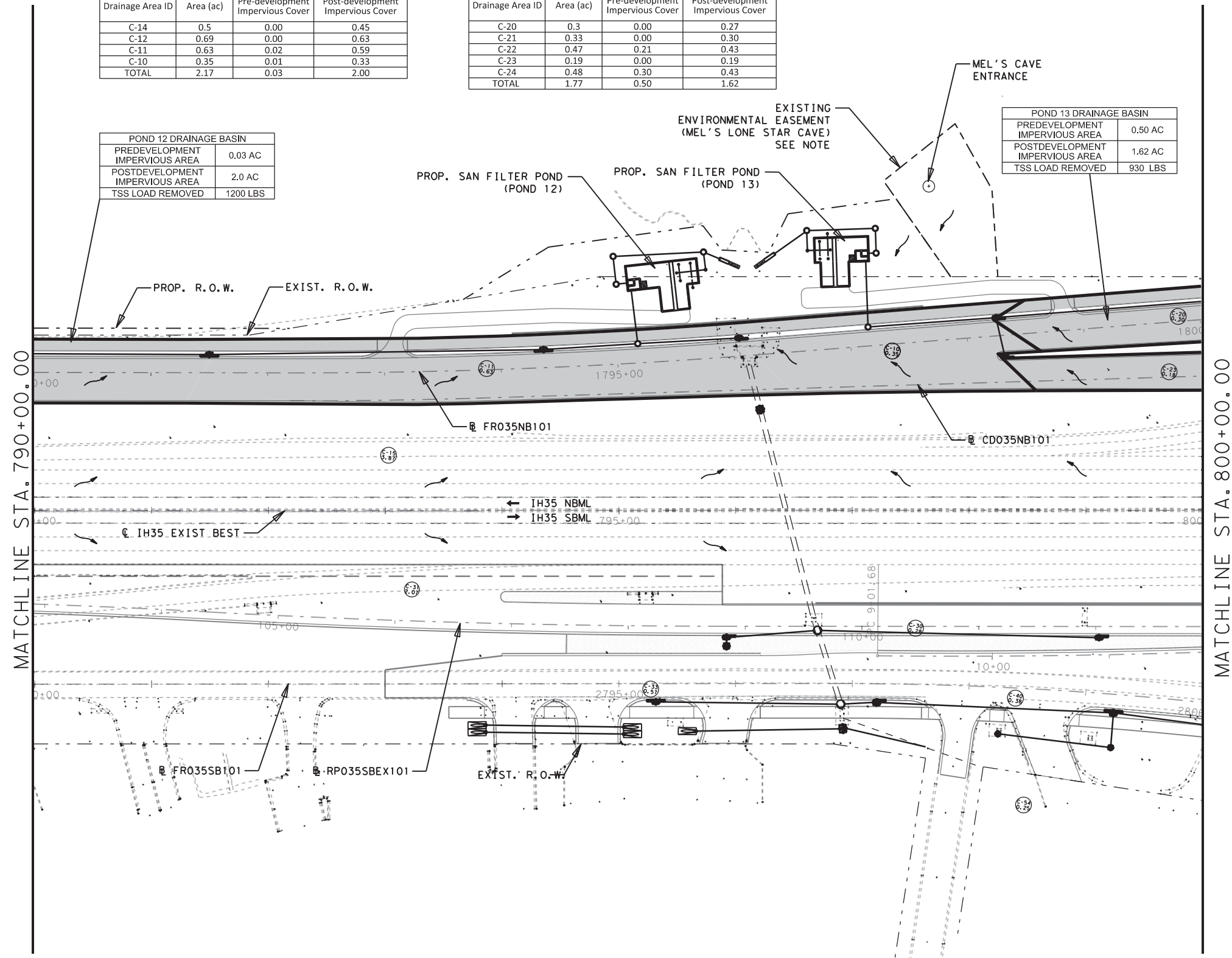
Pond 13			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
C-20	0.3	0.00	0.27
C-21	0.33	0.00	0.30
C-22	0.47	0.21	0.43
C-23	0.19	0.00	0.19
C-24	0.48	0.30	0.43
TOTAL	1.77	0.50	1.62

POND 12 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	0.03 AC
POSTDEVELOPMENT IMPERVIOUS AREA	2.0 AC
TSS LOAD REMOVED	1200 LBS

POND 13 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	0.50 AC
POSTDEVELOPMENT IMPERVIOUS AREA	1.62 AC
TSS LOAD REMOVED	930 LBS

**LEGEND**

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



*Mark W. Litzmann P.E.*

02.05.2020

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**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**I-35 @ WILLIAMS DR.  
 WATER POLLUTION  
 ABATEMENT PLAN**

SHEET 8 OF 12

DS:	CK:	CONT:	SECT:	JOB:	HIGHWAY:
		0015	08	147, ETC	IH 35
DW:	CK:	DIST:	COUNTY:	SHEET NO.	
		AUS	WILLIAMSON	1139	

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NOTE: REFER TO IH 35 DRAINAGE P&Ps FOR PIPE SLOPES AND ADDITIONAL INFORMATION.

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POND 13 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	0.50 AC
POSTDEVELOPMENT IMPERVIOUS AREA	1.62 AC
TSS LOAD REMOVED	930 LBS

POND 16		
Drainage Area ID	Pre-development Impervious Cover	Post-development Impervious Cover
D-10	0.72	0.74
D-11	0.62	0.62
D-12	0.58	0.76
D-13	0.20	0.32
D-14	0.40	0.51
D-16	0.29	0.42
D-17	0.00	0.20
D-18	0.02	0.37
D-19	0.13	0.35
D-20	0.01	0.43
D-21	0.05	0.18
D-22	0.07	0.08
D-23	0.05	0.15
D-24	0.53	0.01
TOTAL	3.69	5.13

POND 16 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	3.69 AC
POSTDEVELOPMENT IMPERVIOUS AREA	5.13 AC
TSS LOAD REMOVED	4350 LBS

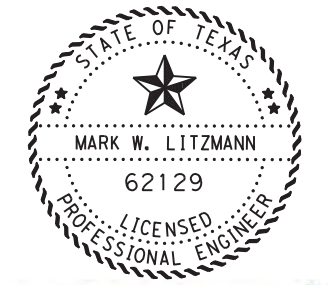
Pond 13			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
C-20	0.3	0.00	0.27
C-21	0.33	0.00	0.30
C-22	0.47	0.21	0.43
C-23	0.19	0.00	0.19
C-24	0.48	0.30	0.43
TOTAL	1.77	0.50	1.62

Drainage Basin ID	
Pre-development Impervious Cover (ac)	0.38
Post-development Impervious Cover (ac)	0.38
TSS load removed (lbs)	358

0' 20' 50' 100'  
 SCALE: 1"=100'

LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



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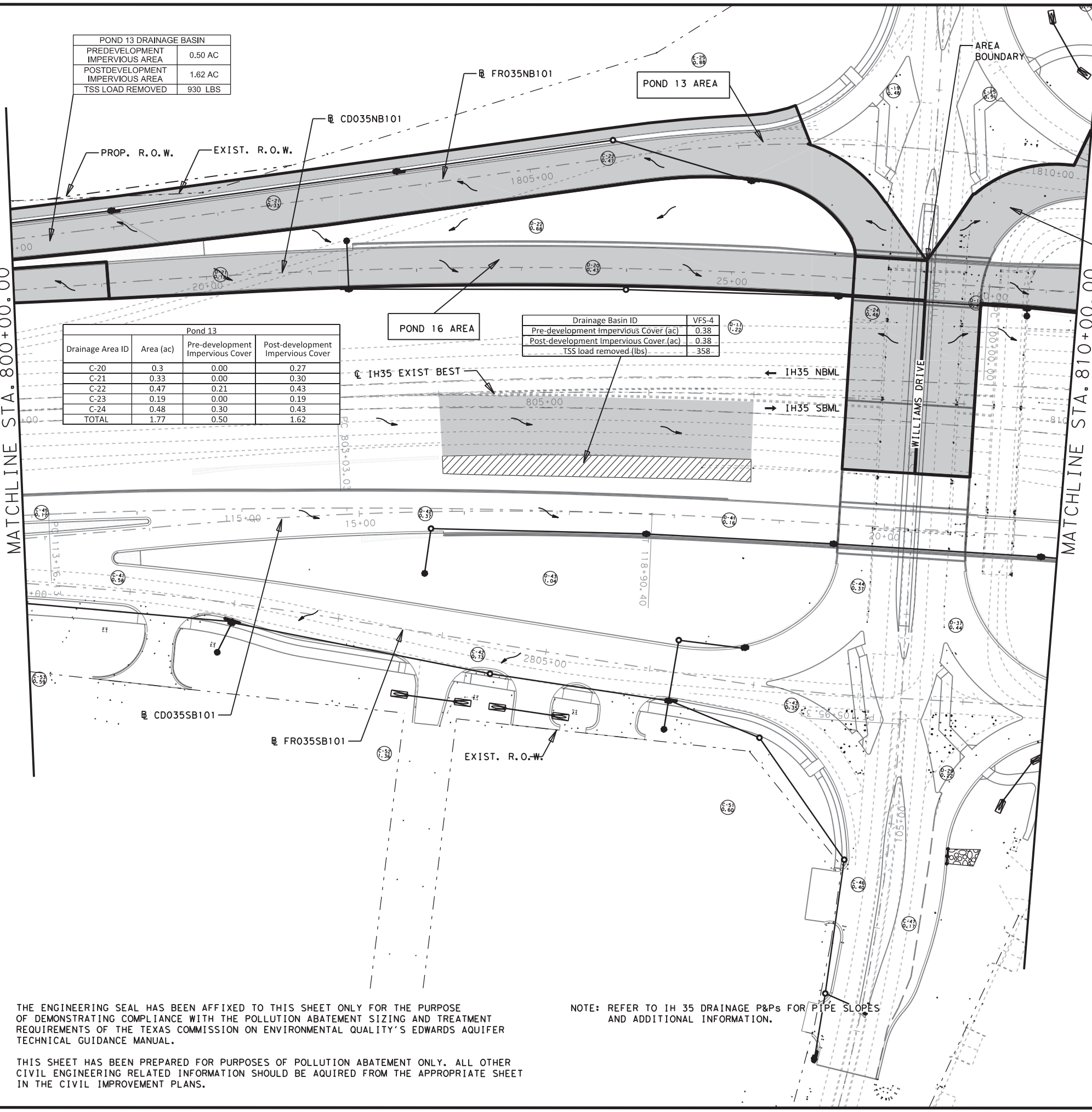
**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**I-35 @ WILLIAMS DR.  
 WATER POLLUTION  
 ABATEMENT PLAN**

SHEET 9 OF 12

DATE	BY	CHK	CONT	SECT	JOB	HIGHWAY
2019			0015	08	147, ETC	IH 35
					DIST	COUNTY
			AUS		WILLIAMSON	1140

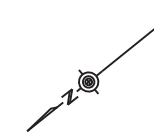


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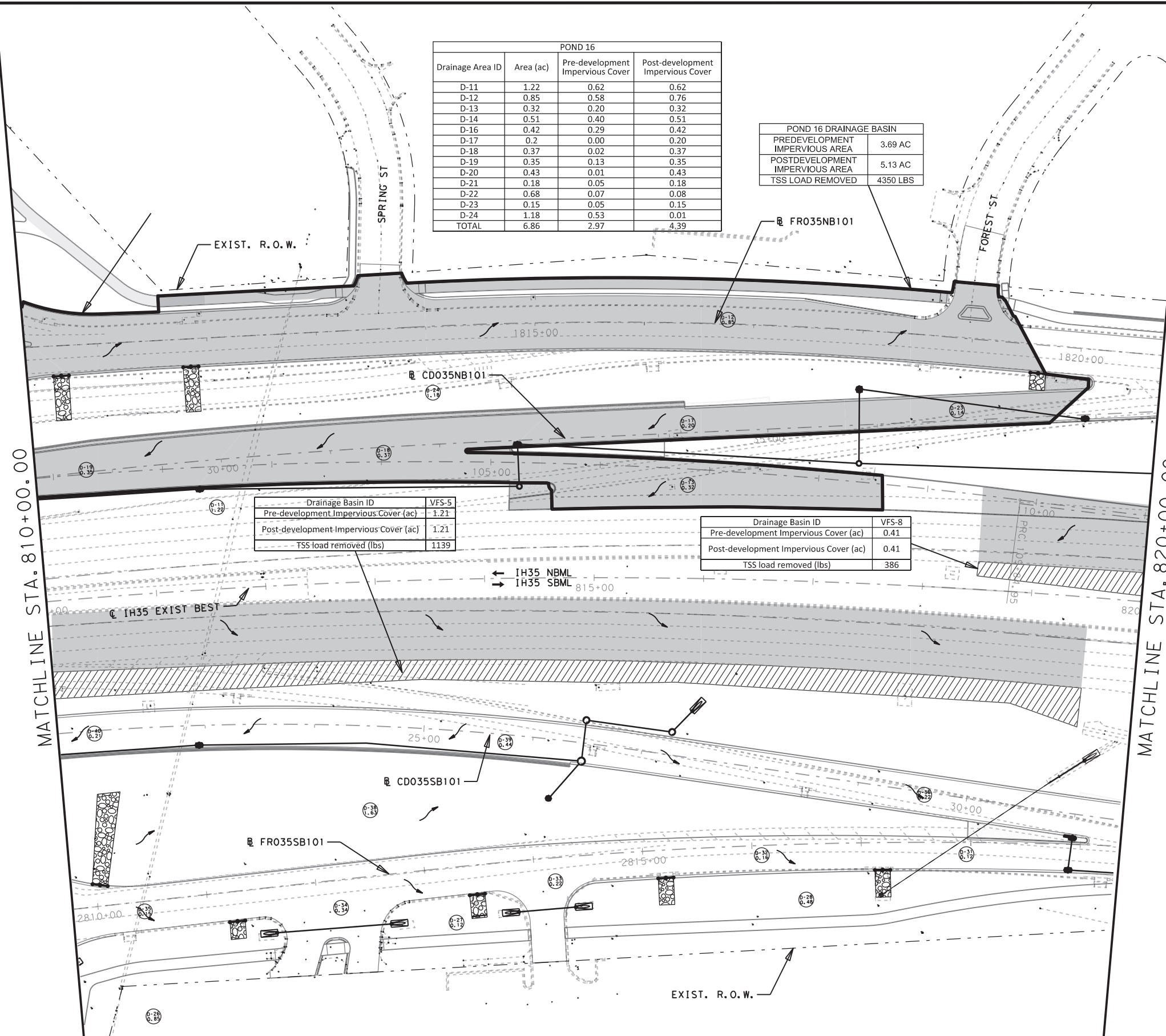


POND 16			
Drainage Area ID	Area (ac)	Pre-development Impervious Cover	Post-development Impervious Cover
D-11	1.22	0.62	0.62
D-12	0.85	0.58	0.76
D-13	0.32	0.20	0.32
D-14	0.51	0.40	0.51
D-16	0.42	0.29	0.42
D-17	0.2	0.00	0.20
D-18	0.37	0.02	0.37
D-19	0.35	0.13	0.35
D-20	0.43	0.01	0.43
D-21	0.18	0.05	0.18
D-22	0.68	0.07	0.08
D-23	0.15	0.05	0.15
D-24	1.18	0.53	0.01
TOTAL	6.86	2.97	4.39

POND 16 DRAINAGE BASIN	
PREDEVELOPMENT IMPERVIOUS AREA	3.69 AC
POSTDEVELOPMENT IMPERVIOUS AREA	5.13 AC
TSS LOAD REMOVED	4350 LBS

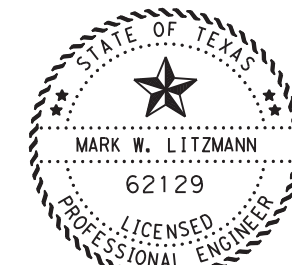
LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP



Drainage Basin ID	VFS-5
Pre-development Impervious Cover (ac)	1.21
Post-development Impervious Cover (ac)	1.21
TSS load removed (lbs)	1139

Drainage Basin ID	VFS-8
Pre-development Impervious Cover (ac)	0.41
Post-development Impervious Cover (ac)	0.41
TSS load removed (lbs)	386



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SHEET 10 OF 12

DATE	CONT	SECT	JOB	HIGHWAY
© 2019	0015	08	147, ETC	IH 35
DIST	COUNTY		SHEET NO.	
AUS	WILLIAMSON		1141	

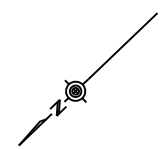
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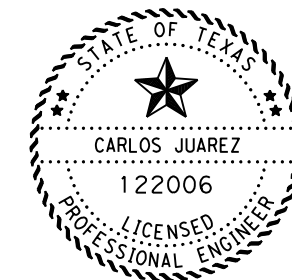
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SCALE: 1"=100'



LEGEND

- WATER QUALITY DRAINAGE AREA
- FLOW DIRECTION
- DIRECTION OF TRAFFIC
- IMPERVIOUS AREA TREATED BY BMP
- STORM SEWER LINE
- STORM SEWER GRATE INLET
- STORM SEWER CURB INLET
- DRAINAGE AREA ID
- VEGETATED FILTER STRIP
- SALAMANDER HABITAT



*Carlos Juarez*  
REVISED 08-07-2023

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CONSTRUCTION MANAGERS

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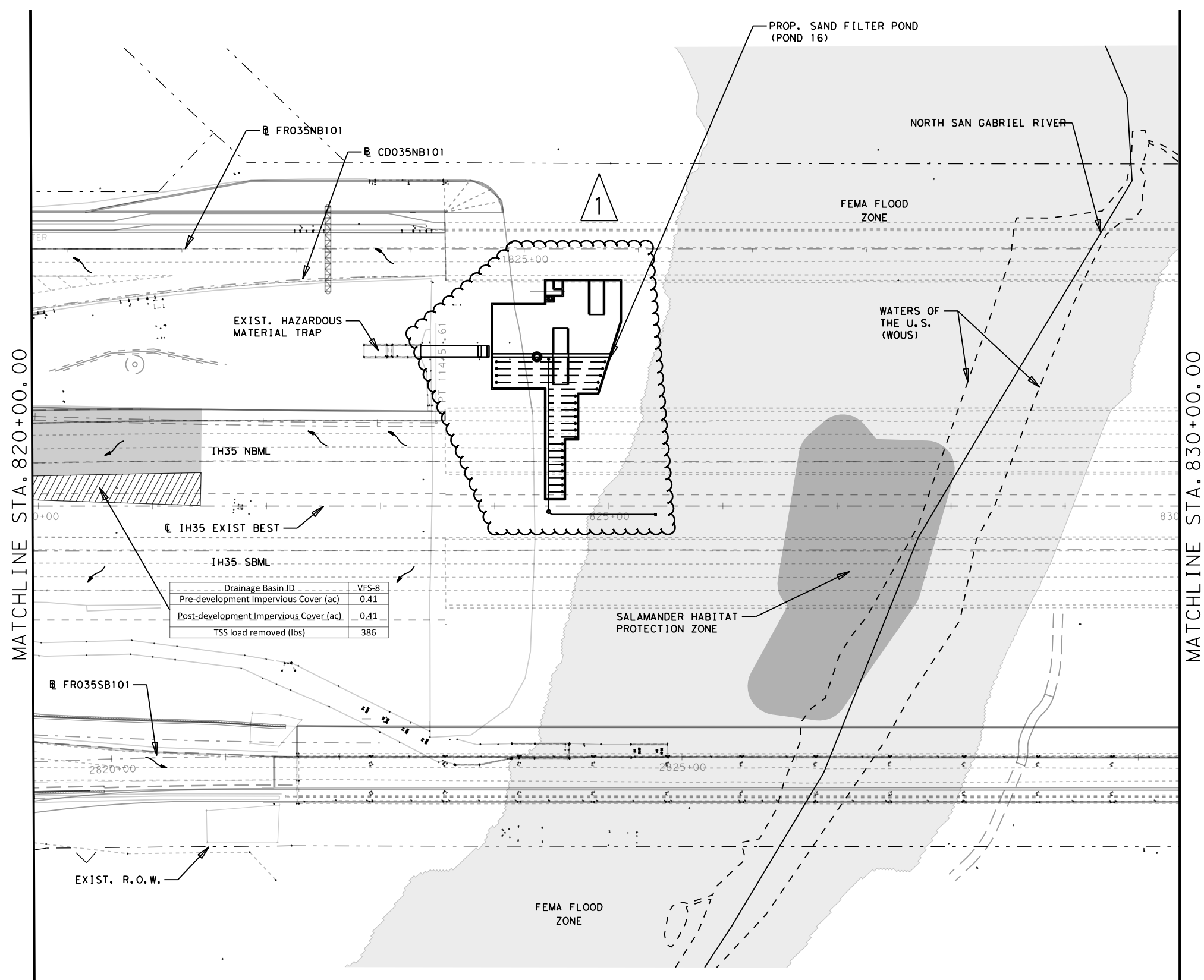
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SHEET 11 OF 12

© 2020	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1142



Drainage Basin ID	VFS-8
Pre-development Impervious Cover (ac)	0.41
Post-development Impervious Cover (ac)	0.41
TSS load removed (lbs)	386

NOTE: REFER TO IH 35 DRAINAGE P&Ps FOR PIPE SLOPES AND ADDITIONAL INFORMATION.

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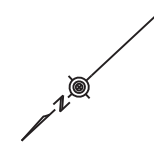


REVISED 08-07-2023 (RFI 186 Pond 16 Updates)









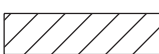
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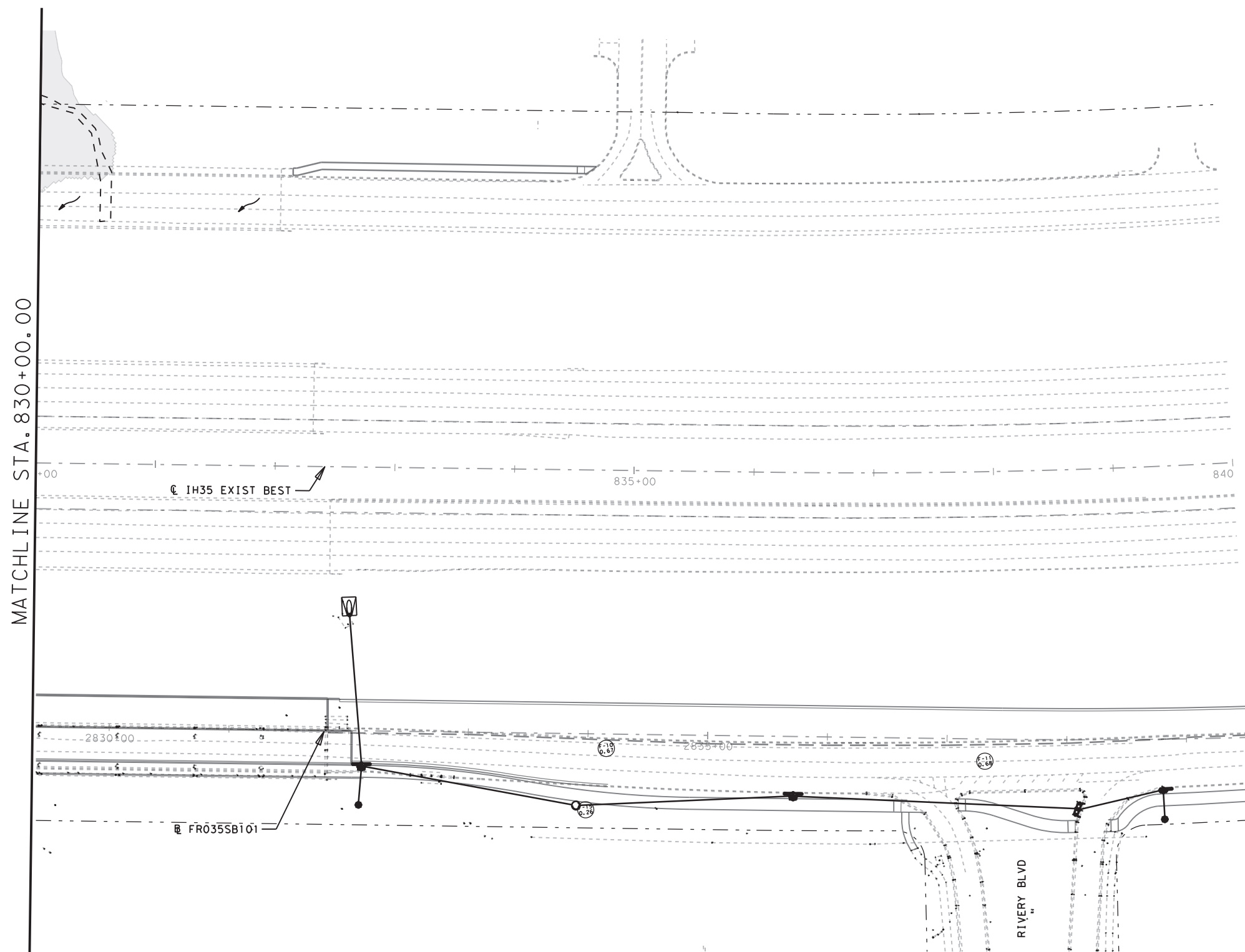


0' 20' 50' 100'  
SCALE: 1"=100'



LEGEND

-  WATER QUALITY DRAINAGE AREA
-  FLOW DIRECTION
-  DIRECTION OF TRAFFIC
-  IMPERVIOUS AREA TREATED BY BMP
-  STORM SEWER LINE
-  STORM SEWER GRATE INLET
-  STORM SEWER CURB INLET
-  DRAINAGE AREA ID
-  VEGETATED FILTER STRIP



*Mark W. Litzmann P.E.*

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DW: CK:	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	1143	

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## Section VI

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### Temporary Stormwater Section

# Temporary Stormwater Section

## Texas Commission on Environmental Quality

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

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

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

## Signature

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

Print Name of Customer/Agent: Carlos Juarez, P.E.

Date: 07-26-2023

Signature of Customer/Agent:



**Regulated Entity Name:** IH 35 Reconstruction of interchange from South of Williams Drive to Lakeway Drive.

## 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: asphaltic products, concrete, and vehicle tracking.

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: Pecan Branch Tributary/ North and South Fork of San Gabriel River

### ***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 PLAN**

No spills of hydrocarbons or hazardous substances are expected. However, in the event such as incidence does occur, the contractor will follow the following TCEQ guidelines:

### **Clean up:**

1. Clean up leaks and spills immediately
2. Use a rag for small spills on paved surfaces, a damp mop for general clean up, and absorbent material for larger spills. If the spilled material is hazardous, then the used clean up materials are also hazardous and must be disposed of as hazardous waste.
3. Never hose down or bury dry material spills. Clean up as much material as possible and dispose of properly.

### **Minor Spills:**

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

### **Semi-Significant**

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

Spills should be cleaned up immediately.

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

## **Significant/Hazardous Spills**

From any event, the Reportable quantity (RQ) = for highly toxic materials the RQ>25 gals. For petroleum/hydrocarbon liquids, spills the RQ>250 gallons (on land) or that which creates "a sheen" on water. TxDOT may provide assistance in traffic control, containment and later repairs, but only certified Hazmat teams will be responsible for handling the material at the site.

For significant or hazardous spills that are in reportable quantities:

1. Notify the TCEQ by telephone as soon as possible and within 24 hours at 512- 339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site. Additionally in the event of a hazardous material spill, local Williamson county and/or city of round rock police, fire and potentially EMS should be contacted in order to initiate the hazardous material response team.
2. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
3. Notification should first be made by telephone and followed up with a written report.
4. The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
5. Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at:

<http://www.tceq.state.tx.us/response/spills.html>



## **ATTACHMENT B – POTENTIAL SOURCES OF CONTAMINATION**

### **Potential Sources of Sediment to Stormwater Runoff:**

- Clearing and grubbing
- Grading and Excavation
- Vehicle Tracking
- Topsoil Stripping and Stockpiling
- Landscaping

### **Potential Pollutants and Sources other than sediment to stormwater runoff:**

- Combined Staging Area – small fueling, minor equipment maintenance, sanitary facility.
- Materials Storage Area – solvents, adhesives, paving materials, aggregates, trash, etc.
- Construction Activities – paving, concrete pouring

### **Potential Onsite Pollutants:**

- Fertilizer
- Concrete
- Asphalt

### **ATTACHMENT C – Sequence of Major Activities**

See attached sheet for the roadway construction sequence of the IH 35 reconstruction of interchange from South of Williams Drive to South of Lakeway Drive.

The receiving water for this project includes Pecan Branch, North and South Fork of San Gabriel River which flows into the Brazos River Basin.

The construction sequencing is an approximation. The contractor has the ability to change the sequence of construction. If this occurs, then the responsible party will update and receive approval from the TCEQ according to procedure before any construction activity begins.

The general sequence of construction for the water quality ponds shall be as follows:

- 1) Install temporary erosion controls and tree protection fencing prior to clearing and preparing R.O.W. for construction activities.
- 2) Rough grade pond site area
- 3) Rough cut water quality pond to serve as temporary sediment basins during construction
  - a. Each water quality pond must be rough cut prior to any construction activities in areas that would contribute storm water runoff to the pond
- 4) Install storm sewer lines / construct NBFR / roadway construction activities
- 5) Complete final grading at ponds
- 6) Install permanent erosion control and restoration of area vegetation around ponds
- 7) Completion of water quality ponds and connections
- 8) Plant any other required ground vegetation
- 9) Remove temporary erosion controls after any adjacent roadway construction is complete

Any changes or modifications to the sequence of construction in regards to the water quality ponds shall be approved by the Engineer.

THE FOLLOWING IS THE RECOMMENDED SEQUENCE OF CONSTRUCTION AND MAINTENANCE OF TRAFFIC FOR THE COMPLETION OF THE WORK DEPICTED IN THE TRAFFIC CONTROL PLAN.

PHASE I - STEP 1

THE INTENT OF PHASE I - STEP 1 IS TO PERFORM CONSTRUCTION OPERATIONS RELATED TO THE PROPOSED WIDENING & OVERLAY ALONG THE SOUTHBOUND LANES OF N. AUSTIN AVE.

- INSTALL ALL TEMPORARY SIGNING, PAVEMENT MARKINGS, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS. TWO LANES OF TRAFFIC SHALL BE MAINTAINED ON BOTH NORTHBOUND AND SOUTHBOUND TRAVEL LANES DURING PEAK HOURS.
- INSTALL TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE EROSION CONTROL LAYOUTS FOR PHASE I CONSTRUCTION.
- MILL 2.5" OF EXISTING ACP ON N. AUSTIN AVE. AS SHOWN ON THE TCP LAYOUTS.
- OVERLAY MILLING LIMITS WITH 1.5" D-GR HMA TY D (64-22).
- INSTALL CHANNELIZING DEVICES AS SHOWN ON THE TCP LAYOUTS.
- WIDEN THE SOUTHBOUND SIDE OF N. AUSTIN AVE. AS SHOWN IN THE TCP LAYOUTS AND PROPOSED TYPICAL SECTIONS, INCLUDING WIDENED PAVEMENT, CURB & GUTTER, STORM DRAINAGE FACILITIES, DRIVEWAYS, ETC.
- CONSTRUCTION OF SUBSTRUCTURE FOR SOUTHBOUND FRONTAGE RD. BRIDGE WIDENING AT STA. 2821+62.51 TO STA. 2831+82.51 MAY BEGIN, WHICH MAY INCLUDE INSTALLATION OF DRILL SHAFTS/COLUMNS, TIE BEAMS, AND BRIDGE GIRDERS. WHEN WORKING ON THE SOUTH BOUND FRONTAGE RD. SUBSTRUCTURE AT THE SAN GABRIEL BRIDGE, PROVIDE A SAFE AND COMFORTABLE PASSAGE AT ALL TIMES FOR ALL PUBLIC/PEDESTRIANS USING PUBLIC SIDEWALK.

PHASE I - STEP 1 UTILITY CONSTRUCTION OPERATIONS

- CONSTRUCT WATERLINE UTILITY ALONG AUSTIN AVE. STA. 213+75
- CONSTRUCT TELECOM FIBER JOINT TRENCH ALONG NB FRONTAGE RD STA. 1725+00 TO STA. 1808+00
- LOWER EXISTING TELECOM FIBER AT WILLIAMS DR. STA 113+82
- CONSTRUCT TELECOM FIBER ALONG WILLIAMS DR. STA 102+60 TO STA. 105+00

PHASE I - STEP 2

THE INTENT OF PHASE I - STEP 2 IS TO PERFORM CONSTRUCTION OPERATIONS RELATED TO THE WIDENING & OVERLAY ALONG THE NORTHBOUND LANES OF N. AUSTIN AVE, RECONSTRUCTION OF EXISTING CROSS-STREETS, WIDENING ALONG WILLIAMS DRIVE, AND I-35 NORTHBOUND FRONTAGE ROAD.

- RELOCATE JOINT BID UTILITIES.
- INSTALL LPCB AS SHOWN ON THE TCP LAYOUTS.
- CONSTRUCT NORTHBOUND SIDE OF N. AUSTIN AVE. WITH MEDIAN AS SHOWN IN THE TCP LAYOUTS INCLUDING SIDEWALKS, WIDENED PAVEMENT, CURB & GUTTER, STORM DRAINAGE FACILITIES, DRIVEWAYS, ETC.
- DEMOLISH AND RECONSTRUCT MYRTLE ST., CHURCH ST, AND SPRING ST. INTERSECTIONS AS SHOWN IN THE TCP AND ASSOCIATED P&P SHEETS. FOR MYRTLE AND CHURCH ST CONSTRUCTION CONSTRUCT ONE STREET TO COMPLETION BEFORE STARTING ON ADJACENT STREET. SEE NOTE 15 OF THE GENERAL NOTES.
- CONSTRUCT NORTHBOUND FRONTAGE ROAD WIDENING FROM STA. 1810+69 TO STA. 1818+44.21 AS SHOWN IN THE TCP LAYOUTS.
- CONTINUE CONSTRUCTION OF SUBSTRUCTURE FOR SOUTHBOUND FRONTAGE RD. BRIDGE WIDENING AT STA. 2821+62.51 TO STA. 2831+82.51 MAY BEGIN, WHICH MAY INCLUDE INSTALLATION OF DRILL SHAFTS/COLUMNS, TIE BEAMS, AND BRIDGE GIRDERS.

PHASE I - STEP 2 UTILITY CONSTRUCTION OPERATIONS

- LOWER EXISTING TELECOM FIBER AT AUSTIN AVE STA. 201+50 TO STA. 205+00
- CONTINUE CONSTRUCTION OF TELECOM FIBER JOINT TRENCH ALONG NB FRONTAGE RD STA. 1725+00 TO STA. 1808+00

PHASE I - STEP 2B

THE INTENT OF PHASE I - STEP 2B IS TO CONSTRUCT THE REMAINING PORTION OF RAISED MEDIAN FOR N. AUSTIN AVE. AND SOUTHBOUND FRONTAGE RD TEMPORARY PAVEMENT.

- INSTALL ALL TEMPORARY SIGNING, PAVEMENT MARKINGS, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS. TWO LANES OF TRAFFIC SHALL BE MAINTAINED ON SOUTHBOUND TRAVEL LANES AND 3 LANES OF TRAFFIC FOR NORTHBOUND TRAFFIC DURING PEAK HOURS.
- CONSTRUCT REMAINING PORTION OF RAISED MEDIAN FOR N. AUSTIN AVE. STA. 211+00 TO STA. 213+90.3 AS SHOWN IN THE TCP LAYOUTS.
- CONSTRUCT SOUTHBOUND FRONTAGE ROAD TEMPORARY PAVEMENT FROM STA. 2787+43 TO STA. 2807+71.
- CONTINUE CONSTRUCTION OF SUBSTRUCTURE FOR SOUTHBOUND FRONTAGE RD. BRIDGE WIDENING AT STA. 2821+62.51 TO STA. 2831+82.51 MAY BEGIN, WHICH MAY INCLUDE INSTALLATION OF DRILL SHAFTS/COLUMNS, TIE BEAMS, AND BRIDGE GIRDERS.

PHASE I - STEP 3

THE INTENT OF PHASE I - STEP 3 IS TO PERFORM CONSTRUCTION OPERATIONS RELATED TO THE WIDENING, RECONSTRUCTION, AND CONSTRUCTION OF I-35 NORTHBOUND FRONTAGE ROAD, SOUTHBOUND FRONTAGE ROAD, AND WILLIAMS DRIVE INTERSECTION.

THE WORK AREAS FOR PHASE 1 STEP 3 CAN BEGIN IN A DIFFERENT SEQUENCE WITH ENGINEERS APPROVAL. IF TELECOM UTILITY RELOCATION ALONG NORTHBOUND FRONTAGE IS NOT COMPLETE BY THE START OF PHASE 1 STEP 3, CONSTRUCTION FOR PHASE 1 STEP 3 SHALL BEGIN WITH THE SOUTHBOUND FRONTAGE ROAD. THE TABLE TO THE RIGHT LISTS SEVERAL WORKZONE AREAS AVAILABLE FOR PHASE 1 STEP 3.

- COMPLETE BRIDGE WIDENING SUBSTRUCTURE AT STA. 2821+62.51 TO STA. 2831+82.51 PRIOR TO REDUCING SOUTHBOUND FRONTAGE RD. TRAFFIC TO TWO LANES AND CONTINUING BRIDGE WORK.
- INSTALL ALL TEMPORARY SIGNING, PAVEMENT MARKINGS, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS.

- INSTALL TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE EROSION CONTROL LAYOUTS.
- INSTALL PCTB AS SHOWN ON PHASE I STEP 3 LAYOUTS OF THE TCP.
- CONSTRUCT NORTHBOUND FRONTAGE ROAD FROM STA. 1725+00 TO STA. 1803+80 AS SHOWN ON THE TCP LAYOUTS, INCLUDING PAVEMENT, CURB & GUTTER, STORM DRAINAGE FACILITIES, AND DRIVEWAYS AS SHOWN ON THE TCP LAYOUTS.
- CONSTRUCT OLD AIRPORT ROAD ADJACENT TO NORTHBOUND FRONTAGE ROAD. SEE TCP GENERAL NOTE 15 MAINTAIN ACCESS TO ALL SIDE STREETS TO THE GREATEST EXTENT POSSIBLE.
- CONSTRUCT SOUTHBOUND FRONTAGE ROAD WIDENING ASSOCIATED WITH SOUTHBOUND RAMP 1 FROM STA. 2754+43 TO STA. 2762+62.
- CONSTRUCT SOUTHBOUND FRONTAGE ROAD FROM STA. 2793+00 TO STA. 2806+30.
- CONSTRUCT WILLIAMS DRIVE EASTBOUND AND WESTBOUND WIDENING FROM STA. 102+60 TO STA. 105+94.5.
- CONSTRUCT PARTIAL SOUTHBOUND COLLECTOR DISTRIBUTOR FROM STA. 28+00 TO STA. 33+69.8.
- CONSTRUCT INSIDE SOUTHBOUND FRONTAGE ROAD FROM SAN GABRIEL RIVER BRIDGE TO RIVERY BLVD.
- WIDEN SOUTHBOUND FRONTAGE FROM RIVERY BLVD TO SB RAMP 3 AS SHOWN ON THE TCP LAYOUTS.
- WIDEN SB RAMP 3 AS SHOWN ON THE TCP LAYOUTS.
- WIDEN SB IH 35 AUXILIARY LANE UNDER UNIVERSITY AVE. (SH 29) FROM STA. 875+79 TO STA. 890+90 AS SHOWN ON THE TCP LAYOUTS.
- CONSTRUCT NORTH BOUND FRONTAGE RD. TEMPORARY PAVEMENT STA. 1803+80 TO STA. 1806+44.

PHASE I - STEP 3 UTILITY CONSTRUCTION OPERATIONS

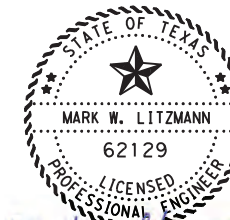
- CONTINUE AND COMPLETE CONSTRUCTION OF TELECOM FIBER JOINT TRENCH ALONG NB FRONTAGE RD STA. 1725+00 TO STA. 1808+00
- CONSTRUCT WATERLINE AT OLD AIRPORT ROAD REALIGNMENT

PHASE I - STEP 4

THE INTENT OF PHASE I - STEP 4 IS TO PERFORM CONSTRUCTION OPERATIONS RELATED TO THE RECONSTRUCTION/WIDENING OF EXISTING FRONTAGE ROADS, WIDENING OF EXISTING MAINLANES, AND CONSTRUCTION OF PROPOSED RAMPS.

- INSTALL TEMPORARY SIGNING, PAVEMENT MARKINGS, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS.
- INSTALL TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE EROSION CONTROL LAYOUTS.
- INSTALL PCTB & LPCB AS SHOWN ON PHASE I STEP 4 LAYOUTS.
- CONSTRUCT INSIDE LANE OF NORTHBOUND FRONTAGE ROAD FROM STA. 1724+50 TO STA. 1739+00
- CONSTRUCT NORTHBOUND ENTRANCE RAMP 1 AND ASSOCIATED MAINLANE WIDENING AS SHOWN IN THE TCP LAYOUTS.
- CONSTRUCT SOUTHBOUND RAMP 1 AND ASSOCIATED MAINLANE WIDENING AS SHOWN IN THE TCP LAYOUTS.
- SALVAGE EXISTING TEMPORARY PAVEMENT FROM PHASE I STEP 3.
- CONSTRUCT INSIDE SOUTHBOUND FRONTAGE ROAD FROM STA. 2793+00 TO WILLIAMS DRIVE AS SHOWN IN THE TCP LAYOUTS.
- REMOVE EXISTING CURB & GUTTER AND SMALL SECTION OF PAVEMENT FROM STA. 2814+23.6 TO STA. 2821+62.51. ON OUTSIDE SOUTHBOUND FRONTAGE. PLACE NEW TY II CURB & GUTTER, AND STORM SEWER AT SAME LIMITS.
- CONSTRUCT OUTSIDE SOUTHBOUND FRONTAGE ROAD FROM SAN GABRIEL RIVER BRIDGE TO RIVERY BLVD.
- MILL 2.5" OF EXISTING ACP ON THE SOUTHBOUND FRONTAGE ROAD AND OVERLAY WITH 1 1/2" ACP FROM STA. 2810+10 TO STA. 2819+04.
- CONSTRUCT CURB FOR SB FRONTAGE ROAD FROM STA. 2810+10 TO STA. 2819+04.
- SAW CUT EXISTING PAVEMENT 1 FT BEHIND PROPOSED CURB, EXCAVATE, AND SALVAGE EXISTING PAVEMENT FROM STA. 2810+10 TO STA. 2819+04
- CONSTRUCT CURB INLETS ALONG SOUTHBOUND FRONTAGE ROAD AT STA. 2844+50 TO STA. 2851+50. USE TCP (2-4)-18 FOR SHORT TERM LANE CLOSURE ADJACENT TO INLETS.

CONSTRUCTION PHASING SEQUENCE				
WORK AREA	ALIGNMENT	PHASE	LIMITS	SIDE
1	AUSTIN AVE	PHASE 1 STEP 1	STA 203+55 TO STA 211+51	Right
2	AUSTIN AVE	PHASE 1 STEP 2	STA 201+16 TO STA 214+00	Left
3	NBFR	PHASE 1 STEP 2	STA 1810+69 TO STA 1818+28	Left
4	AUSTIN AVE	PHASE 1 STEP 2B	STA 209+75 TO STA 213+80	Left
5	SBFR	PHASE 1 STEP 2B	STA 2785+45 TO STA 2807+89	Left
6	NBFR	PHASE 1 STEP 3	STA 1725+00 TO STA 1803+80	Left and Right
7	SBFR	PHASE 1 STEP 3	STA 2793+00 TO STA 2806+30	Right
8	SBFR	PHASE 1 STEP 3	STA 2816+04 TO STA 2864+07	Right
9	WILLIAMS	PHASE 1 STEP 3	STA 102+60 TO STA 105+94	Right
10	SBML	PHASE 1 STEP 3	STA 876+39 TO STA 890+90	Right
11	NBFR	PHASE 1 STEP 4	STA 1724+50 TO STA 1741+46	Right
12	SBML	PHASE 1 STEP 4	STA 751+50 TO STA 783+60	Right
13	SBFR & SB CD	PHASE 1 STEP 4	STA 2793+00 TO STA 2808+10	Left
14	NBFR	PHASE 1 STEP 4	STA 1803+80 TO STA 1808+58	Right
15	SBFR	PHASE 1 STEP 4	STA 2814+23 TO STA 2834+17	Right
16	WILLIAMS	PHASE 2 STEP 1	STA 106+64 TO STA 110+78	Left Bridge
17	SBML	PHASE 2 STEP 2	STA 783+60 TO STA 801+11	Right
18	NBCD	PHASE 2 STEP 2	STA 19+00 TO STA 808+40	Left and Right
19	WILLIAMS	PHASE 2 STEP 2A	SB FR @ Williams	Intersection
20	WILLIAMS	PHASE 2 STEP 2A	NB FR @ Williams	Intersection
21	WILLIAMS	PHASE 2 STEP 2B	SB FR @ Williams	Intersection
22	WILLIAMS	PHASE 2 STEP 2B	NB FR @ Williams	Intersection and E. Williams
23	WILLIAMS	PHASE 2 STEP 3	EXIT TURN AROUND	Demolish
24	WILLIAMS	PHASE 2 STEP 3	STA 106+84 TO STA 110+78	Right Bridge
25	NBCD	PHASE 2 STEP 4	STA 808+40 TO STA 820+05	Left and Right
26	SB CD	PHASE 2 STEP 4	STA 807+86 TO STA 819+68	Left and Right
27	NBCD & ENT RAMP	PHASE 2 STEP 5	STA 813+62 TO STA 823+56	Left
28	WILLIAMS	PHASE 3	WILLIAMS RAISED MEDIANS	LT & RT



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02.17.2020

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**mobility** 35  
CAPITAL AREA



IH 35  
TRAFFIC CONTROL PLAN  
SEQUENCE OF  
CONSTRUCTION

SHEET 1 OF 2

© 2019	CONT	SECT	JOB	HIGHWAY
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DIST	CKT	AUS	WILLIAMSON	SHEET NO. 53

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THE INTENT OF PHASE II - STEP 1 IS TO CONSTRUCT WESTBOUND SIDE OF WILLIAMS DRIVE OVERPASS.

1. INSTALL TEMPORARY PAVEMENT MARKINGS AND PCTB AS SHOWN ON THE TCP LAYOUTS FOR WILLIAMS DRIVE BRIDGE.
2. DEMOLISH EXISTING WESTBOUND SIDE OF WILLIAMS DRIVE OVERPASS.
3. CONSTRUCT PROPOSED WESTBOUND SIDE OF WILLIAMS DRIVE OVERPASS.
4. MOVE NORTHBOUND FRONTAGE ROAD TRAFFIC ONTO THE NEWLY CONSTRUCTED NORTHBOUND FRONTAGE ROAD.

PHASE II - STEP 2

THE INTENT OF PHASE II - STEP 2 IS TO CONSTRUCT PORTION OF PROPOSED NORTHBOUND COLLECTOR DISTRIBUTOR, SOUTHBOUND MAINLANE WIDENING, SOUTHBOUND COLLECTOR DISTRIBUTOR AND FULL HMA PAVEMENT AT WILLIAMS DRIVE INTERSECTION.

1. OBLITERATE EXISTING NORTHBOUND ENTRANCE RAMP AT STA. 803+00.
2. CONSTRUCT NORTHBOUND COLLECTOR DISTRIBUTOR FROMS STA. 19+00 TO STA. 26+67.2.
3. OBLITERATE EXISTING SOUTHBOUND ENTRANCE RAMP AT STA. 788+00.
4. CONSTRUCT SOUTHBOUND MAINLANE WIDENING AND SOUTHBOUND COLLECTOR DISTRIBUTOR FROM STA. 783+60 TO STA. 801+11.6.
5. CONSTRUCT FULL HMA PAVEMENT DURING NIGHT TIME HOURS AT INTERSECTION OF WILLIAMS DRIVE FOR NORTHBOUND AND SOUTHBOUND FRONTAGE ROAD INTERSECTION AS SHOWN IN THE TCP LAYOUTS/DETOUR.

PHASE II STEP 2A

THE INTENT OF PHASE II STEP 2A IS TO CONSTRUCT THE FULL DEPTH ACP FOR THE INSIDE PART OF NB AND SB FRONTAGE RD AT WILLIAMS DRIVE. THIS WORK SHALL OCCUR DURING OFF-PEAK NIGHTIME HOURS AND UTILIZE TEMPORARY LANE SHIFTS. ALL LANES TEMPORARLY CLOSED FOR NIGHTIME INTERSECTION CONSTRUCTION SHALL BE REOPENED DURING PEAK AND NON-WORKING HOURS.

1. SETUP TRAFFIC CONTROL SIGNS AND CHANNELIZING AS SPECIFIED ON PHASE II STEP 2A.
2. MOVE TRAFFIC AS SPECIFIED ON TCP LAYOUTS.
3. CONSTRUCT FULL DEPTH ACP AS SPECIFIED ON PHASE II STEP 2A LAYOUTS.

PHASE II STEP 2B

THE INTENT OF PHASE II STEP 2B IS TO CONSTRUCT THE REMAING FULL DEPTH ACP FOR THE NB, SB AND WILLIAMS DR. EAST PORTION AS SPECIFIED ON TCP LAYOUTS. THIS WORK SHALL OCCUR DURING OFF-PEAK NIGHTIME HOURS AND UTILIZE TEMPORARY LANE SHIFTS. ALL LANES TEMPORARLY CLOSED FOR NIGHTIME INTERSECTION CONSTRUCTION SHALL BE REOPENED DURING PEAK AND NON-WORKING HOURS.

1. SETUP TRAFFIC CONTROL SIGNS AND CHANNELIZING DEVICES AS SPECIFIED ON PHASE II STEP 2A.
2. MOVE TRAFFIC AS SPECIFIED ON TCP LAYOUTS.
3. CONSTRUCT FULL DEPTH ACP AS SPECIFIED ON PHASE II STEP 2A LAYOUTS.

PHASE II - STEP 3

THE INTENT OF PHASE II - STEP 3 IS TO RECONSTRUCT EASTBOUND SIDE OF WILLIAMS DRIVE OVERPASS.

1. CONSTRUCT NORTHBOUND FRONTAGE ROAD FULL HMA PAVEMENT DURING NON-PEAK HOURS FROM STA. 1803+80 TO STA. 1807+15 AS SHOWN ON THE TCP LAYOUTS.
2. MOVE TRAFFIC ONTO NEWLY CONSTRUCTED BRIDGE SECTION.
3. DEMOLISH EXISTING EASTBOUND SIDE OF WILLIAMS DRIVE OVERPASS
4. DEMOLISH TURNAROUND BRIDGE.
5. CONSTRUCT REMAINING PROPOSED EASTBOUND WILLIAMS DRIVE OVERPASS.

PHASE II - STEP 4

THE INTENT OF PHASE II - STEP 4 IS TO CONSTRUCT BOTH NORTHBOUND AND SOUTHBOUND COLLECTOR DISTRIBUTOR, OBLITERATE THE EXISTING SOUTHBOUND EXIT RAMP, AND CONSTRUCT FULL HMA PAVEMENT FOR BOTH THE NORTHBOUND AND SOUTHBOUND COLLECTOR DISTRIBUTORS SOUTH OF WILLIAMS DRIVE.

1. CONSTRUCT NORTHBOUND COLLECTOR DISTRIBUTOR SOUTH OF WILLIAMS DRIVE.
2. CONSTRUCT SOUTHBOUND COLLECTOR DISTRIBUTOR SOUTH OF WILLIAMS DRIVE.
3. OBLITERATE SOUTHBOUND EXIT RAMP SOUTH OF WILLIAMS DRIVE.
4. CONSTRUCT FULL HMA PAVEMENT DURING OFF PEAK HOURS FOR THE NORTHBOUND AND SOUTHBOUND COLLECTOR DISTRIBUTOR SOUTH OF WILLIAMS DRIVE TO SAN GABRIEL RIVER BRIDGE AS SHOWN ON THE TCP LAYOUTS.

PHASE II - STEP 5

THE INTENT OF PHASE II - STEP 5 IS TO OBLITERATE EXISTING EXIT RAMP, AND CONSTRUCT NORTHBOUND COLLECTOR DISTRIBUTOR.

1. INSTALL PCTB AT NORTHBOUND MAINLANES STA. 805+05 TO STA. 823+48.7 AS SHOWN ON THE TCP LAYOUTS.
2. OBLITERATE REMAINING EXISTING NORTH BOUND ENTRANCE RAMP AT STA. 812+00.
3. CONSTRUCT NORTHBOUND COLLECTOR DISTRIBUTOR EXIT RAMP AT STA. 813+62.47 TO STA. 823+56.5 (SAN GABRIEL RIVER).

PHASE III

THE INTENT OF PHASE III IS TO MILL AND OVERLAY REMAINING LIMITS OF WILLIAMS DRIVE, CONSTRUCT PROPOSED RAISED MEDIANS AT WILLIAMS DRIVE, STRIPE INTERSECTION TO DIVERSION DIAMOND INTERSECTION CONFIGURATION , AND CONSTRUCT SHARED USE PATH & ALL REMAINING SIDEWALKS FOR THE ENTIRE PROJECT.

1. INSTALL TEMPORARY SIGNING, PAVEMENT MARKINGS, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS.
2. INSTALL TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE EROSION CONTROL LAYOUTS.
3. MILL 2.5" OF ACP OF REMAINING LIMITS OF WILLIAMS DRIVE NOT RECONSTRUCTED.
4. OVERLAY LIMITS STATED WITH 1.5" D-GR HMA TY D (64-22).
5. CONSTRUCT RAISED MEDIANS AT WILLIAMS DRIVE AS SHOWN ON THE INTERSECTION LAYOUTS.
6. CONSTRUCT SHARED USE PATH AND ALL REMAINING SIDEWALKS FOR THE ENTIRE PROJECT USING TCP (2-1)-18.

PHASE IV

THE INTENT OF PHASE IV IS TO COMPLETE FINAL MILL AND OVERLAY OVER THE REMAINING LIMITS OF NORTHBOUND AND SOUTHBOUND FRONTAGE ROAD NOT RECONSTRUCTED.

1. INSTALL TEMPORARY SIGNING, AND CHANNELIZING DEVICES IN ACCORDANCE TO BC STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE EROSION CONTROL LAYOUTS.
3. MILL 1" OF ACP OF REMAINING LIMITS OF NORHTBOUND AND SOUTHBOUND FRONTAGE ROADS NOT RECONSTRUCTED. (SEE PLAN & PROFILE LAYOUTS FOR LIMITS.
4. INSTALL FINAL LIFT OF 1" TOM ASPHALT PG 70-22 USING APPLICABLE TCP STANDARDS.
5. UTILIZING TCP(3-1) & TCP(3-3)-14, INSTALL FINAL PAVEMENT MARKINGS AS SHOWN ON THE PAVEMENT MARKING LAYOUTS.
6. INSTALL ANY REMAINING SIGNS AND COMPLETE ALL MISCELLANOUS WORK TO FINISH THE PROJECT AS DIRECTED BY THE ENGINEER.
7. REMOVE EROSION CONTROL DEVICES ONCE SUFFICIENT VEGETATION HAS BEEN ESTABLISHED AND APPROVED BY THE ENGINEER.
8. PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, THE CONTACTOR SHALL REMOVE ALL TEMPORARY STRIPING, BARRICADES AND SIGNS, AND OPEN ALL TRAVEL LANES TO TRAFFIC BUT MUST LEAVE ADVANCED WARNING SIGNS IN PLACE UNTIL FINAL ACCEPTANCE BY THE ENGINEER.

WORK AREA	ALIGNMENT	PHASE	CONSTRUCTION PHASING SEQUENCE		SIDE
			LIMITS		
1	AUSTIN AVE	PHASE 1 STEP 1	STA 203+55 TO STA 211+51		Right
2	AUSTIN AVE	PHASE 1 STEP 2	STA 201+16 TO STA 214+00		Left
3	NBFR	PHASE 1 STEP2	STA 1810+69 TO STA 1818+28		Left
4	AUSTIN AVE	PHASE 1 STEP 2B	STA 209+75 TO STA 213+80		Left
5	SBFR	PHASE 1 STEP 2B	STA 2785+45 TO STA 2807+89		Left
6	NBFR	PHASE 1 STEP 3	STA 1725+00 TO STA 1803+80		Left and Right
7	SBFR	PHASE 1 STEP 3	STA 2793+00 TO STA 2806+30		Right
8	SBFR	PHASE 1 STEP 3	STA 2816+04 TO STA 2864+07		Right
9	WILLIAMS	PHASE 1 STEP 3	STA 102+60 TO STA 105+94		Right
10	SBML	PHASE 1 STEP 3	STA 876+39 TO STA 890+90		Right
11	NBFR	PHASE 1 STEP 4	STA 1724+50 TO STA 1741+46		Right
12	SBML	PHASE 1 STEP 4	STA 751+50 TO STA 783+60		Right
13	SBFR & SB CD	PHASE 1 STEP 4	STA 2793+00 TO STA 2808+10		Left
14	NBFR	PHASE 1 STEP 4	STA 1803+80 TO STA 1808+58		Right
15	SBFR	PHASE 1 STEP 4	STA 2814+23 TO STA 2834+17		Right
16	WILLIAMS	PHASE 2 STEP 1	STA 106+64 TO STA 110+78		Left Bridge
17	SBML	PHASE 2 STEP 2	STA 783+60 TO STA 801+11		Right
18	NBCD	PHASE 2 STEP 2	STA 19+00 TO STA 808+40		Left and Right
19	WILLIAMS	PHASE 2 STEP 2A	SB FR @ Williams		Intersection
20	WILLIAMS	PHASE 2 STEP 2A	NB FR @ Williams		Intersection
21	WILLIAMS	PHASE 2 STEP 2B	SB FR @ Williams		Intersection
22	WILLIAMS	PHASE 2 STEP 2B	NB FR @ Williams		Intersection and E. Williams
23	WILLIAMS	PHASE 2 STEP 3	EXIT TURN AROUND		Demolish
24	WILLIAMS	PHASE 2 STEP 3	STA 106+84 TO STA 110+78		Right Bridge
25	NBCD	PHASE 2 STEP 4	STA 808+40 TO STA 820+05		Left and Right
26	SBCD	PHASE 2 STEP 4	STA 807+86 TO STA 819+68		Left and Right
27	NBCD & ENT RAMP	PHASE 2 STEP 5	STA 813+62 TO STA 823+56		Left
28	WILLIAMS	PHASE 3	WILLIAMS RAISED MEDIANS		LT & RT



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02.17.2020

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**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

**IH 35**  
**TRAFFIC CONTROL PLAN**  
**SEQUENCE OF**  
**CONSTRUCTION**

SHEET 2 OF 2

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015	08 147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	54



## **ATTACHMENT D -Temporary Best Management Practices and Measures**

Please see Permanent Stormwater Section, Attachment F: Construction Plans for Erosion Control Layout plan sheets that show temporary BMPs.

The BMPs will be placed prior to Phase 1 construction activities.

### **Prior to commencing each phase of the SW3P the following tasks will occur:**

- construction of temporary sediment basins (roughcut water quality basins with temp. outlet)
- established stabilized construction entrance/exit
- placement of curb inlet protection, as shown on the SW3P layout sheets.
- placement of sediment control fence as shown on the SW3P layouts.
- place rock filter dams, as shown on the SW3P layouts
- place erosion control logs, as shown on the SW3P layouts
- place soil retention blankets, as shown on the SW3P layouts

### **At the completion of construction:**

- All disturbed areas to be grassed are proposed to be mulch seeded (small portions mulch sod) in accordance with the guideline set forth in "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices".
- Once all areas on the site have established permanent stabilization, the temporary BMPs will be removed from the site.

### **Additional notes regarding temporary BMP's:**

A. Prior to commencement of site clearing, topsoil removal and grading, install perimeter swales and dikes at the down slope edge of the area to be graded. Water flowing from upgradient sources will be diverted around the site and will be channeled across/through the project via the existing culvert. The project is designed to segregate offsite up-gradient drainage from on-site runoff into separate drainage systems.

B. Sediment laden storm water generated on-site will be treated using sediment control fence, rock filter berms and inlet protection. Runoff entering the storm sewer system will be filtered by the use of inlet protection. Runoff which is not contained in the storm sewer system is filtered by sediment control fence or rock filter dams before leaving the site. Construction entrances will supplement the control of off-site tracking of contaminated materials. The last stabilization measure will be the application of mulched seeding. This measure will cover and stabilize all areas disturbed by construction.

C. All entrance points to the surface stream (Pecan Branch / San Gabriel River) have temporary BMP's in place to aid in treating the runoff from the site before it leaves the limits of construction. The control measures in place are rock filter dams, sediment control fences, and curb inlet protection. Stabilized construction exits will supplement the control of off-site tracking of material. The site after construction is complete will be stabilized by mulch seeding.

D. The proposed project seeks to honor the natural drainage divides and ensure that water is not

diverted from its natural course. Perimeter swales along the upstream side of the proposed roadway will direct water to the same discharge point downstream of the site. The location of stream crossings will remain relatively unchanged with minimal disturbance to the natural water course. By honoring natural drainage divides, intermediate and final construction improvements will release water into the same tributary (Pecan Branch/ San Gabriel River).

## **ATTACHMENT F – Structural Practices**

### **The following temporary BMP structural practices will be employed on the site:**

- A. Silt Fence – used as barrier protection around the perimeter of the project. The fence retains sediment primarily by retarding flow and promoting deposition on the uphill side of the slope. Runoff is filtered as it passes through the geotextile.
  
- B. Rock Berms – placed at various locations along swales to aid in mitigating erosion and sediment trapping.
  
- C. Inlet Protection – will be provided around all existing and proposed storm sewer inlets during construction. Locations are indicated on the SW3P sheets. These measures will trap and settle out pollutants from the onsite runoff before the runoff enters into the storm drain system and exits the site.
  
- D. Stabilized Construction Exits - Anti-tracking pads consisting of stone will be installed at the exit to each phase of construction to prevent the off-site transport of sediment by construction vehicles. The anti-tracking pads will be at least 50 feet long, a minimum of 10 feet wide, flared at the end closest to the paved road, and will consist of a 8-inch-thick layer of crushed stone. The crushed stone will be placed over a layer of geotextile filter fabric to reduce the mitigation of sediment from the underlying soil.
  
- E. Erosion Control Logs - preformed protective blanket of plastic fibers, straw or other plant residue designed to protect soil from the impact of precipitation and overland flow, and retain moisture to facilitate establishment of vegetation.
  
- F. Soil Retention Blankets - a covering usually of geotextile material to hold a soil in place and allow vegetation to grow.
  
- G. Temporary Sediment Basins – A temporary sediment basin will be created where a permanent sand filter pond BMP is being constructed.

The placement of structural practices in the floodplain has been avoided.

**ATTACHMENT G – Drainage Area Maps**

See attached construction drawings

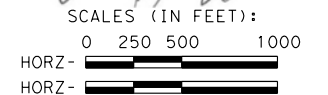
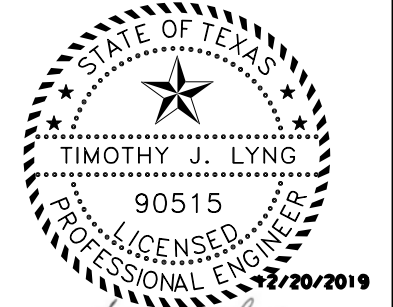
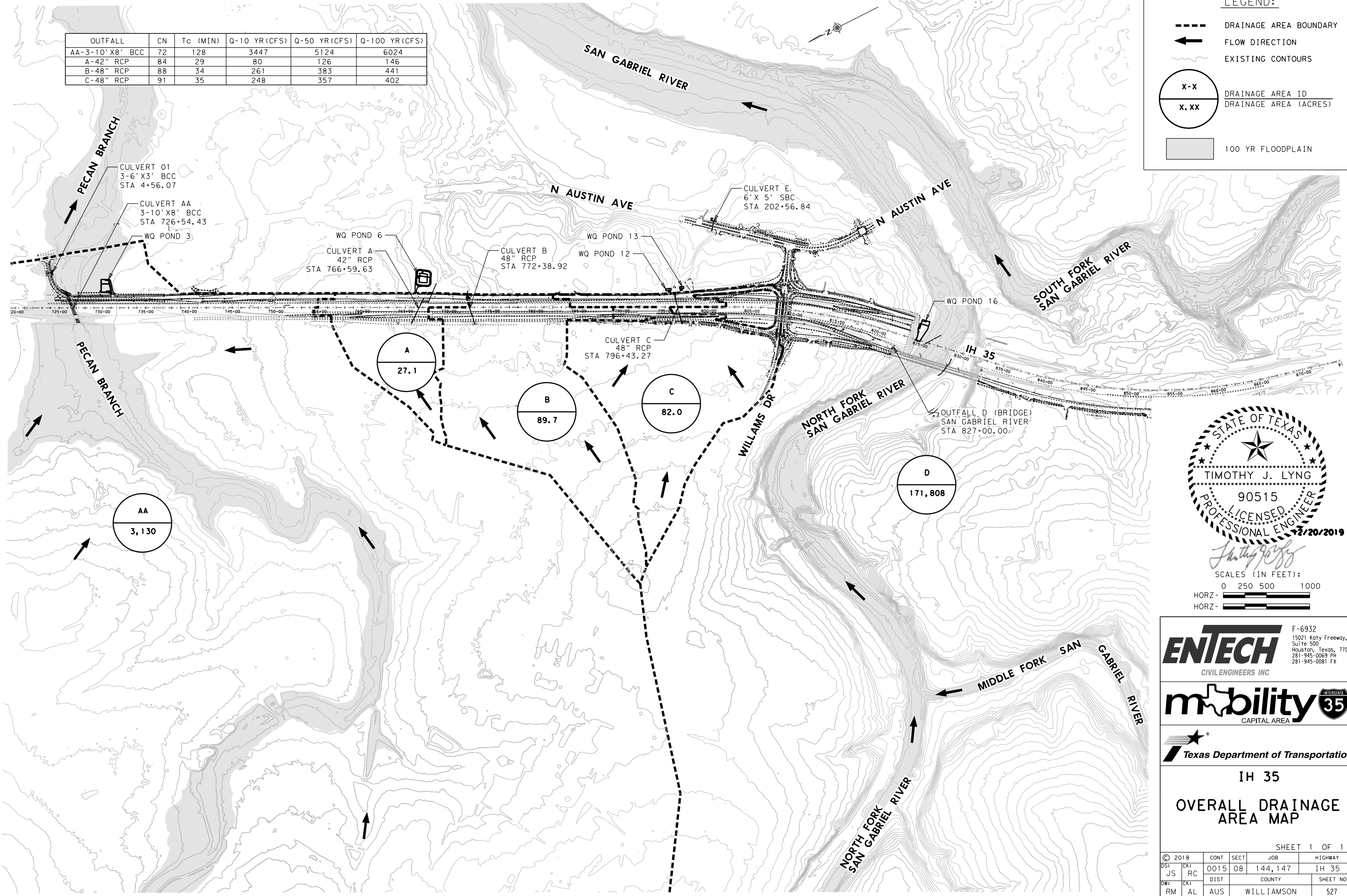


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OUTFALL	CN	Tc (MIN)	Q-10 YR (CFS)	Q-50 YR (CFS)	Q-100 YR (CFS)
AA-3-10' X8' BCC	72	128	3447	5124	6024
A-42" RCP	84	29	80	126	146
B-48" RCP	88	34	261	383	441
C-48" RCP	91	35	248	357	402

LEGEND:

- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- EXISTING CONTOURS
- DRAINAGE AREA ID
- DRAINAGE AREA (ACRES)
- 100 YR FLOODPLAIN



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**mobility** CAPITAL AREA

Texas Department of Transportation

IH 35  
 OVERALL DRAINAGE  
 AREA MAP

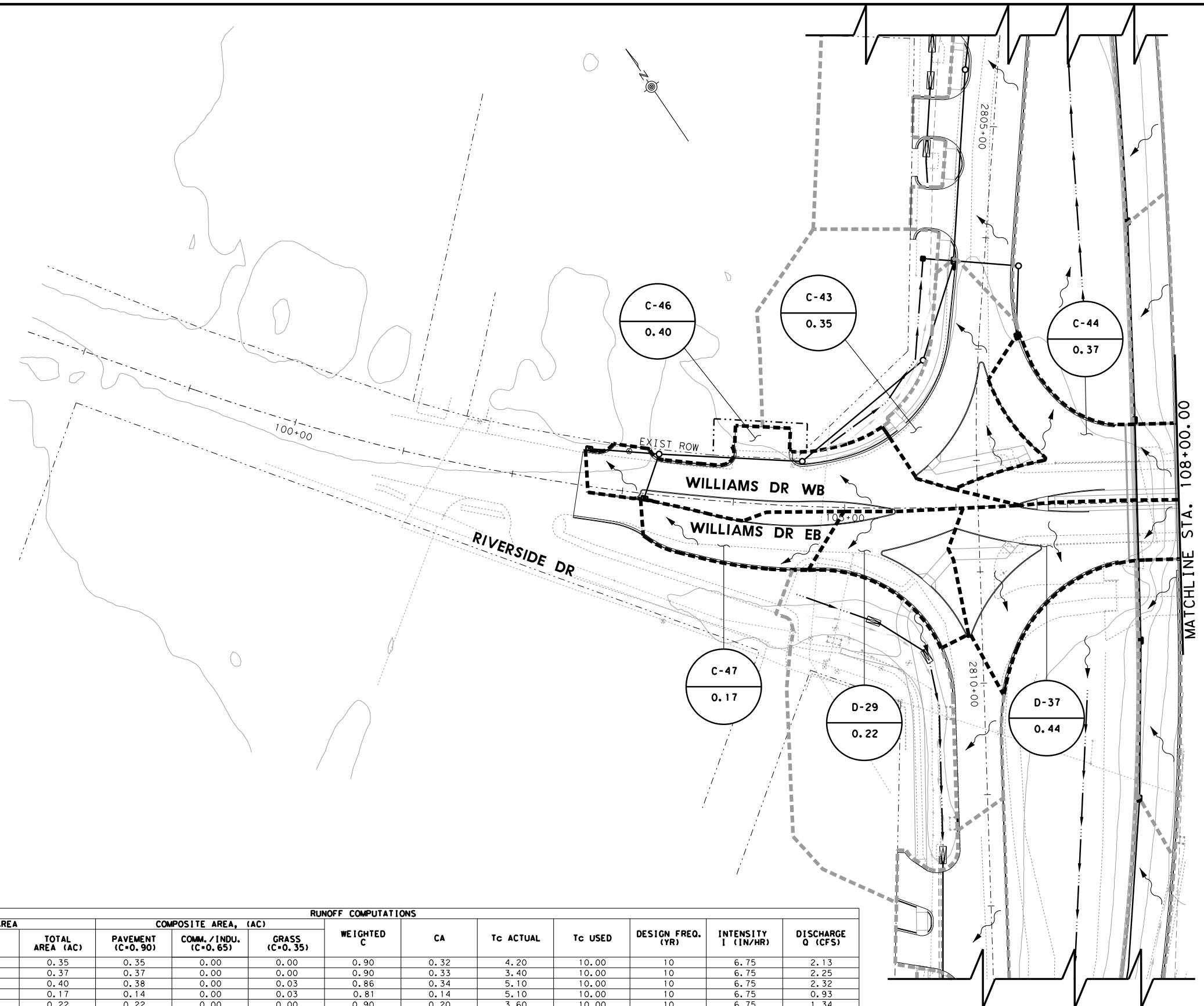
SHEET 1 OF 1

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	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	527	

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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- CL PROPOSED DITCH
- CL EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

**NOTE:**  
 1. FOR AREAS ALONG IH-35 PLEASE SEE IH-35 DRAINAGE AREA MAP SHEETS.

SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

DRAINAGE AREA		COMPOSITE AREA, (AC)						RUNOFF COMPUTATIONS				
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
C-43	C	0.35	0.35	0.00	0.00	0.90	0.32	4.20	10.00	10	6.75	2.13
C-44	C	0.37	0.37	0.00	0.00	0.90	0.33	3.40	10.00	10	6.75	2.25
C-46	C	0.40	0.38	0.00	0.03	0.86	0.34	5.10	10.00	10	6.75	2.32
C-47	C	0.17	0.14	0.00	0.03	0.81	0.14	5.10	10.00	10	6.75	0.93
D-29	D	0.22	0.22	0.00	0.00	0.90	0.20	3.60	10.00	10	6.75	1.34
D-37	D	0.44	0.44	0.00	0.00	0.90	0.40	4.20	10.00	10	6.75	2.67

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

**IH 35**  
**DRAINAGE AREA MAP**  
**WILLIAMS DRIVE**  
**BEGIN PROJECT TO STA 108+00**

SHEET 1 OF 2

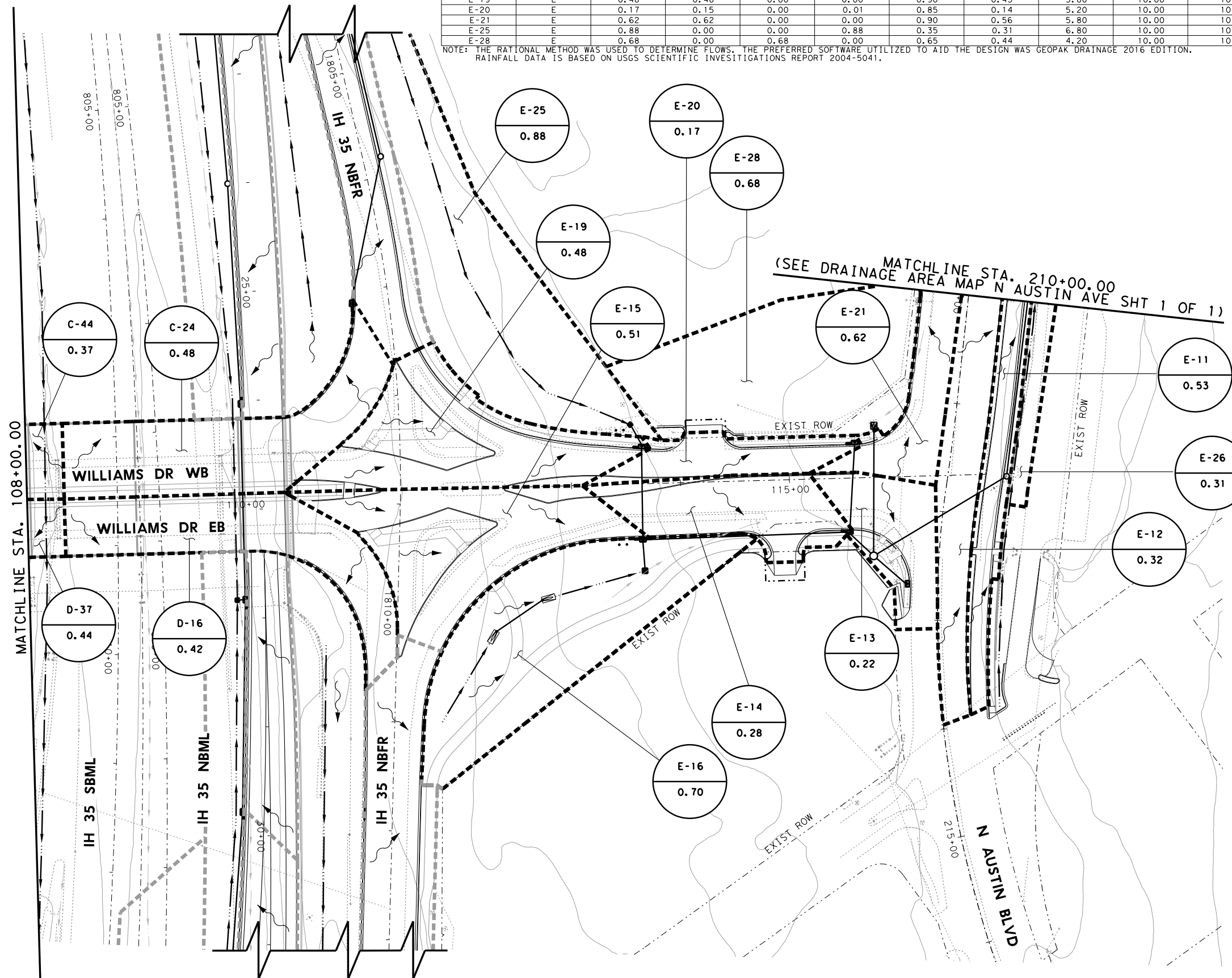
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DW: RM	CK: AL	DIST: AUS	COUNTY: WILLIAMSON	SHEET NO.: 528	

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FILE: N:\4912-17-301\CADD\05\_DRAINAGE\Drainage Area Maps\60203-S-DR-LE-WILL02.dgn

DRAINAGE AREA			COMPOSITE AREA, (AC)				RUNOFF COMPUTATIONS					
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
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C-44	C	0.37	0.37	0.00	0.00	0.90	0.33	3.40	10.00	10	6.75	2.25
D-16	D	0.42	0.42	0.00	0.00	0.90	0.38	7.20	10.00	10	6.75	2.55
D-37	D	0.44	0.44	0.00	0.00	0.90	0.40	4.20	10.00	10	6.75	2.67
E-11	E	0.53	0.53	0.00	0.00	0.90	0.48	6.20	10.00	10	6.75	3.22
E-12	E	0.32	0.32	0.00	0.00	0.90	0.29	6.20	10.00	10	6.75	1.94
E-13	E	0.22	0.22	0.00	0.00	0.90	0.20	3.40	10.00	10	6.75	1.34
E-14	E	0.28	0.26	0.00	0.02	0.87	0.24	5.20	10.00	10	6.75	1.64
E-15	E	0.51	0.43	0.00	0.00	0.90	0.46	5.80	10.00	10	6.75	3.10
E-16	E	0.70	0.09	0.00	0.61	0.42	0.29	9.80	10.00	10	6.75	1.98
E-19	E	0.48	0.48	0.00	0.00	0.90	0.43	5.80	10.00	10	6.75	2.92
E-20	E	0.17	0.15	0.00	0.01	0.85	0.14	5.20	10.00	10	6.75	0.98
E-21	E	0.62	0.62	0.00	0.00	0.90	0.56	5.80	10.00	10	6.75	3.77
E-25	E	0.88	0.00	0.00	0.88	0.35	0.31	6.80	10.00	10	6.75	2.08
E-28	E	0.68	0.00	0.68	0.00	0.65	0.44	4.20	10.00	10	6.75	2.98

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- PROPOSED DITCH
- EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

NOTE:  
FOR AREAS ALONG IH-35 PLEASE  
SEE IH-35 DRAINAGE AREA MAP  
SHEETS.

TIMOTHY J. LYNG  
90515  
LICENSED PROFESSIONAL ENGINEER  
2/20/2019

SCALES (IN FEET):  
HORZ - 0 25 50 100

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281-945-0081 FX

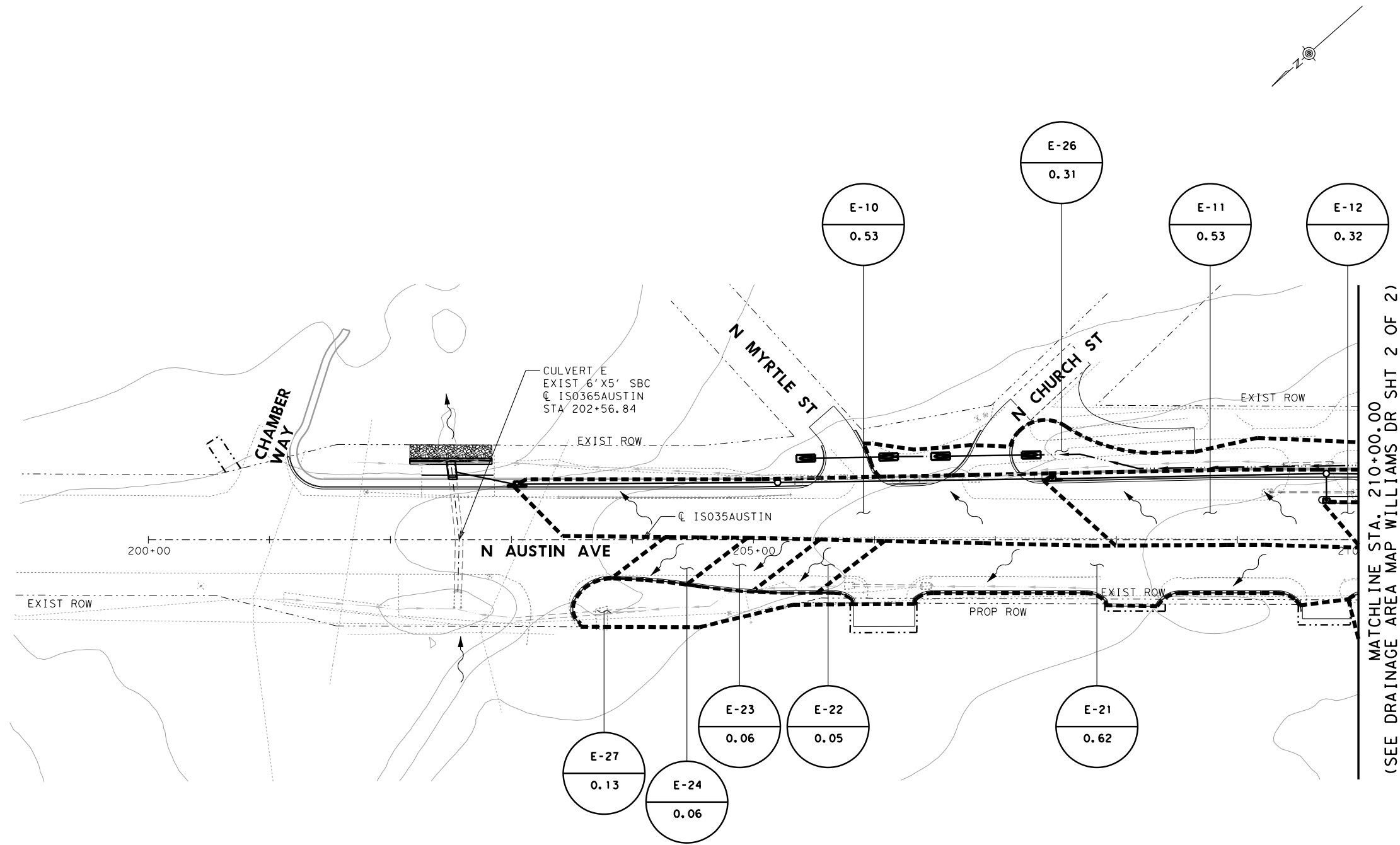
mobility 35  
CAPITAL AREA

Texas Department of Transportation

**IH 35  
DRAINAGE AREA MAP  
WILLIAMS DRIVE  
STA 108+00 TO END PROJECT**

SHEET 2 OF 2

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	147
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	529



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- CL PROPOSED DITCH
- CL EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

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 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA



IH 35  
 DRAINAGE AREA MAP  
 N AUSTIN AVE  
 BEGIN PROJECT TO STA 210+00

SHEET 1 OF 1

DS:	CONT:	SECT:	JOB:	HIGHWAY:
JS	RC	0015	08	147
DW:	CK:	DIST:	COUNTY:	SHEET NO.:
RM	AL	AUS	WILLIAMSON	530

**RUNOFF COMPUTATIONS**

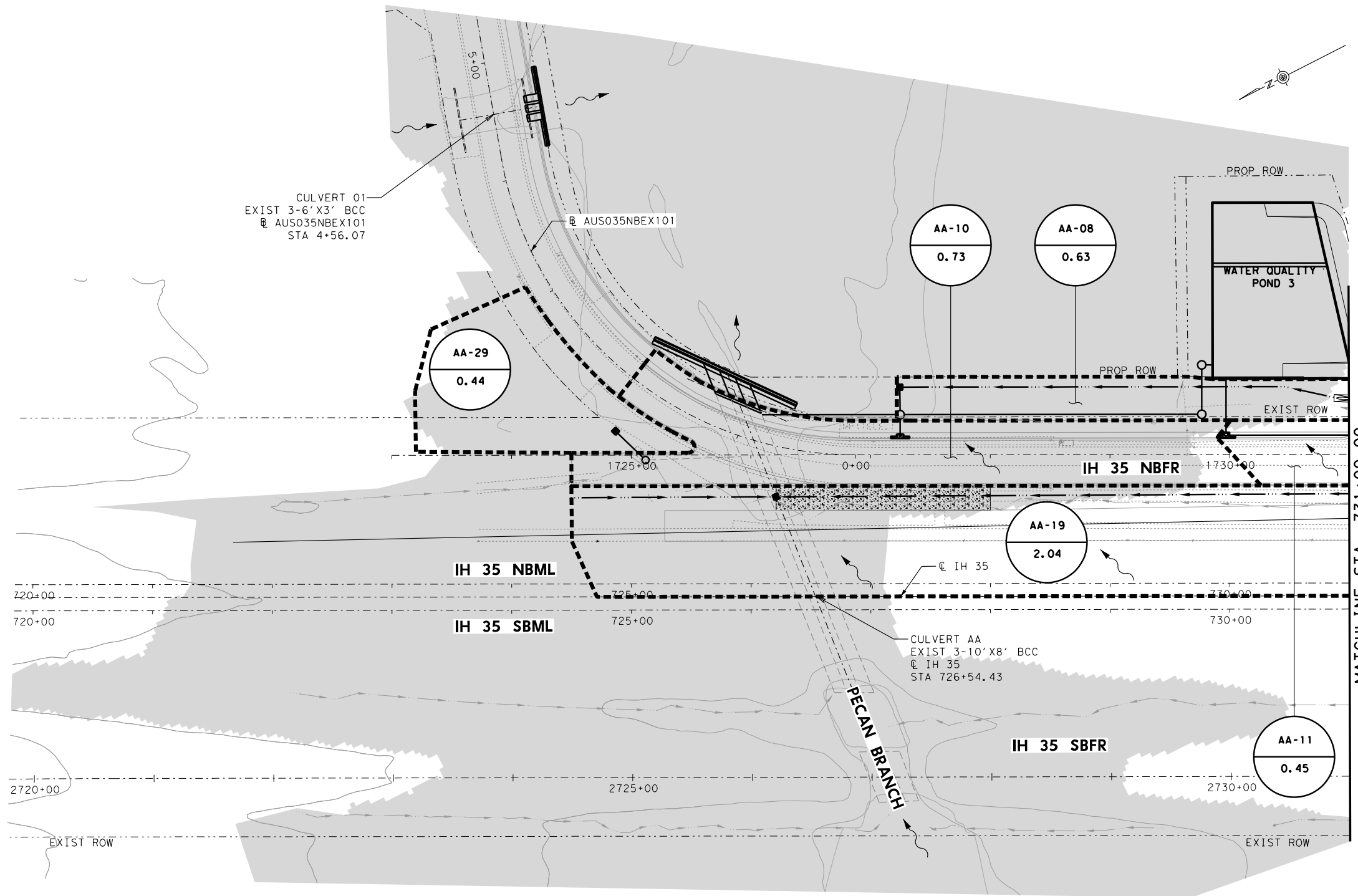
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			TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM. /INDU. (C=0.65)							
E-10	E	0.53	0.53	0.00	0.00	0.90	0.48	6.20	10.00	10	6.75	3.22
E-11	E	0.53	0.53	0.00	0.00	0.90	0.48	6.20	10.00	10	6.75	3.22
E-12	E	0.32	0.32	0.00	0.00	0.90	0.29	6.20	10.00	10	6.75	1.94
E-21	E	0.62	0.62	0.00	0.00	0.90	0.56	5.80	10.00	10	6.75	3.77
E-22	E	0.05	0.05	0.00	0.00	0.90	0.05	1.35	10.00	10	6.75	0.30
E-23	E	0.06	0.06	0.00	0.00	0.90	0.05	1.35	10.00	10	6.75	0.36
E-24	E	0.06	0.06	0.00	0.00	0.90	0.05	1.35	10.00	10	6.75	0.36
E-26	E	0.31	0.00	0.00	0.31	0.35	0.11	4.91	10.00	10	6.75	0.73
E-27	E	0.13	0.05	0.00	0.08	0.56	0.07	4.91	10.00	10	6.75	0.49

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.



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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- @ PROPOSED DITCH
- @ EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
HORZ - 0 25 50 100

DRAINAGE AREA		COMPOSITE AREA, (AC)				RUNOFF COMPUTATIONS						
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
AA-08	AA	0.63	0.00	0.00	0.63	0.35	0.22	9.27	10.00	10	6.75	1.49
AA-10	AA	0.73	0.68	0.00	0.05	0.86	0.63	2.50	10.00	10	6.75	4.24
AA-11	AA	0.45	0.43	0.00	0.03	0.87	0.39	1.70	10.00	10	6.75	2.64
AA-19	AA	2.04	2.04	0.00	0.00	0.90	1.84	5.40	10.00	10	6.75	12.39
AA-29	AA	0.44	0.08	0.00	0.38	0.41	0.18	6.67	10.00	10	6.75	1.22

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

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281-945-0081 FX

**mobility** CAPITAL AREA

Texas Department of Transportation

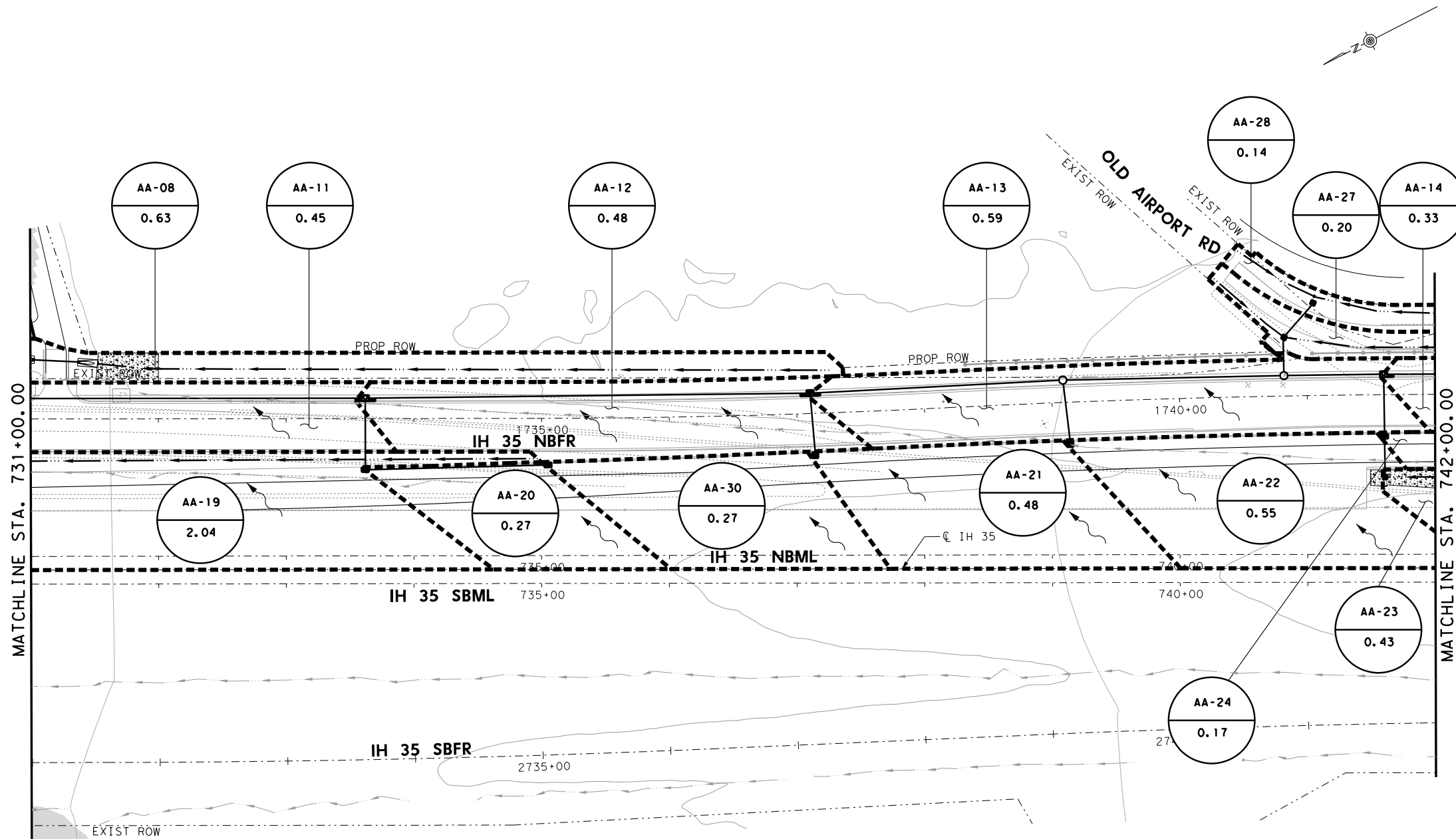
**IH 35  
DRAINAGE AREA MAP  
INTERSTATE 35  
BEGIN PROJECT TO STA 731+00**

SHEET 1 OF 13

DS: JS	CK: RC	CONT: 0015	SECT: 08	JOB: 144	HIGHWAY: IH 35
DW: RM	CK: AL	DIST: AUS	COUNTY: WILLIAMSON	SHEET NO.: 531	

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DATE: 12/20/2019 8:06:18 PM  
 FILE: N:\4912-17-301\CADD\05\_DRAINAGE\Area Maps\60203-S-DR-LE-IH35-02.dgn



**LEGEND:**

- MANHOLE
- ◻ CURB INLET
- ◻ GRATE INLET
- - - DRAINAGE AREA BOUNDARY
- - - DRAINAGE AREA BOUNDARY (NOT LABELED)
- ← PROPOSED DITCH
- ← EXIST DITCH
- FLOW DIRECTION
- ~ EXISTING CONTOURS
- - - EXISTING STORM SEWERS
- X.XX / X.XX DRAINAGE AREA ID / DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

RUNOFF COMPUTATIONS													
DRAINAGE AREA		COMPOSITE AREA, (AC)					WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)								
AA-08	AA	0.63	0.00	0.00	0.63	0.35	0.22	9.27	10.00	10	6.75	1.49	
AA-11	AA	0.45	0.43	0.00	0.03	0.87	0.39	1.70	10.00	10	6.75	2.64	
AA-12	AA	0.48	0.46	0.00	0.03	0.87	0.42	3.20	10.00	10	6.75	2.82	
AA-13	AA	0.59	0.59	0.00	0.00	0.90	0.53	5.80	10.00	10	6.75	3.58	
AA-14	AA	0.33	0.28	0.00	0.05	0.82	0.27	5.00	10.00	10	6.75	1.83	
AA-19	AA	2.04	2.04	0.00	0.00	0.90	1.84	5.40	10.00	10	6.75	12.39	
AA-20	AA	0.27	0.27	0.00	0.00	0.90	0.24	2.50	10.00	10	6.75	1.64	
AA-21	AA	0.48	0.48	0.00	0.00	0.90	0.43	4.70	10.00	10	6.75	2.92	
AA-22	AA	0.55	0.55	0.00	0.00	0.90	0.50	6.20	10.00	10	6.75	3.34	
AA-23	AA	0.43	0.32	0.00	0.11	0.76	0.33	4.20	10.00	10	6.75	2.21	
AA-24	AA	0.17	0.17	0.00	0.00	0.90	0.15	2.50	10.00	10	6.75	1.03	
AA-27	AA	0.20	0.08	0.00	0.13	0.56	0.11	3.50	10.00	10	6.75	0.76	
AA-28	AA	0.14	0.07	0.00	0.07	0.63	0.09	3.50	10.00	10	6.75	0.60	
AA-30	AA	0.27	0.27	0.00	0.00	0.90	0.24	2.50	10.00	10	6.75	1.64	

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

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 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

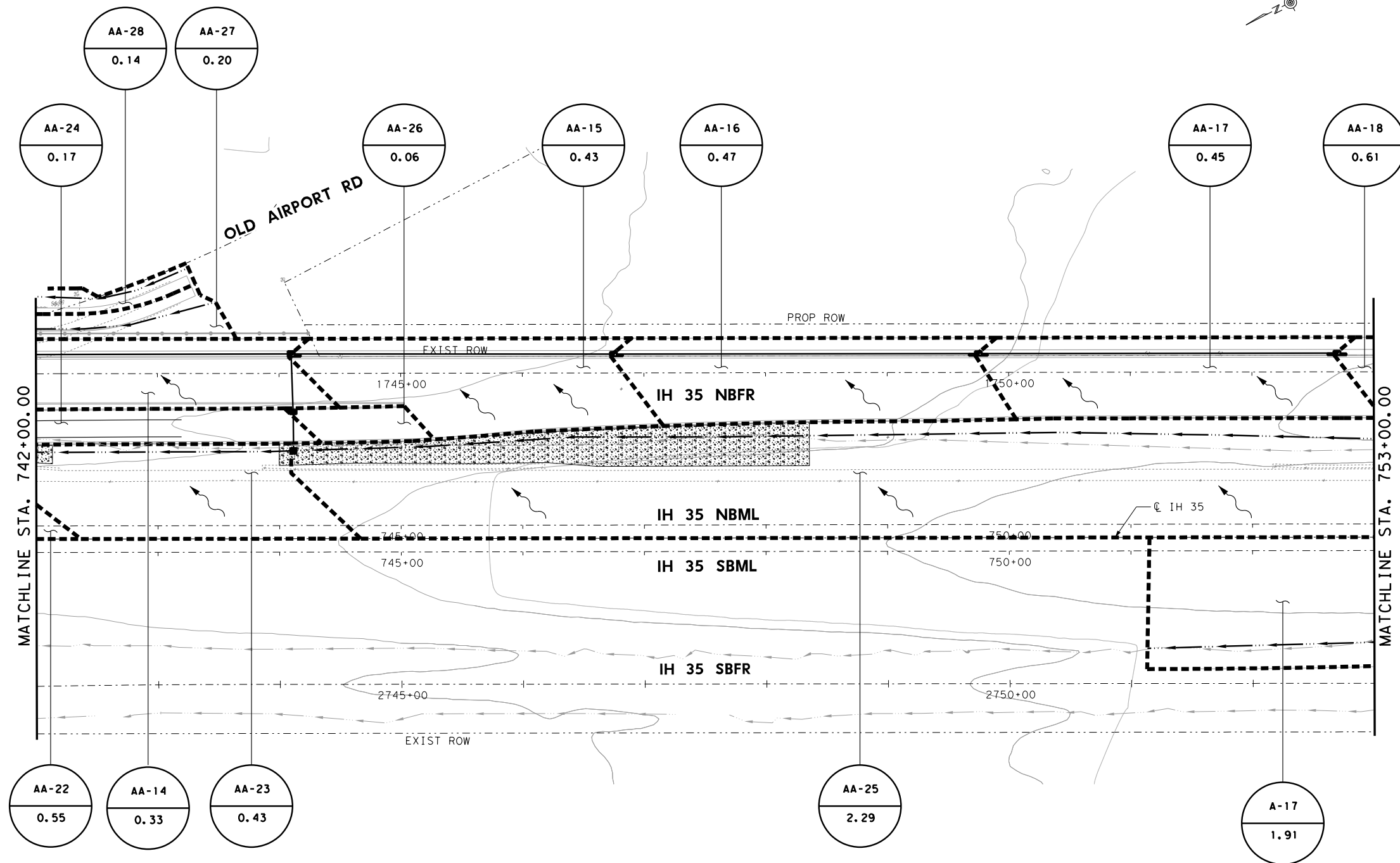
IH 35  
 DRAINAGE AREA MAP  
 INTERSTATE 35  
 STA 731+00 TO STA 742+00

SHEET 2 OF 13

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	532

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DATE: 12/20/2019 8:06:19 PM  
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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- CL PROPOSED DITCH
- CL EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

TIMOTHY J. LYNG  
90515  
LICENSED PROFESSIONAL ENGINEER  
2/20/2019

SCALES (IN FEET):  
HORZ - 0 25 50 100

RUNOFF COMPUTATIONS														
DRAINAGE AREA		COMPOSITE AREA, (AC)						WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)									
AA-14	AA	0.33	0.28	0.00	0.05	0.82	0.27	5.00	10.00	10	6.75	1.83		
AA-15	AA	0.43	0.41	0.00	0.02	0.87	0.37	2.50	10.00	10	6.75	2.53		
AA-16	AA	0.47	0.45	0.00	0.02	0.88	0.41	2.50	10.00	10	6.75	2.79		
AA-17	AA	0.45	0.43	0.00	0.02	0.87	0.39	5.80	10.00	10	6.75	2.64		
AA-18	AA	0.61	0.59	0.00	0.02	0.88	0.54	5.80	10.00	10	6.75	3.62		
AA-22	AA	0.55	0.55	0.00	0.00	0.90	0.50	6.20	10.00	10	6.75	3.34		
AA-23	AA	0.43	0.32	0.00	0.11	0.76	0.33	4.20	10.00	10	6.75	2.21		
AA-24	AA	0.17	0.17	0.00	0.00	0.90	0.15	2.50	10.00	10	6.75	1.03		
AA-25	AA	2.29	2.29	0.00	0.00	0.90	2.06	12.80	12.80	10	6.15	12.68		
AA-26	AA	0.06	0.06	0.00	0.00	0.90	0.05	2.50	10.00	10	6.75	0.36		
AA-27	AA	0.20	0.08	0.00	0.13	0.56	0.11	3.50	10.00	10	6.75	0.76		
AA-28	AA	0.14	0.07	0.00	0.07	0.63	0.09	3.50	10.00	10	6.75	0.60		
A-17	A	1.91	1.49	0.00	0.42	0.78	1.49	10.25	10.25	10	6.69	9.97		

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

ENTECH  
CIVIL ENGINEERS INC

mobility 35  
CAPITAL AREA

Texas Department of Transportation

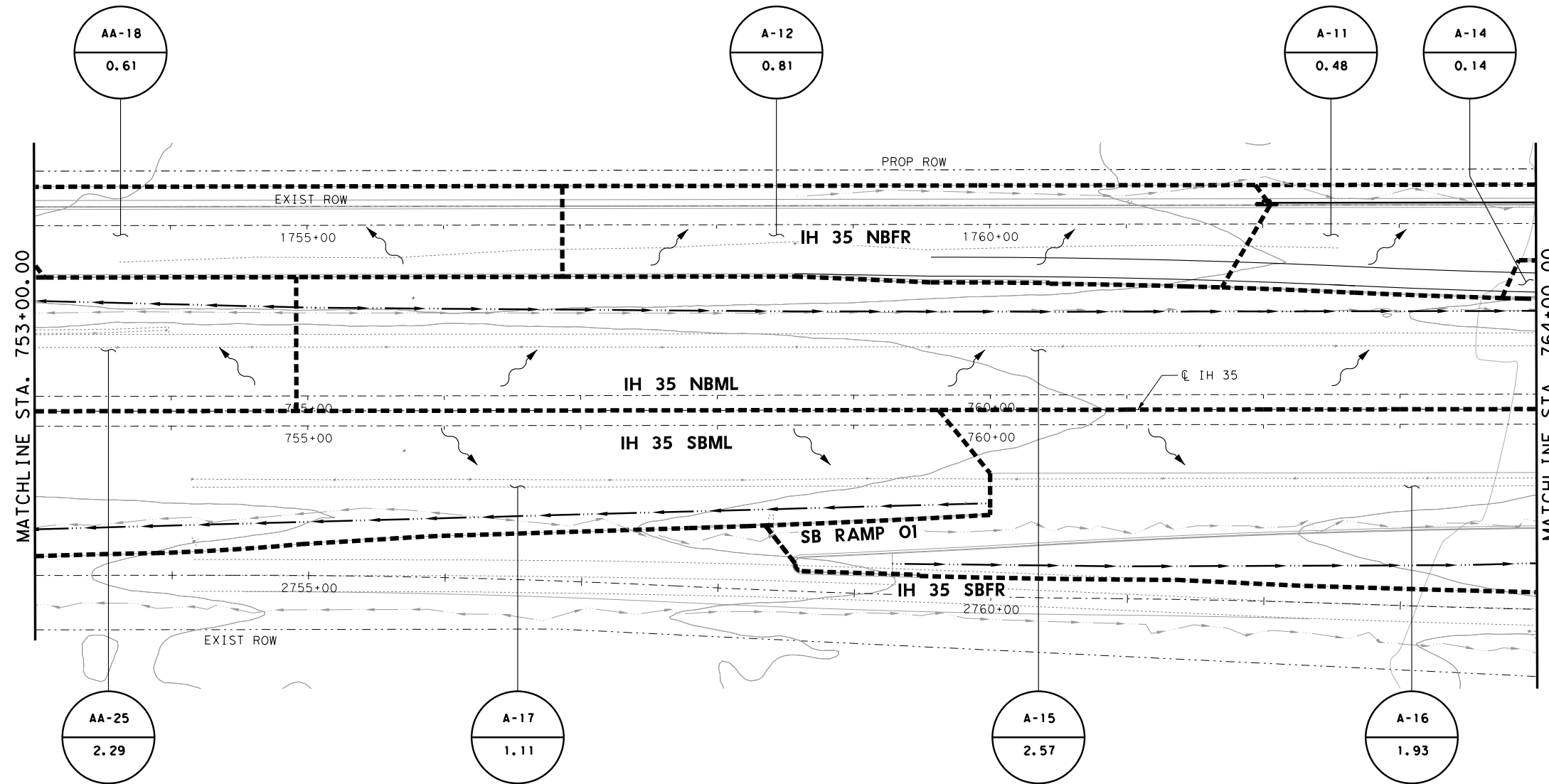
IH 35  
DRAINAGE AREA MAP  
INTERSTATE 35  
STA 742+00 TO STA 753+00

SHEET 3 OF 13

DS: JS	CK: RC	CONT: 0015	SECT: 08	JOB: 144	HIGHWAY: IH 35
DW: RM	CK: AL	DIST: AUS	COUNTY: WILLIAMSON	SHEET NO.: 533	

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DATE: 12/20/2019 8:06:20 PM  
FILE: N:\4912-17-301\CADD\DR-05\_DRAINAGE\Drainage Area Maps\60203-S-DR-LE-IH35-04.dgn



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- @ PROPOSED DITCH
- @ EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
0 25 50 100  
HORZ -

RUNOFF COMPUTATIONS														
DRAINAGE AREA			COMPOSITE AREA, (AC)						CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C								
AA-18	AA	0.61	0.59	0.00	0.02	0.88	0.54	5.80	10.00	10.00	10	6.75	3.62	
AA-25	AA	2.29	2.29	0.00	0.00	0.90	2.06	12.80	12.80	12.80	10	6.15	12.68	
A-11	A	0.48	0.47	0.00	0.02	0.88	0.42	6.00	10.00	10.00	10	6.75	2.85	
A-12	A	0.81	0.77	0.00	0.03	0.88	0.71	6.00	10.00	10.00	10	6.75	4.81	
A-14	A	0.14	0.14	0.00	0.00	0.90	0.13	2.50	10.00	10.00	10	6.75	0.85	
A-15	A	2.57	1.58	0.00	0.99	0.69	1.77	14.61	14.61	14.61	10	5.82	10.32	
A-16	A	1.93	1.34	0.00	0.59	0.73	1.41	10.90	10.90	10.90	10	6.54	9.21	
A-17	A	1.91	1.49	0.00	0.42	0.78	1.49	10.25	10.25	10.25	10	6.69	9.97	

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

**ENTECH** CIVIL ENGINEERS INC  
F-6932  
15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX



**IH 35**  
**DRAINAGE AREA MAP**  
**INTERSTATE 35**  
**STA 753+00 TO STA 764+00**

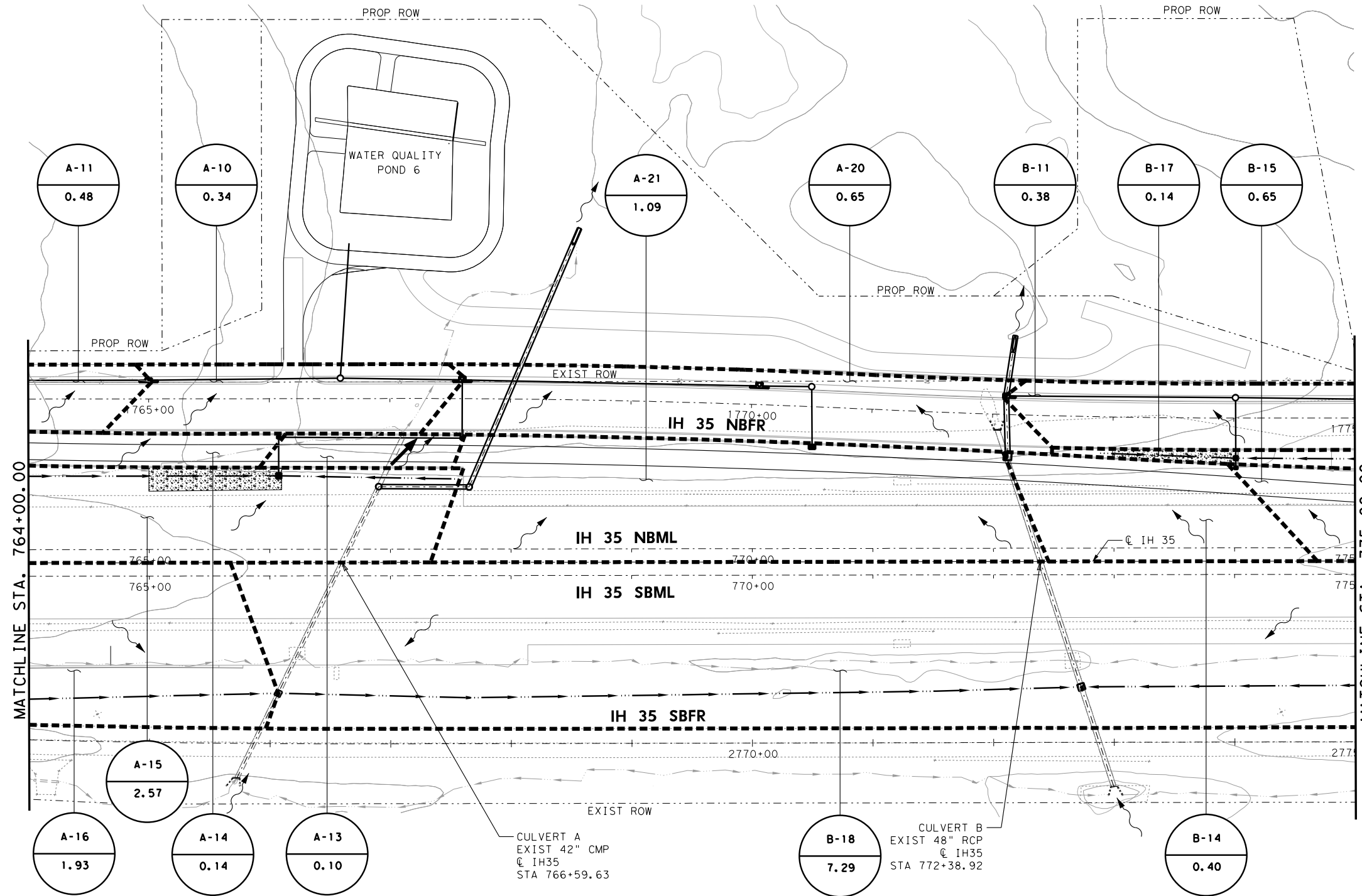
SHEET 4 OF 13

DS: JS	CK: RC	CONT: 0015	SECT: 08	JOB: 144	HIGHWAY: IH 35
DW: RM	CK: AL	DIST: AUS	COUNTY: WILLIAMSON	SHEET NO. 534	



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DATE: 12/20/2019 8:06:21 PM  
FILE: N:\4912-17-301\CADD\DRAINAGE\Area Maps\60203-S-DR-LE-IH35-05.dgn



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- @ PROPOSED DITCH
- @ EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID
- DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

TIMOTHY J. LYNG  
90515  
LICENSED PROFESSIONAL ENGINEER  
2/20/2019

SCALES (IN FEET):  
0 25 50 100  
HORZ -

**ENTECH** CIVIL ENGINEERS INC  
F-6932  
15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX

**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

**IH 35  
DRAINAGE AREA MAP  
INTERSTATE 35  
STA 764+00 TO STA 775+00**

SHEET 5 OF 13

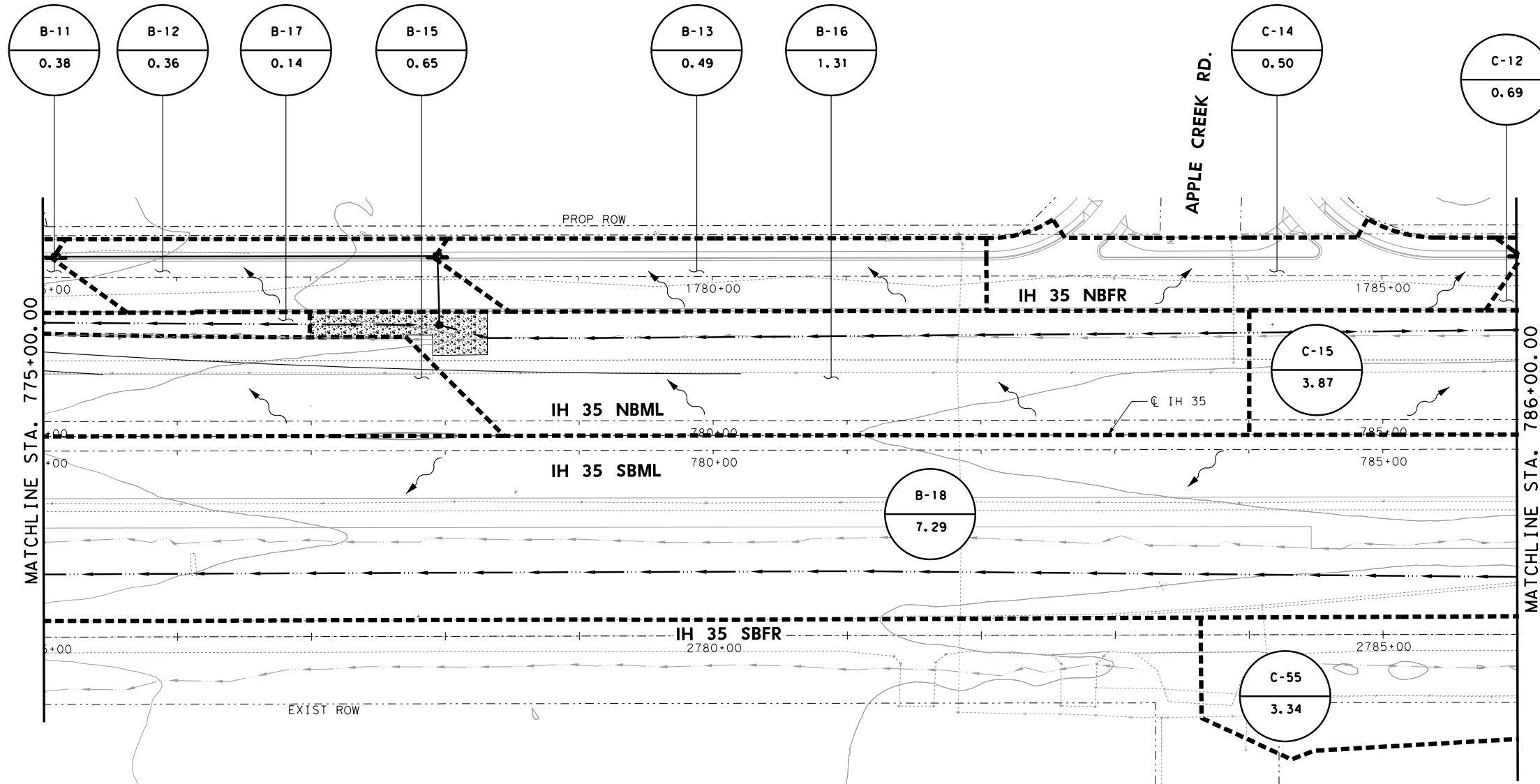
RUNOFF COMPUTATIONS												
INLET ID	DRAINAGE AREA SYSTEM ID	TOTAL AREA (AC)	COMPOSITE AREA, (AC)			WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
			PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)							
A-10	A	0.34	0.33	0.00	0.02	0.87	0.30	6.00	10.00	10	6.75	2.00
A-11	A	0.48	0.47	0.00	0.02	0.88	0.42	6.00	10.00	10	6.75	2.85
A-13	A	0.10	0.10	0.00	0.00	0.90	0.09	2.50	10.00	10	6.75	0.61
A-14	A	0.14	0.14	0.00	0.00	0.90	0.13	2.50	10.00	10	6.75	0.85
A-15	A	2.57	1.58	0.00	0.99	0.69	1.77	14.61	14.61	10	5.82	10.32
A-16	A	1.93	1.34	0.00	0.59	0.73	1.41	10.90	10.90	10	6.54	9.21
A-20	A	0.65	0.60	0.00	0.05	0.86	0.56	4.20	10.00	10	6.75	3.77
A-21	A	1.09	1.09	0.00	0.00	0.90	0.98	6.20	10.00	10	6.75	6.62
B-11	B	0.38	0.31	0.00	0.07	0.80	0.30	3.50	10.00	10	6.75	2.05
B-14	B	0.40	0.40	0.00	0.00	0.90	0.36	6.40	10.00	10	6.75	2.43
B-15	B	0.65	0.65	0.00	0.00	0.90	0.59	6.40	10.00	10	6.75	3.95
B-17	B	0.14	0.06	0.00	0.09	0.56	0.08	3.10	10.00	10	6.75	0.53
B-18	B	7.29	4.02	0.00	3.27	0.65	4.74	20.00	20.00	10	5.04	23.88

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	535

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DATE: 12/20/2019 8:06:22 PM  
 FILE: N:\4912-17-301\CADD\DRAINAGE\Drainage Area Maps\60203-S-DR-LE-IH35-06.dgn



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- @ PROPOSED DITCH
- @ EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID
- DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

**ENTECH** CIVIL ENGINEERS INC  
 F-6932  
 15021 Katy Freeway,  
 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX

**mobility** CAPITAL AREA



**IH 35  
 DRAINAGE AREA MAP  
 INTERSTATE 35  
 STA 775+00 TO STA 786+00**

SHEET 6 OF 13

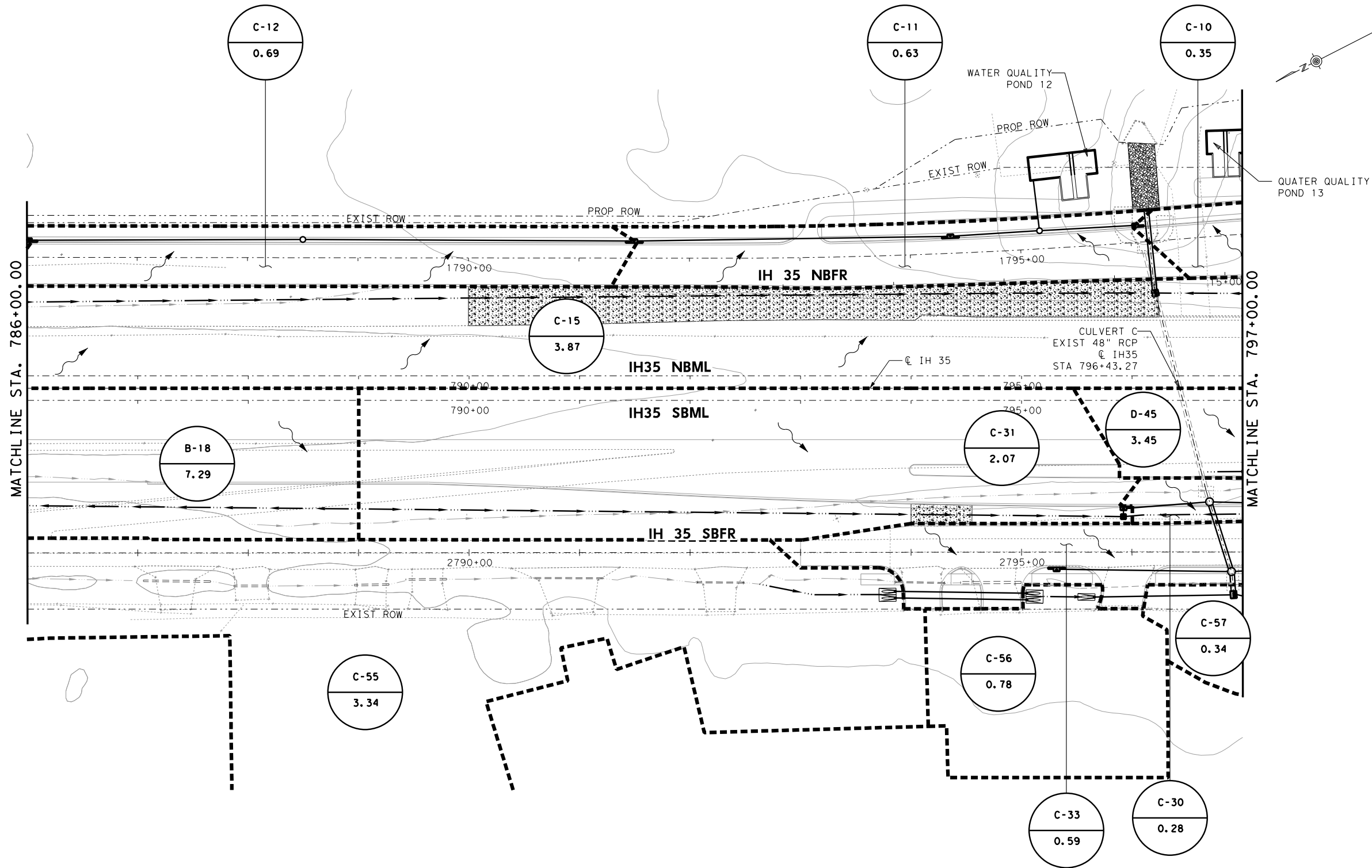
DRAINAGE AREA		COMPOSITE AREA, (AC)						RUNOFF COMPUTATIONS				
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
B-11	B	0.38	0.31	0.00	0.07	0.80	0.30	3.50	10.00	10	6.75	2.05
B-12	B	0.36	0.34	0.00	0.02	0.87	0.31	3.10	10.00	10	6.75	2.11
B-13	B	0.49	0.47	0.00	0.02	0.88	0.43	3.10	10.00	10	6.75	2.91
B-15	B	0.65	0.65	0.00	0.00	0.90	0.59	6.40	10.00	10	6.75	3.95
B-16	B	1.31	0.91	0.00	0.40	0.73	0.96	7.20	10.00	10	6.75	6.46
B-17	B	0.14	0.06	0.00	0.09	0.56	0.08	3.10	10.00	10	6.75	0.53
B-18	B	7.29	4.02	0.00	3.27	0.65	4.74	20.00	20.00	10	5.04	23.88
C-12	C	0.69	0.65	0.00	0.04	0.87	0.60	6.80	10.00	10	6.75	4.05
C-14	C	0.50	0.48	0.00	0.02	0.88	0.44	3.50	10.00	10	6.75	2.97
C-15	C	3.87	2.78	0.00	1.09	0.74	2.86	12.50	12.50	10	6.21	17.78
C-55	C	3.34	2.09	0.00	1.25	0.69	2.30	12.15	12.15	10	6.28	14.47

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

DS: JS	CK: RC	CONT: 0015	SECT: 08	JOB: 144	HIGHWAY: IH 35
DW: RM	CK: AL	DIST: AUS	COUNTY: WILLIAMSON	SHEET NO. 536	

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DATE: 12/20/2019 8:06:23 PM  
FILE: N:\4912-17-301\CADD\GN\05\_DRAINAGE\Drainage Area Maps\60203-S-DR-LE-IH35-07.dgn



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- PROPOSED DITCH
- EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID
- DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

STATE OF TEXAS  
  
 TIMOTHY J. LYNG  
 90515  
 LICENSED PROFESSIONAL ENGINEER  
 12/20/2019  
*Timothy J. Lyng*

SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

**ENTECH** CIVIL ENGINEERS INC  
 F-6932  
 15021 Katy Freeway,  
 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

**IH 35  
 DRAINAGE AREA MAP  
 INTERSTATE 35  
 STA 786+00 TO STA 797+00**

SHEET 7 OF 13

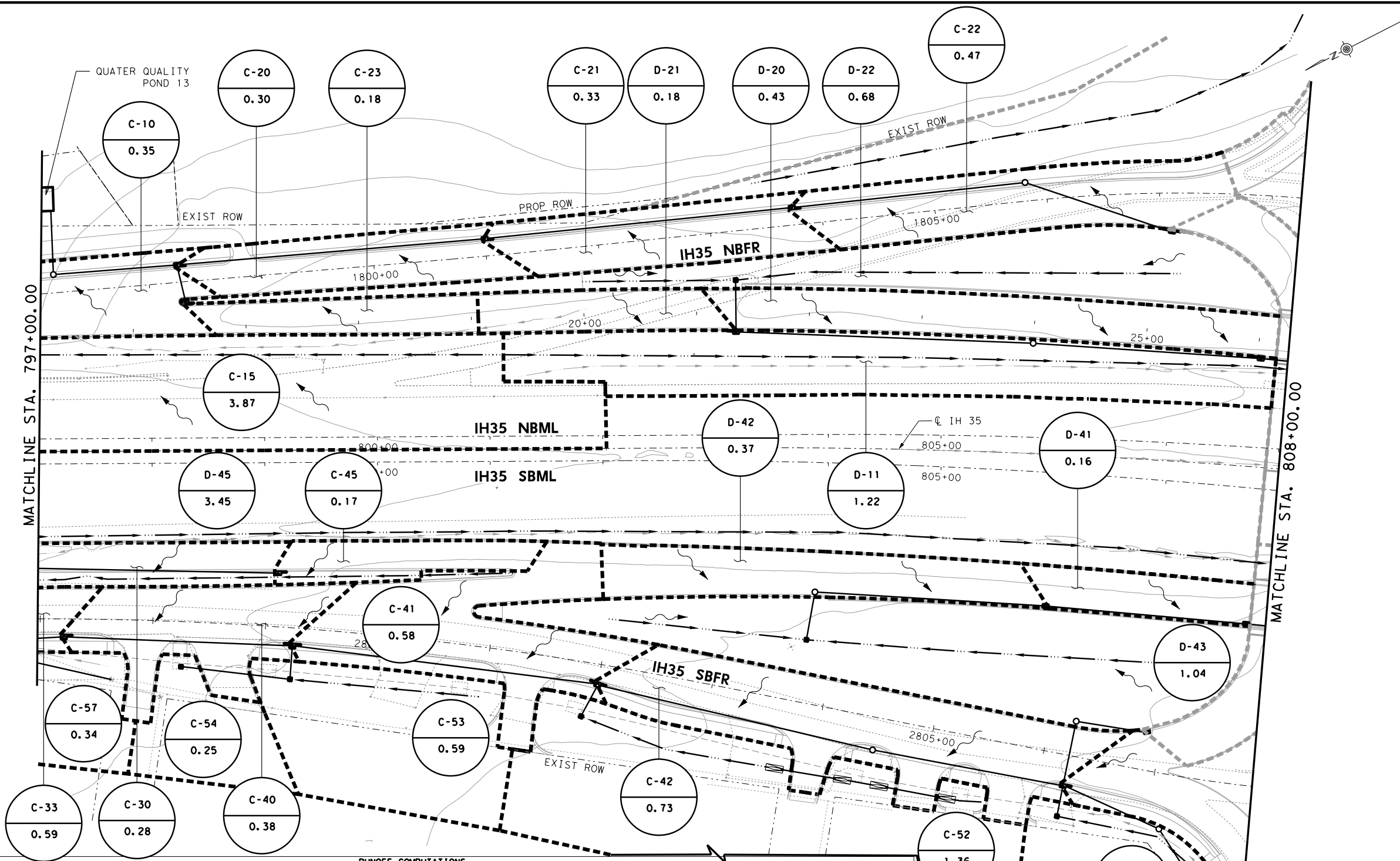
DRAINAGE AREA		COMPOSITE AREA, (AC)			RUNOFF COMPUTATIONS							
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
B-18	B	7.29	4.02	0.00	3.27	0.65	4.74	20.00	20.00	10	5.04	23.88
C-10	C	0.35	0.32	0.00	0.03	0.85	0.30	4.50	10.00	10	6.75	2.01
C-11	C	0.63	0.59	0.00	0.04	0.86	0.54	6.60	10.00	10	6.75	3.66
C-12	C	0.69	0.65	0.00	0.04	0.87	0.60	6.80	10.00	10	6.75	4.05
C-15	C	3.87	2.78	0.00	1.09	0.74	2.86	12.50	12.50	10	6.21	17.78
C-30	C	0.28	0.16	0.00	0.12	0.66	0.18	6.20	10.00	10	6.75	1.25
C-31	C	2.07	1.33	0.00	0.74	0.70	1.45	6.90	10.00	10	6.75	9.78
C-33	C	0.59	0.57	0.00	0.02	0.88	0.52	2.50	10.00	10	6.75	3.50
C-55	C	3.34	2.09	0.00	1.25	0.69	2.30	12.15	12.15	10	6.28	14.47
C-56	C	0.77	0.63	0.00	0.14	0.80	0.62	12.15	12.15	10	6.28	3.87
C-57	C	0.34	0.01	0.00	0.32	0.37	0.13	6.30	10.00	10	6.75	0.85
D-45	D	3.45	2.31	0.00	1.14	0.72	2.48	21.00	21.00	10	4.92	12.22

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	537

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DATE: 12/20/2019 8:06:25 PM  
FILE: N:\4912-17-301\CADD\GN05\_DRAINAGE\Area Maps\60203-S-DR-LE-IH35-08.dgn



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- PROPOSED DITCH
- EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

NOTE:  
FOR AREAS ALONG WILLIAMS DR  
PLEASE SEE WILLIAMS DR DRAINAGE  
AREA MAP SHEETS.

TIMOTHY J. LYNG  
90515  
LICENSED PROFESSIONAL ENGINEER  
2/20/2019

SCALES (IN FEET):  
HORZ - 0 25 50 100

DRAINAGE AREA		COMPOSITE AREA, (AC)				RUNOFF COMPUTATIONS						
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
C-10	C	0.35	0.32	0.00	0.03	0.85	0.30	4.50	10.00	10	6.75	2.01
C-15	C	3.87	2.78	0.00	1.09	0.74	2.86	12.50	12.50	10	6.21	17.78
C-20	C	0.30	0.28	0.00	0.02	0.87	0.26	4.30	10.00	10	6.75	1.76
C-21	C	0.33	0.31	0.00	0.02	0.86	0.28	3.20	10.00	10	6.75	1.92
C-22	C	0.47	0.47	0.00	0.00	0.90	0.42	3.60	10.00	10	6.75	2.86
C-23	C	0.18	0.18	0.00	0.00	0.90	0.16	6.00	10.00	10	6.75	1.09
C-30	C	0.28	0.16	0.00	0.12	0.66	0.18	6.20	10.00	10	6.75	1.25
C-33	C	0.59	0.57	0.00	0.02	0.88	0.52	2.50	10.00	10	6.75	3.50
C-40	C	0.38	0.36	0.00	0.02	0.87	0.33	3.45	10.00	10	6.75	2.23
C-41	C	0.58	0.56	0.00	0.02	0.88	0.51	5.20	10.00	10	6.75	3.45
C-42	C	0.73	0.71	0.00	0.03	0.88	0.64	4.30	10.00	10	6.75	4.34
C-45	C	0.17	0.17	0.00	0.00	0.90	0.15	2.40	10.00	10	6.75	1.03
C-51	C	0.60	0.00	0.45	0.15	0.58	0.35	6.50	10.00	10	6.75	2.35
C-52	C	1.36	0.00	0.78	0.58	0.39	0.53	11.40	11.40	10	6.43	3.41
C-53	C	0.59	0.00	0.32	0.27	0.51	0.30	2.10	10.00	10	6.75	2.03
C-54	C	0.25	0.08	0.00	0.17	0.53	0.13	6.80	10.00	10	6.75	0.89
C-57	C	0.34	0.01	0.00	0.32	0.37	0.13	6.30	10.00	10	6.75	0.85
D-11	D	1.22	1.22	0.00	0.00	0.90	1.10	13.10	13.10	10	6.09	6.69
D-20	D	0.43	0.43	0.00	0.00	0.90	0.39	3.90	10.00	10	6.75	2.61
D-21	D	0.18	0.18	0.00	0.00	0.90	0.16	8.20	10.00	10	6.75	1.09
D-22	D	0.68	0.00	0.00	0.68	0.35	0.24	5.10	10.00	10	6.75	1.61
D-41	D	0.16	0.16	0.00	0.00	0.90	0.14	3.50	10.00	10	6.75	0.97
D-42	D	0.37	0.37	0.00	0.00	0.90	0.33	3.50	10.00	10	6.75	2.25
D-43	D	1.04	0.00	0.00	1.04	0.35	0.36	5.10	10.00	10	6.75	2.46
D-45	D	3.45	2.31	0.00	1.14	0.72	2.48	21.00	21.00	10	4.92	12.22

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

F-6932  
15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX

**IH 35**  
**DRAINAGE AREA MAP**  
**INTERSTATE 35**  
**STA 797+00 TO STA 808+00**

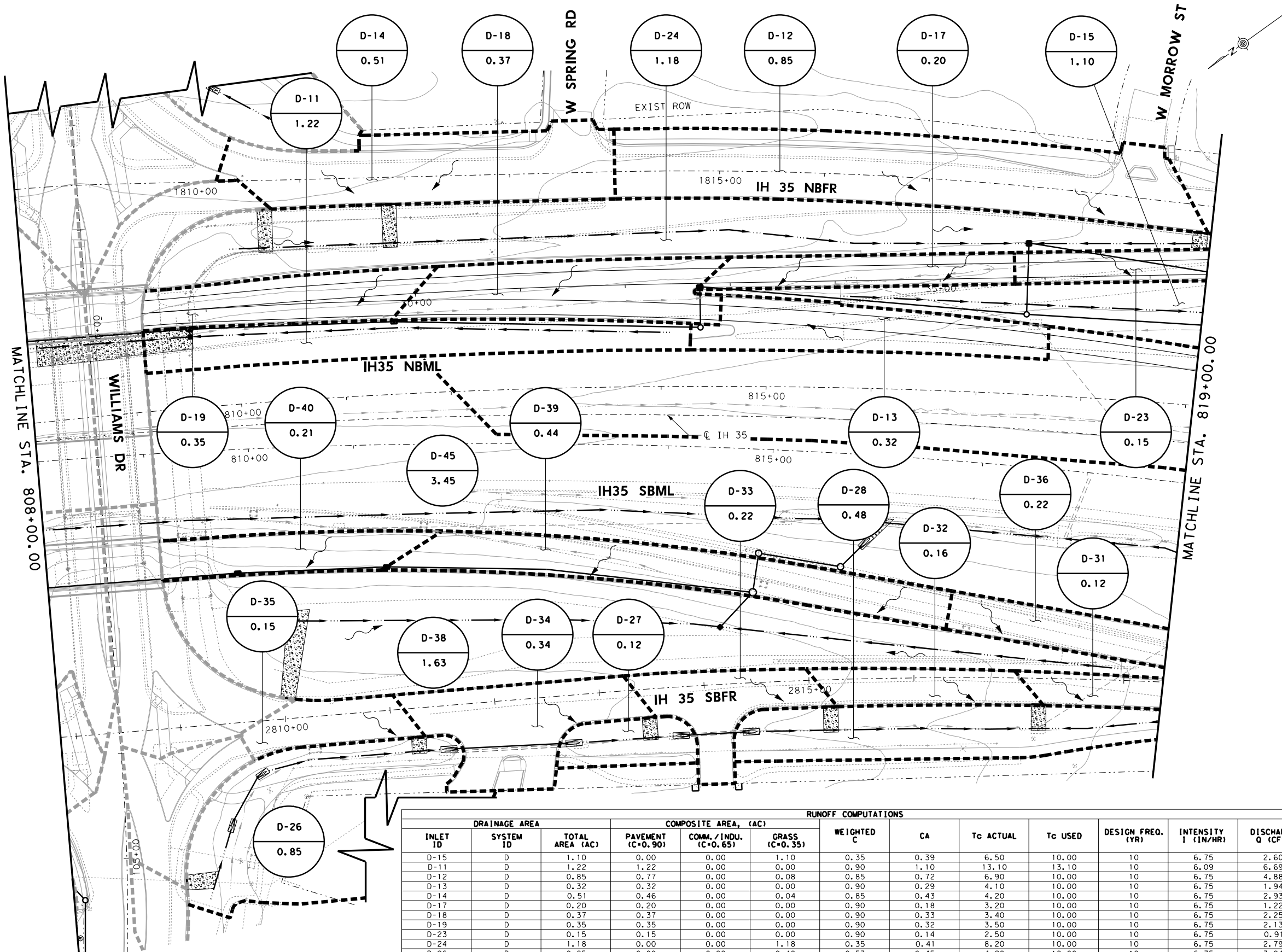
SHEET 8 OF 13

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	538



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DATE: 12/20/2019 8:06:26 PM  
 FILE: N:\4912-17-301\CADD\GN\05\_DRAINAGE\Drainage Area Maps\6203-S-DR-LE-IH35-09.dgn



**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- PROPOSED DITCH
- EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

NOTE:  
 FOR AREAS ALONG WILLIAMS DR  
 PLEASE SEE WILLIAMS DR DRAINAGE  
 AREA MAP SHEETS.



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

DRAINAGE AREA		COMPOSITE AREA, (AC)					RUNOFF COMPUTATIONS							
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)	WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)		
D-15	D	1.10	0.00	0.00	1.10	0.35	0.39	6.50	10.00	10	6.75	2.60		
D-11	D	1.22	0.00	0.00	0.00	0.90	1.10	13.10	13.10	10	6.09	6.69		
D-12	D	0.85	0.77	0.00	0.08	0.85	0.72	6.90	10.00	10	6.75	4.88		
D-13	D	0.32	0.32	0.00	0.00	0.90	0.29	4.10	10.00	10	6.75	1.94		
D-14	D	0.51	0.46	0.00	0.04	0.85	0.43	4.20	10.00	10	6.75	2.93		
D-17	D	0.20	0.20	0.00	0.00	0.90	0.18	3.20	10.00	10	6.75	1.22		
D-18	D	0.37	0.37	0.00	0.00	0.90	0.33	3.40	10.00	10	6.75	2.25		
D-19	D	0.35	0.35	0.00	0.00	0.90	0.32	3.50	10.00	10	6.75	2.13		
D-23	D	0.15	0.15	0.00	0.00	0.90	0.14	2.50	10.00	10	6.75	0.91		
D-24	D	1.18	0.00	0.00	1.18	0.35	0.41	8.20	10.00	10	6.75	2.79		
D-26	D	0.85	0.00	0.00	0.40	0.53	0.45	4.20	10.00	10	6.75	3.04		
D-27	D	0.12	0.03	0.00	0.09	0.49	0.06	2.20	10.00	10	6.75	0.40		
D-28	D	0.48	0.11	0.00	0.37	0.48	0.23	3.40	10.00	10	6.75	1.56		
D-31	D	0.12	0.12	0.00	0.00	0.90	0.11	3.60	10.00	10	6.75	0.73		
D-32	D	0.16	0.16	0.00	0.00	0.90	0.14	2.50	10.00	10	6.75	0.97		
D-33	D	0.22	0.22	0.00	0.00	0.90	0.20	2.10	10.00	10	6.75	1.34		
D-34	D	0.34	0.34	0.00	0.00	0.90	0.31	3.10	10.00	10	6.75	2.07		
D-35	D	0.15	0.15	0.00	0.00	0.90	0.14	2.20	10.00	10	6.75	0.91		
D-36	D	0.22	0.22	0.00	0.00	0.90	0.20	5.10	10.00	10	6.75	1.34		
D-38	D	1.63	0.00	0.00	1.63	0.35	0.57	8.20	10.00	10	6.75	3.85		
D-39	D	0.44	0.44	0.00	0.00	0.90	0.40	5.10	10.00	10	6.75	2.67		
D-40	D	0.21	0.21	0.00	0.00	0.90	0.19	3.20	10.00	10	6.75	1.28		
D-45	D	3.45	2.31	0.00	1.14	0.72	2.48	21.00	21.00	10	4.92	12.22		

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

**ENTECH** CIVIL ENGINEERS INC  
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 15021 Katy Freeway,  
 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

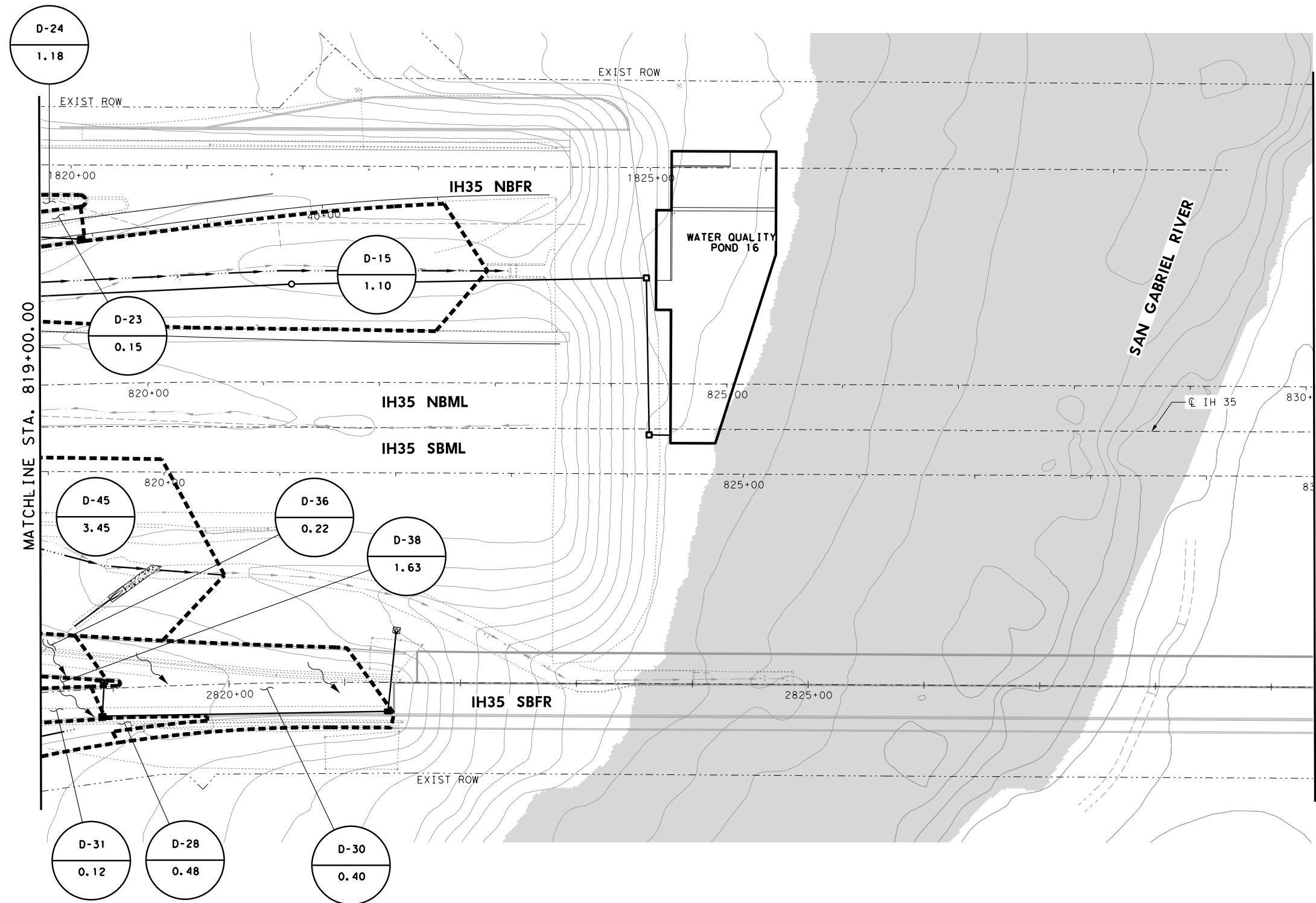
**IH 35  
 DRAINAGE AREA MAP  
 INTERSTATE 35  
 STA 808+00 TO STA 819+00**

SHEET 9 OF 13

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	539

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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- @ PROPOSED DITCH
- @ EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID
- DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
 HORZ - 0 25 50 100

**ENTECH** CIVIL ENGINEERS INC  
 F-6932  
 15021 Katy Freeway,  
 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX

**mobility** CAPITAL AREA



**IH 35  
 DRAINAGE AREA MAP  
 INTERSTATE 35  
 STA 819+00 TO STA 830+00**

SHEET 10 OF 13

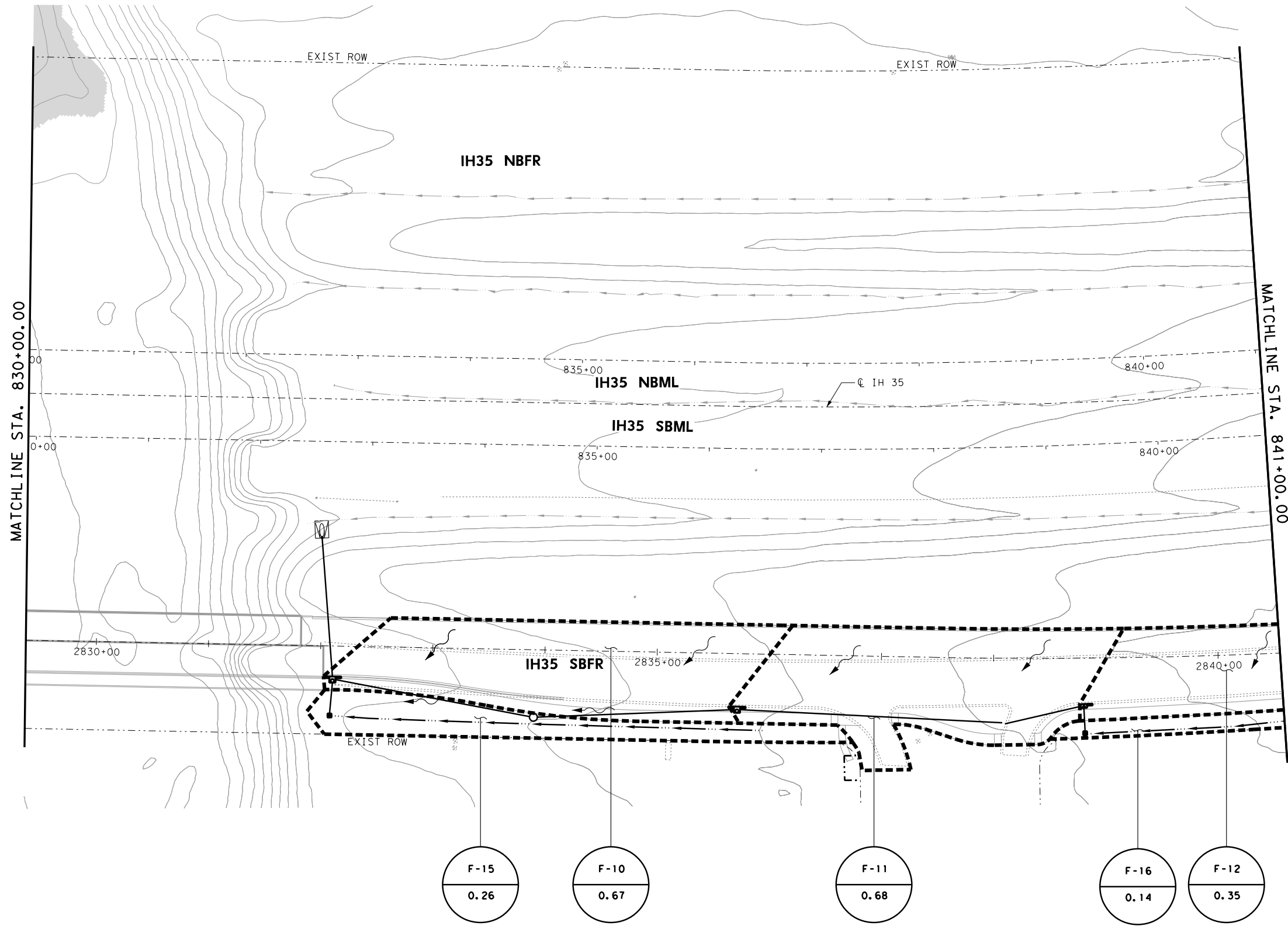
RUNOFF COMPUTATIONS													
DRAINAGE AREA			COMPOSITE AREA, (AC)				WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)								
D-15	D	1.10	0.00	0.00	1.10	0.35	0.39	6.50	10.00	10	6.75	2.60	
D-23	D	0.15	0.15	0.00	0.00	0.90	0.14	2.50	10.00	10	6.75	0.91	
D-24	D	1.18	0.00	0.00	1.18	0.35	0.41	8.20	10.00	10	6.75	2.79	
D-28	D	0.48	0.11	0.00	0.37	0.48	0.23	3.40	10.00	10	6.75	1.56	
D-30	D	0.40	0.40	0.00	0.00	0.90	0.36	5.10	10.00	10	6.75	2.43	
D-31	D	0.12	0.12	0.00	0.00	0.90	0.11	3.60	10.00	10	6.75	0.73	
D-36	D	0.22	0.22	0.00	0.00	0.90	0.20	5.10	10.00	10	6.75	1.34	
D-38	D	1.63	0.00	0.00	1.63	0.35	0.57	8.20	10.00	10	6.75	3.85	
D-45	D	3.45	2.31	0.00	1.14	0.72	2.48	21.00	21.00	10	4.92	12.22	

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	540

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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- PROPOSED DITCH
- EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

STATE OF TEXAS  
TIMOTHY J. LYNG  
90515  
LICENSED PROFESSIONAL ENGINEER  
2/20/2019

SCALES (IN FEET):  
0 25 50 100  
HORZ -

F-15 0.26	F-10 0.67	F-11 0.68	F-16 0.14	F-12 0.35
--------------	--------------	--------------	--------------	--------------

RUNOFF COMPUTATIONS												
DRAINAGE AREA		COMPOSITE AREA, (AC)				WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)							
F-10	F	0.67	0.58	0.00	0.08	0.83	0.56	6.80	10.00	10	6.75	3.75
F-11	F	0.68	0.60	0.00	0.08	0.83	0.56	3.40	10.00	10	6.75	3.81
F-12	F	0.35	0.33	0.00	0.02	0.87	0.30	2.50	10.00	10	6.75	2.06
F-15	F	0.26	0.00	0.00	0.26	0.35	0.09	6.20	10.00	10	6.75	0.61
F-16	F	0.14	0.00	0.00	0.14	0.35	0.05	6.20	10.00	10	6.75	0.33

NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

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15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX

**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

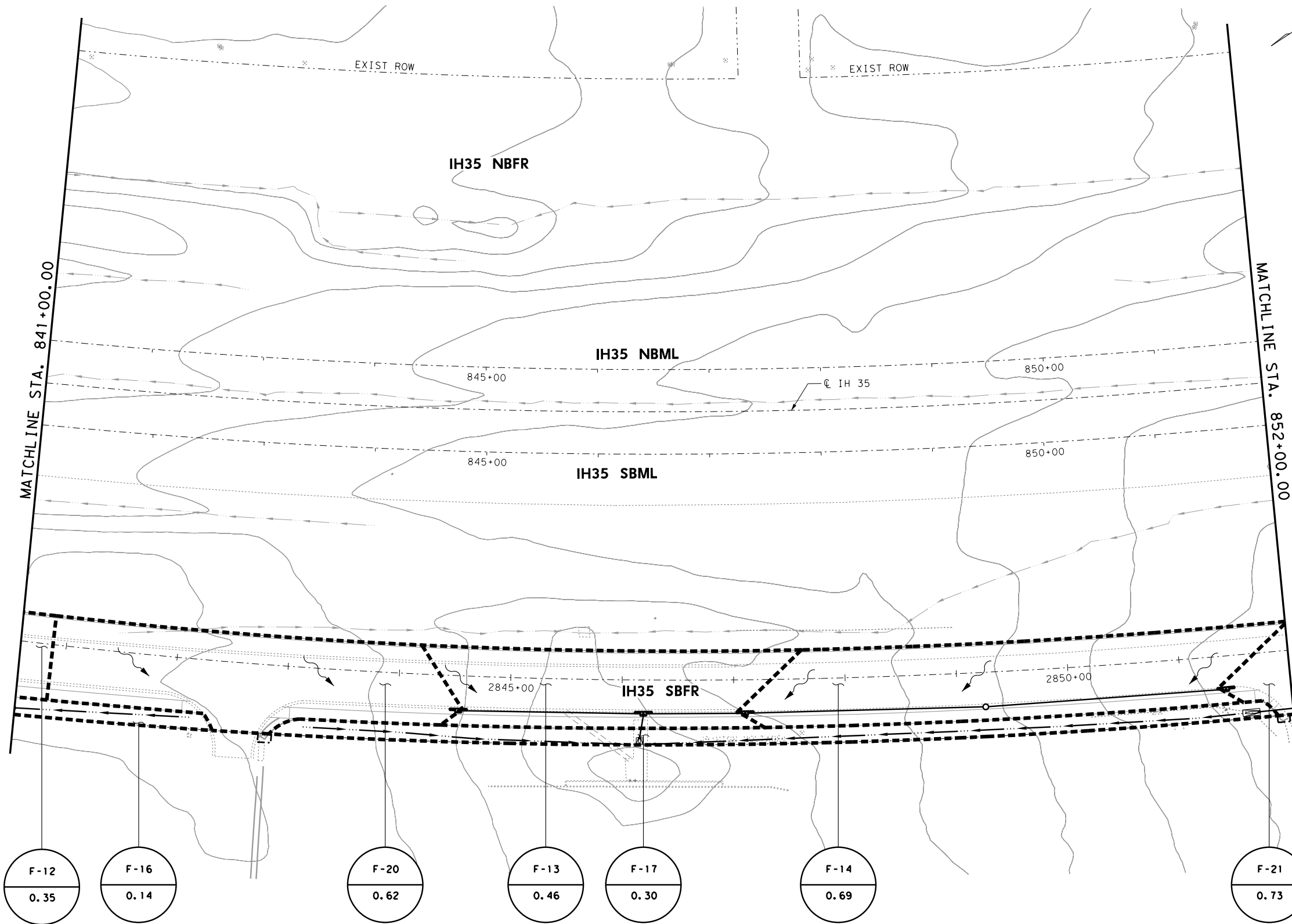
IH 35  
DRAINAGE AREA MAP  
INTERSTATE 35  
STA 830+00 TO STA 841+00

SHEET 11 OF 13

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	541

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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- @ PROPOSED DITCH
- @ EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- DRAINAGE AREA ID
- DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN

TIMOTHY J. LYNG  
90515  
LICENSED PROFESSIONAL ENGINEER  
2/20/2019

SCALES (IN FEET):  
0 25 50 100  
HORZ -

**ENTECH** CIVIL ENGINEERS INC  
F-6932  
15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
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281-945-0081 FX

**mobility** CAPITAL AREA

Texas Department of Transportation

**IH 35  
DRAINAGE AREA MAP  
INTERSTATE 35  
STA 841+00 TO STA 852+00**

SHEET 12 OF 13

RUNOFF COMPUTATIONS												
INLET ID	DRAINAGE AREA		COMPOSITE AREA, (AC)			WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)							
F-12	F	0.35	0.33	0.00	0.02	0.87	0.30	2.50	10.00	10	6.75	2.06
F-13	F	0.46	0.44	0.00	0.02	0.87	0.40	3.80	10.00	10	6.75	2.70
F-14	F	0.69	0.66	0.00	0.03	0.87	0.60	3.80	10.00	10	6.75	4.05
F-16	F	0.14	0.00	0.00	0.14	0.35	0.05	6.20	10.00	10	6.75	0.33
F-17	F	0.30	0.00	0.00	0.30	0.35	0.11	6.90	10.00	10	6.75	0.71
F-20	F	0.62	0.59	0.00	0.03	0.88	0.55	3.80	10.00	10	6.75	3.68
F-21	F	0.73	0.69	0.00	0.04	0.87	0.64	4.60	10.00	10	6.75	4.29

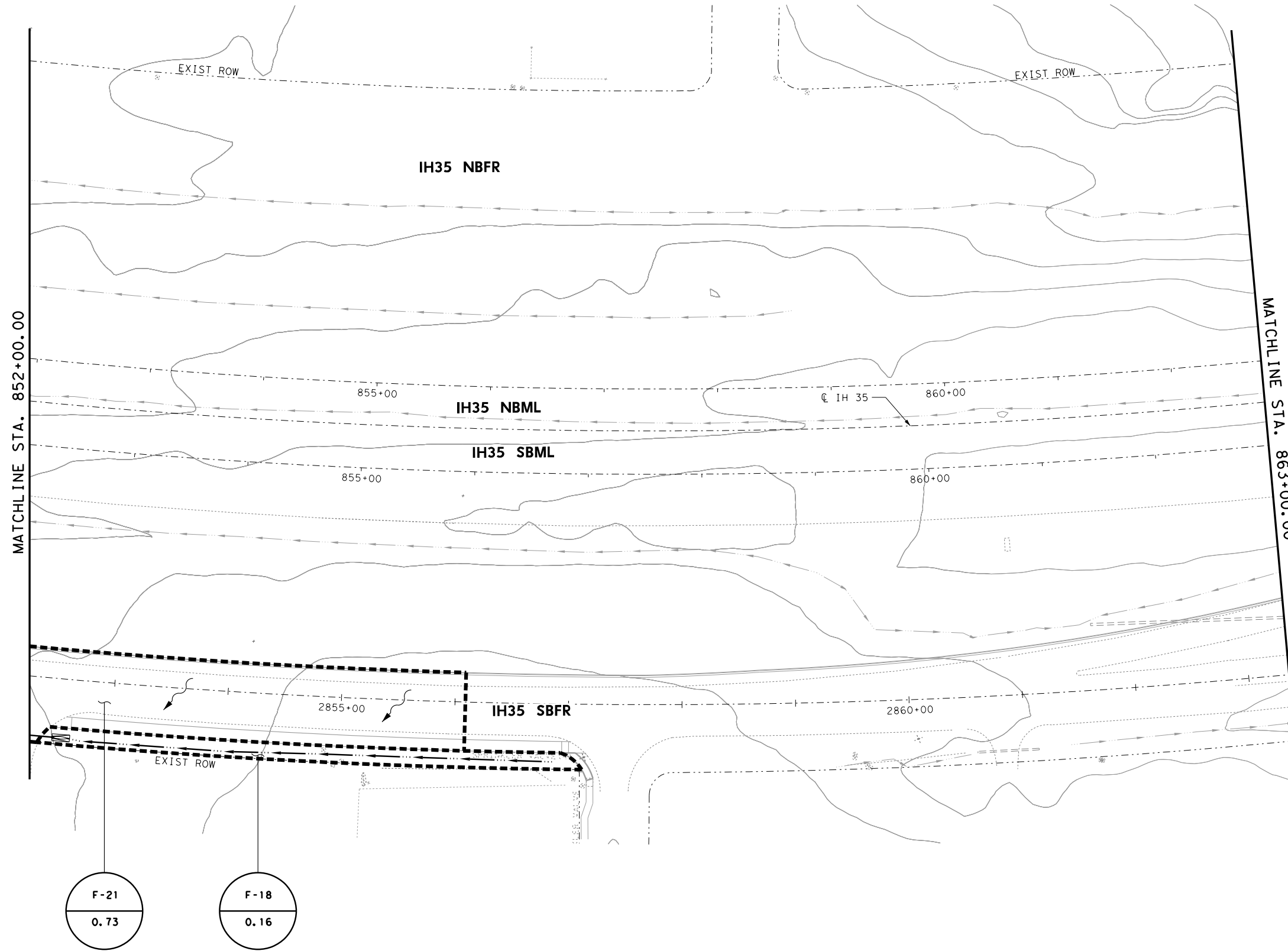
NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	542



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**LEGEND:**

- MANHOLE
- CURB INLET
- GRATE INLET
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY (NOT LABELED)
- CL PROPOSED DITCH
- CL EXIST DITCH
- FLOW DIRECTION
- EXISTING CONTOURS
- EXISTING STORM SEWERS
- X.XX**  
DRAINAGE AREA ID  
**X.XX**  
DRAINAGE AREA (ACRES)
- FEMA FLOODPLAIN



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

**ENTECH** CIVIL ENGINEERS INC  
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 Suite 500  
 Houston, Texas, 77094  
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 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**IH 35**  
**DRAINAGE AREA MAP**  
**INTERSTATE 35**  
**STA 852+00 TO STA 863+00**

SHEET 13 OF 13

RUNOFF COMPUTATIONS													
DRAINAGE AREA			COMPOSITE AREA, (AC)				WEIGHTED C	CA	Tc ACTUAL	Tc USED	DESIGN FREQ. (YR)	INTENSITY I (IN/HR)	DISCHARGE Q (CFS)
INLET ID	SYSTEM ID	TOTAL AREA (AC)	PAVEMENT (C=0.90)	COMM./INDU. (C=0.65)	GRASS (C=0.35)								
F-18	F	0.16	0.00	0.00	0.16	0.35	0.06	4.60	10.00	10	6.75	0.38	
F-21	F	0.73	0.69	0.00	0.04	0.87	0.64	4.60	10.00	10	6.75	4.29	

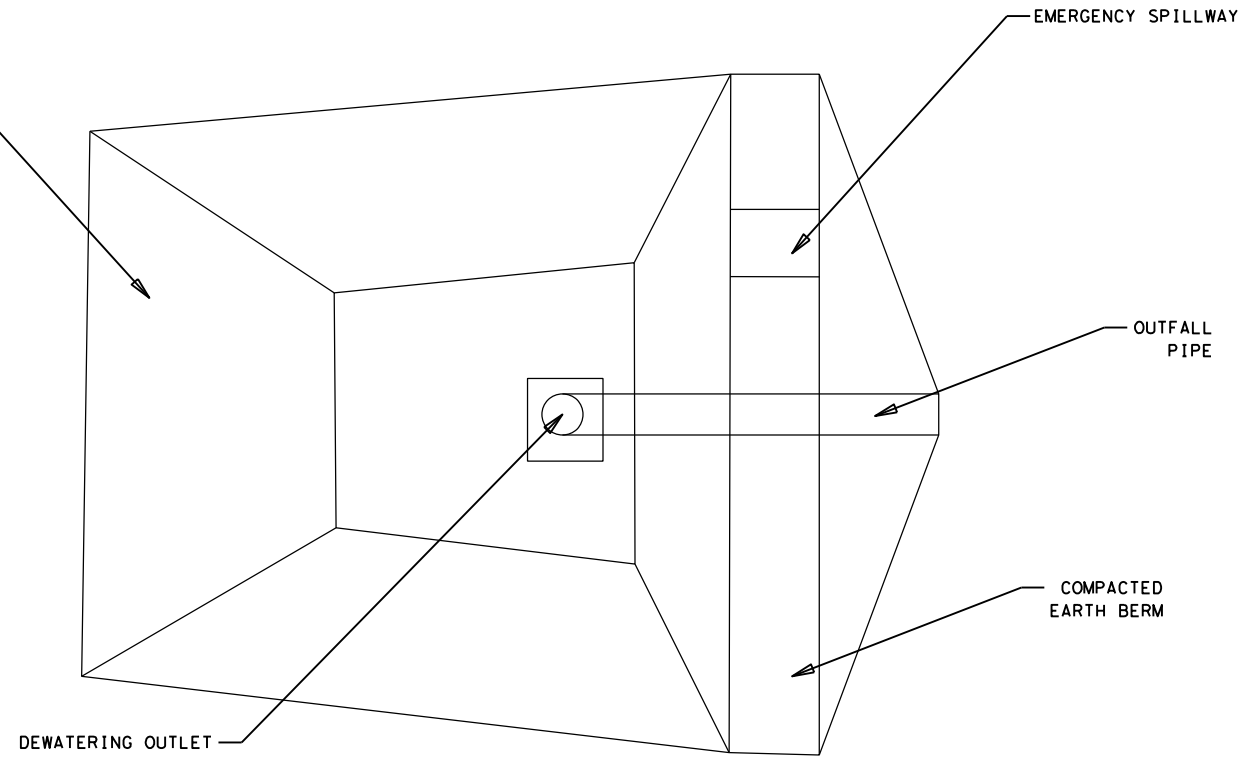
NOTE: THE RATIONAL METHOD WAS USED TO DETERMINE FLOWS. THE PREFERRED SOFTWARE UTILIZED TO AID THE DESIGN WAS GEOPAK DRAINAGE 2016 EDITION. RAINFALL DATA IS BASED ON USGS SCIENTIFIC INVESTIGATIONS REPORT 2004-5041.

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JS	RC	0015	08	144
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	543

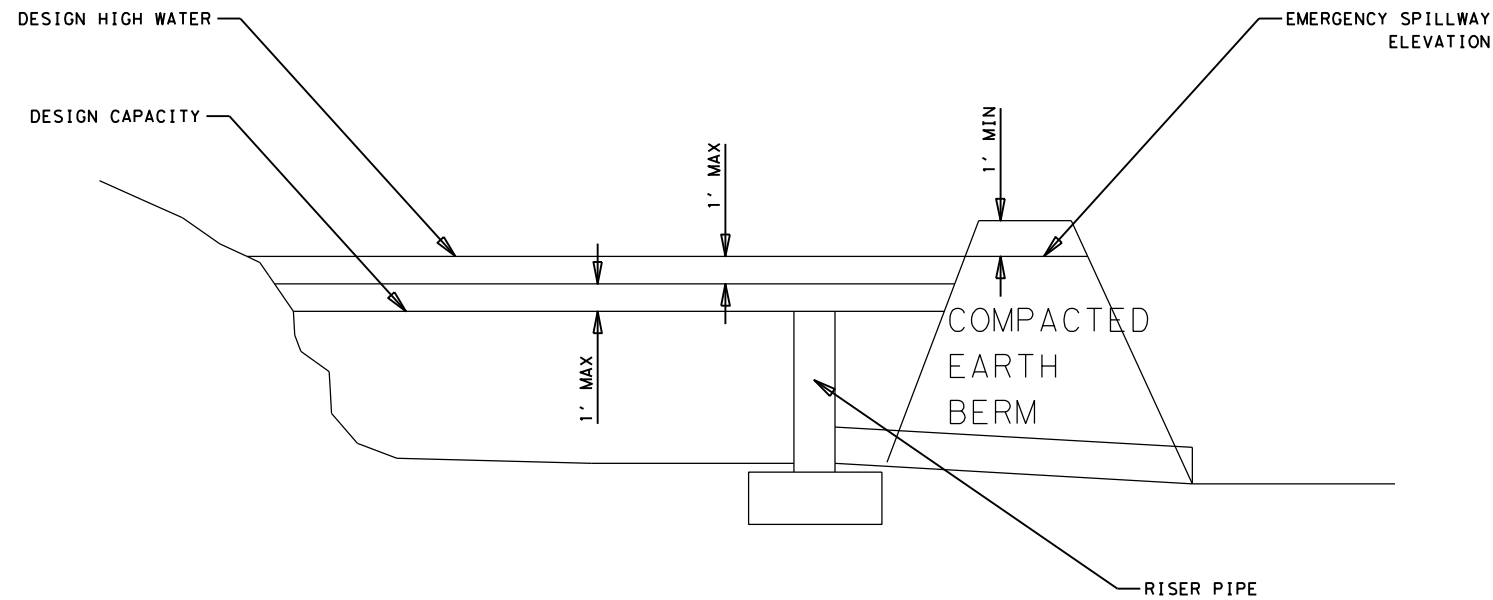
**ATTACHMENT H – Temp Sediment Pond Plans**

See attached construction drawings

EXCAVATED AREA FOR STORAGE  
AS NECESSARY. SHAPE MAY VARY



PLAN VIEW



CROSS SECTION VIEW

NOTES:

DETAIL IS FOR TEMPORARY SEDIMENT BASIN.  
THESE SHALL BE USED TEMPORARILY WHERE  
WATER QUALITY PONDS ARE BEING CONSTRUCTED  
AND SHALL SERVE AS TEMPORARY BMPs.  
MATERIALS AND CONSTRUCTION SHALL BE SUBSIDIARY TO  
PERMANENT WATER QUALITY POND CONSTRUCTION

MATERIALS:

RISER SHOULD BE CORRUGATED METAL OR  
REINFORCED CONCRETE PIPE OR BOX AND  
SHOULD HAVE WATERTIGHT FITTINGS OR CONNECTIONS.

AN OUTLET PIPE OF CORRUGATED METAL OR REINFORCED  
CONCRETE SHOULD BE ATTACHED TO THE RISER AND HAVE  
POSITIVE FLOW TO A STABILIZED OUTLET ON THE DOWNSTREAM  
SIDE OF THE EMBANKMENT.

ANTI-VORTEX AND RUBBISH SCREEN SHOULD BE ATTACHED  
TO THE TOP OF THE RISER AND SHOULD BE MADE OF PVC  
OR CORRUGATED METAL

NOT TO SCALE

**LANDTECH**  
engineering • surveying  
Houston, Texas  
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

**SW3P  
TEMP DETENTION BASIN  
OUTLET DETAIL**

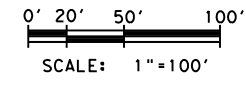


02.05.2020

*Mark W. Litzmann, P.E.*

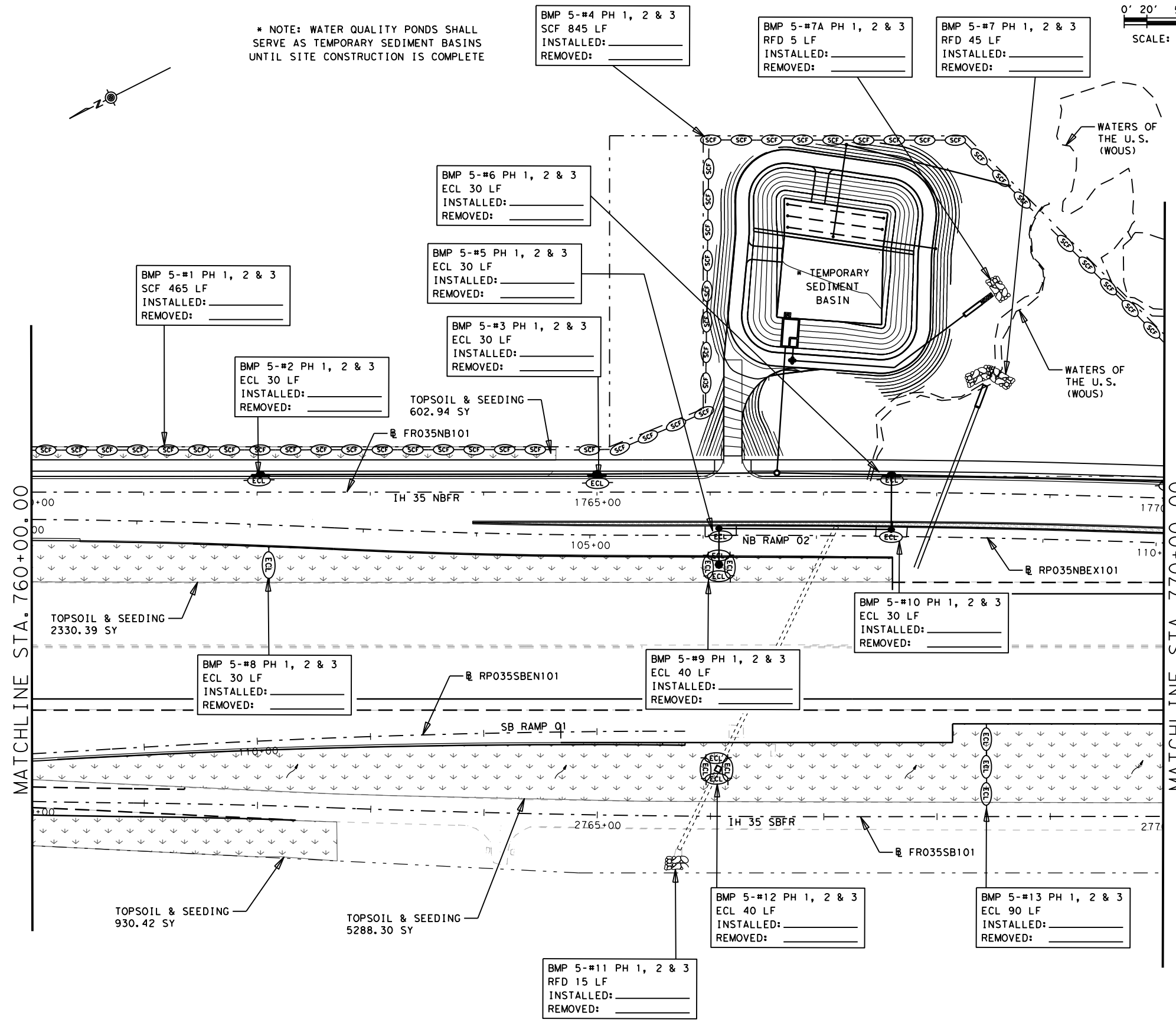
© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1124A

\* NOTE: WATER QUALITY PONDS SHALL SERVE AS TEMPORARY SEDIMENT BASINS UNTIL SITE CONSTRUCTION IS COMPLETE



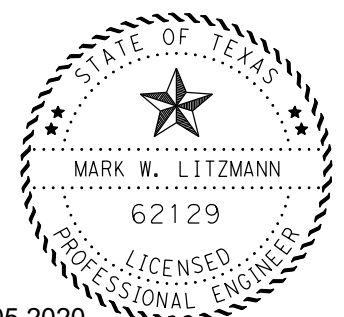
NOTE TO CONTRACTOR:

1. MAINTAIN POSITIVE DRAINAGE THROUGHOUT ALL PHASES OF CONSTRUCTION.
2. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME, HOWEVER ONCE INSTALLED SHALL REMAIN IN PLACE FOR THE REMAINING PHASES OF CONSTRUCTION.
3. CONSTRUCT SOIL RETENTION BLANKET, 4" TOPSOIL, AND BROADCAST SEED ON ALL DISTURBED AREAS NOT OTHERWISE STABILIZED .USE CL 2 BLANKETS ON DITCHES AND OTHER AREAS OF CONCENTRATED FLOW.
4. PROVIDE ONE CONSTRUCTION EXIT PER PHASE, LOCATION OF WHICH WILL BE PER CONTRACTOR'S DISCRETION, BUT SHALL BE IN COMPLIANCE WITH TOPES REQUIREMENTS. SHALL ALSO REQ. TXDOT APPROVAL
5. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
6. REFER TO TEMPORARY EROSION CONTROL STANDARDS FOR ADDITIONAL INFORMATION.
7. DIRECT INTERIM STORM WATER TO MANHOLES AND INLET OPENINGS.
8. STAGE CONSTRUCTION OPERATIONS TO MINIMIZE DISTURBED AREAS. EXPEDITE WORK ACTIVITIES IN DISTURBED AREAS TO RESTORE VEGETATION AS SOON AS POSSIBLE. IF DISTURBED AREAS DO NOT RECEIVE PERMANENT SEEDING WITHIN 21 DAYS THE DISTURBED AREA SHALL BE TEMPORARILY SEEDD.



LEGEND

- PROP. SOIL RETENTION BLANKETS
- TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- DIRECTION OF TRAFFIC
- PHASE (REFER TO TCP LAYOUTS)
- BMP
- SEDIMENT CONTROL FENCE
- ECL
- RFD
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP



02.05.2020

*Mark W. Litzmann, P.E.*

**LANDTECH**  
engineering • surveying  
Houston, Texas  
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

**IH 35  
MAINLANES  
STORM WATER POLLUTION  
PREVENTION PLAN**

SHEET 5 OF 17

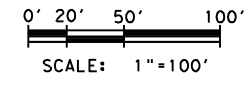
© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1112

DATE: 2/5/2020 4:30:08 PM g:\p\fd\eset\Environmental\DW\SW3P-LOL-60203-S-135ML-SW3P105.dgn



**ATTACHMENT I – Inspection and Maintenance for BMP's**

See attached SW3P plan sheets

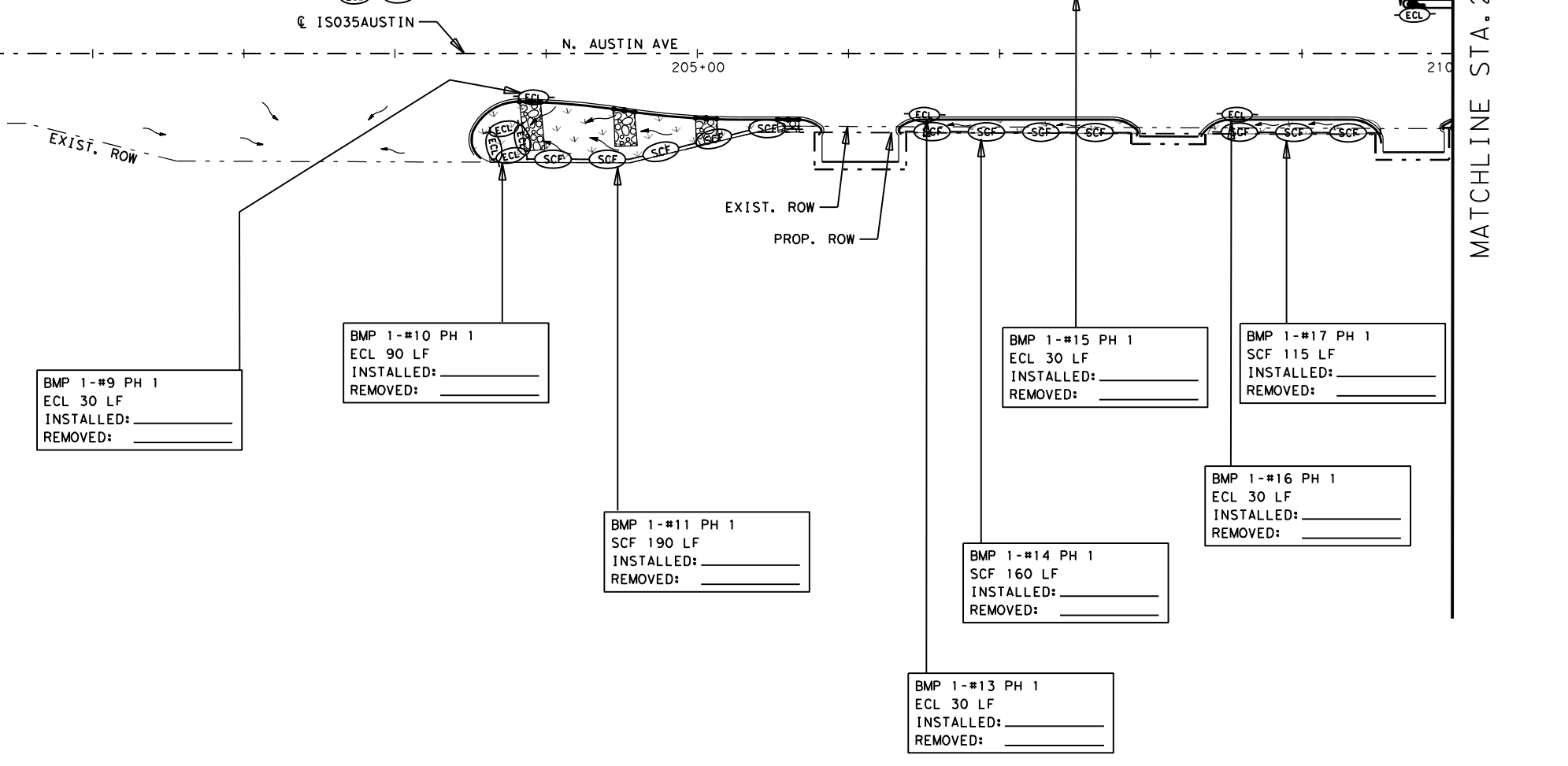
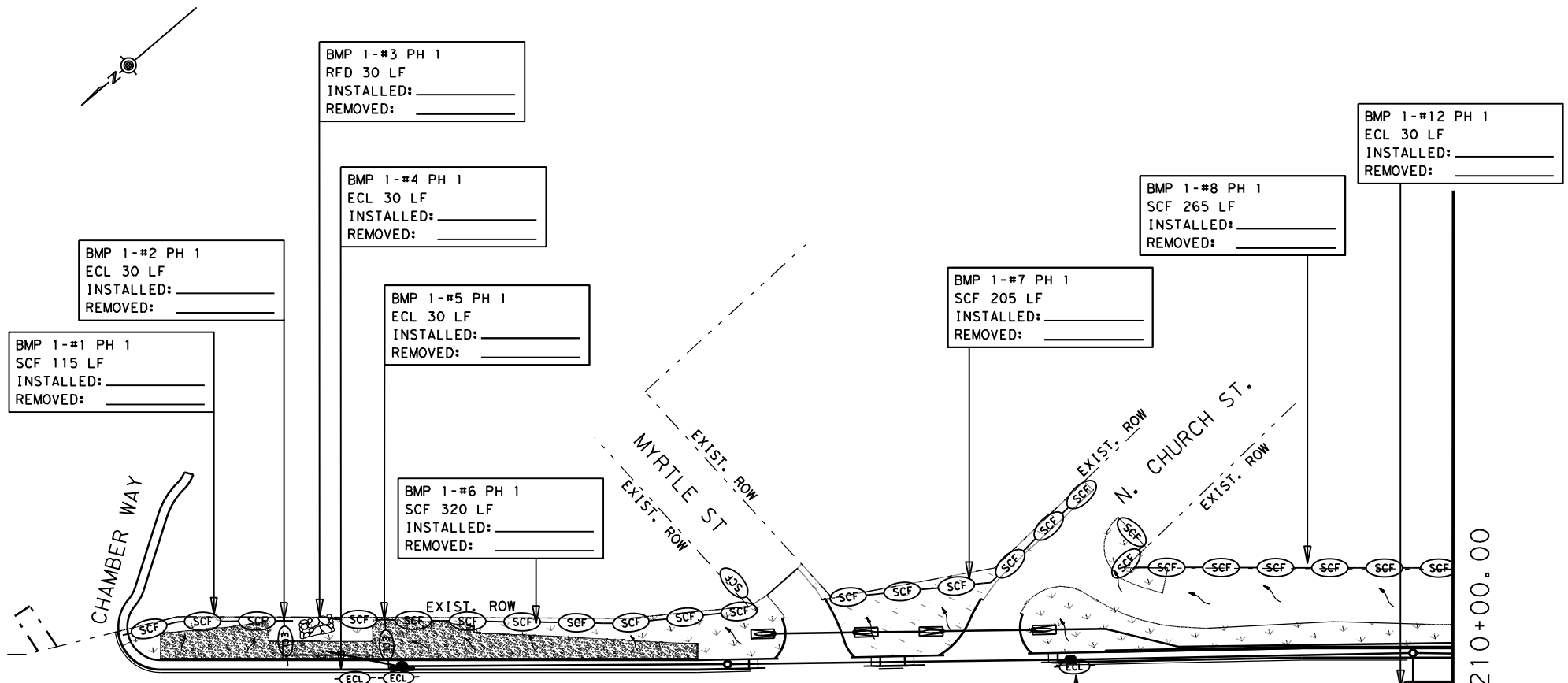


**NOTE TO CONTRACTOR:**

1. MAINTAIN POSITIVE DRAINAGE THROUGHOUT ALL PHASES OF CONSTRUCTION.
2. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME, HOWEVER ONCE INSTALLED SHALL REMAIN IN PLACE FOR THE REMAINING PHASES OF CONSTRUCTION.
3. CONSTRUCT SOIL RETENTION BLANKET, 4" TOPSOIL, AND BROADCAST SEED ON ALL DISTURBED AREAS NOT OTHERWISE STABILIZED. USE CL 2 BLANKETS ON DITCHES AND OTHER AREAS OF CONCENTRATED FLOW.
4. PROVIDE ONE CONSTRUCTION EXIT PER PHASE, LOCATION OF WHICH WILL BE PER CONTRACTOR'S DISCRETION, BUT SHALL BE IN COMPLIANCE WITH TOPES REQUIREMENTS. SHALL ALSO REQ. TXDOT APPROVAL
5. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
6. REFER TO TEMPORARY EROSION CONTROL STANDARDS FOR ADDITIONAL INFORMATION.
7. DIRECT INTERIM STORM WATER TO MANHOLES AND INLET OPENINGS.
8. STAGE CONSTRUCTION OPERATIONS TO MINIMIZE DISTURBED AREAS. EXPEDITE WORK ACTIVITIES IN DISTURBED AREAS TO RESTORE VEGETATION AS SOON AS POSSIBLE. IF DISTURBED AREAS DO NOT RECEIVE PERMANENT SEEDING WITHIN 21 DAYS THE DISTURBED AREA SHALL BE TEMPORARILY SEED.

**LEGEND**

- PROP. SOIL RETENTION BLANKETS TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- PH PHASE (REFER TO TCP LAYOUTS)
- BMP BEST MANAGEMENT PRACTICE
- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP



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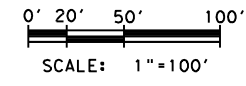


**IH 35  
 AUSTIN AVE  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 1 OF 2

DS:	CK:	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST	COUNTY	SHEET NO.	
		AUS	WILLIAMSON	1106	

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**NOTE TO CONTRACTOR:**

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**LEGEND**

- PROP. SOIL RETENTION BLANKETS
- TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- PHASE (REFER TO TCP LAYOUTS)
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- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP

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**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

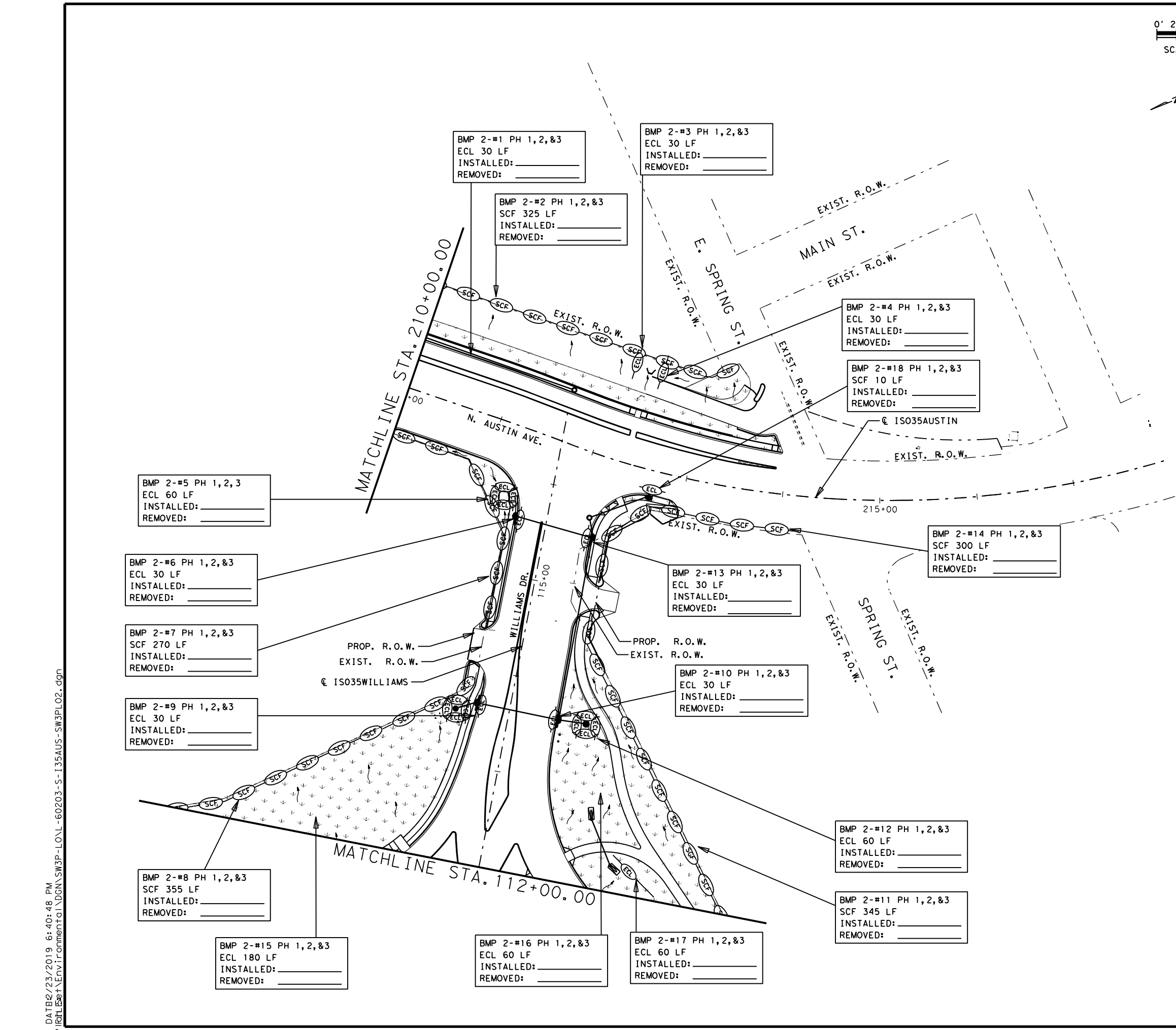
**IH 35  
 AUSTIN AVE  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 2 OF 2

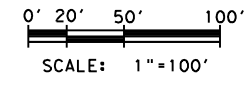
© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1107



*Mark W. Litzmann, P.E.*  
 12.23.2019



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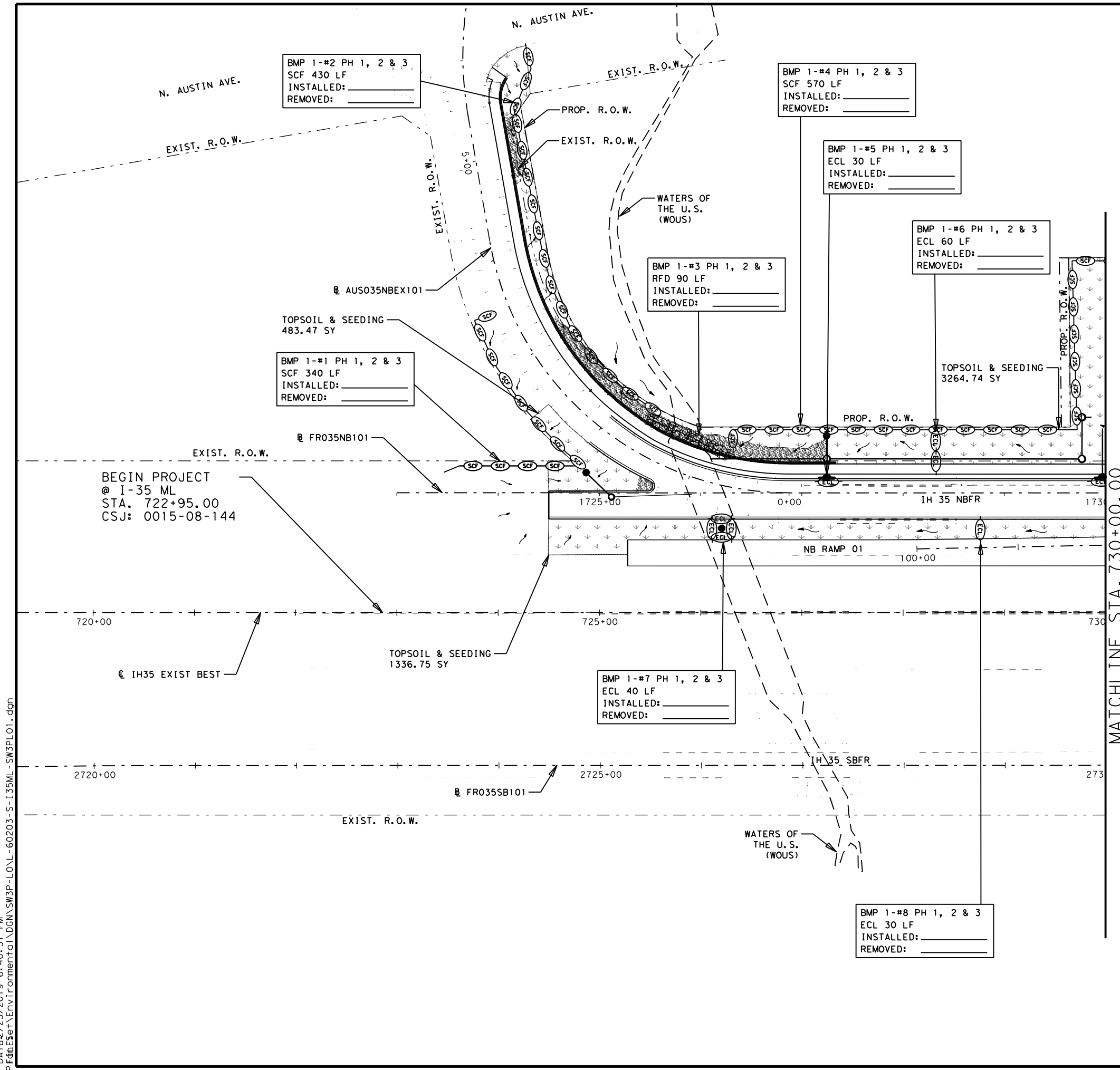


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**mobility** 35  
 CAPITAL AREA  
 Texas Department of Transportation

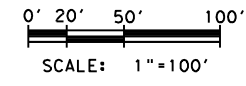
**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 1 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
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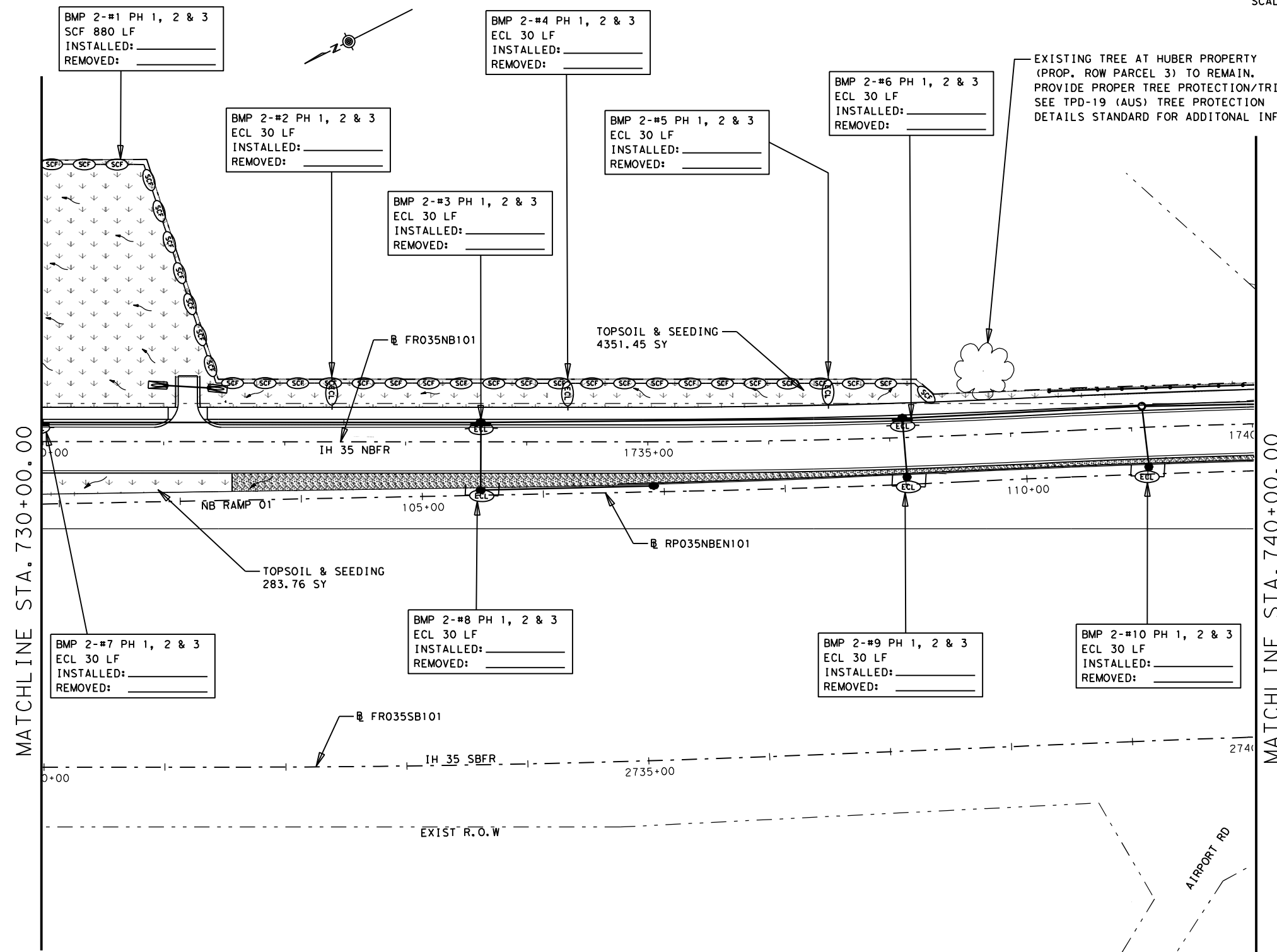


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**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

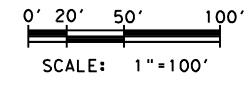
**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 2 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
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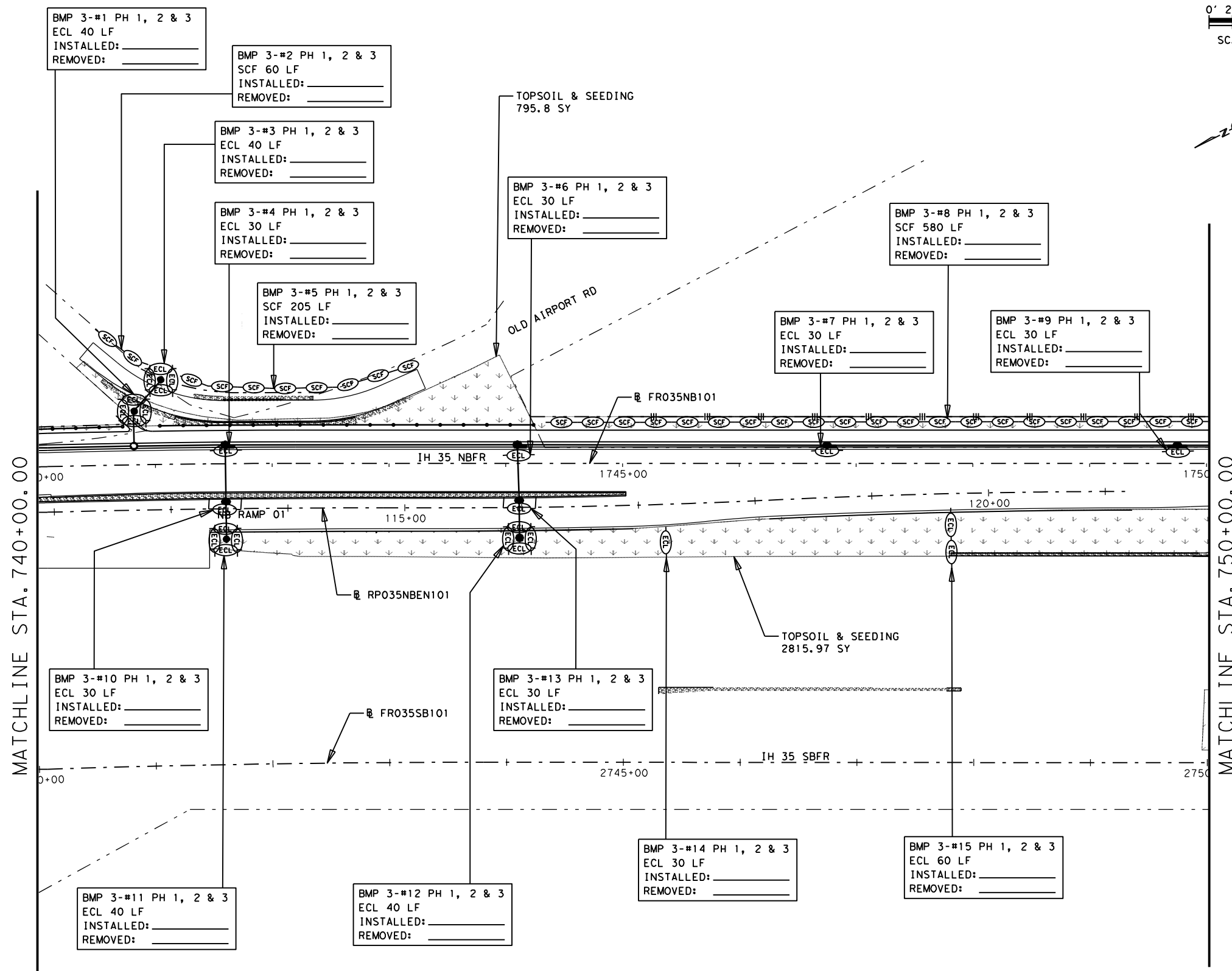
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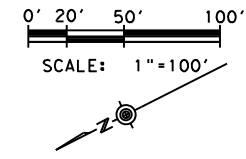
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**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

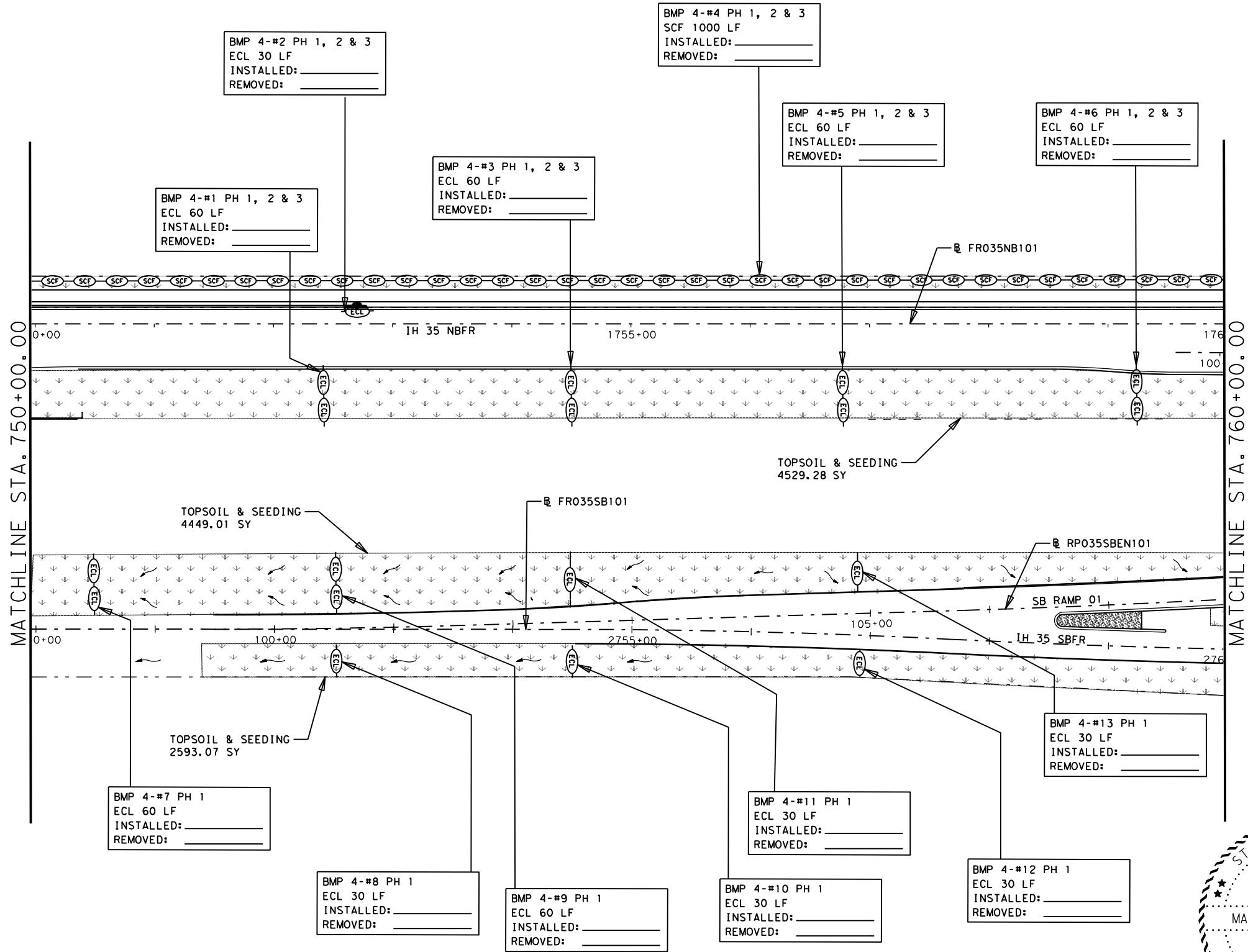
SHEET 3 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1110



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**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

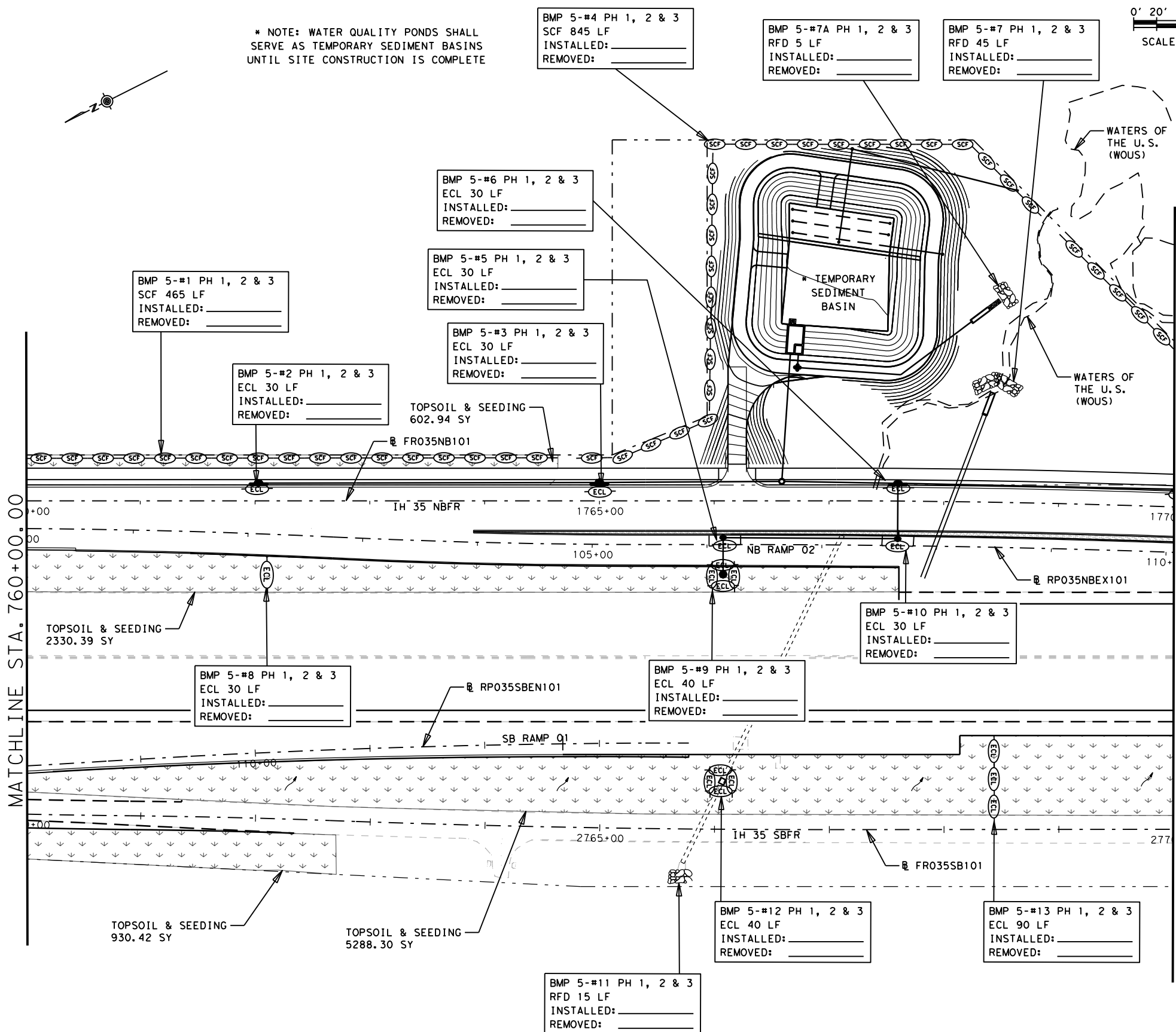
SHEET 4 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1111

STATE OF TEXAS  
 MARK W. LITZMANN  
 62129  
 PROFESSIONAL ENGINEER  
*Mark W. Litzmann, P.E.*  
 12.23.2019

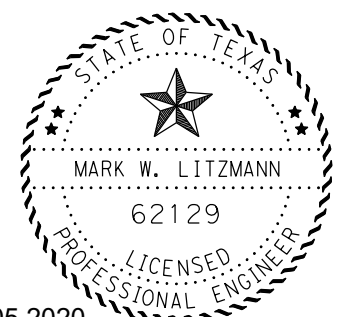
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02.05.2020

*Mark W. Litzmann, P.E.*

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**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 5 OF 17

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DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1112



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ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 6-#2 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 6-#3 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 6-#4 PH 1, 2 & 3  
SCF 550 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 6-#5 PH 1, 2 & 3  
ECL 30 LF  
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REMOVED: \_\_\_\_\_

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ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

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ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

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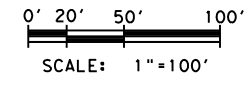
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REMOVED: \_\_\_\_\_

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REMOVED: \_\_\_\_\_

BMP 6-#12 PH 1, 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

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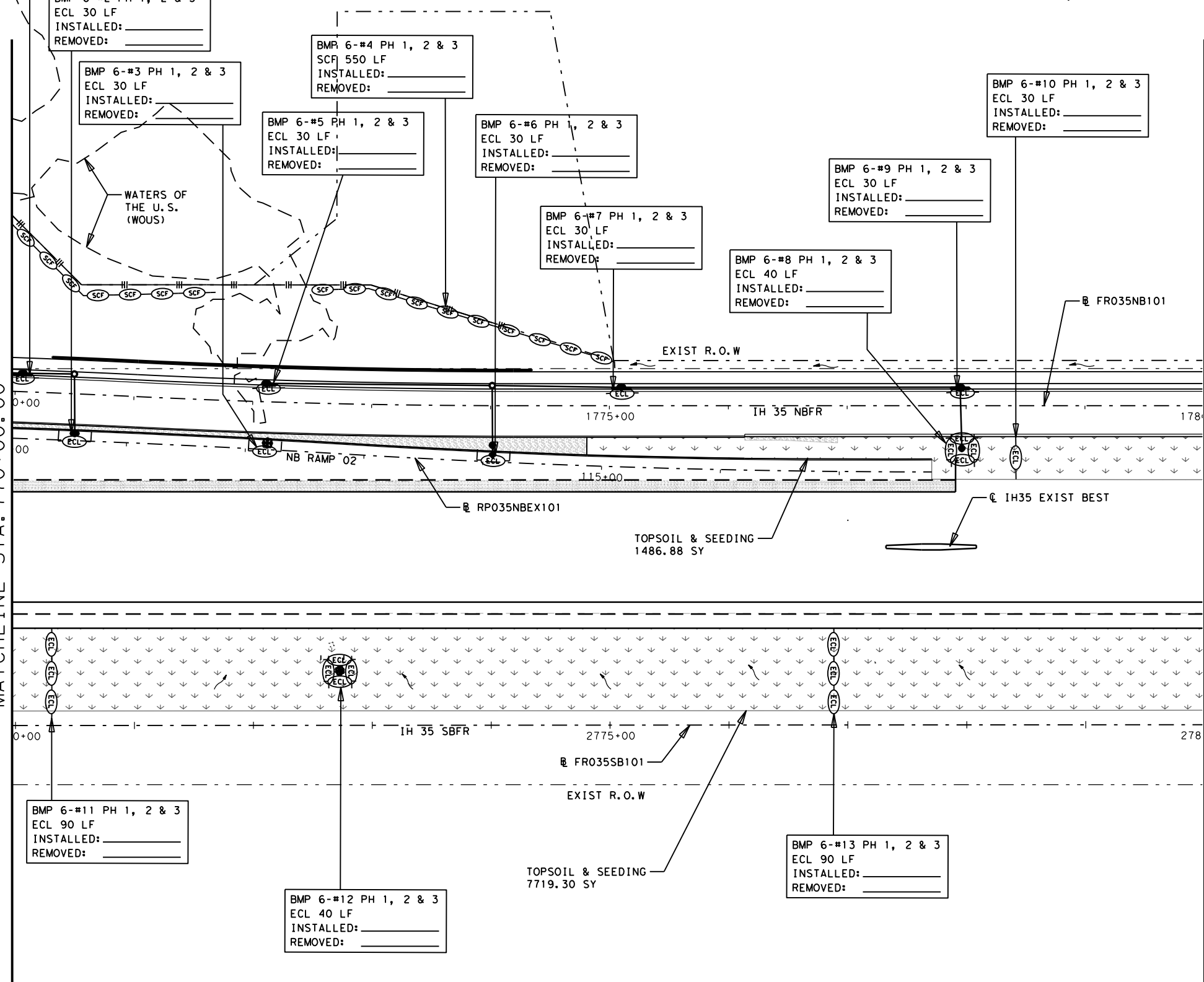


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  - PROP. CONCRETE RIPRAP
  - FLOW DIRECTION
  - TEMP. ROCK FILTER DAM (TY 2)
  - TEMP. EROSION CONTROL LOG
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MATCHLINE STA. 770+00.00

MATCHLINE STA. 780+00.00



02.05.2020

*Mark W. Litzmann, P.E.*

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Houston, Texas  
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

**mobility** 35  
CAPITAL AREA

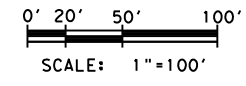
Texas Department of Transportation

**IH 35  
MAINLANES  
STORM WATER POLLUTION  
PREVENTION PLAN**

SHEET 6 OF 17

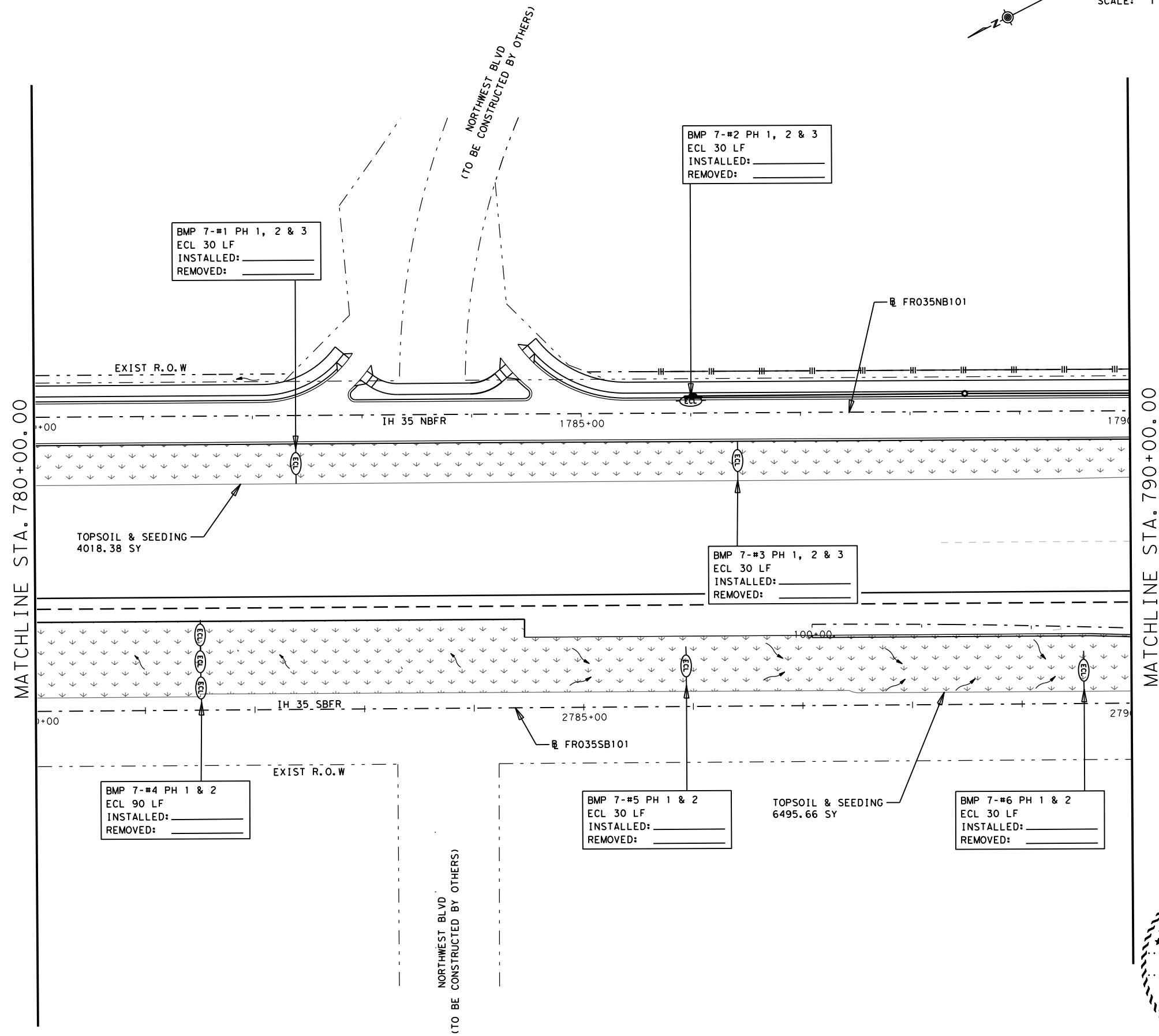
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DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1113

DATE: 2/5/2020 4:30:12 PM  
 G:\P\Envt\Environmental\03\135ML-SW3P-LOV-60203-S-135ML-SW3PLOT.dgn



**NOTE TO CONTRACTOR:**

1. MAINTAIN POSITIVE DRAINAGE THROUGHOUT ALL PHASES OF CONSTRUCTION.
2. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME, HOWEVER ONCE INSTALLED SHALL REMAIN IN PLACE FOR THE REMAINING PHASES OF CONSTRUCTION.
3. CONSTRUCT SOIL RETENTION BLANKET, 4" TOPSOIL, AND BROADCAST SEED ON ALL DISTURBED AREAS NOT OTHERWISE STABILIZED .USE CL 2 BLANKETS ON DITCHES AND OTHER AREAS OF CONCENTRATED FLOW.
4. PROVIDE ONE CONSTRUCTION EXIT PER PHASE, LOCATION OF WHICH WILL BE PER CONTRACTOR'S DISCRETION, BUT SHALL BE IN COMPLIANCE WITH TDPS REQUIREMENTS. SHALL ALSO REQ. TXDOT APPROVAL
5. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
6. REFER TO TEMPORARY EROSION CONTROL STANDARDS FOR ADDITIONAL INFORMATION.
7. DIRECT INTERIM STORM WATER TO MANHOLES AND INLET OPENINGS.
8. STAGE CONSTRUCTION OPERATIONS TO MINIMIZE DISTURBED AREAS. EXPEDITE WORK ACTIVITIES IN DISTURBED AREAS TO RESTORE VEGETATION AS SOON AS POSSIBLE. IF DISTURBED AREAS DO NOT RECEIVE PERMANENT SEEDING WITHIN 21 DAYS THE DISTURBED AREA SHALL BE TEMPORARILY SEEDED.



**LEGEND**

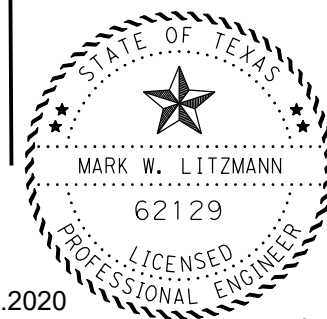
- PROP. SOIL RETENTION BLANKETS
- TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- DIRECTION OF TRAFFIC PHASE (REFER TO TCP LAYOUTS)
- BMP BEST MANAGEMENT PRACTICE
- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP

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**mobility**   
 CAPITAL AREA

Texas Department of Transportation

**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**



02.05.2020

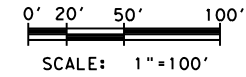
*Mark W. Litzmann, P.E.*

SHEET 7 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
DS: CK:	0015	08	147, ETC	IH 35
DW: CK:	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	1114

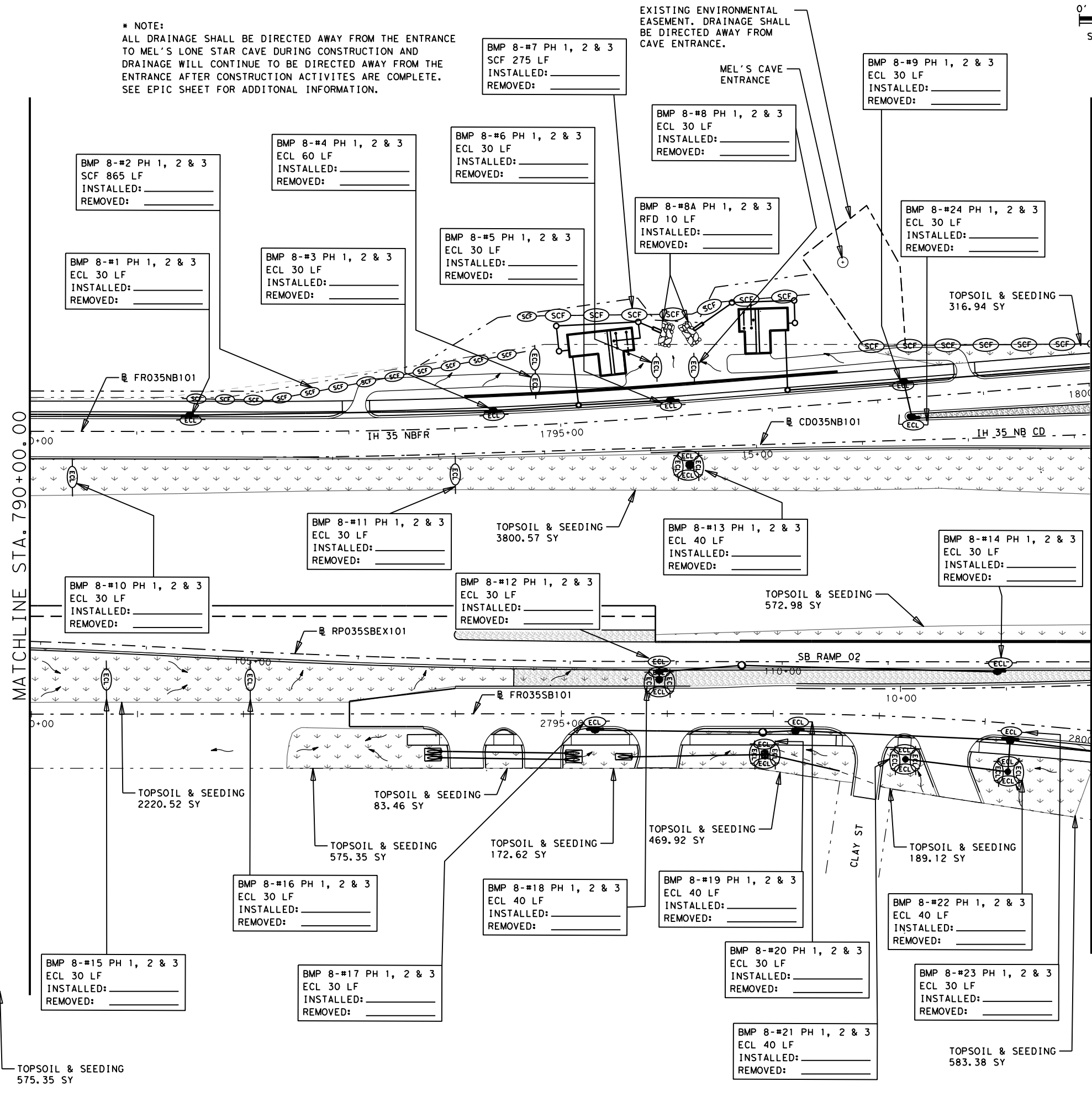
\* NOTE:  
ALL DRAINAGE SHALL BE DIRECTED AWAY FROM THE ENTRANCE TO MEL'S LONE STAR CAVE DURING CONSTRUCTION AND DRAINAGE WILL CONTINUE TO BE DIRECTED AWAY FROM THE ENTRANCE AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE. SEE EPIC SHEET FOR ADDITIONAL INFORMATION.

EXISTING ENVIRONMENTAL EASEMENT. DRAINAGE SHALL BE DIRECTED AWAY FROM CAVE ENTRANCE.



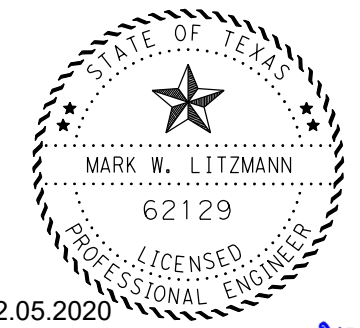
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- PROP. SOIL RETENTION BLANKETS
- TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- DIRECTION OF TRAFFIC
- PHASE (REFER TO TCP LAYOUTS)
- BMP
- SCF
- ECL
- RFD
- PH1
- PH2
- PH3
- PH4



02.05.2020  
*Mark W. Litzmann, P.E.*

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**mobility** 35  
CAPITAL AREA

**Texas Department of Transportation**

**IH 35  
MAINLANES  
STORM WATER POLLUTION  
PREVENTION PLAN**

SHEET 8 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015	08 147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1115

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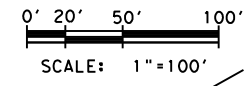
BMP 9-#1 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#3 PH 1, 2 & 3  
SCF 595 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#5 PH 1, 2 & 3  
ECL 360 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#2 PH 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#4 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_



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BMP 9-#9 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#15 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#8 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#14 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#16 PH 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#20 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#10 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#12 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#11 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#17 PH 1, 2 & 3  
ECL 600 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#18 PH 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#19 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#21 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#22 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#34 PH 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#35 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#36 PH 1, 2 & 3  
SCF 285 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

- LEGEND**
- PROP. SOIL RETENTION BLANKETS
  - TOPSOIL & SEEDING
  - KNOWN SALAMANDER HABITAT
  - PROP. CONCRETE RIPRAP
  - FLOW DIRECTION
  - TEMP. ROCK FILTER DAM (TY 2)
  - TEMP. EROSION CONTROL LOG
  - TEMP. SEDIMENT CONTROL FENCE
  - DIRECTION OF TRAFFIC PHASE (REFER TO TCP LAYOUTS)
  - BMP BEST MANAGEMENT PRACTICE
  - SCF SEDIMENT CONTROL FENCE
  - ECL EROSION CONTROL LOG
  - RFD ROCK FILTER DAM
  - PH1 PHASE 1 TCP
  - PH2 PHASE 2 TCP
  - PH3 PHASE 3 TCP
  - PH4 PHASE 4 TCP

TOPSOIL & SEEDING 470.86 SY

BMP 9-#23 PH 1, 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

TOPSOIL & SEEDING 1169.90 SY

BMP 9-#25 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

TOPSOIL & SEEDING 234.18 SY

BMP 9-#26 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#27 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

TOPSOIL & SEEDING 141 SY

TOPSOIL & SEEDING 647.27 SY

BMP 9-#28 PH 1, 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#30 PH 1, 2 & 3  
SCF 80 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 9-#31 PH 1, 2 & 3  
SCF 25 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

TOPSOIL & SEEDING 112.82 SY

TOPSOIL & SEEDING 764.14 SY

TOPSOIL & SEEDING 2116.02 SY



02.05.2020

*Mark W. Litzmann, P.E.*

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**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

**IH 35 MAINLANES STORM WATER POLLUTION PREVENTION PLAN**

SHEET 9 OF 17

DATE	2/5/2020	TIME	4:30:17 PM
PROJECT	CONTRACT	SECTION	JOB
0015	08	147, ETC	IH 35
DISTRICT	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1116	

DATE: 2/5/2020 4:30:17 PM I:\P\Files\Environmental\DWG\SW3P-LOA-60203-S-135M-SW3P\09.dgn



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ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#3 PH 1, 2 & 3  
SCF 305 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#4 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#5 PH 1, 2 & 3  
SCF 510 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#8 PH 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#7 PH 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#10 PH 2 & 3  
SCF 145 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#2 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

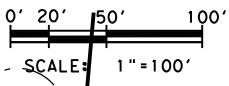
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ECL 340 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#9 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

TOPSOIL & SEEDING  
229.63 SY

TOPSOIL & SEEDING  
772.30 SY

TOPSOIL & SEEDING  
323.03 SY



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- DIRECTION OF TRAFFIC
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- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP

BMP 10-#11 PH 2 & 3  
ECL 90 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#12 PH 2 & 3  
ECL 60 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#13 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#14 PH 2 & 3  
ECL 60 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#15 PH 2 & 3  
ECL 60 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#16 PH 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#30 PH 1, 2 & 3  
ECL 500 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#18 PH 1, 2 & 3  
ECL 90 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#17 PH 1, 2 & 3  
ECL 840 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#22 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#29 PH 2 & 3  
ECL 60 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#19 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#21 PH 1, 2 & 3  
RFD 45 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#24 PH PH 2 & 3  
ECL 40 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#26 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

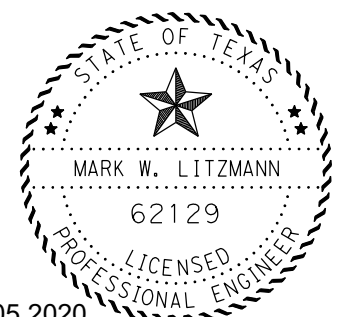
BMP 10-#28 PH 1, 2 & 3  
ECL 60 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#20 PH 1, 2 & 3  
SCF 245 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#23 PH 1, 2 & 3  
SCF 145 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#25 PH 1, 2 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 10-#27 PH 1, 2 & 3  
SCF 500 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_



02.05.2020

*Mark W. Litzmann P.E.*

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Houston, Texas  
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

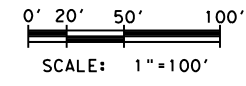
**IH 35  
MAINLANES  
STORM WATER POLLUTION  
PREVENTION PLAN**

SHEET 10 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY	SHEET NO.		
AUS	WILLIAMSON	1117		

DATE: 2/5/2020 7:14:15 PM  
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**NOTE TO CONTRACTOR:**

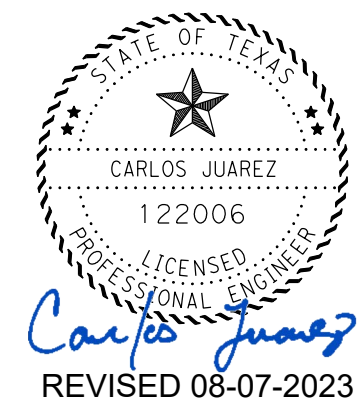
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- PHASE (REFER TO TCP LAYOUTS)
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- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP

REVISED 8-7-2023  
 RFI 186 POND  
 16 UPDATES

REVISED 7-8-2022  
 RFI 157 TOP SOIL  
 AND SEEDING



REVISED 08-07-2023

ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS

**KCI**  
 TECHNOLOGIES

801 Travis Street  
 Suite 2000  
 Houston, TX 77002  
 Phone: 932.975.1545  
 Fax: 713.237.9801  
 www.kci.com

TBPE Registration No. F-10573

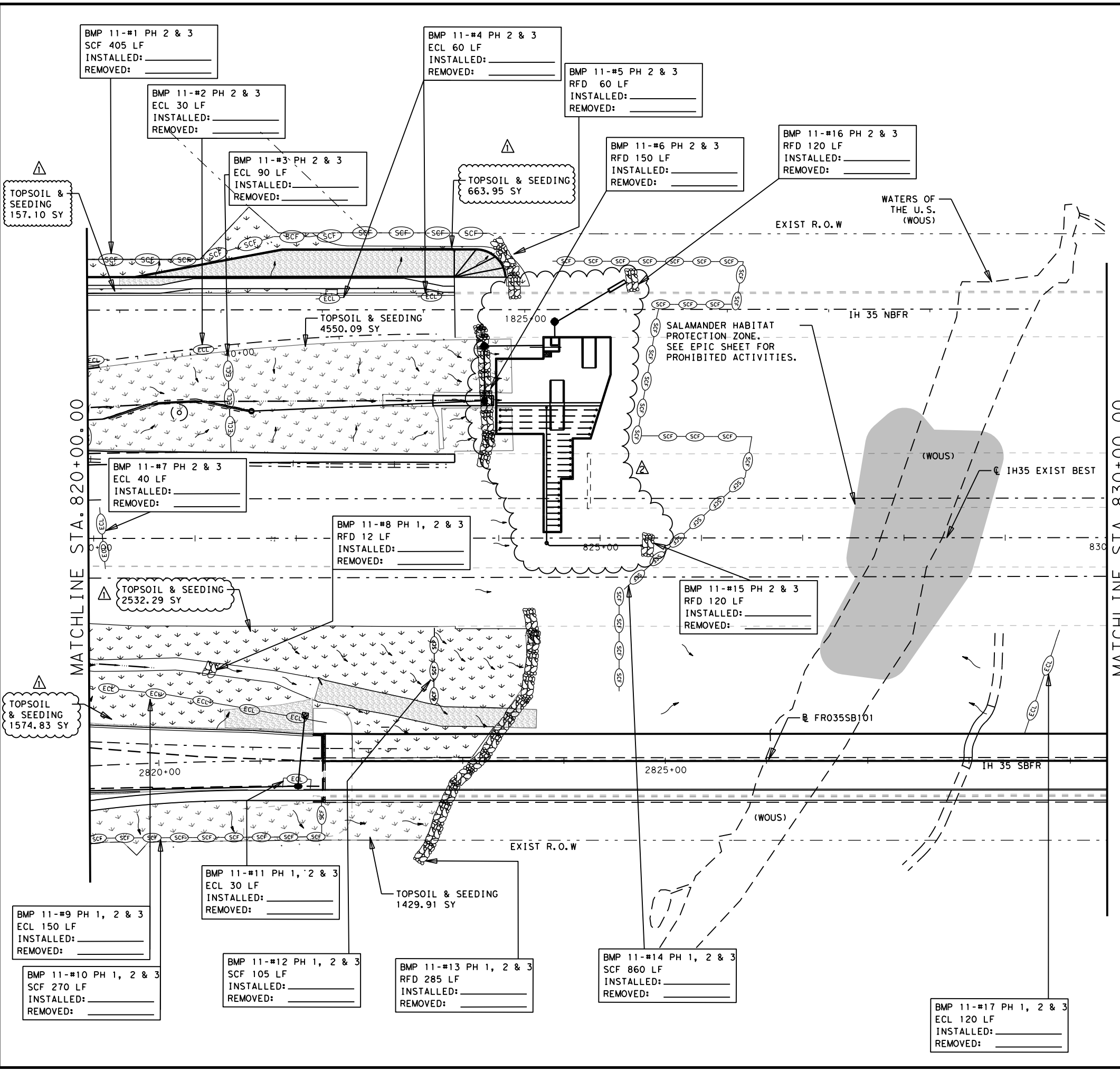
**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 11 OF 17

© 2020	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1118



BMP 11-#1 PH 2 & 3  
 SCF 405 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#4 PH 2 & 3  
 ECL 60 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#5 PH 2 & 3  
 RFD 60 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#16 PH 2 & 3  
 RFD 120 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#6 PH 2 & 3  
 RFD 150 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#2 PH 2 & 3  
 ECL 30 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#3 PH 2 & 3  
 ECL 90 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#7 PH 2 & 3  
 ECL 40 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#8 PH 1, 2 & 3  
 RFD 12 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#15 PH 2 & 3  
 RFD 120 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#9 PH 1, 2 & 3  
 ECL 150 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#11 PH 1, 2 & 3  
 ECL 30 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#12 PH 1, 2 & 3  
 SCF 105 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#13 PH 1, 2 & 3  
 RFD 285 LF  
 INSTALLED: \_\_\_\_\_  
 REMOVED: \_\_\_\_\_

BMP 11-#14 PH 1, 2 & 3  
 SCF 860 LF  
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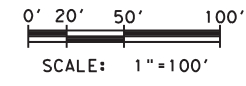
BMP 11-#17 PH 1, 2 & 3  
 ECL 120 LF  
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 REMOVED: \_\_\_\_\_









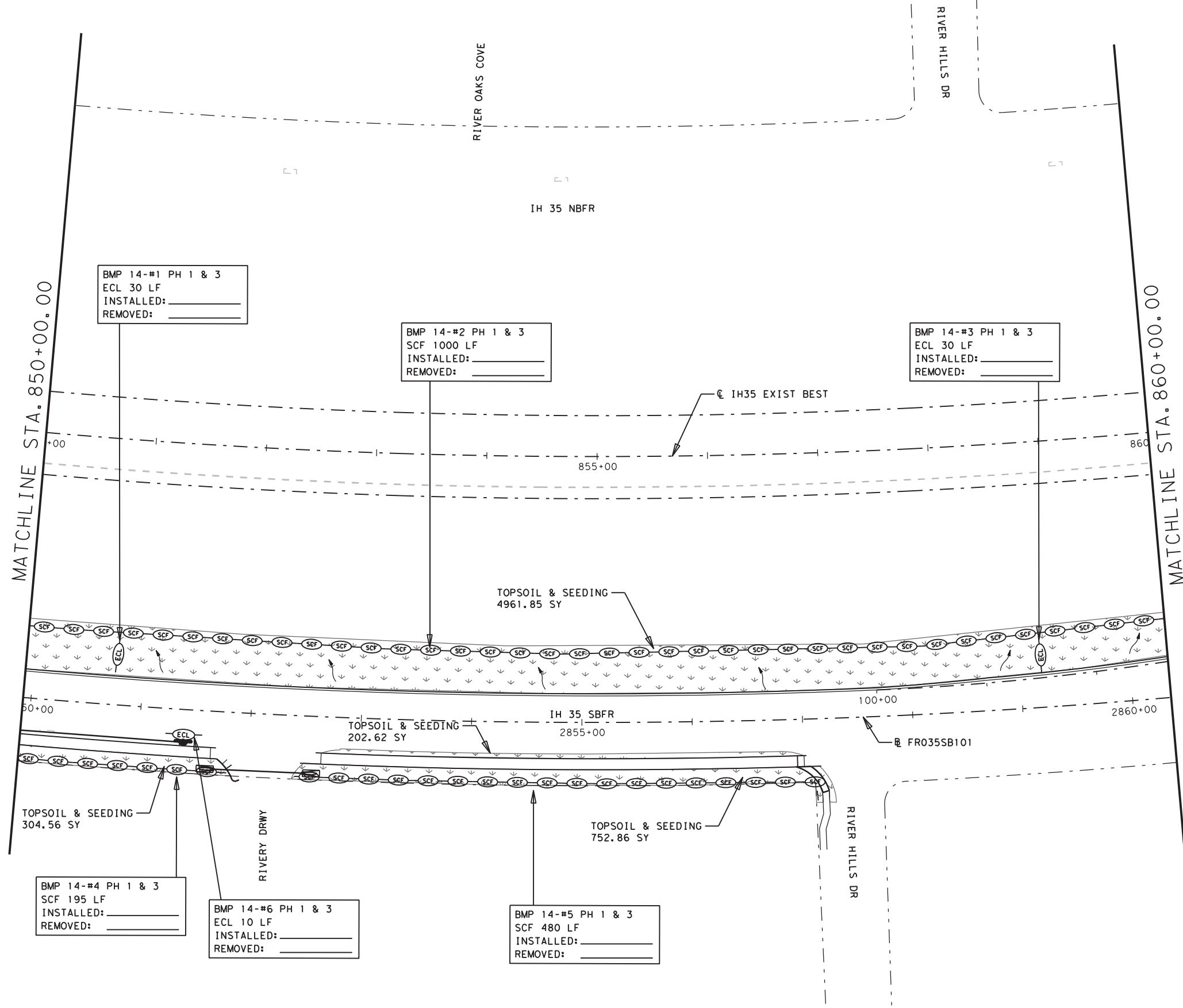


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**LEGEND**

- PROP. SOIL RETENTION BLANKETS
- TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- DIRECTION OF TRAFFIC
- PHASE (REFER TO TCP LAYOUTS)
- BEST MANAGEMENT PRACTICE
- SEDIMENT CONTROL FENCE
- EROSION CONTROL LOG
- ROCK FILTER DAM
- PHASE 1 TCP
- PHASE 2 TCP
- PHASE 3 TCP
- PHASE 4 TCP



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**mobility** 35  
 CAPITAL AREA

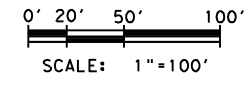
Texas Department of Transportation

**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 14 OF 17

DATE:	20/2020	6:57:01 PM	CONTRACT:	0015	SECTION:	08	JOB:	147, ETC	HIGHWAY:	IH 35
DISTRICT:	AUS	COUNTY:	WILLIAMSON	SHEET NO.:	1121					

DATE: 2/20/2020 6:57:01 PM  
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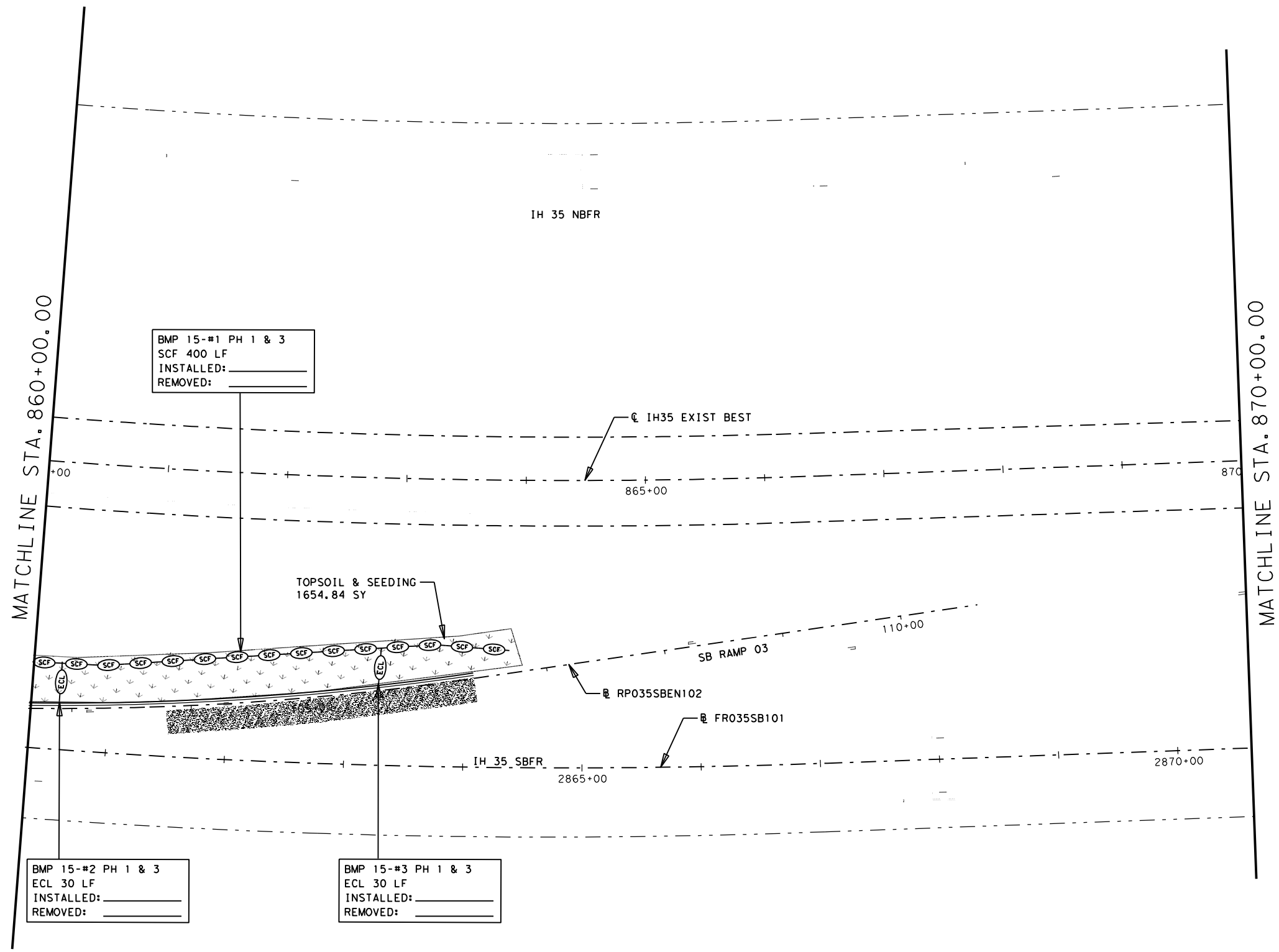


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- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP



BMP 15-#1 PH 1 & 3  
SCF 400 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 15-#2 PH 1 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 15-#3 PH 1 & 3  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_



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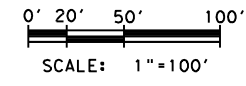


**IH 35  
MAINLANES  
STORM WATER POLLUTION  
PREVENTION PLAN**

SHEET 15 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1122

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**NOTE TO CONTRACTOR:**

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- TOPSOIL & SEEDING
- KNOWN SALAMANDER HABITAT
- PROP. CONCRETE RIPRAP
- FLOW DIRECTION
- TEMP. ROCK FILTER DAM (TY 2)
- TEMP. EROSION CONTROL LOG
- TEMP. SEDIMENT CONTROL FENCE
- PH PHASE (REFER TO TCP LAYOUTS)
- BMP BEST MANAGEMENT PRACTICE
- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP

MATCHLINE STA. 870+00.00

MATCHLINE STA. 880+00.00

IH 35 NBFR

IH35 EXIST BEST

+00 875+00 88

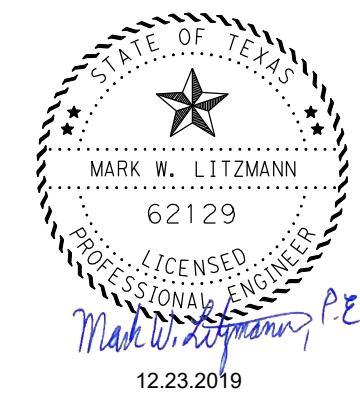
BMP 16-#1 PH 1  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

BMP 16-#2 PH 1  
ECL 30 LF  
INSTALLED: \_\_\_\_\_  
REMOVED: \_\_\_\_\_

TOPSOIL & SEEDING  
1427.56 SY

IH 35 SBFR

SPRING HOLLOW



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**mobility** 35  
CAPITAL AREA

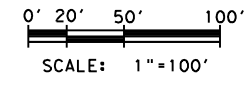
**Texas Department of Transportation**

**IH 35  
MAINLANES  
STORM WATER POLLUTION  
PREVENTION PLAN**

SHEET 16 OF 17

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
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		AUS	WILLIAMSON	1123

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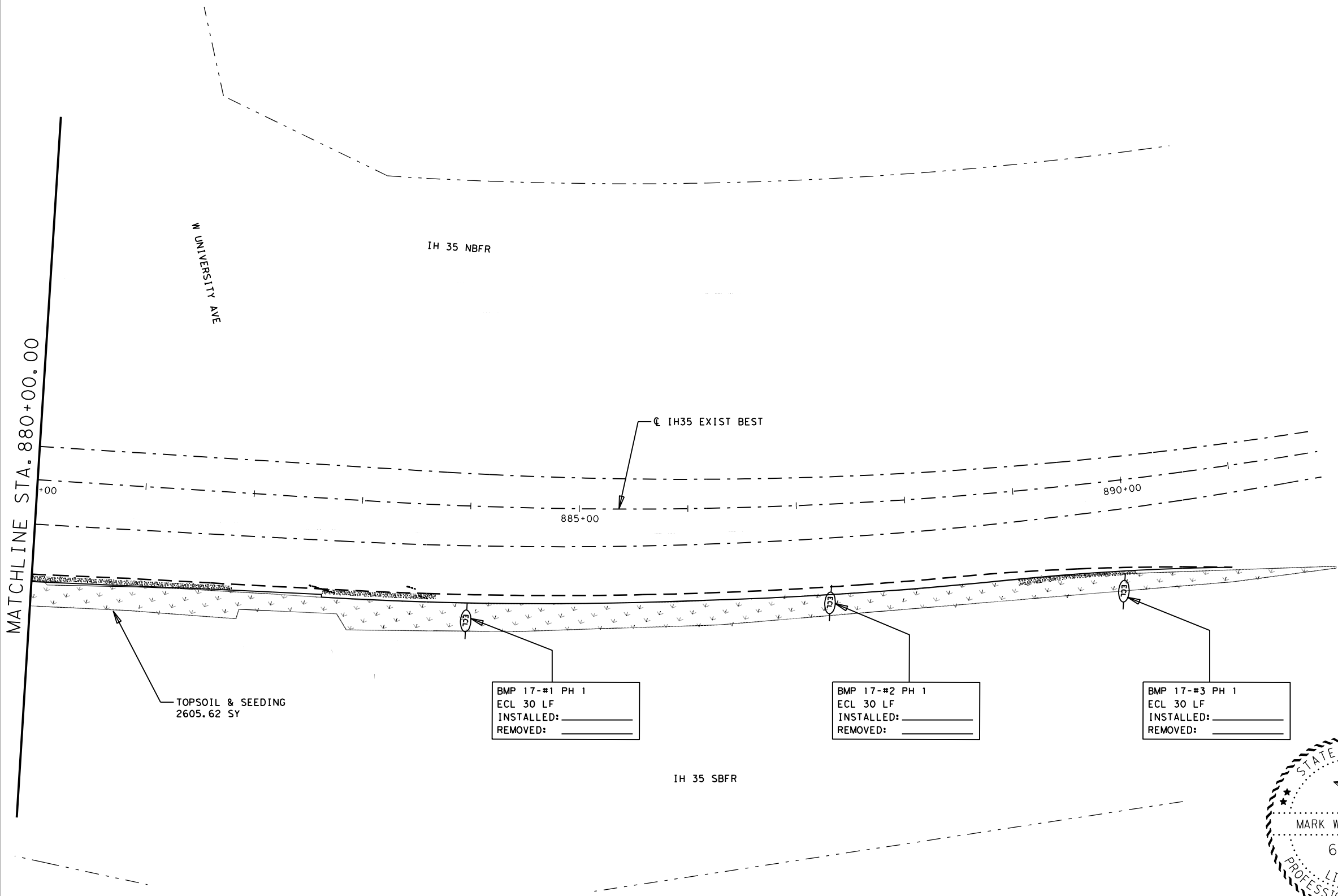
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- DIRECTION OF TRAFFIC
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- SCF SEDIMENT CONTROL FENCE
- ECL EROSION CONTROL LOG
- RFD ROCK FILTER DAM
- PH1 PHASE 1 TCP
- PH2 PHASE 2 TCP
- PH3 PHASE 3 TCP
- PH4 PHASE 4 TCP



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**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

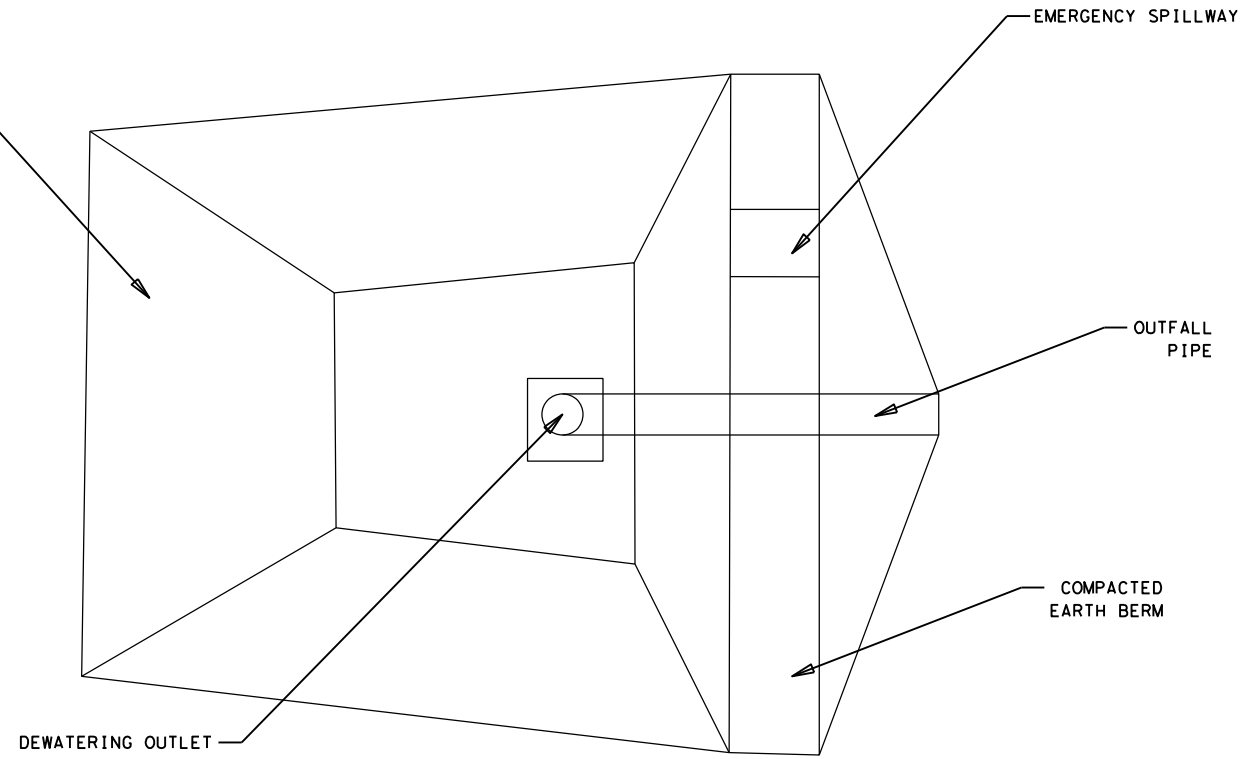
**IH 35  
 MAINLANES  
 STORM WATER POLLUTION  
 PREVENTION PLAN**

SHEET 17 OF 17

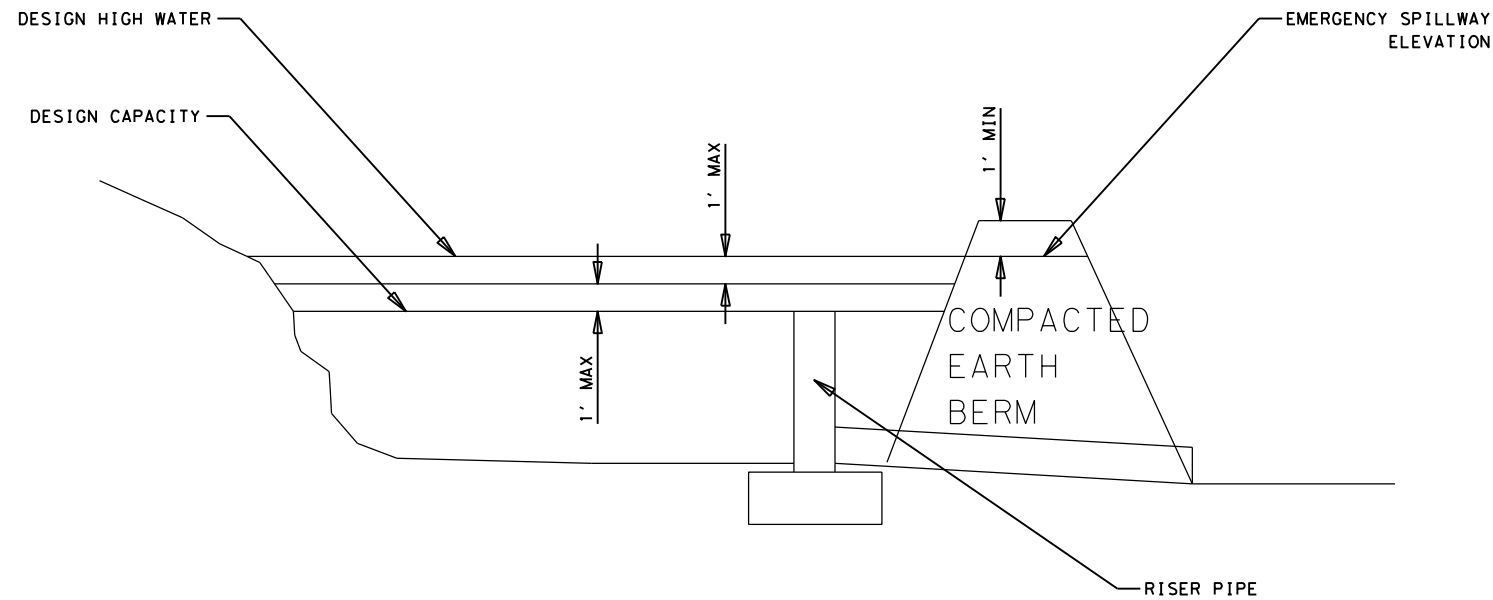
© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1124



EXCAVATED AREA FOR STORAGE  
AS NECESSARY. SHAPE MAY VARY



PLAN VIEW



CROSS SECTION VIEW

NOTES:

DETAIL IS FOR TEMPORARY SEDIMENT BASIN.  
THESE SHALL BE USED TEMPORARILY WHERE  
WATER QUALITY PONDS ARE BEING CONSTRUCTED  
AND SHALL SERVE AS TEMPORARY BMPs.  
MATERIALS AND CONSTRUCTION SHALL BE SUBSIDIARY TO  
PERMANENT WATER QUALITY POND CONSTRUCTION

MATERIALS:

RISER SHOULD BE CORRUGATED METAL OR  
REINFORCED CONCRETE PIPE OR BOX AND  
SHOULD HAVE WATERTIGHT FITTINGS OR CONNECTIONS.

AN OUTLET PIPE OF CORRUGATED METAL OR REINFORCED  
CONCRETE SHOULD BE ATTACHED TO THE RISER AND HAVE  
POSITIVE FLOW TO A STABILIZED OUTLET ON THE DOWNSTREAM  
SIDE OF THE EMBANKMENT.

ANTI-VORTEX AND RUBBISH SCREEN SHOULD BE ATTACHED  
TO THE TOP OF THE RISER AND SHOULD BE MADE OF PVC  
OR CORRUGATED METAL

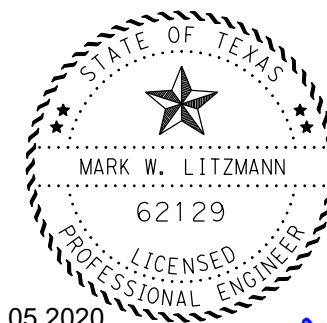
NOT TO SCALE

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**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

**SW3P  
TEMP DETENTION BASIN  
OUTLET DETAIL**



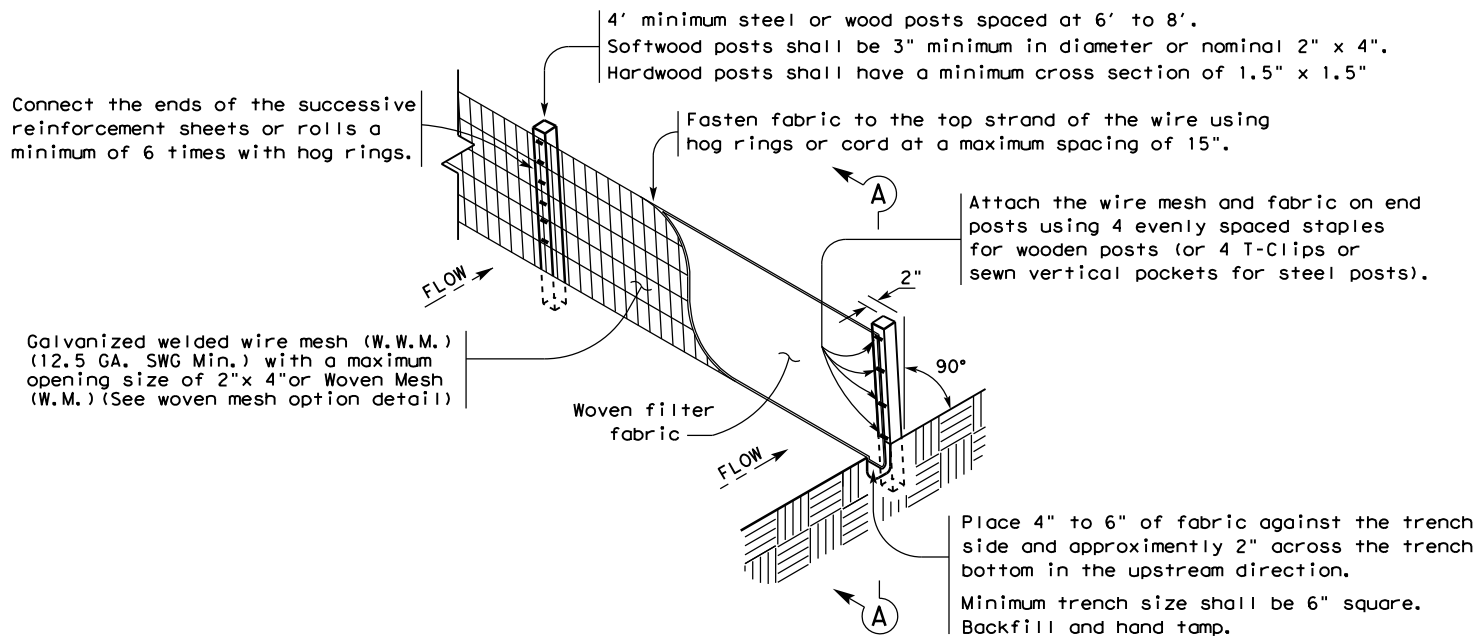
02.05.2020

*Mark W. Litzmann, P.E.*

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DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	1124A

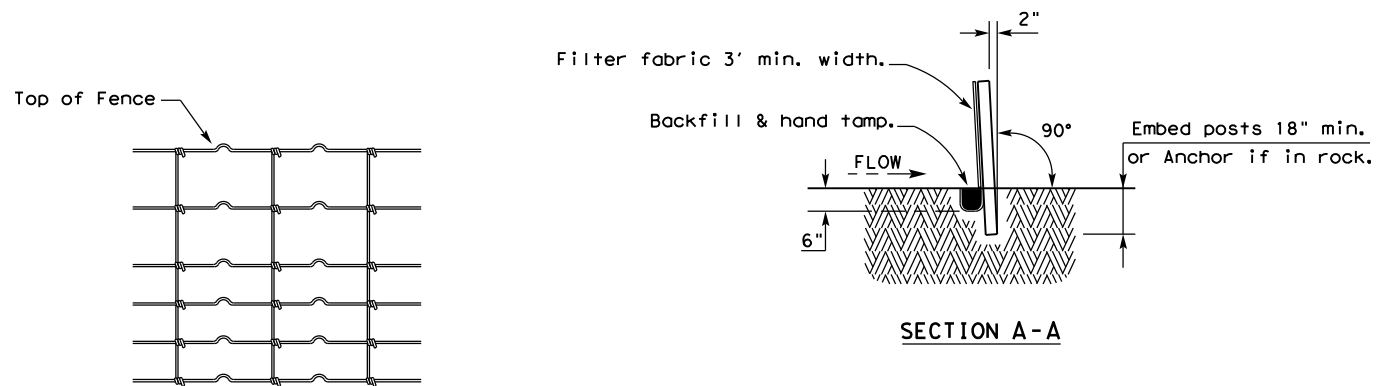
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DATE  
FILE



**TEMPORARY SEDIMENT CONTROL FENCE**

SCF



**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/FT<sup>2</sup>. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

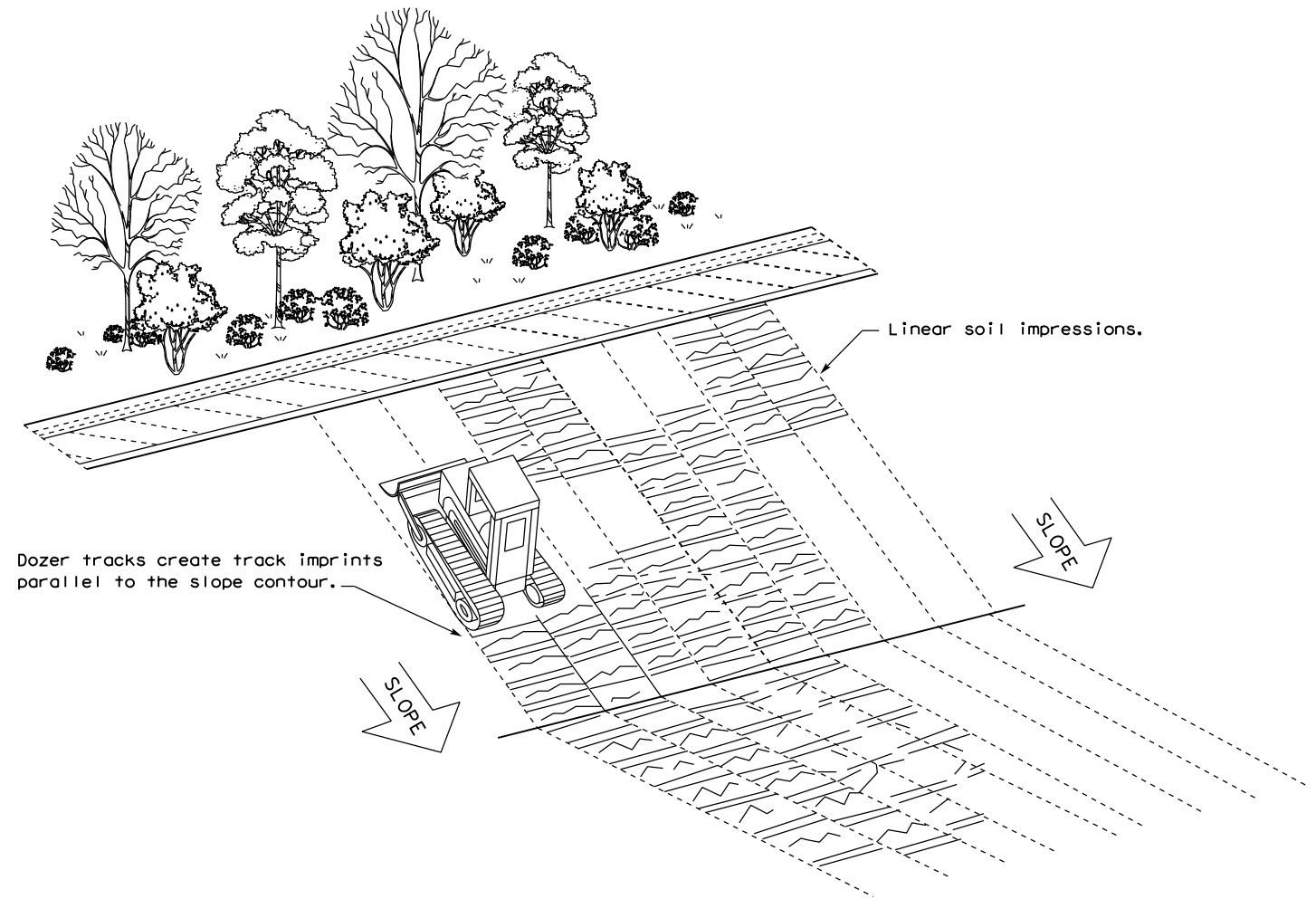
**LEGEND**

Sediment Control Fence

SCF

**GENERAL NOTES**

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. 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.
4. Do not exceed 12" between track impressions.
5. Install continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.

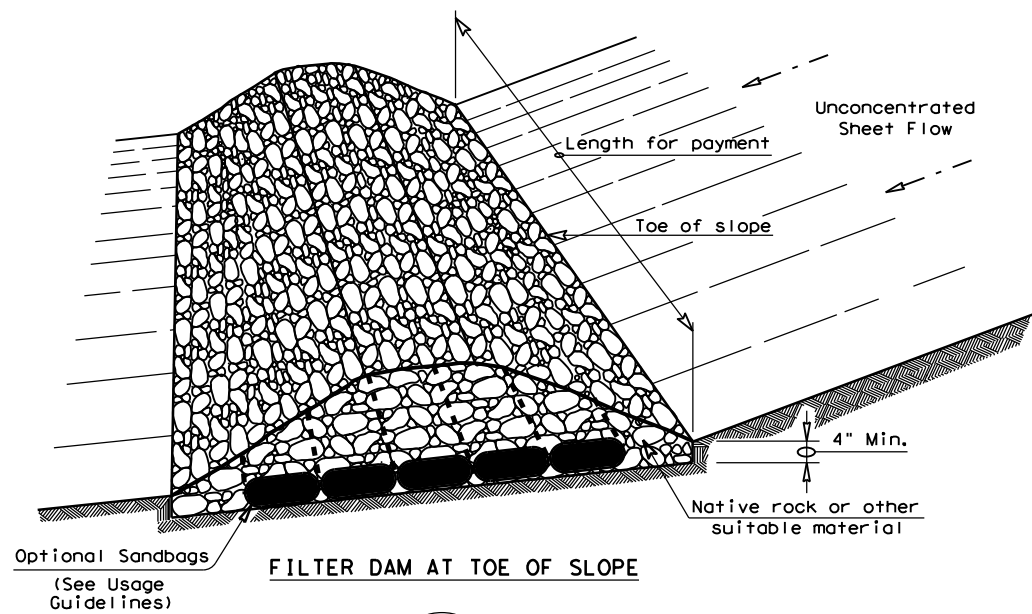


**VERTICAL TRACKING**

				Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE &amp; VERTICAL TRACKING</b> <b>EC(1)-16</b>					
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0015	08	147, ETC	IH 35	
	DIST	COUNTY		SHEET NO.	
	AUS	WILLIAMSON		1145	

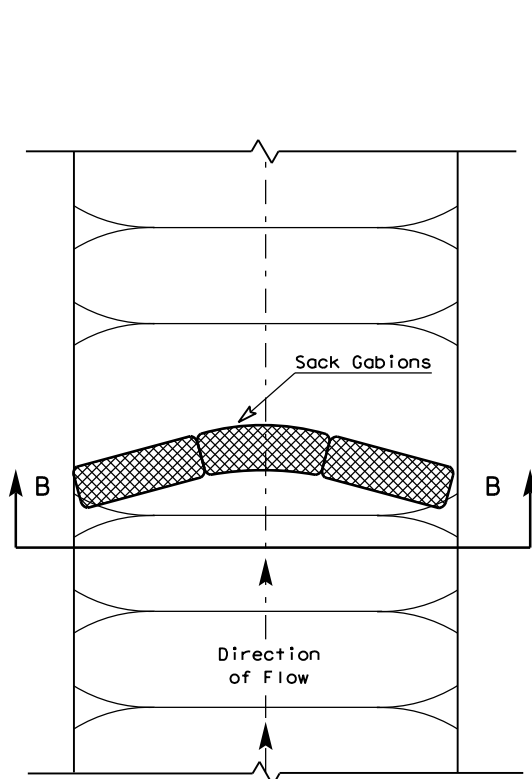
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DATE: FILE:

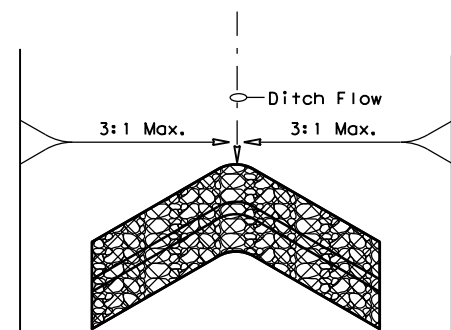


FILTER DAM AT TOE OF SLOPE

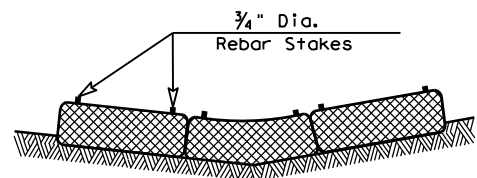
(RFD1)



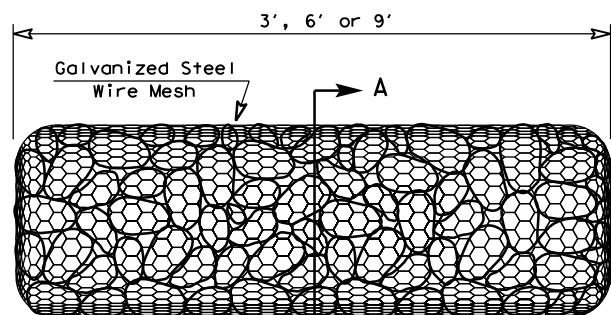
PLAN VIEW



"V" SHAPE PLAN VIEW

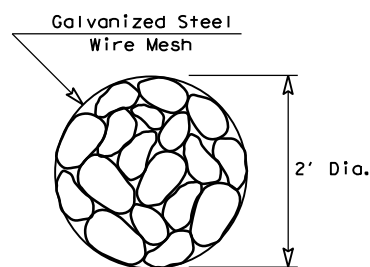


SECTION B-B

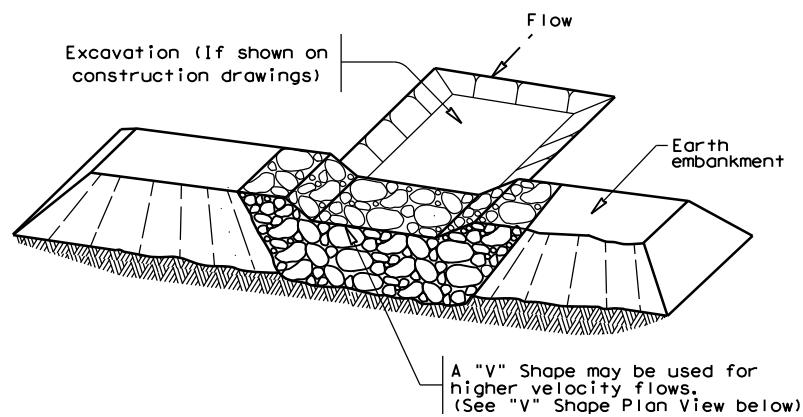


TYPE 4 (SACK GABIONS)

(RFD4)

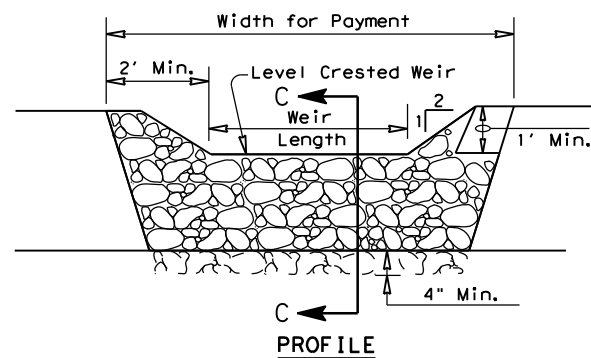


SECTION A-A

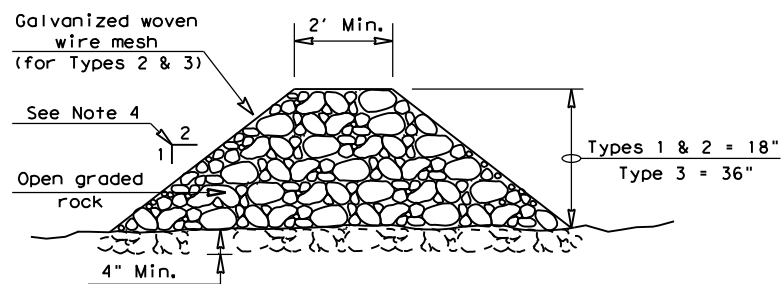


FILTER DAM AT SEDIMENT TRAP

(RFD2) OR (RFD1)



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/FT<sup>2</sup> of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

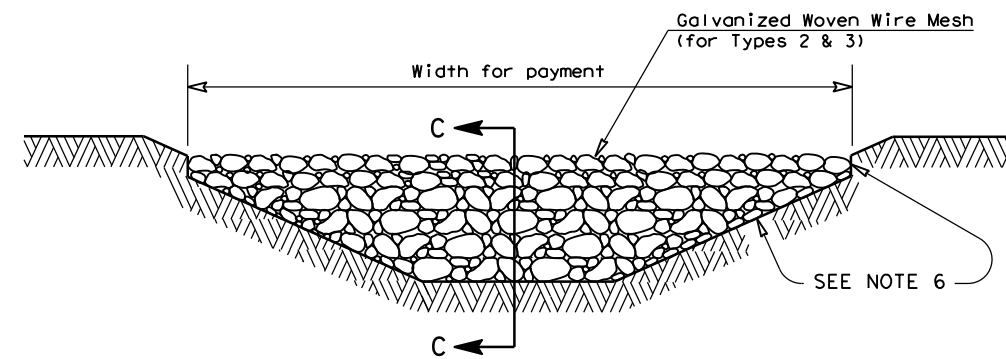
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity 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

(RFD3) OR (RFD2) OR (RFD1)

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & 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.
9. 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".
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

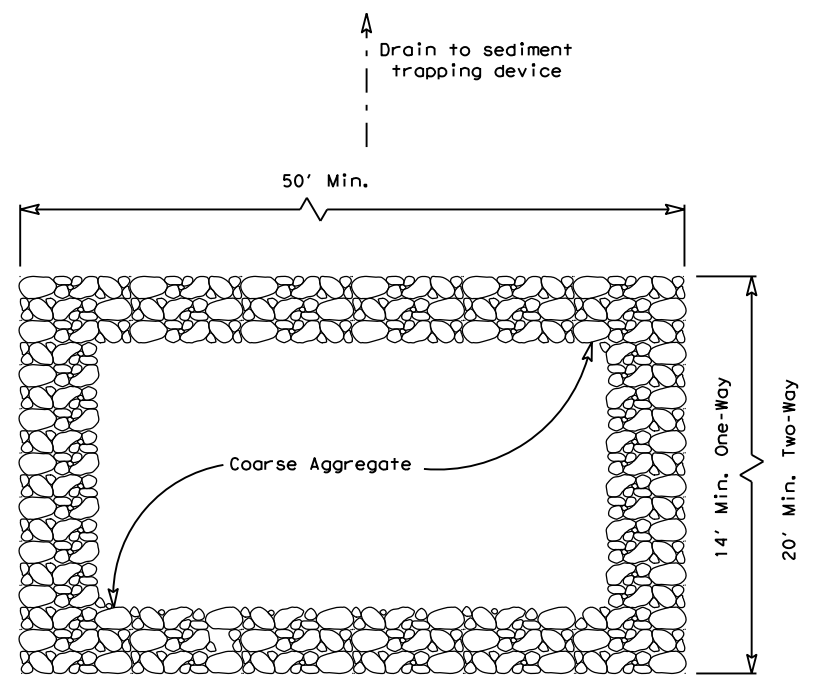
- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)



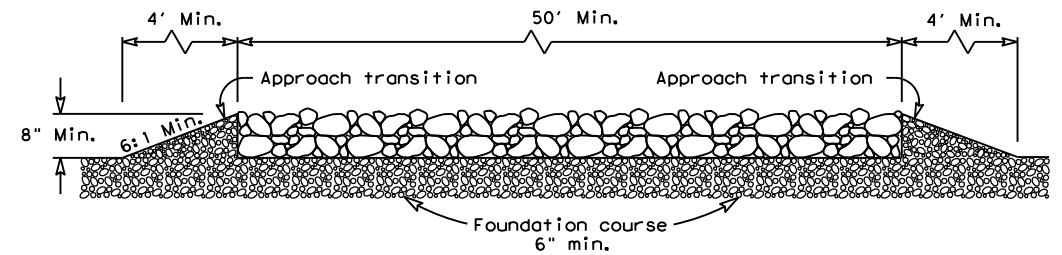
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES  
ROCK FILTER DAMS  
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0015	08	147, ETC	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	1146	

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PLAN VIEW

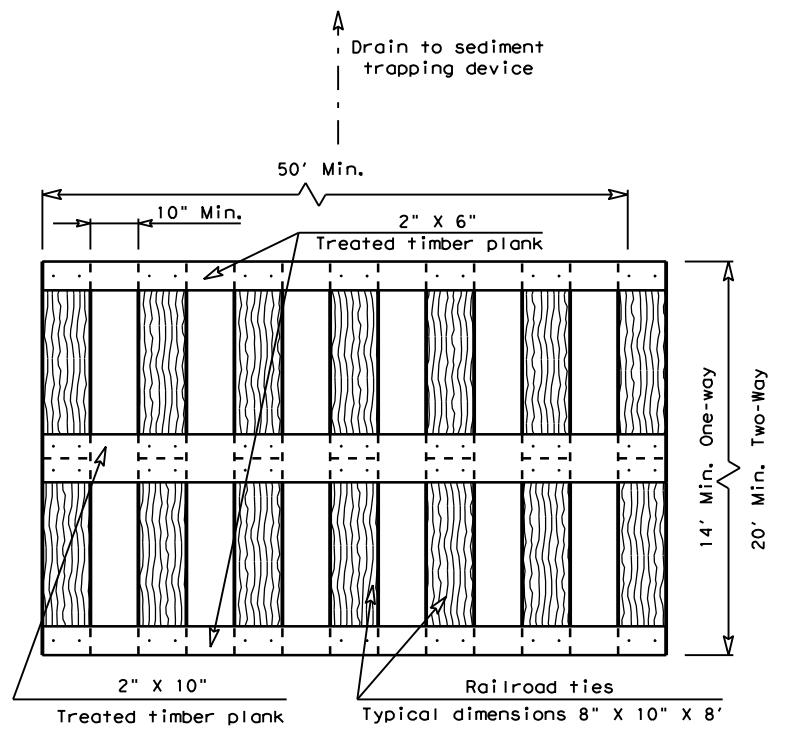


ELEVATION VIEW

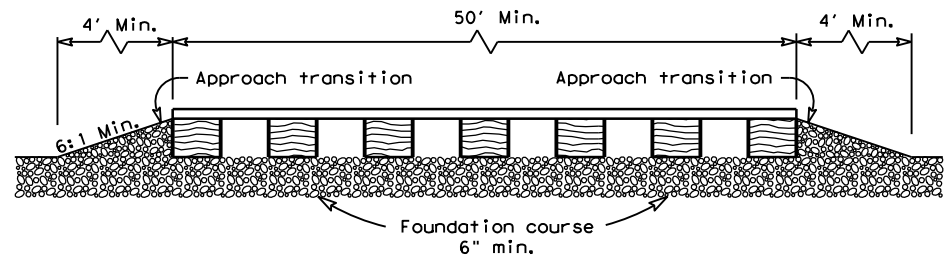
CONSTRUCTION EXIT (TYPE 1)  
ROCK CONSTRUCTION (LONG TERM)

**GENERAL NOTES (TYPE 1)**

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- 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

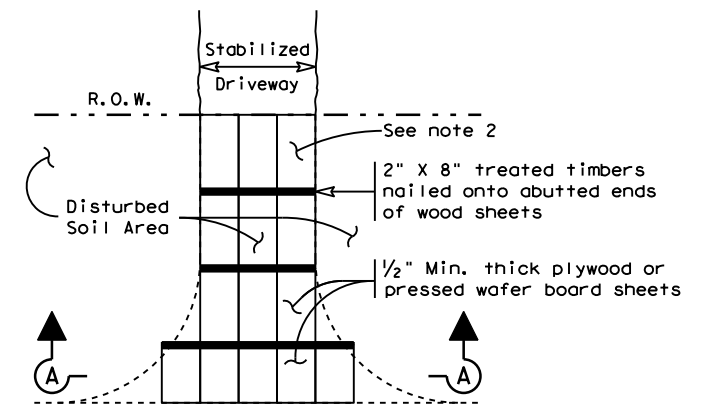


ELEVATION VIEW

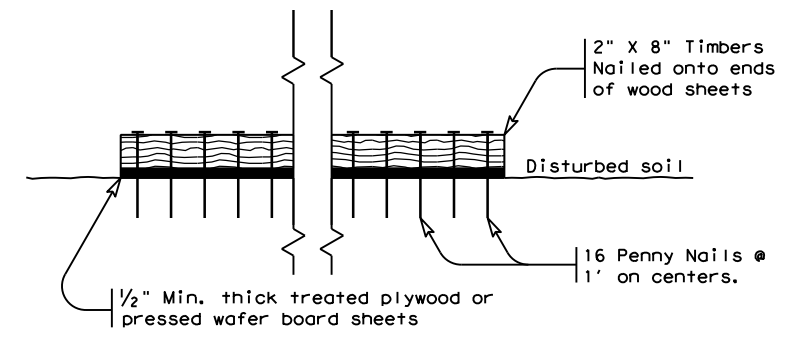
CONSTRUCTION EXIT (TYPE 2)  
TIMBER CONSTRUCTION (LONG TERM)

**GENERAL NOTES (TYPE 2)**

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- 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.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- 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



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)  
SHORT TERM

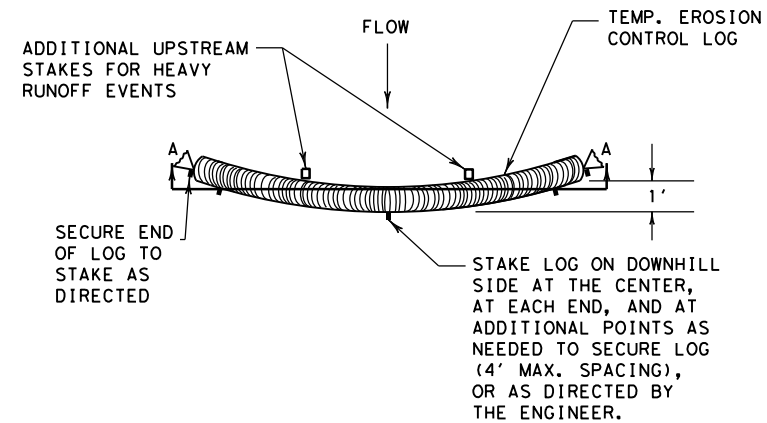
**GENERAL NOTES (TYPE 3)**

- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- 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.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

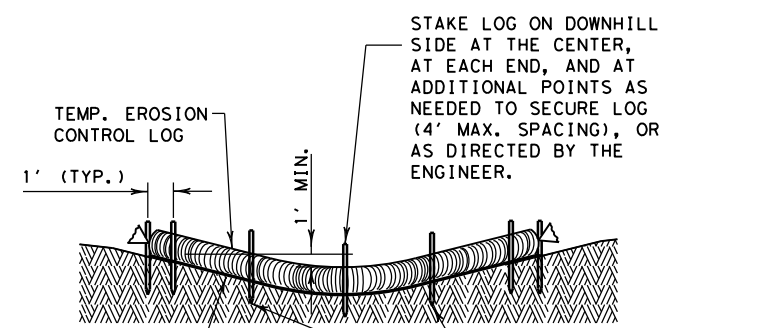
		Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>CONSTRUCTION EXITS</b> <b>EC(3)-16</b>			
FILE: ec316	DN: I&D	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0015 08	147, ETC	IH 35
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1147	



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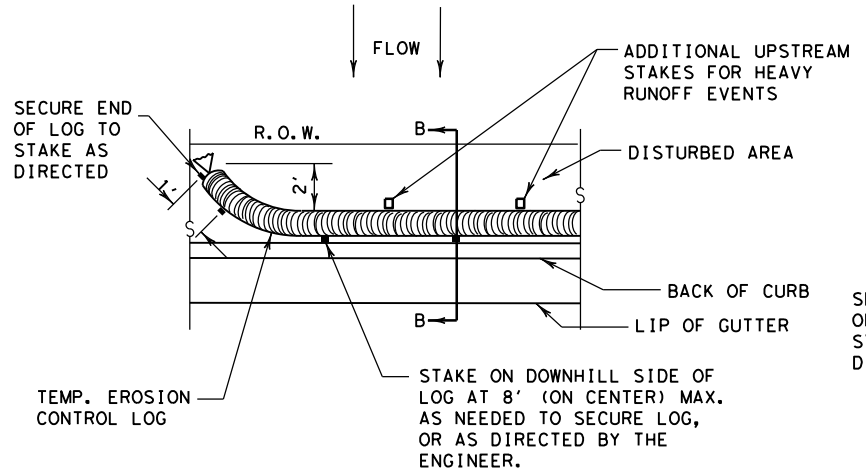
PLAN VIEW



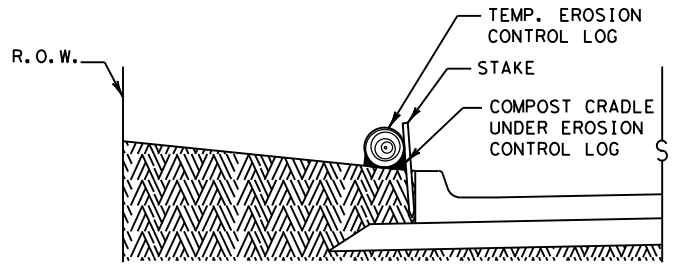
SECTION A-A  
EROSION CONTROL LOG DAM

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

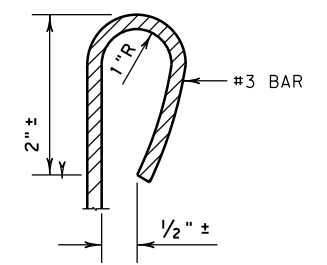


PLAN VIEW

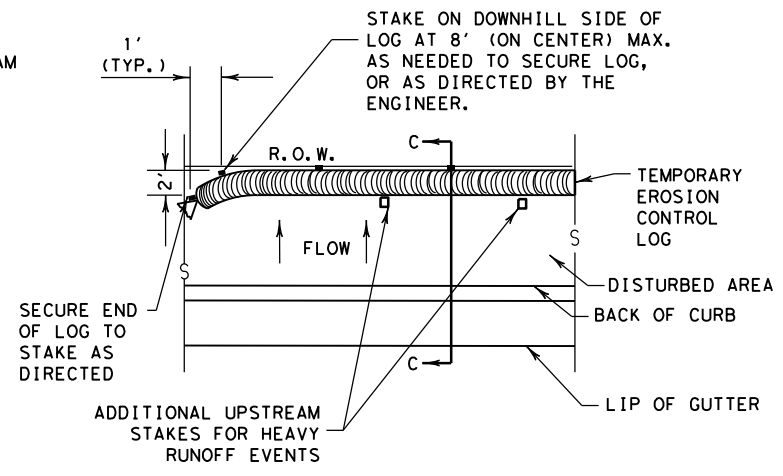


SECTION B-B  
EROSION CONTROL LOG AT BACK OF CURB

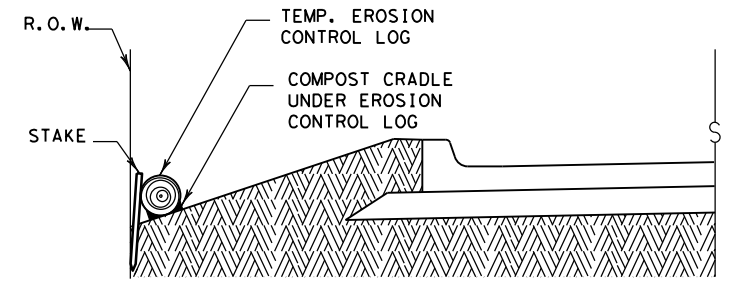
CL-BOC



REBAR STAKE DETAIL



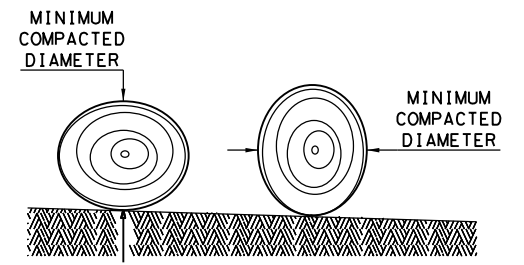
PLAN VIEW



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

**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.

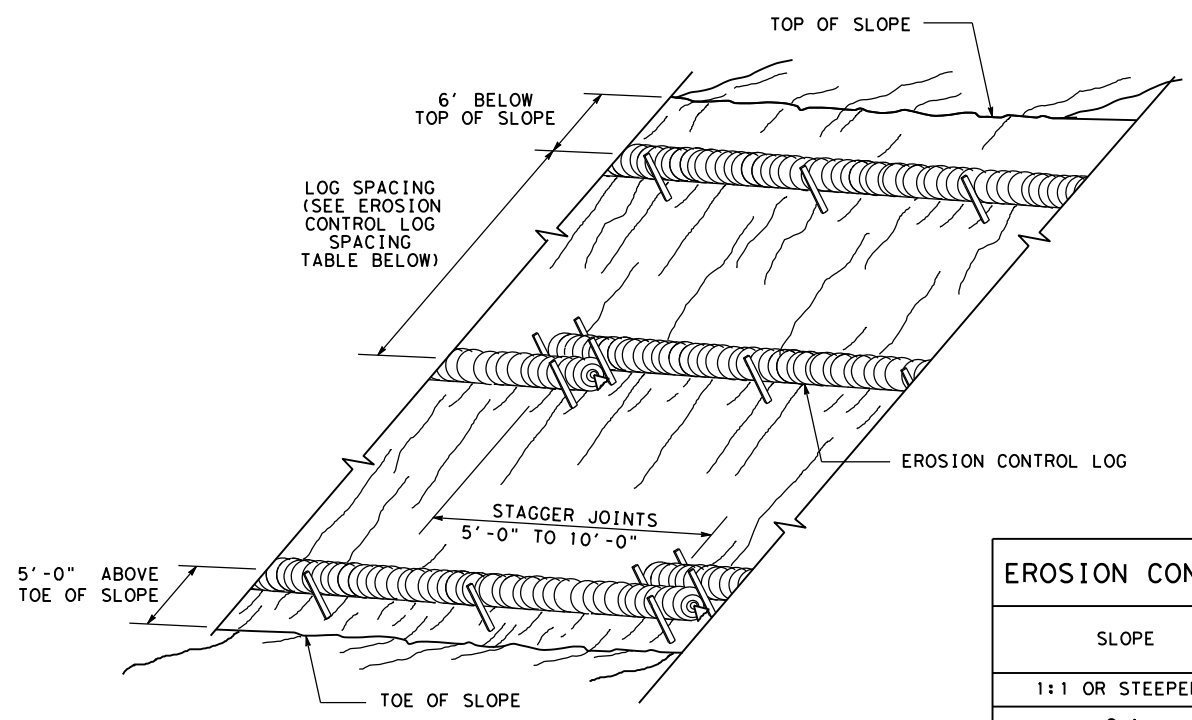
**GENERAL NOTES:**

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

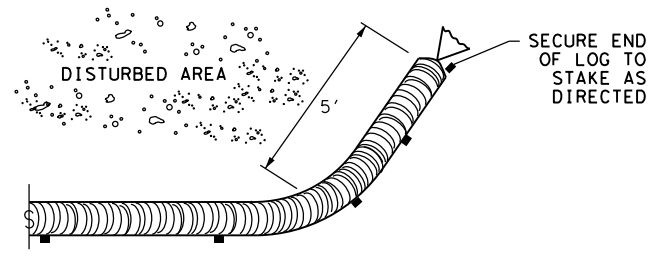
		<i>Design Division Standard</i>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b>			
<b>EROSION CONTROL LOG</b>			
<b>EC (9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0015 08	147, ETC	IH 35
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**EROSION CONTROL LOGS ON SLOPES  
STAKE AND TRENCHING ANCHORING**

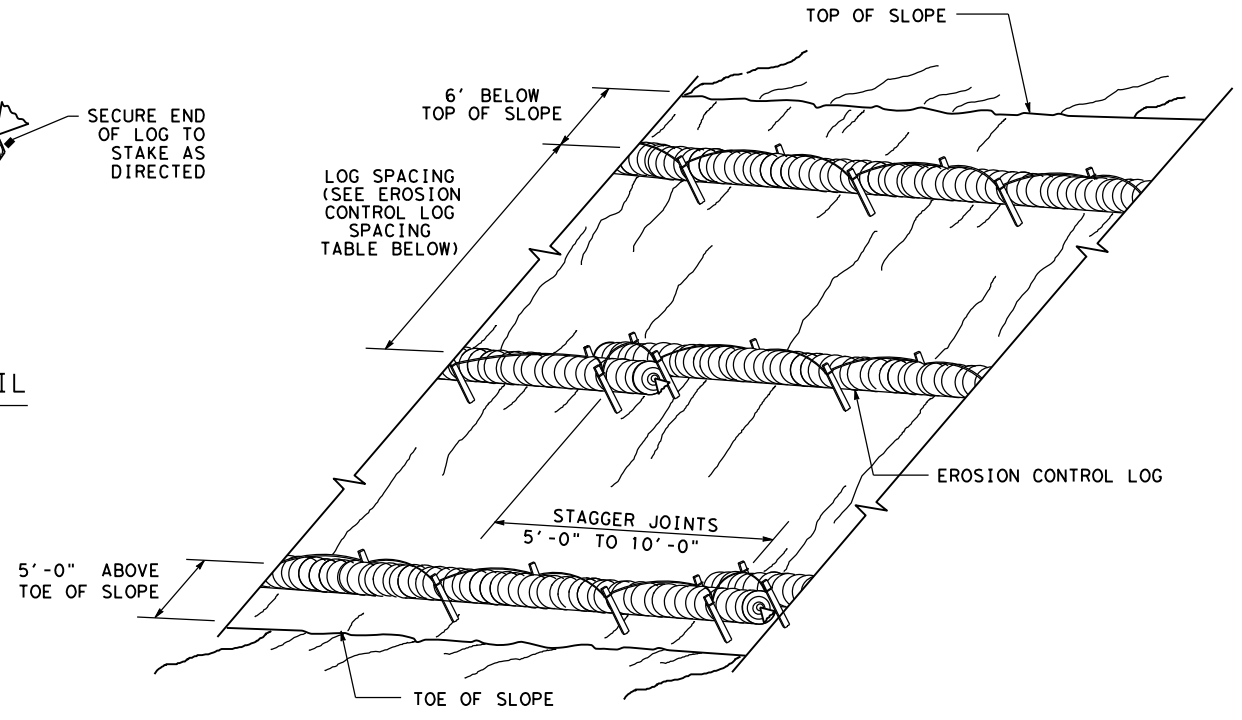
CL-SST



**END SECTION RAP DETAIL**

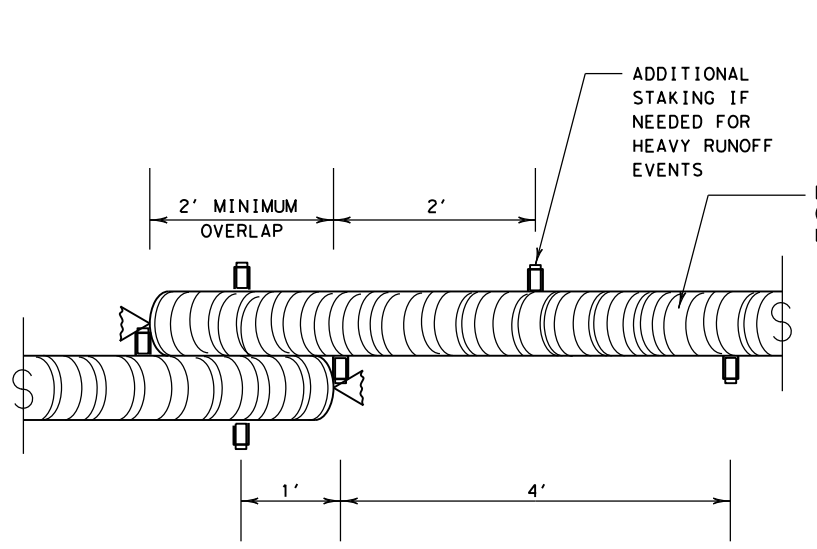
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



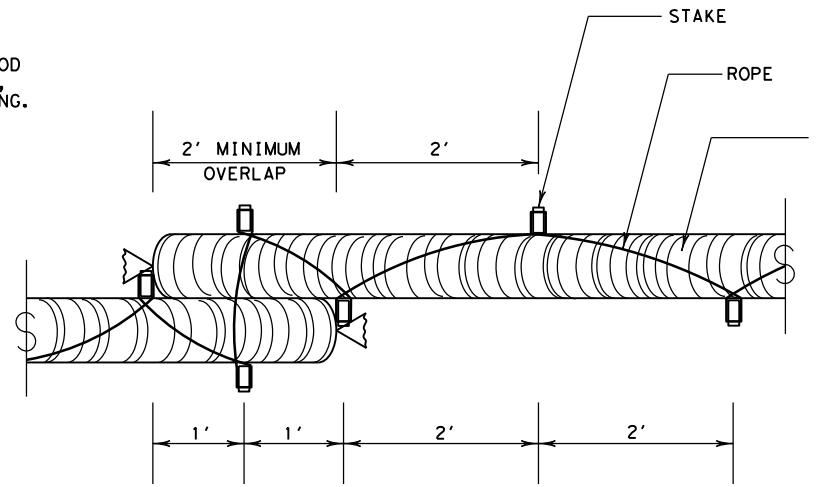
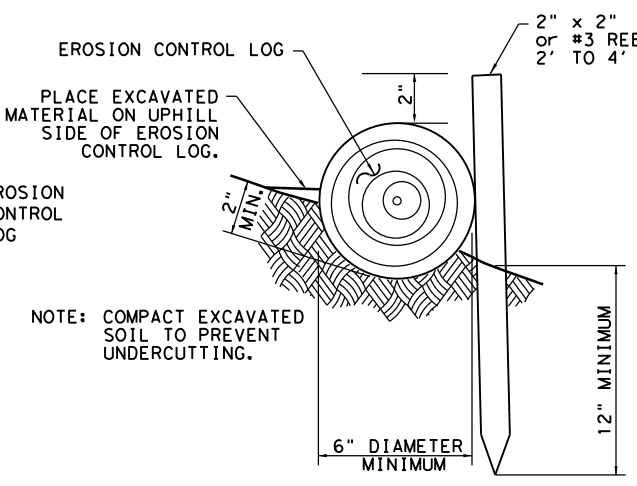
**EROSION CONTROL LOGS ON SLOPES  
STAKE AND LASHING ANCHORING**

CL-SSL



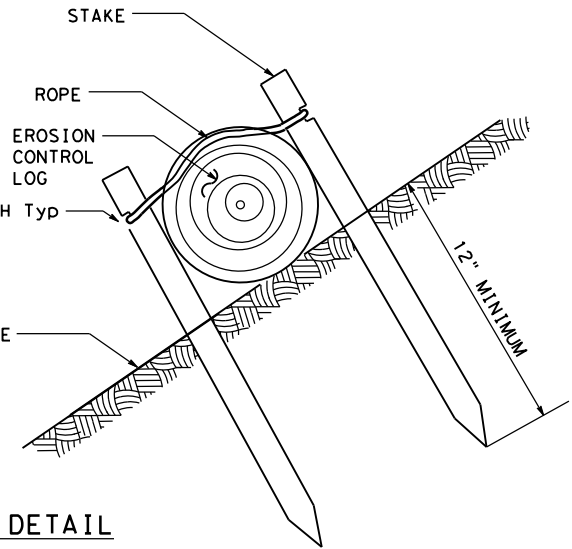
**STAKE AND TRENCHING ANCHORING DETAIL**

CL-SST



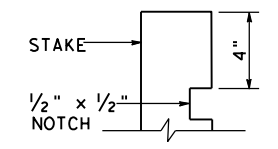
**STAKE AND LASHING ANCHORING DETAIL**

CL-SSL



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

**TRENCH DEPTH TABLE**

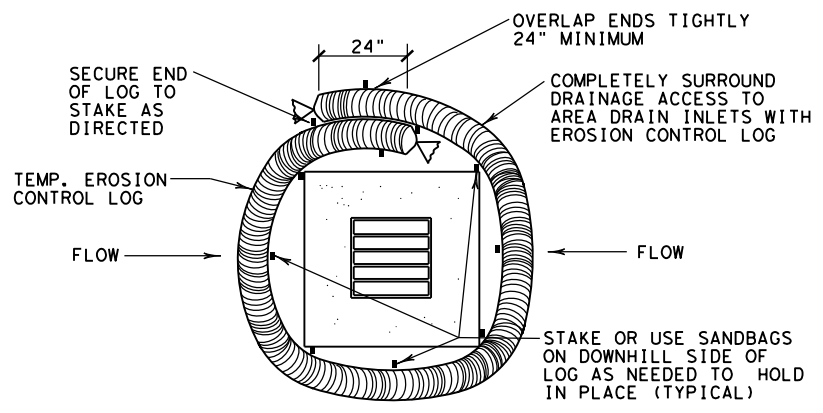


**STAKE NOTCH DETAIL**

SHEET 2 OF 3

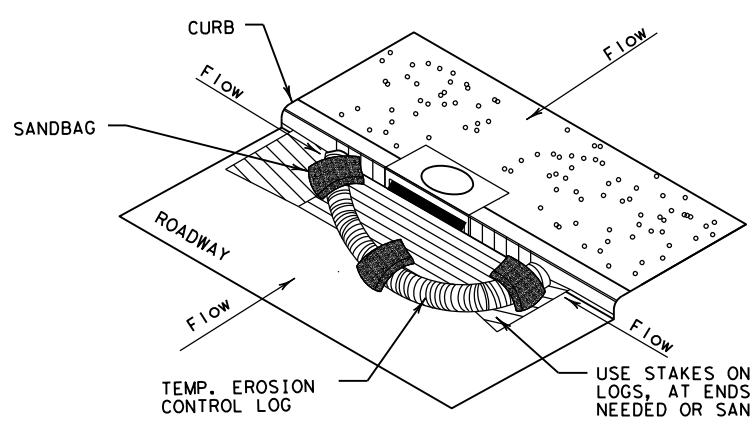
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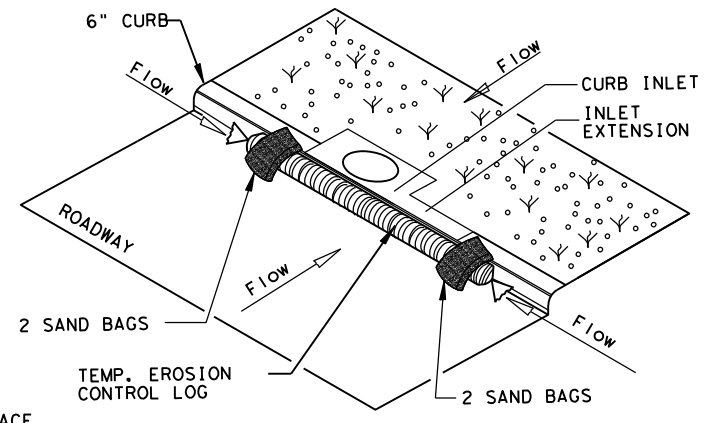
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

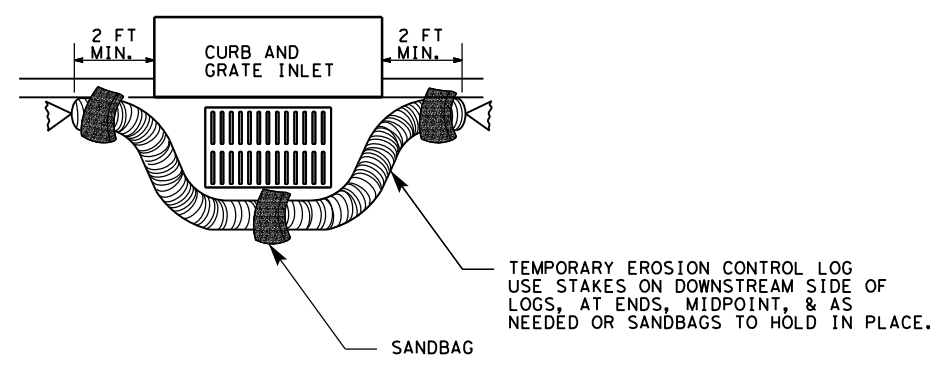
CL-CI



EROSION CONTROL LOG AT CURB INLET

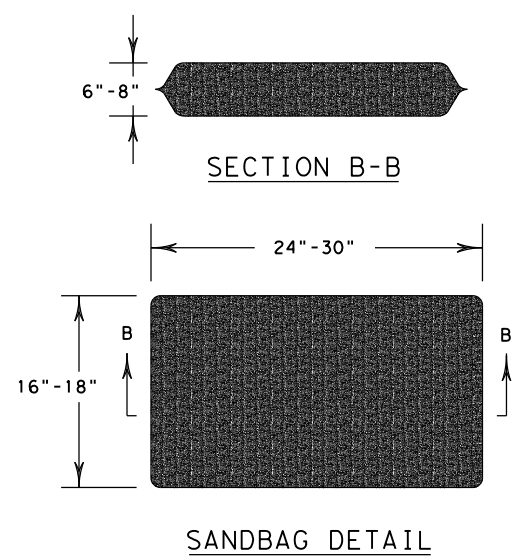
CL-CI

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



SHEET 3 OF 3

		<i>Design Division Standard</i>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>EROSION CONTROL LOG</b> <b>EC (9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0015 08	147, ETC	IH 35
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1150	

## **ATTACHMENT J – Schedule of Interim and Permanent Soil Stabilization Practices**

The schedule of interim and permanent soil stabilization practices will be according to the most recent TPDES construction general permit (refer to SW3P plan sheet for permit information). The SW3P sheets can be found in this WPAP application under Section V – Attachment I.

### **After completion of Permanent Erosion and Sediment Controls**

Stabilize and restore all areas disturbed during construction. Permanent seeding will be applied immediately after the final design grades are achieved on portions of the site but no later than 14 days after construction activities have permanently ceased. After the entire site is stabilized, any sediment that has accumulated will be removed and hauled off-site for disposal. Construction debris, trash and temporary BMPs including silt fences, material storage areas, sanitary toilets, etc.) will also be removed and any areas disturbed during removal will be seeded immediately.



## Section VII

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### **Permanent Stormwater Section**

# Permanent Stormwater Section

## Texas Commission on Environmental Quality

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

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

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

## Signature

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

Print Name of Customer/Agent: Carlos Juarez, P.E.

Date: 07-26-2023

Signature of Customer/Agent

Carlos Juarez

Regulated Entity Name: IH 35

## Permanent Best Management Practices (BMPs)

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

- Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.  
 N/A
- 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

3.  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

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

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

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

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

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

**Attachment A - 20% or Less Impervious Cover Waiver.** The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.

The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

The site will not be used for multi-family residential developments, schools, or small business sites.

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

- A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
  - No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
  - Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.
7.  **Attachment C - BMPs for On-site Stormwater.**
- A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
  - Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.
8.  **Attachment D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.
- N/A
9.  The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.
- The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.
  - Attachment E - Request to Seal Features.** A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.
10.  **Attachment F - Construction Plans.** All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:
- Design calculations (TSS removal calculations)
  - TCEQ construction notes
  - All geologic features
  - All proposed structural BMP(s) plans and specifications
- N/A



11.  **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:
- Prepared and certified by the engineer designing the permanent BMPs and measures
  - Signed by the owner or responsible party
  - Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
  - A discussion of record keeping procedures
- N/A
12.  **Attachment H - Pilot-Scale Field Testing Plan.** Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.
- N/A
13.  **Attachment I - Measures for Minimizing Surface Stream Contamination.** A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.
- N/A

### ***Responsibility for Maintenance of Permanent BMP(s)***

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

14.  The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.
- N/A
15.  A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.
- N/A

## **ATTACHMENT B – Upgradient Stormwater**

The following BMPs have been designed using TCEQ Technical Guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005) to prevent the pollution of stormwater runoff originating upgradient of the site:

No BMP's proposed to treat upgradient stormwater.

Existing cross-culverts will be extended for the locations of proposed widening of existing IH-35 frontage roads, and replaced for locations of total reconstruction of existing frontage roads. The hydraulic capacity of the proposed drainage improvements has been analyzed and determined to have adequate capacity in accordance with TxDOT drainage design criteria. See IH 35 at Williams Drive drainage plan sheets for more information.

### **ATTACHMENT C – BMP for On-Site Stormwater**

The following BMP(s) have been designed using TCEQ Technical Guidance document, Complyingwiththe EdwardsAquiferRules:TechnicalGuidanceonBestManagementPractices(2005) to prevent the pollution of stormwater runoff originating On-site:

- Sand Filter Ponds
- Vegetative Filter Strips

The on-site BMP(s) proposed will treat portions of existing and proposed impervious cover. The proposed facilities will successfully mitigate the TSS load caused by the increase of 20.01 acres of new impervious cover.

#### **Sand Filter Ponds**

A total of 5 sand filter ponds will be constructed and maintained to prevent onsite stormwater pollution. Additionally the sand filter basins will have a manual valve installed on the underdrain outfall pipe allowing the basin to be utilized as an HMT during a spill.

Due to the utilization of curb & gutter sections throughout the majority of the project, a storm drain system will be utilized to capture and convey storm water runoff to outfall points located at each of the 5 proposed ponds. As required by TCEQ RG-348, the proposed sand filter ponds are designed at grade to facilitate drying between storm events, also each pond was checked for design feasibility and to demonstrate sufficient drop through the systems to maintain a positive elevation head in the 100-year storm event.

### **ATTACHMENT D – BMP for Surface Streams**

The following BMP's have been designed using TCEQ Technical Guidance Document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005) to prevent the pollution of stormwater runoff entering the surface streams:

- Sand Filter Ponds
- Vegetative Filter Strips

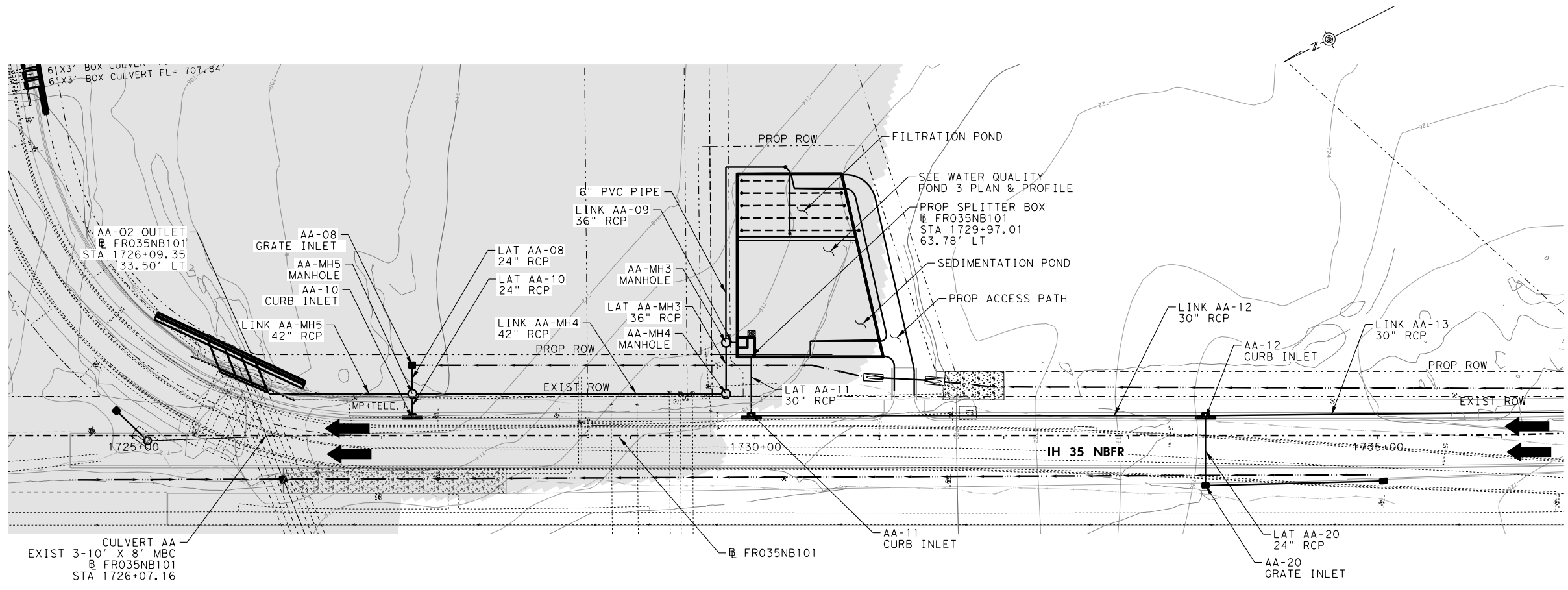
The storm runoff is ultimately directed to the Pecan Branch and North and South Fork San Gabriel River which are a part of the Brazos River basin. Additional BMP controlled measures were described previously in Attachment C in Section 6. Please refer to Attachment C in Section 6 for further details on the measures mentioned.



**ATTACHMENT F – Construction Plans**

See attached construction drawings:

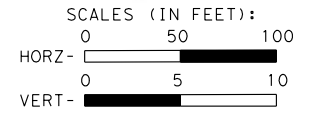
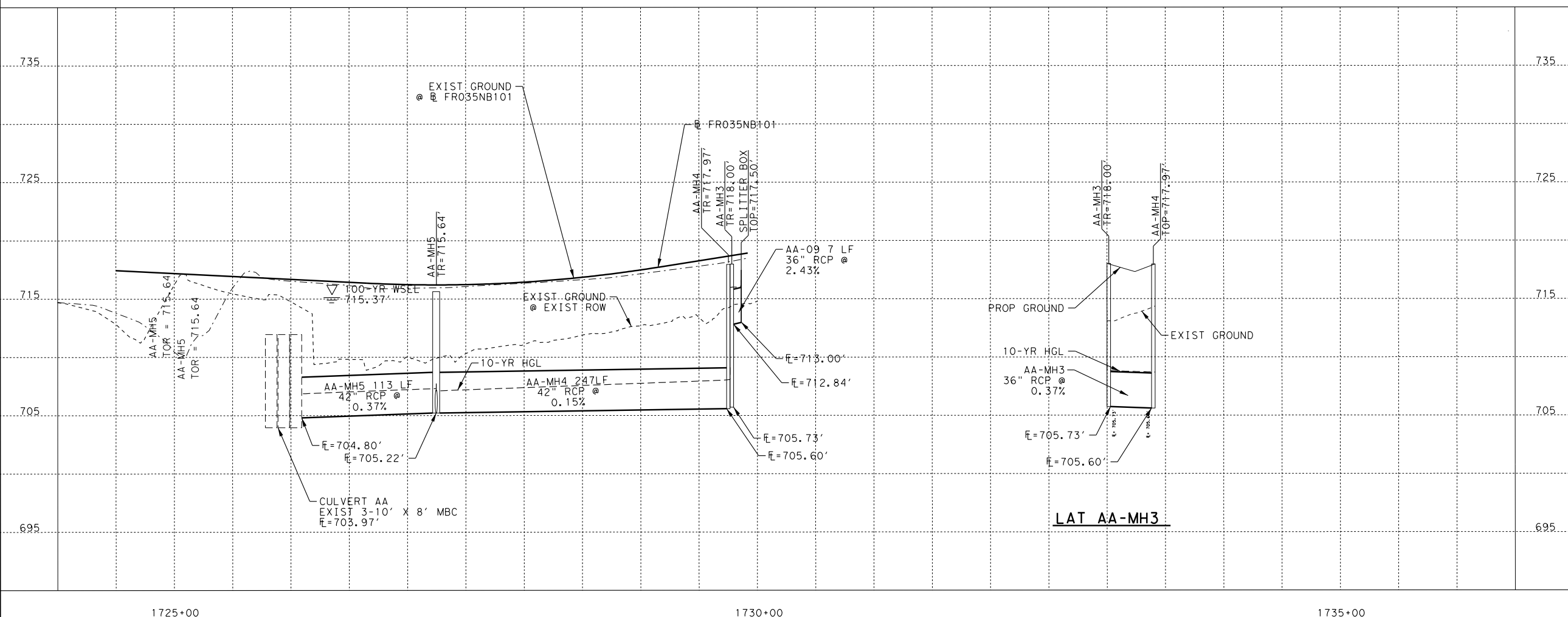
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- LEGEND**
- DIRECTION OF TRAFFIC
  - FLOW DIRECTION
  - EXIST ROW
  - PROP ROW
  - EXIST STORM SEWER
  - PROP STORM SEWER
  - EXIST DITCH
  - PROP DITCH

- NOTES:**
- CONTRACTOR WILL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WHERE NEW FACILITIES CROSS.
  - CONTRACTOR WILL FIELD VERIFY THE SIZE OF ALL STRUCTURES TO BE EXTENDED BEFORE FABRICATING AND/OR ACQUIRING MATERIALS.
  - REMOVAL OF HEADWALL/WINGWALL WILL CONSIST OF REMOVING CURB WALL, HEADWALLS, WINGWALLS AND RIPRAP APRON, IF APPLICABLE.
  - FOR DETAILED PLAN & PROFILE FOR POND 3, SEE "POND 3 PLAN & PROFILE" SHEET.
  - FOR ADDITIONAL STORM SEWER INFORMATION SEE "NB FRONTAGE RD DRAINAGE PLAN & PROFILE" SHEETS.

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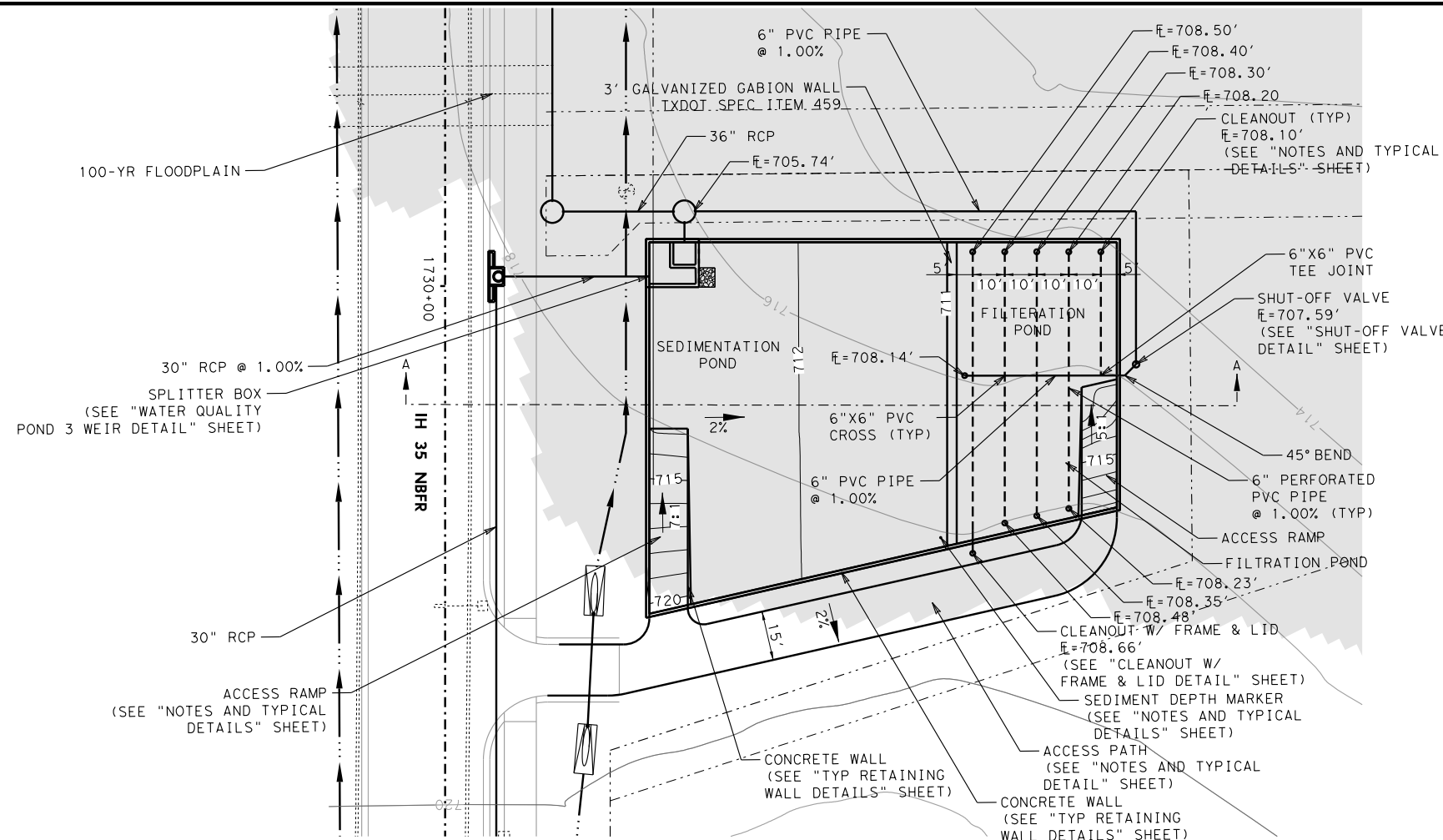
**IH 35  
POND 3 OUTFALL  
PLAN & PROFILE**

SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
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DIR: RM	CK: AL	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	633

100% SUBMITTAL

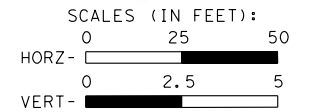
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DRAINAGE AREA (AC)	TREATED IMPERVIOUS COVER (AC)	RUNOFF CAPTURED (IN)	LOAD REMOVED (LBS)	VOLUME REQUIRED (CF)	VOLUME PROVIDED (CF)
8.79	7.68	2.00	7,000.00	54,637.00	63,971.00

STAGE-STORAGE	
ELEV (FT)	STORAGE VOLUME (CF)
711.00	0.00
712.00	8,276.00
713.00	21,869.00
714.00	35,682.00
715.00	49,714.00
716.00	63,971.00

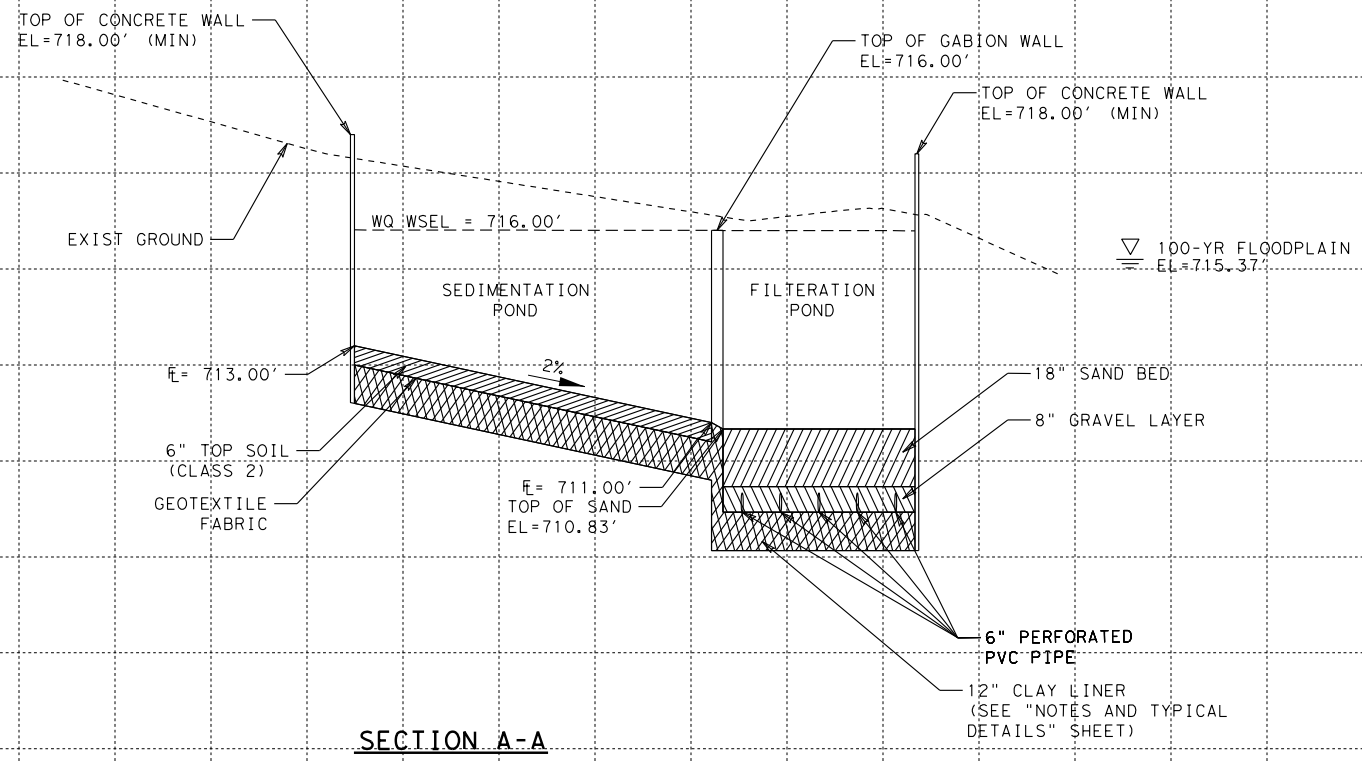
- NOTES
- PROPOSED GRADING BASED ON LIDAR; CONTRACTOR TO FIELD VERIFY GROUND ELEVATIONS AND SHALL MODIFY TOP OF WALL ELEVATIONS ACCORDINGLY.
  - SEE WATER POLLUTION ABATEMENT PLAN APPLICATION PREPARED BY LANDECH, INC. AND PRELIMINARY DRAINAGE REPORT BY HDR, INC. FOR ADDITIONAL INFORMATION.



IH 35  
WATER QUALITY  
POND 3  
PLAN & PROFILE

SHEET 1 OF 1

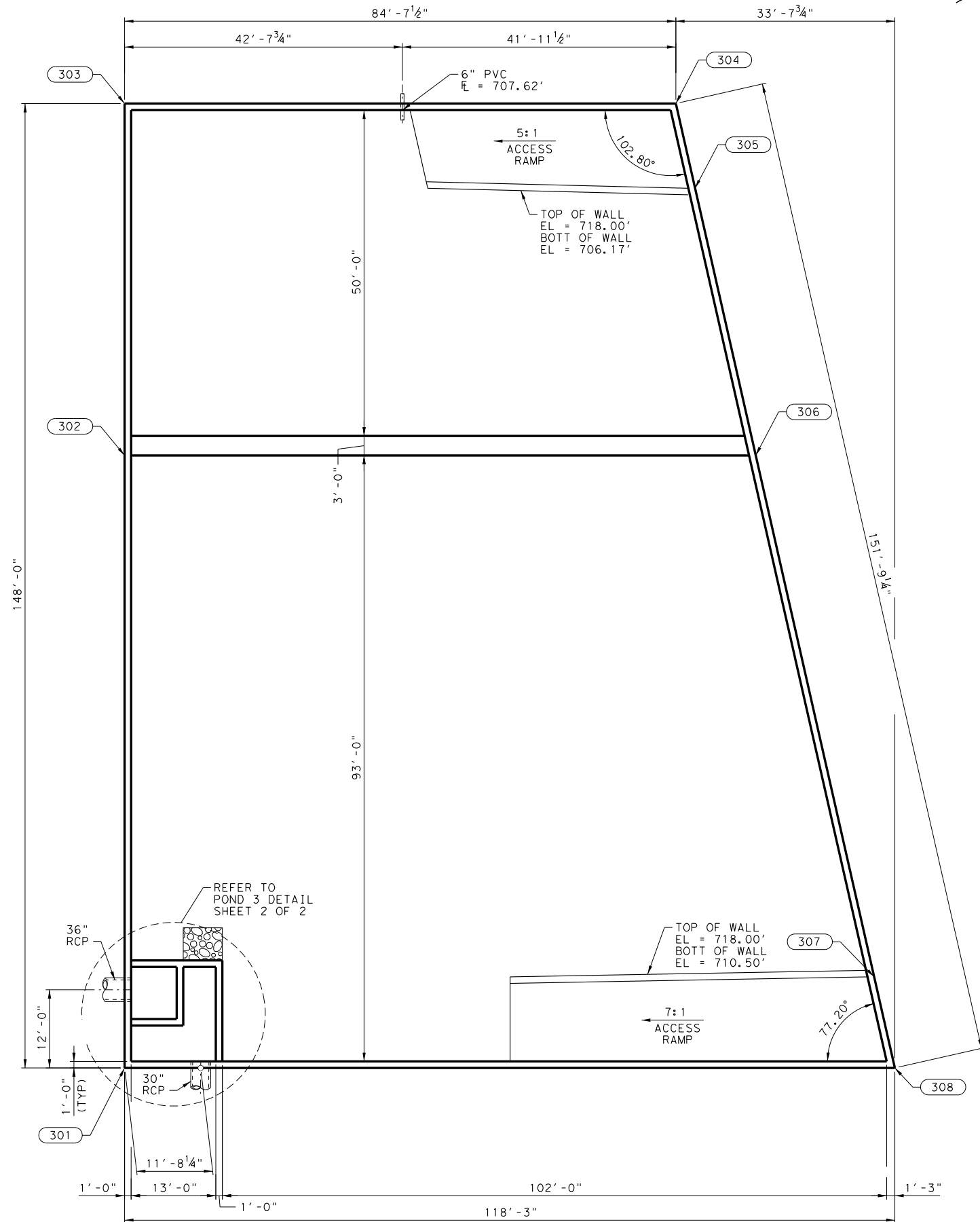
© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144, 147	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	634



SECTION A-A

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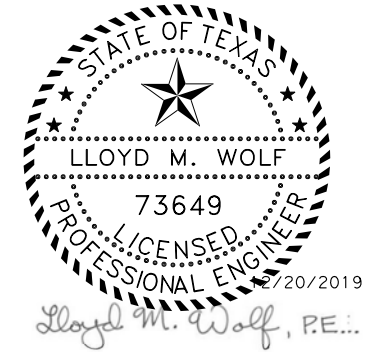


**PLAN**

POND 3 RETAINING WALL POINT TABLE				
POINT ID	EASTING	NORTHING	TOP OF WALL EL (FT)	BOTTOM OF WALL EL (FT)
301	3,135,086.79	10,218,103.42	719.00	710.50
302	3,135,170.72	10,218,061.08	719.00	706.17
303	3,135,218.93	10,218,036.76	719.00	706.17
304	3,135,180.81	10,217,961.21	719.00	706.17
305	3,135,168.79	10,217,964.24	719.00	706.17
306	3,135,127.07	10,217,974.58	719.00	706.17
307	3,135,046.46	10,217,994.63	719.00	710.23
308	3,135,033.53	10,217,997.84	719.00	710.50

**GENERAL NOTES:**

1. DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS WITH CURRENT INTERIMS.
2. ALL REINFORCING STEEL TO BE GRADE 60.
3. REINFORCING STEEL TO BE ADJUSTED TO PROVIDE A MINIMUM OF 2" OF CLEAR COVER UNLESS OTHERWISE NOTED.
4. FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS AND COMMENCING WORK.
5. REFER TO "WATER QUALITY POND TYPICAL DETAILS" SHEET FOR DETAILS.



SCALE VARIES

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**mobility** CAPITAL AREA **35**

**Texas Department of Transportation**

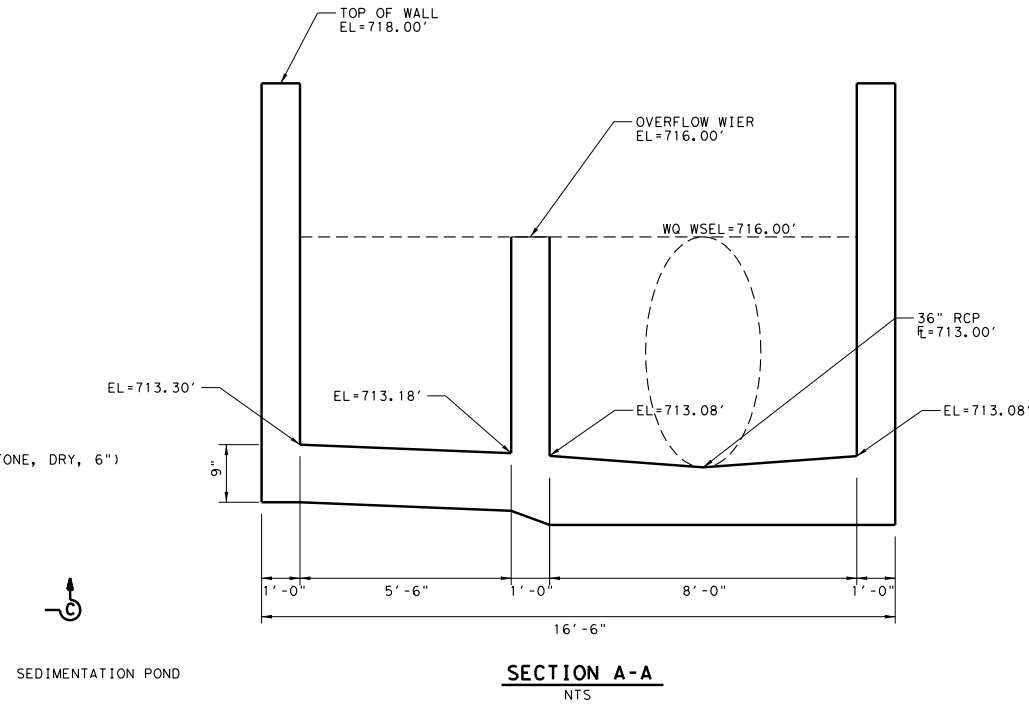
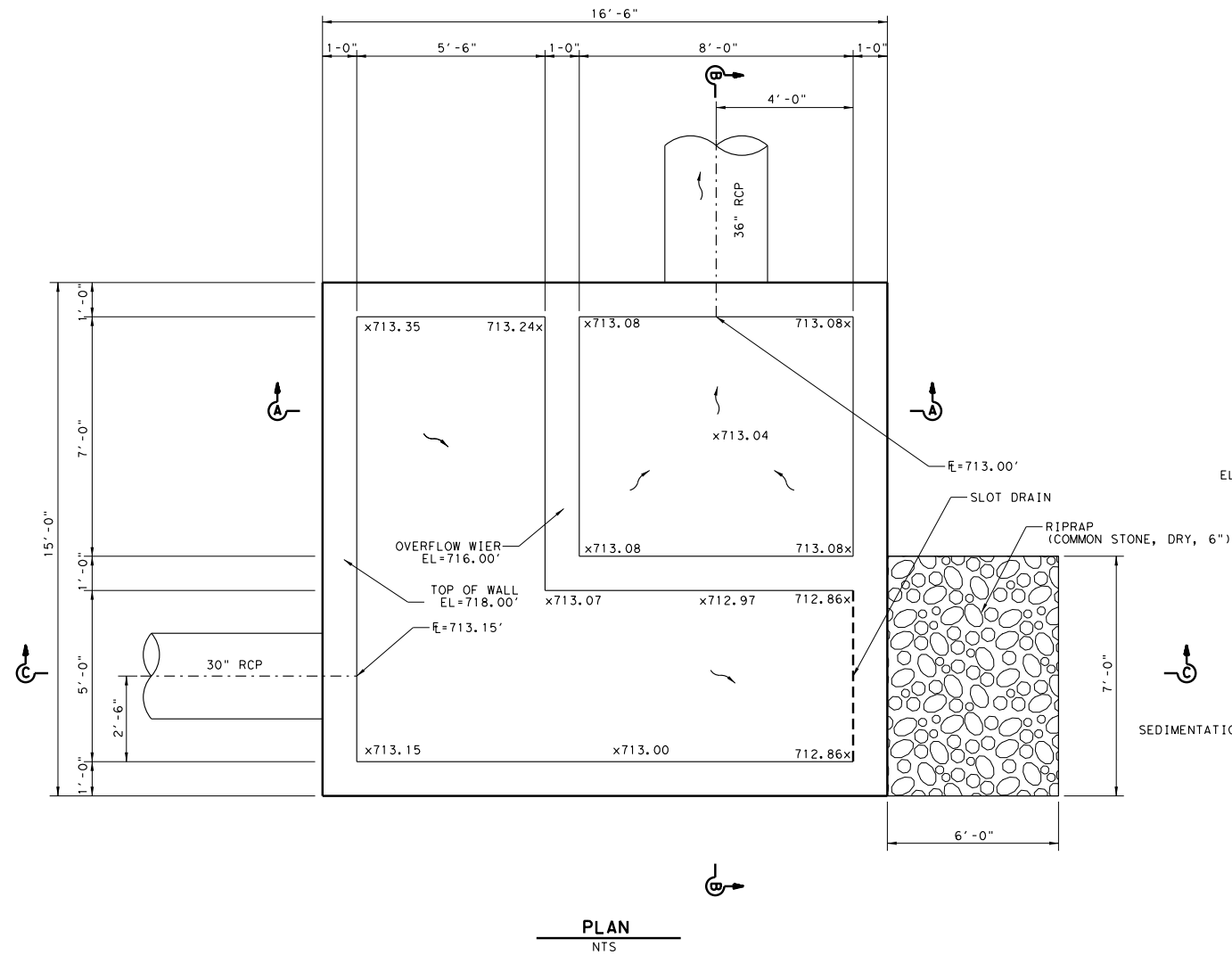
**IH 35**  
**WATER QUALITY**  
**POND 3**  
**DETAIL**

SHEET 1 OF 2					
DS:	CK:	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST		COUNTY	SHEET NO.
GWS	LMW	AUS		WILLIAMSON	635

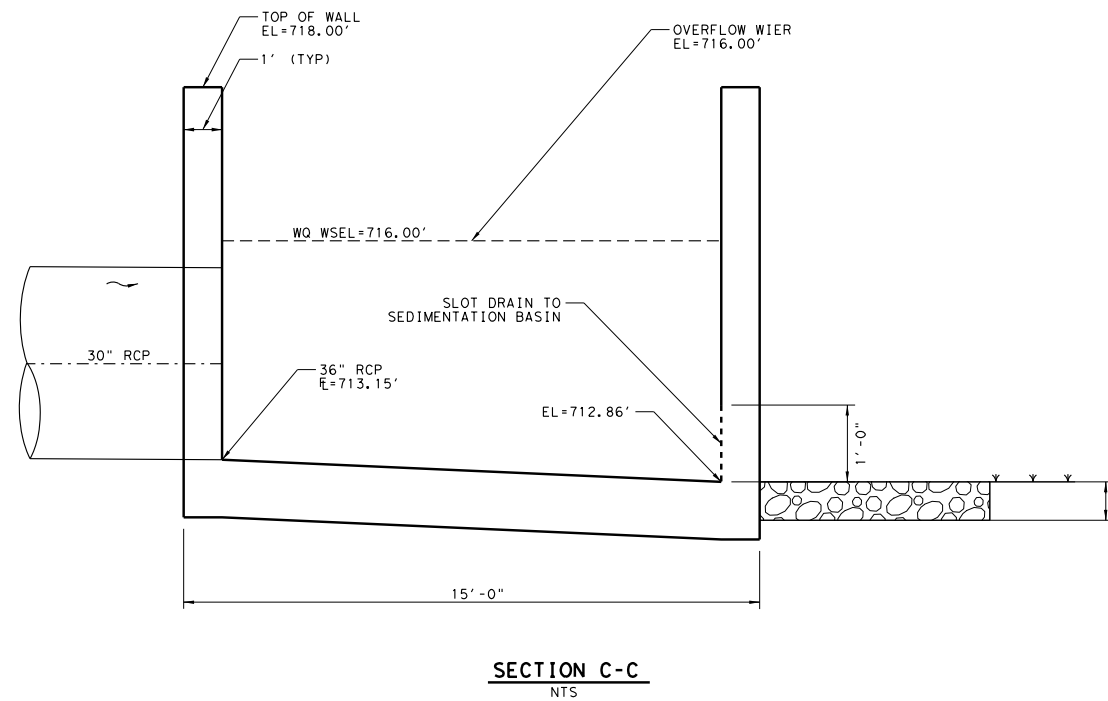
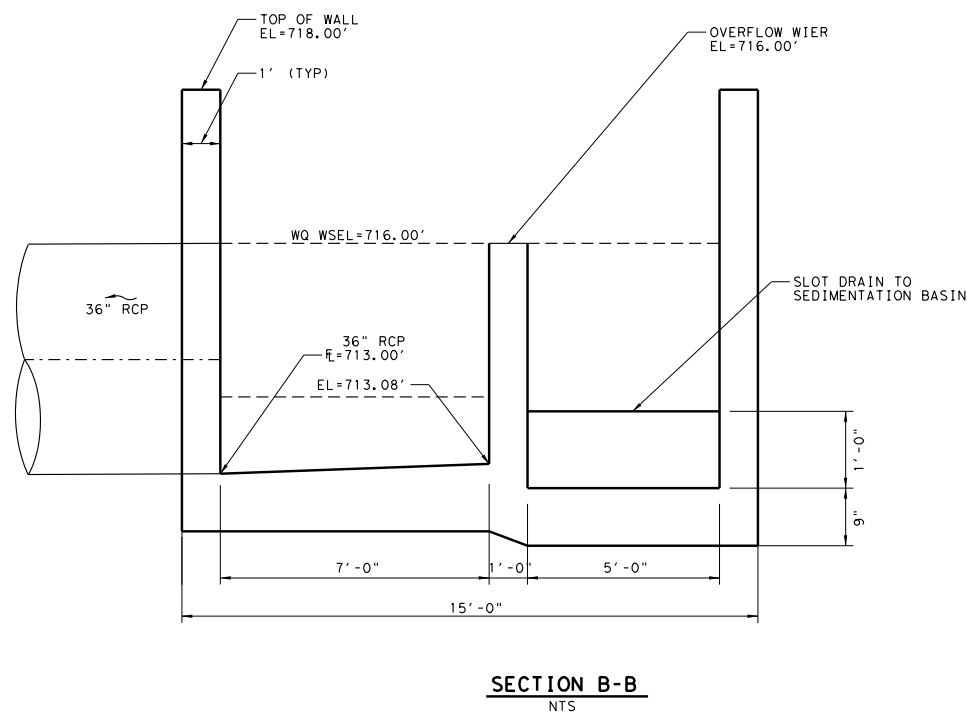


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- NOTES
- FOR STRUCRAL DETAILS SEE "WATER QUALITY POND TYPICAL WEIR DETAILS" SHEET.



STORM EVENT		
	25-YEAR	100-YEAR
WSEL	717.00'	717.50'
DESIGN FLOW	45 cfs	59 cfs
OVERFLOW WEIR CALCULATION		
WEIR EL	716.00'	
WEIR LENGTH	15.00'	
WEIR CAPACITY (Q)	45 cfs	83 cfs
OUTFALL PIPE FLOW CALCULATION (HAZEN-WILLIAMS)		
PIPE SIZE	36-INCH	
PIPE LENGTH	45'	
PIPE FL	713.00'	
PIPE CAPACITY (Q)	129 cfs	161 cfs
OUTFALL ORIFICE CALCULATION		
PIPE CENTROID	714.50'	
ORIFICE CAPACITY (Q)	54 cfs	59 cfs



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

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**mobility** CAPITAL AREA **35**

Texas Department of Transportation

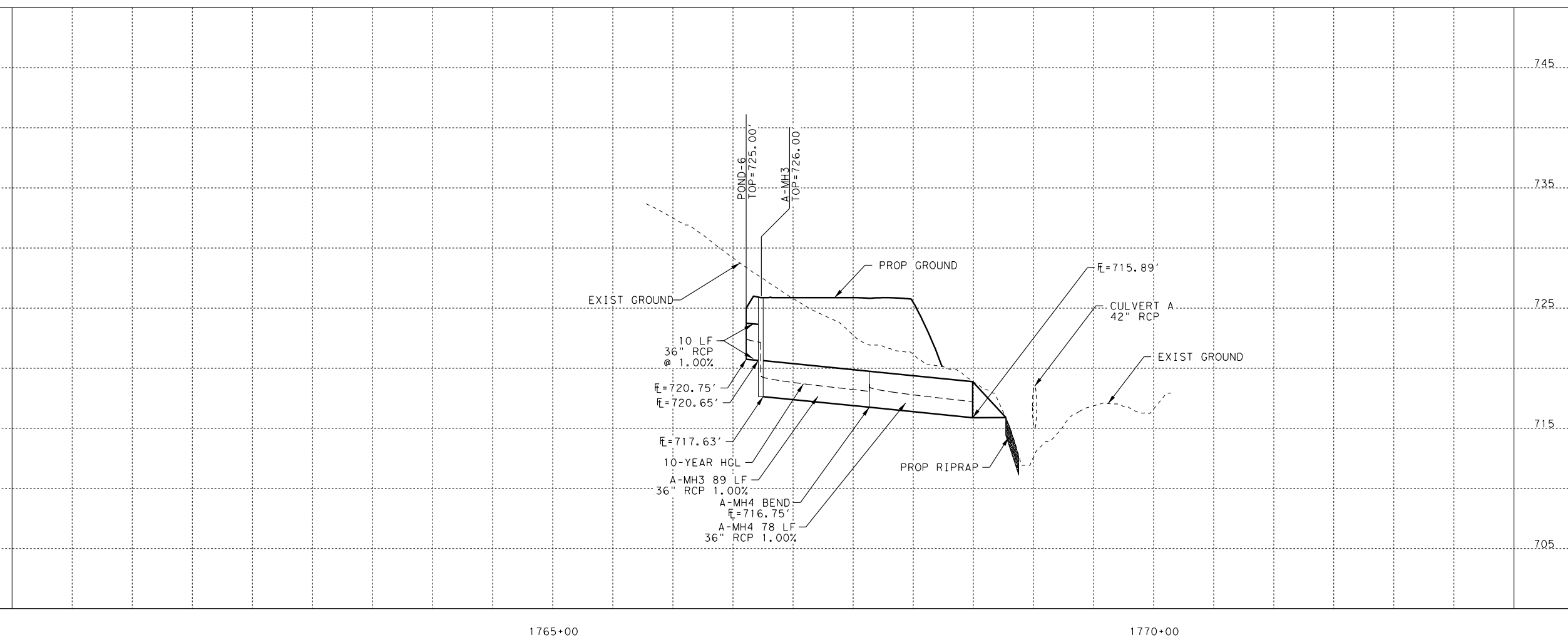
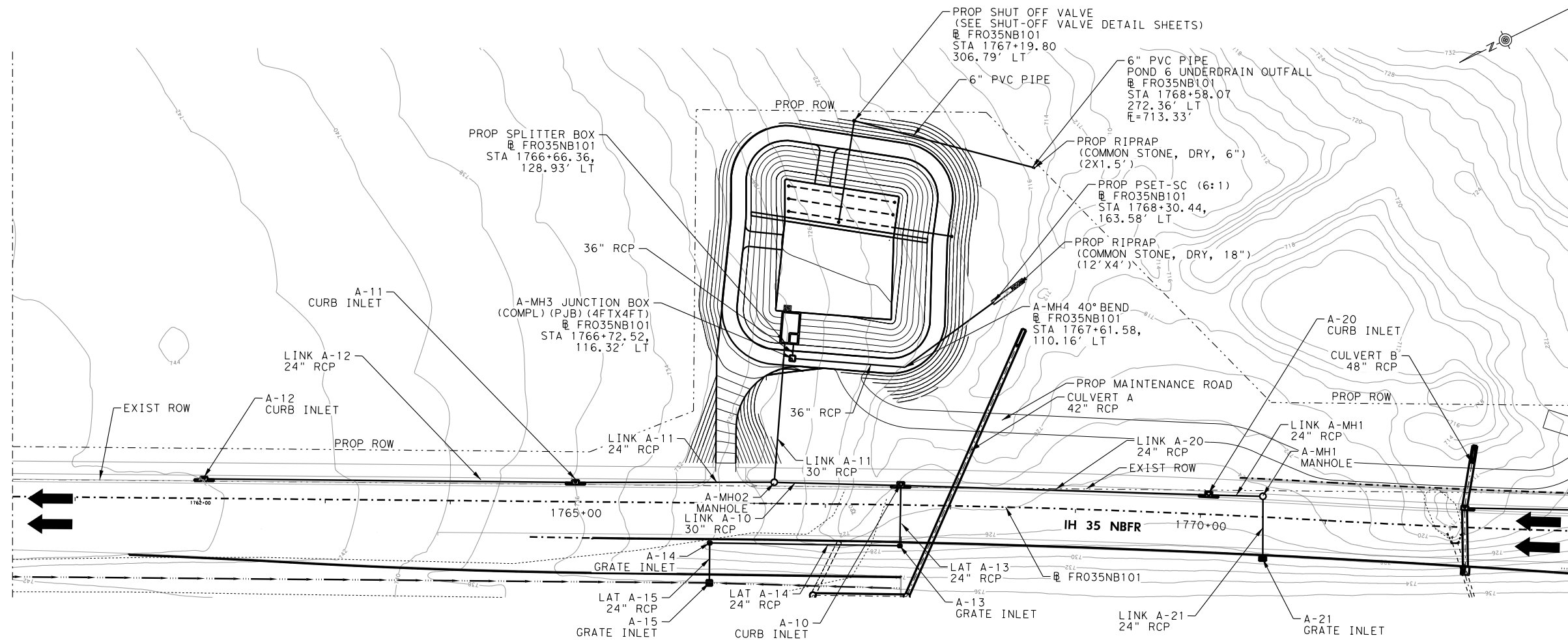
**IH 35  
 WATER QUALITY  
 POND 3  
 WEIR DETAIL**

SHEET 2 OF 2

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144, 147
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	636

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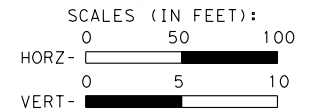


LEGEND

- DIRECTION OF TRAFFIC
- FLOW DIRECTION
- EXIST ROW
- PROP ROW
- EXIST STORM SEWER
- PROP STORM SEWER
- EXIST DITCH
- PROP DITCH

NOTES:

1. CONTRACTOR WILL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WHERE NEW FACILITIES CROSS.
2. CONTRACTOR WILL FIELD VERIFY THE SIZE OF ALL STRUCTURES TO BE EXTENDED BEFORE FABRICATING AND/OR ACQUIRING MATERIALS.
3. REMOVAL OF HEADWALL/WINGWALL WILL CONSIST OF REMOVING CURBWall, HEADWALLS, WINGWALLS AND RIPRAP APRON, IF APPLICABLE.
4. FOR DETAILED PLAN & PROFILE FOR POND 6, SEE "POND 6 PLAN & PROFILE" SHEET.
5. FOR ADDITIONAL STORM SEWER INFORMATION SEE "NB FRONTAGE RD DRAINAGE PLAN & PROFILE" SHEETS.



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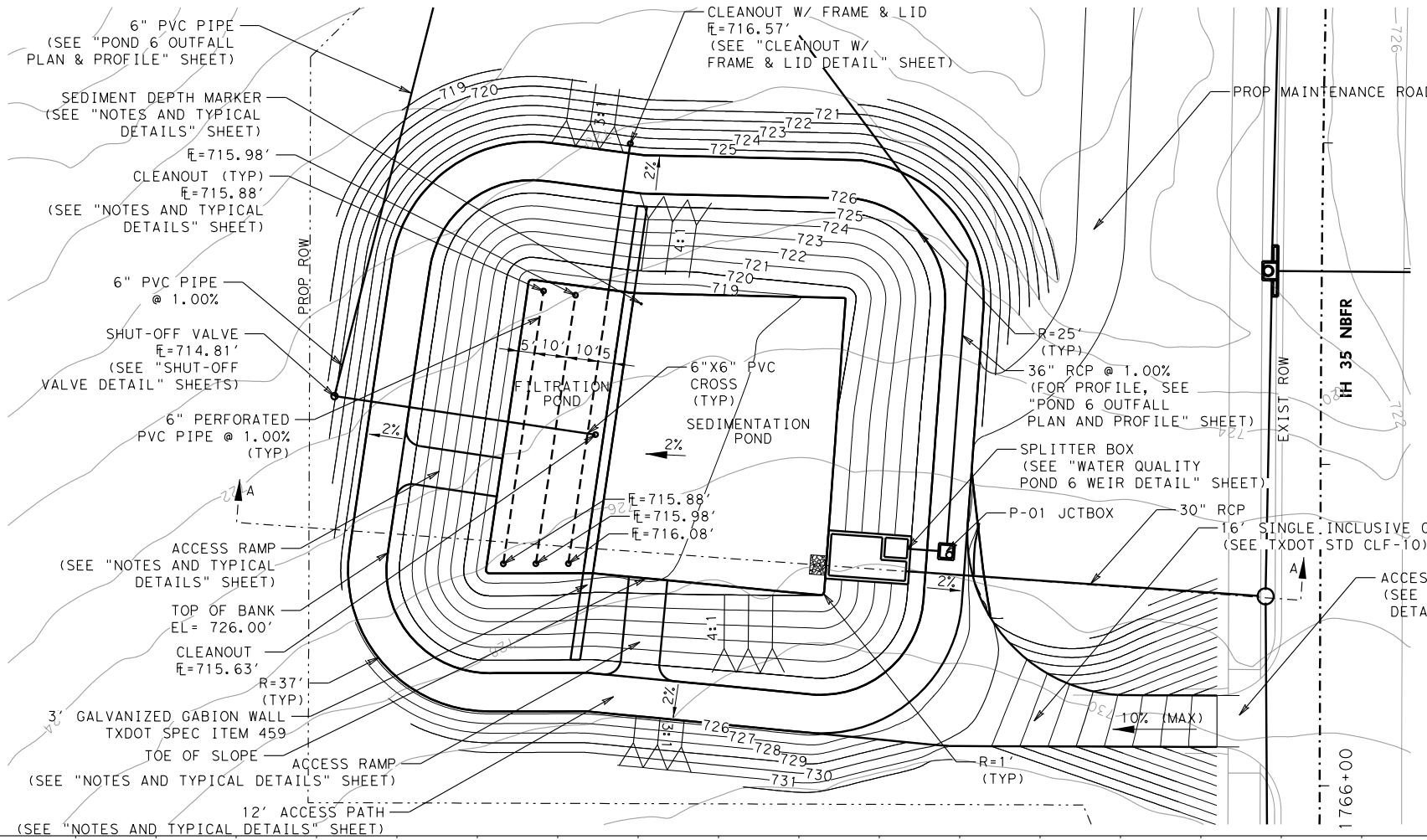
**mobility** CAPITAL AREA  
 INTERSTATE 35

Texas Department of Transportation

IH 35  
 POND 6 OUTFALL  
 PLAN & PROFILE

SHEET 1 OF 1					
© 2018	CONT	SECT	JOB	HIGHWAY	
JS	RC	0015 08	144, 147	IH 35	
DW:	CK:	DIST	COUNTY	SHEET NO.	
RM	AL	AUS	WILLIAMSON	637	

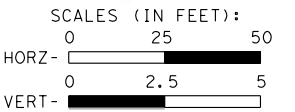
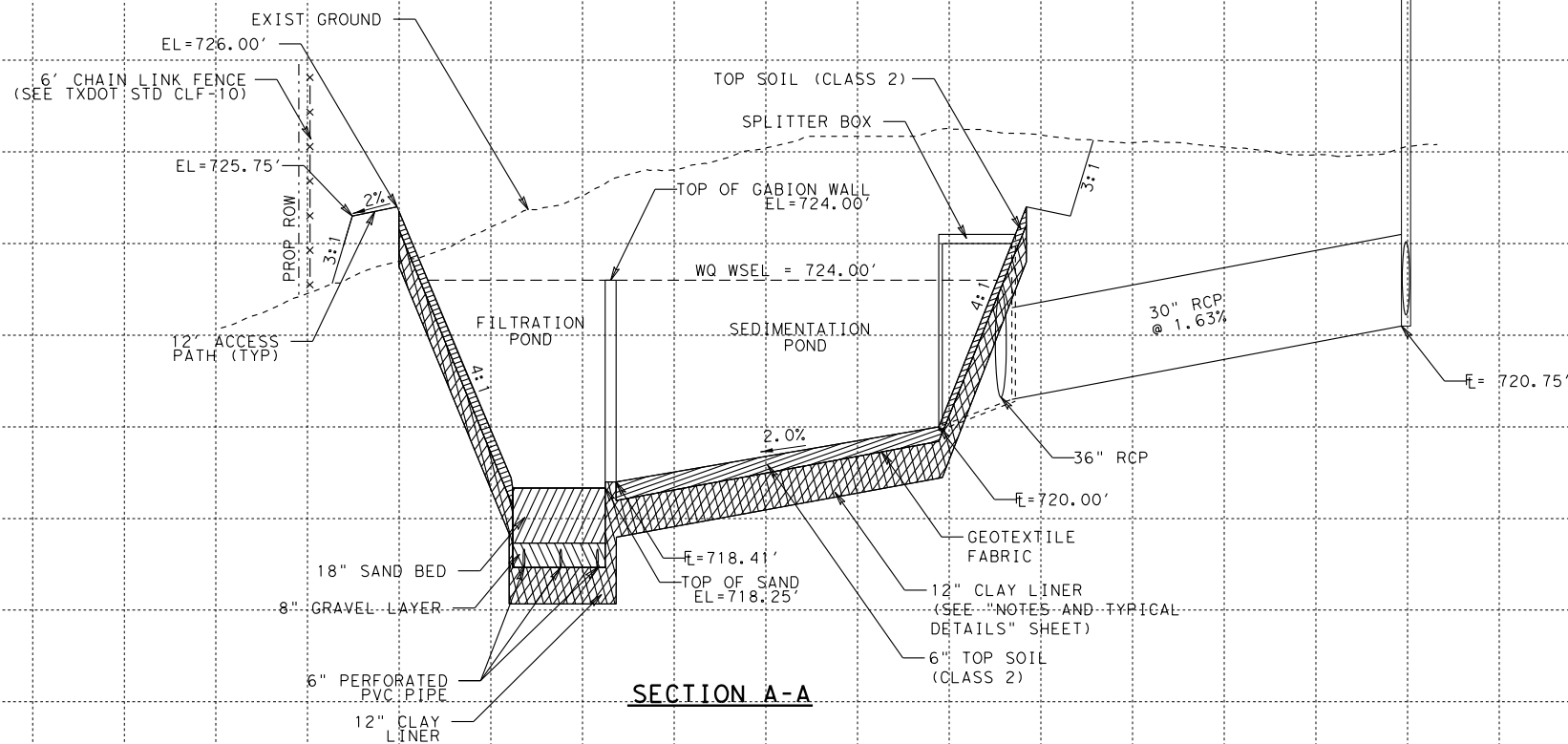
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STAGE-STORAGE	
ELEV (FT)	STORAGE VOLUME (CF)
719.00	0.00
720.00	8,865.00
721.00	20,843.00
722.00	34,766.00
723.00	50,762.00
724.00	68,959.00

- NOTES
- PROPOSED GRADING BASED ON LIDAR; CONTRACTOR TO FIELD VERIFY GROUND ELEVATIONS.
  - SEE WATER POLLUTION ABATEMENT PLAN APPLICATION PREPARED BY LANDTECH, INC. AND PRELIMINARY DRAINAGE REPORT BY HDR, INC. FOR ADDITIONAL INFORMATION.
  - FOR POND 6 GRADING PLAN, SEE "WATER QUALITY POND 6 POINT LAYOUT" SHEET.

DRAINAGE AREA (AC)	TREATED IMPERVIOUS COVER (AC)	RUNOFF CAPTURED (IN)	LOAD REMOVED (LBS)	VOLUME REQUIRED (CF)	VOLUME PROVIDED (CF)
6.18	5.08	3.66	4,990.00	64,563.00	68,959.00



IH 35  
WATER QUALITY  
POND 6  
PLAN & PROFILE

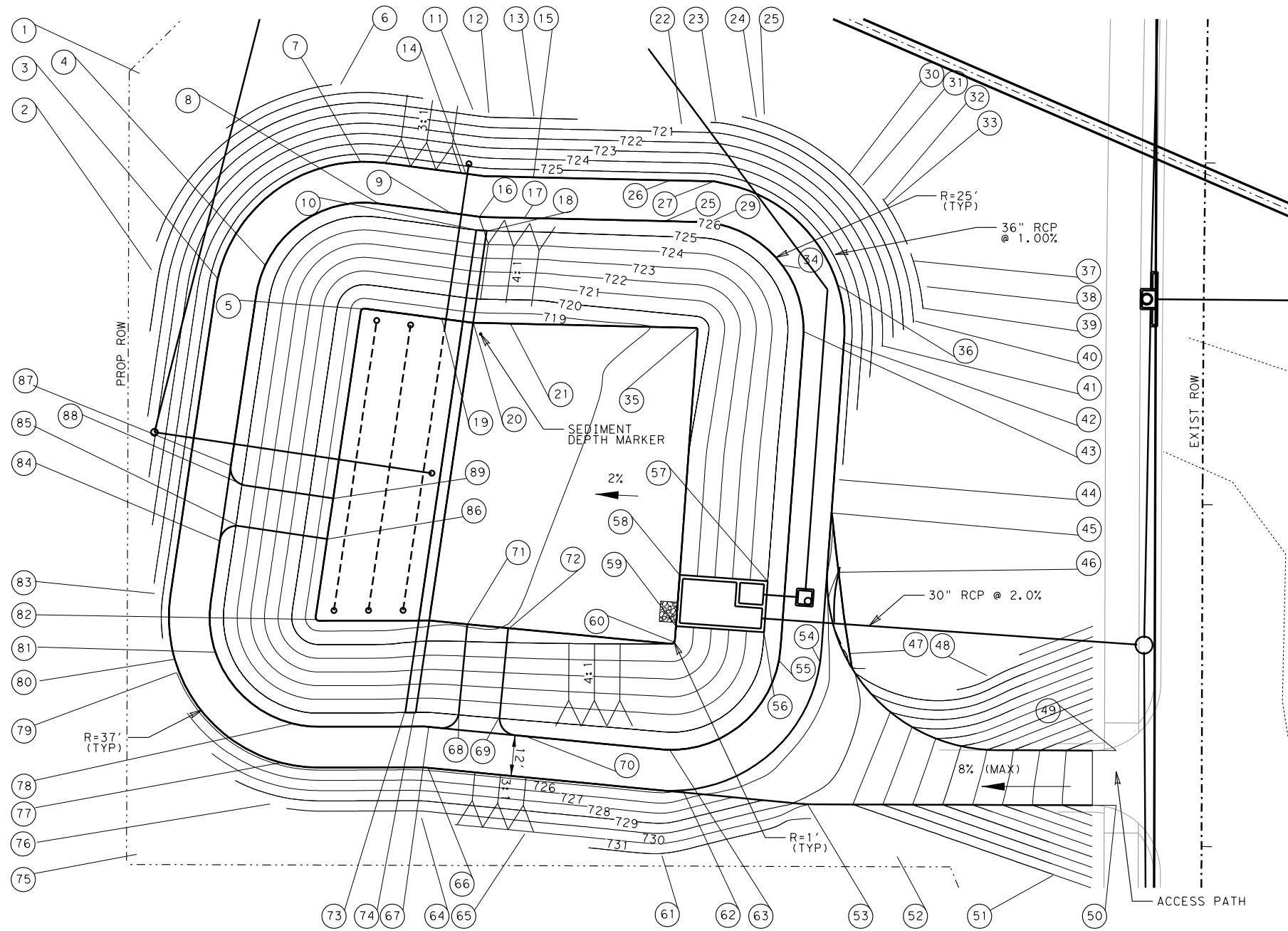
SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144, 147	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	638

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POINT NO	X	Y	ELEV
1	3133595.17	10214555.37	737.86
2	3133617.67	10214608.34	719.27
3	3133601.53	10214619.27	725.75
4	3133587.39	10214622.06	726.00
5	3133567.04	10214646.38	718.25
6	3133543.92	10214584.55	718.08
7	3133548.91	10214607.41	725.75
8	3133549.67	10214620.69	726.00
9	3133527.46	10214640.48	725.01
10	3133532.19	10214632.57	725.99
11	3133512.57	10214608.55	719.46
12	3133508.80	10214611.51	719.57
13	3133497.54	10214618.28	719.81
14	3133523.14	10214624.19	725.75
15	3133505.79	10214634.09	725.75
16	3133524.94	10214637.40	726.00
17	3133513.34	10214643.65	725.99
18	3133524.70	10214642.16	724.99
19	3133548.03	10214659.23	718.25
20	3133540.48	10214664.28	718.26
21	3133530.88	10214669.50	718.25
22	3133460.02	10214639.65	720.25
23	3133450.64	10214643.41	719.89
24	3133439.45	10214647.58	718.69
25	3133436.97	10214647.93	718.61
26	3133470.44	10214652.81	725.75
27	3133458.87	10214658.94	725.75
28	3133476.96	10214663.13	725.96
29	3133465.60	10214669.04	725.98
30	3133422.60	10214674.88	718.97
31	3133420.50	10214679.42	719.61
32	3133416.75	10214686.07	717.92
33	3133416.55	10214687.63	717.92
34	3133451.98	10214690.18	726.00
35	3133482.74	10214695.24	719.28
36	3133440.15	10214702.20	725.75
37	3133417.23	10214705.80	718.02
38	3133417.04	10214714.35	718.02
39	3133420.79	10214719.50	717.97
40	3133424.59	10214721.87	718.83
41	3133436.41	10214724.00	721.98
42	3133446.13	10214718.21	725.75
43	3133455.01	10214709.61	726.00
44	3133465.28	10214753.36	725.24
45	3133471.72	10214761.17	725.75
46	3133477.52	10214777.44	727.05
47	3133485.34	10214800.33	728.53
48	3133452.24	10214823.95	728.55
49	3133428.22	10214860.50	729.33
50	3133435.42	10214874.78	730.27
51	3133461.14	10214884.85	731.91
52	3133499.45	10214859.49	732.81
53	3133516.06	10214834.41	730.50
54	3133494.15	10214798.68	725.78
55	3133504.59	10214792.57	726.00
56	3133504.98	10214783.52	725.00
57	3133497.26	10214770.50	725.00
58	3133519.48	10214757.35	720.00
59	3133527.13	10214770.25	720.01
60	3133529.70	10214774.26	720.00
61	3133560.86	10214828.43	733.86
62	3133546.86	10214814.13	725.77
63	3133544.98	10214801.91	726.00
64	3133618.85	10214787.09	730.67
65	3133593.97	10214804.77	731.26
66	3133610.58	10214774.82	725.75
67	3133604.99	10214764.09	725.97
68	3133595.30	10214764.44	724.84
69	3133585.13	10214770.81	724.89
70	3133579.72	10214780.11	726.00
71	3133581.48	10214742.41	718.80
72	3133571.32	10214748.78	719.04
73	3133609.32	10214757.37	725.00
74	3133606.65	10214758.69	725.00

POINT NO	X	Y	ELEV
75	3133698.13	10214759.25	735.92
76	3133656.66	10214763.59	729.92
77	3133648.38	10214754.21	725.75
78	3133640.36	10214745.36	726.00
79	3133664.07	10214716.91	726.06
80	3133662.64	10214713.26	725.75
81	3133651.07	10214716.73	726.00
82	3133620.29	10214721.46	718.25
83	3133659.31	10214693.41	724.20
84	3133635.37	10214688.18	726.00
85	3133628.38	10214686.87	724.76
86	3133606.77	10214701.84	718.25
87	3133622.36	10214669.60	726.00
88	3133621.43	10214677.00	724.75
89	3133600.26	10214692.09	718.25



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**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

IH 35  
 WATER QUALITY  
 POND 6  
 POINT LAYOUT

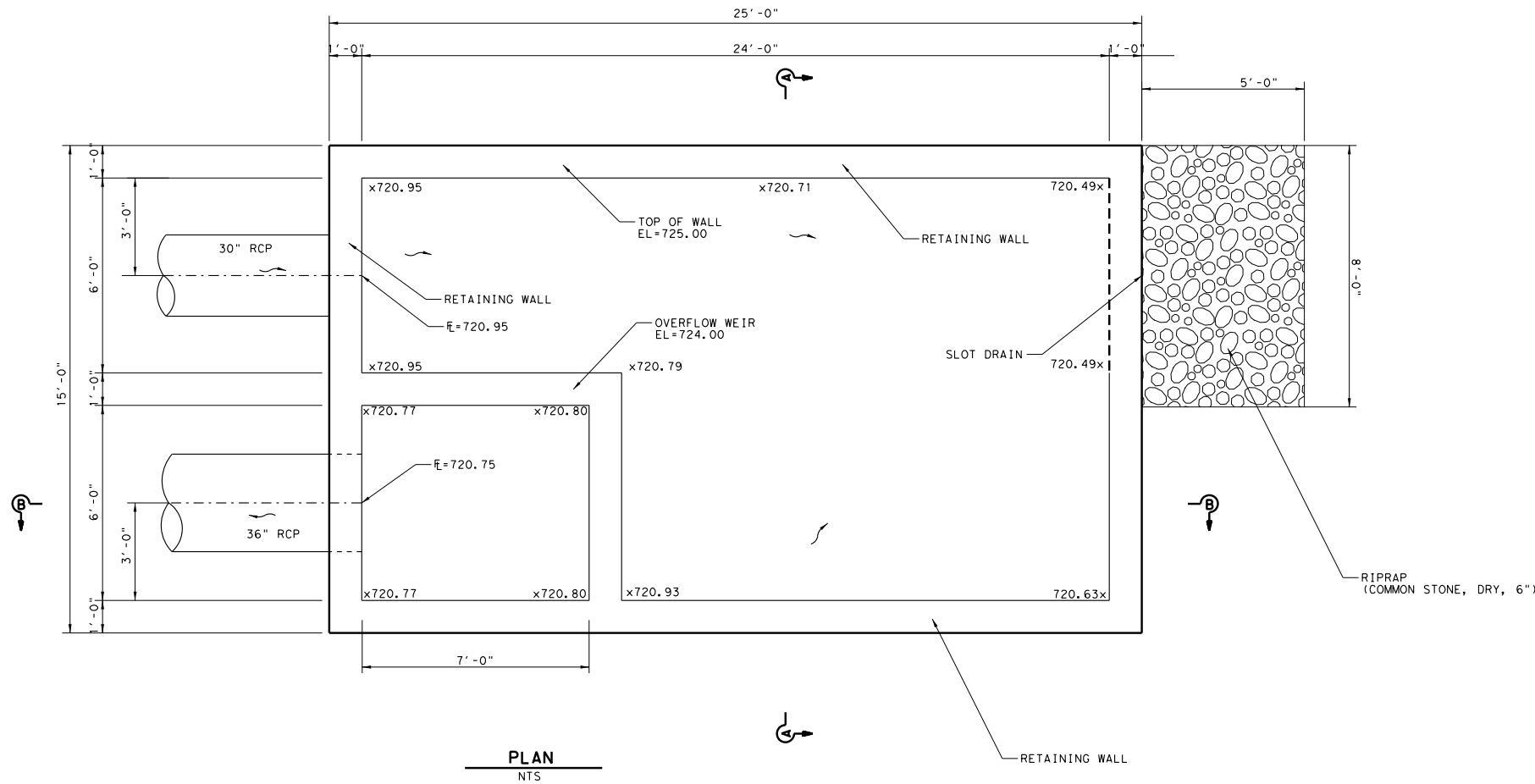
SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144, 147	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	639

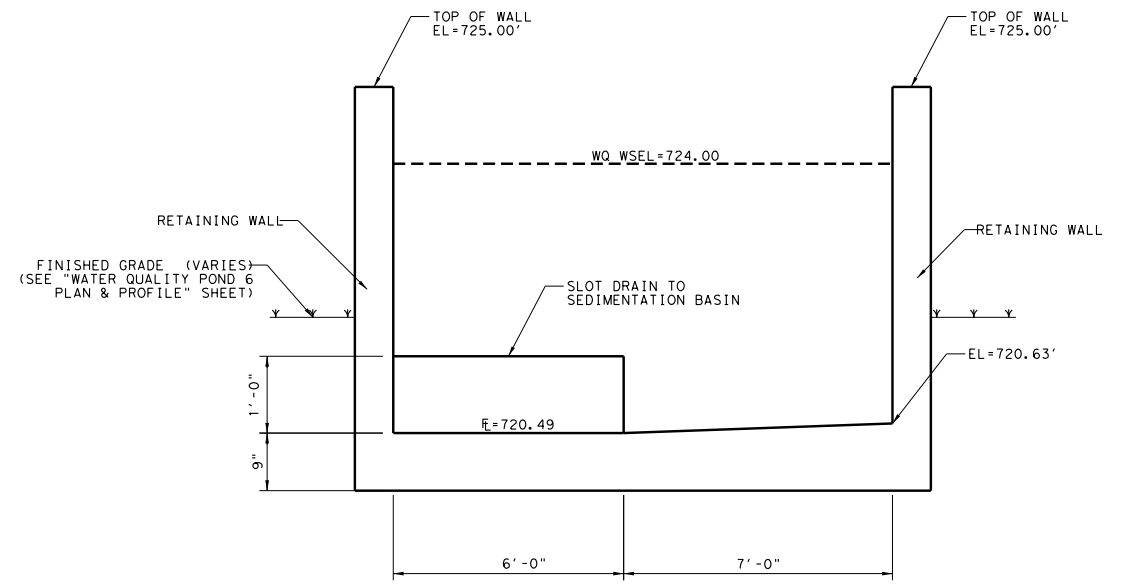


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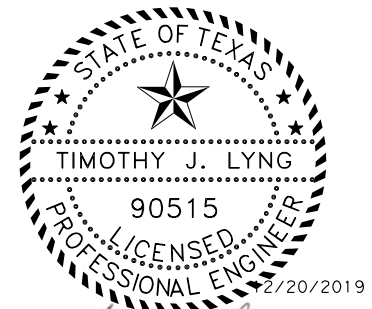
**PLAN**  
NTS



**SECTION A-A**  
NTS

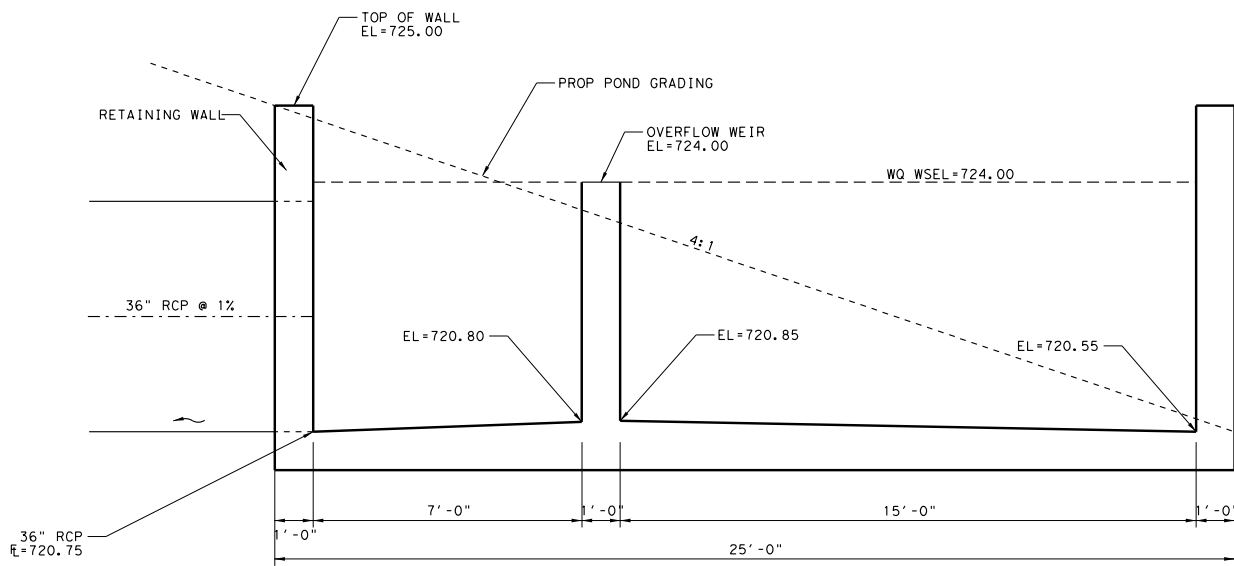
**NOTES**

1. FOR ALL WIER WALL DETAILS, SEE "WATER QUALITY POND TYPICAL WIER DETAILS" SHEET.
2. FOR ALL REATINING WALL DETAILS, SEE "WATER QUALITY POND TYPICAL RETAINING WALL DETAILS" SHEET.



SCALES (IN FEET):  
HORZ - 0 25 50 100

		STORM EVENT	
		25-YEAR	100-YEAR
WSEL		724.92'	725.18'
DESIGN FLOW		34 cfs	50 cfs
<b>OVERFLOW WEIR CALCULATION</b>			
WEIR EL		724.00'	
WEIR LENGTH		13.00'	
WEIR CAPACITY (Q)		34 cfs	50 cfs
<b>OUTFALL PIPE FLOW CALCULATION (HAZEN-WILLIAMS)</b>			
PIPE SIZE		36-INCH	
PIPE LENGTH		166'	
PIPE FL		720.75'	
PIPE CAPACITY (Q)		75 cfs	84 cfs
<b>OUTFALL ORIFICE CALCULATION</b>			
PIPE CENTROID		722.25'	
ORIFICE CAPACITY (Q)		56 cfs	58 cfs



**SECTION B-B**  
NTS

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Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX

**mobility** CAPITAL AREA **35**

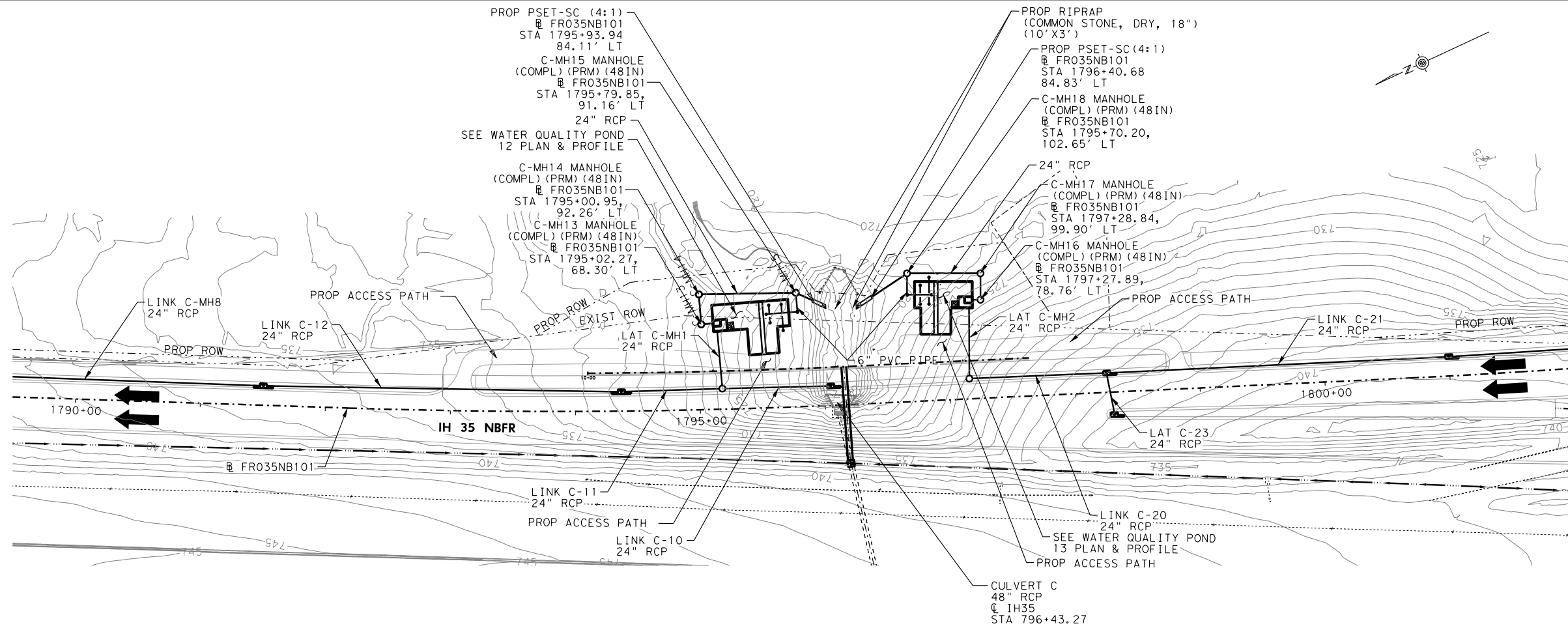
**Texas Department of Transportation**

**IH 35  
WATER QUALITY  
POND 6  
WEIR DETAIL**

SHEET 1 OF 1

DS: JS	CK: RC	CONT: 0015	SECT: 08	JOB: 144, 147	HIGHWAY: IH 35
DW: RM	CK: AL	DIST: AUS	COUNTY: WILLIAMSON	SHEET NO.: 640	

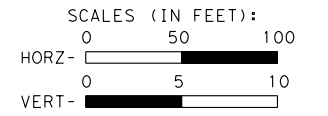
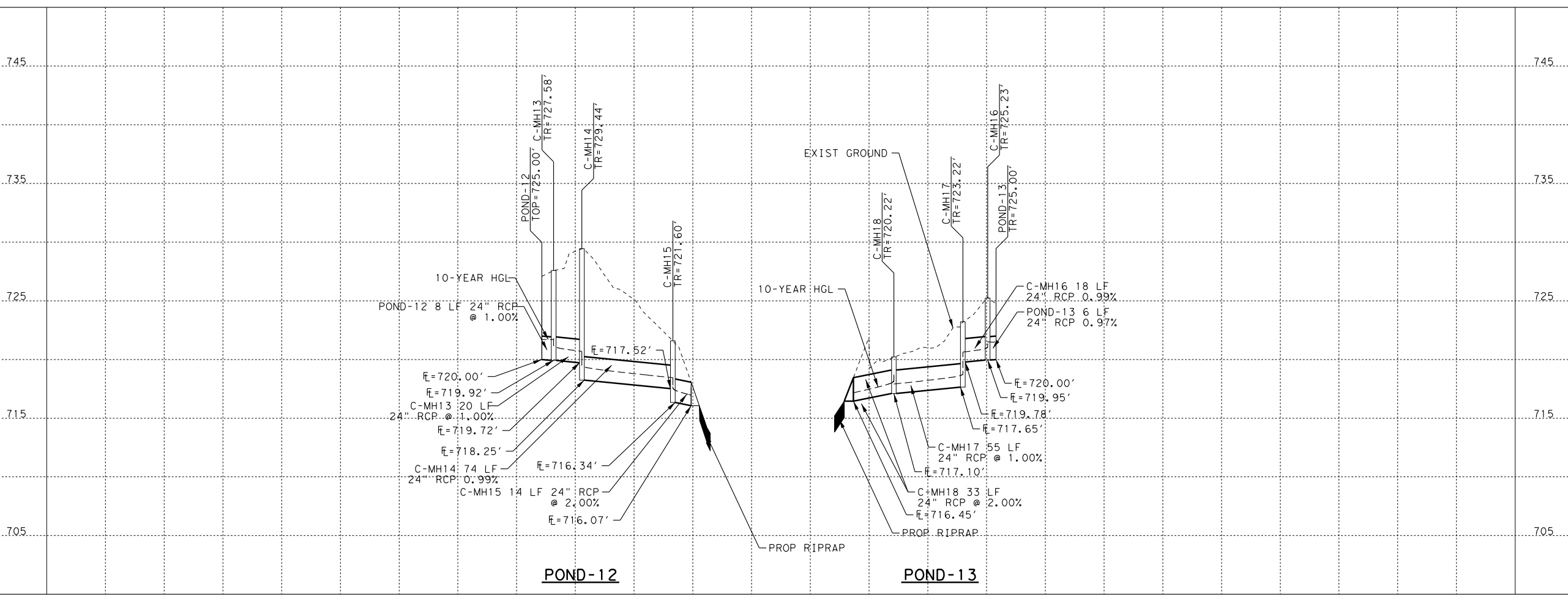
100% SUBMITTAL



- LEGEND**
- DIRECTION OF TRAFFIC
  - FLOW DIRECTION
  - EXIST ROW
  - PROP ROW
  - EXIST STORM SEWER
  - PROP STORM SEWER
  - EXIST DITCH
  - PROP DITCH

- NOTES:**
- CONTRACTOR WILL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WHERE NEW FACILITIES CROSS.
  - CONTRACTOR WILL FIELD VERIFY THE SIZE OF ALL STRUCTURES TO BE EXTENDED BEFORE FABRICATING AND/OR ACQUIRING MATERIALS.
  - REMOVAL OF HEADWALL/WINGWALL WILL CONSIST OF REMOVING CURBWall, HEADWALLS, WINGWALLS AND RIPRAP APRON, IF APPLICABLE.
  - FOR DETAILED PLAN & PROFILE FOR PONDS 12 & 13, SEE "POND 12 PLAN & PROFILE" & "POND 13 PLAN & PROFILE" SHEETS.
  - FOR ADDITIONAL STORM SEWER INFORMATION SEE "NB FRONTAGE RD DRAINAGE PLAN & PROFILE" SHEETS.

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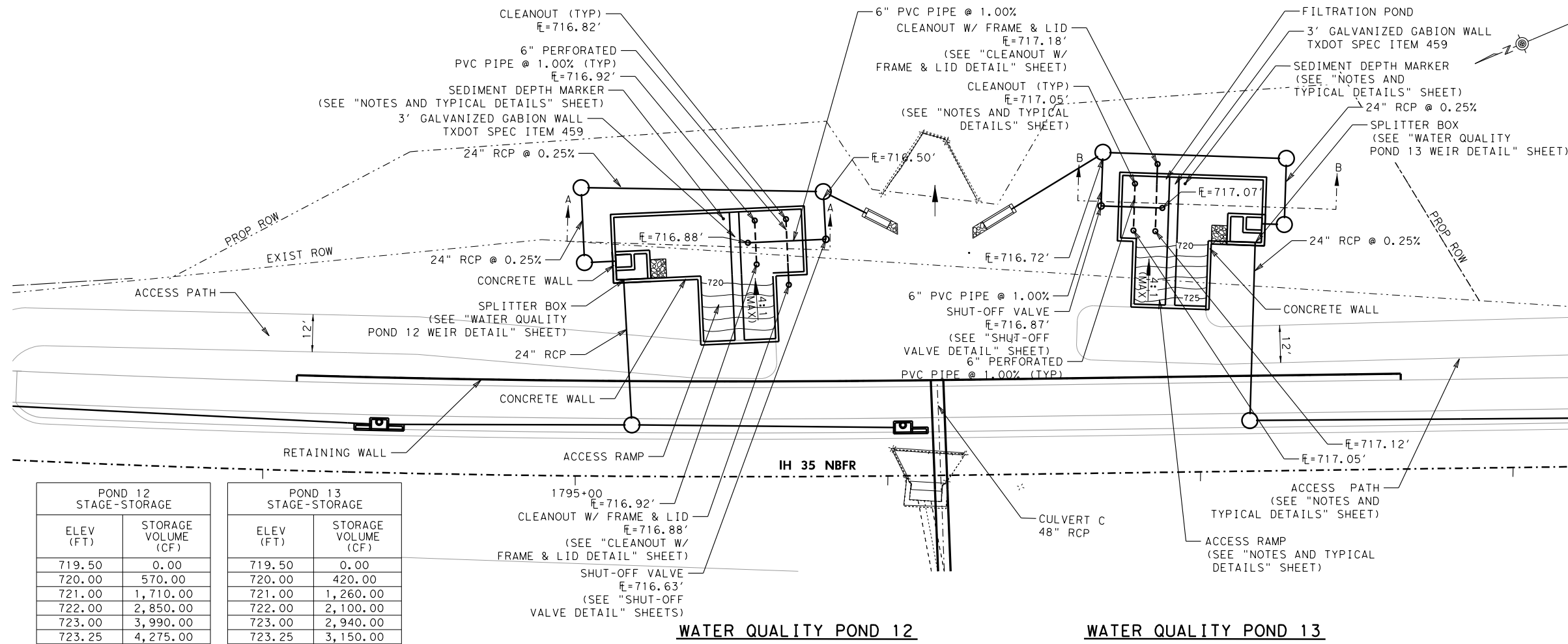
**ENTECH** F-6932  
15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX  
CIVIL ENGINEERS, INC



**IH 35  
PONDS 12 & 13  
OUTFALL LAYOUT  
PLAN & PROFILE**

SHEET 1 OF 1

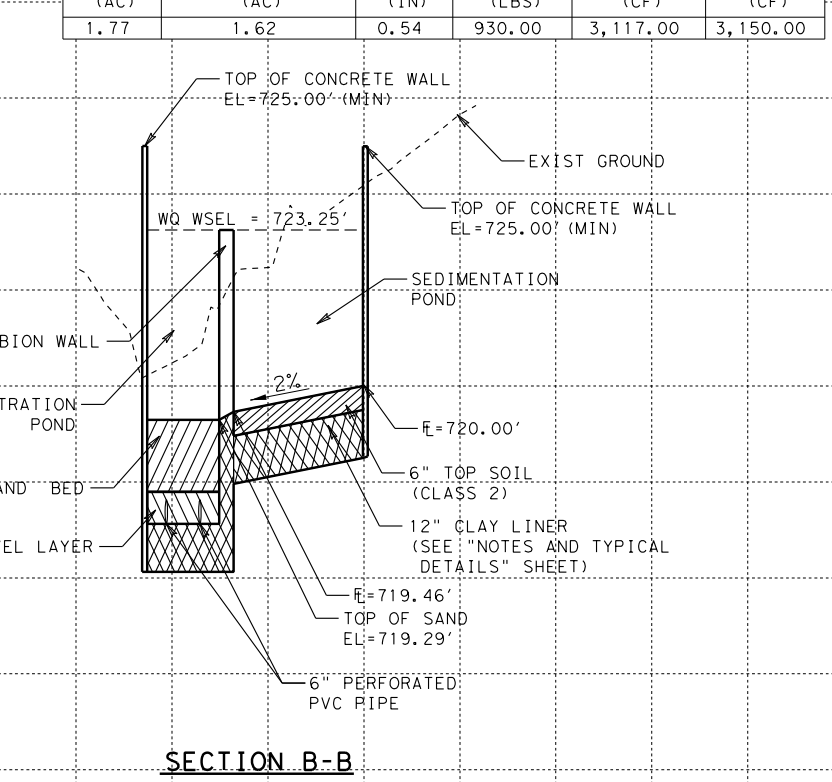
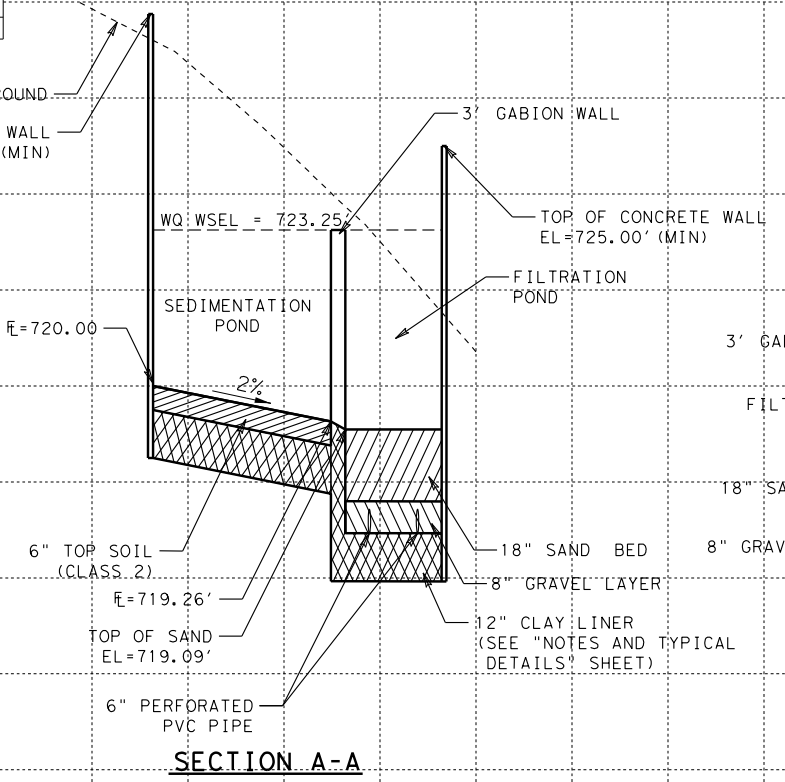
© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015 08	144, 147	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	641



POND 12 STAGE-STORAGE		POND 13 STAGE-STORAGE	
ELEV (FT)	STORAGE VOLUME (CF)	ELEV (FT)	STORAGE VOLUME (CF)
719.50	0.00	719.50	0.00
720.00	570.00	720.00	420.00
721.00	1,710.00	721.00	1,260.00
722.00	2,850.00	722.00	2,100.00
723.00	3,990.00	723.00	2,940.00
723.25	4,275.00	723.25	3,150.00

POND 12					
DRAINAGE AREA (AC)	TREATED IMPERVIOUS COVER (AC)	RUNOFF CAPTURED (IN)	LOAD REMOVED (LBS)	VOLUME REQUIRED (CF)	VOLUME PROVIDED (CF)
2.17	2.00	0.60	1,200.00	4,254.00	4,275.00

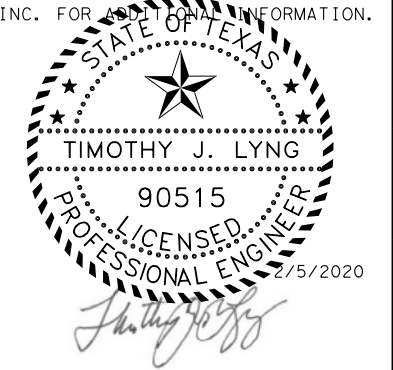
POND 13					
DRAINAGE AREA (AC)	TREATED IMPERVIOUS COVER (AC)	RUNOFF CAPTURED (IN)	LOAD REMOVED (LBS)	VOLUME REQUIRED (CF)	VOLUME PROVIDED (CF)
1.77	1.62	0.54	930.00	3,117.00	3,150.00



**LEGEND**

- DIRECTION OF TRAFFIC
- FLOW DIRECTION
- EXIST ROW
- PROP ROW
- EXIST STORM SEWER
- PROP STORM SEWER
- EXIST DITCH
- PROP DITCH

- NOTES:**
- CONTRACTOR WILL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WHERE NEW FACILITIES CROSS.
  - CONTRACTOR WILL FIELD VERIFY THE SIZE OF ALL STRUCTURES TO BE EXTENDED BEFORE FABRICATING AND/OR ACQUIRING MATERIALS.
  - REMOVAL OF HEADWALL/WINGWALL WILL CONSIST OF REMOVING CURBWall, HEADWALLS, WINGWALLS AND RIPRAP APRON, IF APPLICABLE.
  - PROPOSED GRADING BASED ON LIDAR; CONTRACTOR TO FIELD VERIFY GROUND ELEVATIONS AND SHALL MODIFY TOP OF WALL ELEVATIONS ACCORDINGLY.
  - SEE WATER POLLUTION ABATEMENT PLAN APPLICATION PREPARED BY LANDTECH, INC. AND PRELIMINARY DRAINAGE REPORT BY HDR, INC. FOR ADDITIONAL INFORMATION.



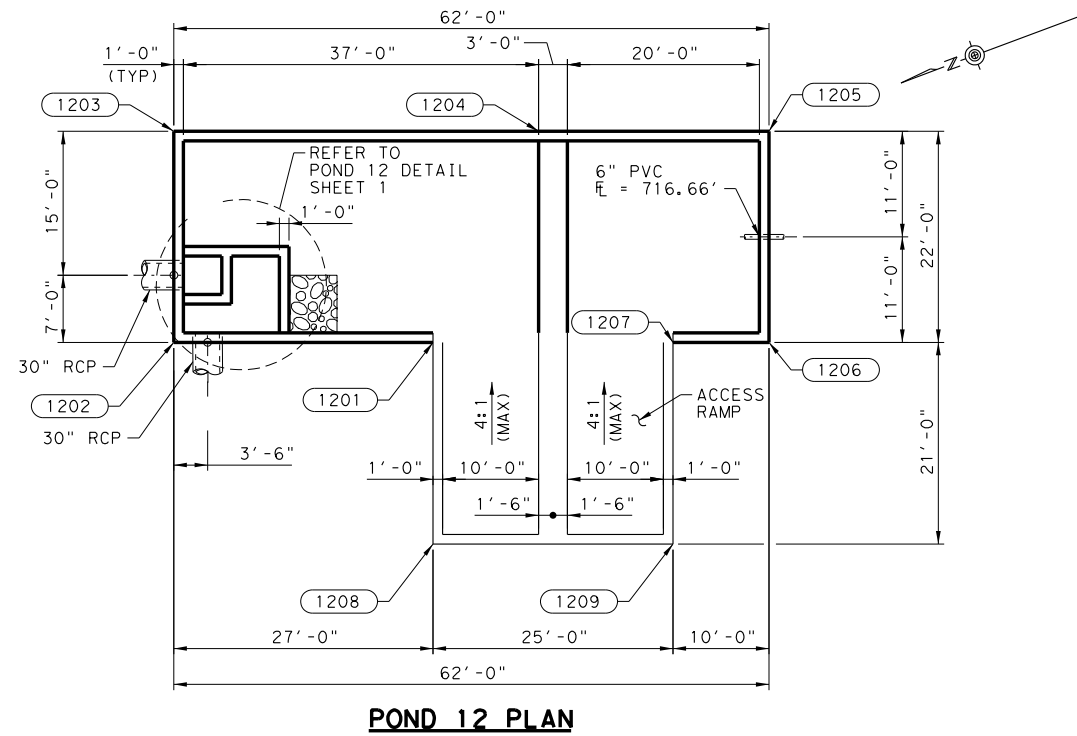
**IH 35  
WATER QUALITY  
PONDS 12 & 13  
PLAN & PROFILE**

SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	642

100% SUBMITTAL

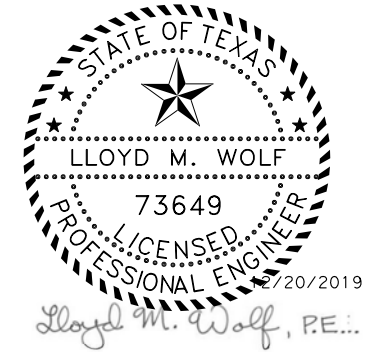
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 PROPOSED  
 EXISTING



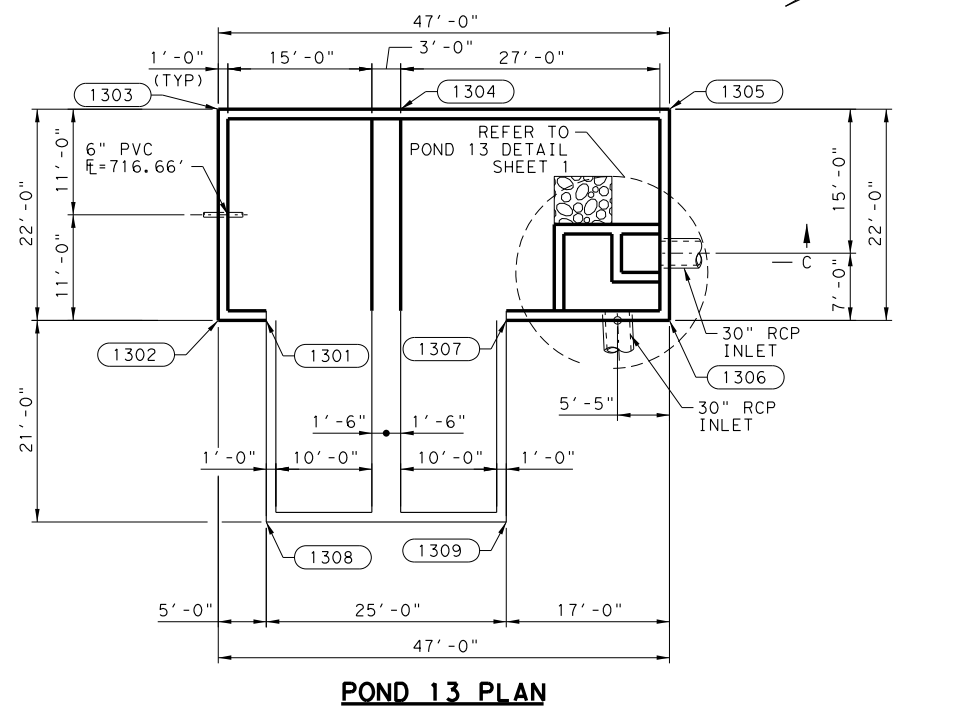
POND 12 RETAINING WALL POINT TABLE				
POINT ID	EASTING	NORTHING	TOP OF WALL EL (FT)	BOTTOM OF WALL EL (FT)
1201	3,132,145.34	10,212,252.16	728.00	715.97
1202	3,132,154.79	10,212,277.45	728.00	716.50
1203	3,132,175.40	10,212,269.74	729.00	716.50
1204	3,132,162.09	10,212,234.15	726.54	714.60
1205	3,132,153.69	10,212,211.67	725.00	714.60
1206	3,132,133.08	10,212,219.37	725.00	714.60
1207	3,132,136.58	10,212,228.74	725.00	714.60
1208	3,132,125.66	10,212,259.51	725.50	724.00
1209	3,132,116.91	10,212,236.09	725.50	724.00

**GENERAL NOTES:**

- DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS WITH CURRENT INTERIMS.
- ALL REINFORCING STEEL TO BE GRADE 60.
- REINFORCING STEEL TO BE ADJUSTED TO PROVIDE A MINIMUM OF 2" OF CLEAR COVER UNLESS OTHERWISE NOTED.
- FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS AND COMMENCING WORK.
- REFER TO "WATER QUALITY POND TYPICAL DETAILS" SHEET FOR DETAILS.



SCALE VARIES



POND 13 RETAINING WALL POINT TABLE				
POINT ID	EASTING	NORTHING	TOP OF WALL EL (FT)	BOTTOM OF WALL EL (FT)
1301	3,132,102.05	10,212,119.30	725.00	714.60
1302	3,132,104.16	10,212,123.83	725.00	714.60
1303	3,132,124.10	10,212,114.55	725.00	714.60
1304	3,132,116.08	10,212,097.32	725.00	714.60
1305	3,132,104.27	10,212,071.94	725.00	716.50
1306	3,132,084.32	10,212,081.22	726.00	716.50
1307	3,132,091.50	10,212,096.63	726.00	716.07
1308	3,132,083.01	10,212,128.16	725.50	724.00
1309	3,132,072.46	10,212,105.49	725.75	724.25



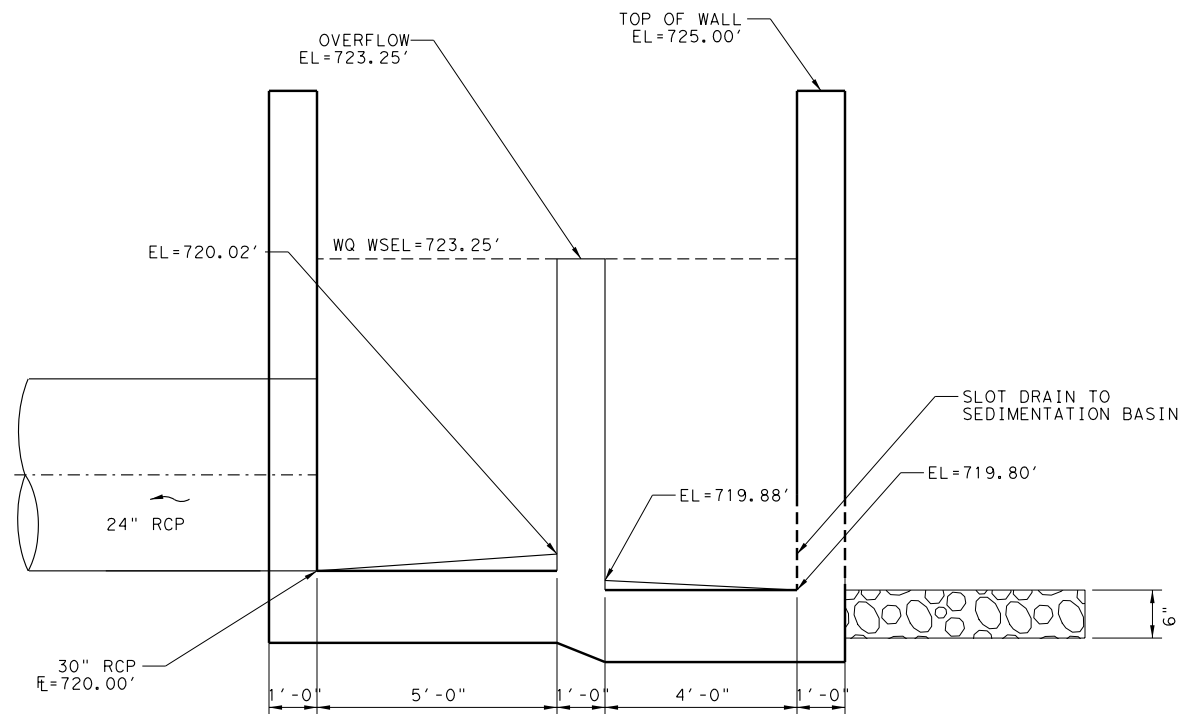
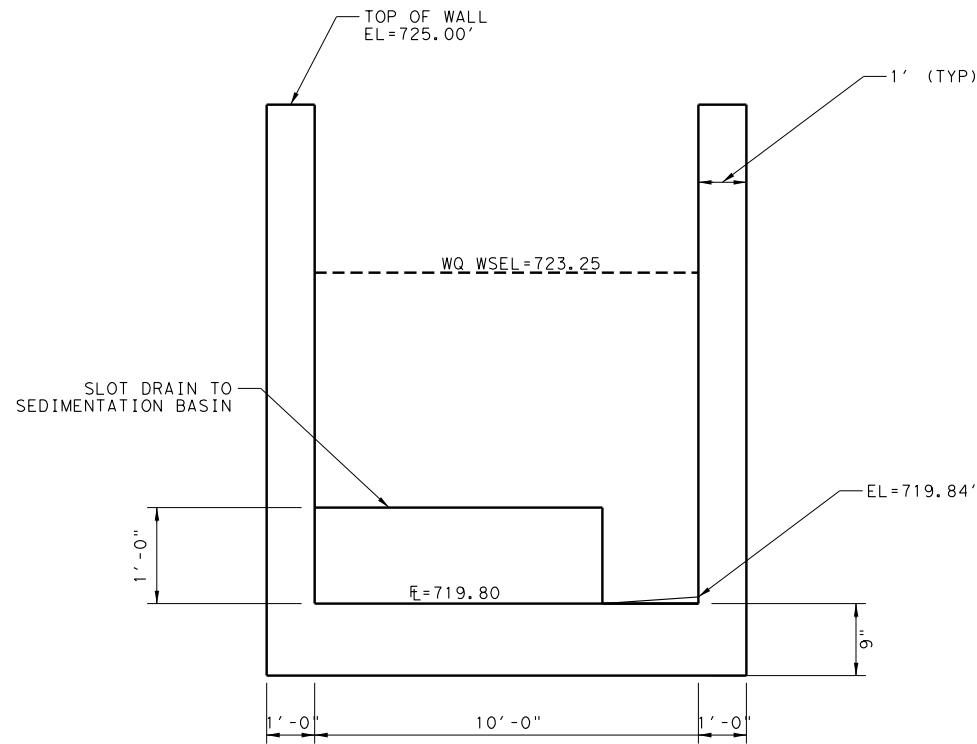
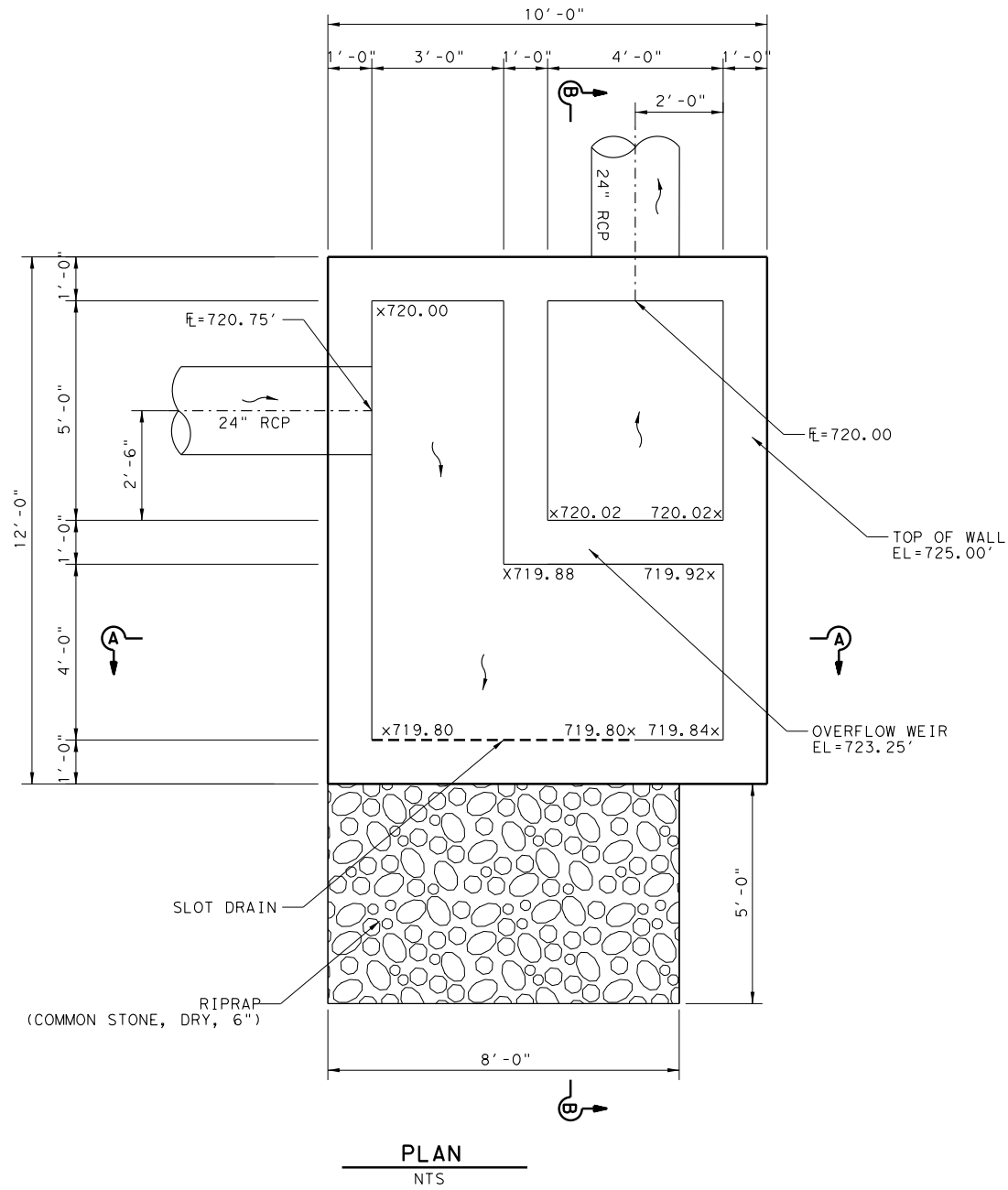
**IH 35  
 WATER QUALITY  
 POND 12 & 13  
 DETAIL**

SHEET 1 OF 1				
© 2018	CONT	SECT	JOB	HIGHWAY
DS: RM	CK: LMW	0015	08	144 IH 35
DW: GWS	CK: LMW	AUS	WILLIAMSON	SHEET NO. 643



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DATE: 12/20/2019 8:09:30 PM  
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STORM EVENT		
	25-YEAR	100-YEAR
WSEL	723.99'	724.12'
DESIGN FLOW	17 cfs	22 cfs
<b>OVERFLOW WEIR CALCULATION</b>		
WEIR EL	723.25'	
WEIR LENGTH	9.00'	
WEIR FLOW (Q)	17 cfs	22 cfs
<b>OUTFALL PIPE FLOW CALCULATION (HAZEN-WILLIAMS)</b>		
PIPE SIZE	24-INCH	
PIPE LENGTH	133'	
PIPE FL	720.00'	
FLOW (Q)	33 cfs	35 cfs
<b>OUTFALL ORIFICE CALCULATION</b>		
PIPE CENTROID	721.00'	
FLOW (Q)	26 cfs	27 cfs

NOTES  
1. FOR STRUCRAL DETAILS SEE "WATER QUALITY POND TYPICAL WEIR DETAILS" SHEET.



SCALES (IN FEET):  
HORZ - 0 25 50 100



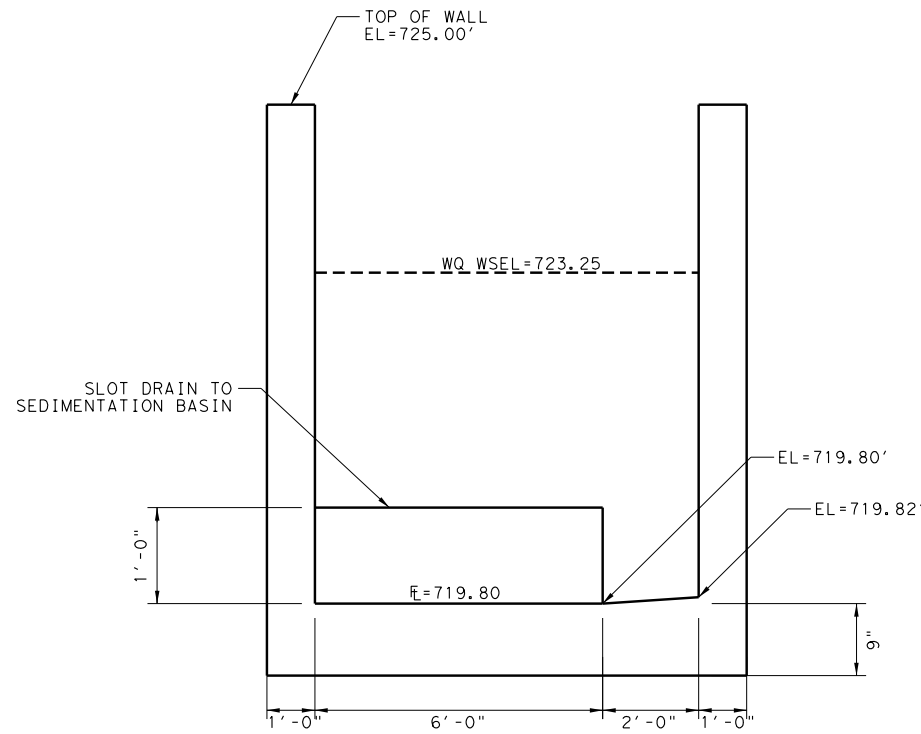
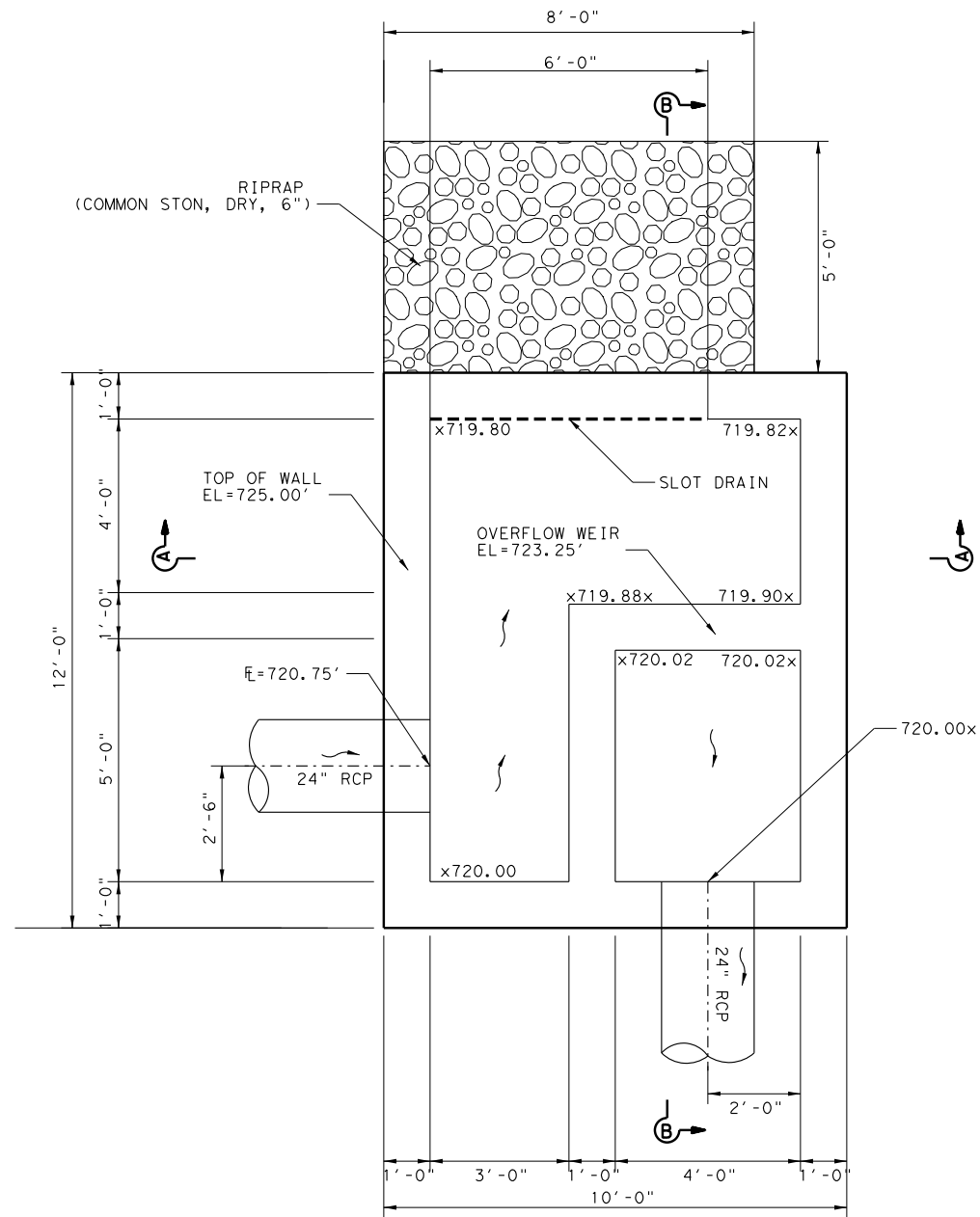
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**WATER QUALITY**  
**POND 12**  
**WEIR DETAIL**

SHEET 1 OF 1

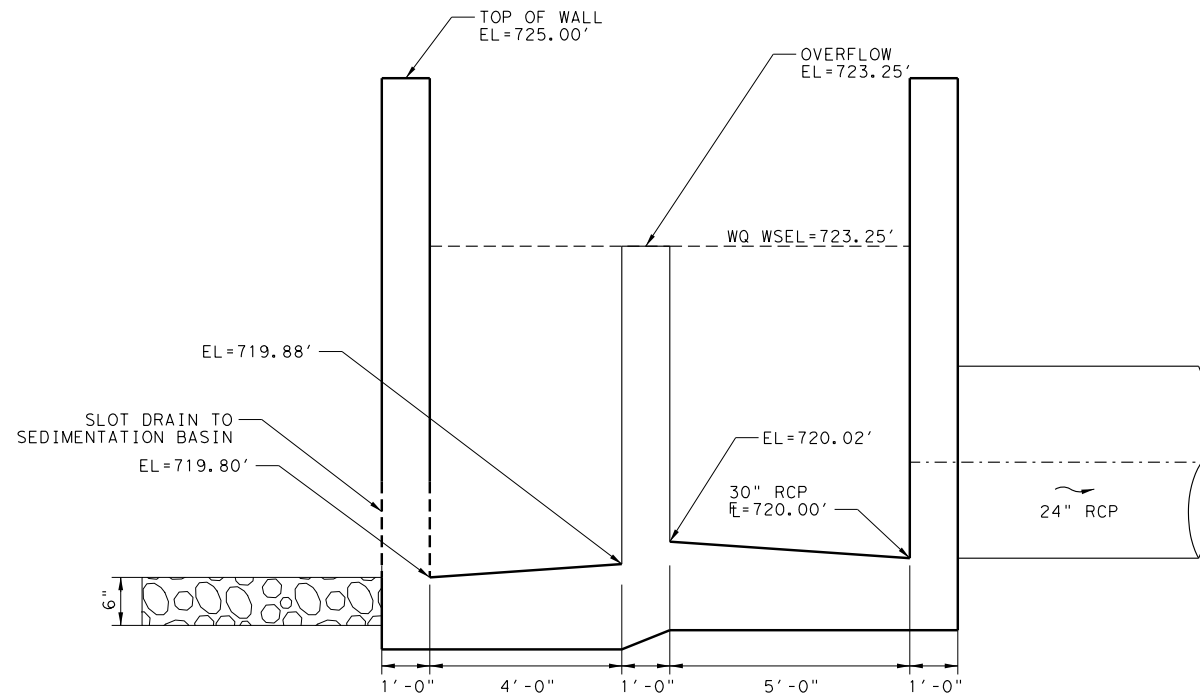
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JS	RC	0015	08 144, 147	IH 35
DW:	CK:	DIST:	COUNTY:	SHEET NO.:
RM	AL	AUS	WILLIAMSON	644

100% SUBMITTAL

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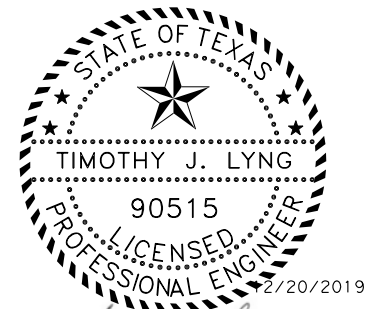


SECTION A-A  
NTS



SECTION B-B  
NTS

STORM EVENT		
	25-YEAR	100-YEAR
WSEL	723.84'	723.95'
DESIGN FLOW	12 cfs	16 cfs
OVERFLOW WEIR CALCULATION		
WEIR EL	723.25'	
WEIR LENGTH	9.00'	
WEIR FLOW (Q)	12 cfs	16 cfs
OUTFALL PIPE FLOW CALCULATION (HAZEN-WILLIAMS)		
PIPE SIZE	24-INCH	
PIPE LENGTH	133'	
PIPE FL	720.00'	
FLOW (Q)	31 cfs	33 cfs
OUTFALL ORIFICE CALCULATION		
PIPE CENTROID	721.00'	
FLOW (Q)	25 cfs	26 cfs



SCALES (IN FEET):  
0 25 50 100  
HORZ -



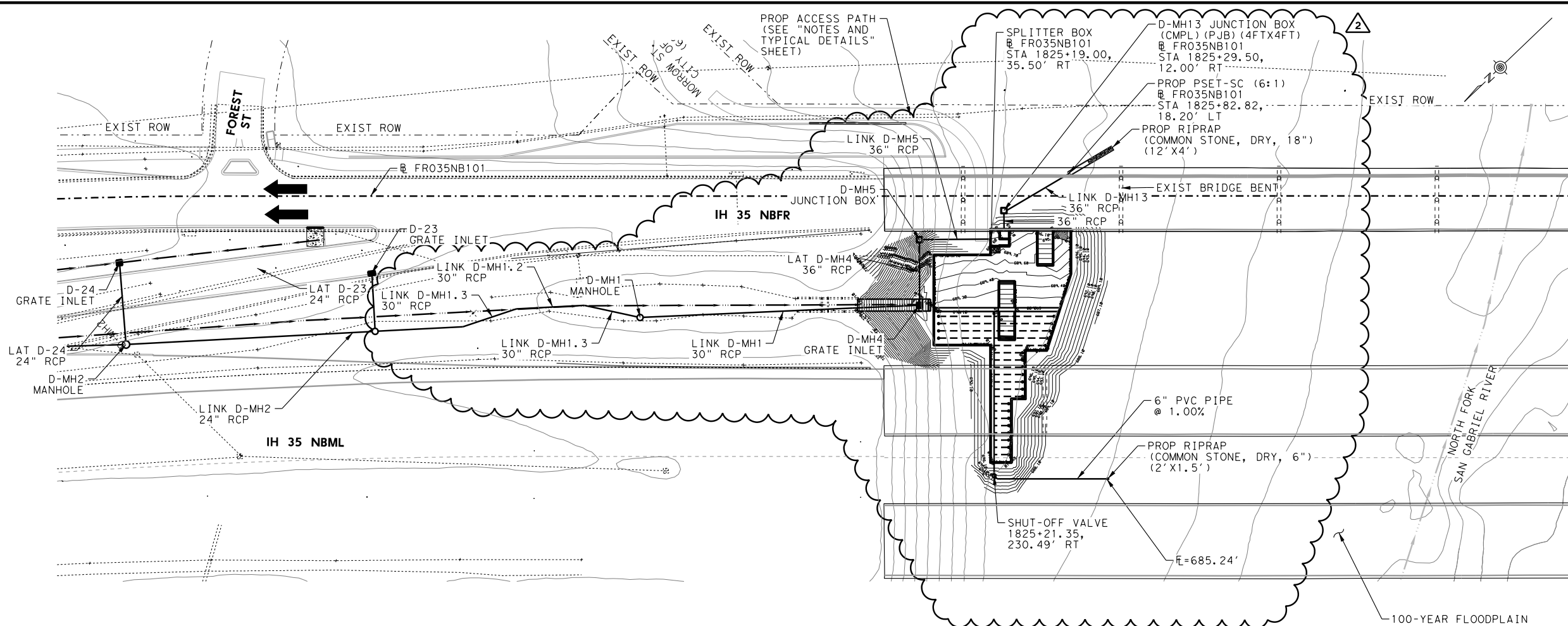
IH 35  
WATER QUALITY  
POND 13  
WEIR DETAIL

SHEET 1 OF 1

DS:	CK:	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST	COUNTY	SHEET NO.	
RM	AL	AUS	WILLIAMSON	645	

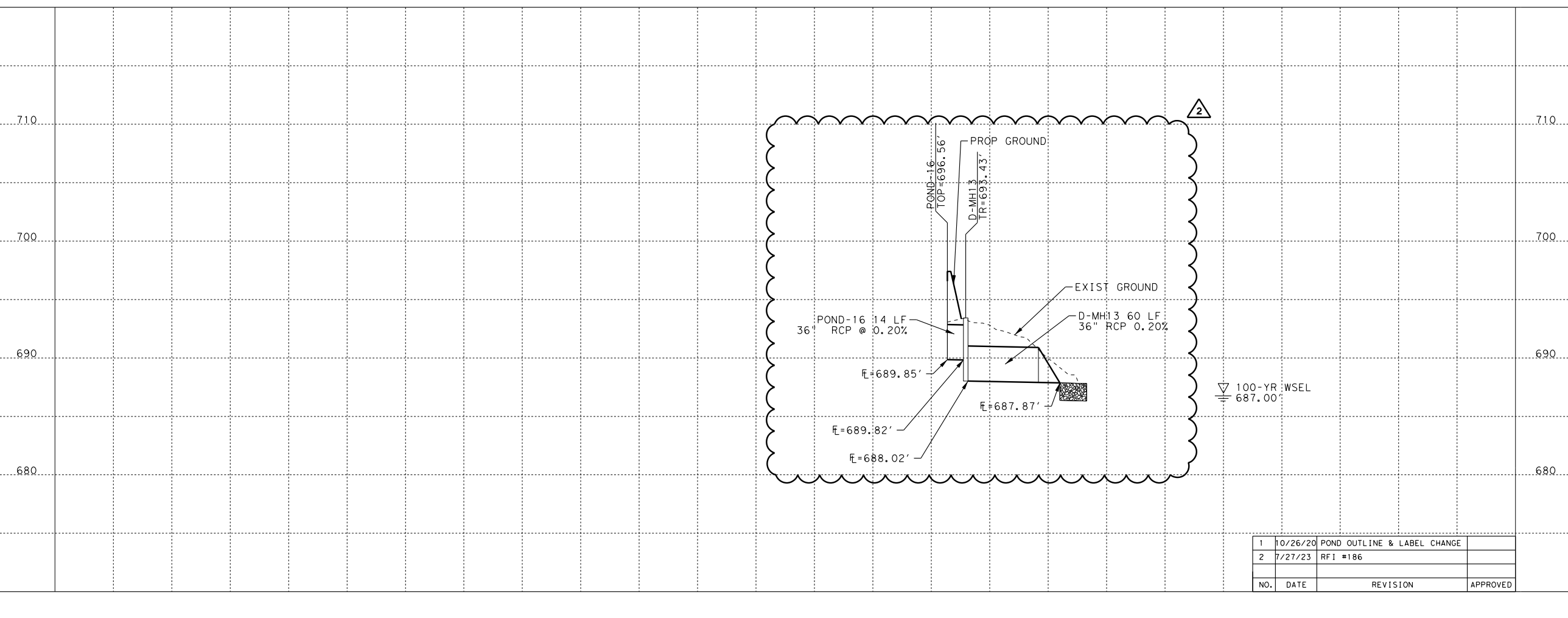
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- LEGEND**
- DIRECTION OF TRAFFIC
  - FLOW DIRECTION
  - EXIST ROW
  - PROP ROW
  - EXIST STORM SEWER
  - PROP STORM SEWER
  - EXIST DITCH
  - PROP DITCH

- NOTES:**
1. CONTRACTOR WILL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WHERE NEW FACILITIES CROSS.
  2. CONTRACTOR WILL FIELD VERIFY THE SIZE OF ALL STRUCTURES TO BE EXTENDED BEFORE FABRICATING AND/OR ACQUIRING MATERIALS.
  3. REMOVAL OF HEADWALL/WINGWALL WILL CONSIST OF REMOVING CURBWall, HEADWALLS, WINGWALLS AND RIPRAP APRON, IF APPLICABLE.
  4. FOR DETAILED PLAN & PROFILE FOR PONDS 16, SEE "POND 16 PLAN & PROFILE" SHEETS.
  5. FOR ADDITIONAL STORM SEWER INFORMATION SEE "NB FRONTAGE RD DRAINAGE PLAN & PROFILE" & "CDNB101 DRAINAGE PLAN & PROFILE" SHEETS.



STATE OF TEXAS  
  
 WAN H. ZHANG  
 98668  
 LICENSED PROFESSIONAL ENGINEER  
 8/4/2023  
*wanzhang*

SCALES (IN FEET):  
 HORZ -   
 VERT -

**ENTECH** F-6932  
 15021 Katy Freeway,  
 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX  
 CIVIL ENGINEERS, INC

**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

**IH 35  
 POND 16 OUTFALL  
 LAYOUT  
 PLAN & PROFILE**

NO.	DATE	REVISION	APPROVED
1	10/26/20	POND OUTLINE & LABEL CHANGE	
2	7/27/23	RFI #186	

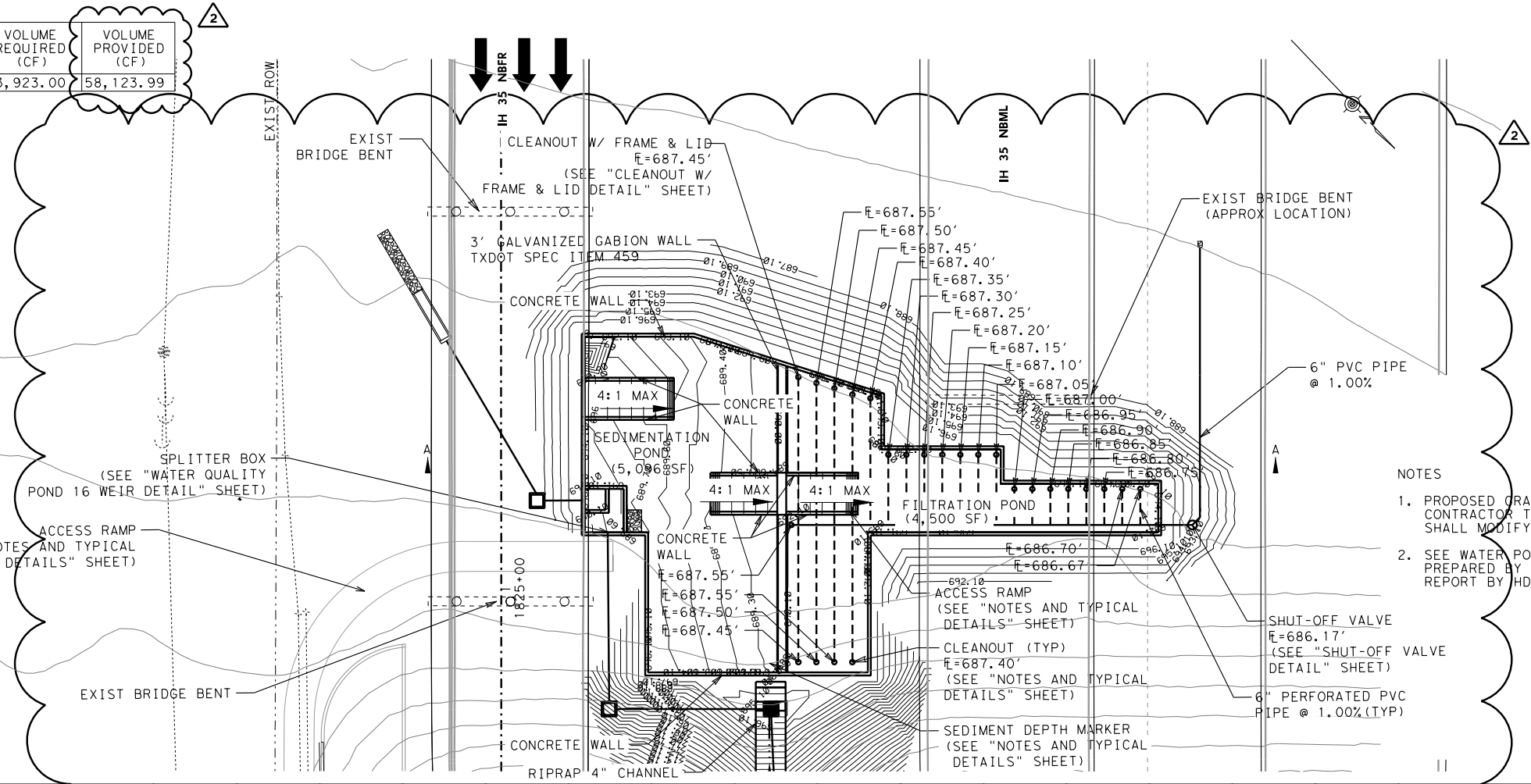
SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
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RM	AL	AUS	WILLIAMSON	646

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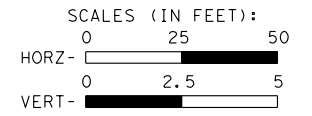
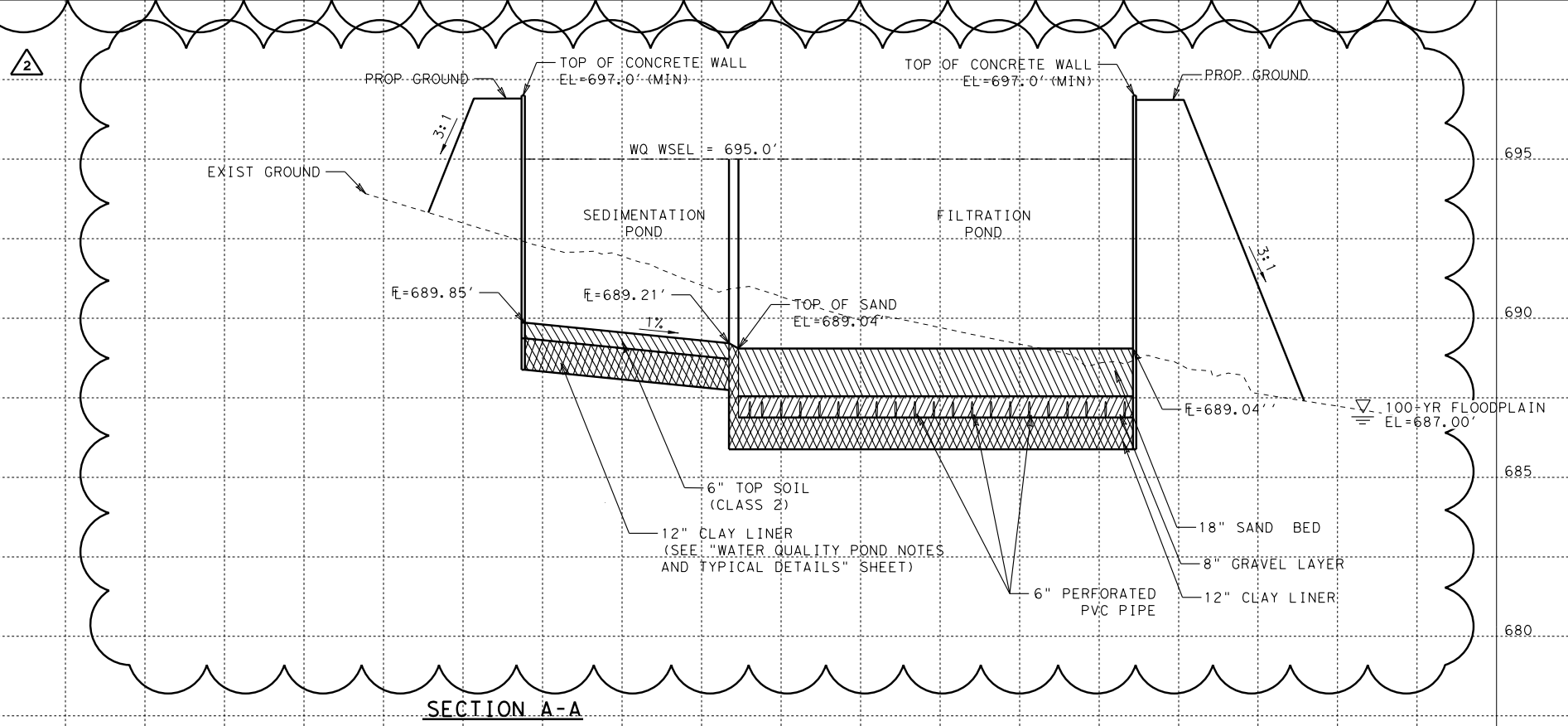
DRAINAGE AREA (AC)	TREATED IMPERVIOUS COVER (AC)	RUNOFF CAPTURED (IN)	LOAD REMOVED (LBS)	VOLUME REQUIRED (CF)	VOLUME PROVIDED (CF)
6.86	4.39	4.00	4,350.00	53,923.00	58,123.99

NO.	DATE	REVISION	APPROVED
1	10/26/20	POND OUTLINE & VOLUME CHANGE	
2	7/26/23	RFI #186	



STAGE STORAGE	
ELEV (FT)	STORAGE VOLUME (CF)
689.04	0.00
684.04	17142.18
693.04	37454.75
695.00	58123.99

- NOTES
- PROPOSED GRADING BASED ON LIDAR; CONTRACTOR TO FIELD VERIFY GROUND ELEVATIONS AND SHALL MODIFY TOP OF WALL ELEVATIONS ACCORDINGLY.
  - SEE WATER POLLUTION ABATEMENT PLAN APPLICATION PREPARED BY LANDTECH, INC. AND PRELIMINARY DRAINAGE REPORT BY HDR, INC. FOR ADDITIONAL INFORMATION.



**ENTECH** CIVIL ENGINEERS, INC

F-6932  
15021 Katy Freeway,  
Suite 500  
Houston, Texas, 77094  
281-945-0069 PH  
281-945-0081 FX

**mobility** CAPITAL AREA

Texas Department of Transportation

IH 35  
WATER QUALITY  
POND 16  
PLAN & PROFILE

SHEET 1 OF 1

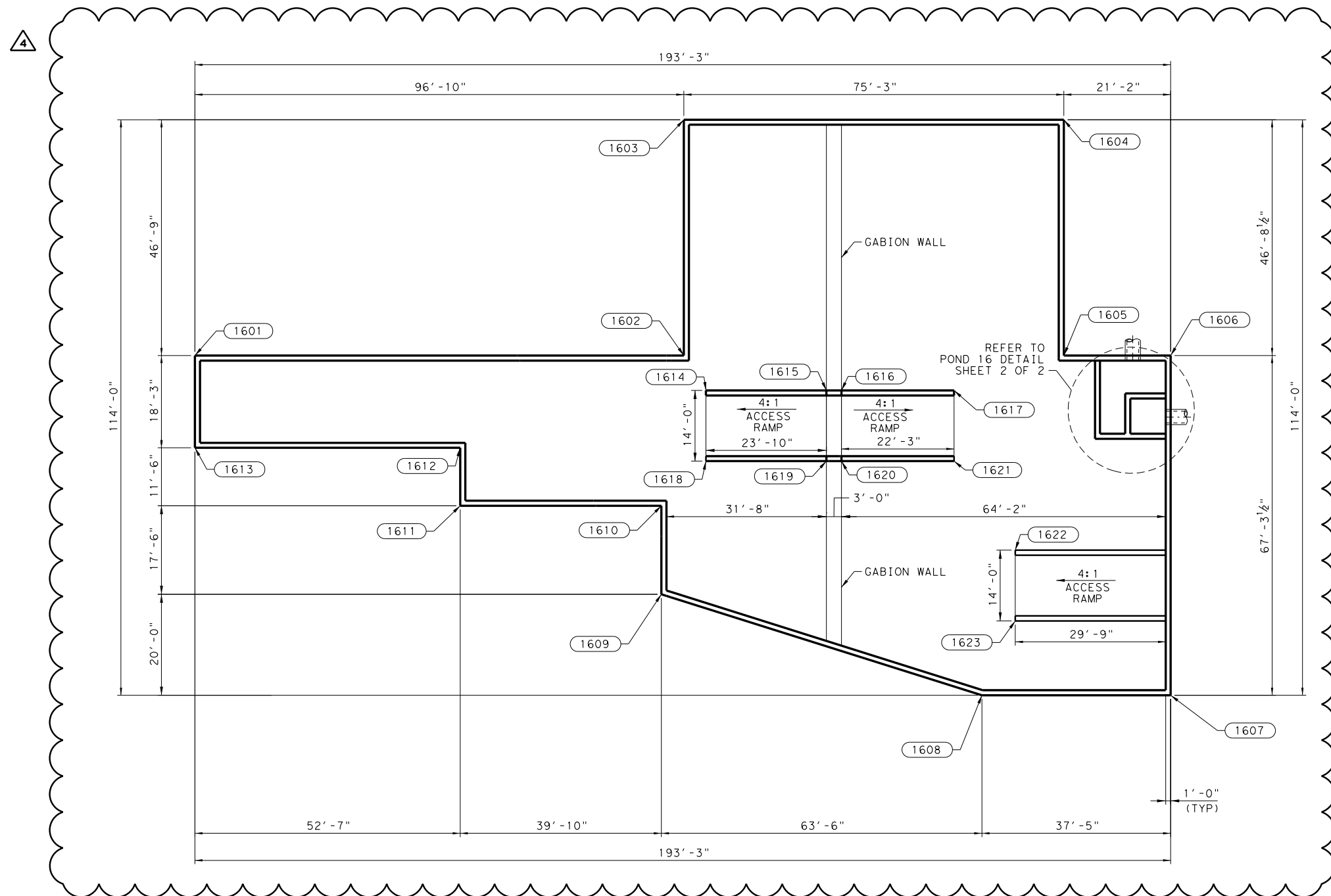
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DW:	CK:	DIST	COUNTY	SHEET NO.
RM	AL	AUS	WILLIAMSON	647

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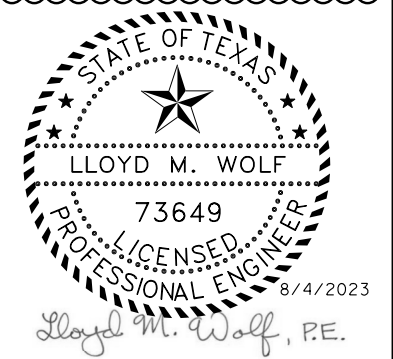


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1	10/26/20	POND OUTLINE & RW POINTS	
2	05/27/21	ACCESS RAMP WALLS	
3	12/10/21	RFI #121	
4	8/1/23	RFI #186	
NO.	DATE	REVISION	APPROVED



- GENERAL NOTES:**
- DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS WITH CURRENT INTERIMS.
  - ALL REINFORCING STEEL TO BE GRADE 60.
  - REINFORCING STEEL TO BE ADJUSTED TO PROVIDE A MINIMUM OF 2" OF CLEAR COVER UNLESS OTHERWISE NOTED.
  - FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS AND COMMENCING WORK.
  - REFER TO "WATER QUALITY POND TYPICAL DETAILS" SHEET FOR DETAILS.
  - NO MORE THAN 5-FT SHALL BE EXCAVATED DURING BENCHED EXCAVATION AROUND THE EXISTING BRIDGE COLUMNS/DRILLED SHAFTS.



SCALE VARIES

**PLAN**

**POND 16 RETAINING WALL POINT TABLE**

POINT ID	EASTING	NORTHING	TOP OF WALL EL (FT)	BOTTOM OF WALL EL (FT)
1601	3,130,350.16	10,209,946.64	697.00	685.00
1602	3,130,420.12	10,209,879.69	697.00	685.00
1603	3,130,452.43	10,209,913.45	697.00	685.00
1604	3,130,506.80	10,209,861.42	697.00	687.50
1605	3,130,474.49	10,209,827.66	697.00	687.50
1606	3,130,489.78	10,209,813.03	697.00	687.75
1607	3,130,443.25	10,209,764.41	697.00	687.75
1608	3,130,416.23	10,209,790.27	697.00	687.00
1609	3,130,384.21	10,209,848.61	697.00	685.00
1610	3,130,396.34	10,209,861.28	697.00	685.00
1611	3,130,367.56	10,209,888.82	697.00	685.00
1612	3,130,375.48	10,209,897.10	697.00	685.00
1613	3,130,337.52	10,209,933.43	697.00	685.00
1614	3,130,418.50	10,209,871.66	689.04	685.00
1615	3,130,435.73	10,209,855.18	695.00	685.00
1616	3,130,437.89	10,209,853.10	695.00	685.00
1617	3,130,453.99	10,209,837.71	689.44	687.00
1618	3,130,408.82	10,209,861.55	689.04	685.00
1619	3,130,426.05	10,209,845.06	695.00	685.00
1620	3,130,428.21	10,209,842.99	695.00	685.00
1621	3,130,444.29	10,209,827.60	689.44	687.00
1622	3,130,440.88	10,209,806.45	689.56	687.00
1623	3,130,431.20	10,209,796.33	689.56	687.00

**ENTECH** F-6932  
 15021 Katy Freeway,  
 Suite 500  
 Houston, Texas, 77094  
 281-945-0069 PH  
 281-945-0081 FX  
 CIVIL ENGINEERS, INC

**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

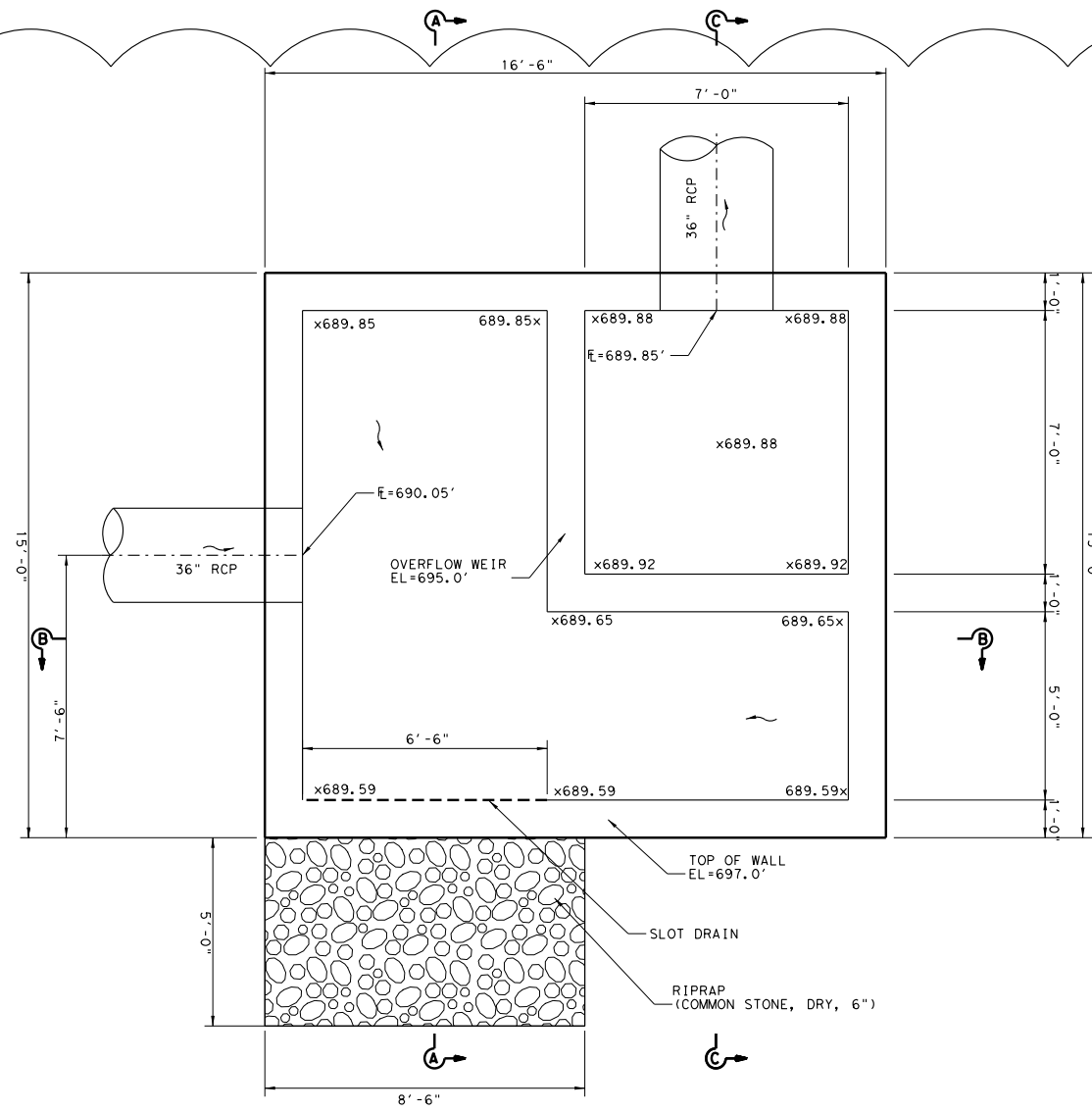
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**WATER QUALITY**  
**POND 16**  
**DETAIL**

SHEET 1 OF 2

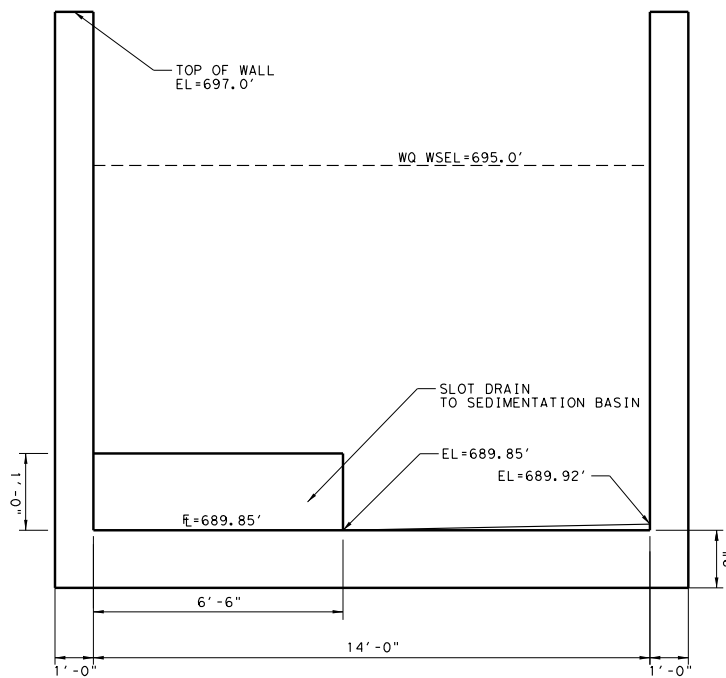
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DIST	COUNTY	SHEET NO.		
DW: GWS	CK: LMW	AUS	WILLIAMSON	648

100% SUBMITTAL

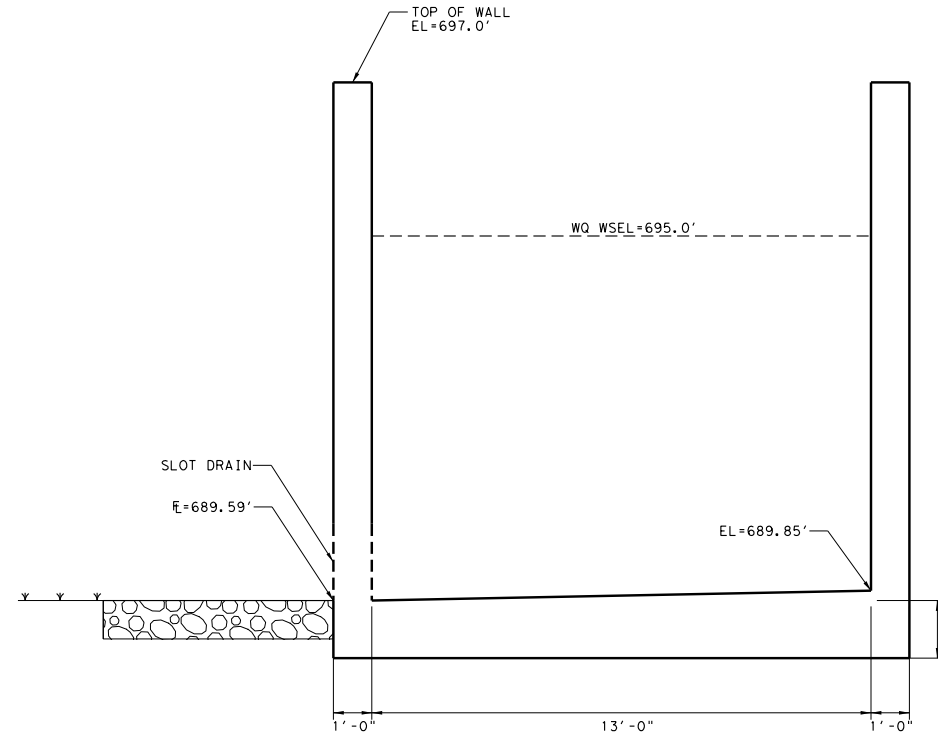
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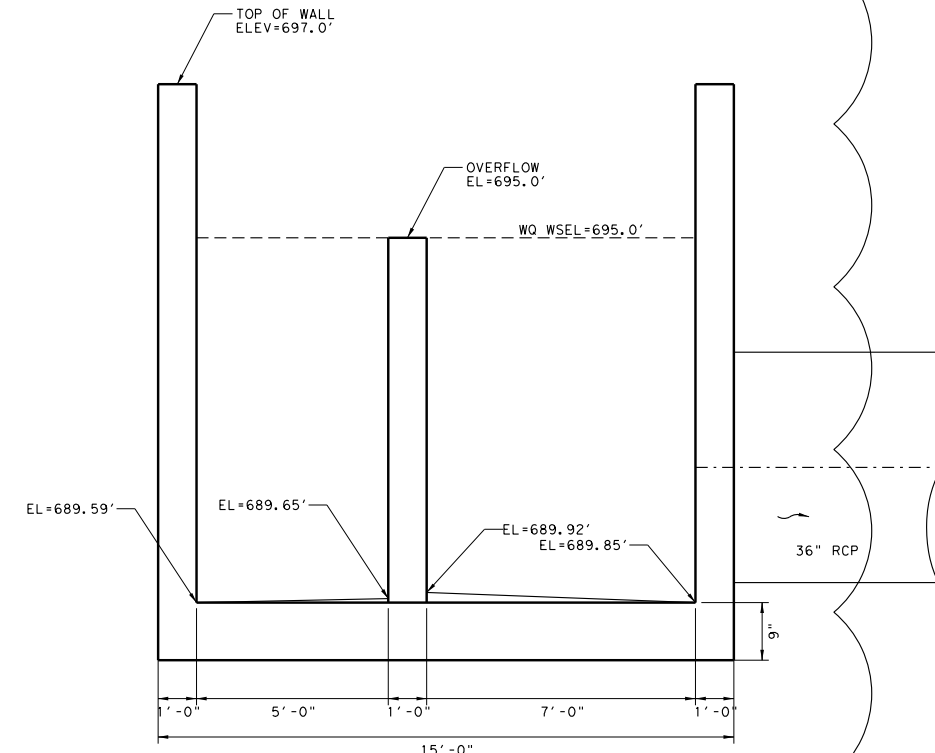
**PLAN**  
NTS



**SECTION B-B**  
NTS



**SECTION A-A**  
NTS



**SECTION C-C**  
NTS



1	7/26/23	RFI #186	
NO.	DATE	REVISION	APPROVED

STORM EVENT		
	25-YEAR	100-YEAR
WSEL	695.86'	696.02'
DESIGN FLOW	33 cfs	43 cfs
OVERFLOW WEIR CALCULATION		
WEIR EL	695.00'	
WEIR LENGTH	14.00'	
WEIR CAPACITY (Q)	33 cfs	43 cfs
OUTFALL PIPE FLOW CALCULATION (HAZEN-WILLIAMS)		
PIPE SIZE	36-INCH	
PIPE LENGTH	92'	
PIPE FL	689.85'	
PIPE CAPACITY (Q)	187 cfs	191 cfs
OUTFALL ORIFICE CALCULATION		
PIPE CENTROID	691.35'	
ORIFICE CAPACITY (Q)	72 cfs	74 cfs



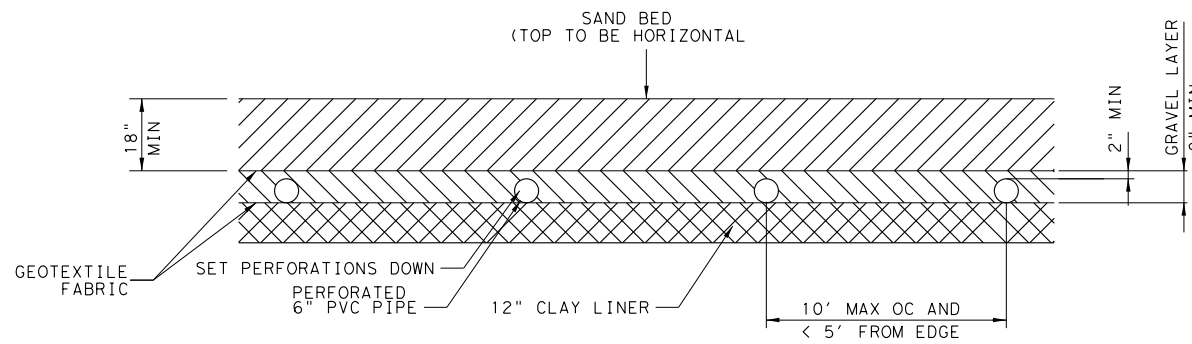
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 0 25 50 100  
 HORZ -



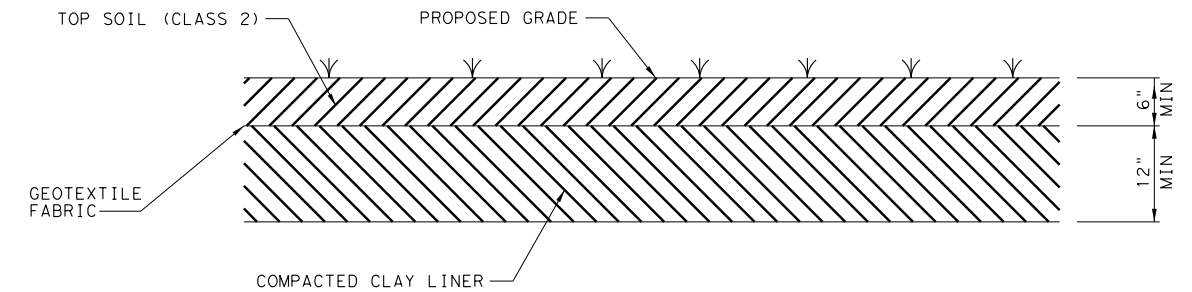
**IH 35**  
**WATER QUALITY**  
**POND 16**  
**DETAIL**

SHEET 2 OF 2

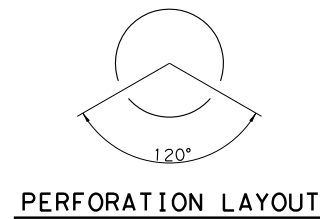
© 2018	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144, 147
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	649



**FILTRATION POND SECTION**  
NTS

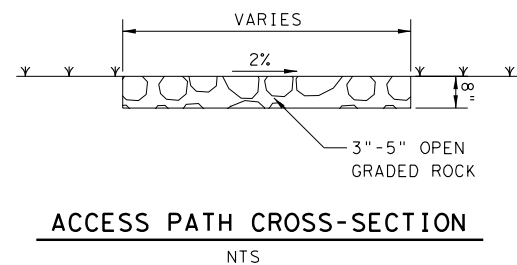


**SEDIMENTATION POND SECTION**  
NTS



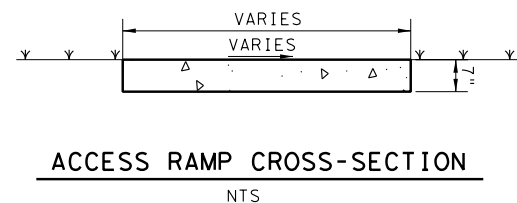
**NOTES:**

- SAND GRAIN SIZE DISTRIBUTION SHALL BE COMPARABLE TO THAT OF "WASHED CONCRETE SAND", (ATM C-33 FINE AGGREGATE).
- ALL UNDER DRAIN PIPE SHALL HAVE A SCREW- ON CLEANOUT ACCESS LOCATION.
- THE PERFORATION SHALL HAVE 3/8" OPENINGS. ADDITIONALLY, THE SPACING BETWEEN PERFORATION ROWS SHALL NOT EXCEED 6".
- ALL PIPING SHALL BE SCHEDULE 40 PVC.
- A VALVE MUST BE INSTALLED ON THE PVC DISCHARGE PIPE FROM THE UNDERDRAINS TO ALLOW FLOW TO BE STOPPED IN CASE OF POLLUTANT RUNOFF.
- CLAY LINER MUST HAVE A MINIMUM THICKNESS OF 12". ALL LINERS AND GEOTEXTILE FABRICS MUST MEET ATC SPECIFICATIONS:
  - A. CLAY LINER SPECIFICATIONS:
    - PERMEABILITY 1X10 CM/SEC
    - PLASTICITY INDEX NOT LESS THAN 15%
    - LIQUID LIMIT NOT LESS THAN 30%
    - CLAY PARTICLES PASSING NOT LESS THAN 30%
    - CLAY COMPACTION 95% STANDARD PROCTOR DENSITY
  - B. GEOTEXTILE FABRIC SPECIFICATIONS:
    - UNIT WEIGHT 8 OZ/SY
    - FILTRATION RATE 0.08 IN/SEC
    - PUNCTURE STRENGTH 125 LB
    - MULLEN BURST STRENGTH 400 PSI
    - TENSILE STRENGTH 200LB
    - EQUIV. OPENING SIZE NO. 80 SIEVE
- CLAY LINER SHALL BE BID UNDER ITEM 132-6047 EMBANKMENT (FINAL) (ORD COMP) (TY C). TOPSOIL, SEEDING, WATERING, ETC. SHALL BE IN ACCORDANCE WITH APPLICABLE ROADWAY ITEMS.
- SEDIMENTATION/FILTRATION POND BOTTOMS SHALL BE LINED WITH 12" CLAY AND GEOTEXTILE FABRICS AS SHOWN IN FILTRATION POND AND SEDIMENTATION POND SECTION DETAILS.
- GRAVEL LAYER CONFORMING TO ITEM 556 FILTER MATERIAL TY C.
- THE BASIN SHOULD BE INSPECTED EVERY SIX MONTHS OR AFTER STORMS GREATER THAN 0.5" RANFALLS. REPAIRS SHOULD BE MADE, IF NECESSARY.
- CORRECTIVE MAINTENANCE IS REQUIRED ANY TIME A SEDIMENTATION BASIN DOES NOT DRAIN THE EQUIVELANT OF THE WATER QUALITY VOLUME WITHIN SIXTY(60) HOURS (I.E. NO STANDING WATER IS ALLOWED).
- VEGETATION WITHIN THE BASIN SHALL NOT BE HIGHER THAN 18 INCHES.



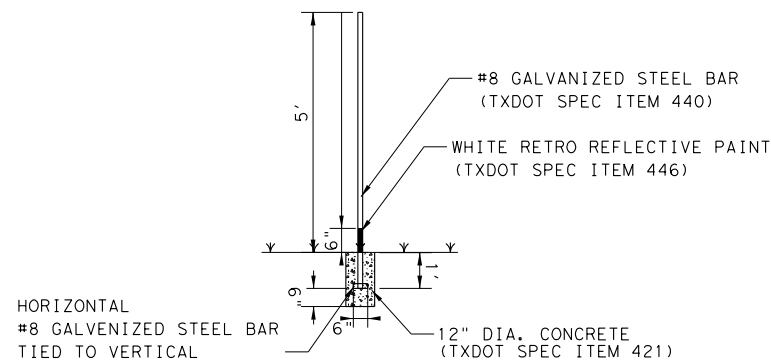
**NOTES:**

- STONE SIZE: 3"-5" OPEN GRADED ROCK
- THICKNESS NO LESS THAN 8".



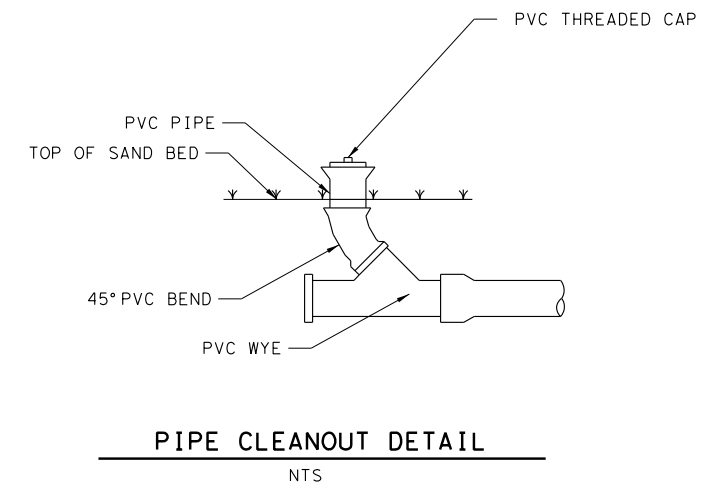
**NOTES:**

- PAVEMENT IN ACCORDANCE WITH TXDOT BID ITEM 360-6001.



**NOTES:**

- SILT SHOULD BE REMOVED WHEN THE ACCUMULATION EXCEEDS 6" IN SEDIMENT BASINS.
- ACCUMULATED TRASH AND DEBRIS SHOULD BE REMOVED EVERY SIX MONTHS OR, AS NECESSARY.



STATE OF TEXAS  
  
 TIMOTHY J. LYNG  
 90515  
 LICENSED PROFESSIONAL ENGINEER  
 12/20/2019  
*Timothy J. Lyng*  
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 HORZ - 0 25 50 100

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Houston, Texas, 77094  
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281-945-0081 FX

**ENTECH**  
CIVIL ENGINEERS INC

**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

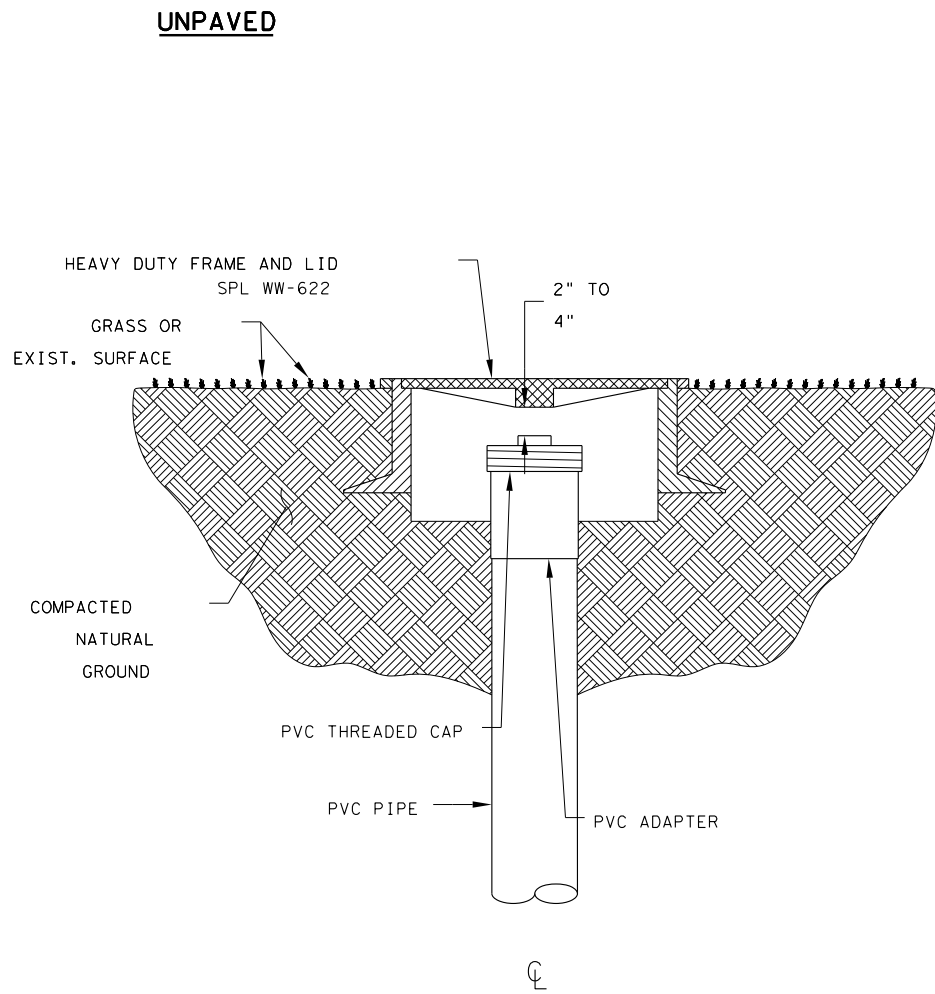
**IH 35  
WATER QUALITY  
NOTES AND TYPICAL  
DETAILS**

SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
DS: JS	CK: RC	0015	08 144, 147	IH 35
DW: RM	CK: AL	AUS	WILLIAMSON	650

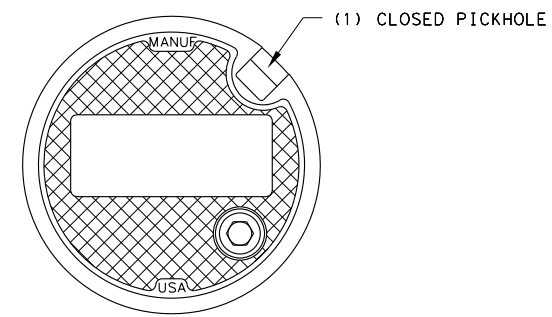
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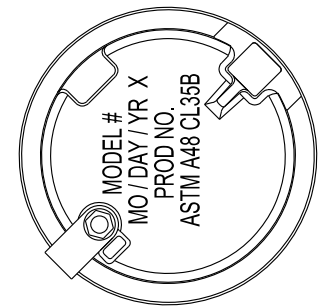


NOTES:

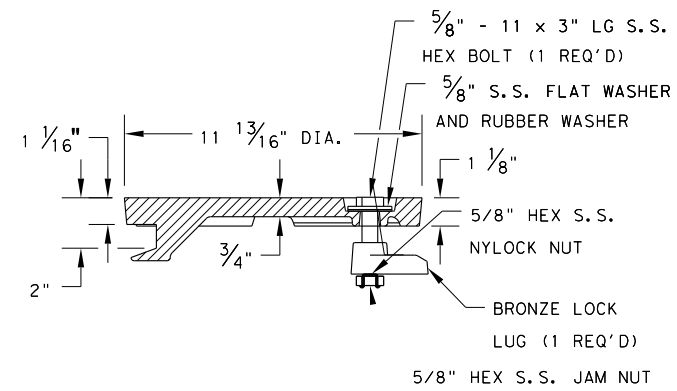
1. REINFORCING STEEL SHALL MEET ITEM 406S, REINFORCING STEEL.
2. ALL PVC SHALL BE SCHEDULE 40.
3. ALL ITEM SPECIFICATIONS REFER TO CITY OF AUSTIN STANDARD SPECIFICATIONS AND STANDARD PRODUCTS LIST.



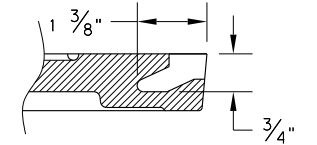
TOP VIEW



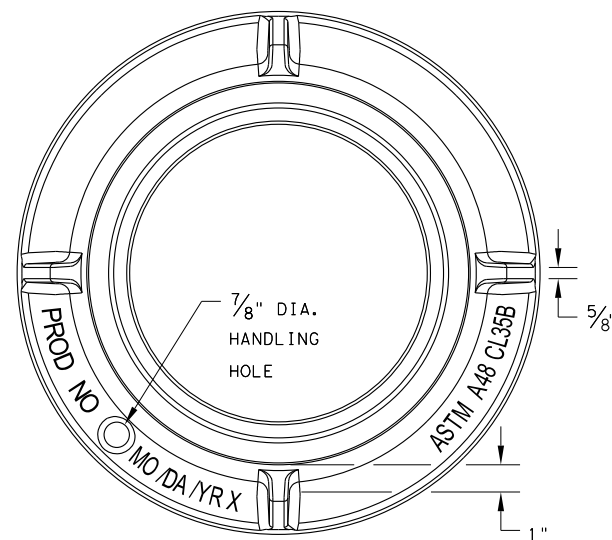
BOTTOM VIEW



SECTION



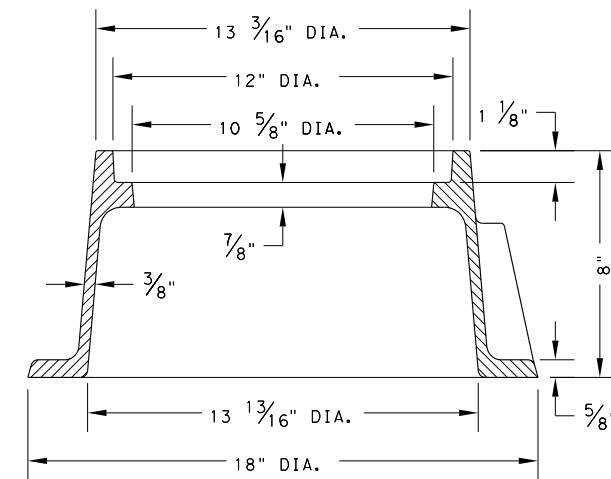
PICK HOLE DETAIL



TOP VIEW

CLEAN-OUT FRAME

CLEAN-OUT LID



SECTION



SCALES (IN FEET):  
HORZ - 0 25 50 100

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CIVIL ENGINEERS INC

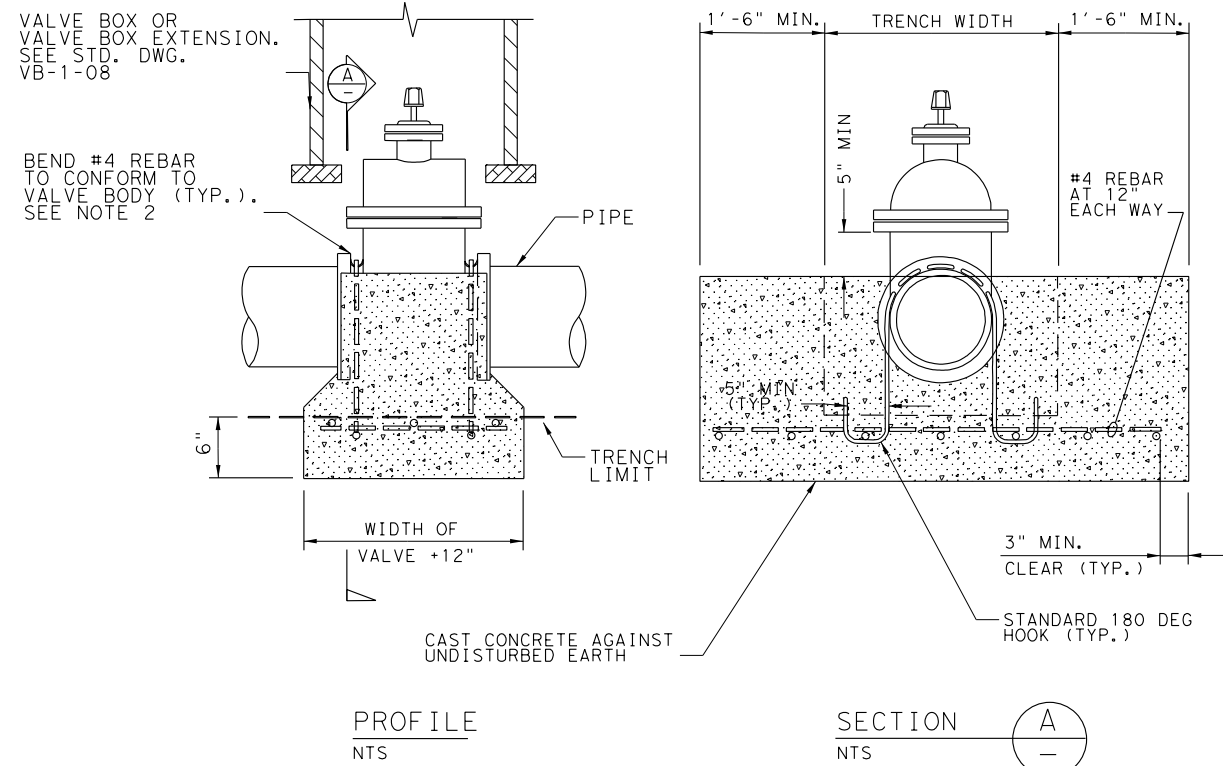
**mobility** 35  
CAPITAL AREA

Texas Department of Transportation

IH 35  
WATER QUALITY  
CLEAN-OUT W/ FRAME  
& LID DETAIL

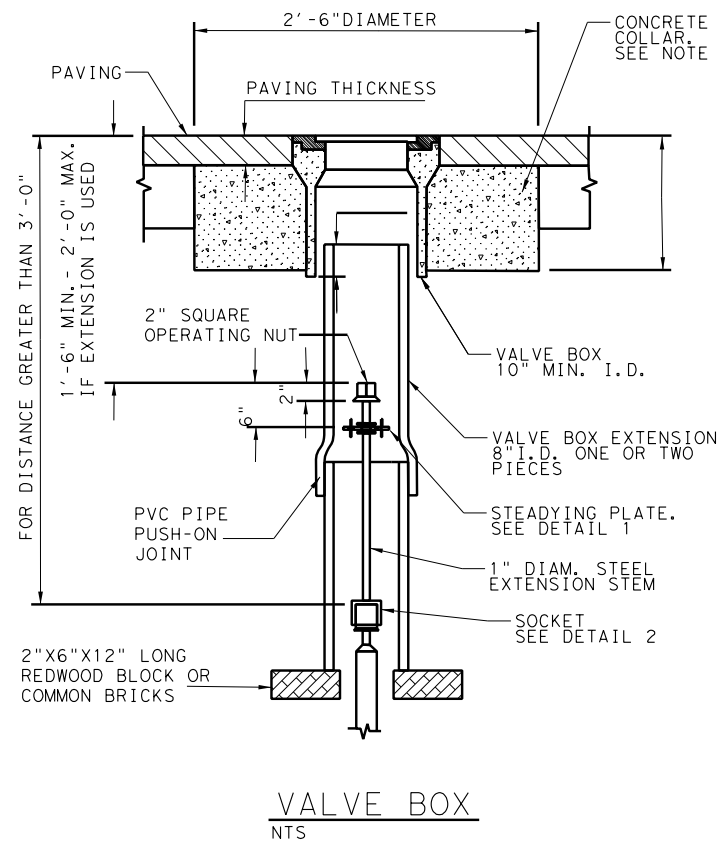
SHEET 1 OF 1				
DS:	CONT	SECT	JOB	HIGHWAY
JS	RC	0015	08	144, 147
DIST	COUNTY	SHEET NO.		
RM	AL	AUS	WILLIAMSON	651





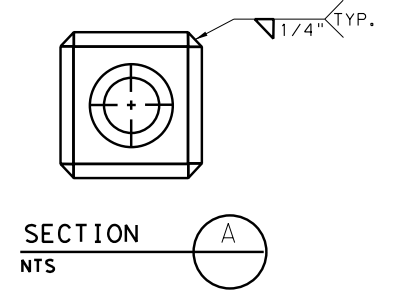
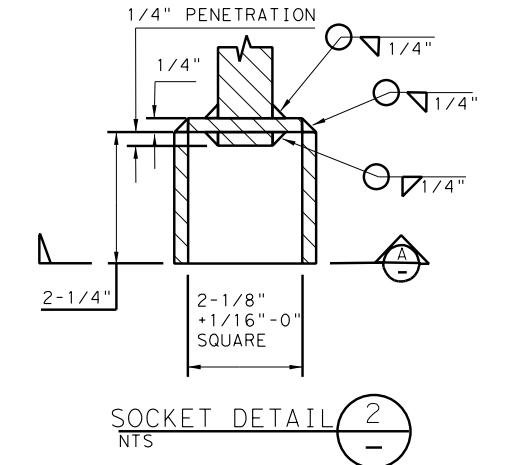
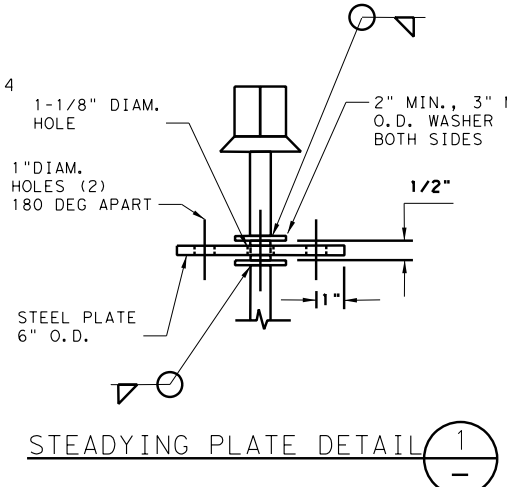
NOTES:

1. COAT VALVE AND MISCELLANEOUS FERROUS METAL PRIOR TO PLACEMENT IN TRENCH IN ACCORDANCE WITH SPECIFICATIONS
2. ALL GATE VALVES SHALL HAVE CURB MARKINGS OR MAKER POSTS. SEE STANDARD DRAWING MP-1-08
3. BONDING WIRES REQUIRED FOR VALVE INSTALLATIONS ON STEEL PIPE. SEE STANDARD DRAWING ET-6-08
4. THE REFERED DRAWINGS AND SPECIFICATIONS, PLEASE SEE CITY OF AUUSTIN STANDARDS.



NOTES:

1. CONCRETE SHALL BE 6 SACK 3/4" MAXIMUM AGGREGATE SIZE
2. AFTER PAVING RAISE VALVE BOX TO PERMANENT GRADE. CAST CONCRETE COLLAR AND REPAIR PAVEMENT
3. AFTER FABRICATION OF VALVE STEM EXTENSION ASSEMBLY COAST ENTIRE ASSEMBLY WITH TWO COATS OF RUST-OLEUM PRIMER OR APPROVED EQUAL
4. IN UNPAVED AREAS, CONCRETE COLLAR TO BE INSTALLED FLUSH WITH VALVE BOX LID. THE SURFACE OF THE CONCRETE COLLAR SHALL SLOPE AWAY FROM THE VALVE BOX LID WITH 2% SLOPE ON FINISHED CONCRETE SURFACE. GRADE OF VALVE BOX LID TO BE DETERMINED BY DISTRICT
5. ANY TRACER WIRES PRESENT SHALL BE INSTALLED IN THE VALVE BOX IN ACCORDANCE WITH STANDARD DRAWING TW-1-08
6. FOR DESIGNATION ON CURB OR MARKER POST, SEE STANDARD DRWAING MP-1-08.
7. WELDING SHALL BE DONE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATIONS.



SCALES (IN FEET):  
 0 25 50 100  
 HORZ -

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 Houston, Texas, 77094  
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 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA

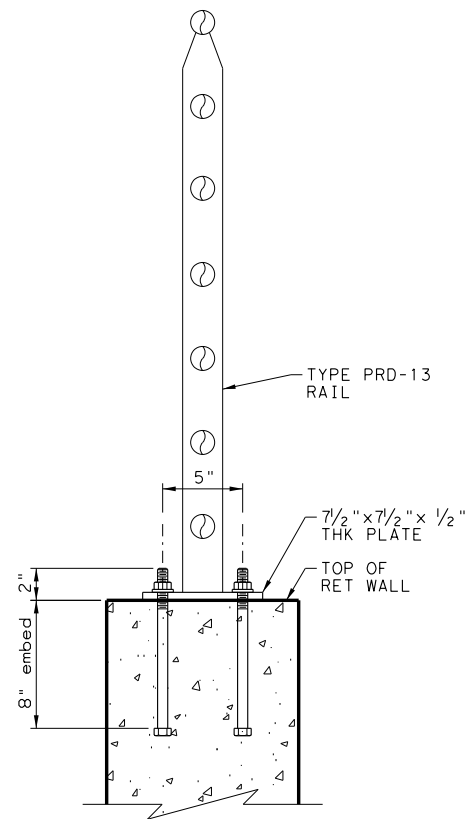
Texas Department of Transportation

**IH 35**  
**WATER QUALITY**  
**SHUT-OFF VALVE**  
**DETAIL**

SHEET 1 OF 1

DS:	CONT:	SECT:	JOB:	HIGHWAY:
JS	RC	0015	08	144, 147
DW:	CK:	DIST:	COUNTY:	SHEET NO.:
RM	AL	AUS	WILLIAMSON	652

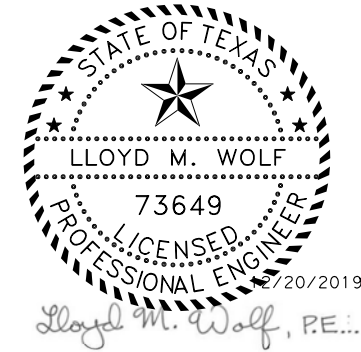




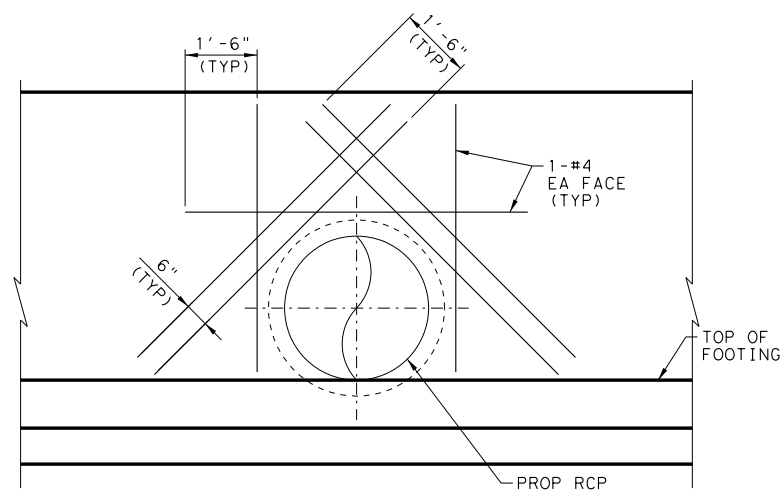
**RAIL MOUNTING DETAIL**

SHOWING CAST-IN-PLACE ANCHOR BOLT OPTION.  
 ANCHOR BOLTS MAY BE POST-INSTALLED EPOXY  
 ANCHORED BOLTS IN ACCORDANCE WITH GENERAL  
 NOTES AND MFG. RECOMMENDATIONS.  
 SEE PEDESTRIAN HANDRAIL DETAILS PRD-13 SHEET  
 FOR INFORMATION NOT SHOWN.

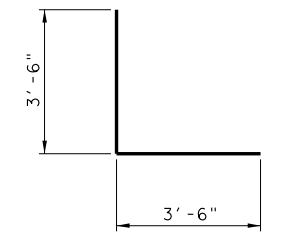
REFER TO "TYPICAL WEIR DETAILS"  
 SHEET FOR BARS L PLACEMENT  
 AND INFORMATION.



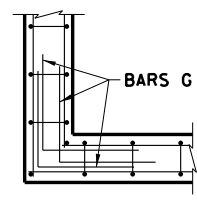
SCALE VARIES



**TYPICAL REINFORCING IN WALL AT PIPE OPENING**



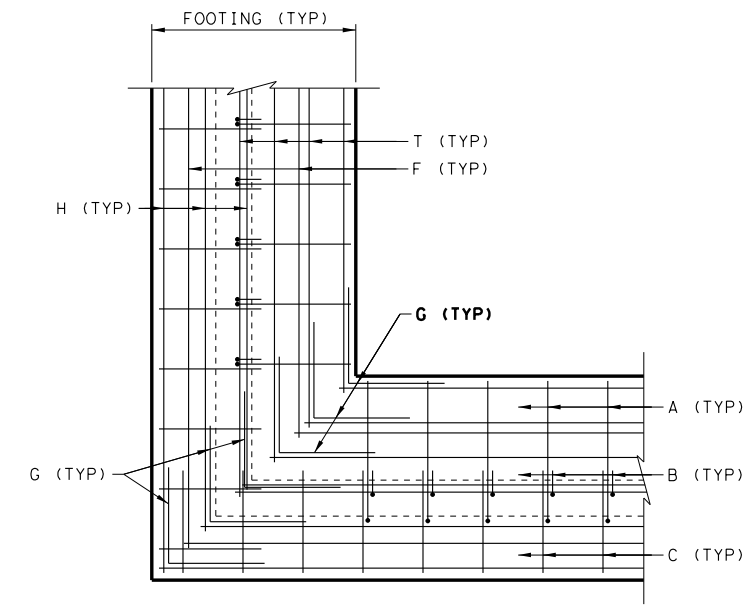
**BARS G #5**



**PLAN AT CORNER**

**TYPICAL REINFORCING IN WALL AT CORNERS**

NOTE: SPACE BARS G WITH BARS D.  
 REFER TO TYPICAL SECTION FOR WALL REINF. INFORMATION.



**TYPICAL REINFORCING IN FOOTING AT CORNERS**

NOTE: SPACE BARS G WITH BARS T & H.  
 WALL NOT SHOWN FOR CLARITY.  
 REFER TO TYPICAL SECTION FOR WALL REINF. INFORMATION.

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 281-945-0081 FX

**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

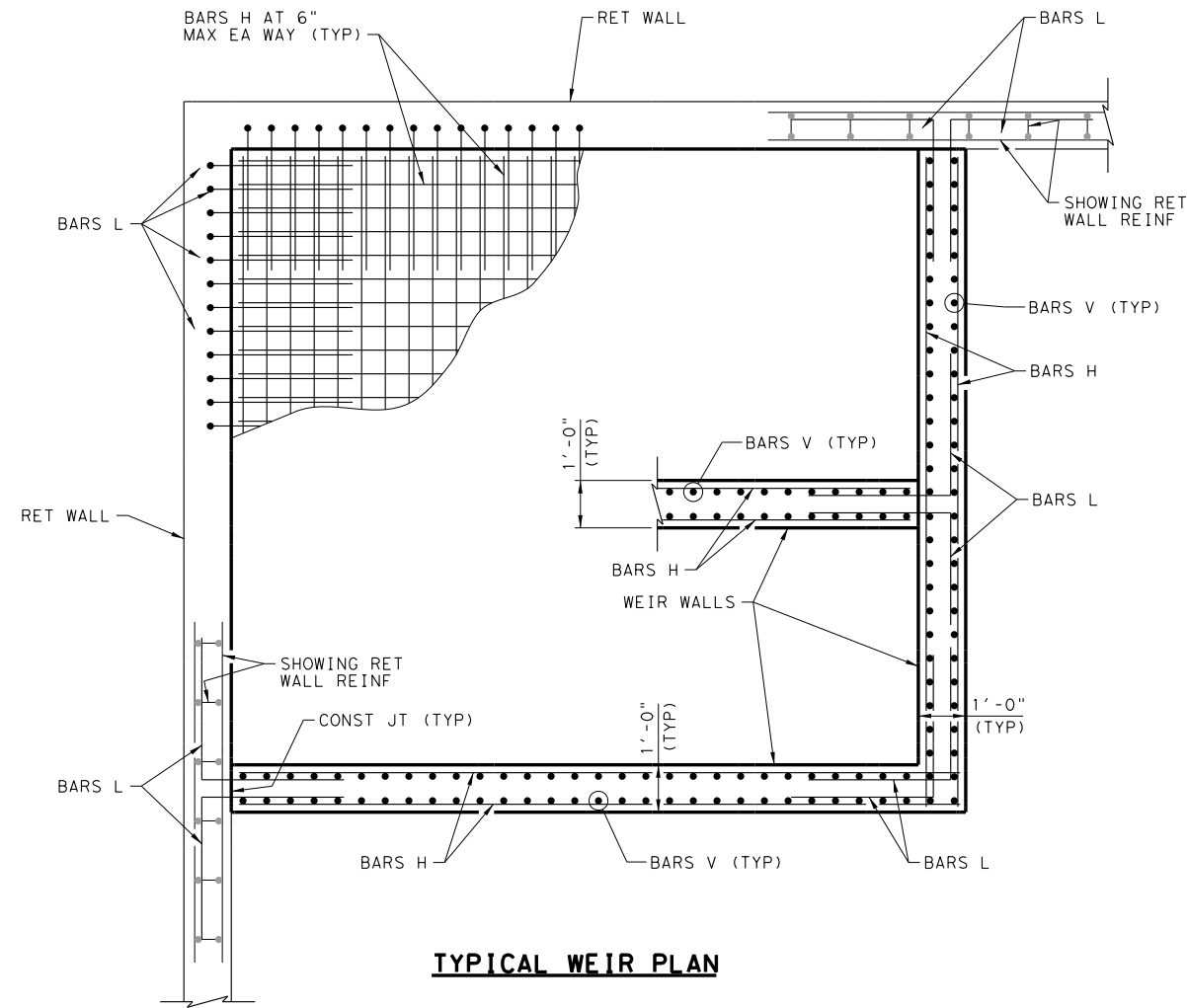
**IH 35**  
**WATER QUALITY POND**  
**TYP RETAINING WALL**  
**DETAILS**

SHEET 2 OF 2

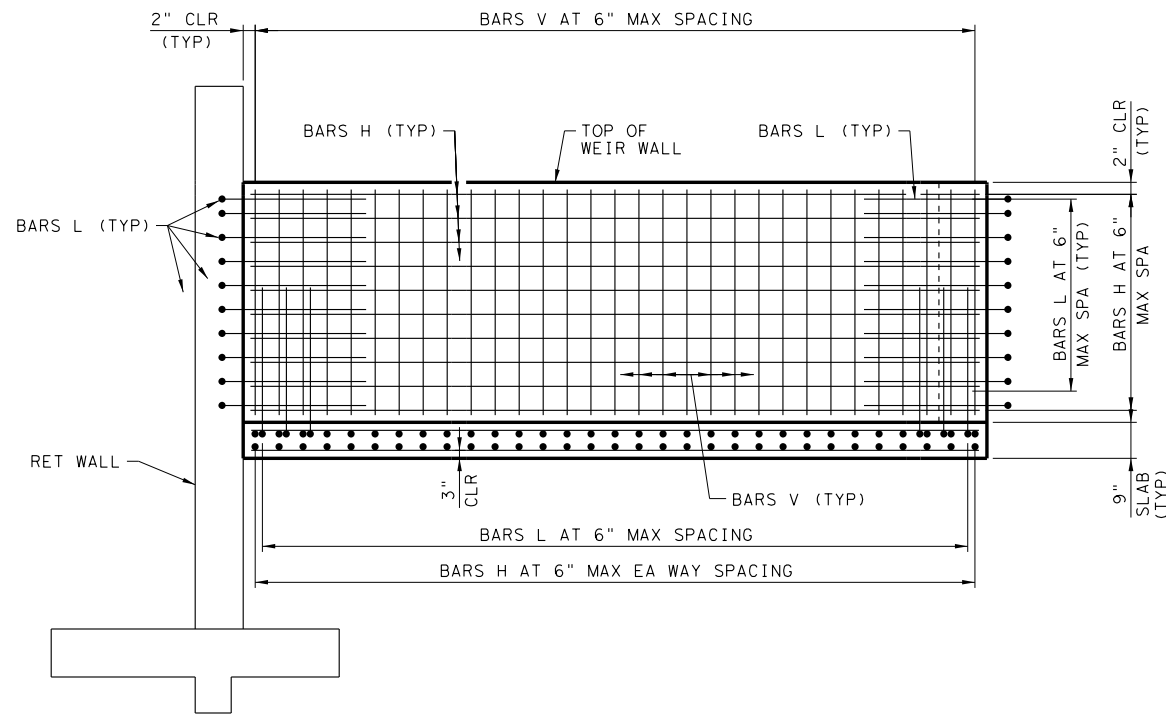
© 2018	CONT	SECT	JOB	HIGHWAY
DS: RM	CK: LMW	0015	08	144
DIST	COUNTY	SHEET NO.		
DW: GWS	CK: LMW	AUS	WILLIAMSON	654

100% SUBMITTAL

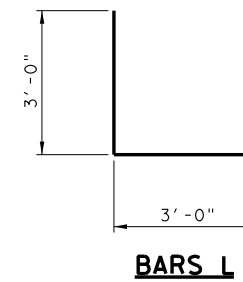
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**TYPICAL WEIR PLAN**



**TYPICAL WEIR ELEVATION**



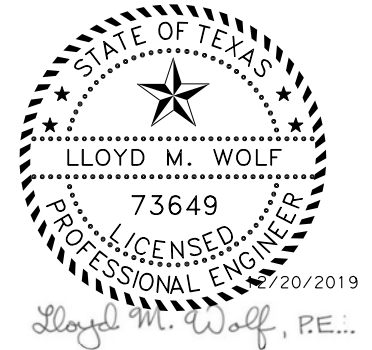
BAR TABLE		
BAR	SIZE	SPACING
H	#4	6" O/C
L	#4	6" O/C
V	#4	6" O/C

**GENERAL NOTES:**

- DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS WITH CURRENT INTERIMS.
- REINFORCING STEEL TO BE ADJUSTED TO PROVIDE A MINIMUM OF 2" OF CLEAR COVER UNLESS OTHERWISE NOTED.
- FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS AND COMMENCING WORK.
- REFER TO WATER QUALITY POND DETAIL SHEETS FOR LOCATION AND INFORMATION NOT SHOWN.

**MATERIAL NOTES:**

- PROVIDE CLASS C CONCRETE (F'C = 3,600 PSI).
- PROVIDE GRADE 60 REINFORCING STEEL.



SCALE VARIES



**IH 35**  
**WATER QUALITY POND**  
**TYPICAL WEIR**  
**DETAILS**

SHEET 1 OF 1

© 2018	CONT	SECT	JOB	HIGHWAY
DS: RM	CK: LMW	0015	08	144
DW: GWS	CK: LMW	AUS	WILLIAMSON	655



**Vegetative Filter Strips**

Cross Section Plan Sheets

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760

750

740

730

720

760

750

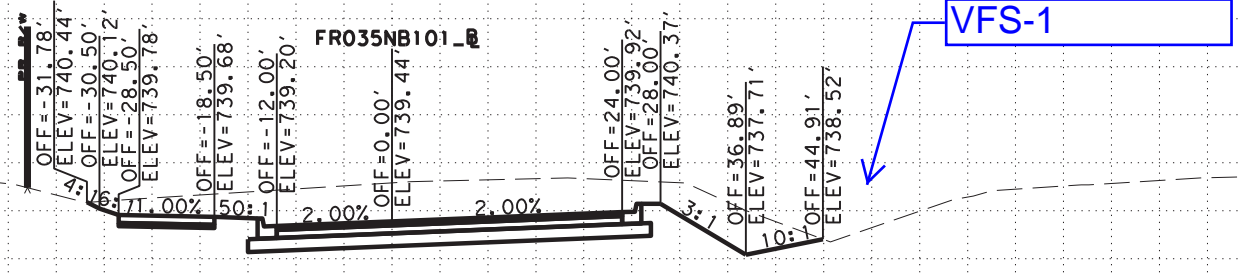
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730

720

-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100

Sta. 1778+00.0000 R1



*Carlos Juarez*  
 08-18-2023



ENGINEERS  
 PLANNERS  
 SCIENTISTS  
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 TECHNOLOGIES  
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 Suite 2000  
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 Fax: 713.237.9801  
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 TBPE Registration No. F-10573



**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CK:	0015 08	147, ETC	IH 35
DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	62

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760

750

740

730

720

760

750

740

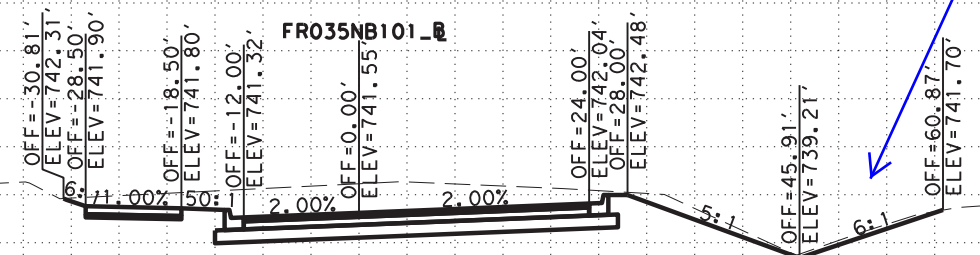
730

720

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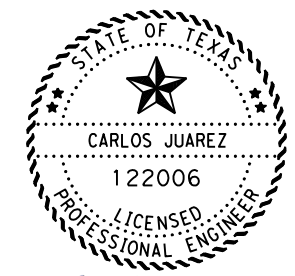
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FR035NB101\_B



VFS-1

6:1



*Carlos Juarez*  
 08-18-2023

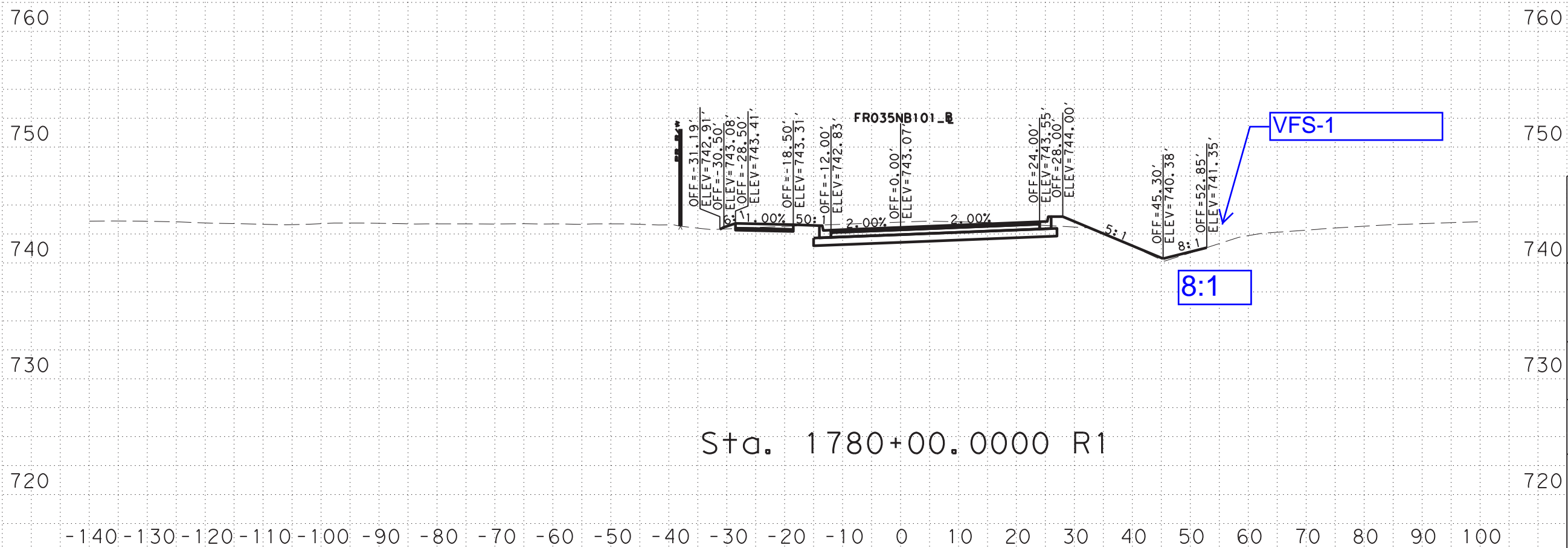
SCALES (IN FEET):



**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	63

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SCALES (IN FEET):  
 HORZ - 0 to 20  
 VERT - 0 to 10

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 TBPE Registration No. F-10573

**mobility** 35  
 CAPITAL AREA

**Texas Department of Transportation**

**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

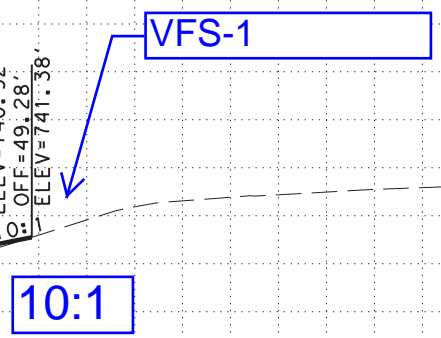
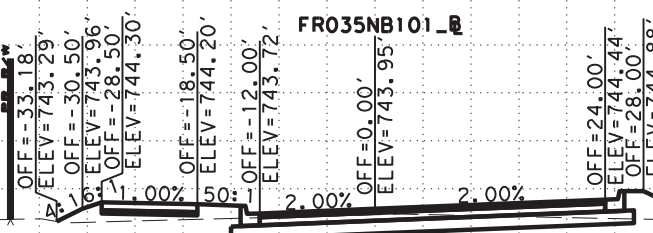
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		AUS WILLIAMSON			64



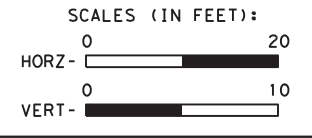
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760  
 750  
 740  
 730  
 720

-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100



Sta. 1781+00.0000 R1



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 Phone: 832.975.1545, Fax: 713.237.9801, www.kci.com  
 TBPE Registration No. F-10573

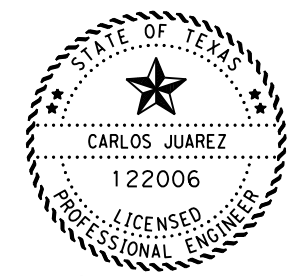
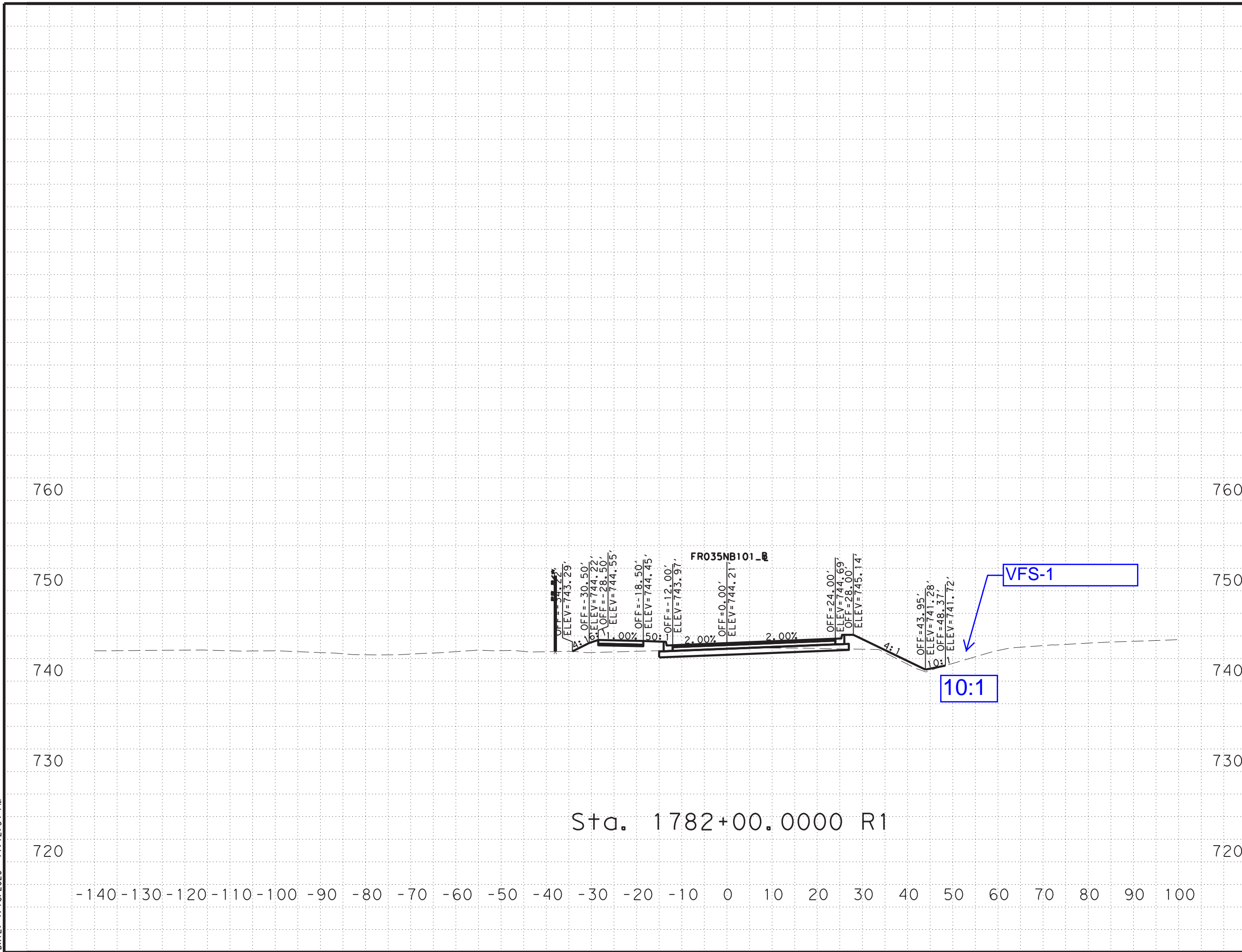
**mobility** CAPITAL AREA



**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

DS:	CK:	CONT:	SECT:	JOB:	HIGHWAY:
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DW:	CK:	DIST:		COUNTY:	SHEET NO.
		AUS		WILLIAMSON	65

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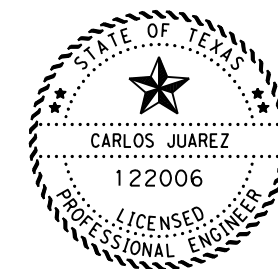
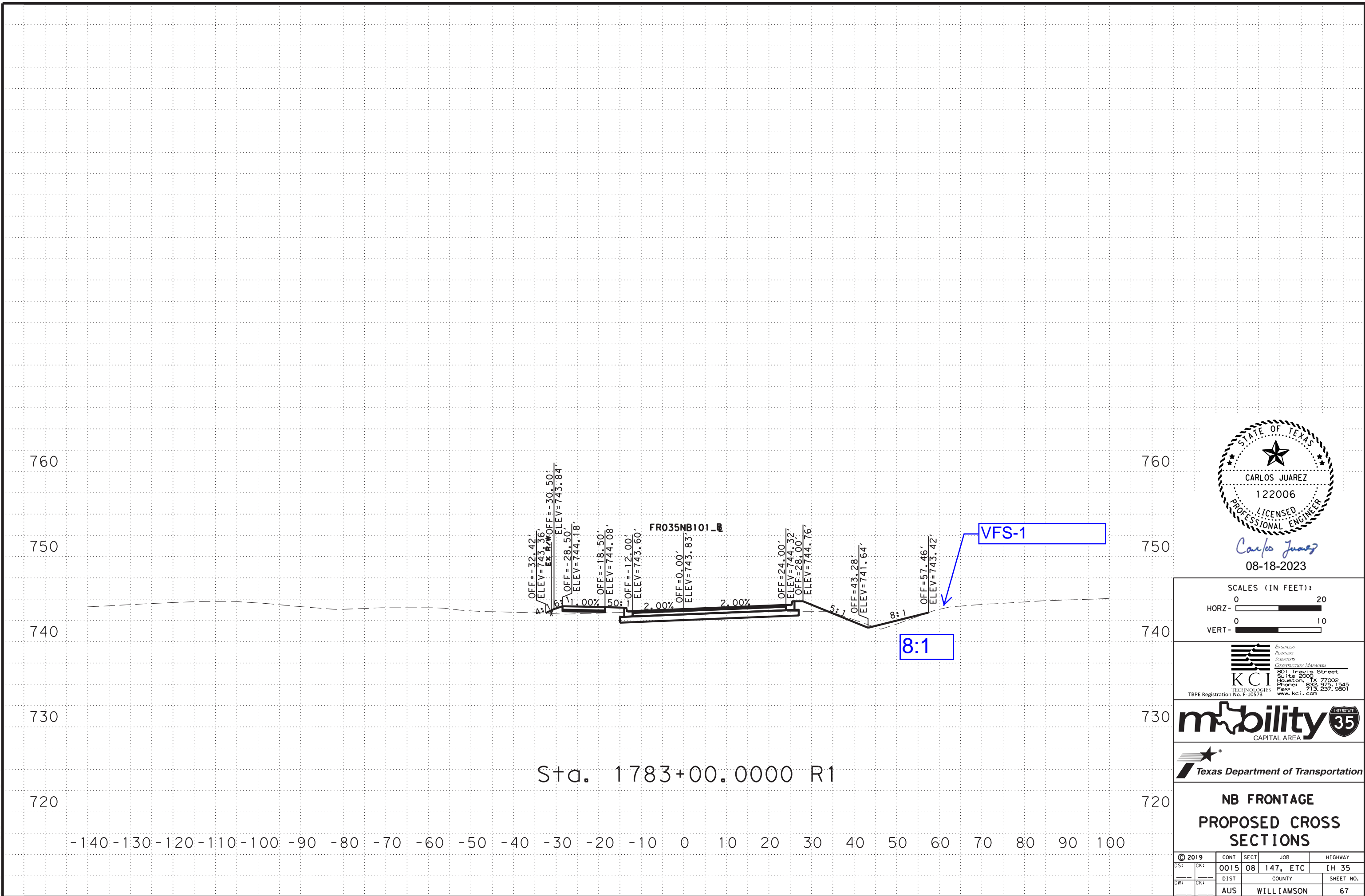
SCALES (IN FEET):



**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

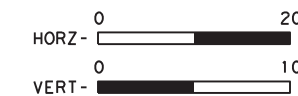
© 2019	CONT	SECT	JOB	HIGHWAY
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		AUS	WILLIAMSON	66

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Northbound Frontage Road (KS).dgn  
 DATE: 1/16/2020 11:12:36 PM



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SCALES (IN FEET):



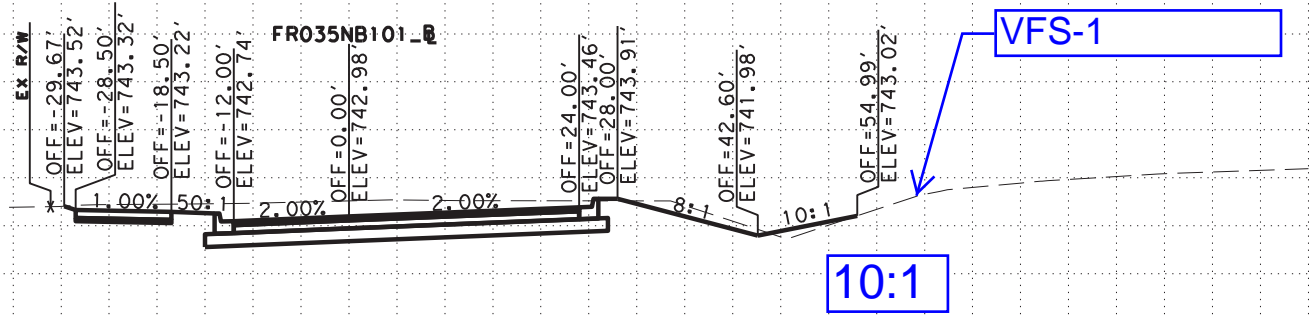
**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS: CK:	0015	08	147, ETC	IH 35
DW: CK:	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	67

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Northbound Frontage Road (KS).dgn  
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760  
 750  
 740  
 730  
 720

-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100



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SCALES (IN FEET):  
 HORZ - 0 to 20  
 VERT - 0 to 10

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**mobility** 35  
 CAPITAL AREA

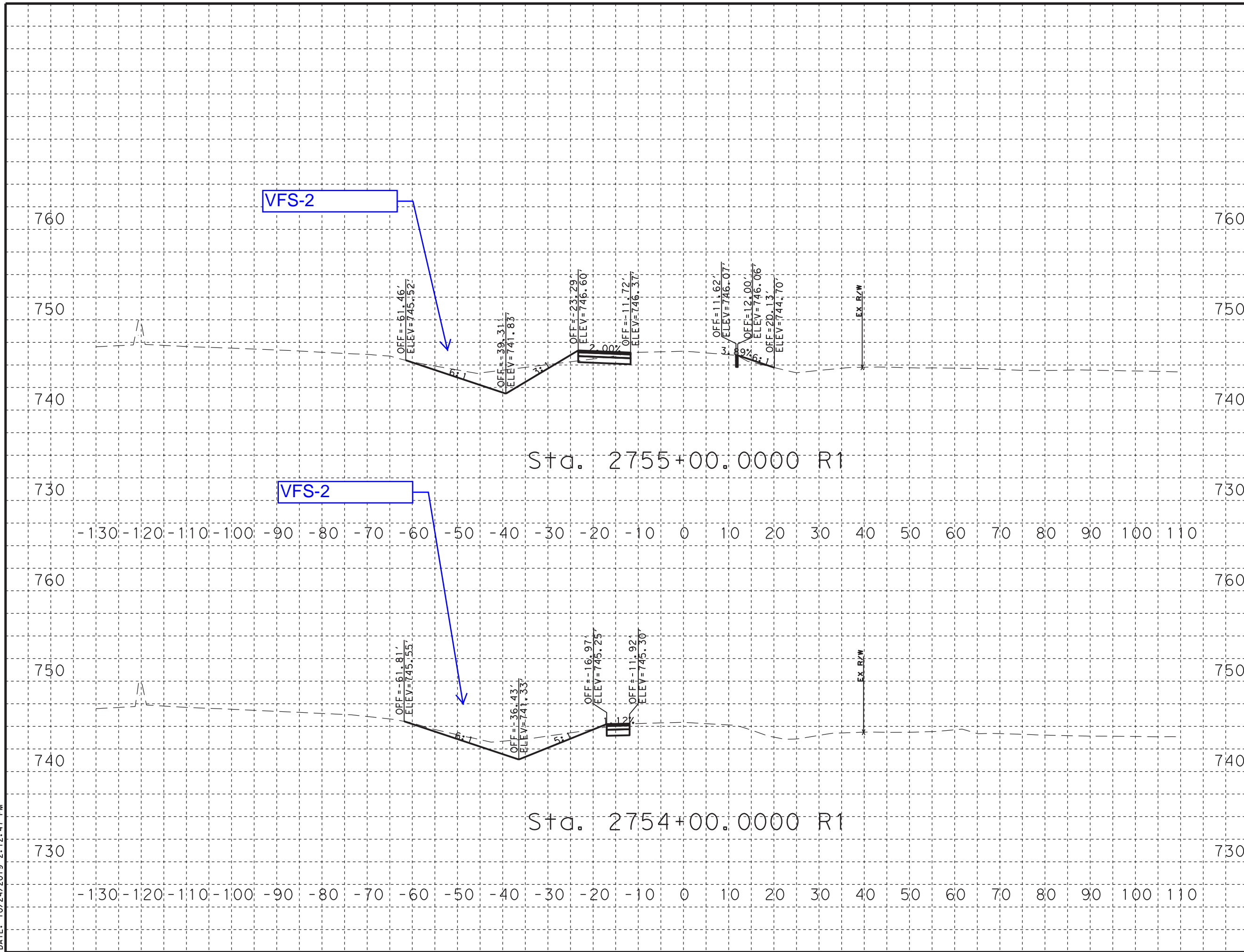
**Texas Department of Transportation**

**NB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

DS:	CONT:	SECT:	JOB:	HIGHWAY:
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DW:	DIST:	COUNTY:	SHEET NO.	
CK:	AUS	WILLIAMSON	68	



FILE: M:\2017\1720101\_IH 35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 10/24/2019 2:12:47 PM



STATE OF TEXAS  
 CARLOS JUAREZ  
 122006  
 LICENSED PROFESSIONAL ENGINEER  
*Carlos Juarez*  
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**mobility** 35  
 CAPITAL AREA

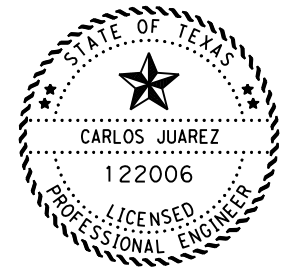
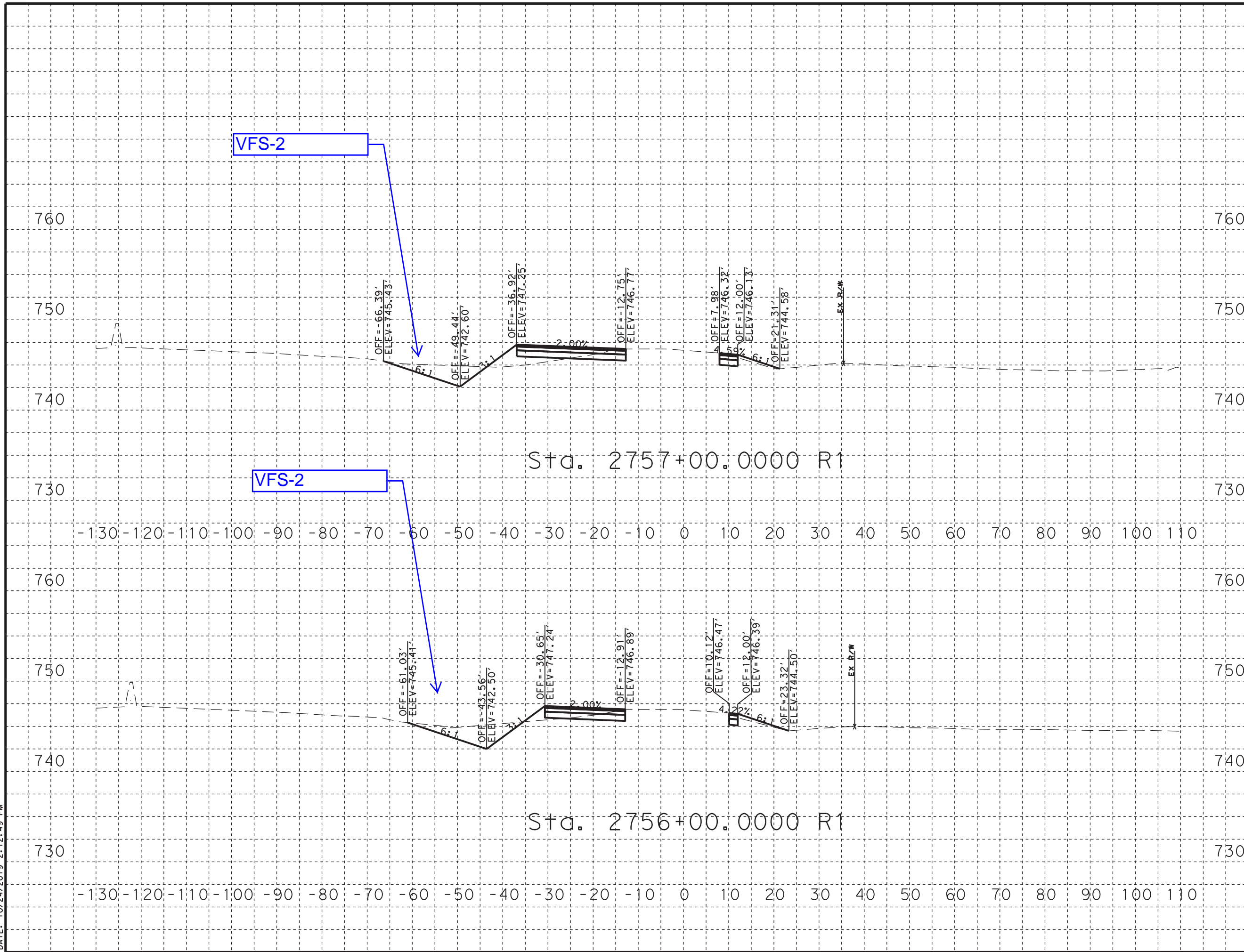


**SB FRONTAGE  
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 SECTIONS**

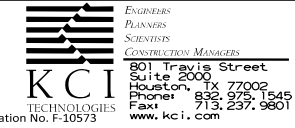
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CK:	0015	08	147, ETC	IH 35
DW:	DIST	COUNTY	SHEET NO.	
CK:	AUS	WILLIAMSON	122	

© 2019

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 10/24/2019 2:12:49 PM



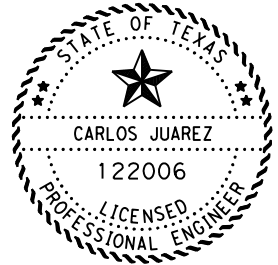
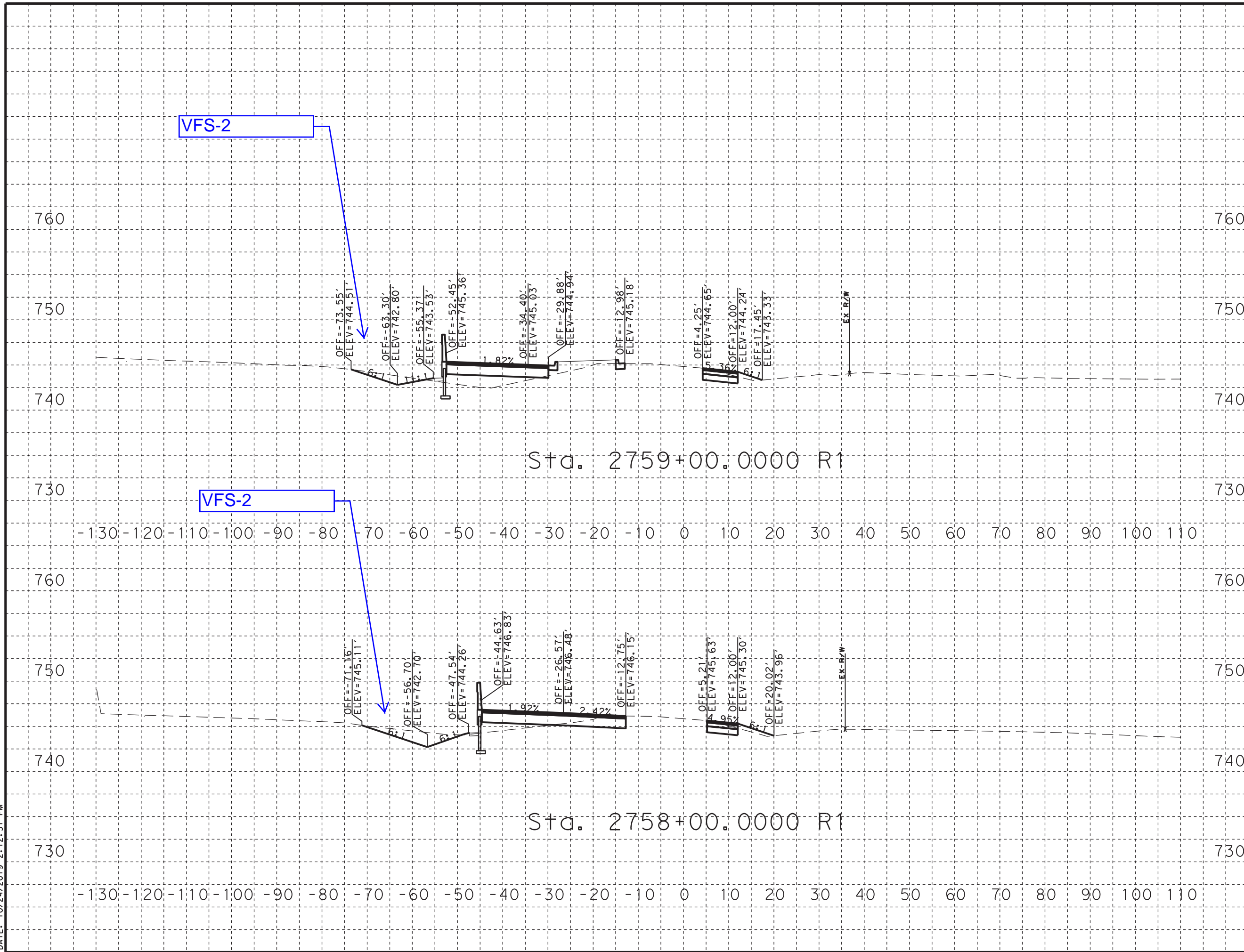
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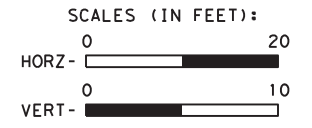
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		AUS		WILLIAMSON	123

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 DATE: 10/24/2019 2:12:51 PM



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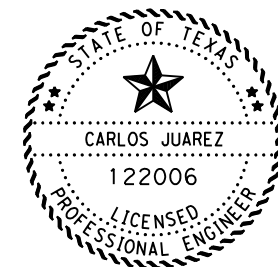
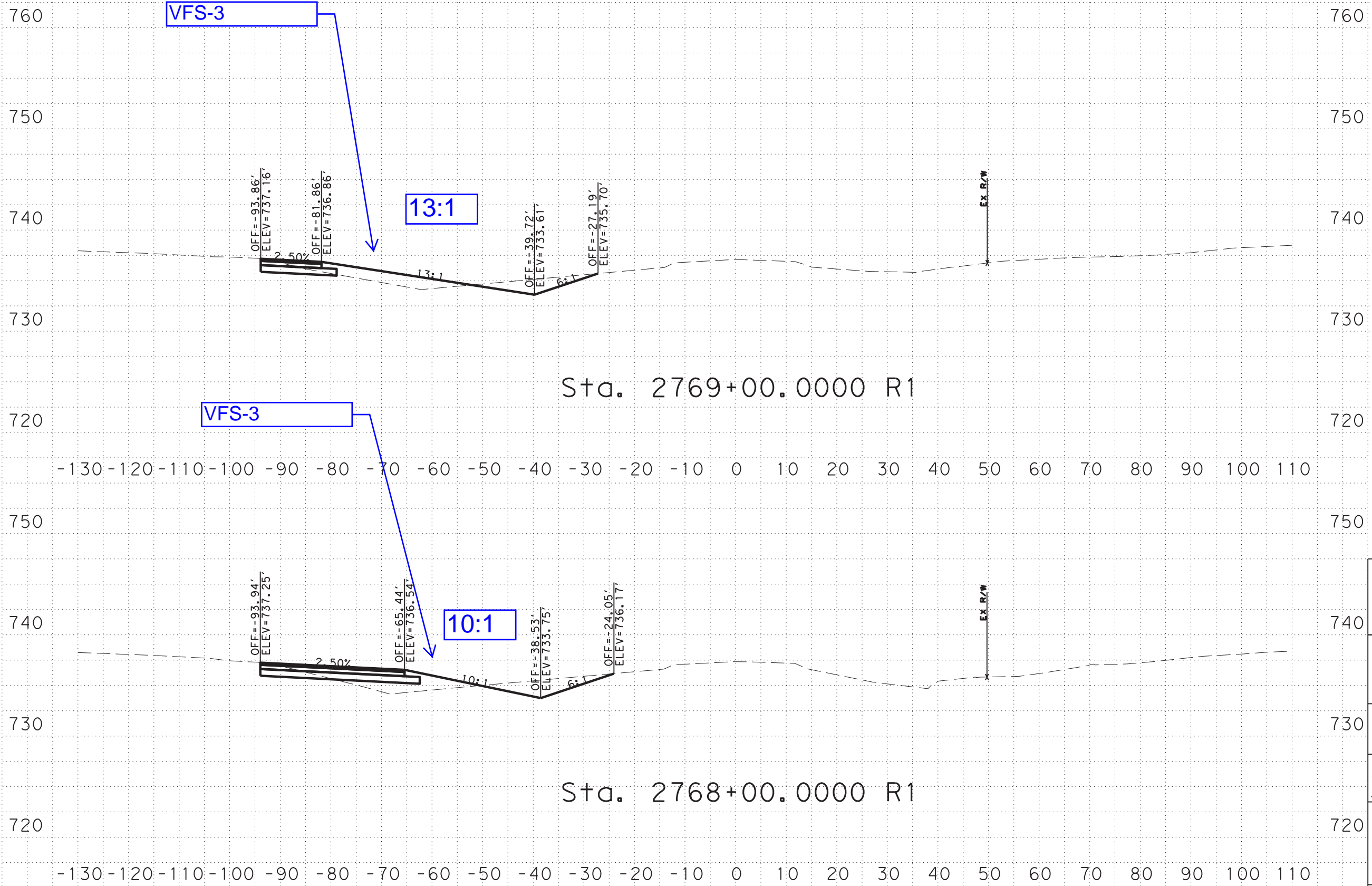
TBPE Registration No. F-10573



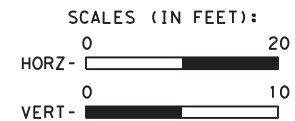
**SB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

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DW:	CK:	DIST	COUNTY		SHEET NO.
		AUS	WILLIAMSON		124

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 DATE: 1/16/2020 11:13:16 PM



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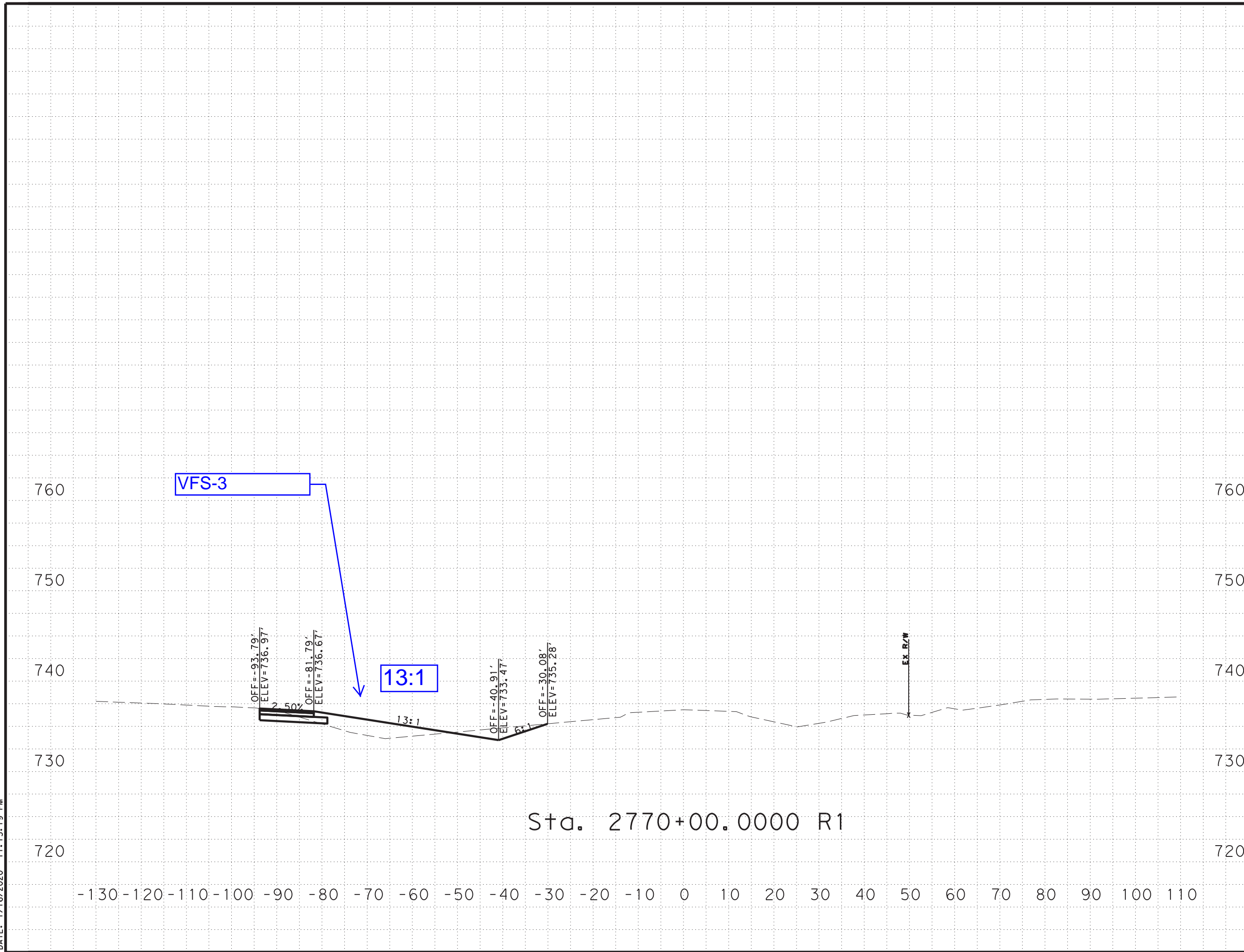


**SB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

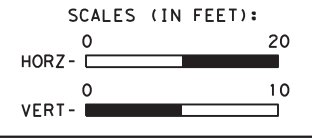
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		AUS		WILLIAMSON	129



FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 1/16/2020 11:13:19 PM



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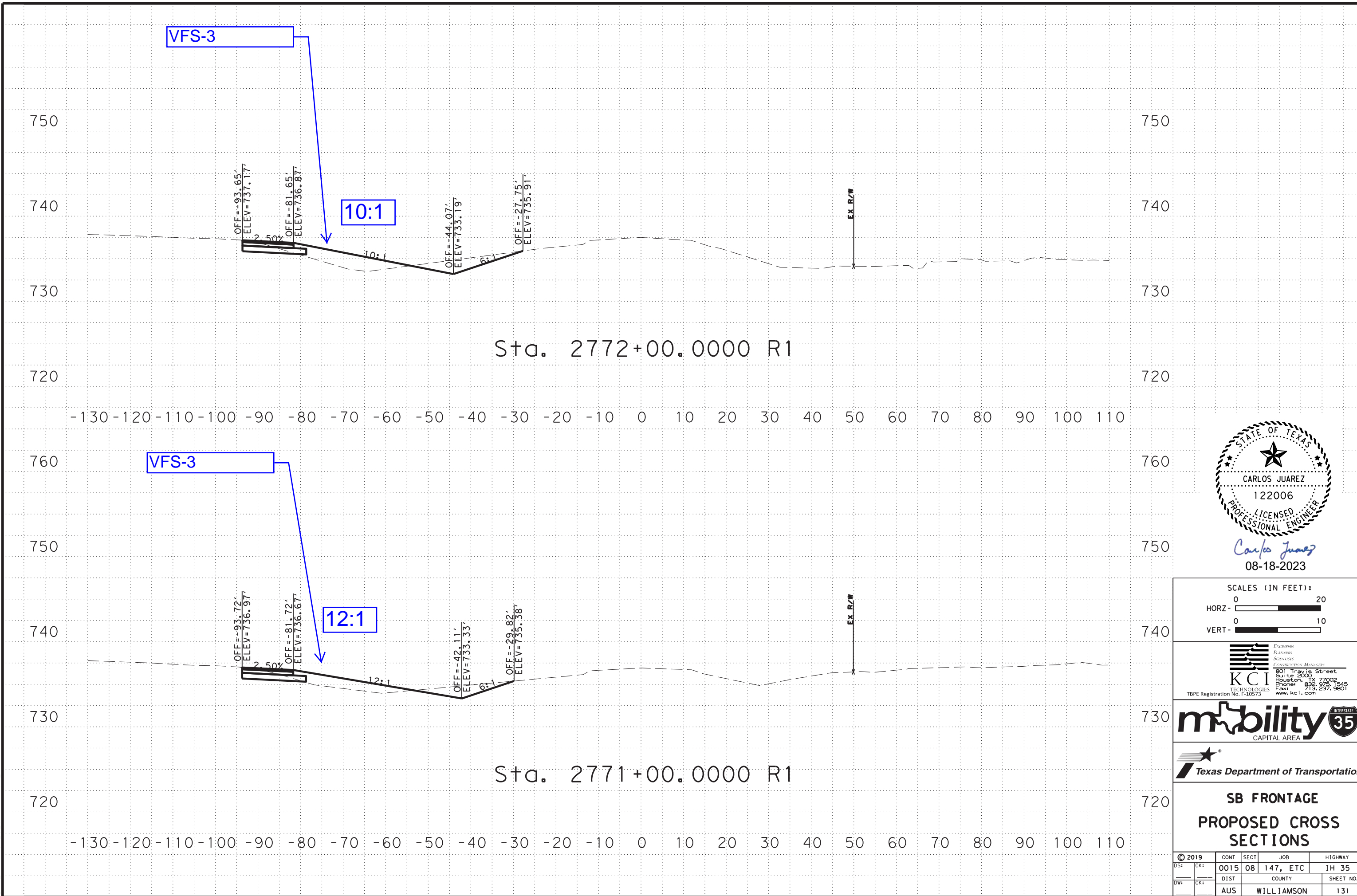
TBPE Registration No. F-10573



**SB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS: CK:	0015	08	147, ETC	IH 35
DW: CK:	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	130

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 1/16/2020 11:13:21 PM



SCALES (IN FEET):  
 HORZ - 0 to 20  
 VERT - 0 to 10

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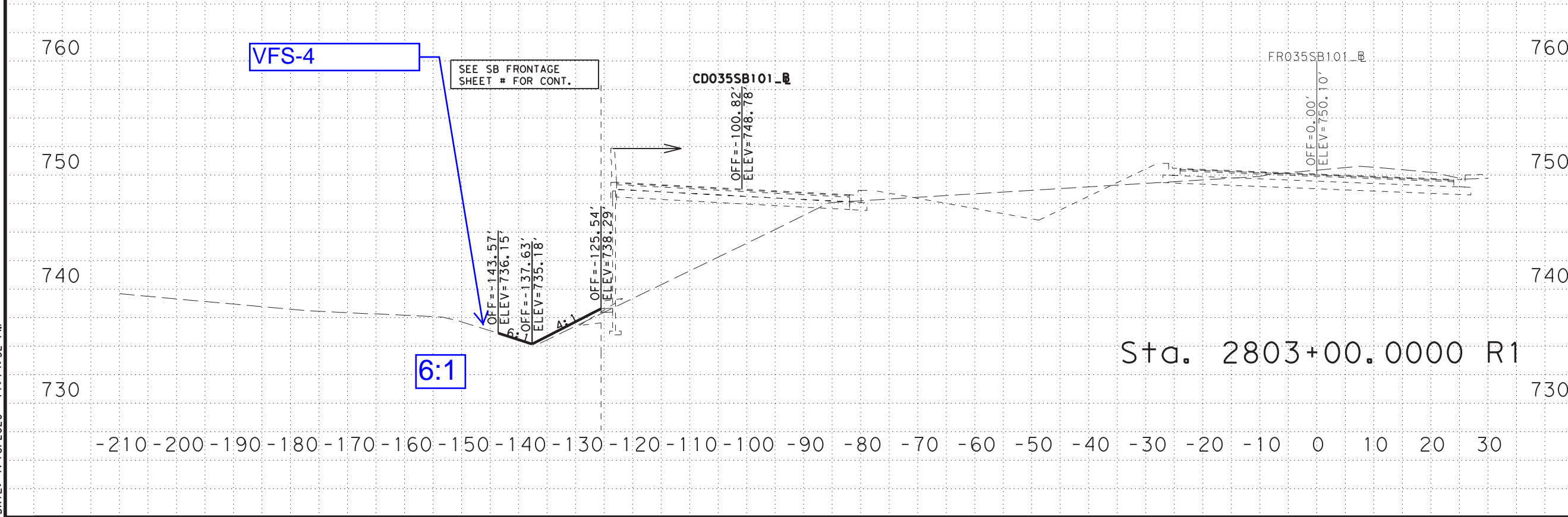
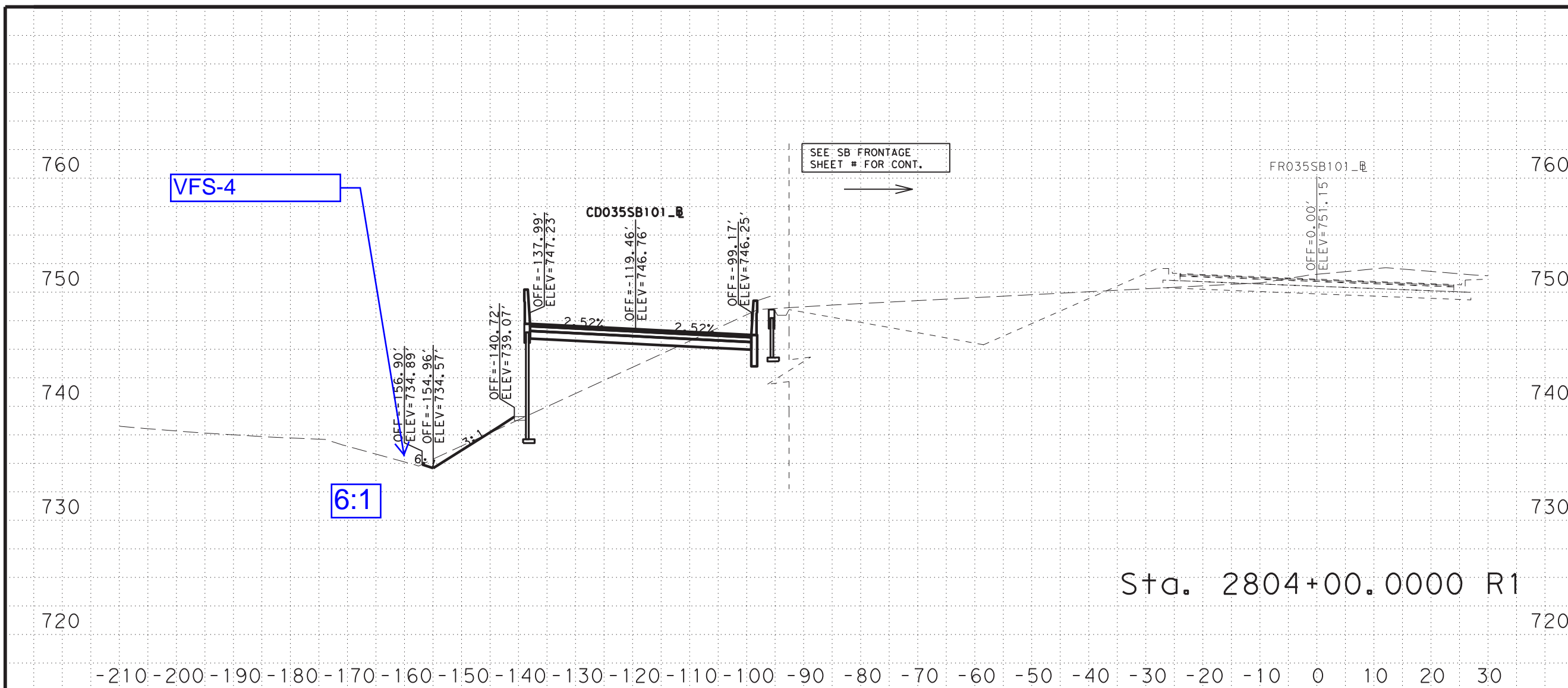
**mobility** CAPITAL AREA

Texas Department of Transportation

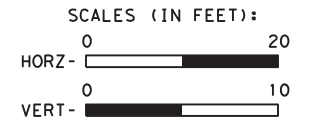
**SB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

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DW:	CK:	DIST	COUNTY		SHEET NO.
		AUS	WILLIAMSON		131

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 DATE: 1/16/2020 11:14:32 PM



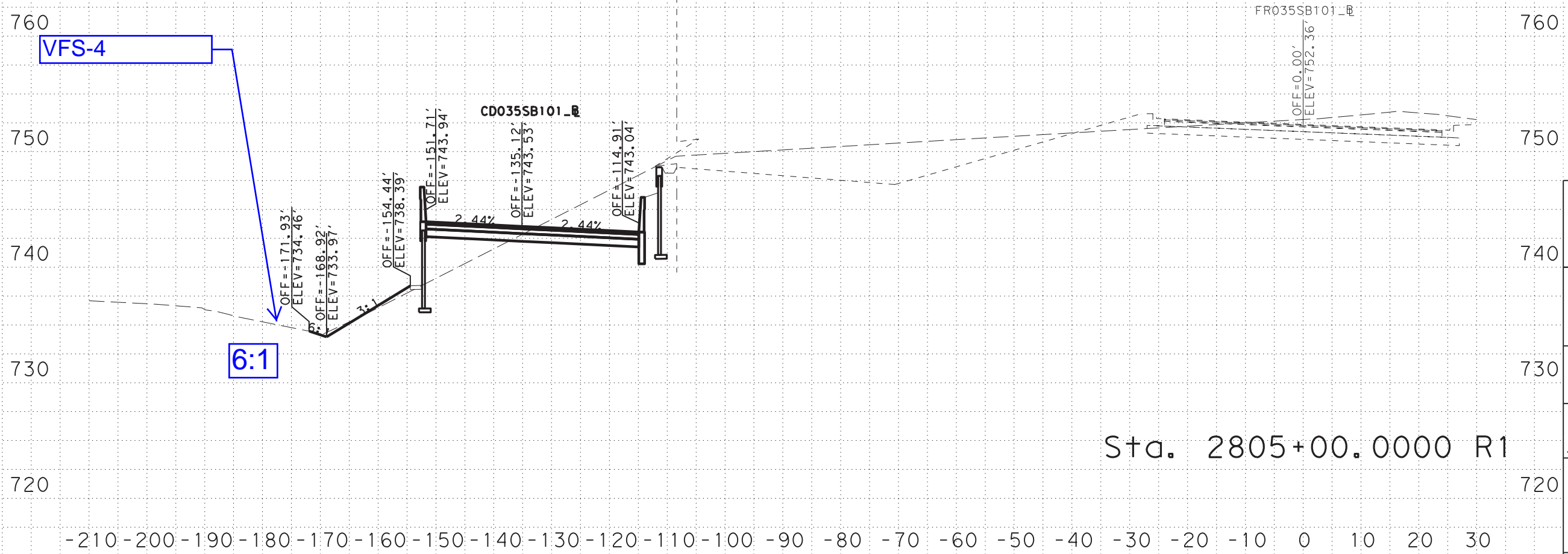
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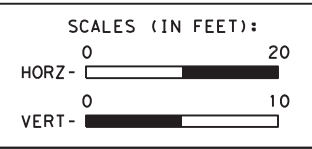
**SB FRONTAGE-SBCD  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS: _____	0015	08	147, ETC	IH 35
DW: _____	DIST	COUNTY		SHEET NO.
_____	AUS	WILLIAMSON		165

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 1/16/2020 11:14:33 PM



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 08-18-2023



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**mobility** 35  
 CAPITAL AREA

Texas Department of Transportation

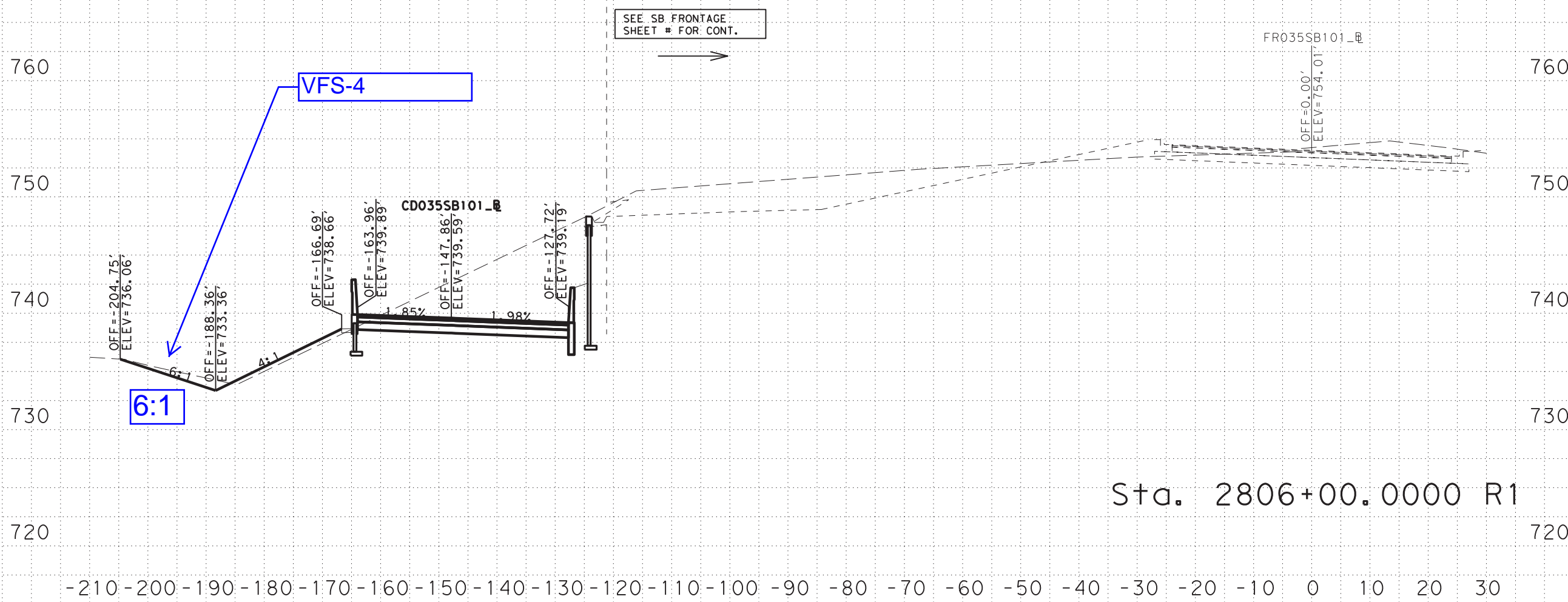
**SB FRONTAGE-SBCD  
 PROPOSED CROSS  
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Sta. 2805+00.0000 R1

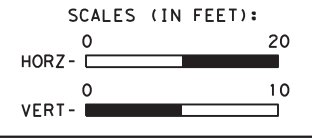
© 2019	CONT	SECT	JOB	HIGHWAY
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DW: CK:	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		166



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 DATE: 1/16/2020 11:14:34 PM



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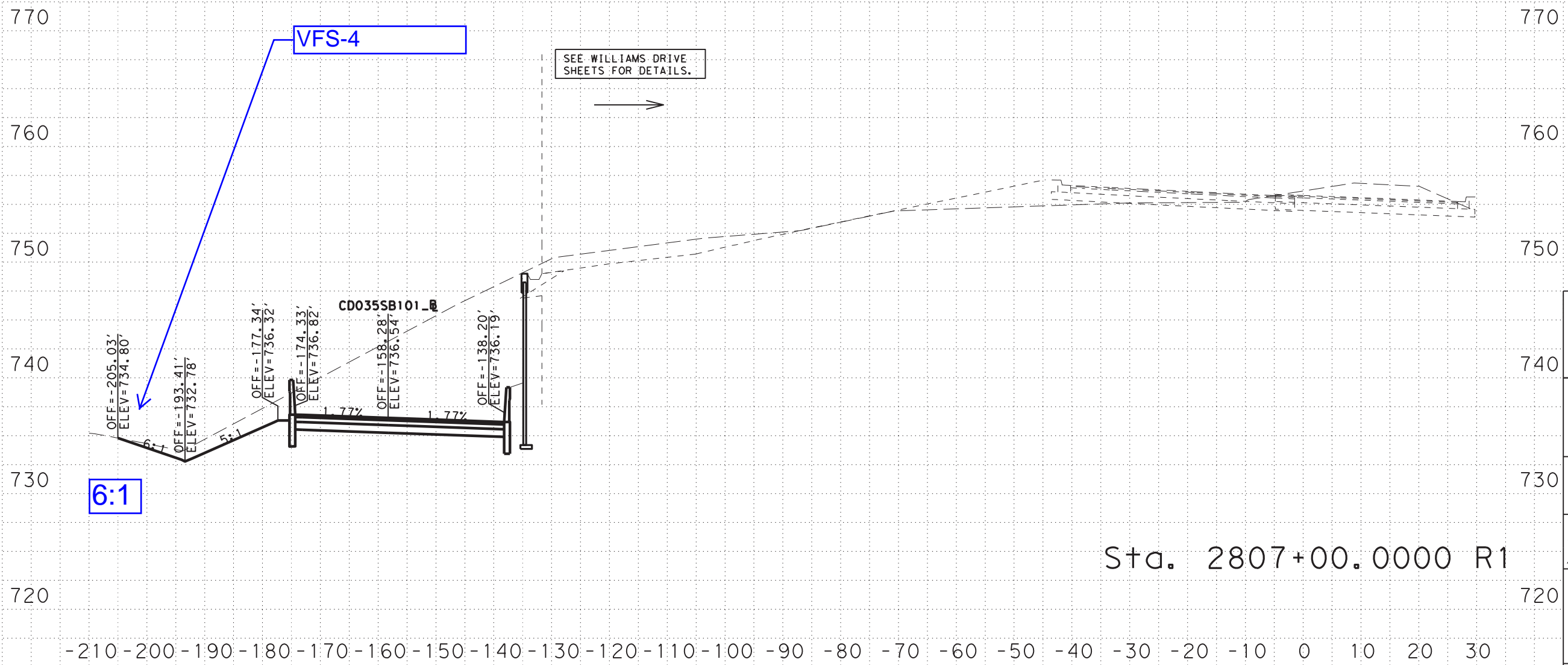
**mobility** CAPITAL AREA



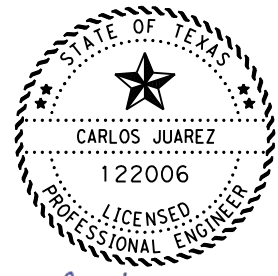
**SB FRONTAGE - SB CD  
 PROPOSED CROSS  
 SECTIONS**

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DW:	CK:	DIST:		COUNTY:	SHEET NO.
		AUS		WILLIAMSON	167

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 1/16/2020 11:14:35 PM



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**SB FRONTAGE - SB CD  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS: CK:	0015	08	147, ETC	IH 35
DW: CK:	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	168

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage.dwg (KS) (Section 1-2).dgn  
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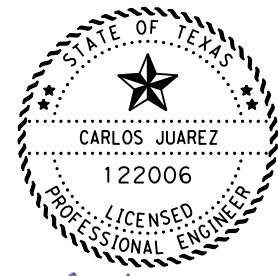
VFS-5

6:1

SEE WILLIAMS DRIVE SHEETS FOR DETAILS.

CD035SB101\_B

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**SB FRONTAGE-SBCD  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS: CK:	0015	08	147, ETC	IH 35
DW: CK:	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	171

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 1/16/2020 11:14:39 PM

770  
760  
750  
740  
730  
720

770  
760  
750  
740  
730  
720

VFS-5

6:1

SEE SB FRONTAGE SHEET # FOR CONT.

FR035SB101\_B

OFF=0.00'  
ELEV=756.23'

CD035SB101\_B

OFF=-198.74'  
ELEV=733.65'

OFF=-186.49'  
ELEV=731.52'

OFF=-173.51'  
ELEV=735.11'

OFF=-169.50'  
ELEV=734.65'

OFF=-154.96'  
ELEV=734.16'

OFF=-134.90'  
ELEV=733.48'

3.39%

3.39%

Sta. 2811+00.0000 R1

-210 -200 -190 -180 -170 -160 -150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30



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SCALES (IN FEET):

HORZ - 0 20

VERT - 0 10

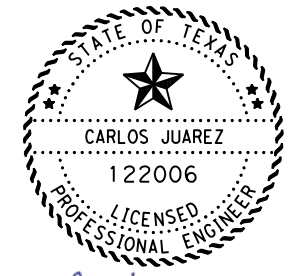
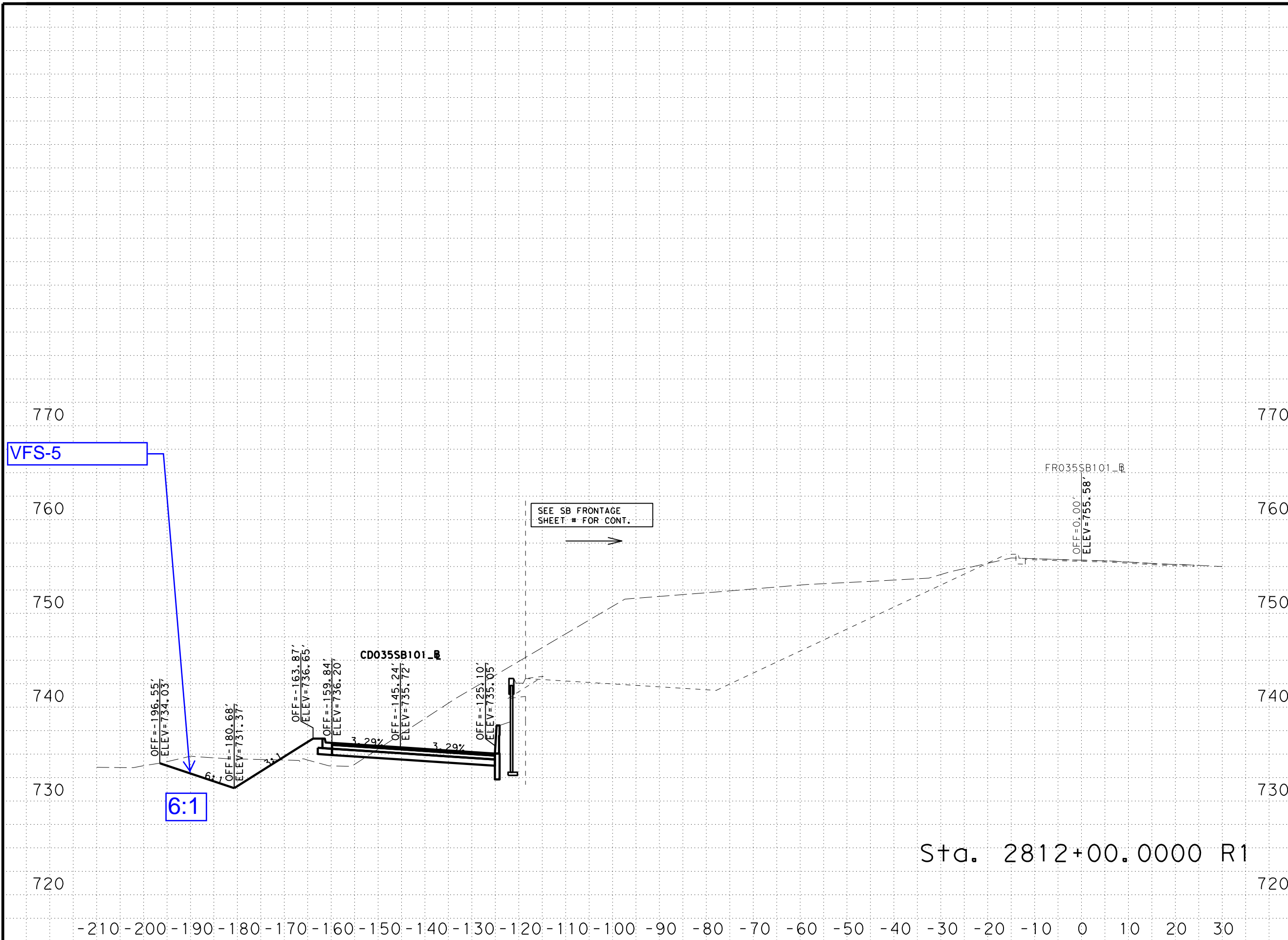


**SB FRONTAGE-SBCD  
PROPOSED CROSS  
SECTIONS**

DS:	CK:	CONT:	SECT:	JOB:	HIGHWAY:
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DW:	CK:	DIST:		COUNTY:	SHEET NO.
		AUS		WILLIAMSON	172



FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 2/4/2020 10:09:59 PM



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 Fax: 713.237.9801  
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**mobility** CAPITAL AREA **35**

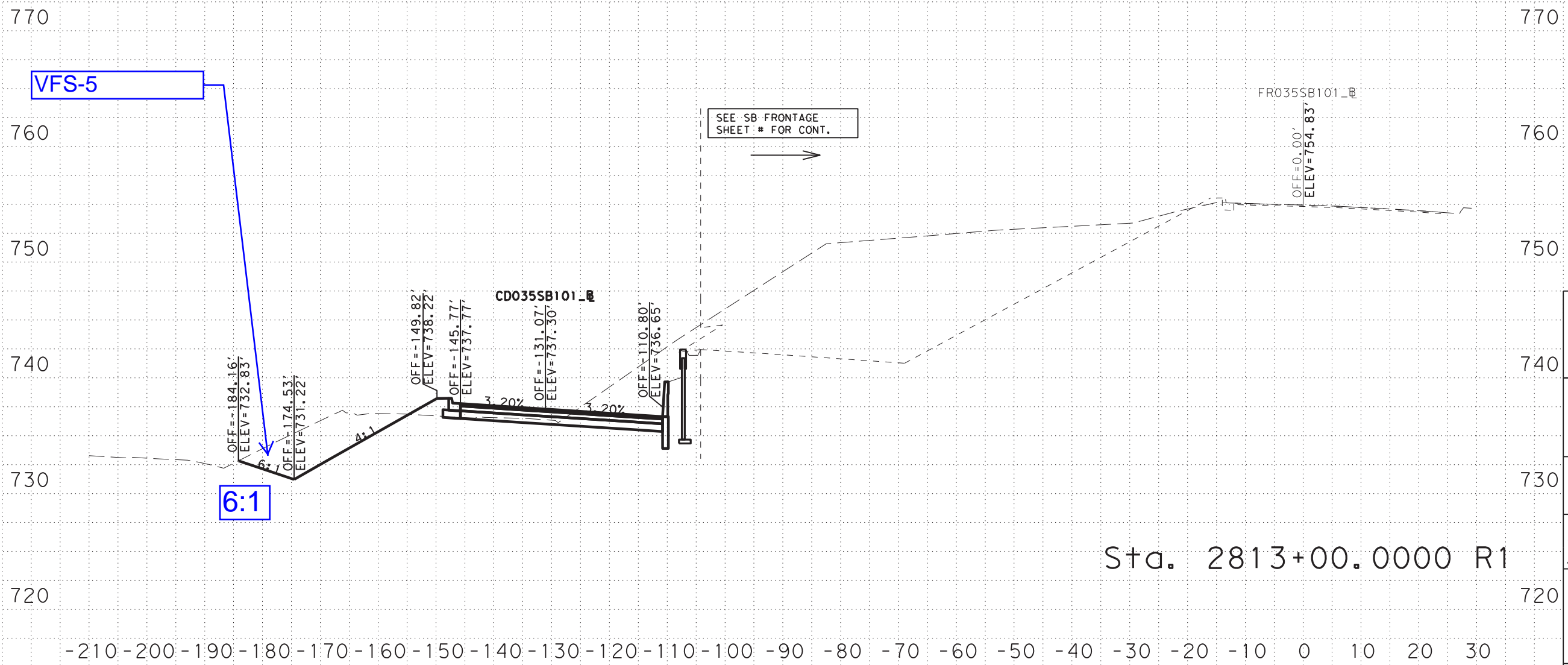


**SB FRONTAGE-SBCD  
 PROPOSED CROSS  
 SECTIONS**

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DW:	CK:	DIST:		COUNTY:	SHEET NO.
		AUS		WILLIAMSON	173

Sta. 2812+00.0000 R1

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 DATE: 1/16/2020 11:14:41 PM



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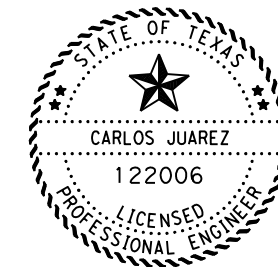
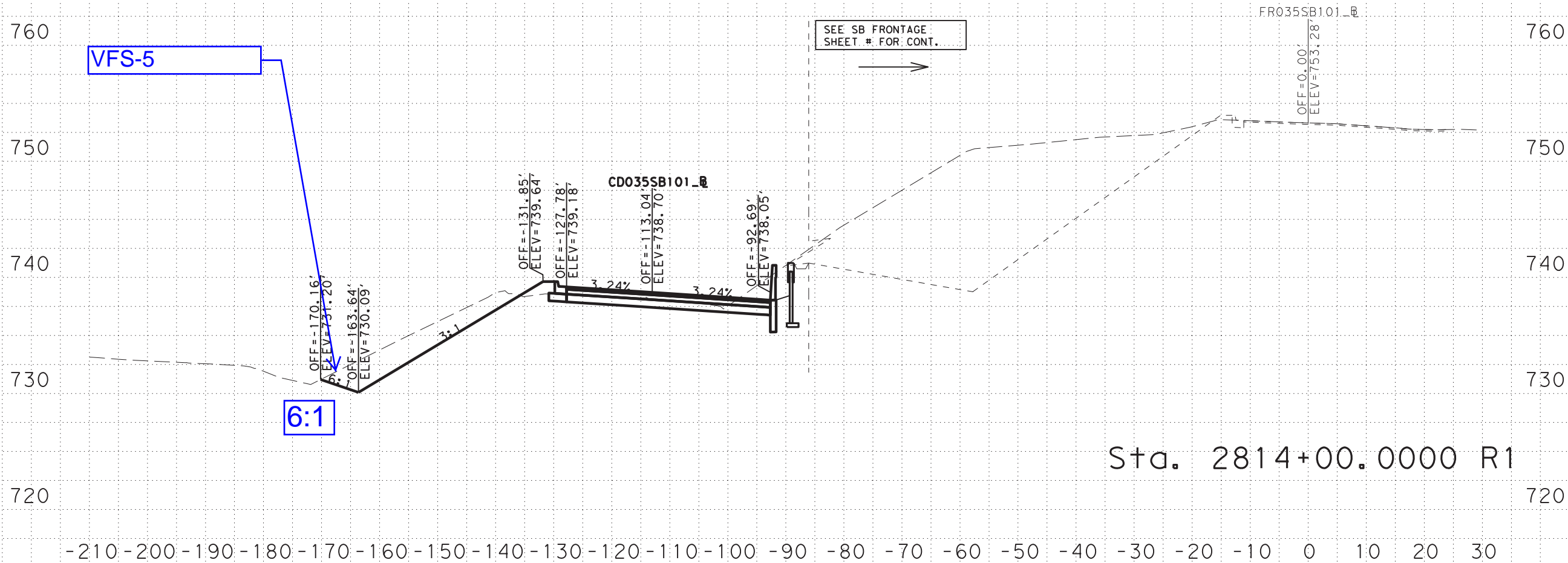
**mobility** CAPITAL AREA **35**



**SB FRONTAGE-SBCD  
 PROPOSED CROSS  
 SECTIONS**

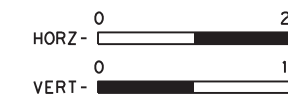
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DW:	CK:	DIST:		COUNTY:	SHEET NO.
		AUS		WILLIAMSON	174

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 DATE: 1/16/2020 11:14:42 PM



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SCALES (IN FEET):

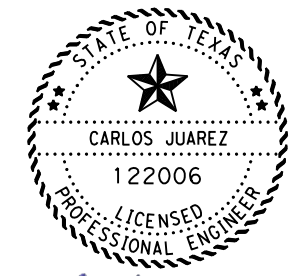
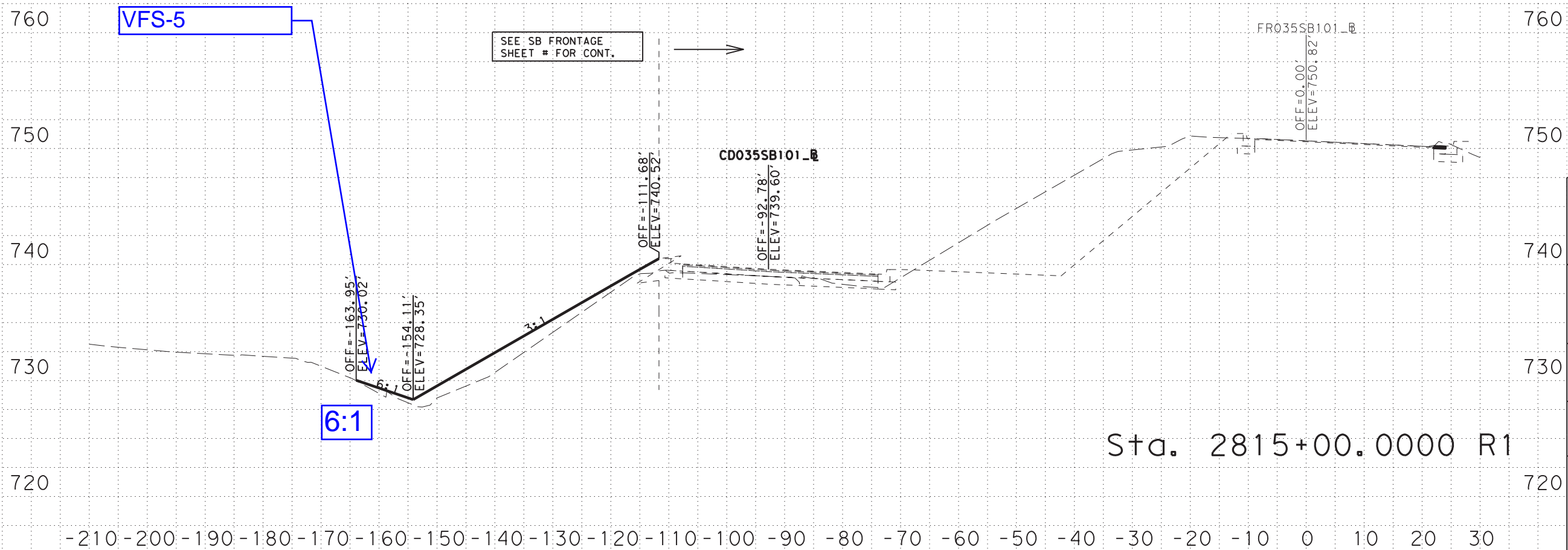


**SB FRONTAGE - SB CD  
 PROPOSED CROSS  
 SECTIONS**

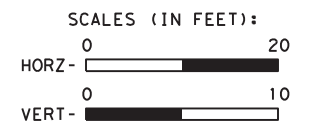
Sta. 2814+00.0000 R1

DS:	CK:	CONT	SECT	JOB	HIGHWAY
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DW:	CK:	DIST		COUNTY	SHEET NO.
		AUS		WILLIAMSON	175

FILE: M:\2017\1720101\_IH\_35\001508144\4 - Design\Plan Set\Xsec\100% XSEC\Southbound Frontage Road (KS) (Section 1-2).dgn  
 DATE: 1/16/2020 11:14:43 PM



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**mobility** CAPITAL AREA



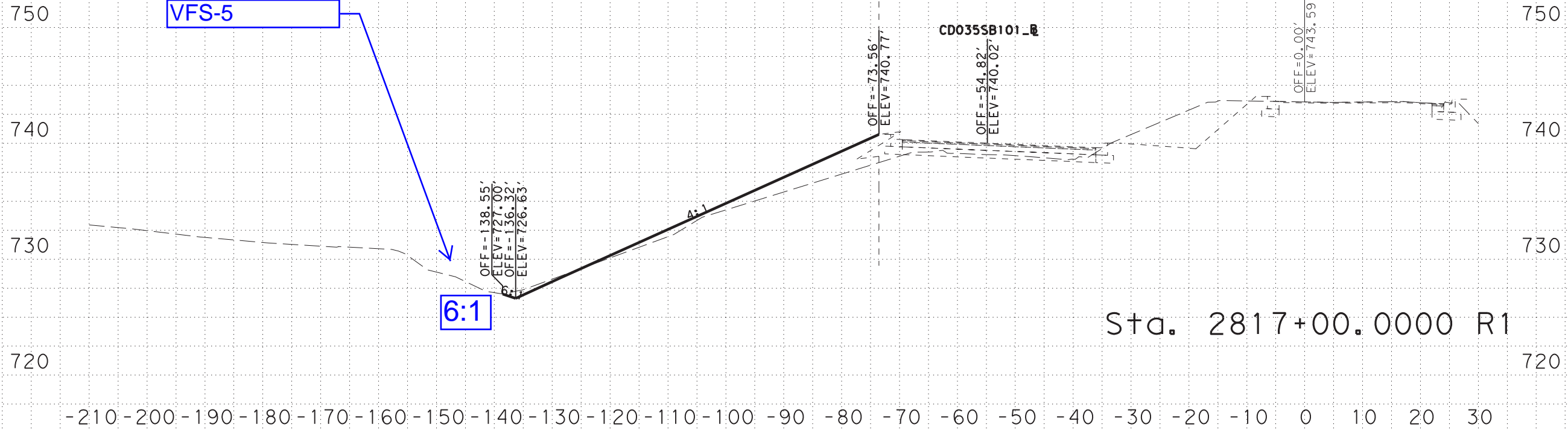
**SB FRONTAGE - SB CD  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS: _____	CK: _____	0015 08	147, ETC	IH 35
DW: _____	CK: _____	DIST	COUNTY	SHEET NO.
		AUS	WILLIAMSON	176

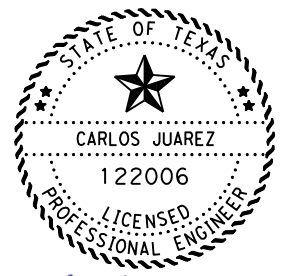
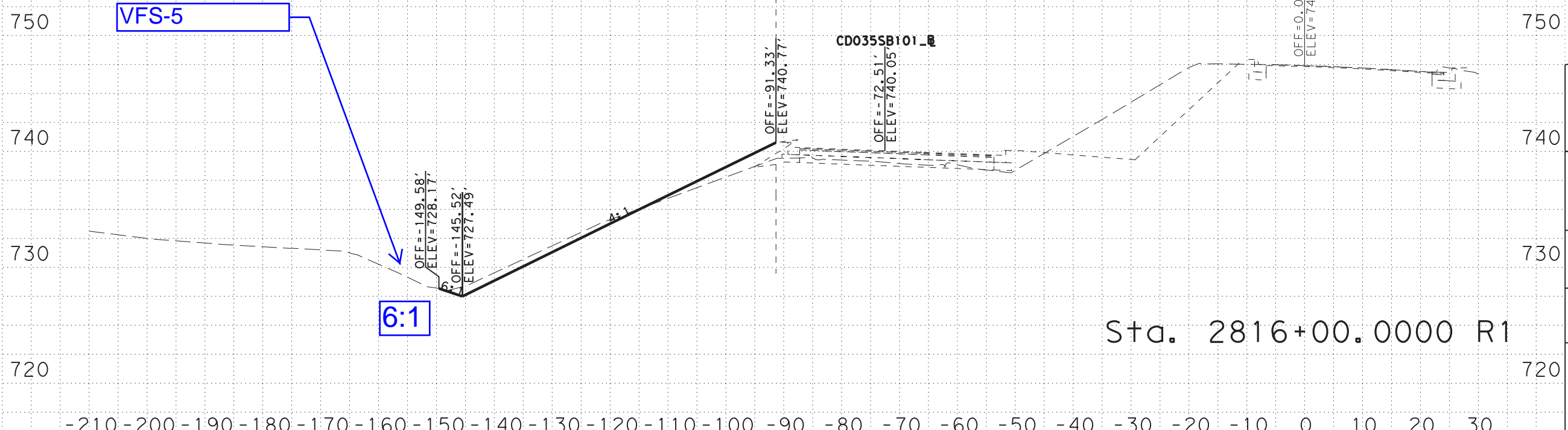


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SEE SB FRONTAGE SHEET # FOR CONT.



SEE SB FRONTAGE SHEET # FOR CONT.



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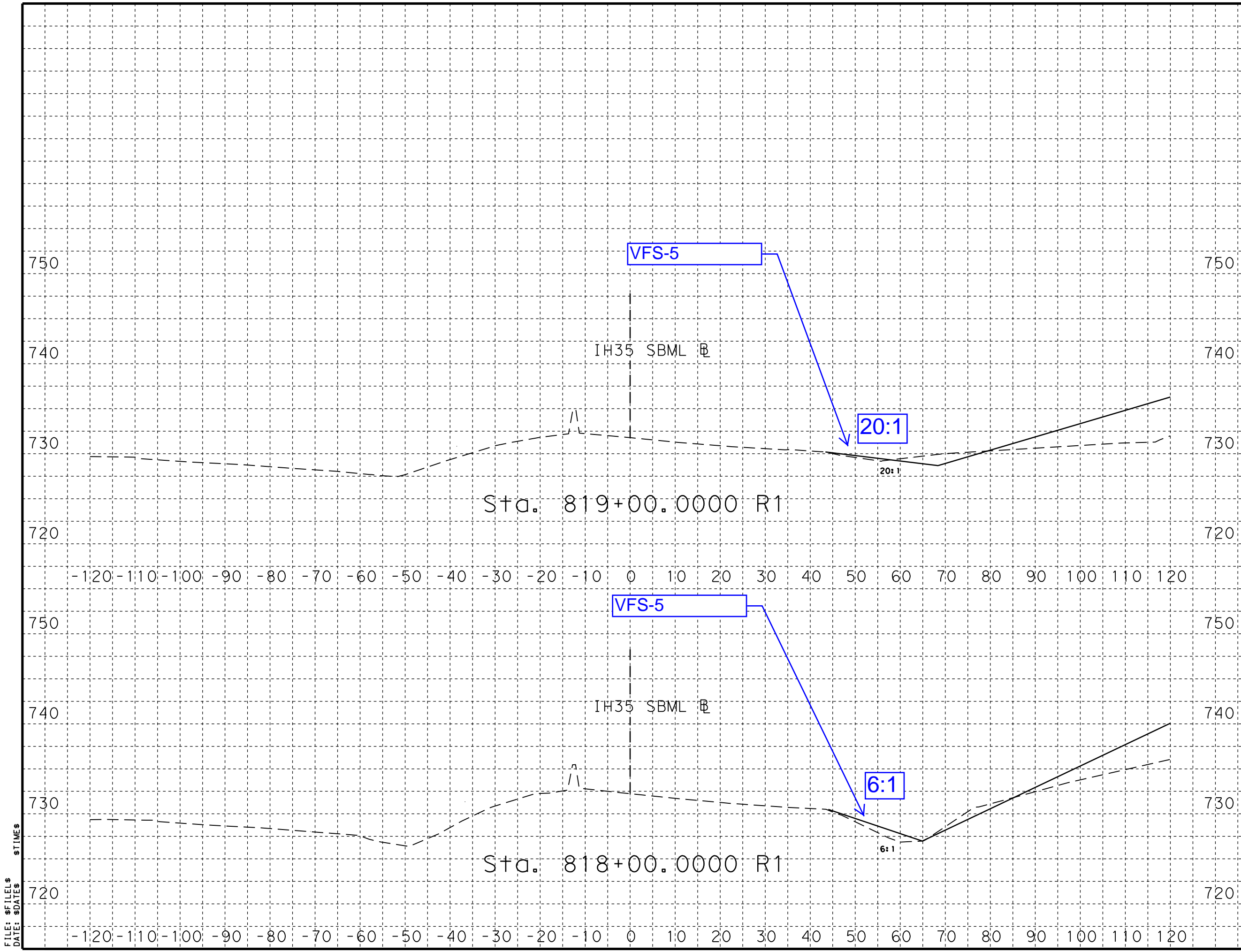
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 TBPE Registration No. F-10573

**mobility** CAPITAL AREA **35**

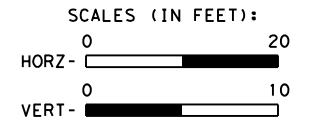


**SB FRONTAGE-SBCD  
 PROPOSED CROSS  
 SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
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DW: CK:	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	177	



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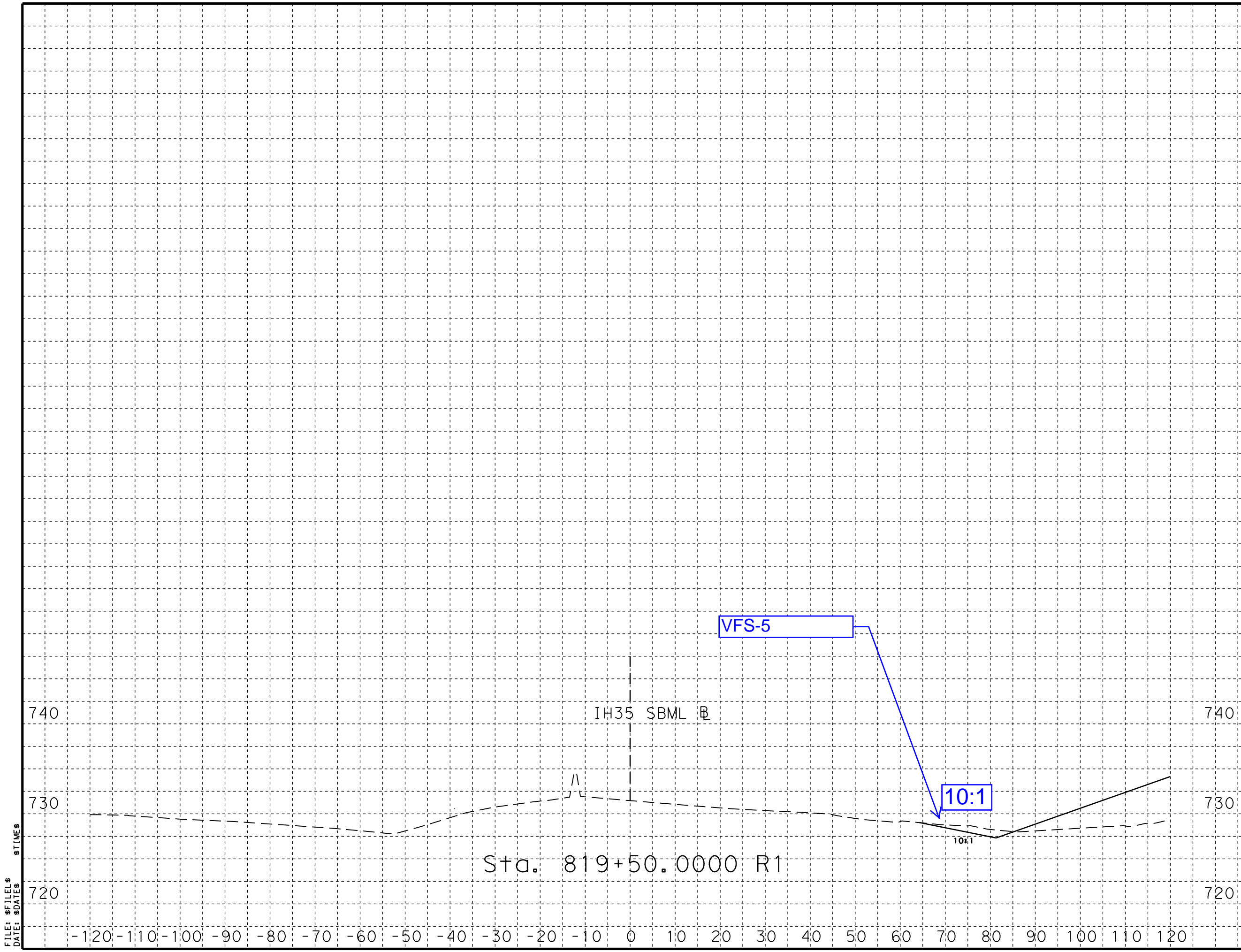
TBPE Registration No. F-10573



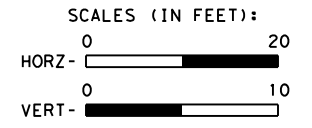
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	\$DSTS	\$CTYS		

FILE: \$FILEL\$  
DATE: \$DATES\$



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**SB FRONTAGE  
PROPOSED CROSS  
SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
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DATE: \$DATES\$

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Sta. 2782+00.0000 R1

VFS-6

6:1

OFF=-92.93'  
ELEV=743.90'

OFF=-80.93'  
ELEV=743.60'

OFF=-47.10'  
ELEV=740.62'

OFF=-23.15'  
ELEV=744.61'

EX. R/W

760

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Sta. 2781+00.0000 R1

VFS-6

6:1

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ELEV=743.41'

OFF=-81.00'  
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OFF=-48.07'  
ELEV=739.87'

OFF=-27.42'  
ELEV=743.31'

EX. R/W



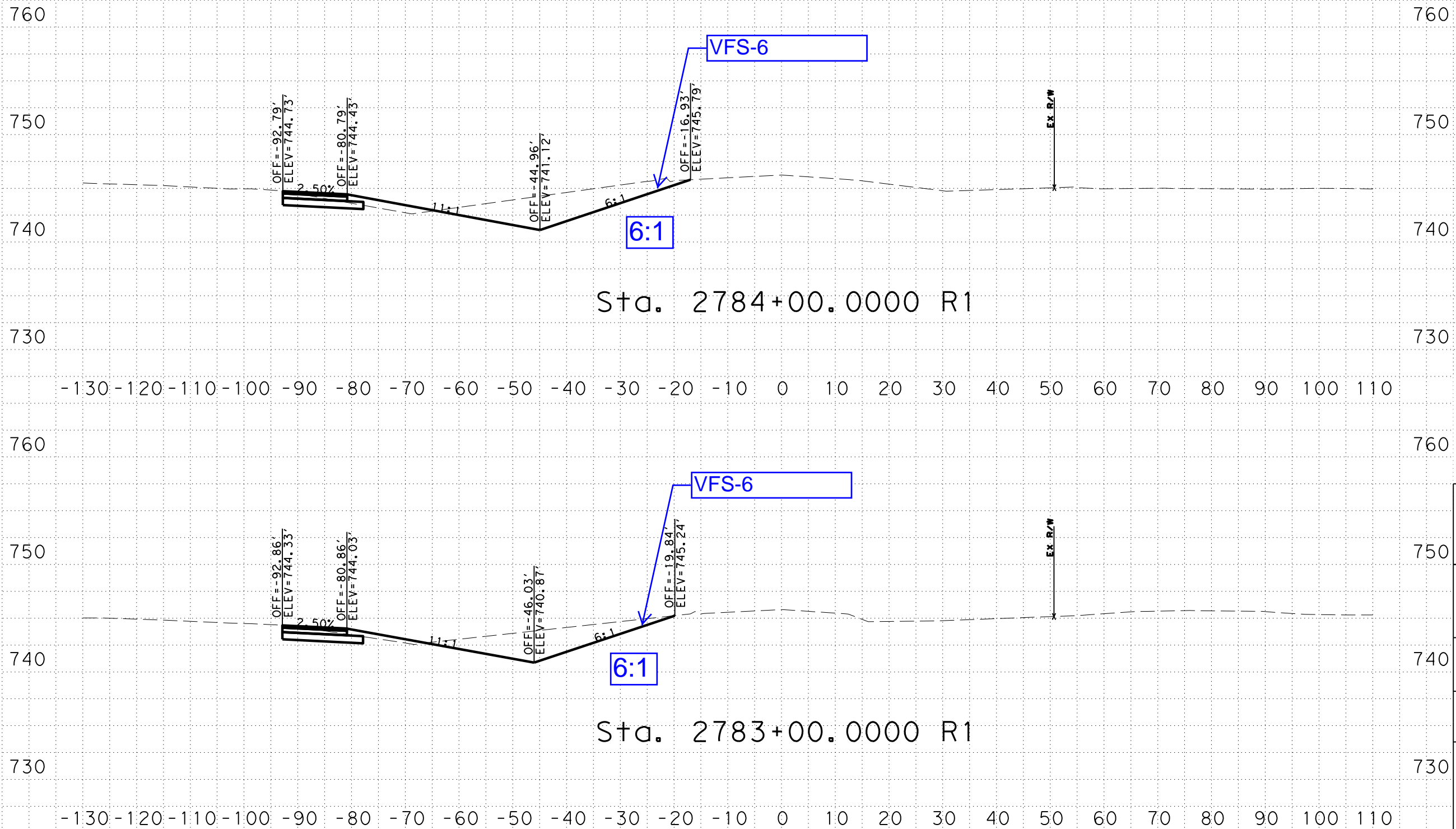
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**SB FRONTAGE  
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 SECTIONS**

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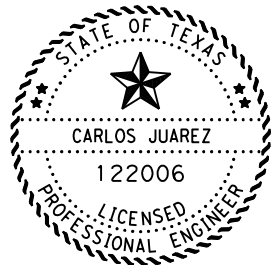
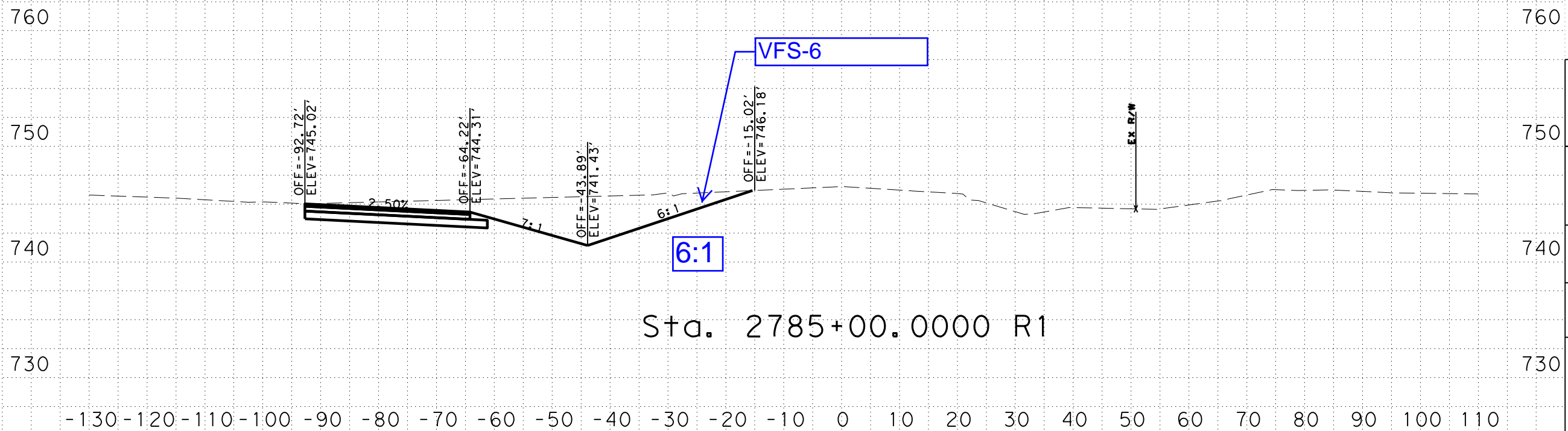
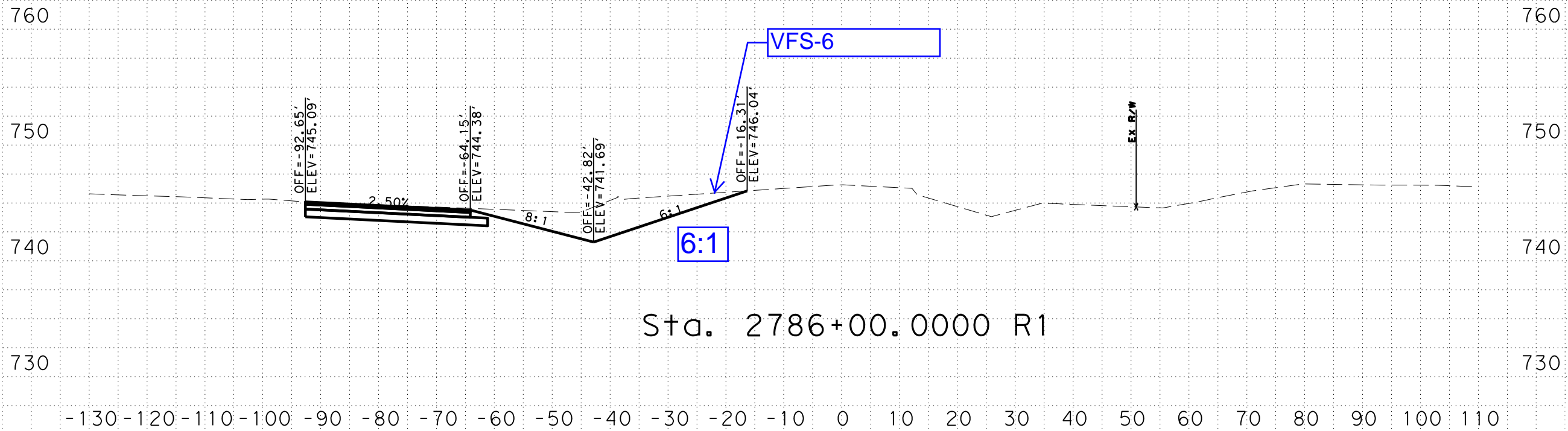


**SB FRONTAGE  
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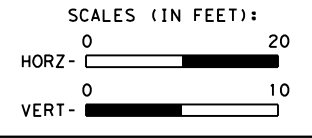
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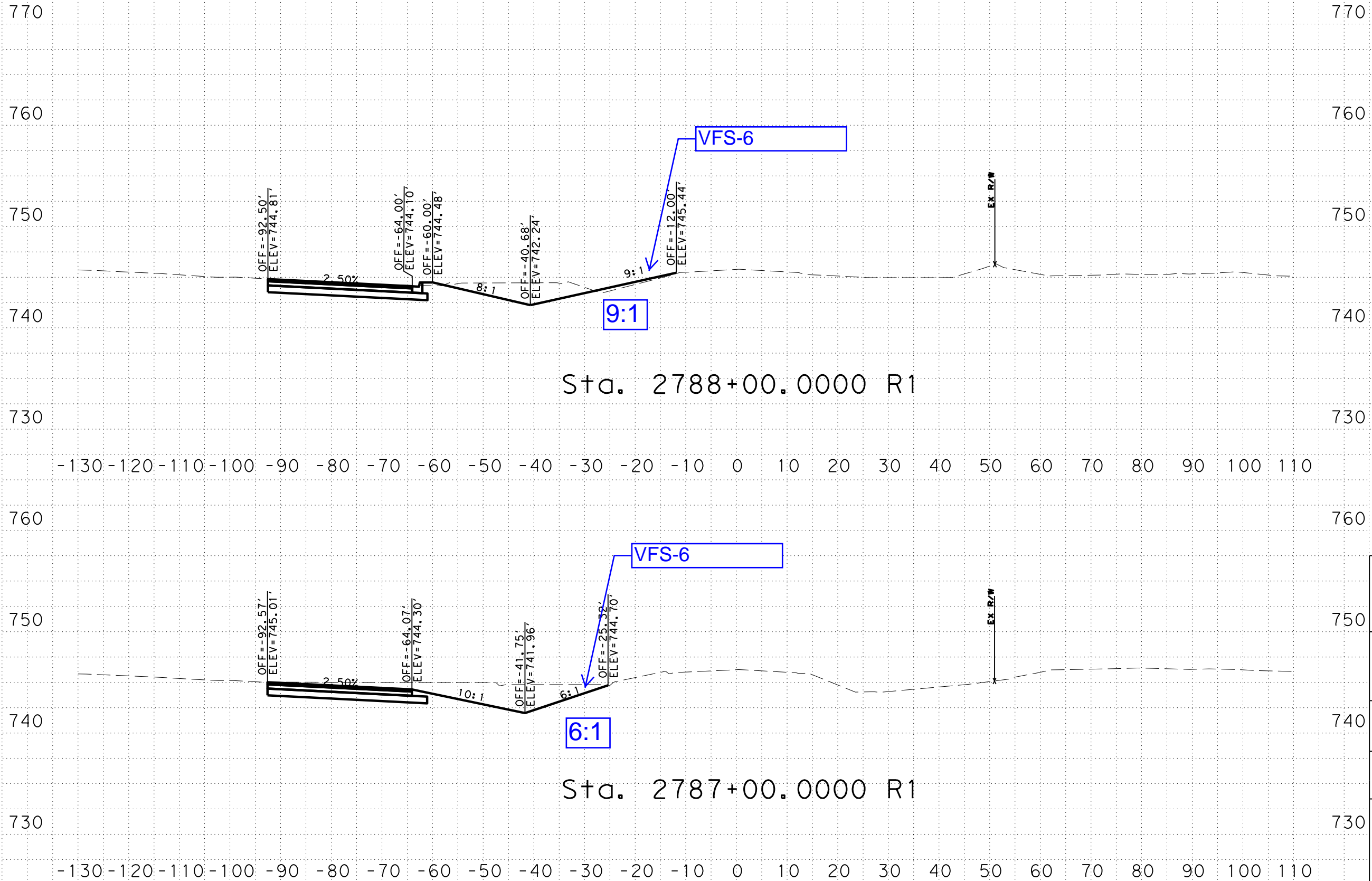
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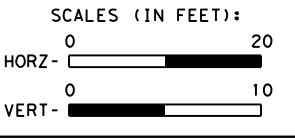
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**SB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

DS:	CK:	CONT	SECT	JOB	HIGHWAY
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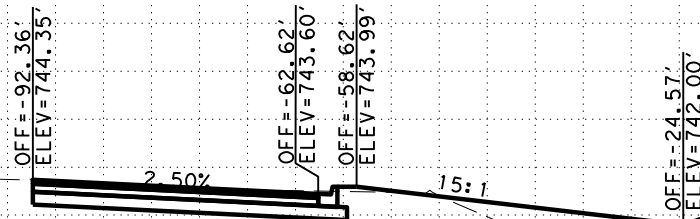
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VFS-6

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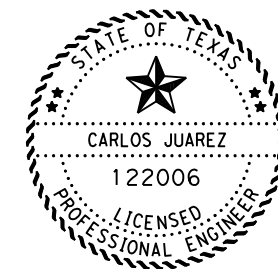
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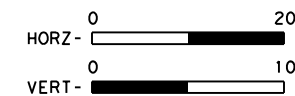
VFS-6

10:1



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SCALES (IN FEET):



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PROPOSED CROSS  
SECTIONS**

DS:	CK:	CONT:	SECT:	JOB:	HIGHWAY:
		0015	08	147, ETC	IH 35
DW:	CK:	DIST:		COUNTY:	SHEET NO.
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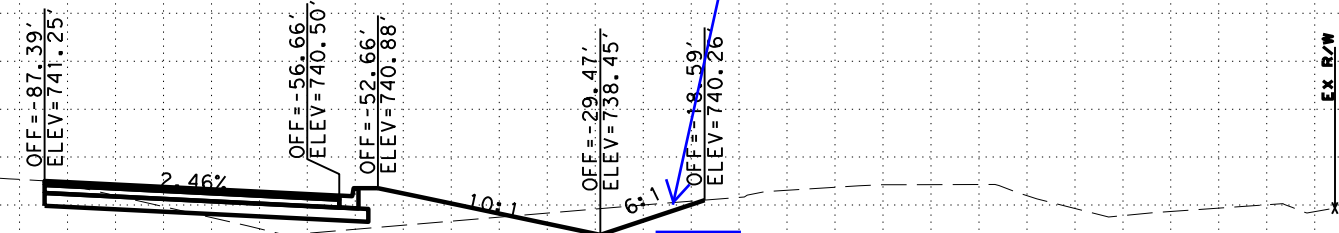
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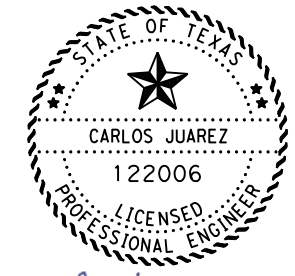
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VFS-7



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SCALES (IN FEET):

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**SB FRONTAGE  
 PROPOSED CROSS  
 SECTIONS**

DS:	CK:	CONT	SECT	JOB	HIGHWAY
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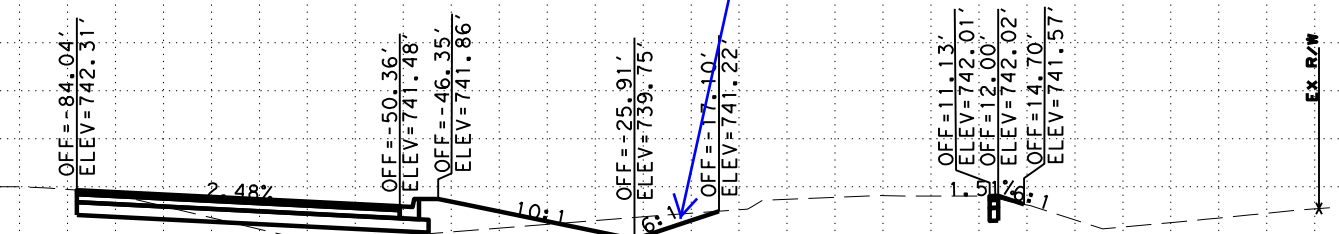
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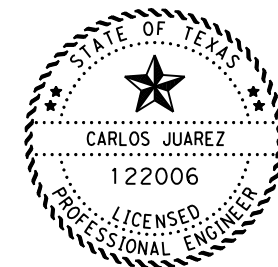
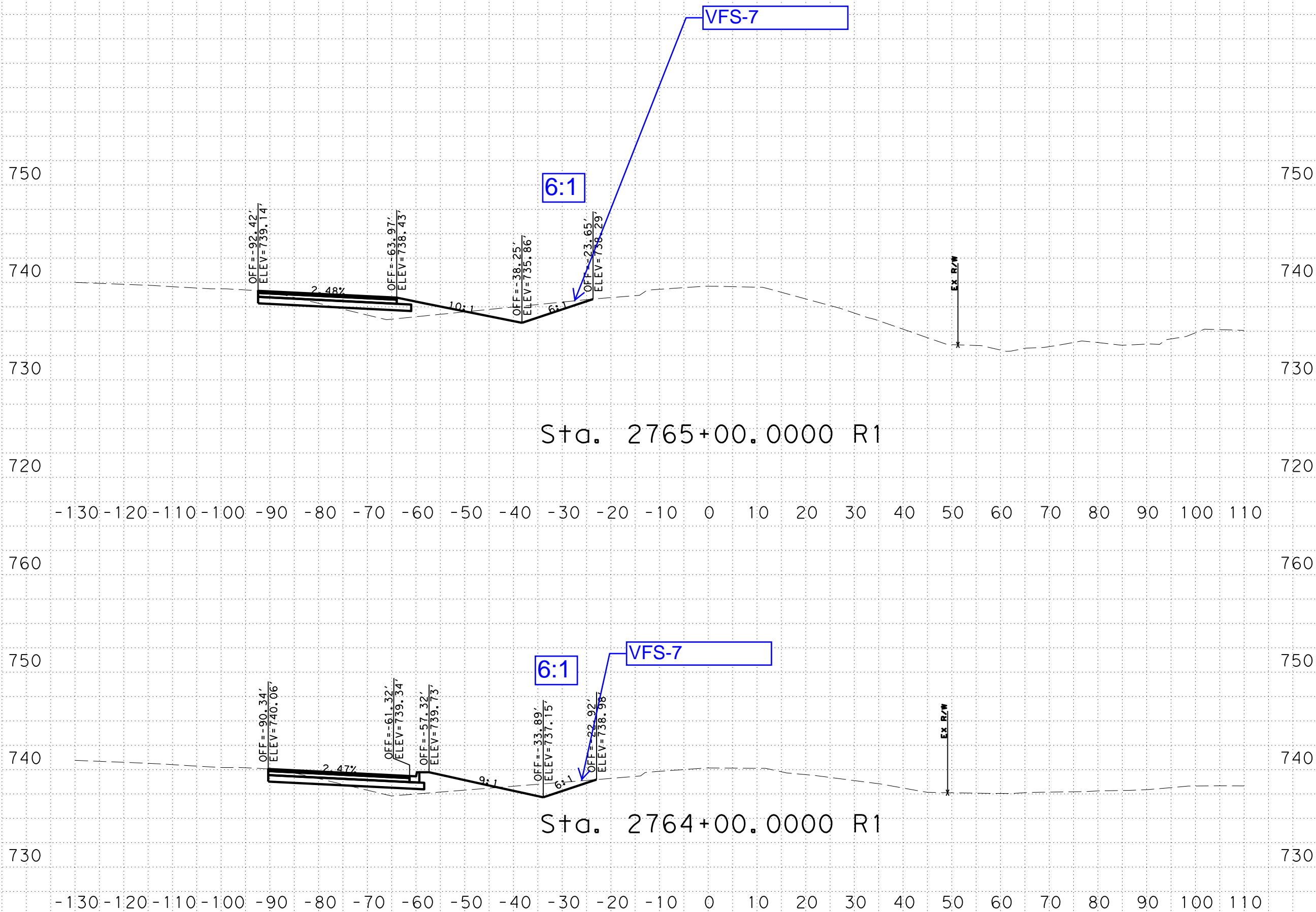


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VFS-7

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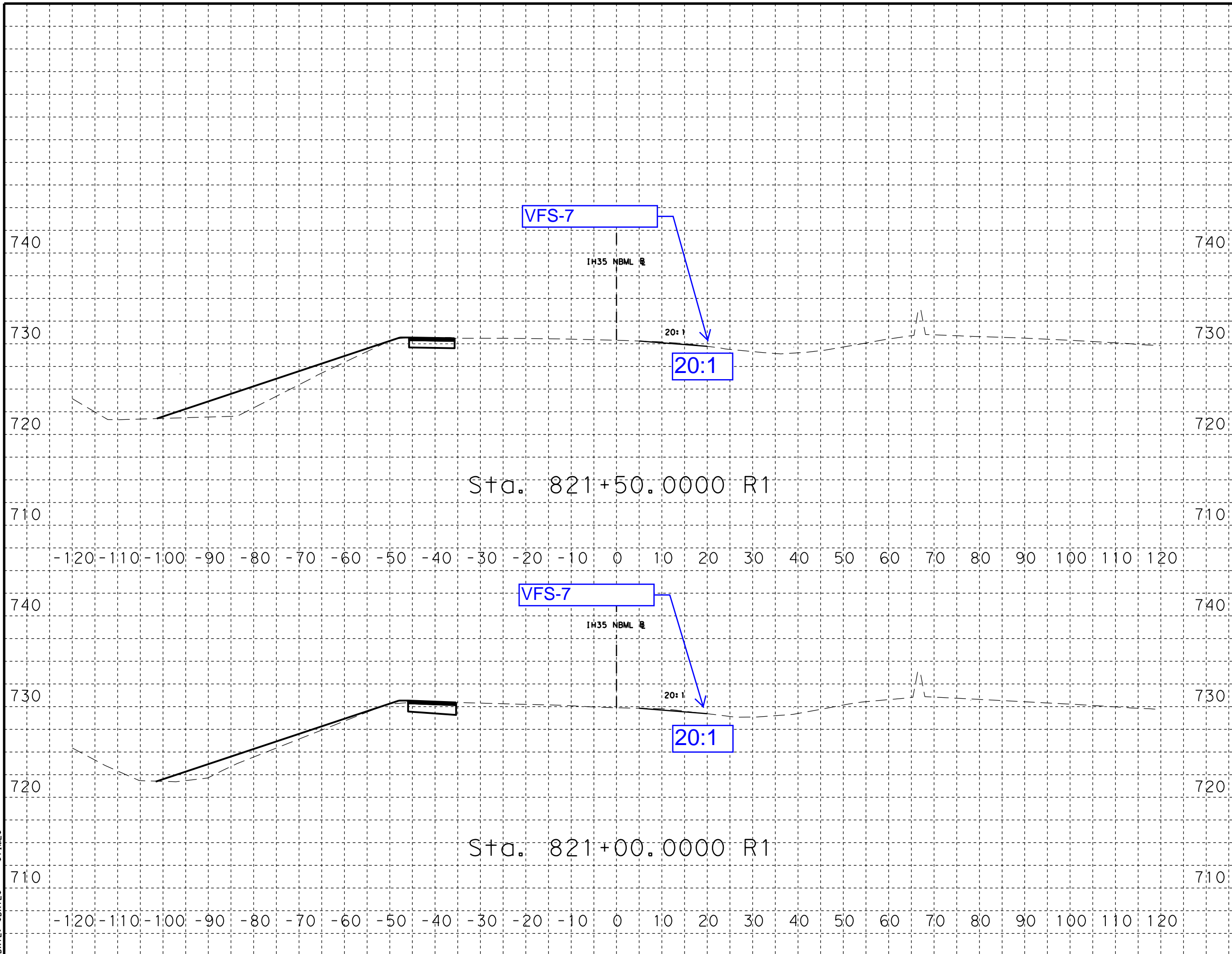
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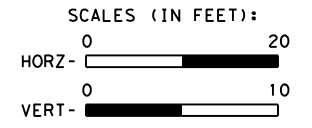
**SB FRONTAGE  
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DW:	CK:	DIST:		COUNTY:	SHEET NO.
		AUS		WILLIAMSON	127





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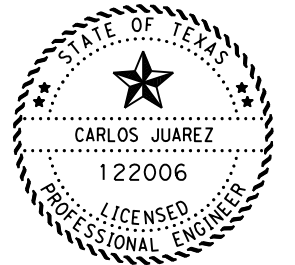
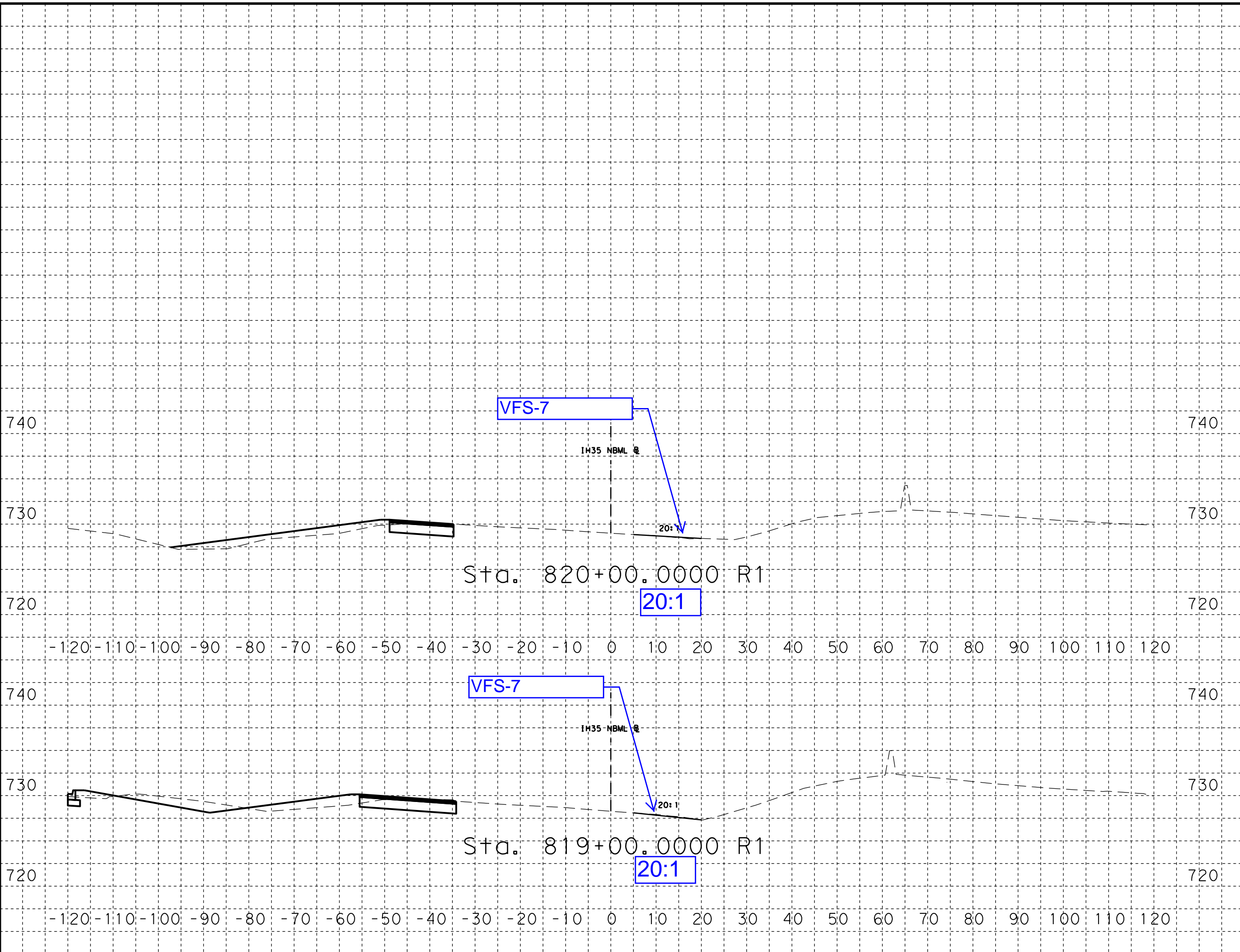


**VFS-8**  
**PROPOSED CROSS SECTIONS**

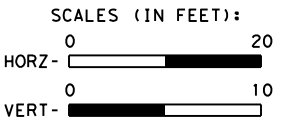
© 2019	CONT	SECT	JOB	HIGHWAY
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FILE: \$FILEL\$  
DATE: \$DATES\$

FILE: \$FILEL\$  
DATE: \$DATE\$



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**VFS-8**  
**PROPOSED CROSS SECTIONS**

© 2019	CONT	SECT	JOB	HIGHWAY
DS:	CS\$	SS\$	\$JS	\$HWYS
DW:	DIST	COUNTY	SHEET NO.	
	\$DSTS	\$CTYS		

**A. GENERAL SITE DATA**

- PROJECT LIMITS:** From South of Lakeway Dr. to South of Williams Dr.
- PROJECT SITE MAPS:**
  - \* Project Coordinates: Latitude: N 30° 38' 59.13" Longitude: W 97° 40' 46.06"
  - \* Project Location Map: Shown on the Title Sheet.
  - \* Drainage Patterns: Shown on Drainage Area Maps.
  - \* Approx. Slopes Anticipated After Major Gradients or Areas of Soil Disturbance: Shown on Typical Sections.
  - \* Major Controls and Locations of Erosion and Sediment Controls: Shown on "SW3P EROSION CONTROL" Sheets.
  - \* Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets.
  - \* Project Specific Locations (PSL): Off-site waste, borrow, or storage areas are not part of this SW3P.
- PROJECT DESCRIPTION:**

PROPOSED CONSTRUCTION OF DIVERGING DIAMOND INTERCHANGE AT INTERSECTION OF I-35 AND WILLIAMS DRIVE WHICH INCLUDES WIDENING AND RECONSTRUCTION OF EXISTING FRONTAGE ROADS, DRAINAGE STRUCTURES, AND BRIDGE CONSTRUCTION.
- MAJOR SOIL DISTURBING ACTIVITIES:**
  - Install controls down-slope of work area and initiate inspection and maintenance activities.
  - Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.
  - Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):
    - Placement of Road Base
    - Extensive Ditch Grading
    - Upgrading or replacing culverts or bridges.
    - Temporary detour roads
    - Other: CONSTRUCTION OF DDI BRIDGE OVERPASS AT WILLIAMS DRIVE
- EXISTING AND PROPOSED CONDITIONS**

Description of existing vegetative cover: INDIGENOUS NATIVE GRASS AND WEEDS  
Percentage of existing vegetative cover: XX%  
Existing vegetative cover: (mark one)
  - Thick or uniformly established
  - Thin and patchy
  - None or minimal cover

Description of Soils: Crawford Clay, Denton Silty Clay, Doss Silty Clay, Eckrant Cobble Clay, Eckrant Extremely Stony Clay, Georgetown Clay/Clay Loam

Site Acreage: 144.92 acres      Acreage Disturbed: 84.42 acres

Pre-construction Runoff Coefficient: 0.40      Post-construction Runoff Coefficient: 0.55
- NAME OF RECEIVING WATERS:**
  - A classified stream does not pass through project.
  - A classified stream passes through project. Name: \_\_\_\_\_ Segment No. \_\_\_\_\_

Name of receiving waters that will receive discharges from disturbed areas of project:

  - NORTH FORK SAN GABRIEL RIVER
  - PECAN BRANCH (SAN GABRIEL RIVER)

Site Is in a Municipal Separate Storm Sewer System (MS4)  
MS4 Operator (name): CITY OF GEORGETOWN

**B. EROSION AND SEDIMENT CONTROLS**

- SOIL STABILIZATION PRACTICES:** (Select T = Temporary or P = Permanent, as applicable)
  - TEMPORARY SEEDING
  - MULCHING (Hay or Straw)
  - BUFFER ZONES
  - PLANTING
  - SEEDING
  - SODDING
  - PRESERVATION OF NATURAL RESOURCES
  - FLEXIBLE CHANNEL LINER
  - RIGID CHANNEL LINER
  - SOIL RETENTION BLANKET
  - COMPOST MANUFACTURED TOPSOIL
  - VERTICAL TRACKING
  - OTHER: (Specify Practice)
- STRUCTURAL PRACTICES:** (Select T = Temporary or P = Permanent, as applicable)
  - SILT FENCES
  - EROSION CONTROL LOGS
  - EROSION CONTROL COMPOST BERMS (Low Velocity)
  - ROCK FILTER DAMS
  - DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
  - DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
  - DIVERSION DIKE AND SWALE COMBINATIONS
  - PIPE SLOPE DRAINS
  - PAVED FLUMES
  - ROCK BEDDING AT CONSTRUCTION EXIT
  - TIMBER MATTING AT CONSTRUCTION EXIT
  - CHANNEL LINERS
  - SEDIMENT TRAPS
  - SEDIMENT BASINS
  - STORM INLET SEDIMENT TRAP
  - STONE OUTLET STRUCTURES
  - CURBS AND GUTTERS
  - STORM SEWERS
  - VELOCITY CONTROL DEVICES
  - OTHER: WATER QUALITY PONDS W/ VALVE

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

The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include (mark all that apply):

  - Existing or new vegetation provides natural filtration.
  - The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious substances.
  - Project includes permanent sedimentation controls (other than grass).
  - Velocities do not require dissipation devices.
  - Velocity-dissipation devices included in the design.
  - Other: \_\_\_\_\_
- NON-STORM WATER DISCHARGES:**

Off-site discharges are prohibited except as follows:

  - Discharges from fire-fighting activities and/or fire hydrant flushings.
  - Vehicle, external building, and pavement wash water where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred. (unless all spilled material has been removed).
  - Plain water used in dust control activities.
  - Plain water originating from potable water sources.
  - Uncontaminated groundwater, spring water or accumulated stormwater.
  - Foundation or footing drains where flows are not contaminated with process materials such as solvents.

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.

Any discharge of excess concrete or washout from concrete trucks should be prohibited or minimized on site. If allowed by the Engineer, they must be managed in a manner so as not to contaminate surface water. They must be located in areas of concentrated flow. Concrete truck wash-out locations shall be field located as needed or as directed by the Engineer, added in the SW3P Layout and included in the Inspections.

Hazardous material spills/leaks shall be prevented or minimized. At a minimum, this includes paints, acids, solvents, fuels, asphalt products, chemical additives for soil stabilization, and concrete curing compounds and additives. When storing hazardous material on the project site, or at a project specific location, BMPs shall be implemented to the storage areas of these products. All spills must be thoroughly cleaned and disposed of properly, and reported to the Engineer. Report any release at or above the reportable quantity during a 24 hour period to the National Response Center at 1-800-424-8802.

**C. OTHER REQUIREMENTS & PRACTICES**

- MAINTENANCE:**

All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets.
- INSPECTION:**

For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every seven (7) days. The inspection must occur on a specifically defined day, regardless of whether or not there has been rainfall since the previous inspection. An Inspection and Maintenance Report shall be prepared for each inspection and the controls shall be revised on the SW3P within seven (7) calendar days following the inspection. In addition, the project site must be inspected after every 1/2-inch rainfall event. This inspection will be documented in the daily work reports.
- WASTE MATERIALS:**

All non-hazardous municipal waste materials such as litter, rubbish, trash, and garbage located on or originating from the project shall be collected and stored in a securely lidded metal dumpster, which shall be provided by the Contractor. The dumpster shall be emptied as necessary or as required by local regulation and the trash shall be hauled to a permitted disposal facility. The burying of non-hazardous municipal waste on project shall not be permitted. Construction material waste sites, stockpiles, and haul roads shall be constructed to minimize and control the amount of sediment that may enter receiving waters. Construction material waste sites shall not be located in any wetland, water body, or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed in a manner to minimize the runoff of pollutants.
- OFFSITE VEHICLE TRACKING:**

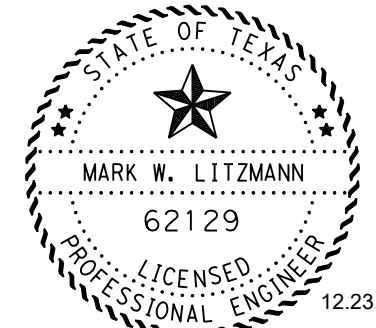
Off-site vehicle tracking of sediments and the generation of dust shall be minimized by use of dust control practices such as dampening of haul roads, and the utilization of construction exits/entrances. Excess sediments on the paved roadways abutting and traversing the project site shall be removed on a regular basis with a power broom or vacuum type sweeper, as directed/approved by the Engineer.
- HAZARDOUS WASTE & SPILL REPORTING:**

The contractor may not store fuels and hazardous substances on-site during construction operations.


HOTLINE: 1-800-832-8224

Reportable Quantities:  
(RQ) For petroleum/hydrocarbon liquids: 25 GAL - on land.  
(RQ) For petroleum/hydrocarbon liquids: \*creating a sheen\* - on water
- SANITARY WASTE:**

All sanitary waste will be collected from the portable units as necessary or as required by a licensed sanitary waste management contractor.
- OTHER**
  - See the EPIC sheet for additional environmental information.
  - Update the SW3P sheets as necessary.
  - Send NOI to the City of Austin.  
Contact: Lee.Lawson@austintexas.gov



Mark W. Litzmann P.E.



engineering & surveying  
Houston, Texas  
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

Texas Department of Transportation

**IH 35  
STORM WATER POLLUTION  
PREVENTION PLAN  
(SW3P)**

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	NH 2020 (185)	IH 35
STATE	DISTRICT	COUNTY
TEXAS	AUSTIN	WILLIAMSON
CONTROL	SECTION	JOB
0015	08	147

1099

DATE: FILE:



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**I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402**

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1. City of Georgetown
2. The project disturbs 5 or more acres of surface area. Comply with TPDES CGP. The project requires that a NOI and a large site notice be posted. TxDOT must file a NOI with TCEQ and send a copy to any non-TXDOT MS4 operator that receives discharge from the project. Implement and maintain the SW3P. Refer to the SW3P plan sheet, BMPs, and detail.

No Action Required  Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

**II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404**

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required
- Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
- Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
- Individual 404 Permit Required
- Other Nationwide Permit Required: NWP# \_\_\_\_\_

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1. Impounded Tributary to San Gabriel River (NB FR Station 1765+00 to 1775+00) - Nationwide Permit 14-PCN not Required;
2. Unnamed Tributary to San Gabriel River (NB FR Station 1765+00 to 1775+00) - Nationwide Permit 14-PCN not Required;
3. Pecan Branch Creek (NB FR Station 1725+00 to 1730+00) - Nationwide Permit 14-PCN not Required;
4. North Fork San Gabriel River (SB FR Station 2823+00 to 2828+00) - Nationwide Permit 14-PCN not Required.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the SW3P.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input checked="" type="checkbox"/> Temporary Vegetation	<input checked="" type="checkbox"/> Silt Fence	<input checked="" type="checkbox"/> Vegetative Filter Strips
<input checked="" type="checkbox"/> Blankets/Matting	<input checked="" type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input checked="" type="checkbox"/> Mulch	<input checked="" type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input checked="" type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input checked="" type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input checked="" type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input checked="" type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input checked="" type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales
		<input checked="" type="checkbox"/> Water Quality Ponds w/ Valve

**III. CULTURAL RESOURCES**

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

No Action Required  Required Action

Action No.

1.

**IV. VEGETATION RESOURCES**

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

No Action Required  Required Action

Action No.

1. Contractor shall use only seeding mixes specified by TxDOT for revegetation of disturbed areas. These TxDOT seed mixes will use only native and regionally adapted species for the revegetating disturbed areas.
2. Contractor is required to be familiar with and comply with the requirements of EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping.
3. Re-vegetation efforts would provide appropriate and sustainable cover to prevent erosion and siltation.

**V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.**

No Action Required  Required Action

Action No.

Migratory Birds

1) The contractor's attention is directed to the fact that there is the possibility that migratory birds may be nesting in any woody vegetation or existing structures within the project limits. The contractor shall remove all woody vegetation, and old migratory bird nests from any structures, between September 16 and February 28 while any nests are not occupied by a bird. In addition, the contractor must be prepared to prevent migratory birds from re-nesting on any structures between March 1 and September 15. All methods must be approved by a qualified professional well in advance of planned use.

U.S. Fish and Wildlife Service Conservation Measures

2) A salamander habitat protection zone will be established during construction by adding a 25-foot buffer around the area that was surveyed for salamanders in the North Fork of the San Gabriel River (shown on PS&E plan sheets near ML Station 825+00 to 830+00). The salamander habitat protection zone will be demarcated with construction fencing to be maintained throughout the duration of construction. This zone will be clearly delineated on construction plans and discussed with contractors at the preconstruction meeting. The following activities will be prohibited within this zone:

- \* Staging of mulched vegetation, building materials, tools, etc.
- \* Staging of stockpiles for soils, gravel, and rock, etc.
- \* Parking or driving of vehicles, equipment, trailers, etc.
- \* Vehicle and equipment cleaning, fueling, and maintenance
- \* Waste management and storage
- \* Hazardous materials storage
- \* Portable restrooms
- \* Concrete washouts

3) All drainage will be directed away from the entrance to Mel's Lone Star Cave (shown on PS&E plan sheets near NB FR Station 1798+00) during construction and drainage will continue to be directed away from the entrance of Mel's Lone Star Cave after construction activities are complete.

**LIST OF ABBREVIATIONS**

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NMP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

4) If a potential karst void is encountered during excavation activities within karst zones 1 and 3, work within 50 ft of the feature will cease until an evaluation is complete. The feature will be evaluated for potential karst invertebrate habitat by a Professional Geoscientist (PG) or karst biologist holding an appropriate 10(a)(1)(A) permit following current USFWS karst survey guidelines. In the case where voids are detected for bridge drilled shafts, potential karst invertebrate habitat will be assessed to the extent feasible using a downhole camera or other similar means. If the feature meets the USFWS criteria for potential karst habitat, then it will be evaluated for its biological significance by a karst biologist holding an appropriate 10(a)(1)(A) permit on a case-by-case basis. If the feature does not meet the criteria for potential karst habitat, then work will continue. If flowing or seeping groundwater is encountered during the excavation of drilled shafts, TxDOT would use steel casing to seal off the groundwater source and prevent contamination before pouring the foundation.

\* While a feature is being evaluated, the surface expression will be covered in order to minimize the influence of diurnal variations in surface temperature. Protection of the feature may include a wood cover, plastic sheeting, and/or blanket that is weighted down with rocks around the perimeter. During periods of high temperatures (> 100° F), a piece of insulation will be added to the cover. Hazard fencing or barricades may be used to protect the area if there is a fall hazard, such as the case of an open shaft. Appropriate BMPs will be implemented to prevent surface runoff from entering the feature.

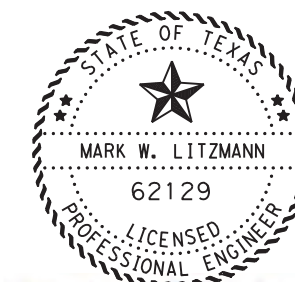
\* If a discovered feature is determined to be occupied or presumed occupied by a listed karst invertebrate, then TxDOT will proceed in such a manner as to minimize impacts to the feature. Occupation by a listed karst invertebrate will be presumed if karst invertebrates collected during surveying are immature and cannot be identified to species. If it is possible within the needs of the project, then the feature will be capped so as to preserve as much of the void space as possible. If work must continue at the feature, then disturbance to the feature will be minimized, but the details will be determined on a case-by-case basis following recommendations from a permitted scientist and an engineer. When features are closed, they will be closed in a condition as similar as possible to pre-excavation condition with regard to water and nutrient inflow and void volume, while protecting the feature from contaminated runoff.

\* If complete avoidance of occupied or presumed occupied karst features encountered during construction is not possible, an evaluation will be performed of the extent that the feature may be impacted. TxDOT will provide instructions to the contractor on how to proceed on a case-by-case basis at each occupied or presumed occupied void encountered.

5) Five proposed water quality ponds and additional BMPs will provide permanent water quality treatment once construction is completed. Water quality BMPs may include sand filter systems. The BMPs have been designed to remove required quantities of TSS in accordance with TCEQ regulations. The primary purpose of the sand filter systems is to provide water quality controls to meet TCEQ regulations. In addition to their primary purpose, they will also act as Hazardous Material Traps (HMTs) to contain spills. A valve will be provided on the outlet of these ponds. The default position for these valves will be open. If a spill is reported a first responder will close the valve to isolate the spill and prevent it from entering a waterway.

6) TxDOT will conduct a fresh water mussel survey in the North Fork of San Gabriel River prior to construction.

7) A qualified individual will be on call during ground disturbing activities in bedrock to assess all karst features encountered for potential karst invertebrate habitat according to current USFWS protocols. If karst voids are encountered during construction, all work would stop within 50 feet of the void site and a qualified karst scientist would perform an initial geologic assessment followed by an inspection by a Section 10(a)(1)(A) permitted scientist if the void is determined to be potential karst species habitat.



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2.13.2020

Texas Department of Transportation		Design Division Standard			
<b>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC</b>					
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
© TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
12-12-2011 1051 REVISIONS	0015	08	147, ETC	IH 35	
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.	
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Texas Parks and Wildlife Department BMPs

- 8) Water Quality - Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
- 9) Water Quality - When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
- 10) Freshwater Mussels - When work is in the water; survey project footprints for state listed species where appropriate habitat exists.
- 11) Freshwater Mussels - When work is in the water and mussels are discovered during surveys; TxDOT will relocate state listed and SGCN mussels under TPWD authorization.
- 12) Terrestrial Reptiles - Apply hydramulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydramulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
- 13) Terrestrial Reptiles - For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
- 14) Terrestrial Reptiles - Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
- 15) Terrestrial Reptiles - Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
- 16) Terrestrial Reptiles - Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
- 17) Plains potted skunk could occur in the project area; the contractor shall void harming the species if encountered, and avoid unnecessary impacts to the den.
- 18) Birds - Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.
- 19) Birds - Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season;
- 20) Birds - A void the removal of unoccupied, inactive nests, as practicable;
- 21) Birds - Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair;
- 22) Birds - Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
- 23) Staging Areas - Project specific locations should be placed in upland areas outside of the floodplain/riparian corridor whenever possible
- 24) Dewatering Activities - Prior to conducting any dewatering activities, TxDOT would coordinate with the TPWD Kills and Spills Team (KAST) to obtain necessary permits.
- 25) Zebra Mussels - For all construction equipment and gear that comes in contact with any public waters: Follow the 7#32TPWD Clean/Drain/Dry Procedures and Zebra Mussel Decontamination Procedures for Contractors Working in Inland Public Waters9#32([https://tpwd.texas.gov/huntwild/wild/wildlife\\*diversity/habitat\\*assessment/tools.phtml](https://tpwd.texas.gov/huntwild/wild/wildlife*diversity/habitat*assessment/tools.phtml))
- 26) SGCN Plants - If Species of Greatest Conservation Need (SGCN) plants are found outside the construction work area, TxDOT will protect them with temporary barrier fencing and alert contractors to avoid disturbing them.
- 27) Vegetation - Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable. Trim trees instead of removal when possible.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

## VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- \* Dead or distressed vegetation (not identified as normal)
- \* Trash piles, drums, canister, barrels, etc.
- \* Undesirable smells or odors
- \* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

Yes  No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

Yes  No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

No Action Required  Required Action

Action No.

- 1.
- 2.
- 3.

### LIST OF ABBREVIATIONS

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CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
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MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
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NOT: Notice of Termination	T&E: Threatened and Endangered Species
NMP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

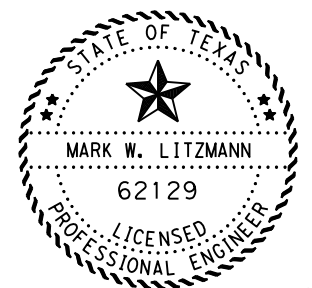
## VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

No Action Required  Required Action

Action No.

1. The Traffic Noise Analysis identified traffic noise walls that satisfy reasonable and feasible criteria (shown on PS&E plan sheets near NB FR Station 1739+00 to 1744+00).
2. The proposed project is located within a Federal Emergency Management Agency (FEMA designated 100-year floodplain. The hydraulic design for this project shall be in accordance with current FHWA and TxDOT design policies. The facility shall permit the conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing significant damage to the facility, stream or other property. The proposed project shall not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. Coordination with the local Floodplain Administrator shall be required.
3. The potential impacts of Particulate Matter emissions will be minimized by using fugitive dust control measures contained in standard specs, as appropriate.
4. The project is located on the Edwards Aquifer Recharge Zone. A TCEQ Water Pollution Abatement Plan (WPAP) was prepared for the project. Comply with the approved TCEQ WPAP and WPAP Approval Letter. Maintain a copy of the WPAP and Approval letters onsite.
5. If geological voids are encountered during construction, follow the Void Mitigation Protocol located in the Void Mitigation Notes Plan Sheet and the WPAP.
6. A PSL was not approved for this project. PSL's must be approved by the TCEQ Edwards Aquifer Protection Program prior to construction of a PSL. Contact the DEQC and/or Austin District Water Quality SME if a PSL a desired.



*Mark W. Litzmann, P.E.*

02.04.2020

		Design Division Standard	
<b>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</b>			
<b>EPIC</b>			
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP
© TxDOT: February 2015	CONT	SECT	JOB
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01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	AUS	WILLIAMSON	1101



## VOIDS DEFINITION

- VOID GREATER THAN SIX INCHES ACROSS IN ANY DIRECTION AND/OR
- VOID IS GREATER THAN ONE SQUARE FOOT ALONG ANY PLANE AND/OR
- VOID BLOWS AIR AND/OR
- VOID CONTINUALLY RECEIVES WATER DURING A RAIN EVENT AND/OR
- VOID HAS WATER FLOWING THROUGH OR OUT OF IT AND/OR

## GENERAL NOTES

1. USING EXPLOSIVES IS NOT ALLOWED.
2. THE PROJECT AREA IS A KNOWN KARST AREA. FRACTURED MATERIAL, BOULDERS, UNDERGROUND VOIDS, GROUNDWATER, UNSTABLE MATERIAL, AND DRASTICALLY VARYING STRATA CAN BE EXPECTED. THE CONTRACTOR SHALL WORK WITH TXDOT AND TXDOT'S PARTNERS TO ALLOW ACCESS AND ON-SITE MONITORING OF EXCAVATION.
3. THE VOID MITIGATION DETAILS ARE EXAMPLES. IMPLEMENTATION OF THE APPROVED MITIGATION PLAN SHOULD USE THE REFERENCED BID ITEMS.
4. CONCRETE USED FOR VOID MITIGATION SHALL BE 3,000 PSI IN ACCORDANCE WITH ITEM 420 CLASS A CONC (MISC). QUANTITIES UNDER 4 CY MAY BE HAND MIXED ON SITE USING 5,000 PSI RATED BAG MIX CONCRETE.
5. 3 IN. x 5 IN. ROCK SHALL BE IN ACCORDANCE WITH ITEM 506. LARGE ROCK > 1 FT. SHALL BE IN ACCORDANCE WITH 12 IN. ROCK PER ITEM 432.
6. FILTER FABRIC AND EROSION LOGS WILL BE IN ACCORDANCE WITH ITEM 506.
7. IMPERMEABLE LINER WILL BE IN ACCORDANCE WITH ITEM 5056. THE EDGE OF THE LINER SHALL BE ANCHORED IN A 6 IN. WIDE BY 18 IN. DEEP TRENCH.
8. STEEL CASING, USED FOR DRILL SHAFT CONSTRUCTION, SHALL BE IN ACCORDANCE WITH ITEM 416.
9. AGGREGATE OR OTHER BACKFILL WILL BE PAID FOR BY OVERRUN OF EXISTING EMBANKMENT ITEM. FILTER FABRIC OVER THE AGGREGATE IS SUBSIDIARY. SANDBAGS SHALL BE PAID USING SANDBAGS FOR EROSION CONTROL. THE SANDBAGS SHALL BE POLYPROPYLENE AND FILLED WITH PEA GRAVEL. CONNECTOR PIPE SHALL BE PAID USING PIPE (PVC) (SCH 80) (6 IN).
10. IF A SINGLE VOID IMPACT CAUSES DELAYS BY MORE THAN 20 WORKING DAYS, DELAY WILL BE CONSIDERED FOR THE IMPACT BEYOND THE INITIAL 20 DAYS. IF THE ACCUMULATION OF VOID IMPACTS CAUSE DELAYS BY MORE 40 WORKING DAYS, DELAY WILL BE CONSIDERED FOR THE IMPACT BEYOND THE 40 DAYS. OVERHEAD, BARRICADES AND DELAYS WILL BE EVALUATED AND PAID IN ACCORDANCE WITH THE CONTRACT. IMPACTS WILL NOT BE CONSIDERED IMPACT AFTER A RESPONSE PROCEDURE IS PROVIDED. ALL DELAYS CAUSED BY A VOID AND THE DURATION FOR IMPLEMENTATION OF A RESPONSE ARE NON-COMPENSABLE FOR LABOR, EQUIPMENT, STANDBY, MOBILIZATIONS, AND COST ESCALATIONS.

## VOID MITIGATION AND PROTECTION MEASURES

REFER TO VOID MITIGATION DETAILS FOR ADDITIONAL INFORMATION. VOID MITIGATION DETAILS ARE TO BE APPROVED BY GEOSCIENTIST AND THE TCEQ (IF APPLICABLE) PRIOR TO IMPLEMENTATION.

1. IN THE EVENT THAT UNKNOWN KARST VOIDS ARE ENCOUNTERED, WORK AT THAT LOCATION WILL BE HALTED IMMEDIATELY AND THE FEATURE WILL BE INSPECTED PROMPTLY BY TXDOT.
2. WHEN REQUIRED, TXDOT WILL INSPECT ALL VOIDS TO DETERMINE THE POTENTIAL OF THE FEATURES TO PROVIDE SUITABLE HABITAT FOR ENDANGERED KARST INVERTEBRATES. WORK AT THAT LOCATION WILL NOT RESUME UNTIL AUTHORIZATION TO DISTURB THE FEATURE HAS BEEN OBTAINED. REFER TO THE EPIC SHEET FOR ADDITIONAL INFORMATION FOR THREATENED OR ENDANGERED SPECIES.  
  
TXDOT WILL INSPECT ALL VOIDS TO DETERMINE THE APPROPRIATE VOID MITIGATION PLAN.
3. ADDITIONAL EXCAVATION OF THE VOID MAY BE REQUIRED BY TXDOT OR THE GEOSCIENTIST TO FULLY EVALUATE THE VOID AND/OR MITIGATION PLAN PREPERATION. TXDOT APPROVAL IS REQUIRED PRIOR THE EXCAVATION. THIS WORK IS SUBSIDIARY.

## VOID DISCOVERY PROTOCOL

IF A VOID IS DISCOVERED, THE FOLLOWING PROTOCOL WILL BE FOLLOWED:

1. ALL VOIDS REQUIRE AN EMAIL NOTIFICATION TO TXDOT DESIGNATED REPRESENTATIVE WITHIN 2 HOURS OF DISCOVERY. THE EMAIL WILL REQUIRE LOCATION INFORMATION (STATION, LATITUDE & LONGITUDE), DATES OF DISCOVERY, VIDEO/PICTURE DOCUMENTATION, SIZE, ETC. CONTRACTOR SHALL SUPPLY A CAMERA AND DIGITAL PICTURE/VIDEO DOCUMENTATION OF ALL VOIDS AND PROVIDE A MEASUREMENT OF THE SIZE OF THE VOID. FOR VOIDS THAT CANNOT BE SAFELY EXPLORED, ANOTHER DEVICE SHALL BE PROVIDED TO DOCUMENT THE VOID. CONTACT THE DISTRICT CONSTRUCTION OFFICE FOR AN EXAMPLE EMAIL THAT SHALL BE FOLLOWED. THIS WORK IS SUBSIDIARY.
2. ALL ACTIVITY WITHIN A 50-FOOT RADIUS OF THE VOID SHALL STOP. BLOCK TRAFFIC FROM DRIVING NEAR THE VOID AND PREVENT CONSTRUCTION EQUIPMENT FROM OPERATING IN THE VICINITY OF THE VOID USING BARRELS, ORANGE CONSTRUCTION FENCE OR OTHER APPROVED HIGHLY VISIBLE BARRIER.
3. A DRY VOID THAT IS LESS THAN 1 CF IN VOLUME OR LESS THAN 6 IN. IN ALL DIRECTIONS WILL NOT REQUIRE ACTION BEYOND NOTIFICATION. TXDOT SHALL BE NOTIFIED IMMEDIATELY VIA EMAIL AND PHONE WHEN A VOID IS FOUND THAT REQUIRES ACTION. TXDOT WILL RESPOND WITHIN 6 BUSINESS DAYS FROM TIME OF EMAIL NOTIFICATION TO PROVIDE GUIDANCE TO THE CONTRACTOR.
4. COVER THE VOID TO PREVENT CONTAMINATION AND CHANGES IN AMBIENT CONDITIONS (TARPS AND PLYWOOD, OR SIMILAR MATERIALS ARE APPROPRIATE AS AVAILABLE). WHERE COVERING THE VOID IS NOT FEASIBLE, CONTRACTOR SHALL OBTAIN APPROVAL FROM TXDOT OF ALTERNATE TEMPORARY PROTECTION MEASURES. BIODEGRADABLE EROSION CONTROL LOG (BECL) SHOULD WRAP THE SURFACE PERIMETER OF THE VOID. TEMPORARY PROTECTIONS SHOULD REMAIN IN PLACE UNTIL FINAL MITIGATION AND PROTECTION MEASURES ARE APPROVED AND IN PLACE. AN EARTHEN BERM WILL BE MAINTAINED ON THE UP-GRADIENT SIDE OF VOID TO PREVENT ANY CONSTRUCTION RUNOFF FROM ENTERING ANY PART OF THE FEATURE WHICH MAY REMAIN. THIS WORK IS SUBSIDIARY.
5. WHEN REQUIRED TXDOT SHALL IMMEDIATELY NOTIFY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AUSTIN REGIONAL OFFICE.
6. TXDOT WILL PROVIDE FOR THE EVALUATION OF THE VOID A QUALIFIED GEOSCIENTIST LICENSED BY THE TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS OR BY A PROFESSIONAL ENGINEER WHO QUALIFIES TO PRACTICE GEOSCIENCE ACCORDING TO THE TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS.
7. WHEN REQUIRED TXDOT WILL SUBMIT AND OBTAIN APPROVAL OF AN ENCOUNTERED FEATURE MITIGATION PLAN TO THE TCEQ AUSTIN REGION OFFICE.
8. WORK SHOULD CEASE IN THE AREA UNTIL ASSESSMENT OF THE VOID CAN BE COMPLETED, TCEQ APPROVES THE ENCOUNTERED FEATURE MITIGATION PLAN AND MITIGATION IS COMPLETED. WHEN THE VOID IS OUTSIDE TCEQ JURISDICTION, TXDOT WILL APPROVE THE ENCOUNTERED FEATURE MITIGATION PLAN.

## VOIDS RELATED TO DRILLED SHAFTS, SOIL NAILS, ROCK NAILS AND OTHER SIMILAR FUNCTIONS

1. SUBMIT INSTALLATION PLAN FOR REVIEW NO LATER THAN 2 MONTHS BEFORE CONSTRUCTION.
2. THE USE OF DRILLING FLUIDS, UNDERWATER PLACEMENT, OR SLURRY METHOD WILL NOT BE ALLOWED IF A VOID IS EXPOSED DURING DRILLING OF SHAFTS OR NAILS. THE CONTRACTOR SHALL USE APPROPRIATE INDUSTRY APPROVED METHODS TO PROVIDE A PRODUCT IN COMPLIANCE WITH THE SPECIFICATIONS. ADDITIONAL TIME OR COMPENSATION WILL NOT BE ALLOWED FOR USE OF ALTERNATE METHODS OR CASING INSTALLATION.
3. DURING NON-WORK HOURS OPEN HOLES SHALL BE PROTECTED FOR SAFETY AND COVERED. SHAFTS SHALL BE SURROUNDED BY EROSION CONTROL LOGS AT AN OFFSET OF 10' FROM THE EDGE OF THE OPENING. THIS WORK IS SUBSIDIARY
4. VIDEO DOCUMENTATION SHALL BE CONDUCTED OF A DRILL SHAFT ONCE EXCAVATION IS COMPLETE AND PRIOR TO PLACING REINFORCEMENT. SUFFICIENT LIGHTING SHALL ACCOMPANY THE VIDEO CAMERA TO ENSURE THE SHAFT AND VOIDS ARE VISIBLE. THIS WORK IS SUBSIDIARY.
5. CONCRETE USED TO FILL THE VOIDS WILL BE PAID USING CLASS A CONC (MISC) ITEM BUT WILL USE THE CLASS OF CONCRETE AS REQUIRED BY THE SPECIFICATION. QUANTITY OF CONCRETE WILL BE BASED ON VISUAL INSPECTION PROVIDED BY THE CONTRACTOR. IF VISUAL INSPECTION IS UNABLE TO DETERMINE THE SIZE OF THE VOID THE CONCRETE FOR PAYMENT WILL BE MEASURED AS THE ADDITIONAL CONCRETE BEYOND THE AMOUNT REQUIRED TO PLACE A CLEAN SHAFT PLUS 10 PERCENT WASTE.
6. THE USE OF PERMANENT CASING SHALL BE IN ACCORDANCE WITH ITEM 416. MATERIAL COST FOR CASING THAT REMAINS WILL BE PAID BY INVOICE FROM SUPPLIER WITH MARK UP IN ACCORDANCE WITH MATERIAL FOR ITEM 9.7. ADDITIONAL LABOR, EQUIPMENT, TIME, ETC. FOR INSTALLATION OF THE CASING WILL NOT BE COMPENSABLE.
7. ADDITIONAL NAIL LENGTH WILL BE PAID BY OVERRUN OF EXISTING BID ITEM. ALTERNATE NAIL TYPE COST WILL BE PAID BY INVOICE FROM SUPPLIER WITH MARK UP IN ACCORDANCE WITH MATERIAL FOR ITEM 9.7. LABOR, EQUIPMENT, ADDITIONAL TIME, ETC. WILL NOT BE COMPENSABLE.
8. CORE HOLES ARE REQUIRED FOR ALL DRILLED SHAFTS.



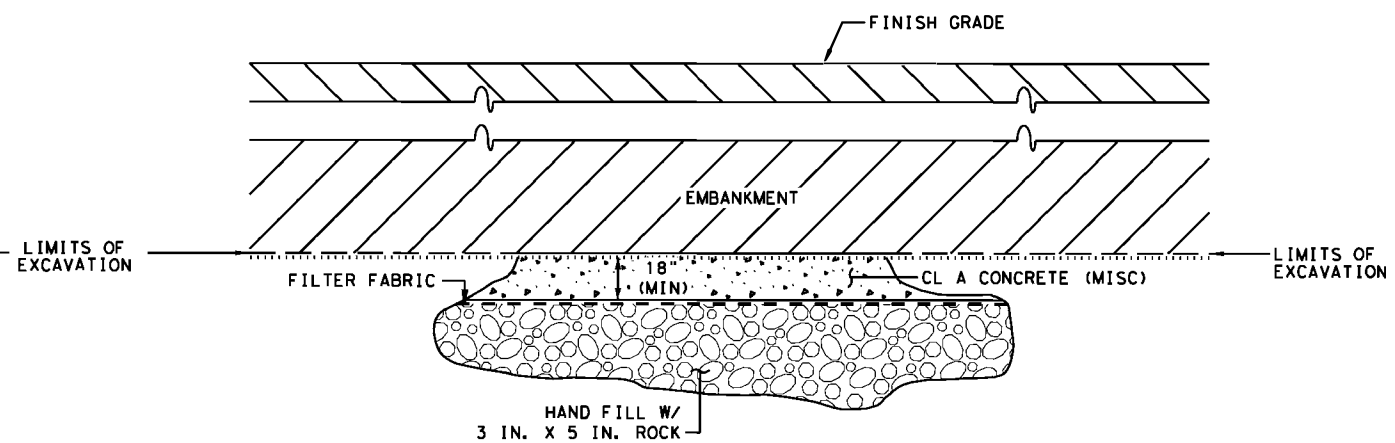
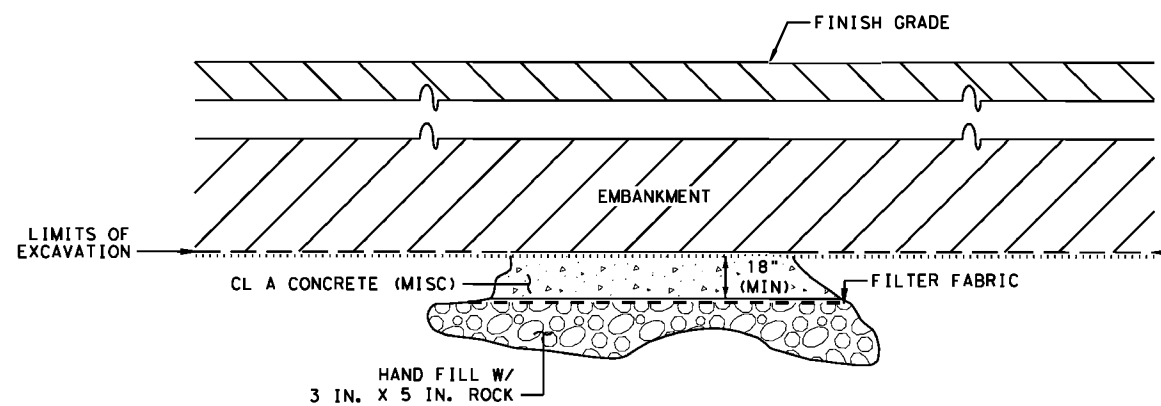
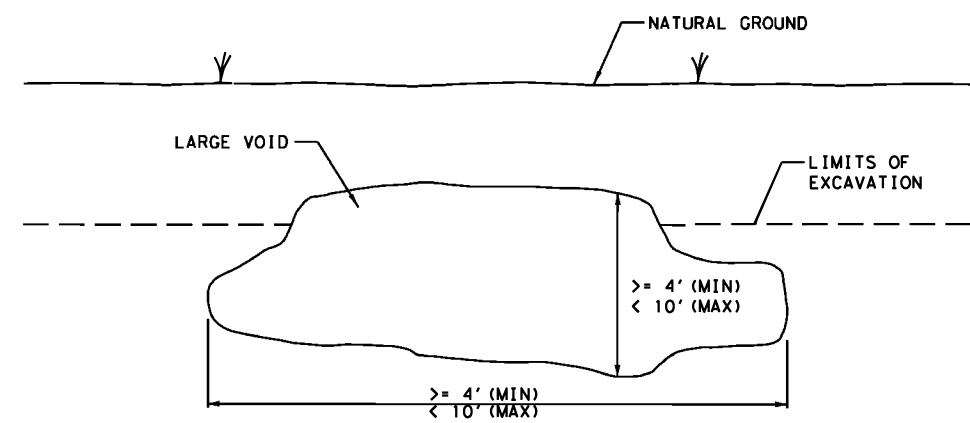
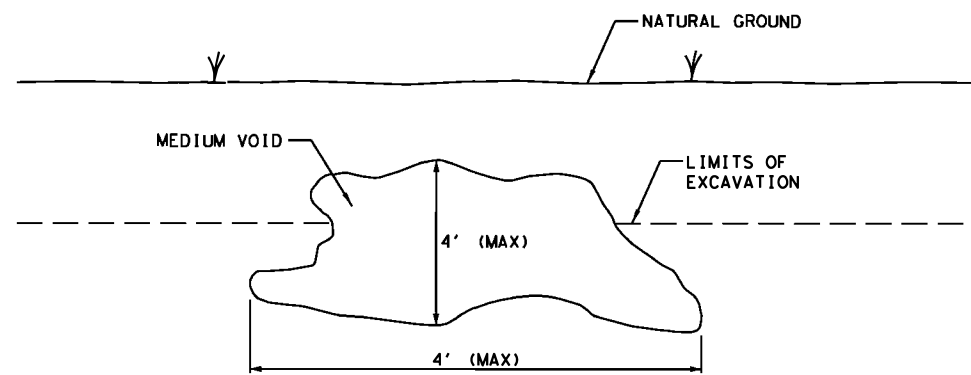
*Mark W. Litzmann, P.E.*

02.04.2020

PLEASE CONTACT ZACH LANFEAR AND ANDY BLAIR AT TXDOT AUS ENV OFFICE PRIOR TO USING THESE DETAILS. PLEASE DELETE THIS NOTE PRIOR TO PLACING THESE DETAILS IN THE PLANS.

SHEET 1 OF 7

		<b>Austin District Design</b>	
<h1>VOID MITIGATION NOTES</h1> <h2>VMD-18 (AUS)</h2>			
FILE: VMD-18 (AUS).dgn	DN: TXDOT	CK:	DW:
© TXDOT Dec. 2018	CONT	JOB	HIGHWAY
REVISIONS	0015 08	147	IH 35
	DIST	COUNTY	SHEET NO.
	AUS	WILLIAMSON	1102



Mark W. Litzmann, P.E.

02.04.2020

**ROADWAY/S.U.P. GRADING OPERATIONS**  
**MEDIUM (DRY VOID)**  
 (<4' IN ANY DIRECTION)  
 (1 CF < 64 CF)

**ROADWAY/S.U.P. GRADING OPERATIONS**  
**LARGE (DRY VOID)**  
 (>=4' <10' ANY DIRECTION)  
 (64 CF < 1000 CF)


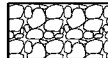


SHEET 2 OF 7

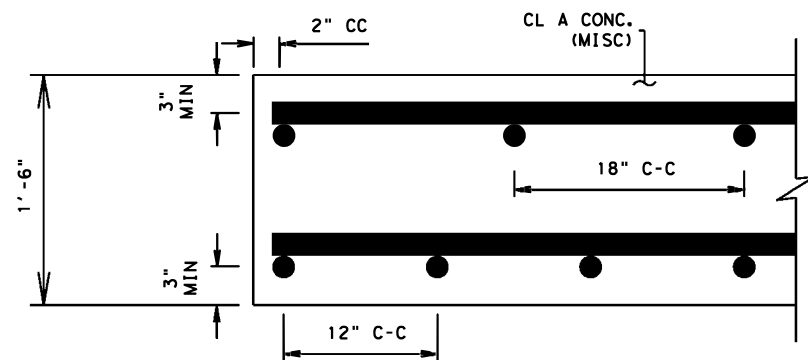
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REVISIONS	0015	08	147
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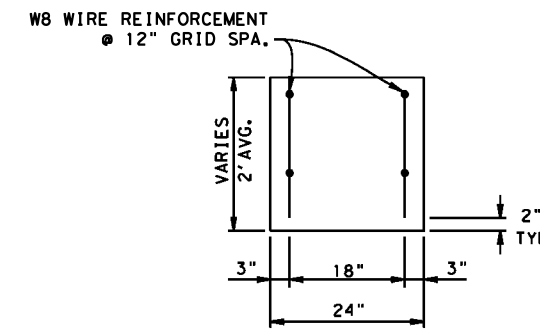
SCALE (IN FEET):  
0 5

**LEGEND**

-  CLASS A CONC. (MISC)
-  3 IN. x 5 IN. ROCK
-  LARGE ROCK (> 1 FT)
-  SHOTCRETE

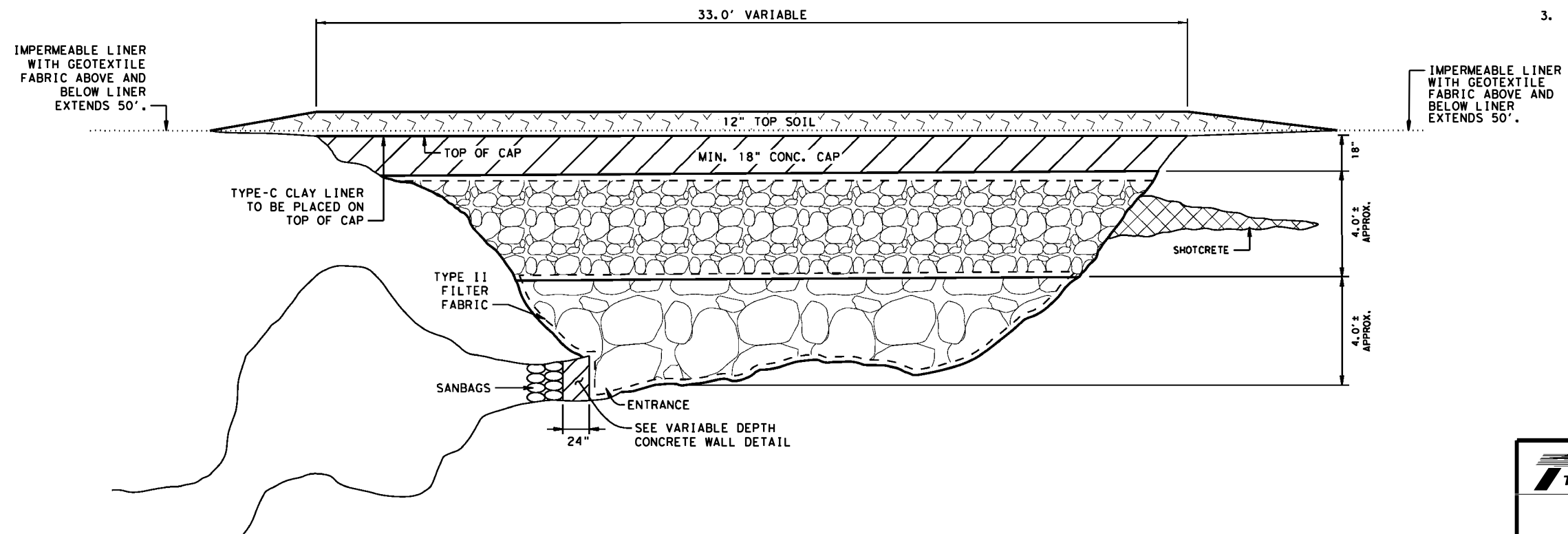


**REINFORCING DETAIL**



**VARIABLE DEPTH CONCRETE WALL**

- NOTE:
1. CONCRETE WALL AND CONCRETE CAP SHALL BE PAID USING CLASS A CONC. (MISC).
  2. SHOTCRETE WILL BE PAID USING CLASS A CONC. (MISC).
  3. THE 12 IN. TOPSOIL AND LINER MAY NOT BE APPLICABLE IF THE VOID IS NOT IN A POND.



**ELEVATION OF VOID IN A POND**




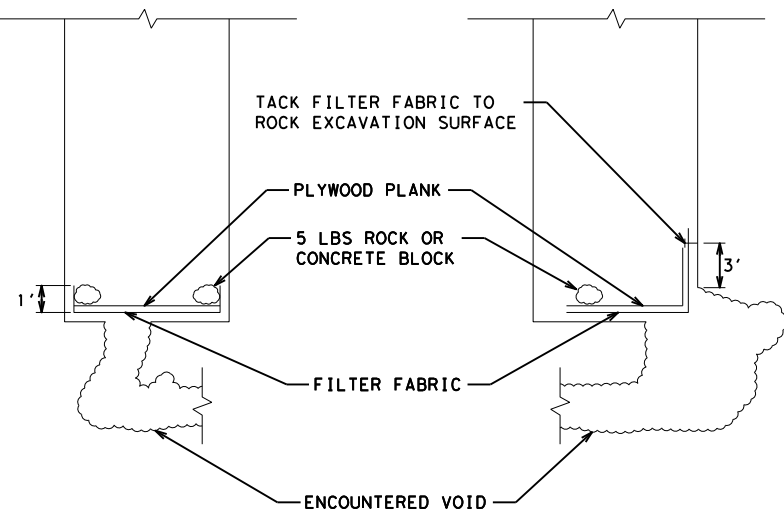
*Mark W. Litzmann, P.E.*

02.04.2020

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SHEET 3 OF 7

		Austin District Design	
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<b>VMD-18 (AUS)</b>			
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© TxDOT Dec. 2018	CON: SECT	JOB	HIGHWAY
REVISIONS 0015	0015 08	147	IH 35
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1104	



**TEMPORARY PROTECTION  
VOID AT BOTTOM OF TRENCH**

**NOTES:**

1. PLACE TEMPORARY PROTECTION WITHIN TRENCH TO COVER VOID AS INDICATED. FABRIC SHALL EXTEND A MINIMUM OF 3 IN. BEYOND EDGE OF VOID. PLACE A PLYWOOD PLANK (MINIMUM 0.75 IN. THICK) OVER FABRIC. PLANK AND FABRIC SHALL BE WEIGHTED AS REQUIRED BY 5 LBS ROCK OR CONCRETE BLOCK TO SECURE FILTER FABRIC.
2. TEMPORARY PROTECTION SHALL BE IN PLACE AT ALL TIMES THAT CONSTRUCTION OPERATIONS ARE NOT IN ACTUAL PROGRESS.
3. CONSTRUCTION OPERATIONS WITHIN 50' SHALL NOT PROGRESS DURING OCCURRENCE OF RAIN TO ALLOW FOR PROTECTION OF VOID DURING A RAIN EVENT.
4. LOCALIZED EROSION MEASURES (SILT FENCE, EROSION CONTROL LOG OR TRIANGULAR FILTER DIKES) SHALL BE INSTALLED ALONG THE TRENCH TO ENSURE THAT LOOSE SPOILS OR RUNOFF DO NOT ENTER THE TRENCH OR AFFECT PERFORMANCE OF TEMPORARY PROTECTION. USE EARTHEN BERN TO DIVERT WATER AWAY FROM THE TRENCH.
5. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT EROSION CONTROL MEASURES REQUIRED ALONG THE TRENCH ARE MAINTAINED, CLEANED AND FULLY FUNCTIONAL.
6. FILTER FABRIC AND ROCK OR CONCRETE BLOCKS AND PLYWOOD PLANK SHALL BE REMOVED FROM THE TRENCH WHEN PERMANENT VOID MITIGATION MEASURES ARE INSTALLED.



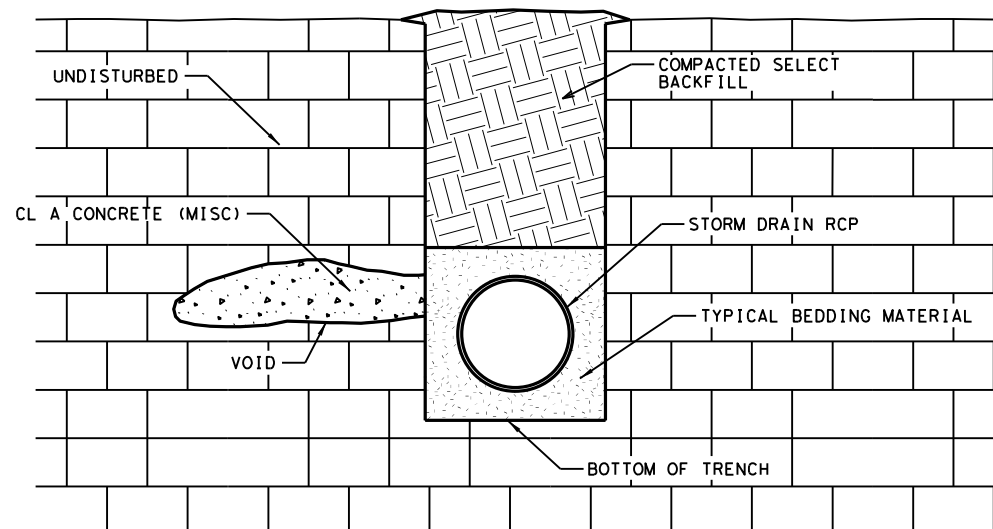
*Mark W. Litzmann, P.E.*

02.04.2020

SHEET 4 OF 7

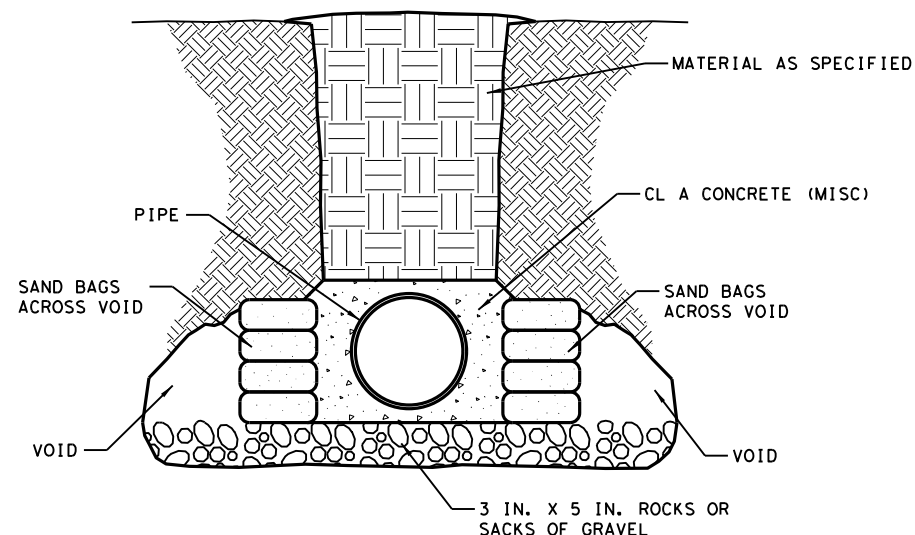
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© TxDOT Dec. 2018	CONT	SECT	HIGHWAY
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	JOB	147	
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1105	

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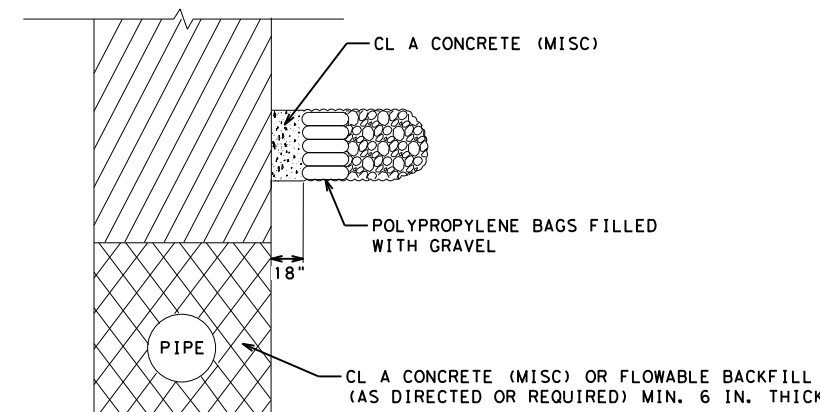
**TRENCHING OPERATIONS  
SMALL/MEDIUM (DRY VOID)  
( < 64 CF )**

VOID IS EITHER LARGER THAN SIX (6) INCHES IN AT LEAST ONE DIRECTION OR IS LOCATED WITHIN THE LEVEL OF THE PIPE EMBEDMENT. ALL ROCK WITHIN AND SURROUNDING THE VOID IS SOUND.



**TRENCHING OPERATIONS  
LARGE (DRY VOID)  
( 64 CF < 1,000 CF )**

VOID INTERSECTS THE PLANE OF THE TRENCH FLOOR AND ANY OPENING IN TRENCH FLOOR IS GREATER THAN FOUR (4) FEET IN ANY DIRECTION, OR THE TRENCH FLOOR IS UNSTABLE.

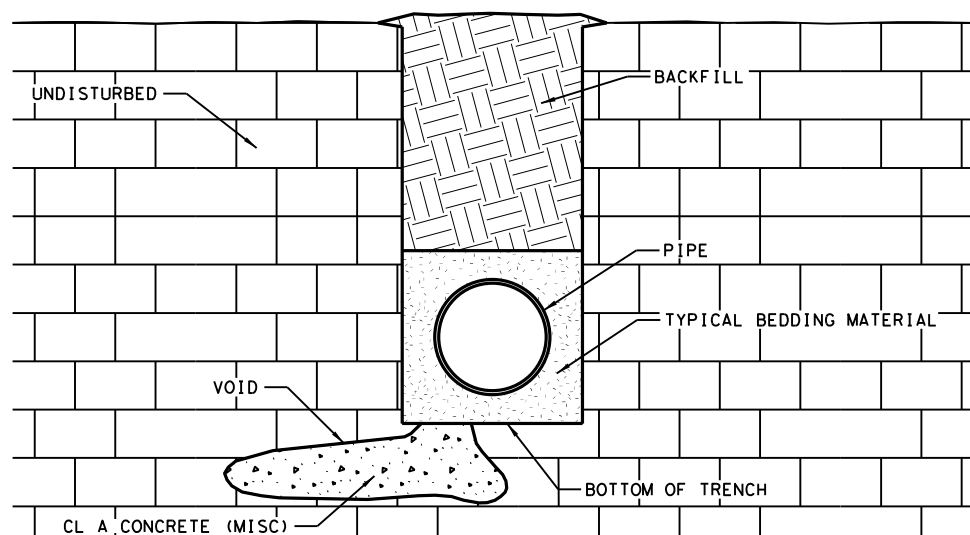


**TRENCHING OPERATIONS  
LARGE (DRY VOID)  
( 64 CF < 1,000 CF )**

VOID IS ABOVE THE PLANE OF THE TRENCH FLOOR

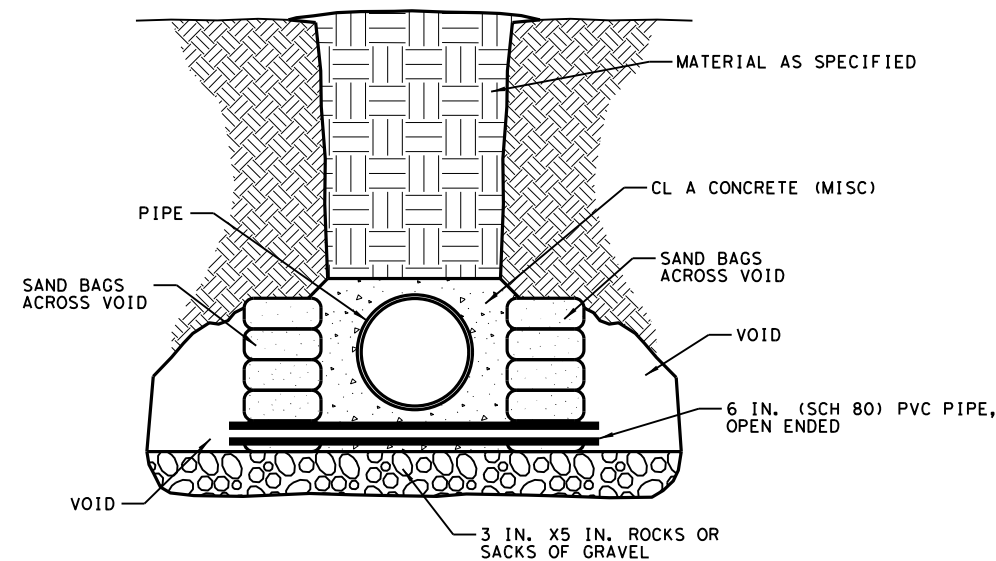
**GENERAL NOTE:**

1. ALL PIPES SHALL BE ENCASED WITH CLASS A CONCRETE THAT EXTENDS 5' BEYOND THE EDGE OF THE VOID IN ALL DIRECTIONS. THE CONCRETE SHALL PROVIDE 6 IN. COVER AROUND THE PIPE.



**TRENCHING OPERATIONS  
SMALL/MEDIUM (DRY VOID)  
( < 64 CF )**

VOID INTERSECTS THE PLANE OF THE TRENCH FLOOR AND IS LESS THAN FOUR (4) FEET IN ANY DIRECTION. ALL ROCK WITHIN AND SURROUNDING THE VOID IS SOUND.



**TRENCHING OPERATIONS  
LARGE (WET VOID)  
( 64 CF < 1,000 CF )**

VOID INTERSECTS THE PLANE OF THE TRENCH FLOOR AND ANY OPENING IN TRENCH FLOOR IS GREATER THAN FOUR (4) FEET IN ANY DIRECTION, OR THE TRENCH FLOOR IS UNSTABLE.



*Mark W. Litzmann, P.E.*  
02.04.2020

SHEET 5 OF 7



**VOID MITIGATION  
DETAILS**

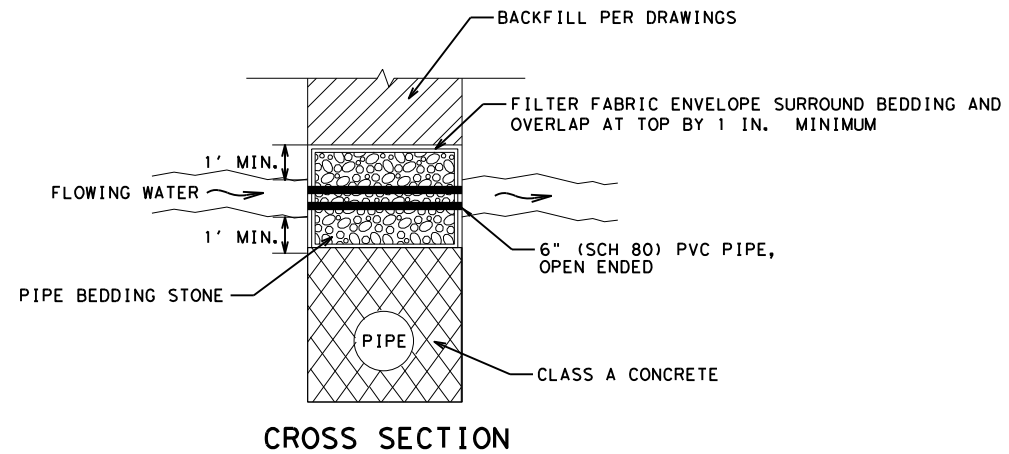
**VMD-18 (AUS)**

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REVISIONS	0015	08	147	IH 35
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	AUS	WILLIAMSON	1105A	

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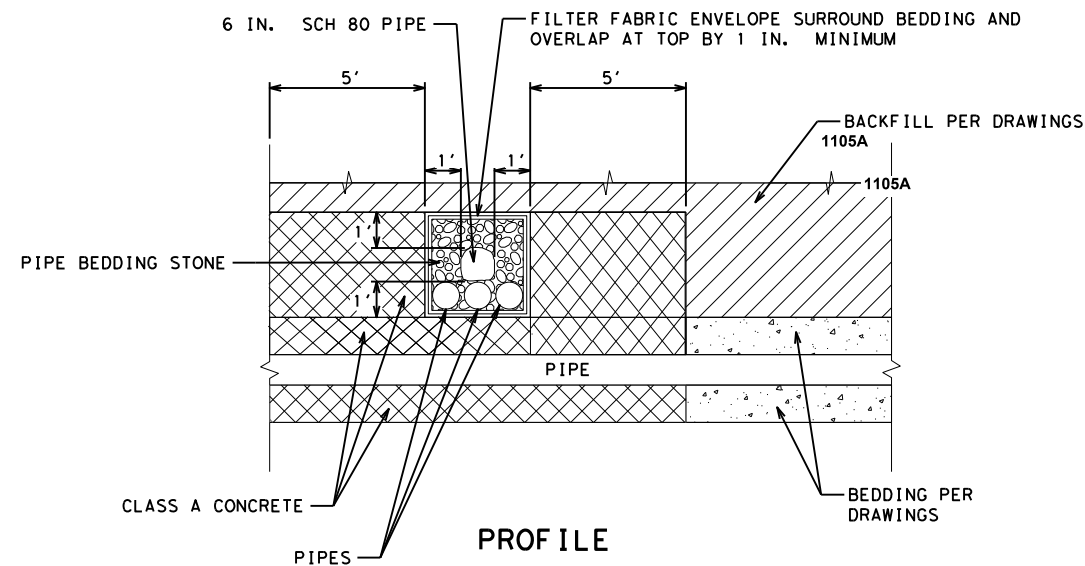


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GENERAL NOTE:

1. ALL PIPES SHALL BE ENCASED WITH CLASS A CONCRETE THAT EXTENDS 5' BEYOND THE EDGE OF THE VOID IN ALL DIRECTIONS. THE CONCRETE SHALL PROVIDE 6 IN. COVER AROUND THE PIPE.



TRENCHING OPERATIONS  
 GROUNDWATER ABOVE  
 BEDDING MATERIAL

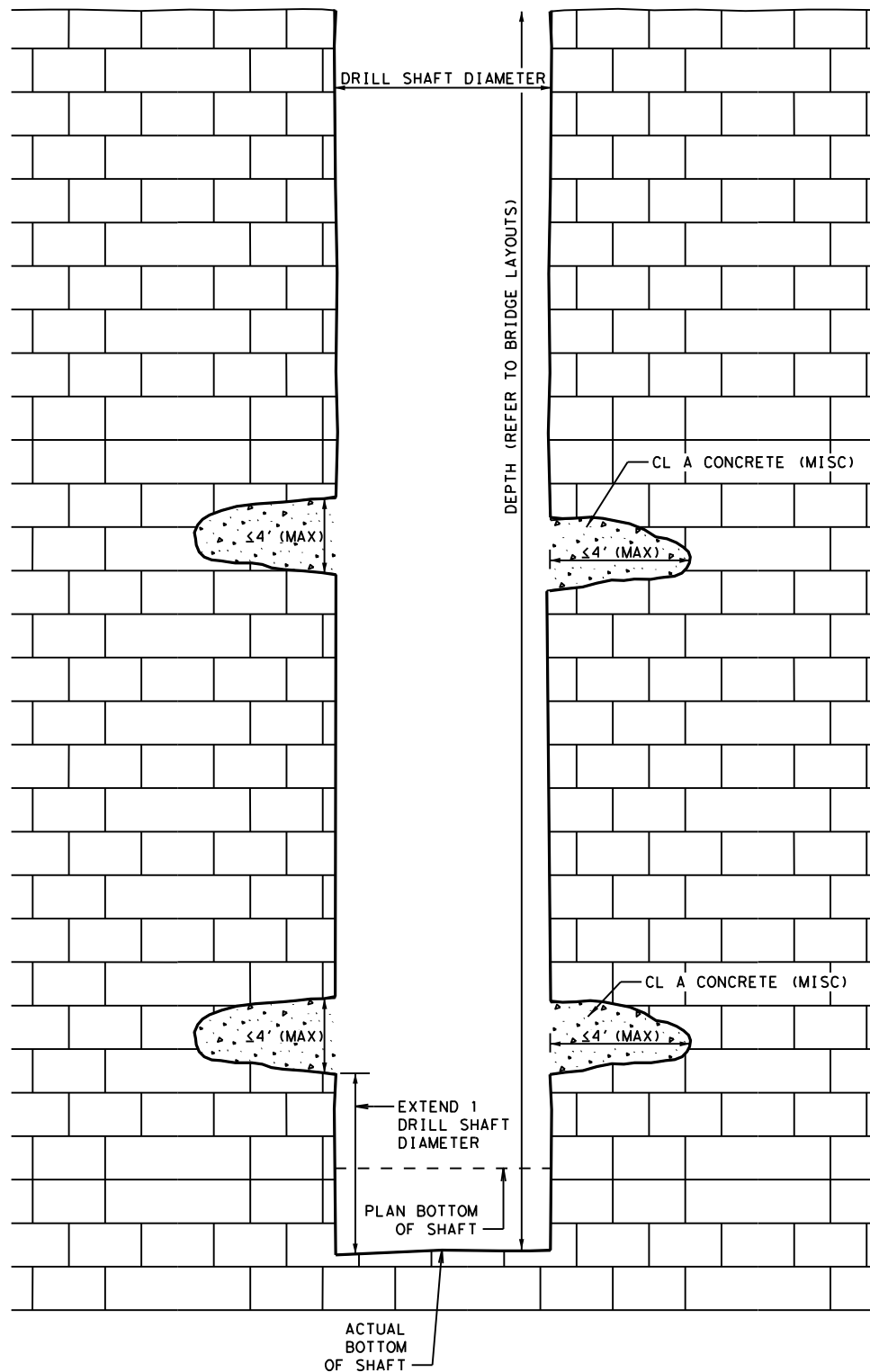


*Mark W. Litzmann, P.E.*  
 02.04.2020

SHEET 6 OF 7

<p><b>VOID MITIGATION          DETAILS</b></p> <p><b>VMD-18 (AUS)</b></p>			
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	DIST	COUNTY	SHEET NO.
	AUS	WILLIAMSON	1105B

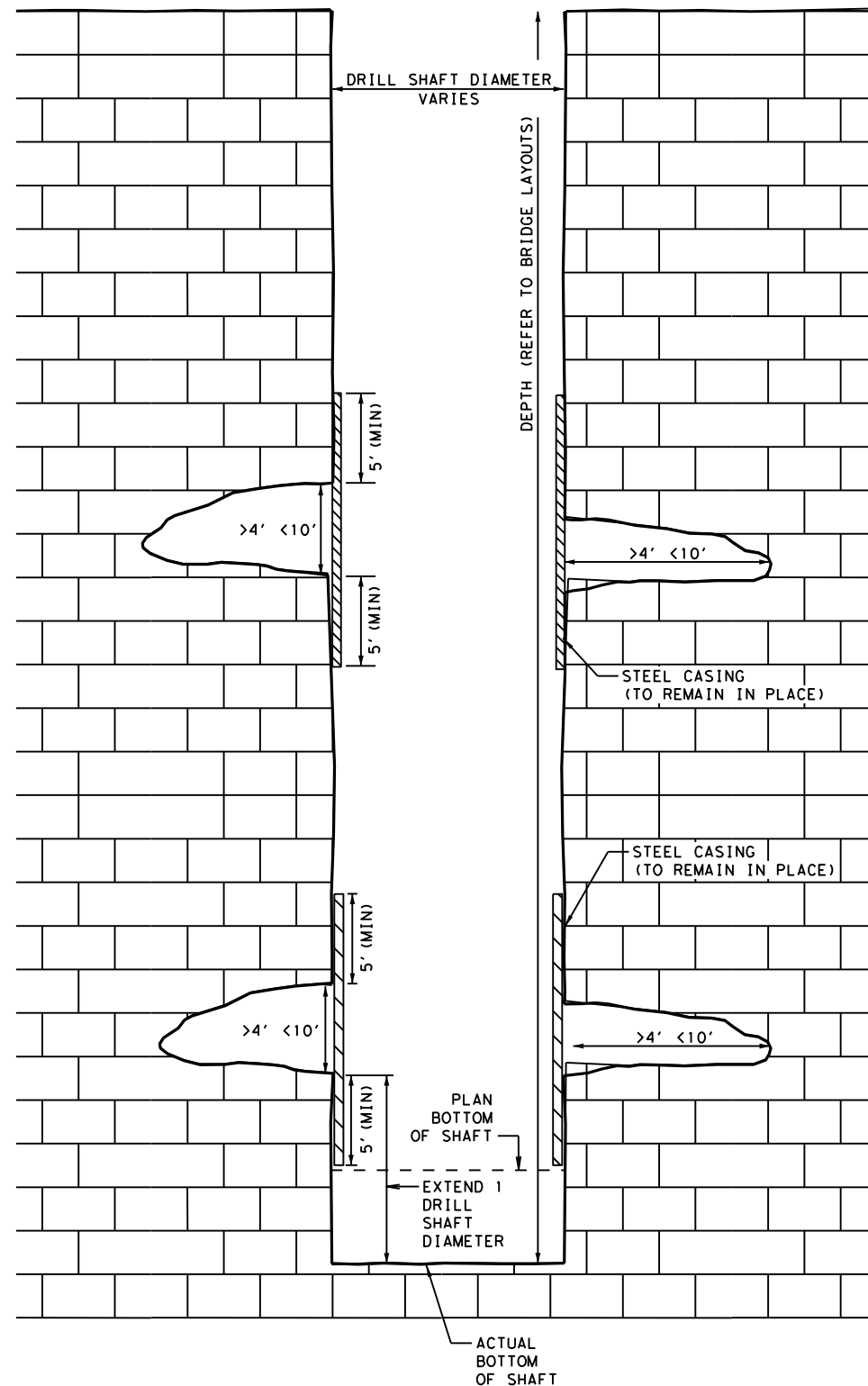
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**DRILL SHAFT OPERATIONS  
 SMALL/MEDIUM (DRY VOID)  
 ( $\le 4'$  IN ANY DIRECTION)**

CONCRETE FOR THE VOID SHALL BE PLACED CONTINUOUSLY WITH THE SHAFT

WHERE VOIDS ARE ENCOUNTERED, DRILL SHAFT LENGTHS MAY NEED TO BE INCREASED. APPROVAL FROM THE ENGINEER OF RECORD IS REQUIRED TO COMPLETE CONSTRUCTION OF THE DRILLED SHAFT.



**DRILL SHAFT OPERATIONS  
 LARGE (DRY VOID)  
 ( $>4' <10'$  IN ANY DIRECTION)**

WHERE VOIDS ARE ENCOUNTERED, DRILL SHAFT LENGTHS MAY NEED TO BE INCREASED. APPROVAL FROM THE ENGINEER OF RECORD IS REQUIRED TO COMPLETE CONSTRUCTION OF THE DRILL SHAFT.

**NOTES:**

1. STEEL CASING WILL BE USED FOR DRILL SHAFT CONSTRUCTION THAT ENCOUNTERS LARGE VOIDS, SO AS TO ALLOW A MINIMUM AMOUNT OF CONCRETE TO ENTER THE VOID.
2. STEEL CASING SHOULD EXTEND A MINIMUM OF FIVE FEET FROM THE EDGE OF THE VOID.
3. AS PART OF THE DRILL SHAFT INSTALLATION PLAN, CONTRACTOR SHALL PROVIDE MEANS AND METHODS FOR ANCHORING THE CASING.
4. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.
5. STEEL CASING MAYBE EXTENDED TO THE TOP OF THE SHAFT. THE ENTIRE LENGTH OF CASING INSTALLED IN A SHAFT WILL BE COMPENSATED IN ACCORDANCE WITH THE VOID MITIGATION NOTES.



*Mark W. Litzmann, P.E.*

02.04.2020

SHEET 7 OF 7

<p><b>VOID MITIGATION          DETAILS</b></p> <p><b>VMD-18 (AUS)</b></p>			
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© TxDOT Dec. 2018	CONT SECT	JOB	HIGHWAY
REVISIONS	0015 08	147	IH 35
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1105C	

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
WATER POLLUTION ABATEMENT PLAN  
GENERAL CONSTRUCTION NOTES**

TCEQ Austin Regional Office

12100 PARK 35 CIRCLE, BUILDING A  
Austin, Texas 78753-1808  
Phone: (512) 339-1808  
Fax: (512) 339-3795

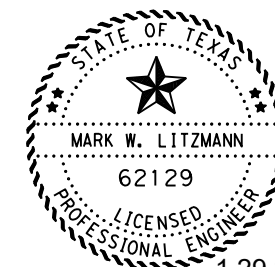
Edwards Aquifer Protection Program Construction Notes - Legal Disclaimer

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

The following TCEQ requirements (From TNRCC-0592, Rev. 7/15/2015) are applicable to all work in the recharge zones of the Edwards Aquifer in Hays, Travis, and/or Williamson Counties and must be adhered to by the Contractor and all Subcontractors:

1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
  - the name of the approved project;
  - the activity start date; and
  - the contact information of the prime contractor.
2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan (WPAP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.
3. If any sensitive feature(s) (caves, solution cavity, sink hole, etc.) is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. Construction activities may not be resumed until the TCEQ has reviewed and approved the appropriate protective measures in order to protect any sensitive feature and the Edwards aquifer from potentially adverse impacts to water quality.
4. No temporary or permanent hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.
5. 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 approved plans and manufacturer's 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.
6. 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.
7. Sediment must be removed from the sediment traps or sedimentation basins not later than TCEQ-0592 (Rev. July 15, 2015) Page 2 of 2 when it occupies 50% of the basin's design capacity.
8. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.
9. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.
10. If portions of the site will have a temporary or permanent 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.
11. The following records shall 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.
12. The holder of any approved Edwards Aquifer protection plan 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 water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
  - B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
  - C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

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Mark W. Litzmann, P.E.

**LANDTECH**  
engineering • surveying  
Houston, Texas  
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

**mobility** 35  
CAPITAL AREA

**Texas Department of Transportation**

**IH 35 @ WILLIAMS DRIVE  
TCEQ REQUIREMENTS  
FOR THE  
EDWARDS AQUIFER**

SHEET 1 OF 1			
© 2019	CONT	SECT	JOB
DS: _____	CK: _____	0015 08	147, ETC
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	1125	

**ATTACHMENT G – Inspection, Maintenance, Repair, and Retrofit Plan**

**Highway: IH 35**

**Limits: From South of Williams Drive to Lakeway Drive**

**Williamson County**

**CSJ:0015-08-144/0015-08-147**

*The maintenance plan guidelines apply to the ongoing operations after completion of the project limits. Guidelines follow TCEQ RG-348 recommendations. Chapter 3 sections 3.5.8 and 3.5.9.*

**Sand Filter Systems**

RG-348 Section 3.5.9 Recommends that “sand filter BMPs be inspected on a quarterly basis and after large storms for the first year of operation. Subsequent inspections can be limited to semi-annually or more often if deemed necessary”. (Chapter 3 Page 3-92)

Remove sediment from the inlet structure and sedimentation chamber. This shall occur when the sediment buildup reaches a depth of 6 inches or when the function of the structure is impaired.

Debris and litter shall be removed during regular mowing operations and inspections.

Clean underdrain piping network to remove any sediment buildup as needed to maintain design drawdown time.

Grass must be mowed at least twice a year to limit vegetation to 18 inches. Vegetation on pond embankments should be mowed to prevent establishment of woody vegetation.

Refer to RG-348 Section 3.5.9 for additional guidance.

**Vegetative Filter Strips**

RG-348 Section 3.5.8 recommends several maintenance guidelines for the VFS. (Chapter 3 Page 3-91). Inspect filter strips at least annually for erosion damage to vegetation. Additional inspection after heavy runoff is desirable.

Limit vegetation height to 18 inches. Grass clippings and brush should not be deposited on the VFS areas. Regular mowing should also include weed control but herbicide should be kept to a minimum

A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be compacted and reseeded so that final grade is level.

Refer to RG-348 Section 3.5.8 for additional guidance.

CSJ: 0015-08-144 and 0015-08-147

Mr. John Taylor   
TxDOT Georgetown Maintenance Office

Date: 3/12/2020

## **ATTACHMENT I – Measures for Minimizing Surface Stream Contamination**

The BMP's utilized to reduce the effect of the increased runoff factor and to mitigate stream flashing, excessive velocities and to control erosion produced by increased imperviousness of the site are as follows:

- Sand Filter Ponds
- Vegetative Filter Strips

The storm runoff that is ultimately directed to the Pecan Branch and North Fork San Gabriel River which are part of the Brushy Creek watershed that flows into the San Gabriel River sub basin into the Brazos river basin, is treated by proposed sand filter ponds. These BMP control measures were described previously in attachment 5C. Please refer to attachment 5C for further details on the measures mentioned.



## Section VIII

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### Agent Authorization Form

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

\_\_\_\_\_  
Shane Rotter

Print Name

\_\_\_\_\_  
Environmental Specialist

Title - Owner/President/Other

of \_\_\_\_\_ Texas Department of Transportation

Corporation/Partnership/Entity Name

have authorized \_\_\_\_\_ Carlos Juarez, P.E.

Print Name of Agent/Engineer

of \_\_\_\_\_ KCI Technologies (TBPE No. F-10573)

Print Name of Firm

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

I also understand that:

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

SIGNATURE PAGE:

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Date

THE STATE OF \_\_\_\_\_ §

County of \_\_\_\_\_ §

BEFORE ME, the undersigned authority, on this day personally appeared \_\_\_\_\_ 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 \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
NOTARY PUBLIC

\_\_\_\_\_  
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: \_\_\_\_\_



February 4, 2020

Mr. Bobby Ramthun, P.E.  
Georgetown Area Engineer  
Texas Department of Transportation  
2727 S. Austin Ave  
Georgetown, Texas 78627

**RE: Mobility35, Williams Drive (CSJ 0015-08-147; 144)**

Dear Mr. Ramthun:

The City of Georgetown understands that the Texas Department of Transportation (TxDOT) is in the design completion stages of a Mobility35 project to reconstruct the I-35 and Williams Drive interchange along with operational improvements along North Austin Avenue. As part of the project, TxDOT will be installing joint-bid utility improvements within the City of Georgetown.

Because a portion of work for this project falls within the City of Georgetown right-of-way or easements, the Water Pollution Abatement Plan (WPAP) application to the Texas Commission on Environmental Quality (TCEQ) will require concurrence from the City to perform work within those area.

Please consider this letter as concurrence, from the City, for TxDOT to perform the work for the joint-bid utilities as part of the Williams Drive project within the City of Georgetown right-of-way or easements.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Wesley Wright', is written across the page.

Mr. Wesley Wright, PE  
Systems Engineering Director  
City of Georgetown

## Section IX

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### Core Data Form





# TCEQ Core Data Form

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

## **SECTION I: General Information**

<b>1. Reason for Submission</b> <i>(If other is checked please describe in space provided.)</i>		
<input type="checkbox"/> New Permit, Registration or Authorization <i>(Core Data Form should be submitted with the program application.)</i>		
<input type="checkbox"/> Renewal <i>(Core Data Form should be submitted with the renewal form)</i>		<input checked="" type="checkbox"/> Other <b>Modification of Existing WPAP</b>
<b>2. Customer Reference Number</b> <i>(if issued)</i>		<b>3. Regulated Entity Reference Number</b> <i>(if issued)</i>
CN                      600803456	<a href="#">Follow this link to search for CN or RN numbers in Central Registry**</a>	RN                      111009577

## **SECTION II: Customer Information**

<b>4. General Customer Information</b>		<b>5. Effective Date for Customer Information Updates</b> (mm/dd/yyyy)		
<input type="checkbox"/> New Customer <input 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)				
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>				
<b>6. Customer Legal Name</b> <i>(If an individual, print last name first: eg: Doe, John)</i>			<i>If new Customer, enter previous Customer below:</i>	
<b>7. TX SOS/CPA Filing Number</b>		<b>8. TX State Tax ID</b> (11 digits)		<b>9. Federal Tax ID</b> (9 digits)
				<b>10. DUNS Number</b> <i>(if applicable)</i>
<b>11. Type of Customer:</b>		<input type="checkbox"/> Corporation <input type="checkbox"/> Individual                      Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited		
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Other:		
<b>12. Number of Employees</b>			<b>13. Independently Owned and Operated?</b>	
<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	
<b>14. Customer Role</b> (Proposed or Actual) – <i>as it relates to the Regulated Entity listed on this form. Please check one of the following</i>				
<input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Owner & Operator <input type="checkbox"/> Other: <input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> VCP/BSA Applicant				
<b>15. Mailing Address:</b>				
	City	State	ZIP	ZIP + 4
<b>16. Country Mailing Information</b> <i>(if outside USA)</i>			<b>17. E-Mail Address</b> <i>(if applicable)</i>	
<b>18. Telephone Number</b>		<b>19. Extension or Code</b>		<b>20. Fax Number</b> <i>(if applicable)</i>

( ) - | ( ) -

## SECTION III: Regulated Entity Information

<b>21. General Regulated Entity Information</b> <i>(If 'New Regulated Entity' is selected, a new permit application is also required.)</i>							
<input checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information							
<i>The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>							
<b>22. Regulated Entity Name</b> <i>(Enter name of the site where the regulated action is taking place.)</i>							
IH 35 reconstruction of interchange from S. of Williams Dr. to Lakeway Dr.							
<b>23. Street Address of the Regulated Entity:</b> <i>(No PO Boxes)</i>							
		City		State		ZIP	
						ZIP + 4	
<b>24. County</b>							

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

<b>25. Description to Physical Location:</b>		IH 35 reconstruction of interchange from S. of Williams Dr. to Lakeway Dr.					
<b>26. Nearest City</b>				<b>State</b>		<b>Nearest ZIP Code</b>	
Georgetown				TX		78626	
<i>Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).</i>							
<b>27. Latitude (N) In Decimal:</b>		31.629333		<b>28. Longitude (W) In Decimal:</b>		97.679494	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
30	38	59.76	97	40	46.18		
<b>29. Primary SIC Code</b> (4 digits)		<b>30. Secondary SIC Code</b> (4 digits)		<b>31. Primary NAICS Code</b> (5 or 6 digits)		<b>32. Secondary NAICS Code</b> (5 or 6 digits)	
<b>33. What is the Primary Business of this entity?</b> <i>(Do not repeat the SIC or NAICS description.)</i>							
<b>34. Mailing Address:</b>		Texas Department of Transportation					
		P.O. Box 15426 NEAS					
		City	Austin	State	TX	ZIP	78761
						ZIP + 4	7157
<b>35. E-Mail Address:</b>							
<b>36. Telephone Number</b>			<b>37. Extension or Code</b>			<b>38. Fax Number</b> <i>(if applicable)</i>	
( 512 ) 832-7103						( 512 ) 832-7157	

**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 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 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"/> Wastewater	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

### **SECTION IV: Preparer Information**

<b>40. Name:</b>	Carlos Juarez, P.E.		<b>41. Title:</b>	Project Manager
<b>42. Telephone Number</b>	<b>43. Ext./Code</b>	<b>44. Fax Number</b>	<b>45. E-Mail Address</b>	
( 956 ) 271-6697		( ) -	carlos.juarez@kci.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.

<b>Company:</b>	KCI Technologies	<b>Job Title:</b>	Project Manager
<b>Name (In Print):</b>	Carlos Juarez, P.E.	<b>Phone:</b>	( 956 ) 271-6697
<b>Signature:</b>		<b>Date:</b>	08-17-2023