


Laredo District PAVEMENT DESIGN REPORT

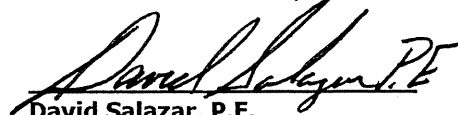


**HWY: FM 624
COUNTY: La Salle
CSJ: 0652-04-051**

**Project Limits:
From SH 97 to 3.34 Miles South of FM 469**

Selected Option: OPTION 1 2.5" TIC OPTION 2 UNDERSEAL

Designed by:  Date: 10/10/12
Amelia Y. De La Garza, P.E.

Approved By:  Date: 10/22/12
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.

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GENERAL PROJECT INFORMATION

Facility

Project pavement structure consists of 5" base, and Seal Coat riding surface up to 5.021 Miles North of FM 469; from there, it consist of 12" cement treated base and a three course surface treatment .

Site has edge failures, and an area where the base/subgrade has started to move. Currently, the location can be overlaid; however, should the location deteriorate faster than expected, then a mill-inlay will be needed.

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 (with subgrade soil types and classifications) are shown in Exhibit E.

The predominant soil type is mostly Clay, with PI ranging from NP to 55; hence, a Texas Triaxial Classification (TTC) of Clay CL 4.40 is being used.

Aside from a couple of areas where the base/subgrade has started to move, there is no indication of base faiures. DCP data on adjacent road section indicates that existing 11" flexbase modulus values are within those of a lime/cement treated subgrade. FWD data on adjacent road section shows that existing modulus values are within those of an untreated flex base. However, considering DCP and FWD data variable, a conservative value of 8" treated subgrade was considered.

Traffic Data

Traffic data from Mainframe TRMI Database Query was used for the design – shown as Exhibit B.

PAVEMENT DESIGN

All design data and parameters are included as Exhibit C, FPS input and output. The traffic data obtained on October 3, 2011, by TP&D, was utilized for the design.

The pavement analysis incorporated the following guidelines:

- Design Life: 20 year design
- Serviceability Index: 4.0
- Terminal Serviceability index: 2.5
- Reliability: 90%
- Time to first Overlay: 8 years
- PVR: Should not be greater than 1.0 inch as calculated by Tex-124-E

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

FPS analysis indicates that to accommodate current and projected ADT the pavement thickness must be at least 11.50".

Based on adjacent roadway section's FWD and DCP analysis, existing flex base modulus values are within those of an untreated base and a treated subgrade.

The purpose of this design is to match adjacent roadway section's overlay. Current pavement has edge drop-offs, and an area where the base/subgrade has started to move; these areas will have to be properly treated or a spot base repair item (DG TY B SAC - B PG 70 -22) must be included in the contract for the overlay/mill-inlay to work.

Should the base remain exposed, the recommendation to protect the exposed base is:

Option 1: Prime with MC-30

***Option 2:** Under Seal with RC 250 and GR 5 (at spot base repair locations) ONLY

The proposed options for the overlay/mill-inlay are:

***Option 1:** Matching adjacent roadway section:
2.5" DG TY - C SAC-B PG 70-22
Perf. Time (Years): T(1) = 31

- not required, due to
base repair w/
HMA
6/10/13
HGS

Option 2: Consisting of the Following:
3" DG TY - C SAC-B PG 70-22
Perf. Time (Years): T(1) = 36

Although these options do not meet the triaxial check, district experience has shown that these fps designs work.

CONCLUSION

A 2.5" to 3" overlay/mill-inlay meets current and a 20 year fps projected design criteria.

The Director of Maintenance will review and determine best viable and cost effective option.

