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Di yaui W. Shaw, Ph.D., P.E., Chairman Toby Baker, Commissioner Jon Niermann, Commissioner Richard A. Hyde, P.E., Executive Director



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 28, 2016

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Mr. Mario Jorge, P.E. San Antonio District Texas Department of Transportation 4615 NW Loop 410 San Antonio, Texas 78229 AUG 0 2 2016

COUNTY ENGINEER

Re: Edwards Aquifer, Comal County

SH 46 Passing Lanes; From Kendall County Line to Bulverde; Bulverde, Texas Request for Approval of a Contributing Zone Plan (CZP) 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer Edwards Aquifer Protection Program ID No. 13000191; RN109248682

Dear Mr. Jorge:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP application for the referenced project submitted to the Austin Regional Office by the Texas Department of Transportation on June 21, 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 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 addition to the current roadway project consists of roadway modifications to occur within 21.3 acres of the acquired 30.8 acre right-of-way (ROW). The project will occur along 2.1 miles of SH 46 (that portion within Comal County), and includes widening to accommodate passing lanes and one center turn lane, each approximately 10-foot in width. The impervious cover in these segments collectively will be increased from approximately 11.9 acres to 15.9 acres (51.0%). Portions of the project in Kendall County are not contemplated under Chapter 213 Edwards rules.

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Mr. Mario Jorge, P.E. July 28, 2016 Page 2

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The project is within the Contributing Zone and approves:

- Adding passing lanes within appropriate sections of Segments C and D within Comal County,
- Adding a center turn lane near Station 810 in Segment D,
- Installing Permanent BMPs consisting of grassy swale (GS) and vegetative filter strips (VFS) for any additional pavement and resurfacing, excluding driveways,
- Re-stabilizing the ROW after construction.

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

PERMANENT POLLUTION ABATEMENT MEASURES

The selected BMP for this project is the roadway receiving VFS in selected areas. One grassy swale will be used in basin C3. Existing culverts will cross under SH 46 and continue to carry and divert off-site runoff around the project. The approved measures meet the required 80 percent removal of the increased load in total suspended solids caused by the project. Design calculations were sealed by Martin Palacios, P.E., on November 4, 2014 to demonstrate the total treatment load removal in the affected watershed areas.

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 CZP and this notice of approval shall be maintained at the project until all regulated activities are completed.
- 3. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

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:		
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Signature of New Responsible Party	Date		COUNTY ENGINEER

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.

TCEQ-10263 (10/01/04)

Bryan W. Shaw, Ph.D., P.E., *Chairman* Toby Baker, *Commissioner* Jon Niermann, *Commissioner* Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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June 24, 2016

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

COUNTY ENGINEER

Re: Edwards Aquifer, **Comal County** PROJECT NAME: **SH 46 Passing Lanes**; SH 46 at Comal Kendall County Line and SH 46 at Limestone Ledge; Comal County, Texas; Bulverde, Texas PLAN TYPE: Application for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B; Edwards Aquifer Protection Program ID No. 13000191

Dear Mr. Hornseth:

The enclosed CZP application is being forwarded to you pursuant to the Edwards Aquifer Protection 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 is located.

Please forward any comments to this office by July 24, 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

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CONTRIBUTING ZONE PLAN



SH 46 Passing Lanes Project

SH 46

From the Comal/Kendall County Line To 0.5852 mile east of Comal/Kendall County Line; Comal County, Texas

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and

SH 46 COUNTY ENGINEER From 0.8977 mile west of Limestone Ledge To 0.5824 mile east of Limestone Ledge, Bulverde, Comal County, Texas

CSJ: 0215-07-022

Texas Department of Transportation



TCEO AUSTIN - REGION 11

June 2016

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Contributing Zone Plan Application

Attachments

<u>8 ½ x 11 Enclosures</u> Narratives for Attachments A – P Road Map USGS Topo Map Engineering Calculations (Impervious Cover, TSS) Inspection and Maintenance Plan (N)

<u>11 x 17 Enclosures</u> Title Sheet (C) Project Layouts (C) Typical Sections (C) Roadway Layouts (M) Contributing Zone Plan Summary (K, L, M) Contributing Zone Plan Layout Sheets show permanent BMP locations (K, L, M) Storm Water Pollution Prevention Plan (SW3P) Narrative and SW3P Layouts, (K, L, M) EPIC Plan Sheet, (K, L, M) Temporary BMP Detail sheets (K, L, M) TCEQ Contributing Zone Plan General Construction Notes (K, L, M)

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Contributing Zone Plan Application

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: John Bryant

Date: <u>June 17, 2016</u>

Signature of Customer/Agent:

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Regulated Entity Name: <u>SH 46 from the Comal/Kendall County Line to 0.5852 mile east of</u> <u>Comal/Kendall County Line; and from 0.8977 mile west of Limestone Ledge to 0.5824 mile east</u> <u>of Limestone Ledge, Comal County, Texas</u>

Project Information

- 1. County: Comal
- 2. Stream Basin: Cibolo Creek (tributary to San Antonio River) and the Guadalupe River
- 3. Groundwater Conservation District (if applicable): Edwards Aquifer Authority
- 4. Customer (Applicant):

Contact Person: <u>Mario Jorge, P.E.</u> Entity: <u>Texas Department of Transportation</u> Mailing Address: <u>4615 NW Loop 410</u> City, State: <u>San Antonio, Texas</u> Z

Zip: <u>78229</u>

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Telephone: <u>210 615 1110</u> Email Address: _____

5. Agent/Representative (If any):

Contact Person: <u>John Bryant</u> Entity: <u>Texas Department of Transportation</u> Mailing Address: <u>4615 NW Loop 410</u> City, State: <u>San Antonio, Texas</u> Telephone: <u>210 615 5838</u> Email Address: <u>john.bryant@txdot.gov</u> Fax: _____

Zip: <u>78229</u> Fax: _____ RECEIVED

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6. Project Location:

The project site is located inside the city limits of <u>Bulverde</u>.

- The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of ______.
- \boxtimes The project site is not located within any city's limits or ETJ.
- 7. The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

See Attachment A narrative.

- 8. Attachment A Road Map. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.
- 9. Attachment B USGS Quadrangle Map. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') is attached. The map(s) clearly show:

Project site boundaries. USGS Quadrangle Name(s).

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

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

11. Existing project site conditions are noted below:

Existing commercial site
 Existing industrial site
 Existing residential site
 Existing paved and/or unpaved roads
 Undeveloped (Cleared)
 Undeveloped (Undisturbed/Not cleared)
 Other: _____

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12. The type of project is:

	Residential: # of Lots:	
] Residential: # of Living Unit Equivalents: _	
	Commercial	
	Industrial	
\boxtimes	Other: <u>TxDOT Road</u>	

13. Total project area (size of site): <u>30.8</u> Acres

Total disturbed area: <u>10</u> Acres

- 14. Estimated projected population: 0
- 15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 -	Impervious	Cover
-----------	------------	-------

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops		÷ 43,560 =	
Parking		÷ 43,560 =	
Other paved surfaces		÷ 43,560 =	15.85
Total Impervious Cover		÷ 43,560 =	15.85

Total Impervious Cover 15.85 ÷ Total Acreage 30.8 X 100 = 51% Impervious Cover

- 16. Attachment D Factors Affecting Surface Water Quality. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.
- 17. Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

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

🗌 N/A

18. Type of project:

XDOT road project.	RECEIVED
 County road or roads built to county specifications. City thoroughfare or roads to be dedicated to a municipality. 	JUN 282016
Street or road providing access to private driveways.	COUNTY ENGINEER

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



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

Length of R.O.W.: <u>varies</u> feet. Width of R.O.W.: <u>varies</u> feet. L x W = <u>varies</u> Ft² ÷ 43,560 Ft²/Acre = <u>30.8</u> acres.

21. Pavement Area:

Length of pavement area: <u>varies</u> feet. Width of pavement area: <u>varies</u> feet. L x W = <u>varies</u> $Ft^2 \div 43,560 Ft^2/Acre = 15.85$ acres. Pavement area 15.85 acres \div R.O.W. area 30.8 acres x 100 = 51% impervious cover.

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

 \square A rest stop will not be included in this project.

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

🖂 N/A

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26. Wastewater will be disposed of by:

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

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

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

Sewage Collection System (Sewer Lines):

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

Existing.

□ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

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

N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

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

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AST Number	Size (Gallons)	Substance to be Stored	Tank Material
4			
5			
	· · · · · · · · · · · · · · · · · · ·	Tak	

Total x 1.5 = ____ Gallons

- 28. The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.
 - Attachment G Alternative Secondary Containment Methods. Alternative methods for providing secondary containment are proposed. Specifications showing equivalet EIVED protection for the Edwards Aquifer are attached.

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

Table 3 - Secondary Containment COUNTY ENGINEER Length (L)(Ft.) Width(W)(Ft.) Height (H)(Ft.) L x W x H = (Ft3) Gallons Image: Image:

Total: _____ Gallons

30. Piping:

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

- structure.
- The piping will be aboveground

The piping will be underground

- 31. The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of:
- 32. Attachment H AST Containment Structure Drawings. A scaled drawing of the containment structure is attached that shows the following:

Interior dimensions (length, width, depth and wall and floor thickness).

Internal drainage to a point convenient for the collection of any spillage.

Tanks clearly labeled

Piping clearly labeled

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Dispenser clearly labeled

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

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

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

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.	RECEIVED
34. \bigotimes The Site Plan must have a minimum scale of 1" = 400'.	JUN 282016
Site Plan Scale: $1'' = 100'$.	COUNTY ENGINEER

- 35. 100-year floodplain boundaries:
 - Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
 - No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): <u>FEMA Panels 48259CO450F dated 12/17/10; the rest are dated 9/2/09</u> 48091CO185F; 48091CO195F; 4891CO215F.

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

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

- 37. \square A drainage plan showing all paths of drainage from the site to surface streams.
- 38. 🖂 The drainage patterns and approximate slopes anticipated after major grading activities.
- 39. \square Areas of soil disturbance and areas which will not be disturbed.
- 40. 🖂 Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
- 41. 🖂 Locations where soil stabilization practices are expected to occur.
- 42. Surface waters (including wetlands).

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□ N/A

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43. \boxtimes Locations where stormwater discharges to surface water.

There will be no discharges to surface water.

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44. Temporary aboveground storage tank facilities.

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

45. Permanent aboveground storage tank facilities.

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

46. \boxtimes Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

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

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

□ N/A

- 48. These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.
 - The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.
 - A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____.

	N/A
--	-----

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

🗌 N/A

50. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to

Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

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

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

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

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

Attachment I - 20% or Less Impervious Cover Waiver. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.

The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

The site will not be used for multi-family residential developments, schools, or small business sites.

52. Attachment J - BMPs for Upgradient Stormwater.

- A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
- No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

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

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

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

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- 54. Attachment L BMPs for Surface Streams. A description of the BMPs and measures ENGINEER that prevent pollutants from entering surface streams is attached.
 - N/A
- 55. Attachment M Construction Plans. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

____N/A

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

Prepared and certified by the engineer designing the permanent BMPs and measures

Signed by the owner or responsible party

Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.

Contains a discussion of record keeping procedures

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

🛛 N/A

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

🗌 N/A

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

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

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owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

60. A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

Administrative Information

- 61. Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions.
- 62. Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.
- 63. The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.
 - The Temporary Stormwater Section (TCEQ-0602) is included with the application.

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NARRATIVES FOR ATTACHMENTS A - P

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ATTACHMENT A - Road Map

From Austin drive south on IH 35. On the north side of New Braunfels, exit and proceed west on SH 46 for a substantial distance, travelling west of US 281 (Bulverde). On SH continue west of US 281 approximately 5.5 miles to the St Joseph Catholic Church (pictured). This is near the middle of roadway Section D. From the church, it is another 3.4 miles west to the Kendall/Comal County line, which is within Section C.

ATTACHMENT B - USGS Quadrangle Map

See attached USGS Topo Map

ATTACHMENT C - Project Narrative

TxDOT plans to widen four sections (Sections A, B, C and D) of SH 46 in Kendall and Comal Counties to accommodate passing lanes. Sections A, B and part of Section C are in Kendall county, which is a county not subject to the TCEQ's Edwards Aquifer rules (30 TAC 213). No further information on Kendall County areas is presented in this application. This application is to permit the portion of Section C that is within Comal County, and Section D which is entirely within Comal County.

The portion of Section C subject to the Edwards Rules is located in Comal County and it begins at the Comal/Kendall County line (which is marked by signs) and extends 0.5852 mile (3,090 feet) east of the county line. It is in an unincorporated portion of Comal County, within the Cibolo Creek watershed.

Section D begins 0.8977 mile (4,470 feet) west of Limestone Ledge (easily identifiable private driveway) to 0.5824 mile (3,075 feet) east of Limestone Ledge, Bulverde, Comal County, Texas. The western end of Section D is in the Guadalupe River watershed but the majority of Section D is within the Cibolo Creek watershed.

None of the roadway work in Comal County crosses the floodplain, perennial streams or intermittent streams but there are some ephemeral stream crossings and off-site ephemeral ponds. The project limits are located on Glen Rose limestone.

The proposed roadway work would add passing lanes to improve traffic flow and safety along SH 46. Section D would also include a center turn lane in proximity to a church. In general, the roadway would be widened by scabbing additional pavement onto the edges of the existing roadway, placing a new surface coating upon the entire widened sections, and then restriping the roadway. The *typical sections* attached to this application generally illustrate the existing and



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proposed conditions. In Section C, most of the widening would be approximately 10 feet wide along the south side of the road. In Section D, most of the widening would add 10 feet of pavement to each side of the road. The proposed roadway improvements would be constructed within the existing State-owned right of way (ROW).

A storm water pollution prevention plan (SW3P) would be implemented in accordance with a TPDES Construction General Permit. A Notice of Intent would be submitted to TCEQ to obtain permit coverage. The SW3P would utilize approximate temporary BMPs such as silt fence, rock filter dams and other measures to control pollutants during the construction phase.

The project would include ancillary features such as adding and relocating guardrails as slopes and obstacles dictate, relocating signs and minor modifications of existing culverts (lengthening or adding safety end treatments). In the areas where the road is widened, the roadside slopes and ditches would generally have to be re-graded. Topsoil, seed and soil retention blankets would be used to stabilize these temporary impact areas.

Sections C and D cumulatively have 11.94 acres of existing impervious cover (IC) and the project would add 3.91 acres of IC, bringing the total IC after construction to 15.85 acres. Adding 3.91 acres of IC requires a treatment system capable of removing 3,510 lbs of total suspended solids (TSS) each year. In Section C, two vegetated filter strips (VFS) and one swale would filter runoff from the pavement. In Section D, nine VFS would filter runoff from the pavement. These BMPs would remove 3,977 lbs TSS per year, exceeding the minimum requirement by 467 lbs.

There are no offsite areas or existing permanent BMPs. The site history is a rural highway.

ATTACHMENT D - Factors Affecting Surface Water Quality.

The project would disturb soils adjacent to the existing roadway and make them vulnerable to erosion. Materials used to build the new bridge and widen the road, and construction equipment are potential sources of storm water pollutants. Construction materials include roadway base material, new topsoil, and asphalt products which are sprayed onto the widened pavement surface. Concrete products may also be pollutant sources. Concrete washout pits would be established to contain rinse waters from concrete handling equipment. Construction equipment would run on diesel or gasoline fuels and contain lubricating oils, engine coolants, and hydraulic oils. Incidental releases or accidents may cause construction material and equipment releases into soils, which could then be carried to receiving streams. Newly seeded or sodded soils would A storm water pollution prevention plan implemented per the TCEQ's be fertilized. Construction General Permit TXR150000 would minimize the incorporation of construction related pollutants into storm water runoff during the construction phase. After construction is complete, the additional impervious cover would generate an increase in total suspended solids (TSS) as calculated by TCEQ's technical guidance. The increase in TSS would be mitigated with vegetated filter strips and swales.

ATTACHMENT E - Volume and Character of Stormwater

The runoff coefficient describes the ratio of runoff to rainfall. Storm water discharging from the

project limits is a combination of runoff from the paved and unpaved portions of the State ROW. Runoff quality is influenced by numerous factors including natural soil chemistry, on-site land use (roadway) and area land use. The project would not cause any significant long term change in the character of the runoff.

ATTACHMENT F - Suitability Letter from Authorized Agent

Not applicable because the project does not involve sewerage facilities.

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ATTACHMENT G - Alternative Secondary Containment Methods	ILIN 98 201F	6
Not applicable because the project does not involve ASTs.	JUN 202010	J

ATTACHMENT H - AST Containment Structure Drawings

Not applicable because the project does not involve ASTs.

ATTACHMENT I - 20% or Less Impervious Cover Waiver

Not applicable because the project exceeds 20% impervious cover.

ATTACHMENT J - BMPs for Upgradient Stormwater

The project does not include features to provide post-construction treatment of runoff from upgradient locations, but the SW3P is designed to protect streams that cross the roadway via culverts.

ATTACHMENT K - BMPs for On-site Stormwater

Vegetated filter strips (VFS) and swales will be used to prevent pollution of surface water. VFS and swale locations are shown on the CZP Layouts

ATTACHMENT L - BMPs for Surface Streams

Protective measures during the construction phase are shown on the SW3P sheets. Appropriate erosion, sedimentation and post construction stabilization controls would be utilized to protect all surface streams during construction. Post construction protective measures are shown on the CZP Layouts.

ATTACHMENT M - Construction Plans

Roadway plan sheets illustrated the areas of proposed widening.

ATTACHMENT N - Inspection, Maintenance, Repair and Retrofit Plan

See list of attachments below.

ATTACHMENT O - Pilot-Scale Field Testing Plan. - Not applicable

ATTACHMENT P - Measures for Minimizing Surface Stream Contamination.

The project would not change the way in which water enters a stream as a result of the construction and development. The project would not directly impact any surface streams. The project represents only a minor change from existing conditions and would not substantially impact stream flashing, the creation of stronger flows and in-stream velocities.





Design Calculations

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Project Name: SH 46 Passing Lanes

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The following calculation sheets have been completed to meet the requirements of the TCEQ as stated in "Complying with the Edwards Aquifer Rules – Technical Guidance on Best Management Practices" (Revised July 2005).



Martin Palacios, P.E. No. 111619 Bain Medina Bain, Inc. TBPE Firm Registration F-001712

	Loading Summary Analysis	RECEIVED
		JUN 282016
Project Name: SH 46 P	assing Lanes	COUNTY ENGINEER
Summary:	TSS reduction requirements for this project =	3,510 lbs/yr
	Load removed by grassy swales that meet width and slope criteria =	259 lbs/yr
	Load removed by vegetated filter strips that meet the width and slope criteria =	3,718 lbs/yr
	Load removed by vegetated filter strips and grassy swales that meet width and slope criteria =	3,977 lbs/yr
Conclusion:	The required TSS load reduction from the project is 3,	510 lbs/yr. The calculated

TSS reduction resulting from the proposed vegetative filter strips and grassy swales that meet slope and width criteria is 3,977 lbs/yr. These BMPs would provide the required TSS load removal requirement for the project.

Martin Pale 11-4-14 DATE NAME

JUN 28 2016

SH46 TOTAL IMPERVIOUS TREATED AREAS WITH GRASSY SWALES

	Ac	Ac	A	OQUNTY ENGINEER
NAME	TOTAL TREATMENT AREA	TOTAL TREATMENT AREA	IMPERVIOUS TREATMENT AREA	IMPERVIOUS TREATMENT AREA
	SQ FT	ACRES	SQ FT	ACRES
C3-1	23791	0.55	13920	0.32

DRAINAGE BASIN TOTAL (GRASSY SWALES)

	TO	TAL	IMPER	VIOUS
	SQ FT	ACRES	SQ FT	ACRES
C3	23791	0.55	13920	0.32
TOTAL	23791	0.55	13920	0.32

SH46 TOTAL IMPERVIOUS TREATED AREAS WITH VEGETATIVE FILTER STRIPS

	Ac	Ac	A ₁	A
NAME	TOTAL TREATMENT AREA	TOTAL TREATMENT AREA	IMPERVIOUS TREATMENT AREA	IMPERVIOUS TREATMENT AREA
	SQ FT	ACRES	SQ FT	ACRES
C3-2	10545	0.24	7418	0.17
C3-3	6940	0.16	4854	0.11
D1-1	14739	0.34	8751	0.20
D2-1	11182	0.26	8193	0.19
D2-2	11184	0.26	8186	0.19
D2-3	11224	0.26	8480	0.19
D3-1	3777	0.09	3286	0.08
D3-2	7539	0.17	6589	0.15
D4-1	50992	1.17	43319	0.99
D4-2	86490	1.99	60421	1.39
D5-1	10741	0.25	6626	0.15

DRAINAGE BASIN TOTAL (VEGETATIVE FILTER STRIPS)

	TO	TAL	IMPER	lous
	SQ FT	ACRES	SQ FT	ACRES
C3	17485	0.40	12272	0.28
D1	14739	0.34	8751	0.20
D2	33590	0.77	24859	0.57
D3	11316	0.26	9875	0.23
D4	137482	3.16	103740	2.38
D5	10741	0.25	6626	0.15
TOTAL	225353	5.17	166123	3.81

All values calculated from microstation Contributing Zone Plan sheets

Impervious Cover Calculations

Project Name: SH46 Passing Lanes County: Comal County

,

Length of Project: SEG C(Comal) = 3012 linear feet; SEG D(Comal) = 7816 linear feet

Drainage Basin	С3	D1	D2	D3	D4	D5	Total
Existing ROW (acres)*	7.28	1.59	5.50	1.71	11.00	3.72	30.8
Existing Roadway (acres)*	3.39	0.68	2.42	0.74	2.70	1.69	
Total Existing Impervious Cover(acres)*	3.55	0.68	2.43	0.75	2.76	1.77	11.94
Proposed ROW (acres)*	7.28	1.59	5.50	1.71	11.00	3.72	30.8
Proposed Roadway (acres)*	3.77	0.81	3.55	0.92	3.80	2.29	
Total Proposed Impervious Cover(acres)*	3.82	0.81	3.81	1.12	3.97	2.32	15.85
Pre-Const. % of Impervious Cover	48.76%	42.77%	44.18%	43.86%	25.09%	47.58%	
Post-Const. % of Impervious Cover	52.47%	50.94%	69.27%	65.50%	36.09%	62.37%	
Net increase of Impervious Area	0.27	0.13	1.38	0.37	1.21	0.55	3.91
Increase Percentage in Impervious Cover	3.71%	8.18%	25.09%	21.64%	11.00%	14.78%	12.69%
* All area were measured in microstation							
	Pre-Constru Post-Constr	uction IC		0.3877 0.5146			
<u>Runoff Coefficient Calculations:</u> Pre-Construction Runoff							
Rv = 1.72x(IC)^3 - 1.97x(IC)^2 + 1.23x(IC) + 0	0.02		0.20				
Post-Construction Runoff	KV =		0.30				
$Rv = 1.72x(IC)^3 - 1.97x(IC)^2 + 1.23x(IC) + 0$).02 Rv =		0.37				

All area calculations were completed in microstation

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JUN 28 2016 Texas Commission on Environmental Quality TSS Removal Calculations 04-20-2009 Project Name: SH 46 Date Prepared: 10/7/2014 COUNTY ENGINEER Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of Instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshe 1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30 Page 3-29 Equation 3 3: La = 27.2(An x P) Ly TOTAL PROJECT * Required TSS removal resulting from the proposed development = 80% of increased los where An = Net increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project Comal County = Total project area included in plan * = 30 80 acros Predevelopment impervious area within the limits of the plan * = 11.94 actes Total post-development impervious area within the limits of the plan* = 15.85 acres Total post-development impervious cover fraction * = 0.51 P= 33 inches 3510 lbs LA TOTAL PROJECT * * The values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfail Area No. = C3-1 Total drainage basin/outfall area = 7.28 acres Predevelopment Impervious area within drainage basin/outfall area = 3.55 acres Post-development Impervious area within drainage basin/outfall area = 3 82 acres Post-development impervious fraction within drainage basin/outfall area = 0.52 242 LA THE BARNE ibs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Grassy Swale Removal efficiency = 70 percent Aqualogic Cartridge Filter Bioretention **Contech StormFilter** Constructed Wetland Extended Detention Grassy Swale Retention / Irrigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wet Basin Wet Vault

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

RG-348 Page 3-33 Equation 3 7 L_R = (BMP afficiency) x P x (A, x 34 6 + A_P x 0.54)

where

- $A_{\mbox{\scriptsize C}}$ = 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

Le * TSS Load removed from this catchment area by the proposed BMP

Ac=	0 55	acres
A, =	0 32	acres
A _P =	0.23	acres
La =	259	lbs

JUN 28 2016

÷

5. Calculate Fraction of Annual Runoff to Trest the drainage basin / outfall a	193			
Desired L _{M THS BARN} =	259	ibs		COUNTY ENGINEER
F=	1.00			
6. Calculate Capture Volume required by the BMP Type for this drainage ba	ain / outfail :	area.	Calculations from RG-	348 Pages 3-34 to 3-36
Rainfall Deoth =	4.00	inches		
Post Development Runoff Coefficient =	0.41	mahle feet		
CIT-ske water Quality Volume =	3254	CODIC HERT		
	Calculations	from RG-348	Pages 3-36 to 3-37	
Off-site area draining to BMP =	0.00	acres		
Off-site impervious cover draining to BMP =	0.00	acres		
Off-site Runoff Coefficient =	0.00			
Off-site Water Quality Volume =	0	cubic feet		
Storace for Sediment ≈	651			
Total Capture Volume (required water quality volume(s) x 1.20) =	3905	cubic feet		
The following sections are used to calculate the required water quality volu The values for BMP Types not selected in cell C45 will show NA.	me(s) for th	e selected BMP		
7. Retention/Irrigation System	Designed as	s Required in RG	-348	Pages 3-42 to 3-46
Required Water Quality Volume for retention basin =	NA	CUDIC 1991		
Irrigation Area Calculations				
Soil infiltration/permeability rate =	01	in/hr	Enter determined per	rmeability rate or assumed value -
Irrigation area =	NA NA	square feel acres		
8. Extended Detention Basin System	Designed as	s Required in RG	j-348	Pages 3-46 to 3-51
Required Water Quality Volume for extended detention basin =	NA	cubic feet		
9. Filter area for Sand Filters	Designed as	s Required in RG	-348	Pages 3-58 to 3-63
9A. Full Sedimentation and Filtration System				
Water Quality Volume for sedimentation basin =	NA	cubic feet		
Minimum filter basin area =	NA	square feet		
Maximum sedimentation basin area = Minimum sedimentation basin area =	NA NA	square feet square feet	For minimum water For maximum water	depth of 2 feet depth of 8 feet
9B. Partial Sedimentation and Filtration System				
Water Quality Volume for combined basins =	NA	cubic feet		
Minimum filter basin area =	NA	square feet		
Maximum sedimentation basin area = Minimum sedimentation basin area =	NA NA	square feet square feet	For minimum water For maximum water	depth of 8 feet depth of 8 feet
10. Bioretention System	Designed a	is Required in RC	G-348	Pages 3-63 to 3-65
Required Water Quality Volume for Bioretention Basin =	NA	cubic feet		
11. Wet Basins	Designed a	is Required in RC	G-348	Pages 3-86 to 3-71
Remined canacity of Permanent Prod a	NA	cubic feet	Permanent Pool Car	pacity is 1.20 times the WOV
Required capacity at WQV Elevation =	NA	cubic feet	Total Capacity shou plus a second WQV	Id be the Permanent Pool Capacity
12. Constructed Wetlands	Designed a	as Required in RO	G-348	Pages 3-71 to 3-73
Required Water Quality Volume for Constructed Wetlands :	NA	cubic feet		

13. AquaLogic TM Cartridge System	Designed as	s Required in RG-348	Pages 3-74	to 3-78	
** 2005 Technical Guidance Manual (RG-348) does not exempt the required	20% increas	se with maintenance cor	stract with AquaLogic TM	RECEIVE	D
	NIA	authin fact			
Required Sedimentation chamber capacity = Filter canisters (FCs) to treat WOV =	NA	cubic reet		JUN 2820	16
Filter basin area (RIA _F) =	NA	square feet			
14. Stormwater Management StormFilter® by CONTECH				COUNTY ENG	INF
Required Water Quality Volume for Contech StormFitter System =	NA	cubic feet		COONTI LING	
THE STAND SECURISMENTS FOR THE FOLLOWING BUD. / LOAD DEMON			ES - NOT CALCUNATER	WATER OILALITY VOL	
IN STARD REVOKENENTS FOR THE FOLLOWING DWEST LOOD, REMAIN	Designed a	s Required in RG-348	Pages 3-5	1 to 3-54	
TJ. GIGSSY SHALLS	Dong too o				
Design parameters for the swale.					
Drainage Area to be Treated by the Swale = A =	. 0) 55 acres			
Impervious Cover in Drainage Area =	0	32 acres			
Keinten intensity = i = Swale Slone =		014 1/1			
Side Slope (z) =		3			
Design Water Depth = y =	: 0) 33 ft			
Weighted Runoff Coefficient = C =	0	0.57			
Acs = cross-sectional area of flow in Swale =	, 0	0 82 sf			
Pw = Wetted Perimeter =	. 3	3.58 feet			
$R_{H} =$ hydraulic radius of flow cross-section = $A_{CB}/P_{W} =$ n = Manning's roughness coefficient =	. 0	0.2 feet			
15A. Using the Method Described in the RG-348					
	5				
Manning's Equation: Q = <u>1.49</u> Acs R _H S					
- 0 134 × O	. 1	1 49 feet			
$y^{187} S^{23}$					
Q = CIA =		0.34 cfs			
To calculate the flow velocity in the swale.					
V (Velocity of Flow in the swale) = Q/A_{cs} =	= (0.42 ft/sec			
To calculate the resulting swale length.					
L = Minimum Swale Length = V (ft/sec) * 300 (sec) *	= 120	6 03 feet			
If any of the resulting values do not meet the design requirement	nt set forth in	RG-348, the design para	meters must be modified	and the solver rerun	
15B. Alternative Method using Excel Solver					
Design Q = ClA :		0.34 cfs			
Manning's Equation Q Swale Width	=	0.88 cfs 6.00 ft	Error 1 = -() 54	
Instructions are provided to the right (green comments)					
Flow Velacit	ty in	0.42 ft/s			
Minimum Lengin	- 12				
insulucions are provided to the right (blue comments).					
	-	# A			
Design Width	-		Emer A -	0.85	

Texas Commission on Environmental Quality					JUN 28 2016
TSS Removal Calculations 04-20-2009			Project Nams: Data Prepared:	SH 46 10/7/2014	COUNTY ENGINEER
Additional information is provided for cells with a red triangle Text shown in blue indicate location of instructions in the Technic Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Characters and the shown in black (Bold) are calculated fields.	e in the upp al Guidance nges to thes	er right corner. Manual - RG-34 e fields will rer	Place the cur 48. nove the equat	sor over the ions used in	cell.
1. The Required Load Reduction for the total project:	Calculations	from RG-348		Pages 3-27 to 3	-30
Page 3-29 Equation 3 3: La	= 27.2(A _N x P)				
where LM TOTAL PROJECT	= Required TS = Net increase	S removal resulting In Impervious area	from the proposed for the project	development = l	80% of increased ic.
P	 Average ann 	ual precipitation, inc	ches		
Site Data. Determine Required Load Removal Based on the Entire Projec County	t = Comal				
• Total project area included in plan • Predevelopment impervious area within the limits of the plan • Total post-development impervious area within the limits of the plan	= 30.80 = 11.94 = 15.85	acres acres acres			
Total post-development impervious cover fraction * P	= 0.51 = 33	inches			
L _{M TOTAL PROJECT} * The values entered in these fields should be for the total project area	= 3510	lbs.			
Number of drainage basins / outfails areas leaving the plan area	z 6				
2. Drainage Basin Parameters (This Information should be provided for ea	ich basin);				
Drainage Basin/Outfali Area No.	= C3-2				
Total drainage basin/outfall area	= 7.28	acres			
Predevelopment impervious area within drainage basin/outfall area	= 3.55	acres			
Post-development impervious area within drainage basin/outfall area	= 382	acres			
Post-development impervious fraction within drainage basin/outfall area	= 0.52				
LM THE BAEN	= 242	lbs			
3. Indicate the proposed BMP Code for this basin.					
Proposed BMP	= Vegetated F	ilter Strips			
Removal efficiency	= 85	percent		Aqualogic Certr Bioretention Contech Stormi	idge Filter Filter
				Constructed We Extended Deter Grassy Swale Retention / Irrig	atland ntion atlon
				Sand Filter Stormceptor Vegetated Filter	r Strips
				Vortechs Wet Basin Wet Vault	
4. Calculate Maximum TSS Load Removed (La) for this Drainage Basin by	the selected i	SMP Type.			
RG-348 Page 3-33 Equation 3 7: Lp	= (BMP efficie	ncy) x P x (A ₁ x 34.	6 + Ap x 0.54)		

where

 $\mathbf{A}_{\mathbf{C}}$ = Total On-Site drainage area in the BMP catchment area

 $\begin{array}{l} A_i \cong \mbox{ Impervious area proposed in the BMP catchment area} \\ A_P \cong \mbox{ Pervious area remaining in the BMP catchment area} \end{array}$

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

A _c =	0 24	acres
A =	0.17	acres
A _P =	0.07	acres
Le=	166	bs

JUN 28 2016 Texas Commission on Environmental Quality TSS Removal Calculations 04-20-2009 Project Name: SH 46 COUNTY ENGINEER Date Prepared: 10/7/2014 Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshe 1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30 Page 3-29 Equation 3 3: La = 27.2(An x P) where. L_{M TOTAL PROJECT} = Required TSS removal resulting from the proposed development = 80% of increased ia: A_N = Net Increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project County = Comal Total project area included in plan 30.80 acres Predevelopment impervious area within the limits of the plan * = 11.94 acres Total post-development impervious area within the limits of the plan' = 15.85 acres Total post-development impervious cover fraction * = 0.51 P= linches 33 LAN TOTAL PROJECT = 3510 lbs * The values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan area = 6 2. Drainage Basin Parameters (This Information should be provided for each basin): Drainage Basin/Outfall Area No. = C3-3 Total drainage basin/outfall area = 7 28 acres Predevelopment impervious area within drainage basin/outfall area = 3 55 acres Post-development impervious area within drainage basin/outfall area = 3 82 acres Post-development impervious fraction within drainage basin/outfall area = 0.52 LA THE BASH = 242 lbs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Bioretention **Contech StormFilter Constructed Wetland Extended Detention Grassy Swale** Retention / Imigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wet Basin Wet Vault 4. Calculate Maximum TSS Load Removed (La) for this Drainage Basin by the selected BMP Type. RG-348 Page 3-33 Equation 3 7 L_R = (BMP efficiency) x P x (A₁ x 34.8 + A_P x 0.54)

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where.

 $A_{\rm c}$ = Total On-Site drainage area in the BMP catchment area

 $A_1 =$ Impervious area proposed in the BMP catchment area $A_p =$ Pervious area remaining in the BMP catchment area

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

A _c =	0.16	acres
A. =	0.11	acres
Ap =	0.05	acres
Le =	108	lbs

JUN 28 2016 Texas Commission on Environmental Quality COUNTY ENGINEER Project Name: SH 46 TSS Removal Calculations 04-20-2009 Date Prepared 10/7/2014 Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee Pages 3-27 to 3-30 1. The Required Load Reduction for the total project; Calculations from RG-348 Page 3-29 Equation 3 3: Lu = 27.2(An x P) LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased k where. AN = Net increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project Comal County = Total project area included in plan * = 30 80 acres Predevelopment impervious area within the limits of the plan * = 11.94 acres Total post-development impervious area within the limits of the plan" = acres 15.85 Total post-development impervious cover fraction * = 0.51 P = inches 33 3510 lbs LM TOTAL PROJECT = * The values entered in these fields should be for the total project area Number of drainage basins / outfails areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D1-1 Total draInage basin/outfall area = 1.59 acres Predevelopment impervious area within drainage basin/outfall area = 0 68 acres Post-development impervious area within drainage basin/outfall area = 0.81 acres Post-development impervious fraction within drainage basin/outfail area = 0.51 LM THE BASEN = 117 lbs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Bioretention Contech StormFilter Constructed Wetland Extended Detention Grassy Swale Retention / Imigation Sand Filter Stormceotor Vegetated Filter Strips Vortechs Wet Basin Wet Vault 4. Calculate Maximum TSS Load Removed (La) for this Drainage Basin by the selected BMP Type. RG-348 Page 3-33 Equation 3.7. L_B = (BMP efficiency) x P x (A, x 34 6 + Ap x 0.54)

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where

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

A_F = Pervious area remaining in the BMP catchment area

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

Ac =	0 34	acres
A _l =	0.20	acres
Ap =	0.14	acres
L _R =	196	lbs

RECEIVED JUN 28 2016 Texas Commission on Environmental Quality TSS Removal Calculations 04-20-2009 Project Name: SH 46 Date Prepared: 10/7/2014 COUNTY ENGINEER Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee 1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30 Page 3-29 Equation 3.3: L_M = 27.2(A_N x P) LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased ic where: A_N = Net increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project County = Comal Total project area included in plan " = 30.80 acras Predevelopment impervious area within the limits of the plan " = 11.94 acres Total post-development impervious area within the limits of the plan* = 15.85 lacres Total post-development impervious cover fraction * = 0.51 33 inches 3510 ibs LATOTAL BROJECT -* The values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D2-1 Total drainage basin/outfall area = 5 50 acres Predevelopment impervious area within drainage basin/outfall area = 2 43 acres Post-development impervious area within drainage basin/outfall area = 3 81 acres Post-development impervious fraction within drainage basin/outfall area = 0.69 LANDER BARN 1239 lbs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Bloretention Contech StormFilter Constructed Wetland Extended Detention **Grassy Swale** Retention / Irrigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wet Basin Wet Vault 4. Calculate Maximum TSS Load Removed (La) for this Drainage Basin by the selected BMP Type. RG-348 Page 3-33 Equation 3 7 Le = (BMP efficiency) x P x (A, x 34.6 + Ap x 0.54)

where

 $A_{\rm P}$ = Pervious area remaining in the BMP catchment area $L_{\rm R}$ = TSS Load removed from this catchment area by the proposed BMP

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

A_I = Impervious area proposed in the BMP catchment area

A _C =	0 26	acres	
A _t =	0 19	acres	
A _P =	0.07	acres	
Le =	185	lbs	

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JUN 28 2016

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: SH 46

Date Prepared: 10/7/2014 COUNTY ENGINEER

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee 1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30 Page 3-29 Equation 3.3: LM = 27.2(AN x P) where LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased to A_N = Net increase in impervious area for the project P = Average annual precipitation, inches Site Data Determine Required Load Removal Based on the Entire Project County = Comal Total project area included in plan * = 30 80 acres Predevelopment impervious area within the limits of the plan * = 11.94 acres Total post-development impervious area within the limits of the plan" = 15.85 acres Total post-development impervious cover fraction * = 0.51 P= 33 linches 3510 LATOTAL PROJECT = lbs * The values entered in these fields should be for the total project area Number of drainage basins / outfails areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D2-2 Total drainage basin/outfall area = 5 50 acres Predevelopment impervious area within drainage basin/outfall area = 2.43 acres Post-development impervious area within drainage basin/outfall area = 3 81 acres Post-development impervious fraction within drainage basin/outfall area = 0.69 1239 LM THE BASH Ibs 3. Indicate the proposed BMP Code for this basin, Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Bioretention **Contech StormFilter Constructed Wetland** Extended Detention Grassy Swale

Retention / Irrigation Sand Filter Stormceptor **Vegetated Filter Strips** Vortechs Wet Basin Wet Vault

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

RG-348 Page 3-33 Equation 3 7. L_R = (BMP efficiency) x P x (A₁ x 34.6 + A_P x 0.54)

where:

Ac = 0.26 acres A, = 0 19 acres Ap = 0.07 acres La = 185 lbs

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

A₁ = Impervious area proposed in the BMP catchment area Ap = Pervious area remaining in the BMP catchment area

L_R = TSS Load removed from this catchment area by the proposed 8MP

IUN 2 8 2016 Texas Commission on Environmental Quality TSS Removal Calculations 04-20-2009 Project Name: SH 46 COUNTY ENGINEER Date Prepared: 10/7/2014 Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee 1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30 Page 3-29 Equation 3.3 L_M = 27.2(A_N x P) where: LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased k A_N = Net increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project County = Comal Total project area included in plan * = 30 80 acres Predevelopment impervious area within the limits of the plan * = 11.94 acres Total post-development impervious area within the limits of the plan* = 15.85 acres Total post-development impervious cover fraction * = 0.51 P= 33 inches LATOTAL PROJECT S 3510 lbs * The values entered in these fields should be for the total project area Number of drainage basins / outfails areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D2-3 Total drainage basin/outfall area = 5.50 acres Predevelopment impervious area within drainage basin/outfall area = 2 43 acres Post-development impervious area within drainage basin/outfall area = 3.81 acres Post-development impervious fraction within drainage basir/outfall area = 0.69 1239 LATTER BASIN = lbs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Bioretention Contech StormFlitter Constructed Wetland Extended Detention **Grassy Swale** Retention / Imigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wet Basin Wet Vault

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

RG-348 Page 3-33 Equation 3.7 Le = (BMP efficiency) x P x (A, x 34 6 + Ap x 0.54)

where

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

A _c =	0 26	acres	
A1 =	0.19		
A _P =	0.07	acres	
LR =	185	lbs	

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Texas Commission on Environmental Quality			JUN 28 2015
TSS Removal Calculations 04-20-2009			Project Name: SH 46 Date Prepared: 10/7/201 COUNTY ENGINEER
Additional information is provided for cells with a red triar Text shown in blue indicate location of instructions in the Tech Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Ci	ngle in the upp nical Guidance I nanges to thes	er right corner Manual - RG-3 e fields will re	er. Place the cursor over the cell. 348. emove the equations used in the spreadshee
1. The Required Load Reduction for the total project:	Calculations	from RG-348	Pages 3-27 to 3-30
Page 3-29 Equation 3.3:	L _M = 27.2(A _N x P)		
where: L _{M TOTAL PROJ}	ECT = Required TS A _N = Net increase P = Average ann	S removal resultin In impervious are ual precipitation, i	ing from the proposed development = 80% of increased ic rea for the project , inches
Site Data. Determine Required Load Removal Based on the Entire P. Cou Total project area included in plan Predevelopment Impervious area within the limits of the pla Total post-development Impervious area within the limits of the plan Total post-development Impervious cover fraction Lease total post-development Impervious cover fraction Total post-development Impervious cover fraction Lease the values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan a 2. Drainage Basin Parameters (This information should be provided for Drainage Basin/Outfall Area I Redevelopment Impervious area within drainage basin/outfall a Post-development Impervious area within drainage basin/outfall a Post-development Impervious fraction within drainage basin/outfall a Post-development Impervious fraction within drainage basin/outfall a Post-development Impervious fraction within drainage basin/outfall a	coject Comal $n' = 30.80$ $n' = 11.94$ $an' = 15.85$ 0.51 $P = 33$ 0.51 $P = 33$ 3510 a a $rea = 6$ 6 $er each basin):$ $No. = D3-1$ $rea = 1.71$ 12 $rea = 0.75$ $rea = 1.22$ $an'' = 332$ 332	acres acres linches lbs acres acres acres acres acres acres	
3. Indicate the proposed BMP Code for this basin. Proposed B Removal efficie	MP = Vegetaled F ncy = 85	Filter Strips percent	Aqualogic Cartridge Filter Bioretention Contech StormFilter Constructed Wetland Extended Datention Grassy Swale Retention / Irrigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wet Basin Wet Vault

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

RG-348 Page 3-33 Equation 3 7 L_R = (BMP efficiency) x P x (A₁ x 34.6 + A_P x 0.54)

where

- Ac = Total On-Site drainage area in the BMP catchment area
- $A_t =$ Impervious area proposed in the BMP catchment area
- $A_P =$ Pervious area ramaining in the BMP catchment area

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

.

Ac =	0.09	acres	
A. =	0.08	acres	
A _P =	0.01	acres	
LR =	78	lbs	
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Texas Commission on Environmental Quality			JUN 28 2016
TSS Removal Calculations 04-20-2009		Project Name: Date Prepared:	SH 46 10/7/2014 COUNTY ENGINEER
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1. The Required Load Reduction for the total project:	Calculations from	RG-348	Pages 3-27 to 3-30
Page 3-29 Equation 3.3: L _M =	= 27.2(A _N x P)		
where L _{M TOTAL PROJECT} A _N = A _N =	 Required TSS ren Net increase in in Average annual p 	noval resulting from the propose apervious area for the project recipitation inches	d development = 80% of increased Ic
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Let the values entered in these fields should be for the total project area	= 3510 lb	S	
The values entered in these helds should be for the total project area			
Number of drainage basins / outfalls areas leaving the plan area a	- 6		
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Drainage Basin/Outfall Area No 🕫	D3-2		
Total drainage basin/outfall area e Predevelopment impervious area within drainage basin/outfall area e	• 1.71 au	cres	
Post-development impervious area within drainage basin/outfall area	1.12 a	cres	
Post-development impervious fraction within drainage basin/outfall area	- 0.65		
L-M THIS BAS N	- 332 10	S	
3. Indicate the proposed BMP Code for this basin,			
Proposed BMP Removal efficiency 4. Calculate Maximum TSS Load Removed (La) for this Drainage Basin by	Vegetated Filter	Strips ercent	Aqualogic Cartridge Filter Bioretention Contech StormFilter Constructed Welland Extended Detention Grassy Swale Retention / Inigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wet Basin Wet Vault
RG-348 Page 3-33 Equation 3.7 La	= (BMP efficiency)	x P x (A, x 34,6 + A= x 0.54)	
the over age a se adapted out the	(

where

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

A. = Impervious area proposed in the BMP catchment area

 A_{P} = Pervious area remaining in the BMP catchment area

 $L_{\rm R}$ = TSS Load removed from this catchment area by the proposed BMP

A _c ≃	0.17	acres
A, =	0.15	acres
A _P =	0.02	acres
L _R =	146	lbs

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JUN 28 2016

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: SH 46 Date Prepared: 10/7/2014 COUNTY ENGINEER

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown In blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee 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: Lu = 27.2(An x P) LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased k where AN * Net increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project County = Comal Total project area included in plan * = 30.80 acres Predevelopment impervious area within the limits of the plan * = 11.94 acres 15.85 Total post-development impervious area within the limits of the plan* = acres Total post-development impervious cover fraction * = 0.51 P. inches 33 3510 lbs LATOTAL PROJECT = * The values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D4-1 Total drainage basin/outfall area = 11.00 acres Predevelopment impervious area within drainage basin/outfall area = 2.76 acres Post-development impervious area within drainage basin/outfall area = 3 97 acres Post-development impervious fraction within drainage basin/outfall area = 0.36 1086 lbs LM THIS BASH = 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Bioretention **Contech StormFilter Constructed Wetland** Extended Detention Grassy Swale Retention / Irrigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs Wat Basin Wet Vault 4. Calculate Maximum TSS Load Removed (La) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3 7 L_R = (BMP efficiency) x P x (A₁ x 34 6 + A_P x 0.54)

where

 $A_c =$ Total On-Site drainage area in the BMP catchment area

 $A_t = \mbox{Impervious area proposed in the BMP catchment area$

Ap * Pervious area remaining in the BMP catchment area

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

Ac =	1.17	acres
A, =	0.99	acres
Ap =	0.18	acres
L _R =	964	Ibs

RECEIVED Texas Commission on Environmental Quality JUN 28 2016 Project Name: SH 46 TSS Removal Calculations 04-20-2009 Date Prepared: 10/7/2014 COUNTY ENGINEER Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee 1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30 Page 3-29 Equation 3.3: L_M = 27.2(A_N x P) LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased ic where: A_N = Net increase in impervious area for the project P = Average annual precipitation, inches Site Data: Determine Required Load Removal Based on the Entire Project County = Comal Total project area included in plan * = 30.80 acres Predevelopment impervious area within the limits of the plan * = 11.94 acres Total post-development impervious area within the limits of the plan* = 15.85 acres Total post-development impervious cover fraction * = 0.51 Pa 33 Inches 3510 lbs LUTATH REGISCT * The values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D4-2 Total drainage basin/outfall area = 11.00 acres Predevelopment impervious area within drainage basin/outfall area = 2.76 acres Post-development impervious area within draInage basin/outfall area = 3 97 acres Post-development impervious fraction within drainage basin/outfall area = 0.36 LA THE BABN * 1086 lbs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 percent Aqualogic Cartridge Filter Biomtention Contech StormFilter **Constructed Wetland** Extended Detention Grassy Swale Retention / Imigation Sand Filter Stormceptor Vegetated Filter Strips Vortechs

4. Calculate Maximum TSS Load Removed (La) 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, x 34.6 + A_P x 0.54)

La =

where

lbs

1358

 A_{C} = Total On-Site drainage area in the BMP catchment area A_{I} = Impervious area proposed in the BMP catchment area A_{e} = Pervious area remaining in the BMP catchment area

Wet Basin Wet Vault

RECEIVED JUN 28 2016 Texas Commission on Environmental Quality TSS Removal Calculations 04-20-2009 Project Name: SH 46 Date Prepared: 10/7/2014COUNTY ENGINEER Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields. Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadshee 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 x P) LM TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased k where A_w = 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 = Comai Total project area included in plan * = 30.08 acres Predevelopment Impervious area within the limits of the plan * = 11.94 acres Total post-development impervious area within the limits of the plan" = acres 15.85 Total post-development impervious cover fraction * = 0.53 P= inches 33 LATOTAL PROJECT = 3510 lhs * The values entered in these fields should be for the total project area Number of drainage basins / outfalls areas leaving the plan area = 6 2. Drainage Basin Parameters (This information should be provided for each basin): Drainage Basin/Outfall Area No. = D5-1 Total drainage basin/outfail area = 3 72 acres Predevelopment impervious area within drainage basin/outfall area = 1.77 acres Post-development impervious area within drainage basin/outfall area = 2 32 acres Post-development Impervious fraction within drainage basin/outfall area = 0.62 LATHE BASN = 494 lbs 3. Indicate the proposed BMP Code for this basin. Proposed BMP = Vegetated Filter Strips Removal efficiency = 85 nement Aqualogic Cartridge Filter Bioretention **Contech StormFilter Constructed Wetland** Extended Detention Grassy Swale Retention / Imigation Sand Filter

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

RG-348 Page 3-33 Equation 3 7' L_R = (BMP efficiency) x P x (A₁ x 34.6 + A_P x 0.54)

where

A_C ≈ 0.25 acres A_t ≈ 0.15 acres A_P ≈ 0.10 acres L_R ≈ 147 lbs

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

 $A_t =$ 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

Stormceptor Vegetated Filter Strips

Vortechs Wet Basin Wet Vault

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ATTACHMENT G

INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN COUNTY ENGINEER

Edwards Aquifer Contributing Zone Maintenance Guidelines

Roadway: SH 46 from the Comal/Kendall County Line to 0.5852 mile east of Comal/Kendall County Line; and SH 46 from 0.8977 mile west of Limestone Ledge to 0.5824 mile east of Limestone Ledge, Bulverde, Comal County. CSJ: 0215-07-022

These maintenance guidelines were prepared at the request of the Texas Commission on Environmental Quality (TCEQ) with regard to their approval of an Edwards Aquifer Protection Plan for the above referenced project. These guidelines apply to the portions of the project limits that are subject to the Edwards Aquifer Rules.

Pest management: Any vegetated areas that have noxious vegetation, insects, or other pests will be remedied with the minimum amount of selective pesticide necessary to control the pest. All chemicals are EPA labeled, registered, and approved. Personnel licensed and/or trained according to Texas Department of Agriculture (TDA) laws and regulations will apply pesticides. Records are kept for each application in accordance with TDA laws and regulations.

Seasonal mowing and vegetation management: Right-of-way areas, which include vegetated filter strips and swales for this project, will be mowed by contract. The cutting height is usually 5-7 inches for all areas.

Inspection cycles: Maintenance forces will review roadways and roadsides on regular basis, most of which are visited within a weekly cycle. Drainage ditches and structures are inspected after large storms with consideration for any damage to grass cover, litter accumulation, or erosion. Any problem areas are duly noted particularly if there is an absence of vegetation, any accumulation of brush, debris or litter, and/or any areas of significant erosion. These items will then be scheduled for repair on priority basis.

Debris and litter removal: Litter, debris and brush accumulation is assessed not only for aesthetic reasons but also for the tendency to clog drainage paths or impede the intended flow of a structure's hydraulic design. Areas are cleaned periodically by state forces or by an outside contractor. Areas documented as trouble spots are scheduled on a priority basis.

Sediment removal: During inspections if sediment has accumulated to a depth that hinders original design characteristics it will be removed. Excessive sedimentation, or a significant load of silt, does not normally occur in filter strip areas, grassy swale areas, or in permanent pond structures after project completion, but it may occur from other drainage areas or construction underway beyond State right-of-way.

Maintenance Contact

The Maintenance Supervisor may be contacted for questions or concerns pertaining to maintenance of the facility. The current Maintenance Supervisor whose maintenance section is in charge of this project area may be contacted at the following location:

Mr. Chad Lux Maintenance Supervisor TxDOT Department of Transportation 1375 N Main Boerne, Texas 78006 Tel: (830) 249-2262

12 03-14

STATE OF TEXAS DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

SHEET NO. DESCRIPTION

REFER TO SHEET 2 "INDEX OF SHEETS"

PLANS OF PROPOSED

STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT

HIGHWAY: SH 46 COUNTY: KENDALL, ETC. PROJECT NUMBER: STP CONTROL: 0215-06-037, ETC

FROM: US 87 TO: KENDALL/COMAL COUNTY LINE C5J: 0215-06-037 ROADWAY LENGTH: 20,516.53 FT = 3.866 MI BRIDGE LENGTH : 104.47 FT = 0.019 MI TOTAL LENGTH: 20,621.00 FT = 3.905 MI

FROM: KENDALL/COMAL COUNTY LINE TO: US 281 CSJ: 0215-07-022 ROADWAY LENGTH: 10,857 FT = 2.056 MI BRIDGE LENGTH : 0.000 FT = 0.000 MI TOTAL LENGTH: 10,857 FT = 2.056 MI

FOR THE WORK CONSISTING OF WIDEN ROADWAY TO PROVIDE PASSING LANES



ROJ. NO.

LETTING

NO. ACCEPTED

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	ADT: 8,800 (2017)	
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E SH 46 100' ROW VARIES (30' USUAL) 40' ROADWAY VARIES (30' USUAL) 12' LANE 12' LANE SHLDR SHLDR Ŷ \$₽ PGL VARIES VARIES VARIES VARIES VARIES VARIES - TETTI 2.5" HMAC & SURF TRT-11.5" FLEX BASE EXISTING TYPICAL SECTION STA. 773+00.00 TO 804+50.00 STA. 844+00.00 TO STA. 851+75.64 (N.T.S.) 8 SH 46 100' MIN. TO 298' MAX. ROW 40'-54' ROADWAY VARIES VARIES 12' LANE 0'-14' TURN LANE/ STRIPED MEDIAN 12' LANE 8' SHLDR 8' SHLOR



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NOTES:

TYPICAL SECTIONS SHOWN DEPICT THE MOST COMMON CASES. REFER TO CROSS SECTIONS FOR ALL SPECIAL CASES.

ALL GRADING SHALL BE WITHIN THE EXISTING RIGHT OF WAY LIMITS.

THE SUBGRADE SHALL BE SHAPED, BLADED, ROLLED AND PROOF ROLLED A MINIMIM DISTANCE OF 24" BEYOND THE EDGE OF THE PROPOSED BASE COURSE.

PROOF ROLLING WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

ENGINEER OR OWNER MUST BE PRESENT WHEN PROOF ROLLING SUBGRADE. CHECK FOR PUMPING OR OTHER IRREGULARITIES IN SUBGRADE. IF UNSUITABLE MATERIAL IS FOUND, CONTRACTOR SHALL REMOVE AND FILL WITH SUITABLE MATERIAL AND RECOMPACT AT NO ADDITIONAL PAY.

SAWCUT SHALL BE SUBSIDIARY TO THE PERTINENT BID ITEMS.

ONE STATION IS EQUAL TO 100 FEET.

IF AREAS BEYOND THE CONSTRUCTION LIMITS ARE DISTURBED OR DAMAGED BY CONTRACTOR, THE CONTRACTOR SHALL REPAIR OR BRING BACK AS CLOSE AS POSSIBLE TO PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE ENGINEER. THERE WILL BE NO SEPERATE PAY FOR THIS WORK AND/OR MATERIALS.

PGL IS BASED ON EXISTING GRADE ELEVATION AT SH 46 BASELINE.

- FINISHED GRADE AT SAWCUT LINE IS BASED ON THE PGL ELEVATION AT THE SH 46 BASELINE PROJECTED TO THE SAWCUT LINE LOCATION AT THE EXISTING CROSS SLOPE OF THE ADJOININGTRAVEL LANES. REFER TO WIDENING TABLES ON PLAN SHEETS FOR EF FORTION. ELEVATION INFORMATION.
- A CROSS SLOPE TO MATCH EXISTING CROSS SLOPE OF THE ADJOINING TRAVEL LANE. REFER TO WIDENING TABLES ON PLAN SHEETS FOR ELEVATION INFORMATION.





NOTES:

TYPICAL SECTIONS SHOWN DEPICT THE MOST COMMON CASES. REFER TO CROSS SECTIONS FOR ALL SPECIAL CASES.

ALL GRADING SHALL BE WITHIN THE EXISTING RIGHT OF WAY LIMITS.

THE SUBGRADE SHALL BE SHAPED, BLADED, ROLLED AND PROOF ROLLED A MINIMIM DISTANCE OF 24° BEYOND THE EDGE OF THE PROPOSED BASE COURSE.

PROOF ROLLING WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

ENGINEER OR OWNER MUST BE PRESENT WHEN PROOF ROLLING SUBGRADE, CHECK FOR PUMPING OR OTHER IRREGULARITIES IN SUBGRADE. IF UNSUITABLE MATERIAL IS FOUND, CONTRACTOR SHALL REMOVE AND FILL WITH SUITABLE MATERIAL AND RECOMPACT AT NO ADDITIONAL PAY.

SAWCUT SHALL BE SUBSIDIARY TO THE PERTINENT BID ITEMS.

ONE STATION IS EQUAL TO 100 FEET.

IF AREAS BEYOND THE CONSTRUCTION LIMITS ARE DISTURBED OR DAMAGED BY CONTRACTOR, THE CONTRACTOR SHALL REPAIR OR BRING BACK AS CLOSE AS POSSIBLE TO PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE ENGINEER. THERE WILL BE NO SEPERATE PAY FOR THIS WORK AND/OR MATERIALS.

PGL IS BASED ON EXISTING GRADE ELEVATION AT SH 46 BASELINE.

- FINISHED GRADE AT SAWCUT LINE IS BASED ON THE PGL ELEVATION AT THE SH 46 BASELINE PROJECTED TO THE SAWCUT LINE LOCATION AT THE EXISTING CROSS SLOPE OF THE ADJOININGTRAVEL LANES. REFER TO WIDENING TABLES ON PLAN SHEETS FOR ELEVATION INFORMATION.
- ▲ CROSS SLOPE TO MATCH EXISTING CROSS SLOPE OF THE ADJOINING TRAVEL LANE. REFER TO WIDENING TABLES ON PLAN SHEETS FOR ELEVATION INFORMATION.

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COUNTY ENGINEER

JUN 2 8 2016

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SH 46 WIDENING TABLE LT SAWCUT LINE RT SAWCUT LINE LT EOP RT EOP STATION OFFSET OFFSET ELEV ELEV OFFSET ELEV OFFSET ELEV 582+50 19.37' LT 1376.18 18' LT 1376.20 1376.20 19.85' RT 1376.16 18' RT 19.4' LT 1377.70 583+00 18' LT 1377.76 16' RT 1377.80 21.51' RT 1377.72 583+50 19.43' LT 1379.28 18' LT 1379.30 18' RT 1379.31 23.01' RT 1379.21 584+00 20.51' LT 1380.84 18' LT 1360.88 18' RT 1380.98 24.51' RT 1380.91 584+50 22' LT 1382.17 18' LT 1362.27 18' RT 1382.47 26.01' RT 1382.36 1383.62 585+00 22' LT 18' LT 1383.72 18' RT 1383.87 50.64' RT 1383.32 585+50 22' LT 1385.01 18' LT 1385.10 18' RT 1385.22 25.3' RT 1385.09 22' LT 1386.42 586+00 18' LT 1386.48 18' RT 1386.43 23.3' RT 1386.34 22' LT 586+50 1387.50 18' LT 1387.56 18' RT 1387.51 22' RT 1387.45 587+00 22' LT 1388.53 18' LT 1388.57 18' RT 1388.64 22' RT 1388.61 587+50 22.77' LT 1389.13 18' LT 1389.23 18' RT 1389.33 22.96' RT 1389.26 588+00 23.54' LT 1389.85 18' LT 1389.94 18' RT 1389.89 23.92' RT 1389.78 588+50 24.31' LT 1390.39 18' LT 1390.51 18' RT 1390.41 24.88' RT 1390.24 589+00 25.08' LT 1390.87 181 LT 1390.96 18' RT 1390.85 Z5.84' RT 1390.71 589+50 25.85' LT 1391.21 18' LT 1391.27 181 RT 1391.25 26.8' RT 1391.18 590+00 26.62' LT 1391.28 18' LT 1391.41 18' RT 1391.54 27.76' RT 1391.46 RECEIVED



NOTES:

1. SAWOUT TO BE SUBSIDIARY TO THE PERTINE

2. ALL STATIONS, OFFSETS, AND ELEVATIONS S WIDENING TABLES ARE REFERENCED FROM SH ALIGNMENT.

	E	STIMATED QU	INTITIES			215-6-37
ITEM		DESCR	IPTION		UNIT	QTY
0100 6002	PREPARING R	low .			STA	7.50
0110 6001	EXCAVATION	(ROADWAY)			CY	572
0132 6001	EMBANKMENT	(FINAL) (ORE	COMP) (TY A)	1	CY	95
0247 6366	FL 85 (CMP 1	N PLC) (TY A	GR 5) FNL PD	S	CY	354
0310 6009	PRIME COAT	(MC-30)			GAL	294
0316 6240	AGGR (TY-PD	GR-4 SAC-B)			CY	44
0316 6410	ASPH (AC-15P	, AC-20-5TR,	AC-20XP, AC1	0-2TR)	GAL	2388
0316 XXX1	AGGR (TY-PD	GR-3)			CY	36
0341 6064	D-GR HMA TY	-D PG 70-22	(LEVEL-UP)		TON	177
0354 6051	PLANE ASPH	CONC PAV 10	TO 11/2*1		SY	1000
0432 6001	BIPBAP ICON	C) (4 IN)			CV.	16
0432 5045	RIBBAR INON	ETRID /A 1				
0432 6045	DDTUEWAVE (1001	**			
0530 6005	DRIVEWARS (ALFJ		·····	51	
0530 6006	UNIVEWATS (SUNF INEALT			51	
0530 6008	TURNOUTS LA				EA	
0530 6009	TURNOUTS (S	URF TREAT			EA	
0530 XXX1	DRIVEWAYS (GRAVEL)			ŚY	45
0540 6001	WTL W-BEAM	GO FEN (TIM	POST)		LF	
0540 6014	MTL W-BEAM	GD FEN(TIM (OSTI SHORT R	ADIUS	LF	
0540 6016	DOWNSTREAM	ANCHOR TERM	INAL SECTION	4	EA	
0544 6001	GUARDRAIL E	ND TREATMEN	T (INSTALL)		EA	
0560 6001	MAILBOX INS	TALL-S (TWG	POST) TY 1		EA	
0560 6002	MAILBOX INS	TALL-D (TWG	POST) TY 1		EA	
0560 6003	MAILBOX INS	TALL-M (TWG	-POST) TY 1		EA	
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2. ALL STATIONS, OFFSETS, AND ELEVATIONS SHOWN IN THE WIDENING TABLES ARE REFERENCED FROM SH 46 BASELINE ALIGNMENT.

MAILBOX INSTALL (SINGLE) -

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			ESTIN	ATED QUAN	TITIES			215-6-37
		1TEM		DESCRIP	TION		UNIT	QTY
EA		0100 600Z	PREPARING ROW				STA	10
3GF		0110 6001	EXCAVATION (RD	ADWAYJ			CY	672
-00		0132 6001	EMBANKMENT (F]	NAL) (ORD C	OMP) (TY A)		CY	675
M GD FN		0247 6366	FL BSICMP IN PL	.C) (TY A G	1 SIFNL POS	,	CY_	775
ER POST)		0310 6009	PRIME COAT (MC	-30)			GAL	664
OWSTRIP)		0316 6240	AGGR (TY-PD GR-	4 SAC-B)			CY	69
CRETE RIRAP	(4=)	0316 6410	ASPH (AC-15P, AC	+20-5TR, A	-20XP, AC10	2TR)	GAL	3728
# 30 CY		0316 XXX1	ACGR (TY-PD GR-	3)			CY	56
		0341 6064	D-GR HMA TY-D F	PG 70-22 (I	EVEL-UP)		TON	372
		0354 6051	PLANE ASPH CON	C PAV (0" 1	0 1 1/2*)		SY.	1333
00		0432 6001	RIPRAP (CONC) (4 IN)			CY	116
¥	100	0432 6045	RIPRAP MOW ST	RIP) (4 IN)			CY	38
0	4	0530 6005	DRIVEWAYS (ACP	1			5Y	56
90	- P	0530 6006	DRIVEWAYS (SUR	F TREAT)			SY	194
	N	0530 6008	TURNOUTS (ACP)				EA	
T A	4	0530 6009	TURNOUTS (SURF	TREAT			EA	3
S.)	0530 XXX1	DRIVEWAYS IGRA	VEL)			SY	
Let	3	0540 6001	MTL W-BEAM GO P	EN (TIM P	0573		LF	655
Ч.		0540 6014	MTL W-BEAM GD F	EN (TIM PO	STI SHORT R	ADIUS	LF	25
-	ER.	0540 6016	DOWNSTREAM ANC	HOR TERMIN	AL SECTION		EA	2
_	r	0544 6001	GUARDRAIL END	REATMENT	(INSTALL)		EA	1
I		0560 6001	MAILBOX INSTAL	L-S (TWG-P	OSTI TY 1		EA	2
0		0560 6002	MATLBOX INSTAL	L-D (TWG-P	05T) TY 1		EA	
AT		0560 6003	MAILBOX INSTAL	L-M (TWG-P	OST) TY 1		EA	1
ž			LEGEND	:				
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18' RT

1350.13

28' RT

1349.64

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ALL STATIONS, OFFSETS, AND ELEVATIONS S WIDENING TABLES ARE REFERENCED FROM SH ALIGNMENT.

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JUN 28 2016

			EST	INATED C	OUAN	TITIES			215-6-37
11	FEM			DES	CRIF	TION		UNIT	QTY
0100	6002	PREPARI	ING ROY	Y				STA	10
0110	6001	EXCAVAT	ION (F	(YAWGAD				CY	659
0132	6001	EMBANKN	IENT (F	INAL) (O	DRD (OMP) (TY A)	CY	779
0247	6366	FL 85 (C	MP IN	PLC) (TY	AG	R 5) FNL PO	5	CY	777
0310	6009	PRIME C	OAT IN	IC-301				GAL	665
0316	6240	AGGR (TY	-PD GF	-4 SAC-	B)			CY	69
0316	6410	ASPH (AC	-15P./	C-20-5T	IR. A	C-20XP. AC1	0-2TR)	GAL	3733
0316	XXXI	AGGR (TY	-PD GF	(-3)				CY	57
0341	6064	0-68 HM		PG 70-2	22 1	EVEL -UP1	_	TON	363
0354	6051		SPU CO	ALC: DAV	101.1			TUN	
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0432	6001	RIPHAP	TUONED	14 INJ				CY	27
0432	6045	RIPRAP	INOW S	TRIP) (4	IND			CY	43
0530	6005	DRIVEWA	YS IAC	(P)				SY	
0530	6006	DRIVEWA	YS ISU	IRF TREAT	T)			SY	327
0530	6008	TURNOUT	S LACP	1				EA	
0530	6009	TURNOUT	S (SUR	F TREAT	1			EA	
0530	XXX1	DRIVEWA	YS IGR	AVEL				SY	
0540	6001	MTL W-B	EAM GD	FEN (T)	1M P	0ST)		LF	620
0540	6014	MTL W-BI	EAM GO	FENITIN	M PO	ST) SHORT R	ADIUS	LF	
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0560	6001	MATL BOY	INSTA	11-5 /7	WIL-P	051) 17 1		EA	
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1		[]	0316	5410	ASPH IAC-	15P, A	C-20-5	TR, AI	C-20XP, AC10-2TR)	GAL	4334
10)	14		XXXI	AGGR ITY	PU GR	-31	20	EVEL-1101	CY	- 65
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			0530	6008	TURNOUTS	(ACP))			FA	
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II			0540	6016	DOWNSTRE	AM AND	CHOR T	EAMIN	AL SECTION	EA	1
10)		0544	6001	GUARDRAI	L END	TREAT	MENT	(INSTALL)	EA	
12			0560	6001	MAILBOX	INSTAL	L-S (TWG-P	OST) TY 1	EA	1
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ALIGNMENT.

	ESTI	MATED OU	NTITIE	ES			215-6-37	215-7-22
ITEM		DESCR	1PTION			UNIT	ΩΤΥ	ΟΤΥ
0100 6002	PREPARING ROW					STA	8.7	1.3
0110 6001	EXCAVATION IR	DADWAY				CY	875	60
0132 6001	EMBANKMENT (F	INAL) (ORD	1	CY	393	59		
0247 6366	FL BSICMP IN P	LCI (TY A	CY	1097	121			
0310 6009	PRIME COAT INC	-30)	GAL	958	104			
0316 6240	AGGRITY-PD GR	-4 5AC-8)				CY	77	10
0316 6410	ASPH IAC-15P, A	C-20-5TR,	AC-20X	(P, AC1	O-ZTA)	GAL	4143	526
0316 XXX1	AGGRITY-PD GR	-31				CY	63	8
0341 6064	D-GR HMA TY-D	PG 70-22	(LEVEL	UP)		TON	468	53
0354 6051	PLANE ASPH COM	C PAV (D	TO 1 1	1/2=1		SY	1160	173
0432 6001	RIPRAP (CONC)	14 INI				CY	18	
0432 6045	RIPRAP (MOW ST	(R1P) (4 1	1)			CY	20	
0530 6005	DRIVEWAYS CACF)		_		5Y		
0530 6006	DRIVEWAYS (SUP	RF TREAT)				SY	39	
0530 6008	TURNOUTS (ACP)					EA		
0530 6009	TURNOUTS ISURF	TREAT)				EA		
0530 XXX1	ORIVEWAYS IGRA	VEL)				SY		
0540 6001	MTL W-BEAM GD	FEN (TIM	POST)			LF	325	
0540 6014	MTL W-BEAM GD	FENCTIM P	POST) SH	HORT P	RADIUS	LF	75	
0540 6016	DOWNSTREAM AND	HOR TERM	INAL SE	ECTIO	N	EA		
0544 6001	GUARDRAIL END	TREATMEN	T (INST	TALL)		EA		
D550 6001	MAILBOX INSTAL	L+S ITWG	-POST1	TY 1		EA		
0560 6002	MAILBOX INSTAL	L-D (TWG	POST)	TY 1		EA		
0560 6003	MAILBOX INSTAL	L-M (TWG	-POST)	TY 1		EA		
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RECEIVED STATION LT EOP LT SAWCUT LINE LT SAWCUT LINE LT EOP JUN 2 8 2016 OFFSET ELEV OFFSET						SH 46	WIDENING	TABLE				
RECEIVED STATION OFFSET ELEV	I		STATION	LT	EOP	LT SAWO	UT LINE	LT SAWO	LT SAWCUT LINE		LT EOP	
JUN 2 8 2016 630+00 28' LT 1390.38 18' LT 1390.31 18' RT 1389.63 28' RT 1390. JUN 2 8 2016 630+50 28' LT 1390.18 18' LT 1390.28 18' RT 1390.18 28' RT 1390. ONTY ENGINEER 631+50 28' LT 1390.16 18' LT 1390.29 18' RT 1390.28 28' RT 1390. 631+50 28' LT 1390.16 18' LT 1390.29 18' RT 1390.24 28' RT 1390. 632+50 28' LT 1389.15 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 632+50 28' LT 1389.15 18' LT 1389.34 18' RT 1389.39 28' RT 1389. 633+50 28' LT 1385.16 18' LT 1387.85 18' RT 1386.67 28' RT 1386. 633+50 28' LT 1385.91 18' LT 1387.85 18' RT 1386.69 28' RT 1386. 634+50 28' LT 1385.91 18' LT 1386.10 18' RT 1386.96	BECH		STATION	OFFSET	ELEV	OFFSET	ELEV	OFFSET	ELEV	OFFSET	ELEV	
JUN 2 8 2016 630+50 28' LT 1390.18 18' LT 1390.28 18' RT 1390.18 28' RT 1390. 631+50 28' LT 1390.13 18' LT 1390.29 18' RT 1390.28 28' RT 1390. 631+50 28' LT 1390.16 18' LT 1390.29 18' RT 1390.24 28' RT 1390. 632+50 28' LT 1389.77 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 632+50 28' LT 1389.15 18' LT 1389.34 18' RT 1389.39 28' RT 1389. 633+00 28' LT 1389.15 18' LT 1389.34 18' RT 1386.67 28' RT 1389. 633+50 28' LT 1389.51 18' LT 1387.85 18' RT 1386.67 28' RT 1386. 633+50 28' LT 1387.66 18' LT 1387.85 18' RT 1386.67 28' RT 1386. 633+50 28' LT 1385.91 18' LT 1387.85 18' RT 1386.67 28' RT 1386. 634+50 28' LT 1385.91 18' LT 1387.00 18' RT 1386.96 28' RT 1386. 635+50 28' LT 1385.91 18' LT 1387.00 18' RT 1386.92 28' RT 1385. 635+50 28' LT 1385.91 18' LT 1385.30 18' RT 1386.09 28' RT 1385. 635+50 28' LT 1385.25 18' LT 1385.30 18' RT 1385.20 28' RT 1385. 635+50 28' LT 1386.01 18' LT 1385.30 18' RT 1385.00 28' RT 1385. 635+50 28' LT 1385.27 8 18' LT 1384.21 18' RT 1386.09 28' RT 1385. 635+50 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381. 637+00 28.52' LT 1381.24 18' LT 1377.72 18' RT 1377.71 28' RT 1377. 638+00 29.54' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1375.63 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1375.63 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1375.63 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1375.65 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1377.78 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1375.65 28' RT 1377. 638+00 29.54' LT 1375.43 18' LT 1377.72 18' RT 1375.65 28' RT 1377. 639+00 1 18' RT 1375.67 28' RT 1375. 639+00 2 100 100 100 100 100 100' RT 1375.67 28' RT 1377. 639+00 1 18' RT 1375.67 28' RT 1375. 639+00 1 18' RT 1375.67 28' RT 1375. 639+00 1 18' RT 1375.67 28' RT 1375. 639+00 1 18' RT 1375.77 77 7			630+00	28' LT	1390.38	18' LT	1390.31	18' RT	1389.63	28' RT	1389.33	
SUN Z 8 2010 631+00 28' LT 1390.13 18' LT 1390.29 18' RT 1390.28 28' RT 1390. SINTY ENGINEER 631+50 28' LT 1390.16 18' LT 1390.29 18' RT 1390.24 28' RT 1390. 632+00 28' LT 1389.77 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 632+00 28' LT 1389.15 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 632+00 28' LT 1389.15 18' LT 1389.34 18' RT 1389.39 28' RT 1389. 633+00 28' LT 1385.91 18' LT 1387.65 18' RT 1386.67 28' RT 1386. 634+00 28' LT 1385.91 18' LT 1386.10 18' RT 1386.09 28' RT 1385. 635+00 28' LT 1385.25 18' LT 1386.10 18' RT 1386.09 28' RT 1384. 635+50 28' LT 1386.21 18' RT 1386.20 28' RT 1384. 635+50 28' LT <td></td> <td></td> <td>630+50</td> <td>28' LT</td> <td>1390.18</td> <td>181 LT</td> <td>1390.28</td> <td>18' RT</td> <td>1390.18</td> <td>28' RT</td> <td>1390.02</td>			630+50	28' LT	1390.18	181 LT	1390.28	18' RT	1390.18	28' RT	1390.02	
ONTYENGINEER 631+50 28' LT 1390.16 18' LT 1390.29 18' RT 1390.24 28' RT 1390. 632+00 28' LT 1389.77 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 632+00 28' LT 1389.15 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 633+50 28' LT 1389.15 18' LT 1388.65 18' RT 1389.67 28' RT 1389. 633+50 28' LT 1387.66 18' LT 1387.85 18' RT 1386.69 28' RT 1386. 634+50 28' LT 1385.91 18' LT 1387.00 16' RT 1386.09 28' RT 1386. 635+50 28' LT 1385.25 18' LT 1386.40 18' RT 1386.40 28' RT 1384.21 636+00 28' LT 1386.01 18' LT 1386.40 18' RT 1383.00 28' RT 1384.21 636+50 28' LT 1381.24 18' LT	JON Z8	5 ZU16	631+00	28' LT	1390.13	18' LT	1390.29	10' RT	1390.28	28' RT	1390.12	
Sintry Engineer 632+00 28' LT 1389.77 18' LT 1389.94 18' RT 1389.90 28' RT 1389. 632+50 28' LT 1389.15 18' LT 1389.34 18' RT 1389.39 28' RT 1389. 633+50 28' LT 1389.15 18' LT 1389.65 18' RT 1389.39 28' RT 1389. 633+50 28' LT 1388.51 18' LT 1389.65 18' RT 1386.67 28' RT 1389. 634+00 28' LT 1386.60 18' LT 1387.00 16' RT 1386.96 28' RT 1385. 634+50 28' LT 1385.25 18' LT 1385.30 18' RT 1385.20 28' RT 1384. 635+50 28' LT 1385.25 18' LT 1384.21 18' RT 1383.00 28' RT 1384. 636+50 28' LT 1384.01 18' LT 1384.21 18' RT 1383.00 28' RT 1381.48 636+50 28' LT 1381.42 18' LT		[631+50	28' LT	1390, 16	16' LT	1390.29	18' RT	1390.24	26' RT	1390.09	
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633-00 28' LT 1388.51 18' LT 1388.65 18' RT 1388.67 28' RT 1386. 633+50 28' LT 1387.66 18' LT 1387.85 18' RT 1387.86 28' RT 1387. 634+00 28' LT 1385.91 18' LT 1387.00 16' RT 1386.96 28' RT 1386. 634+50 28' LT 1385.91 18' LT 1386.10 18' RT 1386.09 28' RT 1385. 635+50 28' LT 1385.25 18' LT 1385.30 18' RT 1386.09 28' RT 1385. 635+50 28' LT 1385.25 18' LT 1385.30 18' RT 1386.20 28' RT 1385. 635+50 28' LT 1382.78 18' LT 1381.42 18' RT 1383.00 28' RT 1382. 636+50 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381.31 637+00 28.52' LT 1379.55 18' LT 1379.73 18' RT 1377.78 28' RT 1377.4 638+00 29.54' LT	S	GINEER	632+50	28' LT	1389.15	18' LT	1389.34	18' RT	1389.39	ZB' RT	1389.23	
633+50 28' LT 1387.66 18' LT 1387.85 18' RT 1387.86 28' RT 1387. 634+00 28' LT 1386.80 18' LT 1387.00 18' RT 1386.96 28' RT 1386. 634+50 28' LT 1385.91 18' LT 1386.10 18' RT 1386.96 28' RT 1385.91 635+50 28' LT 1385.25 18' LT 1385.30 18' RT 1385.20 28' RT 1385.91 635+50 28' LT 1385.25 18' LT 1385.30 18' RT 1385.20 28' RT 1385.91 635+50 28' LT 1382.78 18' LT 1384.21 18' RT 1384.25 28' RT 1384.01 636+50 28' LT 1382.78 18' LT 1381.46 18' RT 1381.46 28' RT 1381.46 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.91 637+50 29.03' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1373.53 638+50 </td <td></td> <td></td> <td>633+00</td> <td>28' LT</td> <td>1388.51</td> <td>18' LT</td> <td>1388.65</td> <td>18' RT</td> <td>1388.67</td> <td>28' RT</td> <td>1388.53</td>			633+00	28' LT	1388.51	18' LT	1388.65	18' RT	1388.67	28' RT	1388.53	
634+00 28' LT 1386.80 18' LT 1387.00 18' RT 1386.96 28' RT 1386. 634+50 28' LT 1385.91 18' LT 1386.10 18' RT 1385.09 28' RT 1385. 635+50 28' LT 1385.25 18' LT 1385.30 18' RT 1385.20 28' RT 1385. 635+50 28' LT 1384.01 18' LT 1384.21 18' RT 1384.25 28' RT 1384.0 636+00 28' LT 1382.78 18' LT 1384.21 18' RT 1383.00 28' RT 1382. 636+50 28' LT 1381.24 18' LT 1381.46 18' RT 1381.46 28' RT 1381.4 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.55 637+50 29.03' LT 1377.55 18' LT 1375.60 18' RT 1377.78 28' RT 1375.5 638+00 29.54' LT 1375.43 18' LT 1375.60 18' RT 1375.63 28' RT 1375.5 638+50	동	[633+50	28' LT	1387.66	18' LT	1387.85	18' RT	1387.86	28' RT	1387.68	
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635+00 28' LT 1385.25 18' LT 1385.30 18' RT 1385.20 28' RT 1385. 635+50 28' LT 1384.01 18' LT 1384.21 18' RT 1384.25 28' RT 1384. 636+00 28' LT 1382.78 18' LT 1382.96 18' RT 1383.00 28' RT 1382. 636+50 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381.3 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.55 637+50 29.03' LT 1377.55 18' LT 1375.60 18' RT 1377.78 28' RT 1375.55 638+00 29.54' LT 1375.43 18' LT 1375.60 18' RT 1375.63 28' RT 1375.55 638+50 18' RT 1371.32 28' RT 1373.53 639+00 18' RT 1369.16 28' RT 1375.65 639+50 18' RT 1369.16 28' RT 1365.76 </td <td>SPLN</td> <td>[</td> <td>634+50</td> <td>28' LT</td> <td>1385.91</td> <td>18' LT</td> <td>1386.10</td> <td>18' RT</td> <td>1386.09</td> <td>26' RT</td> <td>1385.90</td>	SPLN	[634+50	28' LT	1385.91	18' LT	1386.10	18' RT	1386.09	26' RT	1385.90	
635+50 28' LT 1384.01 18' LT 1384.21 18' RT 1384.25 28' RT 1384.4 636+00 28' LT 1382.78 18' LT 1382.96 18' RT 1383.00 28' RT 1381.24 636+00 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381.3 636+00 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381.3 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.5 637+50 29.03' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1375.5 638+00 29.54' LT 1375.43 18' LT 1375.60 18' RT 1375.63 28' RT 1375.5 638+50 18' RT 1373.53 28' RT 1373.53 639+00 18' RT 1369.16 28' RT 1375.65 639+50 18' RT 1369.16 28' RT 1365.7 </td <td>SH40</td> <td>[</td> <td>635+00</td> <td>28' LT</td> <td>1385.25</td> <td>18' LT</td> <td>1385.30</td> <td>18' RT</td> <td>1385.20</td> <td>26' RT</td> <td>1385.11</td>	SH40	[635+00	28' LT	1385.25	18' LT	1385.30	18' RT	1385.20	26' RT	1385.11	
636+00 28' LT 1382.78 18' LT 1382.96 18' RT 1383.00 28' RT 1382. 636+50 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381.3 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.5 637+50 29.03' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1377.4 638+00 29.54' LT 1375.43 16' LT 1375.60 18' RT 1375.63 28' RT 1375.5 638+50 18' RT 1375.63 28' RT 1375.5 639+00 18' RT 1371.32 28' RT 1375.6 639+00 18' RT 1369.16 28' RT 1365.5 53 18' RT 1369.16 28' RT 1375.6 639+00 18' RT 1369.16 28' RT 1365.5 5 <td>AYN</td> <td>[</td> <td>635+50</td> <td>28' LT</td> <td>1384.01</td> <td>18' LT</td> <td>1384.21</td> <td>18' RT</td> <td>1384.25</td> <td>28' RT</td> <td>1384.06</td>	AYN	[635+50	28' LT	1384.01	18' LT	1384.21	18' RT	1384.25	28' RT	1384.06	
636+50 28' LT 1381.24 18' LT 1381.48 18' RT 1381.46 28' RT 1381.4 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.5 637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.5 637+50 29.03' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1377.7 638+00 29.54' LT 1375.43 16' LT 1375.60 18' RT 1375.63 28' RT 1373.5 638+50 18' RT 1373.53 26' RT 1373. 639+00 18' RT 1369.16 28' RT 1371. 639+50 18' RT 1369.16 28' RT 1369.56 5 18' RT 1369.16 28' RT 1369.56	ADW	[636+00	28' LT	1382.78	18' LT	1382.96	18' RT	1383.00	28' RT	1382.85	
637+00 28.52' LT 1379.58 18' LT 1379.73 18' RT 1379.71 28' RT 1379.71 637+00 29.03' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1377.70 638+00 29.54' LT 1375.43 18' LT 1375.60 18' RT 1375.63 28' RT 1375.5 638+50 18' RT 1375.63 28' RT 1373. 18' RT 1375.53 28' RT 1375.5 639+00 18' RT 1371.32 28' RT 1371. 639+00 18' RT 1369.16 28' RT 1368.9 639+00 18' RT 1369.16 28' RT 1368.9 639+00 18' RT 1369.16 28' RT 1368.9	\R0	[6 36+50	28' LT	1381.24	18' LT	1381.48	18' RT	1381.46	28' RT	1381.27	
637+50 29.03' LT 1377.55 18' LT 1377.72 18' RT 1377.78 28' RT 1377.4 638+00 29.54' LT 1375.43 18' LT 1375.60 18' RT 1375.63 28' RT 1375.4 638+50 18' LT 1375.60 18' RT 1373.53 28' RT 1375.4 639+00 18' RT 1371.32 28' RT 1371.4 639+00 18' RT 1369.16 28' RT 1368.4 639+00 18' RT 1369.16 28' RT 1368.4	Jues	[637+00	28.52'LT	1379.58	18' LT	1379.73	18' RT	1379.71	28' RT	1379.56	
638+00 29.54' LT 1375.43 18' LT 1375.60 18' RT 1375.63 28' RT 1375.53 638+50 18' RT 1373.53 28' RT 1373. 639+00 18' RT 1371.32 28' RT 1371. 639+50 18' RT 1375.16 28' RT 1371. 5 639+50 18' RT 1369.16 28' RT 1371.	۲ ۵		637+50	29.03' LT	1377.55	18' LT	1377.72	18' RT	1377.78	28' RT	1377.67	
638+50 18' RT 1373.53 28' RT 1373. 9 639+00 18' RT 1371.32 28' RT 1371. 5 639+50 18' RT 1369.16 28' RT 136'. 5 639+50 18' RT 1369.16 28' RT 136'.	2 ing	[638+00	29.54' LT	1375.43	18' LT	1375.60	18' RT	1375.63	28' RT	1375.50	
9 639+00 18' RT 1371.32 28' RT 1371. 5 639+50 18' RT 1369.16 28' RT 1368.9 5 639+00 18' RT 1369.16 28' RT 1368.9	Pos	[638+50			_		18' RT	1373.53	28' RT	1373.41	
5 639+50 18' RT 1369.16 28' RT 1368.9	46		639+00					16' RT	1371.32	28' RT	1371.12	
	C H	[639+50					18' RT	1369.16	28' RT	1368.92	
18 KI 1367.06 28 KI 1366.1	5		640+00					18' RT	1367.06	28' RT	1366.88	

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NOTES:

1. SAWCUT TO BE SUBSIDIARY TO TH

ALL STATIONS, OFFSETS, AND ELI WIDENING TABLES ARE REFERENCED ALIGNMENT.

		ESTI	MATED QUAN	NTITIES			215-7-22
	ITEM		DESCRI	PTION		UNIT	QTY
	0100 600Z	PREPARING ROW				STA	10
	0110 6001	EXCAVATION IR	DADWAY)			CY	712
	0132 6001	EMBANKMENT IF	INAL) (ORD)	COMP) (TY A)	CY	453
	DZ47 6366	FL BSICMP IN P	LC) (TY A C	FINL PC	5	CY	704
2	0310 6009	PRIME COAT INC	- 30)			GAL	604
<i>A</i>	0316 6240	AGGRITY-PD GR	-4 SAC-81			CY	70
li li	0316 6410	ASPHIAL-ISP, A	L-20-51R, A	C-ZUXP, ACT	10-21RJ	GAL	3762
	0341 5054	D-CO HWA TY-D	06 20-22 (TON	37
	0364 6051	DIANE ASPN CON	P6 10+22 1	TO LIVEL OPT		TON	312
	0412 6001	BIBBAR (CONC)	A THE	10 1 1/2 1		51	1200
	0432 6045 RIPRAP (MON STRIP) (4 IN)						
	0530 6005	DRIVEWAYS LACE	11 11 11 11 11 11 11 11 11 11 11 11 11			C1 EV	172
	0530 6006	DRIVEWAYS ISH	F TREATI			ev 91	112
	0530 6008	TURNOUTS (ACP)		·····		54	1
	0530 6009	TURNOUTS (SURF	TREAT			EA EA	
	0530 XXX1	DRIVEWAYS (GRA	VEL		÷	SY SY	
	0540 6001	MTL W-BEAM CO	FEN (TIM P	0511		1.5	
	0540 6014	MTL W-BEAM CD	FENITIM PO	15T) 5HORT /	RADIUS	LF	
	0540 6016	DOWNSTREAM AND	HOR TERMIN		N	54	
	0544 6001	GUARDRA 11 END	TREATMENT	(INSTALL)		54	
	0560 6001	MAILBOX INSTAL	L-S ITWO-P	POST) TY 1		EA FA	2
	0560 6002	MAILBOY INSTAL	L-D 4TWG-P	POST3 TY 1		EA EA	
	0560 6003	MAILBOX INSTAL	L-M (TWG-P	POST) TV 1		ER FA	3.2
l		I PARIT		warr ri f		64	
		LEGEND					I
		EXIST E	DGE OF R	OADWAY			
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		<u> </u>		PROJECT		SHE	ET NO.
OF FERTINENT B	IN TIEWS'						206
EVATIONS SHOWN	IN THE	STATE	DIST.		COUNTY		
ED FROM SH 46 E	BASELINE	IEXAS	SAT		KENDALL,	FLC	
		0215	SECT		HIG	WAT NO.	<u></u>
		0215	Ub	JUST, EIC	I S	1 46	

ESTIMATED QUANTITIES



DEC			SH 46	WIDENING	TABLE		
REC	LIVED	STATION	RT SAWC	UT LINE	RT	EOP	
11.00		JUNITON	OFFSET	ELEV	OFFSET	ELEV	
JUN 2	8 2016	640+00	16' RT	1367.06	28' RT	1366.88	
		640+50	18' RT	1364.99	28' RT	1364.84	
CHINT		641+00	18' RT	1362.87	28' RT	1362.66	
YTNUO	FNGINEER	641+50	18' RT	1361.04	28' RT	1360.97	
		642+00	18' RT	1358.79	28' RT	1358.62	
-		642+50	18' RT	1356.48	26' RT	1356.22	
μάρ		643+00	18' RT	1354.38	28' RT	1354.13	
407.		643+50	18' RT	1352.48	26' RT	1352.28	
BLP		644+00	18' RT	1350.42	28' RT	1350.28	
SH4		644+50	18' RT	1348.08	28' RT	1347.99	
471		645+00	18' RT	1346.03	28' RT	1345.93	
ADW		645+50	18' RT	1344.04	28' RT	1343,94	
3\RC		646+00	18' RT	1341.98	28' RT	1341.78	
ane:		646+50	18' RT	1340.00	28' RT	1339.78	
d Li		647+00	18' RT	1338.28	28' RT	1338.09	
c.		647+50	18' RT	1336.65	28' RT	1336.45	
so d		648+00	18' RT	1335,45	28' RT	1335.27	
46		648+50	18' RT	1334.36	28' RT	1334.12	
C HS		649+00	18' RT	1333.67	28' RT	1333, 50	
i la la		649+50	18' RT	1332.98	28' RT	1332.80	
373.		650+00	18' RT	1332.63	28' RT	1332.44	
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NOTES:

- 1. SAWCUT TO BE SUBSIDIARY TO THE
- ALL STATIONS, OFFSETS, AND ELEY WIDENING TABLES ARE REFERENCED ALIGNMENT.

		ESTI	MATED QUAN	TITIES			215-7-22
	ITEM		DESCRIP	TION		UNIT	OTY
	0100 6002	PREPARING ROW				STA	10
	0110 6001	EXCAVATION (R	DADWAY)			CY	268
	0132 6001	EMBANKMENT (F	INAL) (ORD (COMP) (TY A)	CY	227
	0247 6366	FL BSICMP IN F	LCI (TY A G	R SIFNL PO	s	CY	389
• I	0310 6009	PRIME COAT IM	C= 301			GAL	333
Ø	0316 6240	ACGR (TY-PD GR	-4 5AC-8)			CY	71
	0316 6410	ASPH (AC-15P, A	C-20-57R, A	C-20XP, AC1	0-2TR)	GAL	3852
	0316 XXX1	ACGR (TY-PO GR	-3)			CY	59
~	0341 6064	D-GR HMA TY-D	PG 70-22 1	LEVEL-UP)		TON	179
	0354 6051	PLANE ASPH CO	IC PAV IO"	10 1 1/2*)		SY	667
	0432 6001	RIPRAP (CONC)	(4 IN)			CY	
	0432 6045	RIPRAP IMOW S	(R]P) (4 IN)			CY	14
	0530 6005	URIVEWAYS TAC	1) 10 100131			SY	
	0530 6008	TIRNOUTS LACO	IF THEATT			51	/5
	0530 6009	TURNOUTS (SUR	TREATI			EA EA	
	0530 XXX1	DRIVEWAYS (CR)	VED	· · · · · · · · · · · · · · · · · · ·	·	CV CV	<u>د</u>
	0540 6001	MTL W-BEAM GD	FEN (TIM P	057)		LE	225
	0540 6014	MTL W-BEAM GD	FENITIM PO	STI SHORT R	ADIUS	LF	
	0540 6016	DOWNSTREAM AN	HOR TERMIN	AL SECTION	1	EA	
ĺ	0544 6001	GUARDRAIL END	TREATMENT	(INSTALL)		EA	1
	0560 6001	MAILBOX INSTAL	L-S (TWG-P	OST) TY 1		ËA	2
[0560 6002	MAILBOX INSTAL	L-D (TWG-P	0517 11 1		EA	
[0560 6003	MAILBOX INSTAL	L-W (TWG-P	OST) TY 1		EA	
		LEGENO):				
		EXIST E	DGE OF R	OADWAY			
		EXIST F	ENCE			~~	
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		DRIVEWA	Y NUMBER			Ġ	ลิ
		ROADWAY	WIDENIN	G		- and	
		CONCRET	E RIPRAP	(4")		a1.	*
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			© 2015 Tx	Departme DOT SH SEGMEN	nt of Trai 46 тс	nspor	tation
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			ROAL	Departme Dot SEGMEN DWAY 1	nf of Trai 46 т с LAYOUT	S	tation
			C Texas C 2015 Tx ROAL	Departme Dot SEGMEN DWAY I	46 T C AYOUT	'S	tation
			ROAL	Departme SEGMEN DWAY I 540+00 TC	46 T C AYOUT STA 650+	S 00	tation
E PERTINENT R	ID ITEMS	SHEET 7 E&B- RR-	CTexas © 2015 Tx ROA(STA 6 0F 8	Departme Dot SEGMEN DWAY I 540+00 TC	46 T C AYOUT STA 650+	S S	
E PERTINENT B	ID ITEMS.	SHEET 7 698: 128:	ROAI STA 6	Departme Dot SEGMEN DWAY I 540+00 TC PROJECT	46 T C AYOUT STA 650+	S S	EET NO. 207
E PERTINENT B	ID ITEMS.	SHEET 7 699: 128: STATE	ROAI STA 6 0F 8	Departme Dot SEGMEN DWAY I 540+00 TC PROJECT	COUNTY	S 00	EET NO. 207
E PERTINENT B EVATIONS SHOW > FROM SH 46	ND ITEMS. N IN THE BASELINE	SHEET 7 699: 128: STATE TEXAS	CTEXAS © 2015 TX ROAI STA 6 OF 8 DIST. SAT	Departme Dot SEGMEN DWAY I 540+00 TC PROJECT	A6 T C AYOUT STA 650+ COUNTY KENDALL,	S 00 ETC	EET NO. 207
E PERTINENT B EVATIONS SHOW D FROM SH 46	ID ITEMS. N IN THE BASELINE	<u>SHEET 7</u> <u>Б</u> <u></u> <u>Б</u> <u></u> <u></u> <u></u> <u>Б</u> <u></u> <u></u> <u></u> <u></u>	Correction of the second secon	Departme Dot SEGMEN DWAY I 540+00 TC PROJECT	COUNTY KENDALL,	S 00 ETC TRAY HD	EET NO. 207



SHEET 8

		SH 46 WIDENING TABLE				
RE		STATION	RT SAWC	UTLINE	RŤ	EOP
		2191100	OFFSET	ELEV	OFFSET	ELEV
JUN	9.9.2010	650+00	18' RT	1332.63	28' RT	1332.44
001	# O ZUID	650+50	18' RT	1332.53	28' RT	1332.33
		651+00	18' RT	1332.59	28' RT	1332.39
COUNTY	ENGINEER	651+50	18' RT	1332.94	28' RT	1332.77
		652+00	18' RT	1333.60	28' RT	1333.55
		652+50	18' RT	1334.49	28' RT	1334.55
μçb		653+00	18' RT	1335.62	26' RT	1335.72
108.		653+50	18' RT	1337.27	28' RT	1337.57
a la		654+00	18' RT	1339,10	28' RT	1339.61
SH41		654+50	18' RT	1340.76	28' RT	1341.24
AYA		655+00	18' RT	1342.69	28' RT	1343.17
ADW		655+50	18' RT	1344,91	28' RT	1345.45
1. AC		656+00	18' RT	1347.12	28' RT	1347.63
ane:		656+50	18' RT	1349.44	28' RT	1349.93
1		657+00	18' RT	1351.67	28' RT	1352.14
č.		657+50	18' RT	1353.79	28' RT	1354.19
Pas		658+00	181 RT	1356.10	28' RT	1356.47
46		658+50	18' RT	1358.50	28' RT	1358.95
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 ALL STATIONS, OFFSETS, AND WIDENING TABLES ARE REFEREN ALIGNMENT.

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		ESTI	MATED QUA	NTITIES			215-7-22	
	ITEM		DESCRI	PTION		UNIT	QTY	
	0100 6007	PREPARING ROW				STA	ß. B	
	0110 5001	EVCAVATION OF	ADWAYS			1	385	
	0170 0001	CARAMATION INC	INGENERAL P	10 10 1 10 1 10 1 1 1 10 1 1 1 1			200	
	0132 6001	EMBANKMENT (F)	OROJ LJAN	LUMP) (TY A)		L CY	172	
	0247 6366	FL BS(CMP IN P	LCI (TY A	GR 51 FNL PO	5	CY	345	
2	0310 6009	PRIME COAT (MC	-30)			GAL	296	
*h	0316 6240	AGGR (TY-PD GR-	4 SAC-B)			CY	63	
	0316 6410	ASPH (AC-15P, AC	-20-5TR.	-20XP. AC1	0-ZTR)	GAL	3403	
	0316 ¥¥¥1	AGGR (TY-PD CP-	3)			CY I	52	
11	0741 0007		00 70	et Partie and		- 61 90.1	36	
1	0341 6064	U-GH HMA TY-D	r6 /0-22	ILEVEL-UP)		TON	145	
`	0354 6051	PLANE ASPH CON	C PAV 10"	TO 1 1/2")		SY	587	
	0432 6001	RIPRAP (CONC)	IPRAP (CONC) (4 IN)					
	0432 6045	RIPRAP (MOW ST	IPRAP (MOW STRIP) (4 1N)					
	0530 6005	DRIVEWAYS IACS	RIVEWAYS (ACP)					
	0530 5005	DRIVEWAYS (CUS	LIVEWAYS (SURF TREAT)					
	0530 6006	DRIVEWATS ISUN	FIREATI			SY	155	
	0530 6008	TURNOUTS (ACP)				EA		
	0530 6009	TURNOUTS (SURF	JRNOUTS (SURF TREAT)					
	0530 XXX1	DRIVEWAYS IGRA	VELI			5Y		
	0540 6001	MTL W-BEAM CO	FEN (TIM	POSTI		15	100	
	0540 5014	MTI WIDEAL CO	CENSTRA -	OCT) CLIMPT	ADTUS	6.F'	,00	
	0340 6014	WIL W-BEAM GD	CNUIM P	USIJSHORT R	AU105			
	0540 6016	DOWNSTREAM AND	HOA TERMI	NAL SECTION	8	EA	1	
	0544 6001	GUARDRAIL END	TREATMENT	(INSTALL)		EA		
	0560 6001	MAILBOX INSTAL	L-S ITWG-	POST) TY 1		EA	1	
	0560 6002	MATI BOX THISTAL	Len these	POST) TY 1		FA		
	0550 0002	HATLENN THEFT	1 - 14 - 17	00011-11-1				
ا _	0080 6003	MAILBOX INSTAL	L-M ((WG-	PUSIA TY 1		<u>E</u> A		
		LEGEND	•					
		EXIST F	DGE OF	ROADWAY				
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		0215	06	037,ETC	S	H 46		



SH46 WIDENING TABLE - LEFT SIDE						
	PROPOS	ED EOP	SAWCUT LINE			
STATION	OFFSET	ELEV	OFFSET	ELEV		
774+00	21.44 LT	1306.54	18' LT	1306.63		
774+50	20.84' LT	1308.08	18' LT	1308.14		
775+00	20.23' LT	1309.92	18' LT	1309.97		
775+50	19.63' LT	1312.15	18' LT	1312.18		
776+00	20.06' LT	1314.62	18' LT	1314.67		
776+50	21.37' LT	1317.37	18' LT	1317.45		
777+00	22.68' LT	1320.12	18' LT	1320.23		
777+50	23.99' LT	1322.62	18' LT	1322. B1		
778+00	25.29' LT	1325.04	18' LT	1325.30		

SH46 WIDENING TABLE - RIGHT SIDE						
	SAWCU	T LINE	PROPOS	ED EOP		
STATION	OFFSET	ELEV	OFFSET	ELEV		
774+00	16' RT	1306.61	22. 44' RT	1306.50		
774+50	10' RT	1308.21	23.23' RT	1308.11		
775+00	18' RT	1310.00	24.03' RT	1309.88		
775+50	16' RT	1312.27	24. 82' RT	1312.15		
776+00	16' RT	1314.74	25.62' RT	1314.58		
776+50	18' RT	1317.46	26.41' RT	1317.25		
777+00	18' RT	1320.22	27.21' RT	1319.99		
777+50	18' RT	1322.88	28' RT	1322.62		
778+00	18' RT	1325.43	28' RT	1325.14		

RECEIVED

JUN 28 2016

NOTES

1. SAWCUT TO BE SUBSIDIARY TO THE PERTI

2. ALL STATIONS, OFFSETS, AND ELEVATION WIDENING TABLES ARE REFERENCED FROM ALIGNMENT.

COUNTY ENGINEER

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		EST	MATER GUANT	ITIËS			215-7-22
	TTEM		DESCRIPT	TON		UNIT	OTY
	0100 6002		WE WE WE	240		STA	4.4
	0110 6001	SYCAVATION A				<u>ev</u>	
	0170 6001	EAGAVATION 1	ETAIL) (ORD 1	VIII (TV)	1		316
	0247 5766		DIPLOTORU			~~	107
	0710 6000	FL DO GAP IN	TEUTITAG	n ø/røl P(13 <u> </u>		444
	0310 6009	FRIME COAT (ang-30)			UAL	144
	0516 6240	AGGR (TT-PD G	IN-4 SAC-8)	-	0.0701	CT	25
	0516 6410	ASPH (AC-15P,	AC-20-5TR, A	U-ZOXP, AC	v-ztr)	GAL	1364
	0316 XXX1	D316 XXX1 AGGR (TY-PD GR-3)					
	0341 6064		TON	9			
	0432 6001	RIPRAP (CONC) (4 IN)			CY	
	0432 6045	RIPRAP CHOW	STRIP) (4 IN)	}		CY	
	0530 6004	DRIVEWAYS (C	CONC)			SY	
	0530 6005	DRIVEWAYS (A	(CP)			SY	
	0530 6006	DRIVEWAYS (S	SURF TREAT)			SY	
	0530 6008	TURNOUTS (AC	(P)			EA	
	0530 6009	TURNOUTS (SU	IRF TREAT)			EA	
	0540 6001	MTL W-BEAN G	O FEN (TIM P	OST)		LF	
	0540 6014	MTL W-BEAM G	D FEN (TIM PO	ST) SHORT	RADIUS	LF	
	0540 6015	DOWNSTREAM	INCHOR TERMI	NAL SECTIO	N	EA	
	0544 6001	CHARDRATI EN	O TREATLENT	(INSTALLY		EA	
	0552 9991	REMOVE AND T	NSTALL DIDE	FENCE AND	GATE		
	0550 5004	MATLONY THET	ALL C /THAT	ACTI TV 4	SWITE .	64 64	<u> </u>
	1009 0000	MAILOUA INST	ALL-3 (WG*	-U317 1T 1		<u> </u>	
	0560 6003	MAILBOX INST	ALL-M (TWG-	POST) TY 1		EA	
		_					
		LEGEN	ND:				
		EXIST	EDGE OF RO	DADWAY			
		EXIST	FENCE			-70	
		EXIST	UTILITY			~~^^	2° C
		RIGHT	OF WAY (RO)W)			
		MAIL	BOX			1	<u>o</u>
		DRIVE	WAY NUMBER				A) I
		ROADW	AY WIDENING	;			í l
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			PR FC bid 100%	ELIM R REVIEW of for contra ng or permit S SLIF	NAR V ONLY truction, t purposes.	 /	
			PR FC N Holder 100%	ELIMI R REVIEW of for contr of permit 6 SUE	V ONLY truction, t purposes. BMITT	 /	
			PR FC bidde 100% Engineer:	ELIMI R REVIEW for comming or permit S SUE	NAR V ONLY truction, t purposes. MITT	/	
			PR FC bidde 100% Engineer: LARRY ZAMC	ELIMI R REVIEV for comming or permin S SUE DRA, PE	NAR V ONLY truction, t purposes. MITT	AL	
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88	ELIMI PR REVIEW of for comming of permin 5 SUE DRA, PE 898	NAR V ONLY truction, t purposes. BMITT Date: 2/16	AL 3/201	6
			PR FC N bidde 100% Engineer: LARRY ZAMC P.E. No: 88	ELIMI DR REVIEV of for some or permi S SUE DRA, PE 696	NARY V ONLY truction, t purposes. BMITT Date: 2/16	AL 3/201	6
			PR FC N bidde 100% Engineer: LARRY ZAMC P.E. No: 88	ELIMI OR REVIEW of for comm or permit of SUE ORA, PE 1698	NAR V ONLY truction, t purposes. MITT Date: 2/16	AL 3/201	6
			PR FC N bidde 100% Engineer: LARRY ZAMC P.E. No: 88	ELIMI OR REVIEW of for comming of permin of SUE ORA, PE 1896	NAR V ONLY truction, t purposes. SMITT Date: 2/16	AL 3/201	6
			PR FC N bidde 100% Engineer: LARRY ZAMC P.E. No: 88	ELIMI PR REVIEW of for comming of permit of SUE DRA, PE 1696	V ONLY truction, t purposes. SMITT Date: 2/16	AL 3/201	6
			PR FC N bidde 100% Engineer: LARRY ZAMC P.E. No: 88	ELIMI PR REVIEW of for some ing or portion S SUE DRA, PE 6998 Lockww & Newr	NAR V ONLY truction, t purposes. MITT Date: 2/16	AL 3/201	6
			PR FC bidde 100% Engineer: LARRY ZAMO P.E. No: BB	ELIMI PR REVIEW of for consist for consist for consist or permit S SUE DRA, PE 6996 Lockwei & News & News Lockwei & News Lockwei & Internation	NARY V ONLY truction, t purposes. BMITT Date: 2/16	AL 3/201	6
			PR FC bidde 100% Engineer: LARRY ZAMO P.E. No: 88 IOPE NO: 88	ELIMI PR REVIEW of for conv or permin 6 SUE DRA, PE 1696 Lockwa <u>& Newar</u> 16 MRDINA	NAR) Y ONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16	AL 3/201	6
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 FE NO: 88 FE NO: 88	ELIMI PR REVIEW of for conv or permin 5 SUE PRA, PE 6998 Lockww <u>& Neww</u> 100 100 100 100 100 100 100 10	NARY VONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16	AL 3/201	6
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 ION: I	ELIMI PR REVIEW of for communication of SUE SUE DRA, PE 898 Lockww <u>& Newwith</u> 100 100 100 100 100 100 100 10	NARY VONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16	AL 3/201 NC. 746160	<u>6</u>
			PR FC N Biddet 100% Engineer: LARRY ZAMC P.E. No: BB ID TOPE ALL TOPE ALL BALLY BALLY BALLY	ELIMI PR REVIEW of for some or permin 6 SUE DRA, PE 698 Lockww 8 New 8 New 1 Successor 1 Successor	NAR V ONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16	AL 3/201 vs NC. 7atio	6
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 ION: 88 FC BADY TOPE ACC TOPE ACC TOPE ACC TOPE ACC TOPE ACC	ELIMI PR REVIEV of for some ng or permit 6 SUE 0RA, PE 696 Lockown 8 Newn 8 Newn 1 SUE 1	NAR V ONLY truction, t purposes. MITT Date: 2/16 Date: 2/16	AL 3/201 15 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 10 10 10 10 10 10 10 10	<u>в</u>
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 TOPE RE BAIN TOPE RE BAIN TOPE RE TOPE RE	ELIMI PR REVIEW OR REVIEW Source of for come ing or permit Source of the source Source of the source So	NAR V ONLY truction, t purposes. MITT Date: 2/16 Date: 2/16	AL 3/201 NC. 783/68 NSPON	6 E
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: BB DE TOPE ACC BALLY TOTS Sea BALLY TOTS Sea TOTS Sea CONTINUES OF TOTS SEA CONTINUES	ELIMI PR REVIEW of for come of or come of SUE DRA, PE 6996 Lockwe 8. New 8. New 8. New 8. New 8. New 8. New 1000 100	NARY VONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16 Date: 2/16	AL 3/201 NC. 78/16 NSPO	6
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: BB DE TOPE ACC BAIRY 7073 Sea BAIRY 7073 Sea BAIRY 7073 Sea ToXGS © 2015 The	ELIMI PR REVIEW of for conne of SUE DRA, PE 6996 Lockwe 8. Newer 8. Newr 8. Newer 8. Newer 8. Newer 8. Newer 8. N	NARY VONLY truction, t purposes. MITT Date: 2/16 Date:	AL 2/201 NC. The base The base The base	6
				ELIMI PR REVIEW of for conne of SUE SUE DRA, PE 1696 Lockwe <u>& Newwi</u> <u>& Newwi</u>	NARY VONLY truction, t purposes. BMITT Date: 2/16 Date:	AL 3/201 NC. 75500 NC.	6 e
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 Control Control BATY BATY Taxas © 2015 Total	ELIMI REVIEW of for conv of sor permit SUE SUE SUE Converting SUE Converting SUE Converting SUE Converting SUE Converting SUE Converting SUE Converting Co	NARY VONLY truction, t purposes. BMITT Date: 2/16 Date:	AL 3/201 VS NC. 744160 NS NS NS NS NS NS NS NS NS NS	6 e
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: BE ION TOPE ALL BAILY TOPE ALL TOPE ALL	ELIMI PR REVIEW of for commission of SUE SUE SUE SUE SUE SUE SUE SUE	NARY V ONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date	AL 3/201 NC. 74210 TS	6 8
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: BB ID TOPE REC BAIN TOPE REC TOPE REC	ELIMI PR REVIEW of for commis- of SUE SUE SUE SUE Commission Commissio	NAR V ONLY truction, t purposes. MITT Date: 2/16 Date:	AL 3/201 NC. Tation TS DO	<u>в</u>
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: BE DE TOPE ARE BALLY TOPE ARE TOPE ARE TOPE ARE TOPE ARE TOPE ARE TOPE ARE TOPE ARE TOTA SEA TOXOS TOPE TO TOXOS	ELIMI PR REVIEW PR EVIEW PR EVIEW S SUE PRA, PE 6998 Lockww A New A Ne	NAR V ONLY truction, t purposes. MITT Date: 2/16 Date:	AL 3/201 15 15 15 15 15 15 15 15 15 1	б б
			PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: BB COPE REC BALLY TOPE REC BALLY TOTA Sea PODE: 210-694-73 TAXOS O 2015 TH ROAL STA 70	ELIMI REVIEW of for conne of or conne of SUE DRA, PE 6998 Lockuw <u>A Newn</u> <u>A </u>	NARY V ONLY truction, t purposes. MITT Date: 2/16 Date:	AL vs vs NC. rational nspon	6
		SHEET	PR FC bidd 100% Engineer: LARRY ZAMC P.E. No: BB DE TOPE ACC P.E. NO: BB TOPE ACC P.E. NO: BB TOPE ACC TOPE ACC TOTA Sea TOXOS © 2015 TH ROAL STA 70 1 OF 9	ELIMI REVIEW of for conn of SUE SUE CALL C	NARY VONLY truction, t purposes. MITT Date: 2/16 Date:	AL 7/201 NC. 7010 75 75 75 75 75 75 75 75 75 75	
		SHEET	PR FC bidde 100% Engineer: LARRY ZAMO P.E. No: 88 FOR TOPE ACC P.E. NO: 88 TOPE ACC P.E. NO: 80 TOPE ACC P.E. NO: 80	ELIMI PR REVIEW of for consist of for consist of SUE DRA, PE 896 BLOCKWA A News A Ne	NAR V ONLY truction, t purposes. MITT Date: 2/16 Date: 2/16	AL //201 //20	6 8 1.cow rtation 223
INE	NT BID IT	SHEET BIT: N	PR FC bidde 100% Engineer: LARRY ZAM P.E. No: 88 I OF 9 E E DEST.	ELIMI PR REVIEV of for conv of sourcess SUE PRA, PE 698 Locktwo <u>& Newwith</u> 6 SUE DRA, PE 698 <u>Banker</u> 100 100 100 100 100 100 100 10	NARY VONLY truction, t purposes. BMITT Date: 2/16 Date:	AL 3/201 NC. TS 00 S	E E HEET IND. 223
INE	NT BID IT		PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 TOPE AC BATY TOYS See TOYS SEE TO	ELIMI REVIEW of for conv of second SUE SUE SUE SUE SUE SUE SUE SUE	NARY V ONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date	AL 3/201 VS NC. 748160 NSDO	E MEET MO. 223
INE NS SH	NT BID IT SHOWN IN 1 45 BASEL		PR FC bidde 100% Engineer: LARRY ZAMC P.E. No: 88 TOPE AC P.E. No: 88 TOPE AC P.E. NO: 88 TOPE AC TOPE	ELIMI PR REVIEW of for commission of SUE SUE SUE SUE SUE SUE SUE SUE	NARY V ONLY truction, t purposes. BMITT Date: 2/16 Date: 2/16 Date	AL 3/201 NC. 70210 NC. 70210 S 00 ETC	
INE NS	NT BID IT SHOWN IN T 46 BASEL	SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET SHEET	PR FC bidde 100% Engineer: LARRY ZAMC P.E. NO: BB CONTENT BALIN TOPE REC BALIN TOPE REC BALIN TOTS Sea PLE NO: BB CONTENT BALIN TOTS Sea PLE NO: BB CONTENT BALIN CONTENT SEA SEA CONTENT SEA SEA SEA SEA SEA SEA SEA SEA	ELIMI REVIEW REVIEW REVIEW SUB SUB CONT C	NARY VONLY truction, t purposes. MITT Date: 2/16 Date:	AL 3/201 NC. 7000 TS D0 ETC ETC ETC	<u>е</u>



(SEE CULVERT PROFILE SHEET)



NOTES:

1. SAWCUT TO BE SUBSIDIARY TO THE PERTINENT BID ITEMS.

2. ALL STATIONS, OFFSETS, AND ELEVATIONS SHOWN IN THE WIDENING TABLES ARE REFERENCED FROM SH 46 BASELINE ALIGNMENT.

	S S	H46 WIDEN1	ING TABLE	- LEFT SI)E
I		PROPOS	SAWCU	T LINE	
	STATION	OFFSET	ELEV	OFFSET	ELEV
	778+00	25.29' LT	1325.04	18' LT	1325.3
	778+50	26.6'LT	1327.33	18' LT	1327.62
	779+00	27.91' LT	1329.44	18' LT	1329.68
	779+50	29.21' LT	1331.07	18' LT	1331.27
	780+00	30.52' LT	1332.06	18' LT	1332.29
	780+50	31.35' LT	1332.41	18' LT	1332.73
	781+00	31.85' LT	1332.52	18' LT	1332.81
	781+50	32' LT	1332.3	18' LT_	1332.5
	782+00	32' LT	1331,4	18' LT	1331.66
	782+50	32' LT	1330.04	18' LT	1330, 33
	783+00	30.58' LT	1327.99	18' LT	1328.29
	783+50	28.54' LT	1325.62	_1 <u>8' LT</u>	1325.87
	784+00	28' LT	1323.19	18' LT	1323.38
	784+50	28' LT	1320.54	16' LT	1320.77
	785+00	28' LT	1318.28	18' LT	1318.41
	785+50	28' LT	1315.97	16' LT	1316.11
	786+00	28' LT	1313.83	18' LT	1314.04
	786+50	28' LT	1312	18' LT	1312.29
	787+00	28' LT	1311.1	18' LT	1311.28
	787+50	28' LT	1310.4	18' LT	1310.54
	788+00	28' LT	1309.68	18' LT	1309.92

	SAWCU	TLINE	PROPOS	ed eop
STATION	OFFSET	ELEV	OFFSET	ELEV
778+00	18' RT	1325.43	26' RT	1325.14
778+50	18' RT	1327.9	28' RT	1327.71
779+00	18' RT	1329.92	28' RT	1329.81
779+50	18' RT	1331.3	26' RT	1331.14
780+00	18' RT	1332.22	26 <u>′ RT</u>	1331.99
780+50	18' RT	1332.9	28' RT	1332.74
781+00	18' RT	1332.93	28' RT	1332.79
781+50	18' RT	1332.45	28' RT	1332.28
782+00	18' RT	1331.59	28' RT	1331.41
782+50	18' RT	1330.37	28' RT	1330.34
783+00	18' RT	1328.32	28' RT	1328,13
783+50	18' RT	1325.9	28' RT	1325, 69
784+00	18' RT	1323.34	28' RT	1323.21
784+50	18 <u>′ RT</u>	1320.68	28' RT	1320, 41
785+00	18' RT	1318.08	28' RT	1317.91
785+50	18 <u>' RT</u>	1315.89	28' RT	1315,64
786+00	18' RT	1313.98	28' RT	1313.73
786+50	161 RT	1312.38	28' RT	1312.14
787+00	18' RT	1311.21	28' RT	1310.99
787+50	18' RT	1310.51	28' RT	1310.36
788+00	18' RT	1310, 12	28' RT	1309,99

SH46 WIDENING TABLE - RIGHT SIDE

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S	H46 WIDENI	ING TABLE	- LEFT SIC	DE
	PROPOS	ED EOP	SAWCU	TLINE
STATION	OFFSET	ELEV	OFFSET	ELEV
788+00	28' LT	1309.68	- 18' LT	1309.92
788+50	28' LT	1309.63	18' LT_	1309,84
789+00	28' LT	1310.02	18' LT	1310.2
789+50	28' LT	1310.64	18' LT_	1310, 89
790+00	28' LT	1311.82	18' LT	1312
790+50	28' LT	1313.2	18' LT	1313.48
791+00	28' LT	1315, 19	18' LT	1315.45
791+50	28' LT	1317.39	18' LT	1317.62
792+00	28' LT	1319.67	18' LT	1319,94
792+50	28' LT	1322.15	18' LT	1322.4
793+00	28' LT	1324.54	18' LT	1324.76
793+50	28' LT	1326.76	18' LT	1326.95
794+00	28' LT	1328.87	18' LT	1329.04
794+50	28' LT	1330.87	18' LT	1331.04
795+00	28' LT	1332.79	18' LT	1332.95
795+50	28' LT	1334.47	18' LT	1334.65
796+00	28.29' LT	1336.12	18' LT	1336.28
796+50	29.27' LT	1337.62	<u>18' LT</u>	1337.82
797+00	30.25' LT	1339.06	18' LT	1339.34
797+50	31.23' LT	1340.75	18' LT	1341.04
798+00	32.21' LT	1342.55	18' LT	1342.82

SH46 WIDENING TABLE - RIGHT SIDE						
	SAWCU	T LINE	PROPOSED EOP			
STATION	OFFSET	ELEV	OFFSET	ELEV		
788+00	_18' RT	1310.12	28' RT	1309.99		
788+50	18' RT	1309.81	28' RT_	1309,59		
789+00	18' RT	1310.1	28' RT	1309.86		
789+50	18' RT	1310.81	26' RT	1310.64		
790+00	18' RT	1312.1	28' RT	1311.97		
790+50	18' RT	1313.65	28' RT	1313.54		
791+00	18' RT	1315.46	28' RT	1315.2		
791+50	18' RT	1317.66	28' RT	1317.47		
792+00	18' RT	1320.08	28' RT	1319,89		
792+50	18' RT	1322.55	28' RT	1322.38		
793+00	16' RT	1324.82	26' RT	1324.64		
793+50	18' RT	1327	28' RT	1326.83		
794+00	18' RT	1329.02	28' RT	1328.84		
794+50	18' RT	1331.07	28' RT	1330.91		
795+00	18' RT	1332.95	28' RT	1332.79		
795+50	18' RT	1334.77	28' RT	1334.65		
796+00	18' RT	1336.33	28.23' RT	1336.19		
796+50	18' RT	1337.83	28.99' RT	1337.65		
797+00	18' RT	1339.41	29.75' RT	1339.18		
797+50	18' RT	1341.07	30.51' RT	1340,84		
798+00	18' RT	1342.8	31.27' RT	1342.64		

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NOTES:

1. SAWCUT TO BE SUBSIDIARY TO THE PERTIN

2. ALL STATIONS, OFFSETS, AND ELEVATIONS SHOWN IN THE WIDENING TABLES ARE REFERENCED FROM SH 46 BASELINE ALIGNMENT.

COUNTY ENGINEER

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770.	E	STIM	TED QUANT	ITIES		Line	215-7-22
ITEN	000040740	D.com	DESCRIP	FION	_	UNIT	Q1Y
0100 6002	PREPARING	ROW	A P161 A 1/1			STA	10.0
0110 6001	ENGAVATIO		AUWAT7	COND) (TV)			012
0247 6365	ENDAMOREN	TN P			ns		922
0310 6009	PRIME COAT		-301	IN OFFICE	9 3	GAL	697
0316 6240	AGGR (TY-P	D GR-	4 SAC-B)			CY	70
0316 6410	ASPH (AC-1	SP. AC	-20-5TR./	C-20XP. AC	10-2TR)	GAL	3794
0316 X00(1	AGGR (TY-P	D GR-	3)			CY	57
0341 6064	D-GR HMA T	Y-0	PG 70-22	(LEVEL-UP)		TON	32
0432 6001	RIPRAP (CO	NC) (4 IN)			CY	10
0432 6045	RIPRAP (M	W ST	RIP) (4 IN)	• • • • • • • • •	CY	30
0530 6004	DRIVEWAYS	(CON	ic)			5Y	
0530 6005	DRIVEWAYS	(ACP)			5Y	
0530 6006	ORIVEWAYS	(SUR	F TREAT)			5Y	87
0530 6008	TURNOUTS	(ACP)				EA	
0530 6009	TURNOUTS	(SURF	TREAT)			EA	
0540 6001	MTL W-BEAN	I GD	FEN (TIM I	POST)		도	497
0540 6014	MTL W-BEAN	I GD	FEN(TIM P	OST) SHORT	RADIUS	내	
0540 6016	DOWNSTREAD	A ANC	HOR TERMI	NAL SECTIO	N N	EA	1
0544 6001	GUARDRAIL	END	TREATMENT	(INSTALL)		EA	2
0552 XXX1	REMOVE AND) INS	TALL PIPE	FENCE AND	GATE	내	
0560 6001	MAILBOX IN	ISTAL	L-S (THG-	POST) TY 1		EA	
0560 6003	MAILBOX IN	ISTAL	L-M (TWG-	POST) TY 1		EA	
	EXI: EXI: RIGI DRI' ROAI CON	ST FI ST U HT OI L BO VEWAY DWAY CRET(CRET(ENCE TILITY F WAY (RO X Y NUMBER WIDENING E RIPRAP DN OF TR 50 25	DW) G (4") AFFIC			
		E	HOREZ ATE PR FC biddi 100% agineer: ARRY ZAMI E. No: BE	ELIMI REVIEV ELIMI DR REVIEV lot for come ng or permi 6 SUE DRA PE 1698	ISION ISION INAR VONLY truction, t purposes, BMITT Date: 2/1	Ý AL 8/201	APPR
		ELL	PR FC biddi 100% agineer: ARRY ZAMI E No: 88 UCC TOPE RE BAIN	ELIMI REVIEW ELIMI DR REVIEW dot for come ng or permit do SUE DRA, PE 1698	ISION ISION INAR VONLY truction, t purposes, SMITT Dote: 2/11 Dote: 2/11	Y AL 8/201	APPR
		ELLP	HOREZ ATE PR FC bidden 100% agineer: ARRY ZAMI ARRY ZAMI E. No: BE DECENTION BALLY 100% 1	ELIMI DR REVIEW for comming or permit of SUE DRA_PE 1698	Parte: 2/11	Y AL 8/201 N/3	6
			HOREZ ATE PR FC bidden 100% mgineer: ARRY ZAMI ARRY ZAMI E. No: BE DEF BATY TOTS Sami 2015 This Texas © 2015 This	ELIMI ELIMI DR REVIEW lot for comming or permin 6 SUE DRA, PE 6998	ISION ISION INAR VONLY truction, t purposes. SMITT Data: 2/11 Data: 2/11 Data: 2/11 Data: 2/11 Data: 2/11 Data: 7.72 BAIN, 5-20 Starting S	AL 8/201 N/5 778216 INC. 778216	<u>APPR</u>
			HOREZ ATE PR FC bidden 100% agineer: ARRY ZAMI ARRY ZAMI E. No: BE Diden 100% Tepre RE BATY Texas 2015 Tex ROAL STA T	SCALE: 1' REV REV ELIMI DR REVIEW for comming or permit 6 SUE DRA, PE 1698 Lockww & New Base Base Commission C	ISION ISION INAR' VONLY truction, t purposes. MITT Data: 2/11 Data: 2/11 Data	×78.68 ×779.78 ×779.79 ×779	APPR
	NO.		HOREZ ATE PR FC bidd 100% agineer: ARRY ZAMI ARRY ZAMI E. No: BE Didd 100% agineer: ARRY ZAMI E. No: BE BAIRY BAIRY BAIRY Corres Co	SCALE: 1 REV REV ELIMI DR REVIEV for comming or permine 6 SUE DRA, PE 698 Lockwi & Newr 1 Fill Construction Constru	ISION ISION INAR VONLY truction, t purposes. MITT Data: 2/11 Data:	×7 AL 8/201 ×7 KNC. KNC. ×7 KNC. KNC. ×7 KNC. K	APPR
	NO.		HOREZ ATE PR FC bidd 100% agineer: ARRY ZAMI ARRY ZAMI E. No: BE Didd 100% agineer: ARRY ZAMI E. No: BE BAIRY Texes RE Toxas © 2015 To ROAL STA 7 OF 9	SCALE: 1 ⁻ REV REV ELIMI DR REVIEW for comming or permine 6 SUE DRA, PE 698 Lockww & New Rev 6 SUE DRA, PE 698 Lockww & New Rev 8 New Rev 100 A COM SEC SECALE: 1 ⁻ Comminue Comminue SECALE: 1 ⁻ Comminue SECALE: 1 ⁻ Comminue SECALE: 1 ⁻ SECALE: 1	ISION ISION INAR VONLY truction, t purposes. MITT Date: 2/11 Date:	Y AL 8/201 N3 TA (NC. 7721/6 (NC. 772) (NC. 772) (NC. 775) (NC.	
IT BID ITE	NO.		HOREZ ATE PR FC bidd 100% agineer: ARRY ZAM ARRY ZAM E. No: BE Didd 100% agineer: ARRY ZAM BAITY FOR E. RE BAITY FOR CAL STA T OF 9	SCALE: 1 ⁻ REV REV ELIMI DR REVIEW fot for comming or permin 6 SUE DRA, PE 6998 Lockww & New & New Market Commission Com	ISION ISION INAR VONLY truction, t purposes. MITT Date: 2/11 Date:	Y AL 8/201 14 INS 14 INS 00 8	АРРЯ АРРЯ Б Сом Сом Сом Сом Сом Сом Сом Сом
IT BID ITE			HOREZ ATE PR FC bidd 100% agineer: ARRY ZAM ARRY ZAM Bidd 100% agineer: ARRY ZAM BUT San FC FC BUT San FC FC BUT San FC FC FC FC FC FC FC FC FC FC	SCALE: 1 ⁻ REV REV ELIMI DR REVIEW fot for comming or permit 6 SUE DRA. PE 1698 Lockww & Newr 1698 DRA. PE 1698 DEAL PE 1698 DE 16988 DE 1698 DE 1698 DE 1698 DE 1698 DE 1698 DE 169	eloo' ISION ISION INAR' V ONLY truction, t purposes. SMITT Data: 2/11 Data: 2/11	Y AL 8/201 14 (NC. 778216 14 (NC. 778216 14 (NC. 778216) (NC. 778216) (NC. 778216) (NC. 778216) (NC. 778) (NC)	APPR APPR 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7

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SH 46



JUN 28 2016

1. SAWCUT TO BE SUBSIDIARY TO THE PERTINENT BID ITEMS. 2. ALL STATIONS, OFFSETS, AND ELEVATIONS SHOWN IN THE WIDENING TABLES ARE REFERENCED FROM SH 46 BASELINE ALIGNMENT.

COUNTY ENGINEER



	ESTIMATED QUANTITIES		215-7-22
ITEM	DESCRIPTION	UNIT	QTY
0100 6002	PREPARING ROW	STA	10.0
0110 6001	EXCAVATION (ROADWAY)	CY	802
0132 6001	EMBANKMENT (FINAL) (ORD COMP) (TY A)	CY	1244
0247 6366	FL 85 (CMP IN PLC) (TY A GR 5) FNL POS	CY	1311
0310 6009	PRIME COAT (MC-30)	GAL	1047
0316 6240	AGGR (TY-PD GR-4 SAC-B)	CY	83
0316 6410	ASPH (AC-15P, AC-20-5TR, AC-20XP, AC10-2TR)	GAL	4494
0316 0001	AGGR (TY-PD GR-3)	CY	68
0341 6064	D-GR HMA TY-D PG 70-22 (LEVEL-UP)	TON	27
0432 6001	RIPRAP (CONC) (4 IN)	CY	69
0432 6045	RIPRAP (MOW STRIP) (4 IN)	CY	74
0530 6004	DRIVEWAYS (CONC)	SY	
0530 6005	DRIVEWAYS (ACP)	5Y	197
0530 6006	DRIVEWAYS (SURF TREAT)	5Y	
0530 6008	TURNOUTS (ACP)	EA	2
0530 6009	TURNOUTS (SURF TREAT)	EA	
0540 6001	MTL W-BEAM GD FEN (TIM POST)	LF	1512
0540 6014	MTL W-BEAN GD FEN (TIM POST) SHORT RADIUS	LF	
0540 6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	
0544 6001	GUARDRAIL END TREATMENT (INSTALL)	EA	2
0552 XXX1	REMOVE AND INSTALL PIPE FENCE AND GATE	LF	55
0560 6001	MAILBOX INSTALL-S (TWG-POST) TY 1	EA	1
0560 6003	MAILBOX INSTALL-M (TWG-POST) TY 1	EA	1





SH46 WIDENING TABLE - LEFT SIDE						
	PROPOS	SAWCU	TLINE			
STATION	OFFSET	ELEV	OFFSET	ELEV		
808+00	37' LT	1390.29	18' LT	1389.47		
808+50	37' LT	1391.12	18' LT	1390.32		
809+00	37' LT	1391.91	16' LT	1391.07		
809+50	37' LT	1392.45	_18' LT	1391.59		
810+00	37' LT	1392.94	18' LT	1392.05		
810+50	37' LT	1393.33	18' LT	1392.44		
811+00	37' LT	1393.54	18' LT	1392.63		
811+50	37' LT	1393.45	18' LT	1392.6		
812+00	37' LT	1393.29	18' LT	1392.46		
812+50	37' LT	1392.96	18' LT	1392.13		
813+00	37' LT	1392.64	18' LT	1391.81		
813+50	37' LT	1392.11	16' LT	1391.25		
814+00	37' LT	1391.27	18' LT	1390,46		
814+50	37' LT	1390.23	18' LT	1389.44		
815+00	37' LT	1389.33	18' LT	1388.45		
815+50	37' LT	1388.09	18' LT	1387.22		
816+00	37' LT	1386.68	18' LT	1385.83		
816+50	37' LT	1385.09	18' LT	1384.27		
817+00	37' LT_	1383.36	18' LT	1382.57		
817+50	37' LT	1381.59	18' LT	1380.74		
818+00	37' LT	1379.65	18' LT	1378.75		

SH46 WIDENING TABLE - RIGHT SIDE						
	SAWCU	TLINE	PROPOS	ED EOP		
STATION	OFFSET	ELEV	OFFSET	ELEV		
808+00	16' RT	1387.92	31' RT	1387.37		
808+50	18' RT	1386.72	31' RT	1388.12		
809+00	18' RT	1389.4	31' RT	1366.78		
809+50	16' RT	1389.9	31' RT	1389.31		
810+00	16' RT	1390.31	31' RT	1389.67		
810+50_	18' RT	1390.68	31' RT	1390.02		
811+00	18' RT	1390.92	31' RT	1390.3		
811+50	18' RT	1390.9	31' RT	1390.26		
812+00	18' RT	1390.76	31' RT	1390,16		
812+50	16' RT	1390.58	31' RT	1390.05		
813+00	18' RT	1390	31' RT	1389.54		
813+50	16' RT	1389, 54	_ 31' RT	1388,99		
814+00	16' RT	1388.85	31' RT	1388.24		
814+50	16' RT	1387.98	31' RT	1387.67		
815+00	16' RT	1386.85	_31' RT_	1386.39		
815+50	18' RT	1385.79	31' RT	1385.35		
816+00	16' RT	1384.37	31' RT	1383.9		
816+50	16' RT	1382.75	31' RT	1382.21		
817+00	16' RT	1381.06	31' RT	1380.52		
817+50	16' RT	1379.2	_31' RT	1378.67		
818+00_	16' RT	1377.17	31' RT	1376.64		

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NOTES

1. SAWCUT TO BE SUBSIDIARY TO THE PERTINENT BID ITEMS.

2. ALL STATIONS, OFFSETS, AND ELEVATIONS SHOWN IN THE WIDENING TABLES ARE REFERENCED FROM SH 46 BASELINE ALIGNMENT.

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	ESTIMATED QUANTITIES		215-7-22
ITEM	DESCRIPTION	UNIT	QTY
0100 6002	PREPARING ROW	STA	10.0
0110 6001	EXCAVATION (ROADWAY)	CY	1417
0132 6001	EMBANKMENT (FINAL) (ORD COMP) (TY A)	CY	1416
0247 6366	FL BS (CMP IN PLC) (TY A GR 5) FNL POS	CY	1259
0310 6009	PRIME COAT (MC-30)	GAL	1067
0316 6240	AGGR (TY-PD GR-4 SAC-8)	CY	84
0316 6410	ASPH (AC-15P, AC-20-5TR, AC-20XP, AC10-2TR)	GAL	4534
0316 XXX1	AGGR (TY-PD GR-3)	CY	69
0341 6064	D-GR HMA TY-D PG 70-22 (LEVEL-UP)	TON	28
0432 6001	RIPRAP (CONC) (4 IN)	CY	60
0432 6045	RIPRAP (HOW STRIP) (4 IN)	CY	12
0530 6004	DRIVEWAYS (CONC)	SY	
0530 6005	DRIVEWAYS (ACP)	SY -	220
0530 6006	DRIVEWAYS (SURF TREAT)	SY	142
0530 6008	TURNOUTS (ACP)	EA '	
0530 6009	TURNOUTS (SURF TREAT)	EA	1
0540 6001	MTL W-BEAN GD FEN (TIM POST)	LF	230
0540 6014	MTL W-BEAM GD FEN (TIM POST) SHORT RADIUS	LF	
0540 6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	
0544 6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1
0552 X0X1	REMOVE AND INSTALL PIPE FENCE AND GATE	LF	
0560 6001	MAILBOX INSTALL-S (TWG-POST) TY 1	EA	1
0560 6003	MAILBOX INSTALL-M (TWG-POST) TY 1	EA	

LEGEND:

EXIST EDGE OF ROADWAY EXIST FENCE EXIST UTILITY RIGHT OF WAY (ROW) MAIL BOX DRIVEWAY NUMBER ROADWAY WIDENING CONCRETE RIPRAP (4") DIRECTION OF TRAFFIC







828+00 18' RT 1339.6 30.23' RT 1340

828+00 34.27' LT 1338.28 18' LT 1338.74

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NOTES:

1. SAWCUT TO BE SUBSIDIARY TO THE PERTI

 ALL STATIONS, OFFSETS, AND ELEVATION WIDENING TABLES ARE REFERENCED FROM ALIGNMENT.

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	ESTIMATED QUANTITIES		215-7-22
ITEM	DESCRIPTION	UNIT	
0100 6002	PREPARING ROW	SIA	10.0
0110 6001	EXCAVATION (HUADWAT)	CT mv	2032
0132 6001	EMBANKMENT (FINAL) (ORD COMPTITIES)		1005
0241 0300	FL BS COMP IN PLC/ (IT A GR S) FMC FUS		1438
0310 6008	PRIME COAT (MC-30)	GAL	87
0316 6410	AGGR(11-TD GR-4 3AC-87	01	4722
0310 0410	ASPH (AC-19F, AC-20-51R, AC-20AF, AC10-21R/	UAL OV	7166
0516 XXX1	AGGR(117-PU GR-3)		12
0341 6064	U-GR HMA (T-U PG (U-22 (LEVEL-UP)		
0432 6001	RIPRAP (CONC) (4 IN)	CT av	
0432 6045	RIPRAP (MOW STRIP) (4 IN)	CT	
0530 6004	DRIVEWAYS (CONC)	51	57
0530 6005	DRIVEWAYS (ACP)	51	125
0530 6006	ORIVEWAYS (SURF TREAT)	SY	104
0530 6008	TURNOUTS (ACP)	EA	
0530 6009	TURNOUTS (SURF TREAT)	EA	1
0540 6001	MTL W-BEAM GD FEN (TIM POST)	내	
0540 6014	NTL W-BEAN GD FEN (TIM POST) SHORT RADIUS		
0540 6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	
0544 6001	GUARDRAIL END TREATMENT (INSTALL)	EA	
0552 XXX1	REMOVE AND INSTALL PIPE FENCE AND GATE	E.	
0560 6001	MAILBOX INSTALL-S (TWG-POST) TY 1	EA	2
0560 6003	WAILBOX INSTALL-M (TWG-POST) TY 1	EA	
	LEGEND:		
	EXIST EDGE OF ROADWAY		
	EXIST FENCE		marthere
	EXIST UTILITY		5° C
	RIGHT OF WAY (ROW)		-
	MAIL BOX		<u>o</u>
	DRIVEWAY NUMBER		AD .
	ROADWAY WIDENING		
	CONCRETE RIPRAP (4")	1.0	*
	DIRECTION OF TRAFFIC	100	
	30 23 0		,
	HORIZ SCALE: 1"=100"		
	NO DATE REVISION		14000
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	FOR REVIEW ONLY		
	bidding or permit purposes.		
	USUBMIT	AL	
	Engineer		
	LARRY ZAMORA, PE		_
	P.E. No: 88696 Date: 2/1	6/201	6
	ION Lockwood, Andrew	NS	
	Lockwood, Andrew & Newnam, Inc.	NS	
	Lockwood, Andrew <u>Rewnam, Inc.</u> TOPE REGISTRATION NO. F-10	NS 	
	Lockwood, Andrew & Newnam, Inc. A ITCA DAILY COMMAN TOPE REGISTRATION NO. F-20 BAIN MEDINA BAIN.	NS 14 [NC.	
	Lockwood, Andrew & Newnam, Inc. A ITCA DAILY COMMAND TOPE AEGISTRATION NO. F-20 BAIN MEDINA BAIN. INGUNAT & SUBTON	NS 14 [VC.	
	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION No. F-20 BAIN MEDINA BAIN, ING ADDIVECTOR BAIN MEDINA BAIN, ING ADDIVECTOR TOTO San Photon Sing Addition TOTO San Addition Taxas	NS 14 [VC. 78816 WW.BMB	I.COM
	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION No. F-20 BAIN MEDINA BAIN, ENGLAGET & SUBTOSIC TOTS SEE Petry. See Astron. The Phone 210-404-7223 Par 210-400-110		I.COM
	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION No. F-20 BAIN MEDINA BAIN, KNUKABET & SUBTONIN Phone 210-404-7223 Par 210-600-110 Texas Department of Tra	NS TA TA TA TA TA TA TA TA TA TA TA TA TA	
	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION No. F-20 BAIN MEDINA BAIN, INCLUSION Son Profile The Pool 200 San Profile Top The Pool 200 San Profile Top The Pool 200 San Profile Top Top San Profile Top Top San Profile Top Top San Profile Top Top San Profile Top		
	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION NO. F-20 BAIN MEDINA BAIN, ENGINEERS & SUMPTON TOTS SAN Prov. San Astronic, Tara Phoger 210-404-7225 PAR 210-400-4100 Texas Department of Tra @ 2015 TROT		i.cox rtation
	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION NO. F-20 BAIN MEDINA BAIN, INCLUSION SUBJECT SUBJECT TOTS SUB FOOT TOTS SUBJECT SUBJECTS TOTS SUBJECTS FAR 201-000-0100 TEXAS Department of Tra @ 2015 TOOT SH 46 SECAMENT D		i.cou rtation
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	Lockwood, Andrew & Newnam, Inc. TOPE AEGISTIATION NO. F-20 BAIN MEDINA PAIN, ENGINEERS & SUBMITURE TOTS SAN Prov. San Antonic, Term TOTS SAN Prov. San Antonic, Term Toxas Department of Tra @ 2015 TOOT SH 46 SEGMENT D ROADWAY LAYOU		
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	Lockwood, Andrew & Newnam, Inc. TEPE AEGISTIATION NO. F-20 BAINY MEDINA PAIN, ENGINEERS & SUBMITION TOTS SAN Prov. San Autonic, Texas TOTS SAN Prov. San Autonic, Texas Totas Department of Trad 2015 TOTT Cards Department of Trad 2015 TOTT SH 46 SEGMENT D ROADWAY LAYOUT STA 818+00 TO STA 828+		i.cox rtation
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	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION NO. F-20 BAIN MEDINA BAIN. ENGINEERS STRATTON DESCRIPTION SOLUTION Phone 210-404-7223 Par 210-400-5180 H Toxas Department of Tra 2015 THOT SH 46 SECAMENT D ROADWAY LAYOUT STA 818+00 TO STA 828+ SHEET 6 OF 9 SH: 10 MODET		i.cox rtation
NT 810 17	Lockwood, Andrew & Newnam, Inc. * If a DAVY COMM TOPE REGISTRATION No. F-20 BAIN MEDINA BAIN. ENVIRONMENT STATION No. F-20 BAIN MEDINA BAIN. ENVIRONMENT A BAIN. ENVIRONMENT A BAIN. Phose 210-404-7223 Part 210-400-6180 H Toxas Department of Tra @ 2015 TAOT SH 46 SECMENT D ROADWAY LAYOUT STA 818+00 TO STA 828+ SHEET 6 OF 9 BR. MC. MOMENT		ntation HELT NO. 228
NT 810 IT	Lockwood, Andrew & Newnam, Inc. * Newnam, Inc. * Tope Accistration No. F-20 BALIN MEDINA BAIN. ENGLISHED STATION No. F-20 BALIN MEDINA BAIN. ENGLISHE STATION NO. F-20 BAIN. ENGLISHE STATION NO. F-20 BAIN. ENGLISHE STATION NO. F-20 BAIN. ENGLISHE STATION NO. F-20 BAIN. ENGLISHE STATION NO. F-20 ENGLISHE STATION NO. F-20 BAIN. ENGLISHE STATION NO. F-20 BAIN. ENG	NS (INC. 77510 14 14 14 14 14 14 14 14 14 14	ntation Herr Ho. 228
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NT BID IT SHOWN IN 46 BASEL	Lockwood, Andrew & Newnam, Inc. TOPE REGISTRATION No. F-20 BAIN MEDINA BAIN ENGINEED A STOTUTO Phone 210-00-7223 Par: 210-00-0180 TOXOS Department of Tro 2015 THOU TOXOS Department of Tro 2015 THOU SH 46 SEGMENT D ROADWAY LAYOU STA 818+00 TO STA 828+ SHEET 6 OF 9 SHEET 6 OF 9 SHE		HEET NO. 228



COUNTY ENGINEER

2. ALL STATIONS, OFFSETS, AND ELEVATIC WIDENING TABLES ARE REFERENCED FROM

ALIGNMENT.

		TIMATER	OLIANT	TTEE		216-7-00
TTEM	ES	ULC DEC	CRIPT	ION	UNIT	0TY
0100 6002	PREPARING A	ROW		2011	STA	10.0
0110 6001	EXCAVATION	(ROADWA)	Y)		CY	1106
0132 6001	EMBANKMENT	(FINAL)	(ORD C	OMP) (TY A)	CY	1797
0247 6366	FL BS (CMP 1	(N PLC) (T	TY A G	R 5) FNL POS	CY	1070
0310 6009	PRIME COAT	(MC-30)			GAL	897
0316 6240	AGGR (TY-PD	GR-4 SAC	c-8)		CY	78
0316 6410	ASPH (AC-15	P, AC-20-	STR, A	C-20XP, AC10-2TR)	GAL	4194
0316 XXX1	AGGR (TY-PD	GR-3)			CY	64
0341 6064	O-GR HMA TI	-D PG 70)-22 (LEVEL-UP)	TON	32
0432 6001	RIPRAP (CO	CJ (4 INJ				8
0530 6004	DETVEWAYS	(CONC)	(4 10)		CT CY	34
0530 6005	DRIVEWAYS	(ACP)			SY	122
0530 6006	ORIVEWAYS	SURF TRE	EAT)		SY	260
0530 6008	TURNOUTS (ACP)			EA	
0530 6009	TURNOUTS (SURF TREA	AT)		EA	1
0540 6001	MTL W-BEAM	GD FEN (тік р	OST)	LF.	626
0540 6014	MTL W-BEAM	GD FEN (1	ТИ РО	ST) SHORT RADIUS	나무	
0540 6016	DOWNSTREAM	ANCHOR 1	TERMIN	IAL SECTION	EA	2
0544 6001	DEMONIE AND	LNU TREAT	DIRENT	(INSTALL)	EA	Z
0550 5001	MATI DOV THE	TALL -C	THE-	AND UALE		225
0560 6001	MATI BOY THE	STALL-M	(TWC-5		EA	1
	Maria Gooder aller					
	LEGE	END:				
	EXIS	T EDGE (OF RC	ADWAY	-	
	EXIS	T FENCE			X	
	EXIS	T OF WAY	11 Y (RO	haf b		5.6
	MATL	BOX	1 110			0
	DRIV	EWAY NU	MBER		(N
	ROAD	WAY WID	ENING	;		Ě
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	<u>NO.</u>	DATE				
	NO.		PRI		Y	
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	NO.			REVISION ELIMINAR R REVIEW ONLY of for construction, to or permit purposes	Y	
				REVISION ELIMINAR R REVIEW ONLY of for construction, of or permit purposes SI IBA/ITT	Y	
				REVISION ELIMINAR R REVIEW ONLY of for construction, for permit purposes SUBMITT	Y	
			PRI FO bidder	REVISION ELIMINAR R REVIEW ONLY of for construction, for construction, g or permit purposes. SUBMITT RA PE	Y	
		DATE 10 Engineer LARRY		REVISION ELIMINAR R REVIEW ONLY of for construction, sg or permit purposes SUBMITT RA PE 698 Dots: 2/1	Y AL 6/201	6
		1 O Engineer		REVISION ELIMINAR R REVIEW ONLY of for construction, ig or permit purposes SUBMITT RA PE 696 Date: 2/1	Y AL 6/201	6
		1 O Enginee LARRY P.E. No	PRI FO Nu biddefr 00%	REVISION ELIMINAR R REVIEW ONLY of for construction, g or permit purposes SUBMITT RA, PE 596 Date: 2/1	Y FAL 8/201	6
		DATE 10 Engineer LARRY P.E. No	PRI FO biddffr 00% Tr. ZAMO	REVISION ELIMINAR R REVIEW ONLY of for construction, go or permit purposed SUBMIT RA PE 698 Dots: 2/1	Y AL 8/201	6
		DATE 10 Enginee LARRY P.E. No		REVISION ELIMINAR R REVIEW ONLY of for construction, of or permit purposes SUBMIT RA, PE 698 Data: 2/1 Lockwood, Andre & Newmarn, Inc.	Y AL 6/201	6
		DATE 10 Enginee LARRY P.E. No		REVISION ELIMINAR R REVIEW ONLY of for construction, of or permit purposes SUBMIT RA, PE 596 Data: 2/1 Lockwood, Andre & Newmam, Inc.	Y AL 6/201	6
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				REVISION ELIMINAR ELIMINAR R REVIEW ONLY of for construction, ng or permit purposes SUBMIT RA PE 596 Data: 2/1 Lockwood, Andre 8 Newman, Inc. 100 Data: 2/1 ICON D	6/201	6
		DATE 10 Engineer LARRY P.E. No Tor Tor		REVISION REVISION ELIMINAR R REVIEW ONLY of for construction, ng or permit purposes. SUBMIT RA PE 596 Data: 2/1 Lockwood, Andre 8. Newman, Inc. 8. Newman, Inc. 100 A DAVE COMP 110	6/201	6 LCOM
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				REVISION ELIMINAR R REVIEW ONLY of for construction, ng or permit purposes. SUBMIT RA PE 596 Data: 2/1 Lockwood, Andre 8 Newman, Inc. 8 Newman, Inc. 100 A DAVE COMP 100 A DAVE COMP	6/201	6 <i>appr</i>
				REVISION ELIMINAR R REVIEW ONLY of for construction, ng or permit purposes. SUBMIT RA PE 596 Date: 2/1 Lockwood, Andre 8 Newman, Inc. 10 Date: 2/1 RA PE 596 Date: 2/1 RA PE 596 Date: 2/1 RA PE 596 Date: 2/1 Date: 2	Y 6/201 wv5 FAL 6/201 Wv5 FAL 6/201 FAL 6/201 FAL 6/201	APPR
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	SHEET			REVISION ELIMINAR R REVIEW ONLY of for construction, ng or permit purposes. SUBMIT RA PE 698 Data: 2/1 RA PE 698 Data: 2/1 RA PE 698 Data: 2/1 RA PE 698 Data: 2/1 RA PE 698 Data: 2/1 Data: 2/1	Y AL 6/201 W/5 FNC. 7/1/0 fnspor	APPR
	NO.	DATE 10 Engineer LARRY P.E. No P.E. No Ta Phanas: 200 Ta Ta Ta Ta Ta Ta Ta Ta		REVISION ELIMINAR R REVIEW ONLY of for construction, ng or permit purposes. SUBMIT RA PE 598 Dots: 2/1 RA PE 598 DOTS: 2/1	Y 6/201 W/5 6/201 W/5 7/2516	
4T 6ID IT!				REVISION REVISION ELIMINAR R REVIEW ONLY of for construction, g or permit purposes. SUBMIT RA PE 598 Data: 2/1 RA PE 598 DATA 598 DAT	Y AL 6/201 wv5 6/201 7/201 8/201 7/201 8/201 7/201 8/201	APPR
NT BID ITI 5HOWN IN '				REVISION ELIMINAR ELIMINAR R REVIEW ONLY af for construction, by or permit purposes b SUBMIT RA, PE 596 Data: 2/1 Lockwood, Andre 8 Newman, Inc. 100 Data: 2/1 RA, PE 596 Data: 2/1 RA, PE 597 DATA 597 DA	Y AL 6/201 ws fraction fracti	APPR

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SH 46



846+00 27.74' LT 1301.41 18' LT 1301.66 846+50 27.74' LT 1299.97 18' LT 1300.18 847+00 27.73' LT 1298.46 18' LT 1298.64

847+50 27.72' LT 1296.56 18' LT 1296.77 848+00 27.01' LT 1294.61 18' LT 1294.87

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NOTES:

845+50 18' RT 1303.14 25.9' RT 1302.9 846+00 18' RT 1301.58 25.07' RT 1301.37

846+50 18' RT 1300. 04 24. 23' RT 1299. 86
 847+50
 18' RT
 1298.51
 23.40' RT
 1298.41

 847+50
 18' RT
 1296.66
 22.56' RT
 1296.56

 848+00
 18' RT
 1294.93
 21.73' RT
 1294.86

1. SAWCUT TO BE SUBSIDIARY TO THE PERTINENT BID ITEMS.

2. ALL STATIONS, OFFSETS, AND ELEVATIONS SHOWN IN THE WIDENING TABLES ARE REFERENCED FROM SH 46 BASELINE ALIGNMENT.

ESTIMATED QUANTITIES		215-7-22
ITEM DESCRIPTION	UNIT	QTY
0100 6002 PREPARING ROW	STA	10.0
0110 GODI EXCAVATION (ROADWAY)	CY	1036
0132 6001 EMBANKMENT (FINAL) (ORD COMP) (TY A)	CY	692
024T 6366 FL BS (CMP IN PLC) (TY A GR 5) FNL POS	CY	896
0310 6009 PRIME COAT (MC-30)	GAL	739
0316 6240 AGGR (TY-PD GR-4 SAC-B)	CY	53
0316 6410 ASPH (AC-15P, AC-20-5TR, AC-20XP, AC10-2TR)	GAL	2638
0316 XXX1 AGGR (TY-PD GR-3)	CY	43
0341 6064 D-GR HMA TY-D PG 70-22 (LEVEL-UP)	TON	36
0432 6001 RIPRAP (CONC) (4 IN)	CY	- 31
0432 6045 RIPRAP (MOW STRIP) (4 IN)	CY	34
0530 6004 DRIVEWAYS (CONC)	SY	
0530 GODS DRIVEWAYS (ACP)	5Y	209
0530 6006 DRIVEWAYS (SURF TREAT)	SY	
0530 6008 TURNOUTS (ACP)	EA	
0530 6009 TURNOUTS (SURF TREAT)	EA	
0540 6001 MTL W-BEAN GD FEN (TIM POST)	LF	708
0540 6014 MTL W-BEAM GD FEN (TIM POST) SHORT RADIUS	LF	127.20
0540 6016 DOWNSTREAM ANCHOR TERMINAL SECTION	EA	2
0544 6001 GUARDRAIL END TREATMENT (INSTALL)	EA	1
0552 XXX1 REMOVE AND INSTALL PIPE FENCE AND GATE	LF	1.000
0560 6001 MAILBOX INSTALL-S (TWG-POST) TY 1	EA	2
0560 6003 MAILBOX INSTALL-M (TWG-POST) TY 1	EA	









SH46 WIDENING TABLE - LEFT SIDE					
	PROPOS	ED EOP	SAWCU		
STATION	OFFSET	ELEV	OFFSET	ELEV	
848+00	27.01' LT	1294.61	18' LT	1294.87	
848+50	25.59' LT	1292.77	18' LT	1293.02	
849+00	24.17' LT	1291.01	18' LT	1291.17	
849+50	22.74' LT	1289.12	18' LT	1289.28	
850+00	21.32' LT	1287.58	18' LT	1287.67	
850+50	20. 44' LT	1286.21	18' LT	1286.25	
851+00	20.36' LT	1284.57	18' LT	1284.63	
851+50	20.29' LT	1283.33	18' LT	1283.39	

SH46 WIDENING TABLE - RIGHT SIDE						
	SAWCUT LINE		PROPOS	ED EOP		
STATION	OFFSET	ELEV	OFFSET	ELEV		
848+00	_16' RT	1294.88	21.73' RT	1294,86		
848+50	18' RT	1293.12	20.89' RT	1293.04		
849+00	18' RT	1291.24	20.06' RT	1291,19		
849+50	18' RT	1289.34	19.26' RT	1289.31		
850+00	18' RT	1287.56	19.26' RT	1287.54		
850+50	18' RT	1285.87	19.26' RT	1285.85		
851+00	18' RT	1284.57	19.26' RT	1284.54		
851+50	18' RT	1283.35	19.26' RT	1283.31		

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NOTES

1. SAWCUT TO BE SUBSIDIARY TO THE PERTIN

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	E211M					
ITEM		DESCRIPT	ION	100	UNIT	QTY
0100 6002	PREPARING ROW				STA	4.0
0110 6001	EXCAVATION (RO	ADWAY)			CY	200
0172 5001	ENGANIVAENT /ET	Nal 1 /OBD /			my I	110
0132 6001	ENDANKMENT (FI	NALT OND		<u>v</u>		210
0247 6365	FL BS (CMP IN PI	LC) (TY A G	R 51 FNL P	25	CY	140
0310 6009	PRIME COAT INC	-30)			GAL	101
0316 6240	AGGR (TY-PD GR-	4 SAC-B)			CY	21
OTLE SALO	ACON (AC-150 AC		C-20VP 40	10-279)	CAL	1108
0310 0410	ASPHICAG-ISP, AG	-20-316, A	C-ZUAF, AU	IV-GIN	GAL	1100
0316 XXX1	AGGR (TY-PD GR-	3)	22.5		CY	17
0341 6064	D-GR HMA TY-D I	PG 70-22 (LEVEL-UP)	100.00	TON	15
0432 6001	RIPRAP (CONC) (4 IN)			CY	
0470 6045	DIDDAD (NOW CT	070) /A THI			CY.	
0432 6043	NIFNAP (MUN 3)	N3F7 (4 100	,			g
0530 6004	DRIVEWAYS (CON	C)			51	
0530 6005	DRIVEWAYS (ACP	3			SY	96
0530 6006	DRIVEWAYS (SUR	F TREAT)			5Y	
0570 6000	THRAFTE (ACR)				EA	f
0330 8008	TURMOUTS (ACF)					
0530 6009	TURHOUTS (SURF	TREAT)			EA	
0540 6001	MTL W-BEAM CO	FEN (TIM P	POST)		LF	126
0540 6014	MTL W-BEAM GD		ST) SHORT	RADIUS	LF	
0540 0014			ILL CROTH	to t		
0540 6016	UOWNSTREAM ANC	NON TERMI	NAL SECTIO	AN I	EA	
0544 6001	GUARDRAIL END	TREATMENT	(INSTALL)	1000	EA	1
0552 XXX1	REMOVE AND INS	TALL PIPE	FENCE AND	GATE	LF	
0550 5001	AATI BOY THETAL	Las (THCal	POST) TY 1		EA	
0300 0001	MALEDON ANDIAL	a			-	
0560 6003	MAILBOX INSTAL	L-M (TWG-	POST) TY 1		EA	T
	NO. D	PR	CALE: 1 SCALE: 1 REV ELIM DR REVIE for for cont	-1007 TISION INAR W ONLY druction,		
	E	100% Engineer: ARRY ZAM(6 SUE ora, pe	at purposes.	AL.	
		100% ingineer: ARRY ZAM P.E. No: 88 I.G. TOPE RE BAIN	6 SUE	Dote: 2/16	AL. 5/201	6
	E L	100% ingineer: ARRY ZAMI 'E No: 8E ION: 8E ION	Lockw Lockw Lockw Lockw Lockw Lockw New Lockw Lockw Lockw New Lockw Lochw	Dota: 2/16 Dota:	AL.	
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		100% ingineer: ARRY ZAM ARRY ZAM TE No: BE EALING TOPE NE: BALING TOPE NE: BALING TOPE NE: BALING TOTA SA 2015 TH ROAL STA 646	Lockw Lockw Lockw Lockw Lockw Lockw A New Lockw A New A	Dote: 2/16 Dote: 2/16	× 5/201 × × × × × × × × × × × × ×	6
		100% ARRY ZAM ARRY ZAM ARRY ZAM FE No: BE EALING TOPE NE: BALING TOPE NE: BALING TOPE NE: BALING TOPE NE: BALING TOPE NE: BALING TOPE NE: BALING STA 646 OF 9	Lockw <u>A New</u> <u>A Ne</u>	Dota: 2/16 Dota: 7/16 Dota: 7/16	AL.	
	SHEET 9	100% ARRY ZAM ARRY ZAM ARRY ZAM TE No: 88 TOPE NE: BAIN TOPE NE: BAIN	Lockw A New A	Dote: 2/16 Dote: 7 Dote:	AL. 3/201 VS TS 5. 64	6 LCOM Tation
ENT BID ITE		100% ingineer: ARRY ZAM PE No: BE ION TOPE NE: BALIN TOPS Sea TOPS S	Lockwe A New A	Dote: 2/10 Dote: 7-20 Dote: 7-20	AL. 3/201 vs TVC. 782/65 5.64	6 rtation
ENT BID ITE	SHEET 9 SHEET 9 SHEET 9 SHEET 9	100% ingineer: ARRY ZAM PE No: BE ION: BE I	Lockw Lockw Lockw Lockw New Lockw New A New A New	Dota: 2/10 Dota: 2/10	AL. 8/201 14 17 17 17 17 17 17 17 17 17 17	<u>в</u> в.сом rtation наст но. 231
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ALL STATIONS, OFFSETS, AND ELEVATIONS WIDENING TABLES ARE REFERENCED FROM S ALIGNMENT.

Drainage Area ID	A₀ Drainage Area (Ac)	A _t Impervious Cover (Ac)	Pervious Cover Area (Ac)	Swale Slope (%)	Side Slopes (h:v)	Design Depth (ft)	Swale Width (ft)	Calc. Flow (cfs)	Calc. Vel. (fps)	Reqir Swal Length
C3-1	0.55	0.32	0.23	1.4	3:1	0.33	2.0	0.34	0.42	126

Total Load Remo

SH 46 VFS Design Calculations Design Method: TCEQ Technical Guidance Manual

SH 46 Grassy Swale Design Calculations Design Method: TCEQ Technical Guidance Manual

		Ac	A ₁	Pervious		r S
	Drainage	Drainage	Impervious	Cover	Loc	bd
	Area ID	Area (Ac)	Cover (Ac)	Area (Ac)	Remo	ved
	C3-2	0.24	0.17	0.07	166	Ibs
	C3-3	0.16	0.11	0.05	108	ibs
	D1-1	0.34	0.20	0.14	196	lbs
	D2-1	0.26	0.19	0.07	185	lbs
	D2-2	0.26	0.19	0.07	185	Ibs
	D2-3	0.26	0.19	0.07	185	lbs
	D3-1	0.09	0.08	0.01	78	lbs
	D3-2	0.17	0.15	0.02	146	lbs
	D4-1	1.17	0.99	0.18	964	lbs
	D4-2	1.99	1.39	0.60	1358	Ibs
	D5-1	0.25	0.15	0.10	147	lbs
		Total	Load Remove	d from VFS =	3,718	ibs
		Toto	al Lood Remov	ed from GS =	259	lbs
s,				ad Removed =	3 077	lbs
					J, 517	105
	RECEIVED		Required Lo	ad Kemoval =	5,510	IDS
	.ILIN 2 8 2016				+ 467	lbs

COUNTY ENGINEER

eqired Swale gth (ft)	Meet: Criter (Y/N	s ia)	L Rei	L _R TSS .oad noved			
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Removed	from G	S =	25	9 Ibs	6		
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÷.							
		NO. D/	TE	REV	ISION		APPR
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		Phane	BAIN 7073 54	I MEDINA NGINEERS & TBPE F- Pedro, San (223 Fair: 819	BAIN, I. SURVEYORS 001712 Intenia, Tesse. -490-5120 M	NC. TREIS	
		7	C ZOIA 1	Departme	ntof Troi	nsportal	lon
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Photoe	BAIN 7073 Sea 210-194-72	MEDINA IGINEERS & Prdru, San / 23 Faz: 810	BAIN, I SURVEYORS 001712 Interio, Terme, -499-5125 Pr	NC. 78614 FR.BHBLCOM
7	e <i>Texos</i> : © 2014 Tel	Departme ¹⁰¹	nt of Tra	nsportation
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	NTRIB 628+	UTING 68 TO	ZONE STA	PLAN 630+00
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40+00 650+00 6 SH 46-Ó 100 Jer \leftarrow ----Υ. Ŕ S1 ST 645/00 650 LINE /00 L INE CI1((****** MATCH MATCH END CONSTRUCTION SEGMENT C CSJ: 0215-07-022 STA.658+80.00 650+00 & SH 46-1111 ST ST INE •00 TCH MA RECEIVED JUN 28 2016

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COUNTY ENGINEER







	A. GENERAL SITE DATA	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	1. MAINTENANCE:
2	1. <u>PROJECT LIMITS</u> : Segment D - Station 773-60 to Station 851-76	shown on plan sheats are to be considered "proposed" unless/until Install date is shown. BMPs are to reduce sediments from road construction activities.	necessary, h days after th
5: 29: 0	2. <u>PROJECT_SITE_MAPS:</u> • Project Latitude29.806236* Project Longitude98.5/0267*	1. <u>SOIL STABILIZATION PRACTICES</u> : (Select T = Temporary or P = Permanent, as applicable)	equipment. maintenance
C.	Project Location Mop: Shown on Title Sheet Project Location Mop: Shown on Title Sheet Project Location Mop: Shown on Drainage Area Maps (Sheet 282) Approx Shown on Drainage Area Maps (Sheet 282)	P SEEDING PRESERVATION OF NATURAL RESOURCES	construction days unless
	Sections (Sheets 17 & 18) * Major Controls and Jordians of Stabilization Practices, Shown on SW3P, Sheets (Sheets 358-372)	BUFFER ZONES _P_RIGID CHANNEL LINER PLANTING _P_SOIL RETENTION BLANKET ROMPOST_MUMICATIONED_TOREOT	2. INSPECTION:
	 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 (Sheets 289-291) 	SODDING OTHER: (Specify Practice)	For areas of materials st
0	3. PROJECT DESCRIPTION: WIDEN ROADWAY TO PROVIDE PASSING LANES	2. <u>SIRUCIUMAL PRACTICES:</u> (Select I = Temporary or P = Permanent, as applicable) 	personnel pro at least once
2/16/2	* Joint-bid utilities are not part of this SW3P	T ROCK FILTER DAMS	for each insp following the
SUL		DIVERSION, INTERCEPTOR, OR PERIMETER DIKES DIVERSION, INTERCEPTOR, OR PERIMETER SWALES DIVERSION DIKE AND SWALE COMBINATIONS	
utes. t section the fro	4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:	PIPE SLOPE DRAINS PAVED FLUMES	
t attrit ad Jus t reloco	Install controls down-slope of work area and initiate inspection and maintenance activities. Beals obseed construction with interim stabilization practices. Adjust eracion and radimentation	T ROCK BEDDING AT CONSTRUCTION EXIT	3. WASTE MATERIALS
tch tex a and do no	controls during construction to meet requirements and changing conditions and as directed/ approved by the Engineer.	SEDIMENT TRAPS SEDIMENT BASINS	or originating
ht - ma a, fenc illy bu	3. Major soli disturbing activities may include but are not limited to: right-of-way preparation, cut	STORM INLET SEDIMENT TRAP STONE OUTLET STRUCTURES CURRS AND GUITERS	regulation and non-hazardous
r welg sactlar eadabl	and/or fill to improve roadway profile, final grading and placement of topsoll and the following (if marked):	STORM SEWERS	sites, stockpl that may enter
size c bered and i	X Placement of road base	OTHER: (Specify Practice)	wetland, wate shall be const
style. a num tioning	<u>X</u> Upgrading ar replacing culverts or bridges Temporary detour road(s) Other	3. <u>STORM WATER MANAGEMENT:</u> The proposed facility was designed in consideration of hydraulic design standards to convey	4. OFFSITE VEHICLE
or Foni ded for propou		stormwater in a manner that is protective of public safety and property. The control of erasion from the facility is inherent to the design. Additional factors affecting post-construction	Off-site vehicl sediments an
esign sec ior	5. EXISTING AND PROPOSED CONDITIONS: Description of existing vegetative gives: (Provide type and description of vegetative game)	stormwater at the project location include: (mark all that apply) <u>X</u> Existing or new vegetation provides natural filtration.	5. OTHER:
sheet D space s nec osition.	Percentage of existing vegetative cover: (Provide percentage)	X The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.	See the EPIC
ilgner: alter : flown a stive p	Thick or unitormity established Thin and Patchy None or minimal cover	<u>X</u> Project includes permanent sedimentation controls (other than grass). Velocities do not require dissipation devices.	
To Des Do not If addi r's reli	Description of soils: Clayey Gravel	Velocity-dissipation devices included in the design. Other :	
Note 2.	Site runoff coefficient (pre-construction): 0.79 Site runoff coefficient (post-construction): 0.82		
	6. <u>RECEIVING WATERS</u> :	4. NON-STORM WATER DISCHARGES:	
	A classified stream does not pass through project. A classified stream passes through project. Name Segment Number	I. Discharges from fire fighting activities and/or fire hydrant flushings.	
	Name of receiving waters that will receive discharges from disturbed areas of the project:	2. Venicle, external building, and pavement wash water where detergents and soaps are not used and where splits or leaks of taxic or hazardous materials have not occurred (unless all splited material has been removed).	
1*0. dgn	Site is in a Municipal Separate Storm Sewer System (MS4).	3. Plain water used to control dust. 4. Plain water origination from patable water sources	
03 ± Seg	MS4 Operator (name):	5. Uncontaminated groundwater, spring water or accumulated stormwater. 6. Foundation or footing drains where flows are not contaminated with process	
d£ws/df		materials such as solvents. 7. Other:	
CW2/2al		Concrete truck wash water discharges on the site should be prohibited or minimized. If allowed	
ing Lar		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 wash-out locations	
9055	RECEIVED	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	
SH 46	JUN 282016	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.	
373.01		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 Conter of 1,800-424,8803	Signature of Period
T: \C-			REVISION DATE: 10.

C. OTHER REQUIREMENTS & PRACTICES

and sediment controls shall be maintained in good working order. If a repair is t shall be performed before the next anticipated storm event but no later than 7 calendar the surrounding exposed ground has dried sufficiently to prevent further damage from If maintenance prior to the next anticipated storm event is impracticable,

must be scheduled and accomplished as soon as practicable. Disturbed areas on which activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar they are scheduled to and do resume within 21 calendar days. The areas adjacent to drainageways shall have priority followed by protecting storm sewer inlets.

the construction site that have not been finally stabilized, areas used for storage of tructural control measures, and locations where vehicles enter or exit the site, wided by the permittee and familiar with the SW3P must inspect disturbed areas every seven (7) calendar days. An inspection and Maintenance Report shall be prepared pection and the controls shall be revised on the SW3P within seven (7) calendar days Inspection.

dous municipal waste materials such as litter, rubbish, trash and garbage located on from the project shall be collected and stored in a securely lidded metal dumpster, the Contractor. The dumpster shall be emptied as necessary or as required by local nd the trash shall be hauled to a permitted disposal facility. The burying of is municipal waste on the project shall not be permitted. Construction material waste olles and haul roads shall be constructed to minimize and control the amount of sediment receiving waters. Construction material waste siles shall not be located in any er body or stream bed. Construction staging areas and vehicle maintenance areas tructed in a manner to minimize the runoff of pollutants.

TRACKING:

cle tracking of sediments and the generation of dust must be minimized. Excess road shall be removed on a regular basis as directed/approved by the Engineer.

sheet for additional environmental information.



	BAIN MEDINA BAIN, INC. ENGINEERS & SURVEYORS TBPS F-001712 7073 San Pedro, San Actonio, Texas, 78218 Phone: 210-494-7223 Fax: 210-490-5120 WW.BMBLCOM						
	© 2012 Texas Department of Transport						
	SH 46 SEGMENT D						
	STORM WATER POLLUTION PREVENTION PLAN (SW3F						
	FED. RD. 01V+140+	FEI	FEDERAL AID PROJECT NO.				
	6						
0.0	STATE	DISTRICT	COUNTY				
, r.t.	TEXAS	SAT	KENDALL	EVEET			
	CONTROL	SECTION	10B	110.			
0/12	0215	06	037, ETC	367			



	ESTIMATED QUANTITIES		215-7-22
ITEM	DESCRIPTION	UNIT	OTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	1725
0164 6035	ORILL SEEDING (PERM) (RURAL) (CLAY)	SY	1725
0164 6041	DRILL SEEDING (TEMP) (WARM)	SY	1725
0164 6043	DRILL SEEDING (TEMP) (COOL)	SY	1725
0166 6002	FERTILIZER	TON	0,1
0168 6001	VEGETATIVE WATERING	MG	26.9
0169 6007	SOIL RETENTION BLANKETS (CL 2) (TY G)	SY	1511
0506 6005	ROCK_FILTER_DAMS_(INSTALL) (TY 5)	LF	
0506 6011	ROCK FILTER DAMS (REMOVE)	LE	
0506 6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	120
0506 6024	CONSTRUCTION EXITS (REMOVE)	5Y	120
0506 6038	TEMPORARY SEDIMENT CONTROL FENCE INSTLL	LF	
0506 6039	TEMPORARY SEDIMENT CONTROL FENCE REMOVE	LF	
0506 6042	BIOGRD EROSN CONT LOGS (18" DIA) INSTALL	LF	72
0506 6043	BIODEGRADBLE EROSION CONTROL LOGS REMOV	LE	72





HAY MULCH SEED (TEMP)		ST/
CONTROL AND TOPSOIL	SHEET 1 OF	5
I RURALI (GLATI	510: SS.	

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SHEET 1	0 <u>F 5</u>					
5FV: 58	PROJECT			SHEET NO.		
				368		
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CONT.	SECT.	JC8	HICHNAY H	ė,		
0215	06	037, ETC	SH 46			



2/16/2016

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.01 SH 46 Possing Lanes/SW3P/SH460-SW3P02.dgn

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ITEM DESCRIPTION UNIT QTY 0160 6003 FURNISHING AND PLACING TOPSOIL (4") SY 3503	
0160 6003 FURNISHING AND PLACING TOPSOIL (4") SY 360	
	3
D164 6035 DRILL SEEDING (PERM) (RURAL) (CLAY) SY 3603	3
0164 6041 DRILL SEEDING (TEMP) (WARM) SY 360	3
0164 6043 DRILL SEEDING (TEMP) (COOL) SY 360	3
0166 6002 FERTILIZER TON 0.2	
0168 6001 VEGETATIVE WATERING MG 56.2	2
0169 6007 SOIL RETENTION BLANKETS (CL 2) (TY 6) 5Y 1200	00
0506 6005 ROCK FILTER DAMS (INSTALL) (TY 5)	
0506 6011 ROCK FILTER DAMS (REMOVE) LF 50	
0506 6020 CONSTRUCTION EXITS (INSTALL) (TY 1) 5Y	
0506 6024 CONSTRUCTION EXITS (REMOVE) SY	
0506 6038 TEMPORARY SEDIMENT CONTROL FENCE INSTLL LF 600)
0506 6039 TEMPORARY SEDIMENT CONTROL FENCE REMOVE LF 600	
0506 6042 BIOGRD EROSN CONT LOGS (18" DIA) INSTALL LF 74	
0506 6043 BIODEGRADBLE EROSION CONTROL LOGS REMOV	





SH 46

0215 06 037, ETC



COUNTY ENGINEER

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ITEM		DESCR	RIPTION			UNIT	QTY
0160 6003	FURNISHING AN	2 PLACING	<u>TOPSOIL</u>	(4")		<u>SY</u>	5031
0164 6041	UNILL SEEDING	(TEMP) (HURAL) {((LAY)		<u>SY</u>	5031
0164 6043	DRILL SEEDING	(TEMP) (T	YARM)		+	<u>- 5Y</u>	5031
0166 6002	FERTILIZER	I FEMELAL	JULI.				0 2
0168 6001	VEGETATIVE WATERING						78.5
0169 6007	SOIL RETENTION	BLANKET	S (CL 2)	(TY G)		SY	2267
0506 6005	ROCK FILTER DA	MS (INST	ALL) (TY	5)		LE	10
0506 6011	ROCK FILTER DA	MS_(REMO	VE)			LE	10
0506 6020	CONSTRUCTION E	XITS (IN	ISTALL) (TY_1)		SY_	120
0506 6024	CONSTRUCTION E	XITS (RE	MOVE)			<u>5Y</u>	120
0506 6038	TEMPORARY SEDI	MENT CON	TROL FEN	CE INSTL	<u></u>	LE	440
0506 6042	TEMPORARY SED	MENT CON	TROL FEN	CE REMOV	<u> </u>	LE	440
0506 6043	BIODECRAORIE E	ONT LOUS	ONTROL I	OCE DEVO	V		56
7		LEGEND SEDIMEN ROCK FI BIODEGR CONTROL FLOW DI DIRECTI TOPSOIL (PERM)/ TOPSOIL	E T CONTRO LTER DAM ADABLE E LOG RECTION ON OF TR DRILL V DRILL RETENTIO	AFFIC SEED N BLANKE			
			50	0		10	0
5 OF STRAW/H/ HAY MULCH 55 N CONTROL AND A) (RURAL) (CL/ DL. R SEED SHALL OR ITEM 164, OR AS DIRE(AY MULCH EED (TEMP) D TOPSOIL AY) BE CTED	NO. D	HORIZ S ATE PR FC biddi 100%	ELIM ELIM DR REVIEN Not for cons for co	IDO ISION INAR WONLY truction, it purposes SMIT J, PE 2/1 Date	Y 5. 6/201	APPR
S OF STRAW/HAY HAY MULCH SE A) (RURAL) (CLA A) (RURAL) (CLA COR ITEM 164, OR AS D]REC	AY MULCH EED (TEMP) D TOPSOIL AY) BE CTED	NO. D. EL Phone Phone SHEET 3 SHEET 3	HORIZ S ATE PR FC Biddi 100% 100% DULLN E. No: 63 BAIN SE SW STA BC OF 5	ELIM REVIEW CONSTRUCTION CO	IDO' ISION INAR WONLY truction, it purposes SMIT J, PE 2/1 Date BAIIN SUPPOSE ISIO STA 825 STA 825	1/NC. 1/	АРРЯ АРРА АРРА
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	ESTIMATED QUANTITIES						
ITEM	DESCRIPTION	UNIT	QTY				
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	5100				
0164 6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	5100				
0164 6041	DRILL SEEDING (TEMP) (WARM)	SY	5100				
0164 6043	DRILL SEEDING (TEMP) (COOL)	SY	5100				
0166 6002	FERTILIZER	TON	0.2				
0168 6001	VEGETATIVE WATERING	MG	79.6				
0169 6007	SOIL RETENTION BLANKETS (CL 2) (TY G)	5Y	1452				
0506 6005	ROCK FILTER DAMS (INSTALL) (TY 5)	LF	40				
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	40				
0506 6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY					
0506 6024	CONSTRUCTION EXITS (REMOVE)	SY					
0506 6038	TEMPORARY SEDIMENT CONTROL FENCE INSTLL	LF	300				
0506 6039	TEMPORARY SEDIMENT CONTROL FENCE REMOVE	LF	300				
0506 6042	BIOGRD EROSN CONT LOGS (16" DIA) INSTALL	LE.	90				
0506 6043	BIDDEGRADBLE EROSION CONTROL LOGS REMOV	LF_	90				



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SEDIME	NT CO	NTRO	L FENCE	-5					
ROCK F	ILTER	DAM	TY 5	RF	05-				
BIODEGRADABLE EROSION BECL									
CONTRO	L LOG								
FLOW D	IRECT	ION		\sim	-				
DIRECT	ION C	FTR	AFFIC		•				
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TOPSOI & SOIL (PERM)	L / D RETE /(TEM	RILL NTIO P)	SEED N BLANKE	, 🕅	****				
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	3	BAIN B	MEDINA NGINKKRS &	SURVEYORS	IVC.	1			
TBPE F-001712 7073 San Pedro, San Antonio, Terez, 75216 Phone: 210-494-7223 Fax: 210-496-5120 NWR.BMBLCOM									
G 2015 TROOT									
SH 46									
SEGMENT D									
SW3P LAYOUTS									
STA 825+00 TO STA 845+00									
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STATE	01	57.		COUNTY					
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\C-1373.01 SH 46 Passing Lanes\SW3P\SH46D*5W3P05.dgn

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1	ESTIMATED QUANTITIES	1	215-7-22
ITEM	DESCRIPTION	UNIT	QTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	1190
0164 6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	1190
0164 6041	DRILL SEEDING (TEMP) (WARM)	SY	1190
0164 6043	DRILL SEEDING (TEMP) (COOL)	SY	1190
0166 6002	FERTILIZER	TON	0,1
0168 6001	VEGETATIVE WATERING	MG	18.6
0169 6007	SOIL RETENTION BLANKETS (CL 2) (IY G)	<u>5Y</u>	45
0506 6005	ROCK FILTER DAMS (INSTALL) (TY 5)	- LE	
0506 6011	ROCK FILTER DAMS (REMOVE)	LE_	
0506 6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY.	120
0506 6024	CONSTRUCTION EXITS (REMOVE)	SY.	120
0506 6038	TEMPORARY SEDIMENT CONTROL FENCE INSTLL	LF_	
0506 6039	TEMPORARY SEDIMENT CONTROL FENCE REMOVE	LE_	
0506 6042	BIOGRD EROSN CONT LOGS (18" DIA) INSTALL	LE.	
0506 6043	IBIDDEGRADBLE EROSION CONTROL LOGS REMOV	LE I	
	LEGEND:		<u> </u>
	SEDIMENT CONTROL FENCE	SCF	—
	ROCK FILTER DAM TY 5	RFD5	-
	BIODEGRADABLE EROSION	BECL	—
	FLOW DIRECTION	\sim	-
	DIRECTION OF TRAFFIC	-	
	TOPSOIL & DRILL SEED		
	TOPSOIL / DRILL SEED & SOIL RETENTION BLANKET (PERM)/(TEMP)	****	\boxtimes



Ι.	STORMWATER POLLUTION F	PREVENTION-CLEAN WATER	ACT SECTION 402	III.	CULTURAL RESOURCES		VI. HAZARDOUS MAT
	Texas Pollutant Discharge E Discharge Permit or Constru or more acres distrubed soi prosion and sedimentation i	Elimination System (TPDES) T Lation General Permit (CGP) n il. Projects with any distu in accordance with Item 506.	XR 150000: Stormwater required for projects with 1 rbed soil must protect for		Refer to TxDOT Standard Specif archeological artifacts are fo archeological artifacts (bones work in the immediate area and	ications in the event historical issues or und during construction. Upon discovery of , burnt rack, flint, pattery, etc.) cease contact the Engineer immediately.	General (applies Comply with the Hazar hazardous materials b making workers aware provided with persona
	No Action Required	Required Action			X No Action Required	Required Action	Obtain and keep on-si used on the project,
	 Prevent stormwoter poll accordance with TREES R 	lution by controlling erosic	n and sedimentation in		Action No.		Paints, acids, solven compounds or additive
	 Comply with the Storm W necessary to control pa 	Water Pollution Prevention P	lan (SW3P) and revise when Engineer,		1.		products which may be Maintain an adequate
	 Post Construction Site occessible to the publi 	Notice (CSN) with SW3P info c and Texas Commission on E	rmation on or near the site, nvironmental Quality (TCEQ),	:	2.		In the event of a spi in accordance with sa
	Environmental Protectio 1. When Contractor project	on Agency (EPA) or other ins specific locations (PSL's)	pectors. Increase disturbed soil area		3.		immediately. The Cont of all product splils
	to 5 acres or more, Con the Englneer.	ntractor shall submit Notice	of Intent (NOI) to TCEQ and		4.		Contact the Engineer
	i. NOI required: ⊠Yes ∐No			IV.	VEGETATION RESOURCES		 Trash piles, dr. Undesirable sme
'	ore: If onount of soll ois	furbonce changes, permit rea	quirements may change.		Preserve native vegetation to to Construction Specification 730, 751, 752 in order to com) the extent practical. Contractor must adhere) Requirements Specs 162,164, 192, 193, 506, ply with requirements for invasive species.	 Evidence of Lea Hazardous Materia!
	WORK IN OR MEAR STREET		TTI ANDS OF SAME WATED		beneficial landscaping, and t	ree/brush removal commitments.	No Action R
.1.	ACT SECTIONS 401 AND	404	EILANDO ULEAN WATEK		No Action Required	Required Action	Action No.
	US Army Corps of Engineers excavating or other work i	s (USACE) Permit required fo in any potential USACE Juris	r filling, dredging, dictional water,		Action No.		1. Contractor i near Sta 257
	The Contractor shall adher	re to all of the terms and c	onditions ossociated with		1.		2.
	the following permit(s):				2.		3.
	No Permit Required Notionwide Permit (NWP)	14 - Pre-construction Notic	ce (PCN) not Required		3.		Does the project i
	Nationwide Permit 14 - 9	PCN Required			4.		If "Yes", a pre- a
	Individual 404 Permit R	lequired					of State Health Se calendar days pric
	Other Nationwide Permit	Required: NWP#	to, location in project	۷.	FEDERAL LISTED, PROPOSED CRITICAL HABITAT, STATE (AND MIGRATORY BIRDS.	THREATENED, ENDANGERED SPECIES, LISTED SPECIES, CANDIDATE SPECIES	with the notificat
	sedimentation and post-proj	ject total suspended solids	(TSS).				VII. OTHER ENVIRO
	. STA 238+44, NWP 14 No F	PCN			No Action Required	Required Action	(includes region
	2. STA 467+30, NWP 14 No F	PCN		ACT I 1. MJ fc	on No. GRATORY BIRD NESTS: Schedule c ilowing requirements:	onstruction activities as needed to meet the	Action No.
	RECEIVED			A. CC	Do not remove or destroy any ntaining eggs and/or flightles: y active nests, they shall not	active migratory bird nests (nests s birds) at any time of year. If there are be removed until the nests become inactive.	2. The controct
	JUN 282016			8. re	On/in structures, if there a noved_until oil nests become if	re any active nests, they sholl not be nactive. After inactive nests are removed	 State Emergina TCEQ Region Notional Risk
		100		2. Se	e structures to prevent future 1 Item 5 in General Notes.	ns, deterrent materiais may be applied to nest building.	3. Hazardous sub compounds) sh
		CK.		3. TH St	ere is potential Golden Cheeke a 156+00 -Sto 764±00. No const	d Warbler (GCWA) habitat between ruction is to occur between	4. Intentional c not allowed.
	101 Best Management Pra	actices: (Not applicable	if no USACE permit)	of	PSLs/equipment storage between	Tor to avoid placement - Sta 753+00 - Sta 767+00.	5. If any sensi- construction suspended imm
	rosion	Sedimentation	Post-Construction TSS	4. Th co	e lexas garter shake may occur htractor is to avold harming th	in the project drea and the he species if encountered.	evoluated and
i 	✓ Temporary Vegetation ✓ Blankets/Matting ☐ Mulch	 ☐ Silt Fence ☑ Rock Berm ☑ Triangular Filter Dike 	Vegetative Filter Strips Retention/Irrigation Systems Extended Detention Basin	lf a do n work	ny of the listed species are ob of disturb species or habitat o may not remove active nests fr	pserved, cease work in the immediate area, and contact the Engineer immediately. The com bridges and other structures during	
] Sodding] Interceptor Swale	📃 Sand Bag Berm 🔲 Straw Bale Dike	Constructed Wetlands	nest are Engli	ng season of the birds associo liscovered, cease work in the l weer immediately.	ned with the nests. If caves or sinkholes mmediated area, and contact the	
] Diversion Dike	Brush Berns	Erasion Control Compost				
	Mulch Filter Berm and Socks	Mulch Filter Berm and Socks	Compost Filter Berm and Socks				
	_ Compost Filter Berm and Socks	Compost Filter Berm and Socks	S Vegetation Lined Ditches				
1			The sect of the sectors				
1		Stone Outlet Sediment Traps	Sond Filter Systems				

TERIALS OR CONTAMINATION ISSUES

to all projects):

rd Communication Act (the Act) for personnel who will be working with by conducting sofety meetings prior to beginning construction and of potential hazards in the workplace. Ensure that all workers are I protective equipment oppropiate for any hazardous materials used. ite Material Safety Data Sheets (MSDS) for all hozardous products which may include, but are not limited to the following categories: nts, asphalt products, chemical additives, fuels and concrete curing s. Provide protected storage, off bare ground and covered, for hozordous. Maintain product labelling as required by the Act. supply of on-site spill response materials, as indicated in the MSDS. ill, take actions to mitigote the spill as indicated in the MSDS, ofe work practices, and contact the District Spill Coordinator

ractor shall be responsible for the proper containment and cleanup

if any of the follwing are detected: sed vegetation (not identified as normal) ums, conister, borrels, etc. lls or odora

ching or seepage of substances

is or Contomination Issues Specific to this Project:

Required Action leouired

s to avoid the area around the cattle dip vat (concrete tank) +00 - Sta 258+00(left).

involve the demolition of a span bridge? No (No further oction required)

demolition notification must be submitted to the Texas Department ervices. The contractor shall contact TxDOT's Project Engineer 25 or to the demolition of the bridges(s) on the project to assist tion.

NMENTAL ISSUES

nal issues such as Edwards Aquifer District, etc.)

equired Required Action

TCEQ-approved Edwards Aquifer Protection Plan conditions authorized letter for this project.

tor must immediately report spilts (including sanitary sever of reportable quantities to TXDOT and to the following: "pency Response Center (800) 424-8802 mai Office (210) 490-3096 Response Center at (800) 424-8802 wifer Authority at (210) 222-2204

bstances (e.g., fuel, ail, asphalt emulsion, concrete curing hall not be stored on the state ROW or easements. discharges of sediment laden storm water during construction are

tive feature (e.g., cave, sinkhole, well) is discovered during all regulated activities near the sensitive feature must be mediately and notify the TXDOT Environmental Office. Construction sitive feature may not proceed until the feature has been d approval to continue construction has been received.

Texas Department of Transportation San Antonio District Standard								
ENVIRONME	NT	AL	PER	MI	TS,			
ISSUES AN	DO	CO	MMITI	MEN	ITS			
EPIC								
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GENERAL NOTES

- If shown on the plans or directed by the Engineer, filter dams should be placed near the top of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
- Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
- 3. Side slopes should be 6:1 or flatter.
- Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
- Filter dams should be embedded a minimum of 4" into existing ground.
- Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

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Texas Department	of Tra	nsp	ortation	,	D D S	esign hvision tandard
TEMPORA SEDIMEN POLLUTION CO ROCK F	RY T ON TLT		ROSI D WA OL N C DAM	IO T IE IS	N, ER AS	URES
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(C) Tx00T June 1993	CONT	SECT	8CL			HIGHNAY
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	0151	COUNTY				SHEET NO.
	SAT		KENDALL.	ETC		385





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KENDALL, ETC

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Texas Commission on Environmental Quality Contributing Zone Plan General Construction Notes

- Written construction notification should be provided to the appropriate TCEQ regional office no 1. later than 48 hours prior to commencement of the regulated activity. Information should 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 with the name and telephone number of the contact person.
- All contractors conducting regulated activities associated with this project should be provided 2. with complete copies of the approved Contributing Zone Plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractor(s) should keep copies of the approved plan and approval letter on-site.
- 3. No temporary aboveground hydrocarbon and hazardous substance storage tank system may be installed within 150 feet if a domestic, industrial, irrigation, or public water supply well.
- Prior to commencing construction, all temporary erosion and sedimentation (E&S) control 4. measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. Controls specified in the SWPPP section of the approved Edwards Aquifer Contributing Zone 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.
- If sediment escapes the construction site, off-site accumulations of sediment must be removed 5. 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 6. 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.
- 7. 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).
- All spoils (excavated material) generated from the project site and stored on-site must have 8. proper E&S controls installed.
- Stabilization measures shall be initiated as soon as practicable in portions of the site where 9. 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.
- The following records should be maintained and made available to the TCEQ upon request: the 10. 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

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- The holder of any approved Contributing Zone plan must notify the appropriate regional office 11. in writing and obtain approval from the executive director prior to initiating any of the following:
 - any physical or operational modification of any best management practices or Α. structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;

B. any change in the nature or character of the regulated activity from that which was originally approved;

Ċ. any change that would significantly impact the ability to prevent pollution of the Edwards Aquifer and hydrologically connected surface water; or

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

Austin Regional Office	San Antonio Regional Office
2800 S. IH 35, Suite 100	14250 Judson Road
Austin, Texas 78704-5712	San Antonio, Texas 78233-448
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.

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LEGEND:	
SEDIMENT CONTROL FENCE	-SCF-
ROCK FILTER DAM TY 5	-RFD5-
BIODEGRADABLE EROSION CONTROL LOG	- (BECL)-
FLOW DIRECTION	\sim
FLOW DIRECTION Direction of traffic	→ +
FLOW DIRECTION DIRECTION OF TRAFFIC TOPSOIL & DRILL SEED (PERMIZ(TEMP)	

