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Technical Memo

Project 0-6132: Task 6 – Test Sections in the Districts

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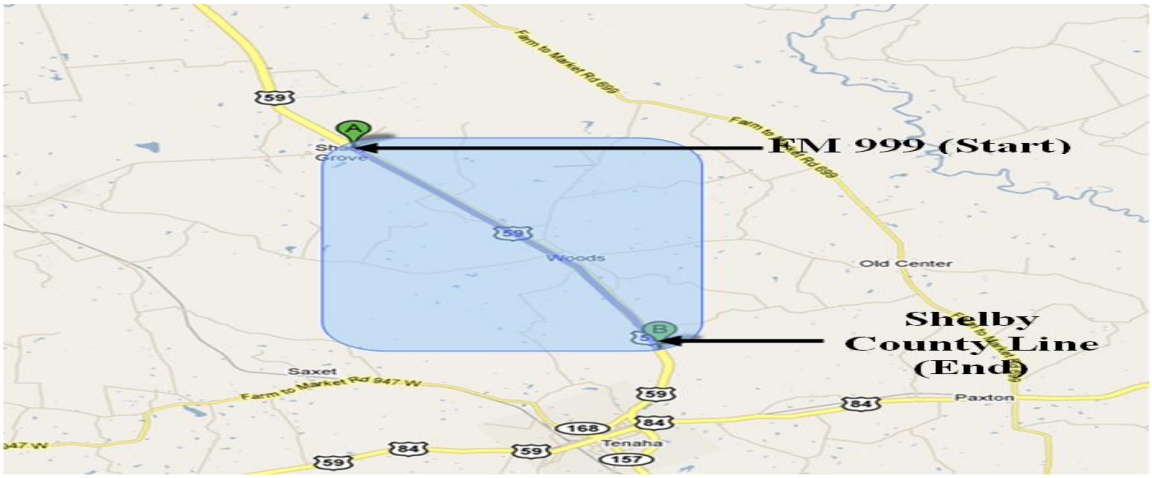
From:	Lubinda F. Walubita
CC:	Tom Scullion (t-scullion@tamu.edu)
Date:	January 10th, 2011
Subject:	Field Performance Report# 01 on the TTI Sections on US 59 (Panola County, Atlanta District) - October 12th, 2010.



Summary

This Tech Memo presents a summary of the field performance evaluation of the TTI sections on US 59 in Panola County (Atlanta District) that was conducted at the end of summer on October 12th 2010; five months after HMA overlay placement. Field performance tests included visual/walking crack surveys, taking of photographs, surface rut measurements with a straightedge, FWD tests, and high-speed profiles.

As indicated in Table 1, performance of both the Control (*with 5.2% target AC @ 97% lab design TGC density*) and the TTI Modified (*with 5.5% target AC @ 98% lab design TGC density*) sections is satisfactory with no major distresses observed even after the sections were subjected to the elevated summer (2010) temperatures of over 100 °F. Details of the performance evaluation are included in the subsequent appendices. Next performance evaluation is scheduled towards the end of this winter.

APPENDIX I: TABULATED RESULTS

Table 1. Test Section, HMA Mix Details, and Performance Evaluation.

Item	TTI Section 1	TTI Section 2	TTI Section 3
Designation	Control# 1	***Modified***	Control# 2
Section length	1 479 ft	*1 848 ft*	1 000 ft
HMA Mix-Design Details			
Mix Type	Type D – Fine Surface (Item 341)	*Type D – Fine Surface (Item 341)*	Type D – Fine Surface (Item 341)
Materials	PG 64-22 + Quartzite + 20% RAP	*PG 64-22 + Quartzite + 20% RAP*	PG 64-22 + Quartzite + 20% RAP
Design target AC	5.2%	*5.5%*	5.2%
Lab design TGC density	97.0%	*98.0%*	97.0%
Construction Details			
HMA overlay thickness	1¾ inch	*1¾ inch*	1¾ inch
Date of HMA placement	March 26th, 2010	*March 26th, 2010*	March 26th, 2010
Avg. QA IRI (in/mi)	43.3	*36.2*	42.7
Performance Data			
Date of 1st field performance evaluation	October 12th, 2010	*October 12th, 2010*	October 12th, 2010
Cracking	None	*None*	None
Avg. surface rutting in wheel path (inches)	0.13	*0.19*	0.12
Avg. IRI (in/mi)	50.3	*57.6*	58.1
Avg. FWD surface deflection	6.4 mils	*6.2 mils*	6.9 mils
Other distresses	Mild asphalt bleeding in outside WP @ 200 ft from start of Section	*None*	None

Analysis and Interpretation of the Results:

Rutting on all the sections including the *TTI Modified section with 5.5% target AC designed at 98% lab TGC density* was very marginal (< 0.25″ [6.25 mm]) even after the elevated summer temperatures of over 100 °F; primarily attributed to HMA densification under traffic loading.

The only surface distress observed was mild bleeding on the pavement surface on the Control Section 1 at about 200 ft from the GPS coordinates N 32° 02. 807'; W 094° 17. 437' at the start of the section. This asphalt bleeding was considered to be construction related. Due to heavy rains the night prior to field testing, there were also intermittent spots of moisture surfacing along the longitudinal joints between the lanes and shoulders, particularly on Test Sections 1 and 2. Strip sealing of some sections of the longitudinal joints maybe warranted in the future.

APPENDIX II: SURFACE RUT MEASUREMENTS (OCT2010)

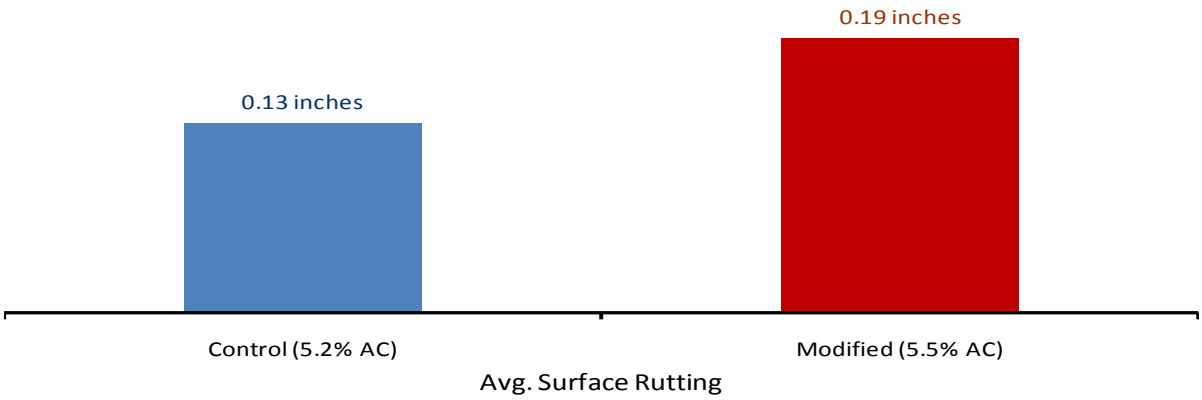


Figure II-1. Surface Rutting After 5 Months of Summer Temperature & Traffic Exposure.

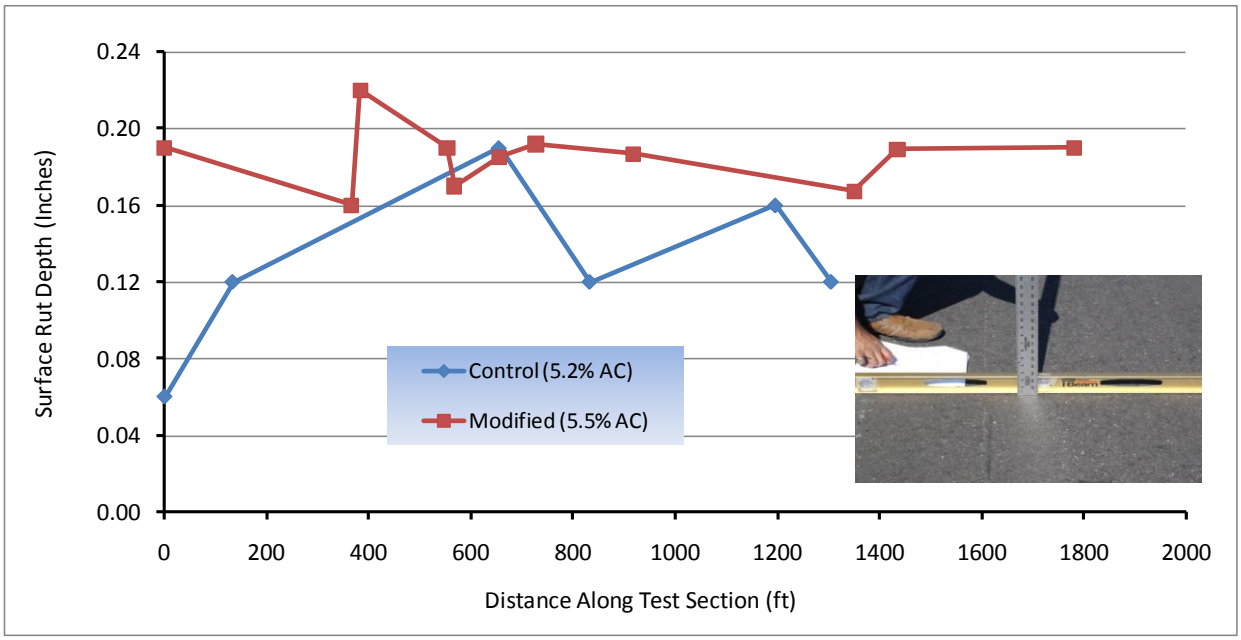


Figure II-2: Comparison of Surface Rutting – Outside Wheel Path, SB Lane (< 0.25″).

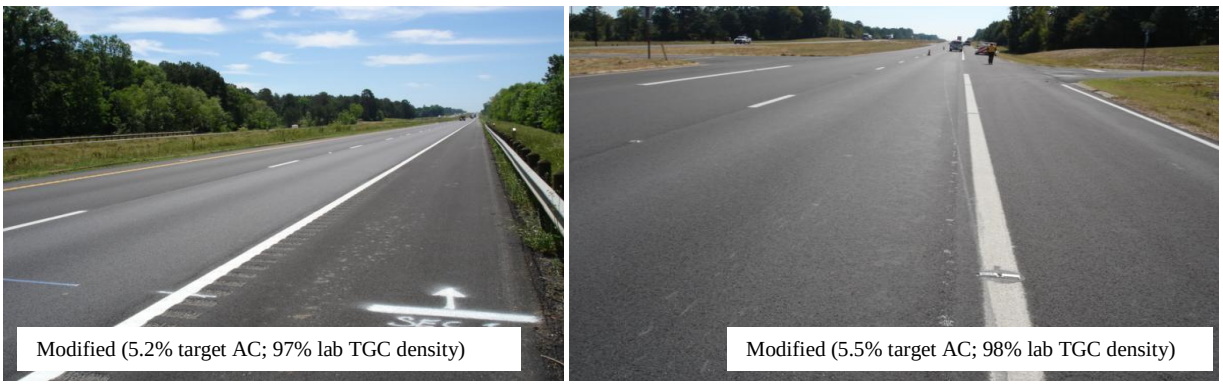


Figure II-2. View of the Test Sections – No Visible Surface Rutting.

APPENDIX III: VISUAL CRACK SURVEY (OCT2010)

Figure III-1. Test Section 1 (Control: 5.2% Target AC) – No Surface Cracking Observed.

Figure III-2. Test Section 2 (Modified: 5.5% Target AC) – No Surface Cracking Observed.

Figure III-3. Test Section 3 (Control: 5.2% Target AC) – No Surface Cracking Observed.

APPENDIX IV: SURFACE PROFILES (IRI) AND FWD DEFLECTIONS

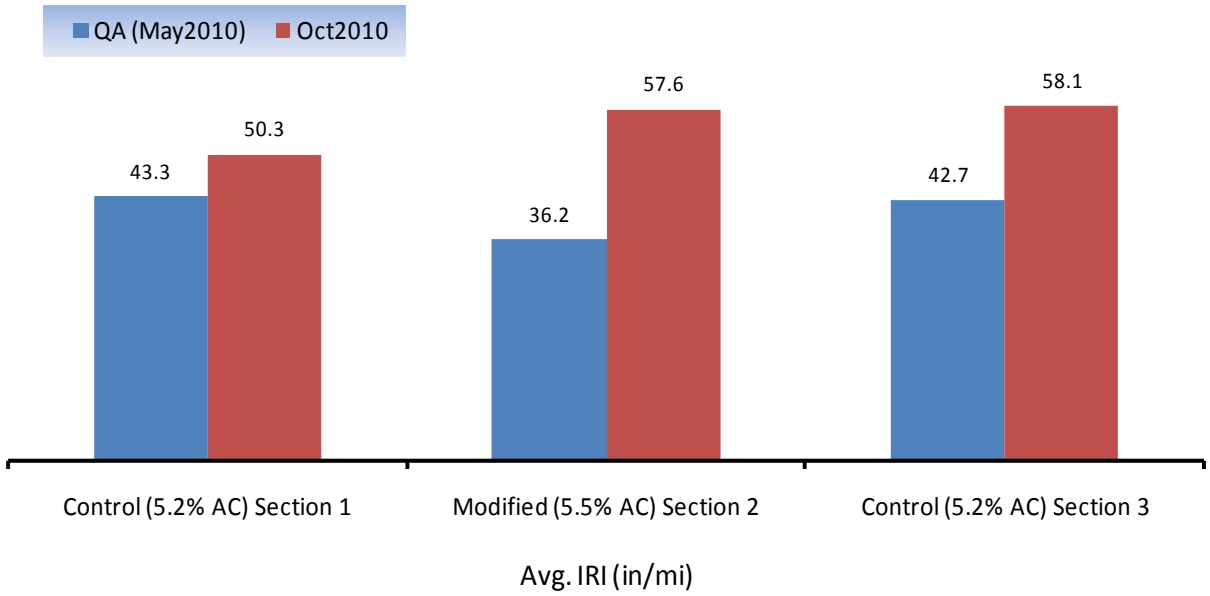


Figure IV-1. Comparison of IRI Plots (<< 90 in/mi).

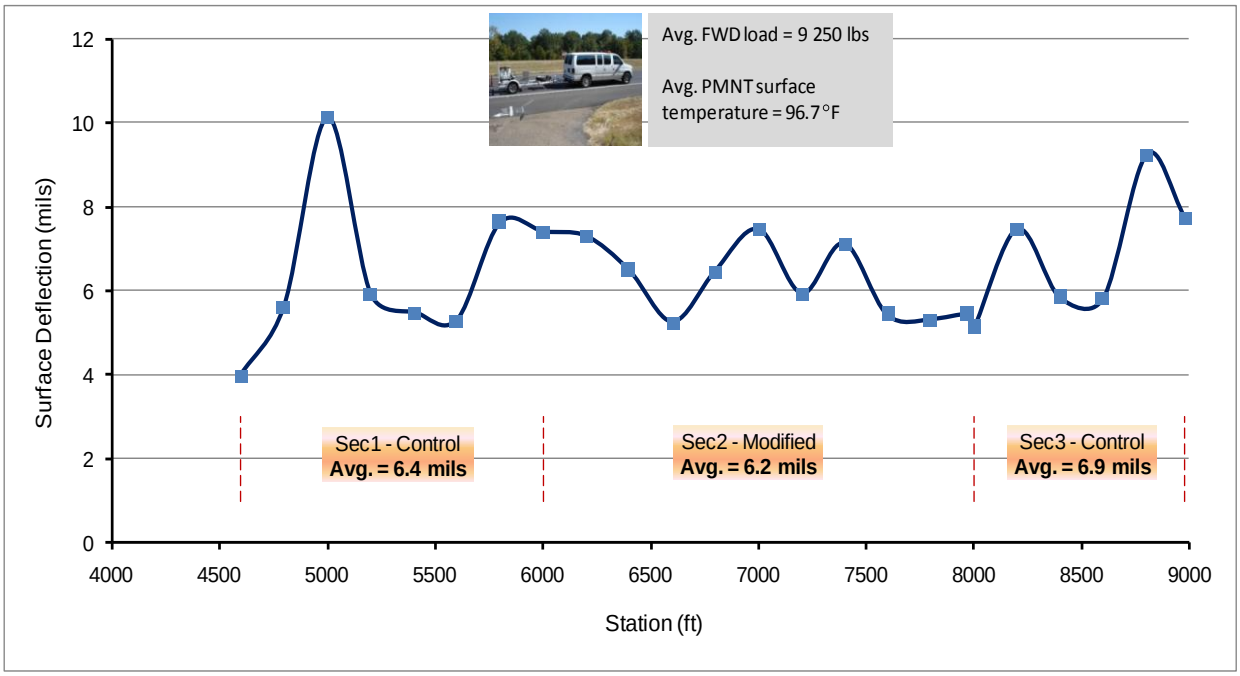


Figure IV-2. Plot of FWD Surface Deflections (Oct2010).

APPENDIX V: PHOTOGRAPHS OF OTHER DISTRESSES (OCT2010)

Figure V-1. Example of Mild Asphalt-Bleeding on the Control Test Section 1.

Figure V-2. Example of Moisture Surfacing Along the Longitudinal Construction Joint.