

# Laredo District PAVEMENT DESIGN REPORT



**HWY: IH 35 NB FR (ES)**


**COUNTY: La Salle**

**CSJ: 0017-08-078 903**

**(0.1 MI N. of FM 168) Project Limits:  
Cotulla to La Salle/Frio County Line**

**Selected Option:** OPTION 3

**Designed by:**  **Date:** 11/16/12  
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**Approved By:**  **Date:** 11/21/12  
David Salazar, P.E.  
Director of Maintenance

**NOTE:** This document is released for the purpose of interim review and is not intended for bidding, construction, or permitting purposes.

## TABLE OF CONTENTS

<b>GENERAL PROJECT INFORMATION.....</b>	<b>3</b>
<u>FACILITY.....</u>	3
<u>SOIL CONDITIONS.....</u>	3
<u>TRAFFIC DATA.....</u>	3
<b>PAVEMENT DESIGN.....</b>	<b>3</b>
<b>CONCLUSION .....</b>	<b>4</b>
<b>EXHIBIT A .....</b>	<b>5</b>
EXISTING TYPICAL SECTIONS .....	5
<b>EXHIBIT B .....</b>	<b>6</b>
TRAFFIC ANALYSIS FOR HIGHWAY DESIGN .....	6
<b>EXHIBIT C .....</b>	<b>7</b>
FPS 21 INPUT AND OUTPUT DATA .....	7
<b>EXHIBIT D .....</b>	<b>8</b>
MODIFIED TRIAXIAL DESIGN PROCEDURE .....	8
<b>EXHIBIT E.....</b>	<b>9</b>
SUBGRADE SOIL DATA.....	9
<b>APPENDIX A.....</b>	<b>10</b>
SURFACE AGGREGATE SELECTION FORM (WWARP).....	10

## **GENERAL PROJECT INFORMATION**

### **Facility**

Site was built in 1931 with 9" flex base and Seal Coat surface, and since it's only been seal coated. The road is narrow and has edge failures; and, there are locations where the subgrade has started to move. Types of failures perceived are edge and base failures

Project Existing Typical Section is included under Exhibit A.

### **Soil Conditions**

The subgrade for this project location consists of several soil types according to the Soil Conservation Service (SCS) soil maps as shown in Exhibit E.

The predominant soil type is Sandy Loam, with PI ranging from NP to 49, and with an average PI of 22. A Texas Triaxial Classification (TTC) of Clay (CL) 4.40 is being used.

FWD data indicate that existing top nine inches (9") modulus values are within those of a lime treated subgrade. Existing flex base is beyond its life cycle, and it is no longer salvageable.

There are no bore soil samples at this moment; determination of sulfate content was not possible. The recommendation is to cement or lime treat flex base as long as a minimum 4" untreated material buffer is placed.

The subgrade soil types and classifications are shown in Exhibit E.

### **Traffic Data**

Traffic data obtained for IH 35 SB FR (WS) will be used for this design. The Traffic analysis report for pavement design from Transportation Planning and Programming Division (TP&P) is shown as Exhibit B. Traffic data was obtained October 18, 2012, by Transportation Planning and Development (TP&D).

## **PAVEMENT DESIGN**

All design data and parameters are included as Exhibit C, FPS input and output. The traffic data obtained for IH 35 SB FR (WS) on October 18, 2012, by TP&D, was utilized for the design.

Since existing flex base has modulus values within those of a lime treated subgrade, it is proposed to leave part of this material in place and use as buffer for new treated base.

In addition to addressing road and traffic needs while meeting or exceeding a 20 year design life, this pavement report goal was to match IH 35 SB FR (WS) structure.

The pavement analysis incorporated the following guidelines:

- Design Life: 20 year design

- Serviceability Index: 3.8
- Terminal Serviceability index: 2.0
- Reliability: 90%
- Time to first Overlay: 8 years

\*\*All design data and parameters are included as Exhibits C and D, FPS input and output, and Modified Triaxial Design Procedure. \*\*

This process resulted in the following proposed pavement structure:

**Option 1: 2 Course Surface Treatment:**

- Under Seal: RC 250 and GR 5 (Coated or Uncoated aggregate)
- Riding Surface: AC-10-2TR and PB GR 3
- 6" New 3% Cement Treated Base (TY E GR 4)
- 3" Existing Flex Base to remain in place
- Perf. Time (Years): T(1) = 40

**Option 2: 2 Course Surface Treatment :**

- Under Seal: RC 250 and GR 5 (Coated or Uncoated aggregate)
- Riding Surface: AC-10-2TR and PB GR 3
- 5" New 3% Cement Treated Base (TY E GR 4)
- 4" Existing Flex Base to remain in place
- Perf. Time (Years): T(1) = 40

**Option 3: 2 Course Surface Treatment:**

- Under Seal: RC 250 and GR 5 (Coated or Uncoated aggregate)
- Riding Surface: AC-10-2TR and PB GR 3
- 4" New 3% Cement Treated Base (TY E GR 4)
- 5" Existing Flex Base to remain in place
- Perf. Time (Years): T(1) = 40

**CONCLUSION**

Proposed alternatives meet current and a 20 year projected design criteria.

The Director of Maintenance will review and determine if this is a viable and cost effective option.

