COPY

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 7, 2016

Mr. Will Lockett, P.E., Area Engineer
San Antonio District
Texas Department of Transportation
4102 IH 35 South
New Braunfels, Texas 78132

Re: Edwards Aquifer, Comal County
FM 306 River Chase Way to Hoffman Lane; New Braunfels ETJ, 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. 13000169; RN109234070

Dear Mr. Lockett:

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 May 27, 2016. 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 Water Pollution Abatement Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10% of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed roadway project will be constructed within approximately 28.66 acres of right-of-way (ROW). The construction will include: expanding lanes from two existing 12-foot wide lanes to four 12-foot wide lanes with 5-foot shoulders; adding a continuous two way turn lane; providing shared-use paths; installing appropriate temporary BMPs; and providing permanent BMPs and other associated appurtenances. The impervious cover will be increased from approximately 7.2 acres to 10.8 acres (37.7 percent). No new wastewater will be generated by this project.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices, engineered filter strips (VFS) will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project area is 3267 pounds of TSS generated from the additional 3.7 acres of impervious cover. Design calculations were sealed by Linda Cox, P.E., on April 4, 2016 to demonstrate the total treatment load removal to exceed the required increase caused by the project. Treatment, by rule, is required only for the increase in total suspended solids (TSS).

GEOLOGY

According to the geologic assessment included with the application, the project traverses the Recharge Zone. In addition, the project crosses the Del Rio Clay and Buda Limestone, as well as a zone of faults identified as F-3. Two anthropogenic features were identified as caused due to erosion from the existing roadway structures. These two features will be filled and the culverts extended, and rock rip rap and energy dissipators are to be placed to prevent future similar occurrences. No wells or other sensitive features were identified within the right-of-way. The TCEQ site assessment of June 24, 2016 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.

<u>During Construction</u>:

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. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment.

9. 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.

10. No evidence of 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. 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.

12. 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.

13. 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.

14. 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:

15. 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.

16. 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.

17. 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.

18. 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.

19. 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,

Carolyn Runyon, Water Section Manager
Austin Region Office
Texas Commission on Environmental Quality

CDR/kls

Enclosure: Change in Responsibility for Maintenance on Permanent BMPs-Form TCEQ-10263

cc: Mr. Tom Hornseth, P.E., County Engineer, Comal County
Ms. Lynn Bumgaurdner, Water Section Manager, San Antonio Regional Office
Ms. Theresa Canales, San Antonio District, Texas Department of Transportation
Mr. Garry Ford, P.E., City Engineer, City of New Braunfels
Mr. Roland Ruiz, General Manager, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC212

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

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

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

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

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

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 31, 2016

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JUN 03 2016

COUNTY ENGINEER

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels, Texas 78132

Re: Edwards Aquifer, **Comal County**
PROJECT NAME: **FM 306 River Chase Way to Hoffman Lane**; N of Hoffman Ln to River Chase Way; New Braunfels, Texas
PLAN TYPE: Application for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213; Edwards Aquifer Protection Program ID No. 13000169

Dear Mr. Hornseth:

The enclosed WPAP application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities, groundwater conservation districts, and counties in which the proposed regulated activity will be located.

Please forward any comments to this office by **June 30, 2016.**

Should you have any questions concerning this matter, please contact Mr. Kevin Smith, P.E. of the Edwards Aquifer Protection Program at the Austin Regional Office (512) 339-2929.

Sincerely,

Carolyn D. Runyon
Water Section Manager
Austin Regional Office

CDR/lcw

Enclosure

Comallo.

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JUN 03 2016
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Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

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

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or if not withdrawn the application will be denied and 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 to you:

- You can withdraw your application, and your fees will be refunded or credited for a resubmittal.
- 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 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 effected jurisdictions.

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

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

1. Regulated Entity Name: FM 306 from Riverchase Way to Hoffmann Lane						**2. Regulated Entity No.:**				
3. Customer Name: Texas Dep.'t of Transportation						**4. Customer No.:** 600803456				
5. Project Type: (Please circle/check one)	New X		Modification			Extension		Exception		
6. Plan Type: (Please circle/check one)	WPAP X	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures	
7. Land Use: (Please circle/check one)	Residential		Non-residential X			**8. Site (acres):**		28.66		
9. Application Fee:	n/a		**10. Permanent BMP(s):**			15' minimum width vegetative filter strip				
11. SCS (Linear Ft.):	0		**12. AST/UST (No. Tanks):**			0				
13. County:	Comal		**14. Watershed:**			Guadalupe River Below Canyon Dam				

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Application Distribution

COUNTY ENGINEER

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

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

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	__	__	__
Region (1 req.)	__	__	__
County(ies)	__	__	__
Groundwater Conservation District(s)	__Edwards Aquifer Authority __Barton Springs/ Edwards Aquifer __Hays Trinity __Plum Creek	__Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	__Austin __Buda __Dripping Springs __Kyle __Mountain City __San Marcos __Wimberley __Woodcreek	__Austin __Bee Cave __Pflugerville __Rollingwood __Round Rock __Sunset Valley __West Lake Hills	__Austin __Cedar Park __Florence __Georgetown __Jerrell __Leander __Liberty Hill __Pflugerville __Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	__	_1_	__	__	__
Region (1 req.)	__	_1_	__	__	__
County(ies)	__	_1_	__	__	__
Groundwater Conservation District(s)	__ Edwards Aquifer Authority __Trinity-Glen Rose	_1_Edwards Aquifer Authority	__Kinney	__EAA __Medina	__EAA __Uvalde
City(ies) Jurisdiction	__Castle Hills __Fair Oaks Ranch __Helotes __Hill Country Village __Hollywood Park __San Antonio (SAWS) __Shavano Park	__Bulverde __Fair Oaks Ranch __Garden Ridge _1_New Braunfels __Schertz	NA	__San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.
Mario R. Jorge, P.E. Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 5/18/16

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):	

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COUNTY ENGINEER

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: Texas Department of Transportation / Mario R. Jorge P.E.

Date: 5/18/16

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: FM 306 from Riverchase Way to Hoffmann Lane
2. County: Comal
3. Stream Basin: Guadalupe River Below Canyon Dam
4. Groundwater Conservation District (If applicable): Edwards Aquifer Authority
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☒ WPAP
   ☐ SCS
   ☐ Modification
   ☐ AST
   ☐ UST
   ☐ Exception Request

7. Customer (Applicant):

Contact Person: Theresa Canales
Entity: Texas Department of Transportation
Mailing Address: 4615 NW Loop 410
City, State: San Antonio, TX Zip: 78229
Telephone: 210-615-6308 FAX: _____
Email Address: Theresa.Canales@txdot.gov

8. Agent/Representative (If any):

Contact Person: _____
Entity: _____
Mailing Address: _____
City, State: _____ Zip: _____
Telephone: _____ FAX: _____
Email Address: _____

9. Project Location:

☐ The project site is located inside the city limits of _____.
☒ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of New Braunfels.
☐ 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.

FM 306 from Riverchase Way to Hoffmann Lane, approx. 6 miles N of New Braunfels

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: 7-1-2016

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.

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ATTACHMENT A

ROAD MAP


N
0 250 500 Meters
0 1,000 2,000 Feet
FM 306
Project Location
Travis
Hays
Guadalupe
Comal
Blanco
Kendall
Bexar
Gillespie
Brownsville
Monterrey
NEW MEXICO
Legacy Hls
River Chase Way
Blackjack Oak
Ashton Oaks
Glen Hill
Hidden Pk
Windrift Way
Glen Hollow
Westfield
Western Oaks
Hoffman Ln
Rolling Oaks Dr
Oak View Dr
Oak Hollow Dr
Texas County Dr
Big Sky Dr
River Island Dr
Copper Ridge Dr
Sunset Ridge Dr
Ruby Ranch Rd
Sunset Glen Ln
Morning View Dr
Chase Dr

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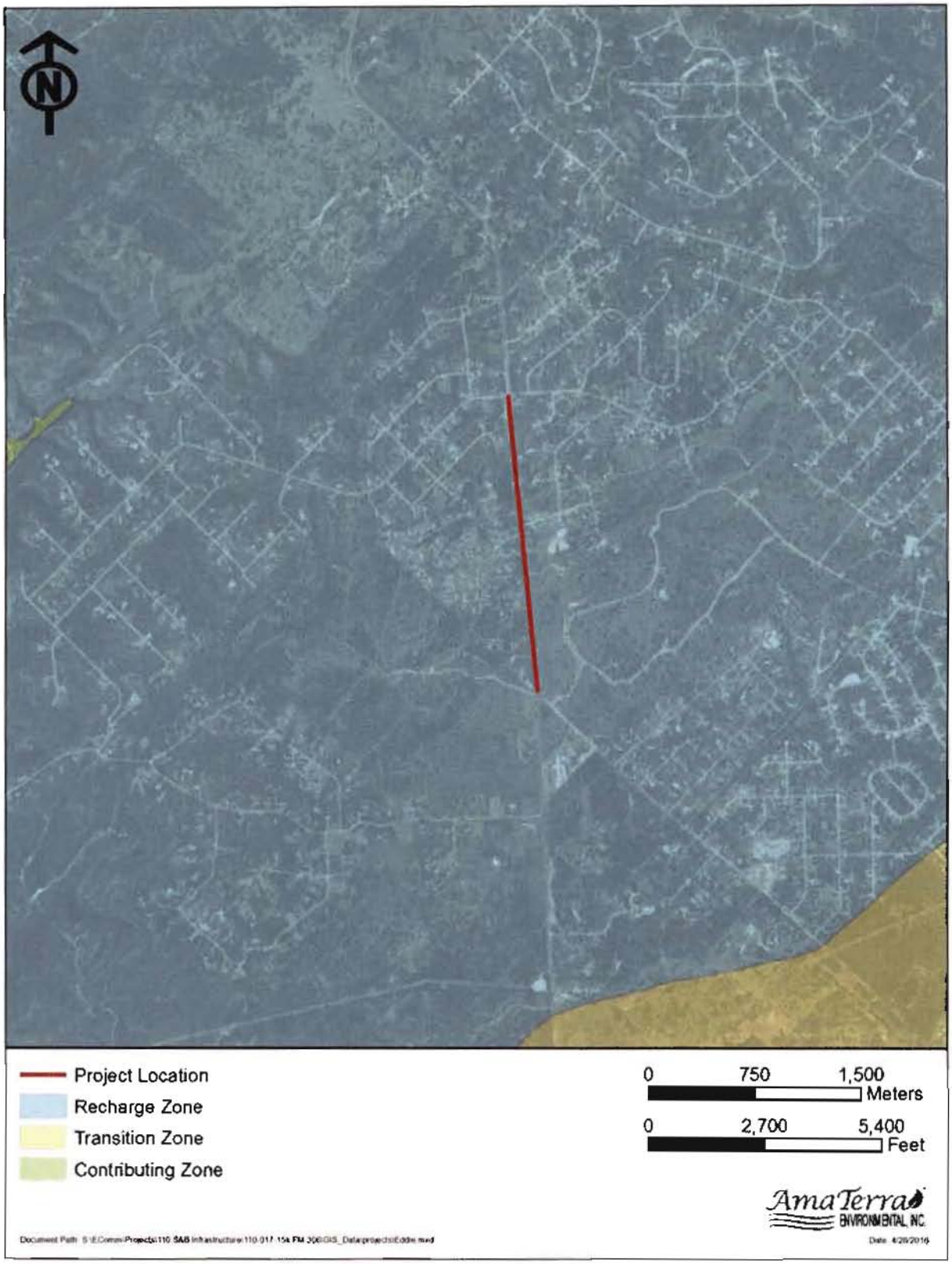
ATTACHMENT B

USGS/EDWARDS RECHARGE ZONE MAP



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ATTACHMENT C

PROJECT DESCRIPTION

The Texas Department of Transportation (TxDOT) proposes to improve an approximately 1.3-mile segment of Farm-to-Market Road (FM) 306 from Riverchase Way to Hoffmann Lane in Comal County, Texas. The existing facility consists of an undivided 2-lane roadway with 12-foot lanes and 5-foot shoulders. The proposed improvements would upgrade the facility to a 4-lane roadway with a continuous left-turn lane and bicycle lanes and 4-foot sidewalks along both sides.

Area of the site: The overall project area is approximately 28.66 acres, all of which occurs in existing ROW. The project would result in approximately 3.64 acres of new pavement.

Offsite areas: Offsite areas consist of rural residential subdivisions and undeveloped ranchland along both sides of the roadway.

Impervious cover: The project area includes approximately 7.16 acres of existing impervious cover. As previously noted, the proposed road improvements would add approximately 3.64 acre of new pavement to this total.

Permanent BMP's: The only permanent BMP would be a 15' minimum width vegetative filter strip along both sides of the entire length of the widening.

Proposed site use: The site would continue to be used as a roadway, conveying northbound and southbound traffic along FM 306.

Site history: Since the construction of FM 306, the site has always been used as a state-maintained roadway and its associated ROW.

Previous development: There has been no previous development of the site apart from the construction of FM 306 and associated features (signs, two box culverts)

Areas to be demolished: None.

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Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

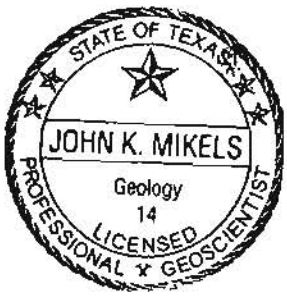
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30TAC213.

Print Name of Geologist: John K. Mikels, PG#14 Telephone: 512-445-3433

Date: 11/15/15 Fax: 512-445-5005

Representing: GEOS Consulting #50191 (Company name & TBPG/TBPE registration #)

Signature of Geologist:



Regulated Entity Name: FM 306 from Riverchase Way to Hoffmann Lane

Project Information

1. Date(s) Geologic Assessment was performed: 11/9-10/15
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

4. ☒ **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
RUD**	D	0.5-1.5
MEC***	D	0.5-1.5

** Soil Group Definitions (Abbreviated)*

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

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

C. Soils having a slow infiltration rate when thoroughly wetted.

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

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 100'
   Site Geologic Map Scale: 1" = 125 approx'
   Site Soils Map Scale (if more than 1 soil type): 1" = 125 approx'

9. Method of collecting positional data:

   ☒ Global Positioning System (GPS) technology.
   ☒ Other method(s). Please describe method of data collection: Aerial images

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. X 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. X The Recharge Zone boundary is shown and labeled, if appropriate. ***Site entirely inside RZ***

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.

X There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. X 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.

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ATTACHMENTS TO GEOLOGIC ASSESSMENT FORM

Project Name: FM 306 from Riverchase Way to Hoffmann Lane
Date of Assessment: 11/9-10/15
Assessment Conducted by: John K. Mikels, P.G., GEOS Consulting

Attachment Numbers below correspond to Attachment Numbers on the GA Form.

Attachment A: Geologic Assessment Table
Separate attachment hereto.

Attachment B: Stratigraphic Column
The Site is underlain by the following Cretaceous age strata (approx. strata thicknesses estimated from regional data, as there are no full, measurable sections exposed on the Site):

- Buda Formation: 40ft
- Del Rio Formation: 30-40ft
- Georgetown Formation: 20ft (mapped on/near site, but not apparent during this GA)
- Edwards Group
  - Person Formation: 180ft
  - Kainer Formation: 330ft

Attachment C: Site Geology
The shallower strata beneath the Site, and their estimated thicknesses, are cited above. The only bedrock outcrops seen on the Site are in the road-cut area near the center of Fig. 2 (Buda & Del Rio), and scattered small exposures (<500sq.ft.) of Person and Kainer, within the FM-306 right-of-way (ROW), across much of the site. Some of these exposures exhibited varying degrees of vugginess and fracturing; however soils and road-grading materials largely infilled most of these openings. In addition, most of these exposures are on higher ground and/or outside of channels (Photos E & F). Regional geologic mapping indicates Georgetown limestone (uppermost member of the Edwards Aquifer) on/near the crest of the road-cut centered within the Feature F-3 zone; however, no Georgetown was apparent within the ROW. The Site is on the eastern side of the Balcones Fault Zone. Regional geologic mapping indicates several faults transecting the Site (Figs. 1 & 2; BEG OFM-0099, BEG Miscellaneous Map No. 39). These faults strike N60-70°E and include both normal and reverse faults. Fault throws are estimated to be on the order of a few tens of feet. Fault traces were not evident on the Site, due to soil, slope rubble, road-base, and vegetative cover obscuring the faults. However, lateral changes (e.g: Buda limestone to Del Rio clay) in the strata exposed in the road-cut (center area of Fig. 2; Photos A, B) indicate the presence of the faults. Strata beneath the Site dip easterly at less than two degrees.

Attachment D: Site Geologic Map
Separate attachments hereto; maps includes geology, soils, and potentially significant GA features. Figure 1 is a map of the entire Site, while Figure 2 is a close-up of roughly the center third of the Site, where the potentially significant features are located (F-1, F-2, F-3).

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Attachments to Geologic Assessment Form

Project Name: FM 306 from Riverchase Way to Hoffmann Lane

Item Numbers below correspond to Item Numbers on the GA Form.

Item 5: Soils

The Soil Units and descriptions cited on the *Geologic Assessment* form and indicated on Figures 1 & 2, are taken from the USDA/NRCS Soil Survey interactive website (http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm) and are what are indicated for the Site *circa* the time of the USDA/NRCS survey. Summary descriptions of the USDA/NRCS soils shown on the maps are:

> **RUD**: Rumple-Comfort Association, 1-8% slopes; RUD soils typically consist of up to 12 to 28 inches of very stony/gravelly clay/clay loam overlying weathered limestone (Edwards Limestone in this case); stone fragments common on the surface; in Hydrologic Group D; typically well drained, with moderately low to moderately high permeability (0.06-0.20in/hr); forms on uplands and ridges as residuum from underlying limestone.
>
> **MEC**: Medlin-Eckrant Association, 1-8% slopes; MEC soils typically consist of up to 80 inches of clay or extremely stony clay overlying weathered limestone (Edwards Limestone in this case); in Hydrologic Group D; typically well drained, with very low to moderately high permeability (0.00-0.57in/hr); forms on uplands and ridges as residuum from underlying limestone.

SOILS NOTE: Roadway & ROW grading, backfilling, and paving has altered and/or removed natural soils from much of the Site. Cutting and backfill materials are apparent in much of the ROW. Hence, the soils shown on the Figures 1 & 2 Map may not accurately reflect currently exposed soils on much of the Site.

Item 12: Geologic & Manmade Features

Three potentially significant features were found during this GA (F-1, F-2, F-3). Their locations are shown on Figures 1 and 2, and summary information is presented in the Geologic Assessment Table.

F-1 and F-2 are anthropogenic features located at the discharge (western) ends of stormwater culverts crossing under FM-306. Both features are "swallow holes", scoured in the ephemeral stream channels by water flowing out from the culverts, then into the channels. Attached Photos C1, C2, D1, and D2 illustrate these features. Soil and debris washed into these features probably retards infiltration from them.

F-3 is a zone of faults located in the center third of the Site. These faults are described above in the Site Geology section. These faults are probably negligible recharge avenues, on the Site, for the following reasons:

- Minimal extent, each, across the Site (150-300ft).
- They transect the Site across some of its highest ground (refer to Fig. 2) and do not transect any channels, within the Site.

* Surficially, on & adjacent to the Site, these faults are predominantly in the Del Rio Clay, which would tend to seal up any faults transecting this strata, preventing dissolution and enlargement within the fault plane.

Item 13: Recharge Zone Boundary

The Site is entirely in the Recharge Zone (RZ). The nearest RZ boundary is about 1.3 miles SSE of the Site, where the Transition Zone begins.

Item 14: Wells

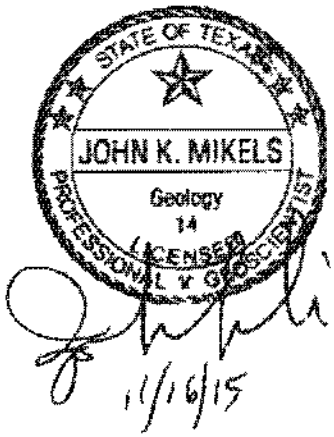
The shallowest significant aquifer beneath the Site is the Edwards Aquifer. No wells were seen on the Site during the conduct of this GA. Searches of the on-line TWDB-WIID database, the TCEQ Water Well Report Viewer, and the TxRRC online oil & gas well database did not reveal the presence of any wells (water, oil/gas, other) on the Site. There are numerous residential water wells in the neighborhoods immediately east and west of the Site.

SUMMARY, CONCLUSIONS & COMMENTS: Three reportable features (F-1, F-2, F-3) were found on this Site during the conduct of this Geologic Assessment. All of these features score sensitivities greater than 40 (see attached GA Table). However, only F-1 and F-2 might warrant further attention, as potentially significant points of recharge. Both of these features are located in ephemeral stream channels and are scoured swallow holes at the discharge ends of stormwater culverts beneath FM-306. Most flow in these channels probably quickly passes by these features, with little diversion into the features. Significant recharge, via F-1 and F-2, could probably be reduced/eliminated by filling them in and re-engineering them to prevent scouring by stormwater flow. Also, if potentially significant features are uncovered during the modifications to FM-306, they must be assessed and appropriate protective measures implemented.

REFERENCES CITED

Baumgardner, Jr., R. W. & Collins, E. W. (1991, revised 7/95), Geologic Map of the Hunter Quadrangle, Texas: UT-Bureau of Economic Geology, Open File Map OFM-0099.

Collins, E. W. (2000), Geologic map of the New Braunfels, Texas, 30 x 60 Minute Quadrangle: UT-Bureau of Economic Geology, Miscellaneous Map No. 39.



GEOLOGIC ASSESSMENT TABLE

Project Name: FM-306 Expansion/Improvements (by TxDOT) **Location:** Comal County, Texas

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B	1C	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE I.D. NO.	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	GEOL. FORM.	DIMENSIONS (FEET)			TREND (DEGREES)	OOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILLING	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPO-GRAPHY
						X	Y	Z		0/10	SF,Z,O	SF,Z,O		per flowchart	2B+5A+8B	<40	≥40	<1.6	≥1.6	
F-1	29.81214°	-98.10783°	MB, SW	30	Kk	30±	25±	4-6	S40°W±	0	NA	NA	N,C,O	35	65		65		X	Streambed/ Hillside
F-2	29.80761°	-98.10747°	MB, SW	30	Kk	30±	20±	3-4	S70°W±	0	NA	NA	N,C,O	35	65		65		X	Streambed/ Hillside
F-3	29.8078° - 29.8111°	-98.1070° - -98.1079	F, Z	30	Kbu, Kdr, Kk	1100±	>500	>1000	N60-70°E	0	NA	NA	N,C,O,F	30	60		60		X	Cliff & Hillside
NOTE: Feature F-3 is classified as a "Zone", to collectively address the three, or more, parallel faults which transect this 1100±ft stretch of FM-306																				
The individual fault planes are not discernible in this Zone, due to soil, slope rubble, & vegetation cover. Lateral strata changes, across the zone, indicate their presence.																				

NOTES: F-1 & F-2 locations collected via handheld GPS (Magellan Explorist Model 210). Fault locations mapped on GoogleEarth imagery.

Lat/Long Datum: WGS84

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

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

12: TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

STATE OF TEXAS
JOHN K. MIKELS
Geology
14
LICENSED
PROFESSIONAL GEOSCIENTIST

John K. Mikels, PG
Geologist's Printed Name

Signature & Seal

11/15/15
Date

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PHOTO A1 - View to east from near center of F-3 Zone. Buda Formation to left and Del Rio Formation to right; fault plane near center, downthrown to left.

PHOTO A2 - View to west from near center of F-3 Zone. Buda Formation to right and Del Rio Formation to left; fault plane near center, downthrown to right. View from across FM-306 from Photo A1 view.

PHOTO B1 - View to east from near north end of F-3 Zone. Buda Formation to left and Del Rio Formation to right; fault plane near center, downthrown to left.

PHOTO B2 - View to east, looking about 120ft south of Photo B2. Buda Formation to right and Del Rio Formation to left; fault plane near center, downthrown to right.

PHOTO C1 - Feature F-1. Scoured "swallow hole" at discharge end of stormwater culvert beneath FM-306. Flow to right (southwesterly). Edwards (Kainer Formation?) exposed in "hole". View to south.

PHOTO C2 - Feature F-1. Scoured "swallow hole" at discharge end of stormwater culvert beneath FM-306. Edwards (Kainer Formation?) exposed in "hole". View towards downstream (southerwesterly). Note "terra-rosa" soil in scoured hole.

PHOTO D1 - Feature F-2. Scoured "swallow hole" at discharge end of stormwater culvert beneath FM-306. Flow to left (southwesterly). Edwards (Kainer Formation?) exposed in "hole". View to north. Note concrete "paved" ROW channel draining towards F-2.

PHOTO D2 - Feature F-2. Scoured "swallow hole" at discharge end of stormwater culvert beneath FM-306. Edwards (Kainer Formation?) exposed in "hole". View towards downstream (southerwesterly). Culvert & FM-306 to the left.

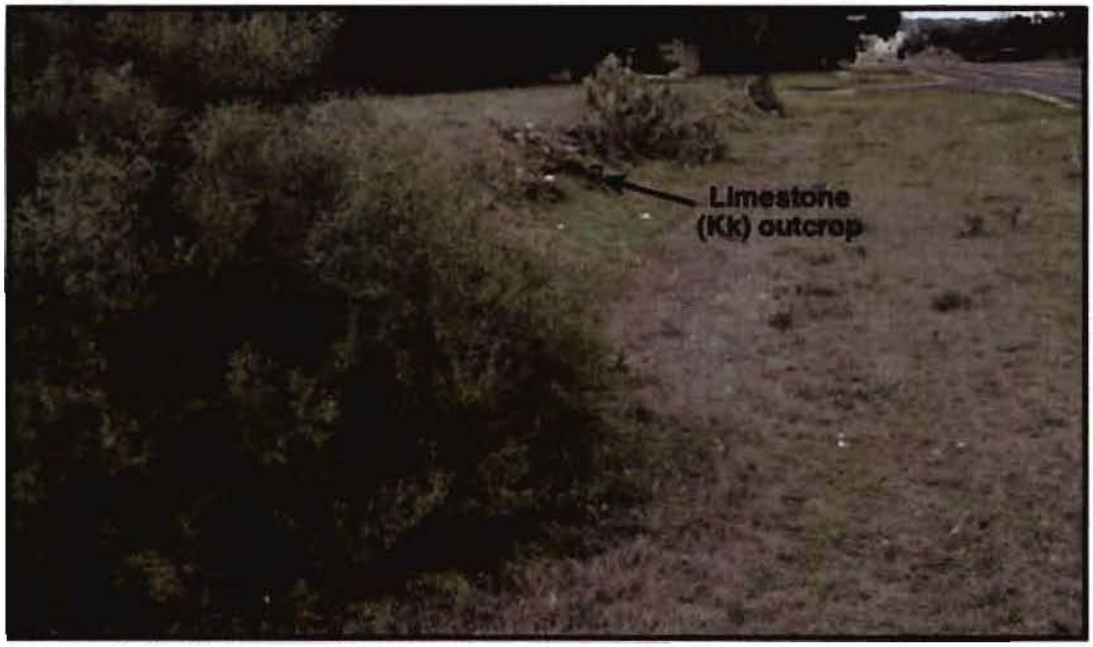

PHOTO E1 - View to north from near southern end of Site. FM-306 at right, Privacy and residential subdivision to left. View is along ROW, graded to direct runoffaway from homes. Cut/grading exposed limestone (Kk) outcrop in upper foreground

PHOTO E2 - Limestone (Kk) exposed in ROW by cut/grading to create runoff channel in ROW, paralleling FM-306. Channel in foreground. Note weathering of limestone and resulting terra-rosa soil infilling.

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PHOTO F1 - Typical cut/filled/graded ROW along southern half of site. FM-306 to the left. Gravel/cobbles visible in forground appear to be imported, as part of ROW channel construction. Scarce bedrock outcrops and in-situ soils. Channel thalweg near tree-line at right.

PHOTO F2 - Limestone (Kk) exposed in ROW by cut/grading to create runoff channel in ROW, paralleling FM-306. View to west in southern area of site.

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FEET
0 500 1000
Contour Interval = 5ft

Fig. 1 - Geology, Soils, & Features Map: FM 306 from Riverchase Way to Hoffmann Lane

Map base from Google Earth; GA boundaries and topographic contours from TxDOT via S&B Infrastructure, LTD

DATA SOURCES
- Geologic Map of the Hunter Quadrangle, UT-BEG OFM-0099 (R. W. Baumgardner & E. W. Collins; 1991)
- USDA/NRCS Web Soil Survey viewer
- TCEQ Edwards Aquifer Viewer website
- Site inspection by GEOS Consulting (11/9-10/15)

Geology
- Kbu: Buda Formation
- Kdr: Del Rio Formation
- Kgt: Georgetown Formation
- Kp: Edwards Group, Person Formation
- Kk: Edwards Group, Kainer Formation

Fault — U / D — Formation Contact

F-1: Potentially Signficant Feature

Soils
- ***RUD***: Rumple-Comfort Association, 1-8% slopes
- ***MEC***: Medlin-Eckrant Association, 1-8% slopes

Soil Unit Boundary

GEOS Consulting ★ Austin, TX ★ (512)445-3433 ★ geos-jkm@swbell.net ★ Project No. 15-18 ★ Final Date: 11/16/15

NOTE: Complete area of this Geologic Assessment shown on Fig. 1.

FEET
0 100 200
Contour Interval = 5ft

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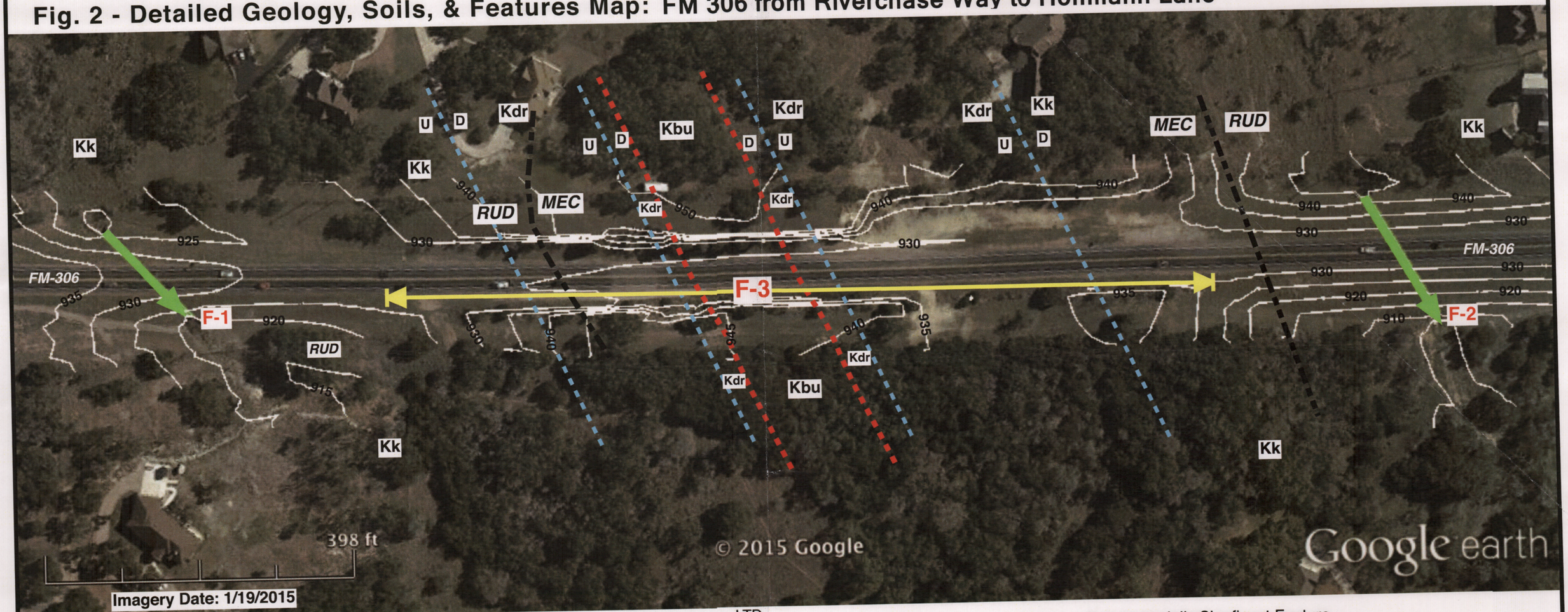
Fig. 2 - Detailed Geology, Soils, & Features Map: FM 306 from Riverchase Way to Hoffmann Lane



Map base from Google Earth; GA boundaries and topographic contours from TxDOT via S&B Infrastructure, LTD

DATA SOURCES
- Geologic Map of the Hunter Quadrangle, UT-BEG OFM-0099 (R. W. Baumgardner & E. W. Collins; 1991)
- USDA/NRCS Web Soil Survey viewer
- TCEQ Edwards Aquifer Viewer website
- Site inspection by GEOS Consulting (11/9-10/15)

Geology
Kbu: Buda Formation
Kdr: Del Rio Formation
Kk: Edwards Group, Kainer Formation
Fault U/D
Formation Contact

F-1: Potentially Signficant Feature
Stormwater Culvert Beneath FM-306

Soils
RUD: Rumple-Comfort Association, 1-8% slopes
MEC: Medlin-Eckrant Association, 1-8% slopes
Soil Unit Boundary

GEOS Consulting ★ Austin, TX ★ (512)445-3433 ★ geos-jkm@swbell.net ★ Project No. 15-18 ★ Final Date: 11/16/15

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Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating 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. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Texas Department of Transportation / Mario R. Jorge, P.E.

Date: 5/18/16

Signature of Customer/Agent:

Mario R. Jorge P.E.

Regulated Entity Name: FM 306 from Riverchase Way to Hoffmann Lane

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☐ Commercial
   ☐ Industrial
   ☒ Other:Roadway

2. Total site acreage (size of property): 28.66 ac

3. Estimated projected population: 0

4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops		÷ 43,560 =	0
Parking		÷ 43,560 =	0
Other paved surfaces	542,149 sq ft	÷ 43,560 =	10.80
Total Impervious Cover	542,149 sq ft	÷ 43,560 =	10.80

Total Impervious Cover 10.80 ÷ **Total Acreage** 28.66 **X 100** = 37.7% **Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality.** A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

Complete questions 7 - 12 if this application is exclusively for a road project.

7. Type of project:

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

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

   ☐ Concrete
   ☒ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): 6,850 feet.

   Width of R.O.W.: 182.2 feet.
   L x W = 1,248,331 Ft^2 ÷ 43,560 Ft^2/Acre = 28.66 acres.

10. Length of pavement area: 6850 feet.

    Width of pavement area: 79.1 feet.
    L x W = 542,149 Ft^2 ÷ 43,560 Ft^2/Acre = 10.80 acres.
    Pavement area 10.80 acres ÷ R.O.W. area 28.66 acres x 100 = 37.7% impervious cover.

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

0% Domestic	0.00 Gallons/day
0% Industrial	0.00 Gallons/day
0% Commingled	0.00 Gallons/day
TOTAL gallons/day 0.00	

15. Wastewater will be disposed of by:

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

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

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

☐ Sewage Collection System (Sewer Lines):

☐ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

☐ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

☐ The SCS was previously submitted on_____.

☐ The SCS was submitted with this application.

☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

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

☐ Existing.
☐ Proposed.

16. ☐ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

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

Site Plan Scale: 1" = 100'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA 2016

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

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

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☐ There are 1 (#) 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 §76.

☒ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:

☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☐ **Attachment D - Exception to the Required Geologic Assessment.** A request and justification for an exception to a portion of the Geologic Assessment is attached.

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

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

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

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

26. ☒ Surface waters (including wetlands).

☐ N/A

27. ☒ Locations where stormwater discharges to surface water or sensitive features are to occur.

☐ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

29. ☒ 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.

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

ATTACHMENT A

FACTORS AFFECTING WATER QUALITY

Water quality can be adversely affected by sedimentation or increased turbidity due to erosion. Construction site activities for the proposed project that could contribute to erosion include clearing vegetation and excavating, moving, and compacting soil. Vegetation removal and surface work loosens soil, removes protective root structures, and exposes soil directly to the erosive powers of precipitation and stormwater runoff. Soil compaction reduces precipitation infiltration and increases overland water flow, thereby increasing the quantity of stormwater runoff available to erode soil.

Road base materials may contain fine particulates. If these materials are exposed to rain or surface flow, the fine particulates may be transported offsite via runoff and contribute to sedimentation or increased turbidity of receiving waters.

The use of asphaltic material, such as that proposed for the improvements on FM 306, can adversely impact water quality through the introduction of organic contaminants into receiving waters. Heavy petroleum hydrocarbons and polynuclear aromatic hydrocarbons typically found in asphalt can bind to particulates in runoff and thus be transported offsite.

The likelihood of impacts on water quality can depend on the availability of pathways for conveyance of potential pollutants from the construction site to a water body through runoff. At the location of the proposed project, there are no storm sewers. In addition, construction plans call for the use of manufactured compost topsoil, soil retention blankets, and temporary silt fencing and rock filter dames throughout the project area. These factors would likely mitigate against potential adverse impacts on water quality during the construction phase of the proposed project.

ATTACHMENT B

VOLUME AND CHARACTER OF STORMWATER

Permanent BMP's are required reduce the increase in total suspended solids (TSS) load associated with development by at least 80%. Vegetative filter strips provide 80% removal provided that the contributing drainage area does not exceed 72 feet in the direction of flow and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with a maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. (TCEQ Removal Calculations 4/20/2009, #16 Vegetative Filter Strips)

> *"The filter strip should extend along the entire length of the contributing area and the slope should not exceed 20%. The minimum dimension of the filter strip (in the direction of flow) should be no less than 15 feet. The maximum width (in the direction of flow) of the contributing impervious area should not exceed 72 feet."* (Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices (RG-348- Revised 2005), Page 3-55.

This project will include an additional 3.64 acres of impervious cover. With an annual rainfall average of 34 inches, the project would generate an additional 10.3 acre-feet of runoff per year.

Based on the TSS removal requirement of 80%, the required TSS load reduction for the project would be 3,267 lbs/yr. For the engineered vegetated filter strips proposed for this project that meet the width and slope criteria, the strips would remove 5,173 lbs/year, which exceeds the project load removal requirements.

The project proposes a minimum 15-foot (varying up to approximately 63 feet) engineered filter strip along the entirety of the length of pavement widening. The approximate slope of the embankments where the vegetative filter strips would be placed ranges from 10 to 20%. The maximum width of the proposed contributing impervious cover is 35 feet at locations of right-turn lanes and 24 feet throughout the rest of the project. Combined with the existing impervious cover, the maximum width is 87 feet at locations of right-turn lanes and 76 feet throughout the rest of the project. All proposed design criteria comply with the guidance provided in Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices for engineered filter strips.

PROJECT NAME	***FM 306 FROM RIVER CHASE TO HOFFMANN LN***		
	CSJ: 1728-02-059		
Length of Project =	1.297 miles	6,850.00 feet	
EXISTING ROW (Area calculated in microstation) =		1,248,331.00 ft^2	28.66
EXISTING ROADWAY (Area calculated in microstation) =		295,435.00 ft^2	6.78
EXISTING DRIVEWAYS & PARKING AREAS (Area calculated in microstation) =		9,106.00 ft^2	0.21
EXISTING RIP-RAP (Area calculated in microstation) =		7,451.00 ft^2	0.17
TOTAL EXISTING IMPERVIOUS COVER		311,992.00 ft^2	7.16
PROPOSED ROW (Same as existing)		1,248,331.00 ft^2	28.66
PROPOSED ROADWAY (Area calculated in microstation) =		470,358.00 ft^2	10.80
PROPOSED DRIVEWAYS (Area calculated in microstation) =		71,791.00 ft^2	0.00
PROPOSED RIP-RAP (Area calculated in microstation) =		0.00 ft^2	0.00
TOTAL PROPOSED IMPERVIOUS COVER		542,149.00 ft^2	10.80
Pre-Construction Fraction of Impervious Cover (IC)			24.99
Post-Construction Fraction of Impervious Cover (IC)			37.68
Net increase in Impervious Area (An)		230,157.00 ft^2	3.64

Runoff Coefficient Calculations:

Pre-Construction Runoff

$Rv = 1.72x(IC)^3 - 1.97x(IC)^2 + 1.23x(IC) + 0.02$

$Rv = 1.72x(0.3444)^3 - 1.97x(0.3444)^2 + 1.23x(0.3444) + 0.02$

$Rv = 0.23$

Post-Construction Runoff

$Rv = 1.72x(IC)^3 - 1.97x(IC)^2 + 1.23x(IC) + 0.02$

$Rv = 1.72x(0.4318)^3 - 1.97x(0.4318)^2 + 1.23x(0.4318) + 0.02$

$Rv = 0.30$

Linda Cox, P.E.

ATTACHMENT C

SUITABILITY LETTER FROM AUTHORIZED AGENT

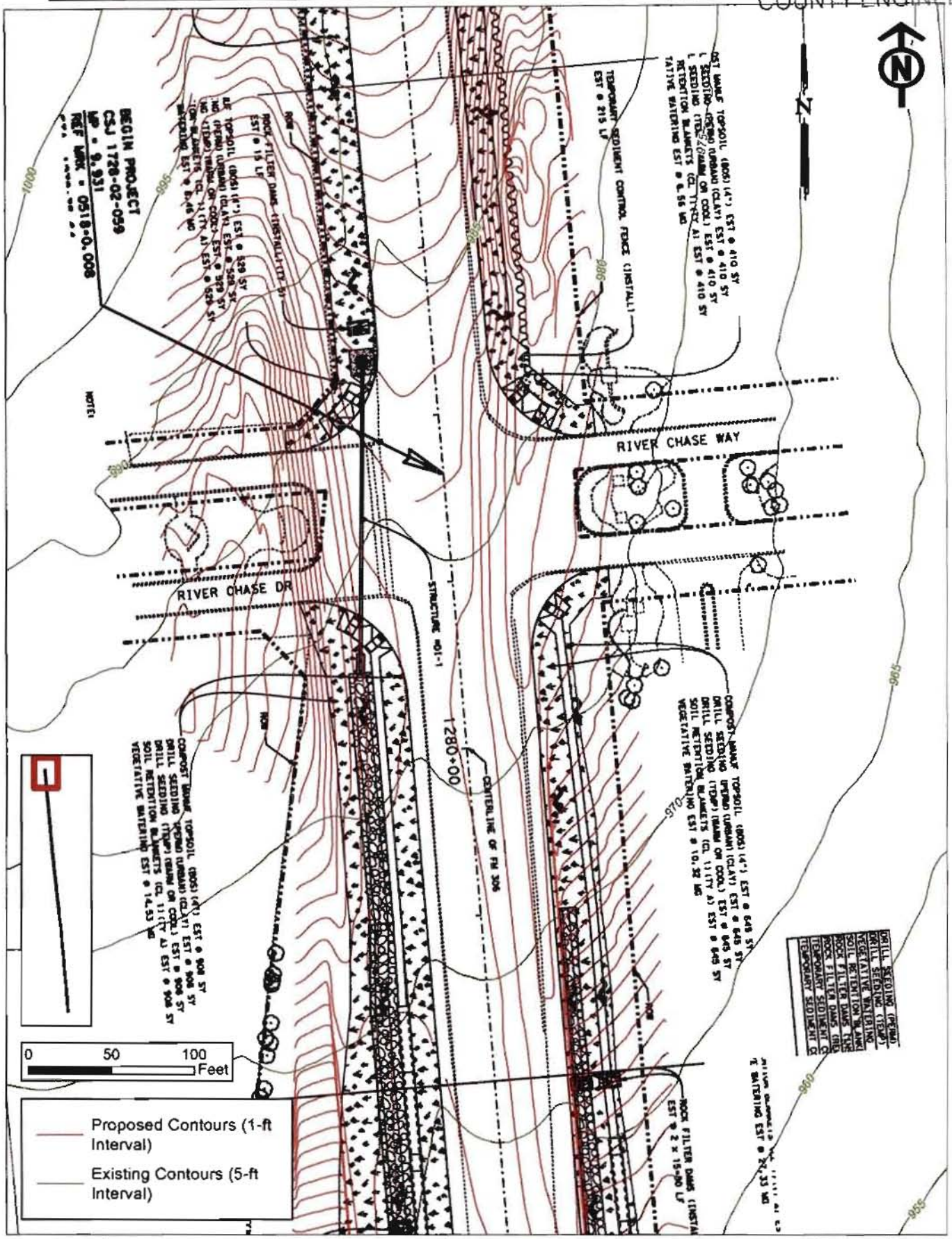
not applicable

ATTACHMENT D

EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

not applicable

SITE PLAN



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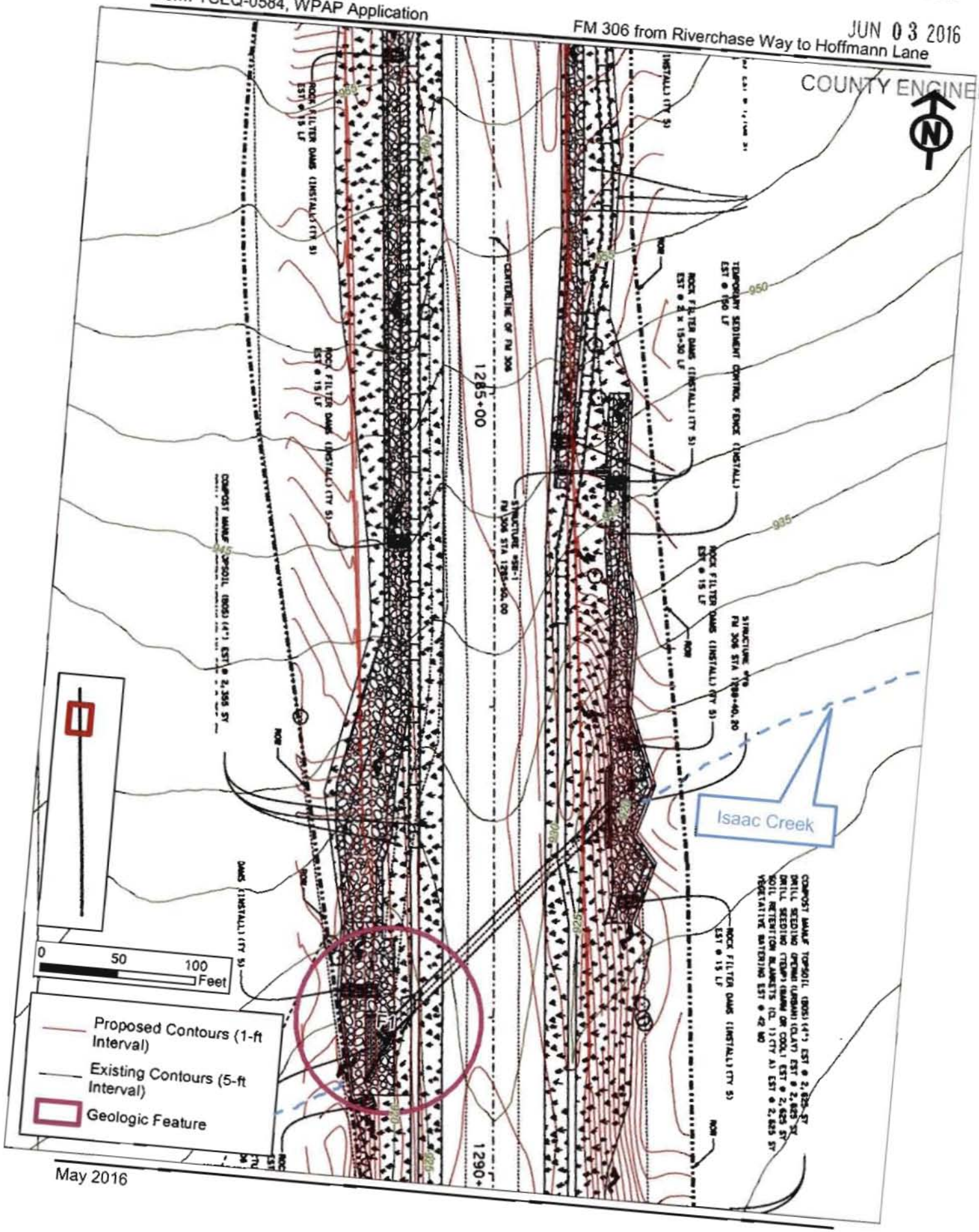
FM 306 from Riverchase Way to Hoffmann Lane



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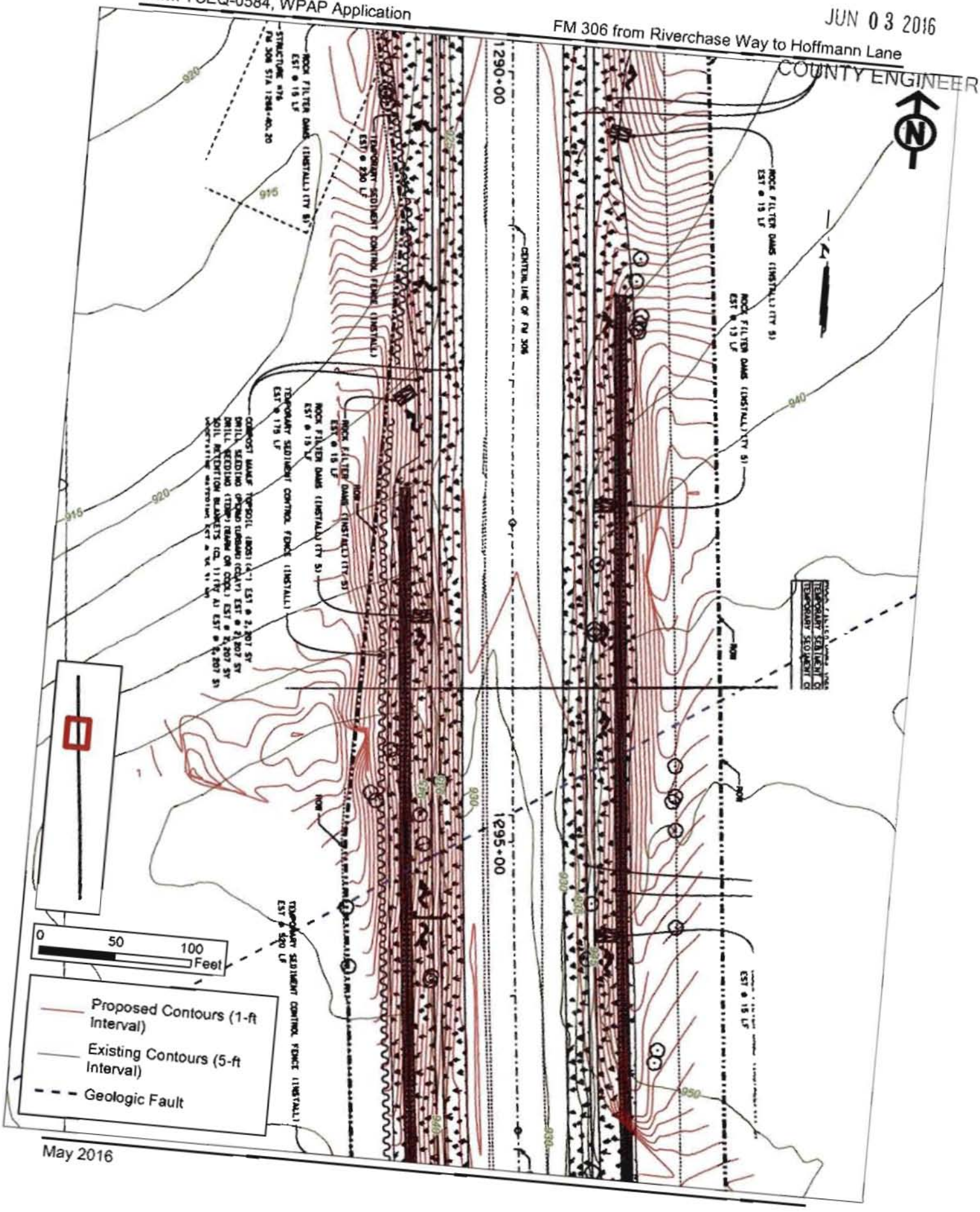

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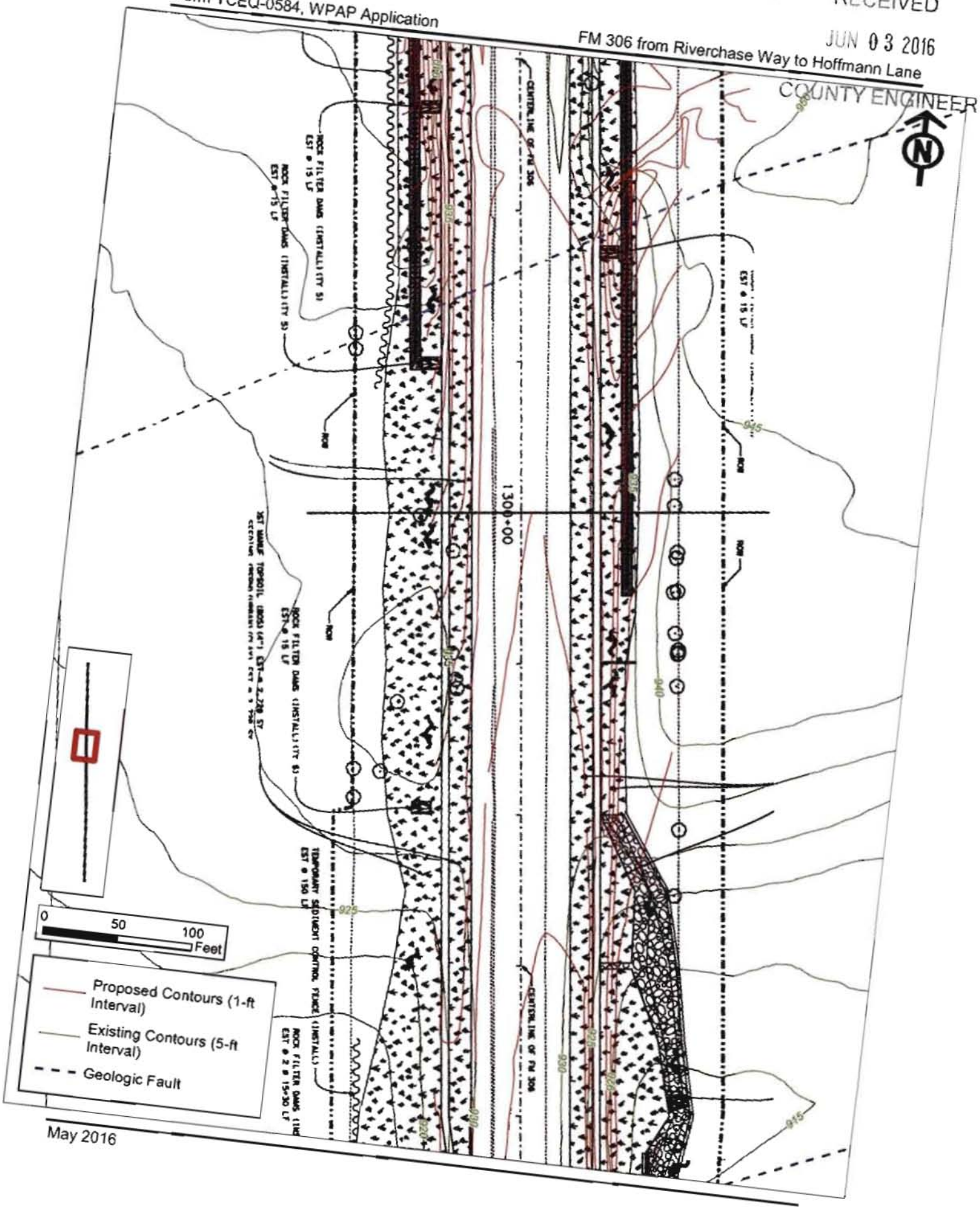

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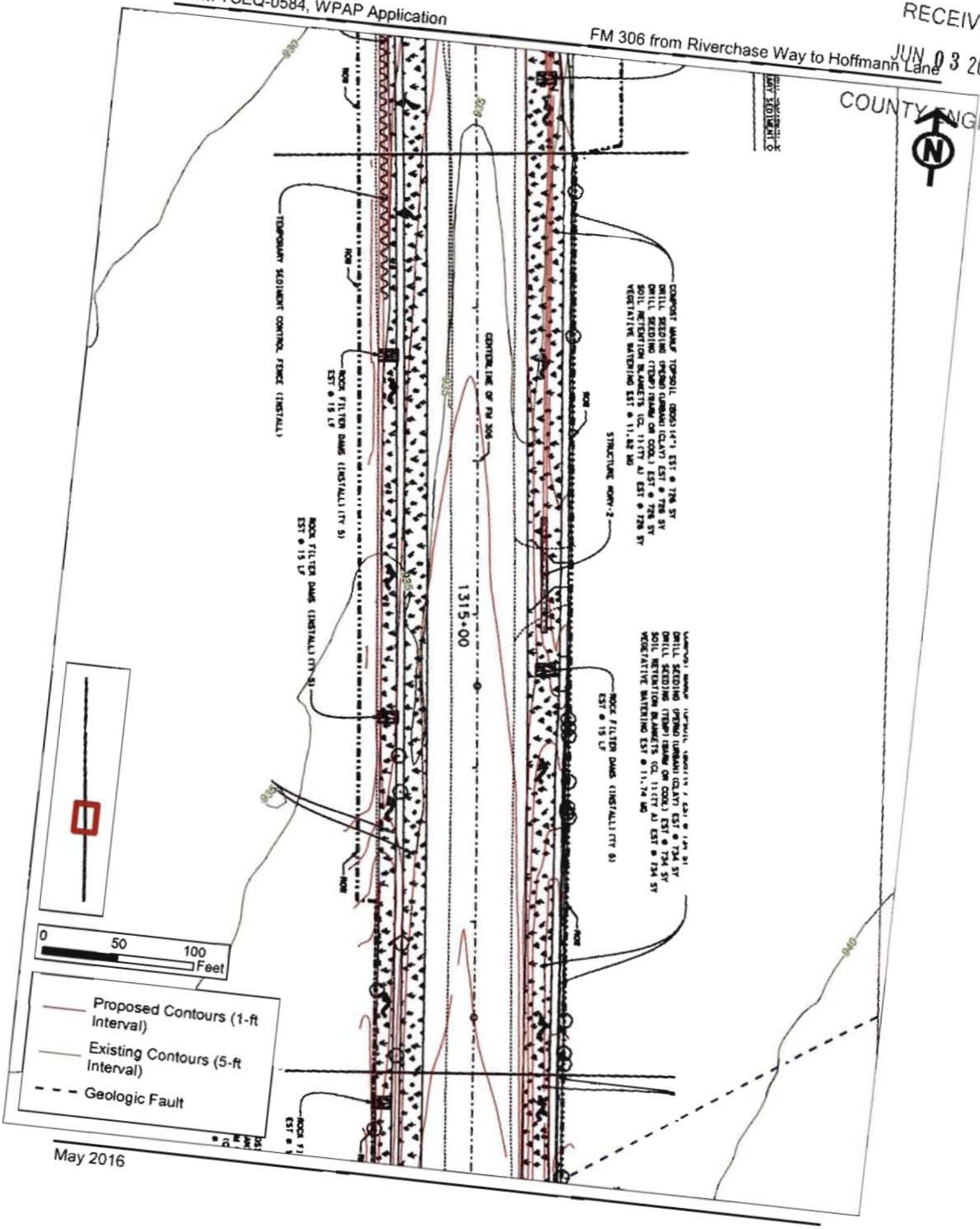
FM 306 from Riverchase Way to Hoffmann Lane

May 2016

FM 306 from Riverchase Way to Hoffmann Lane



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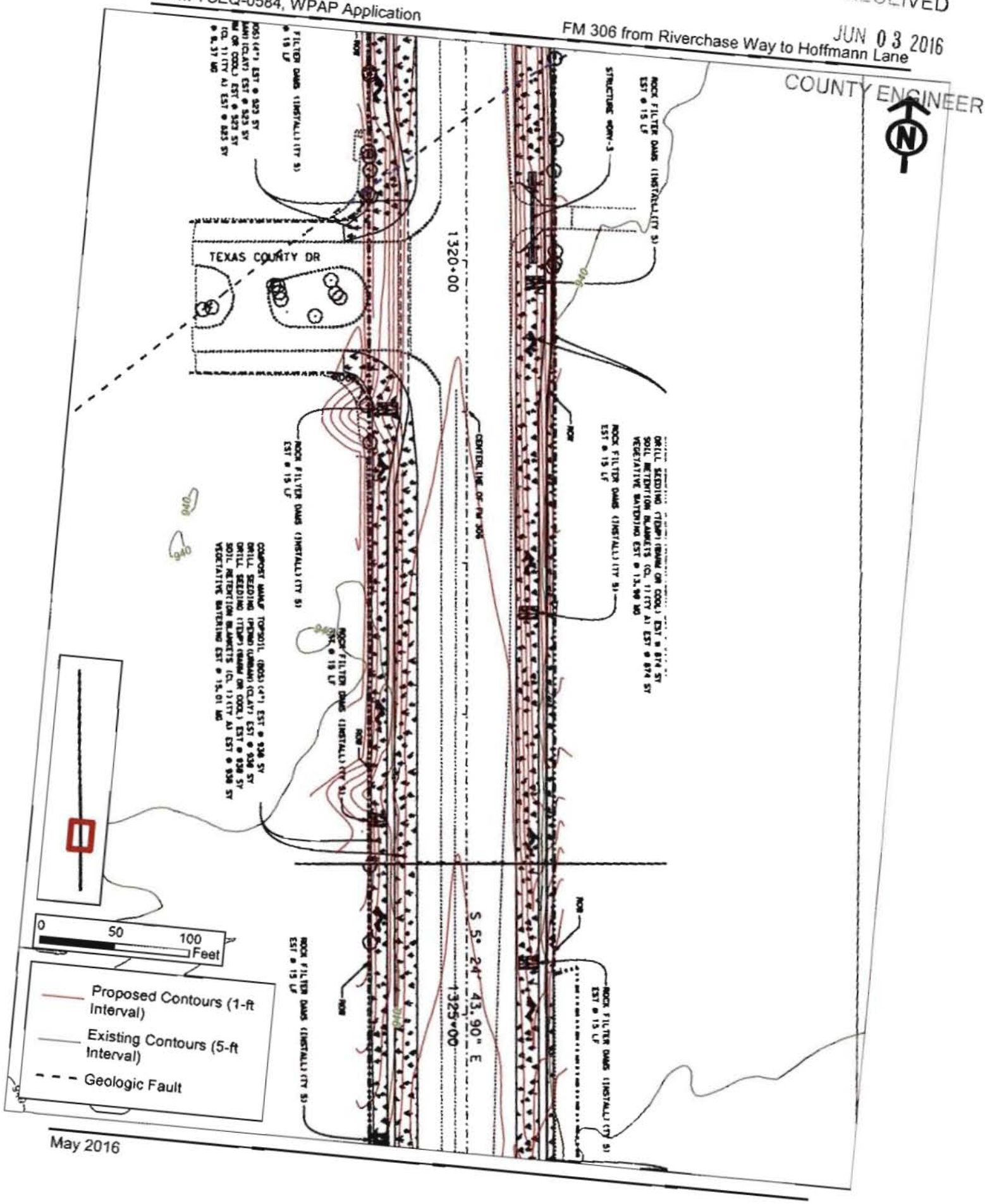

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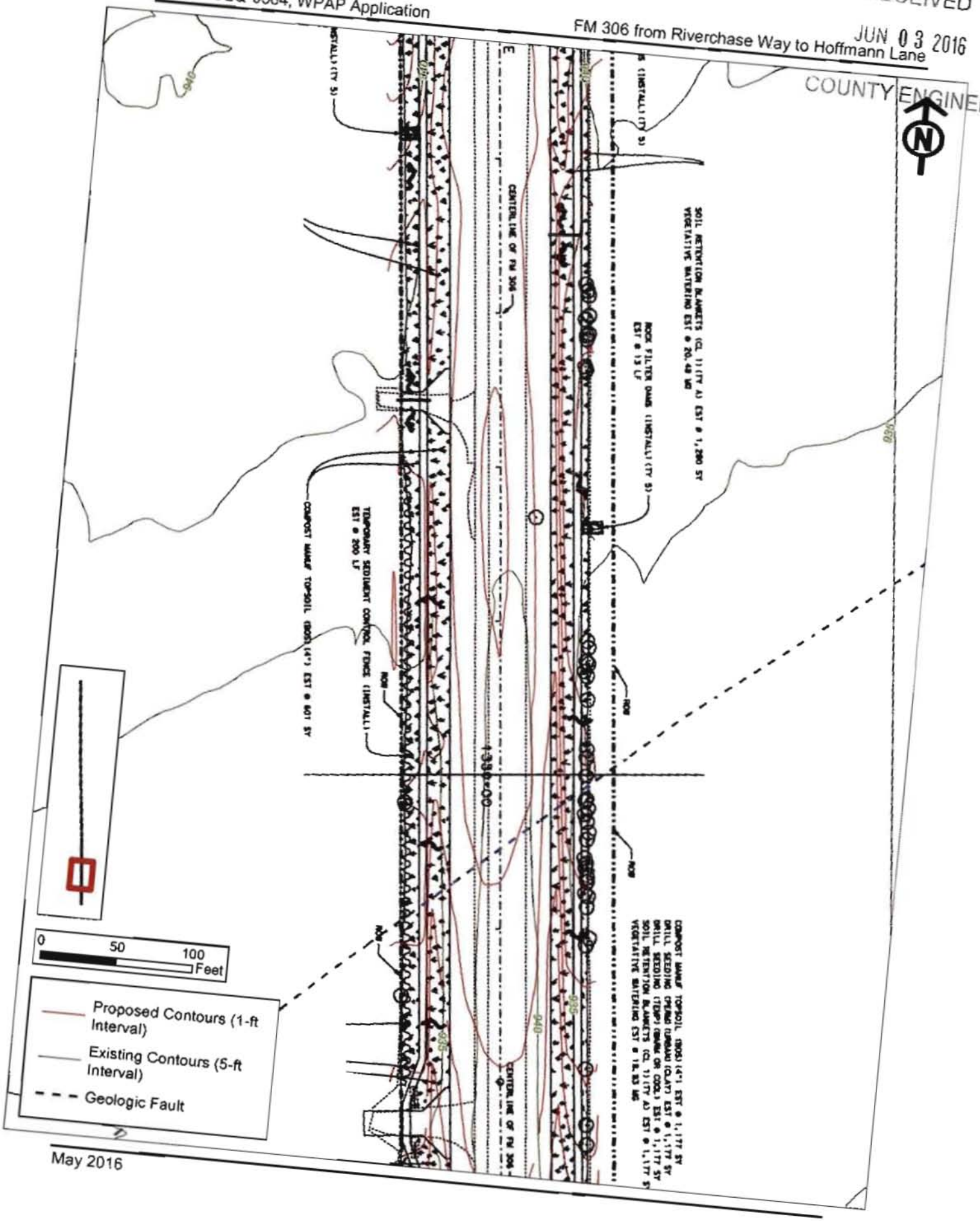

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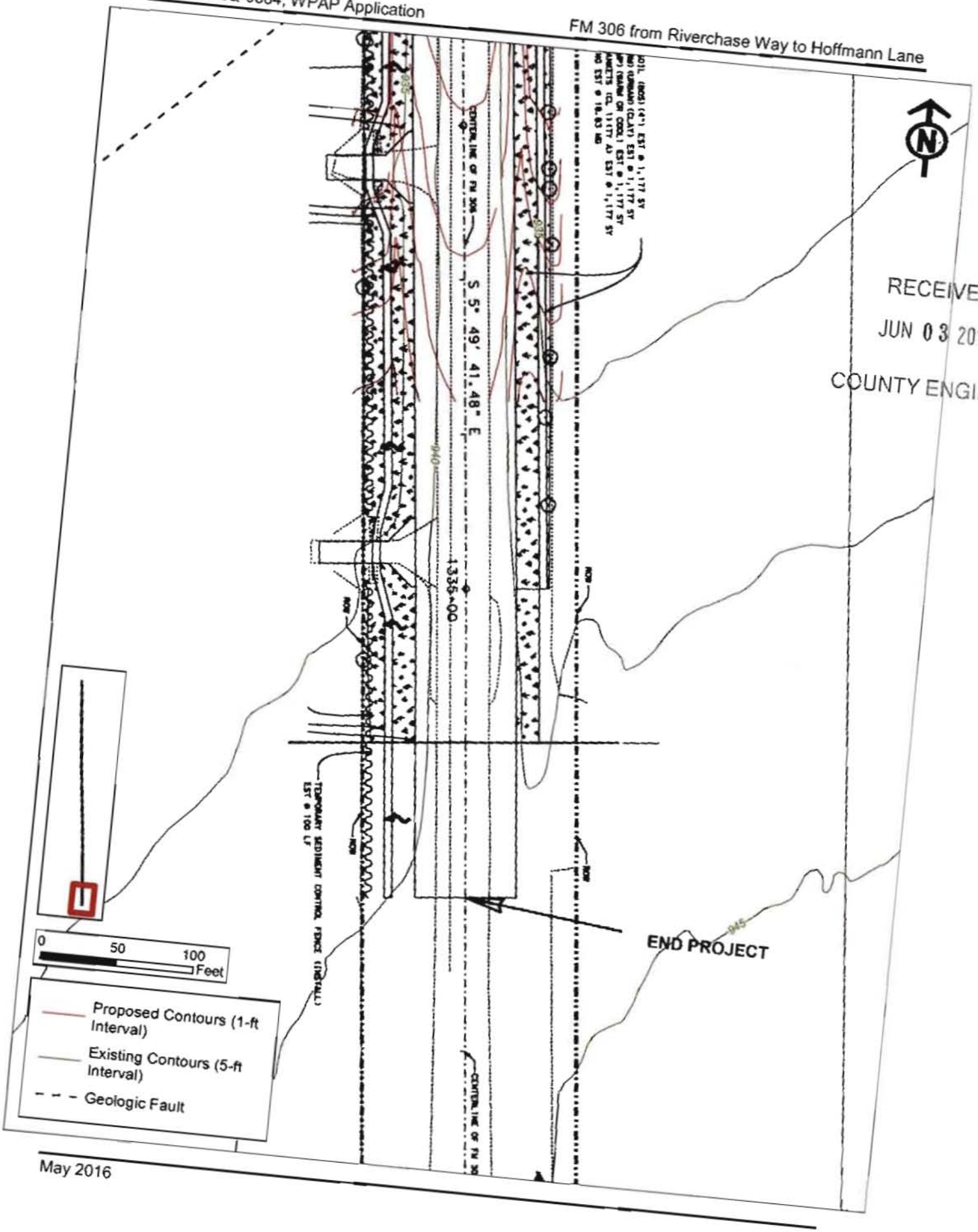

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Temporary Stormwater Section

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: Texas Department of Transportation / Mario R. Jorge, P.E.

Date: 5/18/16

Signature of Customer/Agent:

Regulated Entity Name: FM 306 from Riverchase Way to Hoffmann Lane

Project Information

Potential Sources of Contamination

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

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

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

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

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

☒ 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.

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.

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ATTACHMENT A

SPILL RESPONSE ACTIONS

The contractor would take appropriate measures to prevent, minimize, and control the spill of fuels, lubricants, and other hazardous materials in the construction staging areas. In the event of a spill, the following procedures will be immediately followed:

Minor spills (small quantities of oil, gasoline, paint, etc. will be contained, and subsequently treated, with absorbent materials. These materials will be promptly removed and disposed of properly. Any spilled materials will be recovered if possible. Once the absorbent material is removed, the contaminated area will be cleaned and contaminated cleanup materials will be disposed of properly

Spills of greater than minor quantities, but under reporting limits, will be contained either with absorbent materials (if on paved or impermeable surfaces) or through construction of an earthen dike (if on a soil surface). Spills on paved/impermeable surfaces will be cleaned up additional absorbent materials, cat litter and/or rags. Spills on soil surfaces will be cleaned up by digging up and properly disposing of contaminated soil. If necessary, construction activities will be stopped to allow containment and cleanup activities to commence.

Spills of quantities exceeding reportable quantities will be reported to 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, the Environmental Release Hotline will be contacted at 1-800-832-8224. If the spill exceeds a federal reportable quantity, the contractor will notify the National Response Center at (800) 424-8802. Following telephone notification the contractor will follow up with a written report. The services of a spills contractor or a Haz-Mat team will be obtained immediately; construction personnel will not attempt cleanup until the appropriate and qualified staffs have arrived at the job site.

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ATTACHMENT B

POTENTIAL SOURCES OF CONTAMINATION

Potential sources of sediment to stormwater runoff include:

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

Potential pollutants and sources, other than sediment, to stormwater runoff include:

- Staging Area- small fueling activities, minor equipment maintenance, sanitary facilities, and hazardous waste storage.
- Materials Storage Area- general building materials, solvents, adhesives, paving materials, paints, aggregates, and trash.

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ATTACHMENT C

SEQUENCE OF MAJOR ACTIVITIES

The initial step in construction activities concerning stormwater management will be the installation of controls down-slope of the work area and initiation of inspection and maintenance activities. As phased construction proceeds, interim stabilization practices will be employed. Erosion and sedimentation controls will be adjusted during construction to meet requirements and changing conditions and as directed/ approved by the Engineer.

Major soil-disturbing activities will be undertaken in the following sequence:

Prepare right-of-way (21.88 ac)
Place of road base (3.77 ac)
Ditch grading (0.71 ac)
Upgrading of box culverts (0.02 ac [800 sq. ft.])
Final grading and placement of topsoil 8.48 ac)

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ATTACHMENT D

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

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The primary temporary BMPs proposed for this project are temporary sediment control fences and rock filter dams. Approximately 3,390 linear feet of silt fences and 662 linear feet of rock filter dams are proposed. In addition, two approximately 78-square-yard construction entrances are also proposed.

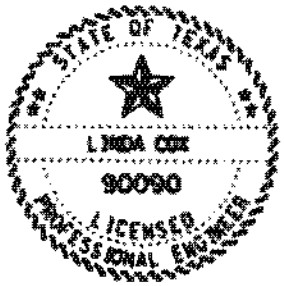
Because of the nature of the proposed project (widening of a roadway), it is not practical to install run-on prevention in the existing roadway along the length of the project. Both run-on and stormwater originating in the area of construction, however, will be forced through either sediment control fencing or rock filter dams, which will minimize the off-site transport of sediment.

RDWY: FM 306
CSJ: 1728-02-059
LIMITS: FROM RIVER CHASE WAY TO HOFFMANN LN
COUNTY: COMAL

GENERAL NOTE IN PLANS CALLING OUT TY 5 ROCK FILTER DAM.

--Item 506--
Rock Filter Dam (Ty 5) (reinforced) constructed as follows:

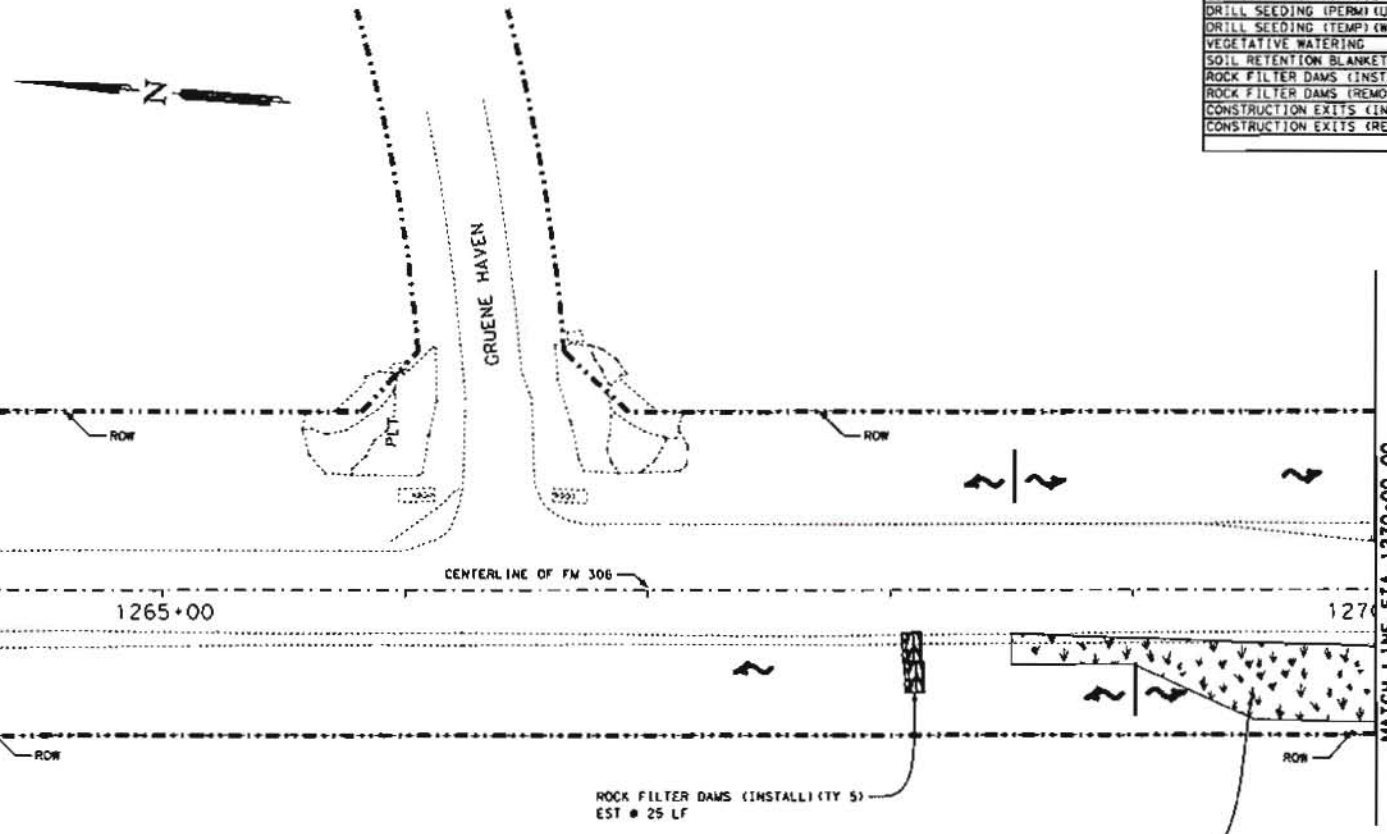
Height:	6" to 12", as directed by the Engineer, measured vertically from the existing ground to the top of the filter dam, with wire mesh
Top Width:	24"
Slopes:	2:1 maximum (outside clear zone) 6:1 maximum (within clear zone)
Aggregate:	Gradation shall be 3 to 6 inches.



Linda Cox, P.E.

04/04/2016

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	362	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	362	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	362	SY
VEGETATIVE WATERING	5.79	MG
SOIL RETENTION BLANKETS (CL1) (TY A)	362	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	25	LF
ROCK FILTER DAMS (REMOVE)	25	LF
CONSTRUCTION EXITS (INSTALL) (TY 1)	78	SY
CONSTRUCTION EXITS (REMOVE)	78	SY



STATE OF TEXAS
LINDA COX
90090
LICENSED
PROFESSIONAL ENGINEER
Linda Cox, P.E.
3-4-16

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COUNTY ENGINEER

NOTE:
SW3P MEASURES SHOWN SHALL BE PLACED PRIOR TO CONSTRUCTION AS SHOWN AND/OR AS DIRECTED BY THE ENGINEER

NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS
FM 306

0 50
SCALE IN FEET

SHEET 1 OF 13

DIST	COUNTY	SHEET NO.
SAT	COMAL	288

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306

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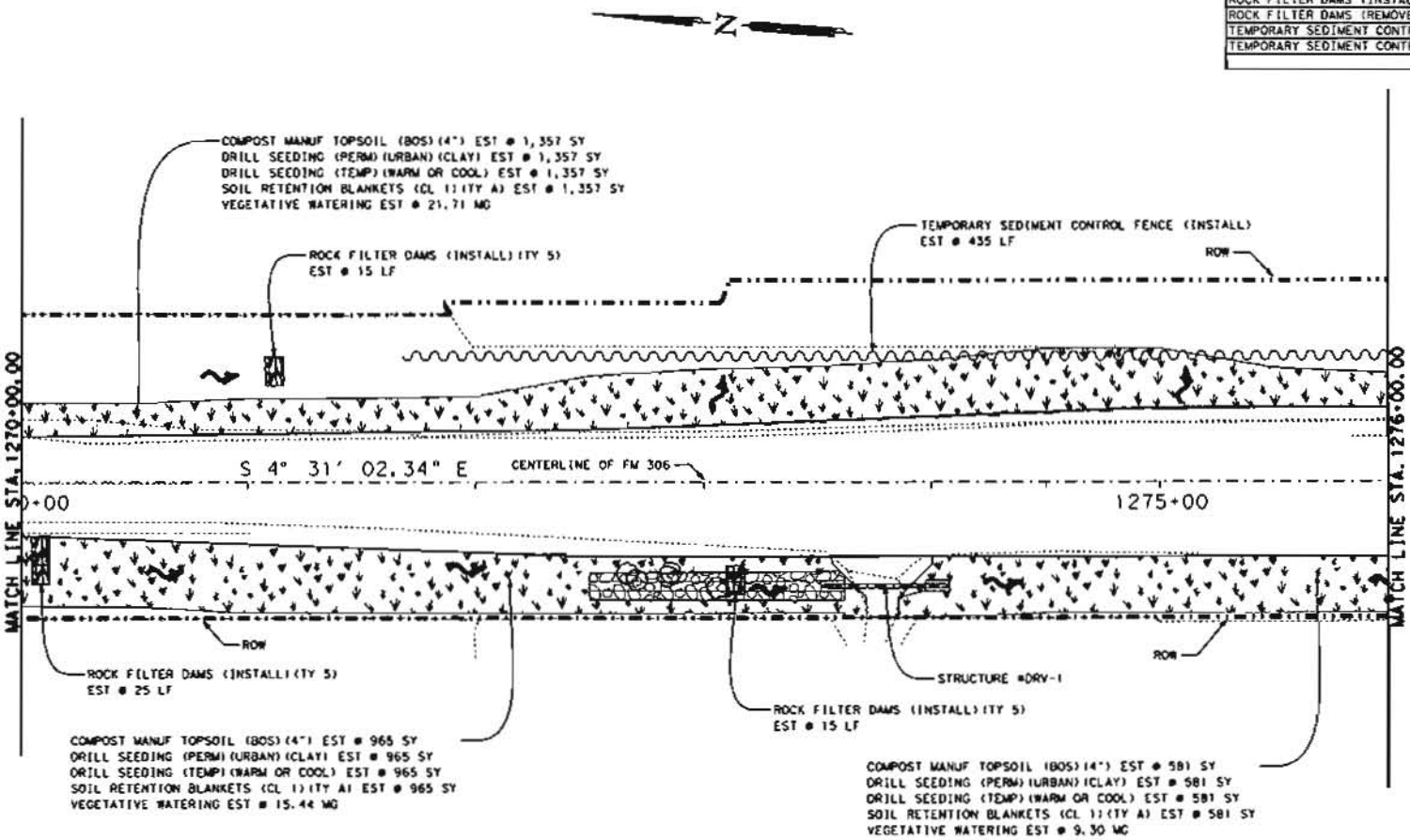
ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	2903	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	2903	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	2903	SY
VEGETATIVE WATERING	46.45	MG
SOIL RETENTION BLANKETS (CL1) (TY A)	2903	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	55	LF
ROCK FILTER DAMS (REMOVE)	55	LF
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	435	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	435	LF



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JUN 03 2016

COUNTY ENGINEER

NOTE:
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NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

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- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

SCALE IN FEET 0 50

STATE OF TEXAS
LINDA COX
90090
LICENSED PROFESSIONAL ENGINEER
Linda Cox, P.E.
4-4-16

SHEET 2 OF 13

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		289

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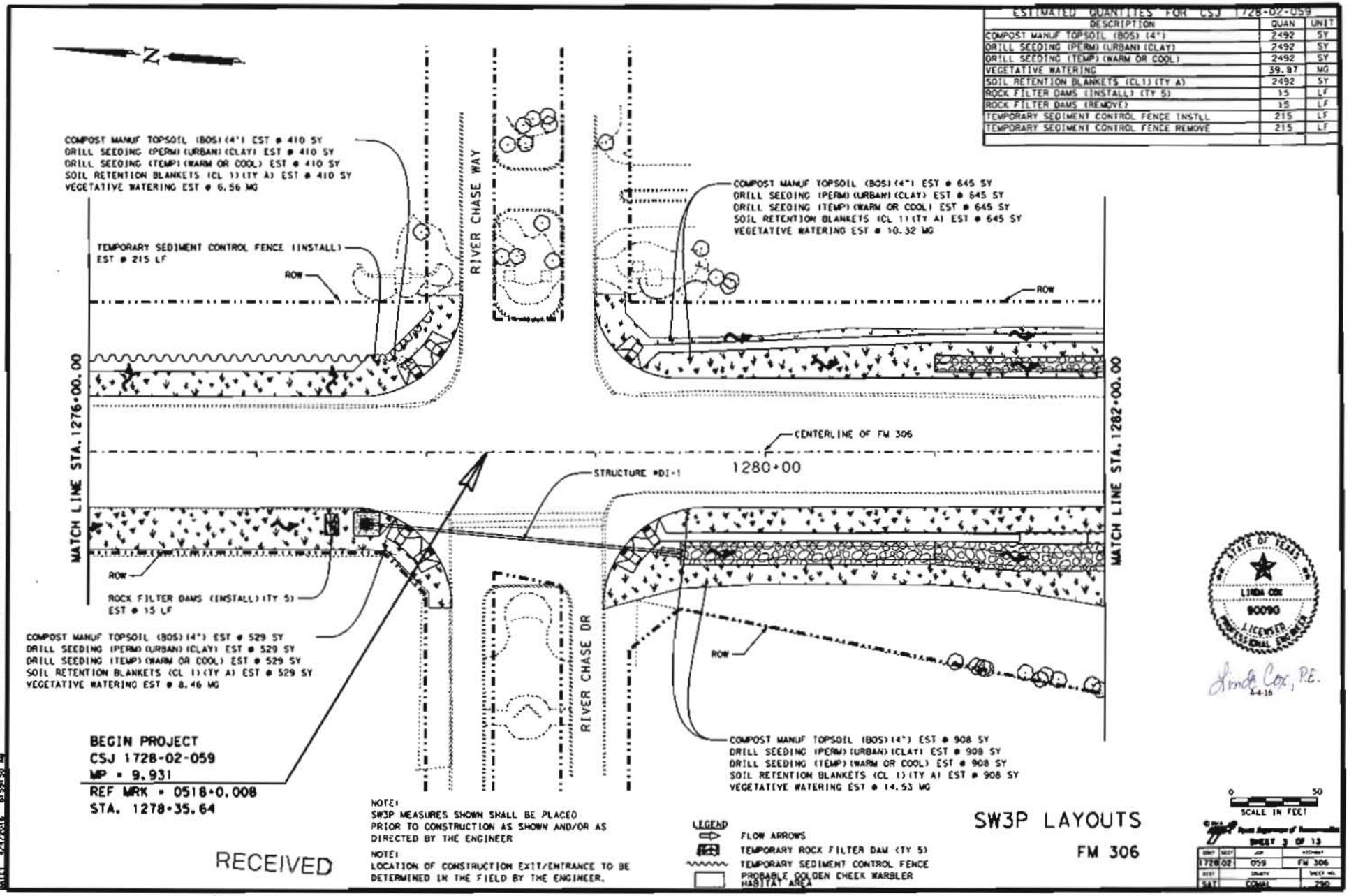

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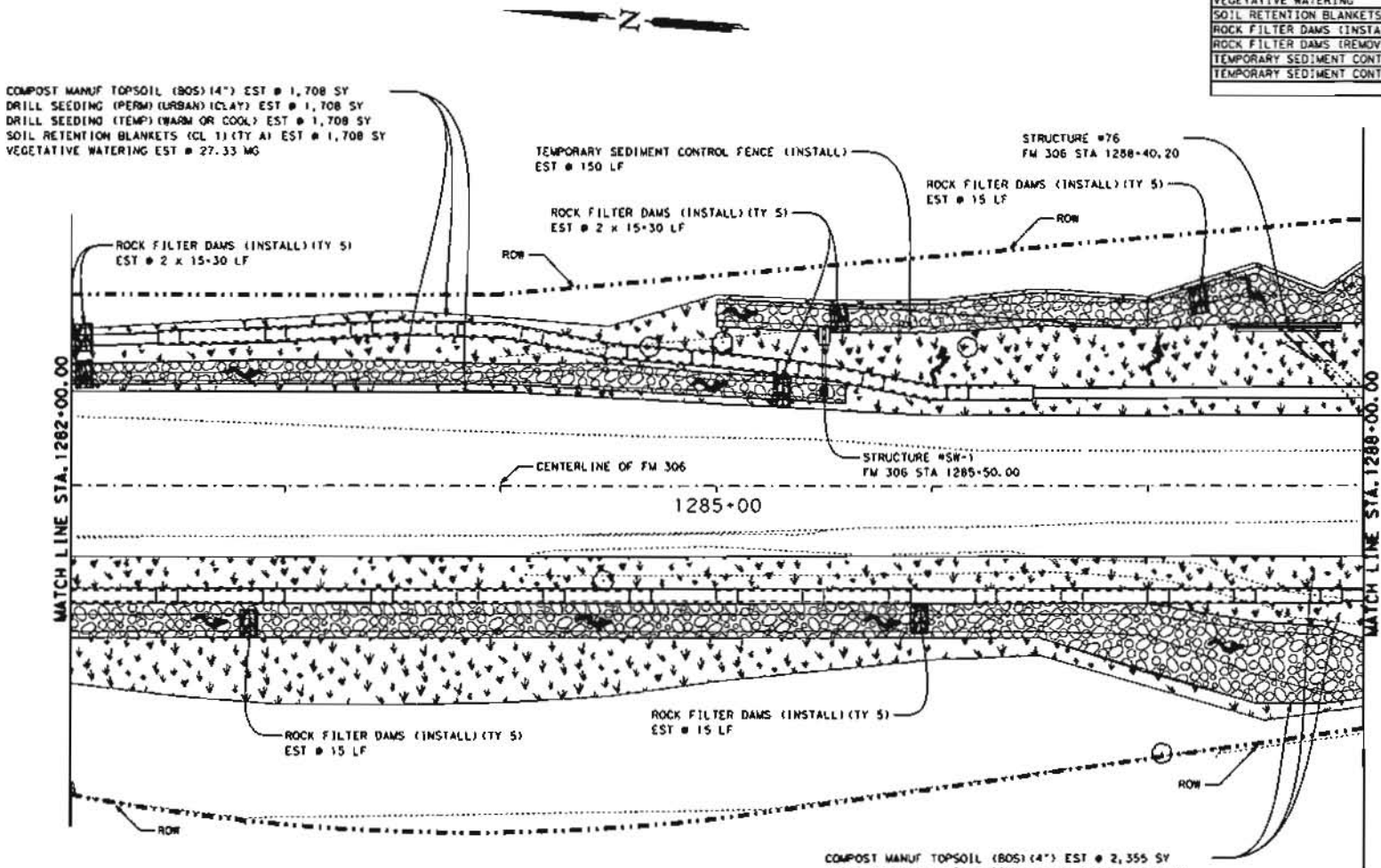
ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	4063	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	4063	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	4063	SY
VEGETATIVE WATERING	65.01	MG
SOIL RETENTION BLANKETS (CL1) (TY A)	4063	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	105	LF
ROCK FILTER DAMS (REMOVE)	105	LF
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	150	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	150	LF



STATE OF TEXAS
LINDA COX
90090
LICENSED PROFESSIONAL ENGINEER
Linda Cox, P.E.
2-4-16

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JUN 03 2016
COUNTY ENGINEER

NOTE:
SW3P MEASURES SHOWN SHALL BE PLACED PRIOR TO CONSTRUCTION AS SHOWN AND/OR AS DIRECTED BY THE ENGINEER

NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

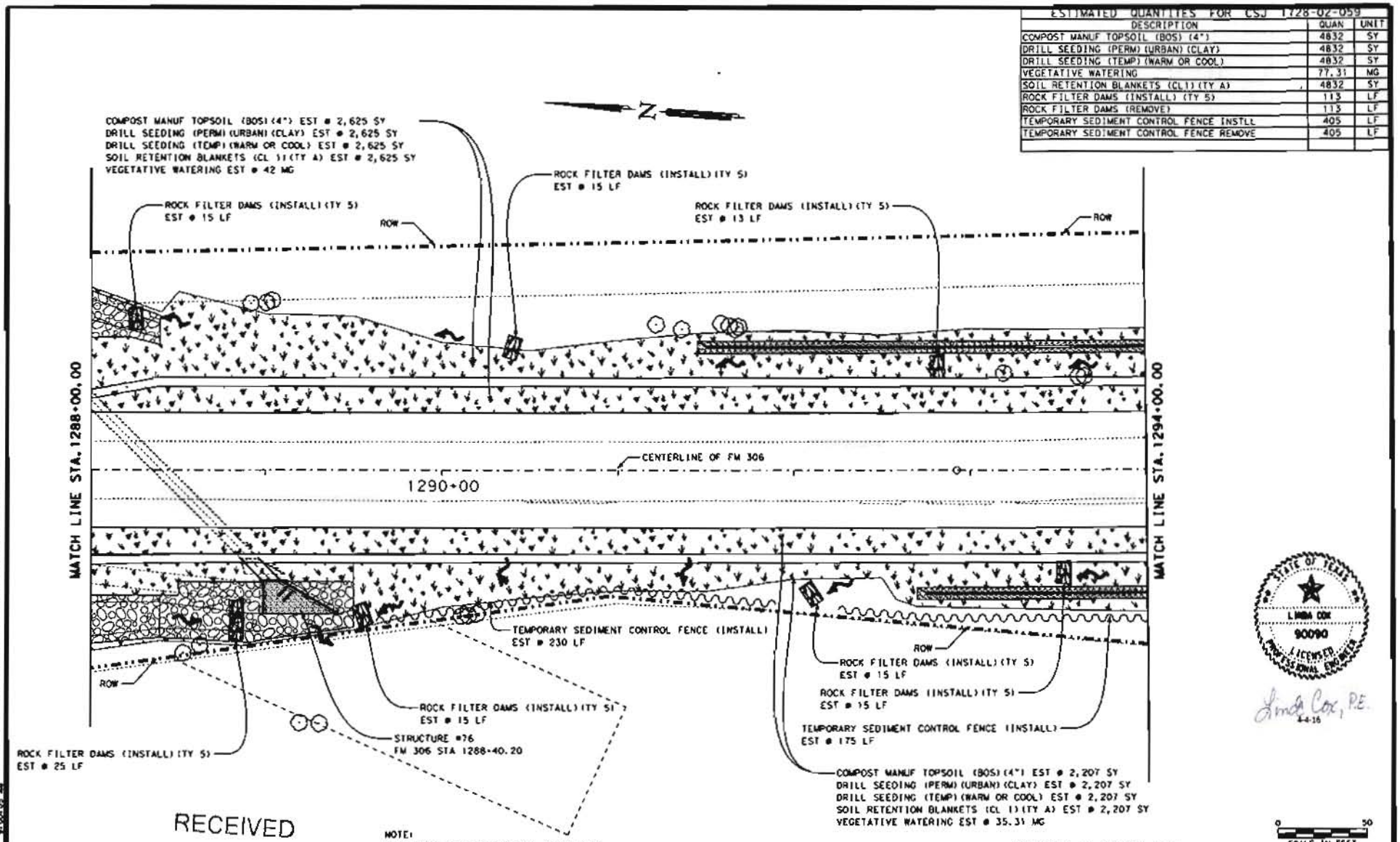
0 50
SCALE IN FEET

Texas Department of Transportation
SHEET 4 OF 13

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		291

FILE: R:\1728-02-059\FM 306 - River Chase to Hoffman\ENVIRONMENTAL\SW3P Layouts\SW3P004.dgn
DATE: 4/4/2016 8:39:58 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	4832	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	4832	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	4832	SY
VEGETATIVE WATERING	77.31	MG
SOIL RETENTION BLANKETS (CL 1) (TY A)	4832	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	113	LF
ROCK FILTER DAMS (REMOVE)	113	LF
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	405	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	405	LF



NOTE:
SW3P MEASURES SHOWN SHALL BE PLACED PRIOR TO CONSTRUCTION AS SHOWN AND/OR AS DIRECTED BY THE ENGINEER

NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

STATE OF TEXAS
LINDA COX
90090
LICENSED
PROFESSIONAL ENGINEER
Linda Cox, P.E.
5-4-16

0 50
SCALE IN FEET

Texas Department of Transportation
SHEET 6 OF 13

DIST	SECT	JOB	HIGHWAY
17	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		292

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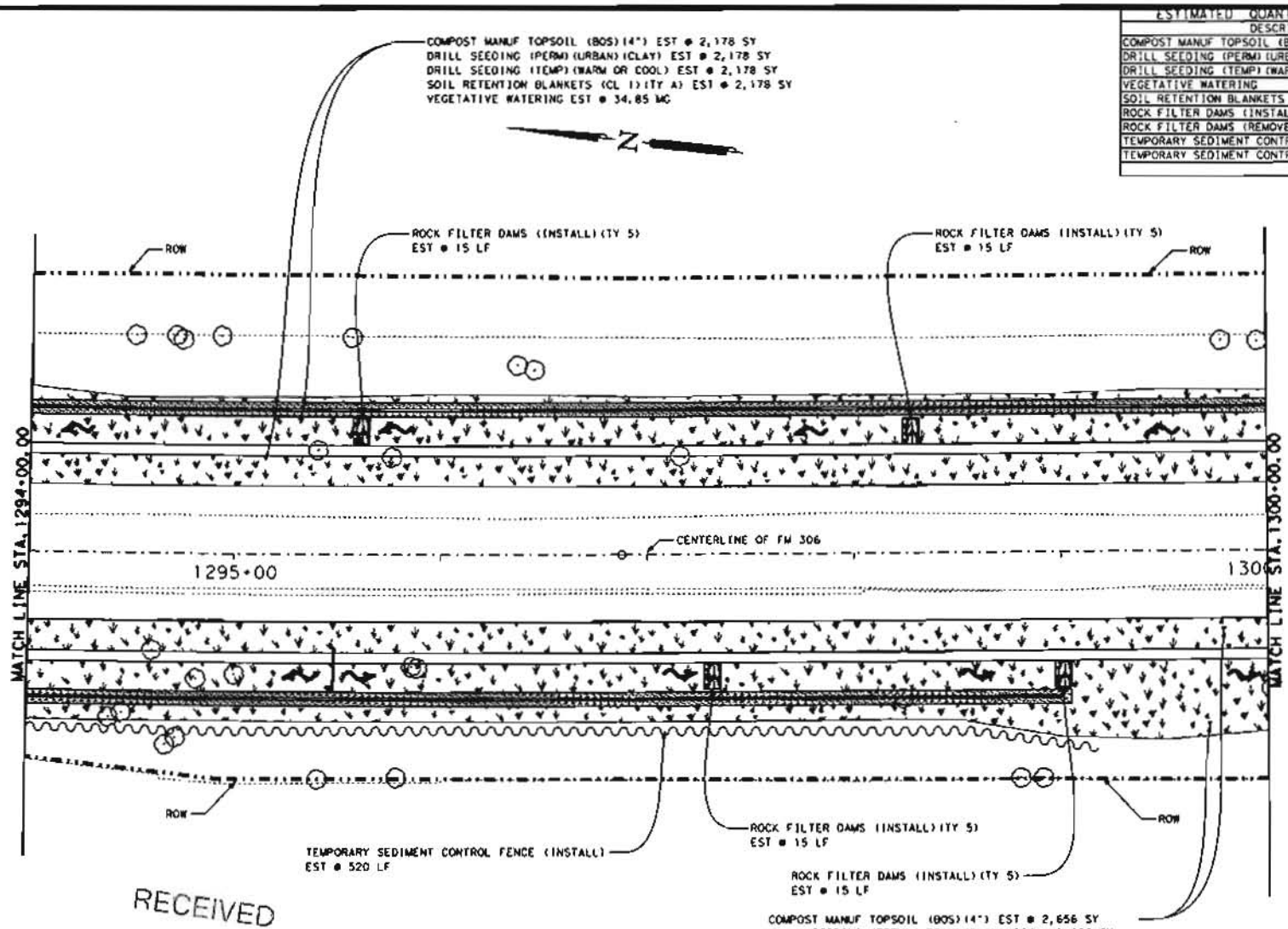
FILE: K:\1728-02-059\FM 306 - River Chase to Hoffman\ENVIRONMENTAL\SW3P Layout\SW3P005.dgn
DATE: 5/4/2016 9:08:05 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	4834	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	4834	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	4834	SY
VEGETATIVE WATERING	77.34	MG
SOIL RETENTION BLANKETS (CL 1) (TY A)	4834	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	60	LF
ROCK FILTER DAMS (REMOVE)	60	LF
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	520	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	520	LF



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NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

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LINDA COX
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Linda Cox, P.E.
4-4-16

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SCALE IN FEET

Texas Department of Transportation
SHEET 8 OF 13

DIST	SECT	JOB	HIGHWAY
17	28 02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		293

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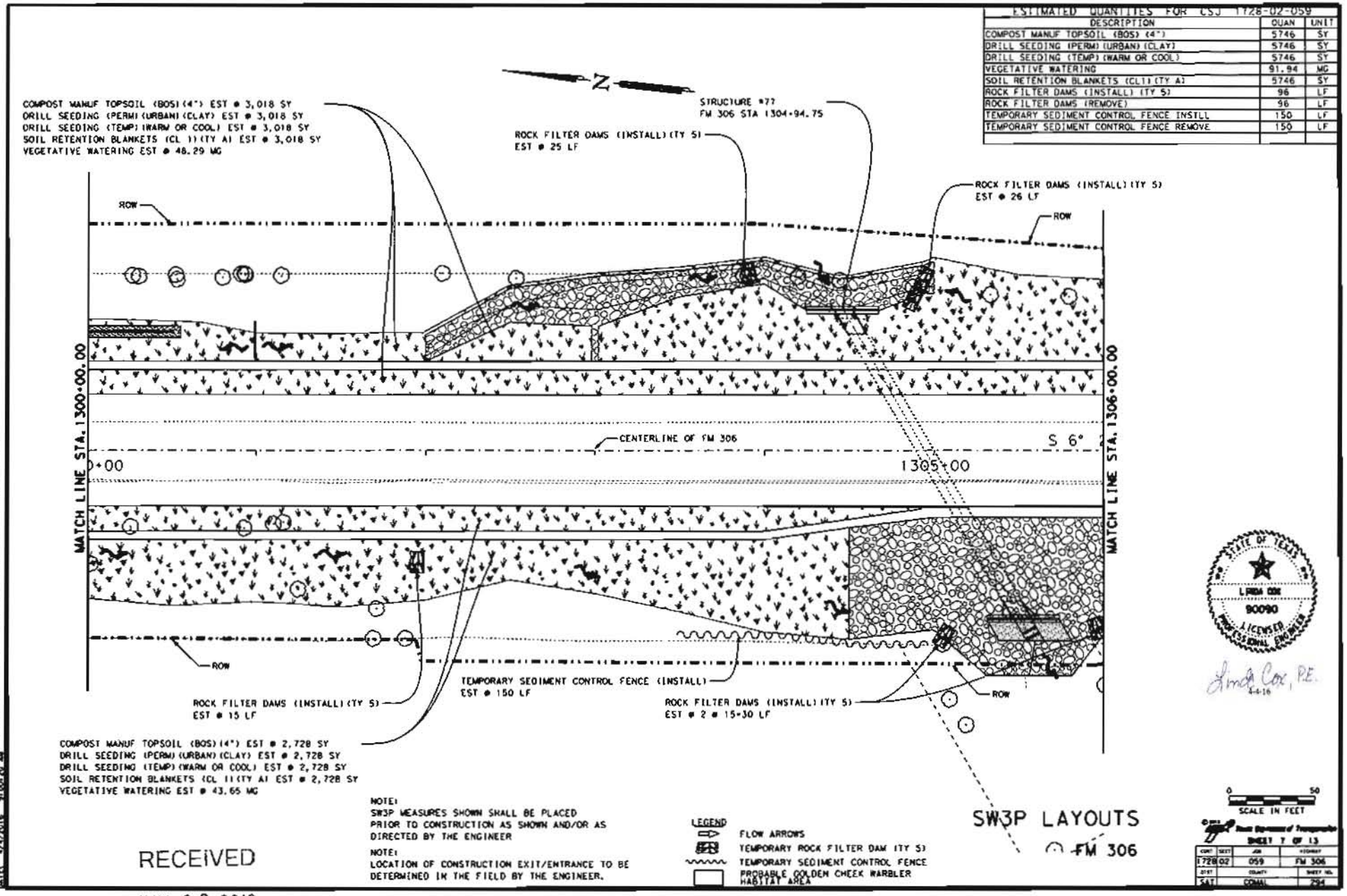

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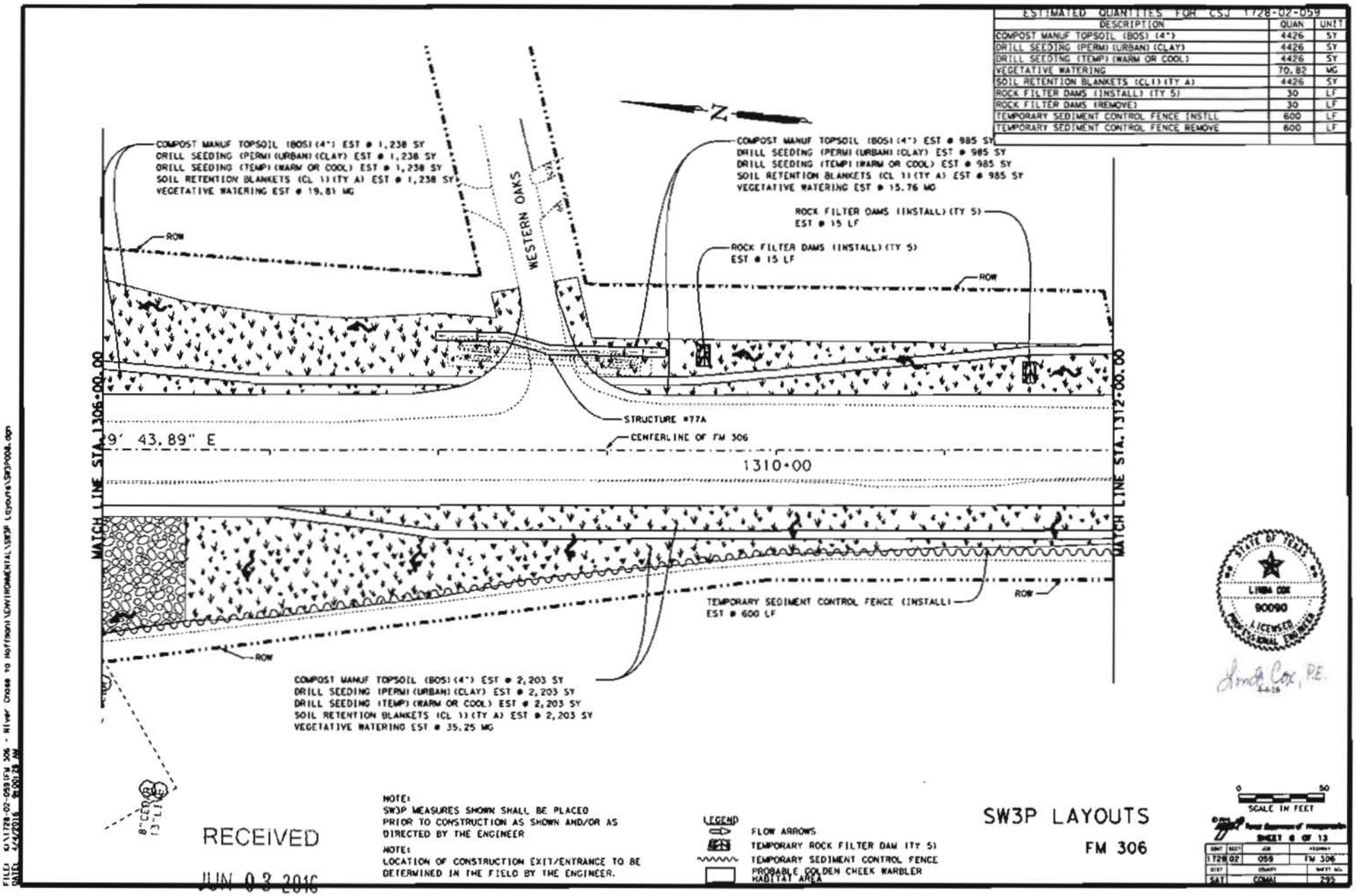
ESTIMATED QUANTITIES FOR CSJ 1728-02-059
DESCRIPTION | QUAN | UNIT
COMPOST MANUF TOPSOIL (BOS) (4") | 4426 | SY
DRILL SEEDING (PERM) (URBAN) (CLAY) | 4426 | SY
DRILL SEEDING (TEMP) (WARM OR COOL) | 4426 | SY
VEGETATIVE WATERING | 70.82 | MG
SOIL RETENTION BLANKETS (CL 1) (TY A) | 4426 | SY
ROCK FILTER DAMS (INSTALL) (TY 5) | 30 | LF
ROCK FILTER DAMS (REMOVE) | 30 | LF
TEMPORARY SEDIMENT CONTROL FENCE INSTLL | 600 | LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE | 600 | LF
COMPOST MANUF TOPSOIL (BOS) (4") EST @ 1,238 SY
DRILL SEEDING (PERM) (URBAN) (CLAY) EST @ 1,238 SY
DRILL SEEDING (TEMP) (WARM OR COOL) EST @ 1,238 SY
SOIL RETENTION BLANKETS (CL 1) (TY A) EST @ 1,238 SY
VEGETATIVE WATERING EST @ 19.81 MG
ROW
WESTERN OAKS
COMPOST MANUF TOPSOIL (BOS) (4") EST @ 985 SY
DRILL SEEDING (PERM) (URBAN) (CLAY) EST @ 985 SY
DRILL SEEDING (TEMP) (WARM OR COOL) EST @ 985 SY
SOIL RETENTION BLANKETS (CL 1) (TY A) EST @ 985 SY
VEGETATIVE WATERING EST @ 15.76 MG
ROCK FILTER DAMS (INSTALL) (TY 5)
EST @ 15 LF
ROCK FILTER DAMS (INSTALL) (TY 5)
EST @ 15 LF
ROW
MATCH LINE STA. 1306+00.00
STRUCTURE #77A
9' 43.89" E
CENTERLINE OF FM 306
1310+00
MATCH LINE STA. 1312+00.00
TEMPORARY SEDIMENT CONTROL FENCE (INSTALL)
EST @ 600 LF
ROW
ROW
COMPOST MANUF TOPSOIL (BOS) (4") EST @ 2,203 SY
DRILL SEEDING (PERM) (URBAN) (CLAY) EST @ 2,203 SY
DRILL SEEDING (TEMP) (WARM OR COOL) EST @ 2,203 SY
SOIL RETENTION BLANKETS (CL 1) (TY A) EST @ 2,203 SY
VEGETATIVE WATERING EST @ 35.25 MG
8"CED
13"LF
NOTE:
SW3P MEASURES SHOWN SHALL BE PLACED PRIOR TO CONSTRUCTION AS SHOWN AND/OR AS DIRECTED BY THE ENGINEER
NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
LEGEND
FLOW ARROWS
TEMPORARY ROCK FILTER DAM (TY 5)
TEMPORARY SEDIMENT CONTROL FENCE
PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA
SW3P LAYOUTS
FM 306
0 50
SCALE IN FEET
SHEET 6 OF 13
1728 02 059 FM 306
DIST COUNTY SHEET NO.
SAT COMAL 295
STATE OF TEXAS
LINDA COX
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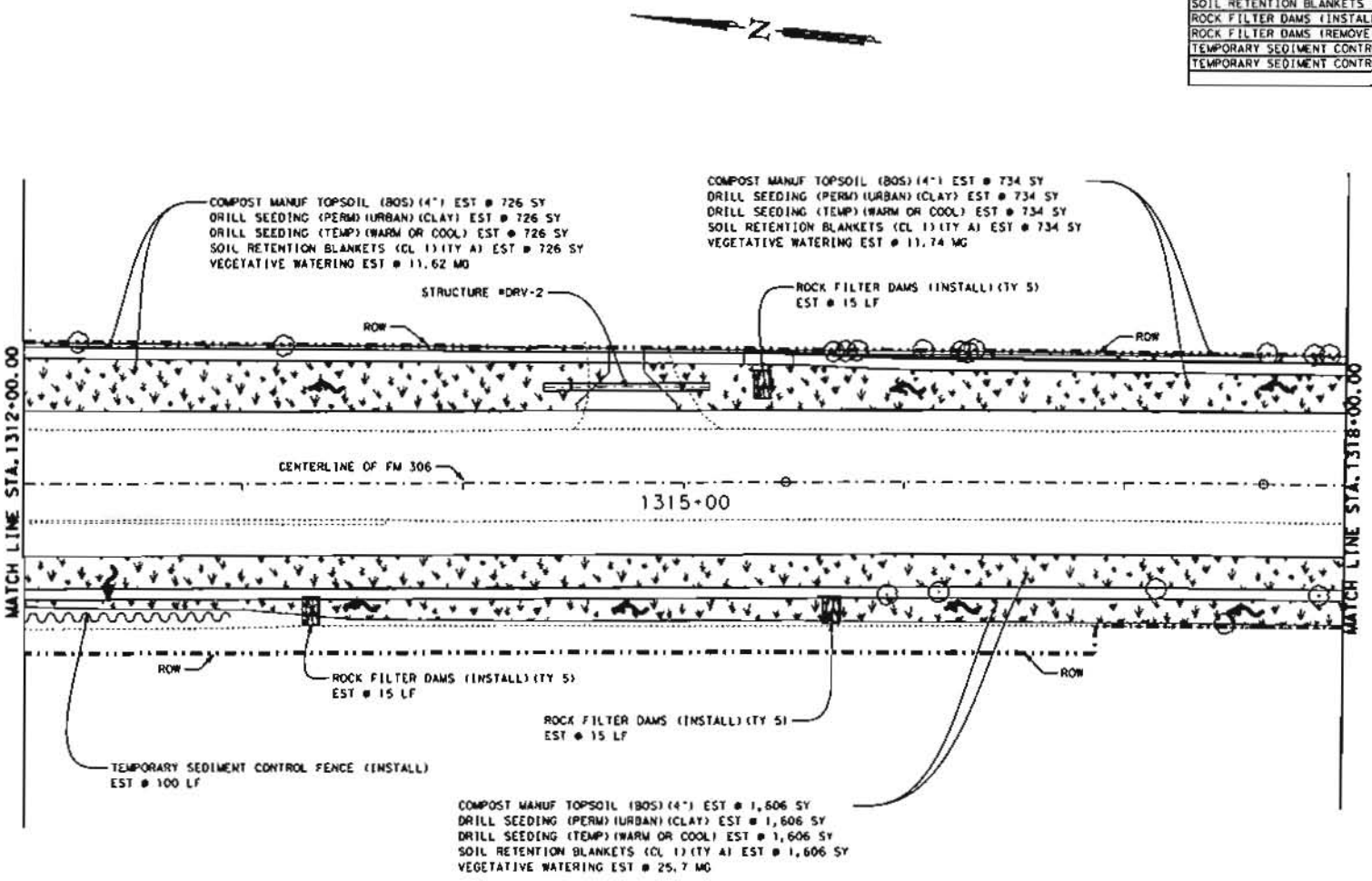
FILE: K:\1728-02-059\FM 306 - River Chase to Hoffman\ENVIRONMENTAL\SW3P Layouts\SW3P006.dgn
DATE: 4/4/2016 8:00:28 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	3066	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	3066	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	3066	SY
VEGETATIVE WATERING	49.08	MG
SOIL RETENTION BLANKETS (CL1) (TY A)	3066	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	45	LF
ROCK FILTER DAMS (REMOVE)	45	LF
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	100	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	100	LF



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NOTE:
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NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

SCALE IN FEET 0 50

Texas Department of Transportation

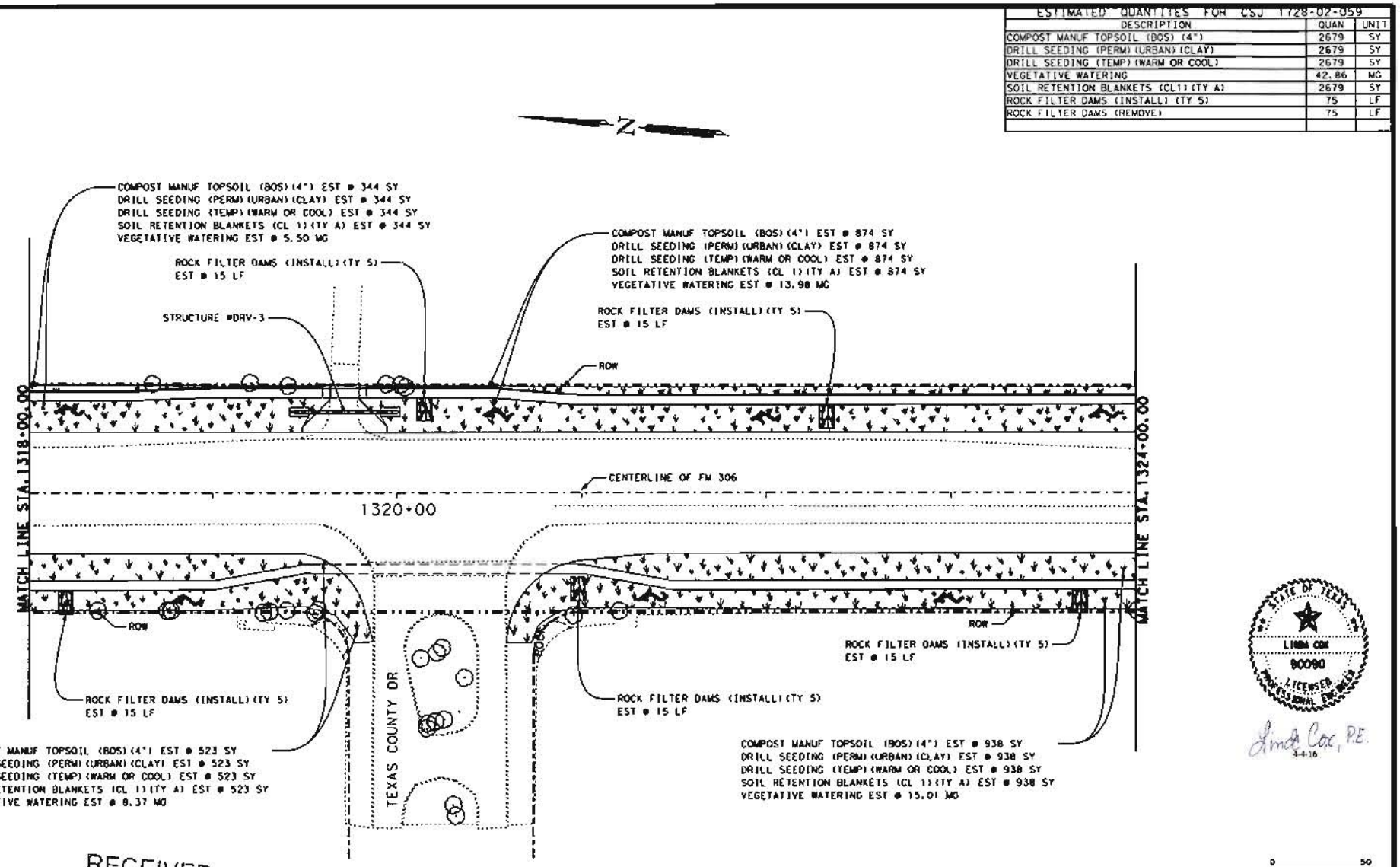
SHEET 9 OF 13

DIST	COUNTY	SHEET NO.
SAT	COMAL	296

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306

FILE: K:\1728-02-059\FM 306 - River Chase to Hoffman\ENVIRONMENTAL\SW3P Layouts\SW3P009.dgn
DATE: 4/4/2016 9:00:33 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	2679	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	2679	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	2679	SY
VEGETATIVE WATERING	42.86	MG
SOIL RETENTION BLANKETS (CL1) (TY A)	2679	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	75	LF
ROCK FILTER DAMS (REMOVE)	75	LF



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COUNTY ENGINEER

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NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

STATE OF TEXAS
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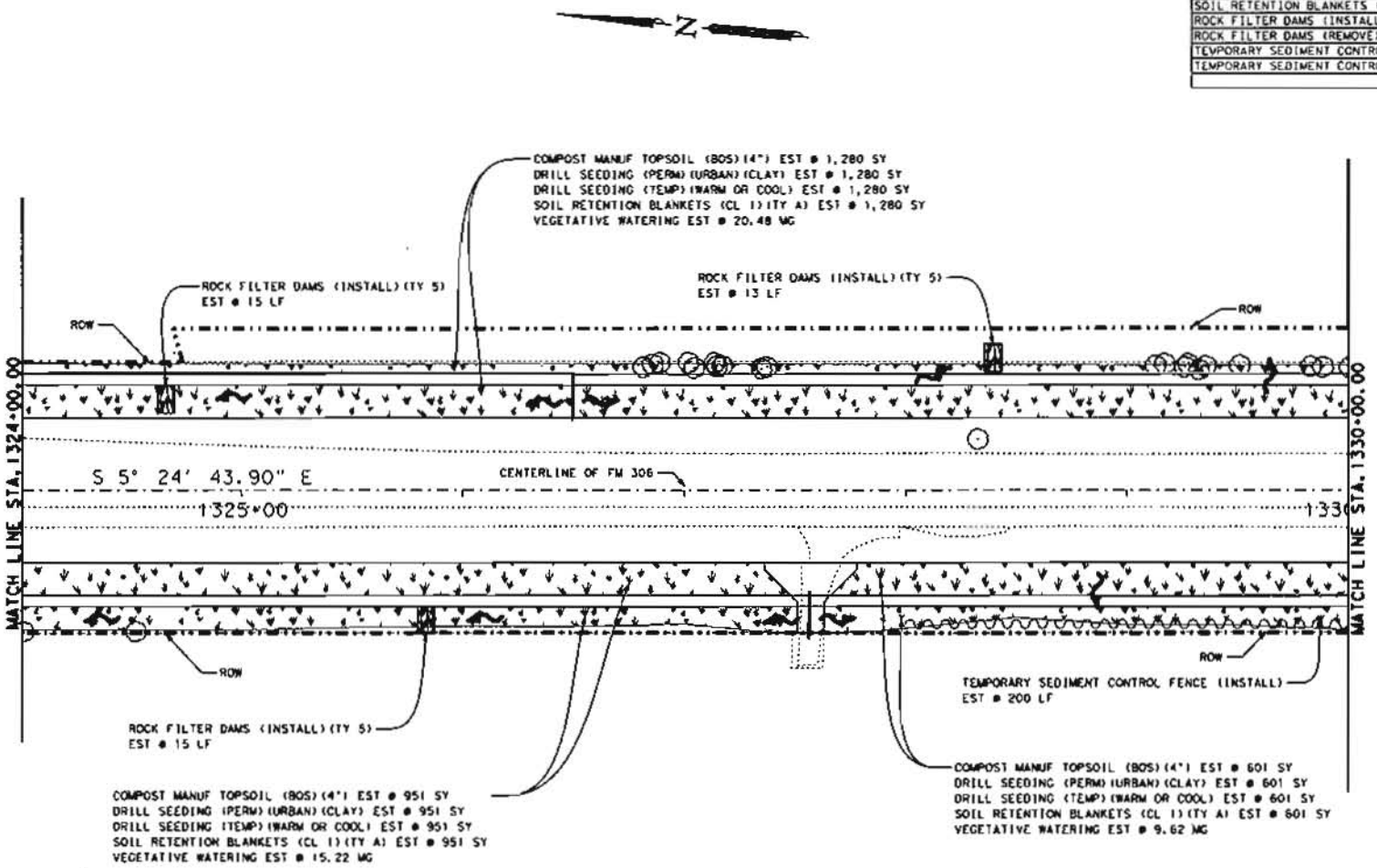
0 50
SCALE IN FEET

Texas Department of Transportation
SHEET 10 OF 13

CNT	TECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		297

FILE: K:\1728-02-059\FM 306 - River Chase to Hoffman\ENVIRONMENTAL\SW3P Layouts\SW3P010.dgn
DATE: 4/4/2016 11:00:42 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	2832	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	2832	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	2832	SY
VEGETATIVE WATERING	45.31	MG
SOIL RETENTION BLANKETS (CL 1) (TY A)	2832	SY
ROCK FILTER DAMS (INSTALL) (TY 5)	43	LF
ROCK FILTER DAMS (REMOVE)	43	LF
TEMPORARY SEDIMENT CONTROL FENCE INSTALL	200	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	200	LF



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NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

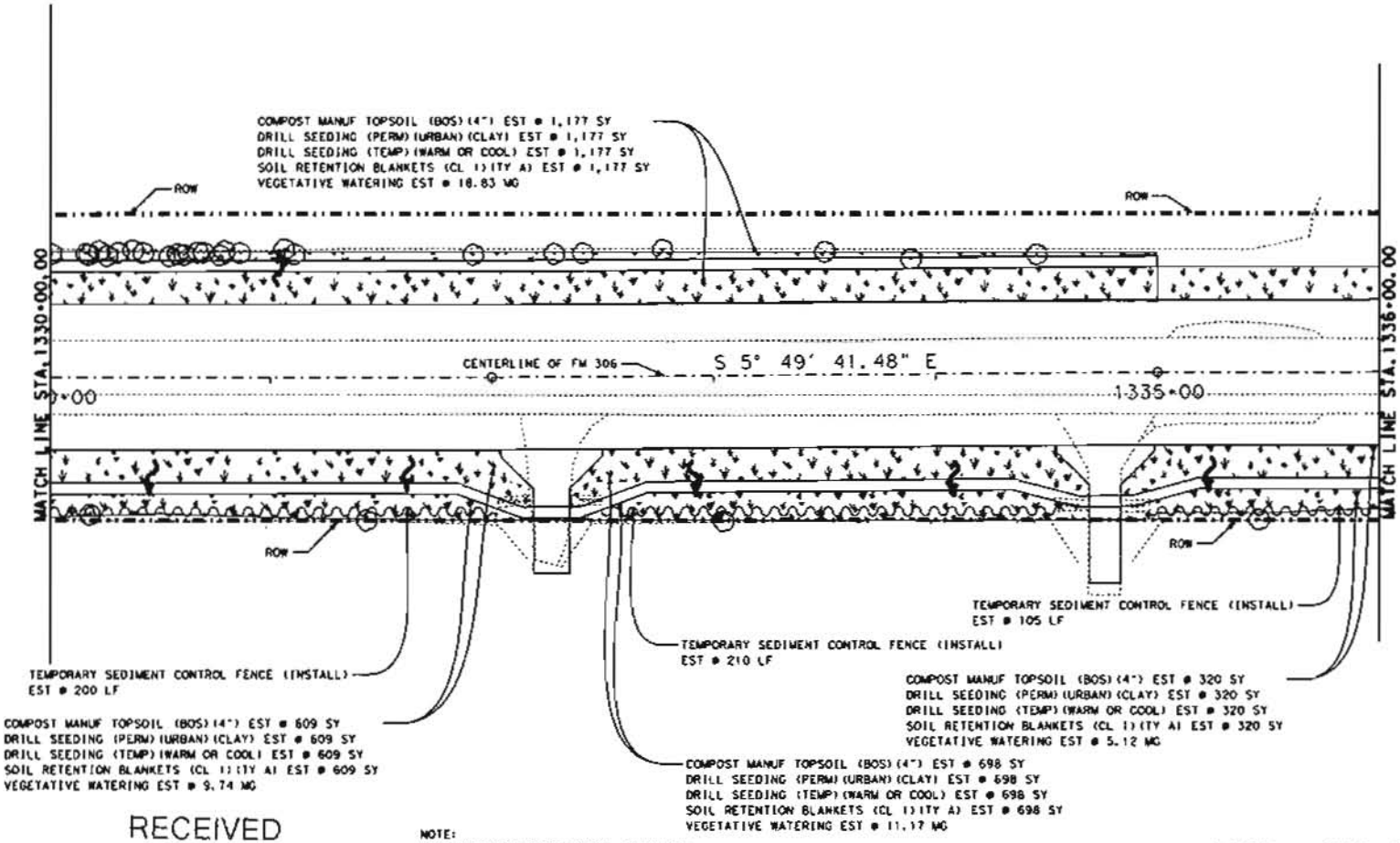
0 50
SCALE IN FEET

Texas Department of Transportation
SHEET 11 OF 13

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		238

FILE: K:\1728-02-059(FM 306 - River Chase to Hoffman)\ENVIRONMENTAL\SW3P Layouts\SW3P011.dgn
DATE: 4/4/2016 11:00:49 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
COMPOST MANUF TOPSOIL (BOS) (4")	2804	SY
DRILL SEEDING (PERM) (URBAN) (CLAY)	2804	SY
DRILL SEEDING (TEMP) (WARM OR COOL)	2804	SY
VEGETATIVE WATERING	44.86	MG
SOIL RETENTION BLANKETS (CL I) (TY A)	2804	SY
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	515	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	515	LF



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COUNTY ENGINEER

NOTE:
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NOTE:
LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS

FM 306

STATE OF TEXAS
LINDA COX
90090
LICENSED PROFESSIONAL ENGINEER
Linda Cox, P.E.
4-4-16

0 50
SCALE IN FEET

Texas Department of Transportation
SHEET 12 OF 13

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		299

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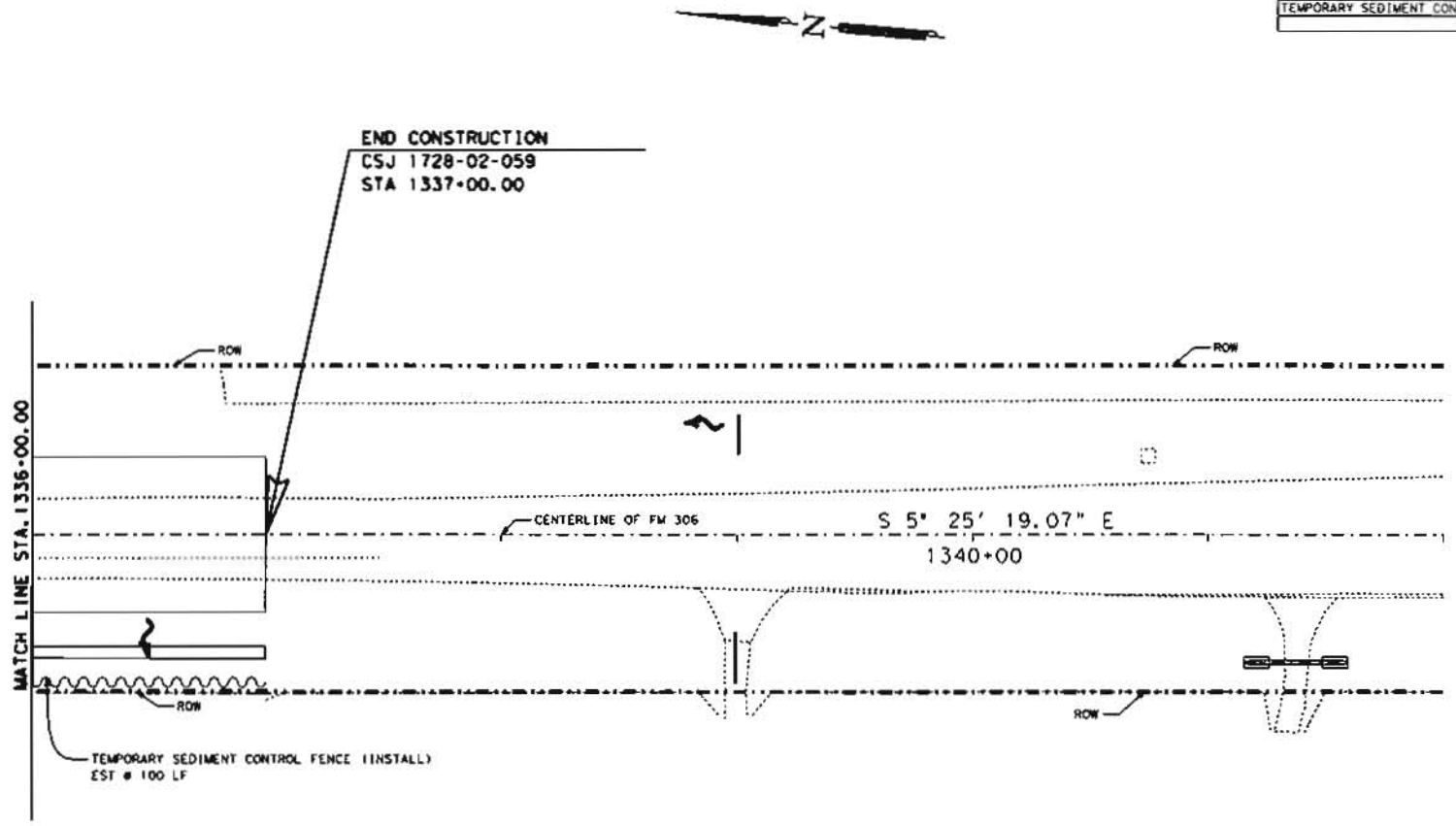
DATE: 4/4/2016 11:00:57 AM

ESTIMATED QUANTITIES FOR CSJ 1728-02-059		
DESCRIPTION	QUAN	UNIT
CONSTRUCTION EXITS (INSTALL) (TY 1)	78	SY
CONSTRUCTION EXITS (REMOVE)	78	SY
TEMPORARY SEDIMENT CONTROL FENCE INSTLL	100	LF
TEMPORARY SEDIMENT CONTROL FENCE REMOVE	100	LF



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LEGEND
- FLOW ARROWS
- TEMPORARY ROCK FILTER DAM (TY 5)
- TEMPORARY SEDIMENT CONTROL FENCE
- PROBABLE GOLDEN CHEEK WARBLER HABITAT AREA

SW3P LAYOUTS
FM 306

0 50
SCALE IN FEET

Texas Department of Transportation
SHEET 13 OF 13

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		300

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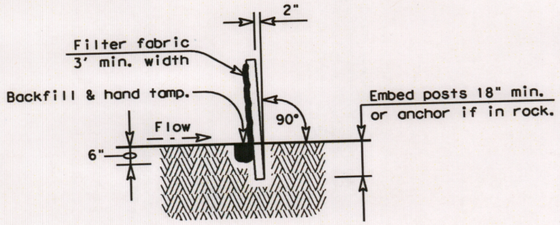


SECTION A-A

GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

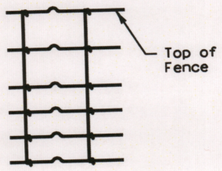
PLAN SHEET LEGEND

Sediment Control Fence —— SCF ——

SEDIMENT CONTROL FENCE USAGE GUIDELINES

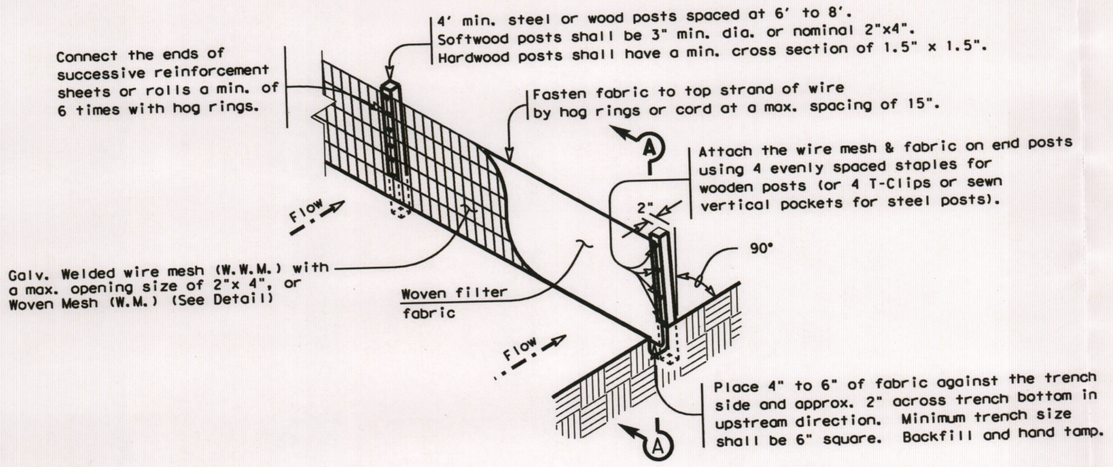
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

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



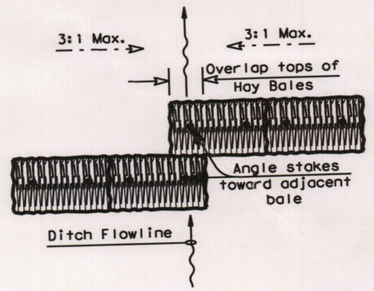
Galv. Hinge joint knot woven mesh (12.5 Ga. Min.) requires a minimum of five horizontal wires spaced at a max.12 inches apart and all vertical wires spaced at a max. 12 inches apart.

Hinge Joint Knot Woven Mesh (Option)

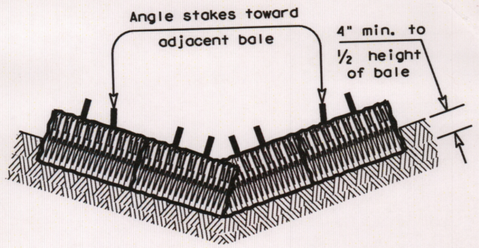


TEMPORARY SEDIMENT CONTROL FENCE

SCF



PLAN VIEW



PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay —— BH ——

BALED HAY USAGE GUIDELINES

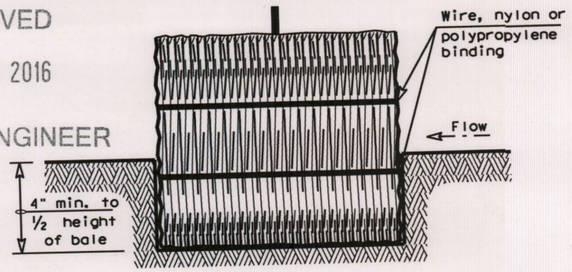
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT^2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than ½ acre.

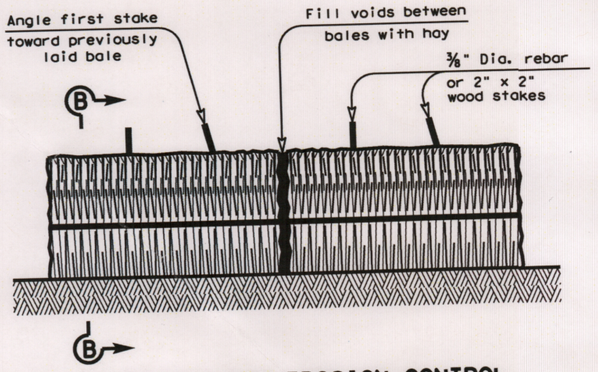
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



SECTION B-B



BALED HAY FOR EROSION CONTROL

BH

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible ½ the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with ⅜" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

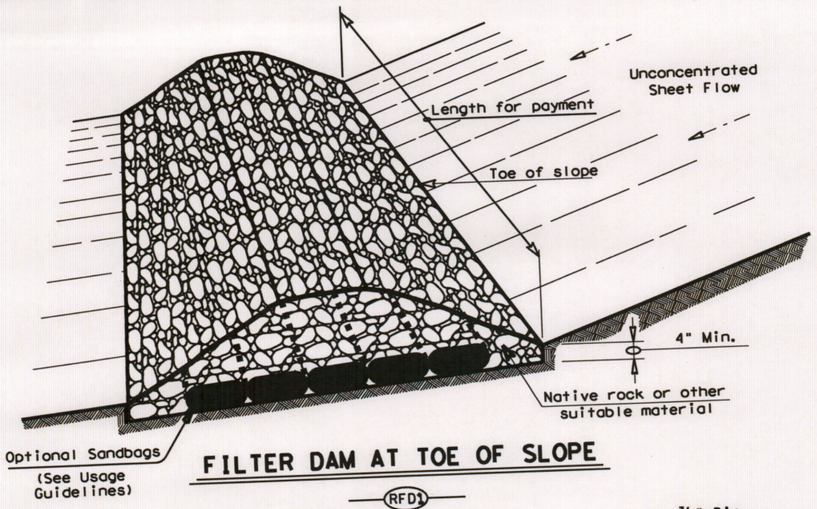
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & BALED HAY

EC(1)-09

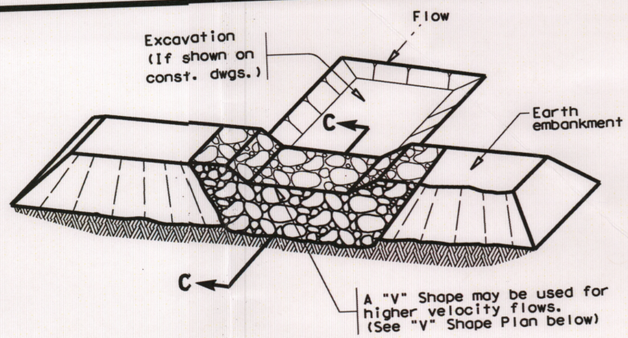
FILE: ec109.dgn	DN: TxDOT	CK: AM	DW: TV	CK: BD
© TxDOT June 1993	CONT	SECT	JOB	HIGHWAY
REVISIONS	1728	02	059	FM 306
	DIST	COUNTY		SHEET NO.
	SAT	COMAL		301

DATE:
FILE:



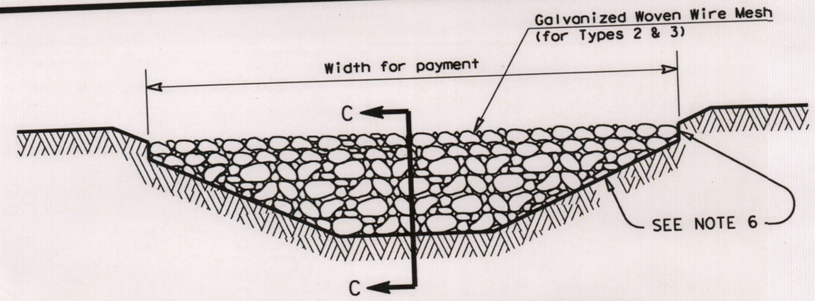
FILTER DAM AT TOE OF SLOPE

RFD1
TYPE 1



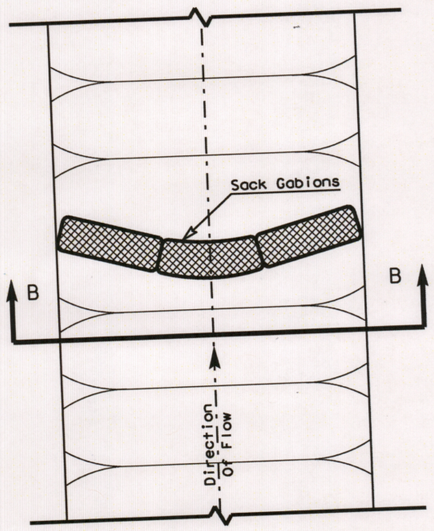
FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2
TYPE 1 OR TYPE 2

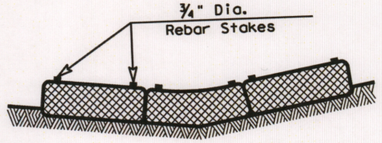


FILTER DAM AT CHANNEL SECTIONS

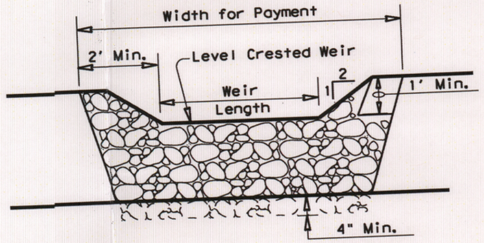
RFD1 — OR — RFD2 — OR — RFD3
TYPE 1 OR TYPE 2



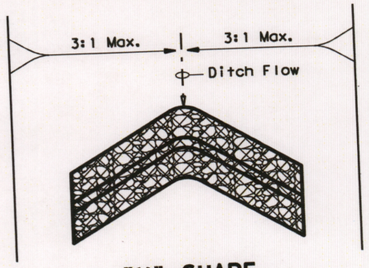
PLAN VIEW



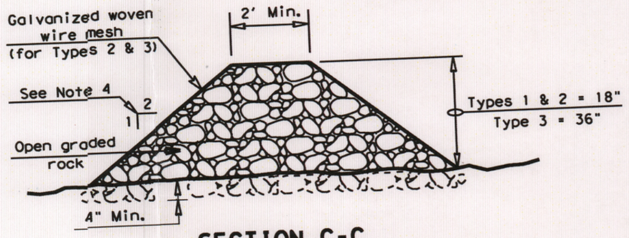
SECTION B-B



PROFILE



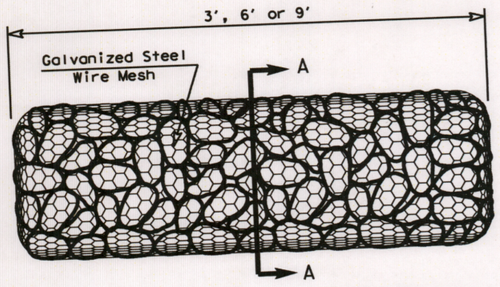
"V" SHAPE
(Plan View)



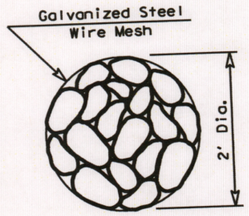
SECTION C-C

PLANS SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3



TYPE 4 (SACK GABIONS)



SECTION A-A

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^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

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

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

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

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

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. 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 ¾" dia. rebar stakes.
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

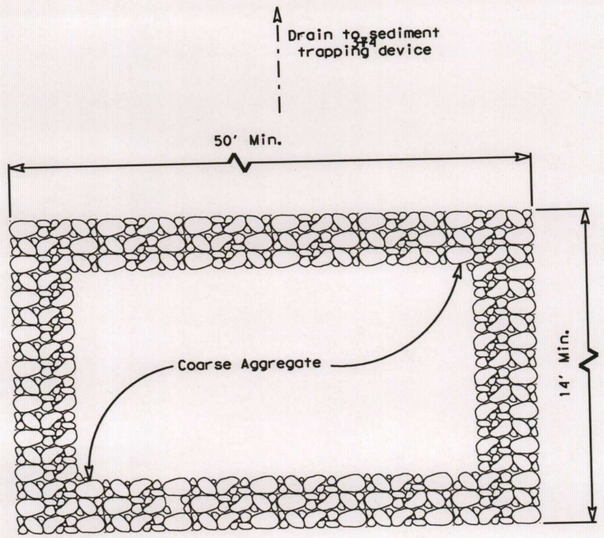
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

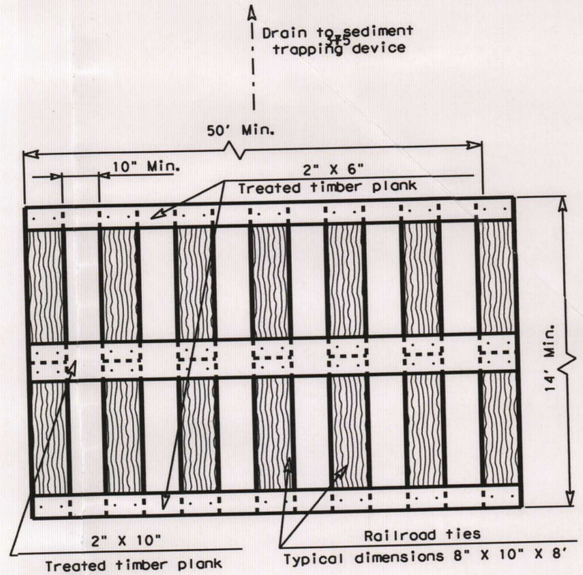
EC(2)-93

FILE: ec293.dgn	DN: TxDOT	CK: HEJ	DW: BD	CK:
© TxDOT June 1993	CONT	SECT	JOB	HIGHWAY
REVISIONS	1728	02	059	FM 306
	DIST	COUNTY		SHEET NO.
	SAT	COMAL		302

DATE:
FILE:



PLAN



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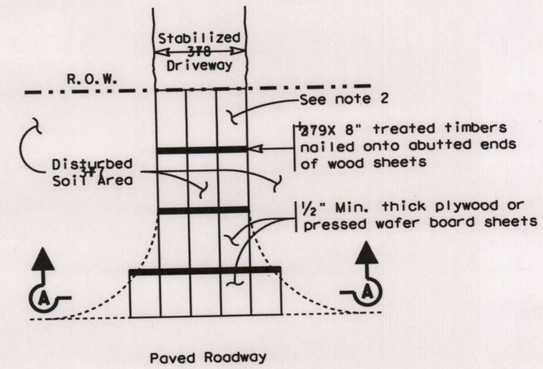
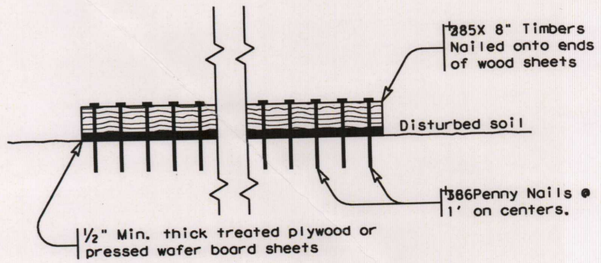
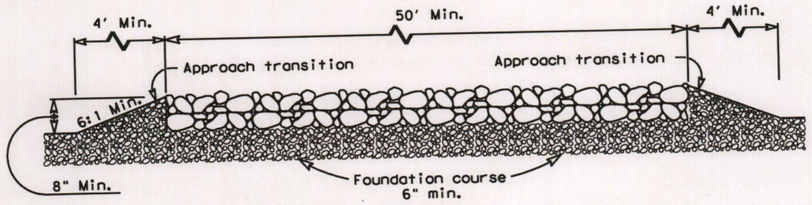


PLAN



SECTION A-A

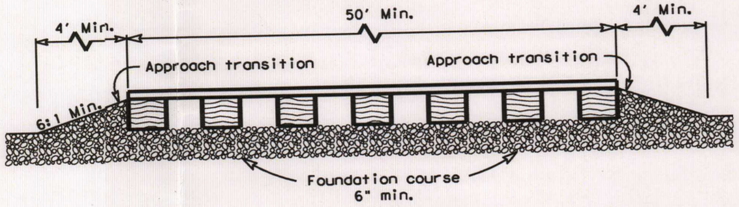


PROFILE

CONSTRUCTION EXIT (TYPE 1)
T380

GENERAL NOTES

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
- T373 The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- T384 The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- T372 The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



PROFILE

CONSTRUCTION EXIT (TYPE 2)
T381

GENERAL NOTES

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- T376 The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- T383 The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- T387 The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

CONSTRUCTION EXIT (TYPE 3)
T382

GENERAL NOTES

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

Texas Department of Transportation

T Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-93

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	DIST	COUNTY		SHEET NO.
	SAT	COMAL		303

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ATTACHMENT E

REQUEST TO TEMPORARILY SEAL A FEATURE

not applicable

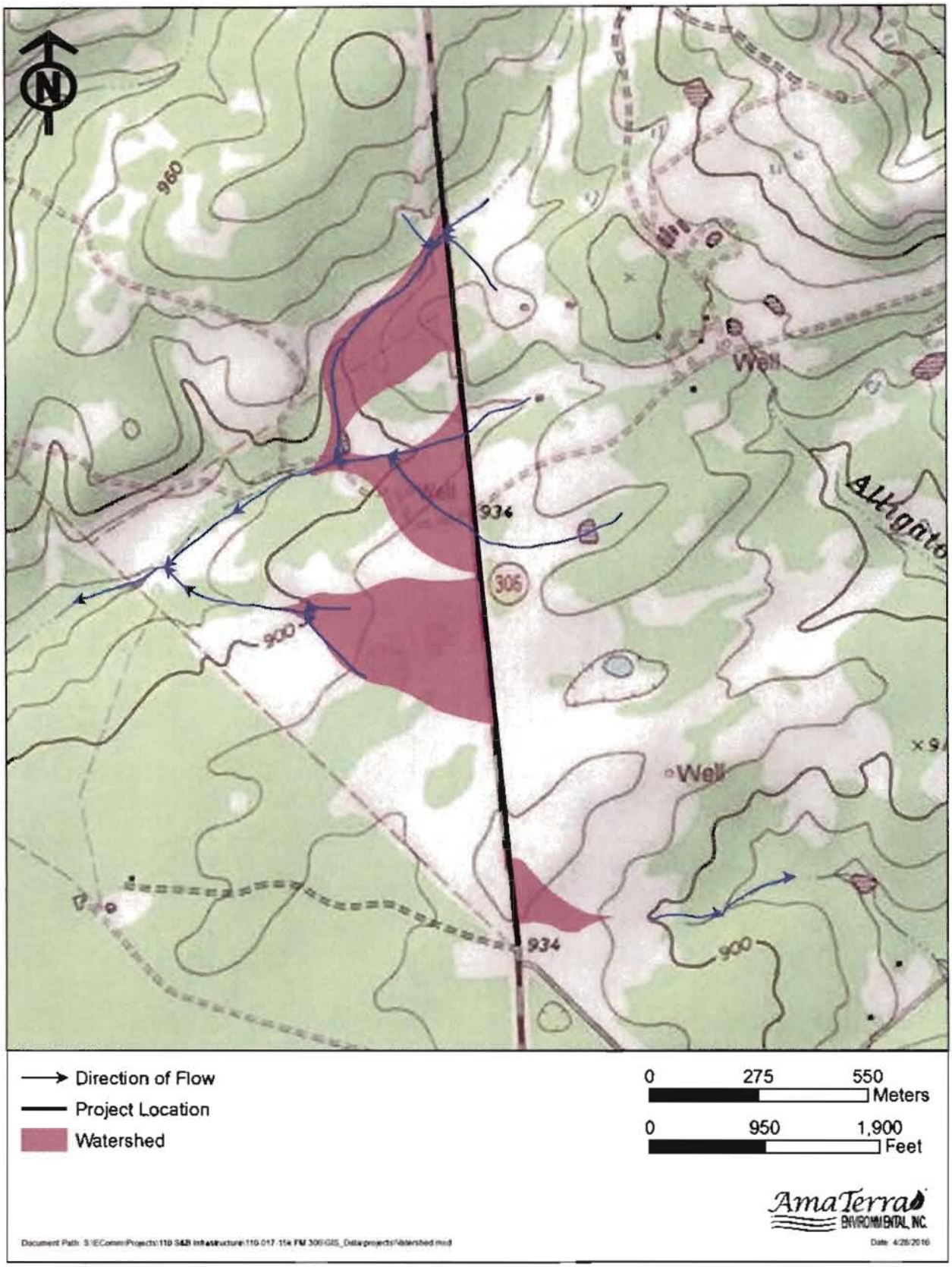
ATTACHMENT F

STRUCTURAL PRACTICES

not applicable

ATTACHMENT G

DRAINAGE AREA MAP



ATTACHMENT H

TEMPORARY SEDIMENT POND(S) PLANS AND CALCULATIONS

not applicable

ATTACHMENT I
Form TCEQ 0602, Temporary Stormwater
Inspection and Maintenance for BMPs

The maintenance and inspection plan for all temporary BMPs is contained in the SW3P General Site Data Sheet (sheet # 285) attached. An inspector will perform a regularly scheduled inspection of all temporary BMPs every 7 calendar days. An inspection and maintenance report will be prepared for each inspection. Maintenance and repairs are performed before the next anticipated storm event or as soon as practicable.

Routine inspections will assess the performance of the BMPs installed to assess their effectiveness. In the event an installed BMP is not performing adequately, as intended, measures will be implemented to replace the existing temporary BMP with a higher capacity temporary BMP. For example, if a sediment control fence is overloaded and not performing adequately, it will be replaced with a rock filter dam or other BMP, and its performance assessed at each routine inspection.

ATTACHMENT J
Form TCEQ 0602, Temporary Stormwater
Schedule of Interim and Permanent Soil Stabilization Practices

All areas not planned for impervious cover (asphalt/concrete) would be permanently stabilized prior to completion of the project. The SW3P layouts show the project's re-vegetation plans.

Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: Same as stated on the Title Sheet

2. PROJECT SITE MAPS:
- Project Latitude 29.607508 N Project Longitude -98.107134 W
- Project Location Maps Shown on Title Sheet
- Drainage Patterns Shown on Drainage Area Maps
- Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance Shown on Typical Sections
- Major Controls and Locations of Stabilization Practices Shown on SW3P Sheets
- Project Specific Locations Off-site waste, borrow, or storage areas are not part of this SW3P.
- Surface Waters and Discharge Locations Shown on Drainage and Culvert Layout Sheets

3. PROJECT DESCRIPTION: Same description as stated on Title Sheet

Non-Joint Bid Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

1. Install controls down-slope of work area and initiate inspection and maintenance activities.

2. 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.

3. 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):

- X Placement of road base
- X Extensive ditch grading
- X Upgrading or replacing culverts or bridges
- ___ Temporary detour road(s)
- ___ Other: _____

5. EXISTING AND PROPOSED CONDITIONS:

Description of existing vegetative cover: NATIVE GRASSES
Percentage of existing vegetative cover: 65%
Existing vegetative cover (most one):
- ___ Thick or uniformly established
- X Thin and Patchy
- ___ None or minimal cover

Description of soils:
Mostly -
COMFORT-RUMPLE-ECKRANT: Very shallow to moderately deep, undulating to steep and hilly soils over indurated limestone on uplands of Edwards Plateau

With Small Pockets Of -
KRUM-MEDLIN-ECKRANT: Deep, very shallow, and shallow, undulating to steep and hilly soils over clay, shaley clay, and limestone on stream terraces, valley fills, and uplands of Edwards Plateau

Site Acreage: 28.66 Acres Acreage disturbed: 18.25 Acres
Site runoff coefficient (pre-construction): 0.72 Site runoff coefficient (post-construction): 0.74

6. RECEIVING WATERS:

- X A classified stream does not pass through project.
- ___ A classified stream passes through project. Name _____ Segment Number _____

Name of receiving waters that will receive discharges from disturbed areas of the project: _____

Site is in a Municipal Separate Storm Sewer System (MS4).
MS4 Operator (name): _____

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B. BEST MANAGEMENT PRACTICES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on plan sheets are to be considered "proposed" unless/until install date is shown. BMPs are to reduce sediments from road construction activities.

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

- T/P SEEDING
- ___ MULCHING (Hay or Straw)
- ___ BUFFER ZONES
- ___ PLANTING
- ___ COMPOST/MULCH FILTER BERM
- ___ SODDING
- T/P PRESERVATION OF NATURAL RESOURCES
- ___ FLEXIBLE CHANNEL LINER
- ___ RIGID CHANNEL LINER
- P SOIL RETENTION BLANKET
- P COMPOST MANUFACTURED TOPSOIL
- ___ OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T SILT FENCES
- ___ HAY BALES
- T ROCK FILTER DAMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- T ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- ___ CURBS AND GUTTERS
- ___ STORM SEWERS
- P VELOCITY CONTROL DEVICES
- P OTHER: GABION MATTRESSES

3. 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):

- X Existing or new vegetation provides natural filtration.
- X The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.
- X Project includes permanent sedimentation controls (other than grass).
- ___ Velocities do not require dissipation devices.
- T Velocity-dissipation devices included in the design.
- ___ Other: _____

4. NON-STORM WATER DISCHARGES:

Off-site discharges are prohibited except as follows:
1. Discharges from fire fighting activities and/or fire hydrant flushings.
2. 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).
3. Plain water used to control dust.
4. Plain water originating from potable water sources.
5. Uncontaminated groundwater, spring water or accumulated stormwater.
6. Foundation or footing drains where flows are not contaminated with process materials such as solvents.
7. Other: _____

Concrete truck wash water discharges on the site should be prohibited or minimized. If allowed by the Engineer, they must be managed in a manner so as not to contaminate surface water. They must not be located in areas of concentrated flow. Concrete truck washout locations must be shown on the SW3P Layout and included in the inspections.

Hazardous material spill/leak shall be prevented or minimized. At a minimum, this includes asphalt products, fuels, oils, lubricants, solvents, paints, acids, concrete curing compounds and chemical additives for soil stabilization. BMPs shall be implemented to the storage areas of these products. All spills must be cleaned and disposed 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

1. 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.

2. 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) calendar days. 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.

3. 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, 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 the 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.

4. OFFSITE VEHICLE TRACKING:
Off-site vehicle tracking of sediments and the generation of dust must be minimized. Excess sediments on road shall be removed on a regular basis as directed/approved by the Engineer.

5. OTHER:
See the EPIC sheet for additional environmental information.

STATE OF TEXAS
LINDA COX
90090
LICENSED
PROFESSIONAL ENGINEER

Linda Cox, P.E.

06/12/2016

REVISION DATE: 10/12

Texas Department of Transportation

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6			FM 306
STATE	DISTRICT	COUNTY	
TEXAS	SAT	COMAL	
CONTROL	SECTION	JOB	SHEET NO.
1728	02	059	285

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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)(ii), (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: Mario R. Jorge, PE

Date: 5/18/16

Signature of Customer/Agent

Mario R. Jorge PE

Regulated Entity Name: FM 306 from River Chase Way to Hoffman Lane

Permanent Best Management Practices (BMPs)

Permanent best management practices and measures that will be used during and after construction is completed.

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

   ☐ N/A

2. ☒ 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

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ATTACHMENT A

20% OR LESS IMPERVIOUS COVER WAIVER

not applicable

ATTACHMENT B

BMP'S FOR UPGRADIENT STORMWATER

Virtually all stormwater flow across the site would originate on-site and would be captured by the proposed vegetative filter strip. As such, installation of a permanent protective BMP is not feasible.

ATTACHMENT C

BMP'S FOR ON-SITE STORMWATER

A vegetative filter strip will be installed along the entire length of the project. The width of the filter strip will be a minimum of 15 feet but will range up to 70 feet at the locations of the box culverts.

ATTACHMENT D

BMP'S FOR SURFACE STREAMS

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As previously noted, a vegetative filter strip will be installed along the entire length of the project and should serve to mitigate against contamination entering Isaac Creek or its tributary.

Features F-1 and F-2 identified in the Geologic Assessment are scour holes at the downstream end of the box culverts at the respective crossings of Isaac Creek and its tributary to the south. The GA identifies them as sensitive features that could facilitate migration of contaminants to the aquifer, but also notes these are anthropogenic features, created by the installation of the culverts themselves. These man-made features would be sealed by the extension of the box culverts as part of the proposed project. The new box culverts would incorporate riprap-lined aprons and dissipators to prevent new scour holes from forming.

Feature F-3 identified in the GA is a zone of faults transecting the middle third of the project area. The GA notes that these faults are unlikely to be more than a negligible source of infiltration due to their small area, their location in upland portions of the project area away from channels, and the tendency of the clay formation in which they occur to naturally seal the faults. As such, no permanent BMP is proposed for this feature.

ATTACHMENT E

REQUEST TO TEMPORARILY SEAL A FEATURE

not applicable

PERMANENT STORMWATER SECTION

ATTACHMENT F

Impervious Cover Calculations

Loading Summary Analysis (TSS Reduction Requirement)

Typical Sections

Site Plan (with existing/proposed contours, geologic features)

WPAP Layouts

TCEQ Construction Notes

MPERVIOUS COVER CALCULATIONS

PROJECT NAME ***FM 306 FROM RIVER CHASE TO HOFFMANN LN***
CSJ: 1728-02-059

Length of Project =	1.297 miles	6,850.00 feet	
EXISTING ROW (Area calculated in microstation) =		1,248,331.00 ft^2	28.66
EXISTING ROADWAY (Area calculated in microstation) =		295,435.00 ft^2	6.78
EXISTING DRIVEWAYS & PARKING AREAS (Area calculated in microstation) =		9,106.00 ft^2	0.21
EXISTING RIP-RAP (Area calculated in microstation) =		7,451.00 ft^2	0.17
TOTAL EXISTING IMPERVIOUS COVER		311,992.00 ft^2	7.16
PROPOSED ROW (Same as existing)		1,248,331.00 ft^2	28.66
PROPOSED ROADWAY (Area calculated in microstation) =		470,358.00 ft^2	10.80
PROPOSED DRIVEWAYS (Area calculated in microstation) =		71,791.00 ft^2	0.00
PROPOSED RIP-RAP (Area calculated in microstation) =		0.00 ft^2	0.00
TOTAL PROPOSED IMPERVIOUS COVER		542,149.00 ft^2	10.80
Pre-Construction Fraction of Impervious Cover (IC)			24.99
Post-Construction Fraction of Impervious Cover (IC)			37.68
Net Increase in Impervious Area (An)		230,157.00 ft^2	3.64

Runoff Coefficient Calculations:

Pre-Construction Runoff

$Rv = 1.72x(IC)^3 - 1.97x(IC)^2 + 1.23x(IC) + 0.02$

$Rv = 1.72x(0.3444)^3 - 1.97x(0.3444)^2 + 1.23x(0.3444) + 0.02$

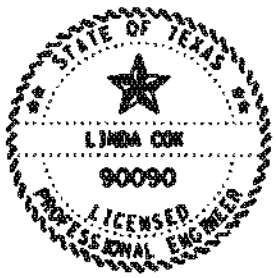
$Rv = 0.23$

Post-Construction Runoff

$Rv = 1.72x(IC)^3 - 1.97x(IC)^2 + 1.23x(IC) + 0.02$

$Rv = 1.72x(0.4318)^3 - 1.97x(0.4318)^2 + 1.23x(0.4318) + 0.02$

$Rv = 0.30$



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LOADING SUMMARY ANALYSIS

Project Name: **ON FM 306 FROM RIVER CHASE WAY TO HOFFMANN LN**
CSJ: 1728-02-059

Summary:

TSS reduction requirements for the project =	3,267 lbs/yr
Load removed from vegetated filter strips that meet the width and slope criteria =	5,173 lbs/yr

Conclusion:

The required TSS load reduction for the project is 3,267 lbs/yr. For the engineered vegetated filter strips that met the width and slope criteria, the strips would remove 5,173 lbs/year, which exceeds the project load removal requirements

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04/04/2016

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: FM 306
Date Prepared: 3/10/2016

Calculations from RG-348 Pages 3-27 to 3-30

1. The Required Load Reduction for the total project:

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

where:

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

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

County =	Comal	
Total project area included in plan * =	28.66	acres
Predevelopment impervious area within the limits of the plan * =	7.16	acres
Total post-development impervious area within the limits of the plan* =	10.80	acres
Total post-development impervious cover fraction * =	0.38	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	3267	lbs.

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

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

Drainage Basin/Outfall Area No. =	1	
Total drainage basin/outfall area =	28.66	acres
Predevelopment impervious area within drainage basin/outfall area =	7.16	acres
Post-development impervious area within drainage basin/outfall area =	10.80	acres
Post-development impervious fraction within drainage basin/outfall area =	0.38	
$L_{M\ THIS\ BASIN}$ =	3267	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

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

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

where:

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

A_C =	5.33	acres
A_I =	5.33	acres
A_P =	0.00	acres
L_R =	5173	lbs

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NTS

FM 306
WPAP LAYOUTS
CALCULATIONS

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		304

CK1: DW1: CK2: DN1:

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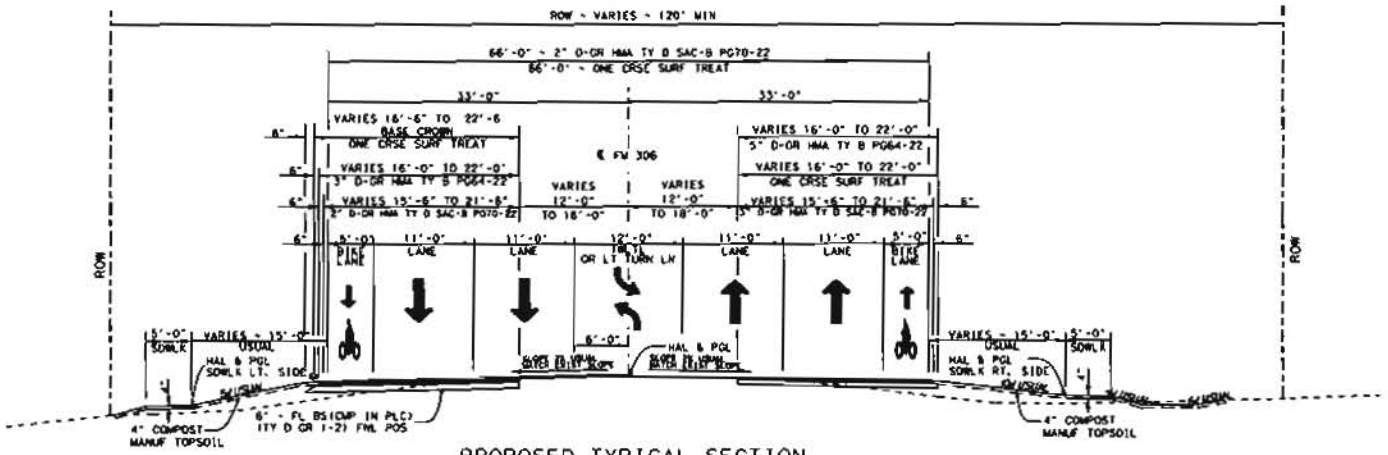
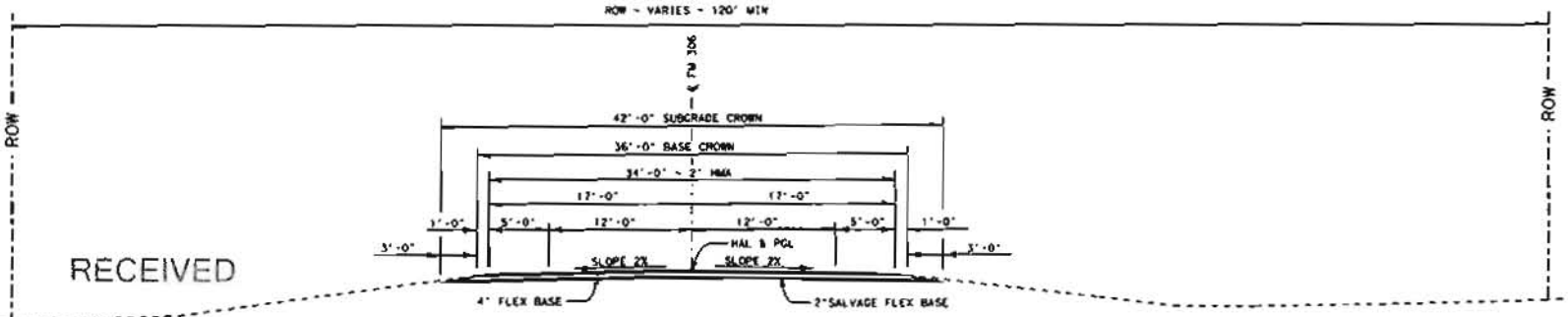


PROPOSED TYPICAL SECTION
BEGIN TO STA. 1277+50
STA. 1317+00 TO STA. 1325+00



EXIST TYPICAL SECTION

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FM 306
TYPICAL SECTIONS

DIST	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		2

SHEET 1 OF 4

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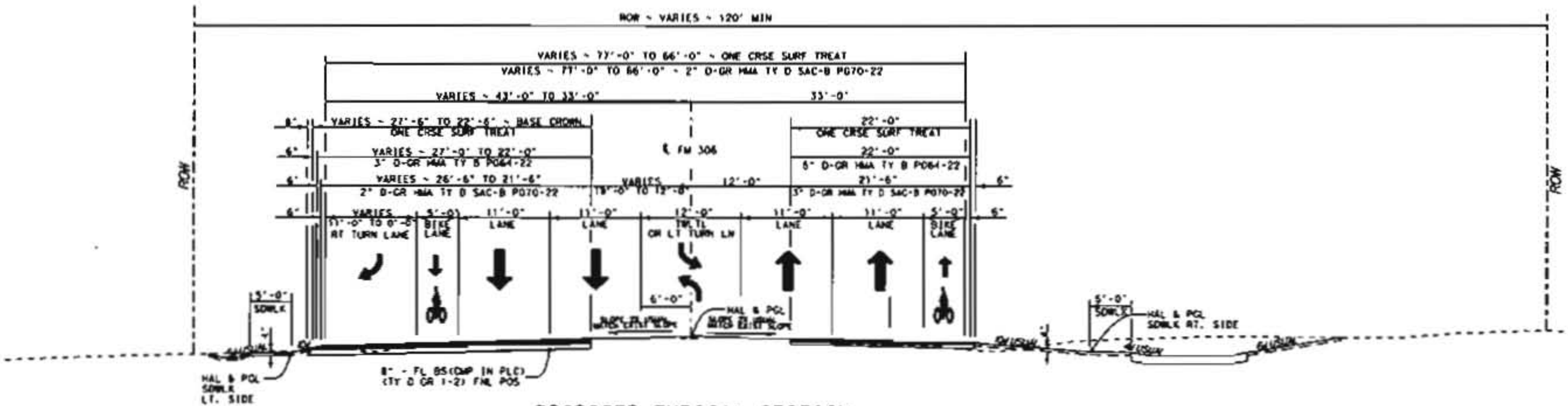

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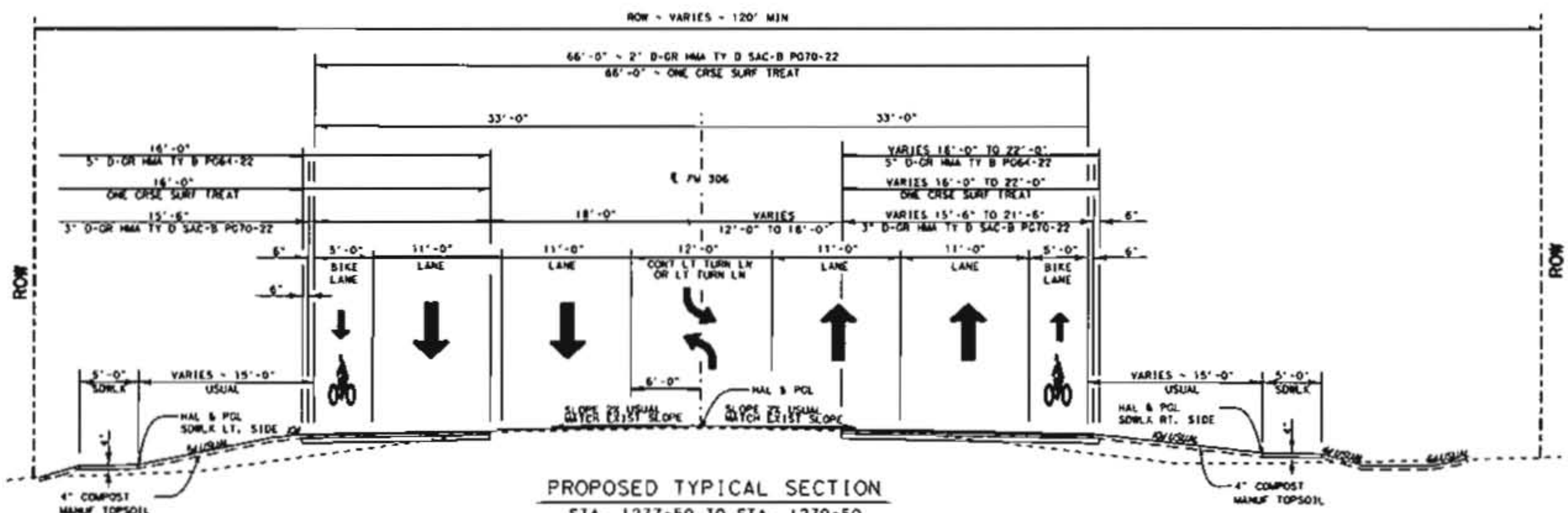

PROPOSED TYPICAL SECTION

STA. 1277+50 TO STA. 1279+50

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FM 306
TYPICAL SECTIONS

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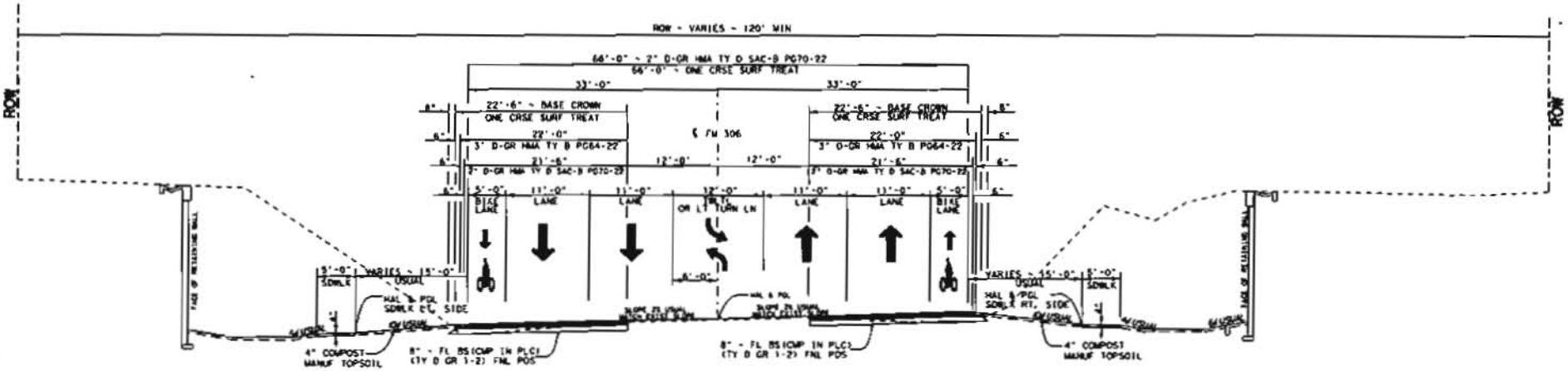
SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
1728	02	059	FM 306
DIST		COUNTY	SHEET NO.
SAT		COMAL	8



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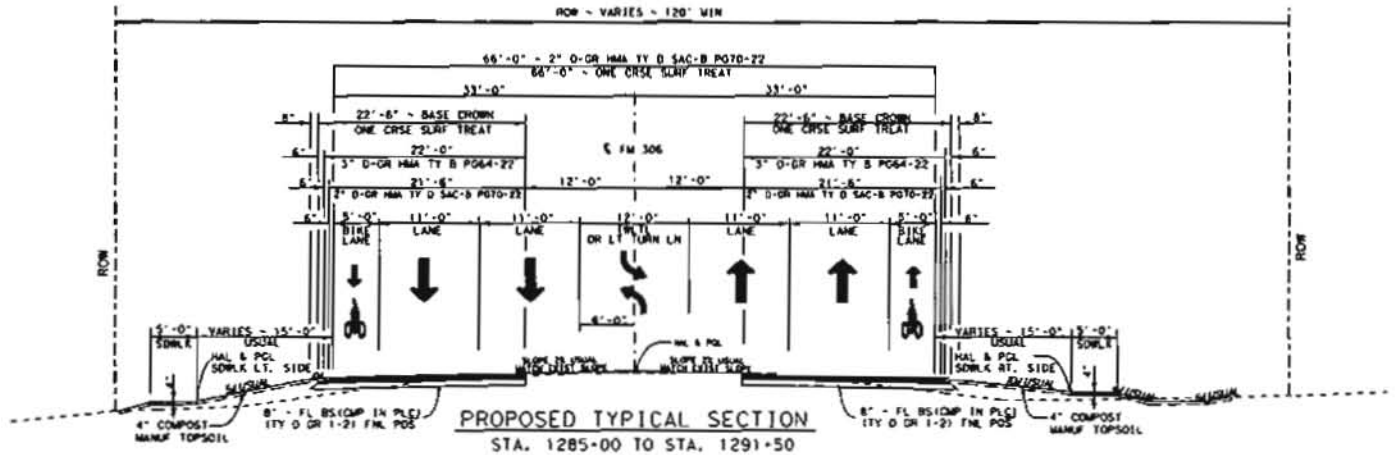

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STA. 1285+00 TO STA. 1291+50
STA. 1300+50 TO STA. 1307+50
STA. 1309+50 TO STA. 1317+00
STA. 1325+00 TO END

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FM 306
TYPICAL SECTIONS

CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
SAT	COMAL		9

SHEET 3 OF 4

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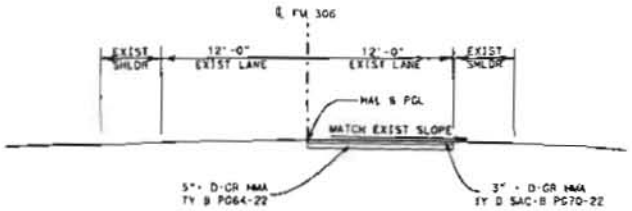

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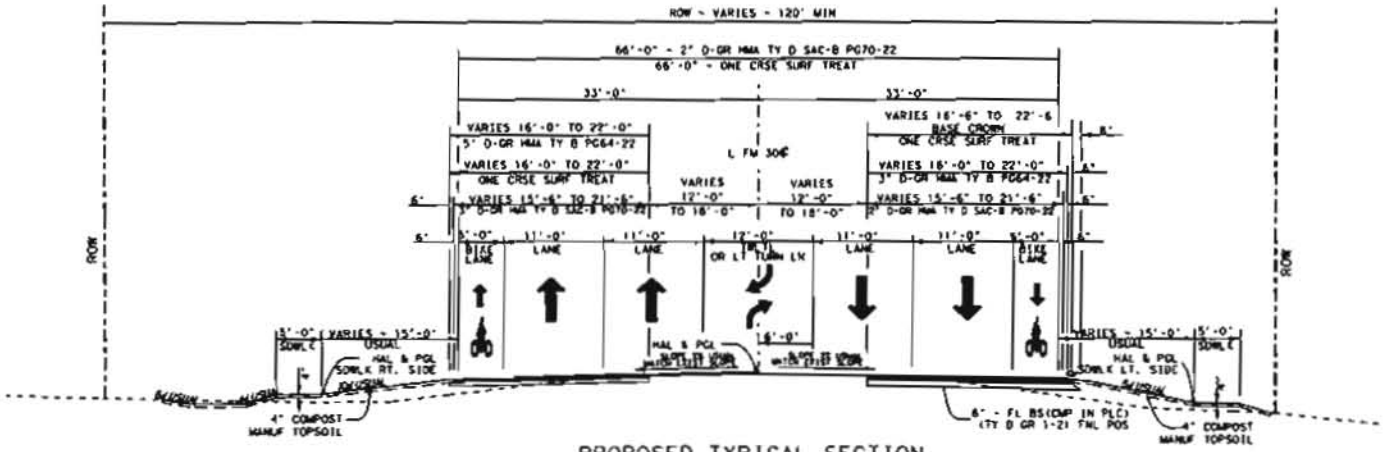
FLEXIBLE PAVEMENT STRUCTURE REPAIR LOCATIONS WILL BE AS DIRECTED BY THE ENGINEER.

PROPOSED TYPICAL SECTION
FLEXIBLE PAVEMENT STRUCTURE REPAIR



PROPOSED TYPICAL SECTION
STA. 1307+50 TO STA. 1309+50

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TYPICAL SECTIONS

SHEET 4 OF 4			
CONT	SECT	JOB	HIGHWAY
1726	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		10

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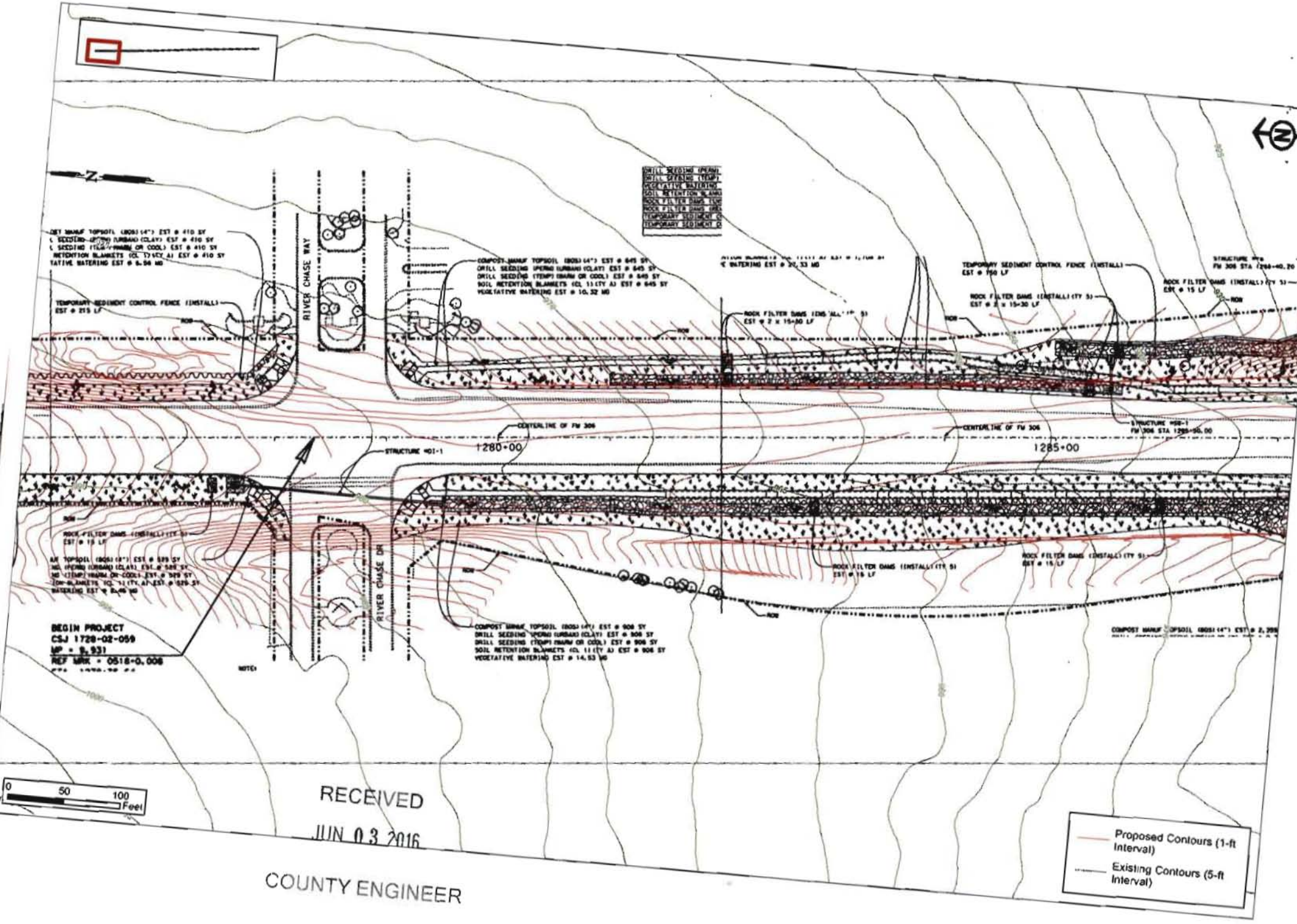

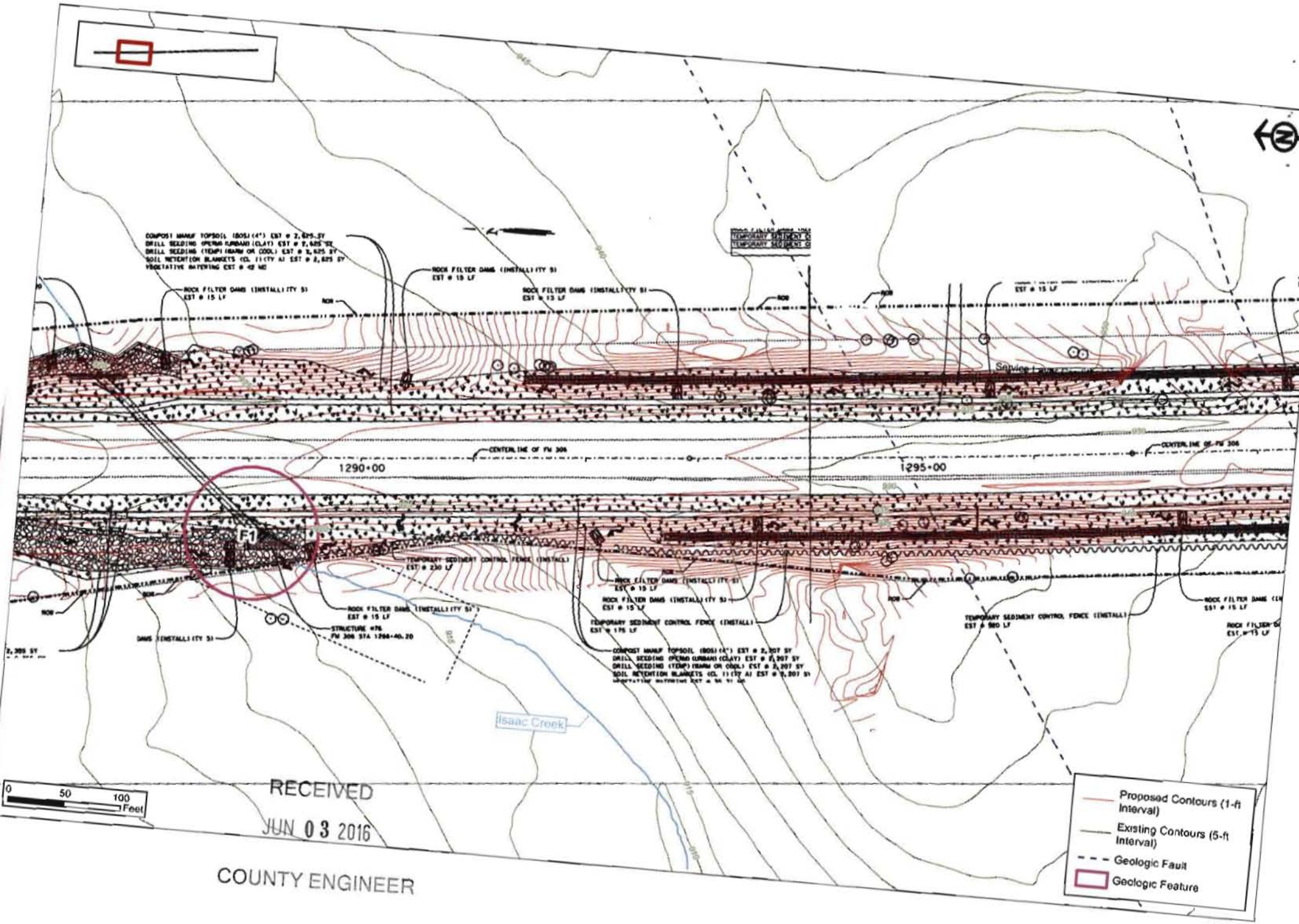

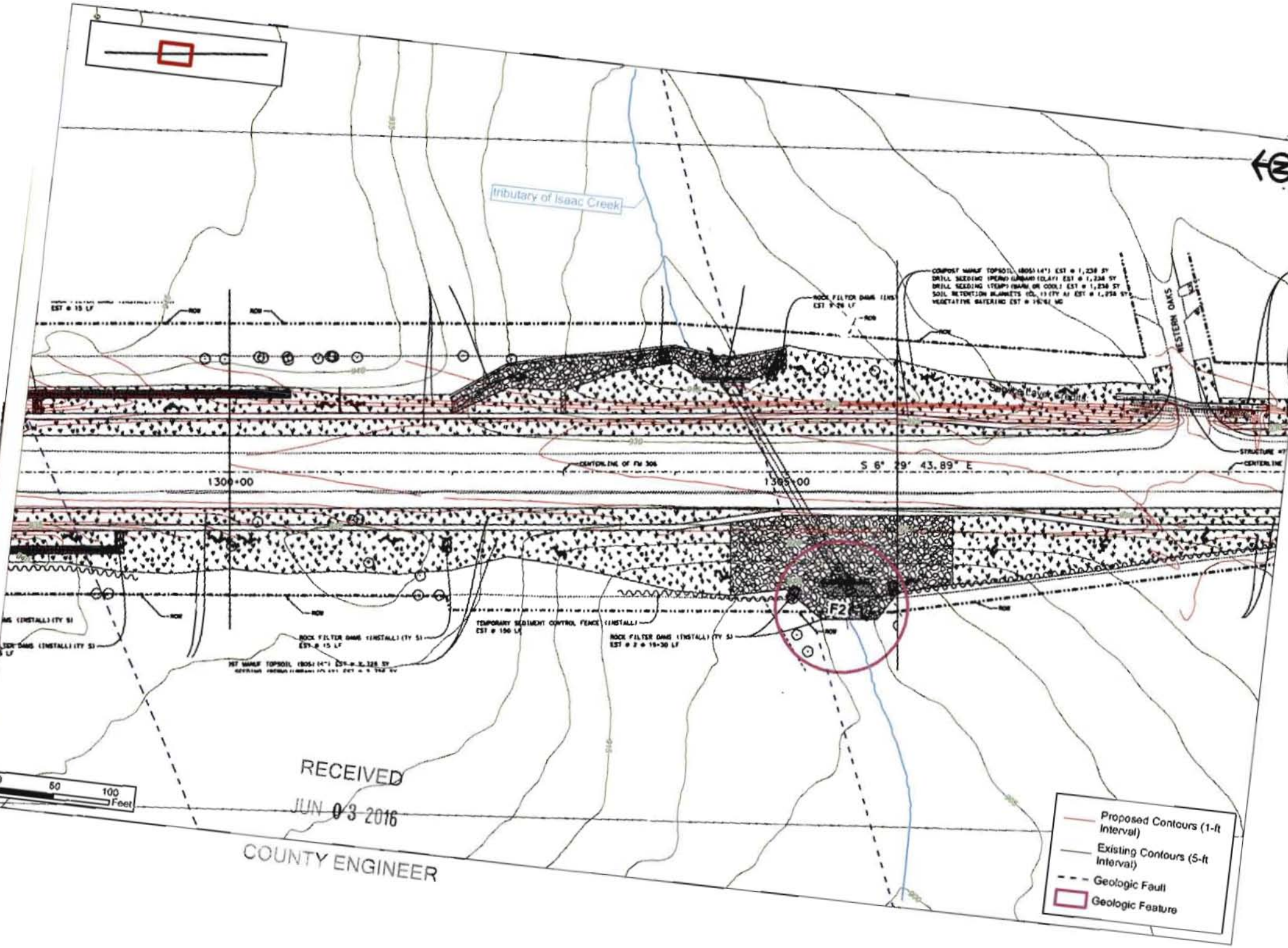
Tributary of Isaac Creek
1300+00
1305+00
S 6° 29' 43.89" E
F2
WESTERN OAKS
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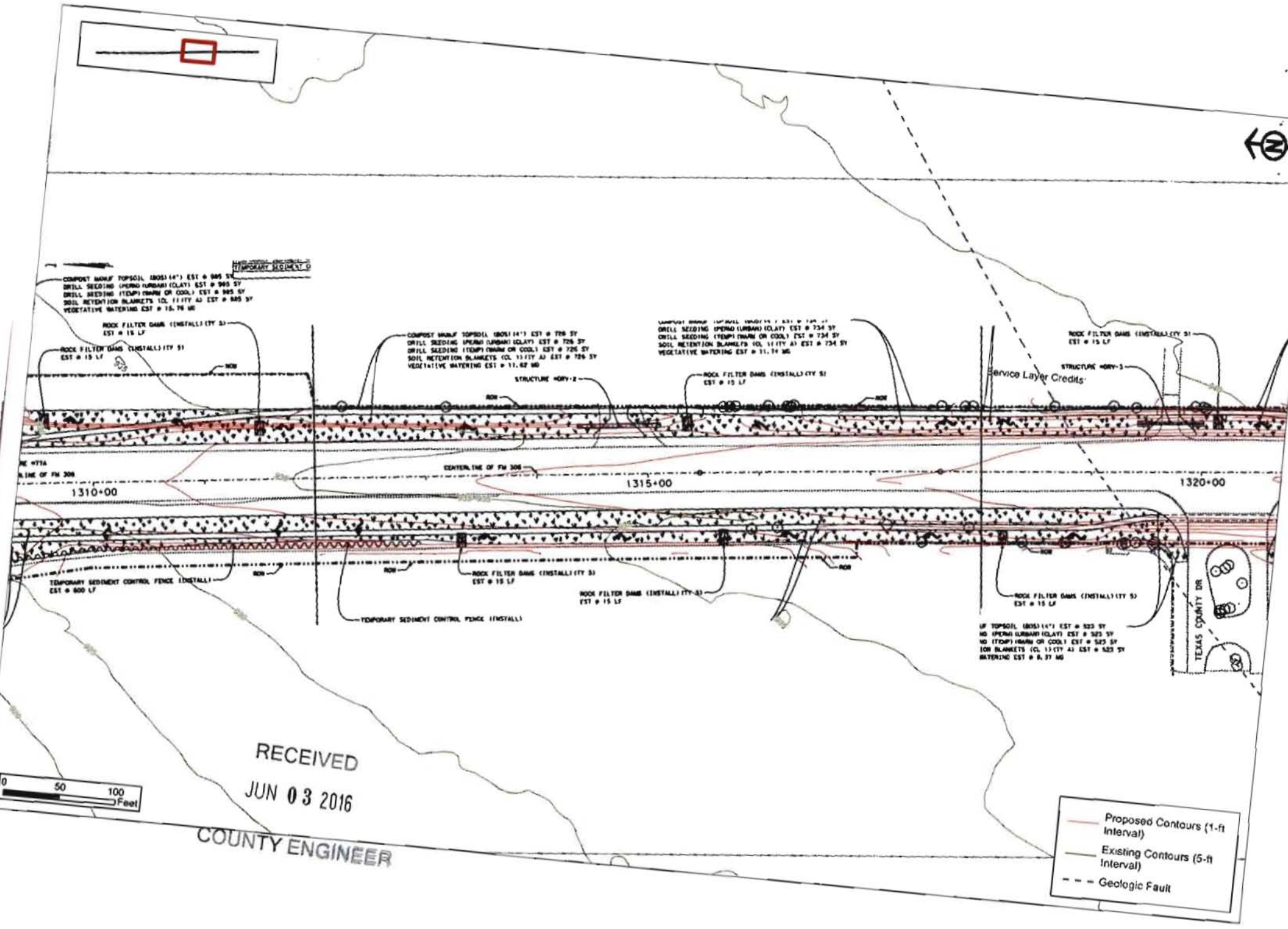
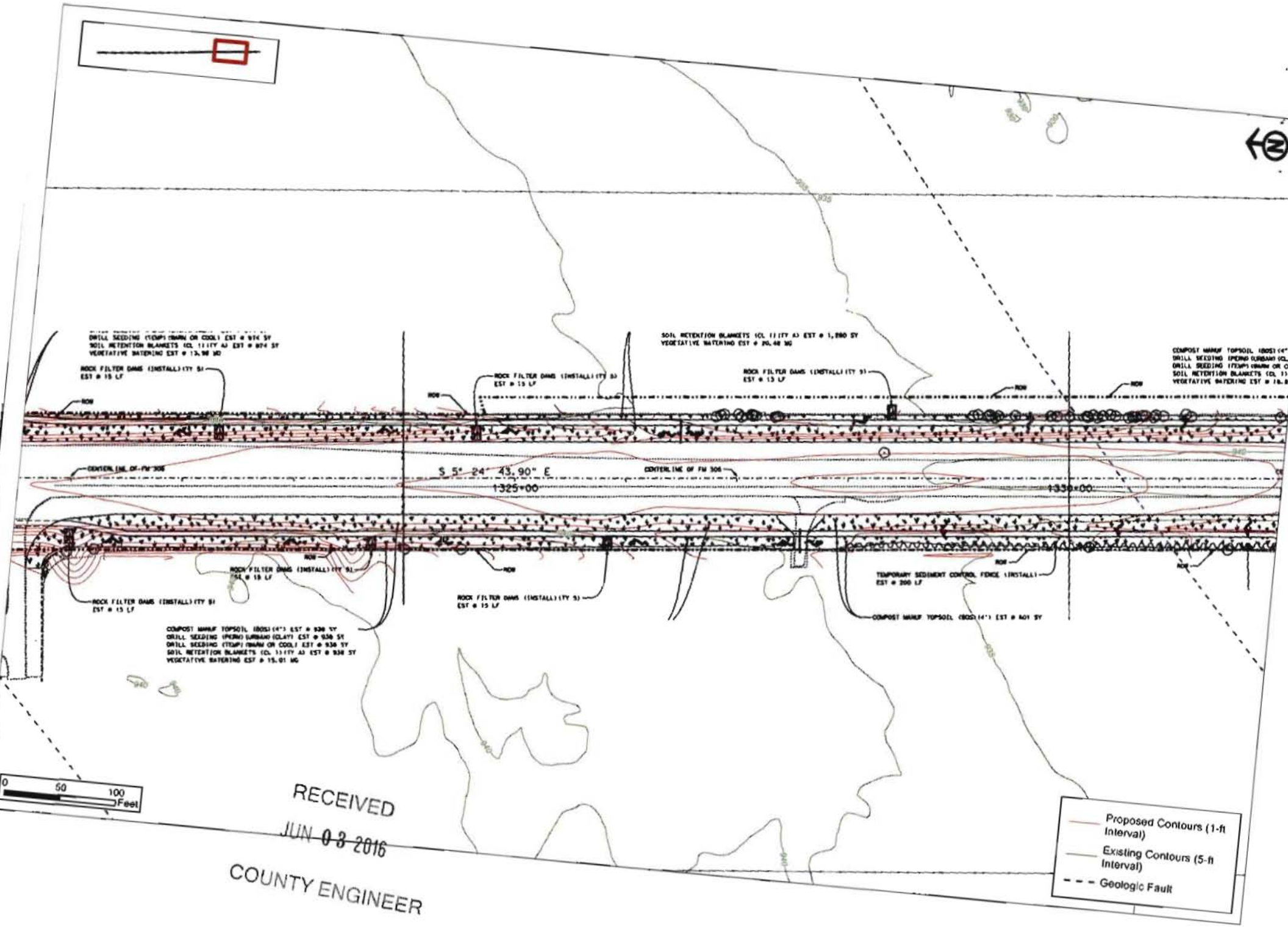
50
100
Feet
Proposed Contours (1-ft Interval)
Existing Contours (5-ft Interval)
Geologic Fault
Geologic Feature





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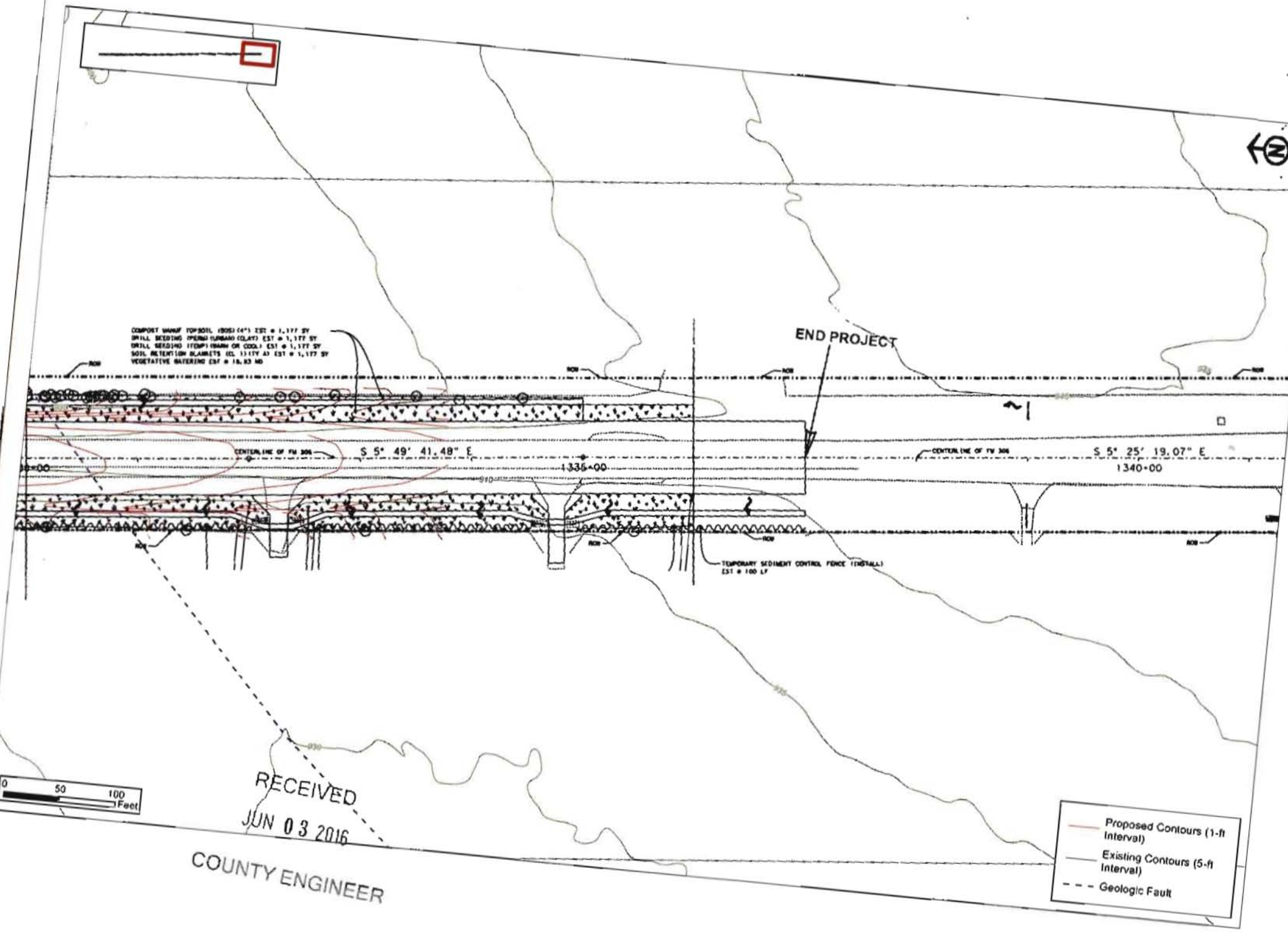

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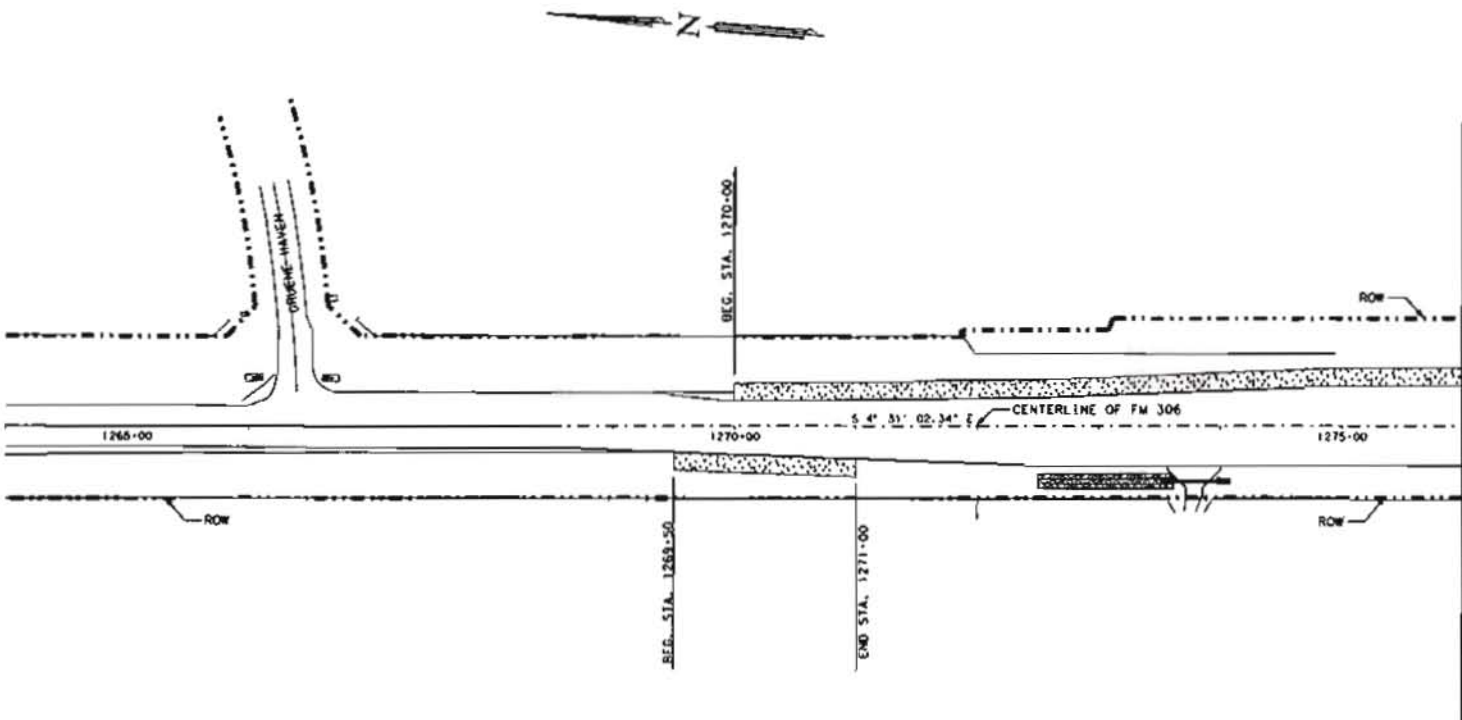
GRASS FILTER STRIP AREA



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CONT	SECT	JOB	HIGHWAY
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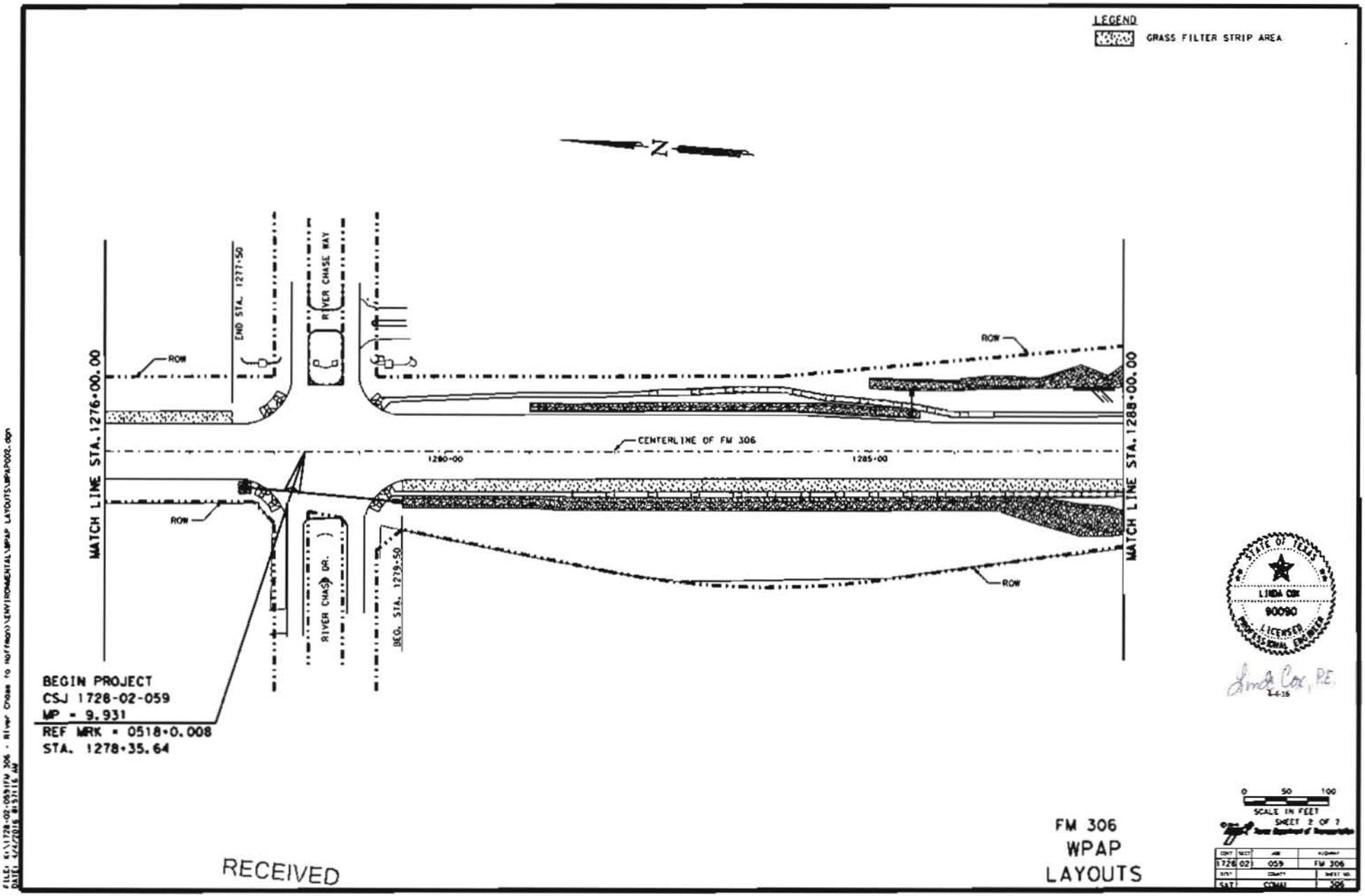
DIST		COUNTY	SHEET NO.
SAT		COMAL	305



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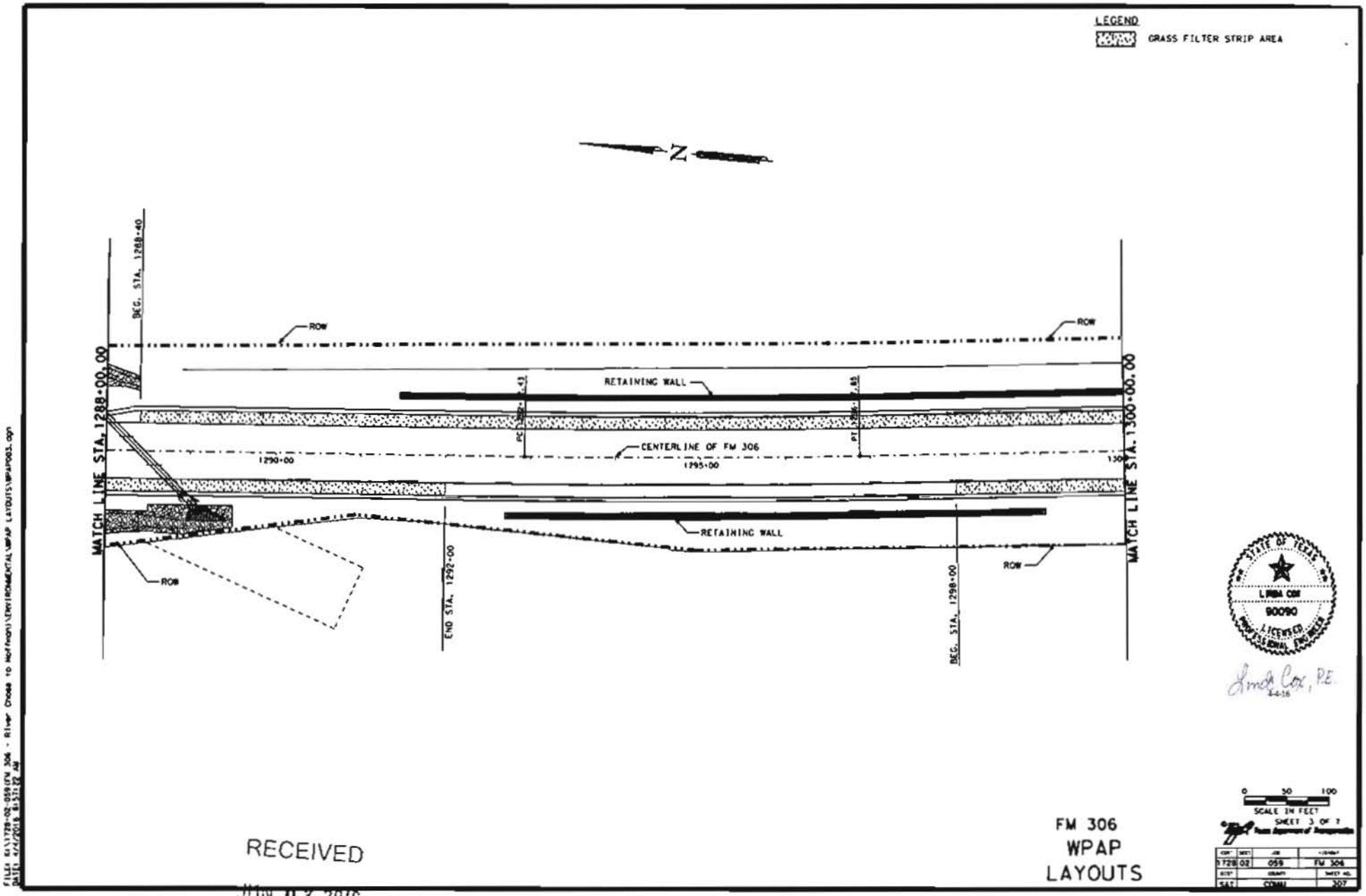

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SCALE IN FEET
SHEET 3 OF 7

FM 306
WPAP
LAYOUTS

CSJ	DIST	JOB	HIGHWAY
1728	02	059	FM 306
DIST	COUNTY		SHEET NO.
SAT	COMAL		307

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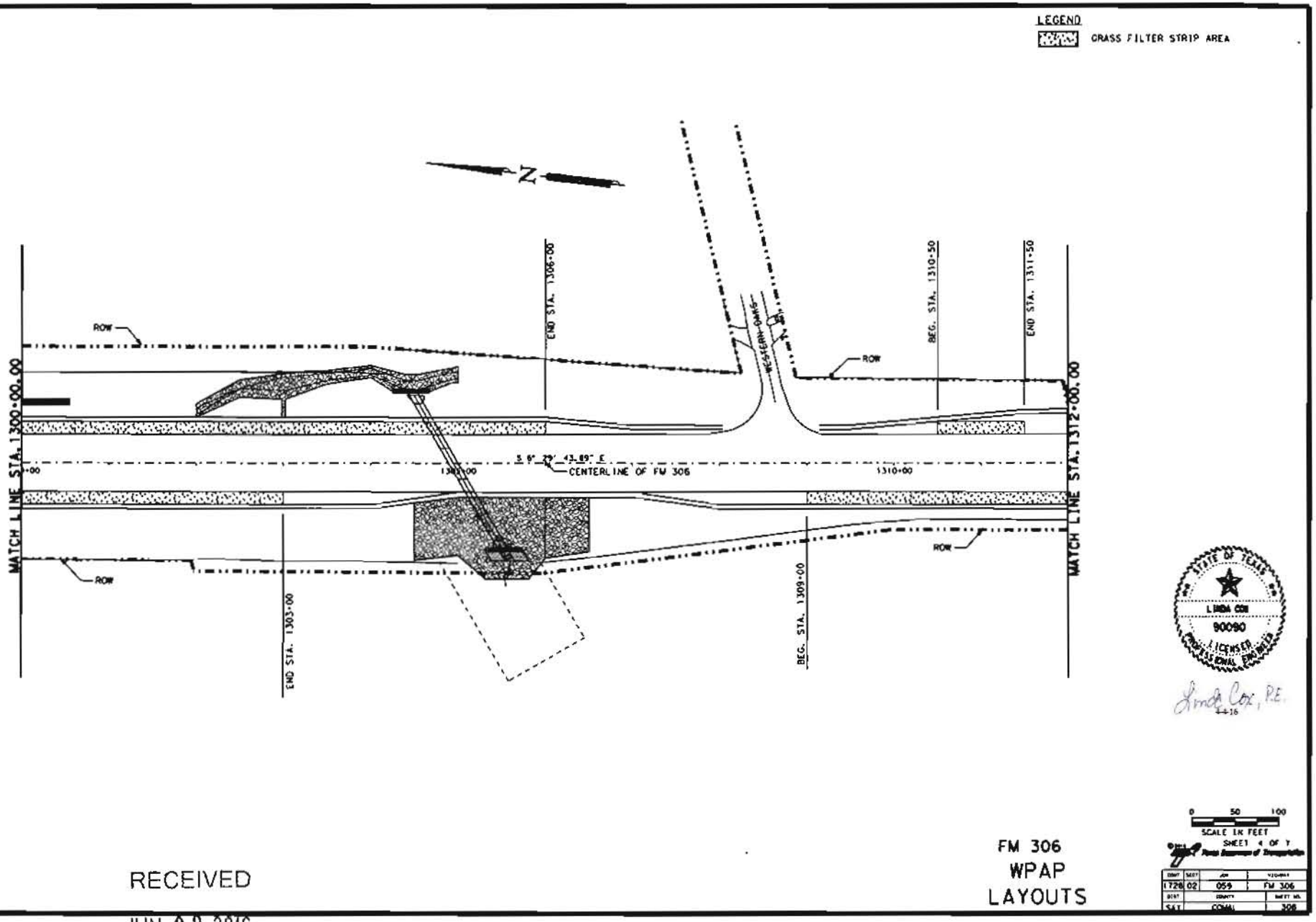

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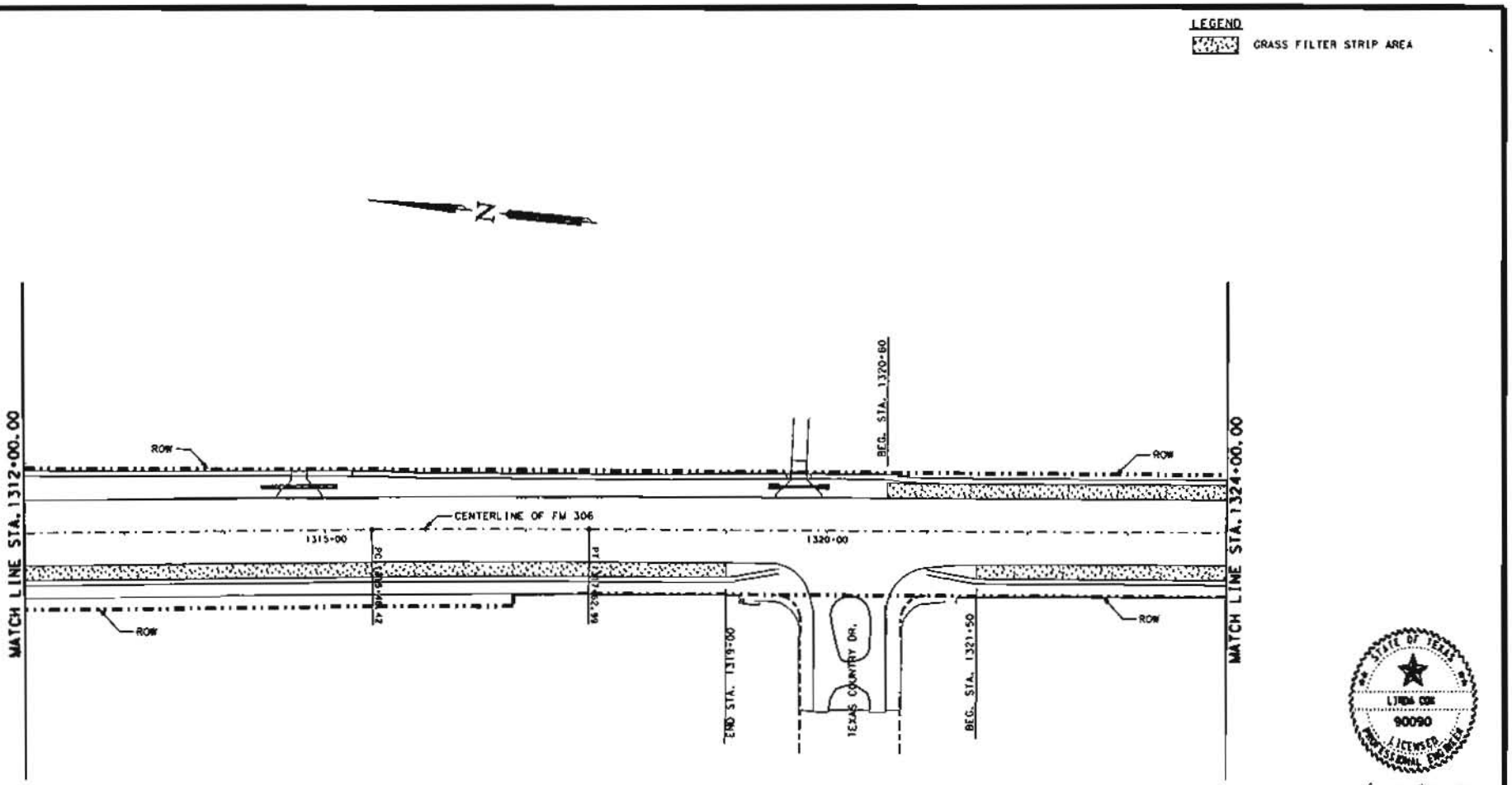

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SCALE IN FEET
SHEET 5 OF 7

FM 306
WPAP
LAYOUTS

DIST	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
SAT	COMAL		309

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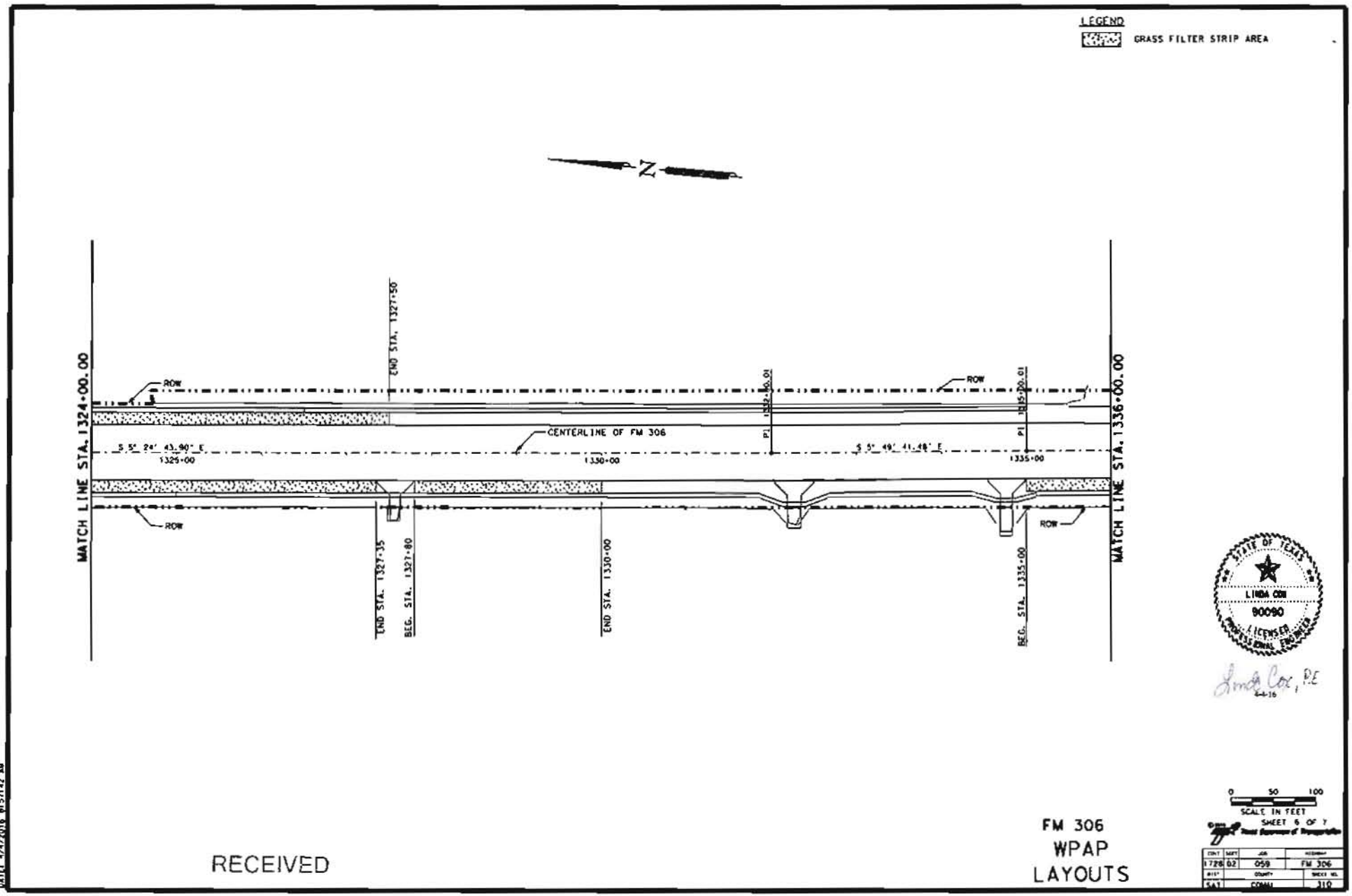

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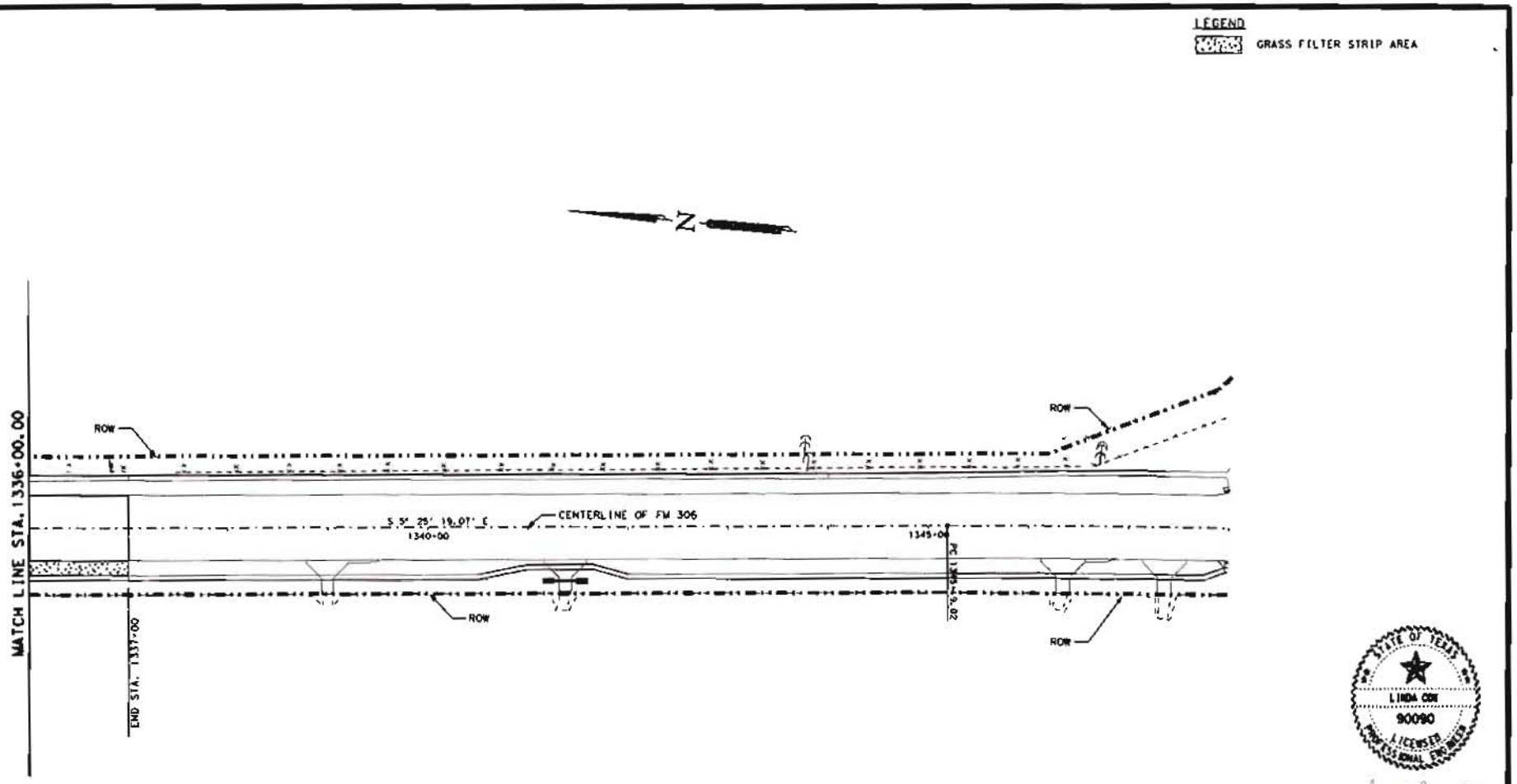

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6-4-16

Texas Commission on Environmental Quality
Water Pollution Abatement Plan
General Construction Notes

1. Written construction notification must be given to the appropriate TCEQ regional office no later than 48 hours prior to commencement of the regulated activity. Information must include the date on which the regulated activity will commence, the name of the approved plan for the regulated activity, and the name of the prime contractor and the name and telephone number of the contact person.

2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan 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 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. The regulated activities near the sensitive feature may not proceed until the TCEQ has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality.

4. No temporary aboveground hydrocarbon and hazardous substance storage tank system is installed within 150 feet of a domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

5. Prior to commencement of construction, all temporary erosion and sedimentation (E&S) control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. Controls specified in the temporary storm water section of the approved Edwards Aquifer Protection Plan are required during construction. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. The controls must remain in place until disturbed areas are revegetated and the areas have become permanently stabilized.

6. 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).

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

8. 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).

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. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

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 Edward 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.

Austin Regional Office	San Antonio Regional Office
2800 S. IH 35, Suite 100	14250 Judson Road
Austin, Texas 78704-5712	San Antonio, Texas 78233-4480
Phone (512) 339-2929	Phone (210) 490-3096
Fax (512) 339-3795	Fax (210) 545-4329

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

FM 306

TCEQ WPAP GENERAL CONSTRUCTION NOTES

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			287
STATE	DISTRICT	COUNTY	
TEXAS	SAT	COMAL	
CONTROL	SECTION	JOB	HIGHWAY NO.
1728	02	059	FM 306

FILE: K:\1728-02-059(FM 306 - River Chase to Hoffman)\ENVIRONMENTAL\TCEQ Gen Notes WPAP.dgn
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ATTACHMENT G

INSPECTION, MAINTENANCE, REPAIR, AND RETROFIT PLAN

As a TxDOT project, inspection, maintenance, repair, and retrofit of permanent BMP's will be the responsibility of TxDOT. Permanent BMP's will be maintained in accordance with the TxDOT Roadside Vegetation Management Manual (Revised September 2013). TxDOT Executive Order 1-92 states: "The department will maintain highway vegetation in an environmentally sensitive and uniform manner consistent with the special conditions presented by local climate, topography, vegetation, and level of urbanization."

TxDOT maintains two levels of vegetation management, Developed Urban Highways and Rural Highways. Vegetation management on this project would be performed under the standards for Rural Highways, as the surrounding area lacks the development required for classification as a Developed Urban Highway.

Chapter 1, Section 3 of the Roadside Vegetation Management Manual states:

> *Erosion Control: Implement erosion control measures as necessary (slope stabilization, seeding, mulching, soil retention blankets, etc.)*

Inspection of permanent BMP's will be performed in accordance with TxDOT's standard maintenance procedures.

When inspections indicate that a BMP is not functioning as intended, maintenance of permanent BMP's will be performed in accordance with the Roadside Vegetation Management Manual in an effort to restore the BMP to its original condition.

When inspections, maintenance and repair of permanent BMP's are ineffective, those BMP's will be retrofitted with a more "high-service" BMP.

A discussion of BMP maintenance, inspections, repairs, and record keeping is found on the design engineer signed and sealed Storm Water Pollution Prevention Plan (SW3P) narrative Sheet, (Plan sheet # 285) .

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ATTACHMENT H

PILOT-SCALE FIELD TESTING PLAN

not applicable

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COUNTY ENGINEER

ATTACHMENT I

MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

The increase in impervious cover resulting from the proposed improvements to FM 306 could result in stream flashing or stronger flows with higher in-stream velocities, which could result in increased erosion and subsequent contamination or sedimentation of Isaac Creek or its immediate southern tributary, both of which traverse the project area. In order to minimize these impacts, the design of the proposed improvements incorporates gabion mattresses in both the upstream and downstream ends of the box culverts at these crossings, as well as along nearby segments of FM 306 exhibiting comparatively steep slopes. In addition, the downstream ends of the box culverts would be equipped with riprap-lined aprons and dissipators to reduce the velocity of stormwater flows from the culverts into the streams.