



# Evaluation of a Stress Absorbing Membrane (SAM)

## Special Experimental Project Progress Report EXP-SR-24

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<b>FDOT Office</b>	<b>State Materials Office</b>
<b>District</b>	<b>2</b>
<b>County</b>	<b>Levy</b>
<b>Financial Project</b>	<b>430548-1-52-01</b>
<b>Roadway ID</b>	<b>34070000</b>
<b>State Road No.</b>	<b>24</b>
<b>US Road No.</b>	<b>N/A</b>

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## Objective

The objective of this study is to evaluate the ability of a Stress Absorbing Membrane (SAM) interlayer, and of a SAM placed over pre-existing Soil Stabilized Columns (SSC) to reduce rutting and cracking. Performance of these treatments is compared to a control section without any special treatment.

## Background

The experimental project is in the Eastbound travel lane of SR-24 in Levy County, extending from milepost 3.332 to milepost 3.849, was constructed as part of a milling and resurfacing project (430548-1-52-01) completed in April of 2015 and the pre-existing pavement surface was 22 years old. The pavement had experienced severe rutting, with a combination of cracking types (i.e., Classes IB, II, III, and block) in the outside wheelpath of R1, which had been patched repeatedly as a result. A 2013 subsurface investigation encountered brown silty sand at a depth of 3.5 to 5 feet. Below this stratum, within the limits of Section 3, a 1-foot thick muck layer was encountered with organic content between 11% and 80%. Underneath the muck layer, brown and gray silty sand (A-3) was encountered up to boring termination depth. The water table was measured at 3.5 feet below the existing pavement surface.

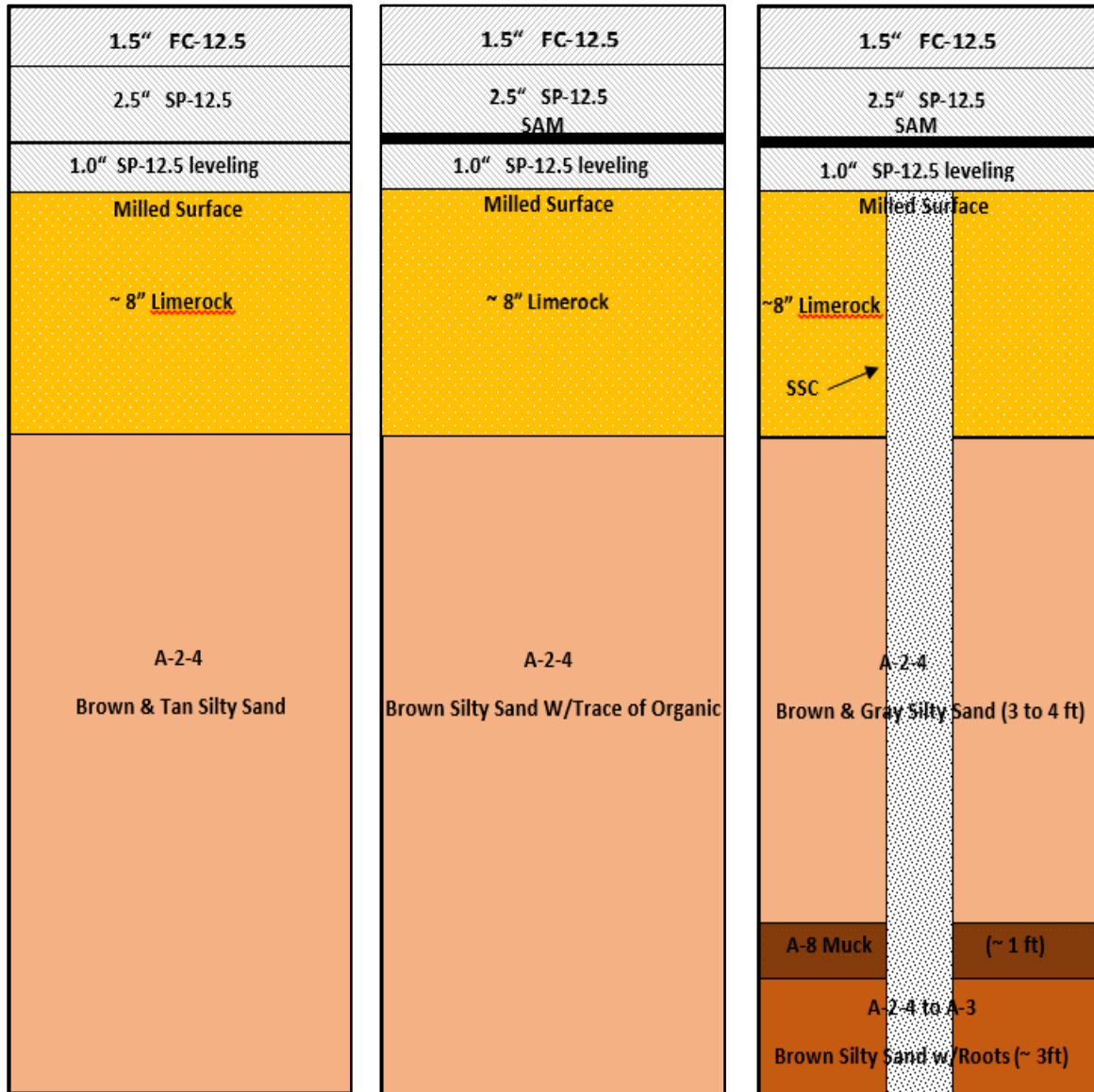
## Project Description

The experimental project consists of three sections including a control section with no special treatment (Section 1), SAM section (Section 2), and a SAM over Soil Stabilized Columns (SSC) section (Section 3). The existing pavement was milled 5 inches and received 1-inch SP 12.5 leveling course on top of 8 inches of existing limerock base, 2.5 inches SP 12.5 structural overlay, and 1.5 inches FC-12.5 friction course. The SSC were placed in a specified grid pattern to transfer the loads from the upper sand embankment, through the very loose sand and peat (organics & muck), into the underlying sand stratum and/or to densify the loose sand and transfer the loads through the peat layers. This is expected to cause minimum disturbance to the existing roadway embankment and allow bridging over the organics (muck). The SSC were placed in four longitudinal rows, with the individual columns spaced every 4 feet on center in the direction of travel, offset every 3 feet in the transverse direction, and longitudinally staggered every 2 feet (see Appendix). The geosynthetic SAM material was designed to provide stress relief to reduce reflective cracking in the overlay and reduce runoff moisture penetration into the pavement. Pavement performance is evaluated in terms of cracking, rutting, smoothness, and deflection.

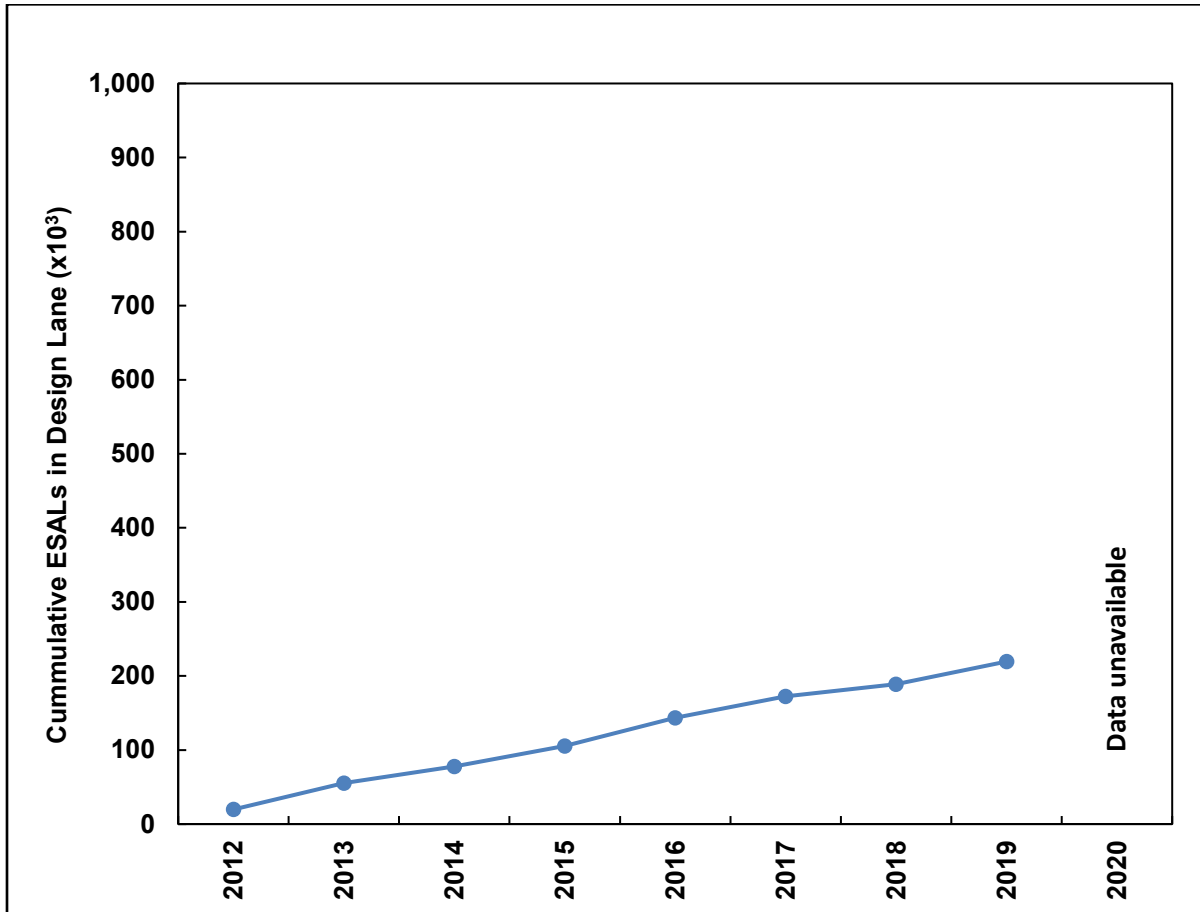


## Project Layout

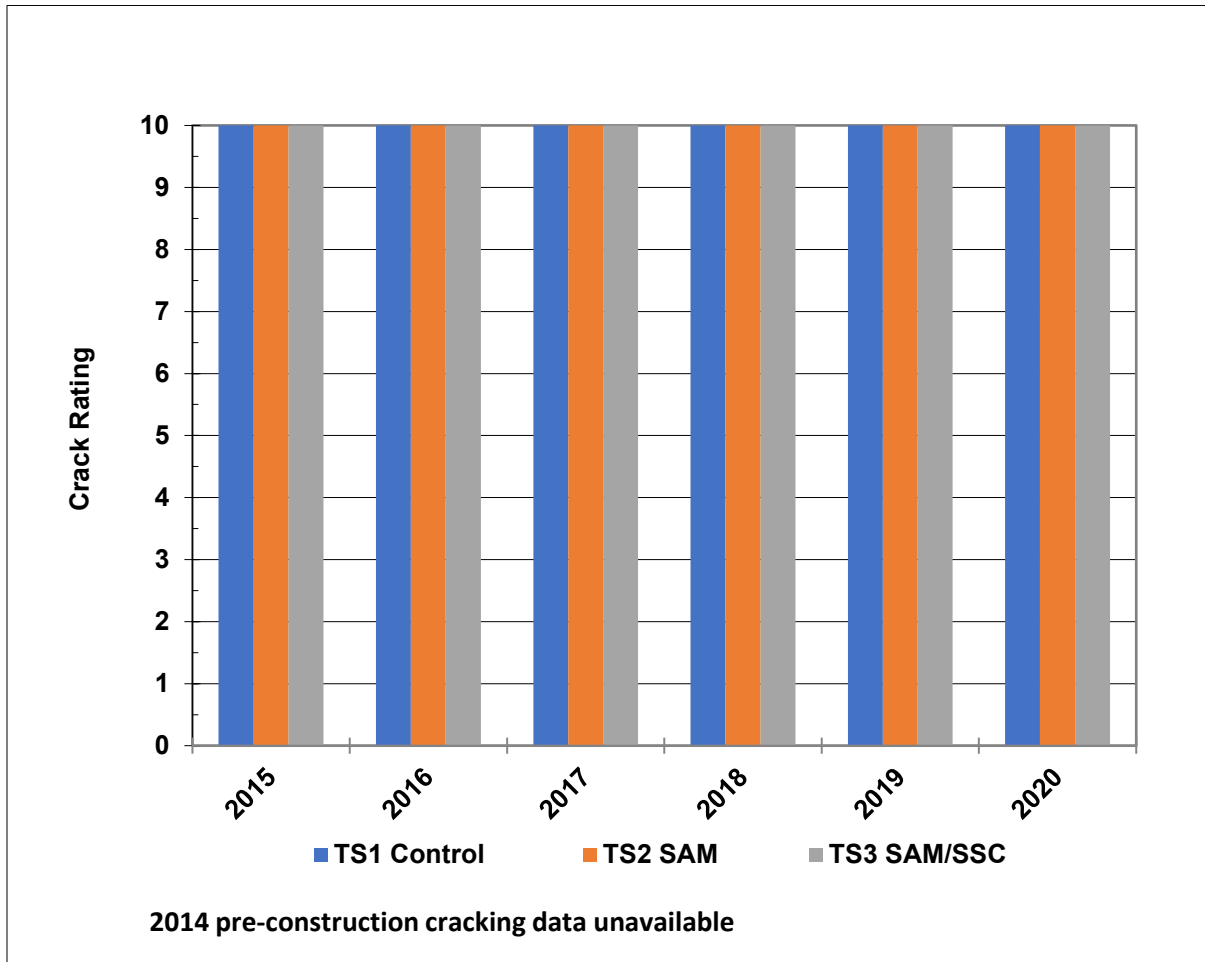
<p><b>Section 1 (No treatment)</b></p> <p><b>BMP 25.953 Sta. 1369+68.91</b></p> <p><b>EMP 25.999 Sta. 1372+11.79</b></p>	<p><b>Section 2 (SAM)</b></p> <p><b>BMP 25.999 Sta. 1372+11.79</b></p> <p><b>EMP 26.045 Sta. 1374+54.67</b></p>	<p><b>Section 3 (SAM over SSC)</b></p> <p><b>BMP 26.055 Sta. 1375+07.47</b></p> <p><b>EMP 26.101 Sta. 1377+50.35</b></p>
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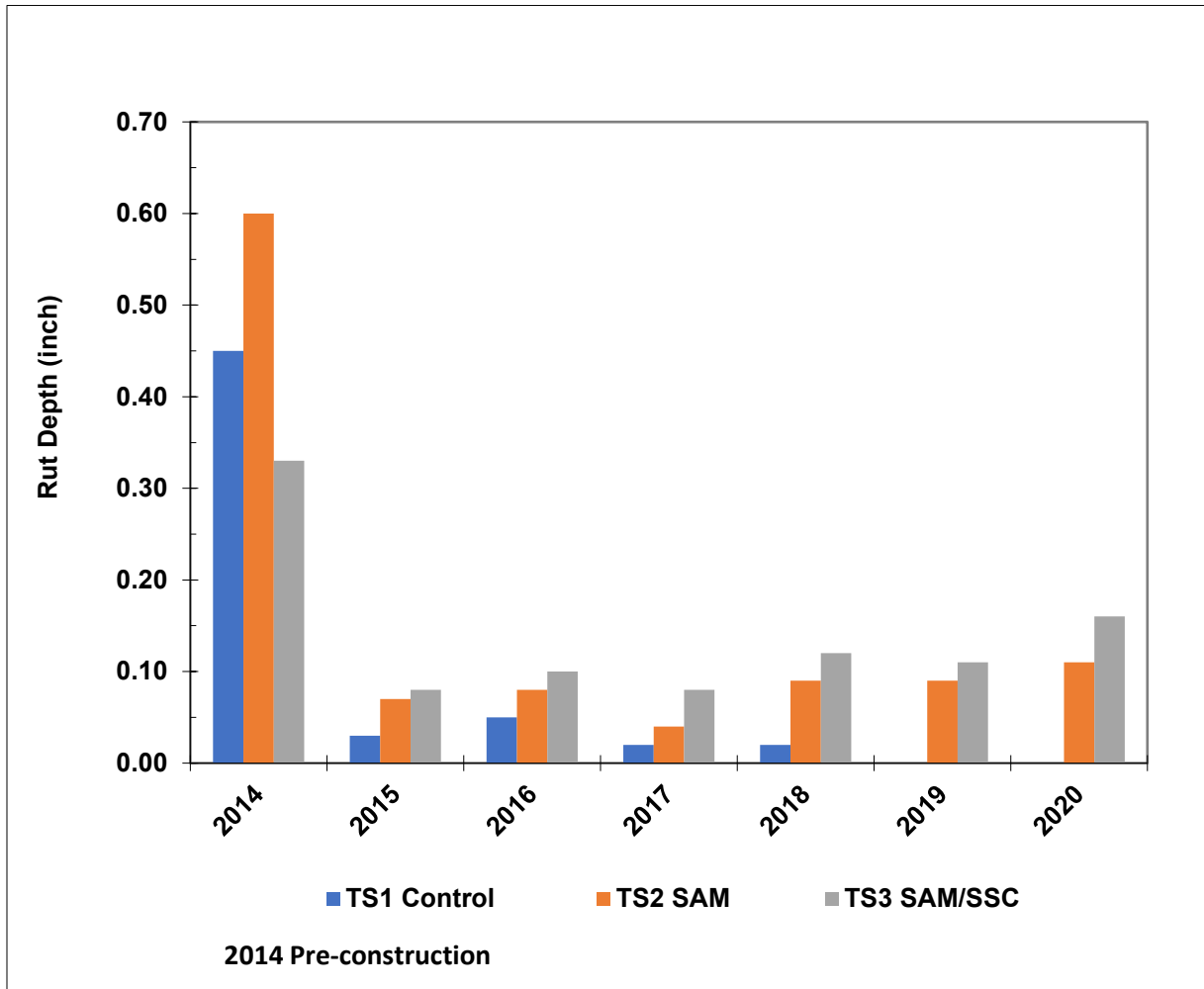
## Traffic Count



## Cracking

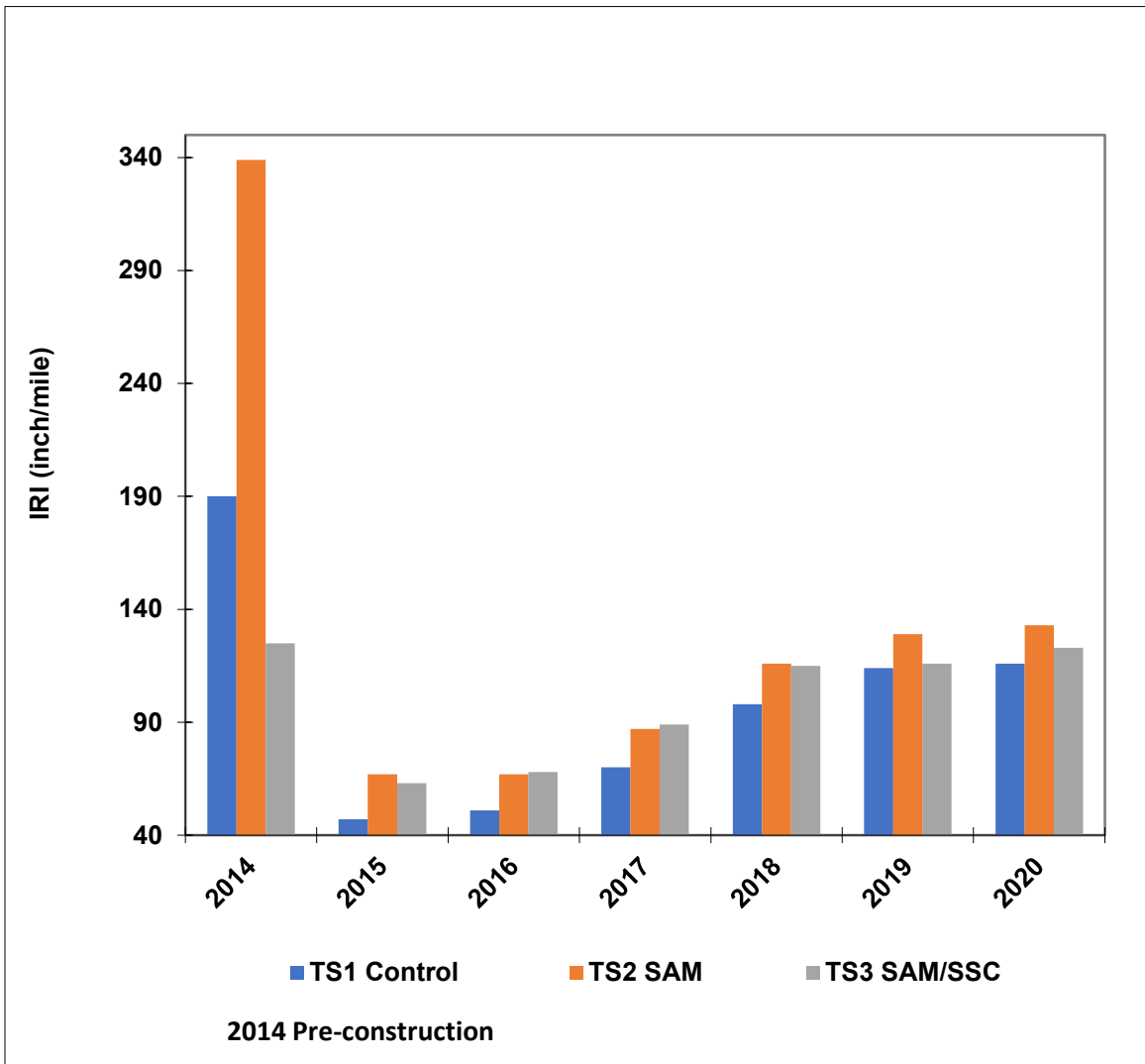


## Rutting

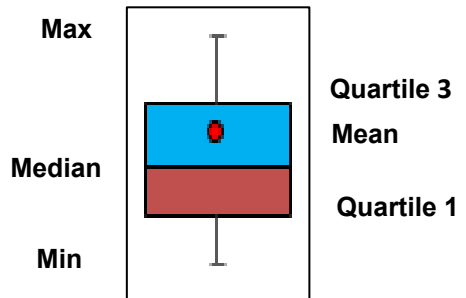
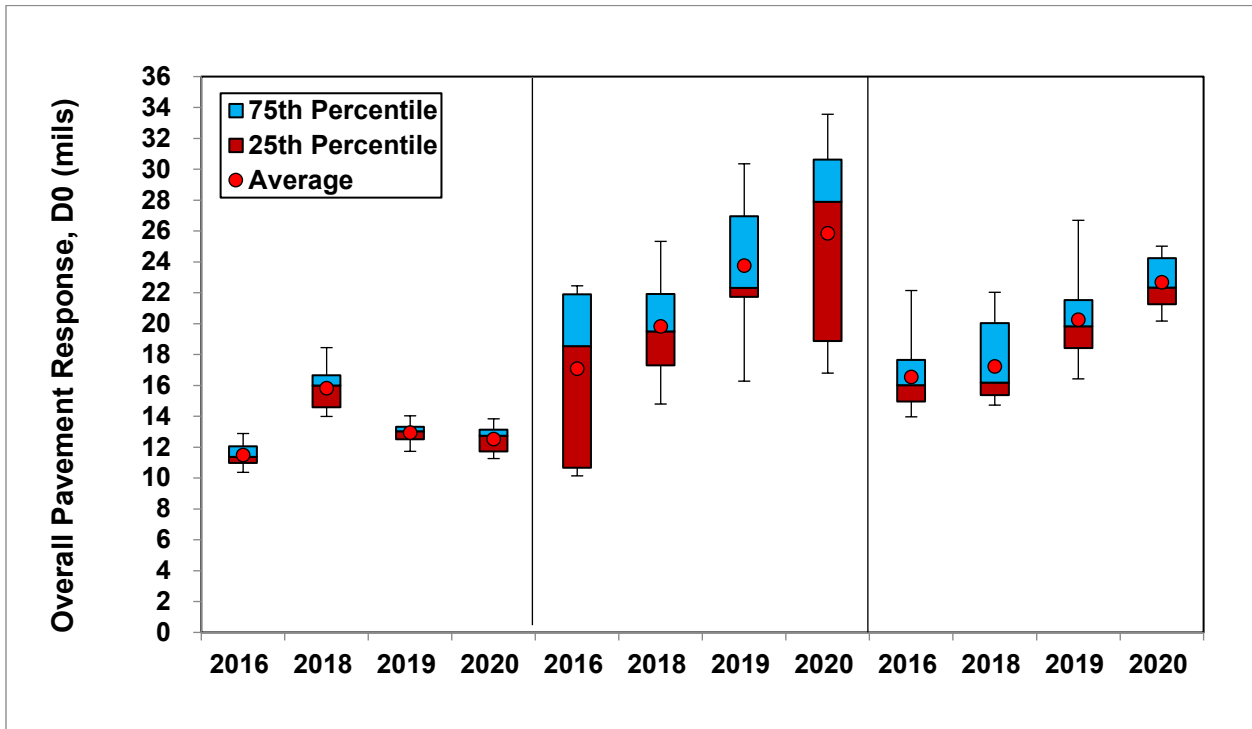




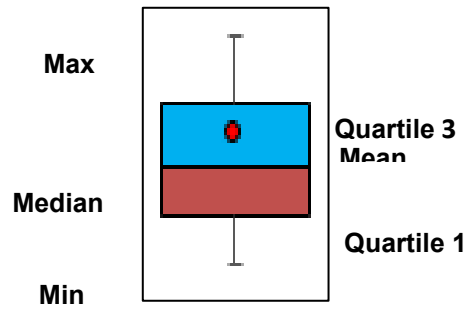
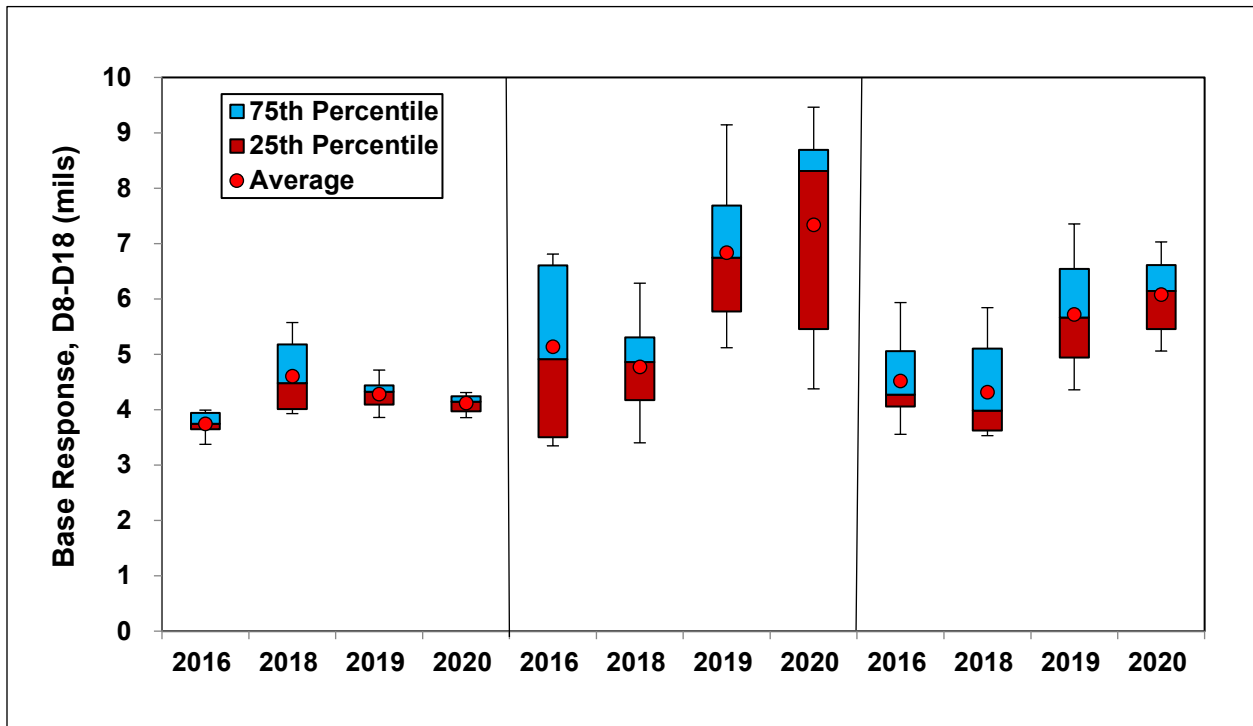
## Smoothness



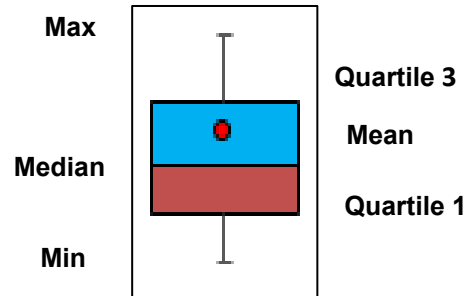
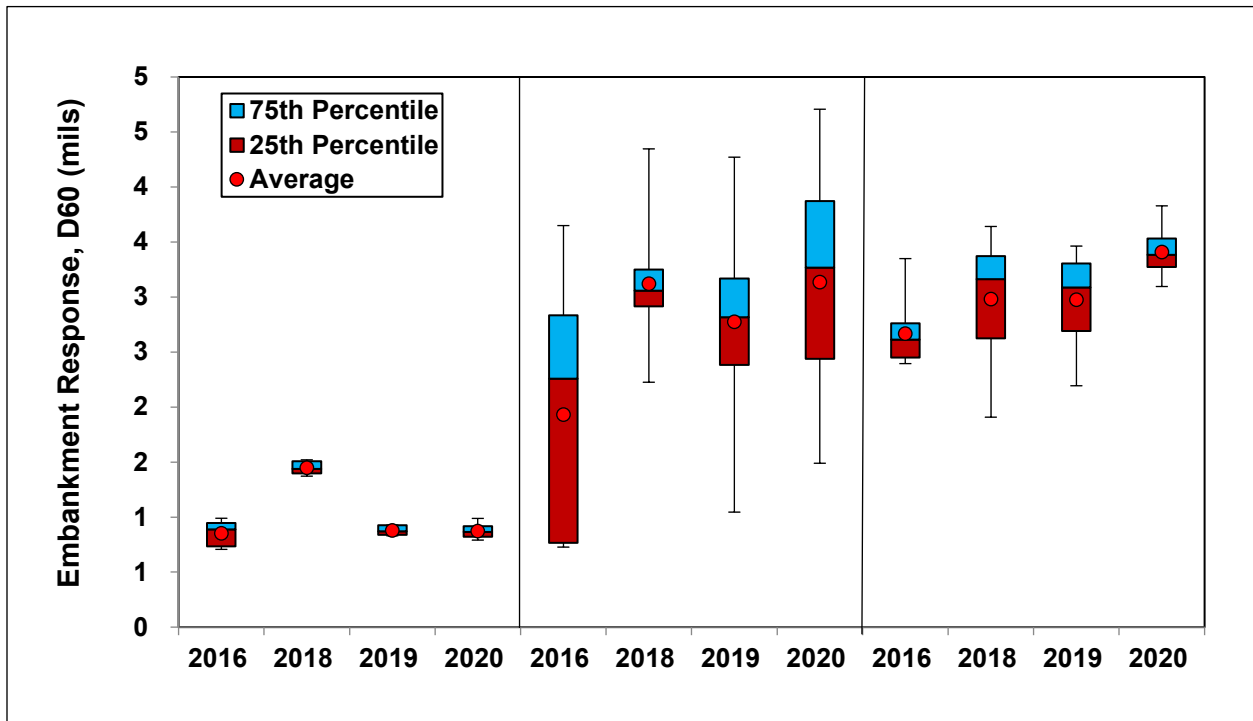
## Deflection - Overall Pavement Response



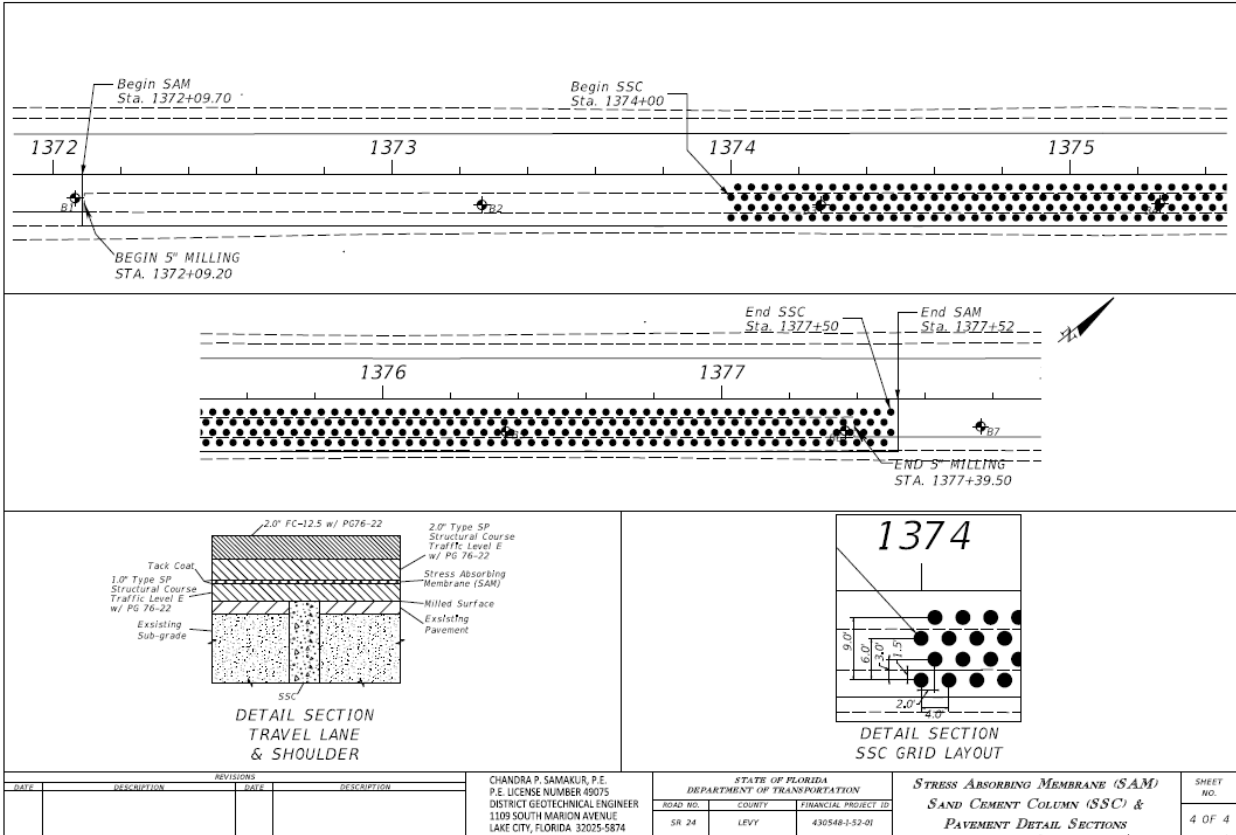
## Deflection - Base Response



## Deflection – Embankment Response



# APPENDIX



REVISIONS	
DATE	DESCRIPTION

CHANDRAP. SAMAKUR, P.E.  
 P.E. LICENSE NUMBER 49075  
 DISTRICT GEOTECHNICAL ENGINEER  
 1109 SOUTH MARION AVENUE  
 LAKE CITY, FLORIDA 32025-5874

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 24	LEVY	430548-1-52-01

**STRESS ABSORBING MEMBRANE (SAM)  
 SAND CEMENT COLUMN (SSC) &  
 PAVEMENT DETAIL SECTIONS**

SHEET NO.  
4 OF 4