

**MEMORANDUM**

**To:** Tony Cooper, Road Design Group Coordinator  
Jason Johnston, District Construction Engineer

**From:** Andrew M. Johnson, State Pavement Design Engineer *AMJ*

**Date:** October 26, 2011

**Subject:** Pavement Design Recommendations for S-41 bridge replacement  
Cherokee County  
File Number: 11.040205  
Pin Number: 40205

As requested, we have reviewed conditions at the subject site in order to make pavement design recommendations.

**Project Overview**

This project involves replacing a bridge on S-41 over Peoples Creek. The project is approximately 0.128 miles long.

**Existing Pavement Conditions**

The pavement on S-41 is in overall good condition east of the bridge and fair condition west of the bridge with moderate to high severity fatigue cracking.

**Soil Conditions**

A soil support value of 1.2 and a Type C geotextile for erosion control under riprap are recommended for this project.

**Estimated Future Traffic**

The Department's Traffic Engineering Office provided estimates of future traffic. The ADT on S-41 for the base year 2012 is 3000 and is expected to increase to 3600 in year 2022, and 4200 in 2032. A copy of the future traffic estimates are attached for your information.



## **Pavement Design Recommendations**

Based on our review of the existing pavement condition, the traffic estimates and the soil support conditions, the recommended pavement design is:

### *New Construction on S-41*

175 psy – HMA Surface Type C

200 psy – HMA Intermediate Type C

600 psy – HMA Base Type B

The design above provides a structural number of **3.51** versus the target structural number of **3.50**.

### *Existing Pavement on S-41*

Full Depth patch as recommended by engineer

Overlay with the following:

175 psy – HMA Surface Type C

If you have any questions, please contact me at 803-737-6683

Enclosures

AMJ/bcs

# TRAFFIC DATA FOR PAVEMENT LOADING

Factors revised February 1999

Report date: 9/30/2011

County 11 CHEROKEE

Route S- 41 Route Name:

Beginning termini Bridge over Peoples Creek

Ending termini:

Beginning mile post: 0.00

☐ 1-way ☒ 2-way

Number of lanes: 2

Type of pavement

Percent Trucks.: 5

☒ Flexible ☐ Rigid

Critical Lane: 100

Rd. Grp. (A-P) - Class 9 %: G - 19

Base year: 2012

Base year ADT: 2,900

Future year 2022

Projected ADT: 3500

Future year 2032

Projected ADT: 4200

3500

## ONE-WAY EQUIVALENT DAILY 18 KIP SINGLE AXLE LOAD APPLICATIONS IN THE CRITICAL LANE

5 YR. DES. = 7.96

10 YR. DES. = 16.45

15 YR. DES. = 25.46

20 YR. DES. = 35.07

YEAR	ADT	AVERAGE ONE-WAY ADT TRUCKS		ADJUSTED TRUCKS	1-WAY EQUIV. 18 KIP TOTAL CRT. LN.	
2012	2,900					
2017	3,200	1,525	76	19	7.96	7.96
2022	3,500	1,575	79	39	16.45	16.45
2027	3,800	1,625	81	61	25.46	25.46
2032	4,200	1,679	84	84	35.07	35.07