EVALUATION OF A RUBBER MODIFIED MIXTURE DESIGNED USING A BALANCED DESIGN IN COFFEE COUNTY, ALABAMA

1-Year Evaluation Report

Submitted to

COFFEE COUNTY, AL

By

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Project Objective

The objective of this project is to evaluate the performance of a rubber modified mixture designed using a balanced mix approach compared with an unmodified mixture also design as a balanced mix, and a conventional unmodified Superpave mix. To accomplish this objective, Coffee County resurfaced a portion of County Road 110 with these three mixtures. The field performance of the test sections will be monitored for 6 years.

1-Year Project Evaluation

A field-performance evaluation was conducted on October 26, 2021, after approximately 12 months of service. Data were collected on the three sections to document performance regarding rutting, cracking, smoothness in terms of international roughness index (IRI), and macrotexture in terms of the mean profile depth (MPD).

The evaluation was conducted using an automated pavement condition survey vehicle. The data collection vehicle used by NCAT is a fully automated PathRunner vehicle. The van is a class 1 inertial profiler with 3D automated crack and rutting detection system. The van includes an on-board laser package which measure smoothness, rutting, and macrotexture, in addition to front-facing super HD cameras, GPS, and 3D automated crack detection software providing a comprehensive pavement evaluation.

Figure 1 presents the layout of the three sections.

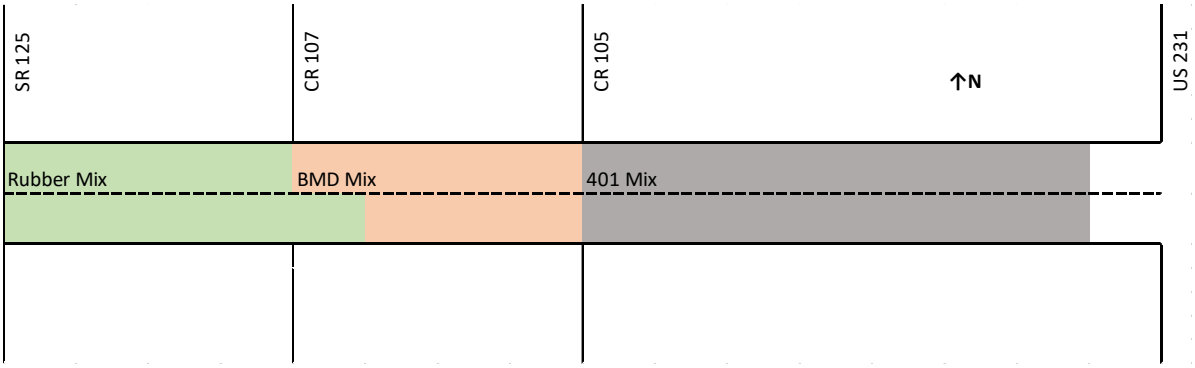

Figure 1 Layout of the Test Sections.

Table 1 shows the rutting, IRI, and MPD results for the test sections for each lane [east bound (EB) and west bound (WB)]. The table also presents the length of each test section. As presented in this table, the rutting performance of all the sections was excellent with rutting not exceeding 0.09 in (401 Mix-WB). IRI of the sections was similar with the BMD-EB mix showing the highest value at 95 in/mi. The macrotexture of the test sections was also very similar with the 401 Mix-EB yielding a slightly higher value at 0.82 mm. No cracking was detected in any of the test sections. Figures 2 through 4 show examples of the surfaces of the control Superpave mix, control BMD mix, and rubber BMD mix.

At the time of this evaluation, no significant different differences were observed in the performance of the different sections. The next field inspection will take place in October 2022.

Table 1 Field Performance of the Test Sections.

Mix	Direction	Length, mi	Avg. Rut, in	MIRI, in/mi	MPD, mm
401 Mix	WB	2.7	0.09	65	0.80
	EB	2.7	0.07	72	0.82
BMD	WB	1.7	0.08	95	0.80
	EB	1.2	0.07	84	0.79
Rubber	WB	1.5	0.08	88	0.78
	EB	2.0	0.08	71	0.78

Figure 2 Control Superpave Mix (401) at 12-month Inspection.

Figure 3 Control BMD Mix at 12-month Inspection.

Figure 5 Rubber BMD Mix at 12-month Inspection.