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Technical Memo

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

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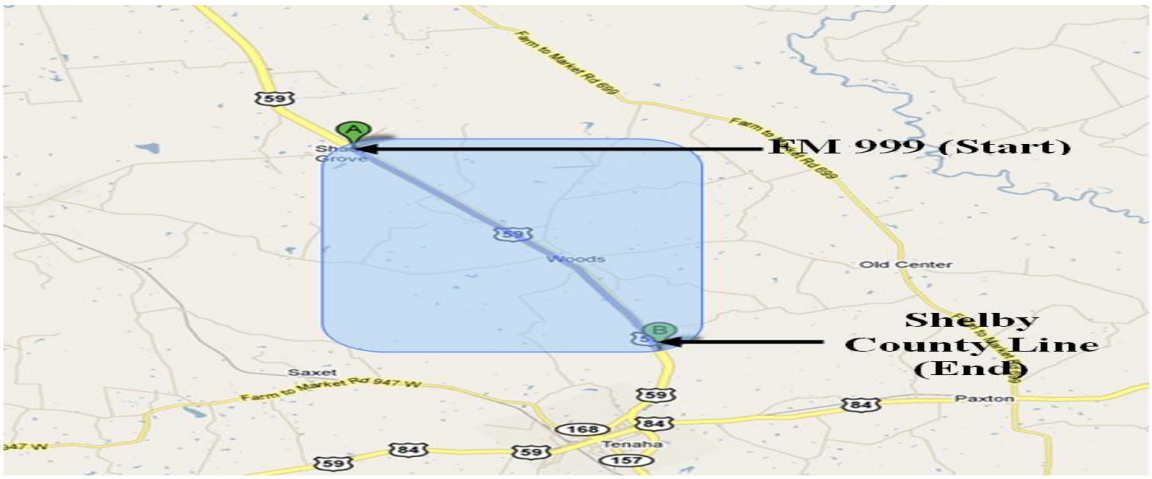
From:	Lubinda F. Walubita
CC:	Tom Scullion (t-scullion@tamu.edu)
Date:	May 23rd , 2011
Subject:	Field Performance Monitoring Report# 02 on the TTI Sections on US 59 (Panola County, Atlanta District)



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 winter on May 13th 2011; one year 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.

Field Performance: 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 to date. Details of the performance evaluation are included in the subsequent appendices. Next performance evaluation is scheduled at the end of this summer 2011.

Acknowledgements: Special thanks go to Miles Garrison, his team, and the traffic crew (TxDOT) for permitting and assisting TTI Researchers conducts the field tests.

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%
Overlay (OT) crack testing	269 cycles	*506 cycles*	240 cycles
Hamburg @ 15 000 passes	3.1 mm	*4.1 mm*	3.4 mm
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 (after 1st summer)	October 12th, 2010	*October 12th, 2010*	October 12th, 2010
Date of 2nd field performance evaluation (after 1st winter)	May 13th, 2011	*May 13th, 2011*	May 13th, 2011
Cracking (5/2011)	None	*None*	None
Avg. surface rutting in wheel path (inches) (5/2011)	0.14	*0.20*	0.13
Avg. IRI (in/mi) (5/2011)	44	*39*	43
Avg. FWD surface deflection	7.6 mils	*8.0 mils*	8.7 mils
Avg. PVMNT surface temperature	97 F	*97 F*	97 F
Other distresses (5/2011)	None observed!	*None observed!*	None observed!

Analysis and Interpretation of the Results:

No distresses were observed during this site visit. 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]) after one year of service. The construction joints also did not exhibit any defects that could be of concern.

As observed in Table 1 above, both the Control and Modified mix-designs are comparably good; thus, it may take several years to see any major performance differences on these sections. The next performance monitoring will be conducted towards the end of this summer (2011) when rutting is critical after the sections will be subjected to their second high summer temperatures of over 100 °F.

APPENDIX II: SURFACE RUT MEASUREMENTS (OCT2010)

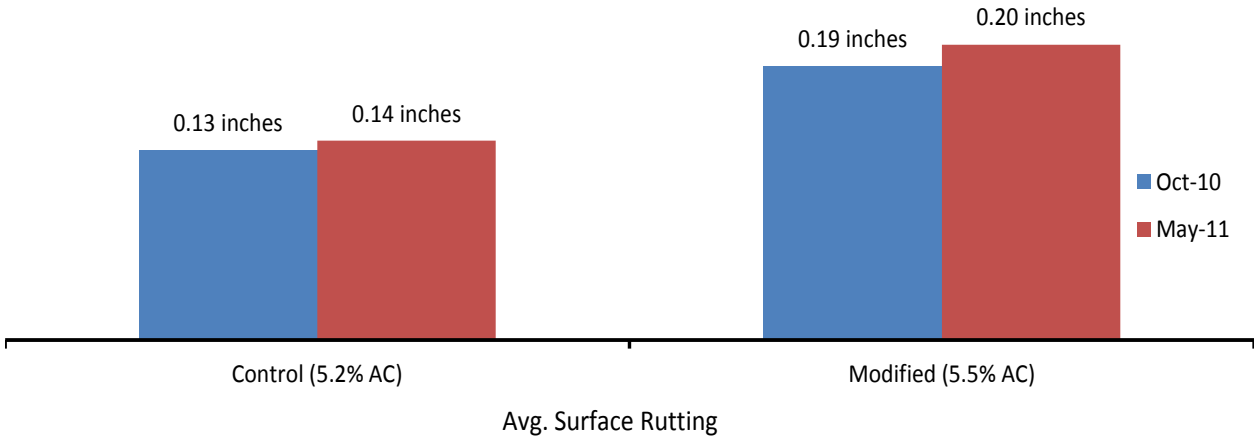


Figure II-1. Avg. Surface Rutting After One Year of Service.

Figure II-2. View of the Test Sections – No Visible Surface Rutting (After 5 Months; Oct 2010).

Figure II-3. View of the Test Sections – No Visible Surface Rutting (After 1 Year; May 2011).

APPENDIX III: VISUAL CRACK SURVEY (MAY2011)

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

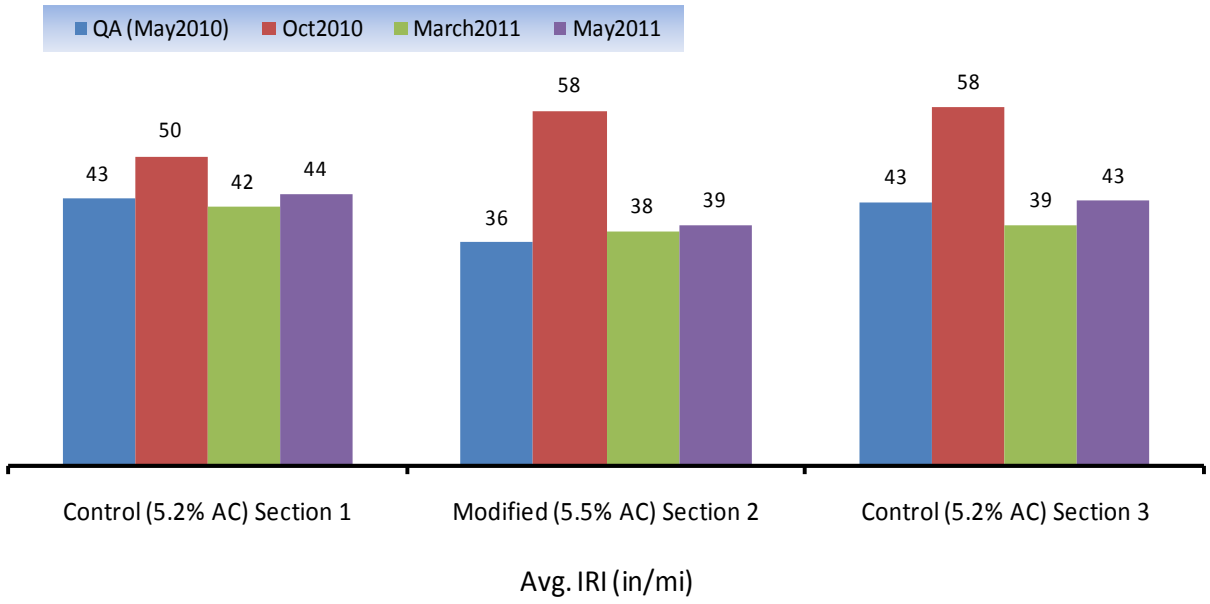


Figure IV-1. Comparison of IRI Plots (<< 90 in/mi).

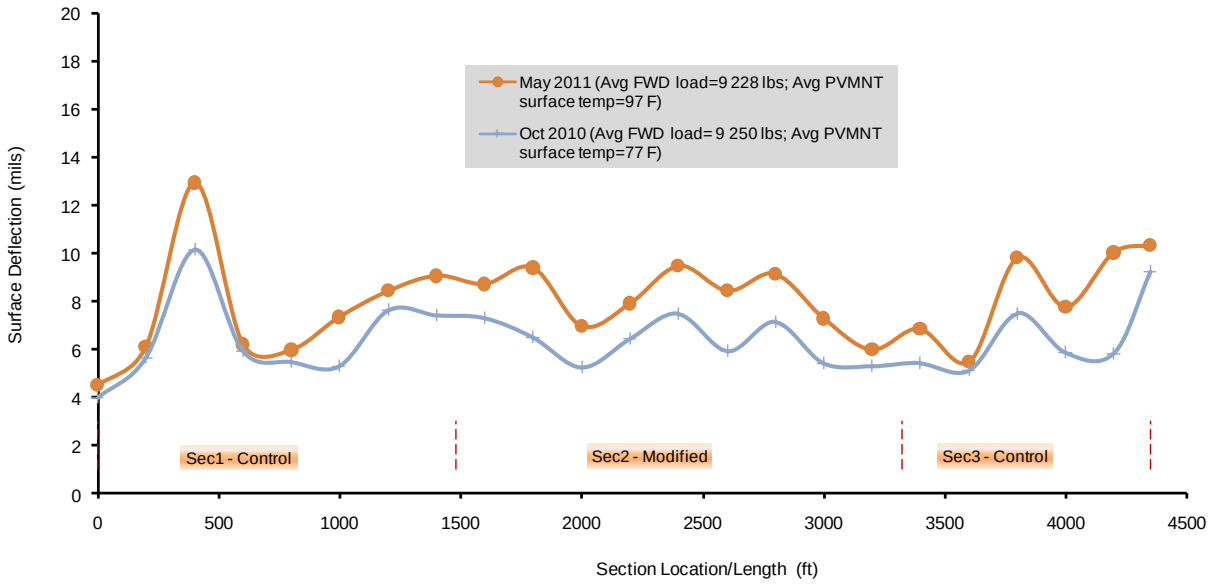


Figure IV-2. Plot of FWD Surface Deflections.