FINAL REPORT

STATE STUDY NO. 111

POLYMER MODIFIED HOT MIX ASPHALT FIELD TRIAL

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16. Abstract

A problem plaguing HMA pavements is rutting, which develops because of the high summer temperatures and heavy trucks. Many different polymer modifiers for asphalt cement have been developed to help improve both the rutting and thermal cracking problems of HMA by altering the properties of the asphalt cement binder.

The primary objective of this research was to evaluate the engineering properties and performance, especially rut resistance, of dense graded HMA containing specific polymer modifiers. The polymer modifiers were used in the HMA for the top two pavement layers of an HMA overlay of a flexible pavement The nine modifiers considered in this study included two crumb rubbers and one gelled asphalt.

Primary conclusions and recommendations resulting from this study include the following:

1. Each polymer required mixing at a higher temperature than regular HMA. These temperatures ranged from 320^{o} to 351^{o}F.
2. The modified HMA mixes were successfully produced in a normal HMA production facility. Most of the modifiers did not require a blending unit.
3. Brookfield Viscometer tests showed that the modifiers were all more viscous at the lower temperatures.
4. Results of the GTM tests showed that the laboratory specimens had sufficient shear strength to resist the stress state in the pavement and that the air voids were above the flushing level and were consistent with design values.
5. Results to date indicate that all the modified binders are providing superior rutting resistance as compared to the control binder. This validates the wisdom of using modified binders for areas of high equivalent single axle loading (ESAL). Continued monitoring will help to better quantify the improvement provided by the modified binders.
6. The APA test results correlate well with field rutting measurements for most of the polymer modifiers considered in this study. This indicates the potential for using the APA to predict the relative rutting performance of different polymer modifiers. Research should be conducted to substantiate this use of the APA.
7. The selection of a polymer modified asphalt binder grade based on the high temperature component of the PG designation could be quite inappropriate for a given project, especially when crumb rubber modifiers are considered for use in the HMA.

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During the period of this study, the Executive Director of MDOT was Dr. Robert L. Robinson followed by Mr. Kenneth I. Warren. The Deputy Executive Director / Chief Engineer was Mr. James D. Quin, Mr. Kenneth I. Warren, and Mr. James Kopf, respectively.

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CHAPTER 1: INTRODUCTION

This project was awarded in May 1994 to Lehman-Roberts Company to rehabilitate some existing pavement with hot mix asphalt (HMA) combined with polymer modifiers. Construction of the modified HMA sections did not occur until the 1996 construction season because of the milling and substantial HMA tonnage to be placed prior to placement of the polymer modified HMA.

BACKGROUND

Rehabilitation of existing asphalt and concrete pavements is most often accomplished with HMA overlays. A problem plaguing HMA pavements is rutting, which develops because of the high summer temperatures and heavy trucks. A rut, as defined by Webster, is the formation of a recessed track, channel, or furrow, worn by the habitual passage of a wheel on the surface of pavement. This channeling effect, depending on its severity, causes drainage, safety, and ride quality problems that must be resolved in some manner. For rutting up to approximately 1 inch, the typical rehabilitation procedure in the past has been to either overlay with HMA or combine milling of the rutted pavement with an overlay.

Many different polymer modifiers for asphalt cement have been developed to help improve both the rutting and thermal cracking problems of HMA by altering the properties of the asphalt cement binder. Manufacturers of polymer modifiers claim the incorporation of their product with the asphalt cement binder in the manufacture of HMA can significantly extend the service life of HMA pavements. These polymer modified pavements are reputed to resist rutting, improve overall stability, and increase useful life. If additional service life can be achieved, then life cycle costs can be lowered, thereby allowing overall savings to the cost of maintaining pavements.

OBJECTIVES

The primary objective of this research was to evaluate the engineering properties and performance, especially rut resistance, of dense graded HMA containing specific polymer modifiers in comparison to the other polymer modified HMA mixes as well as to a control section containing no modifiers. The polymer modifiers were used in the HMA for the top two pavement layers (total thickness of 3 inches) of an HMA overlay of a flexible pavement. This project was located on I-55 in the Grenada area, an area that had experienced unacceptably high rutting in recent years. This research also incorporated data for other polymer modified HMA mixes used on projects that the Mississippi Department of Transportation (MDOT) had constructed from 1993 through the date of construction for this polymer modifier field trial.

SCOPE

The experimental design called for the use of nine different modifiers, each to be used in sections approximately 0.5 mi. long in the 1.5 inch top binder and 1.5 inch surface courses. Transition sections, also approximately 0.5 mi. long, separated the test sections. All test sections as well as the control section were in the northbound lanes of I-55 and had essentially the same type and amount of traffic loading. The control section with no modifier comprised the remainder of the northbound lanes outside the test sections and transitions and contained at least 2 miles having the same general topography as that in the test sections. Other than the modified binder, all other HMA material parameters were the same throughout the test and control sections. Asphalt cement grade AC-20 was the base asphalt for all the modified asphalt cement binders. The control section utilized an AC-30 asphalt cement, which is the standard asphalt cement used by MDOT.

The nine different modifiers were specified by brand name and manufacturer. A special effort was made to select modifiers from the different chemical groups that are in widespread use for modifying HMA. Polymer loading for each different polymer was determined on the basis of its manufacturer's recommendation along with documented previous usage of the polymer for traffic and environmental conditions similar to those to be encountered on this project.

The following is a list of the modifiers used in this research:

TRADENAME	MANUFACTURER	TYPE
KRATON	Shell Chemical Company	SBS Block Copolymer
ULTRAPAVE	Textile Rubber & Chemical	SB Latex
NOVOPHALT	Advanced Asphalt Tech.	LDPE (Recycled)
STYRELF	Koch Materials	SB Block Copolymer
GF-80 RUBBER	Rouse Rubber Industries	-80 Mesh Tire Rubber
SEAL-O-FLEX	Ergon	SBS
VESTOPLAST-S	VP-S Company	Ethylene, Butylene, Terpolymer
MULTI-GRADE	Asphalt Materials	Gelled Asphalt
CRYO-80 MESH	Cryopolymer	Cryogenic Ground Rubber

The nine modifiers included two crumb rubbers and one gelled asphalt.

OTHER MDOT POLYMER PROJECTS

Immediately joining this project to the south is another project that experienced unacceptable rutting before the rehabilitation project was completed. This project, Project Number 54-0055-03-067-11, 12, 13, consisted of rubblization of 8 inches of CRCP in the northbound lanes, installation of edge drains at each edge, and an overlay with 6.5 inches of HMA. The

southbound lanes of CRCP were overlaid with 7 inches of HMA after punchout repair. Another feature of this project was modifying the crown to have a 2 percent cross-slope. SEAL-O-FLEX modified binder was used on most of the top binder course and all of the surface course on the northbound lanes in an effort to reduce and retard rutting. Modifications were made to the HMA job mix formula, such as limiting the use of natural sands to 10 percent.

Another project where a polymer modified binder was used was on Project Number 91-3082-76-011-10 on US 82 in Washington County. Polymer modifiers were used for pavements at all intersections where turning movements of heavy traffic has historically produced severely rutted pavement. SEAL-O-FLEX polymer was used at a rate of 6 percent of the binder content for the binder course and surface course.

In Warren County, VESTOPLAST-S modifier was used on a westbound section of Interstate 20, Project Number 59-0020-01-126-10, in a 1.5 inch lift of binder course and 1.5 inch lift of surface course. This modifier was added as a part of the aggregate at the rate of 7 percent of the binder content. Tests showed a marked increase in Marshall stability properties. Total modified mix for this project was 100 tons of binder course and 100 tons of surface course. This portion of the project is an overlay of an existing CRCP.

Other significant projects done by MDOT that utilized polymer modifiers were also documented in this study. Marshall mixture properties plus pavement performance data to include ride quality, rut depths, and deflection test results constitute the data collected for these other projects.

MDOT SPECIAL PROVISION

At about the same time that this study was being conducted in the field, MDOT approved Special Provision No. 907-702-6 Petroleum Asphalt Cement and Polymer Modified Petroleum Asphalt Cement. As related to polymers, the requirements of this special provision were the following:

- Unless otherwise specified, polymer modified asphalt cement for use in plant mix bituminous base and pavements shall conform to AASHTO Designation: MP-1, Grade PG 76-22.

- Asphalt cement Grade PG 76-22 shall be the product resulting from the addition of a polymer modifier to a PG 64-22 or lower grade asphalt cement and not by some other refining technique.

- The polymer shall be a Styrene Butadiene Styrene (SBS), a Styrene Butadiene Rubber (SBR) or an equal approved by the Engineer. The polymer shall be thoroughly blended with the asphalt cement at the refinery or terminal prior to shipment to the hot mix plant.

- Crumb rubber shall be produced by ambient grinding methods.

This policy was not in effect when this research study was initiated; hence, not all the modifier formulations (largely, percent modifier) used in this research would meet these specifications.

CHAPTER 2: PRECONSTRUCTION EVALUATION OF PAVEMENT

The test and control sections are located on the northbound roadway of I-55 in Grenada and Yalobusha counties. This Federal Aid project, Project Number 59-0055-03-070-10, 11, is located in northcentral Mississippi.

HISTORICAL INFORMATION

Original construction and rehabilitation information for this section of I-55 is given as follows:

Original Construction Information

County	Log mi. Termini		Length	Original Construction		
	Beg.	End	mi.	Year	Base, in	Pavement, in
Grenada	7.347	12.736	5.389	1965	6 CTB[1]	12.5 HMA
Grenada	12.736	15.637	2.901	1964	11 CTB	4 HMA
Yalobusha	0.000	6.449	6.449	1964	11 CTB	4 HMA

Rehabilitation Information

County	Log mi. Termini		Length	Year	Type Rehabilitation
	Beg.	End	mi.		
Grenada	7.347	12.736	5.389	1983	Mill 1 in, SBST[2] , 2.5 in HMA
Grenada	7.347	12.736	5.389	1988	Mill 1.5 in, 1.5 in HMA outside ln.
Grenada	7.347	12.736	5.389	1991	Microsurface outside lane
Grenada	12.736	15.637	2.901	1980	Mill 1 in, SBST
Grenada	12.736	15.637	2.901	1983	SBST, 2.5 in HMA
Grenada	12.736	15.637	2.901	1988	Mill 1.5 in, 1.5 in HMA outside ln.
Grenada	12.736	15.637	2.901	1991	Microsurface outside lane
Yalobusha	0.000	6.449	6.449	1980	Mill 1 in, SBST
Yalobusha	0.000	6.449	6.449	1983	2.5 in HMA
Yalobusha	0.000	6.449	6.449	1988	Mill 1.5 in, 1.5 in HMA outside ln.
Yalobusha	0.000	6.449	6.449	1991	Microsurface outside lane

[1] Cement treated base
[2] Single bituminous surface treatment

In late 1993, samples of the roadway pavement were obtained transverse to the direction of traffic for the full depth of the existing pavement which revealed that rutting extended to the bottom of the HMA mix placed during the first rehabilitation project (top of the original HMA still in place) or approximately 3.5 in. The MDOT rehabilitation design committee decided that if satisfactory rehabilitation were to be achieved, this 3.5 in thickness of rutted pavement would have to be removed and replaced with new pavement.

TRAFFIC VOLUMES

Traffic for this segment of I-55 for 1994 is 14,000 ADT and year 2014 design traffic is projected to be 25,000 ADT with 28 percent trucks. Cumulative 18,000 lb. equivalent single axle loads (ESALs) for the design period is 18.95 million. A deflection survey (Dynaflect) resulted in a recommended additional structure of 3 in for the first 5.3 mi. and 4.5 in for the remaining 9.3 mi. These recommended thicknesses represent confidence levels between 85% and 98%.

DETAILS OF PROJECT

The typical sections for this project called for milling 3.5 in deep, 3 in of HMA base course, either 2 in or 3.5 in of HMA binder course, and 1.5 in of HMA surface course. The roadway south of 708+68 was to receive 2 in HMA binder course and the roadway north of station 708+68 was to receive 3.5 in of HMA binder course. Paved shoulder grades were to be adjusted with HMA. The cross-slope of the traffic lanes was to be increased from the existing 1.56% to 2%.

The items in the project specifications addressing the polymer modified HMA are described as follows:

1. Each modifier will be used in an approximate 0.5 mi. section in the top two pavement lifts for both northbound lanes (24 ft wide roadway) for a total thickness of modified HMA of 3.5 in (later changed to 3 in). Transition sections of approximate 0.5 mi. lengths will separate the various modifier sections. Polymer modified HMA will be permitted in the transition sections to the extent necessary to use any remaining modified binder prepared for the 0.5 mi. test section. All HMA in the transition sections will, however, be paid for at the price for non-modified HMA.

2. HMA aggregate gradation will be held constant for all modified HMA sections as well as the control section (remainder of the northbound lanes) for each pavement lift.

3. Modified binder content must be within 0.3 percent of the binder content of the non-modified HMA for the particular layer.

4. The base asphalt for the modified binders must be an AC-20. The base asphalt must be from the same source for all modified HMA sections as well as the control section, i.e., for all the northbound lanes for the top two pavement lifts.

5. Each modifier manufacturer will be required to have a technical representative on site throughout the production of modified HMA with their modifier.

6. The polymer loading to be used for each modifier must be approved by MDOT. Each manufacturer shall submit to the MDOT Research Engineer copies of at least three different HMA mix designs used previously which incorporated their modifier into HMA

for use under traffic (5 to 10 x 10^6 – 18,000 lb. ESALs design loading) and environmental conditions similar to those to be encountered on this field trial. Traffic and environmental data shall be documented. Polymer loading, asphalt cement grade that was modified, modified binder properties, aggregate gradation, and strength properties shall be listed at a minimum. This information will be used by MDOT to determine a polymer loading range for each individual modifier. The purpose here is to utilize a polymer loading for each particular modifier that is in keeping with customary loading rates for previous applications of the particular modifier and to target similar HMA properties for all modified HMA mixes used on the project.

7. The modifiers will be specified by brand name and manufacturer. The specific modifier within a "family" of polymers under the same name brand will be selected by the manufacturer.

8. Each modifier manufacturer will be required to perform laboratory testing with their modified binder to include all the SHRP binder tests. These test results must be submitted to MDOT before actual production of the modified HMA. If the polymer manufacturers desire, they are encouraged to also submit data from the SHRP mixture tests as well.

9. Each modifier manufacturer will be required to submit samples of the base cement without modification, the modified asphalt cement, and the modifier. FTIR testing will be done to verify polymer loading.

CHAPTER 3: DESIGN AND CONSTRUCTION

This chapter covers the modified mixture designs by the MDOT Materials Division and details the asphalt plant and the paving of the roadway.

MIXTURE DESIGNS

The mix designs for the nine modified mixtures were the same for each with only the addition of the different modifier. Material types for the modified mixtures are given in table 1 for both the binder (high type binder course) HTBC and surface (high type surface course) HTSC. This table also lists the percentages of each type material. Both designs included reclaimed asphalt pavement (RAP) and the addition of 1 percent hydrated lime to reduce stripping. The gradation of the modified mixes are given in table 2 for both the binder and surface courses. The specified design range for the aggregate blend is also listed in table 2. Properties for the mixes are given in table 3. It is interesting to note that the job mix temperature for the modified mixes was 329^{o} F which is 31^{o} hotter than that for regular mix. For the modified mixes, the base petroleum asphalt cement was Grade AC 20 and the binder course had 4.8 percent and the surface course had 5.2 percent asphalt binder by weight of the total mix. The RAP used in both the binder and the surface mixes had an AC content of 5.13%. The RAP contributed 21% of the total AC used in the binder mix and 10% of the total AC used in the surface mix.

The mix design for the control section, both binder and surface courses, was the same as the modified mixes except that petroleum asphalt cement Grade AC 30 was used instead of the AC 20. The information contained in tables 1 through 3 also apply to the control section.

The polymer loading was a percentage of the base asphalt cement in the mix. This loading is given below:

Tradename	Polymer Loading (%)
CRYOPOLYMER	10.0
KRATON	4.25
MULTIGRADE	Indeterminable
NOVOPHALT	5.5
ROUSE RUBBER	10.0
SEAL-O-FLEX	4.25
STYRELF	4.3
ULTRAPAVE	3.0
VESTOPLAST	7.0

ASPHALT PLANT

The asphalt was produced in Lehman-Roberts plant near Grenada, MS. This plant was a batch plant with a single hot bin (figure 1). The hot mix asphalt was conveyed to the top of

the silo and stored for use (figure 2) and the trucks were loaded from a chute at the bottom of the silo (figure 3). In order to carryout this paving operation with so many products, the use of three asphalt cement storage tanks was necessary (figure 4). Two different modified asphalts for the test sections and a regular asphalt for the transition sections were laid in the same day requiring the use of all three storage tanks. For the modified asphalt cement that was terminal blended, and for the AC 30, the products were brought to the plant by tanker (figure 5). However not all the products were terminal blended. NOVOPHALT and Rouse Rubber were blended in a portable blending unit (figure 6) provided by Advanced Asphalt Technologies. The VESTOPLAST product was placed from bags into a machine that blew the polymer up a hose into the pugmill.

CONSTRUCTION OF PAVEMENT

Construction of the pavement started in the construction season of 1995 in which the milling was conducted and the lower layers of pavement were placed. Placement of the modified hot mix asphalt took place from July 8 through August 9, 1996. Early on July 8 the first polymer, which was Kraton, was placed on the inside lane. Temperature of the hot mix at the road was 325^{o} F and all the trucks had tarpaulins which covered the mix while being transported to the roadway. Temperatures of the asphalt were taken in the truck when it arrived, in the hopper of the paver, and behind the paver. Each supplier had a certain temperature range that was requested and the temperatures of the asphalt in the trucks ranged from 320^{o} to 351^{o} F depending on the modifier.

The paving sequence began with the tandem dump trucks unloading the hot mix into the material transfer device (MTD) (figure 7). This MTD worked well with the hot mix being transferred into the hopper of the paver (figure 8). Paving was with a single 12 ft wide front loading paving machine. The paver is shown paving the inside and outside lanes in figures 9 and 10. Placement of the modified mixes appeared to be in a normal fashion as it would for regular HMA except for possibly more smoke and more rolling of the vibratory roller. Only steel wheel rollers were used on the modified mixes.

The rolling pattern was determined using a nuclear density gage. Each time a pass was made with the vibratory roller (figure 11), the density of the pavement was checked. Additional passes of the roller were applied until the density peaked. It took from three to five passes of the breakdown roller for this pattern to be determined depending on which modified asphalt was in place. It was interesting to note that with continued rolling of the modified asphalt caused the density to drop off and later to peak again. The rolling patterns established are given in detail in Appendix A. Temperatures of the pavement during this procedure were also measured and are listed in Appendix A. The vibratory roller sometimes left roller marks on the surface and a small steel wheel roller (figure 12) was able to remove these marks.

The procedure used by the contractor for the paving was to pave the inside lane with a modified asphalt for 0.5 mi. and then change over to regular mix which provided a 0.5 mi. transition section before the next modified asphalt was put down. During a day's time, two modified sections and two transition sections were paved. The inside lane binder sections for two modified asphalts were paved on day one. On the second day, the binder sections were paved in the outside lane. The shoulder was paved on the third day. This process

was then repeated for the surface course. Also, there was another reason for paving in this sequence. The inside lane was paved first and was the “control” strip for conducting the rolling pattern as well as verifying that all mix parameters were met before paving the outside lane.

Most of the paving with the modified asphalts went without any problems except for two instances. During the paving of the binder course for MULTIGRADE, the lab tests showed that the air voids were not acceptable and the Engineer recommended removal of this asphalt. However, it was decided to finish out the MULTIGRADE paving but not consider this section a test section. MULTIGRADE asphalt was placed again later during the operation without any incident. Also, during the initial paving of the binder course for VESTOPLAST, the hose on the blower unit filled with asphalt and the operation was stopped. Due to the difficulty in getting another hose, VESTOPLAST did not continue in the paving or in the study.

TEST SECTIONS

The actual stationing of each modified section as well as the stationing of the transition sections and control section are given in table 4. This table lists the modified asphalts in the order that they were paved. A 1000 ft test section was chosen within each modified section to be used for testing and observation in the future. These section limits are shown in figure 13.

Figure 1. Asphalt plant.

Figure 2. Hot mix storage silo.

Figure 3. Truck loaded under silo.

Figure 4. Asphalt cement storage tanks.

Figure 5. Tanker unloading modified asphalt cement.

Figure 6. Mobile blending unit.

Figure 7. Unloading of hot mix into transfer machine.

Figure 8. Transfer of hot mix to paver.

Figure 9. Paver in inside lane.

Figure 10. Paver in outside lane.

Figure 11. Large steel wheel vibratory roller.

Figure 12. Small steel wheel roller.

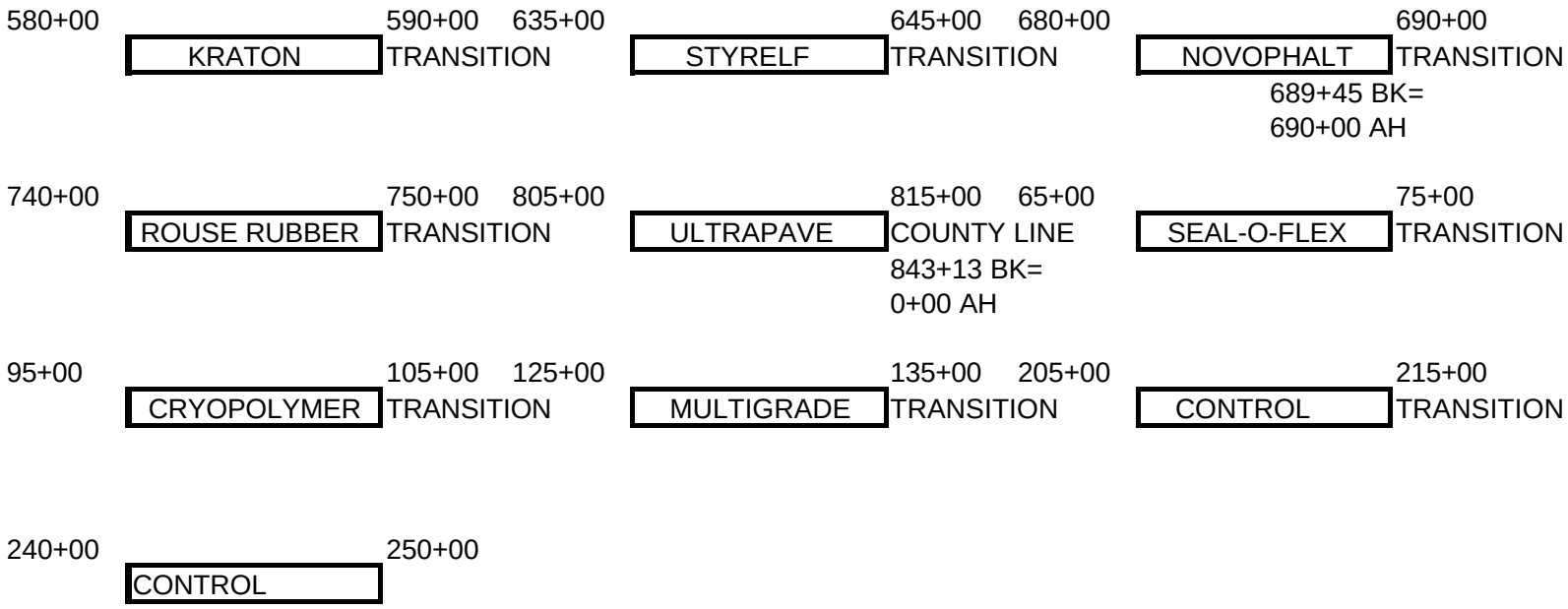

Figure 13. Section limits for study.

Table 1. Material Types for Polymer Modified Mixes

Binder HTBC - Type 6

Type Material	3/4-Inch Crushed Gravel	Mfg. Sand	Course Sand	#67 Limestone	Reclaimed Asphalt Material	#8 Limestone	Hyd. Lime
Recommended Material Blend (%)	20	19	10	20	20	10	1

Surface HTSC - Type 8

Type Material	3/4-Inch Crushed Gravel	1/2-Inch Crushed Gravel	Mfg. Sand	Reclaimed Asphalt Material	Course Sand	Ag. Limestone	Hyd. Lime
Recommended Material Blend (%)	31	25	18	10	10	5	1

Table 2. Gradation of Polymer Modified Mixes

Sieve Size	Binder HTBC - Type 6			Surface HTSC - Type 8		
	Aggregate Blend % Passing	Job Mix % Passing	Specified Design Range	Aggregate Blend % Passing	Job Mix % Passing	Specified Design Range
1 1/2						
1	100	100	100			
3/4	99	99	90-100	100	100	100
1/2	79.4	79	68-89	96.9	97	94-100
3/8	65.3	65	54-73	87.4	87	70-89
No. 4	41.5	42	34-50	54.8	55	36-55
No. 8	27.9	28	22-36	37.4	37	20-37
No. 16	21			27.6		
No. 30	15.7	16	9-19	20.5	20	8-20
No. 50	7.3	7	6-14	11.3	11	5-14
No. 200	3.9	3.9	2-8	5.4	5.4	2-7
	A.C.	4.8	4.0 Min.	A.C.	5.2	4.0 Min.

Table 3. Job Mix Properties for Polymer Modified Mixes

	Binder HTBC - Type 6	Surface HTSC - Type 8
Job Mix Temperature, Degrees F	329	329
Air Voids	4.00%	4.00%
VMA	14.70%	15.00%
Flow	15	13
Maximum Specific Gravity	2.418	2.378
% AC (RAP)	5.13	5.13
% AC (ADD)	3.77	4.69
% AC (TOTAL)	4.8	5.2
Stability, lbs.	2950	2820

Table 4. Actual stationing for test, control, and transition sections.

Modifier	Course	Station-to-Station (Right Lane)	Date Placed
KRATON	Binder	572 + 88 to 602 + 00	7/9/96
	Surface	572 + 50 to 608 + 25	7/12/96
TRANSITION	Binder	602 + 00 to 629 + 75	7/9/96
	Surface	608 + 25 to 626 + 50	7/12/96
STYRELF	Binder	629 + 75 to 657 + 00	7/9/96
	Surface	626 + 50 to 653 + 00	7/12/96
TRANSITION	Binder	657 + 00 to 679 + 00	7/9/96
	Surface	653 + 00 to 678 + 25	7/12/96
NOVOPHALT	Binder	679 + 00 to 707 + 70	7/18/96
	Surface	678 + 25 to 704 + 10	7/20/96
TRANSITION	Binder	707 + 70 to 735 + 10	7/18/96
	Surface	704 + 10 to 736 + 30	7/20/96

Modifier	Course	Station-to-Station (Right Lane)	Date Placed
ROUSE RUBBER	Binder	735 + 10 to 760 + 85	7/18/96
	Surface	736 + 30 to 769 + 00	7/20/96
TRANSITION	Binder	760 + 85 to 790 + 30	7/18/96
	Surface	769 + 00 to 789 + 65	7/20/96
ULTRAPAVE	Binder	790 + 30 to 824 + 00	7/23/96
	Surface	789 + 65 to 839 + 25	7/26/96
TRANSITION	Binder	824 + 00 to 7 + 00	7/23/96
	Surface	839 + 25 to 6 + 00	7/26/96
EQUATION AT COUNTY LINE		843 + 13 BK = 0 + 00 AH	
TRANSITION	Binder	7 + 00 to 56 + 88	7/23/96
	Surface	6 + 00 to 55 + 70	7/26/96

Modifier	Course	Station-to-Station (Right Lane)	Date Placed
SEAL-O-FLEX	Binder	56 + 88 to 84 + 50	7/30/96
	Surface	55 + 70 to 85 + 50	8/2/96
TRANSITION	Binder	No Transition	
	Surface		
CRYOPOLYMER RUBBER	Binder	84 + 50 to 120 + 55	7/30/96
	Surface	85 + 50 to 118 + 54	8/2/96
TRANSITION	Binder	No Transition	
	Surface		
MULTIGRADE	Binder	120 + 55 to 143 + 45	8/7/96
	Surface	118 + 54 to 143 + 00	8/9/96
TRANSITION	Binder	143 + 45 to 185 + 30	8/9/96
	Surface	143 + 00 to 187 + 00	8/9/96

Modifier	Surface Course	Station-to-Station (Right Lane)	Date Placed
CONTROL - C	Binder	185 + 30 to 283 + 50	7/16/96
	Surface	187 + 00 to 283 + 50	8/9/96

CHAPTER 4: TESTING PROCEDURES AND RESULTS

During the placement of the modified hot mix pavement sections, MDOT District Laboratory personnel took samples of the mix and conducted asphalt acceptance tests in the field laboratory. These results are discussed in this chapter. Also, other tests were conducted which included the SHRP Gyratory Compactor (SGC), The Corps of Engineers Gyratory Testing Machine (GTM), the rotational viscometer, tests to determine the "true" PG grading of the various modifiers, and performance testing of the completed pavement.

ACCEPTANCE TESTS

Results of the laboratory tests on the hot mix samples are contained in Appendix B. The actual job mix properties have been taken from this information and summarized in table 5. In addition, the design properties are listed for comparison. The order that the modifiers are listed in table 5 is the order in which they were paved. A discussion follows for each modifier and the control section. The air voids mentioned below refer to 75 blow Marshall specimens.

Air voids determined from the Marshall specimens and from field cores are shown in figure 14 for the HMA binder course and figure 15 for the HMA surface course. For the binder course, the laboratory air voids are in the range of 3-5 percent with the field air voids ranging from 4-8 percent. In all cases for the binder course, the air voids from the cores are higher than those from the laboratory. It is possible that the cores taken from the pavement received less compaction than did the samples with the Marshall hammer. For the surface course, the same is true except in one modifier.

KRATON Modifier

All of the actual properties for KRATON were within acceptable limits for the binder but the air voids were high for the surface. The main property for acceptance is air voids, which for this mix had a value of 4% for design for both layers with acceptance without a penalty of +1% or -1%. For the binder layer, the KRATON modifier had air voids of 3.4% and for the surface layer a value of 5.3%. A second test was conducted to check the air voids and this sample had air voids of 5.6 %. These high air voids for the surface course resulted in a deduction to be made on the pay item. Stability for the KRATON modified mix exceeded the design value for both material layers.

STYRELF Modifier

The air voids for STYRELF were 3.4 for the binder and 5.3 for the surface. A second sample was tested for air voids and resulted in a value of 5.3 also. A deduction was made because of the high values. All of the other property values were acceptable. The percent AC for STYRELF was 4.69 for the binder course, which was slightly on the low side of the design value of 4.8%. The AC for the surface course was 5.07%, which was slightly lower than the design value of 5.2%. Both of these values were acceptable. Stability for the

STYRELF modifier was quite high at values of 3986 lbs. for binder and 3957 lbs. for surface.

NOVOPHALT Modifier

The NOVOPHALT material was added to the mix by means of a blending unit on site. This in no way caused any problem with the hot mix, as the job mix properties were all acceptable. Stability values were acceptable even though the value for the binder was lower than the design.

ROUSE RUBBER Modifier

The ROUSE RUBBER product was added to the mix using the NOVOPHALT modifier blending unit. Air voids and VMA were good values; however, the flow for the binder was a value of 11 compared to the design value of 15. The maximum specific gravity and percent AC were also acceptable. The stability value of 2832 lbs. for the binder was less than the design value of 2945 lbs.

ULTRAPAVE Modifier

The binder mix for ULTRAPAVE was low on air voids with a value of 2.8%. A second test was conducted and increased the air voids only 0.1%. Test values for the surface were all acceptable.

SEAL-O-FLEX Modifier

All test values for SEAL-O-FLEX were within design limits. The stability values were the highest of any of the modifiers.

CRYOPOLYMER RUBBER Modifier

The binder properties were all in tolerance. However, the air voids for the surface mix was low. A second test was conducted and the air voids increased to an acceptable level.

MULTIGRADE Modifier

The air voids for the binder layer were low at 1.9% and a second sample was tested. This second test had air voids of 3.2%, which was an acceptable value. The air voids for the surface mix were high and the contractor was penalized for this mix. The stability values were on the low side.

CONTROL Section

Both the binder and surface test values were acceptable. Stability was low for both mixes.

ROTATIONAL VISCOMETER TESTS

The rotational viscometer was used as part of SHRP Binder Tests to determine viscosity of the different modifiers. Figure 16 displays the viscosity with respect to temperature for the binder courses. At the lower temperature of 275^{O} F the modifiers are all spread out ranging from a high viscosity value of 2600 cP for MULTIGRADE to a lower value of 500 cP for the CONTROL Section. All of the modifiers have higher viscosity at the lower temperature than the AC30 in the CONTROL. However, at the higher temperature of 374^{O} F, all of the modifiers are bunched together ranging from a high value of 400 cP for the NOVOPHALT modifier to a lower value less than 100 cP for the CONTROL and MULTIGRADE. The modifiers are all more viscous at the lower temperatures whereas the AC30 without a modifier did not change much in value.

A similar chart is shown in figure 17 for the surface course with the results being the same as for the binder course, i.e., scatter of the data at the lower temperature and a bunching of the data at the higher temperature. MULTIGRADE, which is a gel, had a very high viscosity at the lower temperature but has the lowest at the higher temperature. The unmodified AC30 did not change much with increase in temperature.

GYRATORY COMPACTOR TESTS

The SGC was also used as part of the SHRP binder tests to determine densities on 6 in diameter pills at 7 percent air voids. Twenty-four samples were made for each modifier for the right lane pavement and these samples were to be tested later in the Asphalt Pavement Analyzer to determine rutting resistance of each modified HMA.

GYRATORY TEST MACHINE TESTS

The US Army Corps of Engineers GTM was used to determine shear strength and air voids with respect to revolutions. Shear strength was calculated using the force diagram and equation from reference 1. The force diagram for computing shear strength has been reproduced and is shown in figure 18. Referring to the force diagram and taking moments about O (while neglecting wall friction and moment N x b), the formula for Gyratory shear (S_G) determined as follows:

$$S_G = 2\,WL / Ah$$

where:

W = p x a = Load on roller
L = Length of roller lever arm

A	=	Cross sectional area of specimen
h	=	Height of specimen
p	=	Roller pressure
a	=	Effective area of roller piston

For GTM model 4C, which is the model used in this study, the value of shear strength becomes the following:

$$S_G = 4.00\ p/h$$

Using the above equation, shear strength was computed for every 40th revolution of the 4 in diameter specimens up to 200 revolutions. The values of shear strength were averaged for these specimens and plotted in figure 19 with respect to revolutions. With increased revolutions, the shear strength decreases. However, the values of shear strength are above 38 psi indicating that the specimens had sufficient shear strength to resist the stress state in the pavement.

Air voids were computed from the GTM data for each modifier and these values were averaged. Averaged voids with respect to revolutions are shown in figure 20. Previous studies have established that 120 revolutions represent 5-10 years of interstate travel on the pavement. Also, flushing and plastic deformation can be expected at voids lower than 1.5 percent. As shown in the figure, there is variability in the mixes as the voids for the different modifiers vary. At 120 revolutions, the voids range from approximately 1.5 to 4 percent. The operators of the GTM did not notice any flushing in the pills.

PERFORMANCE GRADE (PG) OF THE MODIFIERS

At the time that this study was developed, the use of Performance Graded (PG) asphalt binders was not included in MDOT (or any other state highway agency) specifications. The contract documents instructed each modifier manufacturer to provide a modified binder appropriate for the traffic loading on the site. For this reason, the actual performance grades of the asphalts were not necessarily the same. The "true" PG grading of the various modifiers was determined after construction through tests by Ergon Technical Development (ETD). Table 8 provides a ranking of the different modifiers based on the average seven-day maximum pavement temperature component of the PG designation since rutting is a pavement performance parameter effected at high pavement temperatures.

PERFORMANCE TESTS

Performance tests were conducted approximately six months after the pavement construction had been completed. These tests included rutting, ride quality, skid, and falling weight deflectometer (FWD). Rut measurements were subsequently periodically obtained to monitor this parameter of pavement performance with time.

Six months after the pavement construction had been completed rut and ride quality tests were conducted using the South Dakota Profiler. The Profiler was run over the test sections starting at the beginning of the project and recording to the end of the project as given in table 6. The average rut depths for all sections were less than 0.12 in indicating,

as would be expected for new pavement, that the measurements for rut depth were insignificant. The International Roughness Index (IRI) for all sections were all less than 1.6 mm/m indicating excellent ride quality.

Skid tests were conducted for all nine sections. These values were obtained for the total sections as given in table 7. The average skid values range from 47 to 51. All of the skid numbers were above 35 indicating acceptable surface friction for all sections.

FWD tests were conducted on each section but the test section was limited to 500 ft within the overall section. Readings were taken every 25 ft through out the section. The deflections obtained are shown in figures 21 through 29. For the KRATON, STYRELF, and NOVOPHALT modifiers, the deflection values were below 0.003 in. The other modifiers had deflections that were less than 0.005 in. All of the sections have adequate structural capacity for the design traffic year.

Rut measurements were manually obtained subsequent to construction in both the inside and outside wheel paths of the outside lane of each test section. Both the measurements and the months these measurements were recorded are graphically depicted in figures 30 and 31. Appendix C lists the rut measurements that were averaged for use in these figures. The control section consistently experienced the greatest amount of rutting. Table 8 provides a ranking of the different modifiers based on manual rut measurements.

The Automated Pavement Analyzer (APA) was used to test cores and pills of the various modifiers. All of the APA test results presented in this report are from testing samples in the dry condition. Figure 32 shows average rut depths at 8,000 cycles and 120^0F for both cores and pills. For the pills the Control mix experienced the greatest amount of rutting and the Styrelf modifier experienced the least amount of rutting. For the cores the rutting observed in both the Cryopolymer Rubber and Ultrapave modifiers exceeded the Control mix and the Seal-O-Flex modifier experienced the least amount of rutting. Table 8 provides a ranking of the different modifiers based on APA results of the pills from this figure. The pill rather than the core was selected for the basis of ranking in Table 8 since more uniformly prepared samples are used for comparison testing.

Figure 33 shows APA average rut depths of cores at 8000 cycles and at both 120^0F and 147^0F. At 147^0F the Control mix experienced the greatest amount of rutting and the Styrelf modifier experienced the least amount of rutting. At 120^0F the rutting experienced by the Cryopolymer Rubber and Novophalt modifiers exceeded the Control mix and the Styrelf modifier experienced the least amount of rutting. Table 8 provides a ranking of the different modifiers based on APA results of the cores at 147^0F. This temperature was selected instead of 120^0F for the comparison in Table 8 since this temperature better corresponds to the temperatures experienced by asphalt pavements on hot summer days in Mississippi and with the PG grade for Mississippi. Note that no Multigrade modifier cores were tested at 147^0F.

The rut rankings in table 8 are the manual rut measurements, APA rut measurements on cores at 147^0F and APA rut measurements on pills at 120^0F. Five of the eight modifiers are within two rankings relative to each other; i.e., for example, the Styrelf modifier is ranked either first or second among the three rut rankings, Seal-O-Flex is ranked either second or third and so forth. The Kraton modifier is within three rankings and a greater dispersion is

observed with the two crumb rubber modifiers. Except for crumb rubber type polymer modifiers, the general agreement among the three rut rankings indicate the potential for using the APA to predict the relative rutting performance of polymer modifiers.

Considering the True PG Grade and Manual Rut Measurements rankings in table 8 there appears to be a poor correspondence between these two rankings. Note that both of the crumb rubber modifiers and the Kraton modifier are within 4 rankings relative to each other. This observation suggests that the selection of a modified asphalt binder grade based on the high temperature component of the PG designation could be quite inappropriate for a given project, especially when crumb rubber modifiers are considered for use in the HMA.

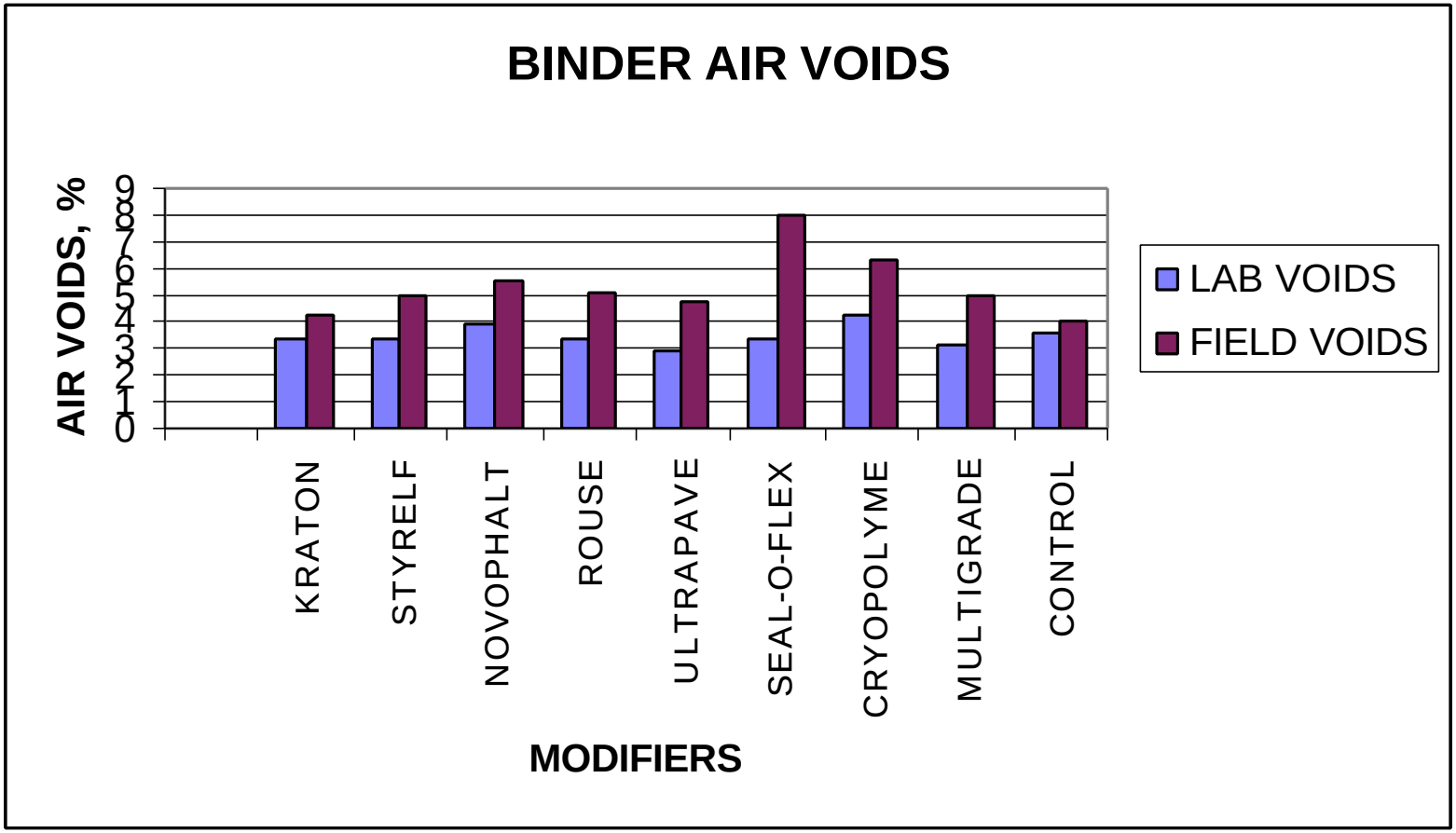

Figure 14. Lab and field air voids for binder course.

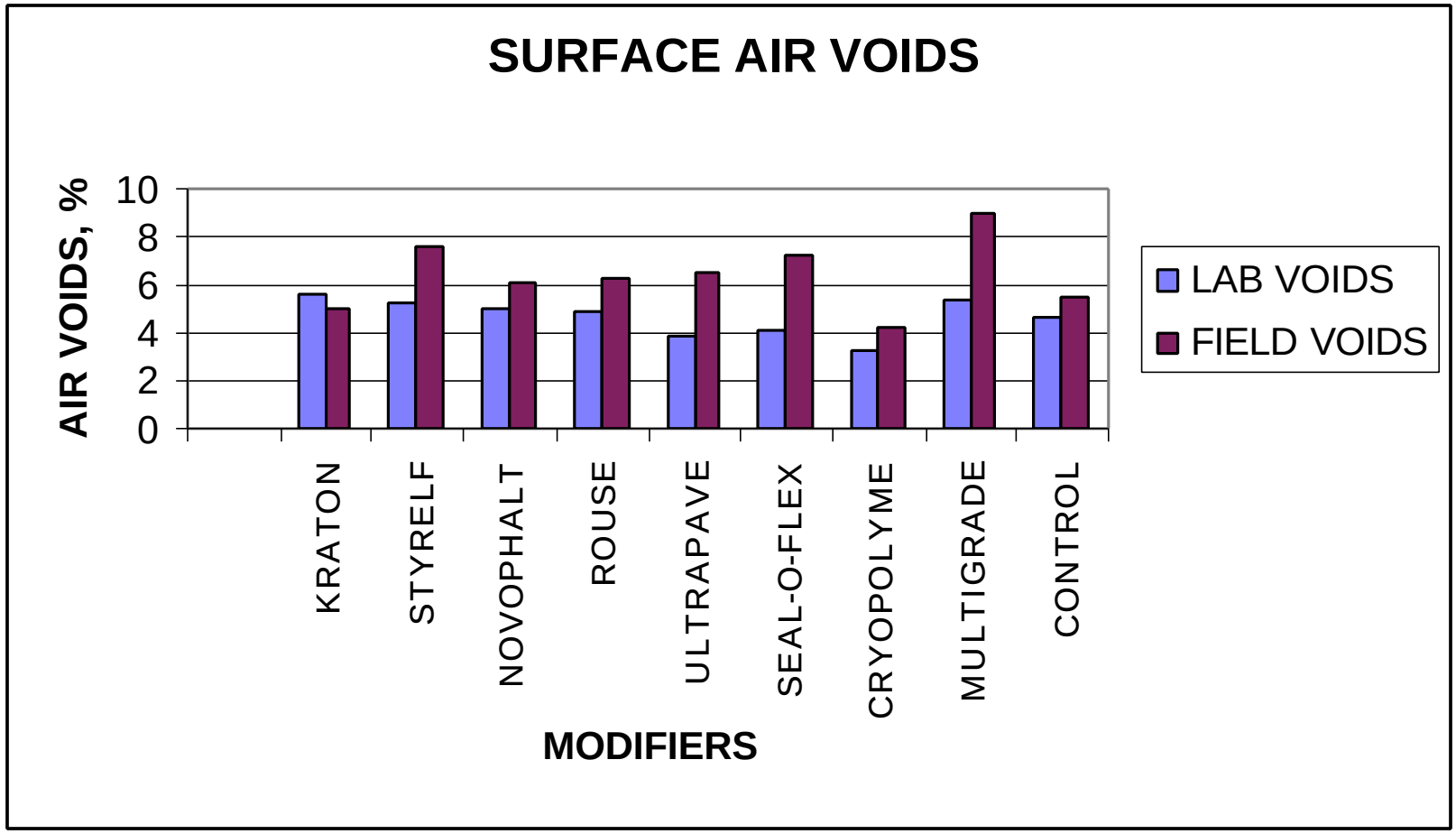

Figure 15. Lab and field air voids for surface course.

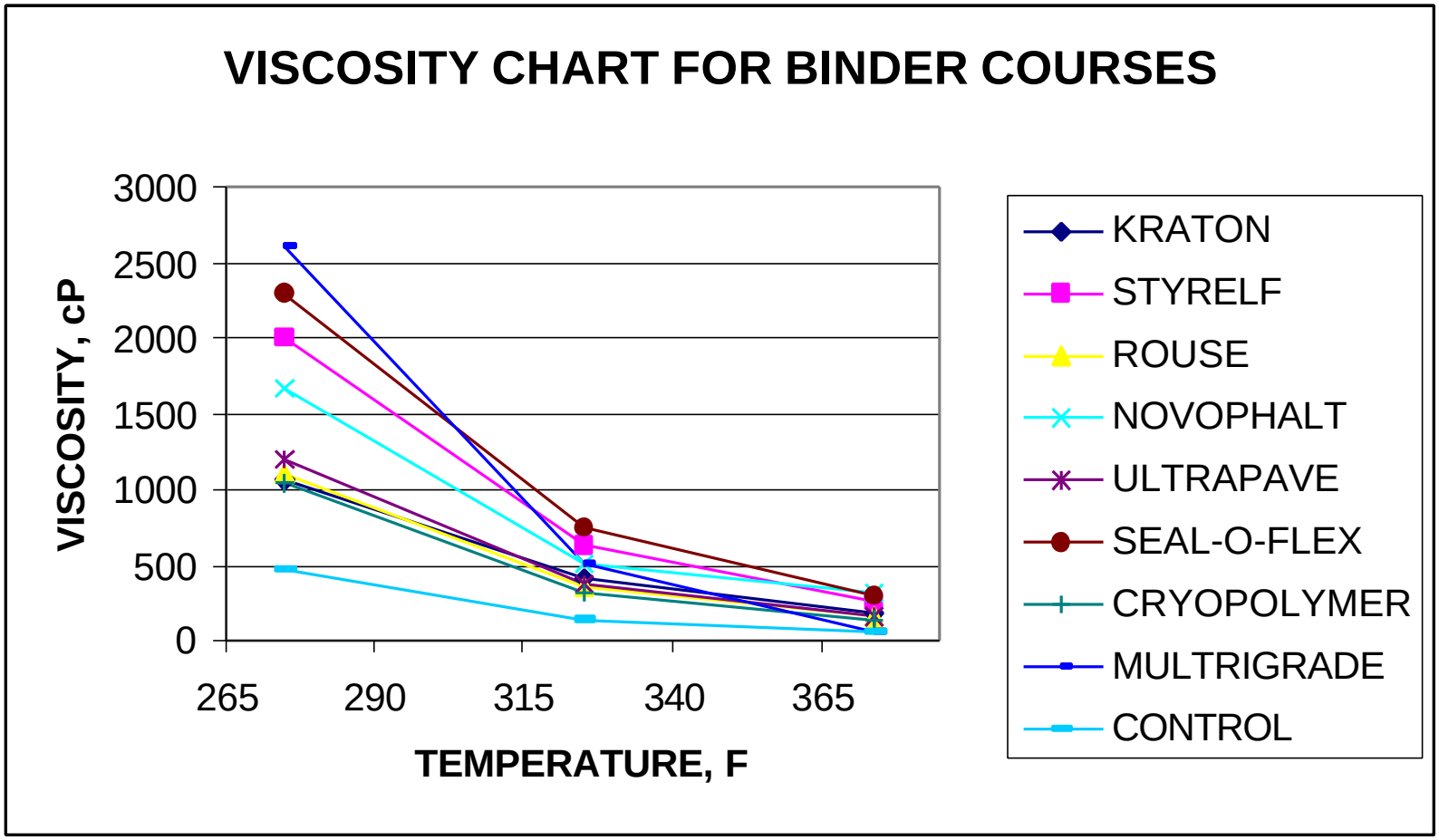

Figure 16. Viscosity chart for binder courses

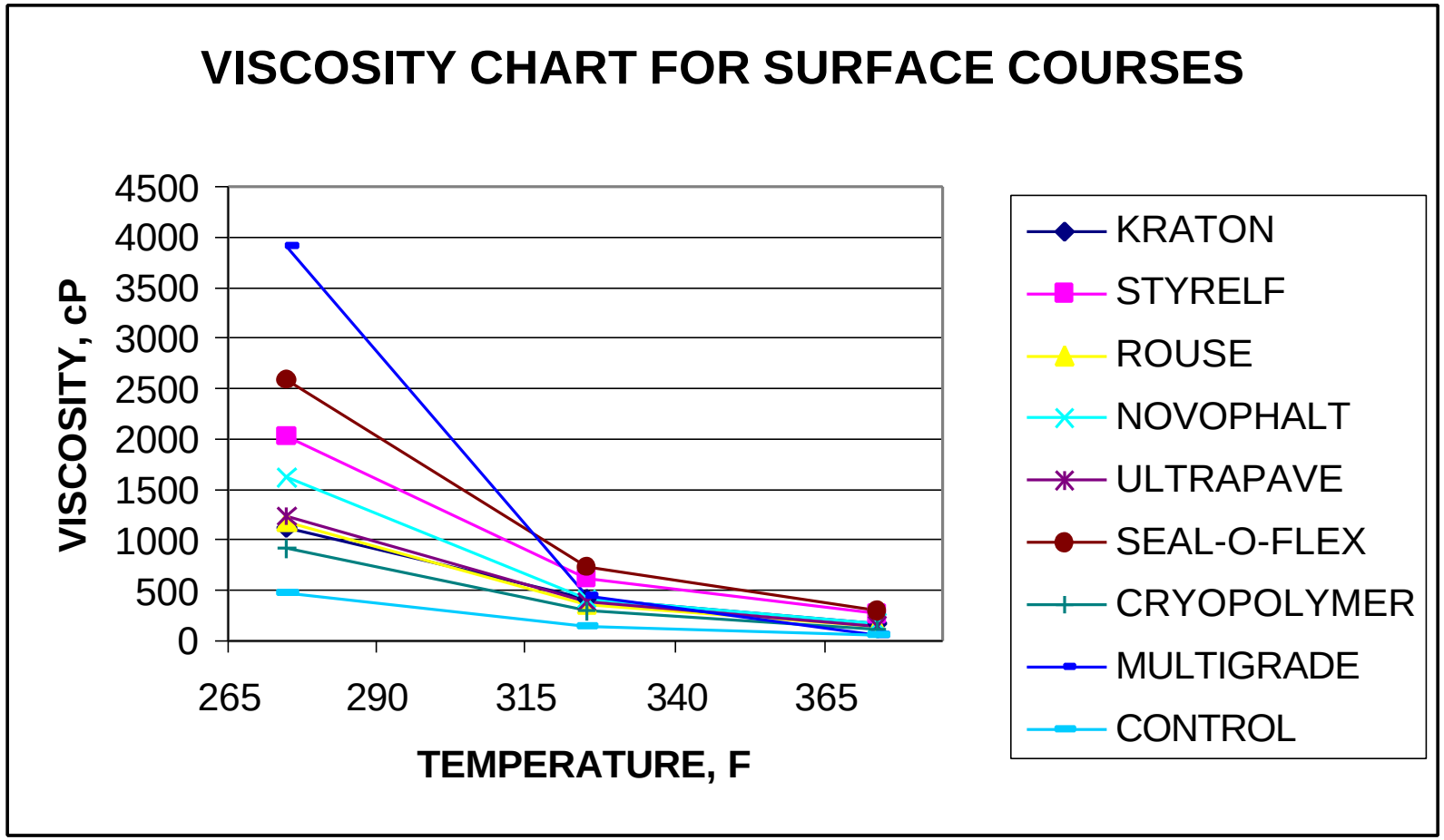

Figure 17. Viscosity chart for surface courses

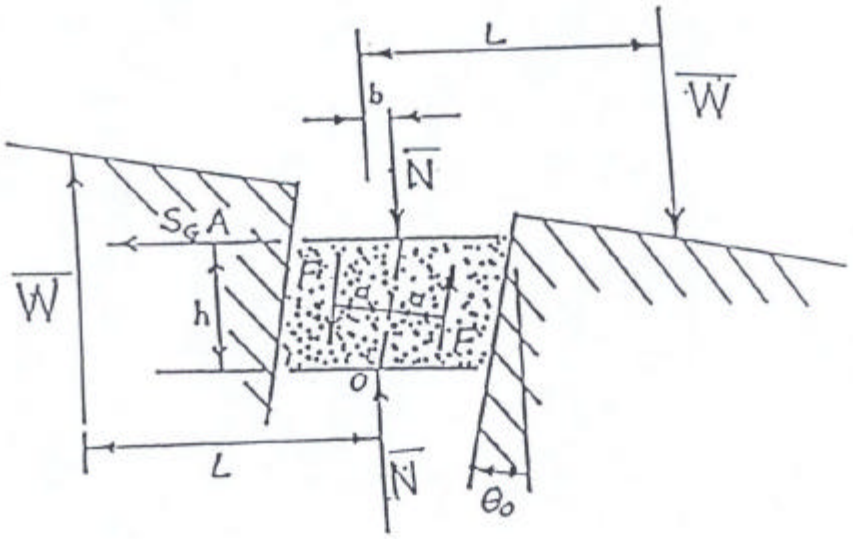

Figure 18. GTM force diagram.

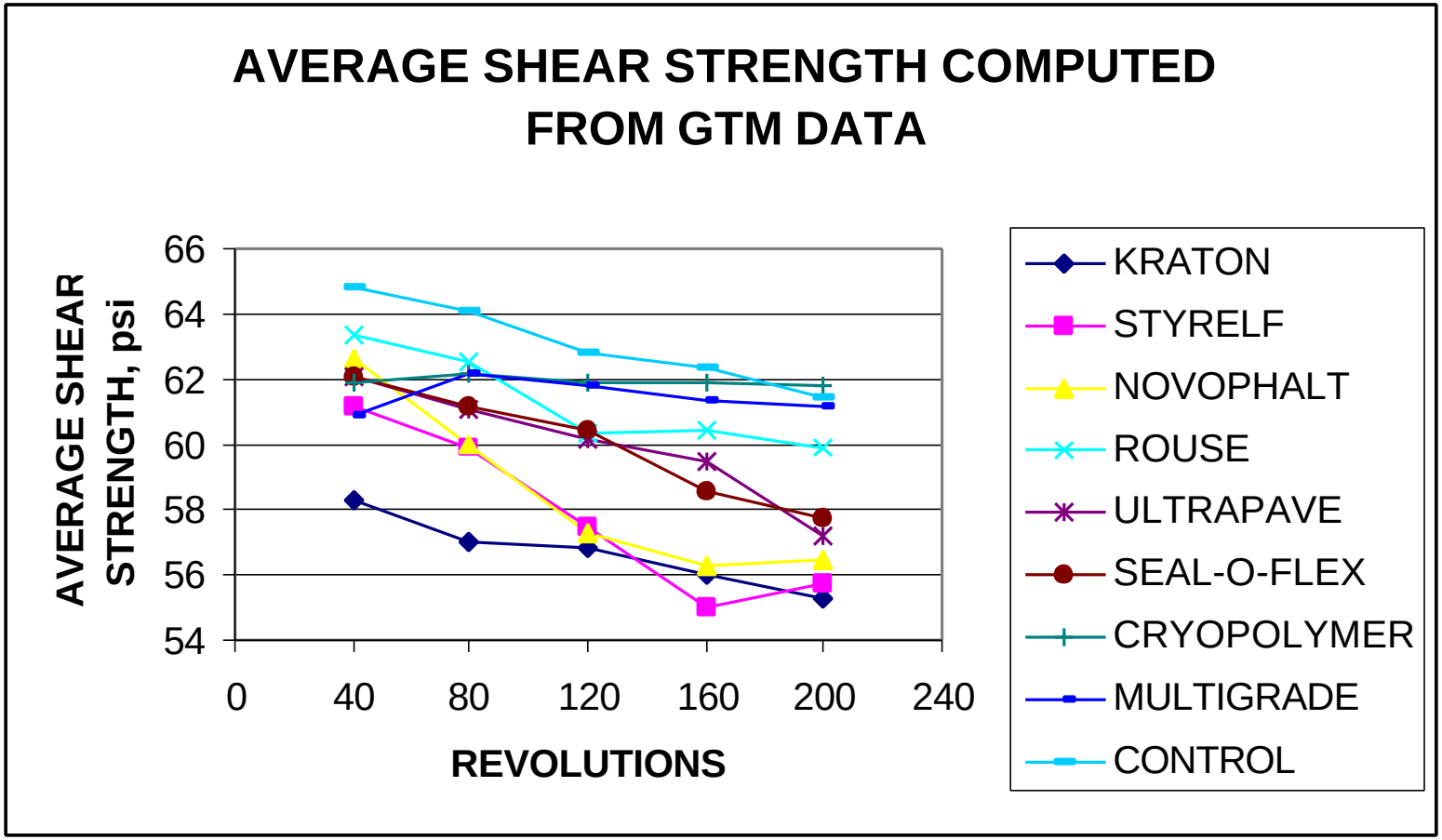

Figure 19. Average shear strength computed from GTM data.

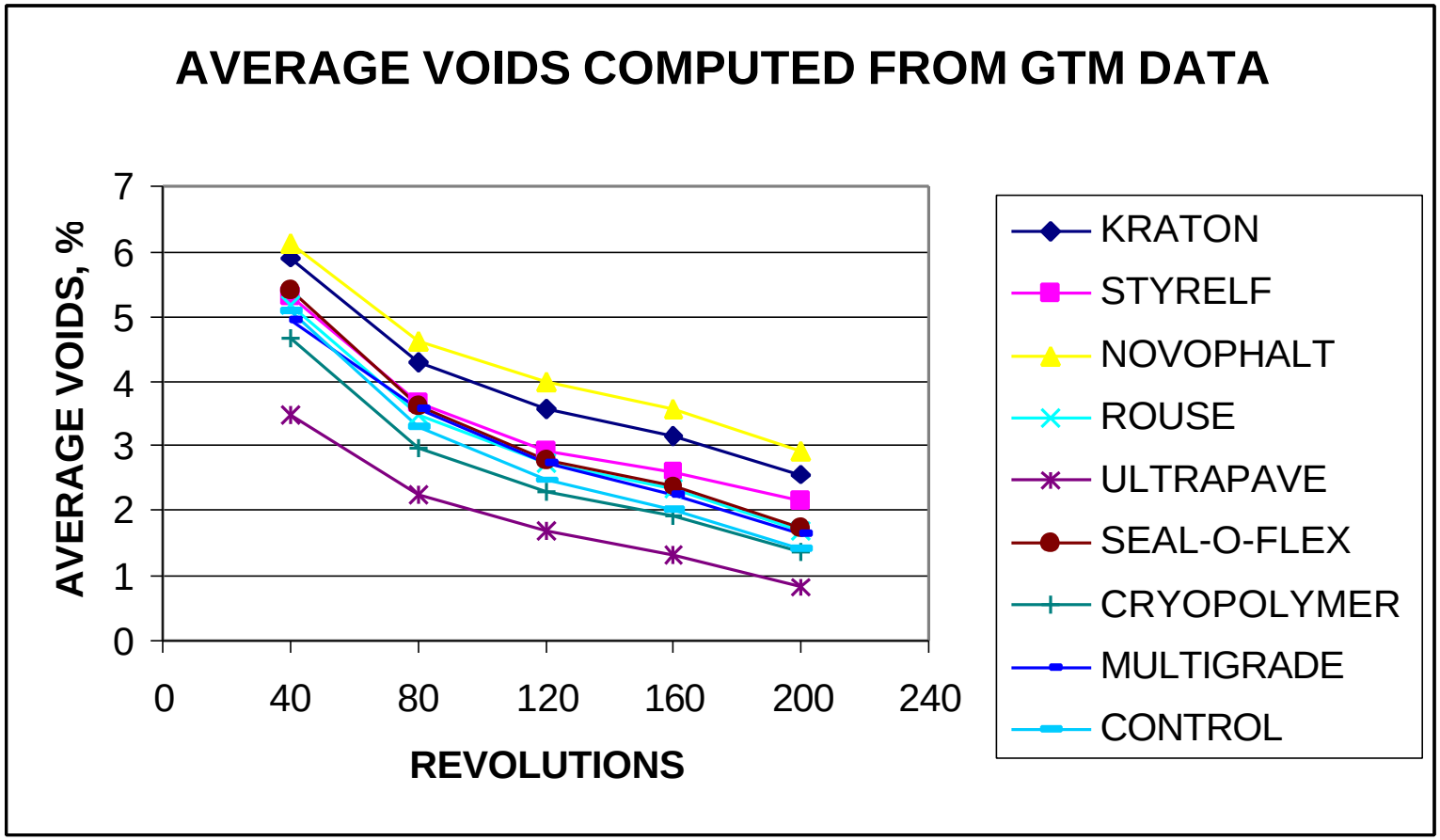

Figure 20. Average voids computed from GTM data.

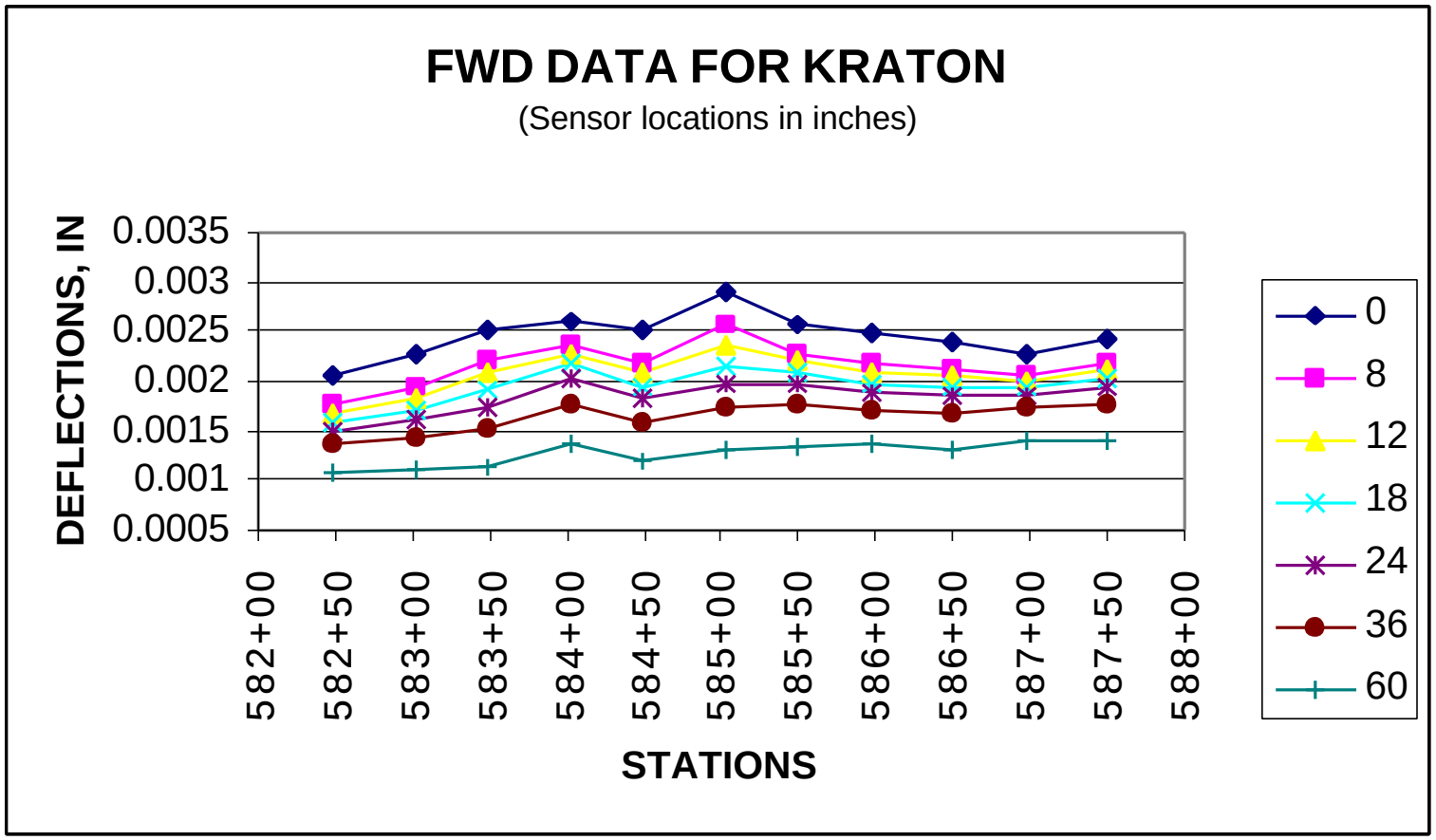

Figure 21.FWD deflections for Kraton.

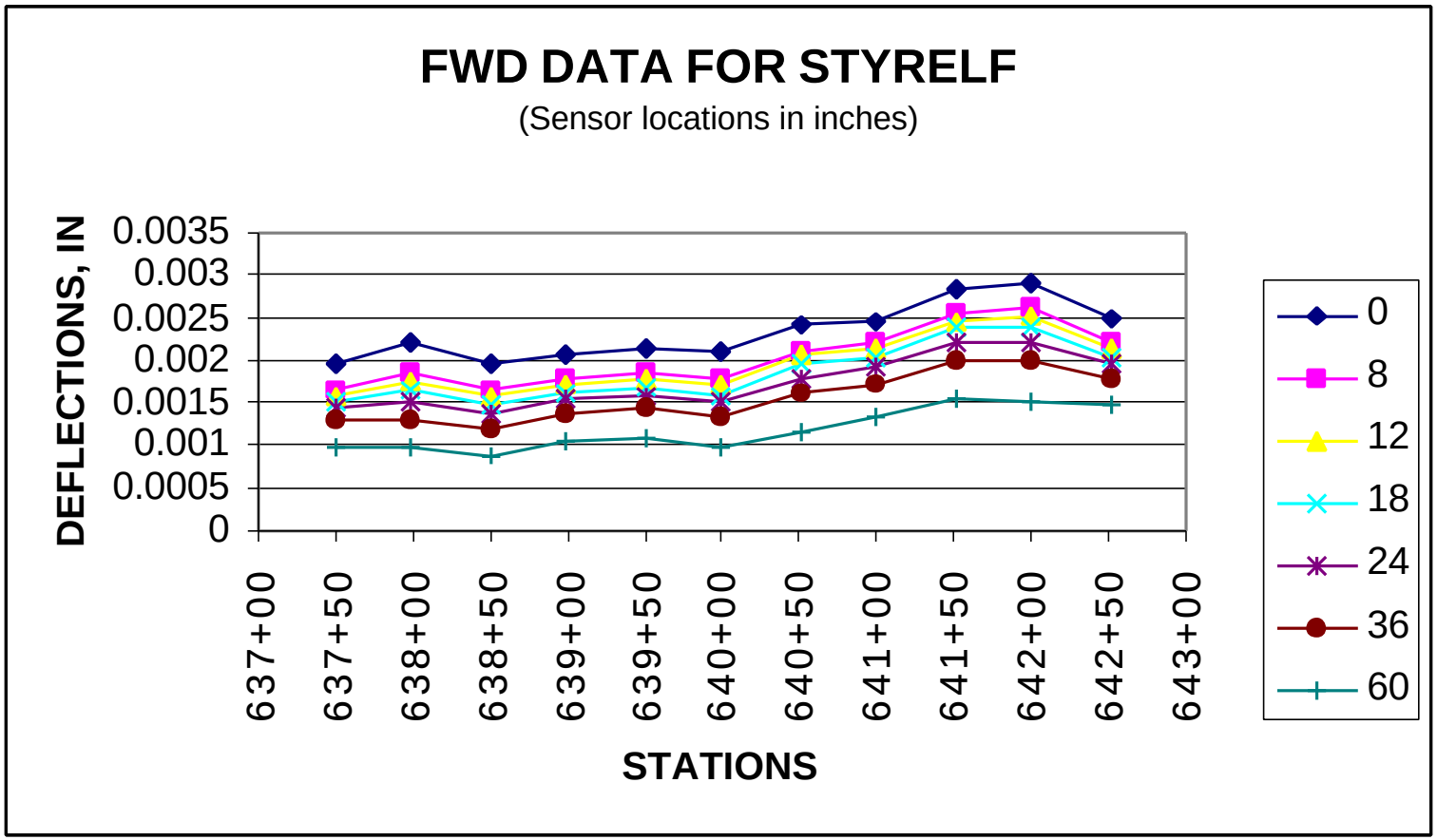

Figure 22. FWD deflections for Styrelf.

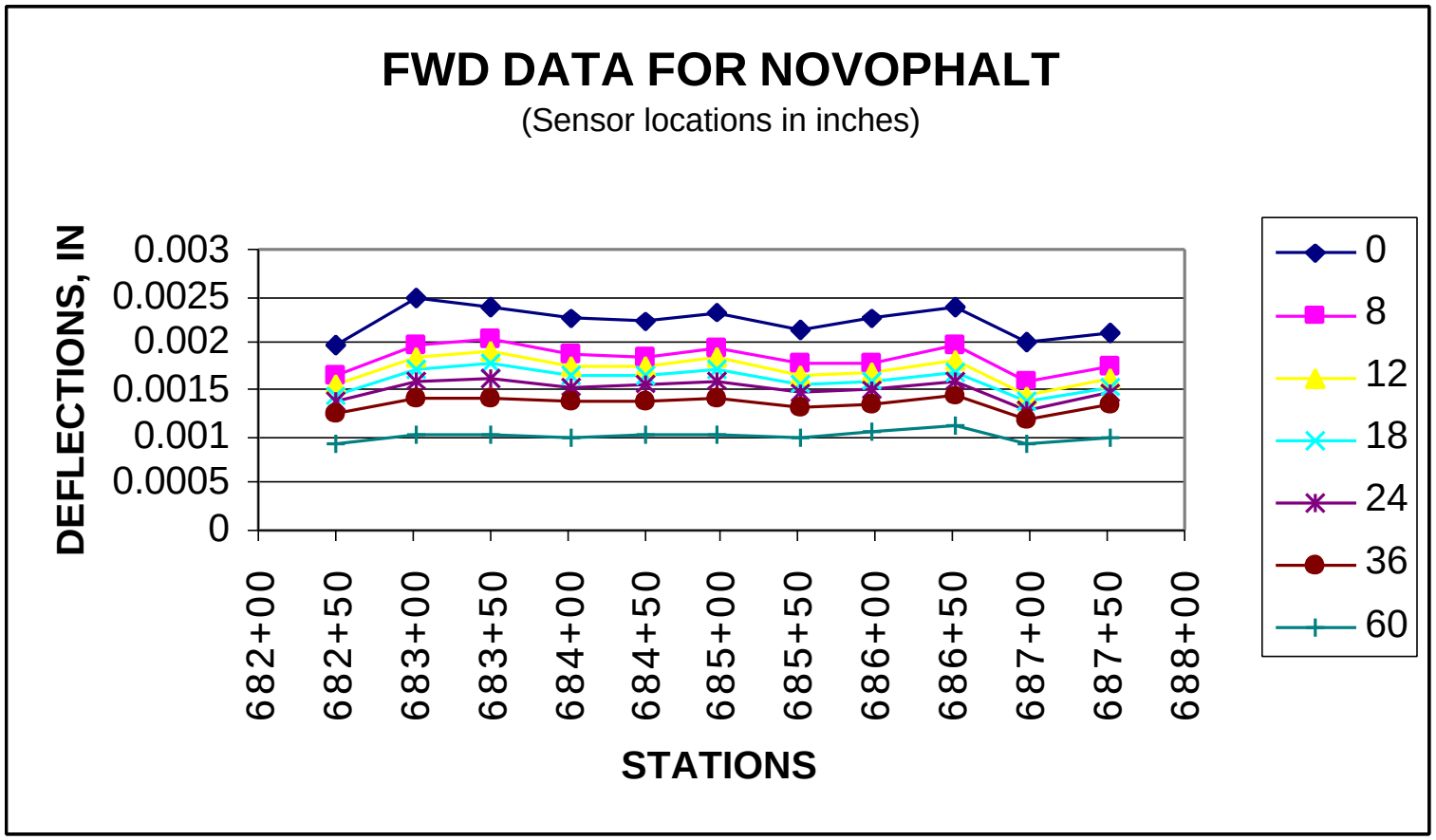

Figure 23. FWD deflections for Novophalt.

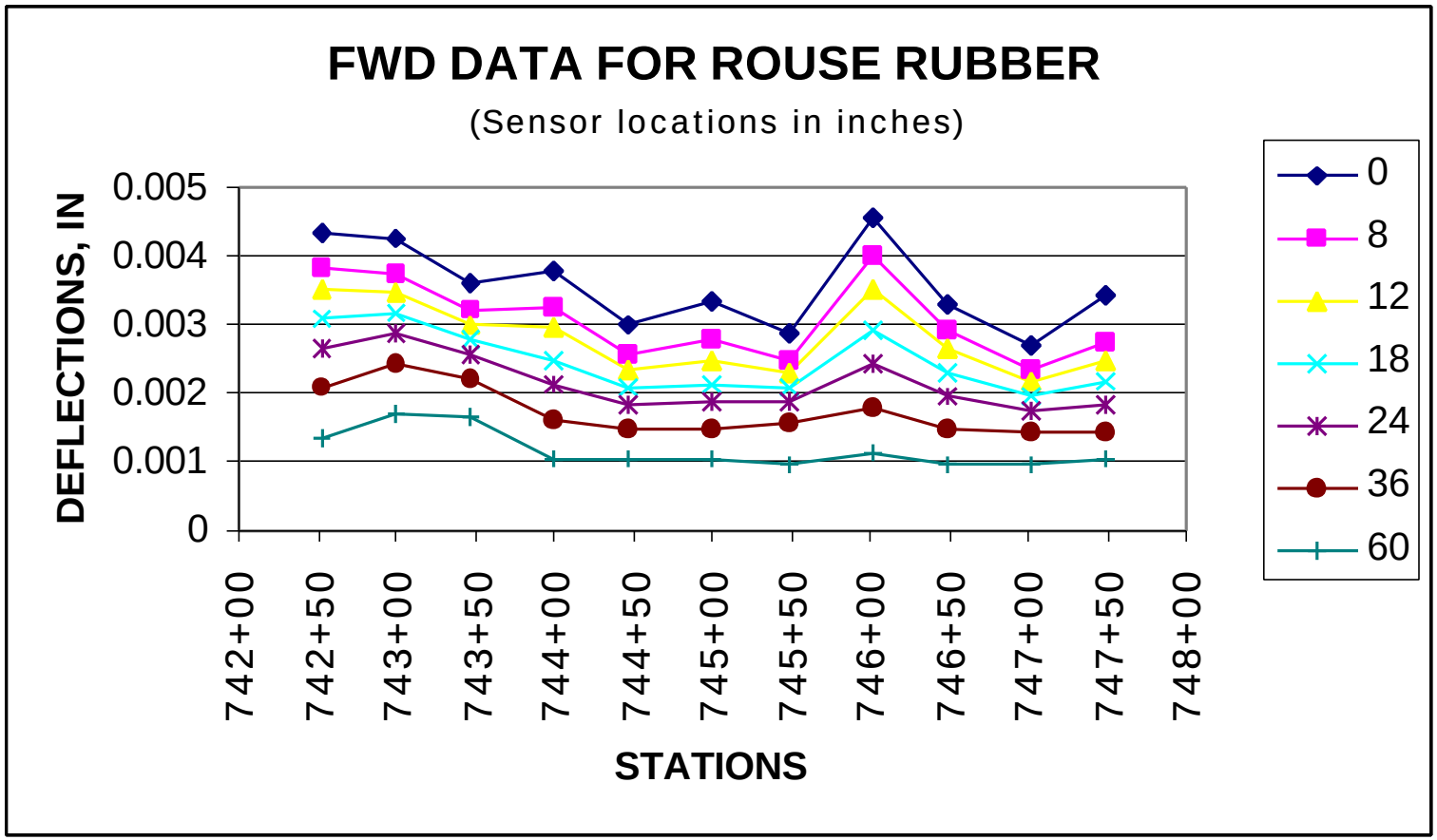

Figure 24. FWD deflections for Rouse Rubber.

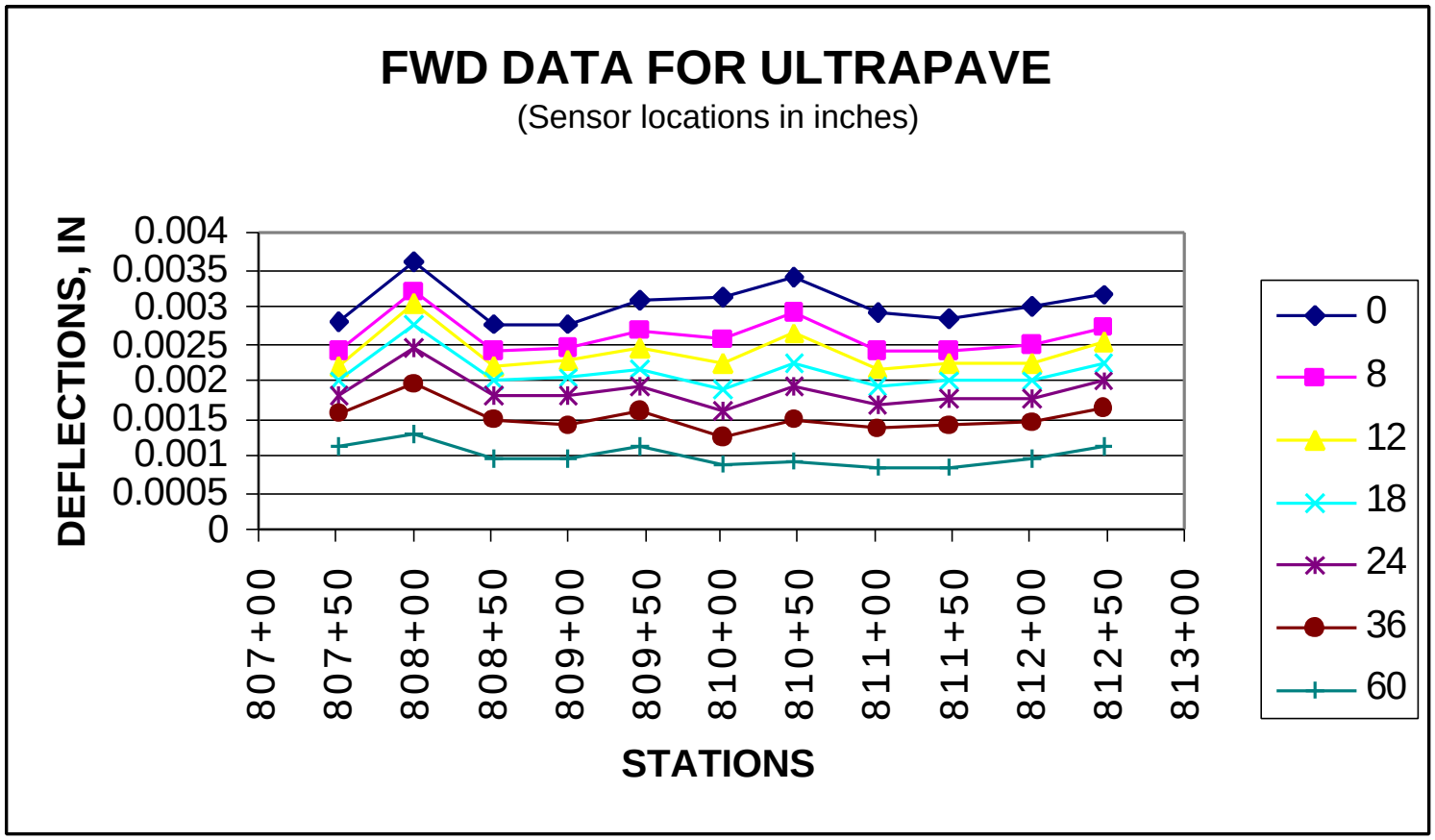

Figure 25. FWD deflections for Ultrapave.

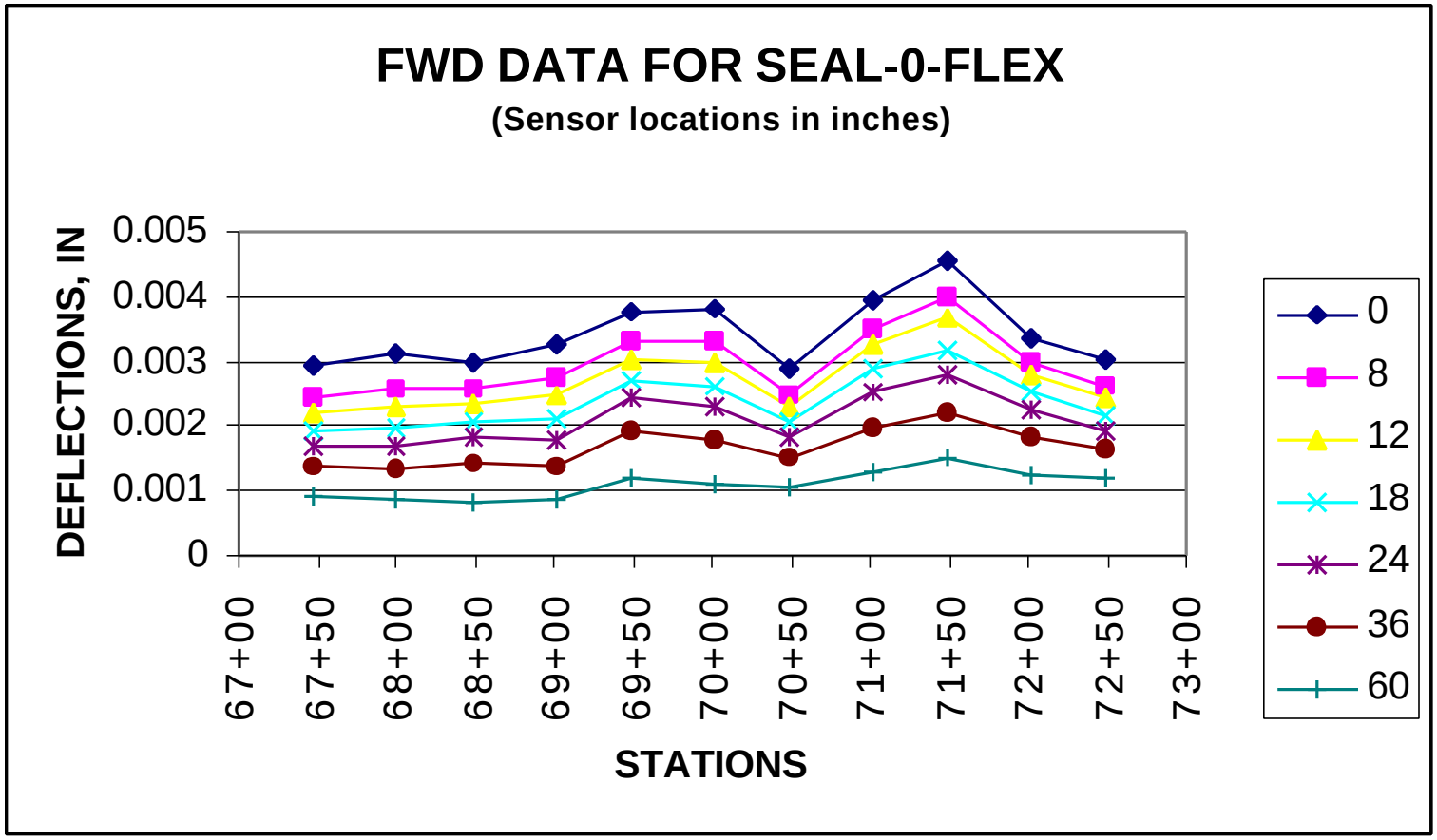

Figure 26. FWD deflections for Seal-O-Flex

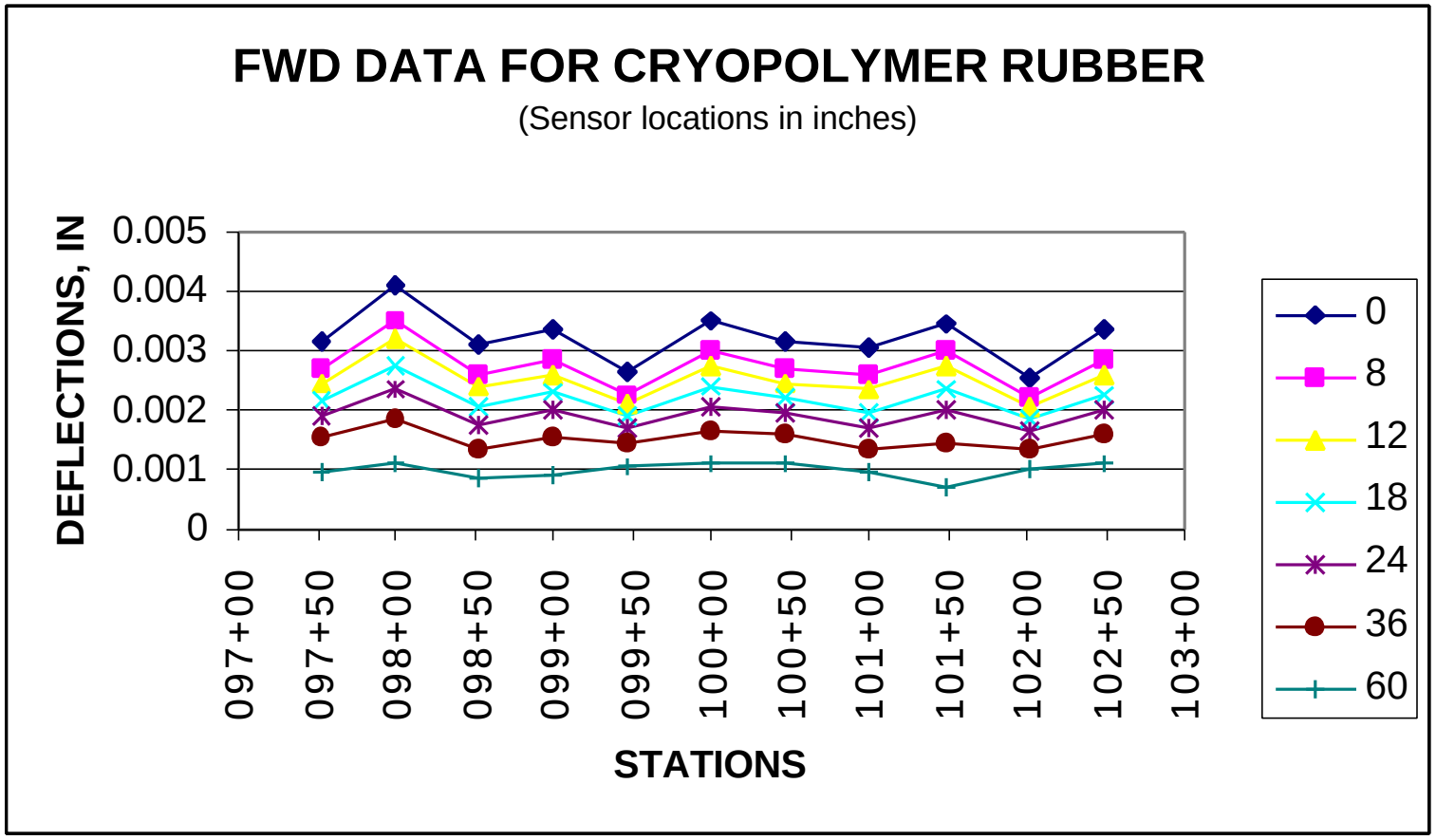

Figure 27. FWD deflections for Cryopolymer RUbber

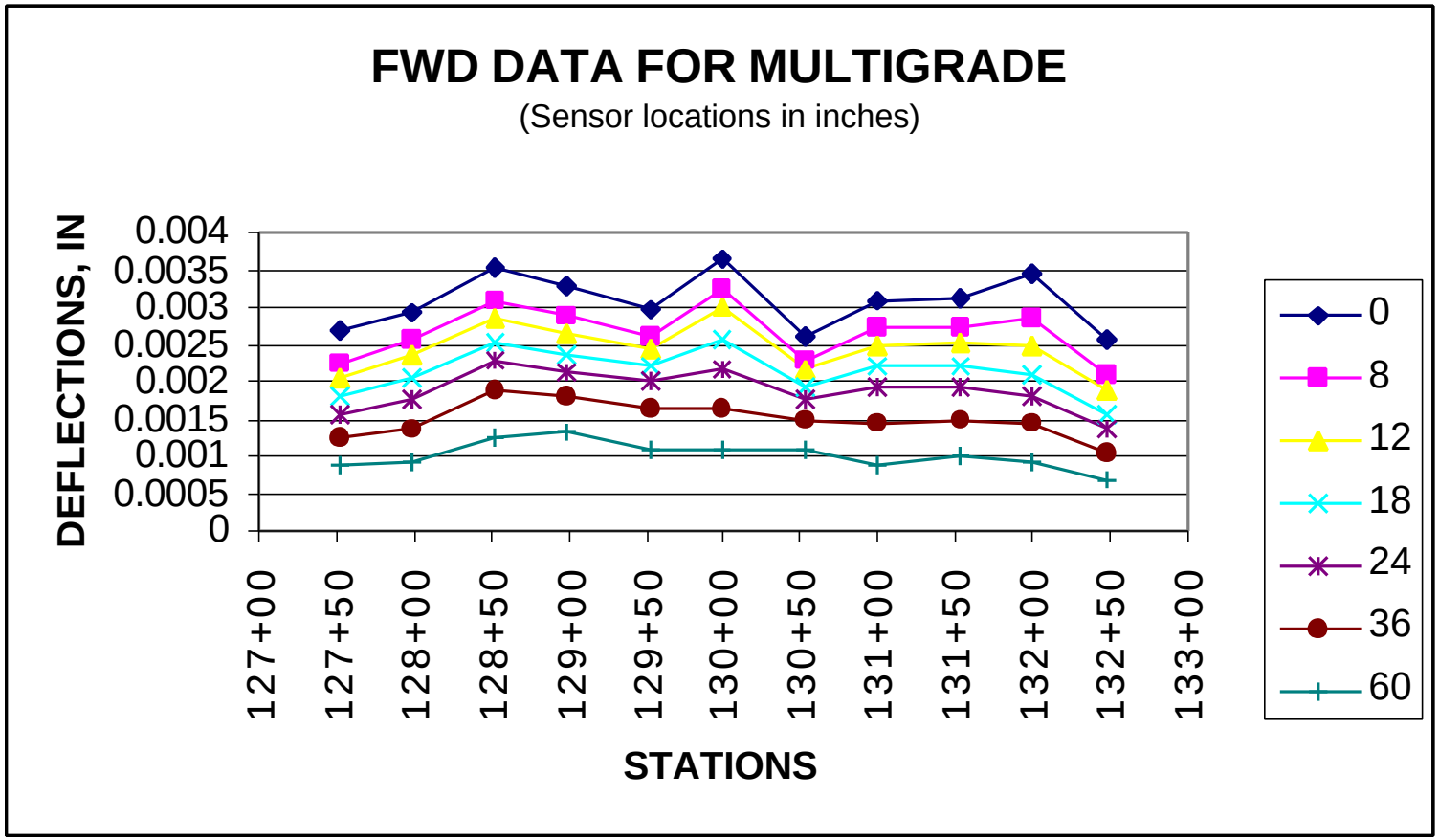

Figure 28. FWD deflections for Multigrade

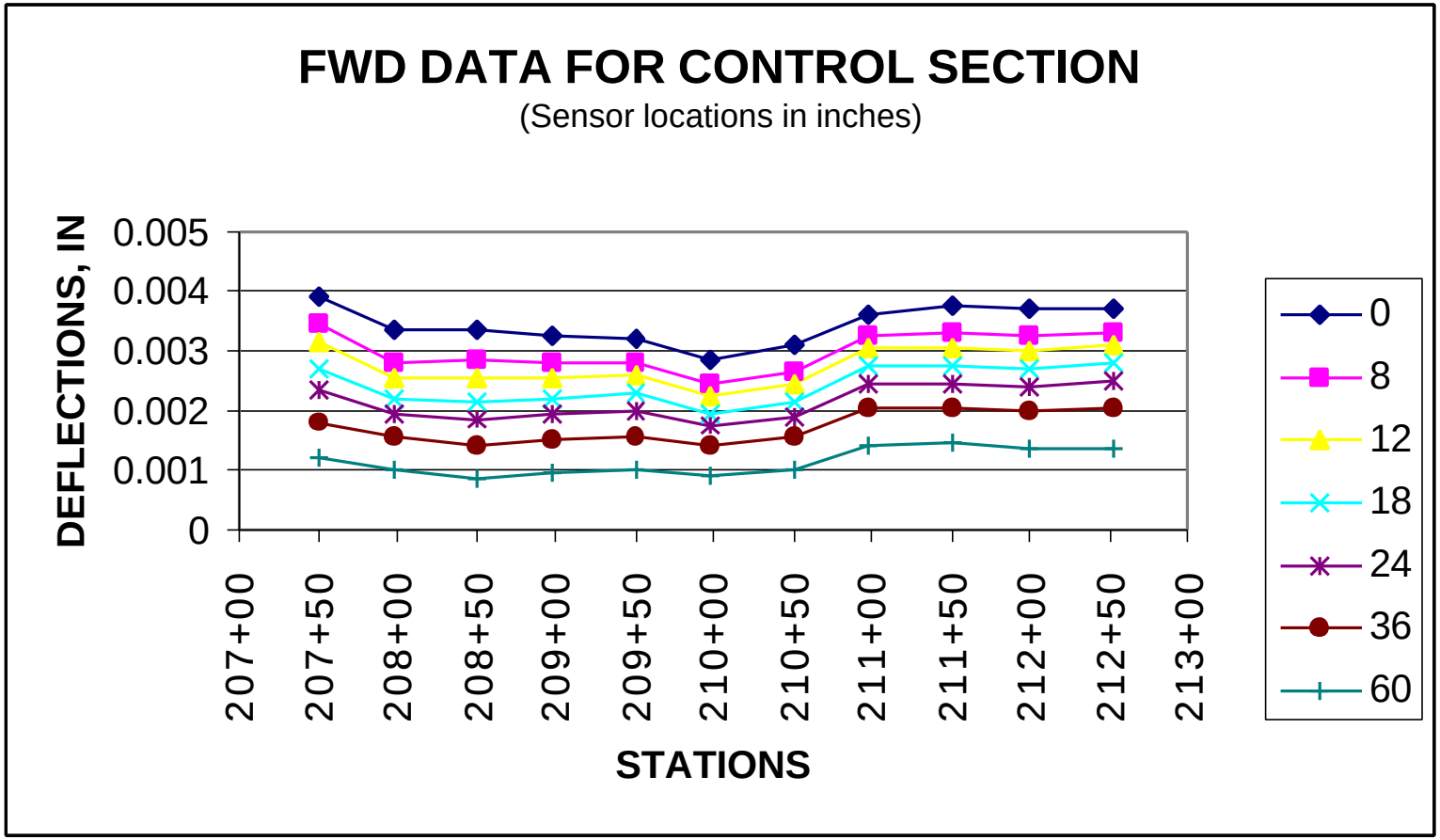

Figure 29. FWD deflections for Multigrade

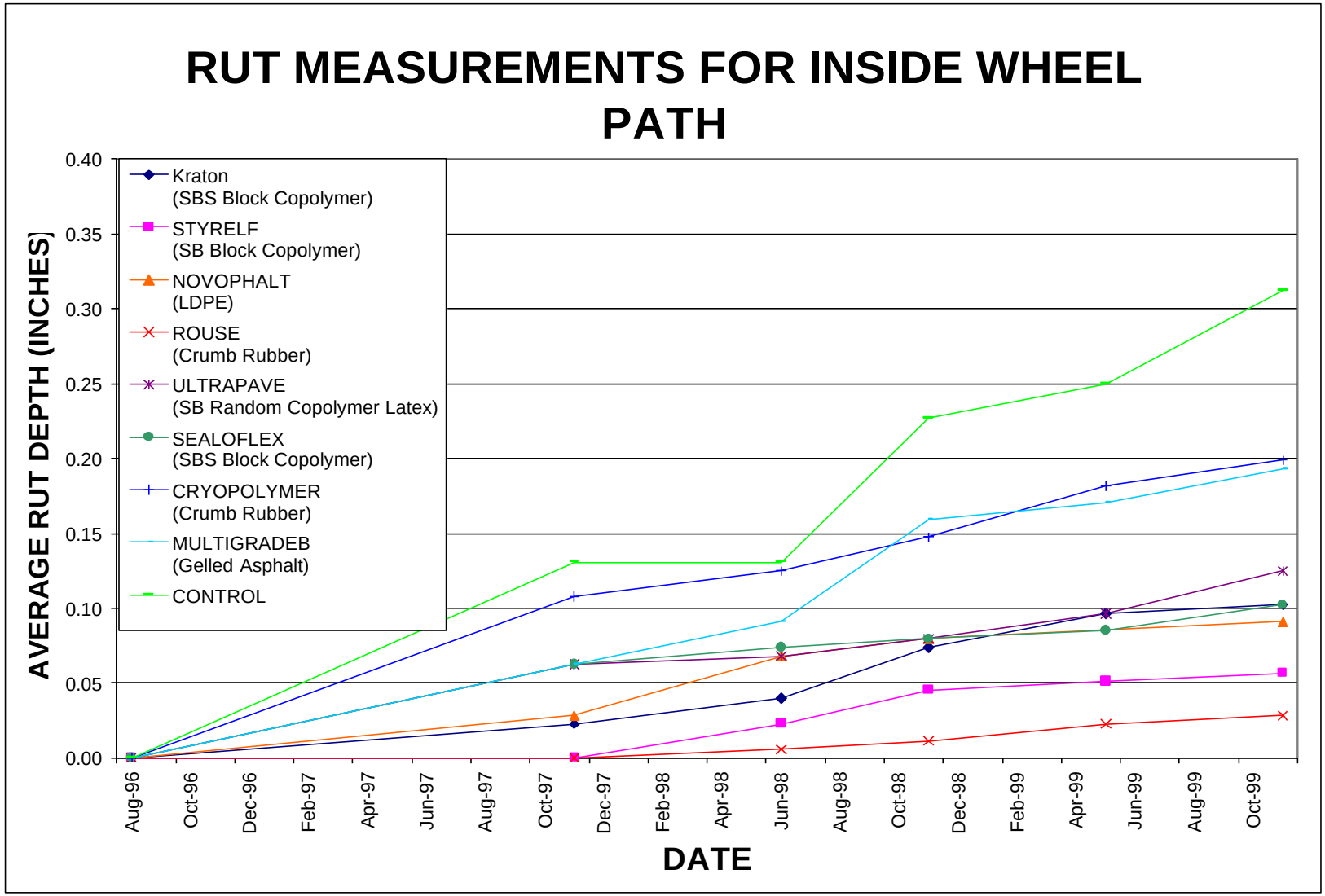

Figure 30. Rut measurements for inside wheel path.

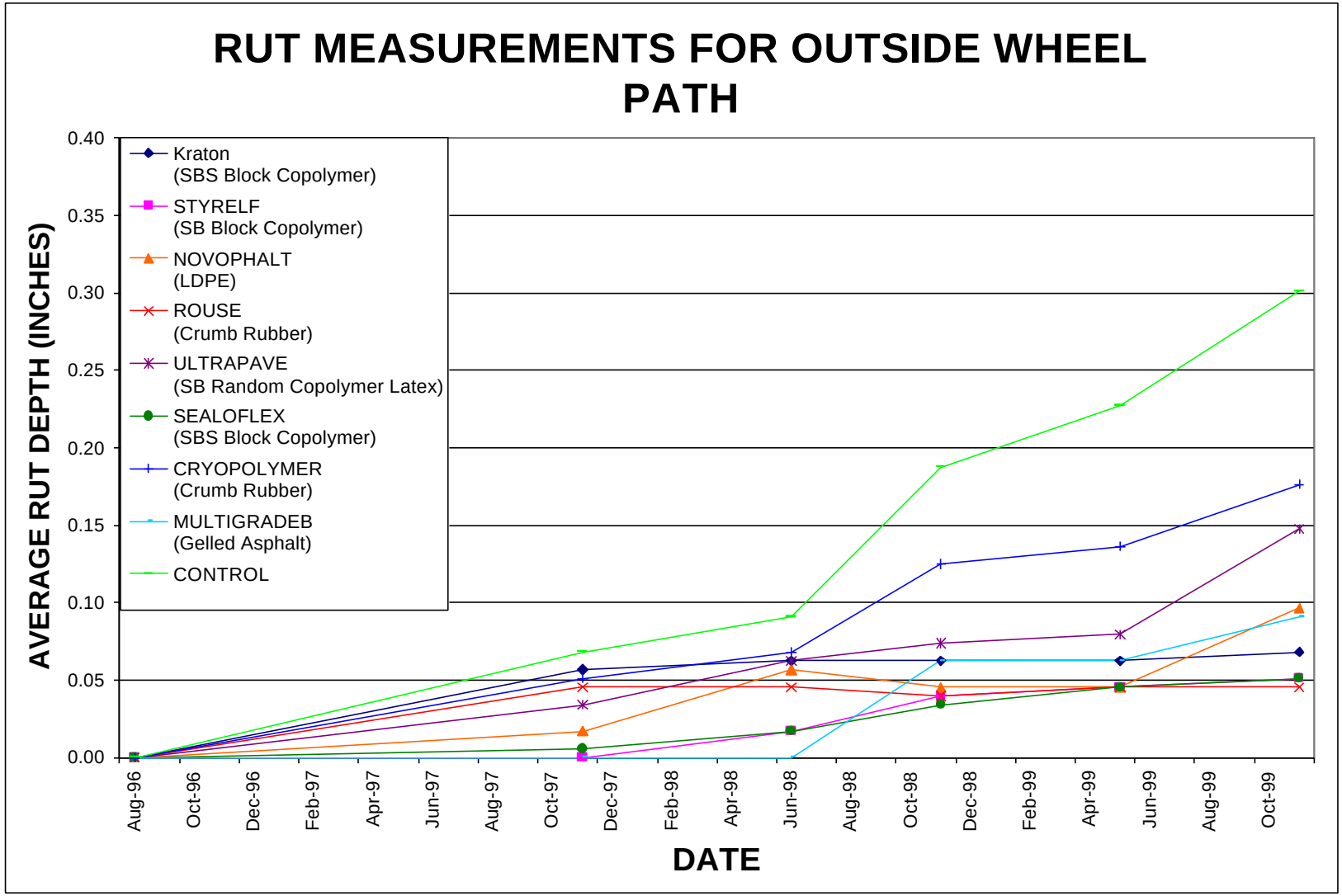

Figure 31. Rut measurements for outside wheel path.

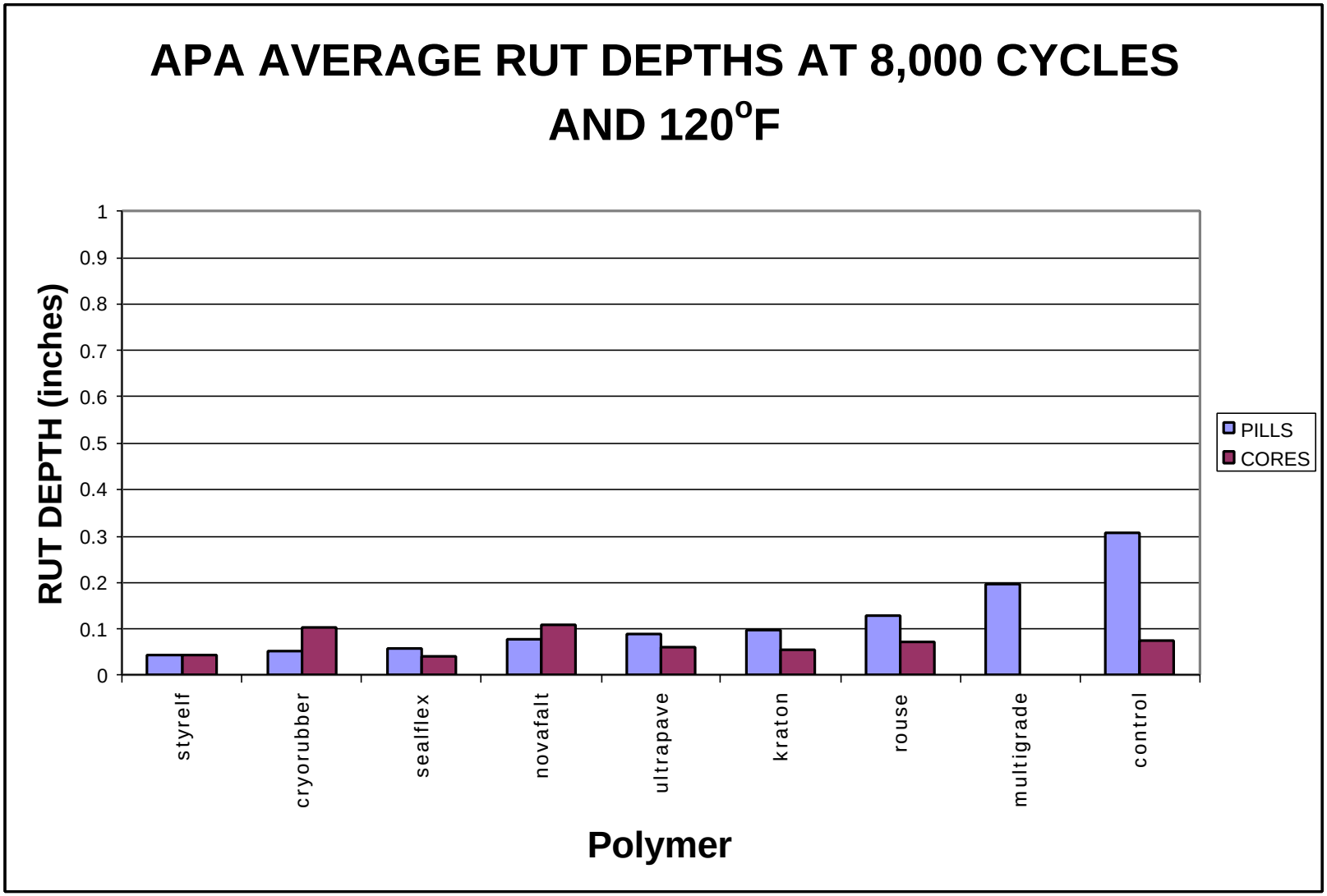

Figure 32. APA average rut depths at 8,000 cycles and 120F

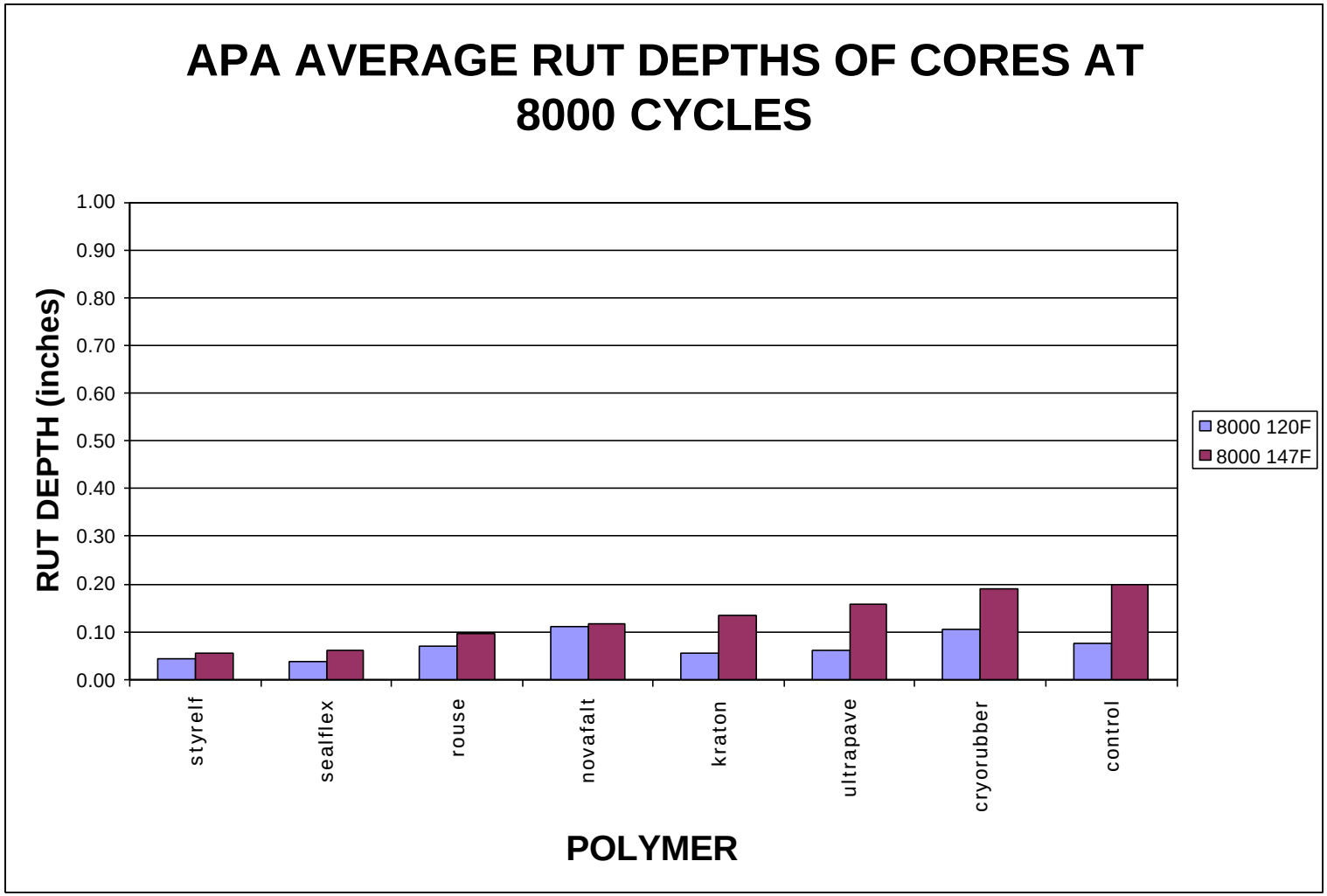

Figure 33. APA average rut depths at 8,000 cycles and 147F

Table 5. Actual Job Mix Properties for Modified and Control Mixes

Modifier	Pavement Course	75 Blow Marshall Air Voids	Roadway Cores Air Voids	VMA	Flow	Maximum Sp. Grav.	% AC	Stability (
DESIGN	Binder	4		14.7	15	2.418	4.8	13 122
	Surface	4		15	13	2.378	5.2	12 543
KRATON	Binder	3.4	4.3	14	16	2.421	4.68	15 506
	Surface	5.6	5.0	15.4	13	2.391	4.94	14 568
STYRELF	Binder	3.4	5.0	13.9	16	2.422	4.69	17 730
	Surface	5.3	7.6	15.9	18	2.381	5.07	17 601
NOVOPHALT	Binder	3.9	5.5	14.6	15	2.42	4.92	12 962
	Surface	5	6.1	15.5	11	2.384	5.03	14 946
ROUSE	Binder	3.4	5.1	14.2	11	2.418	4.83	12 577
	Surface	4.9	6.2	15.1	13	2.39	4.91	14 038
ULTRAPAVE	Binder	2.9	4.7	14	18	2.414	5.09	15 013
	Surface	3.9	6.5	14.5	18	2.383	5	17 668
SEAL-O-FLEX	Binder	3.4	8.0	14.3	20	2.415	4.77	18 109
	Surface	4.1	7.2	15.3	17	2.367	5.08	20 795
CRYOPOLYMER	Binder	4.3	6.3	15.2	12	2.416	4.98	14 403
	Surface	3.2	4.3	15.2	14	2.353	5.59	12 099
MULTIGRADE	Binder	3.2	4.9	13.2	13	2.405	4.66	12 953
	Surface	5.4	9	15.4	13	2.402	4.94	10 996
CONTROL	Binder	3.6	4.1	14.1	13	2.424	4.78	11 000
	Surface	4.6	5.5	15.5	11	2.382	5.33	10 124

Table 6. Rut and IRI Performance Measurements.

Project No.: 59-0065-09-070-10, 11
County: Grenada and Yalobusha
Route: I-55 Northbound Outside Lane
Location: North of Papermill Road Interchange
Test Date: March 12, 1997
Test Time: 10:13 a.m.

Test Section	Distance (mi) From	To		Rut Depth Avg. (in)	IRI Avg. (mm/m)
KRATON	0.0	0.2		0.017	0.93
	0.2	0.4		0.045	0.54
	0.4	0.6		0.039	0.57
	0.6	0.8		0.049	0.65
			Average	0.037	0.67
STYRELF	1	1.2		0.097	0.48
	1.2	1.4		0.035	0.58
	1.4	1.8		0.035	0.59
			Average	0.056	0.54
NOVOPHALT	2	2.2		0.015	0.60
	2.2	2.4		-0.065	0.73
	2.4	2.6		-0.027	0.82
			Average	-0.026	0.72
ROUSE RUBBER	3	3.2		-0.052	0.94
	3.2	3.4		-0.037	0.76
	3.4	3.6		-0.049	0.64
	3.6	3.8		-0.037	0.78
			Average	-0.044	0.78
ULTRAPAVE	4.2	4.4		-0.045	0.88
	4.4	4.6		-0.068	0.86
	4.6	4.8		-0.084	0.88
	4.8	5		-0.072	0.66
	5	5.2		-0.084	0.75
			Average	-0.067	0.80
SEAL-O-FLEX	6	6.2		0.018	0.79
	6.2	6.4		-0.006	0.74
	6.4	6.6		-0.084	0.66
	6.6	6.8		-0.026	0.82
			Average	-0.025	0.75
CRYOPOLYMER	6.8	7		-0.018	0.67
RUBBER	7	7.2		-0.002	0.68
	7.2	7.4		-0.022	0.87
			Average	-0.014	0.74
MULTIGRADE	7.4	7.6		-0.041	0.92
	7.6	7.8		-0.061	0.74
	7.8	8		-0.093	0.93
			Average	-0.065	0.86
CONTROL	8.6	8.8		-0.047	0.72
	8.8	9		-0.028	0.74
	9	9.2		-0.051	0.77
	9.2	9.4		-0.045	0.79
	9.4	9.6		-0.009	0.71
	9.6	9.8		-0.017	0.74
	9.8	10		0.009	0.77
	10	10.2		0.012	0.81
	10.2	10.4		0.011	0.59
	10.4	10.6		0.04	0.67
			Average	-0.013	0.73

Table 7. Skid Test Results

Project No.: 59-0055-03-070-10,11
County: Grenada and Yalobusha
Route: I-55 Northbound Outside Lane
Location: North of Papermill Road Interchange
Test Date: March 27,1997
Test Time: 12:51 p.m.
Weather: Clear (Temperature 75 F)

Test Section	Test No.	Distance, (mi)	Skid Numbers
KRATON	1	0	47.7
	2	0.1	48.9
	3	0.2	47.1
	4	0.3	48.4
	5	0.4	48.4
	6	0.5	47.9
	7	0.6	49.4
		Average	48
STYRELF	8	1.03	45.1
	9	1.13	48.1
	10	1.23	48.0
	11	1.33	48.6
	12	1.43	48.6
	13	1.53	48.5
		Average	48
NOVOPHALT	14	2.02	44.5
	15	2.12	47.2
	16	2.22	46.9
	17	2.32	47.0
	18	2.42	48.2
		Average	47
ROUSE RUBBER	19	3.01	46.3
	20	3.12	43.8
	21	3.22	48.4
	22	3.32	48.1
	23	3.42	46.4
	24	3.52	48.9
	25	3.62	48
		Average	47
ULTRAPAVE	26	4.15	49.1
	27	4.25	48.3
	28	4.35	48.1
	29	4.45	47.9
	30	4.55	49.5
	31	4.65	49.1
	32	4.81	50.0
	33	4.85	49.0
		Average	49

Test Section	Test No.	Distance, (mi)	Skid Numbe
SEAL-O-FLEX	34	6.21	50.3
	35	6.31	51.5
	36	6.41	51.4
	37	6.51	51.4
	38	6.61	51.4
	39	6.71	47.6
		Average	51
CRYOPOLYMER RUBBER	40	6.81	50.1
	41	6.91	49.1
	42	7.01	50.6
	43	7.11	48.8
	44	7.21	51.0
	45	7.31	50.9
		Average	50
MULTIGRADE	46	7.44	49.7
	47	7.54	48.6
	48	7.64	49.6
	49	7.74	48.4
	50	7.84	50.2
		Average	49
CONTROL	51	8.69	48.9
	52	8.79	47.6
	53	8.89	47.6
	54	8.99	47.8
	55	9.09	49.6
	56	9.19	49.5
	57	9.29	50.0
	58	9.42	50.7
	59	9.49	49.2
	60	9.59	48.4
	61	9.69	47.1
	62	9.79	46.7
	63	9.89	47.5
	64	9.99	48.3
	65	10.09	47.2
	66	10.19	47.4
	67	10.29	46.9
	68	10.43	50.7
		Average	48

Table 8. Relative ranking of the different modifiers.

True PG Grade	Manual Rut Measurements	APA on cores @ 147°F	APA on pills @ 120°F
Seal-O-Flex 82 - 27	Rouse Rubber (Crumb Rubber)	Styrelf	Styrelf
Styrelf 77 - 29	Styrelf (SB Block Copolymer)	Seal-O-Flex	Cryopolymer Rubber
Novophalt 76 - 23	Seal-O-Flex (SBS Block Copolymer)	Rouse Rubber	Seal-O-Flex
Rouse Rubber 75 - 29	Kraton (SBS Block Copolymer)	Novophalt	Novophalt
Cryopolymer Rubber 75 - 28	Novophalt (LDPE)	Kraton	Ultrapave
Multigrade 72 - 24	Ultrapave (SB Random Copolymer Latex)	Ultrapave	Kraton
Kraton 71 - 25	Multigrade (Gelled Asphalt)	Cryopolymer Rubber	Rouse Rubber
Ultrapave 70 - 27	Cryopolymer Rubber (Crumb Rubber)	Control	Multigrade
Control 70 - 24	Control		Control

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The following conclusions are based on laboratory and performance test results and on activities at the HMA plant.

8. Each polymer or rubber modifier required mixing at a higher temperature than regular HMA. These temperatures ranged from 320^{o} to 351^{o}F.

9. The modified HMA mixes were successfully produced in a normal HMA production facility. Most of the modifiers did not require a blending unit.

10. Once the rolling pattern was established for the modified HMA, further rolling caused the rolling pattern to break off and then to peak again. Initial rolling was with a steel-wheel vibratory roller and this was followed with a smaller steel-wheel static roller. (No pneumatic roller was used.)

11. Comparison of laboratory acceptance tests conducted during the construction and cores taken from the pavement the next morning showed that the laboratory air voids were closer to the design air voids than the field results.

12. Brookfield Viscometer tests showed that the modifiers were all more viscous at the lower temperatures.

13. Results of the GTM tests showed that the laboratory specimens had sufficient shear strength to resist the stress state in the pavement and that the air voids were above the flushing level and were consistent with design values.

14. Initial performance test results for the pavement test sections were low roughness and deflection readings and high skid values. These results indicate that the test sections were in an excellent initial condition.

15. Results to date indicate all the modifiers are out-performing the control section, both in terms of roadway rutting and rutting in the APA. It is important to note that the rutting on the control section is still relatively small at about 0.25 inch.

16. The selection of a modified asphalt binder grade based on the high temperature component of the PG designation could be quite inappropriate for a given project, especially when rubber modifiers are considered for use in the HMA.

RECOMMENDATIONS

1. It is obvious that all the modified binders are providing superior rutting resistance as compared to the control binder. This validates the wisdom of using modified binders for

areas of high equivalent single axle loading (ESAL). Monitoring of the test sections and the control section will continue for at least two more years.

2. The APA test results correlate well with field rutting measurements for the polymer modifiers indicating the potential for using the APA to predict the relative rutting performance of this type of modifier. Research should be conducted to substantiate this use of the APA.

REFERENCES

1. McRae, J. L., “Gyratory Testing Machine Technical Manual”, Engineering Developments Company, Inc.,1993.

APPENDIX A

ROLLING PATTERNS

APPENDIX A. ROLLING PATTERNS

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
KRATON	Binder	07/08/1996	9:10		328	148
			9:12		325	149.1
			9:13		324	150.4
			9:14		317	152.1
			9:15		312	152.6
			9:16		307	149
			9:17		302	151

MS DOT TICKET NO. 57255
PLANT TEMP/TIME = 340F @ 8:26
ROAD TEMP/TIME = 340F @ 9:04
ROLLING PATTERN @ STA 580+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
KRATON	Surface	07/11/1996	8:47		249	143.9
			8:48		241	143
			8:49		239	146.3
			8:50		235	149.6
			8:51		227	147.2
			8:52		224	148.1

MS DOT TICKET NO. 940761
PLANT TEMP/TIME = 322F @ 8:15
ROAD TEMP/TIME = 326F @ 8:38
ROLLING PATTERN @ STA 579+95 NB I/S LANE

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
STYRELF	Binder	07/08/1996	16:46		319	139.3
			16:47		313	142.6
			16:48		307	148.9
			16:49		300	150.1
			16:50		295	148.4

MS DOT TICKET NO. 57404
PLANT TEMP/TIME = 335F @ 16:05
ROAD TEMP/TIME = 352F @ 16:42
ROLLING PATTERN @ STA 635+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
STYRELF	Surface	07/11/1996	13:21		312	145.6
			13:22		312	150.8
			13:23		306	150.8
			13:24		300	155
			13:26		292	157.4
			13:27		285	158.3

MS DOT TICKET NO. 123903
PLANT TEMP/TIME = 348F @ 12:50
ROAD TEMP/TIME = 356F @ 13:10
ROLLING PATTERN @ STA 638+12 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
NOVOPHALT	Binder	07/17/1996	9:19	265	300	145.3
			9:20	261	300	151.2
			9:21	256	298	153.4
			9:22	244	295	156
			9:23	235	290	152
			9:24	227	284	147

MS DOT TICKET NO. 57356
PLANT TEMP/TIME = 340F @ 7:56
ROAD TEMP/TIME = 353F @ 9:17
ROLLING PATTERN @ STA 691+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
NOVOPHALT	Surface	07/19/1996	8:18		245	142.8
			8:19		237	145
			8:20		228	146.1
			8:21		218	146.4
			8:22		210	148.4
			8:23		203	145.1

MS DOT TICKET NO. 940859
PLANT TEMP/TIME = 324F @ 7:40
ROAD TEMP/TIME = 324F @ 8:05
ROLLING PATTERN @ STA 638+50 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
ROUSE RUBBER	Binder	07/17/1996	12:55		275	145
			12:56		269	148.3
			12:57		264	150.3
			12:58		253	152.5
			12:59		251	154.8
			13:00		247	154.5

MS DOT TICKET NO. 57455
PLANT TEMP/TIME = 325F @ 12:25
ROAD TEMP/TIME = 337F @ 12:50
ROLLING PATTERN @ STA 747+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
ROUSE RUBBER	Surface	07/19/1996	13:04		312	143.6
			13:05		314	146.4
			13:06		313	145.4
			13:07		310	147.9
			13:08		305	147.7
			13:09		299	146.1

MS DOT TICKET NO. 940955
PLANT TEMP/TIME = 347F @ 12:42
ROAD TEMP/TIME =
ROLLING PATTERN @ STA 749+25 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
ULTRAPAVE	Binder	07/22/1996	8:50		290	145.9
			8:51		275	149
			8:52		267	148.9
			8:53		257	148.9
			8:54		250	144.4

MS DOT TICKET NO. 57310
PLANT TEMP/TIME = 335F @ 8:05
ROAD TEMP/TIME = 325F @ 8:49
ROLLING PATTERN @ STA 813+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
ULTRAPAVE	Surface	07/25/1996	12:54	274	213	142.5
			12:55	268	212	143.7
			12:56	262	211	145.6
			12:57	245	209	143.4
			12:58	230	206	142.9

MS DOT TICKET NO. 940810
PLANT TEMP/TIME = 352F @ 12:23
ROAD TEMP/TIME = 350F @ 12:45
ROLLING PATTERN @ STA 801+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
SEAL-O-FLEX	Binder	07/29/1996	9:11	278	289	138
			9:12	273	285	141.3
			9:13	266	282	145.9
			9:14	264	275	140.8

MS DOT TICKET NO. 279763
PLANT TEMP/TIME = 360F @ 7:46
ROAD TEMP/TIME = 343F @ 8:42
ROLLING PATTERN @ STA 68+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Tempterature (F)@t/2	Density (lbs/ft^3)
SEAL-O-FLEX	Surface	08/01/1996	16:11	298	290	141.2
			16:12	282	280	141.8
			16:13	271	273	145.1
			16:14	265	263	142.5
			16:15	262	257	143.2

MS DOT TICKET NO. 594300
PLANT TEMP/TIME = 310F @ 15:42
ROAD TEMP/TIME = 340F @ 16:05

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
CRYOPOLYMER RUBBER	Binder	07/29/1996	13:07		295	136.8
			13:08		286	140.1
			13:10		276	142.6
			13:11		270	144.6
			13:12		265	141.5

MS DOT TICKET NO. 942698
PLANT TEMP/TIME = 340F @ 12:31
ROAD TEMP/TIME = 343F @ 13:00
ROLLING PATTERN @ STA 97+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
CRYOPOLYMER RUBBER	Surface	08/01/1996	18:15	280	314	143.5
			18:16	270	311	145.9
			18:17	265	305	148.6
			18:18	263	297	143.9
			18:19	260	291	148.7

MS DOT TICKET NO. 61832
PLANT TEMP/TIME = 345F @ 17:47
ROAD TEMP/TIME = 339F @ 18:08
ROLLING PATTERN @ STA 96+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
MULTIGRADE	Binder	08/07/1996	10:23	241	256	121.5
			10:25	228	238	134.1
			10:26	226	233	135.8
			10:27	224	230	136.2
			10:28	223	226	134.5

MS DOT TICKET NO. 279908
PLANT TEMP/TIME = 340F @ 7:35
ROAD TEMP/TIME = 310F @ 10:10
ROLLING PATTERN @ STA 125+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
MULTIGRADE	Surface	08/08/1996	11:10	252	247	131
			11:11	242	243	136.9
			11:12	230	237	140.5
			11:13	215	227	142.9
			11:14	208	217	142.8

MS DOT TICKET NO. 594422
PLANT TEMP/TIME = 335F @ 9:14
ROAD TEMP/TIME = 315F @ 11:05
ROLLING PATTERN @ STA 124+00 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
CONTROL	Binder	07/16/1996	13:05		297	147.4
			13:07		289	150.3
			13:08		288	152.1
			13:09		279	151.8
			13:10		270	154.0

MS DOT TICKET NO. 56992
PLANT TEMP/TIME = 316F @ 12:26
ROAD TEMP/TIME = 309F @ 12:48
ROLLING PATTERN @ STA 195+50 NB I/S LANE

POLYMER MODIFIED HMA FIELD TRIAL

ROLLING PATTERN ESTABLISHED

Supplier	Layer	Date	Time	Surface Temperature (F)	Pavement Temperature (F)@t/2	Density (lbs/ft^3)
CONTROL	Surface	08/08/1996	14:00	275	305	129.7
			14:01	268	303	134.4
			14:02	268	300	137.6
			14:03	260	296	137.5
			14:04	258	291	143.1

MS DOT TICKET NO. 61860
PLANT TEMP/TIME = 320F @ 13:02
ROAD TEMP/TIME = 317F @ 13:55
ROLLING PATTERN @ STA 191+00 NB I/S LANE

APPENDIX B

ASPHALT INSPECTORS DAILY REPORT

ASPHALT INSPECTORS DAILY REPORT

Lot No. 124 Date 07/08/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638310
Type Plant Batch-Drum Binder **MODIFIER KRATON** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time		8:33				Time		8:33
Temperature		174 C				Temperature		163 C
Sample Wt. (W)		1559.3				Characteristics of Laboratory Compacted Specimens (MT-34&MT-35)	Air Wt.	1175.5
Weight of Moist (M)		0.6					Water Wt.	670.8
Dry Sample Wt. (Ws)		1558.7					SSD Wt.	1178
Corr. AC %		4.71 (73.4)					Volume	507.2
Total Ext. Wt. (W1)		1485.3					Sp. Grav.	2.318
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.		Voids	3.9
	1 1/2"				6		VMA	14.7
100	1"	0	100	0	6		Dial	248
99	3/4"	4.1	99.7	0.7	6		Stability	3300
79	1/2"	209.5	85.9	6.9	6		Flow	15
65	3/8"	364.8	75.4	10.4	6	Asphalt Content Guage (MT-6)		4.75
42	#4	743.5	49.9	7.9	5	Moisture Correction (AASHTO: T110)	Sample Wt.	502.5
28	#8	966	35	7	5		Wt. Water	0.2
	#16				5		% Moisture	0.04
16	#30	1203.3	19	3	4	Corrected Asphalt Content		4.71
7	#50	1363.6	8.2	1.2	4	Maximum Specific Gravity (AASHTO: T209)	Sample Wt.	1854.2
3.9	#200	1419.5	4.4	0.5	1.5		Cal. Wt.	7514
							Final Wt.	8599.8
							Volume	768.4
							Max. Sp.Grav.	2.413

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	585+35	589+96	591+00	595+77	597+78	
	Location						
CORE DENSITY	Thickness	38 mm	41 mm	41 mm	41 mm	41 mm	
	Air Wt.	684.5	686.9	679.1	668.7	700.5	
	Water Wt.	391.7	386.1	390.5	378.9	400.7	
	SSD Wt.	686.2	689.3	680	670.6	702	
	Volume	294.5	303.2	289.5	291.7	301.3	
	Sp. Gravity	2.324	2.266	2.346	2.292	2.325	Average Density
	Max. Sp. Gravity	2.413					
	% Density	96.3	93.9	97.2	95	96.4	95.8

Crush Count 94.10%
Limestone Retained on #4 Sieve 38.00%
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 126 Date 07/08/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638311
Type Plant Batch-Drum Binder **MODIFIER STYRELF** (Inside Lane) Source of AC ERGON

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time		4:19				Time		4:19
Temperature		174 C				Temperature		163 C
Sample Wt. (W)		1573.8					Air Wt.	1183.2
Weight of Moist (M)		0.6					Water Wt.	674.6
Dry Sample Wt. (Ws)		1573.2				Characteristics	SSD Wt.	1185.9
Corr. AC %		5.04 (79.3)				of Laboratory	Volume	511.3
Total Ext. Wt. (W1)		1493.9				Compacted	Sp. Grav.	2.314
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.9
	1 1/2"				6		VMA	15.2
100	1"	0	100	0	6		Dial	264
99	3/4"	0	100	0	6		Stability	3513
79	1/2"	198.8	86.7	7.7	6		Flow	17
65	3/8"	415.5	72.2	7.2	6	Asphalt Content Guage (MT-6)		5.08
42	#4	809.9	45.8	3.8	5	Moisture	Sample Wt.	500.9
28	#8	1034.1	30.8	2.8	5	Correction	Wt. Water	0.2
	#16				5	(AASHTO: T110)	% Moisture	0.04
16	#30	1233.2	17.5	1.5	4	Corrected Asphalt Content		5.04
7	#50	1369.9	8.3	1.3	4		Sample Wt.	1795.6
3.9	#200	1426.4	4.5	0.6	1.5	Maximum	Cal. Wt.	7514
						Specific Gravity	Final Wt.	8571.5
						(AASHTO: T209)	Volume	738.1
							Max. Sp.Grav.	2.433

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		639+34	643+57	648+43	650+05	653+12	
Location							
CORE DENSITY	Thickness	48 mm	45 mm	38 mm	48 mm	45 mm	
	Air Wt.	732.1	746.4	647.7	779.7	720.7	
	Water Wt.	408.3	426.8	367.9	445.7	405.7	
	SSD Wt.	735.4	747.9	649.6	781.4	723.2	
	Volume	327.1	321.1	281.7	335.7	317.5	
	Sp. Gravity	2.238	2.325	2.299	2.323	2.27	Average
	Max. Sp. Gravity	2.433					Density
	% Density	92	95.6	94.5	95.5	93.3	94.2

Crush Count % Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 3.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 127 Date 07/09/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638310
Type Plant Batch-Drum Binder **MODIFIER KRATON** (Outside Lane) Source of AC ERGON

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time			9:30			Time		9:30
Temperature			174 C			Temperature		163 C
Sample Wt. (W)			1896.5				Air Wt.	1190.8
Weight of Moist (M)			0.8				Water Wt.	682.8
Dry Sample Wt. (Ws)			1895.7			Characteristics	SSD Wt.	1192.1
Corr. AC %			4.68			of Laboratory	Volume	509.3
Total Ext. Wt. (W1)			1807			Compacted	Sp. Grav.	2.338
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.4
	1 1/2"				6		VMA	14
100	1"	0	100	0	6		Dial	262
99	3/4"	18.6	98.9	0.1	6		Stability	3486
79	1/2"	263.9	85.4	6.4	6		Flow	16
65	3/8"	590	67.3	2.3	6	Asphalt Content Guage (MT-6)		4.72
42	#4	1062.9	41.2	0.8	5	Moisture	Sample Wt.	501.8
28	#8	1289.1	28.7	0.7	5	Correction	Wt. Water	0.2
	#16				5	(AASHTO: T110)	% Moisture	0.04
16	#30	1509	16.5	0.5	4	Corrected Asphalt Content		4.68
7	#50	1670.3	7.6	0.6	4		Sample Wt.	1896.2
3.9	#200	1731.6	4.2	0.3	1.5	Maximum Specific Gravity	Cal. Wt.	7514
						(AASHTO: T209)	Final Wt.	8627.1
							Volume	783.1
							Max. Sp.Grav.	2.421

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)						
Sublot No.		1	2	3	4	5
Station		577+35	583+74	590+30	593+01	600+33
Location		0.61 m	0.61 m	3 m	2.4 m	2.4 m
CORE DENSITY	Thickness	51 mm	38 mm	38 mm	41 mm	41 mm
	Air Wt.	843.8	620.6	563.8	540.6	636.7
	Water Wt.	474.5	356	321.7	311.4	363.2
	SSD Wt.	845.4	621.5	565.7	541.9	638.7
	Volume	370.9	365.5	244	230.5	275.5
	Sp. Gravity	2.275	2.337	2.311	2.345	2.311
	Max. Sp. Gravity	2.421				
	% Density	94	96.5	95.5	96.9	95.5

Average Density: 95.7

Crush Count % | Limestone Retained on #4 Sieve % | Agg. Bulk Sp. Grav. 2.59 | Job Mix AC% 4.8 | VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 129 Date 07/09/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638311
Type Plant Batch-Drum Binder **MODIFIER STYRELF** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time						Time		12:34
Temperature		174 C				Temperature		160 C
Sample Wt. (W)		1680.9					Air Wt.	1196.3
Weight of Moist (M)		0.7					Water Wt.	687.1
Dry Sample Wt. (Ws)		1680.2				Characteristics	SSD Wt.	1198.3
Corr. AC %		4.69				of Laboratory	Volume	511.2
Total Ext. Wt. (W1)		1601.4				Compacted	Sp. Grav.	2.34
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	3.4
	1 1/2"					(MT-34&MT-35)	VMA	13.9
100	1"	0	100	0	6		Dial	300
99	3/4"	14.6	99.1	0.1	6		Stability	3986
79	1/2"	281.4	82.4	3.4	6		Flow	16
65	3/8"	480.7	70	5	6	Asphalt Content Gauge (MT-6)		4.73
42	#4	908.4	43.3	1.3	5	Moisture	Sample Wt.	
28	#8	1135.2	29.1	1.1	5	Correction	Wt. Water	
	#16					(AASHTO: T110)	% Moisture	0.04
16	#30	1336.1	16.6	0.6	4	Corrected Asphalt Content		4.69
7	#50	1481.7	7.5	0.5	4		Sample Wt.	1837
3.9	#200	1538.6	3.9	0	1.5	Maximum	Cal. Wt.	7514
						Specific Gravity	Final Wt.	8592.5
						(AASHTO: T209)	Volume	758.5
							Max. Sp.Grav.	2.422

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		634+08	639+58	645+88	647+98	652+00	
Location		3 m	0.9 m	3 m	3 m	3 m	
CORE DENSITY	Thickness	44mm	41 mm	41 mm	38 mm	44 mm	
	Air Wt.	706.2	644.3	669.5	635.7	686.6	
	Water Wt.	400.9	361.6	377.7	367.9	390.8	
	SSD Wt.	707.8	646	671	638.5	688.1	
	Volume	306.9	284.4	293.3	270.6	297.3	
	Sp. Gravity	2.301	2.265	2.283	2.349	2.309	Average
	Max. Sp. Gravity	2.422					Density
	% Density	95	93.5	94.3	97	95.3	95

Crush Count % Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC%4.80
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 132 Date 07/11/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639908
Type Plant Batch-Drum Surface **MODIFIER KRATON** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time		8:10				Time		8:10
Temperature		163 C				Temperature		163 C
Sample Wt. (W)		1888.6					Air Wt.	1181.3
Weight of Moist (M)		0.6					Water Wt.	670
Dry Sample Wt. (Ws)		1888				Characteristics	SSD Wt.	1182
Corr. AC %		5.44 (102.7)				of Laboratory	Volume	512
Total Ext. Wt. (W1)		1785.3				Compacted	Sp. Grav.	2.307
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	3.4
	1 1/2"					(MT-34&MT-35)	VMA	14.3
	1"						Dial	286
100	3/4"	0	100	0	6		Stability	3811
97	1/2"	73.1	95.9	1.1	6		Flow	17
87	3/8"	258.9	85.5	1.5	6	Asphalt Content Guage (MT-6)		5.5
55	#4	778.5	56.4	1.4	5	Moisture	Sample Wt.	501.9
37	#8	1093.1	38.8	1.8	5	Correction	Wt. Water	0.3
	#16					(AASHTO: T110)	% Moisture	0.06
20	#30	1411.5	20.9	0.9	4	Corrected Asphalt Content		5.44
11	#50	1577.1	11.7	0.7	4		Sample Wt.	1538.1
5.4	#200	1671.3	6.4	1	1.5	Maximum	Cal. Wt.	7514.6
						Specific Gravity	Final Wt.	8408.5
						(AASHTO: T209)	Volume	644.2
							Max. Sp.Grav.	2.388

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		582+66	587+68	589+73	593+67	597+52	
Location							
CORE DENSITY	Thickness	38 mm	41 mm	38 mm	38 mm	38 mm	
	Air Wt.	653.6	652.7	636.9	629.4	640.1	
	Water Wt.	368.1	363.2	360.7	347	363	
	SSD Wt.	654.8	653.8	638	631	641.3	
	Volume	286.7	290.6	277.3	284	278.3	
	Sp. Gravity	2.28	2.246	2.2967	2.216	2.3	Average
	Max. Sp. Gravity	2.388					Density
	% Density	95.5	94.1	96.2	92.8	96.3	95

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 134 Date 07/11/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639909
Type Plant Batch-Drum Surface **MODIFIER STYRELF** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time		12:40				Time		12:40
Temperature		166 C				Temperature		160 C
Sample Wt. (W)		1595.8					Air Wt.	1186
Weight of Moist (M)		1					Water Wt.	668.1
Dry Sample Wt. (Ws)		1594.8				Characteristics	SSD Wt.	1188
Corr. AC %		5.25 (83.7)				of Laboratory	Volume	519.9
Total Ext. Wt. (W1)		1511.1				Compacted	Sp. Grav.	2.281
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	4.4
						(MT-34&MT-35)	VMA	15.1
	1 1/2"				6		Dial	285
	1"				6		Stability	3800
100	3/4"	0	100	0	6		Flow	21
97	1/2"	49.4	96.7	0.3	6	Asphalt Content Guage (MT-6)		5.31
87	3/8"	219	85.5	1.5	6	Moisture	Sample Wt.	501.9
55	#4	667.7	55.8	0.8	5	Correction	Wt. Water	0.3
37	#8	940.7	37.7	0.7	5	(AASHTO: T110)	% Moisture	0.06
	#16				5	Corrected Asphalt Content		5.25
20	#30	1210.1	19.9	0.1	4		Sample Wt.	1739.2
11	#50	135.1	10.6	0.4	4	Maximum	Cal. Wt.	7514.6
5.4	#200	1424.4	5.7	0.3	1.5	Specific Gravity	Final Wt.	8524.7
						(AASHTO: T209)	Volume	729.1
							Max. Sp.Grav.	2.385

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	640.04	643+41	648+51	651+00	653+00	
	Location						
	Thickness	38 mm	35 mm	32 mm	48 mm	48 mm	
	Air Wt.	581.2	521.4	679.8	723.3	688.5	
	Water Wt.	316.6	2.87.2	386.4	408	385.3	
CORE	SSD Wt.	584.2	523.4	681.6	725.1	691	
DENSITY	Volume	267.6	236.2	295.2	317.1	305.6	
	Sp. Gravity	2.172	2.207	2.303	2.281	2.253	Average
	Max. Sp. Gravity	2.385					Density
	% Density	91.1	92.5	96.6	95.6	94.5	94.1

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 135 Date 07/12/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639908
Type Plant Batch-Drum Surface **MODIFIER KRATON** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time			9:00			Time		9:00	
Temperature			160 C			Temperature		163 C	163 C
Sample Wt. (W)			2117				Air Wt.	1189.6	1180.3
Weight of Moist (M)			0.8				Water Wt.	667.3	661.8
Dry Sample Wt. (Ws)			2116.2			Characteristics	SSD Wt.	1192.4	1185
Corr. AC %			4.94 (104.5)			of Laboratory	Volume	525.1	523.2
Total Ext. Wt. (W1)			2011.7			Compacted	Sp. Grav.	2.265	2.256
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	5.3	5.6
	1 1/2"				6		VMA	15.4	
	1"				6		Dial	246	
100	3/4'	0	100	0	6		Stability	3275	
97	1/2'	76.5	96.2	0.8	6		Flow	13	
87	3/8'	256	87.3	0.3	6	Asphalt Content Guage (MT-6)		4.98	
55	#4	878.7	56.3	1.3	5	Moisture	Sample Wt.	504.8	
37	#8	1253.2	37.7	0.7	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1617.7	19.7	0.3	4	Corrected Asphalt Content		4.94	
11	#50	1798.4	10.6	0.4	4		Sample Wt.	1905.5	
5.4	#200	1893.8	5.9	0.5	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8623.1	
						(AASHTO: T209)	Volume	797	
							Max. Sp.Grav.	2.391	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	572+71	582+09	584+00	591+32	595+38	
	Location	1.2 m	1.2 m	0.6 m	0.6 m	0.6 m	
CORE DENSITY	Thickness	41 mm	38 mm	38 mm	44 mm	38 mm	
	Air Wt.	650.6	626.8	581.1	663.4	609.6	
	Water Wt.	356.1	347.4	321	366.4	332.5	
	SSD Wt.	653.3	628.4	582.5	665.5	611.3	
	Volume	297.2	231	261.5	299.1	278.8	
	Sp. Gravity	2.189	2.231	2.222	2.218	2.187	Average
	Max. Sp. Gravity	2.391					Density
	% Density	91.6	93.3	92.9	92.8	91.5	92.4

Crush Count 94.7%
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 137 Date 07/12/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639909
Type Plant Batch-Drum Surface **MODIFIER STYRELF** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		12:40				Time		12:40	
Temperature		160 C				Temperature		160 C	163 C
Sample Wt. (W)		1638.9					Air Wt.	1187.6	1200.4
Weight of Moist (M)		0.7					Water Wt.	662.8	671.6
Dry Sample Wt. (Ws)		1638.2				Characteristics	SSD Wt.	1189.8	1204.1
Corr. AC %		5.07 (83.1)				of Laboratory	Volume	527	532.5
Total Ext. Wt. (W1)		1555.1				Compacted	Sp. Grav.	2.254	2.255
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	5.3	5.3
	1 1/2"				6		VMA	15.9	
	1"				6		Dial	298	
100	3/4"	0	100	0	6		Stability	3957	
97	1/2"	72.4	95.3	1.7	6		Flow	18	
87	3/8"	259.3	83.3	3.7	6	Asphalt Content Guage (MT-6)		5.11	
55	#4	717	53.9	1.1	5	Moisture	Sample Wt.	501	
37	#8	990.3	36.3	0.7	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1266.4	18.6	1.4	4	Corrected Asphalt Content		5.07	
11	#50	1403.4	9.8	1.2	4		Sample Wt.	1945.4	
5.4	#200	1471.1	5.4	0	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8642.8	
						(AASHTO: T209)	Volume	817.2	
							Max. Sp.Grav.	2.381	

IP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.	1	2	3	4	5		
Station	626+58	933+62	638+33	646+00	650+81		
Location	3 m	0.6 m	1.8 m	3 m	0.9 m		
Thickness	41 mm	43 mm	41 mm	38 mm	43 mm		
Air Wt.	617.3	636.3	585.9	548.9	735.3		
Water Wt.	339.1	348.4	317	300.1	410.3		
SSD Wt.	618.8	638.3	588.3	550.7	736.7		
Volume	279.7	290.4	271.3	250.6	326.4		
Sp. Gravity	2.207	2.193	2.16	2.19	2.253	Average	
Max. Sp. Gravity	2.381					Density	
% Density	92.7	92.1	90.7	92	94.6	92.4	

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 141 Date 07/17/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638312
Type Plant Batch-Drum Binder **MODIFIER NOVOPHALT** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:55				Time		7:55	
Temperature		168 C				Temperature		163 C	163 C
Sample Wt. (W)		2538.9					Air Wt.	1189.4	1197.1
Weight of Moist (M)		1					Water Wt.	678	684.8
Dry Sample Wt. (Ws)		2537.9				Characteristics	SSD Wt.	1192.2	1200
Corr. AC %		119.3				of Laboratory	Volume	514.2	515.2
Total Ext. Wt. (W1)		2418.6				Compacted	Sp. Grav.	2.313	2.324
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	5.1	4.7
	1 1/2"				6		VMA	14.9	
100	1"	0	100	0	6		Dial	258	
99	3/4"	37	98.5	0.5	6		Stability	3429	
83	1/2"	326.2	86.5	3.5	6		Flow	14	
68	3/8"	713.7	70.5	2.5	6	Asphalt Content Guage (MT-6)		4.74	
42	#4	1359.9	42.8	0.8	5	Moisture	Sample Wt.	501.7	
28	#8	1691.8	30.1	1.9	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	2016.1	16.6	0.6	4	Corrected Asphalt Content		4.7	
7	#50	2250.1	7	0	4		Sample Wt.	2307.4	
3.9	#200	2326.8	3.8	0.1	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8875.5	
						(AASHTO: T209)	Volume	946.5	
							Max. Sp.Grav.	2.438	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		693+68	695+71	700+35	702+88	704+96	
Location		1.5 m	1.8 m	2.7 m	3 m	3 m	
CORE DENSITY	Thickness	44 mm	44 mm	44 mm	44 mm	41 mm	
	Air Wt.	739	727.3	715.7	702.2	644.9	
	Water Wt.	417.9	411.7	401.2	395.4	362.8	
	SSD Wt.	740.9	729.2	717.7	704.6	647.6	
	Volume	323	317.5	316.5	309.2	284.8	
	Sp. Gravity	2.288	2.291	2.261	2.271	2.264	Average
	Max. Sp. Gravity	2.438					Density
	% Density	93.8	94	92.7	93.2	92.9	93.3

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13
Screen Change on 1/2" from 79 to 83
Screen Change on 3/8" from 65 to 68

ASPHALT INSPECTORS DAILY REPORT

Lot No. 140 Date 07/16/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9634180
Type Plant Batch-Drum Binder **CONTROL AC-30** Source AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		8:50				Time		8:50	12:30
Temperature		154 C				Temperature		146 C	146 C
Sample Wt. (W)		2456.1					Air Wt.	1196.3	1181.3
Weight of Moist (M)		1.5					Water Wt.	686.1	669.3
Dry Sample Wt. (Ws)		2454.6				Characteristics	SSD Wt.	1198	1182.8
Corr. AC %		4.78 (117.3)				of Laboratory	Volume	511.9	513.5
Total Ext. Wt. (W1)		2337.3				Compacted	Sp. Grav.	2.337	2.3
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.6	4.7
	1 1/2"				6		VMA	14.1	15.4
100	1"	0	100	0	6		Dial	183	186
99	3/4"	20.9	99.1	0.1	6		Stability	2473	2500
79	1/2"	355.3	84.8	5.8	6		Flow	13	13
65	3/8"	680.3	70.9	5.9	6	Asphalt Content Guage (MT-6)		4.84	4.83
42	#4	1309.1	44	2	5	Moisture	Sample Wt.	504.2	
28	#8	1632.7	30.1	2.1	5	Correction	Wt. Water	0.3	
	#16				5	(AASHTO: T110)	% Moisture	0.06	
16	#30	1928.8	17.5	1.5	4	Corrected Asphalt Content		4.78	4.77
7	#50	2135.5	8.6	1.6	4		Sample Wt.	2025.1	2048.5
3.9	#200	2220.8	5	1.1	1.5	Maximum	Cal. Wt.	7514.6	7514.6
						Specific Gravity	Final Wt.	8704.2	8714.4
						(AASHTO: T209)	Volume	835.5	848.7
							Max. Sp.Grav.	2.424	2.414

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	198+93	222+72	240+63	254+16	279+89	
	Location						
CORE DENSITY	Thickness	38 mm	41 mm	35 mm	38 mm	38 mm	
	Air Wt.	690.2	690.8	609.1	664.1	661.4	
	Water Wt.	392.5	392.8	349.9	376	379	
	SSD Wt.	691.2	691.9	610	665.2	662.1	
	Volume	298.7	299.1	260.1	289.2	283.1	
	Sp. Gravity	2.311	2.31	2.342	2.296	2.336	Average
	Max. Sp. Gravity	2.419					Density
	% Density	95.5	95.5	96.8	94.9	96.6	95.9

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 5
VMA = 14.8 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 143 Date 07/17/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638313
Type Plant Batch-Drum Binder **MODIFIER ROUSE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		12:31				Time		12:31	
Temperature		168 C				Temperature		163 C	
Sample Wt. (W)		2371.6					Air Wt.	1188.5	
Weight of Moist (M)		0.9					Water Wt.	677.6	
Dry Sample Wt. (Ws)		2370.7				Characteristics	SSD Wt.	1190.7	
Corr. AC %		4.74 (112.4)				of Laboratory	Volume	513.1	
Total Ext. Wt. (W1)		2258.3				Compacted	Sp. Grav.	2.316	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.9	
	1 1/2"				6		VMA	14.8	
100	1"	0	100	0	6		Dial	214	
99	3/4"	18.8	99.2	0.2	6		Stability	2883	
83	1/2"	375	83.4	0.4	6		Flow	11	
68	3/8"	700.2	69	1	6	Asphalt Content Guage (MT-6)		4.78	
42	#4	1279.5	43.3	1.3	5	Moisture	Sample Wt.	500.8	
28	#8	1587.7	29.7	1.7	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	1865.5	17.4	1.4	4	Corrected Asphalt Content		4.74	
7	#50	2073.9	8.2	1.2	4		Sample Wt.	1929.7	
3.9	#200	2162.3	4.2	0.3	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8651.7	
						(AASHTO: T209)	Volume	792.6	
							Max. Sp.Grav.	2.435	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		749+44	752+81	754+47	757+52	761+13	
Location		3 m	1.2 m	0.6 m	2.7 m	1.2 m	
CORE DENSITY	Thickness	44 mm	44 mm	41 mm	35 mm	41 mm	
	Air Wt.	736.6	748.1	699.8	542.3	698.2	
	Water Wt.	418.2	427.1	396.5	304	401.8	
	SSD Wt.	739	750.1	702.6	543.9	699.5	
	Volume	320.8	323.1	306.1	239.9	297.7	
	Sp. Gravity	2.296	2.315	2.286	2.261	2.345	Average
	Max. Sp. Gravity	2.435					Density
	% Density	94.3	95.1	93.9	92.9	96.3	94.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 144 Date 07/18/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638312
Type Plant Batch-Drum Binder **MODIFIER NOVOPHALT** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		6:50				Time		6:50	
Temperature		166 C				Temperature		163 C	
Sample Wt. (W)		2059					Air Wt.	1190.8	
Weight of Moist (M)		0.8					Water Wt.	681.2	
Dry Sample Wt. (Ws)		2058.2				Characteristics	SSD Wt.	1193.3	
Corr. AC %						of Laboratory	Volume	512.1	
Total Ext. Wt. (W1)		1956.9				Compacted	Sp. Grav.	2.325	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	3.9	
						(MT-34&MT-35)	VMA	14.6	
	1 1/2"				6		Dial	216	
100	1"	0	100	0	6		Stability	2914	
99	3/4"	10.7	99.5	0.5	6		Flow	15	
83	1/2"	259.8	86.7	3.7	6	Asphalt Content Guage (MT-6)		4.96	
68	3/8"	555.2	71.6	3.6	6	Moisture	Sample Wt.	501.4	
42	#4	1065.6	45.5	3.5	5	Correction	Wt. Water	0.2	
28	#8	1351.7	30.9	2.9	5	(AASHTO: T110)	% Moisture	0.04	
	#16				5	Corrected Asphalt Content		4.92	
16	#30	1615.8	17.4	1.4	4		Sample Wt.	1926.6	
7	#50	1815.5	7.2	0.2	4	Maximum	Cal. Wt.	7514.6	
3.9	#200	1881.7	3.8	0.1	1.5	Specific Gravity	Final Wt.	8645.1	
						(AASHTO: T209)	Volume	796.1	
							Max. Sp.Grav.	2.42	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	679+50	688+93	691+43	701+15	701+96	
	Location	3 m	3 m	1.8 m	1.2 m	2.4 m	
CORE DENSITY	Thickness	41 mm	44 mm	48 mm	41 mm	38 mm	
	Air Wt.	697.2	691.2	751.6	678.4	615.5	
	Water Wt.	399.4	386.6	420.3	380.4	351.9	
	SSD Wt.	698.2	693	754.4	680.1	616.4	
	Volume	298.8	306.4	334.1	299.7	264.5	
	Sp. Gravity	2.333	2.256	2.25	2.264	2.327	Average
	Max. Sp. Gravity	2.42					Density
	% Density	96.4	93.2	93	93.6	96.2	94.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 146 Date 07/18/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638313
Type Plant Batch- Drum Binder **MODIFIER ROUSE** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		11:35				Time		11:35	
Temperature		171 C				Temperature		163 C	
Sample Wt. (W)		1654.4					Air Wt.	1193	
Weight of Moist (M)		0.7					Water Wt.	684.8	
Dry Sample Wt. (Ws)		1653.7				Characteristics	SSD Wt.	1195.6	
Corr. AC %		4.83 (79.9)				of Laboratory	Volume	510.8	
Total Ext. Wt. (W1)		1573.8				Compacted	Sp. Grav.	2.336	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.4	
	1 1/2"				6		VMA	14.2	
100	1"	0	100	0	6		Dial	212	
99	3/4"	0	100	1	6		Stability	2850	
83	1/2"	247.8	84.3	1.3	6		Flow	11	
68	3/8"	484	69.2	1.2	6	Asphalt Content Guage (MT-6)		4.87	
42	#4	903.9	42.6	0.6	5	Moisture	Sample Wt.	500.9	
25	#8	1106.6	29.7	1.7	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	1298.3	17.5	1.5	4	Corrected Asphalt Content		4.83	
7	#50	1444.9	8.2	1.2	4		Sample Wt.	1945	
3.9	#200	1506.5	4.3	0.4	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8655.2	
						(AASHTO: T209)	Volume	804.4	
							Max. Sp.Grav.	2.418	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	737+45	743+71	746+20	752+64	757+37	
	Location	0.6 m	3 m	2.7 m	1.8 m	0.6 m	
CORE DENSITY	Thickness	48 mm	41 mm	41 mm	41 mm	41 mm	
	Air Wt.	764.3	664	685.5	668.7	628.8	
	Water Wt.	433	375.9	391.6	380.2	354.1	
	SSD Wt.	767	666.4	686.4	671.1	630.3	
	Volume	334	290.5	294.8	290.9	276.2	
	Sp. Gravity	2.288	2.286	2.325	2.299	2.277	Average
	Max. Sp. Gravity	2.418					Density
	% Density	94.6	94.5	96.2	95.1	94.2	94.9

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 147 Date 07/19/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639910
Type Plant Batch-Drum Surface **MODIFIER NOVOPHALT** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:35				Time		7:35	
Temperature		163 C				Temperature		163 C	
Sample Wt. (W)		1713.5					Air Wt.	1197.8	
Weight of Moist (M)		0.7					Water Wt.	675.7	
Dry Sample Wt. (Ws)		1712.8				Characteristics	SSD Wt.	1199.4	
Corr. AC %		5.25 (89.9)				of Laboratory	Volume	523.7	
Total Ext. Wt. (W1)		1622.9				Compacted	Sp. Grav.	2.287	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	4.3	
						(MT-34&MT-35)	VMA	14.9	
	1 1/2"				6		Dial	256	
	1"				6		Stability	3264	
100	3/4"	0	100	0	6		Flow	14	
97	1/2"	85.7	94.7	2.3	6	Asphalt Content Guage (MT-6)		5.29	
87	3/8"	257.5	84.1	2.9	6	Moisture	Sample Wt.	501.8	
55	#4	733.2	54.8	0.2	5	Correction	Wt. Water	0.2	
37	#8	1007.5	37.9	0.9	5	(AASHTO: T110)	% Moisture	0.04	
	#16				5	Corrected Asphalt Content		5.25	
20	#30	1307.1	19.5	0.5	4		Sample Wt.	1690.7	
11	#50	1469.8	9.4	1.6	4	Maximum	Cal. Wt.	7514.6	
5.4	#200	1544.5	4.8	0.6	1.5	Specific Gravity	Final Wt.	8498	
						(AASHTO: T209)	Volume	707.3	
							Max. Sp.Grav.	2.39	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	691+30	696+89	697+74	703+47	704+51	
	Location	1.2 m	0.6 m	0.6 m	1.5 m	2.7 m	
CORE DENSITY	Thickness	38 mm	38 mm	35 mm	41 mm	38 mm	
	Air Wt.	605.9	587.6	590.6	667.2	569	
	Water Wt.	335.3	326.4	330	377	313.6	
	SSD Wt.	608.5	590.7	592.1	669.1	572.7	
	Volume	273.2	264.3	262.1	292.1	259.1	
	Sp. Gravity	2.218	2.223	2.253	2.284	2.196	Average
	Max. Sp. Gravity	2.39					Density
	% Density	92.8	93	94.3	95.6	91.9	93.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 149 Date 07/19/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Leman-Roberts Mix Design Lab No. 9639911
Type Plant Batch-Drum Surface **MODIFIER ROUSE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		12:40				Time		12:40	
Temperature		171 C				Temperature		163 C	
Sample Wt. (W)		1700.9					Air Wt.	1191.1	
Weight of Moist (M)		0.7					Water Wt.	669.9	
Dry Sample Wt. (Ws)		1700.2				Characteristics	SSD Wt.	1194.4	
Corr. AC %		5.22 (88.8)				of Laboratory	Volume	524.5	
Total Ext. Wt. (W1)		1611.4				Compacted	Sp. Grav.	2.271	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.7	
	1 1/2"				6		VMA	15.4	
	1"				6		Dial	235	
100	3/4"	0	100	0	6		Stability	3012	
97	1/2"	62.2	96.1	0.9	6		Flow	14	
87	3/8"	223	86.2	0.8	6	Asphalt Content Guage (MT-6)		5.26	
55	#4	736.9	54.3	0.7	5	Moisture	Sample Wt.	500.9	
37	#8	1007	37.5	0.5	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1284.4	20.3	0.3	4	Corrected Asphalt Content		5.22	
11	#50	1435.4	10.9	0.1	4		Sample Wt.	1669.4	
5.4	#200	1522	5.5	0.1	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8483.1	
						(AASHTO: T209)	Volume	700.9	
							Max. Sp.Grav.	2.382	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	751+12	755+86	760+00	762+63	769+00	
	Location	0.6 m	3 m	1.8 m	0.9 m	0.6 m	
CORE DENSITY	Thickness	41 mm	35 mm	32 mm	35 mm	35 mm	
	Air Wt.	688.8	556.7	487.2	573.1	537.7	
	Water Wt.	385.9	310.2	269.7	321.2	302.8	
	SSD Wt.	691.4	558.8	490.4	575	539.3	
	Volume	305.5	248.6	220.7	253.8	236.5	
	Sp. Gravity	2.255	2.239	2.208	2.258	2.274	Average
	Max. Sp. Gravity	2.382					Density
	% Density	94.7	94	92.7	94.8	95.5	94.3

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 150 Date 07/20/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639910
Type Plant Batch-Drum Surface **MODIFIER NOVOPHALT** (Outside Lane) Source of AC ERGON

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:30				Time		7:30	
Temperature		171 C				Temperature		163 C	
Sample Wt. (W)		1692.3					Air Wt.	1199.3	
Weight of Moist (M)		0.7					Water Wt.	674.7	
Dry Sample Wt. (Ws)		1691.6				Characteristics	SSD Wt.	1201.4	
Corr. AC %		85.1				of Laboratory	Volume	526.7	
Total Ext. Wt. (W1)		1606.5				Compacted	Sp. Grav.	2.265	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	5	
	1 1/2"				6		VMA	15.5	
	1"				6		Dial	263	
100	3/4"	0	100	0	6		Stability	3360	
97	1/2"	26.4	98.4	1.4	6		Flow	11	
87	3/8"	204.3	87.3	0.3	6	Asphalt Content Guage (MT-6)		5.07	
55	#4	697.1	56.6	1.6	5	Moisture	Sample Wt.	500.9	
37	#8	1001.9	37.6	0.6	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1317.3	18	2	4	Corrected Asphalt Content		5.03	
11	#50	1469.3	8.5	2.5	4		Sample Wt.	1621.9	
5.4	#200	1524	5.1	0.3	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8456.2	
						(AASHTO: T209)	Volume	680.3	
							Max. Sp.Grav.	2.384	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		679+69	688+12	689+56	698+66	700+77	
Location		1.2 m	1.8 m	1.8 m	2.7 m	2.7 m	
CORE DENSITY	Thickness	38 mm	38 mm	40 mm	38 mm	38 mm	
	Air Wt.	617.4	587.8	668.2	637.7	636.5	
	Water Wt.	341.9	323.3	372.6	358.6	356	
	SSD Wt.	619	589.9	669.7	638.9	638.1	
	Volume	277.1	266.6	297.1	280.3	282.1	
	Sp. Gravity	2.228	2.205	2.241	2.275	2.256	Average
	Max. Sp. Gravity	2.384					Density
	% Density	93.4	92.5	94.3	95.4	94.6	93.9

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 152 Date 07/20/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-roberts Mix Design Lab No. 9639911
Type Plant Batch-Drum Surface **MODIFIER ROUSE** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		11:50				Time		11:50	
Temperature		171 C				Temperature		163 C	
Sample Wt. (W)		1902.6					Air Wt.	1193.2	
Weight of Moist (M)		0.8					Water Wt.	669.7	
Dry Sample Wt. (Ws)		1901.8				Characteristics	SSD Wt.	1194.8	
Corr. AC %		4.91 (93.4)				of Laboratory	Volume	525.1	
Total Ext. Wt. (W1)		1808.4				Compacted	Sp. Grav.	2.272	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.9	
	1 1/2"				6		VMA	15.1	
	1"				6		Dial	247	
100	3/4"	0	100	0	6		Stability	3156	
97	1/2"	47.3	97.4	0.4	6		Flow	13	
87	3/8"	217.4	88	1	6	Asphalt Content Guage (MT-6)		4.95	
55	#4	745.9	58.8	3.8	5	Moisture	Sample Wt.	500.9	
37	#8	1083.9	40.1	3.1	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1431.8	20.8	0.8	4	Corrected Asphalt Content		4.91	
11	#50	1608.4	11.1	0.1	4		Sample Wt.	1667.5	
5.4	#200	1699.7	6	0.6	1.5	Maximum	Cal. Wt.	7514.6	
						Specific Gravity	Final Wt.	8484.4	
						(AASHTO: T209)	Volume	697.7	
							Max. Sp.Grav.	2.39	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		740+40	746+29	750+00	760+14	767+31	
Location		1.5 m	2.7 m	3 m	1.2 m	2.1 m	
CORE DENSITY	Thickness	32 mm	33 mm	35 mm	38 mm	41 mm	
	Air Wt.	521.5	559.3	535.2	629	655.8	
	Water Wt.	289	315.3	297.3	354	363.8	
	SSD Wt.	524.7	561.7	537.6	630.3	658.6	
	Volume	235.7	246.4	240.3	276.3	294.8	
	Sp. Gravity	2.213	2.27	2.227	2.277	2.225	Average
	Max. Sp. Gravity	2.39					Density
	% Density	92.6	95	93.2	95.3	93.1	93.8

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 153 Date 07/22/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638314
Type Plant Batch-Drum Binder **MODIFIER ULTRAPAVE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:40				Time		7:40	
Temperature		171 C				Temperature		163 C	
Sample Wt. (W)		2021					Air Wt.	1190.9	
Weight of Moist (M)		0.4					Water Wt.	682.5	
Dry Sample Wt. (Ws)		2020.6				Characteristics	SSD Wt.	1192	
Corr. AC %		90.9				of Laboratory	Volume	509.5	
Total Ext. Wt. (W1)		1929.7				Compacted	Sp. Grav.	2.337	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.4	
	1 1/2"				6		VMA	13.8	
100	1"	0	100	0	6		Dial	255	
99	3/4"	0	100	1	6		Stability	3388	
83	1/2"	289	85	2	6		Flow	13	
68	3/8"	597.7	69	1	6	Asphalt Content Guage (MT-6)		4.52	
42	#4	1085.7	43.7	1.7	5	Moisture	Sample Wt.	500	
28	#8	1344.2	30.3	2.3	5	Correction	Wt. Water	0.1	
	#16				5	(AASHTO: T110)	% Moisture	0.02	
16	#30	1578	18.2	2.2	4	Corrected Asphalt Content		4.5	
7	#50	1769.5	8.3	1.3	4		Sample Wt.	1641.2	
3.9	#200	1839	4.7	0.8	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8477.3	
						(AASHTO: T209)	Volume	678.3	
							Max. Sp.Grav.	2.42	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		795+05	796+68	802+72	806+45	815+25	
Location		0.6 m	2.1 m	0.9 m	1.8 m	1.2 m	
CORE DENSITY	Thickness	44 mm	38 mm	41 mm	38 mm	41 mm	
	Air Wt.	755.4	623.4	696.7	643.7	676.8	
	Water Wt.	430.3	350.5	397.8	366.1	389.8	
	SSD Wt.	756.5	624.4	698.1	644.9	678.4	
	Volume	326.2	273.9	300.3	278.8	288.6	
	Sp. Gravity	2.316	2.276	2.32	2.309	2.345	Average
	Max. Sp. Gravity	2.42					Density
	% Density	95.7	94	95.9	95.4	96.9	95.6

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 155 Date 07/22/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638317
Type Plant Batch-Drum Binder **MODIFIER MULTIGRADE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		11:18				Time		11:18	
Temperature		166 C				Temperature		163 C	
Sample Wt. (W)		2314.3					Air Wt.	1176.8	
Weight of Moist (M)		0.4					Water Wt.	673.8	
Dry Sample Wt. (Ws)		2313.9				Characteristics	SSD Wt.	1178.1	
Corr. AC %		4.66 (107.8)				of Laboratory	Volume	504.3	
Total Ext. Wt. (W1)		2206.1				Compacted	Sp. Grav.	2.334	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.6	
	1 1/2"				6		VMA	14.1	
100	1"	0	100	0	6		Dial	170	
99	3/4"	0	100	1	6		Stability	2329	
83	1/2"	364.8	83.5	0.5	6		Flow	10	
68	3/8"	669	69.7	1.7	6	Asphalt Content Guage (MT-6)		4.68	
42	#4	1272	42.3	0.3	5	Moisture	Sample Wt.	500	
28	#8	1564	29.1	1.1	5	Correction	Wt. Water	0.1	
	#16				5	(AASHTO: T110)	% Moisture	0.02	
16	#30	1832	17	1	4	Corrected Asphalt Content		4.66	
7	#50	2028.3	8.1	1.1	4		Sample Wt.	2003	
3.9	#200	2110.6	4.3	0.4	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8690.3	
						(AASHTO: T209)	Volume	827.1	
							Max. Sp.Grav.	2.422	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		6+33	7+08	16+74	20+00	24+82	
Location		0.6 m	2.4 m	2.4 m	2.1 m	3	
CORE DENSITY	Thickness	38 mm	32 mm	32 mm	38 mm	41 mm	
	Air Wt.	635.6	554.3	561.5	609.3	629.8	
	Water Wt.	358	318	323.9	346	353	
	SSD Wt.	637.7	555.2	562.4	610.9	632	
	Volume	279.7	237.2	238.5	264.9	279	
	Sp. Gravity	2.272	2.337	2.354	2300	2.257	Average
	Max. Sp. Gravity	2.422					Density
	% Density	93.8	96.5	97.2	95	93.2	95.1

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 156 Date 07/23/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638314
Type Plant Batch-Drum Binder **MODIFIER ULTRAPAVE** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		8:02				Time		8:02	
Temperature		171 C				Temperature		163 C	163 C
Sample Wt. (W)		2056					Air Wt.	1186.6	1195.4
Weight of Moist (M)		0.8					Water Wt.	682.4	686.5
Dry Sample Wt. (Ws)		2055.2				Characteristics	SSD Wt.	1188	1196.5
Corr. AC %		5.09 (104.6)				of Laboratory	Volume	505.6	510
Total Ext. Wt. (W1)		1950.6				Compacted	Sp. Grav.	2.347	2.344
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	2.8	2.9
	1 1/2"				6		VMA	14	
100	1"	0	100	0	6		Dial	254	
99	3/4"	22.2	98.9	0.1	6		Stability	3375	
83	1/2"	364.6	81.3	1.7	6		Flow	18	
68	3/8"	635.7	67.4	0.6	6	Asphalt Content Guage (MT-6)		5.13	
42	#4	1134.7	41.8	0.2	5	Moisture	Sample Wt.	500.9	
28	#8	1380.7	29.2	1.2	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	1603.4	17.8	1.8	4	Corrected Asphalt Content		5.09	
7	#50	1791.3	8.2	1.2	4		Sample Wt.	1813.1	
3.9	#200	1863.7	4.5	0.6	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8576.5	
						(AASHTO: T209)	Volume	751	
							Max. Sp.Grav.	2.414	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		792+44	799+45	807+03	812+46	820+40	
Location		2.1 m	0.6 m	1.8 m	0.6 m	0.9 m	
CORE DENSITY	Thickness	38 mm	44 mm	38 mm	41 mm	41 mm	
	Air Wt.	629.9	704	627.8	694.5	692.4	
	Water Wt.	361.4	397.7	356.7	387.2	395.5	
	SSD Wt.	630.4	705.2	628.8	696.4	693.7	
	Volume	269	307.5	272.1	309.2	298.2	
	Sp. Gravity	2.342	2.289	2.307	2.246	2.322	Average
	Max. Sp. Gravity	2.414					Density
	% Density	97	94.8	95.6	93	96.2	95.3

Crush Count 94.2%
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 158 Date 07/23/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638317
Type Plant Batch-Drum Binder **MODIFIER MULTIGRADE** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time						Time			
Temperature			166 C			Temperature		163 C	163 C
Sample Wt. (W)		96	1776.9				Air Wt.	1182.2	1185.7
Weight of Moist (M)			0.7				Water Wt.	683.4	684.9
Dry Sample Wt. (Ws)			1776.2			Characteristics	SSD Wt.	1183.3	1186.8
Corr. AC %			4.71 (83.7)			of Laboratory	Volume	499.9	501.9
Total Ext. Wt. (W1)			1692.5			Compacted	Sp. Grav.	2.365	2.362
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	1.5	1.6
	1 1/2"				6		VMA	13	
100	1"	0	100	0	6		Dial	177	
99	3/4"	0	100	1	6		Stability	2418	
83	1/2"	295.7	82.5	0.5	6		Flow	14	
68	3/8"	474.2	72	4	6	Asphalt Content Guage (MT-6)		4.75	
42	#4	907.4	46.4	4.4	5	Moisture	Sample Wt.	500.9	
28	#8	1145	32.3	4.3	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	1366.7	19.2	3.2	4	Corrected Asphalt Content		4.71	
7	#50	1536.2	9.2	1.2	4		Sample Wt.	1708	
3.9	#200	1602.3	5.3	1.2	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8510.7	
						(AASHTO: T209)	Volume	711.7	
							Max. Sp.Grav.	2.4	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	10+17	12+53	19+60	21+96	30+67	
	Location	1.5 m	0.9 m	1.2 m	0.6 m	0.9 m	
CORE DENSITY	Thickness	35 mm	35 mm	38 mm	38 mm	35 mm	
	Air Wt.	617.9	662	629.6	677.7	611.1	
	Water Wt.	351.8	372.1	360.3	387.2	344.8	
	SSD Wt.	618.8	664.5	630.6	678.7	612.3	
	Volume	267	292.4	270.3	291.5	267.5	
	Sp. Gravity	2.314	2.264	2.329	2.325	2.284	Average
	Max. Sp. Gravity	2.4					Density
	% Density	96.4	94.3	97	96.9	95.2	96

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 160 Date 07/25/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639912
Type Plant Batch-Drum Surface **MODIFIER ULTRAPAVE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		11:38				Time		11:38	
Temperature		177 C				Temperature		163 C	
Sample Wt. (W)		1707.8					Air Wt.	1192.4	
Weight of Moist (M)		0.7					Water Wt.	675.1	
Dry Sample Wt. (Ws)		1707.1				Characteristics	SSD Wt.	1193.6	
Corr. AC %		5.06 (86.4)				of Laboratory	Volume	518.5	
Total Ext. Wt. (W1)		1620.7				Compacted	Sp. Grav.	2.3	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	4.2	
						(MT-34&MT-35)	VMA	14.2	
	1 1/2"				6		Dial	314	
	1"				6		Stability	4175	
100	3/4"	0	100	0	6		Flow	17	
97	1/2"	77.9	95.2	1.8	6	Asphalt Content Guage (MT-6)		5.1	
87	3/8"	255.7	84.2	2.8	6	Moisture	Sample Wt.	501	
55	#4	746	54	1	5	Correction	Wt. Water	0.2	
37	#8	1014.7	37.4	0.4	5	(AASHTO: T110)	% Moisture	0.04	
	#16				5	Corrected Asphalt Content		5.06	
20	#30	1284.5	20.7	0.7	4		Sample Wt.	2032	
11	#50	1448.4	10.6	0.4	4	Maximum	Cal. Wt.	7514.4	
5.4	#200	1530	5.6	0.2	1.5	Specific Gravity	Final Wt.	8699.9	
						(AASHTO: T209)	Volume	846.5	
							Max. Sp.Grav.	2.4	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	791+38	799+92	802+43	812+25	813+06	
	Location	3 m	3 m	2.8 m	1.2 m	2.4 m	
CORE DENSITY	Thickness	29 mm	41 mm	35 mm	35 mm	38 mm	
	Air Wt.	417.4	622.5	562.3	586.2	578.2	
	Water Wt.	226.6	346.5	314.4	330.6	318.1	
	SSD Wt.	419.5	625.3	563.9	587.7	580.5	
	Volume	192.9	278.8	249.5	257.1	262.4	
	Sp. Gravity	2.164	2.233	2.254	2.28	2.204	Average
	Max. Sp. Gravity	2.4					Density

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 162 Date 07/25/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639915
Type Plant Batch-Drum Surface **MODIFIER MULTIGRADE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		4:05				Time		4:05	
Temperature		177 C				Temperature		163 C	
Sample Wt. (W)		1726.6					Air Wt.	1185.7	
Weight of Moist (M)		0.7					Water Wt.	667.3	
Dry Sample Wt. (Ws)		1725.9				Characteristics	SSD Wt.	1187	
Corr. AC %		5.11 (88.2)				of Laboratory	Volume	519.7	
Total Ext. Wt. (W1)		1637.7				Compacted	Sp. Grav.	2.282	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.6	
	1 1/2"				6		VMA	14.9	
	1"				6		Dial	215	
100	3/4"	0	100	0	6		Stability	2900	
97	1/2"	40.5	97.5	0.5	6		Flow	10	
87	3/8"	179.5	89	2	6	Asphalt Content Guage (MT-6)		5.15	
55	#4	670.1	59.1	4.1	5	Moisture	Sample Wt.	501	
37	#8	972.4	40.6	3.6	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1281.2	21.8	1.8	4	Corrected Asphalt Content		5.11	
11	#50	1452	11.3	0.3	4		Sample Wt.	1750	
5.4	#200	1539.9	6	0.6	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8532.6	
						(AASHTO: T209)	Volume	731.8	
							Max. Sp.Grav.	2.391	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	1+65	5+75	11+92	15+29	19+21	
	Location	2.7 m	2.7 m	1.2 m	0.6 m	3 m	
CORE DENSITY	Thickness	38 mm	31 mm	38 mm	35 mm	31 mm	
	Air Wt.	568.4	518.2	556.9	543.1	498.7	
	Water Wt.	320	290.9	311.7	300	277.3	
	SSD Wt.	570.8	519.6	558.2	544.4	499.8	
	Volume	250.8	228.7	246.5	244.4	222.5	
	Sp. Gravity	2.266	2.266	2.259	2.222	2.241	Average
	Max. Sp. Gravity	2.391					Density
	% Density	94.8	94.8	94.5	92.9	93.7	94.1

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 163 Date 07/26/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639912
Type Plant Batch-Drum Surface **MODIFIER ULTRAPAVE** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:30				Time		7:30	
Temperature		168 C				Temperature		163 C	
Sample Wt. (W)		2360.6					Air Wt.	1202.8	
Weight of Moist (M)		1.4					Water Wt.	679.7	
Dry Sample Wt. (Ws)		2359.2				Characteristics	SSD Wt.	1204.8	
Corr. AC %		5.00 (118)				of Laboratory	Volume	525.1	
Total Ext. Wt. (W1)		2241.2				Compacted	Sp. Grav.	2.291	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.9	
	1 1/2"				6		VMA	14.5	
	1"				6		Dial	311	
100	3/4"	0	100	0	6		Stability	3972	
97	1/2"	111	95	2	6		Flow	18	
87	3/8"	336.9	85	2	6	Asphalt Content Guage (MT-6)		5.06	
55	#4	973.2	56.6	1.6	5	Moisture	Sample Wt.	500.3	
37	#8	1355.4	30.5	2.5	5	Correction	Wt. Water	0.3	
	#16				5	(AASHTO: T110)	% Moisture	0.06	
20	#30	1754.6	21.7	1.7	4	Corrected Asphalt Content		5	
11	#50	1979.4	11.7	0.7	4		Sample Wt.	1573.3	
5.4	#200	2096	6.5	1.1	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8427.5	
						(AASHTO: T209)	Volume	660.2	
							Max. Sp.Grav.	2.383	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	796+28	808+25	818+90	820+53	831+60	
	Location	3 m	1.6 m	0.9 m	1.6 m	2.7 m	
CORE DENSITY	Thickness	38 mm	38 mm	35 mm	44 mm	48 mm	
	Air Wt.	655.3	631.7	563.9	645.4	749.4	
	Water Wt.	367.1	353.3	314.1	359.3	415.4	
	SSD Wt.	656.6	633.2	565.9	647.2	751.8	
	Volume	289.5	279.9	251.8	287.9	336.4	
	Sp. Gravity	2.264	2.257	2.239	2.242	2.228	Average
	Max. Sp. Gravity	2.383					Density
	% Density	95	94.7	94	94.1	93.5	93.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 166 Date 07/29/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638316
Type Plant Batch-Drum Binder **MODIFIER SEAL-O-FLEX** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:50				Time		7:50	
Temperature		166 C				Temperature		163 C	
Sample Wt. (W)		2313.1					Air Wt.	1199.2	
Weight of Moist (M)		0.9					Water Wt.	684.4	
Dry Sample Wt. (Ws)		2312.2				Characteristics	SSD Wt.	1200.8	
Corr. AC %		4.64 (107.3)				of Laboratory	Volume	516.4	
Total Ext. Wt. (W1)		2204.9				Compacted	Sp. Grav.	2.322	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.5	
	1 1/2"				6		VMA	14.5	
100	1"	0	100	0	6		Dial	291	
99	3/4"	92.5	95.8	3.2	6		Stability	3867	
83	1/2"	393.8	82.1	0.9	6		Flow	17	
68	3/8"	735.8	66.6	1.4	6	Asphalt Content Guage (MT-6)		4.68	
42	#4	1304.4	40.8	1.2	5	Moisture	Sample Wt.	501.5	
28	#8	1590.4	27.9	0.1	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	1841.9	16.5	0.5	4	Corrected Asphalt Content		4.64	
7	#50	2030.4	7.9	0.9	4		Sample Wt.	1924.9	
3.9	#200	2107.9	4.4	0.5	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8638.9	
						(AASHTO: T209)	Volume	800.4	
							Max. Sp.Grav.	2.405	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		60+03	68+20	69+43	77+79	79+30	
Location		1.2 m	0.6 m	0.6 m	1.6 m	2.7 m	
CORE DENSITY	Thickness	38 mm	41 mm	44 mm	44 mm	44 mm	
	Air Wt.	613.4	622	704.8	688	664.2	
	Water Wt.	348.2	344	399.8	386.4	373.3	
	SSD Wt.	614.6	625.3	706.3	688.8	666.1	
	Volume	266.4	281.3	306.5	302.4	292.8	
	Sp. Gravity	2.303	2.211	2.3	2.275	2.268	Average
	Max. Sp. Gravity	2.405					Density
	% Density	95.8	91.9	95.6	94.6	94.3	94.4

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 168 Date 07/29/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No.
Type Plant Batch-Drum Binder **MODIFIER CRYOPOLYMER RUBBER** Source of AC Ergon
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		12:35				Time		12:35	
Temperature		177 C				Temperature		163 C	
Sample Wt. (W)		2273.4					Air Wt.	1189.9	
Weight of Moist (M)		0.9					Water Wt.	684.5	
Dry Sample Wt. (Ws)		2272.5				Characteristics	SSD Wt.	1191.6	
Corr. AC %		5.09 (115.7)				of Laboratory	Volume	507.1	
Total Ext. Wt. (W1)		2156.8				Compacted	Sp. Grav.	2.346	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	3.1	
	1 1/2"				6	(MT-34&MT-35)	VMA	14	
100	1"	0	100	0	6		Dial	240	
99	3/4"	11.2	99.5	0.5	6		Stability	3200	
83	1/2"	380.3	83.4	0.6	6		Flow	13	
68	3/8"	620.7	71.2	3.2	6	Asphalt Content Guage (MT-6)		5.13	
42	#4	1195	29.9	1.9	5	Moisture	Sample Wt.	501.9	
28	#8	1512.8	29.9	1.9	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
16	#30	1772	17.8	1.8	4	Corrected Asphalt Content		5.09	
7	#50	1969.1	8.7	1.7	4		Sample Wt.	1761.9	
3.9	#200	2059.9	4.5	0.6	1.5	Maximum	Cal. Wt.	7514.4	
						Specific Gravity	Final Wt.	8548.1	
						(AASHTO: T209)	Volume	728.2	
							Max. Sp.Grav.	2.42	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	89+63	94+00	103+61	108+24	114+45	
	Location	1.8 m	0.9 m	1.6 m	2.1 m	0.6 m	
CORE DENSITY	Thickness	35 mm	41 mm	35 mm	35 mm	41 mm	
	Air Wt.	557.5	680.2	598.7	544.2	661.4	
	Water Wt.	317.5	391.4	343.6	308.8	370.1	
	SSD Wt.	557.4	681.3	599.6	545.4	664.3	
	Volume	239.9	289.9	256	236.6	294.2	
	Sp. Gravity	2.324	2.346	2.339	2.3	2.248	Average
	Max. Sp. Gravity	2.42					Density
	% Density	96	96.9	96.7	95	92.9	95.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = Minimum =

Lab No. Not Available.

ASPHALT INSPECTORS DAILY REPORT

Lot No. 169 Date 07/30/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639914
Type Plant Batch-Drum Binder **MODIFIER SEAL-O-FLEX** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		7:45				Time		7:45	
Temperature		160 C				Temperature		160 C	
Sample Wt. (W)		1842.2					Air Wt.	1191.7	
Weight of Moist (M)		0.6					Water Wt.	682.4	
Dry Sample Wt. (Ws)		1841.6				Characteristics	SSD Wt.	1193.5	
Corr. AC %		4.77 (87.8)				of Laboratory	Volume	511.1	
Total Ext. Wt. (W1)		1753.8				Compacted	Sp. Grav.	2.332	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.4	
	1 1/2"				6		VMA	14.3	
100	1"	0	100	0	6		Dial	306	
99	3/4"	0	100	1	6		Stability	4071	
83	1/2"	339	80.7	2.3	6		Flow	20	
68	3/8"	567	67.7	0.3	6	Asphalt Content Guage (MT-6)		4.83	
42	#4	1031.1	41.2	0.8	5	Moisture Correction	Sample Wt.	502.9	
28	#8	1262.5	28	0	5		Wt. Water	0.3	
	#16				5	(AASHTO: T110)	% Moisture	0.06	
16	#30	1457.3	16.9	0.9	4	Corrected Asphalt Content		4.77	
7	#50	1611	8.1	1.1	4		Sample Wt.	1827.2	
3.9	#200	1674.3	4.5	0.6	1.5	Maximum Specific Gravity	Cal. Wt.	7514.4	
							Final Wt.	8584.9	
						(AASHTO: T209)	Volume	756.7	
							Max. Sp.Grav.	2.415	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station						
	Location						
CORE DENSITY	Thickness	38 mm	44 mm	38 mm	44 mm	41 mm	
	Air Wt.	584.7	693.3	563.2	703.8	657.3	
	Water Wt.	320.8	387.7	305.4	394.3	364.7	
	SSD Wt.	587.2	696	565.3	705.8	659	
	Volume	266.4	308.3	258.9	311.5	294.3	
	Sp. Gravity	2.195	2.249	2.175	2.259	2.233	Average
	Max. Sp. Gravity	2.415					Density
	% Density	90.9	93.1	90.1	93.5	92.5	92

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 170 Date 07/30/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No.
Type Plant Batch Drum Binder **MODIFIER CRYOPOLYMER RUBBER** Source AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		10:15				Time		10:15	
Temperature		168 C				Temperature		163	
Sample Wt. (W)		1967.9					Air Wt.	1190.6	
Weight of Moist (M)		1.2					Water Wt.	676.8	
Dry Sample Wt. (Ws)		1966.7				Characteristics	SSD Wt.	1192	
Corr. AC %		4.98 (97.9)				of Laboratory	Volume	515.2	
Total Ext. Wt. (W1)		1868.8				Compacted	Sp. Grav.	2.311	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.3	
	1 1/2"				6		Dial	243	
100	1"	0	100	0	6		Stability	3238	
99	3/4"	10.7	99.4	0.4	6		Flow	12	
83	1/2"	289.6	84.5	1.5	6	Asphalt Content Guage (MT-6)		5.04	
68	3/8"	536.3	71.3	3.3	6	Moisture	Sample Wt.	501.9	
42	#4	1069.9	42.7	0.7	5	Correction	Wt. Water	0.3	
28	#8	1333	28.7	0.7	5	(AASHTO: T110)	% Moisture	0.06	
	#16				5	Corrected Asphalt Content		4.98	
16	#30	1554.6	16.8	0.8	4		Sample Wt.	1747.2	
7	#50	1723.8	7.8	0.8	4	Maximum	Cal. Wt.	7514.4	
3.9	#200	1797	3.8	0.1	1.5	Specific Gravity	Final Wt.	8538.3	
						(AASHTO: T209)	Volume	723.3	
							Max. Sp.Grav.	2.416	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station						
	Location						
CORE DENSITY	Thickness	44 mm	38 mm	35 mm	38 mm	41 mm	
	Air Wt.	672.1	619.1	562.8	661.6	673.8	
	Water Wt.	376.2	347	314.6	373	379.7	
	SSD Wt.	676	620.1	564.4	663	675.9	
	Volume	299.8	273.1	249.8	290	296.2	
	Sp. Gravity	2.242	2.267	2.253	2.281	2.275	Average
	Max. Sp. Gravity	2.416					Density
	% Density	92.8	93.8	93.3	94.4	94.2	93.7

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = Minimum =

Lab No. Not Available.

ASPHALT INSPECTORS DAILY REPORT

Lot No. 173 Date 08/01/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639914
Type Plant Batch-Drum Surface **MODIFIER SEAL-O-FLEX** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		3:45				Time		3:45	
Temperature		182 C				Temperature		163 C	
Sample Wt. (W)		1614.1					Air Wt.	1209.3	
Weight of Moist (M)		0.6					Water Wt.	676.1	
Dry Sample Wt. (Ws)		1603.5				Characteristics	SSD Wt.	1210.8	
Corr. AC %		5.21 (84.1)				of Laboratory	Volume	534.7	
Total Ext. Wt. (W1)		1529.4				Compacted	Sp. Grav.	2.262	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.6	
	1 1/2"				6		VMA	15.8	
	1"				6		Dial	343	
100	3/4"	0	100	0	6		Stability	4361	
97	1/2"	83.2	94.6	2.4	6		Flow	20	
87	3/8"	215.2	85.9	1.1	6	Asphalt Content Guage (MT-6)		5.25	
55	#4	715.4	53.2	1.8	5	Moisture	Sample Wt.	500.8	
37	#8	972.8	36.4	0.6	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1223.6	20	0	4	Corrected Asphalt Content		5.21	
11	#50	1381.2	9.7	1.3	4		Sample Wt.	2013.1	
5.4	#200	1454.5	4.9	0.5	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8678.3	
						(AASHTO: T209)	Volume	848.9	
							Max. Sp.Grav.	2.371	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		55+86	66+66	69+46	80+40	81+30	
Location		3 m	3 m	1.8 m	1.2 m	2.4 m	
CORE DENSITY	Thickness	38 mm	38 mm	32 mm	38 mm	32 mm	
	Air Wt.	582.5	538.9	470.2	594.7	458.4	
	Water Wt.	324.9	300.5	262.2	332.1	252.8	
	SSD Wt.	586.6	543.7	474.5	599.3	463.2	
	Volume	261.7	243.2	212.3	267.2	210.4	
	Sp. Gravity	2.226	2.216	2.215	2.226	2.179	Average
	Max. Sp. Gravity	2.371					Density
	% Density	93.9	93.5	93.4	93.9	91.9	93.3

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 174 Date 08/01/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No.
Type Plant Batch-Drum Surface **MODIFIER CRYOPOLYMER RUBBER** Source of ASPHALT ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		5:50				Time		5:50	
Temperature		166 C				Temperature		163 C	
Sample Wt. (W)		2161					Air Wt.	1176.4	
Weight of Moist (M)		0.9					Water Wt.	657.8	
Dry Sample Wt. (Ws)		2160.1				Characteristics	SSD Wt.	1178.5	
Corr. AC %		5.23 (113)				of Laboratory	Volume	520.7	
Total Ext. Wt. (W1)		2047.1				Compacted	Sp. Grav.	2.259	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	5	
	1 1/2"				6		VMA	15.9	
	1"				6		Dial	211	
100	3/4"	0	100	0	6		Stability	2833	
97	1/2"	65.3	96.8	0.2	6		Flow	11	
87	3/8"	226.3	88.9	2.9	6	Asphalt Content Guage (MT-6)		5.27	
55	#4	874.7	57.3	2.3	5	Moisture	Sample Wt.	500.9	
37	#8	1245.3	39.2	2.2	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1610.1	21.3	1.3	4	Corrected Asphalt Content		5.23	
11	#50	1828.3	10.7	0.3	4		Sample Wt.	2043.1	
5.4	#200	1943.3	5.1	0.3	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8698.4	
						(AASHTO: T209)	Volume	858.7	
							Max. Sp.Grav.	2.379	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		89+55	100+06	101+86	11+21	115+85	
Location		1.2 m	1.8 m	1.8 m	2.7 m	3 m	
CORE DENSITY	Thickness	38 mm	44 mm	41 mm	35 mm	29 mm	
	Air Wt.	593.3	731.1	658.5	512$	425.1	
	Water Wt.	333.3	413.9	372.2	282	232.6	
	SSD Wt.	597.8	733.8	661.3	518.6	430.8	
	Volume	264.5	319.9	289.1	236.6	198.2	
	Sp. Gravity	2.243	2.285	2.278	2.166	2.145	Average
	Max. Sp. Gravity	2.379					Density
	% Density	94.3	96	95.8	91	90.2	93.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = Minimum =

Lab No. Not Available.

ASPHALT INSPECTORS DAILY REPORT

Lot No. 175 Date 08/02/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639914
Type Plant Batch-Drum Surface **MODIFIER SEAL-O-FLEX** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		1:50				Time		1:50	
Temperature		168 C				Temperature		163 C	
Sample Wt. (W)		2116.3					Air Wt.	1186.9	
Weight of Moist (M)		1.7					Water Wt.	666.8	
Dry Sample Wt. (Ws)		2114.6				Characteristics	SSD Wt.	1189.4	
Corr. AC %		5.08 (107.4)				of Laboratory	Volume	522.6	
Total Ext. Wt. (W1)		2007.2				Compacted	Sp. Grav.	2.271	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.1	
	1 1/2"				6		VMA	15.3	
	1"				6		Dial	357	
100	3/4"	0	100	0	6		Stability	4675	
97	1/2"	66.9	96.7	0.3	6		Flow	17	
87	3/8"	255	87.3	0.3	6	Asphalt Content Guage (MT-6)		5.16	
55	#4	885	55.9	0.9	5	Moisture	Sample Wt.	500.5	
37	#8	1243.7	38	1	5	Correction	Wt. Water	0.4	
	#16				5	(AASHTO: T110)	% Moisture	0.08	
20	#30	1582.8	21.1	1.1	4	Corrected Asphalt Content		5.08	
11	#50	1784.1	11.1	0.1	4		Sample Wt.	1938.5	
5.4	#200	1882.8	6.2	0.8	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8633.4	
						(AASHTO: T209)	Volume	819.1	
							Max. Sp.Grav.	2.367	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		60+44	66+45	73+34	75+64	80+00	
Location		3 m	0.9 m	3 m	3 m	2.4 m	
CORE DENSITY	Thickness	41 mm	32 mm	32 mm	35 mm	38 mm	
	Air Wt.	634.9	513.3	476.5	495.1	602.1	
	Water Wt.	348.3	283.3	262.7	271	336.2	
	SSD Wt.	639.9	516.8	479.4	501	603.8	
	Volume	291.6	233.5	216.7	230	267.6	
	Sp. Gravity	2.177	2.198	2.199	2.153	2.25	Average
	Max. Sp. Gravity	2.367					Density
	% Density	92	92.9	92.9	91	95.1	92.8

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 176 Date 08/02/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9643423
Type Plant Batch-Drum Surface **MODIFIER CRYOPOLYMER RUBBER** Source AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		3:50				Time		3:50	
Temperature		166 C				Temperature		163 C	163 C
Sample Wt. (W)		1736.1					Air Wt.	1191.9	1186.3
Weight of Moist (M)		1.4					Water Wt.	672	666.9
Dry Sample Wt. (Ws)		1734.7				Characteristics	SSD Wt.	1193.6	1187.6
Corr. AC %		5.59 (97)				of Laboratory	Volume	521.6	520.7
Total Ext. Wt. (W1)		1637.1				Compacted	Sp. Grav.	2.285	2.278
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	2.9	3.2
	1 1/2"				6		VMA	15.2	
	1"				6		Dial	211	
100	3/4"	0	100	0	6		Stability	2720	
97	1/2"	44.9	97.3	0.3	6		Flow	14	
87	3/8"	181.7	88.9	1.9	6	Asphalt Content Guage (MT-6)		5.67	
55	#4	703.7	57	2	5	Moisture	Sample Wt.	500.9	
37	#8	993.4	39.3	2.3	5	Correction	Wt. Water	0.4	
	#16				5	(AASHTO: T110)	% Moisture	0.08	
20	#30	1283.1	21.7	1,7	4	Corrected Asphalt Content		5.59	
11	#50	1451.9	11.3	0.3	4		Sample Wt.	1845	
5.4	#200	1528.5	6.7	1.3	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8575	
						(AASHTO: T209)	Volume	784	
							Max. Sp.Grav.	2.353	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		86+60	98+49	101+28	107+40	117+14	
Location		1.2 m	0.9 m	2.4 m	0.9 m	0.6 m	
CORE DENSITY	Thickness	35 mm	41 mm	35 mm	38 mm	35 mm	
	Air Wt.	565.8	651.2	547.4	616.3	569.1	
	Water Wt.	316	362.7	307.9	345.4	319	
	SSD Wt.	568.2	653.8	549.9	618.3	571.6	
	Volume	252.2	291.1	242	272.9	252.6	
	Sp. Gravity	2.243	2.237	2.262	2.258	2.253	Average
	Max. Sp. Gravity	2.353					Density
	% Density	95.3	95.1	96.1	96	95.8	95.7

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = Minimum =

Lot No. 180 Date 08/07/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9643134
Type Plant Batch-Drum Binder **MODIFIER MULTIGRADE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		8:07				Time		8:07	
Temperature		154 C				Temperature		149 C	149 C
Sample Wt. (W)		2042.8					Air Wt.	1192.8	1184.3
Weight of Moist (M)		1.2					Water Wt.	686.3	682
Dry Sample Wt. (Ws)		2041.6				Characteristics	SSD Wt.	1194.2	1185.6
Corr. AC %		5.06 (103.3)				of Laboratory	Volume	507.9	503.6
Total Ext. Wt. (W1)		1938.3				Compacted	Sp. Grav.	2.348	2.352
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens	Voids	2.6	2.4
	1 1/2"				6	(MT-34&MT-35)	VMA	13.9	
100	1"	0	100	0	6		Dial	213	
99	3/4"	35.4	98.2	0.8	6		Stability	2982	
83	1/2"	552.6	71.5	11.5	6		Flow	17	
68	3/8"	711.9	63.3	4.7	6	Asphalt Content Guage (MT-6)		5.12	
42	#4	1162.2	40	2	5	Moisture	Sample Wt.	500.9	
28	#8	1395.3	28	0	5	Correction	Wt. Water	0.3	
	#16				5	(AASHTO: T110)	% Moisture	0.06	
16	#30	1613.7	16.8	0.8	4	Corrected Asphalt Content		5.06	
7	#50	1789.2	7.7	0.7	4		Sample Wt.	2113.5	
3.9	#200	1864.4	3.8	0.1	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8750.6	
						(AASHTO: T209)	Volume	876.9	
							Max. Sp.Grav.	2.41	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	122+23	128+48	130+52	133+25	138+62	
	Location	2.4 m	3 m	1.8 m	1.8 m	0.6 m	
CORE DENSITY	Thickness	35 mm	38 mm	38 mm	35 mm	44 mm	
	Air Wt.	580.7	589.3	657.6	580.8	726.2	
	Water Wt.	327.8	332	373	326.6	412.6	
	SSD Wt.	581.7	593.1	658.6	583.2	728.3	
	Volume	253.9	261.1	285.6	256.6	315.7	
	Sp. Gravity	2.287	2.257	2.303	2.263	2.3	Average
	Max. Sp. Gravity	2.41					Density
	% Density	94.9	93.7	95.5	93.9	95.4	94.7

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 182 Date 08/07/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9643134
Type Plant Batch-Drum Binder **MODIFIER MULTIGRADE** Source of AC Ergon
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		3:50				Time		3:50	
Temperature		154 C				Temperature		149 C	149 C
Sample Wt. (W)		2024.6					Air Wt.	1187.9	1221
Weight of Moist (M)		1.2					Water Wt.	685.2	699
Dry Sample Wt. (Ws)		2023.4				Characteristics	SSD Wt.	1188.8	1223.2
Corr. AC %		4.66 (94.3)				of Laboratory	Volume	503.6	524.2
Total Ext. Wt. (W1)		1929.1				Compacted	Sp. Grav.	2.259	2.329
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	1.9	3.2
	1 1/2"				6		VMA	13.2	
100	1"	0	100	0	6		Dial	209	
99	3/4"	50.5	97.4	1.6	6		Stability	2912	
83	1/2"	451.1	76.6	6.4	6		Flow	13	
68	3/8"	627.8	67.5	0.5	6	Asphalt Content Guage (MT-6)		4.72	
42	#4	1059	45.1	3.1	5	Moisture	Sample Wt.	500.9	
28	#8	1329.1	31.1	3.1	5	Correction	Wt. Water	0.3	
	#16				5	(AASHTO: T110)	% Moisture	0.06	
16	#30	1571	18.6	2.6	4	Corrected Asphalt Content		4.66	
7	#50	1753.8	9.1	2.1	4		Sample Wt.	1818.6	
3.9	#200	1834.5	4.9	1	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8573.4	
						(AASHTO: T209)	Volume	759.2	
							Max. Sp.Grav.	*2.395	2.405

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		124+28	126+48	129+74	134+53	143+00	
Location		2.4 m	0.6 m	2.1 m	0.6 m	0.9 m	
CORE DENSITY	Thickness	41 mm	44 mm	38 mm	32 mm	35 mm	
	Air Wt.	693.8	703.6	625.4	528.1	567.9	
	Water Wt.	393.7	396.1	352.7	298.4	320.1	
	SSD Wt.	694.5	705.2	626.5	529.1	569	
	Volume	300.8	309.1	273.8	230.7	248.9	
	Sp. Gravity	2.307	2.276	2.284	2.289	2.282	Average
	Max. Sp. Gravity	2.405					Density
	% Density	95.9	94.6	95	95.2	94.9	95.1

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 4.8
VMA = 14.7 Minimum = 13

*Max. pulled improperly. Used avg. of Max. on trucks 2 and 4.

ASPHALT INSPECTORS DAILY REPORT

Lot No. 184 Date 08/07/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9638315
Type Plant Batch-Drum Binder **MODIFIER VESTOPLAST** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time						Time			
Temperature						Temperature			
Sample Wt. (W)							Air Wt.		
Weight of Moist (M)							Water Wt.		
Dry Sample Wt. (Ws)						Characteristics	SSD Wt.		
Corr. AC %						of Laboratory	Volume		
Total Ext. Wt. (W1)						Compacted	Sp. Grav.		
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids		
	1 1/2"				6		VMA		
	1"				6		Dial		
	3/4"				6		Stability		
	1/2"				6		Flow		
	3/8"				6	Asphalt Content Guage (MT-6)			
	#4				5	Moisture	Sample Wt.		
	#8				5	Correction	Wt. Water		
	#16				5	(AASHTO: T110)	% Moisture		
	#30				4	Corrected Asphalt Content			
	#50				4		Sample Wt.		
	#200				1.5	Maximum	Cal. Wt.		
						Specific Gravity	Final Wt.		
						(AASHTO: T209)	Volume		
							Max. Sp.Grav.		

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		142+91	147+07	151+68	155+30	158+46	
Location		3 m	3 m	1.2 m	1.8 m	2.7 m	
CORE DENSITY	Thickness	35 mm	35 mm	44 mm	35 mm	32 mm	
	Air Wt.	551.9	543.8	726.7	552.7	515.7	
	Water Wt.	312.2	308.4	413.7	306.8	290.7	
	SSD Wt.	554.6	545.4	727.7	556.1	518	
	Volume	242.4	237	314	249.3	227.3	
	Sp. Gravity	2.277	2.295	2.314	2.217	2.267	Average
	Max. Sp. Gravity	2.405					Density
	% Density	94.7	95.4	96.2	92.2	94.3	94.6

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav.
Job Mix AC%
VMA = Minimum =

No tests were performed on VESTOPLAST.

ASPHALT INSPECTORS DAILY REPORT

Lot No. 185 Date 08/08/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639915
Type Plant Batch-Drum Surface **MODIFIER MULTIGRADE** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time			9:30			Time		9:30	
Temperature			154 C			Temperature		149 C	
Sample Wt. (W)			1829.9				Air Wt.	1196.9	
Weight of Moist (M)			0.7				Water Wt.	676.2	
Dry Sample Wt. (Ws)			1829.2			Characteristics	SSD Wt.	1198.4	
Corr. AC %			4.9 (89.6)			of Laboratory	Volume	522.2	
Total Ext. Wt. (W1)			1739.6			Compacted	Sp. Grav.	2.292	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.9	
	1 1/2"				6		VMA	14.4	
	1"				6		Dial	325	
100	3/4"	0	100	0	6		Stability	4141	
97	1/2"	54.3	96.9	0.1	6		Flow	14	
87	3/8"	267.6	84.6	2.4	6	Asphalt Content Guage (MT-6)		4.94	
55	#4	794.2	54.3	0.7	5	Moisture	Sample Wt.	500.9	
37	#8	1074.7	38.2	1.2	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1362.8	21.7	1.7	4	Corrected Asphalt Content		4.9	
11	#50	1549.2	10.9	0.1	4		Sample Wt.	1868.4	
5.4	#200	1637.8	5.9	0.5	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8599.1	
						(AASHTO: T209)	Volume	783.3	
							Max. Sp.Grav.	2.385	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
	Sublot No.	1	2	3	4	5	
	Station	123+86	127+15	133+01	134+51	140+83	
	Location	2.7 m	2.1 m	2.1 m	3 m	0.6 m	
CORE DENSITY	Thickness	32 mm	35 mm	38 mm	32 mm	32 mm	
	Air Wt.	521.8	551.1	564.5	504.2	490.6	
	Water Wt.	288.5	305.5	311.8	281.5	270.1	
	SSD Wt.	524.4	554	568.5	506.3	494.9	
	Volume	235.9	248.5	256.7	224.8	224.8	
	Sp. Gravity	2.212	2.218	2.2	2.243	2.182	Average
	Max. Sp. Gravity	2.385					Density
	% Density	92.7	93	92.2	94	91.5	92.7

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 187 Date 08/09/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9639915
Type Plant Batch-Drum Surface **MODIFIED MULTIGRADE** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1
Time		8:00				Time		8:00
Temperature		152 C				Temperature		149 C
Sample Wt. (W)		2134.1					Air Wt.	1190.1
Weight of Moist (M)		1.7					Water Wt.	666.5
Dry Sample Wt. (Ws)		2132.4				Characteristics	SSD Wt.	1192.2
Corr. AC %		4.94 (105.3)				of Laboratory	Volume	525.7
Total Ext. Wt. (W1)		2027.1				Compacted	Sp. Grav.	2.264
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	5.7
	1 1/2"				6		VMA	15.4
	1"				6		Dial	192
100	3/4"	0	100	0	6		Stability	2472
97	1/2"	63.1	96.9	0.1	6		Flow	13
87	3/8"	255.4	87.4	0.4	6	Asphalt Content Guage (MT-6)		5.02
55	#4	889.4	56.1	1.1	5	Moisture	Sample Wt.	502
37	#8	1246.7	38.5	1.5	5	Correction	Wt. Water	0.4
	#16				5	(AASHTO: T110)	% Moisture	0.08
20	#30	1597.5	21.2	1.2	4	Corrected Asphalt Content		4.94
11	#50	1807.3	10.8	0.2	4		Sample Wt.	1866.3
5.4	#200	1911.2	5.7	0.3	1.5	Maximum	Cal. Wt.	7514
						Specific Gravity	Final Wt.	8603.3
						(AASHTO: T209)	Volume	777
							Max. Sp.Grav.	2.402

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		122+64	125+00	129+86	137+80	139+11	
Location		1.8 m	1.2 m	0.8 m	2.4 m	1.5 m	
CORE DENSITY	Thickness	32 mm	38 mm	32 mm	32 mm	32 mm	
	Air Wt.	481.7	550.3	500.7	495.5	542	
	Water Wt.	265.1	304	277.2	273.2	300.5	
	SSD Wt.	486.3	557.8	506.1	499.6	545.8	
	Volume	221.2	253.8	228.9	226.4	245.3	
	Sp. Gravity	2.178	2.168	2.187	2.189	2.21	Average
	Max. Sp. Gravity	2.402					Density
	% Density	90.7	90.3	91	91.1	92	91

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.2
VMA = 15 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 181 Date 08/07/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9634180
Type Plant Batch-Drum Binder **CONTROL AC-30** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		2:24				Time		2:24	
Temperature		154 C				Temperature		146 C	146 C
Sample Wt. (W)		1857.1					Air Wt.	1190.7	1183.2
Weight of Moist (M)		1.1					Water Wt.	685.9	682.2
Dry Sample Wt. (Ws)		1856				Characteristics	SSD Wt.	1191.1	1184
Corr. AC %		4.94 (91.7)				of Laboratory	Volume	505.2	501.8
Total Ext. Wt. (W1)		1764.3				Compacted	Sp. Grav.	2.357	2.358
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	1.6	1.6
	1 1/2"				6		VMA	13.5	
100	1"	0	100	0	6		Dial	246	
99	3/4"	0	100	1	6		Stability	3406	
83	1/2"	284.4	83.9	0.9	6		Flow	13	
68	3/8"	439.2	75.1	7.1	6	Asphalt Content Guage (MT-6)		5	
42	#4	879.9	50.1	8.1	5	Moisture	Sample Wt.	500.9	
28	#8	1161.5	34.2	6.2	5	Correction	Wt. Water	0.3	
	#16				5	(AASHTO: T110)	% Moisture	0.06	
16	#30	1409.4	20.1	4.1	4	Corrected Asphalt Content		4.94	
7	#50	1590.7	9.8	2.8	4		Sample Wt.	1884.3	
3.9	#200	1670.2	5.3	1.4	1.5	Maximum Specific Gravity	Cal. Wt.	7514	
							Final Wt.	8611.8	
						(AASHTO: T209)	Volume	786.5	
							Max. Sp.Grav.	2.396	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		229+25	231+16	232+85	236+51	237+38	
Location		2.8 m	0.6 m	3 m	1.5 m	o.6 m	
CORE DENSITY	Thickness	32 mm	38 mm	38 mm	41 mm	41 mm	
	Air Wt.	503.7	641.8	603	651.5	658.7	
	Water Wt.	288	365.5	339.2	372.9	373	
	SSD Wt.	505	642.6	604.3	652.6	661.9	
	Volume	217	277.1	265.1	279.7	288.9	
	Sp. Gravity	2.321	2.316	2.275	2.329	2.28	Average
	Max. Sp. Gravity	2.396					Density
	% Density	96.9	96.7	94.9	97.2	95.2	96.2

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.59
Job Mix AC% 5
VMA = 14.7 Minimum = 13

ASPHALT INSPECTORS DAILY REPORT

Lot No. 186 Date 08/08/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9622035
Type Plant Batch-Drum Surface **CONTROL AC-30** Source of AC ERGON
(Inside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		1:15				Time		1:15	
Temperature		157 C				Temperature		146 C	
Sample Wt. (W)		1840.6					Air Wt.	1196.1	
Weight of Moist (M)		0.7					Water Wt.	675.2	
Dry Sample Wt. (Ws)		1839.9				Characteristics	SSD Wt.	1196.9	
Corr. AC %		5.57 (102.5)				of Laboratory	Volume	521.7	
Total Ext. Wt. (W1)		1737.4				Compacted	Sp. Grav.	2.293	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	3.3	
	1 1/2"				6		VMA	14.9	
	1"				6		Dial	200	
100	3/4"	0	100	0	6		Stability	2686	
97	1/2"	76.5	95.6	1.4	6		Flow	15	
87	3/8"	260.3	85	2	6	Asphalt Content Guage (MT-6)		5.61	
55	#4	799.2	54	1	5	Moisture	Sample Wt.	500.9	
37	#8	1091.2	37.2	0.2	5	Correction	Wt. Water	0.2	
	#16				5	(AASHTO: T110)	% Moisture	0.04	
20	#30	1379.5	20.6	0.6	4	Corrected Asphalt Content		5.57	
11	#50	1565.5	9.9	1.1	4		Sample Wt.	1907.6	
5.4	#200	1651.8	4.9	0.5	1.5	Maximum	Cal. Wt.	7514	
						Specific Gravity	Final Wt.	8617.5	
						(AASHTO: T209)	Volume	804.1	
							Max. Sp.Grav.	2.372	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		195+00	197+65	217+97	222+78	230+10	
Location		0.9 m	0.6 m	2.8 m	1.2 m	1.8 m	
CORE DENSITY	Thickness	38 mm	38 mm	32 mm	32 mm	41 mm	
	Air Wt.	589	592.5	521.2	545.6	617.6	
	Water Wt.	330	327.3	286.6	304.8	343.6	
	SSD Wt.	592.2	596	525.5	548	619.9	
	Volume	262.2	268.7	238.9	243.2	276.3	
	Sp. Gravity	2.246	2.205	2.182	2.243	2.235	Average
	Max. Sp. Gravity	2.372					Density
	% Density	94.7	93	92	94.6	94.2	93.7

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.6
VMA = 15.3 Minimum = 14

ASPHALT INSPECTORS DAILY REPORT

Lot No. 188 Date 08/09/1996 Project No. 59-0055-03-070-10 County Grenada and Yalobusha
Contractor Lehman-Roberts Producer of Mix Lehman-Roberts Mix Design Lab No. 9622035
Type Plant Batch-Drum Surface **CONTROL AC-30** Source of AC ERGON
(Outside Lane)

EXTRATIONS (MT-30)						SAMPLE NUMBER		1	2
Time		9:50				Time		9:50	
Temperature		154 C				Temperature		146 C	
Sample Wt. (W)		1547.9					Air Wt.	1195.9	
Weight of Moist (M)		1.2					Water Wt.	670.7	
Dry Sample Wt. (Ws)		1546.7				Characteristics	SSD Wt.	1197	
Corr. AC %		5.33 (82.4)				of Laboratory	Volume	526.3	
Total Ext. Wt. (W1)		1464.3				Compacted	Sp. Grav.	2.272	
Job Mix	Sieve Size	Weight Grams	% Passing	Dev.	Spec. Tol.	Specimens (MT-34&MT-35)	Voids	4.6	
	1 1/2"				6		VMA	15.5	
	1"				6		Dial	173	
	1"				6		Stability	2276	
100	3/4"	0	100	0	6		Flow	11	
97	1/2"	64.1	95.6	1.4	6	Asphalt Content Guage (MT-6)		5.41	
87	3/8"	222.2	84.8	2.2	6	Moisture	Sample Wt.	500	
55	#4	683.7	53.3	1.7	5	Correction	Wt. Water	0.4	
37	#8	930.9	36.4	0.3	5	(AASHTO: T110)	% Moisture	0.08	
	#16				5	Corrected Asphalt Content		5.33	
20	#30	1165.4	20.4	0.4	4		Sample Wt.	1927.4	
11	#50	1317.2	10	1	4	Maximum	Cal. Wt.	7514	
5.4	#200	1387.6	5.2	0.2	1.5	Specific Gravity	Final Wt.	8632.2	
						(AASHTO: T209)	Volume	809.2	
							Max. Sp.Grav.	2.382	

TEST STRIP OR ROADWAY DENSITY (TMD-22-06-00-000)							
Sublot No.		1	2	3	4	5	
Station		191+40	205+09	210+62	221+29	231+70	
Location		2.8 m	2.4 m	2.8 m	2.1 m	1.5 m	
CORE DENSITY	Thickness	38 mm	38 mm	38 mm	32 mm	41 mm	
	Air Wt.	545.5	559.6	597.2	532.7	684.1	
	Water Wt.	306.2	315	331.8	297.9	378.4	
	SSD Wt.	546.9	560.6	598.8	533.5	687	
	Volume	240.7	245.6	267	235.6	308.6	
	Sp. Gravity	2.266	2.279	2.237	2.261	2.217	Average
	Max. Sp. Gravity	2.382					Density
	% Density	95.1	95.7	93.9	94.9	93.1	94.5

Crush Count %
Limestone Retained on #4 Sieve %
Agg. Bulk Sp. Grav. 2.545
Job Mix AC% 5.6
VMA = 15.3 Minimum = 14

APPENDIX C

MANUAL RUT MEASUREMENTS

Rut Data for Polymer Project I-55 N at Grenada

Modifier: Kraton — Stations: 582+50 587+50

Distance	11/05/1997 ISWP	11/05/1997 OSWP	06/02/1998 ISWP	06/02/1998 OSWP	11/17/1998 ISWP	11/17/1998 OSWP	05/20/1999 ISWP	05/20/1999 OSWP	11/04/1999 ISWP	11/04/1999 OSWP
0	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625
50	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625
100	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625
150	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625
200	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
250	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
300	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625
350	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	2 0.1250
400	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
450	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
500	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625

Modifier: STYRELF — Stations: 637+50 642+50

Distance	11/05/1997 ISWP	11/05/1997 OSWP	06/02/1998 ISWP	06/02/1998 OSWP	11/17/1998 ISWP	11/17/1998 OSWP	05/20/1999 ISWP	05/20/1999 OSWP	11/04/1999 ISWP	11/04/1999 OSWP
0	0 0.0000	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625
50	0 0.0000	0 0.0000	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
100	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625
150	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000
200	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
250	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
350	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
450	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
500	0 0.0000	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625

Modifier: NOVOPHALT — Stations: 682+50 687+50

Distance	11/05/1997 ISWP	11/05/1997 OSWP	06/02/1998 ISWP	06/02/1998 OSWP	11/17/1998 ISWP	11/17/1998 OSWP	05/20/1999 ISWP	05/20/1999 OSWP	11/04/1999 ISWP	11/04/1999 OSWP
0	1 0.0625	0 0.0000	2 0.1250	1 0.0625	3 0.1875	1 0.0625	3 0.1875	1 0.0625	3 0.1875	2 0.1250
50	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625	2 0.1250	2 0.1250
100	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	2 0.1250
150	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250
200	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	3 0.1875
250	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625
300	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625
350	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
400	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
450	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
500	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625

Modifier: ROUSE — Stations: 742+50 747+50

Distance	11/05/1997 ISWP	11/05/1997 OSWP	06/02/1998 ISWP	06/02/1998 OSWP	11/17/1998 ISWP	11/17/1998 OSWP	05/20/1999 ISWP	05/20/1999 OSWP	11/04/1999 ISWP	11/04/1999 OSWP
0	0 0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
50	0 0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
100	0 0	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625
150	0 0	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625
200	0 0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625
250	0 0	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625
300	0 0	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
350	0 0	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625
400	0 0	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625
450	0 0	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625
500	0 0	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625

Modifier: ULTRAPAVE — Stations: 807+50 812+50

Distance	11/05/1997 ISWP	11/05/1997 OSWP	06/02/1998 ISWP	06/02/1998 OSWP	11/17/1998 ISWP	11/17/1998 OSWP	05/20/1999 ISWP	05/20/1999 OSWP	11/04/1999 ISWP	11/04/1999 OSWP
0	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	2 0.1250
50	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	2 0.1250	2 0.1250	3 0.1875
100	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	2 0.1250	2 0.1250	3 0.1875	3 0.1875
150	1 0.0625	0 0.0000	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	2 0.1250
200	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250
250	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250
300	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	3 0.1875
350	1 0.0625	0 0.0000	2 0.1250	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625	3 0.1875	3 0.1875
400	1 0.0625	0 0.0000	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	2 0.1250
450	1 0.0625	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	2 0.1250	2 0.1250
500	1 0.0625	1 0.0625	1 0.0625	1 0.0625	2 0.1250	1 0.0625	2 0.1250	1 0.0625	2 0.1250	2 0.1250

Modifier	SEALOFLEX	Stations	67+60	72+60																				
	11/05/1997				05/02/1998				11/17/1998				05/20/1999				11/04/1999							
Distance	ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP					
0	1	0.0625	0	0.0000	1	0.0625	1	0.0625	1	0.0625	1	0.0625	1	0.0625	1	0.0625	2	0.1250	1	0.0625				
50	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	1	0.0625				
100	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	2	0.1250	0	0.0000				
150	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	1	0.0625				
200	1	0.0625	0	0.0000	1	0.0625	1	0.0625	1	0.0625	1	0.0625	1	0.0625	1	0.0625	2	0.1250	1	0.0625				
250	1	0.0625	1	0.0625	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	1	0.0625				
300	1	0.0625	0	0.0000	1	0.0625	0	0.0000	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	1	0.0625				
350	1	0.0625	0	0.0000	2	0.1250	0	0.0000	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	1	0.0625				
400	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	1	0.0625	1	0.0625	1	0.0625				
450	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	1	0.0625	1	0.0625	1	0.0625				
500	1	0.0625	0	0.0000	1	0.0625	0	0.0000	1	0.0625	1	0.0625	2	0.1250	1	0.0625	2	0.1250	1	0.0625				

Modifier	CRYOPOLYMER	Stations	97+60	102+60																				
	11/05/1997				05/02/1998				11/17/1998				05/20/1999				11/04/1999							
Distance	ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP					
0	1	0.0625	1	0.0625	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	2	0.1250				
50	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	2	0.1250	3	0.1875	2	0.1250	4	0.2500	3	0.1875				
100	2	0.1250	0	0.0000	2	0.1250	1	0.0625	3	0.1875	2	0.1250	3	0.1875	3	0.1875	3	0.1875	3	0.1875				
150	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	3	0.1875				
200	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	2	0.1250	3	0.1875	3	0.1875	3	0.1875	3	0.1875				
250	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	2	0.1250	4	0.2500	3	0.1875				
300	1	0.0625	1	0.0625	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	3	0.1875				
350	1	0.0625	1	0.0625	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	3	0.1875				
400	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	3	0.1875				
450	2	0.1250	1	0.0625	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	2	0.1250	3	0.1875	3	0.1875				
500	2	0.1250	0	0.0000	2	0.1250	1	0.0625	2	0.1250	2	0.1250	2	0.1250	2	0.1250	3	0.1875	2	0.1250				

Modifier	MULTIGRADE®	Stations	127+60	132+60																				
	11/05/1997				05/02/1998				11/17/1998				05/20/1999				11/04/1999							
Distance	ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP					
0	1	0.0625	0	0.0000	1	0.0625	0	0.0000	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	1	0.0625				
50	1	0.0625	0	0.0000	2	0.1250	0	0.0000	2	0.1250	1	0.0625	3	0.1875	1	0.0625	3	0.1875	1	0.0625				
100	1	0.0625	0	0.0000	1	0.0625	0	0.0000	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	2	0.1250				
150	1	0.0625	0	0.0000	1	0.0625	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	3	0.1875	1	0.0625				
200	1	0.0625	0	0.0000	1	0.0625	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	4	0.2500	2	0.1250				
250	1	0.0625	0	0.0000	3	0.1875	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	3	0.1875	1	0.0625				
300	1	0.0625	0	0.0000	1	0.0625	0	0.0000	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	2	0.1250				
350	1	0.0625	0	0.0000	2	0.1250	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	3	0.1875	1	0.0625				
400	1	0.0625	0	0.0000	1	0.0625	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	3	0.1875	1	0.0625				
450	1	0.0625	0	0.0000	2	0.1250	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	3	0.1875	2	0.1250				
500	1	0.0625	0	0.0000	1	0.0625	0	0.0000	3	0.1875	1	0.0625	3	0.1875	1	0.0625	3	0.1875	2	0.1250				

Modifier	CONTROL	Stations	207+60	212+60																				
	11/05/1997				05/02/1998				11/17/1998				05/20/1999				11/04/1999							
Distance	ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP		ISWP		OSWP					
0	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	2	0.1250	3	0.1875	3	0.1875	5	0.3125	4	0.2500				
50	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	3	0.1875	4	0.2500	4	0.2500	5	0.3125	5	0.3125				
100	2	0.1250	1	0.0625	2	0.1250	1	0.0625	4	0.2500	3	0.1875	4	0.2500	4	0.2500	5	0.3125	5	0.3125				
150	2	0.1250	1	0.0625	2	0.1250	2	0.1250	4	0.2500	3	0.1875	4	0.2500	3	0.1875	5	0.3125	4	0.2500				
200	2	0.1250	2	0.1250	2	0.1250	2	0.1250	4	0.2500	3	0.1875	4	0.2500	4	0.2500	5	0.3125	5	0.3125				
250	2	0.1250	1	0.0625	2	0.1250	2	0.1250	3	0.1875	3	0.1875	3	0.1875	4	0.2500	4	0.2500	5	0.3125				
300	3	0.1875	1	0.0625	3	0.1875	2	0.1250	4	0.2500	3	0.1875	5	0.3125	4	0.2500	6	0.3750	5	0.3125				
350	2	0.1250	1	0.0625	2	0.1250	1	0.0625	4	0.2500	3	0.1875	4	0.2500	3	0.1875	5	0.3125	5	0.3125				
400	2	0.1250	1	0.0625	2	0.1250	2	0.1250	5	0.3125	4	0.2500	5	0.3125	4	0.2500	6	0.3750	6	0.3750				
450	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	3	0.1875	4	0.2500	3	0.1875	5	0.3125	4	0.2500				
500	2	0.1250	1	0.0625	2	0.1250	1	0.0625	3	0.1875	3	0.1875	4	0.2500	4	0.2500	4	0.2500	5	0.3125				