



Florida Department of
TRANSPORTATION

Precast Pre-stressed Concrete Pavement Web Interim Report

County
Volusia

Roadway ID
79060

FIN
20780-3-52-01

State Road
600

Last Update
August 2014



Project Description

County: Volusia County
Section/Subsection No. 79060000
State Road: 600
FIN: 422024-2-52-01

OBJECTIVE:

The primary objective of this study is to evaluate the initial performance of pre-cast pre-stressed post-tensioned concrete pavement (PPCP) as a rehabilitation technique in Florida. The performance of conventional CPR technique will also be evaluated for comparison purposes

BACKGROUND:

The Westbound lanes were constructed in 1940. Two Eastbound lanes were added in the 1970's and the paved travel shoulders were added in 1997.

The lanes showed significant distress and received no major rehabilitation except for localized slab replacement. The existing slabs were 20 feet in length and untied. The West bound lanes experienced overtopping during significant storm events. Eventually, the ride quality deteriorated.

DESCRIPTION:

The experimental project consists of three test sections of 800 feet long. The test sections were part of a 6.5 miles rehabilitation project (422024-2-52-01), which was completed in June of 2012.

800 feet of Section 1 was selected out of the 1.9 miles of the concrete rehabilitation length. It has crushed concrete Sub-base, 4 inch of Asphalt Overlay Base and dowel cast in place concrete pavement. This was 8.5" slab replacement of various lengths.

Section 2- This is the first control section. It is a 9.5" Jointed Plain Concrete Pavement with 2" to 3" asphalt concrete (AC) overlay on the base. The base is made of 9" Graded Aggregate. This was a full depth rehabilitation section.

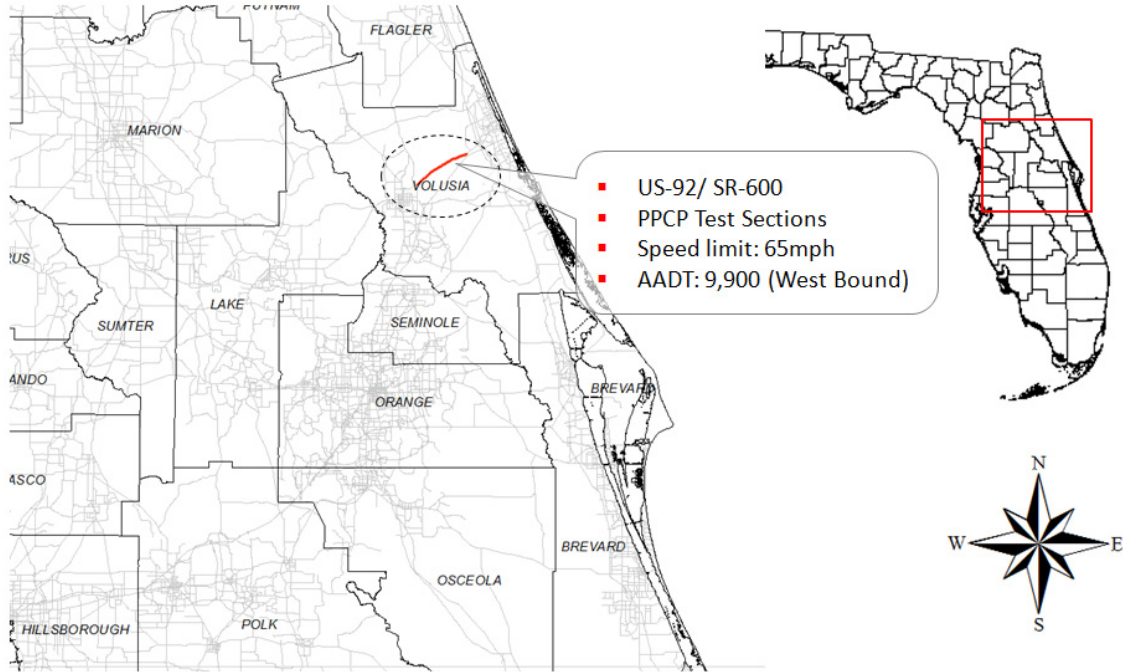
Section 3- is the PPCP pavement. This 793 feet spans' Passing and Traffic Lanes on raised profile area. It has three panels made up of 22 slabs each. Each slab is 24 feet wide and 12 feet long. Therefore there was no longitudinal joint between the two lanes. Instead, we have transverse joints filled with grout. It is built on top of existing roadway slabs (undisturbed) with 2" minimum asphalt inter - layer as working platform and for cross slope correction. Plastic bond breaker was install between panel and base.

The three sections were diamond grind finished.

EVALUATION:

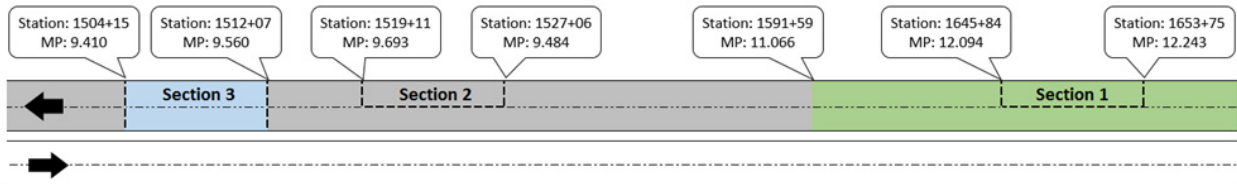
The performance is evaluated in terms of Deflection, Faulting, Friction, Cracking and Ride Quality (an average of both wheel paths).

Project Location



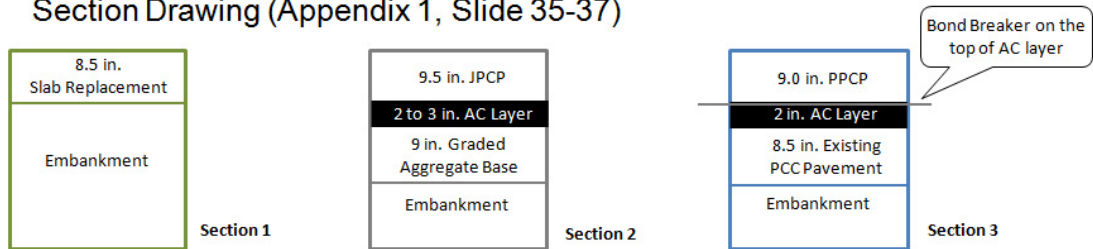
Project Layout

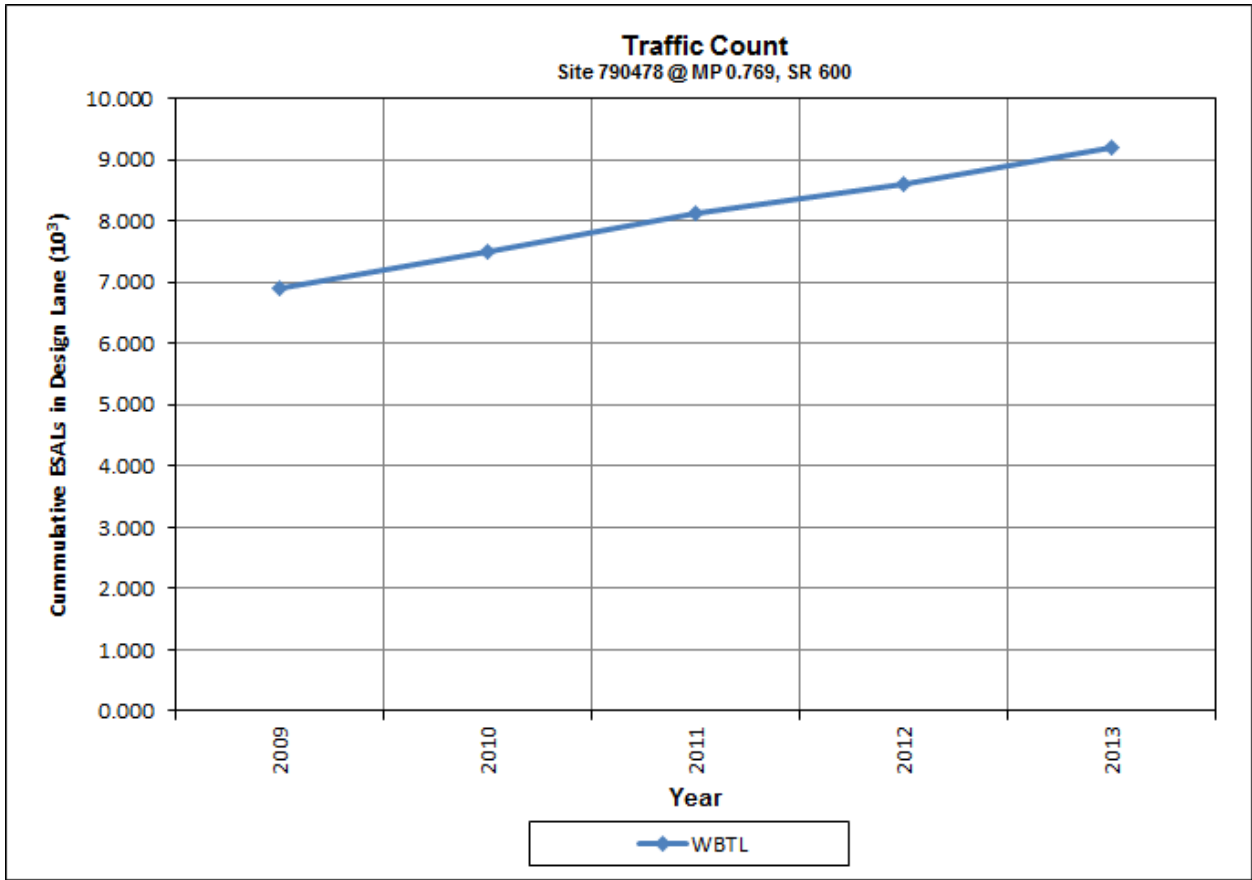
■ US 92 / SR 600 Volusia County



- 8.5 inch Slab Replacement
- 9.0 inch Precast Prestressed Concrete Pavement (PPCP)
- 9.5 inch Jointed Plain Concrete Pavement (JPCP)

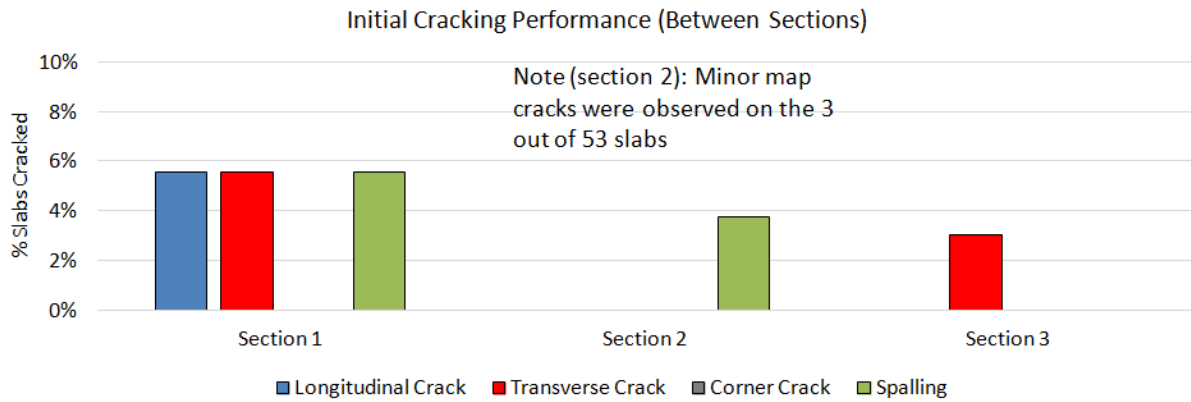
■ Section Drawing (Appendix 1, Slide 35-37)





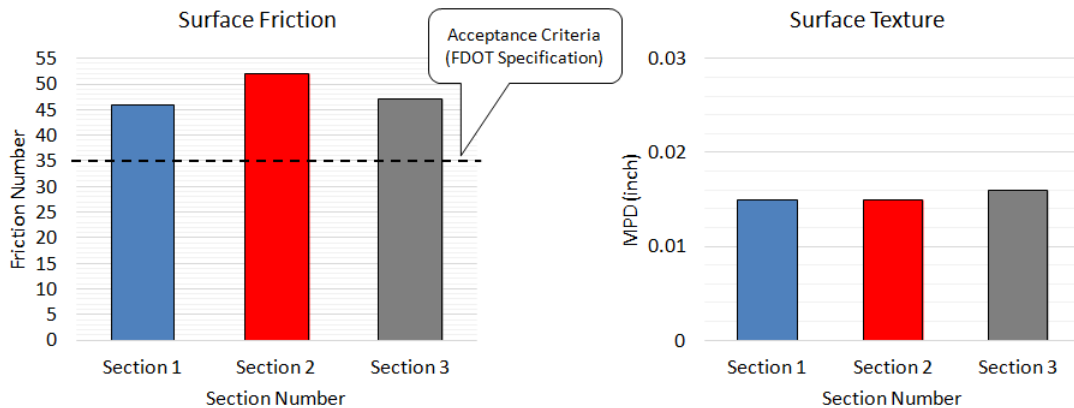
Pavement Distress

- Percent of Deteriorated Slabs (All Test Sections, Newly Placed Slabs)
 - Longitudinal Crack
 - Transverse Crack
 - Corner Crack
 - Spalling

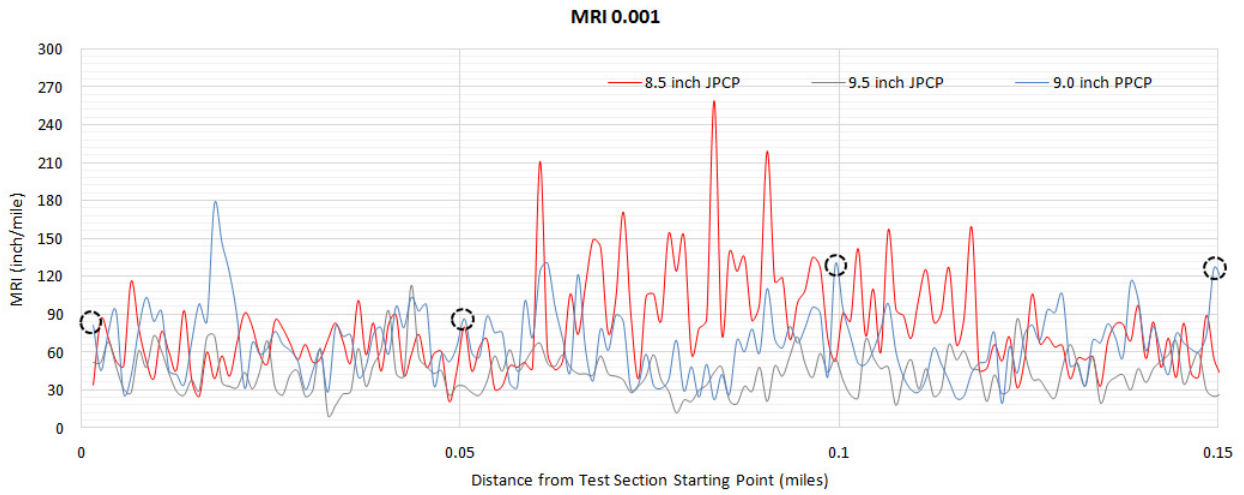


Surface Texture and Friction

- Surface Texture and Friction
 - Surface texture: Mean Profile Depth (MPD), ASTM E 2157
 - Surface Friction: FN-40R, ASTM E 274 (FDOT Spec: ≥ 35)



Initial Smoothness



Note

- ○ Expansion Joint Location

FWD Test (LTE)

