Florida Department of
TRANSPORTATION

Experimental Project 1

High Polymer (HP)
SR 45 / US 41, Nebraska Avenue
Hillsborough County
FM # 431495-1-52-01

State Materials Office

Project Description

- R1, L1 HP test sections ; R2, L2 PMA control sections.
- Posted Speed 35-40 mph.
- From MP 3.165 to MP 4.173.

Figure 1. Project location

Background/Pre-existing Condition

- Nebraska Avenue is an undivided highway with four 9.5 to 12 ft wide lanes, curb and gutter.
- The HMA overlay has underlaying jointed concrete slabs with 20-ft spacing.
- Some joints were 2.5 inches wide or greater contributing to the premature deterioration of the overlay.
- Concrete slabs at these locations were replaced to eliminate the wide joints.
- Joints and cracks were cleaned and sealed before placing friction course.
- Specifications called for filling the joints with epoxy to within 0.5 inch below the concrete surface.

Design

- Mill 1.75” of existing asphalt.
- Grind concrete surface to remove uneven pavement at cracks and joints.
- Overbuild thickness varies.
- Place 2” of FC 12.5 High Polymer (HP) binder TL-C in R1 and L1 (test section).
- Place 2” of regular FC-12.5 PG76-22 Polymer Modified Asphalt (PMA) TL-C in R2 and L2 (control sections).

Performance is evaluated in terms of cracking and rutting from 06/2017 to 05/2021.

Cracking

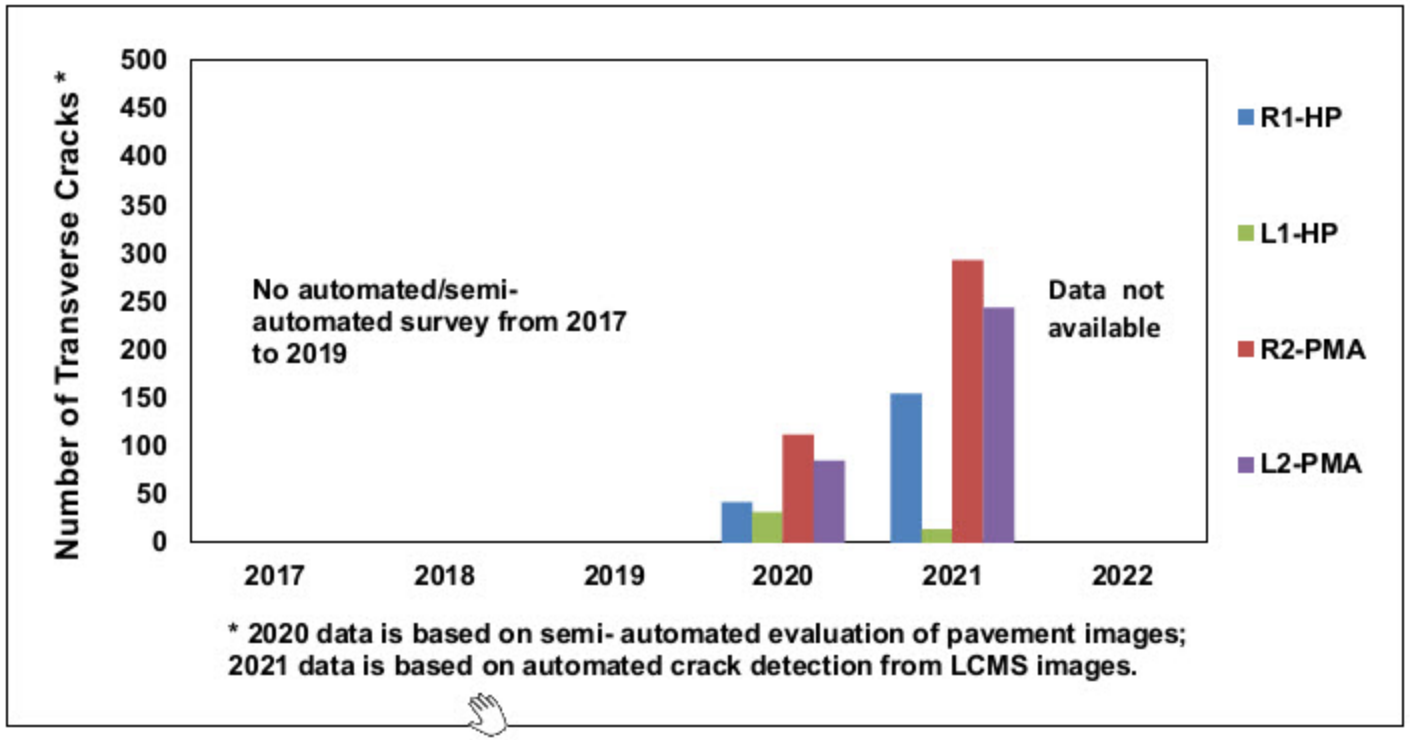

Figure 5 Transverse Cracking

Cracking

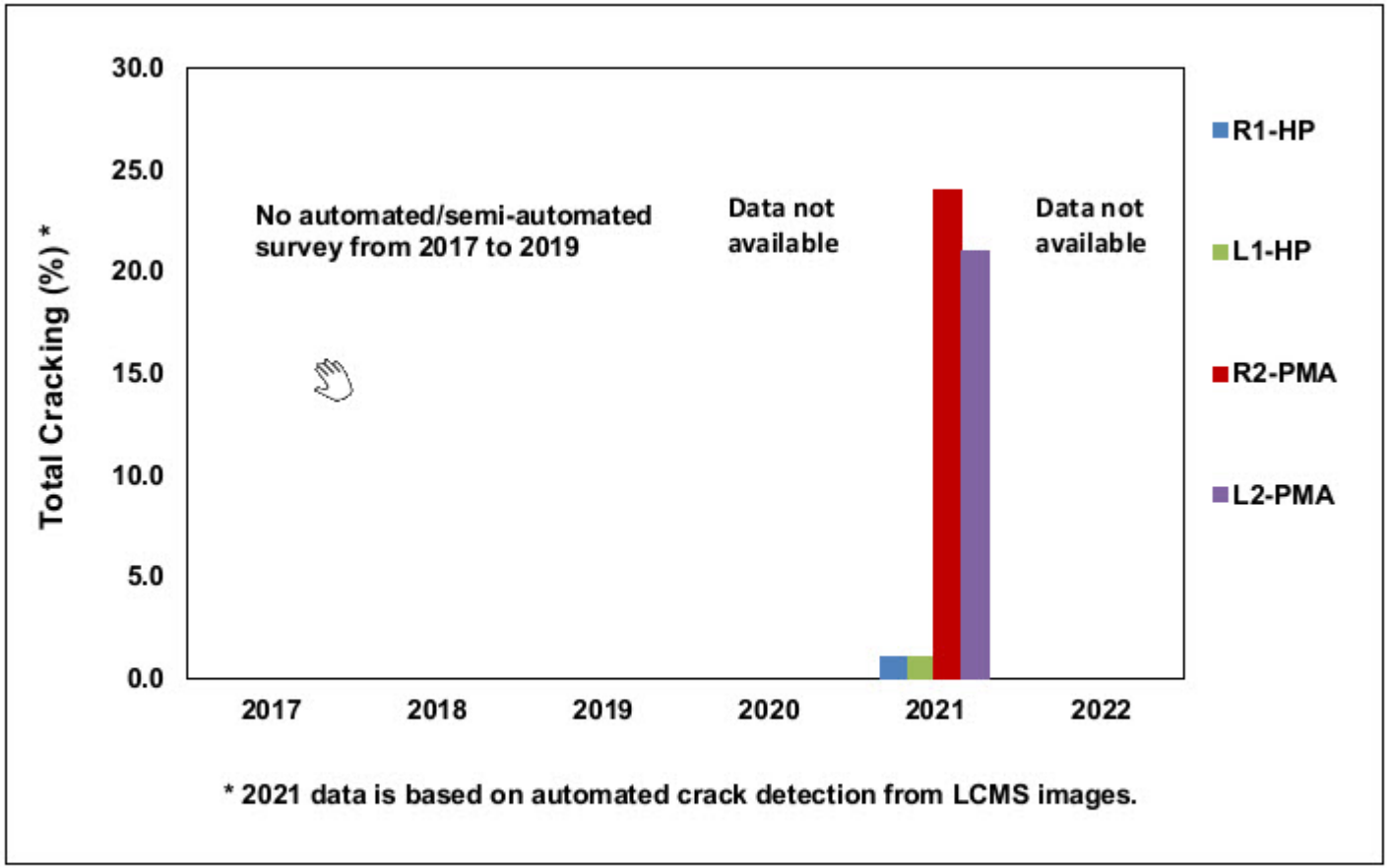

Figure 6 Total Cracking as Percent of Pavement Surface

Rutting

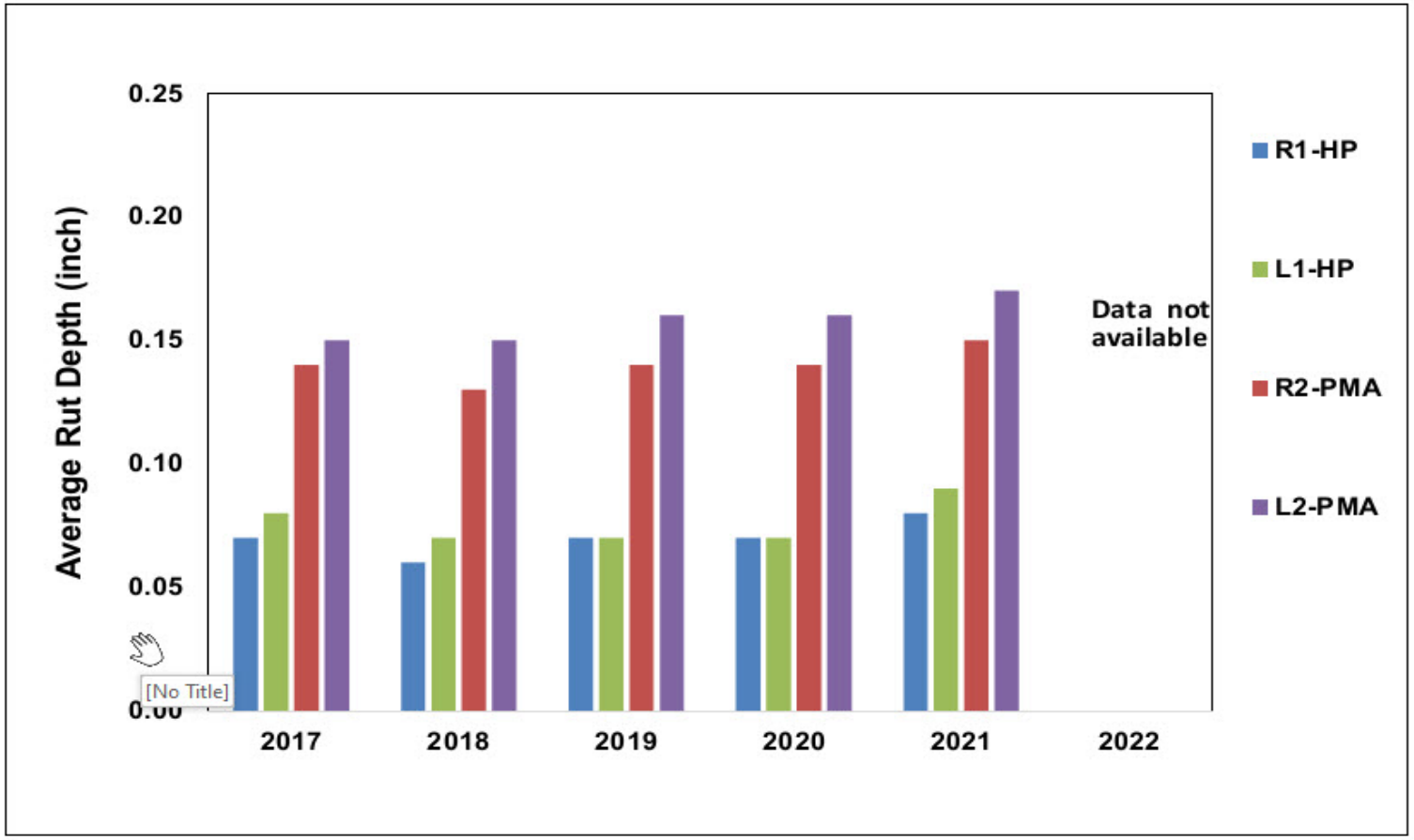

Figure 7. Rutting

Florida Department of
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Experimental Project 2

Open-Graded Crack Relief Layer and Asphalt Rubber Interlayer to Mitigate Reflective Cracking

SR 10 / US 90

Gadsden County

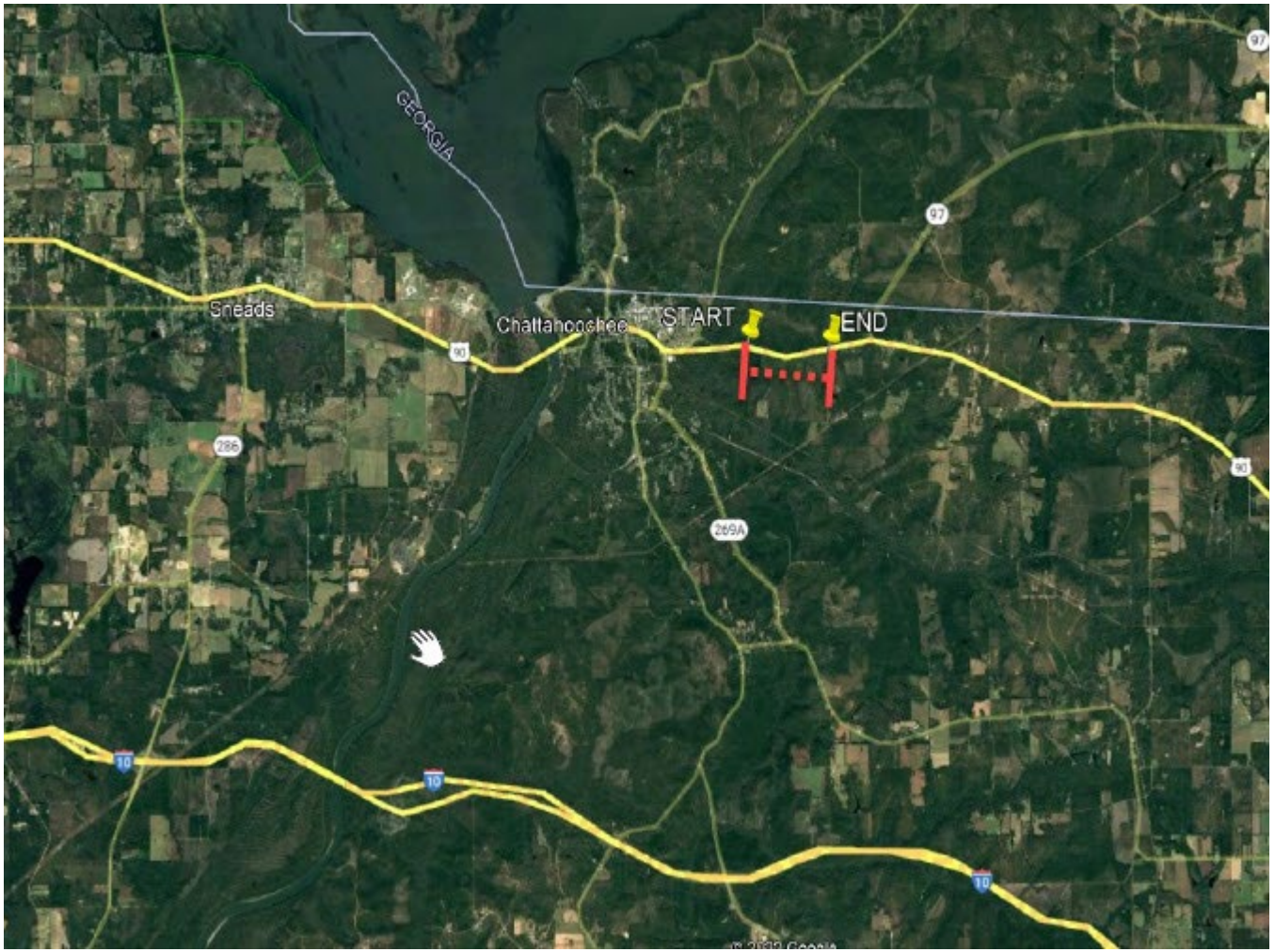
FM # 411695-1-52-01

State Materials Office

Objective

The objective of this study is to evaluate the effectiveness of reflection crack mitigation strategies including open-graded crack relief layer, asphalt rubber membrane interlayer, and asphalt overbuild layer.

Project Location



Background

- Four-lane divided rural minor arterial, in Gadsden County.
- The original two-lane roadway was constructed in the late 1920s and consisted of a 7-inch jointed plain concrete pavement (JPCP) with unpaved shoulders.
- Several rehabilitations took place over the years including asphalt overlays, an initial widening from two to three lanes, and a subsequent widening from three to four lanes.
- Prior to rehabilitation, this roadway exhibited significant reflection cracking in the two inside lanes (R1 and L1) where the original JPCP still exists as a base layer.

Project Description

- The experimental project consists of five test sections ranging from 1,315 to 1,542 feet.
- The test sections were part of a 16.5-miles resurfacing project which was completed in January 2010.
- The experimental project design included milling 3 inches of the existing asphalt and placing back 1.5 inches of SP-12.5 structural course in Sections 1, 2, 4 and 5, and placing 2.5 inches of the same SP-12.5 in Section 3.
- Directly above the milled surface:

  Section 1 received a 0.5 inch of SP 9.5 overbuild.

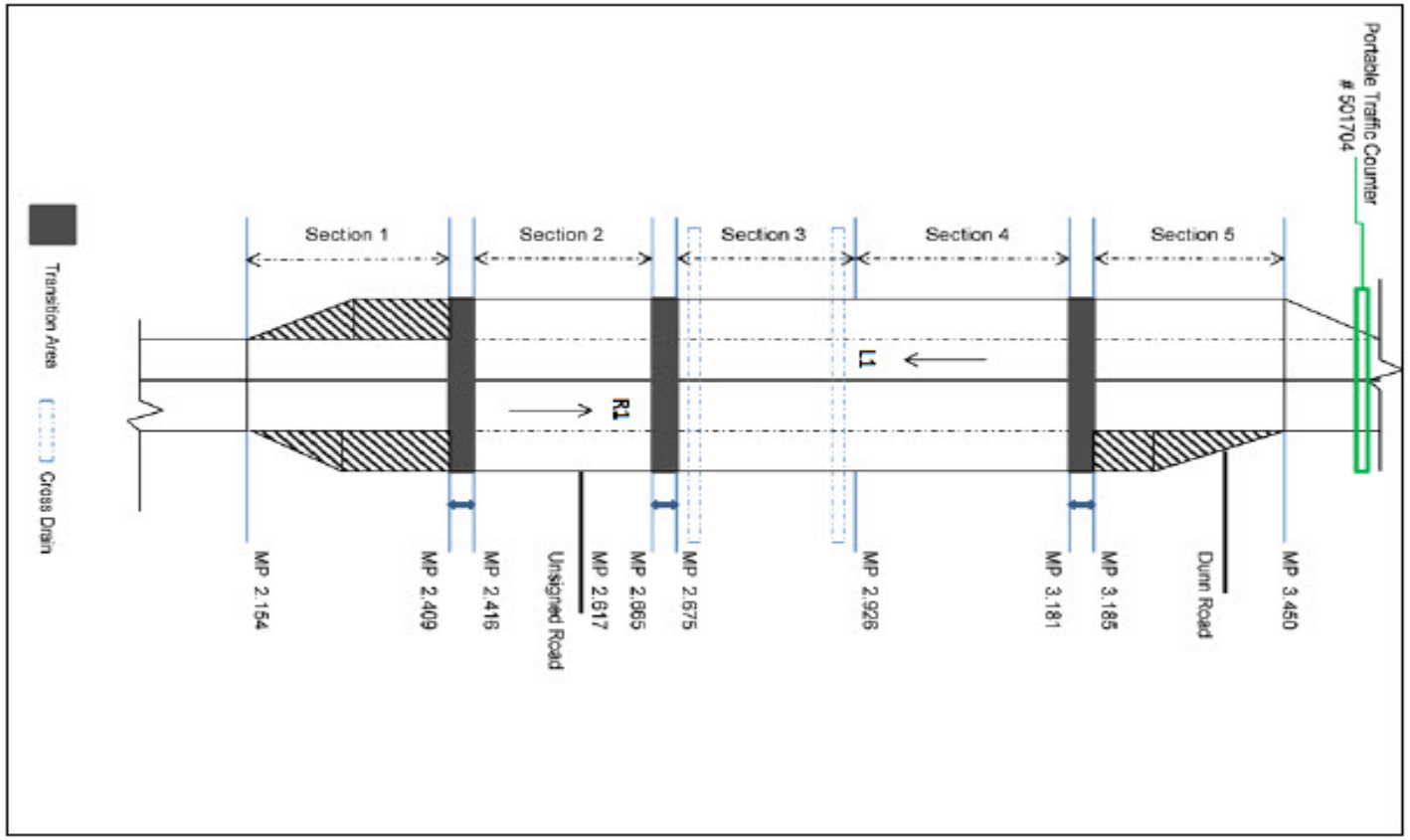
  Section 4 received a 1-inch open-graded crack relief layer (OGCR).

  Section 5 received a 0.5-inch of asphalt rubber membrane interlayer (ARMI).

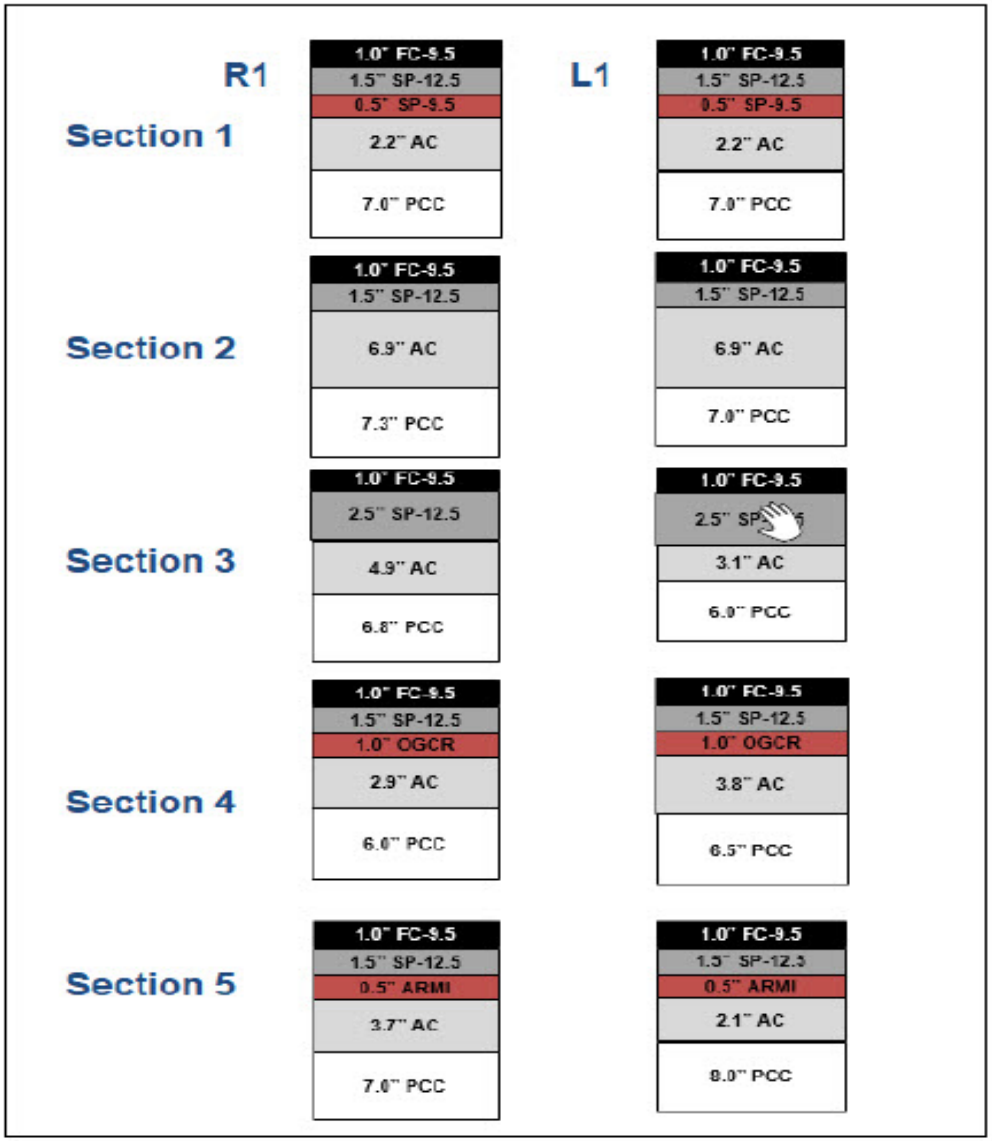
Project Performance

The reported performance as of January 2023 was evaluated in terms of cracking and rutting.

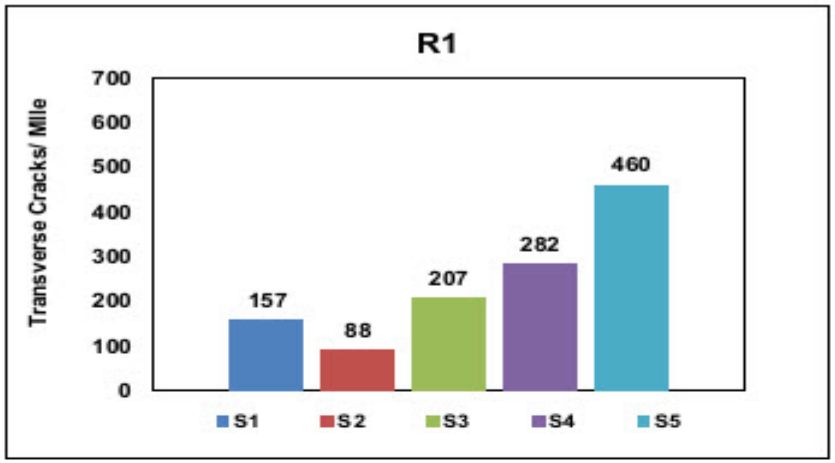
Project Layout

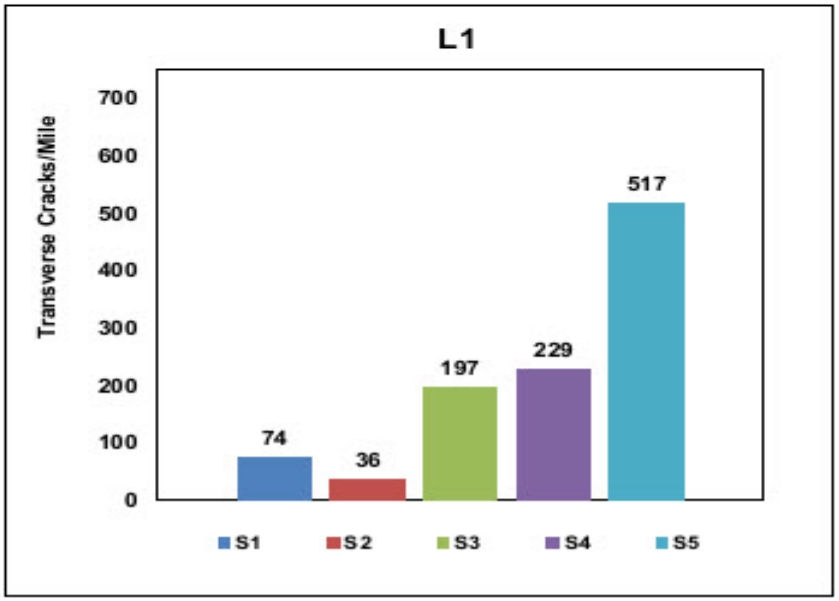


Pavement Thickness

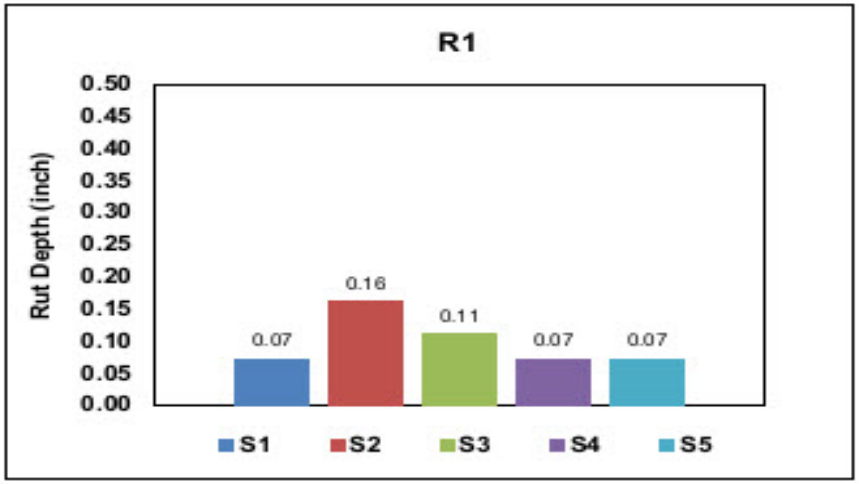


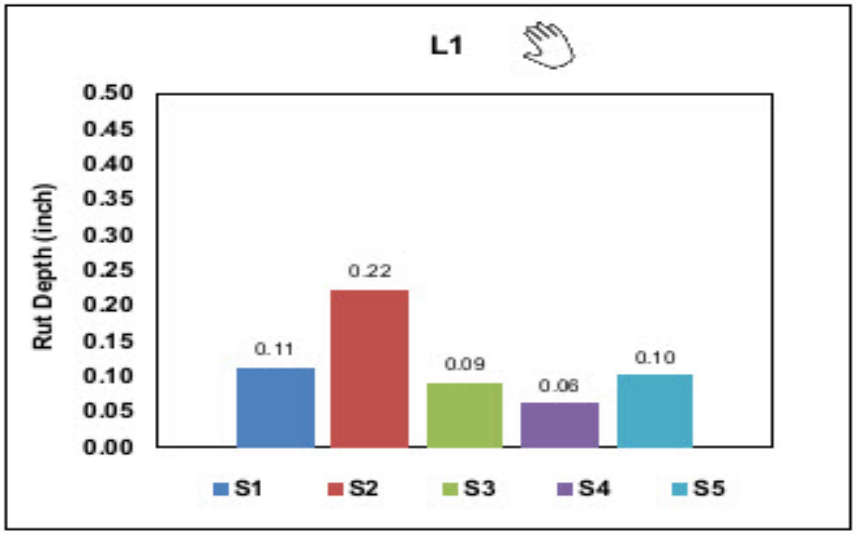
Cracking


R1
Transverse Cracks/ Mile
700
600
500
400
300
200
100
0
157
88
207
282
460
S1
S2
S3
S4
S5


L1
Transverse Cracks/Mile
700
600
500
400
300
200
100
0
74
36
197
229
517
S1
S2
S3
S4
S5

Rutting


R1
Rut Depth (inch)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.07
0.16
0.11
0.07
0.07
S1
S2
S3
S4
S5


L1
Rut Depth (inch)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.11
0.22
0.09
0.08
0.10
S1
S2
S3
S4
S5

Thank you.

Questions?